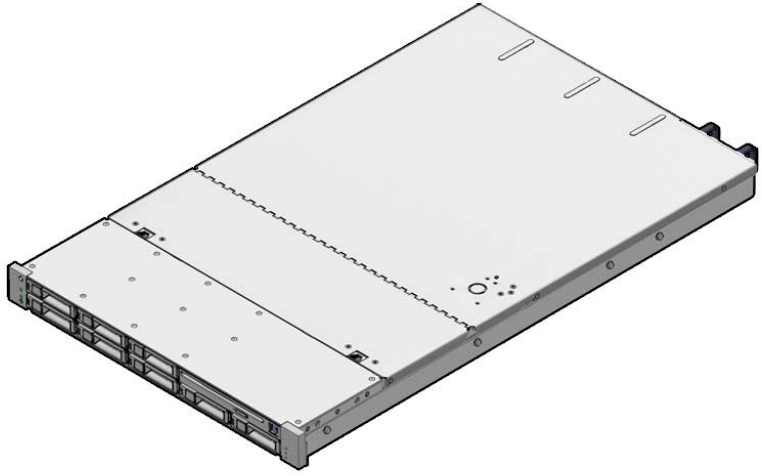
Sun Fire™ X4150 Server Service Manual

For 1U Systems



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Contents

Preface

The *Sun Fire X4150 Server Service Manual* provides detailed procedures for removing and replacing replaceable parts in the Sun Fire™ X4150 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 X4150 Server Service Manual Chapters

Chapter	Describes:
Chapter 1	Sun Fire X4150 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 X4150 Server 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 X4150 server documentation online, go to `http://docs.sun.com`, and then navigate to Sun Fire X4150 server documentation.

The following table lists the available documents.

TABLE P-2 Sun Fire X4150 Server Related Documentation

Title	Function	Part Number	Format	Location
Where To Find Sun Fire X4150 Server Documentation	Additional documentation	820-1857	Printed PDF	Shipping kit Online
Sun Fire X4150 Server Product Notes	Late-breaking information	820-1854	PDF	Online
Sun Fire X4150 Server Safety and Compliance Guide	Safety and regulatory compliance	820-1856	PDF	Online
Sun Fire X4150 Server Installation Guide	Installation	820-1851	Printed PDF	Shipping kit Online
Sun Fire X4150, 4250, and 4450 Servers Diagnostics Guide	Troubleshooting	820-4213	PDF	Online
Sun Integrated Lights Out Manager (ILOM) 2.0 User's Guide and Addendum	Service processor	820-1188	PDF	Online
Sun Integrated Lights Out Manager (ILOM) 3.0 Documentation	Service processor	Document-ation Set	PDF	Online

TABLE P-2 Sun Fire X4150 Server Related Documentation

Title	Function	Part Number	Format	Location
ILOM Supplement	Service processor	820-4998	PDF	Online
ELOM-to-ILOM Migration User's Guide	Service processor	820-4930	PDF	Online
Sun Fire X4150 Server Embedded Lights Out Manager Administration Guide	Service processor	820-1854	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 X4150 Server Product Notes.*

Sun Online

The following table shows where to find Sun documents online.

TABLE P-3 Sun Fire X4150 Server Online Documents

Sun Function	URL	Description
Sun Documentation	http://docs.sun.com	You can navigate to the Sun Fire X4150 server document page and then download PDF and view HTML documents. Includes the LSI card *MegaRAID Storage Manager x64 Server Utilities Reference Manual* for MSM.
Support	http://www.sun.com/support/	Obtain technical support and download patches.
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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`http://www.sun.com/hwdocs/feedback`

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

Example: *Sun Fire X4150 Server Service Manual*, part number 820-1852-13.

CHAPTER 1

Sun Fire X4150 Server Overview

This chapter provides an overview of the features of the Sun Fire X4150 Server.

The following information is included:

1.1 Product Description

The Sun Fire X4150 Server is an enterprise-class two-socket rackmount x64 system powered by either the Dual-Core or Quad-Core Intel® Xeon® processor, packing high performance and headroom expansion into a compact 1-RU footprint.

The product features are listed in TABLE 1-1.

TABLE 1-1 Sun Fire X4150 Server System Features

Feature	Description (Sun Fire X4150 Server)
Processor	• Quad-Core Intel Xeon processor 5300 series or Dual-Core Intel Xeon processor 5100 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 DDR2 memory
Video Memory	8 MB, Maximum resolution: 1280x1024 pixels

TABLE 1-1 Sun Fire X4150 Server System Features *(Continued)*

Feature	Description (Sun Fire X4150 Server)
Ethernet ports	4 ports, 10/100/1000 Mbps, auto-negotiating through two separate controllers
Internal drives	• SAS (up to 8) or SATA (up to 6) disk drives (hard drive or SSD) • Up to 8 SFF SAS 2.5-inch form factor drives. Support for hardware-embedded RAID 0 (striping) and RAID 1 (mirroring) • Up to 4 32GB SSDs • 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	• 7 hot-swappable system fan modules (2 fans per module) • An air baffle facilitates processor/memory airflow
PCI interfaces	3 standard, low profile, half length, PCIe slots on three riser boards (x8 electrical/x16 mechanical)
Power	• AC power: 100–120/200–240 V AC, 12/6 A, 50–60 Hz • 1 or 2 hot-swappable 650W power supply units (PSUs) to provide N+N redundancy, with energy efficient design

TABLE 1-1 Sun Fire X4150 Server System Features *(Continued)*

Feature	Description (Sun Fire X4150 Server)
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 7 Open Solaris Solaris 10 OS with specific Sun Fire X4150 Server software components Supports: • Red Hat Enterprise Linux 4 U4 (AS) (32-bit/64-bit) • Red Hat Enterprise Linux 5 (32-bit/64-bit) • SUSE Linux Enterprise Server 10 SP1 (64-bit) • VMware ESX 3.0.2 • Windows Server 2003 x32 SP2 or greater (Standard Edition/ Enterprise Edition) • Windows Server 2008 x64 (Standard Edition/ Enterprise Edition)
Other software	Java™ Enterprise System with a 90-day trial license

See the Product Release Notes for additional items.

1.2 Sun Fire X4150 Server Chassis Overview

The Sun Fire X4150 Server is based on an all-new chassis family.

1.2.1 Infrastructure Boards

The Sun Fire X4150 Server 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 service processor subsystem (ILOM). The ILOM service processor subsystem controls the host power and monitors host system events (power and environmental). The ILOM 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 4-22
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 X4150 Server, 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 5.6, "Servicing the Paddle Card" on page 5-16
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 5-1
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 X4150 Server has an eight-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 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 3-19
PCIe risers FRU	There are three risers per system, each attached to the rear of the motherboard. In the Sun Fire X4150 Server, each riser supports one PCIe card.	Section 4.3, "Servicing PCIe Risers" on page 4-14

1.2.2 Dimensions

The 1U chassis form factor dimensions are listed in TABLE 1-3.

TABLE 1-3 Sun Fire X4150 Server Dimensions

Dimension	Sun Fire X4150 Server
Height	44 mm/1.73 inches
Width	425.5 mm/16.75 inches
Depth	711.2 mm/28.0 inches
Weight	Minimum: 13.9 kg/30.6 lbs. Maximum: 18.4 kg/40.6 lbs.

1.2.3 System Cables

The Sun Fire X4150 Server internal cables are listed in TABLE 1-4.

TABLE 1-4 Sun Fire X4150 Server Cables

Cable	Connects...
Top cover interlock	To the power distribution board
Ribbon cable	Between the power distribution board and the motherboard
Drives data cables (2)	Between the motherboard (or optional HBA PCI-Express Card) and the drives backplane

See Section 5.7, "Servicing Cables" on page 5-18 for instructions on replacing cables.

1.3 Sun Fire X4150 Server Front Panel Features

FIGURE 1-1 shows front panel features on the Sun Fire X4150 Server.

FIGURE 1-1 Front Panel Features

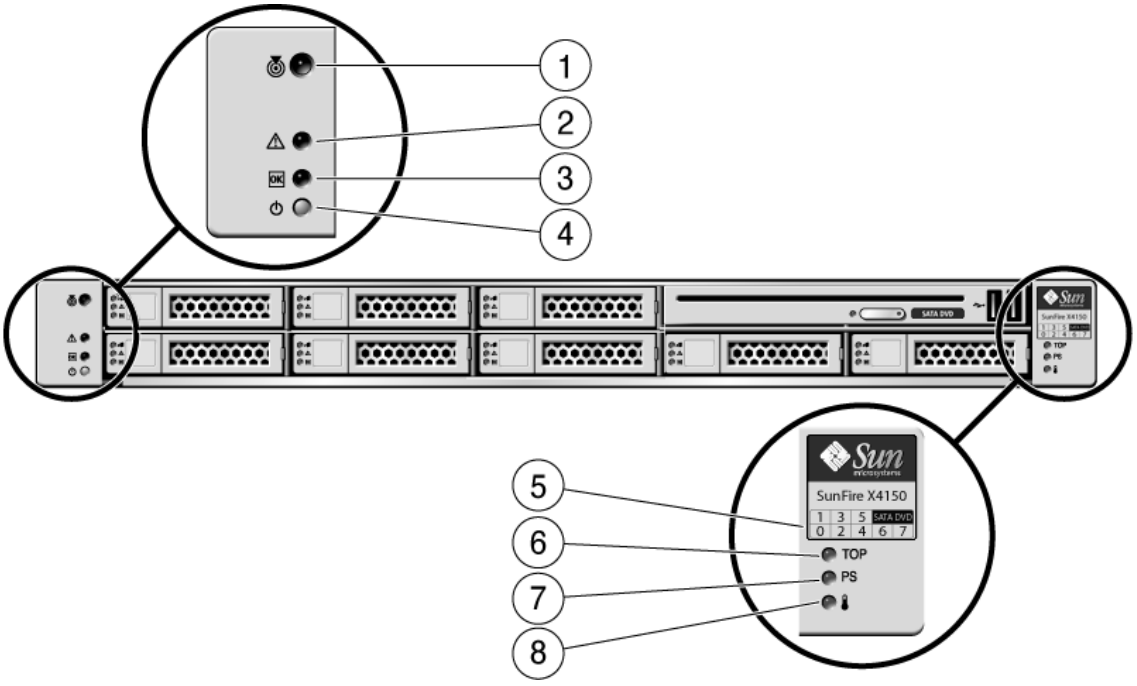


Figure Legend

1	Locator LED/Locator button (white)	**5**	Drives map
2	Service Action Required LED (amber)	**6**	Power Supply Service Required LED (amber)
3	Power/OK LED (green)	**7**	System Overtemperature LED (amber)
4	Power button	**8**	Fan Module Service Required LED (amber)

1.4 Sun Fire X4150 Server Rear Panel Features

FIGURE 1-2 shows rear panel features on the Sun Fire X4150 Server. For more detailed information about ports and their uses, see the *Sun Fire X4150 Server Installation Guide*.

FIGURE 1-2 Rear Panel Features

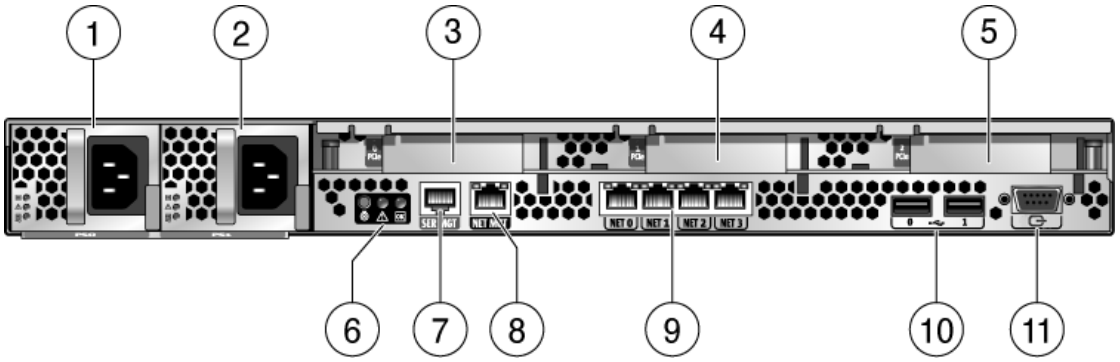


Figure Legend

1	PSU 0	**7**	Serial Management Port
2	PSU 1	**8**	Network Management Port
3	PCIe 0	**9**	Gbit Ethernet Ports (0, 1, 2, 3)
4	PCIe 1	**10**	USB Ports (0, 1)
5	PCIe 2	**11**	HD-15 Video Port
6	Rear Panel System Status LEDs - Locator LED/Locator button (white) - Service Action Required LED (amber) - Power/OK LED (green)		

For a detailed description of PCIe slots, see Section 4.4.1, “Sun Fire X4150 Server PCIe Card Guidelines” on page 4-18.

1.5 Illustrated Parts Breakdown

The following illustrations provide exploded views of Sun Fire X4150 Server system components. Use these illustrations, and the accompanying tables, to identify parts in your system.

FIGURE 1-3 I/O Components (Sun Fire X4150 Server)

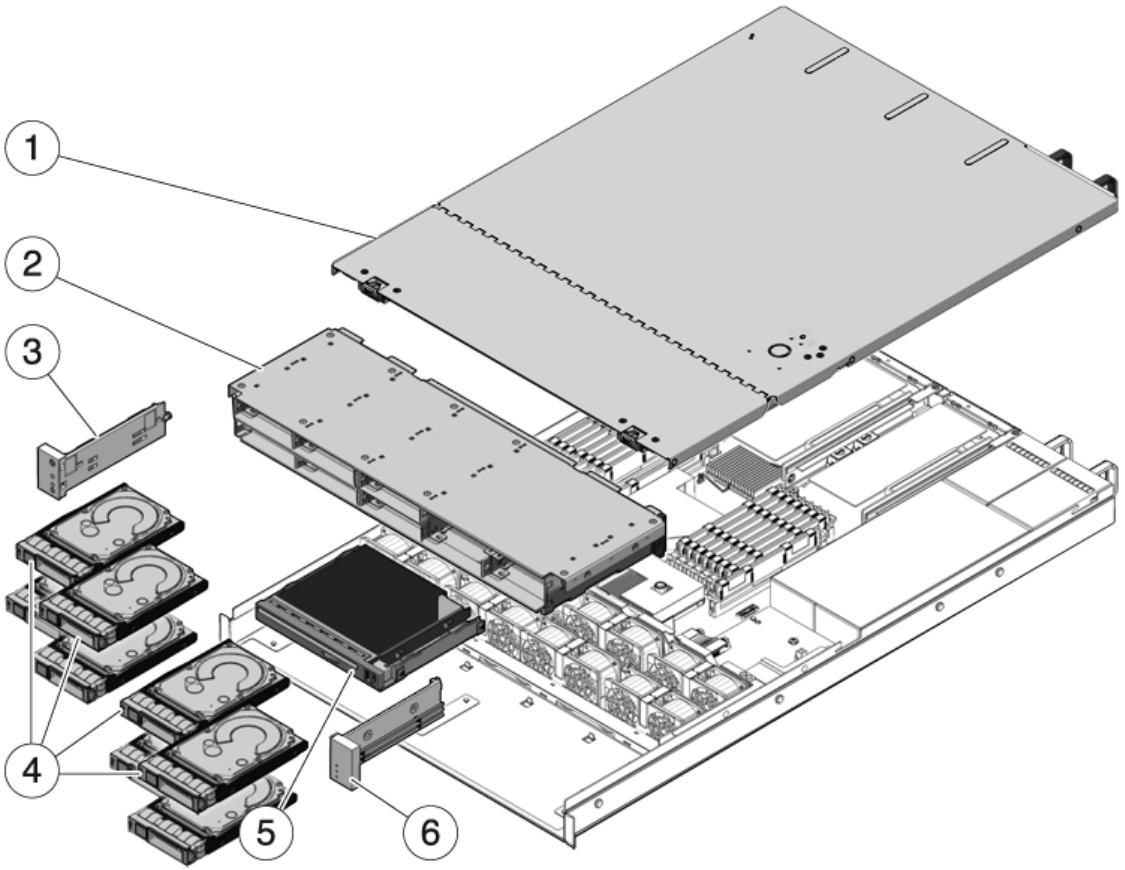


Figure Legend

1	Top Cover	**4**	Drivess
2	DrivesCage	**5**	DVD/USB Module
3	Left Control Panel Light Pipe Assembly	**6**	Right Control Panel Light Pipe Assembly

FIGURE 1-4 Power Distribution/Fan Module Components (Sun Fire X4150 Server)

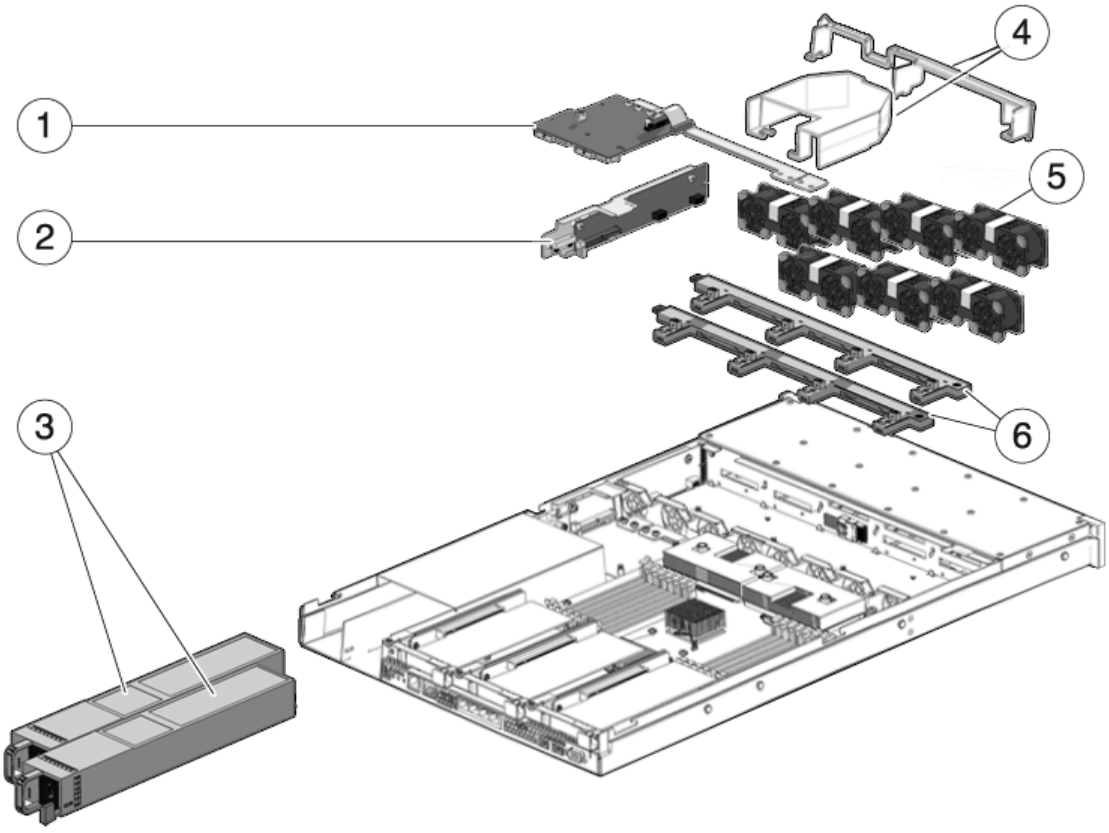


Figure Legend

1	Power Distribution Board/Bus Bar Assembly	**4**	Air Baffle
2	Paddle Card	**5**	Fan Modules
3	Power Supplies	**6**	Fan Boards

FIGURE 1-5 Cables 1 (Sun Fire X4150 Server with SATA)

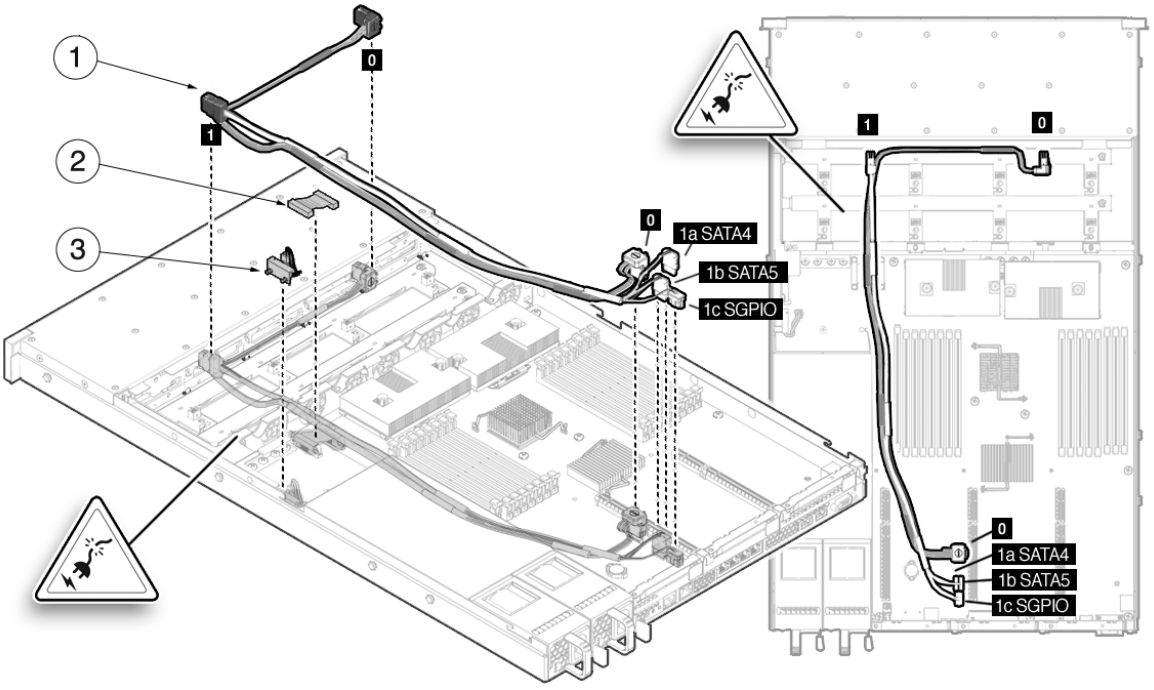


Figure Legend

1	SATA Drive Data Cable
2	Motherboard to Power Distribution Board Cable
3	Top Cover Interlock

FIGURE 1-6 Cables 2 (Sun Fire X4150 Server with SAS)

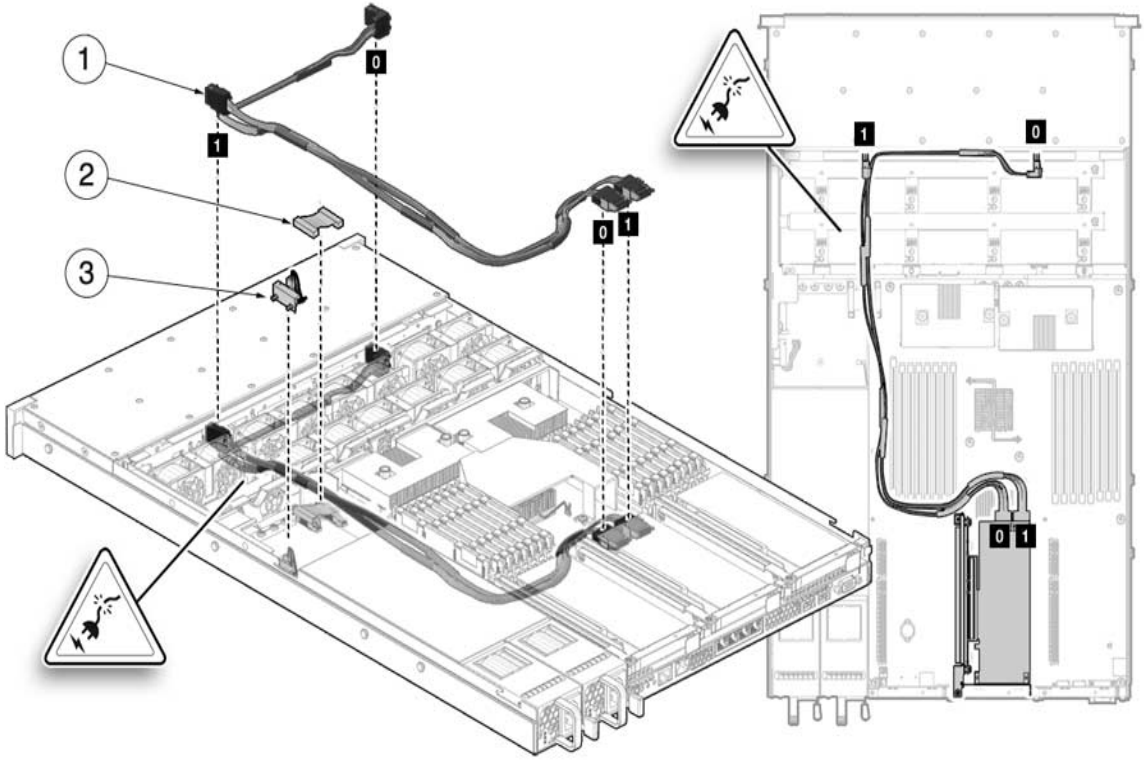


Figure Legend

1	SAS Drive Data Cable
2	Motherboard to Power Distribution Board Cable
3	Top Cover Interlock

CHAPTER 2

Preparing to Service the System

This chapter describes how to prepare the Sun Fire X4150 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 X4150 Server.

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

Caution – Equipment damage 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 X4150 Server Safety and Compliance Guide*.
- 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 X4150 Server can be serviced with the following tools:

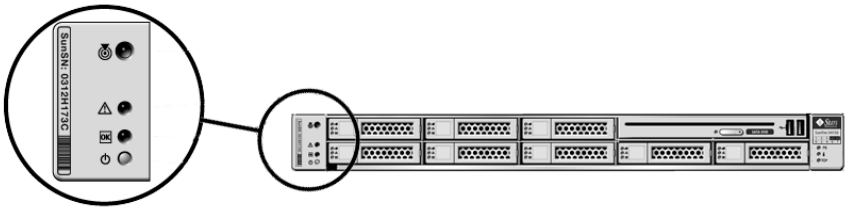
- Antistatic wrist strap
- Antistatic mat
- No. 2 Phillips screwdriver
- No. 1 flat-blade screwdriver (for battery removal)
- Stylus or pencil (to power on server)

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 sticker on the front of the server, and another sticker 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

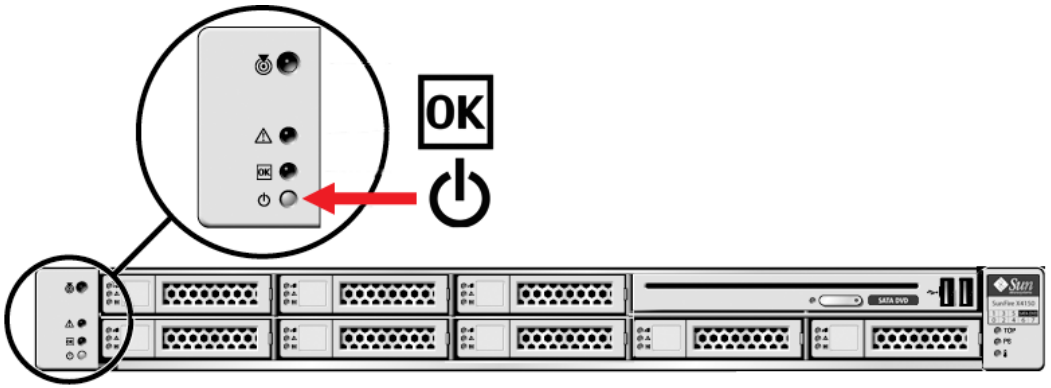
To remove main power from the server, use one of the methods shown in the following table.

TABLE 2-1 Shutdown Procedures

Shutdown	Method
Graceful shutdown	Use a pen, or other 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 back 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 Solaris operating system 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 Solaris™ 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) Issue the following command from the -> prompt to locate the system that requires maintenance.**

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

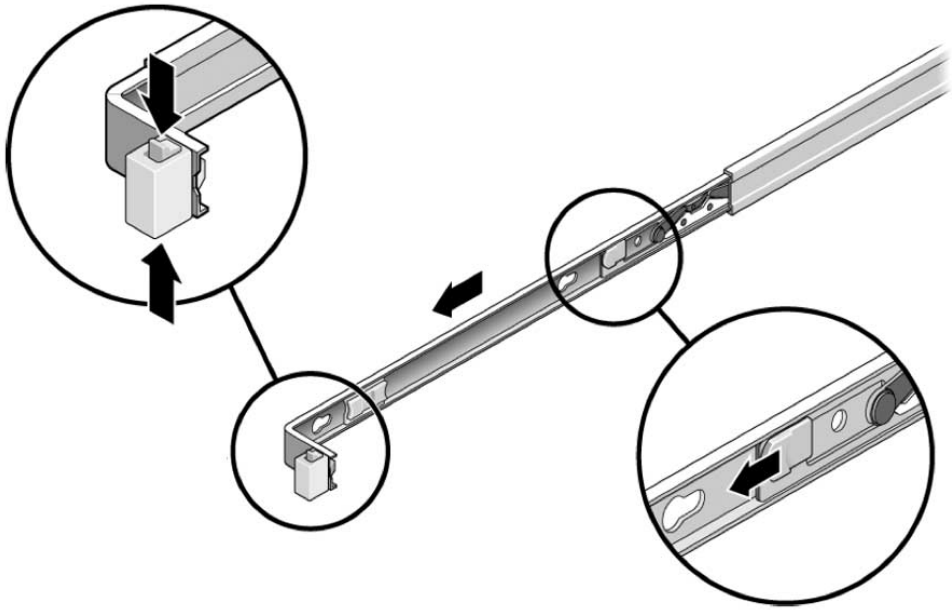
   After you have located the server, press the Locator LED/Locator button to turn it off.

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 lock into place.**

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
- Paddle card
- Disk cage
- Drives backplane
- Front panel light-pipe assemblies

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

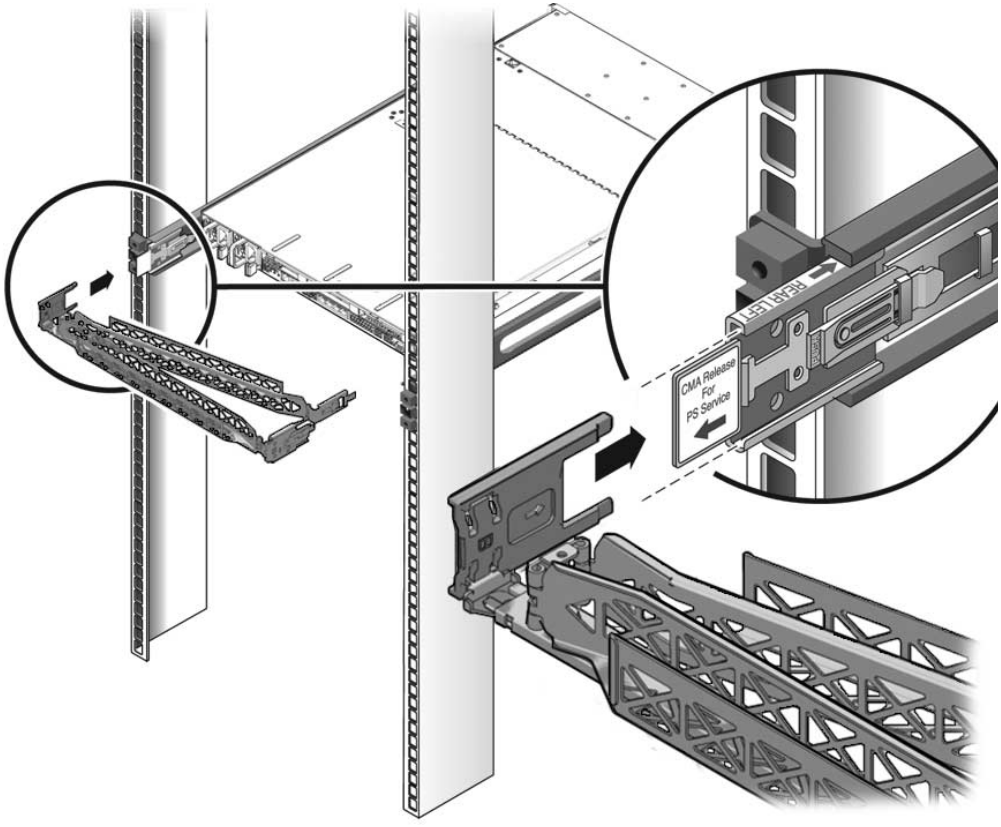
To remove a server from the rack:

1. **Disconnect all the cables and power cords from the server.**
2. **Extend the server to the maintenance position.**

   See Section 2.5, "Extending the Server to the Maintenance Position" on page 2-5.
3. **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 2-4**).**

   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

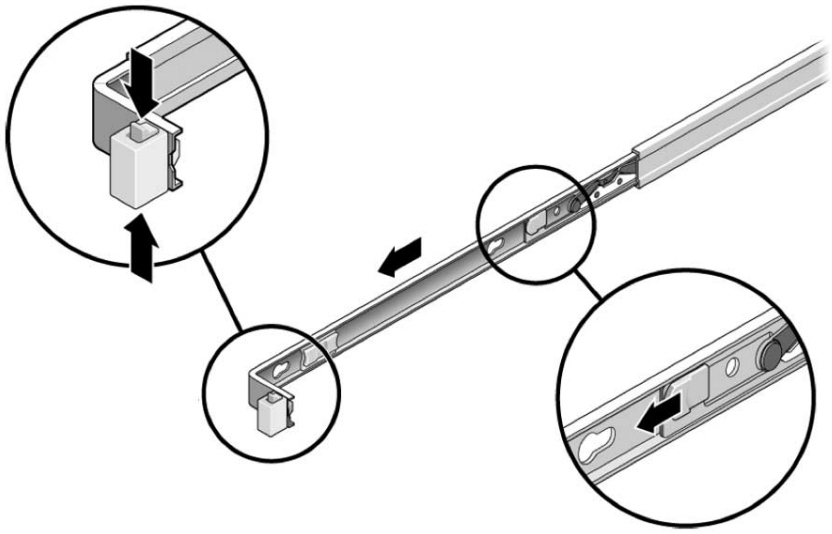


Caution – If necessary, use two people to dismount and carry the chassis.

