



Netra™ X4200 M2 Server Setup Guide

Sun Microsystems, Inc.
www.sun.com

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Preface

The *Netra X4200 M2 Server Setup Guide* provides procedures and information to assist you when installing the server into a rack. This document is written for technicians, system administrators, authorized service providers (ASPs), and users who have experience installing and configuring rackmounted hardware.

How This Document Is Organized

[Chapter 1](#) provides background information that you will need as you prepare to install the server.

[Chapter 2](#) provides instructions for installing the server into an open 4-post rack or a closed cabinet.

[Chapter 3](#) provides instructions for installing the server into an open 2-post rack.

[Chapter 4](#) provides information on grounding the Netra X4200 M2 server and on assembling the DC power connectors.

[Chapter 5](#) provides instructions for cabling the server.

[Chapter 6](#) includes instructions for powering on the server and for enabling the service processor network management port.

[Chapter 7](#) explains the initial setup and configuration of the ILOM server software.

[Chapter 8](#) provides a worksheet to help you configure the preinstalled Solaris™ software.

Using UNIX Commands

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

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

<http://docs.sun.com>

Shell Prompts

Shell	Prompt
C shell	<i>machine-name%</i>
C shell superuser	<i>machine-name#</i>
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 <code>.login</code> file. Use <code>ls -a</code> to list all files. % You have mail.
AaBbCc123	What you type, when contrasted with on-screen computer output	% su Password:
<i>AaBbCc123</i>	Book titles, new words or terms, words to be emphasized. Replace command-line variables with real names or values.	Read Chapter 6 in the <i>User's Guide</i> . These are called <i>class options</i> . You must be <i>superuser</i> to do this. To delete a file, type <code>rm filename</code> .

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

Related Documentation

Application	Title	Part Number	Format	Location
Service	Netra X4200 M2 Server Service Manual	820-0063	PDF	Online
Installation	Netra X4200 M2 Server Setup Guide	820-0062	PDF	Online
	Netra X4200 M2 Operating System Installation Guide	820-0065	PDF	Online
	Sun Fire X4000 Series Server Windows Operating System Installation Guide	819-4346	PDF	Online
Updates	Netra X4200 M2 Server Product Notes	820-0067	PDF	Online
Planning	Netra X4200 M2 Server Site Planning Guide	820-0069	PDF	Online
RAID	Sun LSI 106x RAID User's Guide	820-4933	PDF	Online
Compliance	Netra X4200 M2 Server Safety and Compliance Guide	820-0068	PDF	Online
ILOM	Integrated Lights Out Manager (ILOM) Administration Guide	819-1160	PDF	Online
Hardware Safety	Important Safety Information for Sun Hardware Systems	816-7190	Print	In shipping kit

The documents listed as online are available at:

<http://docs.sun.com/app/docs/prod/nt4200m2.srvr#hic>

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Netra X4200 M2 Server Setup Guide, part number 820-0062-12

Preparing for Installation

This chapter provides background information about the server installation procedures.

This chapter contains the following sections:

- “Tools Needed” on page 1
- “Shipping Kit Inventory List” on page 1
- “Installation Overview” on page 2
- “Installing the Air Filter” on page 4
- “Installing Optional Components” on page 6
- “Slide Rail Assembly Notes” on page 6
- “Safety Precautions” on page 9

Tools Needed

- Phillips screwdriver
- Electrostatic discharge (ESD) mat and antistatic grounding strap

Shipping Kit Inventory List

Standard components of the server are installed at the factory. However, if you ordered options such as a PCI card or monitor, these options 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 and connectors
- Any optional components that were ordered with the server

Installation Overview

This installation guide provides procedures that must be performed in the following order.

1. **Verify that you have received the components that ship with your server, as described in the preceding section.**
2. **Gather configuration information for your server. See your system administrator for specific details, including these parameters:**
 - Netmask
 - IP address for the service processor
 - Gateway IP addressSee [“Worksheet for Installation” on page 96.](#)
3. **Remove the shipping insert from the bezel and install the air filter. See [“Installing the Air Filter” on page 4.](#)**
4. **Install any optional Sun components into your server before rackmounting. See the *Netra X4200 M2 Server Service Manual (820-0063)* for instructions.**
5. **Mount the server into a rack or cabinet. See [“4-Post Rackmounting Options” on page 12](#) and [“2-Post Rackmounting Options” on page 34.](#)**

Note – This manual uses the term *rack* to mean either an open rack or a closed cabinet.

6. Ensure proper grounding using the grounding lugs. See [“Using DC Power” on page 61](#).



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

7. Connect the serial, network, and all other data cables to the server. See [“Cabling the Server” on page 69](#).
8. Connect the server to a serial terminal or a terminal emulator (PC or workstation) to display system messages. See [“Powering On the Server” on page 79](#).



Tip – Connect and power on the serial terminal or a terminal emulator before you connect the power cables, so that the terminal will be ready to display the initial system messages.

9. Assemble and connect the input power cables to the server and examine the display for any error messages. See [“Powering On the Server” on page 79](#).

Note – The service processor (SP) runs on the 3.3V standby voltage. As soon as power is connected to the server, the service processor immediately powers on, runs diagnostics, and initializes the ILOM firmware.

10. After the service processor boots, access the ILOM command-line interface through the serial management port. See [“To Connect to ILOM Using a Serial Connection” on page 85](#).
11. Connect to ILOM via the serial management port. See [“To Connect to ILOM Using an Ethernet Connection” on page 87](#).
12. Power on the server. See [“Powering On the Server” on page 79](#).
13. Configure the Solaris OS. See [“Configuring the Preinstalled Solaris 10 Operating System” on page 95](#). The Solaris OS is preinstalled on the server.

When you power on the server, you are automatically guided through the Solaris OS configuration procedure.

Install any required patches to the server.

Refer to the *Netra X4200 M2 Server Product Notes* (820-0067) for a list of the required patches.

14. Load additional software from the optional Solaris media kit.

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.

Installing the Air Filter

The server ships with a protective shipping insert located between the bezel and the front panel. You must remove this protective insert and replace it with an air filter before powering on the server.



Caution – Failure to remove the shipping insert from the front bezel can block the air from flowing through the server, which can seriously damage the server components.

1. Grip the bezel at the two finger holds and rotate it down to its open position (FIGURE 1-1).

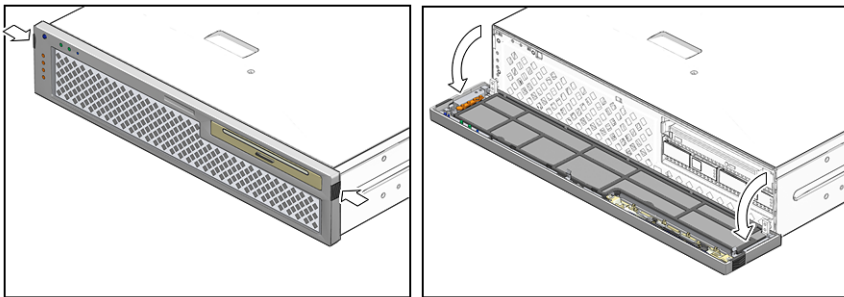


FIGURE 1-1 Finger Holds on the Bezel

2. Carefully remove the shipping insert from the inside of the bezel.
3. Obtain the air filter that shipped with your server.
4. Snap the new air filter into place in the bezel (FIGURE 1-2).

Note – Filters for the two-drive version (with DVD) and four-drive version are different.

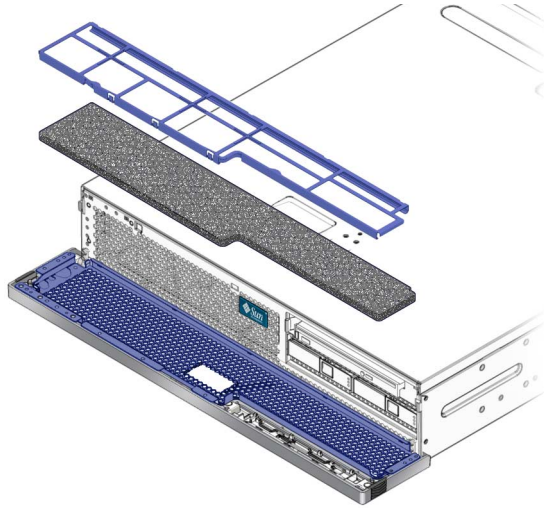


FIGURE 1-2 Installing the Air Filter in the Bezel

5. Close the bezel.

Installing Optional Components

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

- **Install any optional components shipped with your server.**

If you ordered options that are not factory-installed, see the *Netra X4200 M2 Server Service Manual* (820-0063) for installation instructions.

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



Caution – To protect electronic components from electrostatic damage, which can permanently disable the server or require repair by Sun service technicians, note the following guidelines.

- Place components on an antistatic surface, such as a Sun antistatic discharge mat, an antistatic bag, or a disposable antistatic mat.
- Always wear an antistatic wrist strap connected to a metal surface on the chassis when you work on server components.

Refer to the *Netra X4200 M2 Server Service Manual* for the list of optional components.

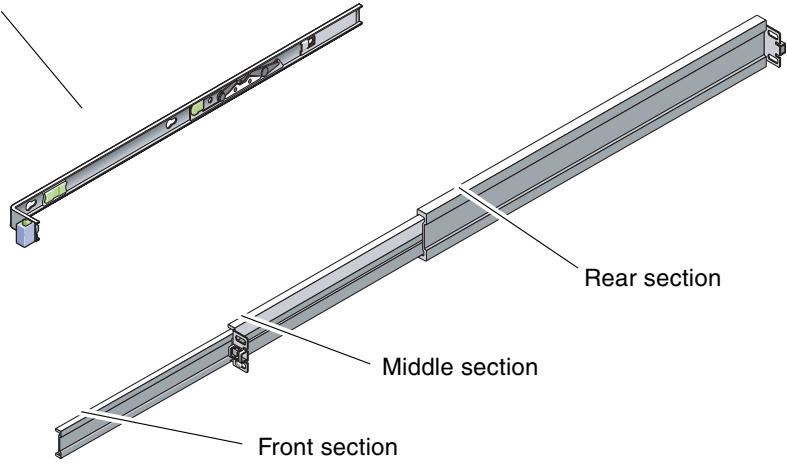
Note – The optional component list might be updated at any time. Refer to the Sun Store web site (<http://store.sun.com>) for the most current list of server supported components.

Slide Rail Assembly Notes

The rackmount kit has two identical slide rail assemblies. You will install one slide rail assembly on both the right and left side of the rack.

Each slide rail assembly consists of a three-section slide rail and a removable mounting bracket (FIGURE 1-3).

Mounting bracket



Rear section

Middle section

Front section

FIGURE 1-3 Sections of the Slide Rail Assembly

- The front, middle, and rear sections form the slide rail. The middle and rear sections have holes for mounting screws and adjust to fit rack depths from 24 in. (61 cm) to 36.5 in. (93 cm). The front section can be extended to enable movement of the server out of the rack.
- The removable mounting bracket slides 14 in. (36 cm) out of the slide rail, then locks in place. If you unlock the mounting bracket at this point, it slides an additional 12 in. (30 cm) before separating from the slide rail. You can then mount the mounting bracket to the right or left side of the chassis.
- There are five locks (FIGURE 1-4) in a slide rail assembly. Four locks are on the mounting bracket. One lock is on the front section of the slide rail.

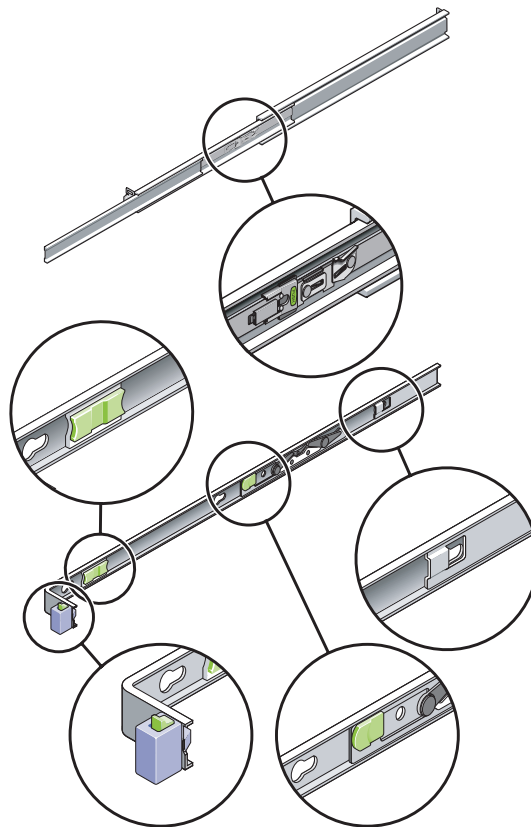


FIGURE 1-4 Locating the Locks on the Slide Rail Assembly

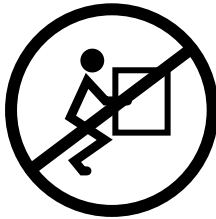
Safety Precautions



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



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 [Chapter 2](#) and [Chapter 3](#).



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

Mounting the Server Into a 4-Post Rack

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

This chapter contains the following sections:

- [“4-Post Rackmounting Options” on page 12](#)
- [“Hardmounting the Server in a 19-Inch 4-Post Rack” on page 12](#)
- [“Mounting the Server With a Sliding Rail Mount in a 19-Inch 4-Post Rack” on page 16](#)
- [“Hardmounting the Server in a 600-mm 4-Post Rack” on page 23](#)

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



Caution – The server weighs approximately 40 lb (18kg). 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 12](#) for installation instructions). [TABLE 2-1](#) lists three additional 4-post rackmount kit options that you can order from Sun. This chapter provides installation instructions for these rackmount kit options.

TABLE 2-1 Optional Rackmount Kits

Mounting Kit	Installation Instructions
19-inch, 4-post rackmount kit for 600–800 mm cabinet depths	“To Install a Server With a Hardmount 19-Inch 4-Post Rack” on page 12
19-inch, 4-post slide rail rackmount 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 16
600 mm x 600 mm rackmount kit	“To Install a Server With a Hardmount in a 600-mm 4-Post Rack” on page 23

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

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

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.

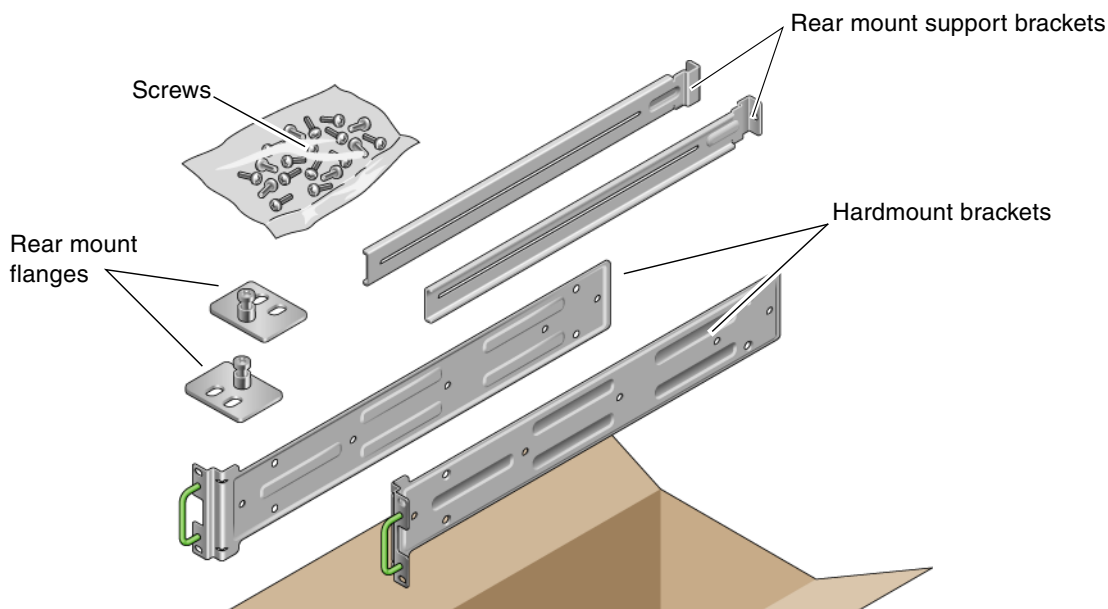


FIGURE 2-1 Contents of the Hardmount 19-Inch 4-Post Kit

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

Number	Description	Where Used
10	M5 x 4.6 mm Phillips flathead screws	8 for hardmount brackets, 2 extra
10	M4 x 0.5 mm x 5 mm Phillips panhead screws	4 to 6 for rear mount brackets, 4 to 6 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

1. Get the hardmount brackets from the rack kit (FIGURE 2-1).
2. Use four of the supplied M5 x 4.6 mm Phillips flathead screws to secure each of the hardmount brackets to the sides of the server (FIGURE 2-2).

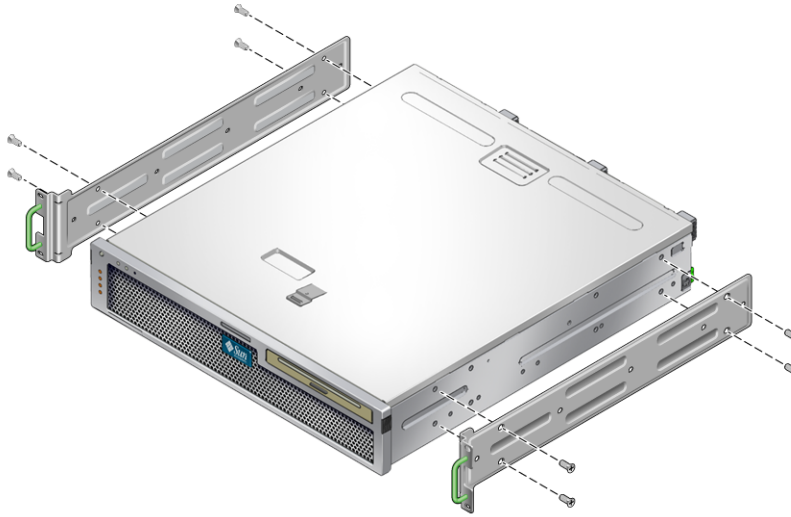


FIGURE 2-2 Securing the Hardmount Brackets to the Server

3. Measure the depth of the rack.
4. Get the two rear mount support brackets from the rack kit (FIGURE 2-1).
5. Install the rear mount support brackets at the rear of the server, and extend the rear mount support brackets to the measured depth of the rack (FIGURE 2-3).
Use two or three of the supplied M4 x 0.5 x 5 mm Phillips panhead screws for each rear mount bracket, depending on the rack depth.

