

# Sun Fire X2270 M2 Server Service Manual



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# Preface

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This preface describes related documentation, available documentation formats, and the process for submitting feedback to Oracle. It also includes a document change history.

- “Related Books” on page 5
- “About This Documentation (PDF and HTML)” on page 7
- “Documentation Comments” on page 7
- “Download Server System Tools and Drivers” on page 7
- “Documents History” on page 8

## Related Books

The following is a list of documents related to Oracle's Sun Fire X2270 M2 server. These and additional support documents are available on the [library page](#) at:

<http://www.oracle.com/pls/topic/lookup?ctx=sfx2270m2&id=homepage>.

Document Group	Document	Description
Sun Fire X2270 M2 Server-Specific Documentation	Sun Fire X2270 M2 Server Product Documentation	Integrated HTML version of all starred (*) documents, including Search and Index.
	<i>Sun Fire X2270 M2 Server Getting Started Guide</i>	Pictorial setup quick reference.
	<i>Sun Fire X2270 M2 Server Installation Guide*</i>	How to install, rack, and configure the server up to initial power-on.
	<i>Sun Fire X2270 M2 Server Product Notes*</i>	Important late-breaking information about the server.
	<i>Sun Installation Assistant 2.3 through 2.4 User's Guide for x64 Servers*</i>	An Oracle tool used to perform an assisted installation of a supported Windows or Linux OS, upgrade firmware (regardless of OS), and other tasks.
	<i>Sun Fire X2270 M2 Server Installation Guide for Oracle Solaris Operating Systems*</i>	How to install the Oracle Solaris OS on your server.

Document Group	Document	Description
	<i>Sun Fire X2270 M2 Server Installation Guide for Oracle VM*</i>	How to install Oracle VM on your server.
	<i>Sun Fire X2270 M2 Server Installation Guide for Linux Operating Systems*</i>	How to install a supported Linux OS on your server.
	<i>Sun Fire X2270 M2 Server Installation Guide for Windows Operating Systems*</i>	How to install supported versions of Microsoft Windows on your server.
	<i>Sun Fire X2270 M2 Server Installation Guide for ESX Software*</i>	How to install supported versions of the ESX OS on your server.
	<i>Integrated Lights Out Manager Supplement for the Sun Fire X2270 M2 Server*</i>	Version-specific supplemental information for your server's Integrated Lights Out Manager.
	<i>Sun Fire X2270 M2 Server Diagnostics Guide*</i>	How to diagnose problems with your server.
	<i>Sun Fire X2270 M2 Server Service Manual*</i>	How to service and maintain your server.
	<i>Sun Fire X2270 M2 Server Safety and Compliance Guide</i>	Safety and compliance information about your server.
Oracle Integrated Controller Disk Management	<i>Sun x64 Server Disk Management Overview</i>	Information about managing your server storage.
x64 Servers Applications and Utilities Reference Documentation	<i>Sun x64 Server Utilities Reference Manual</i>	How to use the available utilities included with your server.
Integrated Lights Out Manager (ILOM) 3.0 Documentation	<i>Oracle Integrated Lights Out Manager (ILOM) 3.0 Feature Updates and Release Notes</i>	Information about new ILOM features.
	<i>Oracle Integrated Lights Out Manager (ILOM) 3.0 Getting Started Guide</i>	Overview of ILOM 3.0.
	<i>Oracle Integrated Lights Out Manager (ILOM) 3.0 Concepts Guide</i>	Conceptual information about ILOM 3.0.
	<i>Oracle Integrated Lights Out Manager (ILOM) 3.0 Web Interface Procedures Guide</i>	How to use ILOM through the web interface.
	<i>Oracle Integrated Lights Out Manager (ILOM) 3.0 CLI Procedures Guide</i>	How to use ILOM through commands.

Document Group	Document	Description
	<i>Oracle Integrated Lights Out Manager (ILOM) 3.0 SNMP and IPMI Procedures Guide</i>	How to use SNMP and IPMI commands.
	<i>Oracle Integrated Lights Out Manager (ILOM) 3.0 Management Protocols Reference Guide</i>	Information about management protocols.

## About This Documentation (PDF and HTML)

This documentation set is available in both portable document format (PDF) and HTML. The information is presented in topic-based format (similar to online help) and therefore does not include chapters, appendices, or section numbering.

## Documentation Comments

Oracle is interested in improving product documentation and welcomes your comments and suggestions. You can submit comments by going to this link:

<http://www.oracle-surveys.com/se.ashx?s=25113745587BE578>

### ▼ Download Server System Tools and Drivers

Patches and the Tools and Drivers CD/DVD ISO image file for your server are now available by from My Oracle Support (MOS). Use this procedure to access server-specific downloads on MOS.

- 1 **Go to <http://support.oracle.com>.**
- 2 **Sign in to My Oracle Support.**
- 3 **At the top of the page, click the Patches and Updates tab.**  
The Patches and Updates screen appears.
- 4 **In the Search screen, click Product or Family (Advanced Search).**  
The screen appears with search fields.
- 5 **In the Product field, select the product from the drop-down list.**  
Alternatively, type a full or partial product name (for example, Sun Fire X2270 M2) until a match appears.

- 6 In the Release field, select the release from the drop-down list.**  
Expand the folders to see the component offerings.
- 7 Click Search.**  
A list of updates (patches) appears.
- 8 To select a patch, click the check boxes next to the patch name (you can select more than one patch).**  
A popup action panel appears. The panel contains several action options.
- 9 To download the update, click Download in the popup panel.**  
The download begins automatically.

## Documents History

- May 2010, initial publication
- June 2010, collection refresh, revisions to –11
- March 2011, *Product Notes* document updated for document errata and SW v1.1.0 and SW v1.2.0 releases. *Windows Operating System Installation Guide* revised for document errata. *Oracle Solaris Operating System Installation Guide* revised for document errata. Service Manual revised for document errata.
- September 2011, *Product Notes* and *OS Installation Guides* updated for SW v1.3.0 release.

# Sun Fire X2270 M2 Server Service Manual Organization

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This *Sun Fire X2270 M2 Server Service Manual* provides information and procedures for maintaining your server. The following table describes how this content is organized.

Section	Link
General server feature and component overview information	<a href="#">“Sun Fire X2270 M2 Server Overview” on page 11</a>
Safety information and component removal and installation tasks	<a href="#">“Maintaining the Sun Fire X2270 M2 Server” on page 17</a>
Service procedures and information	<a href="#">“Sun Fire X2270 M2 Server Service Procedures and Information” on page 77</a>
System specifications	<a href="#">“Sun Fire X2270 M2 Server Specifications” on page 95</a>



# Sun Fire X2270 M2 Server Overview

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This section provides an overview of the internal components and the front and rear panel features of the Sun Fire X2270 M2 server.

- [“Components and Features” on page 11](#)
- [“Front and Rear External Features and Components” on page 15](#)

## Components and Features

- [“Components List” on page 11](#)
- [“Supported Operating Systems and the Preinstalled Oracle Solaris OS Option” on page 13](#)
- [“System Management” on page 14](#)
- [“Tools and Drivers CD Software” on page 14](#)

## Components List

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### Component and Feature

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#### Processors

- Up to two six-core Intel Xeon processors (three model options)
  - Speeds: 2.40 GHz to 3.06 GHz
  - 12 MB level 2 cache per CPU
  - CPU socket, LGA1366
  - Intel Xeon E5620 (2.40 GHz, 12 MB cache, 5.86 GT/s QPI, DDR3-1066, Turbo On, HT On, 80 W)
  - Intel Xeon X5649 (2.53 GHz, 12 MB cache, 5.86 GT/s QPI, DDR3-1333, Turbo On, HT On, 80 W)
  - Intel Xeon X5675 (3.06 GHz, 12 MB cache, 6.4 GT/s QPI, DDR3-1333, Turbo On, HT On, 95 W)
-

Component and Feature		
Memory	<ul style="list-style-type: none"> <li>■ Up to 96 GB of DDR3-1066</li> <li>■ Up to 96 GB of DDR3-1333</li> </ul>	<ul style="list-style-type: none"> <li>■ Twelve DDR3-1333 capable DIMM slots (6 DIMM per CPU) that support up to 96 GB maximum using 8 GB 1066 MHz DIMMs.</li> <li>■ Each DIMM socket can support a 8 GB 1333 MHz, or 8 GB 1066 MHz registered DIMM module.</li> </ul>
Disk and Storage	<ul style="list-style-type: none"> <li>■ SATA hard drive (HD)</li> <li>■ SATA solid-state drive (SSD)</li> <li>■ Embedded RAID support</li> </ul>	<ul style="list-style-type: none"> <li>■ Supports four 3.5" 2 TB 7.2K RPM SATA disk drives.</li> <li>■ Supports four 2.5" 32 GB SSD drives.</li> <li>■ Up to 8 TB with 3.5" SATA drives</li> <li>■ Up to 128 GB with 2.5" SSD drives</li> <li>■ Embedded controller Supports RAID 0,1,5 &amp; 10 on Windows Only</li> </ul>
Power Supply	600W PSU, 80% high-efficiency	
Network I/O	<ul style="list-style-type: none"> <li>■ Two 10/100/1000BASE-T GigabitEthernet ports</li> <li>■ One 10/100BASE-T Network Management (NET MGT) Ethernet port</li> </ul>	
PCI I/O	PCI Express Generation 2	<ul style="list-style-type: none"> <li>■ One PCI Express 2.0 slot</li> <li>■ 50 W max, x16 slot electrical/mechanical, x16 90 degree angle PCIe riser</li> </ul>
External I/O	Serial/RJ-45 and USB 2.0	<ul style="list-style-type: none"> <li>■ One RJ-45 serial port</li> <li>■ Five USB 2.0 ports (2 front, 2 rear, and 1 internal)</li> </ul>



Component and Feature		
System Management	Service processor (SP) module	<ul style="list-style-type: none"> <li>■ Contains an IPMI 2.1-compliant service processor with Integrated Lights Out Manager (ILOM)</li> <li>■ Contains an onboard AST2100 2D/3D graphics controller with an HD15 connector</li> </ul>
Power	One 600 W power supply with cooling fan	
Cooling	Three 5k RPM internal variable-speed blowers	Forced-air cooling to motherboard and components.

*Next:* [“Supported Operating Systems and the Preinstalled Oracle Solaris OS Option”](#) on page 13

## Supported Operating Systems and the Preinstalled Oracle Solaris OS Option

This section describes the operating system options supported for the Sun Fire X2270 M2 Server. You can order your server with the supported version Oracle Solaris 10 operating system (OS) preinstalled. This option assists you in quickly bringing up the sever to an operational state. If you ordered this option, do not need to install the OS, because it is factory-installed on hard drive (HD) 0. When you boot the OS for the first time, use the menu-driven configuration utility to set up the OS with your site-specific parameters. For instructions on configuring the preinstalled OS, refer to the *Sun Fire X2270 M2 Server Installation Guide*.

You can also install one of the supported versions of the Solaris OS, Oracle VM, Linux, Windows, or VMware ESX.

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### Supported Operating Systems

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Preinstalled Operating Systems	Oracle Solaris 10 OS
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**Supported Operating Systems**

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Supported Operating Systems	<ul style="list-style-type: none"><li>■ Solaris 10 Operating System 10/09</li><li>■ Oracle Enterprise Linux (OEL) 5.4, 64-bit</li><li>■ Oracle VM 2.2</li><li>■ Linux<ul style="list-style-type: none"><li>■ Red Hat Enterprise Linux 5.4 64-bit Advanced Server</li><li>■ SUSE Linux Enterprise Server (SLES) 10, SP3 64-bit</li></ul></li><li>■ Windows<ul style="list-style-type: none"><li>■ Windows Server 2008 SP2 32-bit (Standard, Enterprise, and Datacenter)</li><li>■ Windows Server 2008 R2, (Standard, Enterprise, and Datacenter)</li></ul></li><li>■ VMware<ul style="list-style-type: none"><li>■ VMWare ESX UI 4.0</li><li>■ VMWare ESXi UI 4.0</li></ul></li></ul>
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For an updated list of supported operating systems, see <http://wikis.sun.com/display/SystemsComm/Sun+Fire+X2270+M2+Server#tab:Operating-Systems>.

Next: “System Management” on page 14

## System Management

System management on the Sun Fire X2270 M2 Server is performed using an IPMI 2.1-compatible SP. The SP contains the Oracle ILOM application. ILOM provides management capabilities in a browser interface and a command-line interface in both full-power and standby power modes. For more information about ILOM management, refer to the *Integrated Lights Out Manager 3.0 User's Guide* and the *Integrated Lights Out Manager (ILOM) Supplement for Sun Fire X2270 M2 Server*.

Next: “Tools and Drivers CD Software” on page 14

## Tools and Drivers CD Software

The *Sun Fire X2270 M2 Server Tools and Drivers CD*, which is available both online and separately in the optional *Sun Fire X2270 M2 Server Media and Documentation Kit*, contains drivers for OS installation and Intel NIC and Intel RAID/AHCI. The CD also contains BIOS/BMC flash utilities, diagnostics software, and Windows Remote Installation Service (RIS) files.

For more information about using the Tools and Drivers CD software, see “Using the Tools and Drivers CD” on page 77.

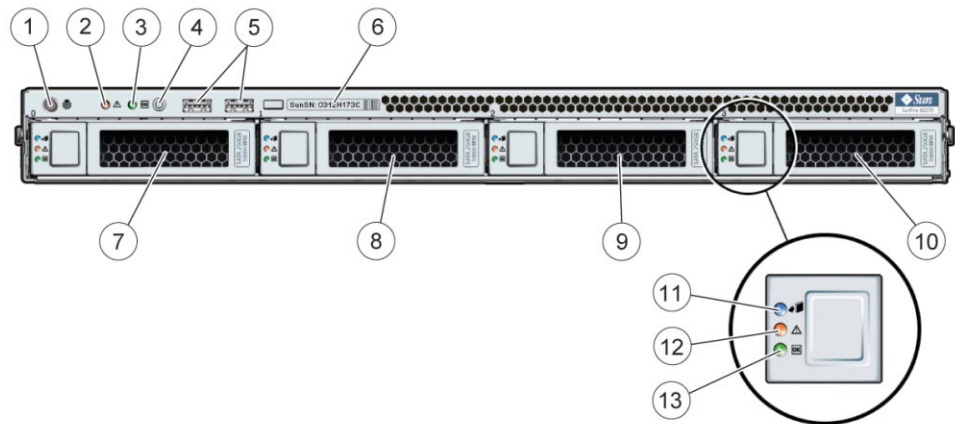
Next: “Front and Rear External Features and Components” on page 15

## Front and Rear External Features and Components

This section shows the locations of external features and components of both the front and rear of the Sun Fire X2270 M2 Server.

- “Front Panel Features and Components” on page 15
- “Rear Panel Features and Components” on page 16

### Front Panel Features and Components




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#### Legend

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1	White Locate LED/button	2	Amber Service Action Required LED
3	Green Power Status LED	4	Power button
5	USB 2.0 ports (2)	6	Server serial number
7	Optional removable SATA HD/SSD 1	8	Optional removable SATA HD/SSD 2
9	Optional removable SATA HD/SSD 3	10	Optional removable SATA HD/SSD 4
11	Disk Ready-to-Remove LED (non-operational)	12	Disk Service Action Required LED (non-operational)
13	Green Disk OK read and write activity LED		

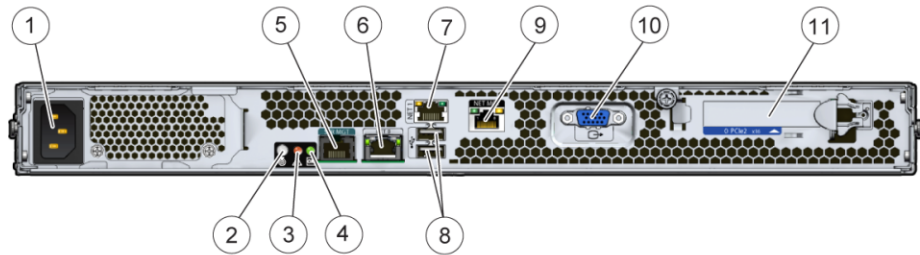
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See also:

- “Locations of Internal Server Components” on page 30
- “Front Panel System Status LEDs” on page 78

Next: “Rear Panel Features and Components” on page 16

## Rear Panel Features and Components




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### Legend

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1	AC power connector	2	White Locate LED
3	Amber Service Action Required LED	4	Green Power Status LED
5	Serial Management (SER MGT) port (RJ-45)	6	GigabitEthernet port (NET-0)
7	GigabitEthernet port (NET-1)	8	USB 2.0 ports (2)
9	Network Management (NET MGT) Ethernet port (available only in systems with an SP module)	10	HD-15 video connector (available only in systems with an SP module)
11	PCIe slot (Gen 2, x16)		

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See also:

- “Locations of Internal Server Components” on page 30
- “Rear Panel System Status LEDs” on page 80
- “Front Panel Features and Components” on page 15

# Maintaining the Sun Fire X2270 M2 Server

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This section contains information that describes how to add, replace, and configure components in the Sun Fire X2270 M2 Server after it has been set up:

- “Preparing for Service and Operation” on page 17
- “Powering On and Powering Off the Server” on page 27
- “Component Replacement Procedures and Topic” on page 29

## Preparing for Service and Operation

This section contains important topics and tasks that describe how to safely and properly prepare your server for both service and operation.

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**Note** – System cooling might be affected by dust and contaminant buildup. Open and check the server approximately every six months or more often in dustier operating environments. Check system heatsinks, fans, and air openings. If necessary, clean systems by brushing or blowing contaminants from the system or by carefully vacuuming contaminants from the system. Do not use liquid cleaners on or in the server.

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- “Important Safety Information” on page 17
- “Antistatic Procedures and Precautions” on page 18
- “How to Use an Antistatic Mat” on page 19
- “CRU and FRU List” on page 19
- “Tools and Supplies Needed” on page 20
- “How to Prepare for Service” on page 21
- “How to Remove the Server from the Rack” on page 22
- “How to Install the Server Into the Rack” on page 23
- “How to Remove the Server Cover” on page 25
- “How to Install the Server Cover” on page 26
- “How to Prepare for Operation” on page 26

## Important Safety Information

This section describes important safety information to know before removing or installing parts in your Sun Fire server.



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**Caution** – Hazardous voltage present. Never attempt to run the server with the covers removed. You *must* disconnect the power supply before servicing any of the components documented in this section.

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

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

- Follow all Oracle cautions, warnings, and instructions marked on the equipment and described in *Important Safety Information for Sun Hardware Systems*.
- Follow all cautions, warnings, and instructions marked on the equipment and described in the *Sun Fire X2270 M2 Server Safety and Compliance Guide*.
- Ensure that the voltage and frequency of your power source match the voltage and frequency inscribed on the equipment's electrical rating label.
- Follow the electrostatic discharge safety practices as described in this document.

Next: [“Antistatic Procedures and Precautions” on page 18](#)

## Antistatic Procedures and Precautions

Electrostatic discharge (ESD) can damage your processor, hard drives, expansion boards, and other components. ESD sensitive devices, such as the motherboards, PCI cards, hard drives, and memory modules, require special handling. Always observe the following precautions before you install a system component



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**Caution** – Component damage. Circuit boards and hard 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 devices. Do not touch the components without antistatic precautions, especially along the connector edges.

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- Do not remove a component from its protective packaging until you are ready to install it.
- Wear a wrist strap and attach it to the system chassis ground or to any metal part of the system before handling components or working in the interior compartment of the workstation.
- Use an antistatic mat (see [“How to Use an Antistatic Mat” on page 19](#)).

Wear an antistatic wrist strap and use an antistatic mat when handling components such as hard drive assemblies, circuit boards, or PCI cards. When servicing or removing server

components, attach an antistatic strap to your wrist and then to a bare metal area on the chassis. Following this practice equalizes the electrical potentials between you and the server.

## ▼ How to Use an Antistatic Mat

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

Place static-sensitive components such as the printed circuit boards, memory modules, and CPUs on the antistatic mat. The following items can be used as an antistatic mat:

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

### 2 Attach an antistatic wrist strap.

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

- See Also**
- [“Important Safety Information” on page 17](#)
  - [“Antistatic Procedures and Precautions” on page 18](#)

## CRU and FRU List

The following is a list of customer-replaceable units (CRUs) and field-replaceable units (FRUs) for the Sun Fire X2270 M2 Server. CRU and FRU designations refer to serviceability. For reasons of safety and complexity, a component designated as a FRU must be serviced by an Oracle Service Technician. A component designated as a CRU has safety and complexity levels deemed to be sufficiently within the scope of a non-service personnel. However, if you feel that servicing a component designated as a CRU exceeds your service capabilities, please contact Oracle Service.

