



Sun Fire™ X4500/X4540 Server Installation Guide

Sun Microsystems, Inc.
www.sun.com

Part No. 820-4855-12
July 2009, Revision A

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Preface

This document explains how to install the Sun Fire™ X4500/X4540 server. This document is intended for trained technicians who have a high-level of understanding and skill in installing server systems.

Related Documentation

All Sun hardware and software documentation is available at:

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

For the most up-to-date information about the Sun Fire X4500/X4540 server, navigate to the Sun Fire X4500/X4540 document collection using the High-End Servers and x64 Servers product category links.

<http://docs.sun.com/app/docs/prod/sf.x4500>

<http://docs.sun.com/app/docs/prod/sf.x4540>

Translated versions of some of these documents might also be available after the product's world-wide release date. Select a language from the drop-down list and browse or navigate to the Sun Fire X4500/X4540 x64 document collection. Available translations for the Sun Fire 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.

Documentation, Support, and Training

The Sun web site provides information about the following additional resources:

Sun Function	URL
Documentation	http://www.sun.com/documentation
Support	http://www.sun.com/support/index.jsp
Training	http://www.sun.com/training
Warranty	http://www.sun.com/service/support/warranty/index.html

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For documentation, please include the title and part number of your document with your feedback:

Sun Fire X4500/X4540 Server Installation Guide, 820-4855-12.

Installing the Sun Fire X4500/X4540 Server Hardware

This chapter covers the following topics:

- “Before You Begin” on page 2
- “Installation Overview” on page 3
- “Installing the Cable Management Arm (CMA) for the X4500” on page 7
- “Installing the Cable Management Arm (CMA) for the X4540” on page 15
- “Removing the System From the Rack” on page 28
- “Cabling and Connectors” on page 29
- “Powering On and Powering Off the Server” on page 32

Tip – The *X4500-J Slide Rail Installation Guide* explains critical installation issues when you install the server into a rack. This document is shipped in the orderable rail kit box and is available online.

Before You Begin

The Sun Fire X4500/X4540 Server documentation set contains several manuals. Before you start setting up your server, familiarize yourself with the major documents. The documentation set will grow as new features (such as OS support) are added.

TABLE 1-1 Sun Fire X4500/X4540 Documentation Set

For this task...	Refer to this document...
Install hardware, set up SP	This document <i>Sun Fire X4500/X4540 Server Safety and Compliance Guide</i>
Install the OS	This document. <i>Sun Fire X4500/X4540 Server Installation Guide</i> <i>Sun Fire X4500/X4540 Server Windows Operating System Installation Guide</i> <i>Solaris ZFS Administration Guide</i>
Manage the Server	<i>Sun Integrated Lights Out Manager 2.0 User's Guide</i> <i>Addendum to the Sun Integrated Lights Out Manager 2.0 User's Guide</i> <i>Sun Integrated Lights Out Manager Supplement for the Sun Fire X4500 and X4540 Servers</i>
Troubleshoot problems	<i>Sun Fire X4500/X4540 Server Diagnostics Guide</i> <i>Sun Fire X4540 Server Product Notes</i>
Maintain Server	<i>Sun Fire X4500/X4540 Server Service Manual</i>

Contents of the System Box

In your system box, in addition to your server and power cords, you will find the following items:

- *Sun Fire X4500 Getting Started Guide* or the *Sun Fire X4540 Getting Started Guide*
- *Software License Agreement*
- *Entitlement for Solaris 10 OS*
- *Important Safety Information for Sun Hardware Systems*
- SunVTS™ Bootable Diagnostics CD
- Sun xVM Ops Center DVD

Installation Overview

After unpacking your server, perform the following tasks:

1. **Install the server into a rack using orderable slide rails.**
 - “Tools and Parts Required” on page 4
 - “Staff Required” on page 4
 - “Compatible Racks” on page 6
2. **Install the cable management arm.**
 - “Installing the Cable Management Arm (CMA) for the X4500” on page 7
3. **Install the cable management arm (X4540).**
 - “Installing the Cable Management Arm (CMA) for the X4540” on page 15
4. **Remove the system from the rack.**
 - “Removing the System From the Rack” on page 28
5. **Attach cables.**
 - “Cabling and Connectors” on page 29.
6. **Power on the server.**
 - “Powering On and Powering Off the Server” on page 32.
7. **Perform initial service processor configuration through the Integrated Lights Out Manager (ILOM).**
 - “Configuring the Sun Fire X4500/X4540 Server Through the Service Processor” on page 37.
8. **Configure the preinstalled Solaris operating system.**
 - “Configuring the Preinstalled Solaris Operating System” on page 53.

Note – For information pertaining to an early-production release of the slide rail and Cable Management Assembly (CMA), see *Sun Fire X4500/X4540 Server Installation Guide*. If your X4500 system has the J slide rails installed, see *Sun X4500-J Slide Rail Installation Guide* for details on removing and replacing the CMA.

Tools and Parts Required

- #2 Phillips screwdriver, 10 inches, magnetic tip
- Mechanical lift (highly recommended).
 - “Mechanical Lift Recommended” on page 5.
- Level, carpenters (spirit or bubble)



Caution – Because of the weight of the system, a mechanical lift is highly recommended for installing the system into the rack. If a lift is not available, remove the following components to reduce the weight: both power supplies, system controller, all 48 hard drives. Leave the fan trays installed. Make sure that the 48 hard drives are replaced in the same order that they are removed.

TABLE 1-1 lists the qualified part numbers for these components. These ordering numbers are subject to change over time. For an updated list of components, see the following web site:

http://sunsolve.sun.com/handbook_pub/Systems/

TABLE 1-2 Sun Fire X4500/X4540 Slide Rails and Cable Management Assembly

Component	Ordering Number
Cable management assembly for X4500 and X4540—compatible with 2 PSUs per system chassis (FRU)	#371-2887, X4229A-Z (X-option)
Combo Kit: Slide rails and cable management assembly for X4500 and X4540—compatible with 2 PSUs per system chassis, and (FRU)	#371-2886
Slide rail assembly for X4500 and X4540 (FRU)	#350-1393, X4541 (X-option)
Slide rail assembly for X4500 and X4540 and cable management assembly for X4540	#350-1394
Slide rail assembly for X4500 and X4540 (X-option)	#590-1169, X4541 (X-option)

Staff Required

At least *three* people are needed to install the system into the rack:

- Two to install the system and operate the lift
- A spotter to ensure rails are engaged correctly

Note – This assumes a mechanical lift is used. If a mechanical lift is not available, the system must be depopulated of most components.

Mechanical Lift Recommended



Caution – To prevent injury to staff or damage to the equipment, use extreme caution when installing the server.

Because of the weight of the server, it is important to use a mechanical lift for installing the server into the rack.

- The Sun Fire X4500 server weighs 160 pounds (72.6 kg) when fully loaded with components.
- The Sun Fire X4540 server weighs 170 pounds (77.1 kg) when fully loaded with components.

Removing Components to Reduce Weight

If a lift is not available, remove the following components to reduce the weight:

- Both power supplies
- System controller
- Hard-disk drives in slots 2 to 46. Leave the bootable drives in slots 0 and 1 installed.



Caution – Label the 46 hard drives before you remove them and make sure they are replaced in the same slot from which they were removed.

Note – Leave the fan trays installed.

Note – Disk mapping for the Sun Fire X4500 is row oriented, starting from the front row, with drives 0-11 across the front from left to right. Disk mapping for the Sun Fire X4540 is column oriented, starting from the left-most column, with drives 0-3 down the left side from front to back. See the service label.



Caution – This assumes a mechanical lift is used. If a mechanical lift is not available, the server must be depopulated of most components.

Compatible Racks

Note – Because of its depth, the Sun Fire X4500/X4540 server fits best in 1000 mm racks. Use the Sun Rack 1000-42 and Sun Rack 1000-38.

The Sun Fire X4500/X4540 server slide rails are compatible with a wide range of equipment racks that meet the following standards:

- Four-post structure (mounting at both front and rear). Note that two-post racks are not compatible.
- Rack horizontal opening and unit vertical pitch conforming to ANSI/EIA 310-D-1992 or IEC 60927 standards.
- Distance between front and rear mounting planes between 23 to 34 inches (580 mm and 870 mm).
- Minimum clearance depth (to front cabinet door) in front of front rackmounting plane: 1.85 inches (47 mm).
- Minimum clearance depth (to rear cabinet door) behind front rackmounting plane: 38 inches (965 mm) with cable management arm (*used for system external cabling except in situations where external SAS cables are used*) or 33.5 inches (851 mm) without cable management arm. Sun 4RU storage drive products fit best in 1000 mm racks. For those products, use the Sun Rack 1000-42 and Sun Rack 1000-38.
- Minimum clearance width (between structural supports and cable troughs) between front and rear mounting planes: 19 inches (483 mm). Clearance on each side of the rack must be at least 1/2 inch (12.7 mm) outwards of the plane between the edges of the front and rear rackmounting structures.
- Minimum clearance width (not between structural supports and cable troughs) between front and rear mounting planes: 18 inches (456 mm).



Caution – Always load equipment into a rack from the bottom up so that the rack does not become top-heavy and tip over. Deploy your rack's anti-tilt bar to prevent the rack from tipping during equipment installation. For instructions, see the service label on the Sun Fire X4500/X4540 Server cover or the label on the rack.

For more information on Sun racks, see:

Installing the Cable Management Arm (CMA) for the X4500

If your system is shipped with a Cable Management Arm (CMA), it is provided to protect the IO and power cables from damage when sliding the system in and out of a rack. **If your system is shipped with a CMA, failure to use the CMA could result in damage to power or data cables during system servicing.** The CMA kit includes the following:

- CMA-to-chassis bracket
- CMA

Note – Some Sun rackable 4RU products that have rear SAS cable connections are not shipped with a CMA due to the potential for damage to the SAS cables when used with the CMA. For these systems, you need to use an alternate method for cable management. **If your system is not shipped with a CMA, skip this section.**

Attaching the CMA

1. **If your system includes a CMA, unpack the CMA parts and take them to the rear of the equipment rack.**

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

2. **If the system is not fully installed into the rack, slide the system so that it is fully installed until it reaches the internal stops.**
3. **Attach the CMA-to-chassis bracket to the right side of the system. See [FIGURE 1-1](#).**

Use a #2 Phillips screwdriver to tighten all three screws.

- a. **Fasten the top two screws of the CMA bracket, then the bottom screw.**
- b. **Turn each screw until it stops (do not overtighten).**

Once the bracket is in place, you can install the CMA.

FIGURE 1-1 Installing the Outer Rail Extension

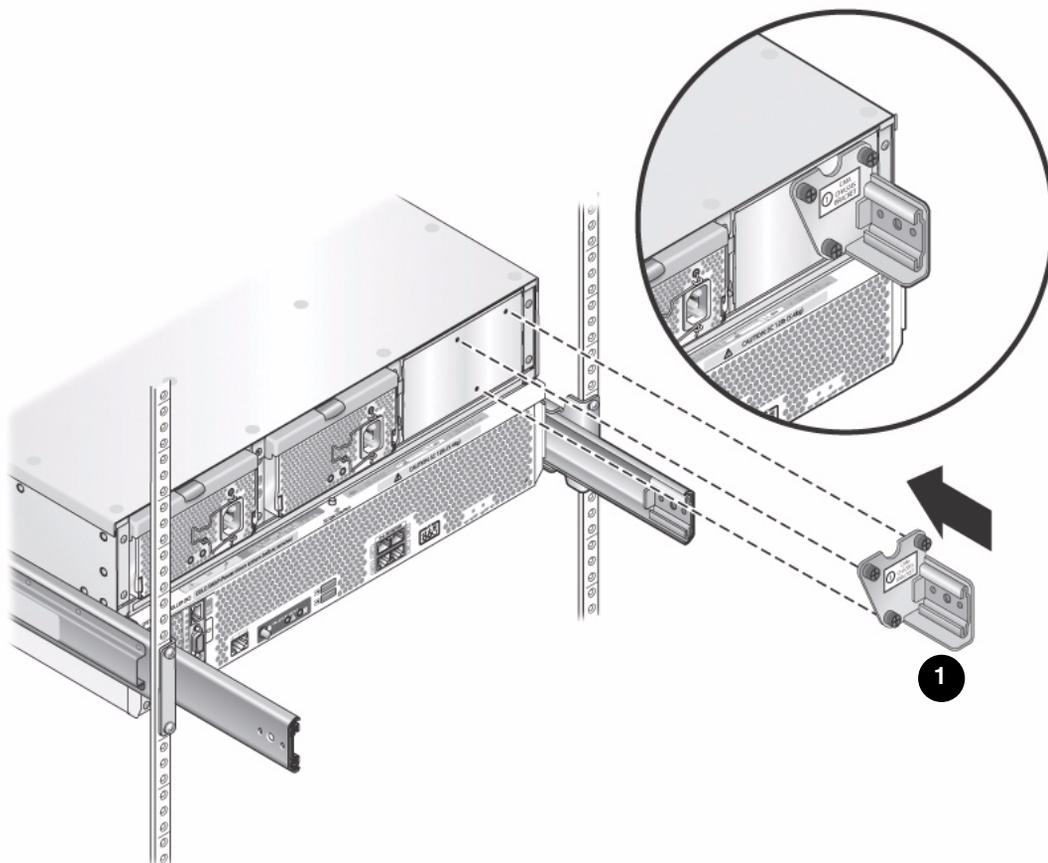


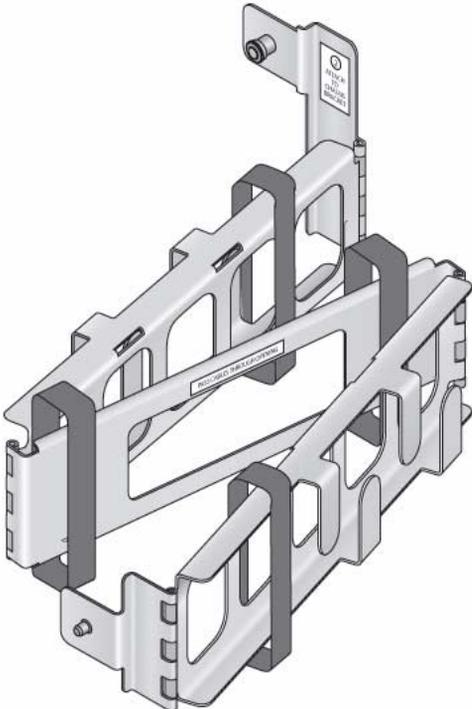
Figure Legend

-
- | | |
|---|------------------------|
| 1 | CMA-to-chassis bracket |
|---|------------------------|
-

The CMA arrives in shipment with the ends folded under and tucked beneath the velcro flaps. Open the velcro flaps and unfold the CMA. As the CMA is installed into the rack, it is folded at an angle. See [FIGURE 1-2](#).

4. Fold the CMA as seen in [FIGURE 1-2](#).

FIGURE 1-2 Folding the CMA



5. Insert the CMA hinge plate into the CMA bracket. (See [FIGURE 1-3](#).) Pull the green, spring-loaded pin outwards, slide the hinge-plate (marked #2) into the CMA bracket, and release the pin. Verify that the hinge-plate is fully seated into the CMA bracket.