4. **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



5. **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 along their 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 X4150 Server. However, antistatic wrist straps are still included with options.

2.7.1.2 Using an Antistatic Mat

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

2.7.2 ESD Handling Procedure

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

   Place ESD-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 ESD mat, part number 250-1088
   - A disposable ESD 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. [1]**

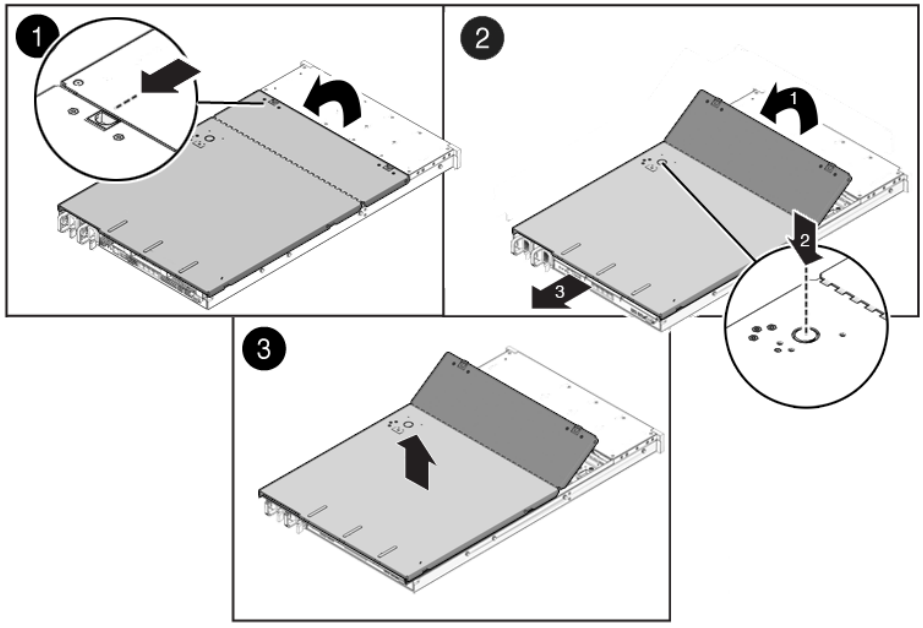
   Pull the two release tabs back to release the door. Rotate the fan door to the open position and hold it there.

2. **Press the top cover release button and slide the top cover toward the rear of the server 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 Sun Fire X4150 Server 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 X4150 Server.

The following topics are covered:

3.1 Hot-Pluggable or Hot-Swappable Devices

Note – Some of the procedures in this section are for customer-replaceable units (CRUs) and some are for field-replaceable units (FRUs), as noted in the procedures and in the following list. FRU components should be replaced **only** by trained service technicians. Contact your Sun Service representative for assistance with FRU replacements.

3.1.1 Hot-Pluggable Devices

Hot-pluggable devices are those devices that you can remove and install 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 X4150 Server, hard drives and SSD 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 the Drives" on page 3-2.

3.1.2 Hot-Swappable Devices

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

In the Sun Fire X4150 Server, the following devices are hot-swappable:

- Fan modules. See Section 3.3, "Servicing Fan Modules" on page 3-8.
- Power supplies. See Section 3.4, "Servicing Power Supplies" on page 3-14.

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

3.2 Servicing the Drives

The following topics are covered for hard drive or SSD:

Note – These are customer-replaceable units.

3.2.1 Sun Fire X4150 Server Drive Guidelines

FIGURE 3-1 shows the front panel of a server with 8 hard drives.

FIGURE 3-1 Server Front

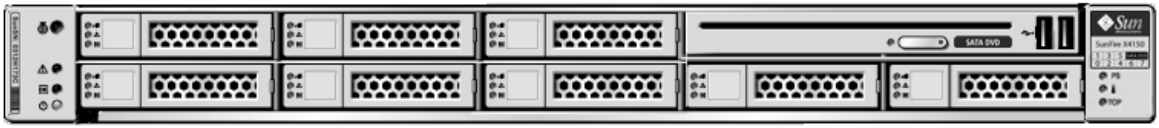


TABLE 3-1 Drive Physical Drive Locations

HD1	**HD3**	**HD5**	DVD drive	
HD0	**HD2**	**HD4**	**HD6**	**HD7**

3.2.2 Sun Fire X4150 Server SSD Guidelines

The X4150 server supports installing SSDs in the drive bays. Each SSD provides at least 32Gb of SATA capacity.

TABLE 3-2 shows drive numbers for a server with 4 SSDs and 4 hard drives. FIGURE 3-1 shows the front panel of a server with 8 drives.

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

SSD1	**SSD3**	**HD5**	DVD drive	
SSD0	**SSD2**	**HD4**	**HD6**	**HD7**

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

Sun Fire X4150 with on-board controller:

- Up to 4 SSDs can be installed.

Sun Fire X4150 with both HBA and on-board controller:

- 0 to 4 SSDs can be installed into the system for the X4150.

  The remaining slots can be filled with up with hard drives that can equal up to 4.
- SSDs can be installed in any drive slot to a maximum of 4 SSDs.

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

The following cable kits are used for the HBA controller when using hard drives and SSDs:

TABLE 3-3 Sun Fire X4150 Cable Kits

Cable Kit	Order Number	Comments
SSD without HBA	6389A	Connects up to 4 SSDs
SAS/SATA with HBA	6388A	Connects up to 8, no more than 4 can be SSDs

3.2.2.1 SSD Minimum Required Firmware

BIOS/ILOM Firmware

- BIOS: 1ADQW060
- ILOM: 3.0.3.37

Adaptec Firmware

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

SSD firmware

- Intel SSD FW: 845C8626

3.2.3 Drive Status LED Reference

FIGURE 3-2 shows the hard drive and SSD LED status indicators.

FIGURE 3-2 Drive Status LEDs

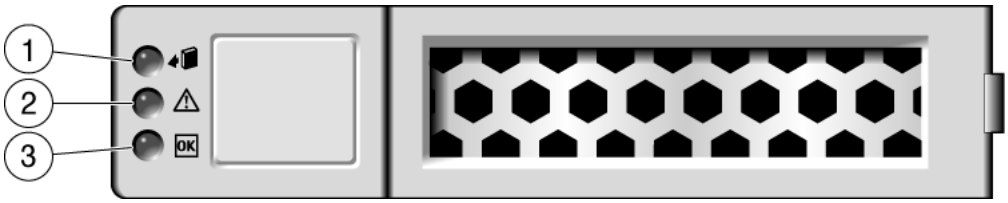


Figure Legend

Legend	LED	Symbol	Color	Lights when
1	OK to Remove		Blue	A drive can be removed safely during a hot-plug operation.
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 or SSD drives can be hot-plugged or cold-plugged. Drives in the Sun Fire X4150 Server might be hot-pluggable, depending on the drive configuration.

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.

To remove a drive from a Sun Fire X4150 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 X4150 Server Drive Guidelines" on page 3-3.

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:

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

   For LSI MegaRAID Storage Manager (MSM): *x64 Server Utilities Reference Manual*

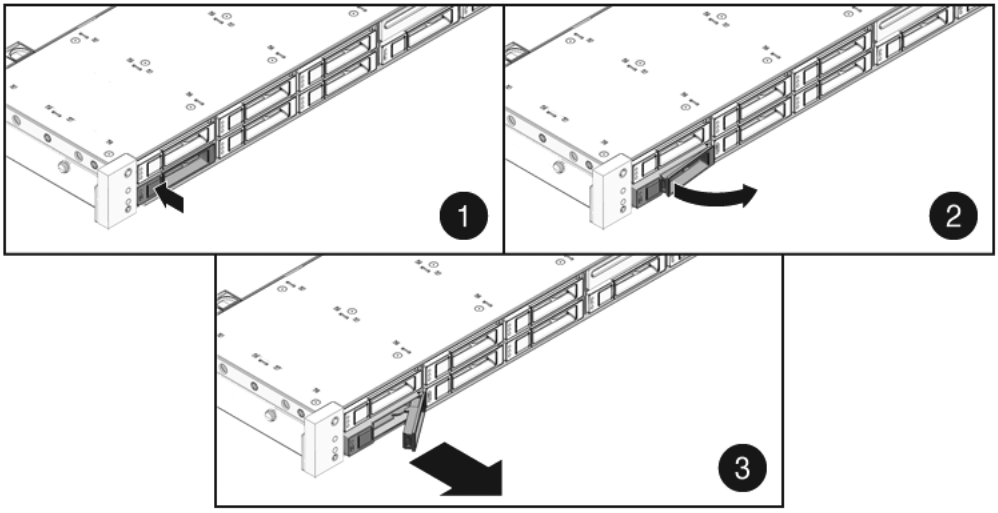
- **To cold-plug a drive: You must power off the server before you can safely remove the drive. Do one of the procedures described in** Section 2.4, "Powering Off the Server" on page 2-3**.**

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

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 an Hard Drive or SSD

Installing a hard drive or SSD drive into the Sun Fire X4150 Server is a two-step process. You must first install a drive into the drive slot, and then configure that drive to the server.

To install a drive or SSD drive into a Sun Fire X4150 Server:

1. **If necessary, remove the blank panel from the chassis.**

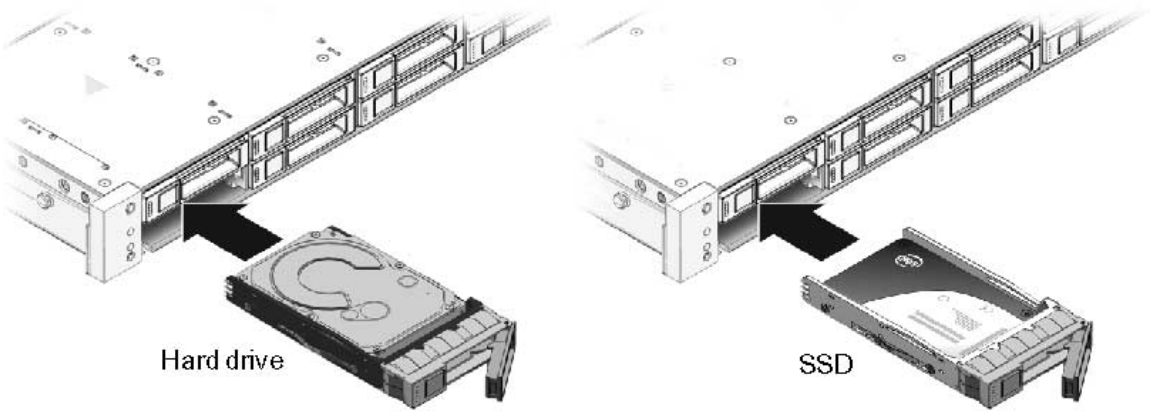
   The Sun Fire X4150 Server might have as many as seven blank panels covering unoccupied drive slots.

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): *x64 Server Utilities Reference Manual*

- **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 X4150 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.

3.3 Servicing Fan Modules

The following topics are covered:

Note – This is a customer-replaceable unit.

3.3.1 About Sun Fire X4150 Server Fans

Seven 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.

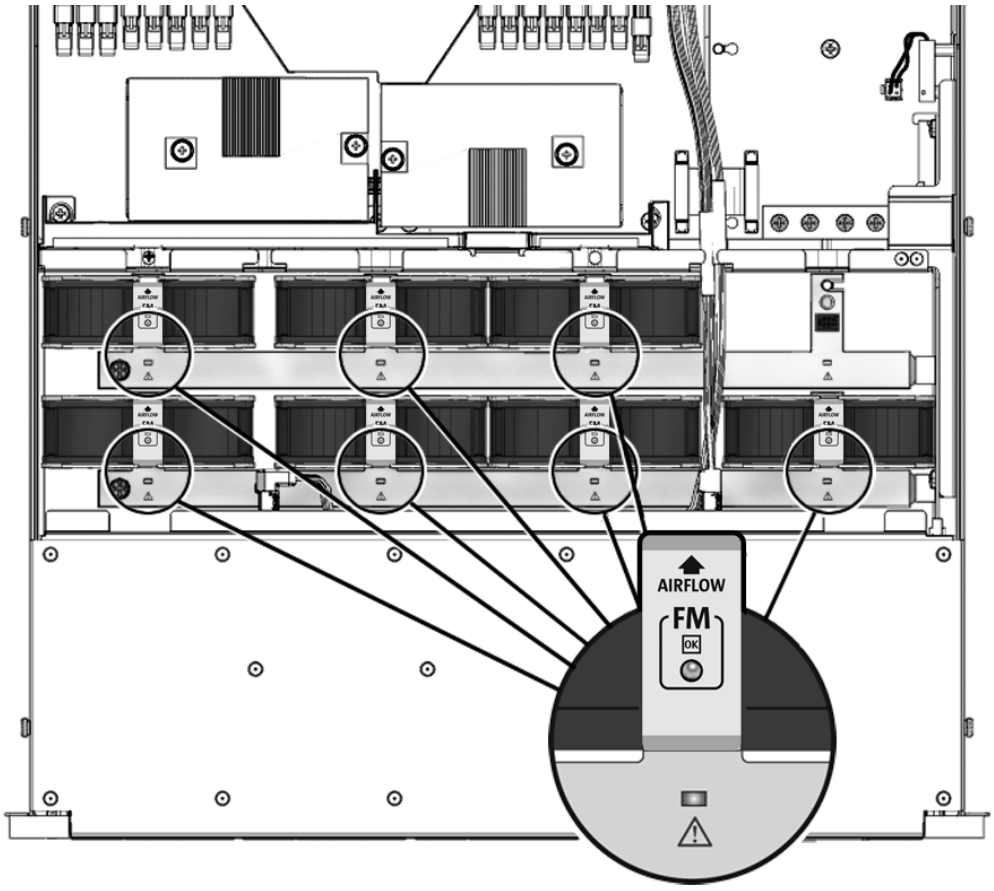
3.3.2 Fan Module LED Reference

Each fan module contains LEDs that are visible when you open the fan tray access door. TABLE 3-4 describes fan tray module LEDs and their functions. FIGURE 3-6 shows fan tray module LED locations.

TABLE 3-4 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 3-5 Fan Module Status LEDs



See Section 1.2, "Sun Fire X4150 Server Chassis Overview" on page 1-3 for more information about system status LEDs.

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 Section 1.3, “Sun Fire X4150 Server Front Panel Features” on page 1-6 for more information about identifying and interpreting system LEDs.

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 after about 60 seconds 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.

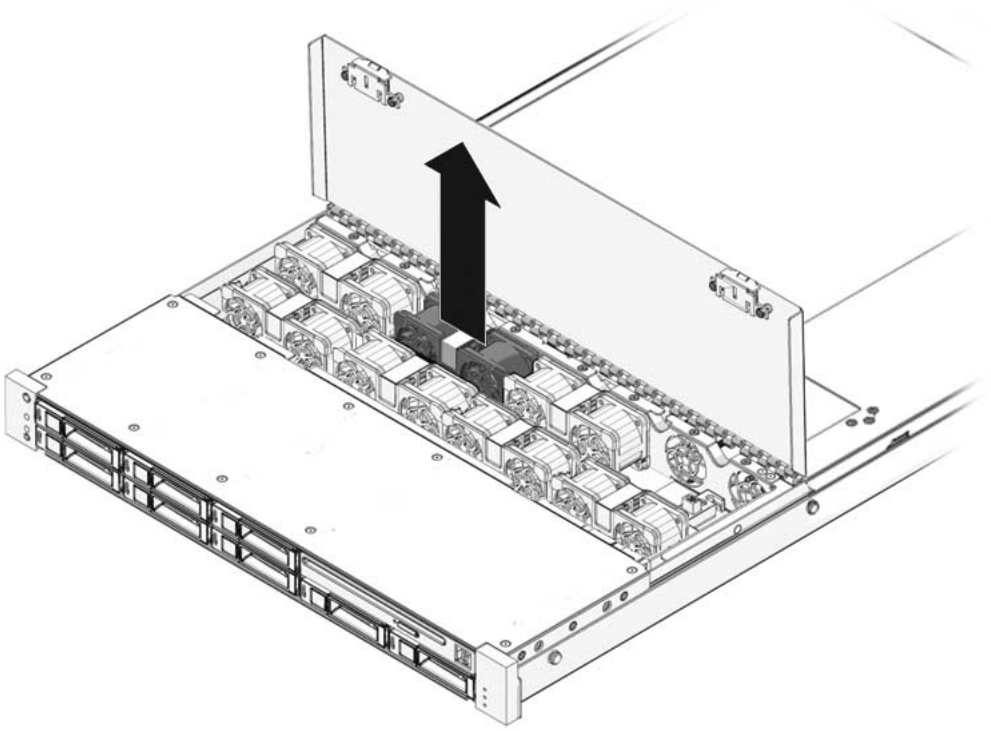
3. **Identify the faulty fan module with a corresponding Service Required LED.**

   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 (**FIGURE 3-6**).**

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 3-6 Removing a Fan Module.

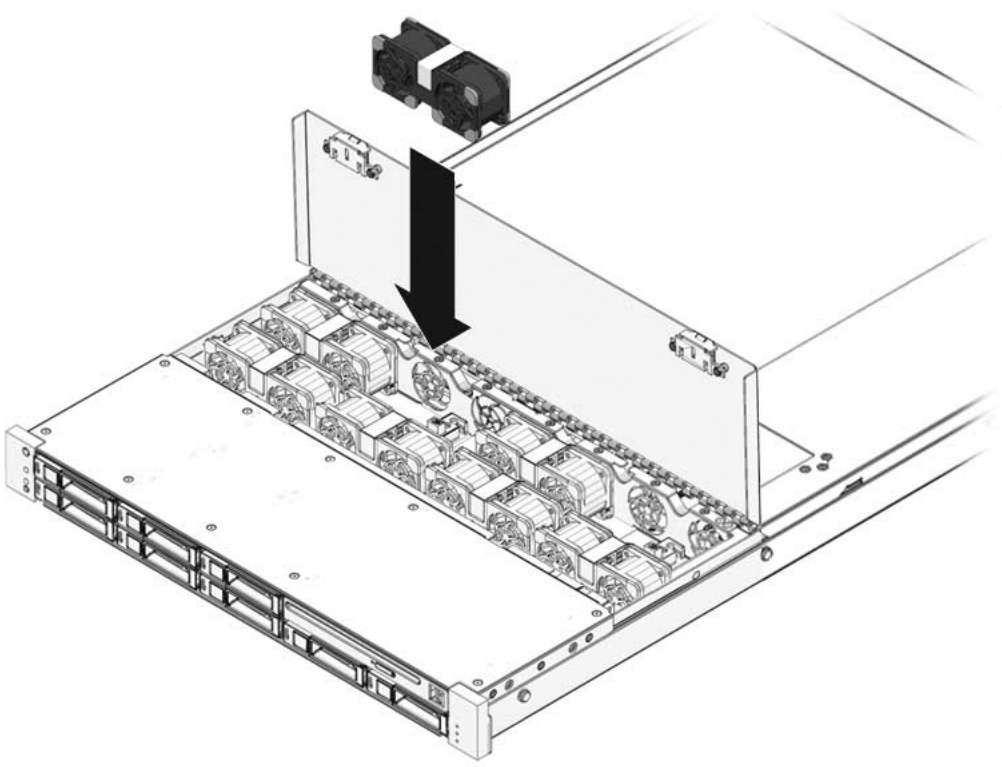


3.3.5 Installing a Fan Module

1. **With the top cover door open, install the replacement fan module into the server (**FIGURE 3-7**).**

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

FIGURE 3-7 Installing a Fan Module



2. **Apply firm pressure to fully seat the fan module.**
3. **Verify 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 X4150 Server Chassis Overview" on page 1-3 for more information about identifying and interpreting system LEDs.

3.4 Servicing Power Supplies

Some versions of the Sun Fire X4150 Servers 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.

Note – This is a customer-replaceable unit.

The following topics are covered:

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 3-14 for power supply LED information.

See Section 1.3, "Sun Fire X4150 Server Front Panel Features" on page 1-6 and Section 1.4, "Sun Fire X4150 Server Rear Panel Features" on page 1-7 for more information about identifying and interpreting server LEDs.

3.4.2 Power Supply LED Reference

Each power supply contains LEDs on the back panel of the system.

FIGURE 3-8 Power Supply Status LEDs

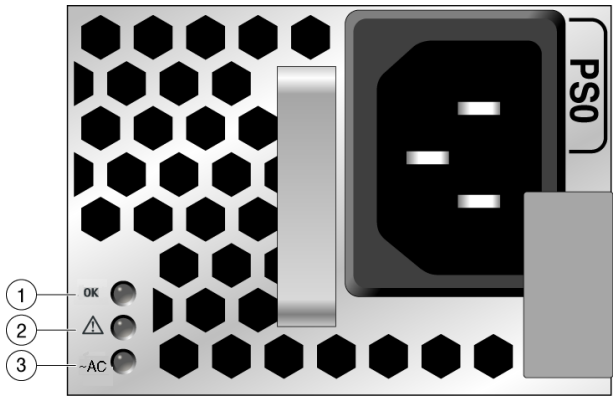


Figure Legend

Legend	LED	Symbol	Color	Lights when
1	OK to Remove	OK	Green	A power supply can be removed safely during a hot–swap operation.
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	AC Present	~AC	Green	The power supply is plugged in and AC power is available, regardless of system power state.

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. **Identify which power supply (0 or 1) requires replacement.**

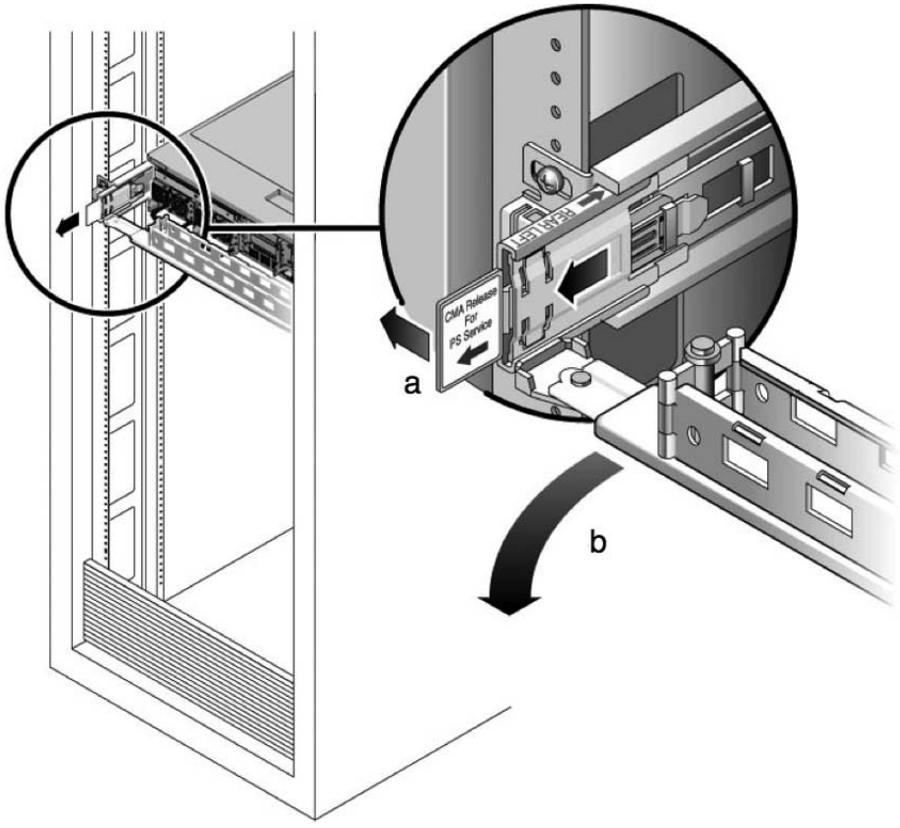
   A lit (amber) failure LED on a power supply indicates that a failure was detected.

2. **Gain access to the rear of the server where the faulty power supply is located.**

3. **Release the cable management arm (CMA) (**FIGURE 3-9**).**

   The CMA is located at the rear of the server rack.

FIGURE 3-9 Releasing the Cable Management Arm

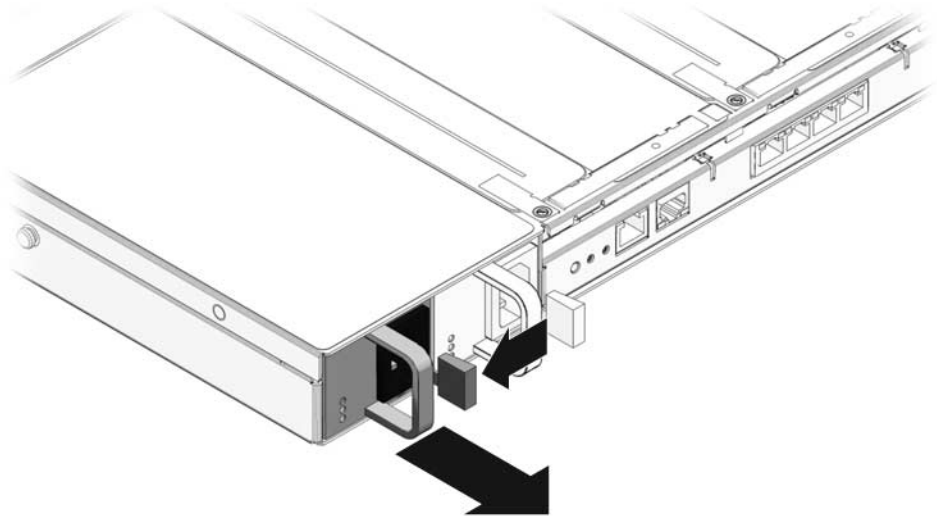


a. **Press and hold the tab.**

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

4. **Disconnect the power cord from the faulty power supply.**
5. **Grasp the power supply handle and press the release latch (**FIGURE 3-10**).**
6. **Pull the power supply out of the chassis.**

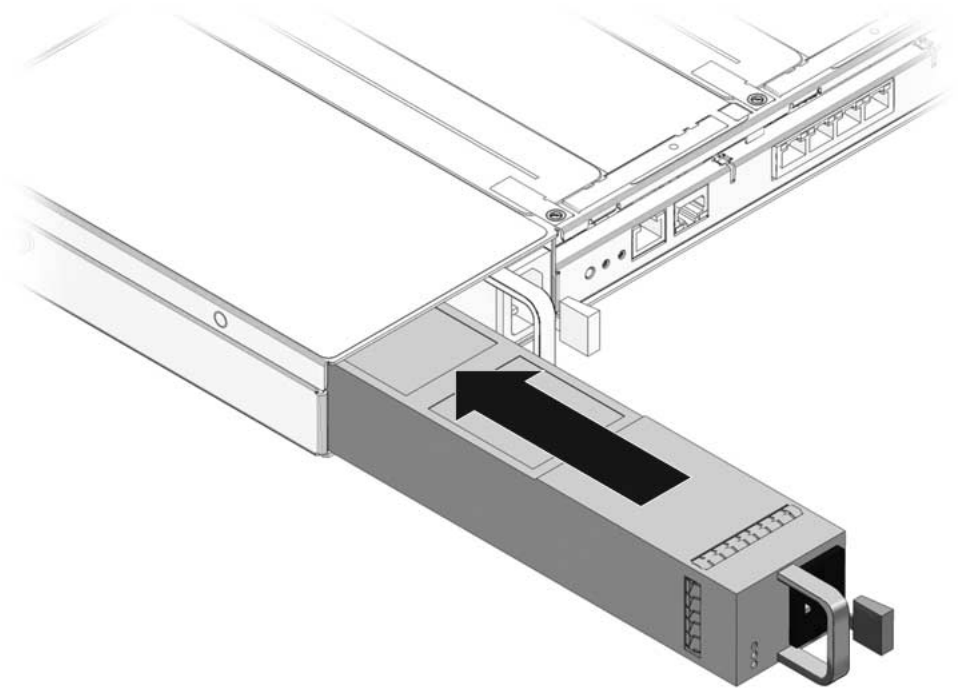
FIGURE 3-10 Power Supply Release Handle



3.4.4 Installing a Power Supply

1. **If you are installing a second power supply in a one power supply system, remove the filler panel. Grasp the vertical wall, and pull the filler panel straight out.**
2. **Align the replacement power supply with the empty power supply chassis bay.**
3. **Slide the power supply into the bay until it is fully seated (**FIGURE 3-11**).**

FIGURE 3-11 Installing a Power Supply



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

   Verify that the AC Present LED is lit.

5. **Close the CMA, inserting the end of the CMA into the rear left rail bracket (**FIGURE 3-9**).**

6. **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 X4150 Server Front Panel Features" on page 1-6 and Section 1.4, "Sun Fire X4150 Server Rear Panel Features" on page 1-7 for more information about identifying and interpreting system LEDs.

