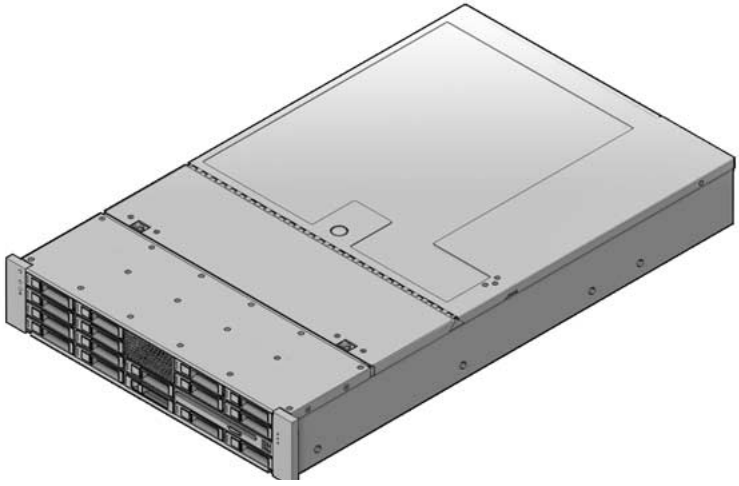
Sun Fire™ X4250 Server Service Manual

For 2U Systems



Sun Microsystems, Inc.
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Contents

Preface

The *Sun Fire X4250 Server Service Manual* provides detailed procedures for removing and replacing replaceable parts in the Sun Fire™ X4250 server. This manual also includes information about the use and maintenance of the server.

This document is written for technicians, system administrators, authorized service providers (ASPs), and users who have advanced experience troubleshooting and replacing hardware.

How This Document Is Organized

This manual contains the following chapters.

TABLE P-1 Sun Fire X4250 Service Manual Chapters

Chapter	Describes:
Chapter 1	"Sun Fire X4250 Server Overview" provides an overview of the system, including front and back panel features, and contains illustrations showing system components.
Chapter 2	"Preparing to Service the System" describes the steps necessary to prepare the system for service.
Chapter 3	"Servicing Customer-Replaceable Devices" describes the service procedures that can be done while the system is running (hot serviceable procedures).
Chapter 4	"Servicing Motherboard Components" describes the service procedures for the motherboard and its associated components, including installing and upgrading memory modules (FB-DIMMs).
Chapter 5	"Servicing Infrastructure Boards and Components" describes the service procedures for all other components.

TABLE P-1 Sun Fire X4250 Service Manual Chapters *(Continued)*

Chapter	Describes:
Chapter 6	"Returning the Server to Operation" describes how to bring the server back to operation after performing service procedures.
Appendix A	"Connector Pinouts" contains pinout tables for all external connectors.
Appendix B	"BIOS Power-On Self-Test (POST) Codes" contains details to interpret BIOS POST codes.
Appendix C	"BIOS Screens" contains examples of typical BIOS screens.

Related Documentation

To view the latest Sun Fire X4250 server documentation online, go to `http://docs.sun.com`, and then navigate to Sun Fire X4250 Server documentation.

The following table lists the available documents.

TABLE P-2 Sun Fire X4250 Server Related Documentation

Application	Title	Part Number	Format	Location
Additional documentation	*Where To Find Sun Fire X4250 Documentation*	820-4212	Printed PDF	Shipping kit Online
Late-breaking information	*Sun Fire X4450 Server Product Notes*	820-4211	HTML PDF	Online
Safety and regulatory compliance	*Sun Fire X4450 Server Compliance and Safety Manual*	820-2704	HTML PDF	Online

Application	Title	Part Number	Format	Location
Installation	*Sun Fire X4450 Server Installation Guide*	820-4217	HTML Printed PDF	Shipping kit Online
Service processor	*Sun Integrated Lights Out Manager 2.0 User's Guide*	820-1188	HTML PDF	Online
	Sun Integrated Lights Out Manager 2.0 User's Guide	820-4198		
	Sun Fire X4250 Server ILOM Supplement	820-4978		
Troubleshooting	*Sun Fire X4150, X4250, and X4450 Servers Diagnostics Guide*	820-4213	HTML PDF	Online

Before You Read This Document

To fully use the information in this document, you must have thorough knowledge of the topics discussed in the *Sun Fire X4450 Server Product Notes.*

Sun Online

The following table shows where to find Sun documents online.

TABLE P-3 Sun Fire X4250 Online Documents

Sun Function	URL	Description
Sun Documentation	`http://docs.sun.com`	You can navigate to the Sun Fire X4250 server document page and then download PDF and view HTML documents.
Support	`http://www.sun.com/support/`	Obtain technical support and download patches.

Sun Function	URL	Description
Training	http://www.sun.com/training/	Learn about Sun courses.
Warranty	http://www.sun.com/service/support/warranty/index.html	Obtain specific details regarding your warranty.
Feedback	http://www.sun.com/hwdocs/feedback/	Submit your comments.

Safety Symbols

Note the meanings of the following symbols that might appear in this document.

Caution – There is a risk of personal injury or equipment damage. To avoid personal injury and equipment damage, follow the instructions.

Caution – Hot surface. Avoid contact. Surfaces are hot and might cause personal injury if touched.

Caution – Hazardous voltages are present. To reduce the risk of electric shock and danger to personal health, follow the instructions.

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Sun is interested in improving its documentation and welcomes your comments and suggestions. To submit your comments, go to:

http://www.sun.com/hwdocs/feedback

Please include the title and part number of your document with your feedback:

Example: *Sun Fire X4250 Server Service Manual*, part number 820-4214-11.

CHAPTER 1

Sun Fire X4250 Server Overview

This chapter provides an overview of the features of the Sun Fire X4250 Server.

The following information is included:

1.1 Product Description

The Sun Fire X4250 Server is an enterprise-class two-socket rackmount x64 system powered by either a Dual-Core or Quad-Core Intel® Xeon® processor, packing high performance and room for growth with six PCIe slots and 16 DIMM slots into a compact 2-RU footprint.

The product features are listed in TABLE 1-1.

TABLE 1-1 Sun Fire X4250 Server System Features

Feature	Description (Sun Fire X4250)
Processor	• Quad-Core Intel Xeon processor 5400 series or Dual-Core Intel Xeon processor 5200 series • Supports up to 2 processors (8 CPU cores) with 2 Intel processor sockets (dual core or quad core)
Memory	16 slots for FB-DIMMS: Up to 64 GB (16 x 4 GB) of PC2-5300 667 MHz ECC fully buffered FB-DIMM memory
Ethernet ports	4 ports, 10/100/1000 Mbps, auto-negotiating through two separate controllers
Internal drives	• Up to 16 SAS disk drives, SFF SAS 73-GB or 146-GB 2.5-inch form factor (hard drives). Up to 8 SSDs maximum plus 8 additional hard drives. • Support for hardware-embedded RAID 0 (striping) and RAID 1 (mirroring) • Optional RAID Levels 0, 1, IE, 5, 5EE, 6, 10, 50, 60 with SAS drives
Removable media	1 slimline DVD drive, supporting CD-R/W, CD+R/W, DVD-R/W, DVD+R/W
USB ports	5 USB 2.0 ports: 2 in front, 2 in rear, plus 1 internal USB port
Service ports	• 1 RJ-45 serial management port (SER MGT) (default connection to access service processor) • 1 10-MB network management port (NET MGT) (to access service processor) • HD-15 VGA video port
Cooling	• 6 hot-swappable system fan modules (2 fans per module) • An air duct facilitates processor/memory airflow
PCI interfaces	6 standard low-profile PCIe slots on three riser boards
Power	• AC power: 100–120/200–240 V AC, 12/6 A, 50–60 Hz • 1 or 2 hot-swappable 1100W power supply units (PSUs) to provide N+N redundancy, with energy efficient design

TABLE 1-1 Sun Fire X4250 Server System Features *(Continued)*

Feature	Description (Sun Fire X4250)
Remote management	On-board integrated LOM service processor providing: • DMTF CLP-based Command Line Interface (CLI) over SSH • Web-based browser interface GUI over HTTPS • IPMI 2.0 • SNMP (v1, v2c, and v3) • Remote graphical access (remote KVM) over Ethernet • Remote storage over Ethernet
Operating system	Solaris™ 10, Update 5 or later. Solaris 10 OS with specific Sun Fire X4250 software components Supports: • Red Hat Enterprise Linux 4 U5 (AS) (32-bit/64-bit) or later • Red Hat Enterprise Linux 5 (32-bit/64-bit) or later • SUSE Linux Enterprise Server 10 SP1 (64-bit) or later • VMware ESX 3.0.2 or later • Windows Server 2003 (32-bit/64-bit) SP2 or greater (Standard Edition/ Enterprise Edition) **Note -** OSes change frequently. Refer to your product web page for updates.
Other software	Java™ Enterprise System with a 90-day trial license

1.2 Sun Fire X4250 Server Chassis Overview

The Sun Fire X4250 Server is based on an all-new chassis family.

- Section 1.2.1, “Infrastructure Boards” on page 1-4
- Section 1.2.2, “System Cables” on page 1-5
- Section 1.2.3, “Dimensions” on page 1-6

1.2.1 Infrastructure Boards

The Sun Fire X4250 has the following boards installed in the chassis. The boards are listed in TABLE 1-2.

TABLE 1-2 Infrastructure Boards

Board	Description	Reference
Motherboard **FRU**	The motherboard includes CPU modules, slots for 16 DIMMs, memory control subsystems, and the SP service processor (ILOM) subsystem. The service processor (integrated LOM) subsystem controls the host power and monitors host system events (power and environmental). The integrated LOM controller draws power from the host's 3.3V standby supply rail, which is available whenever the system is receiving AC input power, even when the system is turned off.	Section 4.6, "Servicing the Motherboard Assembly" on page 4-24 Refer to the Sun Fire 4150, 4250 and 4450 Diagnostic Guide for iLOM sensor information.
Power distribution board **FRU**	This board distributes main 12V power from the power supplies to the rest of the system. It is directly connected to the paddle card, and to the motherboard via a bus bar and ribbon cable. It also supports a top cover interlock ("kill") switch. In the Sun Fire X4250, the power supplies connect directly to the power distribution board.	Section 5.5, "Servicing the Power Distribution Board (PDB)" on page 5-13
Paddle card **FRU**	This board serves as the interconnect between the power distribution board and the fan power boards, drives backplane, and I/O board.	Section 5.7, "Servicing the Paddle Card" on page 5-18
Fan power boards (2) **FRU**	These boards carry power to the system fan modules. In addition, they contain fan module status LEDs, and transfer I^2C data for the fan modules.	Section 5.1, "Servicing the Fan Power Boards" on page 5-2
Drives backplane **FRU**	This board includes the connectors for the drives, as well as the interconnect for the I/O board, Power and Locator buttons, and system/component status LEDs. The Sun Fire X4250 has a 16-disk backplane. Each drive has an LED for power/activity, fault, and ok-to-remove.	Section 5.3, "Servicing the Drives Backplane" on page 5-9
Front I/O board **FRU**	This board carries the front panel USB connections from the drives backplane. The board connects directly to the drives backplane. It is packaged with the DVD drive as a single unit.	Section 3.5, "Servicing the DVD/USB Module" on page 3-20
PCIe risers **FRU**	In the Sun Fire X4250, each riser supports two PCIe cards. There are three risers per system, each attached to the rear of the motherboard.	Section 4.3, "Servicing PCIe Risers" on page 4-13

1.2.2 System Cables

The Sun Fire X4250 internal cables are listed in TABLE 1-3. FIGURE 1-1 shows the system cables on the Sun Fire X4250.

FIGURE 1-1 System Cables

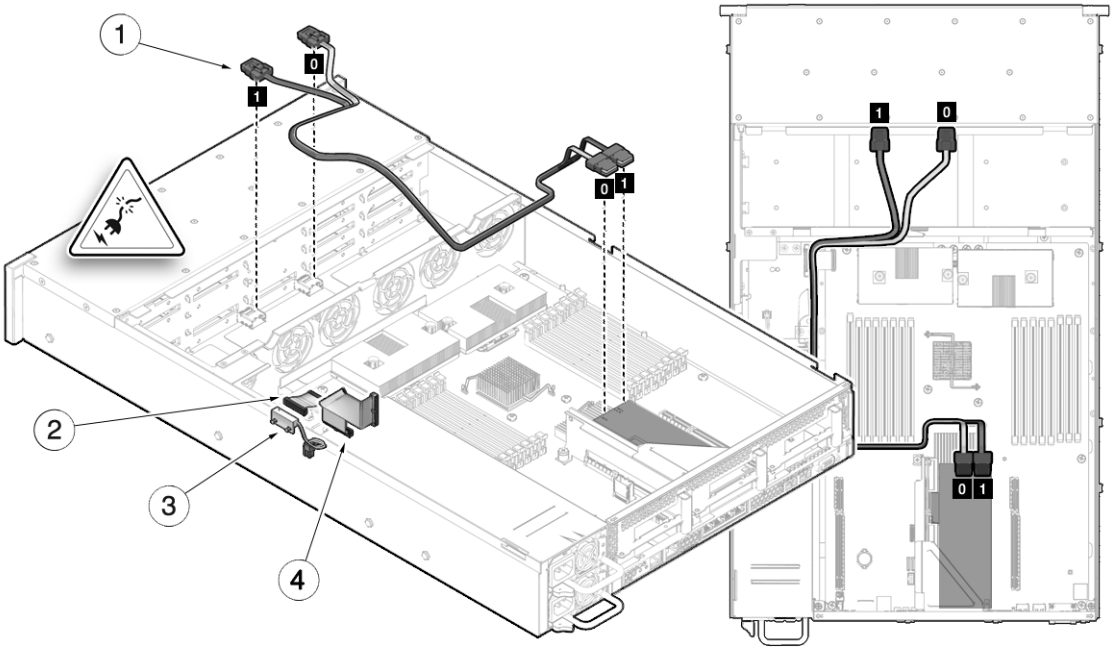


TABLE 1-3 Sun Fire X4250 Server Cables (SAS)

	Cable	Connects...
1	Drive data cables (2)	Between the HBA PCI-Express Card and the drives backplane
2	Motherboard to PDB cable	Between the power distribution board and the motherboard
3	Top cover interlock cable	Removes power when cover opens.
4	PDB ribbon cable	To the power distribution board

1.2.3 Dimensions

The 2U chassis form factor dimensions are listed in TABLE 1-4.

TABLE 1-4 Sun Fire X4250 Server Dimensions

Dimension	Sun Fire X4250
Height	87.85 mm/3.46 inches
Width	445.71 mm/17.55 inches (includes ears - chassis is 425.46 mm/ 16.75 inches)
Depth	733.65 mm/28.88 inches (includes PSU handle - the chassis is 711.25 mm/28.00 inches)
Weight	Maximum: 25.6 kg/56.3 pounds.

1.3 Sun Fire X4250 Server Front Panel Features

FIGURE 1-2 shows front panel features on the Sun Fire X4250.

FIGURE 1-2 Front Panel Features

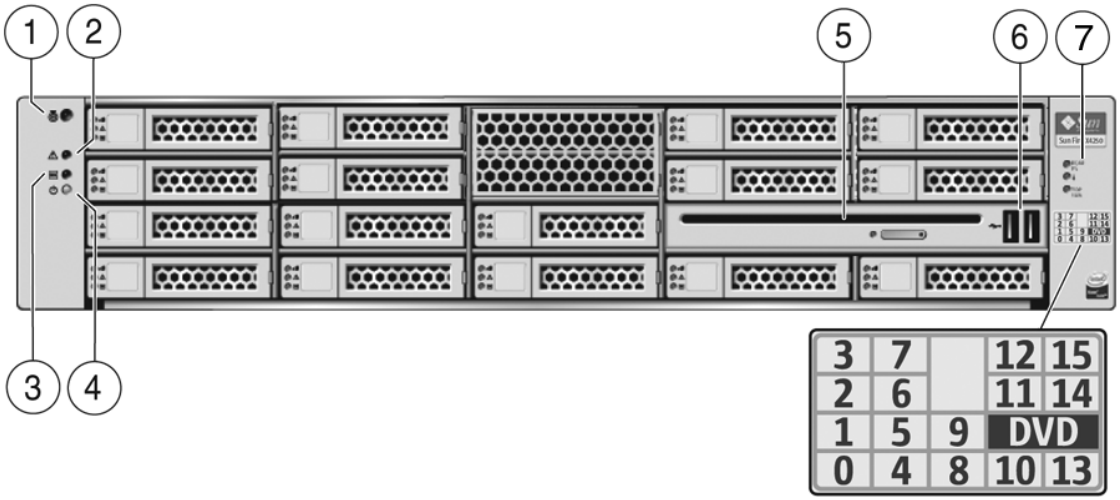


Figure Legend

1	Locator LED/Locator button (white)	**5**	DVD drive
2	Service Action Required LED (amber)	**6**	USB ports (2)
3	Power/OK LED (green)	**7**	Maintenance LEDs: *Power Supply Service Required LED (amber)* *System Overtemperature LED (amber)* *Fan Module Service Required LED (amber)*
4	Power button	**8**	Drive map

1.4 Sun Fire X4250 Server Rear Panel Features

FIGURE 1-3 shows rear panel features on the Sun Fire X4250. For more detailed information about ports and their uses, see the *Sun Fire X4450 Server Installation Guide*. For a detailed description of PCIe slots, see Section 4.3, "Servicing PCIe Risers" on page 4-13.

FIGURE 1-3 Rear Panel Features

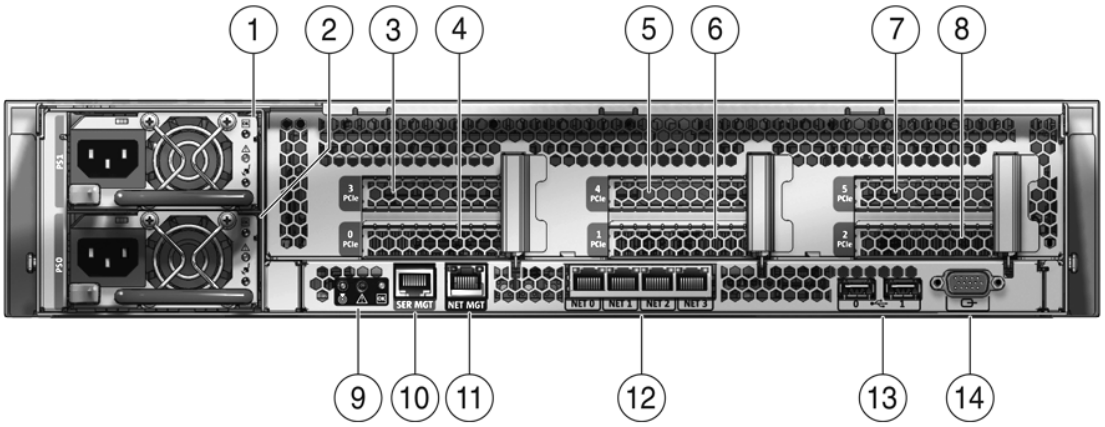


Figure Legend

1	PSU 1	**9**	Rear panel system status LEDs *Locator LED/Locator button (white)* *Service Action Required LED (amber)* *Power/OK LED (green)*
2	PSU 0 slot	**10**	Serial management port
3	PCIe 3 slot	**11**	Network management port
4	PCIe 0 slot		NMI button (Behind panel, not shown)
5	PCIe 4 slot		Reset button (Behind panel, not shown)
5	PCIe 1 slot	**12**	Gbit Ethernet ports (0, 1, 2, 3)
7	PCIe 5 slot	**13**	USB ports (0, 1)
8	PCIe 2 slot	**14**	HD15 video port

1.5 Illustrated Parts Breakdown

The following illustrations provide exploded views of system components. Use these illustrations, and the accompanying tables, to identify parts in your system.

FIGURE 1-4 I/O Components (Sun Fire X4250)

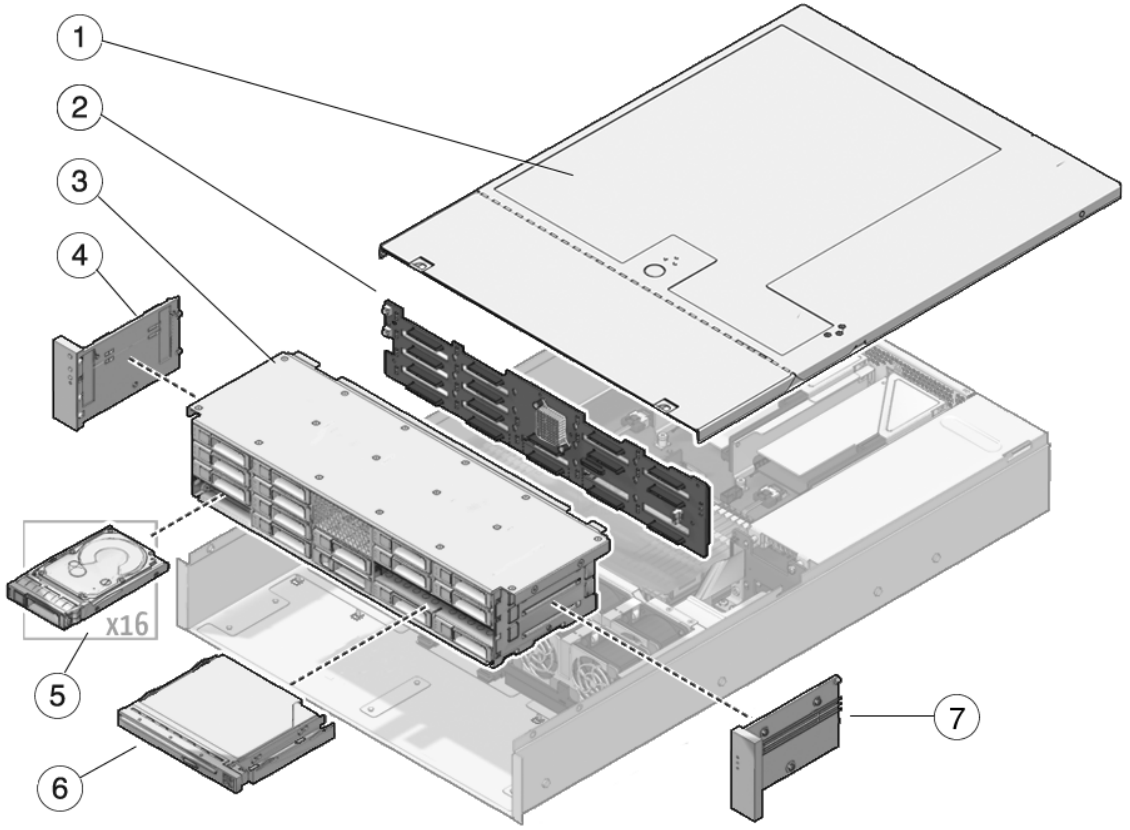


Figure Legend

1	Top cover	**5**	Drive
2	Drives backplane	**6**	DVD/USB Module
3	Drives cage	**7**	Left control panel light pipe assembly
4	Right Control Panel Light Pipe Assembly		

FIGURE 1-5 Power Distribution/Fan Module Components (Sun Fire X4250)

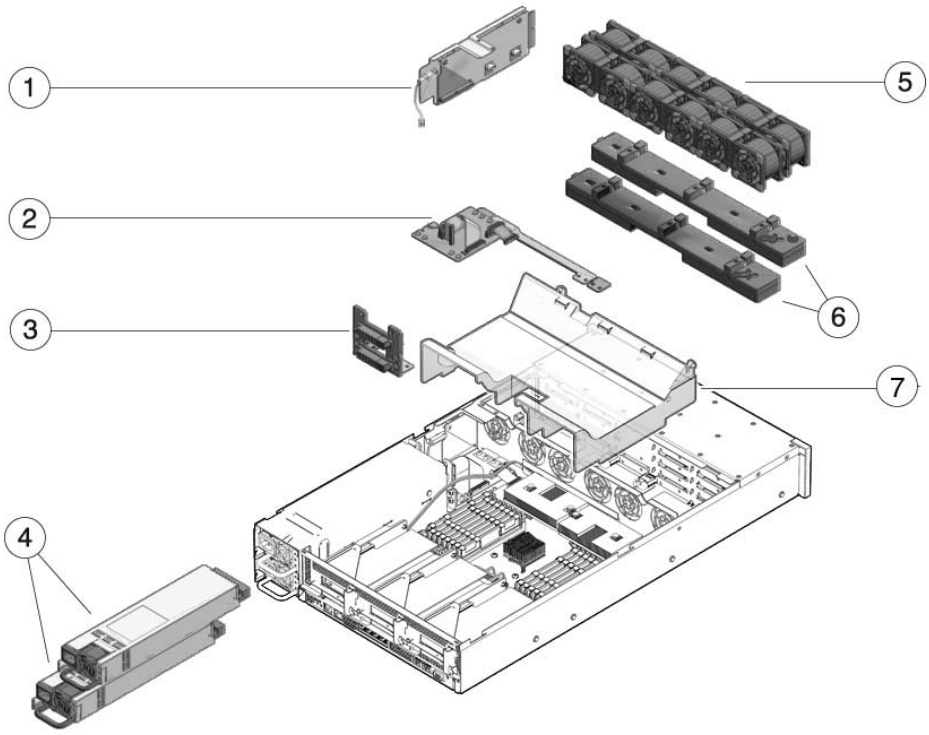


Figure Legend

1	Paddle card	**5**	Fan modules
2	Power distribution board/bus bar assembly	**6**	Fan boards
3	Vertical power distribution board	**7**	Air baffle
4	Power supplies		

Note – System cooling might be affected by dust and contaminant build-up. It is recommended that systems be opened and checked approximately every six months, or more often in dirty operating environments. Check system heat sinks, fans, and air openings. If necessary, clean systems by brushing or blowing contaminants or carefully vacuuming contaminants from the system.

CHAPTER 2

Preparing to Service the System

This chapter describes how to prepare the Sun Fire X4250 server for servicing.

The following topics are covered:

2.1 Safety Information

This section describes important safety information that you need to know prior to removing or installing parts in the Sun Fire X4250 server.

Caution – Never attempt to run the server with the covers removed. Hazardous voltage is present.

Caution – Equipment damage is possible. The covers must be in place for proper air flow.

For your protection, observe the following safety precautions when setting up your equipment:

- Follow all Sun cautions, warnings, and instructions marked on the equipment and described in *Important Safety Information for Sun Hardware Systems* (816-7190).
- Follow all cautions, warnings, and instructions marked on the equipment and described in the *Sun Fire X4450 Server Compliance and Safety Manual*.
- Ensure that the voltage and frequency of your power source match the voltage and frequency inscribed on the equipment's electrical rating label.
- Follow the electrostatic discharge safety practices as described in this chapter.

2.2 Required Tools

The Sun Fire X4250 server can be serviced with the following tools:

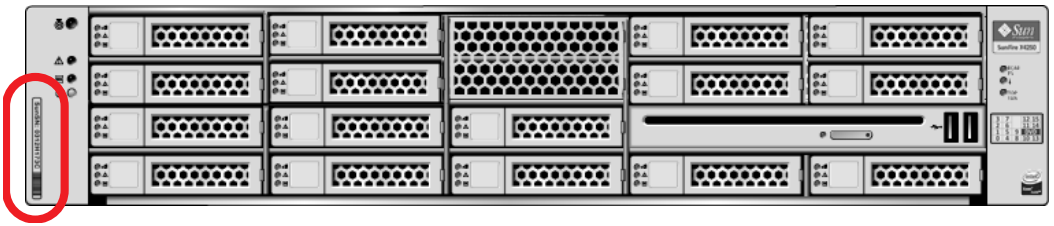
- Antistatic wrist strap
- Antistatic mat
- No. 2 Phillips screwdriver
- Non-conducting No. 1 flat-blade screwdriver (for battery removal), or equivalent
- Non-conducting stylus or pencil (to power on server)

2.3 Obtaining the Chassis Serial Number

To obtain support for your server, you need your chassis serial number. The chassis serial number is located on a label on the front of the server, and another label is on the top of the server.

Note – You might be asked for your hardware serial number if you need service for your system. To find the serial number of your system, use the ILOM command `get /SYS` or see your *Installation Guide* or *Service Manual*.

FIGURE 2-1 Chassis Serial Number Label



2.4 Powering Off the Server

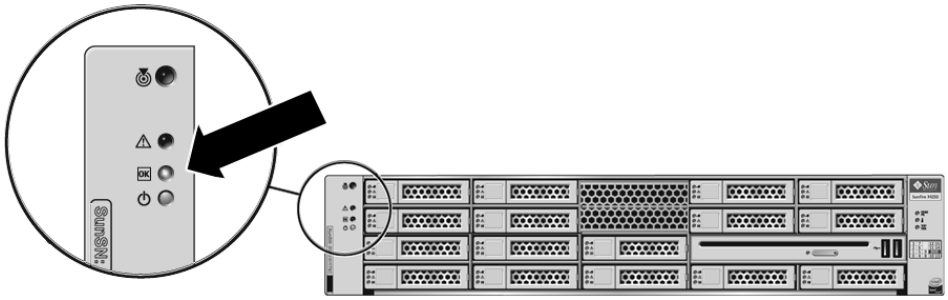
To remove main power from the server, use one of the methods shown in the following table.

TABLE 2-1 Shutdown Procedures

Shutdown	Method
Graceful shutdown	Use a pen, or other non-conducting pointed object, to press and release the Power button on the front panel. Pressing the power button causes Advanced Configuration and Power Interface (ACPI)–enabled operating systems to perform an orderly shutdown of the operating system. Servers not running ACPI-enabled operating systems will shut down to standby power mode immediately.
Emergency shutdown	Press and hold the Power button for at least four seconds until the main power is off and the server enters standby power mode. See FIGURE 2-2. When the main power is off, the Power/OK LED on the front panel flashes, indicating that the server is in standby power mode. **Caution -** All applications and files will be closed abruptly without saving changes. File system corruption might occur.
ILOM SP CLI shutdown	See Section 2.4.1, "Powering Off the Server Using the Service Processor Command Line" on page 2-4.

Caution – To completely power off the server, you must disconnect the AC power cords from the rear panel of the server.

FIGURE 2-2 Front Panel Power/OK LED



2.4.1 Powering Off the Server Using the Service Processor Command Line

You can use the service processor to perform a graceful shutdown of the server and ensure that all of your data is saved and the server is ready for restart.

Refer to the OS documentation for additional information.

1. **Log in as a superuser or equivalent.**

   Depending on the type of problem, you might want to view server status or log files, or run diagnostics before you shut down the server.

2. **Notify affected users.**

3. **Save any open files and quit all running programs.**

   Refer to your application documentation for specific information.

4. **Shut down all logical domains.**

5. **Shut down the operating system.**

6. **Open an SSH session.**

7. **Log into the service processor.**

8. **Type:**

   ```
   stop /SYS
   ```

   or

   ```
   cd /SP/CtrlInfo
   set powerctrl=off
   ```

2.5 Extending the Server to the Maintenance Position

The following components can be serviced with the server in the maintenance position:

- Hard drives/SSDs
- Fan modules
- Power supplies
- DVD/USB module
- Fan power boards
- FB-DIMMs
- PCIe cards
- Motherboard battery

If the server is installed in a rack with extendable slide rails, use this procedure to extend the server to the maintenance position.

1. **(Optional) Type the following command from the service processor (SP) prompt -> to locate the system that requires maintenance.**

```
-> set /SYS/LOCATE status=on
Locator indicator is on.
```

   After you have located the server, press the Locator LED/Locator button to turn it off.

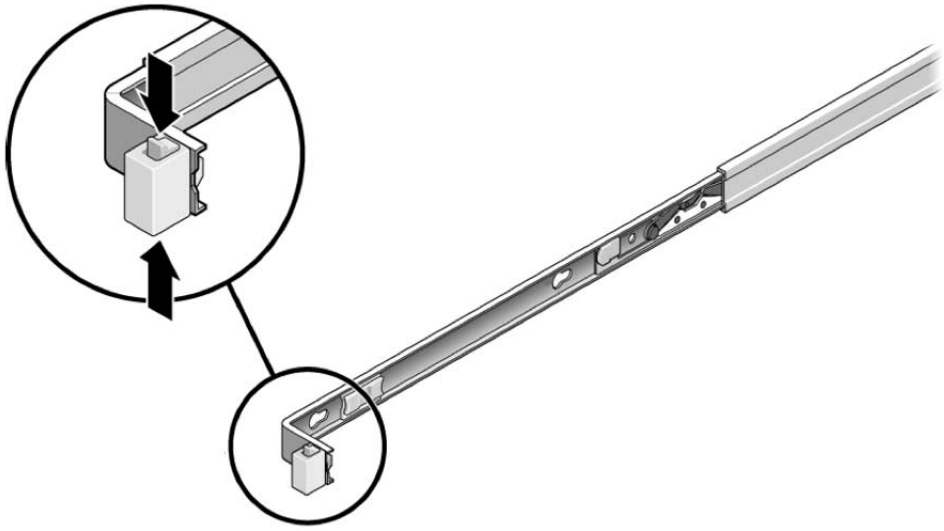
2. **Verify that no cables will be damaged or will interfere when the server is extended.**

   Although the cable management arm (CMA) that is supplied with the server is hinged to accommodate extending the server, you should ensure that all cables and cords are capable of extending.

3. **From the front of the server, release the two slide release latches (**FIGURE 2-3**).**

   Squeeze the green slide release latches to release the slide rails.

FIGURE 2-3 Slide Release Latches



4. **While squeezing the slide release latches, slowly pull the server forward until the slide rails latch.**

2.6 Removing a Server From the Rack

The server must be removed from the rack to service the following components:

- Motherboard
- Power distribution board
- Power supply backplane
- Paddle card
- Drives cage
- Drives backplane
- Front panel light pipe assemblies

Caution – If necessary, use two people to dismount and carry the chassis.

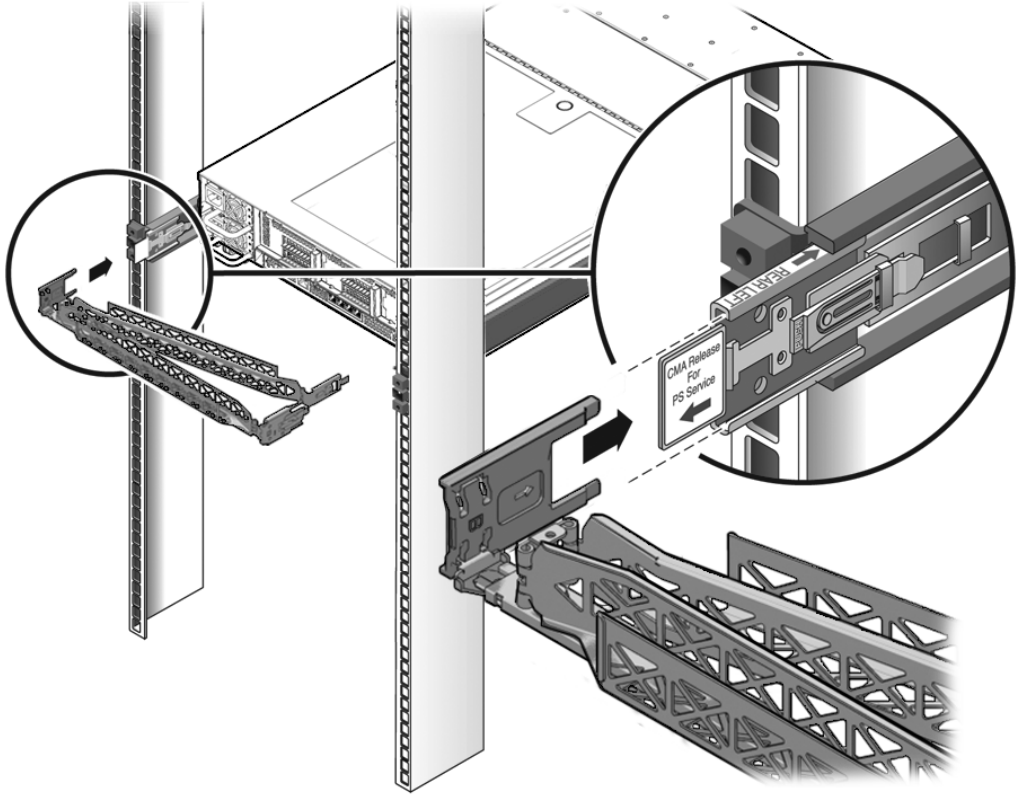
To remove a server from the rack:

1. **Disconnect all cables and power cords from the server.**
2. **Extend the cabinet extender arm for safety, if present.**
3. **Extend the server to the maintenance position.**

   See Section 2.5, “Extending the Server to the Maintenance Position” on page 2-5.
4. **Press the metal lever that is located on the inner side of the rail to disconnect the cable management arm (CMA) from the rail assembly (**FIGURE 2-3**).**

   The CMA is still attached to the cabinet, but the server chassis is now disconnected from the CMA.

FIGURE 2-4 Metal Lever and Cable Management Arm

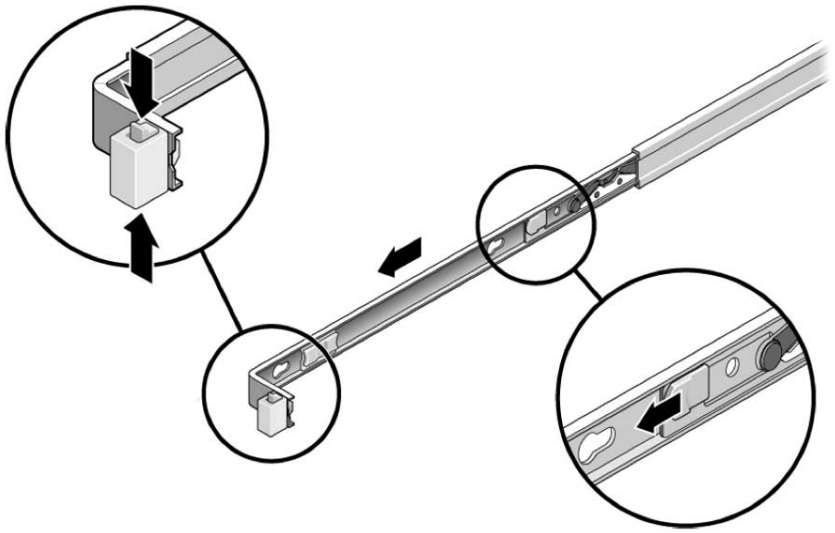


Caution – If necessary, use two people to dismount and carry the chassis.

5. **From the front of the server, pull the release tabs forward and pull the server forward until it is free of the rack rails (**FIGURE 2-5**).**

   A release tab is located on each rail.

