Sun Fire™ X4140, X4240, or X4440 Servers Installation Guide

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Contents

Preface

This *Sun Fire X4140, X4240, or X4440 Servers Installation Guide* (820-2394) contains procedures for installing the Sun Fire X4140, X4240, or X4440 server in a rack, connecting to the service processor administrator account, and configuring the preinstalled Solaris™ Operating System.

Using UNIX Commands

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

- Software documentation that you received with your system.
- Solaris Operating System documentation, which is at http://docs.sun.com.

Shell Prompts

Shell	Prompt
C shell	*machine-name*%
C shell superuser	*machine-name*#
Bourne shell and Korn shell	$
Bourne shell and Korn shell superuser	#

Typographic Conventions

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

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

Related Documentation

The document set for Sun Fire X4140, X4240, or X4440 servers is described in the *Where to Find Sun Fire X4140, X4240, or X4440 Server Documentation* sheet that is packed with your system. You can also find the documentation at
http://docs.sun.com/app/docs/prod/server.x64

Translated versions of some of these documents are available at
http://docs.sun.com. Select a language from the drop-down list and navigate to
the Sun Fire X4140, X4240, or X4440 server document collection using the Product
category link. Available translations for the Sun Fire X4140, X4240, or X4440 servers
include Simplified Chinese, Traditional Chinese, French, Japanese, and Korean.

English documentation is revised more frequently and might be more up-to-date
than the translated documentation. For all Sun documentation, go to the following
web site:

http://docs.sun.com

Product Updates

For product updates that you can download, go to the following web site:

http://www.sun.com/download/

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Please include the title and part number of your document with your feedback. The part number of this *Sun Fire X4140, X4240 and X4440 Servers Installation Guide is* 820-2394-12.

Preparing for Installation

Read the background information in this chapter before you attempt the installation procedures in Chapter 2 and Chapter 3.

This chapter contains the following topics:

- "Server Types" on page 1
- "Disk Drive Locations" on page 3
- "Tools and Equipment Needed" on page 4
- "Exterior Features" on page 5
- "Safety Precautions" on page 9
- "ESD Precautions" on page 9
- "Cabling Notes for Sun Fire X4140, X4240, and X4440 Servers" on page 10
- "Opening the Box" on page 11
- "Optional Component Installation" on page 12
- "Installation Overview" on page 12

Server Types

There are three server types:

- The Sun Fire **X4140** server is a 1U rackmount server that provides two CPU sockets and eight hard drives. FIGURE 1-1 shows the Sun Fire X4140 server.

FIGURE 1-1 Sun Fire X4140 Server

- The Sun Fire **X4240** server is a 2U rackmount server that provides two CPU sockets and eight or sixteen hard drives. FIGURE 1-2 shows the Sun Fire X4240 server.

FIGURE 1-2 Sun Fire X4240 Server
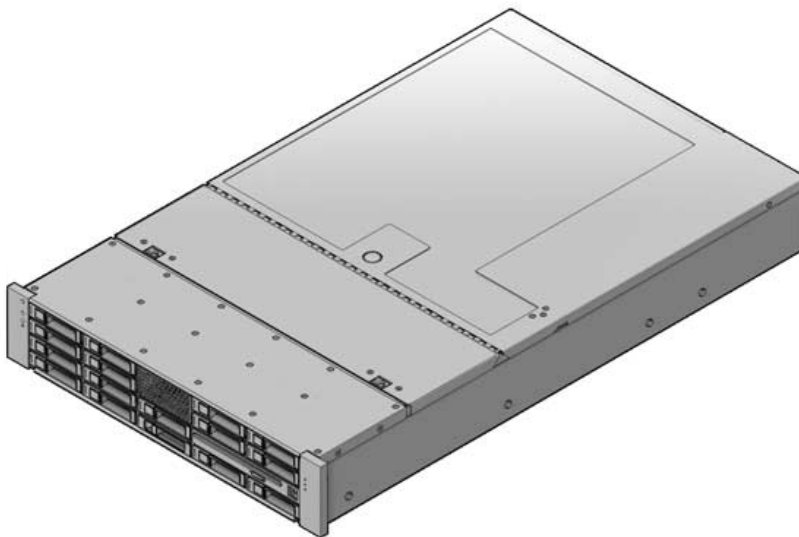
- The Sun Fire **X4440** server is a 2U rackmount server that supports two CPU sockets on the motherboard, plus an optional mezzanine board with two additional CPU sockets. It supports eight hard drives. FIGURE 1-3 shows the Sun Fire X4440 server.

FIGURE 1-3   Sun Fire X4440 Server
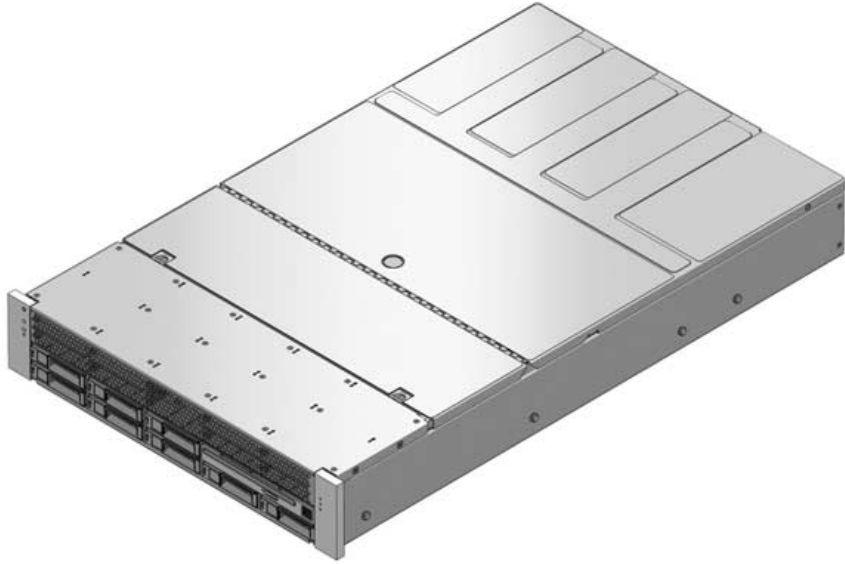
Disk Drive Locations

Sun Fire X4140, X4240, and X4440 servers are available in the following drive configurations.

- Sun Fire X4140 servers are available with eight drives.
- Sun Fire X4240, and X4440 servers are available with eight or sixteen drives.

Note – Hard disk drives or SSD drives may be installed.

FIGURE 1-4 shows the drive locations and drive numbers.

FIGURE 1-4   Sun Fire X4140, X4240, and X4440 Servers Drive Locations
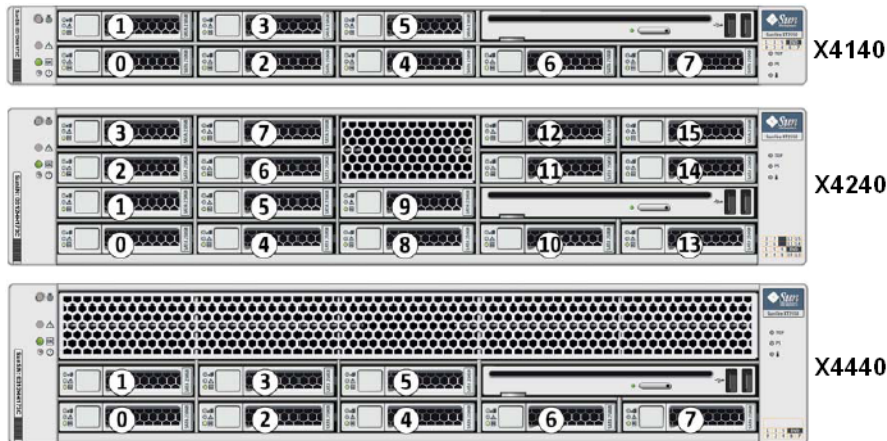
Tools and Equipment Needed

To install Sun Fire X4140, X4240, and X4440 servers, you must have the following tools:

- No. 2 Phillips screwdriver
- Electrostatic discharge (ESD) mat and antistatic grounding strap (required if you install optional components)

In addition, you must provide a system console device, such as one of the following:

- ASCII terminal
- Sun workstation
- Terminal server

Exterior Features

The following sections show the exterior features on the front and back of Sun Fire X4140, X4240, and X4440 servers. The exterior features include LEDs, ports, and hard drives.

Front Panel Features for the Sun Fire X4140 Server

FIGURE 1-5   Front Panel Features on the Sun Fire X4140 Server
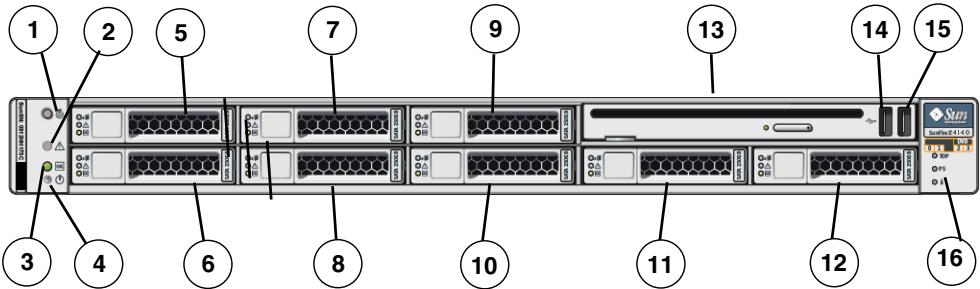
Figure Legend

1	Locator LED/Locator button: white	9	HDD 5
2	Service Required LED: amber	10	HDD 4
3	Power/OK LED: green	11	HDD 6
4	Power button	12	HDD 7
5	HDD 1	13	DVD drive
6	HDD 0	14	USB 2
7	HDD 3	15	USB 3
8	HDD 2	16	Fault LEDs: amber
			Top open
			Power supply (PS) fail
			Over temperature warning, fan fail

Rear Panel Features for the Sun Fire X4140 Server

See FIGURE 1-6 and FIGURE 1-5 for the locations of the ports on the server.

FIGURE 1-6   Rear Panel Features on the Sun Fire X4140 Server
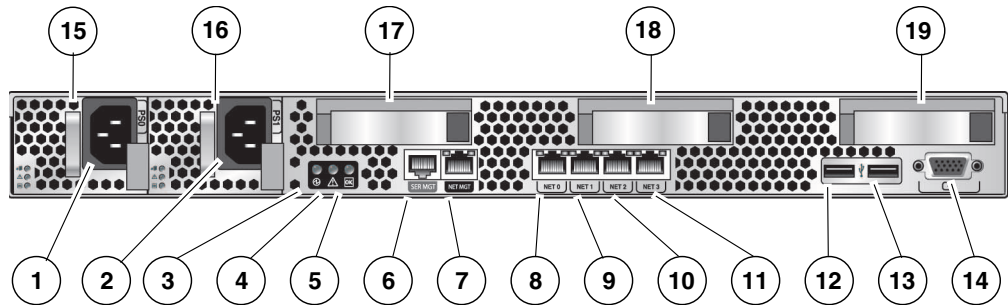
Figure Legend

1	Power Supply 0 with LEDs:	**7**	Net Mgt port
	Power Supply OK: green	**8**	NET0
	Power Supply Fail: amber	**9**	NET1
	AC OK: green	**10**	NET2
2	Power Supply 1 with LEDs:	**11**	NET3
	Power Supply OK: green	**12**	USB port 0
	Power Supply Fail: amber	**13**	USB port 1
	AC OK: green	**14**	VGA video port
3	Locator LED Button	**15**	PS 0
4	Service Required LED	**16**	PS1
5	Power OK LED	**17**	PCIe 0
6	Ser Mgt port	**18**	PCIe 1

Note – USB ports 2 and 3 are located on the front panel (FIGURE 1-5).

