

User Service Guide

HP Integrity rx2620 Server



Manufacturing Part Number: AD117-9003A

First Edition

August 2006

© Copyright 2006 Hewlett-Packard Development Company, L.P.

Legal Notices

Copyright Notices. © Copyright 2006 Hewlett-Packard Development Company, L.P.

The information contained herein is subject to change without notice.

The only warranties for HP products and services are set forth in the express warranty statements accompanying such products and services. Nothing herein should be construed as constituting an additional warranty. HP shall not be liable for technical or editorial errors or omissions contained herein.

Printed in U.S.A.

Intel, Intel Inside, Itanium, and the Intel Inside logo are trademarks or registered trademarks of Intel Corporation or its subsidiaries in the United States and other countries.

Linux is a U.S. registered trademark of Linus Torvalds.

Microsoft and Windows are U.S. registered trademarks of Microsoft Corporation.

About This Document

Intended Audience	13
New and Changed Information in This Edition	13
Publishing History	13
Document Organization	14
Typographic Conventions	14
HP-UX Release Name and Release Identifier	15
Related Documents	15
HP Encourages Your Comments	16

1. Introduction

Server Overview	18
Server Dimensions	19
Server Components	19
Processor	19
Memory	19
PCI Riser	19
Internal Core I/O	20
External Core I/O	20
Power Supply Unit	20
System Board Manageability	20
Enhanced Server Manageability Using the Integrated Lights Out Management Processor	20
Hard Disk Drives	21
System Board Components	22
Processor Sockets	23
Processor Bus	23
ZX1 I/O and Memory Controller	23
Memory	23
I/O Bus Interface	25
Processor Dependent Hardware Controller	26
Dual Serial Controller	26
Field Programmable Gate Array	26
Baseboard Management Controller	27
SCSI Controller	27
IDE Interface	27
1 Gb System LANs A and B	28
USB Connectors	28
Data Pathing Information	28

2. Controls, Ports, and LEDs

Front Panel	32
Hot-Plug Disk Drive Indicators	34
Rear Panel	36
LAN Gb A Connector	38
LAN Gb B Connector	39
Management Processor LAN LEDs (Optional)	40

Contents

3. Powering Off and Powering On the Server

Power States	42
Powering Off the Server	42
Powering Off the Server Using the iLO MP	42
Powering Off the Server Manually	43
Powering On the Server	43
Powering On the Server Using the iLO MP	43
Powering On the Server Manually	44

4. Removing and Replacing Components

ESD Information	46
Service Tools Required	46
Location of Internal Components and Connectors	47
Removing and Replacing System Top Metal Cover and Bezels	49
Rack-Mount System	49
Removing and Replacing the Top Metal Cover	50
Removing and Replacing the Front Bezel	52
Removing and Replacing Hot-Swap and Hot-Plug Devices	53
Removing and Replacing Server Fans	54
Removing and Replacing the Power Supply	56
Removing and Replacing an Internal Hard Disk Drive	58
Removing and Replacing Internal Components	61
Removing and Replacing Airflow Guides	61
Removing and Replacing the Memory Airflow Guide	62
Removing and Replacing the Processor Airflow Guide	62
Removing and Replacing Memory DIMMs	65
Removing and Replacing a Processor	68
Removing and Replacing the System Battery	77
Removing and Replacing PCI Card Cage	79
Removing and Replacing PCI Cards	81
Removing and Replacing the PCI Backplane	83
Removing and Replacing a Removable Media Drive	85
Removing and Replacing iLO MP Hardware	87
Removing and Replacing the iLO MP Battery	89
Removing and Replacing the LED Status Panel	91
Removing and Replacing the System Board	92
Removing and Replacing the Power Supply Interface Module	98
Removing and Replacing the Hard Disk Drive (SCSI) Backplane	101

5. Troubleshooting

Troubleshooting Tips	108
Troubleshooting Methodology	108
Possible Problems	109
The System Will Not Power-Up	109
The System Will Not Boot	109
The System Has Intermittent Failures	110

The System LED or Diagnostic LEDs are Not On and No Error Messages Appear	111
The Server Powers Off but Doesn't Restart	111
Troubleshooting and FRU identification	113
Verifying Hard Disk Drive Operation	115
Identifying and Diagnosing Hardware Problems	116
Power and System LEDs	116
Command Line Interface	128
Command Line Interface Menu	128
Troubleshooting Example Using CLI	129
Troubleshooting Example Using CLI	129
System Board Diagnostic LEDs	130
LAN LEDs	131
Front Panel LAN LEDs	131
Rear Panel LAN LEDs	131
Optional Management Processor LAN LEDs	132
Diagnostics	133
Online Diagnostics/Exercisers	133
Offline Support Tool Availability	134
Offline Support Tools List	134
General Diagnostic Tools	135
Fault Management Overview	135
HP-UX Fault Management	135
Recommended Cleaning Procedures	136
Where to Get Help	137
Information to Collect Before you Contact Support	137
Online Support	137
Phone Support	138

A. Parts Information

Field Replaceable Parts View	140
Field Replaceable Parts List	142

B. Booting the Operating System

Operating Systems Supported on HP Integrity Servers	148
Configuring System Boot Options	148
Booting and Shutting Down HP-UX	149
Adding HP-UX to the Boot Options List	150
Standard HP-UX Booting	151
Single-User Mode HP-UX Booting	152
LVM Maintenance Mode HP-UX Booting	154
Shutting Down HP-UX	154
Booting and Shutting Down HP OpenVMS	155
Adding HP OpenVMS to the Boot Options List	155
Booting HP OpenVMS	156
Shutting Down HP OpenVMS	158
Booting and Shutting Down Microsoft Windows	159

Contents

Adding Microsoft Windows to the Boot Options List	159
Booting the Microsoft Windows Operating System	160
Shutting Down Microsoft Windows	161
Booting and Shutting Down Linux	163
Adding Linux to the Boot Options List	163
Booting the Red Hat Enterprise Linux Operating System	164
Booting the SuSE Linux Enterprise Server Operating System	165
Shutting Down Linux	166

C. Utilities

Extensible Firmware Interface Boot Manager	168
EFI Commands	170
EFI/POSSE Commands	172
help	172
baud	175
boottest	176
cpuconfig	177
ioconfig	177
default	178
errdump	178
info	179
lanaddress	185
monarch	185
pdt	186
sysmode	187
Specifying SCSI Parameters	187
Using the SCSI Setup Utility	188
Using the Boot Configuration Menu	194
Paths	194
Using the System Configuration Menu	202
Using the Security Configuration Menu	203
iLO MP	205
Configuring the iLO MP LAN Port IP Address	206
Accessing the iLO MP	207
Configuring the iLO MP LAN Information	209
iLO MP Command Reference	211

Index	213
------------------------	------------

Table 1. Publishing History Details	13
Table 2. HP-UX 11i Releases	15
Table 1-1. Server Dimensions	19
Table 1-2. Memory Array Capacities	25
Table 1-3. Data Pathing - Part 1	28
Table 1-4. Data Pathing - Part 2	29
Table 1-5. Data Pathing - Part 3	30
Table 2-1. Control Panel LEDs and Switches	32
Table 2-2. Power On/Off Button	33
Table 2-3. Hard Disk Drive LED Definitions	34
Table 2-4. Power Supply LED Definitions	35
Table 2-5. DVD Drive LED Definitions	35
Table 2-6. Rear Panel Connectors and Switches	36
Table 2-7. 10/100/1000 base-T ethernet Gb LAN A Connector LEDs	38
Table 2-8. 10/100/1000 base-T ethernet Gb LAN B Connector LEDs	39
Table 2-9. iLO MP LAN LEDs	40
Table 3-1. Power States	42
Table 4-1. Component Locations	47
Table 4-2. Connector Locations	48
Table 5-1. Problem Symptoms Repair Actions	113
Table 5-2. System LED States	116
Table 5-3. Power and System LED States	120
Table 5-4. Diagnostic LEDs Fault and Warning Categories	121
Table 5-5. Unknown Warning	122
Table 5-6. Memory Warnings	122
Table 5-7. System Board Warnings	123
Table 5-8. Fan Warnings	123
Table 5-9. Processor Warnings	124
Table 5-10. Temperature Warnings	124
Table 5-11. Video Warnings	124
Table 5-12. Power Supply Warnings	124
Table 5-13. Unknown Faults	125
Table 5-14. Memory Faults	125
Table 5-15. Firmware Errors	125
Table 5-16. System Board Faults	126
Table 5-17. Fan Faults	126
Table 5-18. Processor Faults	127
Table 5-19. BMC Faults	127
Table 5-20. Temperature Faults	127
Table 5-21. Power Supply Errors	128
Table 5-22. System Board LEDs	130
Table 5-23. Gb LAN A Connector LEDs	131
Table 5-24. Gb LAN B Connector LEDs	132

Tables

Table 5-25. Optional Management Processor LAN LEDs	132
Table 5-26. Online Support Tools List.	134
Table 5-27. Offline Support Tools List	134
Table 5-28. General Diagnostic Tools List	135
Table 5-29. Cleaning	136
Table A-1. Parts List	142
Table C-1. EFI Commands.	170
Table C-2. Communications Parameters	175
Table C-3. HP Integrity rx2620 Slots	194
Table C-4. HP Integrity rx2620 Drives	195
Table C-5. Console Output Devices	199
Table C-6. Console Output Devices	200
Table C-7. Console Output Devices	201
Table C-8. Console Output Devices	202
Table C-9. iLO MP Main Menu Commands and Descriptions.	211
Table C-10. Command Menu Commands and Descriptions	211

Figure 1-1. HP Integrity rx2620 Server (front view)	18
Figure 1-2. HP Integrity rx2620 Server (front view with bezel removed)	18
Figure 1-3. HP Integrity rx2620 Server (rear view).	18
Figure 1-4. System Block Diagram	22
Figure 1-5. Memory Block Diagram	24
Figure 2-1. Front View	32
Figure 2-2. Control Panel.	32
Figure 2-3. Hot-Plug Disk Drive LED Indicators.	34
Figure 2-4. Power Supply LEDs	34
Figure 2-5. DVD LEDs	35
Figure 2-6. Rear View	36
Figure 2-7. 10/100/1000 base-T ethernet Gb LAN A Connector LEDs	38
Figure 2-8. 10/100/1000 base-T ethernet Gb LAN B Connector LEDs	39
Figure 2-9. iLO MP LAN LEDs	40
Figure 4-1. Internal Physical Layout	47
Figure 4-2. System Board Connectors and Slots	48
Figure 4-3. Release the Rack Latches	50
Figure 4-4. Removing and Replacing the Top Metal Cover	51
Figure 4-5. Aligning the Top Metal Cover	51
Figure 4-6. Closing the Top Metal Cover	52
Figure 4-7. Front Bezel Retaining Clip	52
Figure 4-8. Replacing the Front Bezel	53
Figure 4-9. Fan 1A or Fan 1B Removal	54
Figure 4-10. Fan 2 Removal	55
Figure 4-11. Fan 3 Removal	55
Figure 4-12. Releasing the Power Supply Retaining Clip.	56
Figure 4-13. Removing the Power Supply	57
Figure 4-14. Replacing the Power Supply	57
Figure 4-15. Unlocking the Disk Drive (if necessary).	59
Figure 4-16. Releasing the Disk Drive.	59
Figure 4-17. Removing the Disk Drive.	60
Figure 4-18. Airflow Guides Locations	61
Figure 4-19. Removing the Memory Airflow Guide.	62
Figure 4-20. Removing the Processor Airflow Guide	63
Figure 4-21. Open the Release Clip	63
Figure 4-22. Remove the Front Airflow Guide	64
Figure 4-23. DIMM Slot Identification	66
Figure 4-24. Inserting DIMM into Slot	68
Figure 4-25. Processor Locations.	69
Figure 4-26. Processor Location on System Board.	70
Figure 4-27. Removing the Processor Airflow Guide	71
Figure 4-28. Unscrew the Captive Screws.	71
Figure 4-29. Slide Sequencing Retainer Plate.	72

Figures

Figure 4-30. Unlock Processor Module Locking Mechanism	73
Figure 4-31. Unlocked ZIF Socket Lock	74
Figure 4-32. Processor Alignment Pins	74
Figure 4-33. CPU Slot Alignment Holes	75
Figure 4-34. Installing the Processor Module	75
Figure 4-35. Locking the Processor Module in Place	76
Figure 4-36. Slide the Sequencing Retainer Plate	76
Figure 4-37. Secure the Captive Screws	77
Figure 4-38. Removing the System Battery	78
Figure 4-39. Removing the PCI Cage	80
Figure 4-40. Removing the PCI Cage Cover	80
Figure 4-41. Installing a PCI Slot Cover	82
Figure 4-42. Installing a PCI Card	83
Figure 4-43. Removing the PCI Backplane	84
Figure 4-44. Replacing the PCI Backplane	84
Figure 4-45. Removable Media Drive Removal/Replacement	86
Figure 4-46. Removing the iLO MP Card	87
Figure 4-47. Replacing the iLO MP Blank	88
Figure 4-48. Removing the iLO MP Battery	90
Figure 4-49. Removing the LED Status Panel	91
Figure 4-50. Remove System Board Mounting Screws	93
Figure 4-51. Remove the System Board Mounting Screw	93
Figure 4-52. Remove the System Board	94
Figure 4-53. Slide System Board into Chassis	94
Figure 4-54. Align the System Board PCI Connector	95
Figure 4-55. Slide System Board in Chassis	96
Figure 4-56. Install the Rear Panel Mounting Screws	96
Figure 4-57. Reinstall the Power Connectors	97
Figure 4-58. Power Cables and Holding Clips	99
Figure 4-59. Remove the Mounting Screw	99
Figure 4-60. Remove the PSI Interface Module	100
Figure 4-61. Replacing the Power Supply Interface Module	100
Figure 4-62. Securing the Power Supply Interface Module and Cables	101
Figure 4-63. Open the Fan Power Bridge	102
Figure 4-64. Disconnect SCSI Cables	102
Figure 4-65. Remove Mounting Screws	103
Figure 4-66. Remove the SCSI Backplane	104
Figure 4-67. Remove the SCSI Backplane from Chassis	104
Figure 5-1. LED Apertures on Hard Disk Drive	115
Figure 5-2. Diagnostic LEDs	121
Figure 5-3. Location of the STBY, F/W and BMC LEDs	130
Figure A-1. Parts Identification	140
Figure A-2. Tower Parts	141

Figure C-1. EFI Boot Sequence	168
Figure C-2. Password Reset Jumper	204

About This Document

This document provides information and instructions on servicing and troubleshooting the HP Integrity rx2620 server.

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

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

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

Intended Audience

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

This document is not a tutorial.

New and Changed Information in This Edition

This guide has been updated with:

- This document is being updated as part of a processor upgrade to the HP Integrity rx2620 server.

Publishing History

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

Table 1 **Publishing History Details**

Document Manufacturing Part Number	Operating Systems Supported	Supported Product Versions	Publication Date
AD117-9003A	HP-UX, Windows®, Linux®, OpenVMS®	rx2620	August 2006

Document Organization

This guide is divided into the following chapters.

Chapter 1	Introduction Use this chapter to learn about the features and specifications of the HP Integrity rx2620 server.
Chapter 2	Controls, Ports, and LEDs Use this chapter to learn about the locations of the external controls, ports, and LEDs on the server.
Chapter 3	Powering Off and Powering On the Server Use this chapter to learn about powering the server off and on.
Chapter 4	Removing and Replacing Components Use this chapter to learn how to remove and replace the field replaceable components (FRUs) on the server.
Chapter 5	Troubleshooting Use this chapter to learn about troubleshooting problems you may encounter with the server.
Appendix A	Parts Information Use this appendix to learn the location and part numbers of the server components.
Appendix B	Operating System Boot and Shutdown Use this appendix to learn about booting and shutting down the operating system on the server.
Appendix C	Utilities Use this appendix for information regarding the utilities available for the server.
Appendix D	Console Setup and Connection Use this appendix to learn about the process for setting up a console session and connecting to the server.

Typographic Conventions

This document uses the following conventions.

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

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

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

Book Title The title of a book. On the Web and on the Instant Information CD, it may be a hot link to the book itself.

KeyCap The name of a keyboard key or graphical interface item (such as buttons, tabs, and menu items). Note that **Return** and **Enter** both refer to the same key.

Emphasis Text that is emphasized.

Bold Text that is strongly emphasized.

Bold The defined use of an important word or phrase.

ComputerOut Text displayed by the computer.

UserInput Commands and other text that you type.

Command	A command name or qualified command phrase.
Option	An available option.
Screen Output	Example of computer screen output.
[]	The contents are optional in formats and command descriptions. If the contents are a list separated by , you must select one of the items.
{ }	The contents are required in formats and command descriptions. If the contents are a list separated by , you must select one of the items.
...	The preceding element may be repeated an arbitrary number of times.
	Separates items in a list of choices.

HP-UX Release Name and Release Identifier

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

Table 2 HP-UX 11i Releases

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

Related Documents

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

Web Site for HP Technical Documentation:

<http://docs.hp.com>

Server Hardware Information:

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

Windows Operating System Information

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

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

Diagnostics and Event Monitoring: Hardware Support Tools

Complete information about HP's hardware support tools, including online and offline diagnostics and event monitoring tools, is at the <http://docs.hp.com/hpux/diag/> Web site. This site has manuals, tutorials, FAQs, and other reference material.

Web Site for HP Technical Support:

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

Books about HP-UX Published by Prentice Hall

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

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

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

HP Encourages Your Comments

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

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

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

1 Introduction

The HP Integrity rx2620 server is a 2-socket server based on the Itanium® processor architecture. The server supports the following operating systems: Microsoft Windows®, HP-UX, Linux®, and OpenVMS. The server is available in either rack-mount or pedestal configurations. The server accommodates up to 12 DIMMs and internal peripherals including disks and a DVD. Its high availability features include hot-swap fans, power supplies, and hot-plug disk drives.

This chapter addresses the following topics:

- “Server Overview” on page 18.
- “Server Components” on page 19.
- “System Board Components” on page 22.

Server Overview

The HP Integrity rx2620 server chassis is a 2U Electronics Industry Association (EIA) enclosure, which mounts in any standard 19 inch EIA rack. All external cabling connects from the rear of the enclosure. With the server installed in the rack, service access is enhanced by the use of chassis slides. It has bays to accommodate 1 + 1 redundant, hot-swappable power supplies, accessible from the front of the product. There are three low-profile hot swappable hard disk drives accessible from the front, and a slim-line optical drive for a CD-R, CD-RW, DVD-R or DVD+RW. There are N + 1 redundant, hot-swappable server fans, all clearly identified and easily accessible. Server status indication, a power switch, server locator switch and LED are located in the front within the bezel. There is also a server locator switch and LED in the back of the server for easy identification in the rack. See Figure 1-1, Figure 1-2, and Figure 1-3 for front and back views of the server.

Figure 1-1 HP Integrity rx2620 Server (front view)

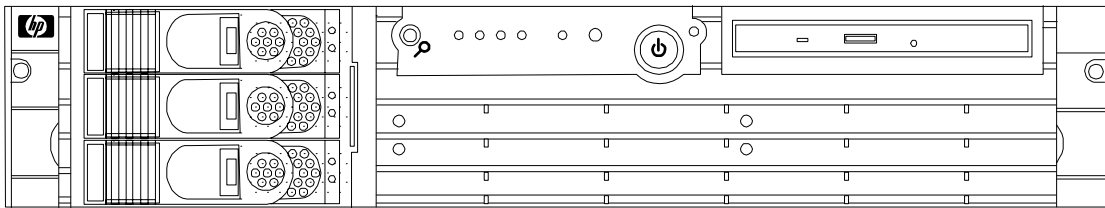


Figure 1-2 HP Integrity rx2620 Server (front view with bezel removed)

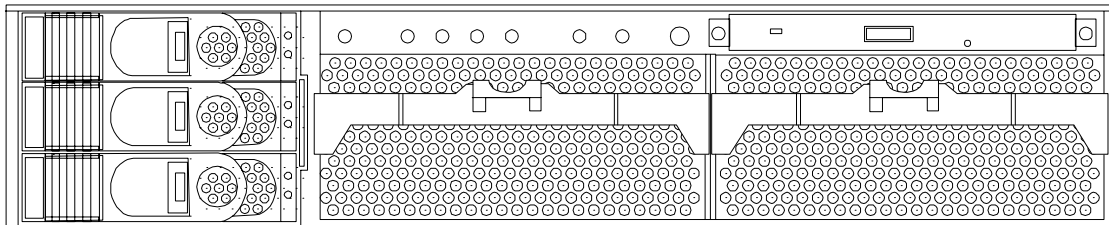
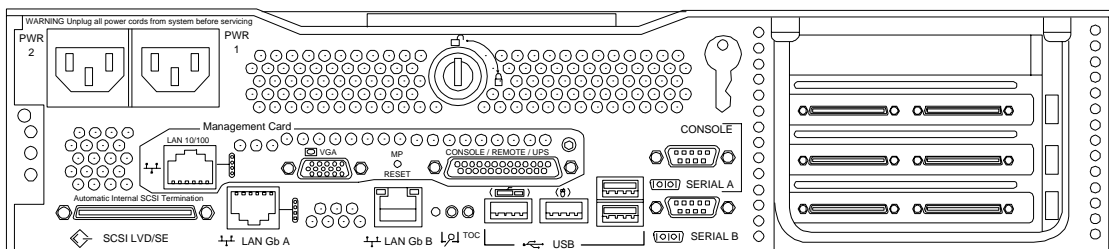


Figure 1-3 HP Integrity rx2620 Server (rear view)



Server Dimensions

Table 1-1 shows the dimensions and weight of the rx2620 server.

Table 1-1 Server Dimensions

Dimensions	Value
Rack units	2U
Height	8.6 cm (3.4 in.)
Width	48.3 cm (19.0 in.)
Depth	67.9 cm (26.8 in.)
Weight	
• Min	17.5 kg (38.6 lb.)
• Max	22.2 kg (49.0 lb.)

Server Components

The following components make up the HP Integrity rx2620 server.

Processor

- 1.4 GHz/12 MB L3 cache dual-core processor
- 1.6 GHz/18 MB L3 cache dual-core processor

Memory

- 12 memory DIMM slots
- 256 MB, 512 MB, 1 GB, 2 GB, and 4 GB standard 184 pins 2.5 V DDR1, CL2, registered, ECC
- 133 MHz memory bus frequency, 266 MTransfers/s data, 8.5 Gb/s peak data bandwidth
- Minimum memory size of 1 GB with four 256 MB DIMMs
- Maximum memory size of 32 GB with eight 4 GB DIMMs
- Upgrades must be made by quads of DIMMs
- DIMMs loaded by quads enable interleaved mode and chip spare

PCI Riser

- Four independent PCI-X 133 MHz 64 bit, 3.3 V, 15 W slots. There is no 5 V card and hot plug support

NOTE Some 25 W cards are supported. See the following slot matrix (by server):

<http://www.docs.hp.com/en/SSM1-EL/slotmatrix.htm>

For more information regarding specific I/O cards, see:

<http://www.docs.hp.com/en/netcom.html>

Internal Core I/O

- Dual channel SCSI U320 interface, two internal 68-pin connectors, one 68-pin external connector
- The three internal SCSI drive connectors are the 80-pin type and provide drive electrical hot-plug capability
- One internal IDE connector for a slim-line optical device (CD and DVD)

External Core I/O

- One SCSI U320 68 pin connector
- Two 10/100/1000Base-T ethernet LAN connectors for twisted-pair cable
- Four USB 2.0 ports
- Two general purpose or 9-pin serial ports, 16550 compatible

Power Supply Unit

- 600 W output power
- The power supply is split in a front-end block (the actual power supply case) that converts the line voltage into a high DC voltage. Back-end voltage regulation modules (on the system board) step down the front end DC voltage to the required voltages
- Redundant and hot-pluggable power supplies (front-end block only)

System Board Manageability

- Baseboard Management Controller (BMC)
- Temperature monitoring and fans regulation by BMC
- BMC manageability console shared with server console and general purpose serial port
- IPMI protocol for communication between BMC/server/iLO MP hardware
- BMC hardware diagnostics display on the front status panel
- Locator front/rear LEDs
- Field replacement units monitoring by BMC
- Serial port for local and modem console
- Wake-on-LAN and Alert-on-LAN capabilities from the 10/100/1000 BT LAN port

Enhanced Server Manageability Using the Integrated Lights Out Management Processor

The integrated Lights Out Management Processor (iLO MP) provides the following enhancements to server manageability:

- Web Graphical User Interface (GUI)
- LAN telnet console
- Web console

- Serial port for local console
- Serial port for modem console
- Duplication of console screen content across all consoles
- VGA and 2D graphics display
- Advanced Features:
 - Secure Shell (SSH) access
 - Group actions through the HP Systems Insight Manager (HPSIM)
 - Directory-based authentication and authorization (LDAP)

Hard Disk Drives

The following hard disk drives are supported by the rx2620 server:

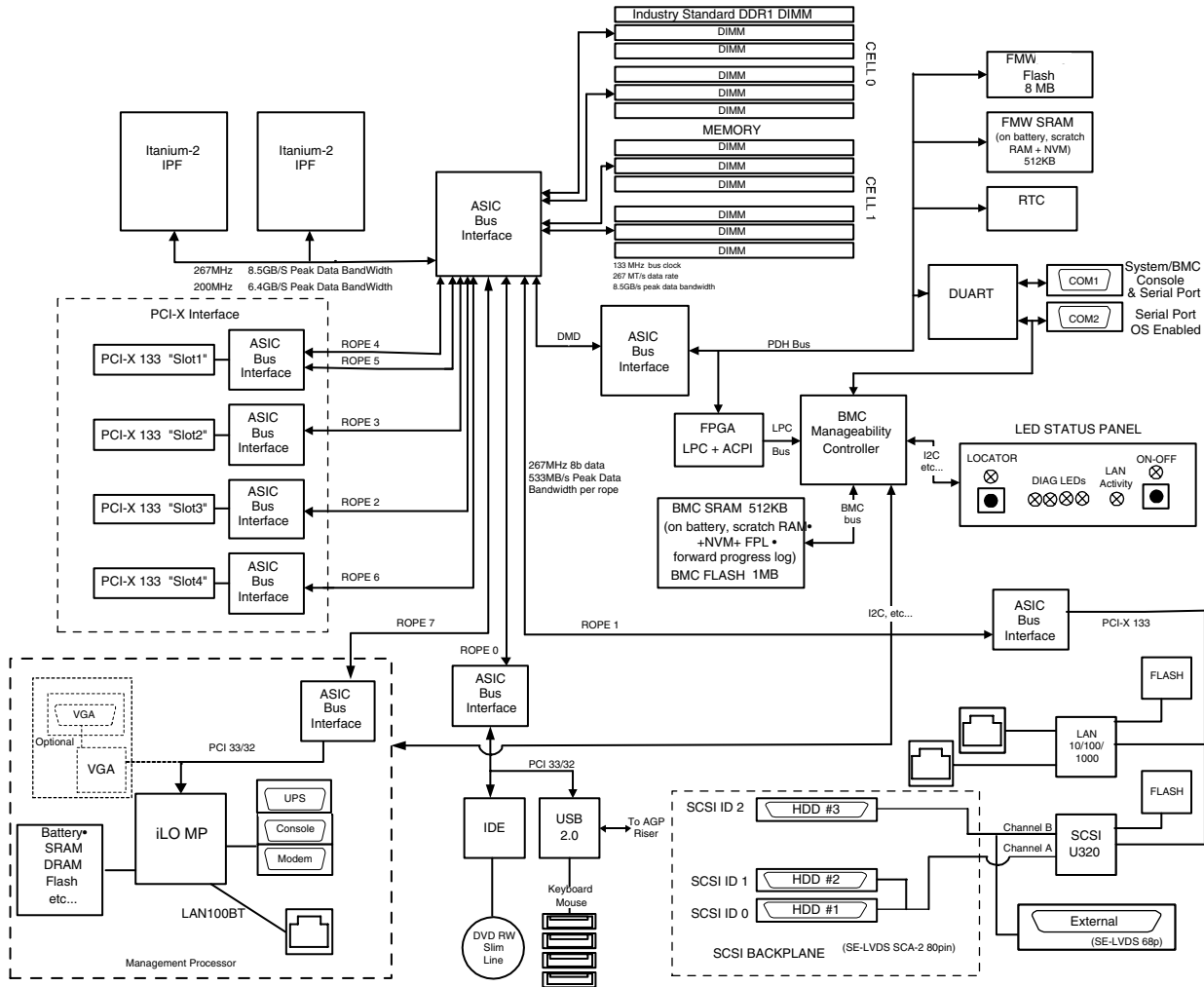
- 36 GB 15K HotPlug Ultra320 SCSI drive
- 73 GB 15K HotPlug Ultra320 SCSI drive
- 146 GB 10K HotPlug Ultra320 SCSI drive
- 300 GB 10K HotPlug Ultra320 SCSI drive

The server holds up to three hard disk drives

System Board Components

This section provides a block diagram of the system board and descriptions of key components (integrated circuits) on the board. Figure 1-4 shows a block diagram of the rx2620 server.

Figure 1-4 System Block Diagram



The following describes the main components of the system board:

- “Processor Sockets” on page 23
- “Processor Bus” on page 23
- “ZX1 I/O and Memory Controller” on page 23
- “Memory” on page 23
- “I/O Bus Interface” on page 25
- “Processor Dependent Hardware Controller” on page 26

- “Dual Serial Controller” on page 26
- “Field Programmable Gate Array” on page 26
- “Baseboard Management Controller” on page 27
- “SCSI Controller” on page 27
- “IDE Interface” on page 27
- “1 Gb System LANs A and B” on page 28
- “USB Connectors” on page 28
- “Data Pathing Information” on page 28

Processor Sockets

The system board consists of two zero insertion force (ZIF) processor sockets, the core electronic complex (CEC), and circuitry for clock and power generation and distribution, boundary scan, in-target probe, and debug.

The front side bus (FSB) is the IA64 processor bus, based on bus protocol from Intel. Unlike previous PA-RISC microprocessors that utilized HP's proprietary processor bus, this processor is designed to utilize the FSB. This allows processor field replaceable units (FRUs) to be dropped in, provided that electrical and mechanical compatibility and support circuitry exist. For the purposes of this document, a FRU consists of a single processor with power pod, and the heatsink assembly.

Each processor plugs directly into, and is powered by its own 12 V to 1.2 V power pod. Other power for the system board comes from multiple on-board DC to DC converters. Each processor is attached to the board through a ZIF socket and the entire FRU secured by a heatsink.

Processor Bus

The FSB in this product runs at 200 MHz. Data on the FSB are transferred at a double data rate, which allows a peak FSB bandwidth of 6.4 Gb/sec.

ZX1 I/O and Memory Controller

The HP Integrity rx2620 server supports the following features of the ZX1 I/O and memory controller chip

- 8.5 Gb/s peak I/O bandwidth
- Seven communication paths
- Peak memory bandwidth of 8.5 Gb/s
- Two memory cells, 144 data bits each

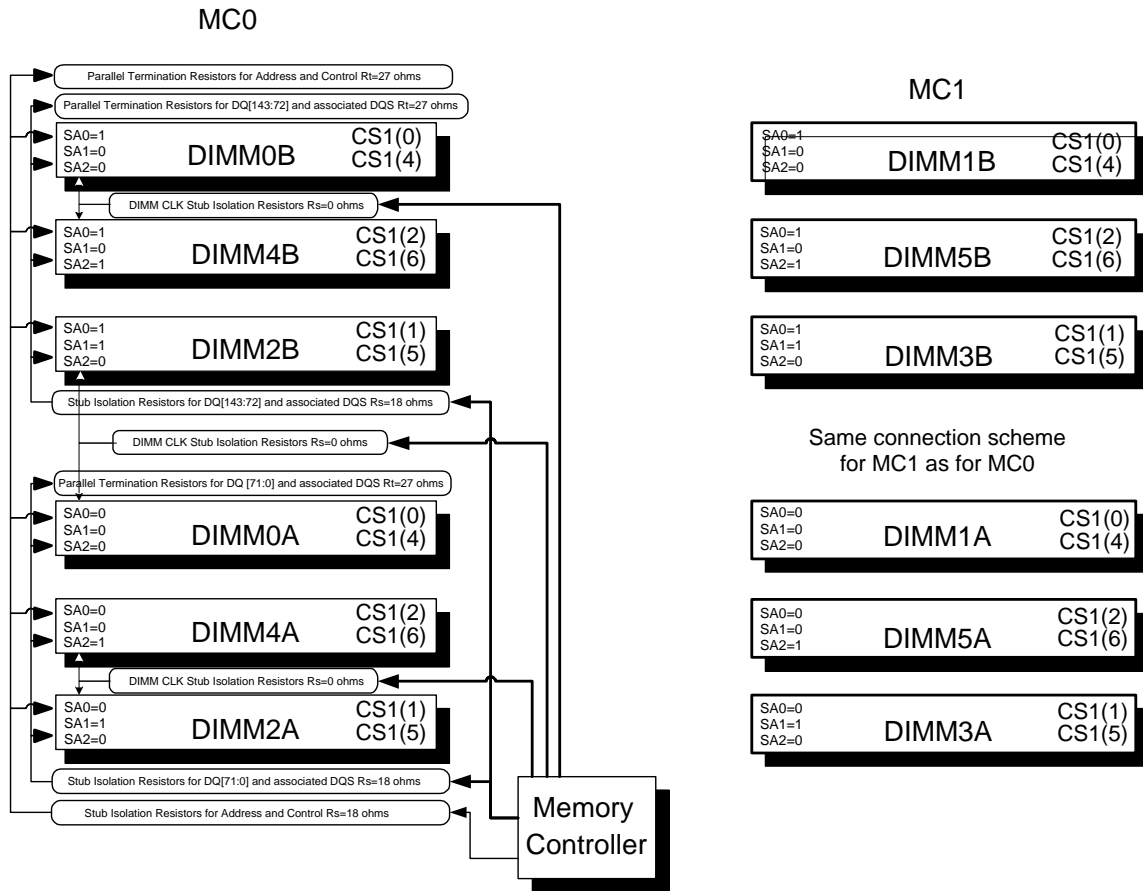
Memory

The memory subsystem provides two memory cells, each of which is 144 data bits wide. Each cell has six DIMM slots, which means a total of 12 DIMM slots are available. The memory bus clock speed is 133 MHz, and the data transfer rate is 266 Mtransfers/second as data is clocked on both edges of the clock. The peak data bandwidth for this memory subsystem design is 8.5 Gb/s. Load DIMMs in quads with qualified modules. Memory is protected by data ECC, and the hardware implementation supports chip-spare.

The minimum amount of memory supported by the server is 1 GB (four 256 MB modules). The maximum amount of memory supported by the server is 32 GB (eight 4 GB modules).

This design does not support any non industry standard DDR DIMMs. Only qualified DIMMs are supported. Figure 1-5 shows a block diagram of the server memory.

Figure 1-5 Memory Block Diagram



Memory Architecture

The I/O ASIC memory interface supports two DDR cells, each of which is 144 data bits wide. The memory subsystem physical design uses a comb-filter termination scheme for both the data and the address and control buses. This part of the topology is similar to other DDR designs in the computer industry. Clocks are distributed directly from the I/O ASIC; each clock pair drives two DIMMs.

Memory data is protected by the ECC. Eight ECC bits per DIMM protect 64 bits of data. The use of ECC allows correction of single-bit errors, and detection of multi-bit errors. Only DIMMs with ECC are qualified or supported.

DIMMs

The memory subsystem supports only DDR SDRAM (Double Data Rate Synchronous Dynamic Random Access Memory) technology utilizing industry-standard PC-1600 type DDR SDRAM DIMMs, 1.2" tall. The DIMMs use a 184-pin JEDEC standard connector.

DIMMs are loaded in groups of four, known as a quad. All four DIMMs in a quad must be the same size. Table 1-2 summarizes the memory solutions.

Table 1-2 Memory Array Capacities

Min / Max Memory Size	Single DIMM Size	DDR SDRAM Count, Type and Technology
1 GB / 3 GB	256 MB DIMM	18 x 32 MB x 4 DDR1 SDRAMs (128 MB)
2 GB / 6 GB	512 MB DIMM	36 x 32 MB x 4 DDR1 SDRAMs (128 MB)
4 GB / 12 GB	1024 MB DIMM	36 x 64 MB x 4 DDR1 SDRAMs (256 MB)
8 GB / 24 GB	2048 MB DIMM	36 x 128 MB x 4 DDR1 SDRAMs (512 MB)
32 GB / 32 GB	4096 MB DIMM	36 x 256 MB x 4 DDR1 SDRAMs (1024 MB)

Chip Spare Functionality

Chip spare enables an entire DDR SDRAM chip on a DIMM to be bypassed in the event that a multi-bit error is detected on the DDR SDRAM. In order to use the chip spare functionality on your server, only DIMMs built with ×4 DDR SDRAM parts can be used, and these DIMMs must be loaded in quads.

The memory subsystem design supports the I/O ASIC chip's spare functionality. Chip spare enables an entire SDRAM chip on a DIMM to be bypassed/replaced in the event that a multi-bit error is detected on that SDRAM. In order to use the chip spare functionality on, only DIMMs built with ×4 SDRAM parts can be used, and these DIMMs must be loaded in quads (two DIMMs per memory cell, loaded in the same location in each memory cell). Each DIMM within a quad must be identical to all the other DIMMs in the quad.

Chip spare is achieved if four identical DIMMs are loaded into a quad. If more DIMMs are added, they must be loaded in quads in order to maintain the chip spare functionality. So, if more DIMMs are added in to the example case, four identical DIMMs (identical to each other, but can be different from the original quad that was loaded) must be loaded into the next quad. However, if you are using 4 GB DIMMS, the only configuration supported is eight 4 GB DIMMS in the first three quads, with no other DIMMs in the remaining quad. For slot and quad locations, see Figure 4-23 on page 66.

Serial Presence Detect

Each DIMM contains an I2C electronically erasable programmable read-only memory (EEPROM) whose content describes the module's characteristics: speed, revision, vendor, etc. This feature is called serial presence detect (SPD). Firmware typically uses this information to detect unmatched pairs of DIMMs, and configure certain memory subsystem parameters. The SPD information for DIMMs loaded in the server is also accessible to the BMC through the I2C bus.

I/O Bus Interface

The I/O bus interface provides these features:

- Industry standard PCI 33 MHz and 66 MHz, PCI-X 66 MHz to 133 MHz, 32 or 64 data bit support
- 3.3 V PCI only, it does not support 5 V PCI.
- Optimizes for DMA performance.
- Supports 3.3 V or Universal keyed PCI cards. 5 V keyed PCI cards are not supported
- Supports up to four PCI sockets.

Processor Dependent Hardware Controller

The PDH controller provides these features:

- 16-bit PDH bus with reserved address space for
 - Flash memory
 - Non-volatile memory
 - Scratch RAM
 - Real Time Clock
 - UARTs
 - External Registers
 - Firmware read/writable registers
 - Two general purpose 32-bit registers
 - Semaphore registers
 - Monarch selection registers
 - Test and Reset register
- Reset and INIT generation

Dual Serial Controller

The dual serial controller is a dual universal asynchronous receiver and transmitter (DUART). This chip provides enhanced UART functions with 16-byte first-in, first-out (FIFO), a modem control interface. Registers on this chip provide onboard error indications and operation status. An internal loopback capability provides onboard diagnostics.

Features include:

- Data rates up to 115.2 kbps
- 16550A fully compatible controller
- A 16-byte transmit FIFO to reduce the bandwidth requirement of the external CPU
- A 16-byte receive FIFO with four selectable interrupt trigger levels and error flags to reduce the bandwidth requirement of the external CPU
- UART control that provides independent transmit and receive
- Modem control signals (-CTS, -RTS, -DSR, -DTR, -RI, -CD, and software controllable line break)
- Programmable character lengths (5, 6, 7, 8) with Even, Odd or No Parity
- A status report register

Field Programmable Gate Array

The field programmable gate array (FPGA) provides ACPI and LPC support for the PDH bus and provides these features:

- ACPI 2.0 interface
- LPC bus interface to support BMC

- Decoding logic for PDH devices

Baseboard Management Controller

The baseboard management controller (BMC) supports the industry-standard Intelligent Platform Management Interface (IPMI) specification. This specification describes the management features that have been built into the system board. These features include: local and remote diagnostics, console support, configuration management, hardware management, and troubleshooting.

The baseboard management controller provides the following:

- Compliance with Intelligent Platform Management Interface 1.0
- Tachometer inputs for fan speed monitoring
- Pulse width modulator outputs for fan speed control
- Push-button inputs for front panel buttons and switches
- One serial port, multiplexed with the server console port
- Remote access and intelligent chassis management bus (ICMB) support
- Three I²C primary/secondary ports (one the ports is used for IPMB)
- Low pin count (LPC) bus provides access to three keyboard controller style (KCS) and one-block transfer (BT) interface
- 32-bit ARM7 processor
- 160-pin low profile flat pack (LQFP) package
- Firmware is provided for the following interfaces:
 - Intelligent platform management interface (IPMI)
 - Intelligent platform management bus (IPMB)

SCSI Controller

The SCSI controller is an LSI Logic 53C1030 chip. This chip is fully compliant with the SCSI Peripheral Interface-3 Specification (SPI-3). It has two independent SCSI channels supporting devices at speeds up to 320 Mb/second each. The 53C1030 adheres to the PCI-X addendum to the PCI Local Specification and is hard-wired to PCI ID 1 which corresponds to bit 17 of the PCI AD bus.

IDE Interface

The IDE controller (PCI649) supports the ATAPI zero to five modes (from 16 to 100 Mb/s). The usable speed on this server is limited to 16 MHz (ATA-33 mode, 33 Mb/s) because the slimline CD/DVD devices do not support the ATA-66 and 100 modes.

The primary IDE channel is the only channel that is implemented. The IDE cable provides only one drive connector, of the primary type, for the DVD peripheral.

1 Gb System LANs A and B

The 1 Gb system LAN ports A and B provide:

- Main server LANs
- 10/100/1000 Mb capability

USB Connectors

The USB connectors provide:

- High speed 480 Mb/sec. capability
- Full speed 12 Mb/sec. and low speed 1.5 Mb/sec
- Support for USB keyboard and mouse
- HP-UX supports HP USB keyboard and mouse

Data Pathing Information

Table 1-3 shows information about data pathing in the HP Integrity rx2620 server.

Table 1-3 Data Pathing - Part 1

PCI Slot	PCI Card Function	Physical Location	ACPI Path
1	PCI-X 133 Mhz/64 bit	Top slot	(HWP0002,400)/PCI(1 0)
2	PCI-X 133 Mhz/64 bit	2nd from top	(HWP0002,300)/PCI(1 0)
3	PCI-X 133 Mhz/64 bit	3rd from top	(HWP0002,200)/PCI(1 0)
4	PCI-X 133 Mhz/64 bit	Bottom slot	(HWP0002,600)/PCI(1 0)
Core I/O -1	USB Port	Rear bulkhead - "Mouse icon"	(HWP0002,0)/PCI(1 0)/USB(0, 0)
Core I/O -2	USB Port	Rear bulkhead - stacked top	(HWP0002,0)/PCI(1 0)/USB(1, 0)
Core I/O -3	USB Port	Rear bulkhead - "Kybd icon"	(HWP0002,0)/PCI(1 1)/USB(0, 0)
Core I/O -4	USB Port	Rear bulkhead - stacked bottom	(HWP0002,0)/PCI(1 1)/USB(1, 0)
Core I/O -5	IDE Controller	System board	(HWP0002,0)/PCI(2 0)
Core I/O -6	1 Gb LAN	Rear bulkhead - LAN Gb B	(HWP0002,100)/PCI(3 0)
Core I/O -7	1 Gb LAN	Rear bulkhead - LAN Gb A	(HWP0002,0)/PCI(2 0)
Core I/O -8	SCSI - Channel A	System board	(HWP0002,100)/PCI(1 0)
Core I/O -9	SCSI - Channel A ID0	Bottom (#3) HDD	(HWP0002,100)/PCI(1 0)/SCSI (Pun0,Lun0)
Core I/O -10	SCSI - Channel A ID1	Middle (#2) HDD	(HWP0002,100)/PCI(1 0)/SCSI (Pun1,Lun0)
Core I/O -11	SCSI - Channel B	System board	(HWP0002,100)/PCI(1 1)
Core I/O -12	SCSI - Channel B ID2	Top (#1) HDD	(HWP0002,100)/PCI(1 1)/SCSI (Pun2, Lun0)

Table 1-3 Data Pathing - Part 1 (Continued)

PCI Slot	PCI Card Function	Physical Location	ACPI Path
Core I/O -13	SCSI - Channel B Ext.	Rear bulkhead - SCSI LVD/SE connector	(HWP0002,100)/PCI(1 1)/SCSI (Punx, Luny)
Core I/O -14	Internal IDE device	Front DVD drive slot	(HWP0002,0)/PCI(2 0)/ATA
Opt MP -1	MP Serial Controller	Rear bulkhead - MP Console/Remote/UPS conn.	(HWP0002,700)/PCI(1 0)
Opt MP -2	MP Console Controller	Rear bulkhead - MP Console/Remote/UPS conn.	HWP0002,700)/PCI(1 1)
Opt MP -3	MP VGA Controller	Rear bulkhead - MP VGA conn.	HWP0002,700)/PCI(2 0)
N/A	System board Console port (CLI)	Rear bulkhead - Serial A/Console connector.	N/A
N/A	System board Serial port	Rear bulkhead - Serial B connector	N/A

Table 1-4 Data Pathing - Part 2

PCI Slot	MAPPER Path	HP-UX Path	Linux Path	Windows Path
1	0/4/1/0	0/4/1/0	80:01.0	
2	0/3/1/0	0/3/1/0	60:01.0	
3	0/2/1/0	0/2/1/0	40:01.0	
4	0/6/1/0	0/5/1/0	C0:01.0	
Core I/O -1	0/0/1/0	0/0/1/0	00:01.0	
Core I/O -2	0/0/1/0	0/0/1/0	00:01.0	
Core I/O -3	0/0/1/1	0/0/1/1	00:01.1	
Core I/O -4	0/0/1/1	0/0/1/1	00:01.1	
Core I/O -5	0/0/2/0	0/0/2/0	00:02.0	
Core I/O -6	0/0/3/0	0/0/3/0	00:03.0	
Core I/O -7	0/1/2/0	0/1/2/0	20:02.0	
Core I/O -8	0/1/1/0	0/1/1/0	20:01.0	
Core I/O -9	0/1/1/0.0.0	0/1/1/0.0.0		
Core I/O -10	0/1/1/0.1.0	0/1/1/0.1.0		
Core I/O -11	0/1/1/1	0/1/1/1	20:01.1	
Core I/O -12	0/1/1/1.2.0	0/1/1/1.2.0		
Core I/O -13	0/1/1/1.x.y	0/1/1/1.x.y		

Table 1-4 Data Pathing - Part 2 (Continued)

PCI Slot	MAPPER Path	HP-UX Path	Linux Path	Windows Path
Core I/O -14	0/0/2/0.0.0	0/0/2/0.0.0		
Opt MP -1	0/7/1/0	0/6/1/0	E0:01.0	
Opt MP -2	0/7/1/1	0/6/1/1	E0:01.1	
Opt MP -3	0/7/2/0	0/6/2/0	E0:02.0	

Table 1-5 Data Pathing - Part 3

PCI Slot	Rope Number	ACPI HID	ACPI UID	PCI Bus Address	PCIBus Number	PCI Host Controller Number
1	4/5	HWP0002	0x400	0x80-0xBF	4	4
2	3	HWP0002	0x300	0x60-0x7F	3	3
3	2	HWP0002	0x200	0x40-0x5F	2	2
4	6	HWP0002	0x600	0xC0-0xDF	6	5
Core I/O -1	0	HWP0002	0x000	0x00-0x1F	0	0
Core I/O -2	0	HWP0002	0x000	0x00-0x1F	0	0
Core I/O -3	0	HWP0002	0x000	0x00-0x1F	0	0
Core I/O -4	0	HWP0002	0x000	0x00-0x1F	0	0
Core I/O -5	0	HWP0002	0x000	0x00-0x1F	0	0
Core I/O -6	0	HWP0002	0x000	0x00-0x1F	0	0
Core I/O -7	1	HWP0002	0x100	0x20-0x3F	1	1
Core I/O -8	1	HWP0002	0x100	0x20-0x3F	1	1
Core I/O -9	1	HWP0002	0x100	0x20-0x3F	1	1
Core I/O -10	1	HWP0002	0x100	0x20-0x3F	1	1
Core I/O -11	1	HWP0002	0x100	0x20-0x3F	1	1
Core I/O -12	1	HWP0002	0x100	0x20-0x3F	1	1
Core I/O -13	1	HWP0002	0x100	0x20-0x3F	1	1
Core I/O -14	0	HWP0002	0x000	0x00-0x1F	0	0
Opt. MP -1	7	HWP0002	0x700	0xE0-0xFF	N/A	7
Opt MP -2	7	HWP0002	0x700	0xE0-0xFF	N/A	7
Opt MP -3	7	HWP0002	0x700	0xE0-0xFF	N/A	7

2 Controls, Ports, and LEDs

This chapter describes the controls, ports, and LEDs on the front and rear panels of the HP Integrity rx2620 server.

This chapter addresses the following topics:

- “Front Panel” on page 32.
- “Rear Panel” on page 36.

Front Panel

The control panel at the front of the HP Integrity rx2620 server provides the controls and indicators commonly used for operation. See Figure 2-1, Figure 2-2, Table 2-1, and Table 2-2 for the location and description of the front panel controls and LEDs.

Figure 2-1 Front View

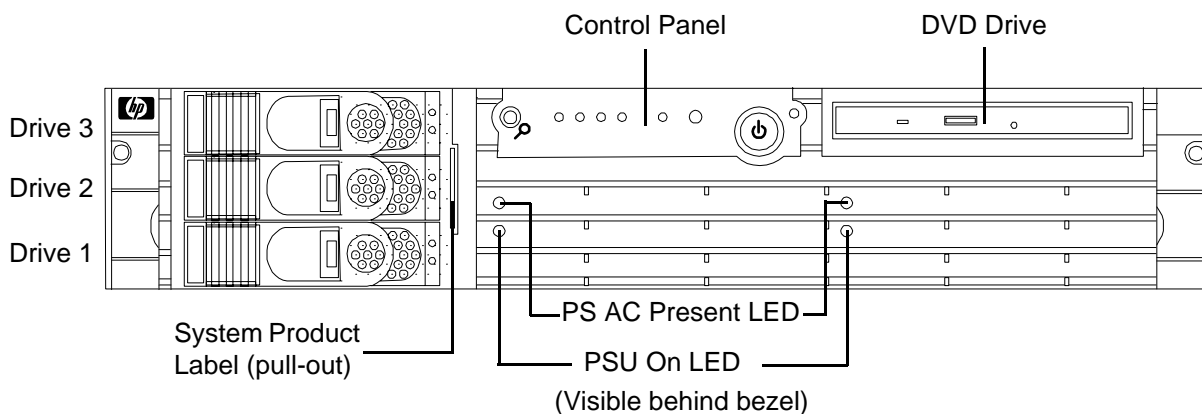


Figure 2-2 Control Panel

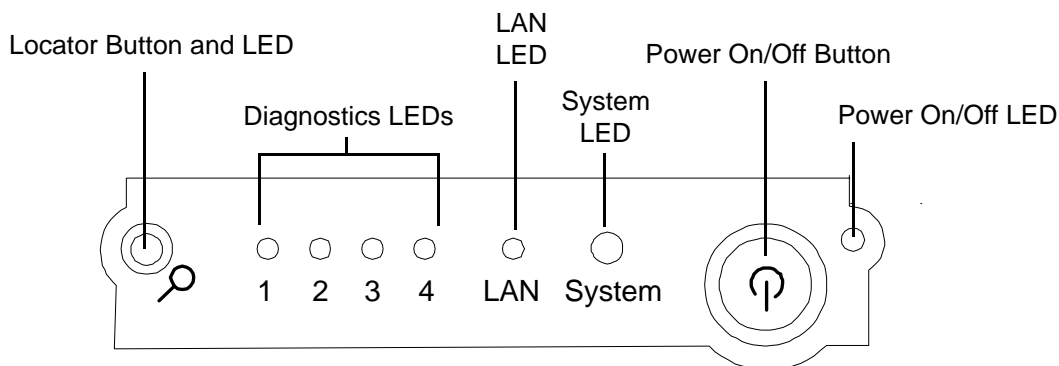


Table 2-1 Control Panel LEDs and Switches

Name	Function
Power On/Off LED	The green on/off LED is illuminated when the power is on.
Power On/Off Button	This is the power on/off switch for the server. See Table 2-2 for detailed operation.

Table 2-1 Control Panel LEDs and Switches (Continued)

Name	Function
System LED	The System LED provides information about the system status. When operation is normal, the LED is green. When there is a system warning, the LED is flashing yellow. When there is a system fault, the LED is flashing red. ^a
LAN LED	The LAN LED provides status information about the LAN interface. When the LAN LED is flashing, there is activity on the LAN.
Diagnostic LEDs 1 – 4	The four diagnostic LEDs operate in conjunction with the system LED to provide diagnostic information about the system. ^a
Locator Button and LED	The locator button and LED are used to help locate this server within a rack of servers. When the button is engaged, the blue LED illuminates and an additional blue LED on the rear panel of the server illuminates. This function may be remotely activated.

a. See Chapter 5, “Troubleshooting,” on page 107 for information provided by the system and diagnostic LEDs.

Table 2-2 Power On/Off Button

Button/Switch	Description
Power Button	<p>Controls the power supply (turns system power on/off) if power is available to the power supply. (Controls both power supplies if two are installed.)</p> <p>If power is off but power is available to the power supplies, pressing the power button:</p> <ul style="list-style-type: none"> • Momentarily (less than 5 seconds) turns on the power supplies and applies power to server circuits • For more than 5 seconds and then released, has no effect. <p>If power is on but the Operating System (OS) has been shut down, pressing the power button:</p> <ul style="list-style-type: none"> • Momentarily (less than 5 seconds) causes a system power down. • For more than 5 seconds (and then held) causes a system power down. <p>If the OS is running, pressing the power button:</p> <ul style="list-style-type: none"> • Momentarily (less than 5 seconds) requests a soft power down by the operating system. The OS determines if the power off request is to be honored. • For more than 5 seconds (and then released) causes an immediate/hard power down without allowing the OS to close open files or flush disk caches possibly resulting in a corrupted disk system or file. This should only be used when the OS is not responding to user requests.

Hot-Plug Disk Drive Indicators

The hot-plug disk drives have two LEDs per drive, as described below. see Figure 2-3 and Table 2-3 for the location and description of the hard disk drive LEDs.

- Status LED—The Drive Status LED is not used in the HP Integrity rx2620 server.
- Activity LED—The Drive Activity LED is green and indicates disk drive activity. This LED is directly controlled by the disk drive and turns on when a drive is accessed.

Figure 2-3 Hot-Plug Disk Drive LED Indicators

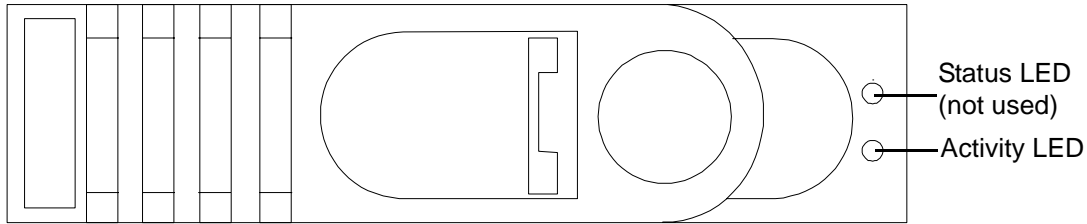


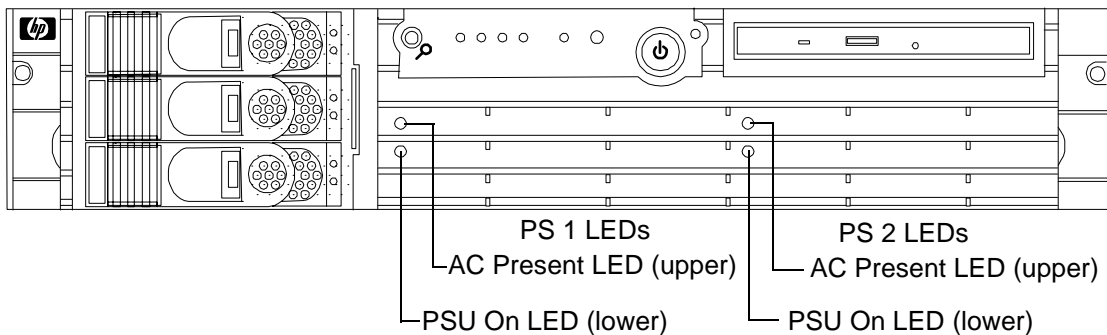
Table 2-3 Hard Disk Drive LED Definitions

LED	Activity	Description
Status LED	Not used	Not used
Activity LED	Flashing green	Drive access under hard drive control

Power Supply LEDs

The HP Integrity rx2620 server is typically delivered with a single power supply (PS 1). An additional power supply (PS 2) may be installed for redundant (n+1) power capability. See Figure 2-4 and Table 2-4 for the location and description of the power supply LEDs.

