HP ProLiant DL580 Generation 2 Server Maintenance and Service Guide

January 2004 (Fifth Edition)
Part Number 230828-005

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About This Guide

This maintenance and service guide can be used for reference when servicing the HP ProLiant DL580 Generation 2 server.

WARNING: To reduce the risk of personal injury from electric shock and hazardous energy levels, only authorized service technicians should attempt to repair this equipment. Improper repairs can create conditions that are hazardous.

Audience Assumptions

This guide is for service technicians. HP assumes you are qualified in the servicing of computer equipment and trained in recognizing hazard in products with hazardous energy levels and are familiar with weight and stability precautions for rack installations.

Technician Notes

WARNING: Only authorized technicians trained by HP should attempt to repair this equipment. All troubleshooting and repair procedures are detailed to allow only subassembly/module-level repair. Because of the complexity of the individual boards and subassemblies, no one should attempt to make repairs at the component level or to make modifications to any printed wiring board. Improper repairs can create a safety hazard.

WARNING: To reduce the risk of personal injury from electric shock and hazardous energy levels, do not exceed the level of repairs specified in these procedures. Because of the complexity of the individual boards and subassemblies, do not attempt to make repairs at the component level or to make modifications to any printed wiring board. Improper repairs can create conditions that are hazardous.

WARNING: To reduce the risk of electric shock or damage to the equipment:

- **Disconnect power from the system by unplugging all power cords from the power supplies.**
- **Do not disable the power cord grounding plug. The grounding plug is an important safety feature.**
- **Plug the power cord into a grounded (earthed) electrical outlet that is easily accessible at all times.**

CAUTION: To properly ventilate the system, you must provide at least 7.6 cm (3.0 in) of clearance at the front and back of the server.

CAUTION: The computer is designed to be electrically grounded (earthed). To ensure proper operation, plug the AC power cord into a properly grounded AC outlet only.

NOTE: Any indications of component replacement or printed wiring board modifications may void any warranty.

Where to Go for Additional Help

In addition to this guide, the following information sources are available:

- User documentation
- *Service Quick Reference Guide*
- Service training guides
- Service advisories and bulletins
- QuickFind information services
- Insight Manager software
- *HP Servers Troubleshooting Guide*

Integrated Management Log

The server includes an integrated, nonvolatile management log that contains fault and management information. The contents of the Integrated Management Log (IML) can be viewed with Insight Manager.

Telephone Numbers

For the name of the nearest HP authorized reseller:

- In the United States, call 1-800-345-1518.
- In Canada, call 1-800-263-5868.

For HP technical support:

- In the United States and Canada, call 1-800-652-6672.
- Outside the United States and Canada, refer to

  www.hp.com

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Illustrated Parts Catalog

This chapter provides the illustrated parts breakdown and spare parts lists for the HP ProLiant DL580 Generation 2 server. Refer to Tables 1-1, 1-2, and 1-3 for the names of referenced spare parts.

Mechanical Components Exploded View

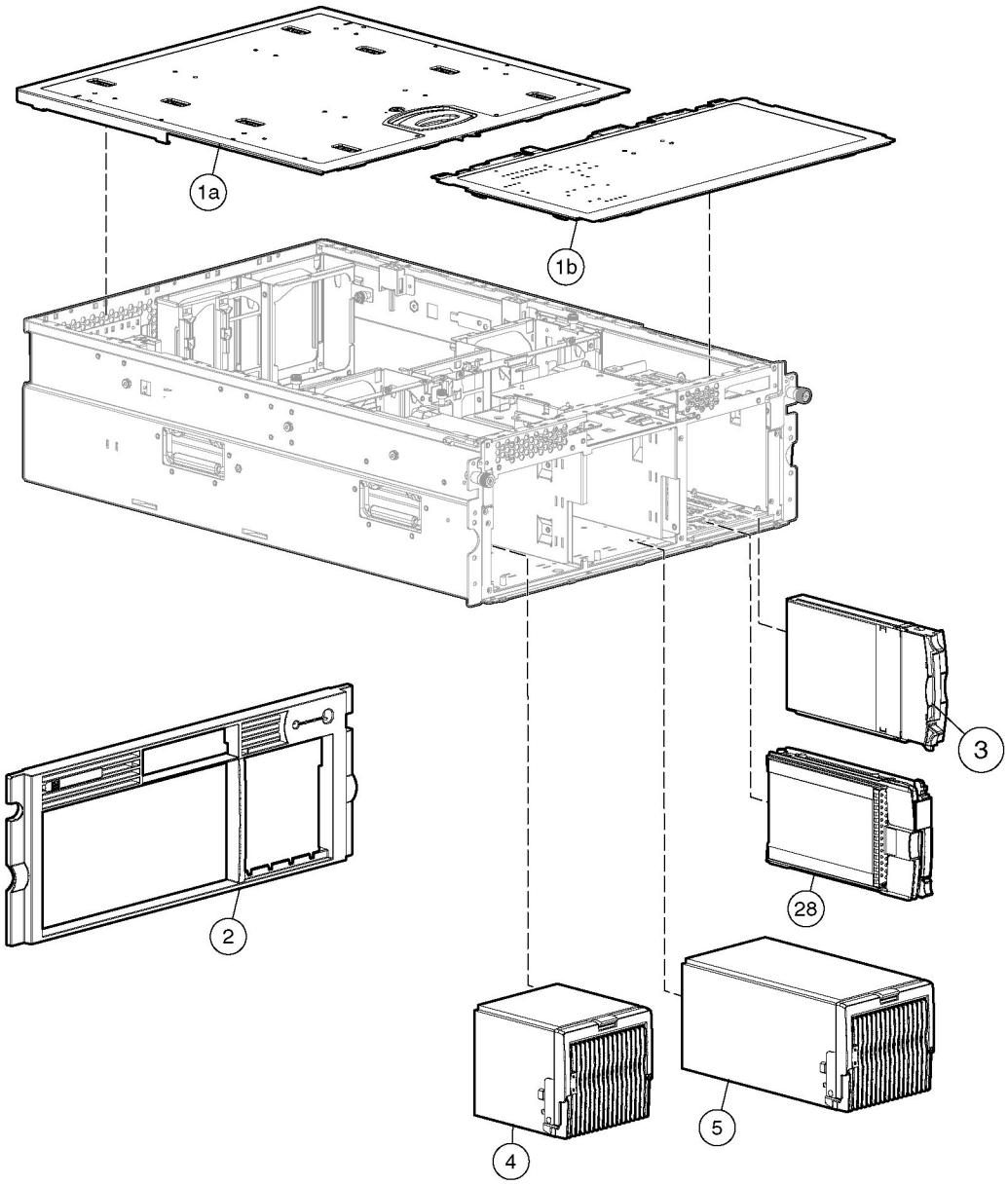

Figure 1-1: Mechanical components exploded view

Mechanical Components Spare Parts List

Table 1-1: Mechanical Components Spare Parts List

Item	Description	Spare Part Number
1	Access panels	240241-001
	a) Rear	
	b) Front	
2	Front bezel	243669-001
3	SCSI hard drive blank	122759-001
4	Power supply blank	267133-001
5	Power supply, 800 W, hot-plug	192201-001
6	Cable management arm*	295792-001
7	Power cord retainer kit*	313825-001

* Not shown.

System Components Exploded View

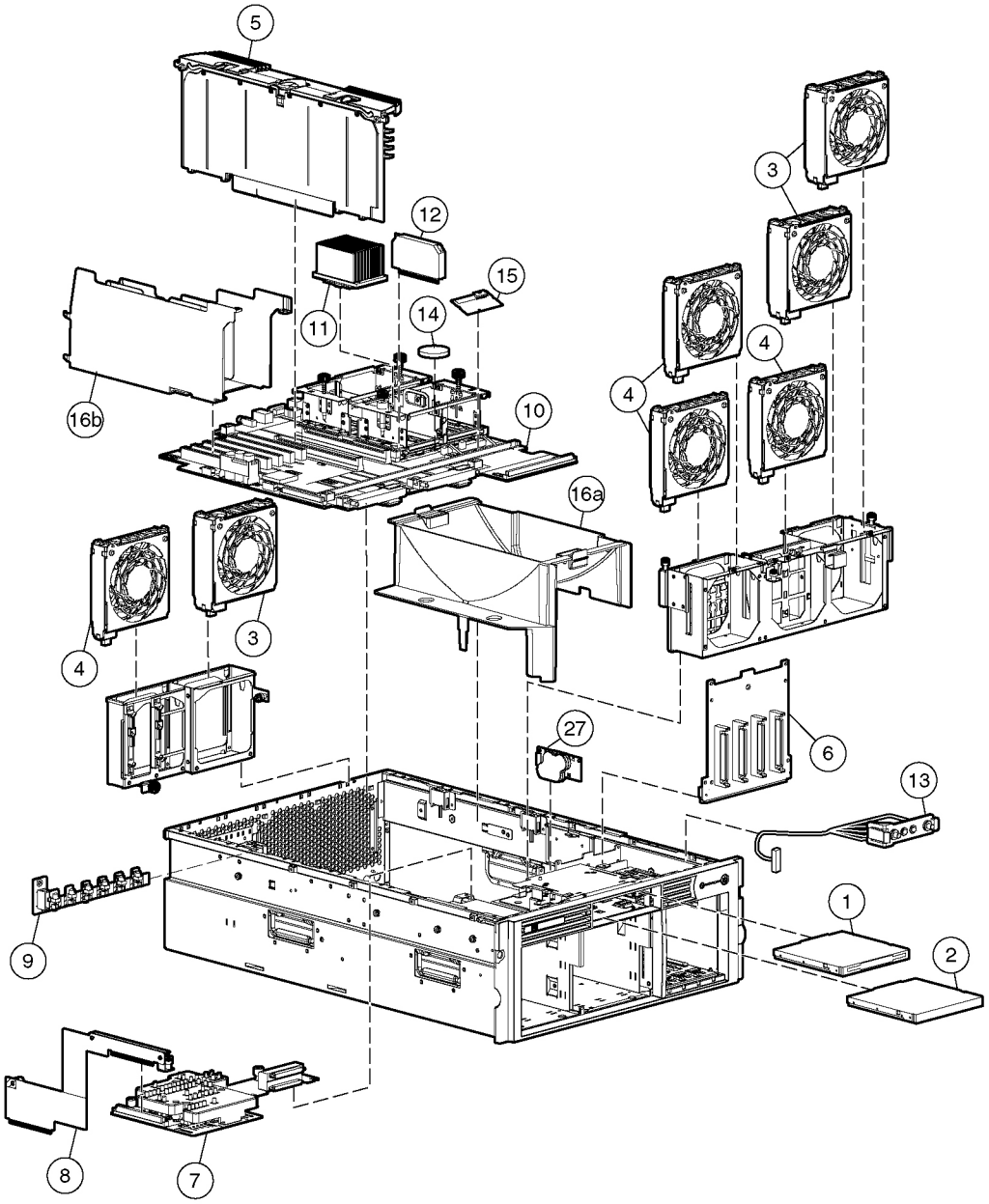

Figure 1-2: System components exploded view

System Components Spare Parts List

Table 1-2: System Components Spare Parts List

Item	Description	Spare Part Number
	Media Storage Devices	
1	Diskette drive, 12.7 mm, multibay	267132-001
2	CD-ROM drive, 24X, multibay	228508-001
	Fans	
3	Fan assembly, hot-plug, 120 × 38 mm	240243-001
4	Fan assembly, hot-plug, 120 × 25 mm	240244-001
	Boards	
5	Memory board	231126-001
6	SCSI backplane	231128-001
7	Diagnostic display board and lightpipe	249105-001
8	Pass-through board	249106-001
9	PCI-X Hot Plug board	231127-001
9a	NIC, 10/100/1000 controller*	284848-001
9b	NIC, Dual PCI-X NC7170*	313586-001
10	System board	231125-001
11	Processors	
	a) Processor, Xeon MP, 1.4-GHz/512 KB L3	272935-001
	b) Processor, Xeon MP, 1.6-GHz/1 MB L3*	272936-001
	c) Processor, Xeon MP, 1.5 GHz/1 MB L3*	309617-001
	d) Processor, Xeon MP, 1.9 GHz/1 MB L3*	311277-001
	e) Processor, Xeon MP, 2.0 GHz/2 MB L3*	309618-001
	f) Processor, Xeon MP, 2.0 GHz/1-MB L3*	327839-001
	g) Processor, Xeon MP, 2.5 GHz/1-MB L3*	327840-001
	h) Processor, Xeon MP, 2.8 GHz/2-MB L3*	327841-001
	i) Processor, Xeon MP, 2.2 GHz/2-MB L3*	352311-001
	j) Processor, Xeon MP, 2.7 GHz/2-MB L3*	352312-001
	k.) Processor, Xeon MP, 3.0 GHz/4-MB L3*	352313-001
	IMPORTANT: Mixing processor speeds and cache sizes is not supported.	
12	Processor power module (PPM)	266655-001
13	Power switch assembly	243670-001

* Not shown

continued

Table 1-2: System Components Spare Parts List *continued*

Item	Description	Spare Part Number
14	Battery, system, 3 V	153099-001
15	5i Plus memory module	260741-001
16	Plastics kit*	243672-001
	a) Processor air baffle	
	b) PCI Expansion board basket	
17	AC power cord, 15 A, 125 V*	237457-001
18	AC power cord, 10A, C14-C19*	311582-001
19	AC power cord, 16A, C19-C20*	295508-001
20	AC power cord, 20 A, 250 V*	237458-001
21	Rack-mounting hardware kit (company rack)*	313215-001
22	Rack-mounting hardware kit (third-party)*	291895-001
23	Cable kit, AC Power*	243671-001
24	Torx screwdriver, T-15*	199630-001
25	Country kit*	231091-001
26	Return kit*	279645-001
26a	Hardware mounting kit, 4U*	286221-001
26b	Cable Kit, Signal*	243670-001
	Options	
27	Battery-Backed Write Cache Module, 4.8 V	260740-001
28	18.2-GB SCSI hard drive, hot-plug 10 K RPM	152190-001
28a	18.2-GB SCSI hard drive, universal, hot-plug, 15 K RPM*	189395-001
28b	18.2-GB SCSI hard drive, U320, hot-plug, 15K	289240-001
28c	36.4-GB SCSI hard drive, hot-plug, 10 K RPM*	177986-001
28d	36.4-GB WUS, 1-inch hot-plug,15 K RPM*	233350-001
28e	36.4-GB SCSI Hard drive, U320, hot-plug, 10K	289041-001
28f	36.4-GB SCSI Hard drive, U320, hot-plug, 15K	289241-001
28g	72.8-GB WUS, 1-inch hot-plug, 10 K RPM*	233345-001
28h	72.8-GB SCSI hard drive, U320, hot-plug, 10K	289042-001
28i	72.8-GB SCSI hard drive, U320, hot-plug, 15K	289243-001
28j	146.8-GB SCSI hard drive, U320, hot-plug, 10K	289044-001
31	8X DVD-ROM drive*	268795-001

continued

Table 1-2: System Components Spare Parts List *continued*

Item	Description	Spare Part Number
	Memory	
32	256-MB DIMM (DDR SDRAM)	249674-001
33	512-MB DIMM (DDR SDRAM)	249675-001
34	1-GB DIMM (DDR SDRAM)	249676-001
35	2-GB DIMM (DDR SDRAM)	265791-001

* Not shown

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Removal and Replacement Procedures

This chapter provides subassembly/module-level removal and replacement procedures for ProLiant DL580 Generation 2 servers. After completing all necessary removal and replacement procedures, run the Diagnostics Utility to be sure that all components operate properly.

You need the following items for some procedures:

- Torx T-15 tool
- Flathead screwdriver
- Diagnostics Utility on the HP SmartStart CD

Safety Considerations

Before performing service procedures, review the following safety information.

Electrostatic Discharge

A discharge of static electricity can damage static-sensitive devices or micro-circuitry. Proper packaging and grounding techniques are necessary precautions to prevent damage. To prevent electrostatic damage:

- Transport products in static-safe containers such as conductive tubes, bags, or boxes.
- Keep electrostatic-sensitive parts in their containers until they arrive at static-free stations.
- Cover workstations with approved static-dissipating material. Use a wrist strap connected to the work surface and properly grounded (earthed) tools and equipment.
- Keep work area free of nonconductive materials such as ordinary plastic assembly aids and foam packing.
- Be sure that you are properly grounded (earthed) when touching a static-sensitive component or assembly.
- Avoid touching pins, leads, or circuitry.
- Use nonconductive field service tools.

Symbols on Equipment

These symbols may be located on equipment in areas where hazardous conditions may exist.

Any product or assembly marked with these symbols indicates that the component exceeds the recommended weight for one individual to handle safely.

WARNING: To reduce the risk of personal injury or damage to the equipment, observe local occupational health and safety requirements and guidelines for manual material handling.

Any surface or area of the equipment marked with these symbols indicates the presence of a hot surface or a hot component.

WARNING: To reduce the risk of injury from a hot component, allow the surface to cool before touching it.

Any surface or area of the equipment marked with these symbols indicates the presence of electric shock hazards. The enclosed area contains no operator serviceable parts.

WARNING: To reduce the risk of injury from electric shock hazards, do not open this enclosure.

Any RJ-45 receptacle marked with these symbols indicates a network interface connection.

WARNING: To reduce the risk of electric shock, fire, or damage to the equipment, do not plug telephone or telecommunications connectors into this receptacle.

Rack Warnings and Cautions

WARNING: To reduce the risk of personal injury or damage to the equipment, adequately stabilize the rack before extending a component outside the rack. Extend only one component at a time. A rack may become unstable if more than one component is extended.

WARNING: To reduce the risk of personal injury or damage to the equipment:

- **Extend the leveling jacks to the floor.**
- **Rest the full weight of the rack on the leveling jacks.**
- **Attach the stabilizers to the rack if it is a single rack installation.**
- **Couple the racks together in multiple rack installations.**

WARNING: When installing the server in a telco rack, adequately secure the rack frame to the building structure at the top and bottom.

WARNING: To reduce the risk of personal injury or damage to the equipment, use two or more people to safely unload the rack from the pallet. An empty 42U rack weighs 115 kg (253 lb), is over 2.1 m (7 ft) tall, and may become unstable when moved on its casters. Handle the rack from both sides as it rolls down the ramp from the pallet. Do not stand in front of the rack.

CAUTION: Always begin by mounting the heaviest item on the bottom of the rack. Continue to populate the rack from the bottom to the top.

Server Warnings and Cautions

WARNING: Do not exceed the level of repair specified in the procedures in the product documentation. All troubleshooting and repair procedures are detailed to allow only subassembly or module-level repair. Because of the complexity of the individual boards and subassemblies, do not attempt to make repairs at the component level or to make modifications to any printed wiring board. Improper repairs can create a safety hazard.

WARNING: To reduce the risk of personal injury from hot surfaces, allow the hot-plug drives and the internal system components to cool before touching.

WARNING: To reduce the risk of electric shock or damage to the equipment:

- **Do not disable the AC power cord grounding plug. The grounding plug is an important safety feature.**
- **Plug the power cord into a grounded (earthed) electrical outlet that is easily accessible at all times.**
- **Unplug the power cord from each power supply to disconnect power to the equipment.**

WARNING: The installation of internal options and routine maintenance and service of this product should be performed by individuals who are knowledgeable about the procedures, precautions, and hazards associated with equipment containing hazardous energy levels.

WARNING: Do not use conductive tools that could bridge live parts. Remove all watches, rings, or loose jewelry when working in hot-plug areas of an energized server.

WARNING: Do not replace non-hot-plug components while power is applied to the product. First, shut down the product and disconnect all AC power cords.

WARNING: Be sure that the AC power supply branch circuit that provides power to the rack is not overloaded. Maintaining a low electrical current draw reduces the risk of personal injury, fire, or damage to the equipment. The total rack load should not exceed 80 percent of the branch circuit rating. Consult the electrical authority having jurisdiction over your facility for wiring and installation requirements.

CAUTION: Protect the server from power fluctuations and temporary interruptions with a regulating uninterruptible power supply (UPS). This device protects the hardware from damage caused by power surges and voltage spikes and keeps the system in operation during a power failure.

CAUTION: Do not operate the server for extended periods without the access panel. Operating the server without the access panel results in improper airflow and improper cooling that can lead to thermal damage.

CAUTION: Reinstall each hard drive into the specific slot from which it was removed. Mixing the hard drives adversely affects the system drive configuration.

Preparation Procedures

To access some components and perform certain service procedures, you must do one or more of the following:

- Extend the server from the rack.

  If you are performing service procedures in an HP, Compaq branded, or third-party rack cabinet, you can use the locking feature of the rack rails to support the server and gain access to internal components.

- Access internal components.

  If you need to access internal components for removal or replacement, you can remove the front and rear access panels without removing the server from the rack.

- Power down the server.

  If you must perform a non-hot-plug replacement procedure, power down the server.

- Remove the server from the rack.

  If the rack environment, cabling configuration, or the server location in the rack creates awkward conditions, remove the server from the rack. If the server is installed in a telco rack, you must remove the server from the rack to access internal components.

WARNING: Before lifting the server, remove all hot-plug power supplies and hard drives to reduce the weight.

Locating and Removing the Torx T-15 Tool

Many hardware procedures in the ProLiant DL580 Generation 2 server are toolless, but a few require the removal of Torx T-15 screws that have been installed for shipping or security reasons. A Torx T-15 tool ships with the server for the removal of these screws.

To locate and remove the Torx T-15 tool:

1. Locate the Torx T-15 tool on the back of the server. It is next to PCI-X slot 6.
2. Slide the tool out of the retaining clips.

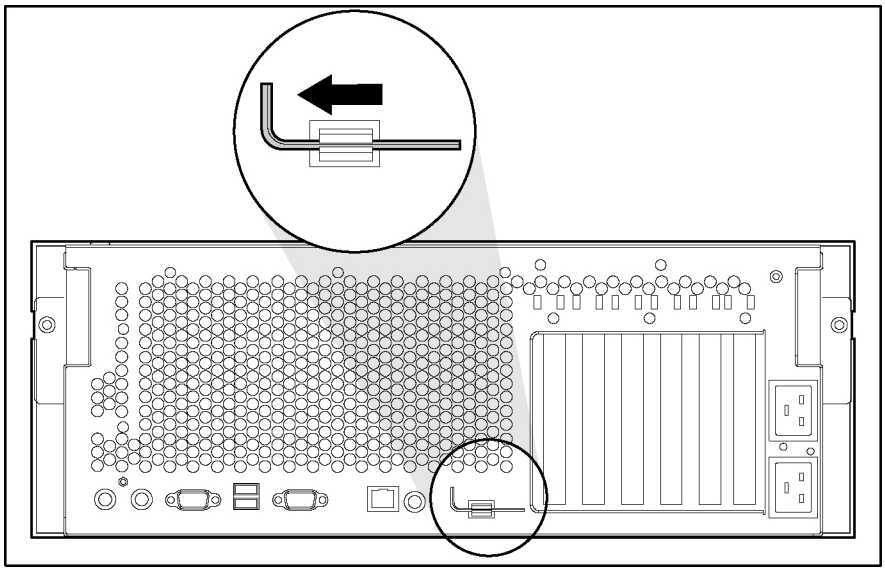

Figure 2-1: Locating and removing the Torx T-15 tool

Extending the Server from the Rack

To perform service procedures, you must extend the server from the rack.

To extend the server from the rack:

1. Loosen the thumbscrews that secure the server to the front of the rack.

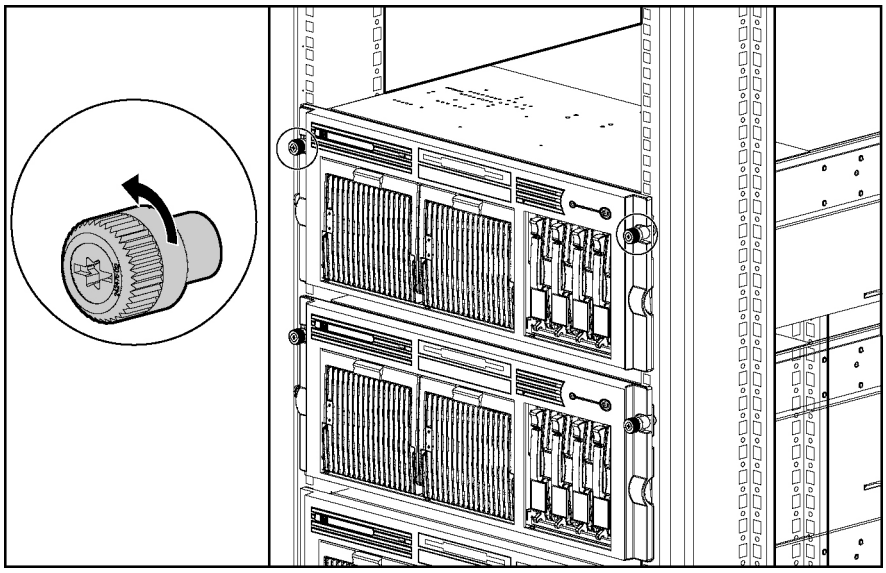

Figure 2-2: Loosening the front panel thumbscrews

2. Extend the server on the rack rails until the server rail-release latches engage.

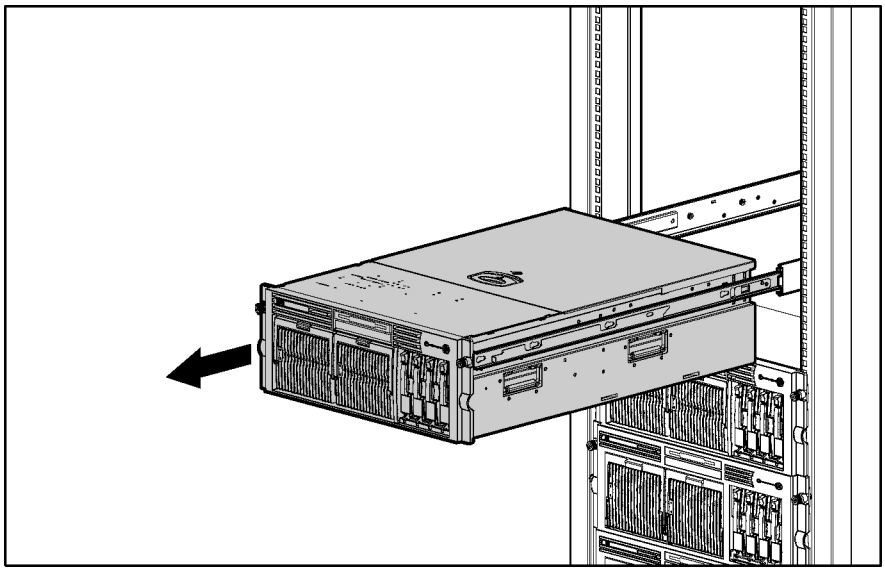

Figure 2-3: Extending the server from the rack

WARNING: Be careful when pressing the rail-release levers and sliding the component into or out of the rack. The sliding rails could pinch your fingertips.

3. To return the server to the rack, reach around the front of the server to press the rail-release levers at the front of both server rails and continue to slide the server into the rack.

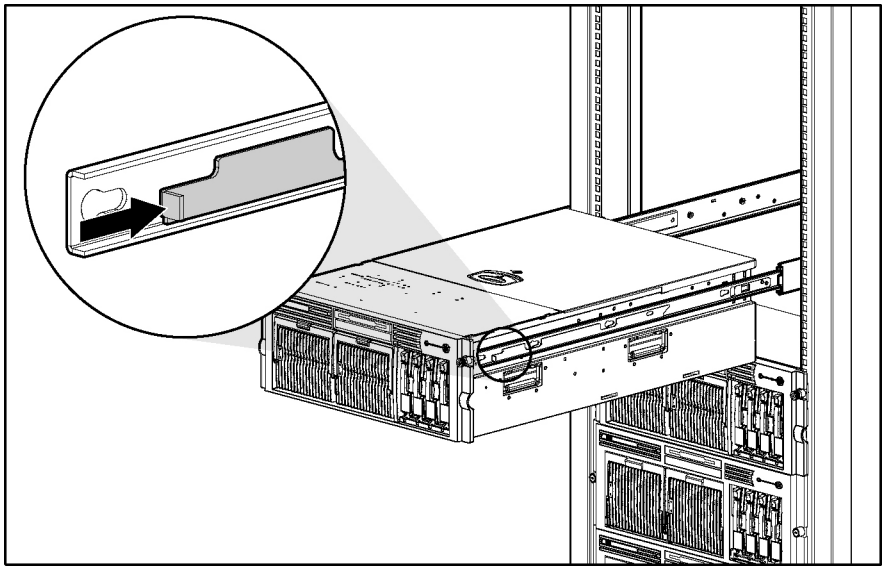

Figure 2-4: Returning the server back into the rack

Opening and Removing the Rear Access Panel

The ProLiant DL580 Generation 2 server has front and rear access panels that may need to be opened and removed to access the system board, processors, memory slots, expansion slots, and other internal components. Observe the following warnings and cautions when removing the access panels.

WARNING: Before removing the access panels for non-hot-plug hardware options, be sure that the power cords are disconnected from the electrical outlet.

WARNING: Pressing the Power On/Standby button sets the server to the standby position, which removes power from most areas of the server. However, portions of the power supply and some internal circuitry remain active until the AC power cord is removed.

WARNING: To reduce the risk of personal injury from hot surfaces, allow the internal system components to cool before touching.

CAUTION: Electrostatic discharge can damage electronic components. Properly ground yourself before beginning any installation procedure.

To open the rear access panel:

1. Extend or remove the server from the rack. Refer to "Extending the Server from the Rack" in this chapter.
2. Disengage the lock on the rear panel using the Torx T-15 tool (1).
3. Using the handle on the rear access panel, slide the rear access panel toward the rear of the unit (2). The springs raise the rear access panel.