FIGURE 2-5 Release Tabs and Slide Assembly



6. Set the server on a sturdy work surface.

2.7 Performing Electrostatic Discharge and Antistatic Prevention Measures

2.7.1 Electrostatic Discharge Safety Measures

Electrostatic discharge (ESD) sensitive devices, such as the motherboards, PCI cards, drives, and memory cards, require special handling.

Caution – Circuit boards and drives contain electronic components that are extremely sensitive to static electricity. Ordinary amounts of static electricity from clothing or the work environment can destroy the components located on these boards. Do not touch the components without antistatic precautions, especially along the connector edges.

Caution – You must disconnect both power supplies before servicing any of the components documented in this chapter.

2.7.1.1 Using an Antistatic Wrist Strap

Wear an antistatic wrist strap and use an antistatic mat when handling components such as drive assemblies, circuit boards, or PCI cards. When servicing or removing server components, attach an antistatic strap to your wrist and then to a metal area on the chassis. Following this practice equalizes the electrical potentials between you and the server.

Note – An antistatic wrist strap is not included in the accessory kit for the Sun Fire X4250 server. However, antistatic wrist straps are still included with options.

2.7.1.2 Using an Antistatic Mat

Place antistatic-sensitive components such as motherboards, memory, and other PCBs on an antistatic mat.

2.7.2 Antistatic Handling Procedure

1. **Prepare an antistatic surface to set parts on during the removal, installation, or replacement process.**

   Place antistatic-sensitive components such as the printed circuit boards on an antistatic mat. The following items can be used as an antistatic mat:

   - Antistatic bag used to wrap a Sun replacement part
   - Sun antistatic mat, part number 250-1088
   - A disposable antistatic mat (shipped with some replacement parts or optional system components)

2. **Attach an antistatic wrist strap.**

   When servicing or removing server components, attach an antistatic strap to your wrist and then to a metal area on the chassis.

2.8 Removing the Top Cover

The top cover and fan door are integrated.

Note – Some field-replaceable units (FRUs) require removal of the top cover.

1. **Unlatch the fan module door. (**FIGURE 2-6 **[1])**

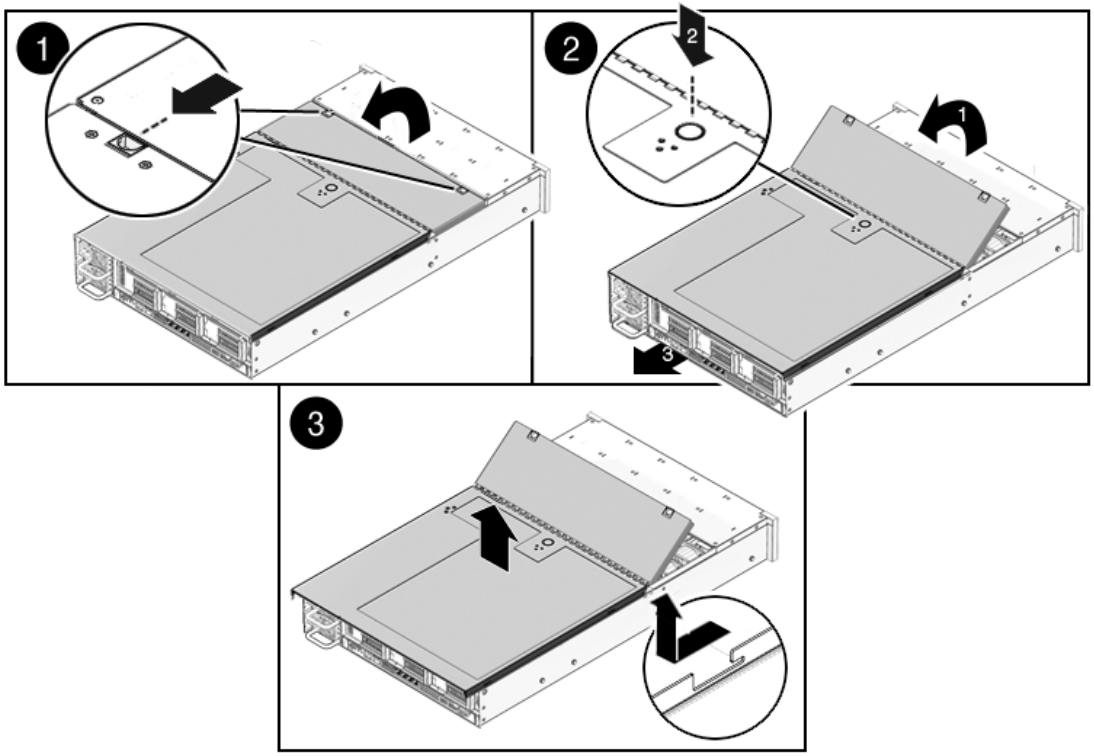
   Pull the two release tabs back to release the door. Rotate the fan door to the open position and hold it there.

2. **Press the top cover release button and slide the top cover to the rear about a half-inch (12.7 mm). [2]**

3. **Lift up and remove the top cover. [3]**

Caution – If the top cover is removed before the server is powered off, the server will immediately go into Standby mode.

FIGURE 2-6 Removing the Top Cover



CHAPTER 3

Servicing Customer-Replaceable Devices

This chapter describes how to replace the hot-swappable and hot-pluggable customer replaceable units (CRUs) in the Sun Fire X4250 server.

The following topics are covered:

3.1 Hot-Pluggable or Hot-Swappable Devices

3.1.1 Hot-Pluggable Devices

Hot-pluggable devices can be removed and installed while the server is running, but you must perform administrative tasks before or after installing the hardware (for example, mounting a drive).

In the Sun Fire X4250 server, only drives are hot-pluggable. To hot-plug a drive, you must take the drive offline (to prevent any applications from accessing it, and to remove the logical software links to it) before you can safely remove it. See Section 3.2, “Servicing Drives” on page 3-2.

3.1.2 Hot-Swappable Devices

Hot-swappable devices can be removed and installed while the server is running without affecting the rest of the server's capabilities.

In the Sun Fire X4250, the following devices are hot-swappable:

- Fan modules. See Section 3.3, "Servicing Fan Modules" on page 3-9.
- Power supplies. See Section 3.4, "Servicing Power Supplies" on page 3-15.

Note – The chassis-mounted drives can be hot-swappable, depending on how they are configured. See Section 3.2, "Servicing Drives" on page 3-2.

3.2 Servicing Drives

The following topics are covered:

Note – These are customer-replaceable units.

3.2.1 Sun Fire X4250 Server Drive Guidelines

TABLE 3-1 and FIGURE 3-1 show physical drive locations for a Sun Fire X4250 server with 16 drives:

FIGURE 3-1 Server Front

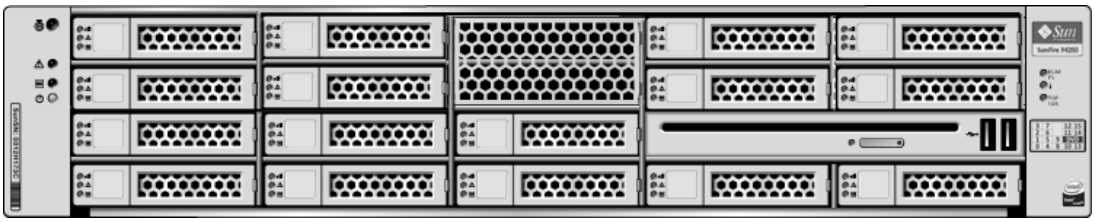


TABLE 3-1 Physical Drive Locations

HD3	**HD7**	N/A	**HD12**	**HD15**
HD2	**HD6**	N/A	**HD11**	**HD14**
HD1	**HD5**	**HD9**	DVD drive	
HD0	**HD4**	**HD8**	**HD10**	**HD13**

3.2.2 Sun Fire X4250 SSD Guidelines

The X4250 server supports installing SSDs in the HD bays. Each SSD provides at least 32Gb of SATA capacity.

FIGURE 3-2 shows drive numbers for a server with 8 SSDs and 8 hard drives. FIGURE 3-1 shows the front panel of a server with 16 drives.

TABLE 3-2 Physical Drive Locations- SSD and HD Configuration

SSD3	**SSD7**	N/A	**HD12**	**HD15**
SSD2	**SSD6**	N/A	**HD11**	**HD14**
SSD1	**SSD5**	**HD9**	DVD drive	
SSD0	**SSD4**	**HD8**	**HD10**	**HD13**

The Sun Fire X4x50 servers support solid-state drives (SSDs) under the following conditions:

Sun Fire X4250 with HBA:

- One to 8 SSDs can be installed into the system for the X4250.

  The remaining slots can be filled with up with hard drives that can equal up to 16.
- SSDs can be installed in any drive slot.

Note – You can create RAID volumes with SAS HDs and SATA SSDs, as long as you do not mix them in a same volume.

3.2.2.1 SSD Minimum Required Firmware

BIOS/ILOM Firmware

- BIOS: 0ADQW060
- ILOM: 3.0.3.30

Adaptec Firmware

- Adaptec FW: 16732
- LSI FW: 1.27.02, MPTBIOS: 6.26.00

Backplane Firmware

- Backplane FW: 5.02.14 (LSI SAS expander)

SSD firmware

- Intel SSD FW: 845C8626

3.2.3 Drive Status LED Reference

FIGURE 3-2 shows drive status LEDs.

FIGURE 3-2 Drive Status LEDs

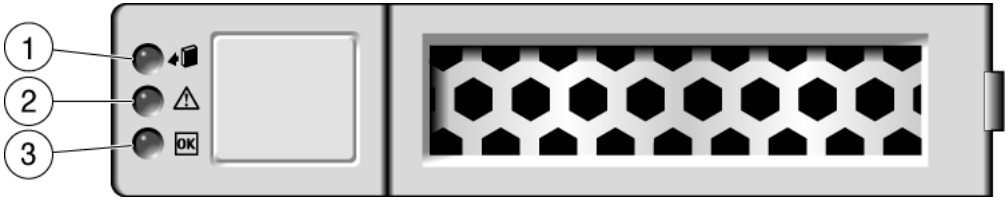


Figure Legend

Legend	LED	Symbol	Color	Lights when
1	OK to Remove		Blue	A drive can be removed safely during a hot-plug operation. **Note -** The blue "OK to Remove" LED requires OS support and is not functional with all operating systems.
2	Service Required		Amber	The system is running and the drive is faulty. The front and rear panel Service Required LEDs are also lit if the system detects a drive fault.
3	OK/Activity		Green	Data is being read from or written to the drive.

3.2.4 Removing a Hard Drive or SSD

Hard drives and SSDs can be hot-plugged or cold-plugged. Drives in the Sun Fire X4250 server might be hot-pluggable, depending on the drive configuration.

To hot-plug a drive you must take the drive offline (to prevent applications from accessing it, and to remove the logical software links to it) before you can safely remove it.

To remove a drive from a Sun Fire X4250 server:

1. **Identify the drive you wish to remove.**

   The amber Service Required LED might be lit. For specific drive locations, see Section 3.2.1, "Sun Fire X4250 Server Drive Guidelines" on page 3-2.

2. **Determine if the drive can be hot-plugged or cold-plugged.**

   The following conditions might prevent you from hot-plugging a drive. You must power off the server, if the drive:

   - Contains the operating system, and the operating system is not mirrored on another drive.
   - Cannot be logically isolated from the online operations of the server.

3. **Do one of the following:**
   - **To hot-plug a drive:**

a. **Unconfigure the drive, as required. You must take the drive offline (to prevent any applications from accessing it, and to remove the logical software links to it) before you can safely remove it.**

   See one of the following HBA documents, if your system uses RAID:

   For Sun StorageTek: *Sun StorageTek RAID Manager Software User's Guide*

   For LSI MegaRAID Storage Manager (MSM): *Sun LSI 106x RAID User's Guide*

b. **Wait until the blue *OK to Remove* LED becomes lit (**FIGURE 3-2**) before you physically uninstall the drive from the chassis.**

   The blue LED indicates that the drive is unconfigured and can be removed.

   To cold-plug a drive:

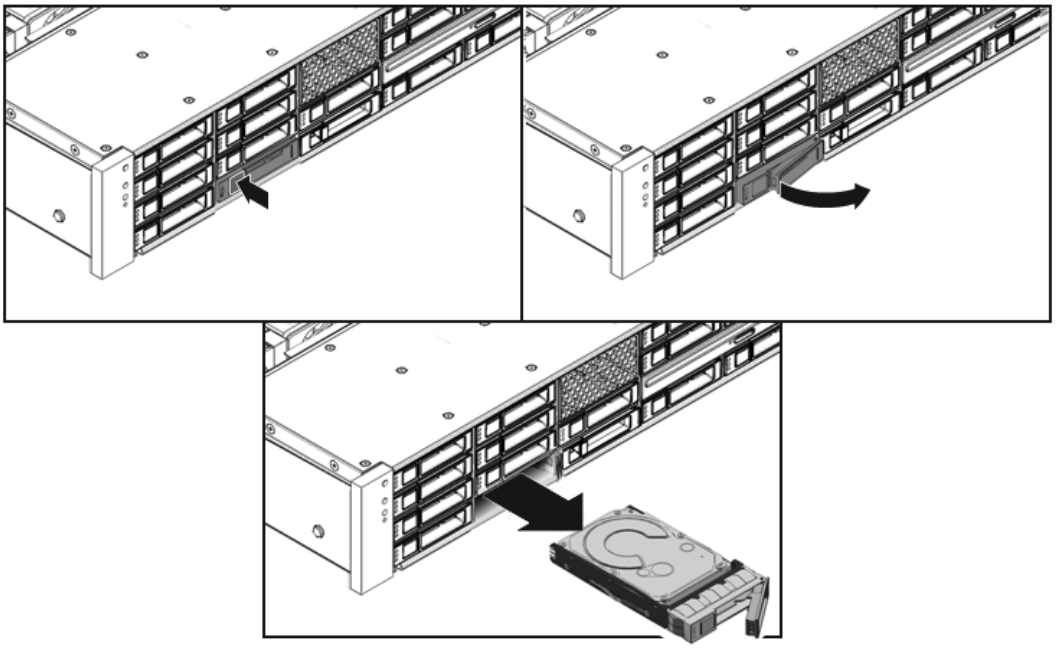
   You must power off the server before you can safely remove the drive. Do one of the procedures described in Section 2.4, "Powering Off the Server" on page 2-3.

4. **On the drive you plan to remove, push the drive release button to open the latch (**FIGURE 3-3**) [1].**

5. **Grasp the latch [2] and pull the drive out of the drive slot [3].**

Caution – The latch is not an ejector. Do not bend it too far to the right. Doing so can damage the latch.

FIGURE 3-3 Locating the Drive Release Button and Latch



3.2.5 Installing a Hard Drive or SSD

Installing a hard drive or SSD into the Sun Fire X4250 server is a two-step process. You must first install a drive into the drive slot, and then configure that drive to the server.

Caution – Before inserting a replacement drive, wait 15 seconds, and verify that your monitoring or administration application has detected the missing or failed drive.

To install a drive into a Sun Fire X4250 server:

1. **If necessary, remove the drive fillers from the chassis.**

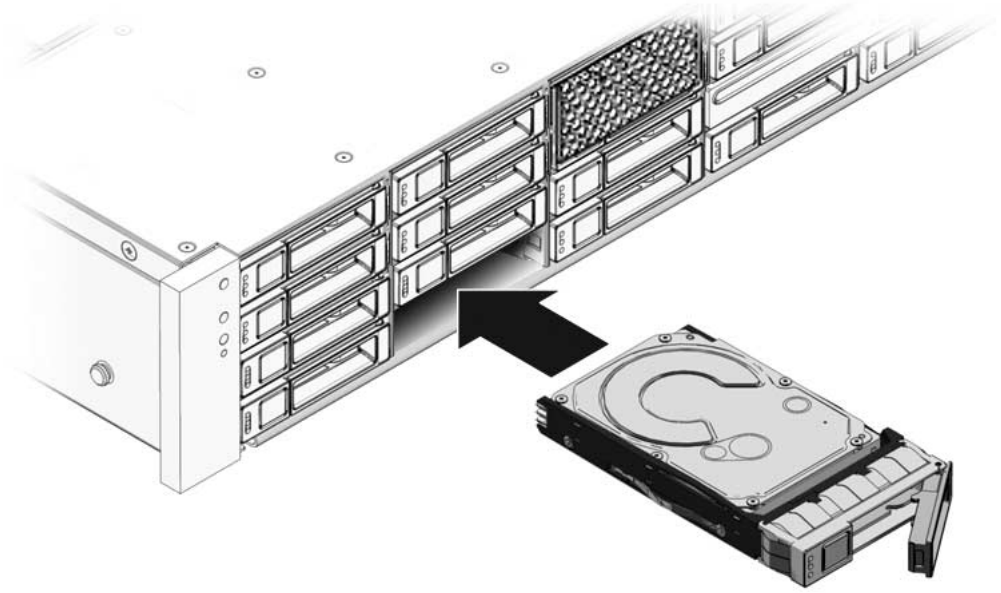
   The Sun Fire X4250 might have as many as 16 drive fillers covering unoccupied drive slots.

2. **Determine the drive slot location for the replacement drive.**

   If you removed an existing drive from a slot in the server, you must install the replacement drive in the same slot as the drive that was removed. Drives are physically addressed according to the slot in which they are installed. See TABLE 3-1 for drive locations.

3. **Slide the drive into the drive slot until it is fully seated. (**FIGURE 3-4**)**

FIGURE 3-4 Installing a Drive



4. **Close the latch to lock the drive in place.**

5. **Do one of the following:**

   - **If you have hot-plugged the drive:**

     Configure the drive. See one of the following HBA documents:

     For Sun StorageTek: *Sun StorageTek RAID Manager Software User's Guide*

     For LSI MegaRAID Storage Manager (MSM): *Sun LSI 106x RAID User's Guide*

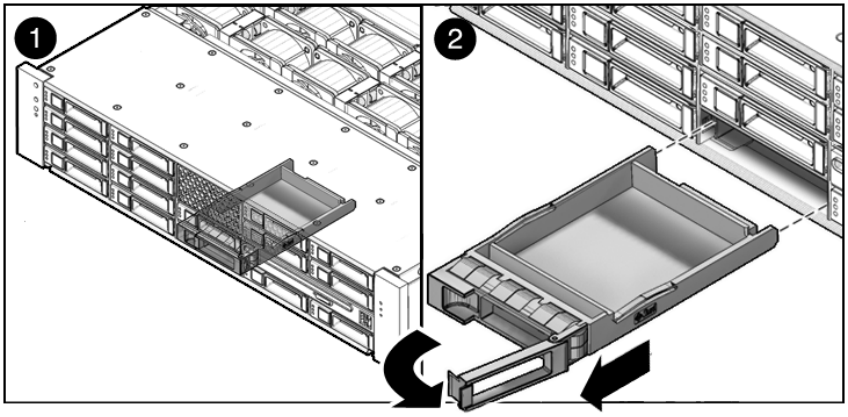
   - **If you have cold-plugged the drive:**

     Restore power to the server. Do the procedure described in Section 6.4, "Powering On the Server" on page 6-6.

3.2.6 Using Drive Fillers

All drive slots in the Sun Fire X4250 server must have drive fillers in place during operation to maintain airflow. To remove fillers, pull the ejector and pull the filler out of the chassis. (FIGURE 3-5)

FIGURE 3-5 Drive Filler



3.3 Servicing Fan Modules

The following topics are covered:

Note – This is a customer-replaceable unit.

3.3.1 About Sun Fire X4250 Server Fans

Six pairs of fan modules are located under the top cover door, providing N+1 cooling redundancy. Each fan module contains two fans mounted in an integrated, hot-swappable CRU.

If a fan module fails, replace the fan as soon as possible to maintain server availability.

Fan modules are hot-swappable and can be removed and installed while the server is running without affecting the rest of the server's capabilities.

3.3.2 Fan Module LED Reference

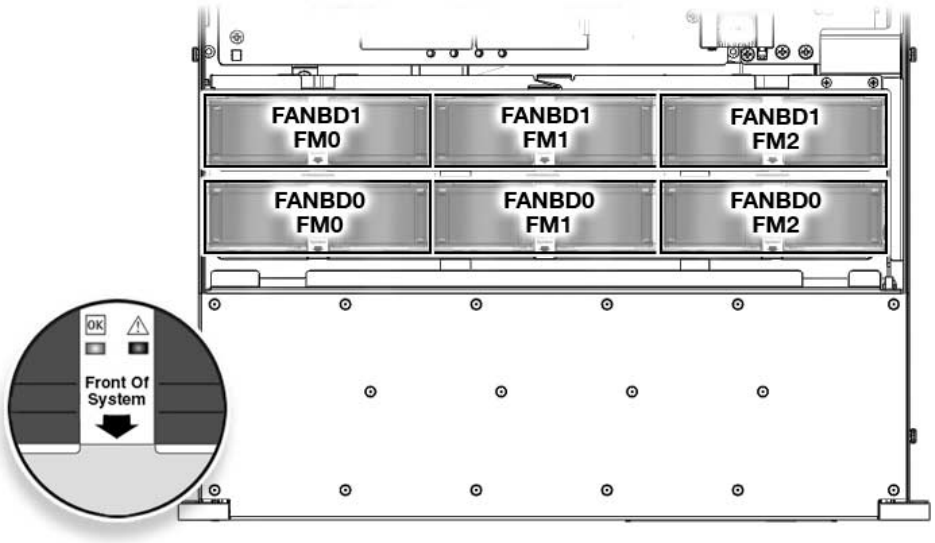
Each fan module contains LEDs that are visible when you open the fan tray access door. TABLE 3-3 describes fan tray module LEDs and their functions.

TABLE 3-3 Fan Module Status LEDs

LED	Color	Lights when...
Power/OK 	Green	The system is powered on and the fan module is functioning correctly.
Service Required 	Amber	The fan module is faulty. The front and rear panel Service Required LEDs are also lit if the system detects a fan module fault.

FIGURE 3-6 shows the fan module locations.

FIGURE 3-6 Fan Module Locations



3.3.3 Detecting Fan Module Failure

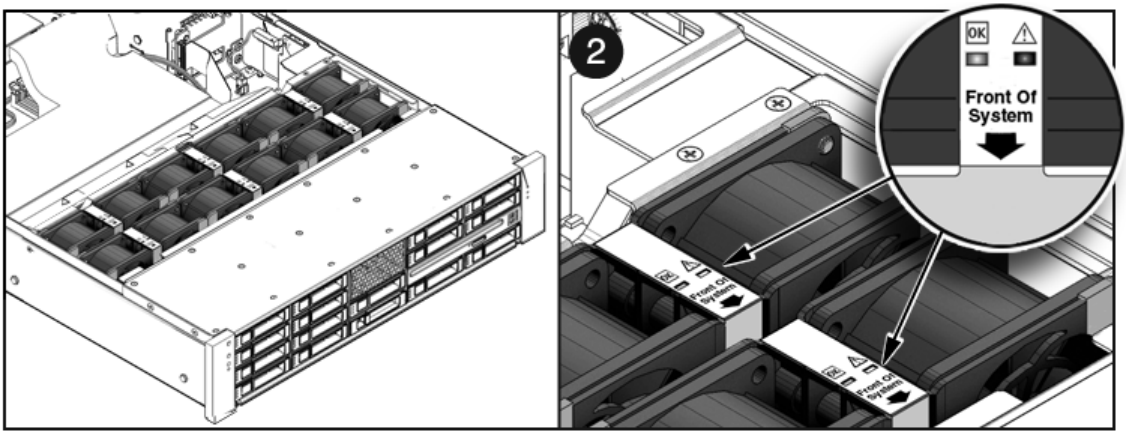
The following LEDs are lit when a fan module fault is detected:

- Front and rear Service Required LEDs
- Top Fan LED on the front of the server
- Fan Fault LED on or adjacent to the faulty fan module

If an overtemperature conditions occurs, the front panel CPU overtemperature LED becomes lit and a message is displayed on the console and logged by the iLOM.

The system Overtemp LED might be lit if a fan fault causes an increase in system operating temperature. See Chapter 1, Section 1.3, "Sun Fire X4250 Server Front Panel Features" on page 1-7 for more information about system status LEDs.

FIGURE 3-7 Detecting a Faulty Fan Module



3.3.4 Removing a Fan Module

Caution – Hazardous moving parts. Unless the power to the server is completely shut down, the only service permitted in the fan compartment is the replacement of the fan modules by trained personnel.

1. **Extend the server into the maintenance position.**

   See Section 2.5, "Extending the Server to the Maintenance Position" on page 2-5.

2. **Unlatch the fan module door.**

   Pull the release tabs back to release the door. Open the top cover toward the rear of the server.

Note – Close the top cover door immediately after replacing the fan to maintain airflow in the server. Leaving the door open for more than 60 seconds while the server is running might cause the server to overheat and shut down.

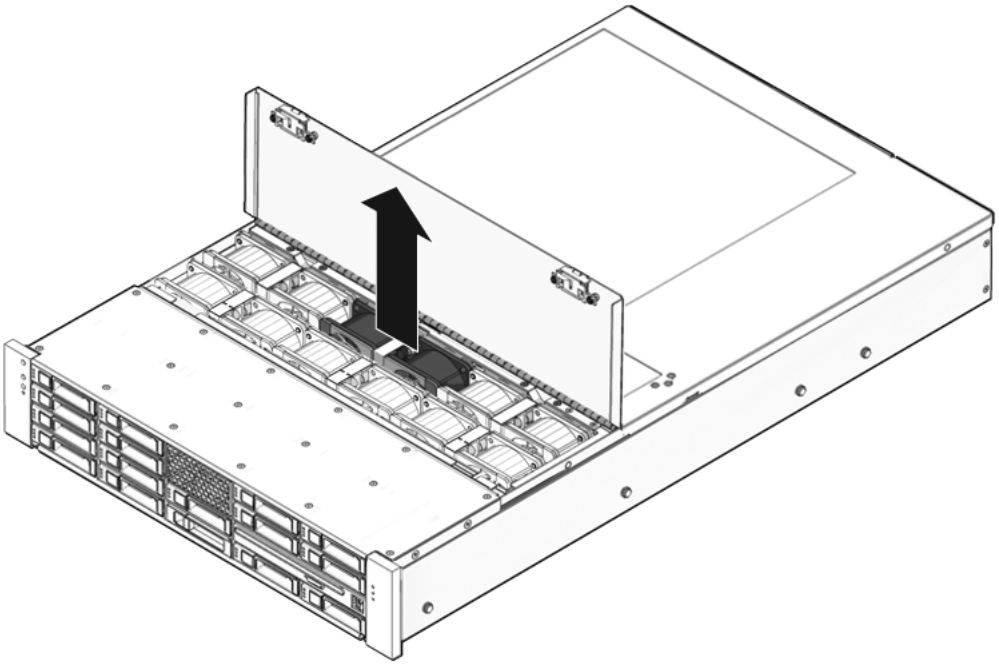
3. **Identify the faulty fan module with a corresponding Service Required LED.**

   The Fan Fault LEDs are located on the fan board.

4. **Using thumb and forefinger in between the two fans, pull the fan module up and out of the connector.**

Caution – When changing the fan modules, note that only the fan modules can be removed or replaced. Do not service any other components in the fan compartment unless the system is shut down and the power cords are removed.

FIGURE 3-8 Removing a Fan Module

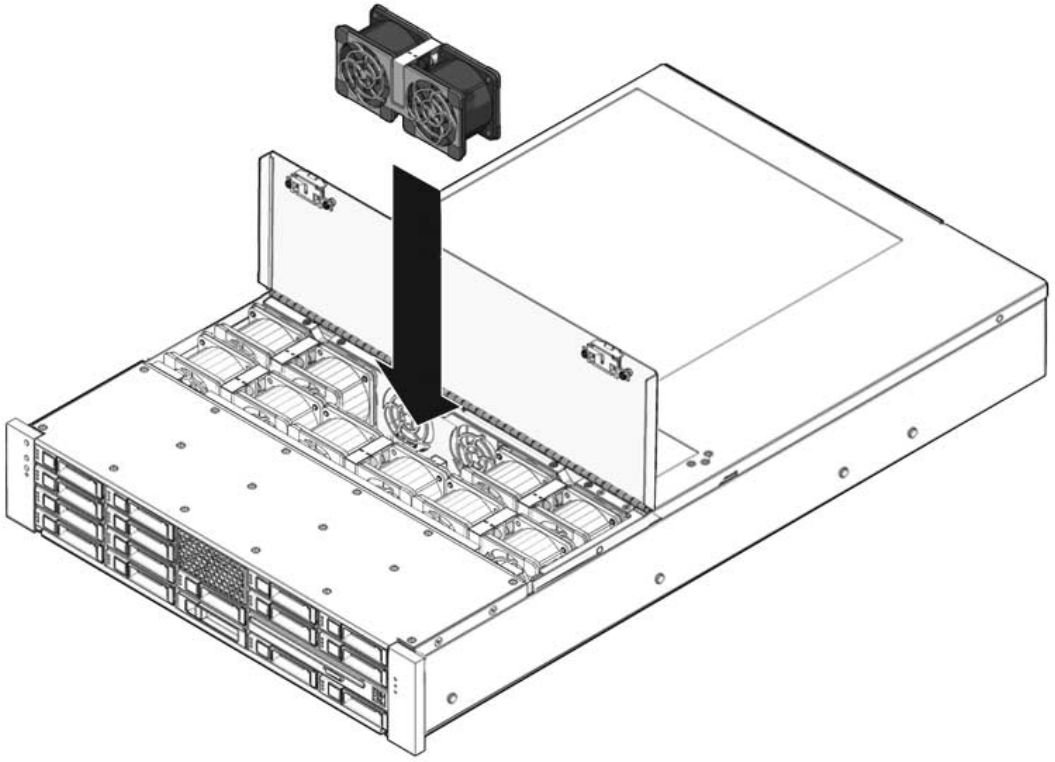


3.3.5 Installing a Fan Module

1. **With the top cover door open, install the replacement fan module into the server (**FIGURE 3-9**).**

   The fan modules are keyed to ensure that they are installed in the correct orientation.

FIGURE 3-9 Installing a Fan Module



2. **Apply firm pressure to fully seat the fan module.**
3. **Verify that Fan OK LED is lit, and that the Fan Fault LED on the replaced fan module is not lit.**
4. **Close the top cover door.**
5. **Verify that the Top Fan LED, Service Required LEDs, and the Locator LED/Locator button are not lit.**

   See Section 1.2, "Sun Fire X4250 Server Chassis Overview" on page 1-3 for more information about front and back panel LEDs.

3.4 Servicing Power Supplies

Some versions of the Sun Fire X4250 server are equipped with redundant hot-swappable power supplies. Redundant power supplies enable you to remove and replace a power supply without shutting the server down, provided that the other power supply is online and working.

If a power supply fails and you do not have a replacement available, leave the failed power supply installed to ensure proper air flow in the server.

The following topics are covered:

Note – This is a customer-replaceable unit.

3.4.1 Detecting Power Supply Failure

The following LEDs are lit when a power supply fault is detected:

- Front and rear Service Required LEDs
- Rear PS Failure LED on the bezel of the server
- Failure LED on the faulty power supply

See Section 3.4.2, "Power Supply LED Reference" on page 3-15 for power supply LED information.

See Section 1.3, "Sun Fire X4250 Server Front Panel Features" on page 1-7 and Section 1.4, "Sun Fire X4250 Server Rear Panel Features" on page 1-8 for more information about identifying and interpreting system LEDs.

3.4.2 Power Supply LED Reference

Each power supply contains a series of LEDs on the rear panel of the system.

FIGURE 3-10 Power Supply Status LEDs

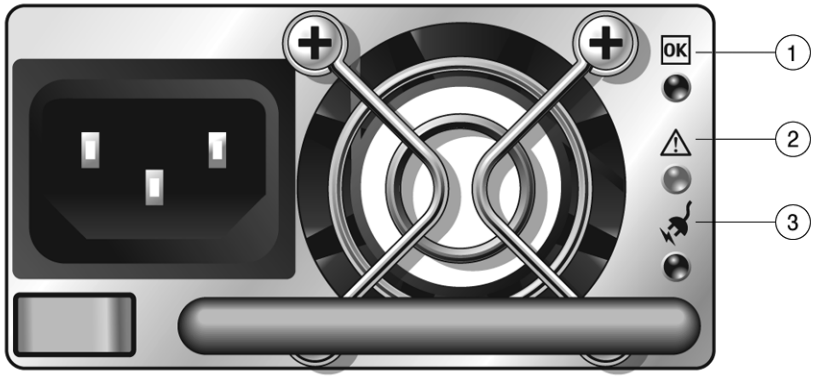


Figure Legend

Legend	LED	Symbol	Color	Lights when
1	AC Present	OK	Green	The power supply is plugged in and AC power is available, regardless of system power state.
2	Service Required	⚠	Amber	The power supply is faulty. The front and rear panel Service Required LEDs are also lit if the system detects a power supply fault.
3	OK to Remove		Green	A power supply can be removed safely during a hot–swap operation.

3.4.3 Removing a Power Supply

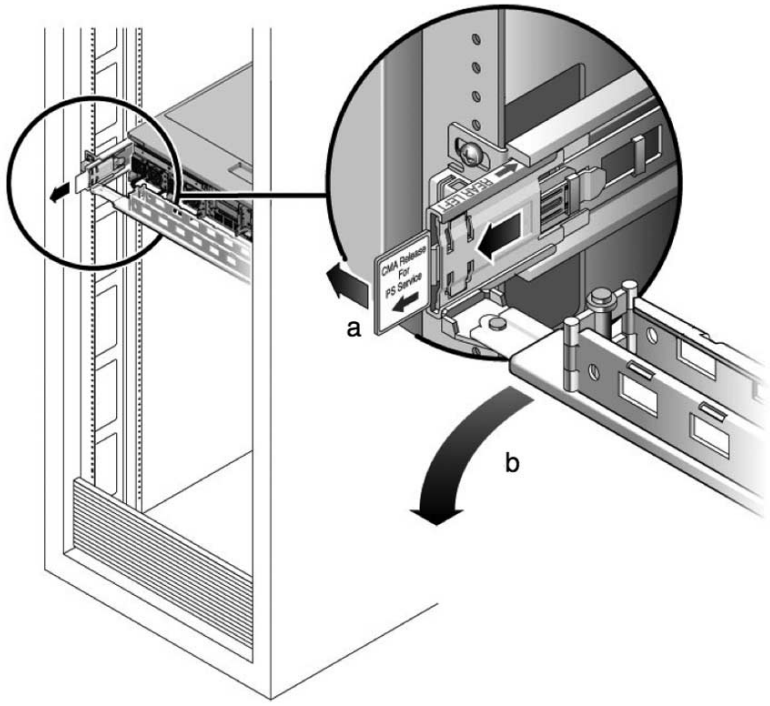
Caution – Hazardous voltages are present. To reduce the risk of electric shock and danger to personal health, follow the instructions.

1. **Determine which power supply (0 or 1) requires replacement.**
   A lit (amber) failure LED on a power supply indicates that a failure was detected.
2. **Gain access to the rear of the server where the faulty power supply is located.**
3. **Release the cable management arm (CMA). (**FIGURE 3-11**)**
   The CMA is located at the rear of the server rack.

a. **Press and hold the tab.**

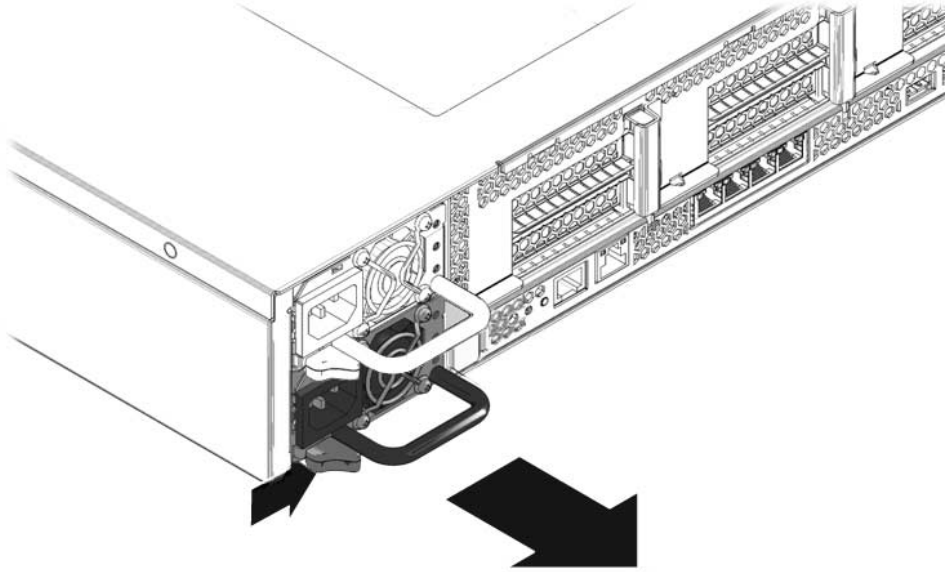
b. **Rotate the cable management arm out of the way so that you can access the power supply.**

FIGURE 3-11 Releasing the Cable Management Arm



4. **Disconnect the power cord from the faulty power supply.**
5. **Grasp the power supply handle and press the release latch. (**FIGURE 3-12**)**
6. **Pull the power supply out of the chassis.**

FIGURE 3-12 Removing a Power Supply Using the Release Handle



3.4.4 Installing a Power Supply

1. **Align the replacement power supply with the empty power supply chassis bay.**
2. **Slide the power supply into the bay until it is fully seated. (**FIGURE 3-13**)**
3. **Reconnect the power cord (or cords) to the power supply (or supplies).**

   Verify that the AC Present LED is lit.
4. **Close the CMA, inserting the end of the CMA into the rear left rail bracket (**FIGURE 3-11**).**
5. **Verify that the following LEDs are not lit:**
   - Failure LED on the replaced power supply
   - Service Required LED
   - Front Service Required LED
   - Rear Service Required LED

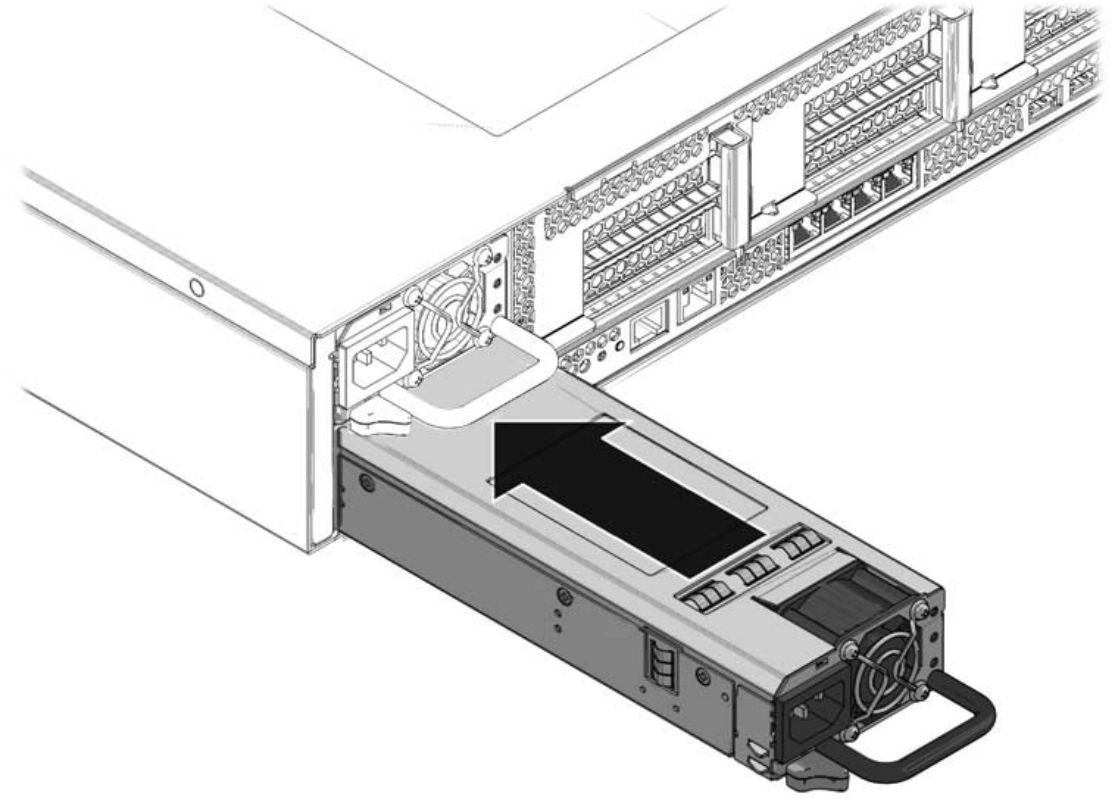
Note – See Section 1.3, "Sun Fire X4250 Server Front Panel Features" on page 1-7 and Section 1.4, "Sun Fire X4250 Server Rear Panel Features" on page 1-8 for more information about identifying and interpreting system LEDs.