Figure 2-4 Power Supply LEDs



(Visible behind bezel)

Table 2-4 Power Supply LED Definitions

LED	State	Description
AC Present LED	Solid green	AC line voltage within the operation voltage specification is present.
PSU On LED	Solid green	DC line voltage within the operation voltage specification is present.

Optional Removable Media Drive

The HP Integrity rx2620 server is delivered without a removable media drive. Either a DVD or CD-RW/DVD drive may be added. Each of these optional devices has one activity LED. See Figure 2-5 and Table 2-5 for the location and description of the DVD LEDs.

Figure 2-5 DVD LEDs

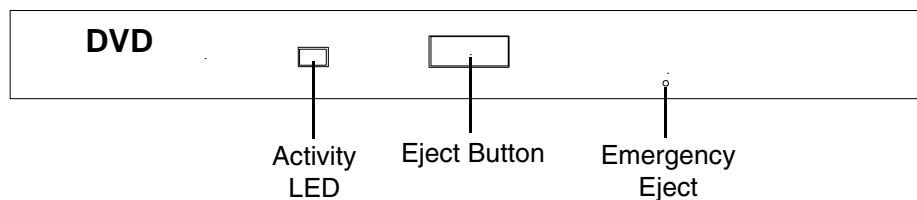


Table 2-5 DVD Drive LED Definitions

LED	State	Description
Activity LED	Flashing green	Drive activity

Rear Panel

The HP Integrity rx2620 server rear panel includes communication ports, I/O ports, AC power connectors, and the locator LED/button. Additional LEDs located on the rear panel of the server signal the operational status of the LAN connector of the optional iLO MP. See Figure 2-6 and Table 2-6 for the location and description of the ports and connectors.

Figure 2-6 Rear View

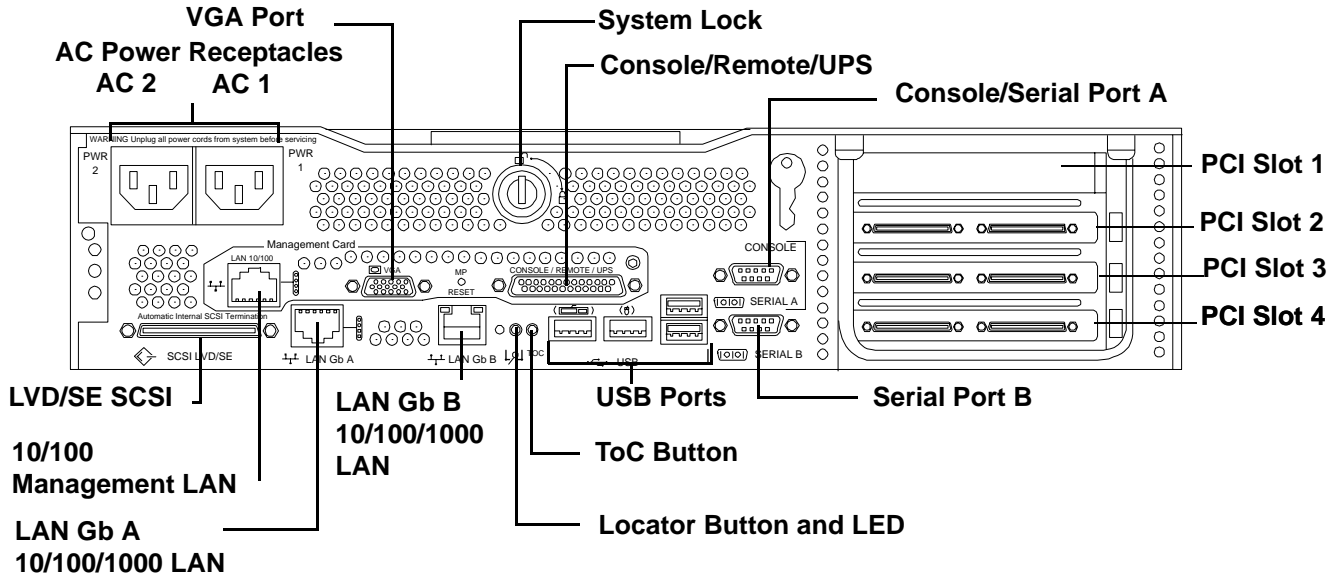


Table 2-6 Rear Panel Connectors and Switches

Connector/Switch	Function
AC Power	Primary power connection (AC1) for the server. A second connector (AC2) is available for the optional, N+1 redundant power supply.
LVD/SE SCSI	68-pin, low-voltage differential, single-ended U320 SCSI. This connector provides external SCSI connection on Core SCSI Channel B
(LAN Gb A) 10/100/1000 LAN	10/100/1000 base-T ethernet LAN connector
(LAN Gb B) 10/100/1000 LAN	10/100/1000 base-T ethernet LAN connector
Serial A (console) and Serial B	9-pin male serial connectors. Serial Port A is used as the console connection when the optional iLO MP is not installed.
USB	Four universal serial bus (USB 2.0) connectors
TOC	Transfer of control button. Halts all system processing and I/O activity and restarts the computer system preserving system memory contents.

Table 2-6 Rear Panel Connectors and Switches (Continued)

Connector/Switch	Function
Locator Button and LED	The locator button and LED are used to help locate a server within a rack of servers. When the button is engaged, the blue LED illuminates and an additional blue LED on the front panel of the server illuminates. This function may be remotely activated by the LOC command of the optional iLO MP.
VGA (optional) ^a	15-pin female video connector. The optional iLO MP provides a connector to support a VGA monitor.
Console/Remote/UPS (optional)	25-pin female serial data bus connector for the optional iLO MP. This connector connects to a three-port breakout cable (HP P/N A6144-63001) with individual connectors for Console, Remote and UPS. The Console connector becomes the console connection when the iLO MP is installed.
10/100 iLO MP LAN (optional)	10/100 Mb LAN connector for the optional iLO MP. Provides LAN console access allowing Wake-On-LAN, Power-On-LAN, and Alert-On-LAN functions. Refer to the <i>HP Integrity and HP 9000 Integrated Lights-Out Management Processor Operations Guide</i> for details on the iLO MP commands.

a. Graphics cards may include a 15-pin connector, a 18-pin connector, or both. Only one connecting cable is needed for each monitor.
Some video cards are pre-installed in the system, while others are packaged separately and shipped with the system. If your system did not ship with a pre-installed graphics card, you must install the card and load the drivers. Refer to the documentation included with your graphics card for instructions.
Frequencies of 85Hz and higher provide flicker-free viewing.
If the monitor you select is DDC-2B or DDC-2B+ compliant, the graphics card automatically limits itself to those resolutions and frequencies supported by that monitor.
For a complete and current list of supported cards see: <http://partsurfer.hp.com>
For detailed information about individual graphics cards, see the respective manufacturer's web site.

LAN Gb A Connector

The rear panel 10/100/1000 base-T ethernet LAN Gb A connector has the following status and activity LEDs. See Figure 2-7 and Table 2-7 for the location and description of the LAN Gb A LEDs.

Figure 2-7 10/100/1000 base-T ethernet Gb LAN A Connector LEDs

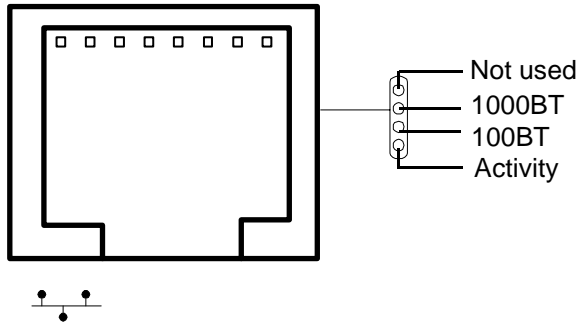


Table 2-7 10/100/1000 base-T ethernet Gb LAN A Connector LEDs

LED	Description
1000BT	Blinking amber—the 1000 MHz with ethernet protocol and twisted-pair wiring is enabled, off—no link.
100BT	Blinking green—the 100 MHz with ethernet protocol and twisted-pair wiring is enabled, off—no link.
Activity	Blinking green—LAN activity. With all other LEDs off, activity is 10BT link.

LAN Gb B Connector

The rear panel 10/100/1000 base-T ethernet LAN Gb B connector has the following status and activity LEDs. See Figure 2-8 and Table 2-8 for the location and description of the LAN Gb B LEDs.

Figure 2-8 10/100/1000 base-T ethernet Gb LAN B Connector LEDs

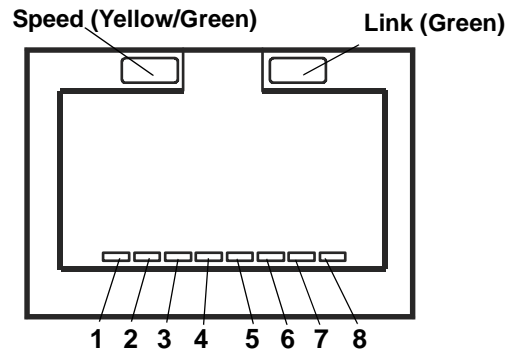


Table 2-8 10/100/1000 base-T ethernet Gb LAN B Connector LEDs

LED	Description
Speed (upper left)	Yellow—the 1000 MHz with ethernet protocol and twisted-pair wiring is enabled, off—no link
Speed (upper left)	Green—the 100 MHz with ethernet protocol and twisted-pair wiring is enabled, off—no link
Link (upper right)	Green—link
Link (upper right)	Off—No link

Management Processor LAN LEDs (Optional)

The LAN port of the optional integrated Lights Out (iLO) Management Processor (MP) uses an RJ-45 type connector. This connector has four LEDs that signal status and activity. The iLO MP is required for Proactive 24 or Critical Service support. See Figure 2-9 and Table 2-9 for the location and description of the MP LAN LEDs.

Figure 2-9 iLO MP LAN LEDs

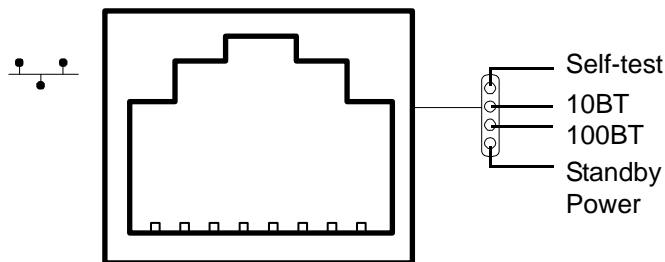


Table 2-9 iLO MP LAN LEDs

LED	Description
Self-test	Yellow—iLO MP is running self-test or error detected
10 BT	Green—10 BT link established, blinking green—10 BT link activity, off—no link
100 BT	Green—100 BT link established, blinking green—100 BT link activity, off—no link
Standby Power	Green—Standby power on, off—standby power off

3 Powering Off and Powering On the Server

This chapter provides information and procedures for powering off and powering on the server.

This chapter addresses the following topics:

- “Power States” on page 42.
- “Powering Off the Server” on page 42.
- “Powering On the Server” on page 43.

Power States

The server has three power states:

- Standby power
- Full power
- Off

Plug the power cord into the appropriate receptacle on the rear of the chassis to achieve the standby power state; the front panel power button is not turned on. Full power occurs when the power cord is plugged into the appropriate receptacle, and either the power is activated through the iLO MP PC command, or the power button is activated. In the off state, the power cords are not plugged in. Table 3-1 lists the server power states.

Table 3-1 Power States

Power States	Power Cable Plugged Into Receptacle?	Power Activated through the iLO MP PC Command; or Front Panel Power Button Activated?	AC Voltage Applied	DC Voltage Applied
Standby power	Yes	No	Yes	No
Full power	Yes	Yes	Yes	Yes
Off	No	No	No	No

NOTE If the power restore feature is set to **Always On** through the iLO MP PR command, the server may automatically power on to the full power state.

Powering Off the Server

Power off the server using the following methods if the server is in either the standby or full power state:

- iLO MP PC command
- Power button

Powering Off the Server Using the iLO MP

To power off the server through the MP, follow these steps:

- Step 1.** Gracefully shut down the operating system. See Appendix B, “Booting the Operating System,” on page 147, or your operating system documentation for more information.
- Step 2.** Initiate a console session, and access the iLO MP Main Menu.
- Step 3.** Enter **CM** to enable command mode.

Step 4. Enter **PC** to use the remote power control command.

Step 5. Enter **OFF** to power off the server, and enter **YES** when prompted to confirm the action.

IMPORTANT The main DC voltage is now removed from the server; however, AC voltage for standby power is still present in the server.

Step 6. Unplug all power cables from the receptacles on the rear panel of the server.

Powering Off the Server Manually

To manually power off the server through the iLO MP, follow these steps:

Step 1. Gracefully shut down the operating system. See Appendix B, “Booting the Operating System,” on page 147, or your operating system documentation for more information.

Step 2. Press the power button to power off the server.

IMPORTANT The main DC voltage is now removed from the server; however, AC voltage for standby power is still present in the server.

Step 3. Unplug all power cables from the receptacles on the rear panel of the server.

Powering On the Server

Power on the server to full power using the following methods if the server is in the standby power state:

- iLO MP **PC** command
- Power button

Powering On the Server Using the iLO MP

NOTE If the power restore feature is set to **Always On** through the iLO MP **PR** command, the server may automatically power on to the full power state.

To power on the server through the iLO MP, follow these steps:

Step 1. Plug all power cables into the receptacles on the rear panel of the server.

Step 2. Initiate a console session, and access the iLO MP Main Menu.

Step 3. Enter **CM.** to enable command mode.

Step 4. Enter **PC** to use the remote power control command.

Step 5. Enter **ON** to power on the server, and enter **YES** when prompted to confirm the action.

Step 6. Start the operating system. See Appendix B, “Booting the Operating System,” on page 147, or your operating system documentation for more information.

Powering On the Server Manually

NOTE If the power restore feature is set to **Always On** through the iLO MP PR command, the server may automatically power on to the full power state.

To manually power on the server, follow these steps:

Step 1. Plug all power cables into the receptacles on the rear panel of the server.

Step 2. Press the power button to start the server.

Step 3. Start the operating system. See Appendix B, “Booting the Operating System,” on page 147, or your operating system documentation for more information.

4 Removing and Replacing Components

This chapter describes the procedure for removing and replacing the different components in the HP Integrity rx2620 server.

This chapter addresses the following topics:

- “ESD Information” on page 46
- “Service Tools Required” on page 46
- “Location of Internal Components and Connectors” on page 47
- “Removing and Replacing System Top Metal Cover and Bezels” on page 49
- “Removing and Replacing Hot-Swap and Hot-Plug Devices” on page 53
- “Removing and Replacing Internal Components” on page 61

ESD Information

Follow the procedures listed below to ensure safe handling of components and to prevent harm to both you and the HP Integrity rx2620 server:

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

Service Tools Required

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

- IPF CPU Install Tool Kit (P/N 5069-5441), consisting of:
 - Disposable ESD Kit
 - Label-less CPU install tool (2.5mm hex and Torx 15)
- 1/4 inch flat blade screwdriver
- Phillips No. 1 Screwdriver
- ACX-10 Torx screwdriver
- ACX-15 Torx screwdriver
- ACX-25 Torx screwdriver

Location of Internal Components and Connectors

Figure 4-1 and Table 4-1 show the location of the internal server components.

Figure 4-1 Internal Physical Layout

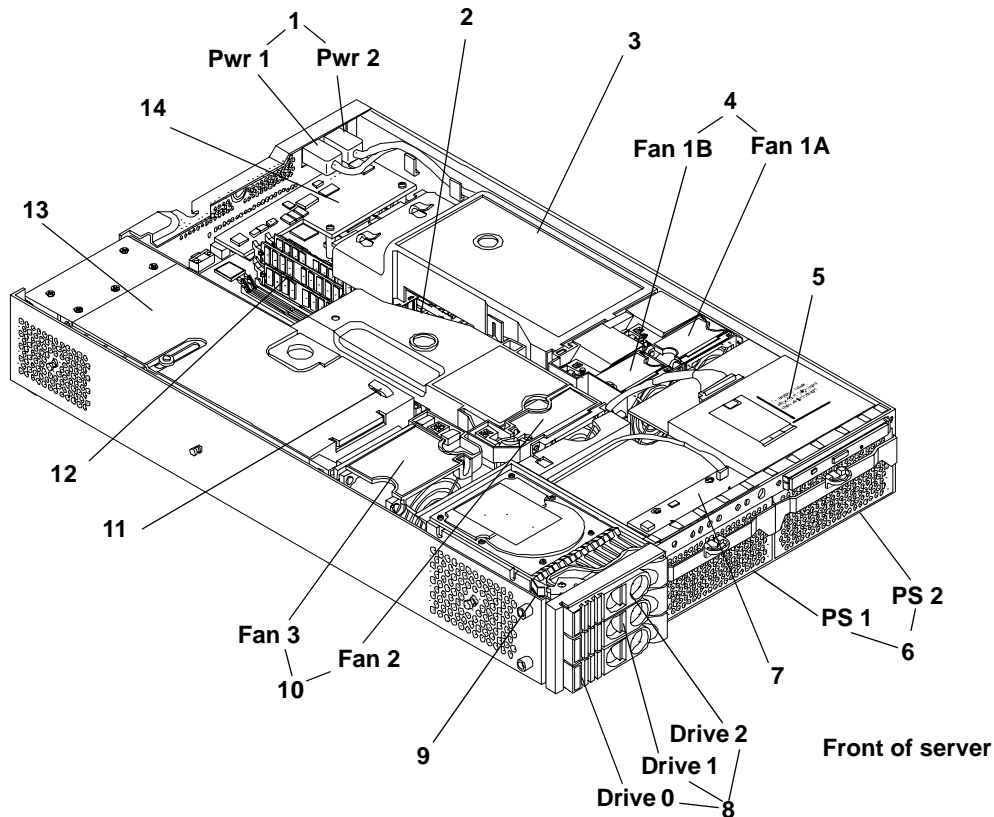


Table 4-1 Component Locations

1 Power receptacles (PWR 1 right, PWR 2 left)	8 Hot-pluggable hard drives (up to 3)
2 Memory airflow guide	9 Hard disk lock
3 Processor airflow guide	10 System fans (fan 2 - memory, fan 3 - I/O cage)
4 System fans (fan 1A - right, fan 1B - left)	11 Intrusion switch
5 Slimline optical drive	12 Memory sockets
6 Power supplies (PSU1 center; PSU2 to the right)	13 PCI cage
7 Status panel board	14 Management controller (Optional)

Figure 4-2 shows the location of the connectors and slots on the system board.

Figure 4-2 System Board Connectors and Slots

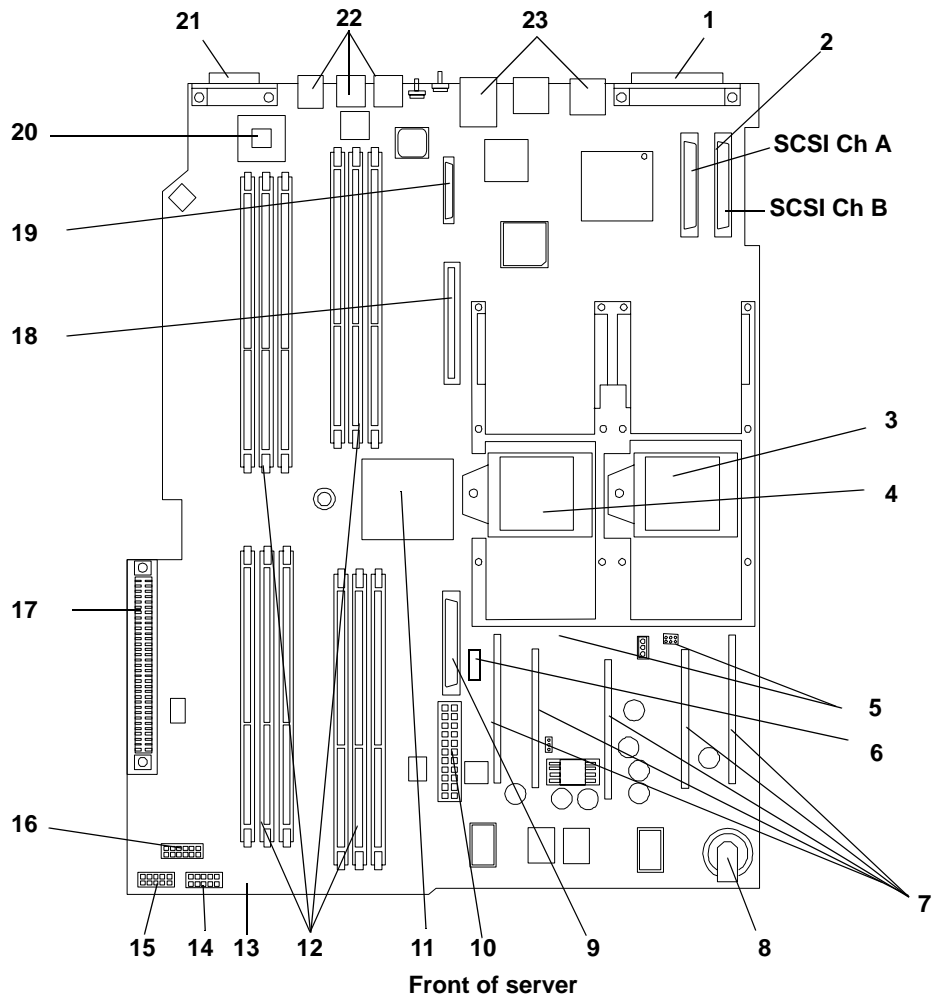


Table 4-2 Connector Locations

1 External SCSI connector	9 PDH connectors	17 PCI backplane connector
2 SCSI connectors A and B	10 Power module power connector	18 Optical drive connector
3 CPU 0 slot	11 ZX1 memory and I/O controller (under heatsink)	19 iLO hardware connector
4 CPU 1 slot	12 Memory sockets	20 HP ZX1 I/O adapter
5 Turbo fan power connectors	13 Status panel connector	21 Serial ports (2)
6 Fan Connector	14 Power module auxiliary connector	22 USB connectors (4)
7 Five VRM cards	15 SCSI backplane power connector	23 LAN connectors (2)
8 Battery	16 PCI/memory fan cable connector	

Removing and Replacing System Top Metal Cover and Bezels

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

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

When the server is running, the top metal cover must be replaced within 30 minutes to prevent components from overheating. If the top metal cover is not replaced within 30 minutes, the server automatically shuts down. If the server has been shut down, always replace the cover before turning the server back on.

Rack-Mount System

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

Accessing a Rack Mounted Server

The HP Integrity rx2620 server is designed to be rack mounted. The following procedure explains how to gain access to a server that is mounted in an approved rack. For rack installation instructions, review the *HP Integrity rx2620 Server Rack Installation Guide*.

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

Extending the Server from the Rack

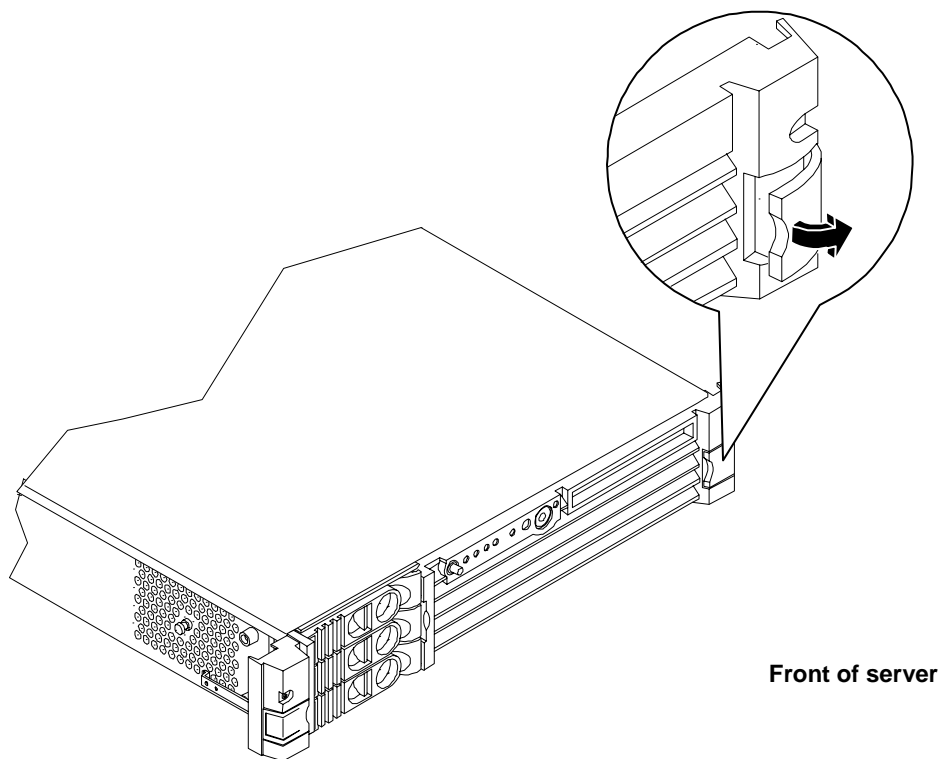
NOTE Ensure that there is enough area (approximately 1.5 meters (4.5 ft.) to fully extend the server out the front and work on it.

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

Step 1. Turn off the server and disconnect the power cable and all other cables from the back of the server. See “Powering Off the Server” on page 42 for more information.

Step 2. Release the rack latches by rotating them outward. See Figure 4-3 for more information.

Figure 4-3 Release the Rack Latches



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

Inserting the Server into the Rack

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

Step 1. Press the rail clips on either side of the server inward and push the server into the rack until it stops.

Step 2. Verify that the rack latches are closed.

Removing and Replacing the Top Metal Cover

The following procedures describe how to remove and replace the top metal cover.

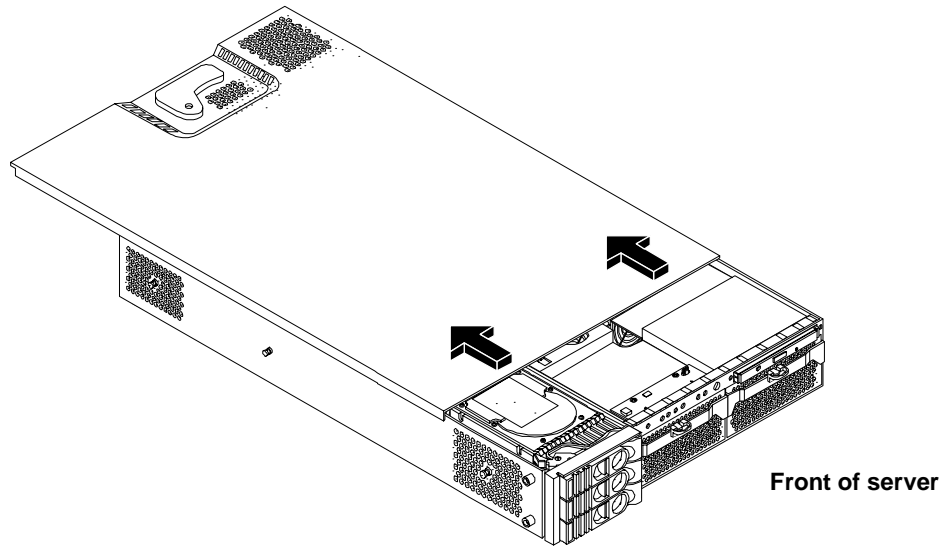
Removing the Top Metal Cover

Step 1. Turn off the server and disconnect the power cable and all other cables from the back of the server.

NOTE If you are removing only a hot-swappable fan, you can leave the server on and the power cables connected. However, you must replace the top metal cover within 30 minutes, or the server will shut down.

Step 2. Ensure the top metal cover lock keyswitch is in the unlocked position. Rotate the blue release lever toward the back of the server and slide the cover toward the back of the server. See Figure 4-4 for more information.

Figure 4-4 Removing and Replacing the Top Metal Cover



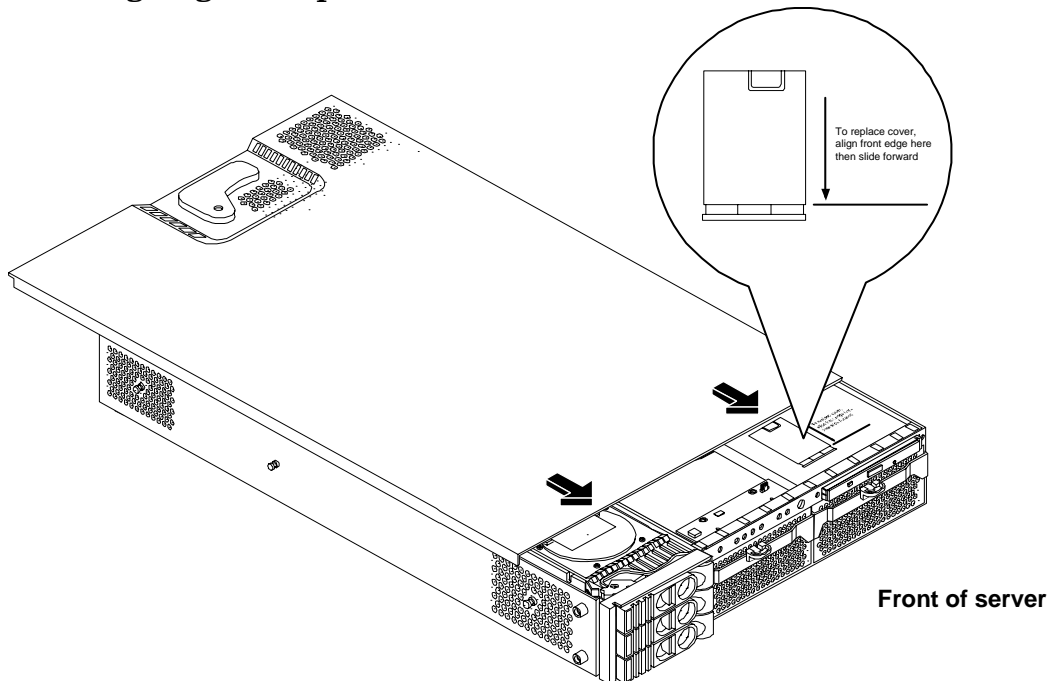
Step 3. Lift the top metal cover off the server chassis.

Replacing the Top Metal Cover

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

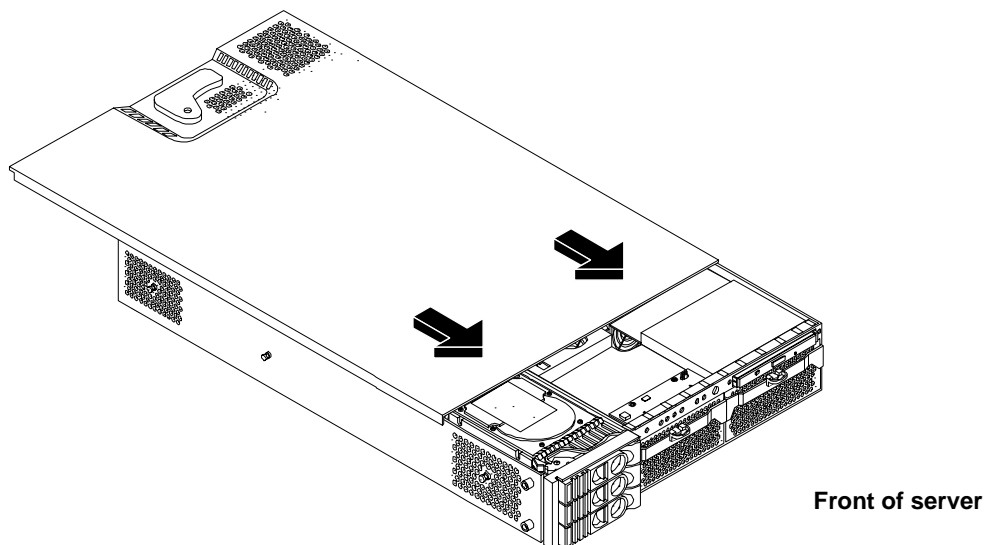
Step 1. Align the front edge of the top metal cover with the alignment mark on the optical drive bay. See Figure 4-5 for more information.

Figure 4-5 Aligning the Top Metal Cover



Step 2. Grasp the blue release lever and slide the top metal cover toward the front of the server until the lever snaps into place. See Figure 4-6 for more information.

Figure 4-6 Closing the Top Metal Cover



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

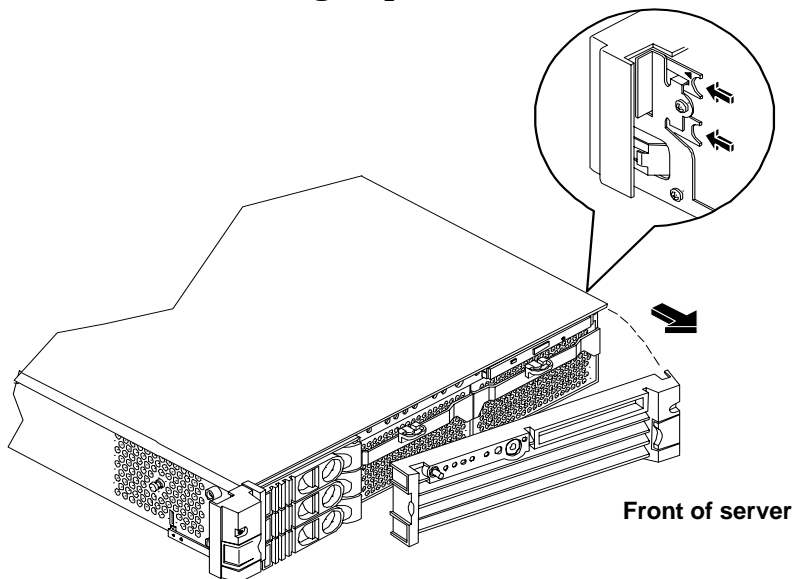
Removing and Replacing the Front Bezel

You must remove the front bezel from the chassis to remove or replace the power supplies or the optical drive.

Removing the Front Bezel

Step 1. Press in on the retaining clips located on the right-side of the front panel. See Figure 4-7 for more information.

Figure 4-7 Front Bezel Retaining Clip



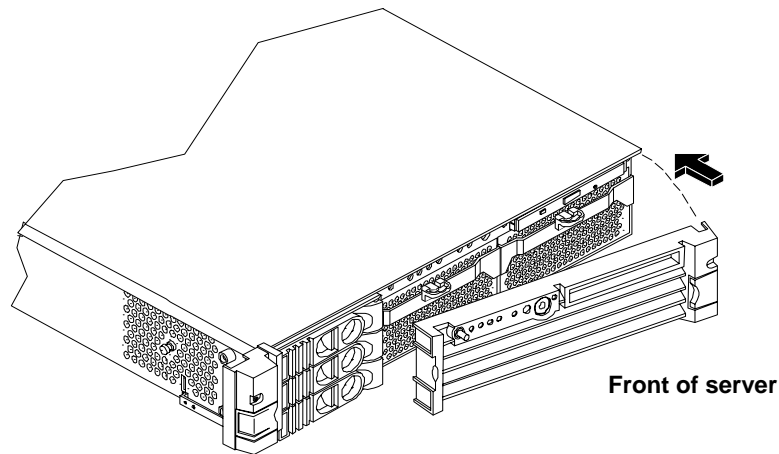
Step 2. Rotate the front panel outward and lift it away from the server chassis.

Replacing the Front Bezel

Step 1. Insert the bezel latches into the matching slots on the server chassis. See Figure 4-8 for more information.

Step 2. Swing the bezel and push toward the front of the server until it locks into place.

Figure 4-8 Replacing the Front Bezel



Removing and Replacing Hot-Swap and Hot-Plug Devices

The HP Integrity rx2620 has hard disk drives that are hot-pluggable and power supplies and fans that are hot-swappable. This section explains how to swap the following devices while the server is running:

- System fans
- Power supplies
- Hard drives

There is a significant difference between the terms hot-swap and hot-plug:

- Hot swapping happens at the device level. A hot-swappable device manages insertion or removal on its own without assistance from operating system commands.
- Hot-plugging allows you to replace a defective component in a high-availability server while it is running. However, hot-plugging may require interaction with the operating server to allow the removal and replacement of a hot-plug device.

Removing and Replacing Server Fans

There are four server fans to keep the server cool when it is running. The server fans are hot-swappable, allowing you to replace a single fan at a time while the server is running.

CAUTION When hot-swapping the fans (the server is running), the top metal cover must be replaced within 30 minutes to prevent components from overheating. If the top metal cover is not replaced within 30 minutes, the server automatically shuts down.

If the server has shut down, replace the top metal cover before restarting the server.

Removing a Server Fan

- Step 1.** Extend the server from the rack. See “Extending the Server from the Rack” on page 49.
- Step 2.** Remove the top metal cover. See “Removing the Top Metal Cover” on page 50.
- Step 3.** Remove fan 1A, 1B, 2 or 3 from the server grasping the appropriate fan and lifting it out of the fan socket. See Figure 4-9, Figure 4-10, and Figure 4-11 for more information.

Figure 4-9 Fan 1A or Fan 1B Removal

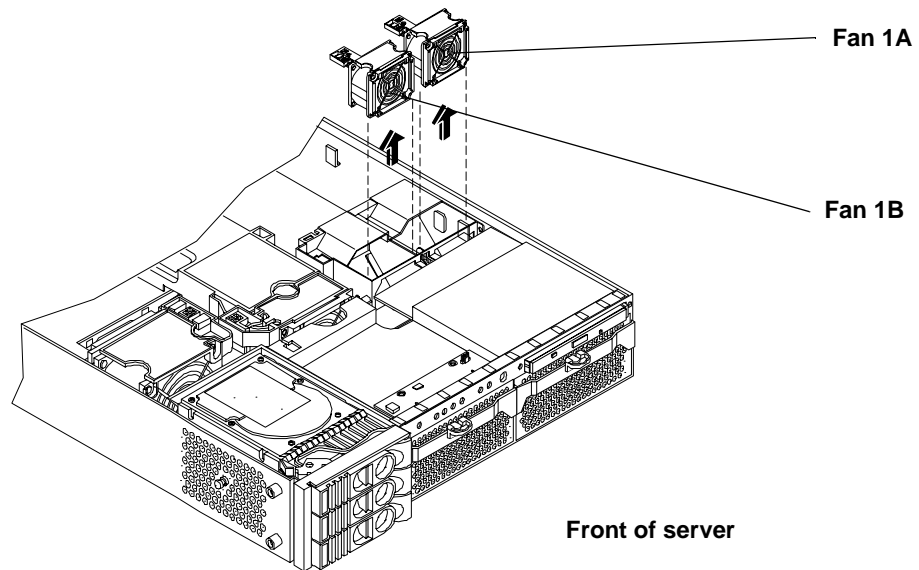


Figure 4-10 Fan 2 Removal

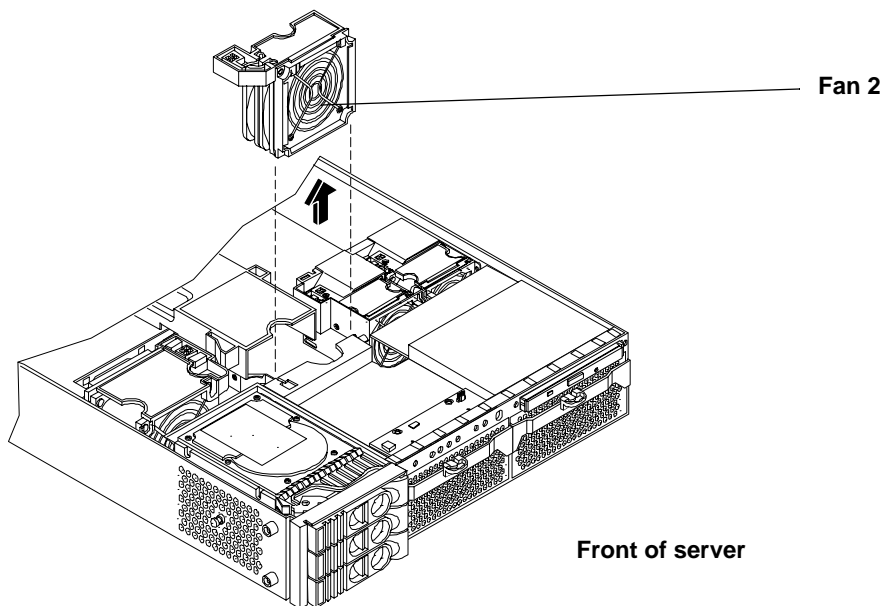
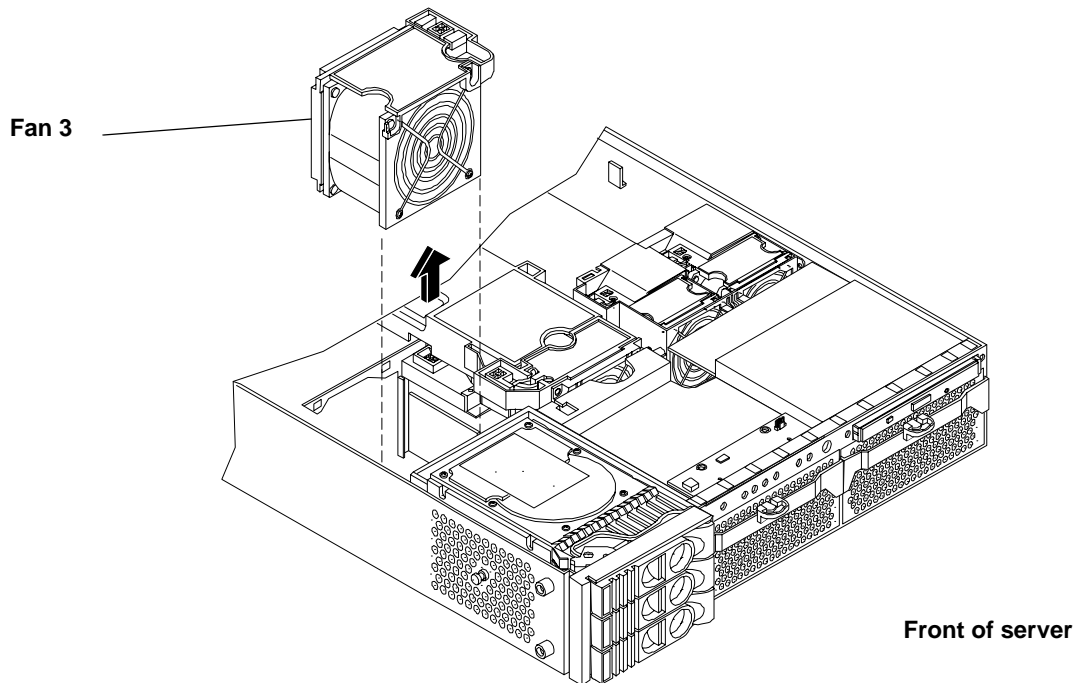


Figure 4-11 Fan 3 Removal



Replacing a Server Fan

- Step 1.** Remove the top metal cover (if necessary). See “Removing the Top Metal Cover” on page 50.
- Step 2.** Grasp the replacement fan module and insert it into its fan socket.

CAUTION If you are hot swapping a fan, replace the top metal cover within 30 minutes to prevent damage to the server components. If the top metal cover is not replaced within 30 minutes, the server automatically shuts down.

If the server has shut down, replace the top metal cover before restarting the server.

Step 3. Check for proper seating of the fan in its socket.

Step 4. Replace the server top metal cover.

Step 5. Verify the fan replacement by using the utilities identified in Appendix C, “Utilities,” on page 167.

- Use the `PS` command of the iLO MP to verify fan operation.

Removing and Replacing the Power Supply

The supported configuration of a HP Integrity rx2620 server requires a minimum of one power supply unit (PSU) to be installed. A second, optional hot-swap PSU, may be installed to provide redundant (N+1) capability.

The power supplies in the server are hot-swappable, that is if one power supply stops working or exhibits voltage problems, the remaining supply can support the server until the failed unit is replaced. A power supply can be removed and replaced without turning off the server on servers with two power supplies.

CAUTION Before removing a power supply, make sure the second power supply is functioning properly. The two green LEDs inside the supply must both be illuminated on the second supply before the failed power supply can be safely removed.

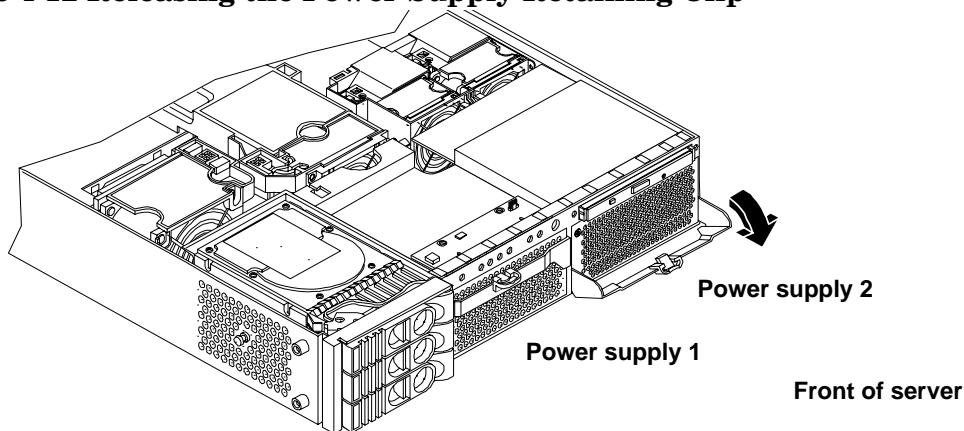
Removing the Power Supply

To remove the power supply, perform the following steps:

Step 1. Remove the front bezel from the server. See “Removing the Front Bezel” on page 52 for more information.

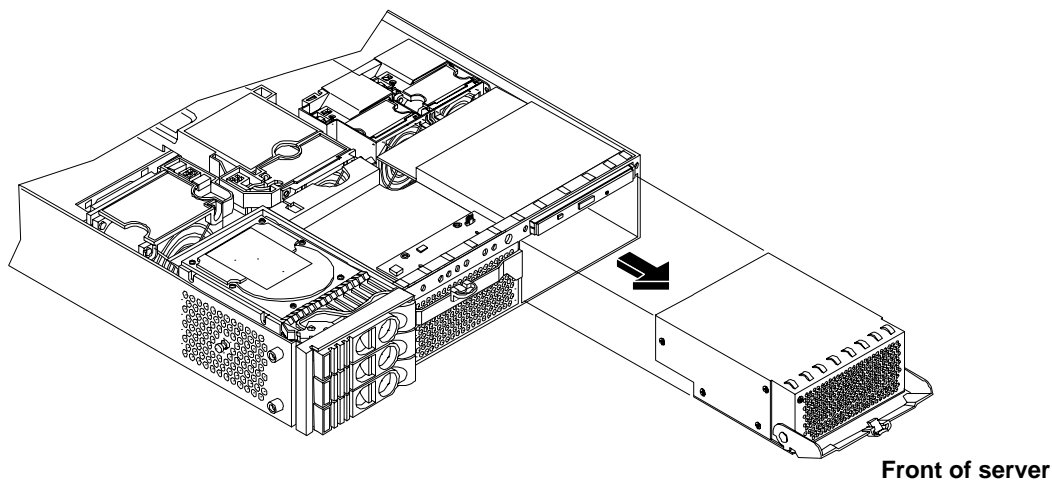
Step 2. Press the power supply retaining clip to unlatch the power supply release lever. See Figure 4-12 and Figure 4-13 for more information.

Figure 4-12 Releasing the Power Supply Retaining Clip



Step 3. Press the power supply release lever and pull the power supply out of the server.

Figure 4-13 Removing the Power Supply

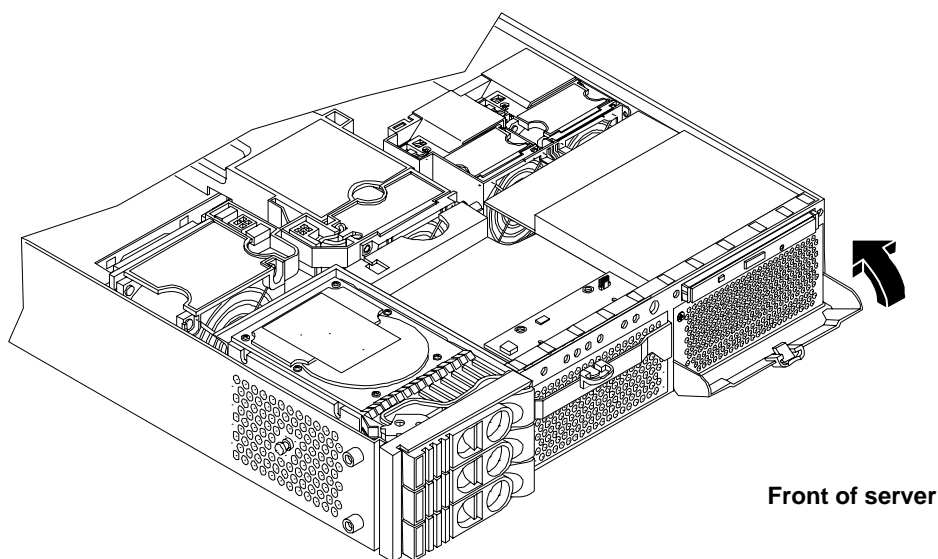


Replacing the Power Supply

To replace the power supply, perform the following steps:

- Step 1.** Remove the front bezel from the server and remove the defective power supply if you have not already done so.
- Step 2.** Open the power supply release lever on the replacement power supply and push the power supply into place. See Figure 4-14 for more information.

Figure 4-14 Replacing the Power Supply



- Step 3.** Push in and up on the power supply release lever to lock the retaining clip in place.
- Step 4.** Verify that both power supply LEDs, visible through the front of the supply grid, are illuminated.

Step 5. Verify the power supply replacement by using the utilities identified in Appendix C, “Utilities,” on page 167.

- Use the `PS` command of the iLO MP to verify power supply operation.

Step 6. Replace the front bezel.

Removing and Replacing an Internal Hard Disk Drive

This section provides information about removing and replacing internal hard disk drives.

The HP Integrity rx2620 server supports up to three hot-pluggable, low-voltage differential (LVD) hard disk drives. These hard disk drives are 3.5-inch form factor devices that connect to Ultra 320 Wide LVD SCSI interfaces on the disk cage backplane.

There is a significant difference between the terms hot-pluggable and hot-swappable:

- Hot swapping happens at the device level; a hot-swappable device manages insertion and removal on its own without assistance from operating system commands.
- Hot-plugging allows you to replace a defective disk drive in a high-availability server while it is running. You may need to interface with the operating system when hot-plugging a device.

CAUTION A hot-plug device may require interaction with the operating system before the device can be safely installed into the server. Verify that the operating system supports installing disk drives while the operating system is running. If the operating system does not support this feature, shut down the operating system before attempting this procedure. Failure to observe this caution results in server failure.

Removing a Hard Disk Drive

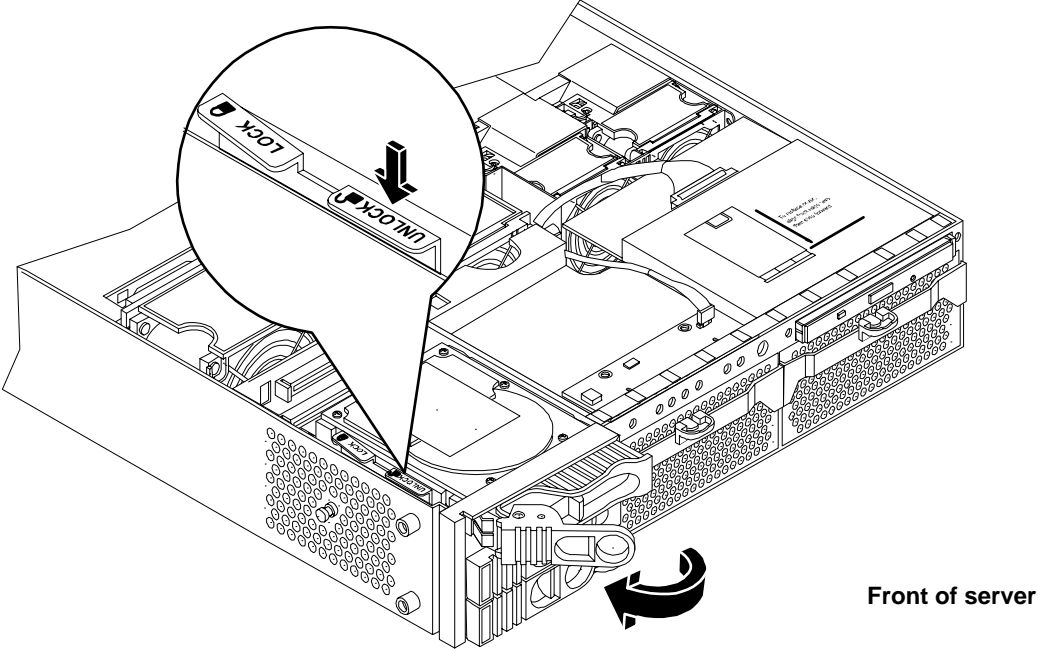
To remove a hard disk drive, perform the following steps:

- Step 1.** If the server is powered on and the OS is running, prepare the OS to have the disk drive removed. Shut down your OS by following your OS instructions.
- Step 2.** If you have not locked your hard drives, proceed to step 3. If you have locked your hard drives, you must unlock them before removing or replacing a drive:
- a. Remove the top metal cover. See “Removing the Top Metal Cover” on page 50 for more information.
 - b. Press down on the unlock lever to unlock the drive. See Figure 4-15 for more information.

CAUTION If you try to remove a hard disk drive without unlocking it from the server, you will damage the hard drive bay.

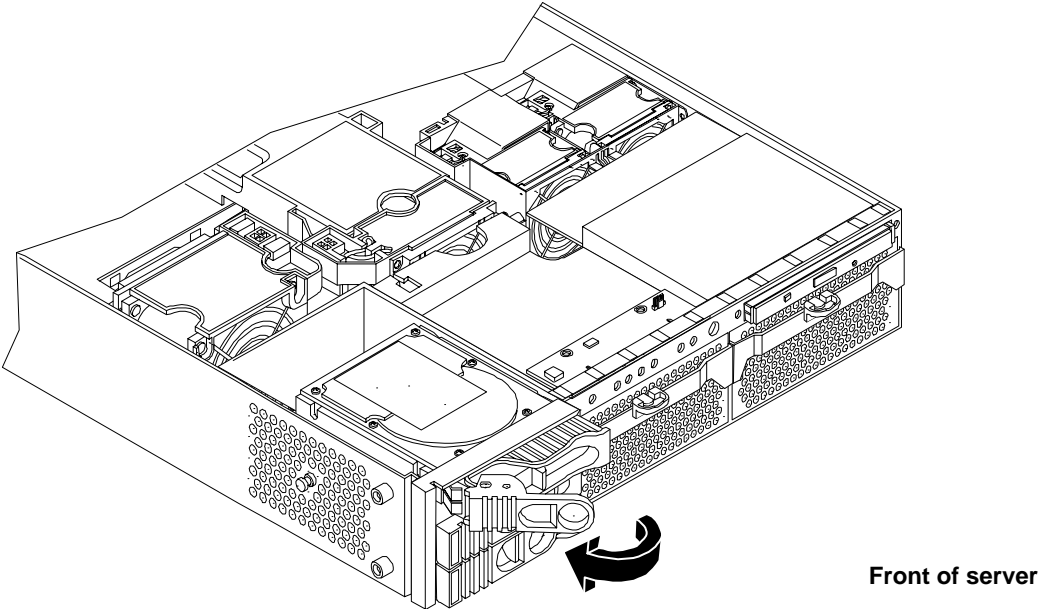
NOTE If the drive bay is not locked, the procedure for installing additional hard disk drives can be accomplished without removing the server from the rack and it is not necessary to remove the top cover. Completion of the procedure would not require locking the disk bay, replacing the top metal cover, or replacing the server in the rack.

Figure 4-15 Unlocking the Disk Drive (if necessary)



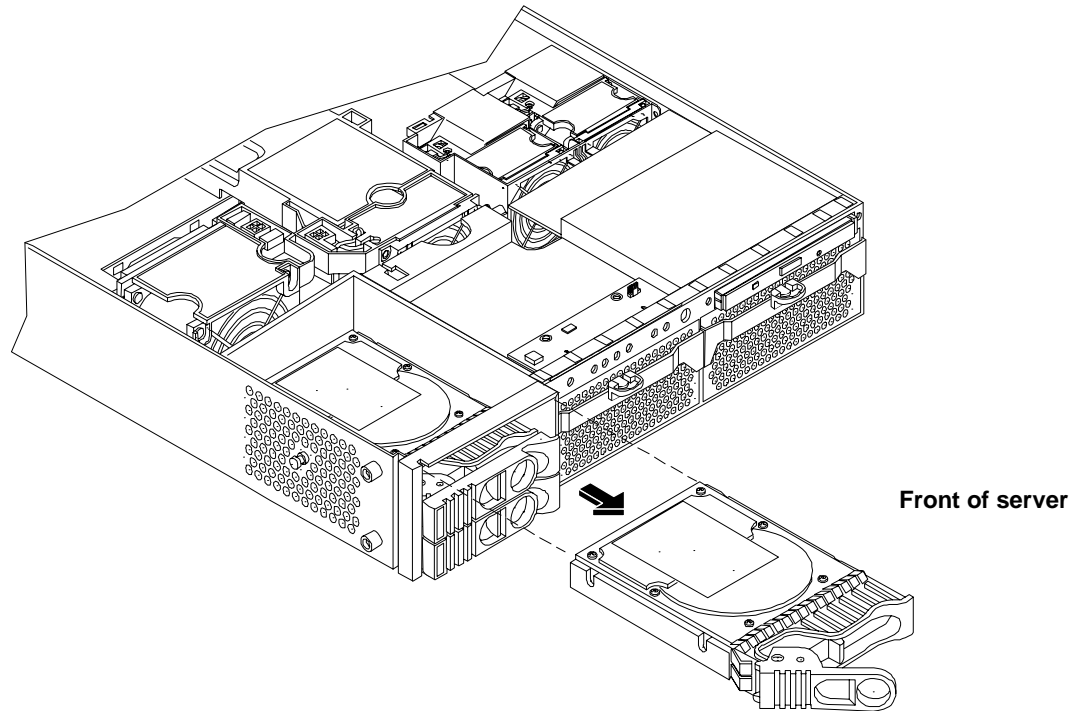
Step 3. Squeeze inward on the colored release clip on the hard drive release lever. See Figure 4-16 for more information.

