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# Sun Fire X4170, X4270, and X4275 Servers Service Manual



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# Preface

The *Sun Fire X4170, X4270, and X4275 Servers Service Manual* provides detailed procedures for removing and replacing replaceable parts in the Sun Fire ™ X4170, X4270, and X4275 Servers. This manual also includes information about the use and maintenance of the servers.

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

## Product Updates

For product updates that you can download for the Sun Fire X4170, X4270, and X4275 Servers, visit the following web site:

`http://www.sun.com/download/index.jsp`

Find the Hardware Drivers section and click x64 Servers & Workstations. The Sun Fire X4170, X4270, and X4275 Servers sites contain updates for firmware and drivers, as well as CD-ROM `.iso` images.

## Related Documentation

For a description of the documentation set for the Sun Fire X4170, X4270, and X4275 Servers, see the *Sun Fire X4170, X4270, and X4275 Servers Getting Started Guide* (820-5833) that is packed with your server and also posted at the product's documentation site.

The related documents listed in the following table are available online at:

http://docs.sun.com/app/docs/prod/sf.x4170#hic

http://docs.sun.com/app/docs/prod/sf.x4270#hic

http://docs.sun.com/app/docs/prod/sf.x4275#hic

| Title | Content | Part Number | Format |
|---|---|---|---|
| *Sun Fire X4170, X4270, and X4275 Servers Product Notes* | Late-breaking information about the server | 820-5831 | PDF<br>HTML |
| *Sun Fire X4170, X4270, and X4275 Servers Getting Started Guide* | Basic installation information for setting up the server | 820-5833 | PDF<br>Print |
| *Sun Fire X4170, X4270, and X4275 Servers Installation Guide* | Detailed installation information for setting up the server | 820-5827 | PDF<br>HTML<br>Print option |
| *Sun Fire X4170, X4270, and X4275 Servers Linux, VMware, Solaris, and OpenSolaris Operating Systems Installation Guide* | Installation instructions for the Linux, VMware, and Solaris operating systems | 820-5828 | PDF<br>HTML |
| *Sun Fire X4170, X4270, and X4275 Servers Windows Operating System Installation Guide* | Installation instructions for the Windows Server operating system | 820-5829 | PDF<br>HTML |
| *Sun Installation Assistant for Windows and Linux User's Guide* | Instructions for using the Sun Installation Assistant to install the Windows and Linux operating systems | 820-3357 | PDF<br>HTML |
| *Sun Fire X4170, X4270, and X4275 Servers Service Manual* | Information and procedures for maintaining and upgrading the server | 820-5830 | PDF<br>HTML |
| *Sun x64 Servers Diagnostics Guide* | Information for diagnosing and troubleshooting the server | 820-6750 | PDF<br>HTML |
| *x64 Servers Utilities Reference Manual* | Information for using applications and utilities common to x64 servers | 820-1120 | PDF<br>HTML |

| Title | Content | Part Number | Format |
|---|---|---|---|
| Sun Integrated Lights Out Manager 3.0 Documentation Collection | These documents cover ILOM features and tasks that are common to servers and server modules that support ILOM 3.0. | 820-5523<br>820-6410<br>820-6411<br>820-6412<br>820-6413 | PDF<br>HTML |
| *Sun Integrated Lights Out Manager 2.0 User's Guide* | ILOM features and tasks that are common to servers that support ILOM | 820-1188 | PDF<br>HTML |
| *Sun Integrated Lights Out Manager 2.0 Supplement for Sun Fire X4170, X4270, and X4275 Servers* | ILOM information that is specific to the servers | 820-7629 | PDF<br>HTML |
| *Sun Integrated Lights Out Manager 3.0 Supplement for Sun Fire X4170, X4270, and X4275 Servers* | ILOM information that is specific to the servers | 820-7959 | PDF<br>HTML |
| *Sun Fire X4170, X4270, and X4275 Servers Safety and Compliance Guide* | Hardware safety and compliance information for the servers | 820-5832 | PDF |
| *Important Safety Information for Sun Hardware Systems* | Multilingual hardware safety and compliance information for all Sun hardware systems | 816-7190 | Print |

Translated versions of some of these documents are available at the web sites described above in French, Simplified Chinese, and Japanese. English documentation is revised more frequently and might be more up-to-date than the translated documentation.

# Documentation, Support, and Training

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# Using UNIX Commands

This document might not contain information about basic UNIX® commands and procedures such as shutting down the system, booting the system, and configuring devices. Refer to the following for this information:

- Software documentation that you received with your system
- Solaris™ Operating System documentation, which is at:

  http://docs.sun.com

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# Typographic Conventions

| Typeface* | Meaning | Examples |
|---|---|---|
| `AaBbCc123` | The names of commands, files, and directories; on-screen computer output | Edit your `.login` file.<br>Use `ls -a` to list all files.<br>`% You have mail.` |
| **`AaBbCc123`** | What you type, when contrasted with on-screen computer output | `% su`<br>`Password:` |
| *AaBbCc123* | Book titles, new words or terms, words to be emphasized. Replace command-line variables with real names or values. | Read Chapter 6 in the *User's Guide*.<br>These are called *class* options.<br>You *must* be superuser to do this.<br>To delete a file, enter `rm` *filename*. |

* The settings on your browser might differ from these settings.

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*Sun Fire X4170, X4270, and X4275 Servers Service Manual*, part number 820-5830-13.

CHAPTER 1

# Sun Fire X4170, X4270, and X4275 Servers Overview

This chapter provides an overview of the features of the servers.

The following information is included:


- Section 1.1, "Product Description" on page 1-1
- Section 1.2, "Server Chassis Overview" on page 1-5
- Section 1.3, "Sun Fire X4170, X4270, and X4275 Servers Front Panel Features" on page 1-8
- Section 1.4, "Sun Fire X4170, X4270, and X4275 Servers Back Panel Features" on page 1-10


## 1.1 Product Description

The server is an enterprise-class two-socket rackmount x64 system powered by the Quad-Core Intel® Xeon® processor, packing high-performance and expansion capability into a compact 1-RU or 2-RU footprint.

The Sun Fire X4170 Server product features are listed in TABLE 1-1.

**TABLE 1-1** Sun Fire X4170 Server System Features

| Feature | Description |
|---|---|
| Processor | • Quad-Core Intel Xeon processor 5500 series<br>• Supports up to two processors (eight CPU cores) with two Intel processor sockets |
| Memory | 18 slots for DDR3 DIMMs: Up to 144 GB of PC3-10600R 1333MHz ECC registered DDR3 memory |
| Ethernet ports | Four ports, 10/100/1000 Mbps, auto-negotiating through two separate controllers |
| Internal storage drives | Up to six 2.5-inch SATA disk drives or up to four solid-state drives (SSDs) with on-board SATA controller, or up to eight 2.5-inch SAS or SATA disk drives (or up to four SSDs) with optional HW RAID controller.<br>**Note -** When the on-board SATA controller is used, storage drives are not supported in the drive slots below the DVD drive |
| Removable media | One slimline DVD-R/W drive, supporting CD-R/W, CD+R/W, DVD-R/W, DVD+R/W formats |
| USB ports | Five USB 2.0 ports: Two in front, two in rear, and one internal |
| Service ports | • One RJ-45 serial management port (SER MGT) (default connection to access service processor)<br>• One 10/100Mbps network management port (NET MGT) (to access service processor)<br>• One HD-15 VGA video port |
| Cooling | Seven hot-swappable system fan modules (two fans per module) |
| PCIe interfaces | Three riser boards, each having one standard low profile PCIe slot (one x16 electrical/x16 mechanical, two x8 electrical/x8 mechanical) |
| Power | AC power: 100–120/200–240 V AC, 12/6 A, 50–60 Hz<br>Up to two hot-swappable 760W power supply units (PSUs) to provide N+N redundancy, with energy efficient design |

**TABLE 1-1** Sun Fire X4170 Server System Features *(Continued)*

| Feature | Description |
|---|---|
| Remote management | ILOM service processor providing:<br>• Command-line interface (CLI) over SSH<br>• Web-based browser interface (BUI) over HTTPS<br>• IPMI 2.0<br>• SNMP (v1, v2c, and v3)<br>• Remote graphical access (remote KVM) over Ethernet<br>• Remote storage over Ethernet |
| Operating system | Supports:<br>• Solaris 10 10/08 and subsequent releases<br>• OpenSolaris 2009.06 and subsequent releases<br>• Red Hat Enterprise Linux 4.7 (32-bit or 64-bit)<br>• Red Hat Enterprise Linux 5.3 (64-bit)<br>• SUSE Linux Enterprise Server 10 SP2 (64-bit)<br>• VMware ESX 3.5 Update 4<br>• VMware ESXi 3.5 Update 4<br>• Microsoft Windows Server 2003 (64-bit) Standard Edition/Enterprise Edition (R2 with SP2 or SP2) (32-bit or 64-bit)<br>• Microsoft Windows Server 2008 (32-bit/64-bit) Standard Edition/Enterprise Edition (R2 with SP2 or SP2) (32-bit or 64-bit) |
| Other software | Java™ Enterprise System with a 90-day trial license |

The Sun Fire X4270 and X4275 Servers product features are listed in TABLE 1-2.

**TABLE 1-2** Sun Fire X4270 and X4275 Servers System Features

| Feature | Description |
|---|---|
| Processor | • Quad-Core Intel Xeon processor 5500 series<br>• Supports up to two processors (eight CPU cores) with two Intel processor sockets |
| Memory | 18 slots for DDR3 DIMMs: Up to 144 GB of PC3-10600R 1333MHz ECC registered DDR3 memory |
| Ethernet ports | Four ports, 10/100/1000 Mbps, auto-negotiating through two separate controllers |

**TABLE 1-2** Sun Fire X4270 and X4275 Servers System Features *(Continued)*

| Feature | Description |
|---|---|
| Internal storage drives | **Storage drives supported by the Sun Fire X4270 and X4275 Servers with the LSI 3081E SAS RAID controller (required):**<br>• Up to sixteen 2.5-inch SAS/SATA HDDs (only supported on X4270 Server)<br>• Up to twelve 3.5-inch SAS/SATA HDDs (only supported on X4275 Server)<br>• CompactFlash slot (internally accessible)<br>**Storage drives supported by the Sun Fire X4270 and X4275 Servers with Sun StorageTek SAS RAID controller (required):**<br>• Up to eight 2.5-inch SAS/SATA SDDs (only supported on X4270 Server)<br>• Up to sixteen 2.5-inch SAS/SATA HDDs (only supported on X4270 Server)<br>• Up to eight 3.5-inch SAS/SATA SSDs (only supported on X4275 Server)<br>• Up to twelve 3.5-inch SAS/SATA HDDs (only supported on X4275 Server)<br>• CompactFlash slot (internally accessible) |
| Removable media | Sun Fire X4270 server only: One slimline DVD-R/W drive, supporting CD-R/W, CD+R/W, DVD-R/W, DVD+R/W formats |
| USB ports | • Sun Fire X4270 server: Five USB 2.0 ports: Two in front, two in rear, and one internal<br>• Sun Fire X4275 server: Three USB 2.0 ports: Two in rear and one internal |
| Service ports | • One RJ-45 serial management port (SER MGT) (default connection to access service processor)<br>• One 10/1000 Mbps network management port (NET MGT) (to access service processor)<br>• One HD-15 VGA video port |
| Cooling | • Six hot-swappable system fan modules (two fans per module)<br>• An air baffle, which facilitates processor/memory airflow |
| PCI interfaces | Three riser boards, each having two standard low profile PCIe slots. Total of six x8 slots, two with native x8 electrical/mechanical, and four with switched x8 electrical/mechanical. |
| Power | AC power: 100–120/200–240 V AC, 12/6 A, 50–60 Hz<br>Up to two hot-swappable 1050W power supply units (PSUs) to provide N+N redundancy, with energy efficient design |

**TABLE 1-2** Sun Fire X4270 and X4275 Servers System Features *(Continued)*

| Feature | Description |
|---|---|
| Remote management | ILOM service processor providing:<br>• Command-line interface (CLI) over SSH<br>• Web-based browser interface (BUI) over HTTPS<br>• IPMI 2.0<br>• SNMP (v1, v2c, and v3)<br>• Remote graphical access (remote KVM) over Ethernet<br>• Remote storage over Ethernet |
| Operating system | Supports:<br>• Solaris 10 10/08 and subsequent releases<br>• OpenSolaris 2009.06 and subsequent releases<br>• Red Hat Enterprise Linux 4.7 and 4.8 (32-bit or 64-bit)<br>• Red Hat Enterprise Linux 5.3 (64-bit)<br>• SUSE Linux Enterprise Server 10 SP2 (64-bit)<br>• SUSE Linux Enterprise Server 11 (64-bit)<br>• VMware ESX 3.5 Update 4<br>• VMware ESXi 3.5 Update 4<br>• VMware ESX 4.0 and ESXi 4.0<br>• Microsoft Windows Server 2003 (64-bit) Standard Edition/Enterprise Edition (R2 with SP2 or SP2) (32-bit or 64-bit)<br>• Microsoft Windows Server 2008 (32-bit/64-bit) Standard Edition/Enterprise Edition (R2 with SP2 or SP2) (32-bit or 64-bit) |
| Other software | Java™ Enterprise System with a 90-day trial license |

See the *Sun Fire X4170, X4270, and X4275 Servers Product Notes* for additional information.

# 1.2 Server Chassis Overview

The following sections provide an overview of the server chassis.

## 1.2.1 Infrastructure Boards

The server boards are listed in TABLE 1-3.

**TABLE 1-3** Infrastructure Boards

| Board | Description | Reference |
|---|---|---|
| **Motherboard** | The motherboard includes CPU modules, slots for 18 DIMMs, memory control subsystems, and the ILOM service processor.<br>The ILOM service processor (SP) controls the host power and monitors host system events (power and environmental). The ILOM SP draws 3.3V standby power from the power supply when AC power is applied (without the host being powered on) even when the system is turned off. | Section 4.7, "Servicing the Motherboard Assembly" on page 4-35 |
| **Power distribution board** | The power supplies connect directly to the power distribution board.<br>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. The power distribution board also has a connector for connecting the top-cover interlock ("kill") switch. | • For Sun Fire X4170 and X4270 Servers: Section 5.6, "Servicing the Power Distribution Board" on page 5-22<br>• For Sun Fire X4275 Server: Section 6.5, "Servicing the Power Distribution Board" on page 6-13 |
| **Paddle card** | This board serves as the interconnect between the power distribution board and the fan power boards, storage drive backplane, and I/O board. It also contains the top-cover interlock ("kill") switch.<br>**Note -** This card is only used on the Sun Fire X4170 and X4270 Servers. | Section 5.7, "Servicing the Paddle Card" on page 5-28 |
| **Connector Break Out Board** | This board serves as the interconnect between the power distribution board and the fan power boards, storage drive backplane, and I/O board. It also contains the top-cover interlock ("kill") switch.<br>**Note -** This board is only used on the Sun Fire X4275 Server. | Section 6.6, "Servicing the Connector Break Out Board" on page 6-15 |

**TABLE 1-3** Infrastructure Boards *(Continued)*

| Board | Description | Reference |
|---|---|---|
| **Fan power boards** | The power boards carry power to the system fan modules. In addition, the boards contain fan module status LEDs, and transfer $I^2C$ data for the fan modules. | • For Sun Fire X4170 and X4270 Servers: Section 5.2, "Servicing the Fan Power Boards" on page 5-4<br>• For Sun Fire X4275 Server: Section 6.1, "Servicing the Fan Power Board" on page 6-2 |
| **Storage drive backplane** | This board includes the connectors for the storage drives, as well as the interconnect for the I/O board, Power and Locator buttons, and system/component status LEDs. The Sun Fire X4170 Server has an eight-disk backplane. The Sun Fire X4270 Server has a sixteen-disk backplane. The Sun Fire X4275 Server has a twelve-disk backplane. Each storage drive has an LED for Power/Activity, Fault, and Ok-to-Remove. | • For Sun Fire X4170 and X4270 Servers: Section 5.4, "Servicing the Storage Drive Backplane" on page 5-15<br>• For Sun Fire X4275 Server: Section 6.3, "Servicing the Storage Drive Backplane" on page 6-6 |
| **Front I/O board** | This board connects directly to the storage drive backplane. It is packaged with the DVD drive as a single unit.<br>**Note -** This board is only used on the Sun Fire X4170 and X4270 Servers. | Section 5.1, "Servicing the DVD/USB Module" on page 5-2 |
| **PCIe risers** | There are three risers per system, each attached to the rear of the motherboard.<br>• In the Sun Fire X4170 Server, each riser supports one PCIe card.<br>• In the Sun Fire X4270 and X4275 Servers, each riser supports two PCIe cards. There is one passive riser with two x8 slots and two active risers (switched PCIe), each with two x8 slots.<br>• All PCIe slots support PCIe Gen 2. | Section 4.3, "Servicing PCIe Risers" on page 4-15 |

## 1.2.2 Dimensions

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

**TABLE 1-4** Servers Dimensions

| Parameter | Sun Fire X4170 Server | Sun Fire X4270 Server | Sun Fire X4275 Server |
|---|---|---|---|
| Height | 1.71 inches/43.43 mm | 3.34 inches/84.84 mm | 3.45 inches/87.6 mm |
| Width | 16.75 inches/425.45 mm | 16.75 inches/425.45 mm | 17.2 inches/436.8 mm |
| Depth | 28.0 inches/711.25 mm | 28.0 inches/711.25 mm | 30.13 inches/765.25 mm |
| Weight | 36 lbs/16.36 kg | 49 lbs/22.27 kg | 65 lbs/29.54 kg |

## 1.2.3 Internal System Cables

The server internal cables are listed in TABLE 1-5.

**TABLE 1-5** Server Cables

| Cable | Connects... |
|---|---|
| Top cover interlock | To the power distribution board |
| Ribbon cable | Between the power distribution board and the motherboard |
| Storage drive data cable(s) | Between the motherboard HBA PCI-Express card and the storage drive backplane. The Sun Fire X4170 Server has two storage drive data cables and the Sun Fire X4270 and X4275 Servers have one storage drive data cable. |

# 1.3 Sun Fire X4170, X4270, and X4275 Servers Front Panel Features

FIGURE 1-1, FIGURE 1-2, and FIGURE 1-3 shows front panel features on the Sun Fire X4170, X4270, and X4275 Servers respectively.

**FIGURE 1-1** Sun Fire X4170 Server Front Panel Features

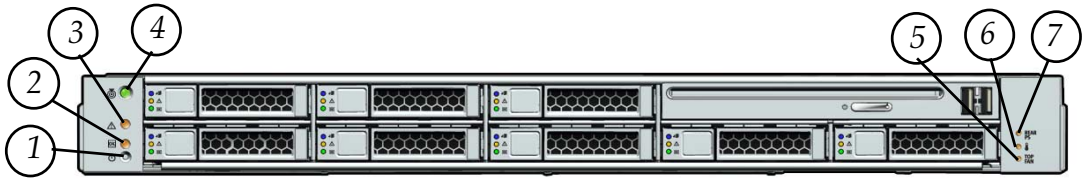



**Figure Legend**

| | | | |
|---|---|---|---|
| **1** | Power button | **5** | Fan Module Service Action Required LED |
| **2** | Power/OK LED | **6** | System Overtemperature LED |
| **3** | Service Action Required LED | **7** | Power Supply Service Action Required LED |
| **4** | Locator LED/Locator button | | |

**FIGURE 1-2** Sun Fire X4270 Server Front Panel Features




**Figure Legend**

| | | | |
|---|---|---|---|
| **1** | Power button | **5** | Fan Module Service Action Required LED |
| **2** | Locator LED/Locator button | **6** | System Overtemperature LED |
| **3** | Service Action Required LED | **7** | Power Supply Service Action Required LED |
| **4** | Power/OK LED | | |

**FIGURE 1-3** Sun Fire X4275 Server Front Panel Features

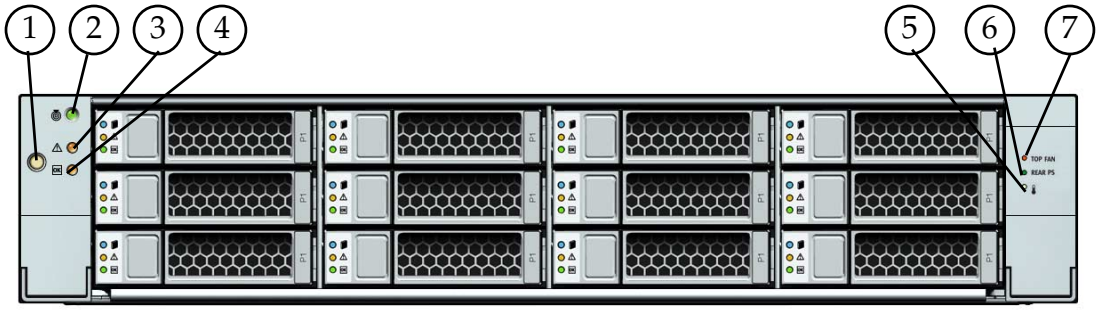



**Figure Legend**

| | | | |
|---|---|---|---|
| **1** | Power button | **5** | System Overtemperature LED |
| **2** | Locator LED/Locator button | **6** | Power Supply Service Action Required LED |
| **3** | Service Action Required LED | **7** | Fan Module Service Action Required LED |
| **4** | Power/OK LED | | |

# 1.4 Sun Fire X4170, X4270, and X4275 Servers Back Panel Features

FIGURE 1-4 shows back panel features on the Sun Fire X4170 Server. For more detailed information about ports and their uses, see the *Sun Fire X4170, X4270, and X4275 Servers Installation Guide*.

**FIGURE 1-4** Sun Fire X4170 Server Rear Panel Features

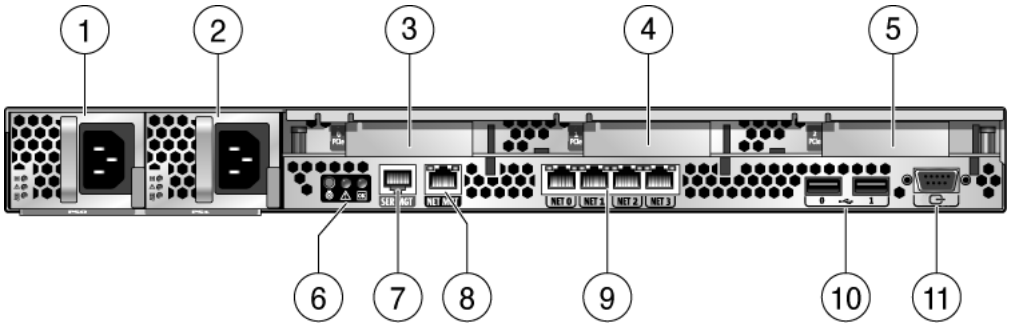



**Figure Legend**

| | | | |
|---|---|---|---|
| **1** | Power Supply Unit (PSU) 0 | **7** | Serial Management Port |
| **2** | Power Supply Unit (PSU) 1 | **8** | Network Management Port |
| **3** | PCIe 0 | **9** | Gigabit-Ethernet Ports (0, 1, 2, 3) |
| **4** | PCIe 1 | **10** | USB 2.0 Ports (0, 1) |
| **5** | PCIe 3 | **11** | HD-15 Video Port |
| **6** | Rear Panel System Status LEDs<br>*Locator LED/Locator button (white)*<br>*Service Action Required LED (amber)*<br>*Power/OK LED (green)* | | |

FIGURE 1-5 shows rear panel features on the Sun Fire X4270 and X4275 Servers. For more detailed information about ports and their uses, see the *Sun Fire X4170, X4270, and X4275 Servers Installation Guide*.

**FIGURE 1-5** Sun Fire X4270 and X4275 Servers Back Panel Features

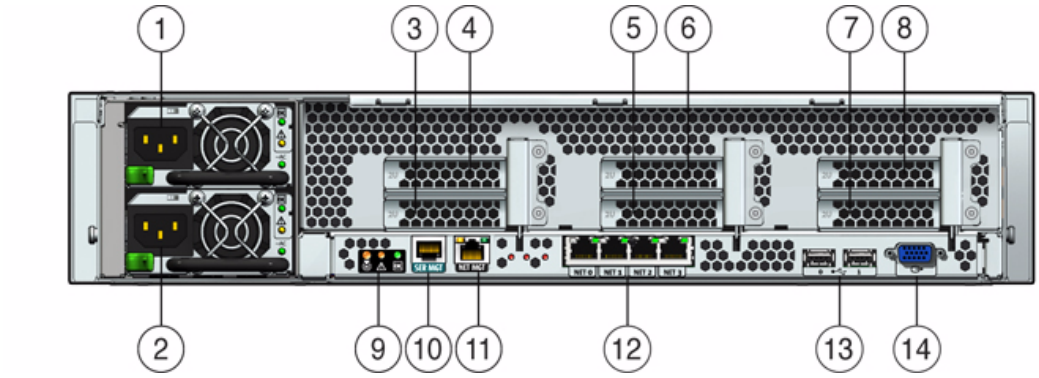



**Figure Legend**

| | | | |
|---|---|---|---|
| **1** | Power Supply Unit (PSU) 1 | **8** | PCIe Slot 5 |
| **2** | Power Supply Unit (PSU) 0 | **9** | Rear Panel System Status LEDs<br>*Locator LED/Locator button (white)*<br>*Service Action Required LED (amber)*<br>*Power/OK LED (green)* |
| **3** | PCIe Slot 0 | **10** | Serial Management Port |
| **4** | PCIe Slot 3 | **11** | Network Management Port |
| **5** | PCIe Slot 1 | **12** | Gigabit-Ethernet Ports (0, 1, 2, 3) |
| **6** | PCIe Slot 4 | **13** | USB Ports 2.0 (0, 1) |
| **7** | PCIe Slot 2 | **14** | HD-15 Video Port |

For a detailed description of PCIe slots, see Section 4.4.1, "PCIe Card Configuration Guidelines" on page 4-22.

CHAPTER 2

# Preparing to Service the System

This chapter describes how to prepare the servers for servicing.

The following topics are covered:


- Section 2.1, “Safety Information” on page 2-1
- Section 2.2, “Required Tools” on page 2-2
- Section 2.3, “Obtaining the Chassis Serial Number” on page 2-2
- Section 2.4, “Powering On and Off the Server” on page 2-3
- Section 2.5, “Wake On LAN–Remote Power On” on page 2-6
- Section 2.6, “Configuring Support for TPM” on page 2-8
- Section 2.7, “Extending the Server to the Maintenance Position” on page 2-13
- Section 2.8, “Removing the Server From the Rack” on page 2-15
- Section 2.9, “Performing Electrostatic Discharge and Antistatic Prevention Measures” on page 2-17
- Section 2.10, “Removing the Top Cover” on page 2-19


## 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 X4170, X4270, and X4275 Servers.



**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 X4170, X4270, X4275 Servers Safety and Compliance Guide* (820-5832).
- 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 X4170, X4270, and X4275 Servers can be serviced with the following tools:

- Antistatic wrist strap
- Antistatic mat
- Allen (hex) wrench
- 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 or another sticker on the top of the server.

# 2.4 Powering On and Off the Server

Refer to the following topics in this section to power on and off a server:


- Section 2.4.1, "Power On the Server" on page 2-3
- Section 2.4.2, "Power Off the Server" on page 2-5
- Section 2.4.3, "Power Off the Server Using the Service Processor Command-Line Interface" on page 2-6


## 2.4.1 Power On the Server

The following procedure assumes that the power cord is connected to the server.

1. **Verify that the server is in the standby power state.**

   In the Standby power state, the OK/Power LED on the front panel of the server blinks (0.1 second on, 2.9 seconds off). The standby power state indicates that the server SP is active but the server host is powered off.

   For the location of the OK/Power LED, see FIGURE 2-1, FIGURE 2-2, and FIGURE 2-3.

2. **Apply full power to the server SP and host.**

   For example:

   - Local server power-on. Use a stylus (or other pointed object) to momentarily press and release the recessed Power button on the front panel of the server.

     For the location of the Power button on each type of server, see FIGURE 2-1, FIGURE 2-2, and FIGURE 2-3.

   - ILOM SP web interface power-on. Log in to the ILOM web interface for the server SP and select: **Remote Control -> Remote Power Control->Power On**.
   - ILOM SP CLI power on. Log in to the SP ILOM CLI and type: **`start /SYS`**

   The Power/OK LED illuminates a SLOW BLINK while the system is booting. A STEADY ON green light illuminates when the server module SP and host are both powered on.

**FIGURE 2-1** Sun Fire X4170 Server Front Panel Power/OK LED

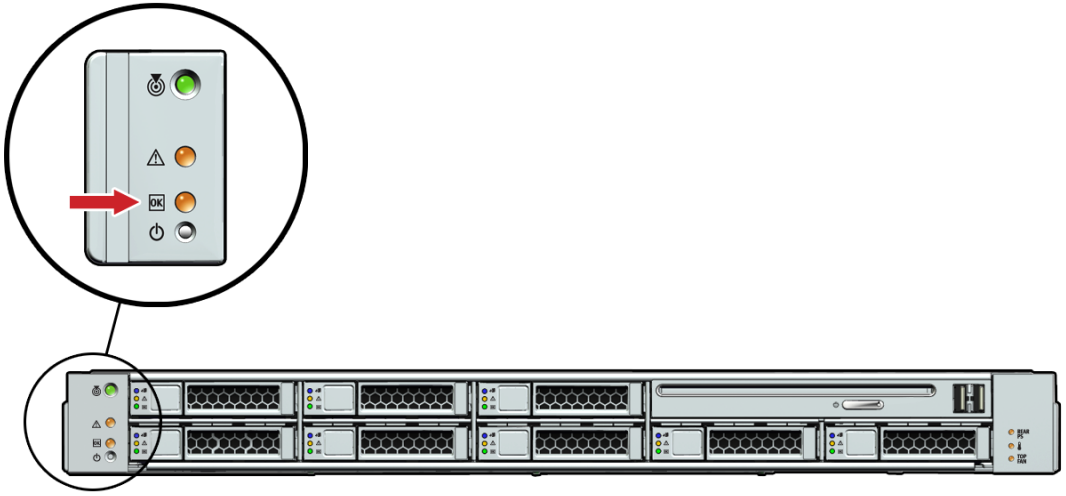


**FIGURE 2-2** Sun Fire X4270 Server Front Panel Power/OK LED

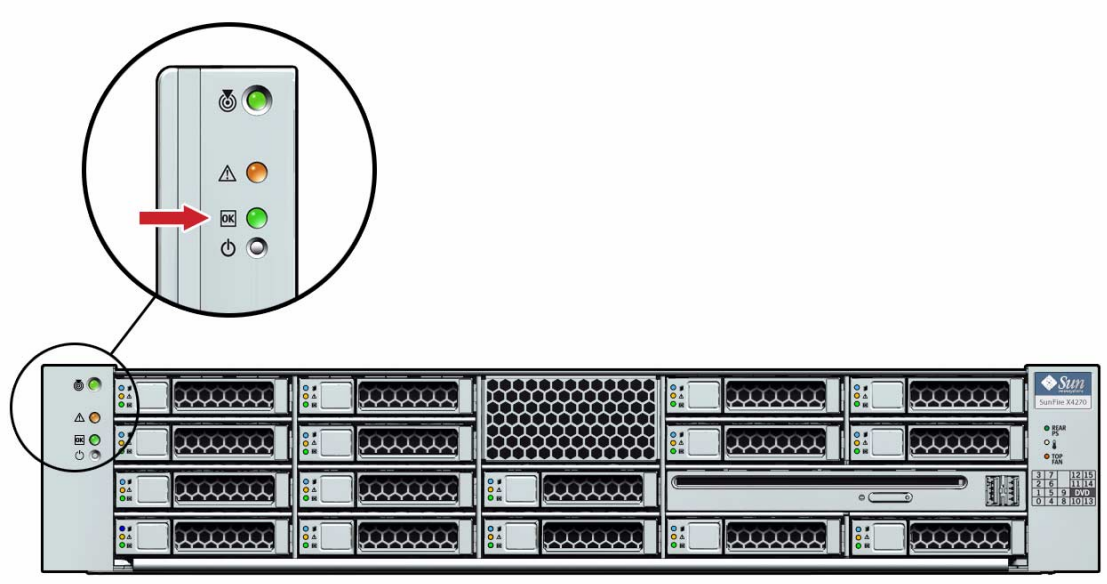
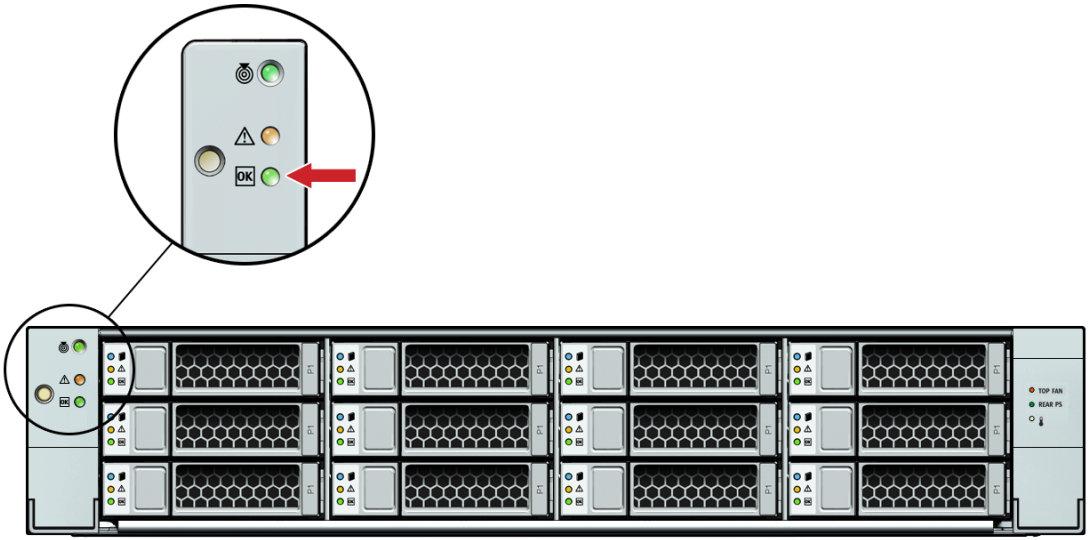


**FIGURE 2-3** Sun Fire X4275 Server Front Panel Power/OK LED




## 2.4.2 Power 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 pencil, pen, or other pointed object, to press and release the Power button on the front panel (see FIGURE 2-1, FIGURE 2-2 and FIGURE 2-3). 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 five seconds until the main power is off and the server enters standby power mode (see FIGURE 2-1, FIGURE 2-2 and FIGURE 2-3). When the main power is off, the Power/OK LED on the front panel flashes, indicating that the server is in standby power mode.<br>**Caution -** All applications and files will be closed abruptly without saving changes. File system corruption might occur. |
| **ILOM SP CLI shutdown** | See Section 2.4.3, "Power Off the Server Using the Service Processor Command-Line Interface" on page 2-6. |



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

### 2.4.3 Power Off the Server Using the Service Processor Command-Line Interface

You can use the ILOM 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.

1. **Log in as root. Type:**

   **`ssh root@`***service_processor_ip_address*

   Password: *root_password* (The default password is `changeme`.)

   The ILOM prompt appears (`->`).

   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. **Power down the server. Type:**

   `->` **`stop /SYS`** (for a Graceful shutdown as defined in TABLE 2-1)

   `->` **`stop -f/SYS`** (for an Emergency Shut as defined in TABLE 2-1)

For additional information, refer to the *Sun Integrated Lights Out Manager 2.0 User's Guide* (820-1188).

## 2.5 Wake On LAN–Remote Power On

Wake On LAN (WOL) enables you to power on a server from another location over a network connection. Specifically this feature provides the ability for the network controller in the server to power the server on when a "magic packet" is received over the network from a remote system.

## 2.5.1 WOL Setup Requirements

1. The Wake On LAN (WOL) option in the Boot menu of the BIOS must be enabled.

   For details, see Section 2.5.2, "Enable or Disable WOL in BIOS" on page 2-7.

2. The server must be connected to an active power source.

3. The server's WOL network port must be connected to an active Ethernet connection.

4. You must have another system on the network that can send magic packets to network adapter (MAC address) that is installed in the server.

   Typically you could use a magic packet program to send the packets over the network to wake a shutdown (WOL-enabled) server. For more details about how to send a magic packet over the network to a WOL-enabled server, refer to the documentation supplied with the magic packet program.

5. Test the WOL implementation by ensuring that the magic packet sent over the network powers on the server.

   If the test fails, verify that your network environment supports magic packets. For instance, some switches and routers might block magic packets.

## 2.5.2 Enable or Disable WOL in BIOS

1. **Reset the power on the server.**

   For details, see Section 2.4, "Powering On and Off the Server" on page 2-3.

2. **Press F2 to enter the BIOS Setup utility, when the system is booting.**

3. **In the BIOS Setup utility, use the arrow keys (or Tab key) to select Boot in the BIOS main menu.**

4. **In the Boot dialog, highlight the Wake ON LAN setting, and then press Enter.**

   A tab appears listing the Wake ON LAN options, one for each network port.

5. **In the tab, enable the appropriate port (for example, `NET0 WAKE ON LAN` for network port 0), then press Enter and do one of the following:**

   - Select `Enabled` to enable the Wake On LAN setting.

   *or*

   - Select `Disabled` to disable the Wake On LAN setting.

6. **Press F10 to save the setting and exit the BIOS Setup utility.**

# 2.6 Configuring Support for TPM

If you intend to use the Trusted Platform Module (TPM) feature set that is provided in Windows 2003 and Windows 2008, you must configure the server to support this feature.

---

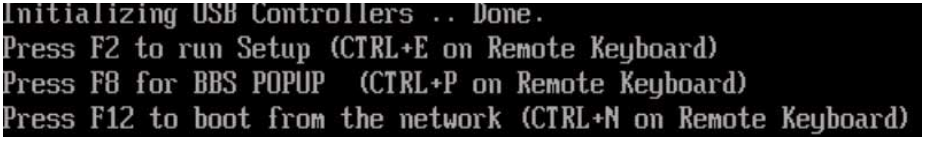
**Note –** TPM enables you to administer the TPM security hardware in your server. For additional information about implementing this feature, refer to the Windows Trusted Platform Module Management documentation provided by Microsoft.

---

## 2.6.1 Configure TPM Support

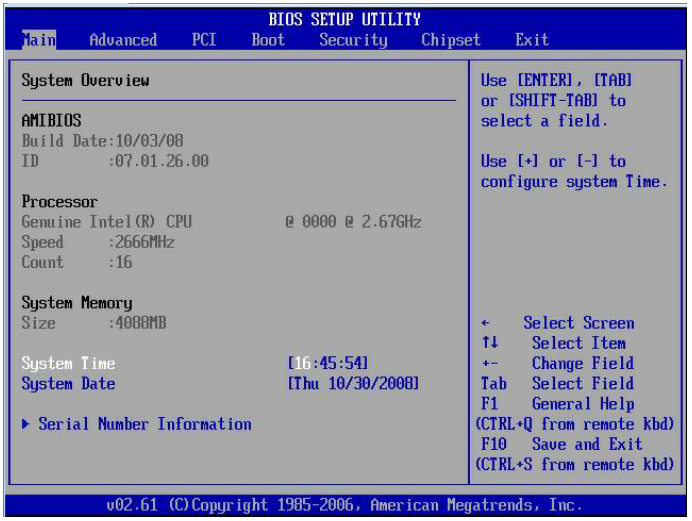
1. **Power on or power cycle the server.**
2. **To enter the BIOS Setup utility, press the F2 key while the system is performing the power-on self-test (POST) (**FIGURE 2-4**).**

**FIGURE 2-4** Press F2 to Enter the BIOS Setup utility




When BIOS is started, the main BIOS Setup utility top-level screen appears (FIGURE 2-5).

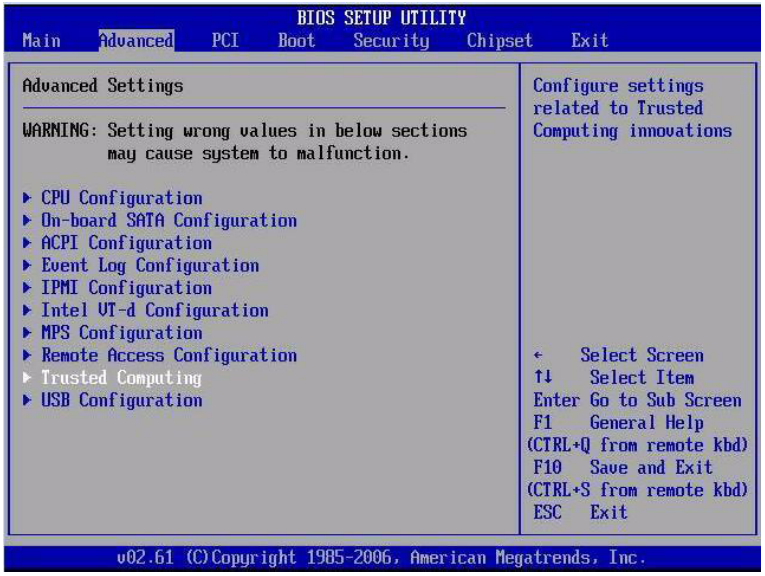
**FIGURE 2-5** BIOS Setup Utility Main Screen




3. **In the BIOS Setup utility screen, select the Advanced menu option.**

   The Advanced page appears (FIGURE 2-6).

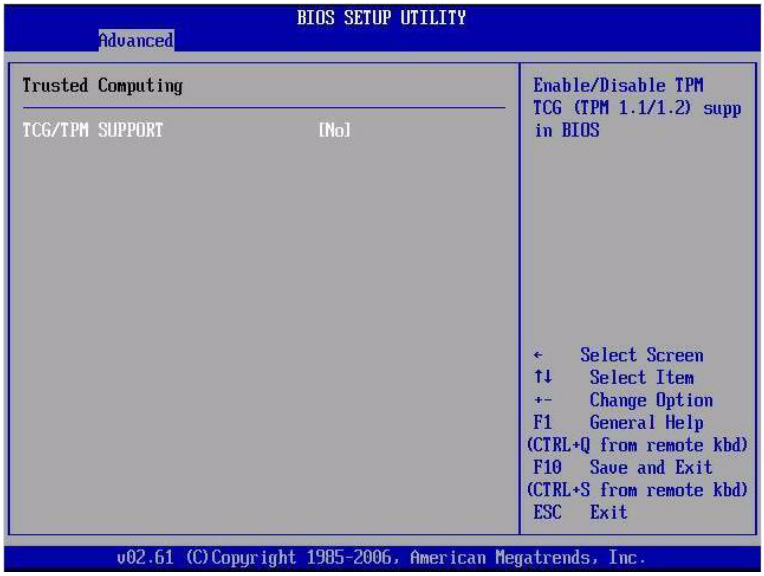
**FIGURE 2-6** Advanced Dialog




4. **In the Advanced dialog, select Trusted Computing and press Enter.**

   The Trusted Computing dialog appears (FIGURE 2-7).

**FIGURE 2-7** Trusted Computing Dialog




5. **In the Advanced Trusted Computing dialog, select the TCG/TPM Support.**

   A pop-up dialog box appears.

6. **In the pop-up tab, set the TCG/TPM Support option to Yes and click Ok.**

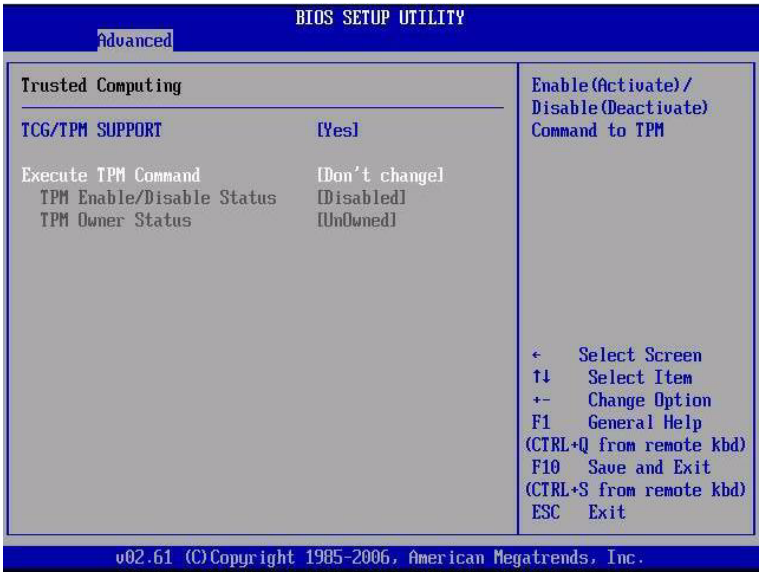
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**Note –** Even if the TCG/TPM Support was already set to `Yes` in the dialog shown above, continue on and complete the remaining steps of this procedure to ensure that all TPM configuration requirements are satisfied.

---

The updated Trusted Computing dialog appears and shows that the TCG/TPM Support setting has changed to Yes (FIGURE 2-8).

**FIGURE 2-8** Trusted Computing Dialog Showing TCG/TPM Support Enabled




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**Note –** In the above screen, the Execute TPM Command setting shows the default, `Don't Change`.

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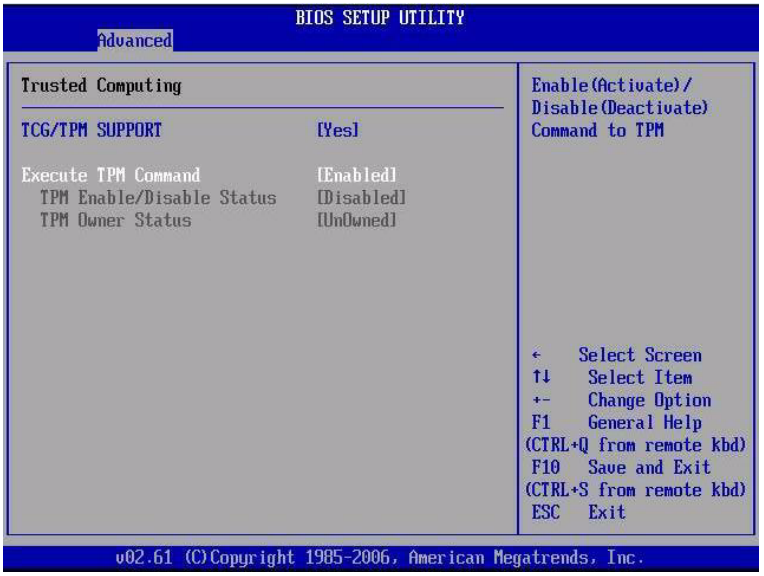
7. **In the Advanced Trusted Computing dialog, select the Execute TPM Command option setting.**

   A pop-up dialog box appears.

8. **In the pop-up tab, set the Execute TPM Command option to Enabled and click Ok.**

   The updated Trusted Computing dialog appears and shows that the Execute TPM Command setting has changed to `Enabled` (FIGURE 2-9).

**FIGURE 2-9** Execute TPM Command Setting Enabled




9. **Press F10 to save the changes and exit BIOS.**

10. **To verify that TPM support is configured, do the following:**

    a. **Reboot the server.**

    b. **To enter the BIOS Setup utility, press the F2 key while the system is performing the power-on self-test (POST) (**FIGURE 2-4**).**

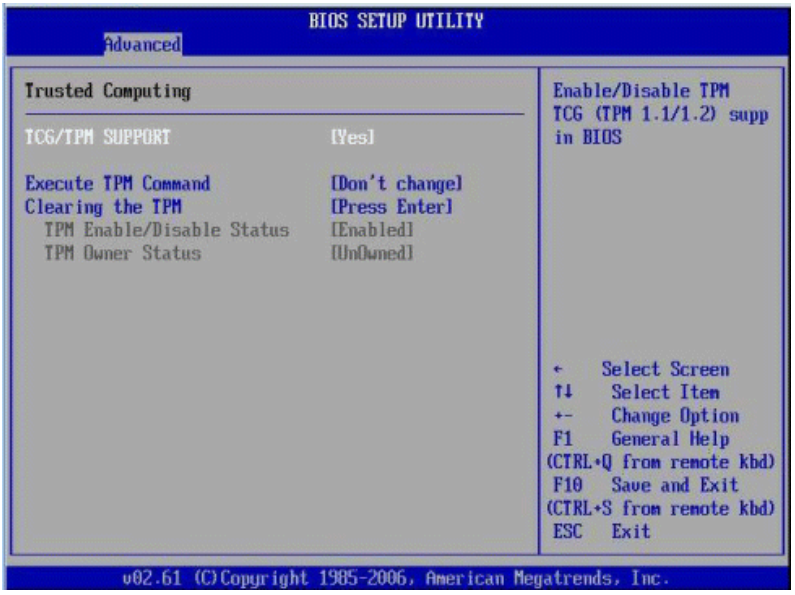
    When BIOS is started, the main BIOS Setup utility top-level screen appears (see FIGURE 2-5).

    c. **Select Advanced -> Trusted Computing and press Enter.**

    The updated Trusted Computing dialog appears (FIGURE 2-10).

    Confirm that the TCG/TPM Support setting is set to `Yes` and the TPM Enabled/Disable Status is set to `Enabled`.

**FIGURE 2-10** Updated TPM Enabled/Disabled Setting




11. **Press F10 to exit BIOS.**

    This completes the TPM configuration.

## 2.7 Extending the Server to the Maintenance Position

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

- Storage drives
- Fan modules
- Power supplies
- DVD/USB module
- Fan power boards
- DDR3 DIMMs
- PCIe Riser cards
- 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.

## 2.7.1 Extend the Server to the Maintenance Position

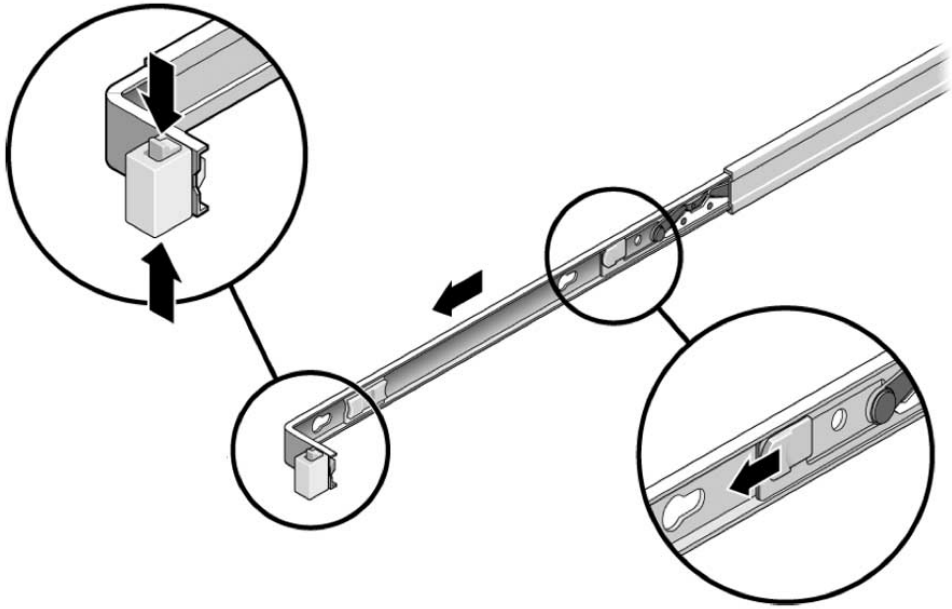
1. **Verify that no cables will be damaged or will interfere when the server is extended.**

   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.

