Sun Netra X4250 Server

Installation Guide

Part No. 820-4055-11
May 2010, Revision 11

Contents

Preface

This installation guide provides detailed information about how to install the Sun Netra X4250 server from Oracle. The audience for this guide is primarily system administrator, network administrators, and service technicians who have an understanding of server systems.

Note – All internal components except hard drives must be installed by qualified service technicians only.

Using UNIX Commands

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

- Software documentation that you received with your system
- Oracle's Solaris Operating System documentation, which is at:

  `http://docs.sun.com`

Shell Prompts

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

Typographic Conventions

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

Note – Characters display differently depending on browser settings. If characters do not display correctly, change the character encoding in your browser to Unicode UTF-8.

Related Documentation

The documents listed as online are available at:

http://docs.sun.com/app/docs/prod/server.nebs

Application	Title	Part Number	Location
Planning	*Sun Netra X4250 Server Site Planning Guide*	820-4053	Online
Installation	*Sun Netra X4250 Server Installation Guide*	820-4055	Online
Issues & updates	*Sun Netra X4250 Server Product Notes*	820-4059	Online
System Management	*Sun Integrated Lights Out Manager 2.0 User's Guide*	820-1188	Online
	Addendum to the Sun Integrated Lights Out Manager 2.0 User's Guide	820-4198	Online
	Sun Integrated Lights Out Manager (ILOM) 2.0 Supplement for the Sun Netra X4250 Server	820-4060	Online
Service	*Sun Netra X4250 Server Service Manual*	820-4056	Online
Platform safety and compliance	*Sun Netra X4250 Server Safety and Compliance Guide*	816-7190	Online
Generic safety	*Important Safety Information for Sun Hardware Systems*	821-1590	Shipping kit
General	*Sun Netra Rack Server Getting Started Guide*	820-3016	Shipping kit

Documentation, Support, and Training

These web sites provide additional resources:

Sun Function	URL
Documentation	http://docs.sun.com/
Support	http://www.sun.com/support/
Training	http://www.sun.com/training/

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Sun Netra X4250 Server Installation Guide, part number 820-4055-11

CHAPTER 1

Sun Netra X4250 Overview

This chapter describes the features of the Sun Netra X4250 server. Topics include:

Sun Netra X4250 Server

The Sun Netra X4250 server (FIGURE 1-1) is a 2 rack unit (2U) server.

FIGURE 1-1 Sun Netra X4250 Server

The Sun Netra X4250 server is a scalable, reliable, high-performance, entry-level server, optimized for enterprise data centers. The server offers the following key features:

- Single or dual Intel® Xeon® L5408 quad core, 2.13 GHz processors for high-throughput and energy savings
- High levels of system uptime through the processor and memory reliability-availability, and serviceability (RAS) features, coupled with redundancy of some system components, and support for hardware RAID (0+1+1E).
- A space efficient, rack-optimized form factor 2U chassis.
- Unified server management though the use of the Sun Integrated Lights Out Manager (ILOM) system controller interface. ILOM integrates and manages x64 platforms with the same tool set, and in heterogeneous environments, using industry standard element management tools and enterprise frameworks.

Chassis Controls, LEDs, and Connectors

The following figures show the physical characteristics of the front and rear panels of the Sun Netra X4250 server (FIGURE 1-2., FIGURE 1-3, and FIGURE 1-5).

FIGURE 1-2 Front Panel With DVD

Figure Legend

1	Alarm status indicators	Top to bottom – Critical LED, Major LED, Minor LED, User LED
2	System status indicators	Left to right – Locator LED button, Service Required LED, System Activity LED, Power button
3	Removable media	In 2 hard drive configurations

FIGURE 1-3 Front Panel With Bezel Removed and Two HDDs

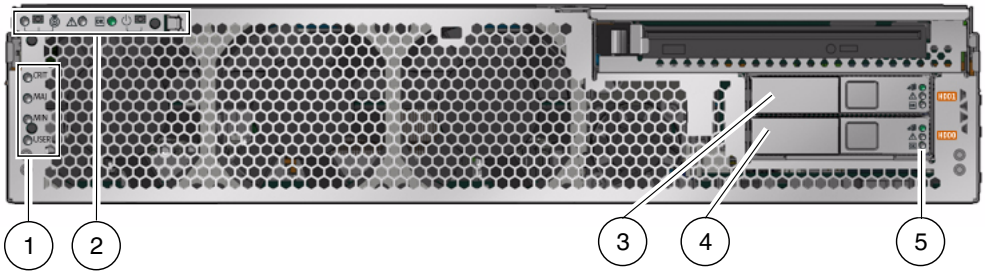


Figure Legend

1	Alarm status indicators	Also displayed with front bezel installed, see FIGURE 1-2.
2	System status indicators	Also displayed with front bezel installed, see FIGURE 1-2.
3	Hard drive 1	HDD 1
4	Hard drive 0	HDD 0
5	Hard drive LEDs	Top to bottom – OK to Remove LED, Service Required LED, Power OK LED

FIGURE 1-4 Front Panel With Bezel Removed and Four HDDs

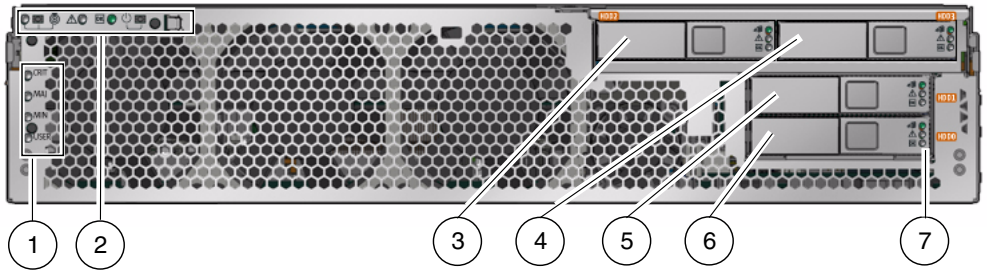


Figure Legend

1	Alarm status indicators	Also displayed with front bezel installed, see FIGURE 1-2.
2	System status indicators	Also displayed with front bezel installed, see FIGURE 1-2.
3	Hard drive 2	HDD 2
4	Hard drive 3	HDD 3
5	Hard drive 1	HDD 1
6	Hard drive 0	HDD 0
7	Hard drive LEDs	Top to bottom – OK to Remove LED, Fault LED, Activity LED

FIGURE 1-5 Rear Panel Cable Connectors and LEDs

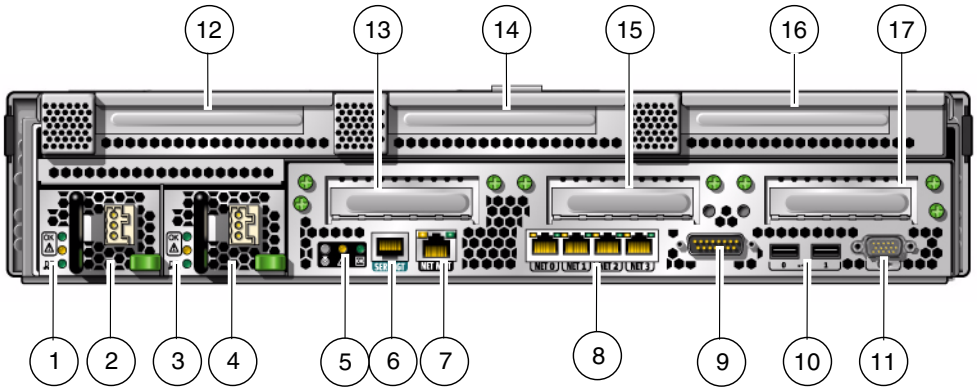


Figure Legend

1	Power Supply 0 LEDs	Top to bottom – Power OK LED, Service Required LED, DC Power LED
2	Power Supply 0	
3	Power Supply 1 LEDs	Top to bottom – Power OK LED, Service Required LED, DC Power LED
4	Power Supply 1	
5	System LEDs	Left to right – Locator LED button, Service Required LED, Power OK LED
6	Service Processor Serial Management Port	SER MGT
7	Service Processor Network Management Port	NET MGT
8	Gigabit Ethernet Ports	Left to right – NET0, NET1, NET2, NET3
9	Alarm Port	
10	USB ports	Left to right – USB0, USB1
11	VGA port	Video
12	Slot 3	PCI-X
13	Slot 0	X8 PCIe (SAS controller)
14	Slot 4	PCI-X full-height, full-width
15	Slot 1	X4 PCIe
16	Slot 5	X8 PCIe full-height, full-width
17	Slot 2	X4 PCIe

Note – The PCI card slots include two PCIe 15W (slots 1 and 2), one PCI-X 15W (slot 3), one PCI-X 25W (slot 4), and one PCIe 25W (slot 5) for a total of 5 PCI slots.

Features

TABLE 1-1 lists the features of the Sun Netra X4250 server.

TABLE 1-1 Feature Specifications

Feature	Description
Processor	One or two Intel Xeon L5408 quad-core, 2.13 GHz socketed processors: • 4 cores (32 threads) • 8 cores (64 threads)
Memory slots/capacity	16 slots that can be populated with one of the following types of fully buffered FB-DIMMs: • 1 GB (16 GB maximum) • 2 GB (32 GB maximum) • 4 GB (64 GB maximum)
Internal hard drives	Two hot-pluggable 146 GB SAS drives with a DVD-RW drive Or Four hot-pluggable 146 GB SAS drives *without* a DVD-RW drive Integrated hard drive controller supports RAID 0, RAID1, and RAID 1E
Optical media drive	One slot-loading, slimline DVD drive, supporting CD-R/W, CD+R/W, DVD-R/W, DVD+R/W
Power supplies	Two hot-swappable 660W AC or DC power supply units (PSUs) providing N+1 redundancy
Alarm	One Telco alarm
Cooling	Three high-power fans for processor, memory FB-DIMM, and PCI card cooling Three low-power fans for hard drive and removable media drive cooling
Ethernet ports	Four 1-GbE, RJ-45-based, autonegotiating ports (on two separate controllers) Note - Two 10-GbE ports are available by adding Sun 10-Gigabit Ethernet PCI-X Adapter.
PCI interfaces*	• One X8 PCIe full-length, full-height slot • One X8 PCIe slot • Two X4 PCIe slots • One PCI-X full-length, full-height slot • One PCI-X slot

TABLE 1-1 Feature Specifications *(Continued)*

Feature	Description
USB ports	Two USB 2.0 ports on rear panel
Additional ports	The following ports are located on the rear panel of the server: • One RJ-45 serial management port (SER MGT) – the default connection to system controller • One 10/100 Mbps Ethernet network management port (NET MGT) – connection to the system controller • One Alarm port – connection to the alarm card • One VGA port – connection to the host
Remote management	On-board Sun Integrated Lights Out Manager (ILOM)
Firmware	Firmware comprising: • ILOM (system management) • BIOS and POST
Operating systems	• Solaris 10 8/07 Operating System (preinstalled on disk 0) or newer • Red Hat Enterprise Linux • SUSE Linux • MS Windows Server 2003 • VMware Refer to the server product notes for information on the minimum version of supported OS and required patches

* PCIe and PCI-X specifications described in this table list the physical requirements for PCI cards. Additional support capabilities must also be provided (such as device drivers) for a PCI card to function in the server. Refer to the specifications and documentation for a given PCI card to determine if the required drivers are provided that enable the card to function in this server.

Preinstalled Solaris Operating System

The Sun Netra X4250 server is preinstalled with the Solaris 10 OS, and offers the following Solaris OS features:

- Stability, high performance, scalability, and precision of a mature 64-bit operating system
- Support for over 12,000 leading technical and business applications
- Solaris Containers – Isolate software applications and services using flexible, software-defined boundaries.
- DTrace – A comprehensive dynamic tracing framework for tuning applications and troubleshooting systemic problems in real time.
- Predictive Self-Healing – Capability that automatically diagnoses, isolates, and recovers from many hardware and application faults.

- Security – Advanced security features designed to protect the enterprise at multiple levels.
- Network Performance – Completely rewritten TCP/IP stack dramatically improves the performance and scalability of your networked services.

You can use the preinstalled Solaris 10 OS, or reinstall a supported version of the Solaris 10 OS from your network, CD, or downloaded copy. Refer to the *Sun Netra X4250 Server Product Notes* for information on the supported OS releases for your server.

Remote Manageability With ILOM

The Sun Integrated Lights Out Manager (ILOM) is system management firmware that is preinstalled on some Sun server platforms. ILOM enables you to actively manage and monitor components installed in your server system. With ILOM, you can monitor and manage your system proactively by viewing hardware configurations, monitoring system information, managing system alerts, and more. ILOM provides a browser-based web interface and a command-line interface, as well as an SNMP user interface and an IPMI user interface. ILOM automatically initializes as soon as power is applied to your system. ILOM will continue to run regardless of the state of the host operating system, making it a "lights-out" management system.

Some key features of ILOM include:

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

ILOM enables you to remotely run diagnostics, such as power-on self-test (POST), that would otherwise require physical proximity to the server's serial port. You can also configure ILOM to send email alerts of hardware failures, hardware warnings, and other events related to the server or to ILOM.

The service processor runs independently of the server, using the server's standby power. Therefore, ILOM continues to function when the server operating system goes offline or when the server is powered off.

For information about configuring and using the ILOM service processor, refer to the *Sun Integrated Lights Out Manager (ILOM) 2.0 User's Guide* and other ILOM documents for the Sun Netra X4250 server. These documents are available online at:

`http://docs.sun.com/app/docs/prod/server.nebs`

High Levels of System Reliability, Availability, and Serviceability

Reliability, availability, and serviceability (RAS) are aspects of a system's design that affect its ability to operate continuously and to minimize the time necessary to service the system. *Reliability* refers to a system's ability to operate continuously without failures and to maintain data integrity. *System availability* refers to the ability of a system to recover to an operational state after a failure, with minimal impact. *Serviceability* relates to the time it takes to restore a system to service following a system failure. Together, reliability, availability, and serviceability features provide for near continuous system operation.

To deliver high levels of reliability, availability, and serviceability, the Sun Netra X4250 server offers the following features:

- Ability to disable individual threads and cores without rebooting
- Lower heat generation reduces hardware failures
- Hot-pluggable hard drives
- Redundant, hot-swappable power supplies (two)
- Redundant fan units
- Environmental monitoring
- Internal hardware drive mirroring (RAID 1)
- Error detection and correction for improved data integrity
- Easy access for most component replacements

Hot-Pluggable and Hot-Swappable Components

Sun Netra X4250 server hardware supports hot-plugging of the chassis-mounted hard drives and power supplies. By using the proper software commands, you can install or remove these components while the system is running. Hot-swap and hot-

plug technologies significantly increase the system's serviceability and availability by providing the ability to replace hard drives, fan units, and power supplies without service disruption.

Power Supply Redundancy

The Sun Netra X4250 server provides two hot-swappable power supplies, enabling the system to continue operating should one of the power supplies fail or if a power source fails.

Environmental Monitoring

The Sun Netra X4250 server features an environmental monitoring subsystem that protects the server and its components against:

- Extreme temperatures
- Lack of adequate airflow through the system
- Power supply failures
- Hardware faults

Temperature sensors are located throughout the system to monitor the ambient temperature of the system and internal components. The software and hardware ensure that the temperatures within the enclosure do not exceed predetermined safe operation ranges. If the temperature observed by a sensor falls below a low-temperature threshold or rises above a high-temperature threshold, the monitoring subsystem software lights the amber Service Required LEDs on the front and rear panels. If the temperature condition persists and reaches a critical threshold, the system initiates a graceful system shutdown. In the event of a failure of the system controller, backup sensors protect the system from serious damage, by initiating a forced hardware shutdown. Required LEDs remain lit after an automatic system shutdown to aid in problem diagnosis.

The power subsystem is monitored in a similar fashion by monitoring power supplies and reporting any fault in the front and rear panel LEDs.

Support for RAID Storage Configurations

You can set up hardware RAID 1 (mirroring) and hardware RAID 0 (striping) configurations for any pair of internal hard drives, providing a high-performance solution for hard drive mirroring.

By attaching one or more external storage devices to the Sun Netra X4250 server, you can use a redundant array of independent drives (RAID) software application such as Solstice DiskSuite or VERITAS Volume Manager to configure system drive storage in a variety of different RAID levels. Software RAID applications such as VERITAS Volume Manager are not included with this server. You must obtain and license them separately.

Rackmountable Enclosure

The Sun Netra X4250 server uses a space-saving 2U-high rack-mountable enclosure that can be installed into a variety of industry standard racks.

CHAPTER 2

Preparing for Installation

This chapter provides background information about the server installation procedures.

This chapter contains these topics:

Electrical Specifications

Electrical Specifications

Parameter	AC	DC[1]
Voltage (nominal)	100-120/200-240 VAC	-48 VDC or -60 VDC
Input current (maximum)	8.2 A	19 A
Frequency	50/60 Hz	N/A
DC Input Treatment	N/A	Isolated DC Return (DC-1)

[1] The DC power source must be reliably connected to ground.

Caution – WARNING: The intra-building port(s) of the equipment or subassembly is suitable for connection to intrabuilding or unexposed wiring or cabling only. The intra-building port(s) of the equipment or subassembly MUST NOT be metallically connected to interfaces that connect to the OSP or its wiring. These interfaces are designed for use as intra-building interfaces only (Type 2 or Type 4 ports as described in GR-1089-CORE, Issue 4) and require isolation from the exposed OSP cabling. The addition of Primary Protectors is not sufficient protection in order to connect these interfaces metallically to OSP wiring

Additional Power System Information

The total input power for the system is divided equally among the power supplies in operation. Reversing the positive and negative inputs to the power supplies of a DC input system will not cause damage. However, the power supplies with reversed input will not operate.

The inputs to a power supply are isolated from the system chassis and the other power supply inputs. The AC or DC power inputs may be at different voltages within the acceptable range and may have different offset voltages relative to the system chassis.

Changing Sun Netra Rack Servers from AC to DC Input or From DC to AC Input

Safety agency requirements prohibit Sun Microsystems from changing a product from AC input to DC input or from DC input to AC input after the product has been removed from the agency approved manufacturing site.

Tools and Equipment Needed

To install the system, you must have the following tools:

- No. 2 Phillips screwdriver
- ESD mat and grounding strap

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

- ASCII terminal
- Workstation
- Terminal server
- Patch panel connected to a terminal server

Shipping Kit Inventory List

Standard components of the server are installed at the factory. However, if you ordered options such as a PCI card and monitor, these are shipped to you separately.

Note – Inspect the shipping cartons for evidence of physical damage. If a shipping carton appears damaged, request that the carrier's agent be present when the carton is opened. Keep all contents and packing material for the agent's inspection.

Verify that you have received all the parts of your server.

- Server chassis
- 19-inch, 4-post rackmount kit and a slide rail assembly
- Package of mounting screws and nuts in assorted sizes to fit various types of racks and cabinets
- Miscellaneous hardware, cables, connectors, and so on
- Any optional components that were ordered with the server

Optional Component Installation

The standard components of the server are installed at the factory. However, if you ordered options such as additional memory or PCI cards, these items will be shipped separately. If possible, install these components prior to installing the server in a rack.

Note – The PCI card slots include two PCIe 15W (slots 1 and 2), one PCI-X 15W (slot 3), one PCI-X 25W (slot 4), and one PCIe 25W (slot 5) for a total of 5 PCI slots.

If you ordered any options that are not factory-installed, see the *Sun Netra X4250 Server Service Manual* (820-4056) for installation instructions.

Note – The list of optional components can be updated without notice. See the product web pages for the most current list of components supported in the server: http://www.sun.com/products-n-solutions/hw/networking/

ESD Precautions

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

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

Installation Overview

This installation guide provides procedures that are to be performed in the following order:

1. Verify that you have received all of the components that ship with your server. See "Shipping Kit Inventory List" on page 13.
2. Gather configuration information for your system. See your system administrator for specific details, including these parameters:
   - Netmask
   - IP address for the service processor
   - Gateway IP address
3. Install any optional components shipped with your system. If you have purchased other optional components such as additional memory, install these components prior to mounting the server in a rack. See "Optional Component Installation" on page 13.
4. Mount the server into a rack or cabinet. See Chapter 3 for 4-post racks, or Chapter 4 for 2-post racks.

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

5. Connect the server to a serial terminal or a terminal emulator (PC or workstation) to display system messages. See "Powering On the System for the First Time" on page 95.

Tip – The serial terminal or a terminal emulator should be connected before you connect the power cables. As soon as power is connected to the system, the service processor immediately powers on and runs diagnostics. Diagnostic test failures will be printed on the serial terminal.

6. Connect the data cables to the server, but do not connect the power cable yet. See "Connecting the Server Cables" on page 79.
7. Connect the power cable to the server and examine the display for any error messages. See "Powering On the System for the First Time" on page 95.

Caution – There is a potential for electric shock if the server and related equipment are not properly grounded.

Note – The service processor runs on the 3.3V standby voltage. As soon as AC or DC power is connected to the system, the service processor immediately powers on, runs diagnostics, and initializes the ILOM firmware.

8. After the service processor boots, access the ILOM command-line interface (CLI) through the serial management port and configure the service processor network addresses. See "Using the Serial Connection" on page 103.

Note – The service processor network management port is not operational until you configure network settings for the service processor (through the service processor serial management port).

9. Commit the changes to the service processor network parameters. See "To Power On the System for the First Time" on page 95.
10. Power on the server from a keyboard using the ILOM software. See "To Power On the System for the First Time" on page 95.
11. Set up the operating system. See "Setting Up the Operating System Software" on page 107.

Note – The Solaris OS is preinstalled on the servers. When you power on, you are automatically guided through the Solaris OS configuration procedure. See "Configuring the Preinstalled Solaris 10 Operating System" on page 109.

12. Install any firmware updates or required patches to the server.

    Refer to the *Sun Netra X4250 Server Product Notes* for a list of required patches.

13. Load additional software from the Solaris media kit (optional).

    The Solaris media kit (sold separately) includes several CDs containing software to help you operate, configure, and administer your server. Refer to the documentation provided with the media kit for a complete listing of included software and detailed installation instructions.

Safety Precautions

Caution – Deploy the antitilt bar on the equipment rack before beginning an installation.

Caution – The Sun Netra X4250 server weighs approximately 40 lb (18.14 kg). Two people are required to lift and mount this 2U server into a rack enclosure when using the procedures in this document.

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

CHAPTER 3

Mounting the Server Into a 4-Post Rack

This chapter provides instructions for installing the server in an open 4-post rack or closed cabinet.

This chapter contains the following sections:

Note – References to *left* and *right* are from your viewpoint as you face either the front or rear of the equipment.

Caution – The server is heavy. Two people are required to lift and mount the server into a rack enclosure when following the procedures in this chapter.

4-Post Rackmounting Options

The server ships with a 19-inch, 4-post hardmount rack kit (see "To Install a Server With a Hardmount 19-Inch 4-Post Rack" on page 20 for installation instructions). TABLE 3-1 lists three additional 4-post rackmount kit options that can be ordered from Sun. This chapter provides installation instructions for these rackmount kit options.

TABLE 3-1 Optional Rackmount Kits

Mounting Kit	Installation Instructions
19-inch, 4-post slide mount kit for 600–800 mm cabinet depths	"To Install a Server With a Sliding Rail Mount in a 19-Inch 4-Post Rack" on page 24
600 mm x 600 mm rackmount kit	"To Install a Server With a Hardmount in a 600-mm 4-Post Rack" on page 31
19-inch, 4-post slide rail kit for 800-1000 mm cabinet depths with cable management assembly	"Installing a Server With a Sliding Rail Mount in a 19-Inch 4-Post Rack for Use With the Cable Management Assembly" on page 37

Note – If you have more than six DC-powered servers in the same rack, you might exceed Telcordia NEBS EMI limits.

Hardmounting the Server in a 19-Inch 4-Post Rack

Hardmount 19-Inch 4-Post Rack Kit

The hardmount kit for a 19-inch 4-post rack consists of:

- Two hardmount brackets
- Two rear mount support brackets
- Two rear mount flanges
- Bag of screws

Note – The front-to-back rail spacing must be at least 460 mm (18.11 in.) and not more than 715 mm (28.15 in.) from the outside face of the front rail to the outside face of the back rail.

