Sun Fire X4800 Server Installation Guide

Part No: 821–0285
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Contents

Using This Documentation

This section describes related documentation, submitting feedback, and a document change history.

Product Information Web Site

For information about the Sun x86 servers, go to `http://www.oracle.com/technetwork/server-storage/sun-x86/overview/index.html`.

For software and firmware downloads for your x86 server product, go to `http://www.oracle.com/technetwork/server-storage/sun-x86/downloads/index.html` page and click on your server model.

Documentation and Feedback

Documentation	Link
All Oracle products	`http://www.oracle.com/documentation`
Sun Fire X4800 server	`http://download.oracle.com/docs/cd/E19140-01/index.html`
Oracle ILOM 3.0	`http://www.oracle.com/technetwork/documentation/sys-mgmt-networking-190072.html#ilom`

Provide feedback on this documentation at: `http://www.oraclesurveys.com/se.ashx?s=25113745587BE578`.

About This Documentation (PDF and HTML)

This documentation set is available in both PDF and HTML. The information is presented in topic-based format (similar to online help) and therefore does not include chapters, appendixes, or section numbering.

A PDF that includes all information on a particular topic subject (such as hardware installation or product notes) can be downloaded by clicking on the PDF button in the upper left corner of the page.

Contributors

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Change History

The following changes have been made to the documentation set.

- April 2010 – Installation Guide released.
- June 2010 – Installation Guide and Getting Started Guide re-released.
- July 2010 – Initial release of other documents.
- August 2010 – Product Notes and Service Manual re-released. ESX Installation Guide added.
- October 2010 – Product Notes re-released.
- December 2010 – Product Notes re-released.
- March 2011 – Documents re-released for SW1.2 including the Installation Guide, the Product Notes, the Linux Installation Guide, the Oracle Solaris Installation Guide, the Windows Installation Guide, and the Service Manual.

Installation Overview

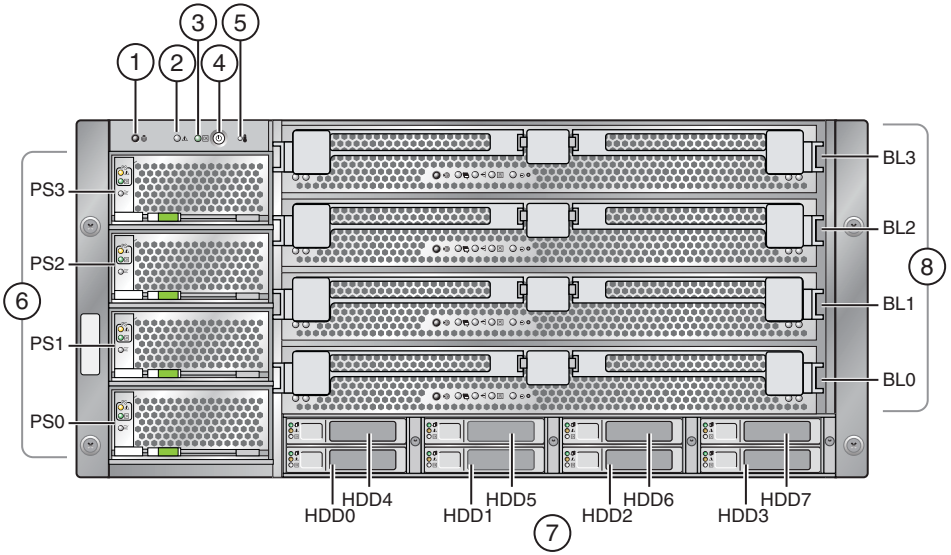
The following table lists the tasks that you must do to install your Oracle Sun Fire X4800 server.

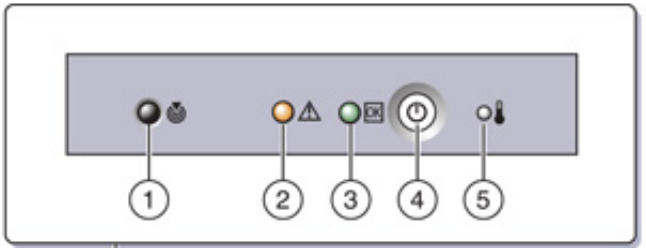
Task	Description	Link
1. Unpack the box.		"How to Unpack the Server" on page 15
2. Familiarize yourself with the server features.		"Front and Back Features and Components" on page 11
3. Install the server in a rack.		To prepare to install your server in a rack, see "How to Unpack the Server" on page 15. Then look at "How to Identify Your Rack Mounting Kit" on page 17 and see the corresponding rack mounting chapter.
4. Connect power cords, cables, and peripherals.		"Attaching Administration (SP) Cables" on page 91
5. Power on the server.		"How to Apply Standby Power for Initial Service Processor Configuration" on page 97
6. Check system specifications.		"Sun Fire X4800 Server Specifications" on page 137
7. Manage the server.		"Managing Your Server" on page 103
		"Communicating With the ILOM and the System Console" on page 113
8. Configure or install an operating system	Configure the optional preinstalled Oracle Solaris OS	"Setting Up the Preinstalled Solaris Operating System" on page 105
	For installation of Oracle Solaris OS when it is not preinstalled.	*Sun Fire X4800 Server Installation Guide for Oracle Solaris Operating System*
	For *assisted* installation of Linux.	*Oracle Hardware Installation Assistant 2.5 User's Guide for x86 Servers* in the Oracle Hardware Installation Assistant library

Task	Description	Link
	For *unassisted* installation of Linux.	*Sun Fire X4800 Server Installation Guide for Linux Operating Systems*
	For *assisted* installation of Windows.	*Oracle Hardware Installation Assistant 2.5 User's Guide for x86 Servers* in the Oracle Hardware Installation Assistant library
	For *unassisted* installation of Windows.	*Sun Fire X4800 Server Installation Guide for Windows Operating Systems*
	For installation of Oracle VM.	*Sun Fire X4800 Server Installation Guide for Oracle VM*

Front and Back Features and Components

Front Features and Components





Note – To find the chassis serial number, see "How to Find the Server's Serial Number" on page 101.

Figure Legend			
1	Locate button/LED (white)	5	Over Temperature LED (amber)
2	Service Action Required LED (amber)	6	Power supplies (PS0 through PS3)
3	Power/OK LED (green)	7	Hard drives (HDD0 through HDD7)
4	Power button	8	CPU modules (BL0 through BL3)

For back panel features and components, see "Back Features and Components" on page 12.

Back Features and Components

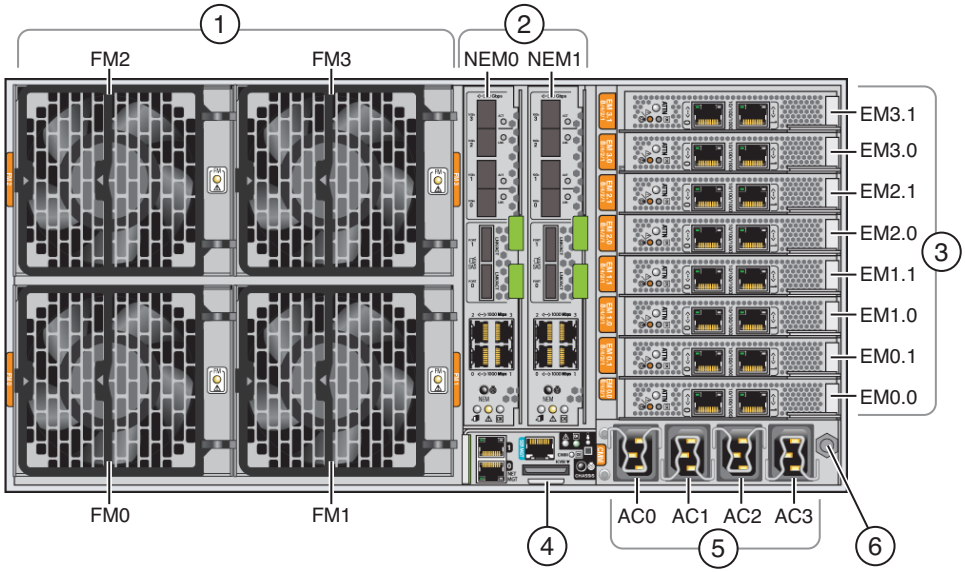


Figure Legend			
1	Fan modules (FM0 through FM3).	4	Service Processor module (SP). The SP provides I/O connectors for system management. See "Attaching Administration (SP) Cables" on page 91 for details.
2	Network Express modules (NEMs).	5	AC power connectors.
3	PCIe Express module slots.	6	Chassis ground.

For front panel features and components, see "Front Features and Components" on page 11.

Unpacking the Server and Identifying the Rack Mounting Hardware

This section provides procedures for unpacking the server and identifying the rack mounting hardware.

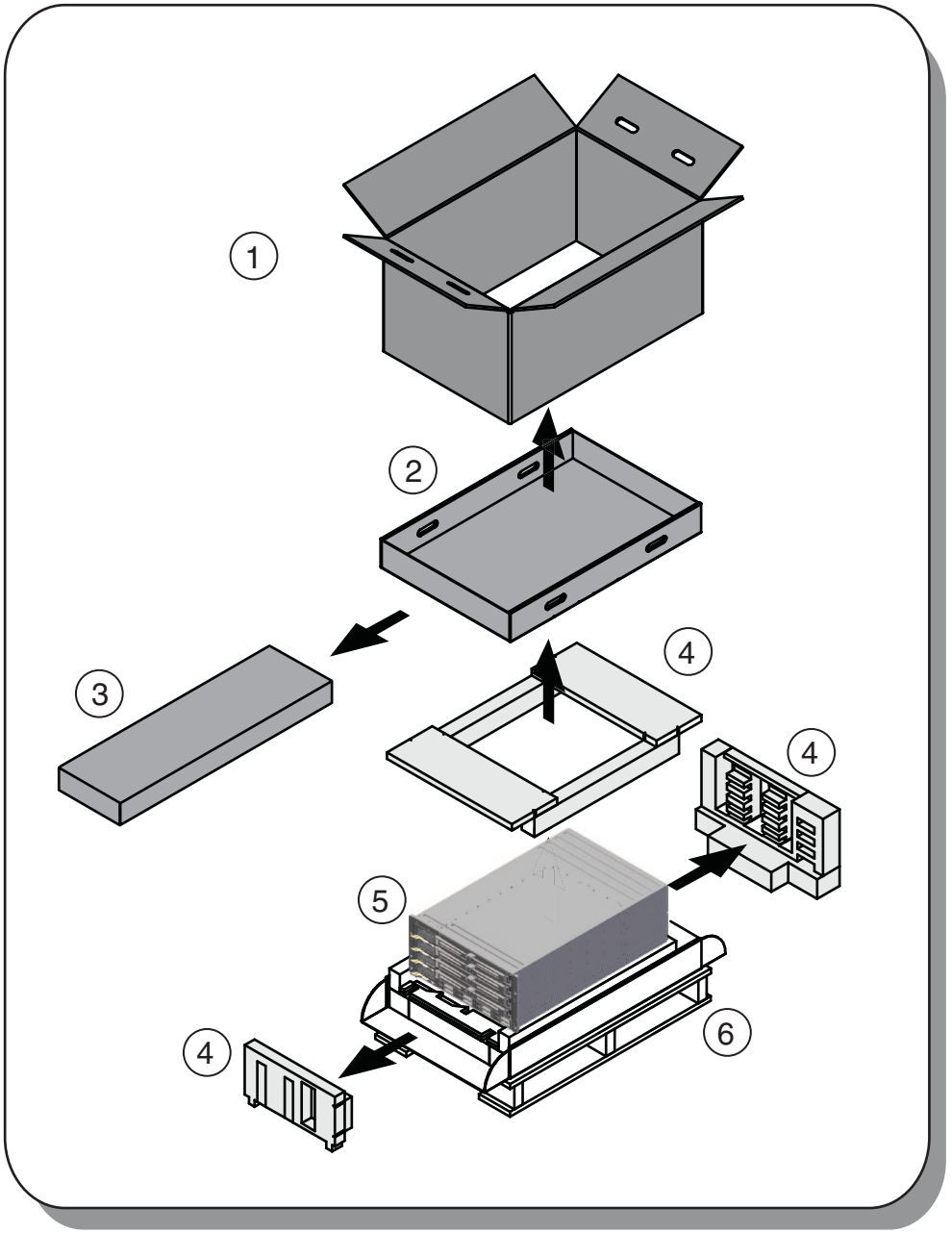
- To unpack your server, see "How to Unpack the Server" on page 15.
- To identify the rack mounting hardware and the correct rack mounting instructions, see "How to Identify Your Rack Mounting Kit" on page 17.

▼ How to Unpack the Server

The following figure shows the packaging components.

1. **Open the top of the box (1).**
   a. **Cut the straps.**
   b. **Cut or remove the tape.**
   c. **Open the flaps.**
2. **Lift the box (1) away from the server.**
3. **Remove the accessory tray (2) and set it and its contents aside.**
4. **Remove the foam inserts (4).**
5. **When it is time to install the server (5) in the rack, either:**
   - Remove the server (5) from the pallet (6).
   - Use a mechanical lift to raise the pallet with the server on it to its location in the rack, then, slide the server off the pallet directly into the rack.