---

6. **Verify the status of the power supplies.**

   Solaris OS: At the -> prompt, type the `show environment` command.

FIGURE 3-13 Installing a Power Supply



3.5 Servicing the DVD/USB Module

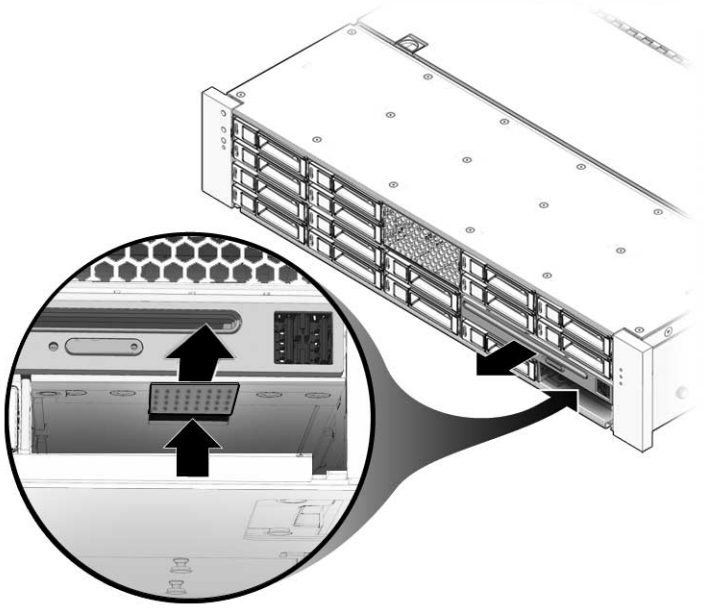
The DVD drive and front USB board are mounted in a removable module that is accessible from the front panel of the system. The DVD/USB module must be removed from the drives cage to service the drives backplane.

Note – This is a customer-replaceable unit.

3.5.1 Removing the DVD/USB Module

1. **Remove media from the drive.**
2. **Prepare the server for service.**
   a. **Power off the server.**
      See Section 2.4, "Powering Off the Server" on page 2-3.
   b. **Disconnect the power cord (or cords) from the power supply (or supplies).**
      See Section 2.4, "Powering Off the Server" on page 2-3.
   c. **Attach an antistatic wrist strap.**
      See Section 2.7, "Performing Electrostatic Discharge and Antistatic Prevention Measures" on page 2-9.
3. **Remove the Sun Fire X4250 HD13 drive.**
   See Section 1.2, "Sun Fire X4250 Server Chassis Overview" on page 1-3 for drive locations.
4. **Release the DVD/USB module from the drives backplane. (**FIGURE 3-14**)**
   Use the finger indent in the drives bay below the DVD/USB module to detach the module from the backplane.
5. **Slide the DVD/USB module pull tab out and use the tab to pull the module out of the drives cage.**
6. **Place the module on an antistatic mat.**

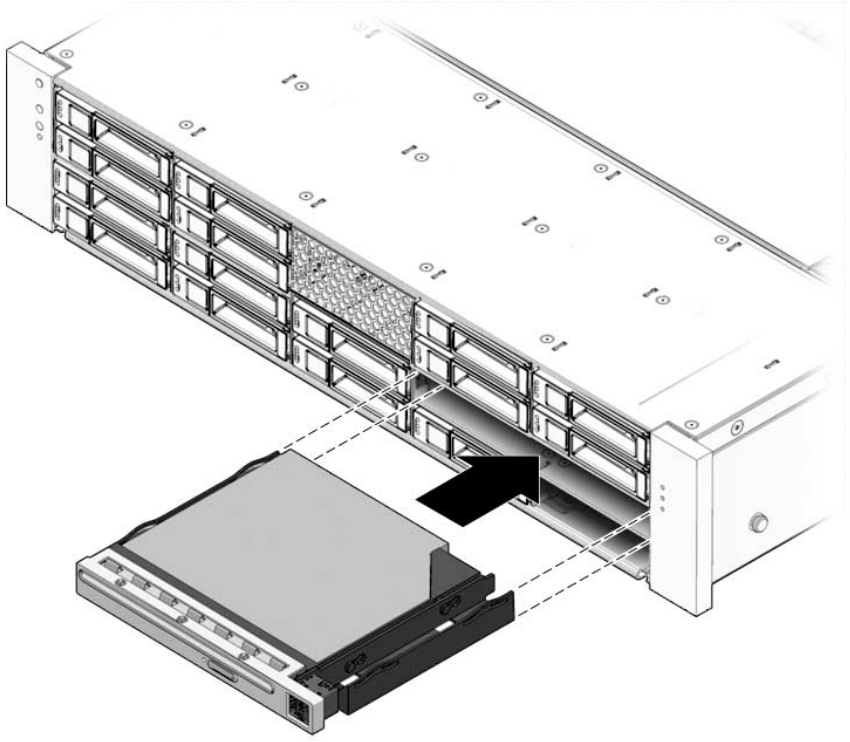
FIGURE 3-14 Removing the DVD/USB Module



3.5.2 Installing the DVD/USB Module

1. **Slide the DVD/USB module into the front of the chassis until it seats.**
   (FIGURE 3-15**)**
2. **Install the drive you removed during the DVD/USB module removal procedure.**
3. **Power on the server.**
   See Section 6.4, “Powering On the Server” on page 6-6.

FIGURE 3-15 Installing the DVD/USB Module



CHAPTER 4

Servicing Motherboard Components

This chapter describes how to replace the motherboard and its components in the Sun Fire X4250 server.

Note – Before performing any of the procedures in this chapter, perform the procedures described in Chapter 2, Preparing to Service the System.

The following topics are covered in this chapter:

Note – Never attempt to run the server with the covers removed. Hazardous voltage is present.

Caution – Equipment damage is possible. The covers must be in place for proper air flow.

4.1 Servicing DIMMs

This section describes how to diagnose and replace faulty FB-DIMMs (fully buffered DIMMs). The following topics are covered:

- Section 4.1.1, "Identifying Faulty DIMMs" on page 4-2
- Section 4.1.2, "FB-DIMM Guidelines" on page 4-4
  (Includes additional FB-DIMM information.)
- Section 4.1.3, "Removing FB-DIMMs" on page 4-6
- Section 4.1.4, "Installing FB-DIMMs" on page 4-7
- Section 4.1.5, "Installing Additional FB-DIMMs" on page 4-9
  (How to upgrade the server with additional FB-DIMMs)

Refer to the *Sun Fire X4150, X4250, and X4450 Servers Diagnostics Guide* for additional DIMM troubleshooting information.

Note – This is a customer-replaceable unit.

Caution – This procedure requires that you handle components that are sensitive to static discharge. This sensitivity can cause the component to fail. To avoid damage, ensure that you follow antistatic practices as described in Section 2.7.1, "Electrostatic Discharge Safety Measures" on page 2-9.

4.1.1 Identifying Faulty DIMMs

The Sun Fire X4250 Service Required LED is lit if the system detects a FB-DIMM fault.

To identify faulty FB-DIMMs:

1. **Prepare the server for service.**

   a. **Power off the server.**

      See Section 2.4, "Powering Off the Server" on page 2-3.

   b. **Disconnect the power cord (or cords) from the power supply (or supplies).**

      See Section 2.4, "Powering Off the Server" on page 2-3.

c. **Slide the server out of the rack.**

   See Section 2.5, "Extending the Server to the Maintenance Position" on page 2-5.

d. **Attach an antistatic wrist strap.**

   See Section 2.7, "Performing Electrostatic Discharge and Antistatic Prevention Measures" on page 2-9.

e. **Remove the top cover.**

   See Section 2.8, "Removing the Top Cover" on page 2-11.

2. **Press and hold the Remind button to identify which FB-DIMM is faulty.** (FIGURE 4-1)

3. **Note the location of faulty FB-DIMMs.**

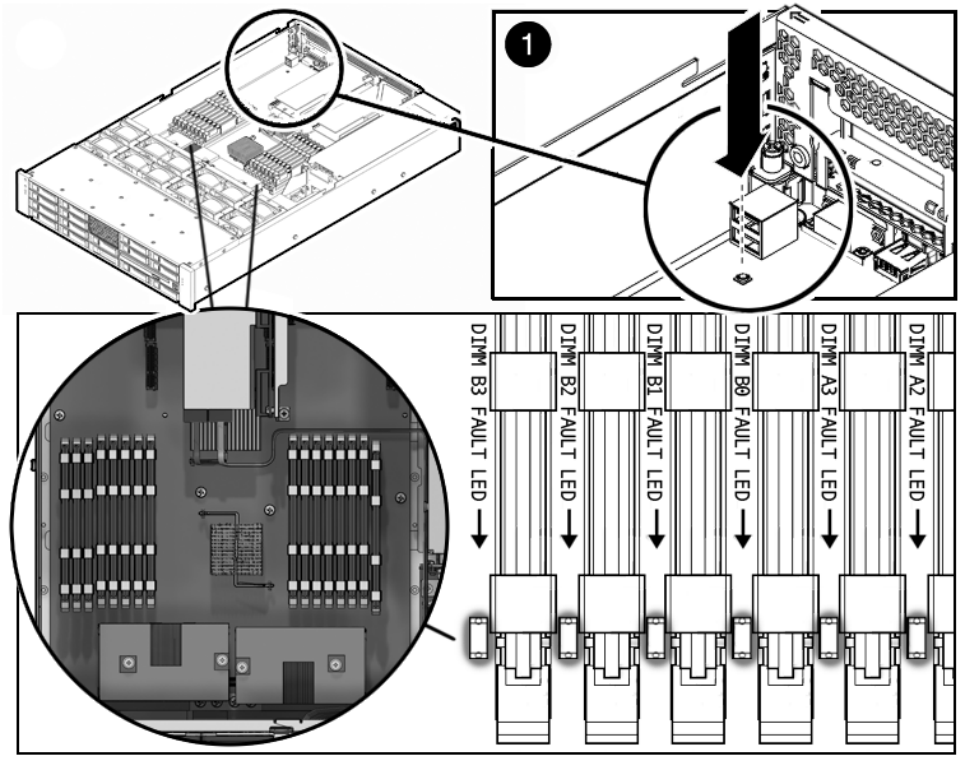
   Faulty FB-DIMMs are identified with a corresponding amber LED on the motherboard.

4. **Ensure that all FB-DIMMs are seated correctly in their slots.**

   If re-seating the FB-DIMM does not fix the problem, remove and replace the faulty FB-DIMM.

Note – Refer to the *Sun Fire X4150, X4250, and X4450 Servers Diagnostics Guide* for more information about DIMM System Event Log (SEL) messages.

FIGURE 4-1 Remind Button Locations



4.1.2 FB-DIMM Guidelines

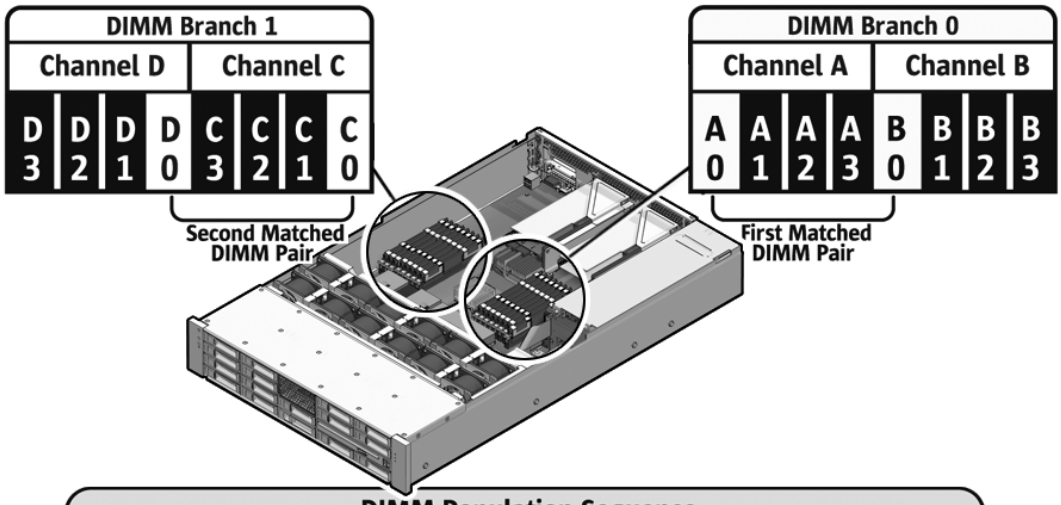
Use the FB-DIMM guidelines, and FIGURE 4-2 to help you plan the memory configuration of your server.

- The server has 16 total slots on the motherboard, in two groups, that hold industry-standard FB-DIMM memory modules. The slots are labeled A0-D3.
- All FB-DIMMs must be the same density (same type).
- The Sun Fire X4250 server supports the following configurations, such as:
  - 2 FB-DIMMs (minimum configuration)
  - 4 FB-DIMMs
  - 8 FB-DIMMs
  - 16 FB-DIMMs (fully populated configuration)

Any even number of DIMMs is allowed. The DIMMs must be populated in pairs and the pairs must be identical in organization, size and speed. See FIGURE 4-2 for detailed configuration information.

- At minimum, Group 1 must be fully populated with four FB-DIMMS of the same density (same type).
- 2 channels per branch, 4 slots per channel
- 4 channels are A, B, C, D
- 4 slot per channel
- 16 total slots (A0-3, B0-3, C0-3, D0-3)
- Install the highest-capacity DIMMs in the lowest-numbered DIMM slots.

FIGURE 4-2 FB-DIMM Layout



DIMM Population Sequence

ATTENTION: •DIMMs must be installed in matched pairs and in the order shown.
•Highest capacity DIMMs are to be located in the lowest numbered DIMM slots.

QTY. DIMMS	Slot Location	QTY. DIMMS	Slot Location
2	A0,B0	10	All of above plus: A2, B2
4	All of above plus: C0, D0	12	All of above plus: C2, D2
6	All of above plus: A1, B1	14	All of above plus: A3, B3
8	All of above plus: C1, D1	16	All of above plus: C3, D3

4.1.3 Removing FB-DIMMs

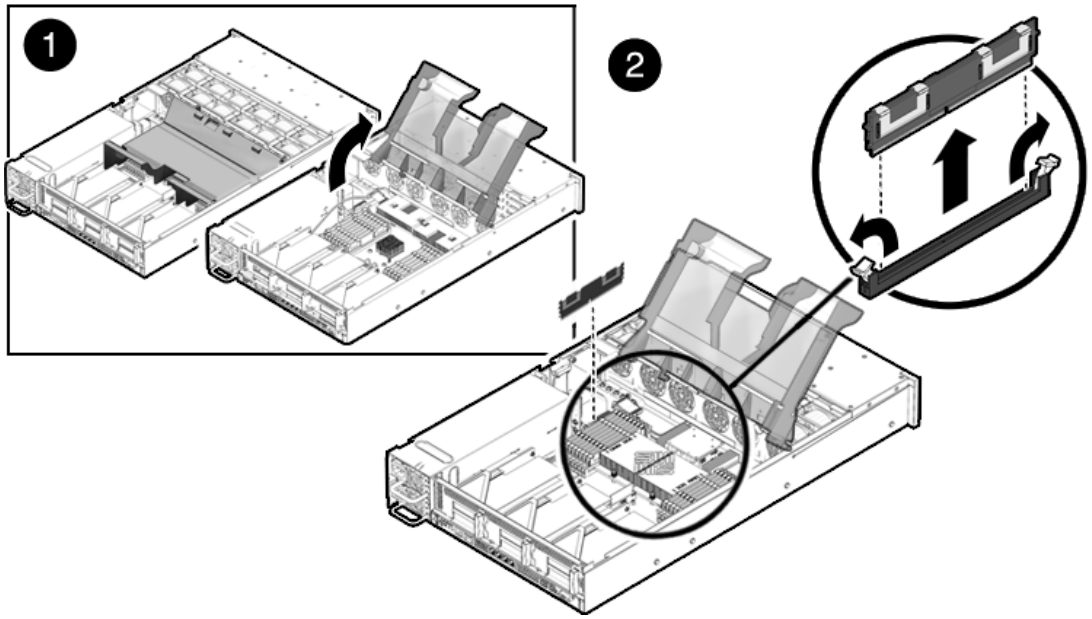
Caution – Ensure that all power is removed from the server before removing or installing FB-DIMMs. You must disconnect the power cables before performing this procedure.

1. **Review** Section 4.1.2, "FB-DIMM Guidelines" on page 4-4 **for memory configuration information.**
2. **Prepare the server for service.**
   a. **Power off the server.**
      See Section 2.4, "Powering Off the Server" on page 2-3.
   b. **Disconnect the power cord (or cords) from the power supply (or supplies).**
      See Section 2.4, "Powering Off the Server" on page 2-3.
   c. **Slide the server out of the rack.**
      See Section 2.5, "Extending the Server to the Maintenance Position" on page 2-5.
   d. **Attach an antistatic wrist strap.**
      See Section 2.7, "Performing Electrostatic Discharge and Antistatic Prevention Measures" on page 2-9.
   e. **Remove the top cover.**
      See Section 2.8, "Removing the Top Cover" on page 2-11.
3. **Lift up the air duct. (**FIGURE 4-3 **[1])**
4. **If you are replacing a faulty FB-DIMM, press the Remind button on the motherboard to locate the FB-DIMMS that you want to replace.**
   The faulty FB-DIMM LED flashes when the Fault Remind button is pressed and held. All faulty FB-DIMMs are indicated with an amber LED, so that you can install the replacement FB-DIMM in the same location.

Tip – Make a note of the faulty FB-DIMM location.

5. **Push down on the ejector tabs on each side of the FB-DIMM until the FB-DIMM is released. [2]**
6. **Grasp the top corners of the faulty FB-DIMM and remove it from the server.**

FIGURE 4-3 Removing FB-DIMMs



7. **Place the FB-DIMM on an antistatic mat.**
8. **Repeat** Step 5 **through** Step 7 **to remove any additional FB-DIMMs.**

4.1.4 Installing FB-DIMMs

Caution – Ensure that all power is removed from the server before removing or installing FB-DIMMs, or damage to the FB-DIMMs might occur. You must disconnect all power cables from the system before performing this procedure.

Tip – See Section 4.1.2, "FB-DIMM Guidelines" on page 4-4 for information about configuring the FB-DIMMs.

1. **Unpackage the replacement FB-DIMMs and place them on an antistatic mat.**
2. **Ensure that the ejector tabs are in the open position.**
3. **Line up the replacement FB-DIMM with the connector (**FIGURE 4-4**).**

   Align the FB-DIMM notch with the key in the connector. This ensures that the FB-DIMM is oriented correctly.

4. **Push the FB-DIMM into the connector until the ejector tabs lock the FB-DIMM in place.**

   If the FB-DIMM does not easily seat into the connector, verify that the orientation of the FB-DIMM is as shown in FIGURE 4-4. If the orientation is reversed, damage to the FB-DIMM might occur.

5. **Repeat Step 2 through Step 4 until all replacement FB-DIMMs are installed.**

6. **Replace the air duct to the down position.**

7. **Install the top cover.**

   See Section 6.1, "Installing the Top Cover" on page 6-2.

8. **Slide the server into the rack.**

   See Section 6.3, "Returning the Server to the Normal Rack Position" on page 6-4.

9. **Reconnect the power cord (or cords) to the power supply (or supplies).**

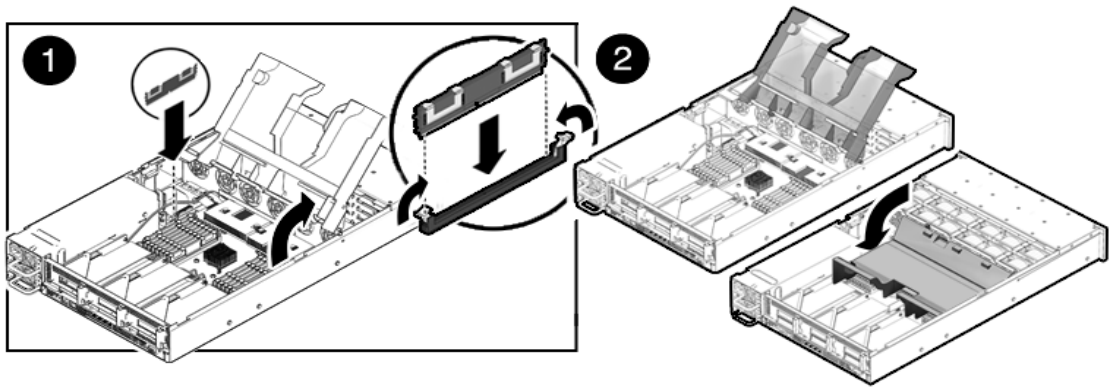
   Verify that the AC Present LED is lit.

   See Section 6.4, "Powering On the Server" on page 6-6.

10. **Power on the server.**

    See Section 6.4, "Powering On the Server" on page 6-6.

FIGURE 4-4 Installing FB-DIMMs



4.1.5 Installing Additional FB-DIMMs

Before you begin, see Section 4.1.2, "FB-DIMM Guidelines" on page 4-4, for information about FB-DIMM configuration guidelines.

Caution – Ensure that all power is removed from the server before installing FB-DIMMs or damage to the FB-DIMMs might occur. You must disconnect all power cables from the system before performing this procedure.

1. **Unpackage the replacement FB-DIMMs and place them on an antistatic mat.**
2. **Ensure that the ejector tabs are in the open position.**
3. **Line up the FB-DIMM with the connector (**FIGURE 4-4**).**

   Align the FB-DIMM notch with the key in the connector. This ensures that the FB-DIMM is oriented correctly.
4. **Push the FB-DIMM into the connector until the ejector tabs lock the FB-DIMM in place.**

   If the FB-DIMM does not easily seat into the connector, verify that the orientation of the FB-DIMM is as shown in FIGURE 4-3. If the orientation is reversed, damage to the FB-DIMM might occur.
5. **Repeat** Step 2 **through** Step 4 **until all FB-DIMMs are installed.**
6. **Replace the air duct to the down position.**
7. **Install the top cover.**

   See Section 6.1, “Installing the Top Cover” on page 6-2.
8. **Slide the server into the rack.**

   See Section 6.3, “Returning the Server to the Normal Rack Position” on page 6-4.
9. **Reconnect the power cord (or cords) to the power supply (or supplies).**

   Verify that the AC Present LED is lit.

   See Section 6.4, “Powering On the Server” on page 6-6.
10. **Power on the server.**

    See Section 6.4, “Powering On the Server” on page 6-6.

4.2 Servicing the Air Duct

You must remove the air duct when removing and installing the following components:

- Power distribution board
- Power supply unit (PSU) PDB

- Paddle card
- Motherboard

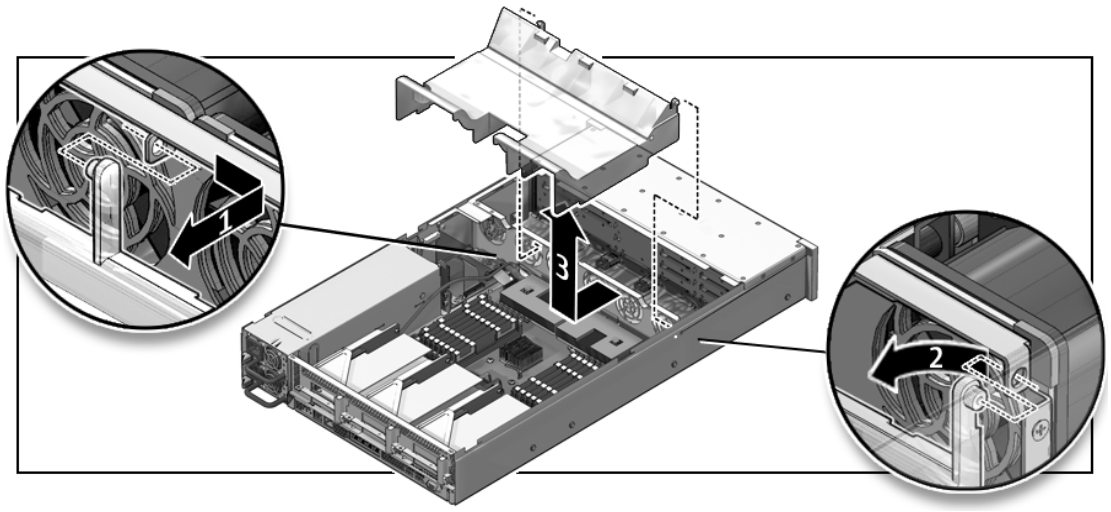
Note – This is a customer-replaceable unit.

Caution – To prevent the system from overheating, ensure that the air duct is correctly installed before powering on the server.

4.2.1 Removing the Air Duct

1. **Prepare the server for service.**
   a. **Power off the server.**
      See Section 2.4, "Powering Off the Server" on page 2-3.
   b. **Disconnect the power cord (or cords) from the power supply (or supplies).**
      See Section 2.4, "Powering Off the Server" on page 2-3.
   c. **Slide the server out of the rack.**
      See Section 2.5, "Extending the Server to the Maintenance Position" on page 2-5.
   d. **Attach an antistatic wrist strap.**
      See Section 2.7, "Performing Electrostatic Discharge and Antistatic Prevention Measures" on page 2-9.
   e. **Remove the top cover.**
      See Section 2.8, "Removing the Top Cover" on page 2-11.
2. **Slide the air duct to the right to disengage the left hand pin as shown in** FIGURE 4-5**.**
3. **Slide the air duct to the left to disengage the right hand pin.**
4. **Move the air duct towards the back to clear the lip on the midwall.**
5. **Lift the air duct out of the server.**
6. **Set the air duct aside.**

FIGURE 4-5 Removing the Air Duct



4.2.2 Installing the Air Duct

Caution – When the server is in operation, ensure that the air duct is correctly installed to prevent the system from overheating.

1. **Install the air duct into the chassis as shown in** FIGURE 4-6**.**

   Ensure that the air duct is aligned and fully seated in the chassis.

2. **Move the air duct towards the front.**
3. **Slide the air duct to the left to engage the right-hand pin.**
4. **Slide the air duct to the right to engage the left-hand pin.**
5. **Return the server to operation.**

   a. **Install the top cover.**

      See Section 6.1, "Installing the Top Cover" on page 6-2.

   b. **Slide the server into the the rack.**

      See Section 6.3, "Returning the Server to the Normal Rack Position" on page 6-4.

c. **Reconnect the power cord (or cords) to the power supply (or supplies).**

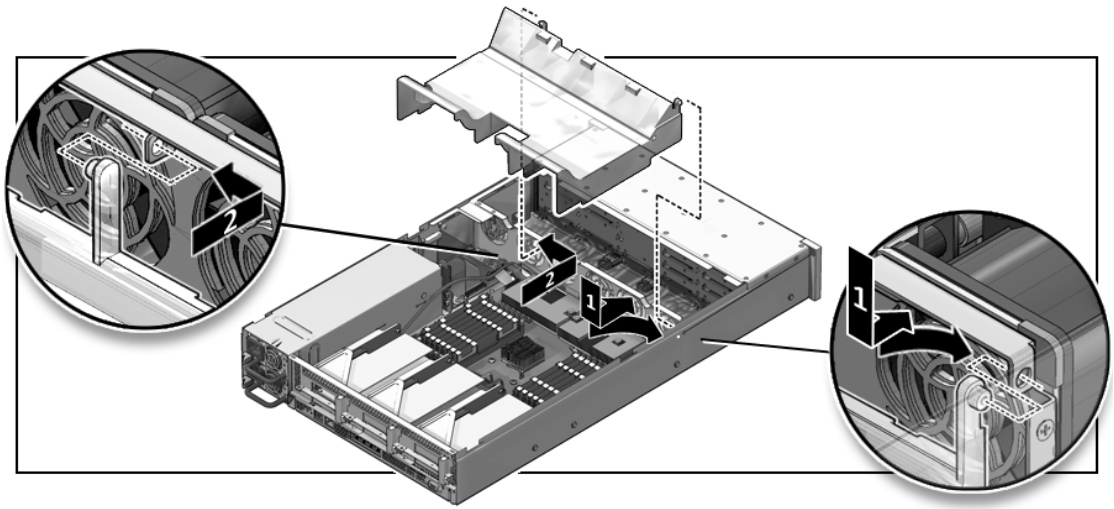
Verify that the AC Present LED is lit.

See Section 6.4, "Powering On the Server" on page 6-6.

d. **Power on the server.**

See Section 6.4, "Powering On the Server" on page 6-6.

FIGURE 4-6 Installing the Air Duct



4.3 Servicing PCIe Risers

PCIe cards are installed on vertical risers. You must remove the relevant riser to access a PCIe card. You must remove all three PCIe risers when replacing the motherboard.

Note – This is a customer-replaceable unit.

Caution – This procedure requires that you handle components that are sensitive to static discharge. This sensitivity can cause the component to fail. To avoid damage, ensure that you follow antistatic practices as described in Section 2.7.1, "Electrostatic Discharge Safety Measures" on page 2-9.

4.3.1 Removing a PCIe Riser

Caution – Ensure that all power is removed from the server before removing or installing risers. You must disconnect the power cables before performing this procedure.

1. **Prepare the server for service.**
   a. **Power off the server.**
      See Section 2.4, "Powering Off the Server" on page 2-3.
   b. **Disconnect the power cord (or cords) from the power supply (or supplies).**
      See Section 2.4, "Powering Off the Server" on page 2-3.
   c. **Attach an antistatic wrist strap.**
      See Section 2.7, "Performing Electrostatic Discharge and Antistatic Prevention Measures" on page 2-9.
   d. **Disconnect any data cables connected to the cards on the PCIe riser being removed.**
      Label the cables to ensure proper connection later.
   e. **Slide the server out of the rack.**
      See Section 2.5, "Extending the Server to the Maintenance Position" on page 2-5.

f. **Remove the top cover.**

See Section 2.8, “Removing the Top Cover” on page 2-11.

2. **If you are servicing a PCIe card, locate its position in the system.**
3. **Disconnect any data cables connected to the cards on the PCIe riser being removed.**

Label the cables to ensure proper connection later.

4. **Remove the rear panel PCI cross beam. (FIGURE 4-7) [1]**

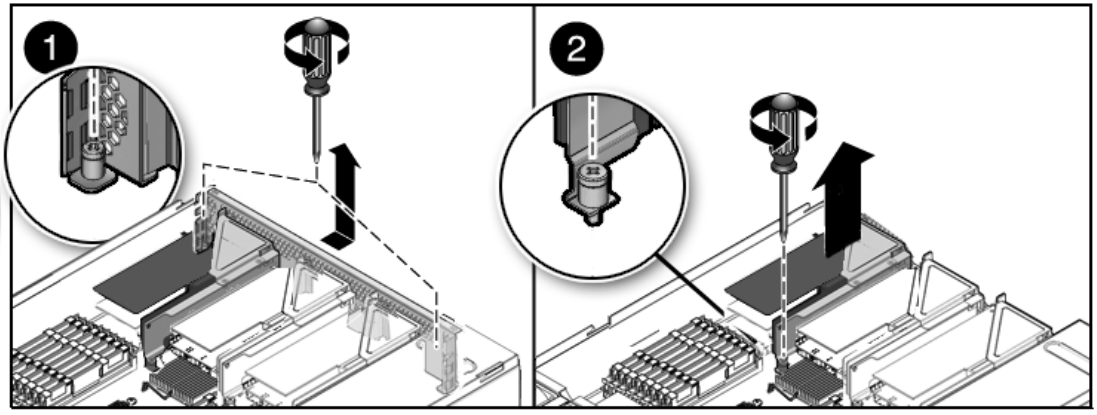
a. **Loosen the two captive Phillips screws on the end of the PCI cross beam.**

b. **Lift the PCI cross beam up and back to remove it from the chassis.**

5. **Loosen the captive retaining screw holding the front end of the riser to the motherboard. [2]**
6. **Lift the riser up to remove it from the server.**

Remove the riser and any PCIe cards attached to it as a unit.

FIGURE 4-7 Removing a PCIe Riser

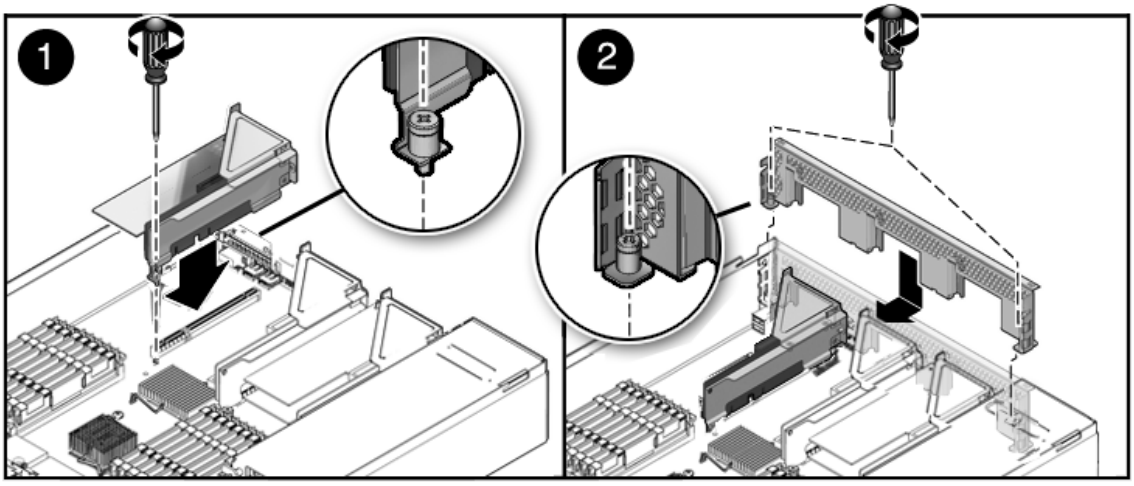


4.3.2 Installing a PCIe Riser

Caution – Ensure that all power is removed from the server before removing or installing risers. You must disconnect the power cables before performing this procedure.

1. **Lower the PCIe riser and any cards attached to it into the system. (**FIGURE 4-8 **[1])**
2. **Slide the back of the riser into the motherboard rear panel stiffener.**
3. **Tighten the screw that secures the riser to the motherboard.**
4. **Install the rear panel PCI cross beam. [2]**
   a. **Slide the cross beam down over the PCIe risers.**
   b. **Secure the PCI cross beam with two captive Phillips screws.**
5. **Return the server to operation.**
   a. **Install the top cover.**
      See Section 6.1, “Installing the Top Cover” on page 6-2.
   b. **Connect any data cables to the PCIe card.**
      Route data cables through the cable management arm.
   c. **Slide the server into the rack.**
      See Section 6.3, “Returning the Server to the Normal Rack Position” on page 6-4.
   d. **Reconnect the power cord (or cords) to the power supply (or supplies).**
      Verify that the AC Present LED is lit.
      See Section 6.4, “Powering On the Server” on page 6-6.
   e. **Power on the server.**
      See Section 6.4, “Powering On the Server” on page 6-6.

FIGURE 4-8 Installing a PCIe Riser



4.4 Servicing PCIe Cards

See Section 4.4.1, "Sun Fire X4250 PCIe Card Guidelines" on page 4-17 for PCIe card configuration guidelines. The following topics are covered:

- Section 4.4.1, "Sun Fire X4250 PCIe Card Guidelines" on page 4-17
- Section 4.4.2, "Removing PCIe Cards" on page 4-18
- Section 4.4.3, "Installing PCIe Cards" on page 4-20

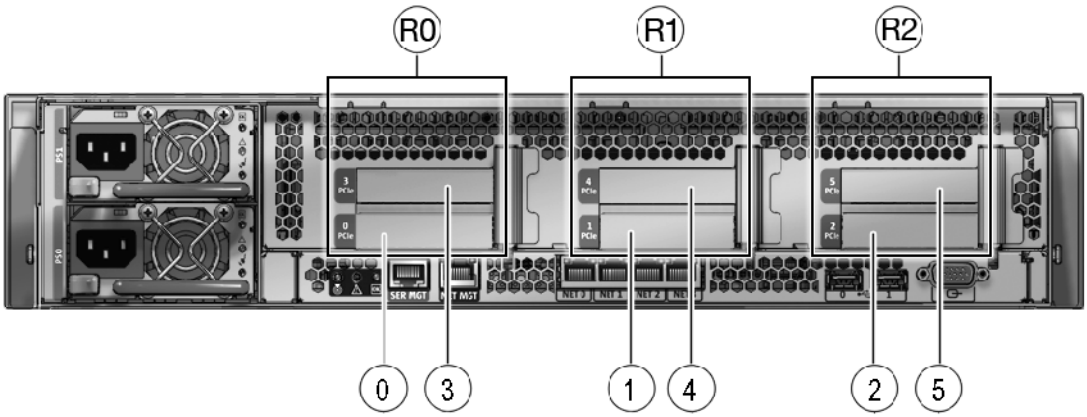
Caution – This procedure requires that you handle components that are sensitive to static discharge. This sensitivity can cause the component to fail. To avoid damage, ensure that you follow antistatic practices as described in Section 2.7, "Performing Electrostatic Discharge and Antistatic Prevention Measures" on page 2-9.