FIGURE 3-1 Contents of the Hardmount 19-Inch 4-Post Kit

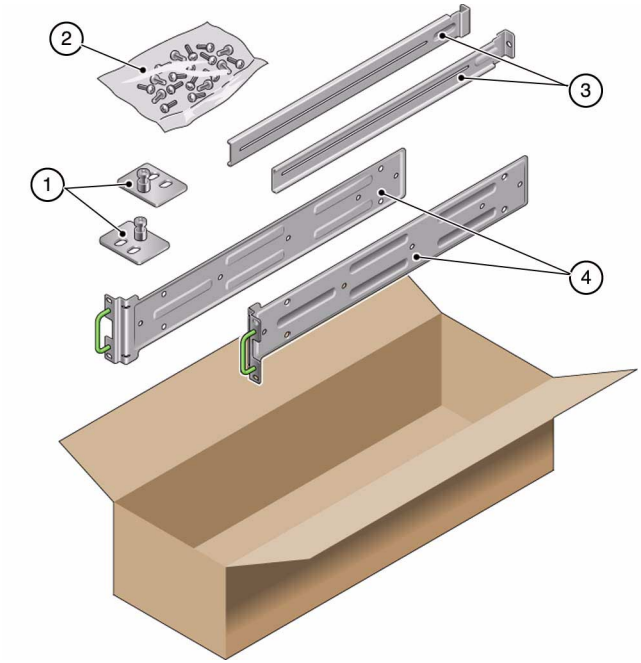


Figure Legend

1	Rear mount flanges	**3**	Rear mount support brackets
2	Screws	**4**	Hardmount brackets

TABLE 3-2 19-inch 4-Post Rackmount Screw Kit Contents

Number	Description	Where Used
10	M5 x 4.5 mm Phillips flathead screws	8 for hardmount brackets, 2 extra
10	M4 x 0.5 mm x 5 mm Phillips panhead screws	4-6 for rear mount brackets, 6-4 extra
10	M5 x 12.7 mm screws	10 for rack, if appropriate
10	M6 x 13 mm screws	10 for rack, if appropriate

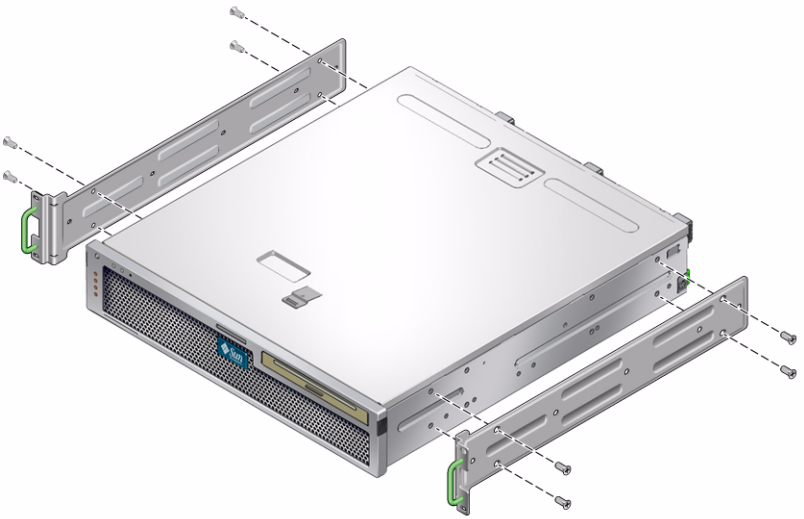
TABLE 3-2 19-inch 4-Post Rackmount Screw Kit Contents *(Continued)*

Number	Description	Where Used
9	M6 square clip nuts	9 for rack, if appropriate
12	10-32 x 0.5 in. combo head screws	12 for rack, if appropriate
12	12-24 x 0.5 in. combo head screws	12 for rack, if appropriate

▼ To Install a Server With a Hardmount 19-Inch 4-Post Rack

1. **Get the hardmount brackets from the rack kit (**FIGURE 3-1**).**
2. **Use four of the supplied M5 × 4.5 mm flathead Phillips screws to secure each of the hardmount brackets to the sides of the server (**FIGURE 3-2**).**

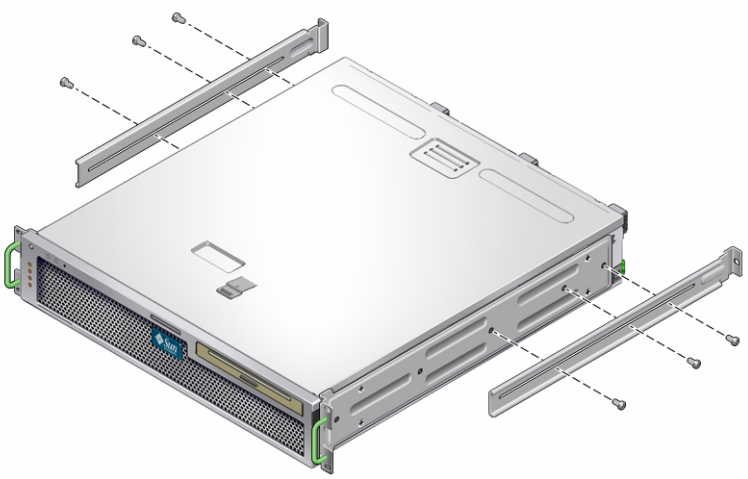
FIGURE 3-2 Securing the Hardmount Brackets to the Server



3. **Measure the depth of the rack.**
4. **Get the two rear mount support brackets from the rack kit (**FIGURE 3-1**).**
5. **Install the rear mount support brackets at the rear of the server, extending the rear mount support brackets to the measured depth of the rack (**FIGURE 3-2**).**

   Use two to three of the supplied M4 × 0.5 × 5 mm panhead Phillips screws for each bracket, depending on the rack depth.

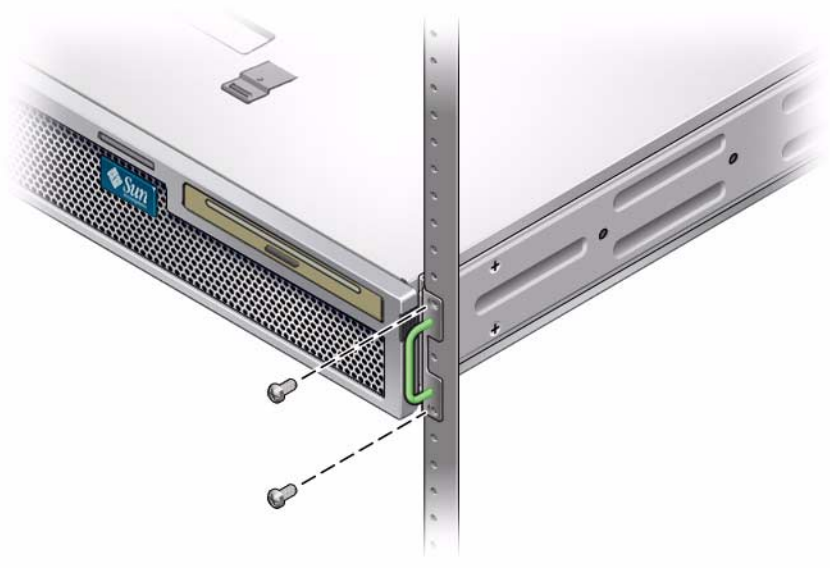
FIGURE 3-3 Attaching the Rear Mount Support Brackets



6. **Lift the server to the desired location in the rack.**

7. **Using two screws per side, secure the front of the hardmount brackets attached to the sides of the server to the front of the rack (**FIGURE 3-4**).**

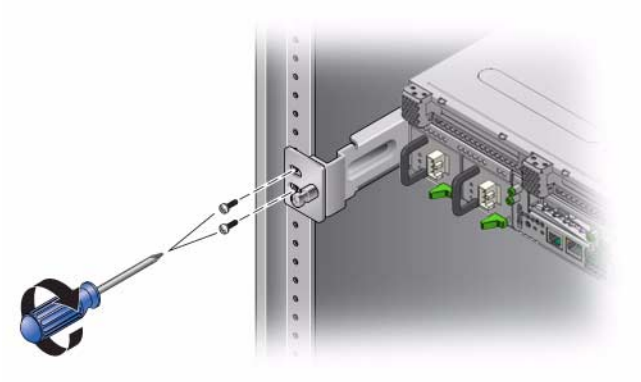
FIGURE 3-4 Securing the Front of the Server to the Rack



8. **Get the two rear mount flanges from the rack kit (**FIGURE 3-1**).**

9. **Using two screws for each rear mount support bracket, secure the rear mount support brackets to the rear of the rack (FIGURE 3-5).**

FIGURE 3-5 Securing the Rear of the Server to the Rack



Mounting the Server in a Sliding Rail Mount 19-Inch 4-Post Rack

Sliding Rail Mount 19-Inch 4-Post Rack Kit

The sliding rail mount kit for a 19-inch 4-post rack consists of:

- Two 19-inch 4-post Telco slide assemblies
- Two short brackets
- Two long brackets
- Four M6 and four 10–32 threaded strips
- Two extension brackets
- Bag of screws

Note – The front-to-back rail spacing must be at least 392 mm (15.43 in.) and not more than 863.6 mm (34 in.) from the outside face of the front rail to the outside face of the back rail.

You also need the hardmount brackets from the standard rackmount kit that came with the server (FIGURE 3-6).

FIGURE 3-6 Contents of the Sliding Rail 19-Inch 4-Post Kit

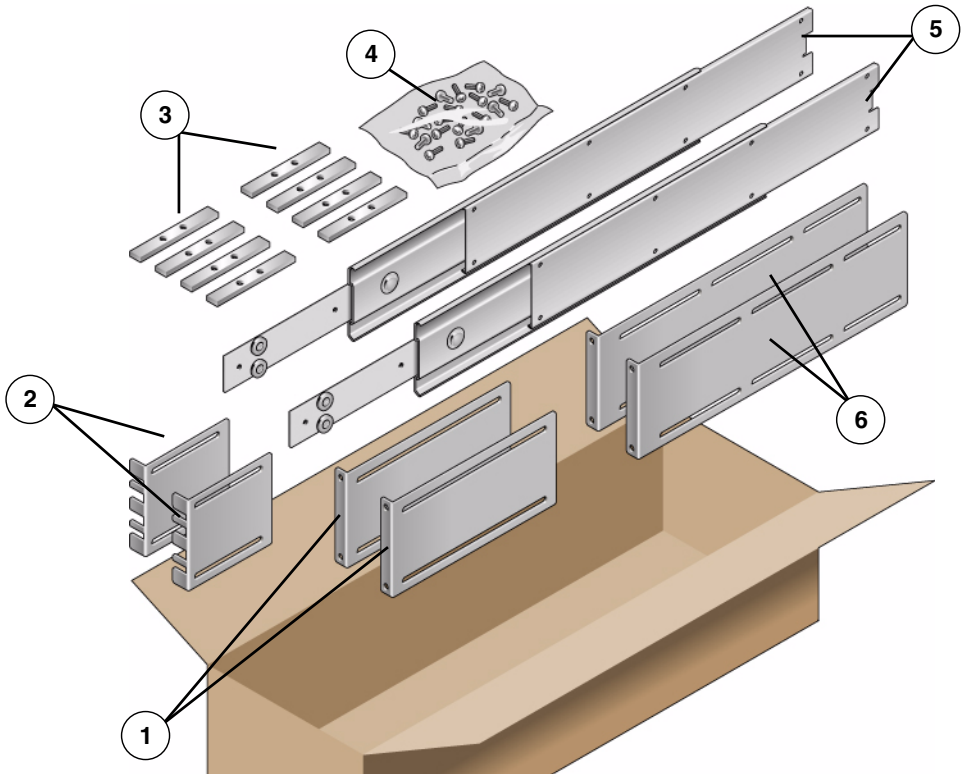


Figure Legend

1	Long brackets	**4**	Screws
2	Short brackets	**5**	Telco slide assemblies
3	Threaded strips	**6**	Extension brackets

TABLE 3-3 Sliding Rail 19-inch 4-Post Rackmount Screw Kit Contents

Number	Description	Where Used
10	M4 x 0.5 mm x 5 mm Phillips panhead screws	8 for glides, 2 extra
10	M6 brass collar screws	4 for short brackets, 4 for long brackets, 2 extra
8	M5 panhead screws, nuts, plain washers and star washers	8 for slides
10	M5 x 12.7 mm screws	10 for rack, if appropriate
12	M6 x 13 mm screws	10 for rack, if appropriate
9	M6 square clip nuts	9 for rack, if appropriate
10	10–32 collar screws 4 short, 4 long, 2 extra	8 for racks with 10-32 holes, if appropriate
12	10-32 x 0.5 in. combo head screws	12 for rack, if appropriate
12	12-24 x 0.5 in. combo head screws	12 for rack, if appropriate

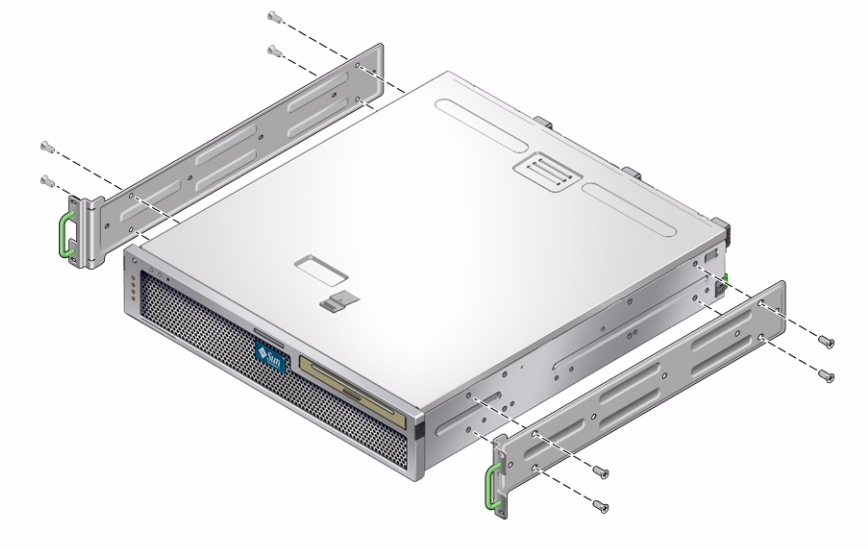
▼ To Install a Server With a Sliding Rail Mount in a 19-Inch 4-Post Rack

1. **Get the hardmount brackets and M5 × 4.5 mm flathead Phillips screws from the standard rack kit (**FIGURE 3-1**).**

   These hardmount brackets and screws are shipped with the standard server ship kit, not as part of the sliding rail 19-inch 4-post rackmount ship kit.

2. **Use four of the supplied M5 × 4.5 mm flathead Phillips screws to secure each of the hardmount brackets to the sides of the server (**FIGURE 3-7**).**

FIGURE 3-7 Securing the Hardmount Bracket to the Server



3. **Get the Telco slide assemblies from the rack kit (**FIGURE 3-6**).**

4. **Press in the button on each slide and pull the glide completely out of the slide (**FIGURE 3-8**).**

FIGURE 3-8 Dismantling the Slide

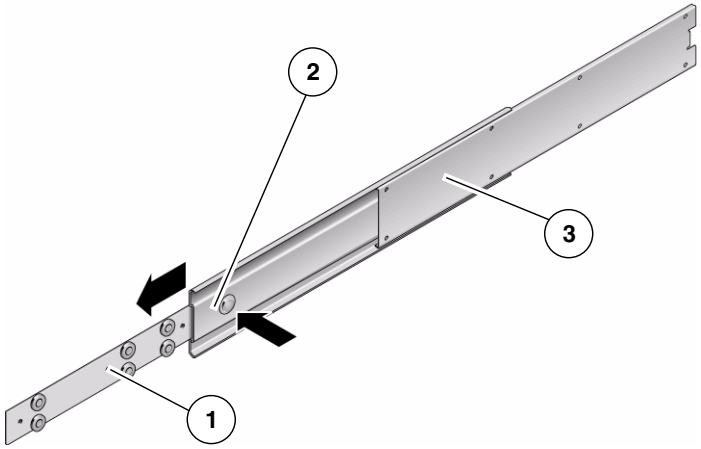
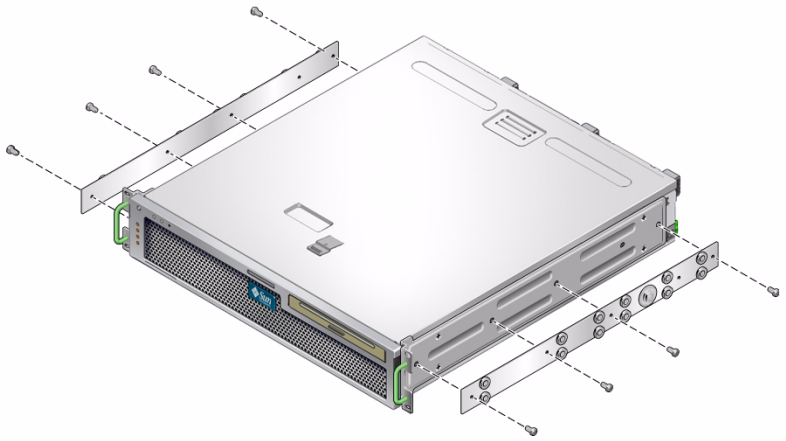


Figure Legend

1	Glide
2	Button
3	Slide (in two parts)

5. **Using eight of the M4 × 0.5 × 5 mm panhead Phillips screws from the rackmount kit (four for each side), screw each glide to the side of the server chassis (**FIGURE 3-9**).**

FIGURE 3-9 Fixing the Glides to the Server Chassis



6. **Get the short brackets and long brackets from the rackmount kit (**FIGURE 3-6**).**

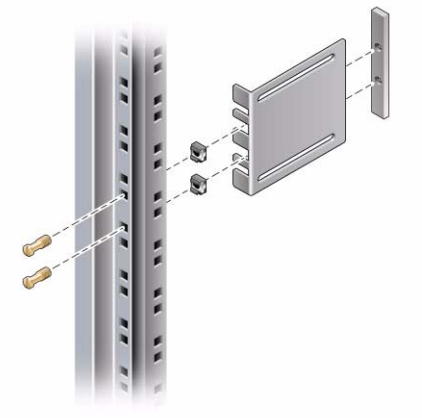
7. **Lift each short bracket to the desired position at the *front* of the rack and attach a short bracket to each of the front rack uprights (**FIGURE 3-10**).**

   Use two of the brass M6 collar screws and M6 cage nuts (if required), and one threaded strip, to secure each bracket (FIGURE 3-10).

8. **Lift each long bracket to the desired position at the *rear* of the rack and attach a long bracket to each of the rear rack uprights (**FIGURE 3-10**).**

   To secure each bracket, use two of the brass M6 collar screws and M6 cage nuts (if required) and one threaded strip, exactly as you did for the front rack uprights in the previous step.

FIGURE 3-10 Securing the Brackets to the Rack



Note – If your rack has 10–32 holes, use the 10–32 collar screws and 10–32 threaded strips.

---

9. **Extend a slide to line up the access holes with the front screw holes.**

10. **Secure the slide onto the short and long brackets at the front and rear of the rack (**FIGURE 3-11**).**

    Use the M5 panhead screws from the inside. Use the M5 nuts, plain washers, and star washers from the outside. Use extension brackets instead of the long brackets if the dimension is greater than 665 mm.

FIGURE 3-11 Securing the Slide to the Brackets

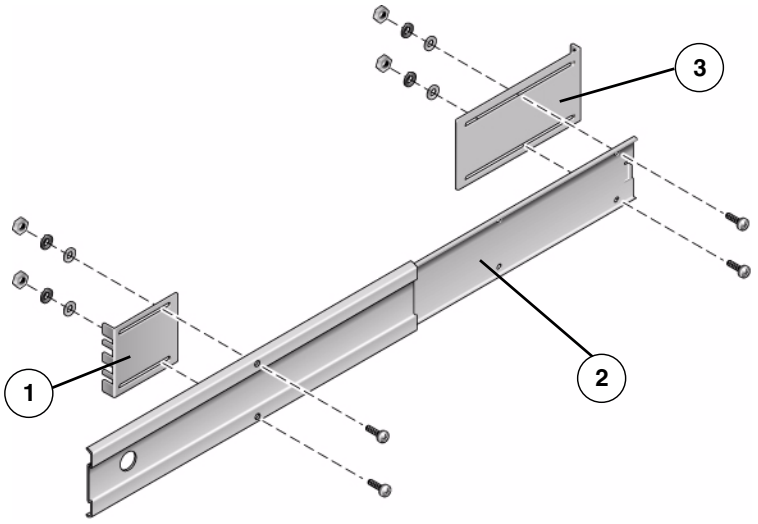


Figure Legend

1	Short bracket
2	Slide
3	Long bracket

11. **Repeat** Step 9 **and** Step 10 **for the slide on the other side of the rack.**

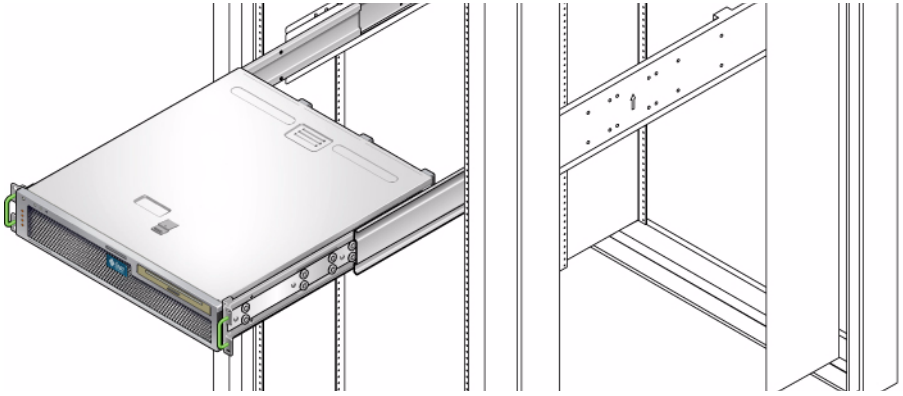
12. **Push the slides completely into the assembly on each side of the rack and release the stop catches.**

13. **Align the glides attached to the server with the slide assemblies in the rack.**

    You might find that there is too much or too little room between the two slides mounted in the rack. Consequently the glides attached to the server might not align correctly with the slides in the rack. If either situation occurs, loosen the M6 collar screws and cage nuts on the long and short brackets (Step 7 and Step 8), move the brackets inward or outward to the appropriate points, then tighten them again.

14. **Push in the slide buttons and slide the server all the way into the rack enclosure (**FIGURE 3-12**).**

FIGURE 3-12 Sliding the Server Into the Rack



15. **Using two screws per side, secure the front of the hardmount brackets that are attached to the sides of the server to the front of the rack (**FIGURE 3-13**).**

    The size of the screws varies, depending on your particular rack.

FIGURE 3-13 Securing the Front of the Server to the Rack

Hardmounting the Server in a 600-mm 4-Post Rack

Hardmount in a 600-mm 4-Post Rack Kit

The hardmount kit for a 600 mm 4-post rack consists of:

- Two adjustable rails
- Two side rails
- Two rear flanges
- Bag of screws

Note – The front-to-back rail spacing must be at least 392 mm (15.43 in.) and not more than 504 mm (19.84 in.) from the outside face of the front rail to the outside face of the back rail.

FIGURE 3-14 Contents of the Hardmount 600-mm 4-Post Kit

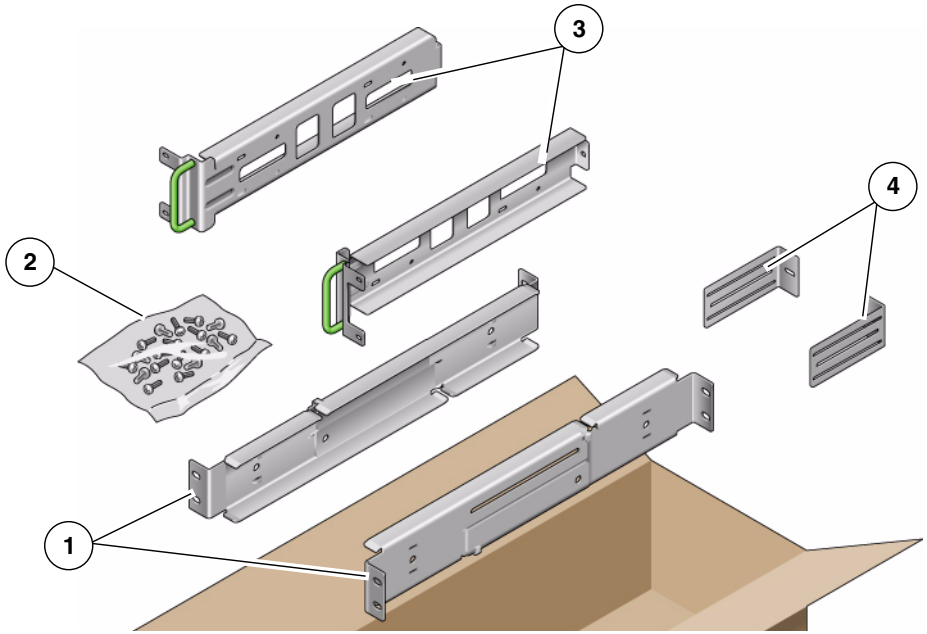


Figure Legend

1	Adjustable rails	**3**	Side rails
2	Screws	**4**	Rear flanges

TABLE 3-4 Hardmount 600 mm 4-Post Rackmount Screw Kit Contents

Number	Description	Where Used
12	M5 x 7 SEM screws	8 for side rails, 4 for rear flanges
10	M5 x 12.7 mm screws	10 for rack, if appropriate
10	M6 x 13 mm screws	10 for rack, if appropriate
9	M6 square clip nuts	9 for rack, if appropriate
12	10-32 x 0.5 in. combo head screws	12 for rack, if appropriate
12	12-24 x 0.5 in. combo head screws	12 for rack, if appropriate

▼ To Install a Server With a Hardmount in a 600-mm 4-Post Rack

1. **Get the adjustable rails from the rack kit (**FIGURE 3-14**).**
2. **Loosen the two screws at the middle of each adjustable rail so that you can extend the adjustable rail (**FIGURE 3-15**).**

FIGURE 3-15 Adjustable Rail Screws

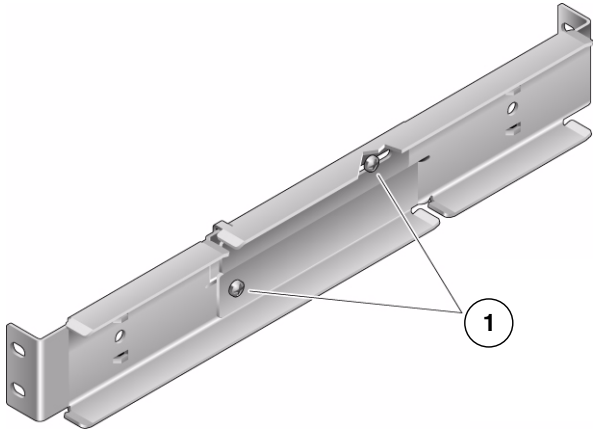


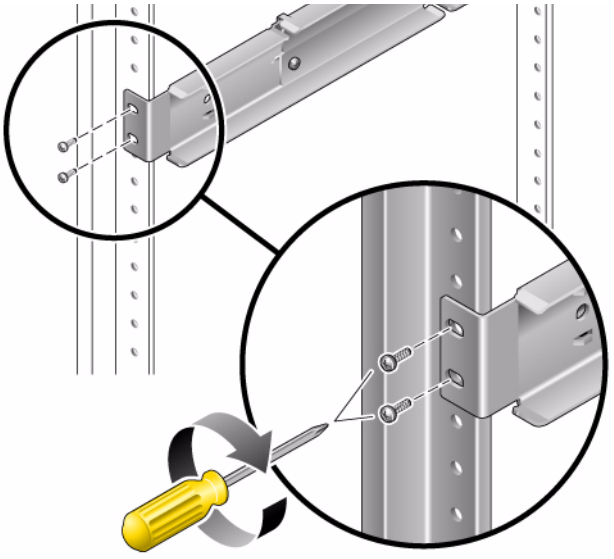
Figure Legend

1	Adjustable rail screws

3. **Lift one of the adjustable rails to the desired location in the rack. Using two screws, secure the front of the rail in the rack (**FIGURE 3-16**).**

   The size of the screws varies, depending on your particular rack.