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**Note** – Components designated as a FRU *must* be serviced by an Oracle Service Technician.

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Component	Designation
Motherboard	FRU
CPU	FRU
Heatsink	FRU

Component	Designation
HD backplane	FRU
Front I/O board	FRU
DIMM	CRU
Power Supply 600 W	CRU
Hard drive	CRU
Solid-state drive	CRU
Slide rail kit	CRU
Tool-less slide rail kit	CRU
Cable management arm	CRU
Service processor module	CRU
SATA cable	CRU
Blower assembly	CRU
Battery (CR2032)	CRU
Front I/O cable kit	CRU
Riser card, PCIe x16 slot	CRU

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*Next:* [“Tools and Supplies Needed” on page 20](#)

## Tools and Supplies Needed

You need the following tools and supplies to perform Sun Fire X2270 M2 Server maintenance procedures:

- #2 Phillips screwdriver (6 inches)
- Small flat-blade screwdriver
- Antistatic wrist strap
- Portable light source
- Antistatic brush, canned air, or a vacuum cleaner (to remove dust and debris)
- Alcohol pads (for CPU replacement by service personnel only)

*Next:* [“How to Prepare for Service” on page 21](#)



## ▼ How to Prepare for Service

- 1 Review the Sun Fire X2270 M2 Server [Sun Fire X2270 M2 Server Product Notes](#).  
The Product Notes contain update information about issues related to hardware and software.
- 2 Review the safety information. See [“Important Safety Information” on page 17](#).
- 3 Review ESD procedures. See [“Antistatic Procedures and Precautions” on page 18](#).
- 4 Power off the server. See [“How to Power Off the Server” on page 28](#).
- 5 Disconnect the AC power cords from the rear of the server.
- 6 Power off all of the peripherals connected to the server.
- 7 Label and disconnect all cables attached to the rear of the server.
- 8 Remove the server from the rack. See [“How to Remove the Server from the Rack” on page 22](#).

---

**Note** – For some procedures it is not necessary to remove the server from the rack. To determine whether to remove the server, review the procedure before proceeding.

---

- 9 Place the server in a location with ample space and light.
- 10 Remove the server cover. See [“How to Remove the Server Cover” on page 25](#).
- 11 Use a vacuum, compressed air, or an antistatic brush to clean the interior of the server so component surfaces and server air vents are free of dust.



---

**Caution** – Potential for component damage. Do *not* use liquid or aerosol spray cleaners to clean the server. Liquid has the potential for causing shorts in electrical systems.

---

## ▼ How to Remove the Server from the Rack



---

**Caution** – Potential for physical harm to personnel or component and facility damage. The weight of the server and uneven weight distribution within the rack can cause physical harm to personnel and damage to components and the facility. Always use a mechanical lift or more than one person to remove the server from the rack. Always use your rack's anti-tip bar, keep the weight distribution to the lower end of the rack, and do not extend more than one server at a time.

---

**1 Power off the server.**

**2 Disconnect all cables from the rear of the server.**

If necessary, label the cables first.

**3 Extend the anti-tip bar at the bottom of the server.**

The anti-tip bar prevents the rack from tipping over and causing physical harm to personnel and damage to components and the facility.

**4 Squeeze and hold the green slide-rail lock tabs that are located on each side of the front of the server.**

**5 Pull the server away from the rack until both slide rails lock with an click.**



---

**Caution** – Include additional personnel from this step forward.

---

**6 Locate the slide lock release tabs.**

The release tabs are located on each side of the server near the center of the mounting brackets.

**7 Prepare to remove the server from the rack. Position at least one person on each side of the rack holding the server.**

**8 Pull the slide lock release tabs forward and then pull the server slightly away from the rack, just far enough to disengage the slide locks.**

This action releases the server from the rack allowing it to slide freely.



---

**Caution** – Do *not* leave the server unattended.

---

**9 Slide the server away from the rack until the mounting brackets on the side of the server clear the rails.**

- 10 Set the server on a flat stable surface.
- 11 If necessary, push the extended rails into the rack.

**See Also** [“How to Install the Server Into the Rack” on page 23](#)

**Next Steps** [“How to Remove the Server Cover” on page 25](#)

## ▼ How to Install the Server Into the Rack

Use this procedure to install the server chassis, with mounting brackets, into the slide rail assemblies that are mounted to the rack.



---

**Caution** – This procedure requires a minimum of two people because of the weight of the server. Attempting this procedure alone could result in equipment damage or personal injury.

---



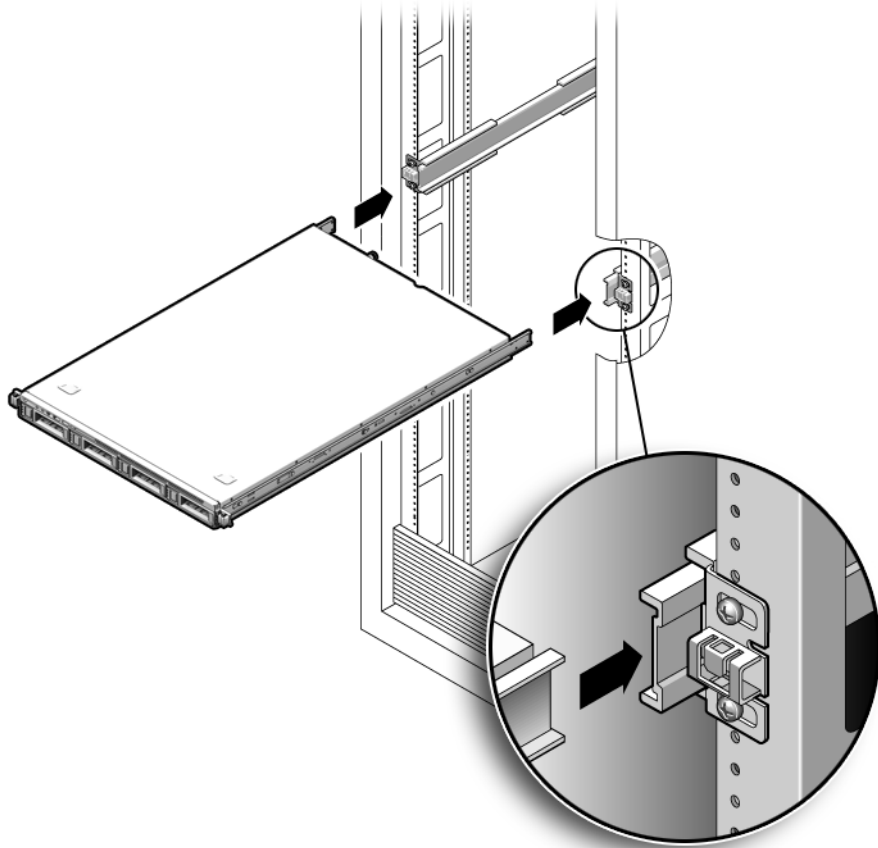
---

**Caution** – Always load equipment into a rack from the bottom up so that it does not become top-heavy and tip over. Deploy your rack’s anti-tilt bar to prevent the rack from tipping during equipment installation.

---

- 1 **Ensure that the slide rails and the slide rail assemblies are fully collapsed into the rack.**  
Push the slide rails into the slide rail assemblies and then collapse the assemblies.

- 2 **Raise the server so the rear ends of the mounting brackets are aligned with the slide rail assemblies mounted in the equipment rack.**



- 3 **Insert the mounting brackets into the slide rails, then push the server into the rack until the mounting brackets encounter the slide rail stops (approximately 12 inches, or 30 cm).**
- 4 **Simultaneously push and hold the slide rail release buttons on each mounting bracket while you push the server into the rack. Continue pushing until the slide rail locks on the front of the mounting brackets engage the slide rail assemblies.**

You will hear a click.



**Caution** – Verify that the server is securely mounted in the rack and that the slide rails locks are engaged with the mounting brackets before continuing.

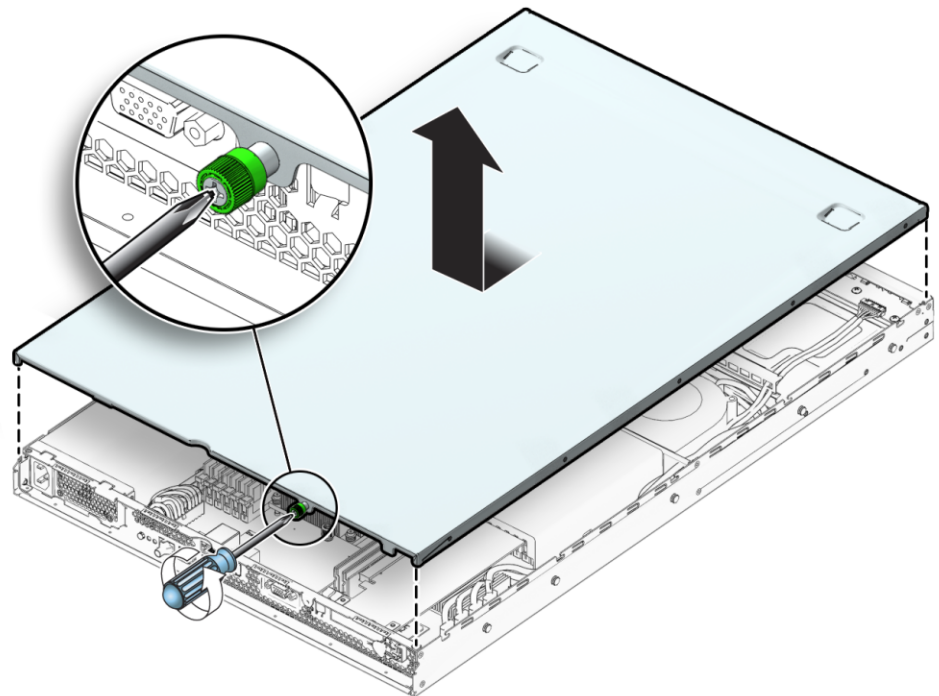
---

**Next Steps** [“How to Prepare for Operation” on page 26](#)

**See Also** [“Rear Panel Features and Components” on page 16](#)

## ▼ How to Remove the Server Cover

- 1 Prepare the server for service. See [“How to Prepare for Service” on page 21](#).
- 2 Loosen the captive screw that secures the cover to the chassis.  
If necessary, use a screwdriver to loosen the screw.



- 3 Pull the cover slightly toward the rear of the server until it stops (approximately .5 inch).
- 4 Lift the cover and remove it.

**See Also** [“Component Replacement Procedures and Topic” on page 29](#)

## ▼ How to Install the Server Cover

- 1 Orient the cover over the server so the lip edge of the cover is at the front of the server and the captive retaining screw is at the rear.
- 2 Set the cover on top of the server and position it so approximately .5 inch of the cover extends over the rear of the server.
- 3 Use the indent on the top cover to push the cover toward the front of the server until the captive screw is in position.
- 4 To secure the cover, tighten the captive screw.

**Next Steps**    [“How to Install the Server Into the Rack” on page 23](#)

## ▼ How to Prepare for Operation

- 1 Ensure that all new components are installed as described in the component replacement instructions (see [“Component Replacement Procedures and Topic” on page 29](#)).
- 2 Ensure that all existing components are properly seated and connected.
- 3 Ensure that all internal cabling is connected and secured within the server and that the cabling is not obstructing the air flow.
- 4 Inspect the interior of the server and remove any tools and loose or foreign debris.
- 5 Use a vacuum, compressed air, or an antistatic brush to clean the interior of the server so component surfaces and server air vents are free of dust.



**Caution** – Potential for component damage. Do *not* use liquid or aerosol spray cleaners to clean the server. Liquid has the potential for causing shorts in electrical systems.

---

- 6 Install the system’s cover. See [“How to Install the Server Cover” on page 26](#).
- 7 Install the server in the rack. See [“How to Install the Server Into the Rack” on page 23](#).
- 8 Connect all external cables to the system.
- 9 To apply AC power, connect the AC power cords to the server.  
When the AC power is applied, the server enters standby mode.

**10** Power on the server. See [“How to Power On the Server” on page 28](#).

**See Also** [“Sun Fire X2270 M2 Server Service Procedures and Information” on page 77](#)

## Powering On and Powering Off the Server

This section contains information about the server power modes and procedures for powering on and off the server.

- [“Power Modes” on page 27](#)
- [“How to Power Off the Server” on page 28](#)
- [“How to Power On the Server” on page 28](#)

### Power Modes

The Sun Fire X2270 M2 Server has two power modes, *full-power mode* and *standby-power mode*.

In *full-power mode*, power is supplied to all the server components (for example, CPU, hard drives, fans). Full-power mode is the normal operational mode for the server. When the server is in full-power mode, the server boots and the operating system (OS) functions. Full-power mode is achieved by pressing the power button on the front of the server when the server is in standby power mode. When the server is in full-power mode, the Power On LED is on continuously (does *not* blink).

*Standby-power mode* is the non-operating mode. That is, the server is in a low-power or powered-down state and is not capable of booting and starting the OS. In standby-power mode, minimum power is supplied only to the components that are required for lights-out management (LOM), such as the service processor (SP). Standby-power mode is achieved by connecting the server to an AC supply using the AC power cords. To sustain standby-power mode, do *not* press the front panel power button. You can also achieve standby-power mode by powering off the server from full-power mode using one of the methods described in the section, [“How to Power Off the Server” on page 28](#). When the server is in standby power mode the Power OK LED on the front panel blinks.

*See also:*

- [“How to Power Off the Server” on page 28](#)
- [“How to Power On the Server” on page 28](#)

## ▼ How to Power Off the Server

- 1 **To gracefully power off the server from main power mode to standby power mode, use the operating system-specific shutdown procedure for the OS running on your server.**  
All operating systems have a shutdown procedure. This shutdown procedure provides a graceful shutdown of the OS, and it should be your first choice for powering off the server.
- 2 **To gracefully power off the server from main power mode to standby power mode using the Power switch, use a stylus or other nonconducting pointed object to quickly press and release the Power button on the front panel.**



---

**Caution** – Potential data loss. Pressing and releasing 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 perform an emergency shut down to standby power mode.

---

When the main power is off and the server is in standby power mode, the Power/OK LED on the front panel blinks, indicating that standby power is still available.



---

**Caution** – In standby power mode, power is still directed to some components. To completely power off the server, you must disconnect the AC power cords from the rear panel of the server.

---

- 3 **To perform an emergency shutdown of the server power, press and hold the Power button for four seconds to force the main power off and enter standby power mode.**



---

**Caution** – Potential Data Loss. Pressing and holding the Power button for four seconds performs an immediate shutdown of the server. The system does not prompt for confirmation, nor are you allowed to save and exit open applications.

---

**See Also** [“How to Power On the Server” on page 28](#)

## ▼ How to Power On the Server

- 1 **Verify that the server’s power supply is connected to an AC power source and that the server is in “Power Modes” on page 27.**

In standby power mode, the Power/OK LED on the front panel blinks, indicating that the service processor is working and the system is ready to be fully powered on to full-power mode (see “Power Modes” on page 27).



## 2 Press and release the recessed power button on the server front panel.

---

**Note** – If necessary, use a stylus or other nonconducting pointed object to depress the power on button.

---

The server performs power-on self tests (POST) and boots to the OS.

**See Also** [“How to Power Off the Server” on page 28](#)

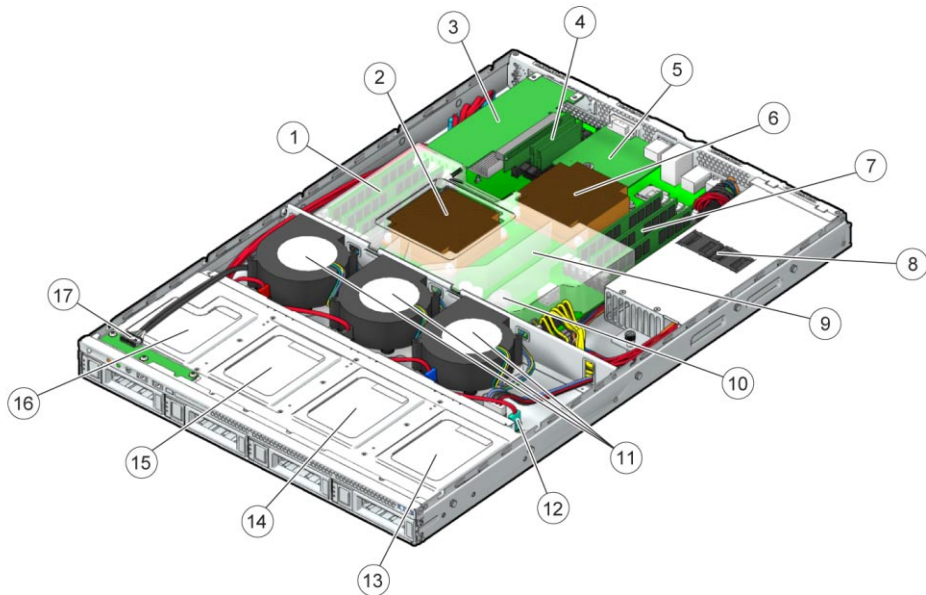
# Component Replacement Procedures and Topic

The procedures in this section are separated into customer-replaceable units (CRUs) and field replaceable units (FRUs). For more information about CRUs and FRUs, see [“CRU and FRU List” on page 19](#).

Component Designations	Procedures and Topics
Component locations	<a href="#">“Locations of Internal Server Components” on page 30</a>
Customer-Replaceable Units (CRUs)	
System battery	<a href="#">“Replacing the System Battery (CRU)” on page 31</a>
DIMMs	<a href="#">“Removing and Installing DIMMs (CRU)” on page 33</a>
PCIe card	<a href="#">“Removing and Installing a PCIe Card (CRU)” on page 40</a>
PCIe riser	<a href="#">“Removing and Installing the PCIe Riser (CRU)” on page 42</a>
Power supply	<a href="#">“Removing and Installing a Power Supply (CRU)” on page 45</a>
Hard drive filler and hard drive assembly	<a href="#">“Removing and Installing a Hard Drive Filler and Hard Drive Assembly (CRU)” on page 48</a>
Air duct	<a href="#">“Removing and Installing the Air Duct (CRU)” on page 52</a>
Blower module	<a href="#">“Replacing a Blower Module (CRU)” on page 54</a>
SP module	<a href="#">“Removing and Installing the SP Module (CRU)” on page 59</a>
Internal cabling	<a href="#">“Sun Fire X2270 M2 Server Internal Cabling” on page 61</a>
Cable harness	<a href="#">“Replacing the SATA Cable Harness (CRU)” on page 62</a>
I/O cable	<a href="#">“Replacing the Front I/O Cable (CRU)” on page 63</a>
Field-Replaceable Units (FRUs)	

Component Designations	Procedures and Topics
Hard drive backplane assembly	“Replacing the Hard Drive Backplane Assembly (FRU)” on page 56
Front I/O board	“Replacing the Front I/O Board (FRU)” on page 64
CPU and heatsink assembly	“Removing, Installing, and Adding a CPU and Heatsink (FRU)” on page 67
Motherboard	“Replacing the Motherboard (FRU)” on page 73

## Locations of Internal Server Components



### Legend

1	DIMM slots (6) for CPU 1	2	CPU 1
3	PCIe riser and card	4	Unsupported component
5	SP board	6	CPU 0
7	DIMM slots (6) for CPU 0	8	Power supply
9	Air duct	10	System battery (located under the air duct)

---

**Legend**

---

11	Blower modules (3)	12	HD/SSD backplane
13	Removable SATA HD/SSD 3	14	Removable SATA HD/SSD 2
15	Removable SATA HD/SSD 1	16	Removable SATA HD/SSD 0
17	I/O board		

---

*See also:*

- [“CRU and FRU List” on page 19](#)

## Replacing the System Battery (CRU)

The system battery is a CR2032 calculator-type battery.

Replace the system battery if you know it is weak, if after any period of AC power loss the BIOS loses its CMOS settings, or if the time-of-day clock loses time.



---

**Caution** – Loss of data. Removing the battery causes the server to revert to the factory default BIOS settings.

---



---

**Caution** – Do not attempt to open or service batteries. The battery contains lithium and can explode if mishandled or improperly disposed.

