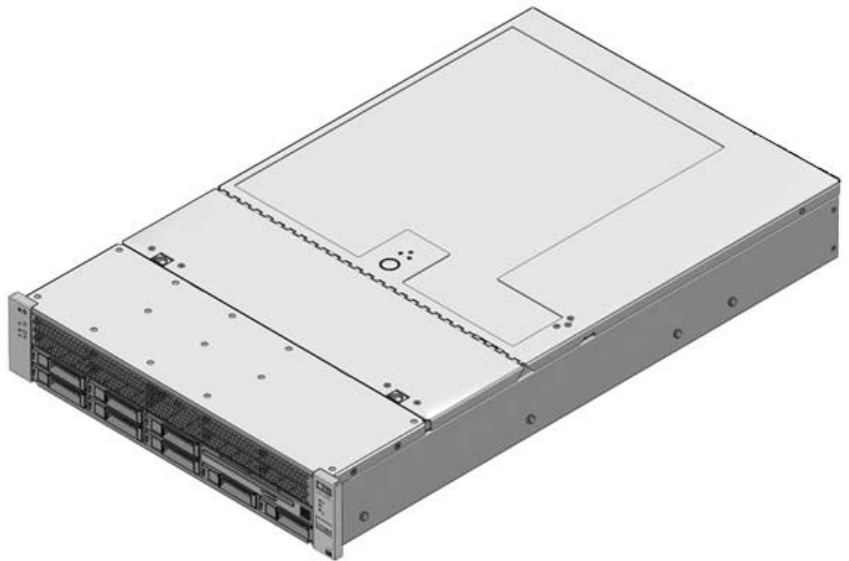


Sun Fire™ X4450 Server Installation Guide



Sun Microsystems, Inc.
www.sun.com

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Preface

The *Sun Fire X4450 Server Installation Guide* provides detailed information about how to install the Sun Fire™ X4450 server hardware and software. The audience for this book is primarily system administrators, network administrators, and service technicians who have an understanding of server systems.

How This Book Is Organized

This guide contains the following chapters:

TABLE P-1 Installation Guide Chapters

Chapter	Describes:
Chapter 1	How to set up the Sun Fire X4450 server hardware.
Chapter 2	How to place the Sun Fire X4450 server into a rack using the rail assembly.
Chapter 3	How to connect cables and power up the Sun Fire X4450 server for the first time.
Chapter 4	How to configure the Solaris™ 10 Operating System (OS) that might be preinstalled on your Sun Fire X4450 server.
Chapter 5	How to configure the Windows Operating System (OS) that might be preinstalled on your Sun Fire X4450 server.
Chapter 6	How to configure the OpenSolaris Operating System (OS) that might be preinstalled on your Sun Fire X4450 server.
Chapter 7	Troubleshooting information and how to apply and remove AC power to the Sun Fire X4450 server. Support contacts are also included.

Typographic Conventions

Typeface*	Meaning	Examples
AaBbCc123	The names of commands, files, and directories; onscreen computer output	Edit your <code>.login</code> file. Use <code>ls -a</code> to list all files. % You have mail.
AaBbCc123	What you type, when contrasted with onscreen computer output	% su 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 a superuser to do this. To delete a file, type <code>rm filename</code> .

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

Sun Online

The following table shows where to find Sun documents online:

Sun Function	URL	Description
Sun Documentation	http://docs.sun.com	You can navigate to the Sun Fire X4450 server document page and then download PDF and view HTML documents. Includes the LSI card <i>MegaRAID Storage Manager x64 Server Utilities Reference Manual</i> for MSM.
Support	http://www.sun.com/support/	Obtain technical support, and download patches.
Training	http://www.sun.com/training/	Learn about Sun courses.
Warranty	http://www.sun.com/service/support/warranty/index.html	Obtain specific details regarding your warranty.
Feedback	http://www.sun.com/hwdocs/feedback/	Submit your comments.

Sun Fire X4450 Server Documentation

To view the latest Sun Fire X4450 server documentation online, go to <http://docs.sun.com>, and then navigate to Sun Fire X4450 server documentation.

Related Documentation

A *Where To Find Documentation* sheet lists available documents for the Sun Fire X4450 server and describes the Sun Fire X4450 server document set. The *Where to Find Documentation* sheet is packed with your system and is also posted at the product's documentation site.

Translated versions of some of these documents are available on-line 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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Safety and Compliance Information

Refer to the following documents for safety information regarding the Sun Fire X4450 server:

- *Important Safety Information for Sun Hardware Systems*, 816-7190: hard copy document included in the ship kit.
- *Sun Fire X4450 Server Safety and Compliance Guide*, 820-2704: available online by navigating to the Sun Fire X4450 server document page from:

<http://docs.sun.com>

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Please include the title and part number of your document with your feedback. For example, the part number of this *Sun Fire X4450 Server Installation Guide* is 820-2709-13.

Before You Begin

This chapter describes how to set up the Sun Fire X4450 server hardware. It includes the following topics:

- [“Tools and Equipment Needed” on page 1](#)
- [“Installation Process Flowchart” on page 1](#)
- [“Unpacking the Boxes” on page 4](#)
- [“Sun Fire X4450 Server Description” on page 6](#)

Tools and Equipment Needed

To install the system, you need the following tools:

- #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

Installation Process Flowchart

To install a typical server, follow the flowchart in [FIGURE 1-1](#) and [FIGURE 1-2](#).

FIGURE 1-1 Sun Fire X4450 server Installation Process (Part 1)

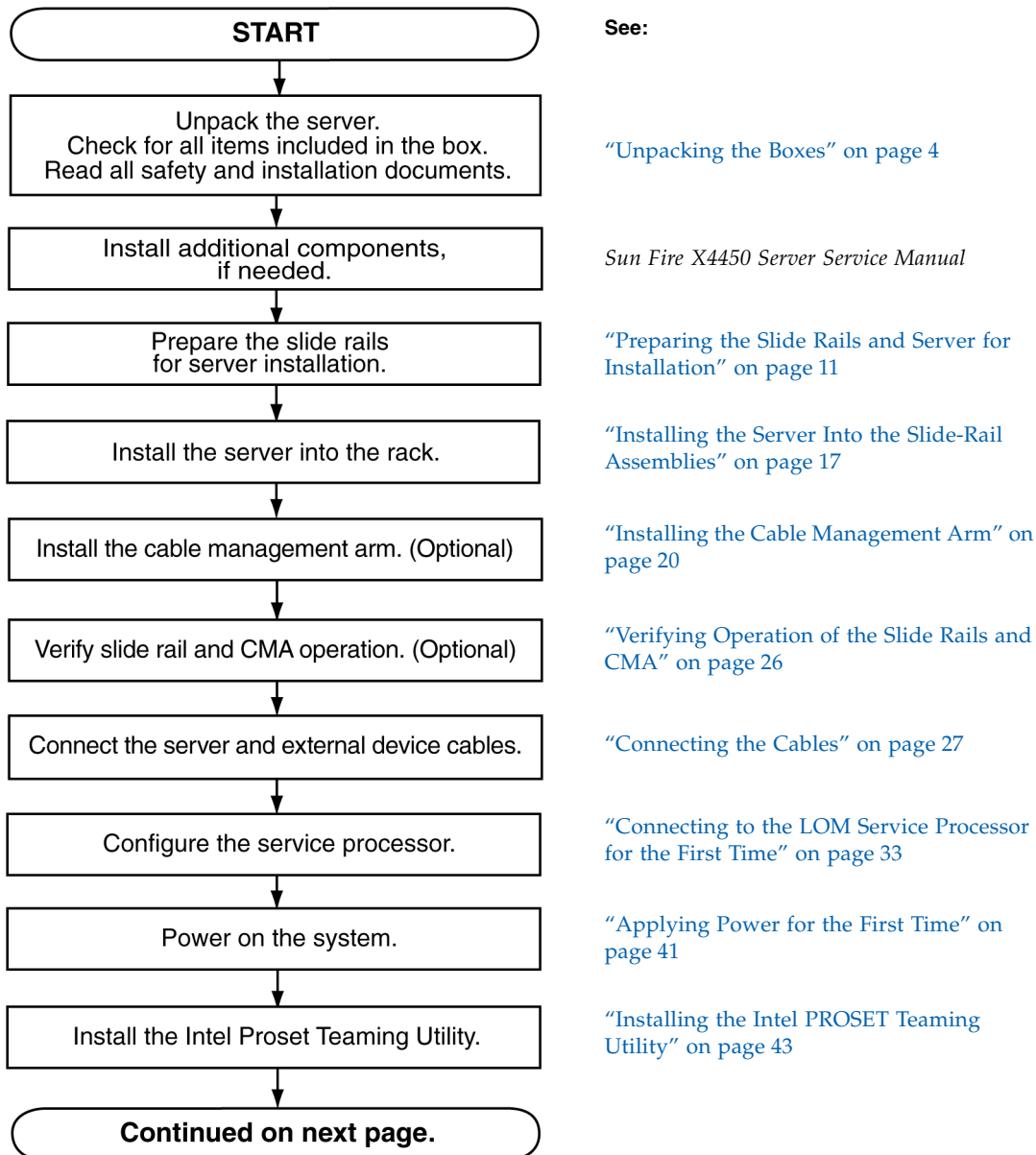
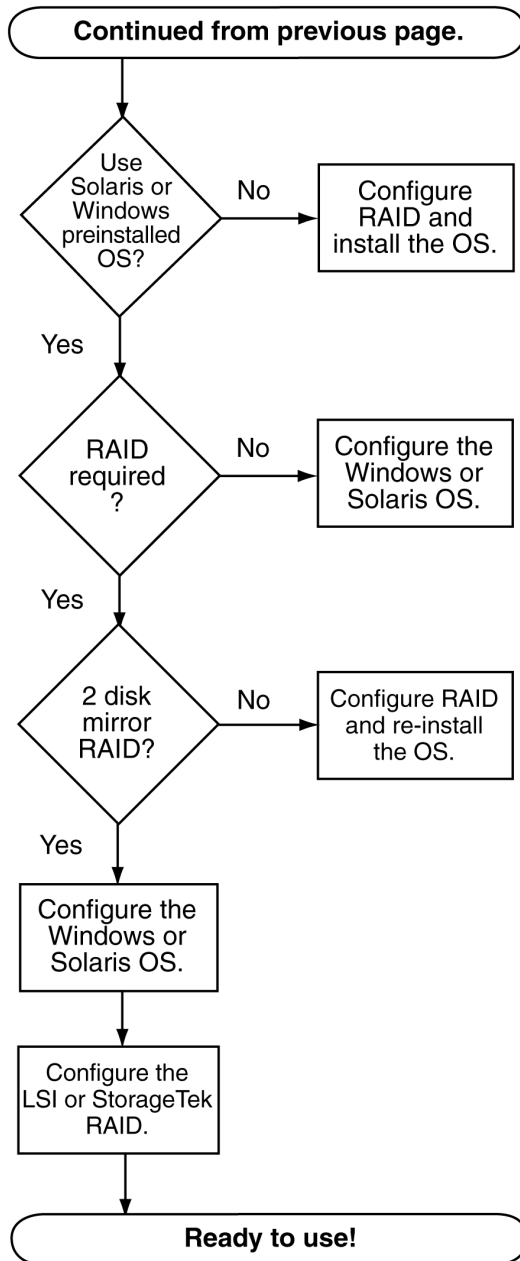


FIGURE 1-2 Sun Fire X4450 server Installation Process (Part 2)



See:

Sun Fire X4150, X4250, and X4450 Servers Operating System Installation Guide

[“Configuring the Preinstalled Solaris 10 Operating System” on page 45](#) or

[“Configuring the Preinstalled Windows Server 2003 R2 Operating System” on page 57](#) or

[“Configuring the Preinstalled OpenSolaris Operating System” on page 65](#)

Note: The preinstalled image can only convert to a 2-disk mirror RAID.

If you want to use any other RAID configuration, you will need to reinstall the OS. See *Sun Fire X4150, X4250, and X4450 Servers Operating System Installation Guide*

[“Configuring the Preinstalled Solaris 10 Operating System” on page 45](#) or

[“Configuring the Preinstalled Windows Server 2003 R2 Operating System” on page 57](#) or

[“Configuring the Preinstalled OpenSolaris Operating System” on page 65](#)

Sun StorageTek: *Sun StorageTek RAID Manager User’s Guide* or

LSI: *Sun LSI 106x RAID User’s Guide* for MSM

Unpacking the Boxes

Unpack all server components from the packing cartons.