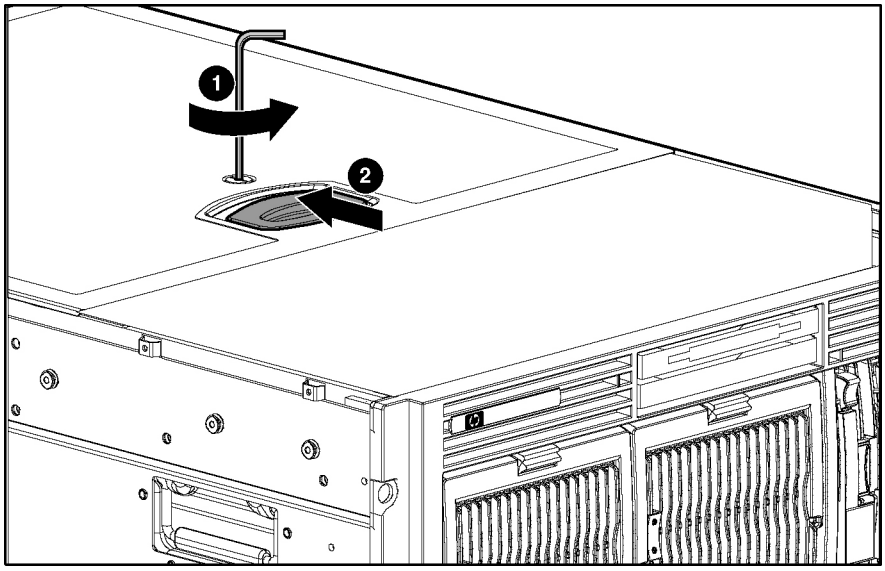

Figure 2-5: Unlocking and sliding the rear access panel open

4. Slide the rear access panel toward the front of the server (1).
5. Push and hold the access panel release lever down (2) while sliding the rear access panel forward about 2.54 cm (1 in).

IMPORTANT: The guide marks on the rear access panel and the server must line up before proceeding to the next step.

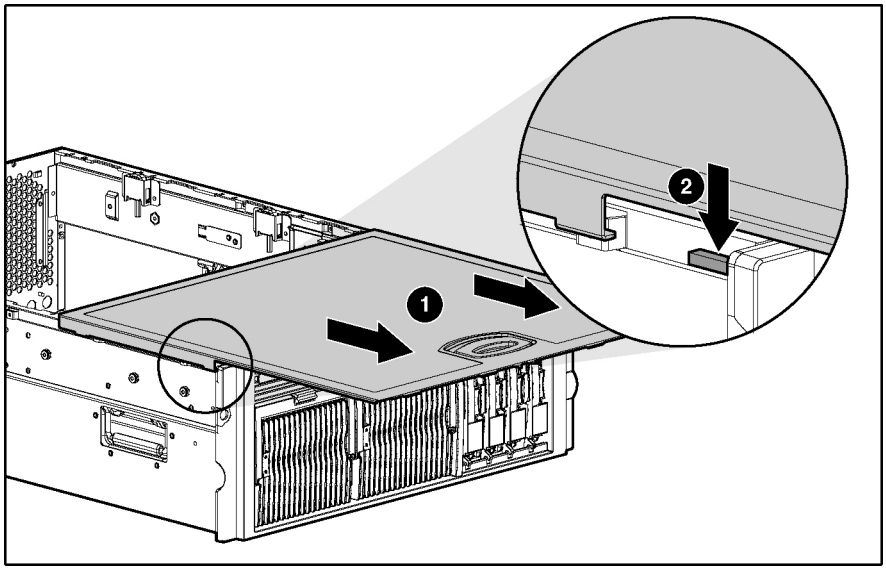

Figure 2-6: Opening the rear access panel

6. Align the guide marks on the rear access panel and the chassis, and lift the rear access panel from the server.

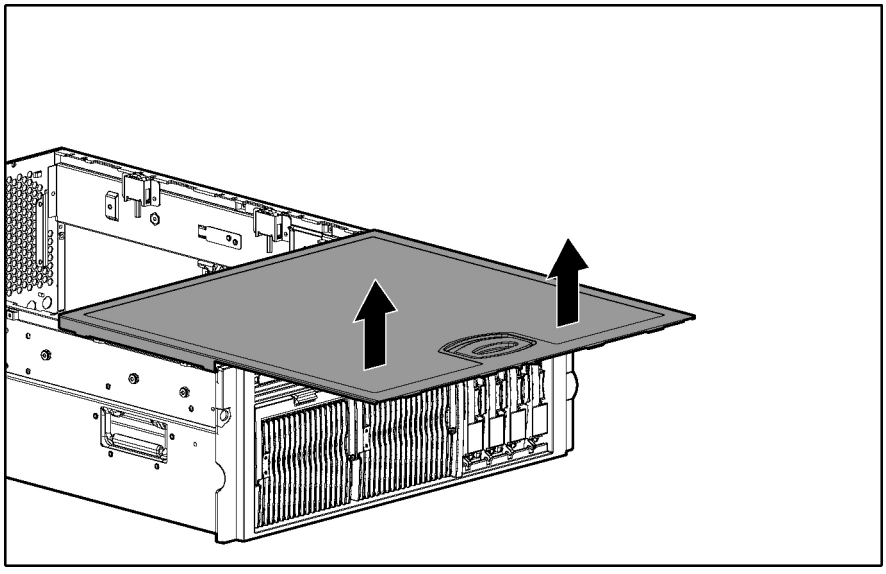

Figure 2-7: Removing the rear access panel

Removing the Front Access Panel

To remove the front access panel:

1. Extend or remove the server from the rack. Refer to "Extending the Server from the Rack" in this chapter.
2. Remove the rear access panel. Refer to "Opening and Removing the Rear Access Panel" in this chapter.
3. Remove the front access panel:
   a. Press the release button located on the inside rear of the front access panel (1).
   b. Slide the front access panel toward the rear of the server (2).
   c. Remove the access panel (3).

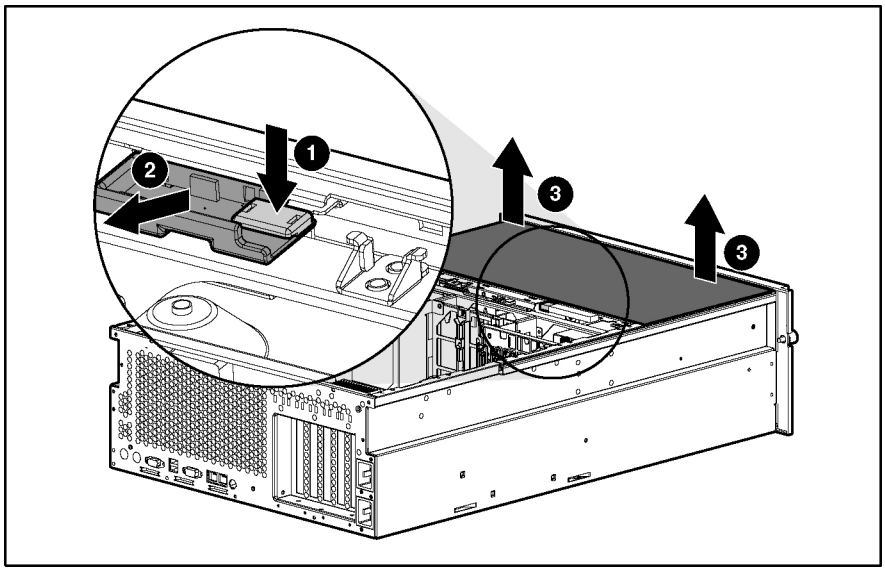

Figure 2-8: Removing the front access panel

Replacing the Access Panels

To replace the access panels:

1. Place the front access panel on top of the server, and line up the guide marks on the front access panel with the corresponding server guide marks.
2. With even pressure, push the front access panel down and slide it toward the front of the server into the fitted slots.

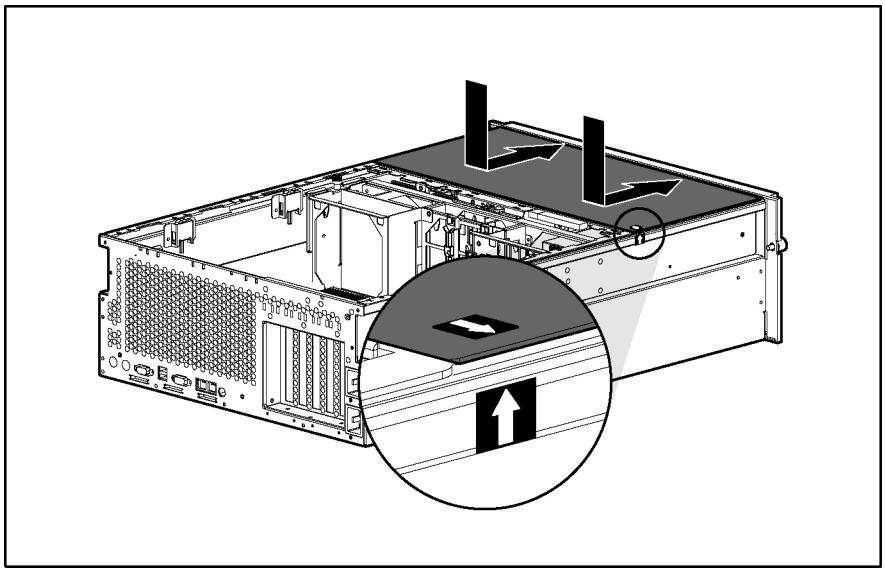

Figure 2-9: Replacing the front access panel

3. Place the rear access panel on top of the server and line up the guide marks on the rear access panel with the corresponding server guide marks.
4. Slide the rear access panel toward the back of the server until it stops.

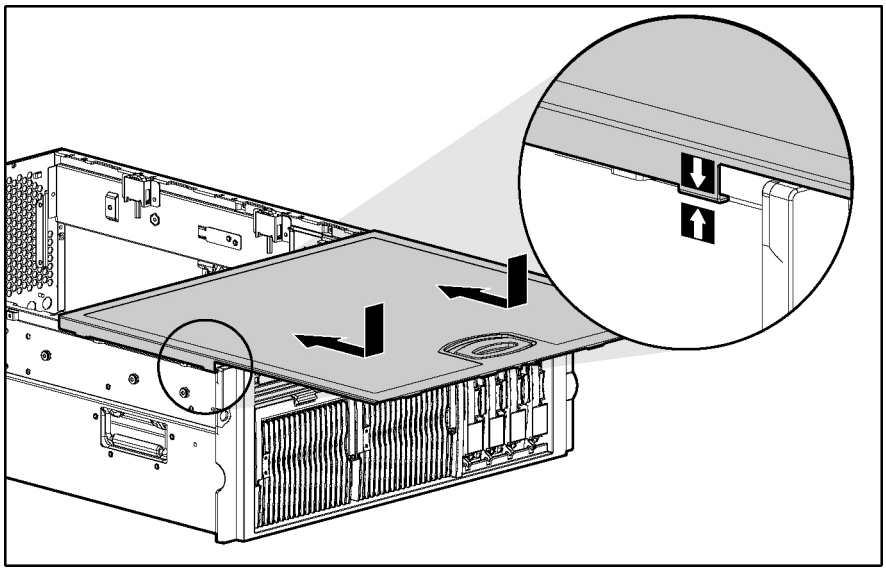

Figure 2-10: Lining up the guide marks

5. With even pressure, push the rear access panel down and slide it toward the front of the server until it seats.

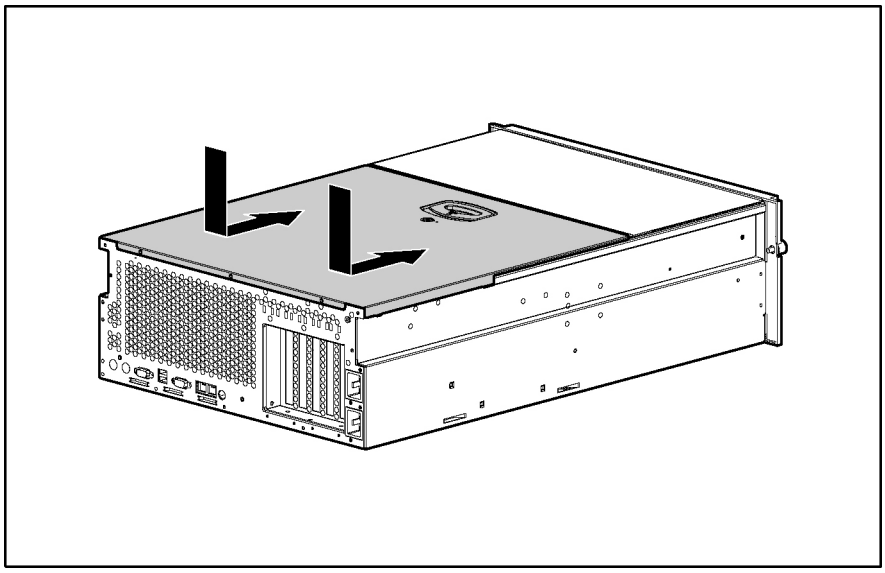

Figure 2-11: Installing the rear access panel

6. Use the Torx T-15 tool to turn the locking screw clockwise to lock the latch.

Powering Down the Server

WARNING: It is necessary to be knowledgeable of electrostatic discharge information before preparing the server. For electrostatic discharge information, refer to "Electrostatic Discharge" in this chapter.

For all non-hot-plug procedures, you must power down the server. To power down the server:

1. Press the Power On/Standby button.
2. Be sure that the front panel power LED indicator is amber and that the fans are off.
3. Disconnect all AC power cords from the server.
4. Disconnect all external peripheral devices from the server.

Removing the Server from the Rack

WARNING: The server is very heavy, up to 44.5 kg (98 lb). To reduce the risk of personal injury or damage to the equipment:

- **Remove all hot-plug power supplies to reduce the weight of the server before lifting it.**
- **Observe local occupational health and safety requirements and guidelines for material handling.**
- **Get help to lift and maneuver the server.**

To remove the server from the rack:

1. Power down the server. Refer to "Powering Down the Server" in this chapter.
2. Loosen the front panel thumbscrews that secure the server faceplate to the front of the rack.
3. Extend the server from the rack. Refer to "Extending the Server from the Rack" in this chapter.
4. Remove the cables from the cable management arm and unplug the cables from the rear of the server.

5. Press the rail release levers on the rails and slide the server off the rack rails.

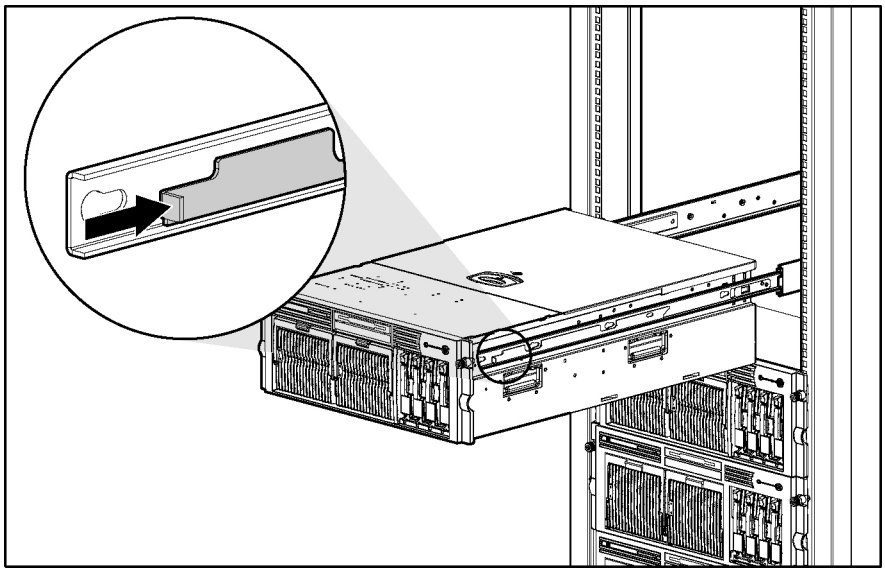

Figure 2-12: Removing the server from the rack

6. Place the server on a sturdy, level surface.

Reverse steps 1 through 4 to install the server into the rack.

Memory

This section provides the following information about the memory components and procedures in the ProLiant DL580 Generation 2 server:

- Memory replacement guidelines
- Memory board slot locations
- Parts of the memory board
- Memory board LEDs and icons
- DIMM installation requirements
- Removing a memory board
- Removing a DIMM
- Installing a DIMM
- Installing a memory board
- Configuring the memory

Memory Replacement Guidelines

DIMM and memory board installation, removal, and replacement procedures can be either hot-plug or non-hot-plug procedures, depending on how the server is configured.

- You cannot perform hot-plug procedures when the system is configured for:
  - — Advanced ECC memory
  - — Online spare memory
  - —Single-board mirrored memory
- You can only perform a hot-plug replacement procedure:
  - — When the server is configured for hot-plug mirrored memory, enabling you to replace failed or degraded DIMMs without powering down the server
  - — When the server is configured for Hot-Add functionality, enabling you to upgrade the amount of memory without powering down the server

For more information about requirements and procedures for using Hot-Add functionality, refer to the *HP ProLiant DL580 Generation 2 and HP ProLiant ML570 Generation 2 Server Hot-Add Memory* booklet on the Documentation CD or the Compaq Reference Library on www.hp.com.

The replacement procedures in this section apply to both hot-plug and non-hot-plug memory replacement, except as noted.

CAUTION: Be sure to power down the server when performing these procedures in a server that is not configured for hot-plug mirrored memory or Hot-Add functionality.

Observe the following warnings when performing a hot-plug replacement procedure.

WARNING: Always comply with all electrostatic and thermal guidelines to prevent bodily injury and ensure a properly functioning system when performing hot-plug operations. For detailed information, refer to "About this Guide" in this guide.

WARNING: The rear access panel provides access to hazardous energy circuits. To avoid risk of injury or damage to the equipment from hazardous energy, be sure the door remains locked during normal operation or install the server in a controlled access location.

WARNING: To reduce the risk of personal injury from hazardous energy or damage to the equipment when working on energized servers:

- **Remove all watches, rings, and any other loose fitting jewelry.**
- **Avoid the use of conductive tools inside the server that could bridge live parts.**

Memory Board Slot Locations

Use Figure 2-13 and Table 2-1 to identify the memory board slots on the system board.

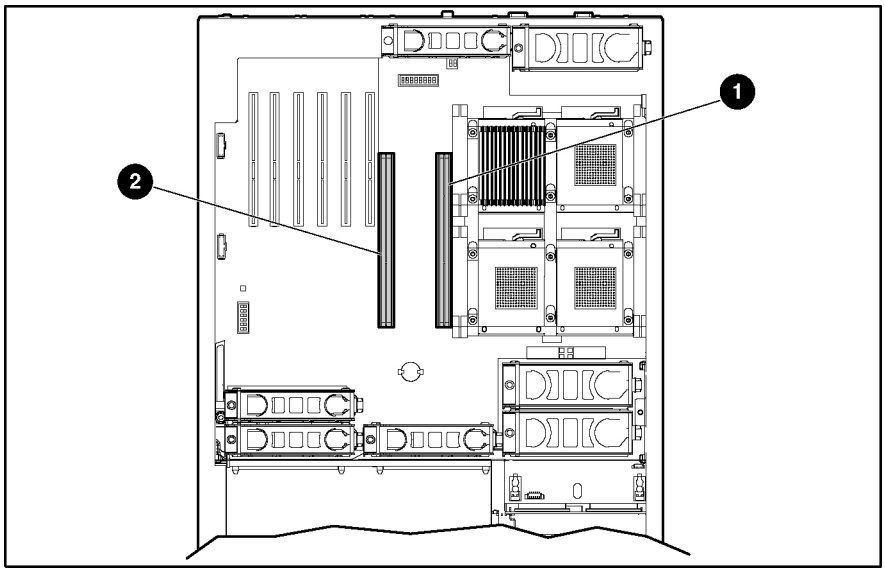

Figure 2-13: Memory board slots

Table 2-1: Memory Board Slots

Item	Description
1	Memory board slot 1
2	Memory board slot 2

Parts of the Memory Board

Use Figure 2-14 and Table 2-2 to identify the parts of the memory board.

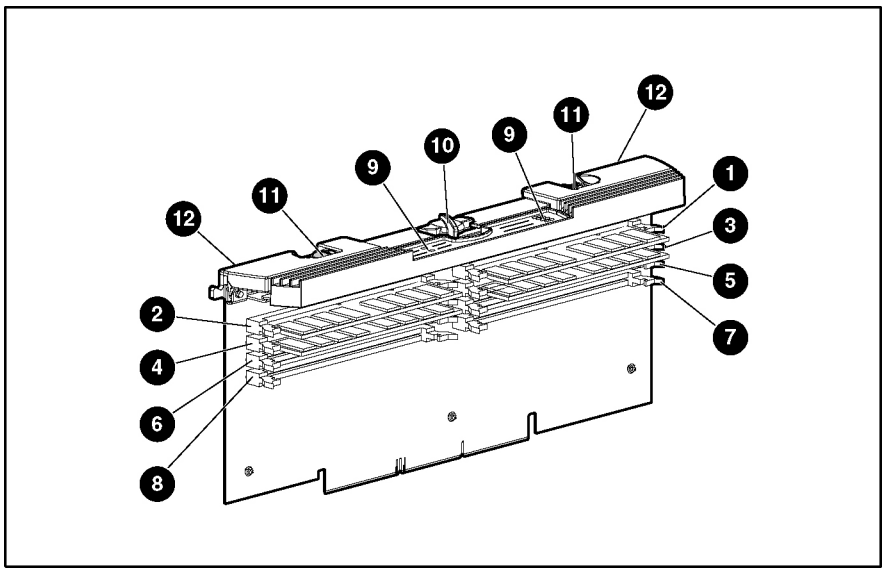

Figure 2-14: Parts of the memory board

Table 2-2: Parts of the Memory Board

Item	Description
1	DIMM slot 1, bank A (populated)
2	DIMM slot 2, bank A (populated)
3	DIMM slot 3, bank A (populated)
4	DIMM slot 4, bank A (populated)
5	DIMM slot 5, bank B
6	DIMM slot 6, bank B
7	DIMM slot 7, bank B
8	DIMM slot 8, bank B
9	LEDs
10	Locking switch
11	Release latches
12	Ejector levers

Memory Board LEDs and Icons

Use Figure 2-15 and Table 2-3 through 2-7 to identify icons and LEDs and their status on the memory board. Each table represents the LEDs for a specific memory mode. Be sure you are referring to the correct table for the specific mode.

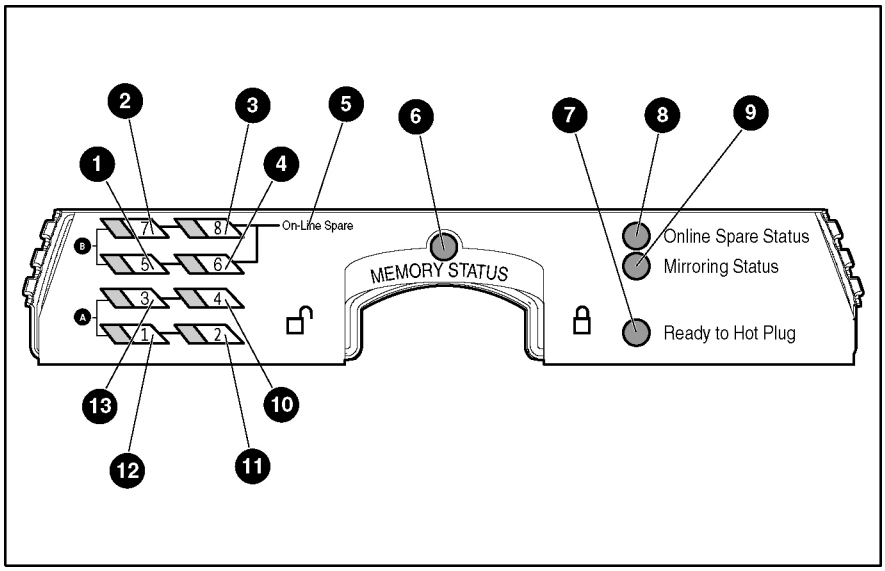

Figure 2-15: Memory board LEDs and icons

Table 2-3: Advanced ECC (Standard) Memory LEDs

Item	Description	Indicator	Status
6	Memory Status	Off	Memory board is offline.
		Green	Memory board is online.
		Flashing green	Memory board is busy.
		Amber	Memory error has occurred on this memory board.
7	Ready to Hot Plug	Off	Do not remove memory board. Advanced ECC memory does not support hot-removal of boards.
1-4 and 10-13	DIMMs 1-8 status	Off	DIMM is not installed.
		Green	DIMM is installed.
		Amber	Memory error has occurred on this DIMM.
		Flashing amber	Configuration error has occurred.
	All LEDs	Flashing amber	**CAUTION:** Memory board is in use; relock it immediately.

Table 2-4: Online Spare Memory LEDs

Item	Description	Indicator	Status
6	Memory Status	Off	Memory board is offline.
		Green	Memory board is online.
		Flashing green	Memory board is busy.
		Amber	Memory error has occurred on this memory board.
8	Online Spare Status	Off	Memory board is not configured for online spare memory.
		Green	Online spare memory is functioning properly.
		Amber	Memory error has occurred and system has failed over to the online spare bank.
7	Ready to Hot Plug	Off	Do not remove memory board. Online spare memory does not support hot-plug capability.
5	Online Spare text	Off	Bank is not configured as an online spare bank.
		Green	Bank is configured as an online spare bank.
		Flashing green	Failure has occurred and online spare bank is active.
1-4 and 10-13	DIMMs 1-8 status	Off	DIMM is not installed.
		Green	DIMM is installed.
		Amber	Memory error has occurred on this DIMM.
		Flashing amber	Configuration error has occurred.
	All LEDs	Flashing amber	**CAUTION:** Memory board is in use; relock it immediately.

Table 2-5: Single-Board Mirrored Memory LEDs

Item	Description	Indicator	Status
6	Memory Status	Off	Memory board is offline.
		Green	Memory board is online.
		Flashing green	Memory board is busy.
		Amber	Memory error has occurred on this memory board.
9	Mirroring Status	Off	Memory board is not configured for mirrored memory.
		Green	Single-board mirrored memory is functioning properly.
		Amber	Memory error has occurred and system has failed over to the mirrored bank(s).
7	Ready to Hot Plug	Off	Do not remove memory board. Single-board mirrored memory does not support hot-plug capability.
1-4 and 10-13	DIMMs 1-8 status	Off	DIMM is not installed.
		Green	DIMM is installed.
		Amber	Memory error has occurred on this DIMM.
		Flashing amber	Configuration error has occurred.
	All LEDs	Flashing amber	**CAUTION:** Memory board is in use; relock it immediately.

Table 2-6: Hot-Plug Mirrored Memory LEDs

Item	Description	Indicator	Status
6	Memory Status	Off	Memory board is offline.
		Green	Memory board is online.
		Flashing green	Memory board is busy.
		Amber	Memory error has occurred on this memory board.
9	Mirroring Status	Off	Memory board is not configured for mirrored memory.
		Green	Hot-plug mirrored memory is functioning properly.
		Amber	Memory error has occurred and system has failed over to the mirrored board.
7	Ready to Hot Plug	Off	Do not remove memory board.
		Green	Memory board can be hot-plugged.
1-4 and 10-3	DIMMs 1-8 status	Off	DIMM is not installed.
		Green	DIMM is installed.
		Amber	Memory error has occurred on this DIMM.
		Flashing amber	Configuration error has occurred.
	All LEDs	Flashing amber	**CAUTION:** Memory board is in use; relock it immediately.

Table 2-7: Memory Board Icons

Description	Status
Lock	Memory board is locked and cannot be removed.
Unlock	Memory board is unlocked, and is only hot-pluggable if the Ready to Hot Plug LED is on.

Note: The icon at which the memory board switch is pointed indicates whether the memory board is locked or unlocked.

DIMM Installation Requirements

Observe the following DIMM configuration requirements when installing DIMM:

- Use only industry-standard PC1600 registered DDR SDRAM DIMMs in 256-MB, 512-MB, 1-GB, and 2-GB capacities, and that support Error Checking and Correcting (ECC).
- Install DIMMs in groups of four, one bank at a time.
- Groups of four DIMMs must be identical. Installing DIMMs of different capacities into the same bank can degrade memory performance.
- Bank A must always be populated. To ease subsequent DIMM installations, install the DIMMs in sequential order.

IMPORTANT: HP recommends that you use only HP DIMMs. Third-party DIMMs may have additional installation requirements. For information about third-party DIMM installation requirements, refer to the Advanced Memory Protection white paper on the ProLiant website at www.hp.com.

IMPORTANT: You must power down the server before installing additional DIMMs. Follow all DIMM configuration requirements carefully. If the DIMMs are not configured properly, you receive an error message during POST.

Additional Requirements for Online Spare Memory Technology

In addition to the DIMM configuration requirements for advanced ECC memory, observe the following DIMM configuration requirements when installing DIMMs for online spare memory:

- Memory board slot 1 must be populated.
- Bank B on the memory board in slot 1 is always the online spare bank, even if two memory boards are installed, and must be populated when the server is configured for online spare memory.
- DIMMs installed in the online spare bank must be of equal or greater capacity than each of those in the remaining banks on both memory boards.

IMPORTANT: If memory board slot 1 Bank B is not populated, the system automatically switches to advanced ECC memory and displays an error message during POST.

NOTE: When configured for online spare memory, the memory board has no hot-plug capabilities.

Additional Requirements for Single-Board Mirrored Memory Technology

In addition to the DIMM configuration requirements for advanced ECC memory, observe the following DIMM configuration requirements when installing DIMMs for single-board mirrored memory:

- Install only one board. The board must be installed in memory board slot 1.
- Bank B of memory board 1 is the mirrored bank.
- DIMMs in the mirrored bank must be configured identically to the bank they are mirroring. Both banks must be populated with DIMMs of the same capacity.

IMPORTANT: If memory board slot 1 Bank B is not populated, the system automatically switches to advanced ECC memory and displays an error message during POST.

NOTE: When configured for single-board mirrored memory, the system has no hot-plug capabilities.

Additional Requirements for Hot-Plug Mirrored Memory Technology

In addition to the DIMM configuration requirements for advanced ECC memory, observe the following DIMM configuration requirements when installing DIMMs for hot-plug mirrored memory:

- Two memory boards must be installed.
- Both memory boards must be configured identically. Corresponding banks (for instance, bank A on the memory board in slot 1 and bank A on the memory board in slot 2) must be populated with DIMMs of the same size and type.

Observe the following DIMM configuration requirements when performing a hot-plug replacement:

- Do not remove the memory board unless the Ready to Hot Plug LED is green.
- If you replace a DIMM, the DIMM must be a PC1600 DDR SDRAM DIMM of the same capacity as the DIMM you are replacing.