FIGURE 1-3 Inserting the Right CMA Hinge Plate Into the CMA Bracket

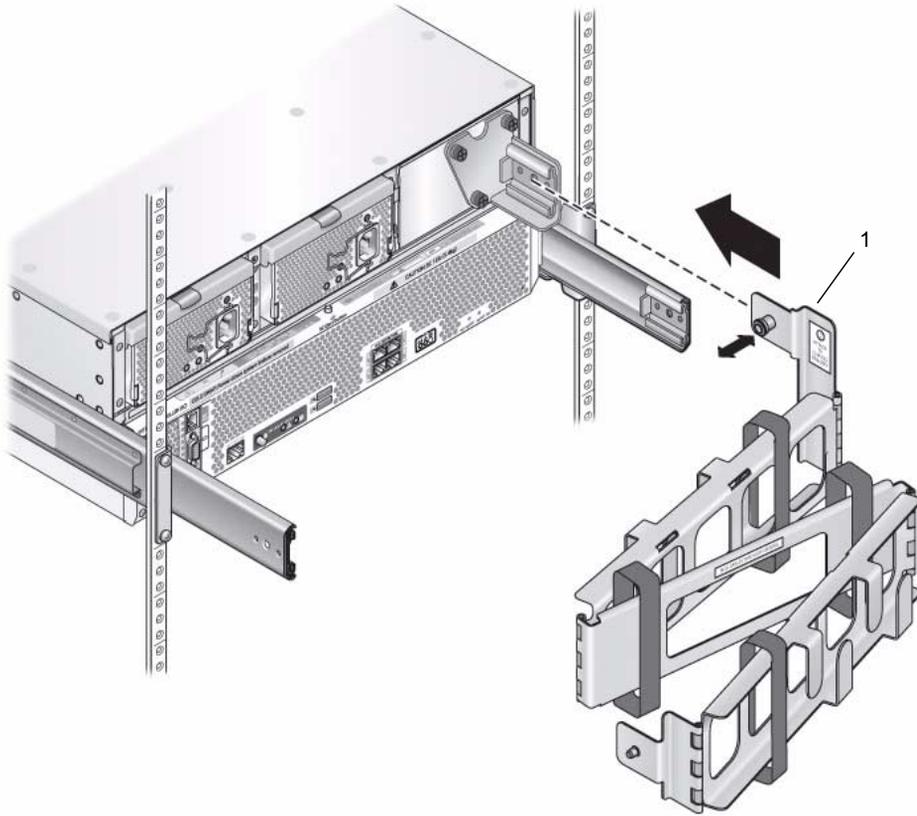
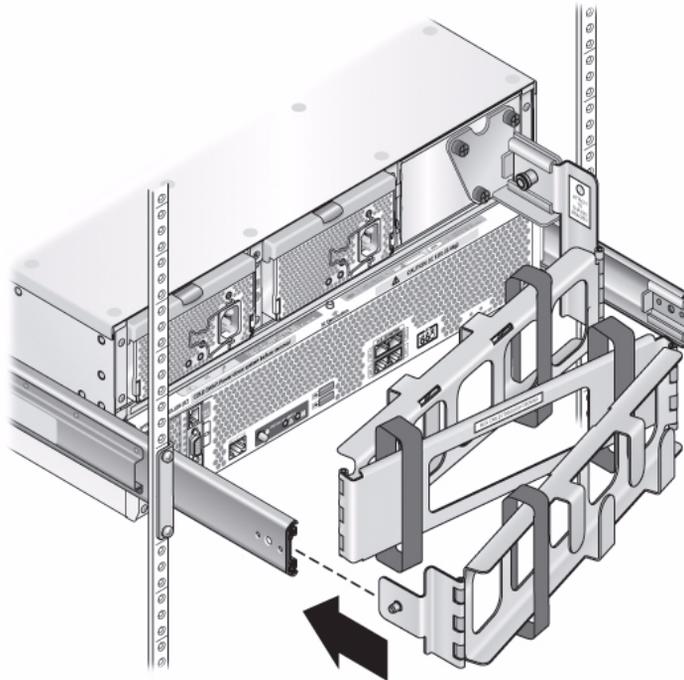


Figure Legend

-
- | | |
|---|-----------------|
| 1 | CMA hinge plate |
|---|-----------------|
-

6. Holding the left CMA hinge plate (marked #2), pull the green spring-loaded pin outwards and slide the hinge plate into the end of the left slide rail (see [FIGURE 1-4](#)). Release the pin and verify that the CMA is firmly attached to the rail.

FIGURE 1-4 Installing CMA Arm Into Left Side Rail



7. Open the CMA assembly and pull into a U shape. See [FIGURE 1-5](#).
8. Loosen all the velcro straps before handling the cables.
9. Install cables to your system, as required, and route the cables through the CMA cable hangers. Both power supply cords and any data cables (such as Ethernet cables) must be run through the CMA.

To minimize electrical interference, the power cables can be placed at the bottom of the CMA trough and data cables tie-wrapped to the top of the trough.

Pull the cables all the way over to the far right side to enter the CMA. This is to help ensure equal tension and a service loop on cables during operation.



Caution – The CMA does NOT have fail-safe operation without at least the power cables being threaded through it. It can double back on itself and bind. If the system is pushed from the front, because the rear of the system cannot be seen, it could damage the CMA beyond repair.

FIGURE 1-5 Example Cabling Path Through CMA Arms With Straps

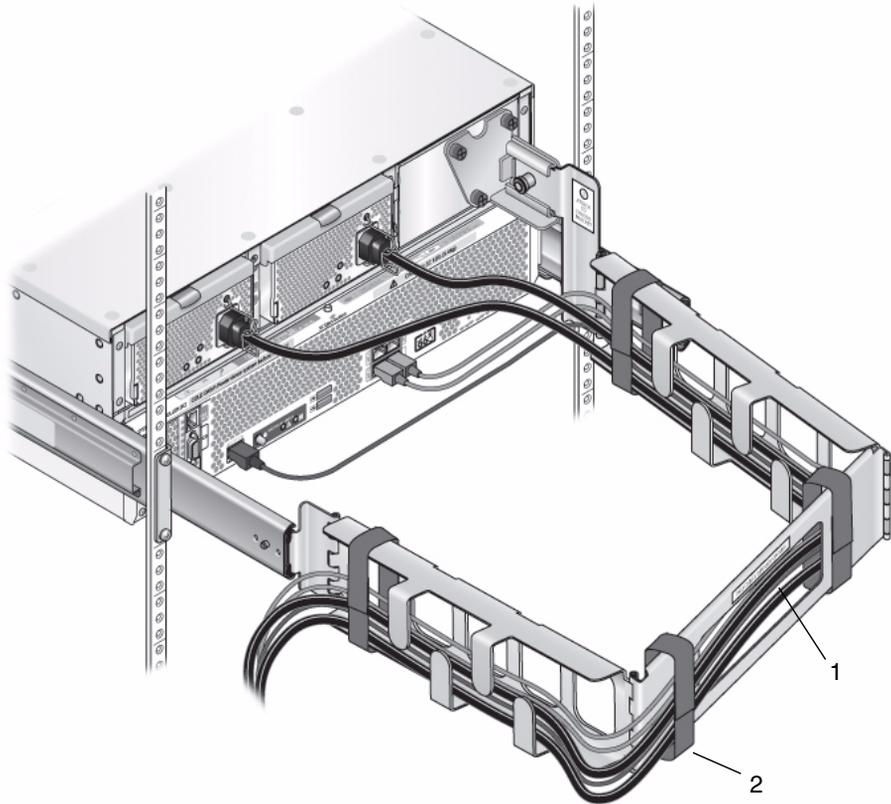


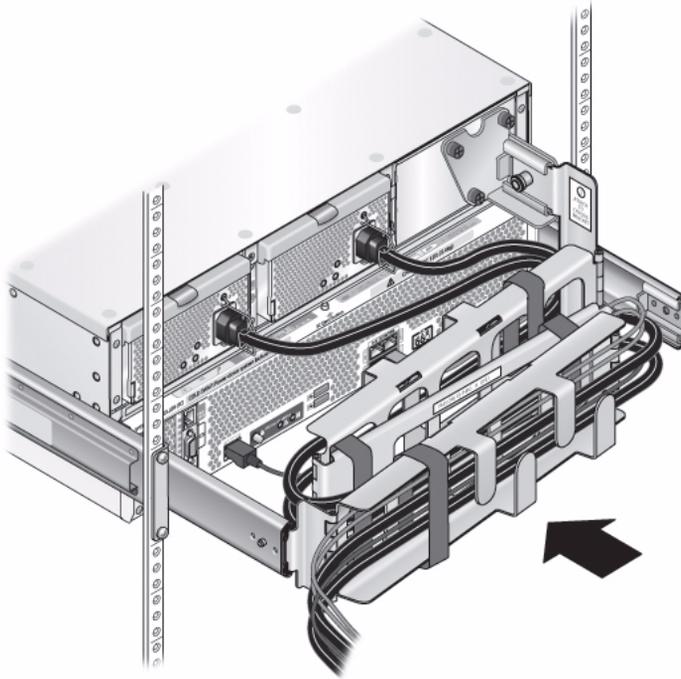
Figure Legend

-
- 1 Pass cable through openings
 - 2 Tie wrap cables with cable strap
-

Note – Do not run cables from another system through the CMA. Use one CMA per system.

10. Fold the CMA arms after cabling to prevent them from extruding into the aisle.
See [FIGURE 1-6](#).

FIGURE 1-6 Folding CMA Arm After Cabling



Verifying CMA Operation

1. Inspect the attached cables for any binding or kinks.
2. Verify that the CMA extends and does not bind in the slide rails.
3. Make sure that the power cord cables are secured to the chassis with the clips on each power supply.
4. Adjust the cable hangers and CMA as required, and then retest the operation of the slide rails and CMA.

Tip – To maximize airflow, tie-wrap the power cords at the bottom of the CMA troughs and the data cables at the top of these troughs.

Removing the CMA to Service the System Controller

If you need to access the system controller (SC), first remove the CMA.

1. Unplug the power and data cables from the system.
2. Pull the green pins on each hinge plate and pull the CMA to the rear.

The cables can remain in the CMA and hang in place if it's being removed only to service the SC module.

Installing the Cable Management Arm (CMA) for the X4540

If your system is shipped with a Cable Management Arm (CMA), it is provided to protect the IO and power cables from damage when sliding the system in and out of a rack. **If your system is shipped with a CMA, failure to use the CMA could result in damage to power or data cables during system servicing.**

The CMA kit includes the following:

- Cable Management Arm
- CMA-to-chassis bracket

Note – To protect your SAS cables from damage, use the Cable Management Bar (CMB) that comes with your system. See [“Installing the Sun Fire X4500/X4540 Server Hardware”](#) on page 1.

Note – For documentation on installing the Cable Management Bar, see [“Installing the Cable Management Bar \(CMB\)”](#) on page 23.

1. **Label your cables so they are easy to identify when you need to reconnect them.**
2. **Unpack the CMA parts and take them to the rear of the equipment rack.**

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

3. **If the system is not fully installed into the rack, slide the system so that it is fully installed and it reaches the internal stops.**

4. **Attach the CMA-to-chassis bracket to the right side of the system. See**

[FIGURE 1-7:](#)

Use a #2 Phillips screwdriver to tighten the two captive screws on the bracket (do not overtighten).

FIGURE 1-7 Attaching the CMA-to-Chassis Bracket to the Chassis

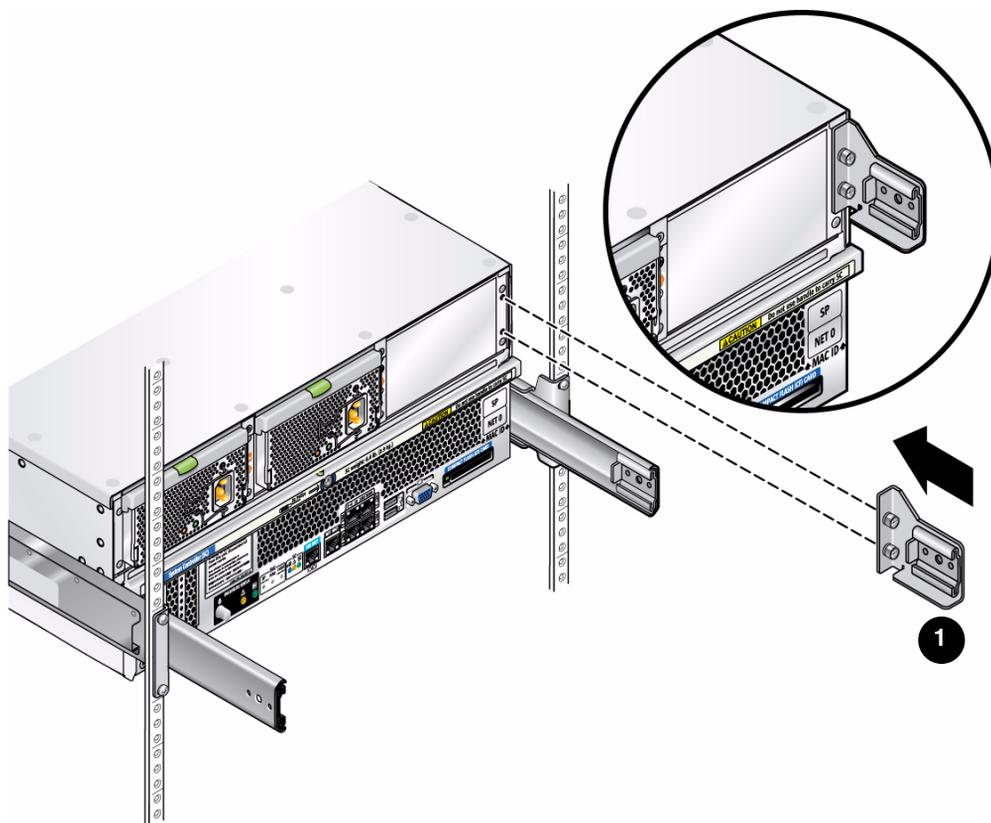


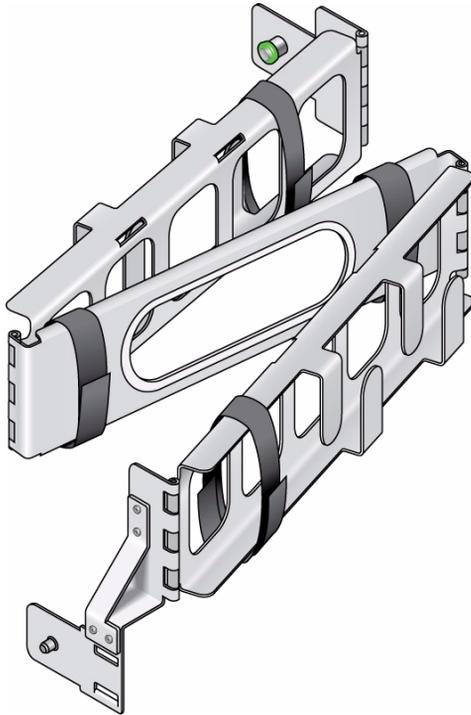
Figure Legend

-
- 1** CMA-to-chassis bracket
-

The CMA arrives in shipment folded and secured by the velcro flaps which may need to be loosened or undone to allow the CMA freedom of movement.

5. Fold the CMA as seen in [FIGURE 1-8](#).

FIGURE 1-8 Folding the CMA



6. Insert the CMA hinge plate into the CMA bracket while pulling the green, spring-loaded pin outwards. Slide the hinge-plate into the CMA bracket and release the pin. Verify the hinge-plate is fully seated into the CMA bracket.

FIGURE 1-9 Inserting the Right-side CMA Hinge Plate Into the CMA Bracket

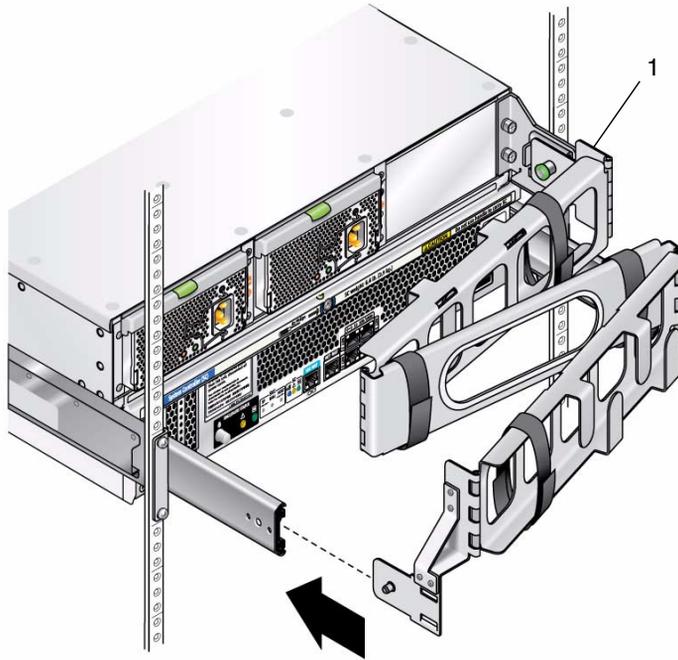


Figure Legend

-
- 1 CMA hinge plate
-

7. Hold the left CMA hinge plate while pulling the green spring-loaded pin outwards. Slide the hinge plate into the end of the left slide rail. Release the pin and verify the CMA is firmly attached to the rail.