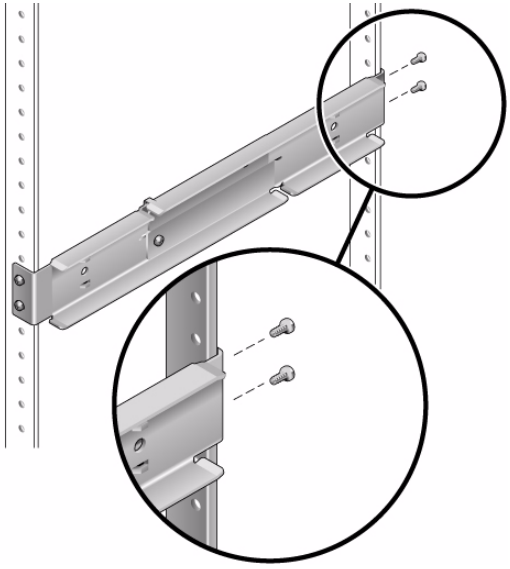
FIGURE 3-16 Securing the Front of the Adjustable Rails to the Rack



4. **At the rear of the rack, use two screws to secure the rear of the adjustable rails to the rack (**FIGURE 3-17**).**

   The size of the screws varies, depending on your particular rack.

FIGURE 3-17 Securing the Rear of the Adjustable Rails to the Rack



5. **Tighten the two screws at the middle of each adjustable rail (**FIGURE 3-15**).**

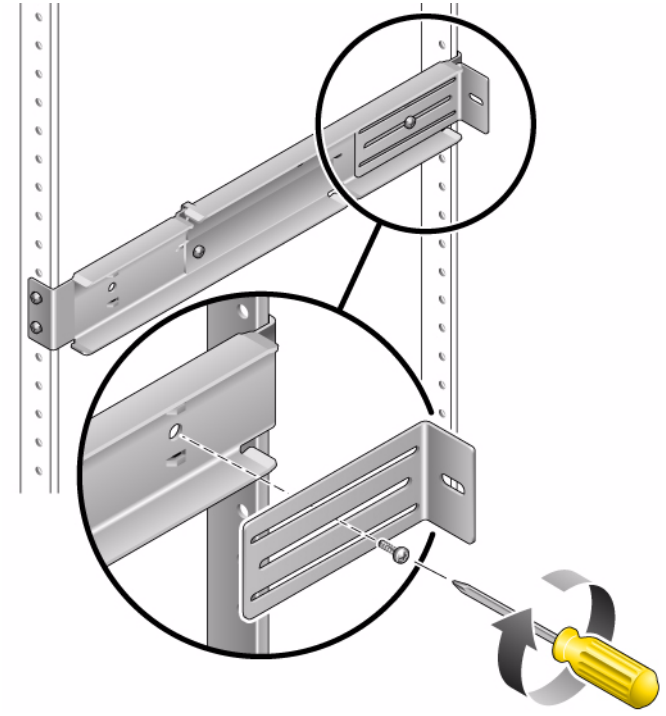
6. **Repeat** Step 3 **through** Step 5 **to mount the other adjustable rail into the rack.**

7. **Get the rear flanges from the rack kit (**FIGURE 3-14**).**

8. **Using one M5 × 7 SEM screw for each rear flange, loosely install the rear flange onto the rear of each of the adjustable rails (**FIGURE 3-18**).**

   Do not completely secure the rear flanges to the adjustable rails. You will use these flanges to set the rack depth for the server in a later step.

FIGURE 3-18 Installing the Rear Flange Onto the Adjustable Rail

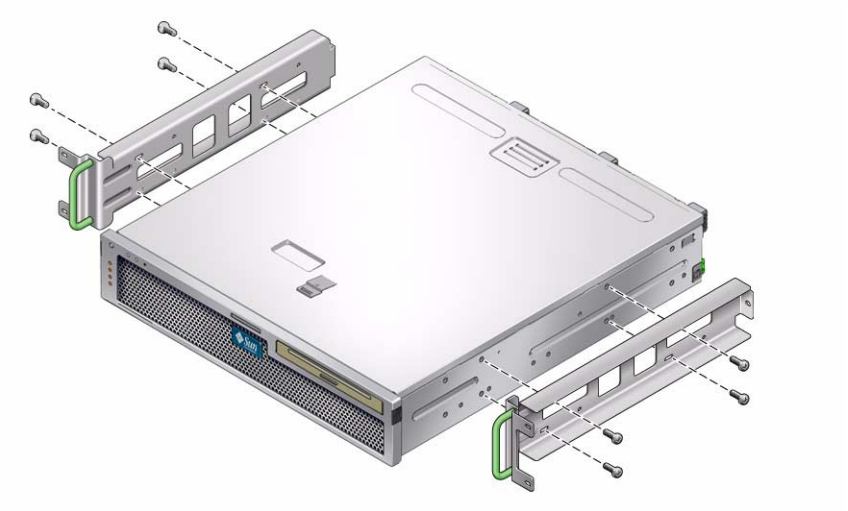


9. **Get the side rails from the rack kit (**FIGURE 3-14**).**

10. **Using eight of the M5 × 7 SEM screws (four for each side rail), secure the side rails to the sides of the server (**FIGURE 3-19**).**

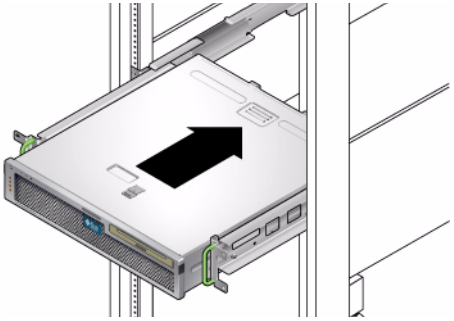
    The side rails can accommodate rack rail setbacks (the distance from the front of the rack to the rack rail) of 50 mm, 75 mm, or 100 mm, depending on the type of rack you are installing the server into.

FIGURE 3-19 Securing the Side Rails to the Server



11. **Lift the server into the rack and slide the server onto the adjustable rails (**FIGURE 3-20**).**

FIGURE 3-20 Sliding the Server Onto the Adjustable Rails



12. **Push the server to the desired depth in the rack, then go to the rear of the server and push the rear flanges flush against the back of the server (**FIGURE 3-18**).**

    If the rack is especially shallow, you can flip the rear flanges around so that they rest flush against the rear of the server.

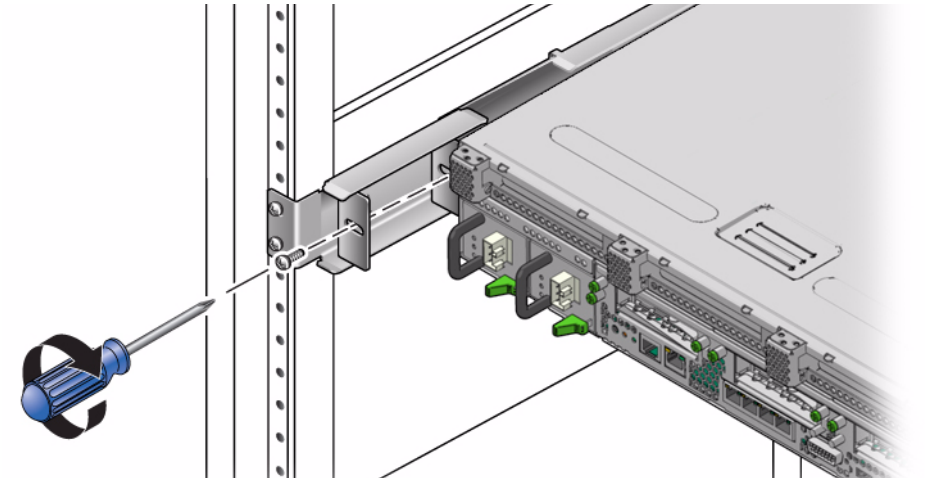
13. **Lift the server out of the rack.**

14. **Set the rear flanges to the desired depth in the rack, then tighten the single M5 × 7 SEM screw on each of the flanges to secure them to the adjustable rails (**FIGURE 3-18**).**

15. **Lift the server into the rack and slide it onto the adjustable rails.**

16. **Push the server backward until it rests flush against the rear flanges, then use one M5 × 7 SEM screw for each rear flange to secure the rear of the server to the rear flanges (**FIGURE 3-21**).**

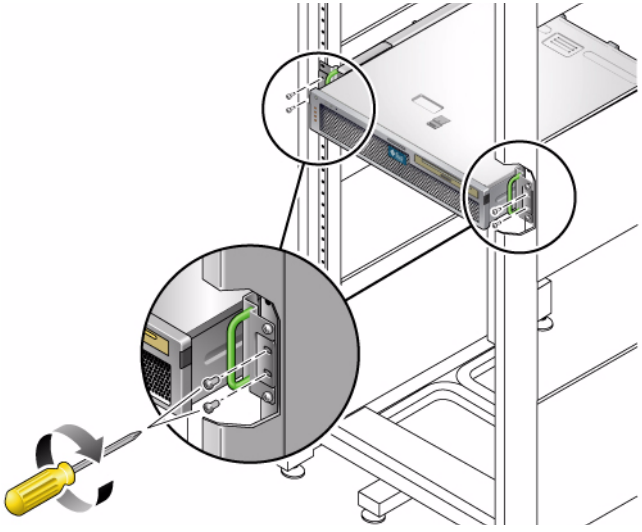
FIGURE 3-21 Securing the Rear of the Server to the Rear Flanges



17. **At the front of the rack, use two screws per side to secure the side rails that are attached to the server to the front of the rack (**FIGURE 3-22**).**

    The size of the screws varies, depending on your particular rack.

FIGURE 3-22 Securing the Front of the Server to the Front of the Rack



Installing a Server With a Sliding Rail Mount in a 19-Inch 4-Post Rack for Use With the Cable Management Assembly

Note – Ensure that you have all of the parts in the rackmount kit before you begin the installation of the server. See "Shipping Kit Inventory List" on page 13.

The rackmount kit contains two slide rail assemblies. A slide rail assembly can be installed on either the right or left side of the rack.

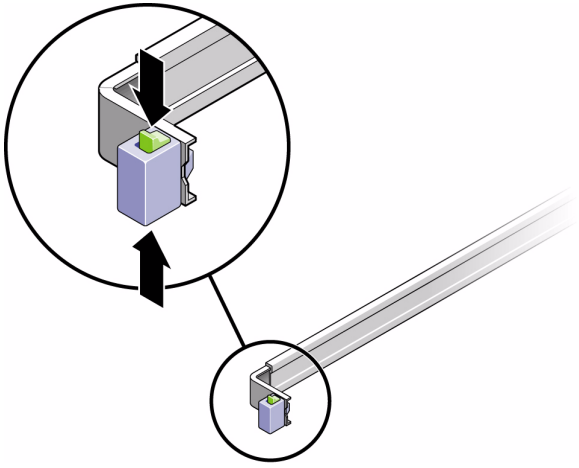
A slide rail assembly consists of two parts, a slide rail and a removable mounting bracket. The slide rail attaches to the rack posts. The mounting bracket attaches to the chassis.

▼ To Install the Slide Rail Assemblies

1. **Pull both mounting brackets completely out of their respective slide rails:**

   a. **Simultaneously press and hold the upper and lower lock buttons of the slide rail lock (**FIGURE 3-23**).**

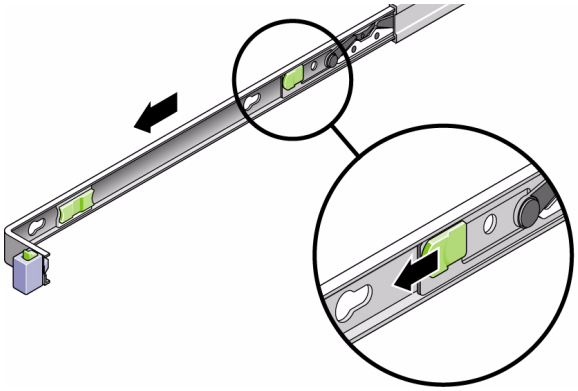
FIGURE 3-23 Unlocking the Slide Rail Assembly



   b. **Pull the mounting bracket out until it locks in the extended position.**

c. Slide the mounting bracket release button in the direction shown in FIGURE 3-24, then slide the mounting bracket out of the slide rail.

FIGURE 3-24 Location of the Mounting Bracket Release Button



d. Press the metal lever (labeled Push) on the middle section (FIGURE 3-25) of the sliding rail, then push the middle section back into the rack.

FIGURE 3-25 Unlocking the Slide Rail Middle Section

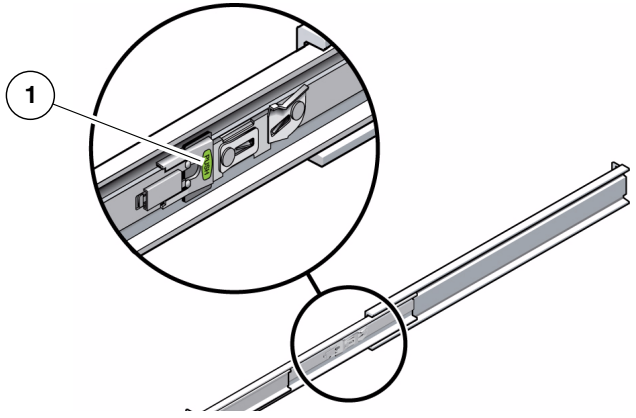


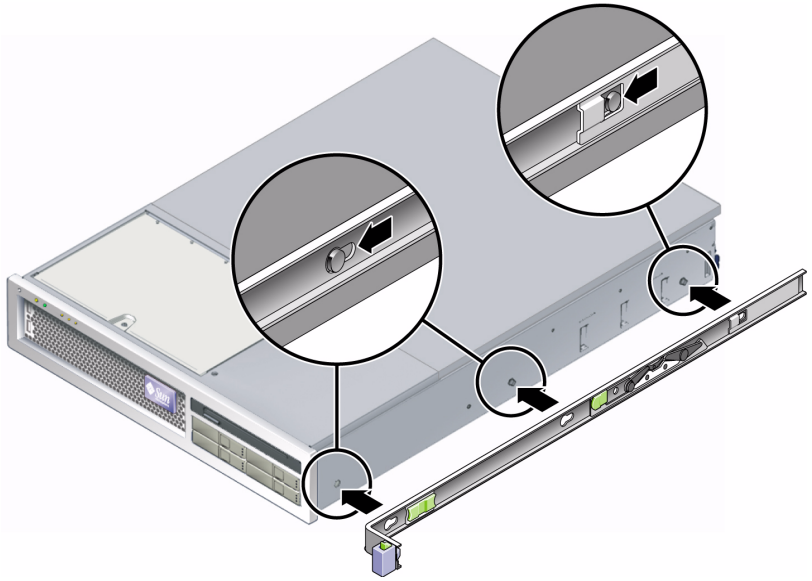
Figure Legend

1	Metal lever

2. Attach a mounting bracket to the right side of the chassis.

a. **Position the mounting bracket against the server chassis (FIGURE 3-26) so that the slide rail lock is at the front and the three keyed openings on the mounting bracket are aligned with the three locating pins on the side of the chassis.**

FIGURE 3-26 Attaching a Mounting Bracket to the Chassis



b. **With the heads of the three locating pins protruding though the three keyed openings in the mounting bracket, pull the mounting bracket toward the front of the chassis until the bracket locks into place with an audible *click*.**

c. **Verify that all three locating pins are trapped in the keyed openings and that the rear locating pin has engaged the mounting bracket lock, as shown in the right side of FIGURE 3-26.**

3. **Attach the second mounting bracket to the left side of the chassis.**

4. **Determine which rack hole numbers to use when attaching the slide rails to the rack posts.**

   The server is two rack units tall (2U). The slide rails occupy the lower half of the 2U space.

5. **Determine which screws you will use to mount the slide rails.**

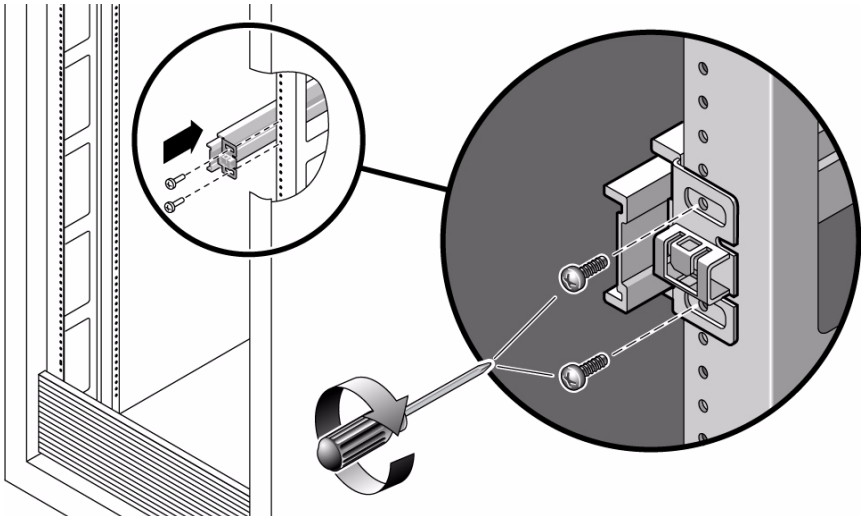
- If your rack has threaded mounting holes in the rack posts, determine whether the threads are metric or standard. Select the appropriate screws from the package included in the mounting kit.

- If your rack does not have threaded mounting holes, the mounting screws are secured with a caged nut.

6. **Attach a slide rail to the right front rack post.**

   a. **Loosely attach the front of a slide rail to the right front rack post (**FIGURE 3-27**) using two screws.**

FIGURE 3-27 Mounting a Slide Rail



Note – Do not tighten the screws yet.

---

   b. **Adjust the length of the slide rail by sliding the rear mounting flange to reach the outside edge of the rear rack post.**

   c. **Loosely attach the rear of the slide rail to the rear rack post with two screws.**

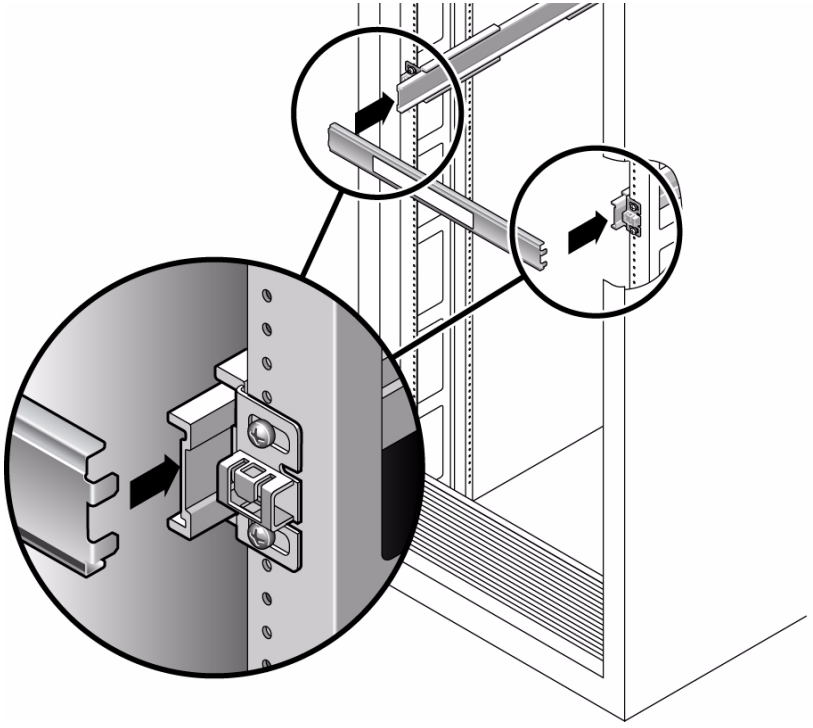
7. **Attach the second slide rail to the left rack posts in a similar manner.**

   Do not tighten the screws.

8. **Use the slide rail spacing tool to adjust the distance between the slide rails:**

   a. **At the front of the rack, plug the left side of the tool into slots at the end of the left rail (**FIGURE 3-28**).**

FIGURE 3-28 Adjusting the Distance Between the Slide Rails



b. Insert the right side of the tool into the front end of the right rail, while sliding the end of the rail to the right or left as needed to enable the ends of the tool to enter the ends of both rails.

The distance between the rails is now equal to the width of the server with mounting brackets.

c. Tighten the screws to lock the ends of the rails in place.

d. At the rear of the rack, repeat Step a through Step c for the rear ends of the rails.

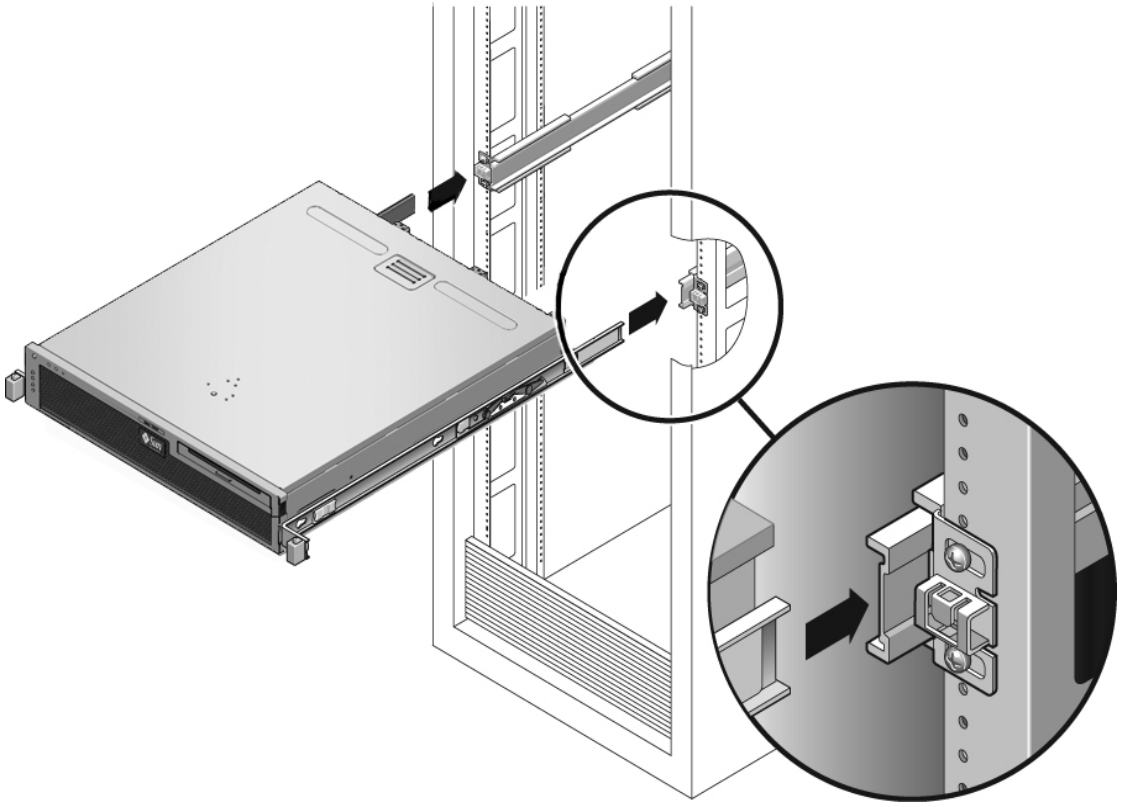
9. Deploy the antitilt bar, if the chassis or rack is so equipped.