Caution – Ensure that all power is removed from the server before removing or installing expansion cards. You must disconnect the power cables before performing this procedure.

4.4.1 Sun Fire X4250 PCIe Card Guidelines

The PCI expansion system is configured using a variety of riser cards. The connector is an x16 but the cards may operate at x8. All connectors operate at x8 and the active riser x8 slots share a single x8.

FIGURE 4-9 Identifying PCIe Cards

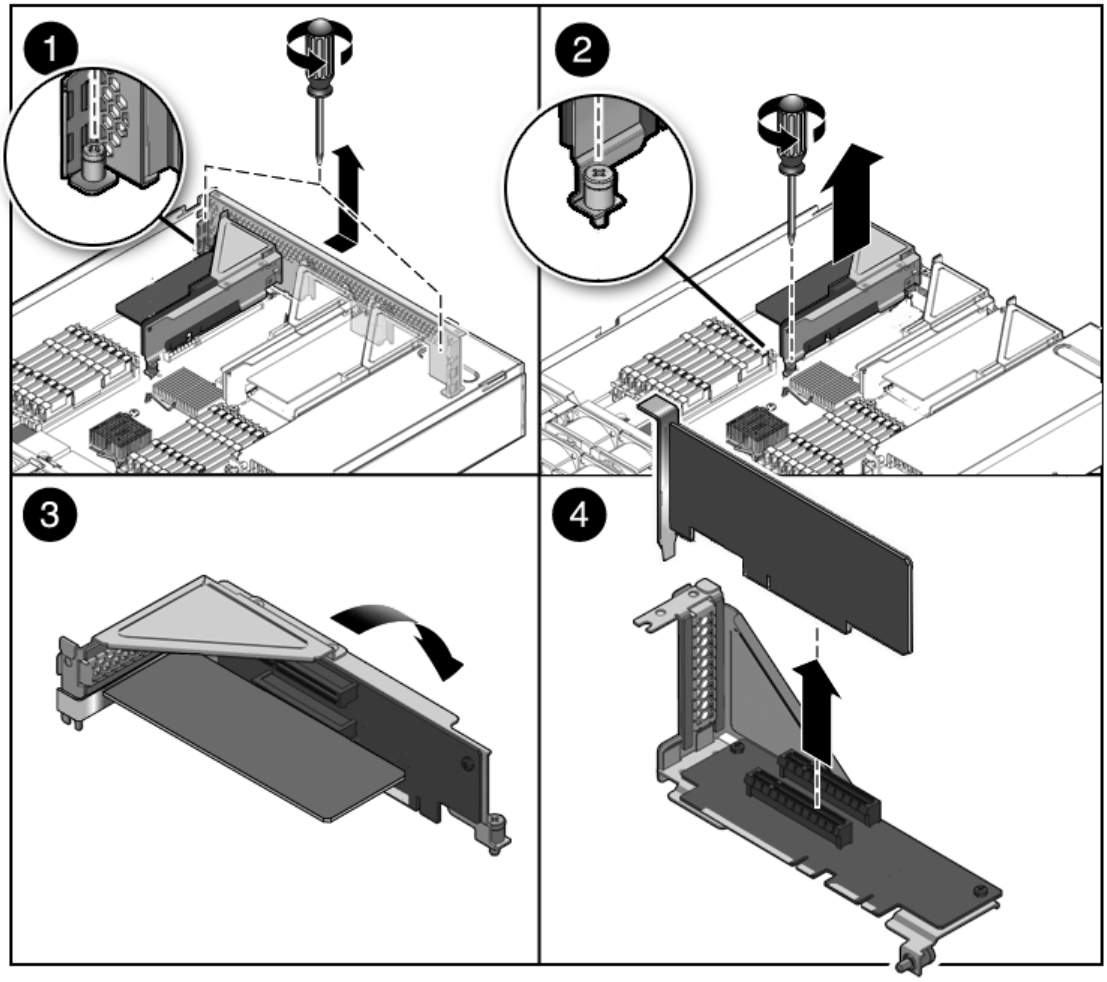


4.4.2 Removing PCIe Cards

Caution – Ensure that all power is removed from the server before removing or installing expansion cards. You must disconnect the power cables before performing this procedure.

1. **Prepare the server for service.**
   a. **Power off the server.**
      See Section 2.4, "Powering Off the Server" on page 2-3.
   b. **Disconnect the power cord (or cords) from the power supply (or supplies).**
      See Section 2.4, "Powering Off the Server" on page 2-3.
   c. **Slide the server out of the rack.**
      See Section 2.5, "Extending the Server to the Maintenance Position" on page 2-5.
   d. **Attach an antistatic wrist strap.**
      See Section 2.7, "Performing Electrostatic Discharge and Antistatic Prevention Measures" on page 2-9.
   e. **Remove the top cover.**
      See Section 2.8, "Removing the Top Cover" on page 2-11.
2. **Locate the PCIe card that you want to remove, and note its corresponding riser board.**
   See Section 1.4, "Sun Fire X4250 Server Rear Panel Features" on page 1-8 for more information about PCIe slots and their locations.
3. **If necessary, make a note of where the PCIe cards are installed.**
4. **Unplug all data cables from the card.**
   Note the location of all cables for reinstallation later.
5. **Remove the rear panel crossbeam and then the riser board. (**FIGURE 4-10**)**
   See Section 4.3, "Servicing PCIe Risers" on page 4-13.
6. **Carefully remove the PCIe card from the riser board connector.**
7. **Place the PCIe card on an antistatic mat.**
8. **If you are not replacing the PCIe card, install a PCIe filler panel.**
   PCIe filler panels are located in the motherboard rear panel.

FIGURE 4-10 Removing a PCIe Card



4.4.3 Installing PCIe Cards

Caution – Ensure that all power is removed from the server before removing or installing expansion cards. You must disconnect the power cables before performing this procedure.

1. **Unpack the replacement PCIe card and place it on an antistatic mat.**
2. **Locate the proper PCIe slot for the card you are replacing.**
3. **If necessary, review the PCIe Card Guidelines to plan your installation.**

   See Section 4.4.1, "Sun Fire X4250 PCIe Card Guidelines" on page 4-17 for additional information.
4. **Remove the PCIe riser board.**

   See Section 4.3, "Servicing PCIe Risers" on page 4-13.
5. **If the server has been continously used for an extended time, inspect the slot for particles.**

   Clean the slot with filtered, compressed air, as required.
6. **Remove the PCI filler panel.**

   PCIe filler panels are located in the motherboard rear panel.
7. **Insert the PCIe card into the correct slot on the riser board. (**FIGURE 4-11**)**
8. **Replace the riser board.**

   a. **Slide the riser back until it seats in its slot in the rear panel.**

   b. **Tighten the captive No. 2 Phillips screw securing the riser to the motherboard.**
9. **Install the top cover.**

   See Section 6.1, "Installing the Top Cover" on page 6-2.
10. **Slide the server into the rack.**

    See Section 6.3, "Returning the Server to the Normal Rack Position" on page 6-4.
11. **Connect any required data cables to the PCIe card.**

    Route data cables through the cable management arm.
12. **Reconnect the power cord (or cords) to the power supply (or supplies).**

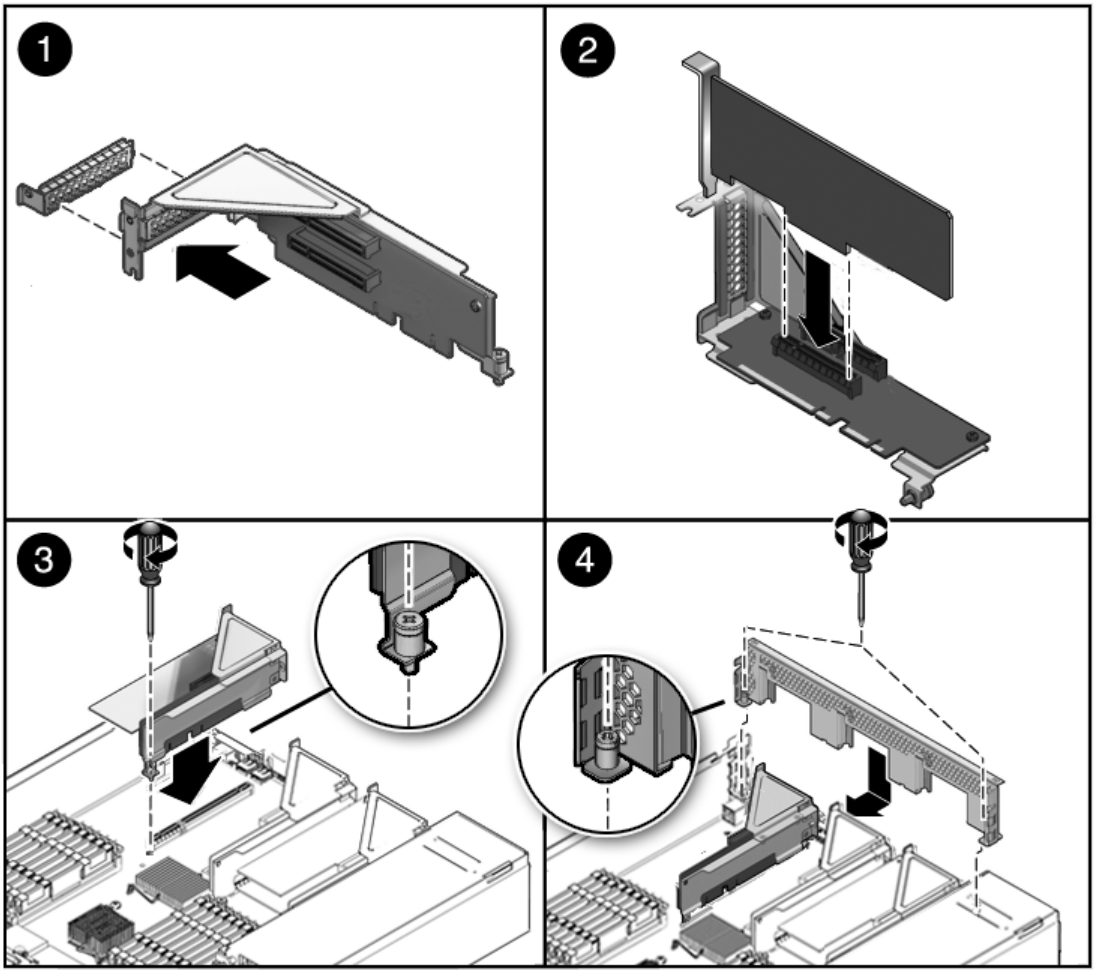
    Verify that the AC Present LED is lit.

    See Section 6.4, "Powering On the Server" on page 6-6.

13. **Power on the server.**

See Section 6.4, “Powering On the Server” on page 6-6.

FIGURE 4-11 Installing a PCIe Card



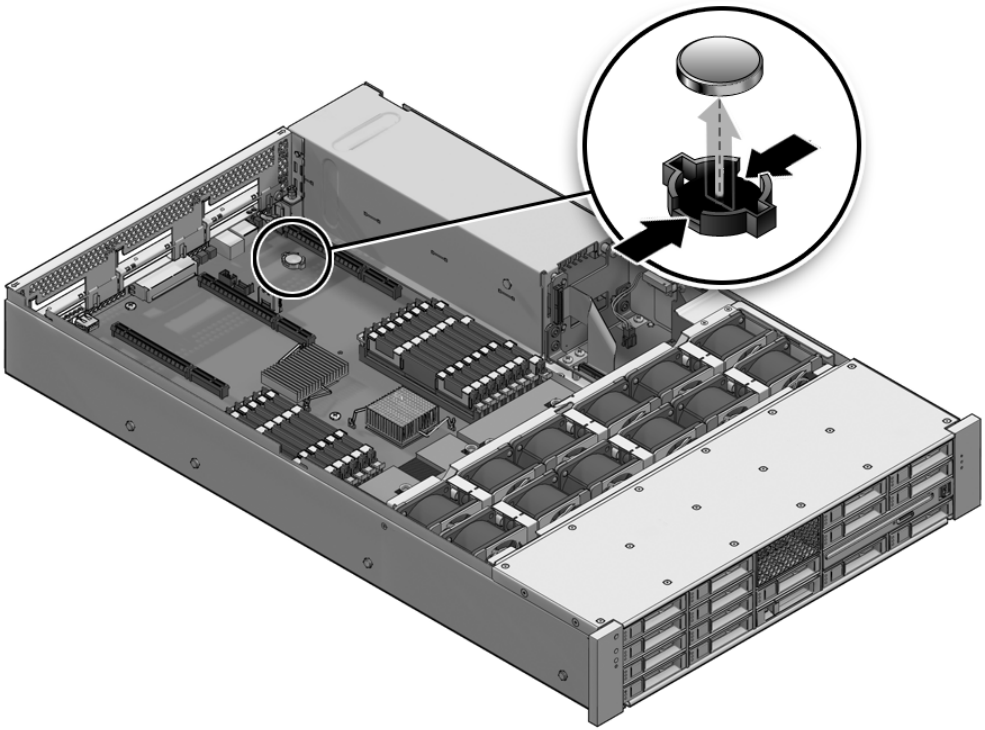
4.5 Servicing the Battery

The battery maintains system time when the server is powered off and a time server is unavailable. If the server fails to maintain the proper time when powered off and not connected to a network, replace the battery. **(**FIGURE 4-12**)**

You need a small (No. 1 flat-blade) non-metallic screwdriver or equivalent.

Caution – Ensure that all power is removed from the server before removing or installing the battery. You must disconnect the power cables from the system before performing this procedure.

FIGURE 4-12 Battery Location



4.5.1 Removing the Battery

1. **Prepare the server for service.**
   a. **Power off the server.**
      See Section 2.4, “Powering Off the Server” on page 2-3.
   b. **Disconnect the power cord (or cords) from the power supply (or supplies).**
      See Section 2.4, “Powering Off the Server” on page 2-3.
   c. **Slide the server out of the rack.**
      See Section 2.5, “Extending the Server to the Maintenance Position” on page 2-5.
   d. **Attach an antistatic wrist strap.**
      See Section 2.7, “Performing Electrostatic Discharge and Antistatic Prevention Measures” on page 2-9.
   e. **Remove the top cover.**
      See Section 2.8, “Removing the Top Cover” on page 2-11.
2. **Remove the PCIe riser closest to the power supply.**
   See Section 4.3.1, “Removing a PCIe Riser” on page 4-13.
   See Section 4.4.1, “Sun Fire X4250 PCIe Card Guidelines” on page 4-17.
3. **Press the latch and remove the battery from the motherboard.**
   Use a small (No. 1 flat-blade) non-metallic screwdriver or equivalent.

4.5.2 Installing the Battery

1. **Unpack the replacement battery.**
2. **Press the new battery into the motherboard.**
   Install the positive side (+) facing upward, away from the motherboard.
3. **Install PCIe riser 0 with any associated cards.**
   See Section 4.3.2, “Installing a PCIe Riser” on page 4-14.
4. **Return the server to operation.**
   a. **Install the top cover.**
      See Section 6.1, “Installing the Top Cover” on page 6-2.

b. **Slide the server into the the rack.**

   See Section 6.3, "Returning the Server to the Normal Rack Position" on page 6-4.

c. **Reconnect the power cord (or cords) to the power supply (or supplies).**

   Verify that the AC Present LED is lit.

   See Section 6.4, "Powering On the Server" on page 6-6.

d. **Power on the server.**

   See Section 6.4, "Powering On the Server" on page 6-6.

5. **Use the ILOM `set date` command to set the day and time.**

   See the *Integrated Lights Out Management Guide.*

4.6 Servicing the Motherboard Assembly

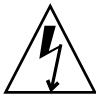
The following topics are covered:

- Section 4.6.1, "Removing the Motherboard Assembly" on page 4-25
- Section 4.6.2, "Installing the Motherboard Assembly" on page 4-27

You must remove the motherboard assembly to access the following components:

- Power distribution board
- Paddle card

Note – FRU: This field-replaceable unit should be replaced only by qualified service technicians. Contact your Sun Service representative for assistance.



Caution – Ensure that all power is removed from the server before removing or installing the motherboard assembly. You must disconnect the power cables from the system before performing this procedure.

Caution – This procedure requires that you handle components that are sensitive to electrostatic discharge. This discharge can cause server components to fail. To avoid damage, ensure that you follow the antistatic practices as described in Section 2.7, "Performing Electrostatic Discharge and Antistatic Prevention Measures" on page 2-9.

Caution – This procedure requires removing the server from the rack. The server is heavy. Two people are required to remove it from the rack.

4.6.1 Removing the Motherboard Assembly

You need a No. 2 Phillips screwdriver.

1. **Prepare the server for service.**
   a. **Power off the server.**
      See Section 2.4, “Powering Off the Server” on page 2-3.
   b. **Disconnect the power cord (or cords) from the power supply (or supplies).**
      See Section 2.4, “Powering Off the Server” on page 2-3.
   c. **Remove the server from the rack.**
      See Section 2.6, “Removing a Server From the Rack” on page 2-7..
   d. **Attach an antistatic wrist strap.**
      See Section 2.7, “Performing Electrostatic Discharge and Antistatic Prevention Measures” on page 2-9.
   e. **Remove the top cover.**
      See Section 2.8, “Removing the Top Cover” on page 2-11.
2. **Remove the air duct.**
   See Section 4.2.1, “Removing the Air Duct” on page 4-10.
3. **Remove the PCIe cards and risers.**
   See Section 4.3.1, “Removing a PCIe Riser” on page 4-13. Note the location of expansion cards in the PCIe risers.
4. **Disconnect the power distribution board ribbon cable. (**FIGURE 4-13 **[1])**
   See Section 5.8.3, “Removing a PDB Cable” on page 5-26.
5. **Disconnect the drive data cables.**
   See Section 1.2.2, “System Cables” on page 1-5.

Caution – The drive data cables are delicate. Ensure that they are safely out of the way when servicing the motherboard.

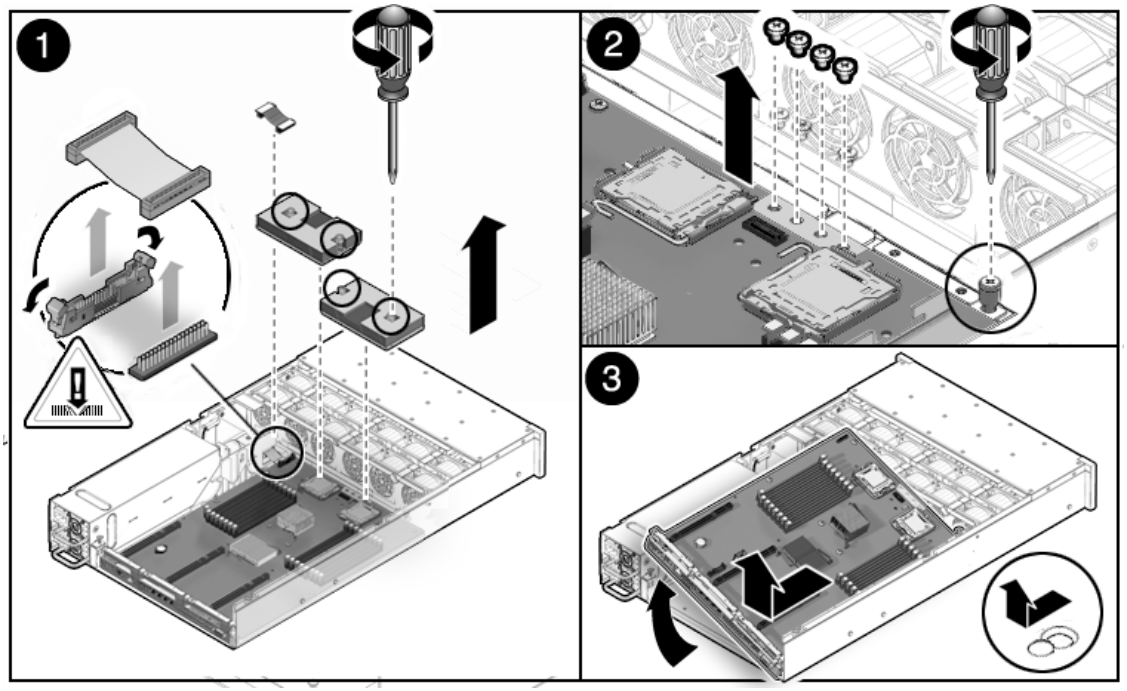
6. **Remove the heatsink covering the busbar screws to access the bus bar.**
7. **Remove the 4 screws that secure the motherboard to the bus bar. [2]**

   Use a No. 2 Phillips screwdriver.
8. **Loosen the captive motherboard retaining screw.**
9. **Lift the motherboard tray out of the chassis. [3]**

   Move the motherboard carefully. Gently slide the motherboard to the rear and carefully lift it upward.
10. **If you are replacing the motherboard only, remove the CPUs, as required.**

    See Section 4.7.2, "Removing a CPU" on page 4-31.
11. **Place the motherboard assembly on an antistatic mat.**

FIGURE 4-13 Removing the Motherboard Assembly



4.6.2 Installing the Motherboard Assembly

Caution – This procedure requires that you handle components that are sensitive to static discharge. Static discharges can cause component failures. To avoid damage, ensure that you follow antistatic practices as described in Section 2.7, "Performing Electrostatic Discharge and Antistatic Prevention Measures" on page 2-9.

1. **Power off the server.**

   See Section 2.4, "Powering Off the Server" on page 2-3.

2. **Attach an antistatic wrist strap.**

   See Section 2.7, "Performing Electrostatic Discharge and Antistatic Prevention Measures" on page 2-9.

3. **If you are replacing the motherboard only, replace the CPUs, as required.**

   Apply thermal grease. Follow the applicable grease procedure included with the grease.

   See Section 4.7.3, "Installing a CPU (Reusing Heatsink)" on page 4-32.

4. **Place the motherboard tray into the chassis. (**FIGURE 4-14**)**

   - Move the motherboard tray carefully. [1]
   - Gently slide the motherboard to the front and carefully set it down. [2]
   - The blind mushroom standoffs must engage the keyhole slots in the tray. Align the tray before moving the tray forward to latch.

5. **Install the 4 screws that secure the motherboard to the bus bar. [3]**

   Torque screws to 7 inch-pounds (0.8 newton-meters). Use a manual torque driver settable to 7 inch-pounds (0.8 newton-meters) with a No. 2 Phillips screwdriver.

6. **Fasten the captive screw at the front of the motherboard. [3]**

7. **Install the CPU heat sinks on the motherboard assembly.**

   See Section 4.7.4, "Installing a CPU (Replacing Heatsink)" on page 4-35.

8. **Carefully connect the power distribution board ribbon cable to the motherboard. [3]**

   Make sure it is seated properly.

   See Section 5.8.4, "Installing a PDB Cable" on page 5-28.

9. **Connect the two drive data cables.**

   See Section 1.2.2, "System Cables" on page 1-5.

   - Be careful when routing the drive cables so they are not pinched and are underneath the ribs on the support.

- Ensure that the two cables are placed behind the plastic shield between the CPU and the power supply housing.

Caution – The drive data cables are delicate. Carefully connect them and make sure that they are seated properly when servicing the motherboard.

10. **Tighten the captive retaining screw that holds the front end of the riser to the motherboard.**

    Be careful when routing the drive cables so they do not get pinched and are underneath the ribs on the support.

11. **Reinstall the PCIe cards and risers.**

    See Section 4.3.2, "Installing a PCIe Riser" on page 4-14.

12. **Return the server to operation.**

    a. **Install the top cover.**

       See Section 6.1, "Installing the Top Cover" on page 6-2.

    b. **Install the server into the rack.**

       See Section 6.2, "Reinstalling the Server in the Rack" on page 6-3.

    c. **Reconnect the power cord (or cords) to the power supply (or supplies).**

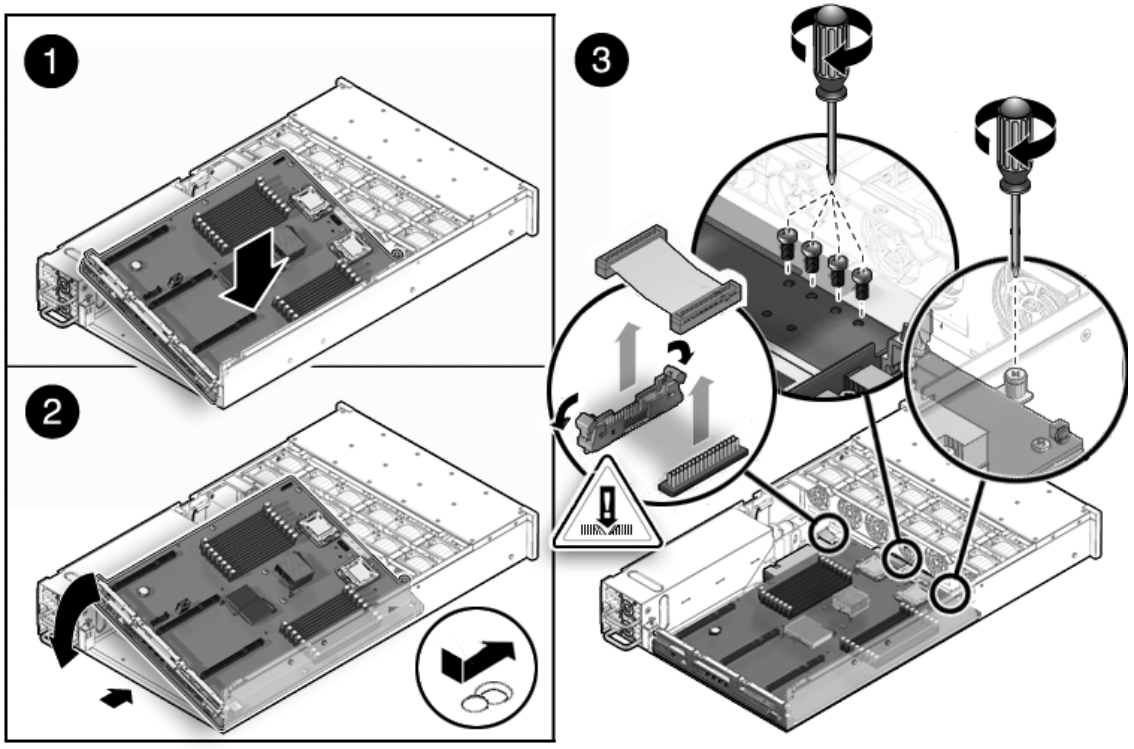
       Verify that the AC Present LED is lit.

       See Section 6.4, "Powering On the Server" on page 6-6.

    d. **Power on the server.**

       See Section 6.4, "Powering On the Server" on page 6-6.

FIGURE 4-14 Installing the Motherboard Assembly



4.7 Servicing CPUs

The following topics are covered:

- Section 4.7.2, “Removing a CPU” on page 4-31
- Section 4.7.3, “Installing a CPU (Reusing Heatsink)” on page 4-32
- Section 4.7.4, “Installing a CPU (Replacing Heatsink)” on page 4-35

Note – FRU: This field-replaceable unit should be replaced only by qualified service technicians. Contact your Sun Service representative for assistance.

A CPU FRU requires trained personnel to apply thermal grease. For Xoption CPUs, the grease is preinstalled.

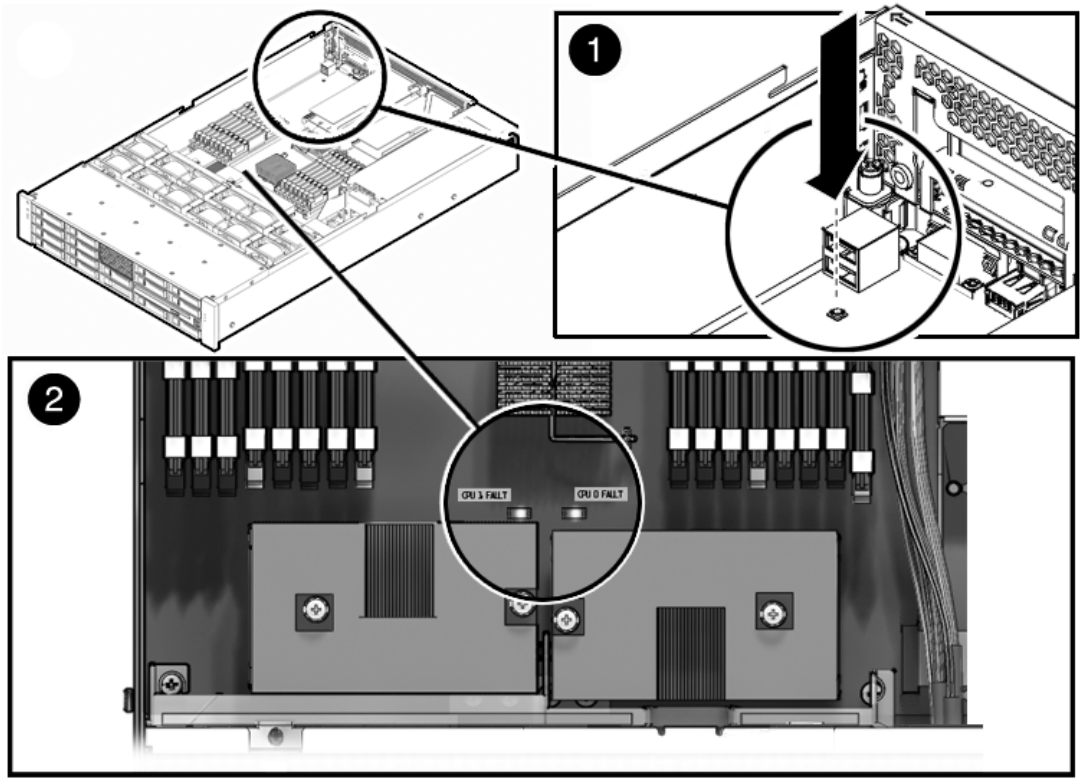
See Section 1.5, “Illustrated Parts Breakdown” on page 1-9 for illustrations of the server and CPUs.

4.7.1 CPU Fault Remind Button

If you are replacing a faulty CPU, press the Remind button on the motherboard to locate the CPU that you want to replace. (FIGURE 4-15)

The faulty CPU LED flashes when the Fault Remind button is pressed and held. All faulty CPUs are indicated with an amber LED, so that you can install the replacement CPU in the same location.

FIGURE 4-15 CPU Remind Button

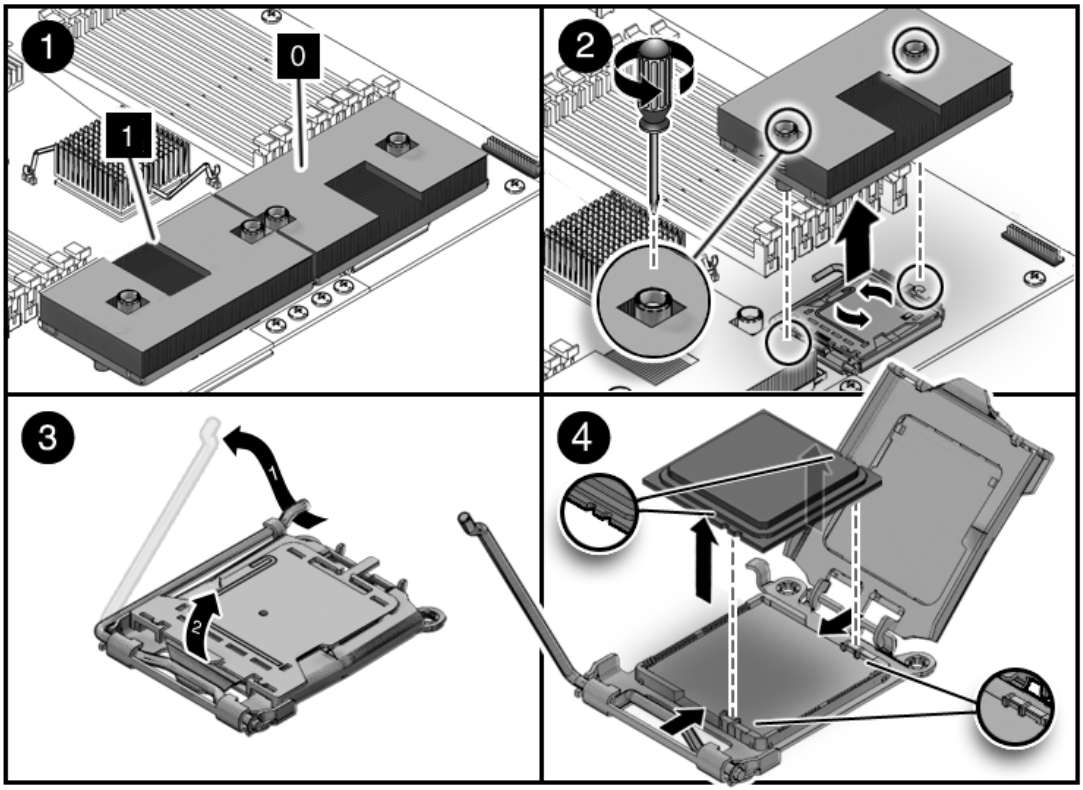


4.7.2 Removing a CPU

To remove a CPU.

1. **Prepare the server for service.**
   a. **Power off the server.**
      See Section 2.4, “Powering Off the Server” on page 2-3.
   b. **Disconnect the power cord (or cords) from the power supply (or supplies).**
      See Section 2.4, “Powering Off the Server” on page 2-3.
   c. **Slide the server out of the rack.**
      See Section 2.5, “Extending the Server to the Maintenance Position” on page 2-5.
   d. **Attach an antistatic wrist strap.**
      See Section 2.7, “Performing Electrostatic Discharge and Antistatic Prevention Measures” on page 2-9.
   e. **Remove the top cover.**
      See Section 2.8, “Removing the Top Cover” on page 2-11.
2. **Identify which CPU to remove. (**FIGURE 4-16 **[1])**
   CPU 0 is closest to the PSU bay. CPU 1 is furthest from the PSU bay.
3. **Unscrew the two heatsink screws. (**FIGURE 4-16 **[2])**
4. **Twist the heatsink slightly to break the seal with grease, and then lift off the heatsink.**
5. **Disengage the lever by rotating upward. (**FIGURE 4-16 **[3])**
6. **Remove the CPU. (**FIGURE 4-16 **[4])**

FIGURE 4-16 Removing a CPU



4.7.3 Installing a CPU (Reusing Heatsink)

To install a CPU do the following. This procedure reuses the existing CPU heatsink.

1. **Prepare the server for service.**

   a. **Power off the server.**

      See Section 2.4, "Powering Off the Server" on page 2-3.

   b. **Disconnect the power cord (or cords) from the power supply (or supplies).**

      See Section 2.4, "Powering Off the Server" on page 2-3.

   c. **Slide the server out of the rack.**

      See Section 2.5, "Extending the Server to the Maintenance Position" on page 2-5.

d. **Attach an antistatic wrist strap.**

See Section 2.7, "Performing Electrostatic Discharge and Antistatic Prevention Measures" on page 2-9.

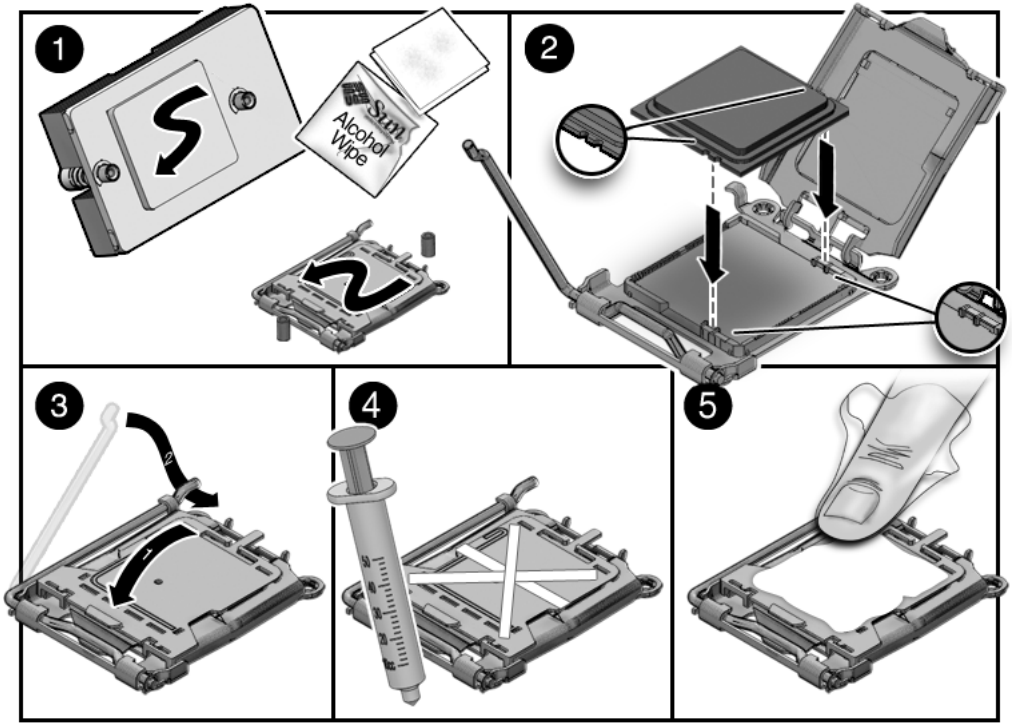
e. **Remove the top cover.**

See Section 2.8, "Removing the Top Cover" on page 2-11.

2. **Remove the heatsink on top of the failed CPU. (**FIGURE 4-18 **)**
3. **Remove the failed CPU.**
4. **Clean off the old thermal interface material from the heatsink and CPU, using the supplied alcohol wipe.**
5. **Set the heat sink aside.**
6. **Place the new CPU in the socket.**

   Make sure the orientation is correct.
7. **Engage the lever by rotating downward and pressing it into the catch. (**FIGURE 4-17**)**

FIGURE 4-17 Installing a CPU (Part 1)



8. **Using the supplied grease syringe, empty the syringe on to the CPU in a star shaped pattern.**

9. **Smooth the grease into a thin even layer on top of the CPU.**

   You can use a piece of plastic bag over your finger.