EXAMPLE 1-1 Installing Left Side CMA Arm Into Left Side Rail

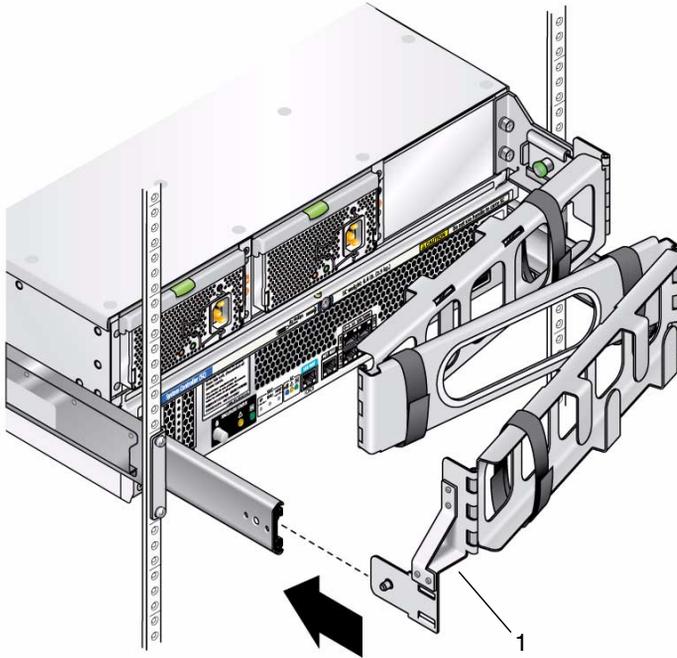


Figure Legend

-
- 1 Left hinge plate
-

8. Unfold the CMA assembly and pull into a U shape. See [FIGURE 1-5](#).
9. Loosen all the velcro straps before handling the cables.
10. Install cables to your system, as required, and route the cables through the CMA cable hangers. Both power supply cords and any data cables (such as Ethernet cables) must be run through the CMA.

To minimize electrical interference, tie-wrap the power cables to the bottom of the CMA trough and tie-wrap the data cables to the top of the trough.

Route the cables toward the right to enter the CMA. This helps ensure equal tension on the cables and creates a service loop on the cables during operation.



Caution – The CMA does NOT have fail-safe operation without the power cables routed through it. Take extreme care if the system needs to be pushed from the front as the CMA can bind in the rails or rack and be damaged beyond repair.

FIGURE 1-10 Cabling Path Through CMA Arms With Straps

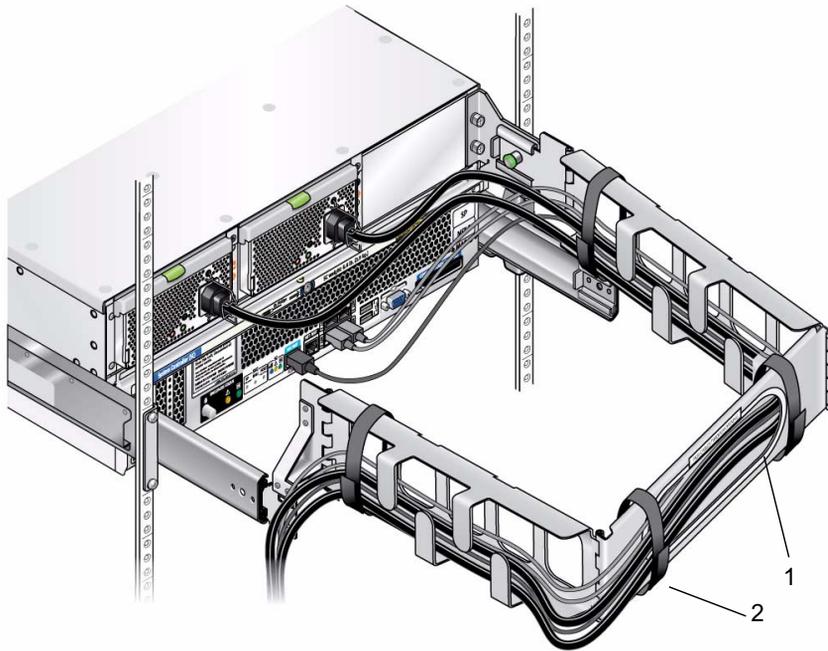


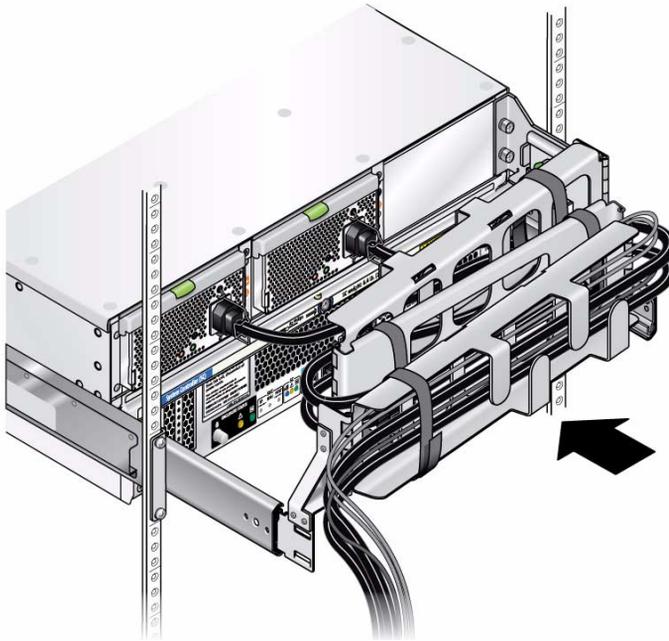
Figure Legend

-
- 1 Pass cable through openings
 - 2 Tie wrap cables with cable strap
-

Note – Do not run cables from another system through the CMA. Use one CMA per system.

11. Fold the CMA after routing cables to prevent the CMA from protruding into the aisle. See [FIGURE 1-6](#).

FIGURE 1-11 Folding CMA After Cabling



Verifying CMA Operation

1. Inspect the attached cables for any binding or kinks.
2. Verify that the CMA extends and does not bind in the slide-rails.
3. Make sure that the power cords are secured to the chassis with the clips on each power supply.
4. Adjust the cable hangers and CMA as required, and then retest the operation of the slide-rails and CMA.

Tip – To maximize airflow, tie-wrap the power cords at the bottom of the CMA troughs and the data cables at the top of these troughs.

Removing the CMA to Service the System Controller

If you need to access the system controller (SC), first remove the CMA.

1. **Unplug the power and data cables from the system.**
2. **Remove the Cable Management Bar.**
3. **Pull the green pins on each hinge plate of the CMA and pull the CMA to the rear.**

The cables can remain in the CMA and hang in place if it's being removed just to service the SC module.

Installing the Cable Management Bar (CMB)

The Cable Management Bar (CMB) is provided to protect the SAS cables from damage when sliding the system in and out of a rack.

The CMB kit includes the following:

- Cable Management Bar
- Cable Management Bar brackets (left and right)

Note – To access some components, you must first remove the Cable Management Arm and Cable Management Bar.

To begin this procedure, the Cable Management Arm (CMA) must be installed. To install the CMA, see [“Installing the Cable Management Arm \(CMA\) for the X4540” on page 15.](#)

1. **Label your SAS cables so they are easy to identify when you need to reconnect them.**
2. **Unpack the CMB parts and assemble it by attaching the right and left brackets to either end of the bar.**

FIGURE 1-12 Assembling the Cable Management Bar

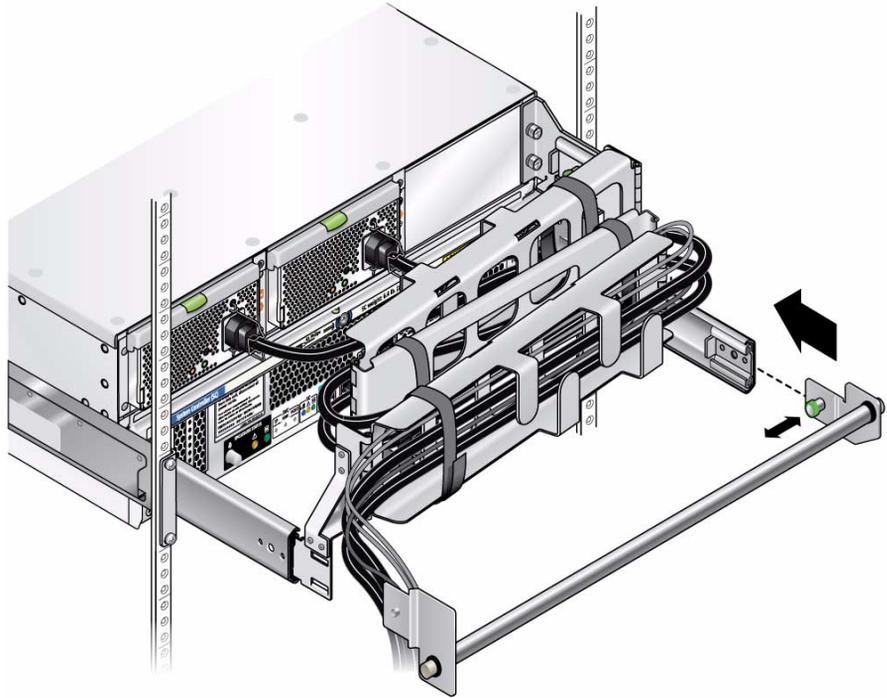


Note – References to “left” or “right” in this procedure assume that you are facing the rear of the equipment rack.

3. If the system is not fully installed into the rack, slide the system so that it is fully installed and it reaches the internal stops.
4. Take the CMB assembly to the rear of the equipment rack.

5. Hold the left CMB bracket while pulling the green spring-loaded pin outwards. Slide the hinge plate into the end of the left bracket of the CMA. Release the pin and verify that the CMA is firmly attached to the rail.

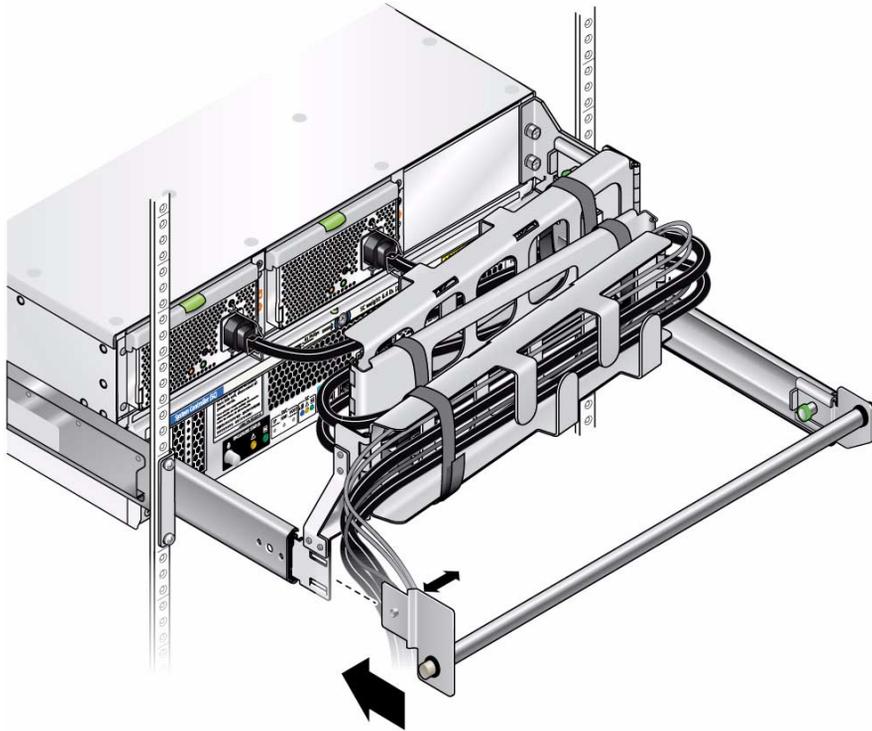
EXAMPLE 1-2 Attaching the Right CMA Bracket



6. Hold the right CMB bracket while pulling the green spring-loaded pin outwards. Slide the hinge plate into the right end of the slide rail. Release the pin and verify the CMA is firmly attached to the rail.

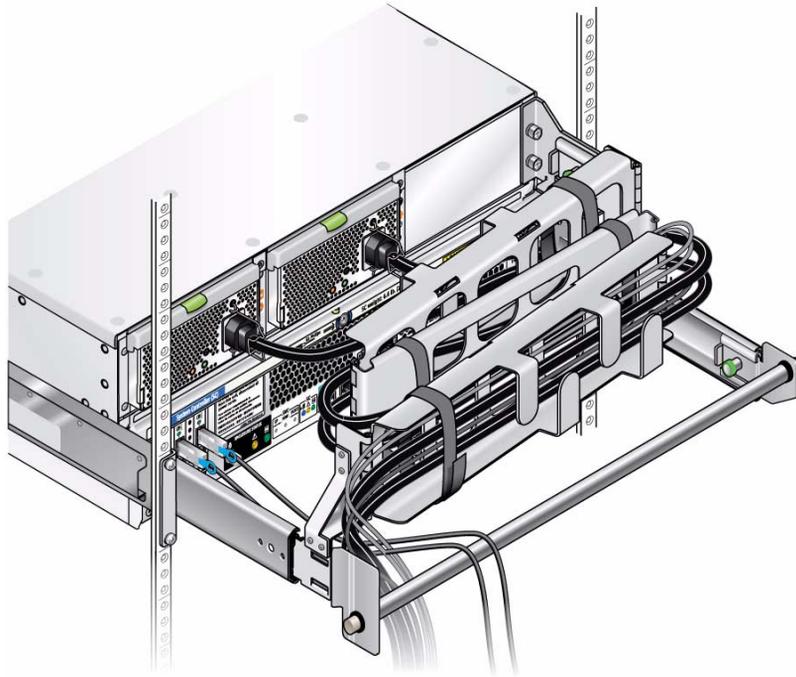
7. Install the left hinge plate into the left hinge plate of the already installed CMA while pulling the green spring-loaded pin outwards. Slide the hinge plate into the left end of the slide rail. Release the pin and verify that the CMA is firmly attached to the rail.

FIGURE 1-13 Attaching the Left CMB Bracket



8. Route the SAS cables over the Cable Management Bar and to the PCI-e card connectors on the back panel of the system.

FIGURE 1-14 Installing SAS Cables onto a System with the CMB



Removing the Cable Management Bar

1. Uninstall the left hinge plate by pulling the green spring-loaded pin outwards and pulling the hinge plate at the same time.
2. Uninstall the right hinge plate by pulling the green spring-loaded pin outwards and pulling the hinge plate at the same time.

Removing the System From the Rack

This procedure assumes that you have turned off the server, removed the cable management arm, and removed any cables or cords that would restrict the movement of the server.



Caution – Attempting this procedure without a mechanical lift or with fewer than *four* people could result in personal injury or equipment damage. These systems can weigh up to 160 pounds (72.7 kg) when fully loaded with components. To prevent injury, use a mechanical lift to remove the system from the rack. If only three people are available, remove power supplies, disk drives, and the system controller to reduce the weight to about 50 pounds before removing the system. Leave the fan trays installed.

1. Remove the CMA and all the cables.

See one of the following:

- *Sun Cable Management Assembly Installation Guide for the Sun Fire X4540 Server*
- *Sun X4500-J Slide Rail Installation Guide (X4500)*
- “Early-Production Slide Rail and CMA Information” on page G-1 (X4500)

2. If you do not have a mechanical lift, remove the following components from the rear of the rack to reduce the weight to a safe level for manual lifting:

- Power supplies
- System Controller

3. Completely extend the system until it stops against internal locks and stops.

4. Release the system using the latches on each side.

5. If you do not have a mechanical lift, open the drives access cover and remove the drives.



Caution – Make sure you label the drives so you can replace them in their original locations.

6. Slide the system completely out of the slide rails and place on a clean, stable surface.

Note – To avoid the middle rails blocking access to the aisle, release the middle rails via their inner latch and slide them fully inside the outer rail. If you are removing the server in a data center with narrow aisles (under 44 inches or approximately 1.12 meters wide), you can order a narrow aisle removal kit from Sun Service.

Cabling and Connectors

Attach cables to the back panel connectors of your server as required. See [FIGURE 1-15](#).