2. **From the front of the server, release the two slide release latches (**FIGURE 2-11**).**

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

**FIGURE 2-11** Slide Release Latches



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

# 2.8 Removing the Server From the Rack

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

- Motherboard
- Power distribution board
- Sun Fire X4170 and X4270 Servers paddle card
- Sun Fire X4275 Server connector breakout board
- Sun Fire X4170 and X4270 Servers storage drive cage
- Storage drive backplane
- Front panel light-pipe assemblies

## 2.8.1 Remove Server From the Rack



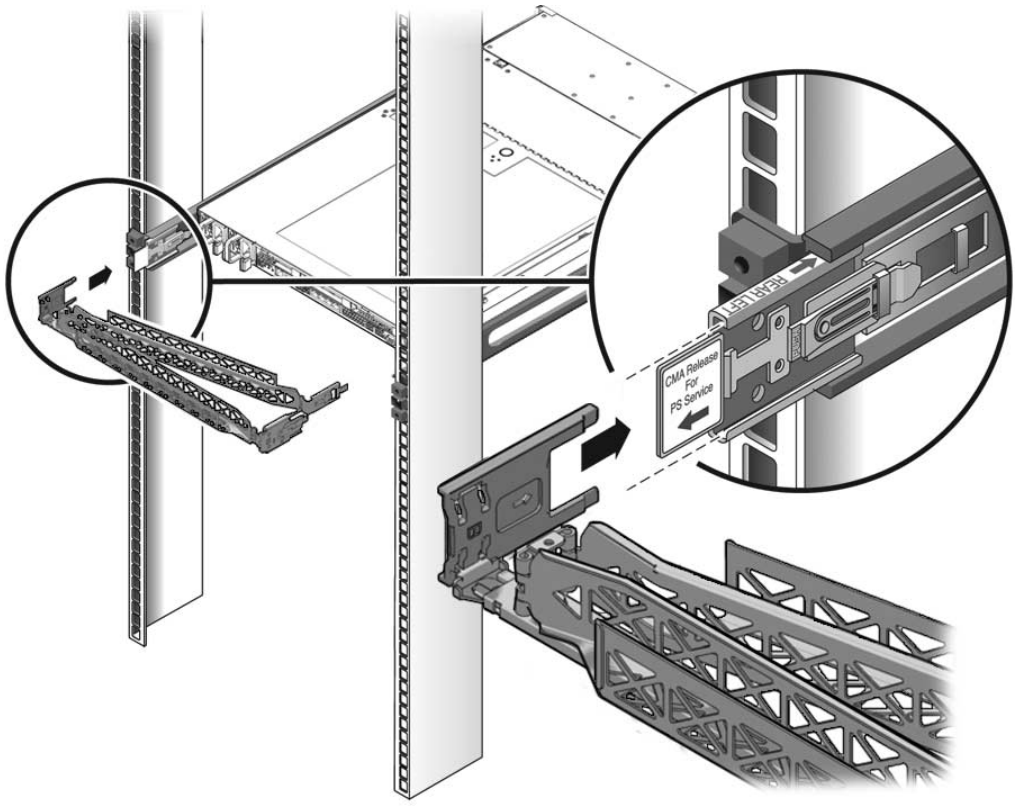
**Caution –** If necessary, use two people to dismount and carry the chassis.

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

   See Section 2.7, "Extending the Server to the Maintenance Position" on page 2-13.
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 2-12).**

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

**FIGURE 2-12** Metal Lever and Cable Management Arm

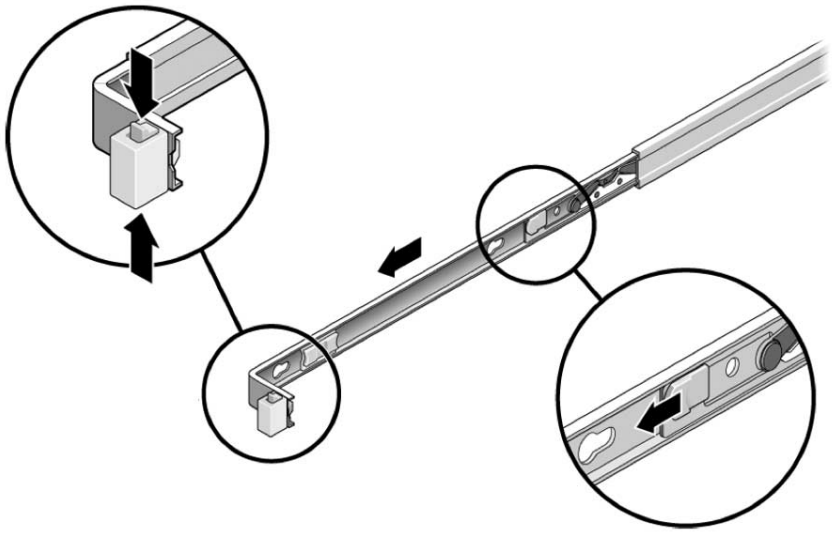



**Caution –** If necessary, use two people to dismount and carry the chassis.

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 2-13**).**

   A release tab is located on each rail.

**FIGURE 2-13** Release Tabs and Slide Assembly



**5. Set the server on a sturdy work surface.**

# 2.9 Performing Electrostatic Discharge and Antistatic Prevention Measures

## 2.9.1 Electrostatic Discharge Safety Measures

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



**Caution –** Circuit boards and storage 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 and drives. 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.

### 2.9.1.1 Using an Antistatic Wrist Strap

Wear an antistatic wrist strap and use an antistatic mat when handling components such as storage drive assemblies, circuit boards, or PCIe 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 X4170, X4270, and X4275 Servers. However, antistatic wrist straps are still included with options and components.

---

### 2.9.1.2 Using an Antistatic Mat

Place ESD-sensitive components on an antistatic mat.

## 2.9.2 Use ESD Handling Precautions

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.

# 2.10 Removing the Top Cover

The top cover and fan door are integrated.



**Caution –** If the top cover is removed without first removing the AC power cords, then not only will the server host shutdown, but also this condition will be flagged as a system fault (that is, the fault LEDs will light). In this situation, the SP will need to be power-cycled (remove/reinsert AC power cords) before the server can be properly returned to service.

**Note –** Servicing some components requires that the top cover be removed.

Refer to the following topics to remove the server top cover:

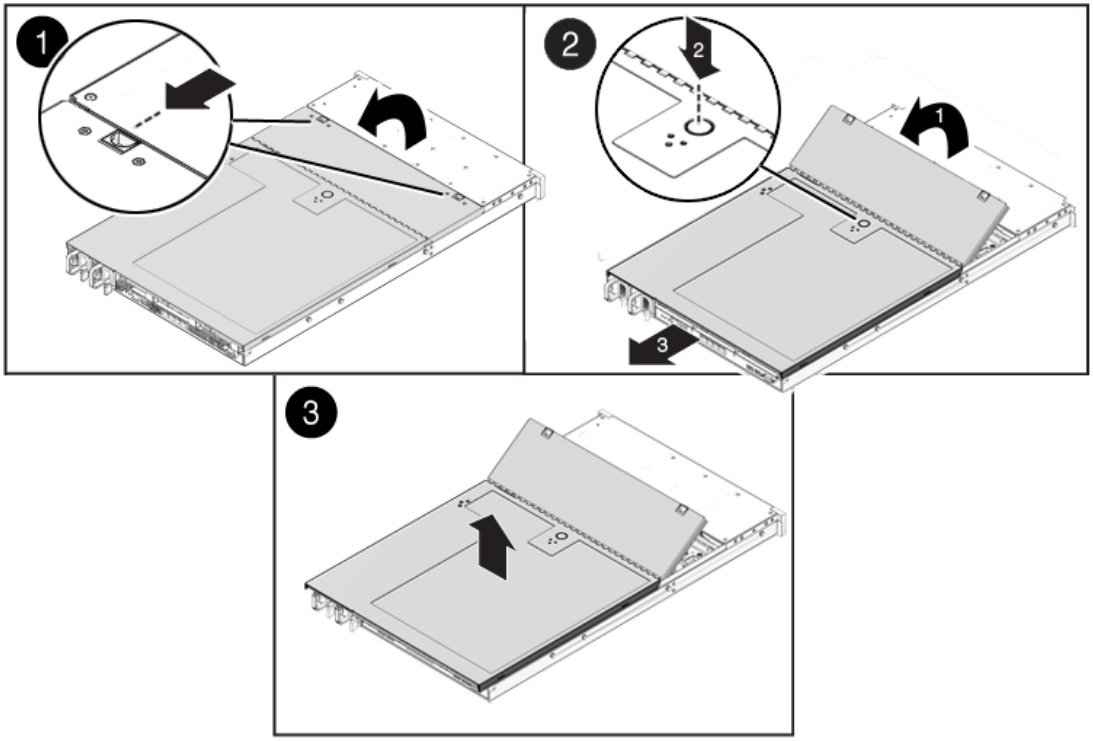
- Section 2.10.1, "Remove Top Cover From Sun Fire X4170 and X4270 Servers" on page 2-19
- Section 2.10.2, "Remove Top Cover From Sun Fire X4275 Server" on page 2-20

## 2.10.1 Remove Top Cover From Sun Fire X4170 and X4270 Servers

1. **Ensure that the AC power cords are disconnected from the server power supplies.**
2. **Unlatch the fan module door (see** FIGURE 2-14 **[1]).**

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

**FIGURE 2-14** Removing the Top Cover From the Sun Fire X4170 and X4270 Servers




3. **Press the top cover release button and slide the top cover toward the rear of the server about a 0.5 inches (12.7 mm) [2].**

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

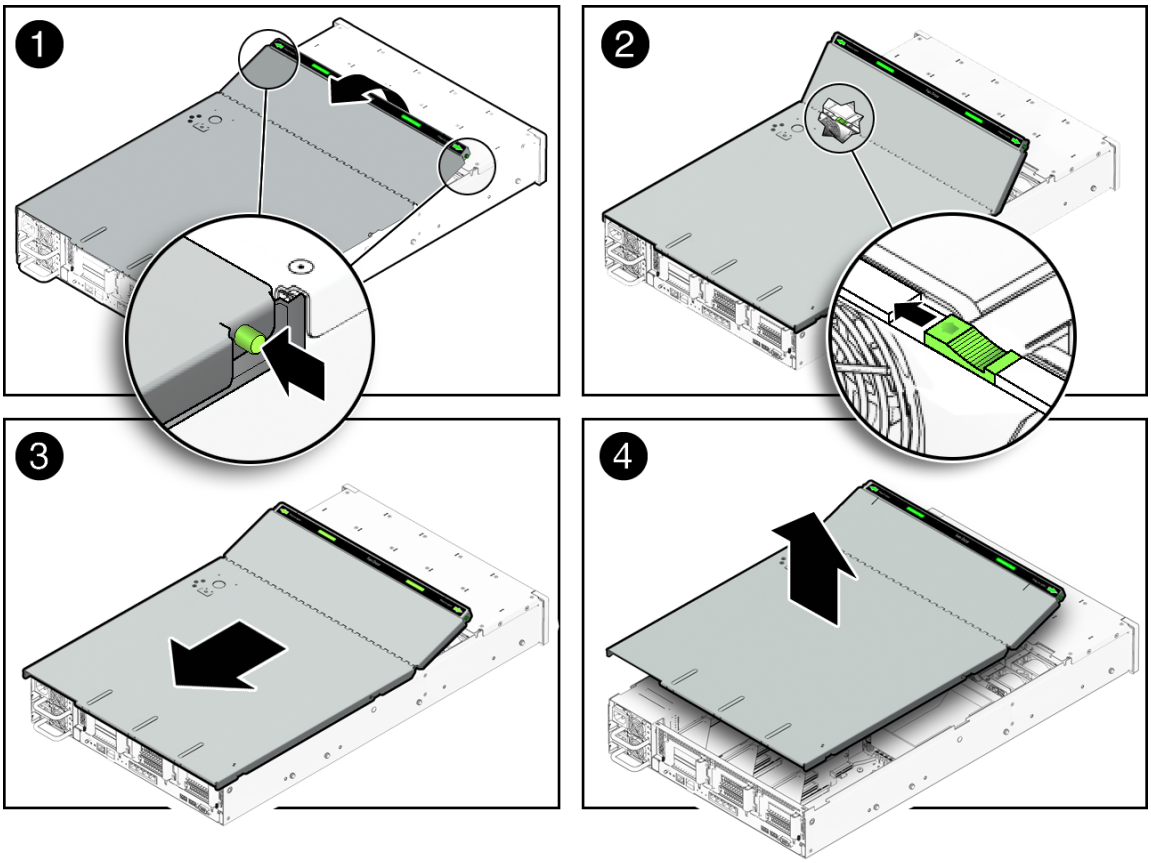
## 2.10.2 Remove Top Cover From Sun Fire X4275 Server

1. **Ensure that the AC power cords are disconnected from the server power supplies.**

2. **Unlatch the fan module door (**FIGURE 2-15 **[1]).**

   Press the two green release buttons on the sides of the fan module door to release the door. Rotate the fan module door to the open position and hold it there.

**FIGURE 2-15** Removing the Top Cover From the Sun Fire X4275 Server




3. **Release the top cover.**

   Locate the green tab to the right (facing the front of the server) and to the rear of the fan modules and slide the tab to the right-most position [2].

4. **Slide the top cover toward the rear of the server about a 0.5 inch (12 mm) [3].**

5. **Lift up and remove the top cover [4].**

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 X4170, X4270, and X4275 Servers.

The following topics are covered in this section:


- Section 3.1, "Hot-Pluggable Versus Hot-Swappable Devices" on page 3-1
- Section 3.2, "Servicing Storage Drives" on page 3-2
- Section 3.3, "Servicing Fan Modules" on page 3-9
- Section 3.4, "Servicing Power Supplies" on page 3-16


## 3.1 Hot-Pluggable Versus Hot-Swappable Devices

Devices that are hot-pluggable, unlike hot-swappable devices, require actions in addition to physical removal and replacement.

### 3.1.1 Hot-Pluggable Devices

Hot-pluggable devices are those devices that you can remove and install while the server is running. However, you must perform one or more administrative tasks before and/or after installing the hardware (for example, mounting a storage drive).

In the Sun Fire X4170, X4270, and X4275 Servers, storage 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 Storage 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 requiring any administrative tasks (for example, fan modules and power supplies).

In the Sun Fire X4170, X4270, and X4275 Servers, the following devices are hot-swappable:

- Fan modules. See Section 3.3, "Servicing Fan Modules" on page 3-9.
- Power supplies. See Section 3.4, "Servicing Power Supplies" on page 3-16.

---

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

---

## 3.2 Servicing Storage Drives

The following topics are covered in this section:


- Section 3.2.1, "Server Storage Drive Locations" on page 3-2
- Section 3.2.2, "Storage Drive Status LED Reference" on page 3-5
- Section 3.2.3, "Remove Storage Drive" on page 3-5
- Section 3.2.4, "Install Storage Drive" on page 3-8


### 3.2.1 Server Storage Drive Locations

FIGURE 3-1 show the physical drive locations for a Sun Fire X4170 Server with eight 2.5-inch storage drives.

**FIGURE 3-1** Sun Fire X4170 Server Front Panel



**Figure Legend**

| | | | | |
|---|---|---|---|---|
| HDD1 | HDD3 | HDD5 | DVD drive and USB Connectors (2) | |
| HDD0 | HDD2 | HDD4 | HDD6 | HDD7 |

FIGURE 3-2 shows the physical drive locations for the Sun Fire X4270 Server with 16 2.5-inch storage drives.

**FIGURE 3-2** Sun Fire X4270 Server Front Panel



**Figure Legend**

| | | | | |
|---|---|---|---|---|
| HDD3 | HDD7 | | HDD12 | HDD15 |
| HDD2 | HDD6 | | HDD11 | HDD14 |
| HDD1 | HDD5 | HDD9 | DVD and USB Connectors (2) | |
| HDD0 | HDD4 | HDD8 | HDD10 | HDD13 |

FIGURE 3-3 shows the physical drive locations for the Sun Fire X4275 Server with 12 3.5-inch storage drives.

**FIGURE 3-3** Sun Fire X4275 Server Front Panel




**Figure Legend**

| | | | |
|---|---|---|---|
| HDD2 | HDD5 | HDD8 | HDD11 |
| HDD1 | HDD4 | HDD7 | HDD10 |
| HDD0 | HDD3 | HDD6 | HDD9 |

## 3.2.2 Storage Drive Status LED Reference

FIGURE 3-4 shows the storage drive status LEDs.

**FIGURE 3-4** Storage Drive Status LEDs

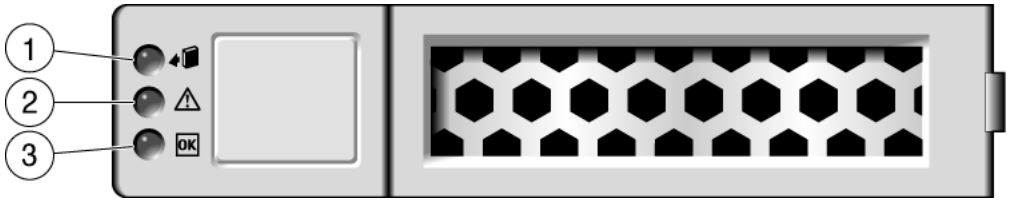



**TABLE 3-1** Storage Drive Status LED Descriptions

| Legend | LED | Symbol | Color | Lights When... |
|---|---|---|---|---|
| 1 | OK to Remove | | Blue | A storage drive can be removed safely during a hot-plug operation. |
| 2 | Service Action Required | | Amber | The system is running and the storage drive is faulty. The front and rear panel Service Action Required LEDs are also lit if the system detects a storage drive fault. |
| 3 | OK/Activity | OK | Green | Data is being read from or written to the storage drive. |

## 3.2.3 Remove Storage Drive

Storage drives can be hot-plugged or cold-plugged (removed when power is off). Storage drives in the servers might be hot-pluggable, depending on the storage 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.

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

   The amber Service Action Required LED might be lit. For specific drive locations, see Section 3.2.1, “Server Storage Drive Locations” on page 3-2.

2. **Determine if the storage 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 storage 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, unconfigure the storage drive, as required.

     You must take the drive offline before you can safely remove it. This removes the logical software links to the drive and prevents any applications from accessing it. For information on how to take a storage drive offline, see TABLE 3-2.

**TABLE 3-2** Storage Drive Removal Configuration Information

| HBA Controller Type | Refer to... |
|---|---|
| For Sun StorageTek: | • *Sun Disk Management Overview* (820-6350-10)<br>• *Sun StorageTek RAID Manager Software User's Guide* (820-1177)<br>**Note -** Open the book PDF file and search on "drive offline." |
| For LSI MegaRAID Storage Manager (MSM) | • *Sun Disk Management Overview* (820-6350-10).<br>• *Sun LSI 106x RAID User's Guide* (820-4933-13).<br>**Note -** Open the book PDF file and search on "drive offline." |

   - To cold-plug a drive, power off the server.

     You must power off the server before you can safely remove the storage drive. Complete one of the procedures described in Section 2.4.2, "Power Off the Server" on page 2-5.

4. **On the drive you plan to remove, push the storage drive release button to open the latch ([1] FIGURE 3-5).**

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

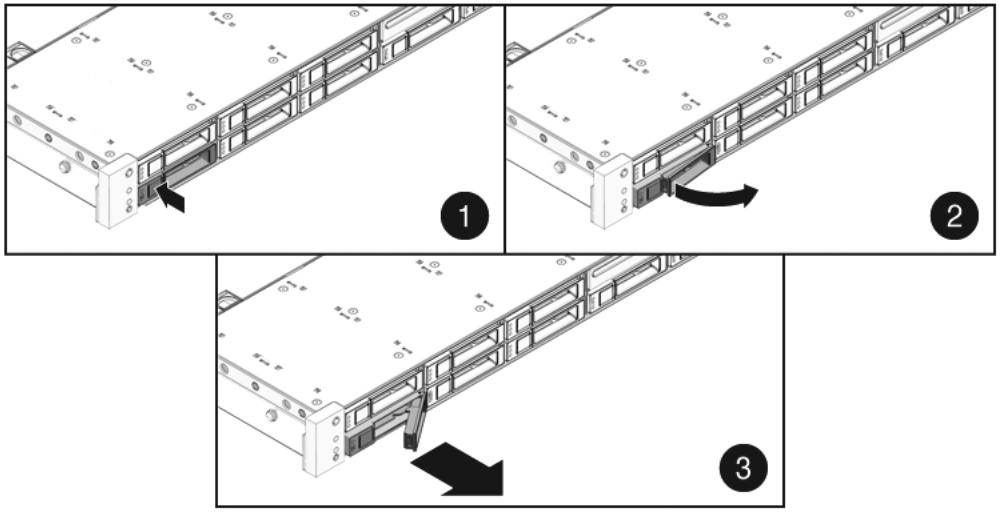


**Caution –** The latch is not an ejector. Do not bend it too far to the right. Doing so can damage the latch.



**Caution –** Whenever you remove a storage drive, you should replace it with another storage drive or a filler panel before you power on the server; otherwise the server might overheat due to improper air flow.

**FIGURE 3-5** Locating the Storage Drive Release Button and Latch



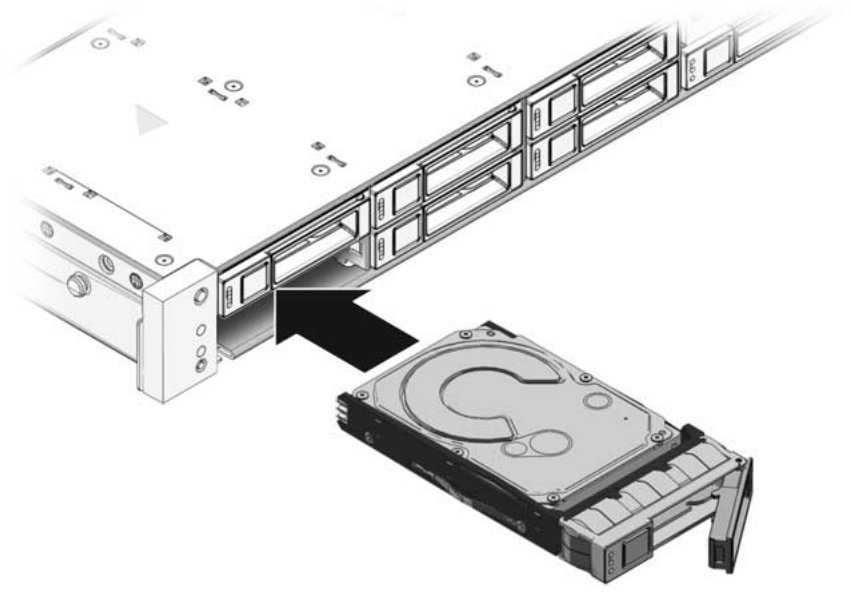
## 3.2.4 Install Storage Drive

Installing a storage drive into a server is a two-step process. You must first install a storage drive into the drive slot, and then configure that drive to the server.

1. **If necessary, remove the blank panel from the chassis.**
   - The Sun Fire X4170 may have as many as seven (7) blank panels covering unoccupied storage drive slots.
   - The Sun Fire X4270 may have as many as fifteen (15) blank panels covering unoccupied storage drive slots.
   - The Sun Fire X4275 may have as many as eleven (11) blank panels covering unoccupied storage drive slots.
2. **Determine the drive slot location for the replacement storage drive.**

   If you removed an existing storage drive from a slot in the server, you must install the replacement drive in the same slot as the drive that was removed. Storage drives are physically addressed according to the slot in which they are installed. See FIGURE 3-1, FIGURE 3-2 and FIGURE 3-3 for storage drive locations.
3. **Slide the drive into the drive slot until it is fully seated. (**FIGURE 3-6**)**

**FIGURE 3-6** Installing a Storage 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 storage drive.

     For configuration information, refer to TABLE 3-3.

**TABLE 3-3** Storage Drive Installation Configuration Information

| HBA Controller Type | Refer to... |
|---|---|
| For Sun StorageTek: | • *Sun Disk Management Overview* (820-6350-10).<br>• *Sun StorageTek RAID Manager Software User's Guide* (820-1177). |
| For LSI MegaRAID Storage Manager (MSM) | • *Sun Disk Management Overview* (820-6350-10).<br>• *Sun LSI 106x RAID User's Guide* (820-4933-13). |

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

     Restore power to the server. Complete the procedure described in Section 7.4, "Powering On the Server" on page 7-7.

# 3.3 Servicing Fan Modules

The following topics are covered in this section:


- Section 3.3.1, "About Server Fans" on page 3-10
- Section 3.3.2, "Fan Module LED Reference" on page 3-10
- Section 3.3.3, "Detecting Fan Module Failure" on page 3-12
- Section 3.3.4, "Remove Fan Module" on page 3-13
- Section 3.3.5, "Install Fan Module" on page 3-14

## 3.3.1 About Server Fans

The fan modules are located under the top cover door. Each fan module contains two fans mounted in an integrated, hot-swappable CRU. The Sun Fire X4170 Server has seven pairs of fan modules that provide N+1 cooling redundancy. The Sun Fire X4270 and X4275 Servers have six pairs of fan modules that provide N+1 cooling redundancy.



**Caution –** While the fan modules do provide some cooling redundancy, if a fan module fails, replace it 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.

**TABLE 3-4** Fan Module Status LEDs

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

FIGURE 3-7 shows the Sun Fire X4170 Server fan module LED status locations.

**FIGURE 3-7** Sun Fire X4170 Server Fan Module Status LEDs

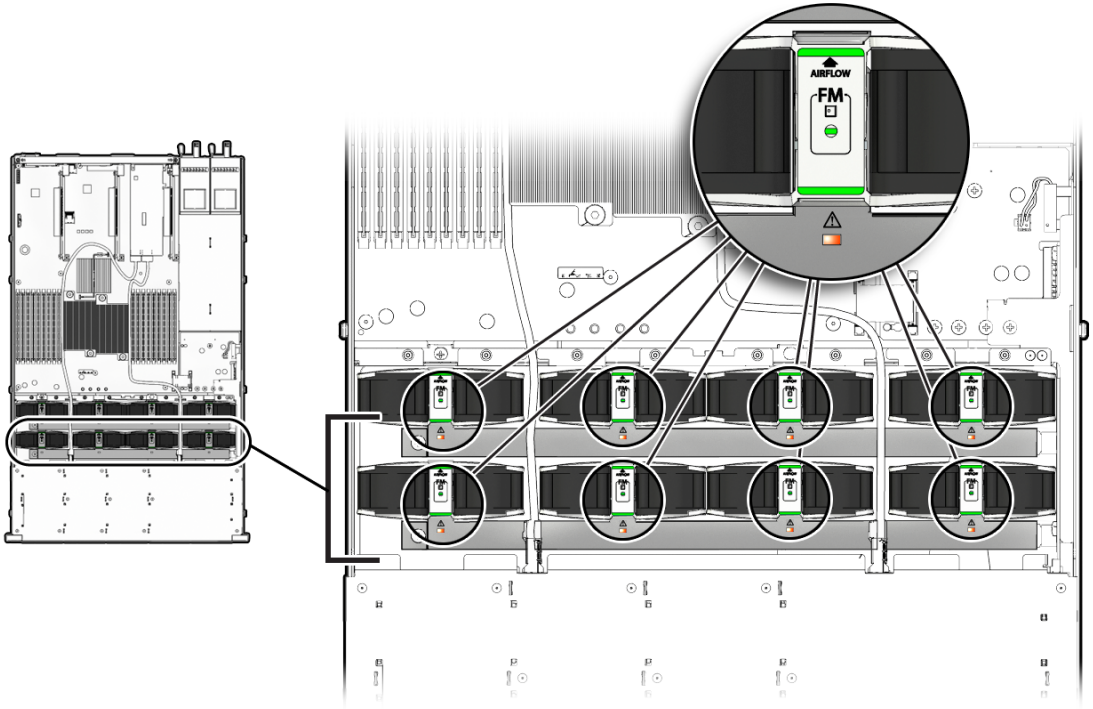
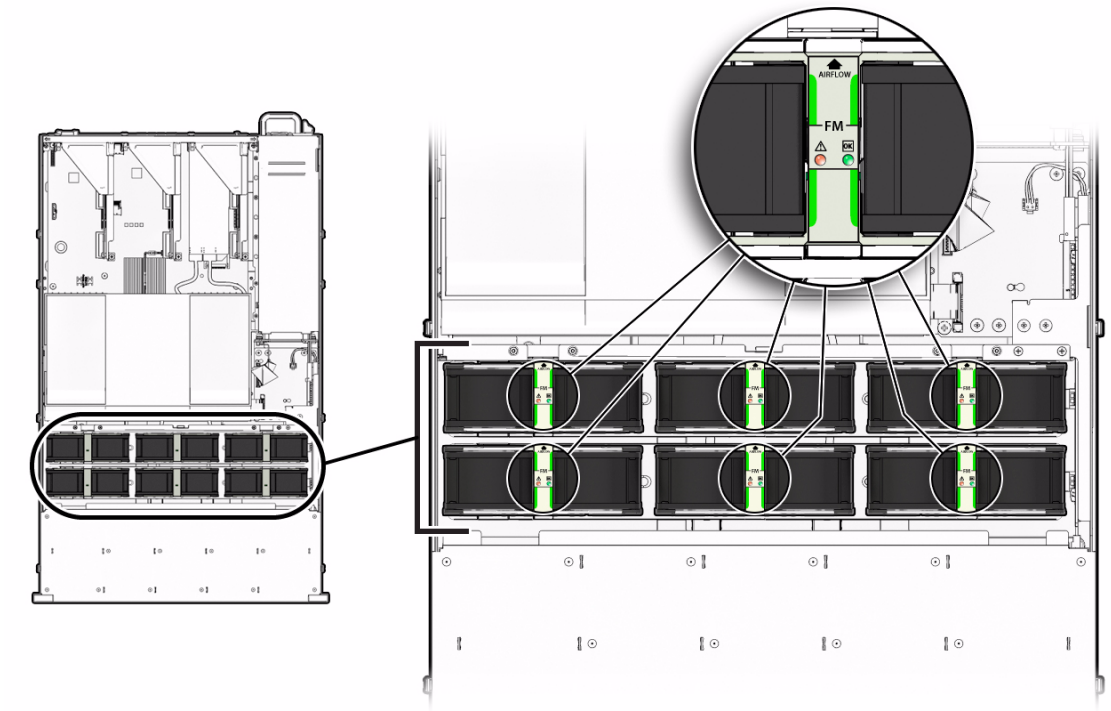


FIGURE 3-8 shows the Sun Fire X4270 and X4275 Servers fan module LED status locations.

**FIGURE 3-8** Sun Fire X4270 and X4275 Servers Fan Module Status LEDs




See Section 1.2, "Server Chassis Overview" on page 1-5 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 Action Required LEDs
- Fan Module Service Action Required (TOP) LED on the front of the server
- Fan Fault LED on or adjacent to the faulty fan module

The system Overtemp LED might light if a fan fault causes an increase in system operating temperature. See Section 1.3, "Sun Fire X4170, X4270, and X4275 Servers Front Panel Features" on page 1-8 for more information about identifying and interpreting system LEDs.

## 3.3.4 Remove 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.

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

   See Section 2.7, "Extending the Server to the Maintenance Position" on page 2-13.

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 within 60 seconds to maintain adequate airflow to properly cool 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 Action Required LED.**

   The Fan Fault LEDs are located on the fan board or the fan module as shown in FIGURE 3-7 and FIGURE 3-8.

4. **Using your thumb and forefinger, grasp the fan module and lift it out of the fan power board (**FIGURE 3-9**).**

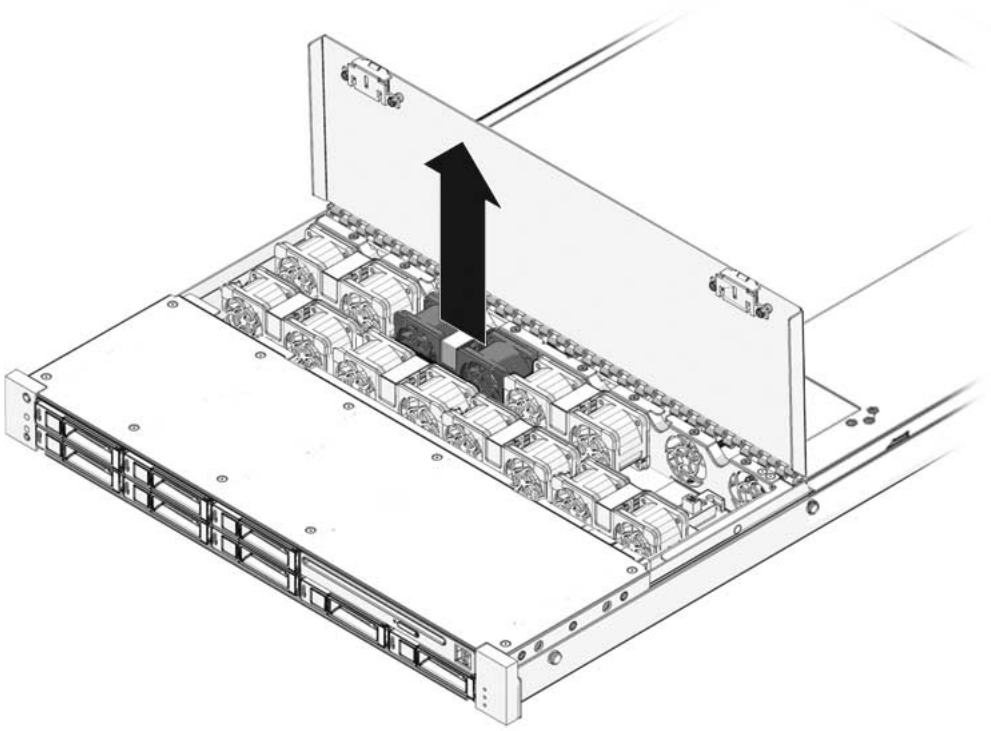


**Caution –** When removing a fan module, do not rock it back and forth. Rocking the fans modules can cause damage to the fan board connectors.



**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 3-9** Removing a Fan Module.

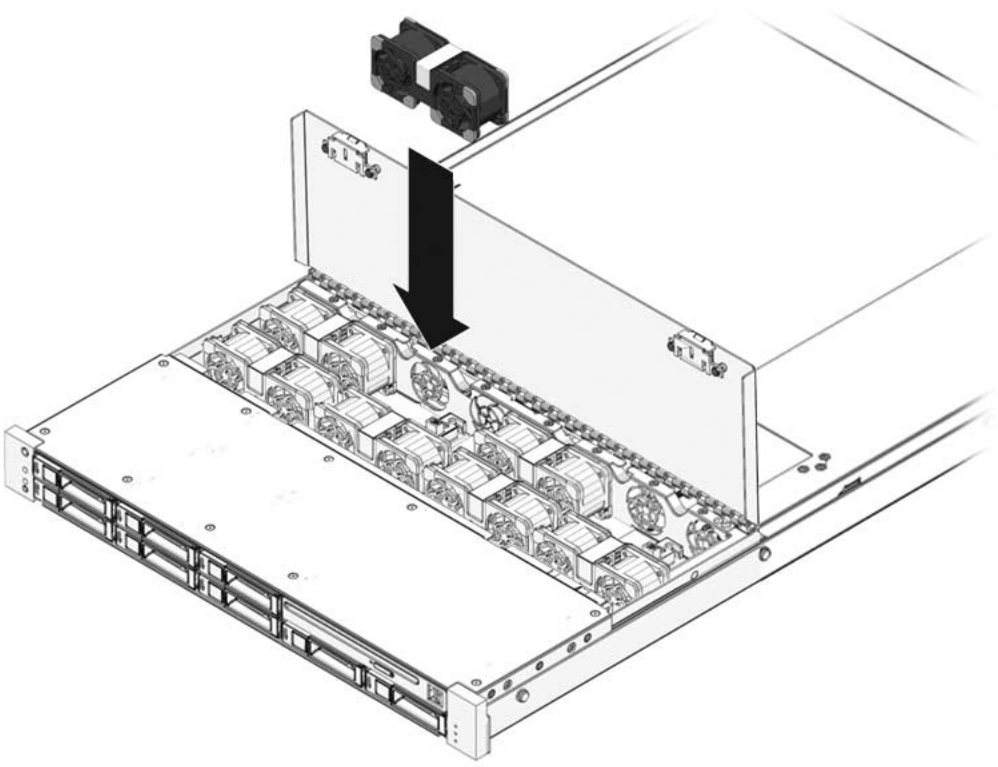


## 3.3.5 Install Fan Module

1. **With the top cover door open, install the replacement fan module into the server (**FIGURE 3-10**).**

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

**FIGURE 3-10** 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 Action Required LEDs, and the Locator LED are not lit.**

   See Section 1.2, "Server Chassis Overview" on page 1-5 for more information about identifying and interpreting system LEDs.

# 3.4 Servicing Power Supplies

If your server is equipped with two power supplies, then the power supplies are hot-swappable. This is because the power supplies are redundant, that is, the server only needs one power supply to operate. 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.

---

**Note –** If a power supply fails and you do not have a replacement available, to ensure proper airflow, leave the failed power supply installed in the server.

---

See Section 3.4.2, "Power Supply LED Reference" on page 3-16 for specific information about power supply status LEDs.

The following topics are covered:


- Section 3.4.1, "Detecting Power Supply Failure" on page 3-16
- Section 3.4.2, "Power Supply LED Reference" on page 3-16
- Section 3.4.3, "Remove Power Supply" on page 3-19
- Section 3.4.4, "Install Power Supply" on page 3-20


## 3.4.1 Detecting Power Supply Failure

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

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

See Section 1.3, "Sun Fire X4170, X4270, and X4275 Servers Front Panel Features" on page 1-8 and Section 1.4, "Sun Fire X4170, X4270, and X4275 Servers Back Panel Features" on page 1-10 for more information about identifying and interpreting system LEDs.

## 3.4.2 Power Supply LED Reference

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

**FIGURE 3-11** Sun Fire X4170 Server Power Supply Status LEDs

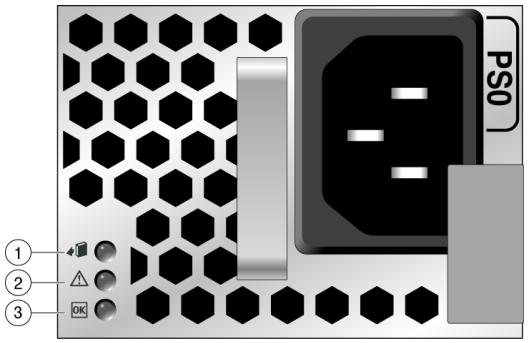



**TABLE 3-5** Power Supply Status LED Descriptions for Sun Fire X4170 Server

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

**FIGURE 3-12** Sun Fire X4270 and X4275 Servers Power Supply Status LEDs

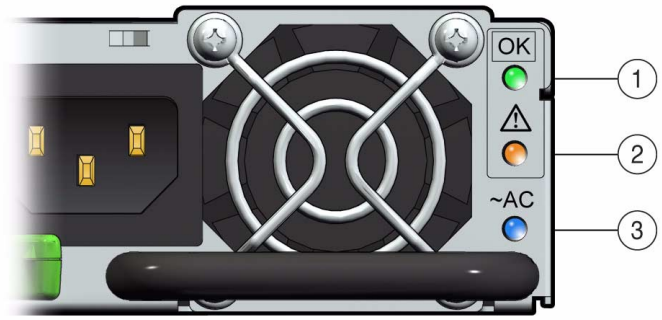



**TABLE 3-6** Power Supply Status LED Descriptions for Sun Fire X4270 and X4275 Servers

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

## 3.4.3 Remove 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.**

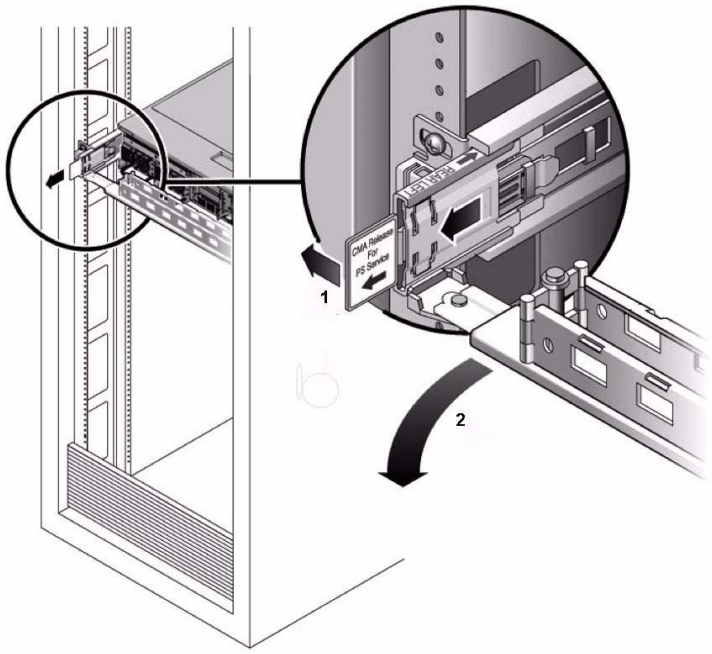
   A lit Service Action Required LED on a power supply indicates that a failure was detected.

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

3. **Release the cable management arm (CMA) (**FIGURE 3-13**).**

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

**FIGURE 3-13** Releasing the Cable Management Arm




   a. **Press and hold the tab [1].**

   b. **Rotate the cable management arm out of the way so that you can access the power supply [2].**

4. **Disconnect the power cord from the faulty power supply.**

5. **Grasp the power supply handle and press the release latch (**FIGURE 3-14 **and** FIGURE 3-15**).**

6. **Pull the power supply out of the chassis.**

**FIGURE 3-14** Power Supply Release Handle on Sun Fire X4170 Server

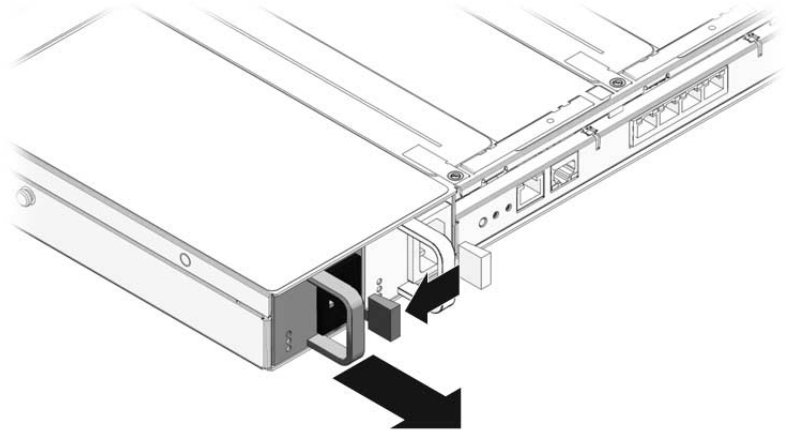
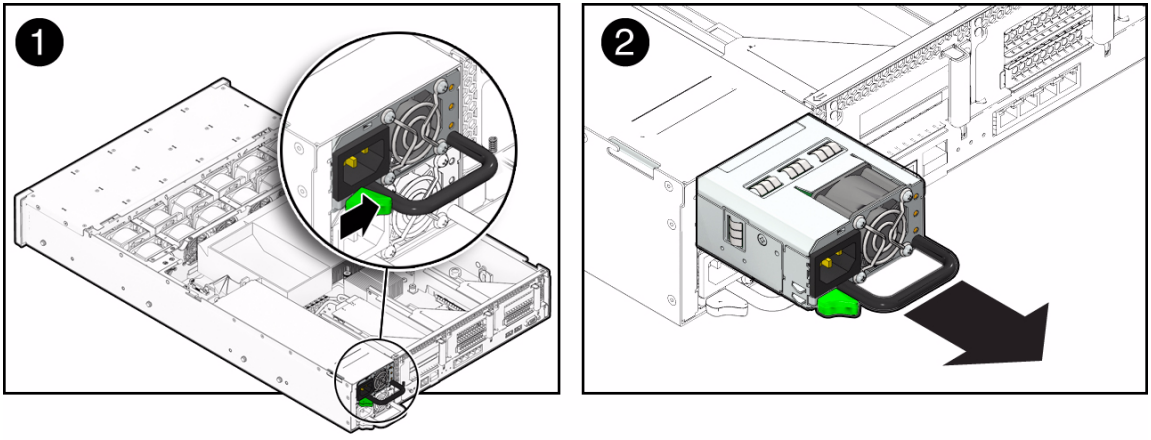


**FIGURE 3-15** Power Supply Release Handle on Sun Fire X4270 and X4275 Servers




## 3.4.4 Install Power Supply

1. **Align the replacement power supply with the empty power supply chassis bay.**

2. **Slide the power supply into the bay until it is fully seated.**

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

   Verify that the AC Present LED is lit.

4. **Close the CMA, inserting the end of the CMA into the rear left rail bracket (**FIGURE 3-13**).**

5. **Verify that the following LEDs are not lit:**
   - Service Action Required LED
   - Front Service Action Required LED
   - Rear Service Action Required LED

---

**Note –** See Section 1.3, "Sun Fire X4170, X4270, and X4275 Servers Front Panel Features" on page 1-8 and Section 1.4, "Sun Fire X4170, X4270, and X4275 Servers Back Panel Features" on page 1-10 for more information about identifying and interpreting system LEDs.

---

CHAPTER 4

# Servicing Motherboard Components

This chapter describes how to replace the motherboard and its components in the Sun Fire X4170, X4270, and X4275 Servers.

**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:


- Section 4.1, "Servicing Memory Modules (DIMMs)" on page 4-2
- Section 4.2, "Servicing the Air Baffle on Sun Fire X4270 and X4275 Servers" on page 4-11
- Section 4.3, "Servicing PCIe Risers" on page 4-15
- Section 4.4, "Servicing PCIe Cards" on page 4-22
- Section 4.5, "Servicing the Battery" on page 4-28
- Section 4.6, "Servicing CPUs" on page 4-30
- Section 4.7, "Servicing the Motherboard Assembly" on page 4-35
- Section 4.8, "Resetting Passwords and Clearing CMOS NVRAM" on page 4-40




**Caution –** Never attempt to run the server with the top cover removed. Hazardous voltage present.



**Caution –** Equipment damage possible. The top cover must be in place for proper airflow.

# 4.1 Servicing Memory Modules (DIMMs)



**Caution –** These procedures require 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 2.9, "Performing Electrostatic Discharge and Antistatic Prevention Measures" on page 2-17.



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

The Sun Fire X4170, X4270, and X4275 Servers support a variety of DIMM configurations that can include quad-rank (QR) DIMMs, dual-rank (DR) DIMMs, or single-rank (SR) DIMMs. When replacing or upgrading a DIMM on the server you should consider the following:

- DIMM and CPU physical layout

  For details, see Section 4.1.1, "DIMM and CPU Physical Layout" on page 4-3.
- DIMM population rules

  For details, see Section 4.1.2, "DIMM Population Rules" on page 4-4.
- DIMM rank classification labels

  For details, see Section 4.1.3, "DIMM Rank Classification Labels" on page 4-5.
- Locating Faulty DIMMs using ILOM versus BIOS

  For details, see Section 4.1.4, "Locations of Faulty DIMMs Using ILOM Versus BIOS" on page 4-6.
- Instructions for removing a faulty DIMM

  For details, see Section 4.1.5, "Remove Faulty DIMMs" on page 4-6.
- Instructions for installing a DIMM

  For details, see Section 4.1.6, "Install DIMMs" on page 4-9.
- Memory Error Correction and Parity

  For details, see Section 4.1.7, "Error Correction and Parity" on page 4-11.

## 4.1.1 DIMM and CPU Physical Layout

The physical layout of the DIMMs and CPUs is shown in FIGURE 4-1 and TABLE 4-1.

**FIGURE 4-1** CPU and DIMM Physical Layout

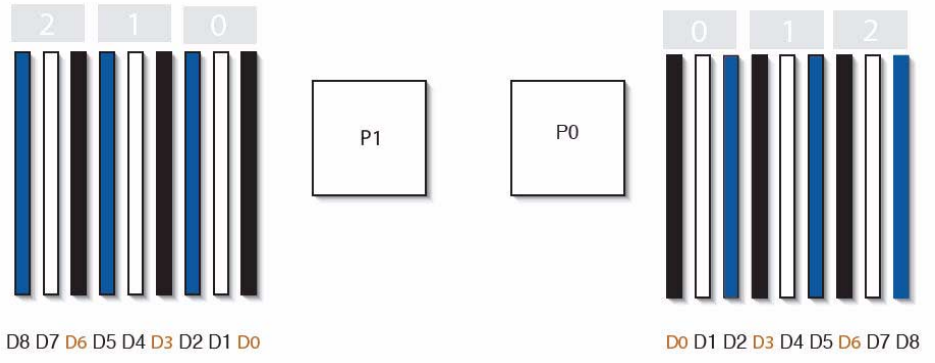
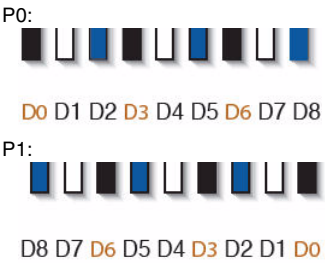



**TABLE 4-1** CPUs and DIMMs Physical Layout

| CPUs and DIMMs | Physical Layout |
|---|---|
| CPU 0 location | P0 |
| CPU 1 location | P1 |

**TABLE 4-1** CPUs and DIMMs Physical Layout

| CPUs and DIMMs | Physical Layout |
|---|---|
| Channel locations for CPU 0 | |
| Three channels per CPU with each channel containing three color-coded DIMM slots (black, white, and blue). |  |
| Channel locations for CPU 1 | |
| Three channels per CPU with each channel containing three color-coded DIMM slots (blue, white and black). |  |
| DIMM slot numbering per CPU; with D8 as the farthest slot away from CPU. |  |

## 4.1.2 DIMM Population Rules

The DIMM population rules for the Sun Fire X4170, X4270, and X4275 Servers are as follows:

1. Do not populate any DIMM sockets next to an empty CPU socket. Each processor contains a separate memory controller.
2. Each CPU can support a maximum of:
   - Nine dual-rank (DR) or single-rank (SR) DIMMs; *or*
   - Six quad-rank (QR) DIMMs with two per memory channel; *or*
   - Three QR DIMMs with one per channel and three DR or SR DIMMs.
3. Populate DIMMs by location according to the following rules:
   - Populate the DIMM slots for each memory channel that are the farthest from the CPU first.

     For example, populate D8/D5/D2 first; then D7/D4/D1 second; and finally, D6/D3/D0. See FIGURE 4-1.
   - Populate QR DIMMs first, followed by SR or DR DIMMs.
     - Populate QR DIMMs in blue sockets (D8/D5/D2) first then white sockets (D7/D4/D1). See FIGURE 4-1.

Note that QR DIMMs are supported only in white sockets if adjacent blue socket contains a QR DIMM.

- Populate QR, SR, or DR DIMMs in sets of three for each CPU, one per memory channel. See FIGURE 4-1.

4. For maximum performance, apply the following rules:
   - The best performance is ensured by preserving symmetry. For example: adding 3x of same kind DIMMs, one per memory channel; and, if the server has two CPUs, ensuring that both CPUs have the same size of DIMMs populated in the same manner.
   - In certain configurations, DIMMs will run slower than their individual maximum speed. See TABLE 4-2 for further details.

**TABLE 4-2** Memory Considerations and Limitations

| | |
|---|---|
| 1 | DIMMs are available in two speeds: 1066 MHz and 1333 MHz |
| 2 | DIMM speed rules are as follows:<br>• 3x of the same kind of DIMMs per channel = 800 MHz<br>• 2x of the same kind of DIMMs per channel = 1333 MHz (for single-rank and dual-rank DIMMs); = 800 MHz (for quad-rank DIMMs)<br>• 1x of the same kind of DIMMs per channel = 1333 MHz (if using 1333 MHz DIMMs)*<br>• 1x of the same kind of DIMMs per channel = 1066 MHz (if using 1066 MHz DIMMs) |
| 3 | The system operates all memory only as fast as the slowest DIMM configuration. |

* This DIMM configuration requires CPUs supporting 1333MHz.

## 4.1.3 DIMM Rank Classification Labels

DIMMs come in a variety of ranks: single, dual, or quad. Each DIMM is shipped with a label identifying its rank classification. TABLE 4-3 identifies the corresponding rank classification label shipped with each DIMM.

**TABLE 4-3** DIMM Classification Labels

| Rank Classification | Label |
|---|---|
| Quad-rank DIMM | 4Rx4 |
| Dual-rank DIMM | 2Rx4 |
| Single-rank DIMM | 1Rx4 |

## 4.1.4 Locations of Faulty DIMMs Using ILOM Versus BIOS

ILOM and BIOS use different formats to identify the location of a faulty DIMM.

- For ILOM, the format is P*x*/D*x*, where *x* is 0 or 1 for CPUs, and 0 to 8 for DIMMs.
- For BIOS, the format is CPU*x*/CHANNEL*x*/DIMM*x*, where *x* is 0 or 1 for CPUs, and 0 to 2 for channels and DIMMs.

TABLE 4-1 shows the mapping of faulty DIMM locations as reported by ILOM and BIOS.

**TABLE 4-1** Mapping of Faulty DIMM Locations for ILOM and BIOS

| ILOM Mapping for CPU0 | BIOS Mapping for CPU0 | ILOM Mapping for CPU1 | BIOS Mapping for CPU1 |
|---|---|---|---|
| P0/D0 | CPU0/CHANNEL0/DIMM2 | P1/D0 | CPU1/CHANNEL0/DIMM2 |
| P0/D1 | CPU0/CHANNEL0/DIMM1 | P1/D1 | CPU1/CHANNEL0/DIMM1 |
| P0/D2 | CPU0/CHANNEL0/DIMM0 | P1/D2 | CPU1/CHANNEL0/DIMM0 |
| P0/D3 | CPU0/CHANNEL1/DIMM2 | P1/D3 | CPU1/CHANNEL1/DIMM2 |
| P0/D4 | CPU0/CHANNEL1/DIMM1 | P1/D4 | CPU1/CHANNEL1/DIMM1 |
| P0/D5 | CPU0/CHANNEL1/DIMM0 | P1/D5 | CPU1/CHANNEL1/DIMM0 |
| P0/D6 | CPU0/CHANNEL2/DIMM2 | P1/D6 | CPU1/CHANNEL2/DIMM2 |
| P0/D7 | CPU0/CHANNEL2/DIMM1 | P1/D7 | CPU1/CHANNEL2/DIMM1 |
| P0/D8 | CPU0/CHANNEL2/DIMM0 | P1/D8 | CPU1/CHANNEL2/DIMM0 |

## 4.1.5 Remove Faulty DIMMs

**Note –** The DDR3 memory DIMMs are customer-replaceable units (CRUs) and do not require an authorized service provider for replacement.