Caution – The weight of the server on extended slide rails can be enough to overturn a cabinet.

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

10. **Insert the ends of the mounting brackets into the sliding rails (**FIGURE 3-29**).**

FIGURE 3-29 Mounting the Chassis on the Slide Rails



11. **Slide the chassis into the rack.**

Caution – Verify that the server is securely mounted in the rack, and that the slide rails are locked to the mounting brackets, before continuing.

▼ To Install the Cable Management Assembly

The cable management assembly (CMA) clips into the ends of the left and right sliding rail assemblies. No screws are necessary for mounting the CMA.

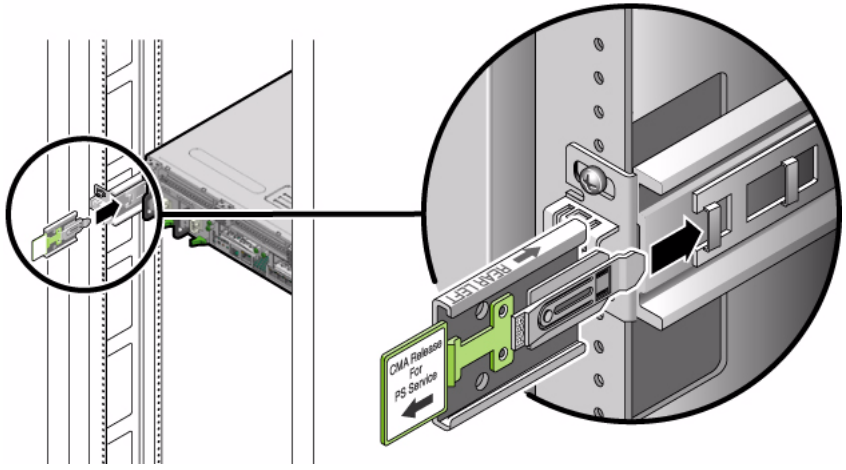
The right sides of the two CMA arms have hinged extensions. On the manufacturer's instruction sheet, the smaller extension is called the inner CMA connector. The connector attaches to the right mounting bracket. The larger extension is called the CMA outer connector, and attaches to the right sliding rail.

Caution – Support the CMA during this installation. Do not permit the assembly to hang by its own weight until it is secured by all three attachment points.

1. **At the rear of the rack, plug the CMA rail extension into the end of the left sliding rail assembly (**FIGURE 3-30**).**

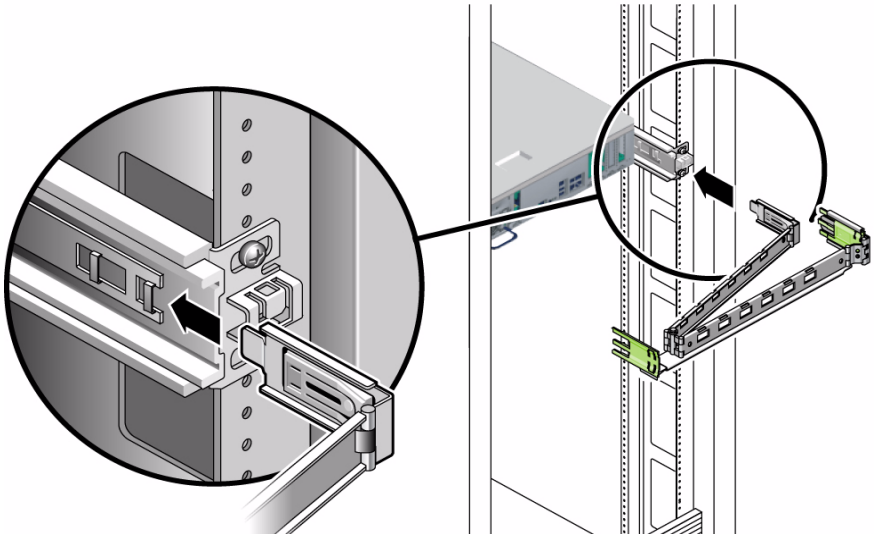
   The tab at the front of the rail extension clicks into place.

FIGURE 3-30 Inserting the CMA Rail Extension Into the Rear of the Left Slide Rail



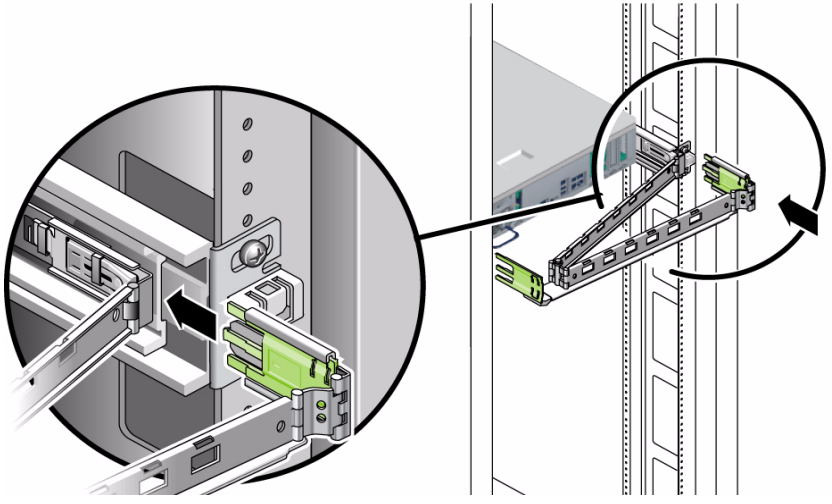
2. **Insert the smaller CMA extension into the clip located at the end of the mounting bracket (**FIGURE 3-31**).**

FIGURE 3-31 Mounting the Inner CMA Connector



3. **Insert the larger extension into the end of the right rail (**FIGURE 3-32**).**

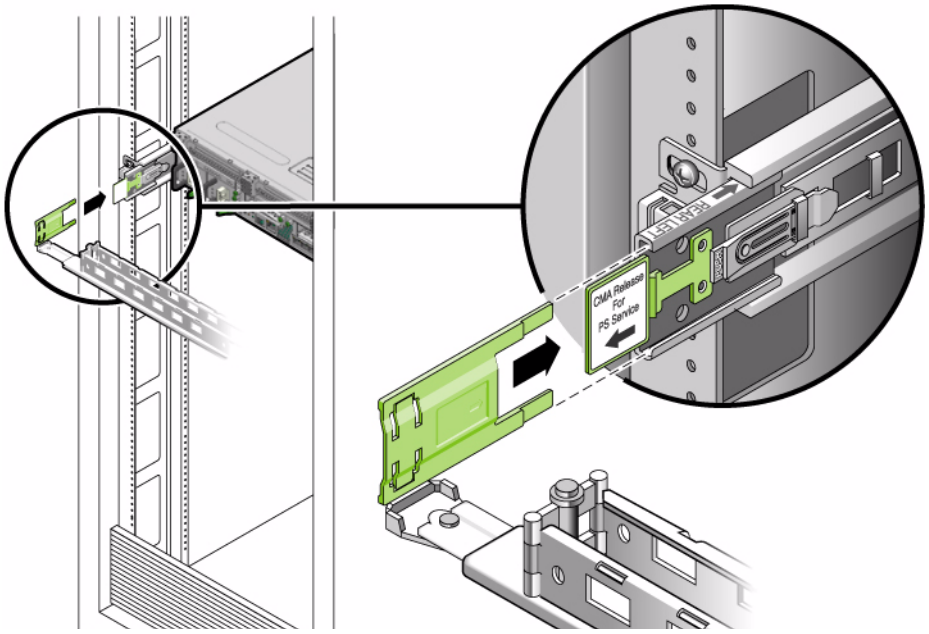
FIGURE 3-32 Attaching the Outer CMA Connector



4. **Insert the hinged plastic connector at the left side of the CMA fully into the CMA rail extension (**FIGURE 3-33**).**

   The plastic tab on the CMA rail extension locks the hinged plastic connector in place.

FIGURE 3-33 Mounting the Left Side of the Rail



▼ To Verify the Operation of the Slide Rails and the CMA

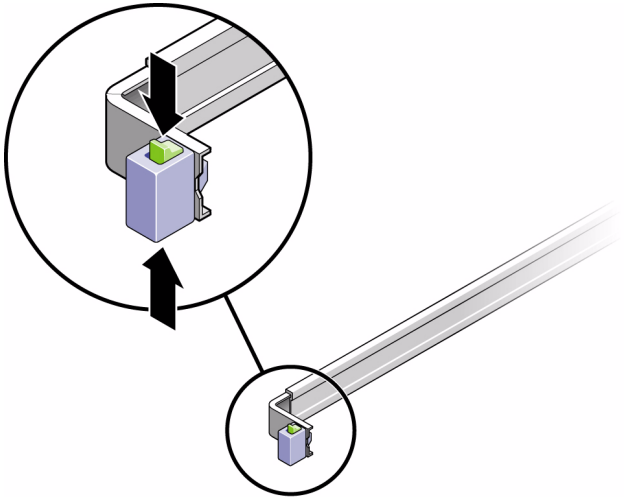
If you are using the CMA on a rack kit with slide rails, follow these steps to ensure that the CMA will not interfere with the ability to move the rack. You must first connect cables to the server.

Tip – Two people are needed for this procedure, one to move the server in and out of the rack, and one to observe the cables and CMA.

---

1. **For a cabinet or a free-standing rack, deploy the antitilt bar.**
2. **Unlock the slide lock buttons (**FIGURE 3-34**) at the right and left sides of the server chassis, and slowly pull the server out of the rack until the slide rails reach their stops.**

FIGURE 3-34 Unlocking the Slide Rail Assembly



3. **Inspect the attached cables for any binding or kinks.**
4. **Verify that the CMA extends fully and does not bind in the slide rails.**
5. **When the server is fully extended out, release the slide rail lever stops (**FIGURE 3-35**).**
6. **Push both levers simultaneously and slide the server back into the rack.**

FIGURE 3-35 Unlocking the Slide Rail Lever Stops

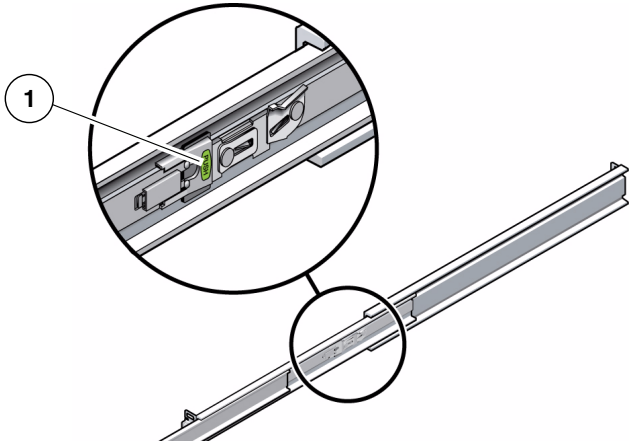


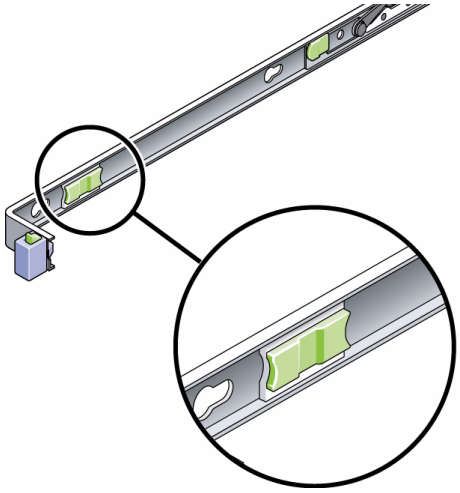
Figure Legend

1	Metal lever

7. **Simultaneously unlock both slide rail release buttons (FIGURE 3-36) and push the server completely into the rack.**

   The server should stop after approximately 15 in. (40 cm) of travel.

FIGURE 3-36 Slide Rail Release Button



8. **Verify that the cables and the CMA retracted without binding.**
9. **Adjust the cable hangers and CMA as required.**

CHAPTER 4

Mounting the Server Into a 2-Post Rack

This chapter provides instructions for installing the server in an open 2-post rack.

This chapter contains the following sections:

Note – References to *left* and *right* are from your viewpoint as you face either the front or rear of the equipment.

Caution – The server is heavy. Two people are required to lift and mount the server into a rack enclosure when following the procedures in this chapter.

2-Post Rackmounting Options

The server ships with a 19-inch, 4-post hardmount rack kit (see "Hardmounting the Server in a 19-Inch 4-Post Rack" on page 18 for installation instructions). TABLE 4-1 lists two additional 2-post rackmount kit options that can be ordered from Sun. This chapter provides installation instructions for these rackmount kit options.

TABLE 4-1 Optional Rackmount Kits

Mounting Kit	Installation Instructions
23-inch 2-post rackmount kit	"To Install a Server With a Hardmount in a 23-Inch 2-Post Rack" on page 52
19-inch 2-post rackmount kit	"Hardmount 19-Inch 2-Post Rack Kit" on page 56

Note – If you have more than six DC-powered servers in the same rack, you might exceed Telcordia NEBS EMI limits.

Hardmounting the Server in a 23-Inch 2-Post Rack

Hardmount 23-Inch 2-Post Rack Kit

The hardmount kit for a 23-inch 2-post rack consists of:

- Two side brackets
- Two rail guides
- Two rear plates
- Bag of screws

Note – The 23-inch 2-post rackmount kit supports rack web thicknesses (the width of the rack post) of 76.20 mm (3 in.), 101.6 mm (4 in.), and 127 mm (5 in.).

FIGURE 4-1 Contents of the Hardmount 23-Inch 2-Post Kit

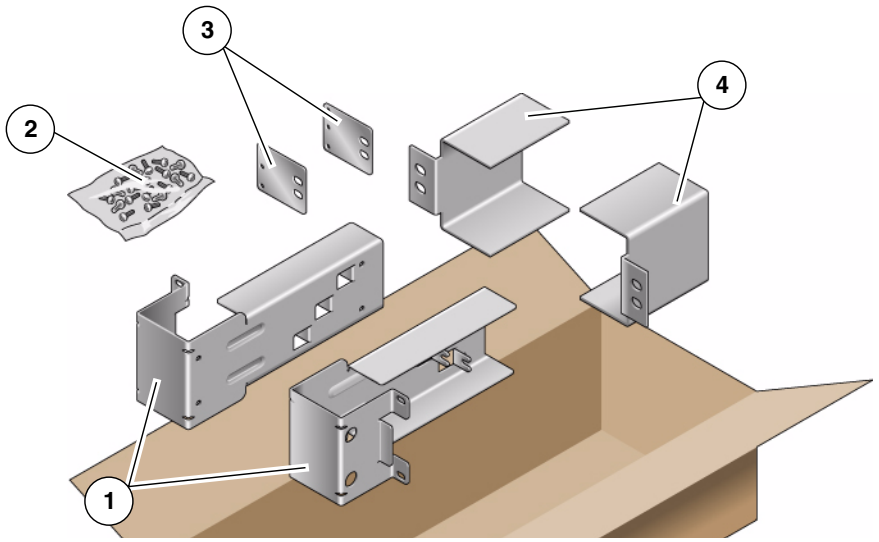


Figure Legend

1	Side brackets	**3**	Rear plates
2	Screws	**4**	Rail guides

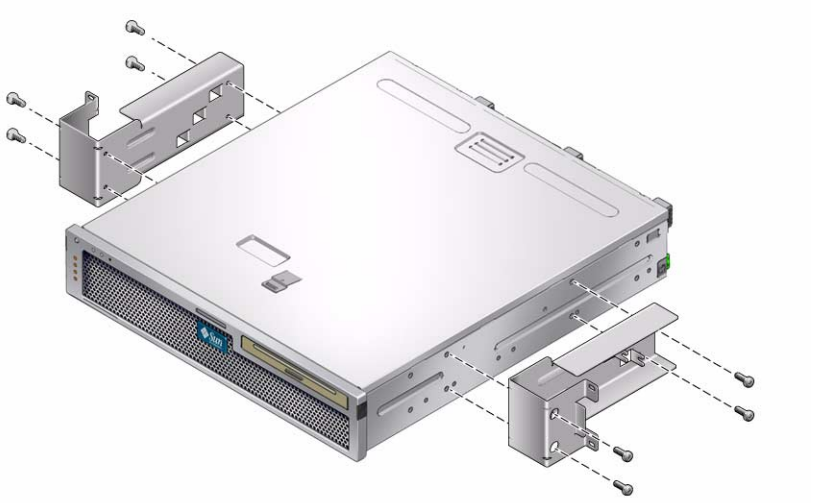
TABLE 4-2 Hardmount 23-Inch 2-Post Rackmount Screw Kit Contents

Number	Description	Where Used
10	M5 x 7 SEM screws	8 for side brackets, 2 for rear plates
10	M5 x 12.7 mm screws	10 for rack, if appropriate
10	M6 x 13 mm screws	10 for rack, if appropriate
9	M6 square clip nuts	9 for rack, if appropriate
12	10-32 x 0.5 in. combo head screws	12 for rack, if appropriate
12	12-24 x 0.5 in. combo head screws	12 for rack, if appropriate

▼ To Install a Server With a Hardmount in a 23-Inch 2-Post Rack

1. **Get the side brackets from the rack kit (**FIGURE 4-1**).**
2. **Using eight of the M5 × 7 SEM screws (four for each side bracket), secure the side brackets to the sides of the server (**FIGURE 4-2**).**

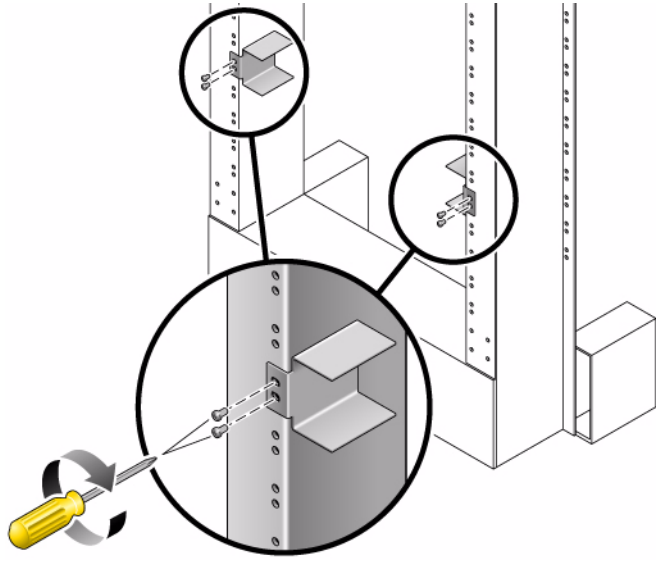
FIGURE 4-2 Securing the Side Brackets to the Side of the Server



3. **Get the rail guides from the rack kit (**FIGURE 4-1**).**
4. **Lift the rail guides to the desired height in the rack and, using two screws each, secure both rail guides to the rack (**FIGURE 4-3**).**

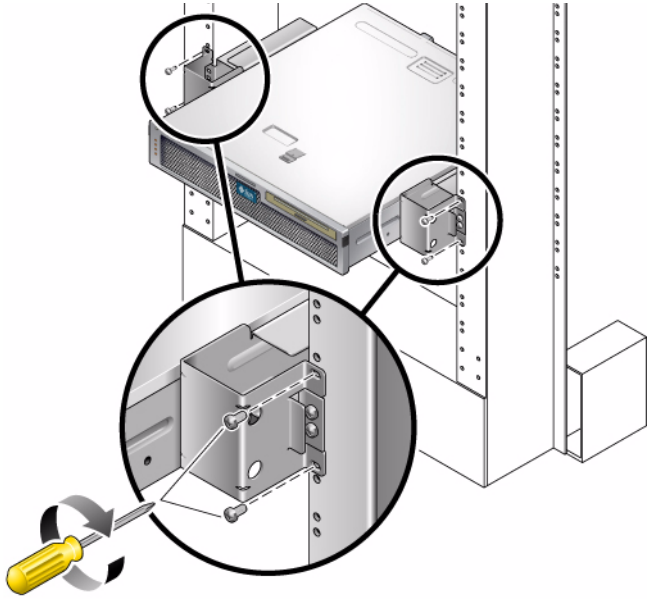
   The size of the screws varies, depending on your particular rack.

FIGURE 4-3 Installing the Rail Guides in the Rack



5. Lift the server into the rack and slide it onto the rail guides (FIGURE 4-4).

FIGURE 4-4 Installing and Securing the Server in the 2-Post Rack



6. **Using two screws on each side, secure each side bracket on the server to the front of the rack (FIGURE 4-4).**

   The size of the screws varies, depending on your particular rack.

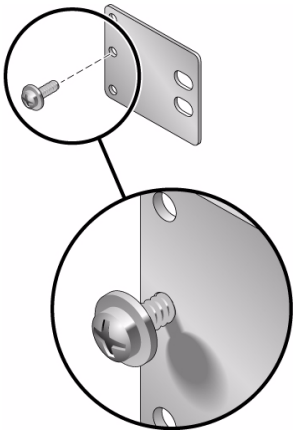
7. **(Optional) If your environment contains especially high vibrations, use the rear plates to further secure the server to the rack (FIGURE 4-1).**

   The rear plates attach to the rear of the post and to one of the three eyelets on each side bracket, depending on the thickness of the post.

   a. **Using one M5 × 7 SEM screw for each rear plate, loosely install the screw in one of the three positions on the rear plate (FIGURE 4-5).**

      The position varies depending on the thickness of the rail in the rack. For example, FIGURE 4-5 shows where you would install the screw for the middle rack position on the rear plate.

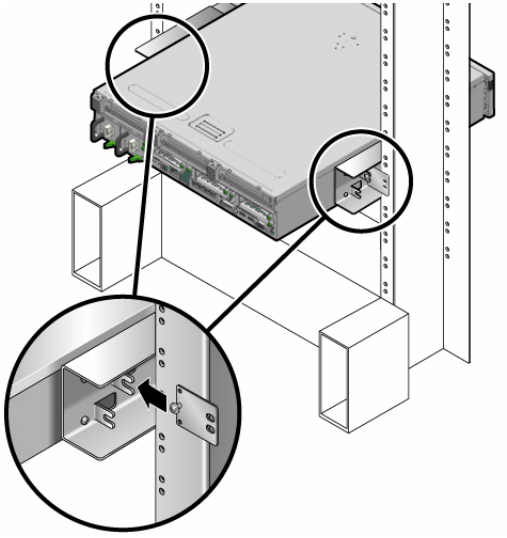
FIGURE 4-5 Installing a Screw on the Middle Rack Position on the Rear Plate



   b. **Slide the rear plate in so that the screw slides into position into one of the eyelets.**

      The screw head should be facing the rear of the server. The other side of the rear plate should be in front of the rack post (FIGURE 4-6).

FIGURE 4-6 Installing the Rear Plate to the Side Bracket

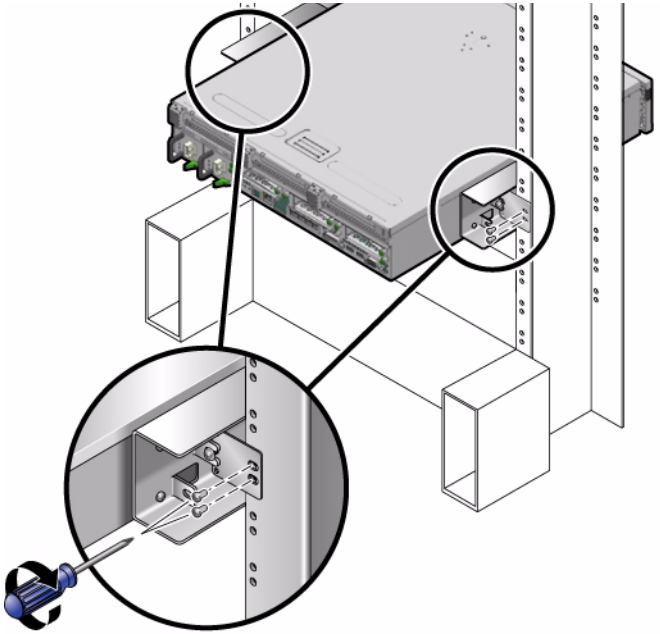


c. **Tighten the screw to secure the rear plate to the eyelet on the side bracket (**FIGURE 4-6**).**

d. **Using two screws, secure the other side of the rear plate to the back of the post (**FIGURE 4-7**).**

   The size of the screws varies, depending on your rack.

FIGURE 4-7 Securing the Rear Plate to the Back of the Post



e. Repeat Step a through Step d to secure the rear plate on the other post.

Hardmounting the Server in a 19-Inch 2-Post Rack

Hardmount 19-Inch 2-Post Rack Kit

The hardmount kit for a 19-inch 2-post rack consists of:

- Two side brackets
- Two rear plates
- Bag of screws

Note – The 19-inch 2-post rackmount kit supports rack web thicknesses (the width of the rack post) of 76.20 mm (3 in.), 101.6 mm (4 in.), and 127 mm (5 in.).