Figure 4-16 Releasing the Disk Drive



Step 4. Pull outward on the release lever to remove the drive from the server. See Figure 4-17 for more information.

Figure 4-17 Removing the Disk Drive



Replacing a Hard Disk Drive

To install or replace a hard disk drive, perform the following steps:

- Step 1.** Insert the hard disk drive into the drive bay from which you removed the drive and push inward on the release lever until the drive no longer slides forward. You must leave the release lever in the open position, as shown, when you push the drive into the server.
- Step 2.** Release the lock on the drive being installed and swing the drive ejection handle to the open position.
- Step 3.** Slide the hard disk drive into the slot until it is nearly seated.
- Step 4.** If desired, lock the hard drives in place. Replace the server top metal cover if it was removed to unlock drives.
- Step 5.** Validate the hard disk drive installation by:
 - a.** If the server does not have iLO MP hardware installed, at the EFI shell prompt input **shell> info io** to interrogate the server for proper identification of the drive.
 - b.** Use the Offline Diagnostic Environment (ODE) **MAPPER** to map the device and path for the drive.
 - c.** Use the Offline Diagnostic Environment (ODE) **PERFVER** to perform selftest on the drive.
- Step 6.** Reset the server to the EFI Boot Maintenance Menu to rescan the hard drives.

Removing and Replacing Internal Components

To upgrade, remove, or replace most server components, you must first shut down the server, and remove the top metal cover.

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

When the server is running, the top metal cover must be replaced within 30 minutes to prevent components from overheating. If the top metal cover is not replaced within 30 minutes, the server automatically shuts down. If the server has been shut down, always replace the cover(s) before turning the server back on.

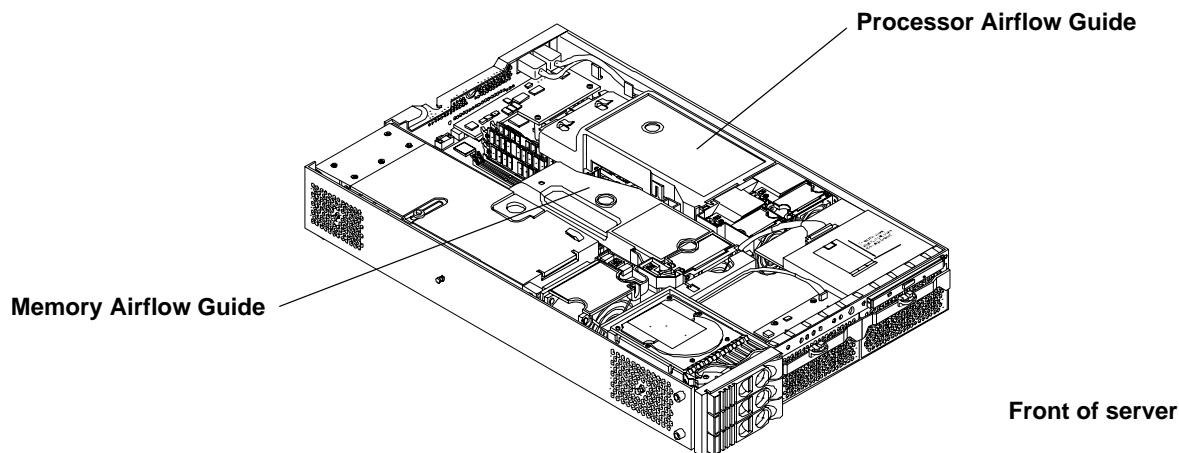
Removing and Replacing Airflow Guides

The server has the following airflow guides:

- The processor airflow guide. See Figure 4-18 for more information
- The memory airflow guide. See Figure 4-18 for more information.

NOTE Air flows through the server from front to back.

Figure 4-18 Airflow Guides Locations



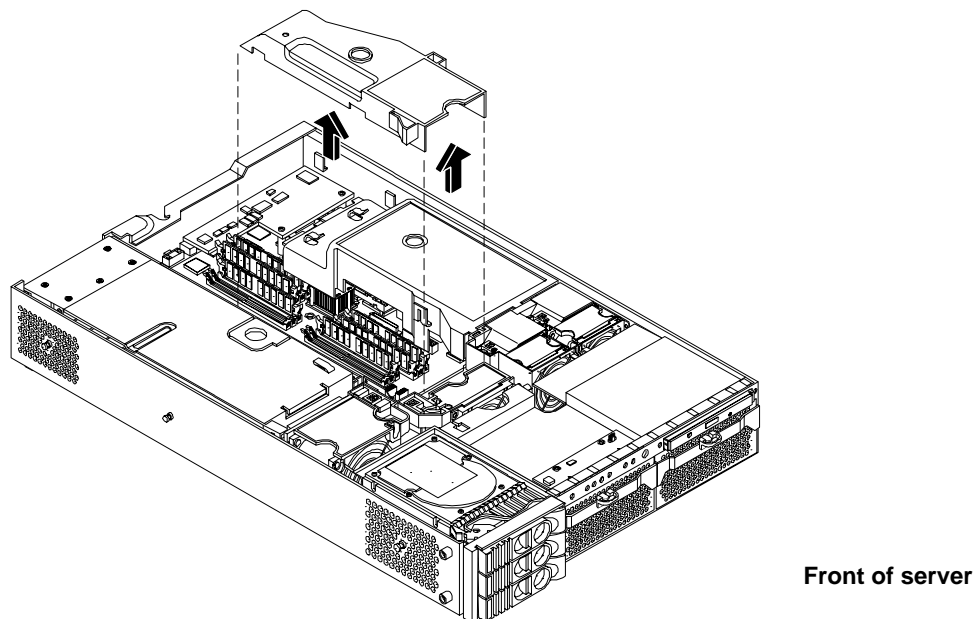
Removing and Replacing the Memory Airflow Guide

The following procedures show how to remove and replace the memory airflow guide.

Removing the Memory Airflow Guide

- Step 1.** Turn off the server and disconnect all power cables. See “Powering Off the Server” on page 42.
- Step 2.** Remove the top metal cover. See “Removing the Top Metal Cover” on page 50.
- Step 3.** Grasp the memory airflow guide and lift it out of the server. See Figure 4-19 for more information.

Figure 4-19 Removing the Memory Airflow Guide



Replacing the Memory Airflow Guide

- Step 1.** Align the guides on both sides of the airflow guide with the slots on the chassis.
- Step 2.** Insert the memory airflow guide in the slots.
- Step 3.** Replace the top metal cover and reconnect all of the power cables.

Removing and Replacing the Processor Airflow Guide

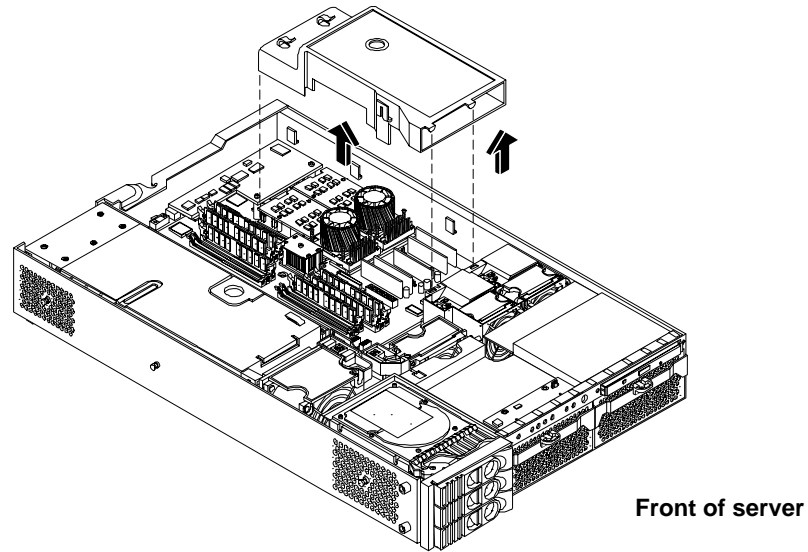
The following procedures show how to remove and replace the processor airflow guide.

Removing the Processor Airflow Guide

- Step 1.** Turn off the server and disconnect all power cables. See “Powering Off the Server” on page 42.
- Step 2.** Remove the top metal cover. See “Removing the Top Metal Cover” on page 50.
- Step 3.** Remove the IDE cable and power module cables from the processor airflow guide cable clips.

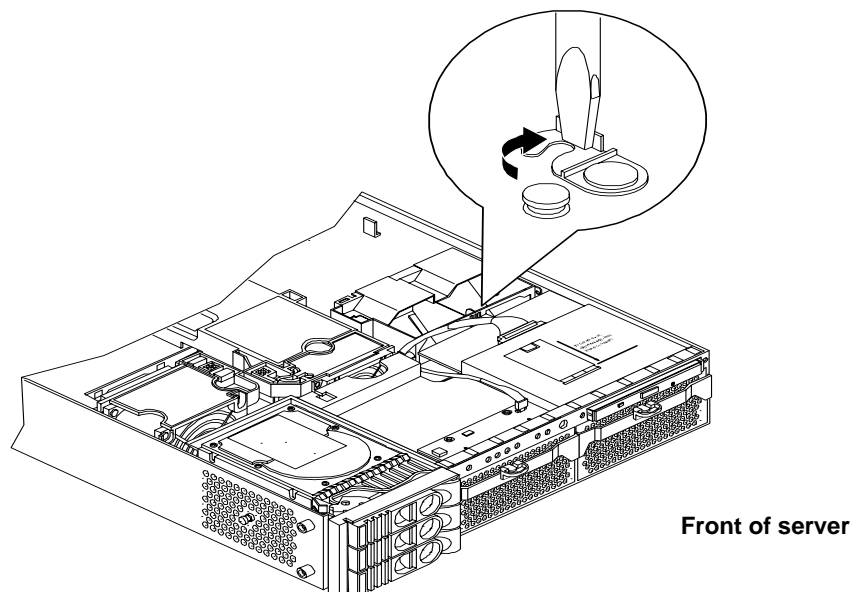
- Step 4.** Remove the main portion of the airflow guide:
- a. Hold the guide using the opening on top of the guide. See Figure 4-20 for more information.
 - b. At the same time, grasp the back end of the airflow guide and lift the guide out of the server.

Figure 4-20 Removing the Processor Airflow Guide



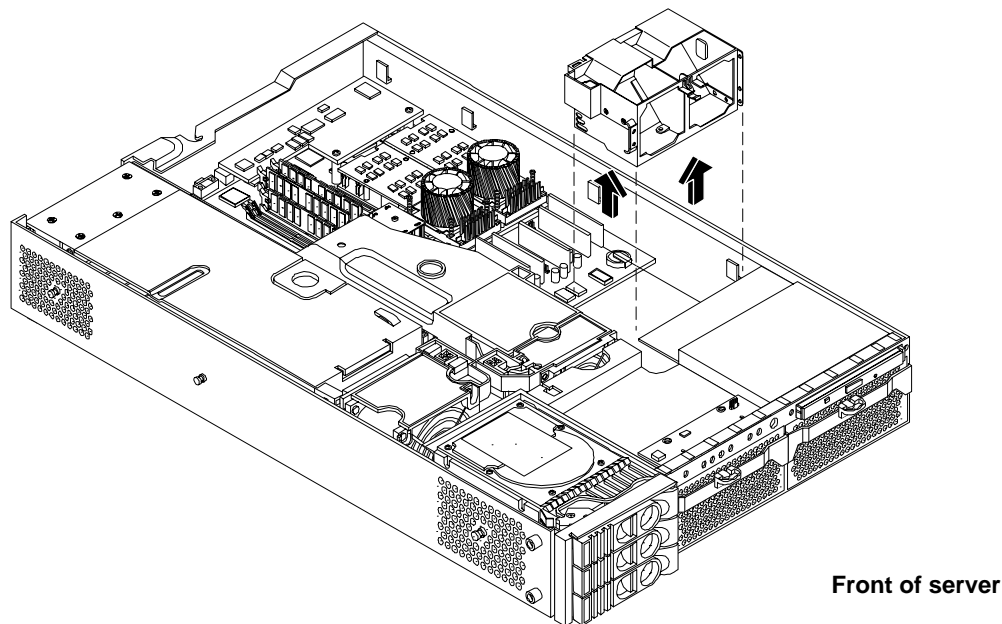
- Step 5.** Disconnect the power cable connected to the guide from the system board.
- Step 6.** Remove the front portion of the airflow guide by doing the following:
- a. Remove server fans 1A and 1B.
 - b. Rotate the clip clockwise to release the latch. See Figure 4-21 and Figure 4-22 for more information.

Figure 4-21 Open the Release Clip



Step 7. Lift the front portion of the airflow guide out of the server.

Figure 4-22 Remove the Front Airflow Guide



Replacing the Processor Airflow Guide

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

- a. Align the release latch of the front half of the airflow guide over the release latch post and snap it in place.
- b. Connect power connector on the front portion of the guide to the connector on the system board.
- c. Replace server fans 1A and 1B.

Step 2. Replace the main portion of the airflow guide:

- a. Hold the opening on top of the processor airflow guide.
- b. At the same time, grasp the back end of the airflow guide and insert the airflow guide into the server.
- c. Connect the power module cable and place the power and IDE cables in the cable clips.
- d. Insert the two airflow guide retaining tabs into the two slots on the front half of the airflow guide.

Step 3. Replace the top metal cover. Reconnect cables.

Removing and Replacing Memory DIMMs

Your server has 12 memory sockets for installing DDR SDRAM memory DIMMs. The supported DIMM sizes are 256 MB, 512 MB, 1 GB, 2 GB, or 4 GB. The server supports combinations from 1 GB up to 32 GB. See Figure 4-23 for the DIMM slot locations on the system board.

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

Voltages are present at various locations within the server whenever an AC power source is connected. This voltage is present even when the main power switch is in the off position.

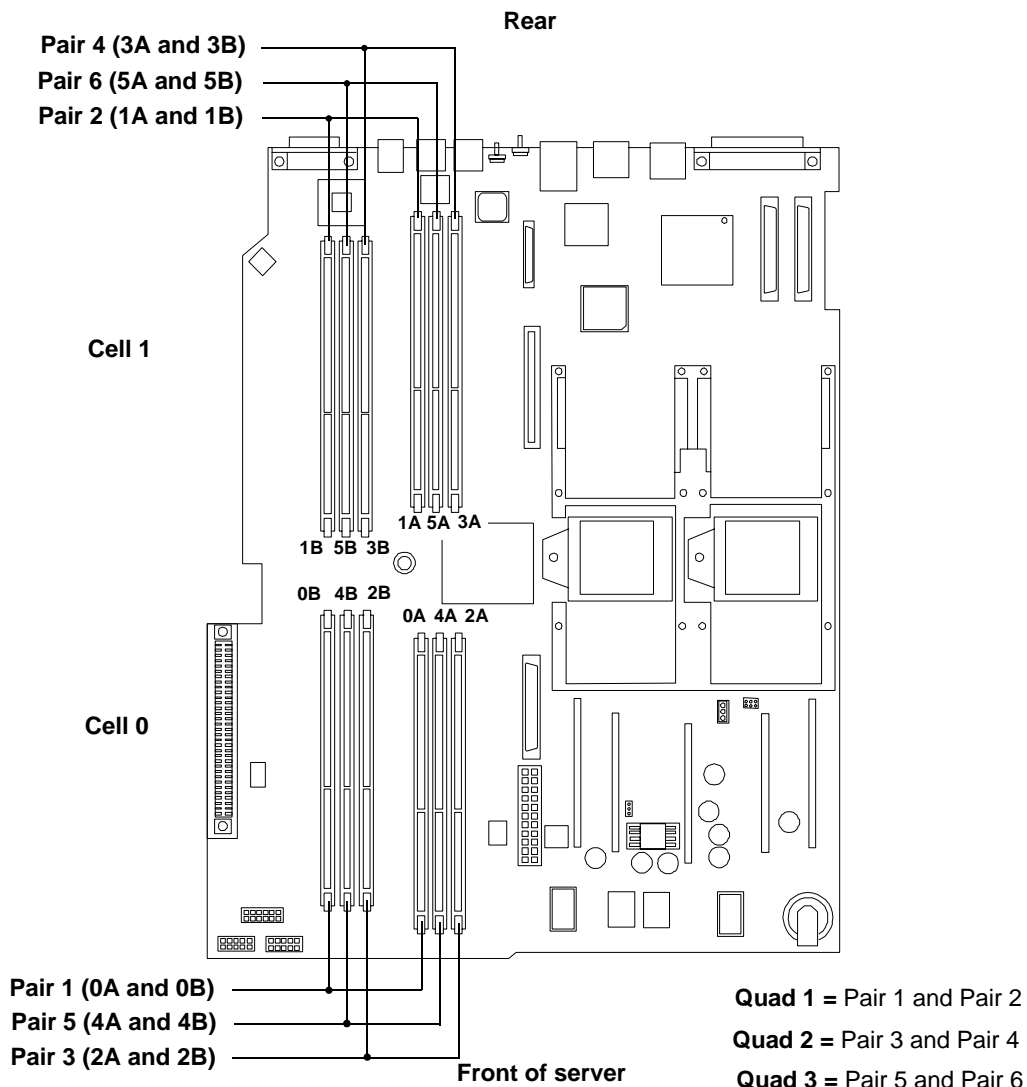
Failure to observe this warning could result in personal injury or damage to equipment.

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

Supported DIMM Sizes

Supported DIMM sizes are 256 MB, 512 MB, 1 GB, 2 GB, and 4 GB. Memory in the server is installed in quads. A quad of memory is a set of four matching DIMMs. Quad sizes may differ within the server as long as all DIMMs within a quad match, unless you are installing 4 GB DIMMs. The only set up allowed with 4 GB DIMMs is to install eight 4 GB DIMMs. The server supports combinations from 1 GB (using 256 MB DIMMs) to 32 GB (using eight 4 GB DIMMs). See Figure 4-23 for the identification of quads.

Figure 4-23 DIMM Slot Identification



Removing DIMMs

To remove memory DIMMs, perform the following steps:

- Step 1.** Turn off the server and disconnect all the cables. See “Powering Off the Server” on page 42 for more information.
- Step 2.** Remove the top metal cover. See “Removing the Top Metal Cover” on page 50.
- Step 3.** Identify the DIMM to be removed and push the appropriate extraction levers found on either side of the DIMM slot outward to the open position. The DIMM ejects from the slot.
- Step 4.** Remove the DIMM from the socket. If the removed memory is functional, store it in a static-free container for future use.

Installing DIMMs

DIMMs must be loaded in the correct order:

- In the HP Integrity rx2620 server, DIMMs must be installed in matched quads. Two matched memory card pairs of equal size (that is, four identical DIMMs) must be installed, one pair per memory cell, as listed below:
 - 0A, 0B and 1A, 1B must be matched pairs of equal size
 - 2A, 2B and 3A, 3B must be matched pairs of equal size
 - 4A, 4B and 5A, 5B must be matched pairs of equal size

NOTE DIMMs match if they have the same HP part number. The DIMMs are 184-pin, industry-standard, DDR266, CL2, registered ECC modules. Industry standard means the DIMMs meet specifications detailed in the JEDEC Standard No. 21-C, Module 4, titled “PC2100 and PC1600 DDR SDRAM Registered DIMM Design Specification.” A complete and current list of acceptable DIMMs is provided on the parts web site at: <http://partsurfer.hp.com>.

Module sizes can be mixed, as long as DIMMs in each quad match, except when using 4 GB DIMMs. If you install 4 GB DIMMs, the only configuration allowed is 8 4GB DIMMs. For example:

- It is acceptable to load a quad of 256 MB DIMMs in sockets 0A, 0B, 1A and 1B; and a quad of 1 GB DIMMs in sockets 2A, 2B, 3A and 3B.
- If using 4GB DIMMs, the only configuration allowed is 4 GB DIMMs in slots 0A, 0B, 1A, 1B, 2A, 2B, 3A, and 3B. Slots 4A, 4B, 5A, and 5B remain empty.

The memory subsystem supports chip-spare functionality. Chip spare enables an entire SDRAM chip on a DIMM to be bypassed (logically replaced) in the event that a multi-bit error is detected on that SDRAM.

In order to use the chip spare functionality, only DIMMs built with x4 SDRAM parts can be used, and these DIMMs must be loaded in quads (two DIMMs per memory cell, loaded in the same location in each memory cell).

Each DIMM within a quad must be identical to all the other DIMMs in the quad.

To install DIMMs, perform the following steps:

Step 1. Turn off the server and disconnect all the cables. See “Powering Off the Server” on page 42.

Step 2. Remove the server top metal cover. See “Removing the Top Metal Cover” on page 50.

CAUTION To ensure that memory modules are not damaged during removal or installation, power off the server and unplug the power cord from the AC power outlet. Wait until the LED on the back of the power supply turns off before removing or installing memory.

Step 3. Holding the memory module by its left and right edges, insert the module into the socket.

The memory modules are keyed and can only be inserted in one direction. When the module is correctly seated, the retainer clips return to their fully upright position. Snap the clips firmly into place to ensure the DIMMs are seated properly.

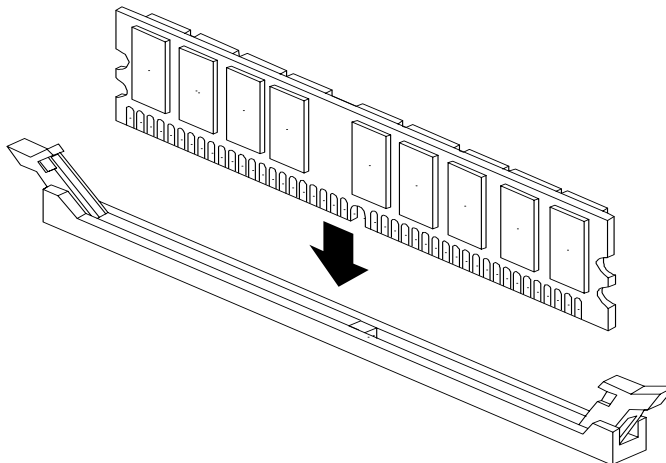
Step 4. Gently and evenly push on each side of the DIMM until it seats in the socket. Ensure the extraction levers are in the closed position. See Figure 4-24 for more information.

Step 5. Replace the server top metal cover, reconnect all cables and turn on the server.

Step 6. Verify that the newly installed memory works:

- Run the `info mem` command at the EFI shell prompt, or
- Run `memdiag` from the Offline Diagnostics CD to insure that the memory is functional
- Monitor the System Event Log (SEL) to ensure there are no events showing memory problems.

Figure 4-24 **Inserting DIMM into Slot**



Removing and Replacing a Processor

This section provides information about removing and replacing a processor. The processors are located on the system board, which is accessible by removing the top metal cover.

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

Voltages are present at various locations within the server whenever an AC power source is connected. This voltage is present even when the main power switch is in the off position.

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

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

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

The processors are located on the system board. The system board can support either one or two processors. The CPU 0 slot is located on the right side of the system board, and the CPU 1 slot is located to the left of CPU 0 near the memory DIMMs. See Figure 4-25 for the processor locations.

NOTE In a single CPU configuration, the single processor must be installed in the CPU 0 slot.

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

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

Valid processors are identified in Appendix A, “Parts Information,” on page 139.

Figure 4-25 Processor Locations

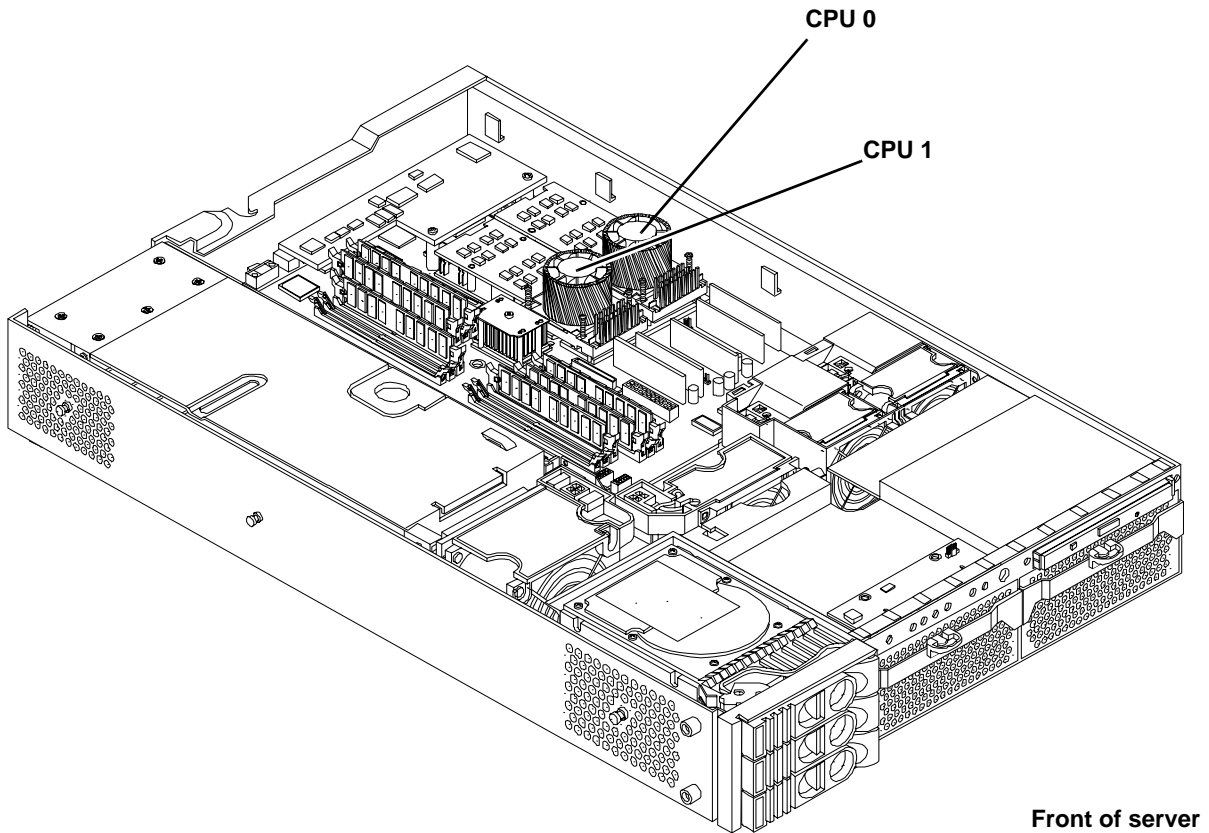
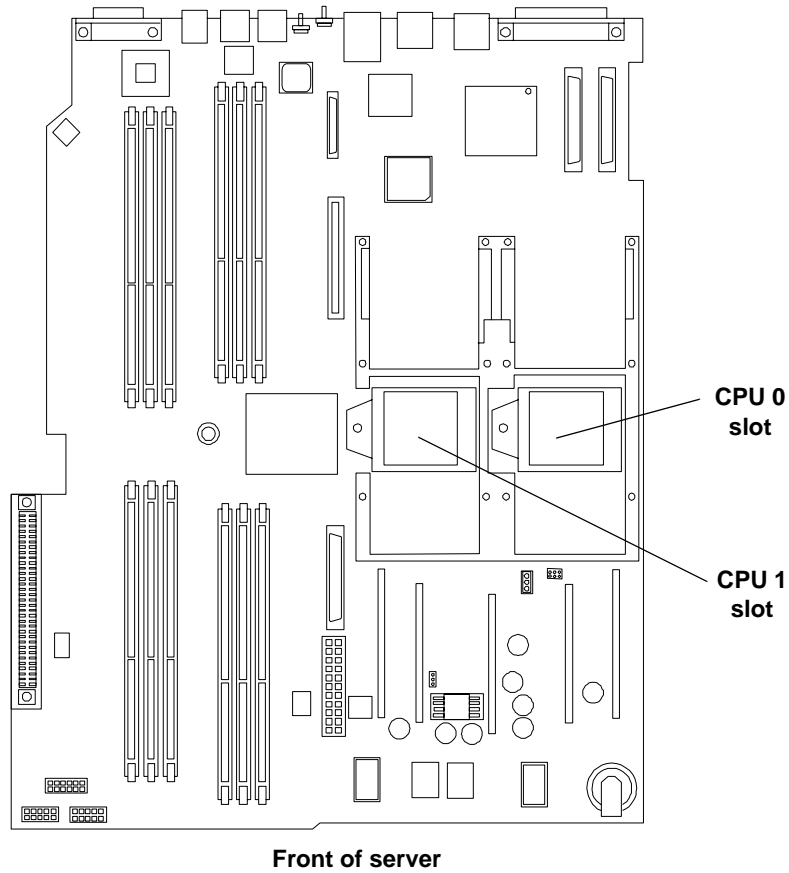


Figure 4-26 Processor Location on System Board



Removing a Processor

To remove a processor module, perform the following steps:

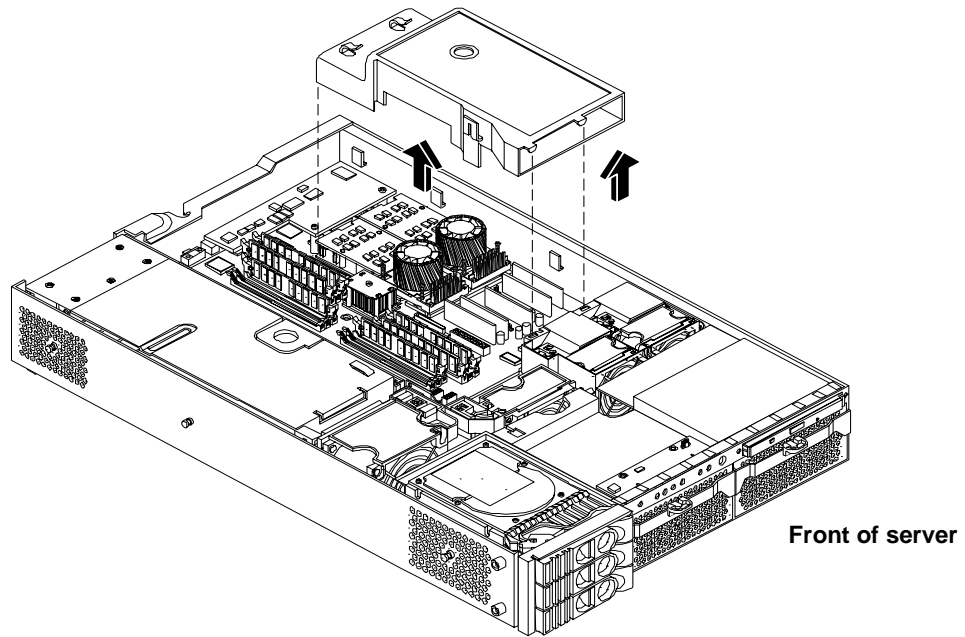
- Step 1.** Turn off the server and disconnect all cables. See “Powering Off the Server” on page 42.
- Step 2.** Remove the top metal cover. See “Removing and Replacing the Top Metal Cover” on page 50.
- Step 3.** Remove the processor airflow guide. See Figure 4-27 for more information.
 - a. Remove the IDE cable and power module cables from the processor airflow guide cable clips.

CAUTION Record the cable routing of these cables to ensure the cables are returned to their correct routes.

- b. Hold the guide using the opening on top of the guide.

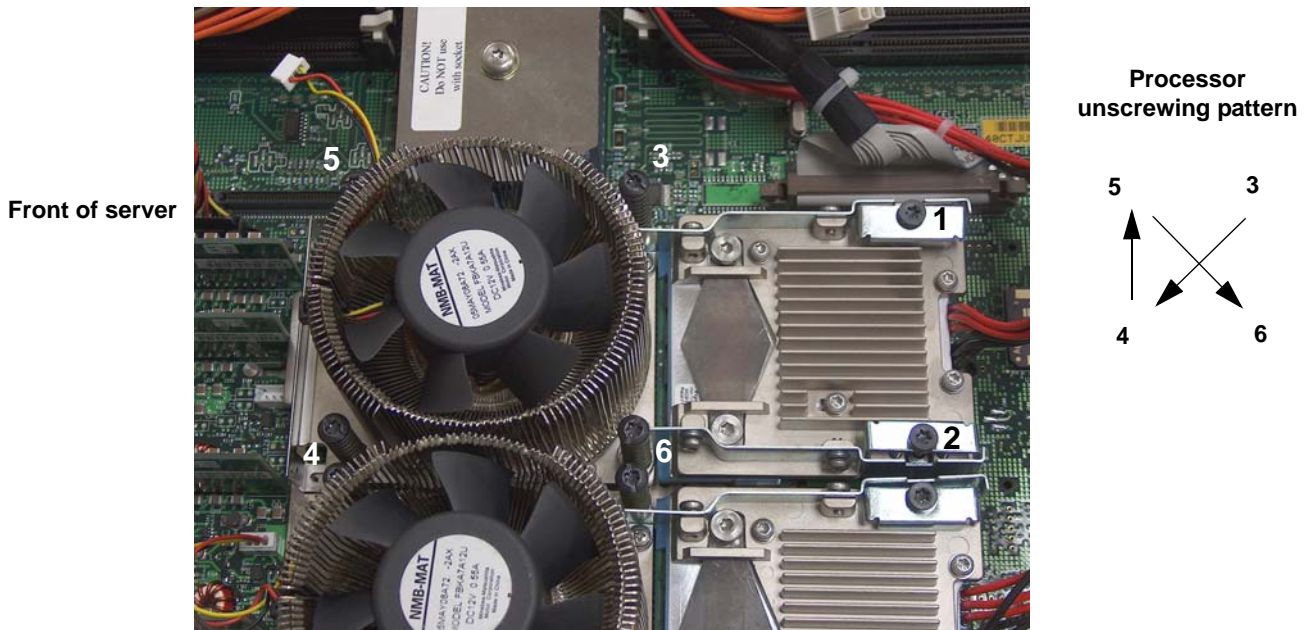
- c. At the same time, grasp the back end of the airflow guide and lift the guide out of the server.

Figure 4-27 Removing the Processor Airflow Guide



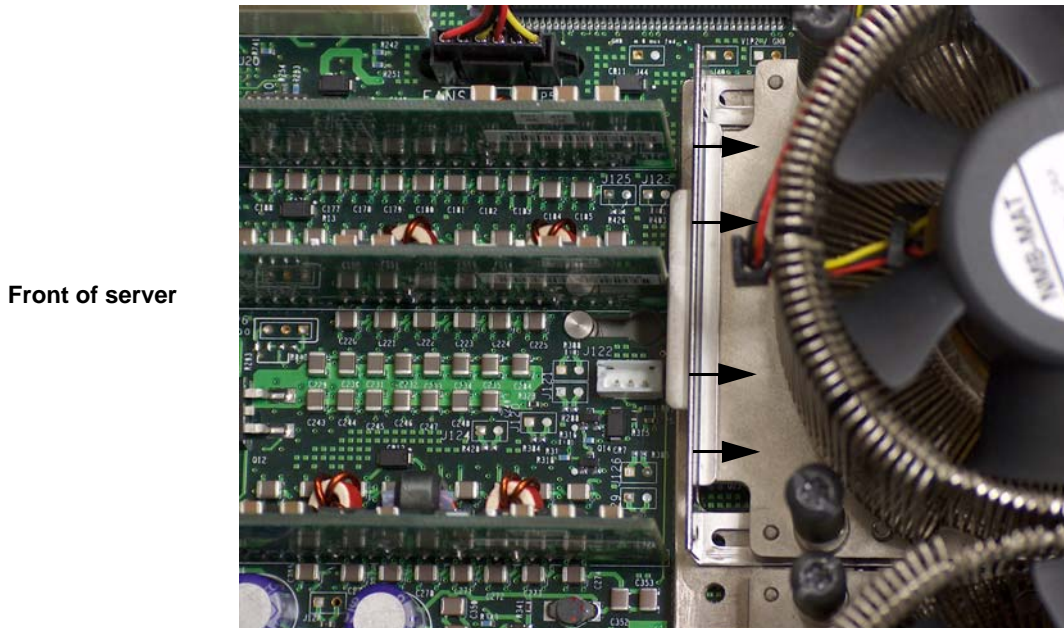
- Step 4.** Disconnect the processor power cable from the server power cable.
- Step 5.** Disconnect the turbo fan power cable from the system board.
- Step 6.** Unscrew the two heat sink captive screws, and the four processor captive screws. See Figure 4-28 for the screw locations and removal sequence.

Figure 4-28 Unscrew the Captive Screws



- Step 7.** Slide the sequencing retainer plate toward the back of the server to open the hole in the edge of the heatsink for insertion of the special processor tool into the processor module locking mechanism. See Figure 4-29 for more information.

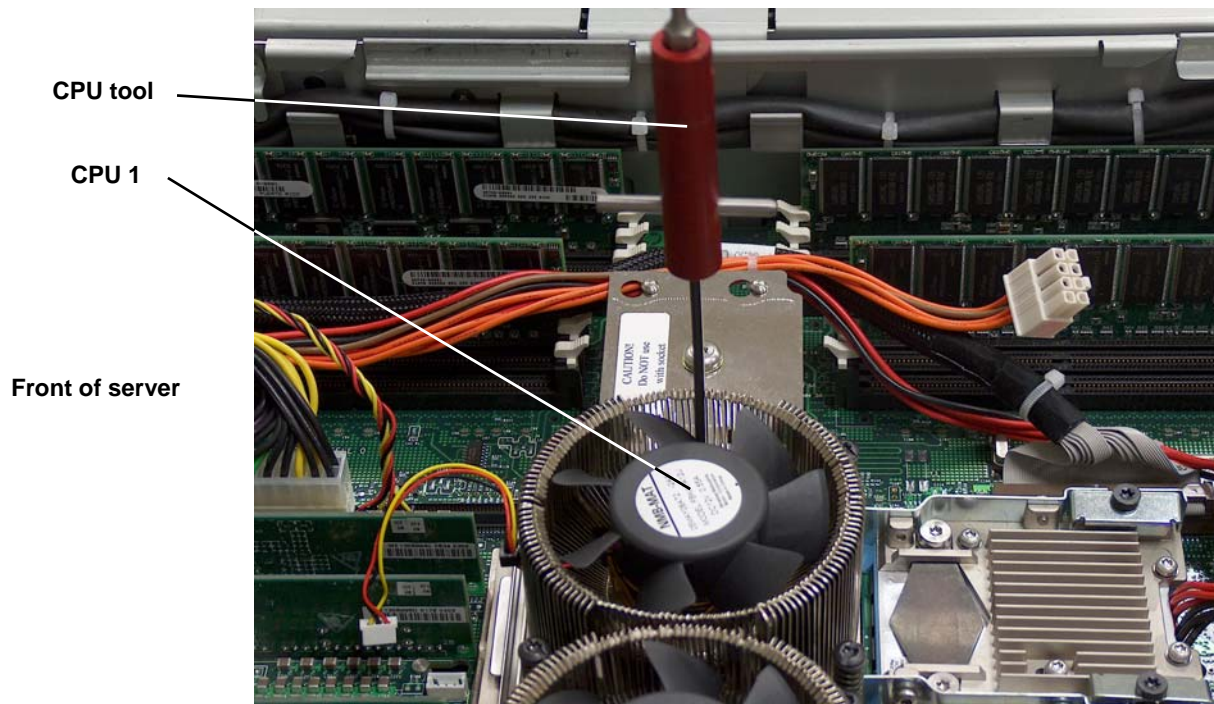
Figure 4-29 Slide Sequencing Retainer Plate



- Step 8.** Unlock the processor-locking mechanism using the special processor tool (P/N 5069-5441), or equivalent 2.5 mm hex tool, shipped with your replacement processor assembly. Insert the tool through the turbo fan blades into the lock and rotate the processor tool 180 degrees counterclockwise. See Figure 4-30 for more information.

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

Figure 4-30 Unlock Processor Module Locking Mechanism



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

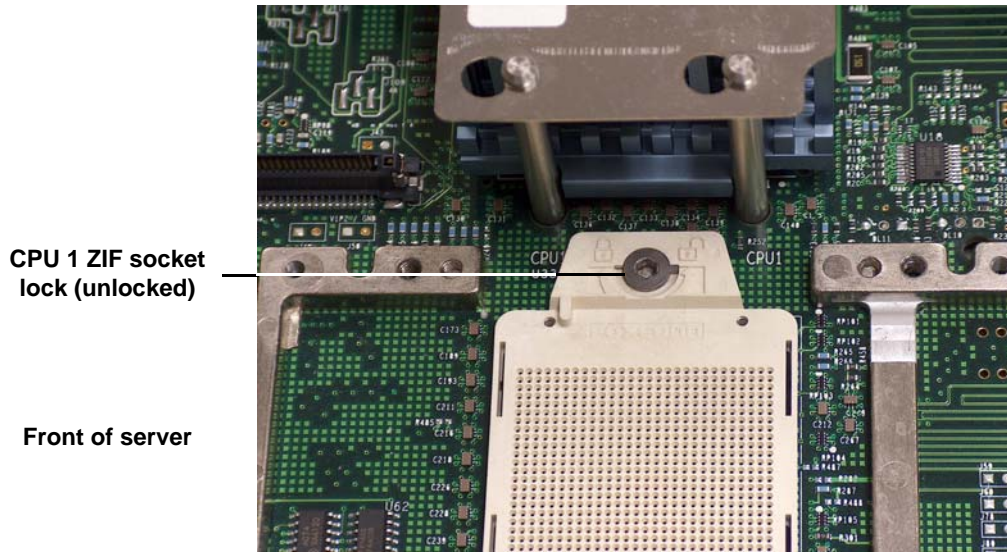
Replacing a Processor

The processors are located on the system board. The system board can support either one or two processors. CPU 0 is located on the right side of the system board near the chassis, and CPU 1 (when installed) is located to the left of CPU 0 near the DIMMs. In a single CPU configuration, the single processor module must be installed in the CPU 0 slot. See Figure 4-26 for the CPU slot locations.

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

- Step 1.** Turn off the server and disconnect all cables. See “Powering Off the Server” on page 42.
- Step 2.** Remove the top metal cover. See “Removing and Replacing the Top Metal Cover” on page 50.
- Step 3.** If you are replacing a processor module, remove the old processor as described “Removing a Processor” on page 70.
- Step 4.** Verify the ZIF socket lock is unlocked by looking at the CPU socket. The thicker post on the locking mechanism should be pointed toward the unlock symbol on the ZIF socket. Figure 4-33 shows the socket unlocked.

Figure 4-31 Unlocked ZIF Socket Lock



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

Step 5. Use the two alignment pins on the processor to properly align the processor on the system board. The two alignment pins fit in the alignment holes on the system board processor mount. Figure 4-32 shows the location of the alignment pins on the processor. Figure 4-33 shows the alignment holes on the system board. The turbo fan power cable must be positioned so that it is located on the side of the heatsink that faces the front of the server. Figure 4-34 shows the processor on the system board.

Figure 4-32 Processor Alignment Pins

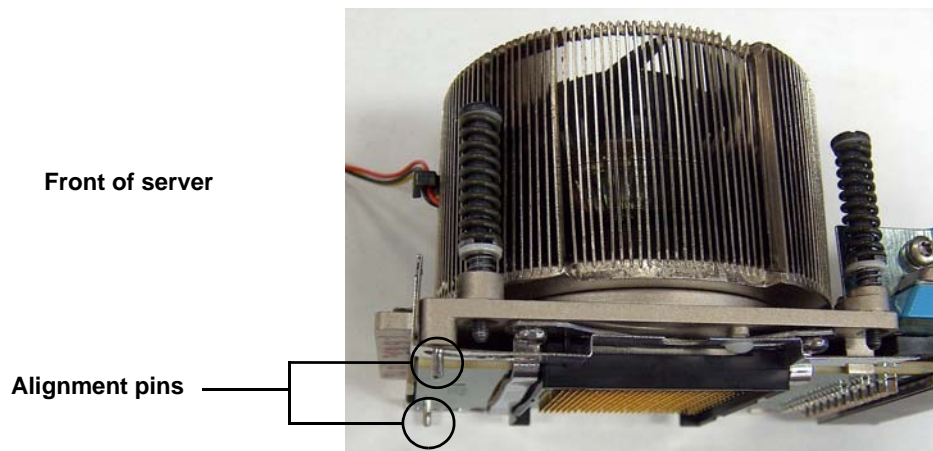


Figure 4-33 CPU Slot Alignment Holes

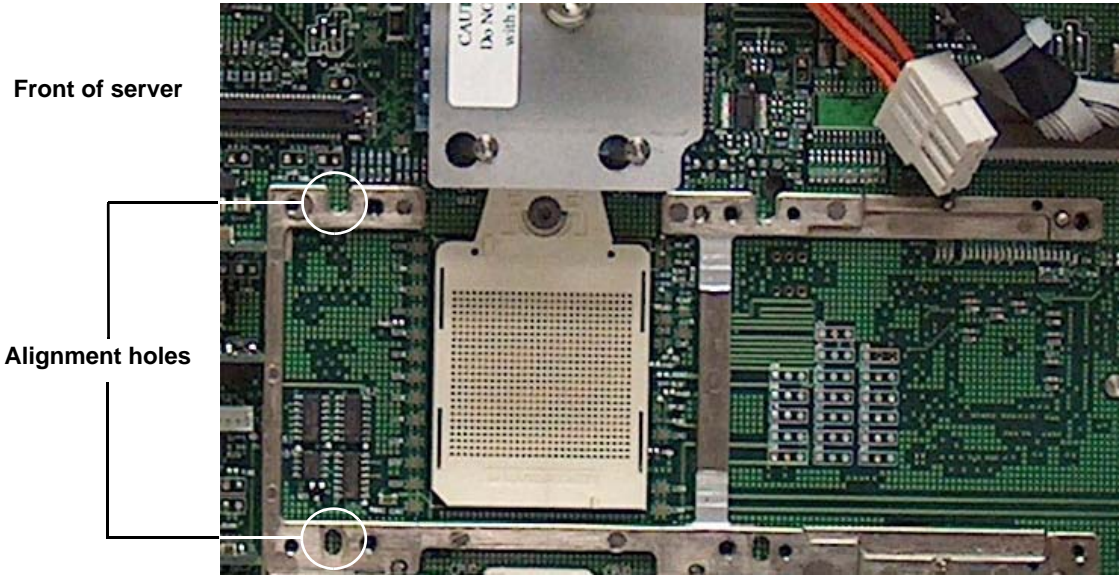
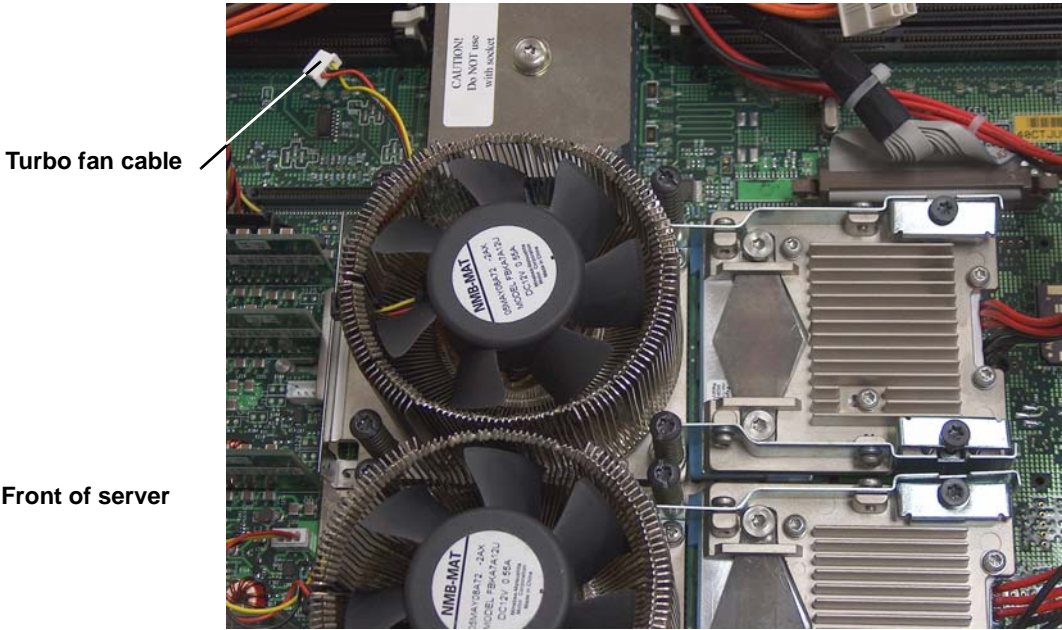


Figure 4-34 Installing the Processor Module

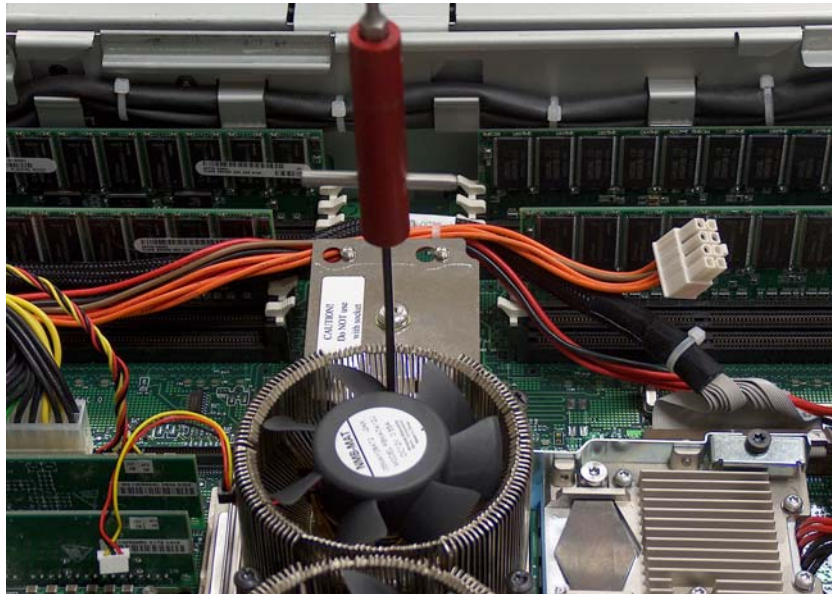


CAUTION Do not press the processor module into the socket. When properly aligned, the processor pins seat into the ZIF socket, no additional pressure is required.

- Step 6.** Use the special processor tool shipped with your replacement processor module to lock the processor module in place on the system board. To do this, insert the special processor tool through the turbo fan blades into the ZIF socket. Rotate the tool clockwise 180 degrees. See Figure 4-35 for more information.

Figure 4-35 Locking the Processor Module in Place

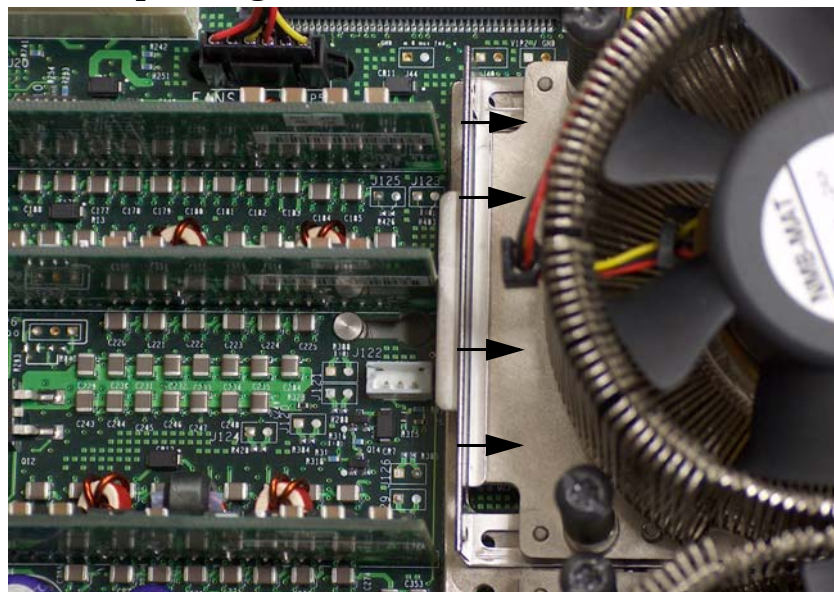
Front of server



- Step 7.** Slide the sequencing retainer plate toward the rear of the server. See Figure 4-36.

Figure 4-36 Slide the Sequencing Retainer Plate

Front of server



Step 8. Screw in the four processor captive screws, and the two heat sink captive screws in the order shown in Figure 4-37.

Figure 4-37 Secure the Captive Screws



Step 9. Connect the processor module turbo fan power cable to the connector on the system board, and connect the power pod cable to the power cable

Step 10. Install the processor airflow guide. See “Removing the Processor Airflow Guide” on page 62.

Step 11. Install the top metal cover. See “Replacing the Top Metal Cover” on page 51.

Step 12. Verify that the newly installed processor works:

- Run the `info cpu` command at the EFI shell prompt; or
- Run `cpu diag` from Offline Diagnostic CD for full functional check.
- Monitor the SEL to ensure there are no events showing processor problems.

Removing and Replacing the System Battery

The main server battery is located on the system board. Servers with iLO hardware have an additional battery located on the iLO MP card. See “Removing and Replacing the iLO MP Battery” on page 89 for more information.

Battery Notice

This product contains a Lithium battery.

WARNING Lithium batteries may explode if mistreated. Do not recharge, disassemble, or dispose of in a fire. Failure to observe this warning could result in personal injury or damage to equipment.

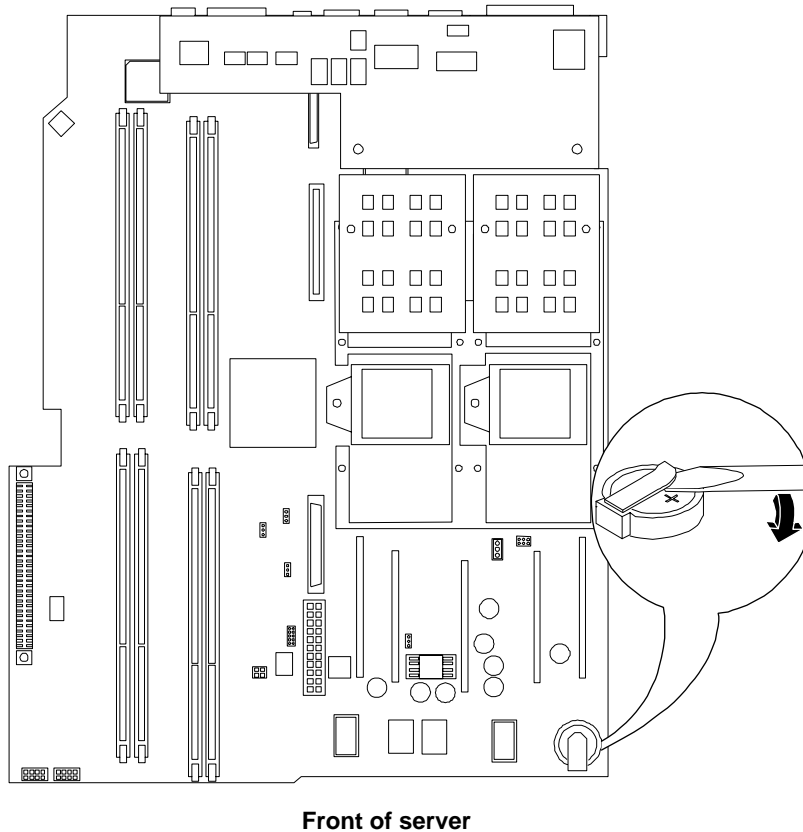
Replace the battery with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

Removing the System Battery

- Step 1.** Turn off the server and disconnect all cables.
- Step 2.** Remove the top metal cover. See “Removing and Replacing the Top Metal Cover” on page 50.
- Step 3.** Lift up on the battery and push on the back of it with a flat-head screwdriver to remove the battery from its holder. See Figure 4-38 for the battery location on the system board.

CAUTION Only lift the battery high enough to clear the holder. Excessive stress on the battery holder retaining clip may damage the clip.

Figure 4-38 Removing the System Battery



Replacing the System Battery

Step 1. Lift up on the battery holder retaining clip with a flat-head screwdriver and slide the battery into the holder. The positive (+) terminal of the battery faces up.

CAUTION Only lift the battery high enough to clear the holder. Excessive stress on the battery holder retaining clip may damage the clip.