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

   a. **Power off the server and disconnect the power cord (or cords) from the server power supply (or supplies).**

      See Section 2.4.2, "Power Off the Server" on page 2-5.

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

See Section 2.7, "Extending the Server to the Maintenance Position" on page 2-13.

**c. Attach an antistatic wrist strap.**

See Section 2.9, "Performing Electrostatic Discharge and Antistatic Prevention Measures" on page 2-17.

**d. Remove the top cover.**

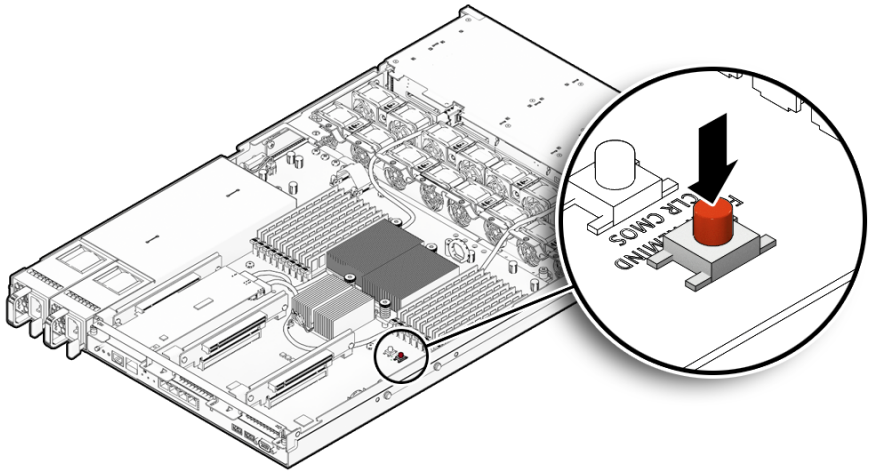
See Section 2.10, "Removing the Top Cover" on page 2-19.

**2. Replace the faulty DIMM(s).**

**a. Identify the location of the faulty DIMMs by pressing the FAULT REMIND button on the motherboard (FIGURE 4-1).**

- If DIMM Service Action Required LED is off: DIMM is operating properly.
- If DIMM Service Action Required LED is on (amber): DIMM is faulty and should be replaced.

**FIGURE 4-1** FAULT REMIND Button




**b. Note the location of faulty DIMMs.**

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

**c. To remove the faulty DIMM do the following:**

**i. Rotate both DIMM slot ejectors outward as far as they will go.**

The DIMM is partially ejected from the socket (FIGURE 4-2).

**ii. Carefully lift the DIMM straight up to remove it from the socket.**

**d. Replace each faulty DIMM with either another DIMM of the same rank size (quad rank, dual rank, or single rank) or a DIMM filler panel.**

For DIMM replacement instructions, see Section 4.1.6, "Install DIMMs" on page 4-9.

**Caution –** If you are not immediately inserting a replacement DIMM into the empty DIMM socket, you should insert a DIMM filler panel in the socket to ensure adequate cooling and reduce the possibility of a system shutdown.

**FIGURE 4-2** DIMM Socket Release and Alignment

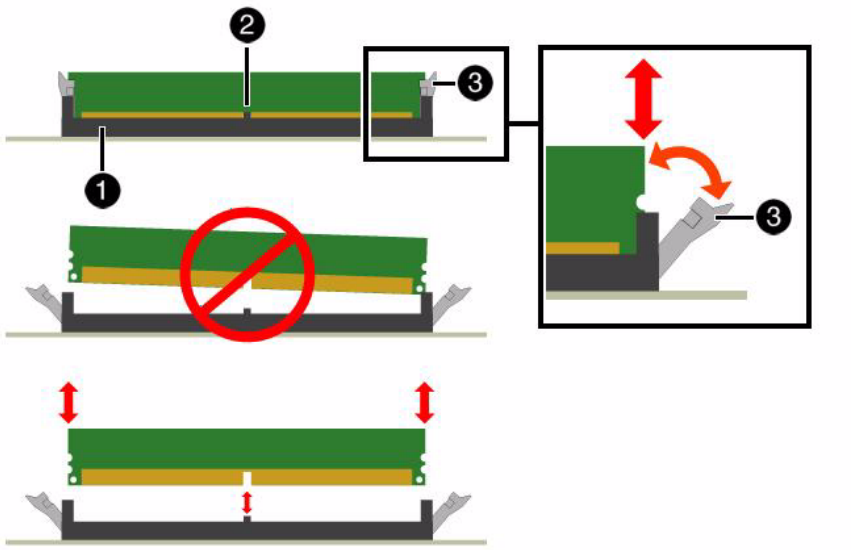



**Figure Legend**

| | |
|---|---|
| **1** | DIMM connector slot |
| **2** | DIMM connector key |
| **3** | DIMM ejector lever |

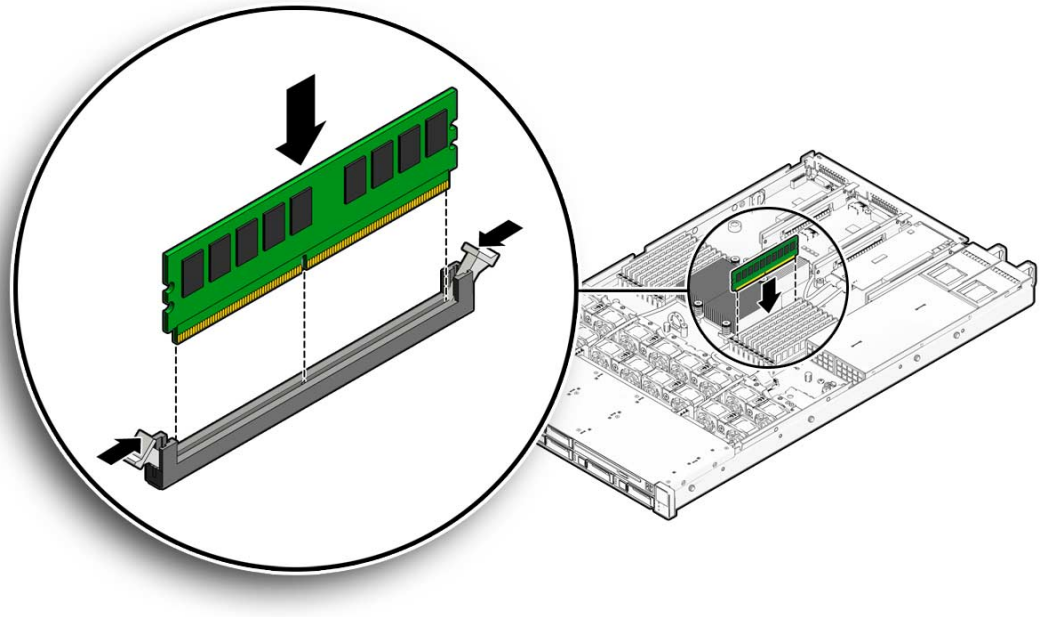
## 4.1.6 Install DIMMs

1. **Unpack the replacement DIMMs and place them on an antistatic mat.**
2. **Ensure that the replacement DIMMs match the sizes as the DIMMs they are replacing.**

   You must not replace a dual-rank DIMM with a quad-rank DIMM and vice versa. If you violate this rule, the performance of the server might be adversely affected. For DIMM population rules, see "DIMM Population Rules" in the *Sun Fire X4170, X4270, and X4275 Servers Installation Guide* (820-5827).
3. **Ensure that the ejector tabs are in the open position.**
4. **Line up the replacement DIMM with the connector (FIGURE 4-3).**

   Align the notch in the DIMM with the key in the connector. The notch ensures that the DIMM is oriented correctly.

**FIGURE 4-3** Installing DIMMs



5. **Push the DIMM into the connector until the ejector tabs lock the DIMM in place.**

   If the DIMM does not easily seat into the connector, verify that the notch in the DIMM is aligned with the key in the connector as shown in FIGURE 4-3. If the notch is not aligned, damage to the DIMM might occur.

6. **Repeat Step 3 through Step 5 until all replacement DIMMs are installed.**

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

   a. **Install the top cover.**

      See Section 7.1, "Install Top Cover" on page 7-1.

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

      See Section 7.3, "Returning the Server to the Normal Rack Position" on page 7-5.

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

      See Section 7.4, "Powering On the Server" on page 7-7.

      Verify that the AC Present LED is lit.

8. **Clear server DIMM faults.**

   a. **To see server faults, log in to the server as `root` using ILOM CLI and type the following command list all known fault on the system:**

      -> **`Show /SP/faultmgmt`**

      The server lists all known faults, for example:

```
SP/faultmgmt
  Targets:
      0 (/SYS/MB/P0/D2)
  Properties:
  Commands:
      cd
      show
```

   b. **To clear the fault type the following command:**

   -> **`set /SYS/MB/P0 clear_fault_action=true`**

      For example:

```
-> set /SYS/MB/P0/D2 clear_fault_action=true
Are you sure you want to clear /SYS/MB/P0 9y/n)? y
Set 'clear_fault_action" to 'true'
```

## 4.1.7 Error Correction and Parity

The server's processor provides parity protection on its internal cache memories and error-correcting code (ECC) protection of the data. The system can detect and log to the ILOM event log the following types of errors:

- Correctable and uncorrectable memory ECC errors
- Uncorrectable CPU internal errors

Advanced ECC corrects up to 4 bits in error on nibble boundaries, as long as they are all in the same DRAM. If a DRAM fails, the DIMM continues to function.

To clear a fault once the faulty DIMM has been replaced, type this ILOM CLI command:

```
-> set clear_fault_action=true
```

---

**Note –** When a single DIMM is marked as faulty by ILOM (for example, `fault.memory.intel.dimm.training-failed` is listed in the SP Event Log), BIOS might map out the entire memory channel that contains the faulty DIMM as failing, that is, up to three DIMMs. As a result, the memory available to the operating system is reduced. However, when the Fault Remind button is pressed, only the fault LED associated with the faulty DIMM lights. The fault LEDs for the other two DIMMs in the memory channel remain off. Therefore, you can correctly identify the faulty DIMM. When the faulty DIMM is replaced and the DIMM fault is cleared using ILOM, the memory available to the operating system returns to normal. For instructions for clearing DIMM faults, see the *Oracle Integrated Lights Out Manager (ILOM) 3.0 Supplement for the Sun Blade X6270 M2 Server Module* (821-0501).

---

# 4.2 Servicing the Air Baffle on Sun Fire X4270 and X4275 Servers

You must remove the air baffle when removing and installing the motherboard on Sun Fire X4270 and X4275 Servers. The Sun Fire X4170 server does not have an air baffle.



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



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

## 4.2.1 Open Air Baffle

**Note –** This procedure is applicable to the Sun Fire X4270 and X4275 Servers only.

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

   a. **Power off the server and disconnect the power cord (or cords) from the server power supply (or supplies).**

      See Section 2.4.2, "Power Off the Server" on page 2-5.

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

      See Section 2.7, "Extending the Server to the Maintenance Position" on page 2-13.

   c. **Attach an antistatic wrist strap.**

      See Section 2.9, "Performing Electrostatic Discharge and Antistatic Prevention Measures" on page 2-17.

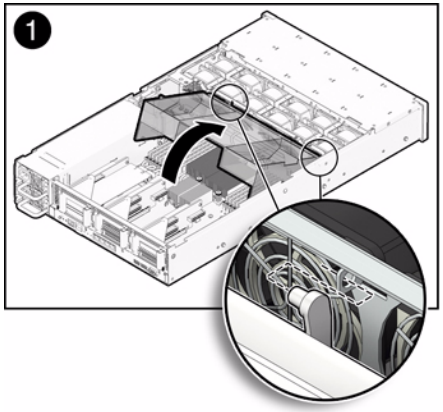
   d. **Remove the top cover.**

      See Section 2.10, "Removing the Top Cover" on page 2-19.

2. **Open the air baffle as shown in** FIGURE 4-4**.**

   Grasp the air baffle at the bottom and lift it up and out of the way.

**FIGURE 4-4** Opening the Air Baffle



## 4.2.2 Remove Air Baffle

**Note –** This procedure is applicable to the Sun Fire X4270 and X4275 Servers only.

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

   a. **Power off the server and disconnect the power cord (or cords) from the server power supply (or supplies).**

      See Section 2.4.2, "Power Off the Server" on page 2-5.

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

      See Section 2.7, "Extending the Server to the Maintenance Position" on page 2-13.

   c. **Attach an antistatic wrist strap.**

      See Section 2.9, "Performing Electrostatic Discharge and Antistatic Prevention Measures" on page 2-17.

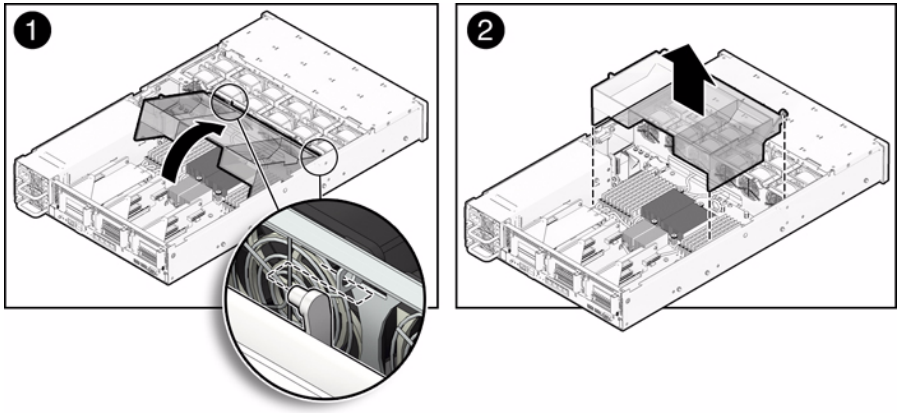
   d. **Remove the top cover.**

      See Section 2.10, "Removing the Top Cover" on page 2-19.

2. **Remove the air baffle as shown in** FIGURE 4-5**.**

   Press the air baffle connectors [1] outward and lift the air baffle up and out of the server [2].

**FIGURE 4-5** Removing the Air Baffle



### 4.2.3 Install Air Baffle

**Note –** This procedure is applicable to the Sun Fire X4270 and X4275 Servers only.



**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.**

   Press the air baffle connectors outward, place the air baffle in to the server, and lower it to its down position.

2. **Return the server to operation.**

   a. **Install the top cover.**

      See Section 7.1, "Install Top Cover" on page 7-1.

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

      See Section 7.3, "Returning the Server to the Normal Rack Position" on page 7-5.

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

      See Section 7.4, "Powering On the Server" on page 7-7.

      Verify that the AC Present LED is lit.

## 4.3 Servicing PCIe Risers

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



**Caution –** These procedures require 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 2.9, "Performing Electrostatic Discharge and Antistatic Prevention Measures" on page 2-17.



**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.

The following topics are covered in this section:


- Section 4.3.1, "Remove PCIe Riser From Sun Fire X4170 Server" on page 4-15
- Section 4.3.2, "Install PCIe Riser on Sun Fire X4170 Server" on page 4-18
- Section 4.3.3, "Remove PCIe Riser From Sun Fire X4270 and X4275 Servers" on page 4-19
- Section 4.3.4, "Install PCIe Riser on Sun Fire X4270 and X4275 Servers" on page 4-20


## 4.3.1 Remove PCIe Riser From Sun Fire X4170 Server

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

   a. **Power off the server and disconnect the power cord (or cords) from the power supply (or supplies).**

      See Section 2.4.2, "Power Off the Server" on page 2-5.

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

   c. See Section 2.7, "Extending the Server to the Maintenance Position" on page 2-13**Attach an antistatic wrist strap.**

      See Section 2.9, "Performing Electrostatic Discharge and Antistatic Prevention Measures" on page 2-17.

   d. **Remove the top cover.**

      See Section 2.10, "Removing the Top Cover" on page 2-19.

2. **Disconnect any data cables connected to the PCIe card on the PCIe riser being removed.**

   Label the cables to ensure proper connection later.

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

   See Section 2.7, "Extending the Server to the Maintenance Position" on page 2-13.

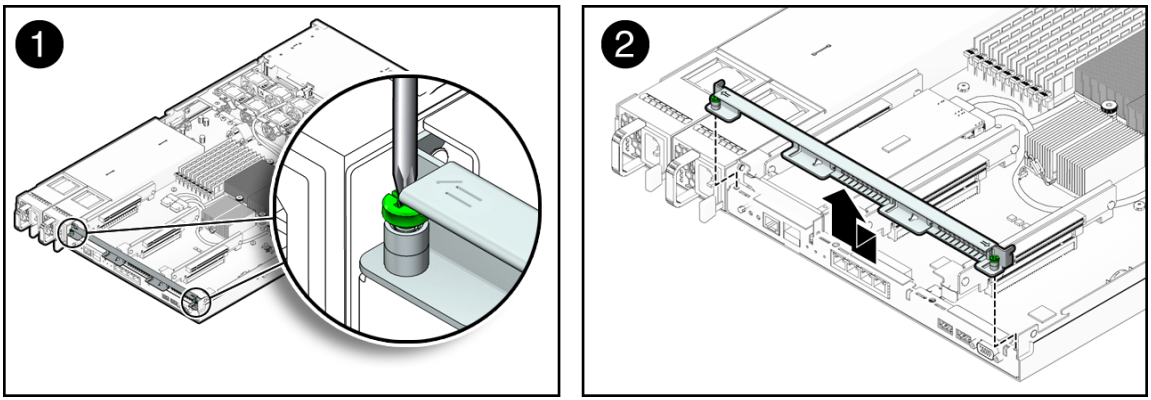
4. **If you are servicing a PCIe card, locate its position in the system.**

5. **Remove the back panel crossbar (**FIGURE 4-6**).**

   a. **Loosen the captive Phillips screw on each end of the back panel crossbar.**

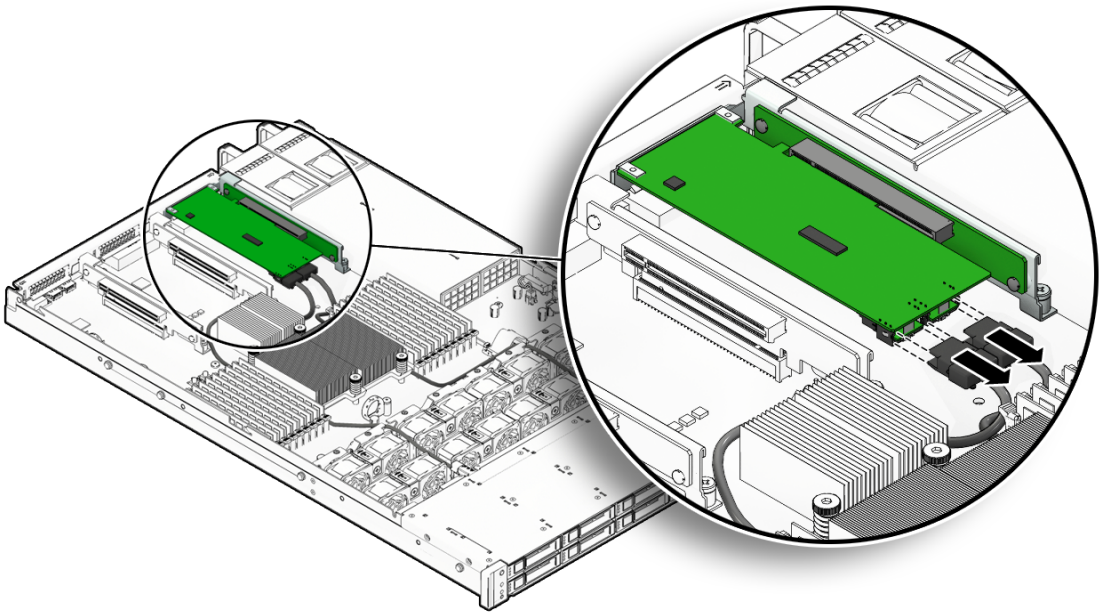
**b. Move the crossbar to the rear of the chassis and lift it up to remove it from the chassis.**

**FIGURE 4-6** Removing the Back Panel Crossbar From Sun Fire X4170 Server




**6. Disconnect any internal cables connected to the PCIe card installed in the riser (FIGURE 4-7).**

**FIGURE 4-7** Disconnecting SAS PCIe Card Internal Cables



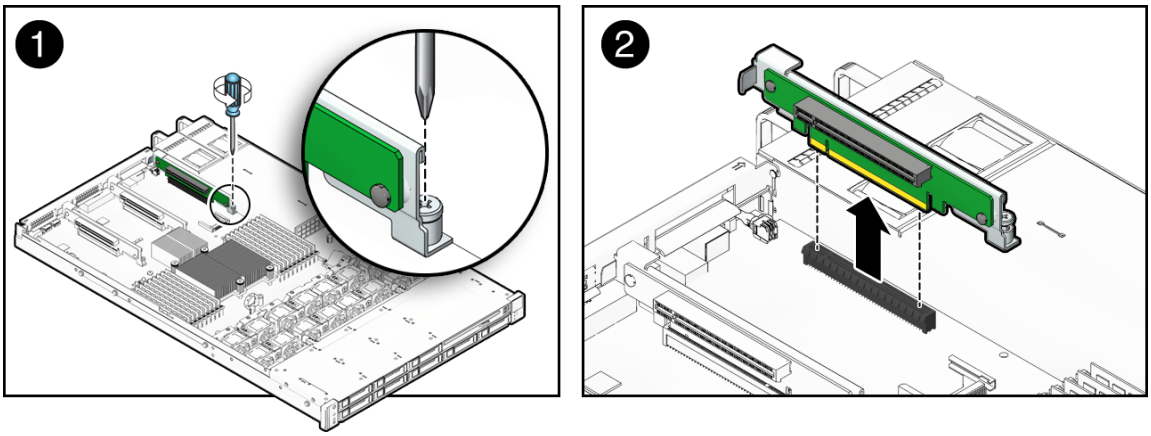
**7. Remove the riser from the system (FIGURE 4-8).**

a. **Loosen the captive Phillips screw on the end of the riser [1].**

b. **Lift up the riser and the PCIe card attached to it, if any, as a unit [2].**

The server has three PCIe risers. On the Sun Fire X4170 Server, each PCIe riser can house only one PCIe card.

**FIGURE 4-8** Removing a Sun Fire X4170 Server PCIe Riser




## 4.3.2 Install PCIe Riser on Sun Fire X4170 Server

1. **Lower the PCIe riser and any cards attached to it into the system.**
2. **Install the screw that secures the riser to the motherboard (**FIGURE 4-9**).**
3. **Install the back panel crossbar.**

   Slide the crossbar down over the PCIe risers. The crossbar is secured with two captive Phillips screws.
4. **If any cards are attached to the PCIe riser, reconnect the cables that you unplugged during the removal procedure.**
5. **Return the server to operation.**

   a. **Install the server top cover.**

   See Section 7.1, “Install Top Cover” on page 7-1.

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

   See Section 7.3, “Returning the Server to the Normal Rack Position” on page 7-5.

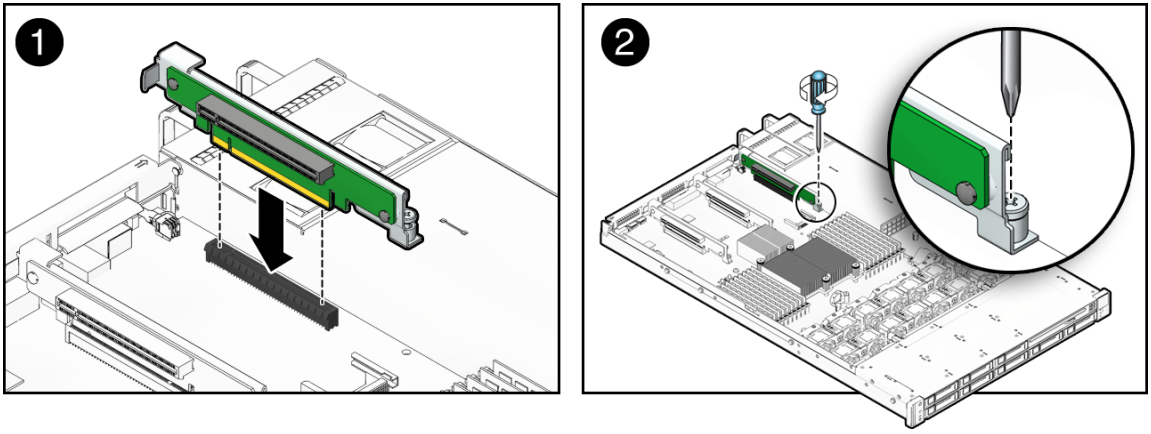
c. **Connect any data cables you removed to service the PCIe cards.**

d. **Reconnect the power cord (or cords) to the power supply (or supplies) and power on the server.**

See Section 7.4, "Powering On the Server" on page 7-7.

Verify that the AC Present LED is lit.to the PCIe card.

**FIGURE 4-9** Installing a PCIe Riser




## 4.3.3 Remove PCIe Riser From Sun Fire X4270 and X4275 Servers

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

   a. **Power off the server and disconnect the power cord (or cords) from the power supply (or supplies).**

   See Section 2.4.2, "Power Off the Server" on page 2-5.

   b. **Attach an antistatic wrist strap.**

   See Section 2.9, "Performing Electrostatic Discharge and Antistatic Prevention Measures" on page 2-17.

   c. **Remove the top cover.**

   See Section 2.10, "Removing the Top Cover" on page 2-19.

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 2.7, “Extending the Server to the Maintenance Position” on page 2-13.

4. **If you are servicing a PCIe card, locate its position in the system.**

5. **Disconnect any data cables connected to the cards on the PCIe riser being removed.**

   Label the cables to ensure proper connection later.

6. **Remove the back panel PCI crossbar (**FIGURE 4-10**).**

   a. **Loosen the two captive Phillips screws on the end of the PCI crossbar [1].**

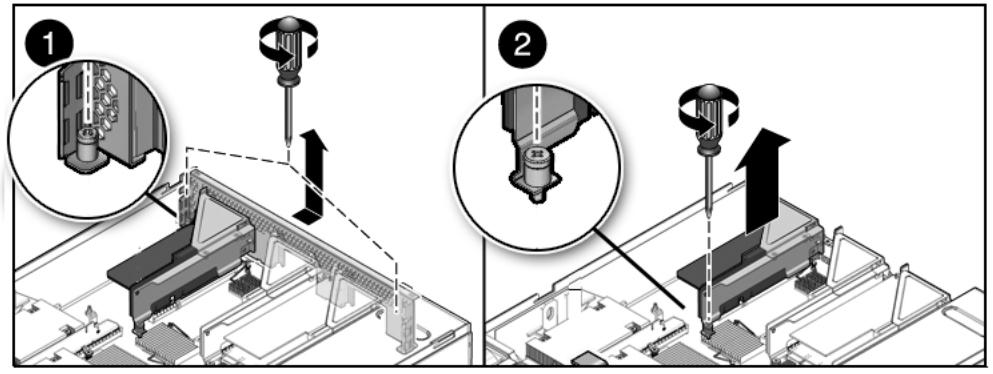
   b. **Lift the PCI crossbar up and back to remove it from the chassis [2].**

7. **Loosen the captive retaining screw holding the riser to the motherboard (**FIGURE 4-10 **[2]).**

8. **Lift the riser up to remove it from the server.**

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

**FIGURE 4-10** Removing the PCIe Riser From Sun Fire X4270 and X4275 Servers



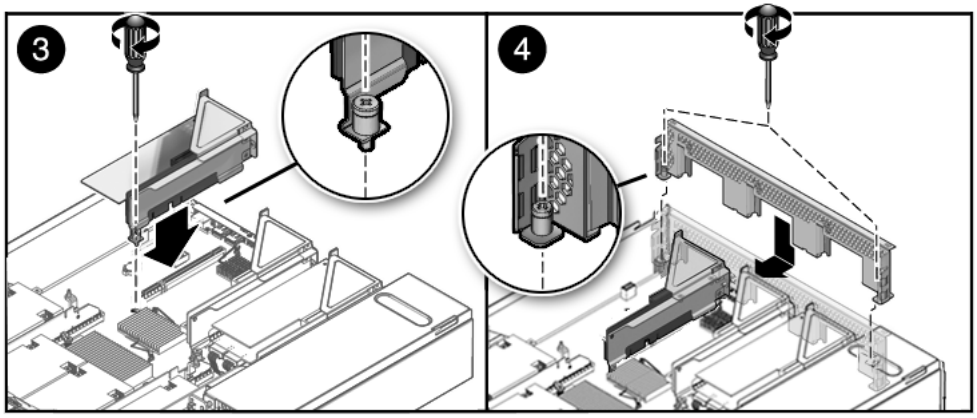

## 4.3.4 Install PCIe Riser on Sun Fire X4270 and X4275 Servers



**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, if any, into the system (FIGURE 4-11).**
2. **Slide the back of the riser into the motherboard back panel stiffener.**
3. **Tighten the screw that secures the riser to the motherboard.**
4. **Install the back panel PCI crossbar.**
   a. **Slide the crossbar down over the PCIe risers.**
   b. **Ensure the PCI crossbar is secured with two captive Phillips screws.**
5. **Return the server to operation.**
   a. **Install the server top cover.**
      See Section 7.1, "Install Top Cover" on page 7-1.
   b. **Slide the server into the rack.**
      See Section 7.3, "Returning the Server to the Normal Rack Position" on page 7-5.
   c. **Connect any data cables you removed to service the PCIe cards.**
   d. **Reconnect the power cord (or cords) to the power supply (or supplies).**
      See Section 7.4, "Powering On the Server" on page 7-7.
      Verify that the AC Present LED is lit.

**FIGURE 4-11** Installing the PCIe Riser on Sun Fire X4270 and X4275 Servers



# 4.4 Servicing PCIe Cards

See Section 4.4.1, "PCIe Card Configuration Guidelines" on page 4-22 for PCIe card configuration guidelines.



**Caution –** These procedures require 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 2.9, "Performing Electrostatic Discharge and Antistatic Prevention Measures" on page 2-17.



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

The following topics are covered in this section:


- Section 4.4.1, "PCIe Card Configuration Guidelines" on page 4-22
- Section 4.4.2, "Remove PCIe Card From Sun Fire X4170 Server" on page 4-22
- Section 4.4.3, "Install PCIe Card on Sun Fire X4170 Server" on page 4-24
- Section 4.4.4, "Remove PCIe Cards From Sun Fire X4270 and X4275 Servers" on page 4-26
- Section 4.4.5, "Install PCIe Cards on Sun Fire X4270 and X4275 Servers" on page 4-27


## 4.4.1 PCIe Card Configuration Guidelines

The PCI expansion system is configured using a variety of riser cards. The connector is an x16 but the cards may operate at x8.

## 4.4.2 Remove PCIe Card From Sun Fire X4170 Server

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

   a. **Power off the server and disconnect the power cord (or cords) from the power supply (or supplies).**

      See Section 2.4.2, "Power Off the Server" on page 2-5.

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

See Section 2.7, "Extending the Server to the Maintenance Position" on page 2-13.

**c. Attach an antistatic wrist strap.**

See Section 2.9, "Performing Electrostatic Discharge and Antistatic Prevention Measures" on page 2-17.

**d. Remove the top cover.**

See Section 2.10, "Removing the Top Cover" on page 2-19.

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

   See Section 1.4, "Sun Fire X4170, X4270, and X4275 Servers Back Panel Features" on page 1-10 for more information about PCIe slots and their locations.

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

4. **Unplug all data cables from the PCIe card.**

   To disconnect the cables from the PCIe card, press the latch, push in toward the connector, and then pull out to remove the cable.

   Note the location of all cables for reinstallation later.

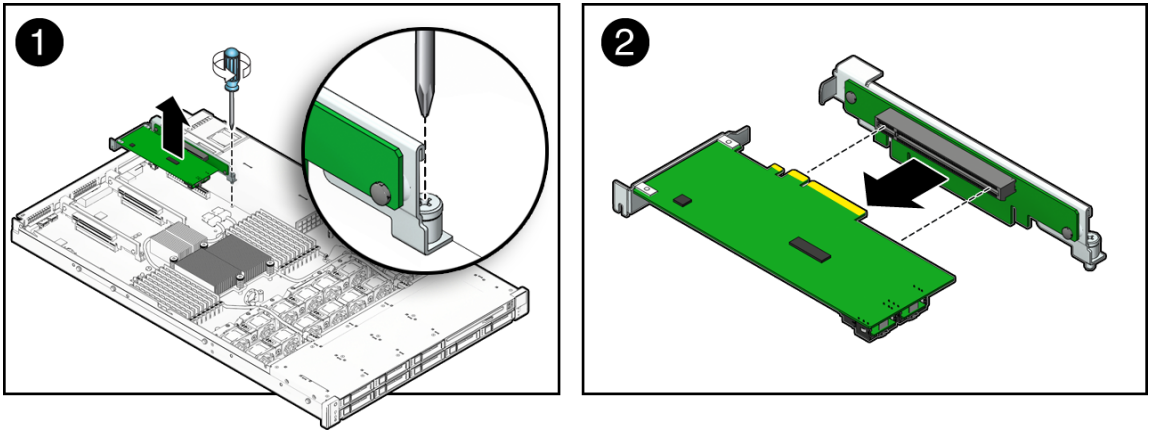
5. **Remove the Phillips screw that secures the PCIe riser to the motherboard and remove the riser (**FIGURE 4-12**).**

   See Section 4.3, "Servicing PCIe Risers" on page 4-15.

6. **Carefully remove the PCIe card from the PCIe riser connector.**

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

**FIGURE 4-12** Removing a PCIe Card

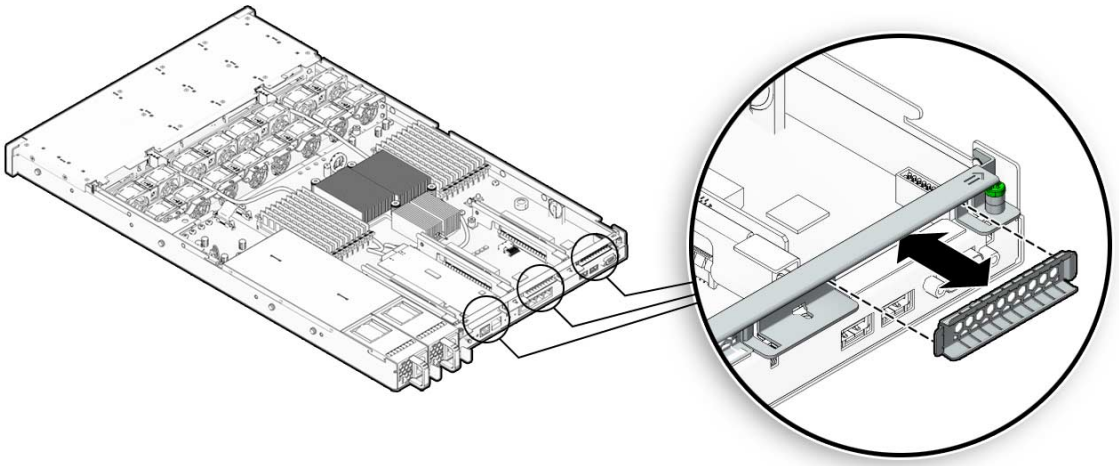


8. **If you are not replacing the PCIe card, install a PCIe filler panel.**

   PCIe filler panels are located in the motherboard back panel.

   Insert the filler panel into the server's back panel crossbar (see FIGURE 4-13).

**FIGURE 4-13** Installing a PCIe Filler Panel on Sun Fire X4170 Server



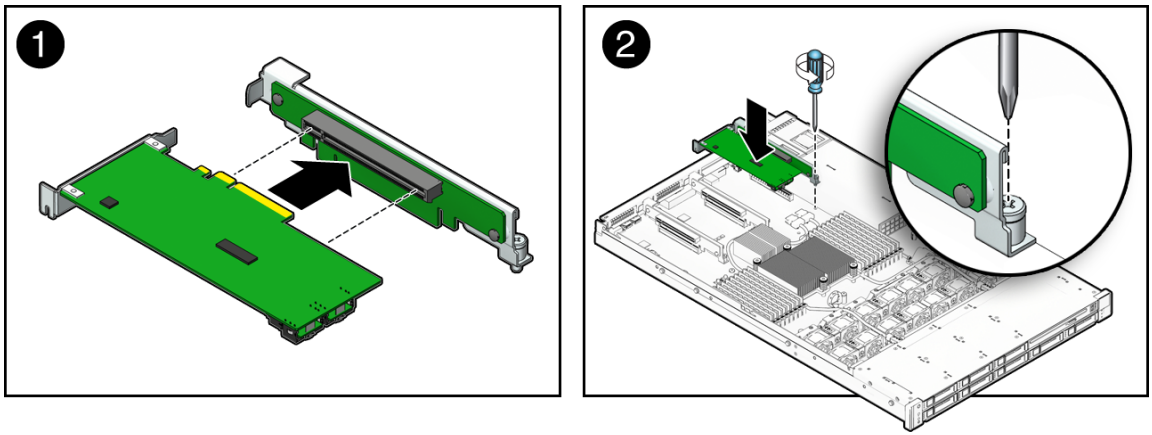
## 4.4.3 Install PCIe Card on Sun Fire X4170 Server

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

   See Section 4.4.1, "PCIe Card Configuration Guidelines" on page 4-22 for additional information.
4. **Remove the PCIe riser.**

   See Section 4.3, "Servicing PCIe Risers" on page 4-15.
5. **Insert the PCIe card into the slot PCIe riser (**FIGURE 4-14 **[1]).**
6. **Place the PCIe riser into the motherboard and tighten the captive No. 2 Phillips screw securing the riser to the motherboard [2].**
7. **If necessary, remove the PCI slot filler panel from the back panel crossbar.**

**FIGURE 4-14** Installing a PCIe Card on Sun Fire X4170 Server




8. **Reconnect the cables to the PCIe card that you unplugged during the removal procedure.**

9. **Return the server to operation.**

   a. **Install the top cover.**

      See Section 7.1, "Install Top Cover" on page 7-1.

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

      See Section 7.3, "Returning the Server to the Normal Rack Position" on page 7-5.

   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) and power on the server.**

      See Section 7.4, "Powering On the Server" on page 7-7.

      Verify that the AC Present LED is lit.

## 4.4.4 Remove PCIe Cards From Sun Fire X4270 and X4275 Servers



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

1. **Prepare the server for service.**
   a. **Power off the server and disconnect the power cord (or cords) from the power supply (or supplies).**
      See Section 2.4.2, "Power Off the Server" on page 2-5.
   b. **Slide the server out of the rack.**
      See Section 2.7, "Extending the Server to the Maintenance Position" on page 2-13
   c. **Attach an antistatic wrist strap.**
      See Section 2.9, "Performing Electrostatic Discharge and Antistatic Prevention Measures" on page 2-17.
   d. **Remove the top cover.**
      See Section 2.10, "Removing the Top Cover" on page 2-19.
2. **Locate the PCIe card that you want to remove, and note its corresponding riser board.**
   See Section 1.4, "Sun Fire X4170, X4270, and X4275 Servers Back Panel Features" on page 1-10 for more information about PCIe slots and their locations.
3. **If necessary, make a note of where the PCIe cards are installed.**
4. **Unplug all data cables from the PCIe card.**
   To disconnect the cables from the PCIe card, press the latch, push in toward the connector, and then pull out to remove the cable.
   Note the location of all cables for reinstallation later.
5. **Remove the PCIe riser (**FIGURE 4-12**).**
   See Section 4.3, "Servicing PCIe Risers" on page 4-15.
6. **Carefully remove the PCIe card from the riser board connector.**
7. **Place the PCIe card on an antistatic mat.**

8. **If you are not replacing the PCIe card, install a PCIe filler panel in the PCI slot in the PCIe riser vacated by the PCIe card.**

   PCIe filler panels are located in the motherboard back panel.

## 4.4.5 Install PCIe Cards on Sun Fire X4270 and X4275 Servers

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

   See Section 4.4.1, "PCIe Card Configuration Guidelines" on page 4-22 for additional information.
4. **Remove the PCIe riser.**

   See Section 4.3, "Servicing PCIe Risers" on page 4-15.
5. **If necessary, remove the PCI filler panel from the PCIe riser.**
6. **Insert the PCIe card into the correct slot on the riser board.**
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. **Reconnect the cables to the PCIe card that you unplugged during the removal procedure.**
9. **Return the server to operation.**
   a. **Install the top cover.**

      See Section 7.1, "Install Top Cover" on page 7-1.
   b. **Slide the server into the rack.**

      See Section 7.3, "Returning the Server to the Normal Rack Position" on page 7-5.
   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) and power on the server.**

See Section 7.4, “Powering On the Server” on page 7-7.

Verify that the AC Present LED is lit.

# 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.



**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 these procedures.

## 4.5.1 Remove Battery

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

**a. Power off the server and disconnect the power cord (or cords) from the power supply (or supplies).**

See Section 2.4.2, “Power Off the Server” on page 2-5.

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

See Section 2.7, “Extending the Server to the Maintenance Position” on page 2-13.

**c. Attach an antistatic wrist strap.**

See Section 2.9, “Performing Electrostatic Discharge and Antistatic Prevention Measures” on page 2-17.

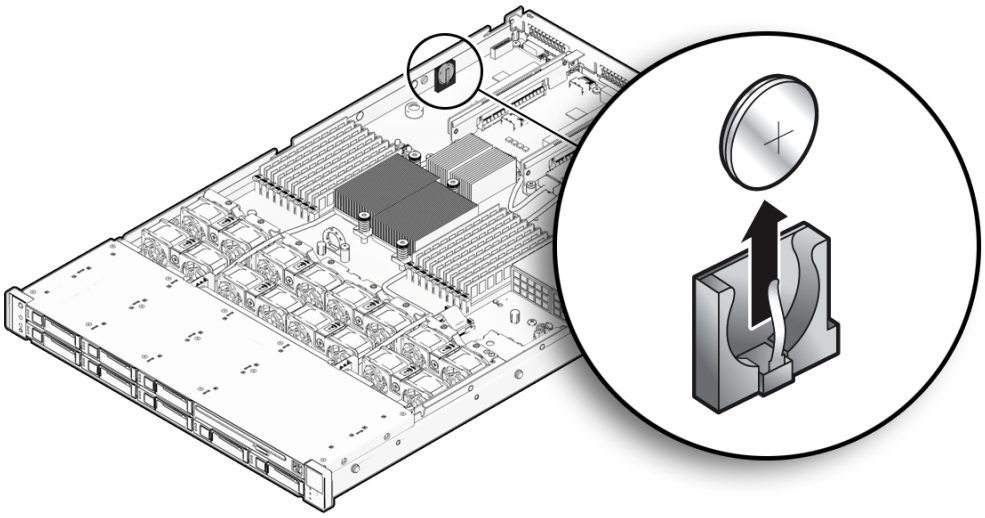
**d. Remove the top cover.**

See Section 2.10, “Removing the Top Cover” on page 2-19.

**2. To remove the battery, place you finger between the battery and side wall of the server chassis and push the battery away from the side wall (FIGURE 4-15).**

**3. Twist the battery (either clockwise or counter-clockwise) and lift it out.**

**FIGURE 4-15** Removing the Battery



## 4.5.2 Install Battery

1. **Unpackage the replacement battery.**
2. **Press the new battery into the battery holder with the positive side (+) facing the server chassis side wall.**
3. **If the service processor is configured to synchronize with a network time server using the Network Time Protocol (NTP), the ILOM clock will be reset as soon as the server is powered on and connected to the network. Otherwise, proceed to the next step.**
4. **If the service processor is not configured to use NTP, you must reset the ILOM clock using the ILOM CLI or the web interface. For instructions, see the** *Sun Integrated Lights Out Manager 2.0 User's Guide* **(820-1188).**
5. **Return the server to operation.**
   a. **Install the top cover.**

      See Section 7.1, "Install Top Cover" on page 7-1.

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

      See Section 7.3, "Returning the Server to the Normal Rack Position" on page 7-5.

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

See Section 7.4, “Powering On the Server” on page 7-7.

Verify that the AC Present LED is lit.

# 4.6 Servicing CPUs

The following topics are covered:


- Section 4.6.1, “Remove CPU” on page 4-30
- Section 4.6.2, “Install CPU” on page 4-32




**Caution –** Ensure that all power is removed from the server before removing or installing a CPU. You must disconnect the power cables from the system before performing these procedures.

## 4.6.1 Remove CPU

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

   a. **Power off the server and disconnect the power cord (or cords) from the power supply (or supplies).**

      See Section 2.4.2, “Power Off the Server” on page 2-5.

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

      See Section 2.7, “Extending the Server to the Maintenance Position” on page 2-13.

   c. **Attach an antistatic wrist strap.**

      See Section 2.9, “Performing Electrostatic Discharge and Antistatic Prevention Measures” on page 2-17.

   d. **Remove the top cover.**

      See Section 2.10, “Removing the Top Cover” on page 2-19.

2. **Remove the CPU (**FIGURE 4-16**).**

   a. **Identify which CPU to remove.**

**b. Identify the location of the faulty CPU by pressing the FAULT REMIND button on the motherboard (FIGURE 4-1).**

- If CPU LED is off: CPU is operating properly.
- If CPU LED is on (amber): CPU is faulty and should be replaced.

CPU0 is closest to the power supply bay (FIGURE 4-16 [1]).

**c. Unscrew the two hex screws from the heatsink for the faulty CPU [2].**

Turn the screws alternately one and one half turns until they are fully removed.

**d. Twist the heatsink slightly to break the grease seal, lift off the heatsink and place it upside down on a flat surface to prevent the thermal grease from contaminating other components.**

**e. Use an alcohol pad to clean the thermal grease from both the bottom of the heatsink and the top of the CPU**

Be very careful not to get the thermal grease on your fingers.

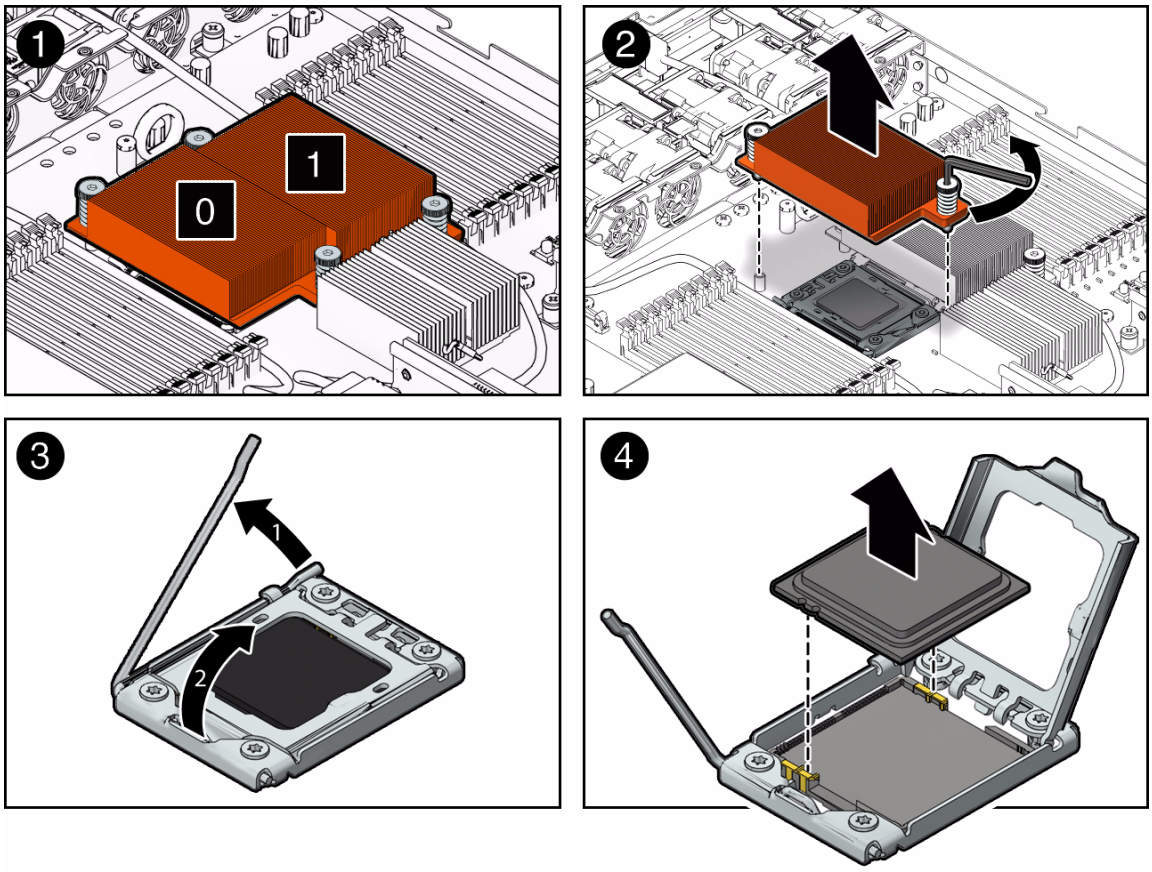


**Caution –** Failure to clean the heatsink and the CPU prior to removing the CPU could result in the accidental contamination of the CPU socket or other components. Also, be careful not to get the grease on your fingers as this could result in contamination of components.

**f. Disengage the CPU release lever by pushing down and moving it to the side away from the CPU, and then rotating the lever upward [3].**

**g. Open the pressure frame and carefully remove the CPU [4].**

**FIGURE 4-16** Removing the CPU




## 4.6.2 Install CPU

1. **Attach an antistatic wrist strap.**

   See Section 2.9, “Performing Electrostatic Discharge and Antistatic Prevention Measures” on page 2-17.

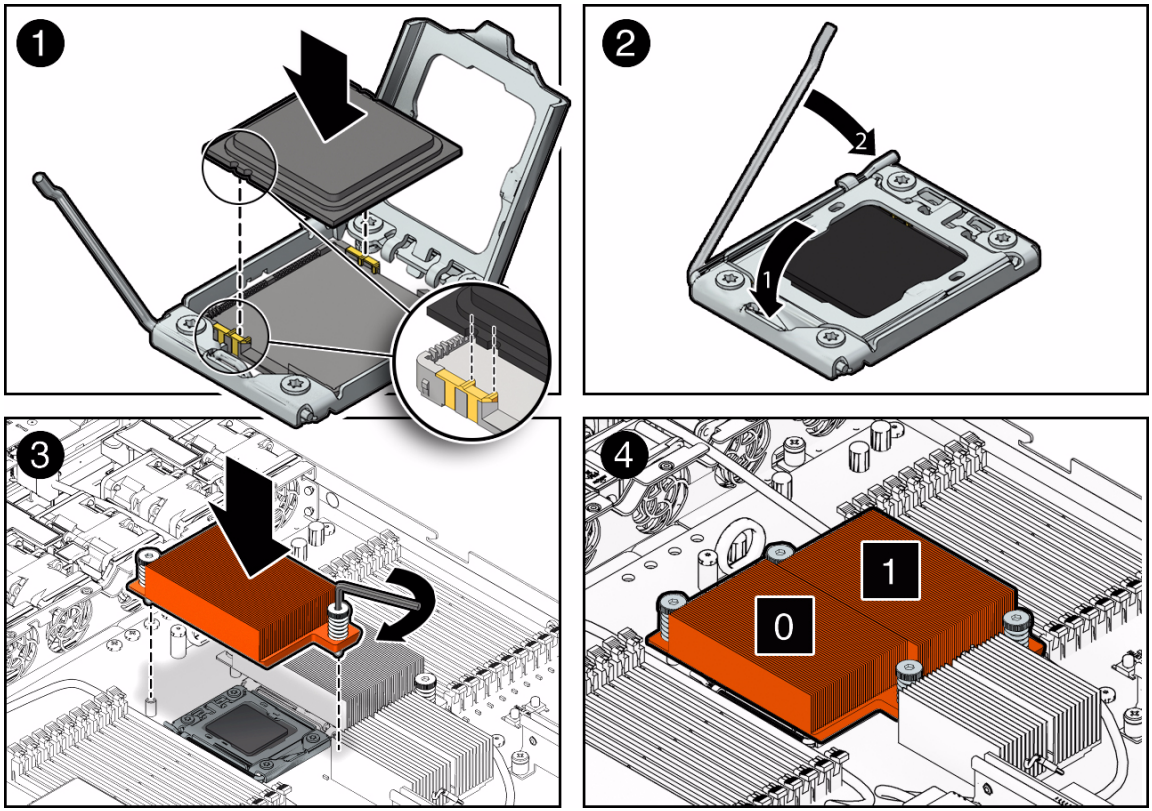
2. **Unpack the replacement CPU.**

3. **Install the CPU (**FIGURE 4-17**).**

**a. Properly orient the CPU with the socket alignment tabs and carefully place the CPU into the socket [1].**

Ensure that the orientation is correct as damage might result if the CPU pins are not aligned correctly.