FIGURE 1-15 Sun Fire X4500 Server Back Panel

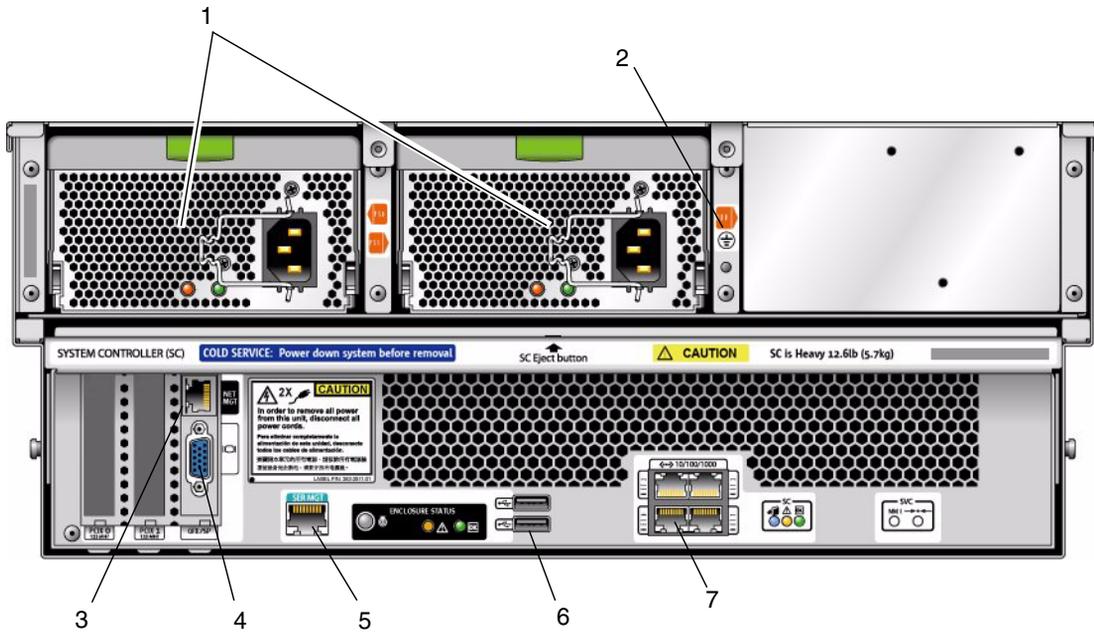


Figure Legend

- 1 AC power connectors with clips to secure power cables
- 2 Chassis ground
- 3 NET MGT (SP)
- 4 Video connector
- 5 SER MGT (serial connection to SP)
- 6 USB connectors (2)
- 7 10/100/1000 Gigabit Ethernet ports

FIGURE 1-16 Sun Fire X4540 Server Back Panel

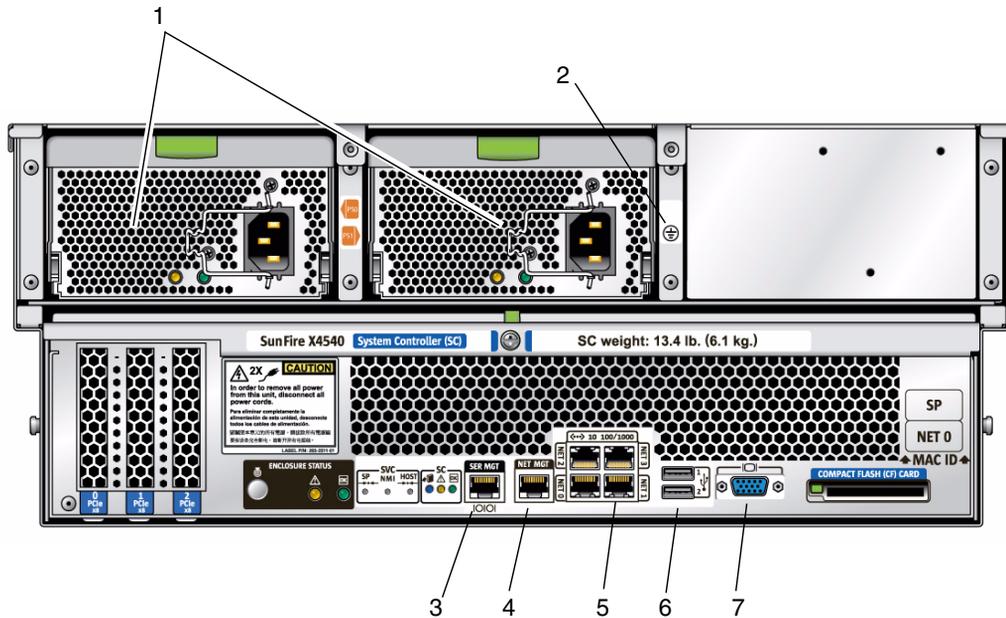


Figure Legend

- 1 AC power connectors with clips to secure power cables
- 2 Chassis ground
- 3 SER MGT (serial connection to SP)
- 4 NET MGT (SP)
- 5 10/100/1000 Gigabit Ethernet ports
- 6 USB connectors (2)
- 7 Video oconnector

1. If desired, connect a USB keyboard cable to a USB connector on the back panel or to the front panel. See [FIGURE 1-15](#) and [FIGURE 1-18](#).

Note – If your operating system (OS) does not support headless operation (Solaris OS does support it) and you plan to interact with the system console directly, connect a keyboard, mouse, and video monitor to the respective connectors.

2. (Optional) Connect a USB mouse cable to a USB connector or to the front panel. See [FIGURE 1-18](#).

3. (Optional) Connect a video monitor cable to the video connector.

4. **Connect Ethernet cables to the NET connectors as required for your Gigabit Ethernet.**
 - The connectors labeled NET 0 through NET 3 are 10/100/1000 Gigabit Ethernet ports.
5. **If you plan to access the Integrated Lights Out Manager (ILOM) over the network, connect a network cable to the 10/100 Ethernet port labeled *NET MGT*.**
 - The port labeled NET MGT is a 10/100 Ethernet port used to connect your system to a management network, such as Integrated Lights Out Manager (ILOM).

Note – The system console is permanently configured to a resolution of 1024 x 768 and a color depth of 24 bits, which cannot be changed. The ILOM requires this limitation to support video redirection.

6. **If you plan to access the ILOM command-line interface using the serial management port, connect a compatible cable to the RJ-45 connector labeled, *SER MGT*.**

The SER MGT port is the serial connection to the service processor and supports ILOM.

Observe the following considerations for the serial port and serial port cabling:

- The default serial port speed is 9600 baud with no flow control.
 - The Sun Fire X4500/X4540 Server uses the same pinout as the RJ-45 port on the RSC/ALOM/ALOM Plus cards on Sun Netra and other Sun Fire systems.
 - There is a compatible Sun RJ45-to-DB9 adapter available, part number 530-3100.
 - An alternative, compatible cable is the Cisco 72-3383-01 console cable.
7. **Continue with “[Powering On and Powering Off the Server](#)” on page 32.**

Powering On and Powering Off the Server

The server has two levels of power: standby power and main power. For initial configuration of the service processor (SP), you need to apply standby power. The procedures for powering on to main power mode and for shutting down from main power mode are also included in this section.

▼ To Apply Standby Power for Initial Service Processor (SP) Configuration

Use this procedure to apply standby power to SP before initial configuration.



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

1. **Connect a grounded AC power cord into the two AC power connectors on the back panel of the server and into grounded AC (200 VAC to 240 VAC) power outlets.**
2. **Ensure that grounded AC power cords are plugged into the two AC power connectors on the back panel of the server and into grounded AC (200 VAC to 240 VAC) power outlets.**

When the power is connected, the server might take up to 58 seconds to go into standby power mode. In standby power mode, the Power/OK LED on the front panel and at the rear on the system controller blinks, indicating that the SP is working. For the LED location, see [FIGURE 1-17](#).

3. **Continue with initial software setup tasks, explained in “Configuring the Sun Fire X4500/X4540 Server Through the Service Processor” on page 37.**

▼ To Power On Main Power Mode

To power on main power for all server components:

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

In standby power mode, the Power/OK LED (3) on the front panel blinks.

FIGURE 1-17 Sun Fire X4500/X4540 Server Power Button

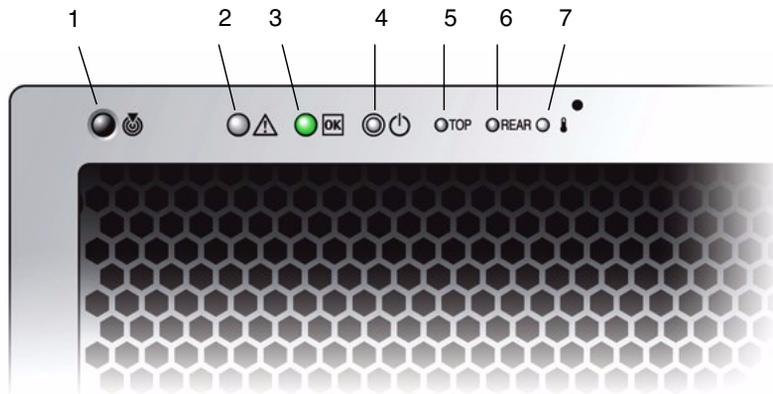


Figure Legend

-
- | | |
|---|--|
| 1 | Locate button/LED |
| 2 | System Fault LED |
| 3 | Power/OK LED (system power) |
| 4 | Power button |
| 5 | Top (drive fault or fan fault) |
| 6 | Rear (power supply or system controller fault) |
| 7 | System over temperature warning |
-

Note – See the service label on the drives access cover for an explanation of the LEDs on the drives, fans, power supply, and system controller.

2. Use a nonconducting stylus to press and release the recessed Power button on the server front panel. See [FIGURE 1-17](#).

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

FIGURE 1-18 Sun Fire X4500/X4540 Server Front Panel

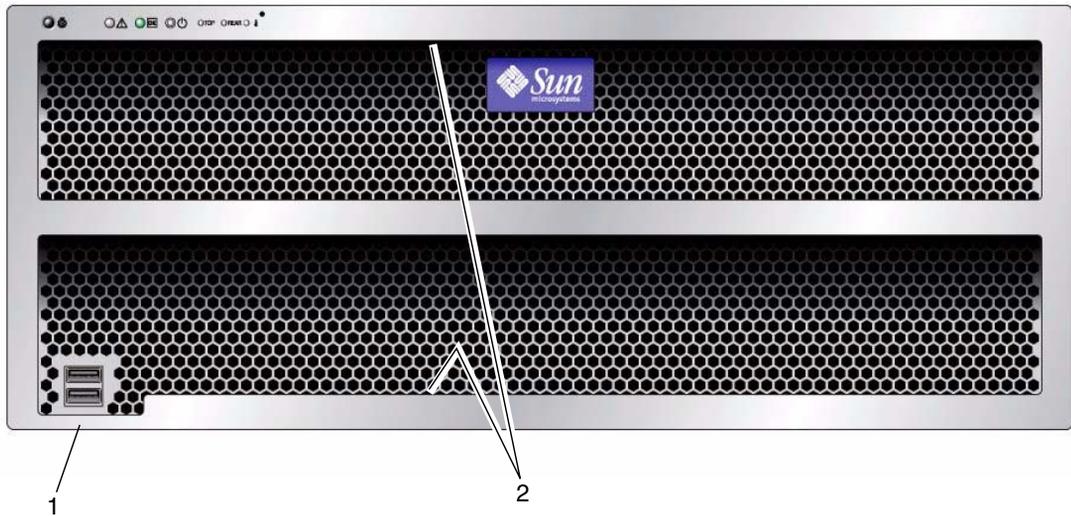


Figure Legend

-
- | | |
|---|-----------------------------------|
| 1 | USB connectors (2) |
| 2 | Serial number labels on ledge (2) |
-

▼ To Shut Down Main Power Mode

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

Graceful shutdown: Use a nonconducting stylus 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 go to standby power mode immediately.

Emergency shutdown: Press and hold the Power button for four seconds to force the main power off and to enter standby power mode.

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



Caution – To power off the server completely, you must disconnect the AC power cords from the power supplies at the rear of the server.

Configuring the Sun Fire X4500/X4540 Server Through the Service Processor

This chapter explains how to connect to the server's service processor (SP) so that you can perform initial configuration tasks. The SP supports the Integrated Lights Out Manager (ILOM) software that you can use to manage the server.

This chapter covers the following topics:

- “Introduction to the Integrated Lights Out Manager Software” on page 38
- “Connecting to the ILOM Service Processor” on page 40
- “Upgrading to ILOM 2.0.2.5 Changes Controller IDs” on page 48
- “ILOM Command Reference” on page 48

For additional information, see the ILOM documentation at:

<http://docs.sun.com/app/docs/prod/sf.x4500>

<http://docs.sun.com/app/docs/prod/sf.x4540>

To learn more about Integrated Lights Out Manager (ILOM), see the appropriate ILOM documentation:

- Product-specific ILOM information is contained in your product's service manual or in the *Sun Integrated Lights Out Manager Supplement for the Sun Fire X4500 and X4540 Servers* for your system.
- Check the version of ILOM installed on your system, for example, 1.0, 1.1.1, 2.0, and so on. Then refer to the appropriate documentation below:
 - If your ILOM is version 1.0, see the *Integrated Lights Out Manager (ILOM) Administration Guide for ILOM 1.0*.
 - If your ILOM version is 1.1.1, see the *Integrated Lights Out Manager (ILOM) Administration Guide for ILOM 1.1.1*.

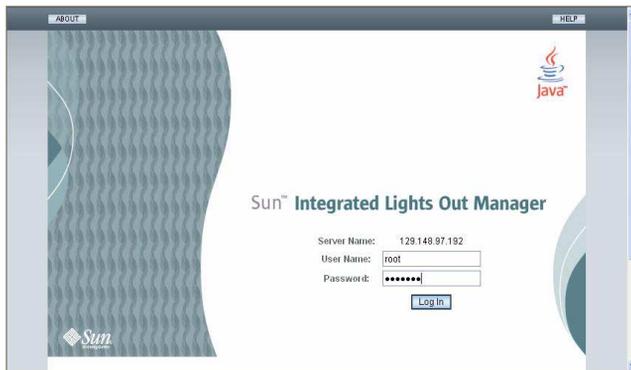
- If your ILOM version is 2.0, see the *Sun Integrated Lights Out Manager 2.0 User's Guide*, the *Addendum to the Integrated Lights Out Manager 2.0 User's Guide*, and the *Sun Integrated Lights Out Manager Supplement for the Sun Fire X4500 and X4540 Servers*.

Note – The SP is installed in the system by default.

Introduction to the Integrated Lights Out Manager Software

The Sun Integrated Lights Out Manager (ILOM) software provides powerful tools for managing your Sun Fire X4500/X4540 server.

FIGURE 2-1 Integrated Lights Out Manager GUI Login Page



ILOM consists of four components, three of which are on your host server and one which can be used on the client system that accesses your host server.

The first three components are as follows:

- **ILOM SP hardware.** Your server is equipped with an ILOM board that performs the following functions:
 - Monitors the status and configuration of field-replaceable components of your server, such as fans, disk drives, and power supplies.
 - Provides serial and Ethernet connections to external terminals or local area networks (LANs).

- **ILOM SP firmware.** A library of system management firmware applications preinstalled on the ILOM (GRASP for Sun Fire X4500) board. This ILOM firmware is operating-system independent. These firmware applications provide the following system management interfaces into your server:
 - A web-based graphical interface
 - A Secure Shell (SSH) command-line interface
 - An IPMI v2.0 command interface
 - A Simple Network Management Protocol (SNMP) v1, v2c, or v3 interfaceThese interfaces call the same underlying system management functions on your GRASP board, so you can choose to work with one or more of these ILOM interfaces to integrate with the other management interfaces running in your data center.
- **Remote Console application.** This application is a piece of layered software that 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 is a mirror of the 1024x768 output from the server's VGA video connector. The remote keyboard, mouse, CD drive or diskette drive appear as standard USB devices.

Note – The Remote Console application runs on the host server. On *client* systems, a web browser and Sun Java™ runtime environment version 5.0 or later are required. You can download the Java runtime environment for your client system for free from <http://java.sun.com>.

The fourth ILOM component is:

- **Client-side Secure Shell application.** To access the ILOM SP through a remote Secure Shell (SSH), you must install a Secure Shell communications application on the remote client system (server, workstation, or laptop). Many Secure Shell communications applications are available through commercial or open-source distribution. Refer to <http://www.openssh.org> for information about open-source client-side SSH applications.

Note – Sun Microsystems has configured the ILOM hardware and firmware on your server to reflect the most common default settings used in the field. It is unlikely that you will need to change these defaults.

Connecting to the ILOM Service Processor

The ILOM communicates through the system serial port or through a dedicated Ethernet port.

- You can run the command-line interface (CLI) connected directly to the serial port.
- You can run the CLI and the web browser through the Ethernet port.

Connecting with the Ethernet requires some configuration.

There are two methods for connecting to the ILOM SP to perform initial setup and configuration:

- [“Connecting to ILOM Using a Serial Connection” on page 40](#)
- [“Connecting to ILOM Using an Ethernet Connection” on page 42](#)

Connecting to ILOM Using a Serial Connection

You can access the ILOM CLI at any time by connecting a terminal or a PC running terminal emulation software to the RJ-45 serial port on the ILOM board.

Use this procedure to establish a serial connection to the ILOM SP so that you can perform initial configuration of ILOM.

Note – This procedure assumes that you have already completed the hardware setup and have applied standby power to your server, as described in Chapter 1 of this guide.