Removing a Memory Board

CAUTION: Electrostatic discharge can damage electronic components. Be sure you are properly grounded before beginning any installation procedure.

To remove a memory board:

1. If the server is not configured for hot-plug mirrored memory, you must power down the server. Refer to "Powering Down the Server" in this chapter.

   Hot-plug replacement procedure: If the server is configured for hot-plug mirrored memory, skip to step 2.

2. Open the rear access panel. Refer to ‘Op ening and Removing the Rear Access Panel”in this chapter.

   Hot-plug replacement procedure: Determine which memory board contains the failed DIMM by locating the memory board with an amber memory status LED and one or more amber DIMM status LEDs. The Ready to Hot Plug LED must be green, indicating that you can perform a hot-plug procedure.

   NOTE: If the Ready to Hot Plug LED is off on both boards, you must power down the server before replacing DIMMs.

3. Disengage the locking switch (1).

   Hot-plug replacement procedure: After turning the locking switch to the unlock position, the LEDs turn off, except the amber LEDs. Wait until all green LEDs are off before proceeding. Make note of which DIMM status LED remains illuminated amber, indicating the DIMM you need to replace.

CAUTION: Do not attempt to unlock the memory board in an operational server when the Ready to Hot Plug LED is not green. This will generate an audible alarm and cause the memory board LEDs to flash amber. Proceeding to remove the memory board after the audible and visible alarms causes system failure.

CAUTION: To prevent system failure, do not remove the memory board from the server until the memory status LED stops blinking.

4. Press the release latches inward (2).
5. Pull the memory board up out of the server (3).

   Hot-plug replacement procedure: While the memory board with the failed or degraded DIMM is being replaced, the system continues to read and write from the operational memory board.

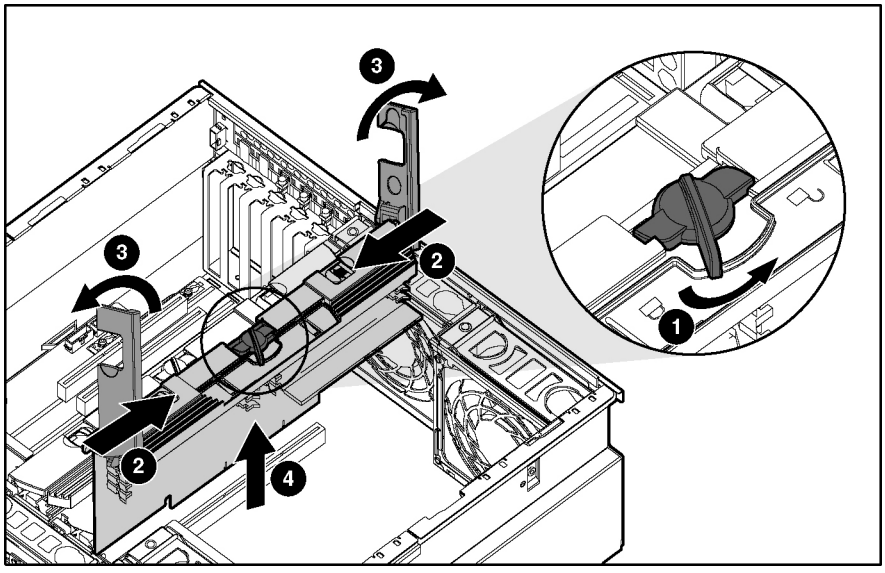

Figure 2-16: Removing a memory board

Removing a DIMM

To remove a DIMM:

1. Remove the memory board. Refer to "Removing a Memory Board" in this chapter.
2. Place the memory board on a level, nonconductive surface.
3. Open the DIMM slot latches (1).
4. Remove the DIMM from the DIMM slot (2).

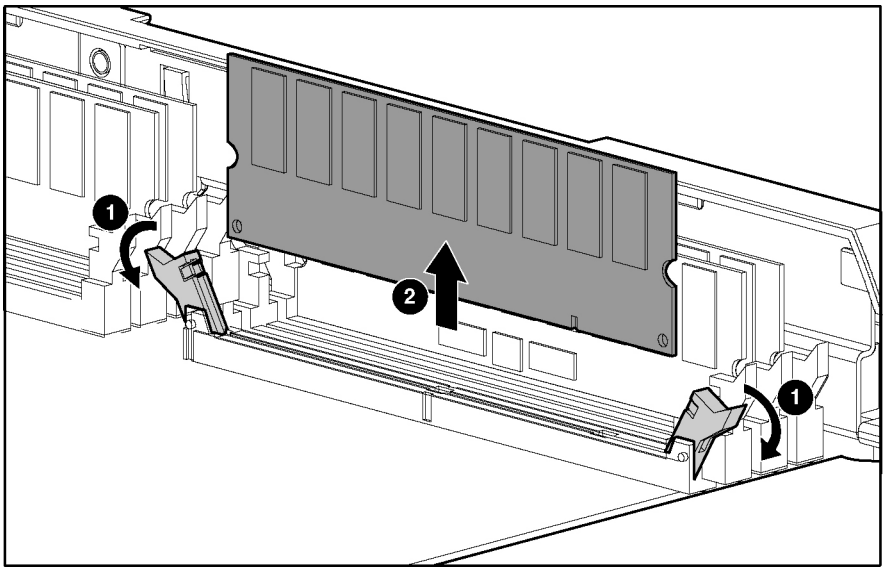

Figure 2-17: Removing a DIMM

Installing a DIMM

To install a DIMM:

1. Align the keyed portion of the bottom edge of the DIMM with the tab in the DIMM slot.

   IMPORTANT: The bottom edge of the DIMM is keyed to fit into the DIMM slot only one way.

2. Press the DIMM firmly into the slot (1).
3. Push the latches into place (2).

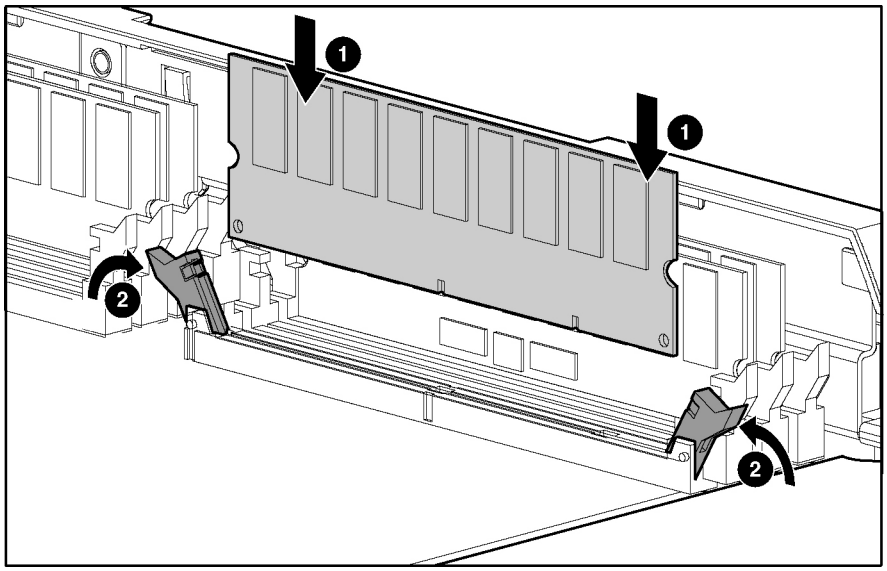

Figure 2-18: Installing a DIMM

Installing a Memory Board

To install a memory board:

1. Align the memory board with the memory slot and memory board guide clips.
2. Slide the memory board into the server (1), and close the ejector levers to seat the memory board firmly (2).

   Hot-plug procedure: Any LEDs that were amber when the board was removed from the server now illuminate amber again.

   IMPORTANT: The LEDs relight amber during this step to enable you to verify again which DIMM failed. If you have already replaced the failed DIMM, disregard the amber LEDs. The LEDs change back to green after the locking switch is engaged, and the memory copy is complete.

3. Engage the locking switch (3).

   Hot-plug procedure: All LEDs now turn off except the memory status LED, which flashes green while data is copied from one memory board to the other. This process may take up to a minute to complete. When the copying process is complete, the other LEDs will re-illuminate as described in Table 2-11.

CAUTION: Do not remove the memory board while the memory status LED is flashing. When the memory status LED is flashing, the memory board is transferring data. Removing the memory board during data transfer may cause system failure.

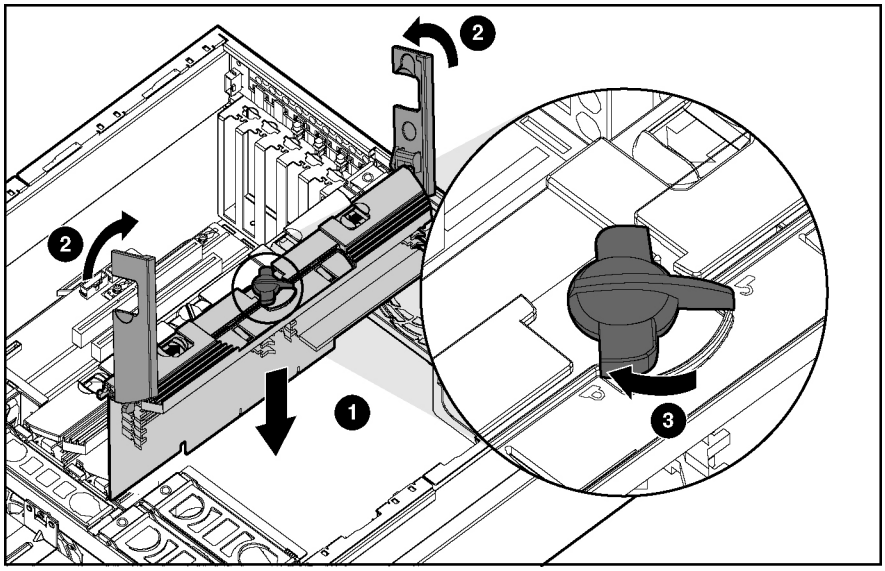

Figure 2-19: Installing a memory board

4. If the server is not currently configured for hot-plug mirrored memory, power up the server. Refer to "Powering Down the Server" in this chapter.

   Hot-plug procedure: If the server is configured for hot-plug mirrored memory or Hot-Add functionality, skip to step 7.

5. Configure the memory. Refer to "Configuring the Memory" in this chapter.

6. Reference the LEDs on the top of the memory board to be sure that the memory is functioning properly. The following table describes the LEDs for each memory configuration when the DIMMs and memory board are installed and functioning properly. For more information on LEDs, refer to Chapter 4 "Connectors, LEDs, and Switches."

Table 2-8: Memory LED States on a Properly Configured Memory Board

LED	Memory Configuration			
	Advanced ECC (Standard Memory)	Online Spare Memory	Single-Board Mirrored Memory	Hot-Plug Mirrored Memory
Memory Status	Green	Green	Green	Green
DIMMs 1-8, if populated	Green	Green	Green	Green
Online Spare Status	Off	Green	Off	Off
Mirroring Status	Off	Off	Green	Green
Online Spare text*	Off	Green	Off	Off
Ready to Hot Plug	Off	Off	Off	Green

*If two memory boards are installed, the online spare text is only illuminated for the memory board in slot 1.

7. Close the rear access panel.
8. Reinstall the server in the rack.

Configuring the Memory

Configuring the servers memory system of the server requires configuring both hardware and software. To configure the memory:

1. Choose one of the following memory configurations:
   - — Standard memory (Advanced ECC)
   - — Online spare memory
   - — Single board mirrored memory
   - — Hot-plug mirrored memory

   For a discussion of how to determine the memory technology best suited for your requirements, refer to the Advanced Memory Protection white paper on the ProLiant website at www.hp.com.
2. Remove the memory board. Refer to "Removing a Memory Board" in this chapter.

3. Install the required DIMMs based on your desired memory configuration. Be sure to follow all DIMM installation requirements. Refer to "DIMM Installation Requirements" in this chapter for the desired memory configuration.
4. Install the memory board. Refer to "Installing a Memory Board" in this chapter.
5. Configure the DIMMs:
   a. Power on the server.
   b. Press the **F9** key to enter RBSU.
   c. Select **Advanced Options**.
   d. Change **POST Speed Up** to **disable** (to test the replaced memory).
   e. Press any key to return to the RBSU main menu.
   f. Select **System Options**.
   g. Select **Advanced Memory Protection**.
   h. Select the desired memory mode.
   i. Press the **Esc** key twice to go back to the main RBSU menu.
   j. Press the **F10** key to exit RBSU. The server reboots and tests all memory in the system.
   k. Once the memory has been tested, re-enable POST Speed Up for faster system boot, if desired.

IMPORTANT: To reconfigure the memory mode after initial setup, you must reboot the system and enter RBSU.

Hot-Plug Procedures

You can perform removal and replacement procedures for some server components without powering down the server. This section describes the removal and replacement procedures for the following hot-plug components:

- Hard drive blanks
- Hot-plug SCSI hard drives
- Power supply blank
- Hot-plug power supplies (must have two power supplies installed for it to be hot-plug capable)
- PCI and PCI-X Hot Plug expansion boards (in hot-plug slots)
- Hot-plug fans
- Hot-plug mirrored memory boards (refer to "Memory" in this chapter)

Hard Drive Blanks

To remove a hard drive blank:

1. Push the sliding release button to unlock the blank (1).
2. Pull the drive blank out of the drive cage (2).

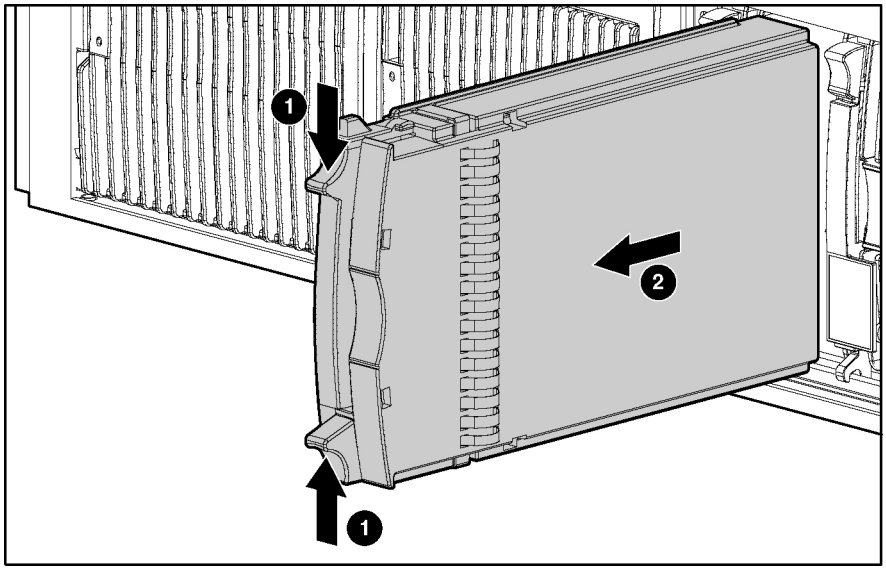

Figure 2-20: Removing a drive blank

NOTE: Keep the blank for future use.

Reverse steps 1 and 2 to replace a drive blank.

Hot-Plug SCSI Hard Drives

Drive Replacement Precautions

Be aware of the following guidelines cautioning unsafe hot-plug replacement.

- Do not remove a degraded drive if any other member of the array is offline (the online LED is off). No other drive in the array is hot-pluggable without data loss. The exception to this is the use of RAID 1+0 as a fault-tolerant configuration. In this case, drives are mirrored in pairs. More than one drive can fail and be replaced as long as the drive or drives they are mirroring are online.
- Do not remove a degraded drive if any member of an array is missing (removed previously and not yet replaced).
- Do not remove a degraded drive if any member of an array is being rebuilt, unless the drive being rebuilt has been configured as an online spare. The online LED for the drive flashes green or amber, indicating that a replaced drive is being rebuilt from the data stored on the other drives.

  NOTE: An online spare drive does not activate and start rebuilding after a predictive failure alert because the degraded drive is still online. The online spare activates only after a drive in the array has failed.

- Do not replace multiple degraded drives at the same time, since the fault tolerance can be compromised. When a drive is replaced, the controller uses data from the other drives in the array to reconstruct data on the replacement drive. If more than one drive is removed, a complete data set is not available to reconstruct data on the replacement drive or drives, and permanent data loss can occur.

CAUTION: Do not turn off any external unit when the server containing. A Smart Array controller is powered up. Also, do not power up the server before powering up the drive enclosure. If these ordering rules are not followed, the Smart Array controller may mark the drives in this enclosure as **failed**, resulting in permanent data loss.

To remove a non-functioning hot-plug SCSI hard drive:

CAUTION: Remove or replace a hard drive only when the drive failure LED is amber. Data loss can occur if a drive is removed when the drive online LED is green. Refer to "Hot-Plug SCSI Hard Drive LEDs" in Chapter 4, "Connectors, LEDs, and Switches," for more information.

CAUTION: Remove or replace only one hard drive at a time. The controller relies on other drives to reconstruct data on the replaced drive. Drive reconstruction is active when the drive online LED is flashing green.

1. Press the release button to unlock the ejector lever on the hard drive (1).
2. Open the ejector lever to release the drive (2).
3. Slide the drive out of the cage (3).

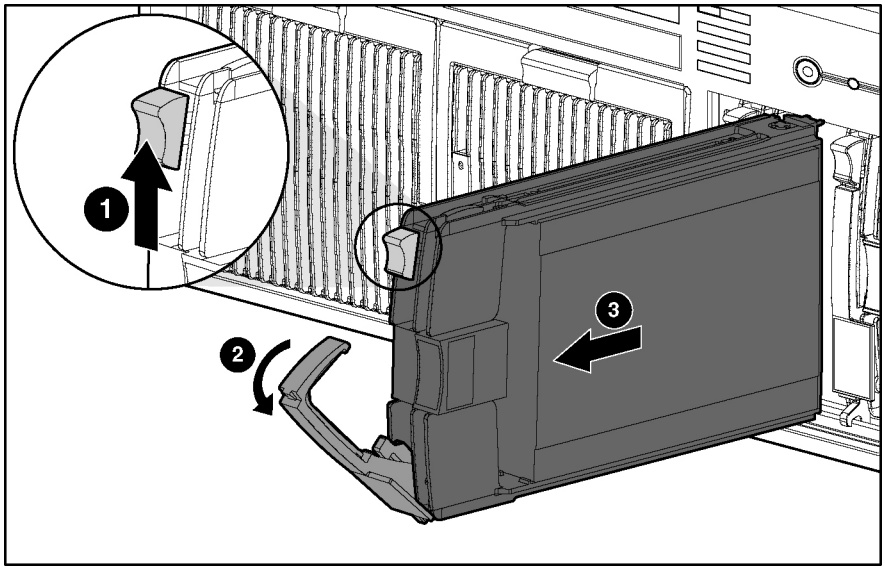

Figure 2-21: Removing a hot-plug SCSI hard drive

IMPORTANT: Always populate hard drive bays starting with the lowest SCSI ID.

Reverse steps 1 through 3 to replace a hot-plug SCSI hard drive.

Power Supply Blank

To remove a power supply blank:

1. Press the lever-release button on the handle of the power supply blanks (1).
2. Pull on the lever to release the blank (2).
3. Remove the power supply blank from the server (3).

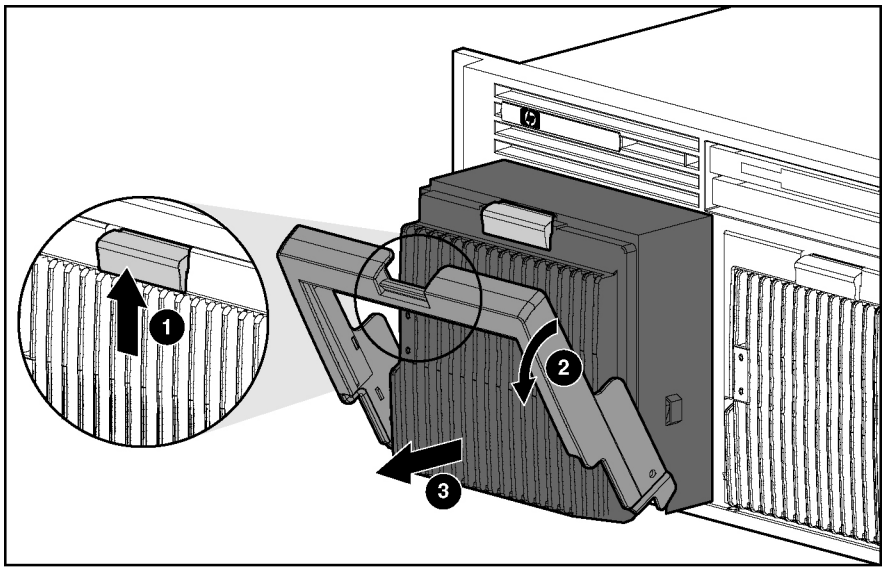

Figure 2-22: Removing a power supply blank

NOTE: Keep the power supply blank for future use.

Reverse steps 1 through 3 to replace a power supply blank.

Hot-Plug Power Supplies

For information on power supply diagnosis, refer to "Hot-Plug Power Supply LEDs" in Chapter 4, "Connectors, LEDs, and Switches."

CAUTION: Do not remove a hot-plug power supply unless there are two power supplies installed. If second power supply is not installed, the system must be powered down to remove the power supply.

CAUTION: Hot-plug power supplies for the ProLiant DL580 Generation 2 server are keyed to be sure that only 800-W hot-plug power supplies can be installed in the server. The handles on 800-W power supplies are black to distinguish them from other power supplies.

To remove a hot-plug power supply:

1. Remove any shipping screws from the bottom of the server, if installed.
2. Press the lever-release button on the handle of the power supply (1).
3. Pull on the lever to release the power supply (2).
4. Remove the power supply from the server (3).

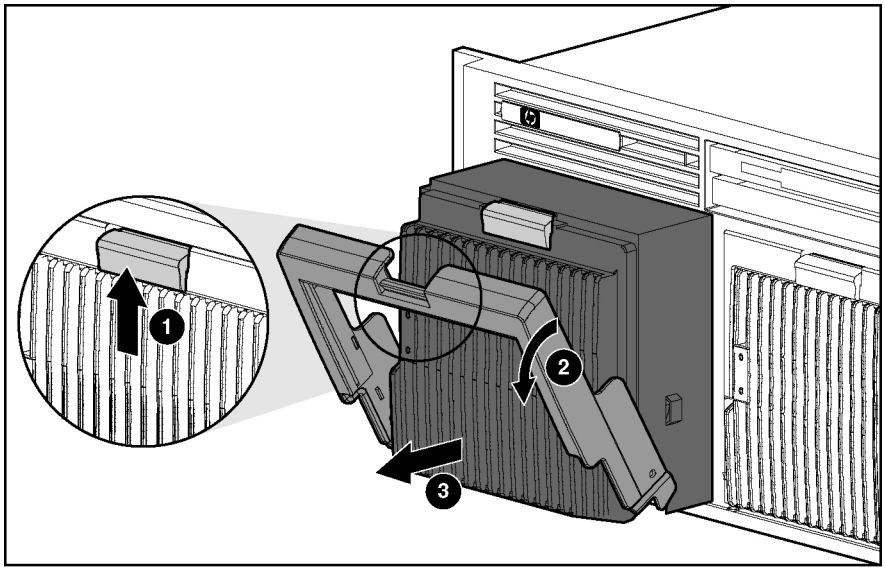

Figure 2-23: Removing a hot-plug power supply

Reverse steps 1 through 4 to replace a hot-plug power supply.

PCI and PCI-X Hot Plug Expansion Boards

CAUTION: Do not attempt a PCI-X Hot Plug procedure if the operating system does not provide PCI-X Hot Plug support or if you do not have the appropriate device drivers installed. Failure to take these precautions causes system shutdown and risks data integrity.

CAUTION: To avoid critical errors, do not open the expansion slot latch if the green power LED is on or blinking. Use the PCI-X Hot Plug button or the software application to turn off power to the slot.

Use either the PCI-X Hot Plug button on the server or the PCI-X Hot Plug Utility of the operation system to control the PCI-X Hot Plug slots.

- The PCI-X Hot Plug button and the PCI-X Hot Plug Utility enable you to power up or power down a PCI-X Hot Plug expansion slot. The PCI-X Hot Plug button enables direct access at each hot-plug expansion slot.
- PCI-X Hot Plug software support for each operating system is available online. For more information, refer to the *PCI Hot Plug Administrator's Guide* on the Documentation CD.

The ProLiant DL580 Generation 2 server includes six PCI-X expansion slots. Use Figure 2-24 and Table 2-9 to identify each slot.

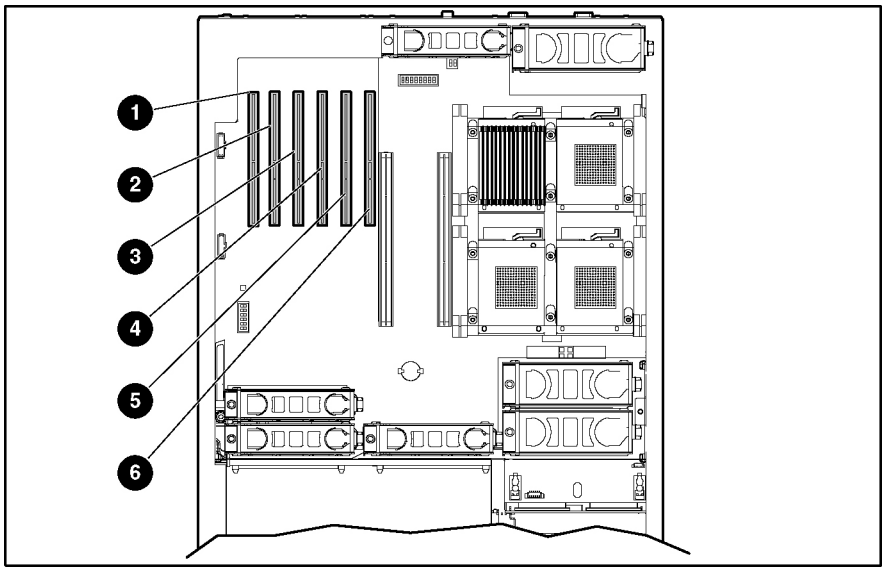

Figure 2-24: PCI-X slot locations

Table 2-9: ProLiant DL580 Generation 2 PCI-X Expansion Slots and Buses

Item	Description	Bus
1	Slot 1 (non-hot-plug)	Shared bus 10
2	Slot 2 (non-hot-plug)	
3	Slot 3 (hot-plug)	Shared bus 6
4	Slot 4 (hot-plug)	
5	Slot 5 (hot-plug)	Shared bus 2
6	Slot 6 (hot-plug)	

To remove an expansion board from a PCI-X Hot Plug slot

1. Extend the server from the rack. Refer to "Extending the Server from the Rack" in this chapter.
2. Open the rear access panel. Refer to "Opening and Removing the Rear Access Panel" in this chapter.

3. Press the port-colored PCI-X Hot Plug button (1) to turn off power to the slot. The power LED flashes until shutdown is complete. Refer to "PCI-X Hot Plug LEDs" in Chapter 4, "Connectors, LEDs, and Switches," to determine the current PCI-X Hot Plug slot status.

CAUTION: To prevent data loss, do **not** open an expansion slot latch when the power LED for the slot is on.

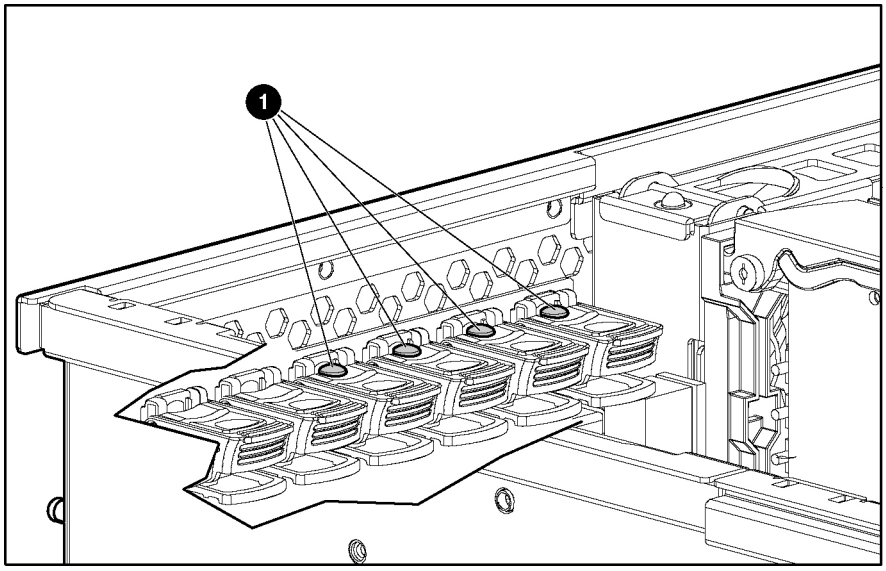

Figure 2-25: PCI-X Hot Plug button

4. When the power LED for the slot is off, disconnect any cables connected to the selected expansion board.
5. Press the PCI-X retaining clip until it locks in the open position, releasing one side of the board.

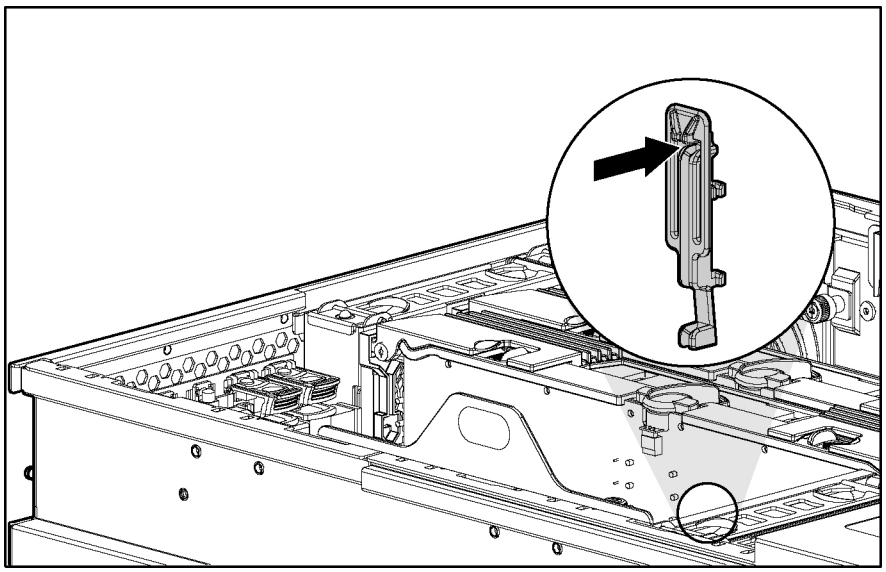

Figure 2-26: Pressing the PCI-X retaining clip

6. Push the tab on the expansion slot latch (1).
7. Swing the latch back to unlock the expansion board (2).
8. Lift the expansion board release handle to disengage the board from the slot (3).
9. Remove the board from the slot (4).