**FIGURE 4-17** Installing the CPU




**b. Lower the pressure frame.**

Ensure that the pressure frame sits flat around the periphery of the CPU.

**c. Engage the release lever by rotating it downward and slipping it under the catch [2].**

**d. Use the syringe (supplied with the new or replacement CPU) to apply approximately 0.1 ml of thermal grease to the center of the top of the CPU. Do not distribute the grease.**

**e. Inspect the heatsink for dust and lint. Clean if necessary.**

f. **Orient the heatsink so that the two screws line up with the mounting studs [3].**

g. **Carefully position the heatsink on the CPU, aligning it with the mounting posts to reduce movement after it makes initial contact with the layer of thermal grease [3].**



**Caution –** If the heatsink assembly is moved too much during its installation, the layer of thermal grease may not be distributed evenly, leading to component damage.

h. **Tighten the screws alternately one-half turn until fully seated.**

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

   a. **Install the top cover.**

      See Section 7.1, "Install Top Cover" on page 7-1.

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

      See Section 7.2, "Reinstalling the Server in the Rack" on page 7-4.

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

      See Section 7.4, "Powering On the Server" on page 7-7.

      Verify that the AC Present LED is lit.

5. **Clear server CPU faults.**

   a. **To show server faults, log in to the server as `root` using the ILOM CLI and type the following command to list all known faults on the system:**

      -> **`show /SP/faultmgmt`**

      The server lists all known faults, for example:

```
SP/faultmgmt
  Targets:
      0 (/SYS/MB/P0)
  Properties:
  Commands:
      cd
      show
```

**b. To clear the fault type the following command:**

-> **`set /SYS/MB/P0 clear_fault_action=true`**

For example:

```
-> set /SYS/MB/P0 clear_fault_action=true
Are you sure you want to clear /SYS/MB/P0 9y/n)? y
Set 'clear_fault_action" to 'true'
```

# 4.7 Servicing the Motherboard Assembly

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

- Power distribution board
- Paddle card

If you are removing the motherboard merely to access the power distribution board or the paddle card, you do *not* have to remove any of the following components from the motherboard:

- PCIe riser(s) and attached PCIe card(s)
- DDR3 DIMMs
- CPUs
- Compact flash card



**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 these procedures.



**Caution –** These procedures require 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 2.9, "Performing Electrostatic Discharge and Antistatic Prevention Measures" on page 2-17.



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



## 4.7.1 Remove Motherboard Assembly

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

   a. **Power off the server and disconnect the power cord (or cords) from the power supply (or supplies).**

      See Section 2.4.2, "Power Off the Server" on page 2-5.

   b. **Remove the server from the rack.**

      See Section 2.8, "Removing the Server From the Rack" on page 2-15.

   c. **Attach an antistatic wrist strap.**

      See Section 2.9, "Performing Electrostatic Discharge and Antistatic Prevention Measures" on page 2-17.

   d. **Remove the top cover from the server.**

      See Section 2.10, "Removing the Top Cover" on page 2-19.

2. **If the server is an Sun Fire X4270 or X4275 system, remove the plastic air baffle.**

   See Section 4.2.2, "Remove Air Baffle" on page 4-13.

3. **Disconnect the storage drive data cables from the SAS PCIe card or the motherboard SATA connectors.**



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

4. **If you are removing the motherboard because it has failed and needs to be replaced, remove the following components from the motherboard:**
   - DDR3 DIMMS. For instructions, see Section 4.1.5, "Remove Faulty DIMMs" on page 4-6.
   - PCIe risers and attached PCIe cards. For instructions, see Section 4.3.1, "Remove PCIe Riser From Sun Fire X4170 Server" on page 4-15.
   - CPUs. For instructions, see Section 4.6.1, "Remove CPU" on page 4-30.
   - Compact flash card

5. **Remove the motherboard.**

   a. **Disconnect the power distribution board ribbon cable (see** FIGURE 4-18 **[1]).**

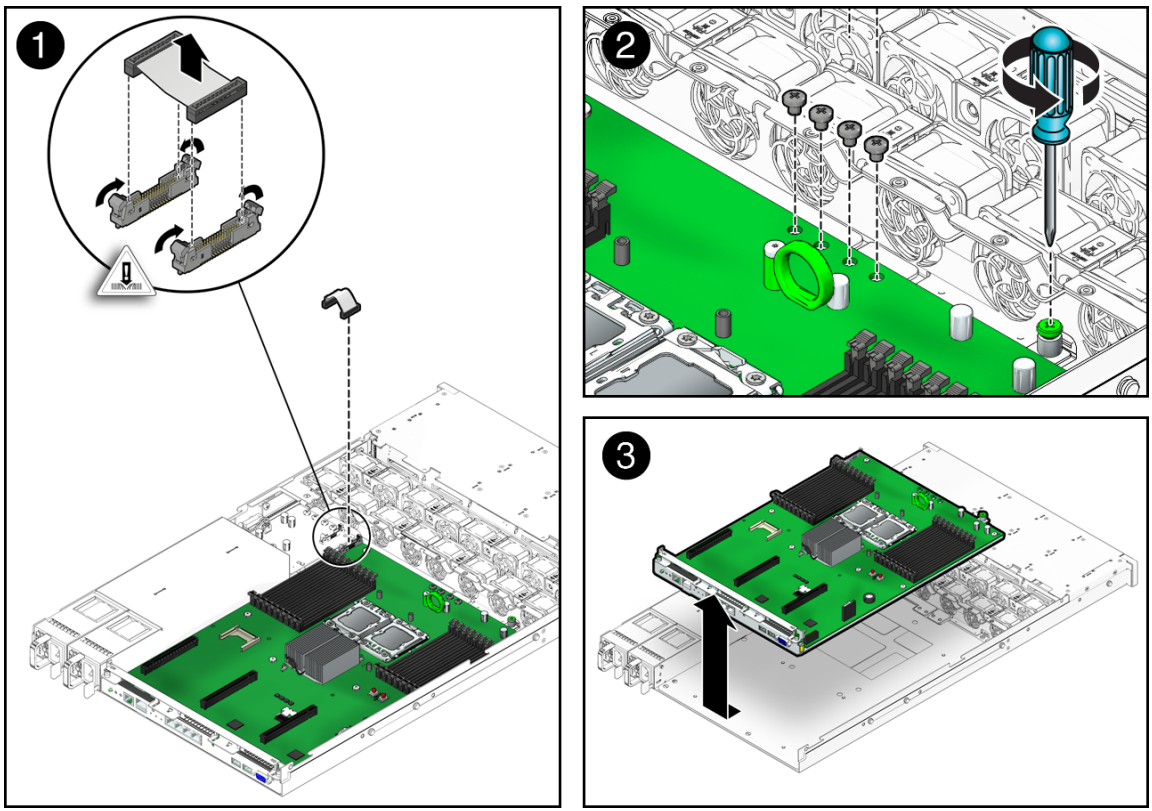
   b. **Remove the four screws that secure the motherboard to the bus bar (see** FIGURE 4-18 **[2]).**

      Use a No. 2 Phillips screwdriver.

c. **Loosen the green captive screw on the front of the motherboard that secures the motherboard to the chassis (see** FIGURE 4-18 **[2]).**

d. **Using the finger loop just below the four screws that secure the motherboard to the bus bar [2], carefully slide the motherboard to the rear of the chassis [3], lift it out of the chassis, and place it on an antistatic mat.**

**FIGURE 4-18** Removing the Motherboard Assembly




## 4.7.2 Install Motherboard Assembly

1. **Attach an antistatic wrist strap.**

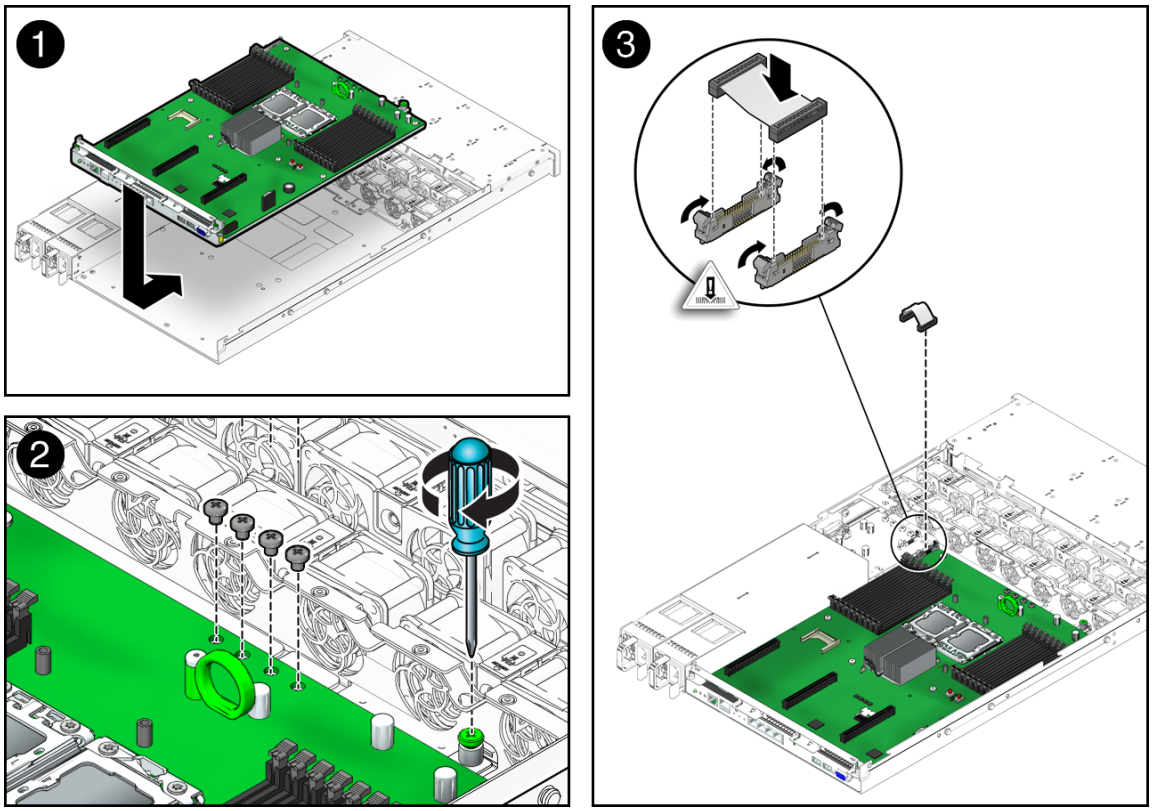
   See Section 2.9, "Performing Electrostatic Discharge and Antistatic Prevention Measures" on page 2-17.

2. **Install the motherboard.**

a. **Place the motherboard into the chassis (**FIGURE 4-19 **[1]).**

Position the motherboard carefully.

**FIGURE 4-19** Installing the Motherboard Assembly




b. **Install the four screws that secure the motherboard to the bus bar (**FIGURE 4-19 **[2]).**

Use a No. 2 Phillips screwdriver.

c. **Tighten the green captive screw on the front of the motherboard, that secures the motherboard tray to the chassis (**FIGURE 4-19 **[2]).**

3. **If you are replacing the motherboard because it failed and needed to be replaced, you can now reinstall the reusable components.**

Reusable motherboard components are as follows:

- DDR3 DIMMS. For instructions, see Section 4.1.6, “Install DIMMs” on page 4-9.

**Note –** Only install the DIMMs in the slots (connectors) from which they were removed.

- PCIe risers and attached PCIe cards. For instructions, see Section 4.3.2, "Install PCIe Riser on Sun Fire X4170 Server" on page 4-18 and Section 4.3.4, "Install PCIe Riser on Sun Fire X4270 and X4275 Servers" on page 4-20.
- CPUs. For instructions, see Section 4.6.2, "Install CPU" on page 4-32.
- Compact flash card.

4. **Carefully connect the power distribution board ribbon cable to the motherboard (**FIGURE 4-19 **[3]).**

   Ensure that it is seated properly.

5. **Connect the two storage drive data cables to the storage drive cage.**



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

6. **If the server is a Sun Fire X4270 or Sun Fire X4275 system, install the air baffle.**

   See Section 4.2.3, "Install Air Baffle" on page 4-14.

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

   a. **Install the top cover.**

      See Section 7.1, "Install Top Cover" on page 7-1.

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

      See Section 7.2, "Reinstalling the Server in the Rack" on page 7-4.

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

      Verify that the AC Present LED is lit.

      See Section 7.4, "Powering On the Server" on page 7-7.

# 4.8 Resetting Passwords and Clearing CMOS NVRAM



**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 these procedures.



**Caution –** These procedures require 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 2.9, "Performing Electrostatic Discharge and Antistatic Prevention Measures" on page 2-17.

The following topics are covered:


- Section 4.8.1, "Overview" on page 4-40
- Section 4.8.2, "Reset the BIOS Password and Clear the CMOS NVRAM Using the CLR CMOS Button" on page 4-40


## 4.8.1 Overview

You can clear the CMOS NVRAM and BIOS Password by pressing the CLR CMOS button, which is located on the motherboard. You can also reset the BIOS passwords from the BIOS Setup utility.

## 4.8.2 Reset the BIOS Password and Clear the CMOS NVRAM Using the CLR CMOS Button

1. **Prepare the server for operation.**

   a. **Power off the server and disconnect the power cord (or cords) from the power supply (or supplies).**

      See Section 2.4.2, "Power Off the Server" on page 2-5.

   b. **Remove the server from the rack.**

      See Section 2.8, "Removing the Server From the Rack" on page 2-15.

c. **Attach an antistatic wrist strap.**

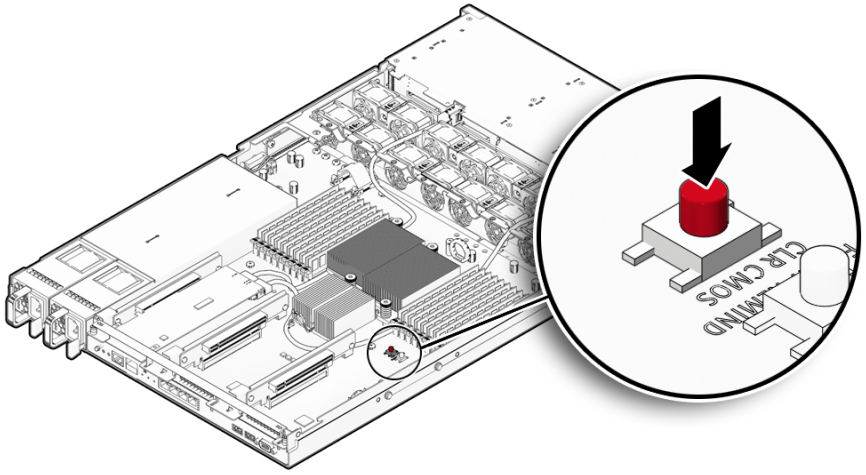
See Section 2.9, "Performing Electrostatic Discharge and Antistatic Prevention Measures" on page 2-17.

d. **Remove the top cover from the server.**

See Section 2.10, "Removing the Top Cover" on page 2-19.

2. **Press and release the CLR CMOS button (**FIGURE 4-20**).**

**FIGURE 4-20** Location of the CLR CMOS Button




3. **Install the top cover.**

See Section 7.1, "Install Top Cover" on page 7-1.

4. **Power on the server and boot until a message appears that indicates that NVRAM has been cleared.**

See Section 7.4, "Powering On the Server" on page 7-7.

The BIOS password is reset to the default and the CMOS NVRAM is cleared.

Verify that the AC Present LED is lit.

5. **Slide the server into the rack.**

See Section 7.2, "Reinstalling the Server in the Rack" on page 7-4.

CHAPTER 5

# Servicing Sun Fire X4170 and X4270 Servers Infrastructure Boards and Components

This chapter describes how to replace cold-swappable, field-replaceable units (FRUs) in the Sun Fire X4170 and X4270 Servers.

The following topics are covered:


- Section 5.1, "Servicing the DVD/USB Module" on page 5-2
- Section 5.2, "Servicing the Fan Power Boards" on page 5-4
- Section 5.3, "Servicing the Storage Drive Cage" on page 5-9
- Section 5.4, "Servicing the Storage Drive Backplane" on page 5-15
- Section 5.5, "Servicing the Front Control Panel Light Pipe Assembly" on page 5-19
- Section 5.6, "Servicing the Power Distribution Board" on page 5-22
- Section 5.7, "Servicing the Paddle Card" on page 5-28
- Section 5.8, "Servicing Cables" on page 5-32




**Caution –** Never attempt to run the server with the top cover removed. Hazardous voltage present.



**Caution –** Equipment damage possible. The top cover must be in place for proper airflow.

# 5.1 Servicing the DVD/USB Module

**Note –** This section only applies to the Sun Fire X4170 and X4270 Servers. The Sun Fire X4275 server does not have a DVD/USB module.

The DVD-ROM drive and front USB connectors 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 storage drive cage in order to service the storage drive backplane.

## 5.1.1 Remove DVD/USB Module

1. **Remove media from the drive.**
2. **Power off the server.**

   See Section 2.4.2, "Power Off the Server" on page 2-5.
3. **Attach an antistatic wrist strap.**

   See Section 2.9, "Performing Electrostatic Discharge and Antistatic Prevention Measures" on page 2-17.
4. **Remove the server storage drive located below and to the right the DVD/USB module (**FIGURE 5-1**).**

   For the Sun Fire X4170 server, remove storage drive HDD7.

   For the Sun Fire X4270 server, remove storage drive HDD13.

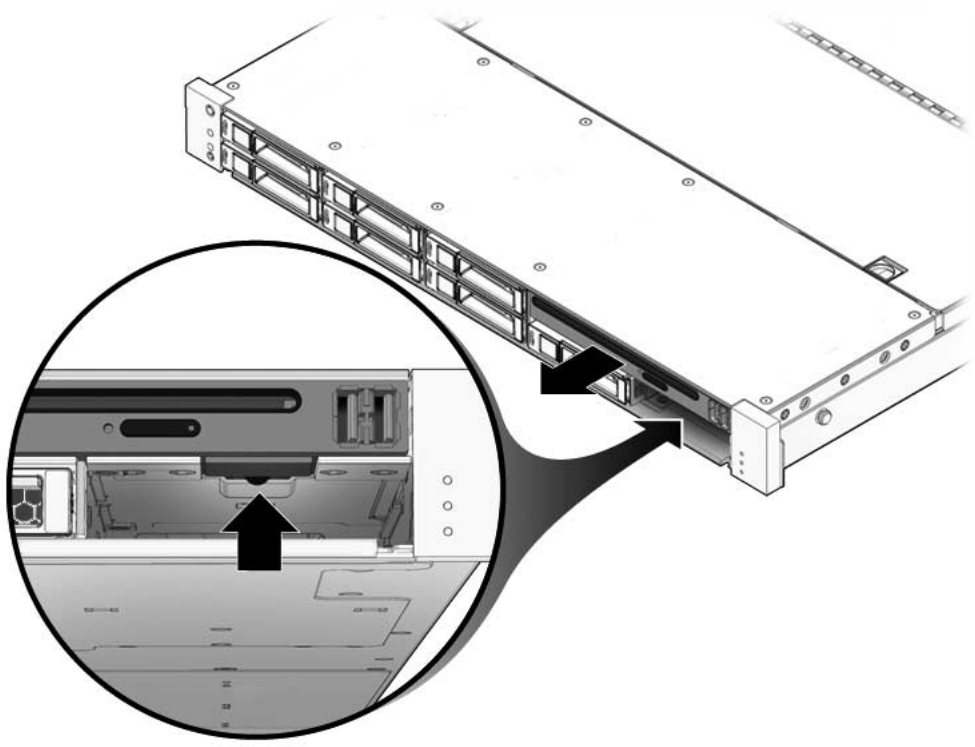
   See Section 3.2.1, "Server Storage Drive Locations" on page 3-2 for illustrations of the storage drive locations for the Sun Fire X4170 and X4270 Servers.
5. **Release the DVD/USB module from the storage drive backplane (**FIGURE 5-1**).**

   Use the finger indent in the storage drive bay below the DVD/USB module to detach the module from the backplane.

**Note –** While FIGURE 5-1 shows the Sun Fire X4170 Server, the Sun Fire X4270 Server is very similar.

6. **Slide the DVD/USB module out of the storage drive cage.**
7. **Place the module on an antistatic mat.**

**FIGURE 5-1** Removing the DVD/USB Module

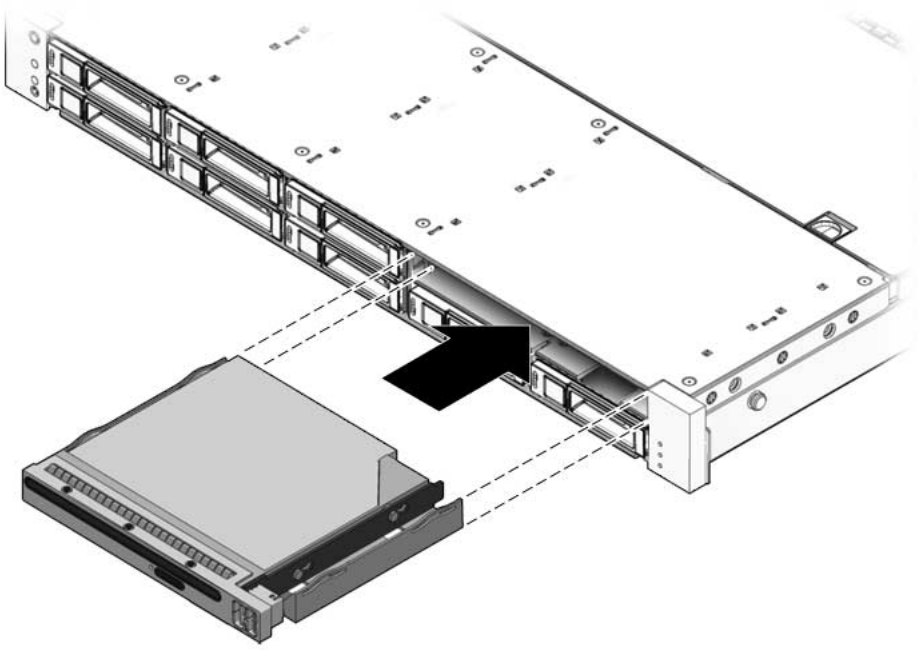


## 5.1.2 Install DVD/USB Module

1. **Slide the DVD/USB module into the front of the chassis until it seats (**FIGURE 5-2**).**
2. **Install the storage drive you removed during the DVD/USB module removal procedure.**
3. **Power on the server.**

   See Section 7.4, “Powering On the Server” on page 7-7.

**FIGURE 5-2** Installing the DVD/USB Module



# 5.2 Servicing the Fan Power Boards

You must remove fan power board(s) to access the paddle card or to access the storage drive data cables in the Sun Fire X4170 and X4270 Servers.



**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 these procedures.

## 5.2.1 Remove Fan Power Board

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

a. **Power off the server and disconnect the power cord (or cords) from the power supply (or supplies).**

   See Section 2.4.2, "Power Off the Server" on page 2-5.

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

   See Section 2.7, "Extending the Server to the Maintenance Position" on page 2-13.

---

**Note –** If you are removing the fan power boards to access the paddle card or storage drive cage, you must remove the server from the rack. See Section 2.8, "Removing the Server From the Rack" on page 2-15.

---

c. **Attach an antistatic wrist strap.**

   See Section 2.9, "Performing Electrostatic Discharge and Antistatic Prevention Measures" on page 2-17.

d. **Remove the top cover.**

   See Section 2.10, "Removing the Top Cover" on page 2-19.

2. **Remove the fan modules.**

---

**Note –** The server has two fan power boards. 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, "Remove Fan Module" on page 3-13.

3. **Remove the Phillips screw that secures the fan power board to the chassis (**FIGURE 5-3 **and** FIGURE 5-4**).**
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 5-3** Removing the Fan Power Board From the Sun Fire X4170 Server

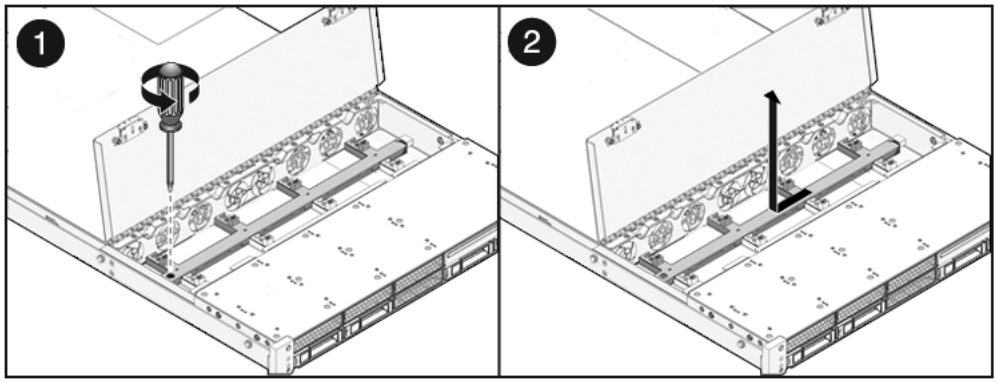
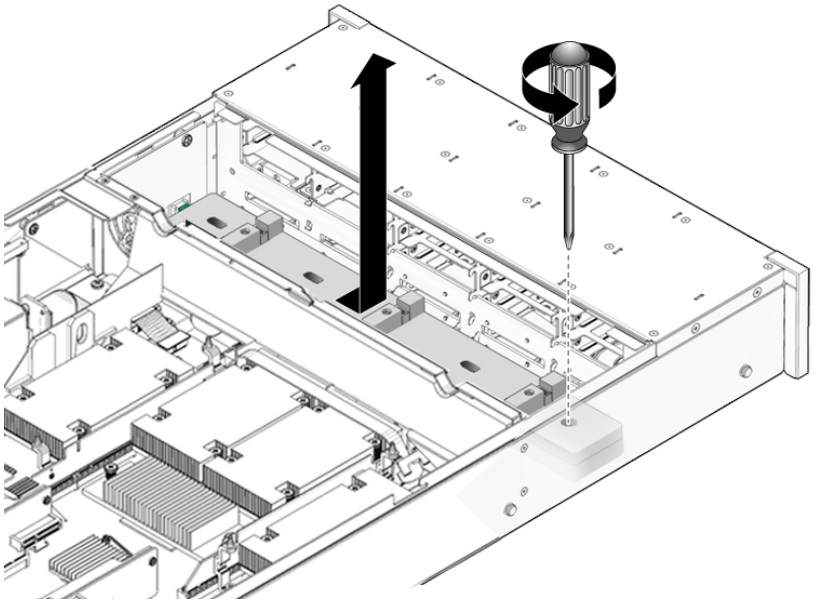



**FIGURE 5-4** Removing the Fan Power Board From the Sun Fire X4270 Server



## 5.2.2 Install 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 5-5 **and** FIGURE 5-6**).**

**FIGURE 5-5** Installing the Fan Power Board on the Sun Fire X4170 Server

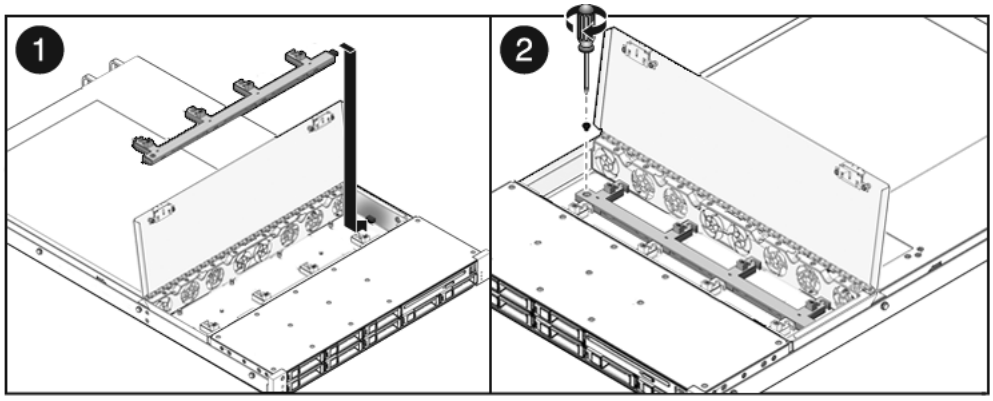
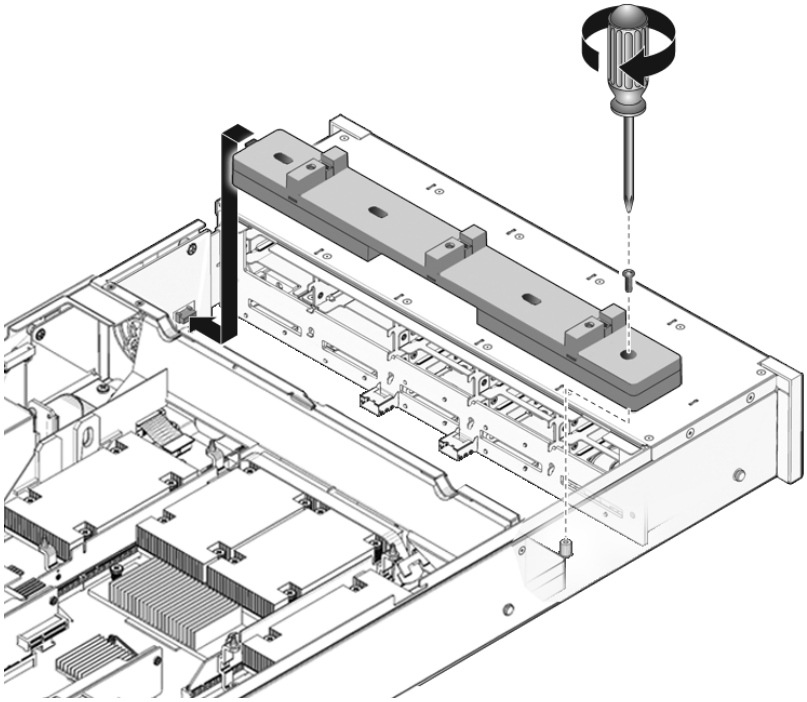


**FIGURE 5-6** Installing the Fan Power Board on the Sun Fire X4270 Server



2. **Secure the board to the chassis with a Phillips screw.**
3. **Reinstall the fan modules.**

   See Section 3.3.5, "Install Fan Module" on page 3-14.
4. **Return the server to operation.**

   a. **Install the top cover.**

      See Section 7.1, "Install Top Cover" on page 7-1.

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

      See Section 7.3, "Returning the Server to the Normal Rack Position" on page 7-5.

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

      See Section 7.4, "Powering On the Server" on page 7-7.

      Verify that the AC Present LED is lit.

# 5.3 Servicing the Storage Drive Cage

You must remove the storage drive cage to access the following components:

- Storage drive backplane
- Front control panel light pipe assemblies



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

## 5.3.1 Remove Storage Drive Cage

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

   a. **Power off the server and disconnect the power cord (or cords) from the power supply (or supplies).**

      See Section 2.4.2, “Power Off the Server” on page 2-5.

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

      See Section 2.7, “Extending the Server to the Maintenance Position” on page 2-13.

   c. **Attach an antistatic wrist strap.**

      See Section 2.9, “Performing Electrostatic Discharge and Antistatic Prevention Measures” on page 2-17.

   d. **Remove the top cover.**

      See Section 2.10, “Removing the Top Cover” on page 2-19.

2. **Remove all storage drives.**

   See Section 3.2.3, “Remove Storage Drive” on page 3-5.

**Note –** Record the drive locations before removing them from the system. You will need to install the storage drives in the correct locations when reassembling the system.

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

   See Section 5.1.1, “Remove DVD/USB Module” on page 5-2.

4. **To gain access to the data cables, remove the fan modules near the cable connections.**

   Only remove the fan modules close to the cable connections.

   See Section 3.3.4, "Remove Fan Module" on page 3-13.

5. **Remove the storage drive cage (see FIGURE 5-7 and FIGURE 5-8).**

   a. **Remove the No. 2 Phillips screws securing the storage drive cage to the chassis.**

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

   b. **Disconnect the PCIe cable(s) from the storage drive cage.**

   c. **Slide the storage drive cage forward to disengage the backplane from the paddle card.**

   d. **Lift the storage drive cage up and disconnect the storage drive data cable(s).**

      Press the connector release button to release the cables.

   e. **Set the storage drive cage on an antistatic mat.**

**FIGURE 5-7** Removing the Storage Drive Cage From the Sun Fire X4170 Server

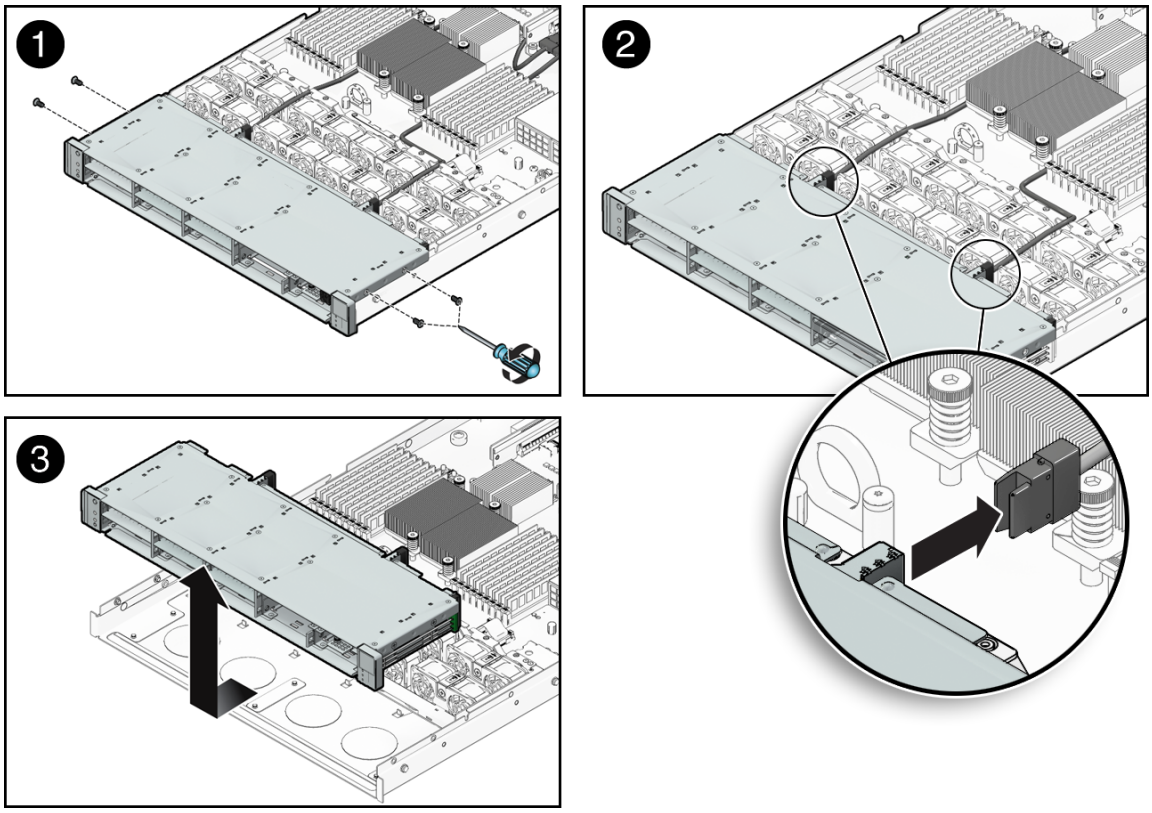
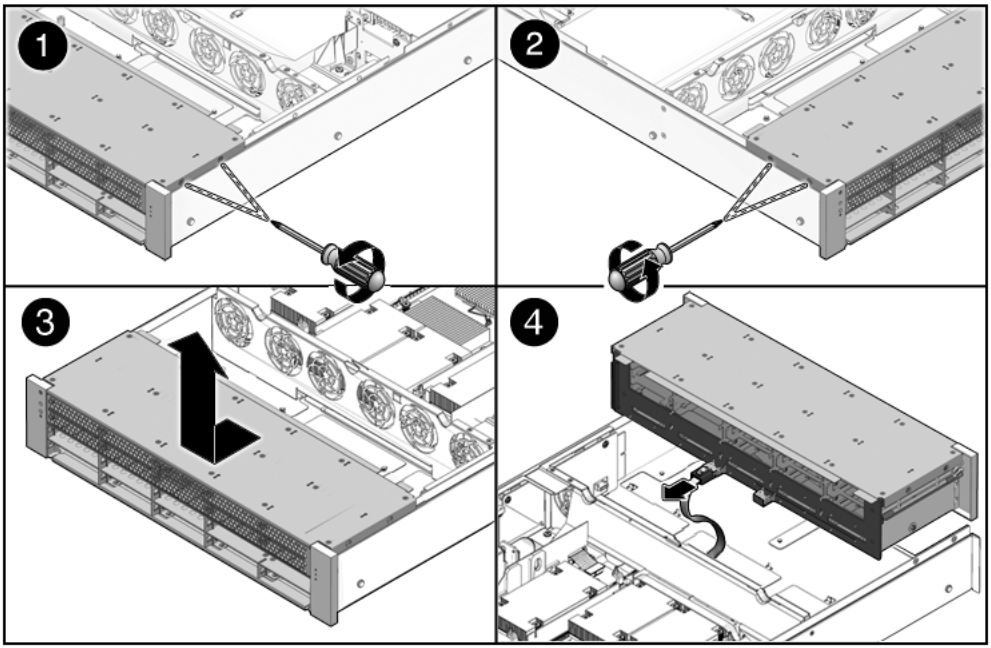


**FIGURE 5-8** Removing the Storage Drive Cage From a Sun Fire X4270 Server




## 5.3.2 Install Storage Drive Cage

1. **Connect the storage drive data cable(s) (**FIGURE 5-9 **and** FIGURE 5-10**).**

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

2. **Position the storage drive cage in the chassis over the standoffs in the chassis side walls.**

3. **Slide the storage drive cage back until the storage drive backplane engages with the paddle card connector.**

4. **Replace the No. 2 Phillips screws securing the storage drive cage to the chassis.**

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

**FIGURE 5-9** Installing the Storage Drive Cage on the Sun Fire X4170 Server

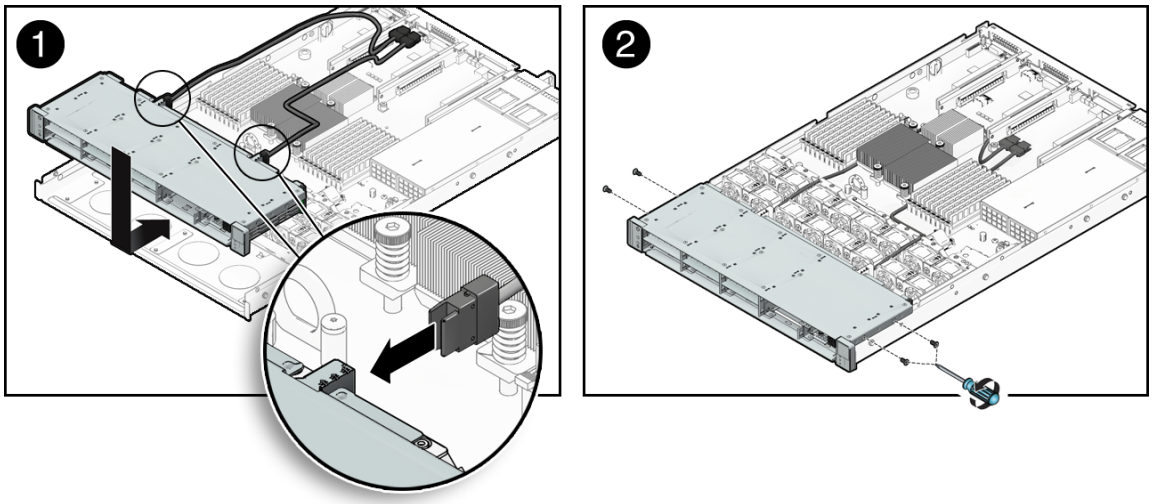
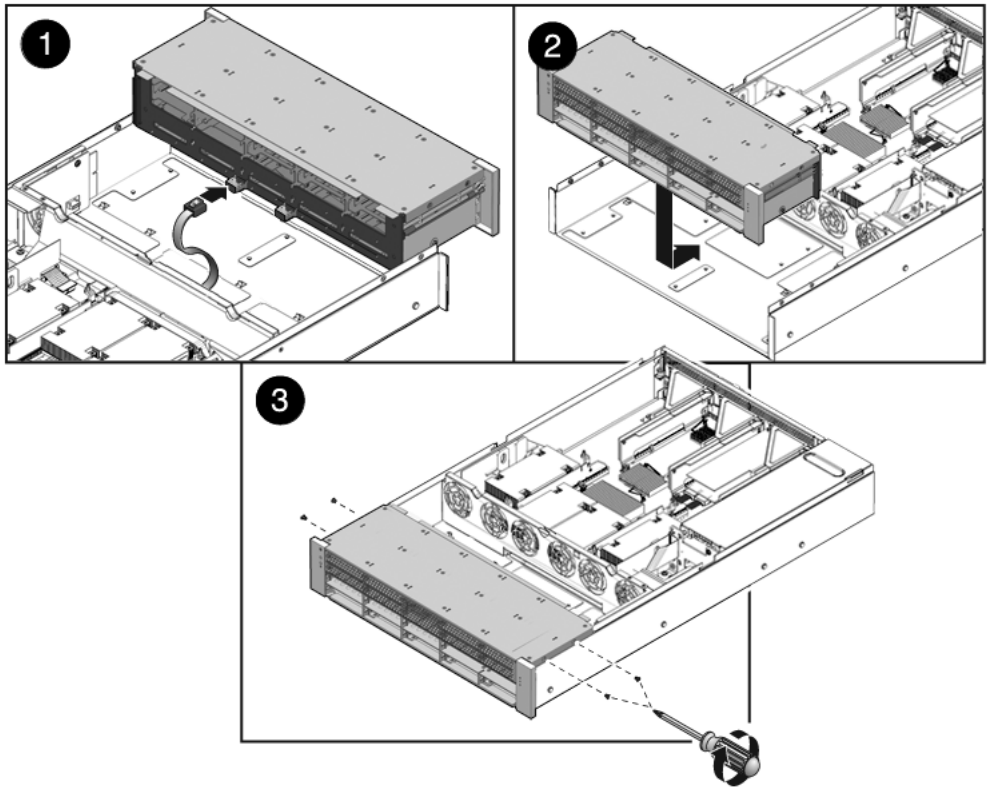


**FIGURE 5-10** Installing the Storage Drive Cage on the Sun Fire X4270 Server




5. **Install the fan modules.**

   See Section 3.3.5, “Install Fan Module” on page 3-14

6. **Install the top cover.**

   See Section 7.1, “Install Top Cover” on page 7-1.

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

   See Section 7.2, “Reinstalling the Server in the Rack” on page 7-4.

8. **Install the storage drives.**

---

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

---

See Section 3.2.4, “Install Storage Drive” on page 3-8.

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

   See Section 5.1.2, "Install DVD/USB Module" on page 5-3.

10. **Reconnect the power cord (or cords) to the power supply (or supplies) and power on the server.**

    See Section 7.4, "Powering On the Server" on page 7-7.

    Verify that the AC Present LED is lit.

# 5.4 Servicing the Storage Drive Backplane

Before you can service the storage drive backplane, you must remove the storage drive cage.

## 5.4.1 Remove Storage Drive Backplane

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

   a. **Power off the server and disconnect the power cord (or cords) from the power supply (or supplies).**

      See Section 2.4.2, "Power Off the Server" on page 2-5.

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

      See Section 2.7, "Extending the Server to the Maintenance Position" on page 2-13.

   c. **Attach an antistatic wrist strap.**

      See Section 2.9, "Performing Electrostatic Discharge and Antistatic Prevention Measures" on page 2-17.

   d. **Remove the top cover.**

      See Section 2.10, "Removing the Top Cover" on page 2-19.

2. **Remove the storage drive cage.**

   See Section 5.3.1, "Remove Storage Drive Cage" on page 5-9.

3. **Remove the No. 2 Phillips screws securing the backplane to the storage drive cage.**

   See FIGURE 5-11 for Sun Fire X4170 Server and FIGURE 5-12 for the Sun Fire X4270 Server.

**FIGURE 5-11** Removing the Storage Drive Backplane From the Sun Fire X4170 Server

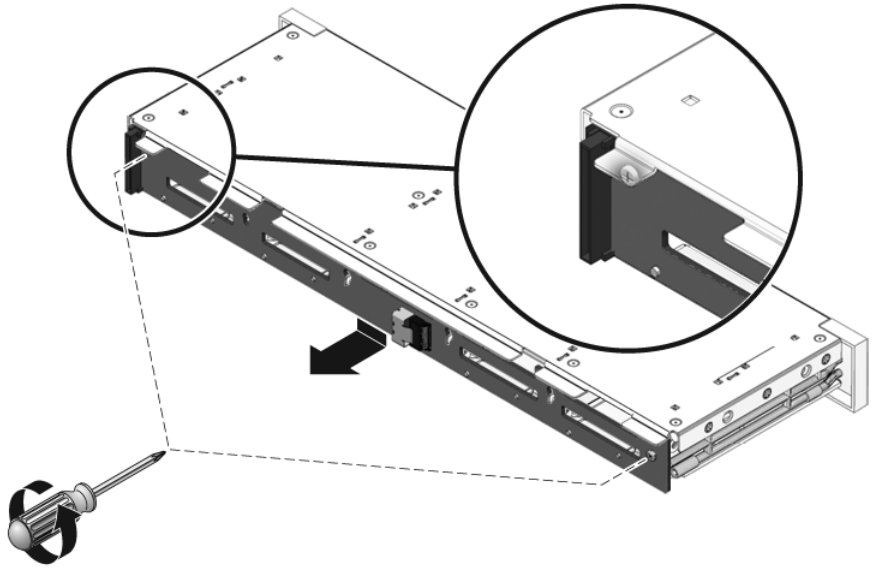
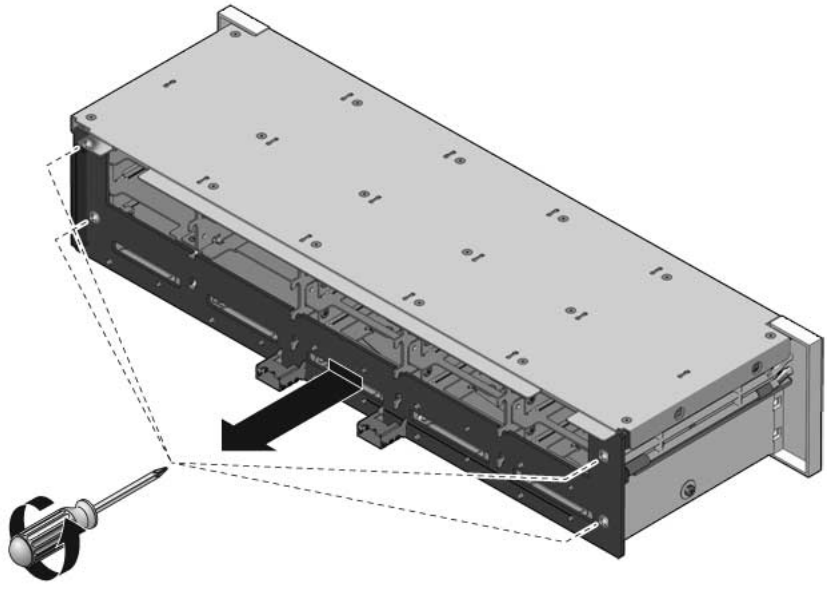


**FIGURE 5-12** Removing the Storage Drive Backplane From the Sun Fire X4270 Server



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

5. **Place the storage drive backplane on an antistatic mat.**

## 5.4.2 Install Storage Drive Backplane

1. **Slide the backplane under the retention hooks on the storage drive cage.**

   See FIGURE 5-13 for Sun Fire X4170 Server and FIGURE 5-14 for the Sun Fire X4270 Server.

2. **Install the No. 2 Phillips screws that secure the backplane to the storage drive cage.**

   If installing the backplane on a Sun Fire X4270 Server, the sequence to install the screws is top left, top right, bottom left, bottom right.

3. **Install the storage drive cage.**

   See Section 5.3.2, “Install Storage Drive Cage” on page 5-12.

**FIGURE 5-13** Installing the Storage Drive Backplane on the Sun Fire X4170 Server

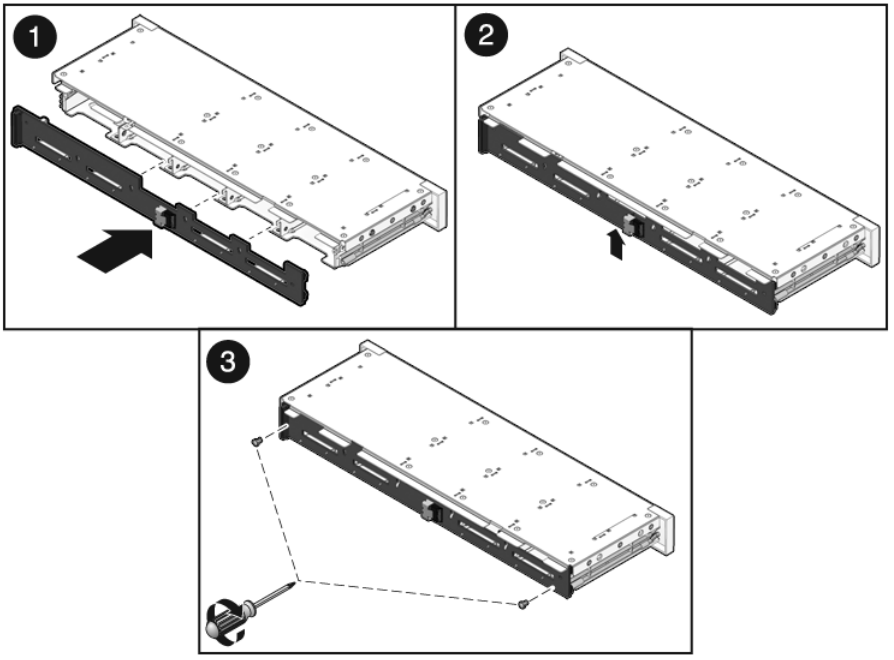
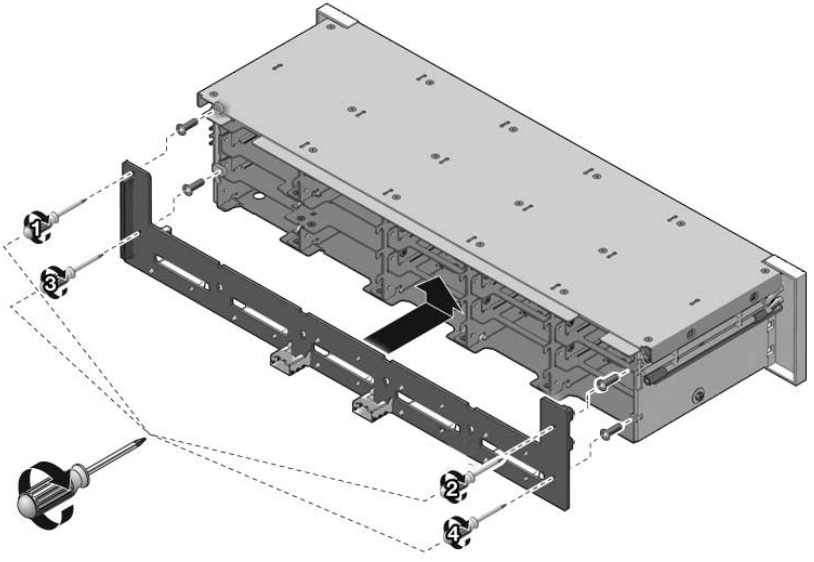



**FIGURE 5-14** Installing the Storage Drive Backplane on the Sun Fire X4270 Server



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

   a. **Install the top cover.**

      See Section 7.1, “Install Top Cover” on page 7-1.

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

      See Section 7.3, “Returning the Server to the Normal Rack Position” on page 7-5.

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

      See Section 7.4, “Powering On the Server” on page 7-7.

      Verify that the AC Present LED is lit.

# 5.5 Servicing the Front Control Panel Light Pipe Assembly



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

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

## 5.5.1 Remove Front Control Panel Light Pipe Assembly

There are two light pipe assemblies; one on each side of the storage drive cage.

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

   a. **Power off the server and disconnect the power cord (or cords) from the power supply (or supplies).**

      See Section 2.4.2, “Power Off the Server” on page 2-5.

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

      See Section 2.7, “Extending the Server to the Maintenance Position” on page 2-13.

c. **Attach an antistatic wrist strap.**

See Section 2.9, "Performing Electrostatic Discharge and Antistatic Prevention Measures" on page 2-17.

d. **Remove the top cover.**

See Section 2.10, "Removing the Top Cover" on page 2-19.

2. **Remove the storage drive cage.**

See Section 5.3.1, "Remove Storage Drive Cage" on page 5-9.