Package Contents Inventory

The following items should be packaged with the Sun Fire X4450 server:

- Sun Fire X4450 server
- Sun Fire X4450 server accessory kit, including the following documentation:
 - *Sun Fire X4150, X4250, and X4450 Servers Getting Started Guide*
 - *Important Safety Information for Sun Hardware Systems*
 - Additional license, safety, and registration documentation
 - DB9-RJ45 adapter (for serial system management port)
- Optional rackmount kit
- Optional cable management kit

Power cables, keyboard, and mouse are packaged separately from the other items.

Options

The documentation and CD kit is a separate orderable option. This kit currently includes the following items:

- *Sun Fire X4450 Server Installation Guide* (this document)
- SunVTS Diagnostics CD
- Sun Fire X4450 Server Tools and Drivers DVD (includes drivers and additional software)
- Sun Installation Assistant CD

Standard server components are installed at the factory. However, ordered options such as additional memory or PCI-e cards are shipped separately. If possible, install optional components before installing the server in a rack.

ESD Precautions

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



Caution – To protect electronic components from electrostatic damage, 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.

Sun Fire X4450 Server Description

This section shows the Sun Fire X4450 server front and back panel features.

Front Panel Features

See [FIGURE 1-3](#) and [TABLE 1-1](#) for the front panel features.

FIGURE 1-3 Front Panel - 8 drive configuration shown

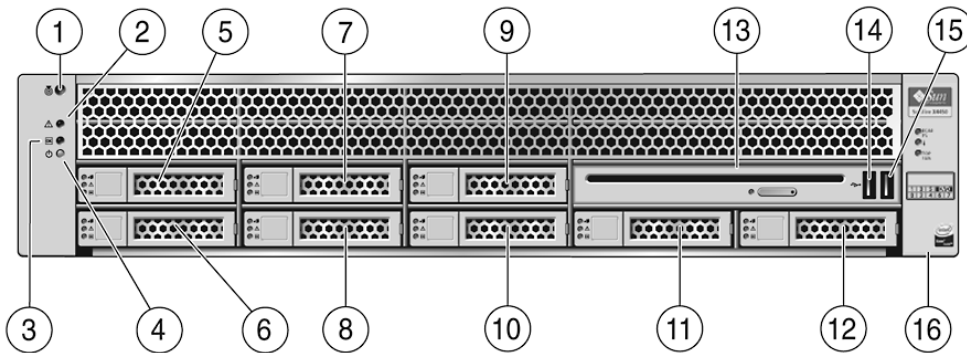


TABLE 1-1 Front Panel Legend

Label	Item	Label	Item
1	Locator LED/Locator button: white	9	Hard disk drive 5 (optional)
2	Service 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	Fault LEDs: amber Top open (Check fan status) Power supply (PS) Over temperature warning

Back Panel

See [FIGURE 1-4](#) and [TABLE 1-2](#) for the back panel features.

FIGURE 1-4 Back Panel

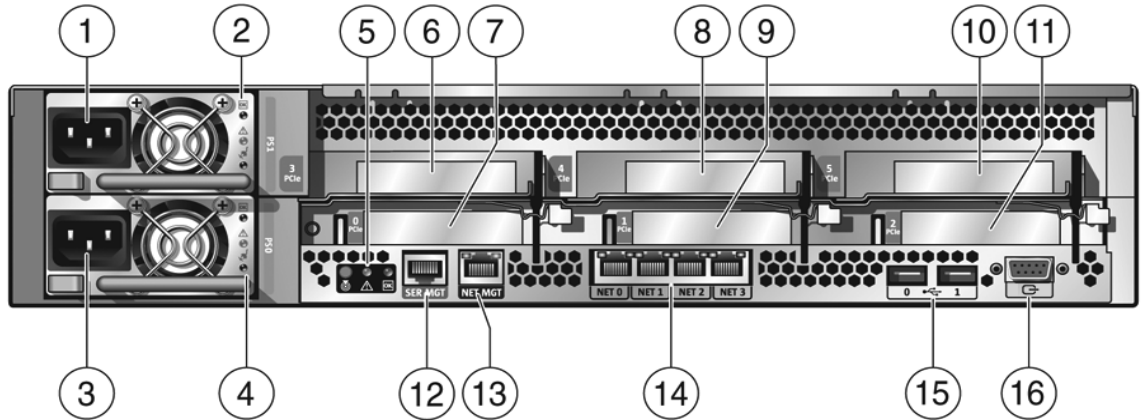


TABLE 1-2 Back Panel Legend

Label	Item	Label	Item
1	Power supply unit 1 connector	6	PCI-express slot (3)
2	Power supply unit 1 status indicator LEDs <ul style="list-style-type: none"> • Power Supply OK: green • Power Supply Fail: amber • AC OK: green 	7	PCI-express slot (0)
3	Power supply unit 0 connector	8	PCI-express slot (4)
4	Power supply unit 0 status indicator LEDs: <ul style="list-style-type: none"> • Power Supply OK: green • Power Supply Fail: amber • AC OK: green 	9	PCI-express slot (1)
5	System status LEDs: <ul style="list-style-type: none"> • Power: green • Attention: amber • Locate: white 	10	PCI-express slot (5)
		11	PCI-express slot (2)
		12	Serial management/RJ-45 serial port
		13	Service processor (SP) network management NET MGT port
		14	Gbit Ethernet ports NET 0, 1, 2, 3 (Intel)
		15	USB 2.0 ports (0, 1)
		16	HD15 video connector (analog VGA)

Installing the Sun Fire X4450 Server Into a Rack with Slide Rails

This chapter describes how to place the Sun Fire X4450 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 Install the Server” on page 9](#)
- [“Preparing the Slide Rails and Server for Installation” on page 11](#)
- [“Installing the Server Into the Slide-Rail Assemblies” on page 17](#)
- [“Installing the Cable Management Arm” on page 20](#)
- [“Verifying Operation of the Slide Rails and CMA” on page 26](#)

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

Before You Install the Server

Read the overview and see the service label on the top cover before you begin to install the Sun Fire X4450 server.

Server Installation Process Overview

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

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 shown:

1. [“Checking Compatibility” on page 10](#)
2. [“Disassembling Slide Rails” on page 12](#)
3. [“Installing the Mounting-Brackets Onto the Server” on page 13](#)
4. [“Installing the Cable Management Arm” on page 20](#)
5. [“Verifying Operation of the Slide Rails and CMA” on page 26](#)
6. [“Connecting the Cables” on page 27](#)

Checking 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 2-1 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).

TABLE 2-1 Rack Compatibility

Item	Requirement
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: <ul style="list-style-type: none">• At least 800 mm (31.5 inches) with the cable management arm• At least 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).



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 – Ensure that the temperature in the rack does not exceed the server’s maximum ambient rated temperatures. Consider the total airflow requirements of all equipment installed in the rack to ensure that the equipment is operated within its specified temperature range.

Preparing the Slide Rails and Server for Installation

The following procedures describe how to prepare the slide rails and server for installation:

- [“Disassembling Slide Rails” on page 12](#)
- [“Installing the Mounting-Brackets Onto the Server” on page 13](#)
- [“Attaching the Slide-Rail Assemblies to the Rack” on page 14](#)

Disassembling Slide Rails

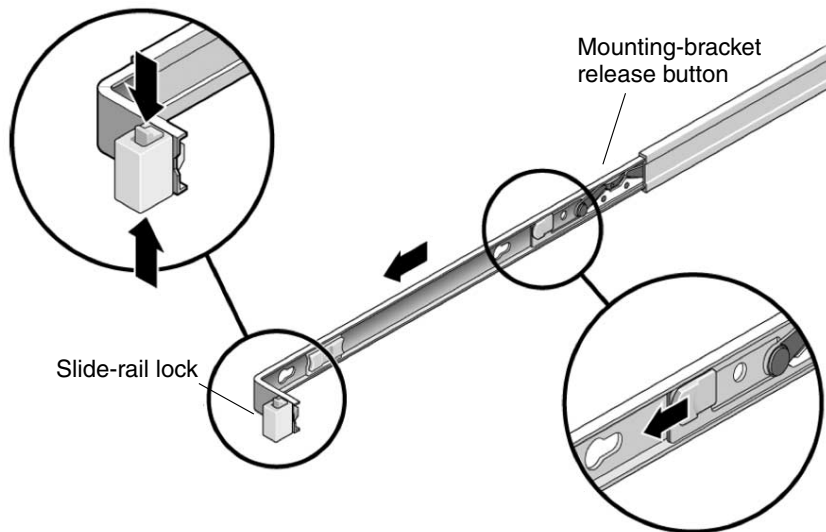
Do one of the following procedures before installation:

- [“To Disassemble Bolt-On Slide Rails” on page 12](#)
- [“To Disassemble Tool-less Slide Rails” on page 13](#)

▼ To Disassemble Bolt-On Slide Rails

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 2-1](#).
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 2-1](#)).
4. Push the mounting-bracket release button toward the front of the mounting bracket, as shown in [FIGURE 2-1](#), and simultaneously withdraw the mounting bracket from the slide-rail assembly.
5. Repeat for the remaining slide-rail assembly.

FIGURE 2-1 Disassembling the Bolt-on Slide Rail Before Installation



▼ To Disassemble Tool-less Slide Rails

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

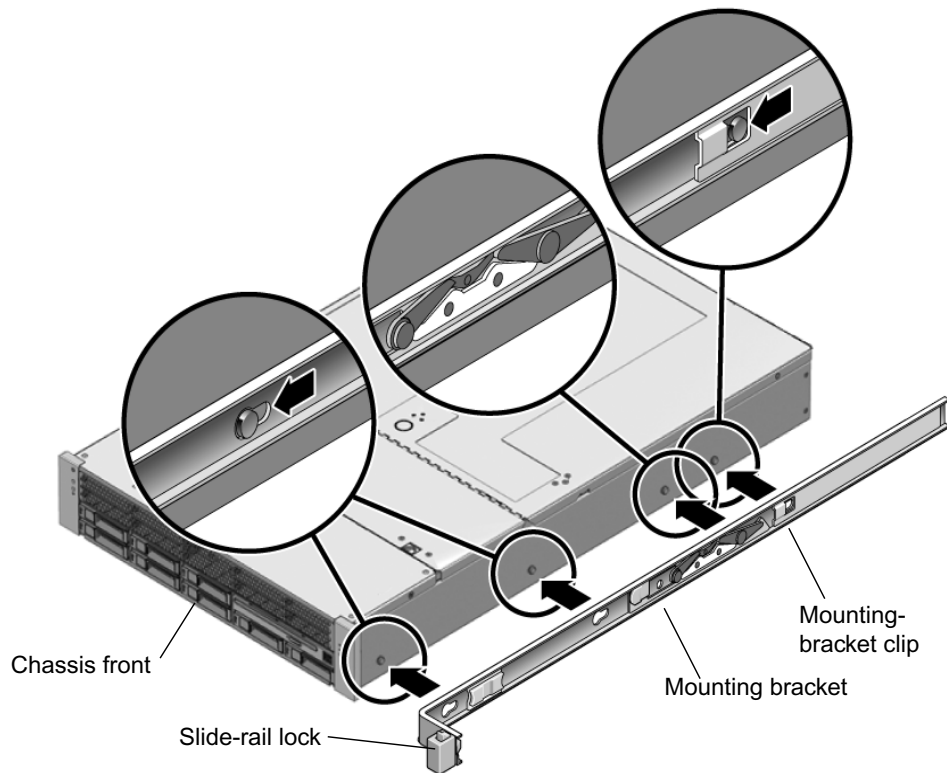
Installing the Mounting-Brackets Onto the Server

▼ 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
- The three keyed openings on the mounting bracket are aligned with the four locating pins on the side of the chassis.

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



2. With the heads of the four chassis locating pins protruding through the three 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 2-2](#).)
3. Verify that the rear locating pin has engaged the mounting-bracket clip. (See [FIGURE 2-2](#).)
4. Repeat [Step 1](#) to [Step 3](#) to install the remaining mounting bracket on the other side of the server.