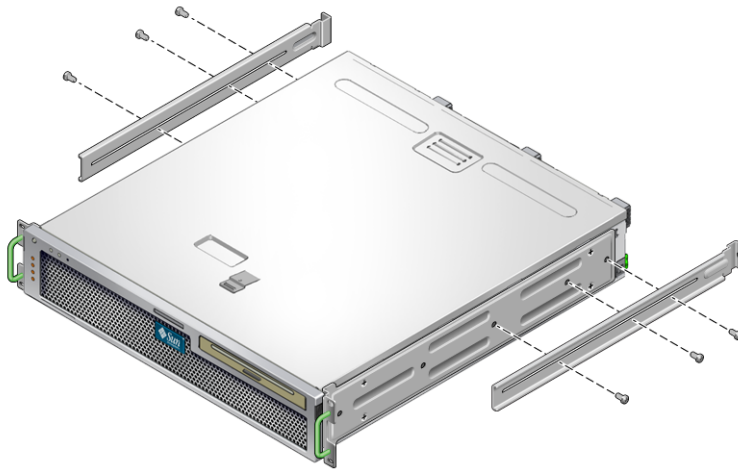


FIGURE 2-3 Attaching the Rear Mount Support Brackets

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 2-4](#)).

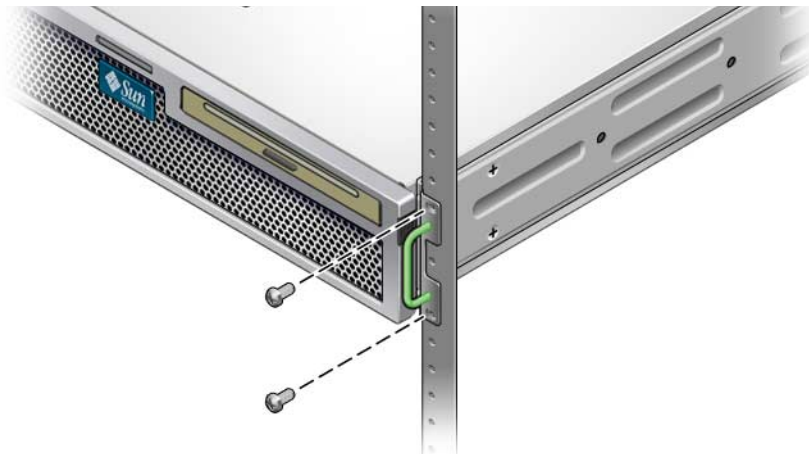


FIGURE 2-4 Securing the Front of the Server to the Rack

8. Get the two rear mount flanges from the rack kit ([FIGURE 2-1](#)).

9. Using two screws for each rear mount support bracket, secure the rear mount support flanges to the rear of the rack (FIGURE 2-5), and secure the flanges to the rear mount support brackets.

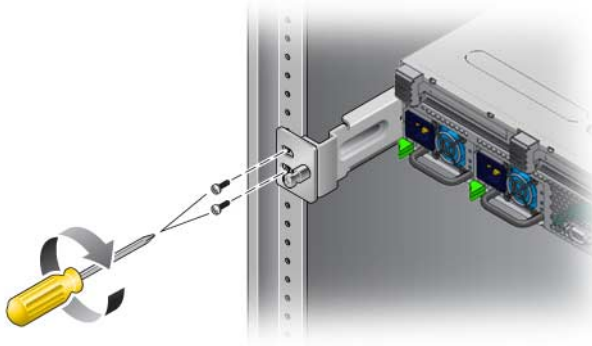


FIGURE 2-5 Securing the Rear of the Server to the Rack

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

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

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 and the M5 x 4.6 mm Phillips flathead screws from the standard rackmount kit that came with the server (FIGURE 2-1).

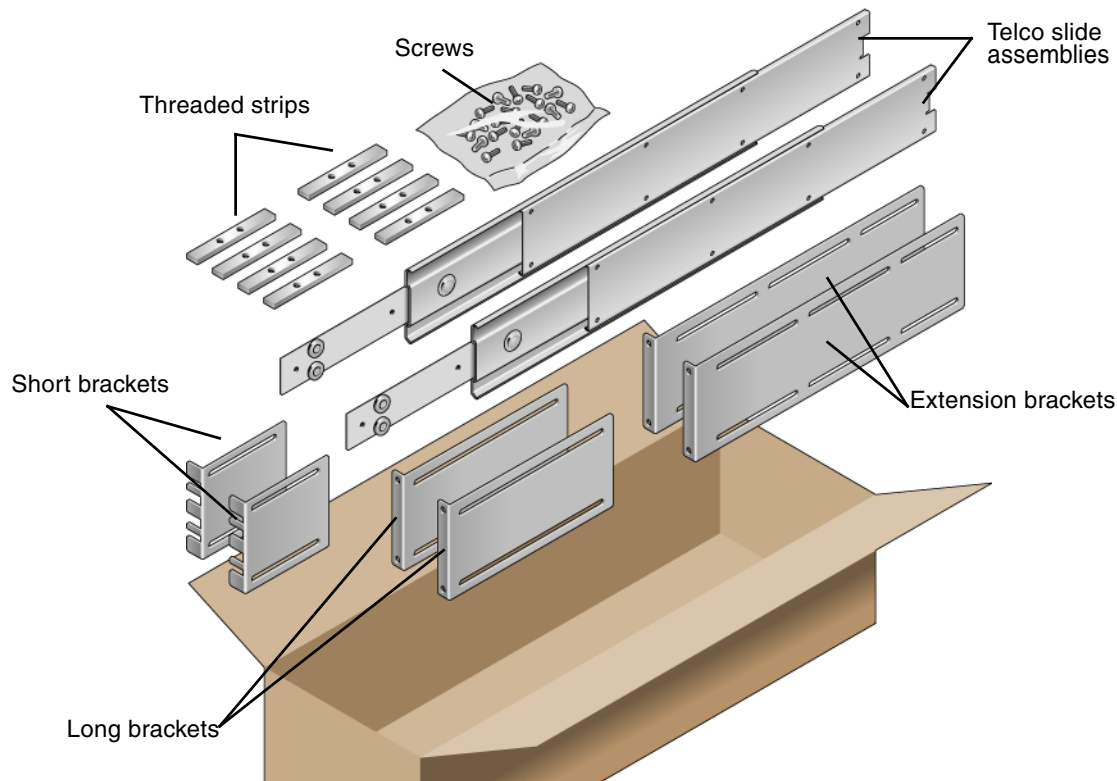


FIGURE 2-6 Contents of the Sliding Rail 19-Inch 4-Post Kit

TABLE 2-3 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

TABLE 2-3 Sliding Rail 19-Inch 4-Post Rackmount Screw Kit Contents *(Continued)*

Number	Description	Where Used
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. **Get the hardmount brackets and M5 x 4.6 mm Phillips flathead screws from the standard rack kit (FIGURE 2-1).**

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 x 4.6 mm Phillips flathead screws to secure each of the hardmount brackets to the sides of the server (FIGURE 2-7).**

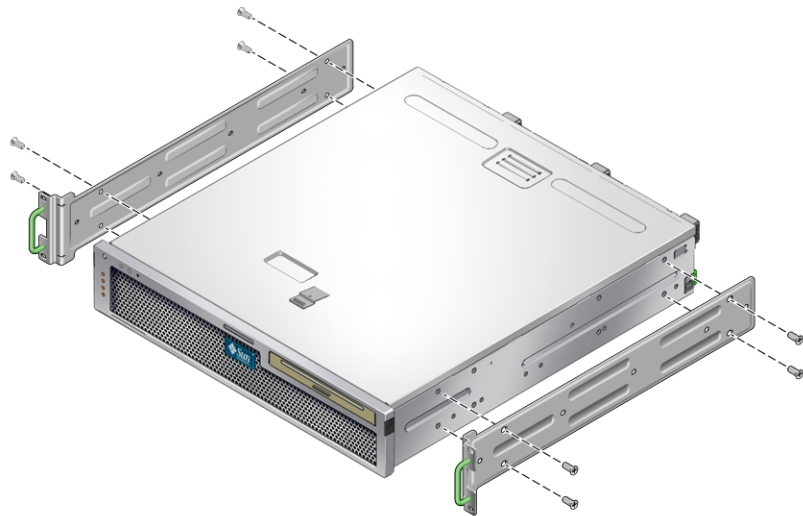


FIGURE 2-7 Securing the Hardmount Brackets to the Server

3. **Get the Telco slide assemblies from the rack kit (FIGURE 2-6).**
4. **Press in the button on each slide and pull the glide completely out of the slide (FIGURE 2-8).**

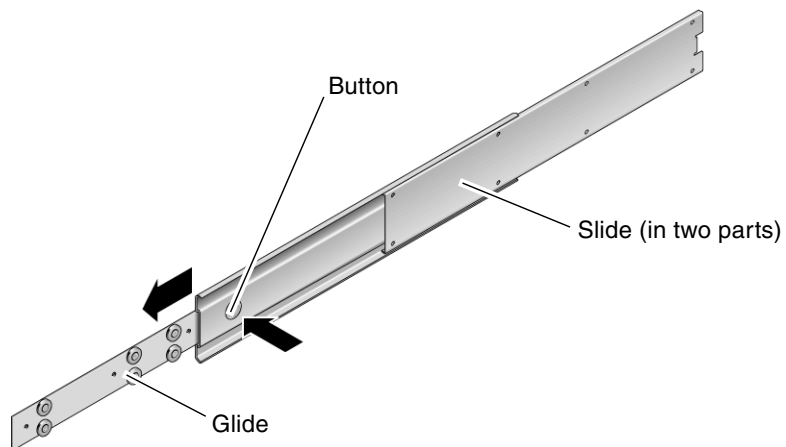


FIGURE 2-8 Dismantling the Slide

5. 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 hardmount brackets ([FIGURE 2-9](#)).

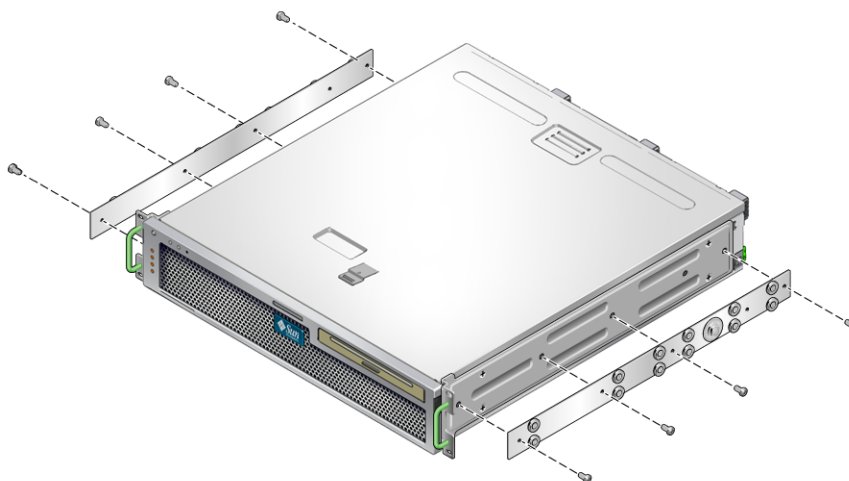


FIGURE 2-9 Attaching the Glides to the Server Chassis

6. Get the short brackets and long brackets from the rackmount kit ([FIGURE 2-6](#)).

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 2-10).

To secure each bracket, use two of the brass M6 collar screws and M6 cage nuts (if required), and one threaded strip (FIGURE 2-10).

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 2-10).

To secure each bracket, use two of the brass M6 collar screws and M6 cage nuts (if required) and one threaded strip, as you did for the front rack uprights in Step 7.

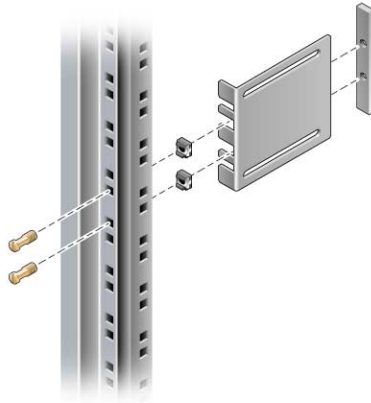


FIGURE 2-10 Securing the Brackets to the Rack

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 2-11).

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

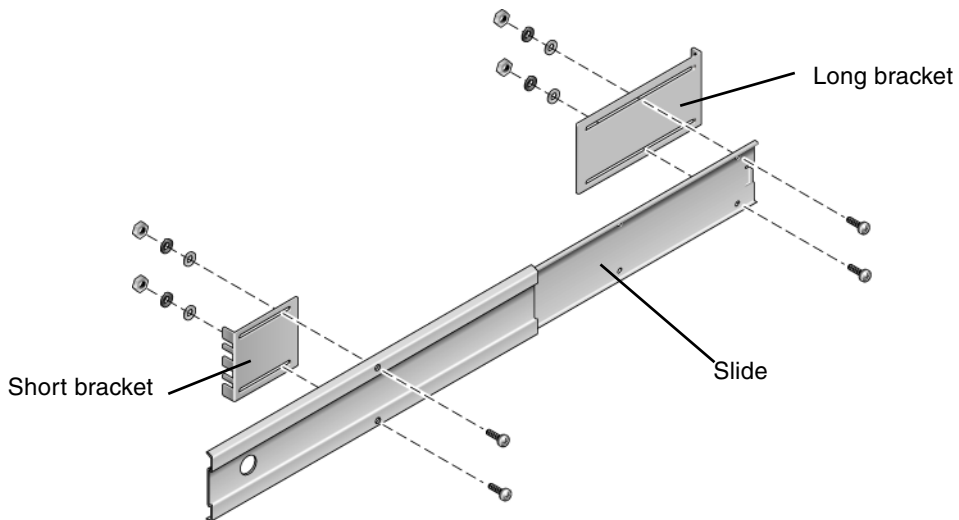


FIGURE 2-11 Securing the Slide to the Brackets

11. Repeat [Step 9](#) and [Step 10](#) for the slide on the other side of the rack.
12. Push the slides completely into the slide assemblies 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 the brackets again.
14. Push in the slide buttons and slide the server all the way into the rack enclosure ([FIGURE 2-12](#)).

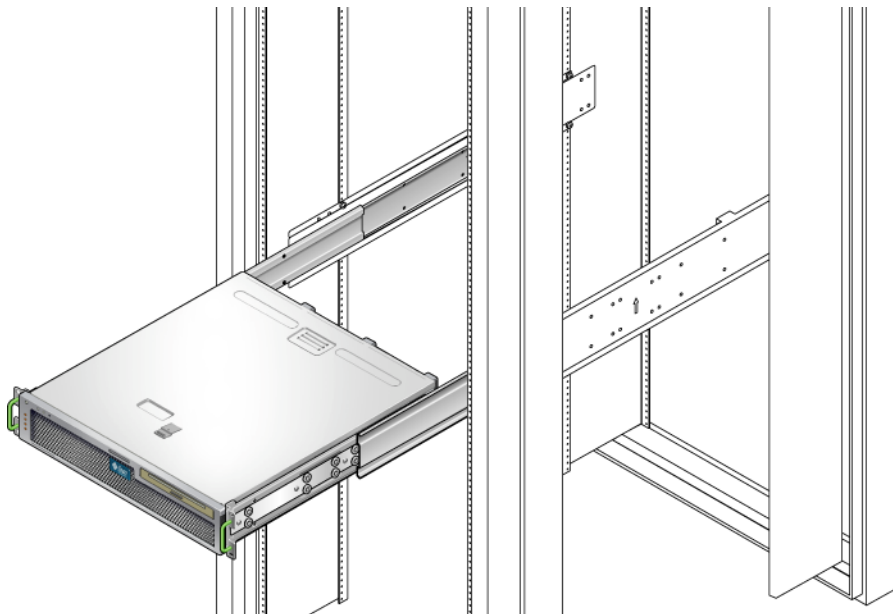
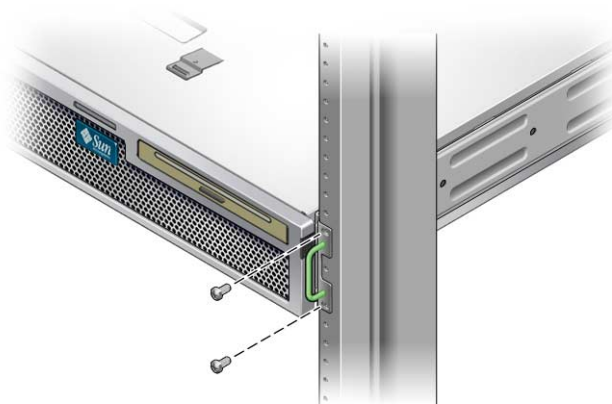


FIGURE 2-12 Sliding the Server Into the Rack

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 2-13](#)).

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



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

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

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.