---

- [“How to Replace the System Battery” on page 31](#)

## ▼ How to Replace the System Battery

**Before You Begin** See:

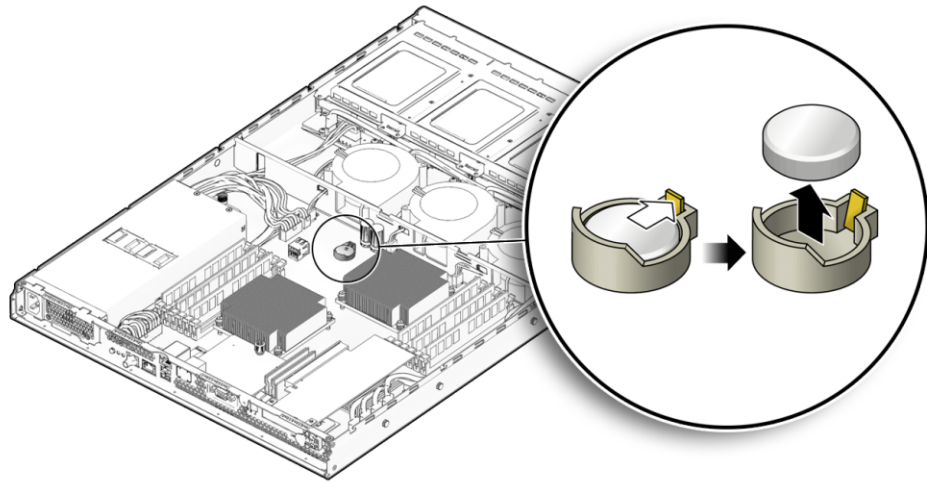
[“Locations of Internal Server Components” on page 30](#)

- 1 Prepare the server for service. See [“How to Prepare for Service” on page 21](#).
- 2 Remove the air duct. See [“How to Remove the Air Duct” on page 53](#).
- 3 Remove the system battery by pulling and quickly releasing the battery retaining clip. This action causes the battery to pop out of its socket.

---

**Note** – Use a tool to gently pry the battery from the socket while pulling the retaining clip.

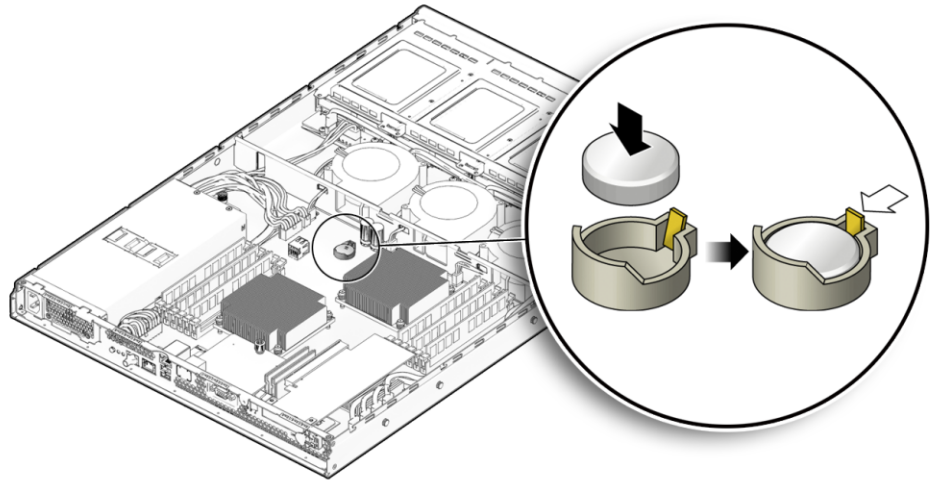
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**Caution** – Do not dispose of the battery with regular waste. Discard used batteries according to the manufacturer’s instructions or in accordance with your facility or local waste-disposal agency.

---

- 4 Insert the new system battery into the battery holder with the side labeled “+” facing upward.




---

**Note** – Replace the battery only with the identical model.

---

- 5 Install the air duct. See [“How to Install the Air Duct”](#) on page 53.
- 6 Prepare the server for operation. See [“How to Prepare for Operation”](#) on page 26.

## Removing and Installing DIMMs (CRU)

This section contains the following topics:

- [“How to Remove a DIMM”](#) on page 33
- [“How to Install a DIMM”](#) on page 35
- [“Error Correction and Parity”](#) on page 36
- [“DIMM Slot Designations”](#) on page 37
- [“DIMM Population Rules”](#) on page 38

### ▼ How to Remove a DIMM

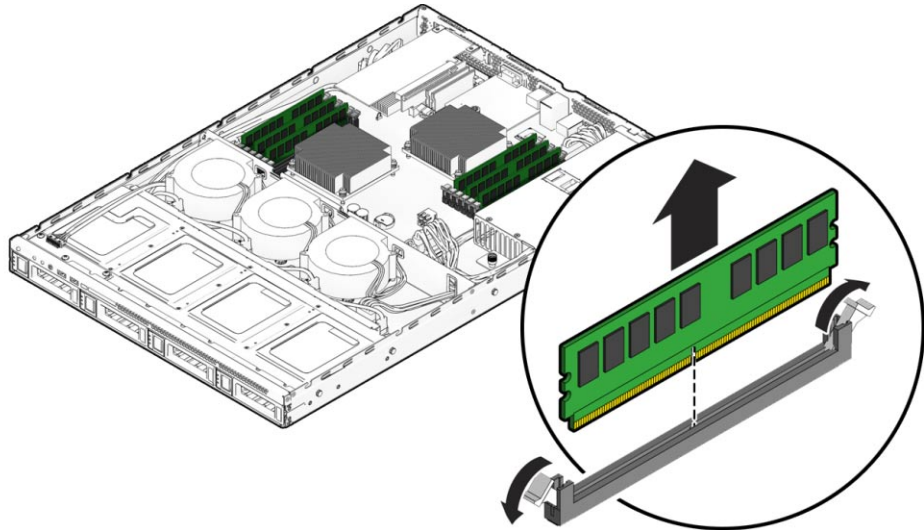
**Before You Begin** See:

[“Locations of Internal Server Components”](#) on page 30

- 1 Prepare the server for service. See [“How to Prepare for Service”](#) on page 21.

- 2 Remove the air duct. See [“How to Remove the Air Duct”](#) on page 53.
- 3 Locate the DIMM socket in which you want to install or replace a memory module. See [“DIMM Slot Designations”](#) on page 37.
- 4 Eject the DIMM from the slot by simultaneously pressing down on the ejector levers at both ends of the DIMM socket.

This action releases the DIMM from the slot.



- 5 To remove the DIMM, lift it up and out of the socket.
- 6 Prepare the server for operation. See [“How to Prepare for Operation”](#) on page 26.

- See Also**
- [“How to Install a DIMM”](#) on page 35
  - [“Error Correction and Parity”](#) on page 36
  - [“DIMM Slot Designations”](#) on page 37
  - [“DIMM Population Rules”](#) on page 38
  - [“Removing and Installing DIMMs \(CRU\)”](#) on page 33

---

## ▼ How to Install a DIMM

---

**Tip** – As an ESD precaution, do *not* remove the DIMM from its packaging until you are ready to install it.

---

### Before You Begin

See:

- “Locations of Internal Server Components” on page 30
- “DIMM Population Rules” on page 38
- “DIMM Slot Designations” on page 37

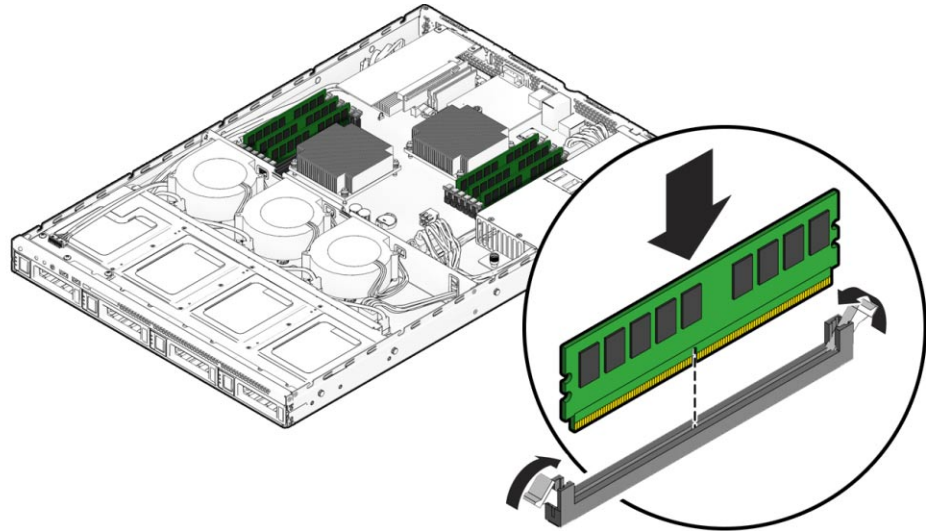
- 1 Prepare the server for service. See “How to Prepare for Service” on page 21.
- 2 Remove the air duct. See “How to Remove the Air Duct” on page 53.
- 3 Locate the DIMM socket in which you want to install or replace a memory module. For slot designations, see “DIMM Slot Designations” on page 37.
- 4 Ensure that the DIMM socket ejector levers are open (rotated fully outward).
- 5 Align the notch in the DIMM's edge connector with the socket alignment key.
- 6 Ensure that the DIMM's edge connector is positioned correctly within the slot.
- 7 To install the DIMM, simultaneously press downward on both top edges of the DIMM until the ejector levers rise to their vertical position and lock into place.

This action produces a click as the levers lock the DIMM in the slot.

---

**Note** – Insert the DIMMs evenly, straight down along the DIMM slot until locked into place.

---



- 8 Ensure that the DIMM is correctly installed in the slot.
- 9 Install the air duct. See [“How to Install the Air Duct” on page 53](#).
- 10 Prepare the server for operation. See [“How to Prepare for Operation” on page 26](#).

- See Also**
- [“How to Remove a DIMM” on page 33](#)
  - [“Error Correction and Parity” on page 36](#)
  - [“DIMM Slot Designations” on page 37](#)
  - [“DIMM Population Rules” on page 38](#)
  - [“Removing and Installing DIMMs \(CRU\)” on page 33](#)

## 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 system event log the following types of errors:

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

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

Refer to the *Oracle Integrated Lights Out Manager 3.0 User’s Guide* for information about how to access the error log.

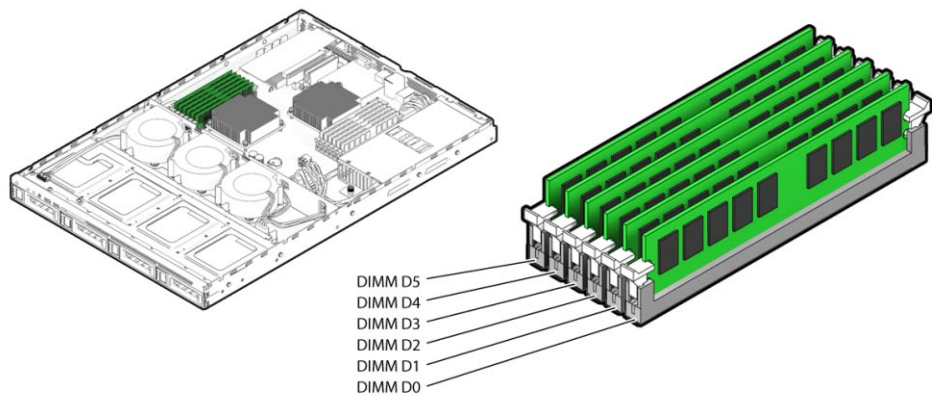
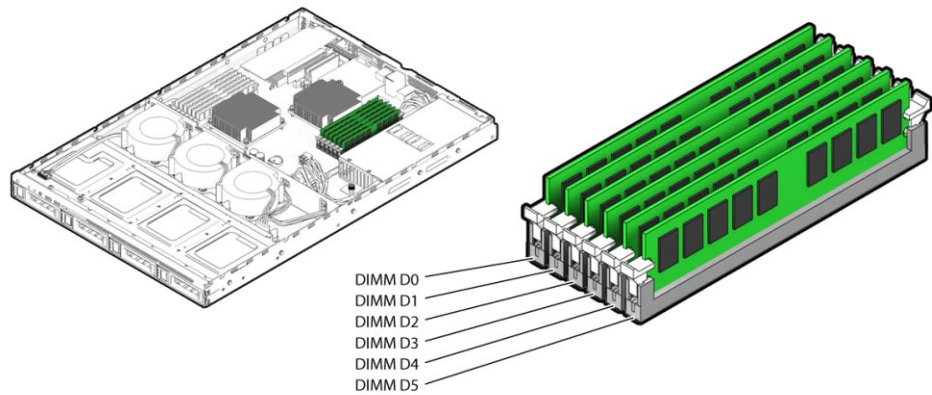


See also:

- “Removing and Installing DIMMs (CRU)” on page 33
- “DIMM Slot Designations” on page 37
- “DIMM Population Rules” on page 38

## DIMM Slot Designations

The following illustrations show the DIMM slot designations for CPU 0 and CPU 1 respectively.



See also:

- “Removing and Installing DIMMs (CRU)” on page 33
- “Error Correction and Parity” on page 36
- “DIMM Population Rules” on page 38

## DIMM Population Rules

When installing, removing, or replacing DIMMs, adhere to the following population rules.

Physical slot population rules	<p>All DIMMs must be DDR3.</p> <p>DIMMs are available in two speeds: 1066 MHz and 1333 MHz</p> <p>Registered DIMMs (RDIMMs) must be ECC only.</p> <p>Do not populate any DIMM slot next to an <i>empty</i> CPU socket. Each CPU contains a separate memory controller.</p> <p>Populate the DIMM slots for each memory channel that are the farthest from the CPU first.</p> <p>Blue DIMM slots are always populated first. For example, populate D5/D3/D1 first, then populate D4/D2/D0.</p>
Performance Considerations	<p>The best performance is assured by preserving symmetry; for example: adding two of the same kind of DIMMs, one per memory channel, and ensuring that both CPUs have the same size of DIMMs populated in the same manner.</p> <p>DIMMs with different speeds can be installed in different slots within the same channel; however, the speed of the slowest DIMM is applied to all the DIMMs (faster DIMMs operate at the slowest supported frequency).</p> <p>DIMM speed rules are as follows:</p> <ul style="list-style-type: none"> <li>■ 2 x DIMM per channel = 1066 MHz</li> <li>■ 2 x DIMM per channel = 1333 MHz</li> <li>■ 1 x DIMM per channel = 1333 MHz (if using 1333 MHz DIMMs)</li> <li>■ 1 x DIMM per channel = 1066 MHz (if using 1066 MHz DIMMs)</li> </ul>

These are the acceptable DIMM configurations.

DIMM Qty	CPU Qty	DIMM SLOT Location	
		CPU 0	CPU 1
1	1	D5	
1	2	<i>configuration not allowed</i>	
2	1	D5, D3	

DIMM Qty	CPU Qty	DIMM SLOT Location	
		CPU 0	CPU 1
2	2	D5	D5
3	1	D5, D3, D1	
3	2	D5, D3	D5
4	1	D5, D3, D1, D4	
4	2	D5, D3	D5, D3
5	1	D5, D3, D1, D4, D2	
5	2	D5, D3, D1	D5, D3
6	1	D5, D3, D1, D4, D2, D0	
6	2	D5, D3, D1	D5, D3, D1
7	1	<i>configuration not allowed</i>	
7	2	D5, D3, D1, D4	D5, D3, D1
8	1	<i>configuration not allowed</i>	
8	2	D5, D3, D1, D4	D5, D3, D1, D4
9	1	<i>configuration not allowed</i>	
9	2	D5, D3, D1, D4, D2	D5, D3, D1, D4
10	1	<i>configuration not allowed</i>	
10	2	D5, D3, D1, D4, D2	D5, D3, D1, D4, D2
11	1	<i>configuration not allowed</i>	
11	2	D5, D3, D1, D4, D2, D0	D5, D3, D1, D4, D2
12	1	<i>configuration not allowed</i>	
12	2	D5, D3, D1, D4, D2, D0	D5, D3, D1, D4, D2, D0

See also:

- “Removing and Installing DIMMs (CRU)” on page 33
- “Error Correction and Parity” on page 36
- “DIMM Slot Designations” on page 37

## Removing and Installing a PCIe Card (CRU)

This section contains the following topics:

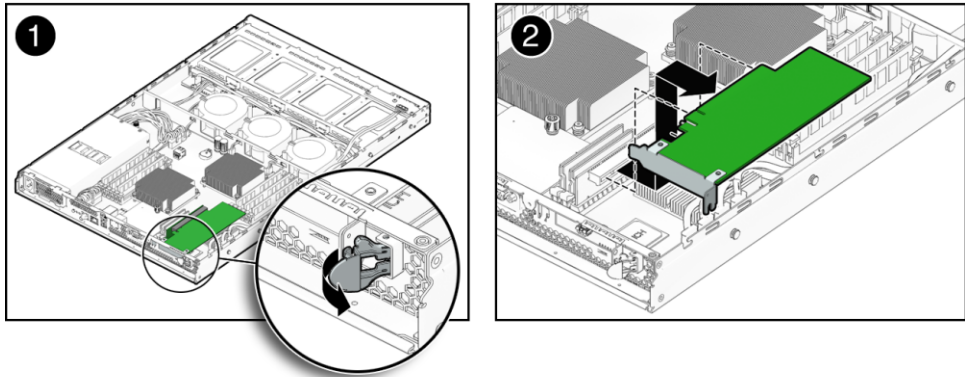
- “How to Remove a PCIe Card” on page 40
- “How to Install a PCIe Card” on page 41

### ▼ How to Remove a PCIe Card

**Before You Begin** See:

“Locations of Internal Server Components” on page 30

- 1 Prepare the server for service. See “How to Prepare for Service” on page 21.
- 2 Remove the air duct. See “How to Remove the Air Duct” on page 53.
- 3 Disconnect any cables connected to the PCIe card.
- 4 To unlock the PCIe card, open the locking latch on the server rear panel.



- 5 To remove the PCIe card from the server, slide the card out of the server rear panel and disconnect the card from the PCIe riser.
- 6 Remove any card-specific cabling from the server.
- 7 Install the air duct. See “How to Install the Air Duct” on page 53.
- 8 Prepare the server for operation. See “How to Prepare for Operation” on page 26.

**See Also** ▪ “How to Install a PCIe Card” on page 41

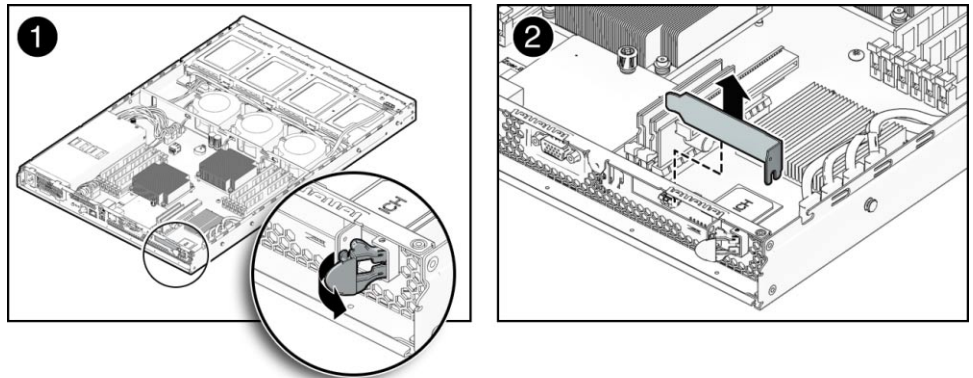
- “Removing and Installing a PCIe Card (CRU)” on page 40

## ▼ How to Install a PCIe Card

**Before You Begin** See:

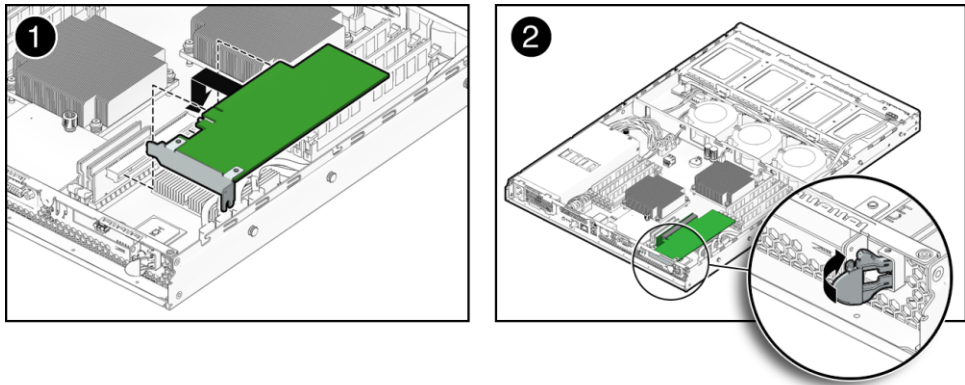
“Locations of Internal Server Components” on page 30.