Attaching the Slide-Rail Assemblies to the Rack

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

- [“To Attach Bolt-On Slide-Rail Assemblies” on page 15](#)
- [“To Attach Tool-less Slide-Rail Assemblies” on page 17](#)

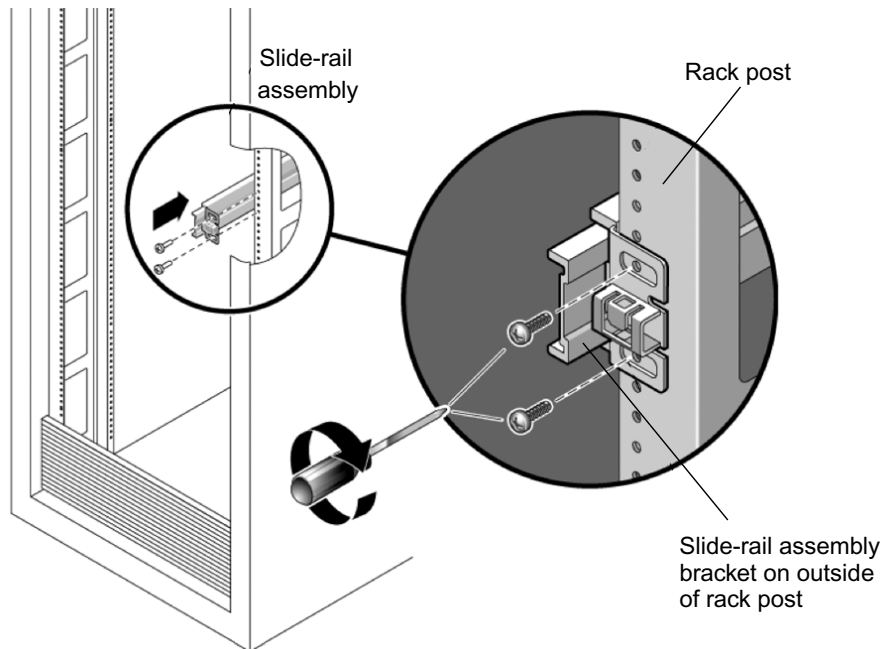
▼ To Attach Bolt-On Slide-Rail Assemblies

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 2-3](#).)
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.

- If your rack has threaded mounting holes in the rack posts:
 - Determine whether the threads are metric or standard.
 - 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.
 - Secure the screws with the caged nuts.

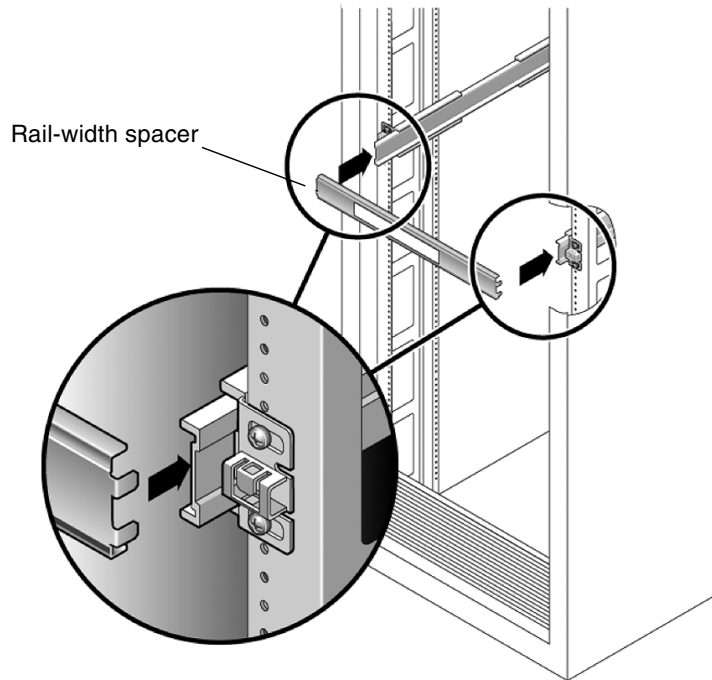
FIGURE 2-3 Slide-Rail Assembly Mounting to Rack Post



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 2-4](#).)

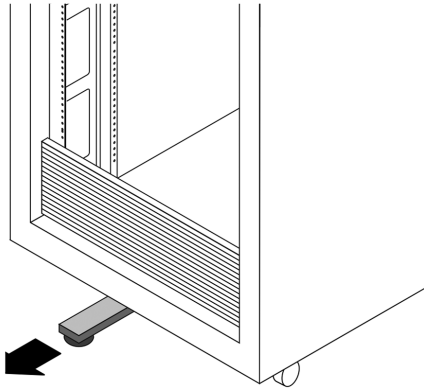
FIGURE 2-4 Setting the Rail Width



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

8. If available, extend the anti-tip foot at the bottom of the rack. (See [FIGURE 2-5](#).)

FIGURE 2-5 Extending the Anti-tip Foot



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

▼ To Attach Tool-less Slide-Rail Assemblies

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

▼ To Install the Server Into Slide-Rail Assemblies



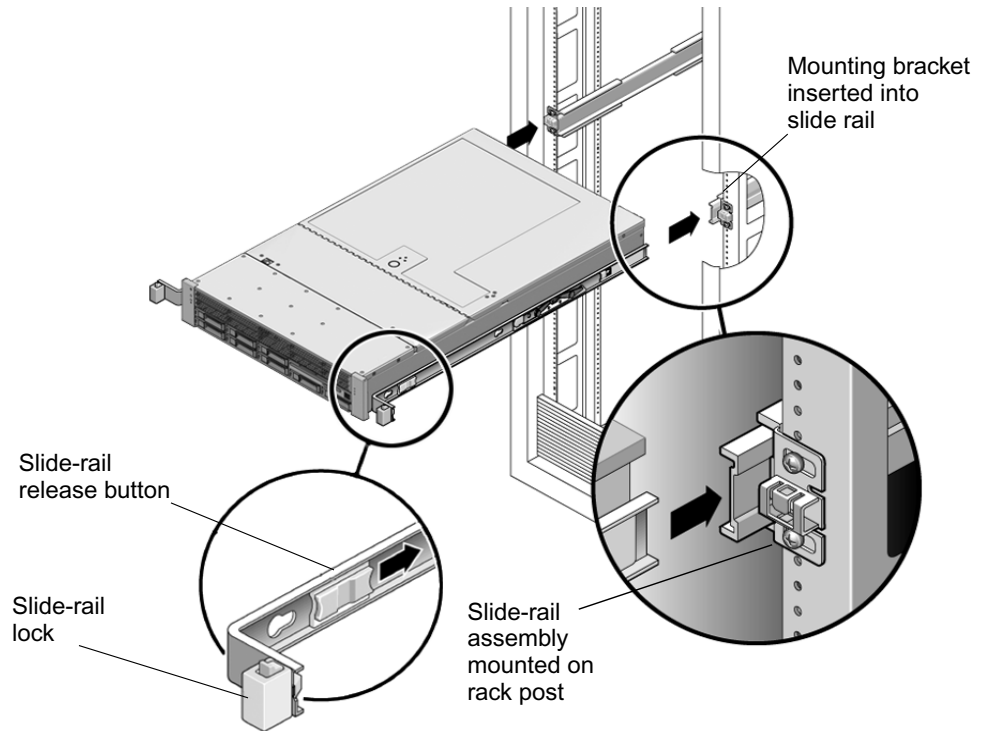
Caution – This procedure requires a minimum of two people because of the weight of the server. Attempting this procedure alone could result in equipment damage or personal injury.



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 foot to prevent the rack from tipping during equipment installation.

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 2-6.](#))
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 2-6 Inserting the Server With Mounting Brackets Into the Slide Rails



4. Simultaneously push and hold the slide-rail release buttons on each mounting bracket while you push the server into the rack. (See [FIGURE 2-6](#).) 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.



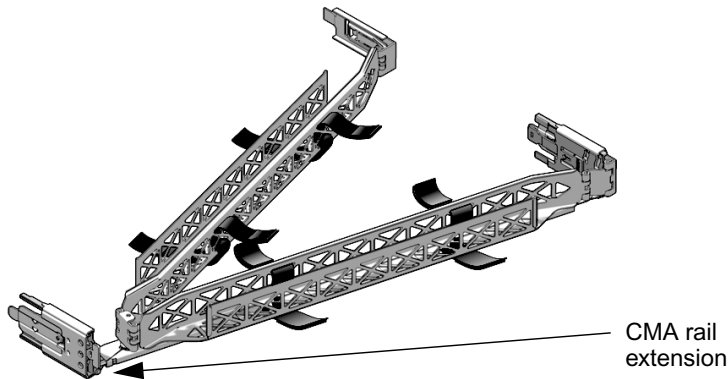
Caution – Verify that the server is securely mounted in the rack and that the slide-rails locks are engaged with the mounting brackets before continuing.

Installing the Cable Management Arm

Use this procedure to install an optional cable management arm (CMA). [FIGURE 2-7](#) shows the CMA.

▼ To Install the Cable Management Arm

FIGURE 2-7 Cable Management Arm (CMA)



1. Unpack the cable management arm 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.

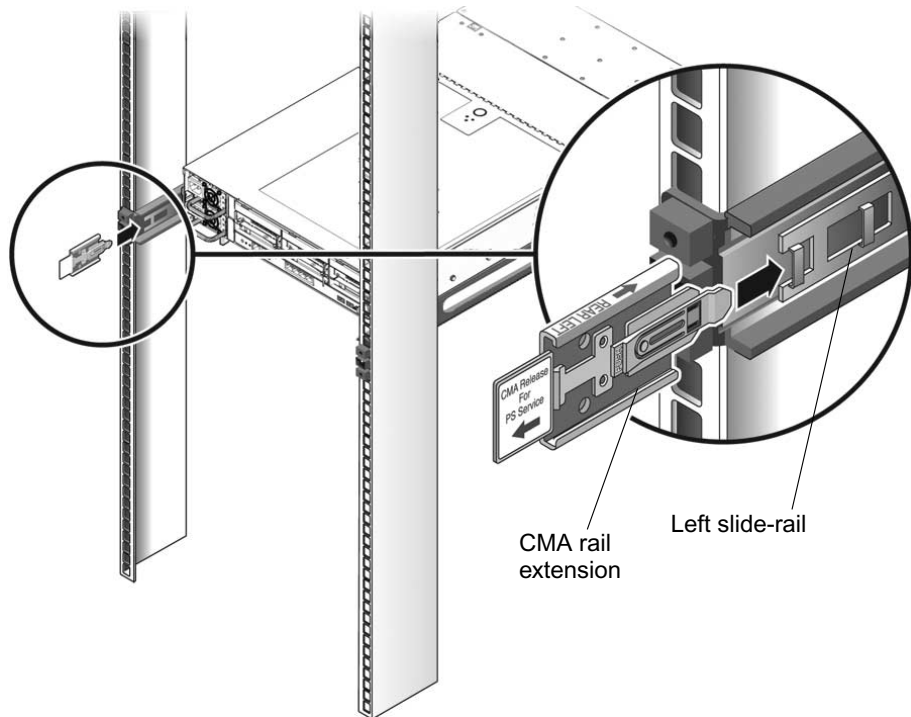
Note – References to “left” or “right” in this procedure assume that you are facing the back of the equipment rack.

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 2-8](#).)

FIGURE 2-8 Inserting the CMA Rail Extension Into the Back of the Left Slide Rail

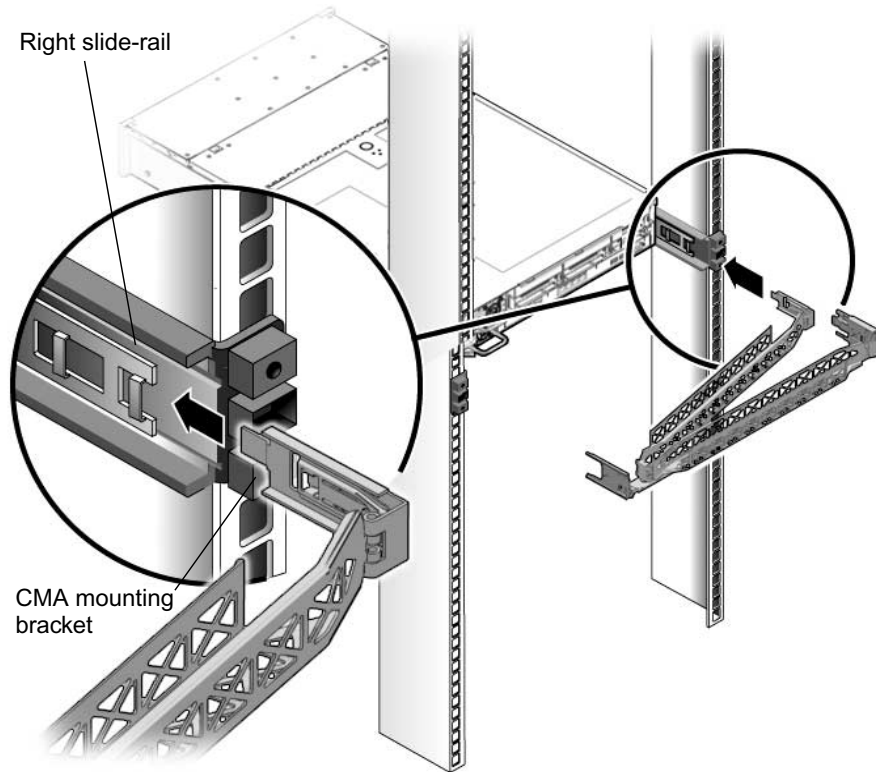


5. Verify that the CMA rail extension engages the slide rail.

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.