For rack mounting instructions, see one of the rack mounting sections as indicated in "How to Identify Your Rack Mounting Kit" on page 17.



Legend	Description
1	Box
2	Accessory tray, which contains rack mounting kit, shipping brackets, and other items
3	Rack mounting kit
4	Packaging foam inserts
5	Server
6	Pallet

See Also "How to Identify Your Rack Mounting Kit" on page 17

▼ How to Identify Your Rack Mounting Kit

Your Sun Fire X4800 server includes one of two types of rack mounting hardware. These are:

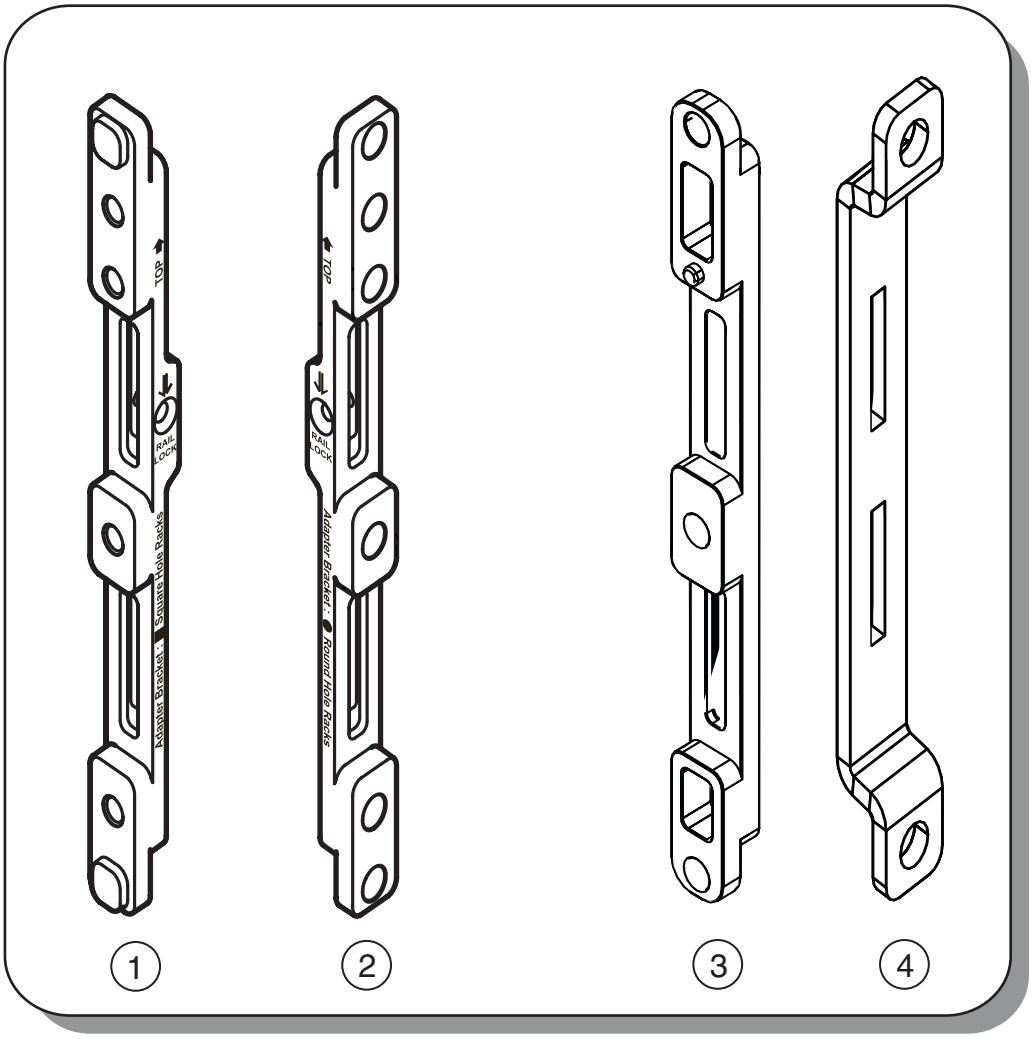
Name	Contents	See this section
Standard	■ Rack mounting hardware (371–4742) ■ Shipping bracket kit (371–4376–24)	"Installing the Server In the Rack Using the Standard Rack Mounting Kit" on page 21
Universal	■ Rack mounting hardware (350–1662) ■ Shipping bracket kit (350–1663)	"Installing the Server In the Rack Using the Universal Rack Mounting Kit" on page 45

1. **Unpack the server as described in "How to Unpack the Server" on page 15.**

   The rack mounting hardware is in the accessory kit.

2. **Look for a part number on the box that holds the rack mounting hardware.**

   - If it has the number 371–4742, it is an *standard* rack mounting kit.
   - If it has the number 350–1662, it is a *universal* rack mounting kit.
   - If you cannot find a number, open the kit and compare the adapter brackets with the following figure.



Legend	Description	See
1	Adapter bracket for round-hole racks in universal rack mounting kit	"Installing the Server In the Rack Using the Universal Rack Mounting Kit" on page 45
2	Adapter bracket for square-hole racks universal rack mounting kit	
3	Front adapter bracket for standard rack mounting kit	"Installing the Server In the Rack Using the Standard Rack Mounting Kit" on page 21

Legend	Description	See
4	Rear adapter bracket for standard rack mounting kit	

See Also "Installing the Server In the Rack Using the Standard Rack Mounting Kit" on page 21

"Installing the Server In the Rack Using the Universal Rack Mounting Kit" on page 45

Installing the Server In the Rack Using the Standard Rack Mounting Kit

This topic describes how to install your server in a rack using the standard rack mounting hardware.

If you are not certain whether you have the standard rack mounting kit or the universal rack mounting kit, see "How to Identify Your Rack Mounting Kit" on page 17, then proceed to the corresponding section.

Note the following:

- If your server is shipped already installed in a rack, skip to "How to Remove the Standard Rack Mounting Kit Shipping Brackets " on page 39.
- If you are going to *ship* the server in a rack, you must install the shipping brackets as described in "How to Install the Standard Rack Mounting Kit Shipping Brackets" on page 41.

This section contains the following topics:

Tools and Staff Required

Caution – The server weighs about 180 pounds (100 kg) when fully loaded with components. To reduce the risk of serious personal injury or equipment damage, use a mechanical lift to install the server into the rack. If a lift is not available, remove components as described in "How to Remove Components to Reduce Weight" on page 26. This reduces the weight of the server to 80 pounds (45 kg).

Always load equipment into a rack from the bottom up so that it does not become top-heavy and tip over. Deploy your rack's anti-tilt bar to prevent the rack from tipping during equipment installation.

Before installing the server into a rack, gather the tools, equipment, and staff required.

Tools, Equipment, and Staffing Required	Notes
Two trained staff	Two people are needed to install the server and operate the lift.
No. 2 10-inch Phillips screwdriver (magnetic tip recommended)	
Mechanical lift	Strongly recommended. If not available, reduce the weight of the server. See "How to Remove Components to Reduce Weight" on page 26.
Compatible rack	See "Compatible Racks " on page 23.
Rack mounting kit	See "Installing the Server In a Rack Using the Standard Rack Mounting Kit" on page 26
Shipping brackets	See "Removing and Installing the Standard Rack Mounting Kit Shipping Brackets" on page 39 ■ You must remove the shipping brackets if your server was shipped in a rack. ■ You must install the shipping brackets if you plan to ship your server in a rack.

Installing Optional Equipment

For information about how to install options such as DIMMs, PCIe EMs, and NEMs, power supplies, and CPU modules, refer to the *Sun Fire X4800 Server Service Manual*.

For information about issues and known workarounds, refer to the *Sun Fire X4800 Server Product Notes*.

Compatible Racks

The rack mounting hardware is compatible with a wide range of equipment racks that meet the following standards:

- Four-post rack (mounting at both front and rear).

Note – Two-post racks are not compatible.

- Rack *must* have 5RU space available.
- Rack should have a horizontal opening and unit vertical pitch conforming to ANSI/EIA 310-D-1992 or IEC 60927 standards.
- Distance between front and rear mounting planes between approximately 26 and 34.5 inches (660.4 mm and 876.3 mm).
- Minimum clearance depth (to front cabinet door) in front of front rack mounting plane: 1 inch (25.4 mm).
- Minimum clearance depth (to rear cabinet door) behind front rack mounting plane: 27.5 inches (700 mm).
- Minimum clearance width (between structural supports and cable troughs) between front and rear mounting planes: 18 inches (456 mm).

Contents of the Standard Rack Mounting Kit

The standard rack mounting kit comes with the following hardware:

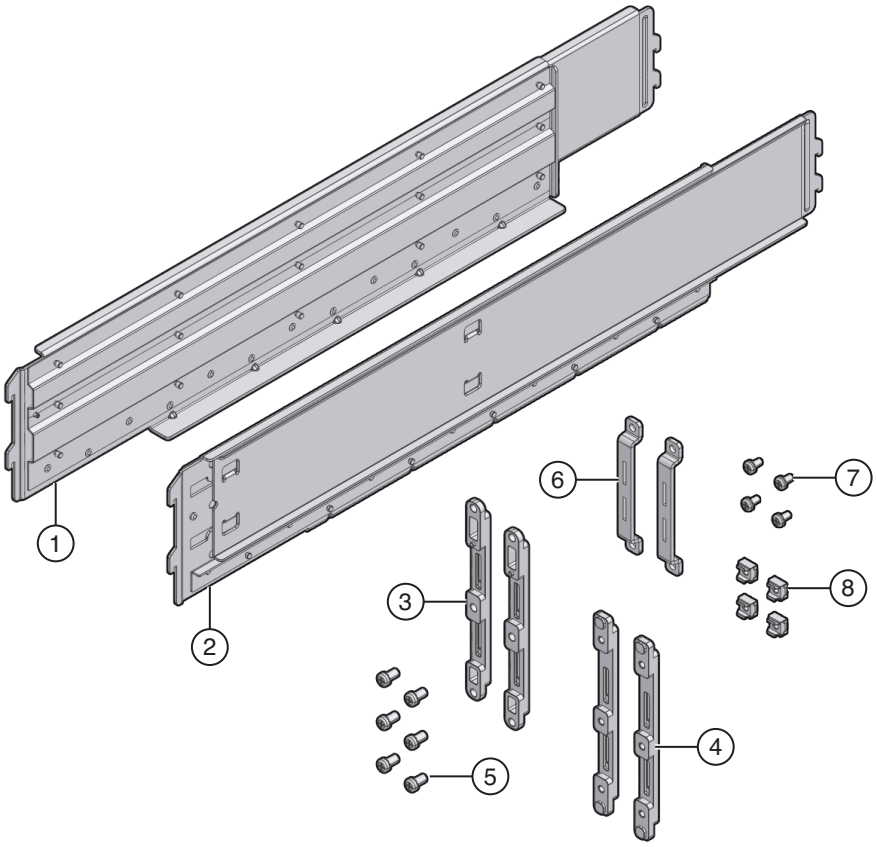


Figure Legend

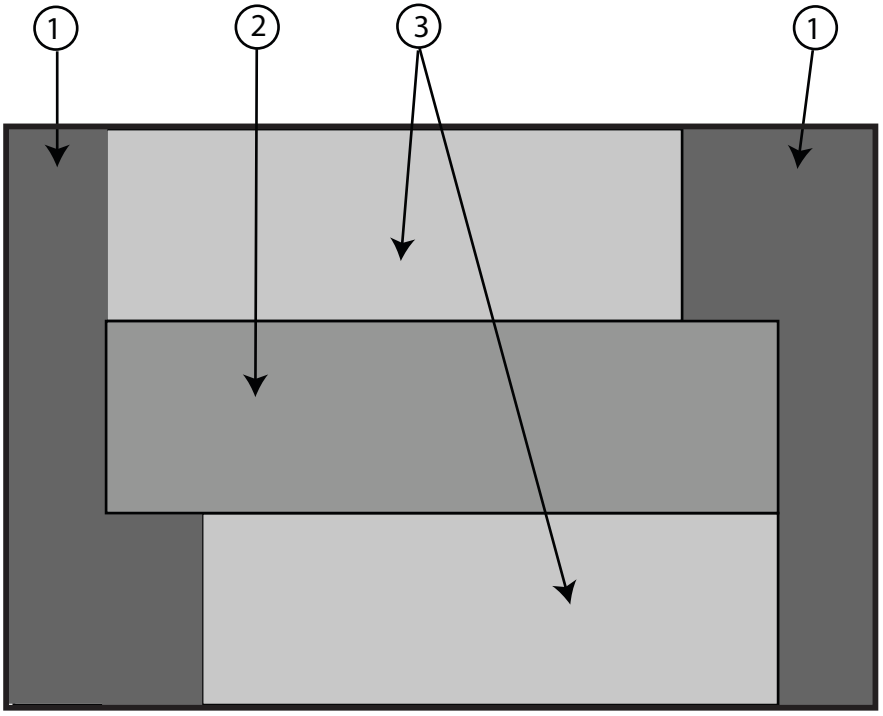
1, 2	Left (1) and right (2) shelf rails	Once the front and rear adapter brackets are installed on the rack, the shelf rails drop into place. The hooks on the front and rear rails hook into the slots on the adapter brackets. The shelf rails expand to match the depth of the rack. These are *not* slide rails. Once the server is mounted in the chassis, it does not move.
3, 4	Front mounting adapter brackets (2 pair)	These attach to the rack and support the shelf rails. There are two types of front adapter brackets; one for round-hole racks (3), and another for square-hole racks (4). Use the one that matches your rack.
5 and 7	An assortment of M6 and 10-32 screws	Oracle provides extra screws to support different configurations. Unused hardware can be discarded or recycled when you have completed the installation.