FIGURE 4-8 Contents of the Hardmount 19-Inch 2-Post Kit

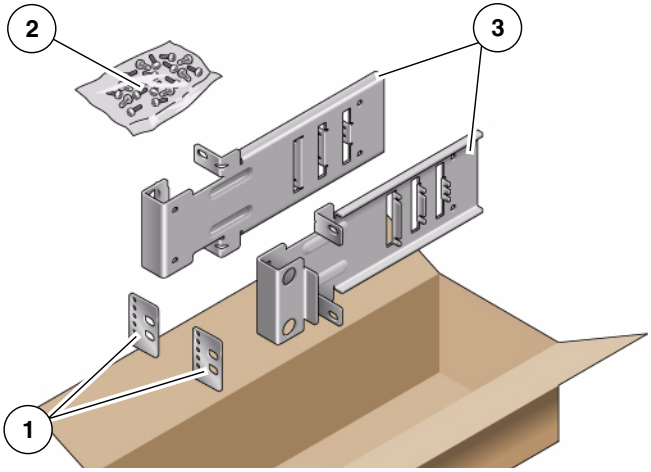


Figure Legend

1	Rear plates	**3**	Side brackets
2	Screws		

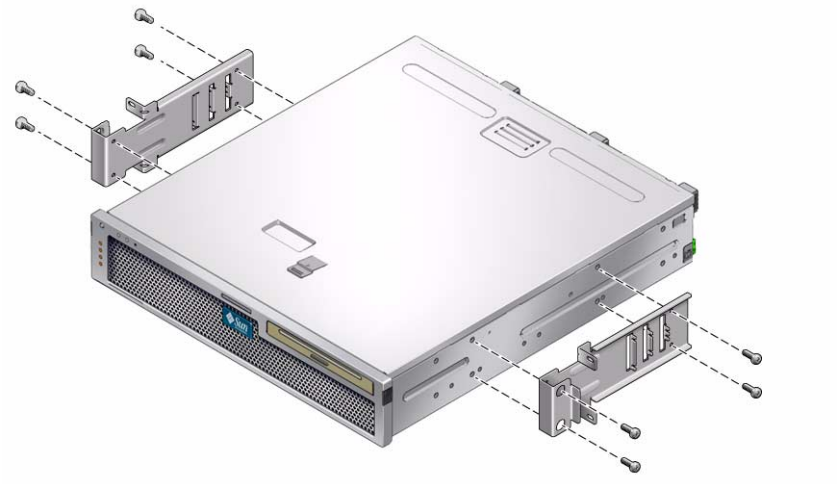
TABLE 4-3 Hardmount 19-Inch 2-Post Rackmount Screw Kit Contents

Number	Description	Where Used
10	M5 x 7 SEM screws	8 for side brackets, 2 extra
6	M3 x 8 SEM screws	4 for rear plates, 2 extra
10	M5 x 12.7 mm screws	10 for rack, if appropriate
10	M6 x 13 mm screws	10 for rack, if appropriate
9	M6 square clip nuts	9 for rack, if appropriate
12	10-32 x 0.5 in. combo head screws	12 for rack, if appropriate
12	12-24 x 0.5 in. combo head screws	12 for rack, if appropriate

▼ To Install a Server With a Hardmount in a 19-Inch 2-Post Rack

1. **Get the side brackets from the rack kit (**FIGURE 4-8**).**
2. **Using four of the M5 × 7 SEM screws for each side bracket, secure the side brackets to the sides of the server (**FIGURE 4-9**).**

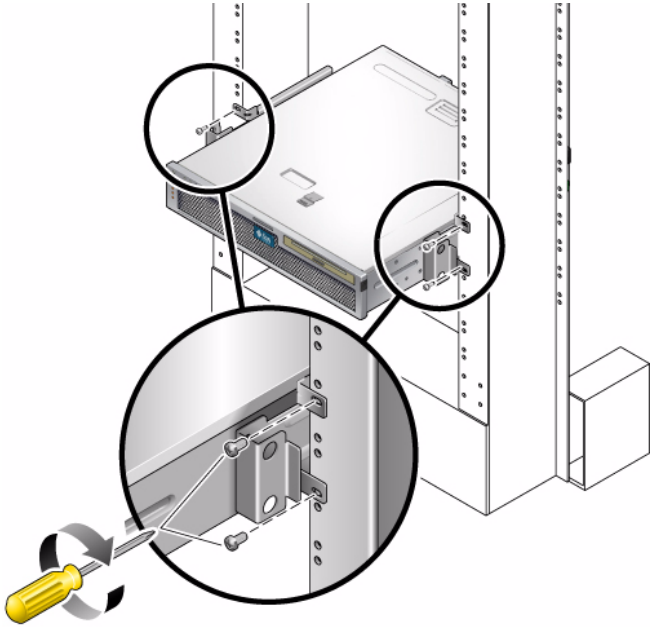
FIGURE 4-9 Securing the Side Brackets to the Side of the Server



3. **Lift the server into the rack.**
4. **Using two screws for each bracket, secure the front of the server to the front of the rack (**FIGURE 4-10**).**

   The size of the screws varies, depending on your rack.

FIGURE 4-10 Installing and Securing the Server in the 2-Post Rack



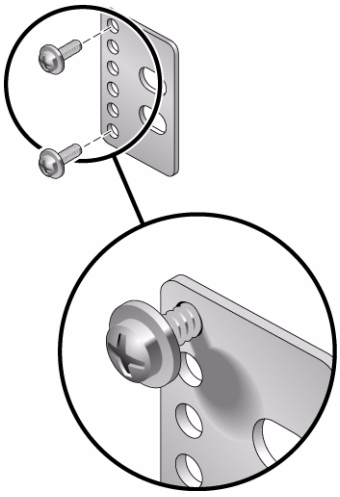
5. **(Optional) If your environment contains especially high vibrations, use the rear plates to further secure the server to the rack (**FIGURE 4-8**).**

   The rear plates attach to the rear of the post and to one of the three sets of eyelets on each side bracket, depending on the thickness of the post.

   a. **Using two of the M3 × 8 SEM screws for each rear plate, loosely install the screws in one of the six positions on the rear plate (**FIGURE 4-11**).**

      The position varies depending on the thickness of the rail in the rack. For example, FIGURE 4-11 shows where you would install the screws for the optimum rack position on the rear plate.

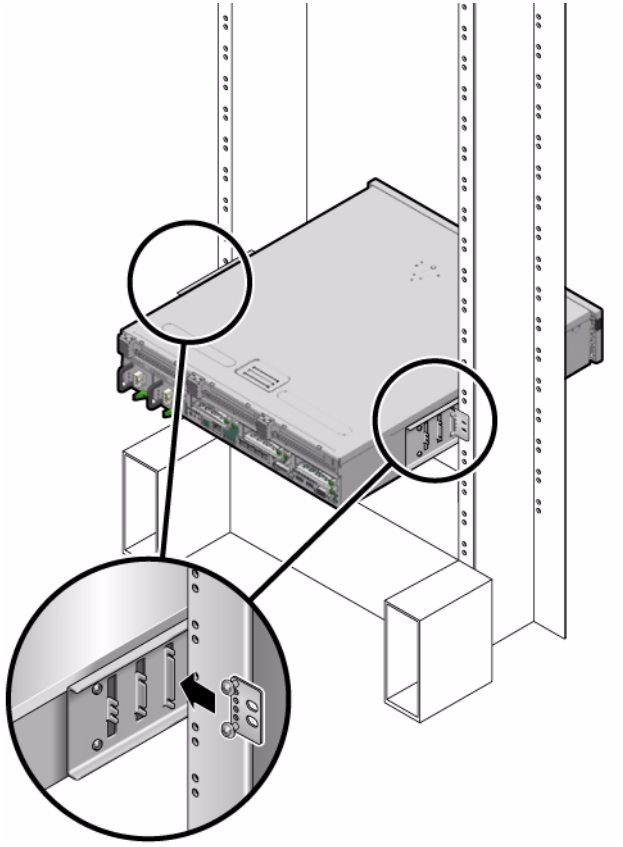
FIGURE 4-11 Installing Screws on the Optimum Rack Position on the Rear Plate



b. Slide the rear plate in so that the screws slide into position into one set of the eyelets.

The screw heads should be facing the rear of the server. The other side of the rear plate should be in front of the rack post (FIGURE 4-12).

FIGURE 4-12 Installing the Rear Plate to the Side Bracket

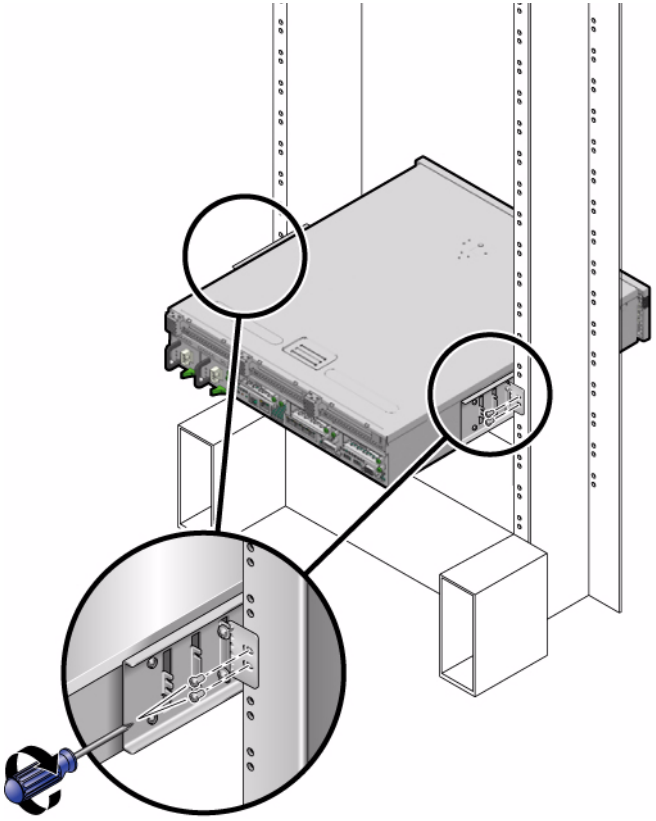


c. **Tighten the screws to secure the rear plate to the set of eyelets on the side bracket (**FIGURE 4-12**).**

d. **Using two screws, secure the other side of the rear plate to the back of the post (**FIGURE 4-13**).**

   The size of the screws varies, depending on your rack.

FIGURE 4-13 Securing the Rear Plate to the Rack



e. **Repeat** Step a **through** Step d **to secure the rear plate on the other post.**

Mounting the Server With a Sliding Rail Mount in a 19-Inch 2-Post Rack

▼ To Install a Server With a Sliding Rail Mount in a 19-Inch 2-Post Rack

The sliding rail mount kit for a 19-inch 2-post rack consists of:

- Two 19-inch 2-post Telco slide assemblies
- Two short brackets
- Two long brackets
- Four M4 and four 10-32 threaded strips
- Two extension brackets
- Bag of screws

Note – The 19-inch 2-post sliding rail rackmount kit supports rack web thicknesses (the width of the rack post) of 76.20 mm (3 in.), 101.6 mm (4 in.), and 127 mm (5 in.).

Note – The front-to-back rail spacing must be at least 392 mm (15.43 in.) and not more than 863.6 mm (34 in.) from the outside face of the front rail to the outside face of the back rail.

FIGURE 4-14 Contents of the Sliding Rail 19-Inch 2-Post Kit

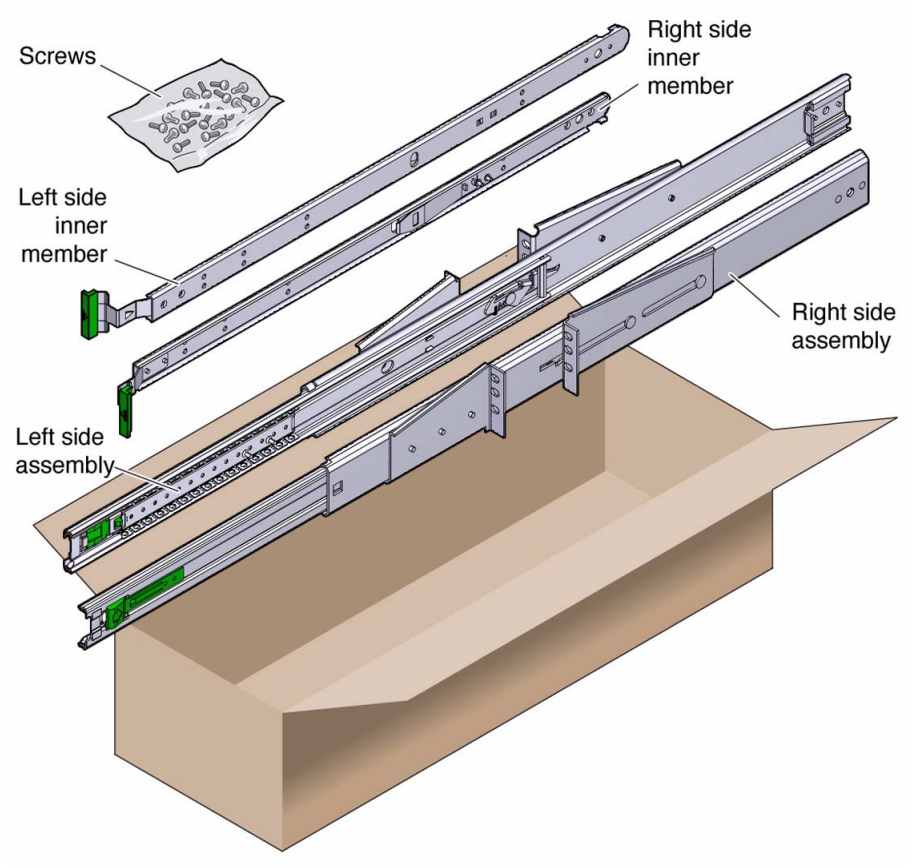


TABLE 4-4 Sliding Rail 19-Inch 4-Post Rackmount Screw Kit Contents

Number	Description	Where Used
10	M4 x 0.5 mm x 5 mm Phillips panhead screws	8 for glides, 2 extra
10	M5 x 12.7 mm screws	10 for rack, if appropriate
12	M6 x 13 mm screws	10 for rack, 2 extra
9	M6 square clip nuts	9 for rack, if appropriate
10	10–32 collar screws, 4 short, 4 long, 2 extra	8 for racks with 10-32 holes, if appropriate
12	10–32 x 0.5 in. combo head screws	12 for rack, if appropriate
12	12–24 x 0.5 in. combo head screws	12 for rack, if appropriate

1. Obtain the slide assemblies from the rack kit (FIGURE 4-14).

2. **Press in the green button on each slide assembly and pull the right side and left side inner members (glides) completely out of the slides (**FIGURE 4-15**).**

FIGURE 4-15 Removing Glides from the Slides

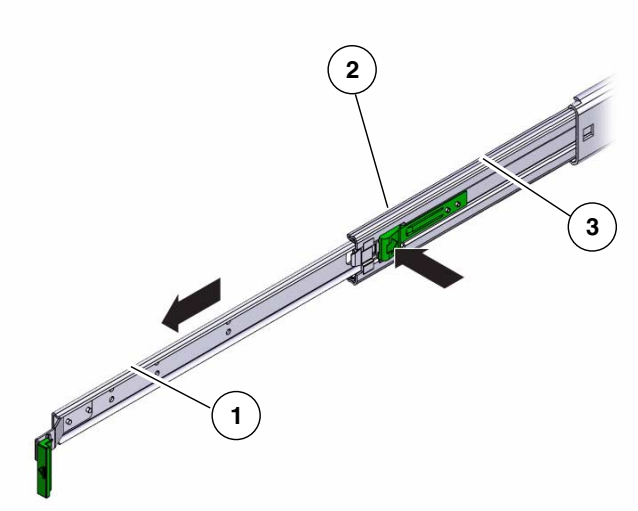
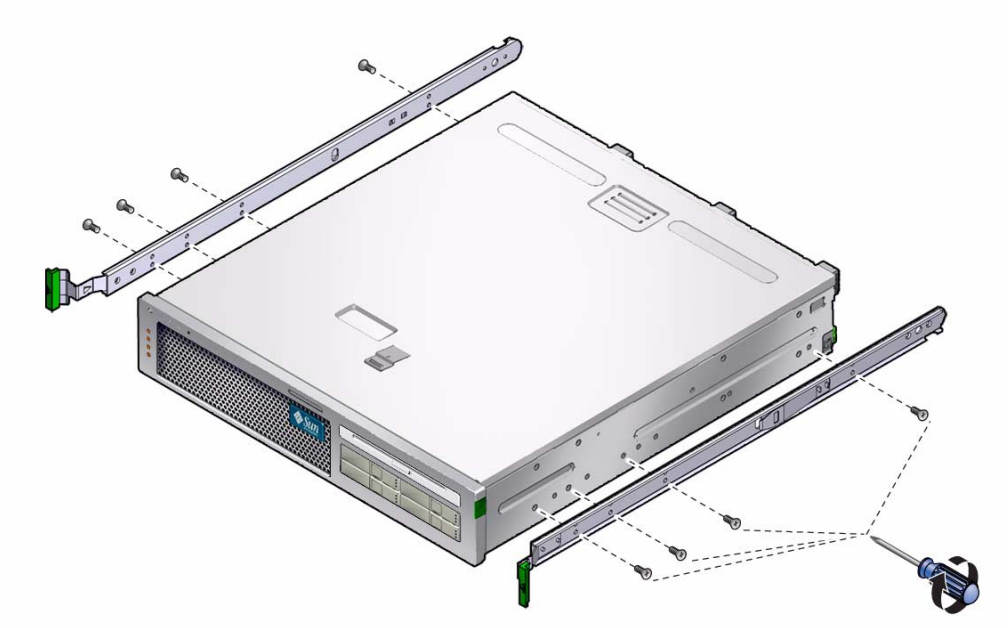


Figure Legend

1	Glide
2	Button
3	Slide (in two parts)

3. **Using eight of the M4 x 0.5 x 5 mm Phillips panhead screws from the rackmount kit (four for each side), attach each glide to the side of the server chassis (**FIGURE 4-16**).**

FIGURE 4-16 Attaching the Glides to the Server Chassis

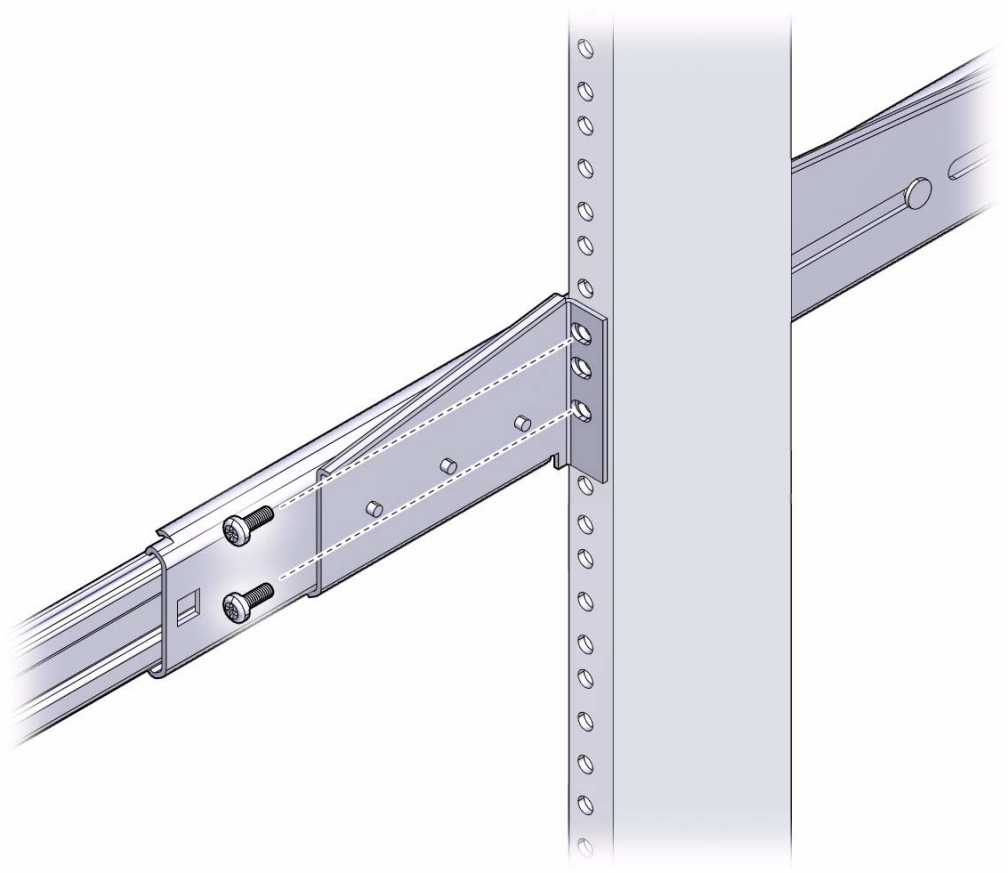


4. **Get the rack brackets (front and rear) from the rackmount kit (**FIGURE 4-14**).**

5. **Lift each front bracket to the desired position at the front of the rack, and attach a front bracket to each of the front rack posts (**FIGURE 4-17**).**

   To secure each bracket, use two of the M5 x 12.7 mm screws or two of the M6 x 13 mm screws. Tighten the screws enough to secure the brackets, but leave them loose enough for adjustment later.

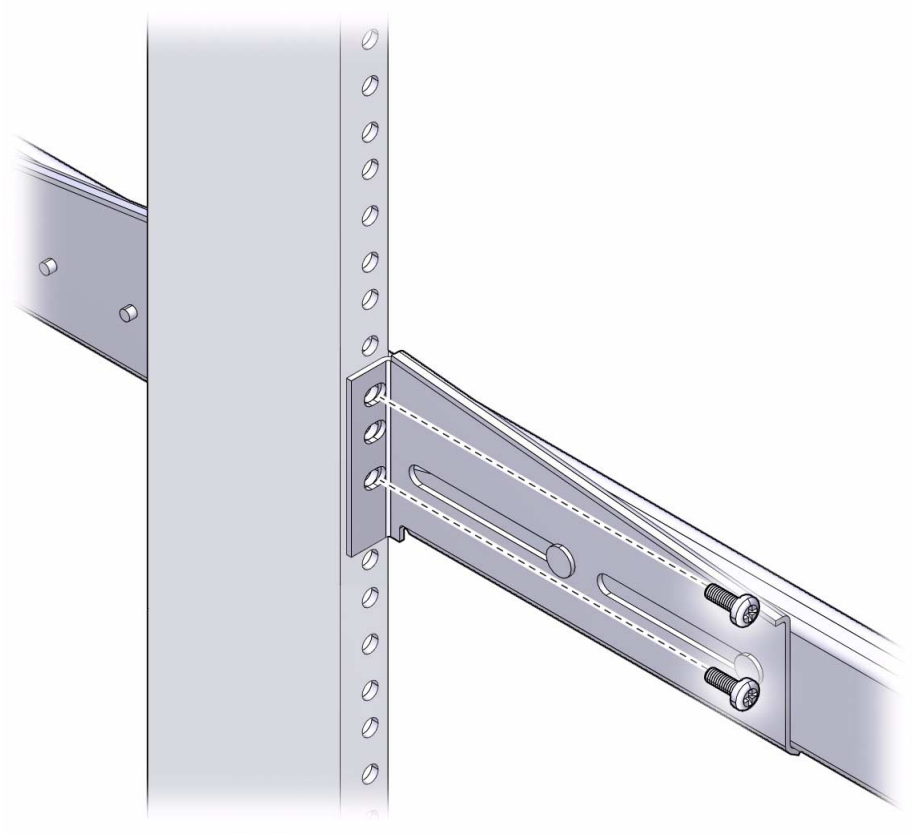
FIGURE 4-17 Attaching the Front Brackets to the Posts



6. **Lift each rear bracket to the desired position at the rear of the rack, and attach a rear bracket to each of the rear rack posts (**FIGURE 4-18**).**

   To secure each bracket, use two of the M5 x 12.7 mm screws or two of the M6 x 13 mm screws, as you did in Step 5. Tighten the screws enough to secure the brackets, but leave them loose enough for adjustment later.