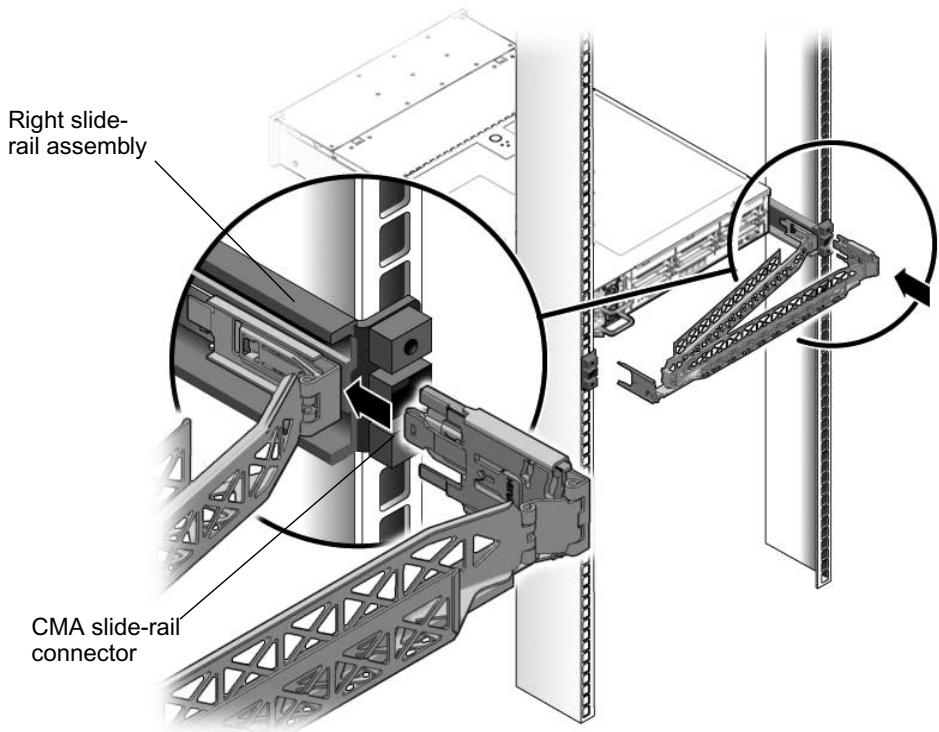
6. Insert the CMA's mounting-bracket connector into the right slide rail until the connector locks into place with an audible click. (See [FIGURE 2-9](#).)

FIGURE 2-9 Inserting the CMA Mounting Bracket Into the Back of the Right Slide Rail



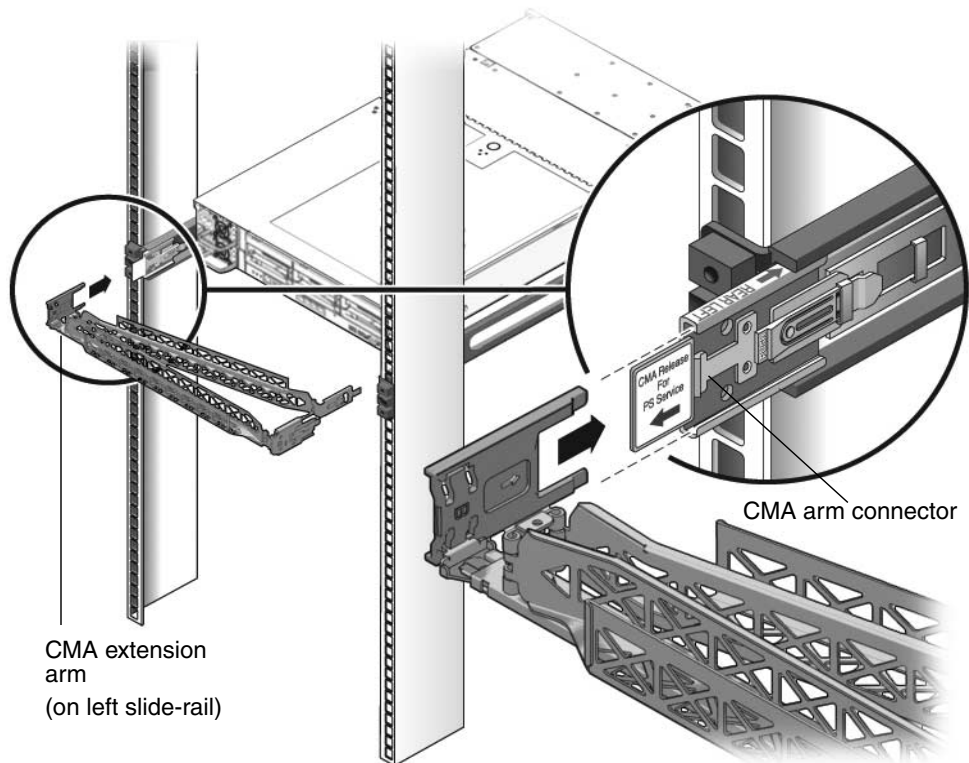
7. Insert the right CMA slide-rail connector into the right slide-rail assembly until the connector locks into place with an audible click. (See [FIGURE 2-10](#).)

FIGURE 2-10 Inserting CMA Slide-Rail Connector Into the Back of the 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 2-11.](#))

FIGURE 2-11 Connecting the CMA Arm to the Rail Extension Connector

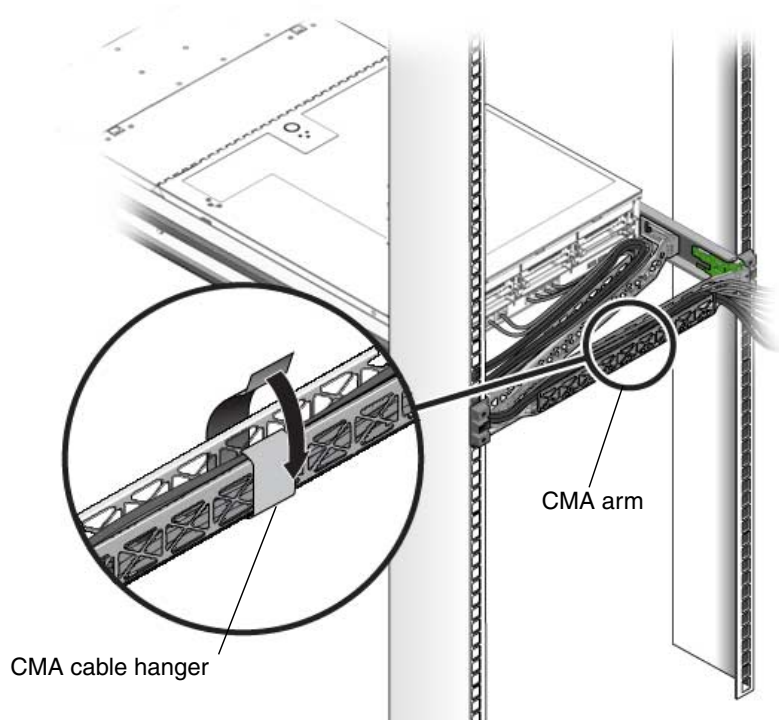


9. Install and route cables to your server, as required.

10. **Attach the hook and loop straps to the CMA, and press them into place to secure the cables. (See [FIGURE 2-12](#).)**

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

FIGURE 2-12 Installing CMA Cable Straps



11. **Attach the right outer latch.**
12. **Attach the support latch to the left CMA extension.**

Verifying Operation of the Slide Rails and CMA

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

▼ To Verify Operation of the 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.
When the server is fully extended, you must release two sets of slide-rail stops to return the server to the rack.
4. Push in the levers located on the inside of each slide rail, just behind the back panel of the server (these levers are labeled “PUSH”).
 - a. Push in both levers simultaneously.
 - b. Slide the server toward the rack.
The server will slide in approximately 18 inches (46 cm) and stop.
 - c. Verify that the cables and the CMA retract without binding before you continue.
5. Push the slide-rail release buttons, located near the front of each mounting bracket. See [FIGURE 2-6](#) for the location of these buttons.
 - a. Simultaneously push or pull both of the slide-rail release buttons.
 - b. Push the server completely into the rack until both slide-rail locks engage.
6. Adjust the cable straps and CMA as required.

Setting Up the Sun Fire X4450 Server

This chapter describes how to connect cables and power up the Sun Fire X4450 server for the first time. It includes the following topics:

- [“Connecting the Cables” on page 27](#)
- [“Service Processor Overview” on page 30](#)
- [“Connecting to the LOM Service Processor for the First Time” on page 33](#)
- [“Determining the LOM Service Processor IP Address” on page 34](#)
- [“Applying Power for the First Time” on page 41](#)

Connecting the Cables

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

Connector Locations

See [FIGURE 3-1](#) and [TABLE 3-1](#) for the locations of the back panel connectors.

FIGURE 3-1 Back Panel Connectors

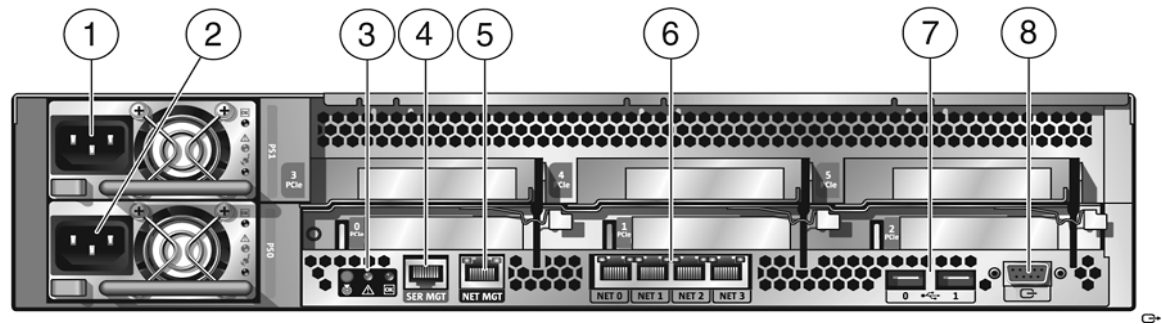


TABLE 3-1 Back Panel Connector Legend

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

Cabling the Server

▼ To Cable the Server

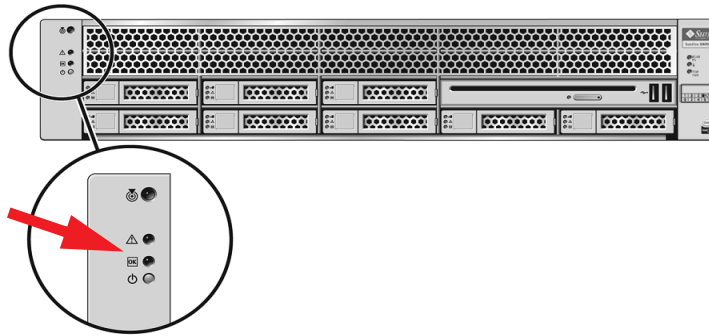
Connect the server power cables, and external cables in the following order:

1. **Connect two grounded server power cords to grounded electrical outlets (1, 2).**

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.**
In standby power mode, the Power/OK LED on the front panel flashes, indicating that the service processor (SP) is working as shown in [FIGURE 3-2](#). At this point, before initial configuration, standby power is supplied only to the SP and power supply fans.

FIGURE 3-2 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 RJ-45 serial port (4).
See [“Connecting to the LOM Service Processor for the First Time”](#) on page 33 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 RJ-45 GigabitEthernet (NET) connectors as needed for OS support (6).
6. Connect any additional external devices, as required, to the server’s USB (7) and/or HD-15 video (8) connectors (optional).
7. Connect to the Lights Out Manager (LOM) SP. See the next section.



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

Service Processor Overview

The Sun Fire X4450 server includes one of the following Lights Out Manager (LOM) service processor (SP) firmware types:

- Embedded Lights Out Manager (ELOM) service processor (SP)

See [“Embedded LOM Service Processor Software Overview” on page 30](#).

Refer to the *Embedded Lights Out Manager (ELOM) Administration Guide* for more information.

- Integrated Lights Out Manager (ILOM) service processor (SP)

See [“Integrated LOM Service Processor Software Overview” on page 32](#).

Refer to the *Sun Integrated Lights Out Manager Users Guide* for more information.

Note – For instructions on changing your service processor firmware type, refer to the *ELOM-to-ILOM Migration User's Guide*.

Where ILOM and ELOM are mentioned in the text, the term LOM is used to indicate ILOM or ELOM, as included in your system.

Embedded LOM Service Processor Software Overview

The Sun Fire X4450 server Embedded Lights Out Manager (ELOM) service processor (SP) consists of the components shown in [TABLE 3-2](#).