---

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

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

3.5 Servicing the DVD/USB Module

The DVD-ROM 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. **Power off the server.**

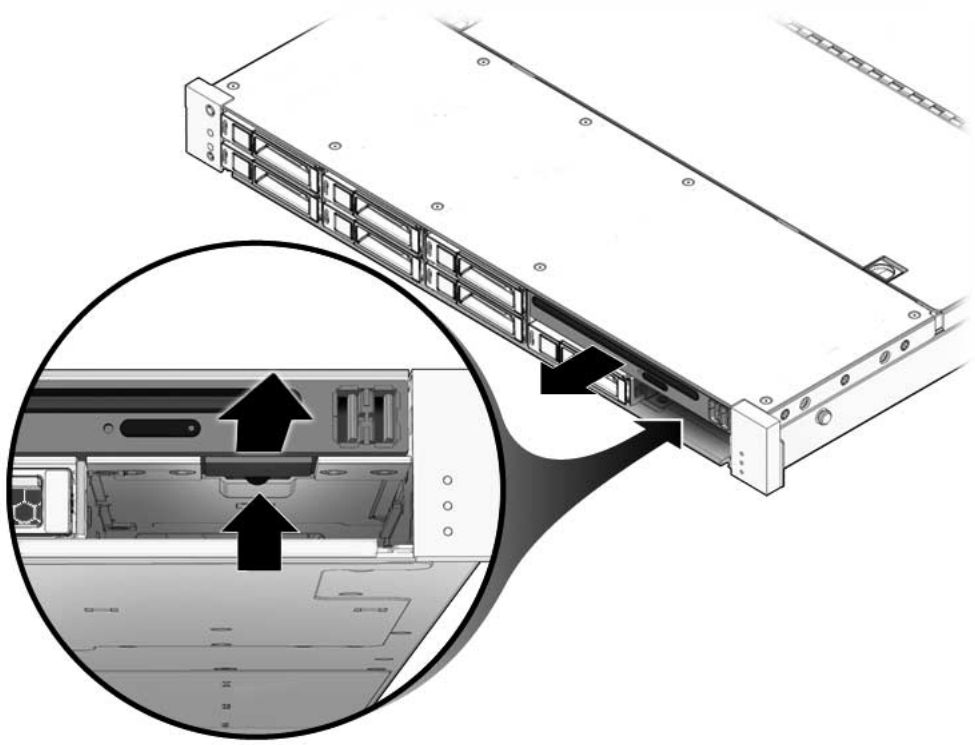
   See Section 2.4, "Powering Off the Server" on page 2-3.
3. **Attach an antistatic wrist strap.**

   See Section 2.7, "Performing Electrostatic Discharge and Antistatic Prevention Measures" on page 2-8.
4. **Remove the Sun Fire X4150 Server HD7 hard drive.**

   See Section 1.2, "Sun Fire X4150 Server Chassis Overview" on page 1-3 for drives locations.
5. **Release the DVD/USB module from the drives backplane (**FIGURE 3-12**).**

   Use the finger indent in the drives bay below the DVD/USB module to detach the module from the backplane.
6. **Slide the DVD/USB module out of the drives cage.**
7. **Place the module on an antistatic mat.**

FIGURE 3-12 Removing the DVD/USB Module

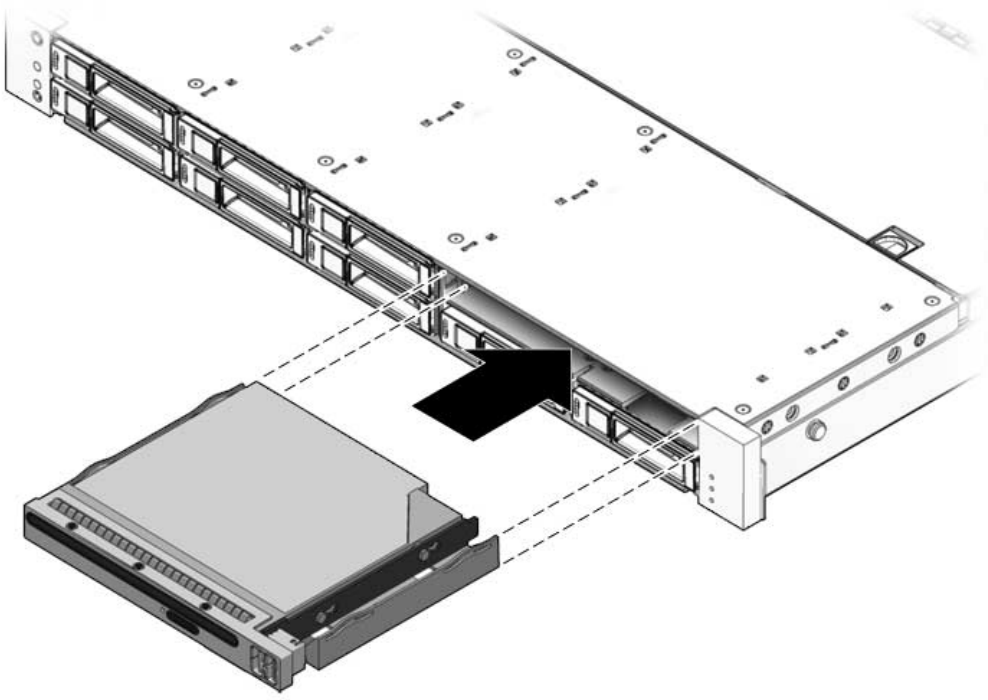


3.5.2 Installing the DVD/USB Module

1. **Slide the DVD/USB module into the front of the chassis until it seats (**FIGURE 3-13**).**
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 3-13 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 X4150 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 present.

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

4.1 Servicing FB-DIMMs

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

- "To Identify Faulty FB-DIMMs" on page 4-2
- Section 4.1.1, "FB-DIMM Guidelines" on page 4-3
  (Includes additional FB-DIMM information)
- "To Remove FB-DIMMs" on page 4-7
- "To Install FB-DIMMs" on page 4-8
- "To Install Additional FB-DIMMs" on page 4-10
  (How to upgrade the server with additional FB-DIMMs)

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, "Performing Electrostatic Discharge and Antistatic Prevention Measures" on page 2-8.

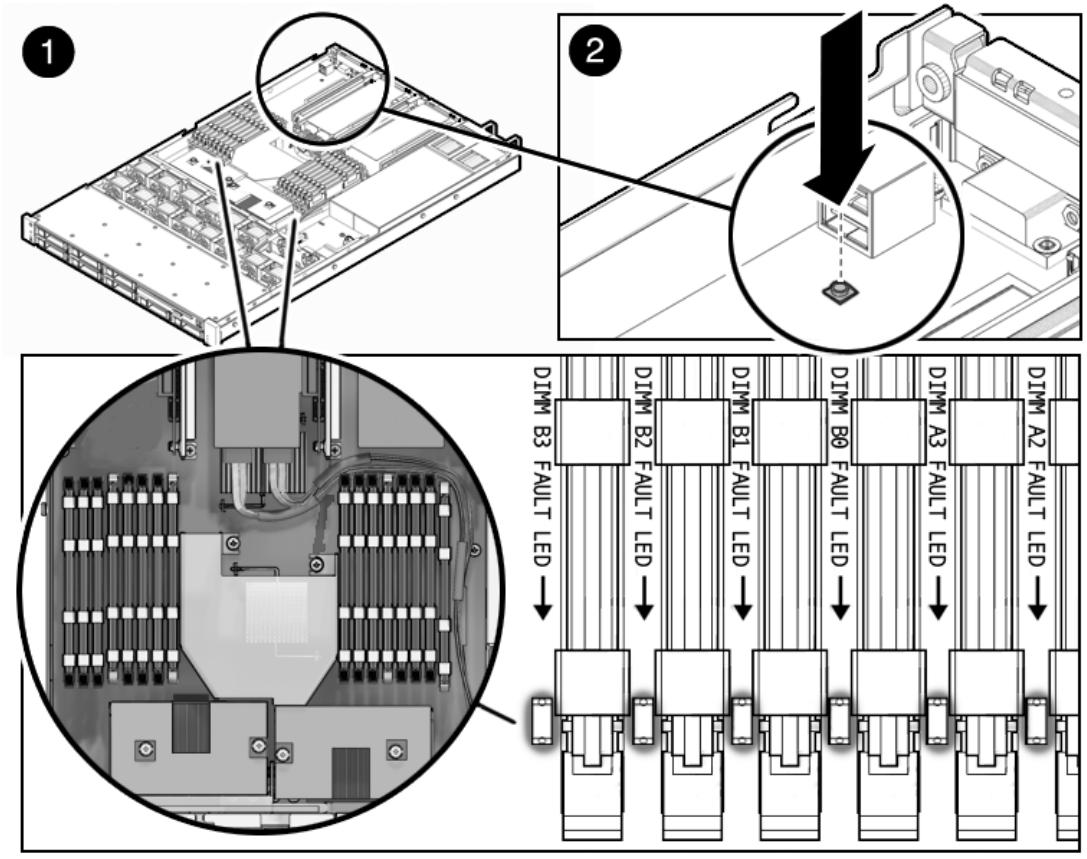
▼ To Identify Faulty FB-DIMMs

The Sun Fire X4150 Server Service Required LED is lit if the system detects a FB-DIMM fault.

To use the rear panel Locator button to identify faulty FB-DIMMs:

1. **Unplug all power cords from the rear panel.**
2. **Press the remind button (**FIGURE 4-1**).**

FIGURE 4-1 Remind Button



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.**

4.1.1 FB-DIMM Guidelines

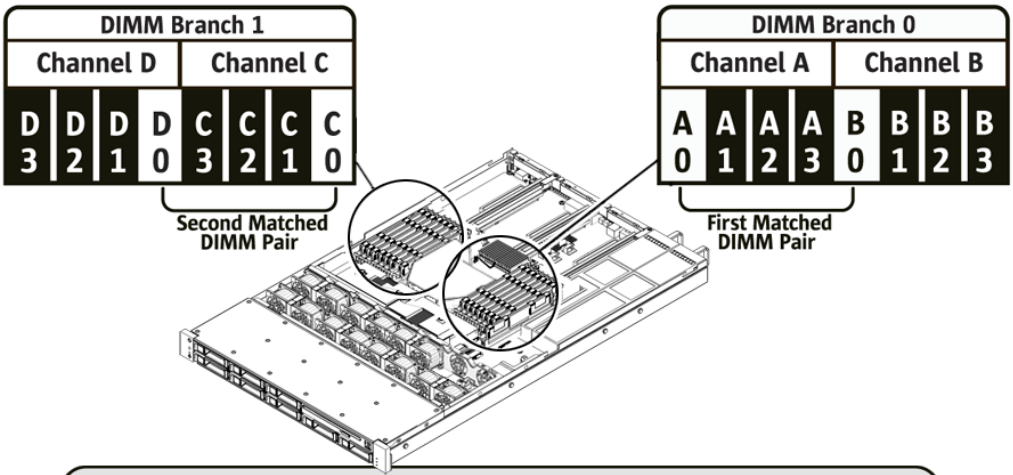
Use the FB-DIMM guidelines, FIGURE 4-2, FIGURE 4-3, and TABLE 4-1 to help you plan the memory configuration of your server.

- 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 X4150 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 DIMM's is allowed. The DIMMs must be populated in matched pairs. The pairs must be identical in organization, size and speed. See TABLE 4-1 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

TABLE 4-1 FB-DIMM Branch Number, Channel Number, ILOM Address, and Connector

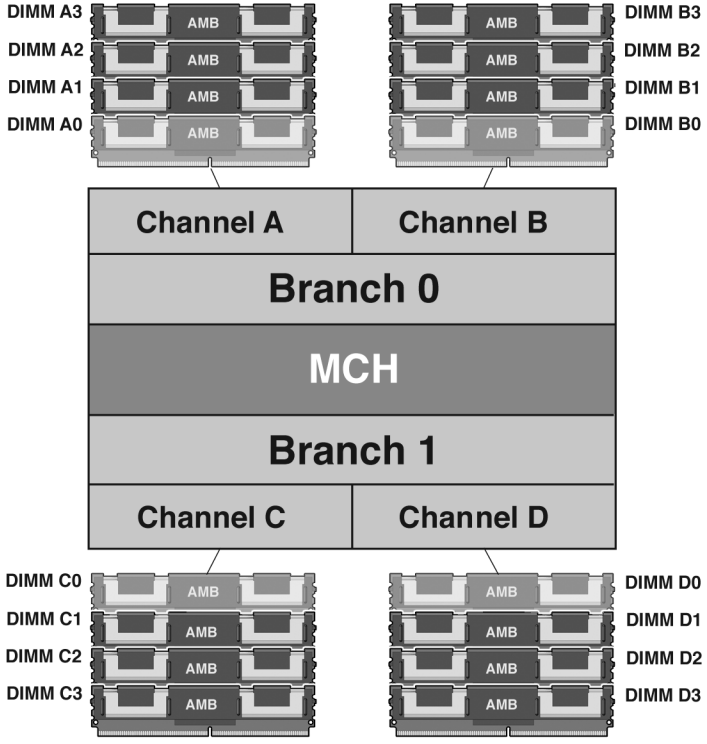
Branch Number	Channel Number	ILOM Address	Motherboard FB-DIMM Connector
Branch 0	Channel A	/SYS/Memory/DIMM_A0	J1001
		/SYS/Memory/DIMM_A1	J1101
		/SYS/Memory/DIMM_A2	J1101
		/SYS/Memory/DIMM_A3	J1101
	Channel B	/SYS/Memory/DIMM_B0	J1201
		/SYS/Memory/DIMM_B1	J1301
		/SYS/Memory/DIMM_B2	J1301
		/SYS/Memory/DIMM_B3	J1301
Branch 1	Channel C	/SYS/Memory/DIMM_C0	J1001
		/SYS/Memory/DIMM_C1	J1101

TABLE 4-1 FB-DIMM Branch Number, Channel Number, ILOM Address, and Connector

Branch Number	Channel Number	ILOM Address	Motherboard FB-DIMM Connector
		/SYS/Memory/DIMM_C2	J1101
		/SYS/Memory/DIMM_C3	J1101
	Channel D	/SYS/Memory/DIMM_D0	J1201
		/SYS/Memory/DIMM_D1	J1301
		/SYS/Memory/DIMM_D2	J1301
		/SYS/Memory/DIMM_D3	J1301

Note – FB-DIMM names in ILOM messages are displayed with the full name, such as /SYS/Memory/DIMM_D0.

FIGURE 4-3 Memory Organization



▼ To Remove FB-DIMMs

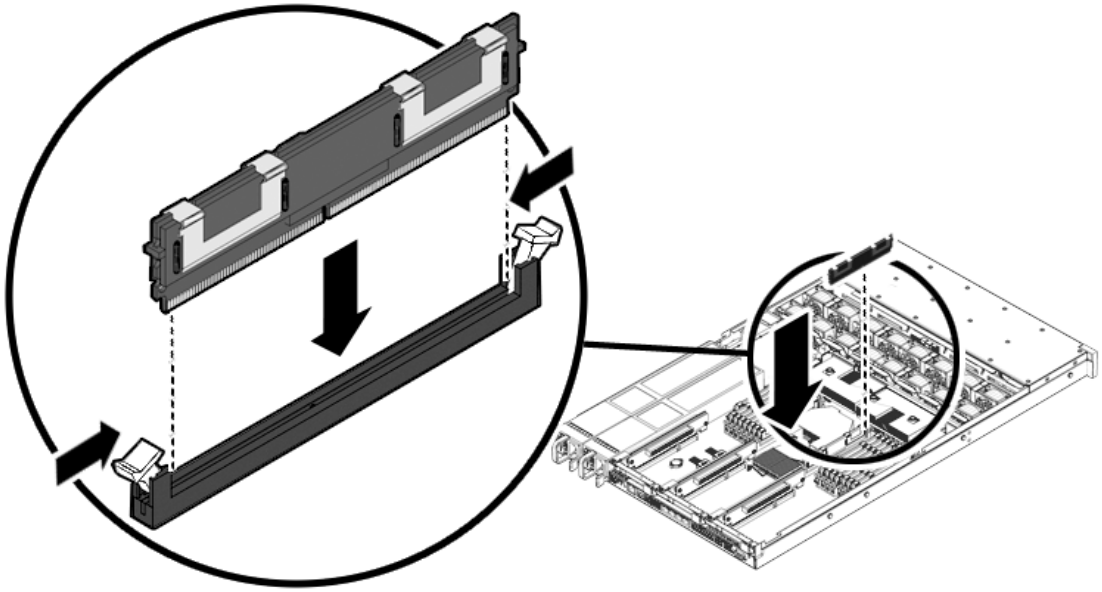
Caution – Ensure that all power is removed from the server before removing or installing FB-DIMMs. You must disconnect the power cables before performing this procedure.

1. **Review** Section 4.1.1, "FB-DIMM Guidelines" on page 4-3 **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. **Extend the server into the maintenance position.**
      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 2-8.
   e. **Remove the top cover.**
      See Section 2.8, "Removing the Top Cover" on page 2-10.
3. **If you are replacing a faulty FB-DIMM, press the "Remind" button to activate the FB-DIMM status LEDs after power is removed.**
   All faulty FB-DIMMs are indicated with an amber LED on the motherboard, so that you can install the replacement FB-DIMM in the same location.

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

4. **Push down on the ejector tabs on each side of the FB-DIMM until the FB-DIMM is released (**FIGURE 4-4**).**
5. **Grasp the top corners of the faulty FB-DIMM and remove it from the server.**

FIGURE 4-4 Removing FB-DIMMs



6. **Place the FB-DIMM on an antistatic mat.**
7. **Repeat Step 4 through Step 6 to remove any additional FB-DIMMs.**

▼ To Install 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 4.1.1, "FB-DIMM Guidelines" on page 4-3 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 4-5).**

   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 4-5. 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. **Install the top cover.**

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

7. **Slide the server into the rack.**

   See Section 6.3, "Returning the Server to the Normal Rack Position" on page 6-5.

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

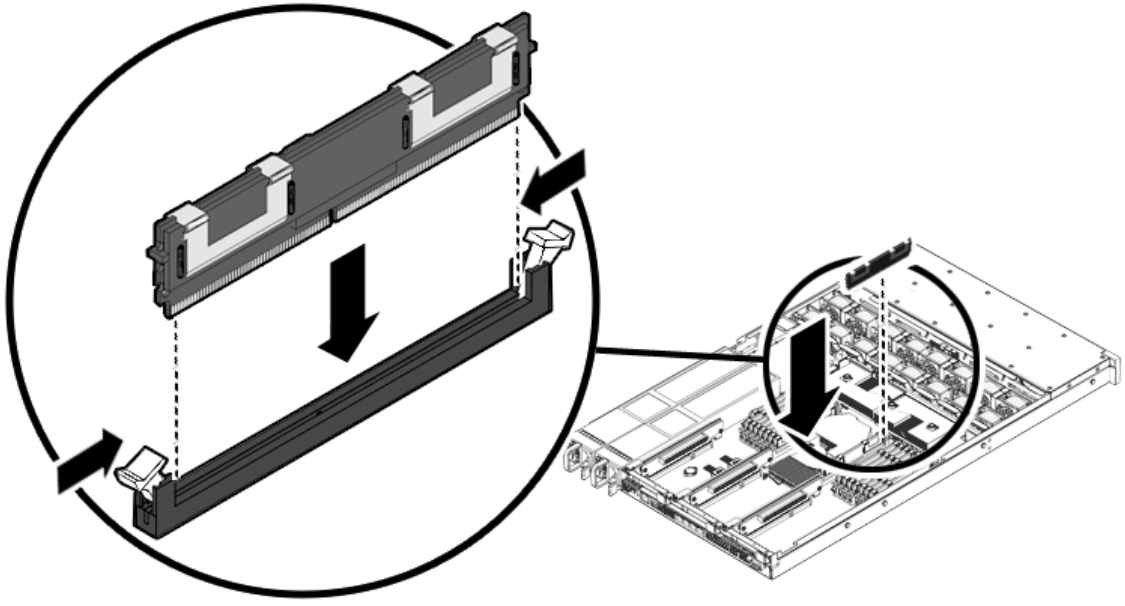
   Verify that the AC Present LED is lit.

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

9. **Power on the server.**

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

FIGURE 4-5 Installing FB-DIMMs



▼ To Install Additional FB-DIMMs

Before you begin, see Section 4.1.1, "FB-DIMM Guidelines" on page 4-3, 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 4-5**).**

   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 4-5. 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. **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 6-5.

   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.

4.2 Servicing the Air Baffle

You must remove the air baffle when removing and installing the motherboard.

Note – This is a customer-replaceable unit.

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

▼ To Remove the Air Baffle

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 2-8.

   e. **Remove the top cover.**

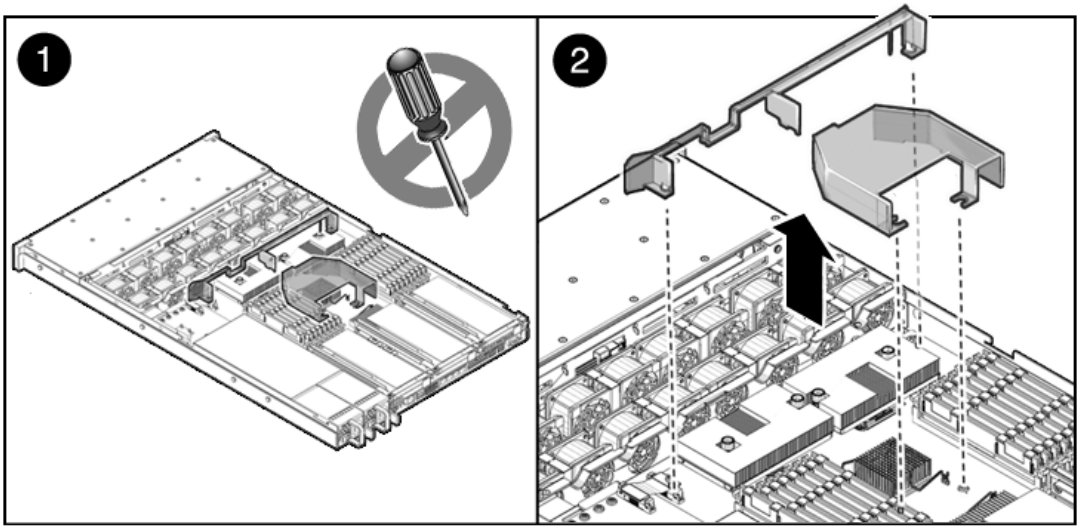
      See Section 2.8, "Removing the Top Cover" on page 2-10.

2. **Remove the air baffle.**

   Slide the duct off of the screws and remove the air baffle as shown in FIGURE 4-6.

3. **Set the air baffle aside.**

FIGURE 4-6 Removing the Air Baffle



▼ To Install the Air Baffle

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

1. **Install the air baffle into the chassis as shown in** FIGURE 4-7**.**

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

2. **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 6-5.

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

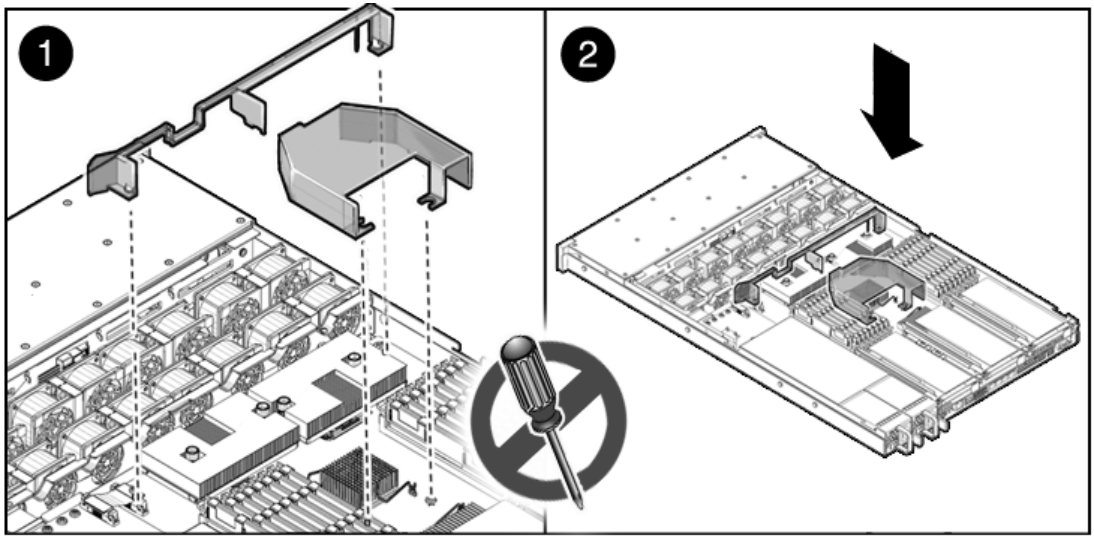
      Verify that the AC Present LED is lit.

      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 4-7 Installing the Air Baffle



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, "Performing Electrostatic Discharge and Antistatic Prevention Measures" on page 2-8.

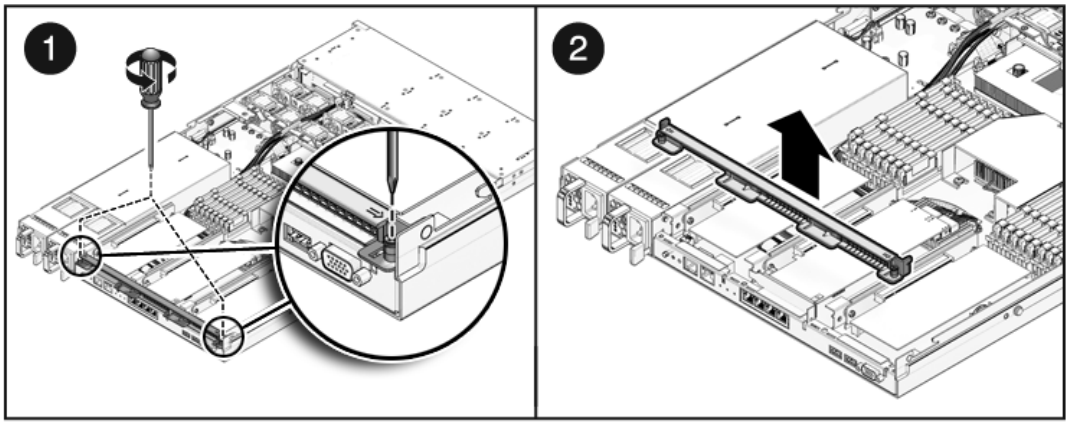
▼ To Remove a PCIe Riser

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 2-8.
2. **Disconnect any data cables connected to the cards on the PCIe riser being removed.**
   Label the cables to ensure proper connection later.
3. **Slide the server out of the rack.**
   See Section 2.5, "Extending the Server to the Maintenance Position" on page 2-5.

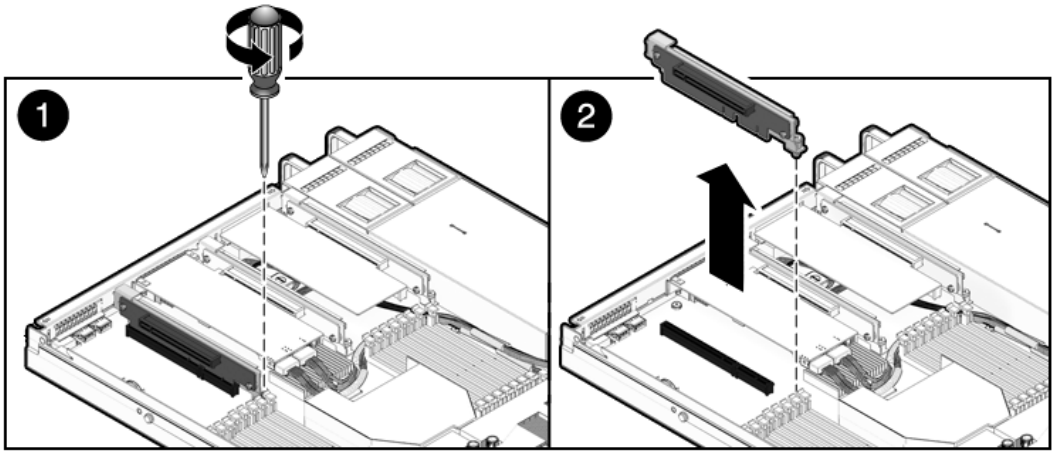
4. **If you are servicing a PCIe card, locate its position in the system.**
5. **Remove the back panel crossbar.**
   a. **Loosen the captive Phillips screw on each end of the back panel crossbar.**
   b. **Lift the crossbar up and back to remove it from the chassis. (**FIGURE 4-8**)**
   c. **Remove the riser and any PCIe cards attached to it as a unit.**

FIGURE 4-8 Removing the Crossbar



6. **Lift the riser up to remove it from the system (**FIGURE 4-9**).**
   a. **Loosen the captive Phillips screw on the end of the riser.**
   b. **Remove the riser and any PCIe cards attached to it as a unit.**

FIGURE 4-9 Removing a PCIe Riser



▼ To Install a PCIe Riser

The following tools are needed for this procedure:

- Phillips screwdriver

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.**
2. **Slide the back of the riser into the motherboard back panel stiffener.**
3. **Install the screw that secures the riser to the motherboard (**FIGURE 4-10**).**
4. **Install the back panel crossbar.**

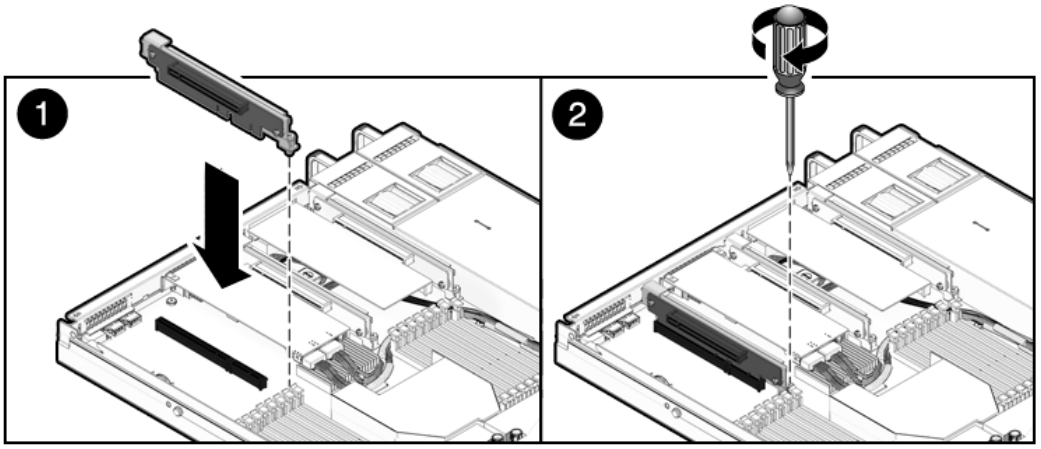
   Slide the crossbeam down over the PCIe risers. The crossbar is secured with two captive Phillips screws.
5. **Slide the server into the rack. See** Section 6.3, "Returning the Server to the Normal Rack Position" on page 6-5**.**
6. **Connect any data cables you removed to service the PCIe cards.**

7. **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.

FIGURE 4-10 Installing a PCIe riser



4.4 Servicing PCIe Cards

See Section 4.4.1, "Sun Fire X4150 Server PCIe Card Guidelines" on page 4-18 for PCIe card configuration guidelines.

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, "Performing Electrostatic Discharge and Antistatic Prevention Measures" on page 2-8.

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 X4150 Server PCIe Card Guidelines

The PCI expansion system is configured using a variety of riser cards. The connector is an x16 mechanically but electrically an x8. Only low profile half length cards are supported.

▼ To Remove 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. **Locate the PCIe card that you want to remove, and note its corresponding riser board.**

   See Section 1.4, "Sun Fire X4150 Server Rear Panel Features" on page 1-7 for more information about PCIe slots and their locations.

2. **If necessary, make a note of where the PCIe cards are installed.**

3. **Unplug all data cables from the card.**

   Note the location of all cables for reinstallation later.

4. **Remove the riser board (**FIGURE 4-11**).**

   See Section 4.3, "Servicing PCIe Risers" on page 4-14.

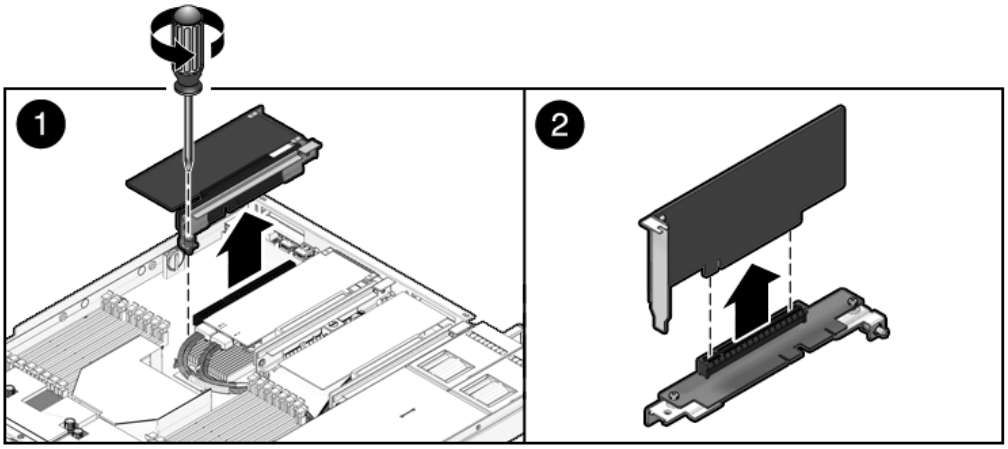
5. **Carefully remove the PCIe card from the riser board connector.**

6. **Place the PCIe card on an antistatic mat.**

7. **If you are not replacing the PCIe card, install a PCIe filler panel.**

   PCIe filler panels are located in the motherboard back panel.

