



# Sun Fire™ X4170, X4270, and X4275 Servers Installation Guide

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Sun Microsystems, Inc.  
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# Preface

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The *Sun Fire X4170, X4270, and X4275 Servers Installation Guide* contains hardware installation procedures and configuration procedures for the preinstalled Solaris and OpenSolaris Operating Systems. You perform these procedures to bring the server to a configurable and usable state.

This document is intended for system administrators, network administrators, and service technicians who have an understanding of server systems.

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## Product Updates

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

<http://www.sun.com/download/index.jsp>

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

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## Related Documentation

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

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

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

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

<b>Title</b>	<b>Content</b>	<b>Part Number</b>	<b>Format</b>
<i>Sun Fire X4170, X4270, and X4275 Servers Product Notes</i>	Late-breaking information about the server	820-5831	PDF HTML
<i>Sun Fire X4170, X4270, and X4275 Servers Getting Started Guide</i>	Basic installation information for setting up the server	820-5833	PDF Print
<i>Sun Fire X4170, X4270, and X4275 Servers Installation Guide</i>	Detailed installation information for setting up the server	820-5827	PDF HTML Print option
<i>Sun Fire X4170, X4270, and X4275 Servers Linux, VMware, Solaris and OpenSolaris Operating Systems Installation Guide</i>	Installation instructions for the Linux, VMware, Solaris, and OpenSolaris operating systems	820-5828	PDF HTML
<i>Sun Fire X4170, X4270, and X4275 Servers Windows Operating System Installation Guide</i>	Installation instructions for the Windows Server operating system	820-5829	PDF HTML
<i>Sun Installation Assistant for Linux and Windows User's Guide</i>	Instructions for using the Sun Installation Assistant to install the Windows and Linux operating systems	820-3357	PDF HTML
<i>Sun Fire X4170, X4270, and X4275 Servers Service Manual</i>	Information and procedures for maintaining and upgrading the server	820-5830	PDF HTML
<i>Sun x64 Servers Diagnostics Guide</i>	Information for diagnosing and troubleshooting the server	820-6750	PDF HTML
<i>x64 Servers Utilities Reference Manual</i>	Information for using applications and utilities common to x64 servers	820-1120	PDF HTML
Sun Integrated Lights Out Manager 3.0 Documentation Collection	These documents cover ILOM features and tasks that are common to servers and server modules that support ILOM 3.0	820-5523 820-6410 820-6411 820-6412 820-6413	PDF HTML
<i>Sun Integrated Lights Out Manager 2.0 User's Guide</i>	ILOM features and tasks that are common to servers and server modules that support ILOM 2.0	820-1188	PDF HTML

<b>Title</b>	<b>Content</b>	<b>Part Number</b>	<b>Format</b>
<i>Sun Integrated Lights Out Manager (ILOM) 3.0 Supplement for Sun Fire X4170, X4270, and X4275 Servers</i>	ILOM 3.0 information that is specific to the Sun Fire X4170, X4270, and X4275 Servers	820-7959	PDF HTML
<i>Sun Integrated Lights Out Manager (ILOM) 2.0 Supplement for Sun Fire X4170, X4270, and X4275 Servers</i>	ILOM 2.0 information that is specific to the Sun Fire X4170, X4270, and X4275 Servers	820-7629	PDF HTML
<i>Sun Fire X4170, X4270, and X4275 Servers Safety and Compliance Guide</i>	Hardware safety and compliance information for the server	820-5832	PDF
<i>Important Safety Information for Sun Hardware Systems</i>	Multilingual hardware safety and compliance information for all Sun hardware system	816-7190	Print

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

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## Documentation, Support, and Training

<b>Sun Function</b>	<b>URL</b>
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Support	<a href="http://www.sun.com/support/">http://www.sun.com/support/</a>
Training	<a href="http://www.sun.com/training/">http://www.sun.com/training/</a>

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# Using UNIX Commands

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

- Software documentation that you received with your system
- Solaris™ Operating System documentation, which is at:  
<http://docs.sun.com>
- OpenSolaris™ Operating System documentation, which is at:  
<http://opensolaris.org/os/documentation/>

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# Typographic Conventions

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

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

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

*Sun Fire X4170, X4270, and X4275 Servers Installation Guide*, part number 820-5827-13.



# Preparing to Install the Sun Fire X4170, X4270, and X4275 Servers

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This chapter describes the Sun Fire X4170, X4270, and X4275 Servers hardware and the information you need to know before you begin to install the servers into a rack. It includes the following topics:

- [“Tools and Equipment Needed” on page 1](#)
- [“Server Installation Task Checklist” on page 2](#)
- [“Opening the Box” on page 3](#)
- [“Server Description” on page 5](#)
- [“Server Supported Components” on page 10](#)
- [“Server Specifications” on page 13](#)

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## Tools and Equipment Needed

To install the system, you need the following tools:

- No. 2 Phillips screwdriver
- ESD mat and grounding strap
- Pencil, stylus, or other pointed device, for pushing front panel buttons

You also need a system console device, such as one of the following:

- Sun workstation
- ASCII terminal
- Terminal server
- Patch panel connected to a terminal server

# Server Installation Task Checklist

TABLE 1-1 summarizes an ordered list of tasks that you must perform to properly install the server.

TABLE 1-1 Installation Task Checklist

Step	Task Description	For Instructions, See:
1	Unpack the server and any optional components ordered for the server from the shipping containers	<ul style="list-style-type: none"><li>• “Opening the Box” on page 3</li></ul>
2	If applicable, install the optional server module components prior to installing the server module into the chassis	<ul style="list-style-type: none"><li>• Chapter 2 “Installing Server Options” on page 17</li></ul>
3	Install the server into a rack	<ul style="list-style-type: none"><li>• Chapter 3 “Installing the Server Into a Rack With Slide-Rails” on page 51</li></ul>
4	Connect cables to the server, configure the ILOM service processor, and apply main power to the server	<ul style="list-style-type: none"><li>• Chapter 4 “Setting Up the Server” on page 73</li></ul>
5	If ordered, configure the factory-installed Solaris or OpenSolaris Operating System image shipped on one of the storage drives	<ul style="list-style-type: none"><li>• Chapter 5 “Configuring the Preinstalled Solaris 10 Operating System” on page 87</li><li>• Chapter 6 “Configuring the Preinstalled OpenSolaris Operating System” on page 103</li></ul>
	If applicable, install one of the following operating systems: <ul style="list-style-type: none"><li>• Red Hat Enterprise Linux</li><li>• SUSE Linux Enterprise Server 10</li><li>• Solaris 10 Operating System</li><li>• OpenSolaris Operating System</li><li>• VMware</li><li>• Microsoft Windows Server 2003 or 2008 Operating System</li></ul>	<ul style="list-style-type: none"><li>• <i>Sun Fire X4170, X4270, and X4275 Servers Linux, VMware, Solaris, and OpenSolaris Operating Systems Installation Guide (820-5828)</i></li><li>• <i>Sun Fire X4170, X4270, and X4275 Servers Windows Operating System Installation Guide (820-5829)</i></li></ul>



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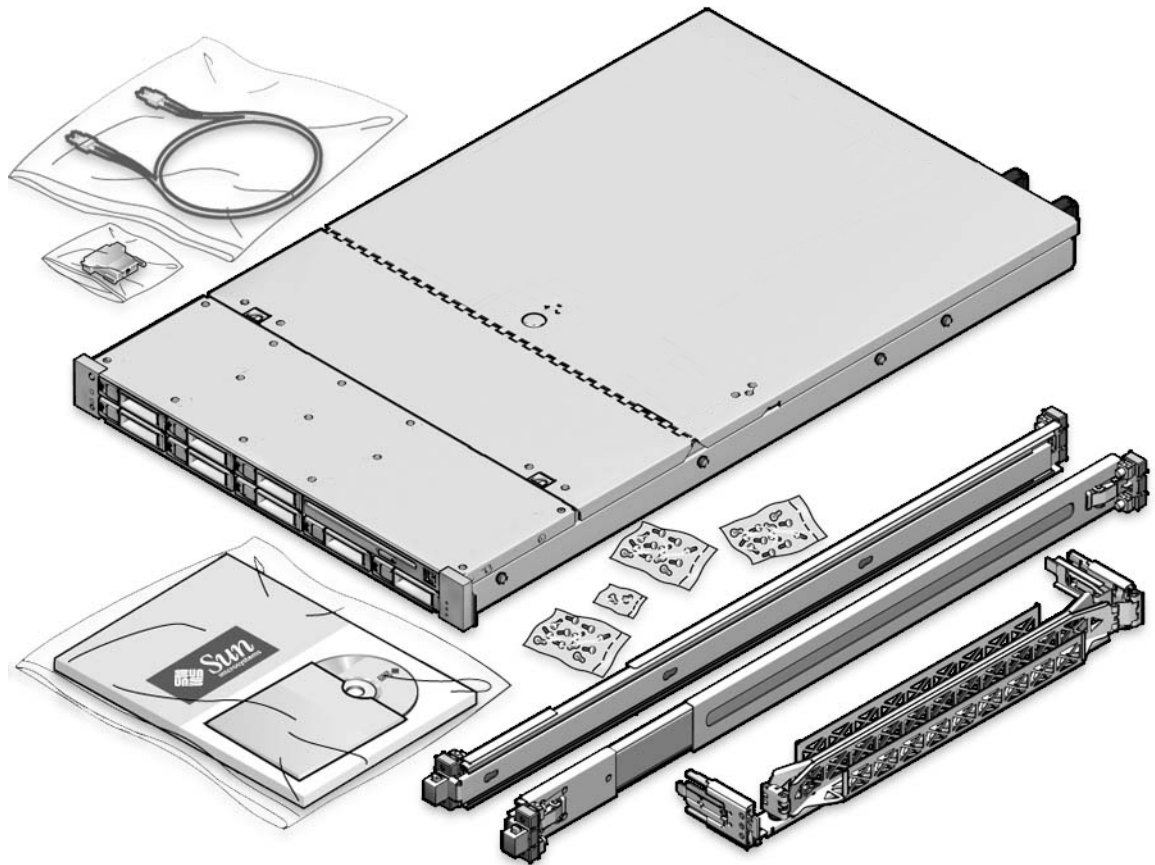
# Opening the Box

Carefully open the shipping box.

## Unpacking

Unpack all server components from the packing cartons. [FIGURE 1-1](#) shows the packing contents:

**FIGURE 1-1** Unpacking the Box



# Package Contents Inventory

The following items should be packaged with the Sun Fire X4170, X4270, and X4275 Servers:

- Sun Fire X4170, X4270, or X4275 Server
- Power cord, packaged separately with country kit
- (Optional) Sun Fire X4170, X4270, and X4275 Server Documentation and Media Kit, including the following:
  - *Sun Fire X4170, X4270, and X4275 Servers Installation Guide* (this document)
  - License and safety documentation
  - Tools & Drivers DVD (includes drivers and additional software), Sun Installation Assistant (SIA) CD/DVD, and SunVTS CD/DVD
- (Optional) Rackmount kit containing rack rails and installation instructions

## Options

Standard server components are installed at the factory. However, ordered options such as additional memory or PCI Express cards are shipped separately. If possible, install optional components before installing the server in a rack. For instructions for installing server options, see [“Installing Server Options”](#) on page 17.

## ESD Precautions

Electronic equipment is susceptible to damage by static electricity. Use a grounded antistatic wriststrap, footstrap, or equivalent safety equipment to prevent electrostatic discharge (ESD) when you install or service the server.



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**Caution** – To protect electronic components from electrostatic discharge, which can permanently disable the system or require repair by Sun service technicians, place components on an antistatic surface, such as an antistatic discharge mat, an antistatic bag, or a disposable antistatic mat. Wear an antistatic grounding strap connected to a metal surface on the chassis when you work on system components.

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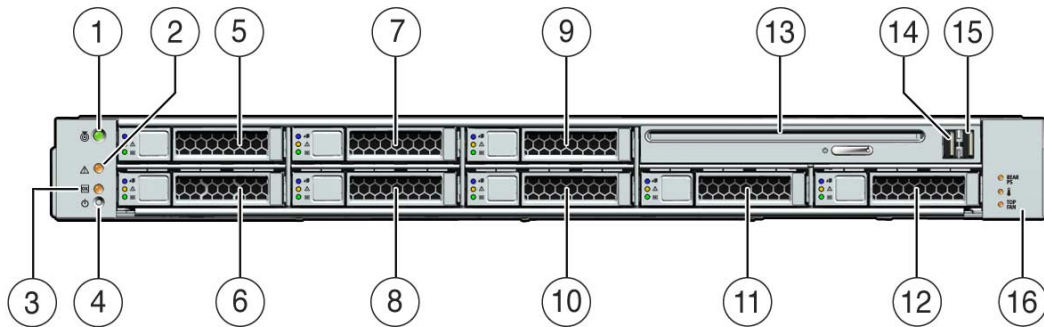
# Server Description

This section shows the front and back of the Sun Fire X4170, X4270, and X4275 Servers.

## Front Panel Features

FIGURE 1-2 shows the Sun Fire X4170 Server front panel and describes its components.

FIGURE 1-2 Sun Fire X4170 Server Front Panel

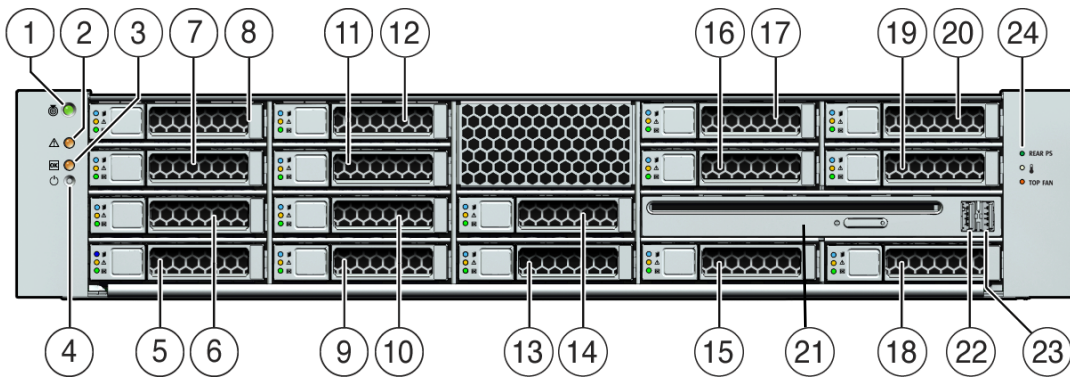


### Figure Legend

1	Locator LED/Locator button: white	9	Hard disk drive 5 (optional)
2	Service Action Required LED: amber	10	Hard disk drive 4 (optional)
3	Power/OK LED: green	11	Hard disk drive 6 (optional)
4	Power button	12	Hard disk drive 7 (optional)
5	Hard disk drive 1 (optional)	13	DVD drive (optional)
6	Hard disk drive 0 (optional)	14	USB 2.0 connector (2)
7	Hard disk drive 3 (optional)	15	USB 2.0 connector (3)
8	Hard disk drive 2 (optional)	16	Power Supply Service Action Required LED: amber System Overtemperature LED: amber Fan Module Service Action Required LED: amber

FIGURE 1-3 shows the Sun Fire X4270 front panel and describes its components.

FIGURE 1-3 Sun Fire X4270 Server Front Panel



**Figure Legend**

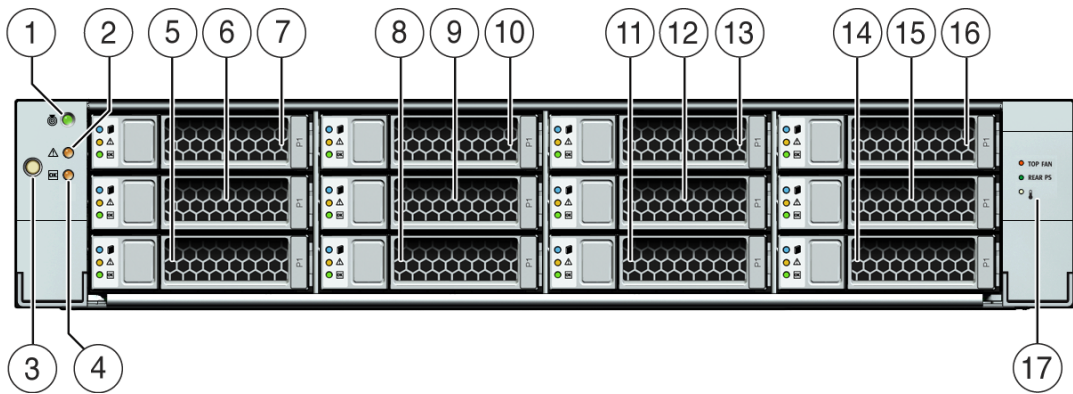
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<ul style="list-style-type: none"> <li>1 Locator LED/Locator button: white</li> <li>2 Service Action Required LED: amber</li> <li>3 Power/OK LED: green</li> <li>4 Power button</li> <li>5 Hard disk drive 0 (optional)</li> <li>6 Hard disk drive 1 (optional)</li> <li>7 Hard disk drive 2 (optional)</li> <li>8 Hard disk drive 3 (optional)</li> <li>9 Hard disk drive 4 (optional)</li> <li>10 Hard disk drive 5 (optional)</li> <li>11 Hard disk drive 6 (optional)</li> <li>12 Hard disk drive 7 (optional)</li> </ul>	<ul style="list-style-type: none"> <li>13 Hard disk drive 8 (optional)</li> <li>14 Hard disk drive 9 (optional)</li> <li>15 Hard disk drive 10 (optional)</li> <li>16 Hard disk drive 11 (optional)</li> <li>17 Hard disk drive 12 (optional)</li> <li>18 Hard disk drive 13 (optional)</li> <li>19 Hard disk drive 14 (optional)</li> <li>20 Hard disk drive 15 (optional)</li> <li>21 DVD drive (optional)</li> <li>22 USB 2.0 connector (2)</li> <li>23 USB 2.0 connector (3)</li> <li>24 Power Supply Service Action Required LED: amber System Overtemperature LED: amber Fan Module Service Action Required LED: amber</li> </ul>
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FIGURE 1-4 shows the Sun Fire X4275 Server front panel and describes its components.

FIGURE 1-4 Sun Fire X4275 Server Front Panel



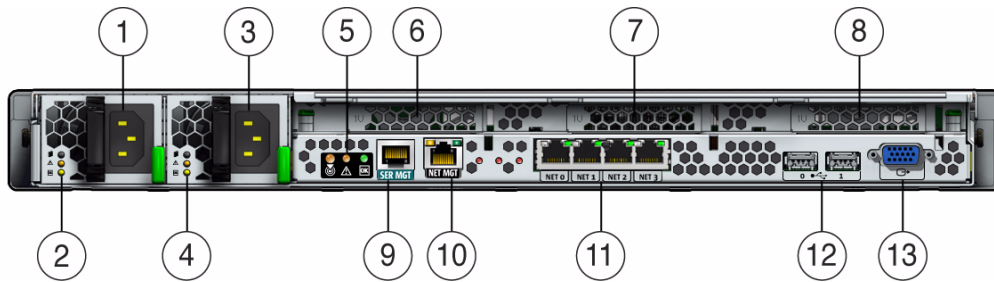
**Figure Legend**

- |   |                                    |    |   |
|---|------------------------------------|----|---|
| 1 | Locator LED/Locator button: white  | 9  | Hard disk drive 4 (optional)  |
| 2 | Service Action Required LED: amber | 10 | Hard disk drive 5 (optional)  |
| 3 | Power button                       | 11 | Hard disk drive 6 (optional)  |
| 4 | Power/OK LED: green                | 12 | Hard disk drive 7 (optional)  |
| 5 | Hard disk drive 0 (optional)       | 13 | Hard disk drive 8 (optional)  |
| 6 | Hard disk drive 1 (optional)       | 14 | Hard disk drive 9 (optional)  |
| 7 | Hard disk drive 2 (optional)       | 15 | Hard disk drive 10 (optional)   |
| 8 | Hard disk drive 3 (optional)       | 16 | Hard disk drive 11 (optional)   |
|   |                                    | 17 | Fan Module Service Action Required LED: amber<br>Power Supply Service Action Required LED: amber<br>System Overtemperature LED: amber |

# Back Panel

FIGURE 1-5 shows the Sun Fire X4170 Server back panel and describes its components.

FIGURE 1-5 Sun Fire X4170 Server Back Panel



## Figure Legend

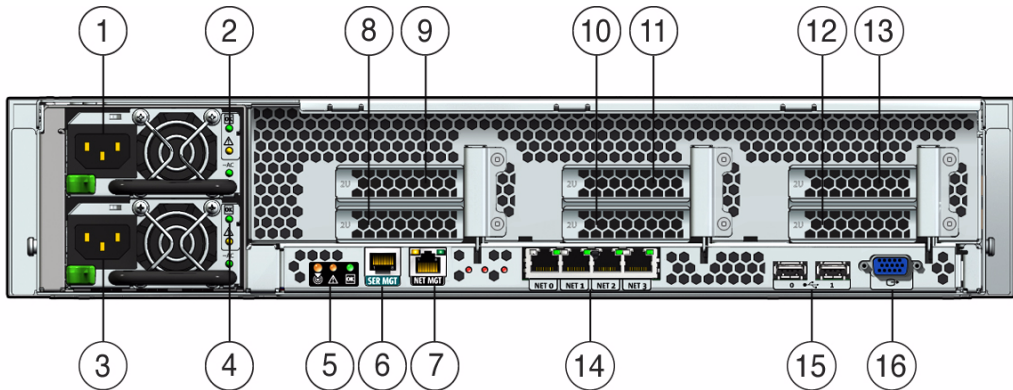
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1	Power supply unit 0 connector	7	PCI Express Module slot (1)
2	Power supply unit 0 status indicator LEDs: Power Supply OK: green Power Supply Fail: amber AC OK: green	8	PCI Express Module slot (2)
3	Power supply unit 1 connector	9	Serial management (SER MGT)/RJ-45 serial port
4	Power supply unit 1 status indicator LEDs: Power Supply OK: green Power Supply Fail: amber AC OK: green	10	Service processor (SP) network management (NET MGT port)
5	System status LEDs: Power: green Attention: amber Locate: white	11	Gigabit Ethernet ports NET 0, 1, 2, 3
6	PCI Express Module slot (0)	12	USB 2.0 ports (0, 1)
		13	HD15 video connector (analog VGA)

---

FIGURE 1-6 shows the Sun Fire X4270 and X4275 Servers back panels and describes their components.

FIGURE 1-6 Sun Fire X4270 and X4275 Servers Back Panel



**Figure Legend**

1	Power supply unit 1 connector	9	PCI Express Module slot (3)
2	Power supply unit 1 status indicator LEDs: Power Supply OK: green Power Supply Fail: amber AC OK: green	10	PCI Express Module slot (1)
3	Power supply unit 0 connector	11	PCI Express Module slot (4)
4	Power supply unit 0 status indicator LEDs: Power Supply OK: green Power Supply Fail: amber AC OK: green	12	PCI Express Module slot (2)
5	System status LEDs: Power: green Attention: amber Locate: white	13	PCI Express Module slot (5)
6	Serial management (SER MGT)/RJ-45 serial port	14	Gigabit Ethernet ports NET 0, 1, 2, 3
7	Service processor (SP) network management (NET MGT) port	15	USB 2.0 ports (0, 1)
8	PCI Express Module slot (0)	16	HD15 video connector (analog VGA)

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# Server Supported Components

## Sun Fire X4170 Server Supported Components and Capabilities



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**Caution – Configuration restriction:** SATA disk drives are not supported on Sun Fire X4170 systems with CPUs that have a power consumption rating higher than 80 watts. Systems with 95-watt CPUs support SAS drives only.

---

The following table describes the components and capabilities of the Sun Fire X4170 Server.

**TABLE 1-1** Sun Fire X4170 Server Components

Component	X4170 Server
CPU	One or two quad-core processors with three integrated DDR3 memory controllers per processor. The following CPU sizes are supported: <ul style="list-style-type: none"><li>• 2.26 GHz/80 Watts</li><li>• 2.40 GHz/60 Watts</li><li>• 2.53 GHz/80 Watts</li><li>• 2.93 GHz/95 Watts</li></ul>
Memory	Nine DIMMs per processor for a maximum of 18 DIMMs and a maximum of 144 GB of memory
Storage devices	<ul style="list-style-type: none"><li>• Up to six 2.5-inch SATA hard drive devices (HDDs) or four solid-state drives (SSDs)</li><li>• Up to eight 2.5-inch SAS/SATA HDDs or four SSDs with the optional Hardware RAID controller</li><li>• DVD-RW drive</li><li>• Compact Flash slot (internally accessible)</li></ul>
USB ports	Two front, two rear, and one internal
PCI Express 2.0 I/O slots	Three low-profile PCIe Gen2 slots (one x16, two x8) or three low-profile, 5.0 GT/s PCIe Gen2 slots (one x16, two x8)
PCI Express I/O cards	For a list of I/O cards that are customer-orderable options, go to the following web site and click on the options card link: <ul style="list-style-type: none"><li>• <a href="http://www.sun.com/servers/x64/x4170/">http://www.sun.com/servers/x64/x4170/</a></li><li>• <a href="http://www.sun.com/servers/x64/x4270/">http://www.sun.com/servers/x64/x4270/</a></li><li>• <a href="http://www.sun.com/servers/x64/x4275/">http://www.sun.com/servers/x64/x4275/</a></li></ul>



**TABLE 1-1** Sun Fire X4170 Server Components *(Continued)*

<b>Component</b>	<b>X4170 Server</b>
Ethernet ports	Four Gigabit Ethernet (GbE) ports on rear panel Each Network Interface Card (NIC) supports I/O Acceleration Technology 3 (IOAT3)
Service processor	Uses the SP subsystem Includes the Baseboard Management Controller (BMC), which supports the industry-standard IPMI feature set Supports remote KVMs over IP Includes serial port Supports Ethernet access to SP through a dedicated 10/100BaseT management port and optionally through one of the host GbE ports (sideband management)
Power supplies	Up to two hot-pluggable power supplies
Cooling fans	Redundant hot-pluggable fans
Management software	Sun Integrated Lights Out Manager

# Sun Fire X4270 and X4275 Servers Supported Components

The following table describes the components and capabilities of the Sun Fire X4270 and X4275 Servers.