FIGURE 4-18 Securing the Rear Brackets to the Rack Posts



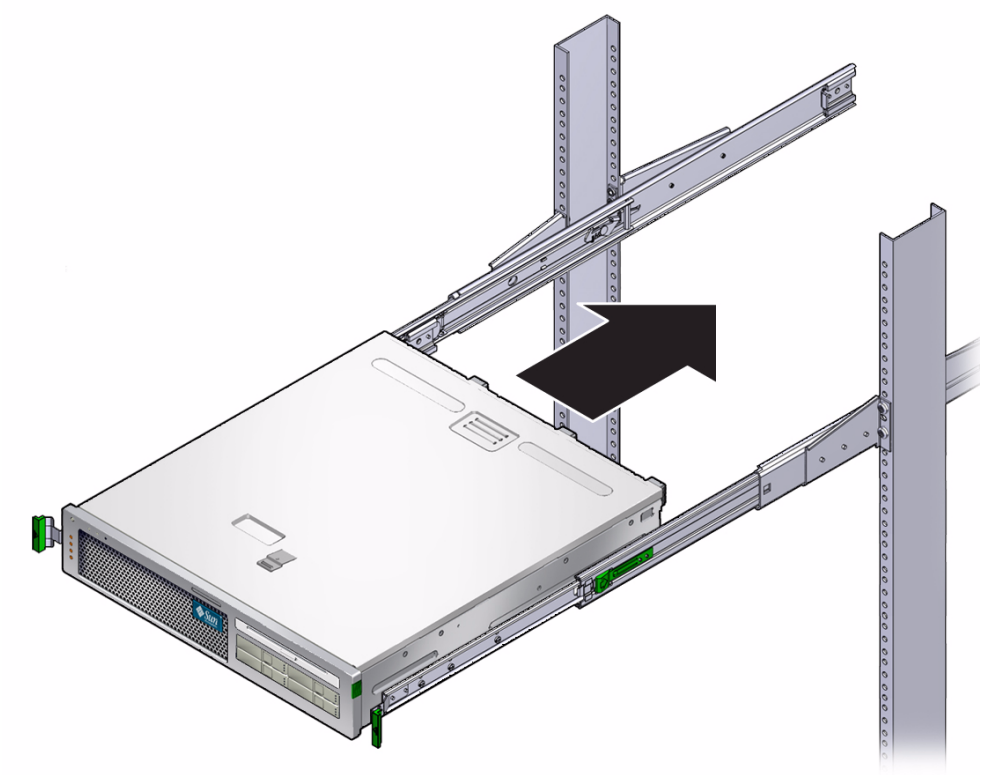
Note – If your rack has 10–32 holes, use the 10–32 collar screws and 10–32 threaded strips.

7. **Align the glides attached to the server with the slide assemblies in the rack.**

   You might find that there is too much or too little room between the two slides mounted in the rack, consequently the glides attached to the server might not align correctly with the slides in the rack. If either situation occurs, loosen the screws on the front and back brackets (Step 5 and Step 6), move the brackets inward or outward to the appropriate points, then tighten the brackets again.

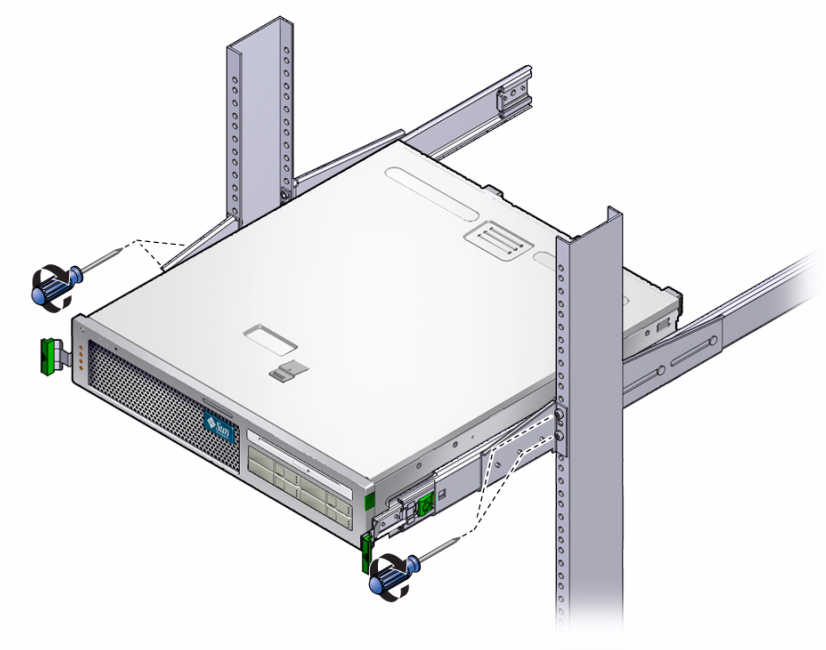
8. **Push in the slide buttons and slide the server all the way into the rack enclosure (**FIGURE 4-19**).**

FIGURE 4-19 Sliding the Server Into the Rack



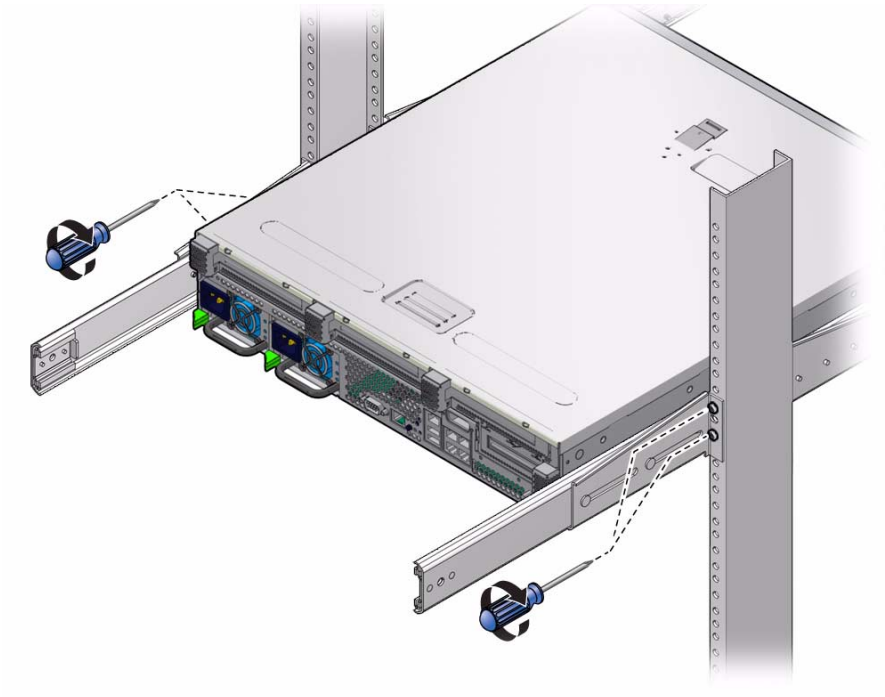
9. Fully tighten the screws on the front brackets

FIGURE 4-20 Tightening the Front Bracket Screws



10. Fully tighten the screws on the rear brackets

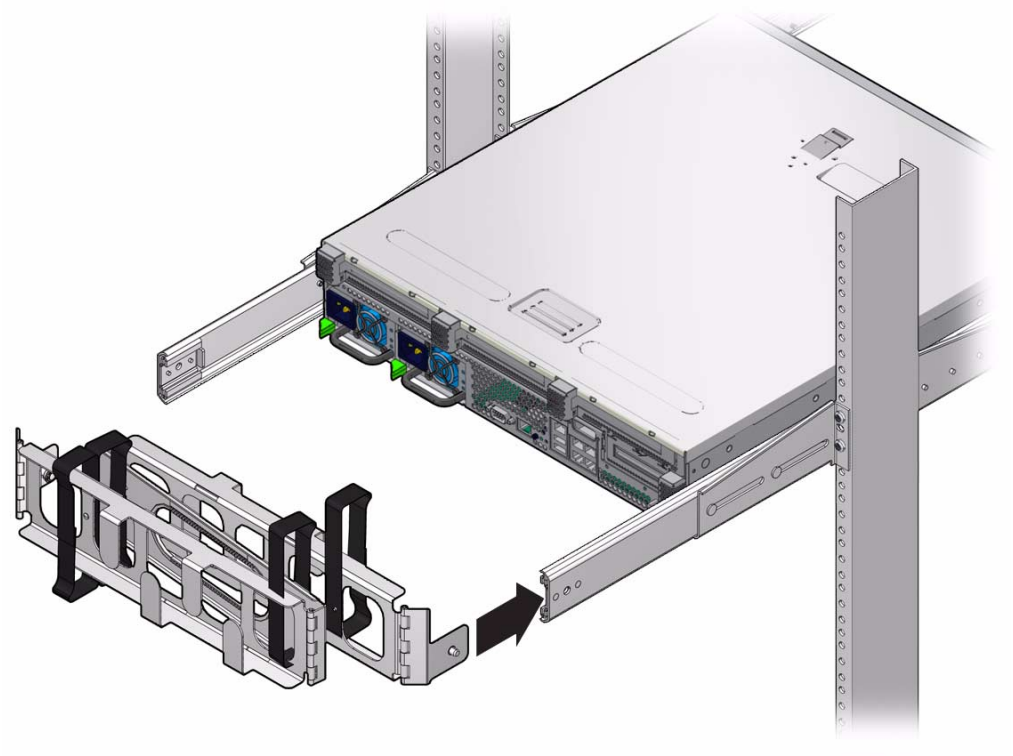
FIGURE 4-21 Tightening the Rear Bracket Screws



11. **Attach Cable Management Arm (CMA) to rails (note labels on rails and CMA) to right (**FIGURE 4-22**) side.**

    Side with arrow attaches to inner glide; other side attached to outer member.

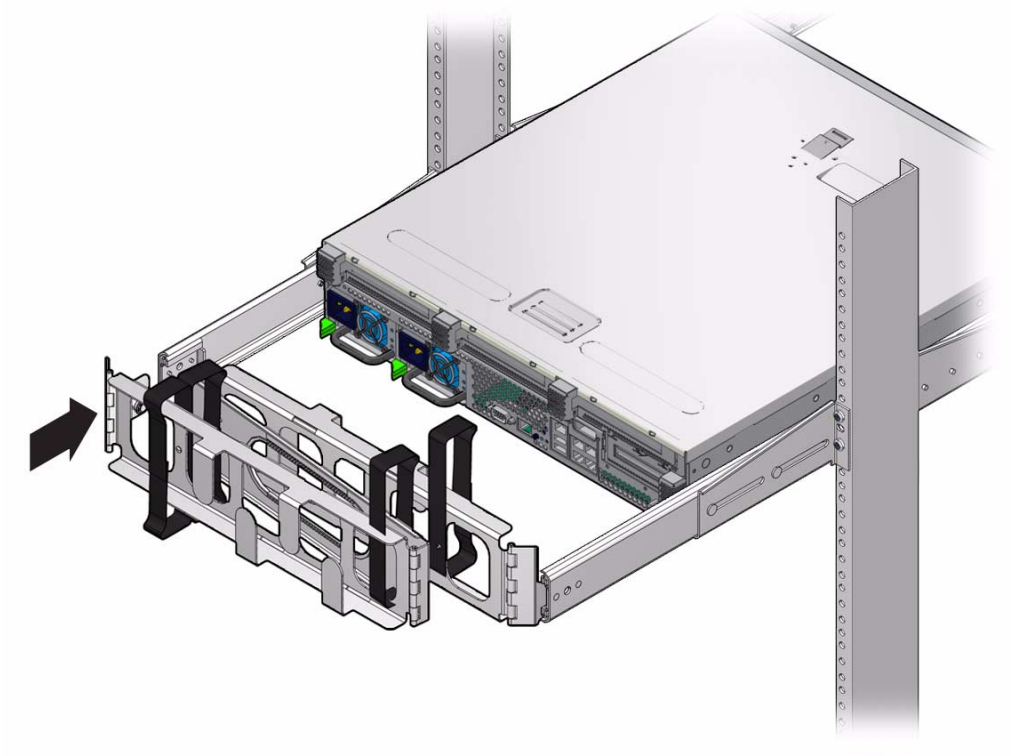
FIGURE 4-22 Attaching Cable Management Arm to Right Side



12. **Attach Cable Management Arm (CMA) to rails (note labels on rails and CMA) to left (FIGURE 4-23) side.**

    Side with arrow attaches to inner glide; other side attached to outer member.

FIGURE 4-23 Attaching Cable Management Arm to Left Side



CHAPTER 5

Cabling the Server

This chapter provides instructions for cabling the server. Topics include:

Note – References to *left* and *right* are from your viewpoint as you face either the front or rear of the equipment.

Cable Connections and Ports

The following list describes the server's cable connections and ports:

- **Minimum cable connections for the servers:**
  - At least one system on-board Ethernet network connection (NET port)
  - The service processor serial management port (SER MGT port)
  - The service processor network management port (NET MGT port)
  - AC or DC power cables for the two system power supplies
- **Service processor management ports:** There are two management ports for use with the ILOM system controller.
  - **The service processor serial management port** (labeled SER MGT) uses an RJ-45 cable and is always available. This port is the default connection to the ILOM system controller.

Note – The serial management (SER MGT) port connection must be made using a shielded twisted-pair (STP) cable in order to comply with NEBS Lightning requirements.

- **The service processor network management port** (labeled NET MGT) is the optional connection to the ILOM system controller. This port is not available until you have configured network settings for the system controller (through the service processor serial management port). See "Connecting to the ILOM Service Processor for the First Time" on page 98. The service processor network management port uses an RJ-45 cable for a 10/100BASE-T connection. This port does not support connections to Gigabit networks.

- **Ethernet ports**: Labeled NET0, NET1, NET2, and NET3. The Ethernet interfaces operate at 10 Mbps, 100 Mbps, and 1000 Mbps. The transfer rates for the Ethernet ports are given in TABLE 5-1.

TABLE 5-1 Ethernet Connection Transfer Rates

Connection Type	IEEE Terminology	Transfer Rate
Ethernet	10BASE-T	10 Mbit/sec
Fast Ethernet	100BASE-TX	100 Mbits/sec
Gigabit Ethernet	1000BASE-T	1000 Mbit/sec

- **VGA (video) port:** Use a 9-pin video cable to connect to a VGA video device.
  - You can use ILOM to redirect the system console to this port.
- **USB ports:** Two Universal Serial Bus (USB) ports labeled USB0 and USB1 are provided on the rear panel (FIGURE 5-1). USB ports support hot-plugging. You can connect and disconnect USB cables and peripheral devices while the server is running, without affecting system operations.
  - You can connect up to 126 devices to each of the two USB controllers, for a total of 252 USB devices per server.
- **Input power cables:** Do not attach power cables to the power supplies until you have finished connecting the data cables, and have connected the server to a serial terminal or a terminal emulator (PC or workstation). The server goes into Standby mode and the ILOM system controller initializes as soon as the input power cables are connected to the power source. System messages might be lost if the server is not connected to a terminal, PC, or workstation at this time.

Connector Locations

FIGURE 5-1 shows the connectors on the rear panel of the Sun Netra X4250 server.

FIGURE 5-1 Rear Panel Connectors on the Sun Netra X4250 Server

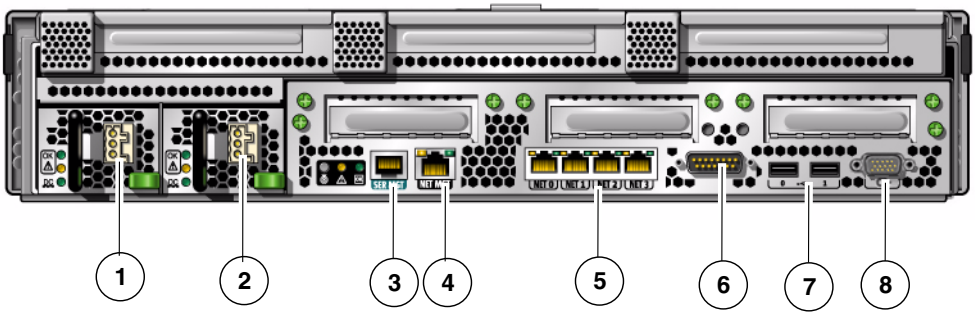


Figure Legend

1	Power Supply 0 Input Power
2	Power Supply 1Input Power
3	Service processor serial management port (SER MGT)
4	Service processor network management port (NET MGT)
5	Ethernet ports (NET0, NET1, NET2, NET3)
6	Alarm port
7	USB ports (USB0, USB1)
8	VGA (video) port

Status Indicator Locations

FIGURE 5-2 shows the status indicators on the front panel of the Sun Netra X4250 server.

FIGURE 5-2 Location of the Bezel Server Status and Alarm Status Indicators

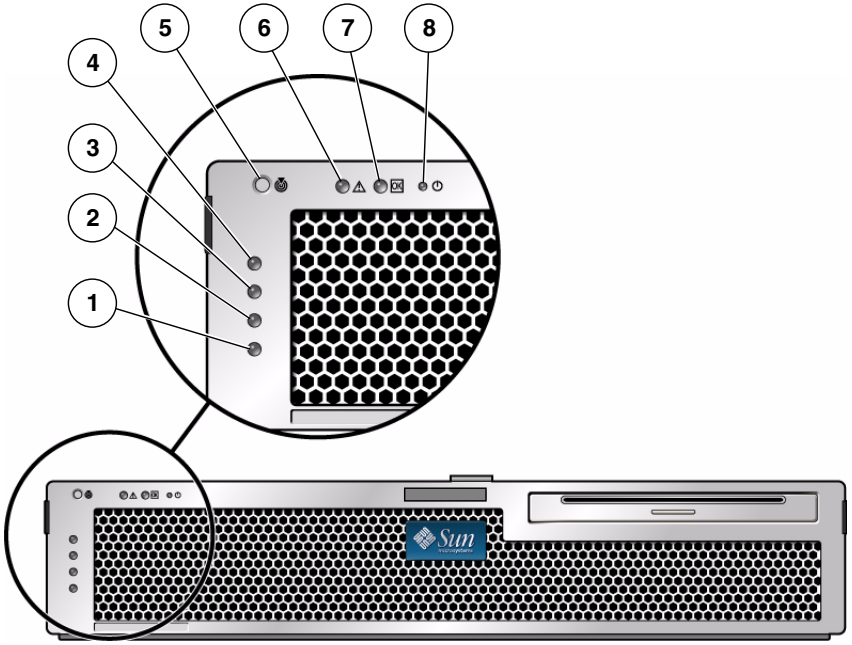


Figure Legend

1	User (amber) alarm status indicator	**5**	Locator LED
2	Minor (amber) alarm status indicator	**6**	Fault LED
3	Major (red) alarm status indicator	**7**	Activity LED
4	Critical (red) alarm status indicator	**8**	Power LED

TABLE 5-2 Bezel Server Status Indicators

Indicator	LED Color	LED State	Component Status
Locator	White	On	Server is identified with the superuser `locator` or ILOM `setlocator` command.
		Off	Normal state
Fault	Amber	On	The server has detected a problem and requires the attention of service personnel.
		Off	The server has no detected faults.
Activity	Green	On	The server is powered up and running the Solaris Operating System.
		Off	Either power is not present or the Solaris software is not running.

Connecting the Server Cables

To boot the server, you must connect and configure the network and serial ports. The procedures are given in the following sections.

- "To Connect the Service Processor Serial Management Port" on page 79
- "To Connect the Service Processor Network Management Port" on page 80
- "To Connect the Ethernet Network Cables" on page 81
- "To Connect AC Power Cables to the Server" on page 82

The server also has serial and USB ports available for connections to optional devices (see "Cable Connections and Ports" on page 75).

Note – When you are finished connecting the cables to the server, ensure that the server can slide smoothly in and out of the rack without binding or damaging the cables. See the section, "To Verify the Operation of the Slide Rails and the CMA" on page 46.

▼ To Connect the Service Processor Serial Management Port

The service processor serial management port is marked SER MGT (FIGURE 5-3). This port is the leftmost RJ-45 port on the rear panel.

Note – The serial management (SER MGT) port connection must be made using a shielded twisted-pair (STP) cable in order to comply with NEBS Lightning requirements.

Note – The cable and DB-9 RJ-45 adapters are for the host serial port, and not for the server SER MGT port.

Use this port for server management. This port is needed to set up the service processor network management port, as detailed in "Connecting to the ILOM Service Processor for the First Time" on page 98.

FIGURE 5-3 Service Processor Serial Management Port – Rear Panel

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

Caution – Do not attach a modem to this port.

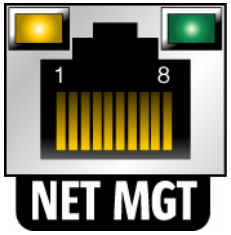
- **Connect a Category 5, shielded twisted-pair (STP) cable from the serial management (SER MGT) port to the terminal device.**

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

▼ To Connect the Service Processor Network Management Port

The service processor network management port is labeled NET MGT (FIGURE 5-4). This port is located just to the right of the serial management (SER MGT) port on the rear panel.

FIGURE 5-4 Service Processor Network Management Port – Rear Panel



Note – This port is not operational until you configure the network settings (through the serial management port), as detailed in "Connecting to the ILOM Service Processor for the First Time" on page 98.

Note – If you have access to a DHCP server on the network, you can see the service processor get an IP address because the DHCP client is enabled by default.

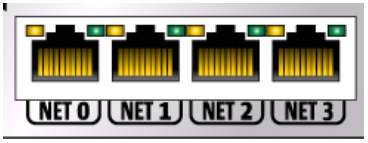
Note – The service processor network management port is configured by default to retrieve network settings with Dynamic Host Configuration Protocol (DHCP) and allow connections using Solaris Secure Shell (SSH). You might need to modify these settings for your network. Instructions are given in Chapter 6.

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

▼ To Connect the Ethernet Network Cables

The server has four network connectors, marked NET0, NET1, NET2, and NET3 (FIGURE 5-5). These connectors are RJ-45 Gigabit Ethernet.

FIGURE 5-5 Service Processor Ethernet Network Ports – Rear Panel



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

   NET0 is the farthest left port in the 4-port network cluster in FIGURE 5-5.

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

Note – The LEDs located above each NET port are Link/Activity (left) and Speed (right) indicators for each port.

▼ To Connect AC Power Cables to the Server

Powering on the system for the first time requires special preparation and procedures. For example, if you have not prepared a display before connecting the AC power cable, system messages could be missed.

Caution – Finish the hardware procedures in this chapter, but do not attach the AC power cable yet.

Caution – The server goes into Standby mode and the service processor initializes as soon as the AC power cable is connected to the power source.

- **Go to** "Powering On the System for the First Time" on page 95 **for instructions on connecting the server to AC power.**

DC Operation Conditions and Procedures

This section provides DC power cabling and requirements information.

DC Power Source Requirements

TABLE 5-3 lists DC power source requirements for each power supply in the Sun Netra X4250 server, and TABLE 5-4 lists DC power source requirements for the server as a whole.

Note – DC power source must be reliably connected to ground.

TABLE 5-3 DC Operating Power Limits and Ranges for Each Power Supply in the Server

Description	Limit or Range
Operating input voltage range	-40 VDC to -75 VDC nominal
Maximum operating input current	11.7 A
Maximum operating input power	660 W

TABLE 5-4 DC Operating Power Limits and Ranges for the Server

Description	Limit or Range
Operating input voltage range	-40 VDC to -75 VDC
Maximum operating input current	23 A
Maximum operating input power	900 W

The server must meet the following requirements:

- Must be reliably connected to protected earth ground
- May be supplied by one or two power sources, isolated from each other
- Must be capable of providing up to 500 W of continuous power per power supply
- Limited to TNV-2 as defined by UL 60950 and IEC 60950

Note – The DC version of the server must be installed in a restricted-access location. According to the intent of the National Electrical Code, a restricted-access location is an area intended for qualified or trained personnel only and has access controlled by a locking mechanism, such as a key lock or an access card system.

DC Supply and Ground Conductor Requirements

The server must meet the following requirements:

- Suitable conductor material: use copper conductors only
- Power supply connections through the input connector: 12 AWG (between the Sun Netra X4250 server and the source). There are three conductors:
  - -48V (negative terminal)
  - Chassis ground connection
  - -48V Return (positive terminal)
- System ground conductor: 12 AWG (to be connected to the chassis)
- Cable insulation rating: Minimum of 75˚C (167˚F), low smoke fume (LSF), flame retardant
- Cable type one of the following:
  - UL style 1028 or other UL 1581 (VW-1) compliant equivalent
  - IEEE 383 compliant
  - IEEE 1202-1991 compliant
- Branch circuit cable insulation color: Per applicable National Electrical Codes

- Grounding cable insulation color: Green and yellow

Note – Depending on the DC power source, the -48V (negative terminal) might be marked with a minus (-) symbol, and the -48V Return (positive terminal) might be marked with a positive (+) symbol.

When attaching DC cables, keep the following requirement in mind:

Caution – You must restrict the connection from the server to the DC power source to minimize the possibility of transient energy appearing on the main input to the equipment. The DC battery power source must be in the same premises as the server. The server cannot be in one building with the power source in another building.

Overcurrent Protection Requirements

- Overcurrent protection devices must be provided as part of each equipment rack.
- Circuit breakers must be located between the DC power source and the Sun Netra X4250 server. Use one 20 A double-pole, fast trip DC-rated circuit breaker for each power supply unit.

Note – Overcurrent protection devices must meet applicable national and local electrical safety codes and be approved for the intended application.

▼ To Assemble the DC Input Power Cable

1. **Identify the parts that you will use to assemble the DC input power cable (**FIGURE 5-6**).**

   The following DC connection parts are required to assemble one or more DC power input cables. These cables connect the -48V DC input sources to the power supply units.