3. **Remove the storage drive backplane.**

See Section 5.4.1, "Remove Storage Drive Backplane" on page 5-15.

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

a. **For the Sun Fire X4170 Server, remove the two No. 2 Phillips screws securing the front control panel light pipe assembly to the storage drive cage** (FIGURE 5-15).

b. **For the Sun Fire X4270 Server, remove the three No. 2 Phillips screws securing the front control panel light pipe assembly to the storage drive cage** (FIGURE 5-16).

5. **Slide the light pipe assembly out of the storage drive cage.**

**FIGURE 5-15** Removing the Light Pipe Assembly From the Sun Fire X4170 Server

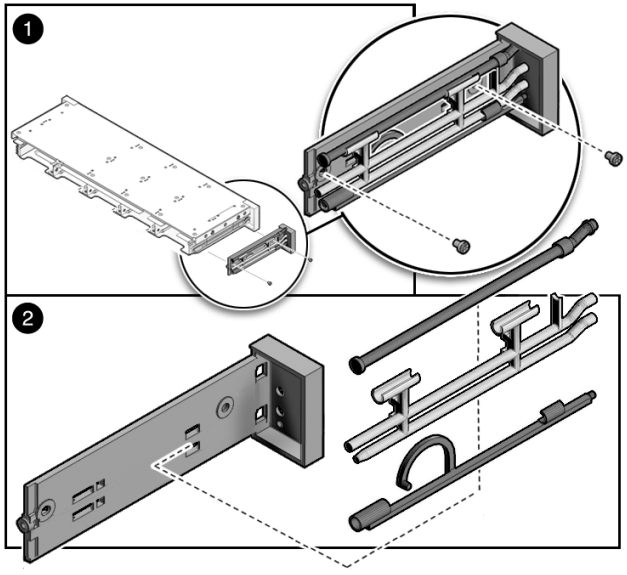
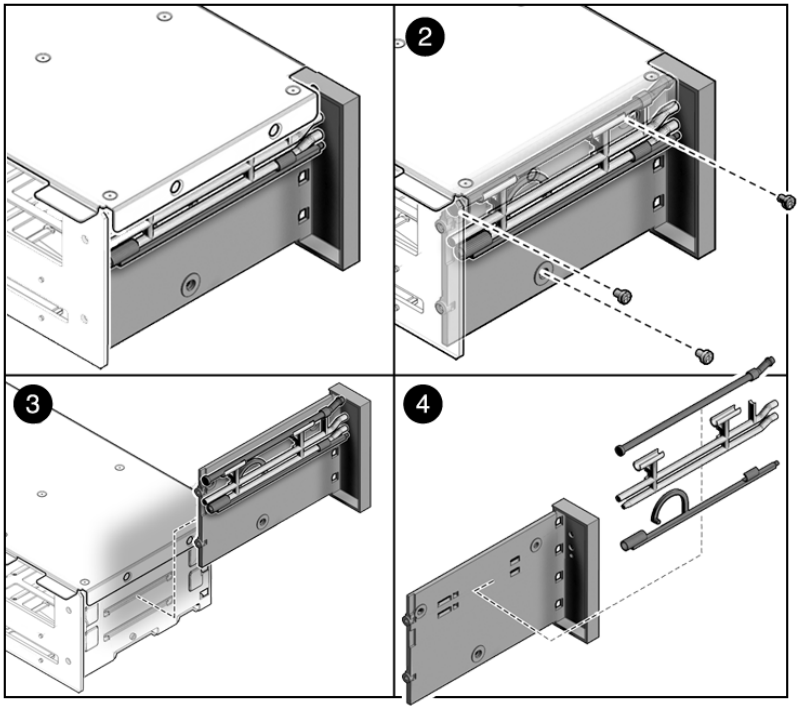


**FIGURE 5-16** Removing the Light Pipe Assembly From the Sun Fire X4270 Server




## 5.5.2 Install Front Control Panel Light Pipe Assembly

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

   See Section 5.4.2, “Install Storage Drive Backplane” on page 5-17.
4. **Install the storage drive cage.**

   See Section 5.3.2, “Install Storage Drive Cage” on page 5-12.
5. **Return the server to operation.**

   a. **Install the top cover.**

      See Section 7.1, “Install Top Cover” on page 7-1.

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

See Section 7.3, "Returning the Server to the Normal Rack Position" on page 7-5.

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

See Section 7.4, "Powering On the Server" on page 7-7.

Verify that the AC Present LED is lit.

# 5.6 Servicing the Power Distribution Board

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.



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

## 5.6.1 Remove Power Distribution Board From Sun Fire X4170 Server

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

**a. Power off the server and disconnect the power cord (or cords) from the power supply (or supplies).**

See Section 2.4.2, "Power Off the Server" on page 2-5.

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

See Section 2.7, "Extending the Server to the Maintenance Position" on page 2-13.

**c. Attach an antistatic wrist strap.**

See Section 2.9, "Performing Electrostatic Discharge and Antistatic Prevention Measures" on page 2-17.

d. **Remove the top cover.**

See Section 2.10, "Removing the Top Cover" on page 2-19.

2. **Remove the motherboard assembly.**

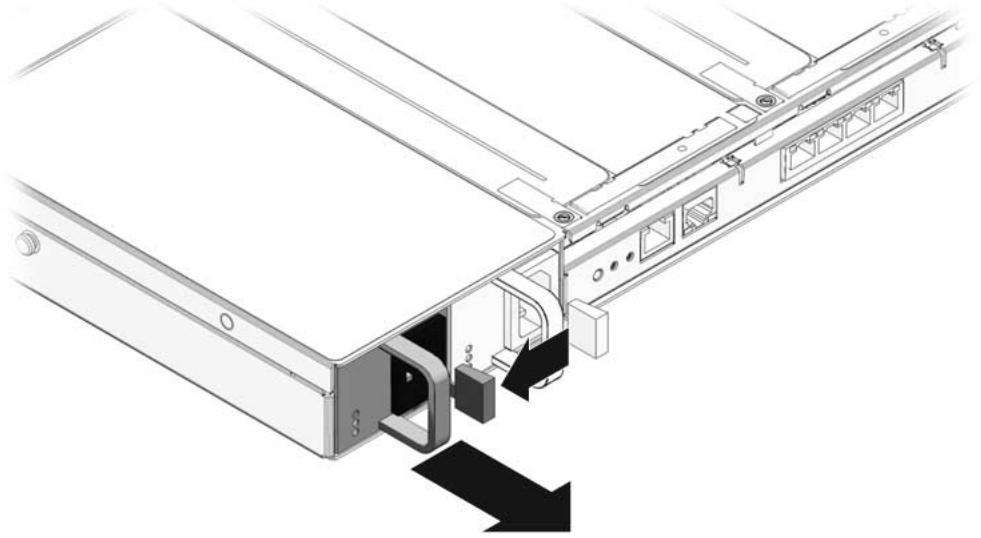
See Section 4.7.1, "Remove Motherboard Assembly" on page 4-36.

3. **Remove all power supplies (**FIGURE 5-17**).**

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

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

**FIGURE 5-17** Removing a Power Supply From the Sun Fire X4170 Server



4. **Remove the power distribution board (**FIGURE 5-18**).**

a. **Disconnect the top cover chassis intrusion switch cable from the power distribution board [1].**

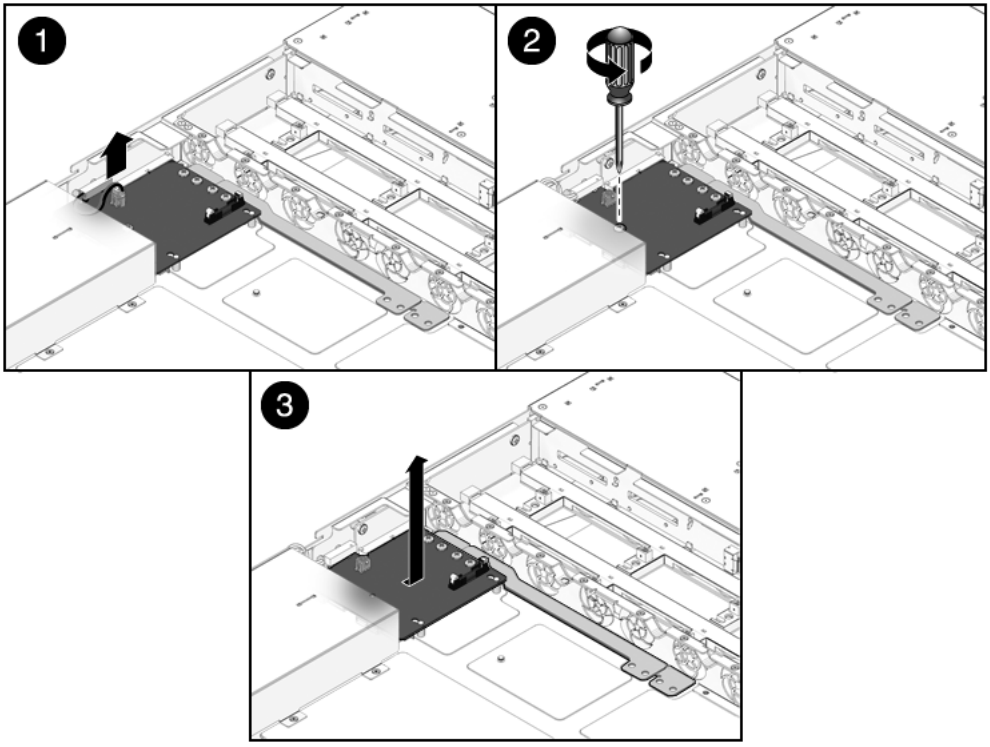
b. **Remove the No. 2 Phillips screw securing the power distribution board to the chassis [2].**

c. **Grasp the bus bar and pull the power distribution board bus bar assembly to the right, away from the paddle card [3].**

d. **Lift the power distribution board bus bar assembly up and out of the system.**

5. **Place the power distribution board bus bar assembly on an antistatic mat.**

**FIGURE 5-18** Removing the Power Distribution Board From theSun Fire X4170 Server




## 5.6.2 Install Power Distribution Board on Sun Fire X4170 Server

1. **Lower the power distribution board bus bar assembly into the chassis (**FIGURE 5-19**).**

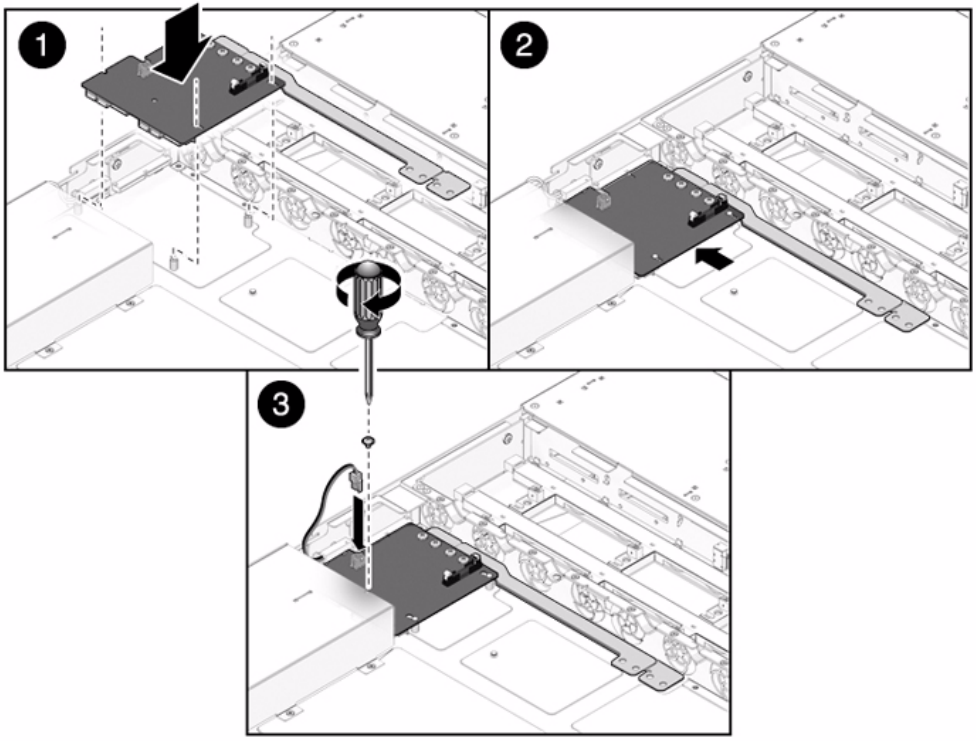
   The power distribution board fits over a series of mushroom standoffs in the floor of the chassis [1].

2. **Slide the power distribution board bus bar assembly to the left, until it plugs into the paddle card [2].**

3. **Install the No. 2 Phillips screw to secure the power distribution board to the chassis [3].**

4. **Connect the top cover chassis intrusion switch cable to the power distribution board [3].**

**FIGURE 5-19** Installing the Power Distribution Board on the Sun Fire X4170 Server




5. **Install the power supplies.**

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

6. **Install the motherboard assembly.**

   See Section 4.7.2, "Install Motherboard Assembly" on page 4-37.

## 5.6.3 Remove Power Distribution Board From the Sun Fire X4270 Server

On the Sun Fire X4270 Server, you do not need to remove the motherboard to service the power distribution board.

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

   a. **Power off the server and disconnect the power cord (or cords) from the power supply (or supplies).**

      See Section 2.4.2, "Power Off the Server" on page 2-5.

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

      See Section 2.7, "Extending the Server to the Maintenance Position" on page 2-13.

   c. **Attach an antistatic wrist strap.**

      See Section 2.9, "Performing Electrostatic Discharge and Antistatic Prevention Measures" on page 2-17.

   d. **Remove the top cover.**

      See Section 2.10, "Removing the Top Cover" on page 2-19.

2. **Remove the power distribution board (FIGURE 5-20).**

   a. **Disconnect the top cover chassis intrusion switch cable from the power distribution board [1].**

   b. **Disconnect the power distribution board ribbon cable that connects the power distribution board to the power supply unit backplane [1].**

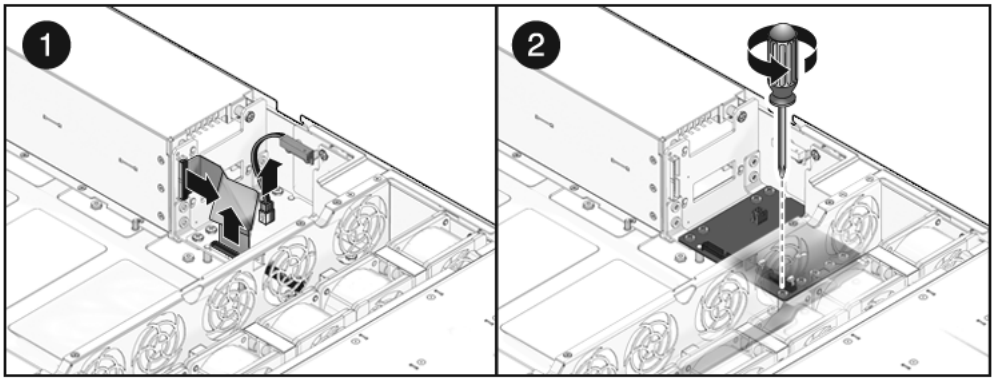
   c. **Remove the four No. 2 Phillips screws at the bottom of the power distribution board [2].**

   d. **Remove the five No. 2 Phillips screws at the top of the power distribution board [2].**

   e. **Grasp the power distribution board and pull it to the left, away from the paddle card.**

   f. **Lift the power distribution board up and out of the system.**

**FIGURE 5-20** Removing the Power Distribution Board From the Sun Fire X4270 Server




3. **Place the power distribution board on an antistatic mat.**

## 5.6.4 Install Power Distribution Board on the Sun Fire X4270 Server

1. **Lower the power distribution board into the chassis (**FIGURE 5-20**)**

   The power distribution board fits over a series of mushroom standoffs in the floor of the chassis.

2. **Slide the power distribution board to the right, until it plugs into the paddle card.**
3. **Install the four No. 2 Phillips screws at the bottom of the power distribution board.**
4. **Install the five No. 2 Phillips screws at the top of the power distribution board.**
5. **Connect the power distribution board ribbon cable that connects the power distribution board to the Power Supply Unit backplane.**
6. **Connect the top cover chassis intrusion switch cable to the power distribution board.**
7. **Return the server to operation.**

   a. **Install the top cover.**

      See Section 7.1, “Install Top Cover” on page 7-1.

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

See Section 7.3, "Returning the Server to the Normal Rack Position" on page 7-5.

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

See Section 7.4, "Powering On the Server" on page 7-7.

Verify that the AC Present LED is lit.

# 5.7 Servicing the Paddle Card

The paddle card assembly includes the top cover interlock switch.



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

## 5.7.1 Remove Paddle Card From Sun Fire X4170 Server

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

**a. Power off the server and disconnect the power cord (or cords) from the power supply (or supplies).**

See Section 2.4.2, "Power Off the Server" on page 2-5.

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

See Section 2.7, "Extending the Server to the Maintenance Position" on page 2-13.

**c. Attach an antistatic wrist strap.**

See Section 2.9, "Performing Electrostatic Discharge and Antistatic Prevention Measures" on page 2-17.

**d. Remove the top cover.**

See Section 2.10, "Removing the Top Cover" on page 2-19.

**2. Remove the motherboard assembly.**

See Section 4.7.1, "Remove Motherboard Assembly" on page 4-36.

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

   See Section 5.6.1, “Remove Power Distribution Board From Sun Fire X4170 Server” on page 5-22.

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

   See Section 5.2.1, “Remove Fan Power Board” on page 5-4.

5. **Remove the paddle card.**

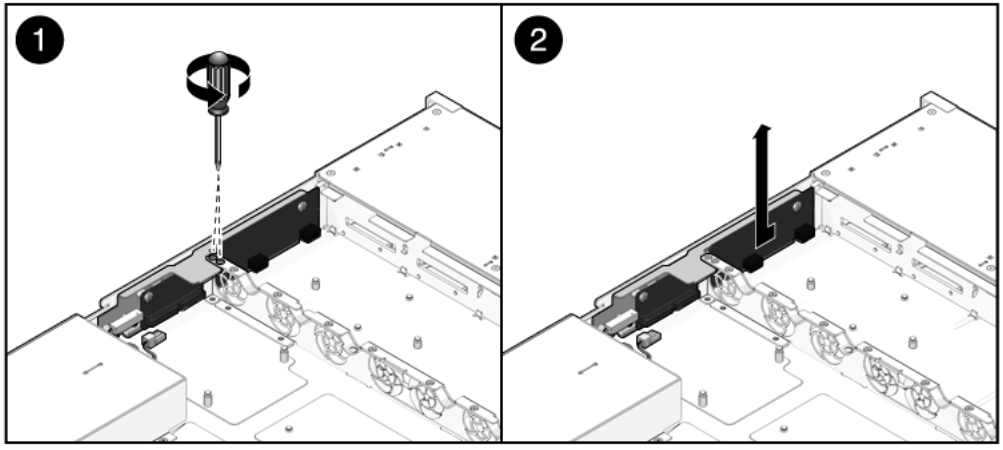
   a. **Remove the two No. 2 Phillips screws securing the paddle card to the chassis (**FIGURE 5-21 **[1]).**

   b. **Slide the paddle card back, away from its connector on the storage drive backplane.**

   c. **Lift the paddle card up and out of the chassis [2].**

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

**FIGURE 5-21** Removing the Paddle Card From the Sun Fire X4170 Server



## 5.7.2 Install Paddle Card on Sun Fire X4170 Server

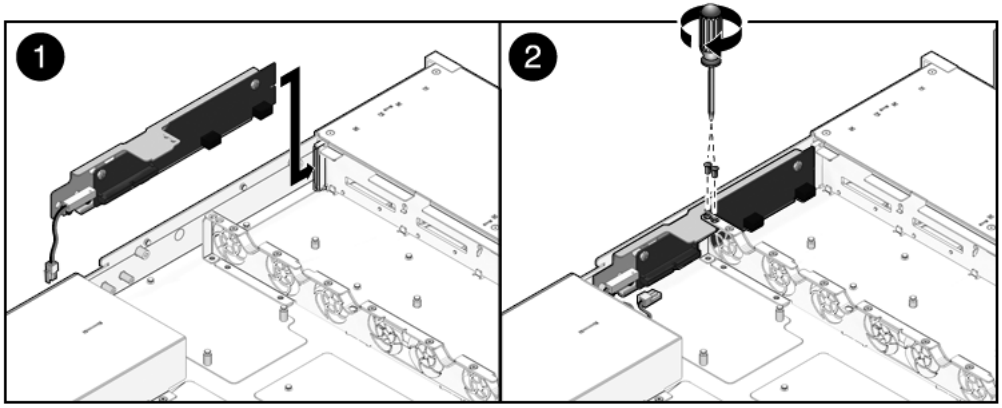
1. **Lower the paddle card into the chassis.**

   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 storage drive backplane (**FIGURE 5-22 **[1]).**

3. **Secure the paddle card with two No. 2 Phillips screws [2].**

**FIGURE 5-22** Installing the Paddle Card From the Sun Fire X4170 Server




4. **Install the fan power boards.**

   See Section 5.2.2, “Install Fan Power Board” on page 5-7.

5. **Install the power distribution board.**

   See Section 5.6.2, “Install Power Distribution Board on Sun Fire X4170 Server” on page 5-24.

6. **Install the motherboard assembly.**

   See Section 4.7.2, “Install Motherboard Assembly” on page 4-37.

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

   a. **Install the top cover.**

      See Section 7.1, “Install Top Cover” on page 7-1.

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

      See Section 7.3, “Returning the Server to the Normal Rack Position” on page 7-5.

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

See Section 7.4, “Powering On the Server” on page 7-7.

Verify that the AC Present LED is lit.

## 5.7.3 Remove Paddle Card From Sun Fire X4270 Server

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**Note –** When removing the paddle card from the Sun Fire X4270 Server, it is not necessary to remove the motherboard.

---

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

   a. **Power off the server and disconnect the power cord (or cords) from the power supply (or supplies).**

      See Section 2.4.2, “Power Off the Server” on page 2-5.

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

      See Section 2.7, “Extending the Server to the Maintenance Position” on page 2-13.

   c. **Attach an antistatic wrist strap.**

      See Section 2.9, “Performing Electrostatic Discharge and Antistatic Prevention Measures” on page 2-17.

   d. **Remove the top cover.**

      See Section 2.10, “Removing the Top Cover” on page 2-19.

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

   See Section 5.6.3, “Remove Power Distribution Board From the Sun Fire X4270 Server” on page 5-26.

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

   See Section 5.2.1, “Remove Fan Power Board” on page 5-4.

4. **Remove the paddle card.**

   a. **Remove the two No. 2 Phillips screws securing the paddle card to the chassis (**FIGURE 5-21**).**

   b. **Slide the paddle card back, away from its connector on the storage drive backplane.**

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

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

## 5.7.4 Install Paddle Card on Sun Fire X4270 Server

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 storage drive backplane (**FIGURE 5-22 **[1]).**

3. **Secure the paddle card with two No. 2 Phillips screws [2].**

4. **Install the fan power boards.**

   See Section 5.2.2, "Install Fan Power Board" on page 5-7.

5. **Install the power distribution board.**

   See Section 5.6.2, "Install Power Distribution Board on Sun Fire X4170 Server" on page 5-24.

6. **Return the server to operation.**

   a. **Install the top cover.**

      See Section 7.1, "Install Top Cover" on page 7-1.

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

      See Section 7.3, "Returning the Server to the Normal Rack Position" on page 7-5.

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

      See Section 7.4, "Powering On the Server" on page 7-7.

      Verify that the AC Present LED is lit.

# 5.8 Servicing Cables

The following topics are covered:


- Section 5.8.1, "Remove HDD Cables in a SAS Configuration" on page 5-33
- Section 5.8.2, "Install HDD Cables in a SAS Configuration on Sun Fire X4170 Server" on page 5-35

- Section 5.8.3, “Install HDD Cables in a SAS Configuration on Sun Fire X4270 Server” on page 5-36
- Section 5.8.4, “Remove HDD Cables in a SATA Configuration (Sun Fire X4170 Server Only)” on page 5-37
- Section 5.8.5, “Install HDD Cables in a SATA Configuration (Sun Fire X4170 Server Only)” on page 5-39
- Section 5.8.6, “Change HDD Cables From SAS to SATA (Sun Fire X4170 Server Only)” on page 5-40
- Section 5.8.7, “Change HDD Cables From SATA to SAS (Sun Fire X4170 Server Only)” on page 5-40
- Section 5.8.8, “Remove Power Distribution Board Cable” on page 5-40
- Section 5.8.9, “Install Power Distribution Board Cable” on page 5-42



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

## 5.8.1 Remove HDD Cables in a SAS Configuration

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

   a. **Power off the server and disconnect the power cord (or cords) from the power supply (or supplies).**

      See Section 2.4.2, “Power Off the Server” on page 2-5.

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

      See Section 2.7, “Extending the Server to the Maintenance Position” on page 2-13.

   c. **Attach an antistatic wrist strap.**

      See Section 2.9, “Performing Electrostatic Discharge and Antistatic Prevention Measures” on page 2-17.

   d. **Remove the top cover.**

      See Section 2.10, “Removing the Top Cover” on page 2-19.

2. **Remove the SAS cable(s) (**FIGURE 5-23 **and** FIGURE 5-24**).**

   a. **Untwist the cable tie downs to release the cable(s).**

**b. To disconnect the cables from the host bus adapter (HBA) PCIe card, depress the latch, push in toward the connector, and then pull out to remove the cable(s).**

**FIGURE 5-23** Removing the HDD Cables in the SAS Configuration From the Sun Fire X4170 Server

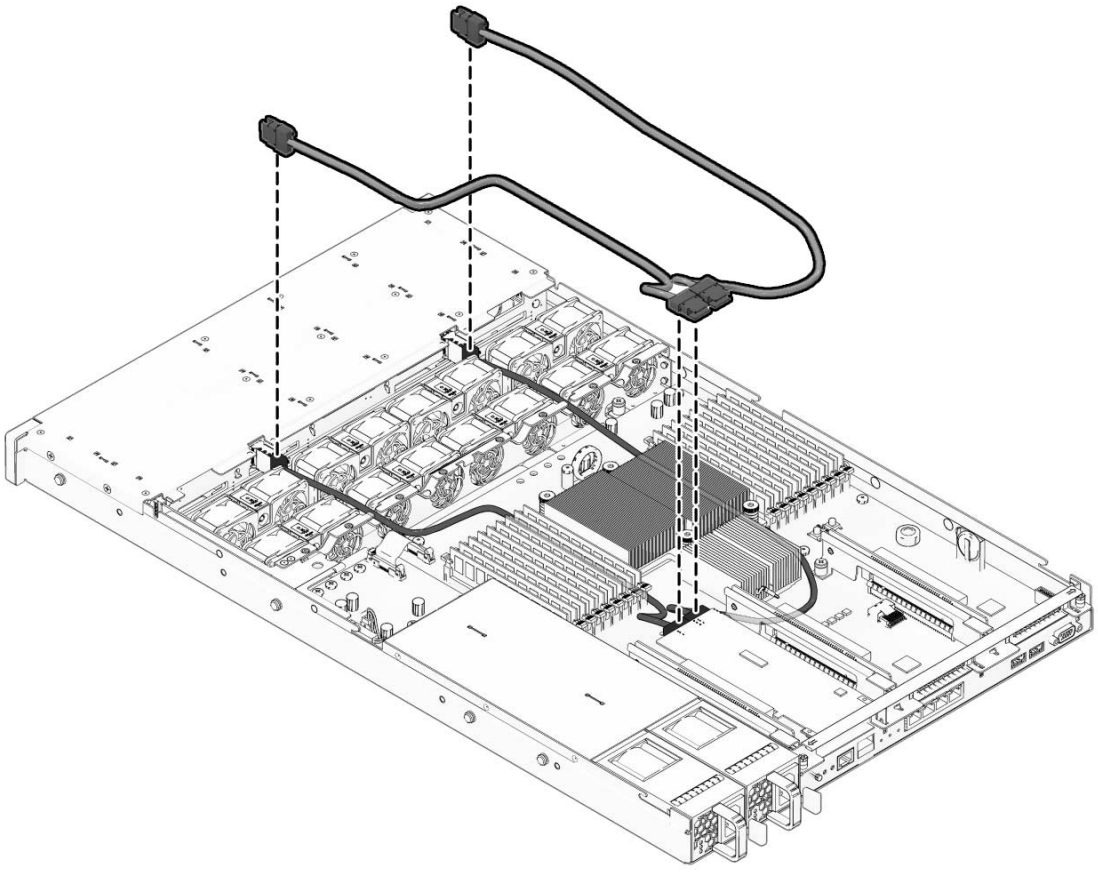
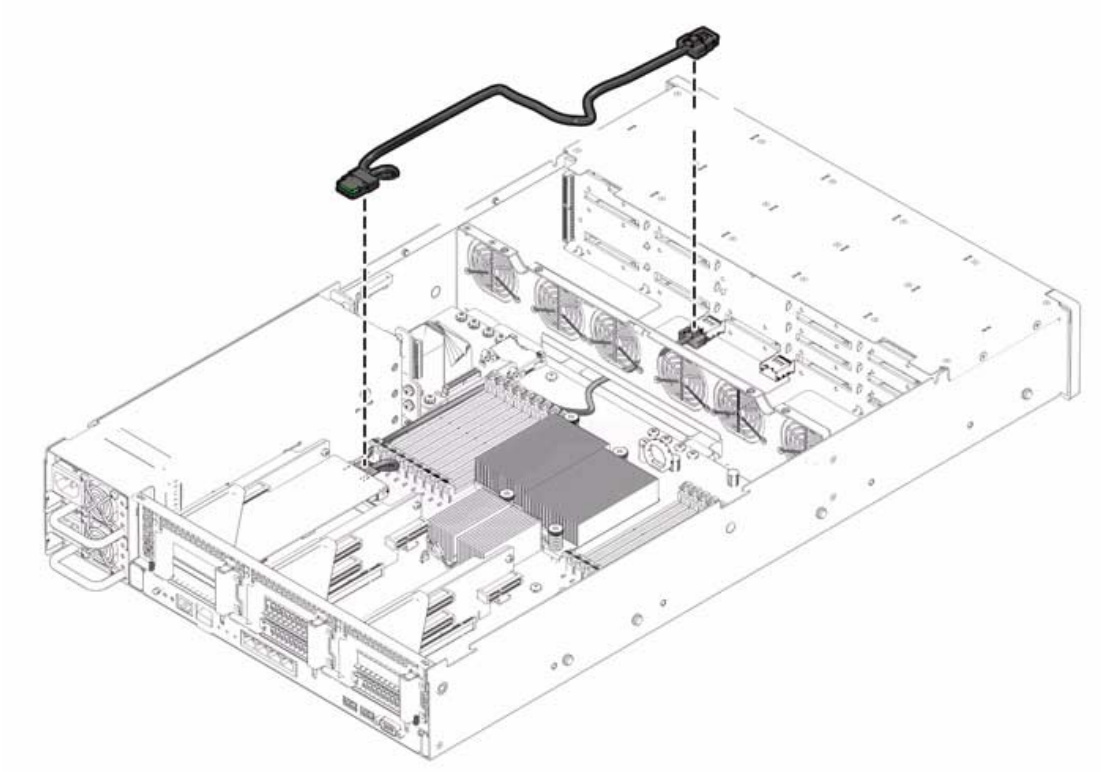


**FIGURE 5-24** Removing the HDD Cable in the SAS Configuration From the Sun Fire X4270 Server



c. **To disconnect each cable at the storage drive backplane, press the latch, push in toward the connector, and then pull out to remove the cable.**

   Removing the cable might be made easier by removing one or more fan modules first.

d. **Remove the cables from the chassis.**

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

## 5.8.2 Install HDD Cables in a SAS Configuration on Sun Fire X4170 Server

To install the two storage drive cables—disk 0-3 cable and disk 4-7 cable—in a SAS configuration, do the following (see FIGURE 5-23):

1. **Install the disk 0-3 cable first.**

a. **Install the cable connector into the storage drive backplane.**

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

b. **Route the cable down and in front of the fan board(s), to prevent the cable from blocking the airflow.**

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

c. **Plug the cable 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(s) into the storage drive backplane.**

   b. **Plug the connector into the connector on the HBA card.**

   c. **Plug the cable connector into the connector on the HBA card that is farthest to the gold fingers (port 1).**

3. **Press 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 7.1, "Install Top Cover" on page 7-1.

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

      See Section 7.2, "Reinstalling the Server in the Rack" on page 7-4.

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

      See Section 7.4, "Powering On the Server" on page 7-7.

      Verify that the AC Present LED is lit.

   d. **Power on the server.**

      See Section 7.4, "Powering On the Server" on page 7-7.

## 5.8.3 Install HDD Cables in a SAS Configuration on Sun Fire X4270 Server

To install the cable in a SAS configuration, do the following (see FIGURE 5-24):

1. **Install the cable.**

a. **Install the cable connector into the storage drive backplane.**

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

b. **Route the cable down and in front of the fan board to prevent the cable from blocking the airflow.**

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

c. **Plug the cable connector into the connector on the HBA card.**

2. **Return the server to operation.**

   a. **Install the top cover.**

      See Section 7.1, “Install Top Cover” on page 7-1.

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

      See Section 7.2, “Reinstalling the Server in the Rack” on page 7-4.

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

      See Section 7.4, “Powering On the Server” on page 7-7.

      Verify that the AC Present LED is lit.

## 5.8.4 Remove HDD Cables in a SATA Configuration (Sun Fire X4170 Server Only)

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

   a. **Power off the server and disconnect the power cord (or cords) from the power supply (or supplies).**

      See Section 2.4.2, “Power Off the Server” on page 2-5.

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

      See Section 2.7, “Extending the Server to the Maintenance Position” on page 2-13.

   c. **Attach an antistatic wrist strap.**

      See Section 2.9, “Performing Electrostatic Discharge and Antistatic Prevention Measures” on page 2-17.

   d. **Remove the top cover.**

      See Section 2.10, “Removing the Top Cover” on page 2-19.

2. **(Optional) Remove the card in the PCIe 0 riser for better access.**

3. **Remove the cables (FIGURE 5-25).**

   a. **Untwist the cable tie downs to release the cables.**

   b. **Press the latch on the single headed cable and then disconnect the cable from the motherboard.**

   c. **Pull up on each of the three individual connectors on the other cable to unplug the cable from the motherboard.**

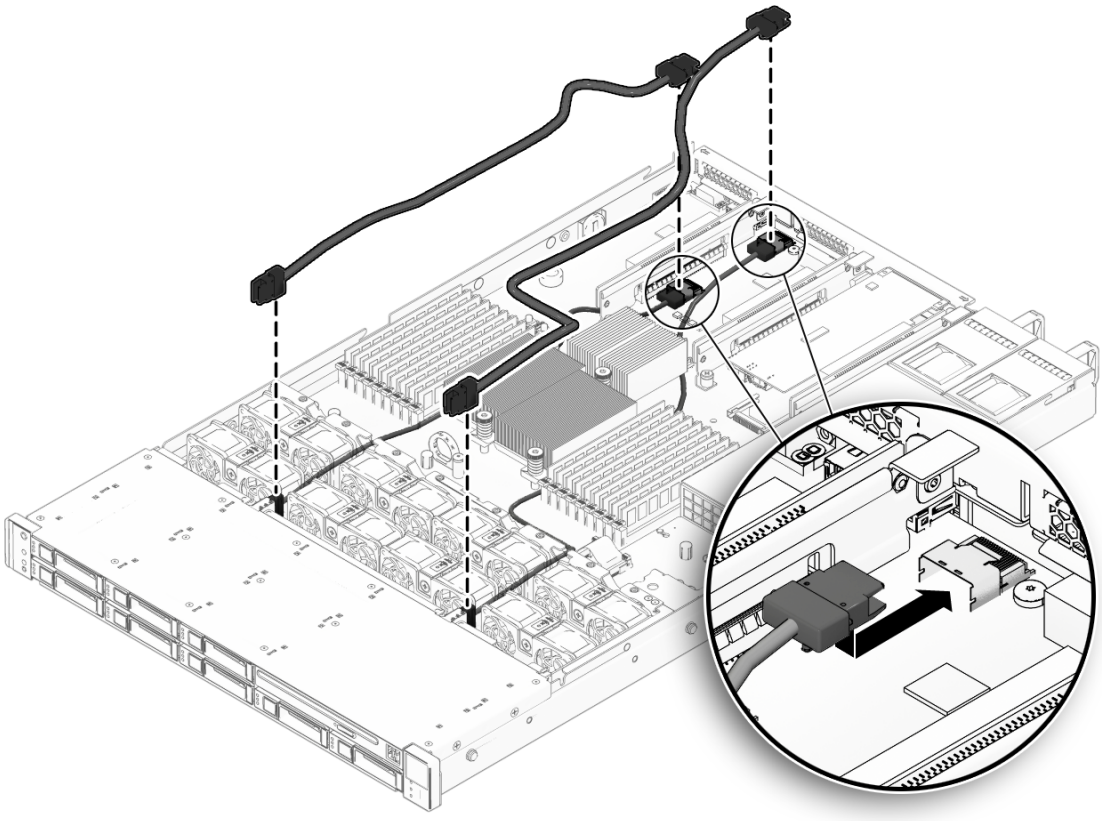
   d. **Remove the fans from fan board 0.**

   e. **Disconnect each cable at the storage drive backplane by depressing the latch, pushing in toward the connector, and then pulling out to remove the cable.**

   f. **Remove the cables from the chassis.**

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

**FIGURE 5-25** Removing the HDD Cables in the SATA Configuration From the Sun Fire X4170 Server



## 5.8.5 Install HDD Cables in a SATA Configuration (Sun Fire X4170 Server Only)

To install two storage drive cables, disk 0-3 and disk 4-5 in SATA configuration, do the following (FIGURE 5-25):

1. **Install the disk 0-3 cable.**

   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 storage drive 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 airflow.**

      Route it through the opening in the mid wall opposite the other disk backplane connector.

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

2. **Install the disk 4-5 cable.**

   a. **Plug the backplane connector into the storage drive backplane.**

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

   c. **Plug the connectors into the two connectors on the motherboard**

      - The connector labeled 4 plugs into the connector labeled SATA4.
      - The connector labeled 5 plugs into the connector labeled SATA5.

---

**Note –** Note the key direction before plugging in these connectors.

---

3. **Press the cables in the cable tie downs, and then secure the cable using the tie downs.**

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

5. **Return the server to operation.**

   a. **Install the top cover.**

      See Section 7.1, “Install Top Cover” on page 7-1.

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

      See Section 7.2, “Reinstalling the Server in the Rack” on page 7-4.

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

See Section 7.4, "Powering On the Server" on page 7-7.

Verify that the AC Present LED is lit.

## 5.8.6 Change HDD Cables From SAS to SATA (Sun Fire X4170 Server Only)

1. **Remove the cables from the SAS configuration.**

   See Section 5.8.1, "Remove HDD Cables in a SAS Configuration" on page 5-33.

2. **Remove the SAS HBA card.**

3. **Install either a different HBA card or a PCIe filler panel in the slot from which the card was removed.**

4. **Install the new cables in the SATA configuration.**

   See Section 5.8.5, "Install HDD Cables in a SATA Configuration (Sun Fire X4170 Server Only)" on page 5-39.

## 5.8.7 Change HDD Cables From SATA to SAS (Sun Fire X4170 Server Only)

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

   See Section 5.8.4, "Remove HDD Cables in a SATA Configuration (Sun Fire X4170 Server Only)" on page 5-37.

2. **Install the SAS HBA card in the PCIe slot (any vacant slot other than slot 1).**

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

   See Section 5.8.2, "Install HDD Cables in a SAS Configuration on Sun Fire X4170 Server" on page 5-35.

## 5.8.8 Remove Power Distribution Board Cable

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

a. **Power off the server and disconnect the power cord (or cords) from the power supply (or supplies).**

   See Section 2.4.2, "Power Off the Server" on page 2-5.

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

   See Section 2.7, "Extending the Server to the Maintenance Position" on page 2-13.

c. **Attach an antistatic wrist strap.**

   See Section 2.9, "Performing Electrostatic Discharge and Antistatic Prevention Measures" on page 2-17.

d. **Remove the top cover.**

   See Section 2.10, "Removing the Top Cover" on page 2-19.

2. **Remove the power distribution board cable (**FIGURE 5-26**).**

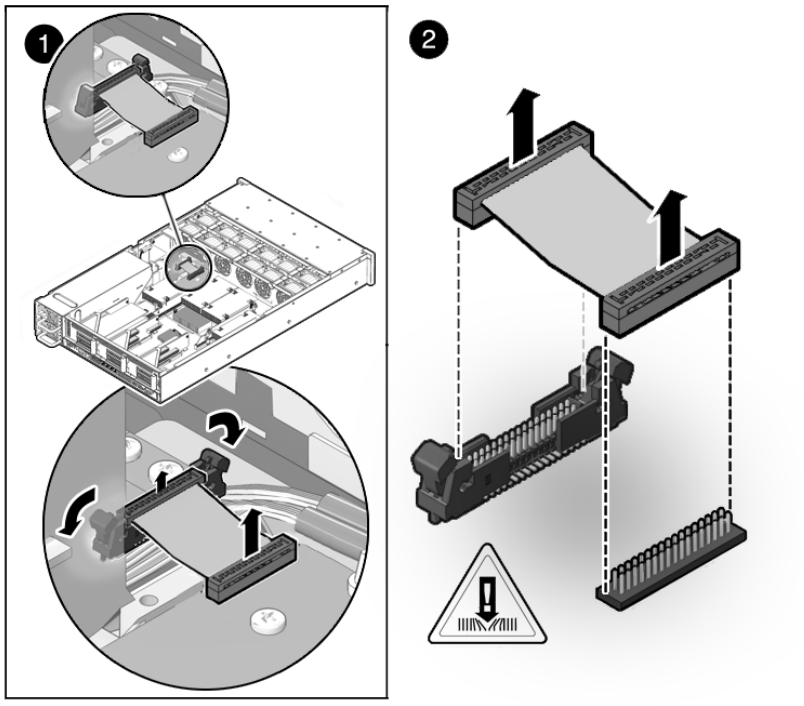
   a. **Release the latches on either side of the connector on the power distribution board and pull the cable straight up.**

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



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

**FIGURE 5-26** Removing the Power Distribution Board Cable




## 5.8.9 Install Power Distribution Board Cable

1. **Remove the power distribution board cable.**

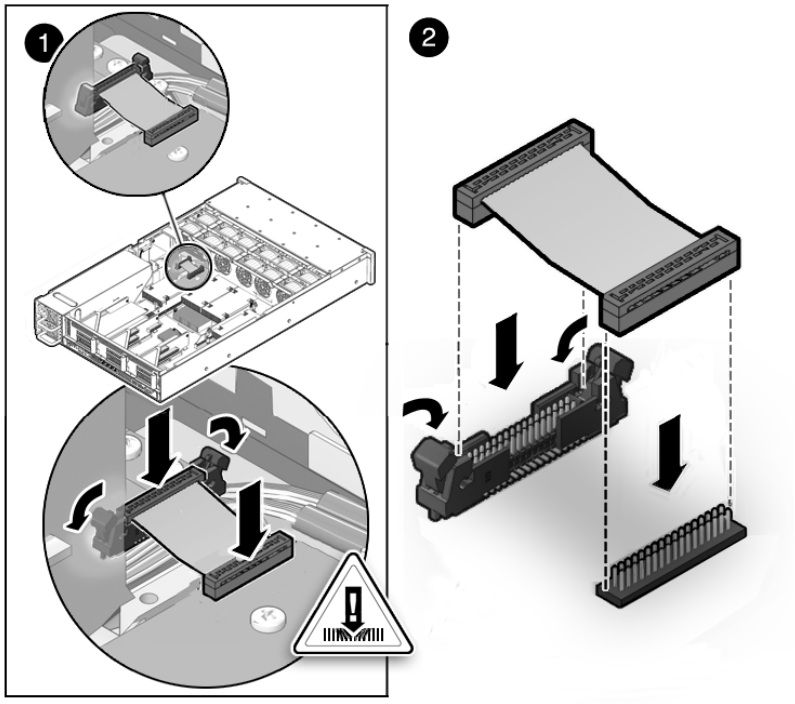
   See Section 5.8.8, "Remove Power Distribution Board Cable" on page 5-40.

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

3. **Open the latches on the power distribution board connector (**FIGURE 5-27 **[1]).**

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

**FIGURE 5-27** Installing the Power Distribution Board Cable




4. **Push the cable connector into the power distribution board connector until seated.**

   The latches should be above the connector housing.

5. **Carefully align the motherboard connector to the motherboard pin field [2].**

   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 7.1, "Install Top Cover" on page 7-1.

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

      See Section 7.2, "Reinstalling the Server in the Rack" on page 7-4.

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

      See Section 7.4, "Powering On the Server" on page 7-7.

      Verify that the AC Present LED is lit.

CHAPTER 6

# Servicing Sun Fire X4275 Server Infrastructure Boards and Components

This chapter describes how to replace cold-swappable, field-replaceable units (FRUs) in the Sun Fire X4275 Server.

The following topics are covered:


- Section 6.1, "Servicing the Fan Power Board" on page 6-2
- Section 6.2, "Servicing the Storage Disk Expander Card" on page 6-4
- Section 6.3, "Servicing the Storage Drive Backplane" on page 6-6
- Section 6.4, "Servicing the Front Control Panel Light Pipe Assembly From Sun Fire X4275 Server" on page 6-10
- Section 6.5, "Servicing the Power Distribution Board" on page 6-13
- Section 6.6, "Servicing the Connector Break Out Board" on page 6-15
- Section 6.7, "Servicing Cables" on page 6-18




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



**Caution –** Equipment damage possible. The covers must be in place for proper airflow.

# 6.1 Servicing the Fan Power Board

You must remove the fan power board to access the storage drive data cable in the Sun Fire X4275 Server.

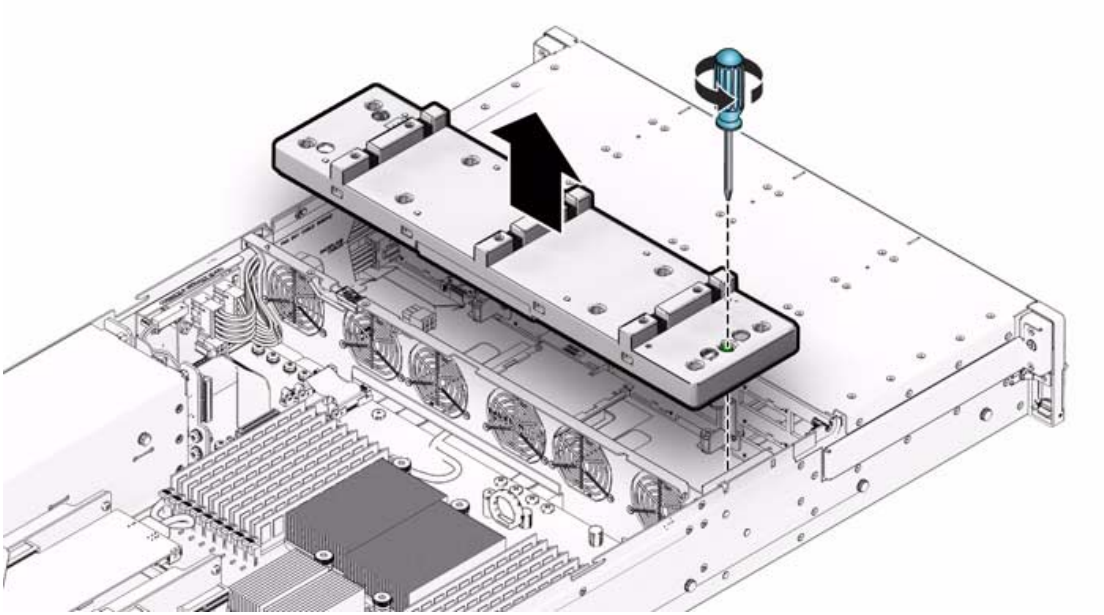


**Caution –** Ensure that all power is removed from the server before removing or installing fan power board. You must disconnect the power cables before performing this procedure.

## 6.1.1 Remove Fan Power Board From Sun Fire X4275 Server

1. **Prepare the server for service.**
   a. **Power off the server and disconnect the power cord (or cords) from the power supply (or supplies).**
      See Section 2.4.2, "Power Off the Server" on page 2-5.
   b. **Slide the server out of the rack.**
      See Section 2.7, "Extending the Server to the Maintenance Position" on page 2-13.
   c. **Attach an antistatic wrist strap.**
      See Section 2.9, "Performing Electrostatic Discharge and Antistatic Prevention Measures" on page 2-17.
   d. **Remove the top cover.**
      See Section 2.10, "Removing the Top Cover" on page 2-19.
2. **Remove the fan modules.**
   See Section 3.3.4, "Remove Fan Module" on page 3-13.
3. **Remove the Phillips screw that secures the fan power board to the chassis (**FIGURE 6-1**).**
4. **Slide the fan power board to the right to disengage it from the standoffs.**
5. **Turn the fan power board over and disconnect the two cables attached to its underside.**
6. **Remove the fan power board from the system and place it on an antistatic mat.**

**FIGURE 6-1** Removing the Fan Power Board on the Sun Fire X4275 Server



## 6.1.2 Install Fan Power Board on Sun Fire X4275 Server

1. **Connect the two cables to the fan power board's underside.**
2. **Lower the fan power board into its mushroom standoffs in the chassis floor and slide it to the left to engage the standoffs.**
3. **Secure the fan power board to the chassis with a Phillips screw.**
4. **Reinstall the fan modules.**

   See Section 3.3.5, "Install Fan Module" on page 3-14.
5. **Return the server to operation.**

   a. **Install the top cover.**

      See Section 7.1, "Install Top Cover" on page 7-1.

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

      See Section 7.3, "Returning the Server to the Normal Rack Position" on page 7-5.

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

See Section 7.4, “Powering On the Server” on page 7-7.

Verify that the AC Present LED is lit.

# 6.2 Servicing the Storage Disk Expander Card



**Caution –** Ensure that all power is removed from the server before removing or installing the disk expander card. You must disconnect the power cables before performing these procedures.

## 6.2.1 Removing the Sun Fire X4275 Server Storage Disk Expander Card

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

   a. **Power off the server and disconnect the power cord (or cords) from the power supply (or supplies).**

      See Section 2.4.2, “Power Off the Server” on page 2-5.

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

      See Section 2.7, “Extending the Server to the Maintenance Position” on page 2-13.

   c. **Attach an antistatic wrist strap.**

      See Section 2.9, “Performing Electrostatic Discharge and Antistatic Prevention Measures” on page 2-17.

   d. **Remove the top cover.**

      See Section 2.10, “Removing the Top Cover” on page 2-19.

2. **Remove the fan modules.**

   See Section 3.3.4, “Remove Fan Module” on page 3-13.

3. **To gain access the disk expander card:**

a. **Remove the Phillips screw that secures the fan power board to the chassis (**FIGURE 6-1**).**

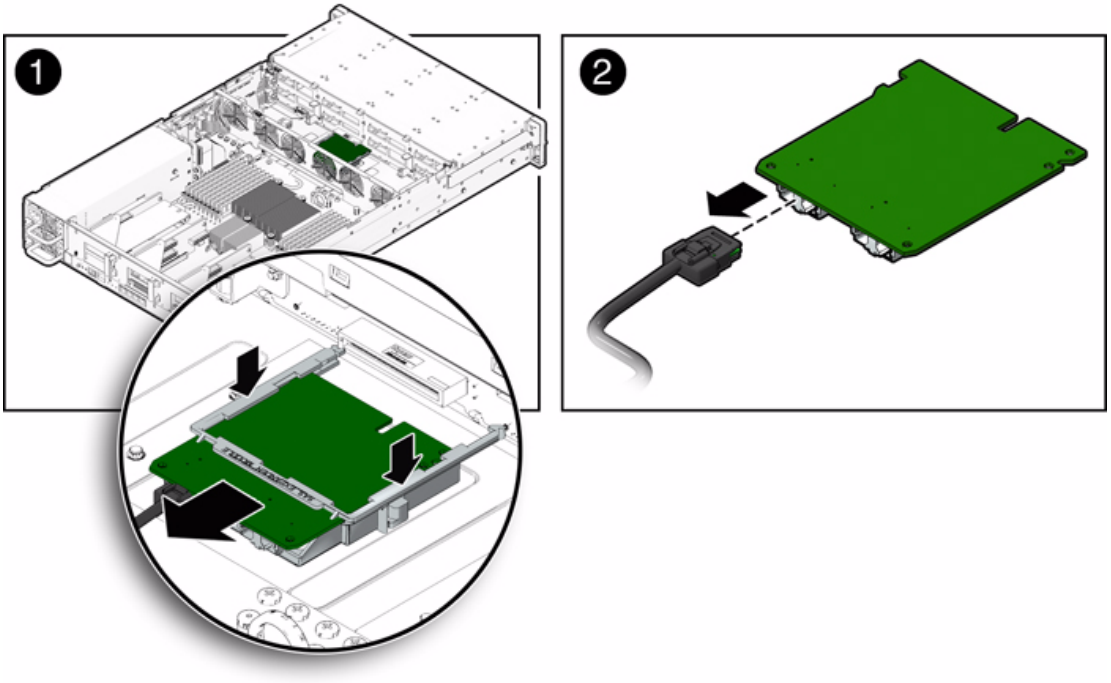
b. **Slide the fan power board to the right to disengage it from the standoffs.**

c. **Lift the fan power board up and to the rear of the server.**

The fan power board is also connected to the chassis by two power cables, but it is not necessary to disconnect these cables.