Step 2. Install the top metal cover. See “Replacing the Top Metal Cover” on page 51.

Step 3. Reconnect all of the power and external cables and turn on the server.

Step 4. Verify the battery replacement by using the utilities identified in Appendix C, “Utilities,” on page 167.

- Use the iLO MP commands to verify operation.

Step 5. You may need to reset the server time and date using the EFI time and date commands. Once you have set the time, turn the server off, unplug the power cord, and wait for one minute before turning it back on. Execute the time and date commands again. If the time and date are now correct, you have installed the battery correctly.

Removing and Replacing PCI Card Cage

Accessory cards are installed in a removable PCI cage. This section explains how to access the PCI card cage, as well as how to remove and install accessory cards.

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

Voltages are present at various locations within the server whenever an AC power source is connected. This voltage is present even when the main power switch is in the off position.

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

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

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

Removing the PCI Card Cage

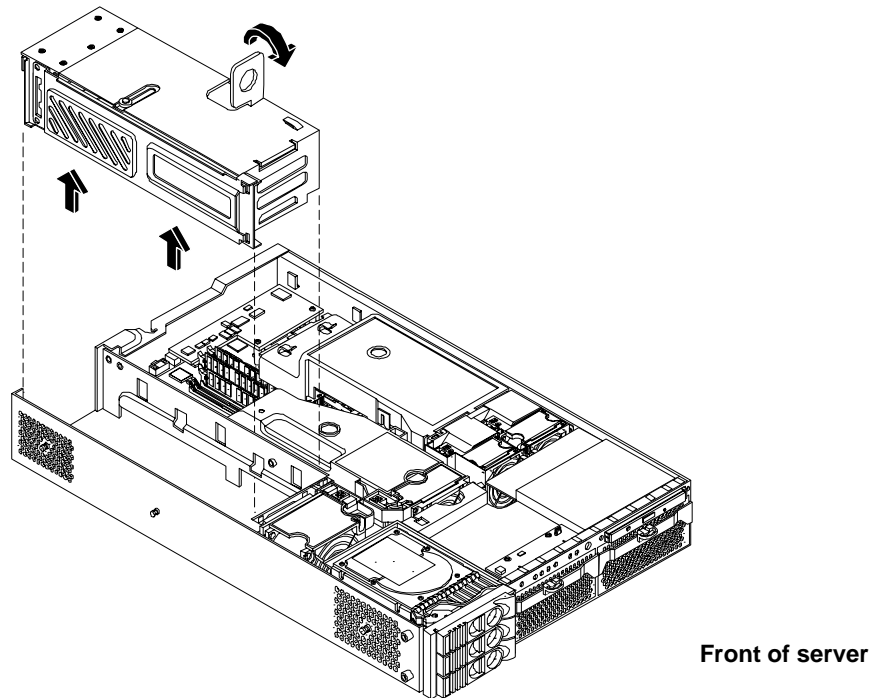
To remove the PCI cage from the server, perform the following steps:

Step 1. Turn off the server and disconnect the power cable and all other cables from the back of the server. See “Powering Off the Server” on page 42 for more information.

Step 2. Remove the top metal cover. See “Removing and Replacing the Top Metal Cover” on page 50.

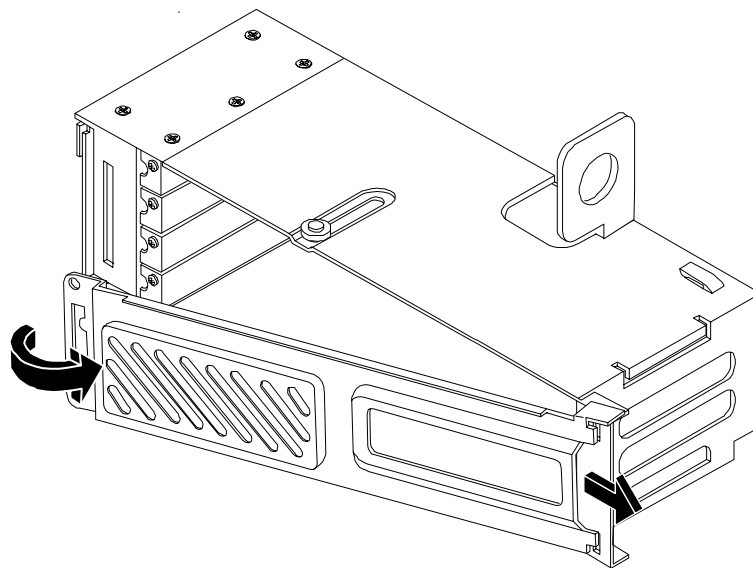
Step 3. Lift up on the PCI cage release lever and the back edge of the PCI cage and lift the PCI cage out of the server. See Figure 4-39 for more information on removing the PCI card cage.

Figure 4-39 Removing the PCI Cage



Step 4. Grasp the PCI cage cover and slide it away from the bulkhead end of the cage, then lift the cover off. See Figure 4-40 for more information.

Figure 4-40 Removing the PCI Cage Cover



Step 5. Unscrew the bulkhead screw that holds the accessory card in place.

Step 6. The PCI cards are now accessible for removal and replacement.

Replacing the PCI Card Cage

To install the PCI cage into the server, perform the following steps:

- Step 1.** Install the PCI card cover onto the PCI cage. See Figure 4-40.
- Step 2.** Slide the PCI card cage into the server, and lock the cage into place by closing the release lever. See Figure 4-39 for more information.
- Step 3.** Install the top metal cover. See “Replacing the Top Metal Cover” on page 51.
- Step 4.** Connect all server power, PCI, and LAN cables.

Removing and Replacing PCI Cards

The server may contain up to four PCI cards. PCI cards are located in the PCI cage.

CAUTION There are restrictions on the number of PCI-X cards that can be installed in the rx2620 server at any given time, depending on the cards being used.

Maximum quantity for any I/O configuration using 337972-B21, AB287A, or A9890A cards:

- Three A9890A cards maximum plus one unpopulated slot
- Two 337972-B21 cards maximum plus two unpopulated slots
- One AB287A card maximum plus three unpopulated slots

Failure to observe this caution results in server degradation, or server failure.

The server has the following accessory card sockets:

- Four 64-bit, 133 MHz PCI-X card sockets
-

WARNING Ensure that the server is powered-down and all power sources have been disconnected from the server prior to removing or replacing a PCI card.

Voltages are present at various locations within the server whenever an AC power source is connected. This voltage is present even when the main power switch is in the off position.

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

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

Carefully read the following information concerning PCI slot configuration. Inserting a PCI card into a slot that is not configured to accept it, may cause operation failure or the PCI card to operate at less than optimum speed. PCI slots are numbered 1 (top of cage) through 4 (bottom of cage). See the labels on the rear panel of the chassis for correct PCI slot number identification.

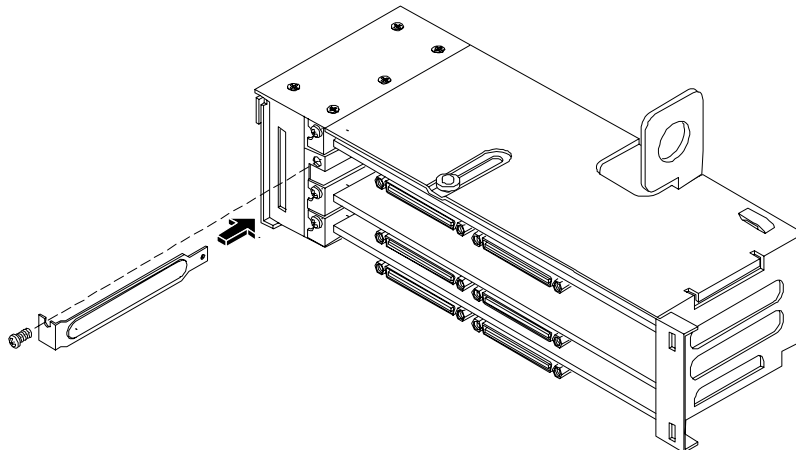
Removing a PCI Card

To remove a PCI card from the server, perform the following steps:

CAUTION Record the location of all PCI cards as they are installed. Depending on the operating system, replacing the PCI card in a different location might cause boot failure.

- Step 1.** Turn off the server and disconnect the power cable and all other cables from the back of the server. See “Powering Off the Server” on page 42 for more information.
- Step 2.** Remove the top metal cover. See “Removing and Replacing the Top Metal Cover” on page 50.
- Step 3.** If necessary disconnect any cables that are connected to the PCI card in order to remove the PCI cage.
- Step 4.** Perform the procedure for removing the PCI cage described in the previous section.
- Step 5.** Grasp the edges of the PCI card being removed and gently rock the card releasing the connector from the PCI backplane connector. Place the removed PCI card in an electrostatic container.
- Step 6.** Install a PCI slot cover to close the cavity left by the removal of the PCI card. This maintains the proper airflow within the chassis. See Figure 4-41 for more information.

Figure 4-41 Installing a PCI Slot Cover

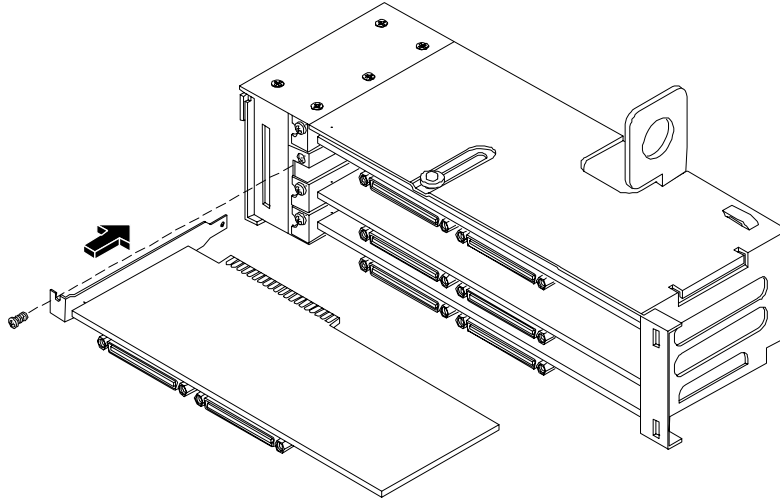


Replacing a PCI or Graphics Card

- Step 1.** Turn off the server and disconnect the power cable and all other cables from the back of the server (if necessary). See “Powering Off the Server” on page 42 for more information.
- Step 2.** Remove the top metal cover (if necessary). See “Removing and Replacing the Top Metal Cover” on page 50.
- Step 3.** Disconnect any cables that are connected to the PCI card in order to remove the PCI cage (if necessary).
- Step 4.** Remove the PCI cage as described in “Removing the PCI Card Cage” on page 79.
- Step 5.** Open the PCI cage as described in “Removing the PCI Card Cage” on page 79.

Step 6. Grasp the edges of the PCI card to be installed and gently press the card into the PCI backplane connector. See Figure 4-42 for more information.

Figure 4-42 Installing a PCI Card



Step 7. Reinstall the PCI cage. See “Replacing the PCI Card Cage” on page 81.

Step 8. Connect any cables that are required by the PCI card.

Step 9. Power on the server. See “Powering On the Server” on page 43.

Step 10. Verify the installation of all PCI cards:

- Check the LEDs of all PCI cards for proper operation. See accessory manuals.
- Run `PERFVER` from the Offline Diagnostics CD to insure that all PCI cards are identified.
- Monitor the SEL to ensure there are no events showing peripheral problems.

Step 11. Replace the top metal cover. See “Removing and Replacing the Top Metal Cover” on page 50.

Step 12. Connect all server power, PCI, and LAN cables.

Removing and Replacing the PCI Backplane

The server backplane is called the PCI backplane and provides four PCI card sockets.

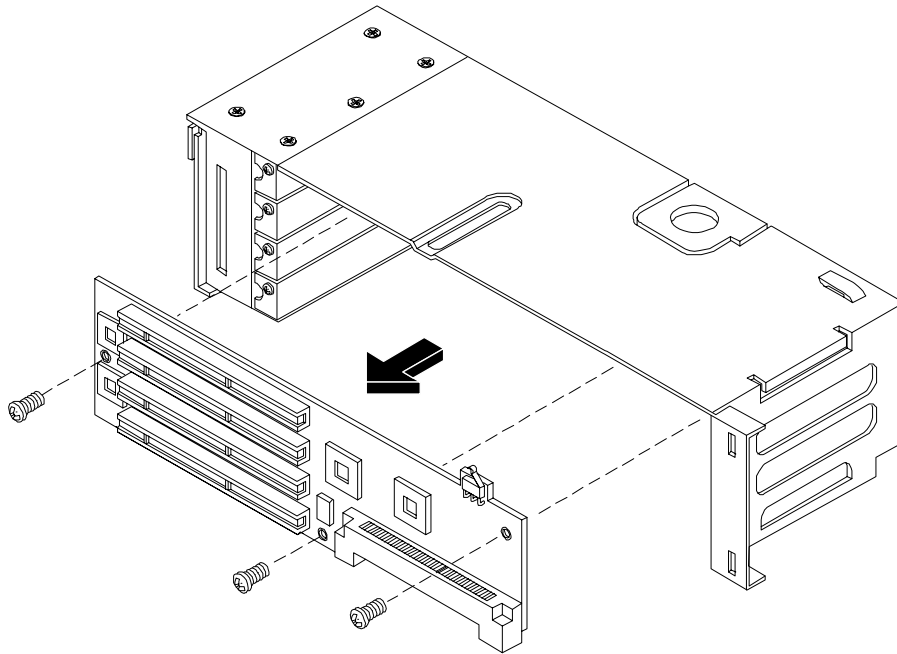
Removing the PCI Backplane

Step 1. Remove all accessory and graphics cards.

Step 2. Unscrew the backplane mounting screws and slide the backplane board toward the bulkhead end of the PCI cage. This unlocks the backplane from its standoffs.

Step 3. Lift the backplane over the top of the standoffs and slide it out of the cage.

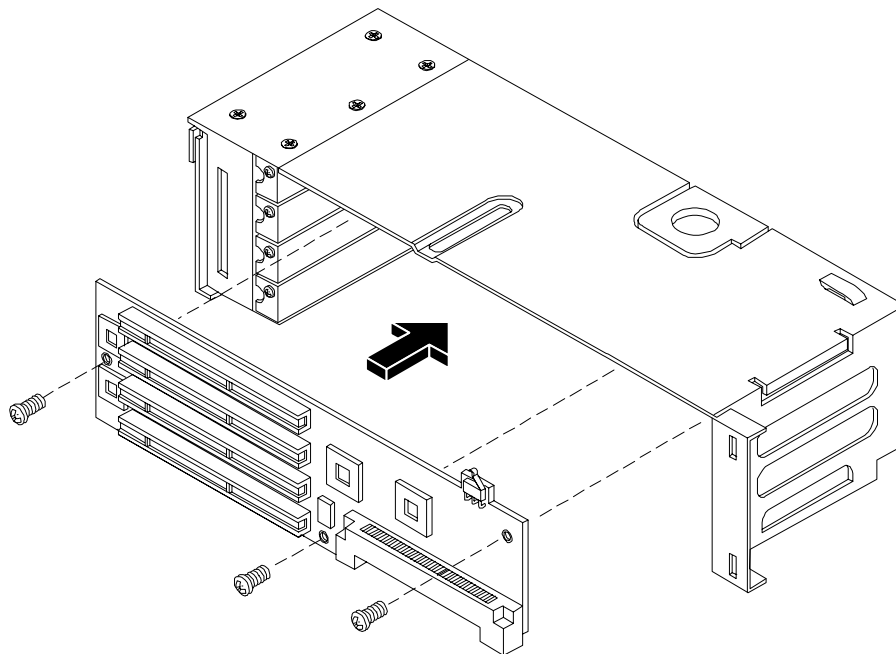
Figure 4-43 Removing the PCI Backplane



Replacing the PCI Backplane

- Step 1.** Place the backplane in the cage by aligning the cage standoffs with the holes on the backplane and slide it into place.
- Step 2.** Secure the PCI backplane by screwing in its mounting screws.

Figure 4-44 Replacing the PCI Backplane



- Step 3.** Replace any accessory and graphics cards.

Step 4. Connect server power, PCI, and LAN cables.

Step 5. Power on the server. See “Powering On the Server” on page 43.

Step 6. Verify the installation of the PCI backplane:

- Check the LEDs of all PCI cards for proper operation.
- Run `mapper` from the Offline Diagnostics CD to insure that all PCI cards are identified.
- Monitor the SEL to ensure there are no events showing peripheral problems.

Removing and Replacing a Removable Media Drive

The removable media drive is located behind the front bezel.

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

Voltages are present at various locations within the server whenever an AC power source is connected. This voltage is present even when the main power switch is in the off position.

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

CAUTION Observe all ESD safety precautions before attempting this procedure. Failure to follow ESD safety precautions could result in damage to the server. Failure to properly complete the steps in this procedure will result in erratic server behavior or server failure. For assistance with this procedure contact your local HP Authorized Service Provider.

Removing a Removable Media Drive

To remove a removable media drive, perform the following steps:

Step 1. Turn off the server and disconnect all cables. See “Powering Off the Server” on page 42.

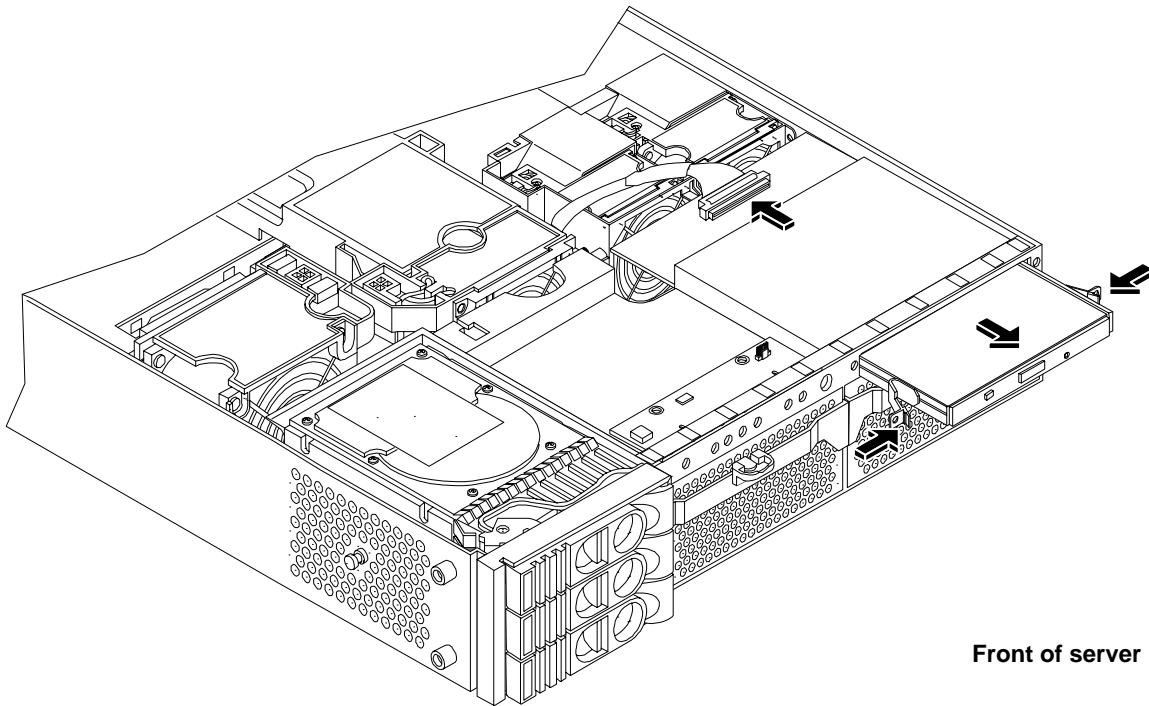
Step 2. Remove the top metal cover. See “Removing and Replacing the Top Metal Cover” on page 50.

Step 3. Disconnect the IDE cable from the back of the drive. See Figure 4-45 for more information.

Step 4. Grasp the front of the DVD drive and squeeze in on the locking tab to release the drive.

Step 5. Pull the drive straight out to remove it from the chassis.

Figure 4-45 Removable Media Drive Removal/Replacement



Replacing a Removable Media Drive

To replace the removable DVD drive, perform the following steps:

- Step 1.** If a removable media drive has not previously been installed in the server, the drive slot is covered with a DVD drive filler. Remove the DVD drive filler.
- Step 2.** Slide the replacement drive into the drive bay until it stops sliding and the retaining clips on both sides of the drive snap into place.
- Step 3.** Connect the IDE cable on the back of the drive.
- Step 4.** Replace the top metal cover.
- Step 5.** Reconnect the power and external cables and turn on the server.
- Step 6.** Verify the drive replacement by using the utilities identified in Appendix C, "Utilities," on page 167.
 - Load removable media and access to verify operation.
 - Use the iLO MP commands to verify operation.
 - Use diagnostics provided by the ODE to exercise the module replaced.

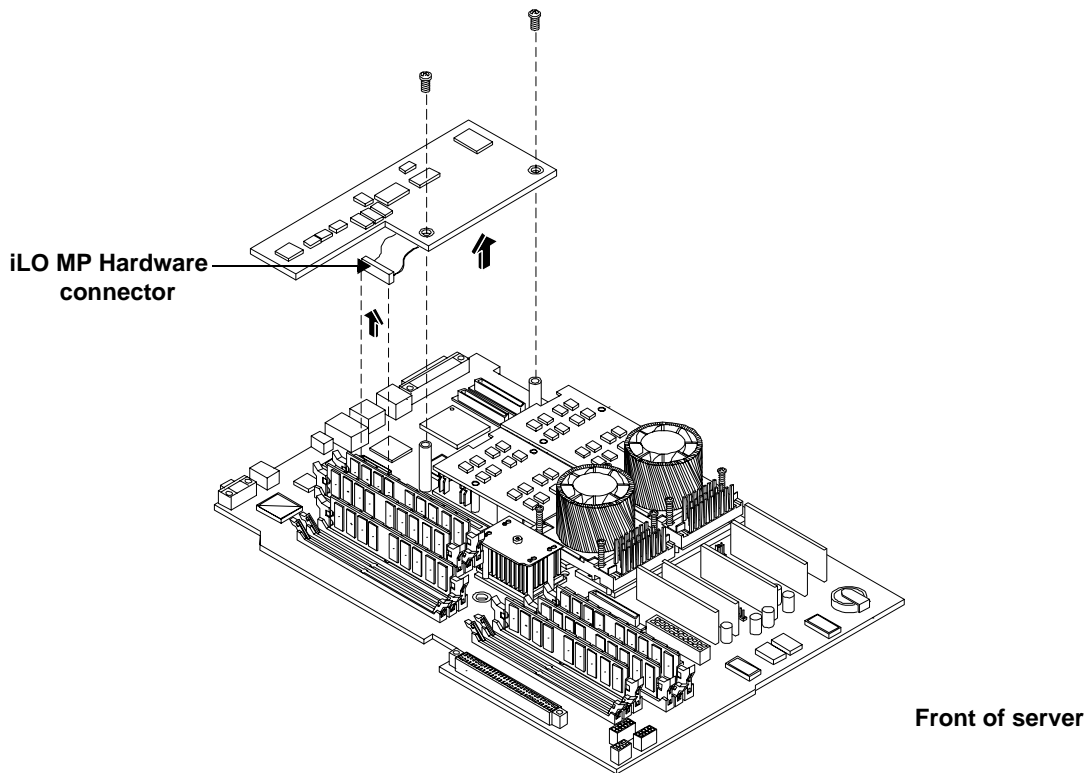
Removing and Replacing iLO MP Hardware

The iLO MP card is an independent support system for the server. It provides a way to connect to a server and perform administration or monitoring tasks for the server hardware.

Removing iLO MP Hardware

- Step 1.** Record the network settings from your iLO MP hardware before beginning this task.
- Step 2.** Turn off the server, disconnect all power and external cables and remove the top metal cover.
- Step 3.** Unscrew the two mounting screws that connect the iLO MP hardware to the internal chassis post as shown in Figure 4-46.

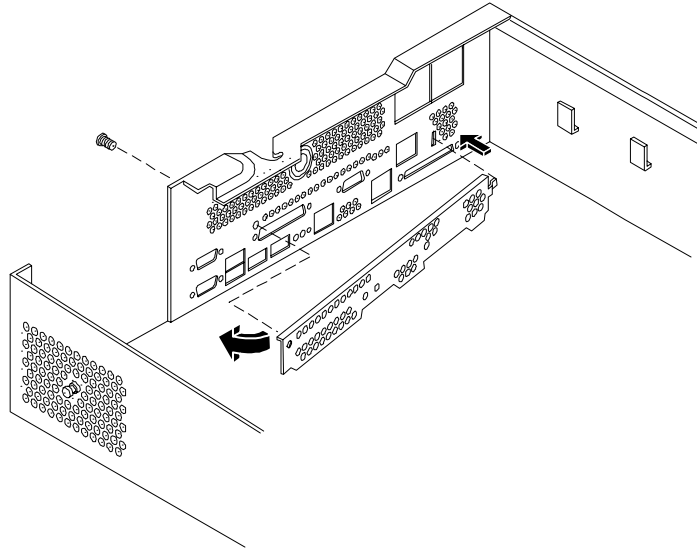
Figure 4-46 Removing the iLO MP Card



- Step 4.** Unscrew the two external mounting screws that are located on both sides of the 25-pin serial connector as shown in Figure 4-47.
- Step 5.** Disconnect the iLO MP hardware connector.
- Step 6.** Remove the iLO MP card from the server by grasping it by its edges.

Step 7. Install the iLO MP blank (if not reinstalling the iLO MP card) on the chassis. This blank is used to fill the holes left by the 10/100 management LAN, 15-pin VGA and 25-pin serial connectors. See Figure 4-47 for more information.

Figure 4-47 Replacing the iLO MP Blank



Step 8. Push the iLO MP blank against the inside of the chassis and screw in the blank's mounting screw on the external connector side of the server chassis.

Step 9. Replace the top metal cover and reconnect the power and external cables.

Replacing iLO MP Hardware

Step 1. Record the network settings from your iLO MP before beginning this task.

Step 2. Turn off the server, disconnect all power and external cables and remove the top metal cover.

Step 3. If you are installing a new card, remove the iLO MP blank.

Step 4. Unscrew the mounting screw for the iLO MP blank, located on the external connector side of the server chassis.

Step 5. Remove the blank retaining tab out of its socket on the server chassis and remove the blank from the server.

Step 6. Insert the iLO MP board in the server.

Step 7. Grasp its edges and place it on the two iLO MP posts.

Step 8. Push the 10/100 management LAN, 15-pin VGA and 25-pin serial connectors through their openings on the back of the server

Step 9. Connect the iLO MP:

- a. Connect the iLO MP cable to its connector on the system board.
- b. Screw in the two mounting screws that connect the iLO MP to the internal chassis post.

- c. Screw in the two external mounting screws that are located on both sides of the 25-pin serial connector.

Step 10. Replace the iLO MP hardware connector.

Step 11. Verify the iLO MP card replacement by using the utilities identified in Appendix C, “Utilities,” on page 167.

- Use the iLO MP commands to verify operation.

Removing and Replacing the iLO MP Battery

Systems with an iLO MP card have two batteries. Systems without iLO MP hardware have only one battery. The main server battery is located on the system board. The iLO MP battery is located on the iLO MP hardware.

Battery Notice

This product contains a Lithium battery.

WARNING **Lithium batteries may explode if mistreated. Do not recharge, disassemble, or dispose of in a fire. Failure to observe this warning could result in personal injury or damage to equipment.**

Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

Removing the iLO MP Battery

Step 1. Record the iLO MP configuration settings from your iLO MP before beginning this task.

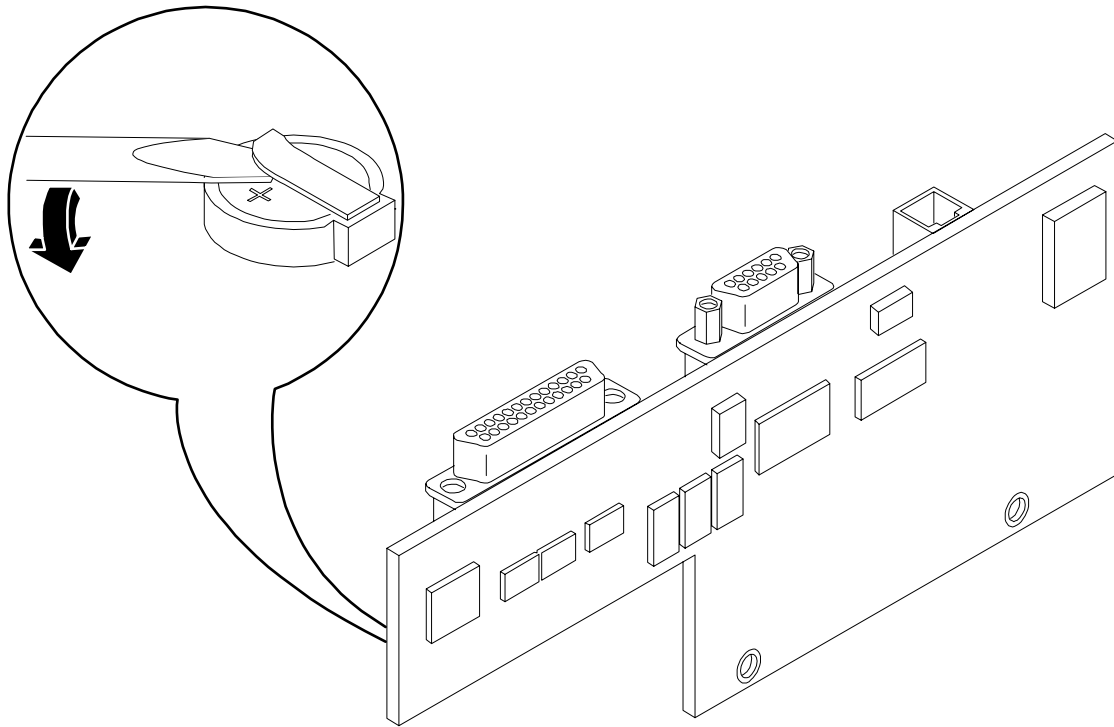
Step 2. Perform all of the steps described in the procedure for “Removing and Replacing iLO MP Hardware” on page 87.

Step 3. The battery for the iLO MP card is located on the underside of the board.

Step 4. Lift up on the battery and push on the back of it with a flat-head screwdriver to remove the battery from its holder. See Figure 4-48 for more information.

CAUTION Only lift the battery high enough to clear the holder. Excessive stress on the battery holder retaining clip may damage the clip.

Figure 4-48 Removing the iLO MP Battery



Replacing the iLO MP Battery

Step 1. Lift up on the battery holder retaining clip with a flat-head screwdriver and slide the battery into the holder. The positive (+) terminal of the battery faces up.

CAUTION Only lift the battery high enough to clear the holder. Excessive stress on the battery holder retaining clip may damage the clip.

Step 2. Perform all of the steps described in the procedure for “Removing and Replacing iLO MP Hardware” on page 87

Step 3. Verify the battery replacement by using the utilities identified in the *HP Integrity rx2620 Server User Service Guide*.

- Use the iLO MP commands to verify operation.

Removing and Replacing the LED Status Panel

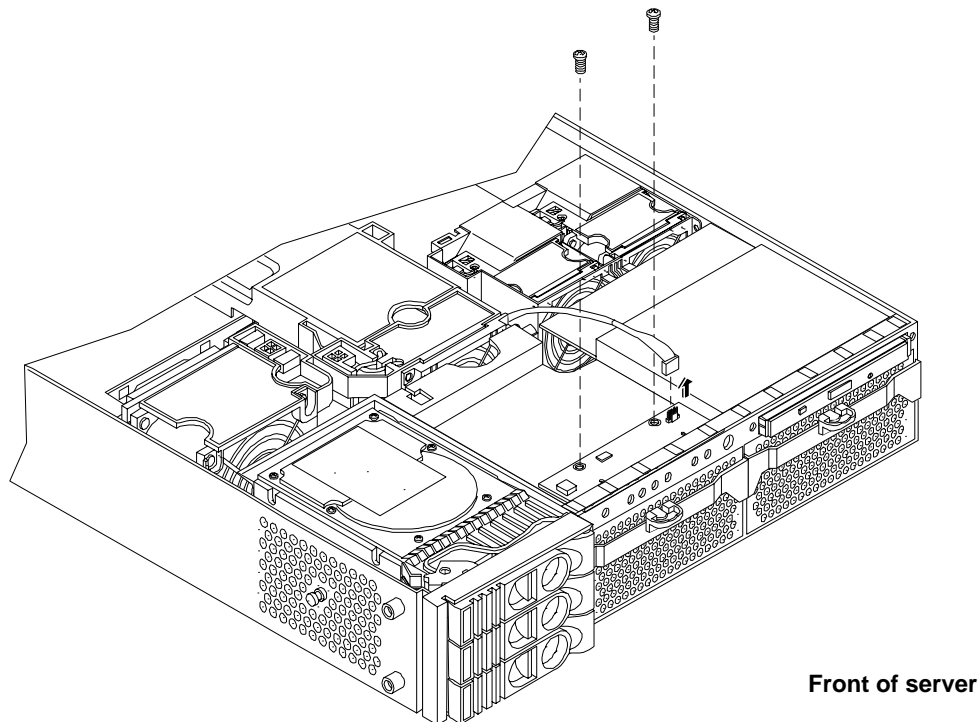
The LED status panel card contains the server LEDs and the diagnostic LEDs.

CAUTION Some server settings are saved to the LED status panel. If you are replacing both the LED status panel and the system board, they must be replaced one at a time to avoid loss of server settings. First replace one component, then turn on the server and boot to the EFI prompt. After confirming that the first component has been replaced successfully, shut down the server and replace the second component.

Removing the LED Status Panel

- Step 1.** Turn off the server, disconnect all power cables, and remove the top metal cover.
- Step 2.** Disconnect the LED status panel's controller cable.
- Step 3.** Unscrew the two LED status panel mounting screws and remove the panel. See Figure 4-49 for more information.

Figure 4-49 Removing the LED Status Panel



Replacing the LED Status Panel

- Step 1.** Replace the LED status panel in the server and screw in the two LED status panel mounting screws.
- Step 2.** Connect the LED status panel controller cable.
- Step 3.** Replace the top metal cover and reconnect all power cables. Turn on the server and verify that the server and power LEDs light up.
- Step 4.** Copy a valid UUID to the new status panel.

NOTE If resetting the UUID does not work successfully, contact your HP support representative.

- Step 5.** Verify the display panel replacement by exercising all front panel controls and observing that the display panel LEDs are operating properly.

Removing and Replacing the System Board

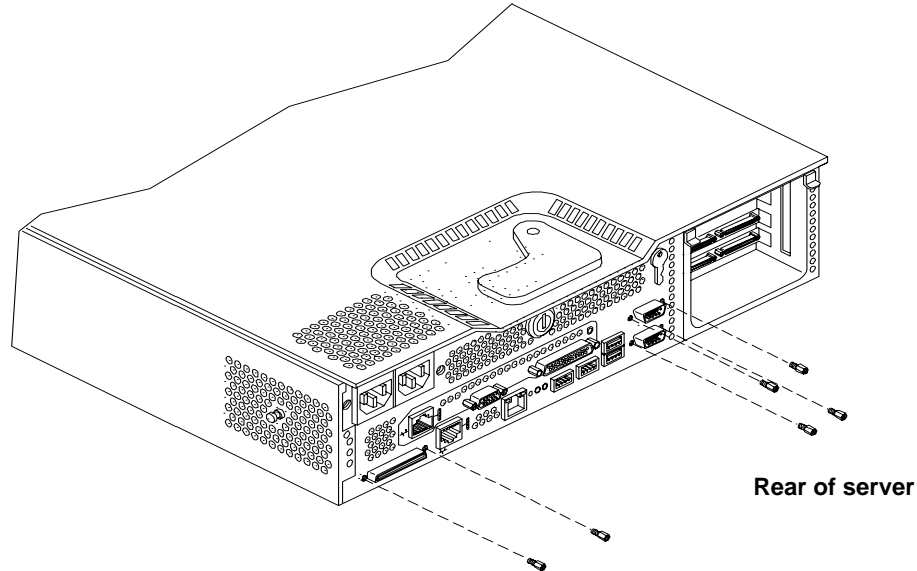
CAUTION Some server settings are saved to the LED status panel. If you are replacing both the LED status panel and the system board, they must be replaced one at a time to avoid loss of server settings. First replace one component, then turn on the server and boot to the EFI prompt. After confirming that the first component has been replaced successfully, shut down the server and replace the second component.

Removing the System Board

- Step 1.** Turn off the server, disconnect all power and external cables and remove the top metal cover.
- Step 2.** Remove these components from the system board:
- Memory airflow guide. See “Removing the Memory Airflow Guide” on page 62
 - Memory DIMMs. See “Removing DIMMs” on page 66
 - Processor airflow guide. See “Removing the Processor Airflow Guide” on page 62
 - Processors. See “Removing a Processor” on page 70
 - Server fans 1A, 1B, 2, and 3. See “Removing a Server Fan” on page 54
 - PCI card cage. See “Removing the PCI Card Cage” on page 79
- Step 3.** If the server has iLO MP hardware installed, remove it as described in “Removing iLO MP Hardware” on page 87.
- Step 4.** Remove the power connector plate:
- a. Unscrew the two power connector mounting screws on the back of the server.
 - b. Reach inside the server to remove the power connectors from the socket. The power connectors should still be connected to their cables.

- Step 5.** Unscrew the six backplane system board mounting screws that connect the system board to the rear of the server chassis. See Figure 4-50 for more information.

Figure 4-50 Remove System Board Mounting Screws

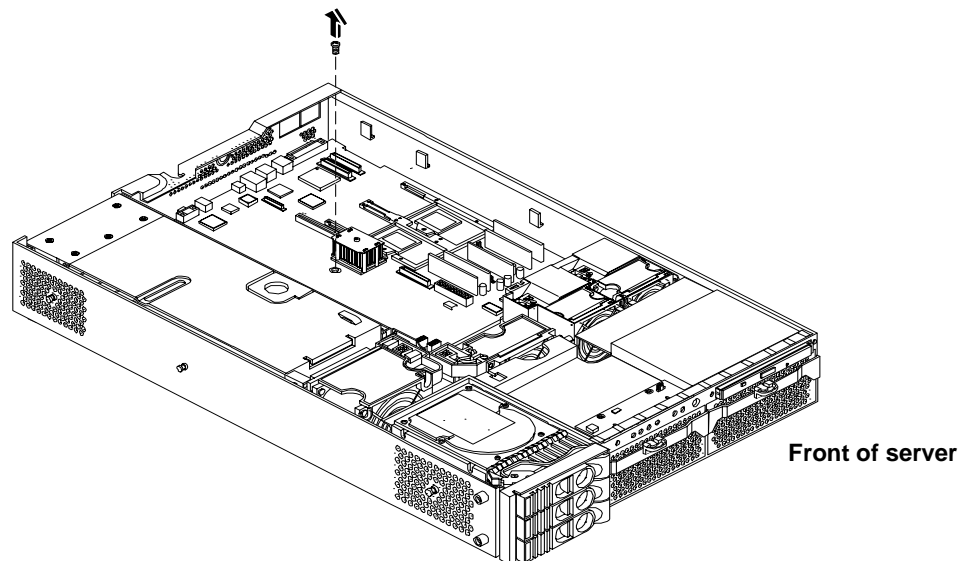


- Step 6.** Disconnect all cables that are connected to the system board. To help with re-assembly, make note of which cables were connected to which port.

NOTE To access the three power cables near the PCI cage, you must lift up the connector bridge for the PCI cage fan.

- Step 7.** Unscrew the system board mounting screw. A screw symbol is adjacent to the mounting screw. See Figure 4-51 for more information.

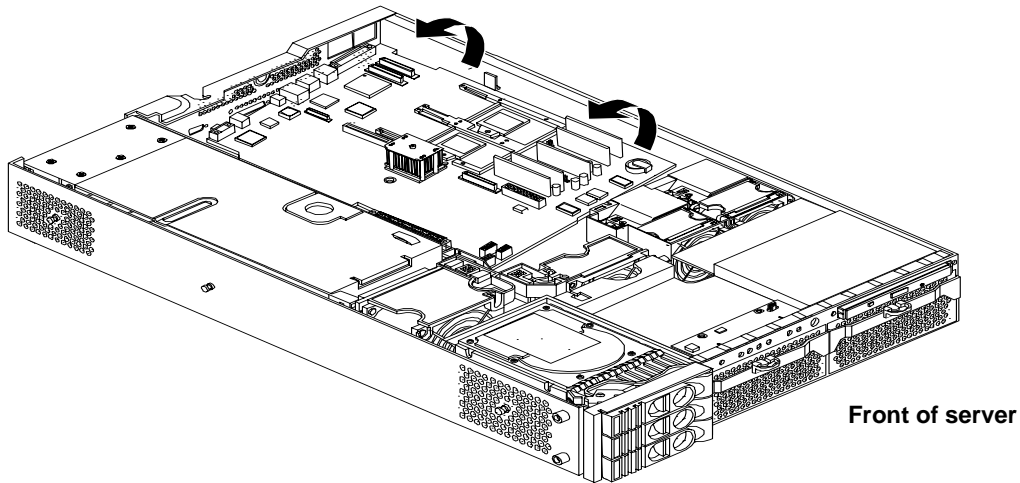
Figure 4-51 Remove the System Board Mounting Screw



Step 8. Remove the system board:

- a. Grasp the memory controller chip heatsink and slide the system board toward the front of the server. This releases the system board from its chassis standoffs.
- b. Lift up the processor module side of the system board and slide it free of the PCI cage bay. See Figure 4-52 for more information.

Figure 4-52 Remove the System Board



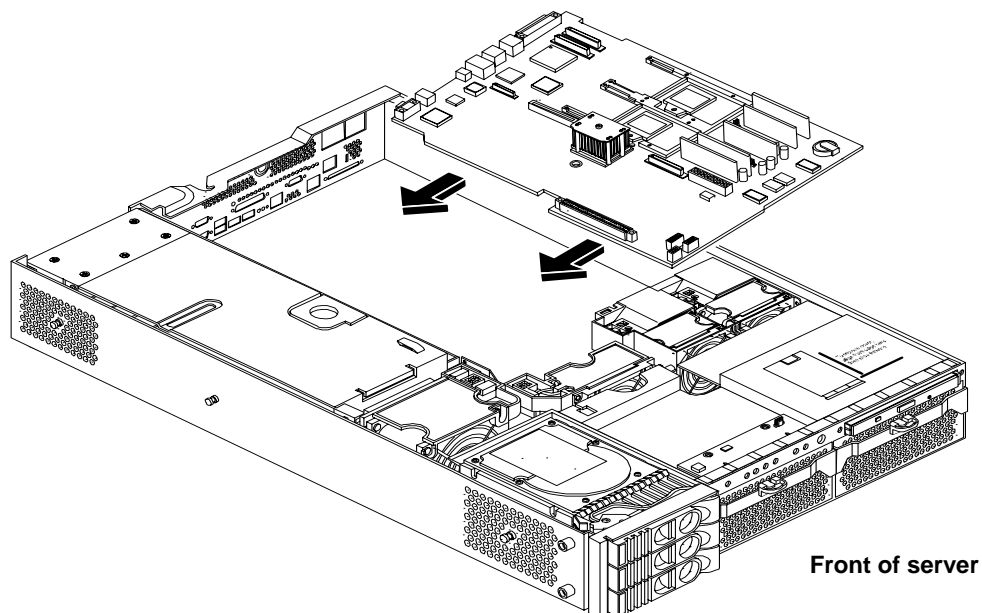
Replacing the System Board

Step 1. Remove the old system board.

Step 2. Grasp the new system board by its edges and carefully align it in the server:

- a. Angle the board to allow the PCI connector to slide into the PCI cage bay area. See Figure 4-53 for more information.

Figure 4-53 Slide System Board into Chassis



- b. Align the system board keyholes with their standoffs on the chassis.
- c. Slide the PCI connector posts on the system board into their slots on the server chassis.

NOTE The PCI cage must be removed from the chassis to install the system board. See “Removing the PCI Card Cage” on page 79.

- Step 3.** Slide the system board back toward the rear of the server to secure the system board on its standoffs. See Figure 4-54 and Figure 4-55 for more information.

Figure 4-54 Align the System Board PCI Connector

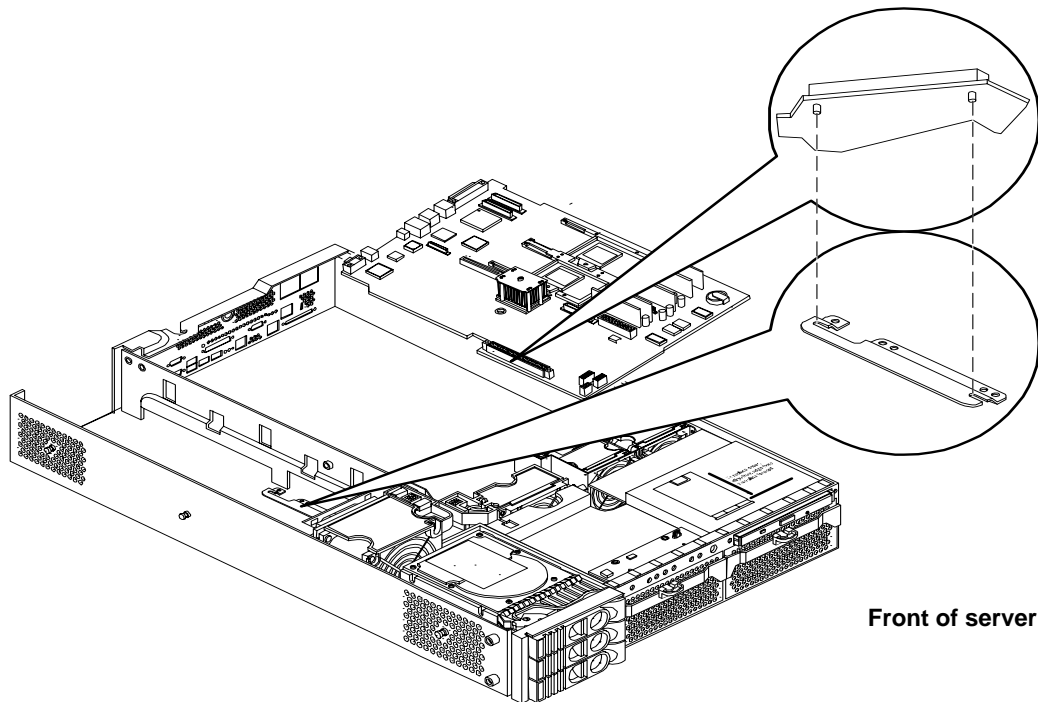
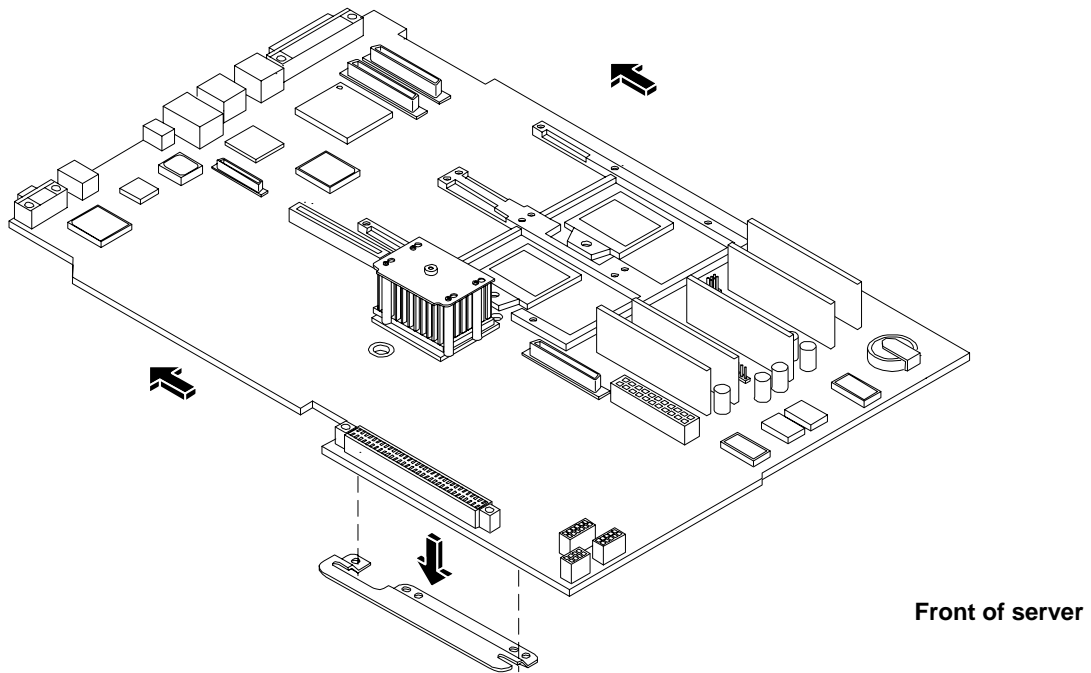
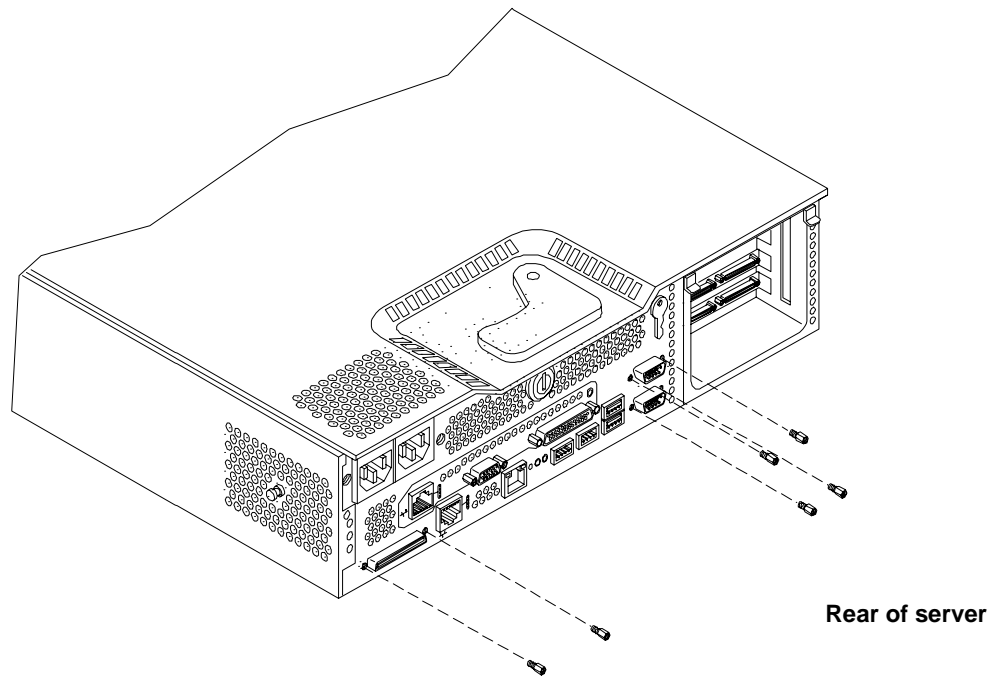


Figure 4-55 Slide System Board in Chassis



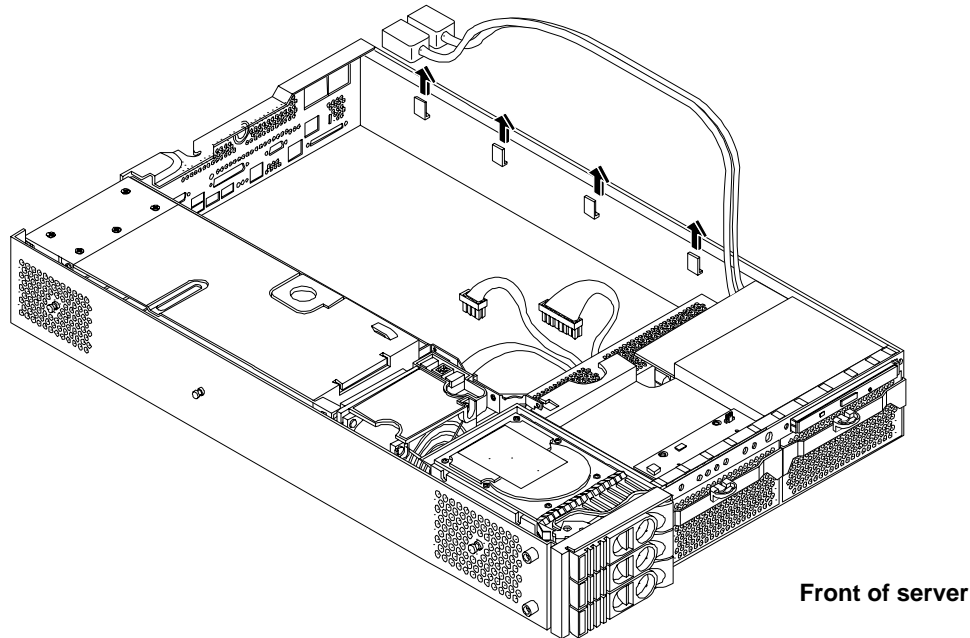
- Step 4.** Screw in the system board mounting screw. See Figure 4-56 for more information.
- Step 5.** Connect all cables to their appropriate connectors on the system board.
- Step 6.** Screw in the six rear backplane system board mounting screws.

Figure 4-56 Install the Rear Panel Mounting Screws



- Step 7.** If the server has an iLO MP, install it now. See “Replacing iLO MP Hardware” on page 88.
- Step 8.** Replace the power connectors in their slots on the back of the server and screw in the power connector mounting screws. See Figure 4-57 for more information.

Figure 4-57 Reinstall the Power Connectors



- Step 9.** Replace the following server components:
- PCI card cage. See “Replacing the PCI Card Cage” on page 81
 - Server fans. See “Replacing a Server Fan” on page 55
 - Processors. See “Replacing a Processor” on page 73
 - Processor airflow guide. See “Replacing the Processor Airflow Guide” on page 64
 - Memory DIMMs. See “Installing DIMMs” on page 67
 - Memory airflow guide. See “Replacing the Memory Airflow Guide” on page 62
- Step 10.** Replace the top metal cover. See “Replacing the Top Metal Cover” on page 51.
- Step 11.** Reconnect all of the power and external cables.
- Step 12.** Power on the server. See “Powering On the Server” on page 43.
- Step 13.** Boot to EFI.
- Step 14.** Respond **YES** to prompts regarding copying information onto the new I/O baseboard.

```
Primary system ID values are undefined. Do you want to copy the valid system ID values to the
new board? (y/[n])
```

```
y
```

- Step 15.** Enter **SERVICE** mode.

Removing and Replacing Components

Removing and Replacing Internal Components

```
Shell> sysmode service
Current System Mode: ADMIN

You are now in SERVICE mode.
```

Step 16. Use the **sysset** command to enter the product data:

```
Shell> sysset prodname "server rx2620"
```

Step 17. Use the **sysset** command to verify all values are set:

```
Shell> sysset
System Information:
Manufacturer: hp
Product Name: server rx2620
Product Number: AB332A
Secondary Product Number is Identical
Serial number: US51884101
Secondary Serial Number is Identical
UUID: A8F2D6EC-DBE5-11D9-9172-AE65D056B60F (Valid)
Secondary UUID is Identical
Product ID: 0x10A
```

Step 18. Use the EFI `date` and `time` commands to set the correct local date and time.

Step 19. Review the system configuration in the **Boot Configuration Menu** and/or EFI shell and reconfigure settings as necessary.

Step 20. Boot the server and resume normal operation.

Removing and Replacing the Power Supply Interface Module

The power supply interface (PSI) module supports up to two redundant power supplies.

Removing the Power Supply Interface Module

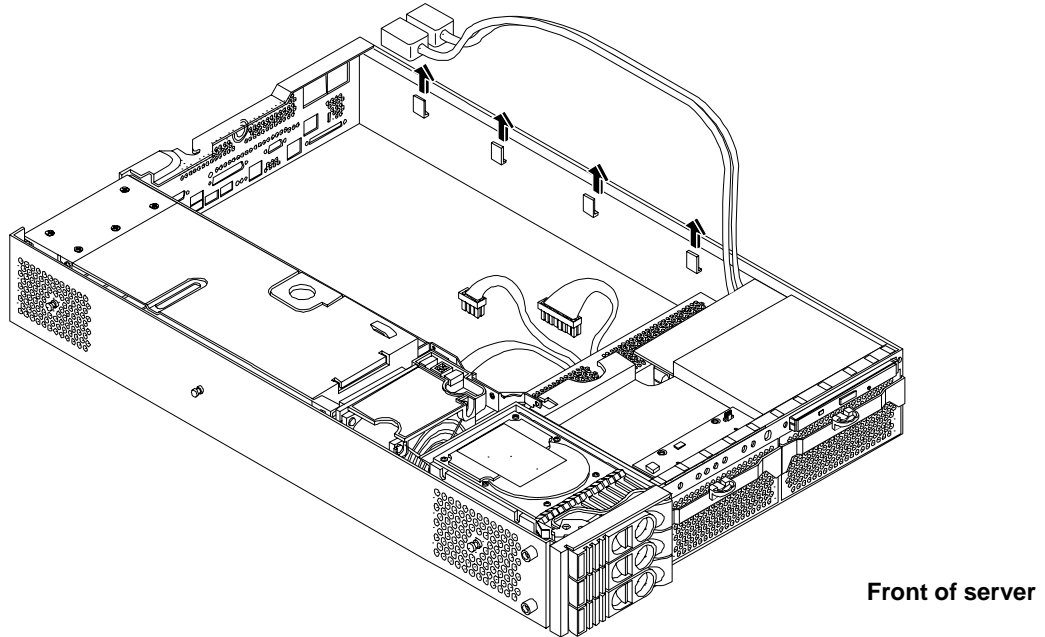
Step 1. Turn off the server, disconnect all power and external cables, and remove the top metal cover.