- 1 Prepare the server for service. See “How to Prepare for Service” on page 21.
- 2 Remove the air duct. See “How to Remove the Air Duct” on page 53.
- 3 If necessary, pull open the locking latch on the rear panel of the server to unlock the PCIe filler panel.



- 4 Remove the filler panel by lifting it straight up and out of the server.
- 5 If a PCIe riser is not already installed in the server, install a PCIe riser. See “How to Install the PCIe Riser” on page 42.  
The PCIe riser is a low-profile, half-length x16 connector card.

- 6 Slide the new PCIe card into the PCIe slot on the rear panel of the server and connect the card to the PCIe riser.



- 7 To lock the PCIe card, push to close the locking latch on the rear panel of the server.
- 8 Attach any required internal cabling to the card.
- 9 Install the air duct. See [“How to Install the Air Duct” on page 53](#).
- 10 Prepare the server for operation. See [“How to Prepare for Operation” on page 26](#).

- See Also**
- [“How to Remove a PCIe Card” on page 40](#)
  - [“Removing and Installing a PCIe Card \(CRU\)” on page 40](#)

## Removing and Installing the PCIe Riser (CRU)

The PCIe riser installed in the server is a low-profile, half-length x16 connector card, supporting up to 35-watt cards.

- [“How to Install the PCIe Riser” on page 42](#)
- [“How to Remove the PCIe Riser” on page 44](#)

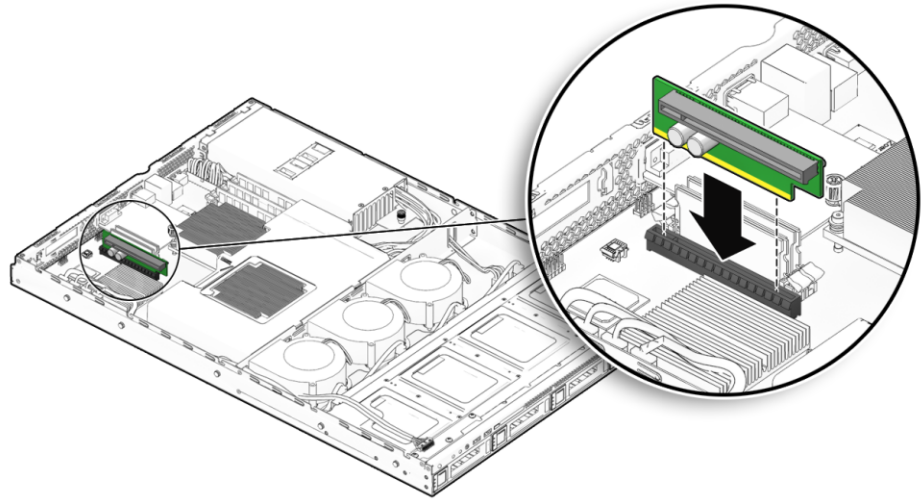
### ▼ How to Install the PCIe Riser

**Before You Begin** See:

[“Locations of Internal Server Components” on page 30](#).

- 1 Prepare the server for service. See [“How to Prepare for Service” on page 21](#).

- 2 Remove the air duct. See [“How to Remove the Air Duct”](#) on page 53.
- 3 Align the riser card in the PCIe slot on the motherboard.
- 4 To install the riser card, gently push the card downward into the slot.



- 5 If you are installing a PCIe card, see [“How to Install a PCIe Card”](#) on page 41.
- 6 Install the air duct. See [“How to Install the Air Duct”](#) on page 53.
- 7 Prepare the server for operation. See [“How to Prepare for Operation”](#) on page 26.

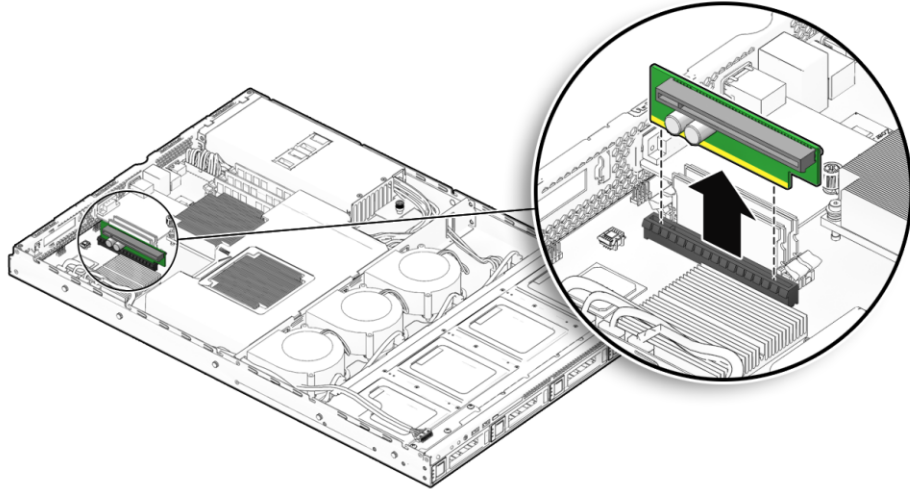
- See Also**
- [“How to Remove the PCIe Riser”](#) on page 44
  - [“Removing and Installing a PCIe Card \(CRU\)”](#) on page 40

## ▼ How to Remove the PCIe Riser

### Before You Begin See:

“Locations of Internal Server Components” on page 30.

- 1 Prepare the server for service. See “How to Prepare for Service” on page 21.



- 2 Remove the air duct. See “How to Remove the Air Duct” on page 53.
- 3 If a PCIe card is connected to the PCIe riser, remove the PCIe card. See “How to Remove a PCIe Card” on page 40.
- 4 Pull the PCIe riser upward to disengage the riser card from the connector on the motherboard.
- 5 Install the air duct. See “How to Install the Air Duct” on page 53.
- 6 Prepare the server for operation. See “How to Prepare for Operation” on page 26.

- See Also**
- “How to Install the PCIe Riser” on page 42
  - “Removing and Installing a PCIe Card (CRU)” on page 40



## Removing and Installing a Power Supply (CRU)

This section contains the following topics:

- [“How to Remove the Power Supply” on page 45](#)
- [“How to Install the Power Supply” on page 47](#)

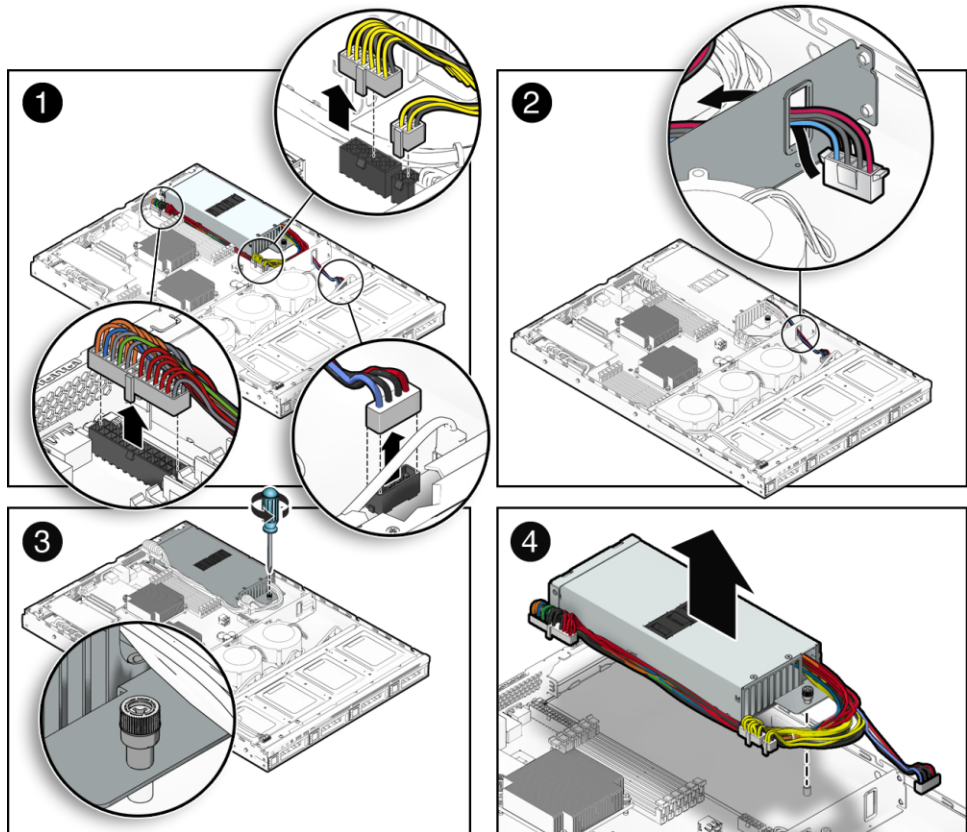
### ▼ How to Remove the Power Supply

**Before You Begin** See:

- [“Sun Fire X2270 M2 Server Internal Cabling” on page 61](#)
- [“Locations of Internal Server Components” on page 30](#)

- 1 Prepare the server for service. See [“How to Prepare for Service” on page 21](#).
- 2 Remove the air duct. See [“How to Remove the Air Duct” on page 53](#).

- 3** Reference the following illustration for this procedure.  
Note the numbered panels.



- 4** Disconnect the three power supply cables from the motherboard (1).
- 5** Disconnect the power supply cable from the hard drive backplane and push the cable through the cutout in the chassis divider (2).
- 6** Loosen the captive screw that secures the power supply to the chassis (3).
- 7** Lift the power supply out of the chassis (4).

**Next Steps** [“How to Install the Power Supply” on page 47](#)

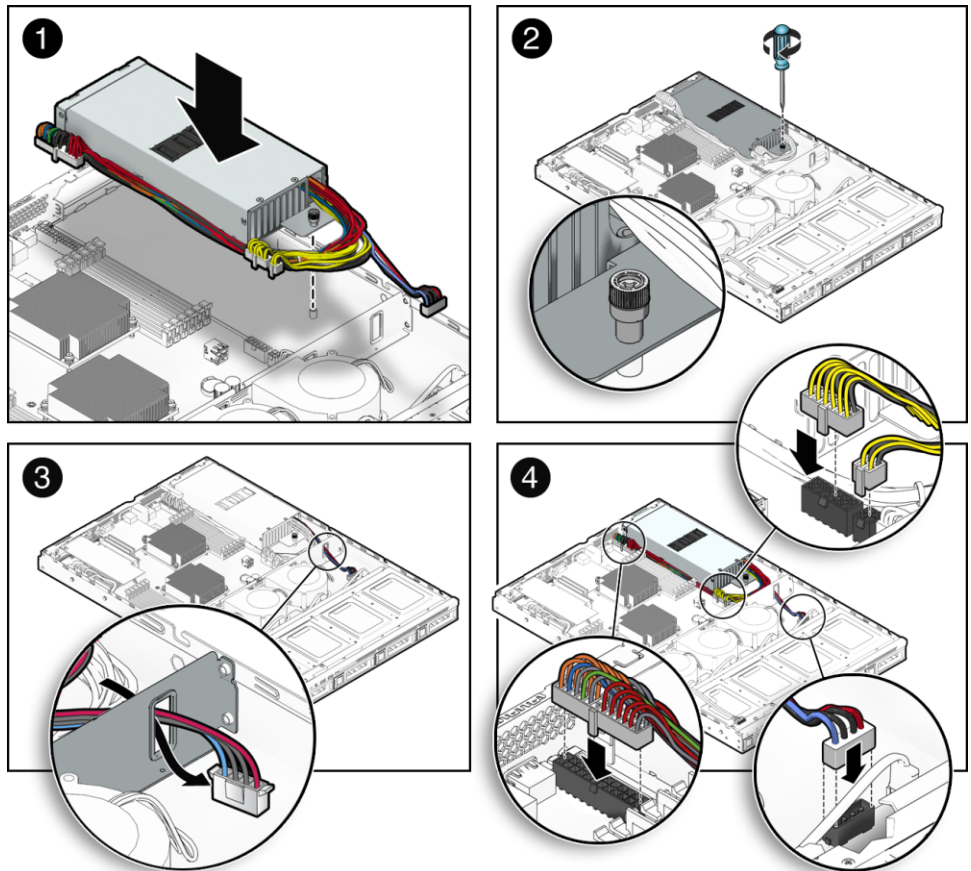
## ▼ How to Install the Power Supply

**Before You Begin** See:

- “How to Remove the Power Supply” on page 45.
- “Sun Fire X2270 M2 Server Internal Cabling” on page 61.
- “Locations of Internal Server Components” on page 30

**1** Reference the following illustration for this procedure.

Note the numbered panels.



- 2** Insert the power supply into the chassis with the cable bundle toward the front of the server (1).
- 3** To secure the power supply to the chassis, fully tighten the captive screw (2).

- 4 Route the HD/SSD power cable through the opening in the chassis divider (3).
- 5 Connect three of the power supply cables to the motherboard (4).
- 6 Connect the power supply cable to the hard disk backplane.
- 7 Install the air duct. See [“How to Install the Air Duct” on page 53](#).
- 8 Prepare the server for operation. See [“How to Prepare for Operation” on page 26](#).

## Removing and Installing a Hard Drive Filler and Hard Drive Assembly (CRU)

This section contains the following topics:

- [“How to Remove a Hard Drive Filler” on page 48](#)
- [“How to Install a Hard Drive Filler” on page 49](#)
- [“How To Remove a Removable Hard Drive Assembly” on page 50](#)
- [“How to Install a Removable Hard Drive Assembly” on page 51](#)

### ▼ How to Remove a Hard Drive Filler



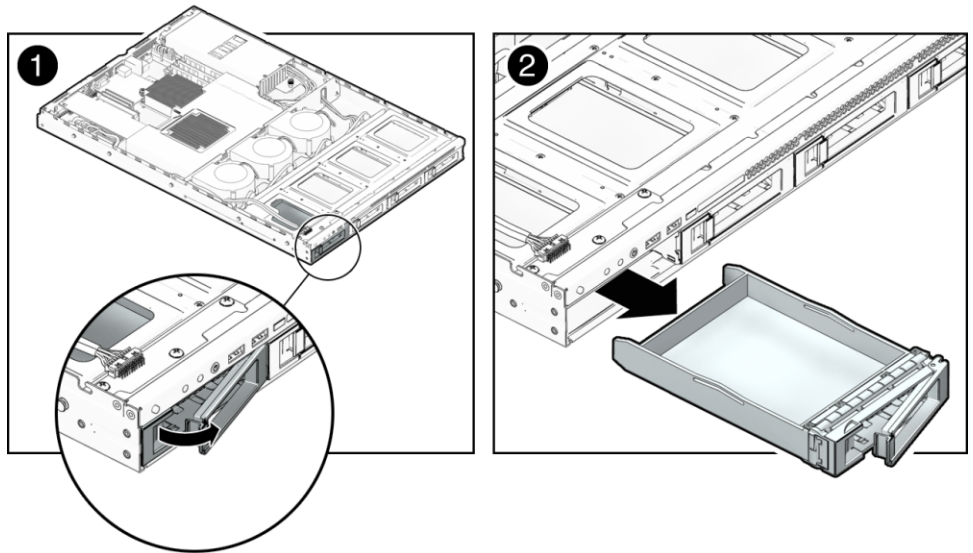
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**Caution** – Thermal over-temperature potential. Do not operate the server without all drive slots populated with either a drive or a filler.

---

If your server contains a filler panel, remove the filler panel before installing a hard drive.

- 1 For the drive slot in which you want to install a removable hard drive, rotate the release lever on the front of the filler to disengage the hook and extend the handle.



- 2 Use the handle to pull the filler out of the slot.

**Next Steps** [“How to Install a Removable Hard Drive Assembly” on page 51](#)

- See Also**
- [“How to Install a Hard Drive Filler” on page 49](#)
  - [“How To Remove a Removable Hard Drive Assembly” on page 50](#)
  - [“How to Install a Removable Hard Drive Assembly” on page 51](#)

## ▼ How to Install a Hard Drive Filler



**Caution** – Thermal over-temperature potential. Do not operate the server without all drive slots populated with either a drive or a filler.

If your server contains a filler panel, remove the filler panel before installing a hard drive.

- 1 Prepare the server for service. See [“How to Prepare for Service” on page 21](#).
- 2 Rotate the release lever on the front of the filler to disengage the hook and extend the handle.

- 3 Slide the filler into the vacant slot until the front of the filler is flush with the front of the server.
- 4 Close the latch and rotate the release lever to lock the latch.

- See Also**
- [“How to Remove a Hard Drive Filler” on page 48](#)
  - [“How To Remove a Removable Hard Drive Assembly” on page 50](#)
  - [“How to Install a Removable Hard Drive Assembly” on page 51](#)

## ▼ How To Remove a Removable Hard Drive Assembly



---

**Caution** – Thermal over-temperature potential. Do *not* operate the server without all drive slots populated with either a drive or a filler panel.

---

- 1 Power off the server. See [“How to Power Off the Server” on page 28](#).

---

**Note** – If you are using an integrated-mirroring (IM) configuration, you do not need to power off the server before removing a hard drive.

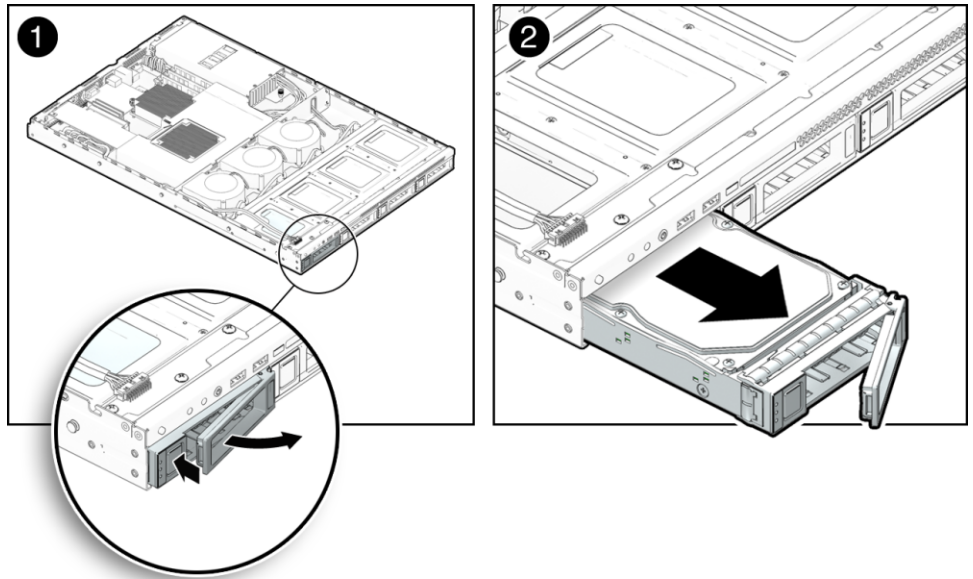
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- 2 On the drive you want to remove, push the release button to open the latch and extend the latch to its fully-open position.

---

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

---



- 3 To remove the drive, use the handle to pull the drive out of the drive slot.
- 4 If you are replacing the drive, go to [“How to Install a Removable Hard Drive Assembly” on page 51](#).
- 5 If you are not replacing the drive, install a filler panel. See [“How to Install a Hard Drive Filler” on page 49](#).
- 6 Power on the server. See [“How to Power On the Server” on page 28](#).