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)

For example, to display status information about the motherboard in your server, type the following command:

```
-> show /SYS/MB
```

Use the ILOM commands to configure the server's user accounts, network settings, access lists, alerts, and so on. For detailed instructions on CLI commands, see the *Integrated Lights Out Manager 2.0 User's Guide*.

5. To go to the host serial console (host COM0), type the following commands:

```
cd /SP/console
```

```
-> start
```

Note – After you have returned to the serial console, to switch back to the CLI, press the **Escape** and left parenthesis [(] key in rapid succession.

6. After configuring the server, continue with “[Configuring the Preinstalled Solaris Operating System](#)” on page 53.

Connecting to ILOM Using an Ethernet Connection

To access the full range of ILOM functionality, you must connect a LAN to the Ethernet port and configure your Ethernet connection.

ILOM supports Dynamic Host Configuration Protocol (DHCP) and static IP addressing.

- To configure DHCP or a static IP address using the BIOS, see “[Configuring the IP Address Using the BIOS Setup Utility](#)” on page 42.
- To configure DHCP, see “[Configuring ILOM Using DHCP](#)” on page 43.
- To configure a static IP address, see “[Configuring ILOM Using a Static IP Address](#)” on page 45.

Configuring the IP Address Using the BIOS Setup Utility

The BIOS Setup utility enables you to set the ILOM IP address and to configure it manually or to use DHCP.

Before You Begin

1. **Unpack your server and connect the system power cable to a power source.**
Refer to your platform documentation for instructions on installing the hardware, cabling, and powering on.
2. **If you plan to use DHCP, verify that your DHCP server is configured to accept new media access control (MAC) addresses.**

To Configure the IP Address

1. **Start the BIOS Setup utility.**
 - a. **Boot the system.**
 - b. **When you see a boot message, press F2 to enter BIOS Setup.**
After some messages and screen changes, the BIOS Setup utility is displayed.
2. **Select the Advanced tab.**
The Advanced page is displayed.
3. **Highlight IPMI 2.0 Configuration in the list, and then select Enter.**
The IPMI 2.0 Configuration page is displayed.
4. **Fill in the IPMI 2.0 Configuration page.**
 - a. **Under IP Assignment, select DHCP or Static.**
 - b. **If you selected Static, fill in the IP address, subnet mask, and default gateway at the bottom of the page.**
5. **Select Commit to save your changes.**
If you selected DHCP, the BIOS utility automatically updates the address fields.



Caution – You must use Commit to save the changes on this page. Pressing F10 does not save your changes.

Configuring ILOM Using DHCP

To configure the ILOM to use a DHCP address:

1. **Verify that your DHCP server is configured to accept new media access control (MAC) addresses.**

2. **Unpack your server and connect the system power cable to a power source.**
3. **Obtain the service processor MAC address from one of the following locations.**

MAC addresses are 12-digit hexadecimal strings in the format *xx:xx:xx:xx:xx:xx* where *x* represents a single hexadecimal letter (0-9, A-F, a-f). Write down that address for future reference.

- The ILOM has a serial port to which you can attach a terminal device. If you log in to the ILOM and enter the command **show /SP/network**, the ILOM displays the current Mac address.
- The MAC address is on the label on the handle of the system controller and attached to the GRASP board. You need to open the cover of the server to view the label on the GRASP board.
- The MAC address is on the Customer Information Sheet shipped with your server.
- You can get the MAC address from the system BIOS Setup screen. Choose Advanced > IPMI 2.0 Configuration > Set LAN Configuration > MAC address.
- You can get the MAC address from the command-line interface. Log in to the ILOM via the CLI and type the command **show /SP/network** to display the MAC address.

4. **Connect an Ethernet cable to the RJ-45 NET MGT Ethernet port.**

See [FIGURE 1-15](#).

5. **Assign an Ethernet address directly, or let DHCP assign one for you.**
 - a. **To assign your own Ethernet address, use the DHCP configuration software to assign an IP address to the MAC address noted in Step 3. See the DHCP server documentation for details.**
 - b. **To let DHCP assign an IP address:**

Note – Various DHCP server applications running on different operating systems store these log files in different locations. Consult your DHCP system administrator to locate the correct path to the log file.

When you connect an Ethernet cable to the ILOM, the ILOM provides its MAC address and DHCP assigns the ILOM an IP address.

- i. **Log in to your DHCP server and view its DHCP log file.**
- ii. **Identify the IP address in the log file that corresponds to the ILOM MAC address.**

Typically, DHCP log file entries are individual lines with the following comma-separated fields:

ID, Date, Time, Description, IP Address, Host Name, MAC Address

Locate the MAC address of your ILOM in the MAC Address (seventh) field of the correct DHCP file entry, and record the corresponding value of the IP Address (fifth) field. This is the IP address that you must use to access the web browser and the remote console.

When this procedure is complete, you can access the ILOM using the IP address assigned by DHCP.

Configuring ILOM Using a Static IP Address

Usually, you configure the ILOM to use DHCP, as described in [“Configuring ILOM Using DHCP” on page 43](#).

If you choose to configure the ILOM using a static IP address, you can do so using one of these methods:

- [“Configuring the IP Address Using the BIOS Setup Utility” on page 42](#)
- [“Configuring a Static IP Address Using CLI and a Serial Connection” on page 45](#)
- [“Configuring a Static IP Address Using the CLI and Ethernet” on page 46](#)
- [“Configuring a Static IP Address Using the Web Interface” on page 47](#)

Before You Begin

1. **Unpack your server and connect the system power cable to a power source.**
2. **Obtain the ILOM IP address from one of the following locations. Record the IP address for future reference.**
 - Command-line interface. Log in to the ILOM by using the CLI, and type the command `show /SP/network` to display the IP address.
 - The system BIOS Setup screen. Choose Advanced -> IPMI 2.0 Configuration. Under LAN Configuration, look at IP Address.

Note – You can set the IP address using the BIOS Setup utility, IPMI 2.0 Configuration page. If the address you see there is acceptable, you do not need to change anything. To change the IP address, type the new address in the IP Address field and click Commit. See [“Configuring the IP Address Using the BIOS Setup Utility” on page 42](#) for details.

Configuring a Static IP Address Using CLI and a Serial Connection

To set a static IP address for the ILOM using the CLI and a serial line connection:

1. Establish a serial connection to the ILOM.

See [“Connecting to ILOM Using a Serial Connection”](#) on page 40 for details.

2. Log in to the ILOM.

3. Type the following command to set the working directory:

```
cd /SP/network
```

4. Type the following commands to specify a static Ethernet.

Note – The following values are examples only. You must specify the IP address, netmask, and gateway appropriate for your ILOM and network configuration.

```
set pendingipaddress=129.144.82.26
```

```
set pendingipnetmask=255.255.255.0
```

```
set pendingipgateway=129.144.82.254
```

```
set commitpending=true
```

5. Log out of the ILOM.

Configuring a Static IP Address Using the CLI and Ethernet

1. Log in to the ILOM using Secure Shell (SSH) over the network, or by connecting a terminal to the serial port.

To establish an SSH connection to the CLI, type the appropriate connection command in the SSH application. For example, to connect to the SP with an IP address of 129.144.82.20, type the following command:

```
# ssh -l root 129.144.82.20
```

Use the IP address you obtained in [“Before You Begin”](#) on page 45.

2. Type the following command to set the working directory:

```
cd /SP/network
```

3. Type the following commands to specify a static Ethernet.

Note – The following values are samples only. You must specify the IP address, netmask, and gateway appropriate for your ILOM and network configuration.

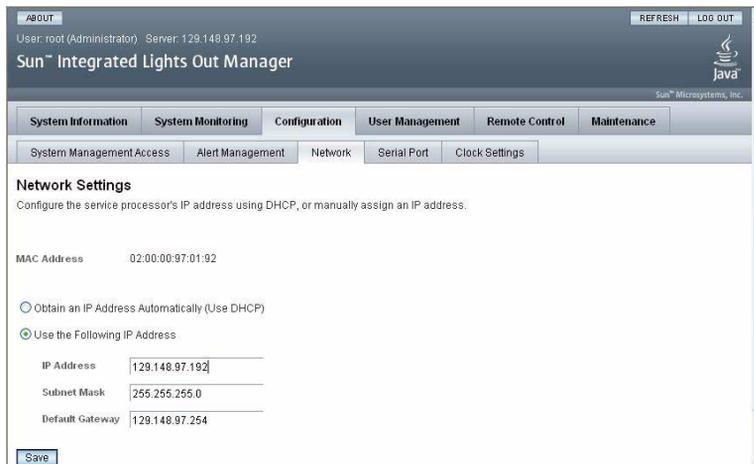
```
set pendingipaddress=129.144.82.26
set pendingipnetmask=255.255.255.0
set pendingipgateway=129.144.82.254
set pendingipdiscovery=static
set commitpending=true
```

Configuring a Static IP Address Using the Web Interface

To set a static IP address for the ILOM using the web browser, do the following. To access the full range of ILOM functionality such as the GUI, connect a LAN to the Ethernet port and configure your Ethernet connection.

- 1. Connect to the ILOM through a web browser running on a remote system.**
Use the IP address you obtained in “Before You Begin” on page 45.
- 2. Log in to the web browser.**
The default user name is **root**, and the default password is **changeme**.
- 3. Choose the Configuration tab and its Network tab to display information about the current ILOM network configuration.** See [FIGURE 2-2](#).
- 4. Click the Use the Following IP Address option.** See [FIGURE 2-2](#).

FIGURE 2-2 Integrated Lights Out Manager Network Settings Page



5. Modify the displayed settings as required, and click save.

ILOM supports Dynamic Host Configuration Protocol (DHCP) and static IP addressing.

- To configure ILOM using DHCP, see [“Configuring ILOM Using DHCP” on page 43](#).
- To configure a static IP address, see [“Configuring ILOM Using a Static IP Address” on page 45](#).

Upgrading to ILOM 2.0.2.5 Changes Controller IDs

For information on how the disk mapping changes when upgrading from pre-ILOM 2.0.2.5 to ILOM 2.0.2.5 and later, see the following sections:

- [“Pre-ILOM 2.0.2.5 and No USB Devices” on page 75](#) and [“ILOM 2.0.2.5 or Later and No USB Device” on page 76](#).
- [“Pre-ILOM 2.0.2.5 and One USB Device” on page 75](#) and [“ILOM 2.0.2.5 or Later and One USB Device” on page 76](#).

ILOM Command Reference

The following table summarizes ILOM commands you can use to manage the SP. For more information on ILOM commands, see the following table and the *ILOM User's Guide*.

TABLE 2-2 Sample ILOM Commands

Description	Command
User Commands	
Add a local user.	create /SP/users/user1 password=password role=administrator operator
Delete a local user.	delete /SP/users/user1
Change a local user's properties.	set /SP/users/user1 role=operator
Display information about all local users.	show -display [targets properties all] -level [value all] /SP/users

TABLE 2-2 Sample ILOM Commands

Description	Command
Display information about LDAP settings.	show /SP/clients/ldap
Change LDAP settings.	set /SP/clients/ldap binddn=proxyuser bindpw=proxyuserpassword defaultrole=administrator operator ipaddress=ipaddress
Network and Serial Port Setting Commands	
Display network configuration information.	show /SP/network
Change network properties for the ILOM. Changing certain network properties, like the IP address, disconnects your active session.	set /SP/network pendingipaddress=ipaddress pendingipdiscovery=dhcp static pendingipgateway=ipgateway pendingipnetmask=ipnetmask commitpending=true
Display information about the external serial port.	show /SP/serial/external
Change the external serial port configuration.	set /SP/serial/external pendingspeed=integer commitpending=true
Display information about the serial connection to the host.	show /SP/serial/host
Change the host serial port configuration.	set /SP/serial/host pendingspeed=integer commitpending=true
Note: This speed setting must match the speed setting for serial port 0, COM1 or /dev/ttyS0 on the host operating system.	
Alert Commands	
Display information about PET alerts. You can configure up to 15 alerts.	show /SP/alert/rules/1...15
Change alert configuration.	set /SP/alert/rules/1...15 destination= ipaddress level=down critical major minor
System Management Access Commands	
Display information about HTTP settings.	show /SP/services/http
Change HTTP settings, such as enabling automatic redirection to HTTPS.	set /SP/services/http port=portnumber secureredirect enabled disabled servicestate=enabled disabled

TABLE 2-2 Sample ILOM Commands

Description	Command
Display information about HTTPS access.	show /SP/services/https
Change HTTPS settings.	set /SP/services/https port=portnumber servicestate=enabled disabled
Display SSH DSA key settings.	show /SP/services/ssh/keys/dsa
Display SSH RSA key settings.	show /SP/services/ssh/keys/rsa
SNMP Commands	
Display information about SNMP settings. By default, the SNMP port is 161 and v3 is enabled.	show /SP/services/snmp engineid=snmpengineid port=snmpportnumber sets=enabled disabled v1=enabled disabled v2c=enabled disabled v3=enabled disabled
Display SNMP users.	show /SP/services/snmp/users
Add an SNMP user.	create /SP/services/snmp/users/snmpusername authenticationpassword=password authenticationprotocol=MD5 SHA permissions=rw ro privacypassword=password privacyprotocol=none DES
Delete an SNMP user.	delete /SP/services/snmp/users/snmpusername
Display information about SNMP public (read-only) communities.	show /SP/services/snmp/communities/public
Add this device to an SNMP public community.	create /SP/services/snmp/communities/ public/comm1
Delete this device from an SNMP public community.	delete /SP/services/snmp/communities/ public/comm1
Display information about SNMP private (read-write) communities.	show /SP/services/snmp/communities/private
Add this device to an SNMP private community.	create /SP/services/snmp/communities/ private/comm2
Host System Commands	
Delete this device from an SNMP private community.	delete /SP/services/snmp/communities/ private/comm2
Start the host system.	start /SYS
Stop the host system.	stop /SYS
Reset the host system.	reset /SYS

TABLE 2-2 Sample ILOM Commands

Description	Command
Start a session to connect to the host console.	start /SP/console
Stop the session connected to the host console.	stop /SP/console
Clock Settings	
Set the ILOM clock to synchronize with a primary NTP server.	set /SP/clients/ntp/server/1 address=<i>ntpIPAddress</i>
Set the ILOM clock to synchronize with a secondary NTP server.	set /SP/clients/ntp/server/2 address=<i>ntpIPAddress2</i>

Configuring the Preinstalled Solaris Operating System

This chapter walks you through the steps for configuring the Solaris Operating System (OS) that has been preinstalled on your Sun Fire X4500/X4540 Server. Solaris 10 4/08 is required for the Sun Fire X4540 Server.

Note – Unlike SPARC® systems, you do not see most of the output of the pre-installed Solaris 10 image through a monitor when you power on the server. You will see the BIOS Power-On Self Test (POST) and other boot information output. You have the option of displaying the installation process as shown in the section: [“To Redirect the Console Output to a Root Device, Root Mirror, or VGA” on page 66.](#) The server ships with its console redirected to the *serial* port. For more information, see [“To Connect to the Server Using a Terminal Program” on page 68.](#)

This chapter covers the following topics:

- [“Before You Begin” on page 54](#)
- [“Gathering Information for the Installation Worksheet” on page 54](#)
- [“Important Solaris OS Installation and Bootable Drive Guidelines” on page 58](#)
- [“Installing Solaris OS Onto an X4540 Using a Compact Flash Card” on page 62](#)
- [“Configuring the Preinstalled Solaris Operating System” on page 63](#)
- [“Using the Solaris Installation Program” on page 70](#)
- [“After Installation” on page 71](#)
- [“Reinstalling the Solaris Operating System” on page 72](#)
- [“Sun Fire X4500 Drives Mapping” on page 74](#)
- [“Downloading Software” on page 78](#)
- [“Installing Other Operating Systems” on page 79](#)

Before You Begin

Before you begin configuring the preinstalled OS:

1. Perform initial configuration of the server's Integrated Lights Out Manager (ILOM) Service Processor (SP) and determine the server's network settings, as described in ["Configuring the Sun Fire X4500/X4540 Server Through the Service Processor"](#) on page 37.
2. Gather the information that you need for the configuration, as listed in ["Gathering Information for the Installation Worksheet"](#) on page 54. Note that default values are indicated by an asterisk (*).

Gathering Information for the Installation Worksheet

Use the worksheet in [TABLE 3-1](#) to gather the information that you need for configuring the preinstalled Solaris OS.