FIGURE 4-11 Removing a PCIe Card



▼ To Install PCIe Cards

1. **Unpackage 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 X4150 Server PCIe Card Guidelines" on page 4-18 for additional information.
4. **Remove the PCIe riser board.**

   See Section 4.3, "Servicing PCIe Risers" on page 4-14.
5. **Remove the PCI filler panel.**

   PCIe filler panels are located in the motherboard back panel.
6. **Insert the PCIe card into the correct slot on the riser board (**FIGURE 4-12**).**
7. **Replace the riser board.**

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

   b. **Tighten the captive No. 2 Phillips screw securing the riser to the motherboard.**
8. **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 6-5.

c. Connect any data cables required to the PCIe card.

Route data cables through the cable management arm.

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

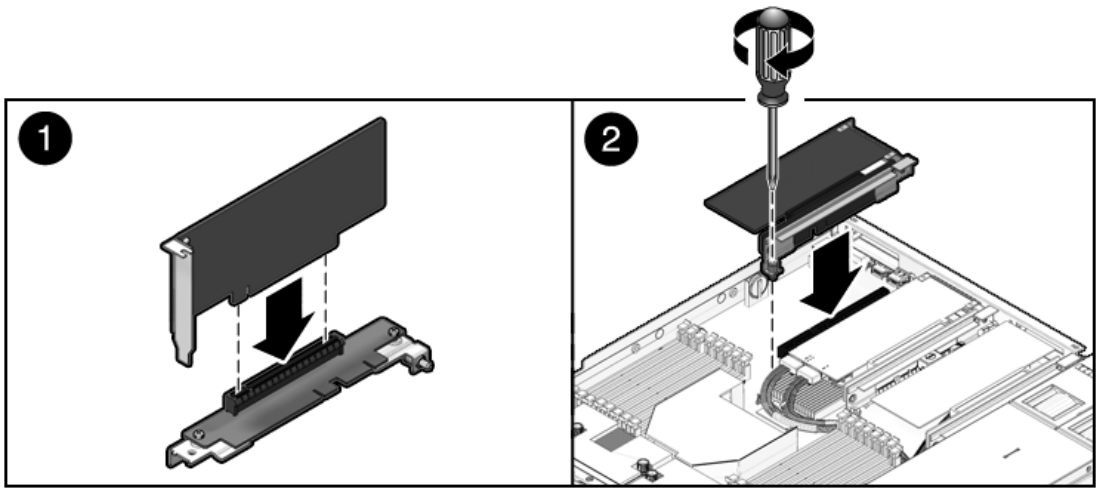
Verify that the AC Present LED is lit.

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 4-12 Installing a PCIe Card



4.5 Servicing the Battery

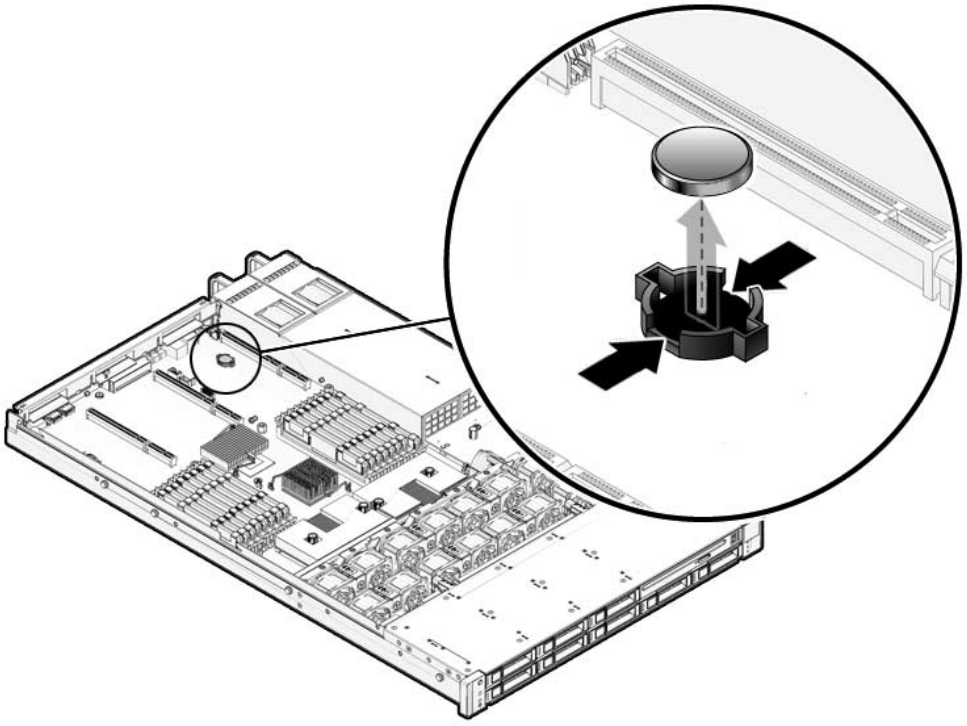
The battery maintains system time when the server is powered off and a time server is unavailable. If the server fails to maintain the proper time when powered off and not connected to a network, replace the battery.

You need a small (No. 1 flat-blade) screwdriver.

Note – This is a customer-replaceable unit.

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 4-13 Battery Location



▼ To Remove the Battery

1. **Remove PCIe riser 0.**

   See "To Remove a PCIe Riser" on page 4-14.

   See Section 4.4.1, "Sun Fire X4150 Server PCIe Card Guidelines" on page 4-18.

2. **Using a small (No. 1 flat-blade) screwdriver, press the latch and remove the battery from the motherboard.**

▼ To Install the Battery

1. **Unpackage 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.**
   See Section t, "To Install a PCIe Riser" on page 4-16.
4. **Use the ILOM `set date` command to set the day and time.**

4.6 Servicing the Motherboard Assembly

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 2-8.

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

▼ To Remove the Motherboard Assembly

You need a thermal grease kit to replace the processors. You must remove a heat sink to replace the motherboard, to access screws.

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 2-6.

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

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

   e. **Attach an antistatic wrist strap.**

      See Section 2.7, "Performing Electrostatic Discharge and Antistatic Prevention Measures" on page 2-8.

   f. **Remove the top cover.**

      See Section 2.8, "Removing the Top Cover" on page 2-10.

2. **Remove the air baffle.**

   See "To Remove the Air Baffle" on page 4-12.

3. **Remove the PCIe cards and risers.**

   See "To Remove a PCIe Riser" on page 4-14. Make note of the location of expansion cards in the PCIe risers.

4. **Disconnect the power distribution board ribbon cable.**

5. **If you are replacing the motherboard, remove the FB-DIMMs.**

   Make note of the memory configuration so that you can install the FB-DIMMs in the replacement motherboard.

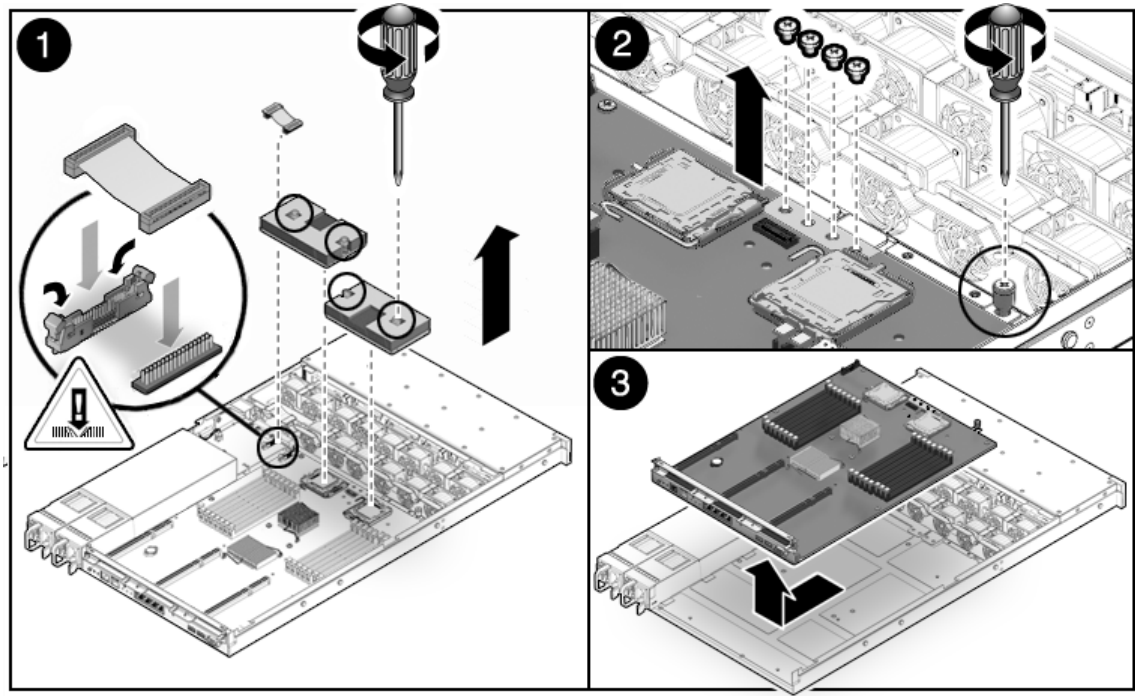
6. **Disconnect the drive data cables.**

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

7. **Remove the plastic air flow baffle from between the fans and the motherboard.**

8. **Remove the processor heat sinks from the motherboard assembly.**
9. **Remove the 4 screws that secure the motherboard to the bus bar.**
   Use a No. 2 Phillips screwdriver.
10. **Loosen the green captive screw on the front of the motherboard, that secures the motherboard tray to the chassis.**
11. **If you are replacing the motherboard only, remove the processors, as required.**
12. **Lift the motherboard assembly out of the chassis (**FIGURE 4-14**).**
    Move the motherboard carefully.
13. **Place the motherboard assembly on an antistatic mat.**

FIGURE 4-14 Removing the Motherboard Assembly



4.6.1 To Install the Motherboard Assembly

Caution – This procedure requires that you handle components that are sensitive to static discharge. Static discharges can cause the 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 2-8.

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 2-8.

3. **Place the motherboard into the chassis (**FIGURE 4-15**).**

   Position the motherboard carefully.

4. **Install the 4 screws that secure the motherboard to the bus bar.**

   Use a No. 2 Phillips screwdriver.

5. **Tighten the green captive screw on the front of the motherboard, that secures the motherboard tray to the chassis.**

6. **If you are replacing the motherboard only, replace the processors, as required.**

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

7. **Install the plastic air flow baffle between the fans and the motherboard.**

8. **Install the processor heat sinks. See** "To Install a Processor FRU" on page 4-30**.**

9. **Carefully connect the power distribution board ribbon cable to the motherboard.**

   Make sure it is seated properly.

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

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

11. **Install all FB-DIMMs in the motherboard assembly.**

Note – Only install the FB-DIMMs in the slots (connectors) from which they were removed. See Section 4.1.1, "FB-DIMM Guidelines" on page 4-3.

12. **Install the air baffle.**

    See "To Install the Air Baffle" on page 4-13.

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

    See "To Install a PCIe Riser" on page 4-16.

14. **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).**

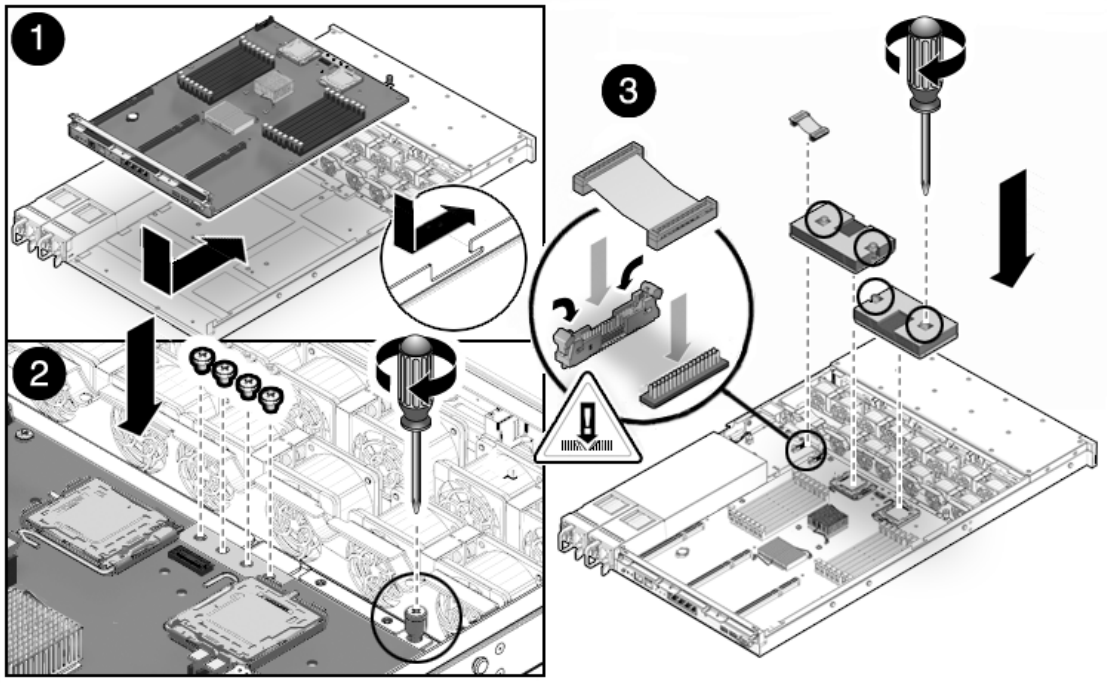
       Verify that the AC Present LED is lit.

       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 4-15 Installing the Motherboard Assembly



4.7 Servicing Processors

The following topics are covered:

- "To Detect Processor Failure" on page 4-28
- Section 4.7.1, "Removing a Processor" on page 4-29
- "To Install a Processor FRU" on page 4-30
- "To Install an XOption Processor" on page 4-33

See Section 1.5, "Illustrated Parts Breakdown" on page 1-8 for illustrations of the server and processors.

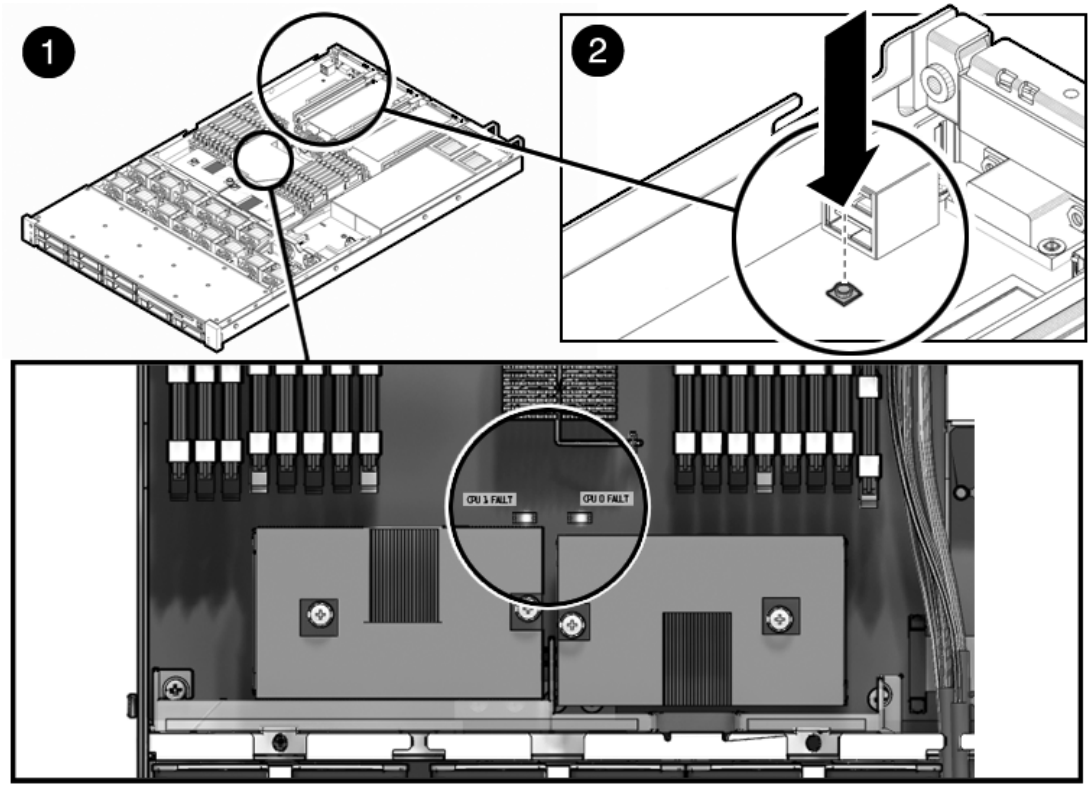
Note – FRU: This field-replaceable unit should be replaced only by qualified service technicians. Contact your Sun Service representative for assistance.

▼ To Detect Processor Failure

The following LEDs are lit when a processor fault is detected:

- Front and rear Service Required LEDs
- Failure LED on the motherboard, one per processor (FIGURE 4-16)

FIGURE 4-16 Detecting Processor Failure



4.7.1 Removing a Processor

To remove a processor.

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 2-8.

e. **Remove the top cover.**

   See Section 2.8, "Removing the Top Cover" on page 2-10.

2. **Identify which processor to remove (**FIGURE 4-17**).**

   CPU 0 is closest to the PSU bay.

3. **Unscrew the two heatsink screws.**

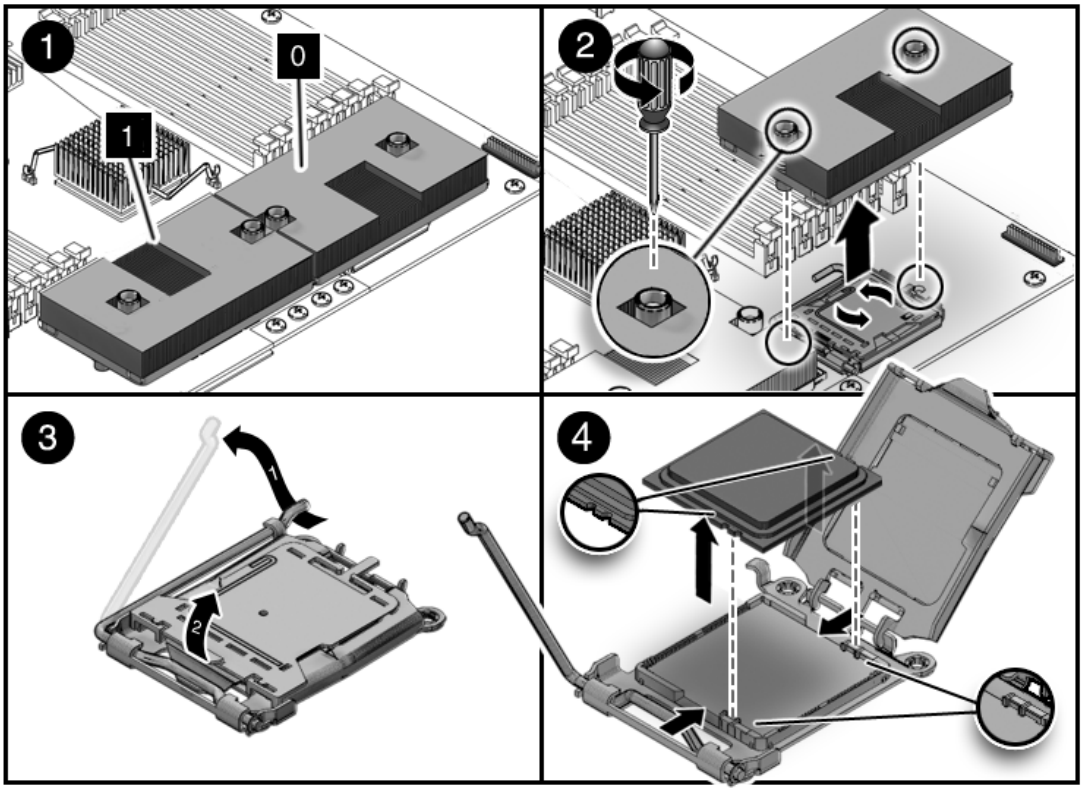
4. **Twist the heatsink slightly to break the seal with grease, and then lift off the heatsink.**

5. **Disengage the lever by pushing down and moving to the side, and then rotating upward.**

6. **Open the pressure frame.**

7. **Remove the processor.**

FIGURE 4-17 Removing a Processor



▼ To Install a Processor FRU

To install a processor FRU.

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 2-8.

e. **Remove the top cover.**

   See Section 2.8, "Removing the Top Cover" on page 2-10.

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

   Make sure the orientation is correct.

7. **Lower the pressure plate.**

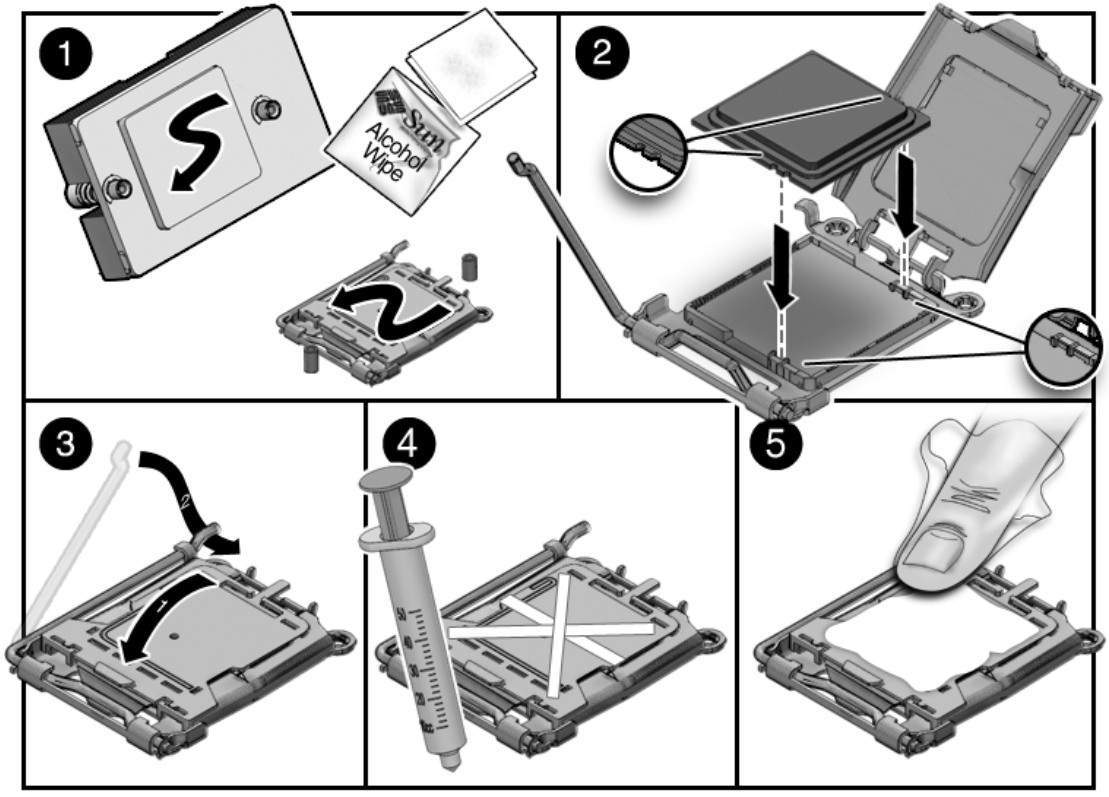
   Make sure the pressure plate sits flat around the periphery of the processor.

8. **Engage the lever by rotating downward and slipping under the catch.**
9. **Using the supplied grease syringe, empty the syringe on to the processor in a star shaped pattern.**
10. **Smooth the grease into a thin even layer on top of the processor.**

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

11. **Orient the heatsink so that the two screws line up with the mounting studs (**FIGURE 4-19**).**
12. **Tighten the screws alternately one 1/2 turn until fully seated.**

FIGURE 4-18 Installing a Processor (Part 1)



13. **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).**

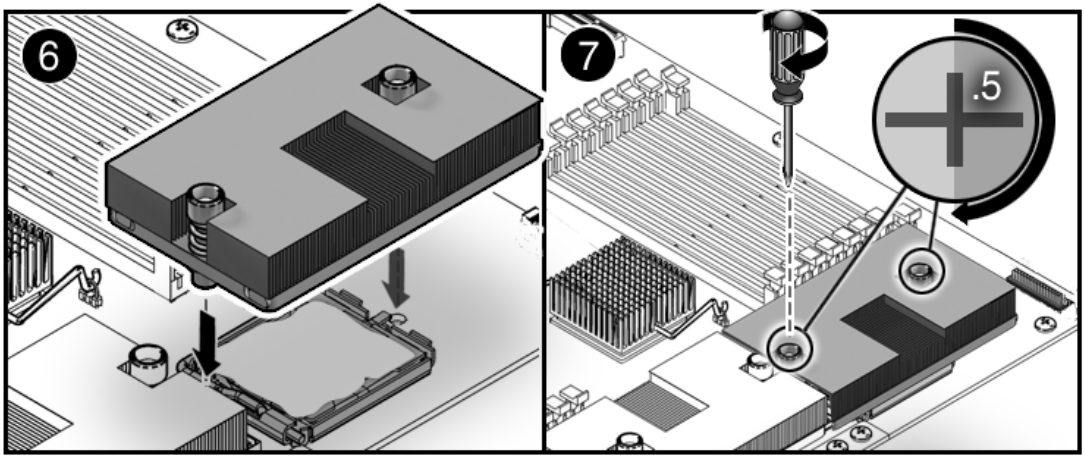
    Verify that the AC Present LED is lit.

    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 4-19 Installing a Processor (Part 2)



▼ To Install an XOption Processor

To install an XOption processor.

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 2-8.

   e. **Remove the top cover.**

      See Section 2.8, "Removing the Top Cover" on page 2-10.

2. **Remove the shipping cover from socket.**

3. **Clean the top of the processor with the provided alcohol wipe.**

4. **Place the processor in the socket with the correct orientation.**
5. **Lower the pressure plate.**
   Make sure the pressure plate sits flat around the periphery of the processor.
6. **Engage the lever by rotating downward and slipping under the catch.**
7. **Remove the plastic protective cover from heatsink.**
   Be careful not to disturb or touch the pre-installed thermal interface material.
8. **Orient the heatsink so the two screws line up with the mounting studs.**
9. **Tighten the screws alternately one 1/2 turn until fully seated.**
10. **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.

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 NVRAM or BIOS Password by changing the J23 jumper position as follows.

J23 jumper position 1-3: Clears CMOS NVRAM

J23 jumper position 2-4: Clears the Password

Access the 6-pin J23 jumper on the motherboard, located near the CR-2032 battery, below PCI-E riser 0.

▼ To Reset 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.

▼ To Reset a BIOS Password Using a Jumper

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

1. **Power off the server.**

   See Section 2.4, “Powering Off the Server” on page 2-3.
2. **Disconnect the power cord (or cords) from the power supply (or supplies).**

   See Section 2.4, “Powering Off the Server” on page 2-3.
3. **Extend the server into the maintenance position.**

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

4. **Attach an antistatic wrist strap.**

   See Section 2.7, “Performing Electrostatic Discharge and Antistatic Prevention Measures” on page 2-8.

5. **Remove the top cover.**

   See Section 2.8, “Removing the Top Cover” on page 2-10.

6. **Locate the jumper J23.**

   Access the J23 jumper on the rear of the motherboard, opposite of the power supply unit.

7. **Place the jumper on position 2-4.**

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

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

10. **Remove the jumper from position 2-4, and replace it back to its original position.**

11. **Install the top cover.**

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

12. **Slide the server into the rack.**

    See Section 6.3, “Returning the Server to the Normal Rack Position” on page 6-5.

13. **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.

14. **Power on the server.**

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

    The password is reset.

▼ To Reset CMOS NVRAM Using a Jumper

To clear the CMOS NVRAM using a jumper:

1. **Power off the server.**

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

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

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

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

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

4. **Attach an antistatic wrist strap.**

   See Section 2.7, “Performing Electrostatic Discharge and Antistatic Prevention Measures” on page 2-8.

5. **Remove the top cover.**

   See Section 2.8, “Removing the Top Cover” on page 2-10.

6. **Locate the jumper J23**

   The 6-pin jumper is located near the CR-2032 battery, below PCI-E riser 0.

7. **Place the jumper on position 1-3.**

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

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

10. **Remove jumper from position 1-3, and replace it back in its original location.**

11. **Install the top cover.**

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

12. **Slide the server into the rack.**

    See Section 6.3, “Returning the Server to the Normal Rack Position” on page 6-5.

13. **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.

14. **Power on the server.**

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

    CMOS 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.

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)*
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. **Attach an antistatic wrist strap.**

   See Section 2.7, "Performing Electrostatic Discharge and Antistatic Prevention Measures" on page 2-8.
6. **Remove the top cover.**

   See Section 2.8, "Removing the Top Cover" on page 2-10.
7. **Remove PCI cards from Riser 1.**

   See Section t, "To Remove PCIe Cards" on page 4-18.
8. **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.
9. **Insert a bootable flash drive into a USB port.**
10. **Connect AC power cables.**

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

11. **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.

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

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

    `socflash.exe` *SP binary backup file*

    For example:

    `socflash.exe s92v092.bin backup.bin`

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

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

15. **Remove the jumper.**

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

17. **Replace PCI cards from Riser 1.**

    See “To Install PCIe Cards” on page 4-19.

18. **Reinstall the top cover.**

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

19. **Slide the server into the rack.**

    See Section 6.3, “Returning the Server to the Normal Rack Position” on page 6-5.

20. **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.

21. **Power on the server.**

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

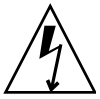
22. **Confirm that the SP is listed in the BIOS settings under Server/AST2000 LAN Configuration.**

CHAPTER 5

Servicing Infrastructure Boards and Components

This chapter describes how to replace cold-swappable, field-replaceable units (FRUs) in the Sun Fire X4150 Server.

The following topics are covered:



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

Caution – Equipment damage 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 in the Sun Fire X4150 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 paddle card or drives cage, you must remove the server from the rack. See Section 2.6, "Removing a Server From the Rack" on page 2-6.

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

      See Section 2.7, "Performing Electrostatic Discharge and Antistatic Prevention Measures" on page 2-8.

   e. **Remove the top cover.**

      See Section 2.8, "Removing the Top Cover" on page 2-10.

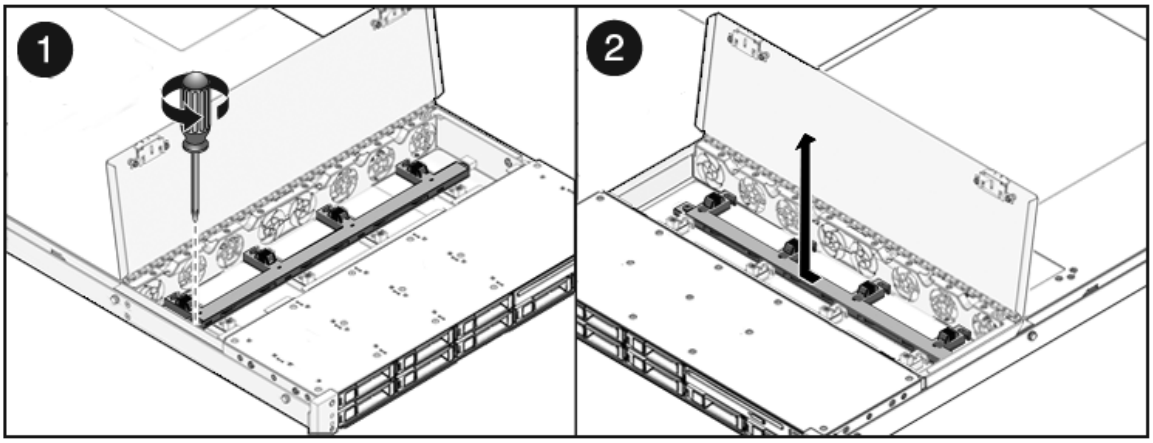
2. **Remove the fan modules.**

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 3-11.