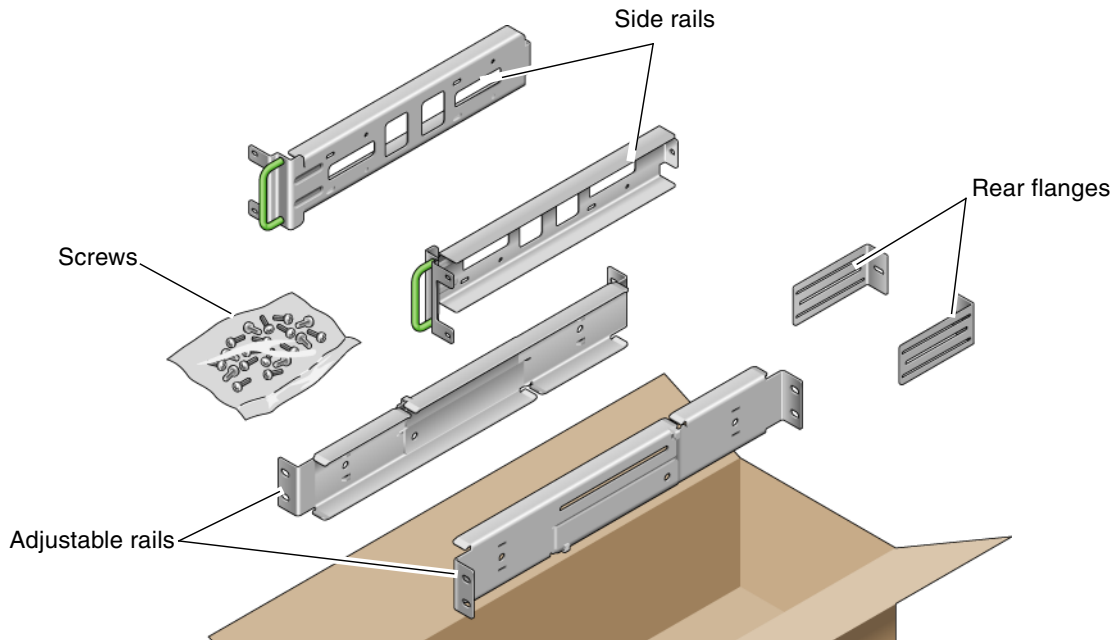


FIGURE 2-14 Contents of the Hardmount 600-mm 4-Post Kit

TABLE 2-4 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

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

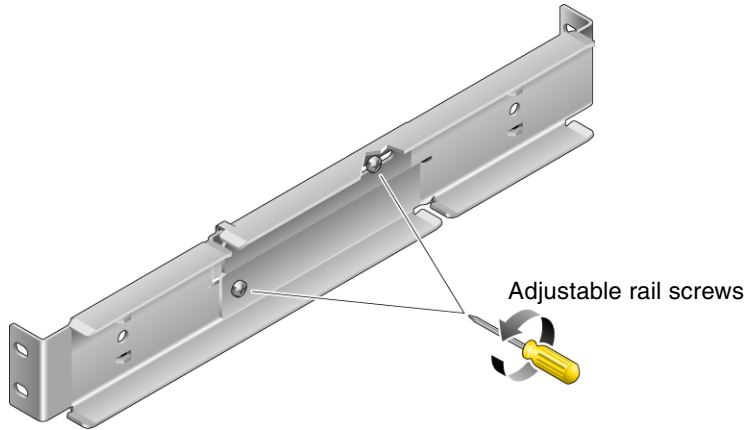


FIGURE 2-15 Locating the Adjustable Rail Screws

3. Lift one of the adjustable rails to the desired location in the rack. Using two screws, secure the front of the adjustable rail to the rack ([FIGURE 2-16](#)).
Screw size varies depending on your particular rack.

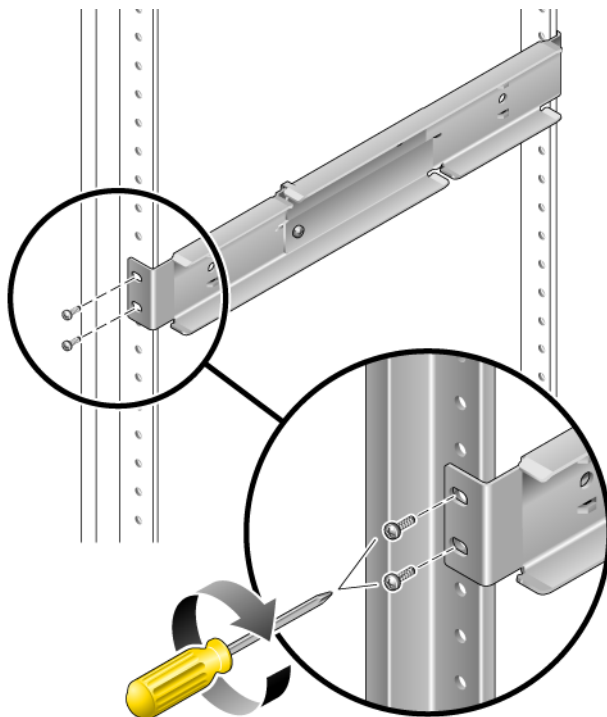


FIGURE 2-16 Securing the Front of the Adjustable Rails to the Rack

4. At the rear of the rack, use two screws to secure the rear of the adjustable rails to the rack ([FIGURE 2-17](#)).

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

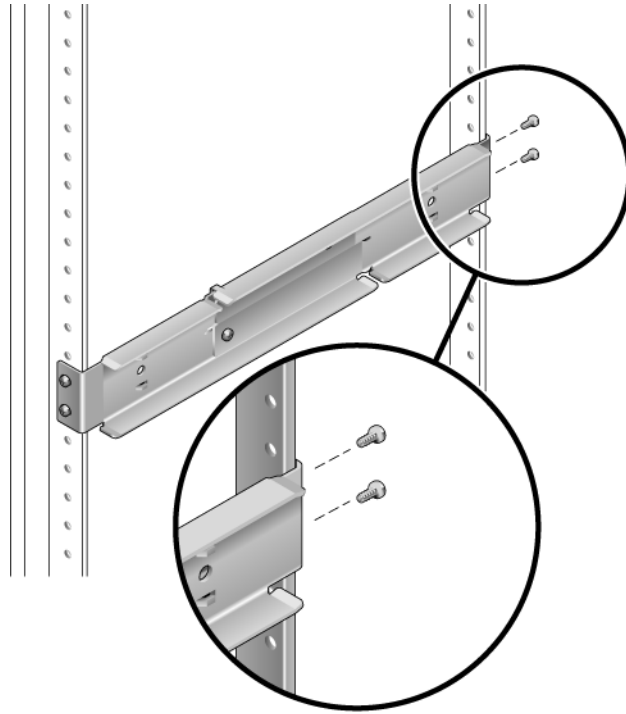


FIGURE 2-17 Securing the Rear of the Adjustable Rails to the Rack

5. Tighten the two screws at the middle of each adjustable rail ([FIGURE 2-15](#)).
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 2-14](#)).
8. Using one M5 x 7 SEM screw for each rear flange, loosely install a rear flange onto the rear of each of the adjustable rails ([FIGURE 2-18](#)).

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.

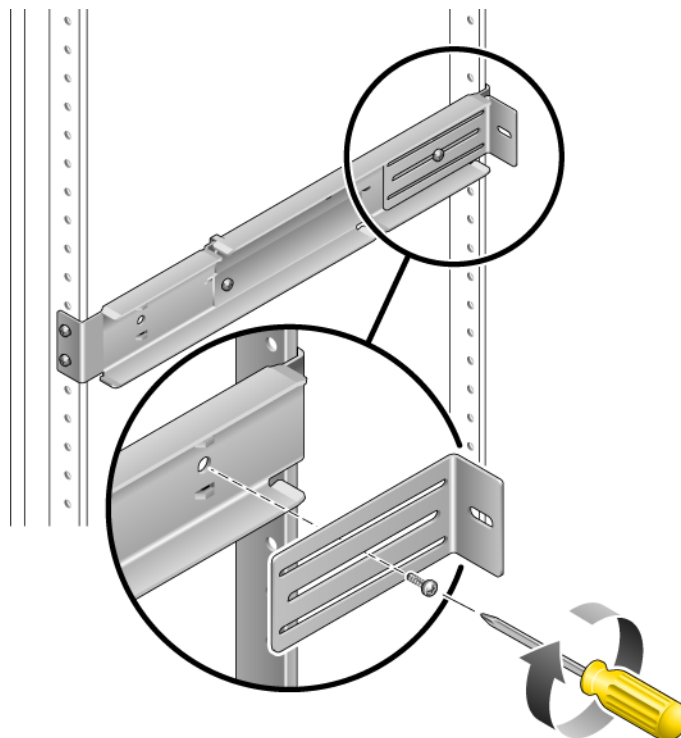


FIGURE 2-18 Installing the Rear Flange Onto the Adjustable Rail

9. Get the side rails from the rack kit ([FIGURE 2-14](#)).
10. Using eight of the $M5 \times 7$ SEM screws (four for each side rail), secure the side rails to the sides of the server ([FIGURE 2-19](#)).

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 using to install the server.

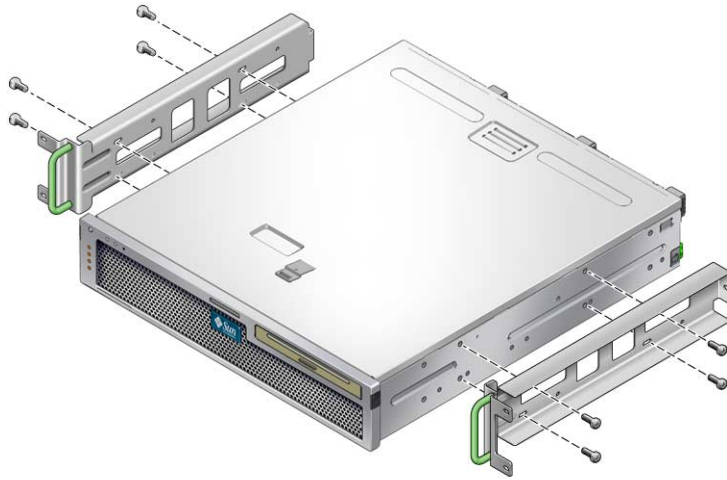


FIGURE 2-19 Securing the Side Rails to the Server

11. Lift the server into the rack and slide the server onto the adjustable rails ([FIGURE 2-20](#)).

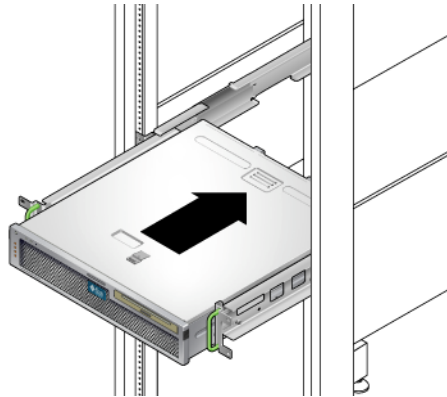


FIGURE 2-20 Sliding the Server Onto the Adjustable Rails

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 2-18](#)).

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 x 7 SEM screw to secure each flange to each adjustable rail ([FIGURE 2-18](#)).
15. Lift the server into the rack and slide the server onto the adjustable rails.
16. Push the server backward until it rests flush against the rear flanges. Use one M5 x 7 SEM screw for each rear flange to secure the rear of the server to the rear flanges ([FIGURE 2-21](#)).

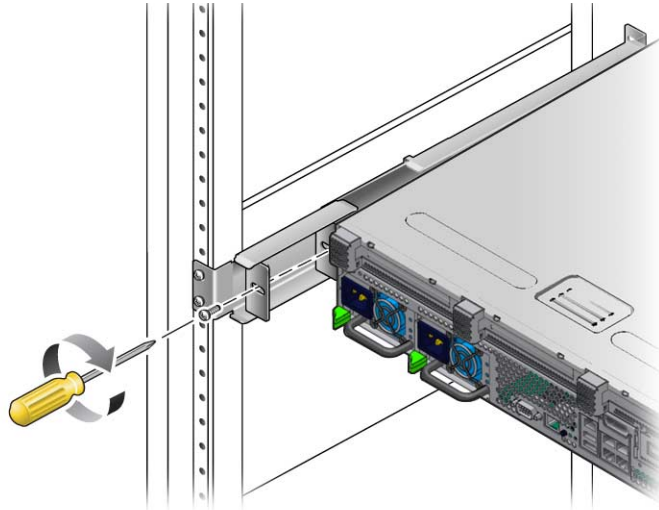


FIGURE 2-21 Securing the Rear of the Server to the Rear Flanges

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 2-22](#)).
Screw size varies depending on your particular rack.

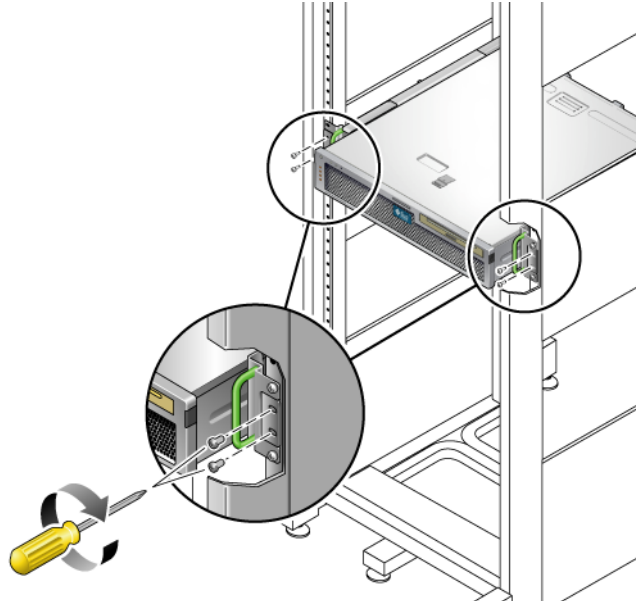


FIGURE 2-22 Securing the Front of the Server to the Front of the Rack

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:

- [“2-Post Rackmounting Options” on page 34](#)
- [“Hardmounting the Server in a 23-Inch 2-Post Rack” on page 34](#)
- [“Hardmounting the Server in a 19-Inch 2-Post Rack” on page 42](#)
- [“Mounting the Server With a Sliding Rail Mount in a 19-Inch 2-Post Rack” on page 49](#)

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



Caution – The server weighs approximately 40 lb (18 kg). 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 rack kit (see [“4-Post Rackmounting Options” on page 12](#) for more information). [TABLE 3-1](#) lists additional 2-post rackmount kit options that you can order from Sun. This chapter provides installation instructions for these rackmount kit options.

TABLE 3-1 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 34
19-inch 2-post rackmount kit	“To Install a Server With a Hardmount in a 19-Inch 2-Post Rack” on page 42
19-inch 2-post slide rackmount kit	“To Install a Server With a Sliding Rail Mount in a 19-Inch 2-Post Rack” on page 49

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

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

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.).

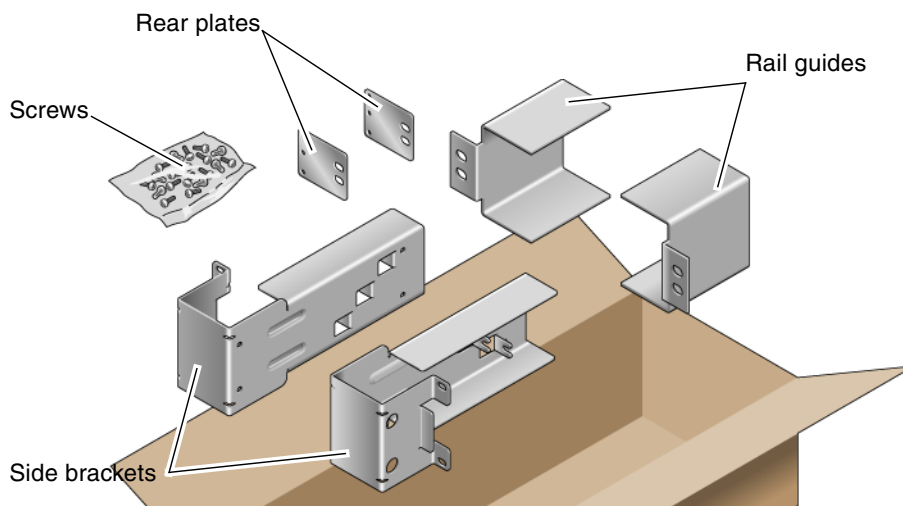


FIGURE 3-1 Contents of the Hardmount 23-Inch 2-Post Kit

TABLE 3-2 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

1. Get the side brackets from the rack kit ([FIGURE 3-1](#)).
2. Use four of M5 x 7 SEM screws for each side bracket, secure the side brackets to the sides of the server ([FIGURE 3-2](#)).

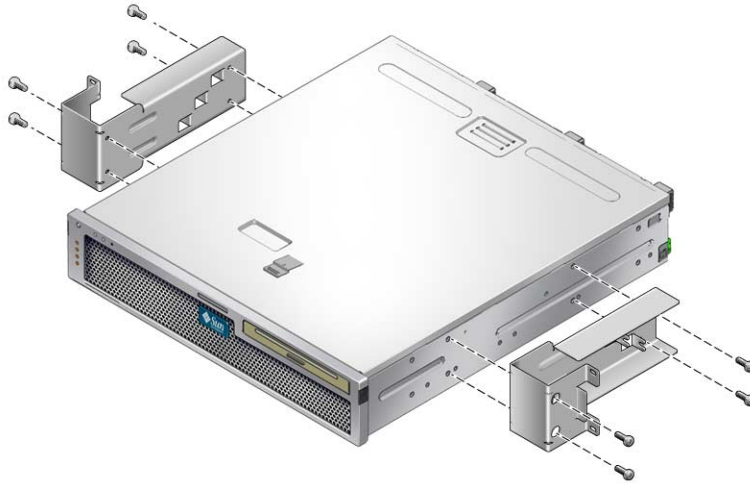


FIGURE 3-2 Securing the Side Brackets to the Side of the Server

3. Get the rail guides from the rack kit ([FIGURE 3-1](#)).
4. Lift the rail guides to the desired height in the rack. Using two screws for each rail guide, secure both rail guides to the rack ([FIGURE 3-3](#)).
Screw size varies depending on your particular rack.