TABLE 3-1 Worksheet for Installation

Information for Installation		Description or Example	Your Answers: Defaults (*)
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.	
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?	<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		A host name that you choose for the system.	
Kerberos		Do you want to configure Kerberos security on this machine? If yes, gather this 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 3-1 Worksheet for Installation (*Continued*)

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

TABLE 3-1 Worksheet for Installation (*Continued*)

Information for Installation	Description or Example	Your Answers: Defaults (*)
Default route	<p>Do you want to specify a default route IP address, or let the Solaris installation program find one?</p> <p>The default route provides a bridge that forwards traffic between two physical networks. An IP address is a unique number that identifies each host on a network.</p> <p>You have the following choices:</p> <ul style="list-style-type: none">• 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 Solaris installation program detect an IP address. However, the system must be on a subnet that has a router that advertises itself by using the Internet Control Message Protocol (ICMP) 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.	<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.	

Finding the IO Board and SP MAC Addresses

The IO board and SP MAC addresses are printed on their respective PC boards, but they are also printed on the system controller handle.

- The SP MAC address is on the left side of the handle. Look for the label that says “SP MAC ID”.
- The IO board MAC address is on the right side of the handle. Look for the label that says “Net 0 MAC ID.”

Note – If the cable management arm (CMA) is in place, it can obscure these addresses. To view the MAC address labels when the CMA is in place, use a stylus to press the recessed button to release the system controller handle, and swivel it down partway until the addresses are visible. Return it to the closed position when you are done.

Important Solaris OS Installation and Bootable Drive Guidelines

Note the following important guidelines when installing the Solaris OS on the Sun Fire X4500/X4540 Server:

The controller number of the bootable disk *differs* depending on the server's configuration. For example, the controller number of the bootable disk is set during installation based on:

- The number of disks installed
- The existence of any external USB disk or CD device, including the virtual CD-ROM and virtual floppy devices supported by the SP

Thus, you must identify the bootable disk *during* the installation procedure.

Sun Fire X4500

The Sun Fire X4500 Server comes with six controllers, each supporting up to eight SATA drives, for a total of 48 SATA drives. Before you reinstall the Solaris OS, you need to determine the logical device name that corresponds to the two bootable disks, which is in the form:

`cXtYdZsW`

where

- `cX` is the controller (or interface) number, such as `c0`, `c2`, `c4`, and so on. Controller numbers are logically assigned in sequential order.
- `tY` is the target ID of the device, such as `t0`, `t1`, `t2`, and so on up to `t7`.
- `dZ` is the device number, also known as the logical unit number (LUN). It reflects the actual address of the device unit. `Z` is zero (0) for Solaris 10 OS.
- `sW` is the slice number that represents a slice of a disk. Valid numbers are 0 to 7.

Sun Fire X4540

The Sun Fire X4540 Server comes with six controllers, each supporting up to eight SATA drives, for a total of 48 SATA drives. Before you reinstall the Solaris OS, you need to determine the logical device name that corresponds to the two bootable disks, which is in the form:

```
cXtYdZsW
```

Note – Compact Flash (CF) storage impacts the number of SATA drives. So the SATA number might change.

where

- `cX` is the controller (or interface) number, such as `c0`, `c2`, `c4`, and so on. Controller numbers are logically assigned in sequential order.
- `tY` is the target ID of the device, such as `t0`, `t1`, `t2`, and so on up to `t7`.
- `dZ` is the device number (also known as the logical unit number (LUN)). It reflects the actual address of the device unit. `Z` is zero (0) for Solaris 10 OS.
- `sW` is the slice number that represents a slice of a disk. Valid numbers are 0 to 7.

To determine the bootable disk, use the command `cfgadm` as described below. The `cfgadm` command provides configuration administration operations on dynamically reconfigurable hardware resources. For more information this command, see the `man` page.

▼ To Determine the Bootable Disks and to Reinstall the Solaris OS

This procedure assumes you are running the Solaris Installation Program and you are reinstalling the Solaris 10 operating system.

1. From the Solaris Installation Program, choose the installation type.

From the Solaris Installation Program, you should see a screen similar to this:

Select the type of installation you want to perform:

- 1 Solaris Interactive
- 2 Custom JumpStart
- 3 Solaris Interactive Text (Desktop session)
- 4 Solaris Interactive Text (Console session)
- 5 Apply driver updates
- 6 Single user shell

Enter the number of your choice followed by the <ENTER> key.
Alternatively, enter custom boot arguments directly.

If you wait 30 seconds without typing anything,
an interactive installation will be started.

- a. Choose option 1 or 3 as the installation type as these options allow you to open a terminal window while running the installation program. Opening a terminal window is required in [Step 4](#).
 - b. Alternatively, you can choose 4, Console session, exit the installation after verifying that the system is complete, type the commands in [Step 4](#), and restart the installation by using the `suninstall` command.
2. Use the information gathered in [“Gathering Information for the Installation Worksheet”](#) on page 54 to help you enter the system and network information when prompted.
3. When prompted for the type of installation you want to perform, click Next.
4. Find the logical disk name for the bootable disks.
- a. Open a terminal window by right-clicking your mouse and choosing the option Program > Terminal.
 - b. Determine the bootable disk for installing the operating system by typing:

```
# cfgadm -al
```

This command lists all the disks. The first two disks listed in the first two controller channels are bootable disks for the server.
5. Go back to the installation program and select the logical disk name that corresponds to the bootable disk onto which you want to install the Solaris OS.
In this example, the bootable disk in physical slot #0 has the logical disk name of `c4t0d0`.

Note – You might see a message that the disk is not a bootable disk drive. Ignore this message and continue.

- a. Use the up and down arrow keys to select the bootable disk determined in Step 4 and press F2 to continue.
 - b. If the disk you chose contains Windows or Linux partitions, you need to create a Solaris partition that can coexist with the Windows or Linux partition. To do this, follow the prompts to create a Solaris fdisk partition to hold the Solaris OS installation.
6. Install the latest version of required patches as described on the product download site. To access the product download site, go to the following web site and locate the Downloads section.

<http://www.sun.com/servers/x64/x4500/support.xml>

Solaris 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 Training and Certification options at a glance, please visit:

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

Installing Solaris OS Onto an X4540 Using a Compact Flash Card

When installing Solaris 10 onto an X4540 Server using a Compact Flash (CF) card as the boot media, do the following:

1. Use the preferred (supported) version of Solaris 10, update 5, build 10.
2. Use only 8-GB or 16-GB CF devices.
3. During the install process, relocate swap and `/var` onto a partition of an internal drive so that those active partitions do not remain on the CF card.
4. Once the installation is complete, set up another partition on the selected internal device for core dumps. Issue the following command to direct core files to the partition on the internal device:

```
dumpadm -c kernel -d /dev/dsk/cXtYd0sZ -s savecore-dir
```

Note – Leaving swap and `/var` on the CF card will work, but your CF card will degrade much faster than it would if relocating those active partitions to another device.

After the installation, you are able to boot up from the CF device and utilize the maximum amount of drive space on the system.

Configuring the Preinstalled Solaris Operating System

The Solaris 10 Operating System is preinstalled on the drive in slot 0 and the mirrored drive in slot 8. Use the information that you gathered in [“Gathering Information for the Installation Worksheet” on page 54](#) as you configure this preinstalled OS.

You can access the system console by connecting to the service processor CLI as described here:

- [“To Connect to the Service Processor CLI” on page 63](#)

You can redirect the Console output:

- [“To Redirect the Console Output to the Video Port” on page 65](#)
- [“To Redirect the Console Output to a Root Device, Root Mirror, or VGA” on page 66](#)

You can configure the preinstalled Solaris OS by using another system to connect to the server:

- [“To Connect to the Server Using the Service Processor’s IP Address” on page 66](#)
- [“To Connect to the Server Using a Terminal Program” on page 68](#)
- [“To Connect to the Server Using a Serial Capture Program” on page 68](#)

▼ To Connect to the Service Processor CLI

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).

See the *Sun Integrated Lights Out Manager 2.0 User's Guide* for more details.

▼ To Connect to the Service Processor Using SSH or a Serial Cable

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 1-17](#) 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 “[Gathering Information for the Installation Worksheet](#)” on page 54 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.

▼ To Redirect the Console Output to the Video Port



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 `eeeprom` command at the prompt using the following arguments:

```
/eeeprom console=text/
```

▼ To Redirect the Console Output to a Root Device, Root Mirror, or VGA

The server's console is automatically directed to the serial port. GRand Unified Bootloader (GRUB), the open-source boot loader, is the default bootloader in the Solaris OS for X86 or X64-based systems. GRUB is the first software program that runs after you power-on a system.

From the GRUB menu, you have the option of booting from the root device, the root mirror, or VGA as shown here.

```
GNU GRUB version 0.95 (619K lower / 4094912K upper memory)
*****
* Solaris 10 8/07 s10x_u3wos_10 X86 *
* Solaris failsafe *
* Solaris 10 8/07 s10x_u3wos_10 X86 (VGA) *
* Solaris 10 8/07 - Mirror disk *
* Solaris 10 8/07 - Mirror disk (VGA) *
*****
```

Use the up and down keys to select which entry is highlighted. Press Enter to boot the selected OS, e to edit the commands before booting, or c for a command line.

▼ To Connect to the Server Using the Service Processor's IP Address

Note – This procedure assumes that you have connected the server to your network through an Ethernet cable.

1. Determine the service processor's IP address:

- a. **Power on the main power to the platform by using a stylus to press the recessed Power button on the front panel.**

Power-On Self-Test (POST) messages appear on your screen as the OS boots.

- b. **Initialize the BIOS Setup utility by pressing the F2 key while the system is performing the POST.**

The main BIOS screen is displayed.

- c. **Select Advanced.**

The Advanced screen is displayed.

d. Select IPMI 2.0 Configuration.

The IPMI 2.0 Configuration screen is displayed.

e. Select the LAN Configuration menu item.

f. Select the IP Address menu option.

The service processor's IP address is displayed using the following format:
Current IP address in BMC: xxx.xxx.xxx.xxx

2. Using a client system, establish a Secure Shell (SSH) connection to the service processor's IP address.

```
-> ssh -l root <sp_ip_address>
```

3. Log in to the service processor as an administrator, for example:

```
login: root  
password: changeme
```

4. If you have changed the SP Serial Port default settings, make sure you reset them to the default settings.

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

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

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

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

6. Follow the Solaris preinstallation on-screen prompts.

7. Use the information gathered in [“Gathering Information for the Installation Worksheet”](#) on page 54 to help you enter the system and network information as you are prompted.

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

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

▼ To Connect to the Server Using a Terminal Program

1. Use a cable to connect the serial port of the server to the serial port of the host system where you will run a terminal program.

Tip – You might need a Sun RJ45 to terminal concentrator adapter. For serial port pinouts, see [TABLE 2-1](#).

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), no flow control.

3. Start a terminal program to connect to the serial console:

On a client running Solaris OS, type:

```
-> $ tip -9600 /dev/ttyx
```

where *x* is a, b, c, and so on.

On a client running Windows OS, start a program such as HyperTerminal.