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.**

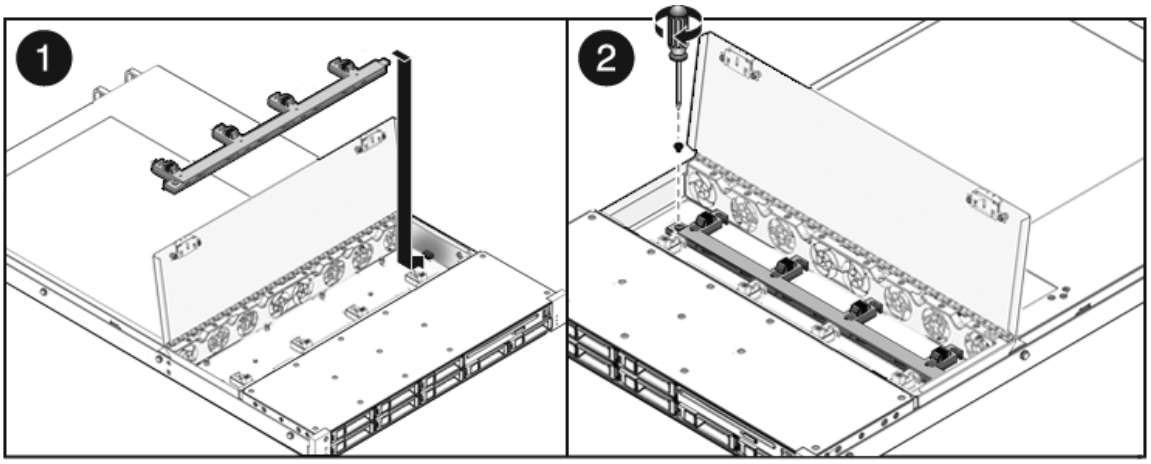
FIGURE 5-1 Removing the Fan Power Board



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).**

FIGURE 5-2 Installing a Fan Power Board



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 3-12.
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 6-5.

   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. **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 2-8.
   e. **Remove the top cover.**
      See Section 2.8, “Removing the Top Cover” on page 2-10.
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, "Servicing the DVD/USB Module" on page 3-19.

4. **Remove the fan modules.**

   See Section 3.3.4, "Removing a Fan Module" on page 3-11.

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

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

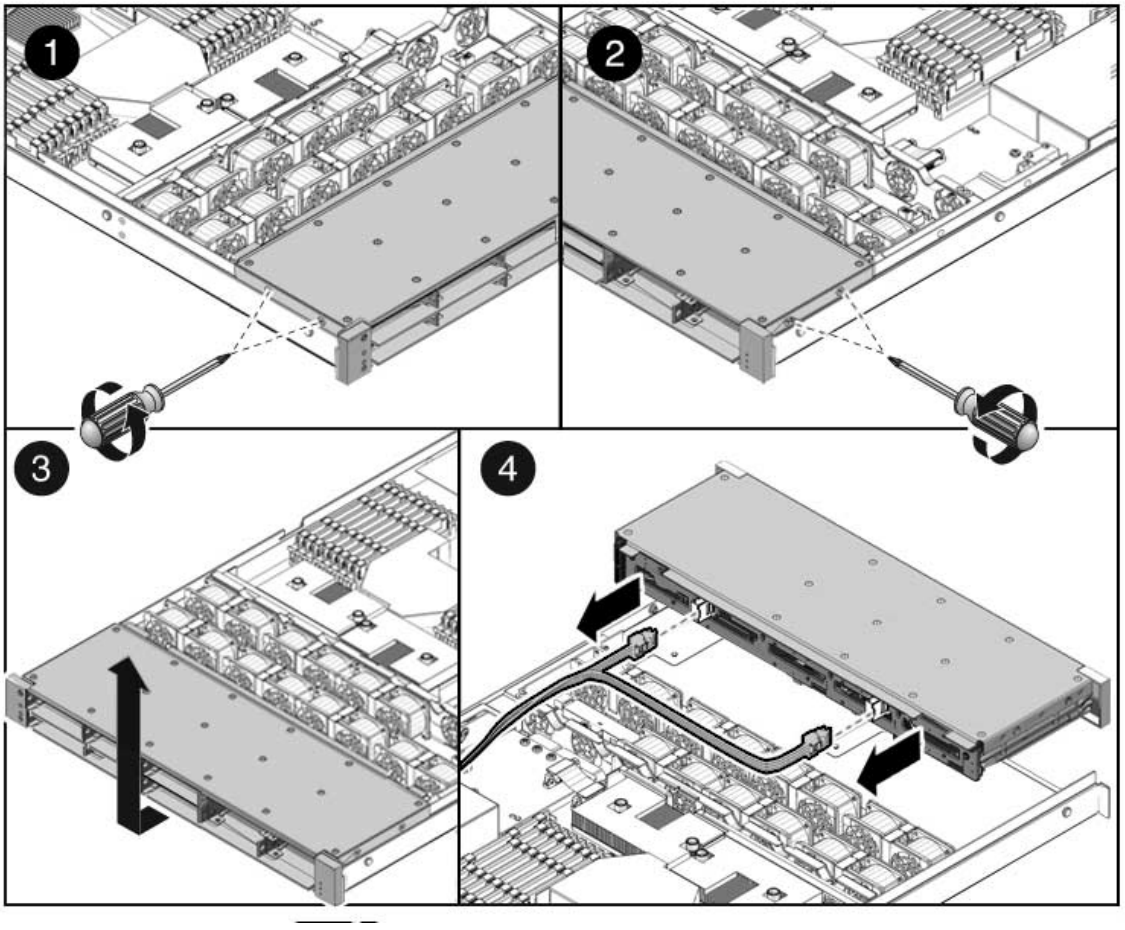
6. **Slide the drives cage forward to disengage the backplane from the paddle cards (**FIGURE 5-3 **[3]).**

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



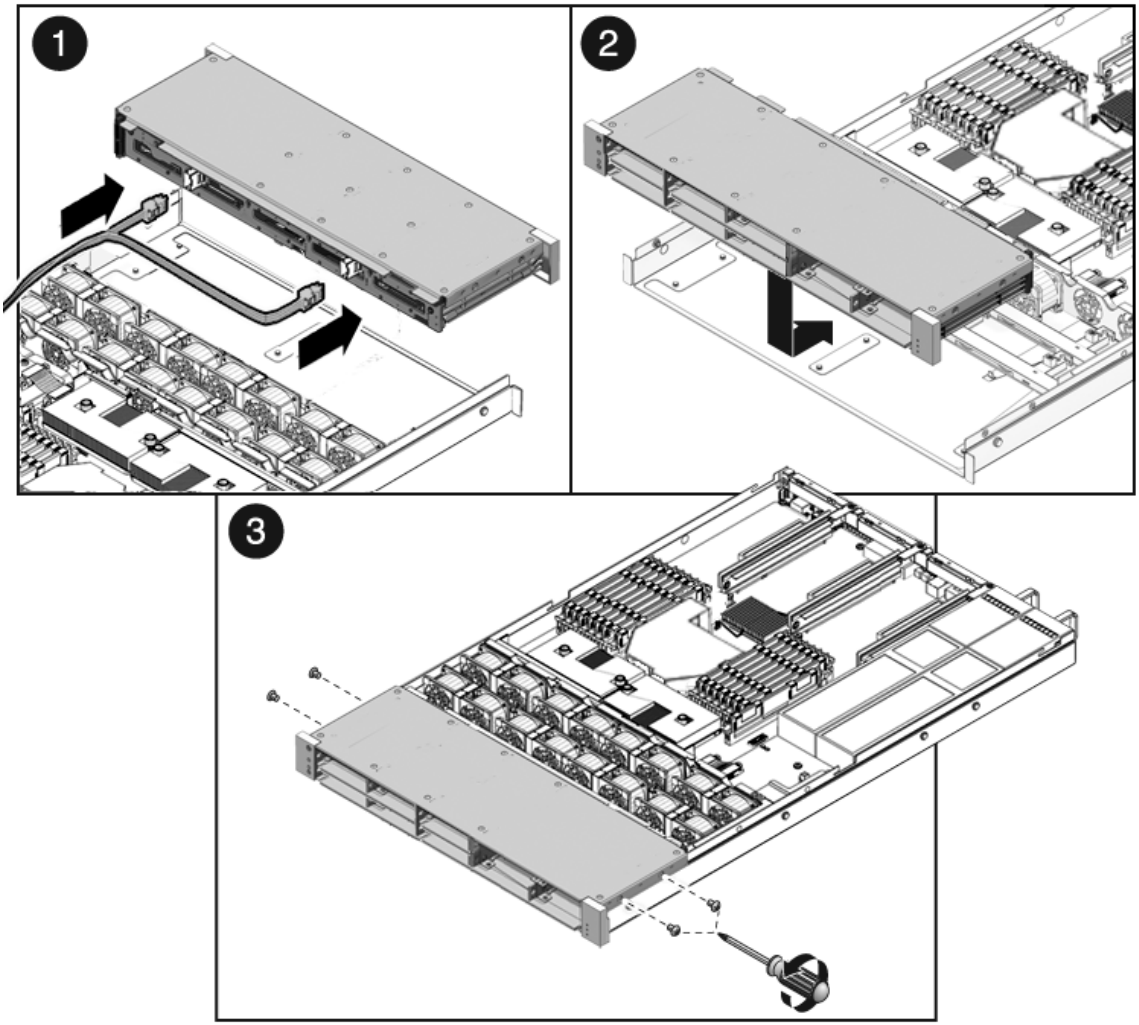
5.2.2 Installing the Drives Cage

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

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

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

FIGURE 5-4 Installing the Drives Cage



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 disk cage to each side of the chassis.

5. **Install the fan power boards.**

   See Section 5.1.2, “Installing a Fan Power Board” on page 5-3.

6. **Install the fan modules.**

   See Section 3.3.5, “Installing a Fan Module” on page 3-12

7. **Install the top cover.**

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

8. **Install the server into the rack.**

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

9. **Install the drives.**

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

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

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

    See Section 3.5.2, “Installing the DVD/USB Module” on page 3-20.

11. **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.

12. **Power on the server.**

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

5.3 Servicing the Drives Backplane

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

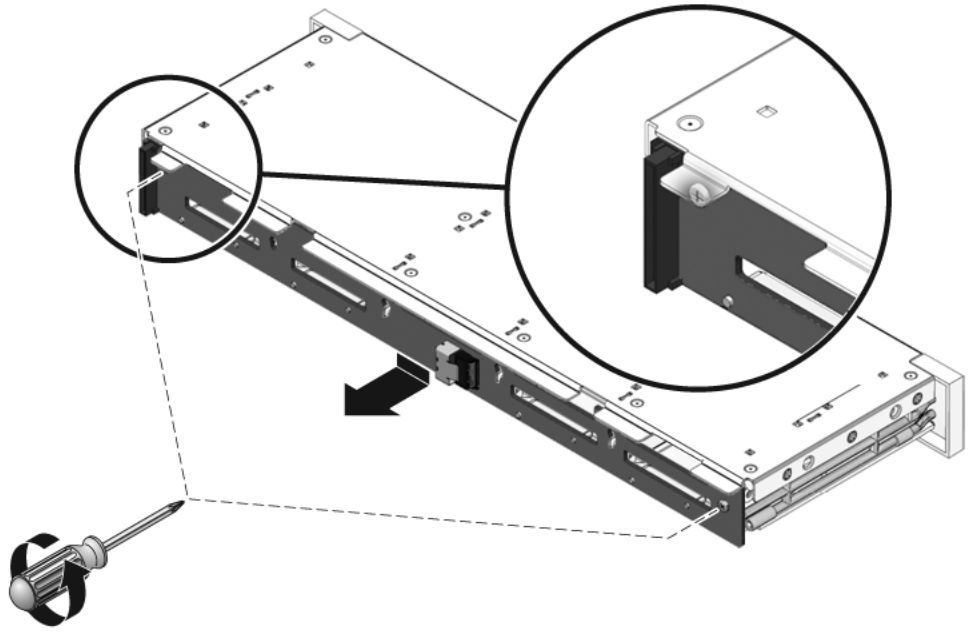
5.3.1 Removing the Drives Backplane

1. **Remove the drives cage.**

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

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

FIGURE 5-5 Removing the Drives Backplane



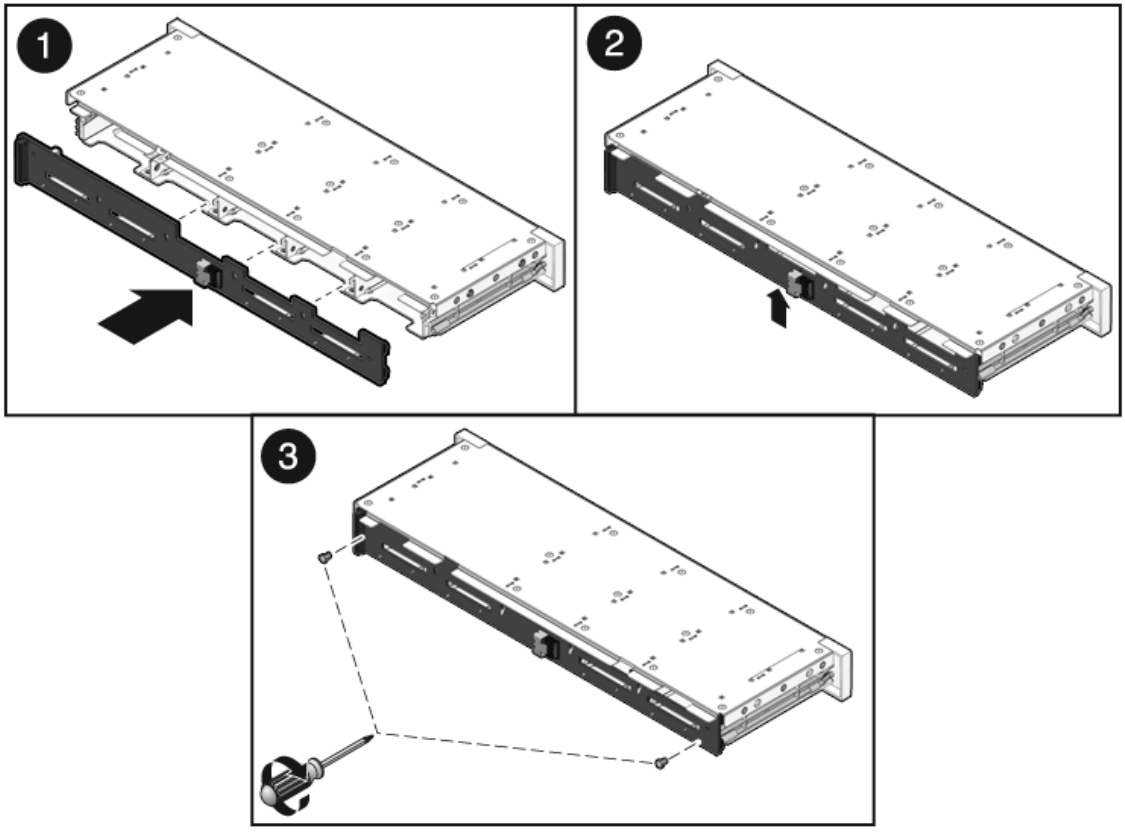
3. **Slide the backplane down and off the drives cage retention hooks.**
4. **Place the drives backplane on an antistatic mat.**

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 two No. 2 Phillips screws that secure the backplane to the drives cage.**
3. **Install the drives cage.**

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

FIGURE 5-6 Installing the Drives Backplane



5.4 Servicing the Front Control Panel Light Pipe Assembly

You must remove the drives cage and 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.

5.4.1 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.

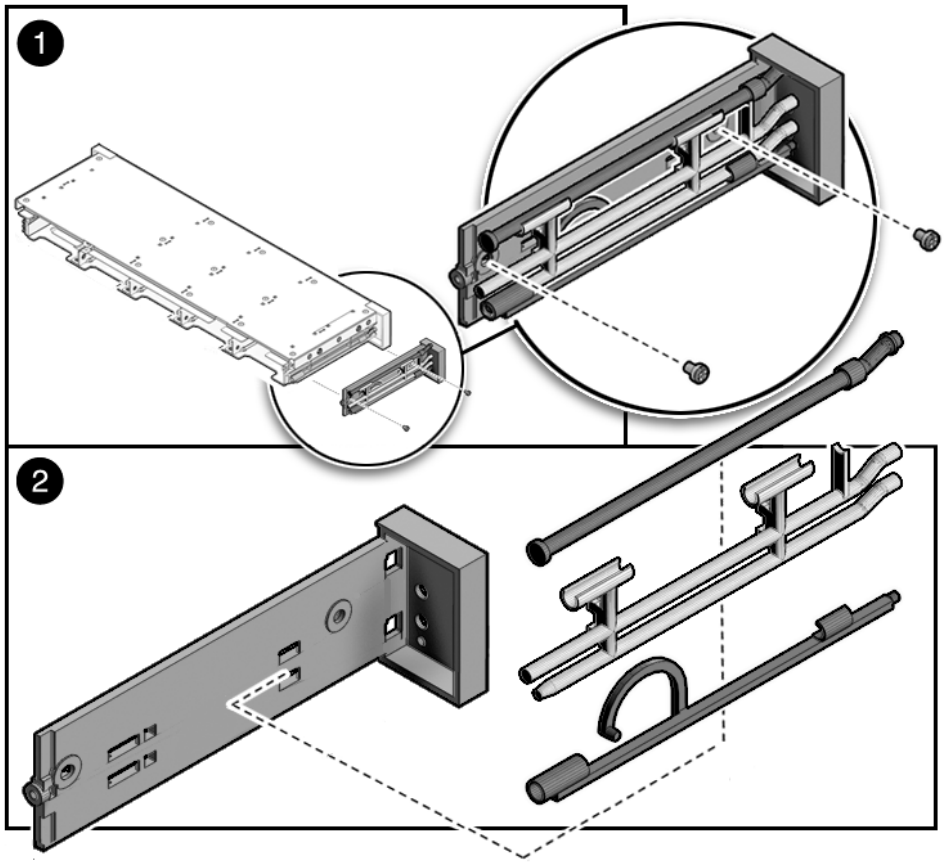
2. **Remove the drives backplane.**

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

3. **Remove the two 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 the 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 two No. 2 Phillips screws.**
3. **Install the drives backplane.**

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

The following tools are needed for this procedure:

- #2 Phillips screwdriver

5.5.1 Removing the Power Distribution Board

1. **Remove the motherboard assembly.**

   See "To Remove the Motherboard Assembly" on page 4-23.

2. **Remove all power supplies.**

   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 3-15.

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

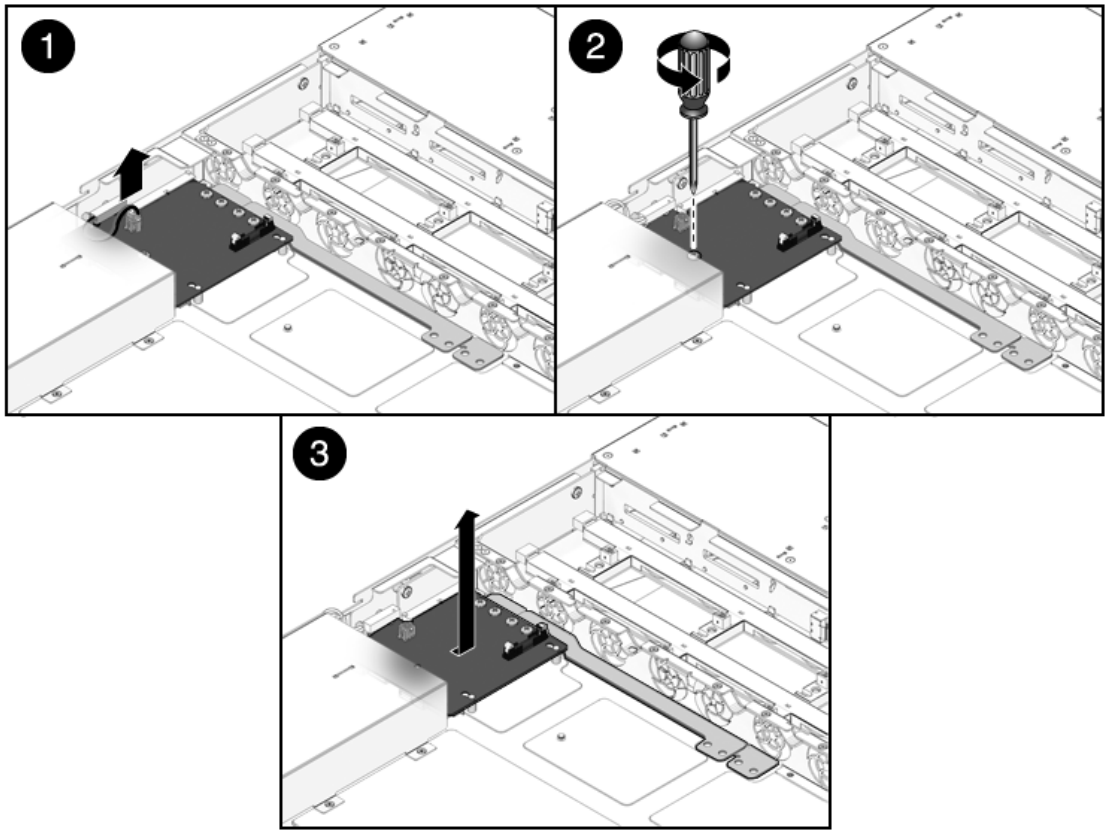
4. **Remove the No. 2 Phillips screw securing the PDB to the chassis.**

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

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

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

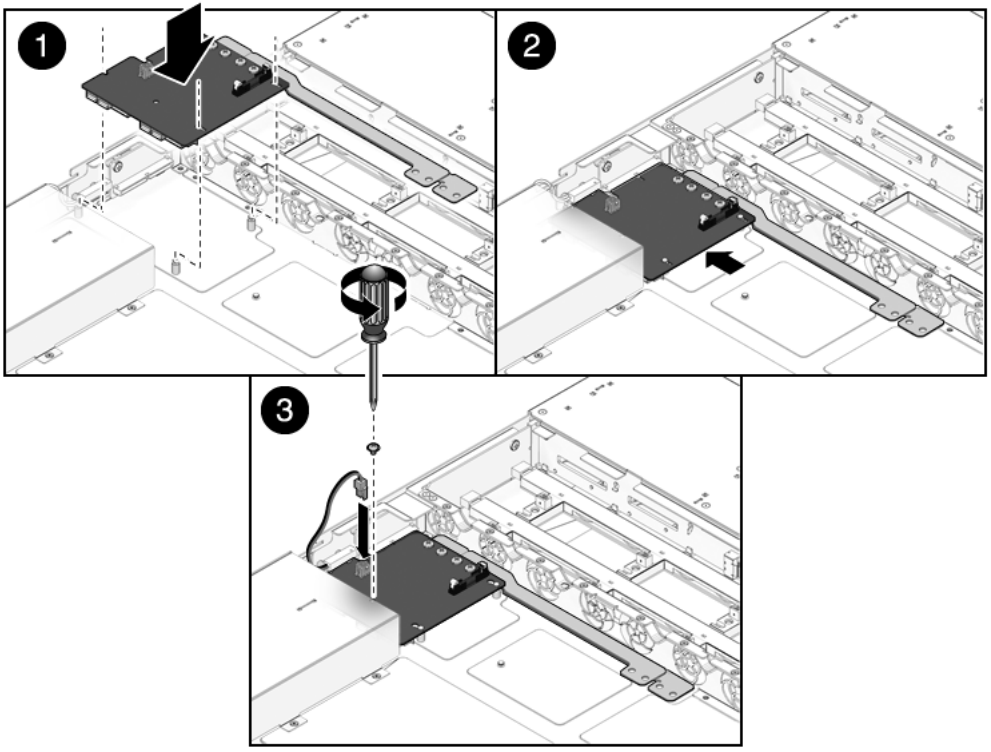
FIGURE 5-8 Removing the Power Distribution Board



5.5.2 Installing the Power Distribution Board

1. **Lower the PDB/bus bar assembly into the chassis (**FIGURE 5-9**).**
   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 the paddle card.**
3. **Install the No. 2 Phillips screw to secure the PDB to the chassis.**
4. **Connect the top cover interlock cable to the power distribution board.**

FIGURE 5-9 Installing the Power Distribution Board



5. **Install the power supplies.**

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

   See Section 3.4.3, "Removing a Power Supply" on page 3-15.

6. **Install the motherboard assembly.**

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

5.6 Servicing the Paddle Card

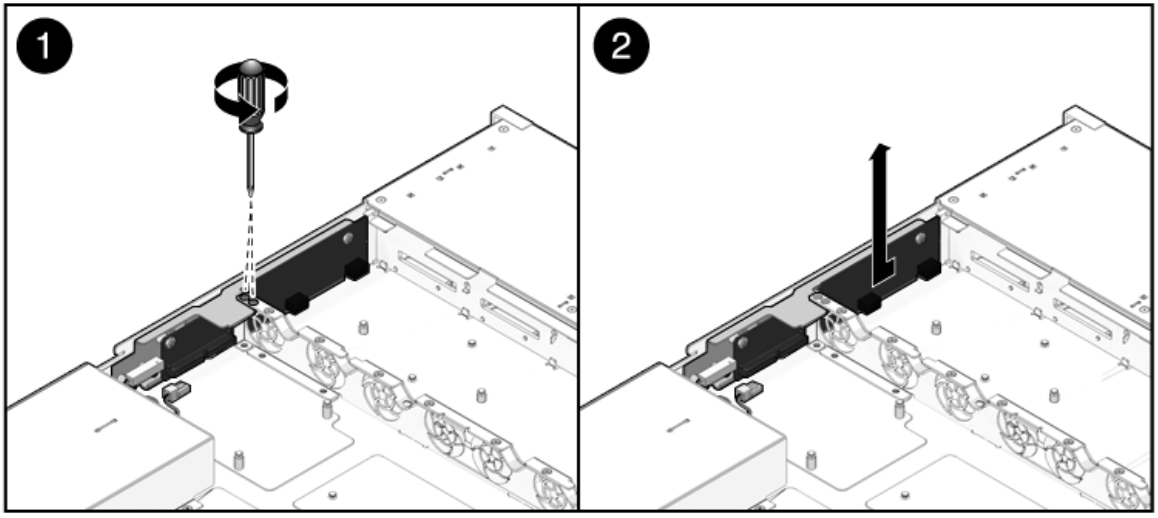
The paddle card assembly includes the top cover interlock switch.

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

5.6.1 Removing the Paddle Card

1. **Remove the motherboard assembly.**
   See "To Remove the Motherboard Assembly" on page 4-23.
2. **Remove the power distribution board.**
   See "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 5-10**).**
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 5-10 Removing the Paddle Card (Sun Fire X4150 Server)

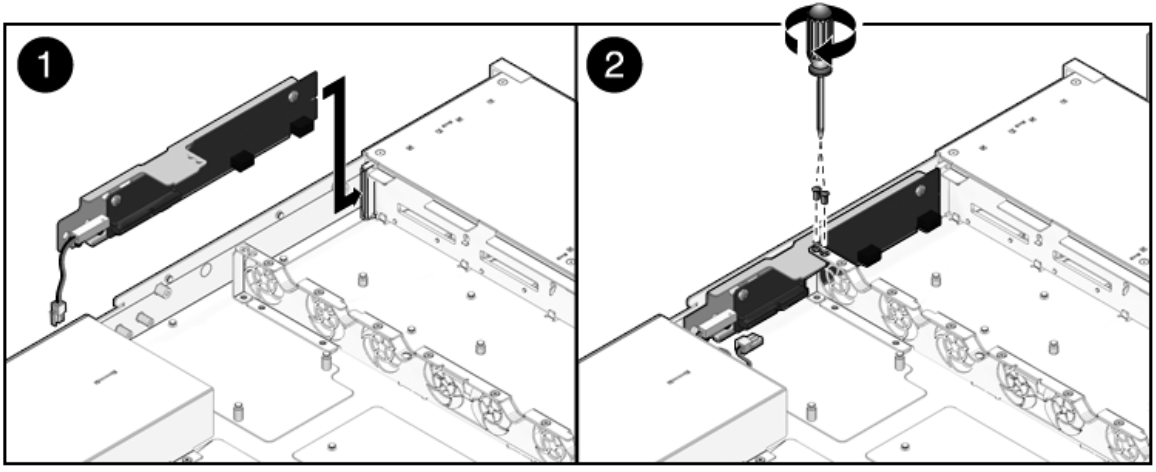


5.6.2 Installing the Paddle Card

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 5-11**).**
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 5-3.
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 4.6.1, “To Install the Motherboard Assembly” on page 4-25.

FIGURE 5-11 Installing the Paddle Card



5.7 Servicing Cables

The following topics are covered:

- Section 5.7.1, “Removing Drive Cables in a SAS Configuration” on page 5-19
- Section 5.7.2, “Installing Drives Cables in a SAS Configuration” on page 5-20
- Section 5.7.3, “Removing Drive Cables in a SATA Configuration” on page 5-22
- Section 5.7.4, “Installing Drive Cables in a SATA Configuration” on page 5-24
- Section 5.7.5, “Changing Drive Cables from SAS to SATA” on page 5-26
- Section 5.7.6, “Change Drive Cables from SATA to SAS” on page 5-27

- Section 5.7.7, “Converting From SAS Configuration To SSD Configuration” on page 5-27
- Section 5.7.8, “Removing a PDB Cable” on page 5-28
- Section 5.7.9, “Installing a PDB Cable” on page 5-30

See Section 1.5, “Illustrated Parts Breakdown” on page 1-8 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.

5.7.1 Removing Drive Cables in a SAS Configuration

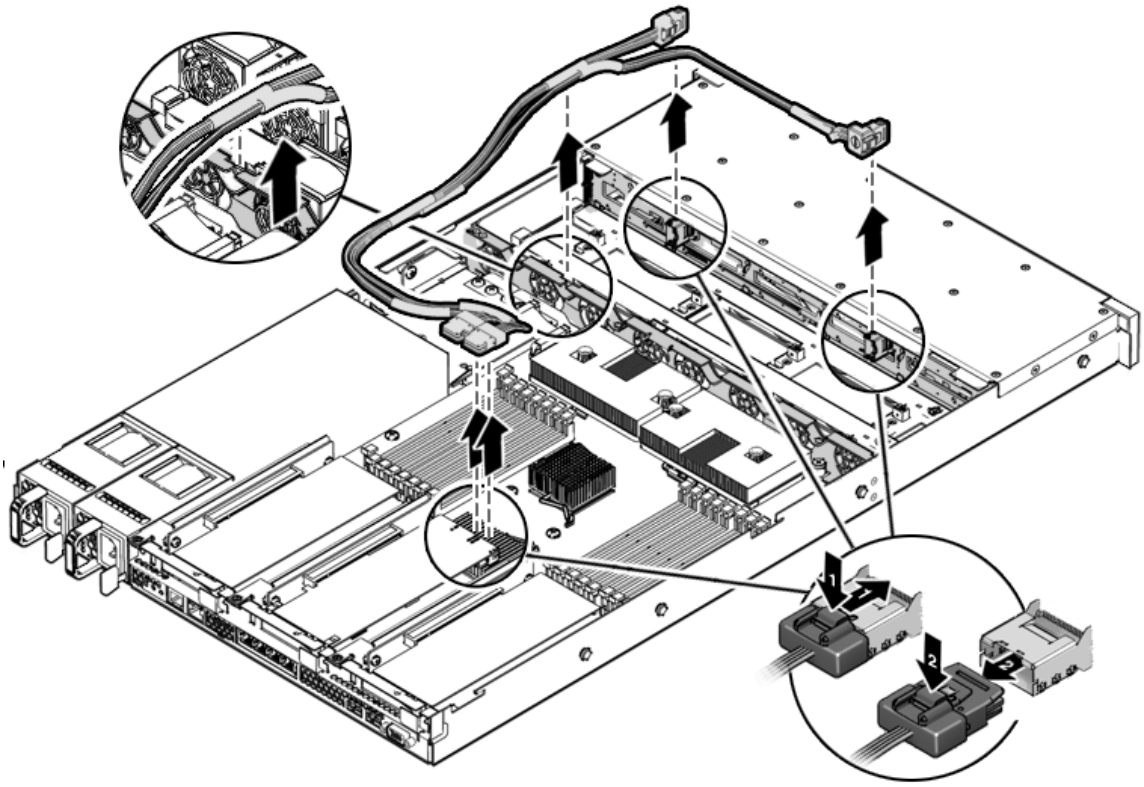
To remove drive cables in a SAS configuration.