TABLE 3-2 Embedded LOM Service Processor Components

Item	Port	Function
1	ELOM hardware	<p>ELOM hardware includes the following hardware components:</p> <ul style="list-style-type: none">• An embedded service processor (SP) chipset. The SP monitors the status and configuration of field-replaceable components inside your server, such as fans, disk drives, and power supplies.• Two back panel external connections: NET MGT Ethernet connection, and serial management port/RJ-45 serial port.
2	ELOM firmware	<p>Several system management firmware applications are preinstalled on the SP chipset. These operating system-independent firmware applications provide the following system management interfaces into your server:</p> <ul style="list-style-type: none">• Web-based graphical interface• Secure Shell (SSH) command-line interface• IPMI v2.0 command-line interface (CLI)• Simple Network Management Protocol (SNMP) v3 interface <p>These interfaces call the same underlying system management functions on your SP. You can work with one or more of these interfaces to integrate with other management interfaces running in your data center.</p>
3	Remote Console application	<p>The Remote Console application allows remote clients to view the graphical console of your host server as though they were directly attached to its video connector. The Remote Console mirrors the video display from the server VGA device (up to 1280 x 1024 resolution) locally on the remote management system. The remote keyboard, mouse, CD drive, or diskette drive appear as standard USB devices.</p> <p>The Remote Console application depends on the following requirements to run correctly. Client systems require a browser (at least IE6, Mozilla, or Firefox) with Sun Java™ runtime environment (at least version 1.6 plug-ins) correctly installed. Java is available for free download at http://java.sun.com.</p>
4	Client-side Secure Shell application	<p>You must install a Secure Shell communications application on the remote client system (server, workstation, or laptop) to access the LOM through a remote Secure Shell (SSH).</p> <p>Many Secure Shell communications applications are available from commercial or open-source distribution. Refer to http://www.openssh.org for information about open-source client-side SSH applications.</p>
5	Serial Redirection	<p>You can set the serial redirection to display system output or Embedded LOM output. A console can also be started to display system output. By default, the LOM output appears. The BIOS contains these serial redirection options. See the <i>Sun Fire X4450 Server Product Notes</i> and the <i>Embedded Lights Out Manager (ELOM) Administration Guide</i> for more information.</p>

Note – The factory has configured the service processor hardware and firmware on your server with the most common settings used in the field. You may not need to change these defaults.

Refer to the *Embedded Lights Out Manager (ELOM) Administration Guide* for detailed information.

Integrated LOM Service Processor Software Overview

Integrated Lights Out Manager (ILOM) is system management firmware that is preinstalled on some Sun server platforms.

Note – If your system is running ELOM firmware, and you want to update to ILOM firmware, refer to the *ELOM-to-ILOM Migration User's Guide* for information.

ILOM enables you to actively manage and monitor components installed in your server system. With ILOM, you can monitor and manage your system proactively by viewing hardware configurations, monitoring system information, managing system alerts, and more

ILOM provides a browser-based web interface and a command-line interface, as well as an SNMP user interface and an IPMI user interface. ILOM automatically initializes as soon as power is applied to your system. ILOM will continue to run regardless of the state of the host operating system, making it a “lights-out” management system.

Some key features of ILOM include:

- Runs on its own processor and resources
- Allows for management of the server without consuming system resources
- Continues to provide management using standby power even when the server is powered-off
- Provides an isolated management network separate from the data network
- Provides a concise view of hardware inventory and environmentals
- Provides the ability to control power, manage components, and access the host console
- Serves as an integration point for other management tools, such as Sun N1 System Manager and third-party applications
- Enables the download of service processor (SP) firmware and BIOS changes

- Manages the inventory of hot-pluggable system components

Refer to the ILOM documentation that corresponds to the ILOM version that you are using.

ILOM Documentation

ILOM 3.0 is now available for the Sun Fire X4450 server. ILOM 3.0 documentation is available in the ILOM 3.0 documentation collection:

<http://docs.sun.com/app/docs/coll/ilom3.0>

ILOM 2.0 documentation is also available at:

<http://docs.sun.com/app/docs/coll/ilom2.0>

In addition, product-specific supplements are available for the Sun Fire X4450 server in the ILOM Supplements section of the Sun Fire X4450 server documentation set.

Connecting to the LOM Service Processor for the First Time

This section describes how to connect to the ELOM or ILOM service processor (SP) for initial setup and configuration. It also includes an overview on SP interfaces and connections.

Initial LOM Setup Overview

The following process allows a user to connect to the LOM SP for initial setup and configuration. Instructions are included for both ELOM and ILOM as required.

Use the following procedures to establish a serial connection to the LOM service processor and configure the LOM SP IP address for the first time.

- “Connecting to the LOM Service Processor for the First Time” on page 33
 - “Method 1: To Access the BIOS” on page 35
 - “Method 2: To Connect to the SP Using a Serial Connection” on page 35
- “Determining the LOM Service Processor IP Address” on page 34
 - “Method 2: To Use the Serial Connection” on page 38
 - “Method 3: To Use the Service Processor (SP) LOM Web Browser Interface” on page 40

About Service Processor Interfaces

After you configure the IP address to comply with your network IP scheme, you can access the LOM SP web browser interface using a Sun Microsystems supported Internet web browser. You can also connect to the LOM service processor through secure shell (SSH).

Choose from one of several LOM SP interfaces to support system management on your server. After you have determined the IP address of the SP, you can access SP firmware applications through the following LOM SP interfaces:

- Serial Port CLI
- Secure shell (SSH) CLI
- Ethernet-based web browser

About LOM IP Addresses

The LOM 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 3 DHCP requests, the LOM 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.

Determining the LOM Service Processor IP Address

There are two methods to determine the IP address of the ELOM or ILOM service processor SP. Choose one of the following methods:

- [“Method 1: To Access the BIOS” on page 35](#)
- [“Method 2: To Connect to the SP Using a Serial Connection” on page 35](#)

▼ Method 1: To Access the BIOS

To access the BIOS and view the service processor (SP) IP address:

1. **Power on the server (or restart the server if it is running).**
See [“Applying Power for the First Time”](#) on page 41.
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. **Navigate to the Server tab, using the left and right keyboard arrows.**
4. **Navigate to AST2000 (LAN)CONFIGURATION and press Enter.**
5. **Access the IP ADDRESS tab.**
6. **View the SP IP address.**

Tip – 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.

▼ Method 2: To Connect to the SP Using a Serial Connection

To establish a connection to the SP using a serial connection (system management port), perform the following steps:

1. **Connect a terminal (or PC running terminal emulation software) to the server serial port.**
2. **Ensure that the following has been set up:**
 - The server hardware is installed.
 - The cables are inserted.
 - The power is in standby mode.
 - The green LED blinks.
3. **Verify that your terminal, laptop, PC, or terminal server is operational.**
4. **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)

5. **Connect a null serial modem cable from the RJ45 serial port on the server back panel to a terminal device (if not connected already).**
See [FIGURE 1-4](#) for the position of the serial port on the back panel.
6. **Press Enter on the terminal device to establish a connection between the terminal device and the LOM service processor (SP).**

Note – If you connect to the serial port on the LOM before it has been powered on or during its power-on sequence, SP boot messages may be displayed.

The LOM displays a login prompt, after a short wait.

login:

7. **Type the default user name `root`, and then type the default password `changeme` to log in to the LOM SP.**

The LOM displays a default command prompt, indicating that you have successfully logged in:

->

8. **Type the command `show /SP/network` to display the current SP IP address.**

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

```
/SP/network
```

```
Targets:
```

```
Properties:
```

```
MACaddress = 00:1B:24:1D:E6:26
```

```
IPAddress = 129.148.53.158
```

```
Netmask = 255.255.255.0
```

```
Gateway = 129.148.53.248
```

```
DNS = 0.0.0.0
```

```
IPSource = dhcp
```

```
Hostname = SUNSP001B241DE626
```


ILOM: 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
pendingipaddress = 129.148.53.128
pendingipdiscovery = static
pendingipgateway = 129.148.53.248
pendingipnetmask = 255.255.255.0
```

9. Be sure to record the IP address assigned to the LOM.

Modifying the Service Processor IP Address

The following examples show how to change the current IP address of the LOM service processor (SP).

Choose one of the following methods.

- [“Method 1: To Use the BIOS” on page 37](#)
- [“Method 2: To Use the Serial Connection” on page 38](#)
- [“Method 3: To Use the Service Processor \(SP\) LOM Web Browser Interface” on page 40](#)

▼ Method 1: To Use the BIOS

To access the BIOS and view the service processor (SP) IP address:

1. Power on the server (or restart the server if it is running).

See [“Applying Power for the First Time” on page 41](#).

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. Navigate to the **Server** tab, using the left and right keyboard arrows.
4. Navigate to **AST2000 (LAN) CONFIGURATION** and press Enter.
5. Access the **IP ADDRESS** tab.
6. View the **SP IP** address.

Tip – 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.

7. Highlight the existing IP address and type the new IP address.
8. Change the IP address mode from DHCP to static.
9. Save and exit the BIOS Setup Utility.

▼ Method 2: To Use the Serial Connection

Example 1: Set to Static IP address

To change the SP DHCP IP address to a static IP address using the serial connection (system management port):

1. Connect a terminal (or a PC running terminal emulation software) to the server serial port.
2. Ensure that the server hardware is installed and cables are inserted.
3. Verify that your terminal, laptop, PC, or terminal server is operational.
4. 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)
5. Connect a null serial modem cable from the server's back panel RJ45 serial port to a terminal device (if not connected already).

See [FIGURE 1-4](#) for the serial port position.

6. Press Enter on the terminal device to establish a connection between the terminal device and the LOM service processor (SP). The following prompt appears.
->
7. Type the default user name **root**, and then type the default password: **changeme** to log in to the LOM SP.
The LOM displays a default command prompt, indicating that you have successfully logged in:
->
8. Type the following command to determine the SP IP address:
show /SP/network
9. After the status has been determined, view the output of **show /SP/network**.
 - ELOM: IPSource = dhcp
 - ILOM: ipdiscovery = dhcp
10. To assign a static IP ADDRESS, type the following commands in exact order:
ELOM:

```
set /SP/network IPSource=static
set /SP/network IPAddress=xxx.xxx.xxx.xxx
set /SP/network Netmask=xxx.xxx.xxx.xxx
set /SP/network Gateway=xxx.xxx.xxx.xxx
```

 Where *xxx.xxx.xxx.xxx* is the IP address.
 ILOM:

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

 Where *xxx.xxx.xxx.xxx* is the IP address

Example 2: Set to DHCP IP address

To change the SP static IP address to a DHCP IP address using the serial connection (system management port), perform the following steps:

1. Connect a terminal (or a PC running terminal emulation software) to the server serial port.

2. Ensure that the server hardware is installed and cables are inserted.
3. Verify that your terminal, laptop, PC, or terminal server is operational.
4. 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)
5. Connect a null serial modem cable from the server's back panel RJ45 serial port to a terminal device (if not connected already).
See [FIGURE 1-4](#) for the serial port position.
6. Press Enter on the terminal device to establish a connection between the terminal device and the LOM SP. The prompt appears.
->
7. Type the following command to change a static address to a DHCP address:
ELOM:
`set /SP/network IPSource=dhcp`
ILOM:
`set /SP/network pendingipdiscovery=dhcp`
`set /SP/networks commitpending=true`
8. Type `show /SP/network` to view the newly assigned DHCP address.
DHCP enabled is shown as `ipdiscovery=DHCP`

▼ Method 3: To Use the Service Processor (SP) LOM Web Browser Interface

Note – The SP web Browser Interface can be accessed *only* if you know the SP IP address. See [“Determining the LOM Service Processor IP Address” on page 34](#).

To change a static IP address, using the SP LOM web interface:

1. Open a Sun Microsystems supported Web browser, such as Internet Explorer, Mozilla, or Firefox.

2. Type the IP address of the SP in the browser address bar.
For example: **http://xxx.xxx.xxx.xxx**
3. Accept the certificate when prompted.
4. Enter your username (**root**) and password (**changme**).
5. Select the Configuration tab and then the Network tab.
6. Set configurations, such as IP configuration and DNS, as required.
7. 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.
8. 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.
9. Record your settings.
10. Log out.
11. If the IP address changes, you must reconnect using the newly assigned IP address, because the current session will become unresponsive.
*Refer to the *Embedded Lights Out Manager (ELOM) Administration Guide* or the *Sun Integrated Lights Out Manager Users Guide* for detailed information.*

Applying Power for the First Time

▼ To Apply Power for the First Time

1. Verify that the top cover is on.
If the cover is removed, the system will power off.
2. 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 flashes. See [FIGURE 3-2](#).

3. Verify that you are connected to the server through the serial management port. Perform the following sub-steps:
 - a. Connect a terminal (or a PC running terminal emulation software) to the server serial port.
 - b. Ensure that the server hardware is installed and cables are inserted.
 - c. Verify that your terminal, laptop, PC, or terminal server is operational.
 - d. 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)
 - e. Connect a null serial modem cable from the server's back panel serial port to a terminal device (if not connected already).
 - f. Press Enter on the terminal device to establish a connection between the terminal device and the LOM service processor (SP).

See [FIGURE 1-4](#) for the serial port position.

The following prompt appears:

->

4. Use a stylus, or other non-conducting pointed object, to press and release the recessed Power button on the server front panel.

When main power is applied to the server, the Power/OK LED next to the Power button lights and remains lit.
5. To display a screen for configuring the preinstalled Solaris OS from the system management port, do one of the following:

ELOM:

a. Type: **cd /SP/AgentInfo**

b. Type: **start Console**

ILOM:

Type: **start/SP/console**

6. Configure the preinstalled OS as shown in one of the following sections:
 - “Configuring the Preinstalled Solaris 10 Operating System” on page 45
 - “Configuring the Preinstalled Windows Server 2003 R2 Operating System” on page 57
 - “Configuring the Preinstalled OpenSolaris Operating System” on page 65

Note – Do one of the following from the serial console:

ELOM: To switch back to the ELOM CLI from the serial console, press **Esc** + **Shift** + **9**, or press **Esc** (, depending on your keyboard location.

ILOM: To switch back to the ILOM command-line interface from the serial console, press **Esc** (, depending on your keyboard location.

Installing the Intel PROSET Teaming Utility

The Intel PROSET teaming utility is optional for Windows systems.

▼ To Install the Intel PROSET Teaming Utility

1. **Install the Ethernet drivers from the Tools & Drivers CD Version 1.1 or later, using your preferred method.**
 - Autorun - Insert the Tool & Drivers CD. From the Autorun menu, choose Install/Update drivers and optional packages.
 - Manually - Access the Ethernet properties and update the driver manually through Device Manager.

2. **When the Ethernet cards have been installed and IP addresses assigned, run the PROSET installer.**

Locate the installer on the Tools & Drivers CD Version 1.1 or later, in the following location: `drivers\windows\IntelNic\2003\PROSET\2003_xx` where `xx` is 32 or 64 bit. Use `PROSETDX.msi` installer.

3. **Follow the instructions on your screen and choose the Advanced Network Features from the displayed list of options.**

4. To access the PROSET Teaming options, locate the Ethernet Card through Device Manager and choose Properties.

The new tabs installed are Teaming and VLAN.

Configuring the Preinstalled Solaris 10 Operating System

This chapter describes how to configure the Solaris™ 10 operating system (OS) that might be preinstalled on your Sun Fire X4450 server. This chapter assumes that your server has a hard drive installed, with the Solaris OS preinstalled. Your system might be different, depending on your hard drive configuration.

This chapter includes the following topics:

- [“Solaris Preinstall Overview” on page 45](#)
- [“Configuring the Solaris OS” on page 49](#)
- [“Configuring Sun Fire X4450 Server RAID Drives” on page 51](#)
- [“Solaris 10 OS User Information” on page 56](#)

Solaris Preinstall Overview

Read this section before you set up the Solaris OS.

Delivery Methods

To configure preinstalled Solaris OS, you can select a delivery option in the GRUB menu that allows you to choose a delivery method:

- Serial management port (default method)
or
- Directly connected monitor and keyboard.

About the GRUB Menu

Solaris uses a GRUB boot loader with a GRUB menu. When you start the Solaris OS, a GRUB menu appears. The GRUB menu allows you to select to direct output to either the serial port or video port.

If you do not select an output within 10 seconds at the boot menu, default redirection of the Solaris OS occurs, and the system boots using the default output (serial management port-ttya). Serial redirection requires a connection to the serial management port. See [“Determining the LOM Service Processor IP Address” on page 34](#) and [“Method 2: To Use the Serial Connection” on page 38](#).

Before You Begin

Before you configure the preinstalled Solaris OS, you must do the following:

1. Perform initial configuration of the SP, and determine the server’s network settings. See [“Setting Up the Sun Fire X4450 Server” on page 27](#).
2. Gather the information that you will need to configure the server. See [“Installation Worksheet” on page 47](#).

After these steps are complete, you can configure the preinstalled Solaris OS. See [“Configuring the Solaris OS” on page 49](#).

Installation Worksheet

Fill in [TABLE 4-1](#) with information you need to configure the preinstalled Solaris 10 OS for the server. Collect only the information that applies to your system.

TABLE 4-1 Installation Worksheet

Installation Information		Description	Enter System Configuration: Asterisk (*) indicates default.
Language		Choose from the list of available languages for the Solaris 10 software.	English*
Locale		Choose your geographic region from the list of available locales.	English (C - 7-bit ASCII)*
Terminal		Choose the type of terminal that you are using from the list of available terminal types.	
Network connection		Is the system connected to a network?	Networked Non-networked*
DHCP		Can the system use Dynamic Host Configuration Protocol (DHCP) to configure its network interfaces?	Yes No*
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: 255.255.255.0	255.255.255.0 *
	IPv6	Do you want to enable IPv6 on this machine?	Yes No*
Host name		A host name that you choose for the system.	
Kerberos		Do you want to configure Kerberos security on this machine? If yes, gather the following information: Default Realm: Administration Server: First KDC: (Optional) Additional KDCs:	Yes No*

TABLE 4-1 Installation Worksheet

Installation Information		Description	Enter System Configuration: Asterisk (*) indicates default.
Name service: if the system uses a name service, provide the following information.	Name service	Which name service should this system use?	NIS+ NIS DNS LDAP None*
	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?	Specify One Find One*
	DNS	Provide IP addresses for the DNS server. You must enter at least one IP address, but you can enter up to three addresses.	IP addresses (1–3):
		You can also enter a list of domains to search when a DNS query is made.	Search Domains (1–3):
	LDAP	Provide the following information about your LDAP profile: If you specify a proxy credential level in your LDAP profile, gather the following information: Proxy-Bind Distinguished Name: Proxy-Bind Password:	Profile name: Profile server:
Default route		Do you want to specify a default route IP address or let the Solaris OS installation program find one? 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.	Specify IP address Detect IP address None*

TABLE 4-1 Installation Worksheet

Installation Information	Description	Enter System Configuration: Asterisk (*) indicates default.
	Select one of the following routes: <ul style="list-style-type: none">• Specify 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.• Detect IP address. 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 ICMP router discovery protocol. If you are using the command-line interface, the software detects an IP address when the system is booted.• None. 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.	
Time zone	How do you want to specify your default time zone	Geographic region* Offset from GM Time zone file
Root password	Choose a root password for the system.	

Configuring the Solaris OS

This section covers the following procedures:

- [“To Configure the Preinstalled Solaris OS” on page 49](#)
- [“To Redirect the Console Output to the Video Port” on page 50](#)
- [“To Set the Video Port as the Default Output” on page 51](#)

▼ To Configure the Preinstalled Solaris OS

1. Log in to the service processor as an administrator. For example:

Login: **root**
Password: **changeme**

2. Start the LOM console.

ELOM:

- a. Type: **cd /SP/AgentInfo**

b. Type: start Console

Refer to the *Embedded Lights Out Manager (ELOM) Administration Guide* for detailed information.

ILOM:

Type: **start/SP/Console**

Refer to the *Sun Integrated Lights Out Manager Users Guide* for detailed information.

3. Follow the Solaris 10 OS preinstallation onscreen instructions.

4. Type the system and network information when prompted. See [TABLE 4-1](#) for collected information.

The displayed screens can vary, depending on how you chose to assign network information to the server (DHCP or static IP address).

5. After the system configuration information has been entered, the OS installation continues.

On completion, the system reboots and displays the Solaris OS login.

Redirecting the Console Output to the Video Port (Optional)

You must complete the procedure [“Configuring the Solaris OS” on page 49](#) and be logged in to the service processor (SP) before you can redirect the console output to the video port. This procedure is optional.

Note – The Solaris GRUB menu allows you to manually select graphics adapter redirection during the boot process. If not chosen within 30 seconds after the GRUB menu is displayed, the system defaults to serial redirection (ttya).

▼ To Redirect the Console Output to the Video Port

- 1. Reboot the system.**
- 2. To enable video output, choose Solaris Build - Graphics Adapter from the Changing Default Console Output GRUB menu.**

Setting the Video Port as the Default Output

The preinstalled Solaris 10 OS image directs console output to the serial port by default. After the initial configuration of the preinstalled Solaris OS is complete, you can modify the Solaris 10 GRUB menu to direct output to the video port by default.



Caution – This procedure is intended only for advanced users of the Solaris OS. You can seriously disrupt server operation or make the server unbootable if you introduce a problem in the `menu.lst` file.

▼ To Set the Video Port as the Default Output

1. **Open the `/boot/grub/menu.lst` file in a text editor.**
2. **Modify the following line in the file to change the default so that the console output goes to the video port:**

```
default 1
```

3. **Run the following command to add the Xserver startup scripts:**

```
/usr/dt/bin/dtconfig -e
```

4. **Reboot the server.**

After the system reboots, the console output goes to the video port by default.

Configuring Sun Fire X4450 Server RAID Drives

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

RAID Drive Overview

The Sun Fire X4450 server has two optional RAID Host Bus Adapter (HBA) cards. You can access the RAID configuration through the HBA card BIOS. [TABLE 4-2](#) shows the key combinations to use to access each HBA's BIOS.

TABLE 4-2 Sun Fire X4450 Server RAID HBA Cards

RAID HBA cards	Press for BIOS
Sun StorageTek	Ctrl-A
LSI 3081E	Ctrl-C

The system will have the preinstalled OS on HD0. When the Solaris OS installation has been completed, the option to upgrade your single-disk OS to a mirrored RAID solution is available.

The configuration procedure is different for each supported controller card. For example, a Sun StorageTek HBA card has many more options for RAID configuration than an LSI HBA card. Configure the RAID depending on your needs as shown in [TABLE 4-3](#).

Note – Configuring the Sun Fire X4450 server RAID 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 to perform a fresh install of the Solaris operating system (or other OS) in the desired RAID configuration.

RAID Drive Options

[TABLE 4-3](#) shows the RAID drive options:

TABLE 4-3 RAID Drive Options

SAS Card	Drives Supported	RAID Configuration Supported	Drive Usage
Sun StorageTek	Seagate 73 GB SAS	Volume – 1 disk	
	Fujitsu 73 GB SAS	RAID 0 – stripe – 2 disk minimum	No redundancy
	Seagate 146 GB SAS	RAID 1 – mirror – 2 disk minimum	50%
		RAID 1E – 3 drive minimum	50%
		RAID 10 – 4 drive minimum	50%

LSI 3081E		RAID 5 – 3 drive minimum	67–94%
		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%
	Seagate 73 GB SAS	IM – Integrated Mirror array. 2 disk minimum, plus up to 2 hot spare disks.	Data on primary disk might be merged.
	Fujitsu 73 GB SAS	IME – Integrated Mirror Enhanced array. 3 to 8 disks including up to 2 hot spares.	All data will be deleted during creation.
	Seagate 146 GB SAS	IS – Integrated Striping array. 2 to 8 disks.	All data will be deleted during creation.

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. Refer to the *Sun Fire X4450 Server Operating System Installation Guide* or an HBA card product guide.

If you choose the preinstalled Solaris OS and want to make the OS part of a RAID set, and if you are using LSI RAID only, perform the following procedure to update the preinstalled Solaris OS to a mirrored RAID set. As stated in [TABLE 4-3](#), only IM (Integrated Mirror) allows data on the primary hard disk drive (HDD) to be preserved or merged into an array of disks.

This example allows the creation of a mirror before or after the Solaris installation. The server has 2 disks: HDD0 (with the OS) and HDD1 (which is blank).

▼ To Create a Mirror Image of the Solaris OS on HDD1

1. **Power on your server system for the first time.**
2. **Press CTRL-C to access the LSI RAID configuration utility.**
3. **Select the SAS card - SAS1068E. 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 to move the cursor to the RAID column, and press the Space bar to include into RAID.
7. Because HDD0 contains data, select merge or delete:
 - Choose M to merge data and start a sync operation.
 - or
 - Choose D to erase the Solaris PreInstall.
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 and reboot.

Creating a RAID Set to Incorporate a Preinstalled OS Using the Sun StorageTek Card

The Sun StorageTek card allows 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. The following example shows how to mirror the preinstalled Solaris OS. This is the better option, and all remaining disks (should there be more than 2) are incorporated into a DATA RAID set using the available options as shown in [TABLE 4-3](#).

You will need the *Sun Fire X4450 Server Tools and Drivers DVD*.

▼ 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. From the supplied Tools & Drivers CD, copy the StorMan.ds application, located in the `/mount-point/RAIDmgmt/StorageTEK/Solaris` directory, to a new directory you create on your Solaris server, for example, `mkdir /StorMan`.
3. Change the permissions of the new directory and StorMan application.