**TABLE 1-2** Sun Fire X4270 and X4275 Servers Components and Capabilities

Component	X4270 and X4275 Servers
CPU	One or two quad-core processors with three integrated DDR3 memory controllers per processor. The following CPU sizes are supported: <ul style="list-style-type: none"><li>• 2.26 GHz/80 Watts</li><li>• 2.40 GHz/60 Watts</li><li>• 2.53 GHz/80 Watts</li><li>• 2.93 GHz/95 Watts</li></ul>
Memory	Nine DDR3 DIMMs per processor for a maximum of 18 DDR3 DIMMs and a maximum of 144 GB of memory
Storage devices	<b>Storage drives supported by the Sun Fire X4270 and X4275 Servers with the LSI 3081E SAS RAID controller (required):</b> <ul style="list-style-type: none"><li>• Up to sixteen 2.5-inch SAS/SATA HDDs (only supported on X4270 Server)</li><li>• Up to twelve 3.5-inch SAS/SATA HDDs (only supported on X4275 Server)</li><li>• DVD-RW drive (only supported on X4270 Server)</li><li>• CompactFlash slot (internally accessible)</li></ul> <b>Storage drives supported by the Sun Fire X4270 and X4275 Servers with Sun StorageTek SAS RAID controller (required):</b> <ul style="list-style-type: none"><li>• Up to eight 2.5-inch SAS/SATA SDDs (only supported on X4270 Server)</li><li>• Up to sixteen 2.5-inch SAS/SATA HDDs (only supported on X4270 Server)</li><li>• Up to eight 3.5-inch SAS/SATA SSDs (only supported on X4275 Server)</li><li>• Up to twelve 3.5-inch SAS/SATA HDDs (only supported on X4275 Server)</li><li>• DVD-RW drive (only supported on X4270 Server)</li><li>• CompactFlash slot (internally accessible)</li></ul>
USB ports	X4270 Server: Two front, two rear, and one internal X4275 Server: Two rear and one internal
PCI Express 2.0 I/O slots	Six x8 low-profile PCIe Gen2 slots or six low-profile PCIe Gen2 (5.0 GT/s) slots
PCI Express I/O cards	For a list of I/O cards that are customer-orderable options, go to the following web site and click on the options card link: <ul style="list-style-type: none"><li>• <a href="http://www.sun.com/servers/x64/x4170/">http://www.sun.com/servers/x64/x4170/</a></li><li>• <a href="http://www.sun.com/servers/x64/x4270/">http://www.sun.com/servers/x64/x4270/</a></li><li>• <a href="http://www.sun.com/servers/x64/x4275/">http://www.sun.com/servers/x64/x4275/</a></li></ul>

**TABLE 1-2** Sun Fire X4270 and X4275 Servers Components and Capabilities (*Continued*)

Component	X4270 and X4275 Servers
Ethernet ports	Four Gigabit Ethernet (GbE) ports on rear panel Each Network Interface Card (NIC) supports I/O Acceleration Technology 3 (IOAT3)
Service processor	Uses the SP subsystem Includes the Baseboard Management Controller (BMC), which supports the industry-standard IPMI feature set Supports remote KVMs over IP Includes a serial port Supports Ethernet access to SP through a dedicated 10/100BaseT management port and optionally through one of the host GbE ports (sideband management)
Power supplies	Up to two hot-pluggable power supplies
Cooling fans	Redundant hot-pluggable fans
Management software	Supports Sun Integrated Lights Out Manager 2.0 and 3.0

# Server Specifications

## Physical Specifications

[TABLE 1-3](#) lists the physical specifications of the Sun Fire X4170, X4270, and X4275 Servers.

**TABLE 1-3** Servers Physical Specifications

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

# Electrical Specifications

TABLE 1-4 lists the electrical specifications for the Sun Fire X4170, X4270, and X4275 Servers.

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**Note** – The power dissipation numbers listed in the following table are the maximum rated power numbers for the power supply used in these servers. The numbers are not a rating of the actual power consumption of the system. For up to date information on the power consumption, see the power calculators for the Sun Fire X4170, X4270, and X4275 Servers on the web at:

<http://www.sun.com/powercalculators>

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**TABLE 1-4** Servers Electrical Specifications

Parameter	Value
<b>Sun Fire X4170 Server</b>	
<b>Input</b>	
Nominal frequencies	50/60 Hz
Nominal voltage range	100-120/200-240 VAC
Maximum current AC RMS	8.8A @ 100 VAC
AC operating range	90-264 VAC
<b>Output</b>	
3.3 VDC STBY	3.6A
+12 VDC	62.3 A
<b>Power dissipation</b>	
Max power consumption	873 W
Max heat output	2977 BTU/hr
<b>Volt-Ampere rating</b>	891 VA @ 240 VAC, 0.98 P.F.
<b>Sun Fire X4270 and X4275 Servers</b>	
<b>Input</b>	
Nominal frequencies	50/60 Hz
Nominal voltage range	100-120/200-240 VAC
Maximum current AC RMS	13.8A @ 100 VAC
AC operating range	90-264 VAC
<b>Output</b>	

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**TABLE 1-4** Servers Electrical Specifications (*Continued*)

Parameter	Value
3.3 VDC STBY	3.0 A
+12 VDC	86.7 A
<b>Power dissipation</b>	
Max power consumption	1235.3 W
Max heat output	4212 BTU/hr
<b>Volt-Ampere rating</b>	1261 VA @ 240 VAC, 0.98 P.F.

## Environmental Requirements

[TABLE 1-5](#) lists the environmental requirements for the Sun Fire X4170, X4270, and X4275 Servers.

**TABLE 1-5** Servers Environmental Requirements

Parameter	Value
Operating temperature (single, non-rack system)	5° C to 35° C (41° F to 95° F)
Nonoperating temperature (single, non-rack system)	-40° C to 70° C (-40° F to 158° F)
Operating humidity (single, non-rack system)	10% to 90% relative humidity, non-condensing
Nonoperating humidity (single, non-rack system)	Up to 93% relative humidity, non-condensing
Altitude (operating) (single, non-rack system)	<ul style="list-style-type: none"> <li>• <b>For the X4170 and X4270 Servers:</b> Up to 3000 m, maximum ambient temperature is derated by 1 degree C per 300 m above 900 m</li> <li>• <b>For the X4275 Server:</b> Up to 3048 m, maximum ambient temperature is derated by 1 degree C per 300 m above 900 m</li> </ul>
Altitude (nonoperating) (single, non-rack system)	Up to 12,000 m



## Installing Server Options

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This chapter describes how to install optional components into the Sun Fire X4170, X4270, and X4275 Servers. Topics discussed in this chapter include:

- [“Planning the Installation of Options” on page 18](#)
- [“Performing Electrostatic Discharge and Antistatic Prevention Measures” on page 21](#)
- [“Preparing the Server to Install Options” on page 22](#)
- [“Removing the Server Top Cover” on page 23](#)
- [“Installing Memory Modules \(DIMMs\)” on page 26](#)
- [“Installing a CPU” on page 32](#)
- [“Installing Hard Disk Drives” on page 34](#)
- [“Installing a PCIe Card” on page 38](#)
- [“Installing a Power Supply” on page 46](#)
- [“Installing the Server Top Cover” on page 48](#)

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# Planning the Installation of Options

Before installing the server options into the server chassis, you should review these topics:

- [“Before You Begin” on page 18](#)
- [“Avoid Electrostatic Discharge” on page 18](#)
- [“Run Server Diagnostics” on page 19](#)
- [“About Server Component Filler Panels” on page 19](#)

## Before You Begin

Before you begin the installation of the options, you should have:

- Reviewed [Chapter 1](#) of this document.
- Located the shipping packaging that contains the options that you are about to install into the server.

## Avoid Electrostatic Discharge

Internal modules and options are electronic components that are extremely sensitive to static electricity. Ordinary amounts of static from your clothes or work environment can destroy components.

To prevent static damage whenever you are accessing any of the internal server components, you must:

- Use an antistatic wrist strap. Attach this wrist strap to your wrist and ground the other end of strap to the system chassis (sheet metal). For additional information, see the instructions that are shipped with the strap.
- Place static sensitive components such as memory modules, hard drives, CPUs, PCIe cards and other server components on an antistatic surface. The following items can be used as an antistatic surface:
  - The bag used to ship the component.
  - Sun Electronic Discharge (ESD) mat, Sun part number 250-1088 (available through your Sun Sales representative).



# Run Server Diagnostics

Before you install server options, you should always run diagnostics on the server to ensure that the server is operating properly. After you install the server options, you should run the diagnostics again. This approach will ensure that the server is working properly before you place the server in service.

For instructions for running diagnostics on a server that is being installed for the first time or a server that is already in service, see the *Sun x64 Servers Diagnostics Guide*.

## About Server Component Filler Panels

Each server is shipped with module-replacement filler panels for CPUs, hard disk drives (HDDs), memory modules (DIMMs), PCIe cards, and power supplies. These filler panels are installed at the factory and must remain in the server until you replace them with a purchased module.

As needed, consult the following sections when installing server option:

- [“Filler Panel Purpose” on page 19](#)
- [“Filler Panel Removal and Installation” on page 19](#)

### Filler Panel Purpose

A filler panel is an empty metal or plastic enclosure that does not contain any functioning system hardware or cable connectors. These panels must remain in any unused module slots (CPU, HDDs, DIMMs, PCIe cards, power supplies) to ensure proper air flow throughout the system. If you remove a filler panel and continue to operate your system with an empty module slot, the operating performance of your system could decline.

### Filler Panel Removal and Installation

Before you can install a server option into the server, you must remove the filler panel from the location into which you intend to install the option. When you remove an option from the server, you must install either a replacement option or a filler panel.

TABLE 2-1 describes how to remove and install server filler panels.

**TABLE 2-1** Server Filler Panel Removal and Replacement Procedures

Filler Panel Type	Removal Procedure	Install Procedure
Memory	<ol style="list-style-type: none"> <li>1. Locate the memory module filler panel to be removed from the motherboard.</li> <li>2. Simultaneously press down on both ejector levers at the ends of the memory module slot.</li> <li>3. Lift the filler panel straight up to remove it from the memory module socket.</li> </ol>	<ol style="list-style-type: none"> <li>1. Locate the vacant memory module slot on the motherboard.</li> <li>2. Ensure that ejector levers at both ends of the memory module slot are in a fully opened position.</li> <li>3. Align the memory module filler panel with the empty slot, then gently press the filler panel into the slot until both ejector levers close, locking the filler panel in place.</li> </ol>
CPU <b>Note</b> - CPUs should only be removed or installed by Sun qualified service personnel.	<ol style="list-style-type: none"> <li>1. To remove the CPU filler panel in the socket, pull the release lever away from the socket into a fully opened position.</li> <li>2. Lift the bail and then gently lift the filler panel straight up and out of the CPU socket.</li> </ol>	<ol style="list-style-type: none"> <li>1. Ensure that the CPU socket release lever and bail are in a fully opened position.</li> <li>2. Gently insert the filler panel onto the exposed pins in the CPU socket.</li> <li>3. After the filler panel is fully seated in the socket, close the bail onto the top of the filler panel, then pivot the release lever down and into the locked position at the side of the socket.</li> </ol>
Disk Drive	<ol style="list-style-type: none"> <li>1. Locate the disk drive filler panel to be removed from the server.</li> <li>2. To unlatch the disk drive filler panel, press the release lever button then tilt the lever up into a fully opened position.</li> <li>3. To remove the filler panel from the slot, hold the opened release lever and gently slide the filler panel toward you.</li> </ol>	<ol style="list-style-type: none"> <li>1. Locate the vacant disk drive module slot in the server, then ensure that the release lever on the filler panel is fully opened.</li> <li>2. Slide the filler panel into the vacant slot by pressing the middle of the filler panel faceplate with your thumb or finger. The release lever will lower as it makes contact with the chassis. Do not slide the filler panel in all the way. Leave the filler panel out approximately 0.25 to 0.50 inch (6 to 12 mm) from the opening</li> <li>3. Using your thumb or finger, press on the middle of the filler panel faceplate until the release lever engages with the chassis.</li> <li>4. Close the release lever until it clicks into place and is flush with the front of the server.</li> </ol>

**TABLE 2-1** Server Filler Panel Removal and Replacement Procedures (*Continued*)

Filler Panel Type	Removal Procedure	Install Procedure
PCI Slot	<p><b>For Sun Fire X4170 Servers:</b></p> <ol style="list-style-type: none"> <li>1. Remove the server top cover.</li> <li>2. Remove the PCI slot filler panel from the location into which you intend to install the PCIe card.</li> </ol>	<p><b>For Sun Fire X4170 Servers:</b></p> <ol style="list-style-type: none"> <li>1. Remove the server top cover.</li> <li>2. Press the PCI filler panel into the vacant PCI slot.</li> </ol>
	<p><b>For Sun Fire X4270 and X4275 Servers:</b></p> <ol style="list-style-type: none"> <li>1. Remove the server top cover.</li> <li>2. Remove the server crossbar.</li> <li>3. Remove the PCI slot filler panel from the location into which you intend to install the PCIe card.</li> </ol>	<p><b>For Sun Fire X4270 and X4275 Servers:</b></p> <ol style="list-style-type: none"> <li>1. Remove the server top cover.</li> <li>2. Remove the server crossbar.</li> <li>3. Press the PCI filler panel into the vacant PCI slot.</li> <li>4. Replace the server crossbar.</li> </ol>
Power supply	<ol style="list-style-type: none"> <li>1. To release the filler panel side latches, use your fingers to press and hold both sides of the filler panel away from the sides of the power supply bay.</li> <li>2. Using fingers on your other hand, grasp the lip at the bottom of the filler panel and pull it out of the power supply bay.</li> </ol>	<ol style="list-style-type: none"> <li>1. Position the filler panel in the power supply bay so that the closed end is facing inward and the lip that is used to remove the filler panel is in the bottom position.</li> <li>2. Press the filler panel into the power supply bay until it is flush with the power supply bay.</li> </ol>

## Performing Electrostatic Discharge and Antistatic Prevention Measures

### Electrostatic Discharge Safety Measures

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



**Caution** – 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 boards. Do not touch the components along their connector edges.



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

## Using an Antistatic Wrist Strap

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

---

**Note** – An antistatic wrist strap is not shipped with the servers. However, antistatic wrist straps are included with options.

---

## Using an Antistatic Mat

Place ESD-sensitive components on an antistatic mat.

## ESD Handling Procedure

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

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

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

### 2. Attach an antistatic wrist strap.

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

---

## Preparing the Server to Install Options

Before you can install any server options, you must prepare the server.

## ▼ Prepare Server to Install Options

To prepare the server to install the options, complete the following tasks:

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

- If the server is being placed into service for the first time, unpack the server from the shipping container.

See [“Opening the Box” on page 3](#).

- If the server is already in service, remove it from service and power it down.

**2. Ensure that the server AC power cord (or cords) is disconnected from the server.**

**3. Remove the server top cover.**

Before you remove the server top cover, you must ensure that no power is being applied to the server.

See [“Removing the Server Top Cover” on page 23](#).

---

**Note** – If you are installing an HDD or a power supply, it is not necessary to remove the server top cover.

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## Removing the Server Top Cover

The procedure for removing the server top cover varies depending on the server type.

- For the Sun Fire X4170 and X4270 Servers, see [“Remove the Top Cover From the Sun Fire X4170 and X4270 Servers” on page 24](#).
- For the Sun Fire X4275 Server, see [“Remove the Top Cover From the Sun Fire X4275 Server” on page 25](#).



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**Caution** – Removing the top cover without properly powering down the server and disconnecting the AC power cords from the power supplies will result in a chassis intrusion switch failure. This failure causes the server to be immediately powered off and the SP to operate in degraded mode. When the top cover is reinstalled, the SP will continue to operate in a degraded mode and the DIMM inventory reported to the ILOM CLI and web interface will be incorrect. To return the server to normal operating mode, reinstall the top cover, and disconnect and reconnect the AC power cords or reboot the SP.

---

## ▼ Remove the Top Cover From the Sun Fire X4170 and X4270 Servers

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

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

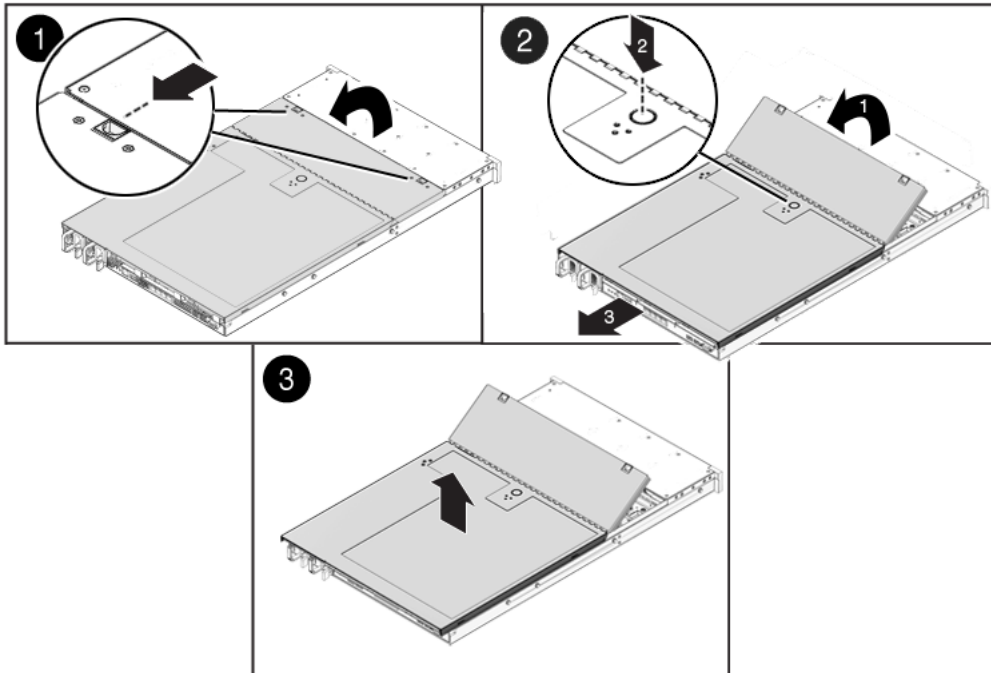
Pull the two release tabs back to release the door. Rotate the fan door to the open position and hold it there.

---

**Note** – FIGURE 2-1 shows the Sun Fire X4170 Server, not the Sun Fire X4270 Server; however, the procedure for removing the top cover is the same for both servers.

---

FIGURE 2-1 Removing the Sun Fire X4170 or X4270 Server Top Cover



3. Press the top cover release button and slide the top cover toward the rear of the server about 0.5 inch (12 mm) [2].

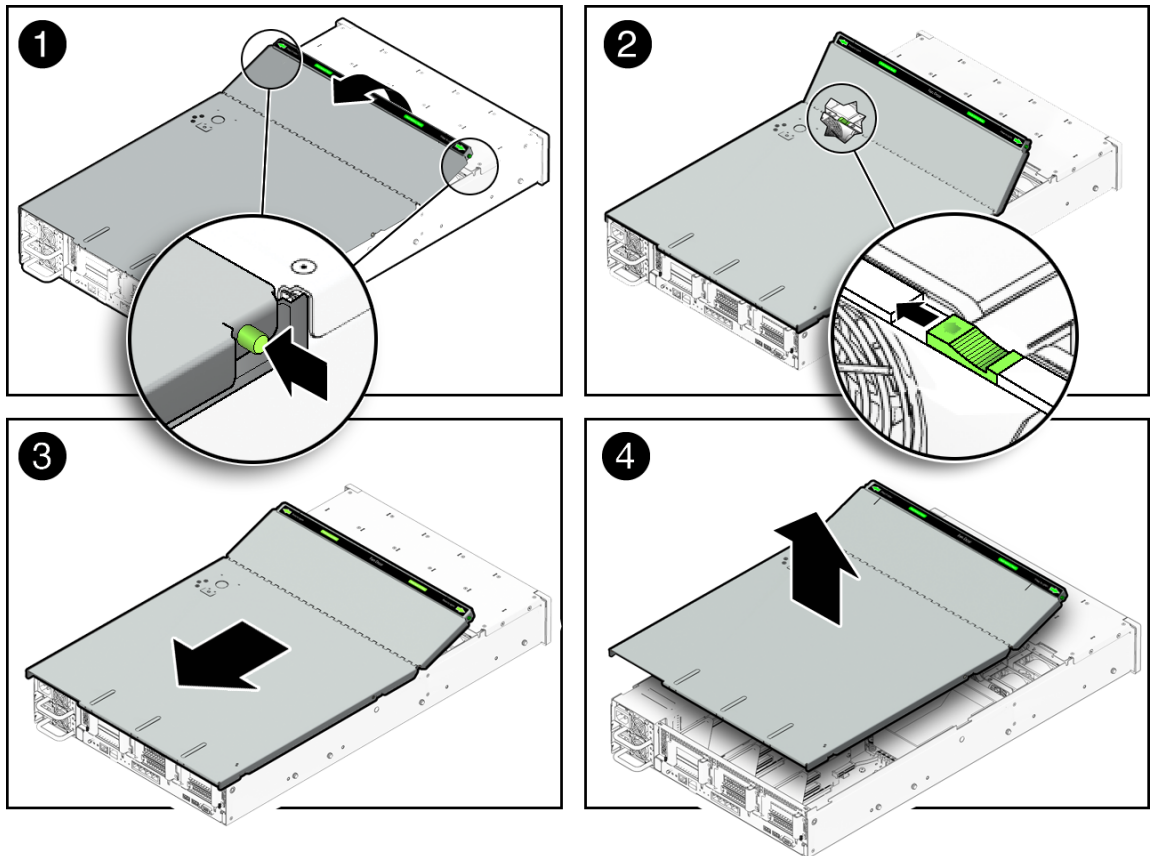
4. Lift up and remove the top cover [3].

## ▼ Remove the Top Cover From the Sun Fire X4275 Server

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

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

FIGURE 2-2 Removing the Sun Fire X4275 Server Top Cover



3. Release the top cover.

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

4. Slide the top cover toward the rear of the server about a 0.5 inch (12 mm) [3].
5. Lift up and remove the top cover [4].

---

## Installing Memory Modules (DIMMs)



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**Caution** – This procedure requires that you handle components that are sensitive to static discharge. This sensitivity can cause the component to fail. To avoid damage, ensure that you follow antistatic practices as described in [“Performing Electrostatic Discharge and Antistatic Prevention Measures”](#) on page 21.

---

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

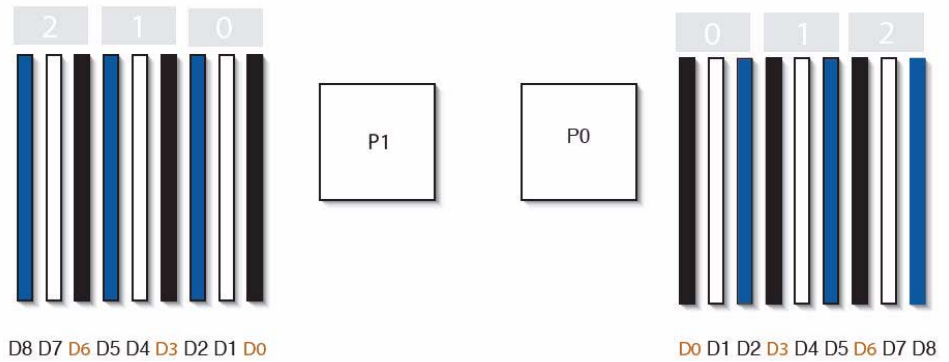
- Physical layout of the DIMMs and CPUs  
For details, see [“DIMM and CPU Physical Layout”](#) on page 26.
- DIMM population rules  
For details, see [“DIMM Population Rules”](#) on page 28.
- Instructions for installing a DIMM  
For details, see [“Install DIMMs”](#) on page 29.
- DIMM rank classifications labels  
For details, see [“DIMM Rank Classification Labels”](#) on page 29.

### DIMM and CPU Physical Layout

The physical layout of the DIMMs and CPUs is shown in [FIGURE 2-3](#) and [TABLE 2-2](#).



**FIGURE 2-3** CPU and DIMM Physical Layout



**TABLE 2-2** CPUs and DIMMs Physical Layout

CPUs and DIMMs	Physical Layout
CPU 0 location	P0
CPU 1 location	P1
Channel locations for CPU 0	
Three channels per CPU with each channel containing three color-coded DIMM slots (black, white, and blue).	
Channel locations for CPU 1	
Three channels per CPU with each channel containing three color-coded DIMM slots (blue, white and black).	
DIMM slot numbering per CPU; with D8 as the farthest slot away from CPU.	<p>P0:</p> <p>P1:</p>

# DIMM Population Rules

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

1. Do not populate any DIMM sockets next to an empty CPU socket. Each processor contains a separate memory controller.
2. Each CPU can support a maximum of:
  - Nine dual-rank (DR) or single-rank (SR) DIMMs; *or*
  - Six quad-rank (QR) DIMMs with two per memory channel; *or*
  - Three QR DIMMs with one per channel and three DR or SR DIMMs.
3. Populate DIMMs by location according to the following rules:
  - Populate the DIMM slots for each memory channel that are the farthest from the CPU first.  
  
For example, populate D8/D5/D2 first; then D7/D4/D1 second; and finally, D6/D3/D0. See [FIGURE 2-3](#).
  - Populate QR DIMMs first, followed by SR or DR DIMMs.
    - Populate QR DIMMs in blue sockets (D8/D5/D2) first then white sockets (D7/D4/D1). See [FIGURE 2-3](#).  
  
Note that QR DIMMs are supported only in white sockets if adjacent blue socket contains a QR DIMM.
    - Populate QR, SR, or DR DIMMs in sets of three for each CPU, one per memory channel. See [FIGURE 2-3](#).
4. For maximum performance, apply the following rules:
  - The best performance is ensured by preserving symmetry. For example: adding 3x of same kind of DIMMs, one per memory channel; and, if the server has two CPUs, ensuring that both CPUs have the same size of DIMMs populated in the same manner.