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 2-8.
   e. **Remove the top cover.**
      See Section 2.8, “Removing the Top Cover” on page 2-10.
2. **Untwist the cable tiedowns to release the cables (**FIGURE 5-12**).**
3. **Remove the cables from the HBA PCIe card by depressing the latch and then pulling out the connector.**
   The HBA card is located in PCIE slot 1.
4. **Remove the fans from fan board 0.**
5. **Disconnect each cable at the drives backplane by depressing the latch and then pulling out the connector.**

6. **Remove the cables.**

   Do not snag the cables on the retainer above the mid-wall.

FIGURE 5-12 Removing Drives Cables in a SAS Configuration



5.7.2 Installing Drives Cables in a SAS Configuration

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

1. **Install the disk 0-3 cable first (**FIGURE 5-13**).**

   A right angle connector is on one end and a single connector is on the other end.

   a. **Install right angle connector in drives backplane.**

      The connector is on the left from the front of the unit.

b. Route the cable down and in front of fan board 0, to prevent the cable from blocking the air stream.

Lay the cable through the opening in the midwall, opposite the other disk backplane connector.

c. Plug the connector into the connector on the HBA card that is closest to the gold fingers (port 0).

2. Install the disk 4-7 cable.

a. Plug the backplane connector into the drives backplane.

b. Route the cable over the Disk 0-3 cable in the same channel through the midwall.

c. Plug the connector into the connector on HBA card that is furthest from the gold fingers (port 1).

3. Dress the cables in the cable tie downs, and then secure the cable tie downs.

4. Re-install the fans to fan board 0.

5. 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).

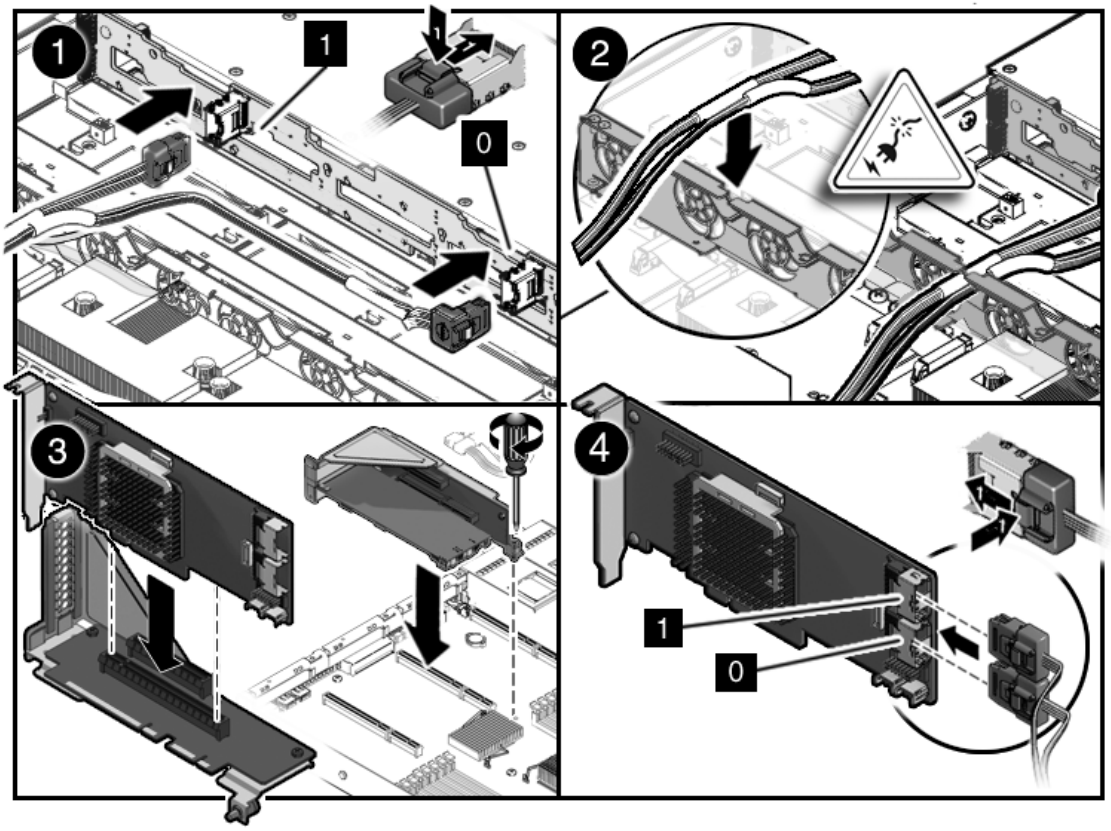
Verify that the AC Present LED is lit.

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 5-13 Installing Drives Cables in a SAS Configuration



5.7.3 Removing Drive Cables in a SATA Configuration

To remove drive cables in a SATA 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. Remove the top cover.

See Section 2.8, “Removing the Top Cover” on page 2-10.

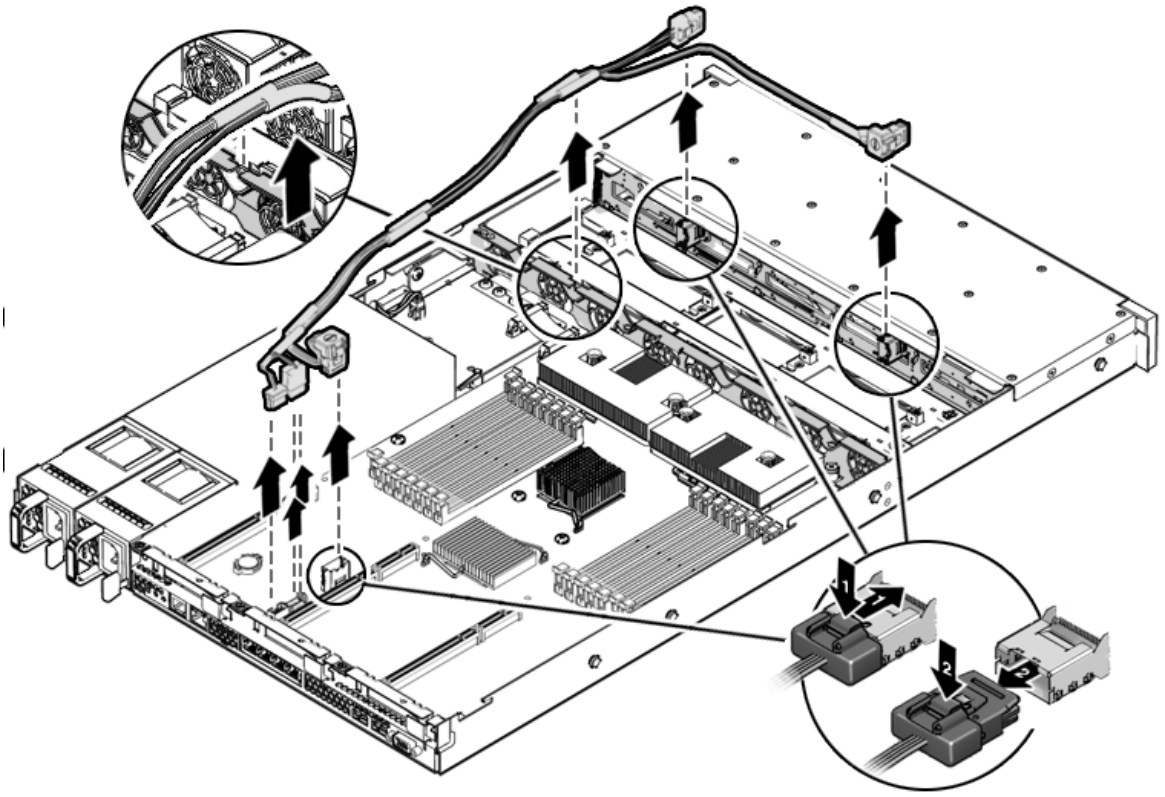
e. Attach an antistatic wrist strap.

See Section 2.7, “Performing Electrostatic Discharge and Antistatic Prevention Measures” on page 2-8.

2. **Remove the card in the PCIe 0 riser for better access (Optional).**
3. **Untwist the cable tiedowns to release the cables (**FIGURE 5-14**).**
4. **Depress the latch on the single headed cable and then disconnect the cable from the motherboard.**
5. **Pull up on each of the three individual connectors on the other cable.**
6. **Remove the fans from fan board 0.**
7. **Disconnect each cable at drives backplane by depressing the latch and then pulling out the connector.**
8. **Remove the cables.**

   Do not snag the cables on the retainer above the mid-wall.

FIGURE 5-14 Removing Drive Cables in a SATA Configuration



5.7.4 Installing Drive Cables in a SATA Configuration

To install two drives cables; Disk 0-3 and Disk 4-5 in SATA configuration, do the following.

1. **Install the disk 0-3 cable (**FIGURE 5-15**).**

   The disk 0-3 cable has a right angle connector on one end and a single connector on the other end.

   a. **Install the right angle connector in the drives backplane.**

      The connector is on the left from the front of the server.

b. Route the cable down in front of fan board 0 to prevent it from blocking the air stream.

Lay it through the opening in the midwall opposite the other disk backplane connector.

c. Plug the connector into the connector on the motherboard.

2. Install the disk 4-5 cable.

a. Plug the backplane connector into the drives backplane.

b. Route the cable over the Disk 0-3 cable in the same channel through the midwall.

c. Plug the connectors into the SATA 0-3 three connectors on the motherboard.

- The connector labeled 4 plugs into the connector labeled SATA4.
- The connector labeled 5 plugs into the connector labeled SATA5.
- The unlabeled rectangular connector plugs into the connector directly behind the two SATA connections.

Note – Note the key direction before plugging in this connector.

---

3. Dress the cables in the cable tie downs, and then secure the cable tie downs.

4. Re-install the fans to fan board 0.

5. 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).

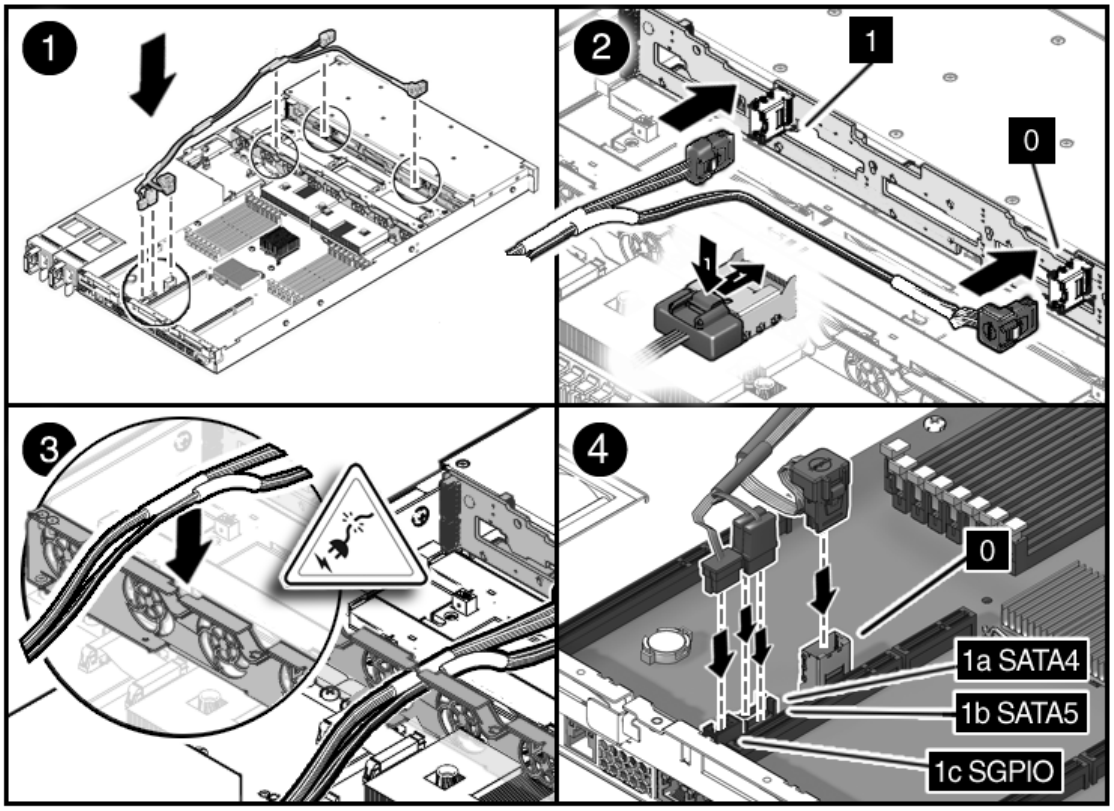
Verify that the AC Present LED is lit.

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 5-15 Installing Drive Cables in a SATA Configuration



5.7.5 Changing Drive Cables from SAS to SATA

To change drives cables from SAS to SATA.

1. **Remove the cables from the SAS configuration.**
   See Section 5.7.1, "Removing Drive Cables in a SAS Configuration" on page 5-19.
2. **Remove the SAS HBA card.**
3. **Install either a different HBA card or a PCIe filler in PCIe slot 1.**
4. **Install the new cables in the SATA configuration.**
   See Section 5.7.4, "Installing Drive Cables in a SATA Configuration" on page 5-24.

5.7.6 Change Drive Cables from SATA to SAS

To change drives cables from SATA to SAS.

1. **Remove the cables in the SATA configuration.**

   See Section 5.7.3, "Removing Drive Cables in a SATA Configuration" on page 5-22.

2. **Install the SAS HBA card in PCIe slot 1 (middle slot).**

3. **Install the new cables in the SAS configuration.**

   See Section 5.7.2, "Installing Drives Cables in a SAS Configuration" on page 5-20.

5.7.7 Converting From SAS Configuration To SSD Configuration

You must relocate the cable attached to port 0 of the HBA card to the Disk 0-3 connection on the motherboard and relocate the cable attached to port 1 of the HBA card to port 0 of the HBA.

1. **Relocate disk 0-3 cable from HBA to Motherboard.**

   Take the cable out of HBA port 0 and connect to SATA 0-3 connection on the motherboard.

2. **Connect cable 0 to the HBA card.**

3. **Relocate disk 4-7 cable from HBA port 1 to HBA port 0.**

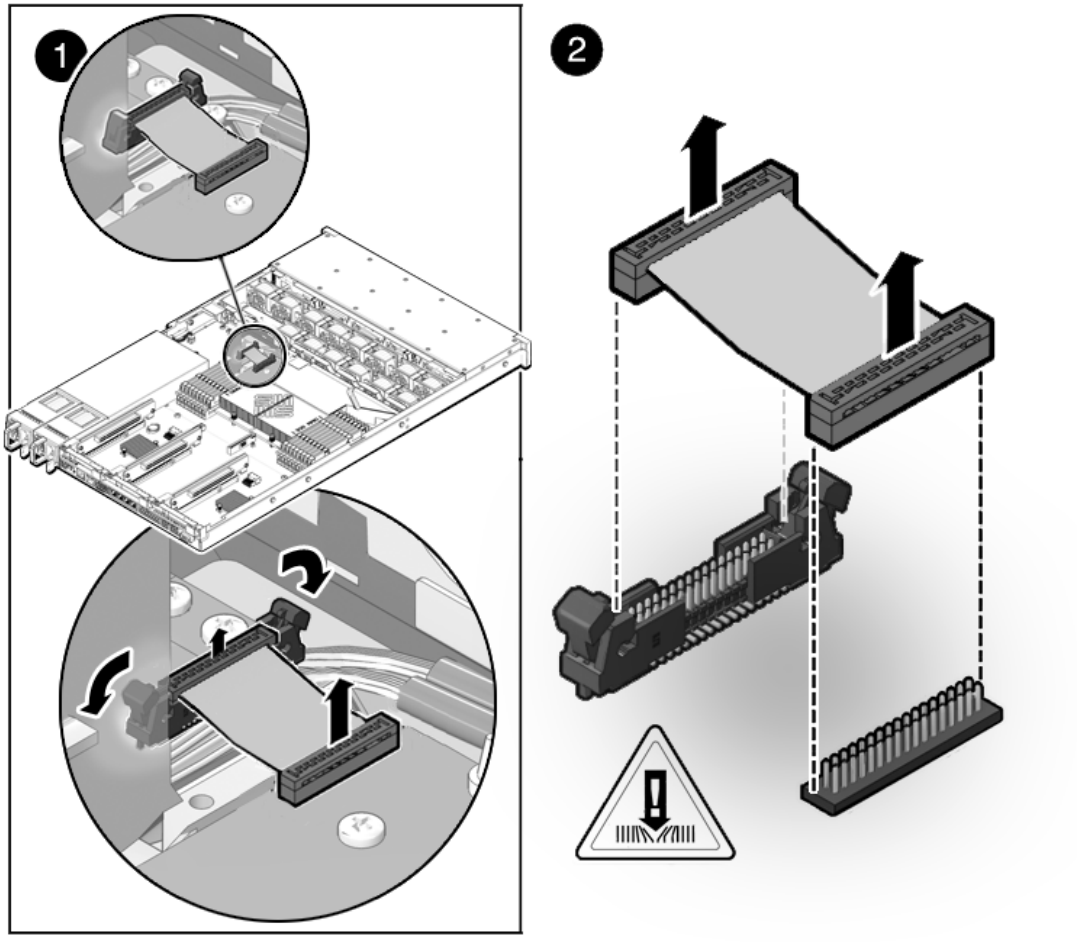
5.7.8 Removing a PDB Cable

To remove a Power Distribution Board ribbon 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 2-8.
   e. **Remove the top cover.**
      See Section 2.8, "Removing the Top Cover" on page 2-10.
2. **Remove the PDB end of cable (**FIGURE 5-16**).**
   a. **Release the 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 connector.**

Caution – Do not to bend the pins on the unshrouded motherboard connector.

FIGURE 5-16 Removing a PDB Cable



5.7.9 Installing a PDB Cable

To install a Power Distribution Board ribbon cable.

1. **Remove the PDB cable**

   See Section 5.7.8, "Removing a PDB Cable" on page 5-28.

2. **Inspect the motherboard pin field to ensure all pins are straight.**

3. **Open the latches on the PDB connector. (**FIGURE 5-17**)**

   Ensure key of cable lines up with slot on the connector.

4. **Push the cable connector into the PDB connection until 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 seated. If you feel significant resistance, stop and check the pin alignment.

6. **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).**

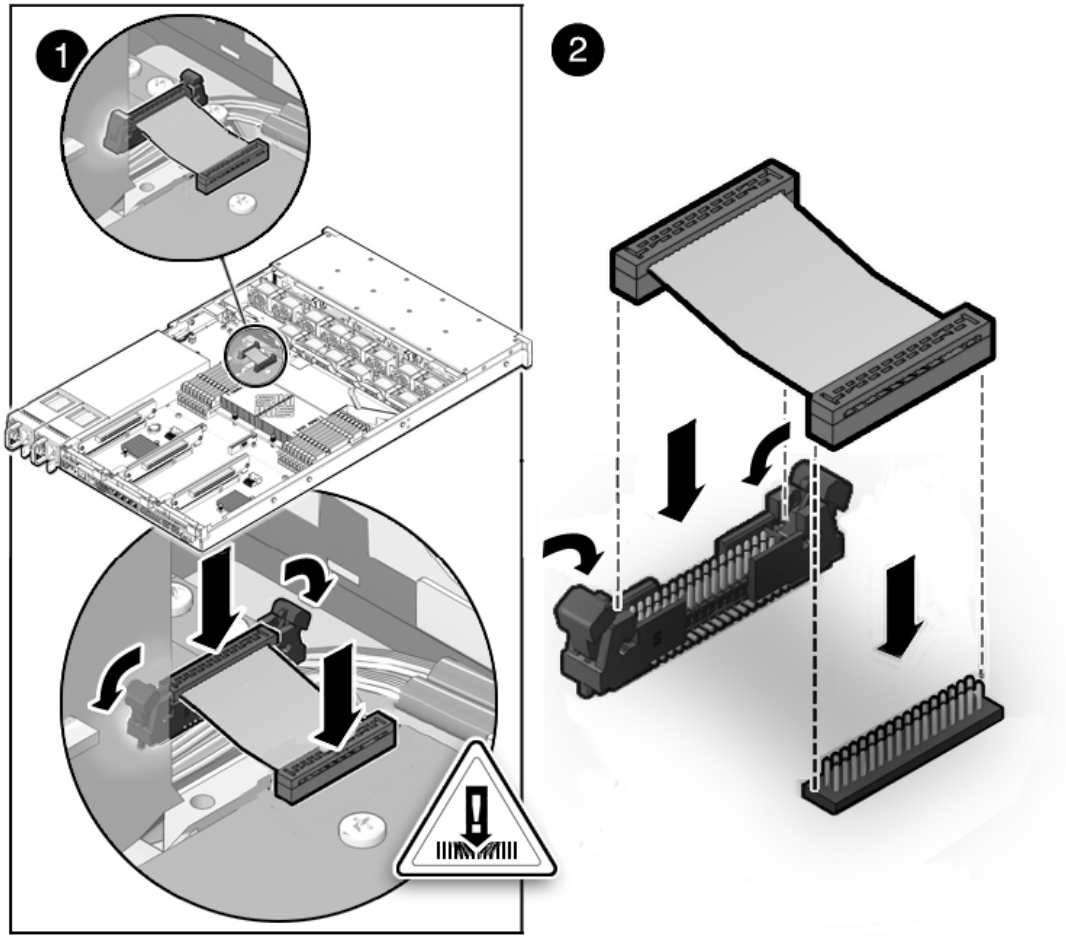
      Verify that the AC Present LED is lit.

      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 5-17 Installing a PDB Cable



CHAPTER 6

Returning the Server to Operation

This chapter describes how to return the Sun Fire X4150 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 present.

Caution – Equipment damage 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:

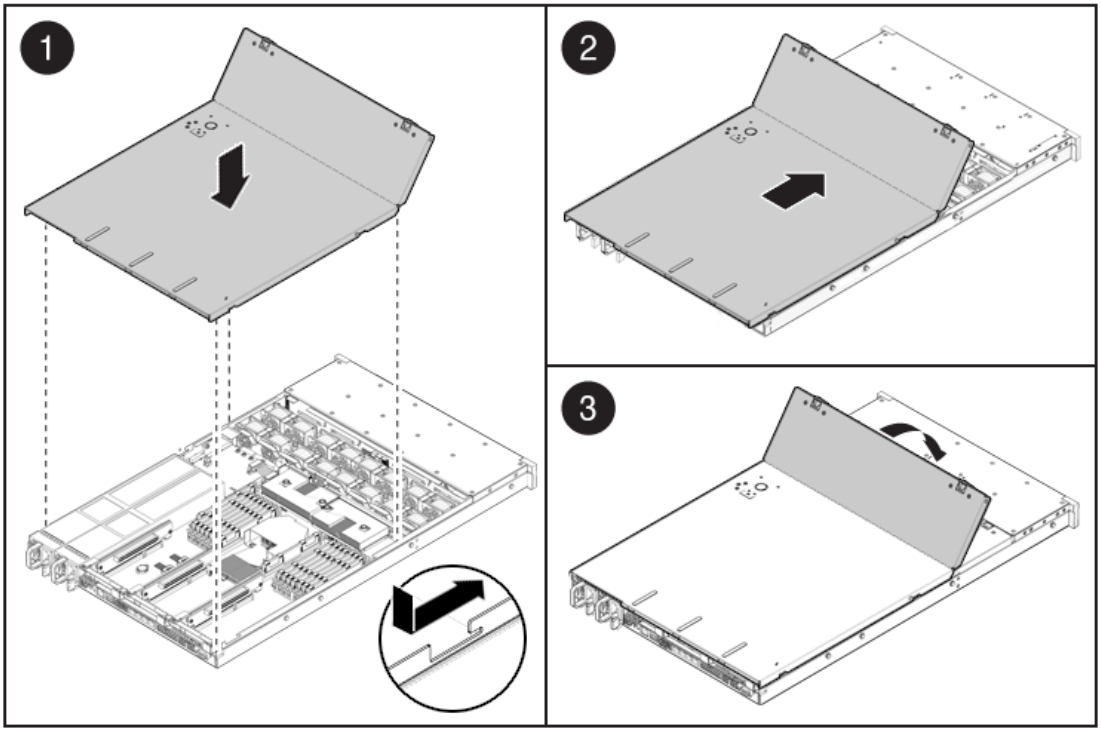
1. **Place the top cover on the chassis.**

   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.**

FIGURE 6-1 Installing the Top Cover



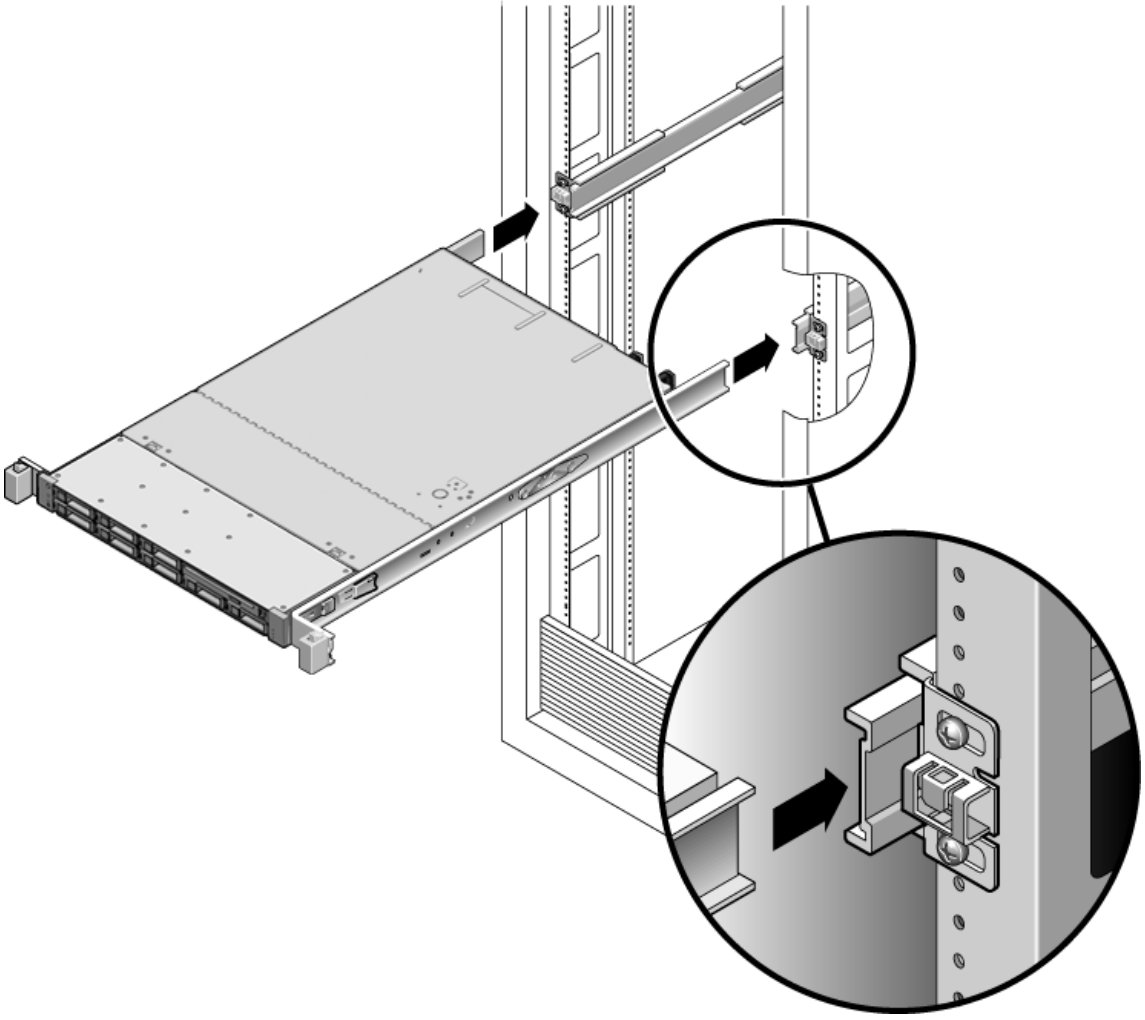
6.2 Reinstalling the Server in the Rack

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

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.
4. **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

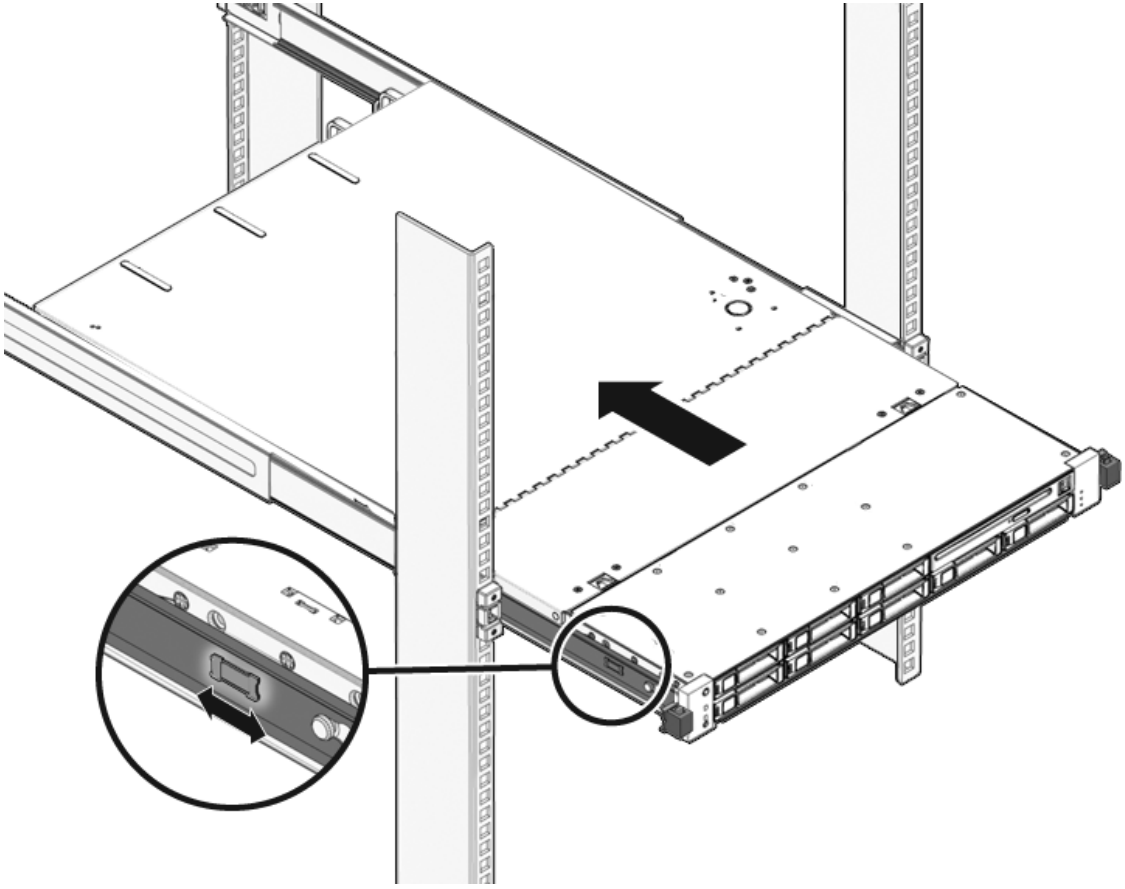


6.3 Returning the Server to the Normal Rack Position

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**).**

FIGURE 6-3 Release Tabs on Rails



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.