- See Also**
- [“How to Remove a Hard Drive Filler” on page 48](#)
  - [“How to Install a Hard Drive Filler” on page 49](#)
  - [“How to Install a Removable Hard Drive Assembly” on page 51](#)

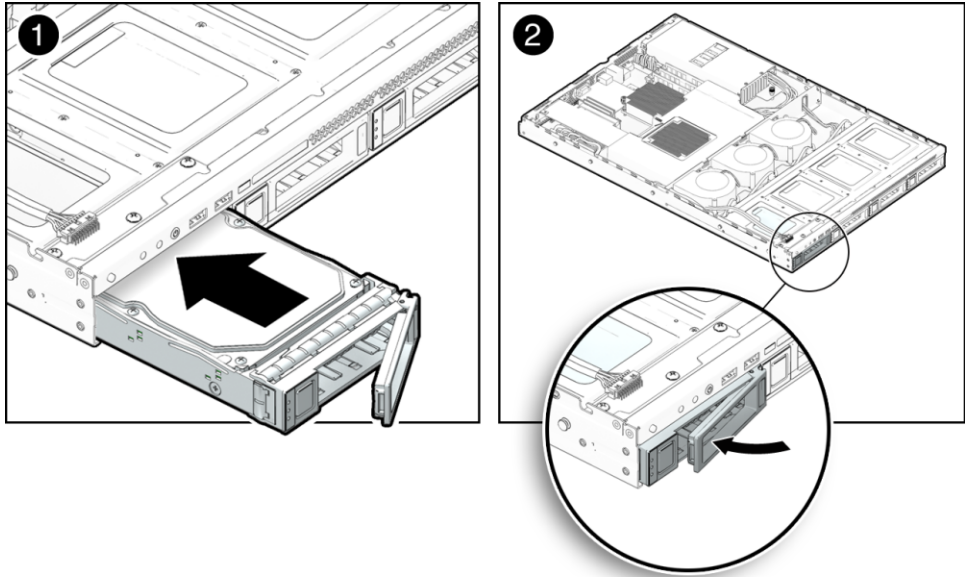
## ▼ How to Install a Removable Hard Drive Assembly

**Before You Begin** See:

[“How to Remove a Hard Drive Filler” on page 48](#).

- 1 Power off the server. See [“How to Power Off the Server” on page 28](#).

- 2 Ensure that the latch on the hard drive assembly is in the fully open position.  
To open the latch, press the latch release button on the front of the assembly.
- 3 Slide the drive into the drive slot until it is fully seated and flush with the front of the server.



- 4 Close the latch.
- 5 Power on the server. See [“How to Power On the Server” on page 28.](#)

- See Also**
- [“How to Remove a Hard Drive Filler” on page 48](#)
  - [“How to Install a Hard Drive Filler” on page 49](#)
  - [“How To Remove a Removable Hard Drive Assembly” on page 50](#)

## Removing and Installing the Air Duct (CRU)

This section contains the following topics:

- [“How to Remove the Air Duct” on page 53](#)
- [“How to Install the Air Duct” on page 53](#)



## ▼ How to Remove the Air Duct

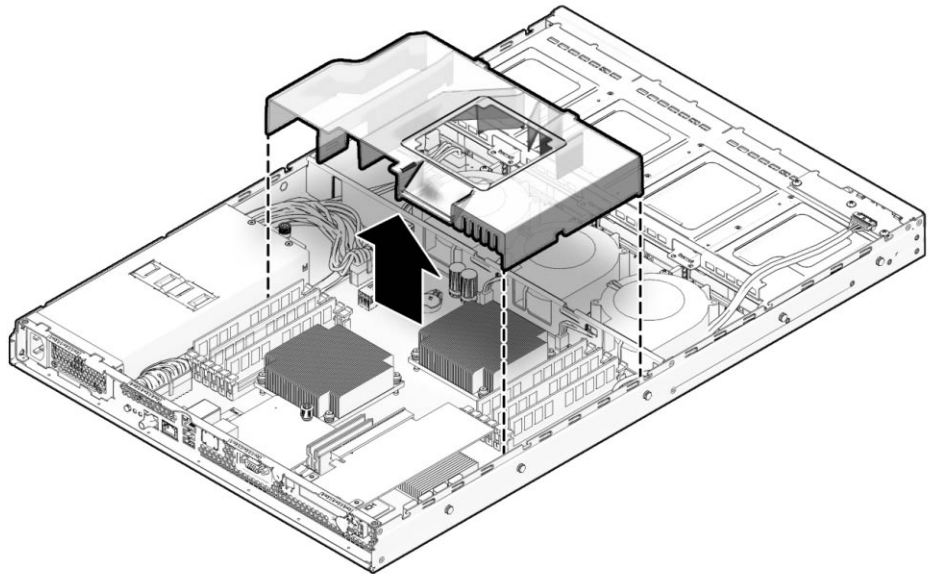


**Caution** – Thermal over-temperature potential. The air duct is an important server-cooling component. Do *not* operate the server without the air duct installed.

**Before You Begin** See:

“Locations of Internal Server Components” on page 30.

- 1 Prepare the server for service. See “How to Prepare for Service” on page 21.
- 2 Pull the air duct up and out of the chassis.



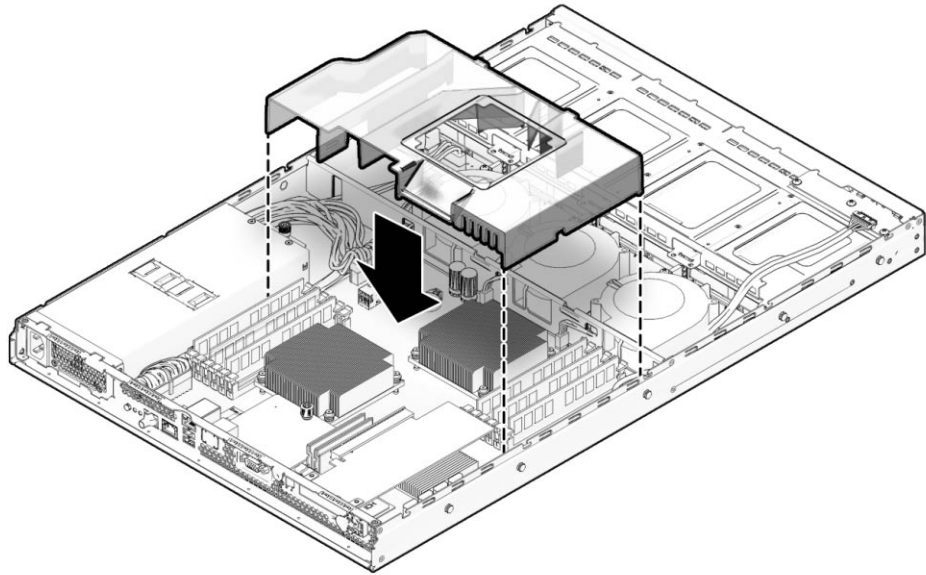
**See Also** ■ “How to Install the Air Duct” on page 53

## ▼ How to Install the Air Duct

**Before You Begin** See:

“Locations of Internal Server Components” on page 30

- 1 Position the air duct in the chassis, aligning the baffle with the indents and opening in the chassis divider.



- 2 Carefully lower the air duct in place.
- 3 Prepare the server for operation. See [“How to Prepare for Operation”](#) on page 26.

**See Also** ■ [“How to Remove the Air Duct”](#) on page 53

## Replacing a Blower Module (CRU)

The following procedures describe how to replace a blower module. The X2270 server contains three blower modules.

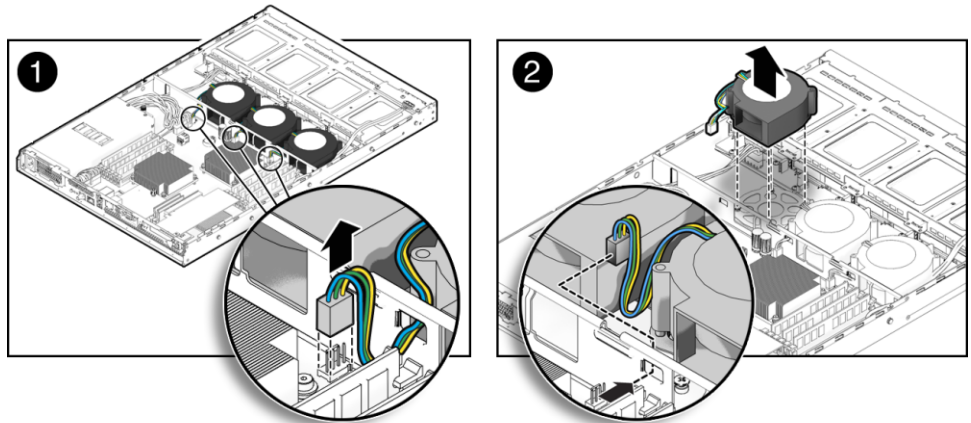
- [“How to Remove a Blower Module”](#) on page 54
- [“How to Install a Blower Module”](#) on page 55

### ▼ How to Remove a Blower Module

**Before You Begin** See:

- [“Sun Fire X2270 M2 Server Internal Cabling”](#) on page 61
- [“Locations of Internal Server Components”](#) on page 30

- 1 Prepare the server for service. See [“How to Prepare for Service”](#) on page 21.
- 2 Remove the air duct. See [“How to Remove the Air Duct”](#) on page 53.
- 3 Unplug the blower’s power connector from the motherboard.



- 4 Pull the blower upward while pushing the connector cable through the cutout in the chassis divider and taking care not to catch the connector on the metal, to remove the blower from the chassis.



**Caution** – Thermal over-temperature potential. Do not operate the server without all airflow components installed.

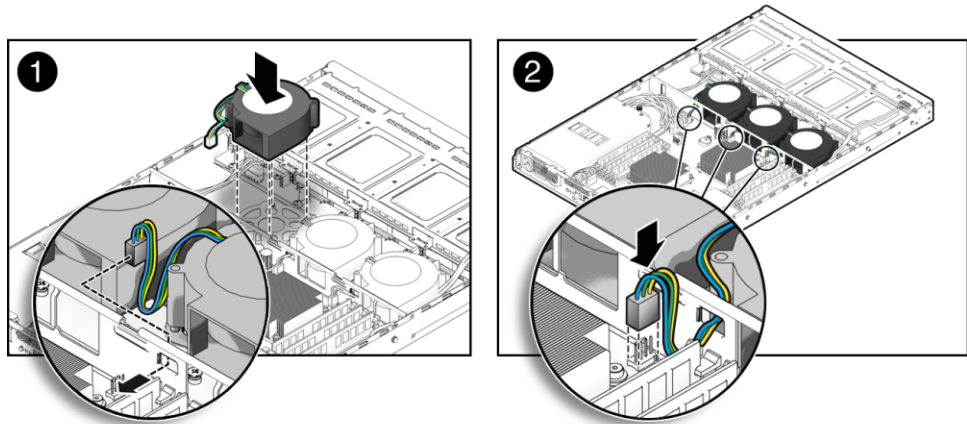
**See Also** ■ [“How to Install a Blower Module”](#) on page 55

## ▼ How to Install a Blower Module

**Before You Begin** See:

- [“Locations of Internal Server Components”](#) on page 30
- [“Sun Fire X2270 M2 Server Internal Cabling”](#) on page 61

- 1 Position the blower module so that it fits over the guideposts and the duct opening fits into the cutouts in the chassis divider.



- 2 Gently push the blower module down while directing the connector cable through the cutout in the chassis divider, until the blower is seated on the guideposts.

---

**Note** – Ensure that the connector cable has been directed through the connector opening in the chassis divider and not through the blower exhaust opening.

---

- 3 Connect the blower power connector to the blower power connector on the motherboard.
- 4 Prepare the server for operation. See [“How to Prepare for Operation” on page 26](#).

- See Also**
- [“How to Remove a Blower Module” on page 54](#)
  - [“Replacing a Blower Module \(CRU\)” on page 54](#)

## Replacing the Hard Drive Backplane Assembly (FRU)

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**Note** – The hard drive backplane assembly is a field-replaceable unit. It must be replaced by a certified Oracle Service Technician.

---

This section contains the following topics:

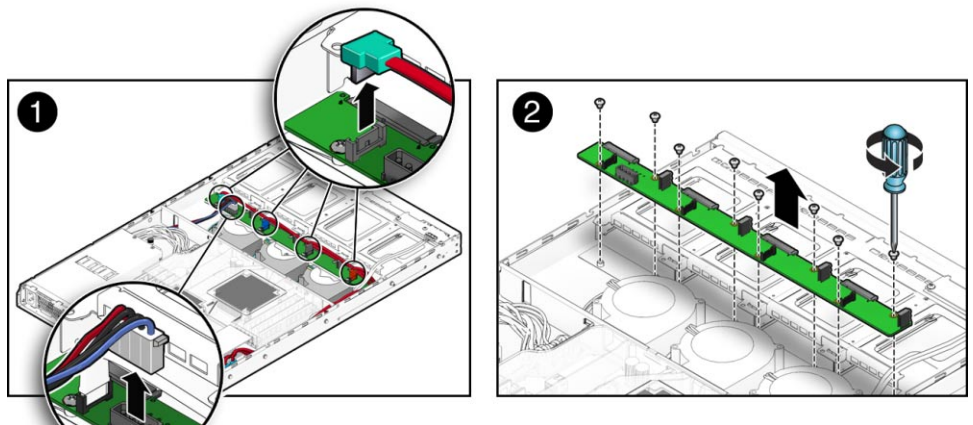
- [“How to Remove the Hard Drive Backplane” on page 57](#)
- [“How to Install the Hard Drive Backplane” on page 58](#)

## ▼ How to Remove the Hard Drive Backplane

**Before You Begin** See:

- “Locations of Internal Server Components” on page 30
- “Sun Fire X2270 M2 Server Internal Cabling” on page 61

- 1 Prepare the server for service. See “How to Prepare for Service” on page 21.
- 2 Remove all hard drives. See “How To Remove a Removable Hard Drive Assembly” on page 50. This ensures that HD/SSDs are detached from the backplane assembly.
- 3 Remove the air duct. See “How to Remove the Air Duct” on page 53.
- 4 Disconnect the HD/SSD power cable connector and the four SATA cable connectors from the backplane assembly.



- 5 Remove the eight screws fastening the backplane assembly to the server chassis.
- 6 Carefully lift the backplane assembly from the server chassis.

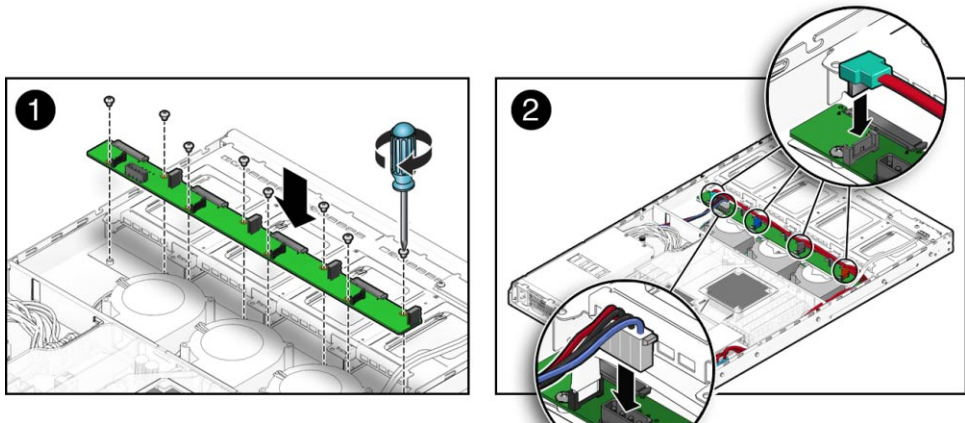
**Next Steps** “How to Install the Hard Drive Backplane” on page 58

## ▼ How to Install the Hard Drive Backplane

### Before You Begin See:

- “Locations of Internal Server Components” on page 30
- “Sun Fire X2270 M2 Server Internal Cabling” on page 61

- 1 Position the backplane board in the server chassis with the SATA connectors facing upward and align the eight screw holes in the backplane with the threaded standoffs in the server chassis.
- 2 To secure the backplane to the server chassis, fully tighten the eight screws.
- 3 Connect the HD/SSD power cable and four SATA cables to the backplane.  
Take care to route the cables properly.



- 4 Install all HD/SSDs. See “How to Install a Removable Hard Drive Assembly” on page 51.
- 5 Install the air duct. See “How to Install the Air Duct” on page 53.
- 6 Prepare the server for operation. See “How to Prepare for Operation” on page 26.

**See Also** “How to Remove the Hard Drive Backplane” on page 57

## Removing and Installing the SP Module (CRU)

This section contains the following topics:

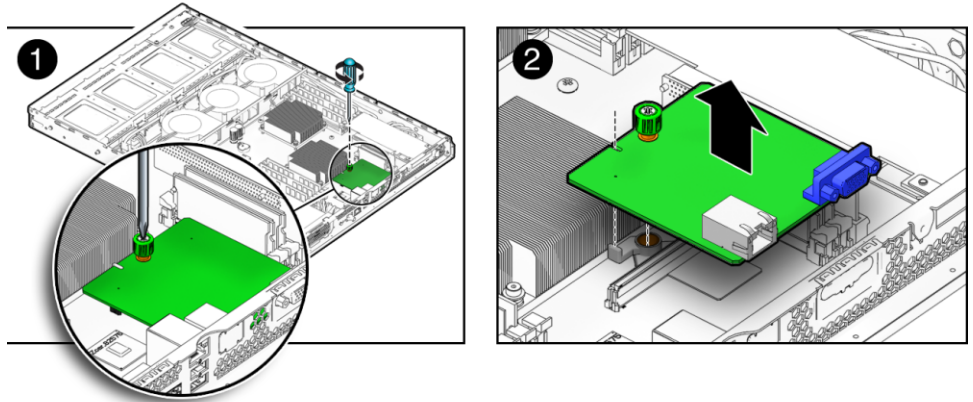
- “How to Remove the SP Module” on page 59
- “How to Install the SP Module” on page 60

### ▼ How to Remove the SP Module

**Before You Begin** See:

“Locations of Internal Server Components” on page 30

- 1 Prepare the server for service. See “How to Prepare for Service” on page 21.
- 2 Remove the air duct. See “How to Remove the Air Duct” on page 53.
- 3 Remove any cables that are attached to the rear of the SP module.
- 4 Completely loosen the captive screw securing the SP module to the server motherboard.



- 5 Pull the SP module upward to disengage the card from the connector and the alignment pin on the motherboard.
- 6 To remove the SP module, slide it slightly forward to clear the rear wall of the server chassis, and then lift the module from the chassis.
- 7 If you are replacing the SP module, see “How to Install the SP Module” on page 60.
- 8 Prepare the server for operation. See “How to Prepare for Operation” on page 26.



**See Also** ■ [“How to Install the SP Module” on page 60](#)

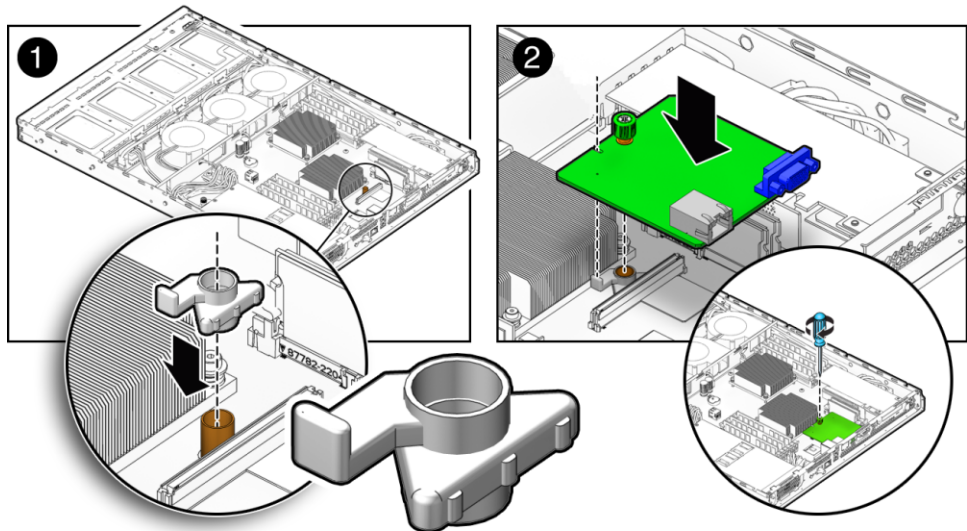
## ▼ How to Install the SP Module

**Before You Begin** See:

- [“Locations of Internal Server Components” on page 30](#)
- [“How to Remove the SP Module” on page 59](#)

- 1 Slide the SP module alignment pin over the screw post *before* installing the SP module.**

The SP module alignment pin is designed to help align the SP module with the card connector. The SP module alignment pin is shipped with the SP module.