```
chmod 777 StorMan.ds
```
4. Run the following command to install the application:

```
pkgadd -d StorMan.ds
```
5. Choose to install all components when prompted.

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

Tip – HDD0 (OS) should be Enclosure 0 Logical Volume 1.

11. To mirror the OS, right-click Logical Device 1 and choose Expand or Change Logical Device.
12. Choose the appropriate RAID option (in this example, RAID 1 for Mirror).
13. Choose a disk to mirror the OS with, from the physical disk list.
Select the hard disk drive that best fits your needs.
14. After you select the HDD, click Next, and then view the configuration summary.
15. Click Apply to start the mirroring process.
You can also click Schedule to perform the mirroring process at a later time.
16. One more confirmation screen will be displayed, and once confirmed, the OS will begin to mirror.
Mirroring may take several hours, depending on the amount of data and the HDD size.

Solaris 10 OS User Information

This section provides pointers to information about the Solaris 10 operating system.

Accessing 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>

Specifically, you can access the Solaris 10 OS Release and Installation collection at:

<http://docs.sun.com/app/docs/coll/1236.1>

Downloading Solaris 10 OS Software

If you need to install the Solaris 10 OS or reinstall the OS after removing it, you can download the CD or DVD image at:

<http://www.sun.com/software/solaris/get.jsp>

Solaris 10 8/07 is the minimum supported version for the Sun Fire X4450 server.

See the *Sun Fire X4450 Operating System Installation Guide* for specific instructions on Solaris 10 OS installation.

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 Classes. For Solaris 10 OS training and certification options at a glance, go to:

<http://www.sun.com/training/catalog/solaris10.html>

Configuring the Preinstalled Windows Server 2003 R2 Operating System

This chapter describes how to configure the Preinstalled Windows Server 2003 R2 Operating System (OS) that might be preinstalled on your Sun Fire X4450 server. This chapter assumes that your server has a hard drive installed, with the Preinstalled Windows Server 2003 R2 OS preinstalled. Your system might be different, depending on your hard drive configuration and ordering options.

This chapter includes the following topics:

- [“Windows Server 2003 R2 Preinstall Overview” on page 57](#)
- [“Configuring the Windows Server 2003 R2 OS” on page 59](#)
- [“Configuring Sun Fire X4450 Server RAID Drives” on page 60](#)

Windows Server 2003 R2 Preinstall Overview

Read this section before you set up Windows Server 2003 R2.

Servers shipped with the factory-installed Windows Server 2003 R2 OS include a *Getting Started Guide*. Read this guide before performing the initial setup of the Windows Server 2003 R2 operating system. For initial setup procedure, also refer to the *Sun x64 Servers Windows 2003 R2 Preinstall Product Notes*.

Delivery Methods

By default, video output for the Windows preinstall is directed to the VGA monitor. If no VGA monitor is attached, use a Remote Console session to configure the OS.

Starting a Remote Console Session

For more detailed information on starting a Remote Console session, refer to.

ELOM: See section "*Starting the Remote Console Application*" in the *Embedded Lights out Manager Guide for the Sun Fire X4150 and X4450 Servers*.

ILOM: See the LOM documentation for the ILOM version that you are using.

Note – If a VGA monitor is attached, skip this section

▼ To Start a Remote Console Session

1. **Determine the Service Processor IP address.**
See "[Determining the LOM Service Processor IP Address](#)" on page 34.
2. **Open a browser window.**
3. **Type the IP address of SP into a browser window, and then login to the web interface.**
4. **Click on the Remote Control tab, and then select Redirection.**
5. **Click Launch.**
The console appears.

Configuring the Windows Server 2003 R2 OS

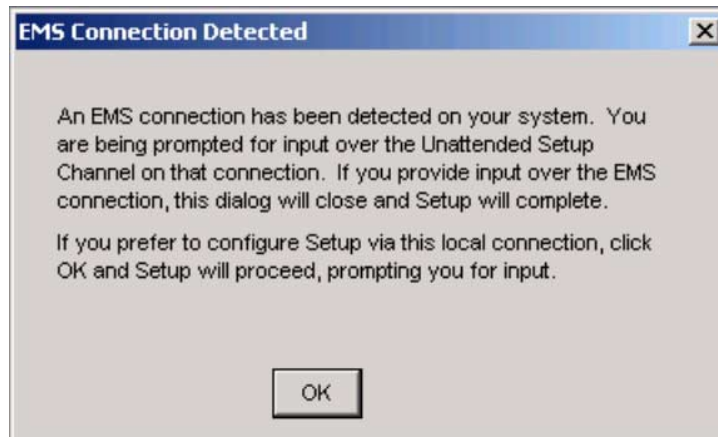
▼ To Configure the Windows Server 2003 R2 Operating System

1. **Boot the preinstalled image for the first time.**

The EMS Connection Detected dialog box appears.

2. **Click OK to continue using this local connection.**

An EMS (emergency management console) connection might be detected if Serial Console Redirection is enabled in the BIOS, and an EMS Connection Detected popup message might appear, as shown here.



Note – In Sun servers, Serial Console Redirection is enabled by default.

3. **The Welcome to Windows Setup Wizard screen appears. Click Next.**
4. **The License Agreement screen appears.**
5. **Read the terms and conditions of the license agreement, and if you agree, accept the terms and conditions. Click Next.**

6. The Regional and Language Options screen appears.
7. Select your preferred region and language. Click Next.
8. The Personalize Your Software screen appears.
9. Type your name and organization. Click Next.
10. The Licensing Modes screen appears.
11. Select the desired licensing mode. Click Next.
12. The Computer Name and Administrator Password screen appears.
 - a. Enter an administrator password and confirm the password.
 - b. Keep or change the suggested computer name.
 - c. Click Next.The Date and Time Settings screen appears.
13. Set the Date, Time, and Time Zone settings for your locale. Click Next.

The network software installs and configures the operating system.
14. The Network Settings page appears.
15. The Workgroup or Computer Domain page appears.
16. Configure the computer to be part of a Domain or Workgroup, and then click Next.

The Performing Final Tasks page appears and the server restarts automatically when completed.

Configuring Sun Fire X4450 Server RAID Drives

After you configure the Windows Server 2003 R2 OS, you might need to configure the RAID drives.

RAID Drive Overview

The Sun Fire X4450 server has two optional RAID Host Bus Adapter (HBA) cards. You can access RAID configuration through the HBA card BIOS. See [TABLE 5-1](#) for the key combinations used to access each HBA's BIOS.

TABLE 5-1 Sun Fire X4450 Server RAID HBA cards

RAID HBA cards	Press for BIOS
Sun StorageTek	Ctrl-A
LSI 3081E	Ctrl-C

The system will have the preinstalled OS on HDD0. When the Windows Server 2003 R2 OS installation has been completed, the option to upgrade your single-disk OS to a mirrored RAID solution is available.

The configuration procedure is different for each supported controller card. For example, a Sun StorageTek HBA card has many more options for RAID configuration than an LSI HBA card. Configure the RAID depending on your needs as shown in [TABLE 5-2](#).

Note – Configuring the Sun Fire X4450 server RAID is optional. By default, the preinstalled Windows Server 2003 R2 image is configured in a non-RAID configuration. If anything other than a basic Mirror RAID is required, it is recommended to perform a fresh install of the Windows Server 2003 R2 OS (or other OS) in the desired RAID configuration.

RAID Drive Options

[TABLE 5-2](#) shows the RAID drive options:

TABLE 5-2 RAID Drive Options

SAS Card	Drives Supported	RAID Configuration Supported	Drive Usage
Sun StorageTek	Seagate 73 GB SAS	Volume – 1 disk	
	Fujitsu 73 GB SAS	RAID 0 – stripe – 2 disk minimum	No redundancy
	Seagate 146 GB SAS	RAID 1 – mirror – 2 disk minimum	50%
		RAID 1E – 3 drive minimum	50%
		RAID – 4 drive minimum	50%
		RAID 5 – 3 drive minimum	67–94%

TABLE 5-2 RAID Drive Options

SAS Card	Drives Supported	RAID Configuration Supported	Drive Usage
LSI 3081E		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%
	Seagate 73 GB SAS	IM – Integrated Mirror array. 2 disk minimum, plus up to 2 hot spare disks.	Data on Primary disk might be merged.
	Fujitsu 73 GB SAS	IME – Integrated Mirror Enhanced array. 3-8 disks including up to 2 hot spares.	All data will be deleted during creation.
	Seagate 146 GB SAS	IS – Integrated Striping array. 2-8 disks.	All data will be deleted during creation.

Mirroring the Preinstalled Windows Server 2003 R2 OS with LSI RAID

The Windows Server 2003 R2 OS supports hardware RAID and cannot be installed on an existing array if one has been created. Refer to the *Sun Fire X4450 Server Operating System Installation Guide* or an HBA card product guide.

If want to make the preinstalled Windows Server 2003 R2 OS part of a RAID set, and if you are using LSI RAID only, perform the following procedure to update the preinstalled Windows Server 2003 R2 OS to a mirrored RAID set. As stated in [TABLE 5-2](#), only IM (Integrated Mirror) allows data on the primary hard disk drive (HDD) to be preserved or merged into an array of disks.

This example allows the creation of a mirror before or after the Windows Server 2003 R2 installation. The server has 2 disks: HDD0 (with the OS) and HDD1 (which is blank).

▼ To Create a Mirror Image of the Windows Server 2003 R2 OS on HDD1

1. Power on your server system for the first time.
2. Press CTRL-A to access the LSI RAID configuration utility.
3. Select the SAS card - SAS1068E. 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 to move the cursor to the RAID column, and press the spacebar to include into 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 Windows Server 2003 R2 PreInstall.
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 and reboot.

Creating a RAID Set to Incorporate a Preinstalled OS Using the Sun StorageTek Card

The Sun StorageTek card allows 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. The following example shows how to mirror the preinstalled Windows Server 2003 R2 OS. This is the better option, and all remaining disks (should there be more than 2) are incorporated into a DATA RAID set using the available options as shown in [TABLE 5-2](#).

You will need the *Sun Fire X4450 Server Tools and Drivers CD*.

▼ To Mirror Your Configured Windows Server 2003 R2 OS

1. Select Start and then Sun Link - Online Information.
2. Select Install Supplemental Software.
3. Check Sun StorageTEK Manager.

4. **Click Next to install the Sun StorageTek Manager program.**
5. **Select Start and then Sun StorageTek Raid Manager.**
6. **Double-click the local machine that displays by the IP Address of the Primary ENET connection.**
A prompt appears.
7. **At the prompt, log in as root, using the OS password that was assigned during installation.**
8. **Click the SUN STK RAID Controller.**
All attached hard disk drives on Enclosure 0 and 1 appear.
9. **To mirror the OS, right-click Logical Device 1 and then choose Expand or Change Logical Device.**
10. **Choose the appropriate RAID option.**
In this example, select RAID 1 for Mirror.
11. **Choose a disk to mirror the OS with, from the physical disk list.**
Select the hard disk drive that best fits your needs.
12. **After you select the hard disk drive, click Next, and then view the configuration summary.**
13. **Click Apply to start the mirroring process.**
You can also click Schedule to perform the mirroring process at a later time.
14. **One more confirmation screen appears. Confirm the mirroring.**
The OS begins to mirror. Mirroring may take several hours, depending on the amount of data and the hard disk drive size.

Configuring the Preinstalled OpenSolaris Operating System

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

Note – 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 66](#)
- [“Configuring the Preinstalled OpenSolaris Operating System” on page 70](#)
- [“Getting Started on OpenSolaris” on page 75](#)
- [“Configuring Server RAID Drives” on page 76](#)
- [“Mirroring the Preinstalled OpenSolaris OS With LSI RAID” on page 78](#)
- [“Mirroring the Preinstalled OpenSolaris OS With Sun StorageTek HBA Card” on page 79](#)
- [“OpenSolaris Operating System User Information” on page 81](#)
- [“Using the OpenSolaris Installation Program” on page 81](#)
- [“Reinstalling the OpenSolaris Operating System” on page 81](#)

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 LOM Service Processor for the First Time” on page 33](#).
- Ensure that main power has been applied to the server. For more information, see [“Applying Power for the First Time” on page 41](#).
- Gather the information that you will need for the configuration, as listed in [“Installation Worksheet” on page 66](#).

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 [“\(Optional\) To Redirect the Console Output to the Video Port” on page 73](#).

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

Note – .Default values are indicated by an asterisk (*) in the table.

TABLE 6-1 Worksheet for OpenSolaris Configuration

Information for Installation		Description or Example	Your Answers: Defaults (*)
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"> • Networked • Non-networked*
DHCP		Can the system use Dynamic Host Configuration Protocol (DHCP) to configure its network interfaces?	<ul style="list-style-type: none"> • Yes • No*
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"> • Yes • No*
Host name		Choose a host name for the system.	
Kerberos		Do you want to configure Kerberos security on this machine? If yes, gather the following information: <div style="text-align: right;"> Default realm: Administration server: First KDC: (Optional) Additional KDCs: </div>	<ul style="list-style-type: none"> • Yes • No*

TABLE 6-1 Worksheet for OpenSolaris Configuration

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">• NIS+• NIS• DNS• LDAP• None*
	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">• Specify One• Find One*
	DNS	Provide IP addresses for the DNS server. You must enter at least one IP address, but you can enter up to three addresses. You can also enter a list of domains to search when a DNS query is made.	
		Search domain: Search domain: Search domain:	
LDAP			
	LDAP	Provide the following information about your LDAP profile:	
		Profile name:	
		Profile server:	
		If you specify a proxy credential level in your LDAP profile, gather the following information: Proxy-bind distinguished name: Proxy-bind password:	

TABLE 6-1 Worksheet for OpenSolaris Configuration

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">• 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.• 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.• 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.	<ul style="list-style-type: none">• Specify One• Detect One• None*
Time zone	How do you want to specify your default time zone?	<ul style="list-style-type: none">• Geographic region*• Offset from GM• Time zone file
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 LOM Service Processor for the First Time” on page 33](#).

Use the information that you gathered in [“Installation Worksheet” on page 66](#) 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:

- [“To Access the System Over the Network” on page 70](#)
- [“To Access the System Locally” on page 71](#)
- [“To Configure the Preinstalled OpenSolaris Operating System” on page 72](#)
- [“\(Optional\) To Redirect the Console Output to the Video Port” on page 73](#)

▼ To Access 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 using the `show` command.

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 be set to 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
```