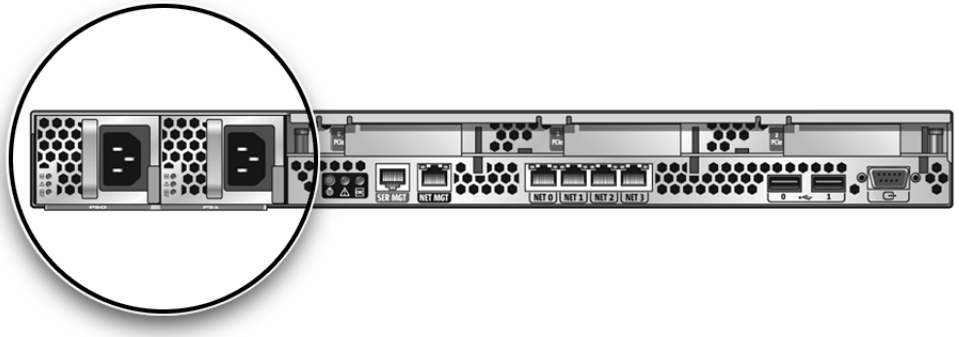
6.4 Powering On the Server

Before powering on your server for the first time, follow the installation and cabling instructions provided in the *Sun Fire X4150 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 that the power cord (or cords) to the power supply (or supplies) on the rear panel as shown in** FIGURE 6-5**.**

FIGURE 6-4 Rear Panel Power Supplies



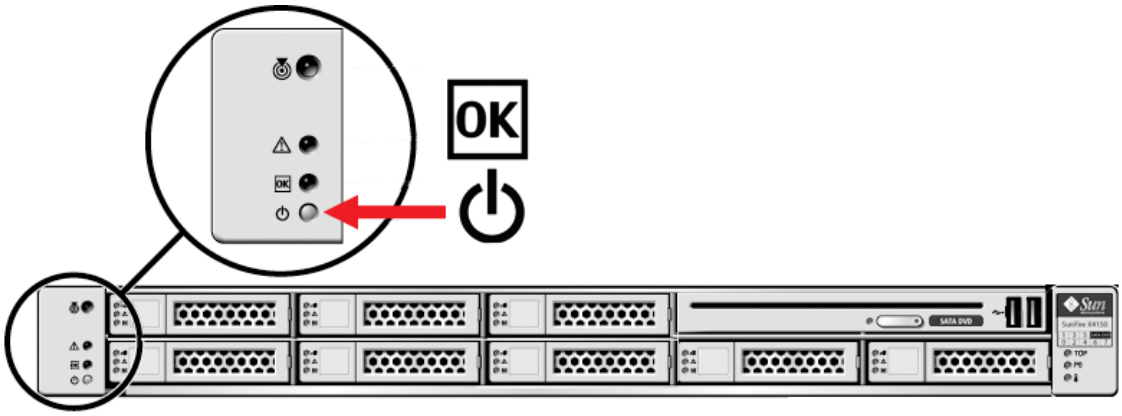
2. **Verify that standby power is on.**

   In standby power mode, the Power/OK LED on the front panel flashes.

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



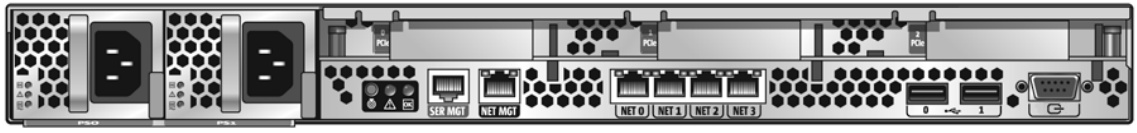
APPENDIX **A**

Connector Pinouts

This appendix provides reference information about the Sun Fire X4150 Server back panel ports and pin assignments.

Topics covered in this appendix include:

FIGURE A-1 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

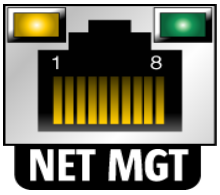


TABLE A-2 Network Management connector signals

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

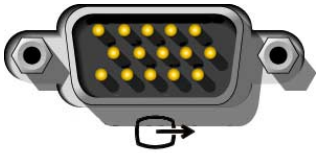


TABLE A-3 Video Connector Signals

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

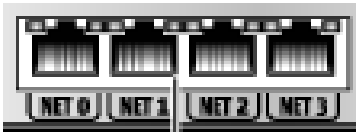


TABLE A-4 USB Connector Signals

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 X4150 Server. 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

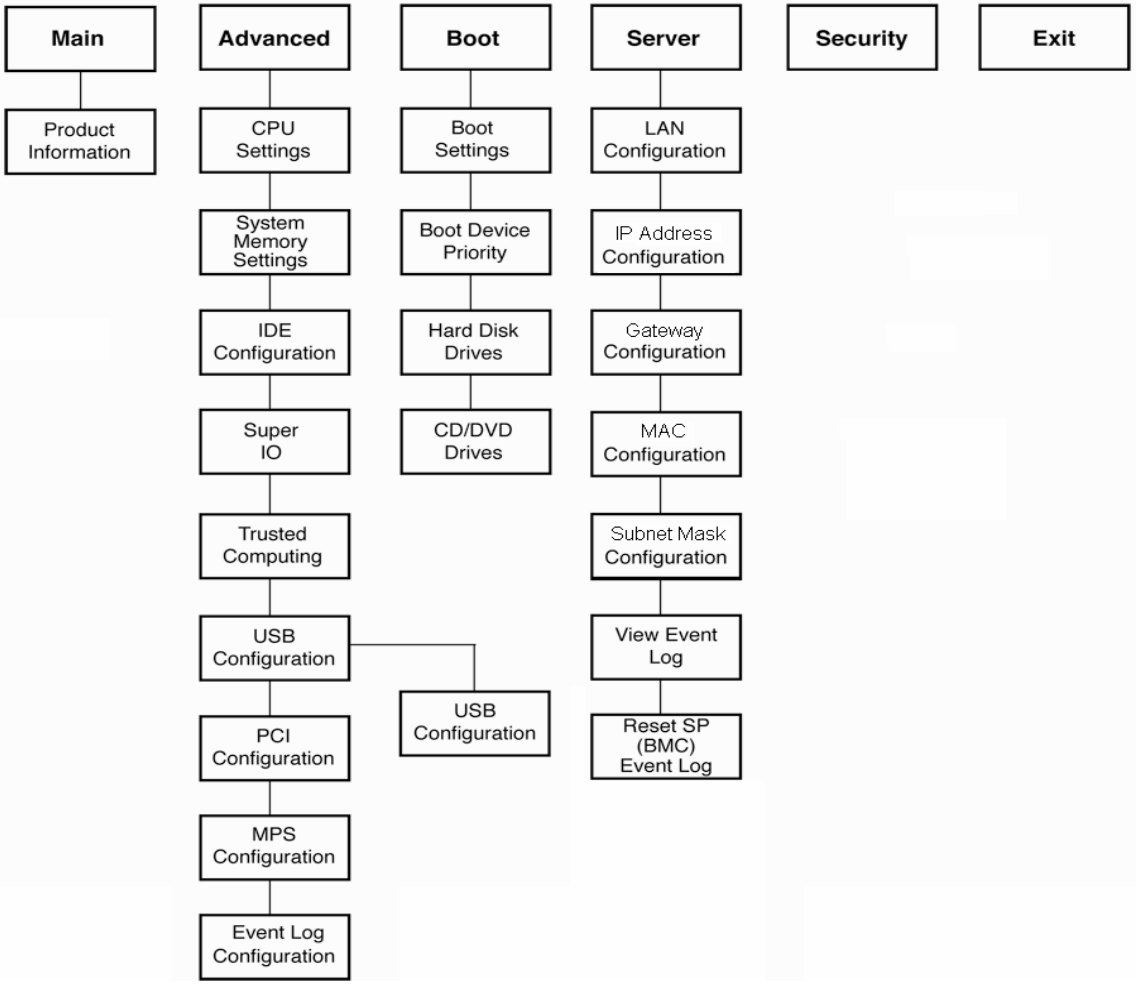
Screen	Description	See...
Main	General product information, including BIOS type, processor, memory, and time/date.	Section C.2.1, "BIOS Main Menu Screens" on page C-5
Advanced	Configuration information for the CPU processor, memory, IDE, Super IO, trusted computing, USB, PCI, MPS and other information.	Section C.2.2, "BIOS Advanced Menu Screens" on page C-7
Boot	Configure the boot device priority (drives and the DVD-ROM drive).	Section C.2.3, "BIOS Boot Menu Screens" on page C-15

TABLE C-1 BIOS Setup Screens Summary

Screen	Description	See...
Server	Server devices can be configured by the BIOS (if applicable).	Section C.2.4, "BIOS Server Menu Screens" on page C-19
Security	Set or change the user and supervisor passwords.	Section C.2.5, "BIOS Security Menu Screens" on page C-24
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-26

FIGURE C-1 summarizes the BIOS menu tree. See Section C.2, "BIOS Setup Menu Screens" on page C-5 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 X4150 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 X4150 Server has the following BIOS Main screens.

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

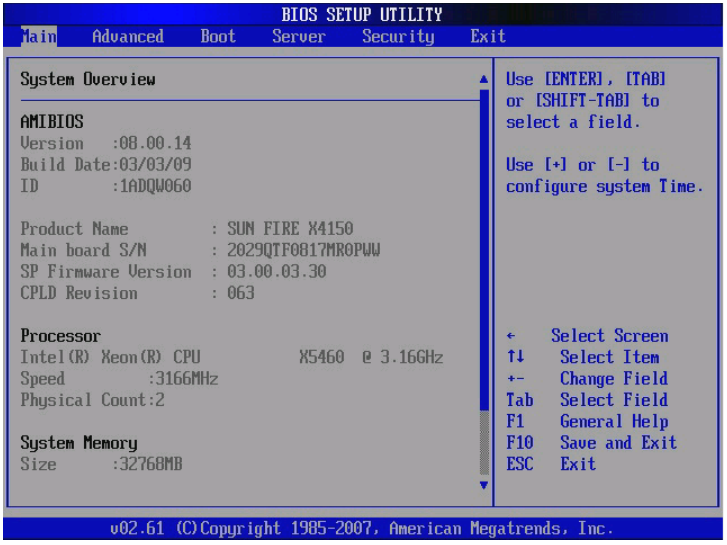


FIGURE C-3 BIOS Setup Utility: Main- Product Information (Access at Bottom)

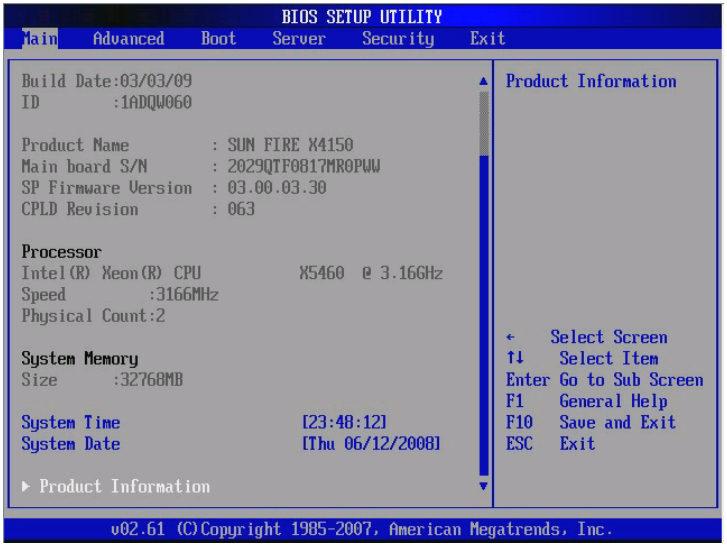
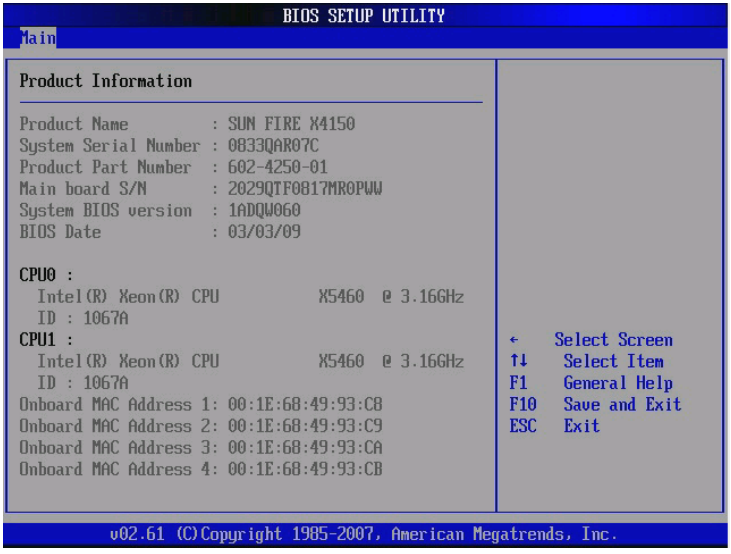


FIGURE C-4 BIOS Setup Utility: Main- Product Information



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 and other system information.

The Sun Fire X4150 Server has the following BIOS Advanced screens:

FIGURE C-5 BIOS Setup Utility: Advanced

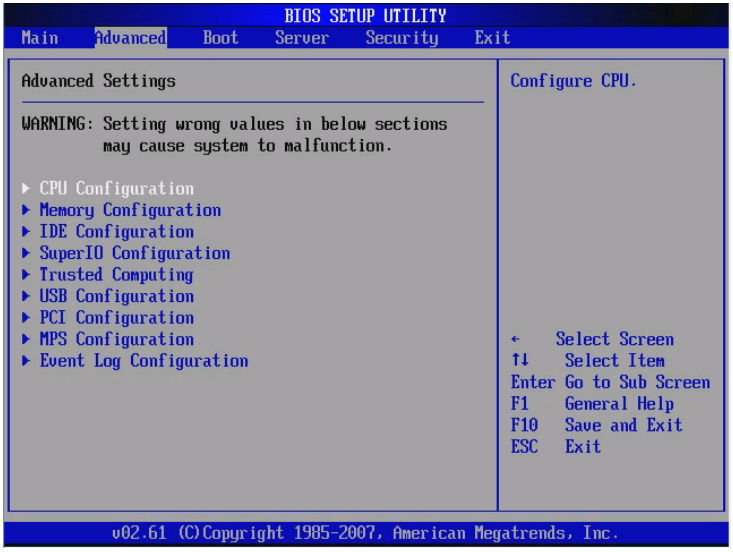


FIGURE C-6 BIOS Setup Utility: Advanced- CPU Settings

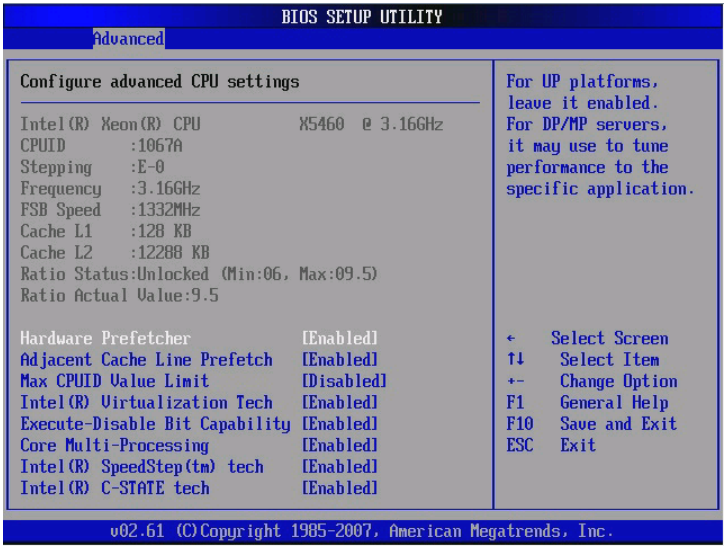
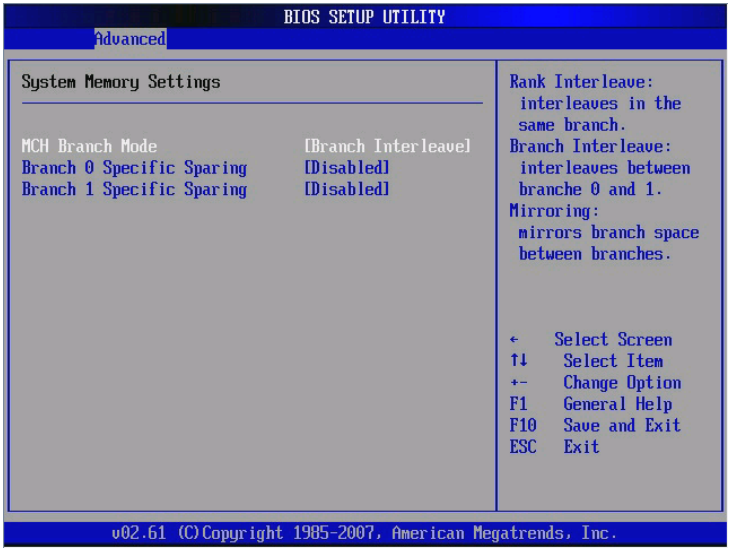


FIGURE C-7 BIOS Setup Utility: Advanced - System Memory Settings



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-8 BIOS Setup Utility: Advanced- IDE Configuration

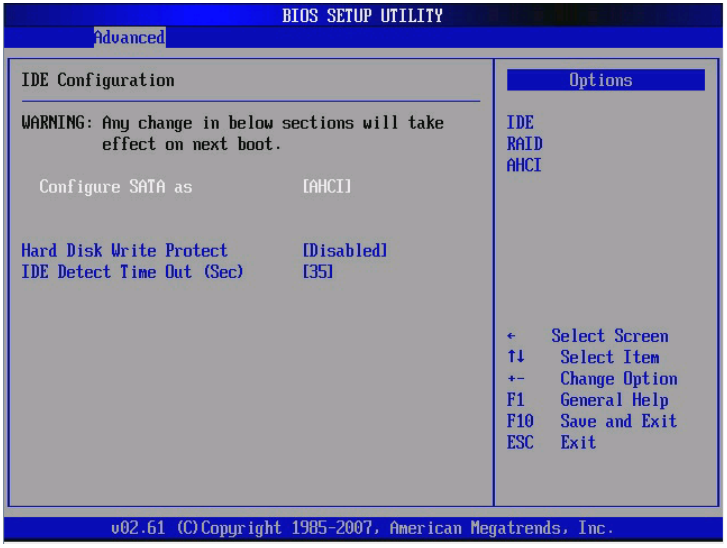


FIGURE C-9 BIOS Setup Utility: Advanced- Super IO Configuration

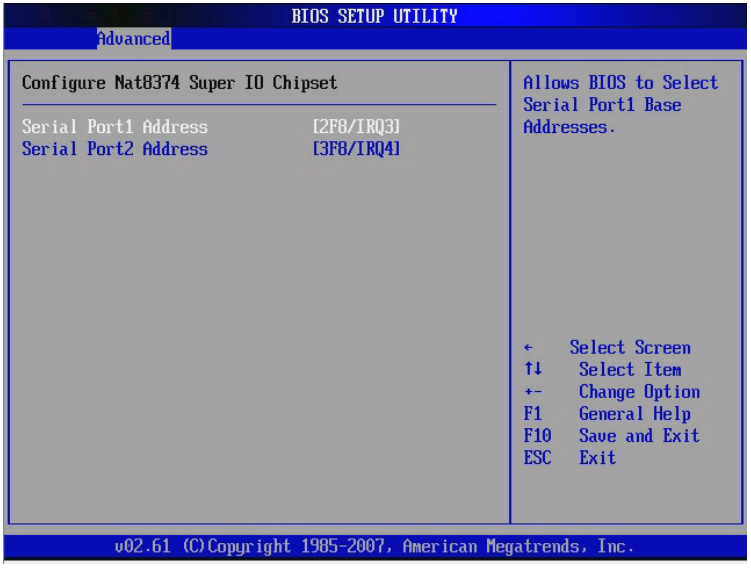


FIGURE C-10 BIOS Setup Utility: Advanced- Trusted Computing

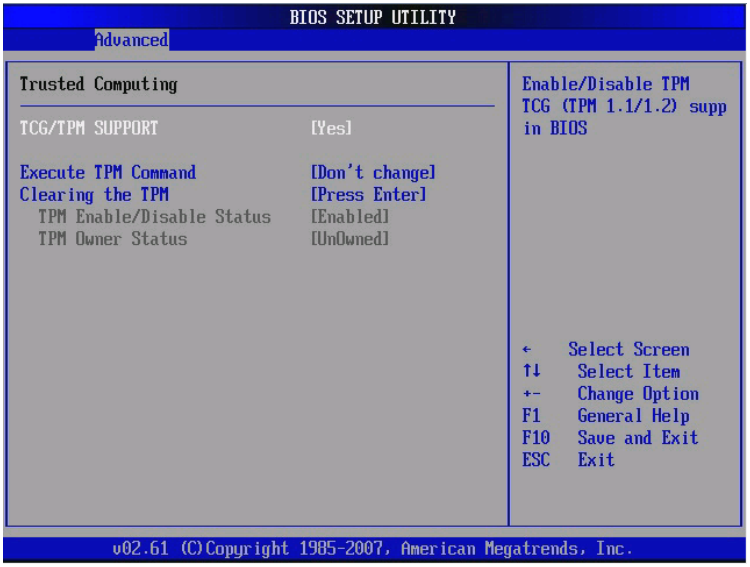


FIGURE C-11 BIOS Setup Utility: Advanced- USB Configuration

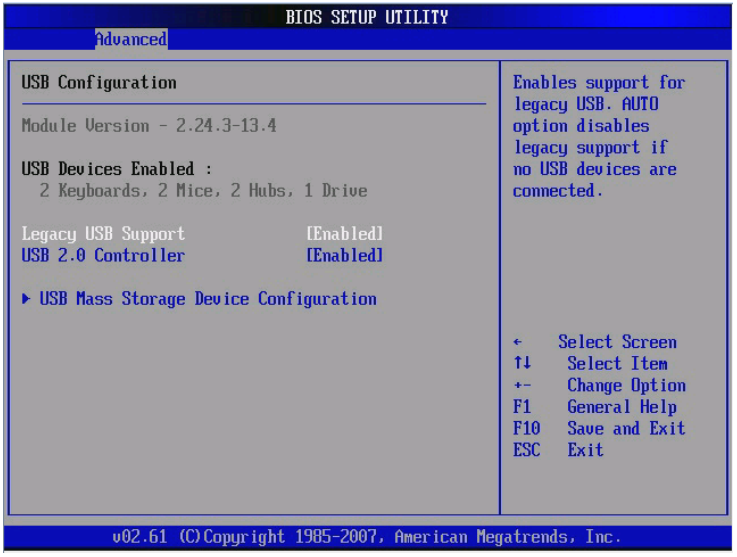


FIGURE C-12 BIOS Setup Utility: Advanced- USB Configuration 2

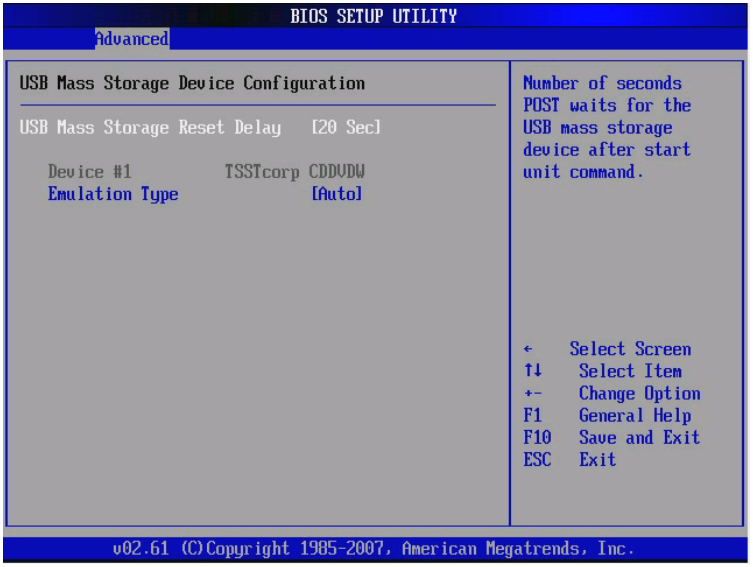


FIGURE C-13 BIOS Setup Utility: Advanced- PCI Configuration

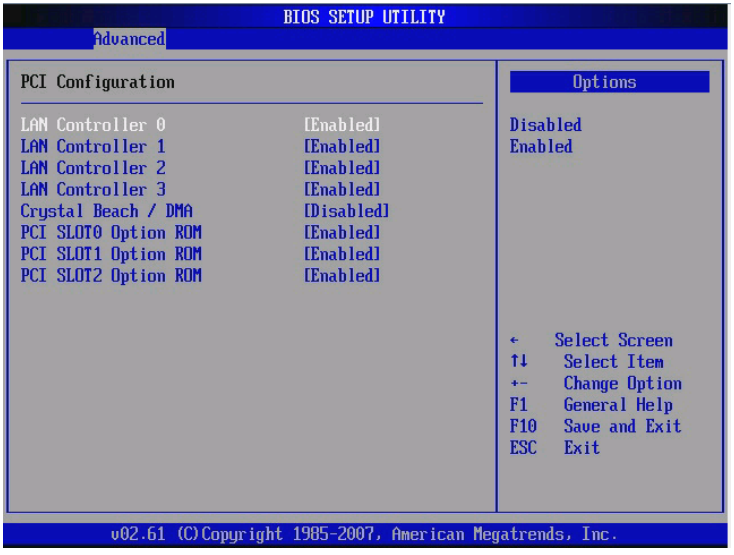


FIGURE C-14 BIOS Setup Utility: Advanced- MPS Configuration

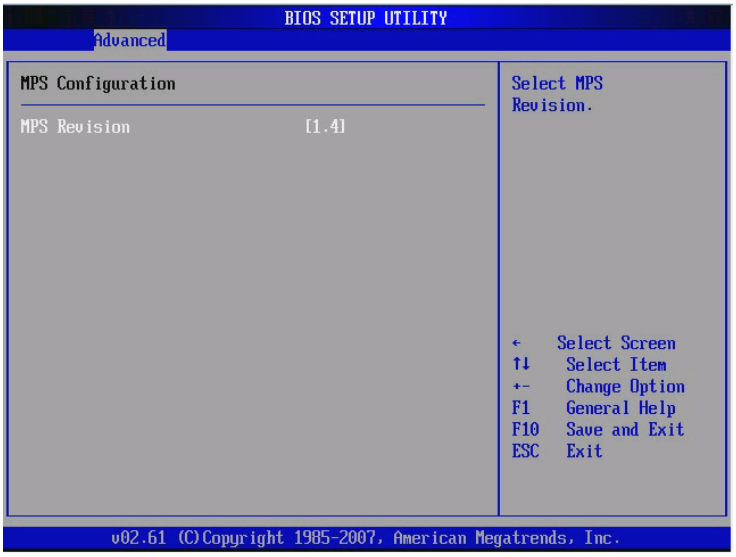


FIGURE C-15 BIOS Setup Utility: Advanced - Event Logging Details

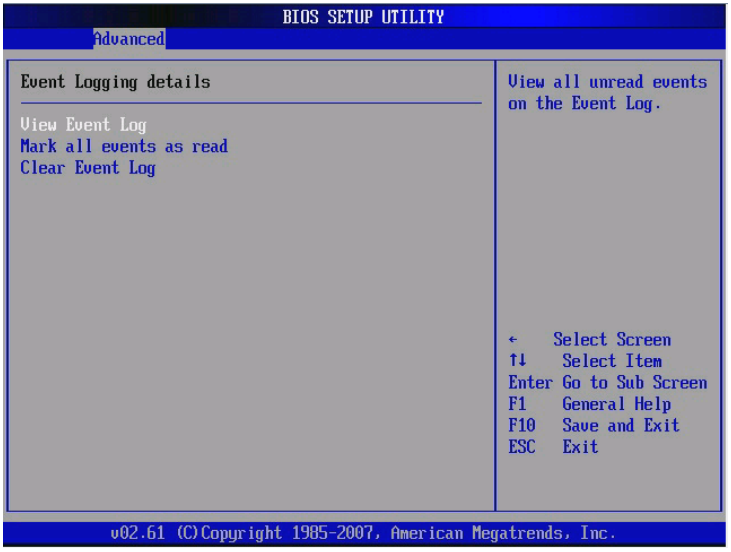


FIGURE C-16 BIOS Setup Utility: Advanced - View Event Log

FIGURE C-17 BIOS Setup Utility: Advanced - Event Log - Mark Events As Read

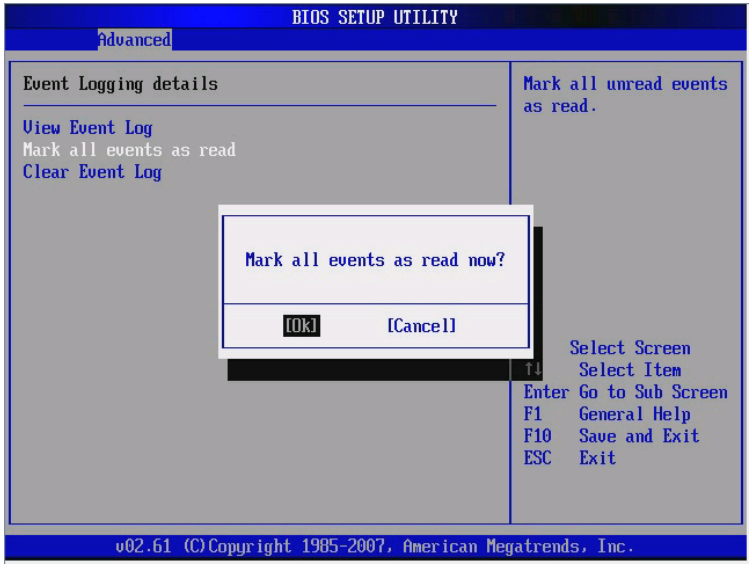
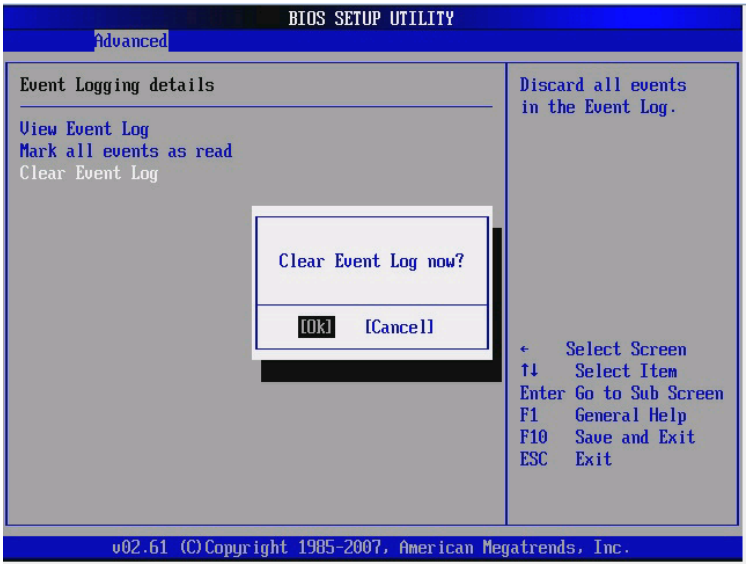


FIGURE C-18 BIOS Setup Utility: Advanced - Clear Event Log



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 X4150 Server has the following BIOS Boot screens.