Step 2. Remove the system board. See “Removing and Replacing the System Board” on page 92.

Step 3. Remove the power supply (or supplies). See “Removing the Power Supply” on page 56.

Step 4. Lift the power cables out of their metal holding clips. See Figure 4-58 for more information.

Figure 4-58 Power Cables and Holding Clips



- Step 5.** Unscrew the PSI mounting screw and remove the PSI module from the server. See Figure 4-59 and Figure 4-60 for more information.

Figure 4-59 Remove the Mounting Screw

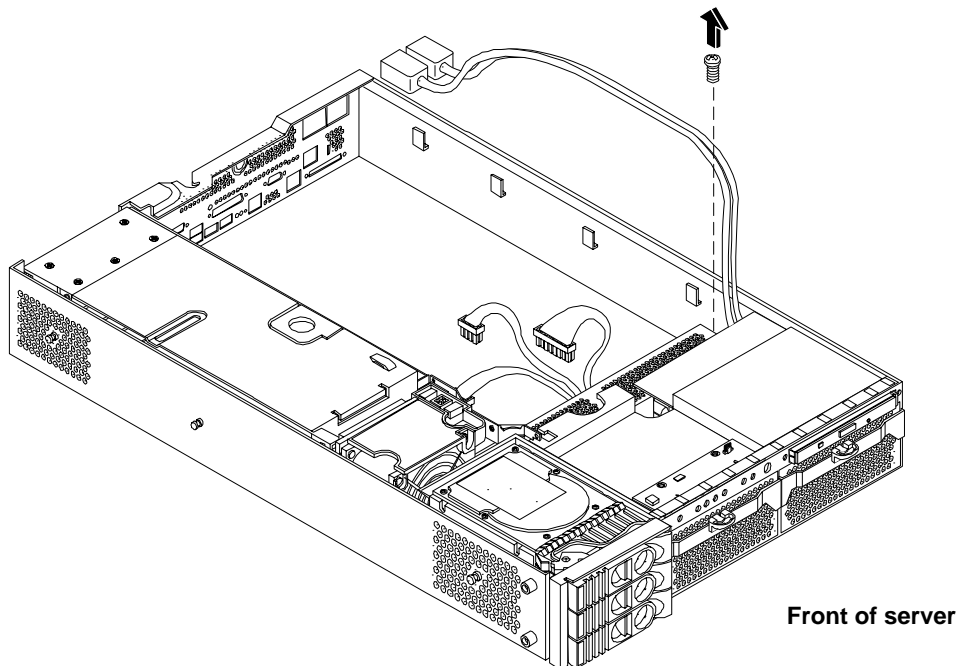
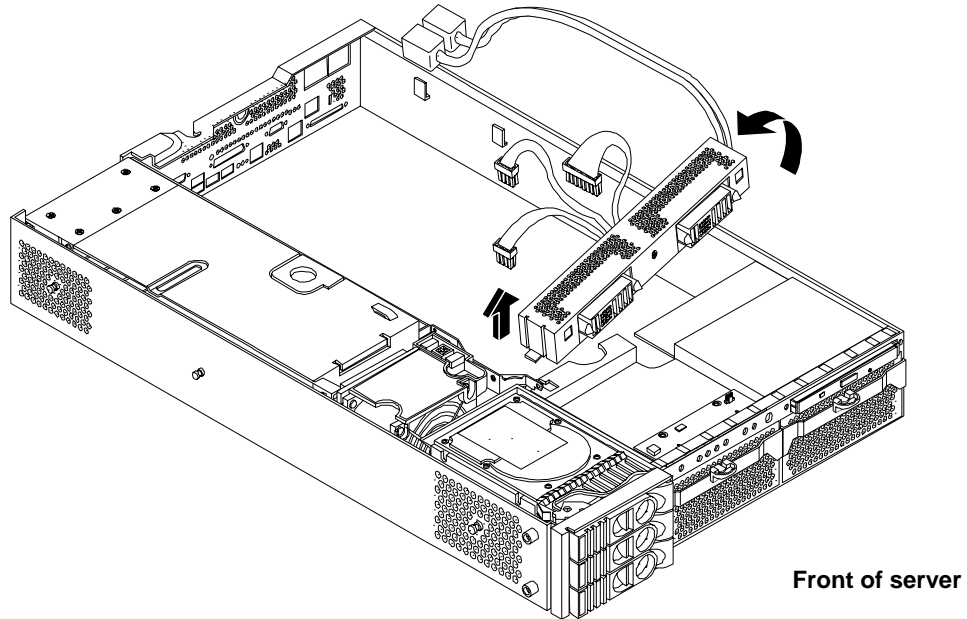


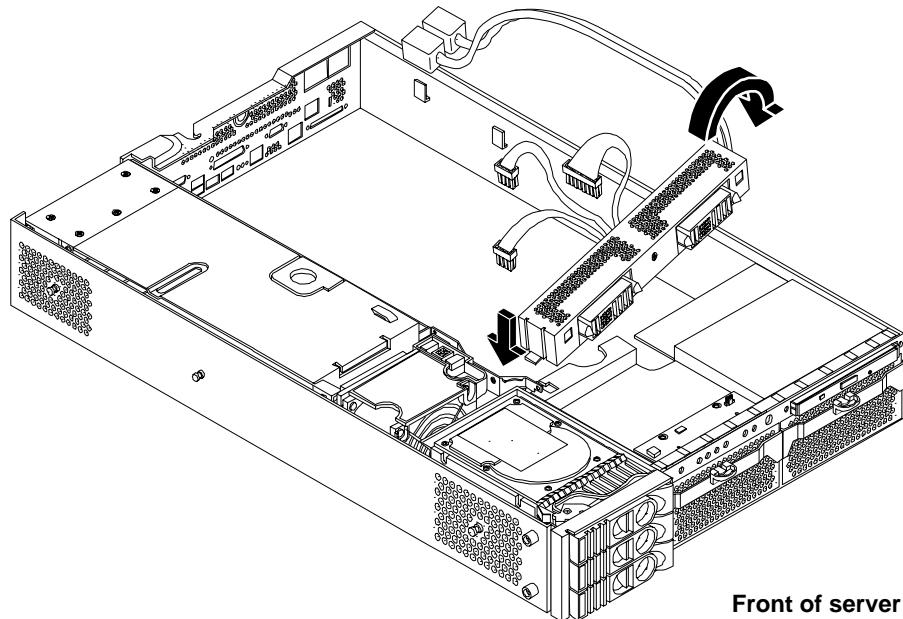
Figure 4-60 Remove the PSI Interface Module



Replacing the Power Supply Interface Module

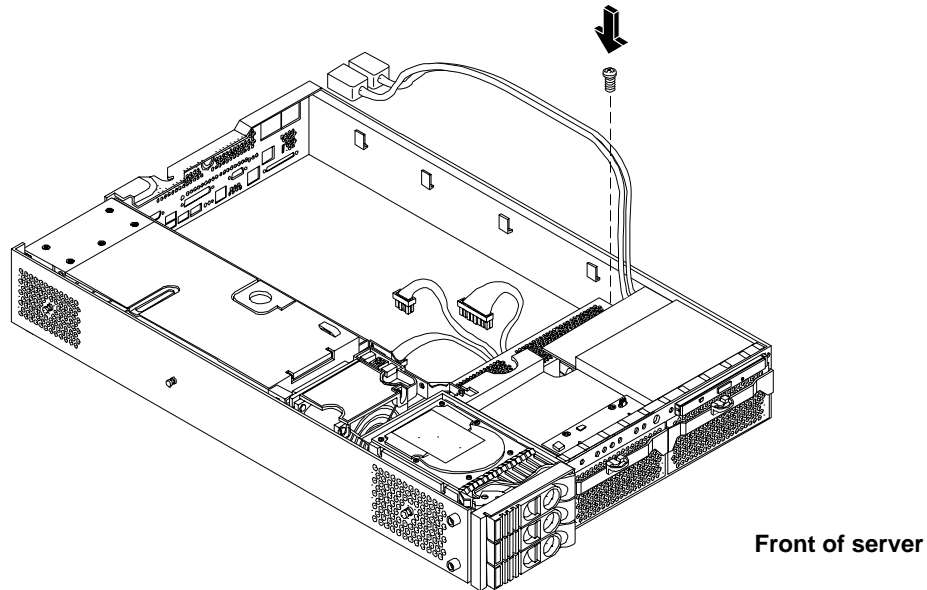
- Step 1.** Place the PSI module into the chassis by sliding the module retaining tab into the socket on the hard disk drive bay wall. See Figure 4-61 for more information.

Figure 4-61 Replacing the Power Supply Interface Module



- Step 2.** Screw in the PSI module mounting screw and secure the power cables behind the holding clips. See Figure 4-62 for more information.

Figure 4-62 Securing the Power Supply Interface Module and Cables



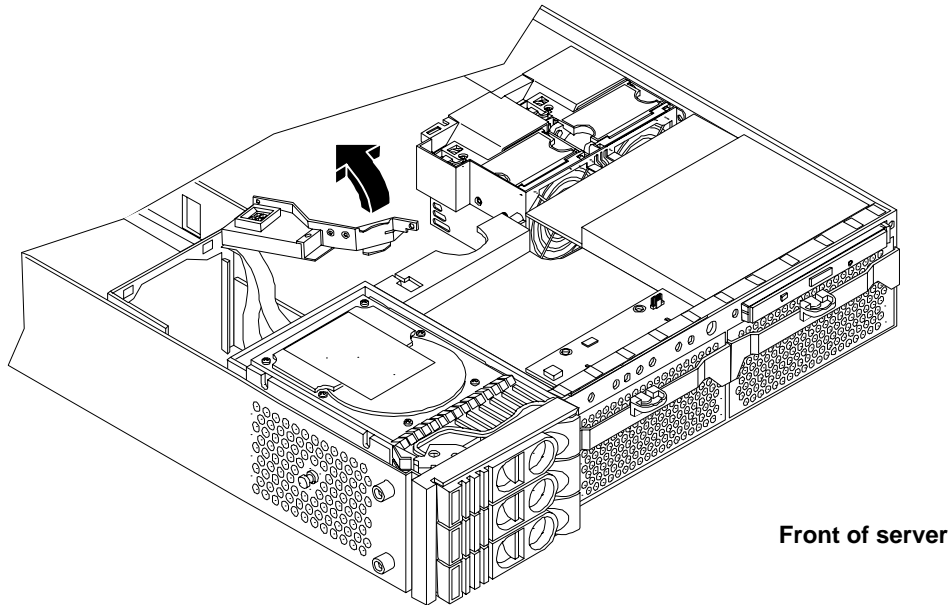
- Step 3.** Replace the system board. See “Removing and Replacing the System Board” on page 92.
- Step 4.** Replace the power supply (or supplies).
- Step 5.** Replace the top metal cover, and reconnect all of the power and external cables.
- Step 6.** Verify the PSI replacement by using the utilities identified in Appendix C, “Utilities,” on page 167.
- Use the iLO MP commands to verify operation.

Removing and Replacing the Hard Disk Drive (SCSI) Backplane

Removing the Hard Drive Disk SCSI Backplane

- Step 1.** Turn off the server, disconnect all power and external cables, and remove the top metal cover.
- Step 2.** Lift up on the PCI cage release lever and the back edge of the PCI cage and lift the PCI cage out of the server.
- Step 3.** Lift up on the fan power bridge and disconnect the backplane power cable. See Figure 4-63 for more information.

Figure 4-63 Open the Fan Power Bridge



Step 4. Remove any installed hard disk drives.

Step 5. Disconnect the SCSI cables and unscrew the backplane mounting screws. See Figure 4-64 and Figure 4-65 for more information.

Figure 4-64 Disconnect SCSI Cables

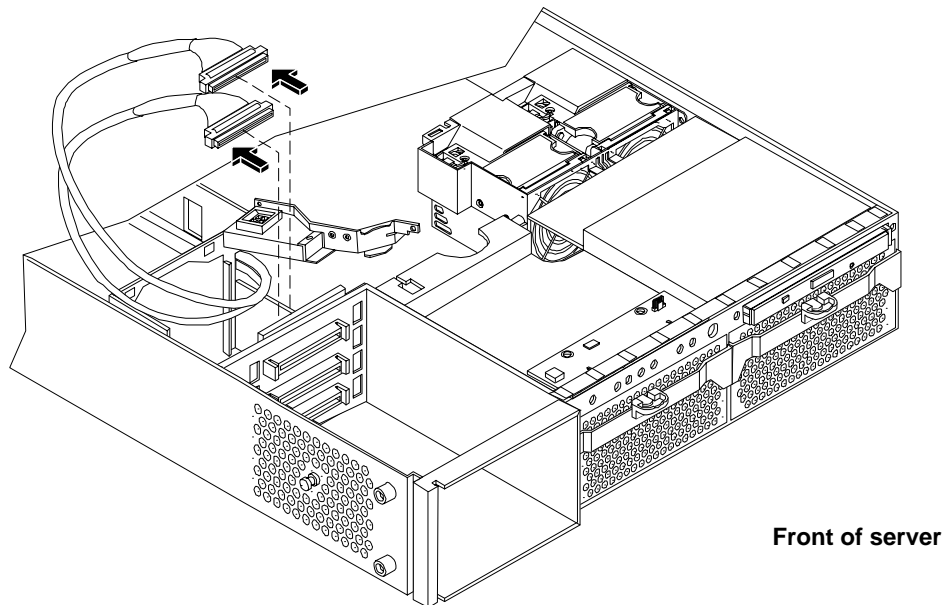
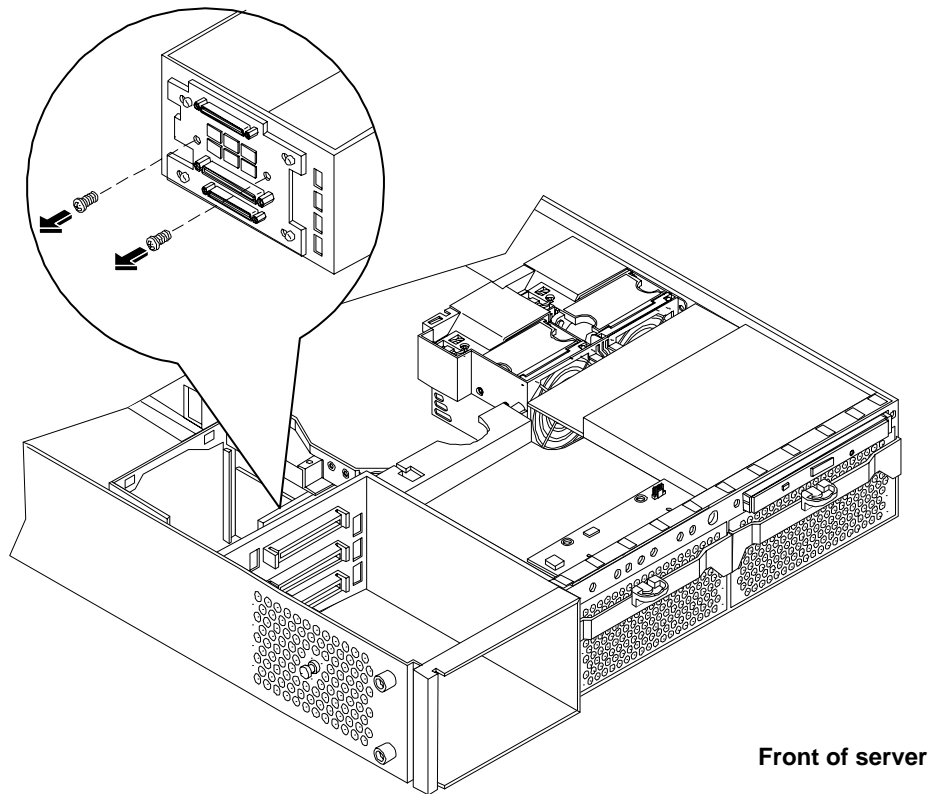


Figure 4-65 Remove Mounting Screws



- Step 6.** Remove the hard drive backplane by sliding it in the direction of the arrow and pulling it outward from its standoff posts. See Figure 4-66 and Figure 4-67 for more information.

Figure 4-66 Remove the SCSI Backplane

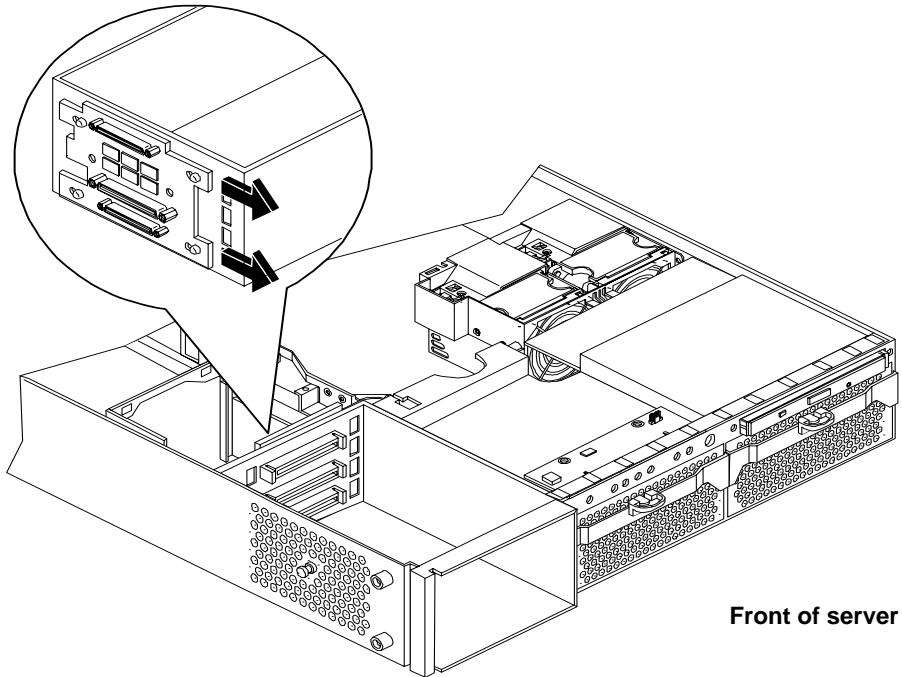
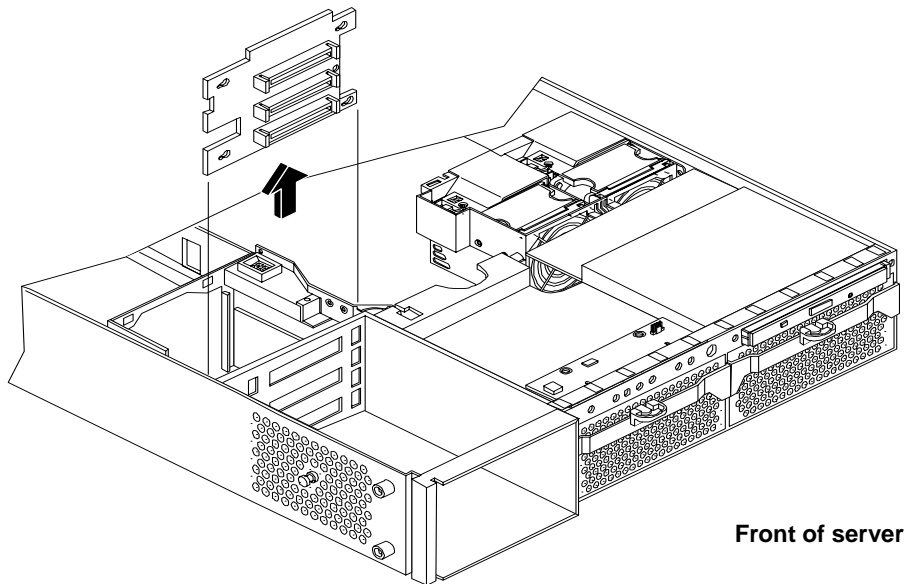


Figure 4-67 Remove the SCSI Backplane from Chassis



Replacing the Hard Disk Drive SCSI Backplane

- Step 1.** Insert the hard drive backplane onto its four chassis standoffs and slide it to the left as you face it. This locks the hard drive backplane in place.
- Step 2.** Screw in the two backplane mounting screws and connect the two SCSI cables.
- Step 3.** Replace any removed hard disk drives.

- Step 4.** Connect the backplane power cable and lower the fan power bridge until it snaps in place.
- Step 5.** Replace the PCI cage in the server and secure it.
- Step 6.** Replace the top metal cover, and reconnect all of the power and external cables.
- Step 7.** Verify the backplane replacement by using the utilities identified in Appendix C, “Utilities,” on page 167.
- Use the iLO MP commands to verify operation.

5 Troubleshooting

This chapter provides troubleshooting instructions used in the installation of the HP Integrity rx2620 server.

This chapter addresses the following topics:

- “Troubleshooting Tips” on page 108
- “Possible Problems” on page 109
- “Troubleshooting and FRU identification” on page 113
- “Verifying Hard Disk Drive Operation” on page 115
- “Identifying and Diagnosing Hardware Problems” on page 116
- “Command Line Interface” on page 128
- “System Board Diagnostic LEDs” on page 130
- “LAN LEDs” on page 131
- “Diagnostics” on page 133
- “Recommended Cleaning Procedures” on page 136
- “Where to Get Help” on page 137

Troubleshooting Tips

CAUTION Do not operate the server for more than 30 minutes with any cover (including disk drives) removed. Damage to server components may result due to improper cooling airflow.

If the top cover is not replaced within 30 minutes, the server automatically shuts down.

- For problems with an optional disk array controller board, refer to the appropriate manuals provided with the array controller.
- For general information on HP server products, refer to the HP Web Site at <http://docs.hp.com> and click on Enterprise Servers, Workstations Systems Hardware.

Troubleshooting Methodology

Step 1. This is the entry point to the troubleshooting process. Here, you pick from a set of symptoms, ranging from very simple (System LED is blinking) to the most difficult (Machine Check Abort [MCA]). The following is a list of symptom examples:

- System LED blinking
- System Alert present on console
- System won't power-up
- System won't boot
- Error/Event Message received
- Machine Check Abort (MCA) occurred

Step 2. This step narrows down the observed problem to the specific troubleshooting procedure required. Here, you isolate the failure to a specific part of the server so that you can perform more detailed troubleshooting. For example:

- Problem-System LED blinking

NOTE The server LED flashes yellow with a warning indication and flashes red with a fault indication.

— System Alert on console?

— Analyze the alert by using the SEL to identify the last error logged by the baseboard management controller. Use either the EFI shell command line interface (CLI) or if the optional iLO MP is installed, use the iLO MP commands to view the SEL.

Step 3. At this point you will have a good idea about which area of the server requires further analysis. For example, if the symptom was “system won't power-up” then the initial troubleshooting procedure may have indicated a problem with the DC power supply not coming up after the power switch was turned on.

- Step 4.** You have now reached the point where the failed Field Replaceable Unit (FRU or FRUs) have been identified and need to be replaced. You must now perform the specific remove and replace and verification steps.

NOTE If multiple FRUs are identified as part of the solution, a fix cannot be guaranteed unless all identified failed FRUs are replaced.

- Step 5.** There may be specific recovery procedures you need to perform to finish the repair. For example, if the display panel is replaced, you will need to restore customer specific information.

Possible Problems

This section contains example HP server problems and their possible solutions. Refer to the *HP Integrity and HP 9000 Integrated Lights-Out Management Processor Operations Guide* for details on the iLO MP commands.

The System Will Not Power-Up

- Step 1.** Review the installation procedures for the server.
- Step 2.** Check all power connection cables.
- Step 3.** Verify that the Power On/Off LED on the control panel is illuminated. If not illuminated check the AC power. If the LED is flashing yellow, the server is in DC standby. The power status may be checked by the iLO MP `PS` command. If the Power On/Off LED is illuminated steady green, the DC power supply(s) is on.
- Step 4.** Check the normal operation of the power supply(s) and fans. The `PS` command of the iLO MP interrogate the status of the power subsystem.
- Step 5.** Check the system board diagnostic LEDs for proper operation. See System Board Diagnostic LEDs later in this chapter.
- Step 6.** Verify that both LEDs of the power supply (visible behind bezel) are illuminated. The upper LED indicates presence of proper AC voltage and the lower indicates that the DC power is good.
- Step 7.** Verify that all cables and modules are correctly connected. Especially check the display panel connection. The iLO MP `VFP` command can be used to verify a match of control panel LED indications.
- Step 8.** If the server starts to power on and then power off, a voltage rail of the power supply may be out of specification. The BMC monitors voltages and prevents power on when power values are out of specification. If this occurs, check the SEL logs for an alert with a high level (alert level 5 or alert level 7). Also check the power subsystem with the iLO MP `PS` command.

The System Will Not Boot

- Step 1.** Examine the display panel LEDs for warning or fault indications. The server LED will be flashing yellow with a warning indication and flashing red with a fault indication. If this occurs, check the SEL logs for additional information on the alert.

Step 2. Examine the four diagnostic LEDs for indications of specific warning or fault indications. The diagnostic LEDs present patterns that categorize the source of the warning or fault. This information is also presented in the SEL.

NOTE If iLO MP hardware is installed, the diagnostic LEDs are monitored by the iLO MP. The diagnostic LEDs on the control panel are disabled.

Step 3. Display and examine the SEL and Forward Progress Log (FPL) for further information relating to warning or fault indication.

Step 4. Use the BMC command line interface (cli) to cycle the server power, `cli>pc off`, `cli>pc on`. This may also be accomplished by the `PC` command (`pc -cycle -nc`) of the iLO MP.

Step 5. Remove all power from the server by disconnecting the AC power cord(s), wait at least twenty seconds, then reconnect the power cords and turn the server back on to see if the failure can be cleared.

Step 6. Check server memory for possible problems. This may also be accomplished by the `info mem` command of the EFI.

Step 7. Check server processors for possible problems. This may also be accomplished by the `info cpu` command of the EFI. This may also be accomplished by the `SS` command of the iLO MP.

Step 8. Check the boot order with the Boot Configuration menu.

Step 9. If the server will still not boot, it may be necessary to replace the base unit.

The System Has Intermittent Failures

Step 1. Examine the display panel LEDs for warning or fault indications. The server LED will be flashing yellow with a warning indication and flashing red with a fault indication.

Step 2. Examine the four diagnostic LEDs for indications of specific warning or fault indications. The diagnostic LEDs present patterns that categorize the source of the warning or fault.

NOTE If iLO MP hardware is installed, the boot process is monitored by the iLO MP. The diagnostic LEDs are disabled.

Step 3. Display and examine the SEL and FPL for further information relating to warning or fault indication.

Step 4. Make sure that the server fan assemblies are fully seated.

Step 5. Verify that the server is plugged into a power source that is within specifications described on the label of the power supply.

Step 6. Make sure that the internal SCSI chain is terminated and that termination is not enabled on any of the drives. Note that with LVD SCSI, termination is provided in the cable.

Step 7. Check that the processors are installed in the correct sockets and that terminators are installed in all unused sockets.

Step 8. Reseat the main memory DDR DIMMs.

- Step 9.** If date and time or customer settings are being cleared, the system board battery may need to be replaced.

The System LED or Diagnostic LEDs are Not On and No Error Messages Appear

If the server does not work (with no LEDs illuminated) and no error messages appearing, check the following:

- Step 1.** Make sure that all cables and the AC power cord are plugged into their proper receptacles.
- Step 2.** Make sure that the AC outlet is working. If the server is plugged into a switched multiple-outlet box, make sure that the switch on the outlet box is turned on.
- Step 3.** Make sure that the server is turned on (the power-on light should be green and the fans should be on).
- Step 4.** Turn the server off, wait at least twenty seconds, then turn the server back on to see if the failure can be cleared.
- Step 5.** Make sure that all boards are installed properly and the processors are installed in the correct slot. They must be seated firmly in their slots and any cables must be connected firmly.
- Step 6.** If the server stopped working after you installed a new board, remove the board and turn on the server. If your server now works, check the installation instructions received with the new board for correct installation method. If the new board is preventing the server from powering on, it is likely to have a serious electrical problem.
- Step 7.** If the server still does not work, remove all boards and options that you have installed (do not remove the hard disk drives) and turn on the server.
- Step 8.** Add the boards and options one at a time to determine which one is causing the problem.
- Step 9.** If you have added any memory, make sure that the DDR DIMMs are seated properly in the board. Also check the DDR DIMM configuration, and that the DDR DIMMs are matched quads.

The Server Powers Off but Doesn't Restart

When certain critical conditions exist, the server shuts down all power.

The critical conditions that may shut down the server are:

- critical temperature fluctuations or changes
- voltage problems (external AC line)
- power supply failure

If the server powers off, and before you try a restart, do the following:

- Step 1.** Examine the display panel LEDs for warning or fault indications. The server LED will be flashing yellow with a warning indication and flashing red with a fault indication.
- Step 2.** Examine the four diagnostic LEDs for indications of specific warning or fault indications. The diagnostic LEDs present patterns that categorize the source of the warning or fault.

NOTE If iLO MP hardware is installed, the boot process is monitored by the iLO MP. The diagnostic LEDs are disabled.

- Step 3.** Display and examine the SEL and FPL for further information relating to warning or fault indication.
- Step 4.** First check to make sure power is getting to the server. Plug a known working device into the power outlet.
- Step 5.** Check for proper ventilation for the server. The server should have at least three inches of space around the front and rear for proper airflow when installed in a rack.

NOTE Temperature problems may be caused by a fluctuating power supply.

- Step 6.** Check the server specifications and make sure the environmental temperature and voltage are in the specified guidelines.
- Step 7.** Monitor the server to make sure you are not experiencing further temperature and voltage problems.

Troubleshooting and FRU identification

Once you have determined the current server state, you must troubleshoot the server to determine what the problem symptoms are and what repair actions to take.

Use Table 5-1 to assist you in repairing the server by matching the problem symptom with the appropriate troubleshooting step.

Table 5-1 Problem Symptoms Repair Actions

Problem or Symptom	Problem Indicators	Normal Functioning Indicators	Troubleshooting Steps	Potential FRUs
No indication of housekeeping voltage present when AC is connected and power switch is in the off position.	Standby LED is off when AC is plugged into server. BMC “heartbeat” not flashing. Both LEDs are located on the system board, see System Board LEDs later in chapter.	Power LED Off. Power LED on iLO MP card (if installed) should be lit solid green. Standby LED on system board is on steady. BMC “heartbeat” LED on system board is flashing.(if installed) should be lit solid green.	<ol style="list-style-type: none"> 1. AC must be present. Check that PDU is plugged in. 2. Ensure there is a working power supply. The LED on the supply should be lit. 3. Check for an EFI shell prompt (CTRL B) at console). 	No AC present Power Supply Power Distribution System board Display board
System won't power on when display panel Power switch is turned on.	Display panel Power LED stays off when power is turned on. System LED may be flashing yellow (Attention indication).	Power switch on. Power LED on steady green. System LED is off.	<ol style="list-style-type: none"> 1. Ensure there is a working power supply. The LED on the supply should be lit. 2. Verify that standby voltage is present. Check that the STBY LED on the system board is lit. 3. Verify that the baseboard management controller is functioning. Check the heartbeat (BMC) LED on the system board is lit. 4. Check server event log (SEL). Look for event log detail = Low Voltage DC power. This indicates a failure of one of the CPU power pods. 	Missing FRU Power Supply CPU power pod System board Intrusion switch on chassis (cover not completely closed)

Table 5-1 Problem Symptoms Repair Actions (Continued)

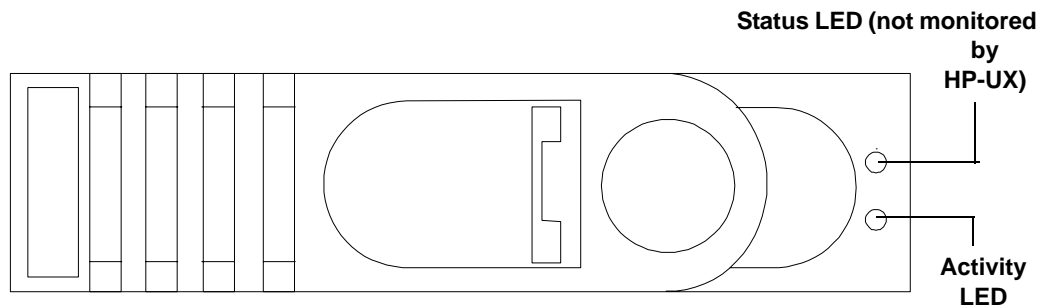
Problem or Symptom	Problem Indicators	Normal Functioning Indicators	Troubleshooting Steps	Potential FRUs
No EFI Main Menu prompt.	<p>Display panel power LED is not steady green.</p> <p>No server events are being displayed at the console.</p> <p>There is no EFI Main Menu prompt at the console.</p>	<p>Display panel power LED is steady green.</p> <p>System events are being displayed at the console.</p> <p>EFI Main Menu prompt.</p>	<ol style="list-style-type: none"> 1. Check that the console is properly connected and can communicate with the BMC (CTRL B should get you the iLO MP login prompt). 2. Check SEL. Look for entries related to: <ul style="list-style-type: none"> • Processors • Processor Support Modules (Also known as power pods). • Memory 3. Check for red LED on the iLO Manageability card if installed. If red, the problem is with the iLO MP. 4. Reduce to minimum configuration and troubleshoot from there. 	<p>Processors</p> <p>Processor Support Modules</p> <p>Memory</p> <p>System board</p> <p>Console</p>
Can't boot to operating system (OS).	<p>Boot error messages.</p> <p>System LED blinking.</p>	<p>OS prompt.</p> <p>OS boot messages.</p> <p>System LED on steady green.</p>	<ol style="list-style-type: none"> 1. Check console messages. Did server hang? 2. Check SELs for possible problem indication. 3. Run ODE diagnostics. 	<p>Corrupt OS</p> <p>Hard Disk Drive</p> <p>Disk drive cage backplane</p> <p>SCSI interface on system board</p> <p>Processor</p>

Verifying Hard Disk Drive Operation

Each hard disk drive has an activity LED indicator on the front of the drive. See Figure 5-1 for more information.

NOTE On the HP Integrity rx2620 server only the Activity LED is used. The Status LED is not monitored by HP-UX.

Figure 5-1 LED Apertures on Hard Disk Drive



Lightpipes on the disk drive transmit light to these apertures from LEDs on the inside rear of the hot-swap mass storage cage. Verify that the LED shows the correct activity indication for all disk drives that you installed:

- Step 1.** Turn on power to the HP server and display monitor.
- Step 2.** During the boot sequence, watch the Activity LED on each hard disk drive:
- **Activity LED:** The LED quickly cycles from amber to green. The LED stays steady green until the drive spins up.
- Step 3.** If the activity LED were illuminated on any disk drives, the drive cage may not be correctly installed. Check installation as follows:
- a. Turn off the HP server power switch and unplug the AC power cords and any cables.
 - b. Disconnect the power distribution cable between the drive cage and the power distribution module and then reconnect it.
 - c. Verify that the SCSI interface is correctly installed from SCSI A channel connector on the system board to the connector on the SCSI cage.
 - d. Check the SCSI bus for proper loading,
 - e. Reconnect the AC power cords and any cables. Restart the HP server to determine whether the LEDs now become illuminated during the boot. If not, contact your reseller.
- Step 4.** If the LED indicator on a single disk drive is not illuminated during boot, the disk drive may be installed incorrectly, or its lightpipes may be damaged.

Check the lightpipe on the disk drive as follows:

- a. Remove the disk drive.

- b. Inspect the lightpipes for damage. If a lightpipe is damaged, contact your reseller.

CAUTION The lightpipes are fragile. Be careful not to damage them when you inspect them or when you reinsert the disk drive.

- c. Reinstall the disk drive.
- d. Restart the HP server to determine whether the LED now becomes illuminated during the boot. If not, contact your reseller.

Step 5. Use the EFI shell command `info io` to check the SCSI drives.

Identifying and Diagnosing Hardware Problems

Should a failure occur, the server LEDs, the diagnostic LEDs, and the SEL help you identify the problem:

- LEDs. The server LED, LAN LED, and diagnostic LEDs on the display panel of the server change color and blink in different patterns to help identify specific problems. LEDs on the front and rear panels of the server display LAN activity.
- The SEL provides detailed information about the errors identified by the LEDs.

If the LEDs and SEL do not give you enough information for you to identify the problem you are experiencing, HP also provides diagnostic tools with each operating system.

Power and System LEDs

The power and server LEDs indicate the state of the server. When the server LED is blinking yellow or red, a problem exists.

NOTE When the optional iLO MP card is installed, the four diagnostic LEDs on the display panel are disabled.

Systems with the Optional Management Processor Installed

Table 5-2 details the LED states that exist for servers having an optional iLO MP card installed.

Table 5-2 System LED States

System LED	State
Off	Off
Solid green	Running OS
Blinking green	Booting or running code other than operating system (boot or diagnostic).

Table 5-2 System LED States (Continued)

System LED	State
Blinking yellow (1/sec.)	Attention indication: Alerts of levels 3-5 detected in the optional iLO MP logs. The LED turns off once the event log has been read.
Blinking red (2/sec.)	Fault indication: System alert level 7 detected, LED blinks until the problem is resolved and the server boots successfully or until it is manually turned off.

For server alerts of levels 3-5, the attention condition on the server LED can be cleared by accessing the logs using the `s1` command available in the Main Menu mode or the BMC command line interface (CLI) `cli>sel` command through the console (serial A) port. To access the BMC CLI press: ESC. To exit BMC CLI press ESC Q (Shift Q).

NOTE Always check the optional iLO MP SELs in the case of a blinking yellow or red System LED before replacing any hardware.

iLO MP Event Logs

The optional iLO MP provides diagnostic and configuration capabilities. Refer to the *HP Integrity and HP 9000 Integrated Lights-Out Management Processor Operations Guide* for details on the iLO MP commands. To access the iLO MP, perform the following:

Step 1. Login with proper username and password.

NOTE Default administrator login and password: login = **Admin** password = **Admin**.

Step 2. Enter `c1` to display the console history log. This log displays console history.

Step 3. Enter `s1` to display the status logs. The status logs consist of:

- System Event
- Forward Progress
- Current Boot
- Previous Boot
- Live Events
- Clear SEL/FPL Logs

Step 4. For a complete explanation of configuring the iLO MP and using the iLO MP commands, see the *HP Integrity rx2620 Server User Service Guide*.

System Event Logs

Step 1. Access the iLO MP command prompt.

Step 2. Run the `sl` command. The Event Log Viewer menu displays:

```
SL
Event Log Viewer:

Log Name          Entries    % Full    Latest Entry
-----
E - System Event      9         1 %      29 Oct 2002 19:15:05
F - Forward Progress  129        3 %
B - Current Boot      82
P - Previous Boot     0
L - Live Events
C - Clear All Logs

Enter your choice or [Q] to Quit:
```

Step 3. Select `e` to review the server events. The Event Log Navigation menu displays:

```
Enter menu item or [Ctrl-B] to Quit: e

          Log Name          Entries    % Full    Latest Timestamped Entry
-----
E - System Event          12         1 %      31 Oct 2003 23:37:45

Event Log Navigation Help:

+      View next block      (forward in time, e.g. from 3 to 4)
-      View previous block  (backward in time, e.g. from 3 to 2)
<CR>   Continue to the next or previous block
D      Dump the entire log
F      First entry
L      Last entry
J      Jump to entry number
H      View mode configuration - Hex
K      View mode configuration - Keyword
T      View mode configuration - Text
A      Alert Level Filter options
U      Alert Level Unfiltered
?      Display this Help menu
Q      Quit and return to the Event Log Viewer Menu
Ctrl-B Exit command, and return to the MP Main Menu
```

```
MP:SL (+,-,<CR>,D, F, L, J, H, K, T, A, U, ? for Help, Q or Ctrl-B to Quit) >a
```

```
Alert Level Threshold Filter:
 1 : Major Forward Progress
 2 : Informational
 3 : Warning
 5 : Critical
 7 : Fatal
```

```
Enter alert level threshold or [Q] to quit filter setup: 3
```

```
-> Alert threshold level 3 filter will be applied.
```

```
Set up alert filter options on this buffer? (Y/[N])
```

```
          Log Name          Entries    % Full    Latest Entry
-----
```

```
E - System Event          410          47 %          18 Feb 2003 09:38:10
```

```
Event Log Navigation Help:
```

```
+      View next block      (forward in time,  e.g. from 3 to 4)
-      View previous block  (backward in time, e.g. from 3 to 2)
<CR>   Continue to the next or previous block
D      Dump the entire log for capture and analysis
F      First entry
L      Last entry
J      Jump to entry number
V      View mode configuration (text, keyword, hex)
?      Display this Help menu
Ctrl-B Quit and return to the Main Menu
```

Step 4. Select `a`, and a threshold filter number to filter events to the desired level.

```
MP:SL (+,-,<CR>,D, F, L, J, H, K, T, A, U, ? for Help, Q or Ctrl-B to Quit) >a
```

```
Alert Level Threshold Filter:
```

```
1 : Major Forward Progress
2 : Informational
3 : Warning
5 : Critical
7 : Fatal
```

```
Enter alert level threshold or [Q] to quit filter setup: 3
```

```
-> Alert threshold level 3 filter will be applied.
```

Step 5. Select `t` to change the display to text mode:

```
Display Mode Configuration:
```

```
      H - Hex mode
Current -> K - Keyword mode
      T - Text mode
```

```
Enter new value, or [Q] to Quit:
```

Step 6. To decode the blinking state of server LED, review the entire SEL and look at events with alert level 3 and above.

For example:

```
Log Entry 24: 14 Feb 2003 15:27:02
Alert Level 3: Warning
Keyword: Type-02 1b0800 1771520
Hot Swap Cage: SCSI cable removed
Logged by: BMC; Sensor: Cable / Interconnect - SCSI ChExt Cable
Data1: Device Removed/Device Absent
0x203E4D0AC6020220 FFFF0008F61B0300

Log Entry 73: 00:00:12
Alert Level 3: Warning
Keyword: Type-02 050301 328449
The server's built-in sensors have detected an open chassis door.
Logged by: BMC; Sensor: Physical Security - Chassis Open
Data1: State Asserted
0x200000000C020570 FFFF010302050300
```

NOTE More detailed information on the server logs is presented in Appendix C, “Utilities,” on page 167.

Systems without a Management Processor

The server LED states operate the same with servers having the optional iLO MP. See Table 5-3 for more information.

Table 5-3 Power and System LED States

Power LED	System LED	State
Off	Off	Off
On (green)	Solid green	Running
On (green)	Blinking green	Booting or running code other than operating system (boot or diagnostic).
On (green)	Blinking yellow (1/sec.)	Attention indication
On (green)	Blinking red (2/sec.)	Fault indication

Diagnostic LEDs

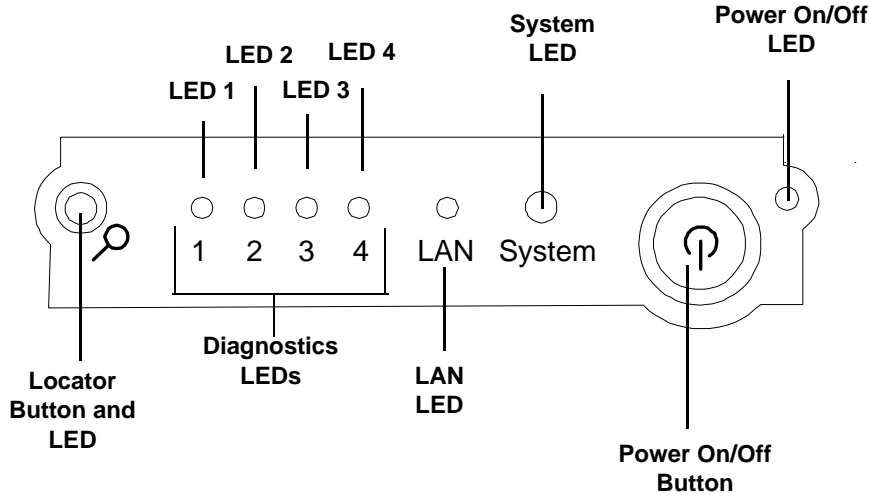
Four diagnostic LEDs are provided on the display panel of the server. Additional diagnostic LEDs are provided on the system board and are described later in this chapter.

The diagnostic LEDs warn of impending failures or present failures and allow you to take preventive or corrective action, such as making a server backup or replacing a component. These diagnostic LEDs are labeled 1, 2, 3 and 4.

- If no iLO MP is installed, the boot progress is monitored by diagnostic LEDs 1 through 4. During the boot-up the LEDs will turn on in sequence until the EFI prompt is reached.

- If an iLO MP is installed, the boot process will be monitored by the iLO MP. The diagnostic LEDs are disabled. See Figure 5-2 for more information.

Figure 5-2 Diagnostic LEDs



The pattern of illuminated LEDs may be used to identify the category of the fault or warning. For example, if diagnostic LED one is red, there is a problem with memory. However, if diagnostic LEDs one and two are both red, there is a problem with the server processor.

If the diagnostic LEDs indicate an error, check the EFI shell command line interface (CLI) `cli>sl e` to display the SEL for a more detailed explanations of the failure.

- The server LED indicates the severity of the error. Check the server LED before proceeding to analyze the sequence of diagnostic LEDs:
 - System LED blinking YELLOW indicates a WARNING.
 - System LED blinking RED indicates a FAULT.
- The diagnostic LEDs provide details about the specific error:
 - Solid red indicates the failing part or subsystem.
 - Off or solid green diagnostic LEDs provide additional details about the failure.

The faults and warnings fall into several general categories. See Table 5-4 for more information.

Table 5-4 Diagnostic LEDs Fault and Warning Categories

LED1	LED2	LED3	LED4	Category
RED	Any ^a	Any ^a	Any ^a	Memory
Any ^a	RED	Any ^a	Any ^a	Firmware
Any ^a	Any ^a	RED	Any ^a	System Board
Any ^a	Any ^a	Any ^a	RED	Fan

Table 5-4 Diagnostic LEDs Fault and Warning Categories (Continued)

LED1	LED2	LED3	LED4	Category
RED	RED	Any ^a	Any ^a	Processor
RED	Any ^a	RED	Any ^a	BMC
RED	Any ^a	Any ^a	RED	Temperature
Any ^a	RED	Any ^a	RED	Power Supply
RED	RED	RED	RED	Unknown

a. This LED can display any color other than red (for example, green or off).

Warnings

Table 5-5 through Table 5-12 provide additional information about each specific warning associated with the various possible LED lighting sequences when the server LED is yellow.

Table 5-5 Unknown Warning

System LED	LED 1	LED 2	LED 3	LED 4	Problem	Solution
Flashing yellow	RED	RED	RED	RED	Unknown warning.	View the SEL <code>cli>sl e</code> for additional information. For further assistance, contact your HP Support Engineer.

Table 5-6 Memory Warnings

System LED	LED 1	LED 2	LED 3	LED 4	Problem	Solution
Flashing yellow	RED	GREEN	OFF	OFF	Mismatched memory pairs.	View the SEL for additional information. Review the information on installing memory in the <i>HP Integrity rx2620 Installation Guide</i> , Chapter 3
Flashing yellow	RED	OFF	GREEN	GREEN	Memory thermal load order.	View the SEL for additional information.
Flashing yellow	RED	GREEN	GREEN	GREEN	Bad serial presence detect (SPD) information (can't detect type).	View the SEL for additional information. For further assistance, contact your HP Support Engineer.

Table 5-7 System Board Warnings

System LED	LED 1	LED 2	LED 3	LED 4	Problem	Solution
Flashing yellow	GREEN	GREEN	RED	OFF	Battery voltage low	Replace the system board battery. Refer to the <i>HP Integrity rx2620 Server User Service Guide</i> for detailed instructions on the maintenance action.

Table 5-8 Fan Warnings

System LED	LED 1	LED 2	LED 3	LED 4	Problem	Solution
Flashing yellow	GREEN	OFF	OFF	RED	Fan1A is not functioning properly	Replace the fan that is not functioning. See the <i>HP Integrity rx2620 Server User Service Guide</i> for detailed instructions on the maintenance action.
Flashing yellow	OFF	GREEN	OFF	RED	Fan1B is not functioning properly	Replace the fan that is not functioning. See the <i>HP Integrity rx2620 Server User Service Guide</i> for detailed instructions on the maintenance action.
Flashing yellow	OFF	OFF	GREEN	RED	CPU0-Fan is not functioning properly	Replace the fan that is not functioning. See the <i>HP Integrity rx2620 Server User Service Guide</i> for detailed instructions on the maintenance action.
Flashing yellow	GREEN	GREEN	OFF	RED	CPU1-Fan is not functioning properly	Replace the fan that is not functioning. See the <i>HP Integrity rx2620 Server User Service Guide</i> for detailed instructions on the maintenance action.
Flashing yellow	OFF	GREEN	GREEN	RED	Fan2 (memory) is not functioning (one rotor)	Replace the fan that is not functioning. See the <i>HP Integrity rx2620 Server User Service Guide</i> for detailed instructions on the maintenance action.

Table 5-8 Fan Warnings (Continued)

System LED	LED 1	LED 2	LED 3	LED 4	Problem	Solution
Flashing yellow	GREEN	GREEN	GREEN	RED	Fan3 (disks/PCI) is not functioning (one rotor)	Replace the fan that is not functioning. See the <i>HP Integrity rx2620 Server User Service Guide</i> for detailed instructions on the maintenance action.

Table 5-9 Processor Warnings

System LED	LED 1	LED 2	LED 3	LED 4	Problem	Solution
Flashing yellow	RED	RED	GREEN	OFF	Processor 0 temperature exceeds limit	Make sure nothing is blocking the server's airflow and locate your server in an air-conditioned room.
Flashing yellow	RED	RED	OFF	GREEN	Processor 1 temperature exceeds limit	Make sure nothing is blocking the server's airflow and locate your server in an air-conditioned room.

Table 5-10 Temperature Warnings

System LED	LED 1	LED 2	LED 3	LED 4	Problem	Solution
Flashing yellow	RED	GREEN	GREEN	RED	External air temperature too high	Make sure nothing is blocking the server's airflow and locate your server in an air-conditioned room.

Table 5-11 Video Warnings

System LED	LED 1	LED 2	LED 3	LED 4	Problem	Solution
Flashing yellow	OFF	RED	RED	OFF	No video adapter present	Install a video adapter. See the installation instructions shipped with the video adapter.

Table 5-12 Power Supply Warnings

System LED	LED 1	LED 2	LED 3	LED 4	Problem	Solution
Flashing yellow	GREEN	RED	OFF	RED	Power supply fault	Check the power supply LED. Replace the power supply.

Faults

Table 5-13 through Table 5-21 provide additional information about each specific fault associated with the various possible LED lighting sequences when the server LED is red.

Table 5-13 Unknown Faults

System LED	LED 1	LED 2	LED 3	LED 4	Problem	Solution
Flashing Red	RED	RED	RED	RED	Unknown fault.	View the SEL for additional information. For further assistance, contact your HP Support Engineer.

Table 5-14 Memory Faults

System LED	LED 1	LED 2	LED 3	LED 4	Problem	Solution
Flashing Red	RED	GREEN	OFF	OFF	Mismatched memory pairs.	Review the information on installing memory in the <i>HP Integrity rx2620 Installation Guide</i> , Chapter 3.
Flashing Red	OFF	OFF	OFF	GREEN	Fatal memory error.	Replace memory.
Flashing Red	RED	GREEN	GREEN	OFF	No memory installed.	Install memory.
Flashing Red	RED	GREEN	GREEN	GREEN	Bad Memory. One or more DIMMs are bad or not seated properly.	Reseat the DIMMs. If the error persists, replace them.

Table 5-15 Firmware Errors

System LED	LED 1	LED 2	LED 3	LED 4	Problem	Solution
Flashing Red	OFF	RED	OFF	OFF	System Firmware Hang	View the SEL for additional information. For further assistance, contact your HP Support Engineer.

Table 5-16 System Board Faults

System LED	LED 1	LED 2	LED 3	LED 4	Problem	Solution
Flashing Red	OFF	GREEN	RED	OFF	VRM overvoltage	View the SEL for additional information. For further assistance, contact your HP Support Engineer.
Flashing Red	GREEN	OFF	RED	OFF	VRM undervoltage	View the SEL for additional information. For further assistance, contact your HP Support Engineer.

Table 5-17 Fan Faults

System LED	LED 1	LED 2	LED 3	LED 4	Problem	Solution
Flashing red	GREEN	OFF	OFF	RED	Fan1A fault	Replace the fan that is not functioning. See the <i>HP Integrity rx2620 Server User Service Guide</i> for detailed instructions on the maintenance action.
Flashing red	OFF	GREEN	OFF	RED	Fan1B fault	Replace the fan that is not functioning. See the <i>HP Integrity rx2620 Server User Service Guide</i> for detailed instructions on the maintenance action.
Flashing red	OFF	OFF	GREEN	RED	CPU0-Fan fault	Replace the fan that is not functioning. See the <i>HP Integrity rx2620 Server User Service Guide</i> for detailed instructions on the maintenance action.
Flashing red	GREEN	GREEN	OFF	RED	CPU1-Fan fault	Replace the fan that is not functioning. See the <i>HP Integrity rx2620 Server User Service Guide</i> for detailed instructions on the maintenance action.
Flashing red	OFF	GREEN	GREEN	RED	Fan2 (memory) fault (both rotors)	Replace the fan that is not functioning. See the <i>HP Integrity rx2620 Server User Service Guide</i> for detailed instructions on the maintenance action.
Flashing red	GREEN	GREEN	GREEN	RED	Fan3 (disks/PCI) fault (both rotors)	Replace the fan that is not functioning. See the <i>HP Integrity rx2620 Server User Service Guide</i> for detailed instructions on the maintenance action.

Table 5-18 Processor Faults

System LED	LED 1	LED 2	LED 3	LED 4	Problem	Solution
Flashing Red	RED	RED	GREEN	OFF	Processor 0 temperature exceeds limit	Make sure nothing is blocking the server's airflow and locate your server in an air-conditioned room. In a single CPU configuration, verify that the airflow blocker is installed.
Flashing Red	RED	RED	OFF	GREEN	Processor 1 temperature exceeds limit	
Flashing Red	RED	RED	GREEN	GREEN	No processor detected.	Verify that the processor or processors are correctly installed. See the <i>HP Integrity rx2620 Installation Guide</i> , Chapter 3 for installation procedures.

Table 5-19 BMC Faults

System LED	LED 1	LED 2	LED 3	LED 4	Problem	Solution
Flashing Red	RED	GREEN	RED	OFF	BMC firmware is damaged	Turn off and unplug the server. Wait 20 seconds, then plug in and restart the server. If the error repeats, replace the base unit.
Flashing Red	RED	GREEN	RED	GREEN	System board FRU inventory device inaccessible	View the SEL for additional information.

Table 5-20 Temperature Faults

System LED	LED 1	LED 2	LED 3	LED 4	Problem	Solution
Flashing Red	RED	GREEN	GREEN	RED	External air temperature too high	Make sure nothing is blocking the server's airflow and locate your server in an air-conditioned room.

Table 5-21 Power Supply Errors

System LED	LED 1	LED 2	LED 3	LED 4	Problem	Solution
Flashing Red	OFF	RED	OFF	RED	VRM or power pod fault	View the SEL for additional information.
Flashing Red	GREEN	RED	OFF	RED	Power Supply 1 fault	
Flashing Red	OFF	RED	GREEN	RED	Power Supply 2 fault	
Flashing Red	GREEN	RED	GREEN	RED	12V out of range (power supply interface fault)	

Command Line Interface

The baseboard management controller (BMC) is accessible by means of the BMC console commands, or command line interface (CLI). The commands are similar to the iLO MP commands but are slightly less interactive.