Figure Legend		
6	Rear adapter brackets (1 pair)	These attach to the rack and support the shelf rails.
8	M6 cage nuts	Used to adapt the rear adapter bracket to the back of square-hole racks.

Location of the Rack Mounting Kit and the Shipping Bracket Kit

The accessory kit that contains the rack mounting kit also contains the shipping bracket kit.

The following figure shows the location of the contents in the box:



Legend	Description
1	Foam packaging material
2	Rack mounting hardware

Legend	Description
3	Shipping brackets

Installing the Server In a Rack Using the Standard Rack Mounting Kit

This section provides instructions for installing your server in a rack. It includes:

- "How to Remove Components to Reduce Weight" on page 26
- "How to Install the Rack Mounting Hardware in Standard Rack" on page 31
- "How to Insert the Server Into the Rack" on page 36

The rack mounting kit does *not* include slide rails. Once the server is installed, it does not slide in or out of the rack.

The rack mounting kit shares a box with the shipping bracket kit.

- See "Removing and Installing the Standard Rack Mounting Kit Shipping Brackets" on page 39 for information about the shipping brackets.
- See "Contents of the Standard Rack Mounting Kit" on page 23 for a description of the contents of the rack mounting kit.

▼ How to Remove Components to Reduce Weight

This procedure describes how to remove components from your server so that two persons can lift it into the rack. If you are going to use a mechanical lift, you do not need to perform this procedure.

Before You Begin

Caution – Circuit boards and hard drives contain electronic components that are extremely sensitive to static electricity. Ordinary amounts of static electricity from clothing or the work environment can destroy the components located on these devices. Do not touch the components without antistatic precautions, especially along the connector edges. For more information, refer to "Antistatic Precautions and Procedures" in *Sun Fire X4800 Server Service Manual*.

Note – This procedure assumes that the server is powered off and all cables are disconnected.

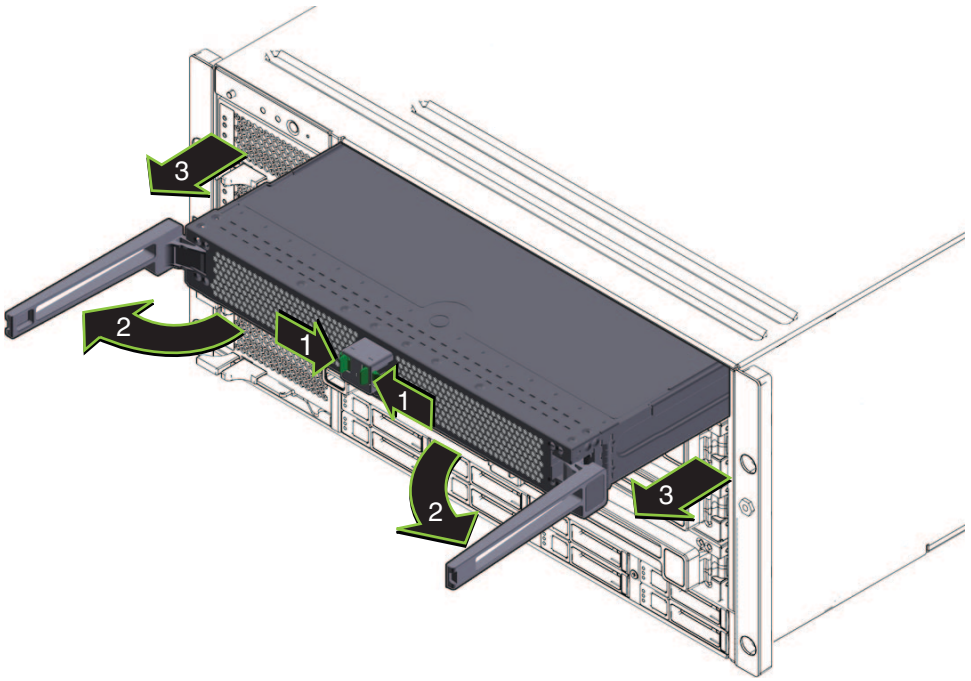
1 Mark all CPU modules with their slot numbers.

Caution – To prevent system failure, you must return CPU modules to their original locations. Mark CPU module slot locations carefully before removing them from the chassis.

2 **Remove the CPU modules from the front of the chassis.**

The chassis contains four CPU module slots; each must have a CPU module or a filler panel.

Note – Because of their light weight, there is no need to remove filler panels.



For each CPU module:

a. **Pinch the green tabs to release the ejectors (1).**

b. **Pull both ejectors out to release the module (2).**

Caution – When the module is partway out of the chassis, close the ejectors, and grasp the module. Do not handle the module by the ejectors.

c. **Gently slide the module forward until it is clear of the chassis (3).**

Caution – The CPU module is heavy. Use two hands.

d. **Close the ejectors on the CPU module.**

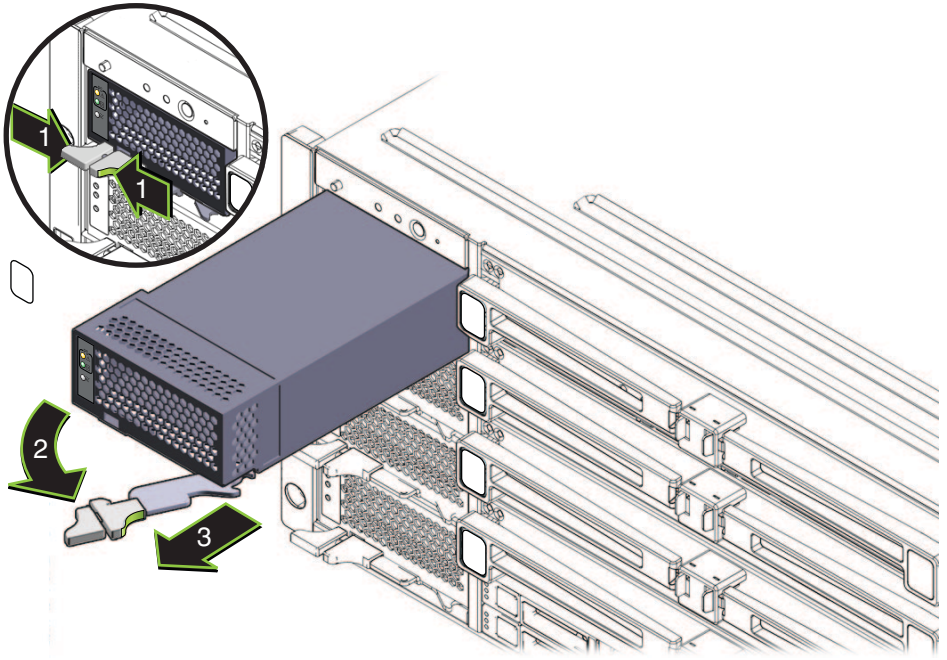
e. **Place the CPU module on an antistatic mat.**

3 **Remove the four power supplies from the front of the chassis.**

a. **Pinch the handle to release the lever (1).**

b. **Pull the lever (2) to release the power supply.**

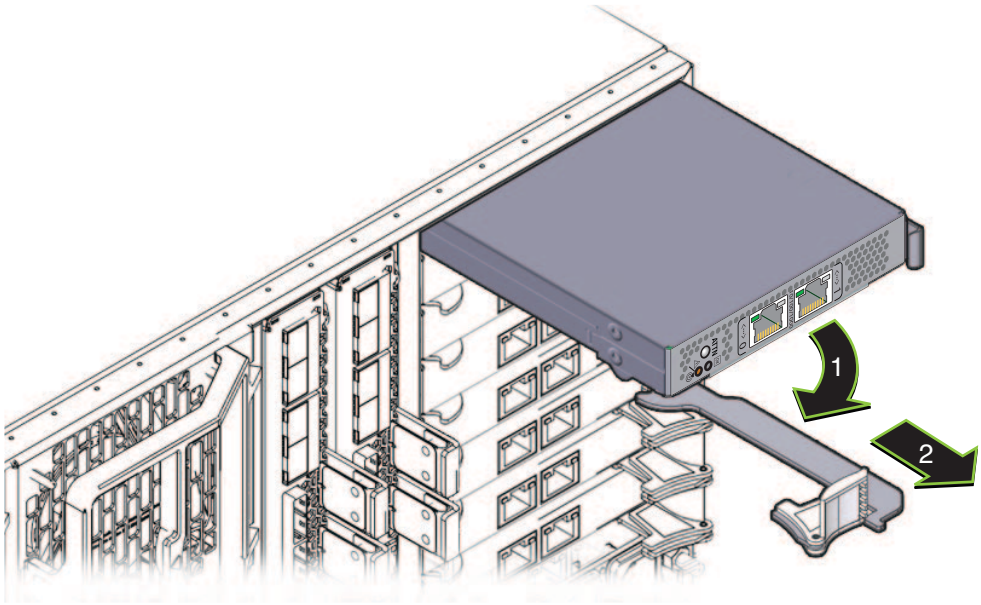
c. **Slide the power supply out of the chassis (3).**



4 **Remove the PCIe express modules from the back of the chassis.**

The upper bays can be used as a hand hold when moving the chassis.

Caution – Do not insert forks from a lift device into these open bays, as this causes severe and non-repairable damage.



a. **Mark all PCIe EM cards with their slot locations.**

Caution – To prevent system failure, you must return PCIe EM cards to their original locations. Mark PCIe EM slot locations carefully before removing them from the chassis.

b. **Rotate the lever (1) to release the module.**

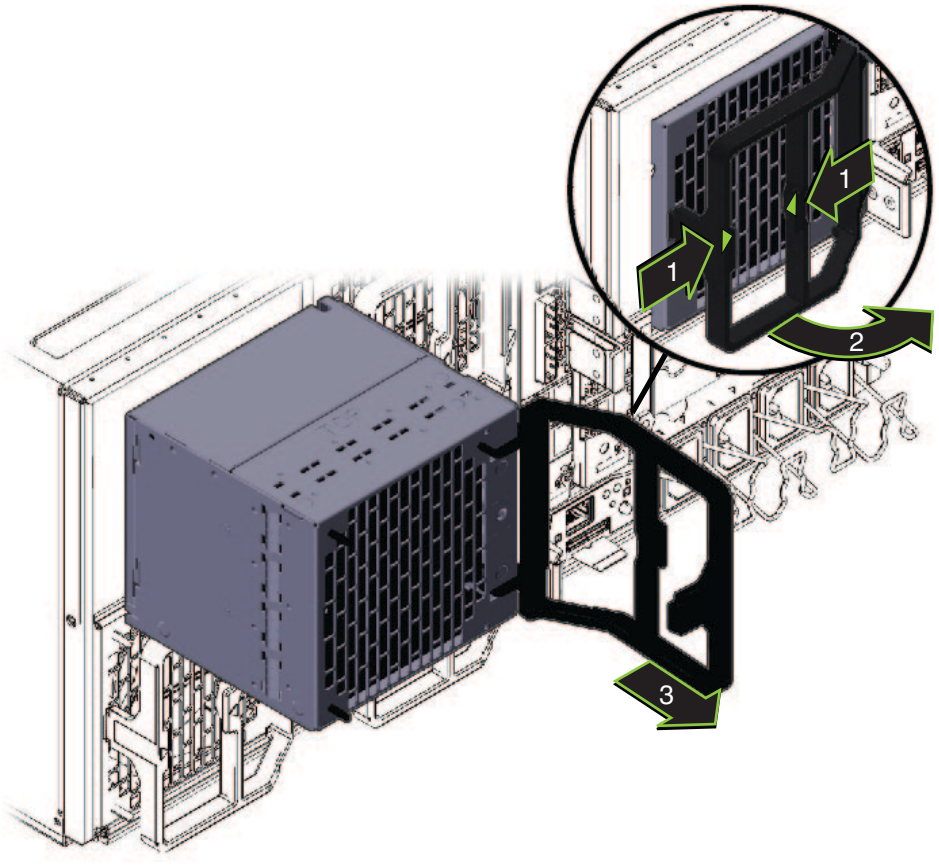
c. **Slide the module out of the chassis (2).**

5 **Remove the upper left fan module (FM2) if necessary.**

Squeeze the clamp (1) to release the fan module (2), then pull it from the chassis (3).

You can use the recess as a hand-hold when moving the chassis.

Caution – Do not insert forks from a lift device into this open bay, as this causes severe and non-repairable damage.



See Also "How to Replace the Components in the Server" on page 30

How to Replace the Components in the Server

The procedure "How to Remove Components to Reduce Weight" on page 26 describes how to remove components from the server. After the server is installed in the rack, you must replace the components.