Reverse steps 1 through 9 to replace the expansion board.

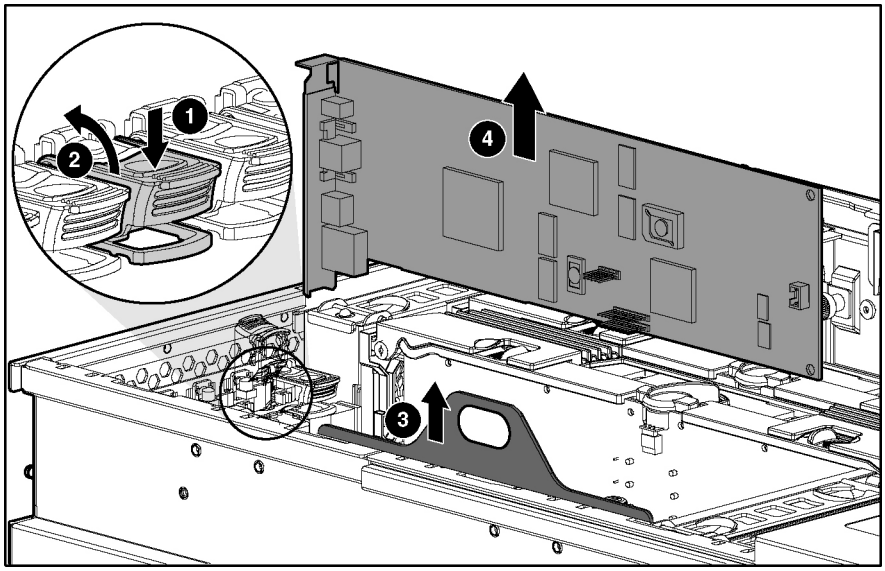

Figure 2-27: Removing a PCI-X Hot Plug expansion board

Performance Balancing

Before replacing the expansion board, review the following recommendations.

Balancing is the paired arrangement of expansion boards for optimal performance based on the bus architecture of the expansion slots. Properly balancing the boards across buses can improve performance. To balance expansion boards:

- Populate slots from the center of the server to ensure optimal thermal conditions. Slot 6 is in the center of the server and has the best cooling.
- Populate slots across different buses before populating two slots on the same bus.

Table 2-10 provides a guideline for slot population order based on the previous recommendations.

NOTE: HP recommends that the optional Remote Insight Lights-Out Edition II (RILOE II) board be populated in slot 1 due to internal cabling requirements.

NOTE: The slot population order that follows is a recommendation only; any PCI or PCI-X expansion board may reside in any slot.

Table 2-10: Recommended PCI-X Expansion Slot Population Order

Slot Number	Population Order	
6	1	Shared PCI-X bus 2
5	4	
4	2	Shared PCI-X bus 6
3	5	
2	3	Shared PCI-X bus 10
1	6	

The system BIOS detects the PCI-X devices in the slots in this order:

5-6-3-4-1-2

For more information about PCI-X bus architecture and numbering, refer to the white paper, *PCI Bus Numbering in a Windows NT Environment*, on the product website at www.hp.com.

Hot-Plug Fans

CAUTION: Do not attempt to remove and replace a fan as a hot-plug procedure unless the fan zone is redundant. For more information, refer to the *HP ProLiant DL580 Generation 2 Server Setup and Installation Guide*.

To remove a hot-plug fan:

1. Extend the server from the rack. Refer to "Extending the Server from the Rack" in this chapter.
2. Open the rear access panel. Refer to "Opening and Removing the Rear Access Panel" in this chapter.
3. Identify the failed fan by locating the fan with the amber LED.
4. Pull the tabs on the top of the fan (1).
5. Remove the fan from the server (2).

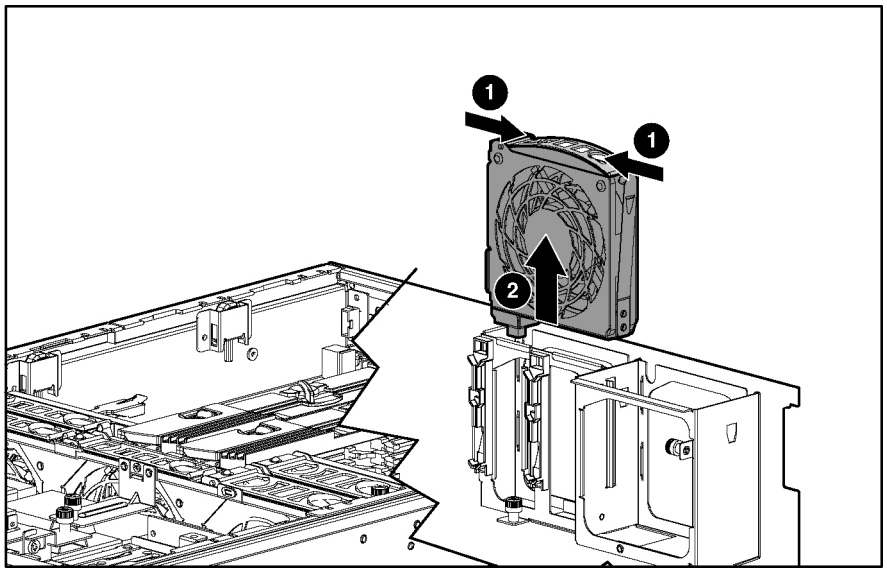

Figure 2-28: Removing a hot-plug fan

CAUTION: Do not operate the server for extended periods without the access panel installed. Operating the server without the access panel results in improper airflow that can lead to thermal damage.

Reverse steps 1 through 5 to replace a hot-plug fan.

For information on hot-plug fan diagnosis, refer to "Hot-Plug Fan" in Chapter 4, "Connectors, LEDs, and Switches."

Non-Hot-Plug Procedures

In order to remove or replace any non-hot-plug component, you must first power down the server. The slimline drive procedure is the only procedure that you can perform without removing the rear access panel.

This section describes the removal and replacement procedures for the following non-hot-plug components:

- Slimline drives
- Front bezel
- Power button/LED assembly
- Processor air baffle
- Processor power modules
- Processors
- Non-hot-plug PCI-X expansion boards
- PCI-X expansion board basket
- PCI-X Hot Plug Expansion board
- SCSI cables
- Front fan cage
- Pass-through board
- Removable media board
- Rear fan cage
- Battery-backed write cache assembly
- SCSI backplane
- System battery
- System board
- AC filter cable assembly

WARNING: To reduce the risk of personal injury or damage to the equipment, the installation of options other than hot-plug power devices should be performed only by individuals who are qualified to service computer equipment and trained to deal with products capable of producing hazardous energy levels.

Slimline Drives

To remove a drive from a slimline drive bay:

1. Power down the server. Refer to "Power ing Down the Server" in this chapter.
2. Push the release button with the Torx T-15 tool (1).
3. Pull the drive out of the slimline drive bay (2).

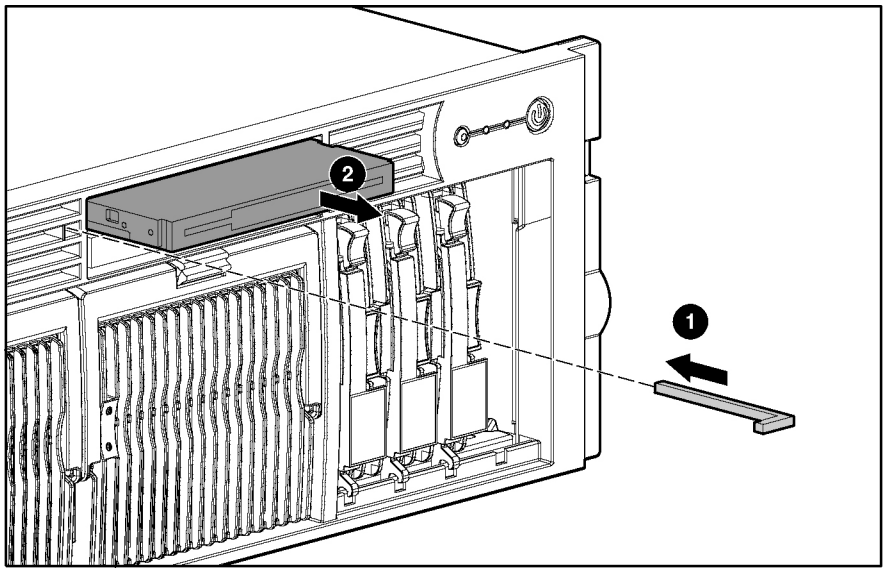

Figure 2-29: Removing a drive from a slimline drive bay

To replace a slimline drive, slide the drive into the slot until it engages the connector.

IMPORTANT: For the diskette drive to be bootable, it must be installed in the top slimline drive bay. For the CD-ROM or DVD-ROM drive to be bootable, it must be installed in the bottom slimline drive bay.

Front Bezel

To remove the front bezel:

1. Power down the server. Refer to "Powering Down the Server" in this chapter.
2. Extend the server from the rack. Refer to "Extending the Rack from the Server" in this chapter.
3. Remove the rear access panel. Refer to "Opening and Removing the Rear Access Panel" in this chapter.
4. Remove the front access panel. Refer to "Removing the Front Access Panel" in this chapter.
5. Remove the light pipe plastic assembly by pressing in the hooks at the panel and rear.
6. Using the T-15 Torx tool, remove the six screws on the exterior of the chassis (1) and the two screws on the interior of the chassis next to the slimline drive bays (2).

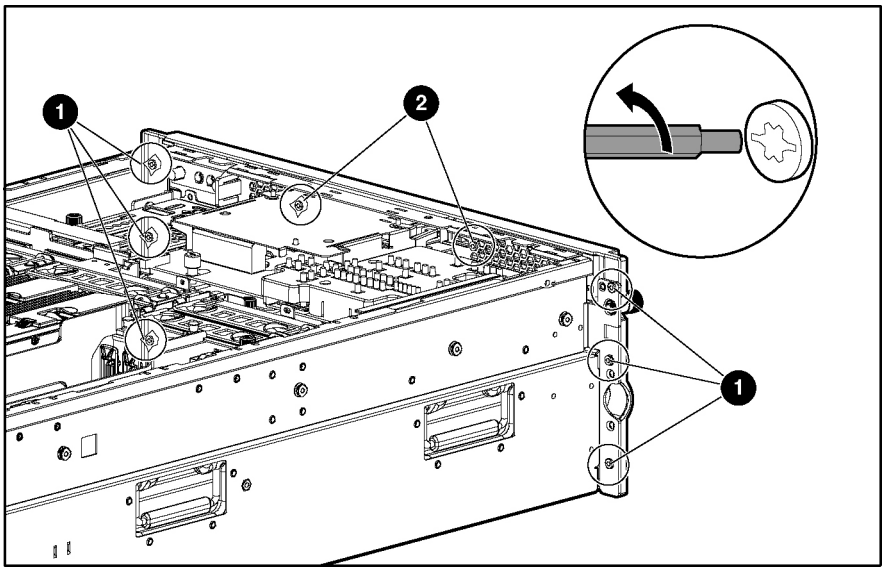

Figure 2-30: Removing the exterior and interior chassis screws

7. Using a flathead screwdriver, disengage the locking tabs on the bezel from underneath the chassis (1).
8. Remove the front bezel (2).

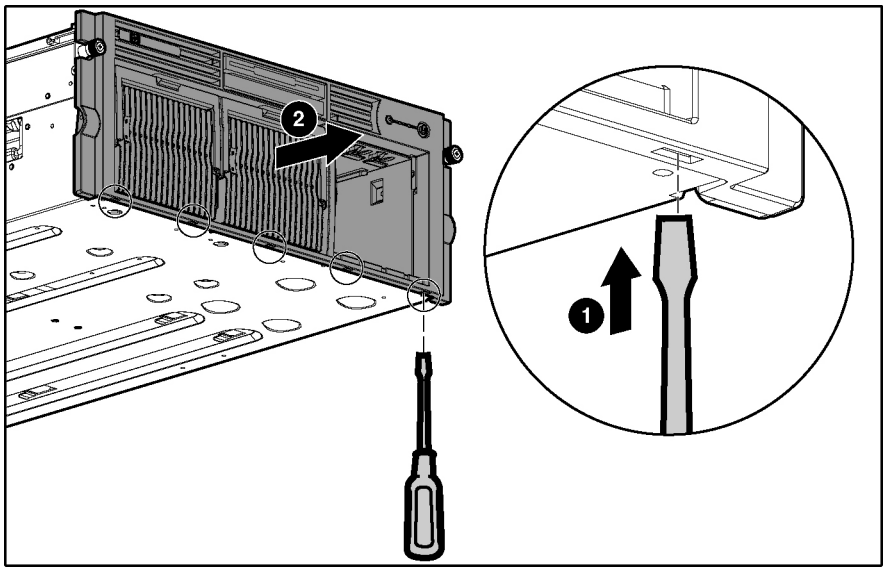

Figure 2-31: Disengaging the locking tabs and removing the front bezel

Repeat steps 1 through 8 to replace the front bezel.

Power Button/LED assembly

To remove the power button/LED assembly:

1. Power down the server. Refer to "Powering Down the Server" in this chapter.
2. Extend the server from the rack. Refer to "Extending the Rack from the Server" in this chapter.
3. Remove the rear access panel. Refer to "Opening and Removing the Rear Access Panel" in this chapter.
4. Remove the front access panel. Refer to "Removing the Front Access Panel" in this chapter.
5. Unplug the cable from the removable media board (1).
6. Push on the locking tab until the opposite side comes out (2).

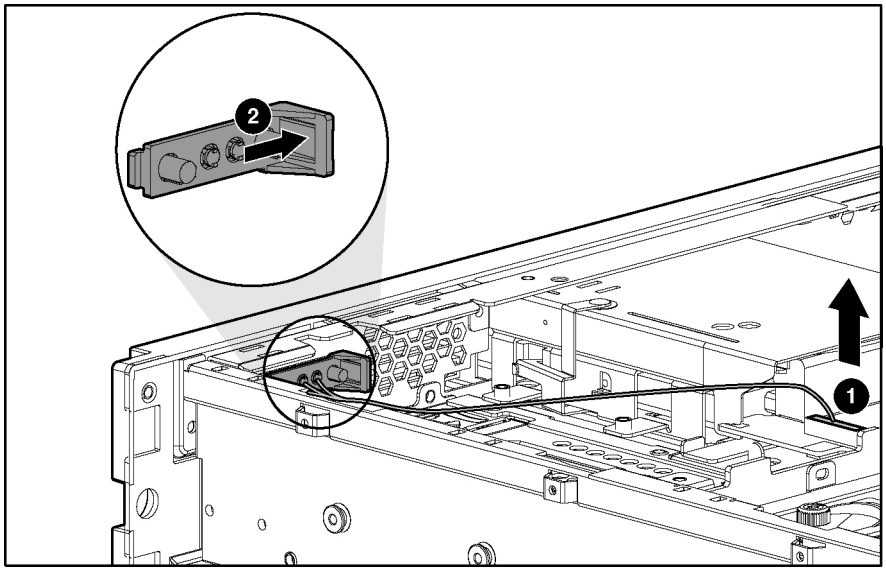

Figure 2-32: Removing the power button/LED assembly

Reverse steps 1 through 6 to replace the power button/LED assembly.

Processor Air Baffle

To remove the processor air baffle:

1. Power down the server. Refer to "Powering Down the Server" in this chapter.
2. Extend the server from the rack. Refer to "Extending the Rack from the Server" in this chapter.
3. Open the rear access panel. Refer to "Opening and Removing the Rear Access Panel" in this chapter.
4. Remove memory board 1. Refer to "Removing a Memory Board" in this chapter.
5. Squeeze both ends of the baffle to release the tabs (1).
6. Lift the processor air baffle from the chassis (2).

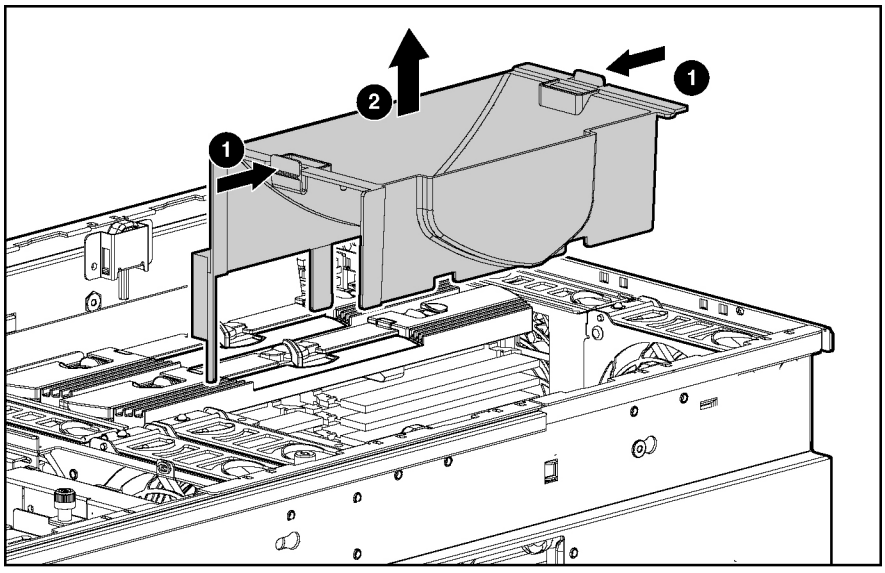

Figure 2-33: Removing the processor air baffle

Reverse steps 1 through 6 to replace the processor air baffle.

Processor Power Modules

CAUTION: Before installing the Processor Power Module (PPM), make sure that the part number on the PPM matches the part number on an existing PPM in the system. PPMs with the same part number may look different, but are functionally equivalent.

1. Power down the server. Refer to "Powering Down the Server" in this chapter.
2. Extend the server from the rack. Refer to "Extending the Rack from the Server" in this chapter.
3. Open the rear access panel. Refer to "Opening and Removing the Rear Access Panel" in this chapter.
4. Remove the memory board from slot 1. Refer to "Removing a Memory Board" in this chapter.
5. Remove the processor air baffle. Refer to "Processor Air Baffle" in this chapter.
6. Loosen the thumbscrew on the processor retaining bracket (1).
7. Open the processor retaining bracket (2).

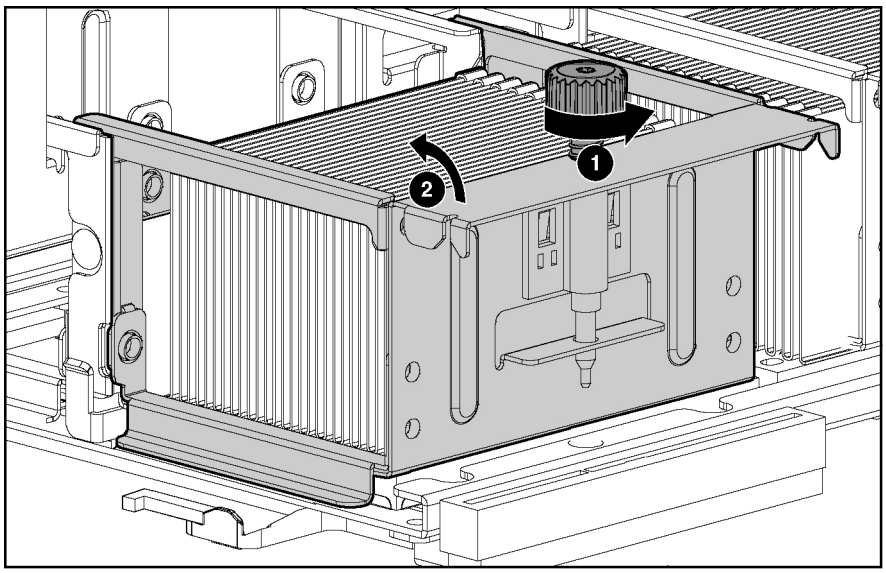

Figure 2-34: Opening the processor retaining bracket

8. Lift the PPM straight up from its slot.

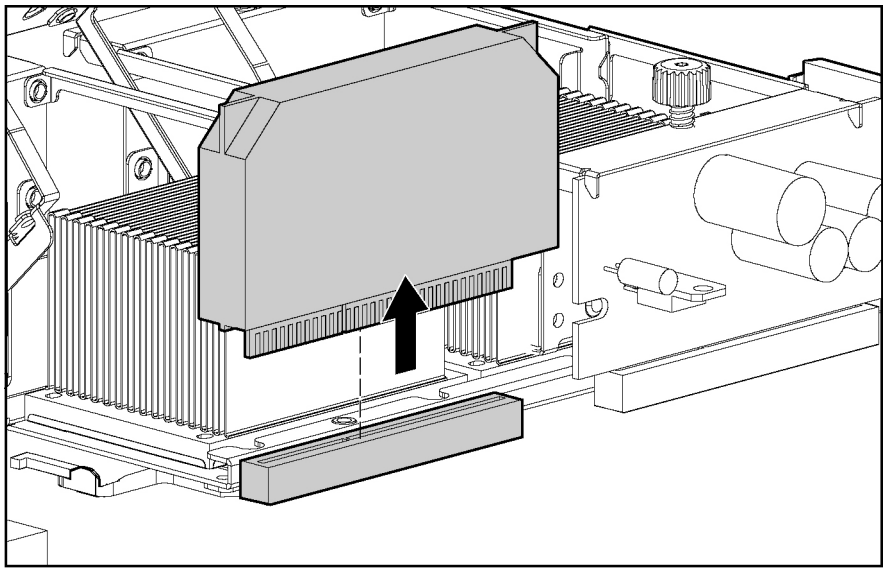

Figure 2-35: Removing a PPM

Reverse steps 1 through 8 to replace a PPM.

IMPORTANT: When installing a PPM, be sure the key slot in the PPM is aligned with the key in the slot.

Processors

To remove a processor:

1. Power down the server. Refer to "Powering Down the Server" in this chapter.
2. Extend the server from the rack. Refer to "Extending the Rack from the Server" in this chapter.
3. Open the rear access panel. Refer to "Opening and Removing the Rear Access Panel" in this chapter.
4. Remove the processor air baffle. Refer to "Processor Air Baffle" in this chapter.
5. Loosen the thumbscrew on the processor retaining bracket (1).
6. Open the processor retaining bracket (2).

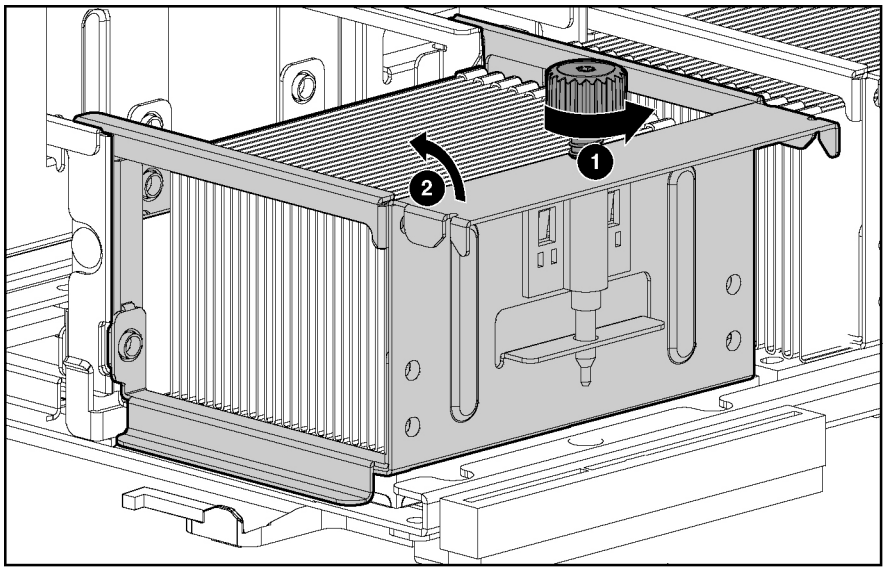

Figure 2-36: Opening the processor retaining bracket

7. Remove the PPM. Refer to "Processor Power Modules (PPMs)" in this chapter.

8. Move the processor-locking lever to the unlocked position (1).
9. Lift the processor/heatsink assembly straight up from its socket (2).

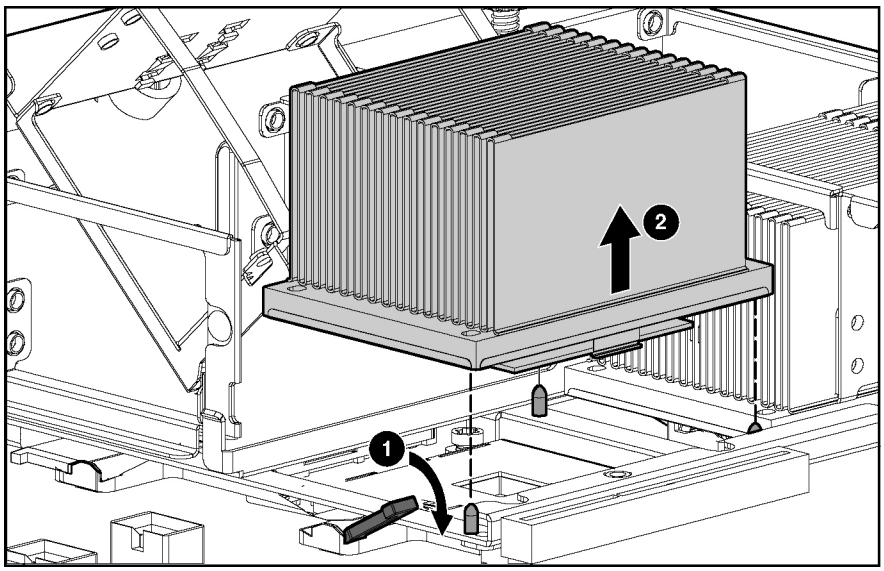

Figure 2-37: Removing the processor/heatsink assembly

Reverse steps 1 through 7 to replace a processor.

CAUTION: The processor is designed to fit one way into the socket. Align the three holes in the base of the heatsink with the three positioning pins in the retaining bracket to properly seat the processor.

IMPORTANT: Mixing processor speeds and cache sizes is not supported.

CAUTION: Before closing the processor retaining bracket, be sure that the processor locking lever is closed. Forcing the bracket shut may damage the processor or the processor socket.

Non-Hot-Plug PCI-X Expansion Boards

To remove a non-hot-plug expansion board:

1. Power down the server. Refer to "Powering Down the Server" in this chapter.
2. Extend the server from the rack. Refer to "Extending the Rack from the Server" in this chapter.
3. Open the rear access panel. Refer to "Opening and Removing the Rear Access Panel" in this chapter.
4. Disconnect any cables connected to the expansion board.
5. Press the PCI-X retaining clip until it stays in the open position.

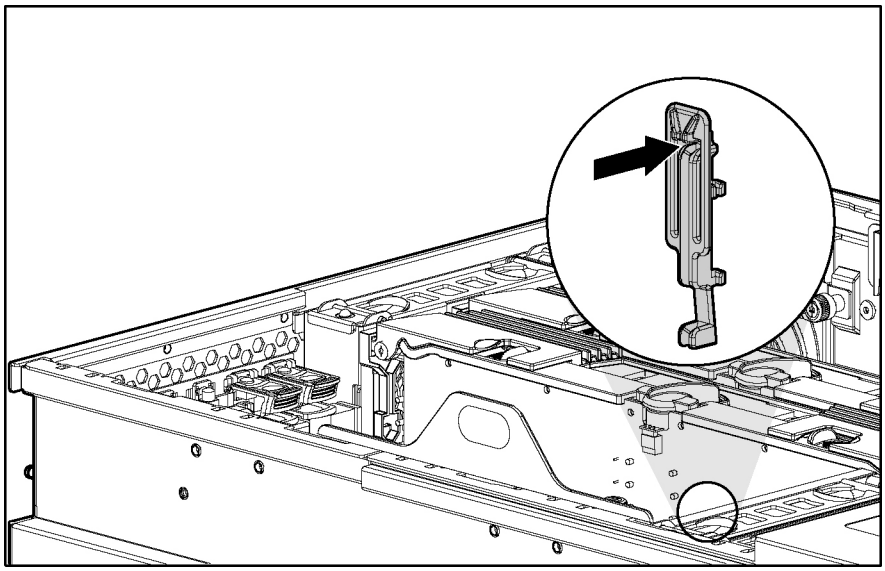

Figure 2-38: Pressing the PCI-X retaining clip

6. Push the tab on the expansion slot latch (1).
7. Swing the latch back to unlock the expansion board (2).
8. Remove the board from the slot (3).

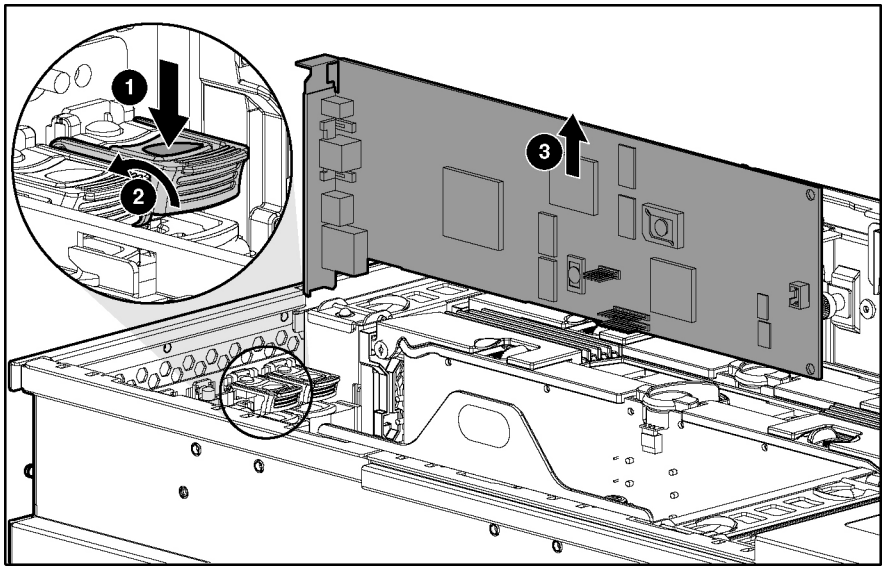

Figure 2-39: Removing an expansion board from a non-hot-plug slot

Reverse steps 1 through 8 to replace an expansion board.