   - DC input plugs
   - Strain relief housings
   - Cage clamp operating lever
   - Tie wraps

FIGURE 5-6 DC Connection Parts

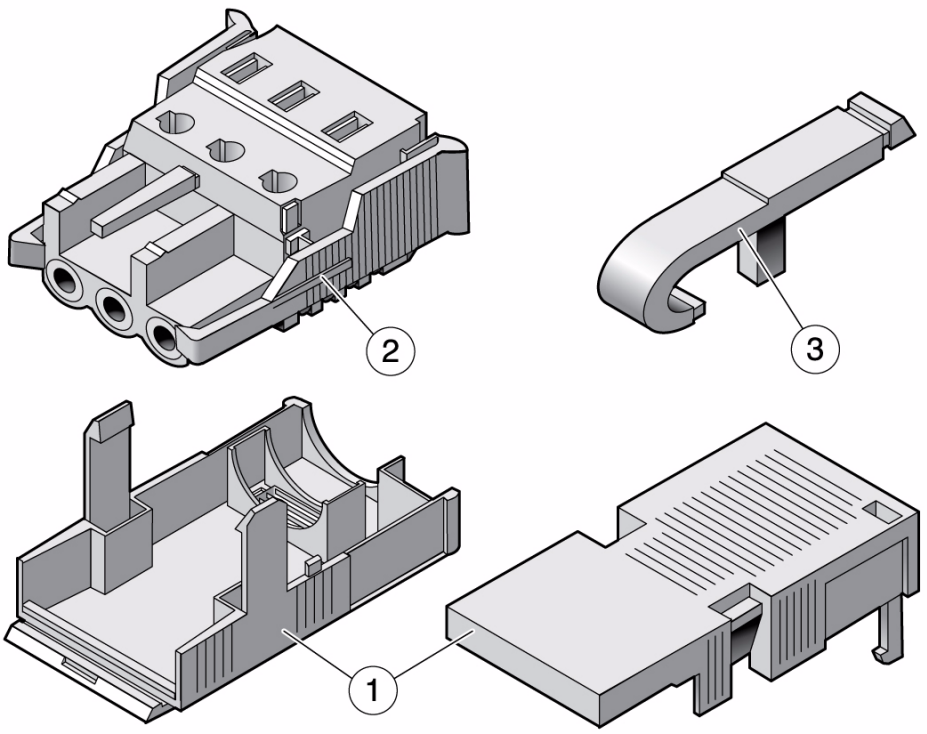


Figure Legend

1	Strain relief housing
2	DC input plug
3	Cage clamp operating lever

2. Turn off power from the DC power source through the circuit breakers.

Caution – Do not proceed with these instructions until you have turned off the power from the DC power source through the circuit breakers.

3. Get a DC input plug from the shipping kit.

4. Locate the three wires coming from the DC power source that will be used in the connection to your unit:

- -48V (negative terminal)
- Chassis ground
- -48V Return (positive terminal)

Note – Depending on the DC power source, the -48V (negative terminal) might be marked with a minus (-) symbol, and the -48V Return (positive terminal) might be marked with a positive (+) symbol.

5. **Strip 5/16 inches (8 mm) of insulation from each of the wires coming from the DC power source.**

   Do not strip more than 5/16 inches (8 mm) from each wire. Doing so leaves uninsulated wire exposed from the DC connector after the assembly is complete.

FIGURE 5-7 Stripping the Insulation From the Wire

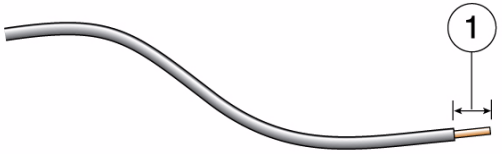


Figure Legend

1	5/16 in. (8 mm)

6. **Open the cage clamp for this section of the DC input plug by taking one of the following actions:**

- Insert the tip of the cage clamp operating lever into the rectangular hole directly above the hole in the DC input plug where you want to insert the first wire. Press down on the cage clamp operating lever (FIGURE 5-8).

FIGURE 5-8 Opening the Cage Clamp Using the Cage Clamp Operating Lever

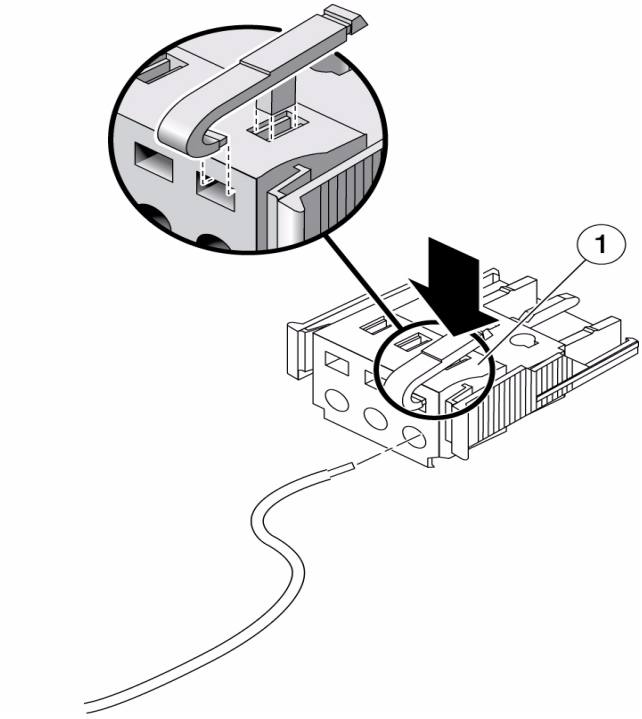


Figure Legend

1	DC input plug

- Insert a small slotted screwdriver into the rectangular hole directly above the hole in the DC input plug where you want to insert the first wire, and press down on the screwdriver (FIGURE 5-9).

FIGURE 5-9 Opening the Cage Clamp Using a Screwdriver

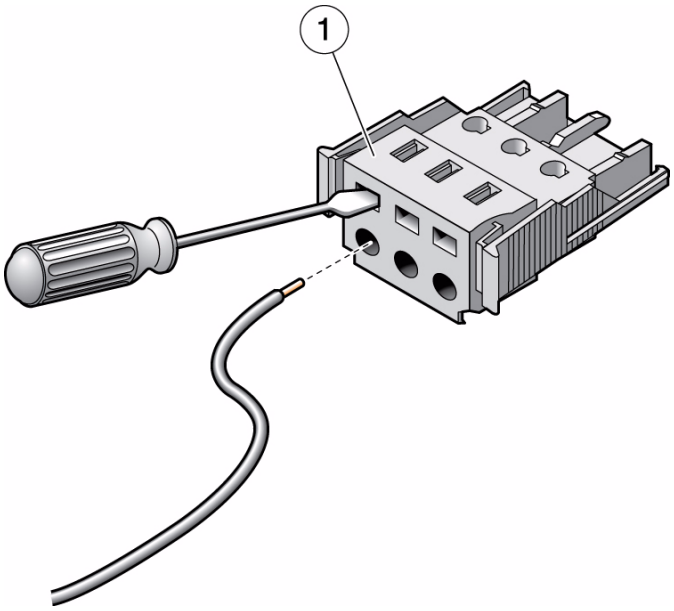


Figure Legend

1	DC input plug

7. **Feed the exposed section of the appropriate wire into the rectangular plug hole in the DC input plug.**

   FIGURE 5-10 shows which wires should be inserted into each hole in the DC input plug.

FIGURE 5-10 Assembling the DC Input Power Cable

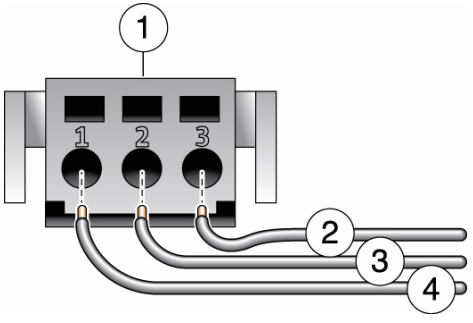


Figure Legend

1	Top of connector	**3**	From chassis ground (green and yellow)
2	From -48V return	**4**	From -48V

8. **Repeat Step 6 and Step 7 for the other two wires to complete the assembly of the DC input power cable.**

9. **Repeat Step 4 through Step 8 to create as many DC input power cables as you need for your unit.**

   You need two DC input power cables, one for each of the power supplies.

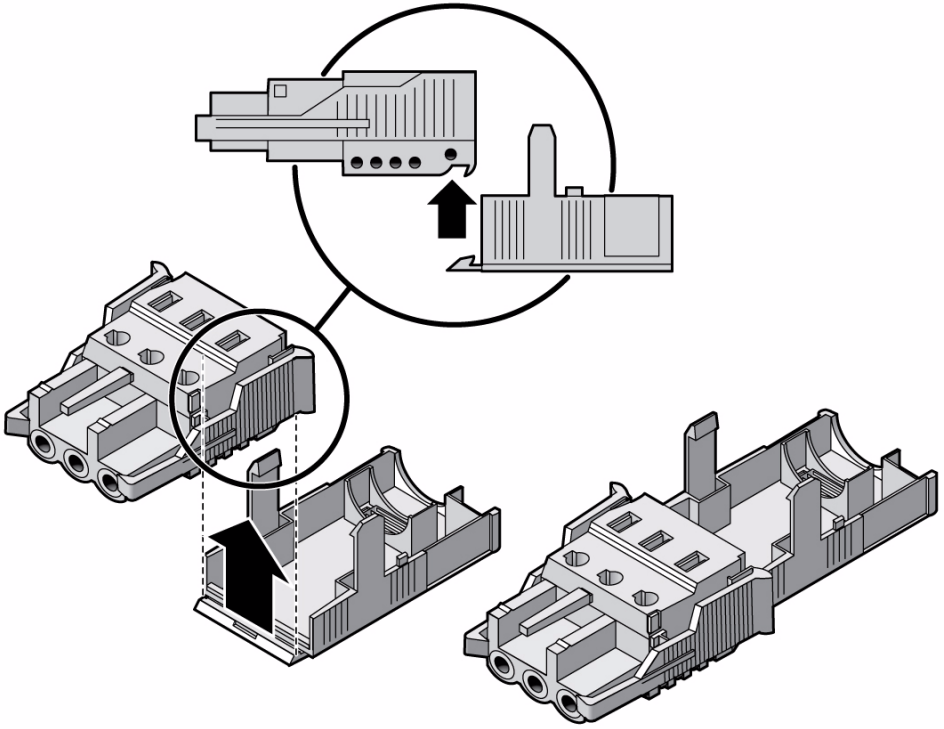
   If you need to remove a wire from the DC input plug, insert the cage clamp operating lever or a small screwdriver into the slot directly above the wire and press down (FIGURE 5-8 and FIGURE 5-9). Pull the wire from the DC input plug.

▼ To Install the Strain Relief Housings

1. **Insert the bottom portion of the strain relief housing into the notch on the DC input plug until it snaps into place.**

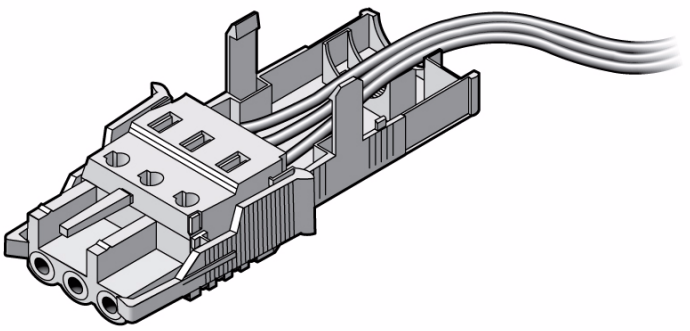
   Ensure that the strain relief housing snaps into place on the DC input plug. You cannot complete the assembly correctly if the strain relief housing is not snapped into place.

FIGURE 5-11 Inserting the Bottom Portion of the Strain Relief Housing



2. **Route the three wires coming from the DC power source through the opening at the end of the bottom portion of the strain relief housing (**FIGURE 5-12**).**

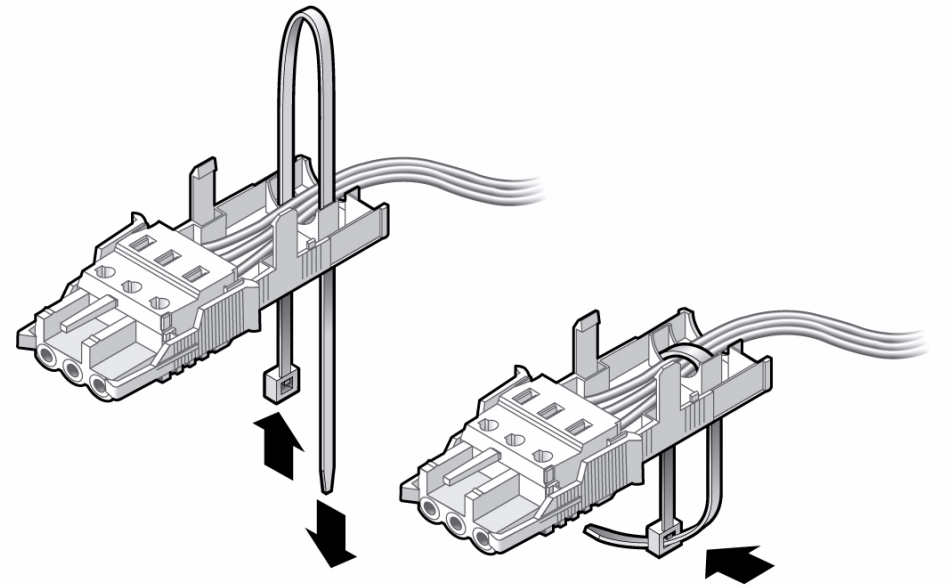
FIGURE 5-12 Routing the Wires out of the Bottom Portion of the Strain Relief Housing



3. **Insert a tie wrap into the bottom portion of the strain relief housing.**

4. **Loop the tie wrap over the wires and back out of the strain relief housing, and tighten the tie wrap to secure the wires to the strain relief housing (FIGURE 5-13).**

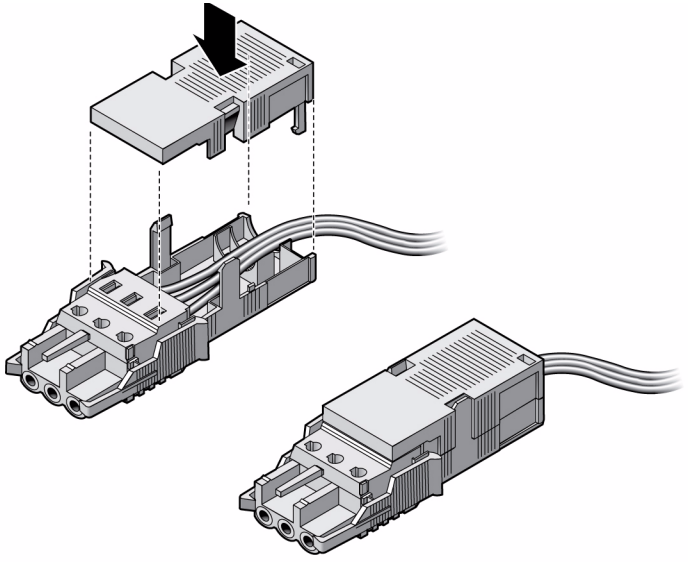
FIGURE 5-13 Securing the Wires to the Strain Relief Housing



5. **Lower the top portion of the strain relief housing so that the three prongs on the top portion insert into the openings in the DC input plug.**

   Push the top and bottom portions of the strain relief housing together until they snap into place (FIGURE 5-14).

FIGURE 5-14 Assembling the Strain Relief Housing



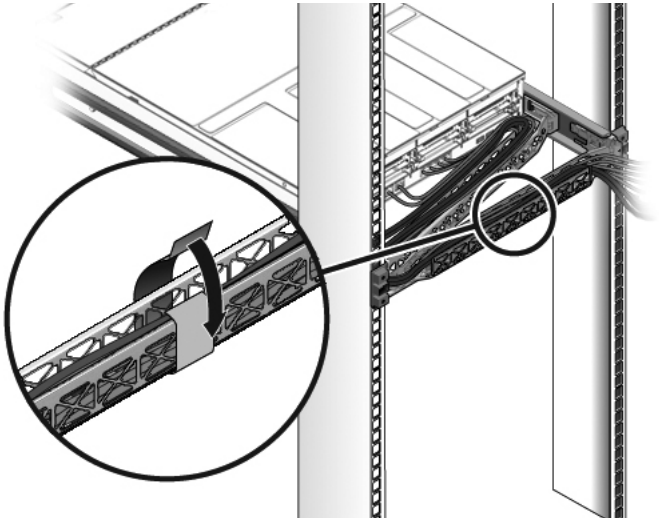
Managing Cables With the CMA

This section provides instruction for using the cable management assembly.

▼ To Secure the Server Cables in the CMA

- **Once the server cables are connected and placed inside the CMA, open the velcro cable straps and wrap the straps around the CMA, securing the cables inside the CMA (**FIGURE 5-15**).**

FIGURE 5-15 Securing the Server Cables With the CMA and Velcro Straps



Note – Verify the operation of the slide rails and CMA, and cable service loops. Perform the steps in the following procedure again before continuing: "To Verify the Operation of the Slide Rails and the CMA" on page 46.

CHAPTER 6

Powering On the System

This chapter includes instructions for booting the server and for enabling the system controller network management port.

The following topics are included:

Powering On the System for the First Time

This section provides an overview and instructions for powering on your system the first time.

▼ To Power On the System for the First Time

Tip – The serial terminal or a terminal emulator should be connected before you connect the power cables, or you will not see the system messages. The server goes into Standby mode and the ILOM service processor initializes as soon as the power cables are connected to the power source.

The service processor runs on the 3.3V standby voltage. As soon as power is connected to the system, the service processor powers on, runs diagnostics, and initializes the ILOM firmware.

1. **Connect a terminal or a terminal emulator (PC or workstation) to the service processor serial management port.**

   Configure the terminal or terminal emulator with these settings:

- 9600 baud
- 8 bits
- No parity
- 1 Stop bit
- No handshake

Note – When you power on the server for the first time and you do not have a terminal or terminal emulator (PC or workstation) connected to the service processor serial management port, you will not see system messages. After connecting to the server with a terminal or terminal emulator, log in to the ILOM CLI to get to the service processor console.

---

2. **Turn on the terminal or terminal emulator.**
3. **Connect the AC or DC power cables to Power Supply 0 and Power Supply 1. Watch the terminal for system messages.**

FIGURE 6-1 Rear Panel Power Connectors

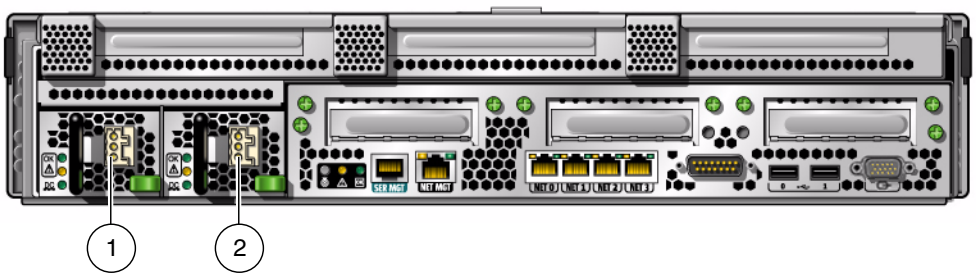


Figure Legend

1	Power Supply 0
2	Power Supply 1

After the service processor boots, the service processor login prompt is displayed on the serial console.

The following example shows a partial output from the service processor boot sequence leading to the login prompt.

EXAMPLE 6-1 Sample Service Processor Output

```
U-Boot 1.1.1 (August 23 2007 - 21:30:12)
...
POST cpu PASSED
POST ethernet PASSED
Hit any key to stop autoboot:  0
## Booting image at fe080000 ...

IP Protocols: ICMP, UDP, TCP, IGMP

Checking all file systems...
fsck 1.37 (21-Mar-2005)
Setting kernel variables ...
... done.
Mounting local filesystems...
Cleaning /tmp /var/run /var/lock.

Identifying DOC Device Type(G3/G4/H3) ...
OK

Configuring network interfaces...Internet Systems Consortium DHCP
Client V3.0.1
Copyright 2007 Internet Systems Consortium.
All rights reserved.
For info, please visit http://www.isc.org/products/DHCP

eth0: config: auto-negotiation on, 100FDX, 100HDX, 10FDX, 10HDX.
Listening on LPF/eth0/00:14:4f:3f:8c:af
Sending on   LPF/eth0/00:14:4f:3f:8c:af
Sending on   Socket/fallback
DHCPDISCOVER on eth0 to 255.255.255.255 port 67 interval 6
eth0: link up, 100 Mbps Full Duplex, auto-negotiation complete.
DHCPDISCOVER on eth0 to 255.255.255.255 port 67 interval 15
Hostname: hostname.
Starting portmap daemon: portmap.
Initializing random number generator...done.
INIT: Entering runlevel: 3
Starting system log daemon: syslogd and klogd.
Starting periodic command scheduler: cron.
Starting IPMI Stack..... Done.
```

EXAMPLE 6-1 Sample Service Processor Output *(Continued)*

```
Starting OpenBSD Secure Shell server: sshd.
Starting Servicetags listener: stlistener.
Starting FRU update program: frutool.

hostname login:
```

4. **Go to the** "Connecting to the ILOM Service Processor for the First Time" on page 98 **and connect to the ILOM SP.**

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

Connecting to the ILOM Service Processor for the First Time

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

This section covers the following topics:

ILOM Service Processor Software Overview

The ILOM service processor (SP) consists of the following components.

TABLE 6-1 ILOM Service Processor Components

Item	Port	Function
1	**ILOM hardware**	ILOM includes the following hardware components: • An embedded service processor (SP) chipset. The service processor monitors the status and configuration of field-replaceable components inside your server, such as fans, disk drives, and power supplies. • Two rear panel external connections: NET MGT port Ethernet connection and RJ-45 serial management port.
2	**ILOM firmware**	Several system management firmware applications are preinstalled on the SP chipset. These operating system-independent firmware applications provide the following system management interfaces into your server: • Web-based graphical interface • Secure Shell (SSH) command-line interface • IPMI v2.0 command-line interface (CLI) • Simple Network Management Protocol (SNMP) v3 interface These interfaces call the same underlying system management functions on your SP. You can work with one or more of these interfaces to integrate with other management interfaces running in your data center.
3	**Remote Console application**	The Remote Console application allows remote clients to view the graphical console of your host server as though the clients were directly attached to its video connector. The Remote Console mirrors the video display from the server VGA device (up to 1280 x 1024 resolution) locally on the remote management system. The remote keyboard, mouse, CD drive, or diskette drive appear as standard USB devices. The Remote Console depends on the following requirements to run correctly. Client systems require a web browser (at least IE 6, Mozilla, or Firefox) with Sun Java™ Runtime Environment (at least version 1.6 plug-ins) correctly installed. Java runtime environment is available for free download at: `http://java.sun.com`
4	**Client-Side Secure Shell application**	You must install a Secure Shell communications application on the remote client system (server, workstation, or laptop) to access the ILOM through a remote Secure Shell (SSH). Many Secure Shell communications applications are available from commercial or open-source distribution. Refer to `http://www.openssh.org` for information about open-source client-side SSH applications.
5	**Serial redirection**	You can set the serial redirection to display system output or ILOM output. A console can also be started to display system output. By default, the ILOM output appears. The BIOS contains these serial redirection options. See the *Sun Netra X4250 Server Service Manual* and the Sun *Integrated Lights Out Manager 2.0 User's Guide* for more information.

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

See the *Sun Integrated Lights Out Manager 2.0 User's Guide* for detailed information.

Service Processor Interfaces

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

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

- Serial port CLI
- Secure Shell (SSH) CLI
- Ethernet-based web browser

ILOM IP Addresses

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

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

If a DHCP server cannot be reached after 3 DHCP requests, the ILOM SP is assigned a static IP address based on the network management port MAC address. This IP address is always in the format 192.168.*xxx*.*xxx*.

Determining the ILOM Service Processor IP Address

Before connecting to the ILOM service processor (SP), you need to determine the IP address of the SP.

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

- "To Access the BIOS and View the Service Processor IP Address" on page 101.
- "To Establish a Connection to the Service Processor Using a Serial Connection" on page 101.

▼ To Access the BIOS and View the Service Processor IP Address

1. **Power on the server (or restart the server if it is running).**
2. **When the Sun Microsystems splash screen appears during the power-on self-test (POST) operation, press F2 to access the BIOS settings.**
3. **Navigate to the Server tab, using the left and right keyboard arrows.**
4. **Access the Server tab and AST2000 (LAN) CONFIGURATION. Press Enter.**
5. **Access the IP ADDRESS tab.**
6. **View the SP IP address.**

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

▼ To Establish a Connection to the Service Processor Using a Serial Connection

1. **Connect a terminal (or PC running terminal emulation software) to the server serial port.**
2. **Ensure that the server hardware is installed and cables are inserted.**

   Ensure that the power is in Standby mode and the green LED blinks. See "Connecting the Server Cables" on page 79.
3. **Verify that your terminal, laptop, PC, or terminal server is operational.**

4. **Configure the terminal device or the terminal emulation software running on a laptop or PC to the following settings:**
   - 8N1: eight data bits, no parity, one stop bit
   - 9600 baud
   - Disable hardware flow control (CTS/RTS)
   - Disable software flow control (XON/XOFF)
5. **Connect a null serial modem cable from the RJ-45 serial port on the server back panel to a terminal device (if not connected already).**

   See FIGURE 1-5 for the position of the serial port on the back panel.
6. **Press Enter on the terminal device to establish a connection between the terminal device and the ILOM service processor (SP).**

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

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

```
login:
```

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

   The ILOM displays a default command prompt (->) indicating that you have successfully logged in.
8. **Type the command `show /SP/network` to display the current SP IP address.**

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

```
/SP/network
   Targets:

Properties:
        MACaddress = 00:1B:24:BE:4A:52
        IPAddress = 110.7.100.4
        Netmask = 255.255.255.0
        Gateway = 110.7.100.254
        DNS = 0.0.0.0
        IPSource = static
        Hostname = SUNSP001B24BE4A52

Target Commands:
        show
        set
```

9. **Record the IP address assigned to the ILOM.**

Modifying the Service Processor IP Address

Choose one of the following methods to change the current IP address of the ILOM service processor (SP):

- "Using the Serial Connection" on page 103
- "Using the Service Processor ILOM Web Browser Interface" on page 105

Using the Serial Connection

The following examples show how to change the current IP address of the ILOM service processor using a serial connection.