10. **Orient the heatsink so that the four screws line up with the mounting inserts.** (FIGURE 4-18)

11. **Tighten the four screws alternately one 1/2 turn in an X pattern until fully seated.**

12. **Return the server to operation.**

    a. **Install the top cover.**

       See Section 6.1, “Installing the Top Cover” on page 6-2.

    b. **Slide the server into the rack.**

       See Section 6.3, “Returning the Server to the Normal Rack Position” on page 6-4.

    c. **Reconnect the power cord (or cords) to the power supply (or supplies).**

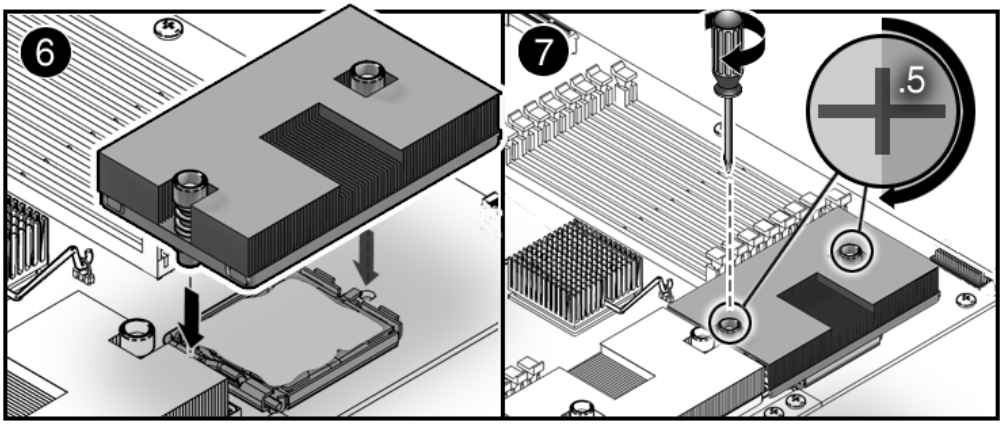
       Verify that the AC Present LED is lit.

       See Section 6.4, “Powering On the Server” on page 6-6.

    d. **Power on the server.**

       See Section 6.4, “Powering On the Server” on page 6-6.

FIGURE 4-18 Installing a CPU (Part 2)



4.7.4 Installing a CPU (Replacing Heatsink)

To install a CPU do the following. This procedure replaces the CPU heatsink.

1. **Prepare the server for service.**
   a. **Power off the server.**
      See Section 2.4, “Powering Off the Server” on page 2-3.
   b. **Disconnect the power cord (or cords) from the power supply (or supplies).**
      See Section 2.4, “Powering Off the Server” on page 2-3.
   c. **Slide the server out of the rack.**
      See Section 2.5, “Extending the Server to the Maintenance Position” on page 2-5.
   d. **Attach an antistatic wrist strap.**
      See Section 2.7, “Performing Electrostatic Discharge and Antistatic Prevention Measures” on page 2-9.
   e. **Remove the top cover.**
      See Section 2.8, “Removing the Top Cover” on page 2-11.
2. **Remove the shipping cover from socket.**
3. **Clean the top of the CPU with the provided alcohol wipe.**
4. **Place the CPU in the socket with the correct orientation.**
5. **Engage the lever by rotating downward and pressing into the catch.**
6. **Remove the plastic protective cover from the heatsink.**
   Be careful not to disturb or touch the pre-installed thermal interface material.
7. **Orient the heatsink so the four screws line up with the mounting studs.**
8. **Tighten the four screws alternately one 1/2 turn in an X pattern until fully seated.**
9. **Return the server to operation.**
   a. **Install the top cover.**
      See Section 6.1, “Installing the Top Cover” on page 6-2.
   b. **Slide the server into the rack.**
      See Section 6.3, “Returning the Server to the Normal Rack Position” on page 6-4.

c. **Reconnect the power cord (or cords) to the power supply (or supplies).**

Verify that the AC Present LED is lit.

See Section 6.4, "Powering On the Server" on page 6-6.

d. **Power on the server.**

See Section 6.4, "Powering On the Server" on page 6-6.

4.8 Resetting Passwords and Clearing CMOS NVRAM

The following topics are covered:

4.8.1 Overview

Clearing CMOS settings resets the BIOS settings, including the BIOS password. You can reset a password from the BIOS screen or with a jumper. You can also clear the CMOS NVRAM and BIOS password by changing jumpers as listed in TABLE 4-1.

TABLE 4-1 Sun Fire X4250 Server Jumpers

Jumper	Function	Location
J602	Clears the SP password.	Access on the motherboard in the rear next to the SP, below PCIe slot 1, PCIe riser 1.
J1802	Clears the CMOS NVRAM and the BIOS password.	Access on the motherboard in the rear next to the SATA connector, below PCIe slot 0, PCIe riser 0.

4.8.2 Resetting a Service Processor Password From the BIOS Screen

To reset a password for the Service Processor, access the BIOS Security screen.

1. **Boot the server.**
2. **Press F2 at the Sun splash screen to enter Setup.**
3. **At the BIOS screen, move to the Security Screen tab.**
4. **Change the password.**
5. **Save and Exit the BIOS.**

   The system restarts.

   See Section , "BIOS Screens" on page C-1 for additional BIOS information.

4.8.3 Resetting the SP Password Using a Jumper

To reset a password for the BIOS by changing a jumper.

1. **Prepare the server for service.**

   a. **Power off the server.**

      See Section 2.4, "Powering Off the Server" on page 2-3.

   b. **Disconnect the power cord (or cords) from the power supply (or supplies).**

      See Section 2.4, "Powering Off the Server" on page 2-3.

   c. **Slide the server out of the rack.**

      See Section 2.5, "Extending the Server to the Maintenance Position" on page 2-5.

   d. **Attach an antistatic wrist strap.**

      See Section 2.7, "Performing Electrostatic Discharge and Antistatic Prevention Measures" on page 2-9.

   e. **Remove the top cover.**

      See Section 2.8, "Removing the Top Cover" on page 2-11.

2. **Locate the 2 pin header J602.**

   Access the J602 jumper on the rear of the motherboard next to the SP, below PCIe slot 1, PCIe riser 1.

3. **Place the jumper across the 2 pins of the header..**

4. **Power on the server and boot until you see a message that the password has been cleared.**

5. **Power off the server, and remove AC power.**

6. **Remove the jumper from J602.**

7. **Return the server to operation.**

   a. **Install the top cover.**

      See Section 6.1, "Installing the Top Cover" on page 6-2.

   b. **Slide the server into the the rack.**

      See Section 6.3, "Returning the Server to the Normal Rack Position" on page 6-4.

   c. **Reconnect the power cord (or cords) to the power supply (or supplies).**

      Verify that the AC Present LED is lit.

      See Section 6.4, "Powering On the Server" on page 6-6.

   d. **Power on the server.**

      See Section 6.4, "Powering On the Server" on page 6-6.

   The password is reset.

4.8.4 Resetting CMOS NVRAM Using a Jumper

To clear the NVRAM using a jumper:

1. **Prepare the server for service.**

   a. **Power off the server.**

      See Section 2.4, "Powering Off the Server" on page 2-3.

   b. **Disconnect the power cord (or cords) from the power supply (or supplies).**

      See Section 2.4, "Powering Off the Server" on page 2-3.

   c. **Slide the server out of the rack.**

      See Section 2.5, "Extending the Server to the Maintenance Position" on page 2-5.

   d. **Attach an antistatic wrist strap.**

      See Section 2.7, "Performing Electrostatic Discharge and Antistatic Prevention Measures" on page 2-9.

e. **Remove the top cover.**

See Section 2.8, "Removing the Top Cover" on page 2-11.

2. **Locate the jumper header J1802.**

Access the J1802 jumper on the rear of the motherboard next to the SATA connector , below PCIe slot 0, PCIe riser 0.

3. **Place the jumper across the 2 pins of the header.**

4. **Power on the server and boot until the message about NVRAM has been cleared.**

5. **Power off the server, and remove AC power cables.**

See Section 2.4, "Powering Off the Server" on page 2-3.

6. **Remove the jumper from J1802.**

7. **Return the server to operation.**

a. **Install the top cover.**

See Section 6.1, "Installing the Top Cover" on page 6-2.

b. **Slide the server into the the rack.**

See Section 6.3, "Returning the Server to the Normal Rack Position" on page 6-4.

c. **Reconnect the power cord (or cords) to the power supply (or supplies).**

Verify that the AC Present LED is lit.

See Section 6.4, "Powering On the Server" on page 6-6.

d. **Power on the server.**

See Section 6.4, "Powering On the Server" on page 6-6.

The NVRAM is cleared.

4.9 Recovering From Corrupt Service Processor Software

If the SP (service processor) software becomes corrupted, you can reinstall the default SP software image from the Tools and Drivers CD.

You need:

- The Tools and Drivers CD.

- A bootable USB flash device.
- A jumper cap. The server has a jumper cap installed on the motherboard, next to the AST 2000 chip.

To reinstall the default SP software image:

1. **Copy the following SP files from the Tools and Drivers CD, located in the `BMCrecovery` directory, to a USB flash device.**
   - `SOCFLASH.EXE`
   - `DOS4GW`
   - `BMC Binary` *(The SP Binary file)*

Note – `SOCFLASH.EXE` is a DOS-based SP firmware recovery tool that offers customers an alternate method to using `ipmiflash` for flash recovery.

---

2. **Remove AC power from the server to be flashed.**

   See Section 2.4, "Powering Off the Server" on page 2-3.

Caution – Do not attempt to flash the system while it is still powered on. An unrecoverable error might occur.

---

3. **Disconnect the power cord (or cords) from the power supply (or supplies).**

   See Section 2.4, "Powering Off the Server" on page 2-3.

4. **Extend the server into the maintenance position.**

   See Section 2.5, "Extending the Server to the Maintenance Position" on page 2-5.

5. **Remove the top cover.**

   See Section 2.8, "Removing the Top Cover" on page 2-11.

6. **Remove PCI cards from riser 1.**

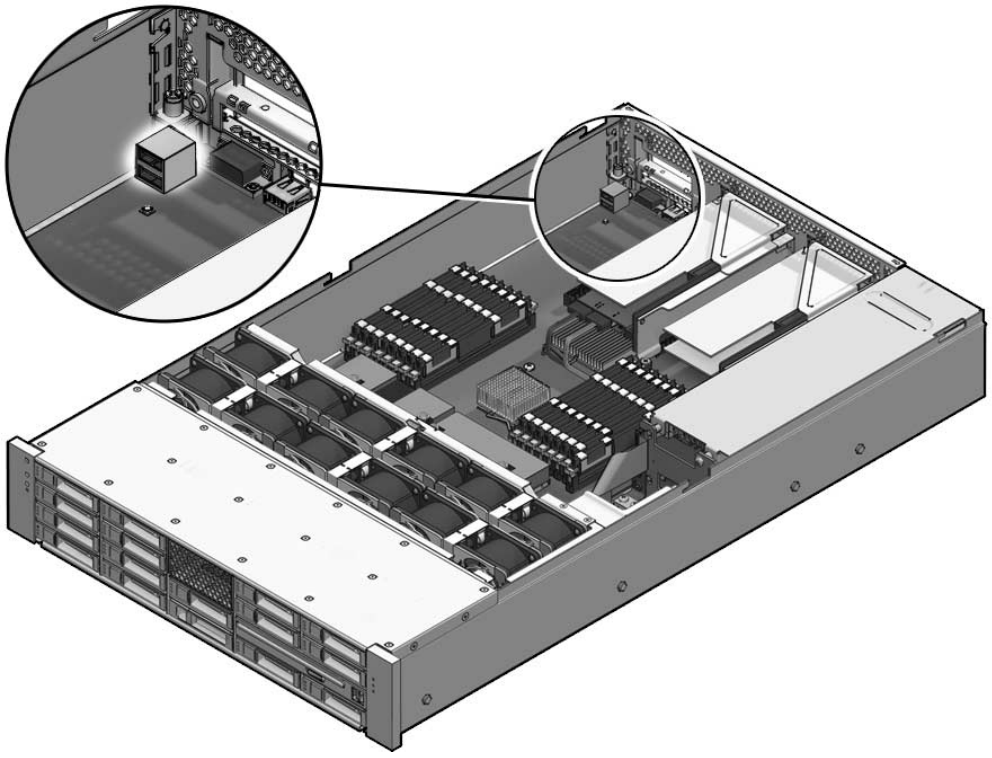
   See Section 4.4.2, "Removing PCIe Cards" on page 4-18.

7. **Use a jumper cap to short the pins at jumper J16 on the server motherboard.**

   JP16 is located toward the rear of the board, between riser 1 and riser 2 and below PCIe slot 1, PCIe riser 1.

8. **Insert a bootable flash drive into a USB port.**

FIGURE 4-19 Internal USB Port



9. **Connect AC power cables.**

   See Section 6.4, “Powering On the Server” on page 6-6.

10. **Power on the server.**

    See Section 6.4, “Powering On the Server” on page 6-6.

    A message appears stating that the BMC was not found.

    The server takes up to three minutes to boot.

11. **Press F2 to enter the system BIOS and verify that the flash device is in the boot order.**

12. **After the flash device has booted, run the following command:**

    `socflash.exe` *SP binary backup file*

    For example:

    `socflash.exe s92v092.bin backup.bin`

13. **After a successful flash, remove the AC power.**

    See Section 2.4, “Powering Off the Server” on page 2-3.

14. **Remove the jumper.**

15. **Remove the flash drive from the USB port.**

16. **Replace PCI cards from riser 1.**

    See Section 4.4.3, “Installing PCIe Cards” on page 4-20.

17. **Return the server to operation.**

    a. **Install the top cover.**

       See Section 6.1, “Installing the Top Cover” on page 6-2.

    b. **Slide the server into the the rack.**

       See Section 6.3, “Returning the Server to the Normal Rack Position” on page 6-4.

    c. **Reconnect the power cord (or cords) to the power supply (or supplies).**

       Verify that the AC Present LED is lit.

       See Section 6.4, “Powering On the Server” on page 6-6.

    d. **Power on the server.**

       See Section 6.4, “Powering On the Server” on page 6-6.

18. **Press F2 to start the BIOS.**

19. **Confirm that the SP is listed in the BIOS settings under Server/AST2000 LAN Configuration.**

20. **Exit the BIOS and start the operating system.**

4.10 Using the Reset and NMI Switches

Caution – Do not use the Reset and NMI Dump switches unless you are instructed to do so by a Field Service engineer.

4.10.1 Reset Switch

The Reset switch on the motherboard sends a reset order to the CPUs, resetting the main system, but not the service processor. The button for this switch is one of the 3 hidden (recessed) buttons on the back of the motherboard located between the NET MGT and NET0 connectors and closest to NET0. It can be pushed by sticking a paper clip or similar object through the hole provided on the rear of the chassis.

4.10.2 NMI Dump Switch

The NMI button is the center button of the row of 3 hidden (recessed) buttons on the back of the motherboard located between the NET MGT and NET0 connectors. The button for this switch can be pushed by sticking a paper clip or similar object through the hole provided on the rear of the chassis.

The Non-Maskable Interrupt (NMI) Dump switch sends an NMI order to the CPUs, which is used by Field Service for debugging activities at the request of operating system engineers. NMI can also be asserted by ILOM. Refer to the *Sun Integrated Lights Out Manager 2.0 User's Guide*.

CHAPTER 5

Servicing Infrastructure Boards and Components

This chapter describes how to replace cold-swappable, field-replaceable units (FRUs) in the Sun Fire X4250 server.

The following topics are covered:

Caution – Never attempt to run the server with the covers removed. Hazardous voltage is present.

Caution – Equipment damage is possible. The covers must be in place for proper air flow.

5.1 Servicing the Fan Power Boards

You must remove both fan power boards to access the paddle card or to access the drive data cables in the Sun Fire X4250 server.

Note – **FRU**: This field-replaceable unit should be replaced only by qualified service technicians. Contact your Sun Service representative for assistance.

Caution – Ensure that all power is removed from the server before removing or installing fan power boards. You must disconnect the power cables before performing this procedure.

5.1.1 Removing a Fan Power Board

1. **Prepare the server for service.**

   a. **Power off the server.**

      See Section 2.4, “Powering Off the Server” on page 2-3.

   b. **Disconnect the power cord (or cords) from the power supply (or supplies).**

      See Section 2.4, “Powering Off the Server” on page 2-3.

   c. **Slide the server out of the rack.**

      See Section 2.5, “Extending the Server to the Maintenance Position” on page 2-5.

Note – If you are removing the fan power boards to access the Vertical PDB card or drives cage, you must remove the server from the rack. See Section 2.6, “Removing a Server From the Rack” on page 2-7.

---

   d. **Attach an antistatic wrist strap.**

      See Section 2.7, “Performing Electrostatic Discharge and Antistatic Prevention Measures” on page 2-9.

   e. **Remove the top cover.**

      See Section 2.8, “Removing the Top Cover” on page 2-11.

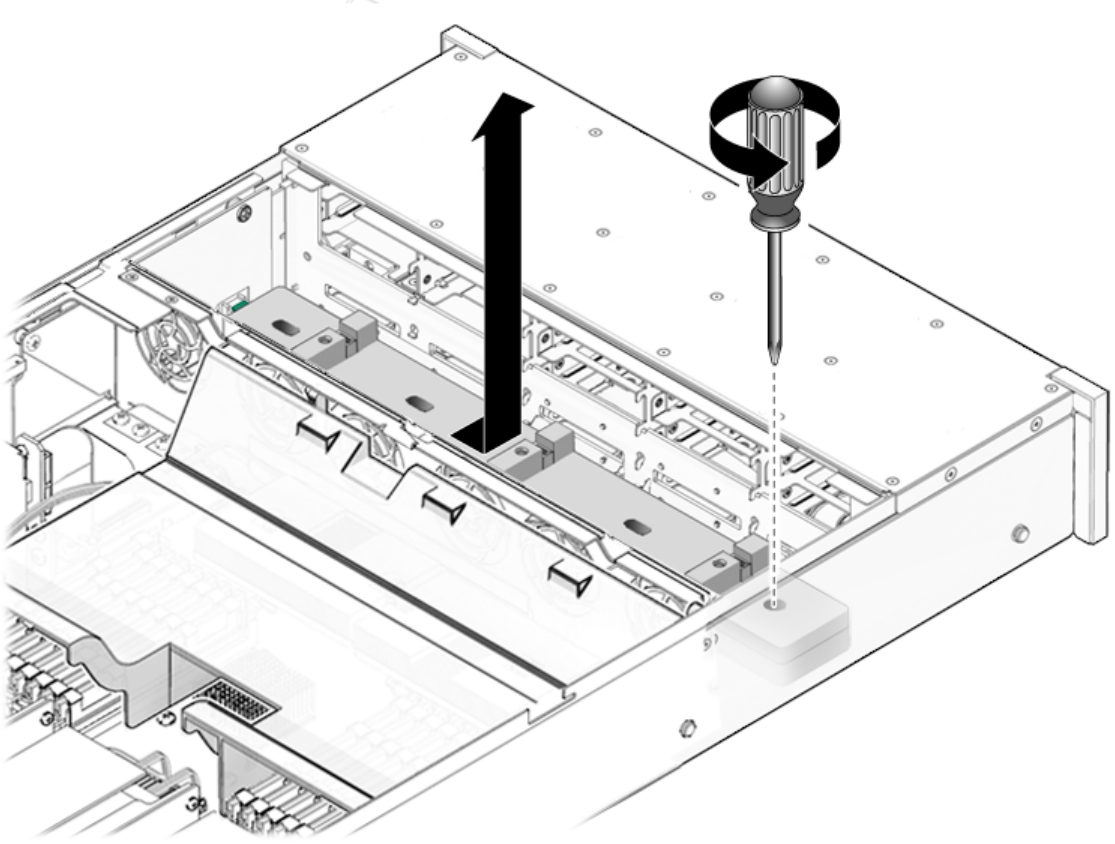
2. **Remove the fan modules.**

Note – If you are replacing a defective fan power board, remove only the fan modules that are necessary to remove the defective fan power board.

See Section 3.3.4, "Removing a Fan Module" on page 3-12.

3. **Remove the Phillips screw that secures the fan power board to the chassis (FIGURE 5-1).**
4. **Slide the fan power board to the left to disengage it from the paddle card.**
5. **Remove the fan power board from the system and place it on an antistatic mat.**

FIGURE 5-1 Removing the Fan Power Board

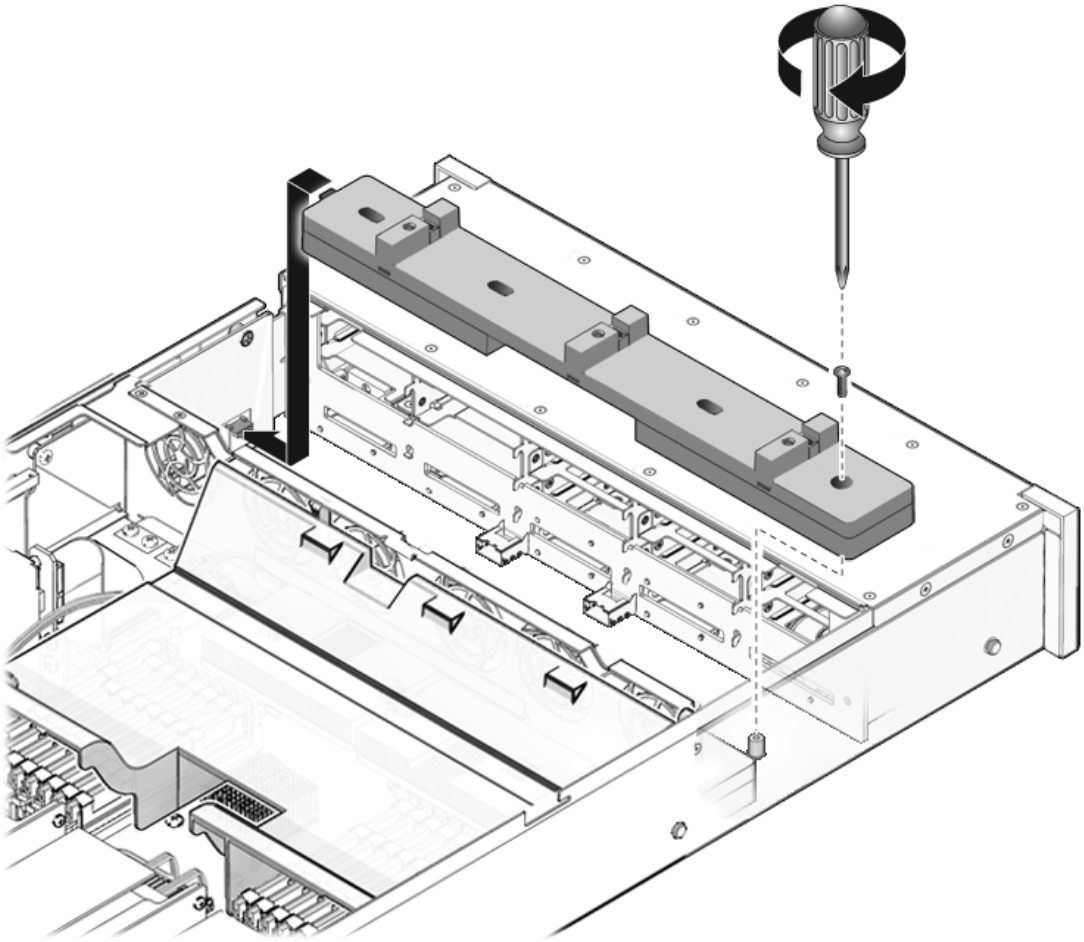


5.1.2 Installing a Fan Power Board

1. **Lower the board into its mushroom standoffs in the chassis floor and slide the board to the right into the Paddle card. (**FIGURE 5-2**)**
2. **Secure the board to the chassis with a Phillips screw.**
3. **Reinstall the fan modules.**

   See Section 3.3.5, “Installing a Fan Module” on page 3-13.

FIGURE 5-2 Installing a Fan Power Board



4. **Return the server to operation.**

a. Install the top cover.

See Section 6.1, “Installing the Top Cover” on page 6-2.

b. Slide the server into the rack.

See Section 6.3, “Returning the Server to the Normal Rack Position” on page 6-4.

c. Reconnect the power cord (or cords) to the power supply (or supplies).

Verify that the AC Present LED is lit.

See Section 6.4, “Powering On the Server” on page 6-6.

d. Power on the server.

See Section 6.4, “Powering On the Server” on page 6-6.

5.2 Servicing the Drives Cage

You must remove the drives cage to access the following components:

- Drives backplane
- Front control panel light pipe assemblies

Note – FRU: This field-replaceable unit should be replaced only by qualified service technicians. Contact your Sun Service representative for assistance.

Caution – Ensure that all power is removed from the server before removing or installing the drives cage. You must disconnect the power cables before performing this procedure.

5.2.1 Removing the Drives Cage

1. Prepare the server for service.

a. Power off the server.

See Section 2.4, “Powering Off the Server” on page 2-3.

b. Disconnect the power cord (or cords) from the power supply (or supplies).

See Section 2.4, “Powering Off the Server” on page 2-3.

c. **Remove the server from the rack.**

   See Section 2.6, "Removing a Server From the Rack" on page 2-7.

d. **Attach an antistatic wrist strap.**

   See Section 2.7, "Performing Electrostatic Discharge and Antistatic Prevention Measures" on page 2-9.

e. **Remove the top cover.**

   See Section 2.8, "Removing the Top Cover" on page 2-11.

2. **If you are servicing the drives backplane, remove all drives.**

   See Section 3.2.4, "Removing a Hard Drive or SSD" on page 3-5.

Note – Make a note of the drive locations before removing them from the system. You will need to install the drives in the correct locations when reassembling the system.

---

3. **If you are servicing the drives backplane, remove the DVD/USB module.**

   See Section 3.5.1, "Removing the DVD/USB Module" on page 3-20.

4. **Remove the fan modules.**

   See Section 3.3.4, "Removing a Fan Module" on page 3-12.

5. **Remove the No. 2 Phillips screws securing the drives cage to the chassis. (**FIGURE 5-3 **[1] and [2])**

   Two screws secure the drives cage to each side of the chassis.

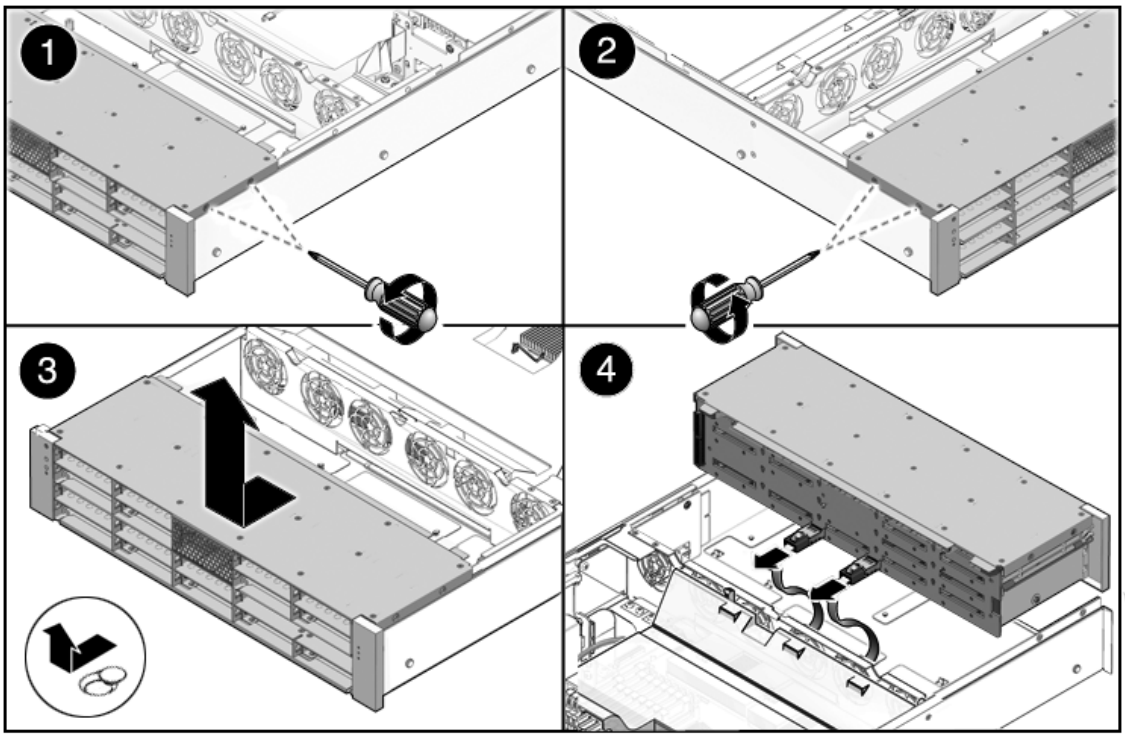
6. **Slide the drives cage forward to disengage the backplane from the paddle cards. (**FIGURE 5-3 **[3])**

7. **Lift the drives cage up and disconnect the drive data cables. (**FIGURE 5-3 **[4])**

   Press the connector release button to release the cable.

8. **Set the drives cage on an antistatic mat.**

FIGURE 5-3 Removing the Drives Cage



5.2.2 Installing the Drives Cage

1. **Connect the drive data cables.**

   Press the connector into its socket until it snaps into place.

2. **Position the drives cage in the chassis, over its standoffs. (**FIGURE 5-4 **[1])**

3. **Slide the drives cage back until the drives backplane engages with the paddle card connector. (**FIGURE 5-4 **[2])**

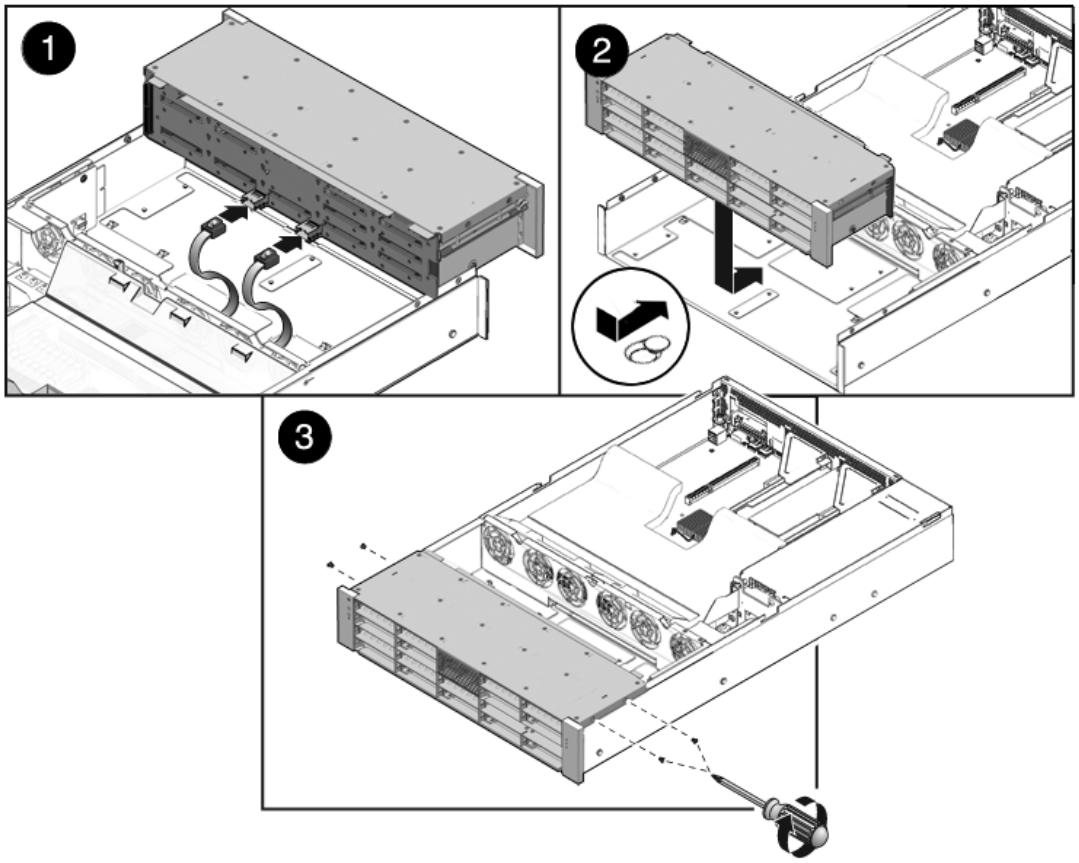
4. **Replace the No. 2 Phillips screws securing the drives cage to the chassis. (**FIGURE 5-4 **[3])**

   Two screws secure the drives cage to each side of the chassis.

5. **Install the fan modules.**

   See Section 3.3.5, “Installing a Fan Module” on page 3-13.

FIGURE 5-4 Installing the Drives Cage



6. **Install the top cover.**

   See Section 6.1, “Installing the Top Cover” on page 6-2.

7. **Install the server into the rack.**

   See Section 6.2, “Reinstalling the Server in the Rack” on page 6-3.

8. **Install the drives.**

Note – Ensure you are installing the drives in the correct drive bays.

   See Section 3.2.5, “Installing a Hard Drive or SSD” on page 3-7.

9. **Install the DVD/USB module.**

   See Section 3.5.2, “Installing the DVD/USB Module” on page 3-21.

10. **Return the server to operation.**

    a. **Reconnect the power cord (or cords) to the power supply (or supplies).**

    Verify that the AC Present LED is lit.

    See Section 6.4, "Powering On the Server" on page 6-6.

    b. **Press the power button to power on the server.**

    See Section 6.4, "Powering On the Server" on page 6-6.

5.3 Servicing the Drives Backplane

You must remove the drives backplane to service the front control panel light pipe assemblies.

Note – FRU: This field-replaceable unit should be replaced only by qualified service technicians. Contact your Sun Service representative for assistance.

5.3.1 Removing the Drives Backplane

1. **Remove the DVD/USB drive.**

   See Section 3.5.1, "Removing the DVD/USB Module" on page 3-20.

2. **Remove the four No. 2 Phillips screws securing the backplane to the drives cage.** (FIGURE 5-5)

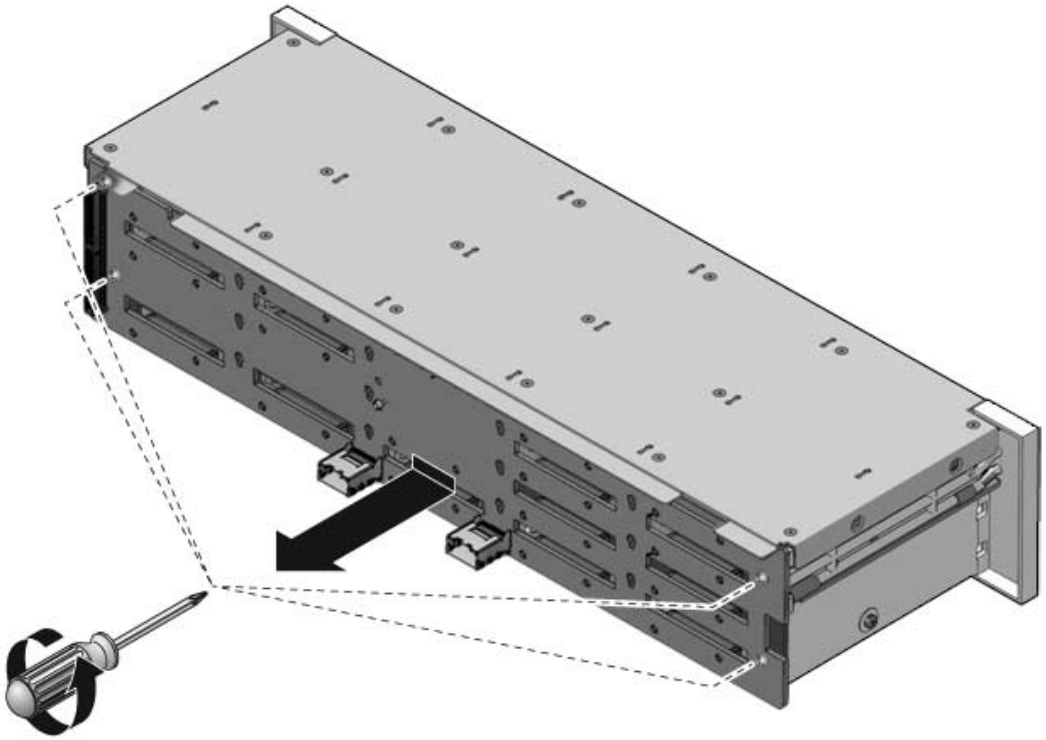
3. **Remove the drives cage.**

   See Section 5.2.1, "Removing the Drives Cage" on page 5-5.

4. **Slide the backplane down and off the drives cage retention hooks.**

5. **Place the drives backplane on an antistatic mat.**

FIGURE 5-5 Removing the Drives Backplane



5.3.2 Installing the Drives Backplane

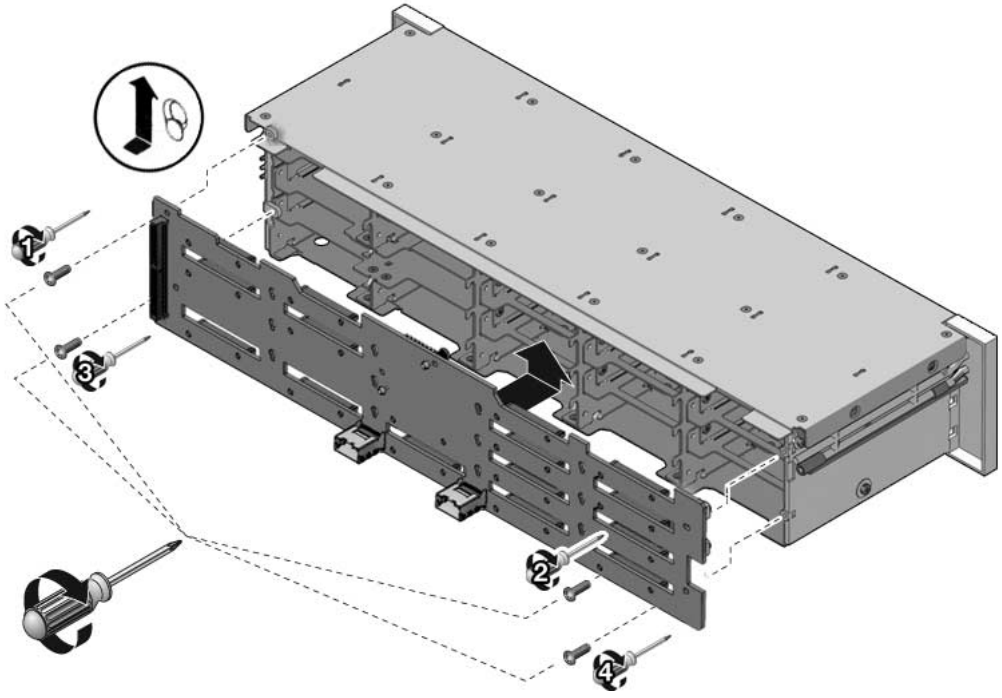
1. **Slide the backplane under the retention hooks on the drives cage.** (FIGURE 5-6)
2. **Install the four No. 2 Phillips screws that secure the backplane to the drives cage.**

   The sequence is top left, top right, bottom left, bottom right.
3. **Install the drives cage.**

   See Section 5.2.2, "Installing the Drives Cage" on page 5-7.
4. **Install the DVD/USB drive.**

   See Section 3.5.2, "Installing the DVD/USB Module" on page 3-21.