- **Reverse the steps in "How to Remove Components to Reduce Weight" on page 26.**

Caution – All CPU modules and PCIe EM modules must be returned to their original locations. Failure to do so can result in system failure.

How to Install the Rack Mounting Hardware in Standard Rack

The rack mounting hardware consists of front and rear adapter brackets with cage nuts, screws, and shelf rails.

Caution – The server weighs about 180 pounds (100 kg) when fully loaded with components. To reduce the risk of serious personal injury or equipment damage, use a mechanical lift to install the server into the rack. If a lift is not available, remove components as described in "How to Remove Components to Reduce Weight" on page 26. This reduces the weight of the server to 80 pounds (45 kg).

Always load equipment into a rack from the bottom up so that it does not become top-heavy and tip over. Deploy your rack's anti-tilt bar to prevent the rack from tipping during equipment installation.

1. **Verify that you have a 5RU space in your rack.**

2. **Select the two front adapter brackets that match your rack.**

   See the following figure.

   The server ships with two sets of front adapter brackets: one (1) for racks with square holes and one (2) for racks with round holes. Select the adapter brackets that match your rack.

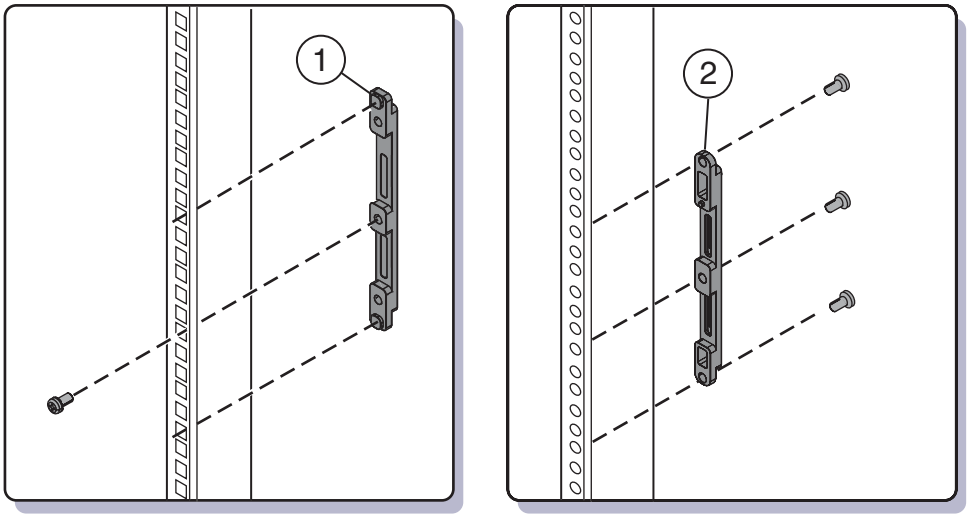
3. **Attach the front adapter brackets to the rack.**

   Make sure you orient the adapter brackets correctly, with the arrow pointing up.

   Select the screws that match your rack.

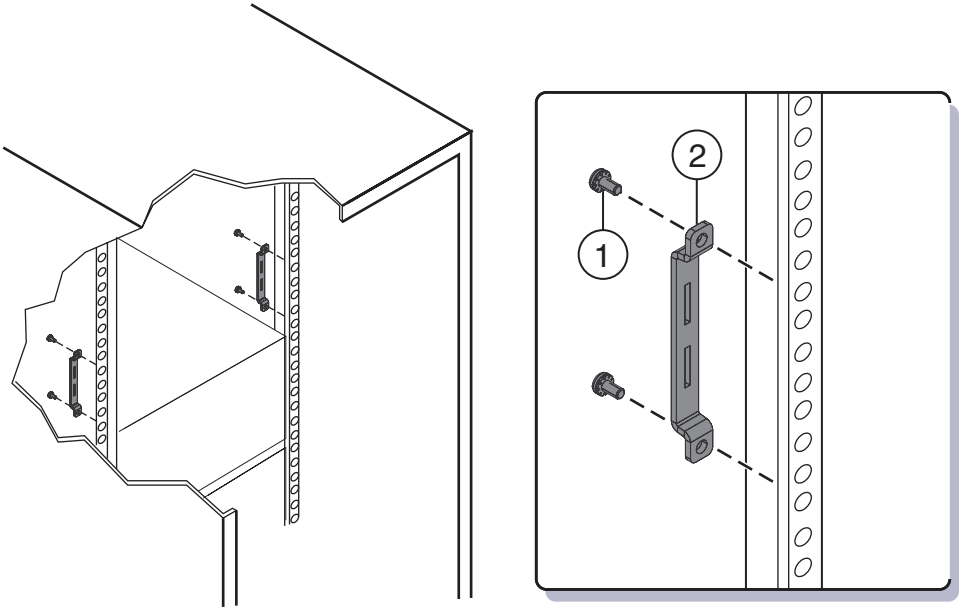
   - Use one M6 per side for a square-hole rack.
   - Use three M6 or three 10-32 per side for a threaded round-hole rack.

The following figure shows the front adapter brackets being attached to a square-hole rack (1) and a round-hole rack (2).



4 If your rack has round holes, use two screws each (1) to fasten the two rear adapter brackets (2) to the rack.

If your rack has square holes, skip this step.



5 If your rack has square holes:

a. Insert the cage nuts (1) for the rear adapter brackets in the holes on the rack.

b. If you are going to install shipping brackets, insert the cage nuts for the shipping brackets (2) in the holes in the rear of the rack.

Note the orientation of the cage nuts for the shipping bracket.

- They face outside the rack, in the opposite direction of the cage nuts for the adapter brackets.
- They are located in the first and third holes above the cage nuts for the adapter brackets.

Note – If you are going to install shipping brackets so you can ship your system in a rack, and your system has a square-hole rack, you must install the rear cage nuts for the shipping bracket on the rack now, *before* installing the rear adapter bracket. You cannot add the cage nuts for the rear shipping bracket when the rear adapter brackets are in place. See "Removing and Installing the Standard Rack Mounting Kit Shipping Brackets" on page 39 for instructions to install the shipping brackets.

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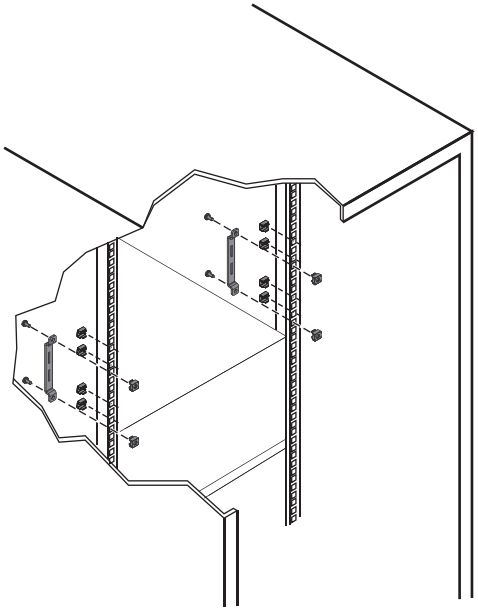
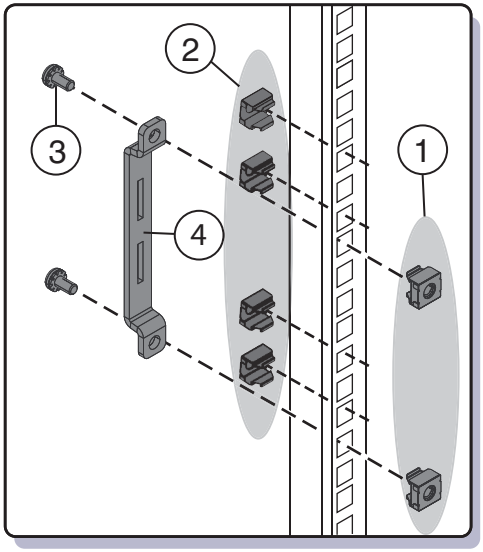
c. Use two screws (3) to fasten each rear adapter bracket (4) to the rack.



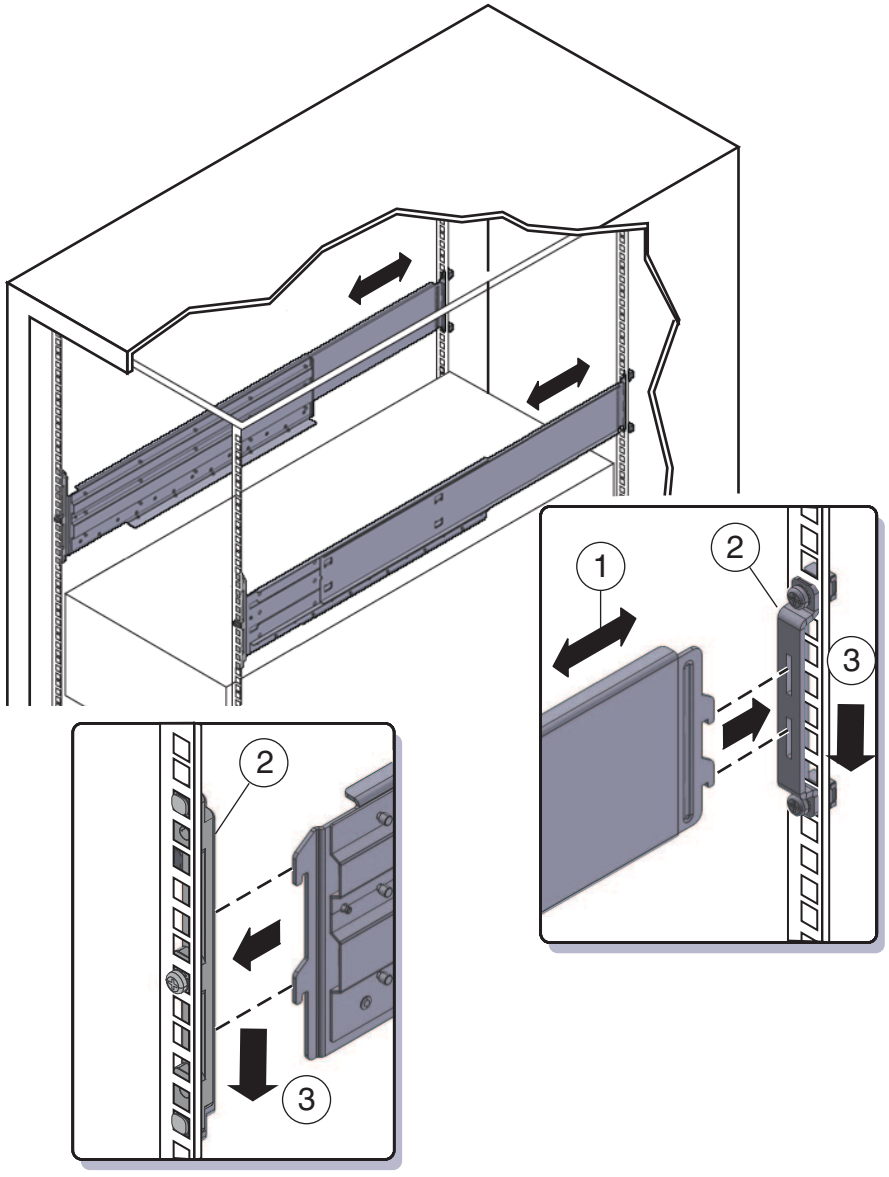


6 Place the shelf rails into the rack.

The following figure shows a square-hole rack.

The shelf rails expand (1) to fit the rack, then slip into the slots on the adapter brackets (2), and drop into place (3).

Be certain to place the shelf rails in the proper orientation, with the shelf facing inward and the gap towards the front of the rack.



Next Steps "How to Insert the Server Into the Rack" on page 36

How to Insert the Server Into the Rack

The following procedure explains how to insert the server into the rack and on to the shelf rail assemblies on the rack.

Before You Begin Perform the steps in "How to Install the Rack Mounting Hardware in Standard Rack" on page 31.