▼ To Access 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.

▼ To 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 Power for the First Time” on page 41](#).

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

2. Follow the OpenSolaris preinstallation onscreen prompts.

3. Use the information gathered in [“Installation Worksheet” on page 66](#) to help you enter the system and network information as you are prompted.

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

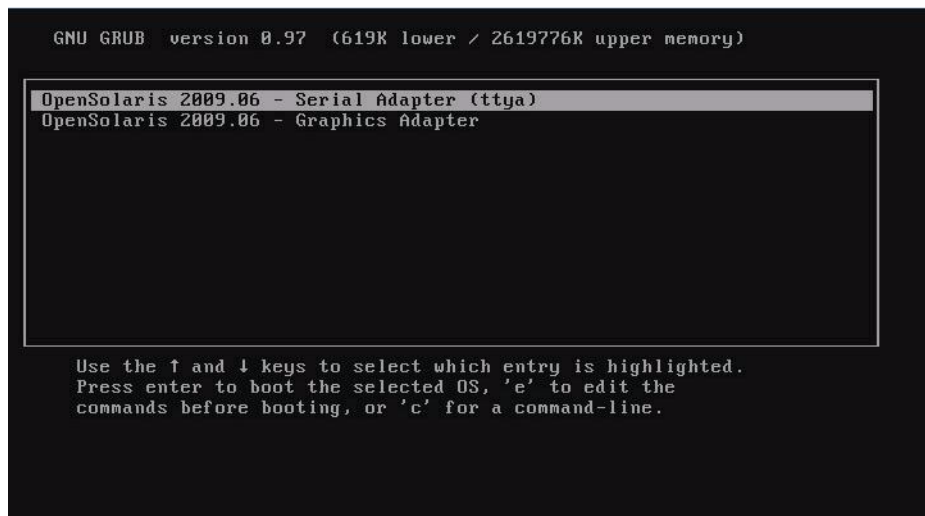
After you have entered the system configuration information, the server completes the boot process and displays the OpenSolaris login prompt.

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

GRUB, the open source boot loader, is the default boot loader in the OpenSolaris OS for 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:
 - [“To Access the System Over the Network” on page 70](#)
 - [“To Access the System Locally” on page 71](#)
2. In 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) Modifying 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.lst` file as follows:**
 - a. **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.**
 - b. **Add a line that specifies the default boot entry. For example, to specify the first entry, set the default to 10.**

Getting Started on OpenSolaris

For information about 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.

Note – Configuring RAID for the server is optional. By default the OpenSolaris preinstalled image is set up 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 Overview

The Sun Fire X4450 server has two optional host bus adapter (HBA) cards. You can access RAID configuration through the HBA card BIOS. See [TABLE 6-2](#) for the key combinations used to access each HBA's BIOS.

TABLE 6-2 Sun Fire X4450 Server 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](#).

RAID Drive Options

TABLE 6-3 lists the RAID drive options.

TABLE 6-3 RAID Drive Options

SAS Card	Drives Supported	RAID Configuration Supported	Drive Usage
Sun StorageTek	Seagate 73 GB SAS	Volume – 1 disk	
	Fujitsu 73 GB SAS	RAID 0 – stripe – 2 disk minimum	No redundancy
	Seagate 146 GB SAS	RAID 1 – mirror – 2 disk minimum	50%
		RAID 1E – 3 drive minimum	50%
		RAID 10 – 4 drive minimum	50%
		RAID 5 – 3 drive minimum	67–94%
		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 73 GB SAS	IM – Integrated Mirror array. 2-disk minimum, plus up to 2 hot spare disks.	Data on primary disk might be merged.
	Fujitsu 73 GB SAS	IME – Integrated Mirror Enhanced array. 3-8 disks including up to 2 hot spares.	All data is deleted during creation.
	Seagate 146 GB SAS	IS – Integrated Striping array. 2-8 disks.	All data is 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 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.

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

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 disks in the system.

This procedure describes how to mirror the preinstalled OpenSolaris OS. This is the better option, and all remaining disks (if there are 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 X4450 Server Tools & Drivers CD.

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

Note – Mirroring can take several hours, depending on the amount of data and the hard disk size.

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.pkg application, located in the /mount-point/RAIDmgmt/StorageTEK/solaris 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 StorMan.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 disks 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 that best fits your needs.
15. After you select the hard disk, 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 disk 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:

<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 Sun Fire X4450 server. Support contacts are also included.

This chapter includes the following topics:

- [“Powering On and Off the Server” on page 83](#)
 - [“Setup Troubleshooting” on page 85](#)
 - [“Contacting Support” on page 87](#)
-

Powering On and Off the Server

Use the following procedures to power on and power off the Sun Fire X4450 server.

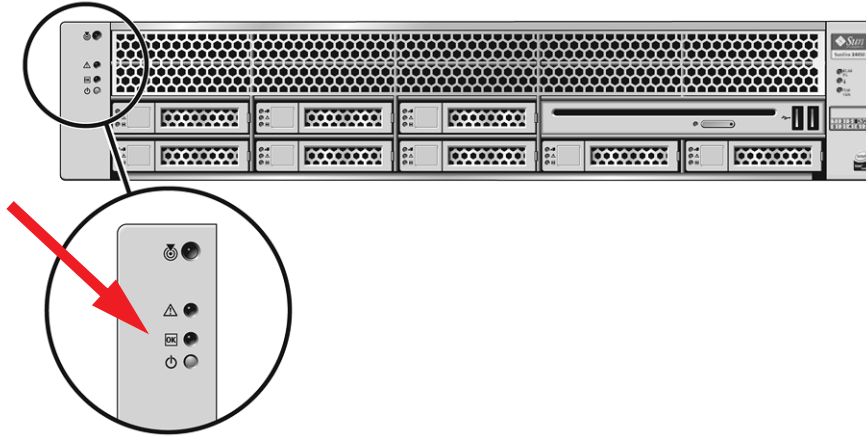
Power On the Main Power

To apply main power for all server components:

- 1. Verify that the top cover is on.**
If the cover is removed, the system will power off.
- 2. 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 flashes.
- 3. Use a pen, or other pointed object, to press and release the recessed Power button on the server front panel.**

When the main power is applied to the server, the Power/OK LED next to the Power button lights and remains lit, as shown in [FIGURE 7-1](#).

FIGURE 7-1 Front Panel Power/OK LED



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

Power Off from Main Power Mode

To remove main power from the server, use one of the following two methods:

TABLE 7-1 Shutdown

Shutdown	Method
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 of the operating system. Servers not running ACPI-enabled operating systems will shut down to standby power mode immediately.
Emergency shutdown	Press and hold the Power button for at least four seconds to force the main power off and cause the server to enter standby power mode. The Power/OK LED on the front panel will begin flashing, 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 7-2](#).

TABLE 7-2 Troubleshooting Procedures

Problem	Possible solution
Server powers on, but the monitor does not.	<ul style="list-style-type: none">• Is the Power button for the monitor turned on?• Is the monitor power cord connected to a wall outlet?• Is the monitor power cord connected to the monitor?• Does the wall outlet have power? Test by plugging in another device.
CD or DVD does not eject from the media tray when you press the Eject button.	<ul style="list-style-type: none">• Move the mouse or press any key on the keyboard. The drive might be in low power mode.• Use the utility software installed on your server to eject the CD.• Make sure that the media in the device is not in use and is not mounted by the operating system.
No video is displayed on the monitor screen.	<ul style="list-style-type: none">• Is the monitor cable attached to the video connector?• Does the monitor work when connected to another system?• If you have another monitor, does it work when connected to the original system?• If, after Power On Self Test (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 if it is configured to redirect its output exclusively over the serial line.
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">• Is the Power LED illuminated on the front of the system? (Ensure that the power cord is connected to the system and to a grounded power receptacle.)• Does the wall outlet have power? Test by plugging in another device.• Does the monitor sync within five minutes after power on? (The green LED on the monitor stops flashing and remains illuminated.)

TABLE 7-2 Troubleshooting Procedures

Problem	Possible solution
Keyboard or mouse does not respond to actions.	<ul style="list-style-type: none">• Verify that the mouse and keyboard cables are connected to the on-board USB 2.0 connectors on the server.• Verify that the server is powered on and the front Power LED is illuminated.
Server appears to be in low power mode, but the Power LED does not blink.	The Power LED only blinks when all server components are in low power mode. A tape drive might be connected to your server. Because tape drives do not enter low power mode, the Power LED does not blink.
Hung or frozen server: No response from mouse or keyboard or any application.	<p>Try to access your system from a different server on the network:</p> <ol style="list-style-type: none">1. On another system, type: ping <i>IP_address_of_server</i>.2. If a response is returned, then try logging in to the Sun Fire X4450 server using either <code>telnet</code>, <code>ssh</code>, or <code>rlogin</code>.3. If you successfully log in, list the running processes using the ps command.4. Kill any processes that appear unresponsive or should not be running, by using the kill <i>process_ID</i> command.5. Check the responsiveness of the Sun Fire X4450 server after each process is killed. <p>If the this procedure does not work, power cycle the server:</p> <ol style="list-style-type: none">1. Press the Power button to power off the server and wait 20 to 30 seconds.2. Press the Power button again to power system back on.

Note – For additional troubleshooting information, see the *Sun Fire X4450 Server Service Manual*.

Contacting Support

If the troubleshooting procedures in this chapter fail to solve your problem, use [TABLE 7-3](#) to collect information that you might need to communicate to the support personnel. [TABLE 7-4](#) lists the Sun web sites and telephone numbers for additional technical support.

TABLE 7-3 System Information Needed for Support

System Configuration Information Needed	Your Information
Sun service contract number	
System model	
Operating environment	
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	
Other Useful Information	
IP address	
Server name (system host name)	
Network or internet domain name	
Proxy server configuration	

TABLE 7-4 Sun Technical Support Contacts

Server Documents and Support Resources	URL or Telephone Number
PDF files for all current Sun Fire X4450 server documents.	http://www.sun.com/documentation/
Solaris™ 10 and other software documents. This web site has full search capabilities.	http://docs.sun.com/documentation/
Discussion and troubleshooting forums.	http://supportforum.sun.com/
Support, diagnostic tools, and alerts for all Sun products.	http://www.sun.com/bigadmin/
SunSolve SM web site. Contains links to software patches. Lists some system specifications, troubleshooting and maintenance information, and other tools.	http://www.sunsolve.sun.com/handbook_pub/
SunService SM support phone numbers.	1-800-872-4786 (1-800-USA-4Sun), select Option 1
Lists international telephone numbers for SunService support.	http://www.sun.com/service/contacting/solution.html
Warranty and contract support contacts. Links to other service tools.	http://www.sun.com/service/warrantiescontracts/
Warranties for every Sun product.	http://www.sun.com/service/support/warranty

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