- In certain configurations, DIMMs will run slower than their individual maximum speed. See [TABLE 2-3](#) for further details.

**TABLE 2-3** Memory Considerations and Limitations

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

\* This DIMM configuration requires CPUs supporting 1333 MHz.

## DIMM Rank Classification Labels

DIMMs come in a variety of ranks: single, dual, or quad. Each DIMM is shipped with a label identifying its rank classification. [TABLE 2-4](#) identifies the corresponding rank classification label shipped with each DIMM.

**TABLE 2-4** DIMM Classification Labels

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

## ▼ Install DIMMs




---

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

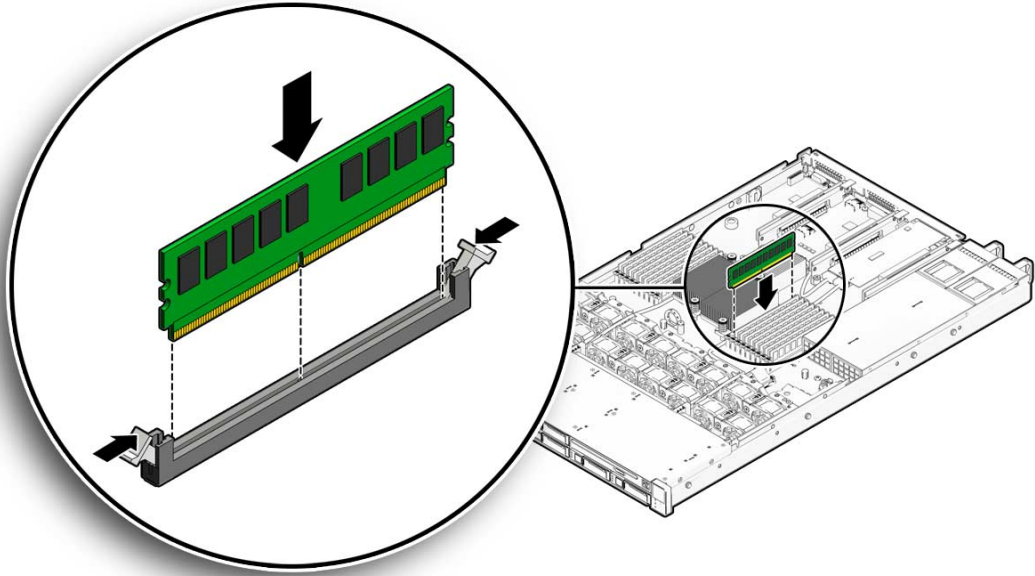
---

### 1. Attach an antistatic wrist strap.

See [“ESD Handling Procedure”](#) on page 22.

- 2. Prepare the server to install options.**  
See [“Preparing the Server to Install Options”](#) on page 22.
- 3. Unpack the DIMMs and place them on an antistatic mat.**
- 4. Determine the rank classification of the DIMMs to be installed.**  
See [“DIMM Rank Classification Labels”](#) on page 29.
- 5. To determine the slots into which to install the DIMMs, review the DIMM population rules to ensure that you are installing the DIMMs in a location that is consistent with the rules.**  
See [“DIMM Population Rules”](#) on page 28.  
If you violate DIMM population rules, the performance of the server might be adversely affected.
- 6. To install a DIMM, do the following:**
  - a. Remove the DIMM filler panel.**  
See [“Filler Panel Removal and Installation”](#) on page 19.
  - b. Ensure that the DIMM connector ejector levers are in the open position.**
  - c. Align the DIMM with the connector (FIGURE 2-4).**  
Align the notch in the DIMM with the key in the connector. The notch ensures that the DIMM is oriented correctly.

**FIGURE 2-4** Installing a DIMM



- d. Push the DIMM into the connector slot until both ejector levers close, locking the DIMM in place.**

If the DIMM does not easily seat into the connector, verify that the notch in the DIMM is aligned with the key in the connector as shown in [FIGURE 2-4](#). If the notch is not aligned, damage to the DIMM might occur.

- e. Repeat [Step a](#) through [Step d](#) until all DIMMs are installed.**

- 7. Install the top cover.**

See [“Installing the Server Top Cover”](#) on page 48.

---

# Installing a CPU

The server is shipped with at least one preinstalled CPU. The server can support a maximum of two CPUs. If you ordered a second CPU as an option for the server, the kit contains a CPU chip and a heatsink with thermal grease pre-applied.

## ▼ Install the CPU



---

**Caution** – CPU options should be installed only by a Sun qualified service technician.

---

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

See [“ESD Handling Procedure”](#) on page 22.

**2. Prepare the server to install options.**

See [“Preparing the Server to Install Options”](#) on page 22.

**3. Unpack the CPU kit.**

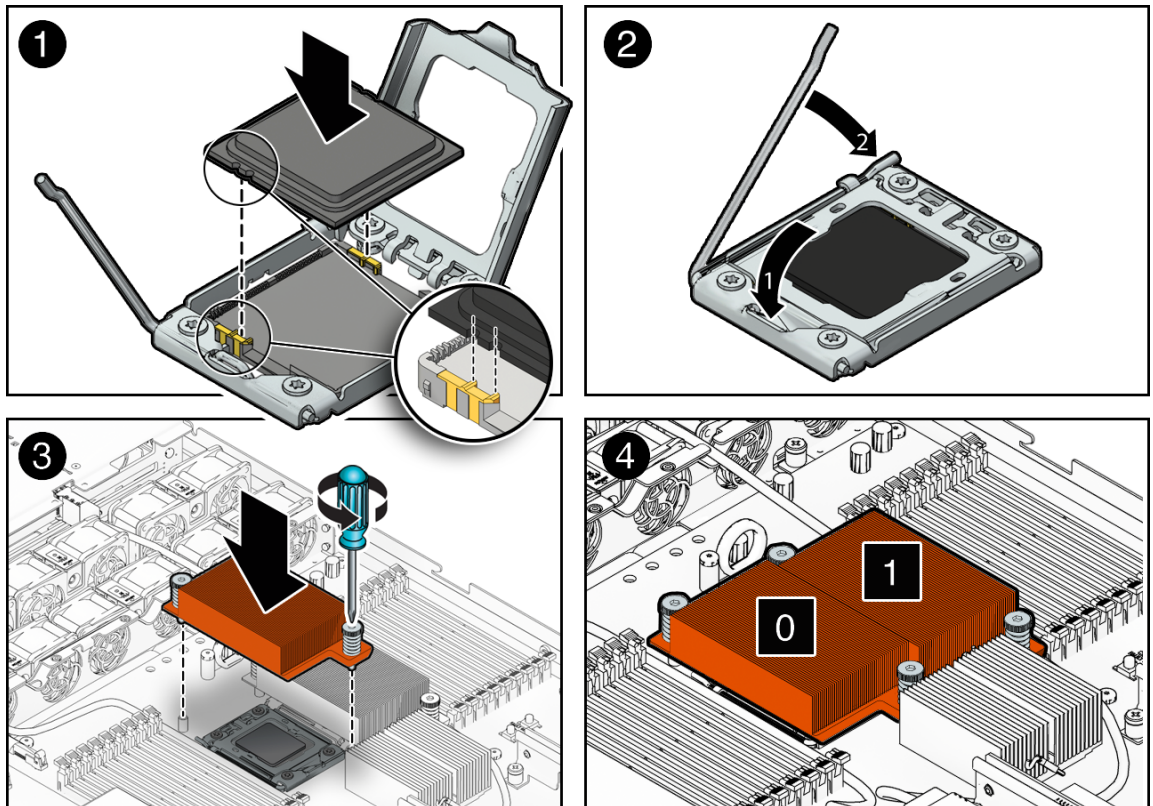
The kit includes a CPU chip and a heatsink with the thermal grease pre-applied.

**4. Install the CPU (FIGURE 2-5).**

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

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

FIGURE 2-5 Installing the CPU



**b. Lower the pressure frame.**

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

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

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



**Caution** – When handling the heatsink, be careful not get the thermal grease on your fingers so as not to transfer the grease to other server components. To do so could cause component contamination and/or damage.

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



---

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

---

- f. Tighten the screws alternately one-half turn until fully seated.
5. Install the top cover.  
See “Installing the Server Top Cover” on page 48.

---

## Installing Hard Disk Drives

The following topics are covered in this section:

- “Server Hard Drive Locations” on page 34
- “Server Hard Disk Drive Configuration Rules” on page 36
- “Installing a Hard Disk Drive” on page 37

### Server Hard Drive Locations

FIGURE 2-6 show the physical drive locations for a Sun Fire X4170 Server with eight 2.5-inch hard drives.

FIGURE 2-6 Sun Fire X4170 Server Front Panel



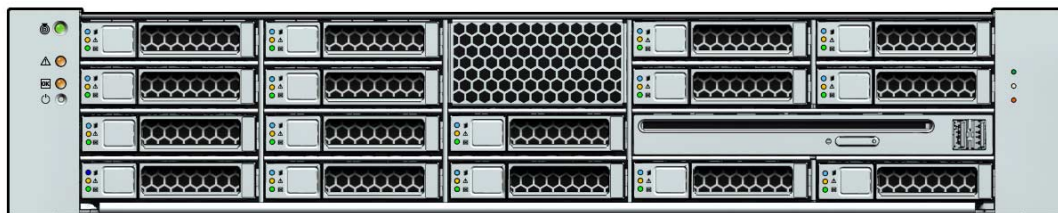
Figure Legend

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

FIGURE 2-7 shows the physical drive locations for the Sun Fire X4270 Server with 16 2.5-inch hard drives.



**FIGURE 2-7** X4270 Server Front Panel



**Figure Legend**

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

FIGURE 2-8 shows the physical drive locations for the Sun Fire X4275 Server with 12 3.5-inch hard drives.

**FIGURE 2-8** Sun Fire X4275 Server Front Panel



**Figure Legend**

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

# Server Hard Disk Drive Configuration Rules

TABLE 2-5 defines the number of hard disk drives (HDDs) supported by a given server type and configuration.

**TABLE 2-5** Server Hard Disk Drive (HDD) Configuration Rules

Server Type/Configuration	SATA Drives Supported	SAS Drives Supported	SSD Drives Supported	Comments
Sun Fire X4170 without HBA (PCIe) card	6	None	4	Any combination of SATA and solid-state disk (SSD) HDDs totaling six (6) are supported.
Sun Fire X4170 with LSI 3081E HBA (PCIe) card	8	8	4	All drives must run off the HBA. Any combination of these HDD types totaling eight (8) are supported; however, you cannot mix drive types inside the same RAID volume.
Sun Fire X4170 with Sun StorageTek SAS HBA (PCIe) card	8	8	4	All drives must run off the HBA. Any combination of these HDD types totaling eight (8) are supported; however, you cannot mix drive types inside the same RAID volume.
Sun Fire X4270 without HBA (PCIe) card	None	None	None	To support HDDs, the X4270 Server must have a PCIe card installed.
Sun Fire X4270 with LSI 3081E HBA (PCIe) card	16	16	0	All drives must run off the HBA. Any combination of these HDD types are supported; however, you cannot mix drive types inside the same RAID volume.
Sun Fire X4270 with Sun StorageTek SAS HBA (PCIe) card	16	16	8	All drives must run off the HBA. Any combination of these HDD types are supported; however, you cannot mix drive types inside the same RAID volume.
Sun Fire X4275 without HBA (PCIe) card	None	None	None	To support HDDs, the X4275 Server must have a PCIe card installed.
Sun Fire X4275 with LSI 3081E HBA (PCIe) card	12	12	0	All drives must run off the HBA. Any combination of these HDD types are supported; however, you cannot mix drive types inside the same RAID volume.
Sun Fire X4275 with Sun StorageTek SAS HBA (PCIe) card	12	12	8	All drives must run off the HBA. Any combination of these HDD types are supported; however, you cannot mix drive types inside the same RAID volume.

# Installing a Hard Disk Drive

To install a hard disk drive, see the following procedure.

## ▼ Install the Hard Disk Drive

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

See [“ESD Handling Procedure”](#) on page 22.

**2. Prepare the server to install options.**

See [“Preparing the Server to Install Options”](#) on page 22.

---

**Note** – You do not need to remove the server’s cover to install a hard drive.

---

**3. Unpack the hard disk drive and place it on an antistatic mat.**

**4. Install the hardware.**

**a. Refer to [TABLE 2-5](#) and verify that your server will support the hard disk drive you intend to install.**

**b. Determine the drive slot location for the hard disk drive.**

Select the first available hard disk drive location starting with the lowest numbered slot, HDD0. For example, if the server has two existing hard drives, install the hard drive in slot HDD2.

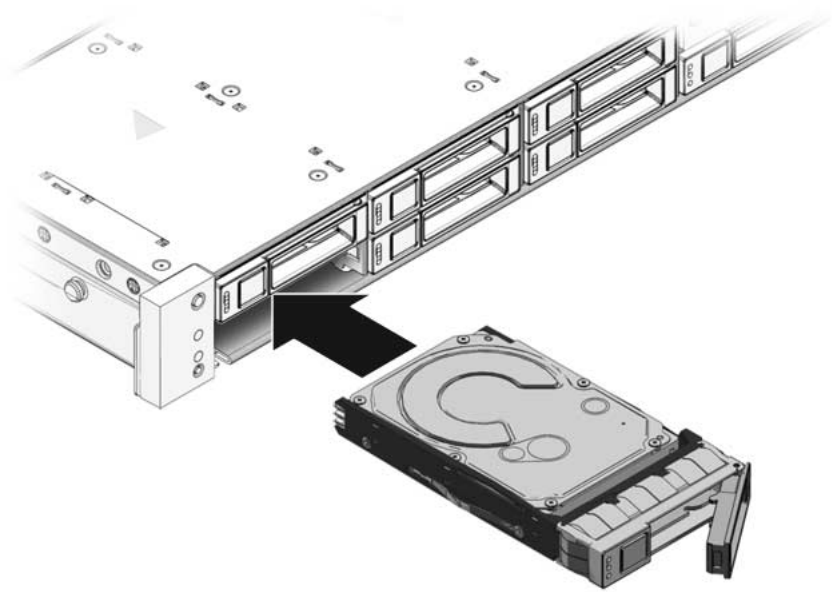
**c. Remove the hard disk drive filler panel from the server chassis for the location into which you intend to install the hard drive.**

See [“Filler Panel Removal and Installation”](#) on page 19.

**d. Hard disk drives are physically addressed according to the slot in which they are installed. See [FIGURE 2-6](#), [FIGURE 2-7](#) and [FIGURE 2-8](#) for hard drive locations.**

**e. Slide the drive into the drive slot until it is fully seated (see [FIGURE 2-9](#)).**

**FIGURE 2-9** Installing a Hard Disk Drive



- f. Close the latch to lock the drive in place.
- g. Repeat [Step a](#) through [Step g](#) until all hard drives are installed.

---

## Installing a PCIe Card

The following topics are covered in this section:

- [“PCIe Card Configuration Rules”](#) on page 38
- [“Install a PCIe Card”](#) on page 39

## PCIe Card Configuration Rules

The server supports three or six PCIe cards depending on the server model.

- The Sun Fire X4170 Server supports three PCIe cards.
- The Sun Fire X4270 and X4275 Servers support six PCIe cards.

---

**Note** – You can install all supported types of PCIe cards into any vacant PCI slot, with the exception of PCI slot 1. Due to size restrictions, you cannot install a SAS RAID host bus adapter (HBA) PCIe card into PCI slot 1.

---

You install the PCIe cards on the servers vertical PCIe risers, which are adjacent to the PCI slots. For the location of the PCI slots, see [FIGURE 1-5](#) and [FIGURE 1-6](#).

In addition to the PCIe card, the installation kit includes applicable host bus adapter installation information that you should reference for additional installation instructions.

## ▼ Install a PCIe Card



---

**Caution** – This procedure requires that you handle components that are sensitive to static discharge. This sensitivity can cause the component to fail. To avoid damage, ensure that you follow antistatic practices as described in “[Performing Electrostatic Discharge and Antistatic Prevention Measures](#)” on page 21.

---



---

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

---

### 1. Attach an antistatic wrist strap.

See “[ESD Handling Procedure](#)” on page 22.

### 2. Prepare the server to install options.

See “[Preparing the Server to Install Options](#)” on page 22.

### 3. Unpack the PCIe card and place it on an antistatic mat.

### 4. Determine the PCI slot into which you intend to install the PCIe card.

---

**Note** – You can install all supported types of PCIe cards into any vacant PCI slot, with the exception of PCI slot 1. Due to size restrictions, you cannot install a SAS RAID host bus adapter (HBA) PCIe card into PCI slot 1.

---

### 5. Remove the server back panel crossbar (see [FIGURE 2-10](#) and [FIGURE 2-11](#)).

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

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

FIGURE 2-10 Removing the Back Panel Crossbar From Sun Fire X4170 Server

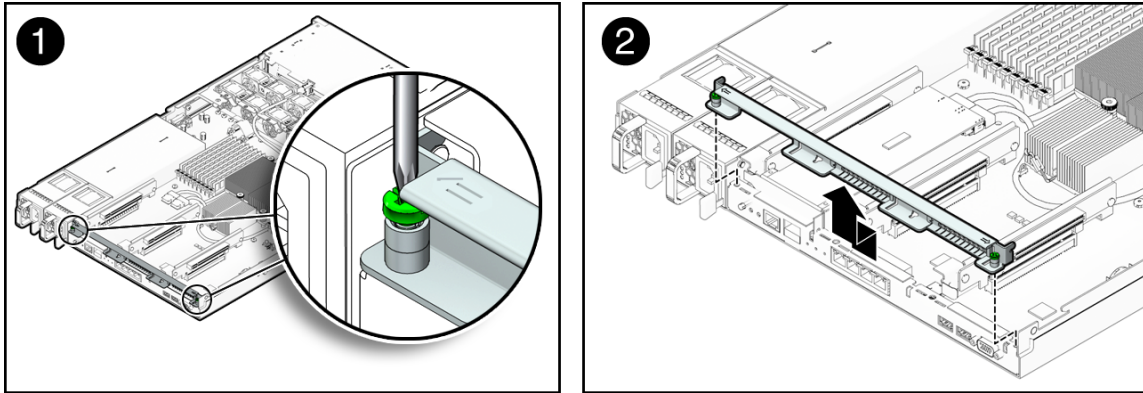
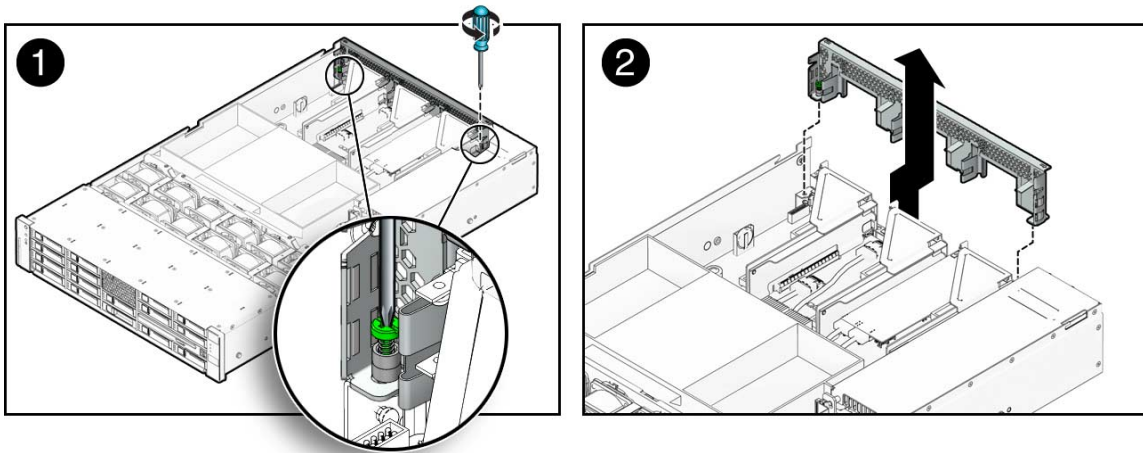


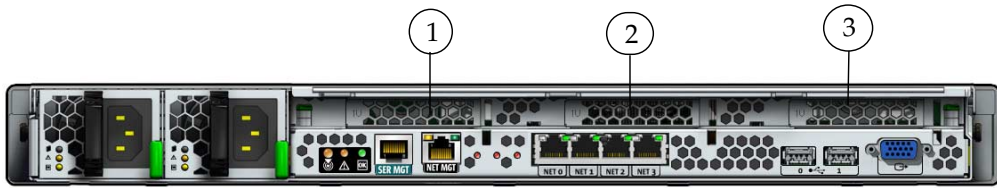
FIGURE 2-11 Removing the Back Panel Crossbar From Sun Fire X4270 and X4275 Servers



- c. Remove the PCI slot filler panel from the slot in the crossbar into which you intend to install the PCIe card.

FIGURE 2-12 shows the location of the PCI slot filler panels on the Sun Fire X4170 Server. The PCI slot filler panels are located in the same area on the Sun Fire X4270 and X4275 Servers.

**FIGURE 2-12** Location of PCI Slots on the Sun Fire X4170 Server



**Figure Legend**

- 
- 1 PCI Slot 0
  - 2 PCI Slot 1
  - 3 PCI Slot 2
- 

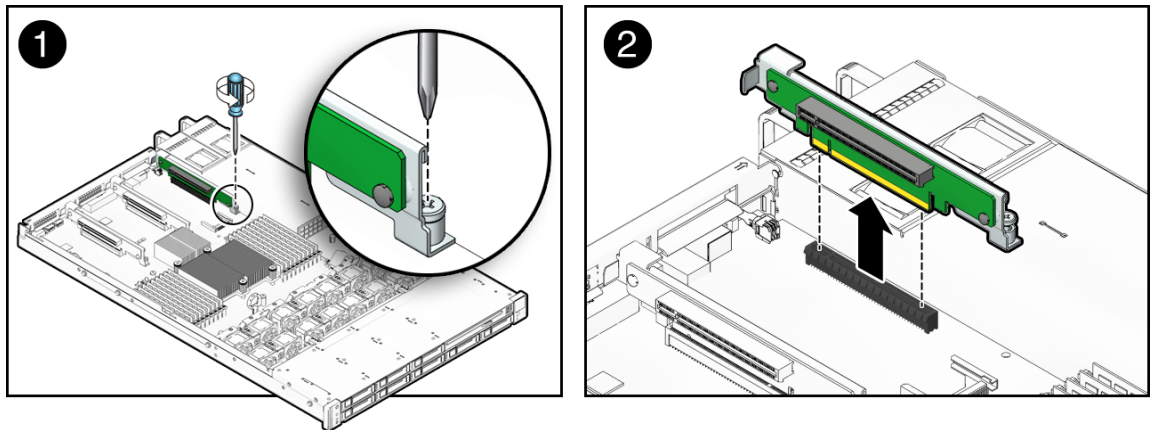
**6. Remove the PCIe riser from the server (see [FIGURE 2-13](#)).**

- a. Using a No. 2 Phillips screwdriver, loosen the captive screw on the end of the riser.
- b. Lift up the riser and any PCIe cards attached to it as a unit.

Each server has three PCIe risers. On the Sun Fire X4170 Server, each PCIe riser can house only one PCIe card. On the Sun Fire X4270 and X4275 Servers, each PCIe riser can house two PCIe cards.

[FIGURE 2-13](#) shows a Sun Fire X4170 Server PCIe riser.

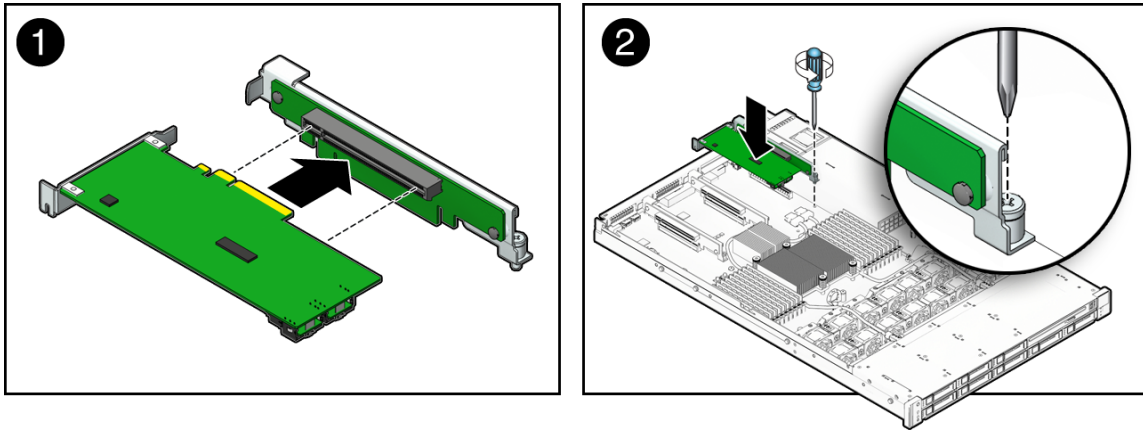
**FIGURE 2-13** Removing a PCIe Riser



**7. Install the PCIe card into the PCIe riser (see [FIGURE 2-14 \[1\]](#)).**

Each server has three PCIe risers. On the Sun Fire X4170 Server, each PCIe riser can house only one PCIe card. On the Sun Fire X4270 and X4275 Servers, each PCIe riser can house two PCIe cards.