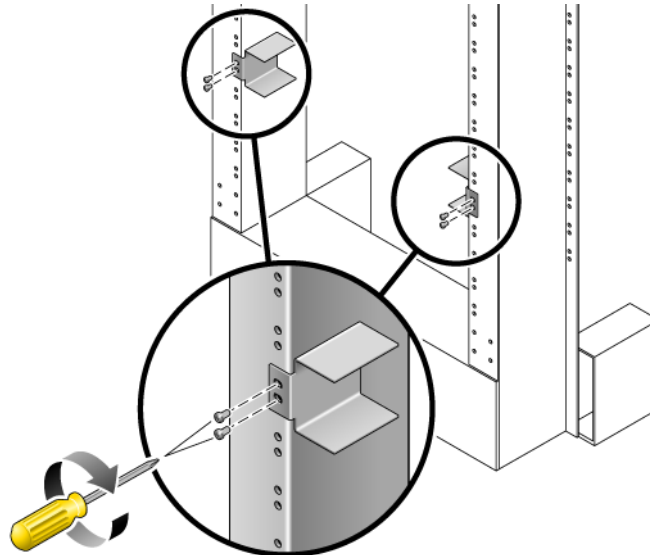


FIGURE 3-3 Mounting the Rail Guides to the Rack

5. Lift the server into the rack and slide the server onto the rail guides ([FIGURE 3-4](#)).

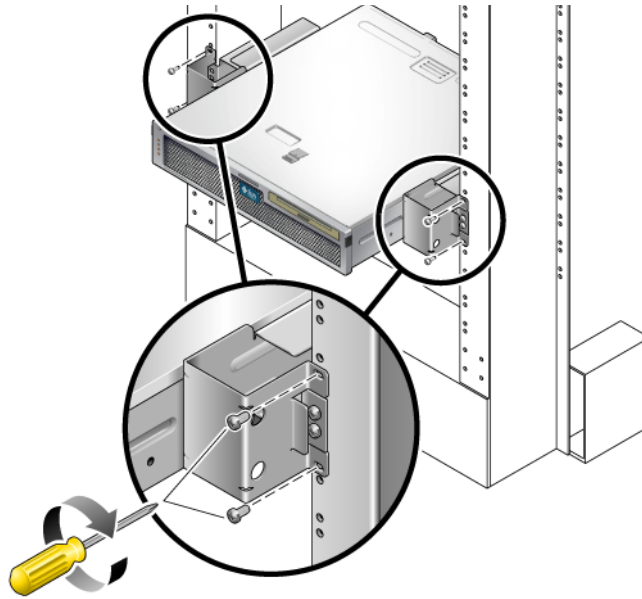


FIGURE 3-4 Installing and Securing the Server in the 2-Post Rack

6. Using two screws on each side, secure each side bracket on the server to the front of the rack ([FIGURE 3-4](#)).
Screw size varies depending on your particular rack.
7. (Optional) If your environment is exposed to especially high vibrations, use the rear plates to further secure the server to the rack ([FIGURE 3-1](#)).
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 3-5](#)).
The position of the screw varies depending on the thickness of the rail in the rack. For example, [FIGURE 3-5](#) shows where you would install the screw for the middle rack position on the rear plate.

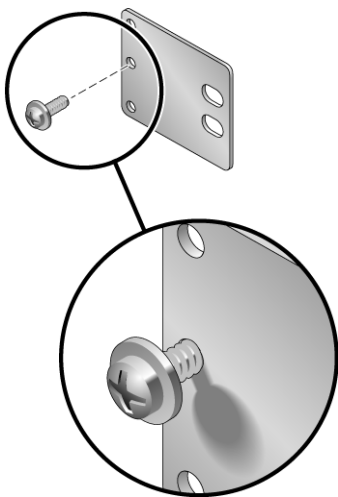


FIGURE 3-5 Installing a Screw for the Middle Rack Position on the Rear Plate

- 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 and the far side of the rear plate should be lined up with the rack post ([FIGURE 3-6](#)).

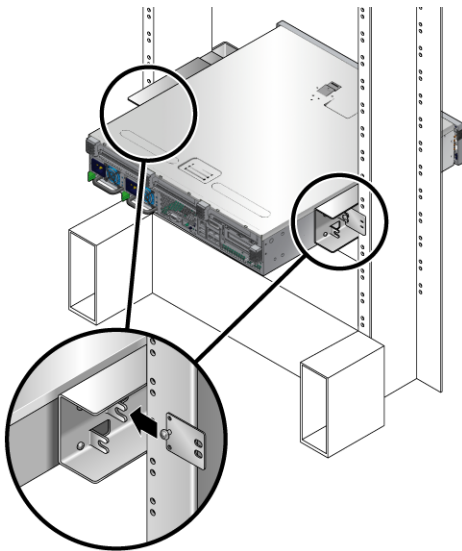


FIGURE 3-6 Installing the Rear Plate to the Side Bracket

- c. Tighten the screw to secure the rear plate to the eyelet on the side bracket (FIGURE 3-6).
- d. Using two screws, secure the far side of the rear plate to the back of the post (FIGURE 3-7). Screw size varies depending on your rack.

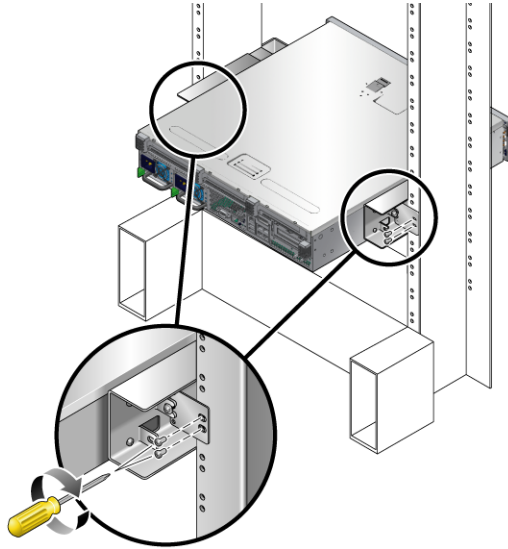


FIGURE 3-7 Securing the Rear Plate to the Side Bracket

- e. Repeat Step 7a through Step 7d to secure the rear plate on the other post.

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

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

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.).

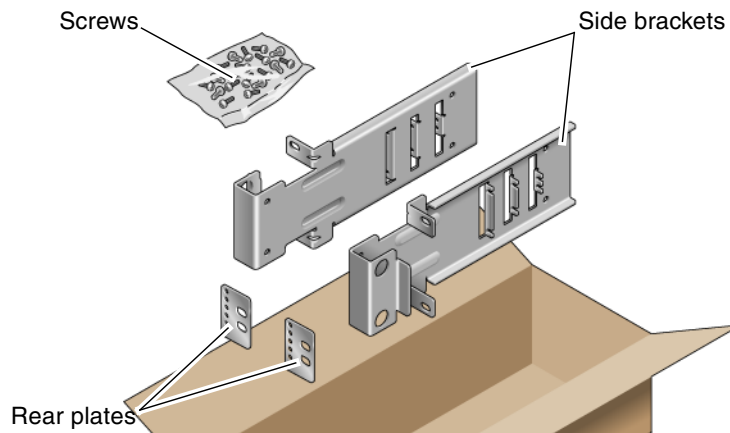


FIGURE 3-8 Contents of the Hardmount 19-Inch 2-Post Kit

TABLE 3-3 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

1. Get the side brackets from the rack kit ([FIGURE 3-8](#)).
2. Using four of the M5 × 7 SEM screws for each side bracket, secure the side brackets to the sides of the server ([FIGURE 3-9](#)).

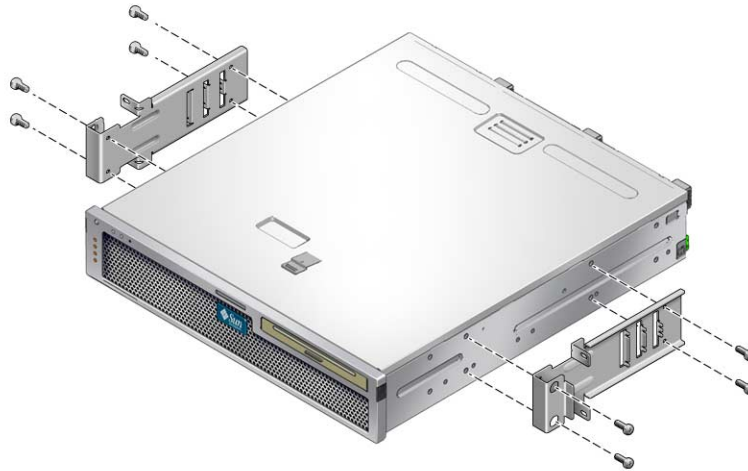


FIGURE 3-9 Securing the Side Brackets to the Sides of the Server

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 3-10](#)).
Screw size varies depending on your rack.

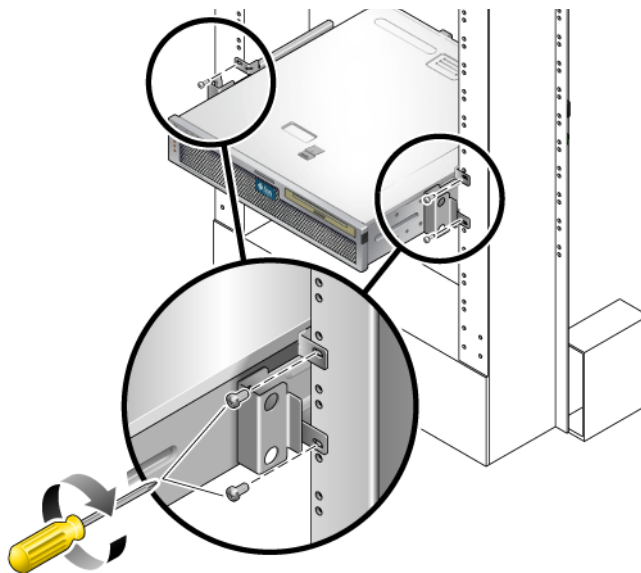


FIGURE 3-10 Installing and Securing the Server in the 2-Post Rack

5. **(Optional)** If your environment is exposed to especially high vibrations, use the rear plates to further secure the server to the rack ([FIGURE 3-8](#)).

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 x 8 SEM screws for each rear plate, loosely install the screws in one of the six positions on the rear plate ([FIGURE 3-11](#)).

The position varies depending on the thickness of the rail in the rack. For example, [FIGURE 3-11](#) shows where you would install the screws for the optimum rack position on the rear plate.

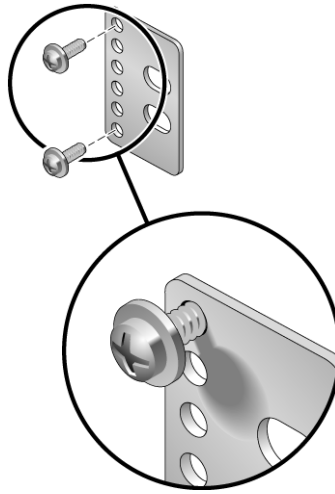


FIGURE 3-11 Installing Screws Into the Optimum Rack Position on the Rear Plate

- 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 and the far side of the rear plate should be lined up with the rack post ([FIGURE 3-12](#)).

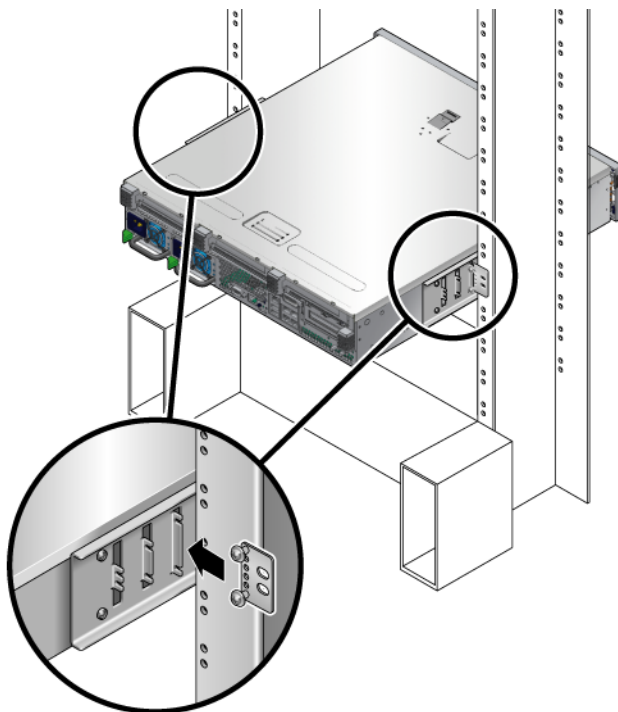


FIGURE 3-12 Mounting the Rear Plate to the Side Bracket

- c. Tighten the screws to secure the rear plate to the set of eyelets on the side bracket (FIGURE 3-12).
- d. Using two screws, secure the far side of the rear plate to the back of the post (FIGURE 3-13). Screw size varies, depending on your rack.

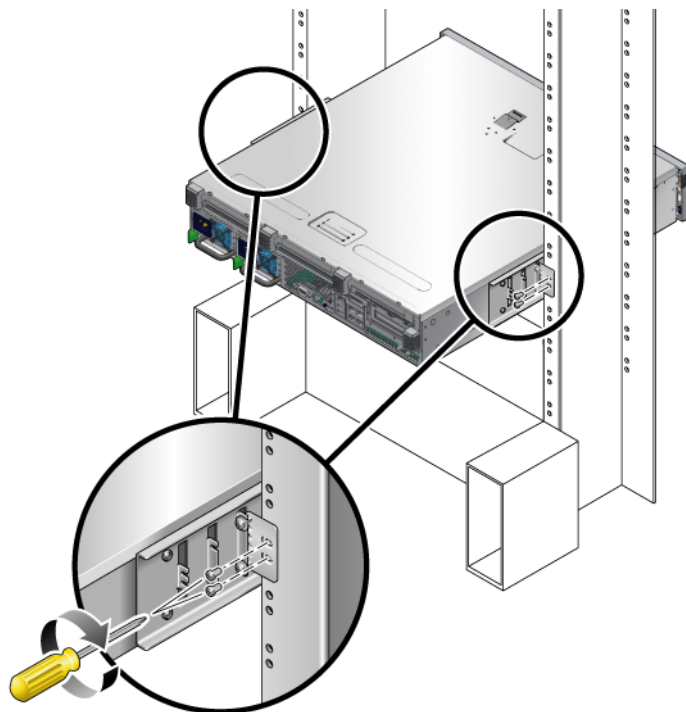


FIGURE 3-13 Securing the Rear Plate to the Side Bracket

- e. Repeat Step 5a through Step 5d 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.

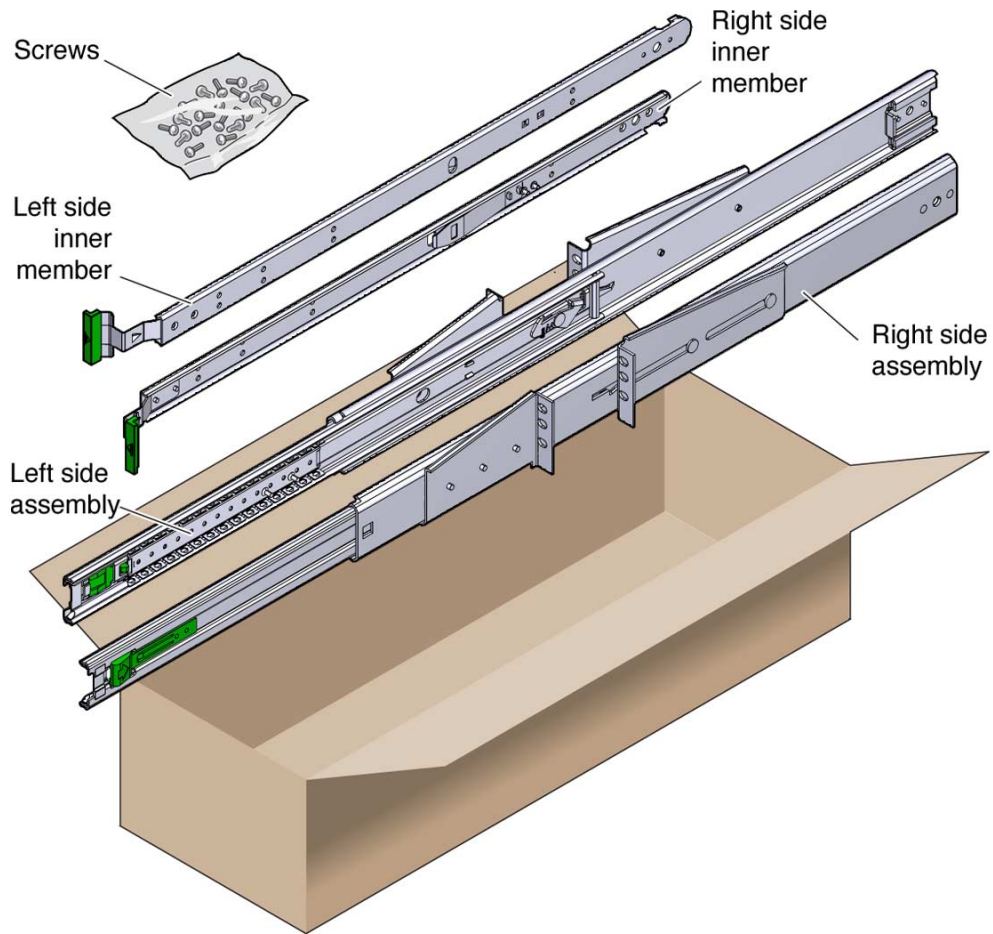


FIGURE 3-14 Contents of the Sliding Rail 19-Inch 2-Post Kit

TABLE 3-4 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

TABLE 3-4 Sliding Rail 19-Inch 4-Post Rackmount Screw Kit Contents (*Continued*)

Number	Description	Where Used
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 3-14](#)).
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 3-15](#)).