Command Line Interface Menu

The command line interface (CLI) provides the following menu selections:

date: Date display

help: List available commands

ipmi: Send IPMI cmd

loc: System locator LED

passwd: Change password

pc: Power control

pr: Power restore policy

ps: Power status

rs: System reset

sl: Show logs

sr: Display firmware revisions

tc: System reset

exit: Exit

Troubleshooting Example Using CLI

This example uses the cli and the SEL to display error message indicating that no memory is installed.

```
cli>sl e
#  Sev Generator/Sensor Description Event ID Data, Timestamp
-----
00A0 - SFW FW error 00-0F:70:40 3F:-- 2003-10-31 22:29:06
00B0 7 CPU0 Mem no DIMMs 000D0 DT 00 0000000000000000
00C0 7 CPU0 Mem no DIMMs 000D0 Time 2003-10-31 22:29:06
00D0 - SFW FW error 00-0F:70:40 3F:-- 2003-10-31 22:29:06
00E0 7 CPU0 Halt boot 00037 DT 04 000000000000000F
00F0 7 CPU0 Halt boot 00037 Time 2003-10-31 22:29:06
```

Troubleshooting Example Using CLI

This example uses the cli and the SEL to display error message indicating that fan 2 (memory fan) has failed.

```
cli>sl e
#  Sev Generator/Sensor Description Event ID Data, Timestamp
-----
0010 - BMC Chass cntrl 00-12:70:A3 81:03 2003-10-31 22:39:02
0020 - BMC LPC reset 00-12:70:02 2003-10-31 22:39:03
0030 - Fan 1 (PSU) OK 11-0A:07:00 2003-10-31 22:39:04
0040 - Fan 3 (CPU) OK 13-0A:07:00 2003-10-31 22:39:04
0050 - ACPI State S0 (on) FA-22:6F:00 2003-10-31 22:39:05
0060 - SFW Boot start 00-1D:0A:00 2003-10-31 22:39:05
0070 2 CPU1 Boot start 00063 DT 04 0000000000000000
0080 2 CPU1 Boot start 00063 Time 2003-10-31 22:39:05
0090 - BMC LPC reset 00-12:70:02 2003-10-31 22:39:07
00A0 - SEL Time Set Set FD-C0:03:01 2003-10-31 22:39:15
00B0 - Fan 2 (Mem) Fail (crit) 12-0A:07:02 2003-10-31 22:39:24
00C0 - BMC Chass cntrl 00-12:70:A3 00:E2 2003-10-31 22:39:31
00D0 - ACPI State S5 (off) FA-22:6F:05 2003-10-31 22:39:32
```

System Board Diagnostic LEDs

There are three additional LEDs that can help when troubleshooting the server. These LEDs are located on the system board close to the back of the server and can be viewed through the small cooling holes in the server case. See Figure 5-3 for the STBY, F/W, and BMC LED locations.

Figure 5-3 Location of the STBY, F/W and BMC LEDs

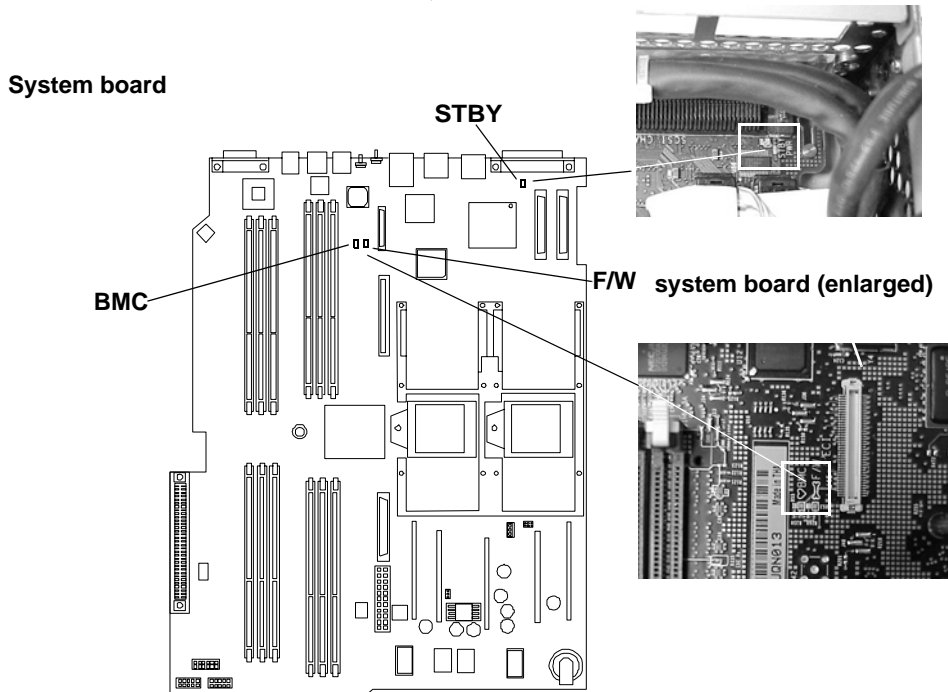


Table 5-22 details the LED states of the STBY, F/W, and BMC LEDs on the system board.

Table 5-22 System Board LEDs

LED	Description
STBY (power good)	This green standby LED comes on as soon as the server power cord is plugged in.
BMC (heartbeat)	A few seconds after the server is plugged in this green LED starts blinking indicating the BMC software is operational.
F/W	A few seconds after the server power is turned on, the server firmware code fetch green LED comes on indicating that the firmware has started the boot process.

LAN LEDs

There are front panel and rear panel LAN LEDs on the HP Integrity rx2620 server.

Front Panel LAN LEDs

The front panel LAN LED indicates the server is communicating over the Gigabit or server management LAN:

- Blinking green, the server is communicating over the LAN.
- Solid green, LAN link is established, no current LAN activity.

Rear Panel LAN LEDs

There are two 1 Gb LAN ports on the rear panel. They are LAN A and LAN B.

LAN A Connector LEDs

The 1 Gb LAN A interface provides four LEDs on the rear panel. Table 5-23 details the LED locations and states for the LAN A connector.

Table 5-23 Gb LAN A Connector LEDs

LAN LED	Location	Color	State
Not used	Top	None	None
1000mb	2nd from top	Amber	Blinking amber – the 1000 Mbps with ethernet protocol and twisted-pair wiring is enabled. Off – no link.
100mb	2nd from bottom	Green	Blinking green – the 100 Mbps with ethernet protocol and twisted-pair wiring is enabled. Off – no link.
Activity	Bottom	Green	Blinking green – The Activity LED lights, and all other LEDs are off for a 10 Mbps connection. Off – no activity

LAN B Connector LEDs

The 1Gb LAN B interface provides two LEDs on the rear panel (the LED on the left is not used). Table 5-24 details the LED locations and states for the LAN B connector.

Table 5-24 Gb LAN B Connector LEDs

LED	Description
Speed (upper left)	Yellow—the 1000 MHz with ethernet protocol and twisted-pair wiring is enabled, off—no link
Speed (upper left)	Green—the 100 MHz with ethernet protocol and twisted-pair wiring is enabled, off—no link
Link (upper right)	Green—link
Link (upper right)	Off—No link

Optional Management Processor LAN LEDs

Four iLO MP LAN LEDs are also on the rear panel if the server has an iLO MP installed. Table 5-25 details the LED locations and states for the LAN A connector.

Table 5-25 Optional Management Processor LAN LEDs

LAN LED	Location	Color	State
Self-test	Top	Yellow	Management processor running selftest or error
		Off	Management processor has booted
10BT	2nd from top	Green	10BT link established
		Blinking green	10BT activity
		Off	No link or 10BT link
100BT	2nd from bottom	Green	100BT link established
		Blinking green	100BT activity
		Off	No link or 10BT link
Standby Power	Bottom	Green	Standby Power on
		Off	Standby Power off

Diagnostics

A suite of offline and online support tools are available to enable manufacturing, field support personnel, and you to troubleshoot server problems. In general, if the operating system (HP-UX) is already running, it is best not to shut it down. Use the online support tools.

If the OS cannot be booted, use the offline support tools to resolve the problem. The offline support tools are available from the EFI partition. Once you resolve the problem preventing booting, boot HP-UX, and use the online support tools for any further testing.

If it is not possible to reach the EFI from either the main disk or from LAN, you must troubleshoot, using the visual fault indicators, console messages, and system error logs that are available.

Online Diagnostics/Exercisers

Online support tools are provided under both operating systems. Centralized error archiving and hardware inventory tools for both OSEs are available as long as the agents/providers that support them are installed on the managed server.

On HP-UX systems, the legacy tools within OnlineDiag continue to be supported. The online support tools, on HP-UX 11.23 and greater, include the Support Tool Manager (STM) tools, and the additional Web-Based Enterprise Management (WBEM) features added by SysFaultMgmt.

The STM suite of tools includes verifiers, diagnostics, exercisers, information modules, and expert tools.

Verifiers quickly determine whether or not a specific device is operational by performing tasks similar in nature to the way applications use the device. No license is required to run the verifiers.

Diagnostics are tools designed to identify faulty or failed FRUs.

Exercisers stress devices in order to facilitate the reproduction of intermittent problems.

Information modules create a log of information specific to one device, including:

- The product identifier
- A description of the device
- The hardware path to the device
- The vendor
- Onboard log information (if applicable)
- Miscellaneous information associated with the device
- The firmware revision code, if firmware is present in the device, is also displayed

Expert tools are device-specific troubleshooting utilities for use by sophisticated users. Their functionality varies from tool to tool, but they are intended to be interactive, and rely on users to provide information necessary to perform a particular task. These tools require users to have the appropriate license, if they wish to run them.

Online Support Tool Availability

Online diagnostics are included in the HP-UX OE media, and are installed by default.

Online Support Tools List

The following online support tools are available on HP-UX 11.23 hosted servers. In some cases, a tool, such as a disk exerciser, is generic to many types of hardware; in other cases, a tool, such as a tape diagnostic, is specific to a particular technology or type of tape drive.

Table 5-26 Online Support Tools List

Functional Area	Information	Verify	Exercise	Diagnose	Expert
System	Yes	No	No	No	No
CPU/FPU	No	No	Yes	No	Yes
Memory	Yes	No	Yes	No	No
Graphics	Yes	Yes	Yes	No	No
Core I/O LAN	Yes	Yes	Yes	Yes	No
Disk/Arrays	Yes	Yes	Yes	No	No
Tape	Yes	Yes	Yes	Yes	Yes
M/O	Yes	No	No	No	Yes
Add-On Network I/O Cards	Yes	Yes	Yes	No	Yes
Add-On Mass Storage I/O Cards	Yes	No	No	No	No

Offline Support Tool Availability

Updates to the EFI HP service partition (HPSP) are available through the CD Installer option on the IPF Offline Diagnostics and Utilities CD. At a minimum, an ISO image of the IPF Offline Diagnostics and Utilities CD is available from the HP web.

Offline Support Tools List

The following offline support tools are available:

Table 5-27 Offline Support Tools List

Offline Tool	Functional Area
CPUDIAG	Processor Diagnostic
MEMDIAG	Memory Diagnostic
MAPPER	System Mapping Utility
PLUTODIAG	SBA/LBA Chipset
PERFVER	Peripheral Verifier
DFDUTIL	SCSI Disk Firmware Update Utility
DISKUTIL	Disk Test Utility (Non-Destructive)
COPYUTIL	Data Copy Utility

Table 5-27 Offline Support Tools List (Continued)

Offline Tool	Functional Area
DISKEXPT	Disk Expert Utility
IODIAG	I/O Diagnostics Launch Facility (Executes third party diagnostics and runs BIST, if available)
CIODIAG2	Core I/O Diagnostic
Specific Card I/O Diagnostics	Card-Specific I/O Diagnostics/BIST

General Diagnostic Tools

The following tools are currently available for support on other HP 9000 and Integrity server platforms. The distribution method is through the Web.

Table 5-28 General Diagnostic Tools List

Diagnostic Tool	Description
IPMI Event Decoder	Provides detailed information about the IPMI event (Problem description, cause, action)

Fault Management Overview

The goal of fault management and monitoring is to increase server availability, by moving from a reactive fault detection, diagnosis, and repair strategy to a proactive fault detection, diagnosis, and repair strategy. The objectives are:

- To detect problems automatically, as close as possible to the time of occurrence.
- To diagnose problems automatically, at the time of detection.
- To automatically report (in understandable text) a description of the problem, the likely cause(s) of the problem, the recommended action(s) to resolve the problem, and detailed information about the problem.
- To ensure that tools are available to repair or recover from the fault.

HP-UX Fault Management

Proactive fault prediction and notification is provided on HP-UX by SysFaultMgmt WBEM indication providers, as well as by the Event Management Service (EMS). The Event Management Service and WBEM provide frameworks for monitoring and reporting events.

SysFaultMgmt WBEM indication providers and the EMS Hardware Monitors allow users to monitor the operation of a wide variety of hardware products, and alert them immediately if any failure or other unusual event occurs. By using hardware event monitoring, users can virtually eliminate undetected hardware failures that could interrupt server operation or cause data loss.

Complete information on installing and using EMS hardware event monitors, as well as a list of supported hardware, can be found in the *EMS Hardware Monitors Users Guide*. An electronic copy of this book is provided on the web site <http://docs.hp.com/hpux/diag>.

WBEM indication providers and EMS Hardware Monitors

Hardware monitors are available to monitor the following components (these monitors are distributed free on the OE media):

- Chassis/Fans/Environment
- CPU monitor
- UPS monitor
- FC Hub monitor
- FC Switch monitor
- Memory monitor
- Core Electronics Components
- Disk drives
- Ha_disk_array

Recommended Cleaning Procedures

Suggested cleaning procedures for the HP Integrity rx2620 server are provided in the following table. Be sure to turn off power to the server when cleaning it. Table 5-29 details the components and procedures that need cleaning for the server.

Table 5-29 Cleaning

Component	Time Frame	Procedure
Keyboard	Regularly	Dust with damp, lint-free cloth.
Monitor screen	Regularly	Use “HP Video Screen Cleaning Solution” found in 92193M Master Clean Kit.
Mouse	Regularly	Refer to the mouse's manual for mouse maintenance procedures.
Cooling fans and grilles	6 Months	Check functions of cooling fans and clean the intake openings on the chassis of dust, lint, and other obstructions to airflow.

CAUTION DO NOT use petroleum-based cleaners (such as lighter fluid) or cleaners containing benzene, trichlorethylene, ammonia, dilute ammonia, or acetone. These chemicals could damage all plastic and painted surfaces.

Where to Get Help

HP customer care will help you solve server problems and, if necessary, initiate appropriate service procedures.

Support is available on the web and by phone.

For information on contacting the HP IT Resource Center (ITRC) near you, go to: <http://www.itrc.hp.com>.

Information to Collect Before you Contact Support

Before you contact HP support, you should:

Step 1. Check the previous sections of this chapter and attempt to solve the problem.

- Note failure symptoms and error indications (LEDs and messages).
- Capture and permanently log the current SEL and FPL contents.
- Try to determine precisely what did or did not happen.

Step 2. Collect the following information:

- The model number of your server (for example rx2620).
- The product number of your server. This can be found on the identification label, which is found on the pull-out label at the front of the server.
- The serial number of your server. This can be found on the identification label.

Step 3. Be familiar with your server configuration.

- Are you using the LAN, RS-232, or web interface to monitor the server?
- How many processors, DIMMs, and PCI cards have been installed?
- What versions of processor, memory, and PCI cards are used and where are they installed?
- What accessories are installed?

Step 4. Determine the following

- Which firmware versions are in use?
- When did the problem start?
- Have recent changes been made to the server?
- Which OS and version is in use?

Online Support

To contact HP Customer Support online, refer to the Worldwide Limited Warranty and Technical Support Guide or visit us at <http://www.hp.com/go/bizsupport>. On our web page, enter the server model number (rx2620) and search the field.

The following information is available on this web site:

- Software and firmware updates
- The latest drivers and utilities
- Additional documentation

Phone Support

To contact HP customer support by phone, go to the HP IT Resource Center (ITRC) near you, at: <http://www.itrc.hp.com>. Local phone numbers are listed in your native language for help.

A Parts Information

This appendix provides server part information such as:

- Description
- Manufacturing part number
- Replacement part number
- Exchange part number

This appendix addresses the following topics:

- “Field Replaceable Parts View” on page 140.
- “Field Replaceable Parts List” on page 142.

Field Replaceable Parts View

The items in this list and the corresponding item numbers are the field replaceable units (FRUs) for the HP Integrity rx2620 server. See Figure A-1 for an exploded view of the server.

Figure A-1 **Parts Identification**

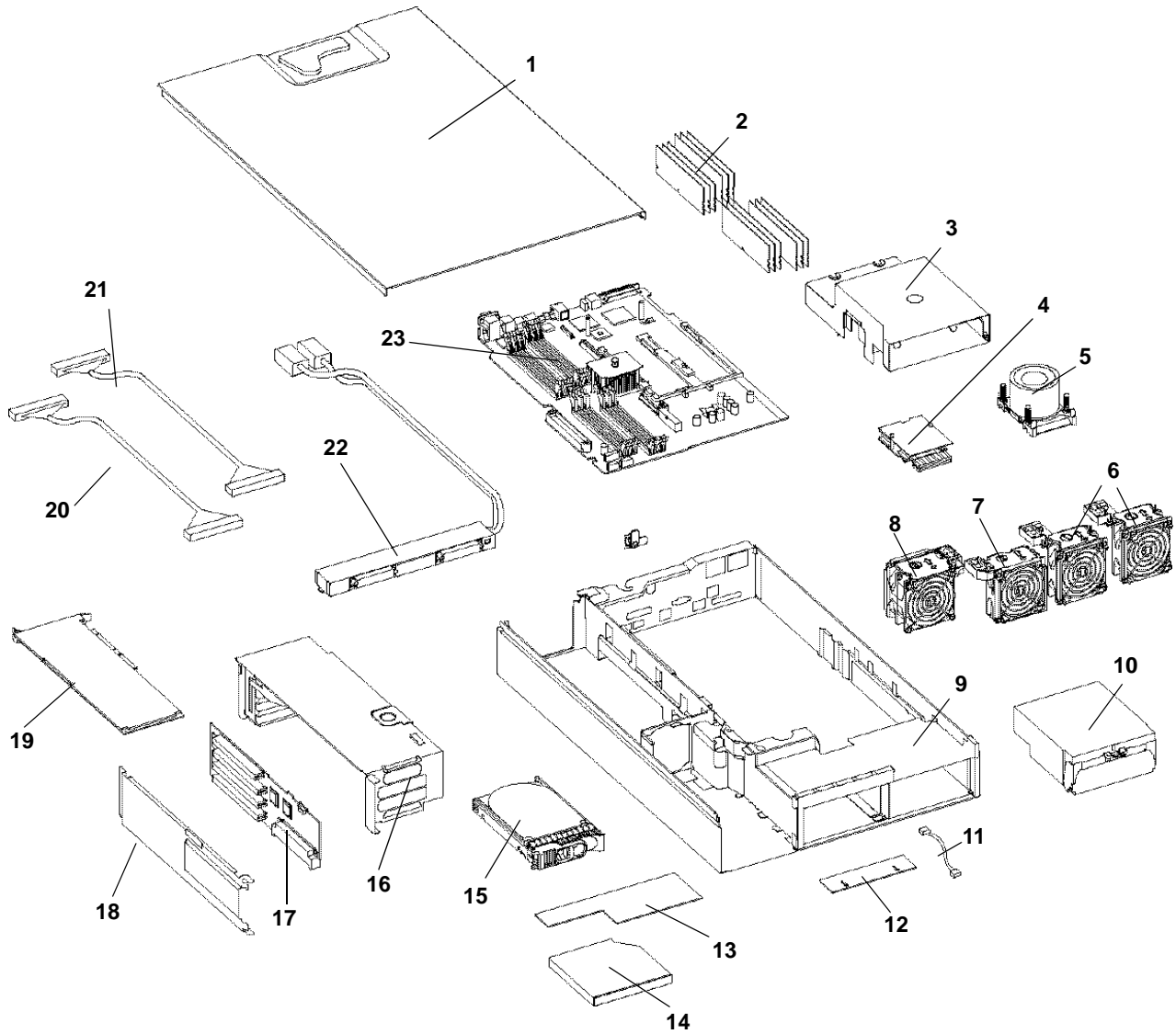
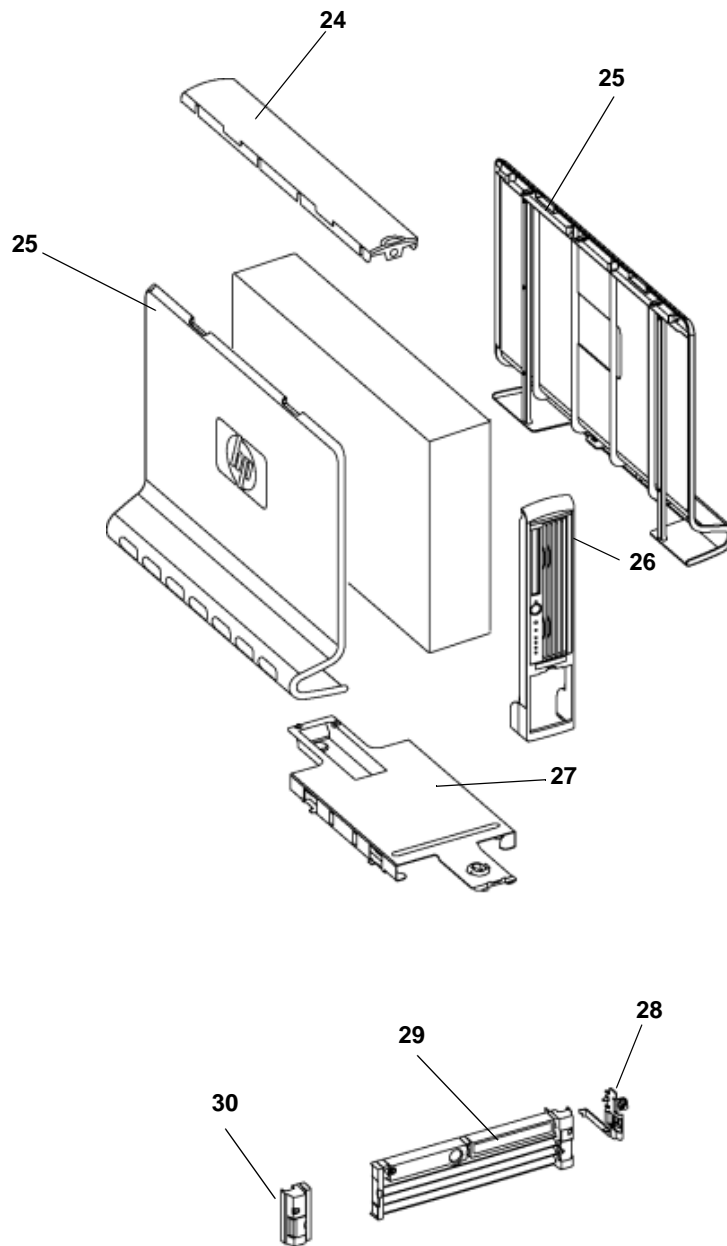


Figure A-2 shows the parts used for a tower-mounted server.

Figure A-2 Tower Parts



Field Replaceable Parts List

Use the item numbers listed in Table A-1 with the part illustrations in order to identify the nomenclature of the part. Part numbers are found by using the part nomenclature from this list to select the correct part from the HP Partsurfer (<http://partsurfer.hp.com>). If a system board needs to be replaced, remove processors, DIMMs, and adapter boards and transfer these to the new board. Ensure all jumper and switch settings on the failed board are transferred to the replacement board.

NOTE Some part numbers shown in Table A-1 have two entries. The second entry is for the Restriction of the Use of Certain Hazardous Substances (RoHS) compliant parts.

Table A-1 **Parts List**

Item No.	Description	Mfg. Part Number	Part Number Replacement	Part Number Exchange
PCA Boards				
22	Power Supply Interface module	A7231-04018	A7231-04018	n/a
	Power Supply Interface module - (RoHS)	A7231-04048	A7231-04048	n/a
	SCSI backplane	A7231-66520	A7231-66520	A7231-69520
	SCSI backplane - (RoHS)	AB587-60005	AB587-60005	n/a
23	System Board	AB331-60001	AB331-67001	AB331-69101
	System Board - (RoHS)	AB331-60101	AB331-67101	AB331-69201
	System Board - (RoHS - for dual-core processors only)	AB331-60101	AB331-67101	AB331-69301
17	PCI backplane	A7231-66530	A7231-66530	n/a
	PCI backplane - (RoHS)	AB587-60004	AB587-60004	n/a
12	Status panel	A7231-66550	A7231-66550	n/a
	Status panel - (RoHS)	AB587-60006	AB587-60006	n/a
Optical Devices				
14	DVD-RW/DVD-ROM Drive, Slimline	AB348A	AB616-62001	AB616-69001
	DVD-RW/DVD-ROM Drive, Slimline - (RoHS)	AB348B	AB348-67001	n/a
14	DVD-ROM Drive, Slimline	A9919A	A7231-62012	A7231-69012
	DVD-ROM Drive, Slimline - (RoHS)	A9919B	A9919-67001	n/a
Memory				
2	PC2100 256 DDR-SDRAM DIMM 1.2"	AB395A	A6967AX	n/a
2	PC2100 512 DDR-SDRAM DIMM 1.2"	AB396A	A6968AX	n/a
2	PC2100 1 GB DDR-SDRAM DIMM 1.2"	AB397A	A6969AX	A6969-69001
2	PC2100 2 GB DDR-SDRAM DIMM 1.2"	AB228A	A6970AX	A6835-69001

Table A-1 Parts List (Continued)

Item No.	Description	Mfg. Part Number	Part Number Replacement	Part Number Exchange
2	PC2100 4 GB DDR-SDRAM DIMM 1.2"	AB475A	AD041A	AB475-69001
Internal disks/removable media				
15	36 GB, 15K RPM Ultra320 SCSI HotPlug Disk	A9896A	A9896-64001	A9896-69001
	36 GB, 15K RPM Ultra320 SCSI HotPlug Disk - (RoHS)	AB420A	AB420-67001	AB420-69001
15	73 GB, 15K RPM Ultra320 SCSI HotPlug Disk	A9897A	A9897-64001	A9897-69001
	73 GB, 15K RPM Ultra320 SCSI HotPlug Disk - (RoHS)	AB421A	AB421-67001	AB421-69001
15	146 GB, 10K RPM Ultra320 SCSI HotPlug Disk	A9898A	A9898-64001	A9898-69001
	146 GB, 10K RPM Ultra320 SCSI HotPlug Disk - (RoHS)	AB422A	AB422-67001	AB422-69001
15	300 GB, 10K RPM Ultra320 SCSI HotPlug Disk - (RoHS)	AB423A	AB423-67001	AB423-69001
Fans				
6	Assembly - CPU Fans	AB331-04001	AB331-67002	n/a
	Assembly - CPU Fans - (RoHS)	AB331-04006	AB331-04006	n/a
7	Assembly - Thin 80mm Fan	A7231-04015	A7231-04015	n/a
	Assembly - Thin 80mm Fan - (RoHS)	A7321-04060	A7321-04060	n/a
8	Assembly - Dual fan	A7231-04033	A7231-04033	n/a
	Assembly - Dual fan - (RoHS)	A7231-04059	A7231-04059	n/a
	Assembly - Office friendly CPU fans - (RoHS)	AD117-2000A	A7231-04017	n/a
Processors				
5	Processor, 1.4 GHz, 12 Mb cache, module	AD122A (A2)	AD122AX	AD122-69001
5	Processor, 1.6 GHz, 18 Mb cache, module	AD123A (A2)	AD123AX	AD123-69001
4	Assembly - McPod II (Power Pod)	0950-4294	0950-4294	n/a
	Processor Tool Kit	A9901A	5069-5441	n/a
Power Supply				
10	Power supply, 600 watts, redundant hot swap	0950-4119	A6874-63000	A6874-69000
	Power supply, 600 watts, redundant hot swap - (RoHS)	0950-4621	0950-4621	n/a
Rack Solution Kits				
	Field Rack Kit, 19" wide	AB376A	n/a	n/a
	Telco Style rack mounting kit	A8716A	n/a	n/a
	Pedestal server mounting kit	AB377A	n/a	n/a
27	Deskside Pedestal	A7231-04028	A7231-04028	n/a
26	Assembly - Deskside Front Panel	A7231-04054	A7231-04054	n/a
24	Deskside top panel	A7231-04052	A7231-04052	n/a

Table A-1 Parts List (Continued)

Item No.	Description	Mfg. Part Number	Part Number Replacement	Part Number Exchange
Rack Server				
28	Server - Assembly - Rack latch right	A7231-04023	A7231-04023	n/a
29	Server - Assembly, Rack bezel right	A7231-04053	A7231-04053	n/a
30	Server - Assembly - Rack left bezel with rack latch	A7231-04055	A7231-04055	n/a
	Server Rack Nameplate (rx2620)	A7136-40002	A7136-40002	n/a
Plastic and Metal Parts				
	Filler, Slimline carbon	A7231-40027	A7231-40027	n/a
	HDD Filler - Carbon	A6198-60003	A6198-60003	n/a
	Assembly - Fan Cage	A7231-04004	A7231-04004	n/a
16	Assembly - PCI Cage	A7231-04006	A7231-04006	n/a
3	Assembly - Plastic turbocooler duct	A7231-04034	A7231-04034	n/a
	Assembly - Plastic turbocooler duct (Montecito CPU)	AD117-3400A	AD117-3400A	n/a
	ECI Cover Plate	A7231-00072	A7231-00072	n/a
1	Assembly - Top Cover	A7231-04003	A7231-04003	n/a
	Assembly- Memory air flow guide	A7231-04049	A7231-04049	n/a
Cables				
	IDE Cable	A7231-63002	A7231-63002	n/a
	IDE Cable - (RoHS)	A7231-63026	A7231-63026	n/a
	Status Panel Cable	A7231-63003	A7231-63003	n/a
	Status Panel Cable - (RoHS)	A7231-63027	A7231-63027	n/a
	Disk Power	A7231-63004	A7231-63004	n/a
	Disk Power - (RoHS)	A7231-63028	A7231-63028	n/a
	SCSI - Channel A	A7231-63017	A7231-63017	n/a
	SCSI - Channel A - (RoHS)	A7231-63038	A7231-63038	n/a
	SCSI - Channel B	A7231-63018	A7231-63018	n/a
	SCSI - Channel B - (RoHS)	A7231-63039	A7231-63039	n/a
	Single channel SCSI	A7231-63024	A7231-63024	n/a
	Dual channel SCSI	A7231-63025	A7231-63025	n/a
	Super 80 mm Fan	A7231-63005	A7231-63005	n/a
	Super 80 mm Fan - (RoHS)	A7231-63030	A7231-63030	n/a
	80 mm Fan	A7231-63006	A7231-63006	n/a
	80 mm Fan - (RoHS)	A7231-63029	A7231-63029	n/a

Table A-1 Parts List (Continued)

Item No.	Description	Mfg. Part Number	Part Number Replacement	Part Number Exchange
	Management Processor M cable	A6144-63001	A6144-63001	n/a
	Management Processor M cable - (RoHS)	A6144-63007	A6144-63007	n/a
	CPU power adapter cable	AD117-2000A	AD117-2000A	n/a
	Flex cable for the iLO MP	A7231-63008	A7231-63008	n/a
	Audio Cable	8121-0808	8121-0808	n/a
	Headphone	5183-9500	5183-9500	n/a
	PWR CORD U.S. CANADA 125 VAC	8120-1378	8120-1378	n/a
	PWR CORD CONT. EUROPE 250 VAC	8120-1689	8120-1689	n/a
	Chinese Power Cord, straight	8120-8376	8120-8376	n/a
	PWR CORD JAPAN 125 VAC	8120-4753	8120-4753	n/a
	PWR CORD SWITZERLAND 250 VAC	8120-2104	8120-2104	n/a
	PWR CORD U.K. 250 VAC	8120-1351	8120-1351	n/a
I/O Cards				
17	Mgmt. Processor with VGA	A9803A	A7231-66580	n/a
17	Mgmt. Processor with VGA - (RoHS)	A9803A	AB587-60002	n/a
17	PCI Single-Channel Ultra 160 Adapter	A6828A	A6828-60101	n/a
17	Windows, Linux 2 port Ultra160 SCSI HBA	A6829A	A6829-60101	n/a
17	Windows, Linux Ultra160 SCSI Adapter (Max. 3)	A7059A	A6828-60101	n/a
17	Windows, Linux 2 port Ultra160 SCSI HBA (Max.3)	A7060A	A6829-60101	n/a
17	2-port U320 SCSI HPUX ()	A7173A	A6961-60011	n/a
17	2-ch U320 RAID Controller Linux, Windows	A9890A	309520-001	n/a
17	4-ch U320 RAID Controller Linux, Windows	A9891A	305920-001	n/a
17	PCI-X 1-port FCA2404 2 Gb Fibre Channel Adapter	AB232A	313045-002	n/a
17	PCI 10/100Base-T LAN Adapter	A5230A	B5509-66001	n/a
17	PCI 1000Base-T Gigabit Ethernet Adapter	A6825A	A6825-67101	n/a
17	2-port 1000Base-SX HPUX	A7011A	A7011-67001	A7011-69001
17	2-port 1000Base-T HPUX	A7012A	A7012-67001	n/a
17	Windows/Linux 1000Base-T Gigabit Ethernet Adapter	A7061A	A6825-67101	n/a
17	Windows/Linux 1000Base-SX Gigabit Ethernet Adapter	A7073A	A6847-67101	n/a
17	2-port 1000Base-SX Linux, Windows	A9899A	A7011-67001	A7011-69001
17	2-port 1000Base-T Linux, Windows	A9900A	A7012-67001	n/a
17	2-port 4X Infinband Adapter HPUX	AB286A	AB286-60001	AB286-69001

Table A-1 Parts List (Continued)

Item No.	Description	Mfg. Part Number	Part Number Replacement	Part Number Exchange
17	PCI ATM 155Mb/s MMF Adapter	A5513A	A5513-60001	A5513-69002
17	PCI Token Ring 4/16/100 Hardware Adapter	A5783A	A5783-60101	A5783-69101
17	Universal PCI FDDI Adapter	A3739B	A3739-60002	A3739-69002
17	2 Port X.25/Frame Relay/SDLC Interface	J3525A	J3525-60001	J3525-69001
17	PCI 8 port serial MUX Adapter	A6748A	A6748-60001	A6748-69001
17	PCI 64 port serial MUX Adapter	A6749A	A6749-60101	A6749-60101
17	Ultra2/100BT combo HPUX	A5838A	A5838-60101	A5838-69101
17	GigE-SX/2G FC Combo Card HPUX	A9782A	A9782-60001	A9782-69001
17	GigE-TX/2G FC Combo Card HPUX	A8784A	A9784-60001	A9784-69001
17	2-port 2 Gb FC HPUX, Linux, Windows	A6826A	A6826-60001	A6826-69001
17	Fibre Channel Card, 2 Gb, Single Port	A6795A	A6795-62001	A6795-69001
17	PCI LAN Adapter, 4 Port 100Base-TX	A5506B	A5506-60102	A5506-69102
17	LAN Adapter, 1000 SX Gigabit, Next Gen	A6847A	A6847-67101	n/a
17	PCI HyperFabric2 Fiber Adapter	A6386A	n/a	A6386-69001
17	USB keyboard and USB scroll mouse	A7861C	n/a	n/a
17	USB to PS/2 Adapter	A7782A	n/a	n/a
Monitor/Keyboard/Mouse				
	Console (15" color monitor, keyboard and data cable)	AB300A		
	18.1" LCD Flat Panel Display	P9021Y		
	19"/18" viewable color monitor (flat screen)	P9009A		
	19"/18" viewable color monitor (flat screen) Europe	P9009W		

B Booting the Operating System

This chapter covers procedures for booting and shutting down an operating system on the HP Integrity rx2620 server. The following operating systems are supported on HP Integrity servers: HP-UX 11i Version 2 (B.11.23), HP OpenVMS, Microsoft Windows Server 2003, Red Hat Enterprise Linux, and SuSE Linux Enterprise Server.

This chapter addresses the following topics:

- “Operating Systems Supported on HP Integrity Servers” on page 148.
- “Configuring System Boot Options” on page 148.
- “Bootting and Shutting Down HP-UX” on page 149.
- “Bootting and Shutting Down HP OpenVMS” on page 155.
- “Bootting and Shutting Down Microsoft Windows” on page 159.
- “Bootting and Shutting Down Linux” on page 163.

Operating Systems Supported on HP Integrity Servers

HP supports the following operating systems on entry-class HP Integrity servers.

- **HP-UX 11i Version 2 (B.11.23)**
For details refer to “Booting and Shutting Down HP-UX” on page 149.
- **HP OpenVMS I64**
For details refer to “Booting and Shutting Down HP OpenVMS” on page 155.
- **Microsoft® Windows® Server 2003**
For details refer to “Booting and Shutting Down Microsoft Windows” on page 159.
- **Red Hat Enterprise Linux 4**
For details refer to “Booting and Shutting Down Linux” on page 163.
- **SuSE Linux Enterprise Server 10**
For details refer to “Booting and Shutting Down Linux” on page 163.

Configuring System Boot Options

This section discusses the server boot options you can configure on entry-class HP Integrity servers, including the boot options list and the autoboot setting for the server.

- **Boot Options List**

The boot options list is a list of loadable items available for you to choose from the EFI Boot Manager menu. Ordinarily the boot options list includes the EFI Shell and one or more operating system loaders.

The following example includes boot options for HP OpenVMS, Microsoft Windows, HP-UX, and the EFI Shell. The final item in the EFI Boot Manager menu, the Boot Configuration menu, is not a boot option. The Boot Configuration menu allows server configuration through a maintenance menu.

```
EFI Boot Manager ver 1.10 [14.61] Please select a boot option
```

```
HP OpenVMS 8.2-1
EFI Shell [Built-in]
Windows Server 2003, Enterprise
HP-UX Primary Boot: 4/0/1/1/0.2.0
Boot Option Maintenance Menu
```

```
Use ^ and v to change option(s). Use Enter to select an option
```

NOTE In some versions of EFI, the **Boot Configuration Menu** is listed as the **Boot Option Maintenance Menu**.

To manage the boot options list for each server, use the EFI Shell, the EFI **Boot Configuration Menu**, or operating system utilities.

At the EFI Shell, the `bcfg` command supports listing and managing the boot options list for all operating systems, except Microsoft Windows. On HP Integrity servers with Windows installed, the `\MSUtil\nvrboot.efi` utility is provided for managing Windows boot options from the EFI Shell. For HP Integrity servers with OpenVMS installed, the `\efi\vms\vms_bcfg.efi` and `\efi\vms\vms_show` utilities are provided for managing OpenVMS boot options.

The **EFI Boot Configuration Menu** provides the **Add a Boot Option**, **Delete Boot Option(s)**, and **Change Boot Order** menu items (use this method if you must add an EFI Shell entry to the boot options list).

Operating system utilities for managing the boot options list include the HP-UX `setboot` command and the HP OpenVMS `@SYS$MANAGER:BOOT_OPTIONS.COM` command.

Refer to the following sections for details:

- Setting HP-UX boot options (refer to “Adding HP-UX to the Boot Options List” on page 150)
- Setting OpenVMS boot options (refer to “Adding HP OpenVMS to the Boot Options List” on page 155)
- Setting Windows boot options (refer to “Adding Microsoft Windows to the Boot Options List” on page 159)
- Setting Linux boot options (refer to “Adding Linux to the Boot Options List” on page 163)

- **Autoboot Setting**

The `autoboot` setting determines, at startup, whether a server automatically loads the first item in the boot options list, or remains at the EFI Boot Manager menu. When `autoboot` is enabled, EFI loads the first item in the boot options list after a designated timeout period.

Configure the `autoboot` setting for an HP Integrity server using either the `autoboot` EFI Shell command, or the **Set Auto Boot TimeOut** menu item from the **EFI Boot Configuration** menu.

For example, from the EFI Shell to disable `autoboot` issue the `autoboot off` command. To enable `autoboot` with the default timeout value issue the `autoboot on` command. To enable `autoboot` with a timeout of 60 seconds issue the `autoboot time 60` command.

Set `autoboot` from HP-UX using the `setboot` command. Enable `autoboot` from HP-UX using the `setboot -b on` command. Disable `autoboot` using the `setboot -b off` command.

Booting and Shutting Down HP-UX

This section covers booting and shutting down HP-UX on entry-class HP Integrity servers.

- To add an HP-UX entry to the boot options list, refer to “Adding HP-UX to the Boot Options List”.
- To boot HP-UX, use the following procedures:
 - “Standard HP-UX Booting” on page 151 describes the standard ways to boot HP-UX. Typically this results in booting HP-UX in multi-user mode.
 - “Single-User Mode HP-UX Booting” on page 152 describes how to boot HP-UX in single-user mode.
 - “LVM Maintenance Mode HP-UX Booting” on page 154 describes how to boot HP-UX in Logical Volume Management (LVM) maintenance mode.
- To shut down the HP-UX operating system, refer to “Shutting Down HP-UX” on page 154.

Adding HP-UX to the Boot Options List

This section describes how to add an HP-UX entry to the server boot options list.

You can add the `\EFI\HPUX\HPUX.EFI` loader to the boot options list from the EFI Shell or EFI Boot Configuration menu (or in some versions of EFI, the Boot Option Maintenance Menu).

NOTE On HP Integrity servers, the operating system installer automatically adds an entry to the boot options list.

Adding an HP-UX Boot Option

This procedure adds an HP-UX item to the boot options list from the EFI Shell.

To add an HP-UX boot option when logged in to HP-UX, use the `setboot` command. For details refer to the `setboot` (1M) manpage.

Step 1. Access the EFI Shell environment.

Log in to the iLO MP and enter `CO` to access the server console.

When accessing the console, confirm that you are at the EFI Boot Manager menu (the main EFI menu). If you are at another EFI menu, choose the **Exit** option from the submenus until you return to the screen with the EFI Boot Manager heading.

From the EFI Boot Manager menu, choose the **EFI Shell** menu option to access the EFI Shell environment.

Step 2. Access the EFI System Partition (`fsX`: where *X* is the file system number) for the device from which you want to boot HP-UX.

For example, enter `fs2:` to access the EFI System Partition for the bootable file system number 2. The EFI Shell prompt changes to reflect the file system currently accessed.

The full path for the HP-UX loader is `\EFI\HPUX\HPUX.EFI` and it should be on the device you are accessing.

Step 3. At the EFI Shell environment, use the `bcfg` command to manage the boot options list.

The `bcfg` command includes the following options for managing the boot options list:

- `bcfg boot dump` — Display all items in the boot options list for the server.
- `bcfg boot rm #` — Remove the item number specified by `#` from the boot options list.
- `bcfg boot mv #a #b` — Move the item number specified by `#a` to the position specified by `#b` in the boot options list.
- `bcfg boot add # file.efi "Description"` — Add a new boot option to the position in the boot options list specified by `#`. The new boot option references `file.efi` and is listed with the title specified by `Description`.

For example, `bcfg boot add 1 \EFI\HPUX\HPUX.EFI "HP-UX 11i"` adds an HP-UX 11i item as the first entry in the boot options list.

Refer to the `help bcfg` command for details.

Step 4. Exit the console and iLO MP interfaces if you are finished using them.

Press **Ctrl+B** to exit the server console and return to the iLO MP Main Menu. To exit the iLO MP, type **x** at the Main Menu.

Standard HP-UX Booting

Use either of the following procedures to boot HP-UX:

- “Access the EFI Boot Manager Menu for the server on which you want to boot HP-UX.” on page 151
- “Access the EFI Shell environment for the server on which you want to boot HP-UX.” on page 151

Booting HP-UX (EFI Boot Manager)

From the **EFI Boot Manager Menu**, choose an item from the boot options list to boot HP-UX.

Step 1. Access the **EFI Boot Manager Menu** for the server on which you want to boot HP-UX.

Log in to the iLO MP and enter **CO** to choose the system console.

When accessing the console, confirm that you are at the **EFI Boot Manager menu** (the main **EFI menu**). If you are at another **EFI menu**, choose the **Exit** option from the submenus until you return to the screen with the **EFI Boot Manager** heading.

Step 2. At the **EFI Boot Manager menu**, choose an item from the boot options list.

Each item in the boot options list references a specific boot device and provides a specific set of boot options or arguments you use when booting the device.

Step 3. Press **Enter** to initiate booting using the chosen boot option.

Step 4. Exit the console and iLO MP interfaces when finished using them.

Press **Ctrl+B** to exit the server console and return to the iLO MP Main Menu. To exit the iLO MP, type **x** at the Main Menu.

Booting HP-UX (EFI Shell)

From the **EFI Shell environment**, boot HP-UX on a device by first accessing the **EFI System Partition** (for example **fs0:**) for the root device, then entering **HPUX** to initiate the loader.

Step 1. Access the **EFI Shell environment** for the server on which you want to boot HP-UX.

Log in to the iLO MP and enter **CO** to choose the system console.

When accessing the console, confirm that you are at the **EFI Boot Manager Menu** (the main **EFI menu**). If you are at another **EFI menu**, choose the **Exit** option from the submenus until you return to the screen with the **EFI Boot Manager** heading.

From the **EFI Boot Manager menu**, choose the **EFI Shell** menu option to access the **EFI Shell environment**.

Step 2. At the **EFI Shell environment**, issue the **map** command to list all currently mapped bootable devices.

The bootable file systems of interest typically are listed as **fs0:**, **fs1:**, and so on.

Step 3. Access the **EFI System Partition** (**fsX:** where **X** is the file system number) for the device from which you want to boot HP-UX.

For example, enter **fs2:** to access the **EFI System Partition** for the bootable file system number 2. The **EFI Shell prompt** changes to reflect the file system currently accessed.

The file system number might change each time it is mapped (for example, when the server boots, or when the `map -r` command is issued).

- Step 4.** When accessing the EFI System Partition for the desired boot device, issue the `HPUX` command to initiate the `HPUX.EFI` loader on the device you are accessing.

The full path for the loader is `\EFI\HPUX\HPUX.EFI`. When initiated, the loader references the `\EFI\HPUX\AUTO` file and proceeds to boot HP-UX using the default boot behavior specified in the `AUTO` file.

You have 10 seconds to interrupt the automatic booting of the default boot behavior. Pressing any key during this 10-second period stops the HP-UX boot process and enables you to interact with the `HPUX.EFI` loader. To exit the loader (the `HPUX>` prompt) enter `exit` (this returns you to the EFI Shell).

To boot the HP-UX operating system, do not type anything during the 10-second period given for stopping at the `HPUX.EFI` loader.

```
Shell> map
Device mapping table
  fs0  : Acpi(000222F0,269)/Pci(0|0)/Scsi(Pun8,Lun0)/HD(Part1,Sig72550000)
  blk0 : Acpi(000222F0,269)/Pci(0|0)/Scsi(Pun8,Lun0)
  blk1 : Acpi(000222F0,269)/Pci(0|0)/Scsi(Pun8,Lun0)/HD(Part1,Sig72550000)
  blk2 : Acpi(000222F0,269)/Pci(0|0)/Scsi(Pun8,Lun0)/HD(Part2,Sig72550000)
  blk3 : Acpi(000222F0,2A8)/Pci(0|0)/Scsi(Pun8,Lun0)
  blk4 : Acpi(000222F0,2A8)/Pci(0|1)/Scsi(Pun2,Lun0)

Shell> fs0:
fs0:\> hpux

(c) Copyright 1990-2002, Hewlett Packard Company.
All rights reserved

HP-UX Boot Loader for IA64  Revision 1.723

Press Any Key to interrupt Autoboot
\efi\hpux\AUTO ==> boot vmunix
Seconds left till autoboot - 9
```

- Step 5.** Exit the console and iLO MP interfaces when finished.

Enter **Ctrl+B** to exit the server console and return to the iLO MP Main Menu. To exit the iLO MP, type `x` at the Main Menu.

Single-User Mode HP-UX Booting

Use the following procedure to boot HP-UX in single-user mode.

Booting HP-UX in Single-User Mode (EFI Shell)

From the EFI Shell environment, boot in single-user mode by stopping the boot process at the `HPUX.EFI` interface (the HP-UX Boot Loader prompt, `HPUX>`) and entering the `boot -is vmunix` command.

- Step 1.** Access the EFI Shell environment for the system on which you want to boot HP-UX in single-user mode.

Log in to the iLO MP and enter `CO` to choose the server console.

When accessing the console, confirm that you are at the **EFI Boot Manager Menu**. If you are at another EFI menu, choose the **Exit** option from the submenus until you return to the screen with the **EFI Boot Manager** heading.

From the EFI Boot Manager menu, choose the **EFI Shell** menu option to access the EFI Shell environment.

- Step 2.** Access the EFI System Partition (`fsX:` where *X* is the file system number) for the device from which you want to boot HP-UX.
- Step 3.** When accessing the EFI System Partition for the desired boot device, issue the **HPUX** command to initiate the `\EFI\HPUX\HPUX.EFI` loader on the device you are accessing.
- Step 4.** Boot to the HP-UX Boot Loader prompt (`HPUX>`) by pressing any key within the 10 seconds given for interrupting the HP-UX boot process. Use the `HPUX.EFI` loader to boot HP-UX in single-user mode in the next step.

After you press a key, the `HPUX.EFI` interface (the HP-UX Boot Loader prompt, `HPUX>`) launches. For help using the `HPUX.EFI` loader, enter the `help` command. To return to the EFI Shell, enter `exit`.

```
fs0:\> hpux

(c) Copyright 1990-2002, Hewlett Packard Company.
All rights reserved

HP-UX Boot Loader for IA64 Revision 1.723

Press Any Key to interrupt Autoboot
\efi\hpux\AUTO ==> boot vmunix
Seconds left till autoboot - 9

[User Types A Key to Stop the HP-UX Boot Process and Access the HPUX.EFI Loader ]

Type 'help' for help

HPUX>
```

- Step 5.** At the `HPUX.EFI` interface (the HP-UX Boot Loader prompt, `HPUX>`) enter the `boot -is vmunix` command to boot HP-UX (the `/stand/vmunix` kernel) in single-user (`-is`) mode.

```
HPUX> boot -is vmunix
> System Memory = 4063 MB
loading section 0
..... (complete)
loading section 1
..... (complete)
loading symbol table
loading System Directory(boot.sys) to MFS
....
loading MFSFILES Directory(bootfs) to MFS
.....
Launching /stand/vmunix
SIZE: Text:25953K + Data:3715K + BSS:3637K = Total:33306K

Console is on a Serial Device
Booting kernel...
```

- Step 6.** Exit the console and iLO MP interfaces when finished using them.

Enter **Ctrl+B** to exit the system console and return to the iLO MP Main Menu. To exit the iLO MP, type **X** at the Main Menu.

LVM Maintenance Mode HP-UX Booting

Use the following procedure to boot HP-UX in Logical Volume Management (LVM) maintenance mode.

Booting HP-UX in LVM-Maintenance Mode (EFI Shell)

From the EFI Shell environment, boot in LVM-maintenance mode by stopping the boot process at the `HPUX.EFI` interface (the HP-UX Boot Loader prompt, `HPUX>`) and entering the `boot -lm vmunix` command.

Step 1. Access the EFI Shell environment for the system on which you want to boot HP-UX in LVM-maintenance mode.

Log in to the iLO MP and enter `CO` to choose the system console.

When accessing the console, confirm that you are at the **EFI Boot Manager Menu**. If you are at another EFI menu, choose the **Exit** option from the submenus until you return to the screen with the **EFI Boot Manager** heading.

From the EFI Boot Manager menu, choose the **EFI Shell** menu option to access the EFI Shell environment.

Step 2. Access the EFI System Partition (`fsX:` where *X* is the file system number) for the device from which you want to boot HP-UX.

Step 3. When accessing the EFI System Partition for the desired boot device, issue the **HPUX** command to initiate the `\EFI\HPUX\HPUX.EFI` loader on the device you are accessing.

Step 4. Type any key within the 10 seconds given for interrupting the HP-UX boot process. This stops the boot process at the `HPUX.EFI` interface (the HP-UX Boot Loader prompt, `HPUX>`).

Step 5. At the `HPUX.EFI` interface, enter the `boot -lm vmunix` command to boot HP-UX (the `/stand/vmunix` kernel) in LVM-maintenance (`-lm`) mode.

Step 6. Exit the console and iLO MP interfaces when finished using them.

Press **Ctrl+B** to exit the system console and return to the iLO MP Main Menu. To exit the iLO MP, type `x` at the Main Menu.

Shutting Down HP-UX

To shut down HP-UX running on a system, use the `shutdown` command. You have the following options when shutting down HP-UX:

- To shut down and reboot an HP-UX system, use the `shutdown -r` command.
- To shut down and halt (power off) an HP-UX system, use the `shutdown -h` command.

For details refer to the `shutdown (1M)` manpage and the following procedure:

Shutting Down HP-UX (`/sbin/shutdown` Command)

From the HP-UX command line, issue the `shutdown` command to shut down the HP-UX operating system.

Step 1. Log in to HP-UX running on the system that you want to shut down.

You should log in to the iLO MP for the server and use the Console menu to access the system console. Accessing the console through the iLO MP enables you to maintain console access to the server after HP-UX has shut down.

Step 2. Issue the `shutdown` command with the appropriate command-line options.

The command-line options you specify dictate the way in which HP-UX shuts down, and whether the server is rebooted.

Use the following list to choose an HP-UX shutdown option for your server:

- To shut down HP-UX and halt (power off) the server, issue the **shutdown -h** command.
To reboot a halted server you must power on the server using the **PC** command at the iLO MP Command menu.
- To shut down HP-UX and reboot the server, issue the **shutdown -r** command.

Booting and Shutting Down HP OpenVMS

This section has procedures for booting and shutting down HP OpenVMS on entry-class HP Integrity servers, and procedures for adding HP OpenVMS to the boot options list.

- To add an HP OpenVMS entry to the boot options list, refer to “Adding HP OpenVMS to the Boot Options List” on page 155.
- To boot HP OpenVMS on an entry-class HP Integrity server, refer to “Booting HP OpenVMS” on page 156.
- To shut down HP OpenVMS, refer to “Shutting Down HP OpenVMS” on page 158.

Adding HP OpenVMS to the Boot Options List

On HP Integrity servers, you can use the following procedures to manage boot options list entries for HP OpenVMS.

You can add the `\efi\vms\vms_loader.efi` loader to the boot options list from the EFI Shell or **EFI Boot Configuration Menu** (or in some versions of EFI, the **Boot Option Maintenance Menu**).

NOTE On HP Integrity servers, the operating system installer automatically adds an entry to the boot options list.

Adding an HP OpenVMS Boot Option

This procedure adds an HP OpenVMS item to the boot options list from the EFI Shell.

To add an HP OpenVMS boot option when logged in to OpenVMS, use the `@SYS$MANAGER:BOOT_OPTIONS.COM` command.

Step 1. Access the EFI Shell environment.

Log in to the iLO MP and enter **CO** to access the system console.

When accessing the console, confirm that you are at the **EFI Boot Manager Menu**. If you are at another EFI menu, choose the **Exit** option from the submenus until you return to the screen with the **EFI Boot Manager** heading.

From the **EFI Boot Manager Menu**, choose the **EFI Shell Menu** option to access the EFI Shell environment.

Step 2. Access the EFI System Partition (`fsX`: where *X* is the file system number) for the device from which you want to boot HP OpenVMS.

For example, enter `fs2:` to access the EFI System Partition for the bootable file system number 2. The EFI Shell prompt changes to reflect the file system currently accessed.

The full path for the HP OpenVMS loader is `\efi\vms\vms_loader.efi` and it should be on the device you are accessing.

Step 3. At the EFI Shell environment, use the `bcfg` command to manage the boot options list.

You can also accomplish this step by using the `\efi\vms\vms_bcfg.efi` and `\efi\vms\vms_show.efi` utilities, which are available on the EFI System Partition for HP OpenVMS. Both `vms_bcfg` and `vms_show` are unique utilities for OpenVMS I64. The `vms_bcfg` utility differs from the `bcfg` EFI command in that `vms_bcfg` enables you to specify boot devices using VMS-style device names.

The `bcfg` command includes the following options for managing the boot options list:

- `bcfg boot dump` — Displays all items in the boot options list for the server.
- `bcfg boot rm #` — Removes the item number specified by *#* from the boot options list.
- `bcfg boot mv #a #b` — Moves the item number specified by *#a* to the position specified by *#b* in the boot options list.
- `bcfg boot add # file.efi "Description"` — Adds a new boot option to the position in the boot options list specified by *#*. The new boot option references *file.efi* and is listed with the title specified by *Description*.

For example, `bcfg boot add 1 \efi\vms\vms_loader.efi "HP OpenVMS"` adds an HP OpenVMS item as the first entry in the boot options list.

Refer to the `help bcfg` command for details.

Step 4. Exit the console and iLO MP interfaces if you are finished using them.

Enter **Ctrl+B** to exit the system console and return to the iLO MP Main Menu. To exit the iLO MP, type **X** at the Main Menu.

Booting HP OpenVMS

To boot HP OpenVMS on an entry-class HP Integrity server, use either of the following procedures:

- “Booting HP OpenVMS (EFI Boot Manager)” on page 156
- “Booting HP OpenVMS (EFI Shell)” on page 157

Booting HP OpenVMS (EFI Boot Manager)

From the **EFI Boot Manager Menu**, choose an item from the boot options list to boot HP OpenVMS using the chosen boot option.

Step 1. Access the EFI Boot Manager menu for the server on which you want to boot HP OpenVMS.

Log in to the iLO MP and enter `CO` to choose the system console.

When accessing the console, confirm that you are at the EFI Boot Manager menu (the main EFI menu). If you are at another EFI menu, choose the **Exit** option from the submenus until you return to the screen with the EFI Boot Manager heading.

Step 2. At the EFI Boot Manager menu, choose an item from the boot options list.

Each item in the boot options list references a specific boot device and provides a specific set of boot options or arguments to use when booting the device.

Step 3. Press **Enter** to initiate booting using the chosen boot option.

Step 4. Exit the console and iLO MP interfaces when finished using them.

Enter **Ctrl+B** to exit the system console and return to the iLO MP Main Menu. To exit the iLO MP, type **X** at the Main Menu.