**FIGURE 2-14** Installing a PCIe Card



**8. Install the PCIe riser with installed PCIe card into the PCI slot (see [FIGURE 2-14 \[2\]](#)).**

**a. Lower the PCIe riser and the installed cards into the server.**

**b. Tighten the captive No. 2 Phillips screw securing the riser to the motherboard.**

**c. Install the back panel crossbar.**

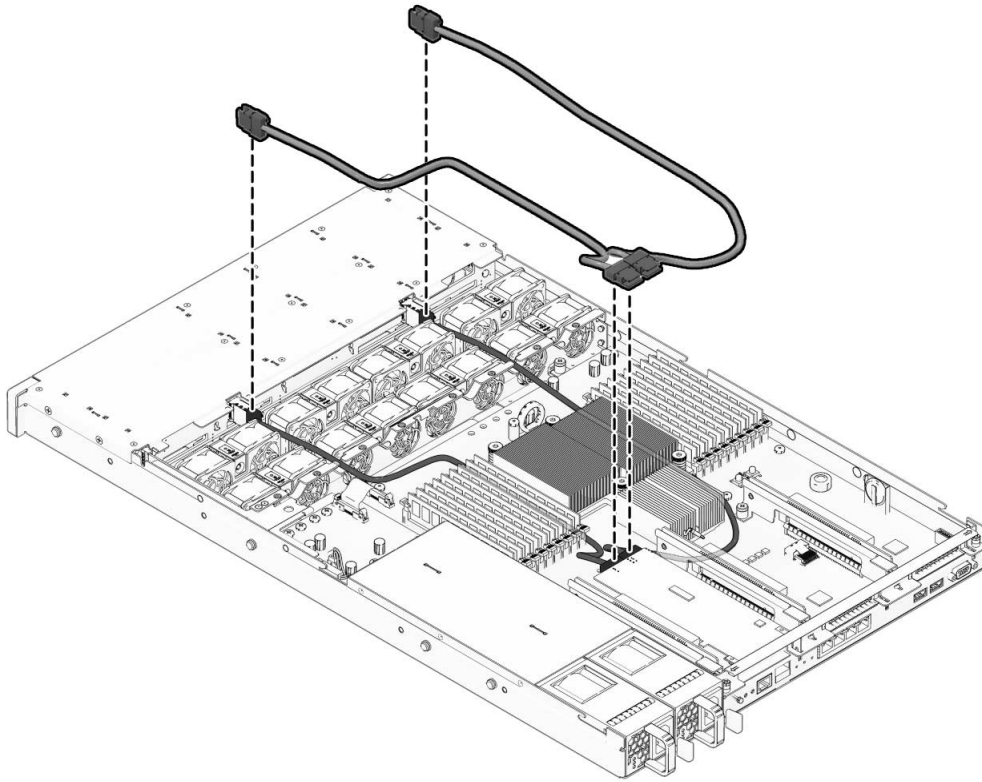
Slide the crossbar down over the PCIe risers. The crossbar is secured with two captive Phillips screws.

**9. If you are installing a SAS RAID host bus adapter (HBA) PCIe card, install and connect the cables that connect the PCIe card to the hard disk drive cage; otherwise skip to the next step.**

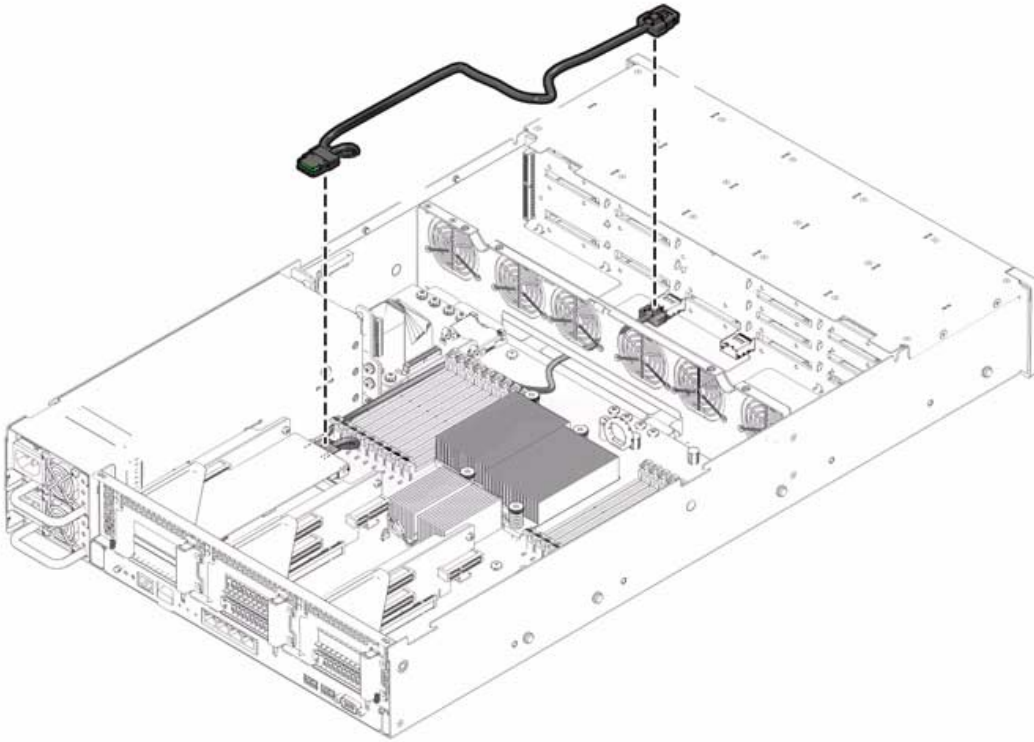
See [FIGURE 2-15](#) for Sun Fire X4170 Server, [FIGURE 2-16](#) for Sun Fire X4270 Server, and [FIGURE 2-17](#) for the Sun Fire X4275 Server.



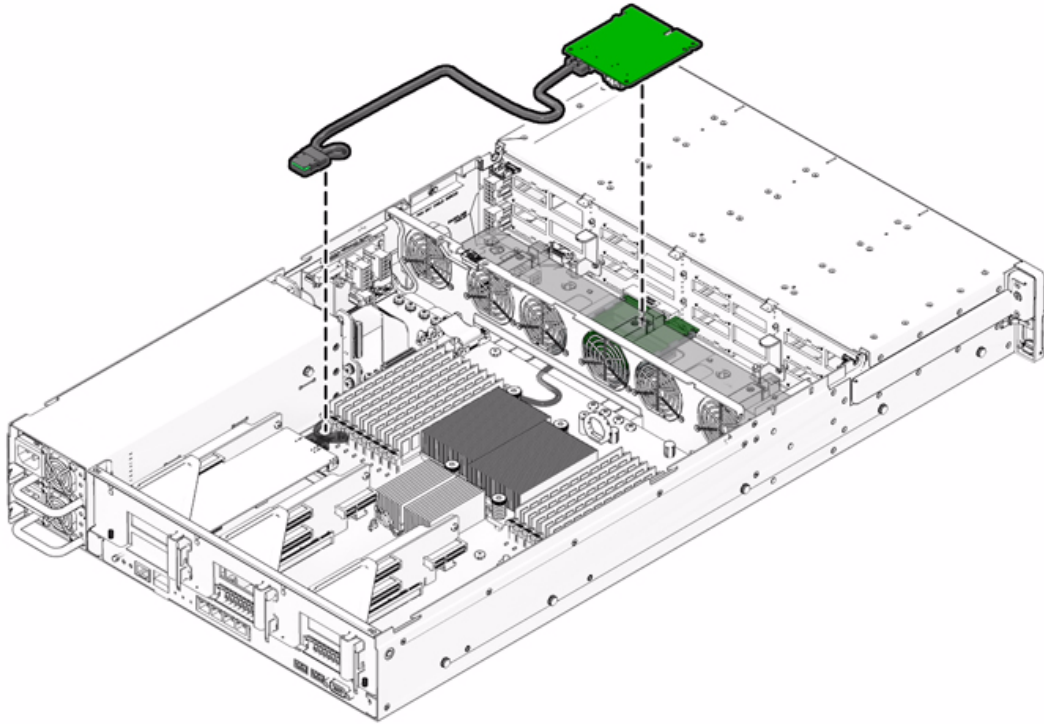
**FIGURE 2-15** Installing the SAS PCIe/Hard Disk Drive Cage Cable Into the Sun Fire X4170 Server



**FIGURE 2-16** Installing the SAS PCIe/Hard Disk Drive Cage Cable in the Sun Fire X4270 Server



**FIGURE 2-17** Installing the SAS PCIe/Hard Disk Drive Cage Cable in the Sun Fire X4275 Server



10. For additional PCIe card installation requirements, refer to the installation information in the PCIe card shipping kit.
11. Install the server top cover.  
See [“Installing the Server Top Cover”](#) on page 48.

---

# Installing a Power Supply

If the server has only one power supply, you can install a second power supply for redundancy.

## ▼ Install a Power Supply

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

See [“ESD Handling Procedure”](#) on page 22.

**2. Prepare the server to install options.**

See [“Preparing the Server to Install Options”](#) on page 22.

---

**Note** – You do not need to remove the server’s cover to install a power supply.

---

**3. Unpack the power supply and place it on an antistatic mat.**

**4. Install the power supply.**

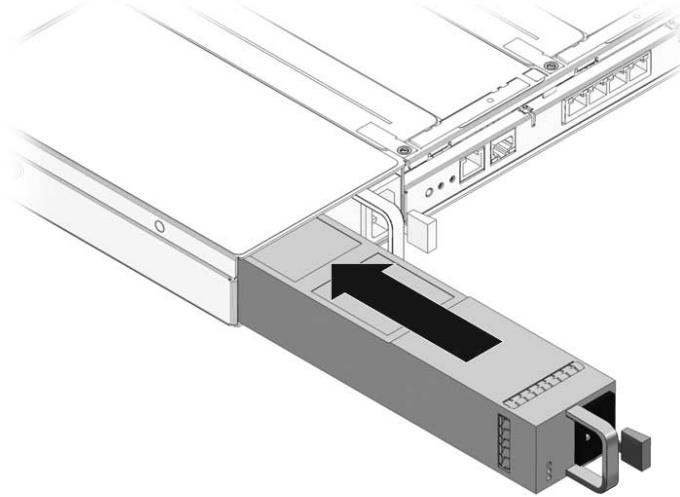
**a. Remove the filler panel from the server’s power supply bay.**

See [“Filler Panel Removal and Installation”](#) on page 19.

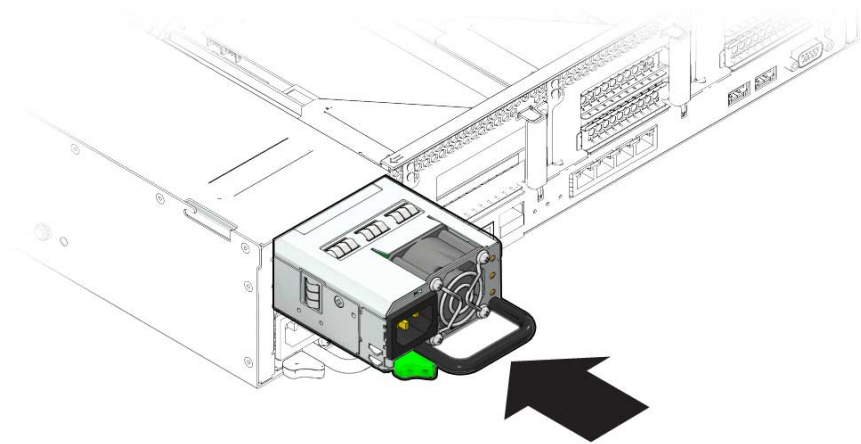
**b. Align the power supply with the empty power supply chassis bay.**

**c. Slide the power supply into the bay until it is fully seated (see [FIGURE 2-18](#) and [FIGURE 2-19](#)).**

**FIGURE 2-18** Installing a Power Supply Into a Sun Fire X4170 Server



**FIGURE 2-19** Installing a Power Supply Into a Sun Fire X4270 or X4275 Server



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# Installing the Server Top Cover

After you have installed the optional components, you must reinstall the top cover onto the server.

## ▼ Install the Server Top Cover

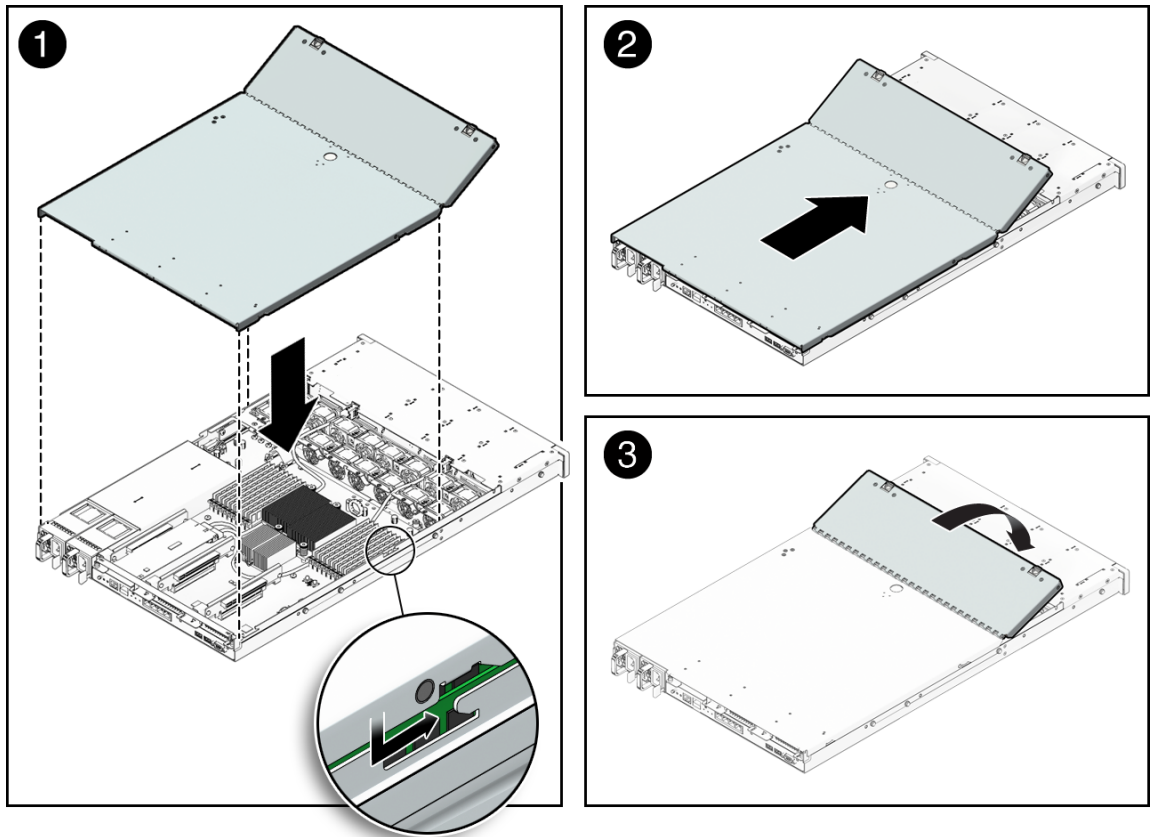
**1. Place the top cover on the chassis.**

Set the cover down so that it hangs over the rear of the server by about 1 inch (25.4 mm) (see [FIGURE 2-20 \[1\]](#) or [FIGURE 2-21 \[1\]](#)).

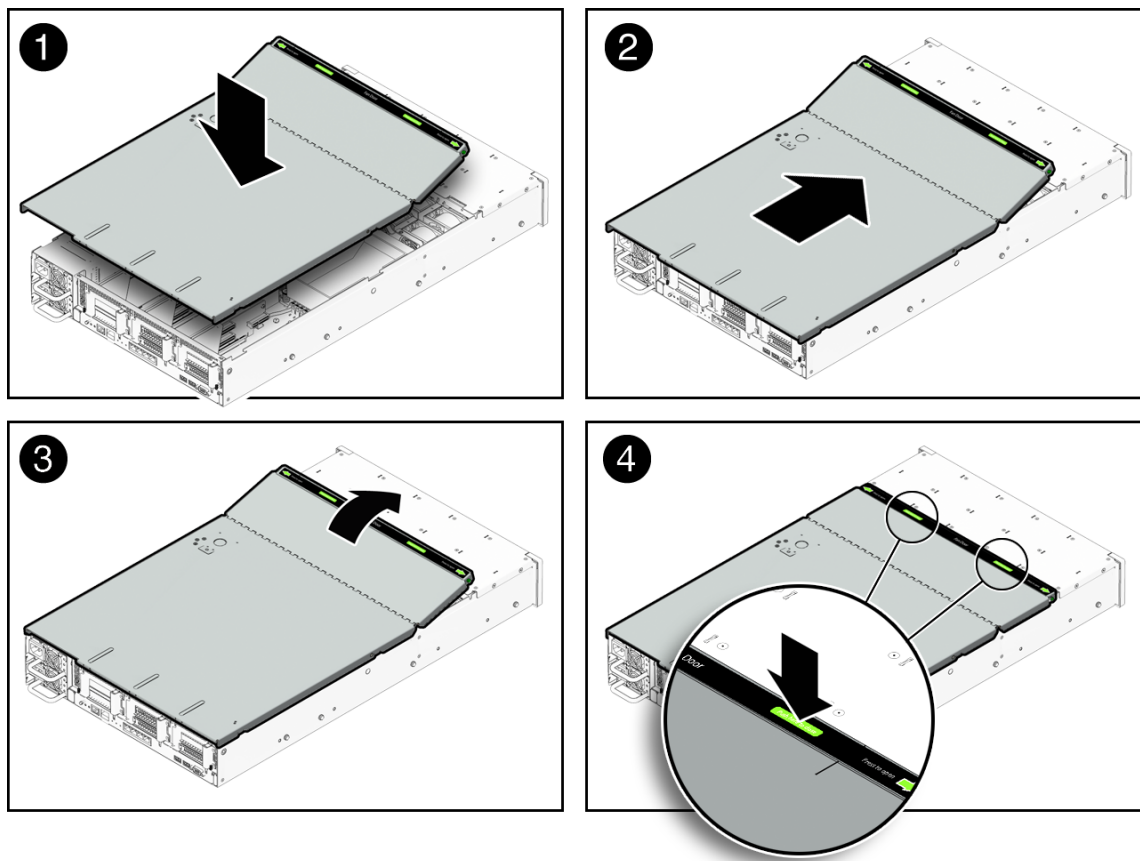
**2. Slide the top cover forward until its cover side latches engage [1 and 2].**

**3. To close the fan cover, press down on the fan cover with both hands [3].**

**FIGURE 2-20** Installing the Top Cover on the Sun Fire X4170 and X4270 Servers



**FIGURE 2-21** Installing the Top Cover on the Sun Fire X4275 Server





# Installing the Server Into a Rack With Slide-Rails

---

This chapter describes how to place the server into a rack using the rail assembly in the rackmount kit. Perform this procedure if the rail assembly is purchased.

This chapter includes the following topics:

- “Before You Begin” on page 51
- “Checking Rack Compatibility” on page 53
- “Disassembling Slide-Rails” on page 54
- “Installing the Mounting Brackets Onto the Server” on page 56
- “Attaching the Slide-Rail Assemblies to the Rack” on page 58
- “Installing the Server Into the Slide-Rail Assemblies” on page 61
- “Installing the Cable Management Arm” on page 65
- “Verifying Operation of the Slide-Rails and CMA” on page 72

---

**Note** – In this guide, the term *rack* means either an open rack or a closed cabinet.

---

---

## Before You Begin

Read the following overview and see the service label on the top cover before you begin to install the server into a rack.

# Server Installation Process Overview

To install your server into a four-post rack using the slide-rail and cable management arm options, perform the following tasks in the order listed.

1. [“Checking Rack Compatibility” on page 53](#)
2. [“Disassembling Slide-Rails” on page 54](#)
3. [“Installing the Mounting Brackets Onto the Server” on page 56](#)
4. [“Installing the Cable Management Arm” on page 65](#)
5. [“Verifying Operation of the Slide-Rails and CMA” on page 72](#)
6. [“Connecting the Cables” on page 74](#)

## Rail Assemblies

The server might include either tool-less or bolt-on rail assemblies in rackmount kits. Instructions for both types are included in this chapter.

## Service Label

Refer to the service label on the server top cover for instructions on how to install your server into a four-post rack, using the slide-rail and cable management arm options. The service label includes instructions for both tool-less and bolt-on rail assemblies.

---

# Checking Rack Compatibility

Check that your rack is compatible with the slide-rail and cable management arm (CMA) options. The optional slide-rails are compatible with a wide range of equipment racks that meet the following standards.

**TABLE 3-1** Rack Compatibility

Item	Requirement
Structure	Four-post rack (mounting at both front and rear). Two-post racks are not compatible.
Rack horizontal opening and unit vertical pitch	Conforms to ANSI/EIA 310-D-1992 or IEC 60927 standards.
Distance between front and rear mounting planes	Minimum 610 mm and maximum 915 mm (24 inches to 36 inches).
Clearance depth in front of front mounting plane	Distance to front cabinet door is at least 25.4 mm (1 inch).
Clearance depth behind front mounting plane	Distance to rear cabinet door is at least 800 mm (31.5 inches) with the cable management arm, or 700 mm (27.5 inches) without the cable management arm.
Clearance width between front and rear mounting planes	Distance between structural supports and cable troughs is at least 456 mm (18 inches).
Server dimensions	See <a href="#">TABLE 3-1</a> for server dimensions.



---

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

---



---

**Caution – Elevated Operating Ambient Temperature:** If the server is installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment might be greater than room ambient temperature. Therefore, consideration should be given to installing the equipment in an environment compatible with the maximum ambient temperature (T<sub>ma</sub>) specified for the server. For server environmental requirements, see [“Environmental Requirements” on page 15](#).

---



---

**Caution – Reduced Air Flow:** Installation of the equipment in a rack should be such that the amount of air flow required for safe operation of the equipment is not compromised.

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**Caution – Mechanical Loading:** Mounting of the equipment in the rack should be such that a hazardous condition is not achieved due to uneven mechanical loading.

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**Caution – Circuit Overloading:** Consideration should be given to the connection of the equipment to the supply circuit and the effect that overloading of the circuits might have on over-current protection and supply wiring. Appropriate consideration of equipment nameplate power ratings should be used when addressing this concern.

---



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**Caution – Reliable Earthing:** Reliable earthing of rackmounted equipment should be maintained. Particular attention should be given to supply connections other than direct connections to the branch circuit (for example, use of power strips).

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## Disassembling Slide-Rails

Complete one of the following procedures before installation:

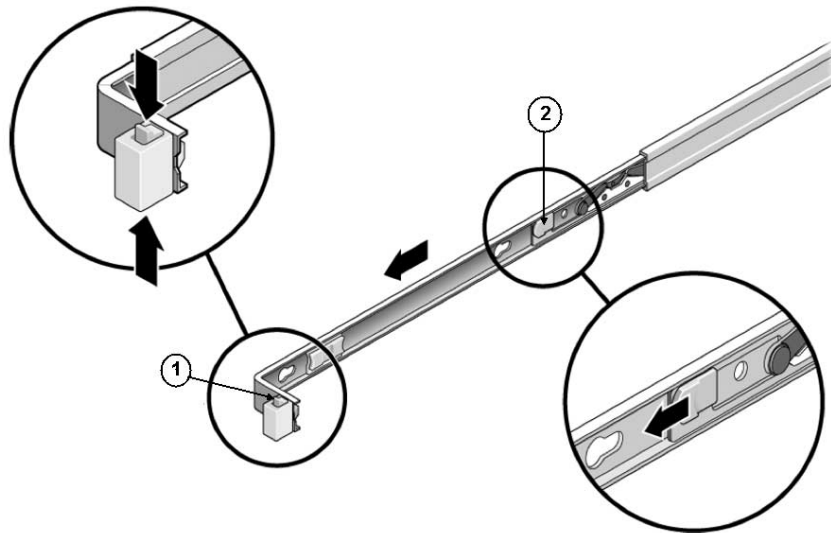
- [“Disassemble Bolt-On Slide-Rails” on page 55](#)
- [“Disassemble Tool-less Slide-Rails” on page 56](#)

## ▼ Disassemble Bolt-On Slide-Rails

To remove the mounting brackets from the bolt-on slide-rail assemblies:

1. Unpack the slide-rails.
2. Locate the slide-rail lock at the front of one of the slide-rail assemblies, as shown in [FIGURE 3-1](#).
3. Squeeze and hold the tabs at the top and bottom of the lock while you pull the mounting bracket out of the slide-rail assembly until it reaches the stop (see [FIGURE 3-1](#)).
4. Push the mounting bracket release button toward the front of the mounting bracket, as shown in [FIGURE 3-1](#), and simultaneously withdraw the mounting bracket from the slide-rail assembly.
5. Repeat for the remaining slide-rail assembly.

**FIGURE 3-1** Disassembling the Bolt-On Slide-Rail Before Installation



### Figure Legend

- 
- |   |                                 |
|---|---------------------------------|
| 1 | Slide-rail lock                 |
| 2 | Mounting bracket release button |
-

## ▼ Disassemble Tool-less Slide-Rails

To remove the mounting brackets from the tool-less slide-rail assemblies, refer to the installation card instructions included with the rackmount kit.

---

## Installing the Mounting Brackets Onto the Server

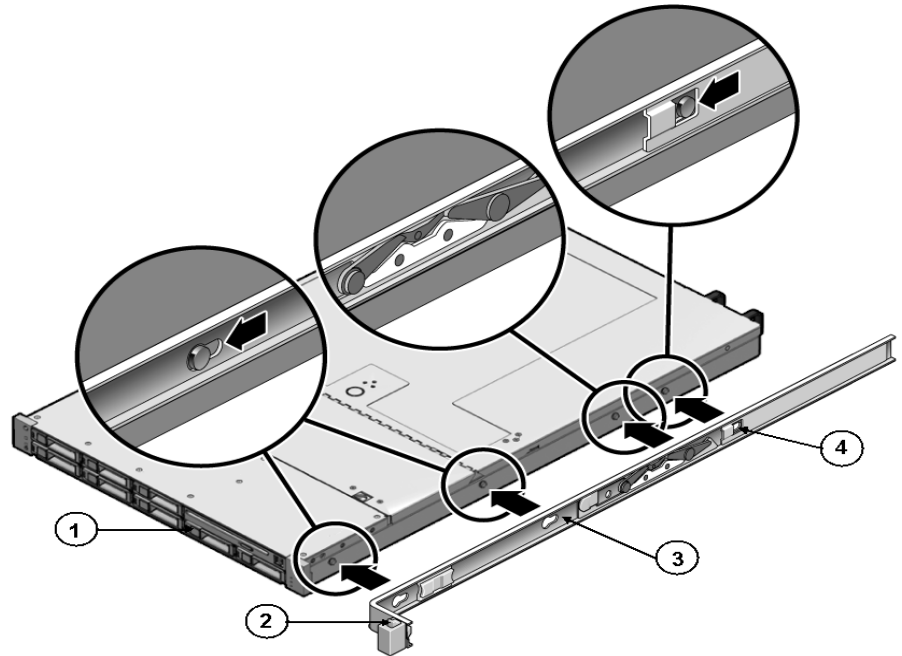
You must install the mounting brackets onto the server before you can rackmount the server.