Front Panel Features for the Sun Fire X4240 and X4440 Servers

FIGURE 1-7 shows the front panel features on the Sun Fire X4240 and X4440 servers.

Note – FIGURE 1-7 shows the eight drive model. The Sun Fire X4240 server is also available with sixteen drives. For drive locations and numbers, see FIGURE 1-4.

FIGURE 1-7   Front Panel Features on the Sun Fire X4240, and X4440 Servers
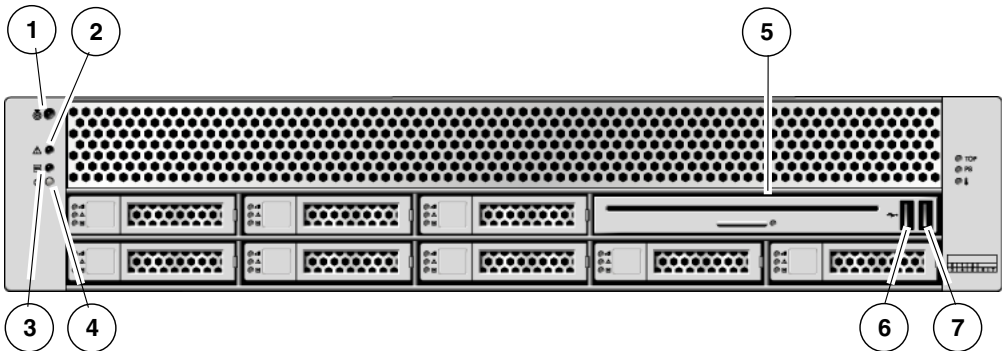
Figure Legend

1	Locator LED/Locator button: white	**5**	DVD drive
2	Service Required LED: amber	**6**	USB Port 2
3	Power/OK LED: green	**7**	USB Port 3
4	Power button		

Rear Panel Features for Sun Fire X4240, and X4440 Servers

FIGURE 1-8 shows the rear panel features on the Sun Fire X4240, and X4440 servers.

FIGURE 1-8   Rear Panel Features on the Sun Fire X4240, and X4440 Servers
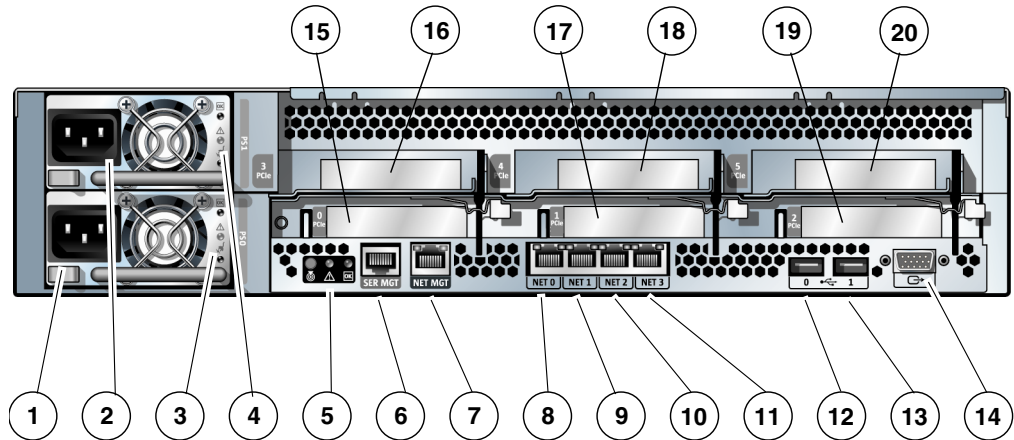
Figure Legend

1	Power Supply 0	**7**	Net Mgt port
2	Power Supply 1	**8**	NET0
3	Power Supply 0 Status LEDs	**9**	NET1
	Power Supply OK: green	**10**	NET2
	Power Supply Fail: amber	**11**	NET3
	AC OK: green	**12**	USB port 0
4	Power Supply 1 Status LEDs	**13**	USB port 1
	Power Supply OK: green	**14**	VGA video port
	Power Supply Fail: amber	**15**	PCIe 0
	AC OK: green	**16**	PCIe 3
5	System Status LEDs	**17**	PCIe 1
	Power: green	**18**	PCIe 4
	Service Required LED: amber	**19**	PCIe 2
	AC OK LED: green	**20**	PCIe 5
6	Ser Mgt port		

Note – USB ports 2 and 3 are located on the front panel (FIGURE 1-7).

Safety Precautions

Caution – If your rack has an antitilt bar, deploy it before beginning an installation.

Caution – The server weighs approximately 40 lb (18 kg). Two people are required to lift and mount the system into a rack enclosure when using the procedures in this chapter.

Caution – When completing a two-person procedure, always communicate your intentions clearly before, during, and after each step to minimize confusion.

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 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.

Cabling Notes for Sun Fire X4140, X4240, and X4440 Servers

Minimum Cable Connections

Sun Fire X4140, X4240, and X4440 servers must have:

- AC Power cables for the two system power supplies
- A serial management port (SER MGT port) for the SP
- A network management port (NET MGT port) for the SP
- At least one system on-board Ethernet network connection (NET port)

USB and VGA port connections are optional.

AC Power Cables

Caution – Do not attach power cables to the power supplies until you have finished connecting the data cables, and have connected the server to a serial terminal or a terminal emulator (PC or workstation).

The server goes into standby power mode and the ILOM service processor initializes as soon as the AC power cables are connected to the power source. System messages might be lost after 60 seconds if the server is not connected to a terminal, PC, or workstation.

Network Management Ports

There are two network management ports for use with the ILOM service processor.

- A **serial management port** (labeled SER MGT) uses an RJ-45 cable and is always available. This is the default connection to the service processor.
- A **network management port** (labeled NET MGT) is the optional connection to the service processor. This port is not available until you have configured network settings for the service processor (through the serial management port). See Chapter 5. The network management port uses an RJ-45 cable for a 10/100 BASE-T connection. This port does not support connections to Gigabit networks.

Ethernet Ports

Ethernet ports are labeled NET0, NET1, NET2, and NET3. The Ethernet interfaces operate at 10 Mbps, 100 Mbps, and 1000 Mbps. Transfer rates for the Ethernet ports are listed in TABLE 1-1.

TABLE 1-1   Ethernet Connection Transfer Rates

Connection Type	IEEE Terminology	Transfer Rate
Ethernet	10BASE-T	10 Mbps
Fast Ethernet	100BASE-TX	100 Mbps
Gigabit Ethernet	1000BASE-T	1000 Mbps

VGA Video Port

Use a 15-pin video cable to connect to a VGA video device.

USB Ports

USB ports support hot-plugging. You can connect and disconnect USB cables and peripheral devices while the OS is running, without affecting system operations.

- USB hot-plug operations are not supported when the system `ok` prompt is displayed or before the system has completed booting.
- You can connect up to 126 devices to each of the two USB controllers, for a total of 252 USB devices per system.

Opening the Box

Carefully open the shipping box.

Unpacking

Unpack all server components from the packing cartons.

Package Contents Inventory

The following items should be packaged with the Sun Fire X4140, X4240, and X4440 server:

- Sun Fire X4140, X4240, or X4440 server
- Accessory kit, including the following documentation and media:
  - Welcome Letter
  - *Sun Fire X4140, X4240, and X4440 Servers Installation Guide* (this document)
  - *Where to Find Sun Fire X4140, X4240, and X4440 Servers Documentation*
  - *Important Safety Information for Sun Hardware Systems*
  - Additional license, safety, and registration documentation
  - Tools and Drivers CD (includes drivers and additional software)
  - DB9-RJ45 adapter (for serial system management port)
- Optional rackmount kit (bolt-on or toolless)
- Optional cable management kit

Optional Component Installation

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.

If you ordered any options that are not factory-installed, refer to the service manual for your server for installation instructions.

Note – The list of optional components can be updated without notice. See the web site for the most current list of components supported in the server.

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

Installation Overview

To install a Sun Fire X4140, X4240, or X4440 server, perform these procedures in the following order.

1. Gather configuration information for your system. See your system administrator for specific details, including these parameters:

   - Netmask

   - IP address for the service processor

   - Gateway IP address

2. Open the box. See "Opening the Box" on page 11.

3. Install any optional Sun components shipped with your system. If you have purchased other optional components such as additional memory, install them prior to mounting the server in a rack. See "Optional Component Installation" on page 12.

4. Mount the server into a rack or cabinet. See Chapter 2 for details.

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

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5. Connect server cables. See "Connecting Cables to the Sun Fire X4140 Server" on page 32 or "Connecting Cables to Sun Fire X4240 and X4440 Servers" on page 36 for details.

6. Configure the service processor as described in Chapter 5.

   The service processor becomes operational when AC power is connected to the server. This mode, where the service processor is operational but the server is not powered-on, is called standby power mode.

7. Power on the server. See Chapter 6.

Note – Chapter 6 describes how to power the server on and off. However, if you have not yet installed and configured your operating system, do not power on your server until you are instructed to do so by the operating system installation instructions.

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8. Prepare the operating system. Do one of the following:

   - If you are going to use the preconfigured Solaris OS, see Chapter 3.

   - If you are going to install another operating systemsuch as Linux, VMware or a customized version of the Solaris operating system, refer to the *Sun Fire X4140, X4240, and X4440 Servers Operating System Installation Guide*.

   - If you are going to install the Windows operating system, refer to the *Sun Fire X4140, X4240, and X4440 Servers Windows Operating System Installation Guide*.

Installing the Server in a Rack

This chapter describes how to install a Sun Fire X4140, X4240, or X4440 server into a rack using the rail assembly in the rackmount kit.

Note – If your rackmount kit came with its own instructions, use the instructions in your rackmount kit instead of the instructions in this chapter. After performing the installation, proceed to Chapter 5 to configure the service processor.

This chapter includes the following topics:

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

Server Installation Process Overview

To install your server into a four-post rack using the slide rail and cable management arm (CMA) options, perform the following tasks in the order shown:

Toolless vs. Bolt-On Rail Assemblies

The rack kits come in two varieties; toolless, or express rail kits, and bolt-on rail kits.

- On the toolless rail kits, the rail assemblies snap onto the rack post without tools.
- On the bolt-on rack kits, the installer must fasten the rail assemblies to the rack post using the connectors. The installer can select the correct hardware from a bag of connectors that is shipped with the rail kit.

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).
Clearance depth in front of front mounting plane	Distance to front cabinet door is at least 25.4 mm (1 inch).
Clearance depth behind front mounting plane	Distance to rear cabinet door is at least 800 mm (31.5 inches) with the cable management arm, or 700 mm (27.5 inches), without the cable management arm.