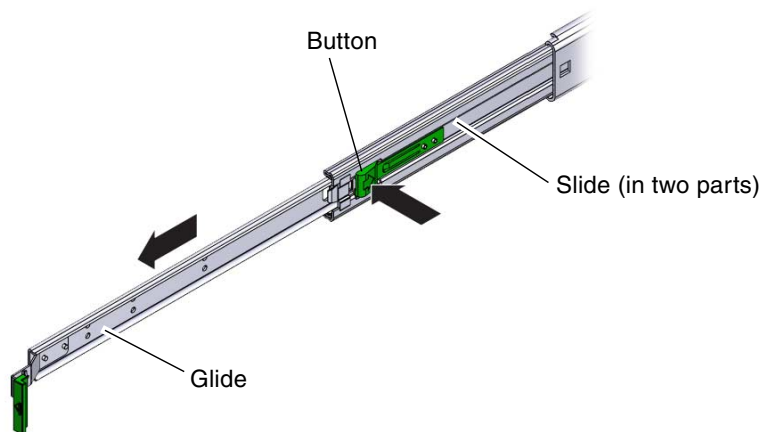


FIGURE 3-15 Removing Glides from the Slides

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 3-16).

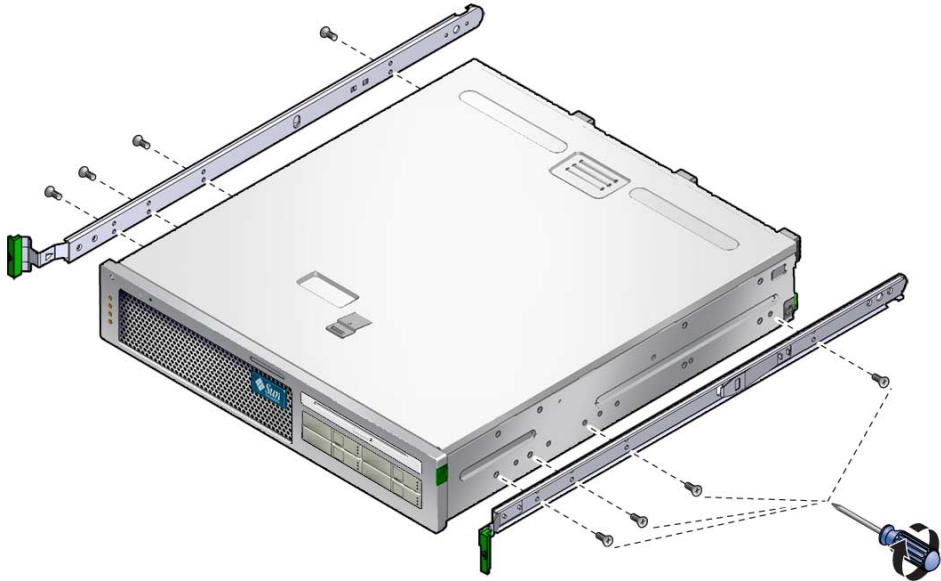


FIGURE 3-16 Attaching the Glides to the Server Chassis

4. Get the rack brackets (front and rear) from the rackmount kit (FIGURE 3-14).

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 3-18).

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.

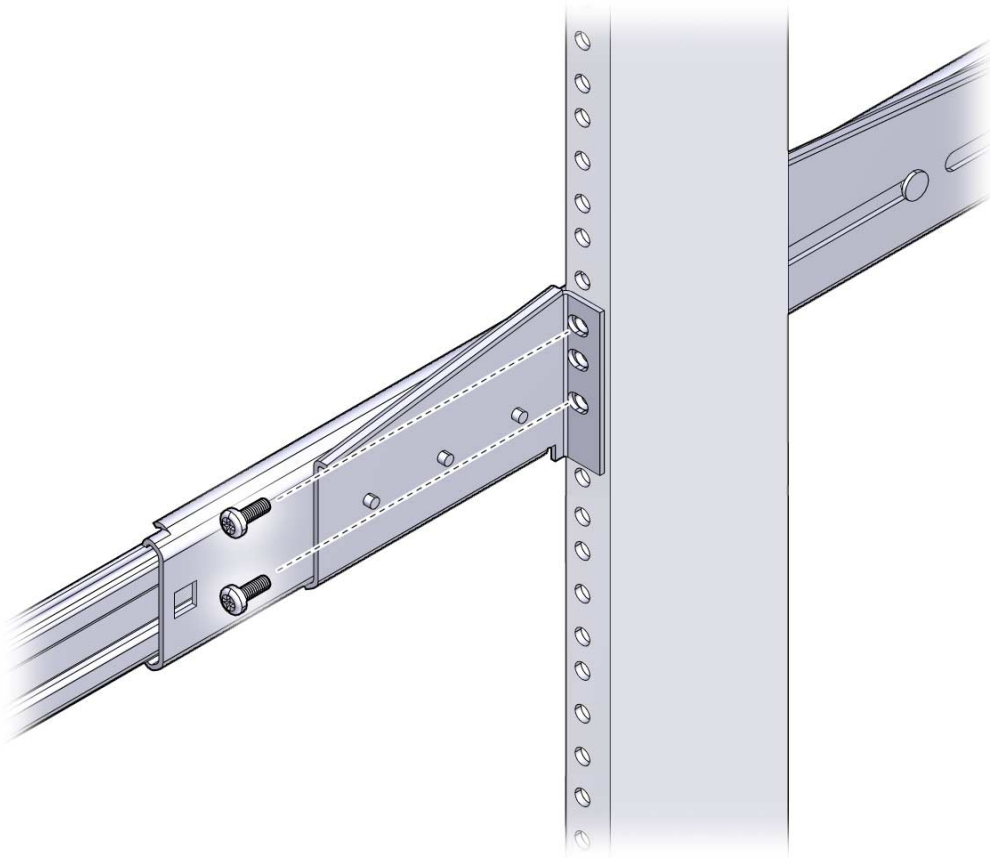


FIGURE 3-17 Attaching the Front Brackets to the Posts

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 3-18).

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.

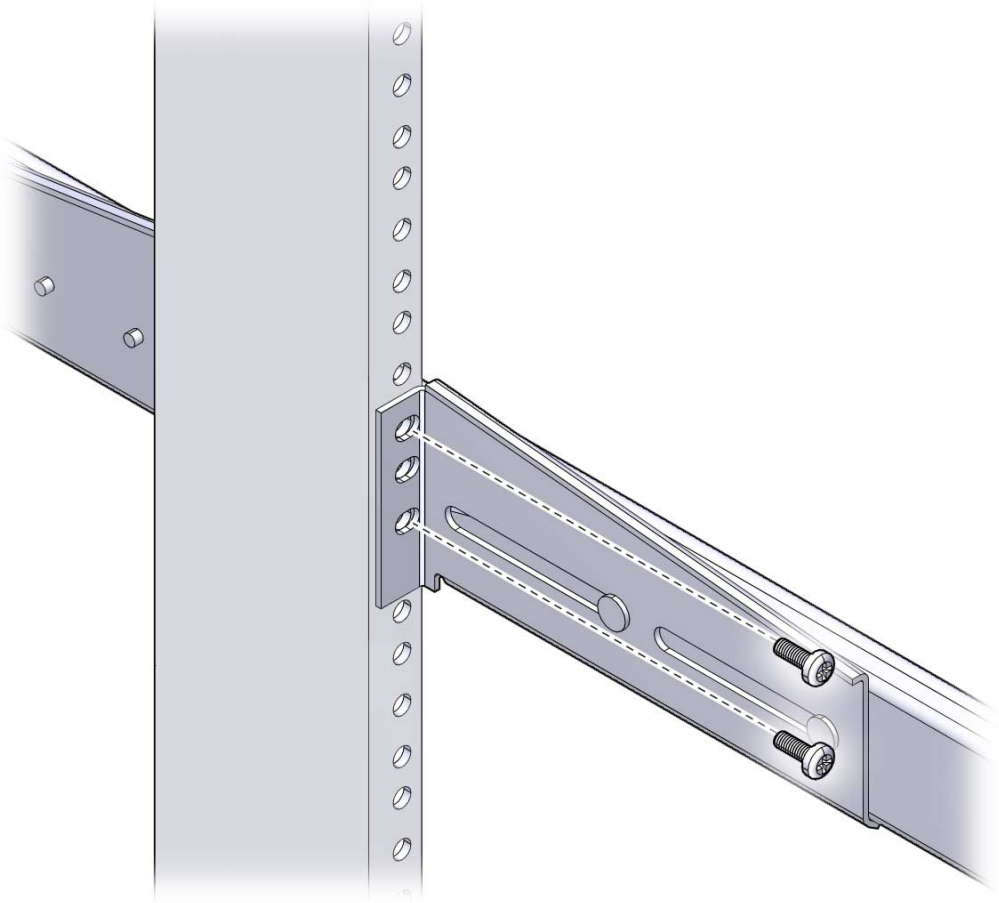


FIGURE 3-18 Securing the Rear Brackets to the Rack Posts

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 3-19](#)).