1 **Lift the server to its position on the rack.**

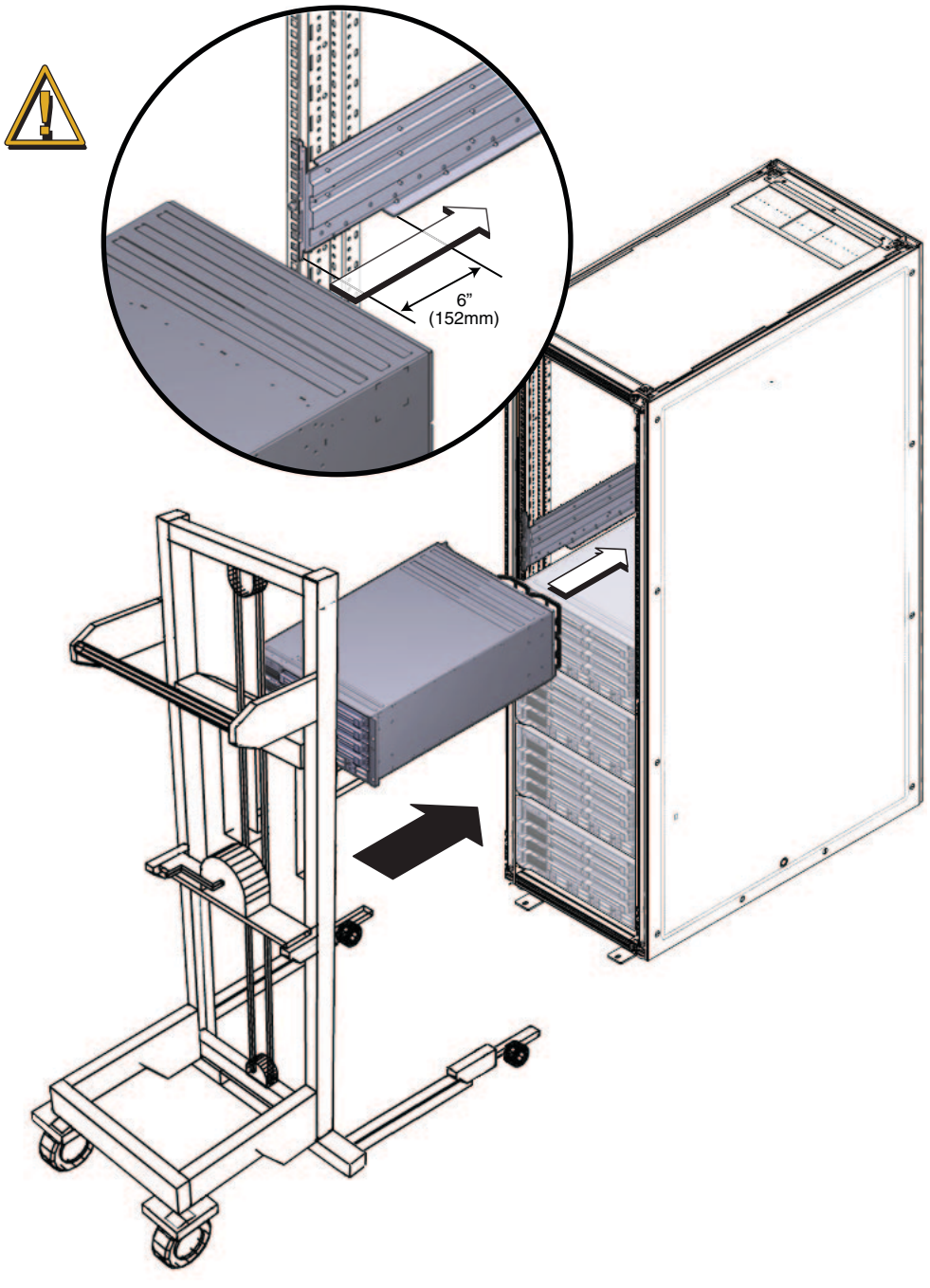
The use of a lift is recommended.

Caution – The server weighs 180 pounds (82 kg). To reduce the risk of serious personal injury or equipment damage, use a mechanical lift to install the server into the rack. If a lift is not available, remove components as instructed in "How to Remove Components to Reduce Weight" on page 26 and use two persons to lift the server into place.

2 **Slide the server onto the shelf rails.**

Caution – Drop Hazard! Do not release the server until it is *more* than 6 inches (152 mm) into the rack, and is firmly supported by the shelf rails. The shelf rails will not support the server until it is *more* than 6 inches (152 mm) inside the rack.

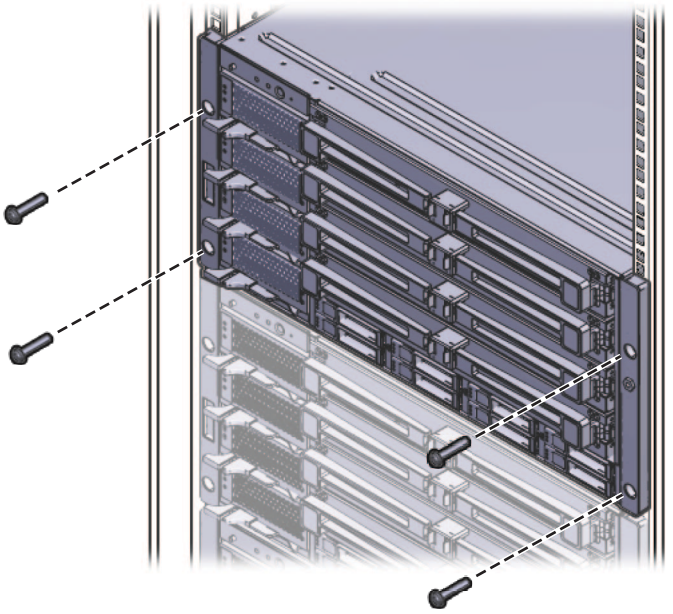
Note – If the server is still on a pallet, you can leave it on the pallet and lift both the server and the pallet with the mechanical lift, and slide the server off the pallet and onto the shelf rails.


6"
(152mm)

3 **Use four screws to attach the front of the server to the front of the rack.**

Use either the M6 x 25, or the 10-32 x 1 screws.

- On a threaded rack, use four M6 x 25, or four 10-32 x 1 screws.
- On a square-hole rack, use four M6 x 25 screws.



4 **If you removed components from the server, replace them after it is mounted in the rack. See "How to Remove Components to Reduce Weight" on page 26.**

See Also

- "How to Remove the Server From the Rack" on page 85
- "Cabling and Power" on page 91
- "How to Remove Components to Reduce Weight" on page 26

Removing and Installing the Standard Rack Mounting Kit Shipping Brackets

If the server is shipped in a rack, it must be supported by shipping brackets.

- If the server is shipped to you in a rack, you must remove the shipping brackets before placing it in service. See "How to Remove the Standard Rack Mounting Kit Shipping Brackets " on page 39.
- If you plan to ship the server in a rack, see "How to Install the Standard Rack Mounting Kit Shipping Brackets" on page 41.

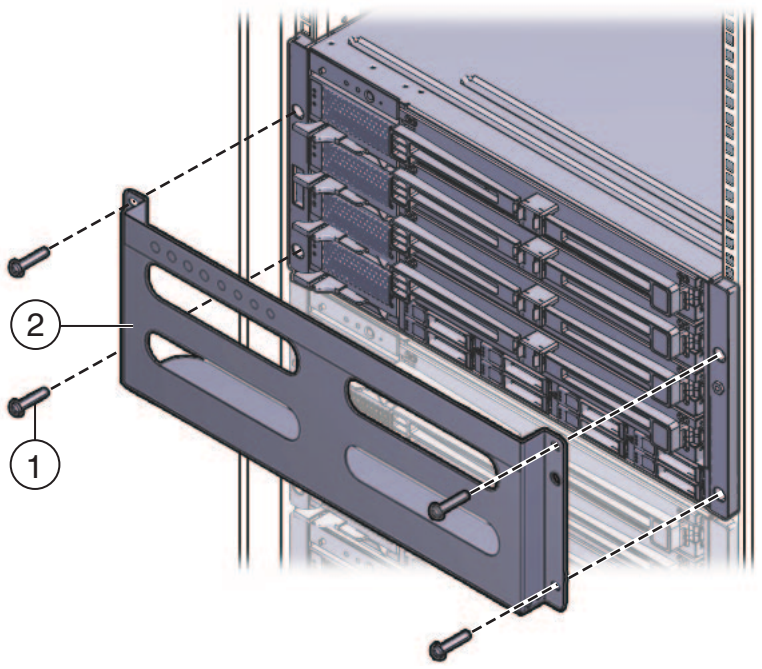
The shipping bracket parts are in the accessory tray with the rack mounting hardware. See "Location of the Rack Mounting Kit and the Shipping Bracket Kit" on page 25 for details.

▼ How to Remove the Standard Rack Mounting Kit Shipping Brackets

This procedure describes how to remove brackets from a system equipped with the standard rack mounting kit.

The shipping bracket kit consists of a front bracket, a rear bottom bracket, a rear top bracket, screws to connect them to the rack, and cage nuts to be used with the rear brackets on racks with square holes. These appear in "How to Install the Standard Rack Mounting Kit Shipping Brackets" on page 41.

1 **Remove the four screws (1) that fasten the front shipping bracket (2) to the front of the server and remove it.**



2 **The front shipping bracket contains eight threaded holes used for storing unused screws (four M6 and four 10–32). Remove the screws that match the threads on your rack and use them to secure the server to the rack.**

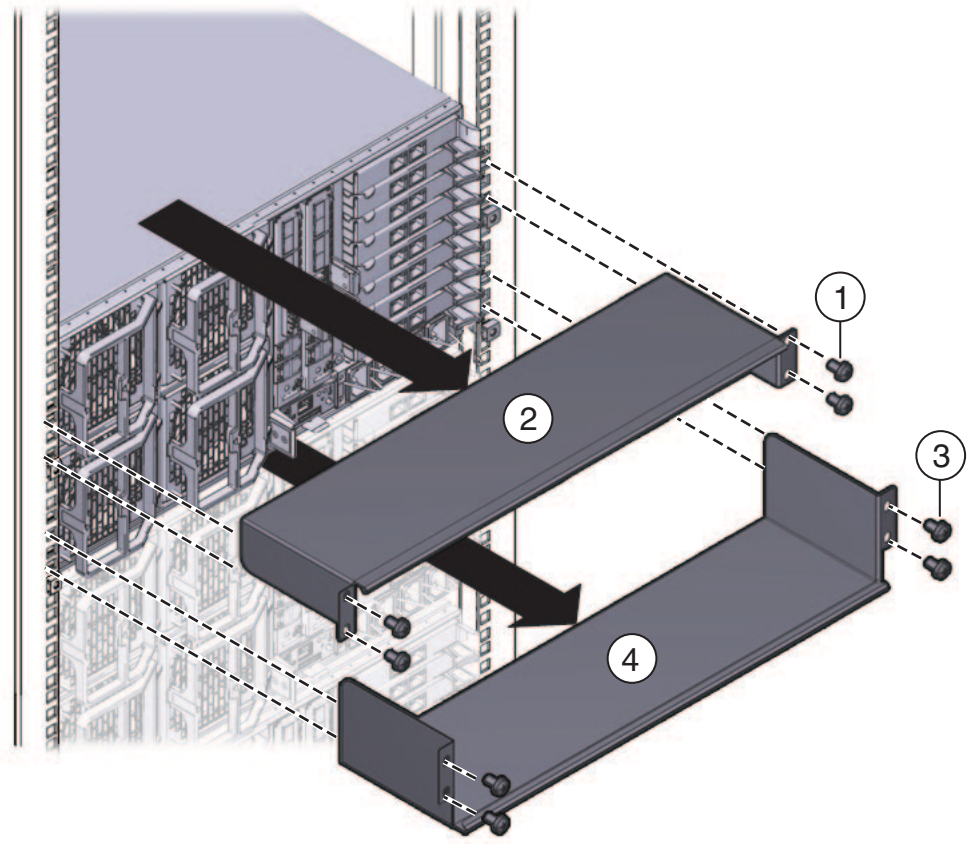
There might be two sets of screws stored on the front of the shipping bracket. Use the set that matches the threading on your rack.

3 **Thread the long screws that you removed in Step 1 into the four empty holes on the shipping bracket.**

They will be stored there in case you need to reinstall the shipping bracket.

4 **Remove the four screws (1) that fasten the rear top shipping bracket (2) over the back of the server and remove it.**

5 **Remove the four screws (3) that fasten the rear bottom shipping bracket (4) under the back of the server and remove it.**



▼ How to Install the Standard Rack Mounting Kit Shipping Brackets

This procedure describes how to install brackets into a system equipped with the standard rack mounting kit.