TABLE 2-1   Rack Compatibility *(Continued)*

Item	Requirement
Clearance width between front and rear mounting planes	Distance between structural supports and cable troughs is at least 456 mm (18 inches).
Sun Fire X4140 server dimensions	*Length:* (not including PSU handle): 28.125 inches (714 mm) *Width:* (not including ears): 16.75 inches (426 mm) *Height*: 1U 1.746 inches (44 mm)
Sun Fire X4240 and X4440 server dimensions	*Length:* (not including PSU handle): 28.125 inches (714 mm) *Width:* (not including ears): 16.75 inches (426 mm) *Height*: 2U 3.49 inches (88 mm)

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. Refer to the service manual for the specified temperature range.

Installing Slide Rails

Separate Mounting Bracket from Slide Rail

On some slide rail kits, the mounting bracket is shipped inside of the slide rail. If the mounting bracket is already separate from the slide rail, skip this procedure.

To separate the mounting brackets from the slide rail:

1. **Unpack the slide rails.**

2. **Locate the slide-rail lock at the front of one of the slide-rail assemblies, as shown in** **.**

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.**

4. **Push the mounting bracket release button toward the front of the mounting bracket, as shown in** **, and simultaneously withdraw the mounting bracket from the slide-rail assembly.**

5. **Repeat for the remaining slide-rail assembly.**

FIGURE 2-1 Disassembling the Slide Rail Before Installation
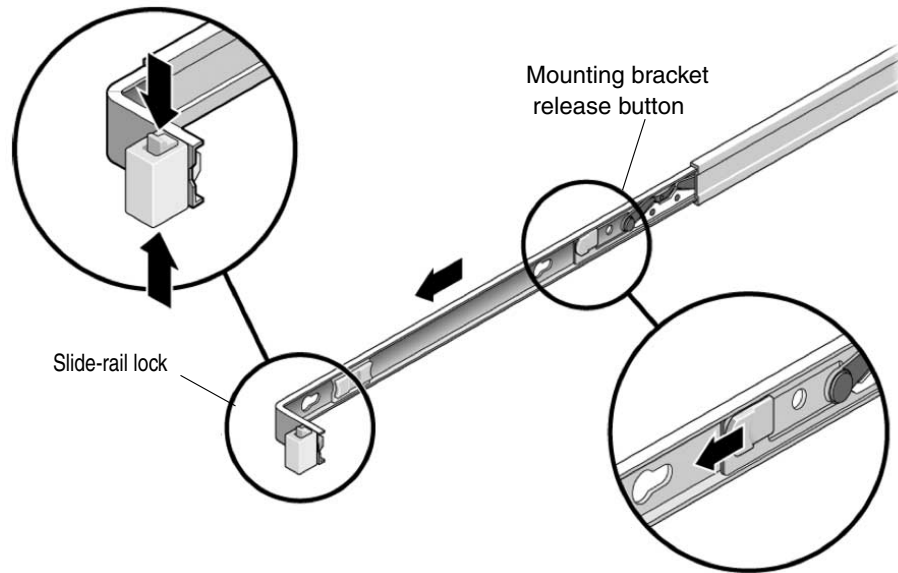
Installing the Mounting Brackets Onto the Server

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, and the keyed openings on the mounting bracket are aligned with the locating pins on the side of the chassis.**

FIGURE 2-2   Aligning the Mounting Bracket With the Server Chassis (Sun Fire X4140 Server Shown)
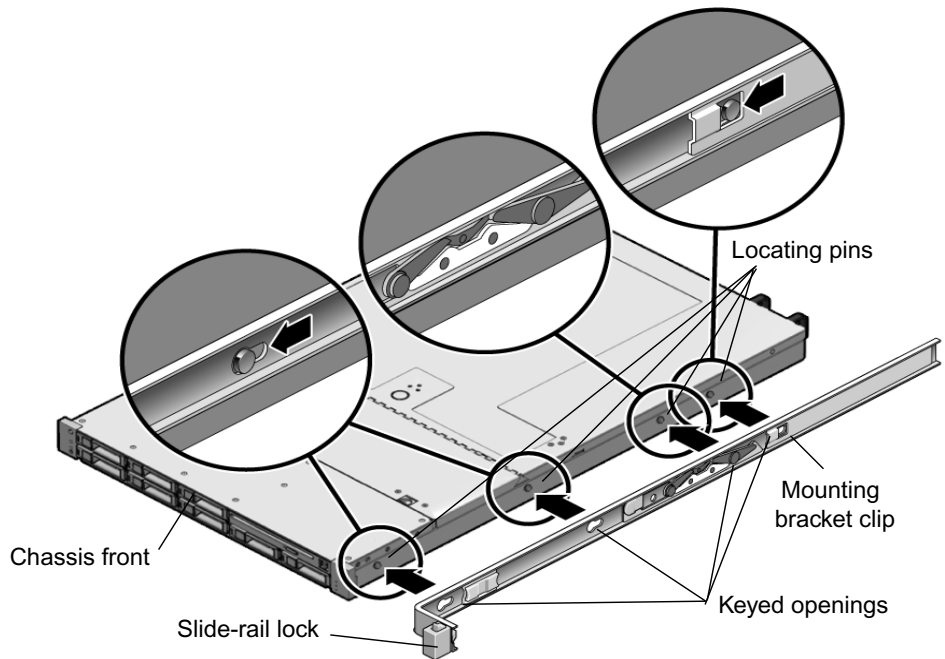
2. **Fasten the mounting bracket to the server:**

   a. **Align the heads of the locating pins with the keyed openings in the mounting bracket.** See FIGURE 2-2.

   b. **Place the mounting bracket on the pins so that it is flush with the side of the server, and the locating pins protrude through the holes on the mounting bracket.**

   c. **Slide the mounting bracket towards the front of the chassis until the bracket clip locks into place with an audible click.**

3. **Verify that the rear locating pin is securely fastened to the server. (See FIGURE 2-2.)**

4. **Repeat** Step 1 **through** Step 3 **to install the remaining mounting bracket on the other side of the server.**

Attaching Toolless Slide Rail Assemblies

To attach toolless slide-rail assemblies to the rack:

1. **Position a slide-rail assembly in your rack so that the brackets at each end of the slide-rail assembly are on the outside of the front and rear rack posts. (See** FIGURE 2-3**.)**

2. **Push the slide-rail assembly against the rack.**

   The toolless brackets latch to the rack post with an audible click.

Attaching Bolt-On Slide-Rail Assemblies

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

1. **Select hardware to match your rack posts from the bag of connectors that came with the slide rail kit.**

   - If your rack has threaded mounting holes in the rack posts, first determine whether the threads are metric or standard, then select the correct screws.

   - If your rack does not have threaded mounting holes in the rack posts, use the caged nuts.

     If you use the caged nuts, press them into the holes from the outside of the rack until they clip into place. Once the caged nuts are in place, they provide threaded mounting holes.

2. **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**.)**

3. **Attach the slide-rail assembly *loosely* to the rack posts, but do *not* tighten the screws completely.**

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

Slide-rail
assembly

Rack post

Slide-rail assembly
bracket on outside
of rack post
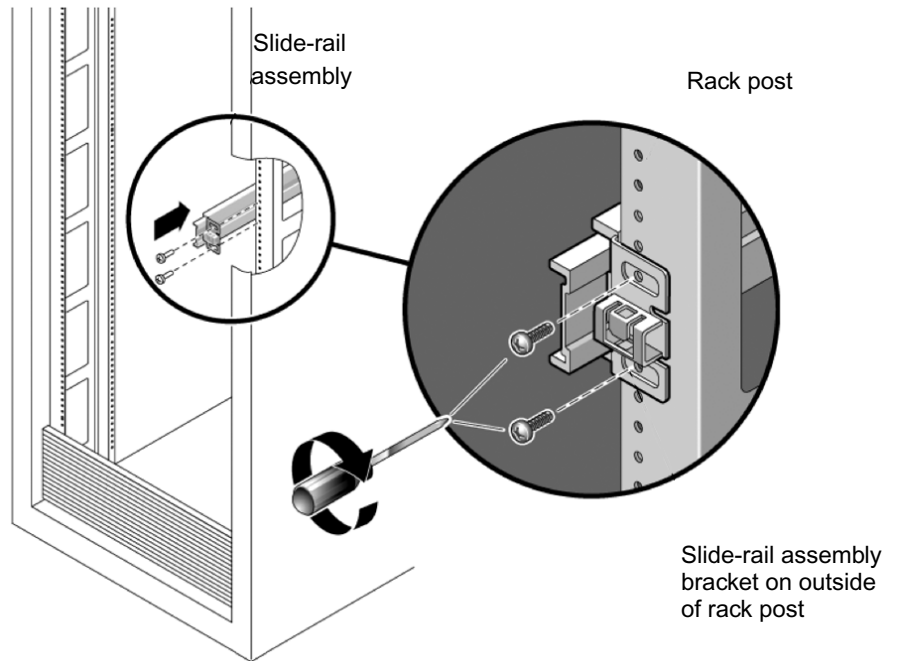
4. **Repeat** Step 1 **through** Step 3 **for the remaining slide-rail assembly.**

5. **From the front of the rack, set the proper width of the rails with the rail-width spacer. (See** FIGURE 2-4**.)**

Note – The rail-width spacer, shown in FIGURE 2-4, is shipped with the bolt-on rail kit. Use it to set the rails to the proper width, then remove it.

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   a. **Insert the rail-width spacer into the slot on the inside of the slide rails.**

   b. **Tighten the screws to lock the rails firmly to the rack posts.**

   c. **Remove the rail-width spacer.**

   d. **Confirm that the rails are attached firmly to the rack.**

FIGURE 2-4   Setting the Rail Width on the Front of the System
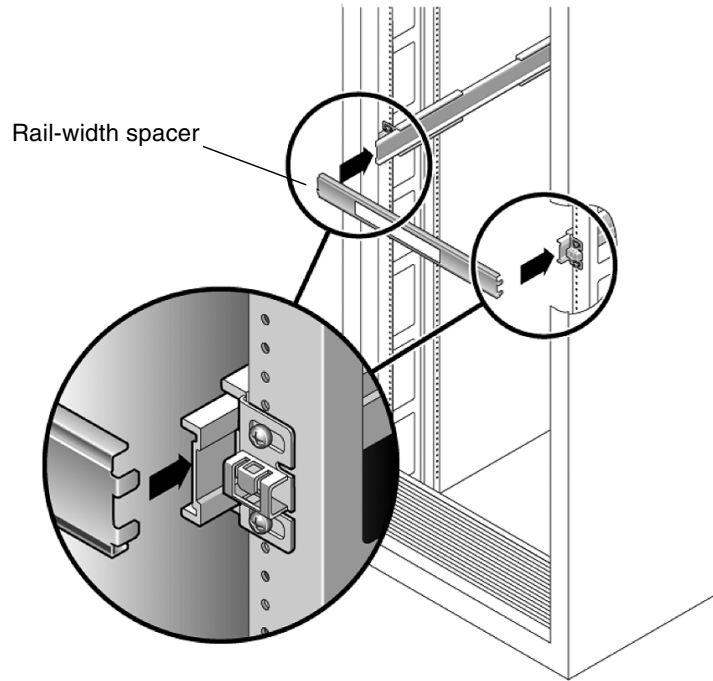
Rail-width spacer

6. **Repeat** Step 5 **for rear of the rack.**

   On the rear of the rack, the slots for the rail-width spacer are on the inside of the rails, several inches from the ends.