▼ To Change the SP DHCP IP Address to a Static IP Address Using the Serial Connection

1. **Connect a terminal (or a PC running terminal emulation software) to the server serial port.**
2. **Ensure that the server hardware is installed and cables are inserted.**
3. **Verify that your terminal, laptop, PC, or terminal server is operational.**
4. **Configure the terminal device or the terminal emulation software running on a laptop or PC to the following settings:**
   - 8N1: eight data bits, no parity, one stop bit
   - 9600 baud
   - Disable hardware flow control (CTS/RTS)
   - Disable software flow control (XON/XOFF)
5. **Connect a null serial modem cable from the server's back panel RJ-45 serial port to a terminal device (if not connected already).**

   See FIGURE 1-5 for the serial port position.
6. **Press Enter on the terminal device to establish a connection between the terminal device and the ILOM service processor (SP).**

   The following prompt appears.

   ->

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

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

   ```
   ->
   ```

8. **Type the following command to determine the SP IP address:**

   ```
   show /SP/network
   ```

9. **To assign a static IP ADDRESS, type the following commands in exact order:**

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

   where *xxx* = IP address numbers

▼ To Change the SP Static IP address to a DHCP IP Address Using the Serial Connection

1. **Connect a terminal (or a PC running terminal emulation software) to the server serial port.**
2. **Ensure that the server hardware is installed and cables are inserted.**
3. **Verify that your terminal, laptop, PC, or terminal server is operational.**
4. **Configure the terminal device or the terminal emulation software running on a laptop or PC to the following settings:**
   - 8N1: eight data bits, no parity, one stop bit
   - 9600 baud
   - Disable hardware flow control (CTS/RTS)
   - Disable software flow control (XON/XOFF)
5. **Connect a null serial modem cable from the server's back panel RJ-45 serial port to a terminal device (if not connected already).**

   See FIGURE 1-5 for the serial port position.

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

   The prompt appears.

   ```
   ->
   ```

7. **Type the following command to change a static address to a DHCP address:**

   `set /SP/network IPSource=dhcp`

8. **Type** `show /SP/network` **to view the newly assigned DHCP address.**

   DHCP enabled is shown as `IPSource=DHCP`

Using the Service Processor ILOM Web Browser Interface

Note – The SP web browser Interface can be accessed *only* if you know the service processor IP address. See "Determining the ILOM Service Processor IP Address" on page 101.

▼ To Change a Static IP Address Using the SP ILOM Web Browser Interface

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

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

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

See the *Sun Integrated Lights Out Manager 2.0 User's Guide* for detailed information.

Applying Power for the First Time

▼ To Turn on the Server for the First Time

1. **Verify that the top cover is on.**

   If the cover is removed, the system will power off.

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

   In standby power mode, the Power OK LED on the front panel flashes. See FIGURE 6-1.

3. **To verify that you are connected to the server through the serial management port, perform the following substeps:**

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

   b. **Ensure that the server hardware is installed and cables are inserted.**

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

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

- 8N1: eight data bits, no parity, one stop bit
- 9600 baud
- Disable hardware flow control (CTS/RTS)
- Disable software flow control (XON/XOFF)

e. Connect a null serial modem cable from the server's back panel RJ-45 serial port to a terminal device (if not connected already).

See FIGURE 1-5 for the serial port position.

f. Press Enter on the terminal device to establish a connection between the terminal device and the ILOM service processor (SP).

The following prompt appears.

```
->
```

g. Use a pencil, or other pointed object, to press and release the recessed Power button on the server front panel.

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

4. **To display a screen for installing the preinstalled Solaris OS from the system management port, type**:

```
start /SP/console
```

5. **Install and configure the software, as required.**

Note – To switch back to the ILOM command-line interface from the serial console, press `Esc (`.

Setting Up the Operating System Software

After configuring the ILOM service procesor with network settings, you can configure the preinstalled Solaris 10 operating system (OS), or install a Linux or Windows platform operating system.

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

- If you want to use the preinstalled Solaris 10 operating system, see "Configuring the Preinstalled Solaris 10 Operating System" on page 109.
- If you want to install a supported Linux OS and the required drivers, refer to the *Sun Netra X4250 Server Operating System Installation Guide* (820-4602) . This document also contains procedures for installing the Solaris operating system from media.
- If you want to install a supported Windows OS and the required drivers, refer to the *Sun Netra X4250 Server Windows Operating System Installation Guide* (820-4602).

For additional OS considerations specific to this server, also refer to either the Sun *Netra X4250 Server Product Notes* (820-4059).

CHAPTER 7

Configuring the Preinstalled Solaris 10 Operating System

This chapter describes how to configure the Solaris 10 Operating System (OS) that might be preinstalled on your Sun Netra X4250 server. This chapter assumes that your server has a hard drive installed, with the Solaris OS preinstalled. Your system might be different, depending on your hard drive configuration.

This chapter includes the following topics:

Solaris Preinstallation Overview

Read this section before you set up the Solaris OS.

Delivery Methods

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

- Configure the preinstalled Solaris OS through the serial management port (default method).
- Configure the preinstalled Solaris 10 image using a directly connected monitor and keyboard.

GRUB Menu

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

If you do not select an output within 10 seconds at the GRUB menu, the system boots using the default output (serial management port `ttya`). Serial redirection requires a connection to the serial management port. See "Determining the ILOM Service Processor IP Address" on page 101 and "Using the Serial Connection" on page 103.

Before You Begin

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

1. Perform initial configuration of the service processor, and determine the server's network settings. See "Powering On the System" on page 95.
2. Gather the information that you will need to configure the server. See "Installation Worksheet" on page 111.
3. After these steps are complete, you can configure the preinstalled Solaris OS. See "Configuring the Solaris OS" on page 114.
4. Configure RAID, if necessary. See "Configuring RAID Drives" on page 115.

Installation Worksheet

Fill in TABLE 7-1 with information you need to configure the preinstalled Solaris 10 OS for the server. Collect only the information that applies to your system.

TABLE 7-1 Installation Worksheet

Installation Information		Description	Enter System Configuration Asterisk (*) Indicates Default.
Language		Choose from the list of available languages for the Solaris 10 software.	English*
Locale		Choose your geographic region from the list of available locales.	English (C - 7-bit ASCII)*
Terminal		Choose the type of terminal that you are using from the list of available terminal types.	
Network connection		Is the system connected to a network?	Networked Nonnetworked*
DHCP		Can the system use Dynamic Host Configuration Protocol (DHCP) to configure its network interfaces?	Yes No*
If you are not using DHCP, note the network address.	IP address	If you are not using DHCP, supply the IP address for the system. Example: `129.200.9.1`	
	Subnet	If you are not using DHCP, is the system part of a subnet? If yes, what is the netmask of the subnet? Example: `255.255.0.0`	`255.255.0.0` *
	IPv6	Do you want to enable IPv6 on this machine?	Yes No*
Host name		A host name that you choose for the system.	
Kerberos		Do you want to configure Kerberos security on this machine? If yes, gather the following information: Default realm: Administration server: First KDC: (Optional) Additional KDCs:	Yes No*

TABLE 7-1 Installation Worksheet *(Continued)*

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

TABLE 7-1 Installation Worksheet *(Continued)*

Installation Information	Description	Enter System Configuration: Asterisk (*) indicates default.
Default route	Do you want to specify a default route IP address or let the Solaris installation program find one? The default route provides a bridge that forwards traffic between two physical networks. An IP address is a unique number that identifies each host on a network. Select one of the following routes: • **Specify IP address**. An `/etc/defaultrouter` file is created with the specified IP address. When the system is rebooted, the specified IP address becomes the default route. • **Detect IP address**. Let the Solaris installation program detect an IP address. However, the system must be on a subnet that has a router that advertises itself by using the ICMP router discovery protocol. If you are using the command-line interface, the software detects an IP address when the system is booted. • **None**. Select None if you do not have a router or do not want the software to detect an IP address at this time. The software automatically tries to detect an IP address on reboot.	Specify IP address Detect IP address None*
Time zone	How do you want to specify your default time zone?	Geographic region* Offset from GM Time zone file
Root password	Choose a root password for the system.	

Configuring the Solaris OS

▼ To Configure the Preinstalled Solaris OS

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

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

2. **To start the ILOM console, type:**

   `start /SP/console`

3. **Follow the Solaris 10 preinstallation onscreen instructions.**

4. **Type the system and network information when prompted.**

   See TABLE 7-1 for collected information.

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

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

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

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

You must complete the procedure "Configuring the Solaris OS" on page 114 and be logged in to the service processor (SP) before you can redirect the console output to the video port. This procedure is optional.

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

---

1. **Reboot the system.**

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

Using the GRUB Menu

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

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

▼ To Set the Video Port as the Default Output

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

   ```
   default 1
   ```

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

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

4. **Reboot the server.**

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

5. **Configure RAID drives, if necessary. See** "Configuring RAID Drives" on page 115**.**

Configuring RAID Drives

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

This section contains the following topics:

RAID Drive Overview

The Sun Netra X4250 server has two optional RAID host bus adapter (HBA) cards. You can access RAID configuration through the HBA card BIOS. To access the LSI card BIOS, press Ctrl-C. To access the Sun StorageTek card BIOS, press Ctrl-A.

TABLE 7-2 RAID HBA Cards

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

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

The configuration procedure is different for each supported controller card. For example, a Sun StorageTek HBA card has many more options for RAID configuration than an LSI HBA card. Configure the RAID depending on your needs as shown in TABLE 7-3.

Note – Configuring the Sun Netra X4250 server RAID is optional. By default the preinstalled Solaris image is configured in a non-RAID configuration. If anything other than a basic mirror RAID is required, it is recommended to perform a fresh installation of the Solaris Operating System (or other OS) in the desired RAID configuration.

TABLE 7-3 shows the RAID drive options

.

TABLE 7-3 RAID Drive Options

SAS Card	Drives Supported	RAID Configuration Supported	Drive Usage
Sun StorageTek	Seagate 73GB SAS	Volume – 1 disk	
	Fujitsu 73GB SAS	RAID 0 – stripe – 2 disk minimum	No redundancy
	Seagate 146GB SAS	RAID 1 – mirror – 2 disk minimum	50%
		RAID 1E – 3 drive minimum	50%
		RAID 10 – 4 drive minimum	50%
		RAID 5 – 3 drive minimum	67–94%
		RAID 5EE – 4 drive minimum	50–88%
		RAID 50 – 6 drive minimum	67–94%
		RAID 6 – 4 drive minimum	50–88%
		RAID 60 – 8 drive minimum	50–88%
		Spanned volume – 2 drive minimum	100%
		RAID volume – 4 drive minimum	50-100%
LSI 3081E	Seagate 73GB SAS	IM – Integrated mirror array. 2 disk minimum, plus up to 2 hot spare disks.	Data on primary disk might be merged.
	Fujitsu 73GB SAS	IME – Integrated mirror enhanced array. 3 to 8 disks including up to 2 hot spares.	All data will be deleted during creation.
	Seagate 146GB SAS	IS – Integrated striping array. 2 to 8 disks.	All data will be deleted during creation.

Mirroring the Preinstalled Solaris OS With LSI RAID

The Solaris OS supports hardware RAID and cannot be installed on an existing array if one has been created. Refer to the *Sun Fire X4250 Server Operating System Installation Guide* or an HBA card product guide.

If you choose the preinstalled Solaris OS and want to make the OS part of a RAID set, and if you are using LSI RAID only, perform the following procedure to update the preinstalled Solaris OS to a mirrored RAID set. As stated in TABLE 7-3, only IM (Integrated Mirror) allows data on the primary hard disk drive (HDD) to be preserved or merged into an array of disks.

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

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

1. **Power on your server system for the first time.**
2. **Press Ctrl-C to access the LSI RAID configuration utility.**
3. **Select the SAS card - SAS1068E and press Enter.**
4. **Choose RAID Properties.**
5. **Create an IM (integrated mirror) for the required disk configuration.**
6. **Select the hard disks to be used.**

   Use the right arrow to move the cursor to the RAID column. Press the Spacebar to include into RAID.
7. **Because HDD0 contains data, select merge or delete:**
   - Choose M to merge data and start a sync operation.
   - Choose D to erase the preinstalled Solaris OS.
8. **Press C to create the RAID and start the sync operation.**
9. **Click Exit to save the configuration and close the menu.**
10. **Press Esc to exit the configuration utility and reboot.**

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

The Sun StorageTek card enables you to choose from many RAID configurations. How you configure your system depends on your system requirements and the available hard disk drives in the system. The following example shows how to mirror the preinstalled Solaris OS. This is the recommended option, and all remaining disks (should there be more than 2) are incorporated into a DATA RAID set using the available options as shown in TABLE 7-3.

You need the *Sun Netra X4250 Server Tools and Drivers CD*. The Sun Netra X4250 Server Tools and Drivers CD image can be donloaded from the Sun Download cenetr at `http://www.sun.com/download/`.

▼ To Mirror Your Configured Solaris OS

1. **Using your Solaris Server, log in and start X server.**

   This graphical user interface is required for StorageTek Software Management.

2. **From the supplied Tools & Drivers CD, copy the** `StorMan.ds` **application, located in the** `/mount-point/RAIDmgmt/StorageTEK/Solaris` **directory, to a new directory you choose on your Solaris server, for example,** `mkdir /StorMan.`

3. **Change the permissions of the new directory and StorMan application:**

   `Chmod 777 StormMan.ds`

4. **Run the following command to install the application:**

   `pkgadd -d StorMan.ds`

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

6. **To run the application, type the following:**

   `sh /usr/StorMan/StorMan.sh`

   A split screen appears.

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

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

   A prompt appears.

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

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

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

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

---

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

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

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

    Select the hard disk drive that best fits your needs.

14. **After you select the HDD, click Next, and then view the configuration summary.**

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

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

    One more confirmation screen is displayed, and when confirmed, the OS will begin to mirror.

    Mirroring may take several hours, depending on the amount of data and the HDD size.

Solaris 10 OS User Information

This section provides pointers to information about the Solaris 10 OS.

Accessing Solaris 10 User Documentation

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

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

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

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

Downloading Solaris 10 OS Software

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

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

Solaris 10 8/07 is the minimum supported version for the Sun Netra X4250 server.

See the *Sun Netra X4250 Server Operating System Installation Guide* for specific instructions on Solaris 10 installation.

Solaris 10 OS Training

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

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

CHAPTER 8

Troubleshooting

This chapter describes troubleshooting information and how to apply and remove power to Oracle's Sun Netra X4250 server. Support contacts are also included.

This chapter includes the following topics:

Powering On and Off the Server

Use the following procedures to power on and power off the Sun Netra X4250 server.

▼ To Apply Main Power for All Server Components

1. **Verify that the top cover is on.**

   If the cover is removed, the system powers off.

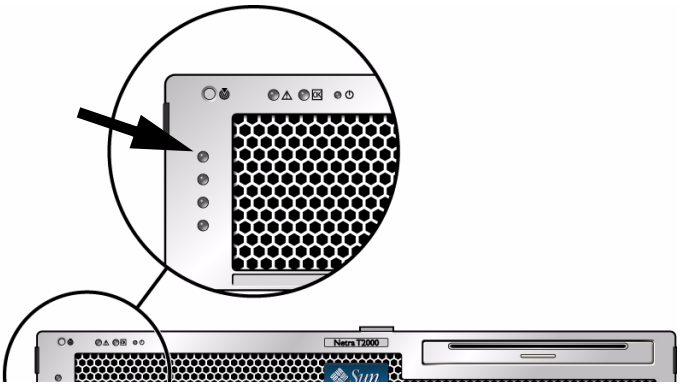
2. **Verify that the power cord has been connected and that Standby power is on.**

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

3. **Use a pen, or other pointed object, to press and release the recessed Power button on the server front panel.**

   When the main power is applied to the server, the Power OK LED next to the Power button lights and remains lit, as shown in FIGURE 8-1.

FIGURE 8-1 Front Panel Power OK LED



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

Power Off From Main Power Mode

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

TABLE 8-1 Shutdown Methods

Shutdown	Method
Graceful shutdown	Use a pen, or other pointed object, to press and release the Power button on the front panel. This action 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 shut down to Standby power mode immediately.
Emergency shutdown	Press and hold the Power button for at least four seconds to force the main power off and cause the server to enter standby power mode. When the main power is off, the Power/OK LED on the front panel begins flashing, indicating that the server is in standby power mode.

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

Setup Troubleshooting

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

If you experience problems while setting up your server, refer to the troubleshooting information in TABLE 8-2.

TABLE 8-2 Troubleshooting Procedures

Problem	Possible Solution
Server powers on, but the monitor does not.	• Is the Power button for the monitor turned on? • Is the monitor power cord connected to a wall outlet? • Is the monitor power cord connected to the monitor? • Does the wall outlet have power? Test by plugging in another device.
CD or DVD does not eject from the media tray when you press the Eject button.	• Move the mouse or press any key on the keyboard. The drive might be in low power mode. • Use the utility software installed on your server to eject the CD. • Ensure that the media in the device is not in use and is not mounted by the operating system.
No video is displayed on the monitor screen.	• Is the monitor cable attached to the video connector? • Does the monitor work when connected to another system? • If you have another monitor, does it work when connected to the original system? • If, after POST and BIOS are complete, you no longer see video output on your monitor and see only a flashing cursor, check the configuration of the operating system to determine if it is configured to redirect its output exclusively over the serial line.
Server does not power on when the front panel Power button is pressed.	Keep notes on the following situations in case you need to call service: • Is the Power LED illuminated on the front of the system? (Ensure that the power cord is connected to the system and to a grounded power receptacle.) • Does the wall outlet have power? Test by plugging in another device. • Does the monitor sync within five minutes after power on? (The green LED on the monitor stops flashing and remains illuminated.)
Keyboard or mouse does not respond to actions.	• Verify that the mouse and keyboard cables are connected to the on-board USB 2.0 connectors on the server. • Verify that the server is powered on and the front Power LED is illuminated.

TABLE 8-2 Troubleshooting Procedures *(Continued)*

Problem	Possible Solution
Server appears to be in low power mode, but the Power LED does not blink.	The Power LED only blinks when all server components are in low power mode. A tape drive might be connected to your server. Because tape drives do not enter low power mode, the Power LED does not blink.
Hung or frozen server: No response from mouse or keyboard or any application.	Try to access your system from a different server on the network: 1. On another system, type **`ping`** *IP_address_of_server*. 2. If a response is returned, then try logging in to the Sun Netra X4250 server using either `telnet`, `ssh`, or `rlogin`. 3. If you successfully log in, list the running processes using the `ps` command. 4. Kill any processes that appear unresponsive or should not be running, by using the `kill` *process_ID* command. 5. Check the responsiveness of the Sun Netra X4250 server after each process is killed. If this procedure does not work, power cycle the server: 1. Press the Power button to power off the server and wait 20 to 30 seconds. 2. Press the Power button again to power system back on.

Note – For additional troubleshooting information, see the *Sun Netra X4250* Server *Service Manual*.

Contacting Support

If the troubleshooting procedures in this chapter fail to solve your problem, use TABLE 8-3 to collect information that you might need to communicate to the support personnel. TABLE 8-4 lists the Sun web sites and telephone numbers for additional technical support.

TABLE 8-3 System Information Needed for Support

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

TABLE 8-4 Sun Technical Support Contacts

Server Documents and Support Resources	URL or Telephone Number
PDF files for all current Sun Netra X4250 server documents.	http://www.sun.com/documentation/
Solaris 10 and other software documents. This web site has full search capabilities.	http://docs.sun.com/documentation/
Discussion and troubleshooting forums.	http://supportforum.sun.com/
Support, diagnostic tools, and alerts for all Sun products.	http://www.sun.com/bigadmin/
SunSolve℠ web site. Contains links to software patches. Lists some system specifications, troubleshooting and maintenance information, and other tools.	http://www.sunsolve.sun.com/handbook_pub/
SunService support phone numbers.	1-800-872-4786 (1-800-USA-4Sun), select Option 1
Lists international telephone numbers for SunService support.	http://www.sun.com/service/contacting/solution.html
Warranty and contract support contacts. Links to other service tools.	http://www.sun.com/service/warrantiescontracts/
Warranties for every Sun product.	http://www.sun.com/service/support/warranty

APPENDIX **A**

Updating the System Firmware

The chapter conatins the following sections:

Updating the Firmware

The ILOM `load` command updates both the service processor firmware and the server firmware.

The flash image consists of the following components:

- Service processor firmware
- BIOS and POST
- Reset/Config
- Sequencer
- Partition description

To use the features and fixes in subsequent firmware releases, perform "To Update the Firmware" on page 129.

▼ To Update the Firmware

1. **Ensure that the ILOM service processor network management (NET MGT) port is configured.**

   This action is required to access the new flash image over the network. See "Modifying the Service Processor IP Address" on page 103.

2. Open an SSH session to connect to the service processor ILOM CLI

```
% ssh root@xx.xxx.xx.x
...
Are you sure you want to continue connecting (yes/no)? yes
...
Password: password (nothing displayed)
Waiting for daemons to initialize...

Daemons ready

Sun Integrated Lights Out Manager

Version 2.0.0.0

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Use is subject to license terms.

->
```

3. Verify that the host is powered off.

If the host is not powered off, type the `stop /SYS` command.

```
-> stop /SYS
```

4. Type the `load` command.

The `load` command updates the service processor flash image and the host firmware. The `load` command requires the following information:

- IP address of a TFTP server on the network that can access the flash image
- Full path name to the flash image that the IP address can access

The command usage is as follows:

`load [-script] -source tftp://`*xxx.xxx.xx.xx/pathname*

where:

- `-script` – Do not prompt for confirmation and act as if yes was specified

- `-source` – Specifies the IP address and full path name (URL) to the flash image.

```
-> load -source tftp://xxx.xxx.xx.xx/pathname
 NOTE: A firmware upgrade will cause the server and ILOM to
       be reset. It is recommended that a clean shutdown of
       the server be done prior to the upgrade procedure.
       An upgrade takes about 6 minutes to complete. ILOM
       will enter a special mode to load new firmware. No
       other tasks can be performed in ILOM until the
       firmware upgrade is complete and ILOM is reset.

Are you sure you want to load the specified file (y/n)? y
Do you want to preserve the configuration (y/n)? y
.............................................................

Firmware update is complete.
ILOM will now be restarted with the new firmware.
Update complete. Reset device to use new image.

->
```

After the flash image has been updated, the system automatically resets.

The service processor resets, runs diagnostics, and returns to the login prompt (on the serial console), similar to EXAMPLE A-1.

EXAMPLE A-1 Typical Boot Sequence Following Firmware Update

```
U-Boot 1.1.1 (May 23 2007 - 21:30:12)
...
POST cpu PASSED
POST ethernet PASSED
Hit any key to stop autoboot:  0
## Booting image at fe080000 ...

IP Protocols: ICMP, UDP, TCP, IGMP

Checking all file systems...
fsck 1.37 (21-Mar-2005)
Setting kernel variables ...
... done.
Mounting local filesystems...
Cleaning /tmp /var/run /var/lock.

Identifying DOC Device Type(G3/G4/H3) ...
OK
```

EXAMPLE A-1 Typical Boot Sequence Following Firmware Update *(Continued)*

```
Configuring network interfaces...Internet Systems Consortium DHCP
Client V3.0.1
Copyright 2007 Internet Systems Consortium.
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For info, please visit http://www.isc.org/products/DHCP

eth0: config: auto-negotiation on, 100FDX, 100HDX, 10FDX, 10HDX.
Listening on LPF/eth0/00:14:4f:3f:8c:af
Sending on   LPF/eth0/00:14:4f:3f:8c:af
Sending on   Socket/fallback
DHCPDISCOVER on eth0 to 255.255.255.255 port 67 interval 6
eth0: link up, 100 Mbps Full Duplex, auto-negotiation complete.
DHCPDISCOVER on eth0 to 255.255.255.255 port 67 interval 15
Hostname: hostname.
Starting portmap daemon: portmap.
Initializing random number generator...done.
INIT: Entering runlevel: 3
Starting system log daemon: syslogd and klogd.
Starting periodic command scheduler: cron.
Starting IPMI Stack..... Done.
Starting OpenBSD Secure Shell server: sshd.
Starting Servicetags listener: stlistener.
Starting FRU update program: frutool.

hostname login:
```

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