Booting HP OpenVMS (EFI Shell)

From the EFI Shell environment, to boot HP OpenVMS on a device first access the EFI System Partition (for example `fs0:`) for the root device and enter `\efi\vms\vms_loader` to initiate the OpenVMS loader.

Step 1. Access the EFI Shell environment for the server on which you want to boot HP OpenVMS.

Log in to the iLO MP and enter `CO` to choose the system console.

When accessing the console, confirm that you are at the EFI Boot Manager menu (the main EFI menu). If you are at another EFI menu, choose the **Exit** option from the submenus until you return to the screen with the EFI Boot Manager heading.

From the EFI Boot Manager menu, choose the **EFI Shell** menu option to access the EFI Shell environment.

Step 2. At the EFI Shell environment, issue the `map` command to list all currently mapped bootable devices.

The bootable file systems of interest typically are listed as `fs0:`, `fs1:`, and so on.

Step 3. Access the EFI System Partition (`fsX:` where *X* is the file system number) for the device from which you want to boot HP OpenVMS.

For example, enter `fs2:` to access the EFI System Partition for the bootable file system number 2. The EFI Shell prompt changes to reflect the file system currently accessed.

Also, the file system number might change each time it is mapped (for example, when the server boots, or when the `map -r` command is issued).

Step 4. When accessing the EFI System Partition for the desired boot device, issue the `\efi\vms\vms_loader` command to initiate the `vms_loader.efi` loader on the device you are accessing.

```
fs5:> \efi\vms\vms_loader.efi
```

```
HP OpenVMS Industry Standard 64 Operating System, Version XAV1-D2Y  
Copyright 1976-2005 Hewlett-Packard Development Company, L.P.
```

```
%PKA0, Copyright (c) 1998 LSI Logic PKW V3.2.20 ROM 4.19  
%PKA0, SCSI Chip is SYM53C1010/66, Operating mode is LVD Ultra3 SCSI  
%SMP-I-CPUTRN, CPU #01 has joined the active set.  
%SMP-I-CPUTRN, CPU #02 has joined the active set.  
%STDRV-I-STARTUP, OpenVMS startup begun at 13-JUL-2005 14:54:36.25  
%EWA0, Auto-negotiation mode set by console
```

```
...
```

Step 5. Exit the console and iLO MP interfaces when finished using them.

Enter **Ctrl+B** to exit the system console and return to the iLO MP Main Menu. To exit the iLO MP, type **X** at the Main Menu.

Shutting Down HP OpenVMS

This section describes how to shut down the HP OpenVMS operating system on entry-class HP Integrity servers.

Step 1. From the HP OpenVMS DCL prompt, issue the **@SYS\$SYSTEM:SHUTDOWN** command to shut down the OpenVMS operating system.

Step 2. Log in to HP OpenVMS running on the server that you want to shut down.

You should log in to the iLO MP for the server and use the Console menu to access the system console. Accessing the console through the iLO MP enables you to maintain console access to the server after HP OpenVMS has shut down.

Step 3. At the OpenVMS DCL prompt issue the **@SYS\$SYSTEM:SHUTDOWN** command and specify the shutdown options in response to the prompts given.

```
>@SYS$SYSTEM:SHUTDOWN

SHUTDOWN -- Perform an Orderly System Shutdown
           on node RSNVMS

How many minutes until final shutdown [0]:
Reason for shutdown [Standalone]:
Do you want to spin down the disk volumes [NO]?
Do you want to invoke the site-specific shutdown procedure [YES]?
Should an automatic system reboot be performed [NO]? yes
When will the system be rebooted [shortly via automatic reboot]:
Shutdown options (enter as a comma-separated list):
  REBOOT_CHECK      Check existence of basic system files
  SAVE_FEEDBACK     Save AUTOGEN feedback information from this boot
  DISABLE_AUTOSTART Disable autostart queues
  POWER_OFF         Request console to power-off the system

Shutdown options [NONE]:

%SHUTDOWN-I-OPERATOR, this terminal is now an operator's console
%%%%%%%%%%%% OPCOM 12-JUL-2005 18:47:51.01 %%%%%%%%%%%%%
Operator status for operator _RSNVMS$OPA0:
CENTRAL, PRINTER, TAPES, DISKS, DEVICES, CARDS, NETWORK, CLUSTER, SECURITY,
...
```

NOTE HP OpenVMS I64 currently does not support the **POWER_OFF** shutdown option.

Booting and Shutting Down Microsoft Windows

This section describes how to boot and shut down Microsoft Windows on entry-class HP Integrity servers and how to add Windows entries to the system boot options list.

- “Adding Microsoft Windows to the Boot Options List” on page 159
- “Booting the Microsoft Windows Operating System” on page 160
- “Shutting Down Microsoft Windows” on page 161

Adding Microsoft Windows to the Boot Options List

To add a Microsoft Windows entry to the system boot options list you must do so from EFI by using the `\MSUtil\nvrboot.efi` utility to import boot options from the `EFI\Microsoft\WINNT50\Boot00...` file on the device from which Windows is loaded.

This procedure adds the Microsoft Windows item to the boot options list.

NOTE On HP Integrity servers, the operating system installer automatically adds an entry to the boot options list.

Step 1. Access the EFI Shell environment.

Log in to the iLO MP and enter `CO` to access the system console.

When accessing the console, confirm that you are at the EFI Boot Manager menu (the main EFI menu). If you are at another EFI menu, choose the **Exit** option from the submenus until you return to the screen with the `EFI Boot Manager` heading.

From the EFI Boot Manager menu, choose the **EFI Shell** menu option to access the EFI Shell environment.

Step 2. Access the EFI System Partition (`fsX:` where `X` is the file system number) for the device from which you want to boot Windows.

For example, enter `fs2:` to access the EFI System Partition for the bootable file system number 2. The EFI Shell prompt changes to reflect the file system currently accessed.

The full path for the Microsoft Windows loader is `\efi\microsoft\winnt50\ia64ldr.efi` and it should be on the device you are accessing. However, you must only initiate this loader from the EFI Boot Menu and not from the EFI Shell.

Step 3. List the contents of the `\EFI\Microsoft\WINNT50` directory to identify the name of the Windows boot option file (`Boot00nn`) that you want to import into the system boot options list.

```
fs0:\> ls EFI\Microsoft\WINNT50
Directory of: fs0:\EFI\Microsoft\WINNT50

09/18/03  11:58a <DIR>          1,024  .
09/18/03  11:58a <DIR>          1,024  ..
12/18/03  08:16a                354   Boot0001
          1 File(s)            354 bytes
          2 Dir(s)
```

```
fs0:\>
```

Step 4. At the EFI Shell environment, issue the `\MSUtil\nvrboot.efi` command to launch the Microsoft Windows boot options utility.

```
fs0:\> msutil\nvrboot

NVRBOOT: OS Boot Options Maintenance Tool [Version 5.2.3683]

    1. SUSE SLES 10
    2. HP-UX Primary Boot: 0/0/1/0/0.2.0
    * 3. Windows Server 2003, Datacenter
    4. EFI Shell [Built-in]

    * = Windows OS boot option

(D)isplay (M)odify (C)opy E(x)port (I)mport (E)rase (P)ush (H)elp (Q)uit

Select>
```

Step 5. Use the **Import** command to import the Window boot option file.

```
Select> i
Enter IMPORT file path: \EFI\Microsoft\WINNT50\Boot0001
Imported Boot Options from file: \EFI\Microsoft\WINNT50\Boot0001

Press enter to continue
```

Step 6. Type **Q** to quit the NVRBOOT utility, and exit the console and iLO MP interfaces if you are finished using them.

Enter **Ctrl+B** to exit the system console and return to the iLO MP Main Menu. To exit the iLO MP, type **X** at the Main Menu.

Booting the Microsoft Windows Operating System

Boot the Windows Server 2003 operating system on an HP Integrity server by using the EFI Boot Manager to choose the appropriate Windows item from the boot options list. Refer to “Shutting Down Microsoft Windows” on page 161 for details on shutting down the Windows operating system.

Step 1. From the EFI Boot Manager menu, choose an item from the boot options list to boot Windows using the chosen boot option.

Step 2. Access the EFI Boot Manager menu for the server on which you want to boot Windows.

Log in to the iLO MP and enter **CO** to choose the system console.

When accessing the console, confirm that you are at the EFI Boot Manager menu (the main EFI menu). If you are at another EFI menu, choose the **Exit** option from the submenus until you return to the screen with the EFI Boot Manager heading.

Step 3. At the EFI Boot Manager menu, choose an item from the boot options list.

Each item in the boot options list references a specific boot device and provides a specific set of boot options or arguments to be used when booting the device.

Step 4. Press **Enter** to initiate booting using the chosen boot option.

Step 5. Once Windows begins loading, wait for the Special Administration Console (SAC) to become available.

The SAC interface provides a text-based administration tool that is available from the system console. For details refer to the SAC online help (type **?** at the `SAC>` prompt).


```
Loading.: Windows Server 2003, Datacenter
Starting: Windows Server 2003, Datacenter

                Starting Windows...
*****
Computer is booting, SAC started and initialized.

Use the "ch -?" command for information about using channels.
Use the "?" command for general help.

SAC>
```

Step 6. Exit the console and iLO MP interfaces when finished using them.

Enter **Ctrl+B** to exit the console and return to the iLO MP Main menu. To exit the iLO MP, type **x** at the Main menu.

Shutting Down Microsoft Windows

Shut down the Windows operating system on HP Integrity servers by using the **Start** menu or the `shutdown` command.

CAUTION Do not shut down Windows using Special Administration Console (SAC) `restart` or `shutdown` commands under normal circumstances.

Issuing `restart` or `shutdown` at the `SAC>` prompt causes the server to restart or shutdown immediately and can result in the loss of data.

Instead use the Windows **Start** menu or the `shutdown` command to shut down gracefully.

To shut down Windows use either of the following methods.

- Choose **Shut Down** from the **Start** menu and choose either **Restart** or **Shut down** from the pull-down menu.

The **Restart** menu item shuts down and restarts the server. The **Shut down** menu item shuts down the server.

You can use this method when using a graphical interface to the server.

- Issue the `shutdown` command from the Windows command line.

Refer to “Log in to Windows running on the server that you want to shut down.” on page 162 for details.

You can issue this command from a command prompt through the Special Administration Console (SAC) or from any other command line.

The Windows `shutdown` command includes the following options:

<code>/s</code>	Shuts down and halts (power off) the server. This is the equivalent of Start—>Shut Down, Shut down . To power on the server, use the iLO MP <code>PC</code> command.
<code>/r</code>	Shuts down and restarts the server. This is the equivalent of Start—>Shut Down, Restart .
<code>/a</code>	Aborts a server shutdown.
<code>/t xxx</code>	Sets the timeout period before shutdown to <code>xxx</code> seconds. The timeout period ranges from 0–600, with a default of 30.

Refer to the `help shutdown` Windows command for details.

Windows Shutdown from the Command Line

From the Windows command line, issue the **shutdown** command to shut down the operating system.

Step 1. Log in to Windows running on the server that you want to shut down.

For example, access the system console and use the Windows SAC interface to start a command prompt, from which you can issue Windows commands to shut down the server.

Step 2. Check to see whether any users are logged in.

Use the `query user` or `query session` command.

Step 3. Issue the **shutdown** command and the appropriate options to shut down the Windows Server 2003 on the server.

You have the following options when shutting down Windows:

- To shut down Windows and reboot:

shutdown /r

or choose the **Start** → **Shut Down** action and choose **Restart** from the pull-down menu.

- To shut down Windows and halt (power off server hardware):

shutdown /s

or choose the **Start** → **Shut Down** action and choose **Shut down** from the pull-down menu.

To reboot a halted server you must power on the server using the `PC` command at the iLO MP Command menu.

- To abort a shutdown (stop a shutdown that has been initiated): **shutdown /a**

For example:

```
shutdown /r /t 60 /c "Shut down in one minute."
```

This command initiates a Windows system shutdown and reboot after a timeout period of 60 seconds. The `/c` option specifies a message that is broadcast to any other users of the server.

Booting and Shutting Down Linux

This section covers booting and shutting down Linux on entry-class HP servers. Procedures for Red Hat Enterprise Linux and SuSE Linux Enterprise Server are given in this section.

- To add a Linux entry to the boot options list, refer to “Adding Linux to the Boot Options List” on page 163.
- To boot Linux on entry-class HP Integrity servers, use the following procedures.
 - Refer to “Booting the Red Hat Enterprise Linux Operating System” on page 164 for details on Red Hat Enterprise Linux.
 - Refer to “Booting the SuSE Linux Enterprise Server Operating System” on page 165 for details on SuSE Linux Enterprise Server.
- To shut down either Red Hat Enterprise Linux or SuSE Linux Enterprise Server, refer to “Shutting Down Linux” on page 166.

Adding Linux to the Boot Options List

This section describes how to add a Linux entry to the system boot options list. The processes for adding both Red Hat Enterprise Linux and SuSE Linux Enterprise Servers are given here.

You can add the `\EFI\redhat\elilo.efi` loader or the `\efi\SuSE\elilo.efi` loader to the boot options list from the EFI Shell or EFI Boot Configuration menu (or in some versions of EFI, the Boot Option Maintenance Menu).

NOTE On HP Integrity servers, the operating system installer automatically adds an entry to the boot options list.

Step 1. Access the EFI Shell environment.

Log in to the iLO MP and enter `CO` to access the system console.

When accessing the console, confirm that you are at the EFI Boot Manager menu (the main EFI menu). If you are at another EFI menu, choose the **Exit** option from the submenus until you return to the screen with the `EFI Boot Manager` heading.

From the EFI Boot Manager menu, choose the **EFI Shell** menu option to access the EFI Shell environment.

Step 2. Access the EFI System Partition (`fsX:` where *X* is the file system number) for the device from which you want to boot Linux.

For example, enter `fs2:` to access the EFI System Partition for the bootable file system number 2. The EFI Shell prompt changes to reflect the file system currently accessed.

The full path for the Red Hat Enterprise Linux loader is `\EFI\redhat\elilo.efi` and it should be on the device you are accessing.

The full path for the SuSE Linux Enterprise Server loader is `\efi\SuSE\elilo.efi` and it should be on the device you are accessing.

Step 3. At the EFI Shell environment, use the `bcfg` command to manage the boot options list.

The `bcfg` command includes the following options for managing the boot options list:

- `bcfg boot dump` — Displays all items in the boot options list for the server.
- `bcfg boot rm #` — Removes the item number specified by `#` from the boot options list.
- `bcfg boot mv #a #b` — Moves the item number specified by `#a` to the position specified by `#b` in the boot options list.
- `bcfg boot add # file.efi "Description"` — Adds a new boot option to the position in the boot options list specified by `#`. The new boot option references `file.efi` and is listed with the title specified by `Description`.

For example, `bcfg boot add 1 \EFI\redhat\elilo.efi "Red Hat Enterprise Linux"` adds a Red Hat Enterprise Linux item as the first entry in the boot options list.

Likewise, `bcfg boot add 1 \efi\SuSE\elilo.efi "SLES 10"` adds a SuSE Linux item as the first entry in the boot options list.

Refer to the `help bcfg` command for details.

Step 4. Exit the console and iLO MP interfaces if you are finished using them.

Enter **Ctrl+B** to exit the system console and return to the iLO MP Main Menu. To exit the iLO MP, type `x` at the Main Menu.

Booting the Red Hat Enterprise Linux Operating System

You can boot the Red Hat Enterprise Linux operating system on HP Integrity servers using either of these methods:

- Choose a Red Hat Enterprise Linux entry from the EFI Boot Manager menu.
To load the Red Hat Enterprise Linux operating system at the EFI Boot Manager menu, choose its entry from the list of boot options.
Choosing a Linux entry from the boot options list boots the operating system using `ELILO.EFI` loader and the `elilo.conf` file.
- Initiate the `ELILO.EFI` Linux loader from the EFI Shell.
Refer to “Access the EFI Shell.” on page 164 for details.

On a Red Hat Enterprise Linux boot device EFI System Partition, the full paths to the loader and configuration files are:

```
\EFI\redhat\elilo.efi  
\EFI\redhat\elilo.conf
```

After choosing the file system for the boot device (for example, `fs0:`) you can initiate the Linux loader from the EFI Shell prompt by entering the full path for the `ELILO.EFI` loader.

By default the `ELILO.EFI` loader boots Linux using the kernel image and parameters specified by the default entry in the `elilo.conf` file on the EFI System Partition for the boot device.

To interact with the `ELILO.EFI` loader, interrupt the boot process (for example, type a space) at the `ELILO` boot prompt. To exit the `ELILO.EFI` loader, use the `exit` command.

Booting Red Hat Enterprise Linux from the EFI Shell

Use this procedure to boot Red Hat Enterprise Linux from the EFI Shell.

Step 1. Access the EFI Shell.

From the system console, choose the **EFI Shell** entry from the EFI Boot Manager menu to access the shell.

Step 2. Access the EFI System Partition for the Red Hat Enterprise Linux boot device.

Use the `map EFI Shell` command to list the file systems (`fs0`, `fs1`, and so on) that are known and mapped.

To choose a file system to use, enter its mapped name followed by a colon (:). For example, to operate with the boot device that is mapped as `fs3`, enter **fs3:** at the EFI Shell prompt.

Step 3. Enter **ELILO** at the EFI Shell command prompt to launch the `ELILO.EFI` loader.

If needed, you can specify the loader's full path by entering `\EFI\redhat\elilo` at the EFI Shell command prompt.

Step 4. Allow the `ELILO.EFI` loader to proceed with booting the Red Hat Enterprise Linux kernel.

By default, the `ELILO.EFI` loader boots the kernel image and options specified by the default item in the `elilo.conf` file.

To interact with the `ELILO.EFI` loader, interrupt the boot process (for example, type a space) at the `ELILO` boot prompt. To exit the loader use the `exit` command.

Booting the SuSE Linux Enterprise Server Operating System

You can boot the SuSE Linux Enterprise Server 10 operating system on HP Integrity servers using either of these methods:

- Choose a SuSE Linux Enterprise Server entry from the EFI Boot Manager menu.

To load the SuSE Linux Enterprise Server operating system at the EFI Boot Manager menu, choose its entry from the list of boot options.

Choosing a Linux entry from the boot options list boots the operating system using `ELILO.EFI` loader and the `elilo.conf` file.

- Initiate the `ELILO.EFI` Linux loader from the EFI Shell. Refer to “Booting SuSE Linux Enterprise Server from the EFI Shell” on page 165 for details.

On a SuSE Linux Enterprise Server boot device EFI System Partition, the full paths to the loader and configuration files are:

```
\efi\SuSE\elilo.efi
\efi\SuSE\elilo.conf
```

After choosing the file system for the boot device (for example, `fs0:`) you can initiate the Linux loader from the EFI Shell prompt by entering the full path for the `ELILO.EFI` loader.

By default, the `ELILO.EFI` loader boots Linux using the kernel image and parameters specified by the default entry in the `elilo.conf` file on the EFI System Partition for the boot device.

To interact with the `ELILO.EFI` loader, interrupt the boot process (for example, type a space) at the `ELILO` boot prompt. To exit the `ELILO.EFI` loader, use the `exit` command.

Booting SuSE Linux Enterprise Server from the EFI Shell

Use this procedure to boot SuSE Linux Enterprise Server 10 from the EFI Shell.

Step 1. Access the EFI Shell.

From the system console, choose the **EFI Shell** entry from the EFI Boot Manager menu to access the shell.

Step 2. Access the EFI System Partition for the SuSE Linux Enterprise Server boot device.

Use the `map` EFI Shell command to list the file systems (`fs0`, `fs1`, and so on) that are known and mapped.

To choose a file system to use, enter its mapped name followed by a colon (:). For example, to operate with the boot device that is mapped as `fs3`, enter **fs3:** at the EFI Shell prompt.

Step 3. Enter **ELILO** at the EFI Shell command prompt to launch the `ELILO.EFI` loader.

If needed, you can specify the loader's full path by entering `\efi\SuSE\elilo` at the EFI Shell command prompt.

Step 4. Allow the `ELILO.EFI` loader to proceed with booting the SuSE Linux kernel.

By default, the `ELILO.EFI` loader boots the kernel image and options specified by the default item in the `elilo.conf` file.

To interact with the `ELILO.EFI` loader, interrupt the boot process (for example, type a space) at the `ELILO` boot prompt. To exit the loader use the `exit` command.

Shutting Down Linux

Use the `shutdown` command to shut down Red Hat Enterprise Linux or SuSE Linux Enterprise Server.

The Red Hat Enterprise Linux and SuSE Linux Enterprise Server `shutdown` command has the following options:

- h Halts (power off) after shutdown.
Use the `PC` command at the iLO MP Command menu to manually power on or power off server hardware, as needed.
- r Reboots after shutdown.
- c Cancels an already running shutdown.
- time* When to shut down. (Required.) You can specify *time* in any of the following ways:
 - Absolute time in the format *hh:mm*, in which *hh* is the hour (one or two digits) and *mm* is the minute of the hour (two digits).
 - Number of minutes to wait in the format *+m*, in which *m* is the number of minutes.
 - `now` to immediately shut down; this is equivalent to using `+0` to wait zero minutes.

Refer to the `shutdown(8)` Linux manpage for details. Also refer to the Linux manpage for the `poweroff` command.

Step 1. From the command line for Red Hat Enterprise Linux or SuSE Linux Enterprise Server, issue the **shutdown** command to shut down the operating system.

Step 2. Log in to Linux running on the server you want to shut down.

Step 3. Issue the **shutdown** command with the desired command-line options, and include the required *time* argument to specify when the operating system shutdown is to occur.

For example, `shutdown -r +20` shuts down and reboots the server in twenty minutes.

C Utilities

This appendix describes the utilities that are part of the server. These include the EFI boot manager, and EFI-POSSE.

This appendix addresses the following topics:

- “Extensible Firmware Interface Boot Manager” on page 168.
- “EFI/POSSE Commands” on page 172.
- “Specifying SCSI Parameters” on page 187.
- “Using the Boot Configuration Menu” on page 194.
- “iLO MP” on page 205.

Extensible Firmware Interface Boot Manager

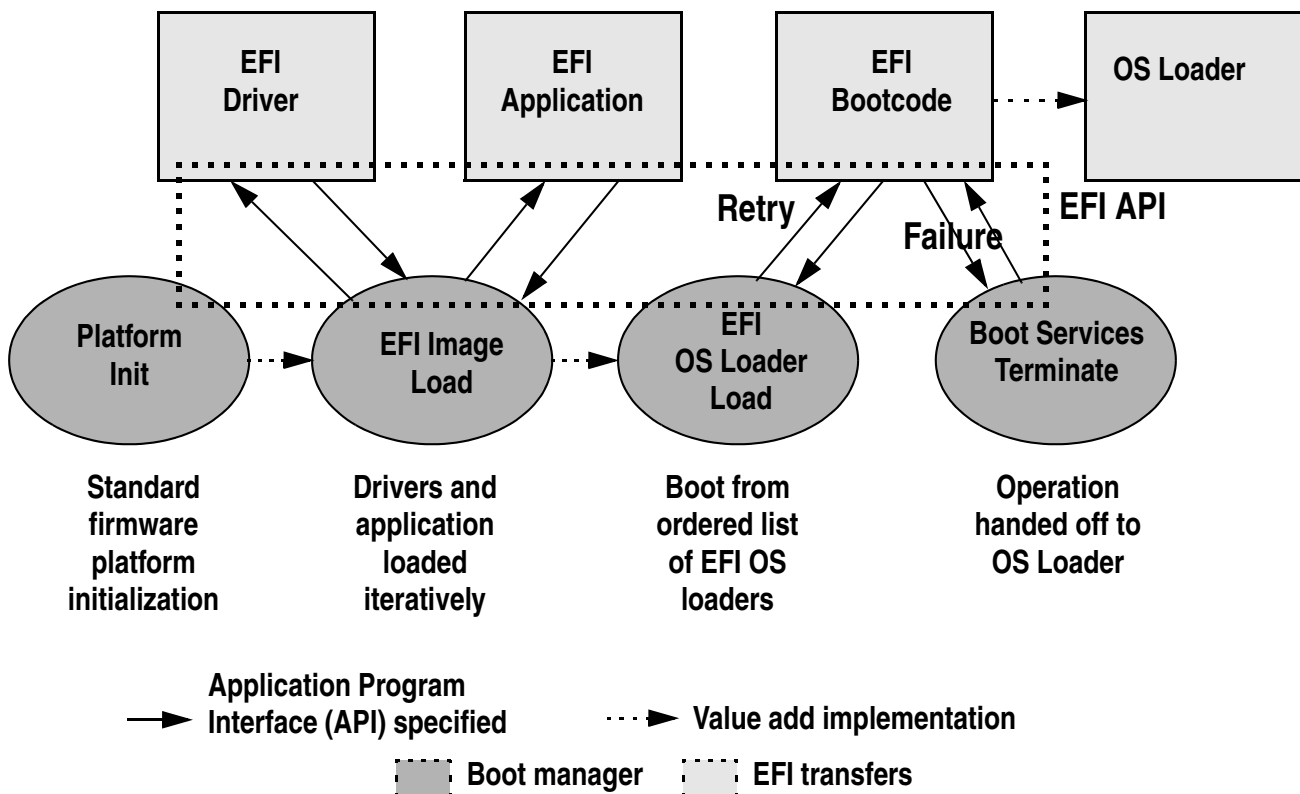
Extensible Firmware Interface (EFI) is an OS and platform-independent boot and pre-boot interface. EFI resides between the OS and platform firmware. This allows the OS to boot without having details about the underlying hardware and firmware. EFI supports boot devices; uses a flat memory model; and hides platform and firmware details from the OS.

NOTE EFI and Pre-OS System Environment (POSSE) are similar. EFI is an Intel specification, whereas POSSE is the HP implementation that aids HP support.

EFI consolidates boot utilities similar to those found in PA-RISC based servers, such as the Boot Console Handler (BCH), and platform firmware into a single platform firmware. EFI allows the selection of any EFI OS loader from any boot medium that is supported by EFI boot services. An EFI OS loader supports multiple options on the user interface.

EFI supports booting from media that contain an EFI OS loader or an EFI-defined server partition. An EFI-defined server partition is required by EFI to boot from a block device.

Figure C-1 EFI Boot Sequence



The EFI boot manager loads EFI applications (including operating system [OS] first stage loader) and EFI drivers from an EFI-defined file system or image loading service. Non-volatile RAM (NVRAM) variables point to the file to be loaded. These variables contain application-specific data that is passed directly to the EFI application. EFI variables provides server firmware a boot menu that points to all the operating systems, even multiple versions of the same operating systems.

The EFI boot manager allows you to control the server's booting environment. Depending on how you have configured the boot options, after the server is powered up the boot manager presents you with different ways to bring up the server. For example, you can boot to the EFI shell, to an operating system located on the network or residing on media in the server, or the Boot Configuration menu, see "Using the Boot Configuration Menu".

- *Boot From File*—Allows the user to explore the EFI file system and to choose a file to boot. The selected file will not be added to the boot option list.
- *Add Boot Entry*—Adds a boot option to the EFI boot manager. You select the boot option by exploring the available file systems for the EFI file you wish to add. After selecting the file, you will be prompted for the name of the boot option and for any optional ASCII or UNICODE arguments the file might use. After saving the boot option you may boot it by selecting it from the list of available boot options in the boot menu.
- *Remove Boot Entry*—Deletes a specific boot entry or all boot entries.
- *Edit OS Boot Order*—Controls the relative order in which the EFI boot manager attempts boot options. For help on the control key sequences you need for this option, refer to the help menu.
- *BootNext Configuration*—Selects a boot option to use one time (the next boot operation).
- *AutoBoot Configuration*—Defines the value in seconds that pass before the server automatically boots without user intervention. Setting this value to zero disables the timeout feature.

EFI Commands

Table C-1 lists EFI commands for the HP Integrity rx2620 server. The equivalent BCH commands found in PA-RISC based servers are also listed.

Table C-1 **EFI Commands**

EFI Shell Command	BCH Command Equivalent (PA-RISC)	BCH Command Parameters (PA-RISC)	Definition
These commands are found in all other menus			
info boot	Boot	[PRI HAA ALT <path>]	Boot from specified path
help <command>	HElp	[<menu> <command>]	Display help for specified command or menu
reset	RESET		Reset the server (to allow reconfiguration of complex
exit (at EFI shell)	MAin		Return to the main menu
MAin			
EFI boot manager “change boot order”	PAth	[PRI HAA ALT CON KEY <path>]	Display or modify a path
bcfg	SEArch	[ALL]	Search for boot devices
bcfg	SEArch	[DIsplay IPL] [<path>]	Search for boot devices
many commands offer a [-b] parameter to cause 25 line breaks	ScRoll	[ON OFF]	Display or change scrolling capability
Configuration			
autoboot	AUto	[BOot SEArch SStart] [ON OFF]	Display or set the auto start flag
info boot	BootID	[<processor #>[<bootid #>]]	Display or set processor boot identifier
EFI boot manager	Boot info		Display boot-related information
autoboot	BootTimer	[0-200]	Seconds allowed for boot attempt
cpuconfig	CPUconfig	[<cpu>][ON OFF]	Configure or deconfigure processor
ioconfig	IOCONFIG	IOCONFIG [fast_init wol [on off]]	Deconfigure or reconfigure IO components or settings

Table C-1 EFI Commands (Continued)

EFI Shell Command	BCH Command Equivalent (PA-RISC)	BCH Command Parameters (PA-RISC)	Definition
boottest	FastBoot	[ON OFF] or [test] [RUN SKIP]	Display or set boot tests execution
date	Time	[cn:yr:mo:dy:hr:mn[:ss]]	Read or set the date
time	Time	[cn:yr:mo:dy:hr:mn[:ss]]	Read or set the real time clock
INformation			
info all	ALL		Display all server information
info boot	BootINfo		Display boot-related information
info cpu	CAche		Display cache information
info chiprev	ChipRevisions		Display revision number of major VLSI
MP command <df>	FRU		Display FRU information
info fw	FwrVersion		Display firmware version for PDC, ICM, and complex
info io	IO		Display firmware version for PDC, ICM, and complex
lanaddress	LanAddress		Display core LAN station address
info mem	Memory		Display memory information
info cpu	PRocessor		Display processor information
SERvice			
errdump clear	CLEARPIM		Clear (zero) the contents of PIM
mm	MemRead	<addr> [<len>] [<type>]	Read memory locations scope of page deallocation
pdt	page deallocation table (pdt)		Display or clear the page deallocation table

Table C-1 **EFI Commands (Continued)**

EFI Shell Command	BCH Command Equivalent (PA-RISC)	BCH Command Parameters (PA-RISC)	Definition
errdump cmc errdump init	processor internal memory (PIM)	[<proc>] [HPMC LPMC TOC ASIC]	Display PIM information

EFI/POSSE Commands

This section describes the EFI/POSSE commands developed for the server.

NOTE EFI and Pre-OS System Environment (POSSE) are similar. EFI is an Intel specification, whereas POSSE is the HP implementation that aids HP support.

help

Provides information on the EFI shell commands. It also has an additional feature to aid those familiar with the BCH menus of PA-RISC servers to adjust to their equivalent functions in EFI.

Syntax

```
help [-b] <category>
help [-b] <cmd>
help [-b] bch <bchmenu> <bchcmd>
```

Parameters

-b	Enable page breaking
category	Category of commands to view help on commands
cmd	Shell command name on which to provide verbose information
bch	Display the list of BCH commands and their corresponding EFI
bchmenu	BCH menu name taken from the top level of the BCH menu
bchcmd	BCH command on which to display information

Operation

If help is initiated with no parameters, it displays a list of shell command categories. To list all of the commands within a category, the user should type **help <category>** (see examples). If initiated with the **-b** switch, any output longer than one page pauses after each page is displayed. If a shell command name is used as a parameter, verbose help is displayed for that command.

If help is initiated with the **bch** option, it displays a list of BCH commands and their corresponding EFI/POSSE commands. It instructs the user to repeat the command line followed by a menu name for more information on that menu. If help is initiated followed by **bch** and a menu name, it displays a list of commands that appear under that BCH menu. The user may then initiate help followed by **bch**, the menu

name, and a BCH command name to display information on that command. This would point the user to the command that has taken the place of that BCH functionality, or will inform the user that the functionality no longer exists. As a shortcut, the user may enter help followed by bch and a BCH command name to go straight to that command.

Example C-1 help Command

```
Shell> help
List of classes of commands:

boot          -- Booting options and disk-related commands
configuration -- Changing and retrieving system information
devices       -- Getting device, driver and handle information
memory        -- Memory related commands
shell         -- Basic shell navigation and customization
scripts       -- EFI shell-script commandsType "help" followed by a class name for a list of commands in
that class
Type "help" followed by command name for full documentation
```

Example C-2 help bch Command

```
COnfiguration      help bch co
INformation        help bch in
PAtch              help bch pa
ScRool             help bch sr
SEArch             help bch sea
SERvice            help bch ser
BOot              help bch bo
HElp              help bch he
RESET              help bch reset
MAin               help bch ma
```

For more help on one of the commands above, at the prompt type:
 help bch <bchcmd>

Example C-3 help configuration Command

```
Shell> help configuration
Configuration commands:

cpuconfig -- Deconfigure or reconfigure cpus
date      -- Display or set date
err       -- Display or set error level
esiproc   -- Make an ESI call
errdump   -- View/Clear logs
info      -- Display hardware information
monarch   -- View or set the monarch processor
palproc   -- Make a PAL call
salproc   -- Make a SAL call
time      -- Display or set time
ver       -- Displays version info
```

Type "help" followed by command name for full documentation on that command.
 Type "help -a" to display a list of all commands.

Example C-4 help cpuconfig Command

```
Shell> help cpuconfig
Deconfigure or reconfigure cpus

CPUCONFIG [module] | [threads] [on|off]

module : Specifies which cpu module to configure
```

EFI/POSSE Commands

threads : Use to display info or configure threads
 on|off : Specifies to configure or deconfigure a cpu module or threads

Note:

1. Cpu status will not change until next boot.
2. Specifying a cpu number without a state will display configuration status.

Examples:

* To deconfigure CPU 0
 fs0:\> cpuconfig 0 off
 Cpu will be deconfigured on the next boot.

* To display configuration status of cpus
 fs0:\> cpuconfig

PROCESSOR MODULE INFORMATION

CPU Module	# of Logical CPUs	Speed	L3 Cache Size	L4 Cache Size	Family/ Model (hex.)	Rev	Processor State
0	2	1.1 GHz	4MB	32MB	1F/01	B1	Active
1	2	1.1 GHz	4MB	32MB	1F/01	B1	Active

* To display cpu thread status
 fs0:\> cpuconfig threads

cpuconfig: Threads are turned off.

* To enable cpu threads
 fs0:\> cpuconfig threads on

cpuconfig: Threads will be on after a reset

* To disable cpu threads
 fs0:\> cpuconfig threads off

cpuconfig: Threads will be off after a reset

Example C-5 help ioconfig Command

Shell> help ioconfig
 Deconfigure or reconfigure IO components or settings

IOCONFIG [fast_init|wol [on|off]]

fast_init Specifies device connection policy setting
 wol Specifies System Wake-On-LAN setting
 on|off Specifies to configure or deconfigure a feature or component

Note:

1. If fast_init is enabled, firmware will connect only the minimum set of devices during boot. This feature might cause boot failure; disable this feature if failure occurs.
2. Any pending Wake-On-LAN request will not be cleared until reboot if the setting is changed to disabled.

System will clear pending Wake-On-LAN requests each time the system reboots if the setting is disabled.

Examples:

* To display the current settings
 fs0:\> ioconfig

```

Fast initialization: Enabled
System Wake-On-LAN: Disabled

* To display the current device connection policy setting
fs0:\> ioconfig fast_init
Fast initialization: Enabled

* To disable fast initialization
fs0:\> ioconfig fast_init off
Fast initialization: Disabled

* To enable the System Wake-On-LAN setting
fs0:\> ioconfig wol on
System Wake-On-LAN: Enabled

```

baud

Sets the baud rate and communication settings for a UART.

Syntax

```
baud <index> <baudrate>
```

Parameters

<index> 0 through the total number of UARTS minus one
 <baudrate> baud rate.

Operation

This command is used to change the speed for a UART in the server. This command works for all UARTs visible to EFI/POSSE. If the UART is part of processor dependent hardware (PDH) space and is initialized by the core firmware, this command communicates the settings to core firmware so the UART can be initialized with the new settings on the next boot. System default is 9600 baud.

Other Communication parameters are listed in Table C-2.

Table C-2 Communications Parameters

Parameter	Value
RECEIVE_FIFO_DEPTH	1
TIMEOUT	1000000
PARITY	No parity
DATA_BITS	8
STOP_BITS	1
CONTROL_MASK	0

boottest

Interacts with the speedy boot variable allowing it to be set appropriately.

Syntax

boottest	Displays status of all speedy boot bits
boottest on	Run all tests (for a normal boot time)
boottest off	Skip all tests (for a faster boot time)
boottest [test]	Displays status of specific Speedy Boot bit
boottest [test] [on off]	Sets or clears a specific Speedy Boot bit

Parameters

[test] Each test can be set or cleared:

booting_valid	Enable/disable system firmware response to BOOTING bit. If OS Speedy Boot aware set to on.
early_cpu	Enable/disable early CPU selftests.
late_cpu	Enable/disable late CPU selftests.
platform	Enable/disable system board hardware tests.
chipset	Enable/disable CEC tests.
io_hw	Enable/disable EFI driver Core I/O tests.
mem_init	Enable/disable memory initialization.
mem_test	Enable/disable full destructive memory tests.

Example C-6 boottest Command

```
Shell> boottest
BOOTTEST Settings Default Variable
Selftest      Setting
-----
booting_valid On (OS speedy boot aware)
early_cpu     Run this test
late_cpu      Run this test
platform      Run this test
chipset       Run this test
io_hw         Run this test
mem_init      Run this test
mem_test      Run this test
```

Example C-7 boottest early_cpu off Command

```
Shell> boottest early_cpu off
BOOTTEST Settings Default Variable
Selftest      Setting
-----
booting_valid On (OS speedy boot aware)
early_cpu     Skip this test
late_cpu      Run this test
platform      Run this test
chipset       Run this test
io_hw         Run this test
mem_init      Run this test
mem_test      Run this test
```


cpuconfig

Displays the config/deconfig state of processors in the server and allows the user to configure or reconfigure processors.

Syntax

```
cpuconfig <cpu> <on|off>
```

Parameters

<cpu> specify a processor
<on|off> state to set the processor to

Operation

Issuing `cpuconfig` with no parameters displays the config/deconfig status of all processors. A user can reconfigure CPUs by specifying a CPU number and a state (on or off). If a valid state is entered and is different from the current state of a CPU, its status changes on the next boot. The last remaining configured CPU in a server cannot be deconfigured.

Example C-8 `cpuconfig` Command

```
Shell> cpuconfig  
PROCESSOR INFORMATION
```

CPU	Speed	Proc Rev	Model	Family	Arch Rev	Processor State
0	1.6Ghz	B1	0	31	0	Sched Deconf
1	1.6Ghz	B1	0	31	0	Active

ioconfig

Use this command to deconfigure or reconfigure I/O components or settings.

Syntax

```
ioconfig <fast_init | wol> <on|off>
```

Parameters

<fast_init> specify device connection policy setting
<wol> specify system wake-on-lan setting
<on|off> specify to configure or deconfigure a feature or component

Operation

The `ioconfig` file is used to retain information on the server I/O configuration across reboots. The `ioconfig` file is created by `insf` at install time; and is modified by `insf`, `rmsf`, and `ioscan` when devices are added or removed. The only purpose of the `ioconfig` file to maintain configuration information when the system is not running.

Example C-9 ioconfig Command

```
Shell> ioconfig
Deconfigure or reconfigure IO components or settings

IOCONFIG [fast_init|wol [on|off]]

fast_init  Specifies device connection policy setting
wol        Specifies System Wake-On-LAN setting
on|off     Specifies to configure or deconfigure a feature or component
```

Note:

1. If fast_init is enabled, firmware will connect only the minimum set of devices during boot. This feature might cause boot failure; disable this feature if failure occurs.
2. Any pending Wake-On-LAN request will not be cleared until reboot if the setting is changed to disabled.

System will clear pending Wake-On-LAN requests each time the system reboots if the setting is disabled.

Examples:

- * To display the current settings


```
fs0:\> ioconfig
Fast initialization: Enabled
System Wake-On-LAN: Disabled
```
- * To display the current device connection policy setting


```
fs0:\> ioconfig fast_init
Fast initialization: Enabled
```
- * To disable fast initialization


```
fs0:\> ioconfig fast_init off
Fast initialization: Disabled
```
- * To enable the System Wake-On-LAN setting


```
fs0:\> ioconfig wol on
System Wake-On-LAN: Enabled
```

default

Allows the user to restore non-volatile memory (NVM) to default values and clear NVM storage values.

Syntax

```
default      [efi|sal]
default      clear [bmc|efi|sal]
```

Parameters

```
clear        clears NVM storage values
```

Operation

Default sets NVM and stable store values to predefined default values. To the normal user only a subset of values are available for default. Executing “default clear” resets the server.

errdump

Displays the contents of processor internal memory logged for all processors present in the server.

Syntax

```
errdump [cpe | cmc | init | la | clear]
```

Parameters

```
cpe          dumps the Corrected Platform Error log
cmc          dumps the Corrected Machine Check log
init        dumps the Initialization log
la          dumps the Logic Analyzer log
clear       erases all of the logs (cpe, cmc, init, la)
```

Operation

If a user enters no parameters, the usage is displayed. Otherwise, the specified error log is displayed. Adding `-n` to the clear parameter disables the confirmation prompt. (The `errdump` command can also be accessed through the System Configuration menu.)

info

Allows the user to display most server information.

Syntax

```
info [ -b] [target]
```

Parameters

```
target:          valid targets are:
    all          display everything
    cpu          display information on cpus
    cache        display information on cache
    mem          display information on memory
    io           display information on io
    boot         display boot-related information
    chiprev      display information on chip revisions
    fw           display firmware version information
    sys          display system information
    warning      display warning and stop boot information
```

Example C-10 info all Command

```
Shell> info all
SYSTEM INFORMATION
Date/Time: Sep 24, 2004 17:27:17 (20:04:09:24:17:27:17)
Manufacturer: hp
Product Name: server rx2620
Product Number: AB333A
Serial Number: USR0418201
UUID: 336B81EE-A9AF-11D8-9653-3F6E1533CC31
System Bus Frequency: 200 MHz
PROCESSOR MODULE INFORMATION
      # of      L3      L4      Family/
CPU   Logical      Cache  Cache  Model      Processor
Module CPUs      Speed  Size  Size  (hex.)  Rev  State
-----
    0      1      1.3 GHz  3 MB  None  1F/01  B1  Active

MEMORY INFORMATION

---- DIMM A -----  ---- DIMM B -----
```

EFI/POSSE Commands

```

      DIMM   Current   DIMM   Current
-----
0    256MB   Active   256MB   Active
1    256MB   Active   256MB   Active
2    ----
3    ----
4    ----
5    ----

```

```

Active Memory   : 1024 MB
Installed Memory : 1024 MB

```

I/O INFORMATION

BOOTABLE DEVICES

```

Order  Media Type  Path
-----
1      CDROM      Acpi(HWP0002,0)/Pci(2|0)/Ata(Primary,Master)/CDROM(Entry0)

```

```

Seg  Bus  Dev  Fnc  Vendor  Device  Slot  Path
#    #   #   #    ID     ID     #    Path
-----
00   00  01  00   0x1033  0x0035  XX   Acpi(HWP0002,0)/Pci(1|0)
00   00  01  01   0x1033  0x0035  XX   Acpi(HWP0002,0)/Pci(1|1)
00   00  01  02   0x1033  0x00E0  XX   Acpi(HWP0002,0)/Pci(1|2)
00   00  02  00   0x1095  0x0649  XX   Acpi(HWP0002,0)/Pci(2|0)
00   20  01  00   0x1000  0x0030  XX   Acpi(HWP0002,100)/Pci(1|0)
00   20  01  01   0x1000  0x0030  XX   Acpi(HWP0002,100)/Pci(1|1)
00   20  02  00   0x8086  0x1079  XX   Acpi(HWP0002,100)/Pci(2|0)
00   20  02  01   0x8086  0x1079  XX   Acpi(HWP0002,100)/Pci(2|1)
00   40  01  00   0x1000  0x0021  03   Acpi(HWP0002,200)/Pci(1|0)
00   60  01  00   0x1077  0x2312  02   Acpi(HWP0002,300)/Pci(1|0)
00   60  01  01   0x1077  0x2312  02   Acpi(HWP0002,300)/Pci(1|1)
00   80  01  00   0x1000  0x000F  01   Acpi(HWP0002,400)/Pci(1|0)
00   80  01  01   0x1000  0x000F  01   Acpi(HWP0002,400)/Pci(1|1)
00   C0  01  00   0x1000  0x0021  04   Acpi(HWP0002,600)/Pci(1|0)
00   E0  01  00   0x103C  0x1290  XX   Acpi(HWP0002,700)/Pci(1|0)
00   E0  01  01   0x103C  0x1048  XX   Acpi(HWP0002,700)/Pci(1|1)
00   E0  02  00   0x1002  0x5159  XX   Acpi(HWP0002,700)/Pci(2|0)

```

```
System Wake-On-LAN: Enabled
```

BOOT INFORMATION

Monarch CPU:

```

Current Preferred
Monarch  Monarch
CPU      CPU
Module/  Module/
Logical  Logical  Warnings
-----
0/0      0/0

```

```
AutoBoot: ON - Timeout is : 10 sec
```

Boottest:

```
BOOTTEST Settings Default Variable
```

```
OS is not speedy boot aware.
```

```

Selftest      Setting
-----      -
early_cpu    Run this test
late_cpu     Run this test
platform     Run this test
chipset      Run this test
io_hw        Run this test
mem_init     Run this test
mem_test     Run this test

```

LAN Address Information:

```

LAN Address      Path
-----
*Mac(000E7F7E07FA) Acpi(HWP0002,100)/Pci(2|0)/Mac(000E7F7E07FA)
Mac(000E7F7E07FB) Acpi(HWP0002,100)/Pci(2|1)/Mac(000E7F7E07FB)

```

FIRMWARE INFORMATION

```

Firmware Revision: 86.10 [4432]
  PAL_A: 7.31/5.37
  PAL_B: 5.69
  EFI Spec: 1.10
  EFI Intel Drop: 14.62
  EFI Build: 86.10
  SAL Spec: 3.01
  SAL_A: 2.00
  SAL_B: 86.10
  POSSE: 0.10
  ACPI: 7.00
  SMBIOS: 2.3.2a:

```

```

BMC Revision: 3.42
  IPMI: 1.00

```

```

Management Processor Revision: E.03.02
Updatable EFI Drivers:

```

***** 2nd part *****

Seg #	Bus #	Dev #	Fnc #	Vendor ID	Device ID	Slot #	Path
00	00	01	00	0x1033	0x0035	XX	Acpi(HWP0002,0)/Pci(1 0)
00	00	01	01	0x1033	0x0035	XX	Acpi(HWP0002,0)/Pci(1 1)
00	00	01	02	0x1033	0x00E0	XX	Acpi(HWP0002,0)/Pci(1 2)
00	00	02	00	0x1095	0x0649	XX	Acpi(HWP0002,0)/Pci(2 0)
00	20	01	00	0x1000	0x0030	XX	Acpi(HWP0002,100)/Pci(1 0)
00	20	01	01	0x1000	0x0030	XX	Acpi(HWP0002,100)/Pci(1 1)
00	20	02	00	0x8086	0x1079	XX	Acpi(HWP0002,100)/Pci(2 0)
00	20	02	01	0x8086	0x1079	XX	Acpi(HWP0002,100)/Pci(2 1)
00	40	01	00	0x1000	0x0021	03	Acpi(HWP0002,200)/Pci(1 0)
00	60	01	00	0x1077	0x2312	02	Acpi(HWP0002,300)/Pci(1 0)
00	60	01	01	0x1077	0x2312	02	Acpi(HWP0002,300)/Pci(1 1)
00	80	01	00	0x1000	0x000F	01	Acpi(HWP0002,400)/Pci(1 0)
00	80	01	01	0x1000	0x000F	01	Acpi(HWP0002,400)/Pci(1 1)
00	C0	01	00	0x1000	0x0021	04	Acpi(HWP0002,600)/Pci(1 0)
00	E0	01	00	0x103C	0x1290	XX	Acpi(HWP0002,700)/Pci(1 0)
00	E0	01	01	0x103C	0x1048	XX	Acpi(HWP0002,700)/Pci(1 1)
00	E0	02	00	0x1002	0x5159	XX	Acpi(HWP0002,700)/Pci(2 0)

System Wake-On-LAN: Enabled

BOOT INFORMATION

EFI/POSSE Commands

Monarch CPU:

Current	Preferred	
Monarch	Monarch	
CPU	CPU	
Module/	Module/	
Logical	Logical	Warnings
-----	-----	-----
0/0	0/0	

AutoBoot: ON - Timeout is : 10 sec

Boottest:

BOOTTEST Settings Default Variable

OS is not speedy boot aware.

Selftest	Setting
-----	-----
early_cpu	Run this test
late_cpu	Run this test
platform	Run this test
chipset	Run this test
io_hw	Run this test
mem_init	Run this test
mem_test	Run this test

LAN Address Information:

LAN Address	Path
-----	-----
*Mac(000E7F7E07FA)	Acpi(HWP0002,100)/Pci(2 0)/Mac(000E7F7E07FA)
Mac(000E7F7E07FB)	Acpi(HWP0002,100)/Pci(2 1)/Mac(000E7F7E07FB)

FIRMWARE INFORMATION

```

Firmware Revision: 86.10 [4432]
  PAL_A: 7.31/5.37
  PAL_B: 5.69
  EFI Spec: 1.10
  EFI Intel Drop: 14.62
  EFI Build: 86.10
  SAL Spec: 3.01
  SAL_A: 2.00
  SAL_B: 86.10
  POSSE: 0.10
  ACPI: 7.00
  SMBIOS: 2.3.2a:
BMC Revision: 3.42
  IPMI: 1.00
Management Processor Revision: E.03.02
Updatable EFI Drivers:
  Floating-Point Software Assistance Handler: 00000118
  LSI Logic Ultra320 SCSI Driver: 01030000
  Broadcom Gigabit Ethernet Driver: 00070003
  Intel(R) PRO/1000 Ethernet Driver: 00002160

```

WARNING AND STOP BOOT INFORMATION

Error[55] : Invalid or inaccessible system ID(s)

CHIP REVISION INFORMATION

Chip Type	Logical ID	Device ID	Chip Revision
Memory Controller	0	122b	0023
Root Bridge	0	1229	0023
Host Bridge	0000	122e	0032
Host Bridge	0001	122e	0032
Host Bridge	0002	122e	0032
Host Bridge	0003	122e	0032
Host Bridge	0004	122e	0032
Host Bridge	0006	122e	0032
Host Bridge	0007	122e	0032
Other Bridge	0	0	0002
Other Bridge	0	0	0009
Baseboard MC	0	0	0342

Example C-11 info cpu Command

Shell> info cpu

PROCESSOR MODULE INFORMATION

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

Example C-12 info mem Command

Shell> info mem

MEMORY INFORMATION

---- DIMM A ----			---- DIMM B ----		
DIMM	Current		DIMM	Current	
0	256MB	Active	256MB	Active	
1	256MB	Active	256MB	Active	
2	----		----		
3	----		----		
4	----		----		
5	----		----		

Active Memory : 1024 MB
 Installed Memory : 1024 MB

Example C-11

Example C-14 info io Command

Shell> info io

I/O INFORMATION

BOOTABLE DEVICES

Order	Media Type	Path
1	CDROM	Acpi (HWP0002,0)/Pci (2 0)/Ata (Primary,Master)/CDROM (Entry0)

Seg #	Bus #	Dev #	Fnc #	Vendor ID	Device ID	Slot #	Path
00	00	01	00	0x1033	0x0035	XX	Acpi (HWP0002,0)/Pci (1 0)
00	00	01	01	0x1033	0x0035	XX	Acpi (HWP0002,0)/Pci (1 1)
00	00	01	02	0x1033	0x00E0	XX	Acpi (HWP0002,0)/Pci (1 2)
00	00	02	00	0x1095	0x0649	XX	Acpi (HWP0002,0)/Pci (2 0)
00	20	01	00	0x1000	0x0030	XX	Acpi (HWP0002,100)/Pci (1 0)
00	20	01	01	0x1000	0x0030	XX	Acpi (HWP0002,100)/Pci (1 1)
00	20	02	00	0x8086	0x1079	XX	Acpi (HWP0002,100)/Pci (2 0)
00	20	02	01	0x8086	0x1079	XX	Acpi (HWP0002,100)/Pci (2 1)
00	40	01	00	0x1000	0x0021	03	Acpi (HWP0002,200)/Pci (1 0)
00	60	01	00	0x1077	0x2312	02	Acpi (HWP0002,300)/Pci (1 0)
00	60	01	01	0x1077	0x2312	02	Acpi (HWP0002,300)/Pci (1 1)
00	80	01	00	0x1000	0x000F	01	Acpi (HWP0002,400)/Pci (1 0)
00	80	01	01	0x1000	0x000F	01	Acpi (HWP0002,400)/Pci (1 1)
00	C0	01	00	0x1000	0x0021	04	Acpi (HWP0002,600)/Pci (1 0)
00	E0	01	00	0x103C	0x1290	XX	Acpi (HWP0002,700)/Pci (1 0)
00	E0	01	01	0x103C	0x1048	XX	Acpi (HWP0002,700)/Pci (1 1)
00	E0	02	00	0x1002	0x5159	XX	Acpi (HWP0002,700)/Pci (2 0)

System Wake-On-LAN: Enabled

Example C-15 info boot Command

Shell> info boot

BOOT INFORMATION

Monarch CPU:

Current	Preferred	
Monarch CPU	Monarch CPU	
Module/Logical	Module/Logical	Warnings
0/0	0/0	

AutoBoot: ON - Timeout is : 10 sec

Boottest:

BOOTTEST Settings Default Variable

OS is not speedy boot aware.

Selftest Setting


```

-----
early_cpu      Run this test
late_cpu       Run this test
platform       Run this test
chipset        Run this test
io_hw          Run this test
mem_init       Run this test
mem_test       Run this test
  
```

LAN Address Information:

```

LAN Address      Path
-----
*Mac(000E7F7E07FA) Acpi(HWP0002,100)/Pci(2|0)/Mac(000E7F7E07FA)
Mac(000E7F7E07FB)  Acpi(HWP0002,100)/Pci(2|1)/Mac(000E7F7E07FB)
  
```

lanaddress

Allows the user to display the core I/O MAC address.

Syntax:

```
lanaddress
```

Parameters

none

Example C-16 lanaddress Command

LAN Address Information:

```

LAN Address      Path
-----
Mac(00306E4C4F1A) Acpi(HWP0002,0)/Pci(3|0)/Mac(00306E4C4F1A)
*Mac(00306E4C0FF2) Acpi(HWP0002,100)/Pci(2|0)/Mac(00306E4C0FF2)
  
```

monarch

Displays or modifies the ID of the bootstrap processor. The preferred monarch number is stored in NVM.

Syntax

```
monarch <cpu>
```

Parameters

<cpu> specifies a cpu

Operation

If specified with no parameters, **monarch** displays the Monarch processor for the server. Specifying a processor number alters the preferred Monarch processor. None of these changes takes affect until after a reboot.

Example C-17 monarch Command

```
Shell> monarch
Current Preferred
Monarch Monarch Possible Warnings
-----
          0          0
          0          0
```

To view monarch: fs0 :\ monarch

```

          | Processor
-----+-----
current status | 0
next boot status | 0
```

To set the monarch processor to 1: fs0 :\ monarch 1

```

          | Processor
-----+-----
current status | 0
next boot status | 1
```

pdt

Displays or clears the contents of the Page Deallocation Table.

Syntax

```
pdt (clear)
```

Parameters

```
<clear> clears the pdt
```

Operation

With no options specified, the command displays the PDT information for the server. The PDT is cleared and a reboot is required for memory reallocation and safe booting.

Example C-18 pdt Command

```
Shell> pdt
PDT Information for PD

Last Clear time for PD: PDT has not been cleared
Number of total entries in PD PDT: 100
Number of used entries in PD PDT: 0
Number of free entries in PD PDT: 50
Number of permanent correctable (SBE) entries in PD PDT: 0
Number of permanent uncorrectable (MBE) entries in PD PDT: 0
Address of first uncorrectable error in PD: 0x0000000000000000
```

Example C-19 pdt clear Command

```
Shell> pdt clear
Are you sure you want to clear the PDT? [y/N] y
Shell>
```

```
Shell> pdt
PDT Information
```

```

                Last Clear time: 10/21/01  5:00p
Number of total entries in PDT:          50
Number of used entries in PDT:           0
Number of free entries in PDT:           50
Number of single-bit entries in PDT:      0
Number of multi-bit entries in PDT:       0
Address of first multi-bit error: 0x0000000000000000

```

sysmode

Display or modify the system mode.

Syntax

```
sysmode <normal | admin| service>
```

Parameters

```

<normal>      sets system mode to normal
<admin>       sets system mode to admin
<service>    sets system mode to service

```

Operation

If specified alone, `sysmode` displays the system mode. If a mode is specified as a parameter, then the system mode is changed. This new mode takes effect immediately. The system mode is retained on successive boots. Interaction with `sysmode` in a variety of scenarios is outlined below.