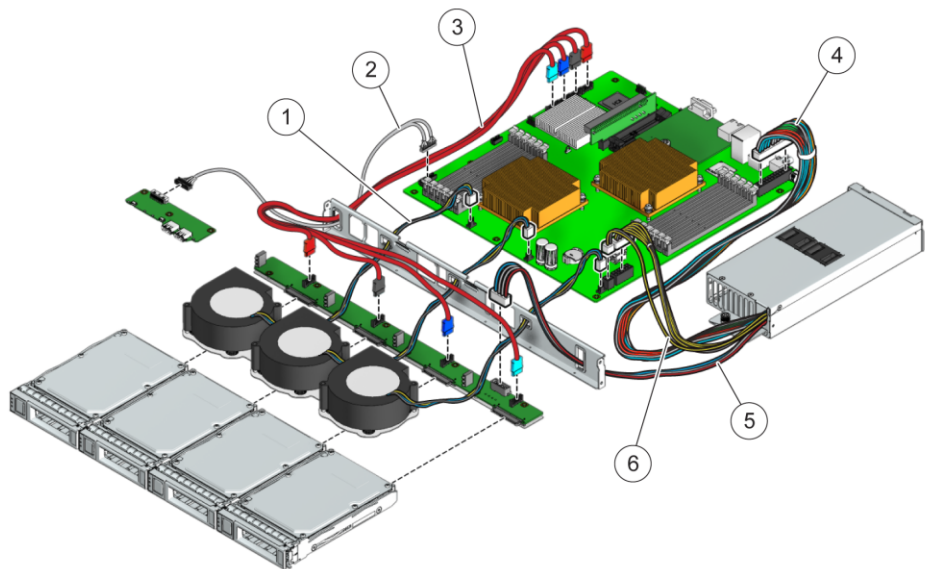
- 2 Position the SP module so the card's RJ-45 and HD15 connectors face the rear of the server.**
- 3 Align connectors on the SP board with the openings in the rear panel of the server chassis.**
- 4 Use the alignment pin to align the connector on the SP module with the connector on the motherboard.**
- 5 Gently push down on the SP module to engage the connector on the module with the connector on the motherboard.**
- 6 Tighten the captive screw to secure the SP module.**



- 7 Install the air duct. See [“How to Install the Air Duct”](#) on page 53.
- 8 Prepare the server for operation. See [“How to Prepare for Operation”](#) on page 26.

**See Also** [“How to Remove the SP Module”](#) on page 59

## Sun Fire X2270 M2 Server Internal Cabling




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### Legend

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1	Blower power cables (3)	2	Front I/O cable
3	SATA cable harness	4	Motherboard power cable
5	SATA backplane power cable	6	Blower power cable (main)

---

*See also:* [“Locations of Internal Server Components”](#) on page 30

## Replacing the SATA Cable Harness (CRU)

This section contains the following topics:

- [“How to Remove the SATA Cable Harness” on page 62](#)
- [“How to Install the SATA Cable Harness” on page 62](#)

### ▼ How to Remove the SATA Cable Harness

**Before You Begin** See:

[“Sun Fire X2270 M2 Server Internal Cabling” on page 61.](#)

- 1 Prepare the server for service. See [“How to Prepare for Service” on page 21.](#)
- 2 Remove the air duct. See [“How to Remove the Air Duct” on page 53.](#)
- 3 Disconnect the four SATA cables from the backplane.
- 4 Disconnect the four SATA cables from the motherboard connections.
- 5 Release the SATA cable harness from its tie-down points.
- 6 Carefully pull the SATA cable through the cutout in the chassis divider and lift it from the chassis.

**Next Steps** [“How to Install the SATA Cable Harness” on page 62](#)

### ▼ How to Install the SATA Cable Harness

**Before You Begin** See:

[“Sun Fire X2270 M2 Server Internal Cabling” on page 61.](#)

- 1 Match the color-coded SATA cables with their associated motherboard connections and connect the SATA cable connectors to the motherboard.
- 2 Carefully route the SATA cable through the cutout in the chassis divider.
- 3 Match the color-coded SATA cables with their associated backplane connection and connect the SATA cable connectors to the backplane.
- 4 Secure the SATA cable to the tie-down points.
- 5 Check the routing of all cables for obstructions.

- 6 Install the air duct. See [“How to Install the Air Duct” on page 53.](#)
- 7 Prepare the server for operation. See [“How to Prepare for Operation” on page 26.](#)

**See Also** [“How to Remove the SATA Cable Harness” on page 62](#)

## Replacing the Front I/O Cable (CRU)

This section contains the following topics:

- [“How to Remove the Front I/O Cable” on page 63](#)
- [“How to Install the Front I/O Cable” on page 63](#)

### ▼ How to Remove the Front I/O Cable

**Before You Begin** See:

[“Sun Fire X2270 M2 Server Internal Cabling” on page 61.](#)

- 1 Prepare the server for service. See [“How to Prepare for Service” on page 21.](#)
- 2 Remove the air duct. See [“How to Remove the Air Duct” on page 53.](#)
- 3 Disconnect the I/O cable from the I/O board.
- 4 Disconnect the two I/O cable connections from the motherboard.
- 5 Carefully pull the I/O cable through the cutout in the chassis divider and lift it from the chassis.

**Next Steps** [“How to Install the Front I/O Cable” on page 63](#)

### ▼ How to Install the Front I/O Cable

**Before You Begin** See:

- [“Sun Fire X2270 M2 Server Internal Cabling” on page 61](#)
- [“How to Remove the Front I/O Cable” on page 63](#)

- 1 Connect the two I/O cable connections to the motherboard.
- 2 Carefully route the I/O cable through the cutout in the chassis divider and over the top of the HD partition.

- 3 Reconnect the I/O cable to the I/O board.
- 4 Check the routing of all cables for obstructions.
- 5 Prepare the server for operation.

**See Also** [“How to Remove the Front I/O Cable” on page 63](#)

## Replacing the Front I/O Board (FRU)

---

**Note** – The front I/O board is a field-replaceable unit. It must be replaced by a certified Oracle Service Technician.

---

This section contains the following topics:

- [“How to Remove the I/O Board” on page 64](#)
- [“How to Install the I/O Board” on page 66](#)

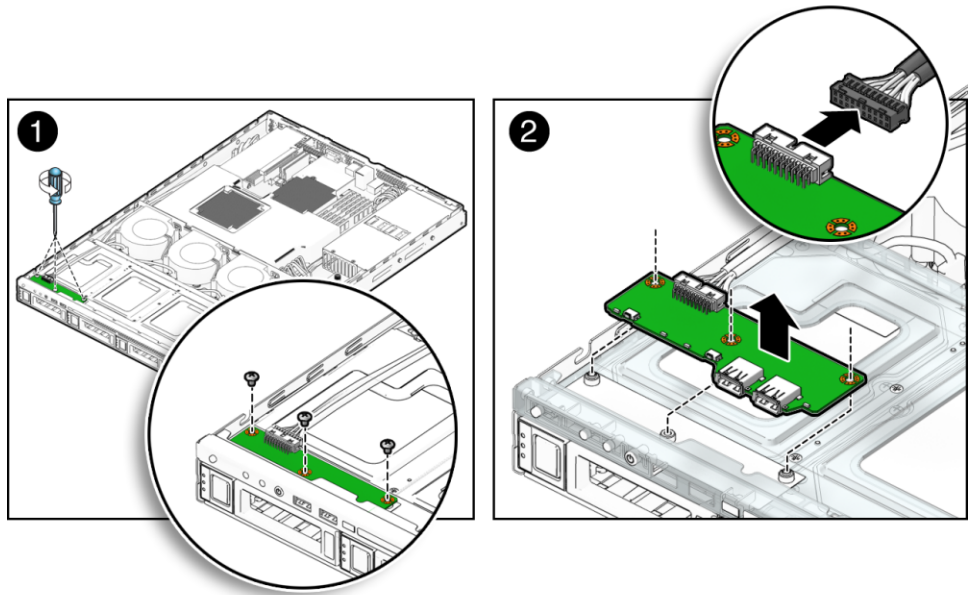
### ▼ **How to Remove the I/O Board**

**Before You Begin** See:

[“Locations of Internal Server Components” on page 30](#)

- 1 Prepare the server for service. See [“How to Prepare for Service” on page 21](#).
- 2 Remove the air duct. See [“How to Remove the Air Duct” on page 53](#).

- 3 Remove the three screws securing the I/O board to the hard drive (HD) cage.



- 4 To remove the I/O board, lift the board high enough to clear the standoffs and then slide the board toward the rear of the server until the connectors are clear.
- 5 Remove the cable connected to the I/O board.

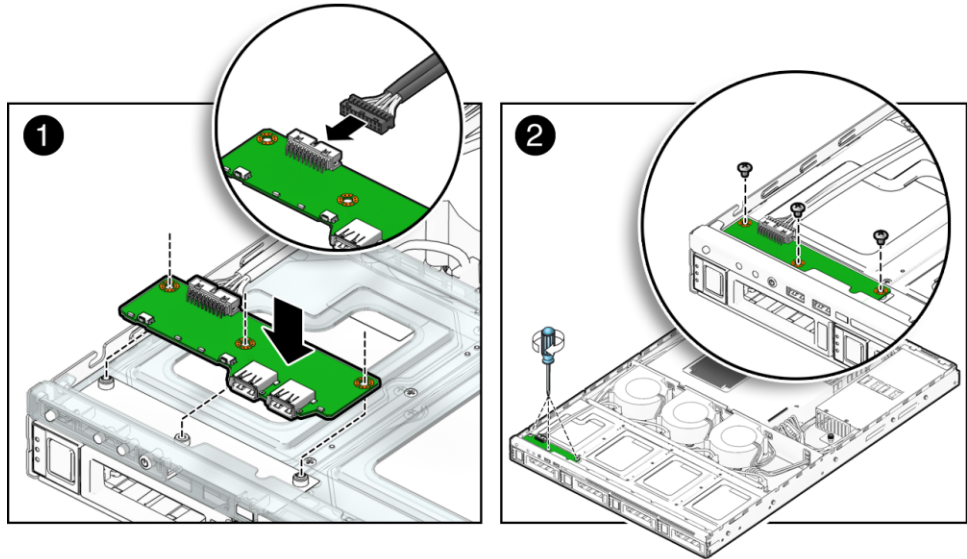
**Next Steps** [“How to Install the I/O Board” on page 66](#)

## ▼ How to Install the I/O Board

**Before You Begin** See:

[“Locations of Internal Server Components” on page 30](#)

- 1 Position the I/O board on top of the HD cage with the connectors facing upward.



- 2 Connect the I/O cable to the connector I/O board.
- 3 Lower the board onto the server and slide the two connectors on the front of the board under the front edge of the server.
- 4 Align the screw holes in the board with the threaded standoffs.
- 5 To secure the board to the server, fully tighten the three screws.
- 6 Install the air duct. See [“How to Install the Air Duct” on page 53](#).
- 7 Prepare the server for operation. See [“How to Prepare for Operation” on page 26](#).

**See Also** [“How to Remove the I/O Board” on page 64](#)

# Removing, Installing, and Adding a CPU and Heatsink (FRU)

**Note** – The CPU and heatsink assembly is a field-replaceable unit. It must be replaced by a certified Oracle Service Technician.

The following procedure describes how to replace a CPU. The Sun Fire X2270 M2 Server supports both single-CPU and dual-CPU configurations. The procedures in this section include removal and installation procedures, as well as a procedure for adding a second CPU to a single-CPU configuration.

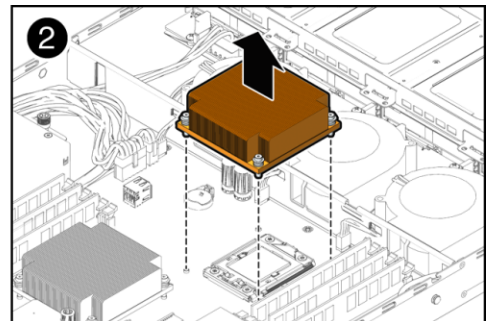
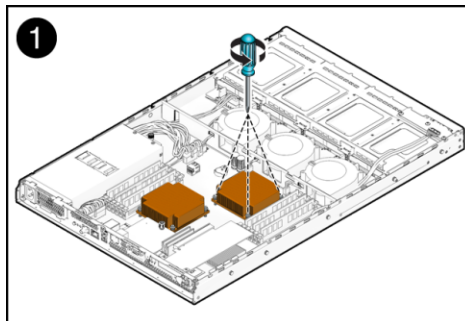
- [“How to Remove a CPU and Heatsink” on page 67](#)
- [“How to Install a CPU and Heatsink” on page 68](#)
- [“How to Add a New CPU and Heatsink Assembly” on page 70](#)

## ▼ How to Remove a CPU and Heatsink

**Before You Begin** See:

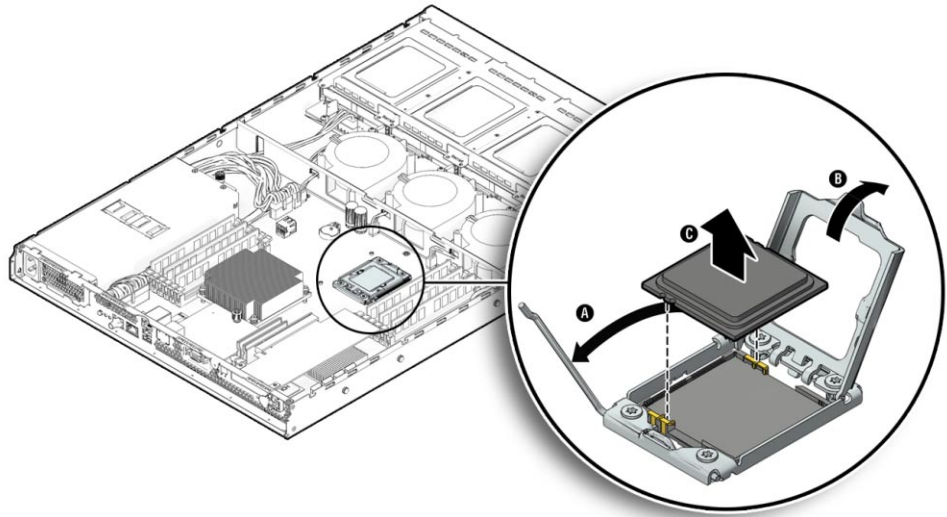
[“Locations of Internal Server Components” on page 30](#)

- 1 Prepare the server for service. See [“How to Prepare for Service” on page 21](#).
- 2 Remove the air duct. See [“How to Remove the Air Duct” on page 53](#).
- 3 Remove the four screws that secure the heatsink to the motherboard.



- 4 Slightly wiggle the heatsink right and left to break the seal created by the thermal compound.
- 5 Lift the heatsink away from the CPU and out of the server.

- 6 Place the heatsink upside down on a flat surface to prevent the thermal compound from contaminating other components or the work space.
- 7 To open the socket release lever, push the lever down and move it slightly away from the CPU. This action releases the lever from the retaining clip.
- 8 Lift the lever to its fully-opened position.



- 9 Lift the CPU cover to its fully-opened position.
- 10 Remove the CPU, leaving the release lever in the open position.

---

**Note** – Ensure that no thermal compound that might be left from the heatsink comes into contact with the CPU socket or underside of the CPU chip.

---

**Next Steps** [“How to Install a CPU and Heatsink” on page 68](#)

## ▼ How to Install a CPU and Heatsink

**Before You Begin** See:

- [“Locations of Internal Server Components” on page 30](#)
- [“How to Remove a CPU and Heatsink” on page 67](#)

- 1 Ensure that the socket release lever and the CPU cover are in their fully-open position.



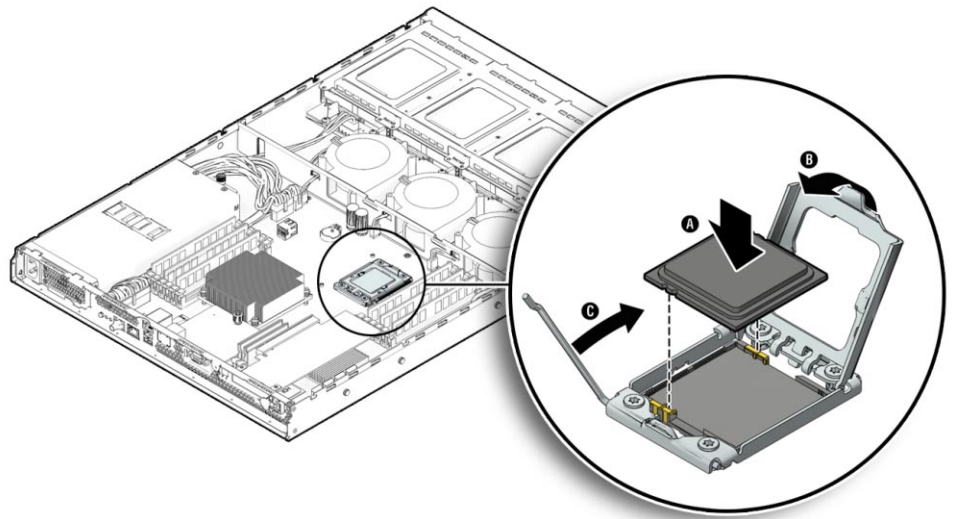
## 2 Unpack the new CPU.



**Caution** – ESD component damage. The CPU is highly sensitive to static electricity. Observe ESD precautions *before* handling the CPU. See “[Antistatic Procedures and Precautions](#)” on page 18.

## 3 Align the small triangle on the upper-left corner of the CPU with the alignment triangle on the socket.

In addition, ensure that the alignment post on the socket engages the semicircular cutout on the CPU.



## 4 Set the CPU in the socket.



**Caution** – Component and motherboard damage. Do *not* force the CPU into the socket. The CPU does *not* need to be pushed downward. When the CPU is correctly aligned, you should be able to easily place the CPU in the socket and it should have minimal movement within the socket. Forcing a misaligned CPU into the socket can permanently damage the component and the motherboard.

## 5 When the CPU is seated in the socket, close the CPU cover.

## 6 To secure the CPU in the socket, lower the socket release lever down until it snaps into place under the retaining clip.

## 7 If you are installing a *new* heatsink, remove the protective plastic from the base of the heatsink to expose the pre-applied thermal compound and go to [Step 10](#).

- 8 If you are *not* installing a new heatsink, use the alcohol pads to remove any residual thermal compound from the bottom of the heatsink.

- 9 Apply thermal compound to the top of the CPU.

For best application, use the *entire* contents of the pre-filled syringe and apply the compound in a star (asterisk) pattern.

- 10 Carefully position the heatsink over the CPU, aligning it with the mounting posts.

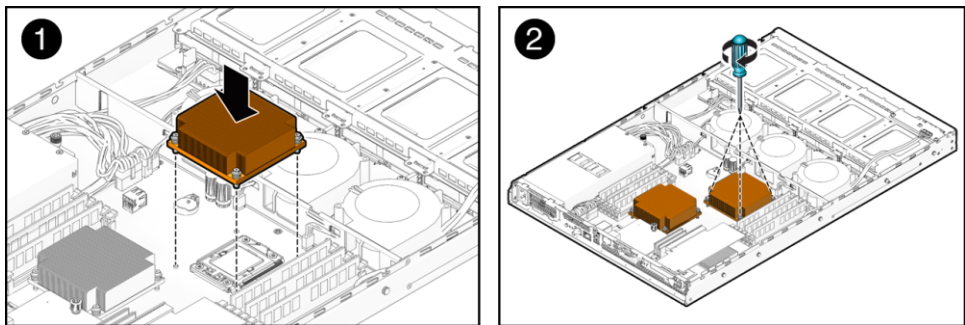
After the heatsink contacts the CPU, minimize the movement .



**Caution** – If the heatsink is moved too much during its installation, the layer of thermal compound might become uneven, leading to component damage.

- 11 To secure the heatsink to the motherboard, alternately tighten the four screws.

Alternately turn each screw one full turn until all the screws are tightened fully.



- 12 Install the air duct. See [“How to Install the Air Duct”](#) on page 53.

- 13 Prepare the server for operation. See [“How to Prepare for Operation”](#) on page 26.

## ▼ How to Add a New CPU and Heatsink Assembly

Use this procedure if you are *adding* a CPU to your server.

**Before You Begin** See:

[“Locations of Internal Server Components”](#) on page 30

- 1 Prepare the server for service. See [“How to Prepare for Service”](#) on page 21.

- 2 Remove the air duct. See [“How to Remove the Air Duct”](#) on page 53.

- 3 To unlock the CPU cover, gently push downward on the CPU retaining lever and move it slightly away from the CPU.

This action releases the lever from the retaining clip.