## ▼ Install Mounting Brackets

To install the mounting brackets onto the sides of the server:

- 1. Position a mounting bracket against the chassis so that the slide-rail lock is at the server front, and the four keyed openings on the mounting bracket are aligned with the four locating pins on the side of the chassis.**

**FIGURE 3-2** Aligning the Mounting Bracket With the Server Chassis



**Figure Legend**

- 
- |   |                       |
|---|-----------------------|
| 1 | Chassis front         |
| 2 | Slide-rail lock       |
| 3 | Mounting bracket      |
| 4 | Mounting bracket clip |
- 

2. With the heads of the four chassis locating pins protruding through the four keyed openings in the mounting bracket, pull the mounting bracket toward the front of the chassis until the mounting bracket clip locks into place with an audible click (see [FIGURE 3-2](#)).
3. Verify that the rear locating pin has engaged the mounting bracket clip (see [FIGURE 3-2](#)).
4. Repeat to install the remaining mounting bracket on the other side of the server.

---

# Attaching the Slide-Rail Assemblies to the Rack

Complete one of the following procedures to attach the slide-rail assemblies to the rack:

- [“Attach Bolt-On Slide-Rail Assemblies” on page 58](#)
- [“Attach Tool-less Slide-Rail Assemblies” on page 61](#)

## ▼ Attach Bolt-On Slide-Rail Assemblies

To attach bolt-on slide-rail assemblies to the rack:

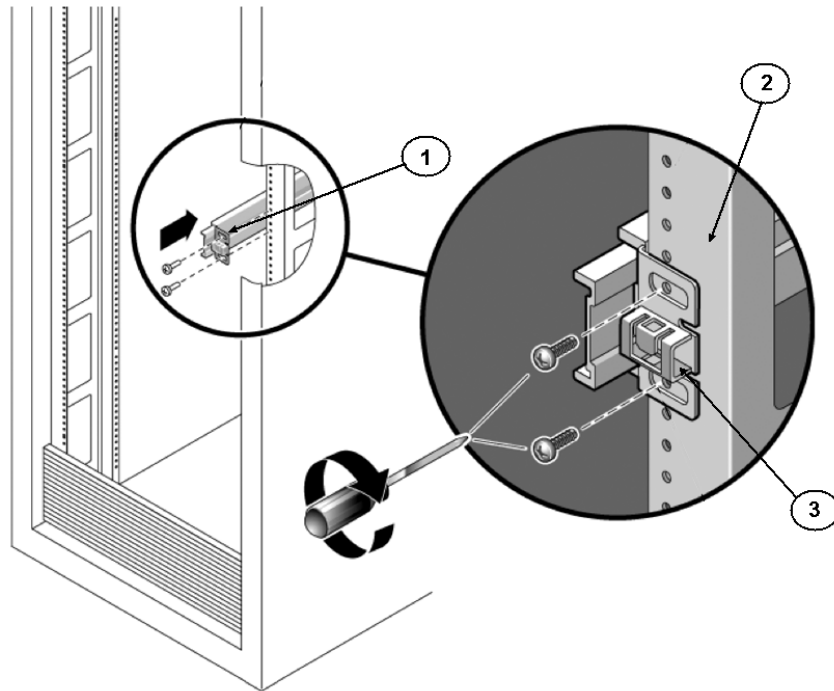
- 1. Position a slide-rail assembly in your rack so that the brackets at each end of the slide-rail assembly are on the outside of the front and rear rack posts (see [FIGURE 3-3](#)).**
- 2. Attach the slide-rail assembly to the rack posts, but do *not* tighten the screws completely.**

Choose one of the following methods to attach the slide-rails. The method you use varies, depending on the type of rack:

- If your rack has threaded mounting holes in the rack posts, first determine whether the threads are metric or standard, then insert the correct mounting screws through the slide-rail brackets and into the threaded holes.
- If your rack does not have threaded mounting holes, insert the mounting screws through both the slide-rail brackets and rack posts, then secure them with the caged nuts.



**FIGURE 3-3** Attaching Slide-Rail Assembly to Rack Post

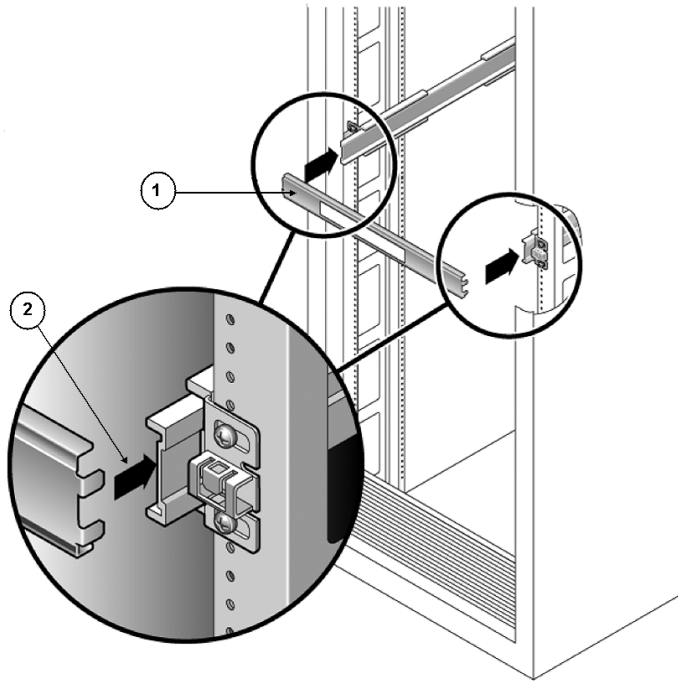


**Figure Legend**

- 
- 1 Slide-rail assembly
  - 2 Rack post
  - 3 Slide-rail assembly bracket on outside of rack post
- 

3. Repeat [Step 1](#) and [Step 2](#) for the remaining slide-rail assembly.
4. From the front of the rack, set the proper width of the rails with the spacer (see [FIGURE 3-4](#)).

**FIGURE 3-4** Setting the Rail Width



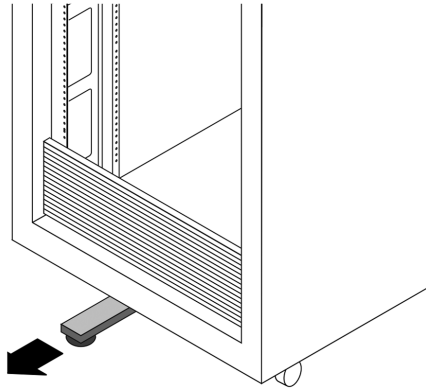
**Figure Legend**

- 
- 1 Rail-width spacer
  - 2 Attaching the spacer to the rails
- 

5. **Tighten the screws on both brackets.**
6. **Remove the spacer and confirm that the rails are attached tightly to the rack.**
7. **Repeat [Step 4](#) through [Step 6](#) for the side-rail assembly at the rear of the rack.**

8. If available, extend the anti-tip bar at the bottom of the rack (see [FIGURE 3-5](#)).

**FIGURE 3-5** Extending the Anti-tip Bar



---

**Caution** – If your rack does not have an anti-tip bar, the rack could tip over.

---

## ▼ Attach Tool-less Slide-Rail Assemblies

To attach tool-less slide-rail assemblies to the rack, refer to the installation card instructions included with the rackmount kit.

---

# Installing the Server Into the Slide-Rail Assemblies

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.

---





---

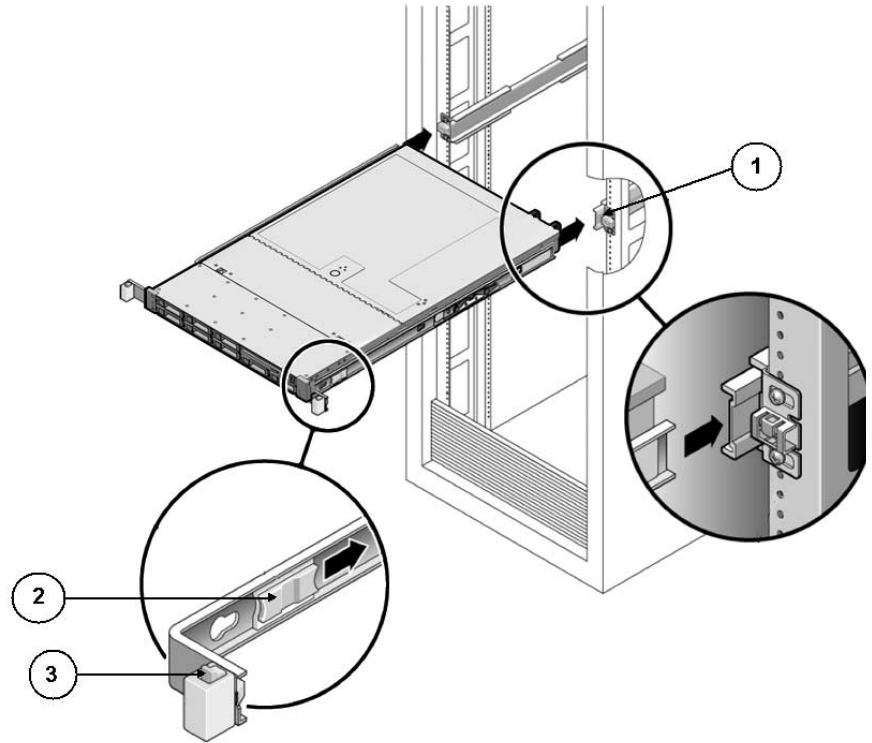
**Caution** – Always load equipment into a rack from the bottom up so that it will not become top-heavy and tip over. Extend your rack’s anti-tip bar to prevent the rack from tipping during equipment installation.

---

## ▼ Install Server Into the Slide-Rail Assemblies

1. Push the slide-rails into the slide-rail assemblies in the rack as far as possible.
2. Raise the server so that the rear ends of the mounting brackets are aligned with the slide-rail assemblies that are mounted in the equipment rack (see [FIGURE 3-6](#)).
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).

**FIGURE 3-6** Inserting the Server With Mounting Brackets Into the Slide-Rails



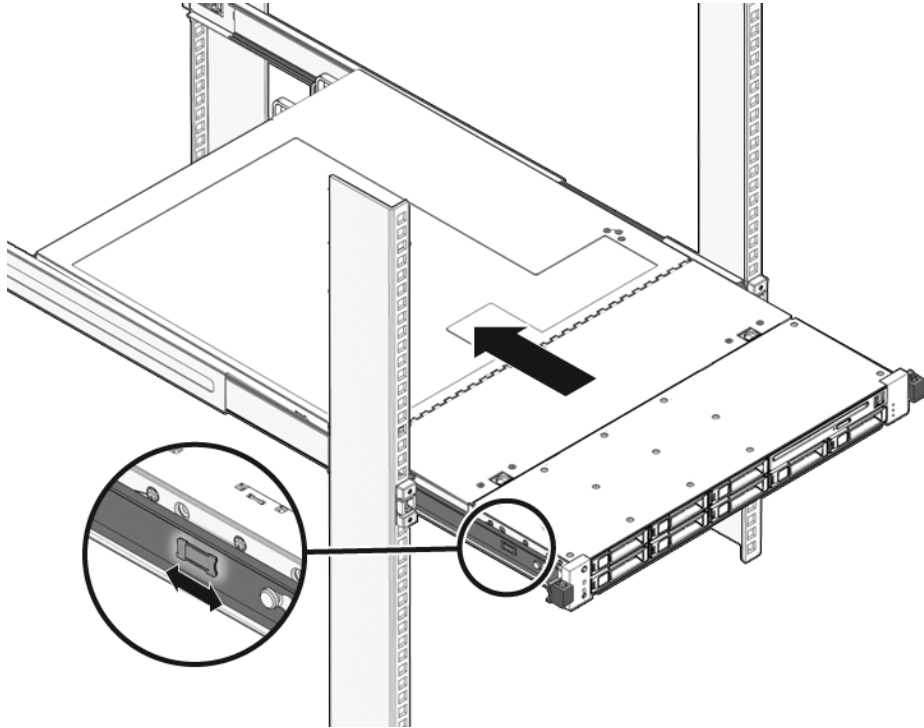
**Figure Legend**

- 
- 1 Inserting mounting bracket into slide rail
  - 1 Slide-rail release button
  - 1 Slide-rail lock
- 

4. Simultaneously push and hold the slide-rail release buttons on each mounting bracket while you push the server into the rack (see [FIGURE 3-7](#)). Continue pushing until the slide-rail locks (on the front of the mounting brackets) engage the slide-rail assemblies.

You will hear an audible click.

**FIGURE 3-7** Sliding the Server Back Into the Rack



---

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

---

---

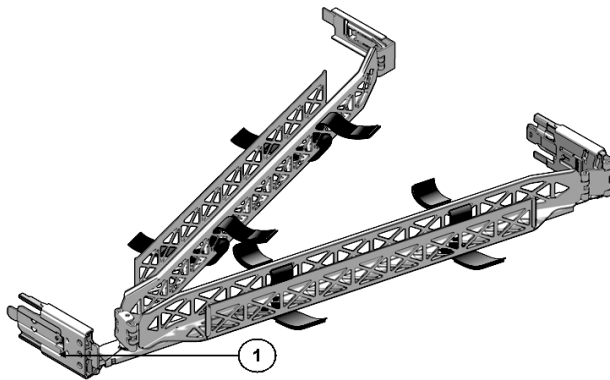
# Installing the Cable Management Arm

The cable management arm (CMA) is an optional assembly that you can use to route the server cables in the rack.

## ▼ Install Cable Management Arm

Use this procedure to install the optional CMA (see [FIGURE 3-8](#)).

**FIGURE 3-8** Cable Management Arm (CMA)



### Figure Legend

---

1 CMA rail extension

---

1. **Unpack the CMA parts.**
2. **Take the CMA to the back of the equipment rack and ensure that you have adequate room to work around the back of the server.**

---

**Note** – References to “left” or “right” in this procedure assume that you are facing the back of the equipment rack.

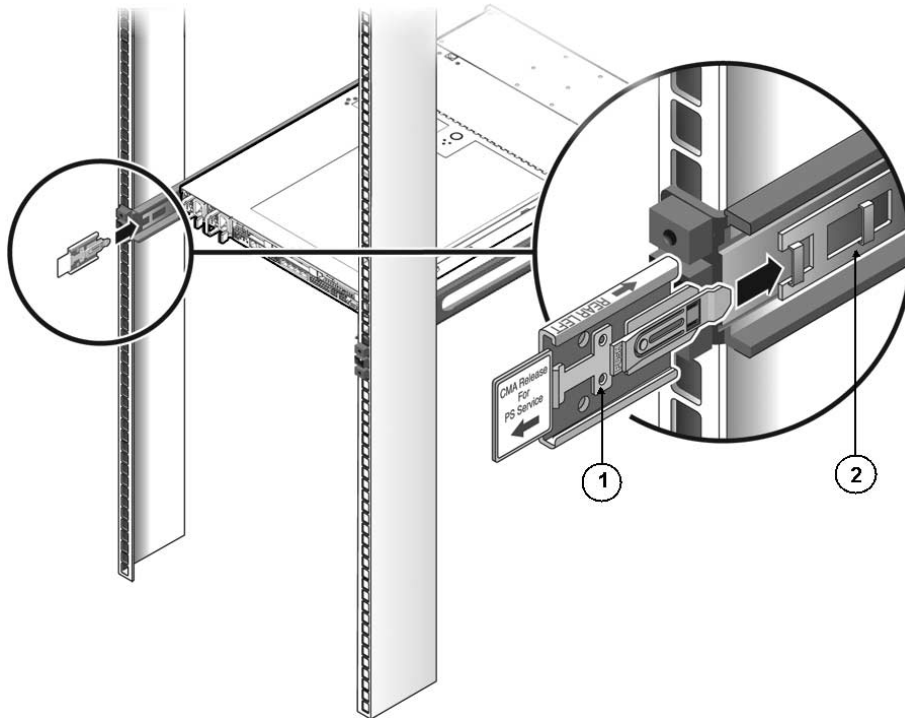
---

3. **Remove tape to separate parts.**

The CMA rail extension might be taped to the CMA arm.

4. Attach the CMA rail extension into the left slide-rail until the extension locks into place with an audible click (see [FIGURE 3-9](#)).

**FIGURE 3-9** Inserting the CMA Rail Extension Into the Back of the Left Slide-Rail



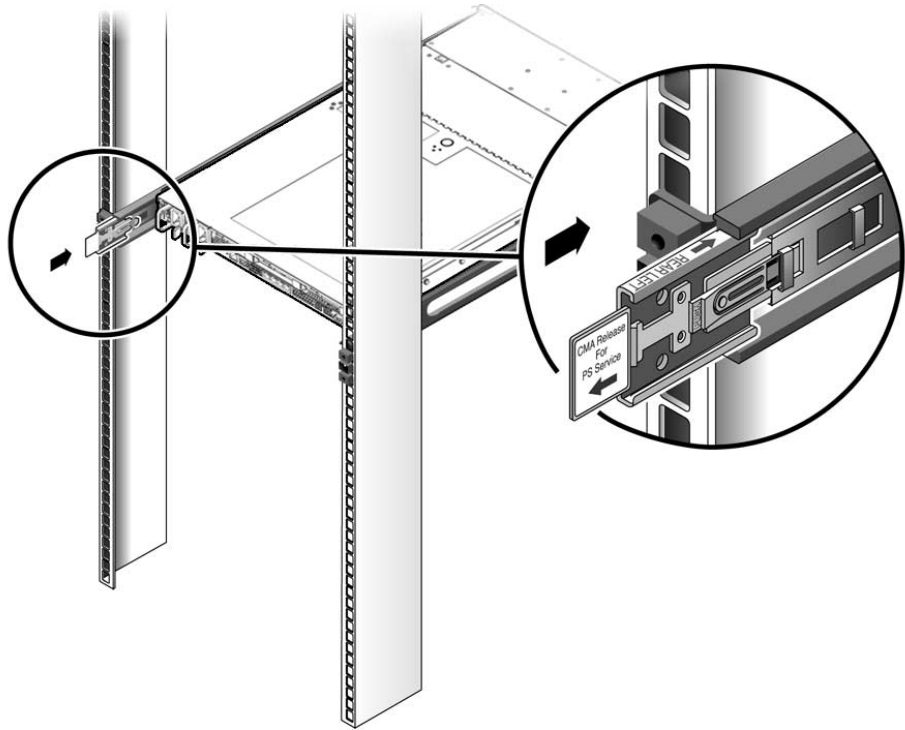
**Figure Legend**

- 
- |   |                    |
|---|--------------------|
| 1 | CMA rail extension |
| 2 | Left slide-rail    |
-



5. Verify that the CMA rail extension engages the slide-rail (see [FIGURE 3-10](#)).

**FIGURE 3-10** Engaging the CMA Rail Extension With the Left Slide-Rail



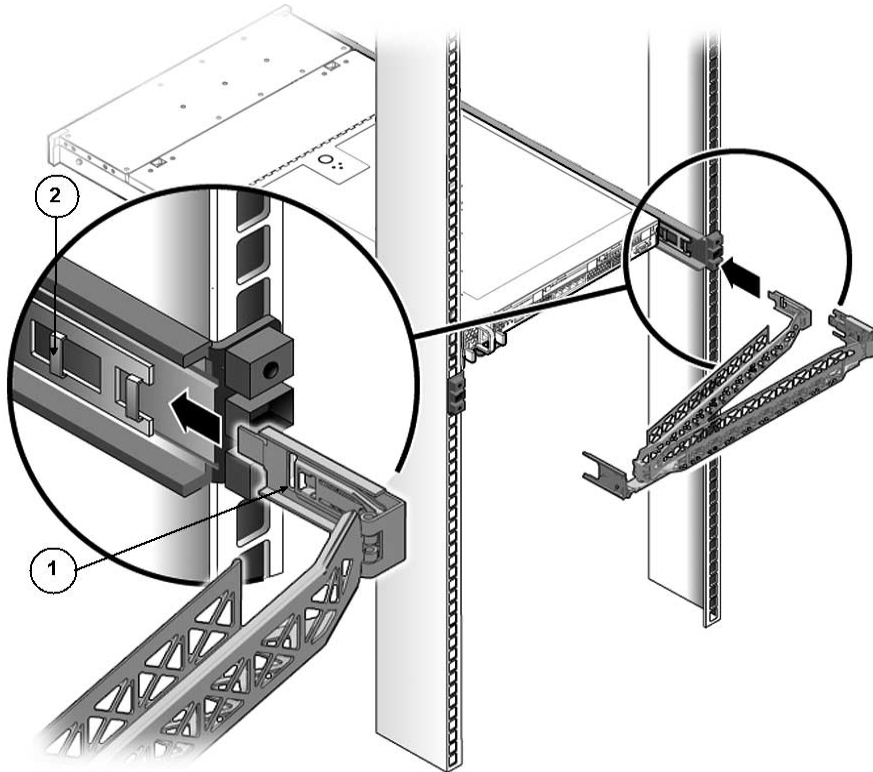
---

**Note** – Support the CMA in the remaining installation steps. Do not allow the arm to hang by its own weight until it is secured by all three attachment points.

---

6. Insert the CMA's mounting bracket connector into the right slide-rail until the connector locks into place with an audible click (see [FIGURE 3-11](#)).

**FIGURE 3-11** Inserting the CMA Mounting Bracket Into the Back of the Right Slide-Rail

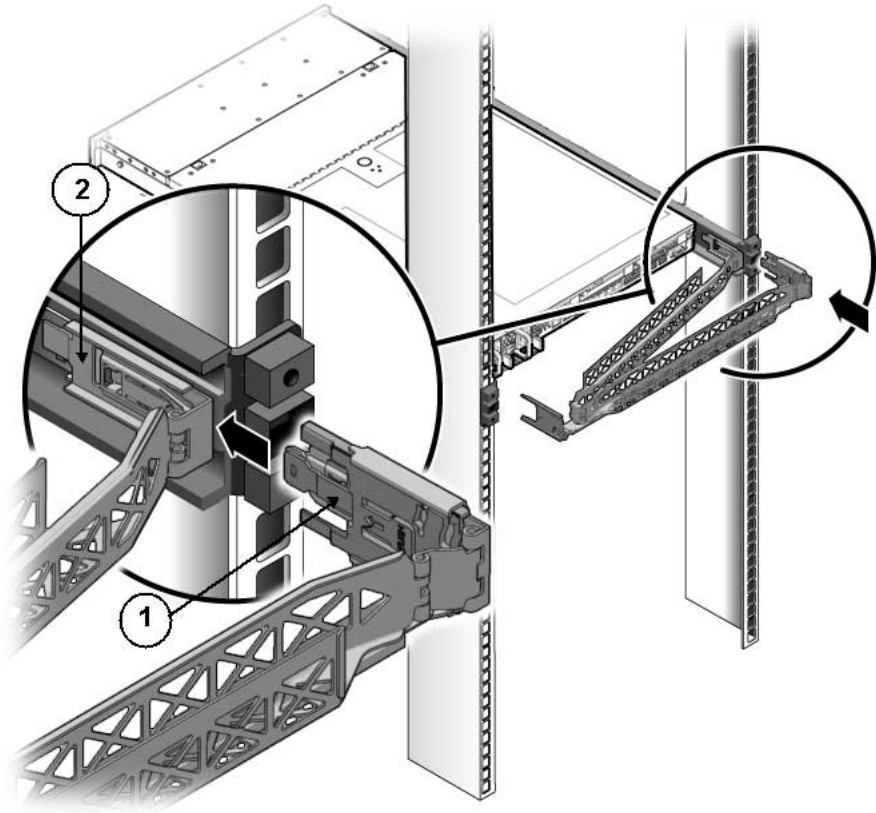


**Figure Legend**

- 
- 1 CMA mounting bracket
  - 2 Right slide-rail
-

7. Insert the right CMA slide-rail connector into the right slide-rail assembly until the connector locks into place with an audible click (see [FIGURE 3-12](#)).