PCI-X Expansion Board Basket

To remove the PCI-X expansion board basket:

1. Power down the server. Refer to "Powering Down the Server" in this chapter.
2. Extend the server from the rack. Refer to "Extending the Rack from the Server" in this chapter.
3. Open the rear access panel. Refer to "Opening and Removing the Rear Access Panel" in this chapter.
4. Unplug all cables attached to the expansion board at the rear of the server.
5. Remove all PCI-X Hot Plug expansion boards from the basket. Refer to "PCI and PCI-X Hot Plug Expansion Boards" in this chapter.

   IMPORTANT: If no expansion board is installed in PCI-X slot 1, remove the expansion slot cover.

6. Pull up on the two plastic rivets to disengage them from the front fan cage (1).
7. Pull up on the side of the basket at the front of the server and tilt it up to a 45° angle (2).
8. Slide the entire basket toward the front of the server and lift the basket out of the chassis (3).

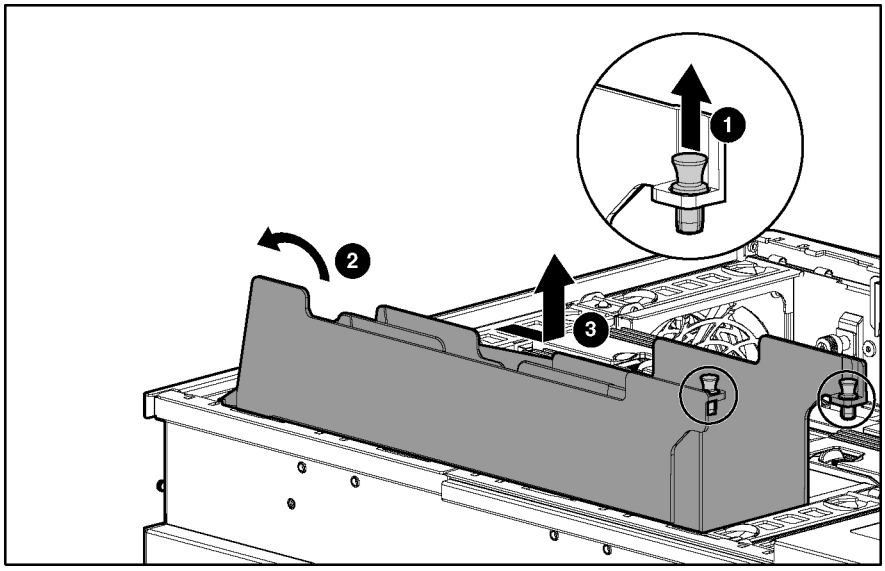

Figure 2-40: Removing the expansion board basket

Reverse steps 1 through 8 to replace the expansion board basket.

PCI-X Hot Plug Board

To remove the PCI-X Hot Plugboard:

NOTE: HP recommends that you remove the server from the rack before removing the PCI-X Hot Plug board.

1. Extend the server from the rack. Refer to "Extending the Rack from the Server" in this chapter.
2. Power down the server. Refer to "Powering Down the Server" in this chapter.
3. Open the rear access panel. Refer to "Opening and Removing the Rear Access Panel" in this chapter.
4. Remove all PCI-X expansion boards from the basket. Refer to "PCI and PCI-X Hot Plug Expansion Boards" in this chapter.

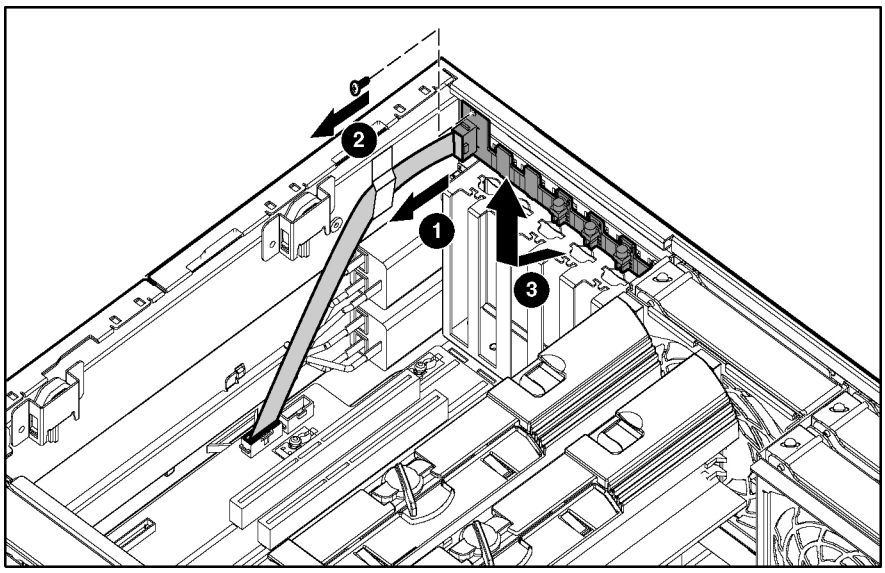

Figure 2-41: Removing the PCI-X Hot Plug board

5. Unplug the cable at the PCI-X hot-plug board connector on the system board. Refer to "System Board" in Chapter 4.
6. Open the PCI-X latch and remove the PCI-X slot cover.
7. From the back of the server at the top of the PCI-X slot, press upward and then forward with your finger to release the PCI-X latch. From inside the server, lift up on the latch until it unhooks from the back wall of the server.
8. Repeat step 8 for the six PCI-X slots and the PCI-X Hot Plug board will be exposed.
9. Reverse steps 1 through 9 to replace the PCI-X Hot Plug board.

SCSI Cables

To remove the SCSI cables:

1. Power down the server. Refer to "Powering Down the Server" in this chapter.
2. Extend the server from the rack. Refer to "Extending the Rack from the Server" in this chapter.
3. Open the rear access panel. Refer to "Opening and Removing the Rear Access Panel" in this chapter.
4. Remove the front access panel. Refer to "Removing the Front Access Panel" in this chapter.
5. Disconnect the SCSI cables from the SCSI backplane (1).
6. Disconnect the SCSI cables from the PCI-X expansion boards (2).

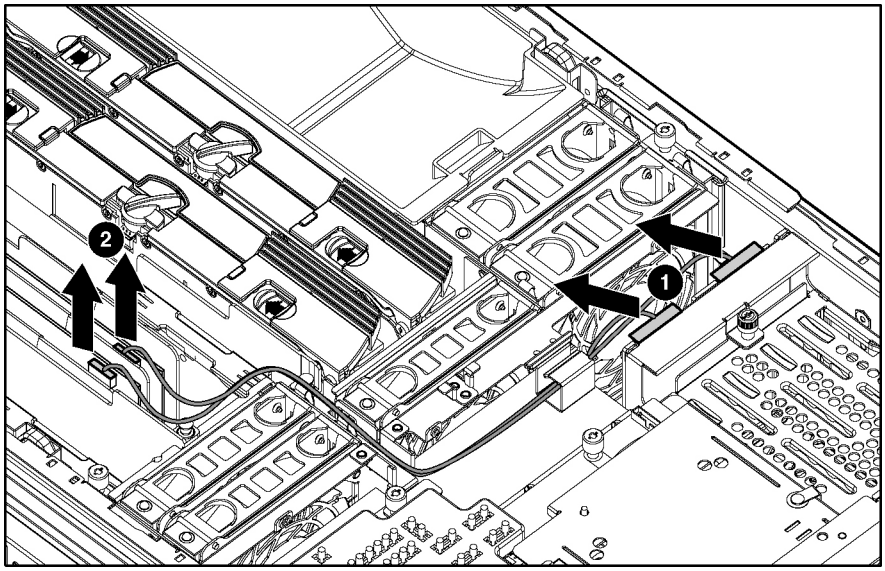

Figure 2-42: Disconnecting SCSI cables from the backplane and expansion boards

Reverse steps 1 through 6 to replace or install the SCSI cables.

Front Fan Cage

To remove the front fan cage:

1. Power down the server. Refer to "Powering Down the Server" in this chapter.
2. Extend the server from the rack. Refer to "Extending the Rack from the Server" in this chapter.
3. Remove the rear access panel. Refer to "Opening and Removing the Rear Access Panel" in this chapter.
4. Remove the front access panel. Refer to "Removing the Front Access Panel" in this chapter.
5. Remove the hot-plug fans in the front fan cage. Refer to "Hot-Plug Fans" in this chapter.
6. Remove the processor air baffle. Refer to "Processor Air Baffle" in this chapter.
7. Remove the memory boards. Refer to "Removing a Memory Board" in this chapter.
8. Remove the PCI-X expansion boards. Refer to "Non-Hot-Plug PCI-X Expansion Boards" in this chapter.
9. Remove the PCI-X basket. Refer to "PCI-X Expansion Board Basket" in this chapter.
10. Remove the SCSI cables. Refer to "SCSI Cables" in this chapter.
11. Loosen the three thumbscrews that secure the front fan cage to the chassis (1).
12. Lift the front fan cage from the chassis (2).

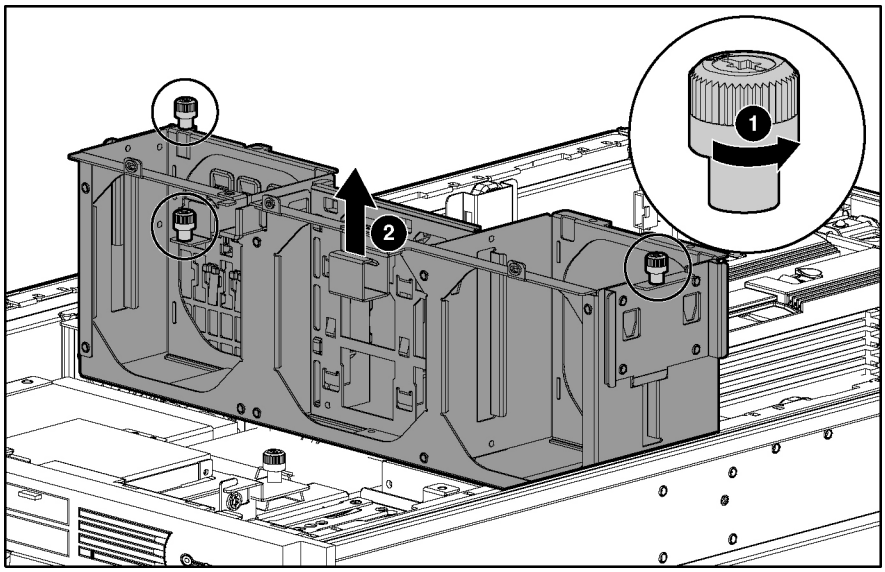

Figure 2-43: Removing the front fan cage

Reverse steps 1 through 12 to replace the front fan cage.

Pass-Through Board

To remove the pass-through board:

1. Power down the server. Refer to "Powering Down the Server" in this chapter.
2. Extend the server from the rack. Refer to "Extending the Rack from the Server" in this chapter.
3. Remove the rear access panel. Refer to "Opening and Removing the Rear Access Panel" in this chapter.
4. Remove the front access panel. Refer to "Removing the Front Access Panel" in this chapter.
5. Remove the front fan cage. Refer to "Front Fan Cage" in this chapter.
6. Loosen the two thumbscrews that secure the pass-through board to the removable media board and the side chassis wall (1). You may need to use a Torx T-15 screwdriver.
7. Lift the pass-through board straight up and out of the chassis (2).

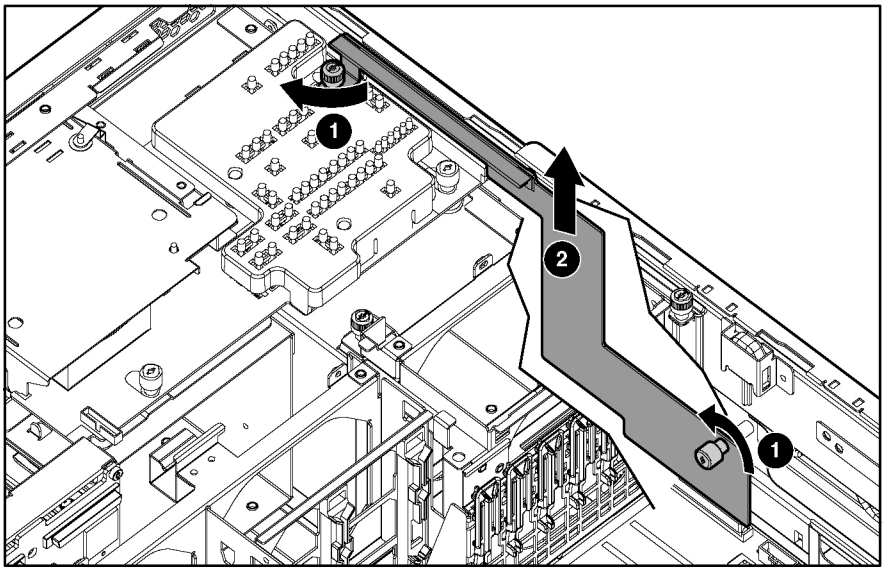

Figure 2-44: Removing the pass-through board

Reverse steps 1 through 7 to replace the pass-through board connector.

Diagnostics Display Board and Lightpipe

To remove the removable media board:

1. Power down the server. Refer to "Powering Down the Server" in this chapter.
2. Extend the server from the rack. Refer to "Extending the Server from the Rack" in this chapter.
3. Remove the rear access panel. Refer to "Opening and Removing the Rear Access Panel" in this chapter.
4. Remove the front access panel. Refer to "Removing the Front Access Panel" in this chapter.
5. Remove the processor air baffle. Refer to "Processor Air Baffle" in this chapter.
6. Remove the front fan cage. Refer to "Front Fan Cage" in this chapter.
7. Remove the pass-through board. Refer to "Pass-Through Board" in this chapter.
8. Eject all devices from the slimline drive bays. Refer to "Slimline Drives" in this chapter.
9. Unplug the Power Button/LED cable. Refer to "Power Button/LED Assembly" in this chapter.
10. Loosen the two thumbscrews holding the removable media board (1).
11. Slide the board to the rear of the unit until it stops, and then lift it up (2).

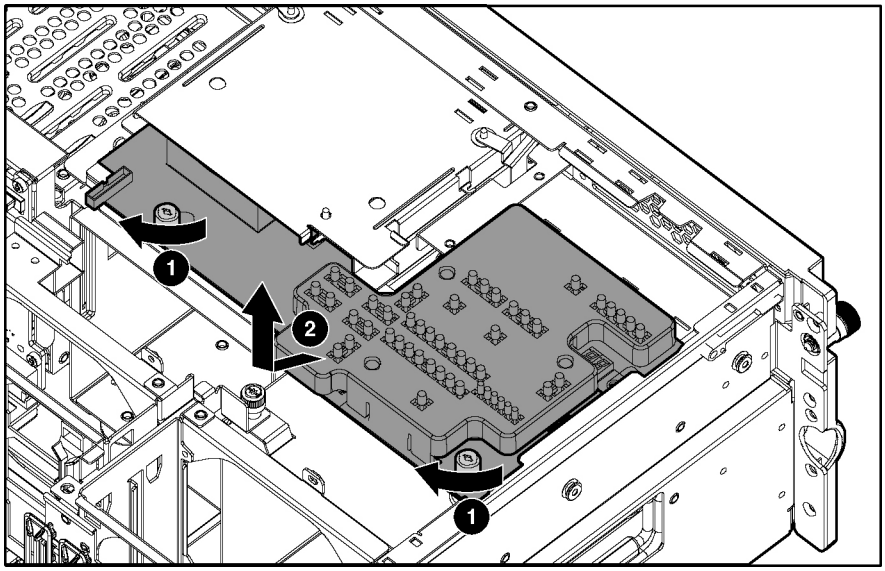

Figure 2-45: Removing the removable media board

12. Lift the board out gently, being careful of the slimline drive bay connector.

Reverse steps 1 through 12 to replace the removable media board.

Rear Fan Cage

To remove the rear fan cage:

1. Power down the server. Refer to "Powering Down the Server" in this chapter.
2. Extend the server from the rack. Refer to "Extending the Rack from the Server" in this chapter.
3. Open the rear access panel. Refer to "Opening and Removing the Rear Access Panel" in this chapter.
4. Remove the hot-plug fans in the rear fan cage. Refer to "Hot-Plug Fans" in this chapter.
5. Remove the processor air baffle. Refer to "Processor Air Baffle" in this chapter.
6. Remove the memory boards. Refer to "Removing a Memory Board" in this chapter.
7. Loosen the two thumbscrews that secure the rear fan cage to the chassis (1).
8. Remove the rear fan cage from the chassis (2).

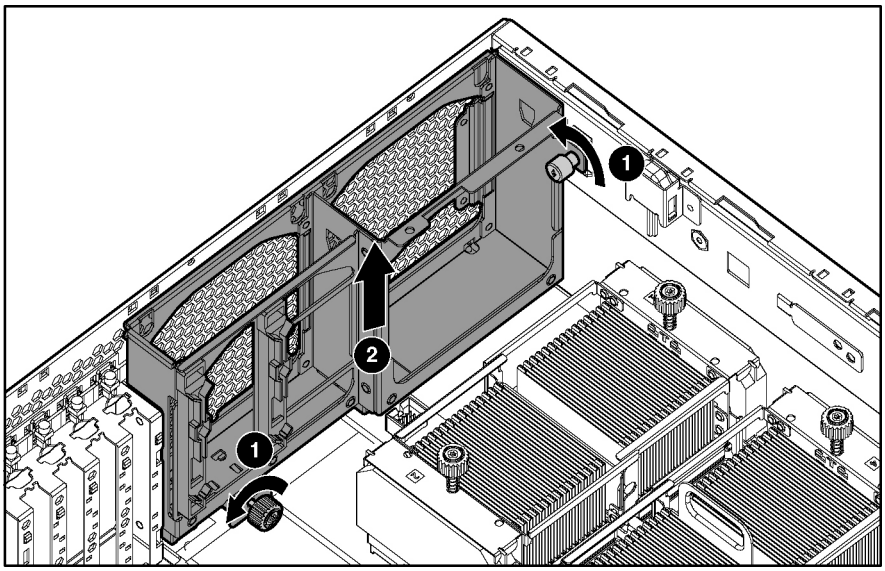

Figure 2-46: Removing the rear fan cage

Reverse steps 1 through 8 to replace the rear fan cage.

Battery-Backed Write Cache Assembly

The Battery-Backed Write Cache (BBWC) assembly contains the Battery-Backed Write Cache Enabler (BBWCE), the 5i Plus Memory Module, and the cable that connects the two.

IMPORTANT: The BBWCE and the 5i Plus Memory Module **must** be removed together, and the cable must stay connected. Unplugging the cable deletes all the data in the cache.

To remove the BBWC assembly:

1. Power down the server. Refer to "Powering Down the Server" in this chapter.
2. Extend the server from the rack. Refer to "Extending the Rack from the Server" in this chapter.
3. Remove the rear access panel. Refer to "Opening and Removing the Rear Access Panel" in this chapter.
4. Remove the front access panel. Refer to "Removing the Front Access Panel" in this chapter.
5. Remove the SCSI cables. Refer to "SCSI Cables" in this chapter.
6. Remove the PCI-X expansion boards. Refer to "Non-Hot-Plug PCI-X Expansion Boards" in this chapter.
7. Remove the PCI-X expansion board basket. Refer to "PCI-X Expansion Board Basket" in this chapter.
8. Remove the memory boards. Refer to "Removing a Memory Board" in this chapter.
9. Remove the processor air baffle. Refer to "Processor Air Baffle" in this chapter.
10. Remove the front fan cage. Refer to "Front Fan Cage" in this chapter.

11. Using your fingernail, release the latch that connects each side of the 5i Plus Memory Module to the system board until the module rises away from the system board (1).

CAUTION: Do not disconnect the cable connecting the BBWCE and the 5i Plus Memory Module.

12. Disengage the BBWCE from the standoffs on the side of the chassis. Remove the complete assembly from the server by pushing it from under the printed circuit board at the standoff (2).

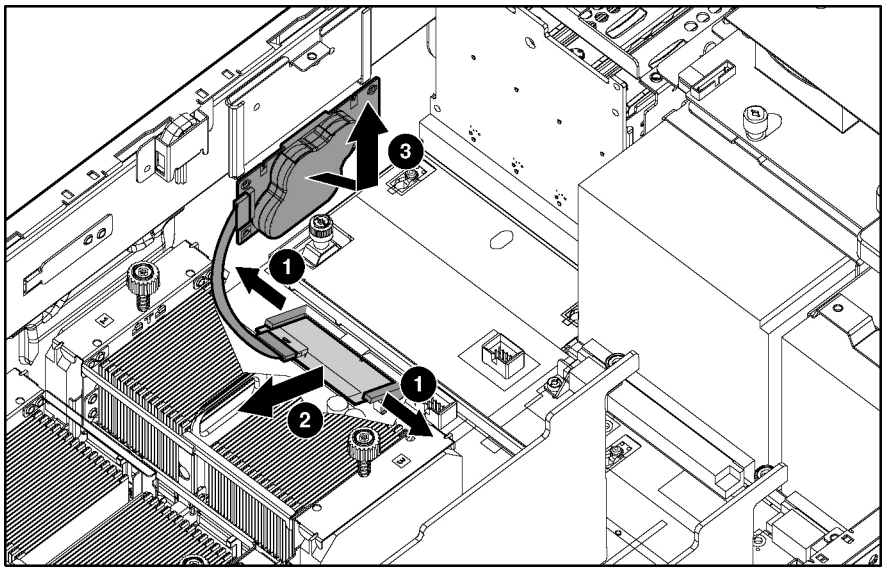

Figure 2-47: Removing the BBWC enabler and 5i Plus Memory Module

Reverse steps 1 through 12 to replace the BBWC Enabler and 5i Plus Memory Module.

SCSI Backplane

To remove the SCSI backplane:

1. Extend the server from the rack. Refer to "Extending the Rack from the Server" in this chapter.
2. Power down the server. Refer to "Powering Down the Server" in this chapter.
3. Unseat all the hot-plug SCSI hard drives and pull them away from the SCSI backplane. Refer to "Hot-Plug SCSI Hard Drives" in this chapter.

   NOTE: If you plan to take the hard drives out of the drive cage, label them so that they will be installed in the same slot.

4. Remove the rear access panel. Refer to "Opening and Removing the Rear Access Panel" in this chapter.
5. Remove the front access panel. Refer to "Removing the Front Access Panel" in this chapter.
6. Disconnect any SCSI cables from the SCSI backplane. Refer to "SCSI Cables" in this chapter.
7. Loosen the thumbscrew (1).
8. Remove the SCSI backplane from the chassis (2).

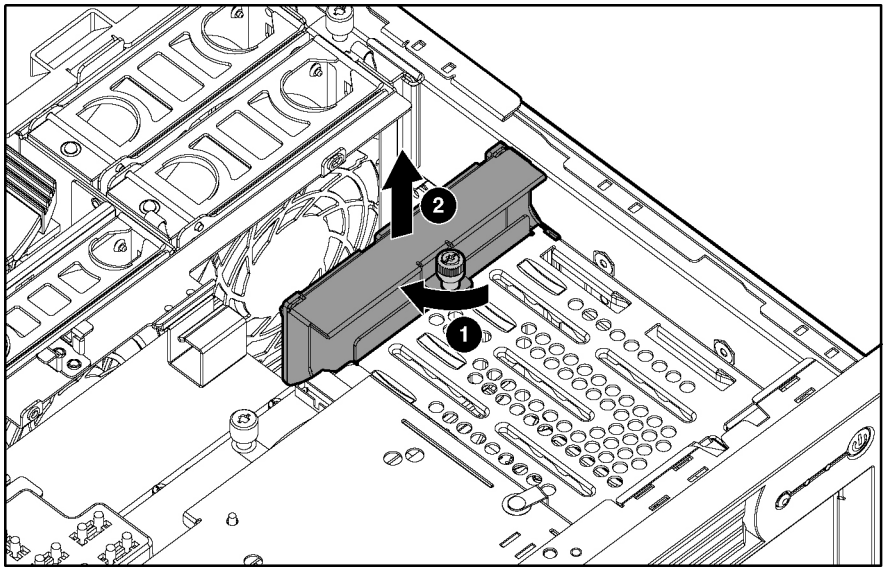

Figure 2-48: Removing the SCSI backplane

Reverse steps 1 through 8 to replace the SCSI backplane.

System Battery

WARNING: This server contains an internal lithium manganese dioxide or vanadium pentoxide battery. A risk of fire and burns exists if the battery pack is not handled properly. To reduce the risk of personal injury:

- **Do not attempt to recharge the battery.**
- **Do not expose to temperatures higher than 60°C (140°F).**
- **Do not disassemble, crush, puncture, short external contacts, or dispose of in fire or water.**
- **Replace only with the HP spare designated for this server.**

CAUTION: Do not dispose of batteries, battery packs, and accumulators with the general household waste. To forward them to recycling or proper disposal, use the public collection system or return them to either HP or an authorized service provider.

To remove the battery:

1. Power down the server. Refer to "Powering Down the Server" in this chapter.
2. Extend the server from the rack. Refer to "Extending the Rack from the Server" in this chapter.
3. Open the rear access panel. Refer to "Opening and Removing the Rear Access Panel" in this chapter.
4. Remove the memory boards. Refer to "Removing a Memory Board" in this chapter.
5. Locate the battery on the system board.

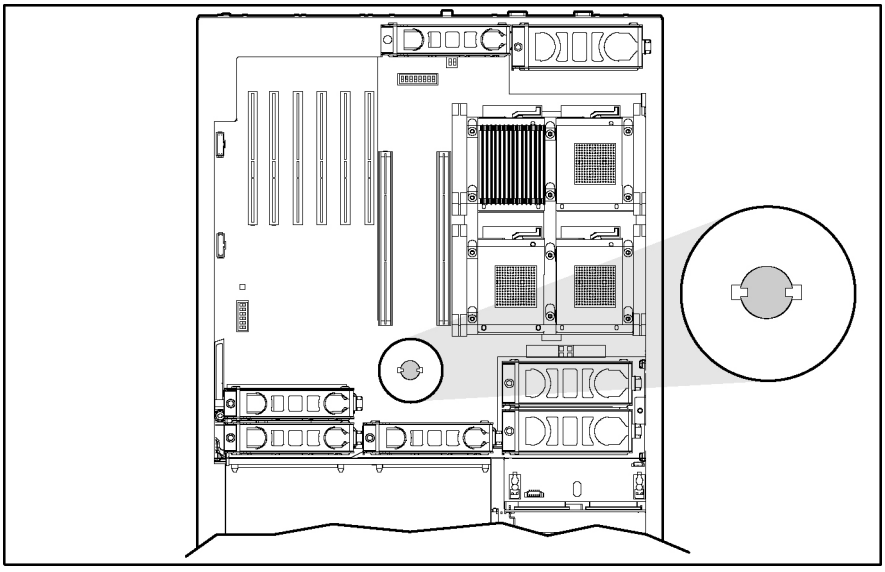

Figure 2-49: Locating the battery on the system board

6. Remove the battery (part number 153099-001) from the system board.

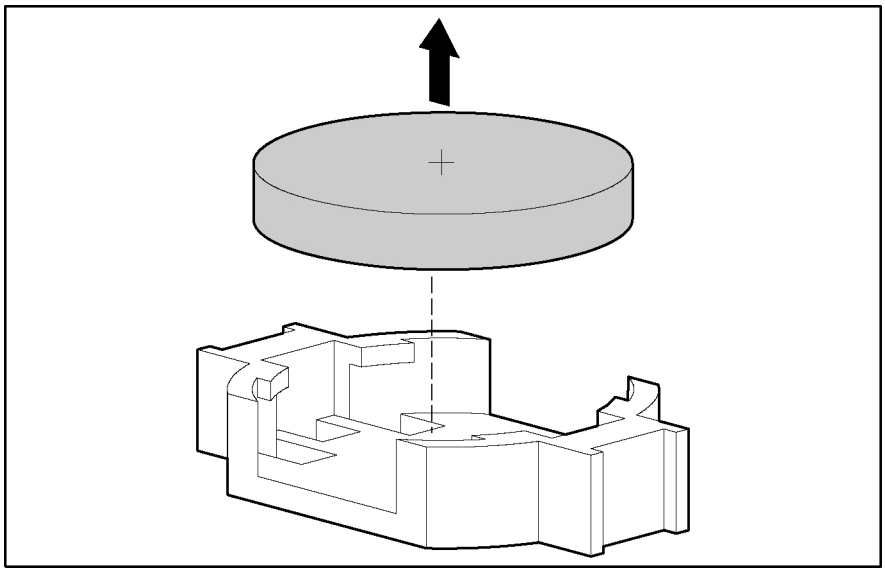

Figure 2-50: Removing the battery from the system board

Reverse steps 1 through 6 to replace the battery.

CAUTION: Loss of BIOS settings occurs when the system battery is removed. BIOS settings must be reconfigured whenever the battery is replaced. Power up the server and run RBSU.