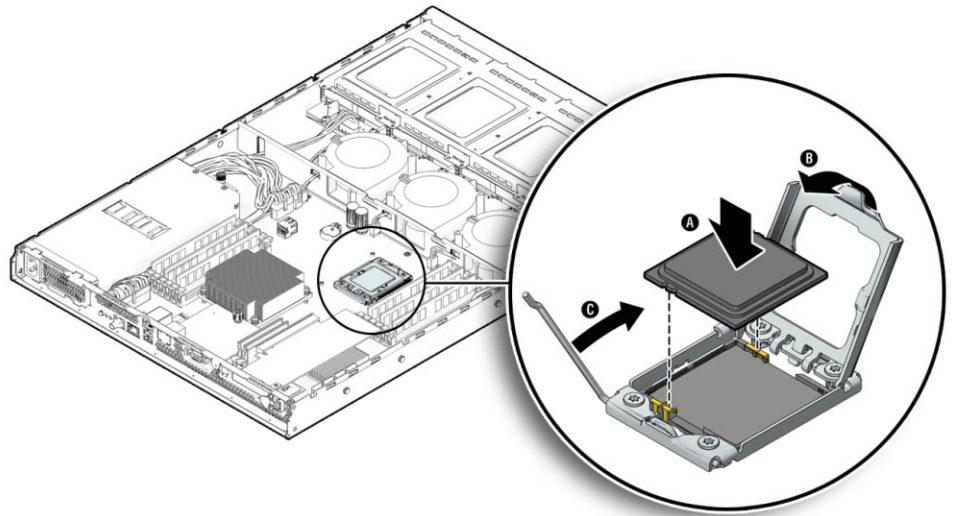
- 4 Lift the lever to its fully open and upright position.
- 5 Lift the CPU cover to its fully open position.
- 6 Remove the new CPU from its packaging.



**Caution** – ESD component damage. The CPU is highly sensitive to static electricity. Observe ESD precautions *before* handling the CPU. See “[Antistatic Procedures and Precautions](#)” on page 18.

- 7 Align the small triangle on the upper-left corner of the CPU with the alignment triangle on the motherboard.

In addition, the alignment post on the socket must engage the semicircular cutout on the CPU.



- 8 Set the CPU in the socket.



**Caution** – Component and motherboard damage. Do *not* force the CPU into the socket. The CPU does *not* require any force and does *not* need to be pushed downward. When the CPU is correctly aligned, you should be able to easily place the CPU in the socket and it should have minimal movement within the socket. Forcing a misaligned CPU into the socket can permanently damage the component and the motherboard.

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- 9 **When the CPU is seated in the socket, close the CPU cover.**
  - 10 **To secure the CPU in the socket, rotate the socket retaining lever down until it snaps into place under the retaining clip.**
  - 11 **Remove the protective plastic from the base of the heatsink to expose the pre-applied thermal compound.**

The plastic cover protects the compound on the bottom of the heatsink. Do not contaminate components or the work space with the thermal compound.
  - 12 **Carefully position the heatsink over the CPU, aligning it with the threaded standoffs.**

After the heatsink contacts the CPU, take care to minimize the movement .
- 

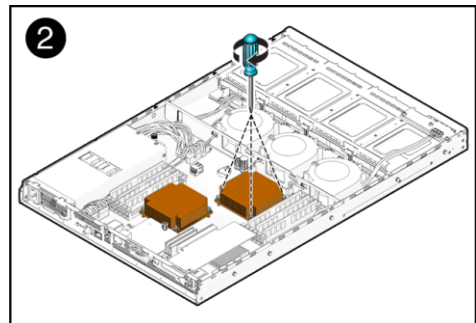
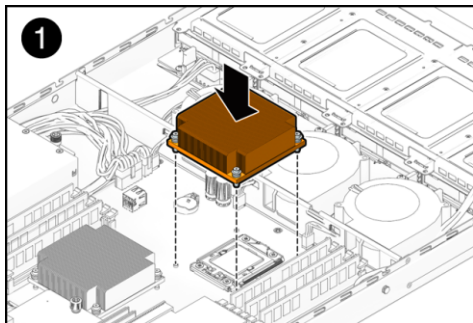


**Caution** – If the heatsink is moved too much during its installation, the layer of thermal compound might become uneven, leading to component damage.

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- 13 **Lower the heatsink onto the CPU.**
- 14 **To secure the heatsink, alternately tighten the four screws.**

Alternately turn each screw one full turn until all the screws are tightened fully.



- 15 **Install the air duct. See [“How to Install the Air Duct” on page 53.](#)**
- 16 **Prepare the server for operation.**

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## Replacing the Motherboard (FRU)

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**Note** – The hard drive backplane assembly is a field-replaceable unit. It must be replaced by a certified Oracle Service Technician.

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- [“How to Remove the Motherboard” on page 73](#)
- [“How to Install the Motherboard” on page 74](#)

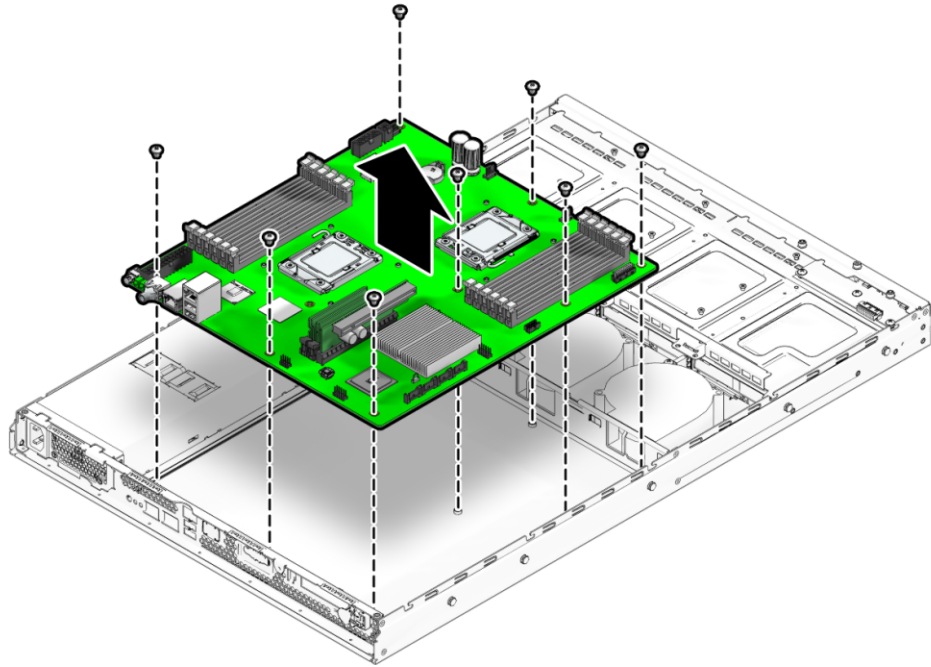
### ▼ How to Remove the Motherboard

**Before You Begin** See:

[“Locations of Internal Server Components” on page 30](#)

- 1 Backup motherboard (MB) FRUID information, see [“How to Backup Motherboard FRUID Information” on page 78](#).
- 2 Prepare for service. See [“How to Prepare for Service” on page 21](#).
- 3 Remove the air duct. See [“How to Remove the Air Duct” on page 53](#).
- 4 Remove the SP module. See [“How to Remove the SP Module” on page 59](#).
- 5 Remove any PCIe cards. See [“How to Remove a PCIe Card” on page 40](#).
- 6 Remove the PCIe riser assembly. See [“How to Remove the PCIe Riser” on page 44](#).
- 7 Remove the DIMMs. See [“How to Remove a DIMM” on page 33](#).
- 8 Disconnect all cables attached to the motherboard and keep them clear of the motherboard. See [“Sun Fire X2270 M2 Server Internal Cabling” on page 61](#).  
If necessary label the cables.
- 9 Remove the CPU and heatsink assemblies. See [“How to Remove a CPU and Heatsink” on page 67](#).

- 10 Remove and retain the eight screws that secure the motherboard to the chassis.



- 11 Lift the motherboard out of the chassis.

**Next Steps** [“How to Install the Motherboard” on page 74](#)

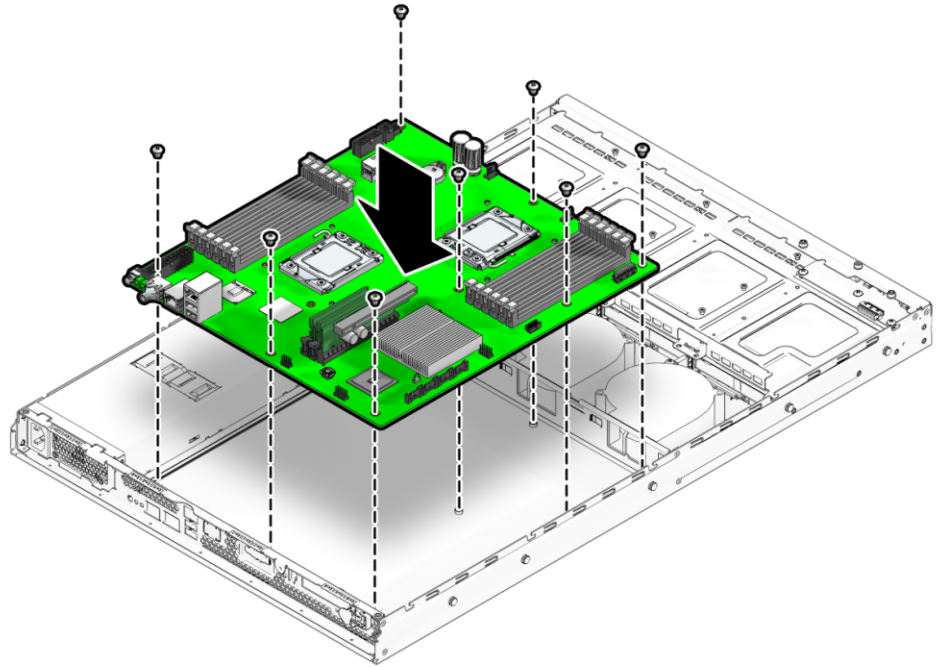
## ▼ How to Install the Motherboard

**Before You Begin** See:

[“How to Remove the Motherboard” on page 73.](#)

- 1 Position the new motherboard so that the ports on the motherboard face the rear of the server.
- 2 Align the motherboard in the chassis so that the screw holes align with the threaded standoffs on the chassis.

- 3 To secure the motherboard, fully tighten the eight screws.



- 4 Install the CPU and heatsink. See [“How to Install a CPU and Heatsink” on page 68.](#)
- 5 Connect the cables to the motherboard. See [“Sun Fire X2270 M2 Server Internal Cabling” on page 61.](#)
- 6 Install the DIMMs. See [“How to Install a DIMM” on page 35.](#)
- 7 Install the PCIe riser. See [“How to Install the PCIe Riser” on page 42.](#)
- 8 Install the PCIe card. See [“How to Install a PCIe Card” on page 41.](#)
- 9 Install the SP module. See [“How to Install the SP Module” on page 60.](#)
- 10 Install the air duct. See [“How to Install the Air Duct” on page 53.](#)
- 11 Prepare the server for operation. See [“How to Prepare for Operation” on page 26.](#)
- 12 Enter the standby-power mode. See [“Power Modes” on page 27.](#)

- 13 To restore FRUID information, enter Service mode and type the following command:**

**copypsnc BACKUP1 PRIMARY**

The MAC address stored in BACKUP1 is incorrect, because it is the address for the old MB.

- 14 To obtain the MAC address of the new motherboard, log in to the ILOM CLI and enter the following command:**

**show /SYS/MB/NET0**

The MAC address appears in the list.

- 15 Make note of the MAC address.**

- 16 In Service mode, type the following command:**

**setpsnc -m *new-mac\_address***

where, *new-mac\_address* is the MAC address of the new motherboard.

- 17 Backup the MB FRUID information. See [“How to Backup Motherboard FRUID Information” on page 78.](#)**

- 18 Prepare the server for operation. See [“How to Prepare for Operation” on page 26.](#)**



# Sun Fire X2270 M2 Server Service Procedures and Information

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This section contains the following information about the BIOS Setup utility and management procedures:

- “Using the Tools and Drivers CD” on page 77
- “How to Backup Motherboard FRUID Information” on page 78
- “LED Locations and Meanings” on page 78
- “BIOS Booting and Setup Considerations” on page 82
- “Service Procedures” on page 88
- “Ordering Components” on page 93

## Using the Tools and Drivers CD

The Tools and Drivers CD contains several software applications and utilities for use with your Sun Fire X2270 M2 Server. The Tools and Drivers CD is available online as an ISO image, which you can download and mount as a virtual CD or use to burn a physical CD. Use the following table to locate the documents that contain a description and explanation of the applications and utilities that are on the Sun Fire X2270 M2 Server Tools and Drivers CD.

Application	Document or Section in This Document
Drivers and installation scripts for supported operating systems	<ul style="list-style-type: none"><li>▪ <i>Sun Fire X2270 M2 Server Installation Guide for Linux Operating Systems</i></li><li>▪ <i>Sun Fire X2270 M2 Server Installation Guide for Oracle Solaris Operating System</i></li><li>▪ <i>Sun Fire X2270 M2 Server Installation Guide for Oracle VM</i></li><li>▪ <i>Sun Fire X2270 M2 Server Installation Guide for Windows Operating System</i></li></ul>
BIOS and SP firmware	<i>Integrated Lights Out Manager Supplement for Sun Fire X2270 M2 Server</i>
Diagnostics software	<i>Oracle x86 Server Diagnostics Guide</i>
Windows RIS/WDS files	<i>Sun Fire X2270 M2 Server Installation Guide for Windows Operating System</i>

## ▼ How to Use the Tools and Drivers CD

- 1 Download the Tools and Drivers CD ISO image from the server download page.
- 2 Use the ISO image to burn a CD or mount the ISO image as a virtual CD.
- 3 Boot the server from the CD or browse the contents of the CD.

## ▼ How to Backup Motherboard FRUID Information

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**Note** – This information is for Oracle Service personnel only.

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The Sun Fire X2270 M2 Server supports TLI and stores the TLI records in the motherboard (MB) FRUID container, called PRIMARY and in a file on the service processor (SP) filesystem, called BACKUP1. After adding or replacing a component in your server, you can initiate a backup the latest TLI record information in the MB FRUID PRIMARY container to BACKUP1 on the SP filesystem using this procedure.

- 1 **Enter Service mode.**
- 2 **To backup the PRIMARY container to the SP filesystem, enter the following command:**  
`copypsnc PRIMARY BACKUP1`

**Next Steps**    [“How to Remove the Motherboard” on page 73](#)

## LED Locations and Meanings

This section contains the following topics:

- [“Front Panel System Status LEDs” on page 78](#)
- [“Hard Drive LEDs” on page 79](#)
- [“Rear Panel System Status LEDs” on page 80](#)

### Front Panel System Status LEDs

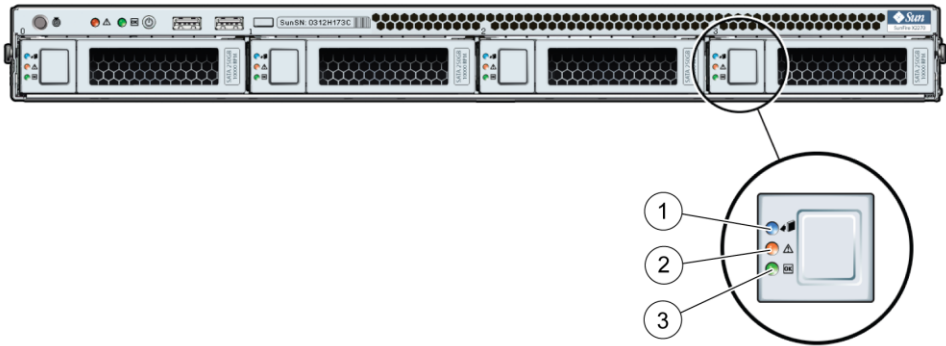
The Sun Fire X2270 M2 Server has three system status LEDs on both the front and rear panels of the server. The LEDs are the Power LED, the Service Action Required LED, and the Locate LED.



LED Name	Color	Activity
1 Server Locate LED	White	<p>Use to identify a server in a rack. Activate locally by pressing the Locate button or activate remotely using the ILOM.</p> <ul style="list-style-type: none"> <li>■ Off: Normal</li> <li>■ On: Blinking</li> </ul>
2 Server Service Action Required LED	Amber	<p>The SP monitors the health of the system and activates the Service Action Required LED.</p> <ul style="list-style-type: none"> <li>■ Off: Normal operation</li> <li>■ Slow blink: A new (unacknowledged) event that requires a service action has been detected.</li> <li>■ Steady on: An event has been acknowledged, but the problem still requires attention.</li> </ul> <p>The following conditions cause the SP to activate the Service Action Required LED:</p> <ul style="list-style-type: none"> <li>■ Voltage outside thresholds.</li> <li>■ Temperature above thresholds.</li> <li>■ Fan speed below thresholds (or not present).</li> <li>■ 24 correctable errors have occurred in a 24 hour period.</li> <li>■ One correctable error has occurred.</li> </ul>
3 Power OK LED	Green	<p>Use to discern the power state of the server.</p> <ul style="list-style-type: none"> <li>■ Steady On: Full-power mode on and OK.</li> <li>■ Blinking: Standby power is on, but main power is off</li> <li>■ Quick blink: in POST, diagnostics running</li> <li>■ Off: No power. AC cords not attached.</li> </ul> <p>For more on power modes, see <a href="#">“Power Modes” on page 27</a>.</p>
4 Power Button		

## Hard Drive LEDs

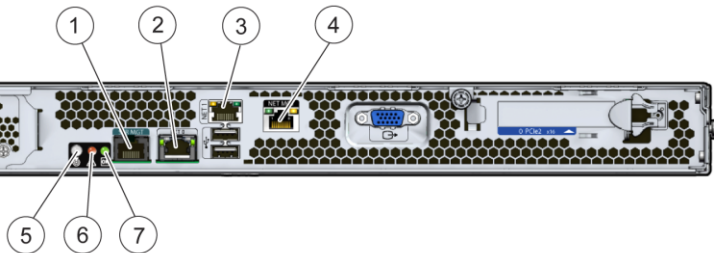
For each hard disk (HD) there are three LEDs.



Name	Color	Activity	Comment
1 Hot-swap LED	Blue	<ul style="list-style-type: none"> <li>■ Off: Normal operation</li> <li>■ Steady on: The system indicates that the disk is ready to be removed.</li> </ul>	Not supported
2 Fault LED	Amber	<ul style="list-style-type: none"> <li>■ Off: Normal operation</li> <li>■ Steady on: The system has detected a fault with the HD.</li> </ul>	Not supported
3 Activity LED	Green	<ul style="list-style-type: none"> <li>■ Blink: Disk activity, standby</li> <li>■ Off: Power is off or no disk activity</li> </ul>	

## Rear Panel System Status LEDs

The rear panel LEDs:



	Name	Color	Activity
1	NET MGT 10/100 Ethernet LED	Green and Amber	See <a href="#">Table 1</a>
2,3,4	GigabitEthernet LED	Green and Amber	See <a href="#">Table 2</a>
5	Server Locate LED	White	Use to identify a server in a rack. Activate locally by pressing the Locate button or activate remotely using the ILOM. <ul style="list-style-type: none"> <li>■ Off: Normal</li> <li>■ On: Blinking</li> </ul>
6	Server Service Action Required LED	Amber	The SP monitors the health of the system and activates the Service Action Required LED. <ul style="list-style-type: none"> <li>■ Off: Normal operation.</li> <li>■ Slow blink: A new (unacknowledged) event that requires a service action has been detected.</li> <li>■ Steady on: An event has been acknowledged, but the problem still requires attention.</li> </ul> <p>The following conditions cause the SP to activate the Service Action Required LED:</p> <ul style="list-style-type: none"> <li>■ Voltage outside thresholds</li> <li>■ Temperature above thresholds</li> <li>■ Fan speed below thresholds (or not present)</li> <li>■ 24 correctable errors have occurred in a 24 hour period.</li> <li>■ One correctable error has occurred.</li> </ul>
7	Power OK LED	Green	Use to discern the power state of the server. <ul style="list-style-type: none"> <li>■ Steady On: Full-power mode on and OK.</li> <li>■ Blinking: Standby power is on, but main power is off</li> <li>■ Quick blink: in POST, diagnostics running</li> <li>■ Off: No power. AC cords not attached.</li> </ul>

TABLE 1 10/100 Ethernet LED Activity Table

LED Name	Color	Activity
10/100 Ethernet (right side)	Green	On: Link established at 100 Megabits.
	Amber	On: Link established at 10 Megabits. Amber LED indicates that the link established is <i>not</i> at full capacity for that port.
10/100 Ethernet (left side)	Green	On: Link Activity.