**FIGURE 3-12** Inserting CMA Slide-Rail Connector Into the Back of the Right Slide-Rail Assembly

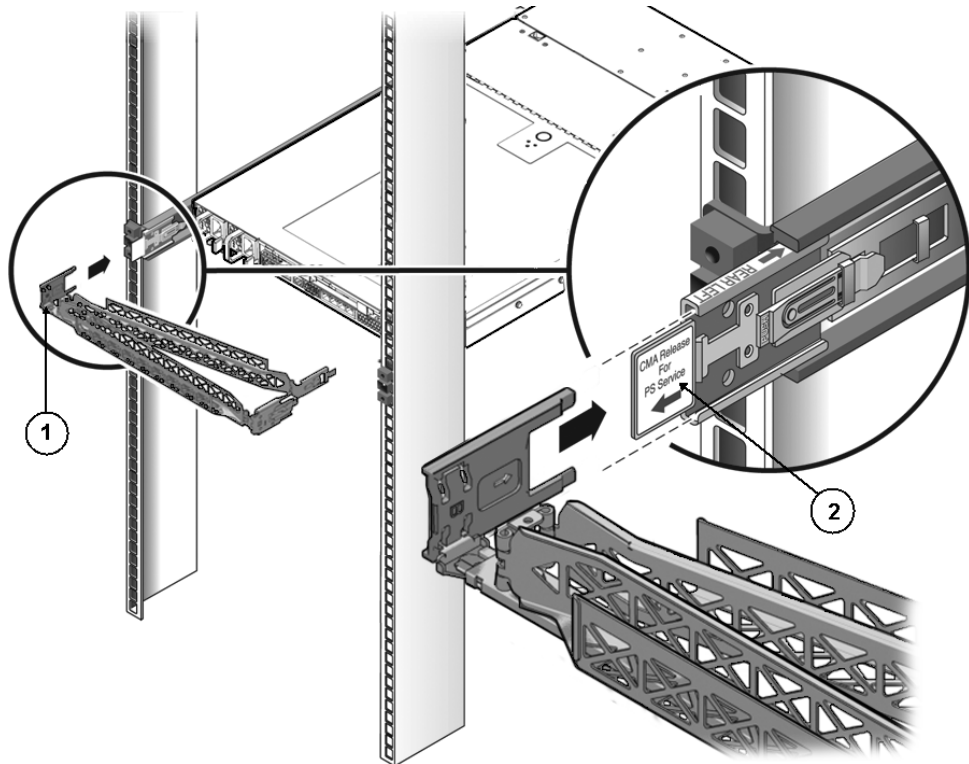


**Figure Legend**

- 
- |   |                           |
|---|---------------------------|
| 1 | CMA slide-rail connector  |
| 2 | Right slide-rail assembly |
-

8. Insert the left CMA slide-rail connector into the rail extension on the left slide-rail assembly until the connector locks into place with an audible click (see [FIGURE 3-13](#)).

**FIGURE 3-13** Connecting the CMA to the Rail Extension Connector



**Figure Legend**

- 
- |   |  |
|---|--|
| 1 | CMA extension arm (on left slide-rail) |
| 2 | CMA extension                          |
- 

9. Install and route cables to your server, as required.

---

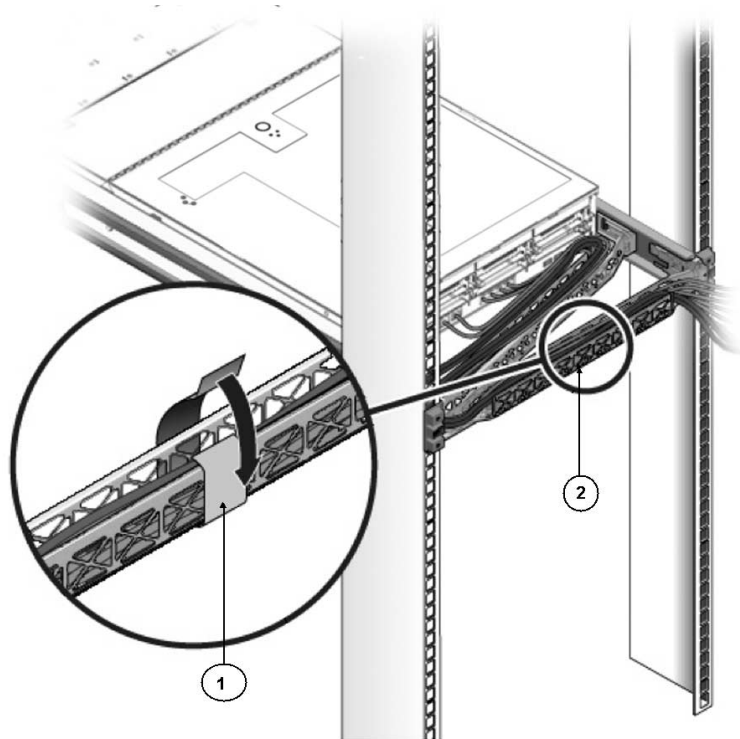
**Note** – Instructions for installing the server cables are provided in [“Connecting the Cables”](#) on page 74.

---

10. Attach the cable hook and loop straps to the CMA, and press them into place to secure the cables (see [FIGURE 3-14](#)).

For best results, place three cable straps, evenly spaced, on the rear-facing side of the CMA and three cable straps on the side of the CMA nearest the server.

**FIGURE 3-14** Installing CMA Cable Straps



**Figure Legend**

- 
- 1 CMA cable strap
  - 2 CMA arm
-

---

# Verifying Operation of the Slide-Rails and CMA

Use the following procedure to ensure that the slide-rails and CMA are operating correctly.

## ▼ Verify Operation of Slide-Rails and CMA

---

**Note** – Two people are recommended for this procedure: one to move the server in and out of the rack, and one to observe the cables and CMA.

---

1. Slowly pull the server out of the rack until the slide-rails reach their stops.

2. Inspect the attached cables for any binding or kinks.

3. Verify that the CMA extends fully from the slide-rails.

4. Push the server back into the rack, as described in the following sub-steps.

When the server is fully extended, you must release two sets of slide-rail stops to return the server to the rack:

a. The first set of stops are levers, located on the inside of each slide-rail, just behind the back panel of the server. These levers are labeled “PUSH.” Push in both levers simultaneously and slide the server toward the rack.

The server will slide in approximately 18 inches (46 cm) and stop.

Verify that the cables and the CMA retract without binding before you continue.

b. The second set of stops are the slide-rail release buttons, located near the front of each mounting bracket (see [FIGURE 3-7](#)). Simultaneously push or pull both of the slide-rail release buttons, and push the server completely into the rack until both slide-rail locks engage.

5. Adjust the cable straps and CMA, as required.

## Setting Up the Server

---

This chapter describes how to connect cables and power on the server for the first time. It includes the following topics:

- [“Connecting the Cables” on page 74](#)
- [“Connecting to the ILOM Service Processor for the First Time” on page 78](#)
- [“Applying Main Power to the Server for the First Time” on page 84](#)

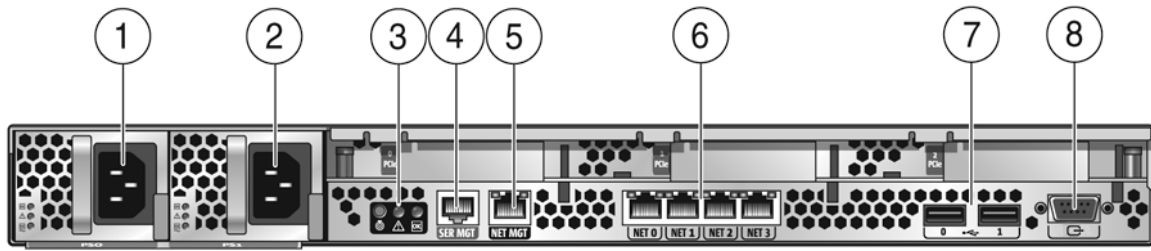
# Connecting the Cables

Connect the power and data cables to the server back panel.

## Connector Locations

FIGURE 4-1 shows and describes the locations of the Sun Fire X4170 Server back panel connectors.

FIGURE 4-1 Sun Fire X4170 Server Back Panel Connectors



### Figure Legend

- |   |   |   |   |
|---|---|---|---|
| 1 | Power supply unit 0 connector                 | 5 | Service processor (SP) network management (NET MGT) Ethernet port |
| 2 | Power supply unit 1 connector                 | 6 | Gigabit Ethernet ports NET-0, 1, 2, 3                             |
| 3 | System status LEDs                            | 7 | USB 2.0 ports (0, 1)  |
| 4 | Serial management (SER MGT)/RJ-45 serial port | 8 | HD15 video connector (analog VGA)                                 |



FIGURE 4-2 shows and describes the locations of the Sun Fire X4270 and X4275 Servers back panel connectors.

FIGURE 4-2 Sun Fire X4270 and X4275 Server Back Panel

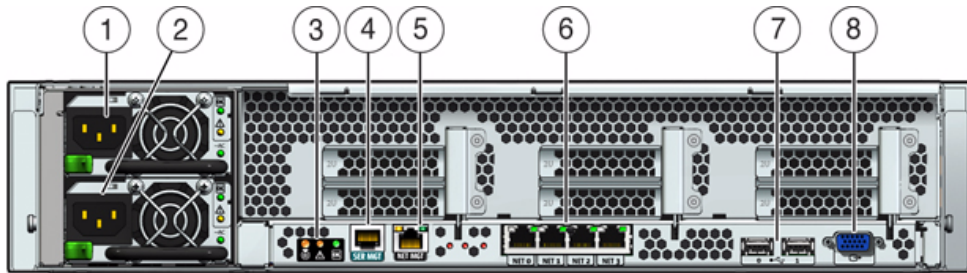


Figure Legend

1	Power supply unit 1 connector	5	Service processor (SP) network management (NET MGT) Ethernet port
2	Power supply unit 0 connector	6	Gigabit Ethernet ports NET-0, 1, 2, 3
3	System status LEDs	7	USB 2.0 ports (0, 1)
4	Serial management (SER MGT)/RJ-45 serial port	8	HD15 video connector (analog VGA)

## ▼ Cable the Server

Connect the server power cables and external cables in the following order:

1. **Connect two grounded server power cords to grounded electrical outlets.**

---

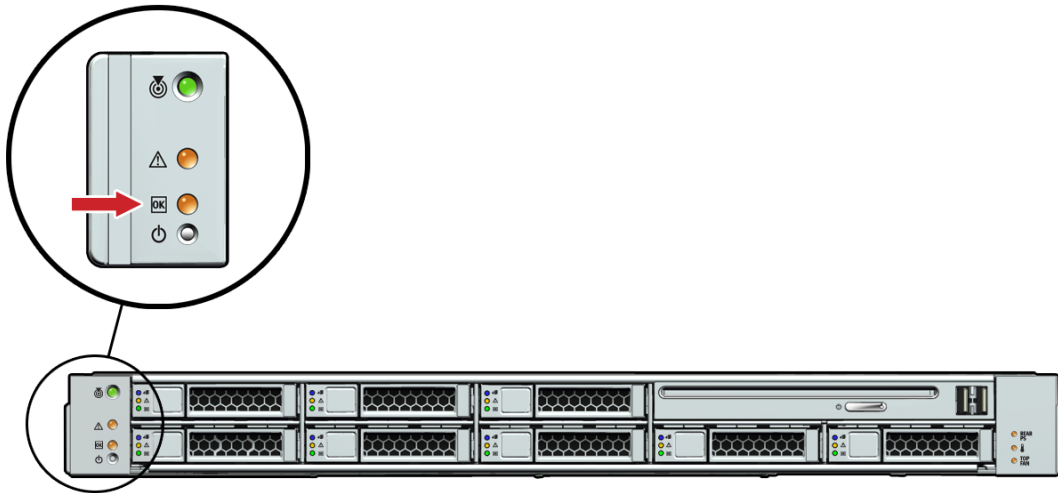
**Note** – Connect only one cable if your server does not have a redundant power supply.

---

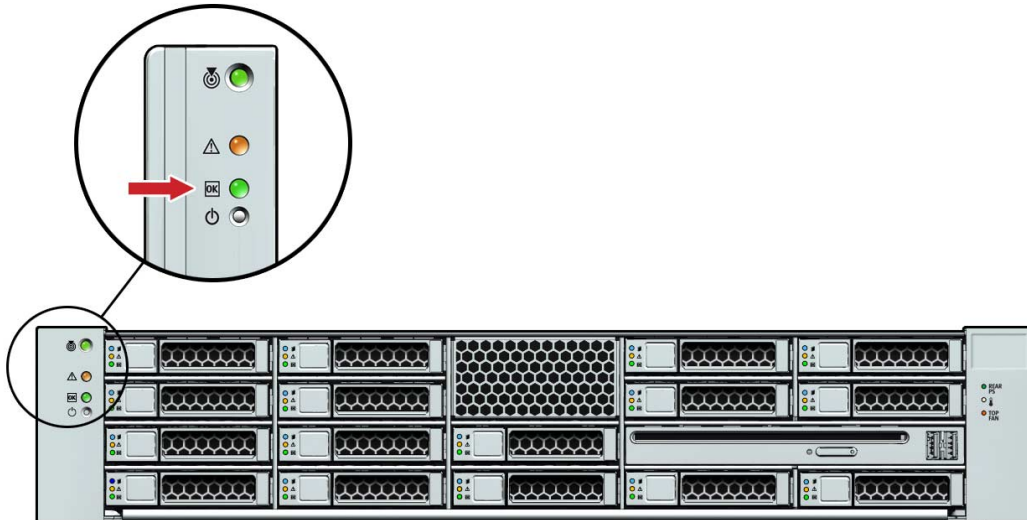
2. **Connect the two server power cords to the AC power connectors on the back panel of the server [1, 2].**

In standby power mode, the Power/OK LED on the front panel blinks, indicating that the service processor (SP) is working as shown in [FIGURE 4-3](#), [FIGURE 4-4](#), and [FIGURE 4-5](#). At this point, before initial configuration, standby power is supplied only to the SP and power supply fans.

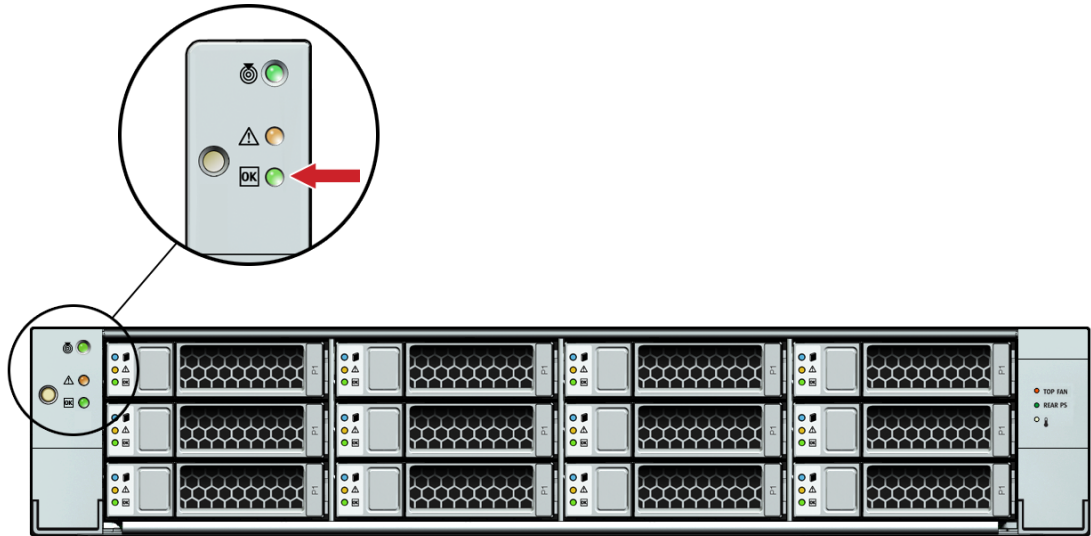
**FIGURE 4-3** Sun Fire X4170 Server Front Panel Power/OK LED



**FIGURE 4-4** Sun Fire X4270 Server Front Panel Power/OK LED



**FIGURE 4-5** Sun Fire X4275 Server Front Panel Power/OK LED



---

**Note** – Do *not* push the Power button at this time. Do not apply main power to the rest of the server until you are ready to install a platform operating system.

---

3. Connect a serial null modem cable to the SER MGT/RJ-45 serial port [4].  
See “[Connecting to the ILOM Service Processor for the First Time](#)” on page 78 for more information about viewing system output from a serial console.
4. Connect Ethernet cables to the SP NET MGT Ethernet port [5].
5. Connect Ethernet cables to the Gigabit Ethernet (NET) connectors as needed for OS support [6].
6. (Optional) Connect any additional external devices, as required, to the server’s USB [7] and/or HD15 Video [8] connectors.
7. Connect to the Integrated Lights Out Manager (ILOM) SP. See the next section.



---

**Caution** – Do not operate the server without all fans, component heatsinks, air baffles, and the cover installed. Severe damage to server components can occur if the server is operated without adequate cooling mechanisms.

---

---

# Connecting to the ILOM Service Processor for the First Time

This section describes how to connect to the ILOM service processor (SP) for initial setup and configuration. It covers the following topics:

- [“About ILOM SP IP Addresses” on page 78](#)
- [“About ILOM SP Interfaces” on page 78](#)
- [“Determining the ILOM SP IP Address” on page 79](#)
- [“Changing the ILOM SP IP Address” on page 81](#)

## About ILOM SP IP Addresses

The ILOM SP is assigned a DHCP IP address by default. There are two requirements for DHCP IP address assignment to occur:

- Connection to your network must be through a NET MGT port.
- DHCP services must be present on your network infrastructure.

If a DHCP server cannot be reached after three DHCP requests, the ILOM SP is assigned a static IP address based on the network management port MAC address. This IP address is always in the format 192.168.xxx.xxx.

## About ILOM SP Interfaces

Choose from one of several ILOM SP interfaces to support system management on your server. You can access SP firmware applications through the following ILOM SP interfaces:

- Serial port command-line interface (CLI) (local access)
- Secure shell (SSH) CLI (remote access over the network)
- Web browser user interface (BUI) (remote access over the network)

# Determining the ILOM SP IP Address

You can use either of the following methods to determine the IP address of the ILOM SP for remote network access:

- [“Use the BIOS Setup Utility to View the Assigned ILOM SP IP Address” on page 79](#)
- [“Use a Serial Connection to View the Assigned ILOM SP IP Address” on page 80](#)

## ▼ Use the BIOS Setup Utility to View the Assigned ILOM SP IP Address

To access the BIOS Setup utility and view the ILOM SP IP address, complete the following steps:

- 1. Power on the server (or restart the server if it is running).**
- 2. When the Sun Microsystems splash screen or text prompt appears during the power-on self-test (POST) operation, press F2 to access the BIOS settings.**
- 3. Using the left and right arrow keys on the keyboard, navigate to the Advanced tab.**  
The Advanced screen appears.
- 4. Using the up and down arrow keys, select the IPMI Configuration option and press Enter to go to the subscreen.**  
The IPMI Configuration subscreen appears.
- 5. Using the up and down arrow keys, select the Set LAN Configuration option and press Enter.**  
The LAN Configuration subscreen appears and shows the current ILOM SP IP address.
- 6. Record the IP address as you will need it to log in to ILOM using SSH or a web browser.**

---

**Note** – If the IP address is in the form of 192.168.xxx.xxx, the DHCP server might not have assigned an address and the SP might use a static address.

---

## ▼ Use a Serial Connection to View the Assigned ILOM SP IP Address

To establish a connection to the SP using a serial connection (SER MGT port), complete the following steps:

**1. Ensure that the server hardware is installed and cables are connected.**

Ensure that the power is in standby mode and the green Power/OK LED blinks. See [“Connecting the Cables” on page 74](#).

**2. Verify that your terminal, laptop, PC, or terminal server is operational.**

**3. Configure the terminal device or the terminal emulation software running on a laptop or PC to the following settings:**

- 8,N,1: eight data bits, no parity, one stop bit
- 9600 baud
- Disable hardware flow control (CTS/RTS)
- Disable software flow control (XON/XOFF)

**4. Connect a null serial modem cable from the SER MGT/RJ-45 serial port on the server back panel to the terminal device (if not connected already).**

See [FIGURE 4-1](#) and [FIGURE 4-2](#) for the position of the serial port on the back panel.

**5. Press Enter on the terminal device to establish a connection between the terminal device and the ILOM SP.**

ILOM displays a login prompt, after a short wait.

```
login:
```

---

**Note** – If you connect to the serial port on the server before the ILOM SP has been powered on or during its power-on sequence, SP boot messages might be displayed prior to the login prompt.

---

**6. Type the default user name, and the default password to log in to the ILOM SP.**

```
Username: root
```

```
Password: changeme
```

ILOM displays a default command prompt (->), indicating that you have successfully logged in to ILOM.

**7. To display the current SP IP address, type:**

-> **show /SP/network**

The IP information appears, as shown in the following sample:

```
/SP/network
Targets:
  commitpending = (Cannot show property)
  ipaddress = 129.148.53.128
  ipdiscovery = static
  ipgateway = 129.148.53.248
  ipnetmask = 255.255.255.0
  macaddress = 00:1E:68:0F:4A:84
  managementport = /SYS/SP/NET0
  outofbandmacaddress = 00:14:4F:E7:2E:48
  pendingipaddress = 129.148.53.128
  pendingipdiscovery = static
  pendingipgateway = 129.148.53.248
  pendingipnetmask = 255.255.255.0
  pendingmanagementport = /SYS/SP/NET0
  sidebandmacaddress = 00:14:4F:E7:2E:49
```

**8. Record the IP address as you will need it to log in to ILOM using SSH or an internet browser.**

## Changing the ILOM SP IP Address

You can use any of the following methods to change the current IP address of the ILOM SP:

- [“Use the BIOS Setup Utility to Change the ILOM SP IP Address”](#) on page 82
- [“Use the Serial Connection to Change the ILOM SP IP Address”](#) on page 82
- [“Use a Web Browser to Change the ILOM SP IP Address”](#) on page 83

## ▼ Use the BIOS Setup Utility to Change the ILOM SP IP Address

To access the BIOS Setup utility and change the ILOM SP IP address, complete the following steps:

1. Follow [Step 1 through Step 5 in the procedure “Use the BIOS Setup Utility to View the Assigned ILOM SP IP Address” on page 79.](#)

The LAN Configuration subscreen appears and shows the current SP IP address.

2. In the LAN Configuration subscreen, using the up and down arrow keys, navigate to the IP Assignment field.

The current IP assignment mode is highlighted.

3. If necessary, change the IP Assignment field from DHCP to static.

4. Using the up and down arrow keys, navigate to the IP Address field.

The current IP address is highlighted.

5. Type the new IP address.

---

**Note** – If the IP address is in the form of 192.168.xxx.xxx, the DHCP server might not have assigned an address and the SP might use a static address.

---

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

## ▼ Use the Serial Connection to Change the ILOM SP IP Address

This section provides two examples of using the serial connection to change the ILOM SP IP address.

### Example 1

To change the SP DHCP IP address to a static IP address using the serial connection (SER MGT port), complete the following steps:

1. Follow [Step 1 through Step 6 in the procedure “Use a Serial Connection to View the Assigned ILOM SP IP Address” on page 80.](#)

2. At the ILOM command prompt, type the following command to determine the SP IP address:

```
-> show /SP/network
```



3. To assign a static IP address, type the following commands in the exact order shown:

```
-> set /SP/network/ pendingipdiscovery=static
-> set /SP/network/ pendingipaddress=xxx.xxx.xxx.xxx
-> set /SP/network/ pendingipnetmask=xxx.xxx.xxx.xxx
-> set /SP/network/ pendingipgateway=xxx.xxx.xxx.xxx
-> set /SP/network/ commitpending=true
```

Where *xxx* are the IP address numbers.

4. Type `show /SP/network` to view and verify the newly assigned static IP address settings.

## Example 2

To change the SP static IP address to a DHCP IP address using the serial connection (SER MGT port), complete the following steps:

1. Follow [Step 1 through Step 6 in the procedure “Use a Serial Connection to View the Assigned ILOM SP IP Address”](#) on page 80.
2. At the ILOM command prompt, type the following command to change a static address to a DHCP address:

```
-> set /SP/network pendingipdiscovery=dhcp
-> set /SP/network commitpending=true
```
3. Type `show /SP/network` to view the newly assigned DHCP IP address.

DHCP enabled is shown as `ipdiscovery=dhcp`

## ▼ Use a Web Browser to Change the ILOM SP IP Address

---

**Note** – The SP web browser interface can be accessed *only* if you know the SP IP address. See [“Determining the ILOM SP IP Address”](#) on page 79.

---

To change a static IP address, using the SP ILOM web browser interface, complete the following steps:

1. Open a supported web browser, such as Internet Explorer, Mozilla, or Firefox.
2. Type the IP address of the ILOM SP in the browser address bar.

For example: **http://xxx.xxx.xxx.xxx**

Where *xxx.xxx.xxx.xxx* is the IP address of the ILOM SP.

3. Accept the certificate when prompted.
4. Enter your user name (**root**) and password (**changeme**).
5. Select the **Configuration** tab and then the **Network** tab.
6. Set configurations, such as IP configuration, as required.
  - a. Do one of the following:
    - If DHCP is required, select the Enable DHCP check box.
    - If STATIC is required, clear the Enable DHCP check box, and manually set all IP information.
  - b. If you manually change the IP address, you must manually change the subnet mask, because the subnet mask changes according to the IP address class.
7. Save your settings.
8. Log out of ILOM.
9. If the IP address changes, you must reconnect to ILOM using the newly assigned IP address, because the current session will become unresponsive.

For detailed information on using ILOM, see the *Sun Integrated Lights Out Manager 2.0 User's Guide* (820-1188).

---

## Applying Main Power to the Server for the First Time

When you are ready to install a supported operating system, you can apply main power to the server.

### ▼ Apply Main Power to the Server

To turn on main power to the server for the first time, following these steps:

1. **Verify that the power cord has been connected and that standby power is on.**

In standby power mode, the Power/OK LED on the front panel blinks. See [FIGURE 4-3](#), [FIGURE 4-4](#), or [FIGURE 4-5](#).
2. **Verify that you are connected to the server through the serial management (SER MGT) port; perform the following sub-steps:**

- a. Ensure that the server hardware is installed and cables are inserted.
- b. Verify that your terminal, laptop, PC, or terminal server is operational.
- c. Configure the terminal device or the terminal emulation software running on a laptop or PC to the following settings:
  - 8,N,1: eight data bits, no parity, one stop bit
  - 9600 baud
  - Disable hardware flow control (CTS/RTS)
  - Disable software flow control (XON/XOFF)
- d. Connect a null serial modem cable from the server's back panel SER MGT/RJ-45 port to the terminal device (if not connected already).  
See [FIGURE 4-1](#) and [FIGURE 4-2](#) for the SER MGT/RJ-45 port location.

- e. Press Enter on the terminal device to establish a connection between the terminal device and the ILOM SP.

ILOM displays a login prompt, after a short wait.

login:

- f. Type the default user name, and the default password to log in to the ILOM SP.

Username: **root**

Password: **changeme**

ILOM displays a default command prompt (-> ), indicating that you have successfully logged in to ILOM.

3. Use a nonconductive stylus such as a pencil, or other pointed object, to press and release the recessed Power button on the server front panel.

When main power is applied to the server, the green Power/OK LED next to the Power button lights and remains lit.