4. **To remove the disk expander card, grasp the sides of the card, press in toward the center of the card, and slide the card toward the rear of the server (**FIGURE 6-2 **[1]).**

**FIGURE 6-2** Removing the Storage Disk Expander Card From the Sun Fire X4275 Server




5. **Disconnect the SAS cable from the disk expander card [2].**

## 6.2.2 Install Storage Disk Expander Card on Sun Fire X4275 Server

1. **Connect the SAS cable to the disk expander card.**

2. **Install the disk expander card into the storage drive backplane.**
3. **Lower the fan power board into its mushroom standoffs in the chassis floor.**
4. **Secure the fan power board to the chassis with the Phillips screw.**
5. **Reinstall the fan modules.**

   See Section 3.3.5, "Install Fan Module" on page 3-14.
6. **Return the server to operation.**

   a. **Install the top cover.**

      See Section 7.1, "Install Top Cover" on page 7-1.

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

      See Section 7.3, "Returning the Server to the Normal Rack Position" on page 7-5.

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

      See Section 7.4, "Powering On the Server" on page 7-7.

      Verify that the AC Present LED is lit.

## 6.3 Servicing the Storage Drive Backplane



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

### 6.3.1 Remove Storage Drive Backplane From Sun Fire X4275 Server

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

   a. **Power off the server and disconnect the power cord (or cords) from the power supply (or supplies).**

      See Section 2.4.2, "Power Off the Server" on page 2-5.

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

See Section 2.7, "Extending the Server to the Maintenance Position" on page 2-13.

**c. Attach an antistatic wrist strap.**

See Section 2.9, "Performing Electrostatic Discharge and Antistatic Prevention Measures" on page 2-17.

**d. Remove the top cover.**

See Section 2.10, "Removing the Top Cover" on page 2-19.

2. **Remove the fan modules.**

See Section 3.3.4, "Remove Fan Module" on page 3-13.

3. **Remove the fan power board.**

See Section 6.1.1, "Remove Fan Power Board From Sun Fire X4275 Server" on page 6-2.

4. **Remove the storage disk expander card.**

See Section 6.2.1, "Removing the Sun Fire X4275 Server Storage Disk Expander Card" on page 6-4.

5. **Remove the storage drive backplane (**FIGURE 6-3**).**

**a. Remove the fan bay cable shroud [1].**

**i. Push on the green tab at the top of the fan bay cable shroud away from the chassis wall.**

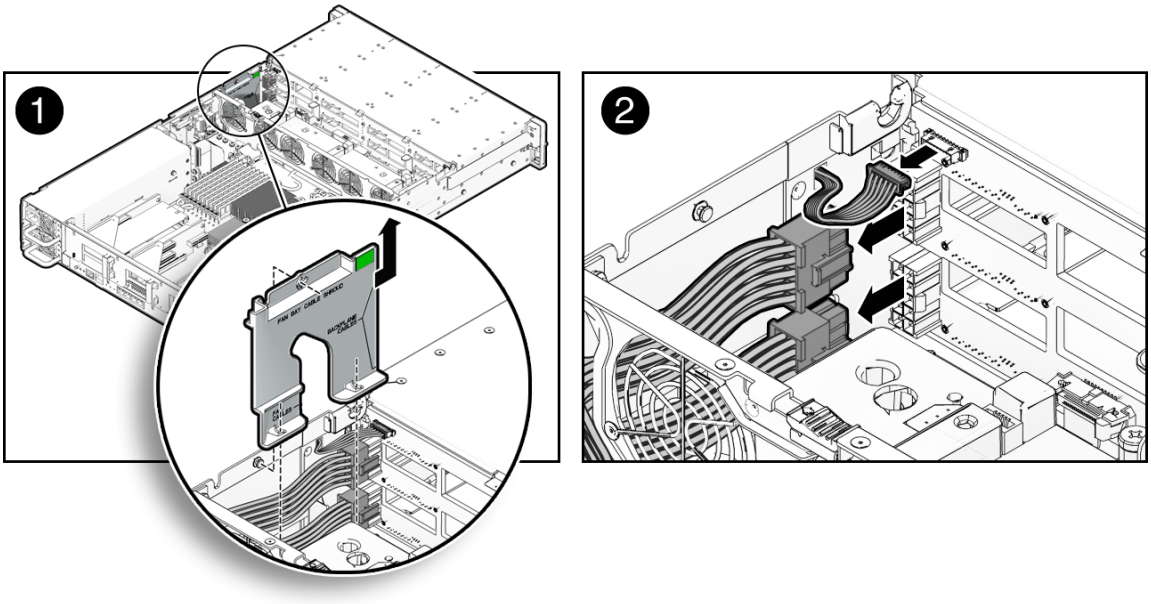
**ii. Slide the fan bay cable shroud toward the front of the server to disengage it from the standoffs (at the top and bottom) that hold it in place and remove the shroud.**

**b. Remove the front panel light pipe cables [2].**

There are two light pipe cables, one on either side of the backplane.

**c. Disconnect the two power cables [2].**

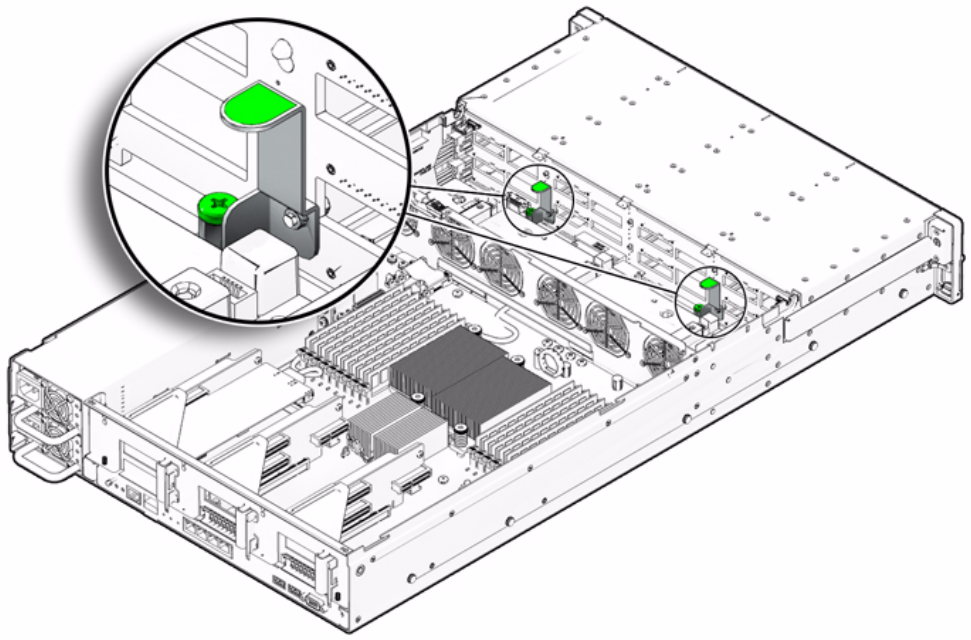
**FIGURE 6-3** Removing the Storage Drive Backplane From the Sun Fire X4275 Server (Part1)




6. **Remove the two green No. 2 Phillips screws that secure the storage drive backplane to the server chassis** (FIGURE 6-4).

7. **Using the storage drive backplane handles, remove the backplane from the storage drive cage.**

**FIGURE 6-4** Removing the Storage Drive Backplane From the Sun Fire X4275 Server (Part 2)



8. **Place the storage drive backplane on an antistatic mat.**

## 6.3.2 Install Storage Drive Backplane on Sun Fire X4275 Server

1. **Position the backplane under the retention hooks on the storage drive cage.**
2. **Install the two green, No. 2 Phillips screws that secure the storage drive backplane to the server chassis.**
3. **Install the power cables and the fan bay cable shroud (**FIGURE 6-3**).**
   a. **Connect the two power cables to the storage drive backplane.**
   b. **Connect the two light pipe cables to the storage drive backplane.**
      There are two light pipe cables, one on either side of the backplane.
   c. **Install the fan bay cable shroud.**

4. **Install the storage drive disk expander card.**

   See Section 6.2.2, “Install Storage Disk Expander Card on Sun Fire X4275 Server” on page 6-6

5. **Install the fan power board.**

   See Section 6.1.2, “Install Fan Power Board on Sun Fire X4275 Server” on page 6-3.

6. **Install the fan modules.**

   See Section 3.3.5, “Install Fan Module” on page 3-14.

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

   a. **Install the top cover.**

      See Section 7.1, “Install Top Cover” on page 7-1.

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

      See Section 7.3, “Returning the Server to the Normal Rack Position” on page 7-5.

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

      See Section 7.4, “Powering On the Server” on page 7-7.

      Verify that the AC Present LED is lit.

## 6.4 Servicing the Front Control Panel Light Pipe Assembly From Sun Fire X4275 Server



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

### 6.4.1 Remove Front Control Panel Light Pipe Assembly From the Sun Fire X4275 Server

There are two light pipe assemblies—one on each side of the server.

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

   a. **Power off the server and disconnect the power cord (or cords) from the power supply (or supplies).**

      See Section 2.4.2, "Power Off the Server" on page 2-5.

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

      See Section 2.7, "Extending the Server to the Maintenance Position" on page 2-13.

   c. **Attach an antistatic wrist strap.**

      See Section 2.9, "Performing Electrostatic Discharge and Antistatic Prevention Measures" on page 2-17.

   d. **Remove the top cover.**

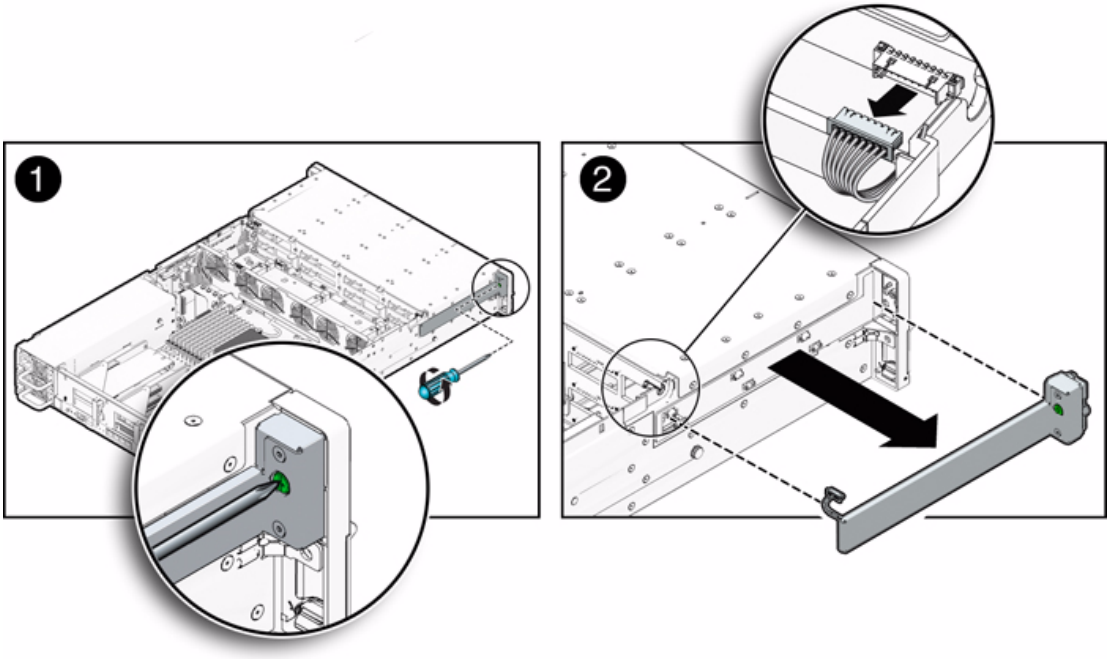
      See Section 2.10, "Removing the Top Cover" on page 2-19.

2. **Remove the No. 2 Phillips screw securing the front control panel light pipe assembly to the server front panel** (FIGURE 6-5 **[1]**).

3. **Disconnect the light panel assembly cable from the storage drive backplane and gently pull it through the side wall of the server chassis [2].**

4. **Remove the light pipe assembly from the server front panel [2].**

**FIGURE 6-5** Removing the Light Pipe Assembly Screw From the Sun Fire X4275 Server




## 6.4.2 Install Front Control Panel Light Pipe Assembly on Sun Fire X4275 Server

1. **Push the front control panel light pipe assembly connector through the side wall of the server chassis.**
2. **Position the light pipe assembly on the side of the server and tighten the No. 2 Phillips screw to secure the light panel to server front panel.**
3. **Connect the light pipe assembly connector to the storage drive backplane.**
4. **Return the server to operation.**
   a. **Install the top cover.**
      See Section 7.1, "Install Top Cover" on page 7-1.
   b. **Slide the server into the rack.**
      See Section 7.3, "Returning the Server to the Normal Rack Position" on page 7-5.

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

See Section 7.4, "Powering On the Server" on page 7-7.

Verify that the AC Present LED is lit.

# 6.5 Servicing the Power Distribution Board

On the Sun Fire X4275 Server, you do not need to remove the motherboard to service the power distribution board.



**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.

## 6.5.1 Remove Power Distribution Board From Sun Fire X4275 Server

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

   a. **Power off the server and disconnect the power cord (or cords) from the power supply (or supplies).**

      See Section 2.4.2, "Power Off the Server" on page 2-5.

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

      See Section 2.7, "Extending the Server to the Maintenance Position" on page 2-13.

   c. **Attach an antistatic wrist strap.**

      See Section 2.9, "Performing Electrostatic Discharge and Antistatic Prevention Measures" on page 2-17.

   d. **Remove the top cover.**

      See Section 2.10, "Removing the Top Cover" on page 2-19.

2. **Remove the power distribution board (**FIGURE 6-6**).**

   a. **Disconnect the top cover interlock cable from the power distribution board.**

   b. **Disconnect the power supply cable from the power distribution board.**

c. **Disconnect the ribbon cable from the power distribution board.**

d. **Remove the five No. 2 Phillips screws securing the power distribution board to the bus bar.**

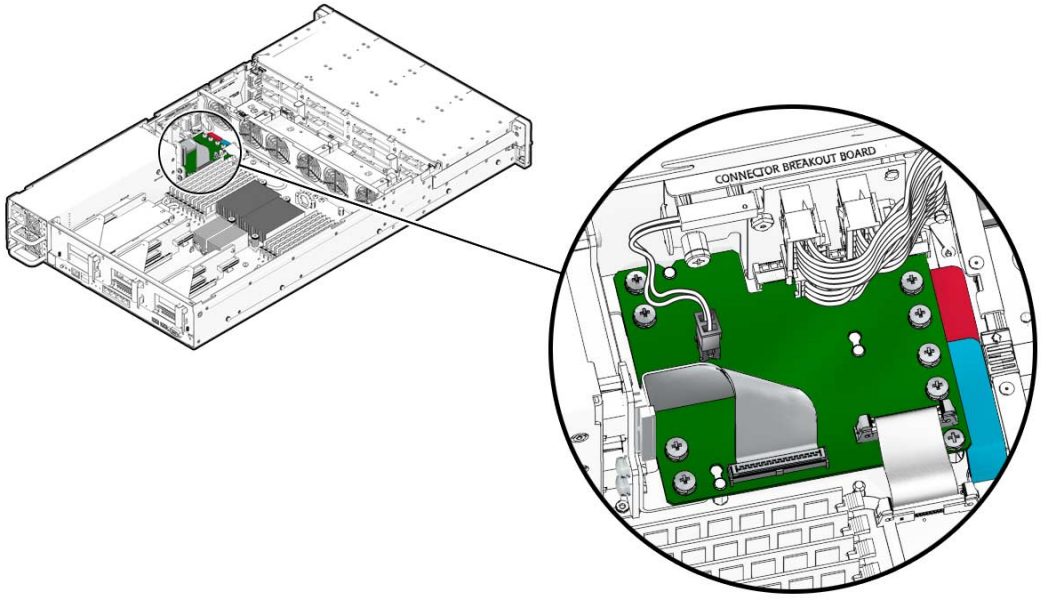
e. **Remove the four No. 2 Phillips screws securing the power distribution board to the chassis.**

f. **Grasp the power distribution board and slide it away from the chassis wall.**

g. **Lift the power distribution board bus bar assembly up and out of the system.**

3. **Place the power distribution board bus bar assembly on an antistatic mat.**

**FIGURE 6-6** Removing the Power Distribution Board From the




## 6.5.2 Install Server Power Distribution Board on the Sun Fire X4275 Server

1. **Lower the power distribution board into the chassis.**

   The power distribution board fits over a series of mushroom standoffs in the floor of the chassis.

2. **Slide the power distribution board toward the chassis wall until it plugs into the connector breakout board.**
3. **Install five No. 2 Phillips screws to secure the power distribution board to the bus bar.**
4. **Install the four No. 2 Phillips screw s to secure the power distribution board to the chassis.**
5. **Connect the top cover interlock cable to the power distribution board.**
6. **Connect the power supply cable to the power distribution board.**
7. **Connect the ribbon cable to the power distribution board.**
8. **Return the server to operation.**
   a. **Install the top cover.**
      See Section 7.1, "Install Top Cover" on page 7-1.
   b. **Slide the server into the rack.**
      See Section 7.3, "Returning the Server to the Normal Rack Position" on page 7-5.
   c. **Reconnect the power cord (or cords) to the power supply (or supplies) and power on the server.**
      See Section 7.4, "Powering On the Server" on page 7-7.
      Verify that the AC Present LED is lit.

# 6.6 Servicing the Connector Break Out Board



**Caution –** The system supplies power to the connector break out 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 connector break out board.

## 6.6.1 Remove Connector Break Out Board From Sun Fire X4275 Server

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

a. **Power off the server and disconnect the power cord (or cords) from the power supply (or supplies).**

   See Section 2.4.2, "Power Off the Server" on page 2-5.

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

   See Section 2.7, "Extending the Server to the Maintenance Position" on page 2-13.

c. **Attach an antistatic wrist strap.**

   See Section 2.9, "Performing Electrostatic Discharge and Antistatic Prevention Measures" on page 2-17.

d. **Remove the top cover.**

   See Section 2.10, "Removing the Top Cover" on page 2-19.

2. **Remove the connector break out board (**FIGURE 6-7**).**

   a. **Remove the three power distribution cables [1].**

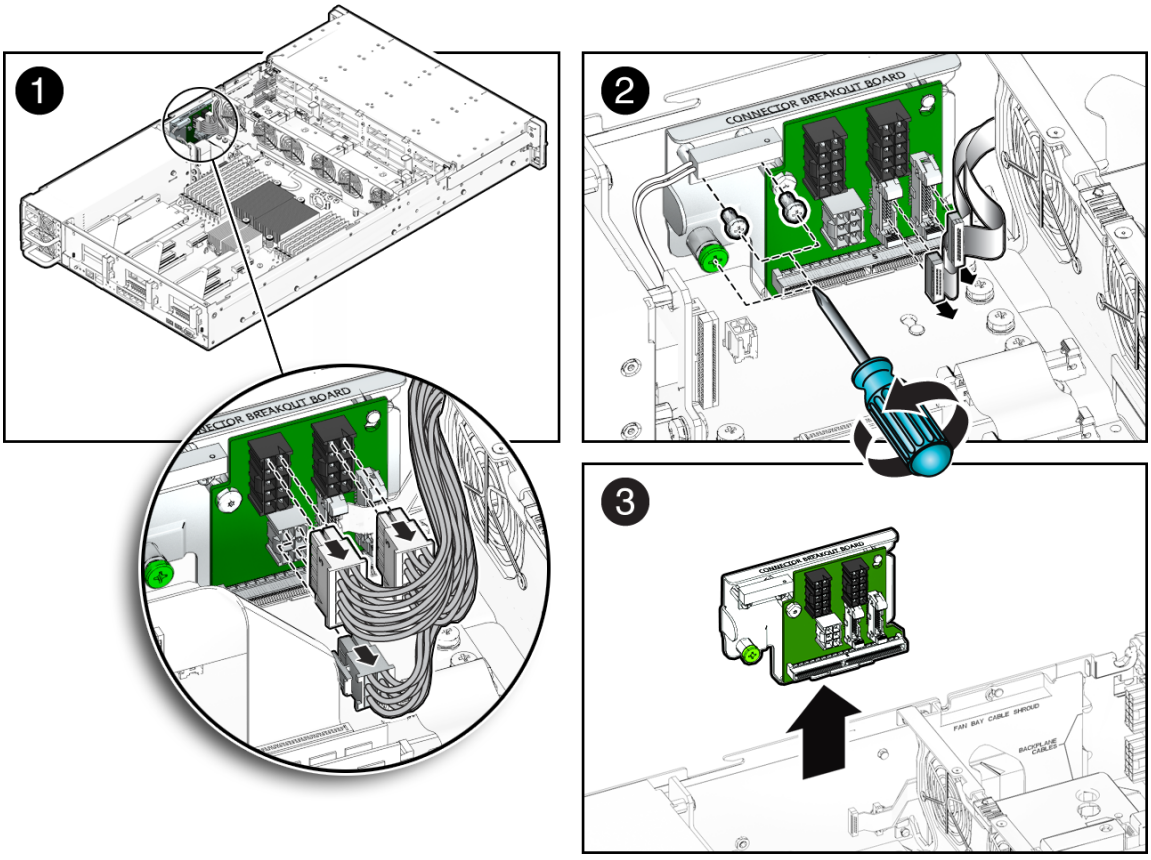
   b. **Remove the two No. 2 Phillips screws securing the top cover interlock to the connector break out board [2].**

   c. **Remove the No. 2 Phillips screw securing the connector break out board to the chassis [2].**

   d. **Lift the connector break out board up and out of the chassis [3].**

3. **Place the connector break out board on an antistatic mat.**

**FIGURE 6-7** Removing the Connector Break Out Board From the Sun Fire X4275 Server




## 6.6.2 Install Connector Break Out Board on Sun Fire X4275 Server

1. **Position the connector break out board against the chassis wall.**
2. **Secure the connector break out board with the No. 2 Phillips screws.**
3. **Install the three power distribution cables.**
4. **Position the top cover interlock on the connector break out board and install the two No. 2 Phillips screws to secure it.**
5. **Return the server to operation.**

**a. Install the top cover.**

See Section 7.1, "Install Top Cover" on page 7-1.

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

See Section 7.3, "Returning the Server to the Normal Rack Position" on page 7-5.

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

See Section 7.4, "Powering On the Server" on page 7-7.

Verify that the AC Present LED is lit.

# 6.7 Servicing Cables

The following topics are covered:

- Section 6.7.1, "Remove Storage Drive Cable in a SAS Configuration From Sun Fire X4275 Server" on page 6-18
- Section 6.7.2, "Install Storage Drive Cable in a SAS Configuration on Sun Fire X4275 Server" on page 6-20
- Section 6.7.3, "Remove Power Distribution Board Cable From Sun Fire X4275 Server" on page 6-21
- Section 6.7.4, "Install Power Distribution Board Cable on Sun Fire X4275 Server" on page 6-22



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

## 6.7.1 Remove Storage Drive Cable in a SAS Configuration From Sun Fire X4275 Server

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

**a. Power off the server and disconnect the power cord (or cords) from the power supply (or supplies).**

See Section 2.4.2, "Power Off the Server" on page 2-5.

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

See Section 2.7, "Extending the Server to the Maintenance Position" on page 2-13.

**c. Attach an antistatic wrist strap.**

See Section 2.9, "Performing Electrostatic Discharge and Antistatic Prevention Measures" on page 2-17.

**d. Remove the top cover.**

See Section 2.10, "Removing the Top Cover" on page 2-19.

**2. Disconnect the SAS cable from the PCIe card (see FIGURE 6-8).**

**a. Untwist the cable tie down to release the cable.**

**b. To disconnect the cable from the host bus adapter (HBA) PCIe card, press the latch, push in toward the connector, and then pull out to remove the cable.**

**3. Disconnect the SAS cable from the disk drive cage disk expander card (FIGURE 6-8).**

**a. To gain access to the disk expander card, remove the fan power board.**

See Section 6.1.1, "Remove Fan Power Board From Sun Fire X4275 Server" on page 6-2.

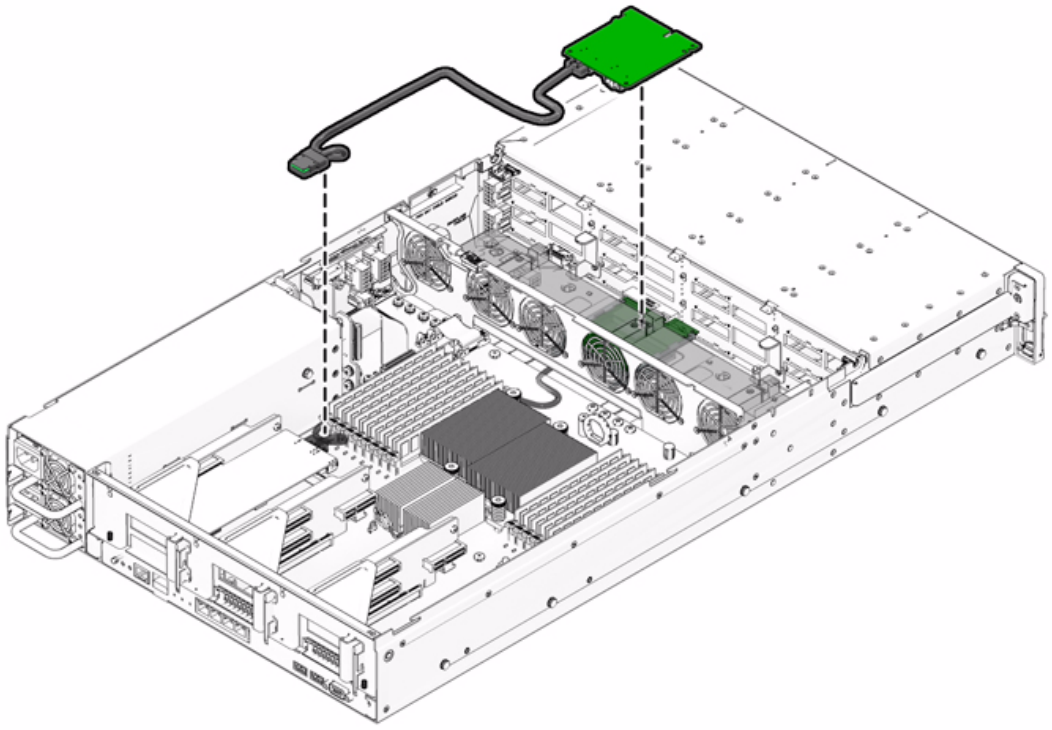
**a. Remove the disk expander card and disconnect the SAS cable.**

See Section 6.2.1, "Removing the Sun Fire X4275 Server Storage Disk Expander Card" on page 6-4.

**b. Remove the cable.**

Be careful not to snag the cable on the server components.

**FIGURE 6-8** Removing Storage Drive Cable in a SAS Configuration From the Sun Fire X4275 Server



## 6.7.2 Install Storage Drive Cable in a SAS Configuration on Sun Fire X4275 Server

1. **Remove the existing cable as describe in** Section 6.7.1, "Remove Storage Drive Cable in a SAS Configuration From Sun Fire X4275 Server" on page 6-18**.**
2. **Install the cable in the disk expander card.**
   a. **Install the cable in the disk expander card and install the disk expander card.**

      See Section 6.2.2, "Install Storage Disk Expander Card on Sun Fire X4275 Server" on page 6-6.

   b. **Install the fan power board.**

      See Section 6.1.2, "Install Fan Power Board on Sun Fire X4275 Server" on page 6-3.

c. **Route the cable down beside the fan power board on the right side facing the server front panel to prevent the cable from blocking the airflow.**

d. **Install the fan modules.**

See Section 3.3.5, "Install Fan Module" on page 3-14.

e. **Plug the cable connector into the connector on the HBA card from which the SAS cable was removed.**

3. **Press the cables in the cable tie down and secure the cable with the tie down.**

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

a. **Install the top cover.**

See Section 7.1, "Install Top Cover" on page 7-1.

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

See Section 7.2, "Reinstalling the Server in the Rack" on page 7-4.

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

See Section 7.4, "Powering On the Server" on page 7-7.

Verify that the AC Present LED is lit.

## 6.7.3 Remove Power Distribution Board Cable From Sun Fire X4275 Server

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

a. **Power off the server and disconnect the power cord (or cords) from the power supply (or supplies).**

See Section 2.4.2, "Power Off the Server" on page 2-5.

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

See Section 2.7, "Extending the Server to the Maintenance Position" on page 2-13.

c. **Attach an antistatic wrist strap.**

See Section 2.9, "Performing Electrostatic Discharge and Antistatic Prevention Measures" on page 2-17.

d. **Remove the top cover.**

See Section 2.10, "Removing the Top Cover" on page 2-19.

2. **Remove the power distribution board cable (**FIGURE 5-26**).**

a. **Release the latches on either side of the connector on the power distribution board and pull the cable straight up.**

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



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

## 6.7.4 Install Power Distribution Board Cable on Sun Fire X4275 Server

1. **Remove the power distribution board cable.**

   See Section 6.7.3, "Remove Power Distribution Board Cable From Sun Fire X4275 Server" on page 6-21.

2. **Inspect the pin field on the unshrouded motherboard connector to ensure all the pins are straight (**FIGURE 5-27**).**

3. **Open the latches on the power distribution board connector.**

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

4. **Push the cable connector into the power distribution board connector 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 7.1, "Install Top Cover" on page 7-1.

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

      See Section 7.2, "Reinstalling the Server in the Rack" on page 7-4.

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

      See Section 7.4, "Powering On the Server" on page 7-7.

      Verify that the AC Present LED is lit.

CHAPTER 7

# Returning the Server to Operation

This chapter describes how to return the Sun Fire X4170, X4270, and X4275 Servers to operation after you have performed service procedures.

The following topics are covered in this chapter:


- Section 7.1, “Install Top Cover” on page 7-1
- Section 7.2, “Reinstalling the Server in the Rack” on page 7-4
- Section 7.3, “Returning the Server to the Normal Rack Position” on page 7-5
- Section 7.4, “Powering On the Server” on page 7-7




**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 airflow.

## 7.1 Install Top Cover

If you removed the top cover, perform the following procedure to replace it.

### 7.1.1 Install Top Cover

1. **Place the top cover on the chassis (**FIGURE 7-1 **and** FIGURE 7-2 **[1]).**

   Set the cover down so that it hangs over the rear of the server by about 1 inch (25.4 mm).

**FIGURE 7-1** Installing the Top Cover on the Sun Fire X4170 and X4270 Servers

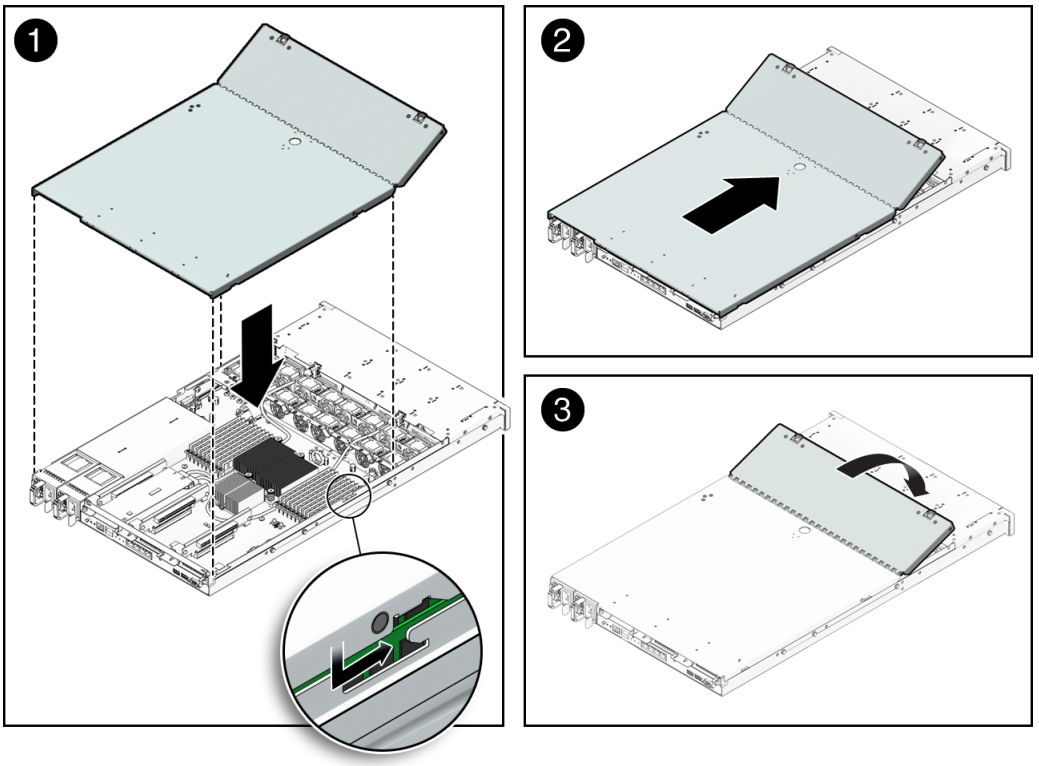
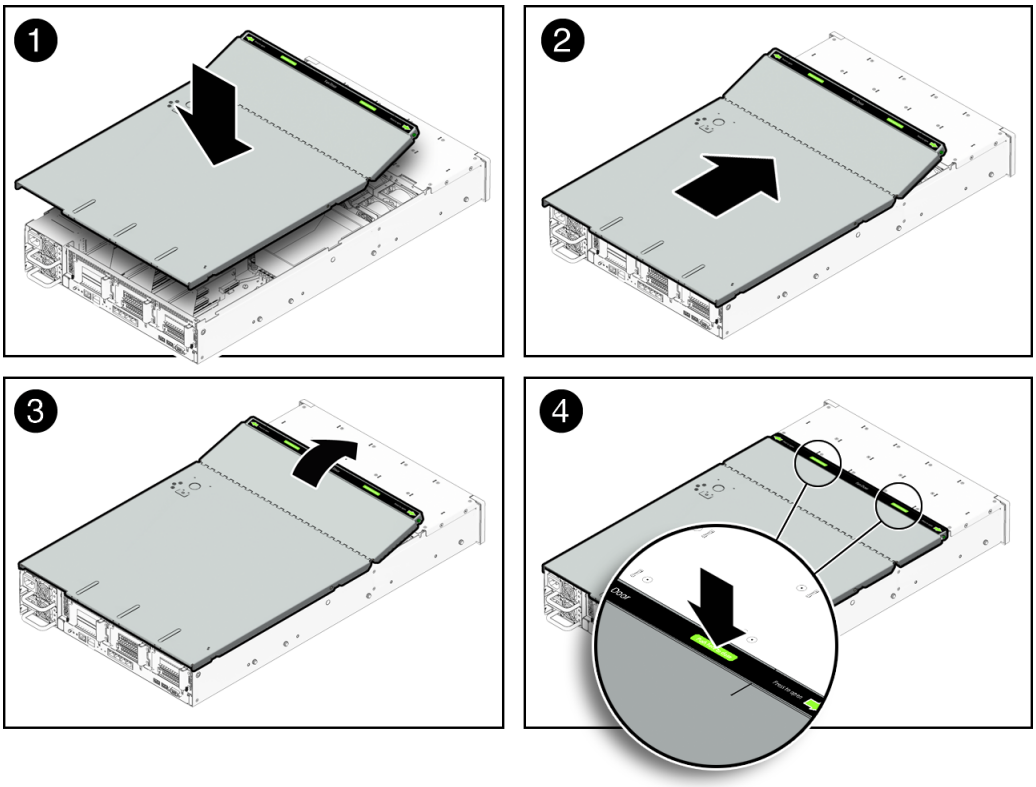


**FIGURE 7-2** Installing the Top Cover on the Sun Fire X4275 Server




2. **Slide the top cover forward until it seats [2].**
3. **Close the fan cover [3].**
4. **If you are installing the X4270 Server cover, press down on the cover at the locations labeled to close the cover completely [4].**

## 7.2 Reinstalling the Server in the Rack

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



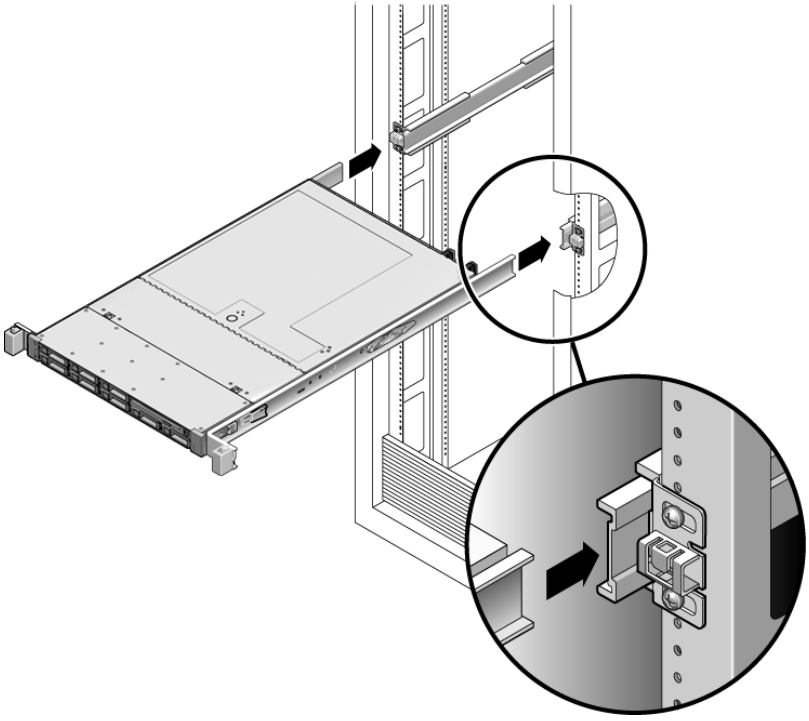
**Caution –** The servers are heavy. Two people might be required to carry the chassis and install it in the rack.

### 7.2.1 Reinstall Server in 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 7-3**).**
3. **Slide the server into the rack until the brackets lock into place.**

   The server is now in the extended maintenance position.

**FIGURE 7-3** Returning the Server to the Rack



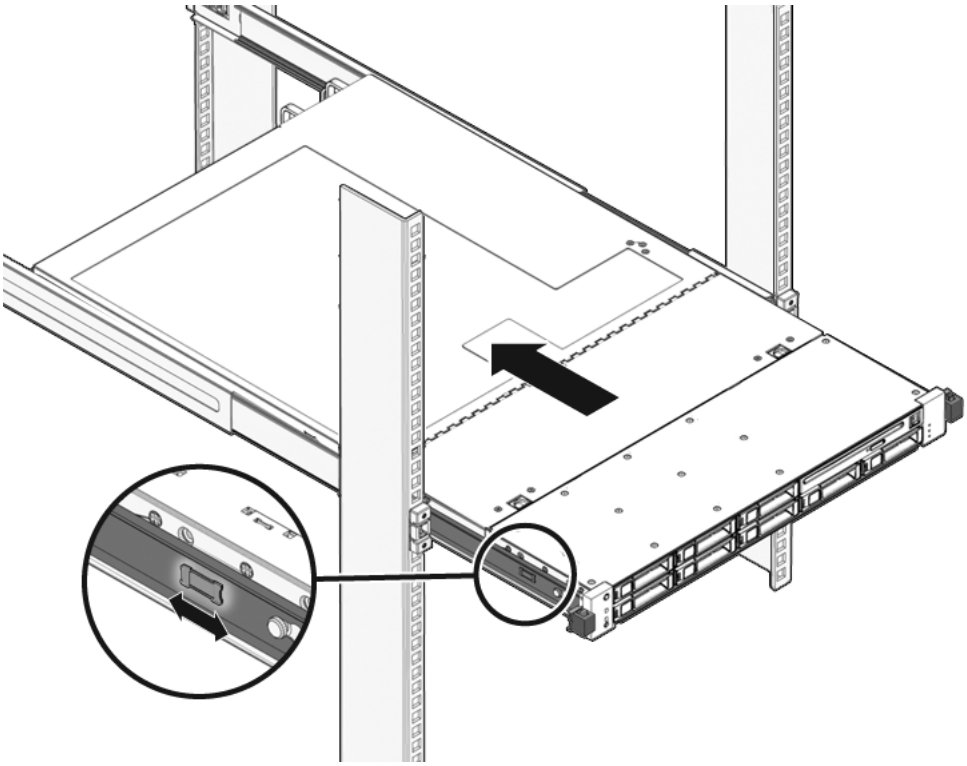
## 7.3 Returning the Server to the Normal Rack Position

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

### 7.3.1 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 7-4**).**

**FIGURE 7-4** 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 cable management arm (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.

# 7.4 Powering On the Server

Before powering on your server for the first time, follow the installation and cabling instructions provided in the *Sun Fire X4170, X4270, and X4275 Servers Installation Guide* (820-5827), which is optionally shipped with the system and is also available online.

To connect power cords and apply power to the server:

1. **Connect the power cord (or cords) to the power supply (or supplies) on the rear panel as shown in** FIGURE 7-5 **and** FIGURE 7-6**.**

**FIGURE 7-5** Sun Fire X4170 Server Rear Panel Power Supplies



**FIGURE 7-6** Sun Fire X4270 and X4275 Servers 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 7-7, FIGURE 7-8, and FIGURE 7-9.

**FIGURE 7-7** Sun Fire X4170 Server Front Panel Power/OK LED

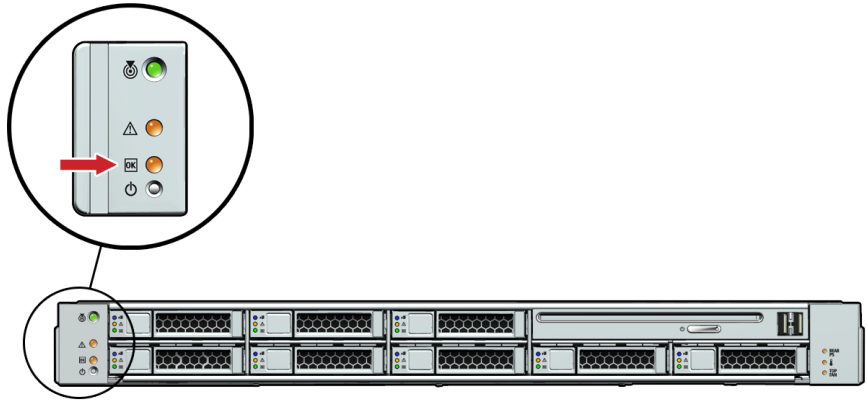


**FIGURE 7-8** Sun Fire X4270 Server Front Panel Power/OK LED

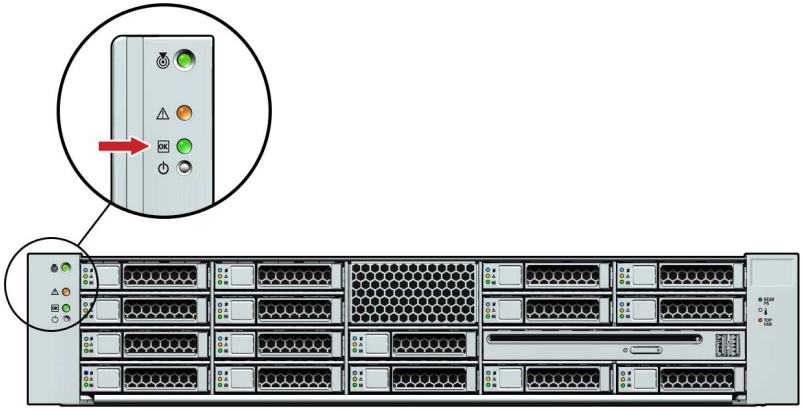
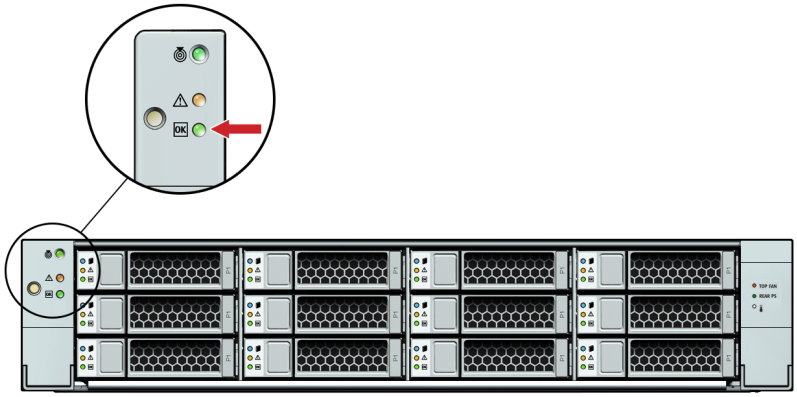


**FIGURE 7-9** Sun Fire X4275 Server Front Panel Power/OK LED



CHAPTER 8

# Troubleshooting The Server and Restoring ILOM Defaults

This chapter introduces the diagnostic tools you can use to troubleshoot or monitor the performance of your server. It also includes information about how to restore the SP password and serial connection defaults in ILOM, as well as how to restore your ILOM SP firmware.


- Section 8.1, “Troubleshooting The Server” on page 8-2
  - Section 8.1.1, “Sun Diagnostic Tools” on page 8-2
  - Section 8.1.2, “Diagnostic Tool Documentation” on page 8-4
- Section 8.2, “Restoring ILOM Defaults” on page 8-5
  - Section 8.2.1, “Accessing the Preboot Menu” on page 8-5
  - Section 8.2.2, “Restoring the Factory Default ILOM Root Password” on page 8-11
  - Section 8.2.3, “Restoring ILOM Access to the Serial Console” on page 8-12
  - Section 8.2.4, “Restoring the SP Firmware Image” on page 8-13
  - Section 8.2.5, “Preboot Menu Command Summary” on page 8-17

# 8.1 Troubleshooting The Server

The server and its accompanying software and firmware contain many diagnostic tools and features that can help you:

- Isolate problems when a failure occurs on a customer replaceable unit (CRU)
- Monitor the status of a functioning system
- Exercise the system to disclose more subtle problems that might be hardware related

Sun provides a suite of diagnostic tools, each of which has its own specific strengths and applications. For more information about which tool might be best to use for your purpose, and where to locate information about these tools, see:


- Section 8.1.1, "Sun Diagnostic Tools" on page 8-2
- Section 8.1.2, "Diagnostic Tool Documentation" on page 8-4


## 8.1.1 Sun Diagnostic Tools

Sun provides a wide selection of diagnostic tools for use with your server. These tools range from the SunVTS software, a comprehensive validation test suite, to log files in ILOM that might contain clues helpful in identifying the possible sources of a problem, and the fault management function in ILOM that enables you to identify a faulted component as soon as the fault occurs.

The diagnostic tools range from standalone software packages, to firmware-based tests like power-on self-test (POST), U-Boot tests, or Pc-Check tests, to hardware LEDs that tell you when the system components are operating.

TABLE 8-1 summarizes the variety of diagnostic tools that you can use when troubleshooting or monitoring your server.

**TABLE 8-1** Summary of Sun Diagnostic Tools

| Diagnostic Tool | Type | What It Does | Accessibility | Remote Capability |
|---|---|---|---|---|
| Integrated Lights Out Manager (ILOM) | SP firmware | Monitors environmental conditions, generates alerts, performs fault isolation, and provides remote console access. | Can function on standby power and when the operating system is not running. | Designed for remote and local access. |
| Preboot Menu | SP firmware | Enables you to restore some of ILOM defaults (including firmware) when ILOM is not accessible. | Can function on standby power and when operating system is not running. | Local access, but can be accessed remotely from a console running terminal emulation software. |
| LEDs | Hardware and SP firmware | Indicate status of overall system and particular components. | Available any time on system power is available. | Local, but sensor and indicators are accessible from ILOM web interface or command-line interface (CLI). |
| POST | Host firmware | Tests core components of system: CPUs, memory, and motherboard I/O bridge integrated circuits. | Runs on startup. Available when the operating system is not running. | Local, but can be accessed through ILOM Remote Console. |
| U-Boot | SP firmware | Initializes and test aspects of the service processor (SP) prior to booting the ILOM SP operating system. Tests SP memory, SP, network devices and I/O devices. | Can function on standby power and when operating system is not running. | Local or remote access through a serial connection. |
| Pc-Check | SP firmware | DOS-based utility that tests all motherboard components (CPU, memory, and I/O), ports, and slots. | Can function on standby power and when operating system is not running. | Remote access through Sun ILOM Remote Console. |
| Solaris commands | Operating system software | Displays various kinds of system information. | Display various kinds of system information. | Local, and over network |
| SunVTS | Diagnostic tool standalone software | Exercises and stresses the system, running tests in parallel. | Requires operating system. Install SunVTS software separately. | View and control over network |

## 8.1.2 Diagnostic Tool Documentation

TABLE 8-2 identifies where you can find more information about Sun diagnostic tools.

**TABLE 8-2** Summary of Documentation for Sun Diagnostic Tools

| Diagnostic Tool | Where to Find Information |
|---|---|
| ILOM | • *Sun Integrated Lights Out Manager 2.0 User's Guide.*<br>• *Addendum to the Sun Integrated Lights Out Manager 2.0 User's Guide*<br>• *Sun Integrated Lights Out Manager (ILOM) 2.0 Supplement for Sun Fire X4170, X4270, and X4275 Servers*<br><br>Locate the latest version of these guides at:<br>• http://docs.sun.com/app/docs/prod/sf.x4170#hic |
| Preboot Menu | • Section 8.2, "Restoring ILOM Defaults" on page 8-5. |
| LEDs;<br>or<br>System indicators and sensors | • *Sun Fire X4170, X4270, and X4275 Servers Service Manual*<br>• *Sun Integrated Lights Out Manager 2.0 User's Guide*<br>*Sun Integrated Lights Out Manager (ILOM) 2.0 Supplement for Sun Fire X4170, X4270, and X4275 Servers*<br>Locate the latest version of these guides at:<br>• http://docs.sun.com/app/docs/prod/sf.x4170#hic |
| POST | • Section E.4, "Default BIOS Power-On Self-Test (POST) Events" on page E-27<br>• Section E.5, "BIOS POST F1 and F2 Errors" on page E-29 |
| U-Boot<br>or<br>Pc-Check | • *Sun x64 Servers Diagnostics Guide*<br><br>Locate the latest copy of this guide at:<br>• http://docs.sun.com/app/docs/prod/sf.x4170#hic |
| Solaris commands | Locate the latest Solaris command information for Solaris 10 at:<br>• http://docs.sun.com/app/docs/doc/817-0550/eqxqt?a=view |
| Sun VTS | Download the Sun VTS software at:<br>• http://sunsolve.com<br><br>Locate the latest documentation for SunVTS at:<br>• http://www.sun.com/oem/products/vts/index.html |

# 8.2 Restoring ILOM Defaults

You can restore the factory defaults for the following ILOM features:

- ILOM root password
- Serial port connection

To restore these factory defaults, you must use the Preboot Menu utility that is shipped installed on your server. The Preboot Menu enables you to address changes to some of ILOM's settings while ILOM is not currently running. In addition to restoring factory defaults for the root password and serial connection settings, the Preboot Menu enables you to restore the SP firmware image on your system.

For more information about how to use the Preboot Menu to restore settings in ILOM, see these sections:


- Section 8.2.1, "Accessing the Preboot Menu" on page 8-5
- Section 8.2.2, "Restoring the Factory Default ILOM Root Password" on page 8-11
- Section 8.2.3, "Restoring ILOM Access to the Serial Console" on page 8-12
- Section 8.2.4, "Restoring the SP Firmware Image" on page 8-13
- Section 8.2.5, "Preboot Menu Command Summary" on page 8-17


## 8.2.1 Accessing the Preboot Menu

To access the Preboot Menu, you must reset the SP and interrupt the boot process. You can interrupt the ILOM boot process by either:

- Using the Locate button on the local server.

  For details about the requirements for this local access method, see Section 8.2.1.1, "Prerequisites for Accessing the Preboot Menu" on page 8-6

Or

- Typing **`xyzzy`** during a pause in the bootstrap process from a remote console (terminal or computer).

  For details about the requirements for this remote access method, see Section 8.2.1.1, "Prerequisites for Accessing the Preboot Menu" on page 8-6.

Some Preboot Menu settings must be configured first, and until they are, you must use the Locate button method to access the Preboot Menu.