7. **If your rack includes an anti-tip foot, extend it from the bottom of the rack. (See** FIGURE 2-5**.)**

   An anti-tip foot is typically required on racks that are *not* bolted in place.

Caution – If your rack requires an anti-tip foot, and it is not extended, the rack could tip over.

FIGURE 2-5   Extending the Anti-tip Foot
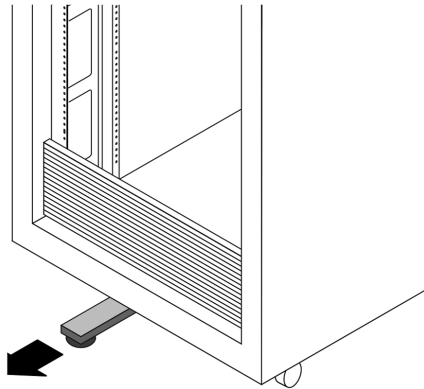
Installing the Server Into the Slide-Rail Assemblies

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

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

Caution – Always load equipment into a rack from the bottom up so that it will not become top-heavy and tip over.

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 server with mounting brackets into the slide rails, then push the server into the rack** *slowly*, **until the mounting brackets meet the slide-rail stops (approximately 12 inches, or 30 cm).**

   Push the server with mounting brackets gently. It will stop abruptly.

FIGURE 2-6 Inserting the Server With Mounting Brackets Into the Slide Rails (Sun Fire X4140 Server Shown)

Mounting bracket inserted into slide rail

Slide-rail release button

Slide-rail lock

Slide-rail assembly mounted on rack post
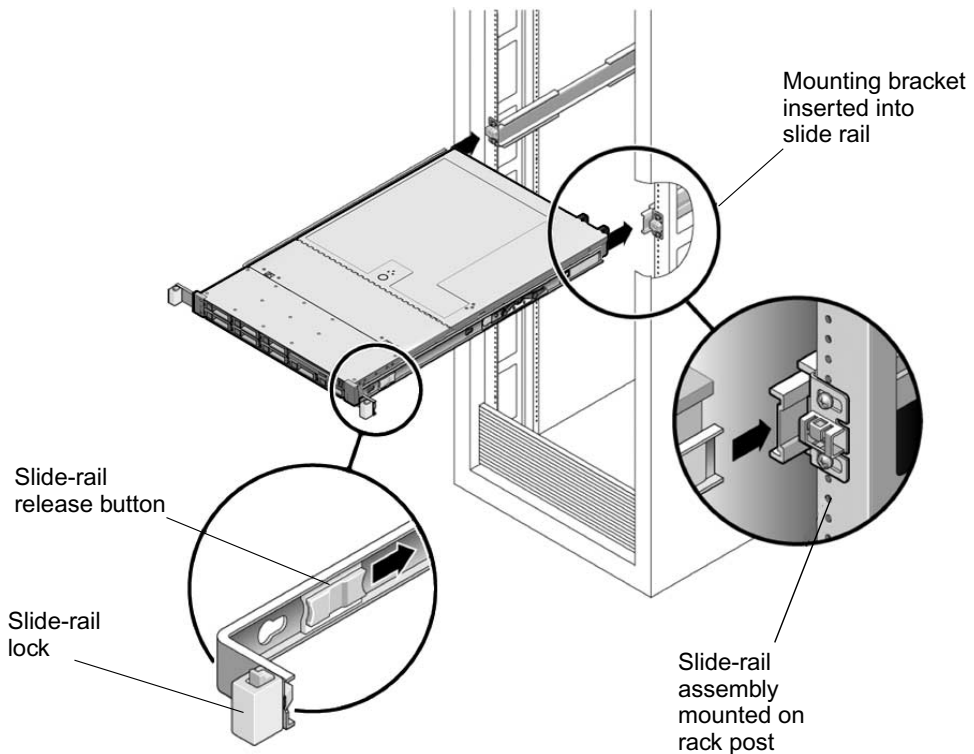
4. **Simultaneously push both slide-rail release buttons towards the back of the rack, while pushing the server into the rack. (See** FIGURE 2-6**.)**

5. **Continue pushing until the front of the server is flush with the rack posts.**

   The slide-rail lock will latch, securing the server in place with an audible click.

6. **Verify that the slide rails work correctly. See** FIGURE 2-7**.**

a. **Press the slide-rail release buttons while pulling the server out from the rack.**

The server should slide about half way out of the rack, then stop.

b. **Simultaneously press the gray slide rail release tabs while pulling the server further out from the rack.**

The server should pull the rest of the way out of the rack, until the slide rails are fully extended.

FIGURE 2-7 Location of Slide Rail Release Tabs

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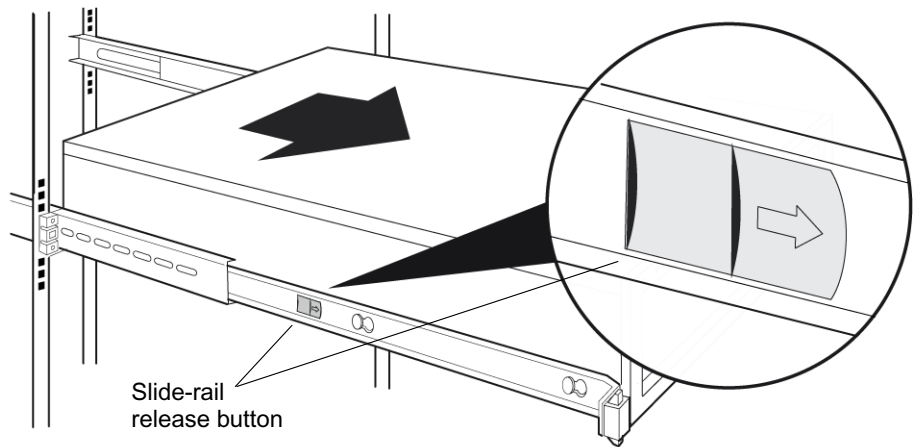
Caution – Verify that the server is securely mounted in the rack and that the slide-rail locks are engaged with the mounting brackets before continuing.

c. **Once you have verified the function of the slide rails, slide the server back fully into the rack until the slide-rail lock engages.**

Installing the Cable Management Arm

Use this procedure to install an optional cable management arm (CMA). FIGURE 2-8 shows the CMA.

FIGURE 2-8   Cable Management Arm (CMA)

CMA rail
extension
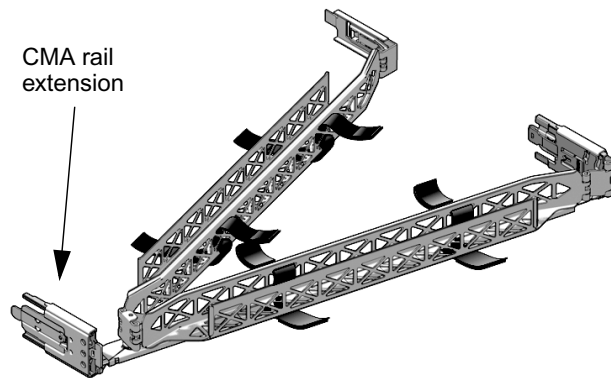
1. **Unpack the CMA parts.**

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

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

3. **If the CMA rail extension is taped to the CMA arm, remove the tape.**

4. **Attach the CMA rail extension to the left slide rail until the extension locks
   into place with an audible click. (See** FIGURE 2-9**.)**

FIGURE 2-9 Inserting the CMA Rail Extension Into the Back of the Left Slide Rail

CMA rail
extension
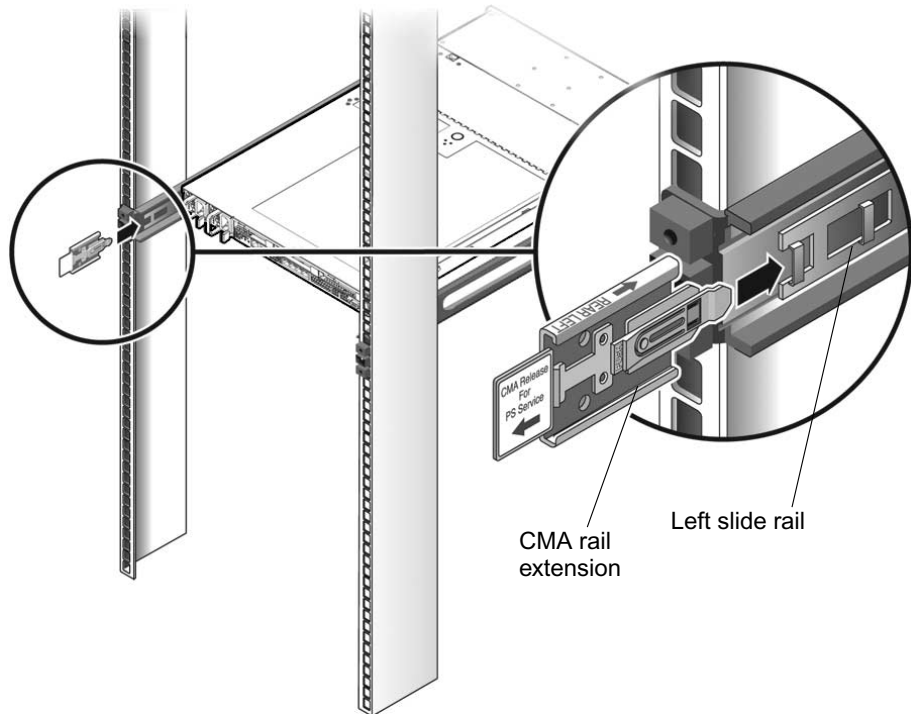
Left slide rail

5. **Verify that the CMA rail extension engages the slide rail, as shown in** FIGURE 2-9**.**

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

---

6. **Insert the CMA's mounting bracket connector into the right slide rail until the connector locks into place with an audible click. (See** FIGURE 2-10**.)**

FIGURE 2-10 Inserting the CMA Mounting Bracket Into the Back of the Right Slide Rail

Right slide rail

CMA mounting
bracket
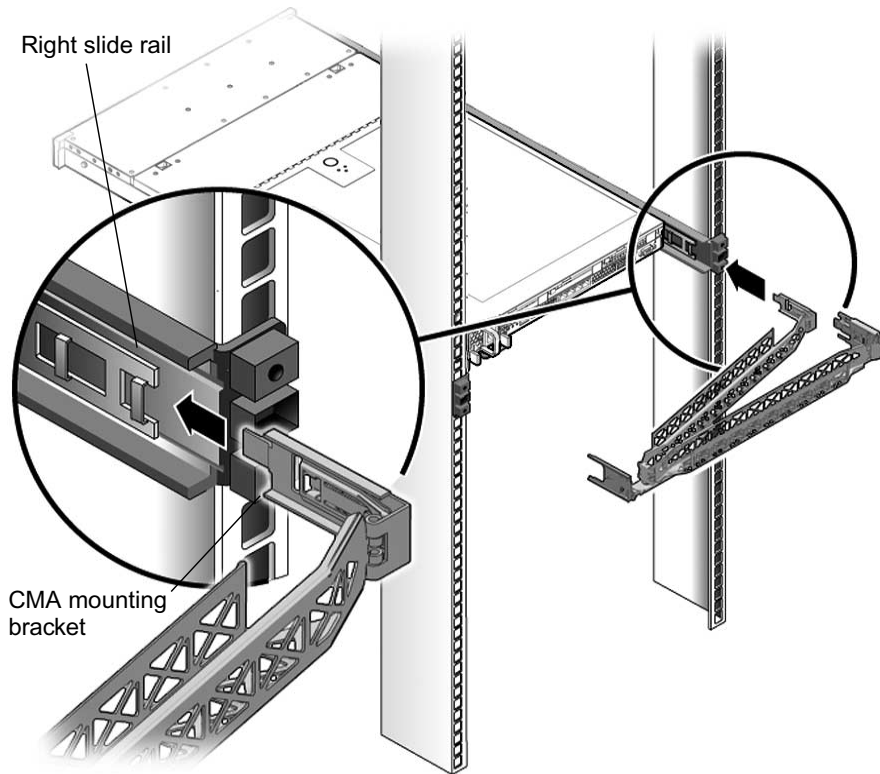
7. **Insert the right CMA slide-rail connector into the right slide-rail assembly until the connector locks into place with an audible click. (See** FIGURE 2-11**.)**