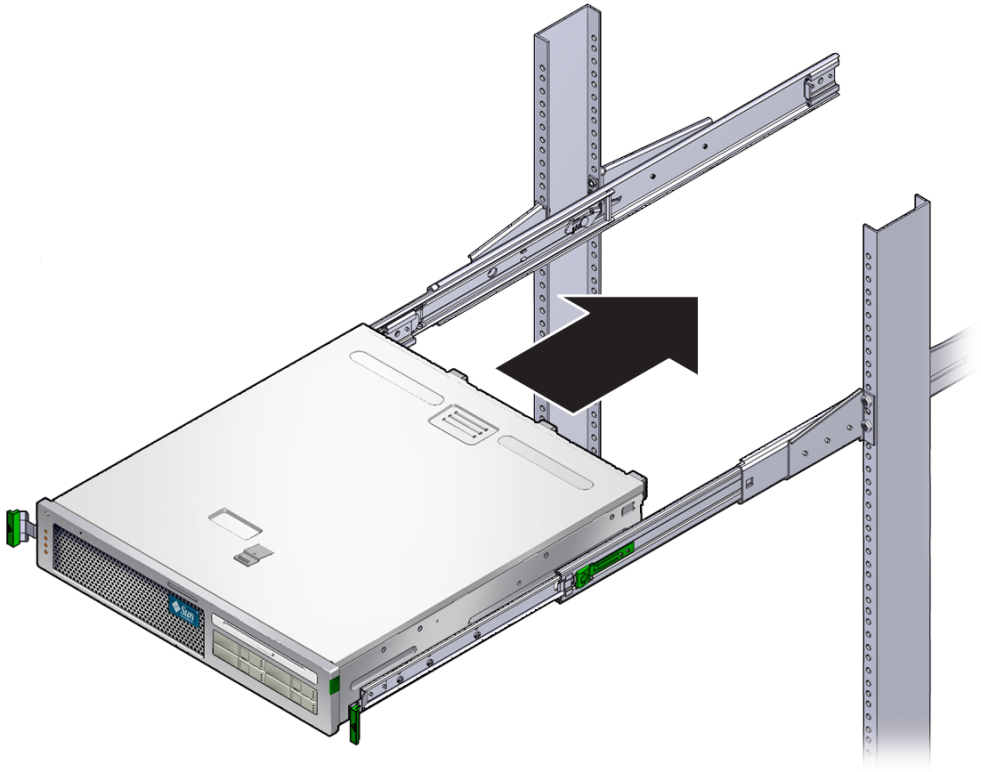


FIGURE 3-19 Sliding the Server Into the Rack

9. Fully tighten the screws on the front and rear brackets

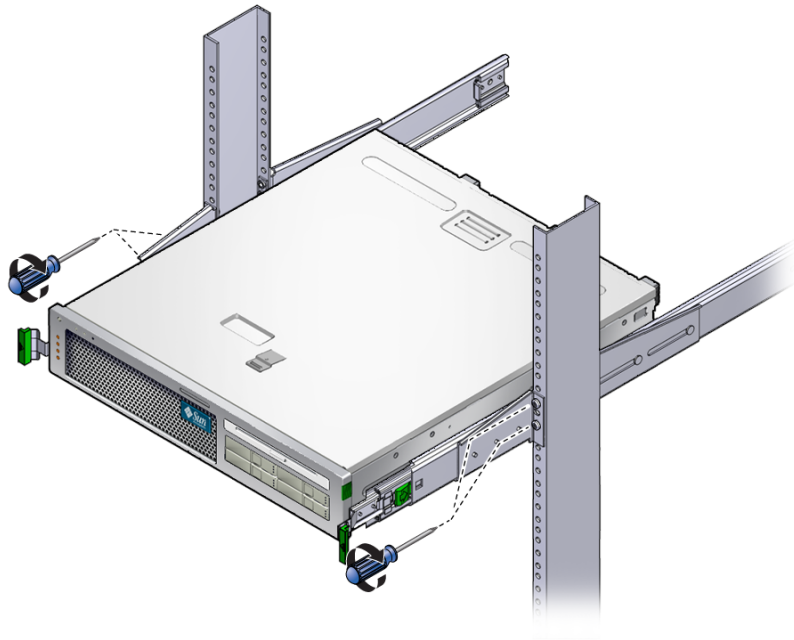


FIGURE 3-20 Tightening the Front Bracket Screws

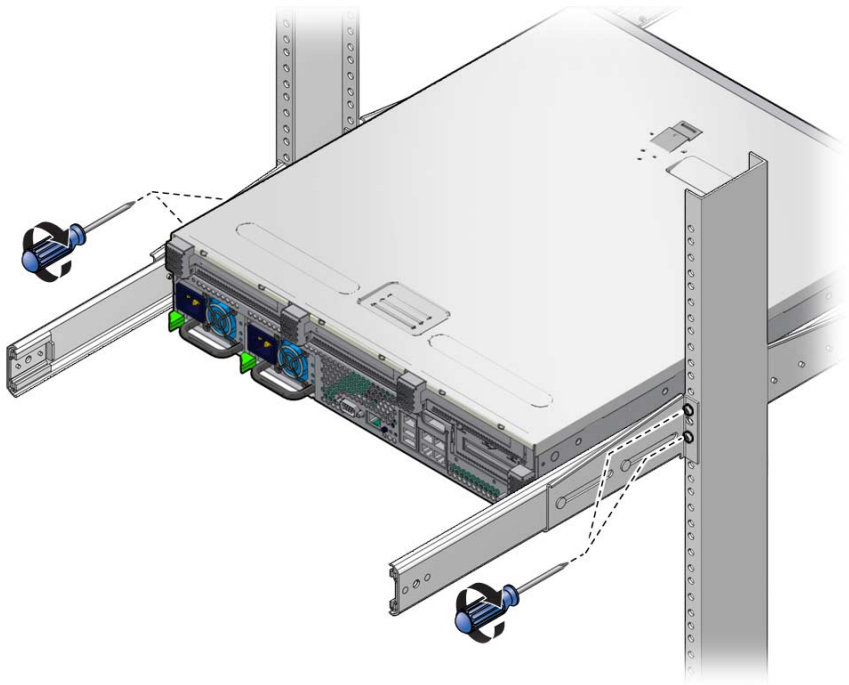


FIGURE 3-21 Tightening the Rear Bracket Screws

10. Attach Cable Management Arm (CMA) to rails (note labels on rails and CMA) to right (FIGURE 3-22) side.

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

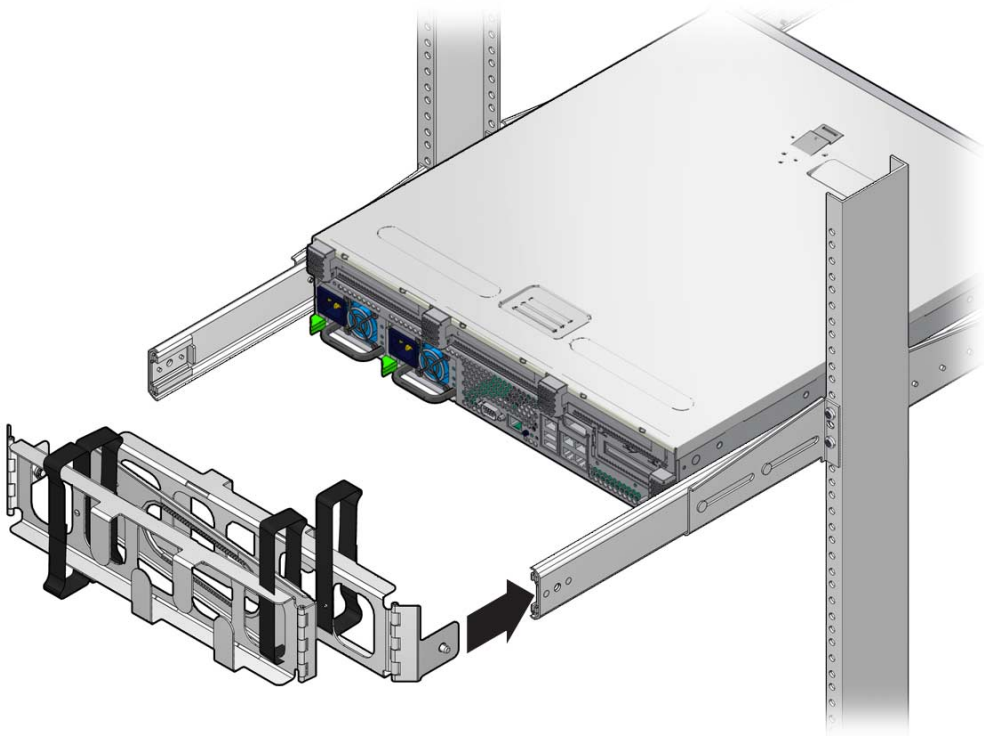


FIGURE 3-22 Attaching Cable Management Arm to Right Side

11. Attach Cable Management Arm (CMA) to rails (note labels on rails and CMA) to left (FIGURE 3-23) side.

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

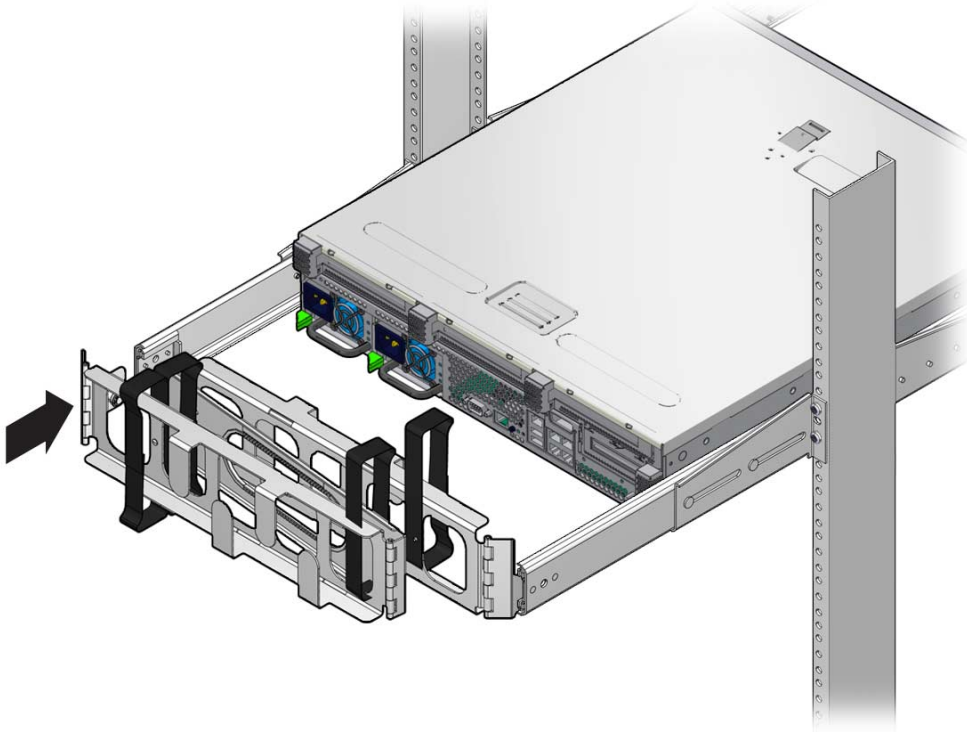


FIGURE 3-23 Attaching Cable Management Arm to Left Side

Using DC Power

This chapter provides the following information on grounding the Netra X4200 M2 server and on assembling the DC power connectors.

- “Grounding the Netra X4200 M2 Server” on page 61
- “Assembling the DC Power Connectors” on page 62

Grounding the Netra X4200 M2 Server

The two M5 grounding studs on the server’s back panel are the recommended safety grounding points (see [FIGURE 4-1](#)). However, an alternative grounding point is provided by the middle pin of the WAGO connector.



Caution – Use either the grounding studs or the DC PSU for grounding, but not both, to avoid ground loop currents through the product chassis.

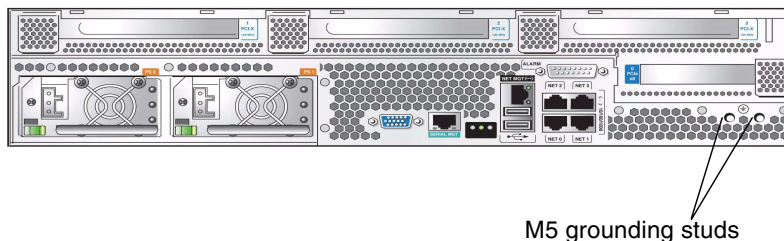


FIGURE 4-1 The Location of the Grounding Studs for Connecting the Two-Hole Lug

To Ground the Server

1. **Terminate a ground conductor using a right-angled two-hole lug.**

Make sure the lug is UL/CSA-approved, that it is suitable for an 8 AWG (6 mm²) conductor, and that it has a 5/8-inch pitch.

To Secure the Lug Onto the Ground Conductor Cable

1. **Connect the free end of the ground conductor cable to an earthing bar located near to the equipment using a UL/CSA-approved crimping tool.**

Do not use a torque value of more than 3.5 Nm maximum.



Caution – External filtering and/or surge suppression devices may be required on the power feeds where branch circuit electromagnetic characteristics are unknown.

Note – For more information about grounding the server, refer to the *Netra X4200 M2 Server Safety and Compliance Guide* (part number: 820-0068).

Assembling the DC Power Connectors

The Netra X4200 M2 Server has a dedicated connector kit; this section explains how to use it.

Required Insulated Conductors

The insulated conductors you use must have the following characteristics:

- Material: tinned copper (multistranded)
- Size: 12 AWG (2.5 mm²) (maximum)
- Rating:
 - 300 vrms (minimum)
 - 75°C
 - Low-smoke fume (LSF)
- Fire resistance:

- VW-1
- GR63-CORE compliant

You will need two supply conductors:

- One -48V (or -60V) DC supply conductor (return, RTN) grounded at source
- One DC supply conductor (- minus)

Finally, you will need one power supply unit (PSU) ground conductor.

Assembling the DC Input Power Cable

1. Determine how many DC input power cables you will need from each DC power source.
2. Turn off power to the DC power source through the circuit breakers.



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

3. Take a DC connector from the ship kit.
4. Locate the Supply and Return wires (and the PSU Ground, if you are using it) coming from the DC power source that you intend to use in the connection to your server:
 - -48V Supply
 - PSU Ground
 - -48V Return
5. Strip 0.31 inches (8 mm) of insulation from each of the wires coming from the DC power source (see [FIGURE 4-2](#)).

Do not strip more than 0.31 inches (8 mm) from each wire. Doing so will leave uninsulated wire exposed from the DC connector after the assembly is complete.

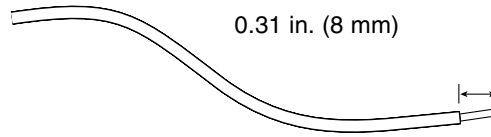


FIGURE 4-2 Stripping the Insulation From the Wire

6. **Insert the tip of the cage clamp operating lever into the rectangular hole directly above the hole in the DC connector where you want to insert the first wire.**

Then press down on the cage clamp operating lever (see [FIGURE 4-3](#)). This opens the cage clamp for this section of the DC connector.

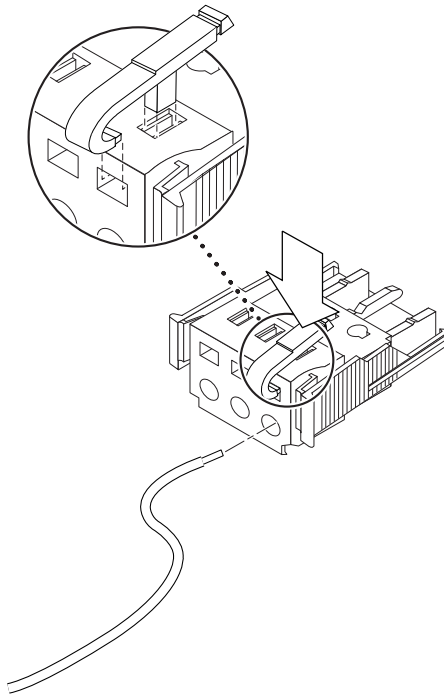


FIGURE 4-3 Opening the DC Connector Cage Clamp (Lever Method)

You can also open the DC connector cage clamp by inserting a small slotted screwdriver into the rectangular hole directly above the hole in the DC connector where you want to insert the first wire, and then pressing down on the screwdriver (see [FIGURE 4-4](#)

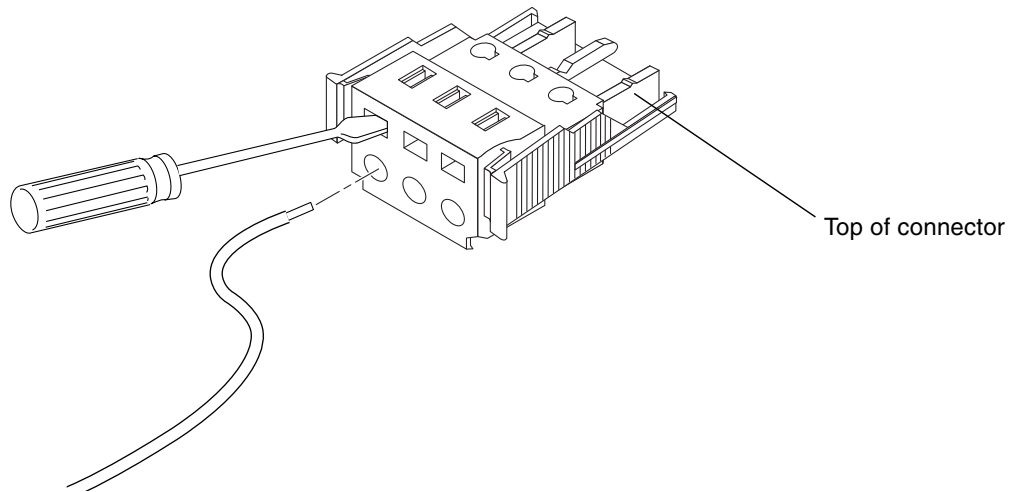


FIGURE 4-4 Opening the DC Connector Cage Clamp (Screwdriver Method)

7. Feed the exposed section of the appropriate wire into that hole in the DC connector.

[FIGURE 4-5](#) shows which wires should be inserted into each hole in the DC connector.

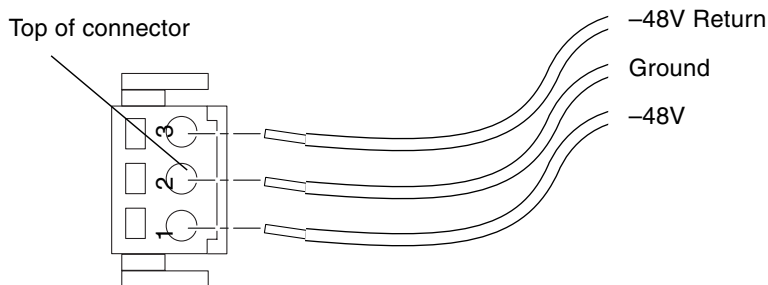


FIGURE 4-5 Assembling the DC Input Power Cable

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 a second DC input power cable.

If you need to remove a wire from the DC connector, insert the cage clamp operating lever or a small screwdriver into the slot directly above the wire and press down ([FIGURE 4-3](#) and [FIGURE 4-4](#)).

Installing the Strain Relief Housings

1. Insert the bottom portion of the strain relief housing into the notch on the DC connector until it snaps into place (see [FIGURE 4-6](#)).

Make sure that the strain relief housing snaps into place on the DC connector, or you will not be able to complete the assembly correctly.

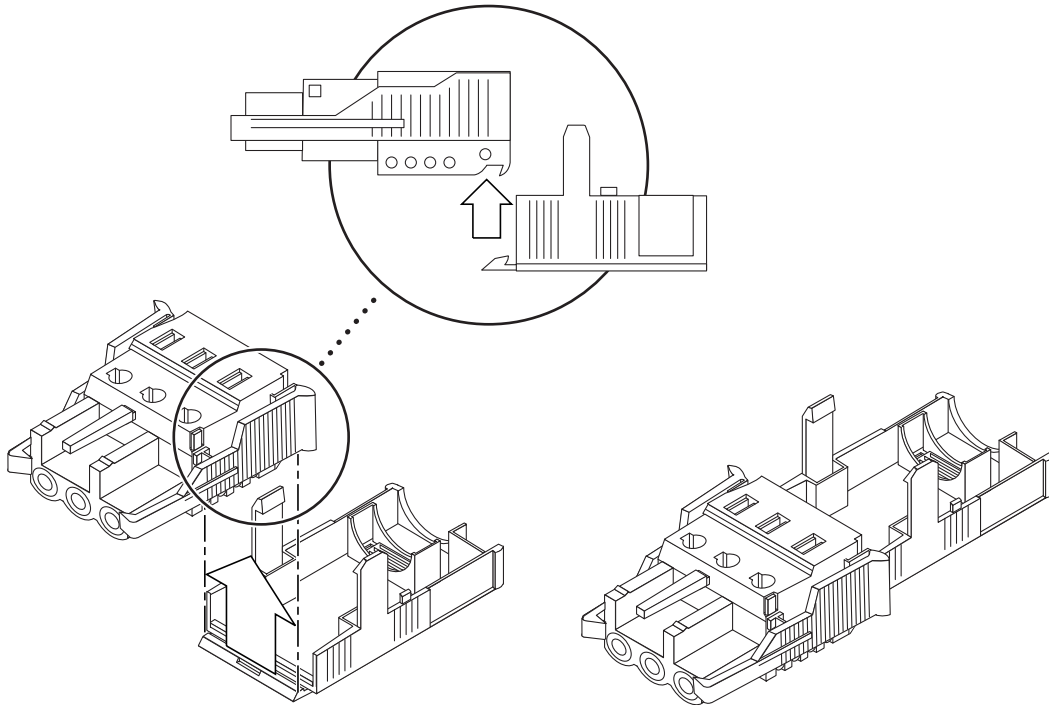


FIGURE 4-6 Inserting the Bottom Portion of the Strain Relief Housing

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 (see [FIGURE 4-7](#)).

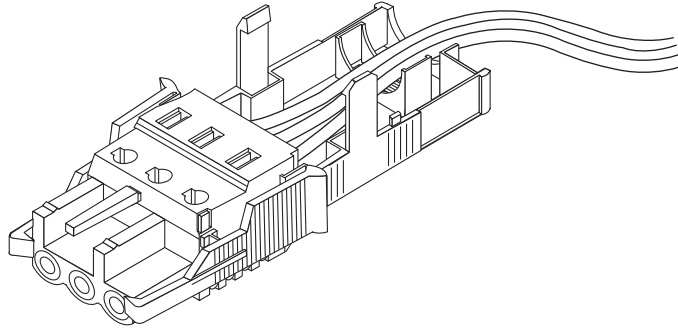


FIGURE 4-7 Routing the Wires Out of the Strain Relief Housing

3. Insert the tie wrap into the bottom portion of the strain relief housing (see [FIGURE 4-8](#)).

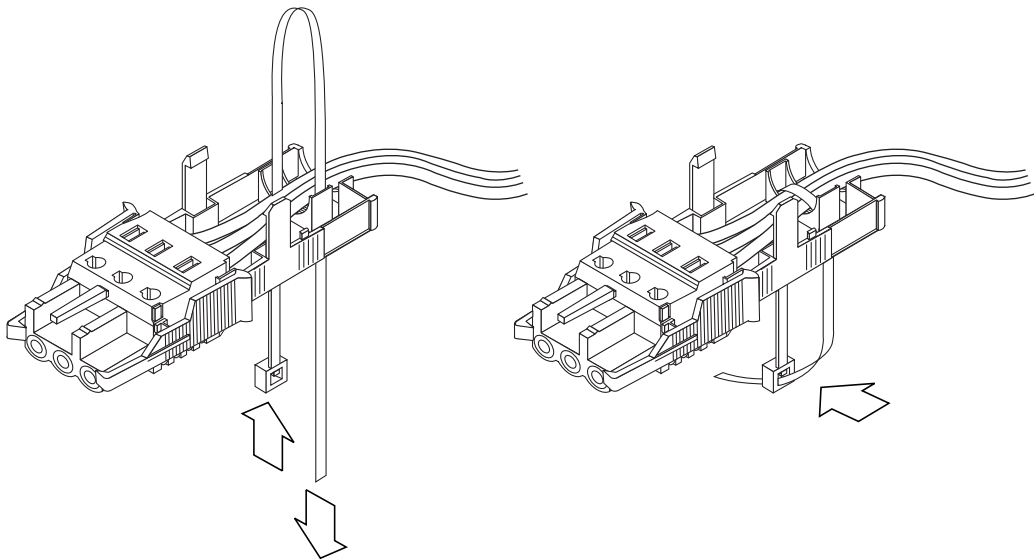


FIGURE 4-8 Securing the Wires to the Strain Relief Housing

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 (see [FIGURE 4-8](#)).

5. Position the top portion of the strain relief housing so that the three prongs on the top portion fit into the openings in the DC connector, and push them together until they snap into place (see [FIGURE 4-9](#)).