For detailed instructions for accessing the Preboot Menu from a local or remote connection, see the following sections:

- Section 8.2.1.1, "Prerequisites for Accessing the Preboot Menu" on page 8-6
- Section 8.2.1.2, "Access to the Preboot Menu" on page 8-6
- Section 8.2.1.3, "Edit Preboot Menu for Remote Access" on page 8-8


### 8.2.1.1 Prerequisites for Accessing the Preboot Menu

Ensure that the applicable requirements are met prior to accessing the Preboot menu from either a local or remote connection.

- For local access to the Preboot Menu (using Locate button)

  You must connect a terminal or computer running terminal emulation software to the server.

  For more information about how to attach local devices to the server using a dongle cable, see the *Sun Fire X4170, X4270, and X4275 Servers Installation Guide*.

  For instructions for accessing the Preboot Menu by using the Locate button, see Section 8.2.1.2, "Access to the Preboot Menu" on page 8-6.

- For remote access to the Preboot Menu (typing **`xyzzy`** during bootstrap)

  Prior to accessing the Preboot Menu remotely, you must set the `bootdelay` and `check_physical_presence` settings in the Preboot Menu to enable remote access. To configure these settings for the first time, you need to:

  a. Access the Preboot Menu using the Locate button on the local server as described in Section 8.2.1.2, "Access to the Preboot Menu" on page 8-6.

  b. Edit the settings in the Preboot Menu to enable remote access as described in Section 8.2.1.3, "Edit Preboot Menu for Remote Access" on page 8-8.

  c. Use a remote terminal or computer running terminal emulation software to access the Preboot Menu remotely.

---

**Note –** You cannot use an SSH, or a remote KVMS session to access the Preboot Menu remotely.

---

### 8.2.1.2 Access to the Preboot Menu

1. **Ensure that the requirements in** Section 8.2.1.1, "Prerequisites for Accessing the Preboot Menu" on page 8-6 **are met.**

2. **Reset ILOM.**

   For example:

- From the server SP ILOM, enter the command:

  -> **reset /SP**

  Where *n* is the slot number of the node.

- Temporarily remove power from the server by disconnecting and reconnecting the power cord(s).

ILOM reboots and messages begin scrolling on the screen.

3. **To interrupt the ILOM boot process perform one of the following actions when the SP is resetting:**

   - Press and hold the Locate button on the server front panel, until the Preboot Menu appears.

   Or

   - Type in **xyzzy** when you see the message:

     `Booting linux in n seconds...`

---

**Note –** You cannot interrupt the ILOM boot process by typing **xyzzy** until you have configured the settings as described in Section 8.2.1.3, "Edit Preboot Menu for Remote Access" on page 8-8.

---

The ILOM Preboot Menu appears.

```
Booting linux in 10 seconds...

                        ILOM Pre-boot Menu
                        ------------------
Type "h" and [Enter] for a list of commands, or "?" [Enter] for
command-line key bindings.  Type "h cmd" for summary of 'cmd'
command.

Warning: SP will warm-reset after 300 seconds of idle time.
  Set 'bootretry' to -1 to disable the time-out.

Preboot>
```

4. **You can perform any of the following tasks or type `boot` to exit the Preboot Menu.**

   - Enable remote access to the Preboot Menu.

     For instructions, see Section 8.2.1.3, "Edit Preboot Menu for Remote Access" on page 8-8.

   - Restore the factory default to the ILOM root password.

     For instructions, see Section 8.2.2.1, "Restore ILOM Root Password to Factory Default Using the Preboot Menu" on page 8-11.

- Restore the serial connection between ILOM and a host console.

  For instructions, see Section 8.2.3.1, "Restore Access to the Serial Console Using the Preboot Menu" on page 8-12.

- Restore the SP firmware image.

  For instructions, see Section 8.2.4.3, "Restore the SP Firmware Image Using the Preboot Menu" on page 8-16.

- Review the commands supported in the Preboot Menu.

  For command details, see Section 8.2.5, "Preboot Menu Command Summary" on page 8-17.

### 8.2.1.3 Edit Preboot Menu for Remote Access

1. **Access the Preboot Menu as described in** Section 8.2.1.2, "Access to the Preboot Menu" on page 8-6**.**

2. **At the** `Preboot>` **prompt, type** `edit`**.**

   The Preboot Menu enters edit mode.

   In edit mode, the Preboot Menu displays its selections one-by-one, offering you a chance to change each one.

   - To change a setting, type the new value, then press Enter.
   - To skip to the next setting, press Enter.

3. **Press Enter to move through the settings until the** `bootdelay` **setting appears.**

4. **To change the** `bootdelay` **setting, type** `3`**,** `10`**, or** `30`**, then press Enter.**

   This value (3, 10, or 30) specifies the number of seconds the SP boot process delays while waiting for your input.

   The Preboot Menu re-displays the `bootdelay` setting with the new value.

5. **Press Enter to return to Preboot Menu selections.**

   The Preboot Menu selections appear.

6. **Press Enter to move through the settings until the** `check_physical_presence` **setting appears.**

   To change the `check_physical_presence` setting, type `no`, then press Enter.

   The Preboot Menu displays the `check_physical_presence` setting with the new value.

7. **Press Enter for the new value to take effect.**

   The Preboot Menu asks you to confirm your changes.

   ```
   Enter 'y[es]' to commit changes: [no]
   ```

8. **Type `y` to save your changes and exit the edit session.**

   If you want to exit the edit session without saving your changes, type `n`.

   The following example shows an edit session where the `bootdelay` and `check_physical_presence` settings are changed.

---

**Note –** For a list of other settings you can edit in the Preboot Menu, see Section 8.2.1.4, "Edit Mode Settings in Preboot Menu." on page 8-10.

---

```
Preboot> edit

Press Enter by itself to reach the next question.
  Press control-C to discard changes and quit.

 Values for baudrate are {[ 9600 ]| 19200 | 38400 | 57600 | 115200
}.
  Set baudrate?                [9600]
 Values for serial_is_host are {[ 0 ]| 1 }.
  Set serial_is_host?          [0]
 Values for bootdelay are { -1 | 3 | 10 | 30 }.
  Set bootdelay?               [30] 10
  Set bootdelay?               [10]
 Values for bootretry are { -1 | 30 | 300 | 3000 }.
  Set bootretry?               [<not set>]
 Values for preferred are {[ 0 ]| 1 }.
  Set preferred?               [<not set>]
 Values for preserve_conf are {[ yes ]| no }.
  Set preserve_conf?           [yes]
 Values for preserve_users are {[ yes ]| no }.
  Set preserve_users?          [no]
 Values for preserve_password are {[ yes ]| no }.
  Set preserve_password?       [yes]
 Values for check_physical_presence are {[ yes ]| no }.
  Set check_physical_presence? [no] no
  Set check_physical_presence? [no]
 Enter 'y[es]' to commit changes: [no] y
Summary: Changed 2 settings.
Preboot>
```

### 8.2.1.4 Edit Mode Settings in Preboot Menu.

In addition to changing the settings required in the Preboot Menu to enable remote access, you can also change other edit mode settings in the Preboot Menu. For a list of these settings, see TABLE 8-3:

**TABLE 8-3** Edit Mode Preboot Menu Command Settings

| Setting | Description |
|---|---|
| `baudrate` | Sets the baudrate of the serial port. Selections include 9600,19200, 38400, 57600, and 115200. |
| `serial_is_host` | If this is set to 0, the serial port connects to the ILOM. If this is set to 1, the serial port connects to the host. For more details, see Section 8.2.3, "Restoring ILOM Access to the Serial Console" on page 8-12. |
| `bootdelay` | The number of seconds the bootstrap process waits for the user to enter **`xyzzy`** before booting the SP. |
| `bootretry` | The number of seconds the Preboot Menu waits for user input before timing out and starting the SP. Set to -1 to disable the timeout. |
| `preferred` | Unused |
| `preserve_conf` | Setting this to `no` duplicates the function of the `unconfig ilom_conf` command, which resets many ILOM configuration settings, but preserves SP network, `baudrate`, and `check_physical_presence` the next time the SP is booted. |
| `preserve_users` | Setting this to `no` duplicates the function of the `unconfig users` command, which resets user information to the default values the next time the SP is booted. |
| `preserve_ password` | Setting this to `no` duplicates the function of the `unconfig password` command, which resets the root password to the default value the next time the SP is booted. |
| `check_physical _presence` | If this is set to `Yes`, you must press and hold the Locate button to interrupt the SP boot process. If it is set to `No`, the boot process prompts you to interrupt it. See Section 8.2.1.3, "Edit Preboot Menu for Remote Access" on page 8-8 for details. |

## 8.2.2 Restoring the Factory Default ILOM Root Password

The ILOM root password grants you access to the ILOM web or command line (CLI) interfaces on the SP. If you forget the root password, you can use the Preboot Menu to restore the password to the factory default, `changeme`.

### 8.2.2.1 Restore ILOM Root Password to Factory Default Using the Preboot Menu

1. **Access the Preboot Menu as described in** Section 8.2.1, "Accessing the Preboot Menu" on page 8-5**.**

2. **In Preboot Menu, type:**

   ```
   Preboot> unconfig password
   Setting 'preserve_password' to 'no' for the next boot of ILOM.
   ```

3. **Reset the SP by typing:**

   ```
   Preboot> boot
   ```

   The Preboot Menu exits and the SP restarts.

   After restarting the ILOM SP, the value for the root password (on the ILOM SP) is set to `changeme` when the SP is finished booting.

## 8.2.3 Restoring ILOM Access to the Serial Console

In the event that the serial connection between ILOM and a host becomes unavailable, you can restore access to the serial port connection by reconfiguring the host as the external serial port owner in either the ILOM web interface or CLI, or in the Preboot Menu.

To determine which interface is best to use when restoring the serial connection between ILOM and a host console, consider the following:

- If a network connection is available, you should use the ILOM web interface or CLI to restore ILOM's access to the serial console.

  For instructions, see the procedure for "Switching Serial Port Output Between SP and Host Console" in the *Sun Integrated Lights Out Manager (ILOM) 2.0 Supplement for Sun Fire X4170, X4270, and X4275 Servers.*

- If a network connection is unavailable, you should use the procedure in Section 8.2.3.1, "Restore Access to the Serial Console Using the Preboot Menu" on page 8-12 to restore ILOM access to the serial console.

### 8.2.3.1 Restore Access to the Serial Console Using the Preboot Menu

1. **Access the Preboot Menu as described in** Section 8.2.1, "Accessing the Preboot Menu" on page 8-5**.**

2. **At the** `Preboot>` **prompt, type** `edit`**.**

   The Preboot Menu enters edit mode.

   In edit mode, the Preboot Menu displays its selections one-by-one, offering you a chance to change each one.

   - To change a setting, type the new value, then press Enter.
   - To skip to the next setting, press Enter.

3. **Press Enter to move through the settings until the** `serial_is_host` **setting appears.**

   To change the `serial_is_host` setting, type **`0`**, and then press Enter.

   The Preboot Menu redisplays the `serial_is_host` setting with the new value.

4. **Press Enter to display the Preboot Menu selections.**

   The Preboot Menu settings appear.

5. **Press Enter to scroll through the settings until the Preboot Menu asks you to confirm your changes.**

   ```
   Enter 'y[es]' to commit changes: [no]
   ```

6. **Type `y` to confirm your change and exit the edit session.**

   The preboot menu displays this message

   ```
   Summary: Changed 1 settings
   Preboot>
   ```

7. **To exit the Preboot Menu, type:** `boot`.

## 8.2.4 Restoring the SP Firmware Image

If ILOM is available, you should always use the ILOM web interface or CLI to restore (update) the firmware image. For instructions about how to restore the SP firmware image using either the ILOM web interface or CLI, see the *Sun Integrated Lights Out Manager 2.0 User Guide* (820-1188).

If ILOM is unavailable, you can use the Preboot Menu or IPMIflash to restore the ILOM firmware image.

To restore the SP firmware image using IPMIflash, see the *Addendum to the Sun Integrated Lights Out Manager 2.0 User's Guide* (820-4198) for more for details.

---

**Note –** If you are unable to access ILOM to update the SP firmware image using either the ILOM interfaces or IPMIflash, you should contact a Sun service representative for assistance.

---

To use the Preboot Menu to restore the SP firmware image on the server, see the following sections:

- Section 8.2.4.1, "Prerequisite for Restoring SP Firmware Using Preboot Menu" on page 8-13
- Section 8.2.4.2, "Special Recovery Considerations for Systems Running ILOM Firmware 2.0.2.17 or Later" on page 8-14
- Section 8.2.4.3, "Restore the SP Firmware Image Using the Preboot Menu" on page 8-16

### 8.2.4.1 Prerequisite for Restoring SP Firmware Using Preboot Menu

The following requirements must be met prior to restoring the SP firmware on your server using the Preboot Menu.

- If your system is running ILOM firmware 2.0.2.x or later, you must enable the Preboot Menu to support the ability to restore the SP firmware . For more infomation on how to enable support in the Preboot Menu to recover the SP firmware, see Section 8.2.4.2, "Special Recovery Considerations for Systems Running ILOM Firmware 2.0.2.17 or Later" on page 8-14.
- You must be a Sun qualified service technician to perform this procedure.
- You must have a valid `.flash` firmware image file on a TFTP server.

---

**Note –** Restore the SP firmware using the Preboot Menu requires a `.flash` file instead of a `.pkg` file that is typically used to update the SP using the ILOM interfaces.

---

### 8.2.4.2 Special Recovery Considerations for Systems Running ILOM Firmware 2.0.2.17 or Later

As of ILOM 2.0.2.17, you must enable support in the Preboot Menu to recover the SP firmware image prior to performing the steps described in Section 8.2.4.3, "Restore the SP Firmware Image Using the Preboot Menu" on page 8-16.

To enable support in the Preboot Menu to recover ILOM firmware 2.0.2.17 or later, follow these steps.

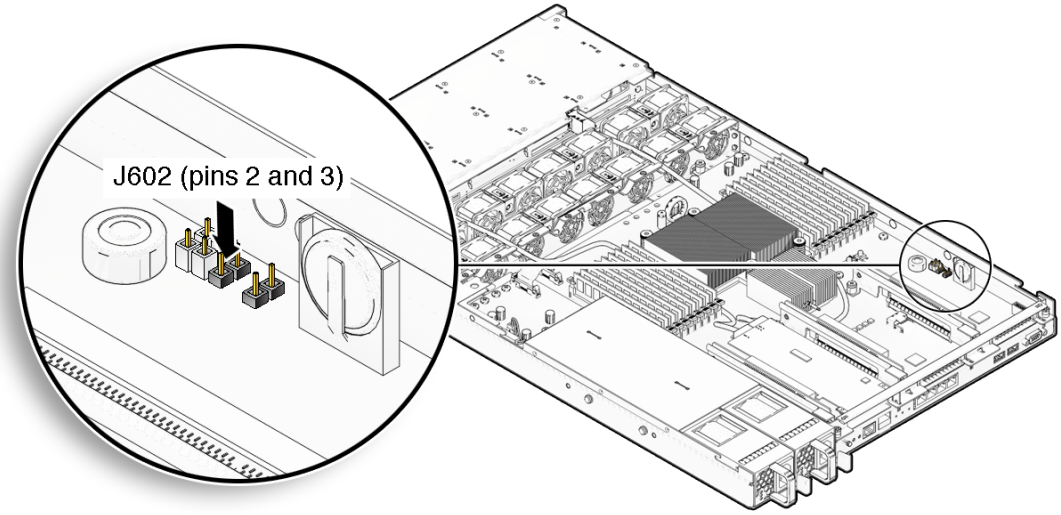
1. **Prepare the server for service by powering down the server, extending the server to the maintenance position, and removing the top cover from the server.**

   For instructions, see the following sections:

   - Section 2.4, "Powering On and Off the Server" on page 2-3
   - Section 2.7, "Extending the Server to the Maintenance Position" on page 2-13
   - Section 2.10, "Removing the Top Cover" on page 2-19

2. **Place a jumper on J602 to short pins 2 and 3 (see** FIGURE 8-1**).**

**FIGURE 8-1** J602 Jumper Location




3. **Replace the top cover and power on the server.**

   For instructions, see the following sections:

   - Section 7.1, "Install Top Cover" on page 7-1
   - Section 7.4, "Powering On the Server" on page 7-7

4. **Follow the instructions for restoring the SP firmware using the Preboot Menu in** Section 8.2.4.3, "Restore the SP Firmware Image Using the Preboot Menu" on page 8-16 **and proceed to the next step in this procedure.**

---

**Note –** The Preboot Menu firmware recovery process must be performed by a Sun qualified service technician and you must have a valid `.flash` file to perform the procedure.

---

5. **After you restore the SP image using the Preboot menu, perform the following steps to remove the J602 jumper from the server and to return the server to normal operation.**

   a. **Power off the server.**

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

   b. **Remove the top cover from the server.**

      See Section 2.10, "Removing the Top Cover" on page 2-19.

   c. **Remove the jumper from J602.**

**d. Replace the top cover.**

See Section 7.1, "Install Top Cover" on page 7-1.

**e. Return the server to the normal rack position.**

See Section 7.3, "Returning the Server to the Normal Rack Position" on page 7-5.

**f. Power on the server.**

See Section 7.4, "Powering On the Server" on page 7-7.

### 8.2.4.3 Restore the SP Firmware Image Using the Preboot Menu

1. **Access the Preboot Menu as described in** Section 8.2.1, "Accessing the Preboot Menu" on page 8-5**.**
2. **At the** `Preboot>` **prompt, type:**

---

**Caution –** The use of the `net flash` command is reserved for use by Sun service personnel only.

---

**`net flash`** *IPaddress path/name* **`.flash`**

where:

- *IPaddress* is the IP address of a TFTP server
- *path* is the path to the file relative to `/tftpboot`
- *name* is the first part of the `.flash` file filename

For example:

```
Preboot> net flash 10.8.173.25 images/system-rom.flash
```

After a series of messages, the Preboot Menu prompt appears.

```
Preboot>
```

3. **At the** `Preboot>` **prompt, type the** `reset` **command to restart the SP.**

For example:

```
Preboot> reset
```

The Preboot Menu exits and ILOM restarts.

## 8.2.5 Preboot Menu Command Summary

TABLE 8-4 identifies the Preboot Menu commands.

**TABLE 8-4** Preboot Menu Commands

| Command | Description |
|---|---|
| `boot` | Boots ILOM. The Preboot Menu exits and ILOM restarts.<br>**Note -** This command executes a modified boot sequence that does not offer the choice to select the diagnostic level, or to interrupt the boot sequence and return to the Preboot Menu. To execute the normal boot sequence, use the `reset warm` command instead. |
| `vers` | Displays version information including the hardware type, board revision, ILOM revision, revisions of PBSW and recovery U-Boot. Shows the checksum integrity of the images, and the preference between redundant images. |
| `help` | Displays a list of commands and parameters. |
| `show` | Displays a list of SP settings. |
| `edit` | Starts an interactive dialog that prompts and changes settings one-by-one. See Section 8.2.1.3, "Edit Preboot Menu for Remote Access" on page 8-8 for details. |
| `diag` | Runs the U-Boot diagnostic tests in manual mode. See the *Sun X64 Servers Diagnostics Guide* for more on U-Boot diagnostic tests. |
| `host` | Initiates various activities related to the host.<br>• `clearcmos` – Clears CMOS and BIOS passwords.<br>• `console` – Connects SP console to host serial console.<br>•<br>**Note -** Type `Ctrl \ q` to quit.<br>• `show` – Shows information about the host state.<br>• `enable-on` – Enables the front-panel Power button, which is usually disabled unless ILOM is running.<br>**Caution -** If you start the host when ILOM is off, the BIOS does not send error events, or power messages to the SP. This can cause the server to lose power.<br>• `hard-off` – Turns the host off. |

**TABLE 8-4** Preboot Menu Commands *(Continued)*

| Command | Description |
|---|---|
| `net` | `{ config \| dhcp \| ping \| flash }`<br><br>• `config` – Starts a dialog that enables you to change the ILOM network settings.<br>• `dhcp` – Changes the network addressing from static to DHCP.<br>**Note -** You must set `ipdiscovery = dhcp` using the `net config` command first.<br><br>• `ping` – Sends a ping.<br>• `flash` – Downloads an ILOM firmware image. See Section 8.2.4, "Restoring the SP Firmware Image" on page 8-13 for details.<br><br>Type **`help net`** *command* for more details on these commands. |
| `reset` | {[ `warm` ]\| `cold` }. Resets the SP and the host.<br><br>• `warm` – Resets the SP without affecting a running host.<br>• `cold` – Resets the SP and the host. It has the effect of powering off the server. |
| `unconfig` | `{ users \| ilom_conf \| most \| all }`<br><br>Causes ILOM to erase any configuration information and returns the values to defaults the next time ILOM boots.<br><br>• `users` – Resets all configured user information.<br>• `password` –Resets the ILOM root password to the default. See Section 8.2.2, "Restoring the Factory Default ILOM Root Password" on page 8-11 for more details.<br>• `ilom_conf` – Resets configuration settings but preserves SP network and `baudrate`, `preferred`, and `check_physical_presence`.<br>• `most` – Resets the SP data storage, but preserves network and baud rate, preferred, and `check_physical_presence` settings.<br>• `all` – Resets all SP data storage and settings.<br><br>Booting ILOM restores other defaults.<br><br>**Note -** None of these options erases the dynamic FRU PROMs. |

APPENDIX **A**

# Connector Pinouts

This appendix provides reference information about the Sun Fire X4170, X4270, and X4275 Servers back panel ports and pin assignments.

Topics covered in this appendix include:


- Section A.1, “Serial Management Port Connector” on page A-2
- Section A.2, “Network Management Port Connector” on page A-3
- Section A.3, “Video Connector” on page A-4
- Section A.4, “USB Connectors” on page A-5
- Section A.5, “Gigabit-Ethernet Connectors” on page A-6


For the locations of the back panel ports on the servers, see FIGURE 1-4 and FIGURE 1-5.

# A.1 Serial Management Port Connector

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

**FIGURE A-1** Serial Management Connector Diagram




**Figure Legend**

| | | | |
|---|---|---|---|
| **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 its use.

**FIGURE A-2** Network Management Connector Diagram




**Figure Legend**

| | | | |
|---|---|---|---|
| **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-3** Video Connector Diagram

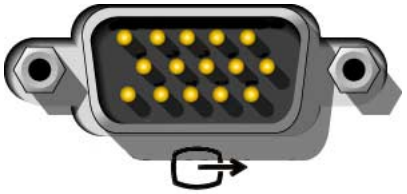


**Figure Legend**

| | | | |
|---|---|---|---|
| **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 and can be accessed from the server back panel.

**FIGURE A-4** USB Connector Diagram

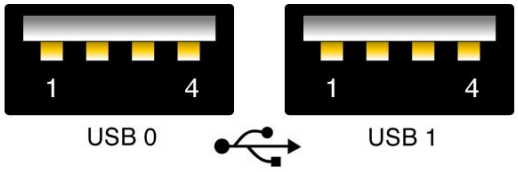



**Figure Legend**

| | | | |
|---|---|---|---|
| USB 0-1 | +5 V (fused) | USB 1-1 | +5 V (fused) |
| USB 0-2 | USB0/1- | USB 1-2 | USB2/3- |
| USB 0-3 | USB0/1+ | USB 1-3 | USB2/3+ |
| USB 0-4 | Ground | USB 1-4 | 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-5** Gigabit Ethernet Connector Diagram




**Figure Legend**

| | | | |
|---|---|---|---|
| **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**

# Sun Fire X4170 Server Illustrated Parts Breakdown

The following illustrations provide exploded views of the Sun Fire X4170 Server system components. Use these illustrations to identify parts in the server.

# B.1 Sun Fire X4170 Server Components

**FIGURE B-1** Sun Fire X4170 Server I/O Components

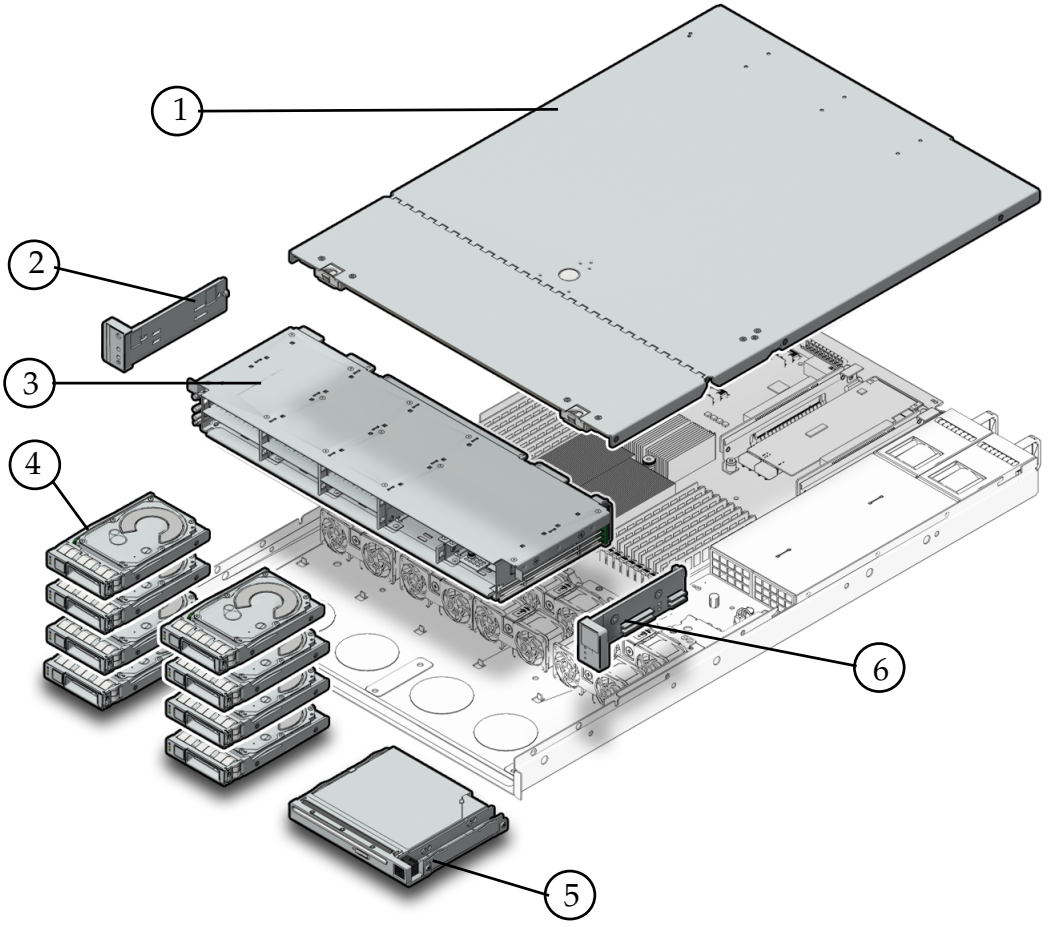



**Figure Legend**

| | | | |
|---|---|---|---|
| **1** | Top Cover | **4** | Hard/Solid State Drives |
| **2** | Left Control Panel Light Pipe Assembly | **5** | DVD/USB Module |
| **3** | Disk Drive Cage | **6** | Right Control Panel Light Pipe Assembly |

**FIGURE B-2** Sun Fire X4170 Server Power Distribution/Fan Module Components

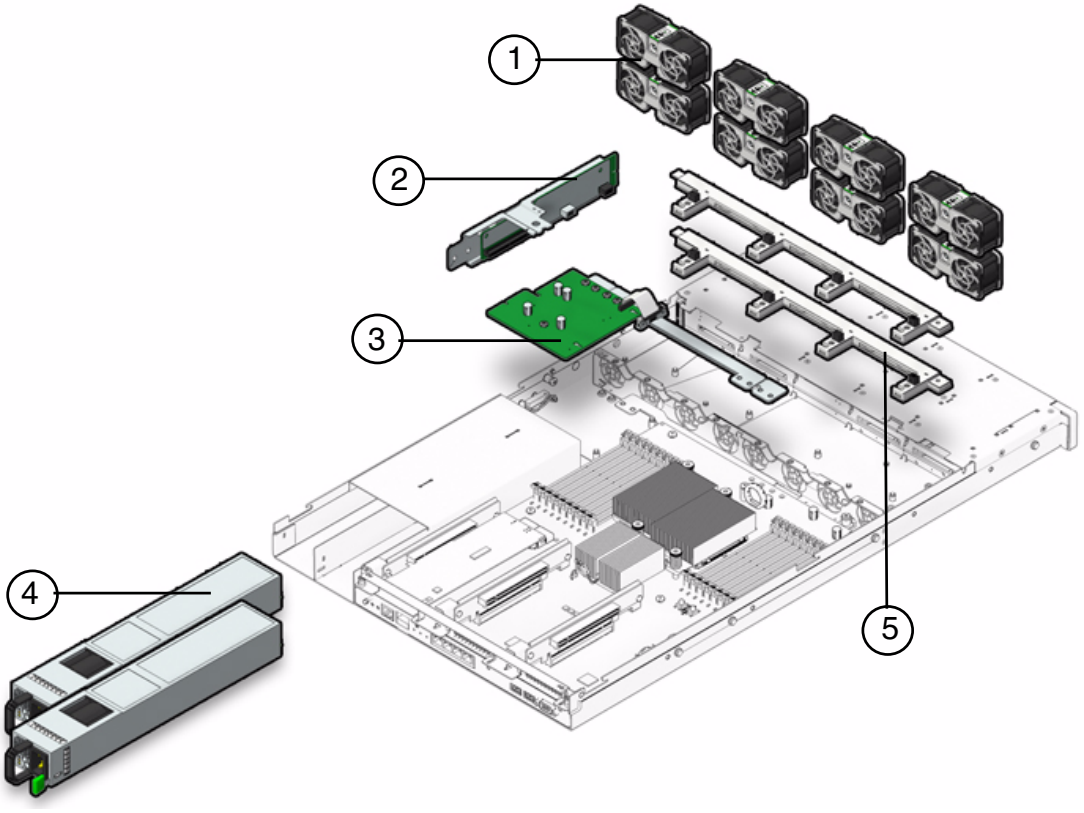



**Figure Legend**

| | | | |
|---|---|---|---|
| **1** | Fan Modules | **4** | Power Supplies |
| **2** | Paddle Card | **5** | Fan Power Boards |
| **3** | Power Distribution Board/Bus Bar Assembly | | |

APPENDIX **C**

# Sun Fire X4270 Server Illustrated Parts Breakdown

The following illustrations provide exploded views of the Sun Fire X4270 Server system components. Use these illustrations to identify parts in the server.

# C.1 Sun Fire X4270 Server Components

**FIGURE C-1** Sun Fire X4270 Server I/O Components

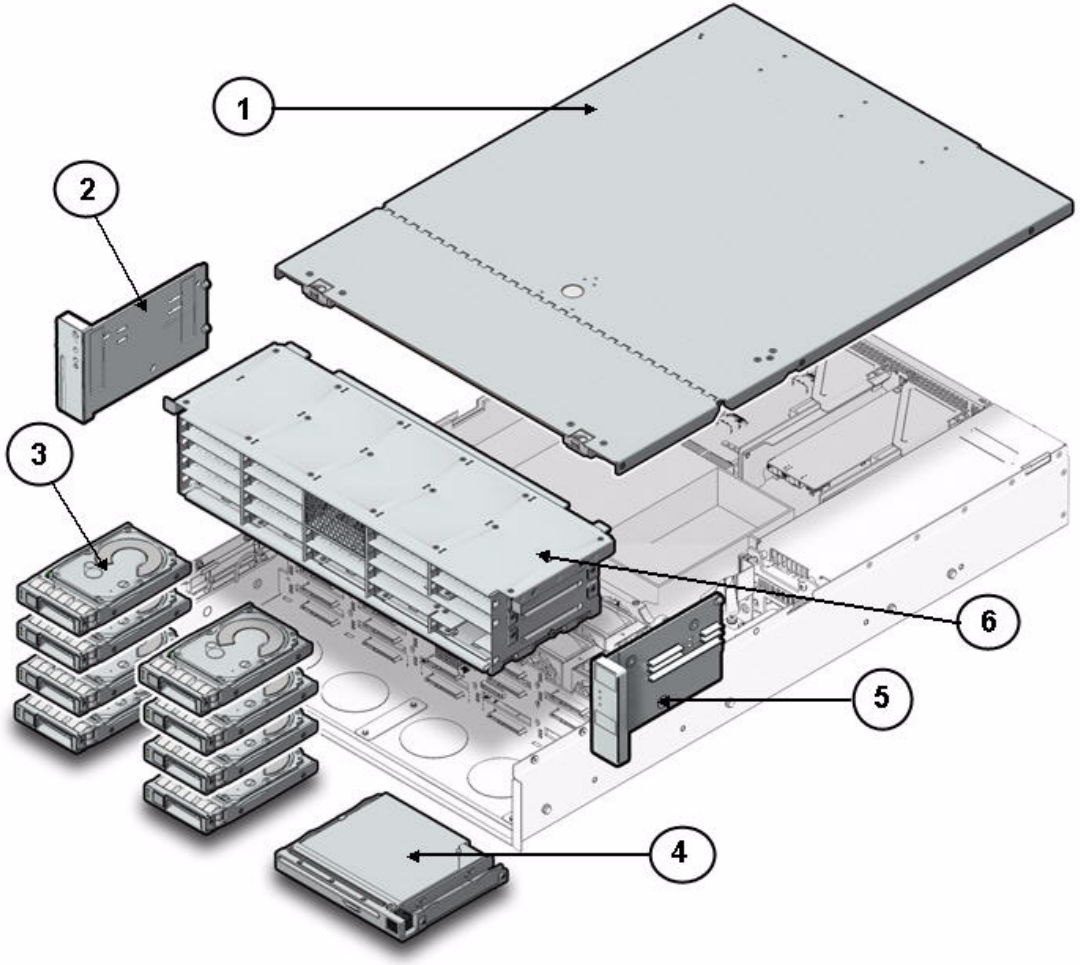



**Figure Legend**

| | | | |
|---|---|---|---|
| **1** | Top Cover | **4** | DVD/USB Module |
| **2** | Left Control Panel Light Pipe Assembly | **5** | Right Control Panel Light Pipe Assembly |
| **3** | Hard/Solid State Drives | **6** | Disk Drive Cage |

**FIGURE C-2** Sun Fire X4270 Server Power Distribution/Fan Module Components

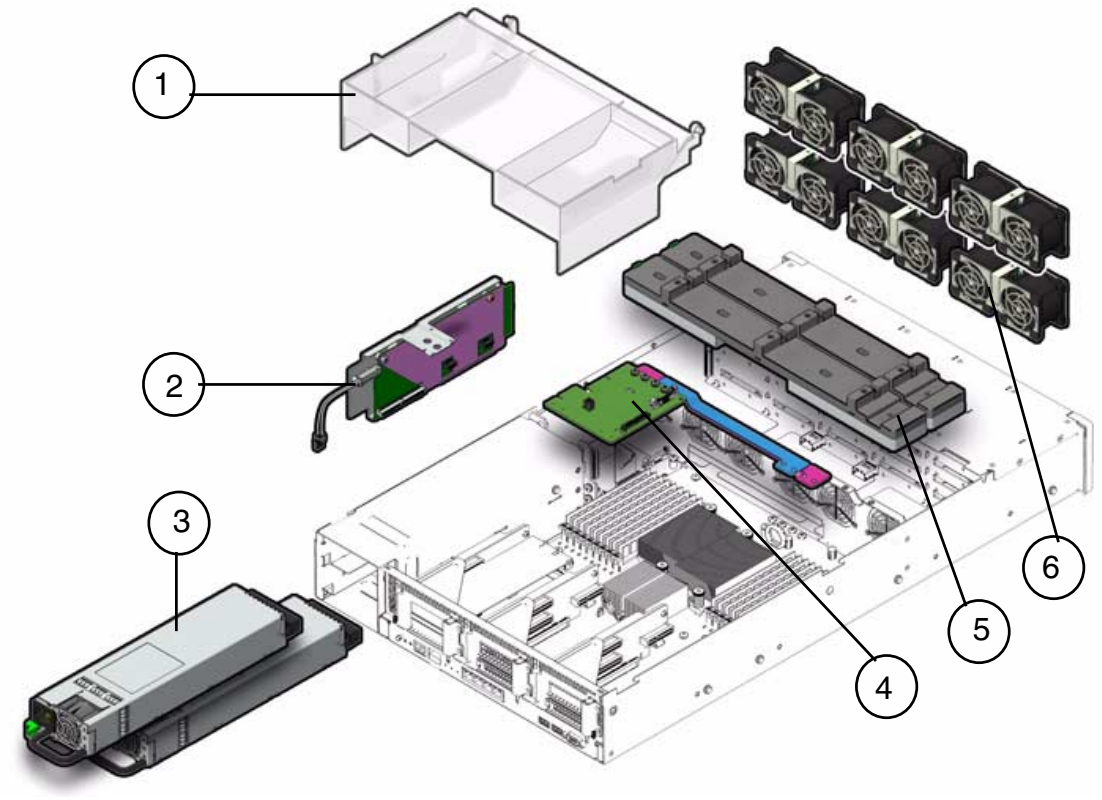



**Figure Legend**

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

APPENDIX **D**

# Sun Fire X4275 Server Illustrated Parts Breakdown

The following illustrations provide exploded views of the Sun Fire X4275 Server system components. Use these illustrations to identify parts in the server.

# D.1 Sun Fire X4275 Server Components

**FIGURE D-1** Sun Fire X4275 Server I/O Components

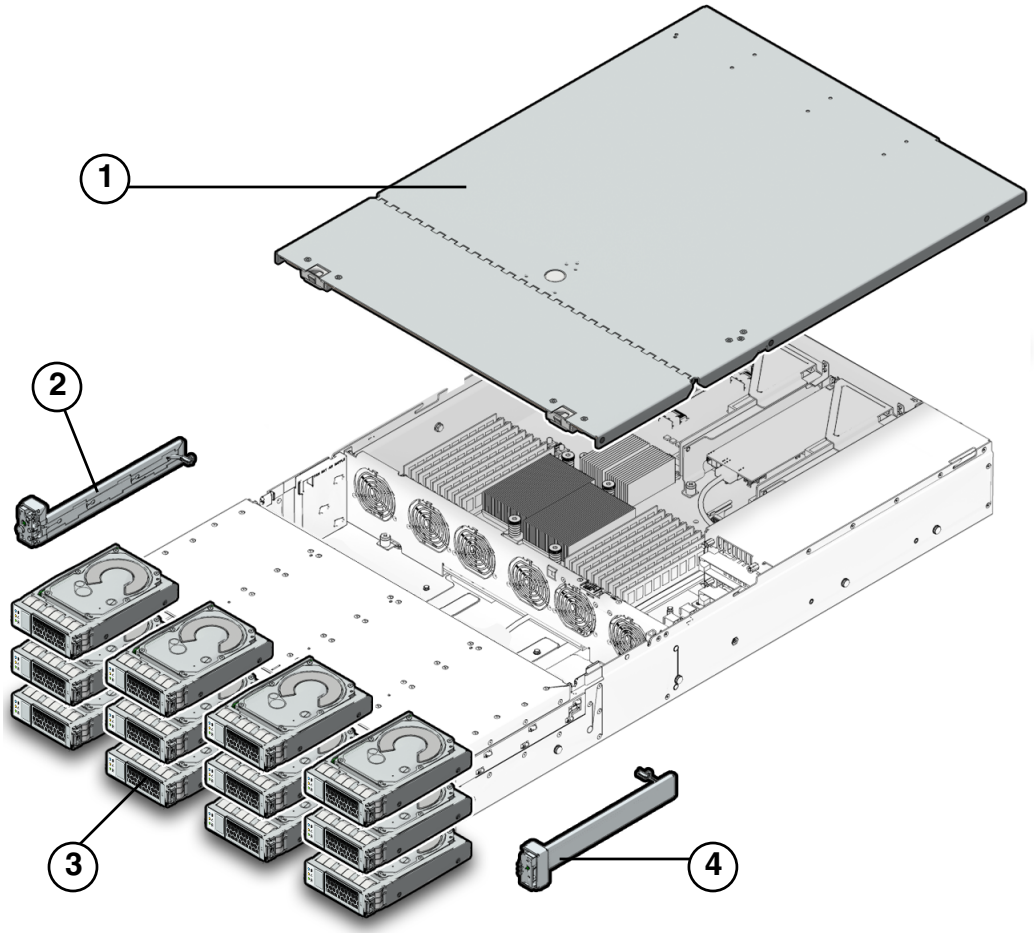



**Figure Legend**

| | | | |
|---|---|---|---|
| **1** | Top Cover | **3** | Hard/Solid State Drives |
| **2** | Left Control Panel Light Pipe Assembly | **4** | Right Control Panel Light Pipe Assembly |

**FIGURE D-2** Sun Fire X4275 Server Power Distribution/Fan Module Components

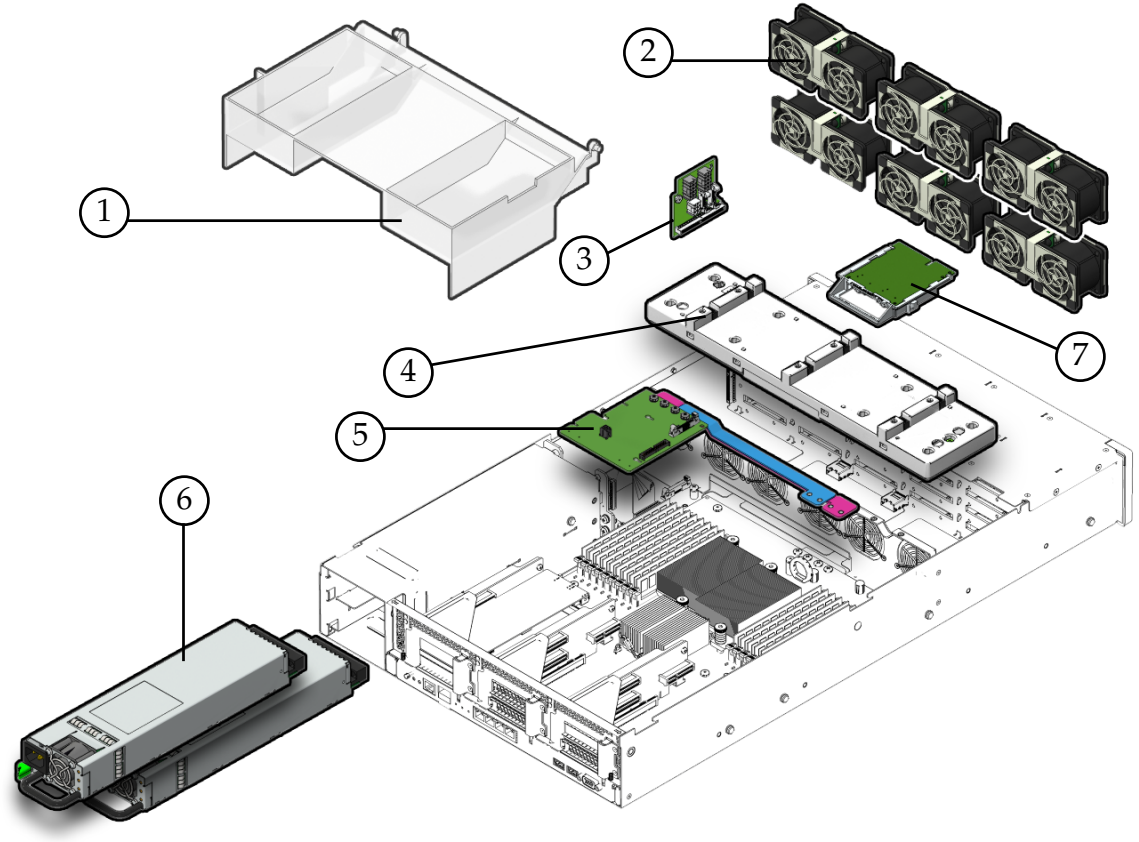



**Figure Legend**

| | | | |
|---|---|---|---|
| **1** | Air Baffle | **5** | Power Distribution Board/Bus Bar Assembly |
| **2** | Fan Modules | **6** | Power Supplies |
| **3** | Connector Break Out Board | **7** | Disk Expander Card |
| **4** | Fan Power Board | | |

APPENDIX **E**

# Configuring BIOS Settings

This section describes how to view and/or modify the Basic Input/Output System (BIOS) settings on the Sun Fire X4170, X4270, and X4275 Servers. The BIOS Setup utility reports system information and can be used to configure the server BIOS settings.

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.

The following topics are covered:


- Section E.1, "Using BIOS Setup Utility Menu Items" on page E-1
- Section E.2, "BIOS Setup Screens Overview" on page E-4
- Section E.3, "BIOS Setup Utility Menu Screens" on page E-5
- Section E.4, "Default BIOS Power-On Self-Test (POST) Events" on page E-27
- Section E.5, "BIOS POST F1 and F2 Errors" on page E-29
- Section E.6, "Ethernet Port Device and Driver Naming" on page E-29


## E.1 Using BIOS Setup Utility Menu Items

You can access BIOS Setup utility screens from the following interfaces:

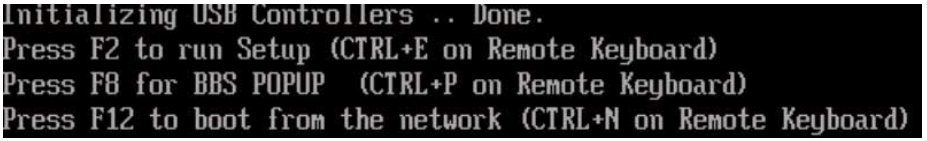
- Use a USB keyboard, mouse, and VGA monitor connected directly to the server.
- Use a terminal (or terminal emulator connected to a computer) through the serial port on the back panel of the server.
- Connect to the server using the Sun ILOM Remote Console.

To access BIOS configuration screens and to change the system's parameters, complete the following steps:

1. **Power on or power cycle the server.**

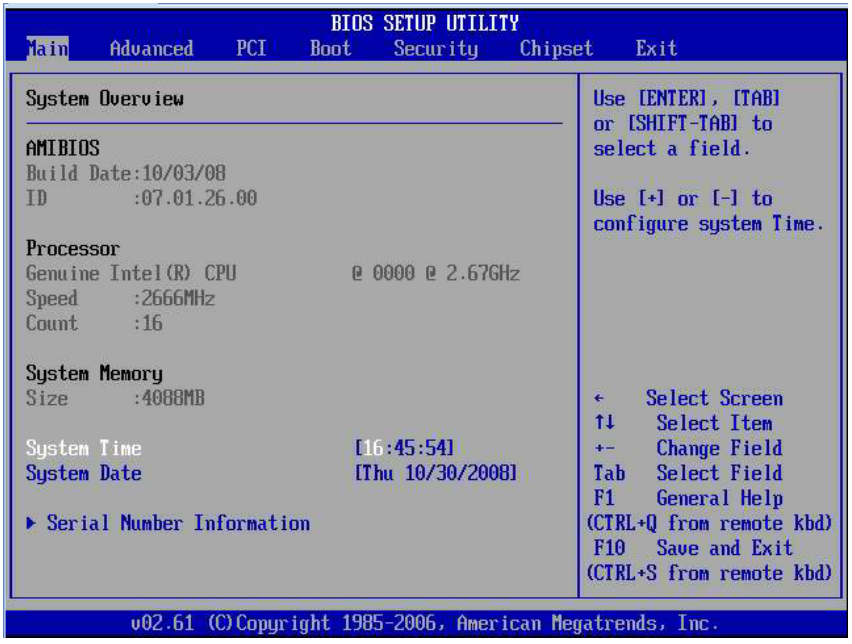
2. **To enter the BIOS Setup utility, press the F2 key while the system is performing the power-on self-test (POST)** FIGURE E-1**).**

**FIGURE E-1** Press F2 to Run Setup Prompt




When BIOS is started, the main BIOS Setup utility top-level screen appears (FIGURE E-2). This screen provides seven menu options across the top of the screen.

**FIGURE E-2** BIOS Setup Utility - Main Screen




3. **Use the left and right arrow keys to select the different menu options.**

   As you select each menu option, the top-level screen for that menu option appears.

4. **To select an option on a top-level screen, use the up and down arrow keys to scroll up and down the options presented.**

   Only options that can be modified are highlighted when you press the up and down arrow keys.

- If a field can be modified, as you select the option, user instructions for modifying the option appear in the right column of the screen.
- If a field is a link to a sub-screen, instructions to press the **Enter** key to access the sub screen appear in the right column.

5. **Modify the setup field and press the Esc key to save the changes and exit the screen.**

   Some screens present a confirmation dialog box that enables unwanted changes to be retracted.

6. **On sub-screens that only provide configuration information and cannot be modified, press the Esc key to exit the screen.**

7. **To continue modifying other setup parameters, repeat** Step 3 **through** Step 6**. Otherwise, go to** Step 8**.**

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

9. **Follow the instructions on the Exit menu screen to save or discard your changes and exit the BIOS Setup utility.**

# E.2 BIOS Setup Screens Overview

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

**TABLE E-1** BIOS Setup Screens Summary

| Screen | Description | See This Section |
|---|---|---|
| Main | General product information, including BIOS type, processor, memory, and time/date. | Section E.3.1, "BIOS Main Menu Screens" on page E-5 |
| Advanced | Configuration information for the CPU, memory, IDE, Super IO, trusted computing, USB, PCI, MPS and other information. | Section E.3.2, "BIOS Advanced Menu Screens" on page E-7 |
| PCI | Configure the server to clear NVRAM during system boot. | Section E.3.3, "BIOS PCI Menu Screens" on page E-16 |
| Boot | Configure the boot device priority (storage drives and the DVD-ROM drive). | Section FIGURE E-23, "BIOS Setup Utility: Boot - Boot Settings" on page E-18 |
| Security | Set or change the user and supervisor passwords. | Section E.3.5, "BIOS Security Menu Screens" on page E-20 |
| Chipset | View the configuration of server chipsets. | Section E.3.6, "BIOS Chipset Menu Screens" on page E-22 |
| Exit | Save changes and exit, discard changes and exit, discard changes, or load optimal or fail-safe defaults. | Section E.3.7, "BIOS Exit Menu Screens" on page E-25 |

See Section E.3, "BIOS Setup Utility Menu Screens" on page E-5 for examples of each of these screens.

# E.3 BIOS Setup Utility Menu Screens

The following figures show sample Sun Fire X4170, X4270, and X4275 Servers 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 defaults at startup.

The following topics are covered:


- Section E.3.1, "BIOS Main Menu Screens" on page E-5
- Section E.3.2, "BIOS Advanced Menu Screens" on page E-7
- Section E.3.3, "BIOS PCI Menu Screens" on page E-16
- Section E.3.4, "BIOS Boot Menu Screens" on page E-17
- Section E.3.5, "BIOS Security Menu Screens" on page E-20
- Section E.3.6, "BIOS Chipset Menu Screens" on page E-22
- Section E.3.7, "BIOS Exit Menu Screens" on page E-25


## E.3.1 BIOS Main Menu Screens

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

The Sun Fire X4170, X4270, and X4275 Servers have the following BIOS Main screens.

**FIGURE E-3** BIOS Setup Utility: Main - System Overview

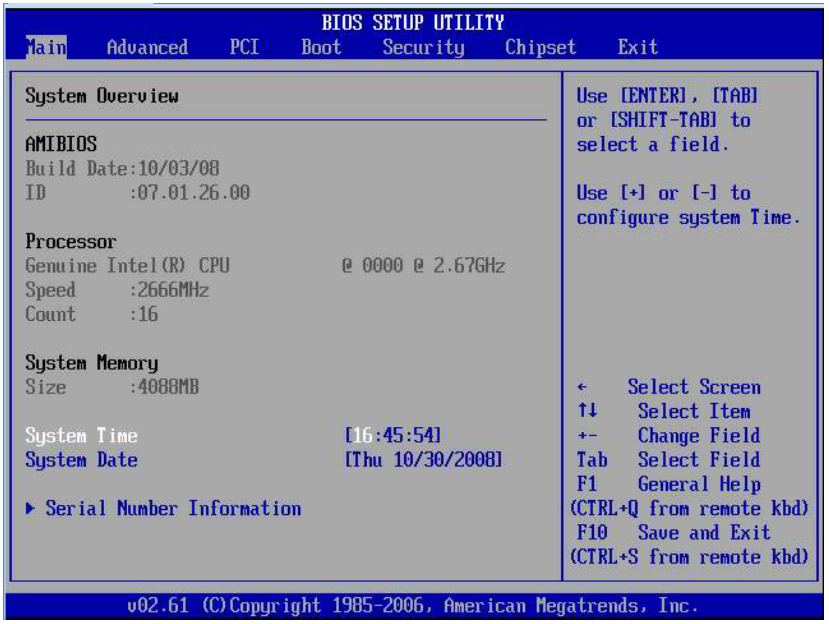
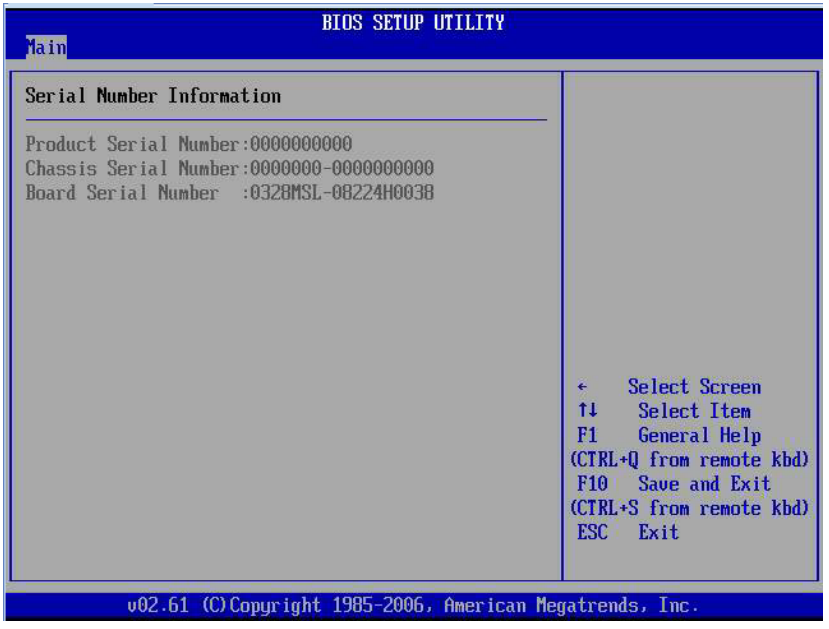



**FIGURE E-4** BIOS Setup Utility: Main - Serial Number Information



## E.3.2 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 X4170, X4270, and X4275 Servers have the following BIOS Advanced screens.