System Board

To remove the system board:

1. Power down the server. Refer to "Powering Down the Server" in this chapter.
2. Remove all power supplies. Refer to "Hot-Plug Power Supply" in this chapter.
3. Unseat all the hot-plug SCSI hard drives. Refer to "Hot-Plug SCSI Hard Drives" in this chapter. Label the individual hard drives if they will be removed from the drive cage, so that you can replace them in their correct location.
4. Extend the server from the rack. Refer to "Extending the Rack from the Server" in this chapter. Although not required, HP recommends removing the server from the rack for best performance. See "Removing the Server from the Rack" in this chapter.
5. Remove the rear access panel. Refer to "Opening and Removing the Rear Access Panel" in this chapter.
6. Remove the front access panel. Refer to "Removing the Front Access Panel" in this chapter.
7. Remove the front fan cage. Refer to "Front Fan Cage" in this chapter.
8. Remove the rear fan cage. Refer to "Rear Fan Cage" in this chapter.
9. Remove the pass-through board. Refer to "Pass-Through Board" in this chapter.
10. Remove the SCSI backplane. Refer to "SCSI Backplane" in this chapter.
11. Remove the BBWC assembly. Refer to "Battery-Backed Write Cache Assembly" in this chapter.

12. Unscrew the system board thumbscrews (1).
13. Disconnect the PCI-X board cable (2).
14. Slide the system board toward the front of the unit (3).

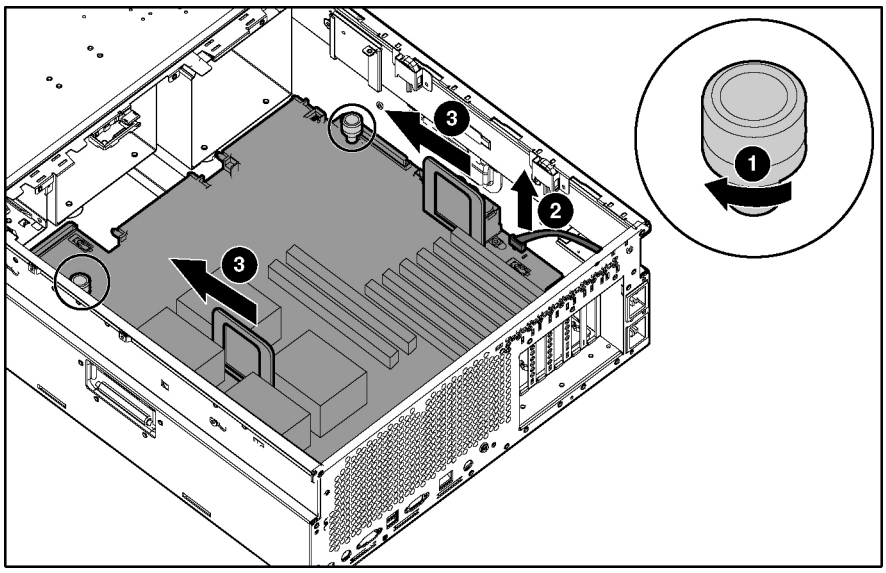

Figure 2-51: Unscrewing the thumbscrews and sliding the system board

IMPORTANT: When handling the system board, place your hands only on the two handles.

15. Grasping the two handles, lift the side with the processor handles first, tilting the board to a 45° angle (1).
16. Lift the entire system board out of the chassis (2).
17. Transfer the processors and PPMs to the replacement system board. Be sure to put them back in the same slots.
18. Check the SW4, SW7, and SW8 switch settings on the old board against the settings in chapter 4 to be sure that they are in the correct positions.

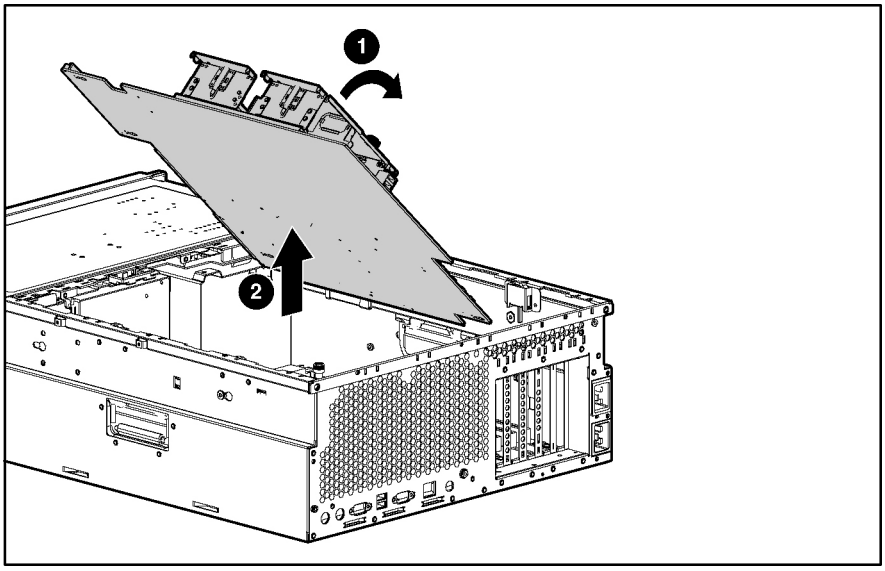

Figure 2-52: Removing the system board from the chassis

Reverse steps 1 through 18 to replace the system board.

IMPORTANT: The server serial number must be re-entered through RBSU after replacing the system board. Refer to the "Re-entering the Server Serial Number" section.

AC Filter Cable Assembly

The AC filter cable assembly consists of two cables leading from separate power supply input connectors near the front of the chassis and ending in an AC filter and inlets at the rear of the chassis.

To remover the AC filter cable:

1. Power down the server. Refer to "Powering Down the Server" in this chapter.
2. Remove all power supplies. Refer to "Hot-Plug Power Supplies" in this chapter.
3. Label the individual hard drives so that you can replace them in their correct location.
4. Remove all the hot-plug SCSI hard drives. Refer to "Hot-Plug SCSI Hard Drives" in this chapter.
5. Extend the server from the rack. Refer to "Extending the Rack from the Server" in this chapter.
6. Remove the rear access panel. Refer to "Opening and Removing the Rear Access Panel" in this chapter.
7. Remove the front access panel. Refer to "Removing the Front Access Panel" in this chapter.
8. Remove all hot-plug fans in the front and rear fan cages. Refer to "Hot-Plug Fans" in this chapter.
9. Remove the processor air baffle. Refer to "Processor Air Baffle" in this chapter.
10. Remove all PPMs. Refer to "Processor Power Modules (PPMs)" in this chapter.
11. Remove all processors. Refer to "Processors" in this chapter.
12. Remove the memory boards. Refer to "Removing a Memory Board" in this chapter.
13. Remove the PCI-X expansion boards. Refer to "Non-Hot-Plug PCI-X Expansion Boards" in this chapter.
14. Remove the PCI-X basket. Refer to "PCI-X Expansion Board Basket" in this chapter.
15. Remove the SCSI cables. Refer to "SCSI Cables" in this chapter.
16. Remove the front fan cage. Refer to "Front Fan Cage" in this chapter.
17. Remove the rear fan cage. Refer to "Rear Fan Cage" in this chapter.
18. Remove the pass-through board. Refer to "Pass-Through Board" in this chapter.
19. Remove the SCSI backplane. Refer to "SCSI Backplane" in this chapter.
20. Remove the BBWC assembly. Refer to "Battery-Backed Write Cache Assembly" in this chapter.
21. Remove the system board. Refer to "System Board" located in this chapter.

22. Cut the four tie-wraps securing the AC filter cable to the chassis.

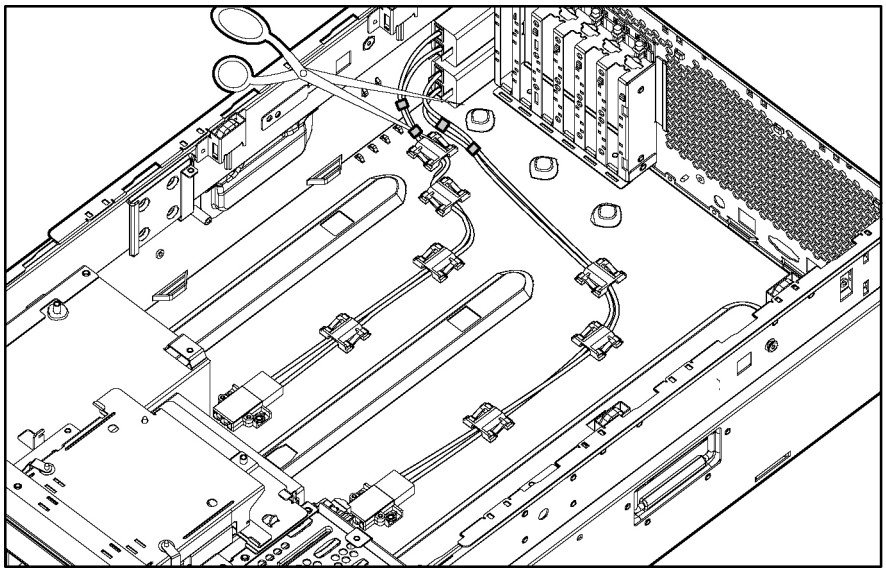

Figure 2-53: Cutting the cable tie-wraps

23. Remove the seven cable clips:
    a. Lift to disengage the cable clip (1).
    b. Slide the clip forward, and lift it off the chassis (2).

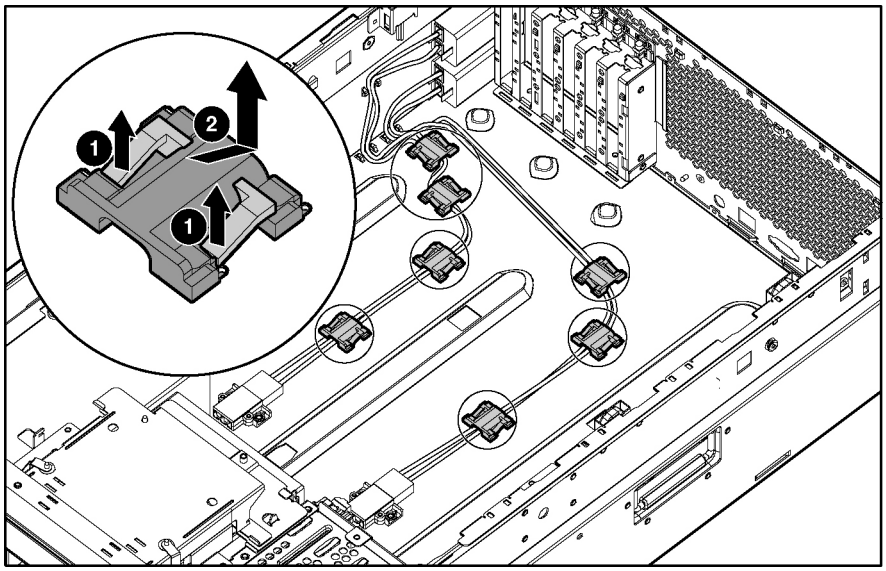

Figure 2-54: Removing the cable clips

24. Use the Torx T-15 tool or screwdriver to remove the eight screws that secure the power supply connectors to the chassis bottom (1).
25. Remove the cords from the connectors (2).
26. Remove the connectors from the server (3).

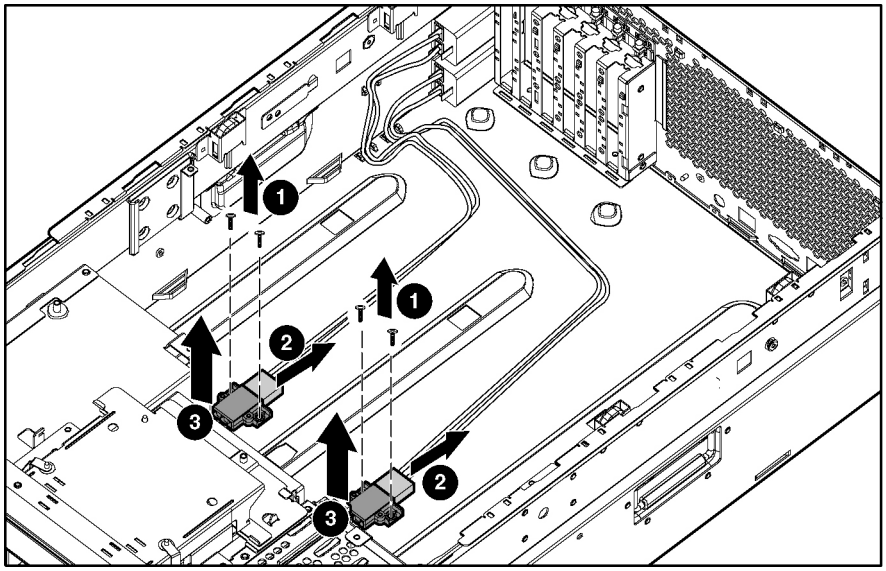

Figure 2-55: Removing the power supply connectors

27. Use the Torx T-15 tool or a screwdriver to remove the four screws that secure the AC filter cable assembly to the rear chassis wall (1).
28. Slide the assembly into the chassis, and then lift the assembly out of the chassis (2).

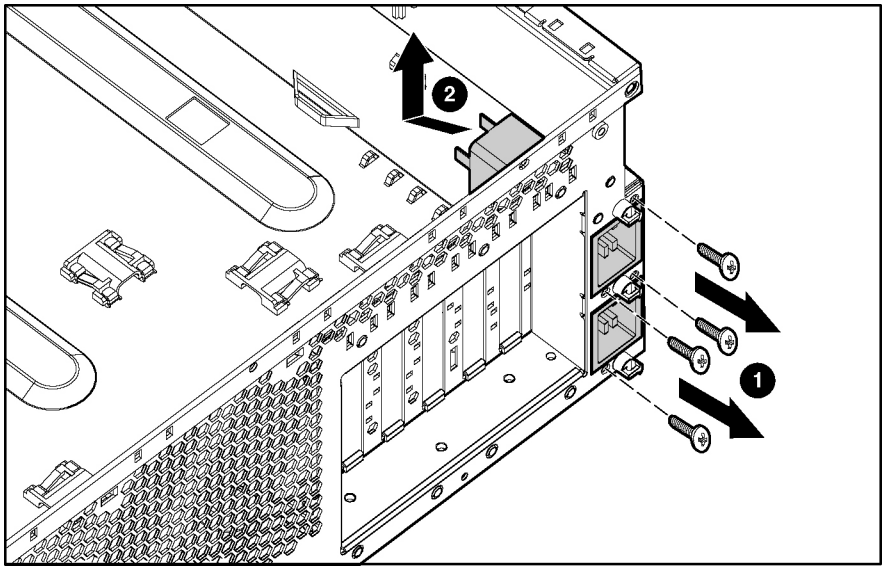

Figure 2-56: Removing the AC filters

Reverse steps 1 through 28 to replace the AC filter cable assembly.

Re-entering the Server Serial Number

After replacing the system board or clearing the NVRAM, the server serial number must be re-entered.

1. During the server startup sequence, press the **F9** key to access RBSU.
2. Select the **System Options** menu.
3. Select **Serial Number**. The following warning is displayed:

   ```
   WARNING! WARNING! WARNING! The serial number is loaded into the
   system during the manufacturing process and should NOT be
   modified. This option should ONLY be used by qualified service
   personnel. This value should always match the serial number
   sticker located on the chassis.
   ```

   Press the **Enter** key to clear the warning.
4. Enter the serial number and press the **Enter** key.
5. Press the **Escape** key to close the menu.
6. Press the **Escape** key to exit RBSU.
7. Press the **F10** key to confirm exiting RBSU. The server will automatically reboot.

3

Diagnostic Tools

This chapter is an overview of software and firmware diagnostic tools that are available for configuring, monitoring, and managing the HP ProLiant DL580 Generation 2 servers.

Use the tools in Table 3-1 to diagnose problems, test hardware, and monitor and manage the HP ProLiant DL580 Generation 2 server operations.

Table 3-1: Diagnostic Tools

Tool	Description	How to run the tool
Array Diagnostics Utility (ADU)	ADU is designed to run on all ProLiant systems that support HP array controllers. ADU collects information about the array controllers in the system and generates a list of detected problems.	For a list of HP servers that support ADU, follow the support link on product website at www.hp.com. For a complete list of ADU error messages, refer to the *HP Servers Troubleshooting Guide*.
Automatic Server Recovery-2 (ASR-2)	ASR-2 automatically restarts the server after a catastrophic operating system failure. With ASR-2, you have two recovery options: • Available Recovery provides software error recovery and environmental recovery. • Unattended Recovery logs the error information to the IML, resets the server, and tries to restart the operating system.	Run RBSU and set ASR-2 to enable this tool.
Diagnostics	Diagnostics tests and verifies operation of HP hardware. If Diagnostics finds a hardware failure, it isolates the replaceable part, if possible.	Access Diagnostics when POST detects a system configuration error. For a complete list of POST error messages, refer to the *HP Servers Troubleshooting Guide*. Diagnostics can be run from the SmartStart CD or downloaded by following the support link on the product website at www.hp.com.
Insight Manager 7	Insight Manager 7 is a client/server application used to remotely manage HP hardware in a network environment. Insight Manager reports hardware fault conditions (both failure and pre-failure) and collects data for reporting and graphing.	For more information on viewing and printing the event list, refer to the Management CD, the *Insight Manager User Guide,* or in the *HP ProLiant DL580 Generation 2 Server Setup and Installation Guide.*
Integrated Lights-Out (iLO)	iLO is a remote management port that can be accessed through a dedicated Lights-Out port on the rear panel of the server. Accessed through a standard browser from anywhere, the iLO capabilities will not require any unique software applications to use.	For more information on iLO, refer to the *Integrated Lights-Out User Guide* on the Documentation CD.

Table 3-1: Diagnostic Tools

Tool	Description	How to run the tool
Survey Utility	Survey Utility gathers critical hardware and software information on servers running Microsoft Windows NT, Novell NetWare, SCO OpenServer, or SCO Unixware operating systems. If a significant change occurs between data-gathering intervals, the survey utility marks the previous information and overwrites the survey text files to reflect the latest changes in the configuration.	Install the Survey Utility from the SmartStart CD, the Integration Maintenance Utility, or the Management CD.
Integrated Management Log (IML)	The IML is a log of system events such as system failures or nonfatal error conditions. View events in the IML from within: • Insight Manager 7 • Survey Utility • Operating system-specific IML utilities	The IML requires HP operating system management drivers. Refer to the SmartStart CD for instructions on installing the appropriate drivers.
ROM-Based Setup Utility (RBSU))	RBSU configures the hardware installed in or connected to the server. Specifically, it can: • Store configuration information in nonvolatile memory • Manage memory installation, processor upgrades, network interface cards and mass storage devices • Assist in installing an operating system • Configure ports and IRQs, if required	Run RBSU by pressing the **F9** key during POST.
ROMPaq Utility	The ROMPaq Utility checks the system and provides a choice of available ROM revisions and controller firmware.	Run this utility from the SmartStart CD included with the server.
SmartStart Diskette Builder	The SmartStart Diskette Builder is a utility that uses data stored on the SmartStart CD to create support diskettes. You can create support diskettes for specific configuration needs or for software that cannot be used directly from the SmartStart CD.	Run the diskette builder tool from the SmartStart CD.

4

Connectors, LEDs, and Switches

This chapter explains the location and function of system connectors, internal and external LEDs, and system switches.

Connectors

Use this section to identify system connectors for service procedures.

Rear Panel

Figure 4-1 and Table 4-1 illustrate the components located on the rear panel.

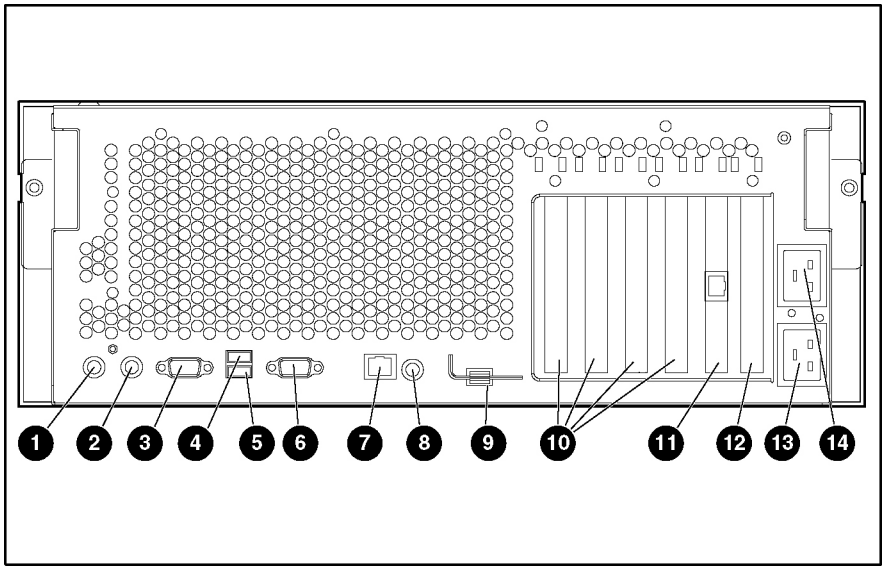

Figure 4-1: Rear panel components

Table 4-1: Rear Panel Components

Item	Description
1	Keyboard connector
2	Mouse connector
3	Video connector
4	USB connector 1
5	USB connector 2
6	Serial connector
7	Integrated Lights-Out Network connector
8	Rear Unit Identification LED switch
9	Torx T-15 tool
10	PCI-X Hot Plug slots 3 through 6
11	PCI-X non-hot-plug slot 2 (NIC with RJ-45 Ethernet connector)
12	PCI-X non-hot-plug slot 1
13	AC inlet (primary)
14	AC inlet (secondary)

System Board

Figure 4-2 and Table 4-2 illustrate the connectors located on the system board.

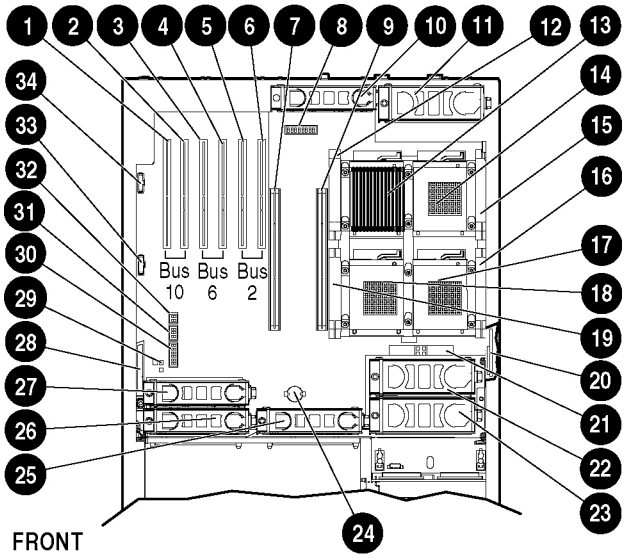

Figure 4-2: System board connectors

Table 4-2: System Board Connectors

Item	Description	Item	Description	Item	Description
1	Non-hot-plug expansion slot 1	13	Processor 1	25	Hot-plug fan 3
2	Non-hot-plug expansion slot 2	14	Processor socket 2	26	Hot-plug fan 1
3	Hot-plug slot 3	15	PPM slot 2	27	Hot-plug fan 2
4	Hot-plug slot 4	16	PPM slot 3	28	Pass-through board connector
5	Hot-plug slot 5	17	Processor socket 3	29	Non-Maskable Interrupt (NMI) switch
6	Hot-plug slot 6	18	Processor socket 4	30	Configuration maintenance switch (SW4)
7	Memory board slot 2	19	PPM slot 4	31	System ID switch (SW7)
8	Integrated Lights-out diagnostic LEDs	20	Battery-backed write cache enabler (optional)	32	Integrated Lights-Out override switch (SW8)
9	Memory board slot 1	21	5i Plus Memory Module	33	30-pin Remote Insight Lights-Out Edition II Board connector
10	Hot-plug fan 4	22	Hot-plug fan 6	34	PCI-X Hot Plug board connector
11	Hot-plug fan 7	23	Hot-plug fan 5		
12	Power Processor Module (PPM) 1	24	Battery		

SCSI Backplane Board

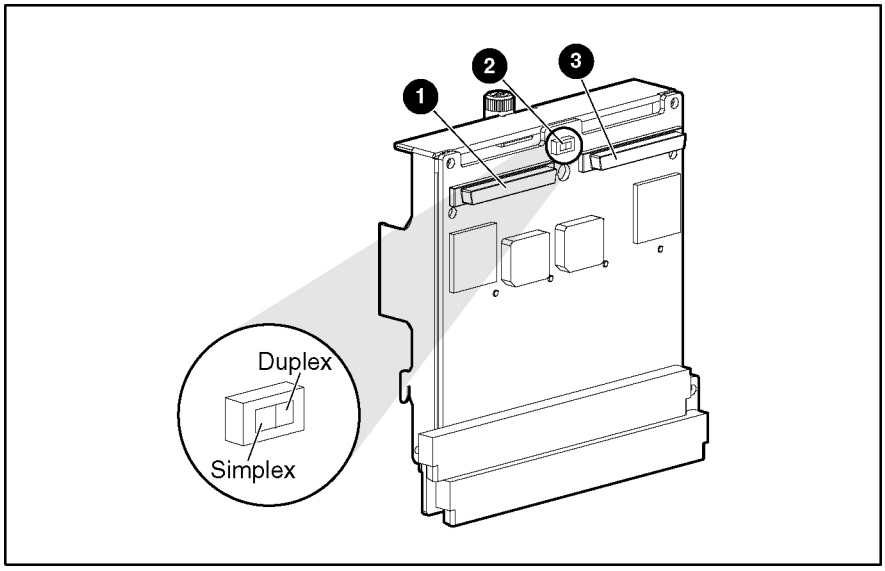

Figure 4-3: SCSI backplane board connectors

Table 4-3: SCSI Backplane Board Connectors

Item	Description
1	SCSI channel B
2	SCSI simplex/duplex switch
3	SCSI channel A

Memory Board

Figure 4-4 and Table 4-4 illustrate the connectors and DIMM banks located on the memory board.

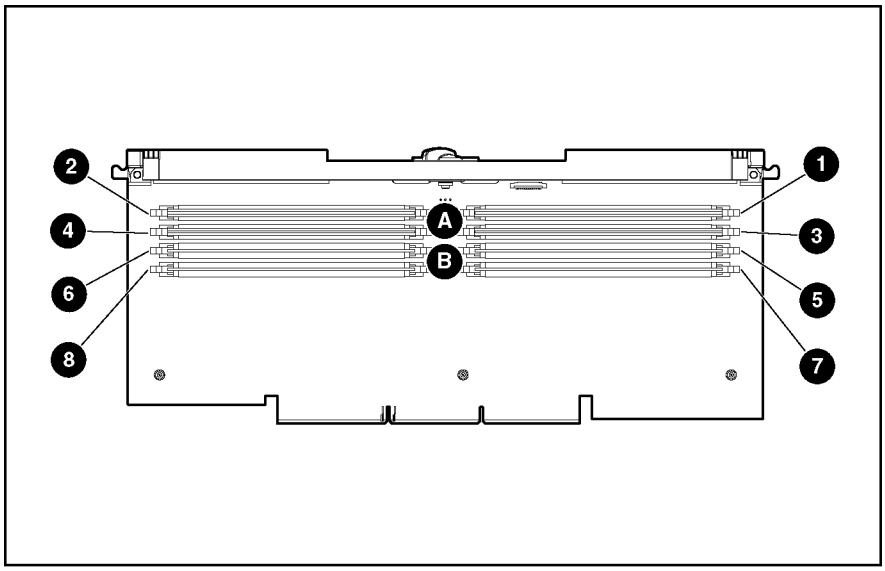

Figure 4-4: Memory board connectors and DIMM banks

Table 4-4: Memory Board Connectors and DIMM Banks

Item	Description
1	DIMM slot 1, bank A (populated)
2	DIMM slot 2, bank A (populated)
3	DIMM slot 3, bank A (populated)
4	DIMM slot 4, bank A (populated)
5	DIMM slot 5, bank B
6	DIMM slot 6, bank B
7	DIMM slot 7, bank B
8	DIMM slot 8, bank B

LEDs

The ProLiant DL580 Generation 2 server contains several sets of LEDs that indicate the status and settings of hardware components. This section discusses the types and locations of the following LEDs:

- Front panel
- QuickFind Diagnostic display
- Hot-plug SCSI hard drive
- Hot-plug fans
- Hot-plug power supplies
- PCI-X hot-plug
- Memory board
- Processors and PPMs
- Internal Diagnostic Display
- Interlock Status

Front Panel

The front panel has four LEDs that indicate the status of the server. Figure 4-5 and Table 4-5 identify the location and status of each of the LEDs.

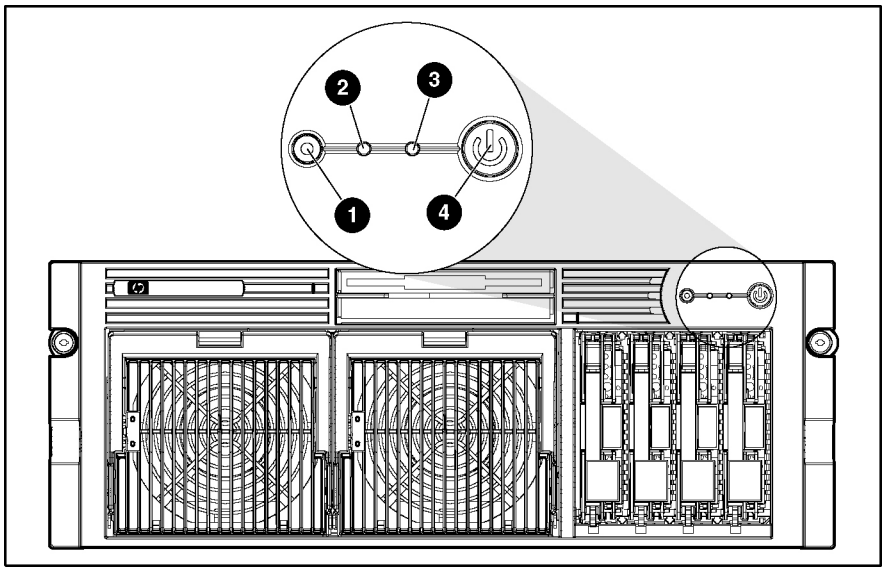

Figure 4-5: Front panel LEDs

Table 4-5: Front Panel LEDs

Item	Description	Status
1	Unit ID	Blue = Activated Blue flashing = System being managed remotely Off = Deactivated
2	Internal health	Green = Normal Red = System critical Amber = System degraded Off = System off
3	External health	Green = Normal Red = Critical power supply failure Amber = Redundant power supply failure Off = System off
4	Power	Green = On Amber = Off (auxiliary power only) Off = Power cord not attached to the server or power supply failure

QuickFind Diagnostic Display

A new feature on the ProLiant DL580 Generation 2 server set of is the LEDs that are located on the front access panel. These LEDs enable you to quickly diagnosis a problem with a component in the server simply by referring to the top of the system. Figure 4-6 and Table 4-6 identify the location and status of each of the LEDs.