FIGURE 2-11 Inserting CMA Slide-Rail Connector Into the Back of the Right Slide-Rail Assembly

Right slide-rail assembly

CMA slide-rail connector
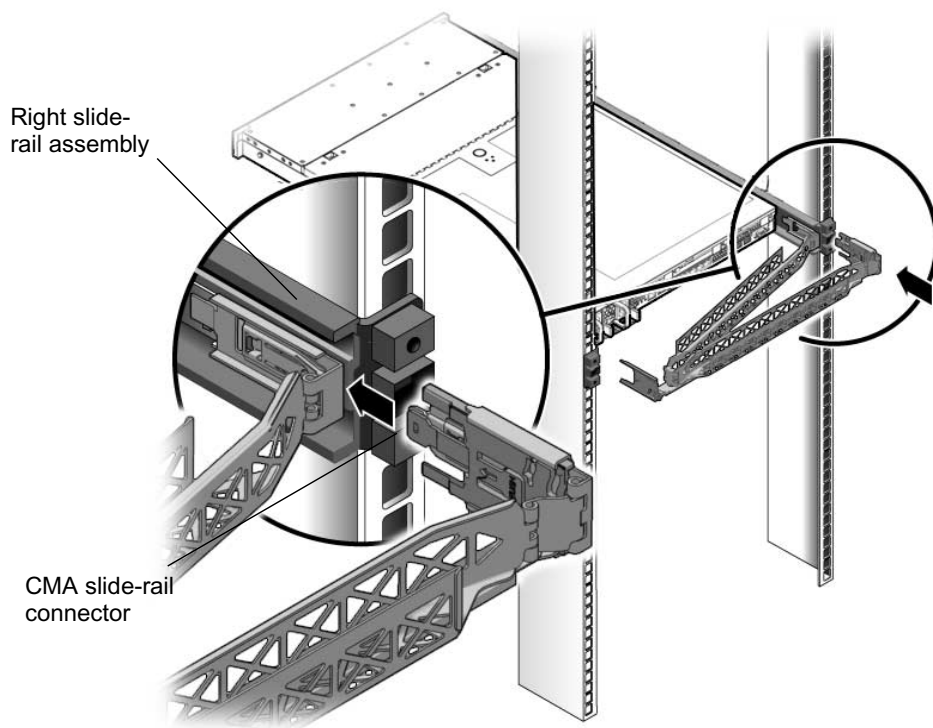
8. **Insert the left CMA slide-rail connector into the rail extension on the left slide-rail assembly until the connector locks into place with an audible click. (See** FIGURE 2-12**.)**

Note – In the closed position, the CMA covers the server's power supply connectors, which are located on the left-rear of the chassis. To access them, release the CMA arm connector and swing the CMA out of the way.

FIGURE 2-12 Connecting the CMA Arm to the Rail Extension Connector

CMA arm connector

CMA extension
arm
(on left slide rail)
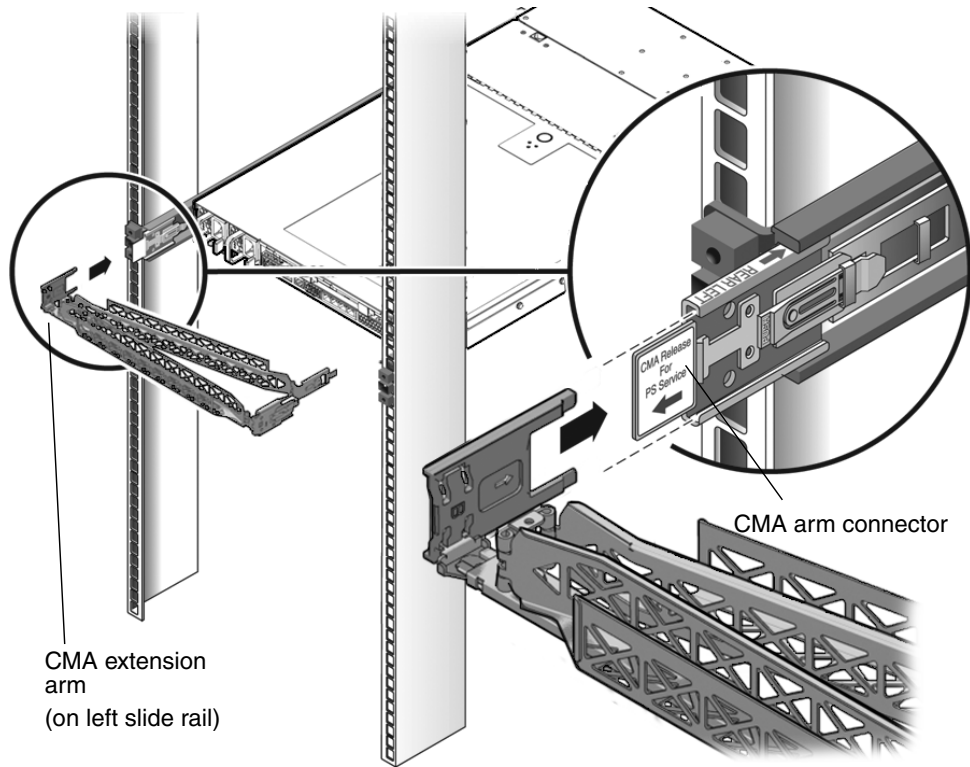
9. **Install and route cables to your server, as required.**

10. **Attach the hook and loop straps to the CMA, and press them into place to secure the cables. (See** FIGURE 2-13**.)**

   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 2-13 Installing CMA Cable Straps

CMA arm

CMA cable hanger
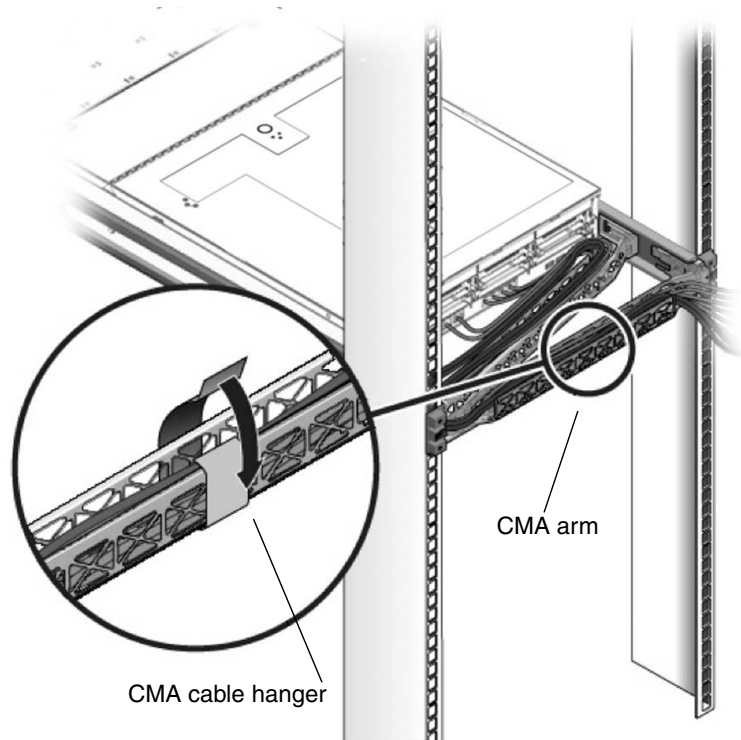
11. **Attach the right outer latch.**

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.

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

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

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

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

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

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

   a. **The first set of stops are released by sliding the green release mechanism, located on the inside of each slide rail, just behind the back panel of the server. Push in both sides simultaneously and slide the server toward the rack.**

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

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

   b. **The second set of stops are the slide-rail release buttons, located near the front of each mounting bracket. See** FIGURE 2-6. **Simultaneously push or pull both of the slide-rail release buttons, and push the server completely into the rack until both slide-rail locks engage.**

   c. **Adjust the cable straps and CMA as required.**

Connecting Cables to the Sun Fire X4140 Server

Connect cables to the server as described in the following sections.

- "Ethernet Network Cables" on page 33
- "Serial Management Port" on page 34
- "SP Network Management Port" on page 34
- "AC Power Cables" on page 35
- "VGA Video Port" on page 35
- "USB Ports" on page 35

Refer to "Cabling Notes for Sun Fire X4140, X4240, and X4440 Servers" on page 10.

Note – When you are finished connecting the cables to the server, ensure that the server can slide smoothly into and out of the rack without binding or damaging the cables. See the section, "Verifying Operation of the Slide Rails and CMA" on page 31.

Connector Locations

FIGURE 2-14 shows the connectors on the rear panel of the server.

FIGURE 2-14 Sun Fire X4140 Rear Panel Features
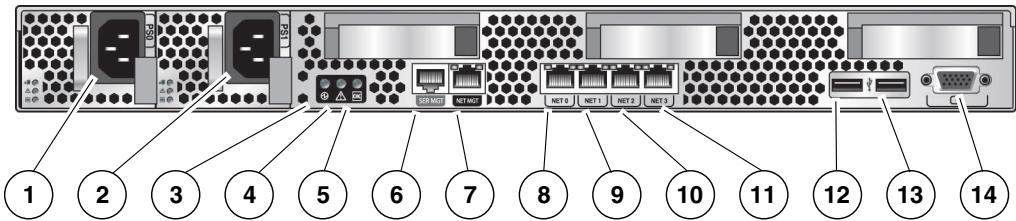
Figure Legend

1	Power Supply 0	**8**	NET0
2	Power Supply 1	**9**	NET1
3	Locator LED Button	**10**	NET2
4	Service Required LED	**11**	NET3
5	Power OK LED	**12**	USB port 0
6	Ser Mgt port	**13**	USB port 1
7	Net Mgt port	**14**	Video VGA port

Ethernet Network Cables

The Sun Fire X4140 server has four RJ-45 Gigabit Ethernet connectors, marked NET0, NET1, NET2, and NET3 (FIGURE 2-14).

1. **Connect a Category 5 cable from your network switch or hub to Ethernet Port 0 (**NET0**) on the rear of the chassis.**

2. **Connect Category 5 cables from your network switch or hub to the remaining Ethernet ports (**NET1**,** NET2**,** NET3**), as needed.**

Serial Management Port

The serial management port is marked SER MGT (FIGURE 2-15). It provides a serial connection to the service processor.