FIGURE 5-6 Installing the Drives Backplane



5.4 Servicing the Front Control Panel Light Pipe Assembly

Note – FRU: This field-replaceable unit should be replaced only by qualified service technicians. Contact your Sun Service representative for assistance.

5.4.1 Removing the Front Control Panel Light Pipe Assembly

1. **Remove the drives cage.**

   See Section 5.2.1, "Removing the Drives Cage" on page 5-5.

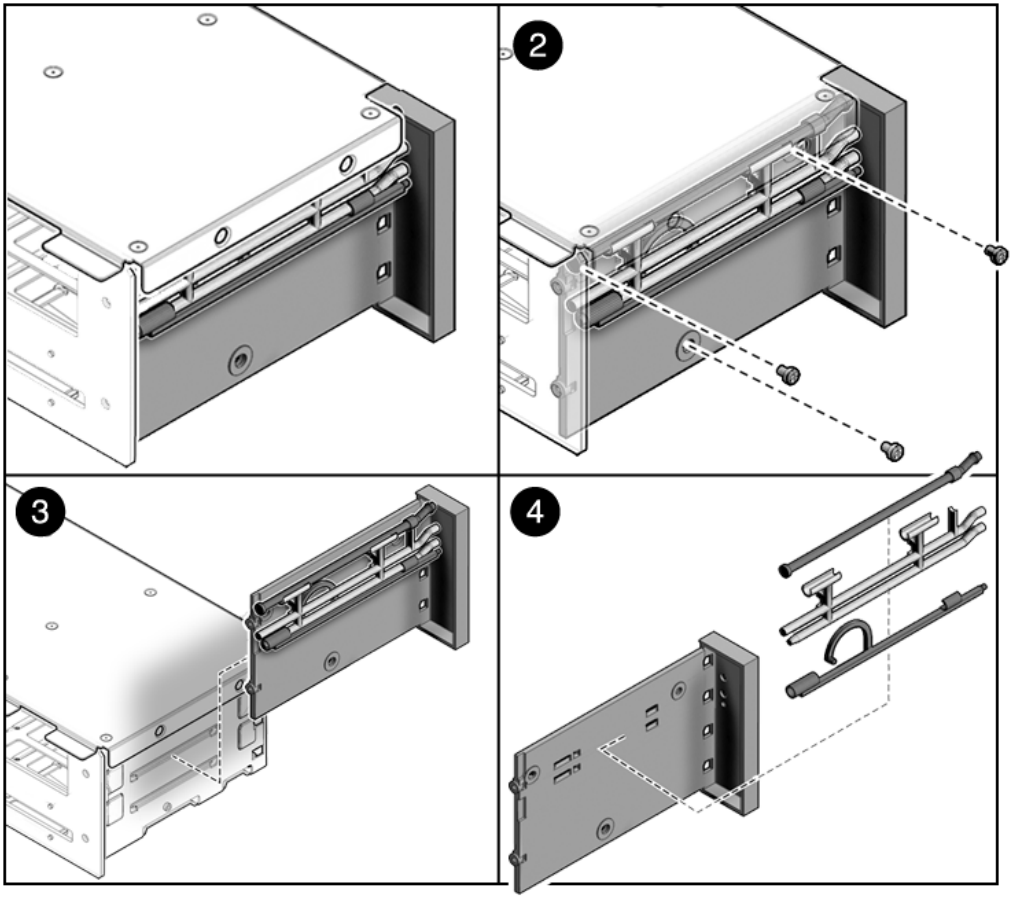
2. **Remove the drives backplane.**

   See Section 5.3.1, “Removing the Drives Backplane” on page 5-9.

3. **Remove the three No. 2 Phillips screws securing the front control panel light pipe assembly to the drives cage.** (FIGURE 5-7)

4. **Slide the light pipe assembly out of the drives cage.**

FIGURE 5-7 Removing a Light Pipe Assembly



5.4.2 Installing the Front Control Panel Light Pipe Assembly

1. **Align the light pipe assembly with the mounting holes on the drives cage.**
2. **Secure the light pipe assembly with three No. 2 Phillips screws.**
3. **Install the drives backplane.**

   See Section 5.3.2, "Installing the Drives Backplane" on page 5-10.
4. **Install the drives cage.**

   See Section 5.2.2, "Installing the Drives Cage" on page 5-7.

5.5 Servicing the Power Distribution Board (PDB)

It is easier to service the power distribution board (PDB) with the bus bar assembly attached. If you are replacing a faulty PDB, you must remove the bus bar assembly from the old board and attach it to the new PDB.

You must remove the power distribution board to access the paddle card.

Note – FRU: This field-replaceable unit should be replaced only by qualified service technicians. Contact your Sun Service representative for assistance.

Caution – The system supplies power to the power distribution board even when the server is powered off. To avoid personal injury or damage to the server, you must disconnect power cords before servicing the power distribution board.

5.5.1 Removing the Power Distribution Board

The following tools are needed for this procedure:

- No, 2 Phillips screwdriver

1. **Remove the motherboard assembly.**

   See Section 4.6.1, "Removing the Motherboard Assembly" on page 4-25.

2. **Remove all power supplies. (**FIGURE 5-8**)**

   a. **Grasp the power supply handle and press the release latch.**

   b. **Slide the power supply out of the system.**

   See Section 3.4.3, “Removing a Power Supply” on page 3-16.

3. **Disconnect the top cover interlock cable from the power distribution board. (**FIGURE 5-8**)**

4. **Disconnect the PDB ribbon cable from the Power Supply Unit backplane.**

5. **Remove the four screws securing the L shaped bus bars from the PSU backplane to the PDB.**

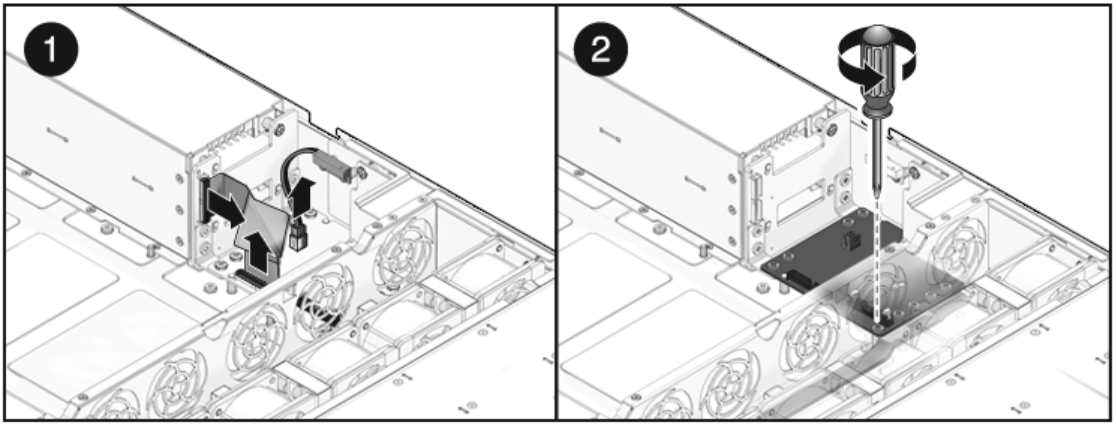
6. **Remove the No. 2 Phillips screw securing the PDB to the chassis.**

7. **Grasp the bus bar and pull the PDB/bus bar assembly to the left, away from the paddle card.**

8. **Lift the PDB/bus bar assembly up and out of the system.**

9. **Place the PDB/bus bar assembly on an antistatic mat.**

FIGURE 5-8 Removing the Power Distribution Board



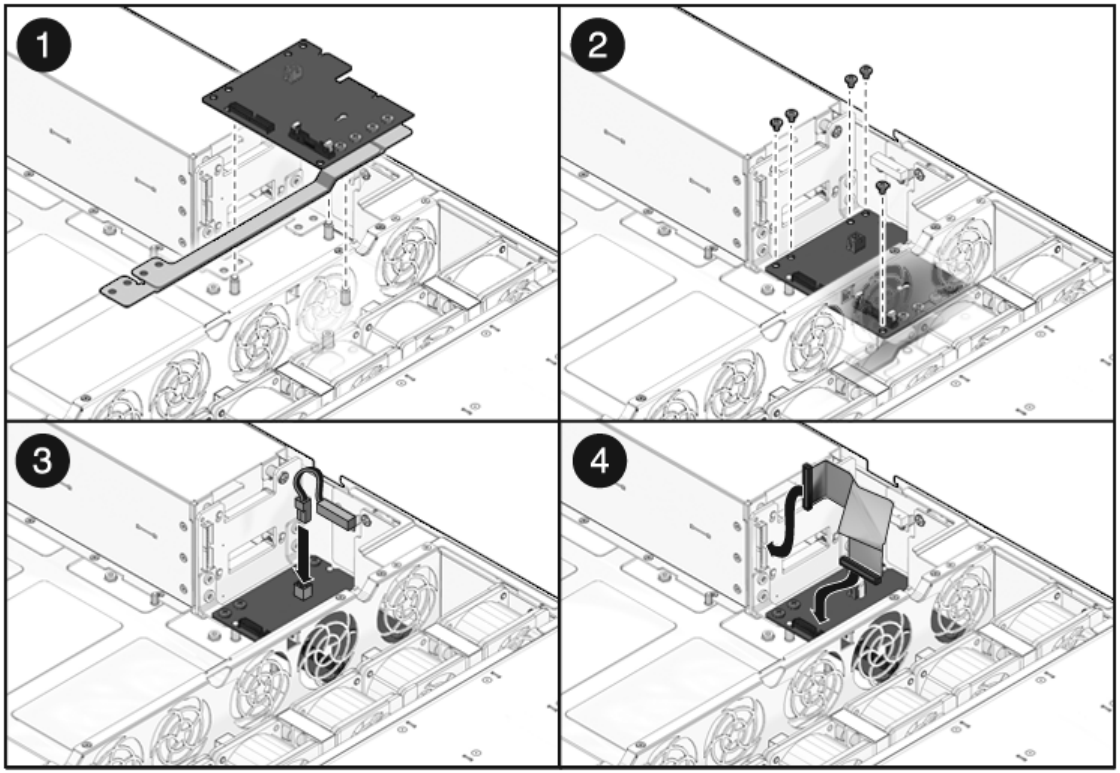
5.5.2 Installing the Power Distribution Board

1. **Lower the PDB/bus bar assembly into the chassis. (**FIGURE 5-9 **[1])**

   The PDB fits over a series of mushroom standoffs in the floor of the chassis.

2. **Slide the PDB/bus bar assembly to the right, until it plugs into paddle card.**
3. **Install the five No. 2 Phillips screws to secure the PDB to the chassis. [2]**
4. **Connect the top cover interlock cable to the power distribution board. [3]**
5. **Connect the PDB ribbon cable to the PSU backplane. [4]**
6. **Install the power supplies.**
   Slide each power supply into its bay until it locks into place.
   See Section 3.4.4, "Installing a Power Supply" on page 3-18.
7. **Install the motherboard assembly.**
   See Section 4.6.2, "Installing the Motherboard Assembly" on page 4-27.

FIGURE 5-9 Installing the Power Distribution Board



5.6 Servicing the Power Supply Backplane

In the Sun Fire X4250, the power supply backplane carries 12V power to the power distribution board.

Note – FRU: This field-replaceable unit should be replaced only by qualified service technicians. Contact your Sun Service representative for assistance.

Caution – The system supplies power to the power supply backplane even when the server is powered off. To avoid personal injury or damage to the server, you must disconnect power cords before servicing the power supply backplane.

5.6.1 Removing the Power Supply Backplane

1. **Remove the motherboard assembly.**

   See Section 4.6.1, "Removing the Motherboard Assembly" on page 4-25.

2. **Remove all power supplies.**

   Grasp the power supply handle and press the release latch.

   See Section 3.4.3, "Removing a Power Supply" on page 3-16.

3. **Remove the power distribution board.**

   See Section 5.5.1, "Removing the Power Distribution Board" on page 5-13.

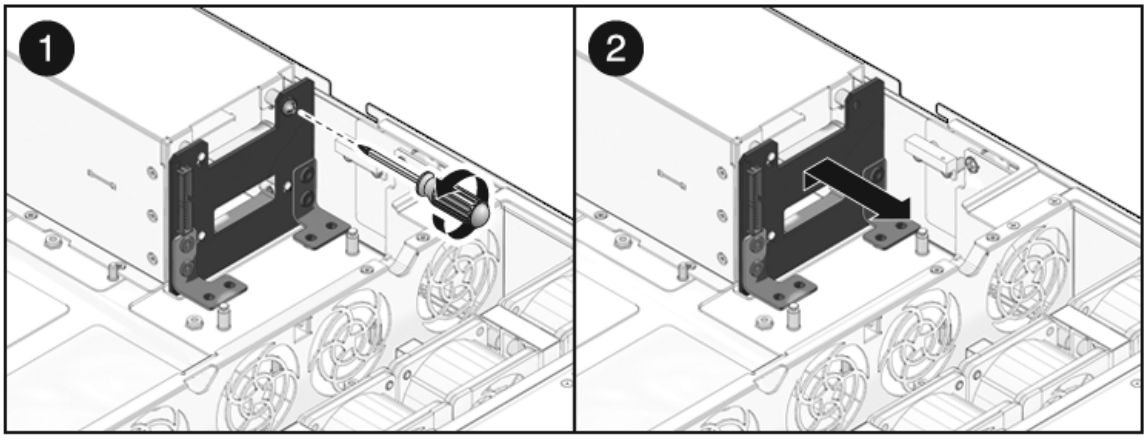
4. **Unscrew the 4 screws that secure the L shaped bus bars to the PSU backplane and the PDB.**

5. **Remove the No. 2 Phillips screw securing the power supply backplane to the power supply bay. (**FIGURE 5-10**)**

6. **Lift the power supply backplane up and off its mushroom standoffs, and out of the system.**

7. **Place the power supply backplane on an antistatic mat.**

FIGURE 5-10 Removing the Power Supply Backplane

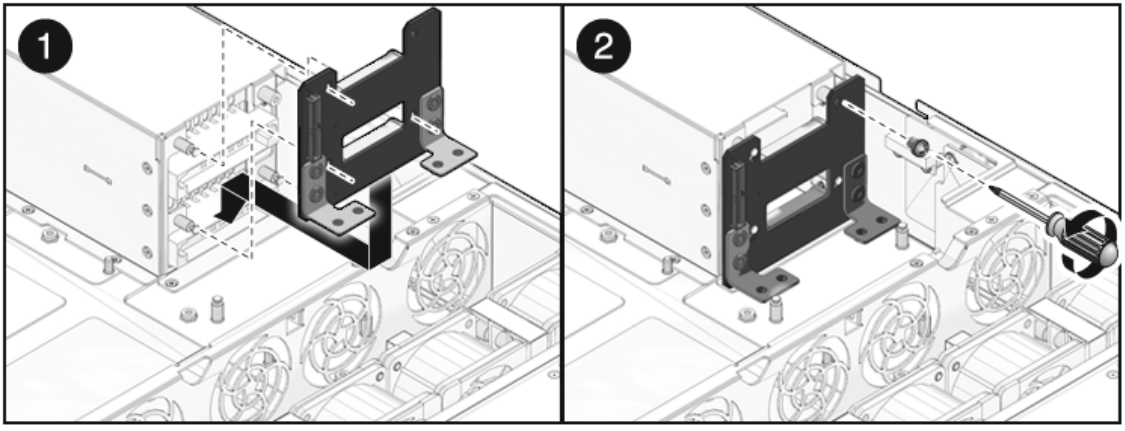


5.6.2 Installing the Power Supply Backplane

1. **Mount the power supply backplane to the front of the power supply bay. (**FIGURE 5-11**)**

   Place the backplane over its mushroom standoffs and press down toward the floor of the chassis.

FIGURE 5-11 Installing the Power Supply Backplane



2. **Secure the power supply backplane with one No. 2 Phillips screw.**

3. **Install the power distribution board.**

   See Section 5.5.2, “Installing the Power Distribution Board” on page 5-15.

4. **Install all power supplies.**

   Slide each power supply into its bay until it locks into place.

   See Section 3.4.4, “Installing a Power Supply” on page 3-18.

5. **Install the motherboard assembly.**

   See Section 4.6.2, “Installing the Motherboard Assembly” on page 4-27.

5.7 Servicing the Paddle Card

The paddle card assembly includes the top cover interlock switch.

Note – FRU: This field-replaceable unit should be replaced only by qualified service technicians. Contact your Sun Service representative for assistance.

5.7.1 Removing the Paddle Card

1. **Remove the motherboard assembly.**

   See Section 4.6.1, “Removing the Motherboard Assembly” on page 4-25.

2. **Remove the power distribution board.**

   See Section 5.5.1, “Removing the Power Distribution Board” on page 5-13.

3. **Remove the fan power boards.**

   See Section 5.1.1, “Removing a Fan Power Board” on page 5-2.

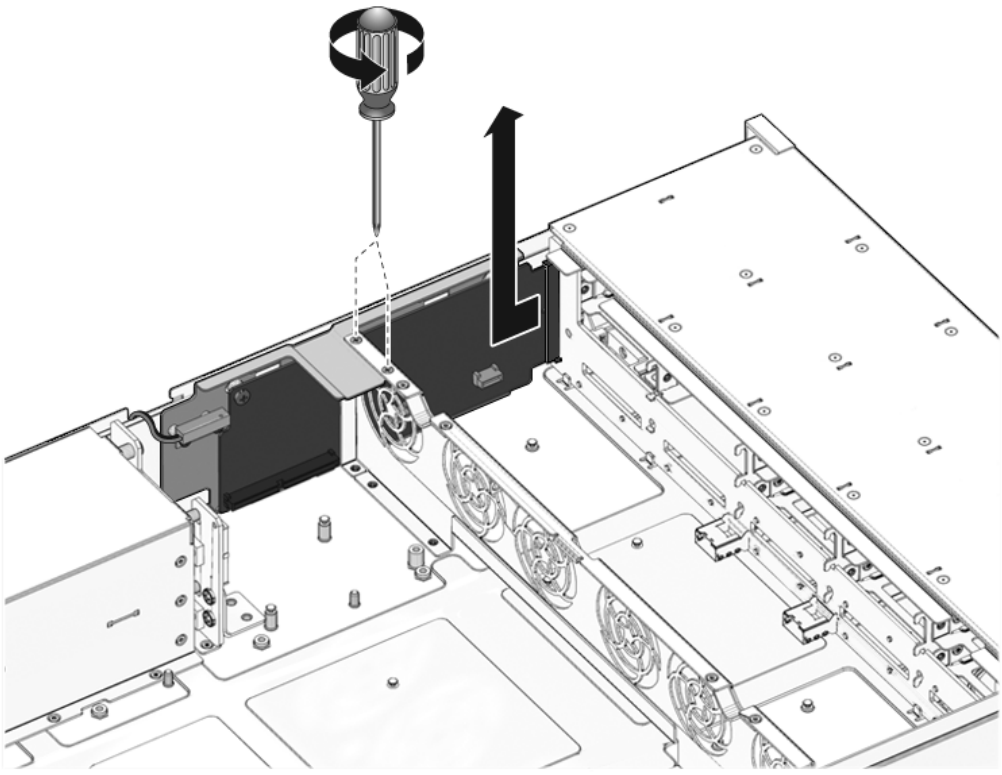
4. **Remove the two No. 2 Phillips screws securing the paddle card to the chassis.** (FIGURE 5-12)

5. **Slide the paddle card back, away from its connector on the drives backplane.**

6. **Lift the paddle card up and out of the chassis.**

7. **Place the paddle card on an antistatic mat.**

FIGURE 5-12 Removing the Paddle Card



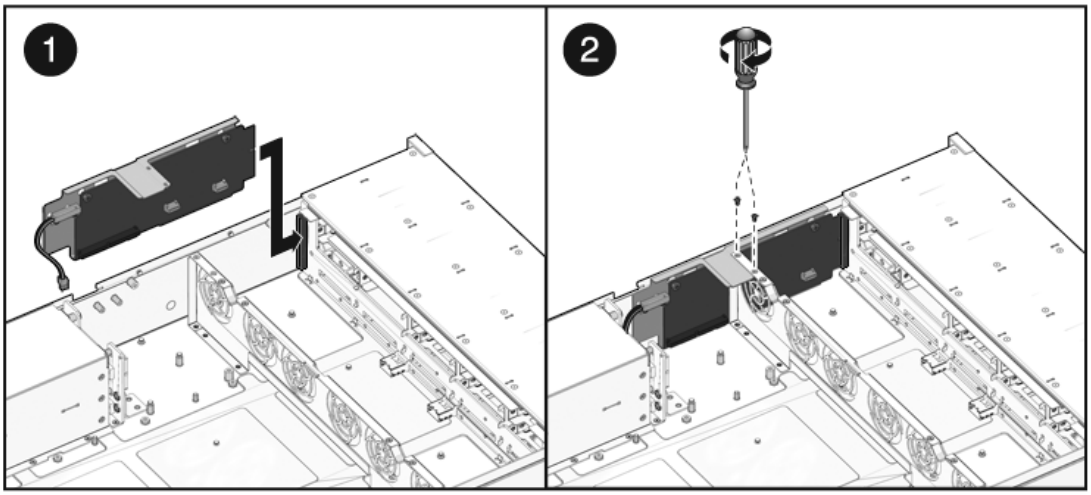
5.7.2 Installing the Paddle Card

1. **Lower the paddle card into the chassis.**
   The paddle card fits over a series of mushroom standoffs in the chassis side wall.
2. **Slide the paddle card forward to plug it into the drives backplane. (**FIGURE 5-13**)**
3. **Secure the paddle card with two No. 2 Phillips screws.**
4. **Install the fan power boards.**
   See Section 5.1.2, “Installing a Fan Power Board” on page 5-4.
5. **Install the power distribution board.**
   See Section 5.5.2, “Installing the Power Distribution Board” on page 5-15.

6. **Install the motherboard assembly.**

   See Section 4.6.2, “Installing the Motherboard Assembly” on page 4-27.

FIGURE 5-13 Installing the Paddle Card



5.8 Servicing Cables

The following topics are covered:

- Section 5.8.1, “Removing HD Cables in a SAS Configuration” on page 5-22
- Section 5.8.2, “Installing HD Cables in a SAS Configuration” on page 5-23
- Section 5.8.3, “Removing a PDB Cable” on page 5-26
- Section 5.8.4, “Installing a PDB Cable” on page 5-28

See Section 1.2.2, “System Cables” on page 1-5 for illustrations of cables.

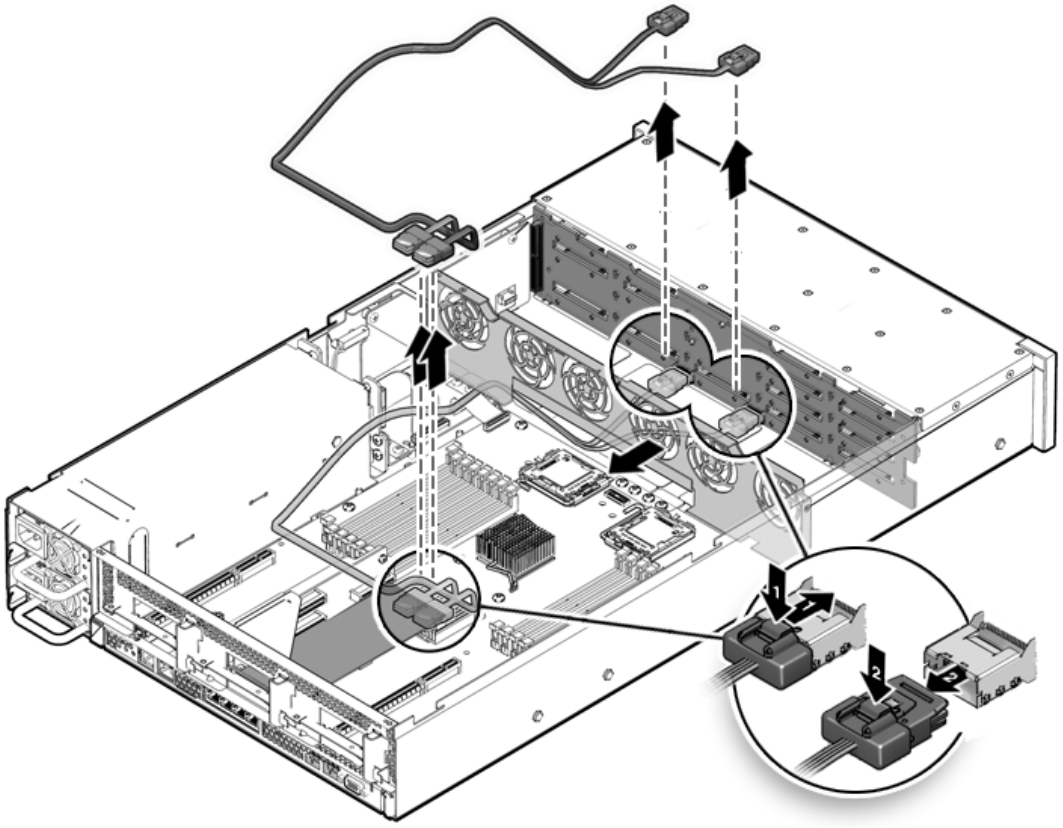
Note – FRU: This field-replaceable unit should be replaced only by qualified service technicians. Contact your Sun Service representative for assistance.

5.8.1 Removing HD Cables in a SAS Configuration

To remove drive cables in a SAS configuration.

1. **Prepare the server for service.**
   a. **Power off the server.**
      See Section 2.4, "Powering Off the Server" on page 2-3.
   b. **Disconnect the power cord (or cords) from the power supply (or supplies).**
      See Section 2.4, "Powering Off the Server" on page 2-3.
   c. **Slide the server out of the rack.**
      See Section 2.5, "Extending the Server to the Maintenance Position" on page 2-5.
   d. **Attach an antistatic wrist strap.**
      See Section 2.7, "Performing Electrostatic Discharge and Antistatic Prevention Measures" on page 2-9.
   e. **Remove the top cover.**
      See Section 2.8, "Removing the Top Cover" on page 2-11.
2. **Remove the air duct.**
   See Section 4.2.1, "Removing the Air Duct" on page 4-10.
3. **Remove the fan modules.**
   See Section 3.3.4, "Removing a Fan Module" on page 3-12.
4. **Remove the fan power boards.**
   See Section 5.1.1, "Removing a Fan Power Board" on page 5-2.
5. **Untwist the cable tiedowns to release the cables. (**FIGURE 5-14**)**
6. **Remove each cable at the drive backplane by pressing the latch and then pulling out the connector.**
7. **Disconnect each cable at the SAS HBA card by pressing the latch and then pulling out the connector.**
8. **Pull the cables through the midwall.**
   Avoid damaging the air blocker.
9. **Lift the cables out of the chassis.**

FIGURE 5-14 Removing Drive Cables in a SAS Configuration



5.8.2 Installing HD Cables in a SAS Configuration

To install two drive cables; Disk 0-3 and Disk 4-7 in a SAS configuration.

1. **Prepare the server for service.**

   a. **Power off the server.**

      See Section 2.4, “Powering Off the Server” on page 2-3.

   b. **Disconnect the power cord (or cords) from the power supply (or supplies).**

      See Section 2.4, “Powering Off the Server” on page 2-3.

c. **Slide the server out of the rack.**

   See Section 2.5, "Extending the Server to the Maintenance Position" on page 2-5.

d. **Attach an antistatic wrist strap.**

   See Section 2.7, "Performing Electrostatic Discharge and Antistatic Prevention Measures" on page 2-9.

e. **Remove the top cover.**

   See Section 2.8, "Removing the Top Cover" on page 2-11.

2. **Remove the air duct.**

   See Section 4.2.1, "Removing the Air Duct" on page 4-10.

3. **Remove the fan modules.**

   See Section 3.3.4, "Removing a Fan Module" on page 3-12.

4. **Remove the fan power boards.**

   See Section 5.1.1, "Removing a Fan Power Board" on page 5-2.

5. **Thread the power board end of the cables underneath the midwall, towards the drives backplane. (**FIGURE 5-15**)**

   a. **Connect the connector labeled** PB 0, 1, 2, and 3 **to the connector furthest from the power supply.**

   b. **Connect the connector labeled** PB 4, 5, 6, and 7 **to the connector nearest to the power supply.**

6. **Reinstall the fan boards, making sure the cable is not pinched.**

   The cable routes through the slot underneath of the fan boards.

   See Section 5.1.2, "Installing a Fan Power Board" on page 5-4.

7. **Route the cable towards the power supply bay, and over the notch in the vertical power supply unit backplane.**

8. **Install the SAS HBA card in PCIe slot 0.**

   The lower card on the riser is closest to the power supply wall.

9. **Install the connector labeled** MB 0, 1, 2, and 3 **into port 0 of the SAS HBA card, that is closest to the gold fingers.**

10. **Install the connector labeled** MB 4, 5, 6, and 7 **into port 0 of the SAS HBA card, that is furthest from the gold fingers.**

11. **Replace the air duct.**

    See Section 4.2.2, "Installing the Air Duct" on page 4-11.

12. **Install the fan modules.**

    See Section 3.3.5, “Installing a Fan Module” on page 3-13.

13. **Return the server to operation.**

    a. **Install the top cover.**

       See Section 6.1, “Installing the Top Cover” on page 6-2.

    b. **Slide the server into the rack.**

       See Section 6.3, “Returning the Server to the Normal Rack Position” on page 6-4.

    c. **Reconnect the power cord (or cords) to the power supply (or supplies).**

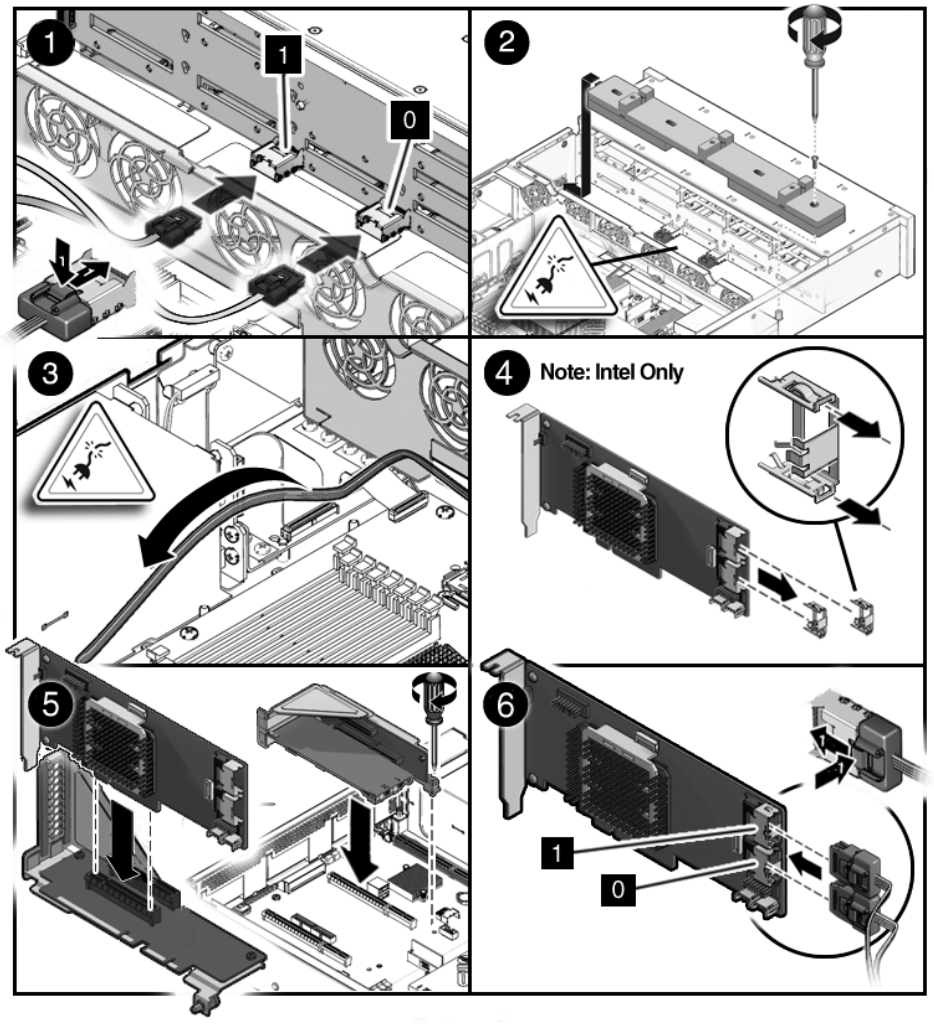
       Verify that the AC Present LED is lit.

       See Section 6.4, “Powering On the Server” on page 6-6.

    d. **Power on the server.**

       See Section 6.4, “Powering On the Server” on page 6-6.

FIGURE 5-15 Installing Drive Cables in a SAS Configuration



5.8.3 Removing a PDB Cable

To remove a power distribution board cable.

1. **Prepare the server for service.**

   a. **Power off the server.**

      See Section 2.4, “Powering Off the Server” on page 2-3.

b. Disconnect the power cord (or cords) from the power supply (or supplies).

See Section 2.4, “Powering Off the Server” on page 2-3.

c. Slide the server out of the rack.

See Section 2.5, “Extending the Server to the Maintenance Position” on page 2-5.

d. Attach an antistatic wrist strap.

See Section 2.7, “Performing Electrostatic Discharge and Antistatic Prevention Measures” on page 2-9.

e. Remove the top cover.

See Section 2.8, “Removing the Top Cover” on page 2-11.

2. Remove the air duct.

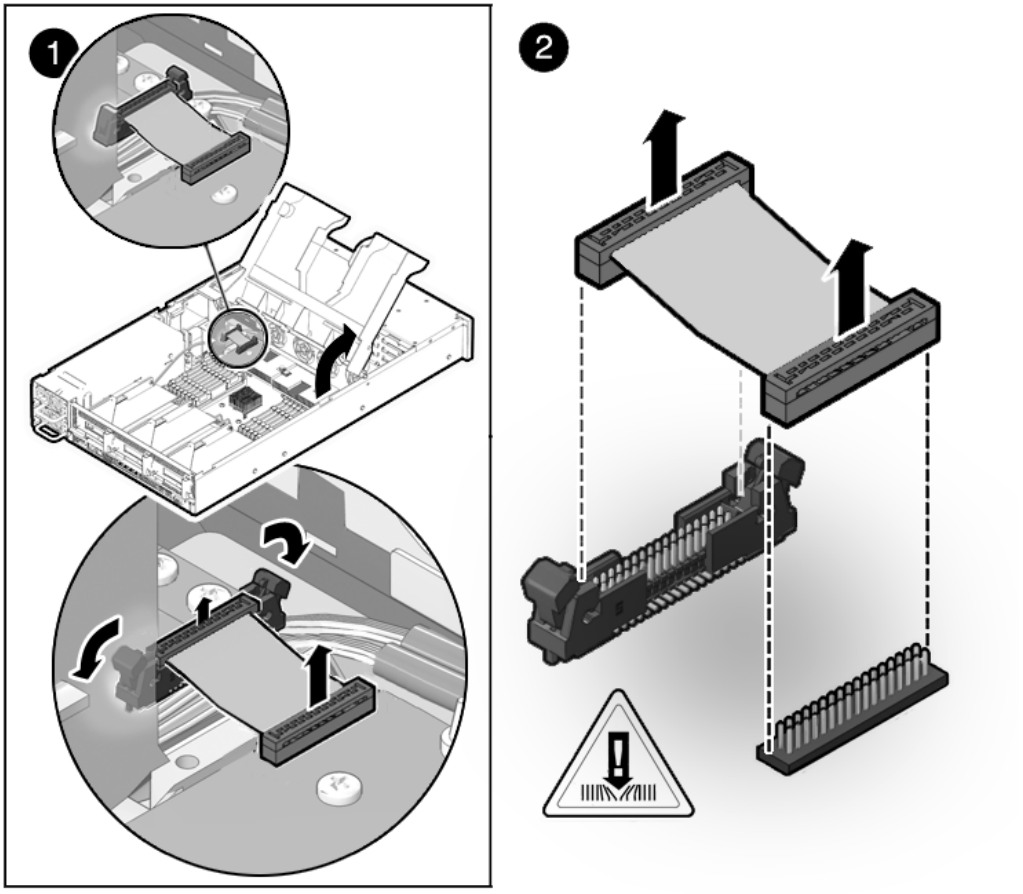
See Section 4.2.1, “Removing the Air Duct” on page 4-10.

3. Remove the PDB end of the cable. (FIGURE 5-16**)**

a. Release the locking latches on either side and then pull the cable straight up.

b. Grasp each end of the connector on the motherboard, and then pull straight up to disconnect from the connector.

FIGURE 5-16 Removing a PDB Cable



5.8.4 Installing a PDB Cable

To install a power distribution board cable.

1. **Remove the PDB cable.**
2. **Inspect the motherboard pin field to ensure all pins are straight. (**FIGURE 5-17**)**
3. **Open the locking latches on the PDB connector.**
   Ensure the key of the cable lines up with the slot on the connector.
4. **Push the cable connector into the PDB connection until it is seated.**
   The latches should be above the connector housing.

5. **Carefully align the motherboard connector to the motherboard pin field.**

   Gently press the connector down until it is seated. If you feel significant resistance, stop and check the pin alignment.

6. **Replace the air duct.**

   See Section 4.2.2, "Installing the Air Duct" on page 4-11.