4. To display a screen for installing the preinstalled Solaris or OpenSolaris OS from the server SER MGT port, type:

```
-> start /SP/console
```

5. To install and configure the preinstalled Solaris or OpenSolaris OS software, proceed to [“Configuring the Preinstalled Solaris 10 Operating System”](#) on page 87 or [“Configuring the Preinstalled OpenSolaris Operating System”](#) on page 103.

---

**Note** – To return to the ILOM command-line interface from the serial console, press **ESC** ( , depending on your keyboard (U.S.A. or international)).

---



# Configuring the Preinstalled Solaris 10 Operating System

---

This chapter explains the steps for configuring the Solaris™ 10 Operating System (OS) that is preinstalled on the hard disk drive (or solid state drive), if ordered. The preinstalled Solaris version is Solaris 10 10/09 or later.

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**Note** – Unlike with SPARC® systems, you will *not* see the output of the preinstalled Solaris 10 image through a monitor when you power on the server. You will see the BIOS power-on self-test (POST) and other boot information output.

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This chapter includes the following topics:

- [“Before You Begin” on page 88](#)
- [“Configuring the Preinstalled Solaris 10 Operating System” on page 92](#)
- [“Configuring Server RAID Drives” on page 95](#)
- [“Mirroring the Preinstalled Solaris OS With LSI RAID” on page 97](#)
- [“Mirroring the Preinstalled Solaris OS With Sun StorageTek HBA Card” on page 98](#)
- [“Solaris 10 Operating System User Information” on page 100](#)
- [“Using the Solaris Installation Program” on page 100](#)
- [“Reinstalling the Solaris Operating System” on page 101](#)

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# Before You Begin

Before you begin configuring the preinstalled Solaris 10 OS, do the following:

- Configure an IP address for the server SP. For details, see [“Connecting to the ILOM Service Processor for the First Time” on page 78](#).
- Ensure that main power has been applied to the server. For more information, see [“Applying Main Power to the Server for the First Time” on page 84](#).
- Gather the information that you will need for the configuration, as listed in [“Installation Worksheet” on page 88](#). Note that default values are indicated by an asterisk (\*).

---

**Note** – To identify the MAC address for a server or other chassis components, see the Customer Information Sheet (shipped with the component), or inspect the printed MAC address label attached to the server or chassis component.

---

- The server ships with its console redirected to the *serial* port. You can choose an option to send the output to VGA (video port). For more information, see [“Redirect the Console Output to the Video Port \(Optional\)” on page 94](#).

## Installation Worksheet

Use the worksheet in [TABLE 5-1](#) to gather the information that you need to configure the preinstalled Solaris 10 OS. You only need to collect the information that applies to your application of the system.

**TABLE 5-1** Worksheet for Solaris 10 Configuration

Information for Installation		Description or Example	Your Answers: Defaults (*)
Language		Select from the list of available languages for the Solaris 10 software.	English*
Locale		Select your geographic region from the list of available locales.	
Terminal		Select the type of terminal that you are using from the list of available terminal types.	
Network connection		Is the system connected to a network?	<ul style="list-style-type: none"> <li>• Networked</li> <li>• Non-networked*</li> </ul>
DHCP		Can the system use Dynamic Host Configuration Protocol (DHCP) to configure its network interfaces?	<ul style="list-style-type: none"> <li>• Yes</li> <li>• No*</li> </ul>
If you are not using DHCP, note the network address:	IP address	If you are not using DHCP, supply the IP address for the system. Example: 129.200.9.1	
	Subnet	If you are not using DHCP, is the system part of a subnet? If yes, what is the netmask of the subnet? Example: 255.255.0.0	255.255.0.0*
	IPv6	Do you want to enable IPv6 on this machine?	<ul style="list-style-type: none"> <li>• Yes</li> <li>• No*</li> </ul>
Host name		Choose a host name for the system.	
Kerberos		Do you want to configure Kerberos security on this machine? If yes, gather this information: <div style="text-align: right; margin-right: 20px;">                     Default realm:                      Administration server:                      First KDC:                      (Optional) Additional KDCs:                 </div>	<ul style="list-style-type: none"> <li>• Yes</li> <li>• No*</li> </ul>

**TABLE 5-1** Worksheet for Solaris 10 Configuration (*Continued*)

Information for Installation		Description or Example	Your Answers: Defaults (*)
Name service	Name service	If applicable, which name service should this system use?	<ul style="list-style-type: none"> <li>• NIS+</li> <li>• NIS</li> <li>• DNS</li> <li>• LDAP</li> <li>• None*</li> </ul>
	Domain name	Provide the name of the domain in which the system resides.	
	NIS+ and NIS	Do you want to specify a name server, or let the installation program find one?	<ul style="list-style-type: none"> <li>• Specify One</li> <li>• Find One*</li> </ul>
	DNS	<p>Provide IP addresses for the DNS server. You must enter at least one IP address, but you can enter up to three addresses.</p> <p>You can also enter a list of domains to search when a DNS query is made.</p> <p style="text-align: right;">Search domain: Search domain: Search domain:</p>	
	LDAP	<p>Provide the following information about your LDAP profile:</p> <p style="text-align: right;">Profile name: Profile server:</p> <p>If you specify a proxy credential level in your LDAP profile, gather the following information:</p> <p style="text-align: right;">Proxy-bind distinguished name: Proxy-bind password:</p>	



**TABLE 5-1** Worksheet for Solaris 10 Configuration (*Continued*)

Information for Installation	Description or Example	Your Answers: Defaults (*)
Default route	<p>Do you want to specify a default route IP address, or let the Solaris installation program find one?</p> <p>The default route provides a bridge that forwards traffic between two physical networks. An IP address is a unique number that identifies each host on a network.</p> <p>You have the following choices:</p> <ul style="list-style-type: none"><li>• You can specify the IP address. An <code>/etc/defaultrouter</code> file is created with the specified IP address. When the system is rebooted, the specified IP address becomes the default route.</li><li>• You can let the Solaris installation program detect an IP address. However, the system must be on a subnet that has a router that advertises itself by using the Internet Control Message Protocol (ICMP) for router discovery. If you are using the command-line interface, the software detects an IP address when the system is booted.</li><li>• You can select None if you do not have a router or do not want the software to detect an IP address at this time. The software automatically tries to detect an IP address on reboot.</li></ul>	<ul style="list-style-type: none"><li>• Specify One</li><li>• Detect One</li><li>• None*</li></ul>
Time zone	<p>How do you want to specify your default time zone?</p>	<ul style="list-style-type: none"><li>• Geographic region*</li><li>• Offset from GM</li><li>• Time zone file</li></ul>
Root password	<p>Choose a root password for the system.</p>	

---

# Configuring the Preinstalled Solaris 10 Operating System

---

**Note** – Before you perform this procedure, you need to set up the service processor. If you have not done so, see [“Connecting to the ILOM Service Processor for the First Time” on page 78](#).

---

Use the information that you gathered in [“Installation Worksheet” on page 88](#) as you perform the configuration.

After configuring the server ILOM service processor (SP), you can configure the preinstalled Solaris 10 Operating System (OS) using the SP to connect to the system console.

## ▼ Configure the Preinstalled Solaris 10 OS

### 1. From the serial console, start a terminal session.

For example:

#### ■ On a serial console running Solaris:

Type the appropriate command to start a terminal session. For example, you can start a terminal session on a Solaris console by typing:

```
$tip -9600 /dev/ttya
```

#### ■ On a client running Windows:

Open the appropriate program to start a terminal session. For example, you can start a terminal session on a Windows console by selecting:

```
Start -> Programs -> Accessories -> Communications ->  
Hyperterminal
```

#### ■ On a client running Linux:

Type the appropriate command to start a terminal session. For example, to start a terminal session on a Linux console, you could launch Minicom.

Minicom is a text-based serial communication program that is included in the Linux distributions. For more information, see the man pages included in the Linux distribution.

### 2. Log in to ILOM using one of the methods described in [“Connecting to the ILOM Service Processor for the First Time” on page 78](#).

The ILOM CLI prompt (->) appears.

3. Verify that the communication properties of the service processor are set to the defaults.

For example:

```
-> show /SP/serial/host
/SP/serial/host
  Targets:

  Properties:
    commitpending = (Cannot show property)
    pendingspeed = 9600
    speed = 9600

  Commands:
    cd
    show
```

---

**Note** – If the speed is anything other than 9600, change it using this command:

```
-> set /SP/serial/host pendingspeed=9600 commitpending=true
```

---

4. Start the serial console mode by entering the following:

```
-> start /SP/console
```

Only accounts with Administrator privileges are enabled to configure the SP.

5. When the following prompt appears, type **y**:

```
Are you sure you want to start /SP/console (y/n)? y
```

6. Apply main power to the server by using a nonconductive pointed object or stylus to press the recessed Power button on the front panel.

For additional information about powering on your server, see [“Applying Main Power to the Server for the First Time”](#) on page 84.

POST messages appear on your screen as the OS boots up.

7. Follow the Solaris 10 preinstallation on-screen prompts.

8. Use the information gathered in [“Installation Worksheet”](#) on page 88 to help you enter the system and network information as you are prompted.

The screens that are displayed will vary, depending on the method that you chose for assigning network information to the server (DHCP or static IP address).

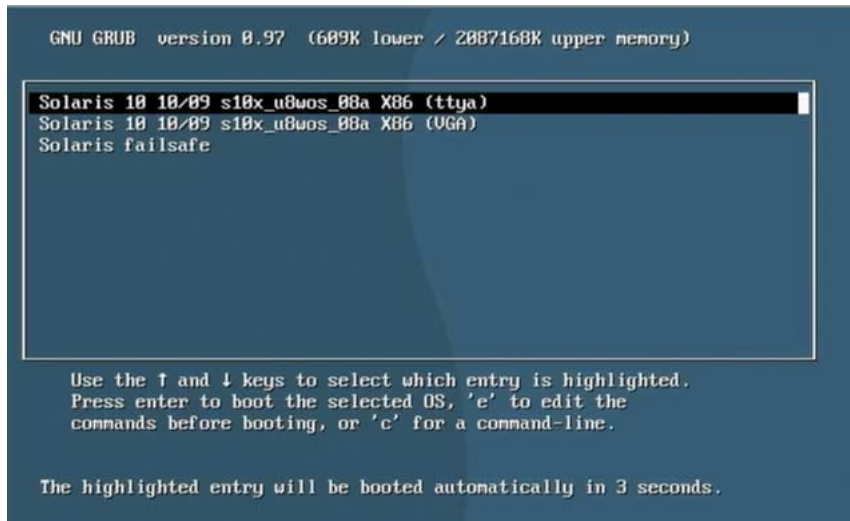
After you have entered the system configuration information, the server completes the boot process and displays the Solaris login prompt.

## ▼ Redirect the Console Output to the Video Port (Optional)

The server's console is automatically directed to the serial port. GRUB, the open source boot loader, is the default boot loader in the Solaris OS for x86-based or x64-based systems. The boot loader is the first software program that runs after you power on a system.

1. Use a cable to connect the SER MGT port of the host server to the video port of the client system.
2. From the GRUB menu, you have the option of displaying the installation process to a VGA connection (video port) (see [FIGURE 5-1](#)).

FIGURE 5-1 GRUB Menu Screen



3. To display output to the video port, choose this option:

```
Solaris 10 10/09 s10x_u8wos_08a X86 (VGA)
```

---

# Configuring Server RAID Drives

After you configure the Solaris OS, you might need to configure the RAID drives.

## RAID Drive Overview

The Sun Fire X4170, X4270, and X4275 Servers have two optional host bus adapter (HBA) cards. You can access RAID configuration through the HBA card BIOS. To access the LSI HBA card BIOS, press CTRL-C during the system boot. To access the Sun StorageTek HBA card BIOS, press CTRL-A during the system boot.

**TABLE 5-2** Sun Fire X4170, X4270, and X4275 Servers HBA Cards

HBA Cards	Press for BIOS
Sun StorageTek	CTRL-A
LSI 3081E	CTRL-C

The server has the preinstalled OS on hard disk drive 0 (HDD0). When the Solaris OS installation is complete, the option to upgrade your single-disk OS to a mirrored RAID solution is available.

The configuration procedure is different for each supported HBA card. For example, a Sun StorageTek HBA card has many more options for RAID configuration than does an LSI HBA card. Configure the RAID depending on your needs as shown in [TABLE 5-3](#).

---

**Note** – Configuring RAID for the server is optional. By default the Solaris preinstalled image is configured in a non-RAID configuration. If anything other than a basic mirror RAID is required, it is recommended that you perform a fresh install of the Solaris Operating System (or other OS) in the desired RAID configuration.

---

# RAID Drive Options

TABLE 5-3 lists the RAID drive options.

**TABLE 5-3** RAID Drive Options

HBA Card	Drives Supported	RAID Configuration Supported	Drive Usage
Sun StorageTek	Seagate 73GB SAS	Volume – 1 disk	No redundancy 50% 50% 67–94% 50–88% 67–94% 50–88% 50–88% 100% 50-100%
	Fujitsu 73GB SAS	RAID 0 – stripe – 2 disk minimum	
	Seagate 146GB SAS	RAID 1 – mirror – 2 disk minimum	
	Fujitsu 146GB SAS	RAID 1E – 3 drive minimum	
	Hitachi 146GB SAS	RAID 5 – 3 drive minimum	
	Fujitsu 200GB SATA	RAID 5EE – 4 drive minimum	
		RAID 50 – 6 drive minimum	
		RAID 6 – 4 drive minimum	
		RAID 60 – 8 drive minimum	
LSI 3081E	Seagate 73GB SAS	Spanned Volume – 2 drive minimum	Data on Primary disk might be merged. All data will be deleted during creation. All data will be deleted during creation.
	Fujitsu 73GB SAS	RAID Volume – 4 drive minimum	
	Seagate 146GB SAS	IM (Integrated Mirror array) – 2 disk minimum, plus up to 2 hot-spare disks	
	Fujitsu 146GB SAS	IME (Integrated Mirror Enhanced array) – 3 to 8 disks including up to 2 hot-spare disks	
	Hitachi 146GB SAS	IS (Integrated Striping array) – 2 to 8 disks	
	Fujitsu 200GB SATA		

---

# Mirroring the Preinstalled Solaris OS With LSI RAID

The Solaris OS supports hardware RAID and cannot be installed on an existing array if one has been created.

If you choose the preinstalled Solaris OS and want to make the OS part of a RAID set, and if you are using the LSI HBA card only, perform the following procedure to update the preinstalled Solaris OS to a mirrored RAID set. As noted in [TABLE 5-3](#), only IM (Integrated Mirror) allows data on the primary hard disk drive (HDD) to be preserved or merged into an array of disks.

This procedure describes how to create a mirror image of the OS before or after the Solaris installation. When the server has two or more hard disk drives, the Solaris OS is preinstalled on HDD0. You can mirror the Solaris OS to any of the other hard disk drives.

## ▼ Create a Mirror Image of the Preinstalled Solaris OS

To create a mirror image of the Solaris OS on HDD1:

1. **Power on your server for the first time.**
2. **Press CTRL-C to access the LSI RAID Configuration utility.**
3. **Select the HBA card, then press Enter.**
4. **Choose RAID Properties.**
5. **Create an IM (Integrated Mirror) for the required disk configuration.**
6. **Select the hard disks to be used. Use the right arrow key to move the cursor to the RAID column, then press the space bar to include disks into the RAID.**
7. **Because HDD0 contains data, select merge or delete:**
  - Choose **M** to merge data and start a sync operation.
  - Choose **D** to erase the preinstalled Solaris OS.
8. **Press C to create the RAID and start the sync operation.**
9. **Click Exit to save the configuration and close the menu.**

10. Press Esc to exit the Configuration utility.
11. Reboot the Solaris OS.

---

## Mirroring the Preinstalled Solaris OS With Sun StorageTek HBA Card

The Sun StorageTek host bus adapter (HBA) card enables you to choose from many RAID configurations. How you configure your system depends on your system requirements and the available hard disk drives in the system.

This procedure describes how to mirror the preinstalled Solaris OS. This is the better option, and all remaining disks (should there be more than two) are incorporated into a DATA RAID set using the available options as shown in [TABLE 5-3](#).

You will need the Sun Fire X4170, X4270, and X4275 Servers Tools & Drivers CD.

### ▼ Create a Mirror Image of the Preinstalled Solaris OS

Follow these steps to mirror your configured Solaris OS:

1. Using your Solaris server, log in and start Xserver.

This graphical user interface is required for StorageTek Software Management.

2. Make a new directory on your Solaris server, type:

```
mkdir /StorMan
```

3. Insert the supplied Tools & Drivers CD, and copy the StorMan.dss application, located in the /mount-point/RAIDmgmt/StorageTEK/Solaris directory, to the new directory you created on your Solaris server, for example, /StorMan.

4. Change the permissions of the new directory and StorMan application, type:

```
chmod 777 StormMan.pkg
```

5. Run the following command to install the application:

```
pkgadd -d StorMan.pkg
```

6. Choose to install all components when prompted.



7. To run the application, type:

```
sh /opt/StorMan/StorMan.sh
```

A split screen appears.

8. Click the screen to activate the Managed Systems List.

9. Double-click the local machine (it is displayed by IP Address of the Primary ENET connection).

A prompt appears.

10. At the prompt, log in as root, using the OS password that was assigned during Solaris installation.

11. Click the SUN STK RAID Controller.

All attached hard disk drives on Enclosure 0 and 1 appear.

---

**Note** – HDD0 (OS installed) should be Enclosure 0 Logical Volume 1.

---

12. To mirror the OS, right-click Logical Device 1 and choose Expand or Change Logical Device.

13. Choose the appropriate RAID option (in this example, RAID 1 for Mirror).

14. Choose a disk to mirror the OS with, from the physical disk list.

Select the hard disk drive that best fits your needs.

15. After you select the hard disk drive, click Next, and then view the configuration summary.

16. Click Apply to start the mirroring process.

You can also click **Schedule** to perform the mirroring process at a later time.

17. Another confirmation screen appears. Confirm to start the mirroring process.

The OS begins to mirror. Mirroring can take several hours, depending on the amount of data and the hard disk drive size.

---

# Solaris 10 Operating System User Information

This section provides pointers to information about the Solaris 10 Operating System.

## Solaris 10 User Documentation

You can access the various collections of the Solaris 10 OS user documentation at:

<http://docs.sun.com/app/docs/prod/solaris.10>

## Solaris 10 OS Training

Sun provides flexible training options that accommodate your personal schedule and learning style. The training options include instructor-led, web-based online, CD-ROM, and Live Virtual Class. For Solaris 10 Training and Certification options at a glance, go to:

<http://www.sun.com/training>

---

# Using the Solaris Installation Program

The documentation listed in this section provides instructions for using the Solaris installation program and is available at the following web site:

<http://docs.sun.com/>

Follow the instructions for *x86-based* systems, not *SPARC-based* systems. For more information, see the Solaris 10 Release and Installation Collection for the version of the Solaris 10 Operating System you have installed. This documentation is available at:

<http://docs.sun.com/app/docs/prod/solaris.10>

After you configure the preinstalled Solaris OS, the Solaris installation program reboots the system and prompts you to log in. The system displays the message of the day, indicating the preloaded software that comes with your system:

- Sun Java™ Enterprise System (Java ES)
- Sun Studio™ 11

# Sun Java Enterprise System

Sun Java Enterprise System (Java ES) is a set of software components that provide services needed to support enterprise-strength applications distributed across a network or Internet environment.

## Sun Studio 11

Sun Studio 11 includes high-performance, optimizing C, C++, and Fortran compilers for the Solaris OS on SPARC and x86/x64 platforms. It also includes command-line tools and a NetBeans-based Integrated Development Environment (IDE) for application performance analysis and debugging of mixed source language applications. The tools offer multi-platform support, compatible with gcc, Visual C++, C99, OpenMP, and Fortran 2003.

---

# Reinstalling the Solaris Operating System

If you want to reinstall the Solaris OS or install a different version of the Solaris OS, refer to the *Solaris 10 Installation Guide: Basic Installations* (820-0176).

## Download Solaris Operating System

You can download software for the Solaris OS from the following sites:

- To download the Solaris 10 operating system, go to:  
<http://www.sun.com/software/solaris/get.jsp>
- To download patches, go to:  
<http://sunsolve.sun.com/>



# Configuring the Preinstalled OpenSolaris Operating System

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This chapter explains the steps for configuring the OpenSolaris™ Operating System (OS) that is preinstalled on the hard disk drive, if ordered. The preinstalled OpenSolaris version is OpenSolaris 2009.06 or later.

---

**Note** – Unlike with SPARC® systems, by default console output is redirected to the Serial Port. You will see the BIOS power-on self-test (POST) and other boot information output on the serial port.

---

This chapter includes the following topics:

- [“Before You Begin” on page 104](#)
- [“Configuring the Preinstalled OpenSolaris Operating System” on page 108](#)
- [“Getting Started on OpenSolaris” on page 113](#)
- [“Configuring Server RAID Drives” on page 114](#)
- [“Mirroring the Preinstalled OpenSolaris OS With LSI RAID” on page 116](#)
- [“Mirroring the Preinstalled OpenSolaris OS With Sun StorageTek HBA Card” on page 117](#)
- [“OpenSolaris Operating System User Information” on page 119](#)
- [“Using the OpenSolaris Installation Program” on page 119](#)
- [“Reinstalling the OpenSolaris Operating System” on page 119](#)

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# Before You Begin

Before you begin configuring the preinstalled OpenSolaris OS, do the following:

- Configure an IP address for the server SP. For details, see [“Connecting to the ILOM Service Processor for the First Time” on page 78](#).
- Ensure that main power has been applied to the server. For more information, see [“Applying Main Power to the Server for the First Time” on page 84](#).
- Gather the information that you will need for the configuration, as listed in [“Installation Worksheet” on page 104](#). Note that default values are indicated by an asterisk (\*).

---

**Note** – To identify the MAC address for a server or other chassis components, see the Customer Information Sheet (shipped with the component), or inspect the printed MAC address label attached to the server or chassis component.

---

- The server ships with its console redirected to the *serial* port. You can choose an option to send the output to VGA (video port). For more information, see [“\(Optional\) Redirect the Console Output to the Video Port” on page 111](#).

## Installation Worksheet

Use the worksheet in [TABLE 6-1](#) to gather the information that you need to configure the preinstalled OpenSolaris OS. You only need to collect the information that applies to your application of the system.

**TABLE 6-1** Worksheet for OpenSolaris Configuration

<b>Information for Installation</b>	<b>Description or Example</b>	<b>Your Answers: Defaults (*)</b>
Language	Select from the list of available languages for the OpenSolaris software.	English*
Locale	Select your geographic region from the list of available locales.	
Terminal	Select the type of terminal that you are using from the list of available terminal types.	
Network connection	Is the system connected to a network?	<ul style="list-style-type: none"> <li>• Networked</li> <li>• Non-networked*</li> </ul>
DHCP	Can the system use Dynamic Host Configuration Protocol (DHCP) to configure its network interfaces?	<ul style="list-style-type: none"> <li>• Yes</li> <li>• No*</li> </ul>
If you are not using DHCP, note the network address:	IP address	If you are not using DHCP, supply the IP address for the system. Example: 129.200.9.1
	Subnet	If you are not using DHCP, is the system part of a subnet? If yes, what is the netmask of the subnet? Example: 255.255.0.0
	IPv6	Do you want to enable IPv6 on this machine?
Host name	Choose a host name for the system.	<ul style="list-style-type: none"> <li>• Yes</li> <li>• No*</li> </ul>
Kerberos	Do you want to configure Kerberos security on this machine? If yes, gather the following information: <div style="text-align: right; margin-right: 100px;">                     Default realm:                      Administration server:                      First KDC:                      (Optional) Additional KDCs:                 </div>	<ul style="list-style-type: none"> <li>• Yes</li> <li>• No*</li> </ul>

**TABLE 6-1** Worksheet for OpenSolaris Configuration (*Continued*)

Information for Installation		Description or Example	Your Answers: Defaults (*)
Name service	Name service	If applicable, which name service should this system use?	<ul style="list-style-type: none"> <li>• NIS+</li> <li>• NIS</li> <li>• DNS</li> <li>• LDAP</li> <li>• None*</li> </ul>
	Domain name	Provide the name of the domain in which the system resides.	
	NIS+ and NIS	Do you want to specify a name server, or let the installation program find one?	<ul style="list-style-type: none"> <li>• Specify One</li> <li>• Find One*</li> </ul>
	DNS	<p>Provide IP addresses for the DNS server. You must enter at least one IP address, but you can enter up to three addresses.</p> <p>You can also enter a list of domains to search when a DNS query is made.</p> <p style="text-align: right;">Search domain: Search domain: Search domain:</p>	
	LDAP	<p>Provide the following information about your LDAP profile:</p> <p style="text-align: right;">Profile name: Profile server:</p> <p>If you specify a proxy credential level in your LDAP profile, gather the following information:</p> <p style="text-align: right;">Proxy-bind distinguished name: Proxy-bind password:</p>	



**TABLE 6-1** Worksheet for OpenSolaris Configuration (*Continued*)

Information for Installation	Description or Example	Your Answers: Defaults (*)
Default route	<p>Do you want to specify a default route IP address, or let the OpenSolaris installation program find one?</p> <p>The default route provides a bridge that forwards traffic between two physical networks. An IP address is a unique number that identifies each host on a network.</p> <p>You have the following choices:</p> <ul style="list-style-type: none"><li>• You can specify the IP address. An <code>/etc/defaultrouter</code> file is created with the specified IP address. When the system is rebooted, the specified IP address becomes the default route.</li><li>• You can let the OpenSolaris installation program detect an IP address. However, the system must be on a subnet that has a router that advertises itself by using the Internet Control Message Protocol (ICMP) for router discovery. If you are using the command-line interface, the software detects an IP address when the system is booted.</li><li>• You can select None if you do not have a router or do not want the software to detect an IP address at this time. The software automatically tries to detect an IP address on reboot.</li></ul>	<ul style="list-style-type: none"><li>• Specify One</li><li>• Detect One</li><li>• None*</li></ul>
Time zone	How do you want to specify your default time zone?	<ul style="list-style-type: none"><li>• Geographic region*</li><li>• Offset from GM</li><li>• Time zone file</li></ul>
Root password	Choose a root password for the system.	