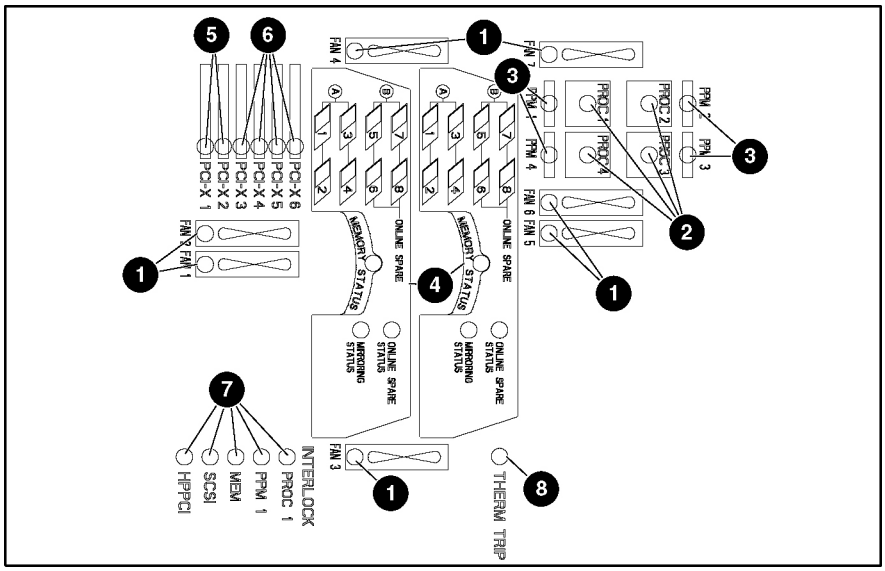

Figure 4-6: QuickFind Diagnostic Display LEDs

Table 4-6: QuickFind Diagnostic Display LEDs

Item	Description	Status
1	Hot-plug fans	
2	Processors	
3	PPMs	
4	Memory	Amber = failure detected
5	Non-hot-plug PCI-X	Off = Normal
6	Hot-plug PCI-X	
7	Interlock	
8	Therm trip	

Interlock Status

Improperly seated components in the interlock chain cause the LED associated with the fault origination point to illuminate on the system board. Figure 4-7 and Table 4-7 identify the location and status of each of the LEDs.

NOTE: Interlock components are required for the system to power up.

IMPORTANT: ProLiant DL580 Generation 2 servers are not equipped with chassis door or access panel interlocks.

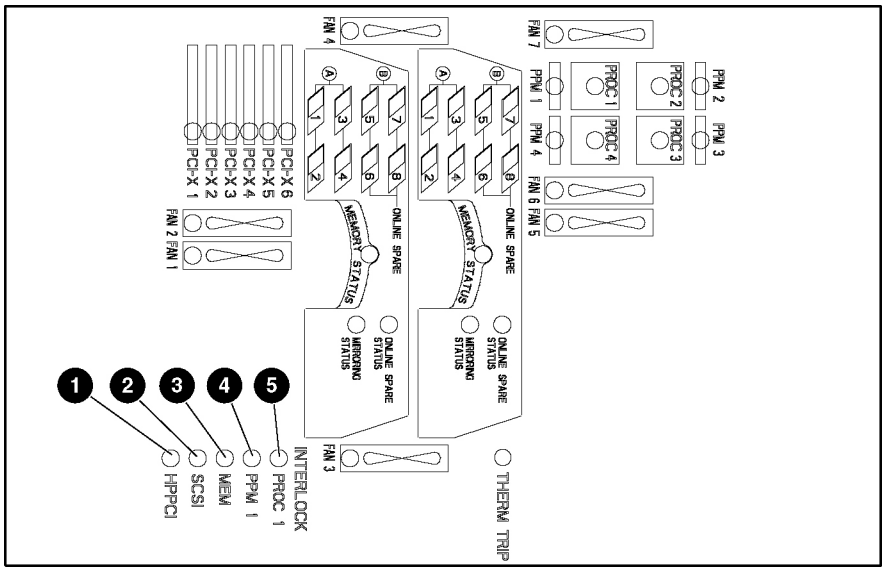

Figure 4-7: Interlock LEDs

Table 4-7: Interlock LEDs

Item	Name	Status	Description
1	HPPCI	Amber	PCI Hot Plug PCA cable or PCI-X Hot Plug board not installed properly
		Off	Normal
2	SCSI	Amber	SCSI backplane not seated properly
		Off	Normal
3	Mem	Amber	No memory boards detected; memory boards not installed properly
		Off	Normal
4	PPM 1	Amber	Processor Power Module 1 not installed properly
		Off	Normal
5	Proc 1	Amber	Processor 1 not installed properly
		Off	Normal

Hot-Plug SCSI Hard Drive

The hard drive LEDs, located on each physical drive, are visible on the front of the server or external storage unit. They provide activity, online, and fault status for each drive when configured as part of an array and attached to a powered-on controller. Their behavior may vary depending on the status of other drives in the array. Figure 4-8 and Table 4-8 identify the location and status of each of the LEDs.

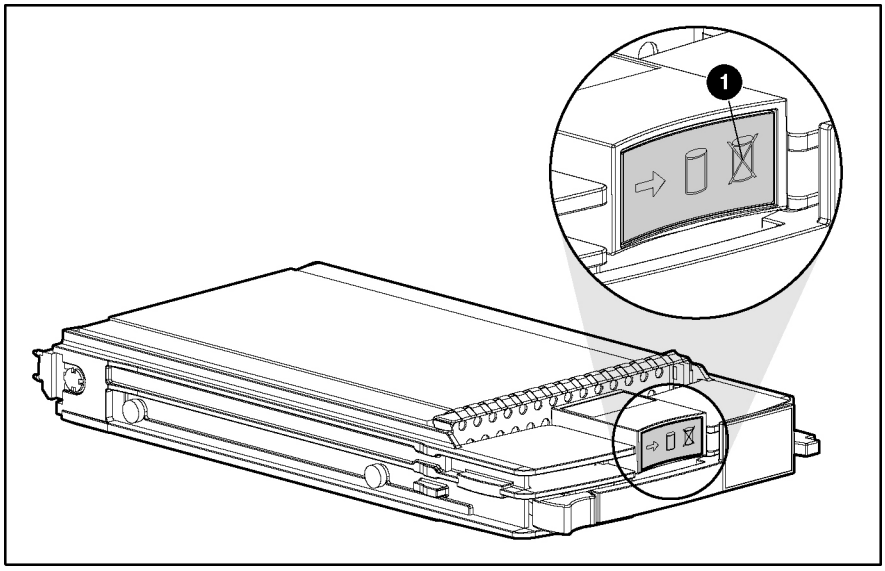

Figure 4-8: Hot-plug SCSI hard drive LEDs

Table 4-8: Hot-Plug SCSI Hard Drive LEDs

Item	Description	Status
1	Drive activity	On = Drive activity
		Off = No drive activity
2	Online status	Flashing = Online activity
		Off = No online activity
3	Fault status	Flashing = Fault-process activity
		Off = No fault-process activity

Table 4-9: Hot-Plug SCSI Hard Drive LED Combinations

Activity LED	Online LED	Fault LED	Status
On	Off	Off	**Do not remove the drive. Removing a drive during this process will cause data loss.** The drive is being accessed and is not configured as part of an array.
On	Flashing	Off	**Do not remove the drive. Removing a drive during this process will cause data loss.** The drive is rebuilding or undergoing capacity expansion.
Flashing	Flashing	Flashing	**Do not remove the drive. Removing a drive during this process will cause data loss.** The drive is part of an array being selected by the Array Configuration Utility. -Or- The Options ROMPaq is upgrading the drive.
Off	Off	Off	OK to replace the drive online if a predictive failure alert is received, and the drive is attached to an array controller. The drive is not configured as part of an array. -Or- If this drive is part of an array, then a powered-on controller is not accessing the drive. -Or- The drive is configured as an online spare.
Off	Off	On	OK to replace the drive online. The drive has failed and has been placed off line.
Off	On	Off	OK to replace the drive online if a predictive failure alert is received, provided that the array is configured for fault tolerance and all other drives in the array are online. The drive is online and configured as part of an array.
On or flashing	On	Off	**Do not remove the drive. Removing a drive during this process will cause data loss.** The drive is online and being accessed.

Hot-Plug Fan

In ProLiant DL580 Generation 2 servers, the seven hot-plug system fans are installed as dual-fan assemblies. Each assembly is monitored by an LED attached to the system board and read from the top of the assembly inside the chassis.

The hot-plug fan LED indicates the status of each fan. Check the status of the fans by noting the color of the LED at the fan location. Figure 4-9 identifies the location of the LED.

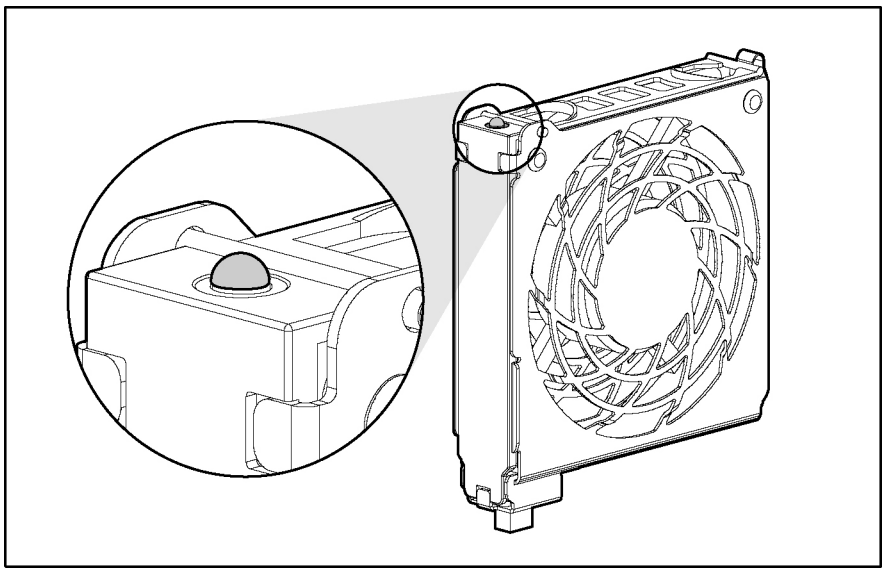

Figure 4-9: Hot-plug fan LED

The hot-plug fan LED indicates the following conditions:

- Off = Power is not applied to the fan
- Green = Power is applied to the fan and the fan is functional
- Amber = Fan failure

Hot-Plug Power Supplies

Determine the power supply status by noting the color of the LED on the power supply unit. Figure 4-10 and Table 4-10 identify the location and status of each of the LEDs.

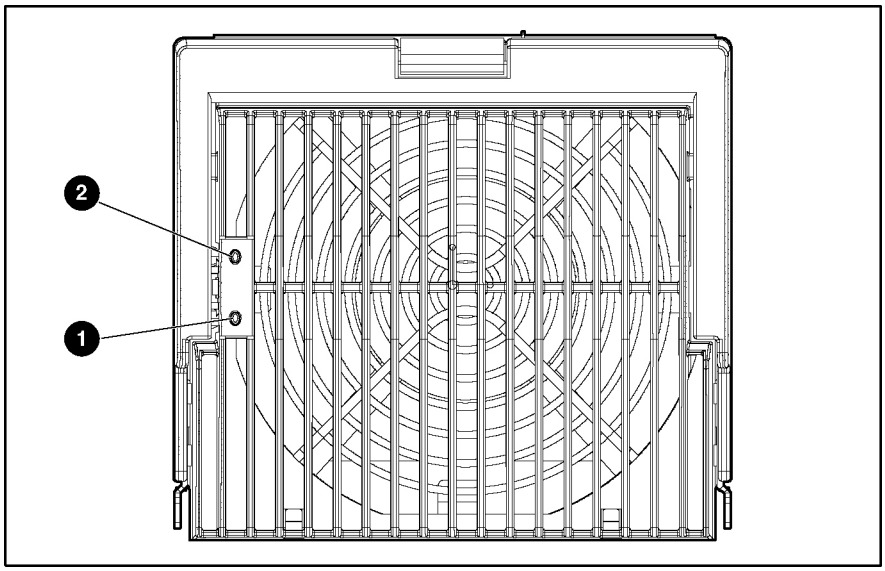

Figure 4-10: Hot-plug power supply LEDs

Table 4-10: Hot-Plug Power Supply LEDs

(1) Power LED Status Green	(2) Fault LED Status Amber	Description
Off	Off	No AC power
Off	On	No AC power to power supply or power supply failure
Blinking	Off	Standby mode
On	Off	Normal operations
On	Blinking	Current limit exceeded

PCI-X Hot Plug

The PCI-X Hot Plug LEDs at each expansion slot indicate the status of each board slot. The LEDs are viewed from the rear of the server or by opening the rear access panel. Figures 4-11 and 4-12 and Tables 4-11 and 4-12 identify the location and status of each of the LEDs.

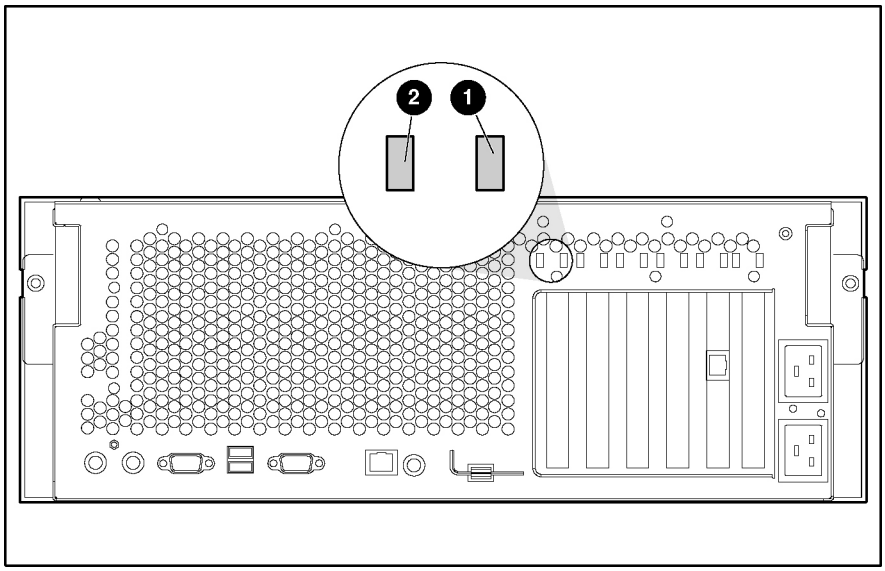

Figure 4-11: External PCI-X Hot Plug LEDs

Table 4-11: External PCI-X Hot Plug LEDs

Item	Description
1	Power LED (green)
2	Fault LED (amber)

Network Interface Controller

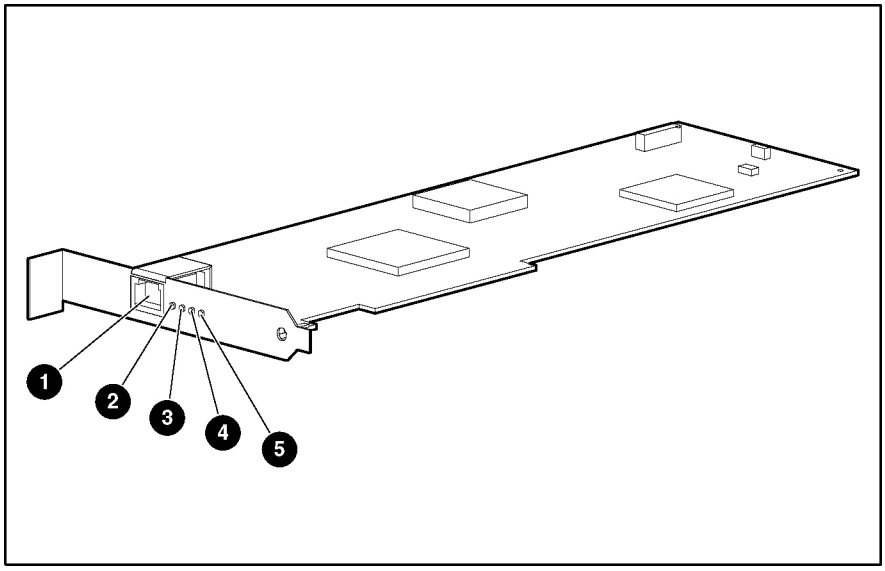

Figure 4-12: Network Interface Controller LEDs

Table 4-12: Network Interface Controller LEDs

Item	Description	Status
1	RJ-45 Ethernet connector	
2	1000 Mb/s LED	On = Good Gigabit Ethernet link Off = No 1000 Mb/s link; possible link at different speed
3	100 Mb/s LED	On = Good 100 Mb/s fast Ethernet link Off = No 100 Mb/s link; possible link at different speed
4	10 Mb/s LED	On = Good 10 Mb/s fast Ethernet link Off = No 10 Mb/s link; possible link at different speed.
5	Activity LED	Blinking = Brief bursts of data detected on the port On = Streams of data detected on the port Off = No data detected on the port

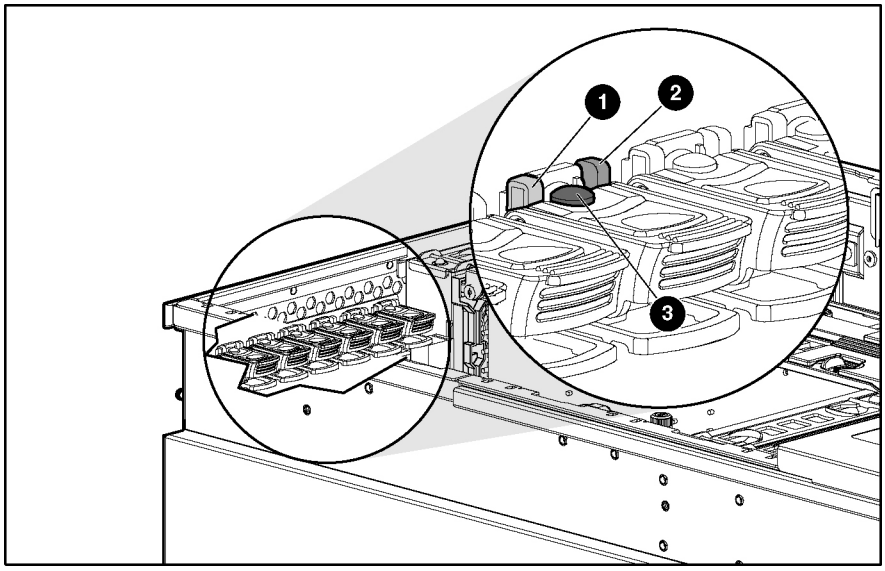

Figure 4-13: Internal PCI Hot Plug LEDs and button

Table 4-13: Internal PCI Hot Plug LEDs and Button

Item	Description	Status
1	Slot fault LED	Amber = Slot requires attention. There may be a problem with the slot, the PCI board, or the driver. Check the green LED before opening the slot. Off = Slot does not require attention.
2	Slot power LED	Green = Power is applied to the slot. Do **not** open. Blinking green = Power to slot is being turned off or on. This process may take several minutes. Do not open the slot release lever until the green LED is completely off. Do **not** open. Off = You may replace or remove a board in this slot only.
3	PCI Hot Plug button (port)	

Note: If the any of the LEDs indicates an error, refer to the *HP ProLiant DL580 Generation 2 Server Setup and Installation Guide* for information on PCI-X technology and troubleshooting.

Battery-Backed Write Cache Enabler

When the Battery-Backed Write Cache Enabler (BBWCE) is connected to the controller and the server is powered on, the green LED indicates the battery charge status. When the battery is connected to the controller and the server is powered down, the amber LED indicates the data retention status. Figure 4-14 and Table 4-14 identify the location and status of the LEDs.

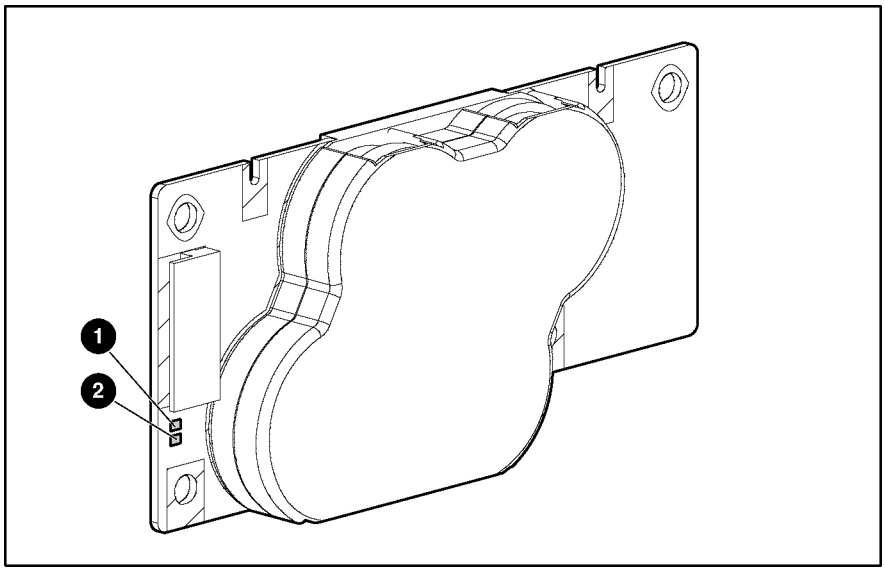

Figure 4-14: Battery-Backed Write Cache Enabler LEDs

NOTE: The battery will take 24 hours to charge for the first time.

Table 4-14: Battery-Backed Write Cache Enabler LEDs

Server Status	LED Color	LED Status	Battery Module Status
Server is on and has normal run time.	Green	On	Fast charging
	Green	Off	Trickle charging
	Amber	On	Short in the connection of one or more of the four button cells within the battery module
	Amber	Blinking	Open in the circuit between the positive and negative terminals of the battery module
Server is on and is in the first 30 seconds after power up.	Amber or green	On	Temporary lock-out state; data is lost due to cable being detached
Server is off and is in data retention mode.	Amber	Blinking every 15 seconds	User data held in write cache is being backed up

CAUTION: After the server is powered down, wait 15 seconds and then check the LED illumination pattern before unplugging the cable from the battery module. The LEDs are not visible with the rear access panel on.

- If the amber LED blinks after 15 seconds, do not remove the cable from the battery module. This module is backing up data, and data is lost if the cable is detached.
- If neither LED blinks after 15 seconds, it is safe to remove the cable from the battery module.

When the server is on, review the POST message before plugging or unplugging the cable from the module.

Memory Board

Figure 4-15 and Tables 4-15 through 4-18 identify the memory board LEDs and their statuses for specific memory modes.

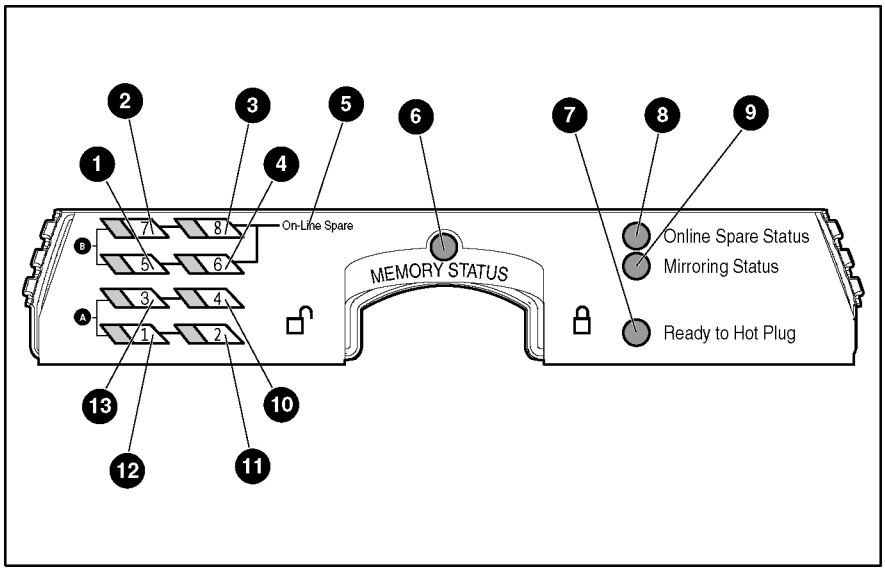

Figure 4-15: Memory board LEDs

Table 4-15: Advanced ECC (Standard) Memory LEDs

Item	Description	Indicator	Status
1-4 and 10-13	DIMM 1-8 status	Off	DIMM is not installed.
		Green	DIMM is installed.
		Amber	Memory error has occurred on this DIMM.
		Flashing amber	Configuration error has occurred.
6	Memory status	Off	Memory board is offline.
		Green	Memory board is online.
		Flashing green	Memory board is busy.
		Amber	Memory error has occurred on this memory board.
7	Ready to Hot Plug	Off	Do not remove memory board, advanced ECC memory does not support hot-removal of boards.
All LEDs		Off	Memory board is not seated properly or locking switch is not engaged; memory board can be removed safely.
		Flashing amber	**CAUTION:** Memory board is in use; relock it immediately.

Table 4-16: Online Spare Memory LEDs

Item	Description	Indicator	Status
1-4 and 10-13	DIMM 1-8 status	Off	DIMM is not installed.
		Green	DIMM is installed.
		Amber	Memory error has occurred on this DIMM.
		Flashing amber	Configuration error has occurred.
5	"Online Spare" text	Off	Bank is not configured as an online spare bank.
		Green	Bank is configured as an online spare bank.
		Flashing green	Failure has occurred and online spare bank is active.
6	Memory status	Off	Memory board is offline.
		Green	Memory board is online.
		Flashing green	Memory board is busy.
		Amber	Memory error has occurred on this memory board.
7	Ready to Hot Plug	Off	Do not remove memory board; online spare memory does not support hot-plug capability.
8	Online spare status	Off	Memory board is not configured for online spare memory.
		Green	Online spare memory is functioning properly.
		Amber	Memory error has occurred and system has failed over to the online spare bank.
All LEDs		Off	Memory board is not seated properly or locking switch is not engaged; memory board can be removed safely.
		Flashing amber	**CAUTION:** Memory board is in use; relock it immediately.

Table 4-17: Single-Board Mirrored Memory LEDs

Item	Description	Indicator	Status
1-4 and 10-13	DIMM 1-8 status	Off	DIMM is not installed.
		Green	DIMM is installed.
		Amber	Memory error has occurred on this DIMM.
		Flashing amber	Configuration error has occurred.
6	Memory status	Off	Memory board is offline.
		Green	Memory board is online.
		Flashing green	Memory board is busy.
		Amber	Memory error has occurred on this memory board.
7	Ready to Hot Plug	Off	Do not remove memory board; single-board mirrored memory does not support hot-plug capability.
9	Mirroring status	Off	Memory board is not configured for mirrored memory.
		Green	Single-board mirrored memory is functioning properly.
		Amber	Memory error has occurred and system has failed over to the mirrored bank.
All LEDs		Off	Memory board is not seated properly or locking switch is not engaged; memory board can be removed safely.
		Flashing amber	**CAUTION:** Memory board is in use; relock it immediately

Table 4-18: Hot-Plug Mirrored Memory LEDs

Item	Description	Indicator	Status
1-4 and 10-13	DIMM 1-8 status	Off	DIMM is not installed.
		Green	DIMM is installed.
		Amber	Memory error has occurred on this DIMM.
		Flashing amber	Configuration error has occurred.
6	Memory status	Off	Memory board is offline.
		Green	Memory board is online.
		Flashing green	Memory board is busy.
		Amber	Memory error has occurred on this memory board.
7	Ready to Hot Plug	Off	Do not remove memory board; memory board is not configured for hot-plug removal.
		Green	OK to remove memory board –system is configured for hot-plug mirrored memory.
9	Mirroring status	Off	Memory board is not configured for mirrored memory.
		Green	Hot-plug mirrored memory is functioning properly.
		Amber	Memory error has occurred and system has failed over to the mirrored board.
All LEDs		Off	Memory board is not seated properly or locking switch is not engaged; memory board can be removed safely.
		Flashing amber	**CAUTION:** Memory board is in use; relock it immediately.

Internal Diagnostic Display

Figure 4-16 and Table 4-19 identify the internal diagnostic display and its status.

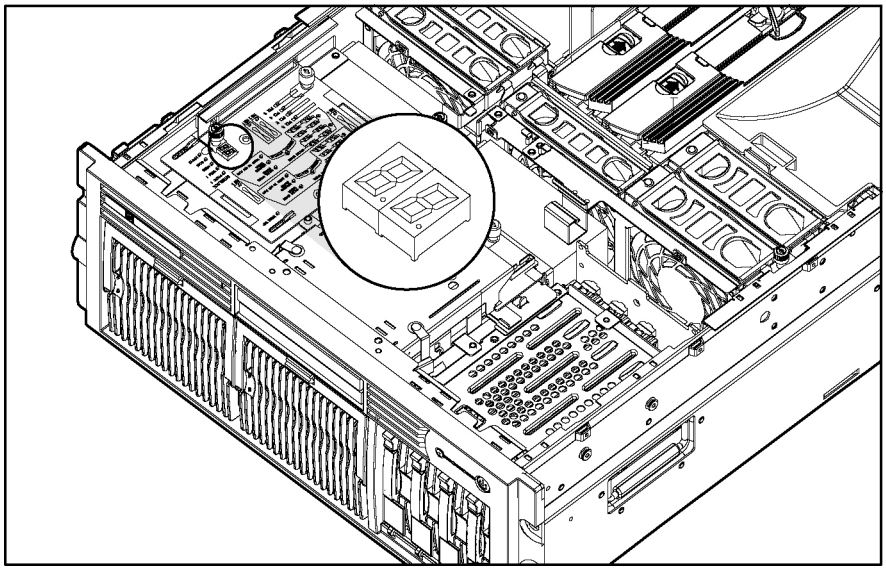

Figure 4-16: Internal diagnostic display LEDs and switches

Table 4-19: Internal diagnostic display switches

Item	Switch 1	Switch 2	Description
Port 84	OFF	OFF	For more information on Port 84, refer to the Port 84 diagnostic codes that occur during the boot process.
Reserved	OFF	ON	N/A
iLO	ON	OFF	For more information on iLO, refer to the *Integrated Lights-Out User Guide.*
5i Plus	ON	ON	For more information on 5i Plus, refer to the *Smart Array 5i Plus Controller User Guide*

System Board Switches

Some server operations, including adding or removing a component or changing a security feature, require that you reconfigure a system switch. If the system configuration is incorrect, the server may not work properly and you may receive error messages on the screen. Setting and checking the system board switches is an important part of the overall troubleshooting process.