7. **Return the server to operation.**

   a. **Install the top cover.**

      See Section 6.1, "Installing the Top Cover" on page 6-2.

   b. **Slide the server into the rack.**

      See Section 6.3, "Returning the Server to the Normal Rack Position" on page 6-4.

   c. **Reconnect the power cord (or cords) to the power supply (or supplies).**

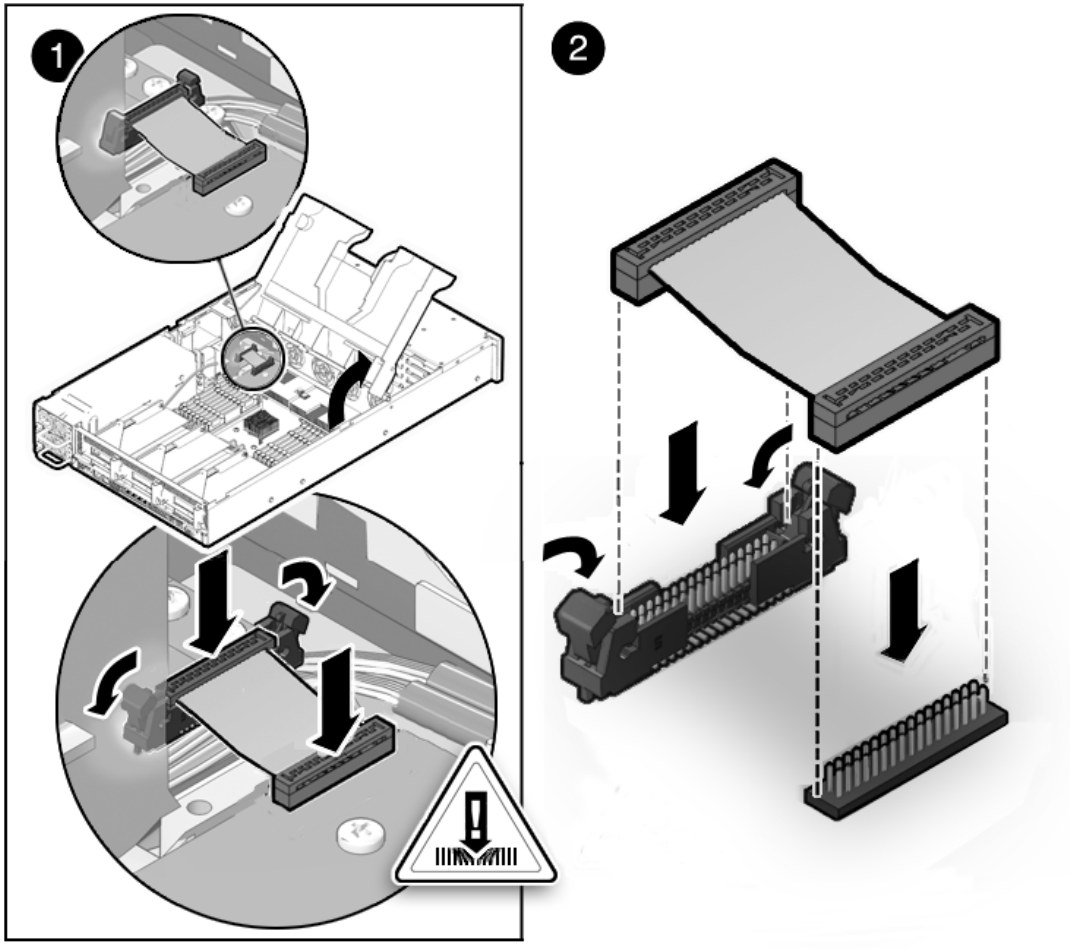
      Verify that the AC Present LED is lit.

      See Section 6.4, "Powering On the Server" on page 6-6.

   d. **Power on the server.**

      See Section 6.4, "Powering On the Server" on page 6-6.

FIGURE 5-17 Installing a PDB Cable



CHAPTER 6

Returning the Server to Operation

This chapter describes how to return the Sun Fire X4250 server to operation after you have performed service procedures.

The following topics are covered in this chapter:

Caution – Never attempt to run the server with the covers removed. Hazardous voltage is present.

Caution – Equipment damage is possible. Covers must be in place for proper air flow.

6.1 Installing the Top Cover

If you removed the top cover, perform the following steps to replace it:

1. **Place the top cover on the chassis.**

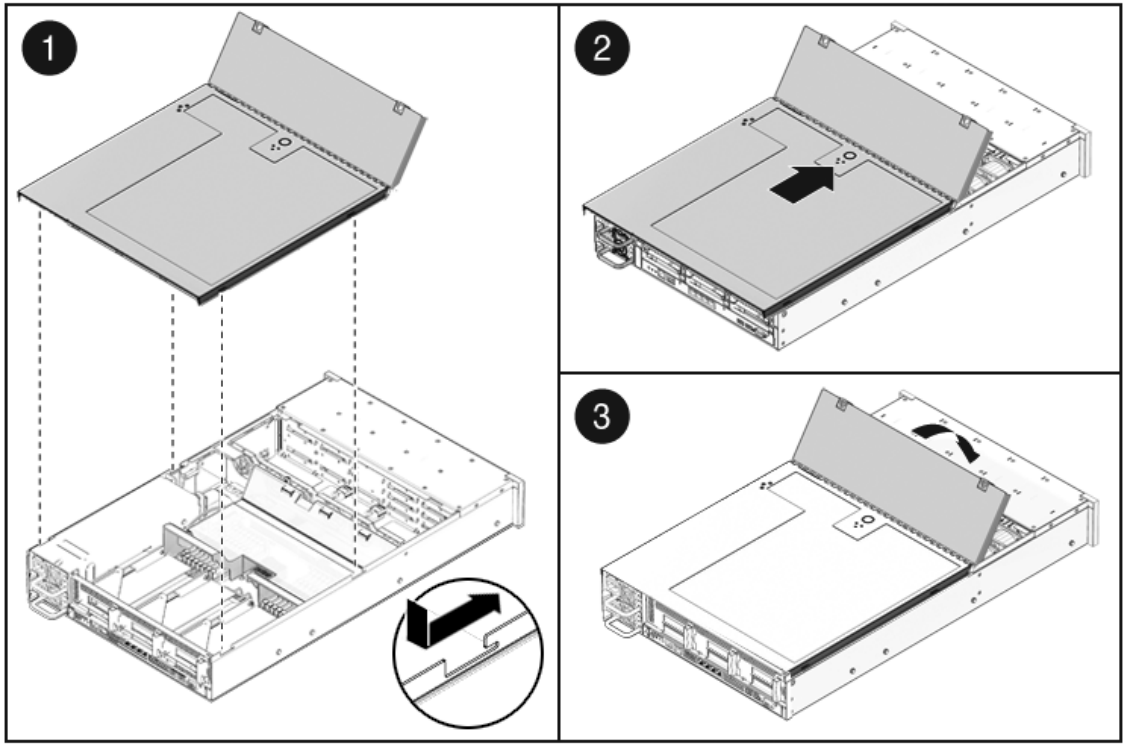
   Set the cover down so that it hangs over the rear of the server by about an inch (25.4 mm).

2. **Slide the top cover forward until it seats (**FIGURE 6-1**).**

3. **Close the fan cover and engage the fan cover latches.**

Caution – If the top cover is not installed correctly, and the cover is not completely closed, the server will not power on.

FIGURE 6-1 Installing the Top Cover



6.2 Reinstalling the Server in the Rack

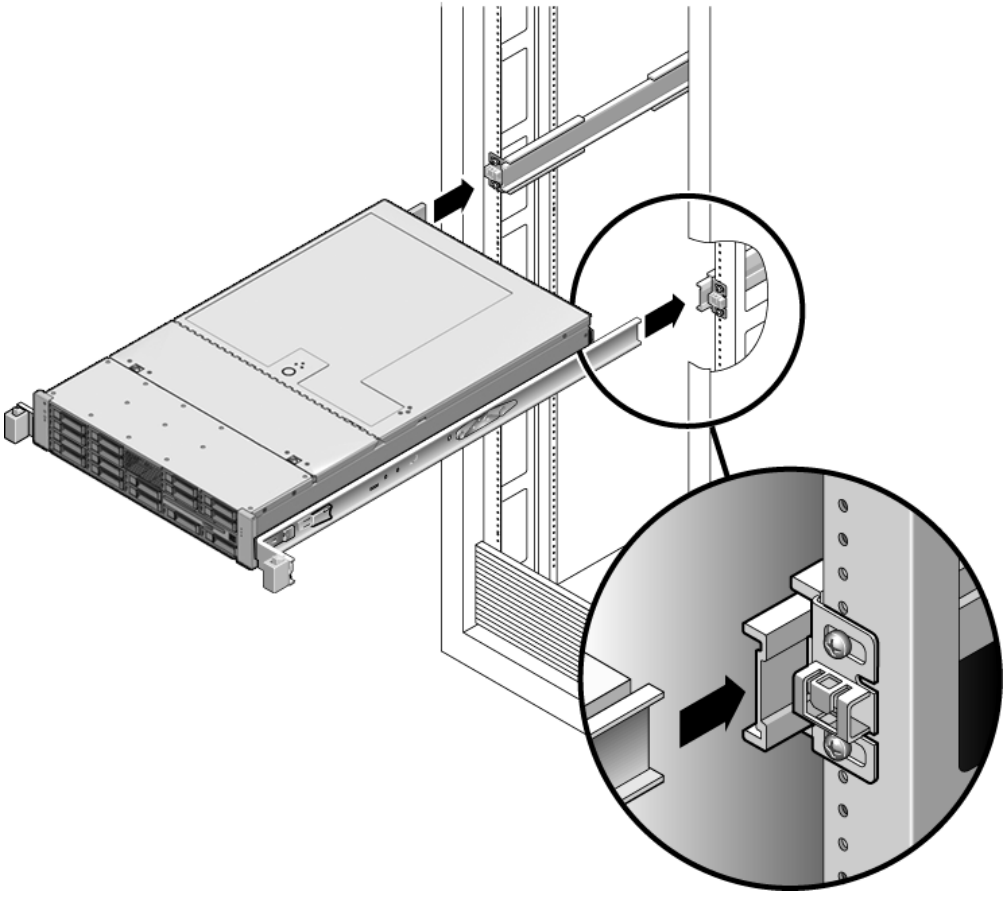
If you removed the server chassis from the rack, perform these steps to replace it.

Caution – The servers are heavy. Two people might be required to carry the chassis and install it in the rack.

1. **On the rack, ensure that the slide rails are extended.**
2. **Place the ends of the chassis mounting brackets into the slide rails (**FIGURE 6-2**).**
3. **Slide the server into the rack until the brackets lock into place.**

   The server is now in the extended maintenance position.

FIGURE 6-2 Returning the Server to the Rack



6.3 Returning the Server to the Normal Rack Position

If you extended the server to the maintenance position, use this procedure to return the server to the normal rack position.

1. **Release the slide rails from the fully extended position by pushing the release tabs on the side of each rail (**FIGURE 6-3**).**

2. **While pushing on the release tabs, slowly push the server into the rack.**

   Ensure that the cables do not get in the way.

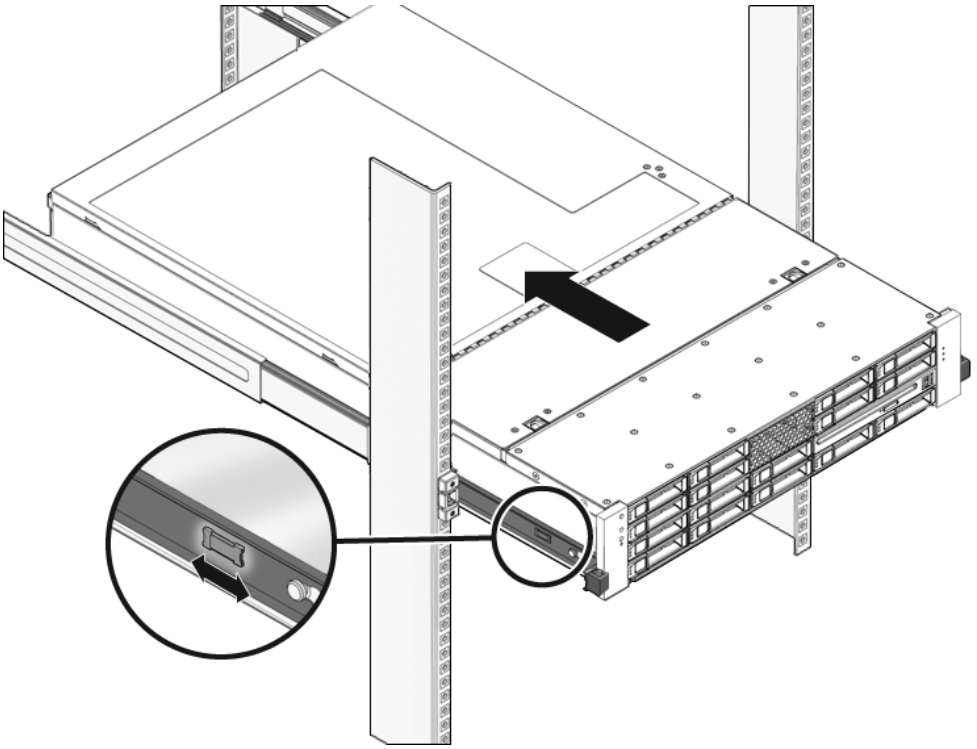
3. **Reconnect the cables to the back of the server.**

   If the CMA is in the way, disconnect the left CMA release and swing the CMA open.

4. **Reconnect the CMA.**

   Swing the CMA closed and latch it to the left rack rail.

FIGURE 6-3 Release Tabs on Rails



6.4 Powering On the Server

Before powering on your server for the first time, follow the installation and cabling instructions provided in the *Sun Fire X4450 Server Installation Guide*, which is shipped with the system and is also available online.

To connect power cords and apply power to the server:

1. **Connect the power cord (or cords) to the power supply (or supplies) on the rear panel as shown in** FIGURE 6-4**.**

FIGURE 6-4 Rear Panel Power Supplies

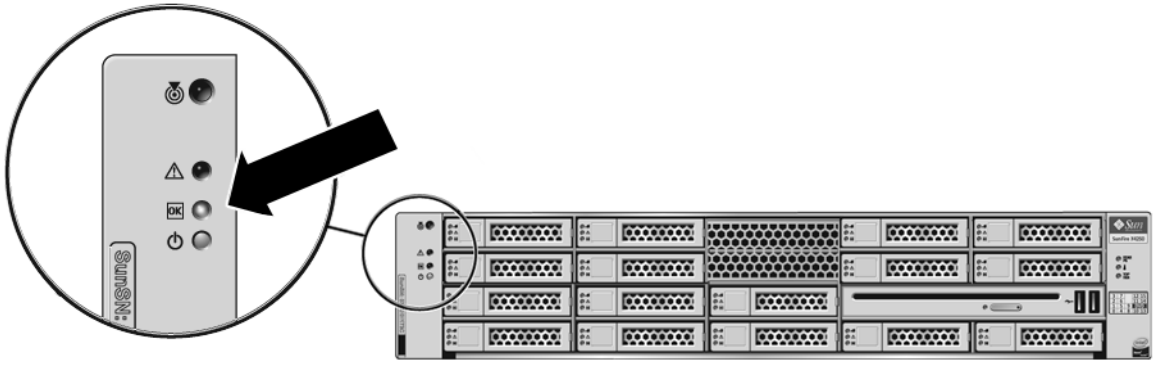
2. **Verify that standby power is on.**

   In standby power mode, the Power/OK LED on the front panel flashes. The front panel Power/OK LED will begin flashing about two minutes after the power cords are plugged in.

3. **Use a pen, or other pointed object, to press and release the recessed Power button on the server front panel.**

   When the main power is applied to the server, the Power/OK LED next to the Power button lights and remains lit, as shown in FIGURE 6-5.

FIGURE 6-5 Front Panel Power/OK LED



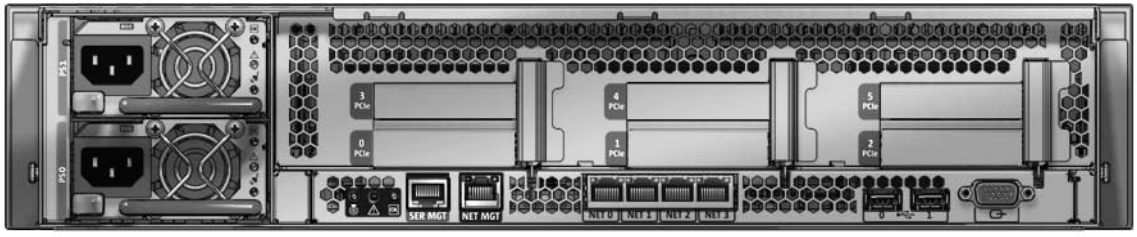
APPENDIX **A**

Connector Pinouts

This appendix provides reference information about the system back panel ports and pin assignments.

Topics covered in this appendix include:

FIGURE A-1 Sun Fire X4250 Server Back Panel



A.1 Serial Management Port Connector

The serial management connector (labeled SERIAL MGT) is an RJ-45 connector located on the back panel. This port is the default connection to the system console.

FIGURE A-2 Serial Management Connector Diagram

TABLE A-1 Serial Management Connector Signals

Pin	Signal Description	Pin	Signal Description
1	Request to Send	5	Ground
2	Data Terminal Ready	6	Receive Data
3	Transmit Data	7	Data Set Ready
4	Ground	8	Clear to Send

A.2 Network Management Port Connector

The network management connector (labeled NET MGT) is an RJ-45 connector located on the motherboard and can be accessed from the back panel. This port needs to be configured prior to use.

FIGURE A-3 Network Management Connector Diagram

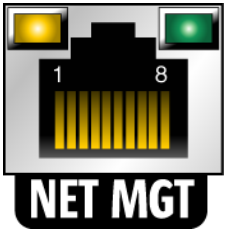


TABLE A-2 Network Management Connector Signals

Pin	Signal Description	Pin	Signal Description
1	Transmit Data +	5	Common Mode Termination
2	Transmit Data –	6	Receive Data –
3	Receive Data +	7	Common Mode Termination
4	Common Mode Termination	8	Common Mode Termination

A.3 Video Connector

The video connector (VGA) is an HD-15 connector that can be accessed from the back panel.

FIGURE A-4 Video Connector Diagram

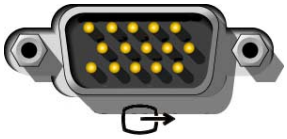


TABLE A-3 Video Connector Signals

Pin	Signal Description	Pin	Signal Description
1	Red Video	9	[KEY]
2	Green Video	10	Sync Ground
3	Blue Video	11	Monitor ID - Bit 1
4	Monitor ID - Bit 2	12	Monitor ID - Bit 0
5	Ground	13	Horizontal Sync
6	Red Ground	14	Vertical Sync
7	Green Ground	15	N/C (Reserved)
8	Blue Ground		

A.4 USB Connectors

Two Universal Serial Bus (USB) ports are located on the motherboard in a double-stacked layout and can be accessed from the back panel.

FIGURE A-5 USB Connector Diagram

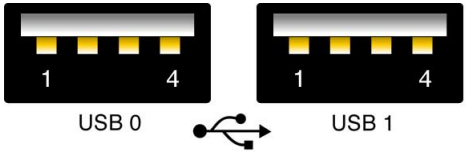


TABLE A-4 USB Connector Signals

Pin	Signal Description	Pin	Signal Description
A1	+5 V (fused)	B1	+5 V (fused)
A2	USB0/1-	B2	USB2/3-
A3	USB0/1+	B3	USB2/3+
A4	Ground	B4	Ground

A.5 Gigabit Ethernet Connectors

Four RJ-45 Gigabit Ethernet connectors (NET0, NET1, NET2, NET3) are located on the system motherboard and can be accessed from the back panel. The Ethernet interfaces operate at 10 Mbit/sec, 100 Mbit/sec, and 1000 Mbit/sec.

FIGURE A-6 Gigabit Ethernet Connector Diagram

TABLE A-5 Gigabit Ethernet Connector Signals

Pin	Signal Description	Pin	Signal Description
1	Transmit/Receive Data 0 +	5	Transmit/Receive Data 2 –
2	Transmit/Receive Data 0 –	6	Transmit/Receive Data 1 –
3	Transmit/Receive Data 1 +	7	Transmit/Receive Data 3 +
4	Transmit/Receive Data 2 +	8	Transmit/Receive Data 3 –

APPENDIX **B**

BIOS Power-On Self-Test (POST) Codes

The system BIOS provides a basic power-on self-test (POST), during which the BIOS checks the basic devices required for the server to operate. The progress of the self-test is indicated by a series of POST codes. This chapter explains the BIOS POST testing, provides an alternate method for viewing the codes, describes how to change POST options, and lists the POST codes.

This chapter contains the following sections:

B.1 Introduction

The POST is a systematic check of basic system devices. As the testing progresses, the BIOS displays codes that you can use to interpret the status of your server. The codes appear at the bottom right corner of the system's VGA screen, after the self-test has progressed far enough to initialize the video monitor. Because the codes might scroll off of the screen too quickly to be read, an alternate method of displaying POST codes is to redirect the output of the console to a serial port (see Section B.3, "Redirecting Console Output" on page B-2).

B.2 How BIOS POST Memory Testing Works

The BIOS POST memory testing is performed as follows:

1. The first megabyte of DRAM is tested by the BIOS before the BIOS code is shadowed (that is, copied from ROM to DRAM).
2. Once executing out of DRAM, the BIOS performs a simple memory test (a write/read of every location with the pattern `55aa55aa`).

Note – This memory test is performed only if Quick Boot is *not* enabled from the Boot Settings Configuration screen. Enabling Quick Boot causes the BIOS to skip the memory test. See Section B.4, "Changing POST Options" on page B-3 for more information.

---

3. The BIOS polls the memory controllers for both correctable and non-correctable memory errors and logs those errors into the SP.
4. The message, `BMC Responding` appears at the end of POST.

B.3 Redirecting Console Output

To access the SP and redirect the console output so that the BIOS POST codes can be read remotely.

1. **Attach a multi-port dongle cable to the server module UCP connector.**
2. **Attach a monitor to the multi-port dongle cable's video port and a keyboard to a USB connector.**
3. **Power cycle or power on the server.**
4. **Initialize the BIOS Setup Utility by pressing the F2 key while the system is performing the power-on self-test (POST).**

   The BIOS Main Menu screen appears.

5. **Select Server.**

   The Server screen appears.

6. **Select AST2000 LAN Configuration.**

   The LAN Configuration screen appears.

7. **Select the IP Address menu item.**

   The SP's IP address appears

8. **Start a web browser and type the SP's IP address in the browser's address bar.**

9. **Type a user name and password as follows:**

   User name: **root**
   Password: **changeme**

10. **The ILOM SP web GUI screen appears.**

11. **Click the Remote Control tab.**

12. **Click the Redirection tab.**

13. **Click on the Start Redirection button.**

    The javaRConsole window appears and prompts you for your user name and password again.

14. **When you are prompted, type a user name and password with administrator privileges.**

    The current POST screen appears.

B.4 Changing POST Options

These instructions are optional, but you can use them to change the operations that the server performs during POST testing.

To Change POST Options

1. **Initialize the BIOS Setup Utility by pressing the F2 key while the system is performing the power-on self-test (POST).**

   The BIOS Main Menu screen appears.

2. **Select the Boot menu.**

   The Boot Settings screen appears.

3. **Select Boot Settings Configuration.**

   The Boot Settings Configuration screen appears.

4. **On the Boot Settings Configuration screen, there are several options that you can enable or disable:**

   - **Hit 'F2' Message Display:** Displays "Press F2 to run Setup" in POST. This option is enabled by default.

- **Quick Boot:** This option is enabled by default. The BIOS skips certain tests while booting, such as the extensive memory test. This decreases the time it takes for the system to boot.
- **Quiet Boot:** This option is disabled by default. If you enable this option, the Sun Microsystems logo appears instead of POST codes.
- **Add On ROM Display Mode:** This option is set to Force BIOS by default. This option takes effect only if you have also enabled the Quiet Boot option, but it controls whether output from the Option ROM is displayed. The two settings for this option are as follows:
  - **Force BIOS:** Remove the Sun logo and display Option ROM output.
  - **Keep Current:** Do not remove the Sun logo. The Option ROM output is not displayed.
- **Boot Num-Lock:** This option is On by default (keyboard Num-Lock is turned on during boot). If you set this option off, the keyboard Num-Lock is not turned on during boot.
- **Wait for F1 if Error:** This option is enabled by default. The system pauses if an error is found during POST and only resumes when you press the F1 key.
- **Interrupt 19 Capture:** This option is reserved for future use. Do not change.

B.5 POST Codes

TABLE B-1 contains descriptions of each of the POST codes, listed in the same order in which they are generated. These POST codes appear as a four-digit string that is a combination of two-digit output from primary I/O port 80 and two-digit output from secondary I/O port 81. In the POST codes listed in TABLE B-1, the first two digits are from port 81 and the last two digits are from port 80.

The Response column describes the action taken by the system on encountering the corresponding error. The choices are:

- **Warning** or **Not an Error** – The message appears on the screen. An error record is logged to the system event log (SEL). The system continues booting with a degraded state. The user might want to replace the unit.
- **Pause** – The message appears on the screen, an error is logged to the SEL, and user input is required to continue. The user can take immediate corrective action or choose to continue booting.

- **Halt** – The message appears on the screen, an error is logged to the SEL, and the system cannot boot unless the error is resolved. The user needs to replace the faulty part and restart the system.

TABLE B-1 Error Messages and Responses

Error Code	Error Message	Response
0000	Timer Error	Pause
0003	CMOS Battery Low	Pause
0004	CMOS Settings Wrong	Pause
0005	CMOS Checksum Bad	Pause
000B	CMOS memory size Wrong	Pause
000C	RAM R/W test failed	Pause
000E	A: Drive Error	Pause
000F	B: Drive Error	Pause
0012	CMOS Date/Time Not Set	Pause
0040	Refresh Timer Test Failed	Halt
0041	Display Memory Test Failed	Pause
0042	CMOS Display Type Wrong	Pause
0043	~<INS> Pressed	Pause
0044	DMA Controller Error	Halt
0045	DMA-1 Error	Halt
0046	DMA-2 Error	Halt
0047	Unknown BIOS error. Error code = 0047	Halt
0048	Password Check Failed	Halt
0049	Unknown BIOS error. Error code = 0049	Halt
004A	Unknown BIOS error. Error code = 004A	Pause
004B	Unknown BIOS error. Error code = 004B	Pause
004C	Keyboard/Interface Error	Continues to boot
005D	S.M.A.R.T. Command Failed	Continues to boot
005E	Password Check Failed	Pause
0101	Warning! This system board does not support the power requirements of the installed processor. The processor will be run at a reduced frequency, which will impact system performance.	Pause

TABLE B-1 Error Messages and Responses *(Continued)*

Error Code	Error Message	Response
0102	Error! The CPU Core to Bus ratio or VID configuration has failed! Please enter BIOS Setup and re-config it.	Pause
0103	ERROR! CPU MTRRs configuration failed! Uncacheable memory hole or PCI space too complicated.	Continues to boot
0120	Thermal Trip Failure	Pause
0121	Thermal Trip Failure	Pause
0122	Thermal Trip Failure	Pause
0123	Thermal Trip Failure	Pause
0124	Thermal Trip Failure	Pause
0125	Thermal Trip Failure	Pause
0126	Thermal Trip Failure	Pause
0127	Thermal Trip Failure	Pause
0128	Thermal Trip Failure	Continues to boot
0129	Thermal Trip Failure	Continues to boot
012A	Thermal Trip Failure	Continues to boot
012B	Thermal Trip Failure	Continues to boot
012C	Thermal Trip Failure	Continues to boot
012D	Thermal Trip Failure	Continues to boot
012E	Thermal Trip Failure	Continues to boot
012F	Thermal Trip Failure	Continues to boot
0150	Processor Failed BIST	Pause
0151	Processor Failed BIST	Pause
0152	Processor Failed BIST	Pause
0153	Processor Failed BIST	Pause
0154	Processor Failed BIST	Pause
0155	Processor Failed BIST	Pause
0156	Processor Failed BIST	Pause
0157	Processor Failed BIST	Pause
0158	Processor Failed BIST	Continues to boot
0159	Processor Failed BIST	Continues to boot

TABLE B-1 Error Messages and Responses *(Continued)*

Error Code	Error Message	Response
015A	Processor Failed BIST	Continues to boot
015B	Processor Failed BIST	Continues to boot
015C	Processor Failed BIST	Continues to boot
015D	Processor Failed BIST	Continues to boot
015E	Processor Failed BIST	Continues to boot
015F	Processor Failed BIST	Continues to boot
0160	Processor missing microcode	Pause
0161	Processor missing microcode	Pause
0162	Processor missing microcode	Pause
0163	Processor missing microcode	Pause
0164	Processor missing microcode	Pause
0165	Processor missing microcode	Pause
0166	Processor missing microcode	Pause
0167	Processor missing microcode	Pause
0168	Processor missing microcode	Continues to boot
0169	Processor missing microcode	Continues to boot
016A	Processor missing microcode	Continues to boot
016B	Processor missing microcode	Continues to boot
016C	Processor missing microcode	Continues to boot
016D	Processor missing microcode	Continues to boot
016E	Processor missing microcode	Continues to boot
016F	Processor missing microcode	Continues to boot
0180	BIOS does not support current stepping	Pause
0181	BIOS does not support current stepping	Pause
0182	BIOS does not support current stepping	Pause
0183	BIOS does not support current stepping	Pause
0184	BIOS does not support current stepping	Pause
0185	BIOS does not support current stepping	Pause
0186	BIOS does not support current stepping	Pause
0187	BIOS does not support current stepping	Pause

TABLE B-1 Error Messages and Responses *(Continued)*

Error Code	Error Message	Response
0188	BIOS does not support current stepping	Continues to boot
0189	BIOS does not support current stepping	Continues to boot
018A	BIOS does not support current stepping	Continues to boot
018B	BIOS does not support current stepping	Continues to boot
018C	BIOS does not support current stepping	Continues to boot
018D	BIOS does not support current stepping	Continues to boot
018E	BIOS does not support current stepping	Continues to boot
018F	BIOS does not support current stepping	Continues to boot
0192	L2 cache size mismatch	Continues to boot
0193	CPUID, Processor stepping are different	Continues to boot
0194	CPUID, Processor family are different	Pause
0195	Front side bus mismatch. System halted.	Continues to boot
0196	CPUID, Processor Model are different.	Pause
0197	Processor speeds mismatched.	Pause
5120	CMOS cleared by jumper.	Pause
5121	Password cleared by jumper.	Pause
5125	Not enough conventional memory to copy PCI Option ROM	Continues to boot
5180	Unsupported Memory Vendor : DIMM_A0	Warning
5181	Unsupported Memory Vendor : DIMM_A1	Warning
5182	Unsupported Memory Vendor : DIMM_A2	Warning
5183	Unsupported Memory Vendor : DIMM_A3	Warning
5184	Unsupported Memory Vendor : DIMM_B0	Warning
5185	Unsupported Memory Vendor : DIMM_B1	Warning
5186	Unsupported Memory Vendor : DIMM_B2	Warning
5187	Unsupported Memory Vendor : DIMM_B3	Warning
5188	Unsupported Memory Vendor : DIMM_C0	Warning
5189	Unsupported Memory Vendor : DIMM_C1	Warning
518A	Unsupported Memory Vendor : DIMM_C2	Warning
518B	Unsupported Memory Vendor : DIMM_C3	Warning
518C	Unsupported Memory Vendor : DIMM_D0	Warning

TABLE B-1 Error Messages and Responses *(Continued)*

Error Code	Error Message	Response
518D	Unsupported Memory Vendor : DIMM_D1	Warning
518E	Unsupported Memory Vendor : DIMM_D2	Warning
518F	Unsupported Memory Vendor : DIMM_D3	Warning
5190	Unsupported AMB Vendor : DIMM_A0	Warning
5191	Unsupported AMB Vendor : DIMM_A1	Warning
5192	Unsupported AMB Vendor : DIMM_A2	Warning
5193	Unsupported AMB Vendor : DIMM_A3	Warning
5194	Unsupported AMB Vendor : DIMM_B0	Warning
5195	Unsupported AMB Vendor : DIMM_B1	Warning
5196	Unsupported AMB Vendor : DIMM_B2	Warning
5197	Unsupported AMB Vendor : DIMM_B3	Warning
5198	Unsupported AMB Vendor : DIMM_C0	Warning
5199	Unsupported AMB Vendor : DIMM_C1	Warning
519A	Unsupported AMB Vendor : DIMM_C2	Warning
519B	Unsupported AMB Vendor : DIMM_C3	Warning
519C	Unsupported AMB Vendor : DIMM_D0	Warning
519D	Unsupported AMB Vendor : DIMM_D1	Warning
519E	Unsupported AMB Vendor : DIMM_D2	Warning
519F	Unsupported AMB Vendor : DIMM_D3	Warning
51C0	Memory Configuration Error.	Continues to boot
8101	Warning! USB Host Controller not found at the specified address!!!	Continues to boot
8102	Error! USB device failed to initialize!!!	Continues to boot
8104	Warning! Port 60h/64h emulation is not supported by this USB Host Controller!!!	Continues to boot
8105	Warning! EHCI controller disabled. It requires 64bit data support in the BIOS.	Continues to boot
8301	Not enough space in runtime area. SMBIOS data will not be available.	Continues to boot

TABLE B-1 Error Messages and Responses *(Continued)*

Error Code	Error Message	Response
8302	Not enough space in runtime area. SMBIOS data will not be available.	Continues to boot
8601	Error: BMC Not Responding	Continues to boot
8701	Insufficient Runtime space for MPS data.!!. System may operate in PIC or Non-MPS mode.	Continues to boot

APPENDIX **C**

BIOS Screens

C.1 Configuring BIOS Settings

This section describes how to view and/or modify the BIOS Setup Utility screens in the Sun Fire X4250. The BIOS Setup utility reports system information and can be used to configure the server BIOS settings.

The Basic Input/Output System (BIOS) has a Setup utility stored in the BIOS flash memory. The configured data is provided with context-sensitive Help and is stored in the system's battery-backed CMOS RAM. If the configuration stored in the CMOS RAM is invalid, the BIOS settings default to the original state specified at the factory.

C.1.1 Using BIOS Menu Items

You can access BIOS configuration screens from the following interfaces:

- Use a USB keyboard, mouse, and VGA monitor connected directly to the server.
- Use a terminal (or terminal emulator connected to a computer) through the serial port on the back panel of the server.

To access BIOS configuration screens and change the system’s parameters, do the following steps:

1. **Enter the BIOS Setup utility by pressing the F2 key while the system is performing the power-on self-test (POST).**

   When BIOS is started, the main BIOS Setup menu screen is displayed.

2. **Highlight the field to be modified using the arrow and Tab keys.**

   Use the left and right arrow keys to move sequentially back and forth through the menu screens. Fields that can be reconfigured are displayed in color. All other fields are nonconfigurable.

   - Use the up and down arrows, on the keyboard, to scroll through a menu.
   - Use the Tab key to move back and forth across columns.

3. **Press Enter to select the field.**

   A dialog box shows the available options.

4. **Modify the setup field and close the screen.**

5. **If you need to modify other setup parameters, use the arrow and Tab keys to navigate to the desired screen and menu item, and then repeat** Step 1 **through** Step 4**. Otherwise, go to** Step 6**.**

6. **Press and release the right arrow key until the Exit menu screen appears.**

7. **Follow the instructions on the Exit menu screen to save your changes and exit the Setup utility.**

C.1.2 BIOS Setup Screens Overview

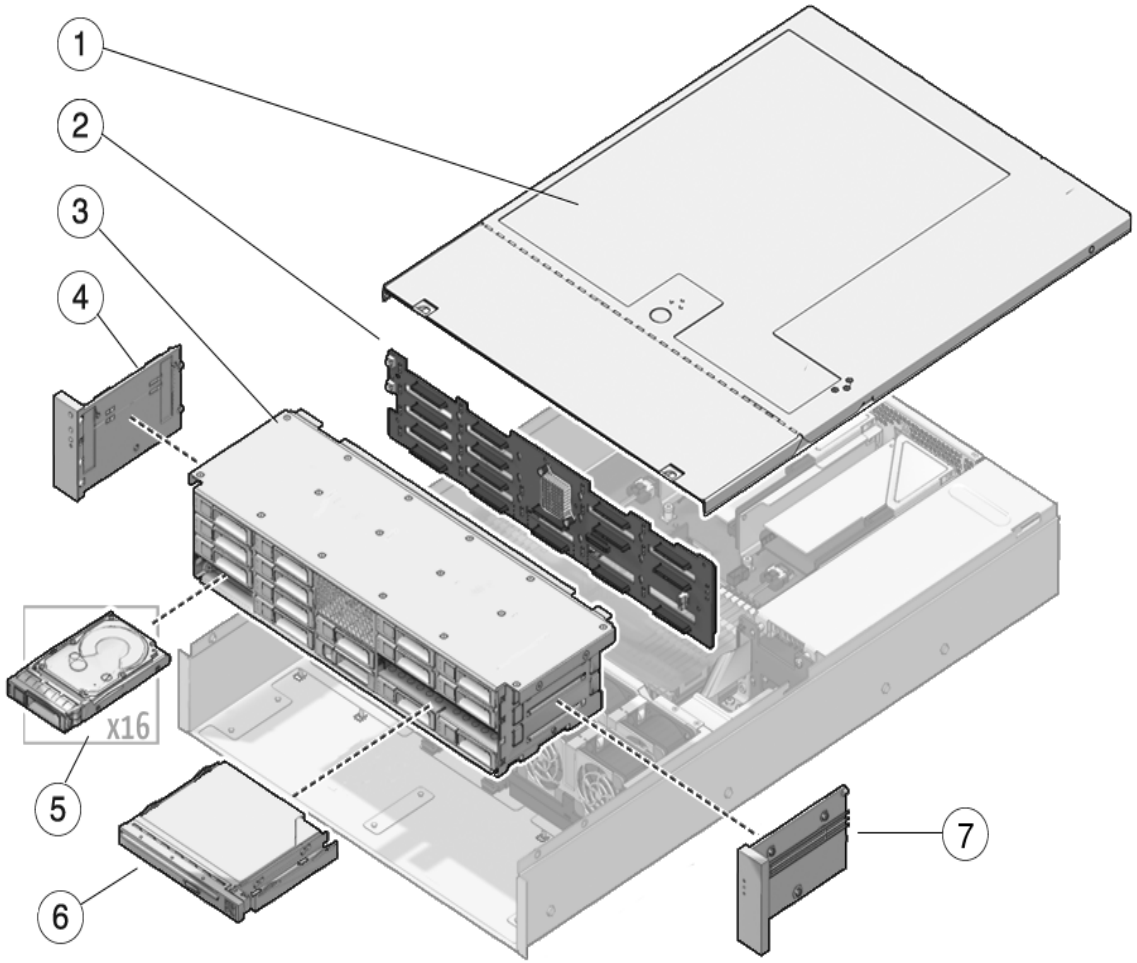
TABLE C-1 contains summary descriptions of the top-level BIOS setup screens.