On a client running Linux OS, 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
```

5. Start the serial console by typing the following:

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

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

Power-on self test (POST) messages display on your screen as the OS boots.

▼ To Connect 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 [“Gathering Information for the Installation Worksheet”](#) on page 54 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.

Using the Solaris Installation Program

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

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

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

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

Before You Begin

Make sure the Sun Fire X4500/X4540 Server is connected to:

- (Optional) Monitor
- (Optional) Keyboard
- (Optional) Mouse
- Ethernet
 - Through the NET MGT (SP) port
 - Through the 10/100/1000 Gigabit Ethernet ports
- Power
- Serial device (depending on console type)

For locations of connections, see [FIGURE 1-15](#).

During Installation

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

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

Online documentation for this software can be found at:

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

Sun Java Enterprise System

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

Sun Studio 11 Compilers and Tools

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

Sun xVM Ops Center

Sun xVM Ops Center is a highly scalable, unified management platform for physical and virtual environments. Sun xVM Ops Center manages multi-platform x64 and SPARC systems distributed throughout a global datacenter and integrates with existing toolsets. Sun xVM Ops Center facilitates many aspects of compliance reporting (ITIL), data center automation, and enables the simultaneous management of thousands of systems.

After Installation

The Solaris OS is preinstalled on the drive in physical slot 0 and is mirrored on the drive in physical slot 8. Drives in physical slots 2 through 26 are configured as a single ZFS volume. See the following documentation for more information about managing the server.

For this task...	Refer to this document...
Administering, configuring, and monitoring the server including drives management, the <code>hd</code> utility, and preinstalled disk mirroring	<i>Sun Fire X4500/X4540 Administration Guide</i>
Solaris OS installation options	Solaris 10 Release and Installation documentation
Diagnosing problems, including SunVTS diagnostics software, event logs and POST codes, LEDs and error handling	<i>Sun Fire X4500/X4540 Diagnostics Guide</i>
ZFS filesystem	<i>ZFS Administration Guide</i>

hd Utility

Installing the `hd` utility is recommended. The `hd` utility enables you to map the logical-to-physical devices for the server. You need to understand this mapping to administer the system, manage the drives, and troubleshoot the system. The `hd` utility is available from:

- SunVTS Bootable Diagnostic CD included in your system box
- Preinstalled in `/usr/bin/hd`
- The Downloads section of the following web site:

<http://www.sun.com/servers/x64/x4500/support.xml>

<http://www.sun.com/servers/x64/x4540/support.xml>

For more information about the utility, see the *x64 Servers Utilities Reference Manual* on the product documentation web site. If you reinstall the Solaris 10 operating system, you need to use the `pkgadd` command to reinstall the `hd` utility.

Reinstalling the Solaris Operating System

If you want to reinstall the Solaris OS or to install a different version of the Solaris OS, you can install it in one of several ways, including by DVD and network (using Preboot eXecution Environment [PXE]).

Note – When the user reinstalls the OS, and if any CD-ROM devices are present at the time of installation—as either directly attached USB devices or redirected devices (both physical devices or ISO images) via the JavaRConsole—the disk mapping will change. If you need to reinstall the OS and you wish to keep the original factory-shipped disk mappings, we recommend that you do both of the following:

- 1) Do not install via a CD-ROM device, instead install via a Jumpstart server.
 - 2) Export ZFS pools before the installation and reimport the pools after the installation.
-

For step-by-step procedures, see the book, *Solaris 10 Installation Guide: Basic Installations*.

In addition to installing the Solaris 10 Operating system, you must install any required patches as described in the product download site. To access the product download site, go to either of the following web sites to locate the Downloads section.

<http://www.sun.com/servers/x64/x4500/support.xml>

<http://www.sun.com/servers/x64/x4540/support.xml>

If you want to restore your system software to its pre-installed state, see “Recreating the Preinstalled OS” in *Sun Fire X4500/X4540 Servers Administration Guide*.

Sun Fire X4500 Drives Mapping

When you reinstall the OS, the drive names change depending on the ILOM version and USB CD storages devices present at the time of OS installation.

Pre-ILOM 2.0.2.5 and ILOM 2.0.2.5 and Later

The following applies for the drive and device mapping for systems with pre-ILOM 2.0.2.5 and ILOM 2.0.2.5 and later installed:

- **Pre-ILOM 2.0.2.5: Remote CD-ROM is *always mapped to c2* and remote floppy device is *always mapped to c3*.**
- **ILOM 2.0.2.5 or later: Remote CD-ROM and remote floppy devices *are only mapped if enabled in the JavaRConsole*. If one device is enabled, it will have the *c2* number. If both are enabled, numbers *c2* and *c3* will both be used.**
- Drive device path: `/dev/cxydz`
- Channel numbers are assigned dynamically at the time of OS installation, and become static thereafter.
- Channel number assigning skips empty channels (controllers).

Note – Only a fully populated system with all 48 drives is supported.

- Channel numbers are different if a USB storage device is present at the time of OS installation.
- Solaris channel numbering with at least 1 drive per controller at install time:
 - All drives on Controller 0 have a *c0* number.
 - All drives on Controller 1 have a *c1* number.
 - Remote USB devices, such as a CD-ROM or floppy, physically installed or present by mapping through JavaRConsole, will be inserted after Controller 1 and have numbers *c2*, *c3*, etc.
 - All drives on Controller 2 will have a *c x* number, where *x* is 1+ the number of added USB devices. For example, on a system with 2 devices, Controller 2 will have a *c4* name, and on a system with 3 devices, Controller 2 have a *c5* name.
 - All drives on remaining controllers will have a *c x* number where *x* is 1 more than the previous controller.

Pre-ILOM 2.0.2.5 and No USB Devices

TABLE 3-2 Sun Fire X4500 Drives Mapping, No USB Storage Devices, Pre-ILOM 2.0.2.5

USB (CD- ROM)	USB (Floppy)	USB Device	Controller 3		Controller 2		Controller 5		Controller 4		Controller 1		Controller 0	
--	--	--	36	37	38	39	40	41	42	43	44	45	46	47
			c5t3	c5t7	c4t3	c4t7	c7t3	c7t7	c6t3	c6t7	c1t3	c1t7	c0t3	c0t7
			24	25	26	27	28	29	30	31	32	33	34	35
			c5t2	c5t6	c4t2	c4t6	c7t2	c7t6	c6t2	c6t6	c1t2	c1t6	c0t2	c0t6
--	--	--	12	13	14	15	16	17	18	19	20	21	22	23
			c5t1	c5t5	c4t1	c4t5	c7t1	c7t5	c6t1	c6t5	c1t1	c1t5	c0t1	c0t5
c2	c3	--	0	1	2	3	4	5	6	7	8	9	10	11
			c5t0	c5t4	c4t0	c4t4	c7t0	c7t4	c6t0	c6t4	c1t0	c1t4	c0t0	c0t4
			c5		c4		c7		c6		c1		c0	

Pre-ILOM 2.0.2.5 and One USB Device

TABLE 3-3 Sun Fire X4500 Drives Mapping, One USB Storage Device, Pre-ILOM 2.0.2.5

USB (CD- ROM)	USB (Floppy)	USB Device	Controller 3		Controller 2		Controller 5		Controller 4		Controller 1		Controller 0	
--	--	c4ty	36	37	38	39	40	41	42	43	44	45	46	47
			c6t3	c6t7	c5t3	c5t7	c8t3	c8t7	c7t3	c7t7	c1t3	c1t7	c0t3	c0t7
			24	25	26	27	28	29	30	31	32	33	34	35
			c6t2	c6t6	c5t2	c5t6	c8t2	c8t6	c7t2	c7t6	c1t2	c1t6	c0t2	c0t6
--	--	--	12	13	14	15	16	17	18	19	20	21	22	23
			c6t1	c6t5	c5t1	c5t5	c8t1	c8t5	c7t1	c7t5	c1t1	c1t5	c0t1	c0t5
c2	c3	c4*	0	1	2	3	4	5	6	7	8	9	10	11
			c6t0	c6t4	c5t0	c5t4	c8t0	c8t4	c7t0	c7t4	c1t0	c1t4	c0t0	c0t4
			c6		c5		c8		c7		c1		c0	

* — Denotes the one USB device.

ILOM 2.0.2.5 or Later and No USB Device

When no USB devices are present, there is a direct 1:1 physical controller number to /dev/cXtY mapping. For example, Controller 2 has a c2 name, Controller 3 has a c3 name, and Controller 4 has a c4 name, etc.

TABLE 3-4 Sun Fire X4500 Drives Mapping, No USB Storage Device, ILOM 2.0.2.5

USB (CD- ROM)	USB (Floppy)	USB Device	Controller 3		Controller 2		Controller 5		Controller 4		Controller 1		Controller 0	
--	--	--	36	37	38	39	40	41	42	43	44	45	46	47
			c3t3	c3t7	c2t3	c2t7	c5t3	c5t7	c4t3	c4t7	c1t3	c1t7	c0t3	c0t7
			24	25	26	27	28	29	30	31	32	33	34	35
			c3t2	c3t6	c2t2	c2t6	c5t2	c5t6	c4t2	c4t6	c1t2	c1t6	c0t2	c0t6
--	--	--	12	13	14	15	16	17	18	19	20	21	22	23
			c3t1	c3t5	c2t1	c2t5	c5t1	c5t5	c4t1	c4t5	c1t1	c1t5	c0t1	c0t5
--	--	--	0	1	2	3	4	5	6	7	8	9	10	11
			c3t0	c3t4	c2t0	c2t4	c5t0	c5t4	c4t0	c4t4	c1t0	c1t4	c0t0	c0t4
--	--	--	c3		c2		c5		c4		c1		c0	

ILOM 2.0.2.5 or Later and One USB Device

When the ILOM version is 2.0.2.5 or later, the remote floppy and remote CD-ROM are now treated as USB storage devices and are only mapped when they are enabled in the javaRConsole. The channel numbers change depending on how many total USB storage devices are present at the time of OS installation. All USB devices gets enumerated between physical Controller 1 and Controller 2, which causes a shift in naming when compared to systems without any USB storage devices. For example, a USB DVD gets the c2 name and Controller 2 gets the c3 name:

TABLE 3-5 Sun Fire X4500 Drives Mapping, One USB Storage Device, ILOM 2.0.2.5

USB Device	USB Device	USB Device	Controller 3		Controller 2		Controller 5		Controller 4		Controller 1		Controller 0	
--	--		36	37	38	39	40	41	42	43	44	45	46	47
		c2ty	c4t3	c4t7	c3t3	c3t7	c6t3	c6t7	c5t3	c5t7	c1t3	c1t7	c0t3	c0t7
			24	25	26	27	28	29	30	31	32	33	34	35
		c2ty	c4t2	c4t6	c3t2	c3t6	c6t2	c6t6	c5t2	c5t6	c1t2	c1t6	c0t2	c0t6
--	--		12	13	14	15	16	17	18	19	20	21	22	23
		c2ty	c4t1	c4t5	c3t1	c3t5	c6t1	c6t5	c5t1	c5t5	c1t1	c1t5	c0t1	c0t5
--	--		0	1	2	3	4	5	6	7	8	9	10	11
		c2ty	c4t0	c4t4	c3t0	c3t4	c6t0	c6t4	c5t0	c5t4	c1t0	c1t4	c0t0	c0t4
--	--	c2*	c4		c3		c6		c5		c1		c0	

* — Denotes the one USB device.

ILOM 2.0.2.5 or Later and Three USB Storage Devices

The following drives mapping table applies to a system with *three* USB storage devices present. For example, three USB DVD gets c2, c3, and c4 names at the time of OS installation:

TABLE 3-6 Sun Fire X4500 Drives Mapping, Three USB Storage Device, ILOM 2.0.2.5

USB (CD- ROM)	USB (Floppy)	USB Device	Controller 3		Controller 2		Controller 5		Controller 4		Controller 1		Controller 0	
c2ty	c3ty	c4ty	36	37	38	39	40	41	42	43	44	45	46	47
			c6t3	c6t7	c5t3	c5t7	c8t3	c8t7	c7t3	c7t7	c1t3	c1t7	c0t3	c0t7
			24	25	26	27	28	29	30	31	32	33	34	35
			c6t2	c6t6	c5t2	c5t6	c8t2	c8t6	c7t2	c7t6	c1t2	c1t6	c0t2	c0t6
c2*	c3*	c4*	12	13	14	15	16	17	18	19	20	21	22	23
			c6t1	c6t5	c5t1	c5t5	c8t1	c8t5	c7t1	c7t5	c1t1	c1t5	c0t1	c0t5
c2*	c3*	c4*	0	1	2	3	4	5	6	7	8	9	10	11
			c6t0	c6t4	c5t0	c5t4	c8t0	c8t4	c7t0	c7t4	c1t0	c1t4	c0t0	c0t4
c2*	c3*	c4*	c6		c5		c8		c7		c1		c0	

*— Denotes the USB devices.

Downloading Software

If you need to reinstall software, you can download the software from these sites:

- To download the Solaris 10 operating system, see:

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

- To download patches, see:

<http://sunsolve.sun.com/pub-cgi/show.pl?target=home>

Installing Other Operating Systems

For information on installing other operating systems, see the following:

- *Sun Fire X4500/X4540 Server Operating System Installation Guide*
- *Sun Fire X4500/X4540 Server Windows Operating System Installation Guide*
- *Sun Fire X4500/X4540 Server Product Notes*

Other operating systems might require software updates. See the appropriate release notes for the software release that supports the OS you want to install.

LSI Firmware Upgrade Procedure

During the upgrade process for the LSI firmware each controller is updated sequentially and does not provide notice to the user when each controller is being updated. During this procedure, there might be misleading messages that could cause you to believe the upgrade process is in a loop, such as:

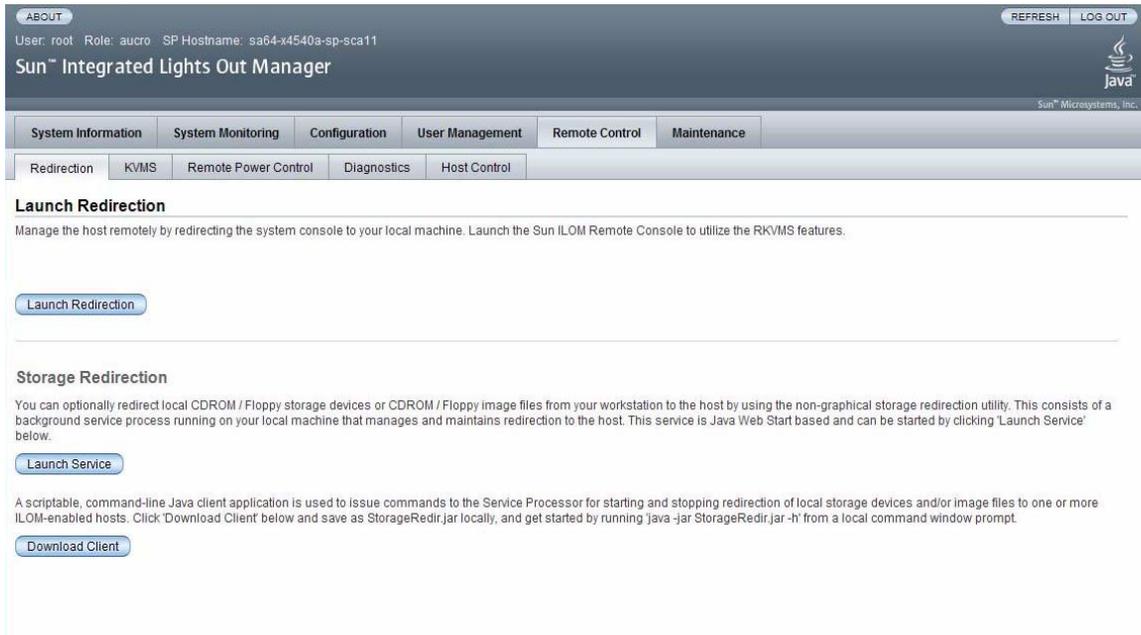
```
Finished Processing Commands Successfully. Exiting SASFlash. I'm  
finished.
```

The process eventually stops at the A:\> prompt at which point you can disconnect the ISO image and perform a power cycle.

This LSI firmware upgrade procedure can take up to 40 or more minutes to perform.

▼ To Upgrade the LSI Firmware

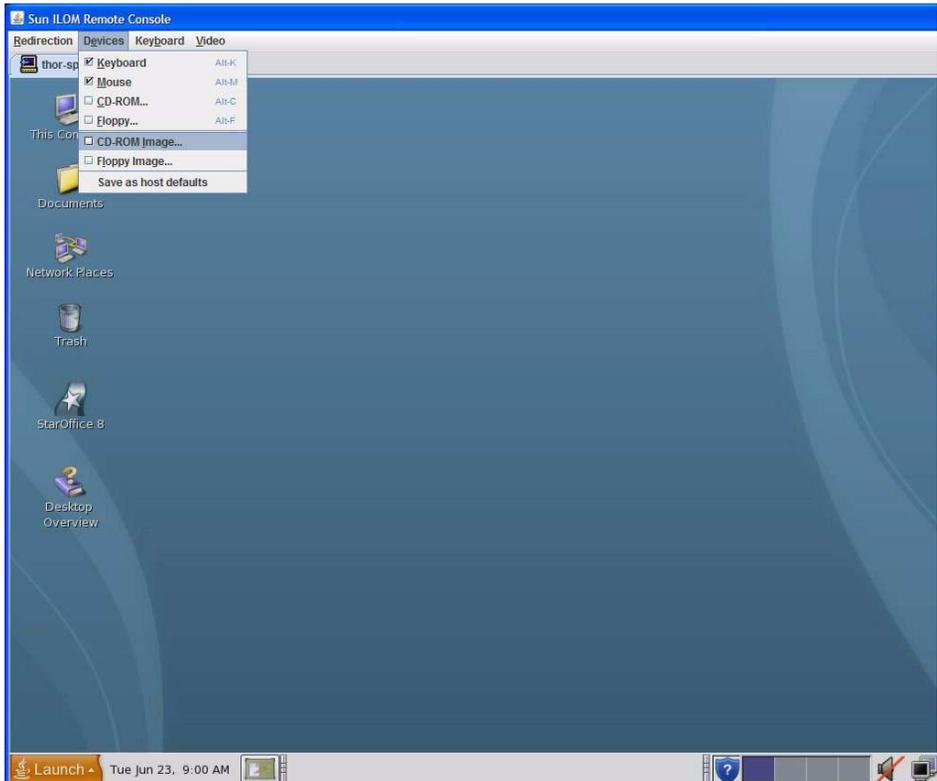
1. In the ILOM GUI, go to the Remote Control > Redirection view:



The screenshot displays the Sun Integrated Lights Out Manager (ILOM) web interface. At the top, there is a header bar with 'ABOUT' on the left and 'REFRESH' and 'LOG OUT' on the right. Below the header, the user information is shown: 'User: root Role: auro SP Hostname: sa64-x4540a-sp-sca11'. The main title is 'Sun™ Integrated Lights Out Manager'. A navigation menu is visible with tabs for 'System Information', 'System Monitoring', 'Configuration', 'User Management', 'Remote Control', and 'Maintenance'. Under 'Remote Control', there are sub-tabs for 'Redirection', 'K/VMS', 'Remote Power Control', 'Diagnostics', and 'Host Control'. The 'Redirection' sub-tab is selected. The main content area is titled 'Launch Redirection' and contains the following text: 'Manage the host remotely by redirecting the system console to your local machine. Launch the Sun ILOM Remote Console to utilize the RK/VMS features.' Below this text is a button labeled 'Launch Redirection'. The next section is titled 'Storage Redirection' and contains the text: 'You can optionally redirect local CDROM / Floppy storage devices or CDROM / Floppy image files from your workstation to the host by using the non-graphical storage redirection utility. This consists of a background service process running on your local machine that manages and maintains redirection to the host. This service is Java Web Start based and can be started by clicking 'Launch Service' below.' Below this text is a button labeled 'Launch Service'. The final section contains the text: 'A scriptable, command-line Java client application is used to issue commands to the Service Processor for starting and stopping redirection of local storage devices and/or image files to one or more ILOM-enabled hosts. Click 'Download Client' below and save as StorageRedir.jar locally, and get started by running 'java -jar StorageRedir.jar -h' from a local command window prompt.' Below this text is a button labeled 'Download Client'.

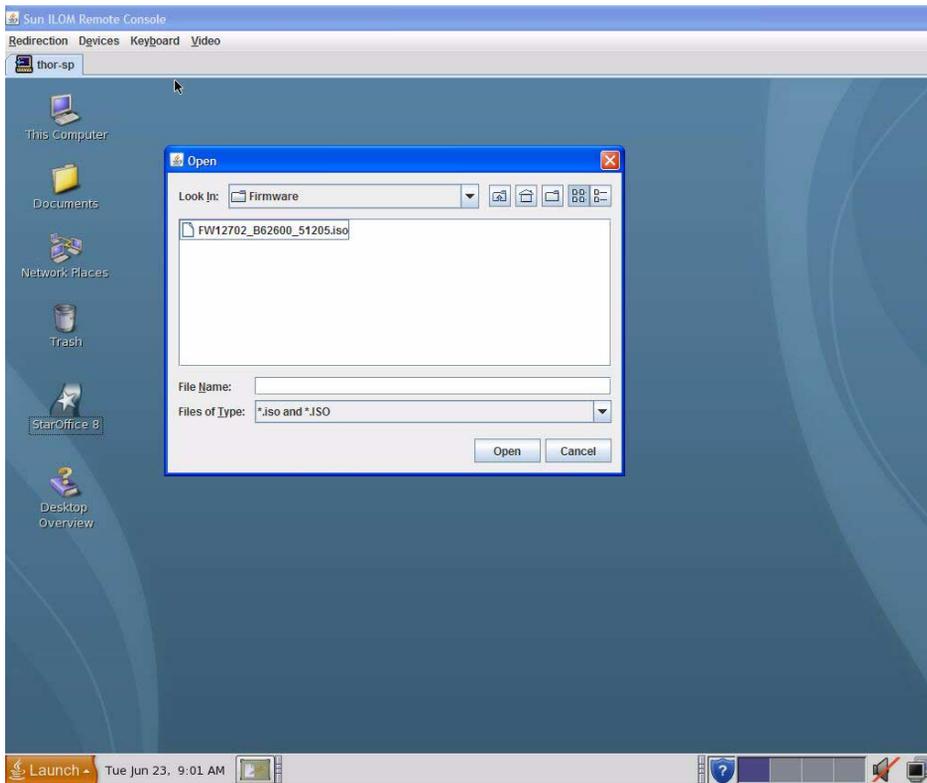
2. From the ILOM Remote Console window, go to the Devices menu and select CD-ROM Image:

FIGURE 4-1 Selecting CD-ROM Image



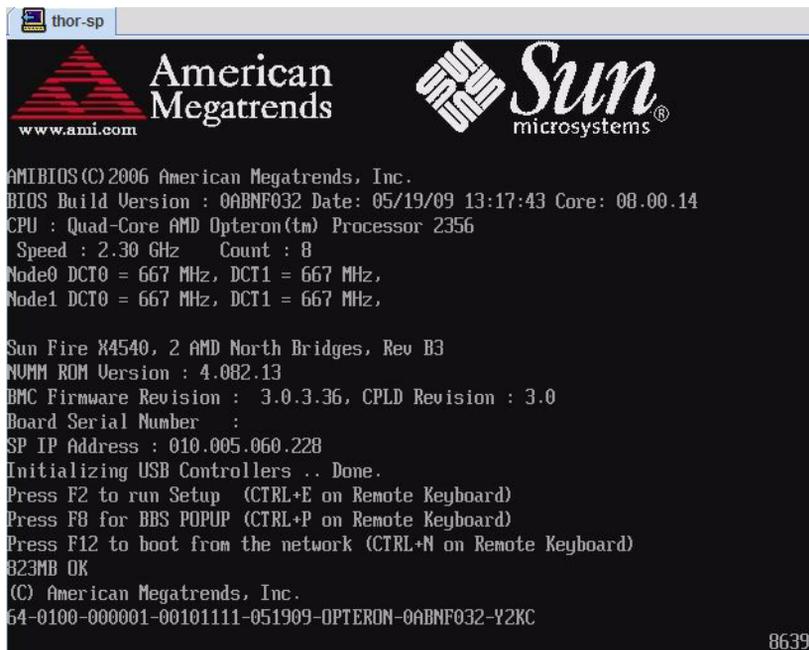
Select the ISO image by name (FW12702_B62600_51205.iso):

FIGURE 4-2 Selecting the ISO Image



3. Boot (or reboot) the system.

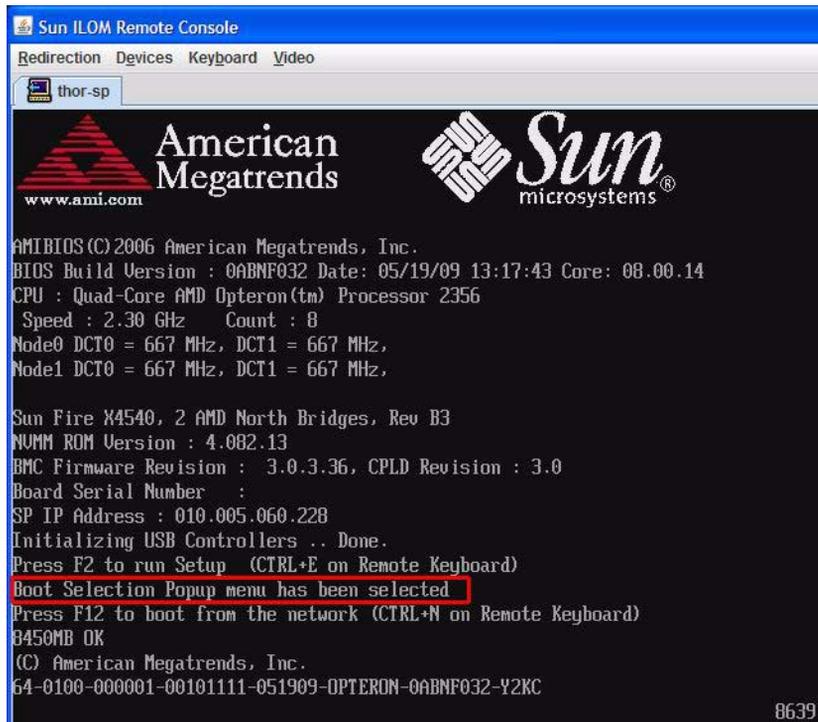
FIGURE 4-3 Rebooting the System