**FIGURE E-5** BIOS Setup Utility: Advanced - Advanced Settings

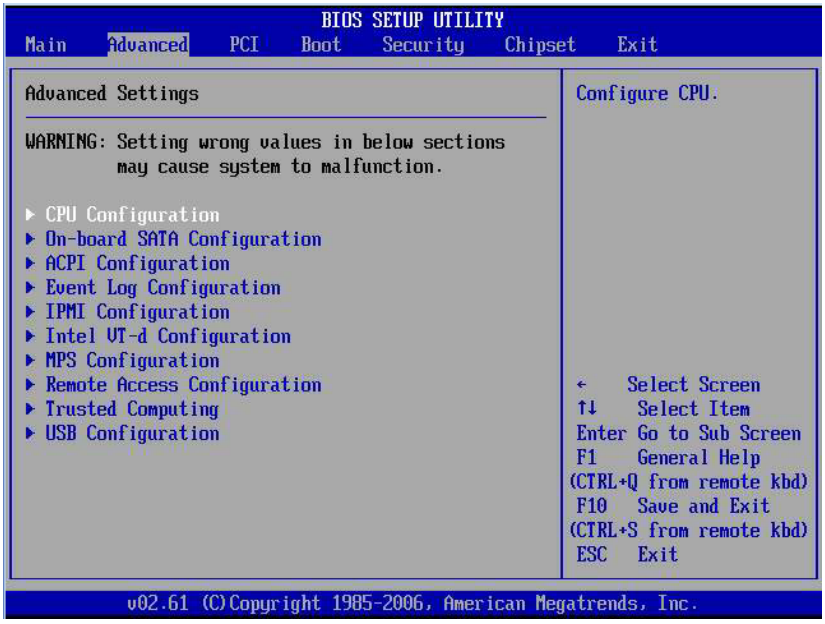


**FIGURE E-6** BIOS Setup Utility: Advanced - Configure Advanced CPU Settings

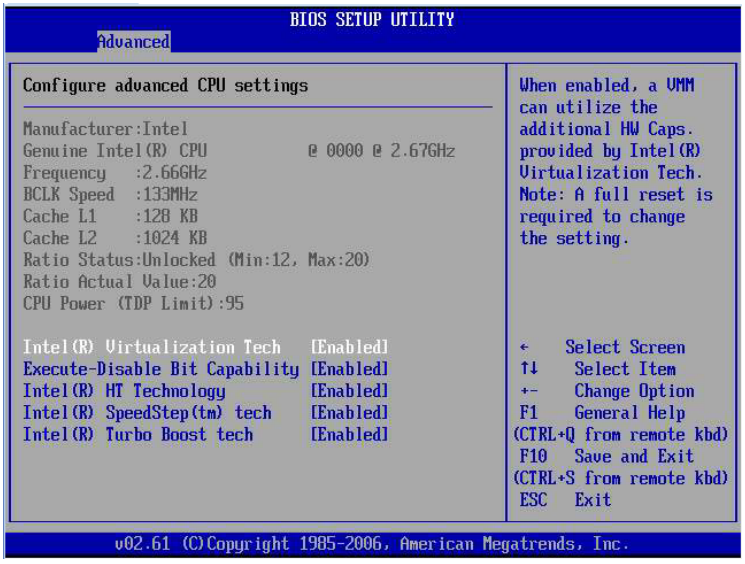



**FIGURE E-7** BIOS Setup Utility: Advanced - On-board SATA Configuration

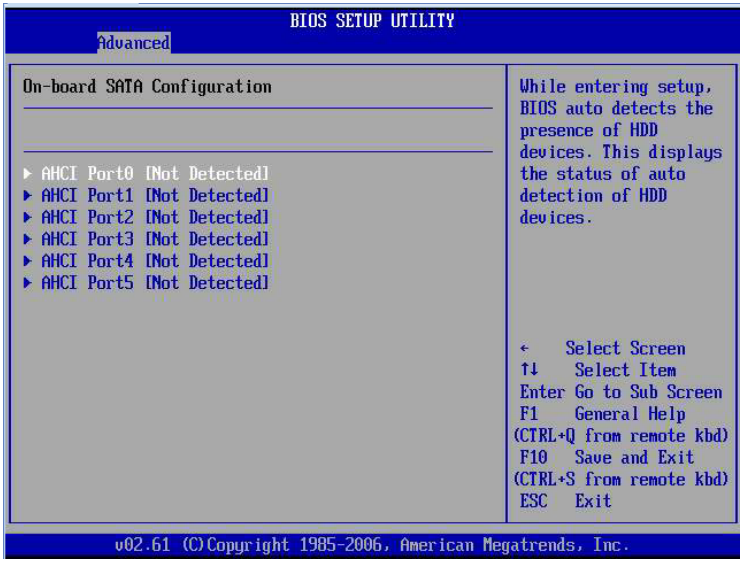


**FIGURE E-8** BIOS Setup Utility: Advanced - AHCI Port 0 Configuration

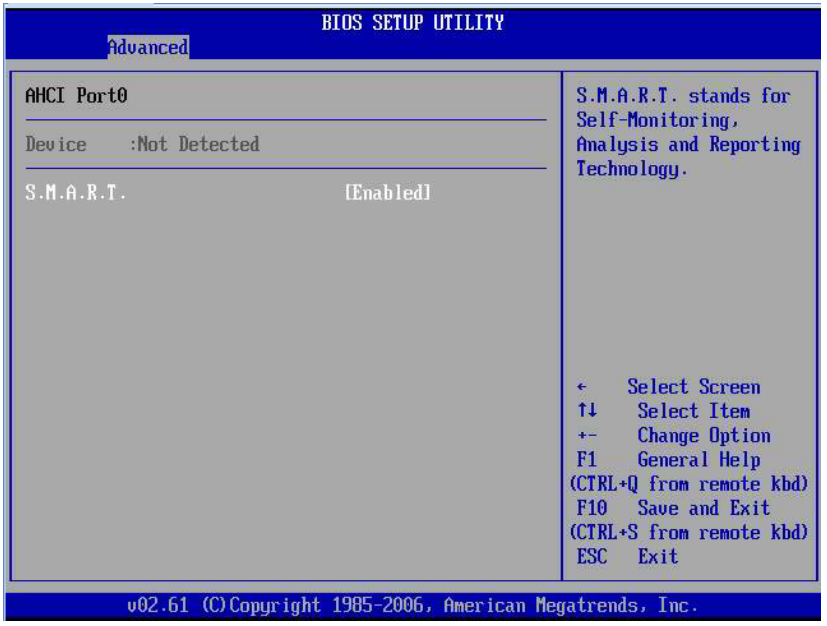



**FIGURE E-9** BIOS Setup Utility: Advance - ACPI Settings

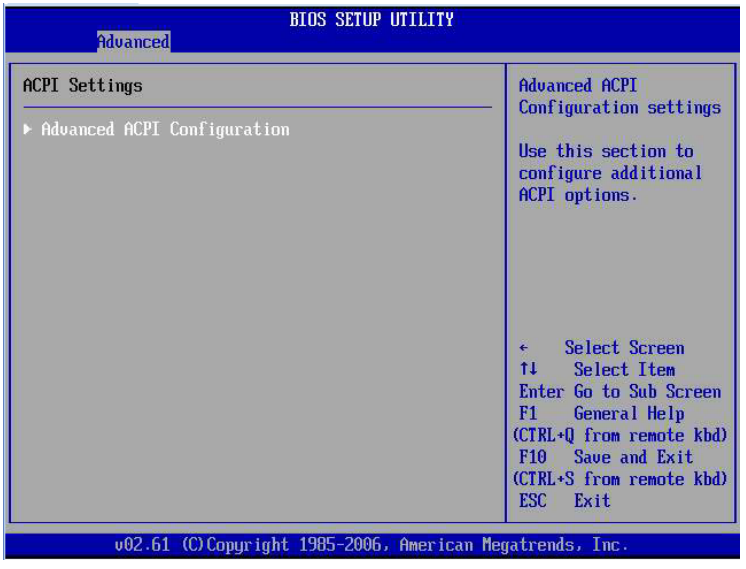


**FIGURE E-10** BIOS Setup Utility: Advanced - Advanced ACPI Configuration

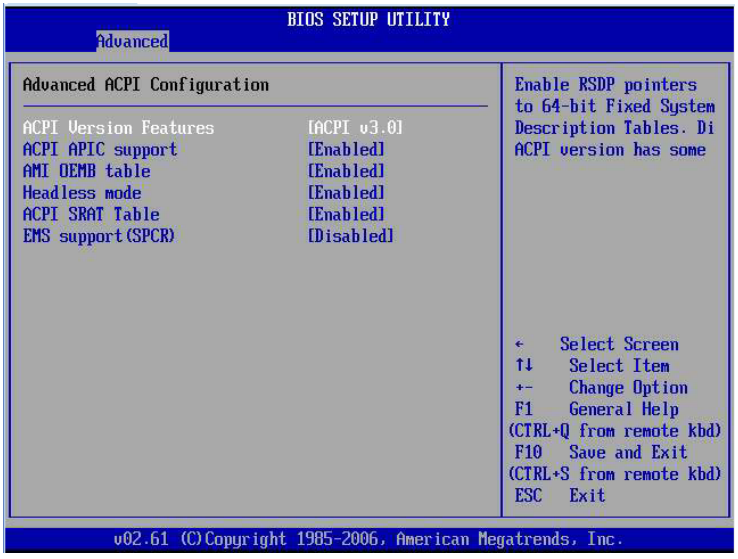



**FIGURE E-11** BIOS Setup Utility: Advanced - Event Logging Details

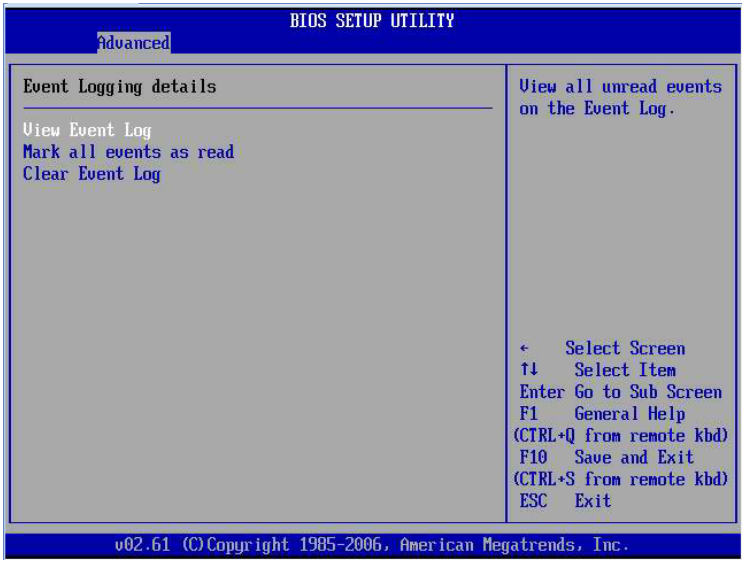


**FIGURE E-12** BIOS Setup Utility: Advanced - View Event Log

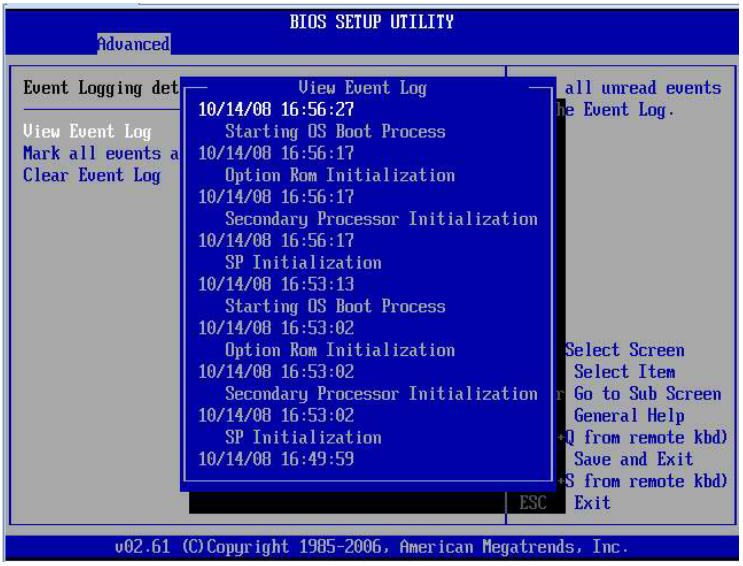



**FIGURE E-13** BIOS Setup Utility: Advanced - IPMI Configuration

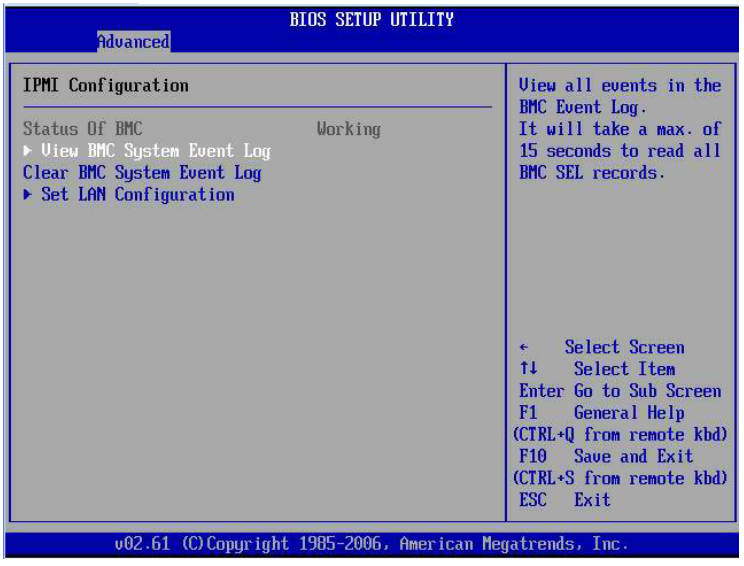


**FIGURE E-14** BIOS Setup Utility: Advanced - LAN Configuration

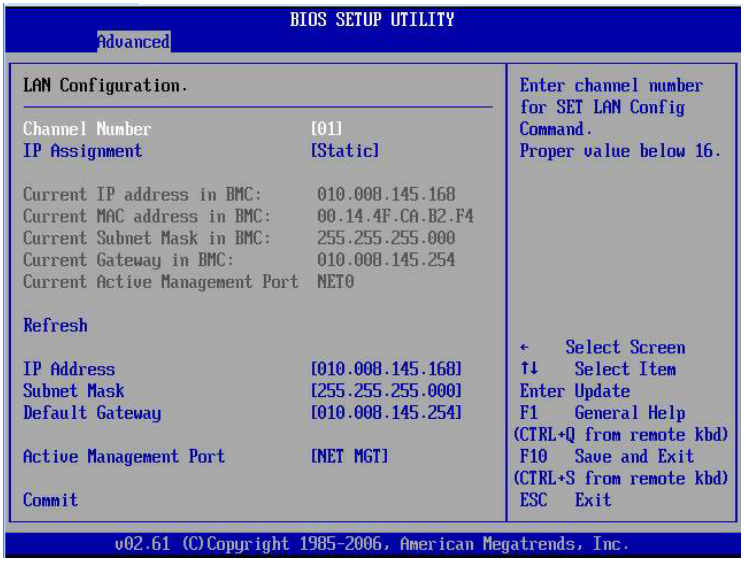



**FIGURE E-15** BIOS Setup Utility: Advanced - Total Number of Entries

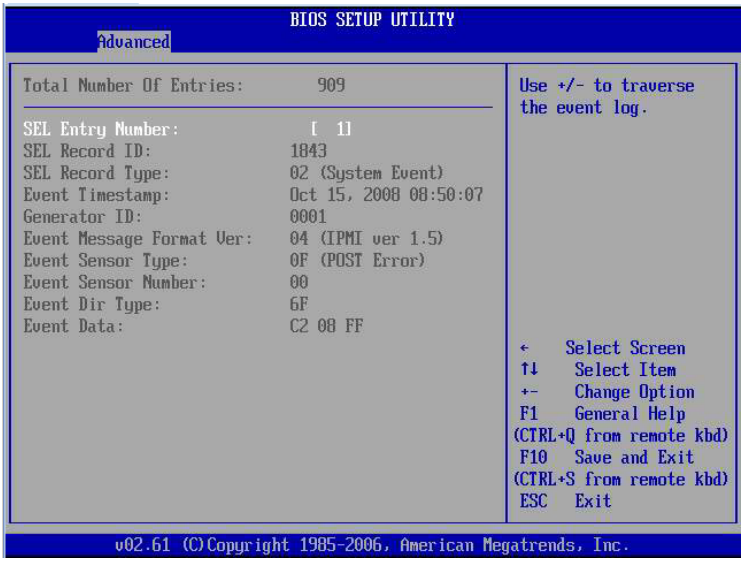


**FIGURE E-16** BIOS Setup Utility: Advanced - Intel VT-d Configuration

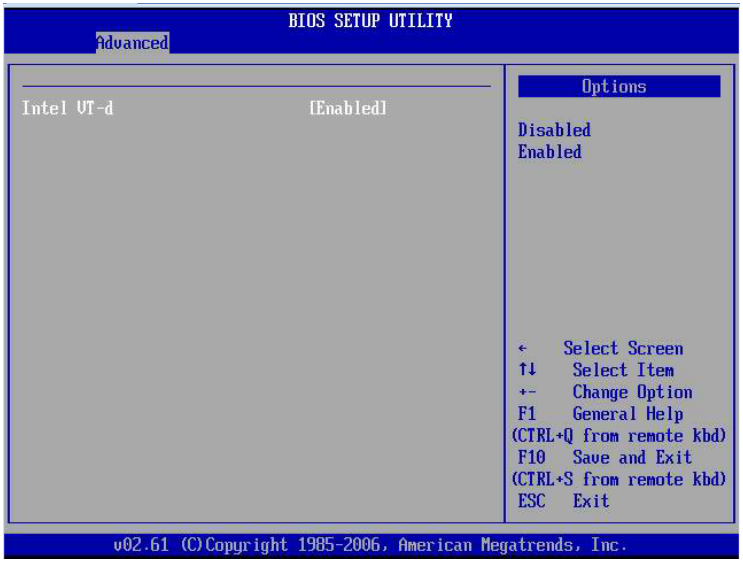



**FIGURE E-17** BIOS Setup Utility: Advanced - MPS Configuration

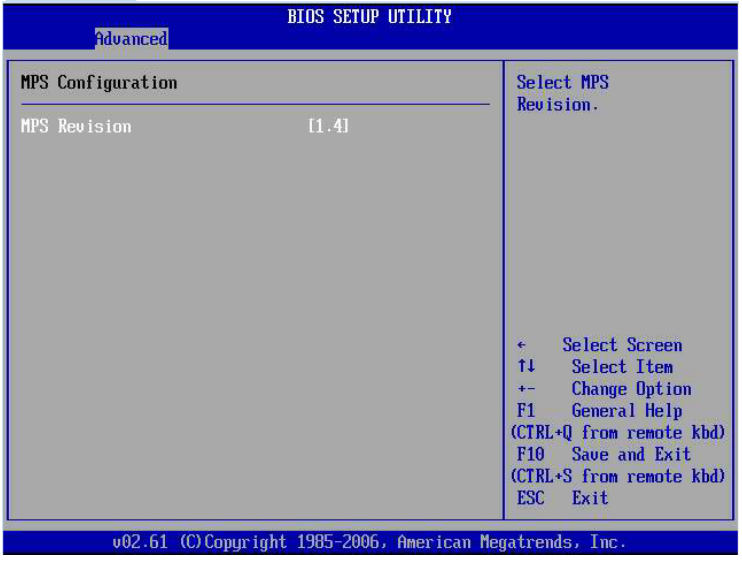


**FIGURE E-18** BIOS Setup Utility: Advanced - Configure Remote Access Type and Parameters

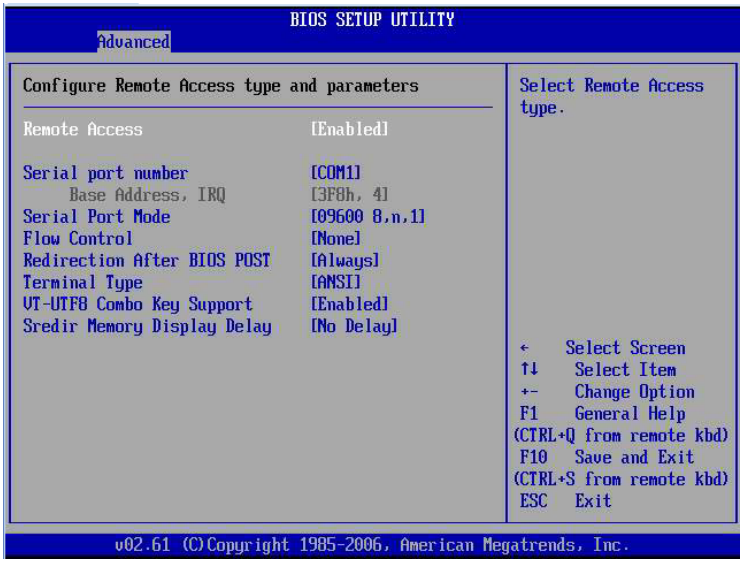



**FIGURE E-19** BIOS Setup Utility: Advanced - Trusted Computing Configuration

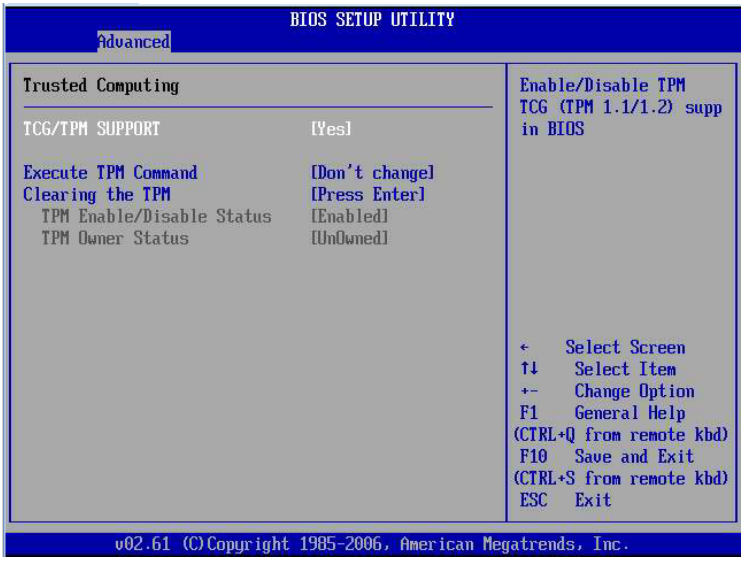


**FIGURE E-20** BIOS Setup Utility: Advanced - USB Configuration

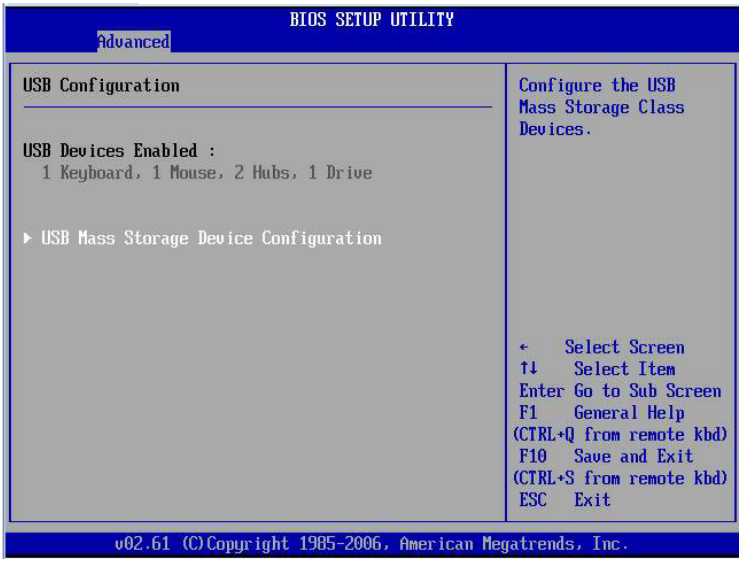
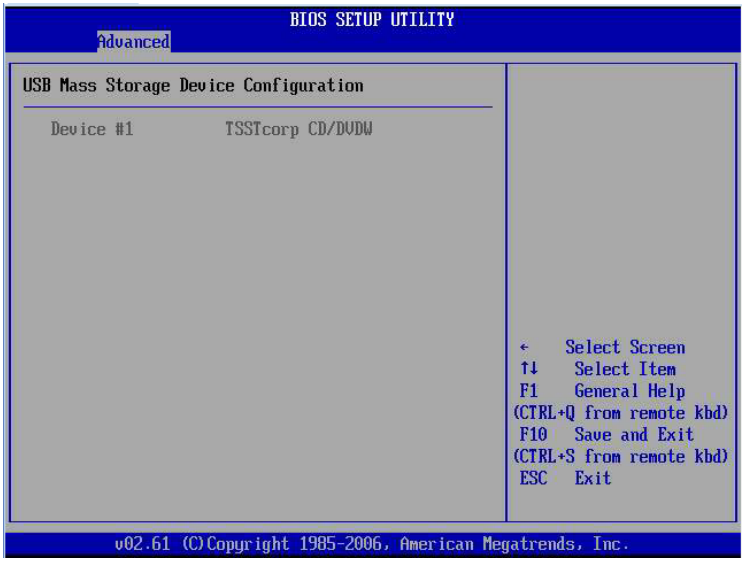



**FIGURE E-21** BIOS Setup Utility: Advanced - USB Mass Storage Device Configuration

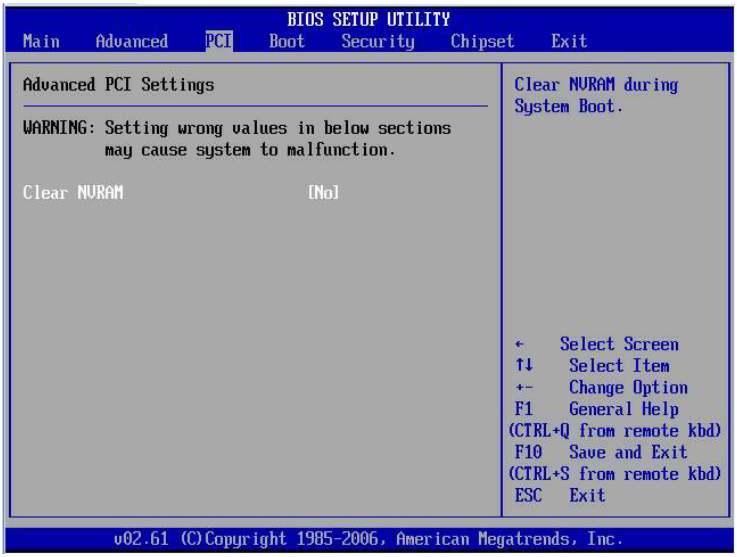


## E.3.3 BIOS PCI Menu Screens

The BIOS PCI screen enables you to configure the server to clear NVRAM during system boot.

The Sun Fire X4170, X4270, and X4275 Servers have the following BIOS PCI screen.

**FIGURE E-22** BIOS Setup Utility: PCI - Advanced PCI Settings




## E.3.4 BIOS Boot Menu Screens

The BIOS Boot screens enable you to configure the boot device priority (storage drives and the DVD-ROM drive).

The Sun Fire X4170, X4270, and X4275 Servers have the following BIOS Boot screens.

**FIGURE E-23** BIOS Setup Utility: Boot - Boot Settings




**FIGURE E-24** BIOS Setup Utility: Boot - Boot Settings Configuration

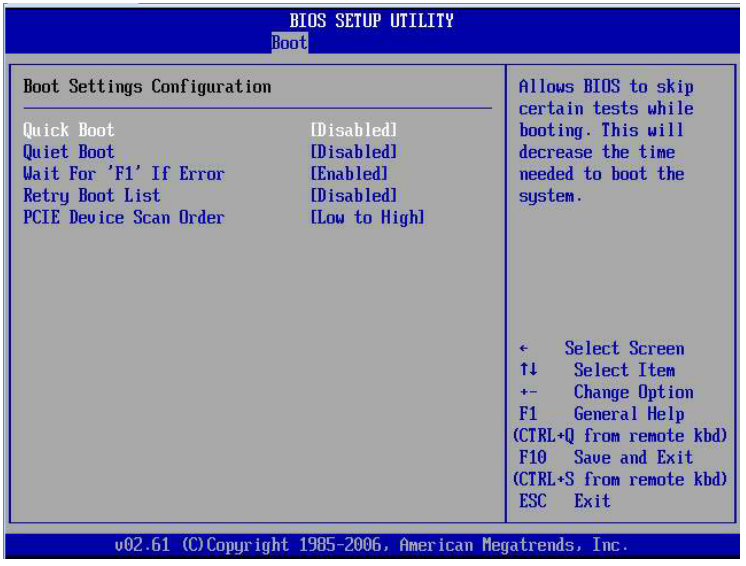


**FIGURE E-25** BIOS Setup Utility: Boot - Boot Device Priority

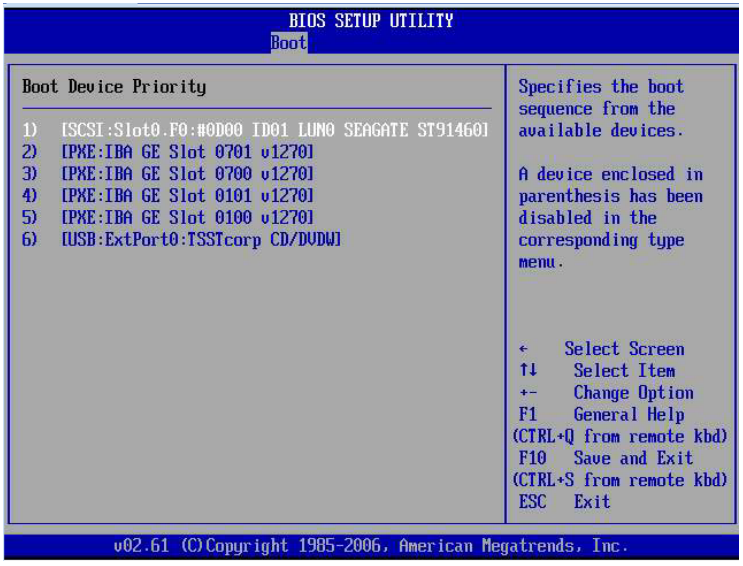



**FIGURE E-26** BIOS Setup Utility: Boot - Option ROM Configuration

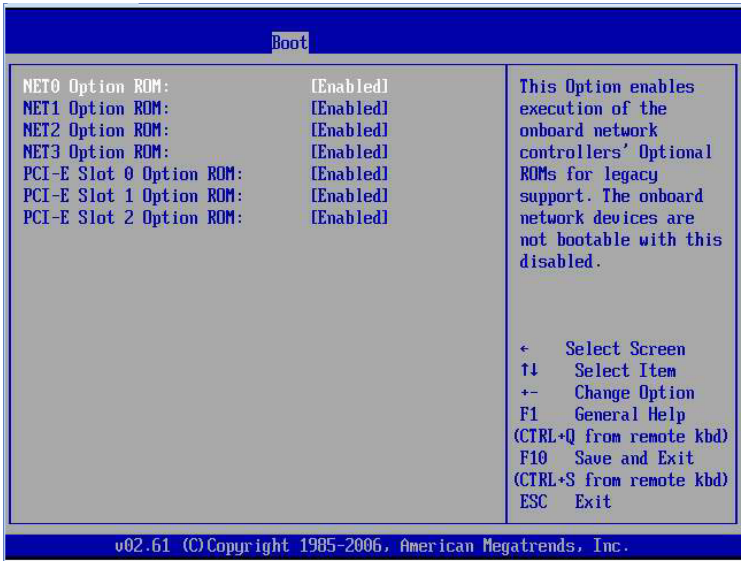
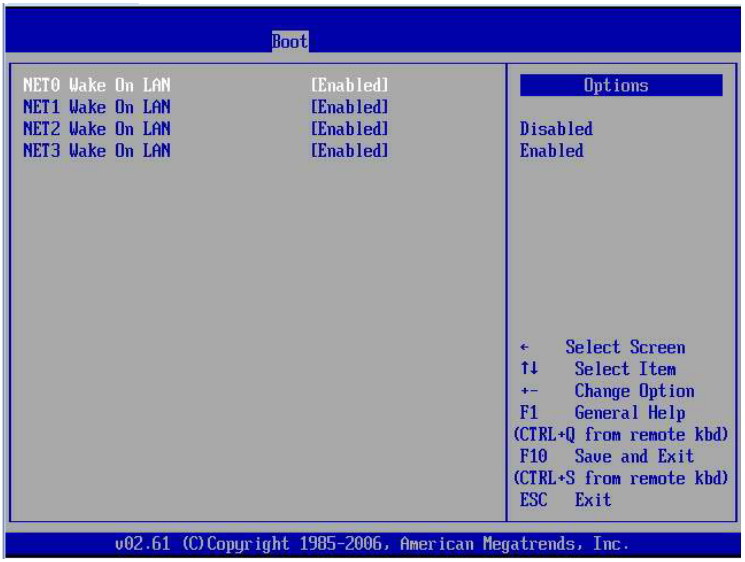


**FIGURE E-27** BIOS Setup Utility: Boot - Wake On LAN Configuration

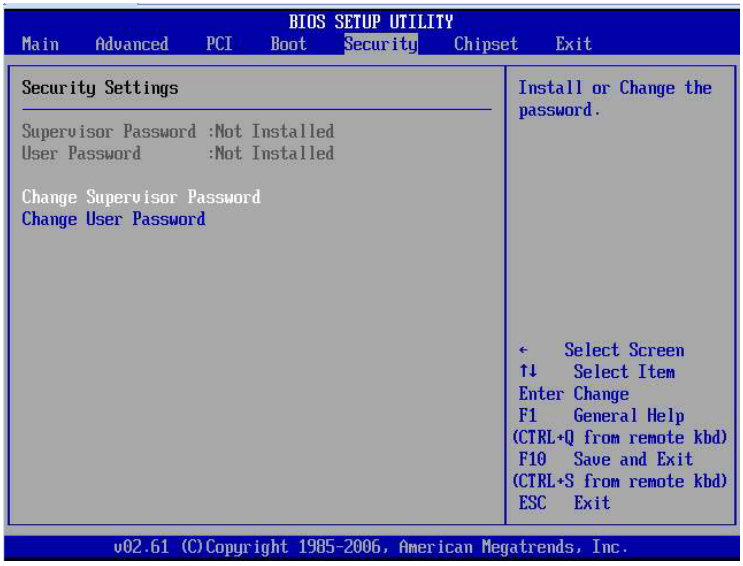



## E.3.5 BIOS Security Menu Screens

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

The Sun Fire X4170, X4270, and X4275 Servers have one BIOS Security screen.

**FIGURE E-28** BIOS Setup Utility: Security - Security Settings



## E.3.6 BIOS Chipset Menu Screens

The BIOS Chipset screens enable you to set the chipset parameters.

The Sun Fire X4170, X4270, and X4275 Servers have the following BIOS Chipset screens.

**FIGURE E-29** BIOS Setup Utility: Chipset - Advanced Chipset Settings

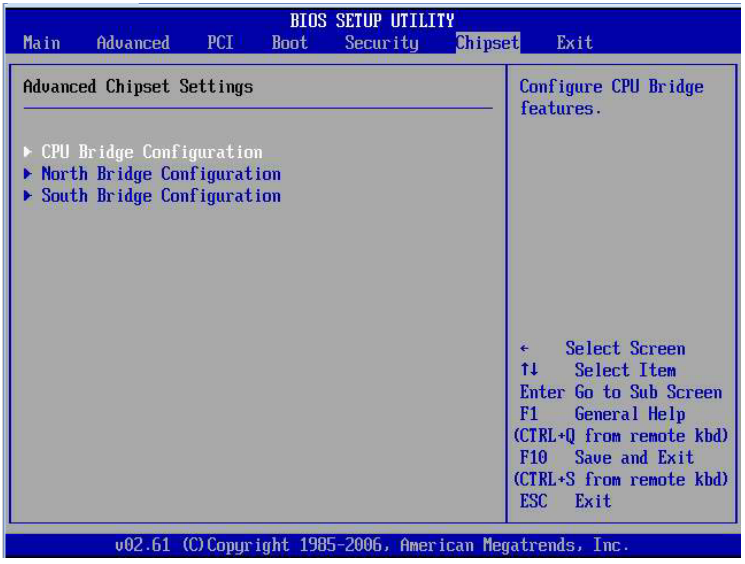


**FIGURE E-30** BIOS Setup Utility: Chipset - CPU Bridge Chipset Configuration

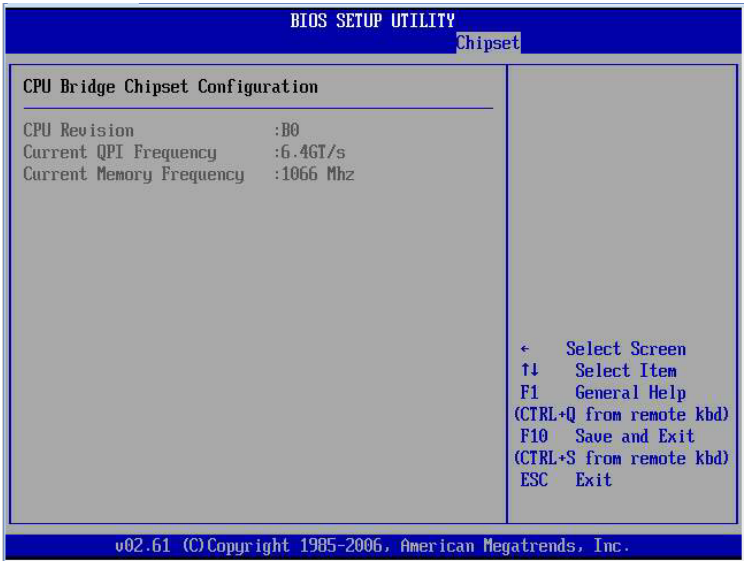



**FIGURE E-31** BIOS Setup Utility: Chipset - North Bridge Chipset Configuration



**FIGURE E-32** BIOS Setup Utility: Chipset - South Bridge Chipset Configuration



## E.3.7 BIOS Exit Menu Screens

The BIOS Exit options enable you to save changes and exit, discard changes and exit, discard changes, or load optimal defaults (FIGURE E-33).

To select and execute an option, follow these steps:

1. **Use the up and down arrow keys to scroll up and down the BIOS Exit options.**
2. **Press Enter to select the option.**

   A confirmation dialog box appears (see FIGURE E-34) that enables you to save or cancel the changes and exit the Setup utility.

---

**Note –** The confirmation dialog box is only shown below for the Save Changes and Exit option screen. The other confirmation screens work in a similar way.

---

**FIGURE E-33** BIOS Setup Utility: Exit - Exit Options - Save Changes and Exit

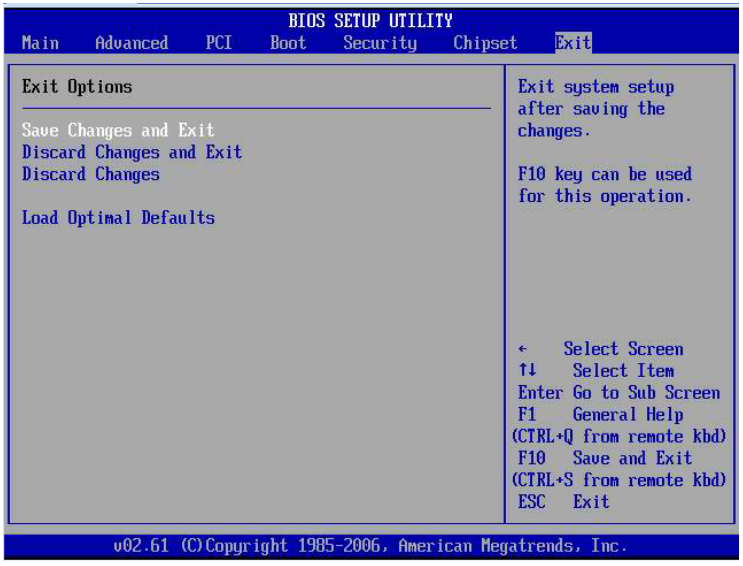
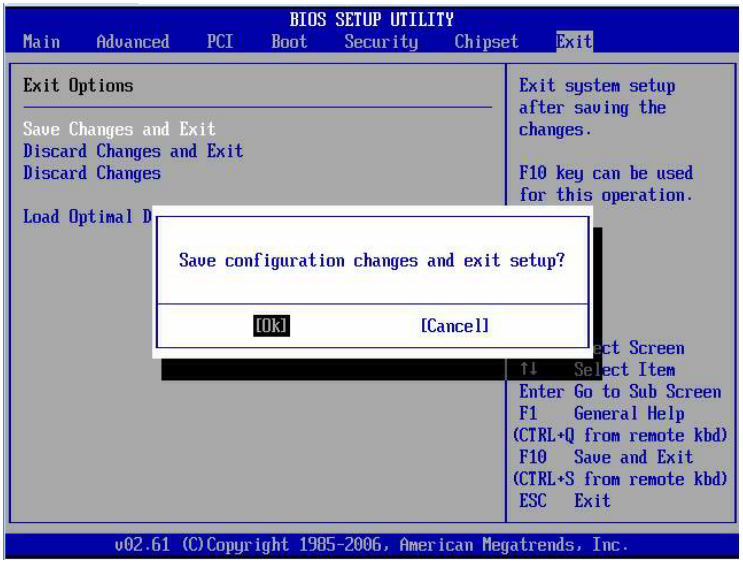



**FIGURE E-34** BIOS Setup Utility: Exit - Save Configuration Changes and Exit Confirmation



# E.4 Default BIOS Power-On Self-Test (POST) Events

At system startup, the BIOS performs a power-on self-test that checks the hardware on your server to ensure that all components are present and functioning properly. TABLE E-2 identifies the events that can occur during BIOS POST, as well as specifies whether these event can prevent the host from powering-on.

**TABLE E-2** BIOS POST Events

| Event | Cause | Boot continues on host? |
|---|---|---|
| User password violation | Attempt to enter password fails three times | No |
| Setup password violation | Attempt to enter password fails three times | No |
| Correctable ECC | Correctable ECC (error correction code) error detected | Does not apply |
| Uncorrectable ECC | Uncorrectable ECC error detected | Does not apply |
| No system memory | No physical memory detected in the system | No |
| No usable system memory | All installed memory has experienced an unrecoverable failure | No |
| Hard disk controller failure | No disk controller found | Yes |
| Keyboard failure | Keyboard cannot be initialized | Yes |
| Boot media failure | No removable boot media is found | Yes |
| No video device | No video controller is found | No |
| Firmware (BIOS) ROM corruption | BIOS checksum fails and the boot block is not corrupted | No |
| System restart | System boot initiated | Yes |
| Initiated by hard reset | Boot process started by hard reset | Yes |
| Memory initialization | Memory sizing is occurring.<br>System firmware progress | Does not apply |
| Primary processor initialization | Primary CPU initialization<br>System firmware progress | Does not apply |
| Initiated by warm reset | Boot process started by warm reset | Does not apply |

**TABLE E-2** BIOS POST Events *(Continued)*

| Event | Cause | Boot continues on host? |
|---|---|---|
| Embedded controller management | Management controller initialization | Does not apply |
| Secondary processor(s) initialization | Secondary CPU initialization asserted<br>System firmware progress | Does not apply |
| Video initialization | When BIOS initializes keyboard | Does not apply |
| Keyboard controller initialization | When BIOS initializes keyboard | Does not apply |
| Option ROM initialization | BIOS initializes Option ROMs<br>System firmware progress | Does not apply |
| Option ROM space exhausted | BIOS cannot copy an option to the memory | Yes |
| User initiated system set up | End user initiated access to BIOS Set Up Utility<br>System firmware progress | Does not apply |
| User initiated boot to OS | System boot initiated<br>System firmware progress | Does not apply |
| No bootable media | Nothing to boot from | No |
| PXE server not found | Boot error - PXE server not found<br>F12 key was pressed but BIOS fails to boot from PXE server | No |
| ACPI Power state | Soft-off power applied | Does not apply |

# E.5 BIOS POST F1 and F2 Errors

Each power-on-self-test (POST) diagnostic is a low-level test designed to pinpoint faults in a specific hardware component. If the POST diagnostics discloses an F1 or F2 error, it typically reports the following information about the error:

- Type of error detected
- When or where the error occurred

TABLE E-4 lists some of the F1 and F2 error messages that could appear during the POST diagnostics along with instructions for how to possibly resolve the error reported.

# E.6 Ethernet Port Device and Driver Naming

The server supports four 10/100/1000BASE-T Gigabit Ethernet ports on the rear of the chassis. For port locations, see FIGURE 1-2.

The device naming for the Ethernet interfaces is reported differently by different interfaces and operating systems. See TABLE E-3 for the physical (BIOS) and logical (operating system) naming conventions used for each interface.

**TABLE E-3** Logical Port Naming

| Interface | NET0 | NET1 | NET2 | NET3 |
|---|---|---|---|---|
| BIOS | slot 108 | slot 109 | slot 110 | slot 111 |
| Solaris 10 10/09 | igb0 | igb1 | igb2 | igb3 |
| RHEL 5.4 (64-bit) | eth0* | eth1 | eth2 | eth3 |
| Oracle Enterprise Linux (OEL) 5.4 (64-bit) | eth0† | eth1 | eth2 | eth3 |
| SLES 10 SP3 (64-bit) and SLES 11 (64-bit) | eth0‡ | eth1 | eth2 | eth3 |
| Windows 2008 | net1 | net2 | net3 | net4 |
| Oracle VM 2.2.1 | xenbr0 | xenbr1 | xenbr2 | xenbr3 |
| VMware ESX 4.0 and ESXi 4.0 | vmnic#** | vmnic# | vmnic# | vmnic# |

* If you are using the XEN kernel in RHEl 5, there will be XEN bridge devices associated with each logical port. The ports for these bridge devices will be named xenbr*n*, where *n* is 0-3.

† If you are using the XEN kernel in OEL 5, there will be XEN bridge devices associated with each logical port. The ports for these bridge devices will be named xenbr*n*, where *n* is 0-3.

‡ If you are using the XEN kernel in SLES 10 or SLES 11, there will be XEN bridge devices associated with each logical port. The ports for these bridge devices will be named xenbr*n*, where *n* is 0-3.

** For VMware, the Ethernet port that the user assigns to the service console will be vmnic0. Other ports are mapped by ascending order of the PCI bus enumerations.

**TABLE E-4** BIOS POST F1 and F2 Error Messages

| BIOS POST Error Message | Error Type | Resolution |
|---|---|---|
| Uncorrectable Error Detected on Last Boot:IOH(0) Protocol Error (Please Check SP Log for more Details) | IOH error | • Press F1 to continue.<br>• Check the SP event log in ILOM for more details. |
| Uncorrectable Error Detected on Last Boot:IOH(0) QPI [*x*] Error (Please Check SP Log for more Details) | IOH error | • Press F1 to continue.<br>• Check the fault management function and the SP event log in ILOM for more details.<br>**Note -** Where QPI [*x*] equals 0 for QPI Link 0 or 1 for QPI Link 1. |
| Uncorrectable Error Detected on Last Boot:IOH(0) PCI-E [*x*] Error (Please Check SP Log for more Details) | IOH error | • Press F1 to continue.<br>• Check the fault management function and the SP event log in ILOM for more details.<br>**Note -** Where PCI-E [*x*] port number can range from 1 to 10 depending on the PCI root port on IOH. |
| Uncorrectable Error Detected on Last Boot:IOH(0) ESI Error (Please Check SP Log for more Details) | IOH error | • Press F1 to continue.<br>• Check the fault management function and the SP event log in ILOM for more details. |
| Uncorrectable Error Detected on Last Boot:IOH(0) Thermal Error(Please Check SP Log for more Details) | IOH error | • Press F1 to continue.<br>• Check the fault management function and the SP event log in ILOM for more details. |
| Uncorrectable Error Detected on Last Boot:IOH(0) DMA Error (Please Check SP Log for more Details) | IOH error | • Press F1 to continue.<br>• Check the SP event log for more details. |
| Uncorrectable Error Detected on Last Boot:IOH(0) Miscellaneous Error (Please Check SP Log for more Details) | IOH error | • Press F1 to continue.<br>• Check the fault management function and the SP event log in ILOM for more details. |
| Uncorrectable Error Detected on Last Boot:IOH(0) VTd Error (Please Check SP Log for more Details) | IOH error | • Press F1 to continue.<br>• Check the SP event log in ILOM for more details. |
| BMC Not Responding | ILOM error | • Press F1 to continue.<br>**Note -** This error message might display if during the SP/BIOS communication an internal error occurs. This error might require you to restart the SP. |

**TABLE E-4** BIOS POST F1 and F2 Error Messages *(Continued)*

| BIOS POST Error Message | Error Type | Resolution |
|---|---|---|
| • Primary Slave Hard Disk Error<br>• Primary Master Hard Disk Error<br>• Secondary Master Hard Disk Error<br>• Secondary Slave Hard Disk Error | IDE/ATAPI error | • Press F1 to continue.<br>• Check the SP event log in ILOM for more details.<br>**Note -** These type of error messages display when the BIOS is attempting to configure IDE/ATAPI devices in POST. |
| Timer Error | 8254 timer error | • Press F1 to continue.<br>• Check the SP event log in ILOM for more details.<br>**Note -** This type of error typically indicates an error while programming the count register of channel 2 of the 8254 timer. This could indicate a problem with system hardware. |
| RAM R/W test failed | Memory test failure | • Press F1 to continue.<br>• Check the SP event log in ILOM for more details.<br>**Note -** This type of error typically indicates that the RAM read/write test failed. |
| KBC BAT Test failed | Keyboard controller basic assurance test error | • Press F1 to continue.<br>• Check the SP event log in ILOM for more details.<br>**Note -** Keyboard controller BAT test failed. This error might indicate a problem with keyboard controller initialization. |
| Display memory test failed | Video display error | • Press F1 to continue.<br>• Check the SP event log in ILOM for more details. |
| CMOS Battery Low | CMOS battery error | • Press F2 to enter BIOS Setup Utility to load system defaults.<br>• Check the SP event log in ILOM for more details.<br>• If necessary, replace CMOS battery. |
| • CMOS Checksum Bad<br>• CMOS Date/Time Not Set | CMOS error | • Press F2 to enter BIOS Setup Utility to load system defaults.<br>• Check the SP event log in ILOM for more details. |

**TABLE E-4** BIOS POST F1 and F2 Error Messages *(Continued)*

| BIOS POST Error Message | Error Type | Resolution |
|---|---|---|
| Password check failed | Password check error | • Press F1 to continue.<br>• Check the SP event log in ILOM for more details.<br>**Note -** This type of error indicates that the password entered does not match the password specified in the BIOS Setup Utility. This condition might occur for both Supervisor and User password verification. |
| Keyboard/Interface Error | Keyboard controller error | • Press F1 to continue.<br>• Check the SP event log in ILOM for more details.<br>**Note -** This type of error indicates that the Keyboard Controller failure. This error might indicate a problem with system hardware. |
| S.M.A.R.T error on the drive | S.M.A.R.T device error | • Press F1 to continue.<br>• Check the SP event log in ILOM for more details.<br>**Note -** S.M.A.R.T. failure messages might indicate the need to replace the storage device. |

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