The shipping bracket kit contains the following parts:

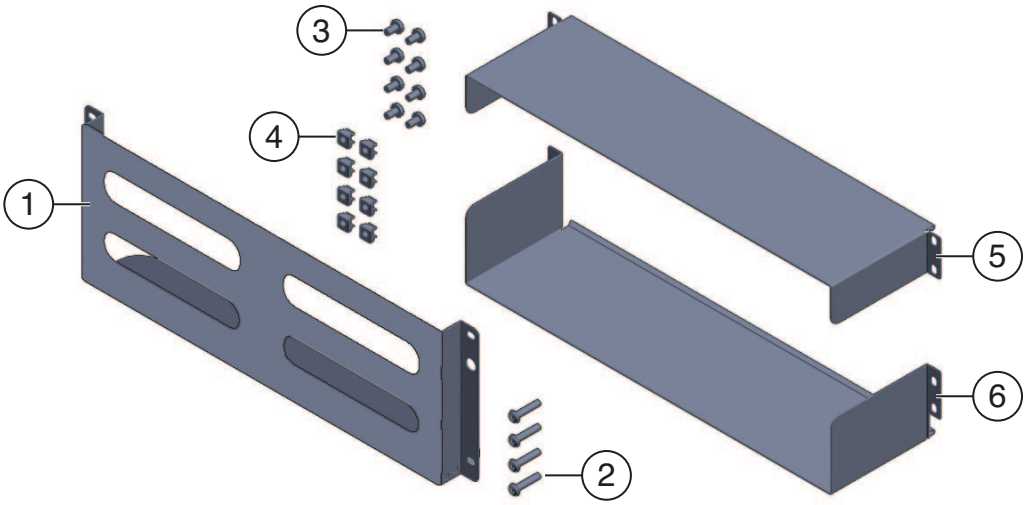
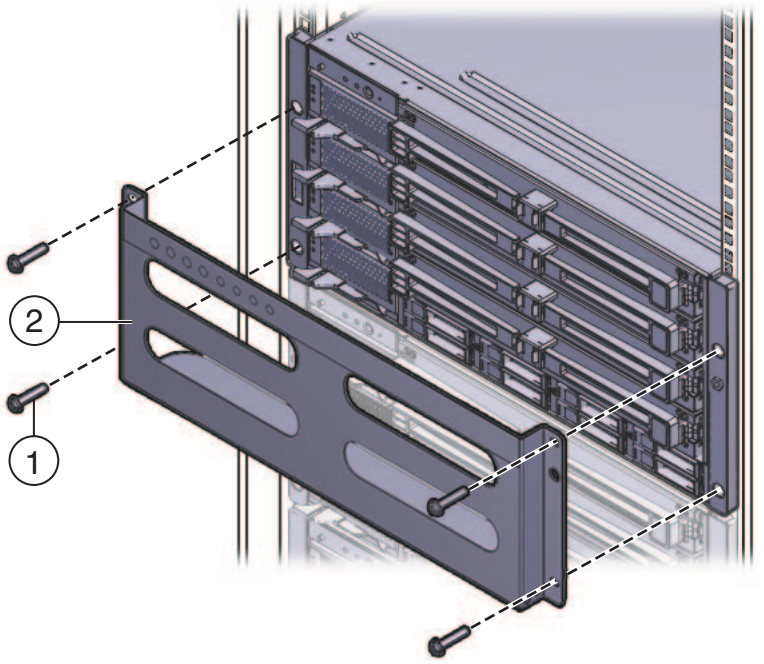


Figure Legend	
1	Front shipping bracket
2, 3	Two sets of screws (M6 and 10-32). Each set contains four screws for the front shipping bracket (2) and eight screws for the rear shipping brackets (5 and 6)
4	Eight M6 cage nuts for rear shipping bracket in square-hole racks
5	Top rear shipping bracket
6	Bottom rear shipping bracket

Note – The shipping bracket kit is shipped in the accessory tray with the rack mounting kit. See "Location of the Rack Mounting Kit and the Shipping Bracket Kit" on page 25 for details.

1. **Remove the four (short) screws that fasten the front of the server to the rack.**
2. **Insert the front shipping bracket (1) into the front of the server with the supporting flange underneath the server.**
3. **The front shipping bracket contains eight threaded holes used for storing unused screws (four M6 and four 10–32). Remove the long screws that match the threads on your rack.**

4 **Use the four long screws (M6 or 10–32) (1) to fasten the shipping bracket (2) to the front of the server.**



5 **Insert the short screws into the four empty storage holes on the shipping bracket.**

They will be stored there to be used when you remove the shipping bracket.

6 **If you are installing the shipping brackets in a rack with square holes, check to ensure that the cage nuts are installed in the rear.**

Note the orientation and location of the cage nuts for the shipping bracket.

- There are four cage nuts per side (eight total).
- They are installed on the inside of the rack, facing outward. This is the opposite direction from the cage nuts for the shelf adapter brackets.
- For each shipping bracket, there should be two shipping bracket cage nuts; one in the hole directly above the shipping bracket cage nut, and one in the third hole above the shipping bracket cage nut.

If the cage nuts are not in place, you must:

a. **Remove the server and the mounting hardware from the rack, as described in "Removing the Server From the Rack" on page 85.**

b. Reinstall the adapter brackets and the server, and install the rear shipping bracket cage nuts as you install the rear adapter brackets. This is included in the rack mounting procedure.

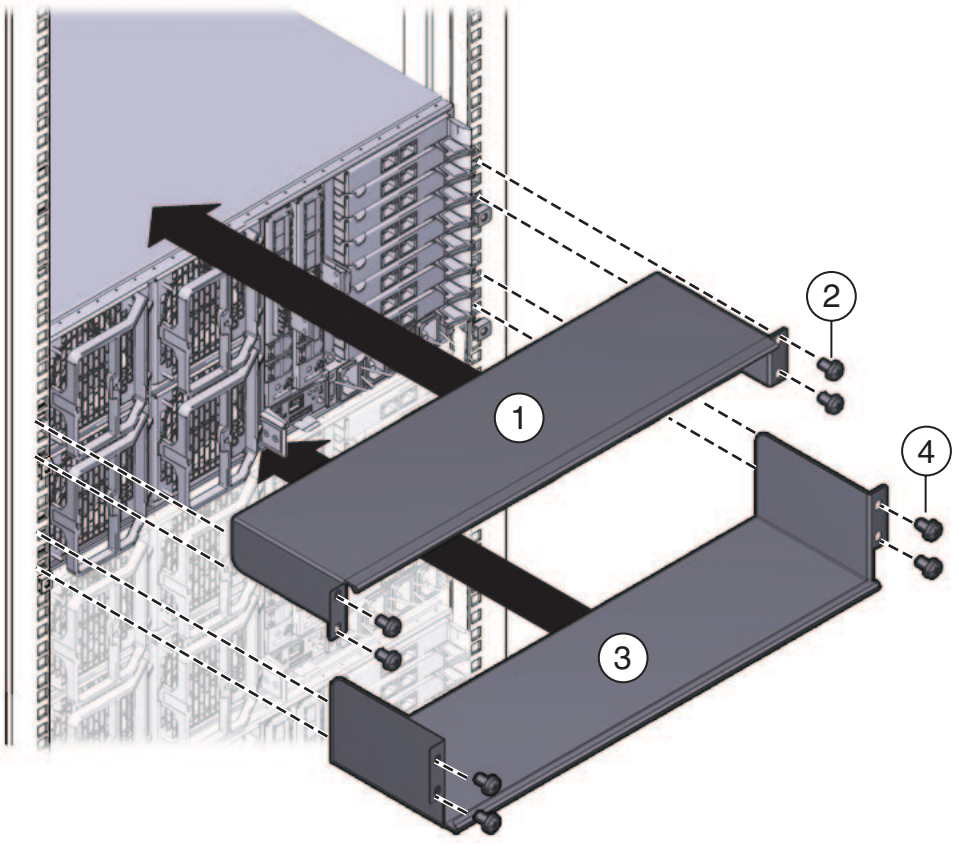
See "How to Install the Rack Mounting Hardware in Standard Rack" on page 31.

7 Insert the rear top shipping bracket (1) over the back of the server with the side panels facing down.

Use four screws (2) to fasten it to the rack (4).

8 Insert the rear bottom shipping bracket (3) under the back of the server with the side panels facing up.

Use four screws (4) to fasten it to the rack.



Installing the Server In the Rack Using the Universal Rack Mounting Kit

This topic describes how to install your server in a rack using the universal rack mounting hardware.

If you are not certain whether you have the standard rack mounting kit or the universal rack mounting kit, see "How to Identify Your Rack Mounting Kit" on page 17, then proceed to the corresponding section.

Note the following:

- If your server is shipped already installed in a rack, skip to "How to Remove the Universal Rack Mounting Kit Shipping Brackets" on page 80.
- If you are going to *ship* the server in a rack, you must install the shipping brackets as described in "How to Install the Universal Rack Mounting Kit Shipping Brackets" on page 76.

This section contains the following topics:

Tools and Staff Required

Caution – The server weighs about 180 pounds (100 kg) when fully loaded with components. To reduce the risk of serious personal injury or equipment damage, use a mechanical lift to install the server into the rack. If a lift is not available, remove components as described in "How to Remove Components to Reduce Weight" on page 26. This reduces the weight of the server to 80 pounds (45 kg).

Always load equipment into a rack from the bottom up so that it does not become top-heavy and tip over. Deploy your rack's anti-tilt bar to prevent the rack from tipping during equipment installation.

Before installing the server into a rack, gather the tools, equipment, and staff required.

Tools, Equipment, and Staffing Required	Notes
Two trained staff	Two people are needed to install the server and operate the lift.
No. 2 10-inch Phillips screwdriver (magnetic tip recommended)	
Mechanical lift	Strongly recommended. If not available, reduce the weight of the server. See "How to Remove Components to Reduce Weight" on page 26.
Compatible rack	See "Compatible Racks " on page 46.
Rack mounting kit	See "Installing the Server in a Rack Using the Universal Rack Mounting Kit" on page 49.
Shipping brackets	See "Installing and Removing the Universal Rack Mounting Kit Shipping Brackets" on page 76. ■ You must remove the shipping brackets if your server was shipped in a rack. ■ You must install the shipping brackets if you plan to ship your server in a rack.

Installing Optional Equipment

For information about how to install options such as DIMMs, PCIe EMs, and NEMs, power supplies, and CPU modules, refer to the *Sun Fire X4800 Server Service Manual*.

For information about issues and known workarounds, refer to the *Sun Fire X4800 Server Product Notes*.

Compatible Racks

The rack mounting hardware is compatible with a wide range of equipment racks that meet the following standards:

- Four-post rack (mounting at both front and rear).

  Note – Two-post racks are not compatible.

- Rack *must* have 5RU space available.
- Rack should have a horizontal opening and unit vertical pitch conforming to ANSI/EIA 310-D-1992 or IEC 60927 standards.
- Distance between front and rear mounting planes between approximately 26 and 34.5 inches (660.4 mm and 876.3 mm).

- Minimum clearance depth (to front cabinet door) in front of front rack mounting plane: 1 inch (25.4 mm).
- Minimum clearance depth (to rear cabinet door) behind front rack mounting plane: 27.5 inches (700 mm).
- Minimum clearance width (between structural supports and cable troughs) between front and rear mounting planes: 18 inches (456 mm).

Contents of the Universal Rack Mounting Kit

The universal rack mounting kit comes with the following hardware:

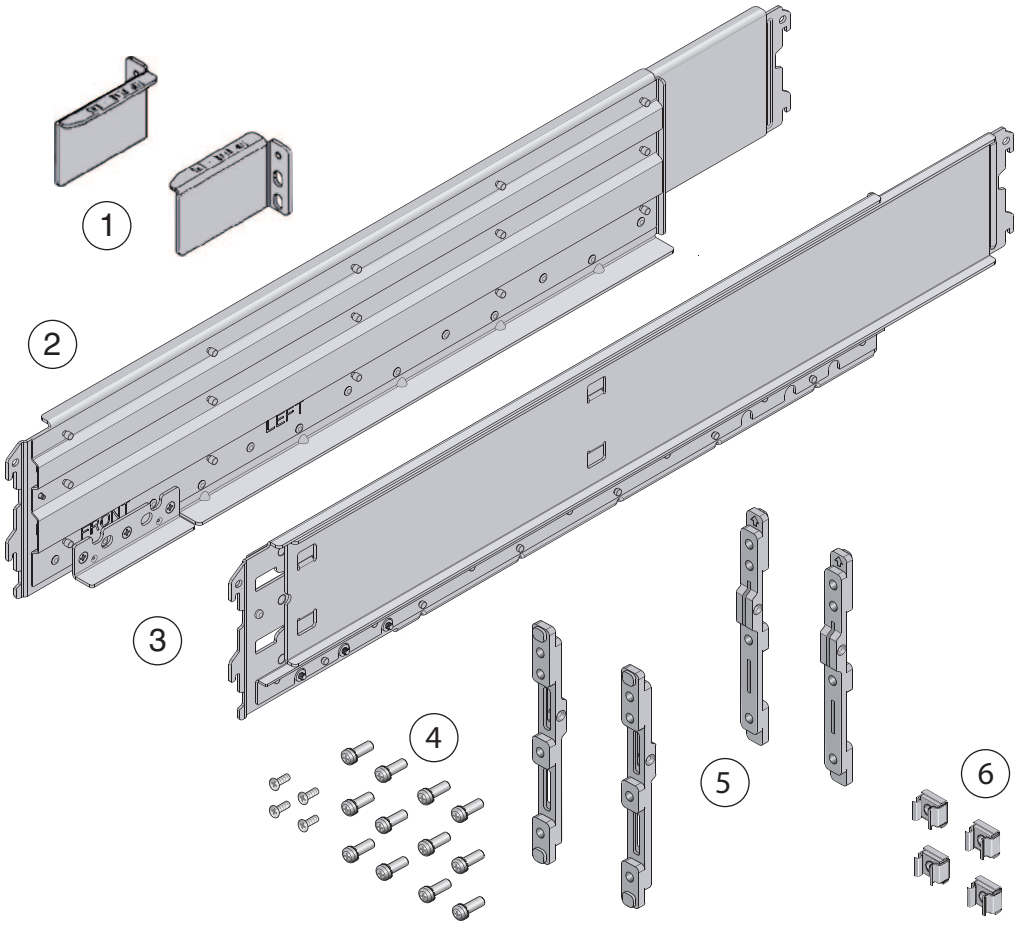


Figure Legend

1	Top rear braces	These attach to the posts at the upper back of the server.
2, 3	Left (2) and right (3) shelf rails	Once the front and rear adapter brackets are installed on the rack, the shelf rails drop into place. The hooks on the rails hook into the slots on the front and rear brackets. The shelf rails expand to match the depth of the rack. These are *not* slide rails. Once the server is mounted in the chassis, it does not move.