TABLE C-1 BIOS Setup Screens Summary

Screen	Description	See...
Main	General product information, including BIOS type, processor, memory, and time/date.	Section C.2.1, "BIOS Main Menu Screens" on page C-4
Advanced	Configuration information for the CPU, memory, IDE, Super IO, trusted computing, USB, PCI, MPS and other information.	Section C.2.2, "BIOS Advanced Menu Screens" on page C-5
Boot	Configure the boot device priority (drives and the DVD-ROM drive).	Section C.2.3, "BIOS Boot Menu Screens" on page C-10
Server	Server devices can be configured by the BIOS (if applicable).	Section C.2.4, "BIOS Server Menu Screens" on page C-13
Security	Set or change the user and supervisor passwords.	Section C.2.5, "BIOS Security Menu Screens" on page C-17
Exit	Save changes and exit, discard changes and exit, discard changes, or load optimal or fail-safe defaults.	Section C.2.6, "BIOS Exit Menu Screens" on page C-18

FIGURE C-1 summarizes the BIOS menu tree. See Section C.2, "BIOS Setup Menu Screens" on page C-3 for examples of each of these screens.

FIGURE C-1 BIOS Utility Menu Tree



C.2 BIOS Setup Menu Screens

The following figures show sample Sun Fire X4250 server BIOS Setup Utility screens.

Note – The screens shown are examples. The version numbers and the screen items and selections shown are subject to change over the life of the product.

All settings are set to the optimal default at startup.

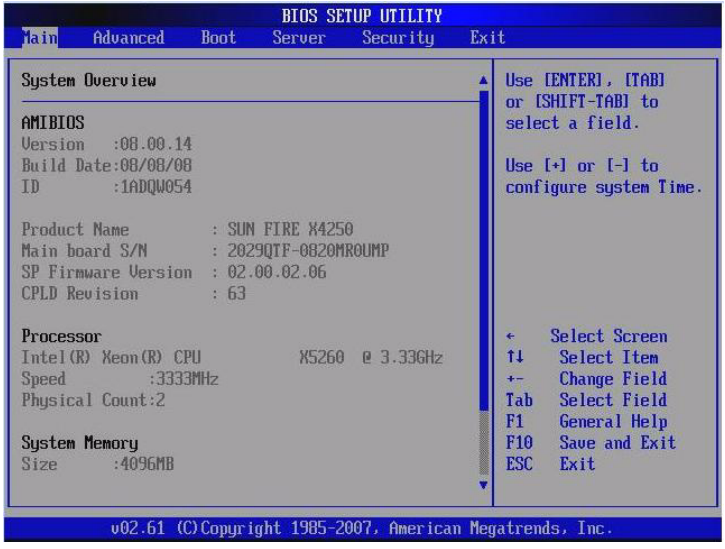
This section covers the following:

C.2.1 BIOS Main Menu Screens

The BIOS Main screens provide general product information, including BIOS type, processor type, memory, and time/date.

The Sun Fire X4250 server has the following BIOS Main screens.

FIGURE C-2 BIOS Setup Utility: Main - System Overview



C.2.2 BIOS Advanced Menu Screens

The BIOS Advanced screens provide detailed configuration information for the CPU, memory, IDE, Super IO, trusted computing, USB, PCI, MPS, event log configuration, and other system information.

The Sun Fire X4250 server has the following BIOS Advanced screens:

FIGURE C-3 BIOS Setup Utility: Advanced

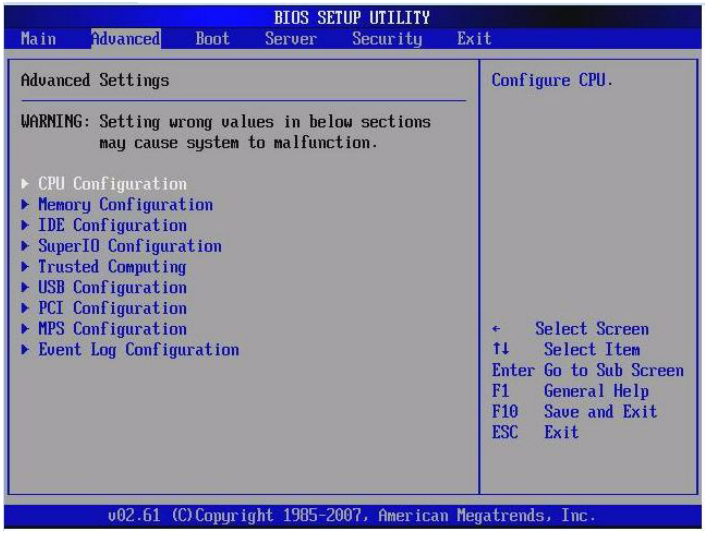


FIGURE C-4 BIOS Setup Utility: Advanced- CPU Settings

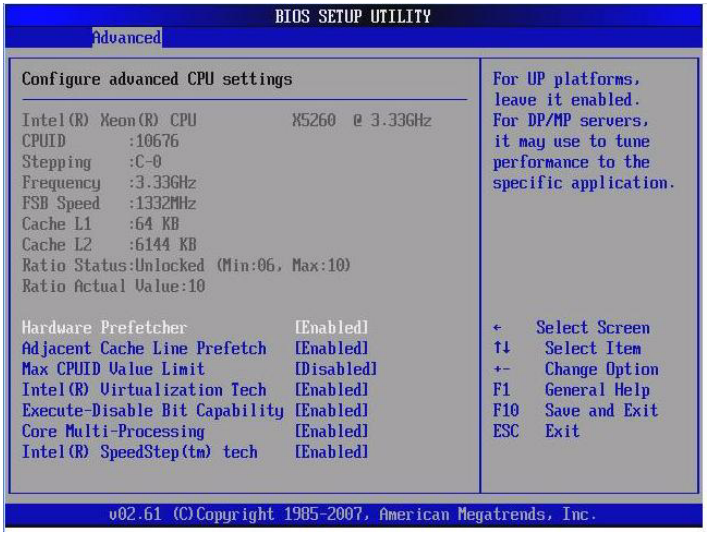
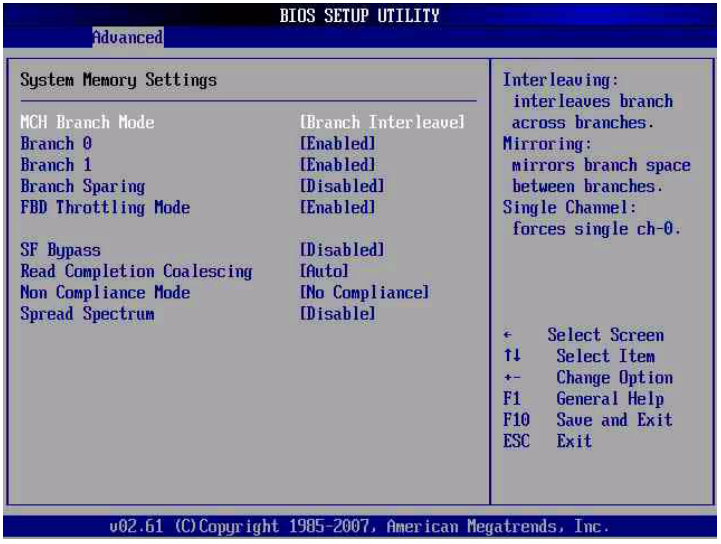


FIGURE C-5 BIOS Setup Utility: Advanced - System Memory Settings



Advanced System Memory Settings:

MCH Branch Mode [Branch Interleave]—Choose one of the following settings:

Rank interleave—Interleaves in the same branch.

Branch interleave—Interleaves between branch 0 and 1.

Mirroring—Mirrors branch space between branches.

FIGURE C-6 BIOS Setup Utility: Advanced- IDE Configuration

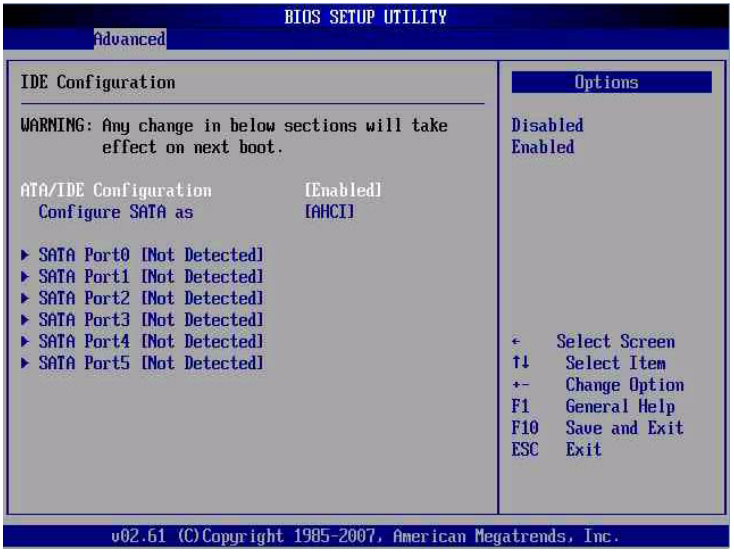


FIGURE C-7 BIOS Setup Utility: Advanced- Super IO Configuration

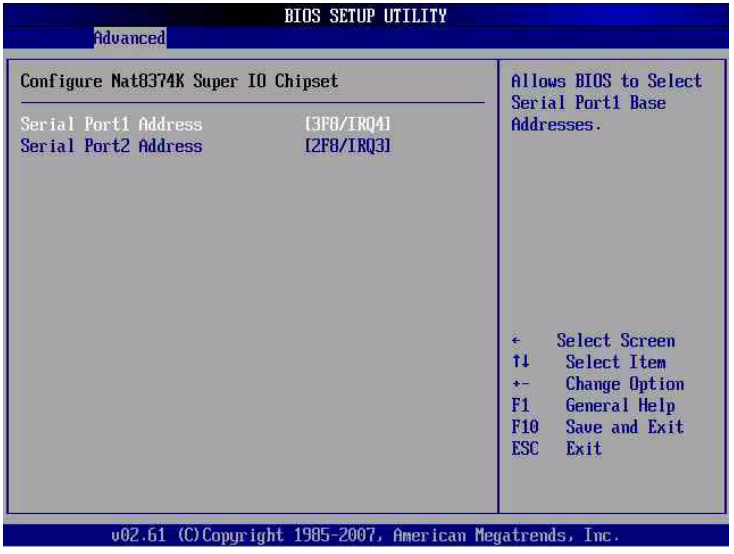


FIGURE C-8 BIOS Setup Utility: Advanced- Trusted Computing

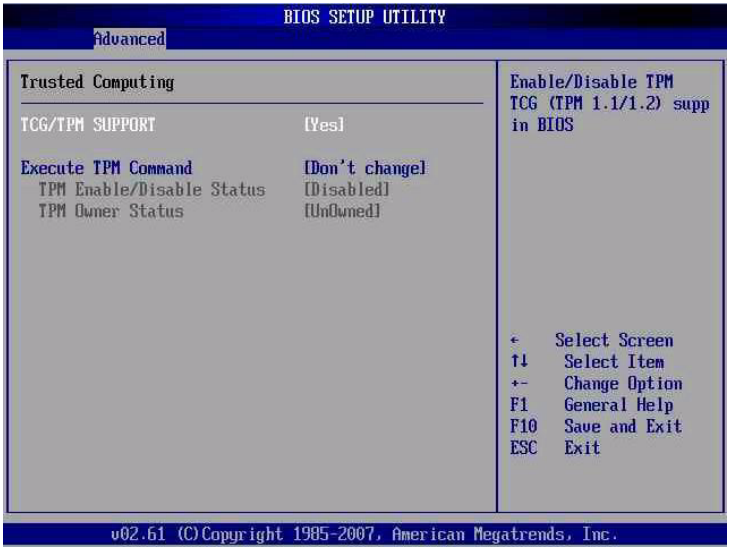


FIGURE C-9 BIOS Setup Utility: Advanced- USB Configuration

FIGURE C-10 BIOS Setup Utility: Advanced- USB Configuration 2

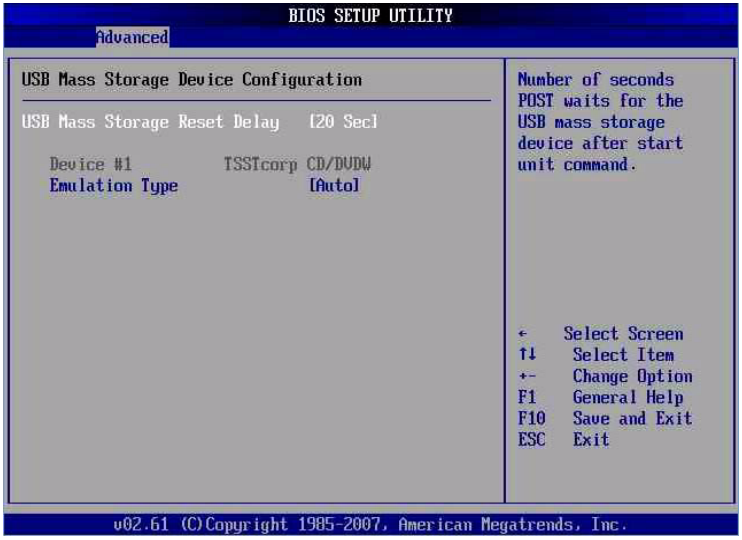


FIGURE C-11 BIOS Setup Utility: Advanced- PCI Configuration

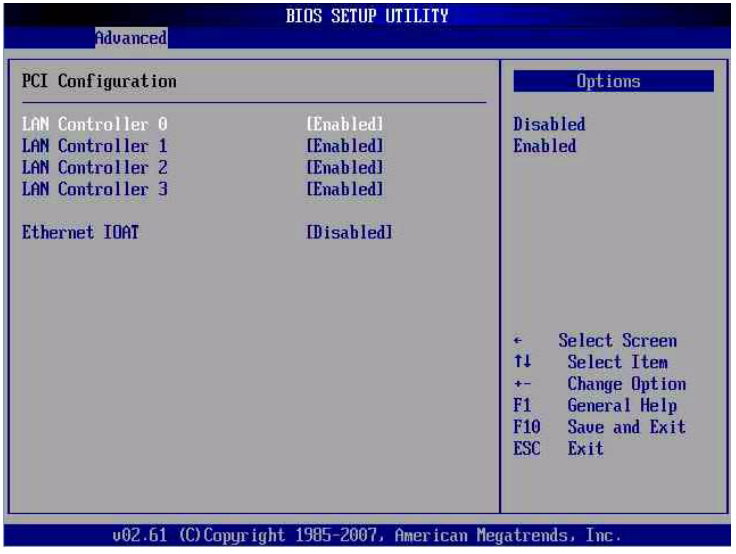


FIGURE C-12 BIOS Setup Utility: Advanced- MPS Configuration

C.2.3 BIOS Boot Menu Screens

The BIOS Boot screens allow you to configure the boot device priority (drives and the DVD-ROM drive). The Sun Fire X4250 server has the following BIOS Boot screens.

FIGURE C-13 BIOS Setup Utility: Boot

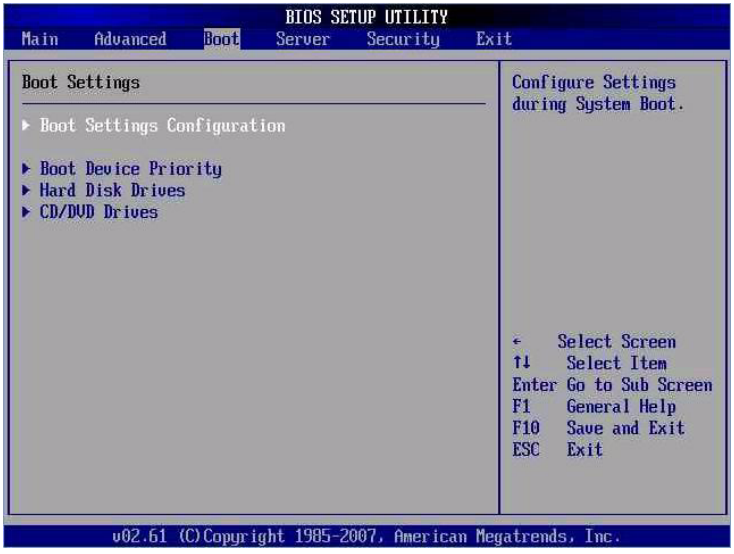


FIGURE C-14 BIOS Setup Utility: Boot Settings Configuration

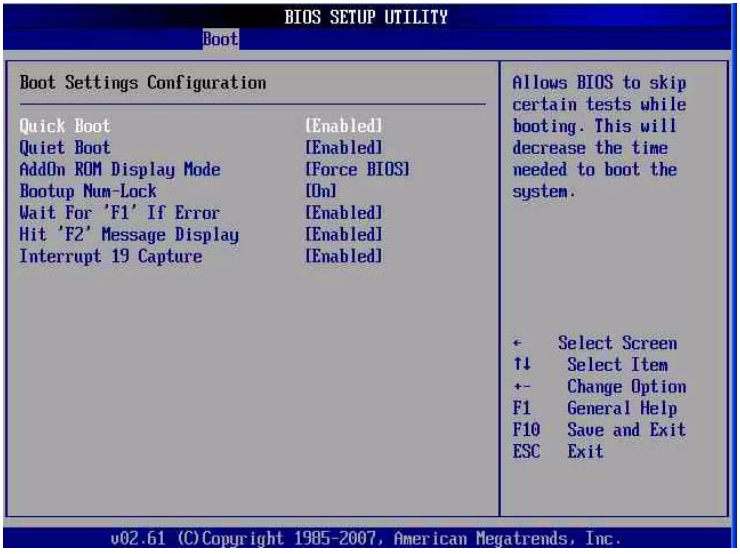


FIGURE C-15 BIOS Setup Utility: Boot Device Priority

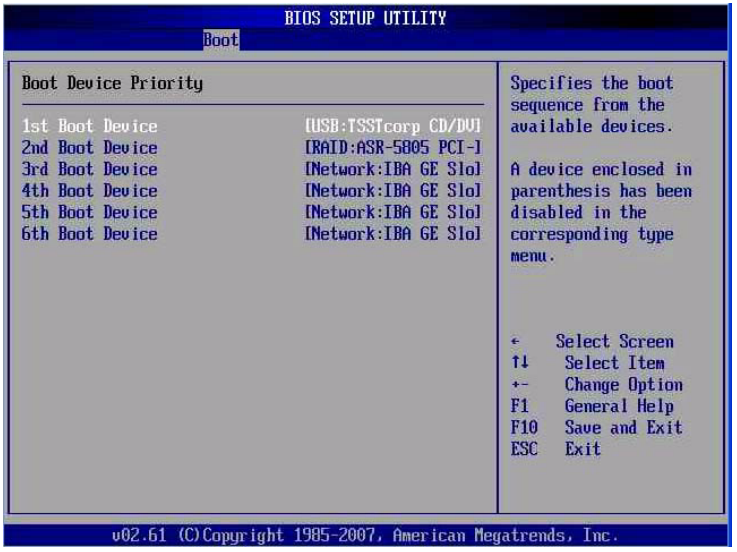


FIGURE C-16 BIOS Setup Utility: Boot Hard Drives

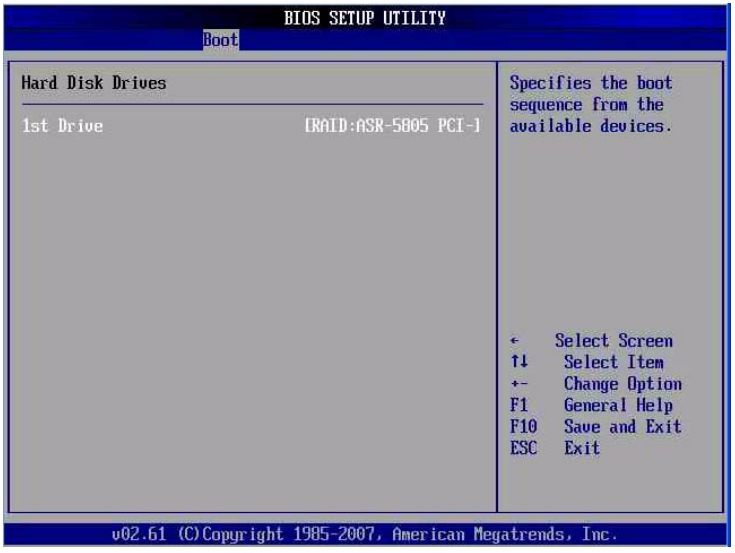


FIGURE C-17 BIOS Setup Utility: Boot CD/DVD Drives

C.2.4 BIOS Server Menu Screens

The BIOS Server screens allow you to configure Server devices (if applicable).

Note – The term BMC that may be displayed on some screens refers to the SP (service processor).

The Sun Fire X4250 server has the following BIOS Server screens.

FIGURE C-18 BIOS Setup Utility: Server

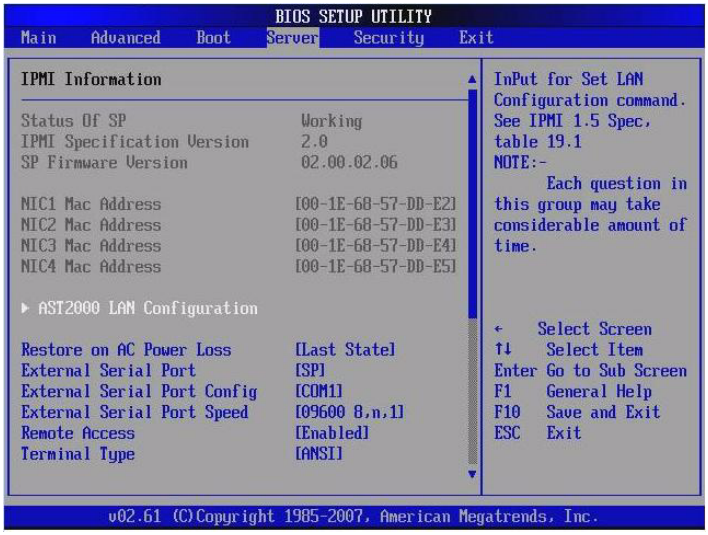


FIGURE C-19 BIOS Setup Utility: Server - Bottom of Scroll

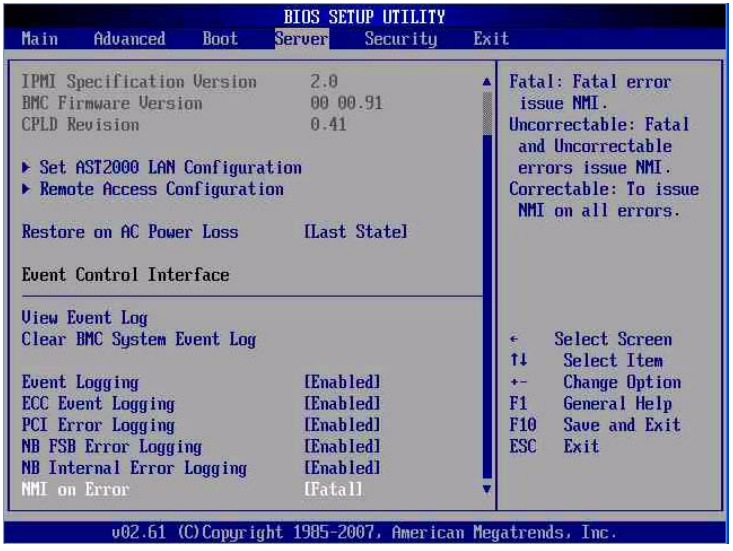


FIGURE C-20 BIOS Setup Utility: Server - LAN Configuration

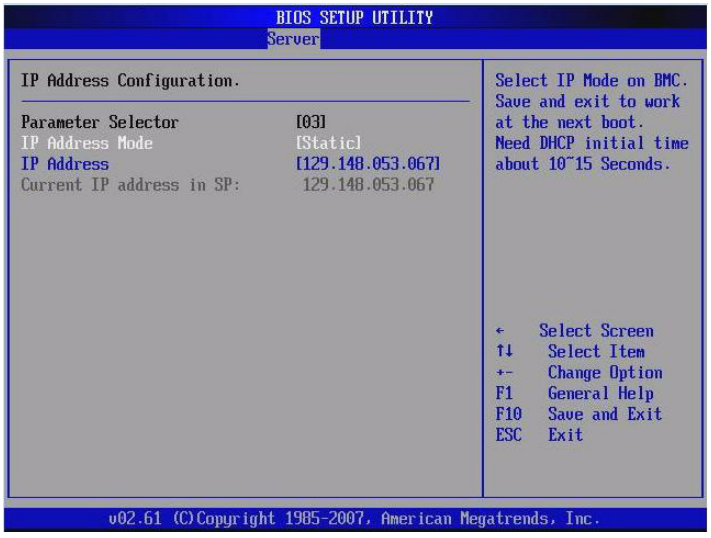


FIGURE C-21 BIOS Setup Utility: Server - LAN Configuration - Reset SP (BMC) Password

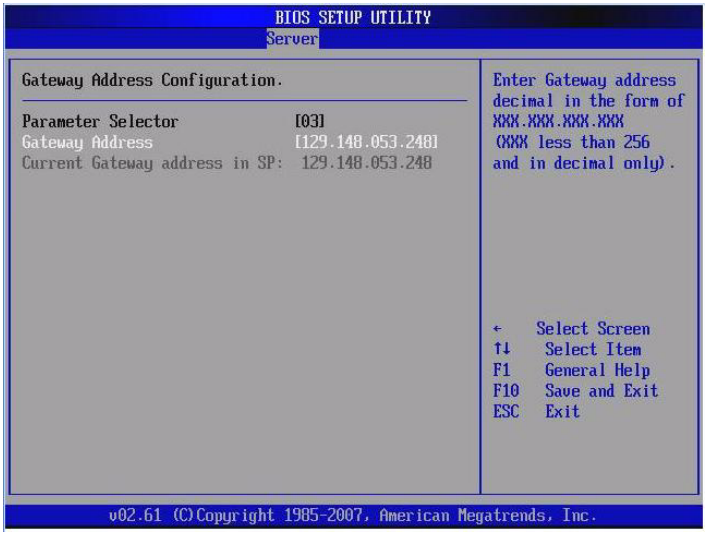


FIGURE C-22 BIOS Setup Utility: Server - Configure Remote Access

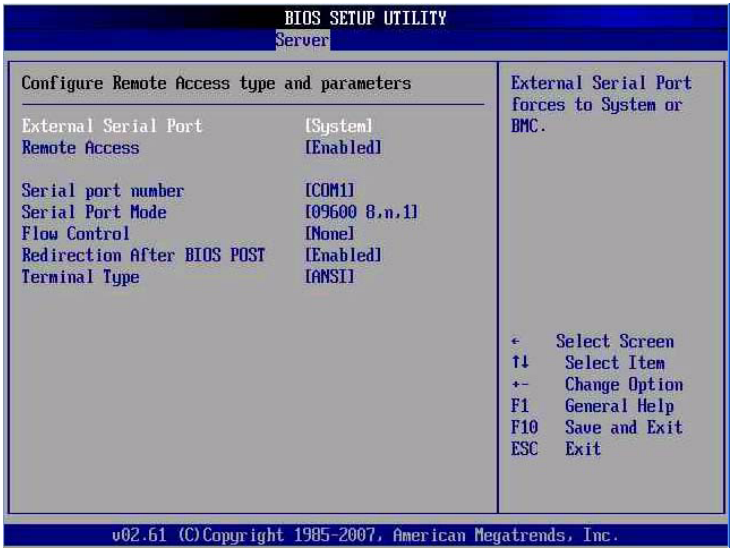
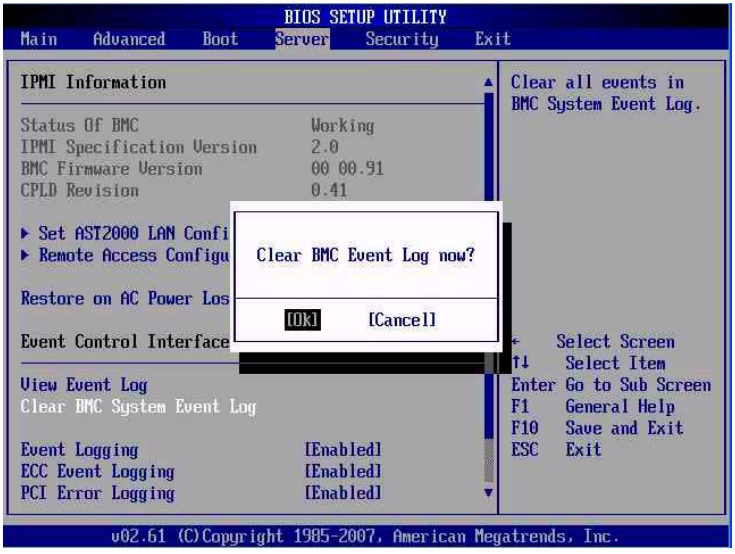


FIGURE C-23 BIOS Setup Utility: Server - View Event Log

FIGURE C-24 BIOS Setup Utility: Server - Clear BMC Event Log

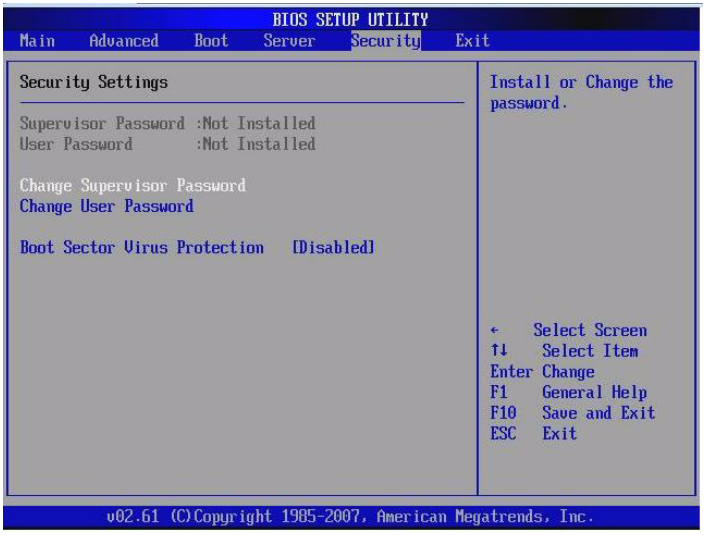


C.2.5 BIOS Security Menu Screens

The BIOS Security screens allow you to set or change the user and supervisor passwords.

The Sun Fire X4250 server has the following BIOS Security screens:

FIGURE C-25 BIOS Setup Utility: Security - Change Supervisor Password



C.2.6 BIOS Exit Menu Screens

The BIOS Exit screens allow you to save changes and exit, discard changes and exit, discard changes, or load optimal or fail-safe defaults.

The Sun Fire X4250 server has the following BIOS Exit screens:

FIGURE C-26 BIOS Setup Utility: Exit

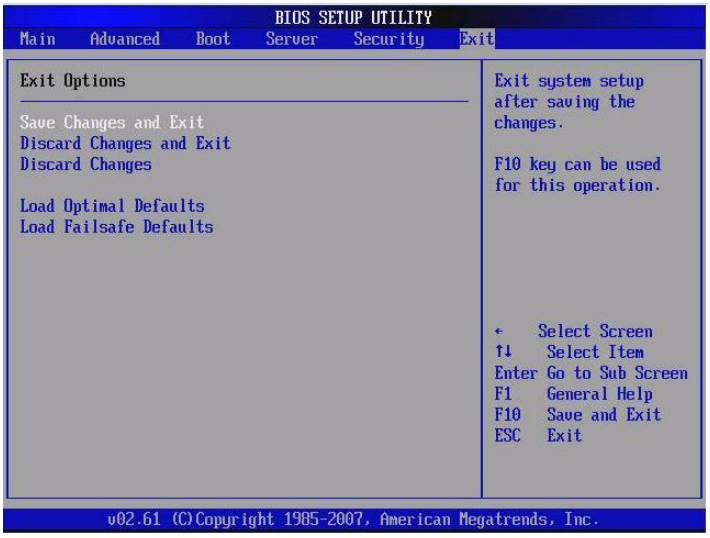


FIGURE C-27 BIOS Setup Utility: Exit - Save Configuration Changes

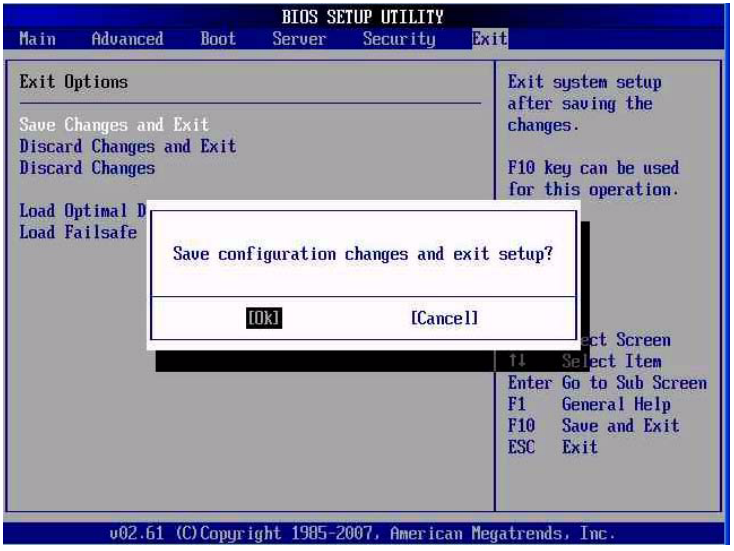


FIGURE C-28 BIOS Setup Utility: Exit - Discard Changes

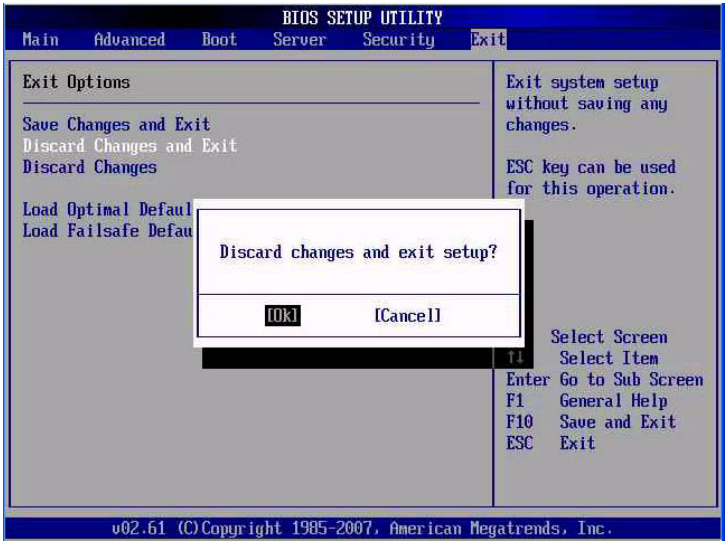


FIGURE C-29 BIOS Setup Utility: Exit - Discard Changes, Do Not Exit

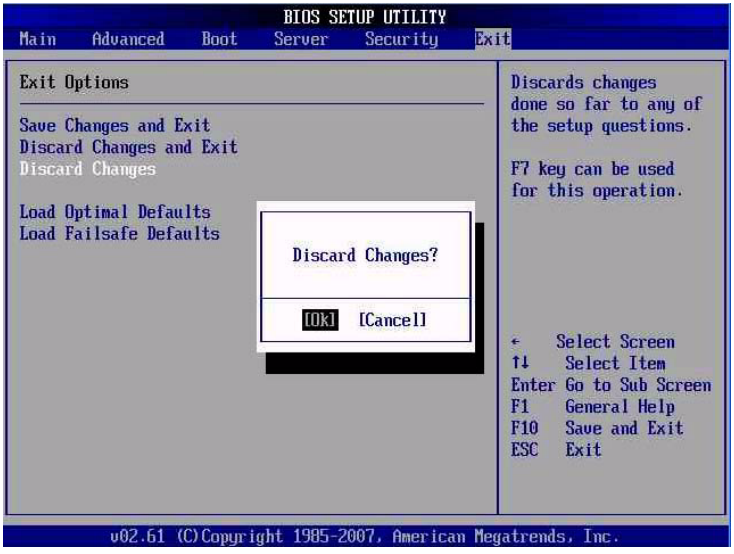


FIGURE C-30 BIOS Setup Utility: Exit - Load Optimal Defaults

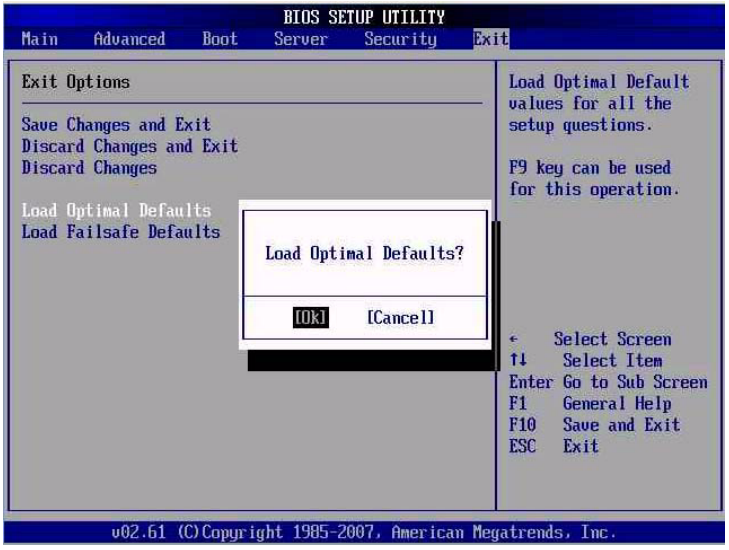
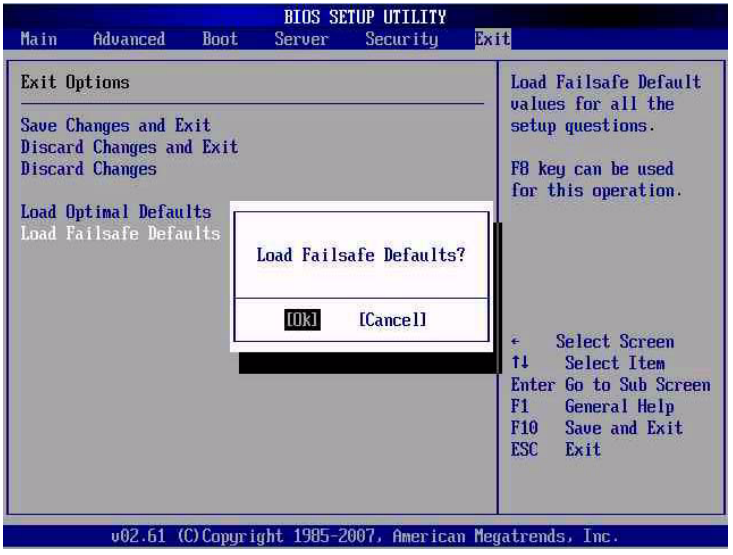


FIGURE C-31 BIOS Setup Utility: Exit - Load Fail-safe Defaults



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