FIGURE 2-15 Serial and Network Ports – Rear of Chassis
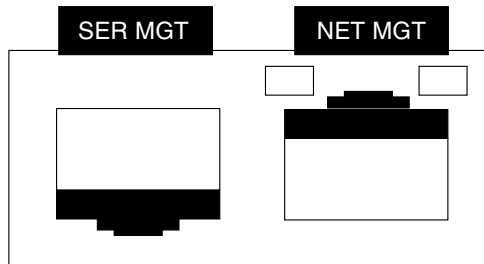
Note – Use the serial management port *only* for server management. It is the default connection between the service processor and a terminal or a computer.

Caution – Do not attach a modem to this port.

● **Connect a Category 5 cable from the SER MGT serial management port to the terminal device.**

When connecting either a DB-9 or a DB-25 cable, use an adapter to perform the crossovers given for each connector.

The default serial protocol is 9600 baud, no parity, with no hardware or software flow control.

SP Network Management Port

The SP network management port is marked NET MGT (FIGURE 2-15). It provides a network connection to the service processor.

Note – The network management port is configured by default to retrieve network settings via Dynamic Host Configuration Protocol (DHCP), and to allow connections using Solaris Secure Shell (SSH). You might need to modify these settings for your network. Instructions are given in Chapter 5.

- **Connect a Category 5 cable from the NET MGT network management port to your network switch or hub.**

AC Power Cables

- **Connect AC power cables to power supply 0 and power supply 1, as shown in** **.**

Caution – Do not turn on system power yet.

When you connect AC power to the server, the server automatically enters standby power mode. The service processor starts, but the server remains powered off.

The Power/OK LED on the front panel flashes.

Note – When the CMA is installed, it covers the AC power connectors. To access the power connectors, release the CMA arm connector on the left side of the CMA, and swing the CMA out of the way. See FIGURE 2-12.

For more complete information about powering the system on and off, see Chapter 6.

VGA Video Port

The video port connector uses a HD-15 connector, which is located at the lower right corner of the rear panel (FIGURE 2-14).

USB Ports

Four Universal Serial Bus (USB) ports are provided. USB ports 0 and 1 are located on the rear of the chassis (FIGURE 2-14). Ports 2 and 3 on the front of the chassis.

Connecting Cables to Sun Fire X4240 and X4440 Servers

Connect cables to the server as described in the following sections.

- "Ethernet Network Cables" on page 38
- "Serial Management Port" on page 38
- "SP Network Management Port" on page 39
- "AC Power Cables" on page 39
- "VGA Video Port" on page 40
- "USB Ports" on page 40

Refer to "Cabling Notes for Sun Fire X4140, X4240, and X4440 Servers" on page 10.

Note – When you are finished connecting the cables to the server, ensure that the server can slide smoothly in and out of the rack without binding or damaging the cables. See the section, "Verifying Operation of the Slide Rails and CMA" on page 31.

Connector Locations

FIGURE 2-16 shows the connectors and power supplies on the back of the Sun Fire X4240 and X4440 servers.

FIGURE 2-16 Sun Fire X4240 and X4440 Rear Panel Features
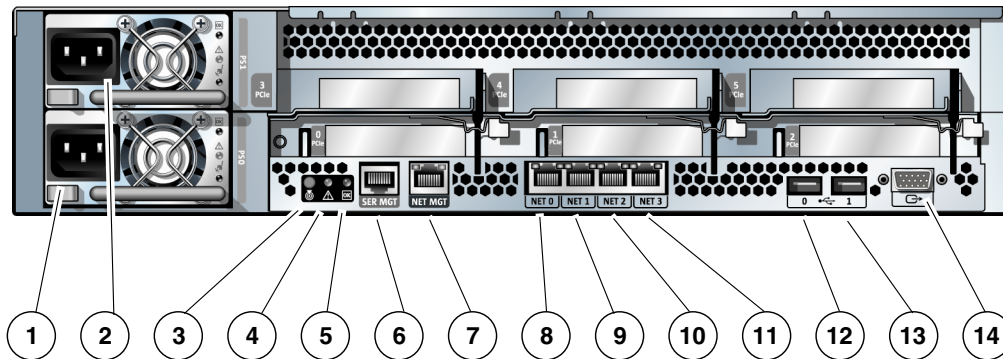
1	Power Supply 0	**8**	NET0
2	Power Supply 1	**9**	NET1
3	Locator LED Button	**10**	NET2
4	Service Required LED	**11**	NET3
5	Power OK LED	**12**	USB port 0
6	Ser Mgt port	**13**	USB port 1
7	Net Mgt port	**14**	VGA video port

USB ports 2 and 3 are located on the front panel (FIGURE 2-17).

FIGURE 2-17 Sun Fire X4240 and X4440 Front Panel USB Ports
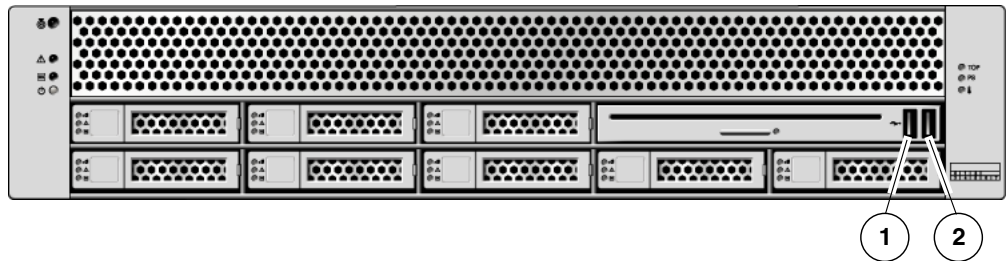
Figure Legend

1	USB Port 2
2	USB Port 3

Ethernet Network Cables

The servers have four RJ-45 Gigabit Ethernet network connectors. They are marked NET0, NET1, NET2, and NET3 (FIGURE 2-18).

FIGURE 2-18 Ethernet Network Connections
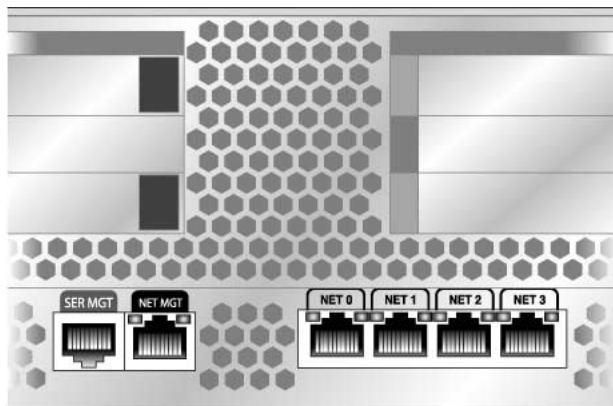
1. **Connect a Category 5 cable from your network switch or hub to Ethernet Port 0 (NET0) on the rear of the chassis.**

2. **As needed, connect Category 5 cables from your network switch or hub to the remaining Ethernet ports (NET1, NET2, NET3).**

Serial Management Port

The serial management port is marked SER MGT (FIGURE 2-18). It is the leftmost RJ-45 port on the rear of the chassis.

This port provides a serial connection to the service processor.

Note – Use the serial management port *only* for server management. It is the default connection between the service processor and a terminal or a computer.

Caution – Do not attach a modem to this port.

● **Connect a Category 5 cable from the serial management port to the terminal device.**

When connecting either a DB-9 or a DB-25 cable, use an adapter to perform the crossovers given for each connector.

SP Network Management Port

The SP network management port is marked NET MGT (FIGURE 2-18). It provides a network connection to the service processor. It is the RJ-45 port above the rear USB ports.

● **Connect a Category 5 cable from your network switch or hub to the Network Management Port.**

Note – This port is not operational until you configure the network settings (through the serial management port), as described in Chapter 5.

Note – The network management port is configured by default to retrieve network settings via Dynamic Host Configuration Protocol (DHCP) and to allow connections using Solaris Secure Shell (SSH). You might need to modify these settings for your network. Instructions are given in Chapter 5.

AC Power Cables

● **Connect AC power cables to power supply 0 and power supply 1. See** FIGURE 2-18**.**

Caution – Do not turn on system power yet.

When you connect AC power to the server, the server automatically enters power mode. The service processor starts, but the server remains powered off.

The Power/OK LED on the front panel flashes.

Note – When the CMA is installed, it covers the AC power connectors. To access the power connectors, release the CMA arm connector on the left side of the CMA, and swing the CMA out of the way. See FIGURE 2-12.

For more complete information about powering the system on and off, see Chapter 6.

VGA Video Port

The video port connector uses a HD-15 connector, which is located at the lower right corner of the rear panel (FIGURE 2-16).

USB Ports

Four Universal Serial Bus (USB) ports are provided. USB ports 0 and 1 are located on the rear of the chassis (FIGURE 2-16). Ports 2 and 3 are on the front of the chassis (FIGURE 2-17).

Setting Up the Operating System Software

After configuring the ILOM with network settings as described in Chapter 5, you can configure the preinstalled Solaris™ 10 operating system (OS), or install a Linux or Windows platform operating system.

Use the appropriate reference below, depending on which OS you want to use:

- If you want to use the preinstalled Solaris 10 OS, see "Configuring the Preinstalled Solaris Operating System" on page 42.

- If you want to install a supported Linux OS and the required drivers, refer to the *Sun Fire X4140, X4240, and X4440 Servers Operating System Installation Guide* . This document also contains procedures for installing the Solaris operating system from media.

- If you want to install a supported Windows OS and the required drivers, refer to the *Sun Fire X4140, X4240, and X4440 Servers Windows Operating System Installation Guide*.

- For additional OS considerations specific to your server, refer to the *Sun Fire X4140, X4240, and X4440 Servers Product Notes*.

Configuring the Preinstalled Solaris Operating System

This section contains information and procedures for configuring the Solaris 10 Operating System (OS) that has been preinstalled on your server.

Note – Unlike with SPARC® systems, you will *not* see the output of the preinstalled Solaris 10 image through a monitor when you power on the server. The output of the preinstalled image is directed to a *serial console* instead of a monitor that is attached to the server.

To configure the preinstalled Solaris OS:

1. Use the worksheet in TABLE 3-1 to gather the configuration information that you need.

2. Configure the OS.

Installation Worksheet

Use the worksheet in TABLE 3-1 to gather the information that you need to configure the preinstalled Solaris 10 OS. You only need to collect the information that applies to your application of the system.

TABLE 3-1   Installation Worksheet

Information for Installation		Description or Example	Your Answers: Defaults are noted with an asterisk. (*)
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: `255.255.0.0`	255.255.0.0*
	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: Default Realm: Administration Server: First KDC: (Optional) Additional KDCs:	• Yes • No*

TABLE 3-1   Installation Worksheet *(Continued)*

Information for Installation		Description or Example	Your Answers: Defaults are noted with an asterisk. (*)
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. You can also enter a list of domains to search when a DNS query is made. Search Domain: Search Domain: Search Domain:	
	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: Proxy-Bind Distinguished Name: Proxy-Bind Password:	

TABLE 3-1 Installation Worksheet *(Continued)*

Information for Installation	Description or Example	Your Answers: Defaults are noted with an asterisk. (*)
Default route	Do you want to specify a default route IP address or let the Solaris 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. You have the following choices: • You can specify the IP address. An /etc/defaultrouter 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 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. • You can choose 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.	• Specify One • Detect One • None*
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 Preinstalled Solaris 10 Operating System

Use the information that you gathered in as you perform the configuration.