```
thor-sp  
American Megatrends  
www.ami.com  
Sun  
microsystems®  
AMIBIOS (C) 2006 American Megatrends, Inc.  
BIOS Build Version : 0ABNF032 Date: 05/19/09 13:17:43 Core: 08.00.14  
CPU : Quad-Core AMD Opteron(tm) Processor 2356  
Speed : 2.30 GHz Count : 8  
Node0 DCT0 = 667 MHz, DCT1 = 667 MHz,  
Node1 DCT0 = 667 MHz, DCT1 = 667 MHz,  
  
Sun Fire X4540, 2 AMD North Bridges, Rev B3  
NUMM ROM Version : 4.082.13  
BMC Firmware Revision : 3.0.3.36, CPLD Revision : 3.0  
Board Serial Number :  
SP IP Address : 010.005.060.228  
Initializing USB Controllers .. Done.  
Press F2 to run Setup (CTRL+E on Remote Keyboard)  
Press F8 for BBS POPUP (CTRL+P on Remote Keyboard)  
Press F12 to boot from the network (CTRL+N on Remote Keyboard)  
823MB OK  
(C) American Megatrends, Inc.  
64-0100-000001-00101111-051909-OPTERON-0ABNF032-Y2KC  
8639
```

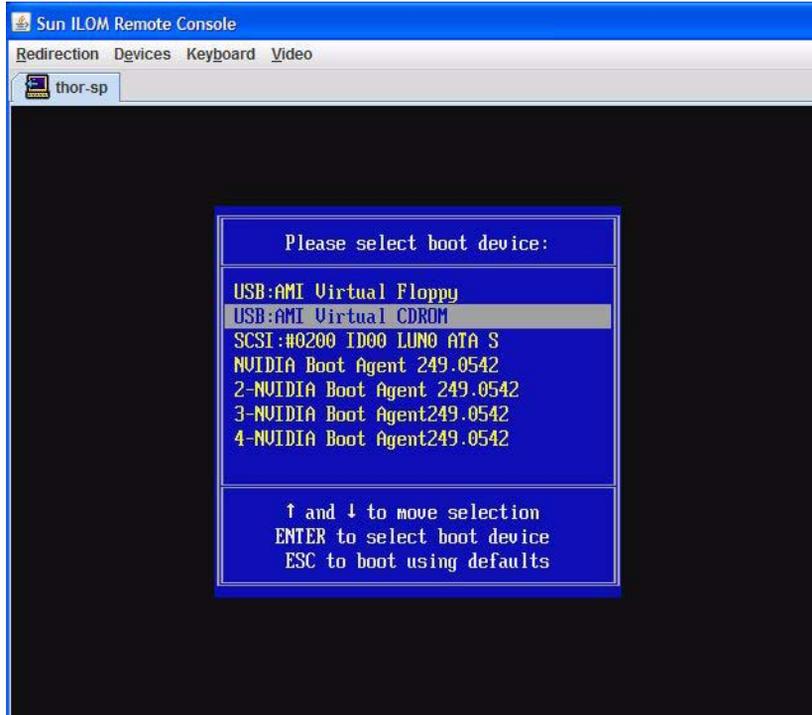
4. Press F8 to get to the BIOS boot-selection (BBS) pop-up menu:

FIGURE 4-4 Selecting BBS POPUP at Boot-up



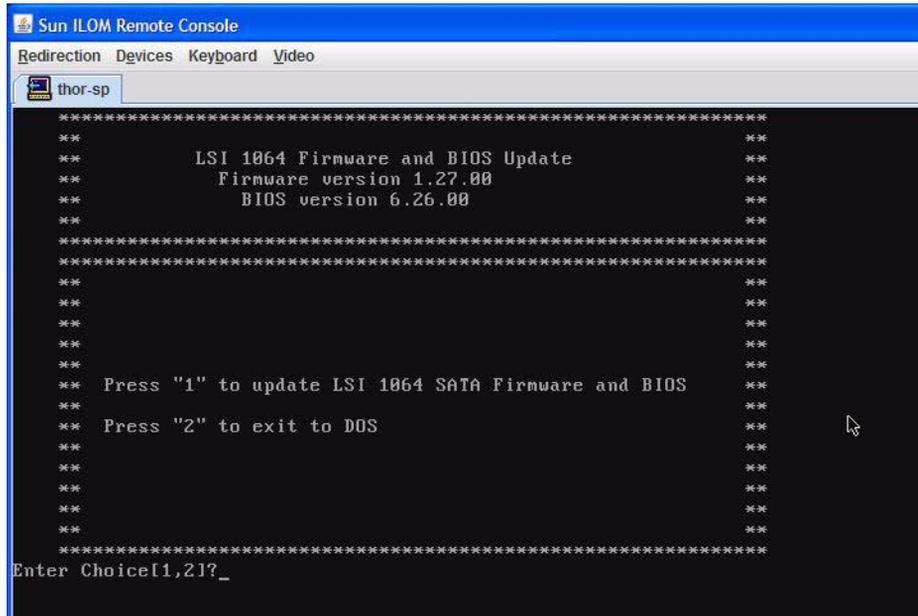
5. Wait 3 minutes and 43 seconds for the BIOS boot-selection (BBS) menu to appear.
6. Select USB:AMI Virtual CDROM:

FIGURE 4-5 Selecting USB:AMI Virtual CDROM



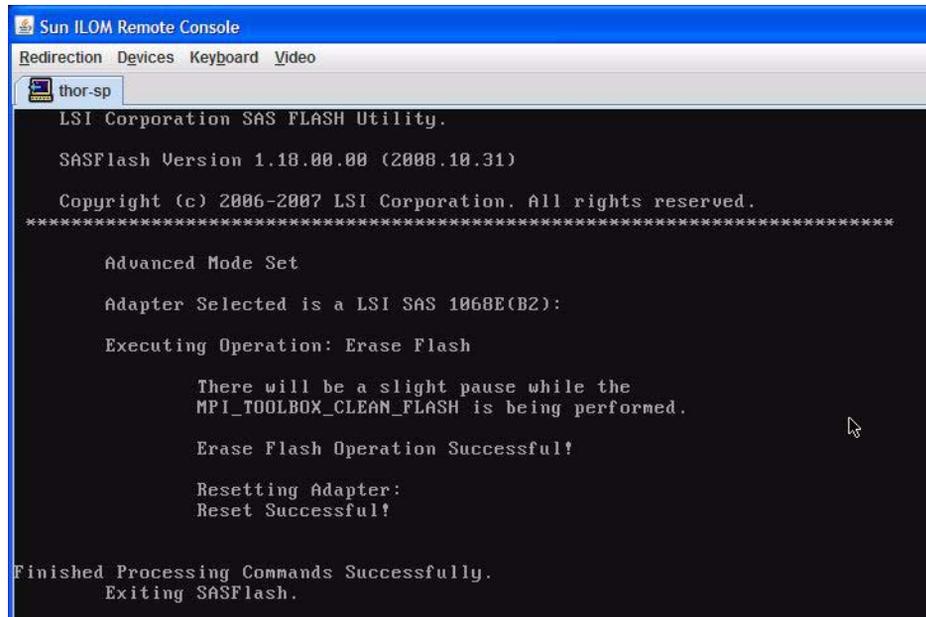
7. Wait about 6 seconds while the update starts. Enter Choice [1,2] appears. Press the 1 key.

FIGURE 4-6 Selecting to Update LSI Firmware and BIOS



8. See several messages during the upgrade process:
Finished Processing Commands Successfully. Exiting SASFlash.

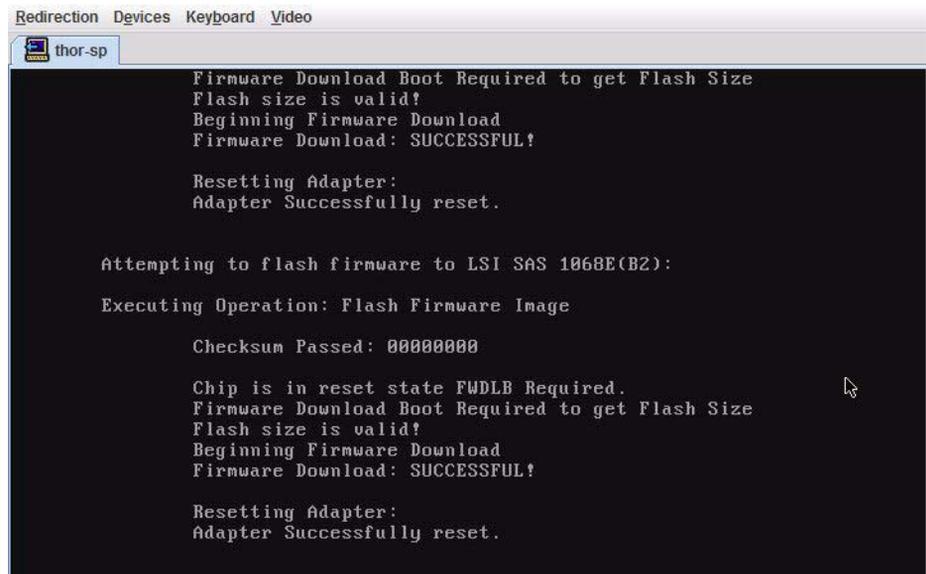
FIGURE 4-7 Finished Processing Commands Messages



```
Sun ILOM Remote Console
Redirection Devices Keyboard Video
thor-sp
LSI Corporation SAS FLASH Utility.
SASFlash Version 1.18.00.00 (2008.10.31)
Copyright (c) 2006-2007 LSI Corporation. All rights reserved.
*****
Advanced Mode Set
Adapter Selected is a LSI SAS 1068E(B2):
Executing Operation: Erase Flash
    There will be a slight pause while the
    MPI_TOOLBOX_CLEAN_FLASH is being performed.
Erase Flash Operation Successful!
Resetting Adapter:
Reset Successful!
Finished Processing Commands Successfully.
Exiting SASFlash.
```

See several messages that read Resetting Adapter: Adapter Successfully Reset:

FIGURE 4-8 Adapter Successfully reset Messages



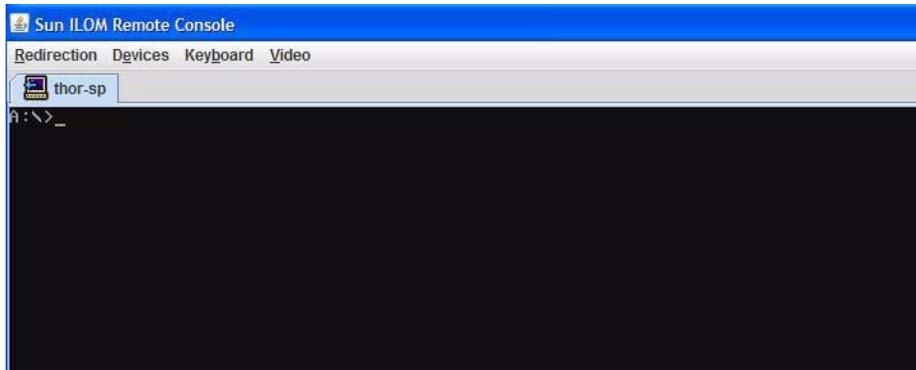
```
Redirection Devices Keyboard Video
thor-sp
Firmware Download Boot Required to get Flash Size
Flash size is valid!
Beginning Firmware Download
Firmware Download: SUCCESSFUL!
Resetting Adapter:
Adapter Successfully reset.
Attempting to flash firmware to LSI SAS 1068E(B2):
Executing Operation: Flash Firmware Image
Checksum Passed: 00000000
Chip is in reset state FWDLB Required.
Firmware Download Boot Required to get Flash Size
Flash size is valid!
Beginning Firmware Download
Firmware Download: SUCCESSFUL!
Resetting Adapter:
Adapter Successfully reset.
```

9. Wait approximately 22 minutes.

The firmware upgrade is complete when you see the DOS A:\> prompt.

Note – There is no on-screen indication that the upgrade has finished.

FIGURE 4-9 The DOS A:\> Prompt



10. Unmount ISO and reboot the box.

Note – During POST, you might see the message, "Adapter configuration may have changed, reconfiguration is suggested!" This can be safely ignored.

11. Wait approximately 4 minutes after Power-on Self Test (POST) has completed.

12. Press Control-C to enter the LSI configuration screen. Ignore the reconfiguration is suggested! message.

13. Wait about 10 seconds. Verify that the firmware have been updated on all controllers.

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