Example C-20 `sysmode` Command

```

Shell> sysmode
System Mode: NORMAL

Shell> sysmode admin
You are now in admin mode.

Shell> sysmode service
You are now in service mode.

Shell> sysmode normal
You are now in normal mode

```

Specifying SCSI Parameters

The following SCSI parameters may be configured for the SCSI board:

- SCSI ID (SCSI initiator ID)
- Maximum data transfer rate (SCSI rate)
- Bus width
- Whether the HBA is bootable (driver support)
- Avoid bus resets (secondary cluster server)

Using the SCSI Setup Utility

Step 1. At the EFI shell prompt, type this command to map the parameters for all PCI cards installed in the server:

```
info io
```

A list of all the devices that are installed in the HP Integrity rx2620 server and managed by EFI drivers is displayed. The output may look like this:

I/O INFORMATION

BOOTABLE DEVICES

Order	Media	Type	Path				
1	CDROM		Acpi(HWP0002,0)/Pci(2 0)/Ata(Primary,Master)/CDROM(Entry0)				

Seg #	Bus #	Dev #	Fnc #	Vendor ID	Device ID	Slot #	Path
00	00	01	00	0x1033	0x0035	XX	Acpi(HWP0002,0)/Pci(1 0)
00	00	01	01	0x1033	0x0035	XX	Acpi(HWP0002,0)/Pci(1 1)
00	00	01	02	0x1033	0x00E0	XX	Acpi(HWP0002,0)/Pci(1 2)
00	00	02	00	0x1095	0x0649	XX	Acpi(HWP0002,0)/Pci(2 0)
00	20	01	00	0x1000	0x0030	XX	Acpi(HWP0002,100)/Pci(1 0)
00	20	01	01	0x1000	0x0030	XX	Acpi(HWP0002,100)/Pci(1 1)
00	20	02	00	0x8086	0x1079	XX	Acpi(HWP0002,100)/Pci(2 0)
00	20	02	01	0x8086	0x1079	XX	Acpi(HWP0002,100)/Pci(2 1)
00	40	01	00	0x1000	0x0021	03	Acpi(HWP0002,200)/Pci(1 0)
00	60	01	00	0x1077	0x2312	02	Acpi(HWP0002,300)/Pci(1 0)
00	60	01	01	0x1077	0x2312	02	Acpi(HWP0002,300)/Pci(1 1)
00	80	01	00	0x1000	0x000F	01	Acpi(HWP0002,400)/Pci(1 0)
00	80	01	01	0x1000	0x000F	01	Acpi(HWP0002,400)/Pci(1 1)
00	C0	01	00	0x1000	0x0021	04	Acpi(HWP0002,600)/Pci(1 0)
00	E0	01	00	0x103C	0x1290	XX	Acpi(HWP0002,700)/Pci(1 0)
00	E0	01	01	0x103C	0x1048	XX	Acpi(HWP0002,700)/Pci(1 1)
00	E0	02	00	0x1002	0x5159	XX	Acpi(HWP0002,700)/Pci(2 0)

System Wake-On-LAN: Enabled

In the preceding example, a single SCSI interface is shown in the listing. The information for both channels of the SCSI interface is shown in **bold**, for highlighting purposes.

For each channel of the SCSI board, you need to note certain information. As an example, look at the information for the SCSI interface (the first two bold lines). For each channel of *this* SCSI interface, note the following information:

- **Bus #**—identifies the bus the device is on; for the SCSI interface, this is the same for both channels. In this example, the bus number is 20.
- **Dev #**—the ID the device is assigned on the bus; for the SCSI interface, this is the same for both channels. In this example, the SCSI interface is device 01.
- **Fnc #**—identifies the channel of the device (00 for channel A, 01 for channel B, and so on). In this example, because the SCSI interface has two channels, one channel is 00 and the other is 01.
- **Vendor ID**—shows the device’s vendor ID; for the SCSI interface, this is the same for both channels. For all the SCSI interface the ID is 0x1000.
- **Device ID**—shows the device ID; for the SCSI interface, this is the same for both channels. For the SCSI interface the ID is 0x0030.
- **Slot #**—identifies the physical card slot in the server where the SCSI interface is installed; for the SCSI interface, this is the same for both channels. In this example, the SCSI interface is on the system board therefore the in slot number is xx.

Specifying SCSI Parameters

- Path—identifies the device’s path; for the SCSI interface, this is the same for both channels. In this example, the SCSI interface path is `Acpi (HWP0002,200) /Pci (1|0)` for channel A and `Acpi (HWP0002,200) /Pci (1|1)` for channel B.

Using the SCSI interface information from the example above, the pieces of information that, combined, tell you this is a SCSI interface are the following (shown in **bold**, for highlighting purposes):

```
00  20  01  00  0x1000  0x0030  xx  Acpi (HWP0002,200) /Pci (1|0)
00  20  01  01  0x1000  0x0030  xx  Acpi (HWP0002,200) /Pci (1|1)
```

Looking at all of the above information together, the vendor (**0x1000**) and device (**0x0030**) are the IDs for a SCSI interface. Of the devices with those IDs, this device has two channels (Fnc # of **00** immediately followed by Fnc # of **01**). Also, this SCSI interface has a non-numeric (XX) slot # indicating that it is on the system board.

- Step 2.** Still at the EFI shell prompt, type this command to obtain the controller’s handle for the SCSI interface:

devtree

A tree of all EFI-capable devices installed in the server is displayed. The output could look like this:

```
Shell> devtree
Device Tree
  Ctrl[04]
  Ctrl[06] VenHw(SysROM)
  Ctrl[0B] Acpi (HWP0002,0)
    Ctrl[15] Usb Open Host Controller
    Ctrl[16] Usb Open Host Controller
    Ctrl[17] Acpi (HWP0002,0) /Pci (1|2)
    Ctrl[18] PCI IDE/ATAPI Controller
    Ctrl[56] DV-28E-C
    Ctrl[91] FAT File System [FAT32] 118 MB
  Ctrl[0C] Acpi (HWP0002,100)
    Ctrl[1C] LSI Logic Ultra320 SCSI Controller
    Ctrl[1D] LSI Logic Ultra320 SCSI Controller
    Ctrl[1E] Acpi (HWP0002,100) /Pci (2|0)
      Ctrl[57] Acpi (HWP0002,100) /Pci (2|0) /Mac (000E7F7E07FA)
    Ctrl[1F] Acpi (HWP0002,100) /Pci (2|1)
      Ctrl[58] Acpi (HWP0002,100) /Pci (2|1) /Mac (000E7F7E07FB)
  Ctrl[0D] Acpi (HWP0002,200)
    Ctrl[20] Acpi (HWP0002,200) /Pci (1|0)
  Ctrl[0E] Acpi (HWP0002,300)
    Ctrl[22] HP 2 Gb Dual Port PCI/PCI-X Fibre Channel Adapter ( Port 1)
    Ctrl[23] HP 2 Gb Dual Port PCI/PCI-X Fibre Channel Adapter ( Port 2)
  Ctrl[0F] Acpi (HWP0002,400)
    Ctrl[24] Acpi (HWP0002,400) /Pci (1|0)
    Ctrl[25] Acpi (HWP0002,400) /Pci (1|1)
  Ctrl[10] Acpi (HWP0002,600)
    Ctrl[26] Acpi (HWP0002,600) /Pci (1|0)
  Ctrl[11] Acpi (HWP0002,700)
    Ctrl[27] Acpi (HWP0002,700) /Pci (1|0)
    Ctrl[28] Acpi (HWP0002,700) /Pci (1|1)
    Ctrl[43] 16550 Serial UART Driver
    Ctrl[44] VT-100+ Serial Console
      Ctrl[3E] Primary Console Input Device
      Ctrl[3F] Primary Console Output Device
      Ctrl[3D] Primary Standard Error Device
    Ctrl[29] Acpi (HWP0002,700) /Pci (2|0)
  Ctrl[40] Acpi (PNP0501,0)
```

```
Ctrl[41] 16550 Serial UART Driver
Ctrl[42] VT-100+ Serial Console
Ctrl[54] VenHw(D65A6B8C-71E5-4DF0-A909-F0D2992B5AA9)
```

In the preceding example, the SCSI interface information is shown **highlighted bold**. You can tell the information is for the SCSI interface because the path on the first line—`Acpi (HWP0002, 100)`—is the path from the information displayed by the `info io` command. The next two lines are for the SCSI interface two channels, one line for each channel (they contain the SCSI interface description [LSI Logic Ultra320 SCSI Controller]). Note the value shown for `Ctrl`—17 and 18—at the beginning of each of those lines; this is the **controller’s handle** for each channel. You need to know it for the next step.

NOTE The controller’s handle values change on every boot.

Step 3. Still at the EFI shell prompt, type this command to obtain the EFI driver’s handle for the SCSI interface:

drvcfg

A list of all EFI-capable configurable components in the server is displayed. The output may look like this:

```
Shell> drvcfg
Configurable Components
Drv[3D] Ctrl[15] Lang[eng]
Drv[3F] Ctrl[19] Lang[eng]
Drv[45] Ctrl[17] Lang[eng]
Drv[45] Ctrl[18] Lang[eng]
```

This listing shows which driver controls which device (controller). In the above example, the SCSI interface information is shown **highlighted bold**. You can tell the information is for this SCSI interface because the values shown for `Ctrl`—17 and 18—are the controller’s handles for the SCSI interface two channels (from the information displayed by the `devtree` command).

NOTE The EFI driver’s handle values change on every boot.

TIP From this command (`drvcfg`), we recommend you record these two pieces of information for *each* channel of *each* SCSI interface for parameters to be changed:

- `Drv` (the EFI driver’s handle)
- `Ctrl` (the controller’s handle)

Step 4. Using the information (the driver’s handle [`Drv`] and the controller’s handle [`Ctrl`]) from the `drvcfg` command, start the EFI SCSI Setup Utility for *one* channel of *this* SCSI interface. Still at the EFI shell prompt, type this command:

drvcfg -s *drv_handle* *cntrl_handle*

where

- *drv_handle* is the handle of the driver that controls the channel whose SCSI ID you want to display or change

Specifying SCSI Parameters

- `cntrl_handle` is the handle of the controller for the channel whose SCSI ID you want to display or change

So, continuing the example for *channel A* of *this* SCSI interface, you would type:

```
drvcfg -s 45 18
```

Step 5. The EFI SCSI Setup Utility starts and its main menu is displayed, showing a list of all the EFI capable SCSI interfaces in the server.

Move the cursor to highlight the channel of the SCSI interface; press **Enter**. (To determine which channel of the interface to highlight, match the PCI Bus, PCI Dev, and PCI Func values on this screen to the Bus #, Dev #, and Fnc # values from the `info io` command.)

CAUTION Do *not* select the <Global Properties> option on the main menu.

TIP To move the cursor in the EFI SCSI Setup Utility, you can use these keys:

- Arrow keys: ↑ ↓ ← →
 - Alternate keys:
 - H** = left
 - J** = down
 - K** = up
 - L** = right
 - I** = home
 - O** = end
-

Step 6. The “Adapter Properties” screen for this channel of the SCSI interface is displayed. If you like, you can make sure the utility is running for the channel of the SCSI interface by comparing the values shown for PCI Bus, PCI Device, and PCI Function to the Bus #, Dev #, and Fnc # values from the `info io` command.

CAUTION Do *not* change the value for *any* of these fields on the “Adapter Properties” screen:

- Auto Termination
- SCSI Parity
- SCSI Bus Scan Order
- Spinup Delay (Secs)

Changing any of these fields can cause unpredictable results.

CAUTION Do *not* change the value for *any* of these fields on the “Device Properties” screen:

- Scan Id
- Scan LUNs > 0
- Disconnect
- SCSI Timeout
- Queue Tags
- Format
- Verify

Changing any of these fields can cause unpredictable results.

Step 7. You may display (and optionally change) any SCSI parameters listed below for the channel of the SCSI interface, or restore its SCSI parameters to their default values.

- SCSI ID
- Maximum data transfer rate
- Bus width
- Whether the SCSI interface is bootable (driver support)
- Avoid bus resets (secondary cluster server)
- Restore Defaults

Step 8. Use the arrow keys to navigate to the appropriate SCSI parameter.

Step 9. Use the plus (+) and minus (-) keys to scroll through the values until the value you want is displayed.

Step 10. Press **Esc** to exit the “Adapter Properties” screen. You are given these choices:

- Cancel the exit from the screen (to stay in the “Adapter Properties” screen for the channel of the SCSI interface)
- Save the changes you made and then exit the screen
- Discard the changes you made and then exit the screen

Step 11. Move the cursor to the action (cancel, save, or discard) you want to take; press **Enter**.

If you selected cancel, you remain in the “Adapter Properties” screen for the channel of the SCSI interface. You can still change the channel’s parameters listed above.

If you selected save or discard, you are placed in the EFI SCSI Setup Utility’s main menu.

CAUTION Do not select the <Global Properties> option on the main menu.

Step 12. Press **Esc** to exit the main menu and the EFI SCSI Setup Utility.

Step 13. Select the option for exiting the utility.

Step 14. When you are prompted to, press **Enter** to stop the SCSI interface; you are now back at the EFI shell prompt.

Step 15. At the EFI shell prompt, type this command:

```
reset
```

The server starts to reboot. This is **required** to cause the new SCSI setting.

Using the Boot Configuration Menu

This menu allows you to select console output and input devices as well as various boot options. It contains the following items:

- Boot From File
- Add Boot Entry
- Edit Boot Entry
- Remove Boot Entry
- Edit OS Boot Order
- AutoBoot Configuration
- BootNext Configuration
- Driver Configuration
- Console Configuration
- System Reset

These items are described in the following sections.

In all menus, select:

- Refer to the status bar on the bottom of the screen for help on menus and navigation
- Enter to select an item after using the arrow keys to highlight the item
- Save Settings to NVRAM to save your changes

NOTE The options shown here are examples. Your server may have different options available based on the server configuration and installed hardware components.

Paths

All devices in the HP Integrity rx2620 are represented by paths in the EFI shell. To identify the correct slot or disk drive, use the following tables.

Table C-3 HP Integrity rx2620 Slots

Socket	Path
1 PCI	Acpi(HWP0002,400)/pci(1 0)
2 PCI	Acpi(HWP0002,300)/pci(1 0)

Table C-3 HP Integrity rx2620 Slots (Continued)

Socket	Path
3 PCI	Acpi(HWP0002,200)/pci(1 0)
4 PCI	Acpi(HWP0002,600)/pci(1 0)

Table C-4 HP Integrity rx2620 Drives

Drive	Path
SCSI Disk (HDD1)	Acpi(HWP0002,100)/Pci(1 1)/Scsi(Pun2,Lun0)
SCSI Disk (HDD2)	Acpi(HWP0002,100)/Pci(1 0)/Scsi(Pun1,Lun0)
SCSI Disk (HDD3)	Acpi(HWP0002,100)/Pci(1 0)/Scsi(Pun0,Lun0)
Removable Media Boot	Acpi(HWP0002,0)/Pci(2 0)/ATA

Boot From File

Use this option to manually run a specific application or driver.

NOTE This option boots the selected application or driver one time only. When you exit the application, you return to this menu.

This option displays the file systems that are on your server or workstation and lets you browse these file systems for applications or drivers that are executable. Executable files end with the `.efi` extension. You can also select remote boot (LAN) options that have been configured on your network.

For example:

```

Boot From a File. Select a Volume
NO VOLUME LABEL [Acpi(HWP0002,0)/Pci(2|0)/Ata(Primary,Master)/CDROM
CD_FORMAT [Acpi(HWP0002,0)/Pci(2|0)/Ata(Secondary,Master)/CDROM
Removable Media Boot [Acpi(HWP0002,500)/Pci(2|0)/Ata(Secondary,Master)
Load File [EFI Shell [Built-in]]
Load File [Acpi(HWP0002,0)/Pci(3|0)/Mac(00306E4C4F1A)]
Exit

```

In this example:

- NO VOLUME LABEL is a hard drive. When you format a hard drive, the EFI tools provide an option to LABEL the disk. In this example, the volume was not labelled.
- CD_FORMAT is the label created for the disk currently inside the DVD drive.
- Removable Media Boot allows you to boot from a removable media drive (CD/DVD drive). This option does not support booting from a specific file on a specific removable media disc.
- The two Load Files are the EFI Shell and the LAN.

Add Boot Entry

Use this option to add items to the EFI boot menu.

Using the Boot Configuration Menu

This option displays the file systems that are on your server and lets you browse these file systems for applications or drivers that are executable. Executable files end with the `.efi` extension. You can also select remote boot (LAN) options that have been configured on your network. The option you have selected will be added to the EFI boot menu.

If you add a new drive to your server, you must manually add its boot options list if you want to make it a bootable device.

When adding a boot option that already exists in the Boot Manager list of boot options, you can choose whether to create a new option or modify the existing one. If you:

- Choose to modify an existing option, you may change the boot option name and/or add boot option arguments to the existing option.
- Create a new boot option for an already existing option, multiple instances of the same boot option exist.

For example:

```
Add a Boot Option. Select a Volume
NO VOLUME LABEL [Acpi(HWP0002,0)/Pci(2|0)/Ata(Primary,Master)/CDROM
  Removable Media Boot [Acpi(HWP0002,0)/Pci(2|0)/Ata(Secondary,Master)
  Load File [EFI Shell [Built-in]]
  Load File [Acpi(HWP0002,0)/Pci(3|0)/Mac(00306E4C4F1A)]
Exit
```

In this example:

- Most of the items are the same options in Boot From a File.
- NO VOLUME LABEL is a hard drive. You can search through the disk for bootable applications to add to the Boot Manager list of Boot options.
- Removable Media Boot will treat the Removable Media (generally a CD) as a bootable device.
- Load File EFI Shell adds a new instance to the EFI Shell. Load File with the MAC address adds a network boot option

Edit Boot Entry

Use this option to remove boot options from the EFI boot menu.

NOTE This does not delete any files, applications or drivers from your server.

This option displays a list of boot options that are configured on your server. The names will match the options on the main Boot Manager menu (above).

If you remove a drive from your server, you must manually delete it from the boot options list.

- To delete an item from the list, use the arrow keys to highlight the item and press Enter.
- To remove all of the entries from the EFI boot menu, select Delete All Boot Options. This setting may be used as a security device on servers that are accessed remotely.

Remove Boot Entry

Use this option to change the order of boot options. The order in which options are listed in the EFI boot menu also reflects the order in which the server attempts to boot. If the first boot option fails, the server tries booting the second, then the third, and so forth, until a boot option succeeds or until all options have failed.

For example, if you normally boot using a configuration on your LAN but would like to boot from a local hard drive if the LAN is unavailable, move the LAN boot option to the top of the list, followed by the hard drive boot option.

The menu lists boot options that currently exist in the main Boot Manager menu. You can change the priority of the items by moving them up or down in the list:

- Press U to move an option up.
- Press D to move an option down.
- Select Save Settings to NVRAM to modify the order in the Boot Manager menu, which modifies the order that the Boot Manager will attempt to boot the options.
- The items at the bottom of the screen (shown in bold in these examples) are descriptions of the selected option.

For example:

```
Change boot order. Select an Operation
EFI Shell [Built-in]
Current OS
Save Settings to NVRAM
Help
Exit

VenHw(D65A6B8C-71E5-4DF0-A909-F0D2992B5AA9)
Boot0000
```

BootNext Configuration

Use this option to run the selected boot option immediately upon entering the main Boot Manager menu. This option is useful for booting an option that only needs to be booted once, without changing any other setting in the main Boot Manager menu. This is a one-time operation and does not change the permanent system boot settings.

This option displays the file systems that are on your server and lets you browse these file systems for applications or drivers that are executable. Executable files end with the `.efi` extension. You can also select remote boot (LAN) options that have been configured on your network.

To restore the default boot next setting, select Reset BootNext Setting.

For example:

```
Manage BootNext setting. Select an Operation
EFI Shell [Built-in]
Current OS
Reset BootNext Setting
Save Settings to NVRAM
Help
Exit

VenHw(D65A6B8C-71E5-4DF0-A909-F0D2992B5AA9)
Boot0000
```

AutoBoot Configuration

Use this option to set the amount of time the server pauses before attempting to launch the first item in the Boot Options list.

For example:

Using the Boot Configuration Menu

```
Set Auto Boot Timeout. Select an Option
  Set Timeout Value
  Delete/Disable Timeout
  Help
  Exit
```

Interrupting the timeout during the countdown stops the Boot Manager from loading any boot options automatically. If there is no countdown, boot options must be selected manually.

- To set the auto boot timeout value, in seconds, select Set Timeout Value and enter the desired value.
- To disable the timeout function, select Delete/Disable Timeout.

NOTE When this option is selected, the server does not automatically boot. The server stops at the EFI boot menu and waits for user input.

Driver Configuration

Use this option to define the devices that display output from the system console. This list normally includes the VGA monitor and a serial port for directing output to a terminal emulation package.

NOTE If you install a modem in your server, make sure you disable the modem serial port in both the Active Console Input and Active Console Output device lists.

NOTE Some operating systems support multiple consoles, such as a simultaneous serial and VGA output. See your OS documentation to determine how many consoles are supported with your server. Multiple consoles are not supported for HP-UX or Windows (use the Smart Setup CD to switch between COM A and the iLO MP on Windows servers).

For example:

```
Select the Console Output Device(s)
  Acpi (PNP0501,0) /Uart (9600 N81) /VenMsg (PcAnsi)
  Acpi (PNP0501,0) /Uart (9600 N81) /VenMsg (Vt100)
  * Acpi (PNP0501,0) /Uart (9600 N81) /VenMsg (Vt100+)
  Acpi (PNP0501,0) /Uart (9600 N81) /VenMsg (VtUtf8)
  Acpi (HWP0002,700) /Pci (1|1) /Uart (9600 N81) /VenMsg (PcAnsi)
  Acpi (HWP0002,700) /Pci (1|1) /Uart (9600 N81) /VenMsg (Vt100)
  * Acpi (HWP0002,700) /Pci (1|1) /Uart (9600 N81) /VenMsg (Vt100+)
  Acpi (HWP0002,700) /Pci (1|1) /Uart (9600 N81) /VenMsg (VtUtf8)
  * Acpi (HWP0002,700) /Pci (2|0)
```

* indicates a currently selected device.

This menu is identical to Console Error Devices. The HP Integrity rx2620 server does not support different configurations for Output and Error console. For correct operation:

- When changes are made to either Output or Error console menus, the identical change must be made in both menus.

- When changing serial devices, changes must be made to Output, Input, and Error menus for proper operation.

Table C-5 Console Output Devices

To select:	Choose:
Serial A/Serial 1	Acpi(PNP0501,0)/Uart(9600 N81)/VenMsg(Vt100+)
iLO MP Serial Console	Acpi(HWP0002,700)/Pci(1 0)/Uart(9600 N81)/VenMsg(Vt100+)
iLO MP VGA Port	Acpi(HWP0002,700)/Pci(2 0)

- Each option is identified with an EFI device path. Not all options will be available, depending on the configuration of the server and the options purchased. Device paths may differ slightly on different product models.
- On both serial device examples, UART 9600 indicates the current baud rate of the serial device (can be changed with the EFI shell baud command), VenMsg Vt100+ is the current emulation type (several different terminal emulation protocols are supported, see list above).
- Only one terminal emulation type (PcAnsi, Vt100, etc.) can be selected for each serial console, but multiple serial consoles can be selected at a time.

Driver Configuration

Use this option to define the devices that display output from the system console. This list normally includes the VGA monitor and a serial port for directing output to a terminal emulation package.

NOTE If you install a modem in your server, make sure you disable the modem serial port in both the Active Console Input and Active Console Output device lists.

NOTE Some operating systems support multiple consoles, such as a simultaneous serial and VGA output. See your OS documentation to determine how many consoles are supported with your server. Multiple consoles are not supported for HP-UX or Windows (use the Smart Setup CD to switch between COM A and the iLO MP on Windows servers).

For example:

```
Select the Console Output Device(s)
  Acpi (PNP0501,0) /Uart (9600 N81) /VenMsg (PcAnsi)
Acpi (PNP0501,0) /Uart (9600 N81) /VenMsg (Vt100)
* Acpi (PNP0501,0) /Uart (9600 N81) /VenMsg (Vt100+)
Acpi (PNP0501,0) /Uart (9600 N81) /VenMsg (VtUtf8)
Acpi (HWP0002,700) /Pci (1|1) /Uart (9600 N81) /VenMsg (PcAnsi)
Acpi (HWP0002,700) /Pci (1|1) /Uart (9600 N81) /VenMsg (Vt100)
* Acpi (HWP0002,700) /Pci (1|1) /Uart (9600 N81) /VenMsg (Vt100+)
Acpi (HWP0002,700) /Pci (1|1) /Uart (9600 N81) /VenMsg (VtUtf8)
* Acpi (HWP0002,700) /Pci (2|0)
```

* indicates a currently selected device.

This menu is identical to Console Error Devices. The HP Integrity rx2620 does not support different configurations for Output and Error console. For correct operation:

Using the Boot Configuration Menu

- When changes are made to either Output or Error console menus, the identical change must be made in both menus.
- When changing serial devices, changes must be made to Output, Input, and Error menus for proper operation.

Table C-6 Console Output Devices

To select:	Choose:
Serial A/Serial 1	Acpi(PNP0501,0)/Uart(9600 N81)/VenMsg(Vt100+)
iLO MP Serial Console	Acpi(HWP0002,700)/Pci(1 1)/Uart(9600 N81)/VenMsg(Vt100+)
iLO MP VGA Port	Acpi(HWP0002,700)/Pci(2 0)

- Each option is identified with an EFI device path. Not all options will be available, depending on the configuration of the server and the options purchased. Device paths may differ slightly on different product models.
- On both serial device examples, UART 9600 indicates the current baud rate of the serial device (can be changed with the EFI shell baud command), VenMsg Vt100+ is the current emulation type (several different terminal emulation protocols are supported, see list above).
- Only one terminal emulation type (PcAnsi, Vt100, etc.) can be selected for each serial console, but multiple serial consoles can be selected at a time.

Console Configuration

Use this option to define the devices that display output from the system console. This list normally includes the VGA monitor and a serial port for directing output to a terminal emulation package.

NOTE If you install a modem in your server, make sure you disable the modem serial port in both the Active Console Input and Active Console Output device lists.

NOTE Some operating systems support multiple consoles, such as a simultaneous serial and VGA output. See your OS documentation to determine how many consoles are supported with your server. Multiple consoles are not supported for HP-UX or Windows (use the Smart Setup CD to switch between COM A and the iLO MP on Windows systems).

For example:

```
Select the Console Output Device(s)
  Acpi(PNP0501,0)/Uart(9600 N81)/VenMsg(PcAnsi)
Acpi(PNP0501,0)/Uart(9600 N81)/VenMsg(Vt100)
* Acpi(PNP0501,0)/Uart(9600 N81)/VenMsg(Vt100+)
Acpi(PNP0501,0)/Uart(9600 N81)/VenMsg(VtUtf8)
Acpi(HWP0002,700)/Pci(1|1)/Uart(9600 N81)/VenMsg(PcAnsi)
Acpi(HWP0002,700)/Pci(1|1)/Uart(9600 N81)/VenMsg(Vt100)
* Acpi(HWP0002,700)/Pci(1|1)/Uart(9600 N81)/VenMsg(Vt100+)
Acpi(HWP0002,700)/Pci(1|1)/Uart(9600 N81)/VenMsg(VtUtf8)
* Acpi(HWP0002,700)/Pci(2|0)
```

* indicates a currently selected device.

This menu is identical to Console Error Devices. The HP Integrity rx2620 server does not support different configurations for Output and Error console. For correct operation:

- When changes are made to either Output or Error console menus, the identical change must be made in both menus.
- When changing serial devices, changes must be made to Output, Input, and Error menus for proper operation.

Table C-7 Console Output Devices

To select:	Choose:
Serial A/Serial 1	Acpi(PNP0501,0)/Uart(9600 N81)/VenMsg(Vt100+)
iLO MP Serial Console	Acpi(HWP0002,700)/Pci(1 1)/Uart(9600 N81)/VenMsg(Vt100+)
iLO MP VGA Port	Acpi(HWP0002,700)/Pci(2 0)

- Each option is identified with an EFI device path. Not all options will be available, depending on the configuration of the server and the options purchased. Device paths may differ slightly on different product models.
- On both serial device examples, UART 9600 indicates the current baud rate of the serial device (can be changed with the EFI shell baud command), VenMsg Vt100+ is the current emulation type (several different terminal emulation protocols are supported, see list above).
- Only one terminal emulation type (PcAnsi, Vt100, etc.) can be selected for each serial console, but multiple serial consoles can be selected at a time.

System Reset

Use this option to define the devices that display output from the system console. This list normally includes the VGA monitor and a serial port for directing output to a terminal emulation package.

NOTE If you install a modem in your server, make sure you disable the modem serial port in both the Active Console Input and Active Console Output device lists.

NOTE Some operating systems support multiple consoles, such as a simultaneous serial and VGA output. See your OS documentation to determine how many consoles are supported with your server. Multiple consoles are not supported for HP-UX or Windows (use the Smart Setup CD to switch between COM A and the iLO MP on Windows servers).

For example:

```
Select the Console Output Device(s)
Acpi(PNP0501,0)/Uart(9600 N81)/VenMsg(PcAnsi)
Acpi(PNP0501,0)/Uart(9600 N81)/VenMsg(Vt100)
* Acpi(PNP0501,0)/Uart(9600 N81)/VenMsg(Vt100+)
Acpi(PNP0501,0)/Uart(9600 N81)/VenMsg(VtUtf8)
Acpi(HWP0002,700)/Pci(1|1)/Uart(9600 N81)/VenMsg(PcAnsi)
Acpi(HWP0002,700)/Pci(1|1)/Uart(9600 N81)/VenMsg(Vt100)
* Acpi(HWP0002,700)/Pci(1|1)/Uart(9600 N81)/VenMsg(Vt100+)
Acpi(HWP0002,700)/Pci(1|1)/Uart(9600 N81)/VenMsg(VtUtf8)
* Acpi(HWP0002,700)/Pci(2|0)
```

Using the Boot Configuration Menu

* indicates a currently selected device.

This menu is identical to Console Error Devices. The HP Integrity rx2620 server does not support different configurations for Output and Error console. For correct operation:

- When changes are made to either Output or Error console menus, the identical change must be made in both menus.
- When changing serial devices, changes must be made to Output, Input, and Error menus for proper operation.

Table C-8 Console Output Devices

To select:	Choose:
Serial A/Serial 1	Acpi(PNP0501,0)/Uart(9600 N81)/VenMsg(Vt100+)
iLO MP Serial Console	Acpi(HWP0002,700)/Pci(1 1)/Uart(9600 N81)/VenMsg(Vt100+)
iLO MP VGA Port	Acpi(HWP0002,700)/Pci(2 0)

- Each option is identified with an EFI device path. Not all options will be available, depending on the configuration of the server and the options purchased. Device paths may differ slightly on different product models.
- On both serial device examples, UART 9600 indicates the current baud rate of the serial device (can be changed with the EFI shell baud command), VenMsg Vt100+ is the current emulation type (several different terminal emulation protocols are supported, see list above).
- Only one terminal emulation type (PcAnsi, Vt100, etc.) can be selected for each serial console, but multiple serial consoles can be selected at a time.

Using the System Configuration Menu

The System Configuration Menu (on servers with EFI firmware version 2.0 or higher) includes the following options:

- Advanced System Information
- Set System Time
- Set System Date
- Set User Interface
- Set System Wake-On LAN
- Set System Defaults

Advanced System Information

The Advanced System Information Menu displays information about server and component configuration.

Set System Time

Set System Time lets you modify the server time.

Set System Date

Set System Date lets you modify the server date.

Set User Interface

Set User Interface lets the user change the legacy boot manager user interface.

Set System Wake-On LAN

Set System Wake-On LAN lets the user enable/disable the server Wake-On_LAN settings.

Set System Defaults

Set System Defaults lets you select server default settings.

Using the Security Configuration Menu

The Security Configuration Menu (on servers with EFI firmware version 2.0 or higher) includes the following options:

- Administrator Password Options
- User Password Options

Administrator Password Options

Administrator Password Options lets the user set and clear the administrator password.

User Password Options

User Password Options lets the user set and clear the administrator password.

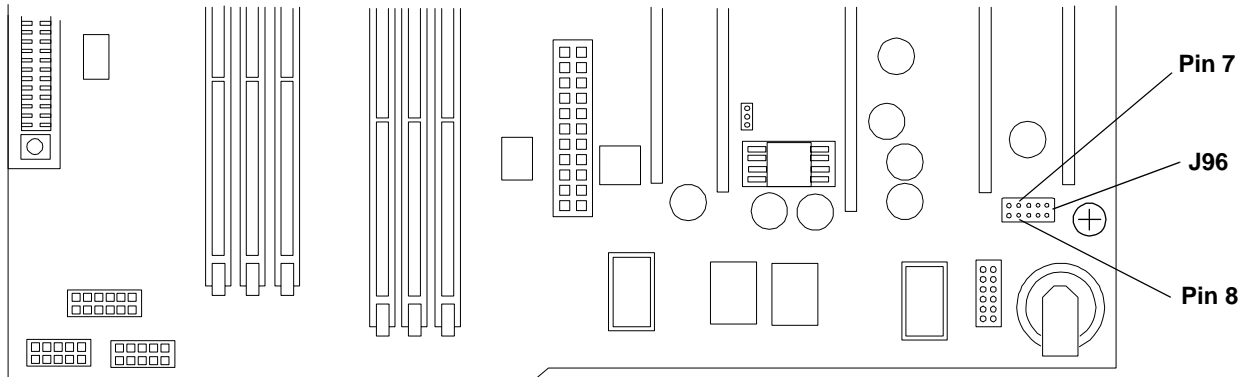
If you forget your passwords, they can be reset using an iLO MP command. Follow these steps.

- If your server has an iLO Manageability card:
Run the iLO Manageability card bp command to reset the administrator and user passwords (see “iLO MP Command Reference” on page 211).
- If your server does not have an iLO Manageability card, you must reset the passwords using a jumper on the system board:

Step 1. Power down the server and unplug the AC power cord.

Step 2. Place a jumper between pins 7 and 8 on J96 located on the system board near the battery.

Figure C-2 Password Reset Jumper



Step 3. Plug in the AC power cord and wait for the BMC heartbeat LED on the system board to start blinking green. This should take about 5 seconds from the time you plug in the power cord.

Step 4. Unplug the AC power cord again and remove the jumper.

Step 5. Plug in the power cord and boot the server.

Step 6. The passwords have been cleared. Follow the instructions above to set new server passwords.

Step 7. Store the server in a secure location and keep the server case locked at all times to protect against unauthorized access.

iLO MP

The **Integrated Lights-Out Management Processor** (iLO MP) offers remote server management through an independent management processor (MP). It provides a way for you to connect to a server and perform administration or monitoring tasks for the server hardware. iLO MP is available whenever the server is connected to a power source, even if the server main power switch is in the off position.

iLO controls power, reset, and Transfer of Control (TOC) capabilities; provides console access; displays and records system events; and can display detailed information about the various internal subsystems. iLO also provides a virtual front panel that you can use to monitor server status and see the state of front panel LEDs. All iLO functions are available through the server LAN and the local RS-232 and remote RS-232 ports. Access to local and remote ports, telnet, and secure shell (SSH) is through the iLO text interface, while Web access is through a graphical user interface (GUI).

iLO was introduced into most Integrity Entry Class servers in late 2004. Prior to that, embedded remote server management was referred to as management processor functionality. All legacy MP functionality has been carried forward and combined with new features, all under the heading of “iLO MP”. Therefore, “iLO” and “MP” mean the same thing for Entry Class servers.

Firmware version E.03.13 (or later) supports the following iLO MP features:

- Always-on capability: iLO is active as long as the power cord is plugged in
- Multiple access methods: Local, remote, telnet, SSH use the iLO text interface. Web access uses a GUI.
 - Local Serial Port: Use a terminal or laptop computer for direct connection.
 - Remote/Modem Serial Port: Use a dedicated modem RS-232 port and external modem.
 - LAN: Use telnet, Web, or SSH to access iLO LAN.
- Remote power cycle; power on or power off; reset
- Mirrored console: The system console output stream is reflected to all connected console users, and any user can provide input.
- Independent, non mirrored sessions (from local and modem ports)
 - Direct session with OS using the iLO MP command `SE`
 - Connection to another iLO using the iLO MP command `CSP`
- Display of information about various internal subsystems
 - Field replaceable unit (FRU) information
 - System power state, temperature information, and fan status
 - Status of processors
- Logging, display, and keyword search of:
 - System console history
 - System events
- User access control
- DHCP and DNS support
- IPMI over LAN
- Licensing

- iLO Advanced Pack features, such as SSH access, group actions capability, and LDAP

NOTE A complete description of the iLO MP is provided in the *HP Integrity and HP 9000 Integrated Lights-Out Management Processor Operations Guide*.

Configuring the iLO MP LAN Port IP Address

By connecting the iLO MP LAN port to an active network, you have two options for configuring an IP address. The first option is to use a DHCP server, which automatically assigns an IP address, and the other is to use the ping command from another host on the same subnet to set a static IP address for the iLO MP. After the IP address has been set, you can establish a telnet session to configure additional parameters.

If you are using a DHCP server, and it provides the Domain Name, and if the primary DNS server accepts dynamic DNS (DDNS) updates or has been configured through the DHCP server, then you can use a default host name to connect to the iLO MP through telnet. The default host name is 14 characters long, consisting of the letters “mp” followed by the 12 characters of the Media Access Protocol (MAC). See “Configure an IP Address” on page 207 to determine the MAC address. If no DNS access is available, the telnet session can use the assigned IP address.

If you are using DHCP, proceed to “Accessing the iLO MP” on page 207. For more information on configuring DHCP, see “Configuring the iLO MP LAN Information” on page 209. For a non-DHCP implementation, perform the following steps to configure a static IP address.

Configuring a Static IP Address (Non-DHCP)

To configure a static IP address for the iLO MP LAN port, follow these steps:

1. Set up local terminal access.
2. Configure the IP address.

Set Up Local Terminal Access After powering on the terminal, ensure the communications settings are as follows:

- 8/none (parity)
- 9600 baud
- None (receive)
- None (transmit)

If the terminal is a PC using Reflection 1, check or change these communications settings by performing the following steps:

Step 1. From the Reflection 1 Main screen, pull down the Connection menu and choose **Connection Setup**.

Step 2. Choose **Serial Port**.

Step 3. Choose **Com1**.

Step 4. Check the settings and change, if required.

Go to More Settings to set Xon/Xoff. Click **OK** to close the More Settings window.

Step 5. Click **OK** to close the Connection Setup window.

Step 6. Pull down the Setup menu and choose **Terminal** (under the Emulation tab).

Step 7. Choose a supported terminal type.

The preferred type is VT100.

Step 8. Click **Apply**.

This option is not highlighted if the terminal type you want is already selected.

Step 9. Click **OK**.

Configure an IP Address To configure the iLO MP LAN static IP address, perform the following steps:

Step 1. Determine the Media Access Control (MAC) address of the iLO MP LAN interface by viewing the label located at the rear of the server.

Step 2. Connect a LAN cable on your local subnet to the core I/O LAN port.

Step 3. Add an Address Resolution Protocol (ARP) table entry to another host located on your local subnet. This ARP table entry maps the MAC address of the core I/O LAN interface to the IP address chosen for that interface.

NOTE Adding an entry to the ARP table is typically done using the ARP command with the appropriate option. For example, **arp -s** is used with Windows. Consult your operating system documentation for more information.

Step 4. Use the **ping** command from the host that has the new ARP table entry. The destination address is the IP address that is mapped to the MAC address of the iLO MP. The iLO MP LAN port should now be configured with the appropriate IP address.

Step 5. Use the **telnet** command to connect to the iLO MP from a host on the local subnet.

Accessing the iLO MP

You can connect to the iLO MP using the following methods:

- The local serial port using a local terminal
- The remote Customer Service Modem (CSM) port using external modem (dial-up) access, if remote modem access is configured
- The iLO MP LAN port using the Web interface, telnet, or SSH, if login access through the iLO MP LAN is enabled

Local Terminal Access to the iLO MP

Establish communication with the iLO MP by connecting a terminal to the local CSM I/O serial port.

Establish a terminal session using a standalone terminal or using terminal emulation software, such as HyperTerm, Putty, or Reflection 1 running on a PC.

During installation, communicating with the iLO MP enables such tasks as:

- Verifying that the components are present and installed correctly
- Configuring the LAN port

Interacting with the iLO MP

To interact with the iLO MP command line interface, perform the following steps:

NOTE On initial server installation, the iLO MP has two default user accounts:

- All Rights (Administrator) level user; login = Admin, password = Admin (both are case sensitive).
- Console Rights (Operator) level user; login = Oper, password = Oper (both are case sensitive).

For security reasons, HP recommends that you use the UC command during the initial logon session to modify default passwords (enter **CM** at the MP> prompt, and enter **UC** at the MP:CM> prompt).

IMPORTANT If default users such as Admin are modified, configuration parameters in HP Systems Insight Manager (HP SIM) need to be changed for the group actions feature to work properly. For more information regarding HP SIM, refer to the HP Systems Insight Manager User and Installation Guide at the following web site: www.hp.com/go/hpsim.

Step 1. Log in using your iLO MP user account name and password.

NOTE If you are logged in, the **iLO MP Main Menu** displays. To follow this procedure, make sure you are at the **iLO MP Main Menu**. Use **Ctrl+B** to return to the **iLO MP Main Menu**.

Step 2. Use the iLO MP menus and commands as needed. Main Menu commands are shown in “iLO MP Main Menu”. You can access commands not displayed in the iLO MP Main Menu in command mode by first using the CM command at the MP prompt. You can display a list of available commands using the iLO MP help function. Initiate the help function from either the iLO MP Main Menu or the Command Menu prompts by entering **HE** followed by **LI**. You can return to the iLO MP Main Menu by pressing **Ctrl+B**.

Step 3. Log out using the X command (enter **X** at the MP> prompt) after returning to the iLO MP Main Menu.

iLO MP Main Menu

Following are the iLO MP Main Menu commands:

```
MP MAIN MENU:
CO: Console
VFP: Virtual Front Panel
CM: Command Menu
CL: Console Logs
SL: Show Event Logs
CSP: Connect to Service Processor
SE: Create OS Session
HE: Main Menu Help
X: Exit Connection
```

NOTE The previous example shows the Main Menu screen accessed through the local serial or remote modem ports. The list of commands displayed might be different and depends on your method of access to the iLO MP.

Configuring the iLO MP LAN Information

LAN information includes the iLO MP network name, IP address information, and configuring DHCP and DNS service information.

To configure the iLO MP LAN IP address:

Step 1. At the iLO MP Main Menu prompt (MP>), enter **CM** to choose command mode.

Step 2. At the command mode prompt (MP:CM>), enter **LC** (for LAN configuration).

The screen displays the default values and asks if you want to modify them. It is good practice to write down the information, because you might need it for future troubleshooting. See “The LC Command Screen” on page 210.

NOTE The default value in the “IP address” field is set at the factory. You must configure the actual iLO MP LAN IP address.

Step 3. The screen displays the current LC data. When prompted to enter a parameter name, **A** to modify All, or **Q** to Quit, enter **A** to choose all parameters.

Step 4. The screen displays the current DHCP status. If DHCP is used to acquire IP address information, enter **E** to enable, **D** to disable, or **Q** unless you are using the local serial port.

Step 5. Enter the **LC** command to disable DHCP.

CAUTION Modifying the DHCP status, IP address, gateway IP address, or subnet mask parameters drops all present LAN and Web connections.

NOTE Changing DHCP status to Enabled or Disabled resets IP address, gateway IP address, and subnet mask parameters to factory default values. If DHCP status was changed to disabled, you can change the values.

If the IP address, gateway IP address, and subnet mask are obtained through DHCP, you cannot change them without first disabling DHCP.

Step 6. The screen displays the current IP address. When prompted to enter a new value or **Q**, enter the new IP address.

Step 7. The screen displays the current host name. When prompted to enter a new value or **Q**, enter the new iLO MP network name.

This is the host name for the iLO MP LAN displayed at the command prompt. It is also used to identify the iLO MP LAN interface in a DNS database. The name can be up to 64 characters in length, and must start with a letter, end with a letter or number, and contain only letters, numbers, or dashes.

NOTE The host name is not case sensitive.

- Step 8.** The screen displays the current subnet mask name. When prompted to enter a new value or **Q**, enter the new subnet mask name.
- Step 9.** The screen displays the current gateway address. When prompted to enter a new value or **Q**, enter the new gateway address.
- Step 10.** The screen displays the current link state information. When prompted to enter a new value or **Q**, press **enter**. The message -> Current Link State has been retained displays.
- Step 11.** The screen displays the current Web console port number. When prompted to enter a new value or **Q**, press **enter**. The message -> Current Web Console Port Number has been retained displays.
- Step 12.** The screen displays the current SSH console port number. When prompted to enter a new value or **Q**, press **enter**. The message -> Current SSH Console Port Number has been retained displays.

NOTE SSH settings will not display if you do not have Integrated Lights-Out Advanced Pack licensing.

- Step 13.** The screen displays a new **LC** listing, including the values entered in the preceding steps. Verify that the desired values have been accepted. When prompted to enter a parameter for revision, **Y** to confirm, or **Q** to Quit, enter **Y** to confirm all parameters.

```
-> Check all LAN parameters to ensure they are correct before commit.  
-> "SP_NAME_STR" will be reset if you confirm the changes.  
MP Host Name: mpserver
```

- Step 14.** Enter **XD -reset** to reset the iLO MP (only necessary if you are connected through a serial port).
- Step 15.** After the iLO MP resets, log in to the iLO MP again. Enter the iLO MP command mode (enter **CM** at the **MP:** prompt).
- Step 16.** At the **MP:CM>** prompt, enter **LS** to confirm the new LAN settings.
- Step 17.** Enter **SA** to enable or disable the Web console and telnet access after the iLO MP has been reset.

NOTE HP recommends disabling access methods that you do not intend to use. For example IPMI over LAN. IPMI over LAN allows access to the iLO MP through the LAN and has no password by default. HP recommends disabling this port if IPMI management console software is not being used in your data center (use the **SA** command). If console management tools are being used, HP recommends using the tools to set a password on the IPMI over LAN port.

The LC Command Screen

The following screen shows **LC** command output:

```
MP:CM> LC -nc  
Current LAN Configuration:  
  MAC Address       : 0x0060b0f54c51  
  DHCP Status      : Enabled  
  IP Address        : 127.1.1.1
```

```

MP Host Name       : maestro
Subnet Mask        : 255.255.248.0
Gateway Address    : 127.1.1.1
Link State         : Auto Negotiate
Web Console Port Number : 2023
SSH Access Port Number : 22
IPMI/LAN Port Number : 626
LAN status: UP and RUNNING
-> Command successful.

```

NOTE The SSH console port number does not display if you do not have Integrated Lights-Out Advanced Pack licensing.

iLO MP Command Reference

There are two menus from which commands are executed: the iLO MP Main Menu and the Command Menu. You access the Command Menu by first using the `CM` command at the `MP>` prompt.

The following tables provide a reference for commands available through the command line interface.

iLO MP Main Menu Commands

Commands are listed in Table C-9.

Table C-9 iLO MP Main Menu Commands and Descriptions

Command	Description
CL	View console log
CM	Enter command mode
CO	Select console mode
CSP	Connect to another service processor
HE	Display help for menu or command
SE	Enter OS session
SL	Show event logs
VFP	Display virtual front panel
X	Exit

Command Menu Commands

Commands are listed in Table C-10.

Table C-10 Command Menu Commands and Descriptions

Command	Description
BP	Reset BMC passwords
CA	Configure async or serial ports
DATE	Display the current date

Table C-10 Command Menu Commands and Descriptions (Continued)

Command	Description
DC	Default configuration
DF	Display field replaceable unit (FRU) information
DI	Disconnect remote or LAN console
DNS	Set DNS configuration
FW	Upgrade iLO MP firmware
HE	Display help for menu or command
ID	Display or modify server information
IT	Modify iLO MP inactivity timers
LC	LAN configuration
LDAP	LDAP configuration
LM	License management
LOC	Display and configure locator LED
LS	LAN status
MR	Modem reset
MS	Modem status
PC	Remote power control
PG	Paging parameter setup
PR	Power restore
PS	Power management module status
RB	Reset BMC
RS	Reset server through RST signal
SA	Set access options
SO	Configure security options
SS	Display server processor status
SYSREV	Display all firmware revisions
TC	Reset through transfer of control (TOC)
TE	Tell (send a message to other users)
UC	User configuration
VDP	Display virtual diagnostic panel LEDs
WHO	Display connected iLO MP users
XD	Diagnostics or reset of iLO MP

A

acetone, 136
 activity LED, 115
 adapter
 slot number, determining with `info` command, 189
 ammonia, 136
 anti-static wrist strap, 46
 autoboot, 149

B

baseboard management controller, 27
 benzene, 136
 block diagram
 memory, 24
 system board, 22
 BMC, 27
 BMC commands, 128
 BMC LED, 130
 boot
 EFI boot manager, 168
 boot configuration menu, 194
 boot options list, 148
 adding HP-UX, 150
 adding Linux, 163
 adding OpenVMS, 155
 adding Windows, 159
 booting
 HP-UX, 149
 LVM maintenance mode, 154
 single-user mode, 152
 Linux, 163
 OpenVMS, 155
 Red Hat Linux, 164
 SuSE Linux, 165
 from EFI shell, 165
 Windows, 159

C

caution
 light pipes, 116
 changing your password, 203
 chip sparing, 25, 67
 cleaning your server, 136
 command interface *See* MP Main Menu commands
 command line interface commands, 128
 Command Menu commands, 211–212
 commands
 devtree
 controller handle, determining, 191
 EFI-capable devices and controller handles,
 displaying, 190
 drvcfg
 EFI configurable components, displaying, 191
 EFI driver handle, determining, 191
 EFI SCSI setup utility, starting, 191
 info
 adapter slot number, determining, 189
 adapter's path, determining, 190
 component locations, 47

configurable components, EFI capable, displaying,
 191
 connector locations, 48
 control panel LEDs, 32
 controller handle, determining, 191
 controls
 CD/DVD controls, 34, 35
 control panel, 32
 hard disk drive controls, 34
 core I/O specifications
 external, 20
 internal, 20
 customer support, 137

D

data paths, 28
 ACPI, 194
 DDNS, 206
 devtree command
 controller handle, determining, 191
 EFI-capable devices and controller handles,
 displaying, 190
 diagnostic LEDs, 33
 diagnostics, 133
 dimensions of server, 19
 DIMMs
 chip spare functionality, 25
 installing, 67
 matched pairs, 67
 remove and replace, 65
 slot locations on system board, 66
 specifications, 24
 supported sizes, 65
 disk drive *See* hard disk drives
 drvcfg command
 EFI configurable components, displaying, 191
 EFI driver handle, determining, 191
 EFI SCSI setup utility, starting, 191
 dual serial controller, 26
 DVD drive
 controls and indicators, 34, 35
 DVD drive LEDs, 35
 dynamic DNS *See* DDNS

E

EEPROM, 25
 EFI
 capable devices
 and controller handles, displaying, 190
 commands, 170–172
 configurable components, displaying, 191
 driver handle, determining, 191
 EFI boot manager, 168
 EFI SCSI setup utility
 starting, 191
 EFI/POSSE, 172–187
 EFI/POSSE commands, 172
 electrically erasable programmable read-only
 memory, 25
 ethernet card LAN LEDs, 38, 39
 extensible firmware interface, *See* EFI

Index

F

F/W LED, 130
fault LED warnings, 121
fault management, 135
field programmable gate array, 26
field replaceable unit, FRU
 list of, 140
FPGA, 26
front bezel, remove and replace, 52
front panel
 controls, 32
 LEDs, 32
FSB, 23

G

gigabit LAN, 131, 132

H

handle
 controller, determining, 191
hard disk drive
 backplane, remove and replace, 101
 LEDs, 34
 locking and unlocking, 58
 modules, 115
 remove and replace, 58
hard disk drives
 specifications, 21
HDD *See* hard disk drive
Hot-swap disk drive module, 115
hot-swap vs hot-plug, 53
HyperTerm, 206

I

I/O bus interface, 25
I/O controller, 23
iLO
 overview, 205–206
 See also MP
indicators, LED, 115
info command
 adapter path, determining, 190
 adapter slot number, determining, 189
integrated Lights-Out Management Processor *See*
 iLO
IPMI, 27

J

jumper, password reset, 204

L

LAN, 131
LAN A LEDs, 38
LAN B LEDs, 39
LAN LEDs, 33, 131
LAN port
 configuring a static IP address (non-DHCP), 206
 configuring the IP address, 206–207
LED status panel

 remove and replace, 91
LED warnings
 fault, 121
 system, 122
LEDs, 115, 116, 120
 control panel, 32
 diagnostic, 33
 DVD, 35
 DVD drive, 35
 ethernet LAN, 38, 39
 front control panel, 32
 front panel, 32
 hard disk drive, 34
 LAN, 33, 38, 39
 troubleshooting, 131
 LAN A, 38
 LAN B, 39
 locator, 33
 MP, 40
 MP LAN, 40
 troubleshooting, 132
 power supply, 34
 rear panel, 36
 system, 33
 system board, 130
lighter fluid, 136
locator LEDs, 33

M

Management Processor *See also* iLO, MP
memory *See* DIMMs
memory airflow guide, remove and replace, 62
memory architecture, 24
memory block diagram, 24
memory controller, 23
memory specifications, 19
MP
 accessing, 207
 commands, 210
 configuring for LAN, 209
 interacting with, 208
 LAN, 40
 LEDs, 40
 local terminal access to, 207
 Main Menu, 208
MP card
 remove and replace, 87
MP card battery
 remove and replace, 89
MP LAN LEDs, 40
MP LAN port IP address
 configuring a static IP address (non-DHCP), 206
 configuring an IP address (DHCP), 209
 LC command, 210
MP Main Menu commands, 211
MP *See also* iLO

O
online support, 137
online support tools, 134

operating systems supported, 148
OS *See* operating system

P

parts list, 140
password reset jumper, 204
password reset options, 203
path, determining for adapter
 with `info` command, 190
paths
 ACPI, 194
 data, 28
PCI, 25, 27
PCI/AGP backplane
 remove and replace, 83
PCI and graphics cards
 remove and replace, 79
PCI backplane, 19
PDH, 26
phone support, 138
power, 116
 states, 42
power and system LEDs, 116
power button, 32, 33
power off the server
 using the MP, 42
 using the power button, 43
power on the server
 using the MP, 43
 using the power button, 44
power states
 full power, 42
 off, 42
 standby power, 42
power supply
 remove and replace, 56
power supply interface module
 remove and replace, 98
power supply LEDs, 34
power supply, remove and replace, 56
Pre-OS System Environment *See* EFI/POSSE, 168
processor
 location, 69
 socket specifications, 23
 specifications, 19
processor airflow guide
 remove and replace, 62
processor airflow guide, remove and replace, 62
processor bus, 23
processor dependent hardware controller, 26
processor module
 remove and replace, 68
Putty, 206

R

rear panel
 LEDs, 36
 ports, 36
Reflection 1, 206
removable media drive
 remove and replace, 85

remove and replace
 DIMMs, 65
 front bezel, 52
 hard disk drive, 58
 hard disk drive backplane, 101
 internal hard disk drive, 58
 LED status panel, 91
 memory airflow guide, 62
 MP card, 87
 MP card battery, 89
 PCI/AGP backplane, 83
 PCI and graphics cards, 79
 power supply, 56
 power supply interface module, 98
 processor airflow guide, 62
 processor module, 68
 removable media drive, 85
 system battery, 77
 system board, 92
 system covers and bezels, 49
 system fans, 54
 system memory, 65
 top metal cover, 50

S

safety information, 46
SCSI, 27
 setup utility, 188
 specifications, 20
 specifying parameters, 187
SCSI adapter
 path
 determining with `info` command, 190
security configuration menu, 203
SEL, 116, 117
server component locations, 47
server dimensions, 19
server power states, 42
server weight, 19
service tools, 46
shut down
 HP-UX, 154
 Linux, 166
 OpenVMS, 158
 Windows, 161
 from command line, 162
slot number of adapter, determining with `info`
 command, 189
static IP address (non-DHCP)
 configuring, 207
 configuring the MP LAN port, 206
 set up local terminal access, 206
STBY LED, 130
subsystem, 23
support
 online, 137
 phone, 137
supported operating systems, 148
system battery
 remove and replace, 77

Index

- System board, 130
- system board
 - block diagram, 22
 - components, 22
 - connectors and slots, 48
 - remove and replace, 92
- system board LEDs, 130
- system configuration menu, 202
- system covers and bezels
 - remove and replace, 49
- System Event Log, 116
- system fans
 - remove and replace, 54
- system fans, remove and replace, 54
- system LED warnings, 122
- system LEDs, 33, 116
- system memory
 - remove and replace, 65

T

- terminal access, 206
- tools required, 46
- top metal cover, remove and replace, 50
- trichlorethylene, 136

U

- unlocking a hard disk drive, 58
- USB specifications, 28

W

- weight of server, 19

Z

- ZX1 I/O, 23