In this procedure, you connect to the service processor CLI, and use it to access the system console. You can do this using two methods:

- A client system running SSH (method 1).
- A serial cable connected directly to the server (method 2).

Note – The system console screen should remain blank until the system is powered on.

Before You Begin

If you are going to use SSH (method 1), the following conditions must be present:

- The communication properties of the serial port of the system must be set to the defaults: 9600 baud, 8N1 (eight data bits, no parity, one stop bit), disable flow control.
- You must have an Ethernet connection to the same subnet as the NET MGT port connected to the service processor.
- You must know the service processor's IP address.

If these conditions are not present, use a serial cable (method 2).

Refer to the *Sun Integrated Lights Out Manager User's Guide* for more details.

Procedure

1. **Connect to the service processor using one of the following methods:**

   Method 1: To connect using SSH:

   a. **Open an SSH client.**

   b. **Type the following command:**

      ssh -l root *<sp_ip_address>*

      The service processor displays its login prompt.

   Method 2: To connect using a serial cable and a terminal capture program:

a. **Use a cable to connect the serial port of the server to the serial port of the serial capture host system.**

b. **Start a terminal session to capture the serial port output:**

   - On a client running Solaris OS, type:

     $`tip -9600 /dev/ttya`

   - On a client running Windows, start a program such as Hyperterminal.

   - On a client running Linux, start a program such as Minicom, 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.

   The service processor displays its login prompt.

2. **Log in to the service processor as an Administrator, for example:**

   login: `root`
   password: `changeme`

   The service processor displays its prompt:

   `->`

3. **Start the system console by typing the following:**

   `start /SP/console`

   The system console remains inactive (blank) until you turn on the system power.

4. **Use a pointed object to press and release the recessed Power button on the server front panel. See** FIGURE 6-1 **for the location of the Power button.**

   Messages scroll by on the system console screen.

5. **Follow the Solaris 10 onscreen prompts.**

6. **Use the information gathered in the** "Installation Worksheet" on page 42 **to help you enter the system and network information as you are prompted.**

   The screens that are displayed 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 posts a warning then reboots the system. When it reboots, the Solaris login prompt appears.

   The installation is complete.

Redirecting the Console Output to the Video Port (Optional)

⚠️ **Caution –** This procedure is intended for advanced users of Solaris only. You can seriously disrupt the proper functioning of the server or render the server unbootable if you introduce a problem in the `bootenv.rc` file.

After completing the preceding steps and while logged in to the SP, if you wish to redirect the console output to the video port, run the `eeprom` command at the prompt using the following arguments:

/eeprom console=text/

▼ Connecting to the Server Using a Serial Capture Program

1. **Use a cable to connect the serial port of the server to the serial port of the serial capture host system.**

2. **Make sure the communication properties of the serial port of the system are set to the default.**

   The default settings are 9600 baud, 8N1 (eight data bits, no parity, one stop bit), disable flow control.

3. **Start a terminal session to capture the serial port output:**

   On a client running Solaris OS, type:

   $**tip –9600 /dev/ttya**

   On a client running Windows, start a program such as Hyperterminal.

   On a client running Linux, start a program such as Minicom, 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.

4. **Log in to the service processor as an Administrator, for example:**

   login: **root**
   password: **changeme**

   The service processor displays its prompt:

   ->

5. **Start the serial console by typing the following:**

   start /SP/console

6. **Power on main power to the server by using a pointed object to press the recessed Power button on the front panel.**

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

7. **Follow the Solaris 10 onscreen prompts.**

8. **Use the information gathered in the** "Installation Worksheet" on page 42 **to help you enter the system and network information as you are prompted.**

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

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

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

Solaris 10 Training

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

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

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 drive, if ordered. The preinstalled OpenSolaris version is OpenSolaris 2009.06 or later.

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

This chapter includes the following topics:

Before You Begin

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 Service Processor For Configuration" on page 69.
- Ensure that main power has been applied to the server. For more information, see "Powering On the Server" on page 78.
- Gather the information that you will need for the configuration, as listed in "Installation Worksheet" on page 52. Note that default values are indicated by an asterisk (*).

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

- The server ships with its console redirected to the *serial* port. You can choose an option to send the output to VGA (video port). For more information, see "(Optional) Redirect the Console Output to the Video Port" on page 59.

Installation Worksheet

Use the worksheet in TABLE 4-1 to gather the information that you need to configure the preinstalled OpenSolaris OS. You only need to collect the information that applies to your application of the system.

TABLE 4-1   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?	• 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: `255.255.0.0`	255.255.0.0*
	IPv6	Do you want to enable IPv6 on this machine?	• 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 align=right>Default realm:</div><div align=right>Administration server:</div><div align=right>First KDC:</div><div align=right>(Optional) Additional KDCs:</div>	• Yes • No*

TABLE 4-1 Worksheet for OpenSolaris Configuration *(Continued)*

Information for Installation		Description or Example	Your Answers: Defaults (*)
Name service	Name service	If applicable, which name service should this system use?	• 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. You can also enter a list of domains to search when a DNS query is made. Search domain: Search domain: Search domain:	
	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 4-1   Worksheet for OpenSolaris Configuration *(Continued)*

Information for Installation	Description or Example	Your Answers: Defaults (*)
Default route	Do you want to specify a default route IP address, or let the OpenSolaris 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. You have the following choices: • You can specify the IP address. An `/etc/defaultrouter` 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.	• Specify One • Detect One • None*
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 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 Service Processor For Configuration" on page 69.

Use the information that you gathered in "Installation Worksheet" on page 52 as you perform the configuration.

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

Configuration instructions, see the following topics:

- "Accessing the System Over the Network" on page 56
- "Accessing the System Locally" on page 57
- "Configure the Preinstalled OpenSolaris Operating System" on page 58
- "(Optional) Redirect the Console Output to the Video Port" on page 59

▼ Accessing the System Over the Network

1. **Log in to ILOM:**

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

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

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

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

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

   For example:

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

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

    Commands:
       cd
       show
```

Note – The speed must 9600. You can change the speed to 9600 using the following command:
```
-> set /SP/serial/host pendingspeed=9600 commitpending=true
```

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

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

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

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

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

▼ Accessing the System Locally

1. **Use a cable to connect the SER MGT port of the host server to the serial port of the client system.**

2. **To access the system console, start a terminal session using one of the following methods:**

   ■ **From a OpenSolaris client:**

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

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

- **From a Windows client:**

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

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

- **From a Linux client:**

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

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

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

    ILOM displays a login prompt, after a short wait.

    ```
    login:
    ```

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

---

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

    Username: **root**

    Password: **changeme**

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

▼ Configure the Preinstalled OpenSolaris Operating System

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

    For additional information about powering on your server, see "Powering the Server On and Off" on page 77.

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

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

3. **Use the information gathered in** "Installation Worksheet" on page 52 **to help you enter the system and network information as you are prompted.**

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

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

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

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

1. **Connect to the server over the network or locally as described in these procedures:**
   - "Accessing the System Over the Network" on page 56
   - "Accessing the System Locally" on page 57

2. **From the GRUB menu, you have the option of displaying the installation process to a TTYA connection (serial port) or a VGA connection (video port) (see** FIGURE 4-1**).**

FIGURE 4-1   OpenSolaris GRUB Menu Screen
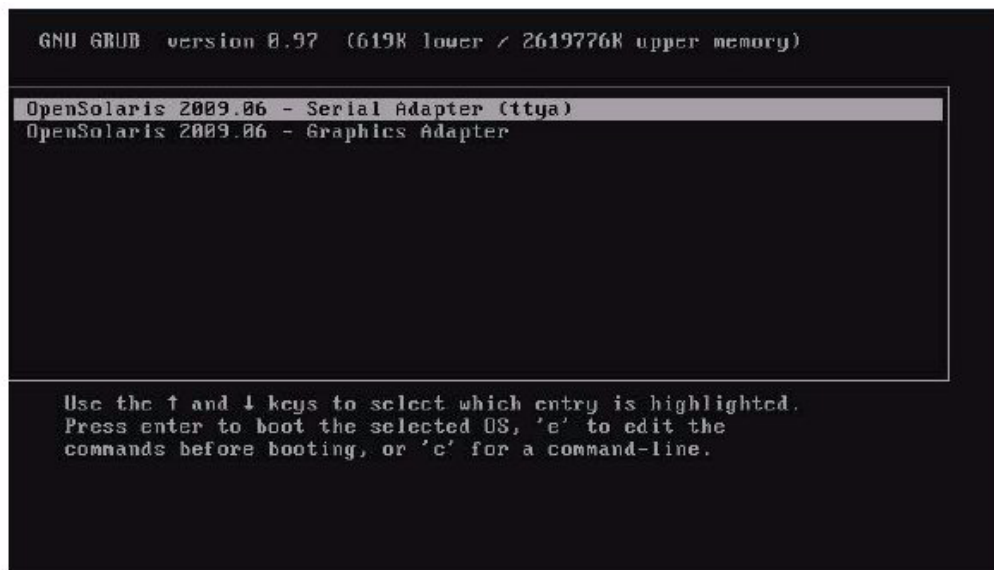
3. **To display output to the video port, choose this option:**

   ```
   OpenSolaris 2009.06 - Graphics Adapter
   ```

▼ (Optional) Modify the GRUB Menu to Auto Boot

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

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

1. **Change the -1 value on the time-out line to reflect the duration you want the menu to be presented. For example, for a 10-second delay, set the -1 on the time-out line to 10.**

2. **Add a line that specifies the default boot entry. For example, to specify the first entry, set the default to 10.**

Getting Started on OpenSolaris

For information on getting started on OpenSolaris, click the Start Here icon on the OpenSolaris Desktop (see FIGURE 4-2).

FIGURE 4-2 OpenSolaris Desktop

Configuring Server RAID Drives

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

RAID Drive Overview

The Sun Fire X4450 server has two optional host bus adapter (HBA) cards. You can access RAID configuration through the HBA card BIOS. To access the LSI HBA card BIOS, press CTRL-C during the system boot. To access the Sun StorageTek HBA card BIOS, press CTRL-A during the system boot.

TABLE 4-2   Sun Fire X4450 server Servers HBA Cards

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

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

The configuration procedure is different for each supported HBA card. For example, a Sun StorageTek HBA card has many more options for RAID configuration than does an LSI HBA card. Configure the RAID depending on your needs as shown in .

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

RAID Drive Options

TABLE 4-3 lists 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%
		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 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 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 4-3, only Integrated Mirror (IM) allows data on the primary hard disk drive (HDD) to be preserved or merged into an array of disks.

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

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

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

1. **Power on your server for the first time.**

2. **Press CTRL-C to access the LSI RAID Configuration utility.**

3. **Select the HBA card, then press Enter.**

4. **Choose RAID Properties.**

5. **Create an Integrated Mirror (IM) for the required disk configuration.**

6. **Select the hard disks to be used. Use the right arrow key to move the cursor to the RAID column, then press the space bar to include disks into the RAID.**

7. **Because HDD0 contains data, select merge or delete:**
   - Choose **M** to merge data and start a sync operation.
   - Choose **D** to erase the preinstalled OpenSolaris OS.

8. **Press C to create the RAID and start the sync operation.**

9. **Click Exit to save the configuration and close the menu.**

10. **Press Esc to exit the Configuration utility.**

11. **Reboot the OpenSolaris OS.**

Mirroring the Preinstalled OpenSolaris OS With Sun StorageTek HBA Card

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

This procedure describes how to mirror the preinstalled OpenSolaris OS. This is the better option, and all remaining disks (should there be more than two) are incorporated into a DATA RAID set using the available options as shown in TABLE 4-3.

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

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

Follow these steps to mirror your configured OpenSolaris OS:

1. **Using your OpenSolaris server (the server that contains the preinstalled OpenSolaris OS), log in and start Xserver.**

   This graphical user interface is required for StorageTek Software Management.

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

   `mkdir /StorMan`

3. **Insert the supplied Tools & Drivers CD, and copy the StorMan.dss application, located in the** `/mount-point/RAIDmgmt/StorageTEK/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 StormMan.pkg`

5. **Type the following command to install the application:**

   `pkgadd -d StorMan.pkg`

6. **Choose to install all components when prompted.**

7. **To run the application, type:**

   sh /opt/StorMan/StorMan.sh

   A split screen appears.

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

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

   A prompt appears.

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

11. **Click the SUN STK RAID Controller.**

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

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

---

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

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

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

    Select the hard disk drive that best fits your needs.

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

16. **Click Apply to start the mirroring process.**

    A confirmation screen appears.

    To perform the mirroring process at a later time, you can click **Schedule**.

17. **Click Confirm to start the mirroring process.**

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

OpenSolaris Operating System User Information

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

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

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

- OpenSolaris Training—For training options, go to:

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

Using the OpenSolaris Installation Program

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

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

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

Reinstalling the OpenSolaris Operating System

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

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

Download OpenSolaris Operating System

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

- To download the OpenSolaris operating system, go to:

  `http://opensolaris.org/os/TryOpenSolaris/`

- To download support repository updates (SRUs), which contain the latest released bug fixes for the OpenSolaris OS, go to:

  `http://sunsolve.sun.com/show.do?target=opensolaris`

Connecting to the Service Processor For Configuration

This chapter describes how to connect to the Sun Fire X4140, X4240, or X4440 server's Integrated Lights Out Manager (ILOM) service processor (SP), and how to perform initial network configuration.

Overview

The ILOM provides a connection to the system console and can be used to perform network management and configuration functions. It can be used when the system is powered off, as long as the AC power is connected.

This chapter describes how to connect to the service processor to ensure that it is working correctly and to configure its network settings. You can configure the service processor to use DHCP or a static IP address. If you configure it to use a static IP address, you must enter the network address settings.

The service processor is described fully in the *Sun Integrated Lights Out Manager User's Guide*.

The ILOM provides two control interfaces; the command-line interface (CLI), and the web GUI.

- The CLI can be accessed through a serial cable via the SER MGT port, or a secure SSH connection via the NET MGT port.
- The Web GUI is accessed through a web browser over the Ethernet connection through the NET MGT port.

The connections appear in FIGURE 2-14 and FIGURE 2-16.

Either method can be used to configure your network settings. However, to use SSH or the web GUI, you must already know your service processor's IP address.

Use the procedure that you prefer:

Using the CLI

Use this procedure to establish a serial connection to the ILOM, then to perform initial network configuration.

This procedure assumes that you have already completed the hardware setup and have applied standby power to your server.

- If you do not know your ILOM's IP address, use a serial connection.
- If you know the ILOM's IP address, you can use either a serial connection or SSH.

▼ Connecting to the ILOM Using the CLI

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

2. **Configure the terminal device or the terminal emulation software running on a laptop or PC to the following settings:**
    -   8N1: eight data bits, no parity, one stop bit
    -   9600 baud
    -   Disable hardware flow control (CTS/RTS)
    -   Disable software flow control (XON/XOFF)

3. **Connect a serial cable from the RJ-45 SER MGT port on the server's back panel to a terminal device. See** FIGURE 1-6 **or** FIGURE 1-8**.**

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

    The SP displays its login prompt: **`login`**

5. **Log in to the ILOM.**

    a. **Type the default user name: `root`**

    b. **Type the default password: `changeme`.**

    Once you have successfully logged in, the SP displays its default command prompt:

    `->`

    You can now use the SP's command line interface (CLI).

6. **Configure the server's network settings:**

    a. **Navigate to the CLI's network settings. Type:**

    `/SP/network`

    b. **Type the following commands to configure the network settings:**
    -   To configure a static IP address, type:

        `set pendingipaddress=`*xxx.xxx.xx.xx*

        `set pendingipnetmask=`*yyy.yyy.yyy.y*

        `set pendingipgateway=`*zzz.zzz.zz.zzz*

        `set pendingipdiscovery=static`

        `set commitpending=true`

        Where *xxx.xxx.xx.xx*, *yyy.yyy.yyy.y* and *zzz.zzz.zz.zzz* are the IP address, netmask, and gateway for your ILOM and network configuration.
    -   To configure a dynamic IP address, type:

```
set pendingipdiscovery=dhcp

set commitpending=true
```

7. **(Optional) Start the serial console.**

   ■ To start the serial console, you can type:

   ```
   cd /SP/console
   start
   ```

   ■ To switch back to the ILOM CLI, enter the **Esc (** key sequence.

8. **When you are done, type exit.**

   The ILOM exits.

9. **After configuring the ILOM, continue with**

▼ Connecting to the ILOM Using SSH

This procedure assumes that:

■ You are connected to a command-line device that has access to the same subnet as the ILOM,

■ You know the ILOM's IP address.

1. **Enter the command:**

   ```
   ssh -l root@ipaddress
   ```

   where *ipaddress* is the ILOM IP address.

2. **When prompted, enter the default password, changeme.**

   Once you have successfully logged in, the SP displays its default command prompt:

   ```
   ->
   ```

   You can now use the SP's command-line interface (CLI).

3. **Configure the server's network settings:**

   a. **Navigate to the CLI's network settings. Type:**

   ```
   /SP/network
   ```

   b. **Type the following commands to configure the network settings:**

   ■ To configure a static IP address, type:

   ```
   set pendingipaddress=xxx.xxx.xx.xx

   set pendingipnetmask=yyy.yyy.yyy.y

   set pendingipgateway=zzz.zzz.zz.zzz
   ```

set pendingipdiscovery=static

　　　　set commitpending=true

　　　　Where *xxx.xxx.xx.xx*, *yyy.yyy.yyy.y* and *zzz.zzz.zz.zzz* are the IP address, netmask, and gateway for your ILOM and network configuration.

　■　To configure a dynamic IP address, type:

　　　　set pendingipdiscovery=dhcp

　　　　set commitpending=true

4. **(Optional) start the serial console.**

　■　To start the serial console, you can type:

　　　cd /SP/console

　　　start

　■　To switch back to the ILOM CLI, enter the **Esc (** key sequence.

5. **When you are done, type exit.**

　The ILOM exits.

6. **After configuring the ILOM, continue with** Chapter 3**.**

Using the ILOM Web GUI

To access the full range of ILOM functionality such as the graphical user interface (GUI), you must connect a LAN to the Ethernet port and access the ILOM web GUI.

Note – This procedure assumes that you have already completed the hardware setup and have applied standby power for your server. It also assumes that you know the ILOM's IP address.

---

1. **If you are going to use DHCP, ensure that your DHCP server is configured to accept new media access control (MAC) addresses by checking with your system administrator.**

2. **Connect an Ethernet cable to the server's RJ-45 NET MGT Ethernet port. See See** FIGURE 1-6 **or** FIGURE 1-8**.**

Note – If the ILOM is *not* using static IP addresses, it broadcasts a DHCPDISCOVER packet with the ID of its MAC address. A DHCP server on your LAN returns a DHCPOFFER packet containing an IP address and other information. The ILOM then manages its "lease" of that IP address that was assigned to it by the DHCP server.

3. **If you do not know the ILOM IP address, use the procedure in** "Using the CLI" on page 70 **to find it.**

4. **Type the ILOM IP address in a web browser window.**

   The login page appears.

5. **Enter the default user name and password, `root` and `changeme`.**

   The ILOM web GUI page appears.

6. **To configure the network settings, select the Configuration tab and its Network tab.**

   The current network settings appear. See FIGURE 5-1.

7. **Select and configure the IP address:**

   a. **To use DHCP, select the radio button next to Obtain an IP Address Automatically (use DHCP).**

   b. **To use a static IP address:**

      i. **Select the radio button next to Use the Following IP Address.**

      ii. **Enter the IP address, subnet mask, and gateway IP address in the corresponding fields.**

FIGURE 5-1   Integrated Lights Out Manager Network Settings Page

8. **Click Save when you are done.**

9. **Continue with** Chapter 3**.**

For detailed instructions on configuring your system, see the *Sun Integrated Lights Out Manager User's Guide*.

Powering the Server On and Off

This chapter describes how to power your Sun Fire X4140, X4240, or X4440 server on and off.

- "Preparing the System" on page 77
- "Applying Standby Power" on page 78
- "Powering On the Server" on page 78
- "Powering Off the Server" on page 79

Preparing the System

Ensure that AC power is connected to the server as described in Chapter 2.

Caution – A maximum of two power cords can be connected to a single branch circuit. The remaining power cord(s) must be connected to a second branch circuit.

Caution – If you are connecting your server for the first time, do not power on the system until you are instructed to do so in Chapter 3.

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

Applying Standby Power

When you connect AC power to the server, the server automatically enters standby power mode. The service processor starts, but the server remains powered-off.

The Power/OK LED on the front panel flashes.

If you are starting the server for the first time, configure the service processor as described in Chapter 5.

Powering On the Server

Caution – If you have not yet installed your operating system, do not turn on system power yet.

To install an operating system, before powering on the server, perform one of the following processes:

- To install the preinstalled Solaris operating system, see Chapter 3.
- To install a supported Linux or VMware operating system, refer to the *Sun Fire X4140, X4240, and X4440 Servers Operating System Installation Guide*.
- To install a supported Windows operating system, refer to the *Sun Fire X4140, X4240, and X4440 Servers Windows Operating System Installation Guide*.

▼ To Power On the Server

1. **Verify that power cords have been connected and that standby power is on.**

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

Note – When the CMA is installed, it covers the AC power connectors. To access the power connectors, release the CMA arm connector on the left side of the CMA, and swing the CMA out of the way. See FIGURE 2-12.

2. **Use a pointed object to press and release the recessed Power button on the server front panel. See** FIGURE 6-1.

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

FIGURE 6-1   Front Panel (Sun Fire X4140 Server Shown)

Figure Legend

| 1 | Power Button |
| 2 | Power/OK LED |

Powering Off the Server

● **To power off the server from main power mode, use one of the following two methods:**

  ■ **Graceful shutdown:** Use a 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 four seconds to force main power off and enter standby power mode.

  When main power is off, the Power/OK LED on the front panel will begin flashing, indicating that the server is in standby power mode.

Note – To completely power off the server, you must disconnect the AC power cords from the back panel of the server. When the CMA is installed, it covers the AC power connectors. To access the power connectors, release the CMA arm connector on the left side of the CMA, and swing the CMA out of the way. See FIGURE 2-12.

Caution – Do not disconnect the AC power cords from the system while it is powered-on.

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