TABLE 2 10/100/1000 Base-T Ethernet Activity Table

LED Name	Color	Activity
10/1000/1000 Base-T Ethernet LED (left side)	Green	On: Link established at 1 Gigabit.
	Amber	On: Link established at 100 Megabits. Amber LED indicates that the link established is <i>not</i> at full capacity for that port.
	Amber	Off: Link established at 10 Megabits. Amber LED indicates that the link established is <i>not</i> at full capacity for that port.
10/1000/1000 Base-T Ethernet LED (right side)	Green	On: Link activity.

## BIOS Booting and Setup Considerations

See the following sections for information when booting the BIOS and other setup considerations:

- [“About the BIOS” on page 82](#)
- [“BIOS-Supported POST Hot Keys” on page 83](#)
- [“Default BIOS Power-On Self Test \(POST\) Events” on page 83](#)
- [“BIOS POST F1 and F2 Errors” on page 84](#)
- [“BIOS POST Memory Testing Sequence” on page 87](#)
- [“About Hardware Prefetchers” on page 88](#)

### About the BIOS

The Basic Input/Output System (BIOS) has a setup utility stored in the BIOS memory. The setup utility reports system information and can be used to configure the BIOS settings. The configurable 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 return to their default optimal values.

There are seven menus in the BIOS Setup utility, which appear in this order: Main, Advanced, PCI, Boot, Security, Chipset, and Exit. To navigate the menus or options listed on the menu, use the arrow keys. The options or fields that you can configure on a menu appear in color. For instructions on how to navigate and change settings in the BIOS Setup utility, refer to the online instructions provided on the menu.

## BIOS-Supported POST Hot Keys

Key or Key Sequence	Function	Availability
F2	Enter BIOS Setup utility	During POST
ESC	Toggle the logo screen to POST screen	While Log screen appears
ESC	Bypass memory test	During memory count
F1	Continue from nonfatal BIOS error	During POST when prompt message is shown
F8	Show the boot menu	During POST
F12	Boot from Network	PXE boot
F2	Enter Setup utility when fatal error	During POST when prompt message is shown
Ctrl + Home	BIOS recovery	Press when power on

## 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. identifies the events that can occur during BIOS POST, as well as specifies whether these event can prevent the host from powering-on.

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 error correction code (ECC) 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

Event	Cause	Boot continues on host?
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 System firmware progress	Does not apply
Primary processor initialization	Primary CPU initialization System firmware progress	Does not apply
Initiated by warm reset	Boot process started by warm reset	Does not apply
Embedded controller management	Management controller initialization	Does not apply
Secondary processor(s) initialization	Secondary CPU initialization asserted 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 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 Setup utility System firmware progress	Does not apply
User initiated boot to OS	System boot initiated System firmware progress	Does not apply
No bootable media	Nothing to boot from	No
PXE server not found	Boot error - PXE server not found F12 key was pressed but BIOS fails to boot from PXE server	No
ACPI Power state	Soft-off power applied	Does not apply

## 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 a POST diagnostic 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

The following table lists some of the F1 and F2 error messages that could appear during the POST diagnostics and instructions for how to possibly resolve the error reported.

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	<ul style="list-style-type: none"> <li>■ Press F1 to continue.</li> <li>■ Check the SP event log in ILOM for more details.</li> </ul>
Uncorrectable Error Detected on Last Boot:IOH(0) QPI [x] Error (Please Check SP Log for more Details)  <b>Note</b> – Where QPI [x] equals 0 for QPI Link 0 or 1 for QPI Link 1.	IOH error	<ul style="list-style-type: none"> <li>■ Press F1 to continue.</li> <li>■ Check the fault management function and the SP event log in ILOM for more details.</li> </ul>
Uncorrectable Error Detected on Last Boot:IOH(0) PCIe [x] Error (Please Check SP Log for more Details)  <b>Note</b> – Where PCIe [x] port number can range from 1 to 10 depending on the PCI root port on IOH.	IOH error	<ul style="list-style-type: none"> <li>■ Press F1 to continue.</li> <li>■ Check the fault management function and the SP event log in ILOM for more details.</li> </ul>
Uncorrectable Error Detected on Last Boot:IOH(0) ESI Error (Please Check SP Log for more Details)	IOH error	<ul style="list-style-type: none"> <li>■ Press F1 to continue.</li> <li>■ Check the fault management function and the SP event log in ILOM for more details.</li> </ul>
Uncorrectable Error Detected on Last Boot:IOH(0) Thermal Error (Please Check SP Log for more Details)	IOH error	<ul style="list-style-type: none"> <li>■ Press F1 to continue.</li> <li>■ Check the fault management function and the SP event log in ILOM for more details.</li> </ul>
Uncorrectable Error Detected on Last Boot:IOH(0) DMA Error (Please Check SP Log for more Details)	IOH error	<ul style="list-style-type: none"> <li>■ Press F1 to continue.</li> <li>■ Check the SP event log for more details.</li> </ul>
Uncorrectable Error Detected on Last Boot:IOH(0) Miscellaneous Error (Please Check SP Log for more Details)	IOH error	<ul style="list-style-type: none"> <li>■ Press F1 to continue.</li> <li>■ Check the fault management function and the SP event log in ILOM for more details.</li> </ul>
Uncorrectable Error Detected on Last Boot:IOH(0) VT-d Error (Please Check SP Log for more Details)	IOH error	<ul style="list-style-type: none"> <li>■ Press F1 to continue.</li> <li>■ Check the SP event log in ILOM for more details.</li> </ul>
BMC Not Responding	ILOM error	<ul style="list-style-type: none"> <li>■ Press F1 to continue.</li> </ul> <p><b>Note</b> – This error message might appear if an internal error occurs during the SP/BIOS communication. This error might require you to restart the SP.</p>

BIOS POST Error Message	Error Type	Resolution
<ul style="list-style-type: none"> <li>■ Primary Master Hard Disk Error</li> <li>■ Primary Slave Hard Disk Error</li> <li>■ Secondary Master Hard Disk Error</li> <li>■ Secondary Slave Hard Disk Error</li> </ul>	IDE/ATAPI error	<ul style="list-style-type: none"> <li>■ Press F1 to continue.</li> <li>■ Check the SP event log in ILOM for more details.</li> </ul> <p><b>Note</b> – These error messages appear when the BIOS is attempting to configure IDE/ATAPI devices in POST.</p>
Timer Error	8254 timer error	<ul style="list-style-type: none"> <li>■ Press F1 to continue.</li> <li>■ Check the SP event log in ILOM for more details.</li> </ul> <p><b>Note</b> – 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.</p>
RAM R/W test failed	Memory test failure	<ul style="list-style-type: none"> <li>■ Press F1 to continue.</li> <li>■ Check the SP event log in ILOM for more details.</li> </ul> <p><b>Note</b> – This type of error typically indicates that the RAM read/write (R/W) test failed.</p>
KBC BAT Test failed	Keyboard controller basic assurance test error	<ul style="list-style-type: none"> <li>■ Press F1 to continue.</li> <li>■ Check the SP event log in ILOM for more details.</li> </ul> <p><b>Note</b> – Keyboard controller BAT test failed. This error might indicate a problem with keyboard controller initialization.</p>
Display memory test failed	Video display error	<ul style="list-style-type: none"> <li>■ Press F1 to continue.</li> <li>■ Check the SP event log in ILOM for more details.</li> </ul>
CMOS Battery Low	CMOS battery error	<ul style="list-style-type: none"> <li>■ Press F2 to enter BIOS Setup utility to load system defaults.</li> <li>■ Check the SP event log in ILOM for more details.</li> <li>■ If necessary, replace CMOS battery.</li> </ul>
<ul style="list-style-type: none"> <li>■ CMOS Checksum Bad</li> <li>■ CMOS Date/Time Not Set</li> </ul>	CMOS error	<ul style="list-style-type: none"> <li>■ Press F2 to enter BIOS Setup utility to load system defaults.</li> <li>■ Check the SP event log in ILOM for more details.</li> </ul>

BIOS POST Error Message	Error Type	Resolution
Password check failed	Password check error	<ul style="list-style-type: none"> <li>■ Press F1 to continue.</li> <li>■ Check the SP event log in ILOM for more details.</li> </ul> <p><b>Note</b> – This type of error indicates a password entered does not match the password specified in the BIOS Setup utility. This condition might occur for both Supervisor and User password verification.</p>
Keyboard/Interface Error	Keyboard controller error	<ul style="list-style-type: none"> <li>■ Press F1 to continue.</li> <li>■ Check the SP event log in ILOM for more details.</li> </ul> <p><b>Note</b> – This type of error indicates a Keyboard Controller failure. This error might indicate a problem with the system hardware.</p>
S.M.A.R.T. error on the drive	S.M.A.R.T. device error	<ul style="list-style-type: none"> <li>■ Press F1 to continue.</li> <li>■ Check the SP event log in ILOM for more details.</li> </ul> <p><b>Note</b> – S.M.A.R.T. failure messages might indicate to replace the storage device.</p>

## BIOS POST Memory Testing Sequence

The BIOS POST memory testing sequence is performed as follows:

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

---

**Note** – The simple memory test is performed only if Quick Boot is not enabled from the Boot Settings Configuration screen. Enabling Quick Boot causes the BIOS to skip the memory test.

---

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

## About Hardware Prefetchers

Hardware prefetchers work well in workloads that traverse array and other regular data structures. The hardware prefetcher option is disabled by default and should be disabled when running applications that perform aggressive software prefetching or for workloads with limited cache. For example, memory-intensive applications with high bus utilization could see a performance degradation if hardware prefetching is enabled.

## Service Procedures

This section contains the following service procedure topics:

- [“How to Clear the CMOS” on page 88](#)
- [“Updating BIOS and SP Firmware” on page 89](#)
- [“Recovering the SP and BIOS Firmware” on page 91](#)

### ▼ How to Clear the CMOS

Use this procedure to clear the server’s CMOS settings in the case of a system hang.

For example, if the server hangs because of incorrect settings and will not boot, use this procedure to invalidate the settings and reboot with the default settings.

- 1 **Prepare the server for service.** See [“How to Prepare for Service” on page 21](#).
- 2 **Remove the AC power cord from the rear of the server.**
- 3 **Remove the server cover.** See [“How to Remove the Server Cover” on page 25](#).
- 4 **Remove the battery for 30 seconds, then reinsert it.**  
Use the procedure for replacing the system battery. See [“Replacing the System Battery \(CRU\)” on page 31](#).
- 5 **Install the server cover.** See [“How to Install the Server Cover” on page 26](#).
- 6 **Prepare the server for operation.** See [“How to Prepare for Operation” on page 26](#).
- 7 **Reinsert the AC power cord.**

---

## Updating BIOS and SP Firmware

---

**Note** – If you want to use the Sun Installation Assistant to update the BIOS and SP firmware, refer to “System BIOS and ILOM Upgrade” in the *Sun Installation Assistant for Windows and Linux User’s Guide*.

---

You can update the BIOS and SP firmware from the Tools and Drivers CD using one of the following methods:

- “How to Update BIOS and ILOM SP Firmware Using the CLI” on page 89
- “How to Update the BIOS and SP Firmware Using the Web Interface” on page 90

### ▼ How to Update BIOS and ILOM SP Firmware Using the CLI

#### 1 Set up a TFTP server to host the SP image.

Instructions for setting up the TFTP server can be found in the system administration guides for the appropriate Solaris or Linux version:

- Solaris 10 manual at:  
<http://docs.sun.com/app/docs/prod/solaris.10#hic>
- Red Hat Enterprise Linux 5 documentation at:  
<http://www.redhat.com/docs/manuals/enterprise/#RHEL5>
- SUSE Linux Enterprise Server 9 manual at:  
<http://www.novell.com/documentation/suse.html>

#### 2 Copy the SP image from the `/firmware/webgui_cli/version/SP_file` file on the Tools and Drivers CD to your TFTP server `/tftpboot` directory.

where *version* is the version of the Tools and Drivers CD that you are using and *SP\_file* is the name of the SP image.

For example: `/firmware/webgui_cli/1.0.0/X2270M2-3.0.9.20.pkg`

#### 3 Ensure that the OS on the platform is shut down.

#### 4 Log in to the Sun Fire X2270 ILOM CLI with Administrator privileges.

#### 5 Type the following command to download the new ILOM SP firmware image:

-> `load -source tftp:URL`

For example:

```
-> load -source tftp://ipaddress/X2270M2-xxx_xxxx.pkg
```

- 6 Type **y** to load the specified file.
- 7 Type **y** to preserve your ILOM configuration settings. If not, the settings will be overwritten by the firmware default.
- 8 Type **n** to upgrade BIOS after ILOM is upgraded.  
The BIOS and ILOM SP firmware update begins.

---

**Note** – During the upgrade process, the login prompt appears. Do not attempt to log in until the update is finished.

---



---

**Caution** – Possible firmware corruption. The update is not finished until the SP reboot is complete. Do not press the Power button until the SP is booted and the server is in standby-power mode.

---

## ▼ How to Update the BIOS and SP Firmware Using the Web Interface

You can update BIOS and ILOM SP firmware using the ILOM web interface. Refer to the *Sun Integrated Lights Out Manager 3.0 User's Guide* for more information about setting up and using the ILOM software.

- 1 Start the ILOM SP web interface by typing the IP address of the SP into a browser.
- 2 Copy the file `/firmware/webgui_cli/version/SP_file` from the `webgui_cli` directory located on the Tools and Drivers CD to the remote system that is running the ILOM web interface.  
where *version* is the version of the Tools and Drivers CD you are using and *SP\_file* is the name of the SP image.

For example: `/firmware/webgui_cli/1.0.0/X2270M2-3.0.9.20.pkg`

- 3 Ensure that the OS on the platform is shut down.
- 4 Log in to the SP ILOM web interface with Administrator privileges.
- 5 Select Maintenance --> Firmware Upgrade tabs.  
The Firmware Upgrade page appears.

**6 Click Enter Upgrade Mode.**

A dialog box appears asking you to confirm to enter Upgrade mode.

**7 Click OK to enter Upgrade mode or Cancel to exit the process.**

ILOM stops its normal operation and prepares for a flash upgrade.

**8 Enter the path to the new ILOM flash image file in the Select Image File to Upload field or click Browse to locate and select the firmware update file.**

Use files with .pkg extensions.

**9 Click Upload to upload the file, or click Cancel to exit the process.**

The selected file is uploaded and verified as the correct image update for your SP.

This process takes about one minute with a fast network connection.

**10 When the Verify Firmware Image page appears, click OK.****11 Select Preserve Configuration to keep your ILOM settings. If not, the settings are overwritten by the firmware defaults.****12 Click Start Upgrade or click Cancel to exit the process.**

When you click Start Upgrade, a progress screen indicates that the firmware image is being updated. When the update progress reaches 100%, the firmware update is complete.

When the update is complete, the system *automatically* reboots.

**13 After the SP finishes rebooting, use your browser to reconnect to ILOM.**

## Recovering the SP and BIOS Firmware

If your server has corrupted SP or BIOS firmware, you can use one of the following methods to recover the firmware:

- [“How to Recover the SP and BIOS Firmware Using a CD/DVD Drive” on page 92](#)
- [“How to Recover the SP and BIOS Firmware Using a USB Flash Drive” on page 92](#)

---

**Note** – You should only use the following procedures for system recovery, as these procedures will not preserve BIOS settings and ILOM configurations.

---

## ▼ How to Recover the SP and BIOS Firmware Using a CD/DVD Drive

- 1 Insert the Tools and Drivers CD into the CD/DVD drive.
- 2 Reboot the server.
- 3 When the Tools and Drivers CD menu appears, select menu option 3, Exit to DOS.
- 4 From the DOS prompt, navigate to the directory on the Tools and Drivers CD that contains the recovery program.

For example:

```
-> cd firmware/BIOS
```

- 5 From the DOS prompt, type the following command to run the recovery program:  
-> run fLash.bat
- 6 When the Recovery menu is appears, select menu option 1.

For example:

1) Flash System BIOS firmware - Clear BIOS CMOS and load defaults.

---

**Note** – When you select option 1, the default ILOM and BIOS settings are loaded. Therefore, you might need to reset some of the ILOM and BIOS settings.

---

- 7 When the recovery program is completed, disconnect the AC power connection from the server for 30 seconds, then reconnect the AC power.

## ▼ How to Recover the SP and BIOS Firmware Using a USB Flash Drive

- 1 Create a bootable MS-DOS USB flash drive.  
You can create a bootable USB flash drive using a freeware application such as BootFlashDOS 1.0.
- 2 Using a system that contains both a CD/DVD drive and a USB port, insert the Tools and Drivers CD into the CD/DVD drive and the bootable USB flash drive into an available USB port.
- 3 Copy the contents of the /firmware/USBFlash/SPREcovery/\* directory from the Tools and Drivers CD to a bootable MS-DOS USB flash drive.



- 4** Insert the USB flash drive containing the contents of the Tools and Drivers CD into an available USB port on the Sun Fire X2270 M2 Server.
- 5** Power on (or reboot) the Sun Fire X2270 M2 Server.  
The BIOS screen appears.
- 6** In the BIOS screen, press F8 to specify a temporary boot device.  
The Select Boot Device menu appears.
- 7** In the Boot Device menu, select the USB flash drive as the first boot device, then press Enter.
- 8** Save the changes and exit the system BIOS.  
The system automatically boots to the USB flash drive.
- 9** Navigate to the directory on the USB flash drive that contains the contents of the Tools and Drivers CD.
- 10** In the terminal window, type the following command to run the recovery program:  
-> `run recovery.bat`
- 11** When the recovery program is completed, disconnect the AC power connection from the server for 30 seconds, then reconnect the AC power.  
Because the default ILOM and BIOS settings are automatically loaded when the SP and BIOS firmware is flashed, you might need to reset some of the ILOM and BIOS settings.

## Ordering Components

You can order additional components and replacement parts for the Sun Fire X2270 M2 Server.

Contact your local Oracle sales representative for more information. For the most up-to-date component information, refer to the components list on the following web site:

[http://sunsolve.sun.com/handbook\\_pub/validateUser.do?target=Systems/index](http://sunsolve.sun.com/handbook_pub/validateUser.do?target=Systems/index)



# Sun Fire X2270 M2 Server Specifications

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The section contains the following topics:

- “Physical Specifications” on page 95
- “Power Specifications” on page 95
- “Environmental Specifications” on page 96
- “Acoustic Noise Specifications” on page 96

## Physical Specifications

Specification	Standard	Metric
Height	1.7 inches	43 mm
Width	17.2 inches	436 mm
Depth	25.6 inches	650 mm
Weight	27.28 lbs (minimum configuration option)	12.4 kg
	29.04 lbs (maximum configuration option)	13.2 kg

## Power Specifications

Maximum continuous power is 600 watts.

Parameter	Minimum	Rated	Maximum
Voltage	90 Vrms	100–127/200–240 Vrms	264 Vrms
Frequency	47 Hz	50/60 Hz	63 Hz

Current Type	Values
Maximum input current	8.6 Amps max. at 100 VAC; 4.3 Amps max. @ 200 VAC, full load

Current Type	Values
Maximum inrush current	60 Amps

## Environmental Specifications

Specification	State	British	Metric
Temperature	Operating (sea level)	41° F to 100° F	5° C to 35° C
	Non-operating	-40° F to 158° F	-40° C to 70° C
Humidity	Operating	10% to 93% RH non-condensing, 80.6° F max wet bulb	10% to 93% RH non-condensing, 38° C max wet bulb
	Non-operating	93% RH, non-condensing, 100.4° F max wet bulb	93% RH, non-condensing, 43° C max wet bulb
Vibration	Operating	0.12 G x-y, 0.17 G z; 5-500 Hz sine	
	Non-operating	0.3 G x-y, 0.6 G z; 5-500 Hz sine	
Shock	Operating	3.5 G; 11 msec. half-sine	
Maximum operating temperature derating		-1.8° F for every 985 ft. in altitude	-1° C for every 300 m in altitude
Altitude	Operating	0 to 10,000 feet	0 to 3,048 m

## Acoustic Noise Specifications

	23° C Idle	23° C Operating
L <sub>w</sub> A <sub>d</sub>	7.0 B	7.5 B
L <sub>p</sub> Am	60 dba	70 dba

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