---

# Configuring the Preinstalled OpenSolaris Operating System

---

**Note** – Before you perform this procedure, you need to set up the service processor. If you have not done so, see [“Connecting to the ILOM Service Processor for the First Time” on page 78](#).

---

Use the information that you gathered in [“Installation Worksheet” on page 104](#) as you perform the configuration.

After configuring the server ILOM service processor (SP), you can configure the preinstalled OpenSolaris Operating System (OS) over the network using Secure Shell (SSH) or locally using the SER MGT port to connect to the system console.

Configuration instructions, see the following topics:

- [“Accessing the System Over the Network” on page 108](#)
- [“Accessing the System Locally” on page 109](#)
- [“Configure the Preinstalled OpenSolaris Operating System” on page 110](#)
- [“\(Optional\) Redirect the Console Output to the Video Port” on page 111](#)

## ▼ Accessing the System Over the Network

### 1. Log in to ILOM:

- a. In a networked terminal window, enter `ssh root@<IP_address>`

Where `<IP_address>` is internet address of the server in the format `xxx.xxx.xxx.xxx`.

- b. At the password prompt, enter the default password **changeme**.

ILOM displays a default command prompt (`->`), indicating that you have successfully logged in to ILOM.

2. Verify that the communication properties of the service processor are set to the defaults.

For example:

```
-> show /SP/serial/host
/SP/serial/host
  Targets:

  Properties:
    commitpending = (Cannot show property)
    pendingspeed = 9600
    speed = 9600

  Commands:
    cd
    show
```

---

**Note** – The speed must 9600. You can change the speed to 9600 using the following command:

```
-> set /SP/serial/host pendingspeed=9600 commitpending=true
```

---

3. Start the serial console mode by entering the following command:

```
-> start /SP/console
```

---

**Note** – Only accounts with Administrator privileges are enabled to configure the SP.

---

4. When the following prompt appears, type **y**:

```
Are you sure you want to start /SP/console (y/n)? y
```

## ▼ Accessing the System Locally

1. Use a cable to connect the SER MGT port of the host server to the serial port of the client system.
2. To access the system console, start a terminal session using one of the following methods:
  - **From a OpenSolaris client:**

Type the appropriate command to start a terminal session. For example, you can start a terminal session on an OpenSolaris console by typing:

```
$tip -9600 /dev/ttya
```

■ **From a Windows client:**

Open the appropriate program to start a terminal session. For example, you can start a terminal session on a Windows console by selecting:

```
Start -> Programs -> Accessories -> Communications ->
Hyperterminal
```

■ **From a Linux client:**

Type the appropriate command to start a terminal session. For example, to start a terminal session on a Linux console, you could launch Minicom.

Minicom is a text-based serial communication program that is included in the Linux distributions. For more information, see the man pages included in the Linux distribution.

**3. Press Enter on the terminal device to establish a connection between the terminal device and the ILOM SP.**

ILOM displays a login prompt, after a short wait.

```
login:
```

---

**Note** – If you connect to the serial port on the server before the ILOM SP has been powered on or during its power-on sequence, SP boot messages might be displayed prior to the login prompt.

---

**4. Type the default user name and password to log in to the ILOM SP.**

```
Username: root
```

```
Password: changeme
```

ILOM displays a default command prompt (->), indicating that you have successfully logged in to ILOM.

## ▼ Configure the Preinstalled OpenSolaris Operating System

**1. Apply main power to the server by using a nonconductive pointed object or stylus to press the recessed Power button on the front panel.**

For additional information about powering on your server, see [“Applying Main Power to the Server for the First Time” on page 84.](#)

POST messages appear on your screen as the OS boots up.

**2. Follow the OpenSolaris preinstallation on-screen prompts.**

3. Use the information gathered in [“Installation Worksheet” on page 104](#) to help you enter the system and network information as you are prompted.

The screens that are displayed will vary, depending on the method that you chose for assigning network information to the server (DHCP or static IP address).

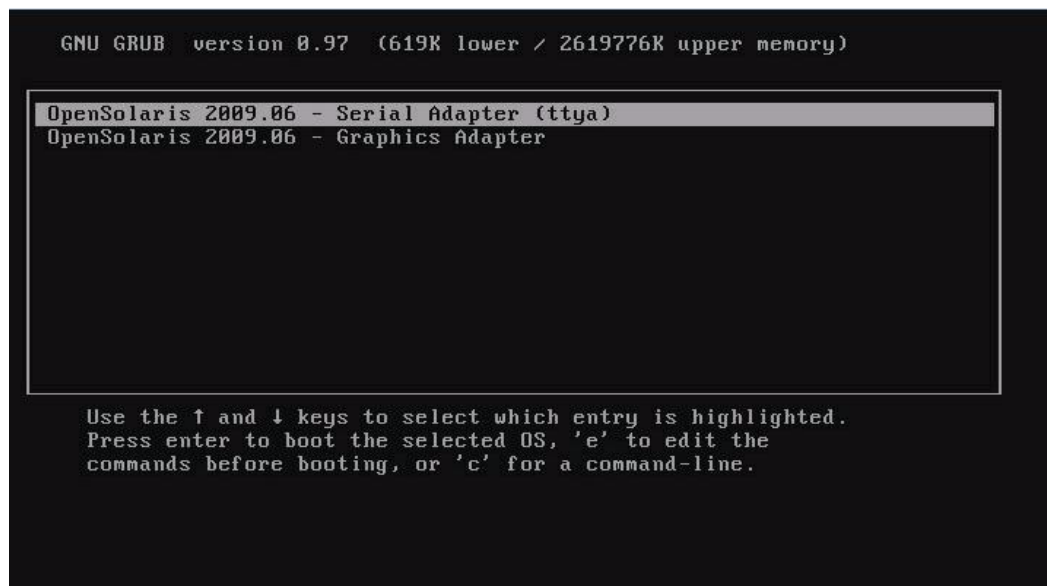
After you have entered the system configuration information, the server completes the boot process and displays the OpenSolaris login prompt.

## ▼ (Optional) Redirect the Console Output to the Video Port

GRUB, the open source boot loader, is the default boot loader in the OpenSolaris OS for x86-based or x64-based systems. The boot loader is the first software program that runs after you power on a system.

1. Connect to the server over the network or locally as described in these procedures:
  - [“Accessing the System Over the Network” on page 108](#)
  - [“Accessing the System Locally” on page 109](#)
2. From the GRUB menu, you have the option of displaying the installation process to a TTYA connection (serial port) or a VGA connection (video port) (see [FIGURE 6-1](#)).

**FIGURE 6-1** OpenSolaris GRUB Menu Screen



**3. To display output to the video port, choose this option:**

OpenSolaris 2009.06 - Graphics Adapter

## ▼ (Optional) Modify the GRUB Menu to Auto Boot

The GRUB menu on the preinstalled image has been configured for an infinite timeout so that you can choose the console output on power-up. However, you can modify this setting so that your system boots automatically.

To modify the GRUB menu to auto boot, edit the `/rpool/boot/grub/menu.1st` file as follows:

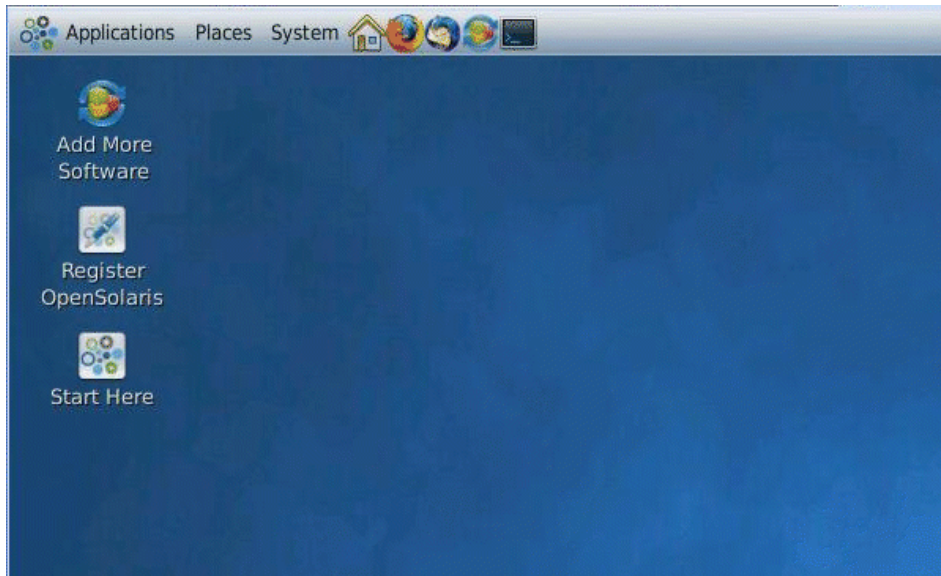
- 1. Change the -1 value on the time-out line to reflect the duration you want the menu to be presented. For example, for a 10-second delay, set the -1 on the time-out line to 10.**
- 2. Add a line that specifies the default boot entry. For example, to specify the first entry, set the default to 0.**

---

# Getting Started on OpenSolaris

For information on getting started on OpenSolaris, click the Start Here icon on the OpenSolaris Desktop (see [FIGURE 6-2](#)).

**FIGURE 6-2** OpenSolaris Desktop



---

# Configuring Server RAID Drives

After you configure the OpenSolaris OS, you might need to configure the RAID drives.

## RAID Drive Overview

The Sun Fire X4170, X4270, and X4275 Servers have two optional host bus adapter (HBA) cards. You can access RAID configuration through the HBA card BIOS. To access the LSI HBA card BIOS, press CTRL-C during the system boot. To access the Sun StorageTek HBA card BIOS, press CTRL-A during the system boot.

**TABLE 6-2** Sun Fire X4170, X4270, and X4275 Servers HBA Cards

HBA Cards	Press for BIOS
Sun StorageTek	CTRL-A
LSI 3081E	CTRL-C

The OpenSolaris OS is preinstalled on hard disk drive 0 (HDD0). When the OpenSolaris OS installation is complete, the option to upgrade your single-disk OS to a mirrored RAID solution is available.

The configuration procedure is different for each supported HBA card. For example, a Sun StorageTek HBA card has many more options for RAID configuration than does an LSI HBA card. Configure the RAID depending on your needs as shown in [TABLE 6-3](#).

---

**Note** – Configuring RAID for the server is optional. By default the OpenSolaris preinstalled image is configured in a non-RAID configuration. If anything other than a basic mirror RAID is required, it is recommended that you perform a fresh install of the OpenSolaris Operating System (or other OS) in the desired RAID configuration.

---



# RAID Drive Options

TABLE 6-3 lists the RAID drive options.

**TABLE 6-3** RAID Drive Options

HBA Card	Drives Supported	RAID Configuration Supported	Drive Usage
Sun StorageTek	Seagate 73GB SAS	Volume – 1 disk	
	Fujitsu 73GB SAS	RAID 0 – stripe – 2 disk minimum	No redundancy
	Seagate 146GB SAS	RAID 1 – mirror – 2 disk minimum	50%
	Fujitsu 146GB SAS	RAID 1E – 3 drive minimum	50%
	Hitachi 146GB SAS	RAID 5 – 3 drive minimum	67–94%
	Fujitsu 200GB SATA	RAID 5EE – 4 drive minimum	50–88%
		RAID 50 – 6 drive minimum	67–94%
		RAID 6 – 4 drive minimum	50–88%
		RAID 60 – 8 drive minimum	50–88%
		Spanned Volume – 2 drive minimum	100%
	RAID Volume – 4 drive minimum	50-100%	
LSI 3081E	Seagate 73GB SAS	IM (Integrated Mirror array) – 2 disk minimum, plus up to 2 hot-spare disks	Data on Primary disk might be merged.
	Fujitsu 73GB SAS		
	Seagate 146GB SAS	IME (Integrated Mirror Enhanced array) – 3 to 8 disks including up to 2 hot-spare disks	All data will be deleted during creation.
	Fujitsu 146GB SAS		
	Hitachi 146GB SAS		
	Fujitsu 200GB SATA	IS (Integrated Striping array) – 2 to 8 disks	All data will be deleted during creation.

---

# Mirroring the Preinstalled OpenSolaris OS With LSI RAID

The OpenSolaris OS supports hardware RAID and cannot be installed on an existing array if one has been created.

If you choose the preinstalled OpenSolaris OS and want to make the OS part of a RAID set, and if you are using the LSI HBA card only, perform the following procedure to update the preinstalled OpenSolaris OS to a mirrored RAID set. As noted in [TABLE 6-3](#), only Integrated Mirror (IM) allows data on the primary hard disk drive (HDD) to be preserved or merged into an array of disks.

This procedure describes how to create a mirror image of the OS before or after the OpenSolaris installation. When the server has two or more hard disk drives, the OpenSolaris OS is preinstalled on HDD0. You can mirror the OpenSolaris OS to any of the other hard disk drives.

## ▼ Create a Mirror Image of the Preinstalled OpenSolaris OS With LSI RAID

To create a mirror image of the OpenSolaris OS on a hard disk drive:

1. **Power on your server for the first time.**
2. **Press CTRL-C to access the LSI RAID Configuration utility.**
3. **Select the HBA card, then press Enter.**
4. **Choose RAID Properties.**
5. **Create an Integrated Mirror (IM) for the required disk configuration.**
6. **Select the hard disks to be used. Use the right arrow key to move the cursor to the RAID column, then press the space bar to include disks into the RAID.**
7. **Because HDD0 contains data, select merge or delete:**
  - Choose **M** to merge data and start a sync operation.
  - Choose **D** to erase the preinstalled OpenSolaris OS.
8. **Press C to create the RAID and start the sync operation.**
9. **Click Exit to save the configuration and close the menu.**

10. Press Esc to exit the Configuration utility.
11. Reboot the OpenSolaris OS.

---

## Mirroring the Preinstalled OpenSolaris OS With Sun StorageTek HBA Card

The Sun StorageTek host bus adapter (HBA) card enables you to choose from many RAID configurations. How you configure your system depends on your system requirements and the available hard disk drives in the system.

This procedure describes how to mirror the preinstalled OpenSolaris OS. This is the better option, and all remaining disks (should there be more than two) are incorporated into a DATA RAID set using the available options as shown in [TABLE 6-3](#).

You will need the Sun Fire X4170, X4270, and X4275 Servers Tools & Drivers CD.

### ▼ Create a Mirror Image of the Preinstalled OpenSolaris OS With Sun StorageTek

Follow these steps to mirror your configured OpenSolaris OS:

1. Using your OpenSolaris server (the server that contains the preinstalled OpenSolaris OS), log in and start Xserver.  
This graphical user interface is required for StorageTek Software Management.
2. Make a new directory on your OpenSolaris server, type:  

```
mkdir /StorMan
```
3. Insert the supplied Tools & Drivers CD, and copy the StorMan.dss application, located in the `/mount-point/RAIDmgmt/StorageTEK/OpenSolaris` directory, to the new directory you created on your OpenSolaris server, for example, `/StorMan`.
4. Change the permissions of the new directory and StorMan application by typing:  

```
chmod 777 StormMan.pkg
```
5. Type the following command to install the application:  

```
pkgadd -d StorMan.pkg
```

6. Choose to install all components when prompted.
7. To run the application, type:  

```
sh /opt/StorMan/StorMan.sh
```

A split screen appears.
8. Click the screen to activate the Managed Systems List.
9. Double-click the local machine (it is displayed by IP Address of the Primary ENET connection).  
A prompt appears.
10. At the prompt, log in as root, using the OS password that was assigned during OpenSolaris installation.
11. Click the SUN STK RAID Controller.  
All attached hard disk drives on Enclosure 0 and 1 appear.

---

**Note** – HDD0 (on which the preinstalled OpenSolaris OS is installed) should be Enclosure 0 Logical Volume 1.

---

12. To mirror the OS, right-click Logical Device 1 and choose Expand or Change Logical Device.
13. Choose the appropriate RAID option (in this example, RAID 1 for Mirror).
14. Choose a disk to mirror the OS with, from the physical disk list.  
Select the hard disk drive that best fits your needs.
15. After you select the hard disk drive, click Next, and then view the configuration summary.
16. Click Apply to start the mirroring process.  
A confirmation screen appears.  
To perform the mirroring process at a later time, you can click **Schedule**.
17. Click Confirm to start the mirroring process.  
The OS begins to mirror. Mirroring can take several hours, depending on the amount of data and the hard disk drive size.

---

# OpenSolaris Operating System User Information

This section provides pointers to information about the OpenSolaris Operating System.

- OpenSolaris User Documentation—You can access the various collections of the OpenSolaris OS user documentation at:

<http://opensolaris.org/os/documentation/>

- OpenSolaris Training—For training options, go to:

<http://www.opensolaris.com/learn/subscriptions/>

---

# Using the OpenSolaris Installation Program

You can find instructions for using the OpenSolaris installation program at the following web site:

<http://dlc.sun.com/osol/docs/content/2009.06/getstart/index.html>

After you configure the preinstalled OpenSolaris OS, the OpenSolaris installation program reboots the system and prompts you to log in.

---

# Reinstalling the OpenSolaris Operating System

If you want to reinstall the OpenSolaris OS or install a different version of the OpenSolaris OS, refer to *Getting Started With OpenSolaris 2009.06* at:

<http://dlc.sun.com/osol/docs/content/2009.06/getstart/>

# Download OpenSolaris Operating System

You can download software for the OpenSolaris OS from the following sites:

- To download the OpenSolaris operating system, go to:  
<http://opensolaris.org/os/TryOpenSolaris/>
- To download support repository updates (SRUs), which contain the latest released bug fixes for the OpenSolaris OS, go to:  
<http://sunsolve.sun.com/show.do?target=opensolaris>

## If You Need Help

---

This chapter describes troubleshooting information and how to apply and remove AC power to the server. Support contacts are also included.

This chapter includes the following topics:

- “Powering On and Off the Server” on page 121
- “Setup Troubleshooting” on page 122
- “Contacting Support” on page 124

---

## Powering On and Off the Server

Use the following procedures to power on and power off the server.

### ▼ Power On the Main Power

To apply main power for all server components:

1. **Verify that the power cord has been connected and that standby power is on.**  
In standby power mode, the Power/OK LED on the front panel blinks.
2. **Use a stylus, pen, or other nonconducting pointed object, to press and release the recessed Power button on the server front panel.**

When main power is applied to the server, the green Power/OK LED next to the Power button begins to blink slowly while the system boots and lights solidly once the operating system boots. (See [FIGURE 4-3](#), [FIGURE 4-4](#), and [FIGURE 4-5](#).)

The first time the server powers on, the power-on self-test (POST) can take up to one minute to complete.

## ▼ Power Off from Main Power Mode

- To remove main power from the server, use one of the following two methods:
  - **Graceful shutdown** - Use a pen, or other pointed object, to press and release the Power button on the front panel. This causes Advanced Configuration and Power Interface (ACPI)-enabled operating systems to perform an orderly shutdown. Servers not running ACPI-enabled operating systems will shut down to standby power mode immediately.
  - **Emergency shutdown** - Press and hold the Power button for at least four seconds until the main power is off and the server enters standby power mode. When the main power is off, the Power/OK LED on the front panel flashes, indicating that the server is in standby power mode.



---

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

---

## Setup Troubleshooting

This section contains information to help you troubleshoot minor server problems.

If you experience problems while setting up your server, refer to the troubleshooting information in [TABLE 7-1](#).

**TABLE 7-1** Troubleshooting Procedures

Problem	Possible Solution
Server powers on, but the monitor does not.	<ul style="list-style-type: none"><li>• Is the Power button for the monitor turned on?</li><li>• Is the monitor power cord connected to a wall outlet?</li><li>• Is the monitor power cord connected to the monitor?</li><li>• Does the wall outlet have power? Test by plugging in another device.</li></ul>
CD or DVD does not eject from the media tray when you press the Eject button.	<ul style="list-style-type: none"><li>• Move the mouse or press any key on the keyboard. The drive might be in low power mode.</li><li>• Use the utility software installed on your server to eject the CD.</li><li>• Ensure that the media in the device is not in use and is not mounted by the operating system.</li></ul>



**TABLE 7-1** Troubleshooting Procedures (*Continued*)

<b>Problem</b>	<b>Possible Solution</b>
No video is displayed on the monitor screen.	<ul style="list-style-type: none"><li>• Is the monitor cable attached to the video connector?</li><li>• Does the monitor work when connected to another system?</li><li>• If you have another monitor, does it work when connected to the original system?</li><li>• If, after POST and BIOS are complete, you no longer see video output on your monitor and see only a flashing cursor, check the configuration of the operating system to determine whether it is configured to redirect its output exclusively over the serial line.</li></ul>
Server does not power on when the front panel Power button is pressed.	<p>Keep notes on the following situations in case you need to call service:</p> <ul style="list-style-type: none"><li>• Is the Power/OK LED flashing or constantly illuminated on the front of the system? (Ensure that the power cord is connected to the system and to a grounded power receptacle.)</li><li>• Does the wall outlet have power? Test by plugging in another device.</li><li>• Does the monitor sync within five minutes after power on? (The green LED on the monitor stops flashing and remains illuminated.)</li><li>• Has the system fully booted the ILOM SP? (Note that the system will block Power button presses until the ILOM SP is fully booted.)</li></ul>
Keyboard or mouse does not respond to actions.	<ul style="list-style-type: none"><li>• Verify that the mouse and keyboard cables are connected to the on-board USB 2.0 connectors on the server.</li><li>• Verify that the server is powered-on and the front Power/OK LED is illuminated.</li></ul>

**TABLE 7-1** Troubleshooting Procedures (Continued)

<b>Problem</b>	<b>Possible Solution</b>
Server appears to be in standby power mode, but the Power/OK LED does not blink.	The Power/OK LED only blinks when all server components are in standby power mode. A tape drive might be connected to your server. Because tape drives do not enter standby power mode, the Power/OK LED does not blink.
Hung or frozen server: No response from mouse or keyboard or any application.	Try to access your system from a different server on the network: <ol style="list-style-type: none"><li>1. On another system, type: <b>ping</b> <i>IP_address_of_server</i>.</li><li>2. If a response is returned, then try logging in to the server using either <code>telnet</code>, <code>ssh</code>, or <code>rlogin</code>.</li><li>3. If you successfully log in, list the running processes using the <b>ps</b> command.</li><li>4. Kill any processes that appear unresponsive or should not be running, by using the <b>kill</b> <i>process_ID</i> command.</li><li>5. Check the responsiveness of the server after each process is killed.</li></ol> If the this procedure does not work, power cycle the server: <ol style="list-style-type: none"><li>1. Press the Power/OK button to power off the server and wait 20 to 30 seconds.</li><li>2. Press the Power/OK button again to power on the system.</li></ol>

**Note** – For additional troubleshooting information, see the *Sun Fire X4170, X4270 and X4275 Servers Service Manual* and the *Sun x64 Servers Diagnostics Guide*.

## Contacting Support

If the troubleshooting procedures in this chapter fail to solve your problem, refer to the *Sun x64 Servers Diagnostics Guide* and run the server diagnostics.

If you still cannot solve your problem, use [TABLE 7-2](#) to collect information that you might need to communicate to with support personnel. Then refer to [TABLE 7-3](#) for the Sun web sites and telephone numbers for additional technical support.

**TABLE 7-2** System Information Needed for Support

<b>System Configuration Information Needed</b>	<b>Your Information</b>
Sun service contract number	
System model	
Operating environment	

**TABLE 7-2** System Information Needed for Support (*Continued*)

System Configuration Information Needed	Your Information
System serial number	
Peripherals attached to the system	
Email address and phone number for you and a secondary contact Street address where the system is located	
Superuser password	
Summary of the problem and the work being done when the problem occurred	
<b>Other Useful Information</b>	
IP address	
Server name (system host name)	
Network or internet domain name	
Proxy server configuration	

**TABLE 7-3** Sun Technical Support Contacts

Server Documents and Support Resources	URL or Telephone Number
PDF files for all current Sun Fire X4170, X4270, and X4275 Server documents.	<a href="http://docs.sun.com/app/docs/prod/sf.x4170#hic">http://docs.sun.com/app/docs/prod/sf.x4170#hic</a> <a href="http://docs.sun.com/app/docs/prod/sf.x4270#hic">http://docs.sun.com/app/docs/prod/sf.x4270#hic</a> <a href="http://docs.sun.com/app/docs/prod/sf.x4275#hic">http://docs.sun.com/app/docs/prod/sf.x4275#hic</a>
Solaris™ 10 OS and other software documents.	<a href="http://docs.sun.com">http://docs.sun.com</a>
OpenSolaris™ OS and other software documents.	<a href="http://opensolaris.org/os/documentation/">http://opensolaris.org/os/documentation/</a>
Discussion and troubleshooting forums.	<a href="http://supportforum.sun.com/">http://supportforum.sun.com/</a>
Support, diagnostic tools, and alerts for all Sun products.	<a href="http://www.sun.com/bigadmin/">http://www.sun.com/bigadmin/</a>
SunSolve™ web site. Contains links to software patches. Lists some system specifications, troubleshooting and maintenance information, and other tools.	<a href="http://www.sunsolve.sun.com/">http://www.sunsolve.sun.com/</a>
SunService™ support phone numbers.	1-800-872-4786 (1-800-USA-4Sun), select Option 1

**TABLE 7-3** Sun Technical Support Contacts *(Continued)*

<b>Server Documents and Support Resources</b>	<b>URL or Telephone Number</b>
Lists international telephone numbers for SunService support.	<a href="http://www.sun.com/service/contacting/solution.html">http://www.sun.com/service/contacting/solution.html</a>
Warranty and contract support contacts. Links to other service tools.	<a href="http://www.sun.com/service/warrantiescontracts/">http://www.sun.com/service/warrantiescontracts/</a>
Warranties for every Sun product.	<a href="http://www.sun.com/service/support/warranty">http://www.sun.com/service/support/warranty</a>

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