System Maintenance Switch (SW4)

Figure 4-17 and Table 4-20 identify the system maintenance switch location and settings. The system maintenance switch:

- Disables the embedded video in the system (reserved)
- Designates rack-mounted or tower configurations (reserved)
- Enables or disables the diskette boot option
- Enables or disables power-on password protection
- Clears all configuration information from nonvolatile RAM
- Prevents system nonvolatile RAM from accepting configuration changes
- Prepares the server to accept ROMPaq disaster recovery operations

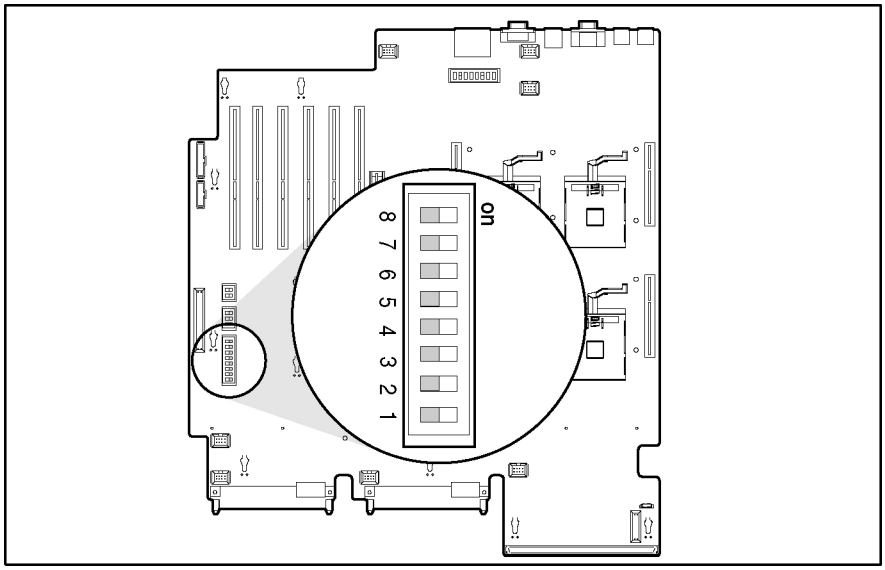

Figure 4-17: System maintenance switch (SW4)

Table 4-20: System Maintenance Switch (SW4)

Position	Default	Function	Description	Settings
1		Reserved		
2	Off	Lock configuration	Enables or disables configuration changes in nonvolatile RAM (NVRAM).	**Open (off)** Configuration can be changed. **Closed (on)** Configuration is locked and cannot be changed.
3		Reserved		
4	Off	Diskette boot override	Enables or disables booting from diskette drive. Both settings enable you to read from and write to the diskette after the system completes the boot sequence.	**Open (off)** The diskette drive boot is controlled by the configuration. **Closed (on)** The diskette drive boots regardless of the configuration.
5	Off	Password disable	Enables or disables password protection.	**Open (off)** Power-on password is enabled. **Closed (on)** Power-on password is disabled.
6	Off	Configuration validation	Invalidates nonvolatile RAM (NVRAM) configuration information.	**Open (off)** NVRAM is valid. **Closed (on)** NVRAM is invalid, and configuration is lost.
7	Off	BIOS enabler		**Open (off)** BIOS is disabled. **Closed (on)** BIOS is enabled.
8	Off	Hot spare boot enabler		**Open (off)** Hot spare boot is disabled. **Closed (on)** Hot spare boot is enabled.

Enabling ROMPaq Disaster Recovery Mode

A corrupted system ROM requires you to recreate the ROM BIOS by using the ROM flash utility. This can be accomplished only when the system is in disaster recovery mode. Set configuration switches 1, 4, 5, and 6 on the system maintenance switch block to on to enable disaster recovery mode.

IMPORTANT: Before enabling ROMPaq disaster recovery mode, refer to the *HP Servers Troubleshooting Guide* for complete instructions on disaster recovery.

System ID Switch (SW7)

Figure 4-18 and Table 4-21 identify the system ID switch location and settings.

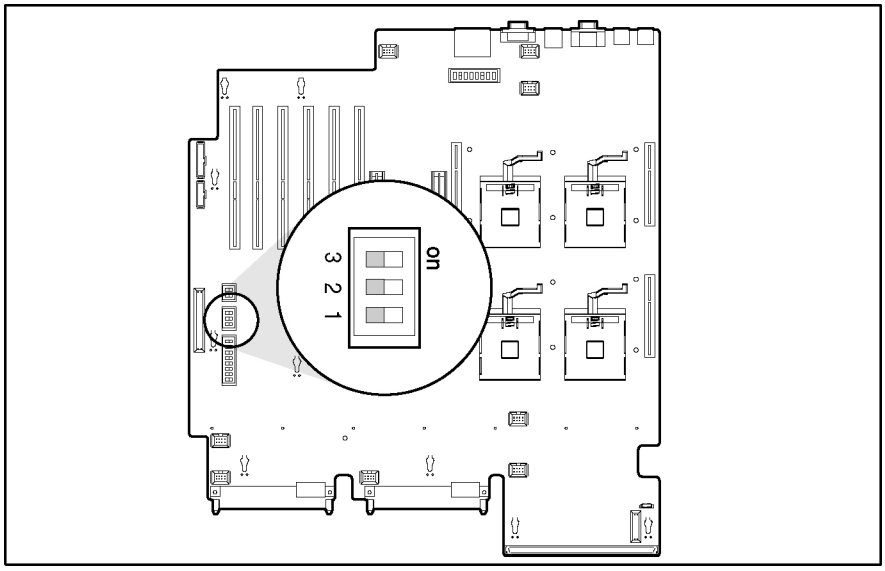

Figure 4-18: System ID switch (SW7)

Table 4-21: System ID Switch (SW7)

Position	Default	Function	Description	Settings
1 through 3	Chassis ID	Used to allow 8 ID combinations, if used as another system.		

iLO/Spread Spectrum Switch (SW8)

The iLO/Spread Spectrum switch (SW8) is a two-position switch that is used for miscellaneous purposes. The iLO security override switch allows the administrator full access to the iLO processor. This access is necessary if the administrator password is lost or if the iLO boot-block needs to be flashed. Figure 4-19 and Table 4-22 identify the iLO/Spread Spectrum switch location and settings.

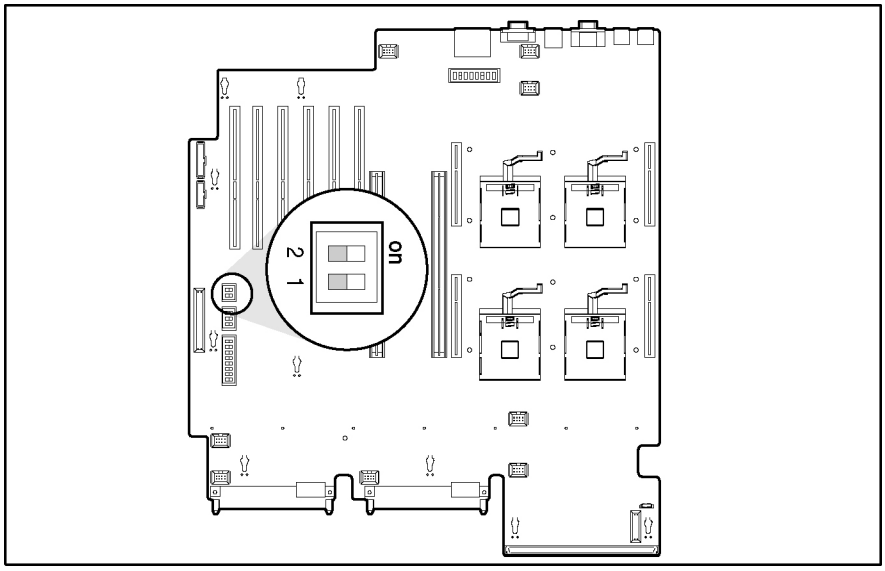

Figure 4-19: iLO/Spread Spectrum switch (SW8)

Table 4-22: iLO/Spread Spectrum Switch (SW8)

Position	Default	Function	Description	Settings
1	Off	iLO security override	The override allows the administrator full access to the iLO processor.	**Open (off)** Normal **Closed (on)** Override
2	Off	Spread spectrum enabler		**Open (off)** Clock spread spectrum is disabled. **Closed (on)** Clock spread spectrum is enabled.

Non-Maskable Interrupt (NMI) Switch

Crash dump analysis is an essential part of eliminating reliability problems such as hangs or crashes in operating systems, device drivers, and applications. Crashes can freeze a system, requiring you to do a hard reset. Resetting the system erases any information that supports root cause analysis.

Systems running supported Microsoft operating systems experience a blue screen trap when the operating system crashes. When this happens, Microsoft recommends that system administrators perform a NMI event by pressing a dump switch. The NMI event allows a hung system to become responsive.

The ProLiant DL580 Generation 2 server is equipped with an NMI switch that, when pushed, performs a memory dump before performing a hard reset.

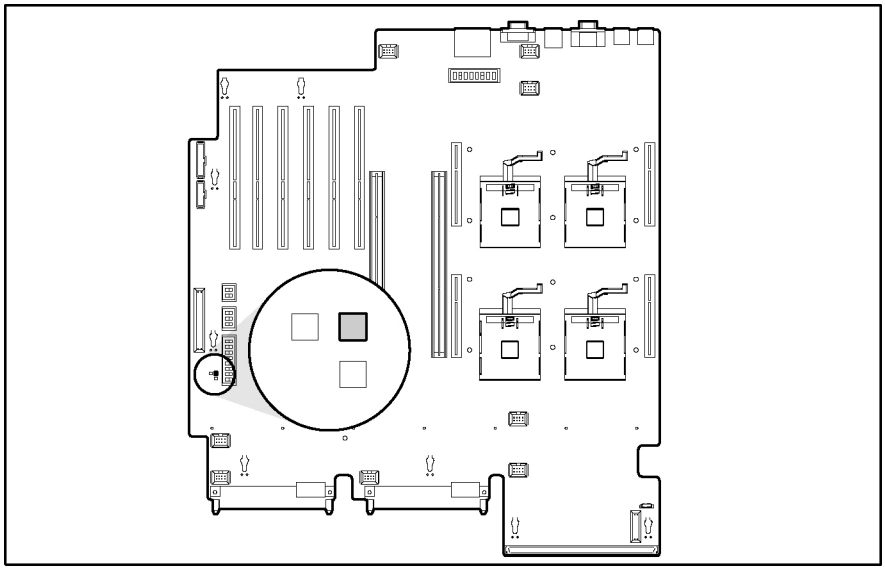

Figure 4-20: Non-Maskable Interrupt (NMI) switch

Rear Unit Identification LED Switch

The rear unit identification LED switch offers a visual reference for service personnel. Figure 4-21 illustrates where the rear UID switch is located.

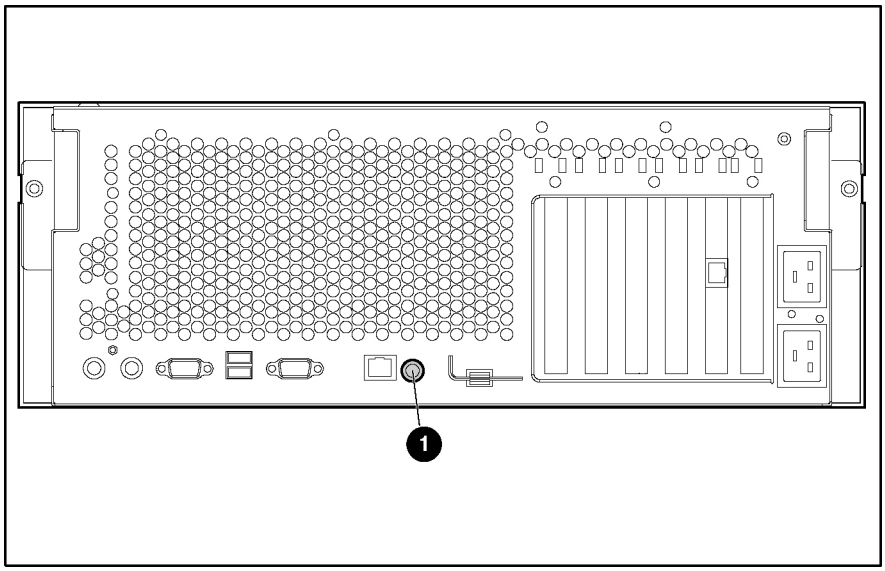

Figure 4-21: Rear Unit Identification LED switch

The rear unit identification LED switch (1) indicates the following conditions:

- Blue = The switch is activated.
- Off = The switch is deactivated.

NC7770 PCI-X Gigabit Server Adapter Jumper

The NC7770 PCI-X Gigabit Server Adapter (PCA part number 284685-003) is equipped with a jumper, which is used to write-protect the contents of the onboard serial EEPROM. The board is shipped standard with the jumper in the Disable position. If a firmware update is required, the firmware update software may request that you move the jumper to the Enable position while the firmware is updated.

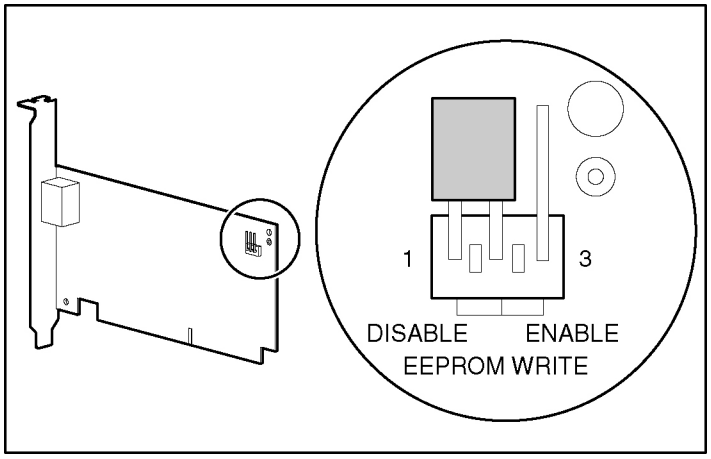

Figure 4-22: NC7770 PCI-X Gigabit Server Adapter jumper settings

5

Troubleshooting

This chapter provides specific troubleshooting information for the HP ProLiant DL580 Generation 2 server. Use it to find details about server startup and operation errors.

For information on LEDs and switches specific to the server, refer to Chapter 4, ‘Connectors, LEDs, and Switches.”

For a more detailed discussion of troubleshooting techniques, diagnostic tools, error messages, and preventative maintenance, refer to the *HP Servers Troubleshooting Guide* included on the Documentation CD that ships with the server.

WARNING: A risk of personal injury exists from hazardous energy levels. The installation of options and the routine maintenance and service of this product shall be performed by individuals who are knowledgeable about the procedures, precautions, and hazards associated with equipment containing hazardous energy circuits.

When the Server Does Not Start

This section provides systematic instructions on what to try and where to go for help for the most common problems encountered during initial POST. The server must first complete this test each time you power up, before it can load the operating system and start running software applications.

WARNING: A risk of personal injury exists from hazardous energy levels. The installation of options and the routine maintenance and service of this product shall be performed by individuals who are knowledgeable about the procedures, precautions, and hazards associated with equipment containing hazardous energy circuits.

If the server does not start:

1. Be sure that the server and monitor are plugged into a working outlet.
2. Be sure that the power source is working properly:
   a. Check the status using the system power LED.
   b. Be sure that the Power On/Standby button was pressed firmly.
3. Be sure that the power supplies are working properly by checking the power supply LEDs.

   NOTE: For more information about the location and status of LEDs, refer to Chapter 4, "Connectors, LEDs, and Switches." For more information about power, refer to the *Servers Troubleshooting Guide*.

4. Check the interlock LEDs on the hood label. If any LEDs are amber, reseat the component.
5. If the system does not complete POST or start loading an operating system, refer to the *HP Servers Troubleshooting Guide* for information on loose connections.
6. If the server is rebooting repeatedly, verify that the system is not rebooting due to a problem that initiates an ASR-2 reboot. Some operating systems reboot the server when an error occurs. This is the default in the Windows 2000 operation system.
7. Restart the server.

   IMPORTANT: If the server does not restart, proceed to the section, "Diagnostic Steps."

8. Check the server for the following normal power-up sequence to be sure that the system meets the minimal hardware requirements and is powered up during normal operations:
   a. The power button LED turns from standby (amber) to on (green).
   b. The fans start up. It is normal for the fans to initially run at full speed and then slow down.
9. View the monitor for the following messages; be sure the system meets the minimal hardware requirements and is powered up during normal operations:
   a. ProLiant logo
   b. BIOS information

c. Copyright information

d. Processor initialization

e. Multi-initiator configuration

IMPORTANT: Select the multi-initiator configuration utility (**ctrl-a**) only to support HP storage and clustering options.

f. PXE initialization

g. Option ROMs

h. SCSI devices

10. The operating system loads to complete the boot process.

If the server completes POST and attempts to load the operating system, go to the "Problems After Initial Boot" section in this chapter.

Diagnostic Steps

If the server does not power up, or powers up but does not complete POST, answer the questions in Table 5-1 to determine appropriate actions based on the symptoms observed. The flow of questions reflects the usual flow of events during a power-on sequence. A flow chart following this table illustrates the recommended diagnostic steps and decision options.

According to the answers you give, you will be directed to an appropriate secondary table in this section. The table outlines possible reasons for the problem, options available to assist in diagnosis, possible solutions, and references to other sources of information.

Table 5-1: Diagnostic Steps

Question	Action
Question 1: Is the system power LED off?	If no, continue to question 2. If yes, refer to Table 5-2.
Question 2: Is the system power LED green?	If yes, continue to question 3. If no, refer to Table 5-3.
Question 3: Is the external health LED green?	If yes, continue to question 4. If no, refer to Table 5-4.
Question 4: Is the internal health LED green?	If yes, continue to question 5. If no, refer to Table 5-5.
Question 5: Is the monitor displaying information?	If yes, use the POST messages for further diagnosis. Refer to Table H-6 for details. If no, refer to Table 5-6.

Table 5-2: Is the System Power LED Off?

Answer	Possible Reasons	Possible Solutions
Yes, it is off	The system is not connected to AC power, or no AC power is available.	Be sure that the power cord is connected to the power supply.
	A power supply problem exists. The power supply may not be connected or inserted properly, it may have a damaged connector, or it may have failed.	Be sure that the power supply is undamaged and fully seated, and then be sure that the power supply LED is green when you power up the server. Refer to Chapter 4, "Connectors, LEDs, and Switches," for locations and states.
	A broken connection exists between the front panel LED assembly and the removable media board.	Be sure that the power switch cable assembly is inserted properly to the removable media board.
	The front panel LED assembly has failed.	Refer to the *HP Servers Troubleshooting Guide* for further options regarding power problems and general hardware problems.
No		If the system power button LED is amber, press the Power On/Standby button. Refer to Table 5-3.

Note: For LED locations and functions, refer to Chapter 4, "Connectors, LEDs, and Switches." For cabling configurations, refer to the setup and installation guide.

Table 5-3: Is the System Power LED Green?

Answer	Possible Reasons	Possible Solutions
No, it is off	Power On/Standby button has not been pressed firmly.	Firmly press the power button.
	A power supply problem exists. The power supply may not be connected or inserted properly, it may have a damaged connector, or it may have failed.	Be sure that the power supply is undamaged, the power supply is fully seated, and the power supply LED is green.
	The system may have experienced a short.	Check for bent connector pins and improperly seated expansion boards.
	The front panel LED assembly has failed.	Be sure that the front panel LED assembly cable is connected to the power backplane.
Yes		If the system power button LED is green, refer to Table H-4.

Note: For LED locations and functions, refer to Chapter 4, "Connectors, LEDs, and Switches." For cabling configurations, refer to the setup and installation guide.

Table 5-4: Is the External Health LED Green?

Answer	Possible Reasons	Possible Solutions
No, it is amber	One power supply has failed; therefore, power supply redundancy is lost.	Be sure that each installed power supply is securely connected to an AC power source.
		Locate the amber power supply LED to identify the failed power supply.
		Contact an authorized service provider for replacement parts and service.
No, it is red	All installed power supplies have experienced a failure.	Remove all AC power from power supplies and reconnect to clear the error condition.
		Replace the power supply.
Yes		If the external health LED is green, refer to Table H-5.

Note: For LED locations and functions, refer to Chapter 4, "Connectors, LEDs, and Switches." For cabling configurations, refer to the setup and installation guide.

Table 5-5: Is the Internal Health LED Green?

Answer	Possible Reasons	Possible Solutions
For component failure identification (amber LED), check the hood label.		
No, it is amber	A processor is in pre-failure condition. A DIMM is in pre-failure condition. One memory bank is valid, but another bank is missing a DIMM. One memory bank is valid, but another bank has mismatched DIMMs installed. One memory bank is valid, but another bank has an unsupported DIMM type installed. A redundant fan has failed.	Use internal component failure LEDs to identify: • Missing components • Degraded components • Failed components • Improperly installed components For corrective procedures, refer to the maintenance and service guide on the Documentation CD that ships with the server.
Answer	**Possible Reasons**	**Possible Solutions**
No, it is red	A processor has failed. Processor 1 is not installed. A processor is an unsupported type. Processor voltage requirements are mismatched. Processor does not have an associated PPM installed. A PPM has failed. A DIMM has experienced a multibit error. DIMM pairs have mismatched DIMMs. DIMMs are missing. DIMMs are an unsupported type. A required fan has failed. A thermal event has occurred.	Use internal component failure LEDs to identify: • Missing components • Failed components • Improperly installed components • Thermal event
	A component is not properly seated.	Check the interlock LEDs on top of the front access panel. Be sure that all components are seated securely.
	Memory board is missing.	Add the memory board.
Yes		If the internal health LED is green, refer to Table H-6.
Note: For LED locations and functions, refer to Chapter 4, “Connectors, LEDs, and Switches.”		

Table 5-6: Is the Monitor Displaying Information?

Answer	Possible Reasons	Possible Solutions
No	The monitor may not have power.	Be sure that the monitor AC power cord is plugged in and that the monitor power button has been pressed.
	Video may not be connected properly.	If a video card is installed, be sure that the video cable is properly connected.
		If a Remote Insight Lights-Out Edition II expansion board is installed, be sure that the video cable is connected to the video connector on this expansion board.
		Check the video connections. Refer to the *Servers Troubleshooting Guide* for video problems.
	Non-volatile RAM (NVRAM) may be corrupted.	Clear NVRAM. Refer to Caution at the end of this table. Refer to Chapter 4 for the correct switch setting.
		Are there any audible indicators, such as a series of beeps? A series of beeps is the audible signal indicating the presence of a POST error message. Refer to the *Servers Troubleshooting Guide* for a complete description of each beep sequence and the corresponding error messages.
	The system ROM and redundant ROM may be corrupted.	If the system ROM and redundant ROM are corrupt, refer to "ROMPaq Disaster Recovery" in this chapter for instructions on performing a recovery procedure.
Yes		Video is available for diagnosis. Determine the next action by observing POST progress and error messages. Refer to the *HP Servers Troubleshooting Guide* for a complete description of each POST error message.

CAUTION: Clearing non-volatile RAM (NVRAM) deletes the configuration information, and data loss could occur if the operation is not performed properly.

Problems After Initial Boot

Once the server has passed POST, you may still encounter errors, such as an inability to load the operating system. Use Table 5-7 to troubleshoot server installation problems that occur after the initial boot.

Refer to the *HP Servers Troubleshooting Guide* for more information of software problems.

Table 5-7: Problems After Initial Boot

Problem	Possible Reasons	Possible Solutions
System cannot load ProLiant Essentials Foundation Pack.	ProLiant Essentials Foundation Pack requirement not performed.	Check the ProLiant Essentials Release Notes provided in the ProLiant Essentials Online Reference Information on the ProLiant Essentials Foundation Pack.
	CD-ROM drive is not properly seated.	Reseat CD-ROM drive.
	Insufficient memory is available.	A rare Insufficient Memory message may display the **first** time ProLiant Essentials is booted on certain unconfigured systems. Cold-boot the machine with the ProLiant Essentials Foundation Pack inserted in the CD-ROM drive to correct the problem.
	Existing software is causing conflict.	Run the System Erase Utility. Read the Caution at the end of this table. Refer to the instructions in the *HP Servers Troubleshooting Guide*.

continued

Table 5-7: Problems After Initial Boot *continued*

Problem	Possible Reasons	Possible Solutions
ProLiant Essentials fails during installation.	Error occurs during installation.	Follow the error information provided. If it is necessary to reinstall, run the System Erase Utility. Read the Caution at the end of this table. Refer to the instructions in the *HP Servers Troubleshooting Guide*.
	CMOS is not cleared.	Run the System Erase Utility. Read the Caution at the end of this table. Refer to the instructions in the *HP Servers Troubleshooting Guide*.
Server cannot load operating system.	Required operating system step is missed.	Follow these steps: 1. Note at which phase the operating system has failed. 2. Remove any loaded operating system. 3. Refer to the operating system documentation. 4. Install the operating system again.
	Installation problem has occurred.	Refer to the operating system documentation and to the ProLiant Essentials Release Notes on the ProLiant Essentials for Servers CD. Run RBSU and check the OS Selection menu.
	Problem is encountered with the hardware you have added to the system.	Refer to the documentation provided with the hardware. Refer to the setup and installation guide to identify correct SCSI bus cabling configuration for the unit.
	Problem is encountered with hardware added to a new configure-to-order system (where available).	You must complete the factory-installed operating system software installation before adding new hardware to the system. Be sure you are following the instructions provided in the *Factory-Installed Operating System Software Installation Guide*. Remove the new hardware and complete the software installation. Then, reinstall the new hardware.

CAUTION: The System Erase Utility causes loss of all configuration information, as well as loss of existing data on all connected hard drives. Before performing this operation, refer to the *HP Servers Troubleshooting Guide* for information on the System Erase Utility and the associated warning.

Refer to the *HP Servers Troubleshooting Guide* for the following:

- Information you need to collect when diagnosing software problems and to provide when contacting support
- Instructions on how to upgrade the operating system and its drivers
- Information about available recovery options and advice on minimizing downtime

ROMPaq Disaster Recovery

A corrupted system ROM requires that you recreate the ROM BIOS by a process called disaster recovery. This operation can be accomplished only when the system is in disaster recovery (emergency repair boot) mode. When both system ROMs are corrupt, the system defaults to disaster recovery mode automatically and the server emits two extended beeps.

IMPORTANT: Before performing this operation, refer to the *HP Servers Troubleshooting Guide* for complete instructions on disaster recovery.

To perform ROMPaq disaster recovery:

1. Power down the server. Refer to Chapter 2, "Removal and Replacement Procedures."
2. Extend the server from the rack. Refer to Chapter 2, "Removal and Replacement Procedures."
3. Remove the rear access panel. Refer to Chapter 2, "Removal and Replacement Procedures."
4. Set system maintenance switches 2 and 6 to the on position. For the location of these switches, refer to Chapter 4, "Connectors, LEDs, and S witches."
5. Power up the server. After the system powers up, it repeatedly emits two long beeps.
6. Power down the server again. If necessary, perform a forced shutdown by pressing the power button for four seconds.
7. Set system maintenance switches 2 and 6 back to the default position (off).
8. Replace the access panels. Refer to Chapter 2, "Removal and Replace ment Procedures."
9. Restore the server in the rack. Refer to Chapter 2, "Removal and Replacement Procedures."
10. Power up the system.
11. Insert a ROMPaq diskette with the latest system ROM that you have downloaded by following the support link on the product website at www.hp.com.

IMPORTANT: The ROMPaq will flash both sides of the redundant ROM. This process may take up to ten minutes.

12. Wait until the server emits three rising beeps, indicating the completion of the ROM flash process.
13. Restart the server.

Other Information Resources

Refer to the following additional information for help.

Table 5-8: Troubleshooting Resources

Resource	Description
HP Servers Troubleshooting Guide	This is a resource for obtaining troubleshooting information that is beyond the scope of this document. It includes general hardware and software troubleshooting information for all ProLiant servers, a complete list of error messages along with explanations of probable causes, and a list of remedial measures. This guide resides on the Documentation CD that ships with the server. To be sure that you have the most up-to-date copy of the *HP Servers Troubleshooting Guide* document, visit the product website at www.hp.com.
Other Online Documentation	Product Bulletin QuickSpecs OS Support Matrix

For additional information on warranties and service and support upgrades (CarePaq services), visit the product website at www.hp.com.

6

Specifications

This chapter provides specifications for the HP ProLiant DL580 Generation 2 server.

Table 6-1: System Unit Specifications

Dimensions	
Height	17.6 cm (6.88 in)
Width	48.3 cm (19.0 in)
Depth	67.3 cm (26.5 in)
Weight	29.9 kg, minimum (66 lb, minimum) 44.5 kg, maximum (98 lb, maximum)
International input requirements	
Rated input voltage	200 V to 240 V
Rated input frequency	50 Hz to 60 Hz
Rated input current	6 A
U.S. input requirements	
Rated input voltage	100 V to 120 V
Rated input frequency	50 Hz to 60 Hz
Rated input current	12 A
Power supply output power	
Rated steady-state power	800 W
Maximum peak power	800 W
Temperature range	
Operating	10° to 35°C (50° to 95°F)
Non-operating	-30° to 60°C (-20° to 140°F)
Relative humidity (non-condensing)	
Operating	20% to 80%
Non-operating	5% to 90%
Maximum wet bulb temperature	38.7°C (101.7°F)
Heat dissipation	4000 BTU/Hr

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