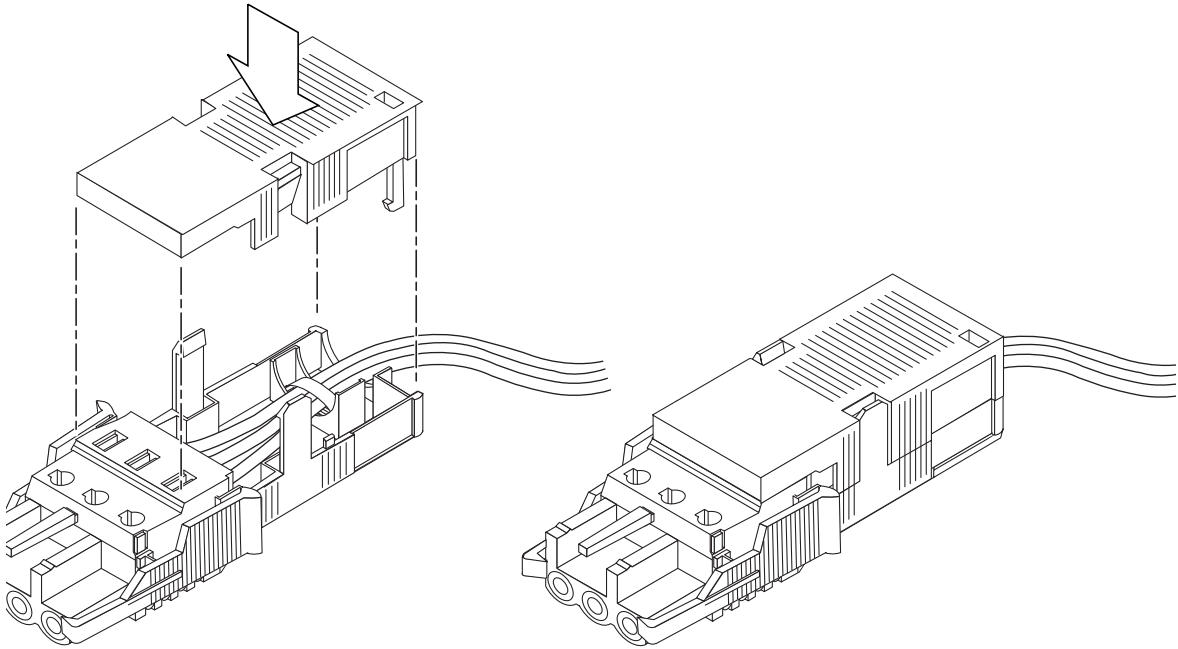


FIGURE 4-9 Assembling the Strain Relief Housing

What's Next?

The DC input power cables for your server are now completely assembled. For information about connecting the power cords and other cables, see [“Cabling the Server” on page 69](#).

Do not power on the server (see [“Powering On the Server” on page 79](#)) until you have installed any optional hardware components you need (see [“Preparing for Installation” on page 1](#)) and until you have installed the server securely into a rack or cabinet (see [“Mounting the Server Into a 4-Post Rack” on page 11](#) and [“Mounting the Server Into a 2-Post Rack” on page 33](#)).

Cabling the Server

This chapter provides instructions for cabling the server.

This chapter contains the following sections:

- [“Data Ports and Cabling Notes” on page 70](#)
- [“Connecting Cables” on page 72](#)

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

Data Ports and Cabling Notes

Port Locations

See [FIGURE 5-1](#) for the locations of the ports, indicators, and power connection on the server.

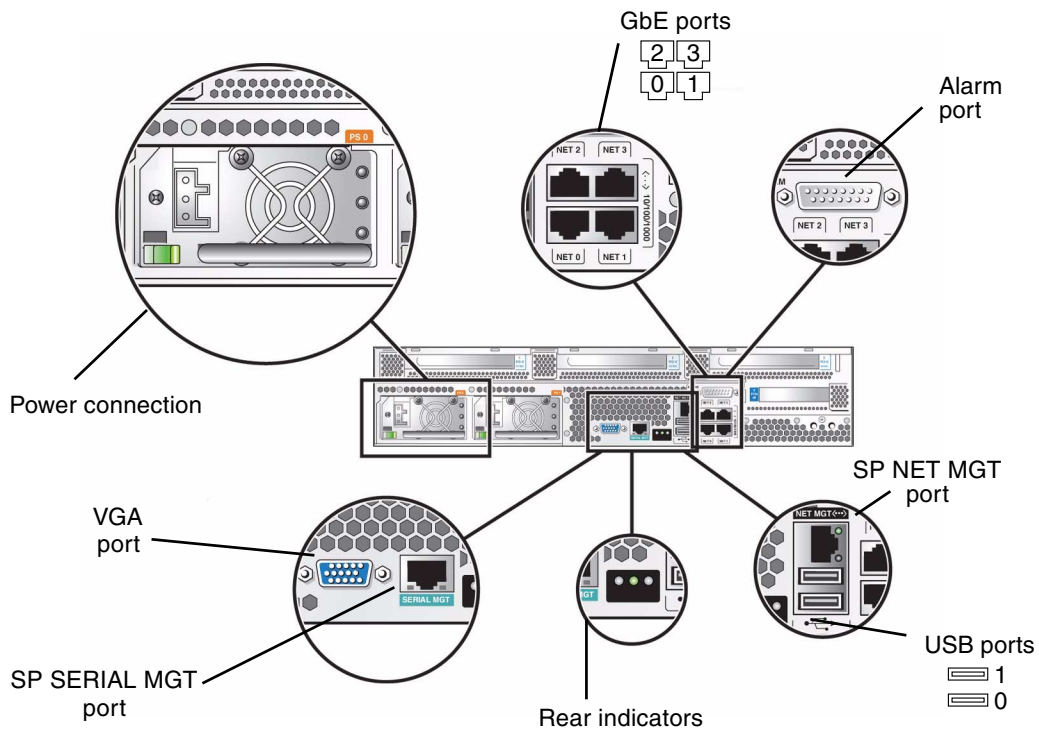


FIGURE 5-1 Rear Panel Features

Cabling Notes

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

■ **Minimum cable connections for the server:**

- At least one server on-board Ethernet network connection (GbE ports).
- The service processor serial management port (SERIAL MGT port) or, the service processor network management port (NET MGT port).
- Power cables for the two power supplies.

■ **Service processor (SP) management ports:** There are two SP management ports for use with the ILOM service processor.

- The SP serial management port (labeled SERIAL MGT) uses an RJ-45 cable and is always available. This is the default connection to the ILOM service processor.
- The SP network management port (labeled NET MGT) is the optional connection to the ILOM service processor.

■ **Ethernet ports:** Labeled NET0, NET1, NET2, and NET3. The Ethernet interfaces operate at 10 Mbyte/sec, 100 Mbyte/sec, and 1000 Mbyte/sec.

■ **VGA serial port**

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

- Both external USB ports are USB 2.0 Hi-Speed compliant interfaces.
- 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 service processor 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.



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.

Connecting Cables

▼ To Connect the Ethernet Network Cables

The server has four RJ-45 Gigabit Ethernet network connectors. They are marked NET0, NET1, NET2, and NET3 ([FIGURE 5-2](#)).

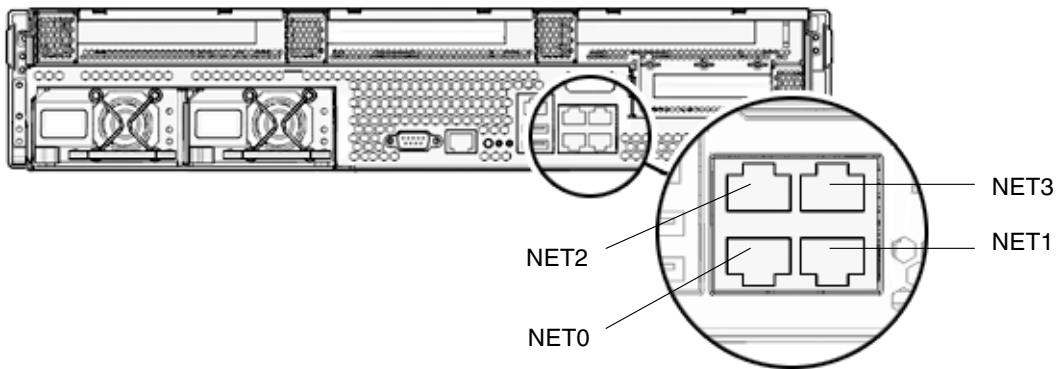


FIGURE 5-2 Ethernet Network Connections

1. Connect a Category 5 cable from your network switch or hub to Ethernet Port 0 (NET0) on the rear of the chassis.
2. As needed, connect Category 5 cables from your network switch or hub to the remaining Ethernet ports (NET1, NET2, NET3).

▼ To Connect the SP Serial Management Port

Use the SP serial management port for server management. This port is needed to set up the SP network management port. The SP serial management port is marked SER MGT. It is the leftmost RJ-45 port on the rear of the chassis ([FIGURE 5-3](#)).

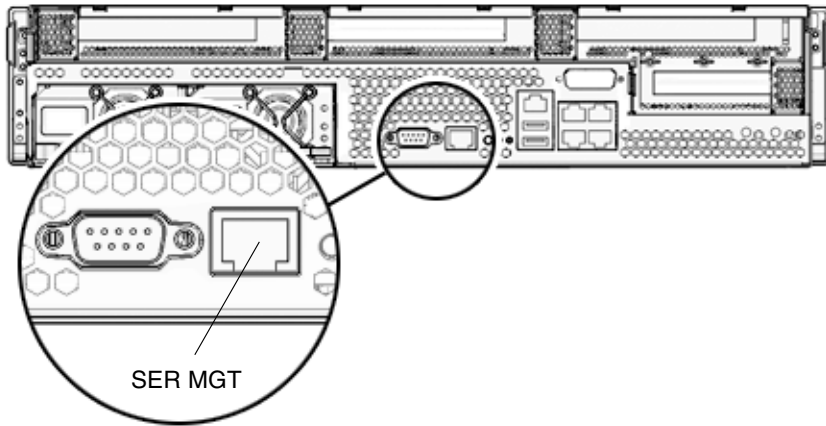


FIGURE 5-3 Service Processor Serial Connection

- Connect a Category 5 cable from the SP serial management port to the terminal device.

▼ To Connect the SP Network Management Port

The SP network management port is marked NET MGT. It is the RJ-45 port above the rear USB ports ([FIGURE 5-4](#)).

Note – The SP network management port is not operational until you have configured the network settings through the serial management port.

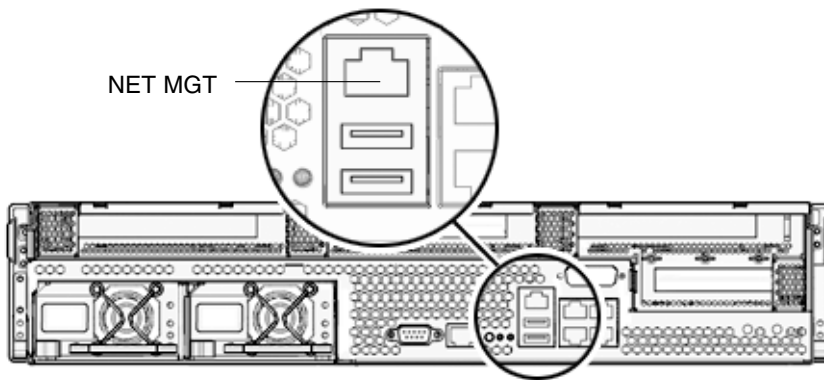


FIGURE 5-4 Service Processor Network Connection

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

Input Power Cables

Note – Finish the hardware procedures in this chapter, but do not attach the input power cables yet.

Powering on the server for the first time requires special preparation and procedures. For example, if you have not prepared a monitor to display system messages before connecting the input power cables, system messages might be lost. You are instructed to connect the server to input power in [“Powering On and Powering Off the Server”](#) on page 79.



Caution – The server goes into standby mode and the service processor initializes as soon as the input power cables are connected to the power source.

Surge Protector Devices

An external Surge Protection Device (SPD) is not intended to be used at the AC input of this network equipment. The Netra X4200 server meets NEBS criteria without the addition of an SPD.

VGA Connection

The VGA port connector uses a HD-15 connector (see inset in [FIGURE 5-5](#)). Use this port for general-purpose serial data transfers. This port is not connected to the SP serial management port.

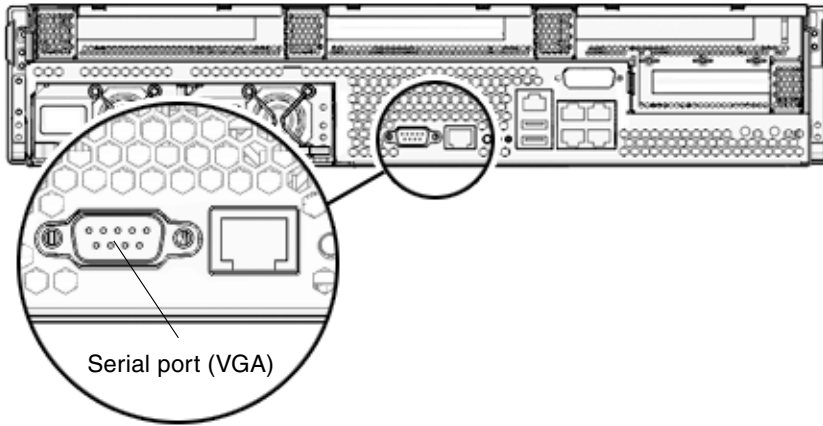


FIGURE 5-5 Serial Port Connection

Use a null modem cable or an adapter to perform the crossovers given for each connector.

- If connecting to a serial port on a personal computer, use Sun adapter part number 530-3100-01.
- If connecting to a Sun workstation or server, use Sun adapter part number 530-2889-03.

USB Ports

Two Universal Serial Bus (USB) ports are provided on the server. USB ports 0 and 1 are located on the rear of the chassis ([FIGURE 5-6](#)).

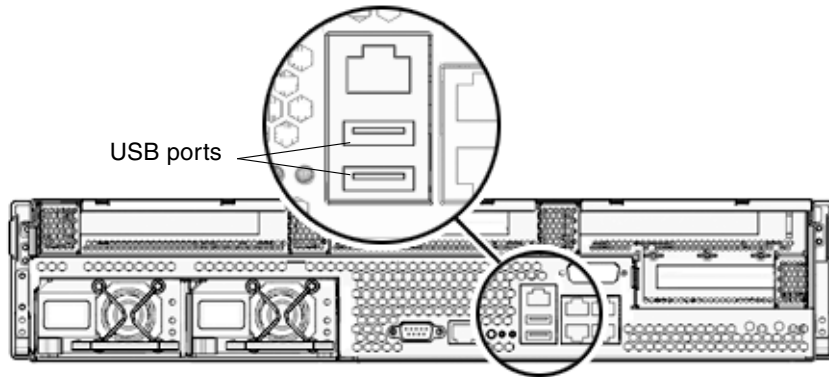


FIGURE 5-6 USB Ports

Alarm Port

The server has a dry-contact alarm port to support telco applications ([FIGURE 5-7](#)).

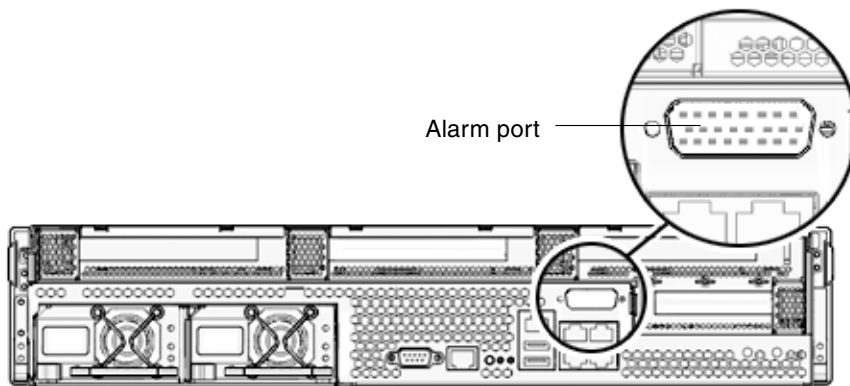


FIGURE 5-7 Alarm Port

Powering On the Server

This chapter provides instructions for powering on the server.

This chapter contains the following selections:

- [“To Apply Standby Power for Initial Service Processor Configuration” on page 79](#)
- [“To Power On Main Power Mode” on page 80](#)
- [“To Shut Down Main Power Mode” on page 81](#)

Powering On and Powering Off the Server

Only standby power should be applied to the server at this point so that you can perform initial configuration of the service processor. Procedures for powering on to main power mode and for shutting down from main power mode are also included in this section.

▼ To Apply Standby Power for Initial Service Processor Configuration

Use this procedure to apply standby power to the service processor (SP) before initial configuration.



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 operated without adequate cooling mechanisms.

1. **Connect grounded power cords to the power connectors on the back panel of the server and to grounded power outlets.**

In standby power mode, the Power/OK LED on the front panel flashes, indicating that the SP is working and the system is ready to be fully powered on to main power mode. See [FIGURE 6-1](#) for the LED location.

Note – At this point, standby power is supplied only to the Graphics Redirect and Service Processor (GRASP) board and power supply fans. You can proceed to [Chapter 8](#) of this guide to begin initial configuration. Do not apply main power to the rest of the server until you are ready to install a platform operating system.

2. **Continue with initial software setup tasks, as described in [Chapter 8](#) of this guide.**

▼ To Power On Main Power Mode

To power on main power for all server components:

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

In standby power mode, the Power/OK LED on the front panel flashes. See [FIGURE 6-1](#).

2. **Use a ballpoint pen or other stylus 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.

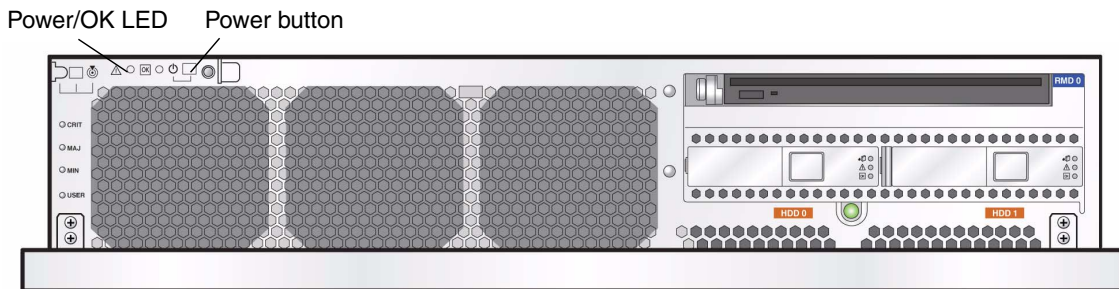


FIGURE 6-1 Power/OK LED and Power Button on the Server Front Panel

▼ To Shut Down Main Power Mode

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

- **Graceful shutdown:** Use a ballpoint pen or other stylus to press and release the Power button on the front panel. This causes Advanced Configuration and Power Interface (ACPI) enabled operating systems to perform an orderly shutdown of the operating system. Servers not running ACPI-enabled operating systems will shut down to standby power mode immediately.
- **Emergency shutdown:** Press and hold the Power button for four seconds to force main power off and enter standby power mode.