Figure Legend		
4	An assortment of M6 and 10-32 screws The screws are packaged by size and type. They include: ■ 12 – M6 X 16 ■ 12 – M6 X 12 ■ 4 – M6 X 4 flathead ■ 4 – 10-32 X 10 ■ 12 – 10-32 shoulder screws	Oracle provides extra screws to support different configurations. Unused hardware can be discarded or recycled when you have completed the installation.
5	Adapter brackets (2 sets of four each)	These attach to the rack and support the shelf rails. There are two sets of adapter brackets; one for round-hole racks, and another for square-hole racks. Use the set that matches your rack.
6	M6 cage nuts	Used to attach the top rear braces to square-hole racks.

Installing the Server in a Rack Using the Universal Rack Mounting Kit

This section provides instructions for installing your server in a rack. It includes:

Note – The rack mounting kit does *not* include slide rails. Once the server is installed, it does not slide in or out of the rack.

▼ How to Remove Components to Reduce Weight

This procedure describes how to remove components from your server so that two persons can lift it into the rack. If you are going to use a mechanical lift, you do not need to perform this procedure.

Before You Begin

Caution – Circuit boards and hard drives contain electronic components that are extremely sensitive to static electricity. Ordinary amounts of static electricity from clothing or the work environment can destroy the components located on these devices. Do not touch the components without antistatic precautions, especially along the connector edges. For more information, refer to "Antistatic Precautions and Procedures" in *Sun Fire X4800 Server Service Manual*.

Note – This procedure assumes that the server is powered off and all cables are disconnected.

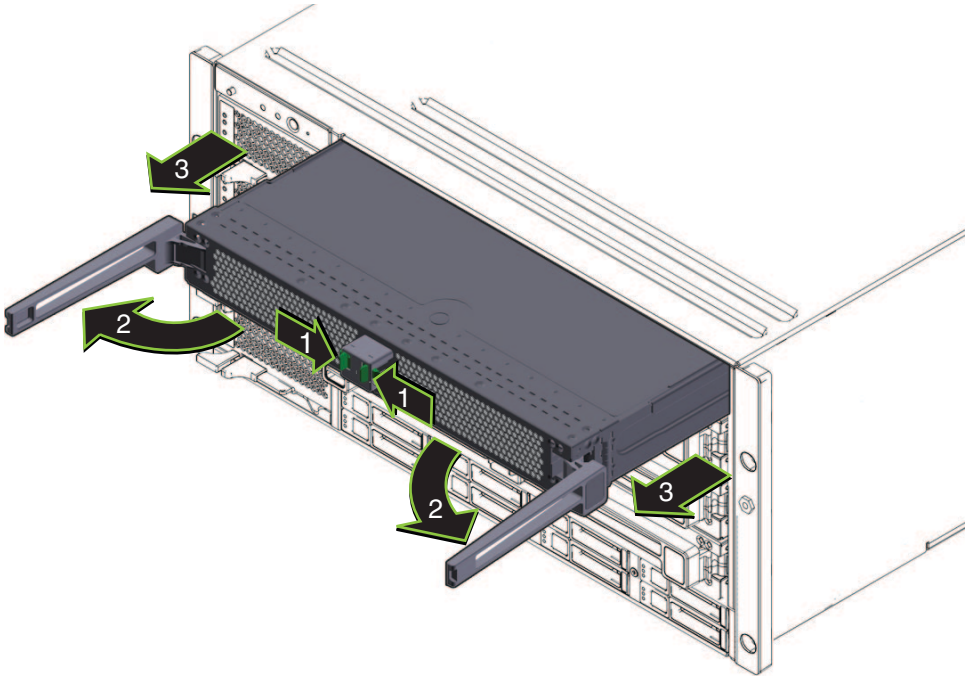
1 Mark all CPU modules with their slot numbers.

Caution – To prevent system failure, you must return CPU modules to their original locations. Mark CPU module slot locations carefully before removing them from the chassis.

2 Remove the CPU modules from the front of the chassis.

The chassis contains four CPU module slots; each must have a CPU module or a filler panel.

Note – Because of their light weight, there is no need to remove filler panels.



For each CPU module:

a. **Pinch the green tabs to release the ejectors (1).**

b. **Pull both ejectors out to release the module (2).**

Caution – When the module is partway out of the chassis, close the ejectors, and grasp the module. Do not handle the module by the ejectors.

c. **Gently slide the module forward until it is clear of the chassis (3).**

Caution – The CPU module is heavy. Use two hands.

d. **Close the ejectors on the CPU module.**

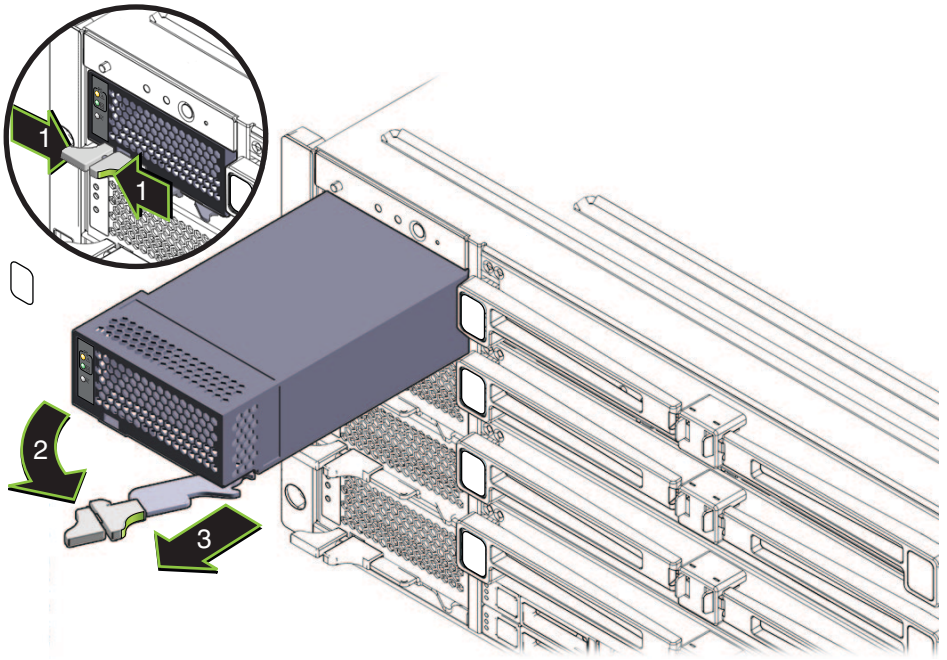
e. **Place the CPU module on an antistatic mat.**

3 **Remove the four power supplies from the front of the chassis.**

a. **Pinch the handle to release the lever (1).**

b. **Pull the lever to release the power supply (2).**

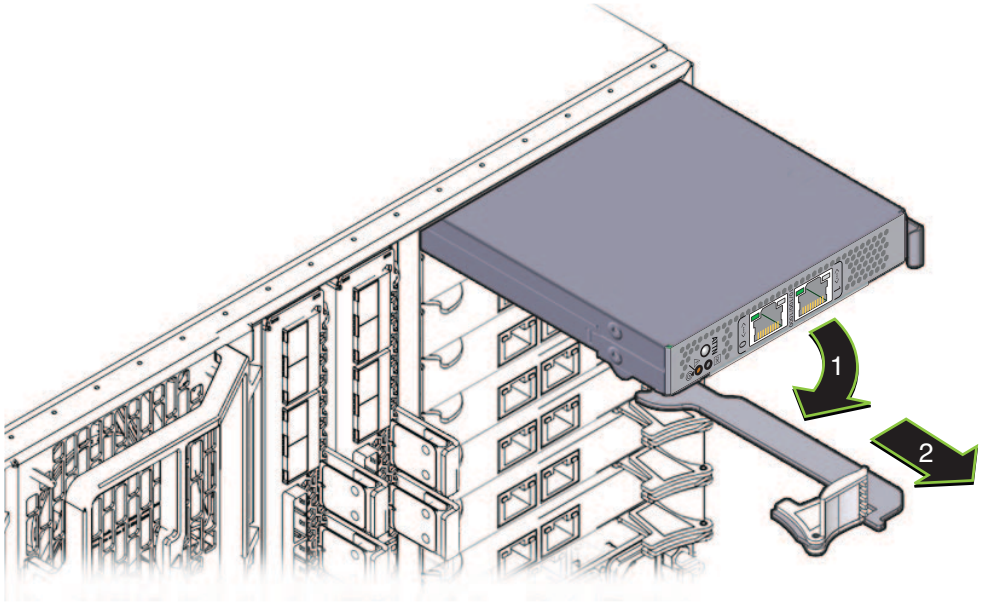
c. **Slide the power supply out of the chassis (3).**



4 **Remove the PCIe express modules from the back of the chassis.**

The upper bays can be used as a hand hold when moving the chassis.

Caution – Do not insert forks from a lift device into these open bays, as this causes severe and non-repairable damage.



a. **Mark all PCIe EM cards with their slot locations.**

Caution – To prevent system failure, you must return PCIe EM cards to their original locations. Mark PCIe EM slot locations carefully before removing them from the chassis.

b. **Rotate the lever to release the module (1).**

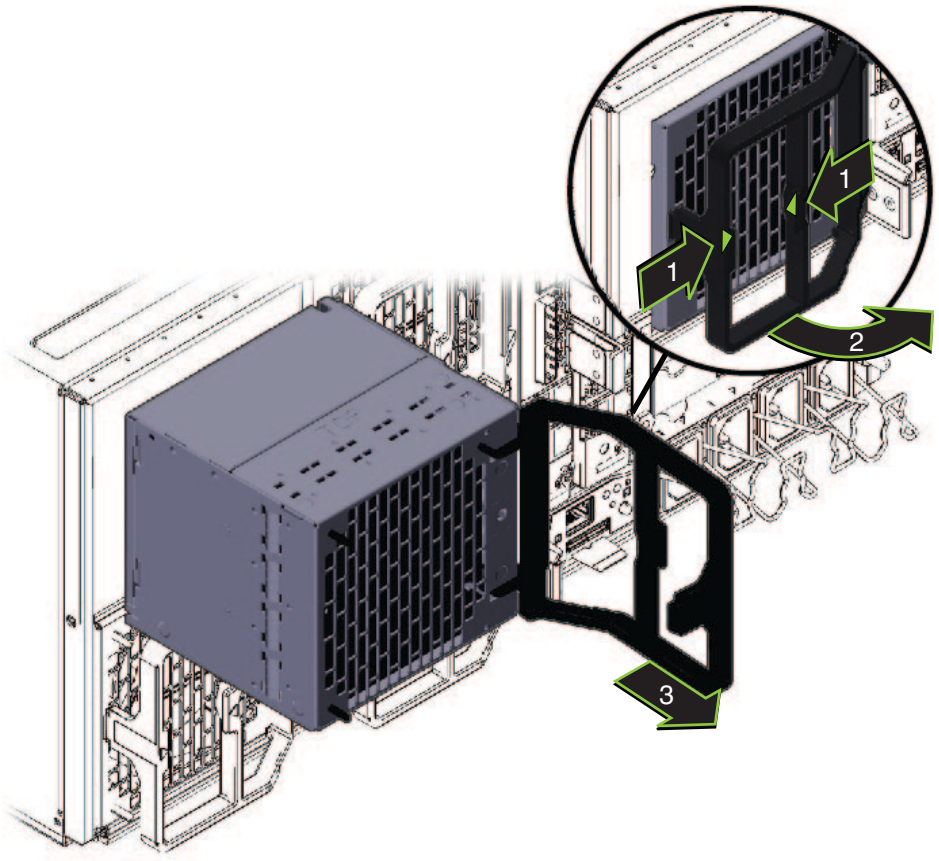
c. **Slide the module out of the chassis (2).**

5 **Remove the upper left fan module (FM2) if necessary.**

Squeeze the clamp (1) to release the fan module (2), then pull it from the chassis (3).

You can use the recess as a hand-hold when moving the chassis.

Caution – Do not insert forks from a lift device into this open bay, as this causes severe and non-repairable damage.



See Also "How to Install the Rack Mounting Hardware in a Square-Hole Rack" on page 55

"How to Install the Rack Mounting Hardware in a Round-Hole Rack" on page 64

"How to Replace the Components in the Server" on page 54

▼ How to Replace the Components in the Server

The procedure "How to Remove Components to Reduce Weight" on page 49 describes how to remove components from the server. After the server is installed in the rack, you must replace the components.

- **Reverse the steps in "How to Remove Components to Reduce Weight" on page 49.**

Caution – All CPU modules and PCIe EM modules must be returned to their original locations. Failure to do so can result in system failure.

How to Install the Rack Mounting Hardware in a Square-Hole Rack

The rack mounting kit consists of adapter brackets, rear braces, shelf rails, cage nuts, and screws.