FIGURE C-19 BIOS Setup Utility: Boot

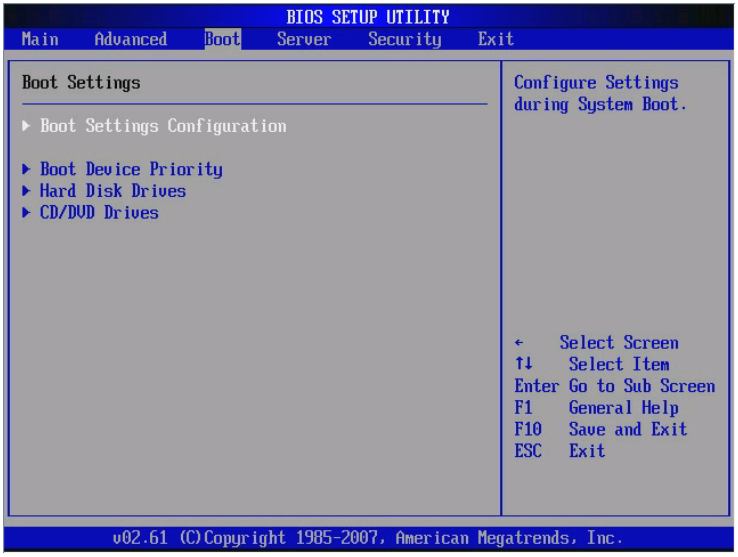


FIGURE C-20 BIOS Setup Utility: Boot Settings Configuration

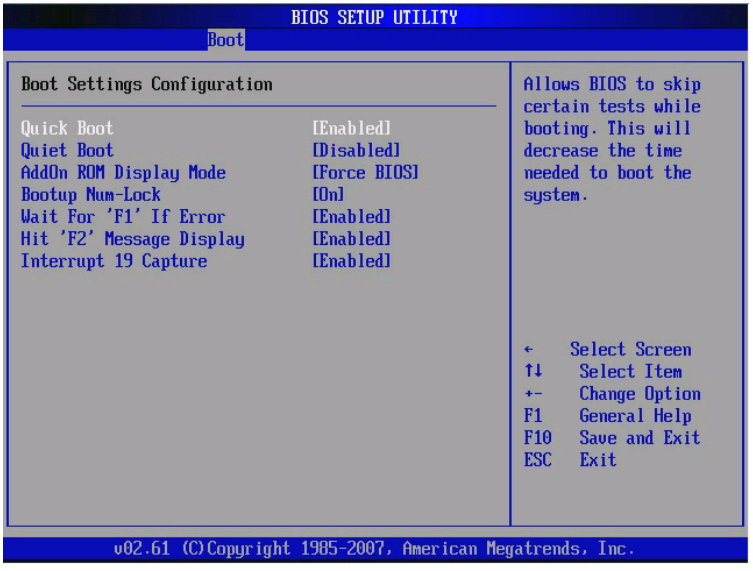


FIGURE C-21 BIOS Setup Utility: Boot Device Priority

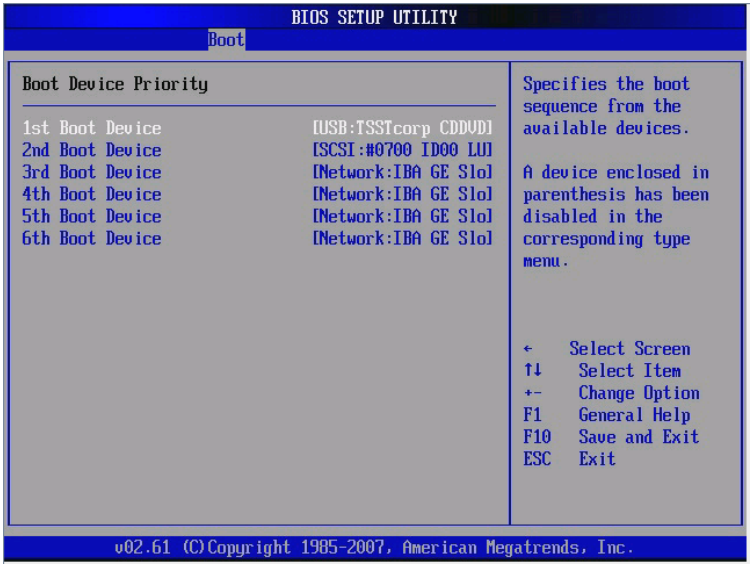


FIGURE C-22 BIOS Setup Utility: Boot Hard Drives

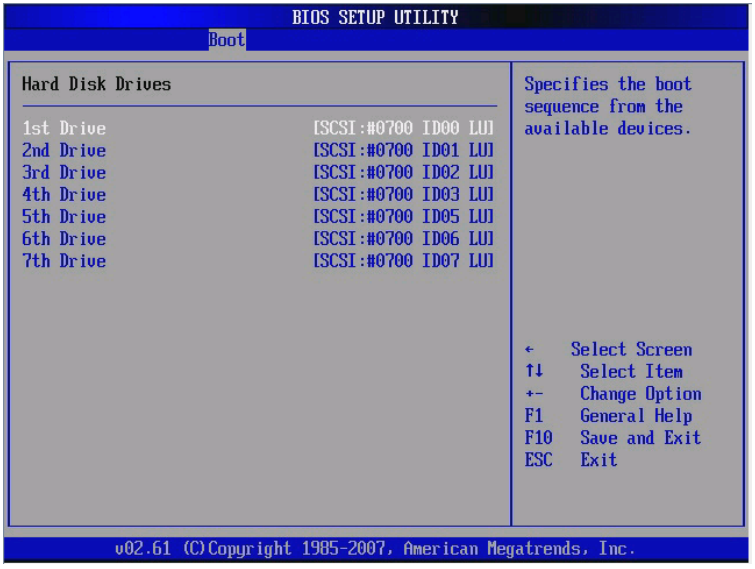
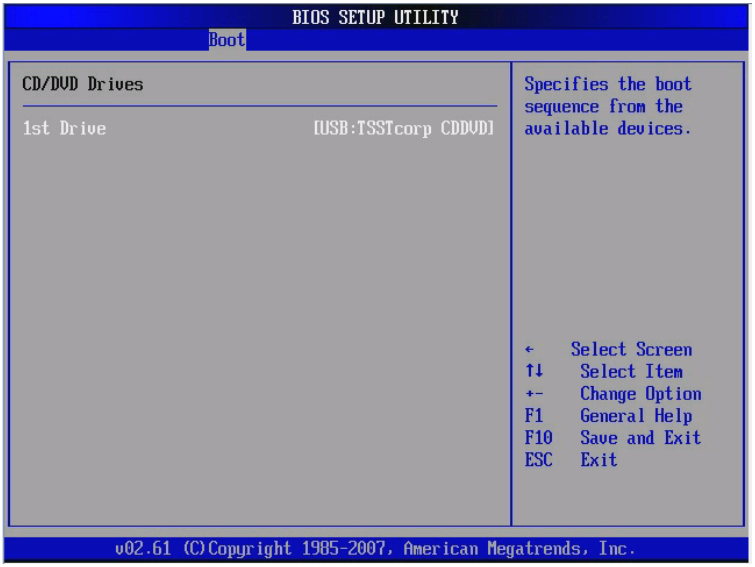


FIGURE C-23 BIOS Setup Utility: Boot CD/DVD Drives



C.2.4 BIOS Server Menu Screens

The BIOS Server screens allow you to configure Server devices (if applicable) and view Service Processor (SP) System Event Logs (SEL).

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

The Sun Fire X4150 Server has the following BIOS Server screens.

FIGURE C-24 BIOS Setup Utility: Server

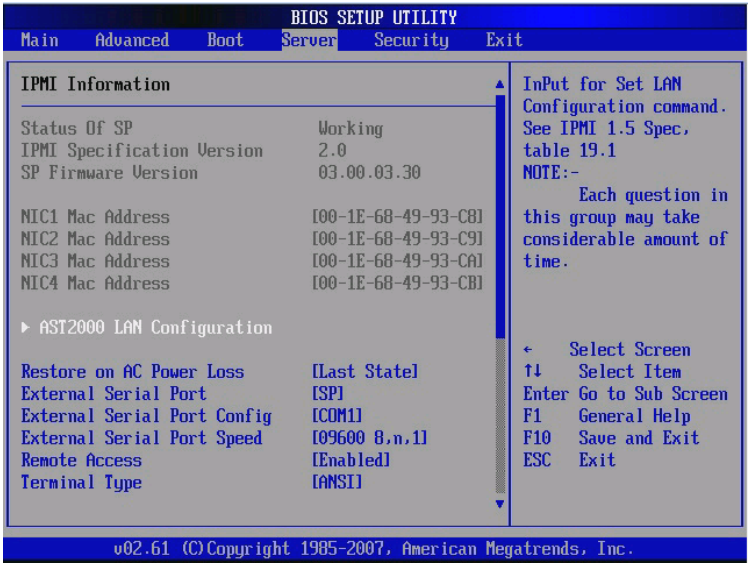


FIGURE C-25 BIOS Setup Utility: Server - Bottom of Scroll

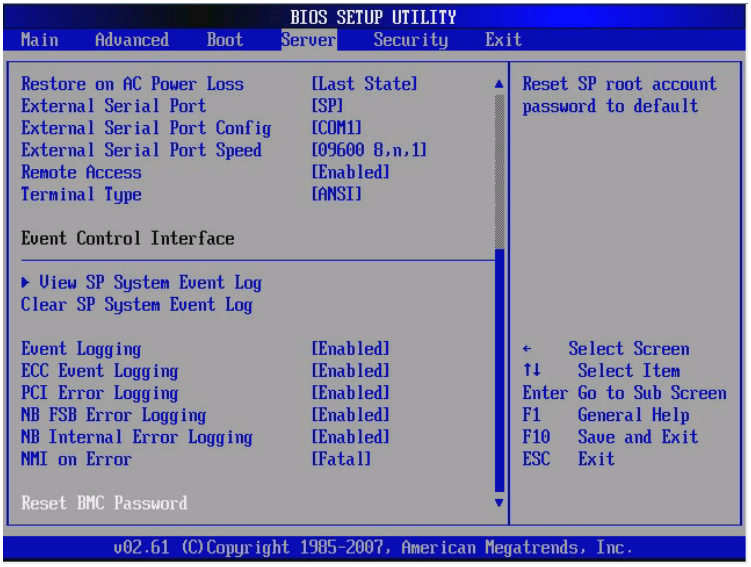


FIGURE C-26 BIOS Setup Utility: Server - LAN Configuration

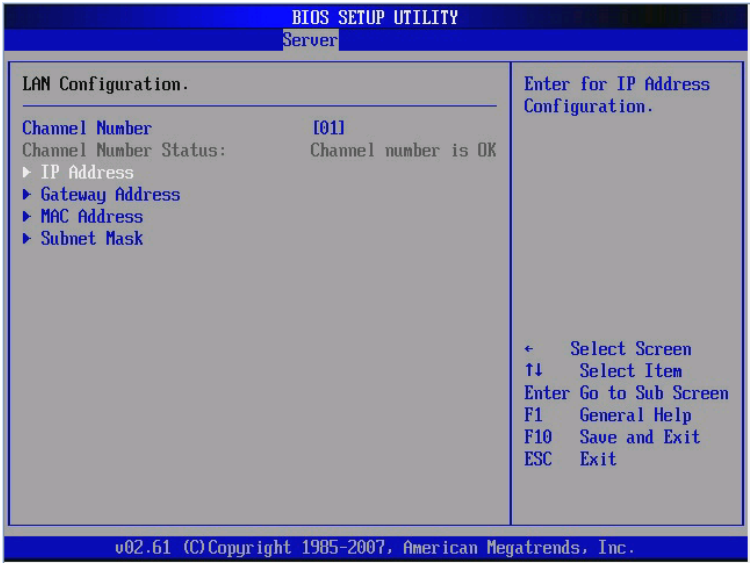


FIGURE C-27 BIOS Setup Utility: Server - LAN Configuration - IP Address Configuration

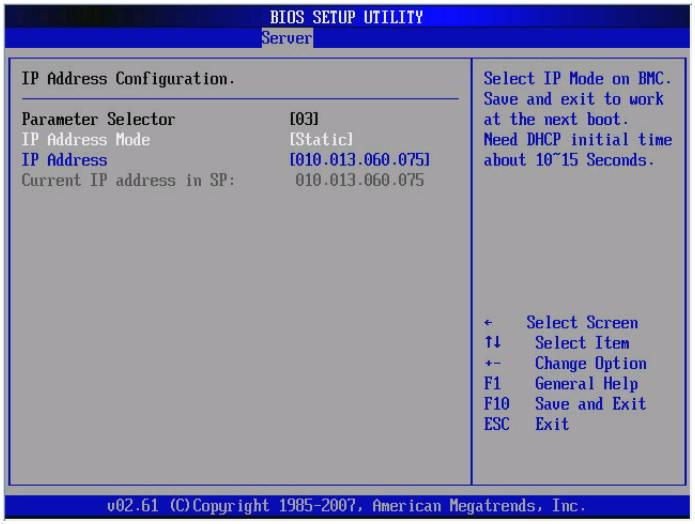


FIGURE C-28 BIOS Setup Utility: Server - Gateway Address Configuration

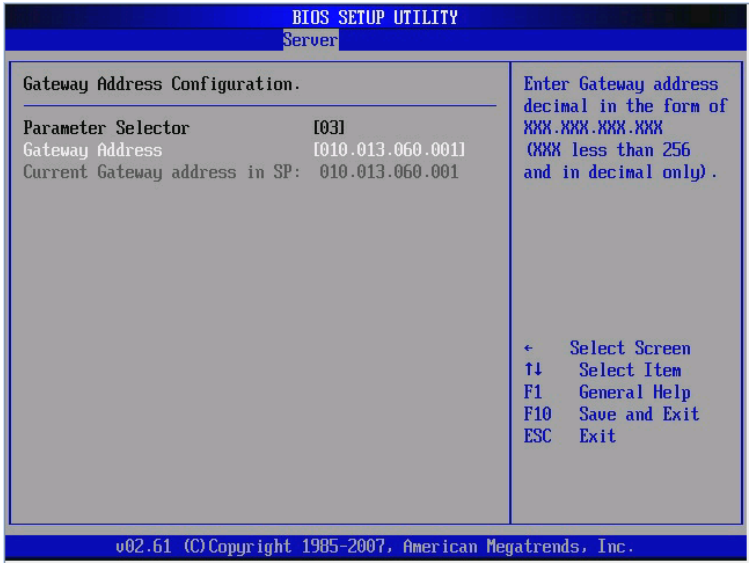


FIGURE C-29 BIOS Setup Utility: Server - MAC Address Configuration

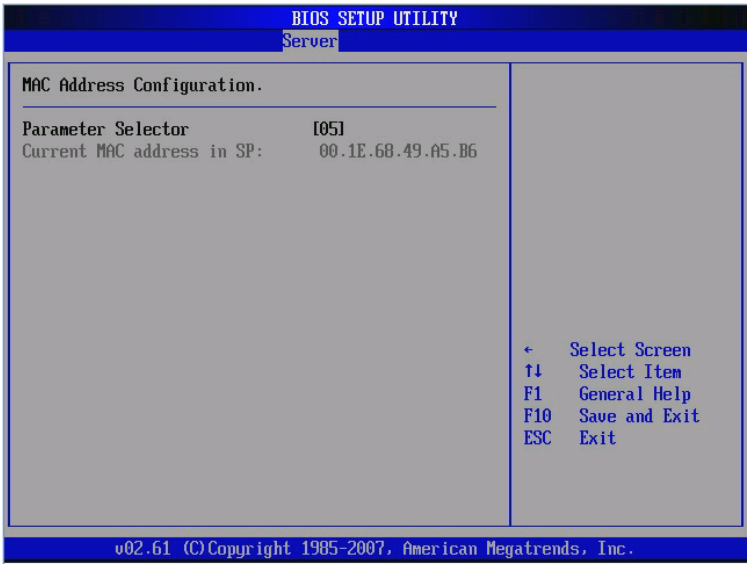


FIGURE C-30 BIOS Setup Utility: Server - Subnet Mask Configuration

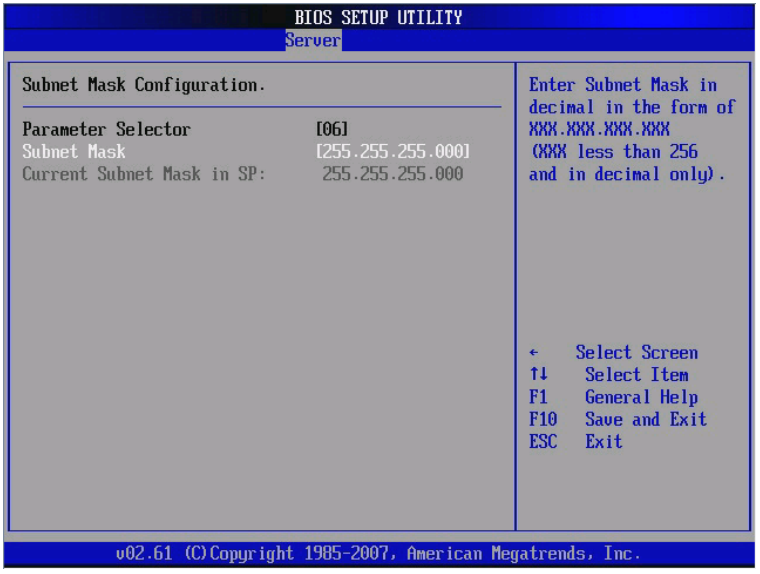


FIGURE C-31 BIOS Setup Utility: Server - View Service Processor (SP) System Event Log (SEL)

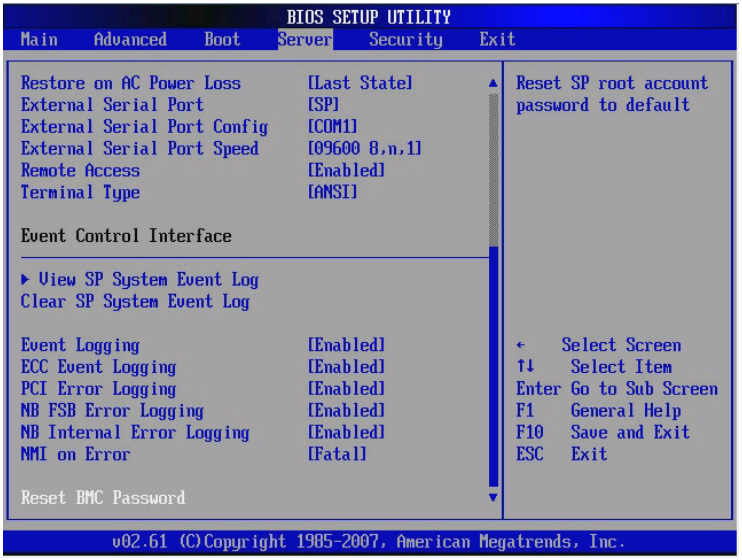


FIGURE C-32 BIOS Setup Utility: Server - Clear Service Processor (SP) System Event Log (SEL)

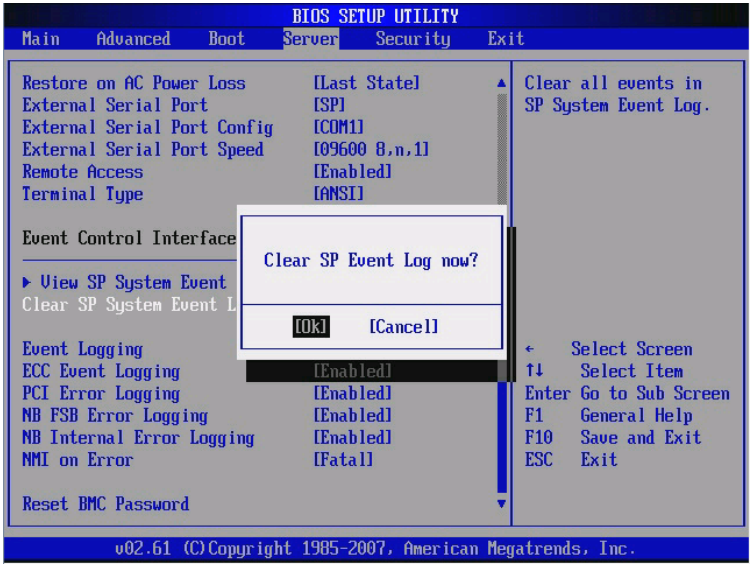
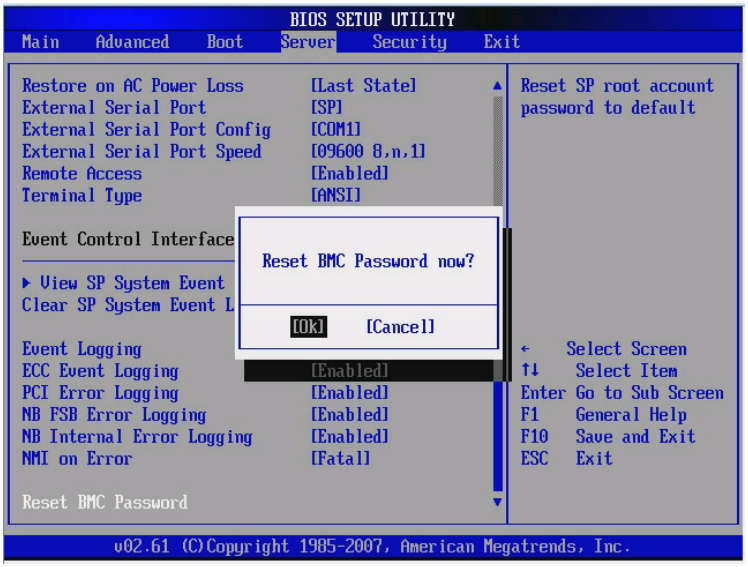


FIGURE C-33 BIOS Setup Utility: Server - Reset BMC Password (SP)



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 X4150 Server has the following BIOS Security screens:

FIGURE C-34 BIOS Setup Utility: Security

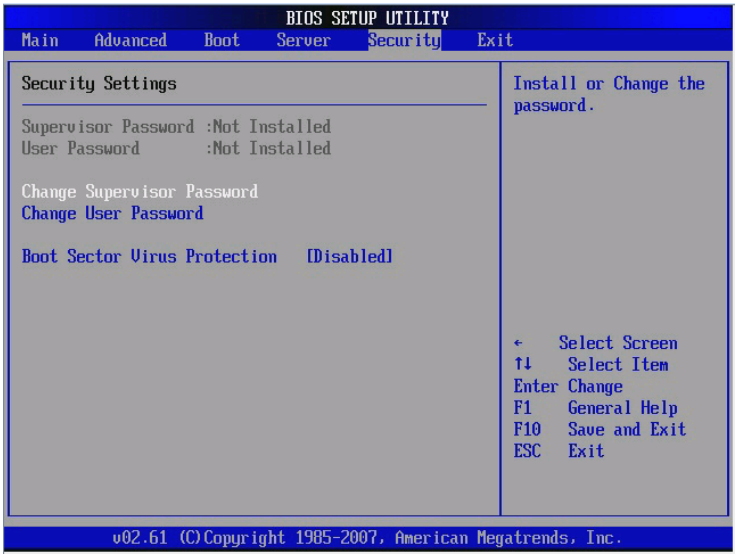


FIGURE C-35 BIOS Setup Utility: Security - Change Supervisor Password

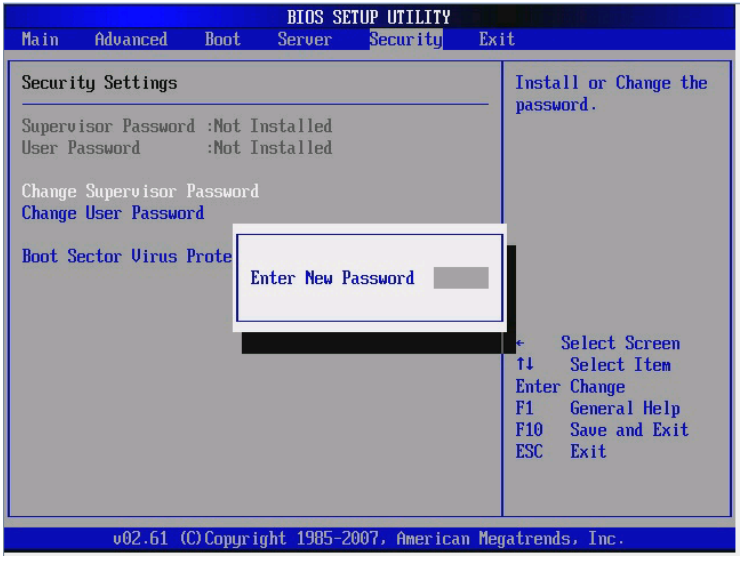
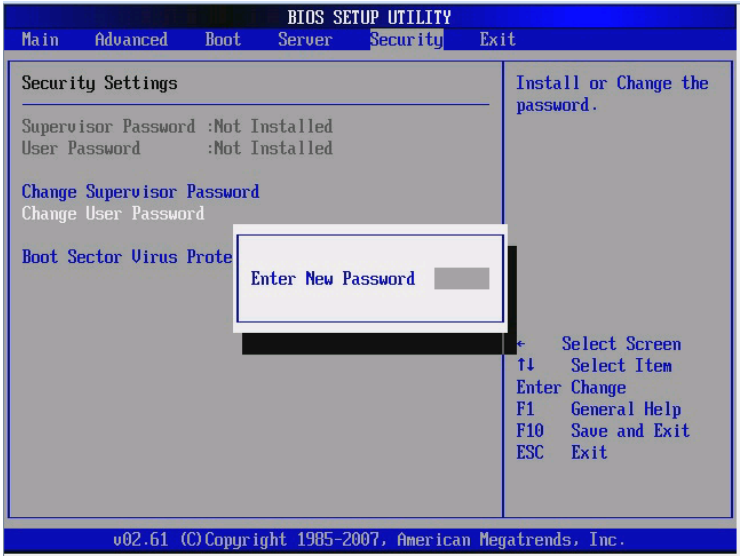


FIGURE C-36 BIOS Setup Utility: Security - Change User Password



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 X4150 Server has the following BIOS Exit screens:

FIGURE C-37 BIOS Setup Utility: Exit

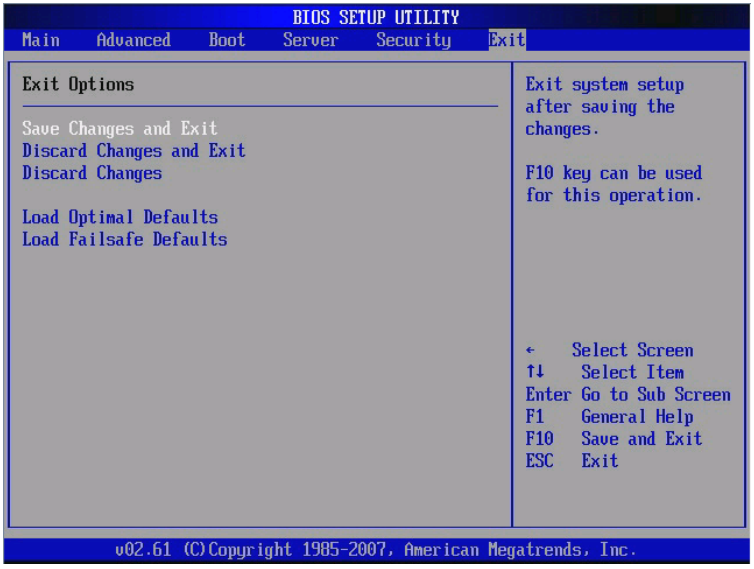


FIGURE C-38 BIOS Setup Utility: Exit - Save Configuration Changes

FIGURE C-39 BIOS Setup Utility: Exit - Discard Changes

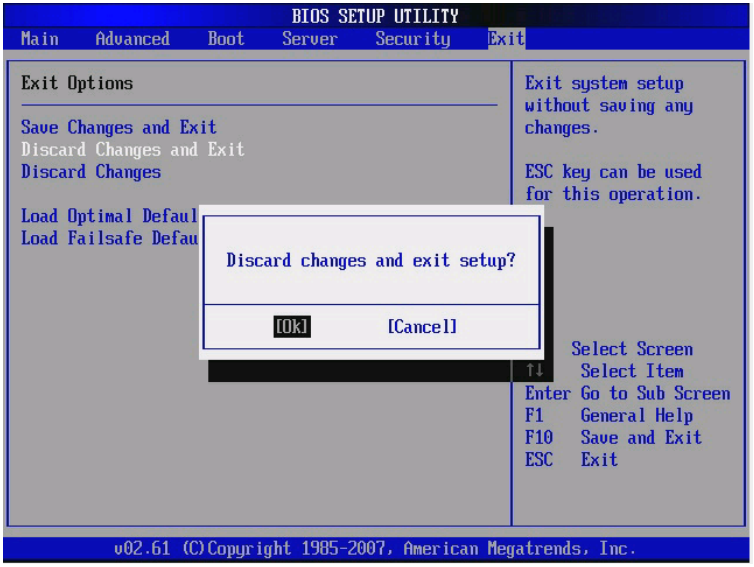


FIGURE C-40 BIOS Setup Utility: Exit - Discard Changes, Do Not Exit

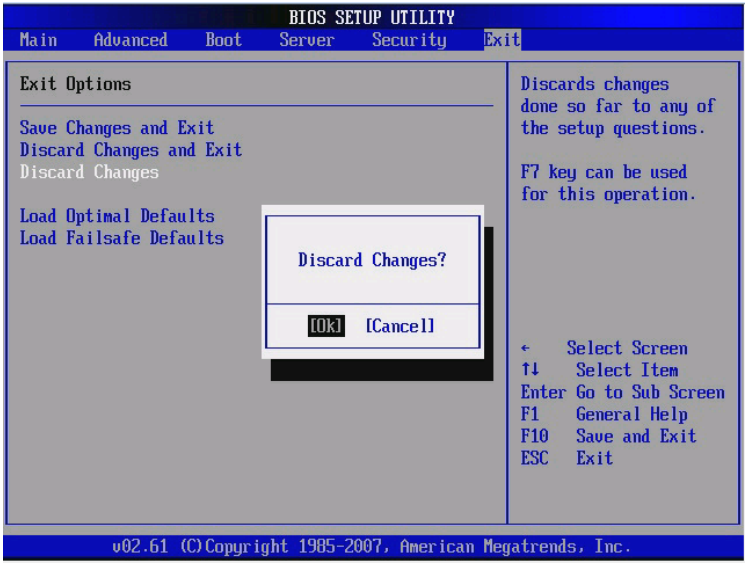


FIGURE C-41 BIOS Setup Utility: Exit - Load Optimal Defaults

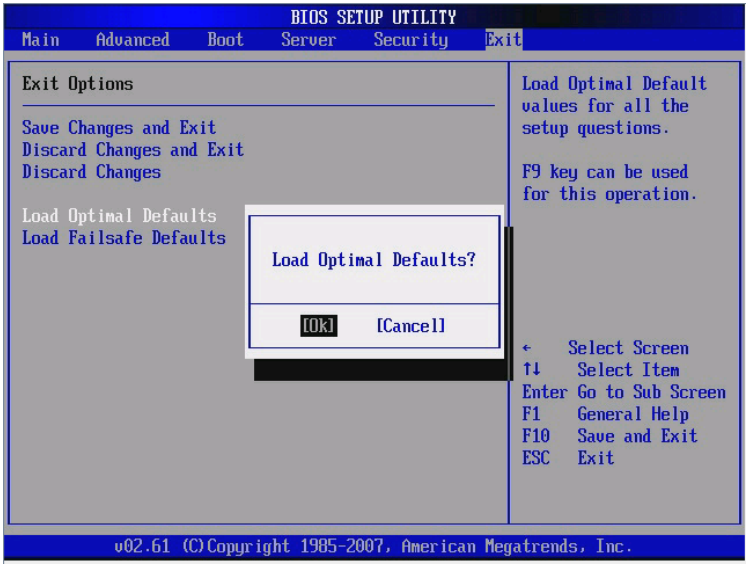
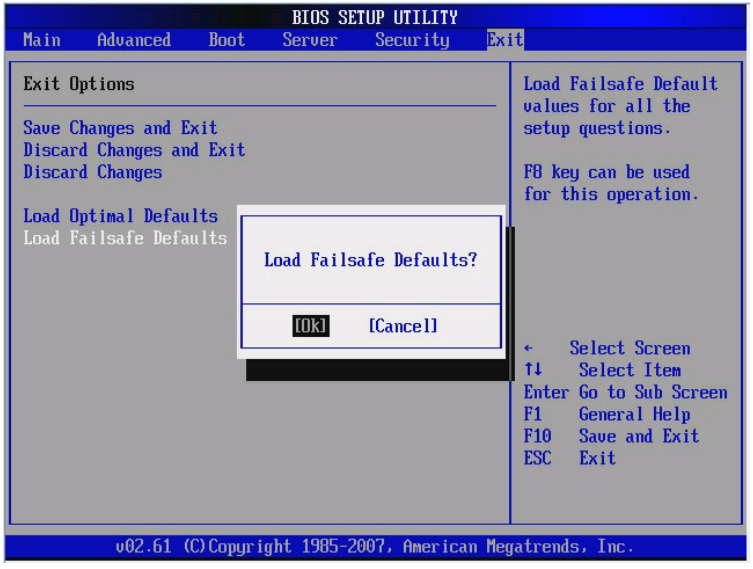


FIGURE C-42 BIOS Setup Utility: Exit - Load Fail-safe Defaults



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