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



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

Setting Up the Netra X4200 M2 Server Software

This chapter describes the tasks for initial setup of the server's service processor and Integrated Lights Out Manager software.

This chapter contains these topics:

- [“Introduction to the Integrated Lights Out Manager” on page 84](#)
- [“Connecting to the ILOM Service Processor” on page 85](#)
- [“Setting Up Platform Operating System and Driver Software” on page 93](#)

Introduction to the Integrated Lights Out Manager

The Sun™ Integrated Lights Out Manager (ILOM) provides powerful tools for managing your Netra X4200 M2 server.

FIGURE 7-1 Integrated Lights Out Manager Login Page

ILOM consists of four components, three of which are on your host server and one that is on the client system that accesses your host server. The four components are as follows:

- ILOM SP hardware. Your server is equipped with a Graphics Redirect and Service Processor (GRASP) board that performs the following functions:
 - Monitors the status and configuration of the field-replaceable components of your server, such as fans, disk drives, and power supplies.
 - Provides serial and Ethernet connections to external terminals or local area networks (LANs).
- ILOM SP firmware. A library of system management firmware applications is preinstalled on the GRASP board. This ILOM firmware is operating system independent. These firmware applications provide the following system management interfaces into your server:
 - A web-based graphical interface
 - A Secure Shell (SSH) command-line interface
 - An IPMI v2.0 command interface
 - A Simple Network Management Protocol (SNMP) v1, v2c, or v3 interface

These interfaces call the same underlying system management functions on your GRASP board, so that you can choose to work with one or more of these ILOM interfaces to integrate with the other management interfaces running in your data center.

- Remote Console application. The Remote Console application is a piece of layered software that enables clients to view the graphical console of your host server as though they were directly attached to its video connector. The Remote Console is a mirror of the 1024x768 output from the server's VGA video connector. The remote keyboard, mouse, CD drive or diskette drive will appear as standard USB devices.

Note – The Remote Console application is not required on the client systems, but a web browser and Sun Java™ runtime environment version 5.0 or later are required on the client systems. You can download Java for free from <http://java.sun.com>.

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

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

Connecting to the ILOM Service Processor

There are two methods for connecting to the ILOM SP to perform initial setup and configuration. Use the procedure that you prefer:

- [“To Connect to ILOM Using a Serial Connection” on page 85](#)
- [“To Connect to ILOM Using an Ethernet Connection” on page 87](#)

▼ To Connect to ILOM Using a Serial Connection

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

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

1. **Verify that your terminal, laptop, or terminal server is operational.**
2. **Configure the terminal device or the terminal emulation software running on a laptop or PC to the following settings:**
 - 8N1: eight data bits, no parity, one stop bit
 - 9600 baud
 - Disable hardware flow control (CTS/RTS)
 - Disable software flow control (XON/XOFF)
3. **Connect a serial cable from the RJ-45 SERIAL MGT port on the server’s back panel to a terminal device ([FIGURE 5-3](#)).**

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

The SP eventually displays a login prompt, such as the following example:

```
SUNSP0003BA84D777 login:
```

In this example login prompt:

- The string SUNSP is the same for all SPs.
- 0003BA84D777 is the Ethernet MAC address of the particular SP. This will be different for each server.

5. Log in to ILOM.

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

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

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

```
->
```

You can now run command-line interface (CLI) commands to configure ILOM for the server's user accounts, network settings, access lists, alerts, and so on. For detailed instructions on CLI commands, see the *Integrated Lights Out Manager Administration Guide* (819-1160).

For instructions on configuring static network settings using the CLI, see [“Configuring Static IP Addresses Using the CLI” on page 91](#).

6. To start the host serial console, type:

```
cd /SP/console
```

```
start
```

Note – You can switch back to the SP CLI from the host serial console by typing the **Escape** key followed by the (key.

7. After configuring the server, proceed with [“Configuring the Preinstalled Solaris 10 Operating System” on page 95](#).

Redirecting the Host Console Output to the Video Port (Optional)



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

After completing [Step 6](#) in the previous section, if you wish to redirect the host console output to the video port, run the `eeeprom` command at the Solaris prompt with the following arguments:

```
eeeprom input-device=keyboard
eeeprom output-device=screen
eeeprom console=screen
```

▼ To Connect to ILOM Using an Ethernet Connection

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

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

- To configure using DHCP, see [“Configuring ILOM Ethernet Settings Using DHCP” on page 88](#).
- To configure using a static IP address, see [“Configuring ILOM Using Static Ethernet Settings” on page 90](#).

Configuring ILOM Ethernet Settings Using DHCP

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

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

2. Connect an Ethernet cable to the server's RJ-45 NET MGT Ethernet port (FIGURE 5-4).

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

3. Obtain the ILOM SP IP address from one of the following locations. Record the IP address for future reference.

- CLI commands. The SP has a serial port to which you can attach a terminal device. If you log in to the SP and type the CLI command **show /SP/network**, the SP displays the current IP address.
- System BIOS Setup screen. Press F2 during bootup, then choose Advanced → IPMI 2.0 Configuration → Set LAN Configuration → IP address.
- DHCP server log files. If you use this method, perform Step 3a through Step 3c below. Otherwise, skip to [Step 4](#).

a. Identify the MAC address of the ILOM SP from one of the following locations and write it down:

- CLI commands. The SP has a serial port to which you can attach a terminal device. If you log in to the SP and type the CLI command **show /SP/network**, the SP displays the current MAC address.
- Customer Information Sheet. This sheet is shipped with your server.
- The system BIOS Setup Screen. Press F2 during bootup, then choose Advanced → IPMI 2.0 Configuration → Set LAN Configuration → MAC address.

b. Log in to your DHCP server and view its DHCP log file.

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

c. Identify the IP address in the log file that corresponds to the MAC address of your ILOM SP.

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

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

Locate the MAC address of your ILOM SP in the MAC Address (seventh) field of the correct DHCP file entry and record the corresponding value of the IP Address (fifth) field. This is the IP address that you must use to access the system management firmware applications on your ILOM SP.

4. **Open a session to the ILOM SP using the IP address that you obtained in Step 3.**

You can use the CLI or the GUI interface.

- To establish a Secure Shell (SSH) connection to the ILOM SP CLI, type the appropriate connection command in the SSH application. For example, to connect from a Solaris or Linux system or when using OpenSSH on Windows to the SP with the DHCP-assigned IP address of 172.16.x.x, type the following command:

```
# ssh -l root 172.16.x.x
```

The user name is **root**, which was included in the `ssh` command. When you are prompted, enter the default password for the SP, **changeme**. You can then enter commands to manage user accounts or to monitor the status of devices on your server.

- To establish a connection to the ILOM SP web GUI, type the IP address of the ILOM SP in the browser locator box and press Enter. For example, if the IP address for your ILOM SP was 172.16.x.x, you would type it as shown in [FIGURE 7-2](#). The first GUI page prompts you for the default user name, **root**, and the default password, **changeme**.

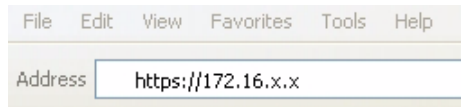


FIGURE 7-2 Opening a Session With a Web GUI

5. **After you have entered the user name and password in either the CLI or web GUI, you can use the interface to configure your ILOM SP.**

For detailed instructions on configuring your system, see the *Integrated Lights-Out Manager Administration Guide* (819-1160).

6. **Continue with “Configuring the Preinstalled Solaris 10 Operating System” on page 99.**

Configuring ILOM Using Static Ethernet Settings

As an alternative to having your DHCP server assign an IP address to your ILOM SP, you can also assign a static IP address to it. You can do this by using the web GUI, by using the CLI over the network or serial port, or by using the server's BIOS Setup utility. Use the procedure you prefer.

- [“Configuring Static IP Addresses Using the Web GUI” on page 90](#)
- [“Configuring Static IP Addresses Using the CLI” on page 91](#)
- [“Configuring Static IP Addresses Using the BIOS Setup Utility” on page 92](#)

Configuring Static IP Addresses Using the Web GUI

1. **Determine the current IP address of the ILOM SP from one of the following locations:**
 - CLI command. The SP has a serial port to which you can attach a terminal device. If you log in to the SP and type the CLI command **show /SP/network**, the SP displays the current IP address.
 - System BIOS Setup screen. Press F2 during bootup, then choose Advanced → IPMI 2.0 Configuration → Set LAN Configuration → IP address.
2. **Connect to the ILOM SP through a web browser running on a remote system.**
3. **Log in to the web GUI using the user name, *root*, and the default password, *changeme*.**
4. **Choose the Configuration tab and its Network tab to display information about the current network configuration of your ILOM SP (FIGURE 7-3).**
5. **Select the Use the Following IP Address option and type your static IP address information. See the example in FIGURE 7-3.**

The screenshot shows the Sun Integrated Lights Out Manager (ILOM) web GUI. At the top, it displays 'User: root (Administrator) Server: 129.148.97.192' and a 'Sun™ Integrated Lights Out Manager' header. Below the header is a navigation bar with tabs: System Information, System Monitoring, Configuration, User Management, Remote Control, and Maintenance. Under the Configuration tab, there are sub-tabs: System Management Access, Alert Management, Network, Serial Port, and Clock Settings. The 'Network' sub-tab is selected, showing the 'Network Settings' page. The page instructs the user to 'Configure the service processor's IP address using DHCP, or manually assign an IP address.' It shows the 'MAC Address' as 02:00:00:97:01:92. There are two radio buttons: 'Obtain an IP Address Automatically (Use DHCP)' and 'Use the Following IP Address'. The 'Use the Following IP Address' option is selected. Below this, there are three input fields: 'IP Address' with the value 129.148.97.192, 'Subnet Mask' with the value 255.255.255.0, and 'Default Gateway' with the value 129.148.97.254. A 'Save' button is located at the bottom left of the form.

Configuring Static IP Addresses Using the CLI

1. Log in to the CLI using SSH or by connecting to the serial port.

- To establish a Secure Shell (SSH) connection to the ILOM CLI, type the appropriate connection command in the SSH application. For example, to connect to the SP to connect from a Solaris or Linux system or when using OpenSSH on Windows to the SP with the DHCP-assigned IP address of 172.16.x.x, you would type the following command:

```
# ssh -l root 172.16.x.x
```

See the example in [FIGURE 7-2](#).

2. Type the following commands, using your own IP addresses in place of the examples below:

(The IP addresses shown in the commands below are examples.)

```
cd /SP/network
set pendingipaddress=172.16.x.x
set pendingipnetmask=192.168.x.x
set pendingipgateway=10.x.x.x
set pendingipdiscovery=static
set commitpending=true
```

Configuring Static IP Addresses Using the BIOS Setup Utility

1. Enter the BIOS Setup utility by pressing the F2 key while the system is booting up and performing the power-on self-test (POST).
2. When the BIOS Main menu screen is displayed, select `Advanced`.
3. From the `Advanced` menu screen, select `IPMI 2.0 Configuration`.
4. From the `IPMI 2.0 Configuration` screen, select `LAN Configuration`.
5. On the `LAN Configuration` screen, change the `IP Assignment` field to `Static`.
6. Type the static IP address in the `IP Address` field.
You can also enter the subnet mask and default gateway settings in their respective fields.
7. Select `Commit` and press `Enter` to commit the changes.
8. Select `Refresh` and press `Enter` to see your new static IP settings displayed in the `Current IP address in BMC` field.
9. Press and release the right arrow key until the `Exit` menu screen is displayed.
10. Follow the instructions on the `Exit` menu screen to save your changes and exit the Setup utility.

Setting Up Platform Operating System and Driver Software

After configuring the ILOM SP with network settings, you can configure the preinstalled Solaris™ 10 OS, or install a supported Linux or Windows platform operating system and drivers.

- If you want to use the preinstalled Solaris 10 OS, refer to [“Configuring the Preinstalled Solaris 10 Operating System” on page 95](#).
- For details about installing a supported Linux or Solaris OS and the required drivers, refer to *Netra X4200 M2 Server Operating System Installation Guide* (820-0065).
- For details about installing a supported Windows OS and the required drivers, refer to *Sun Fire X4000 Series Servers Windows Operating System Installation Guide* (819-4346).
- For additional OS considerations specific to this server, also refer to the *Netra X4200 M2 Server Product Notes* (820-0067).

Configuring the Preinstalled Solaris 10 Operating System

This chapter explains the steps for configuring the Solaris™ 10 Operating System (OS) that has been preinstalled on your Netra X4200 M2 server.

Note – The output of the preinstalled image is directed to a serial console connected to the motherboard's VGA port.

This chapter contains the following sections:

- [“Before You Begin” on page 95](#)
- [“Configuring the Preinstalled Solaris 10 Operating System” on page 99](#)

Before You Begin

Before you begin configuring the preinstalled OS, you need to do the following:

1. Perform initial configuration of the server's Integrated Lights Out Manager (ILOM) service processor (SP) and determine the server's network settings, as described in [“Connecting to the ILOM Service Processor” on page 85](#).
2. Gather the information that you will need for the configuration, as listed in the [“Worksheet for Installation” on page 96](#). You only need to collect the information that applies to your application of the system.

TABLE 8-1 Worksheet for Installation

Information for Installation		Description or Example	Your Answers: Defaults are noted with an asterisk. (*)
Language		Choose from the list of available languages for the Solaris 10 software.	English*
Locale		Choose your geographic region from the list of available locales.	English (C - 7-bit ASCII)*
Terminal		Choose the type of terminal that you are using from the list of available terminal types.	
Network connection		Is the system connected to a network?	<ul style="list-style-type: none"> • Networked • Non-networked*
DHCP		Can the system use Dynamic Host Configuration Protocol (DHCP) to configure its network interfaces?	<ul style="list-style-type: none"> • Yes • No*
If you are not using DHCP, note the network address.	IP address	If you are not using DHCP, supply the IP address for the system. Example: 129.200.9.1	
	Subnet	If you are not using DHCP, is the system part of a subnet? If yes, what is the netmask of the subnet? Example: 255.255.0.0	255.255.0.0*
	IPv6	Do you want to enable IPv6 on this machine?	<ul style="list-style-type: none"> • Yes • No*
Host name		A host name that you choose for the system.	
Kerberos		Do you want to configure Kerberos security on this machine? If yes, gather this information: <div style="text-align: right;"> Default Realm: Administration Server: First KDC: (Optional) Additional KDCs: </div>	<ul style="list-style-type: none"> • Yes • No*

TABLE 8-1 Worksheet for Installation (*Continued*)

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

TABLE 8-1 Worksheet for Installation (*Continued*)

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

Configuring the Preinstalled Solaris 10 Operating System

Note – Before you perform this procedure, you need to set up the service processor. If you have not done so, see [“Before You Begin” on page 95](#).

Use the information that you gathered in the [“Worksheet for Installation” on page 96](#) as you perform the configuration.

After configuring the ILOM SP, you can configure the preinstalled Solaris 10 Operating System (OS) by using another system to connect to the server, or install a Linux or Windows platform operating system. The possible ways to do this are described here:

- [“To Connect to the Server Using the Service Processor’s IP Address” on page 100](#).
If you use this method, you first need to determine the service processor’s IP address and the server must be connected to the network.
- [“To Connect to the Server Using a Serial Capture Program” on page 101](#).
If you use this method, you do not need to determine the service processor’s IP address, but you will need to have a cable connection from the server to the serial port of the serial capture host system.
- If you want to install a supported Linux or Windows OS and the required drivers, refer to the *Netra X4200 M2 Server Operating System Installation Guide* (820-0065). This document also contains procedures for installing the Solaris Operating System from media.
- For additional OS considerations specific to this server, also refer to the *Netra X4200 M2 Server Product Notes* (820-0066).

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

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

1. If you have not already done so, determine the service processor's IP address:

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

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

- b. Initialize the BIOS Setup utility by pressing the F2 key while the system is performing the power-on self-test (POST).
- c. When the main BIOS screen is displayed, select Advanced > IPMI 2.0 Configuration.
- d. When the IPMI 2.0 Configuration screen is displayed, select the LAN Configuration menu item.
- e. Select the IP Address menu item.

The service processor's IP address is displayed using the following format:

Current IP address in BMC: xxx.xxx.xxx.xxx

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

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

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

login: **root**

password: **changeme**

4. Start the ILOM console mode by typing the following:

```
start /SP/console
```

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

5. If you have changed the SP serial port default settings, you must reset them to the default settings.

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

7. Use the information gathered using the [“Worksheet for Installation”](#) on page 96 to help you enter the system and network information as you are prompted.

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

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

▼ To Connect to the Server Using a Serial Capture Program

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

2. **Verify that the communication properties of the serial port of the system are set to the default.**

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

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

On a client running Solaris OS, type:

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

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

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

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

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

5. **Start the ILOM SP GUI by typing:**

```
start /SP/console
```

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

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

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

8. Use the information gathered using the “Worksheet for Installation” on page 96 to help you enter the system and network information as you are prompted.

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

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

Solaris 10 OS 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 reinstall the Solaris 10 3/05 HW1 OS after removing it, you can download the CD or DVD image.

- To download the CD image, see:

<http://javashopl.m.sun.com/ECom/docs/Welcome.jsp?StoreId=8&PartDetailId=Sol10-hw1-x86-G-F&TransactionId=try>

- To download the DVD image, see:

<http://javashopl.m.sun.com/ECom/docs/Welcome.jsp?StoreId=8&PartDetailId=Sol10-hw1-x86-DVD-G-F&TransactionId=try>

Solaris 10 OS Training

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

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

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