Caution – The server weighs about 180 pounds (100 kg) when fully loaded with components. To reduce the risk of serious personal injury or equipment damage, use a mechanical lift to install the server into the rack. If a lift is not available, remove components as described in "How to Remove Components to Reduce Weight" on page 49. This reduces the weight of the server to 80 pounds (45 kg).

Always load equipment into a rack from the bottom up so that it does not become top-heavy and tip over. Deploy your rack's anti-tilt bar to prevent the rack from tipping during equipment installation.

Note – To install rack mounting hardware in round-hole racks, see "How to Install the Rack Mounting Hardware in a Round-Hole Rack" on page 64.

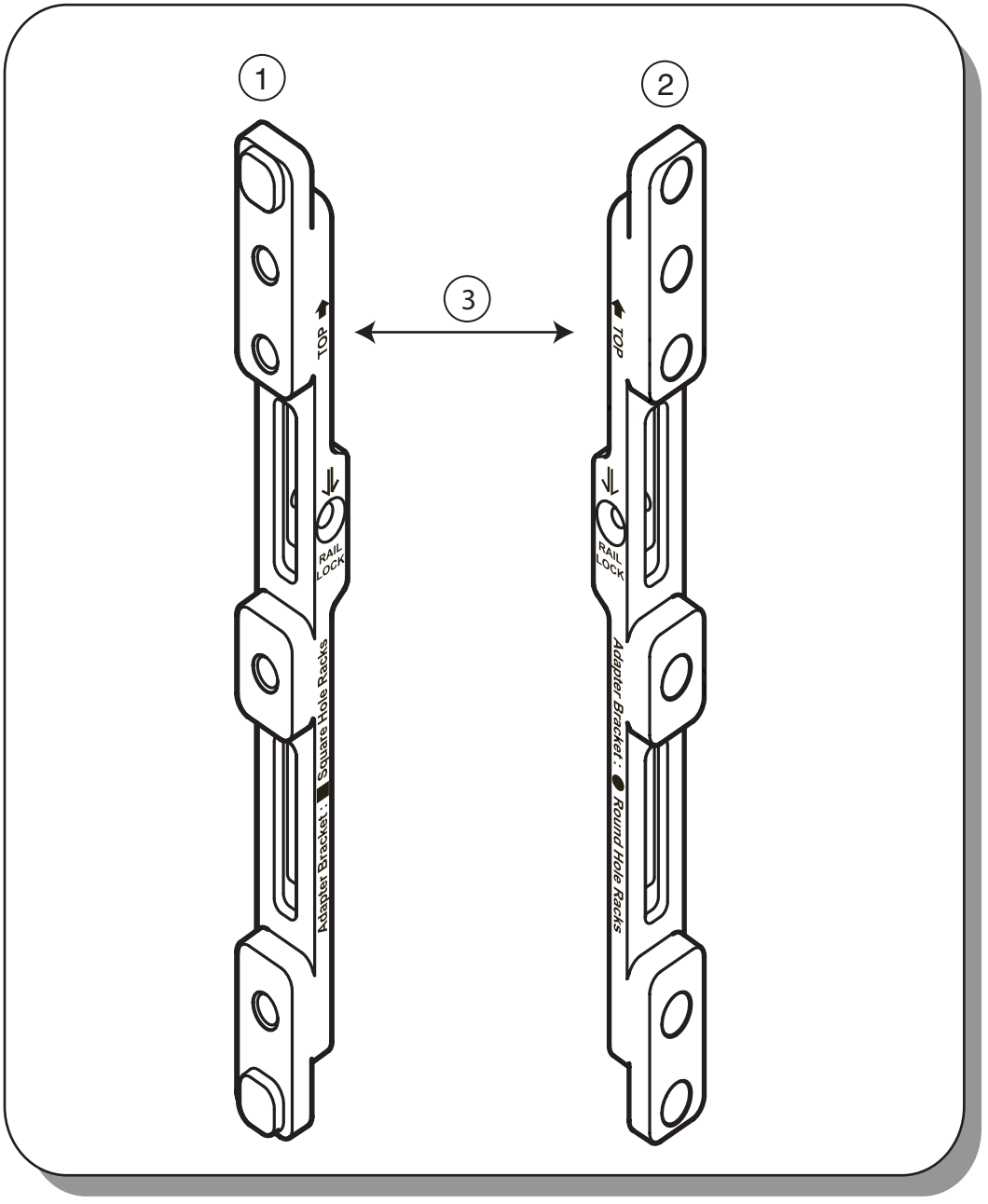
This task requires the following screws and connectors:

Function	Description
Attach adapter brackets to front rack posts	Four M6 x 12
Attach adapter brackets to rear rack posts	Four M6 x 12
Attach braces to rear rack posts	Four M6 x 10 and four M6 cage nuts
Locking screws for rails	Four M4 x 10 flathead

1. **Gather the following screws and connectors:**
2. **Verify that you have a 5RU space in your rack.**
3. **Select the set of adapter brackets for square-hole racks.**

   The server ships with two sets of adapter brackets: one for racks with square holes (1) and one for racks with round holes (2). The brackets for square-hole racks (1) have threads. See the following figure.

Note – Arrows on the brackets (3) indicate how the bracket should be oriented. Be sure to install all brackets with the "Top" arrow (3) pointing up.


1
2
3
TOP
RAIL LOCK
Adapter Bracket : Square Hole Racks
TOP
RAIL LOCK
Adapter Bracket : Round Hole Racks

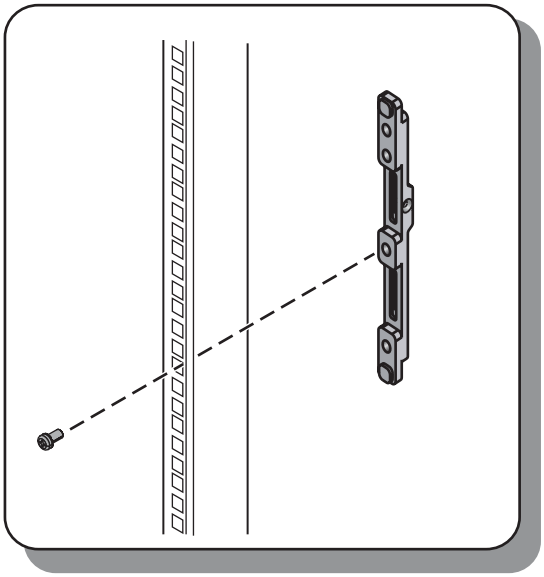
4 Attach the brackets to the front posts.

Place the brackets so that the bottom of the bracket is aligned with the bottom of the (5RU) space where the server will go, and that the arrow labelled "top" points up.

Note – The accessory tray includes a printed template that you can use to help align the adapter brackets.

Use one M6 x 16 screw per side. Pass the screw from the outside of the rack, through the holes in the post, and into the threads on the adapter brackets.

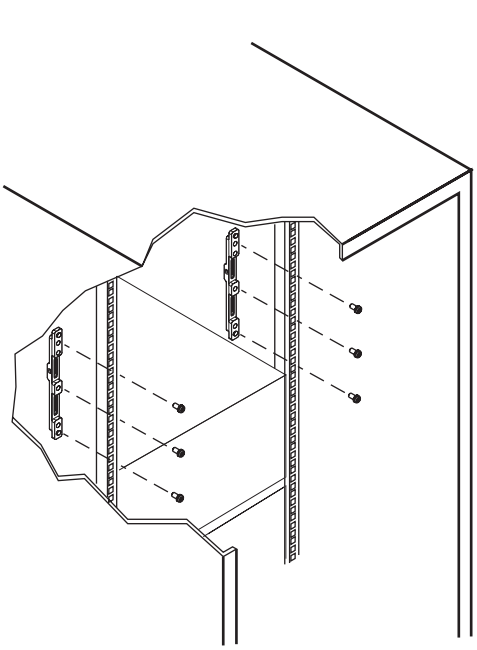
The other two holes (per side) are used later, to attach the bezel of the server to the rack.

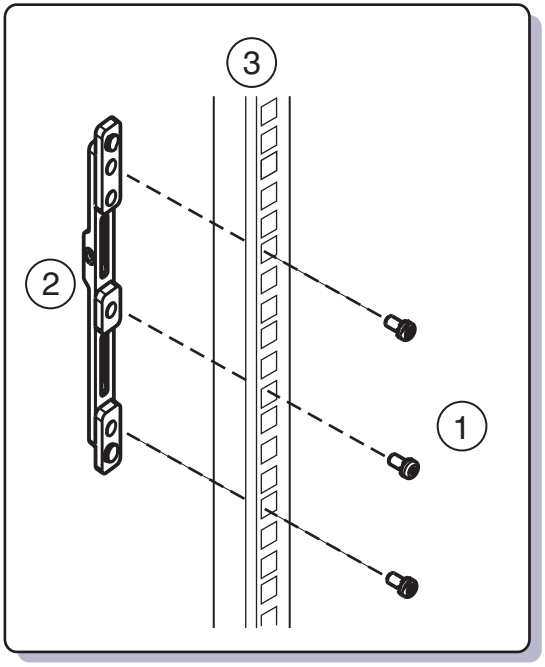


5 Attach the brackets to the rear posts.

Place the brackets so that the bottom of the bracket is aligned with the bottom of the (5RU) space where the server will go, and that the arrow labelled "top" points up.

Use three M6 X 16 screws per side (1) to fasten the bracket (2) to the posts (3).

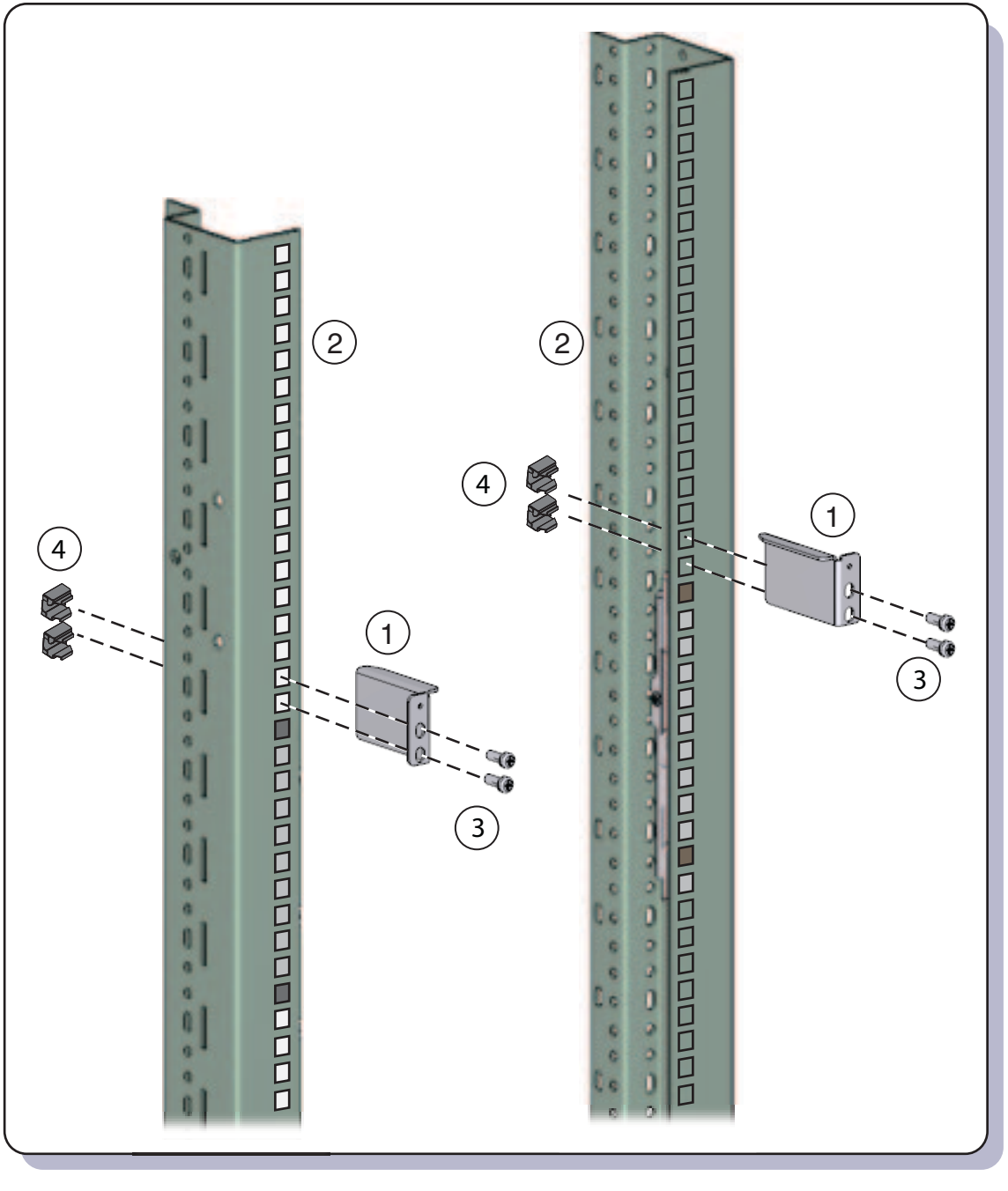




6 Attach upper rear braces (1) to the rack posts (2) directly above the adapter brackets, as shown in the following figure.

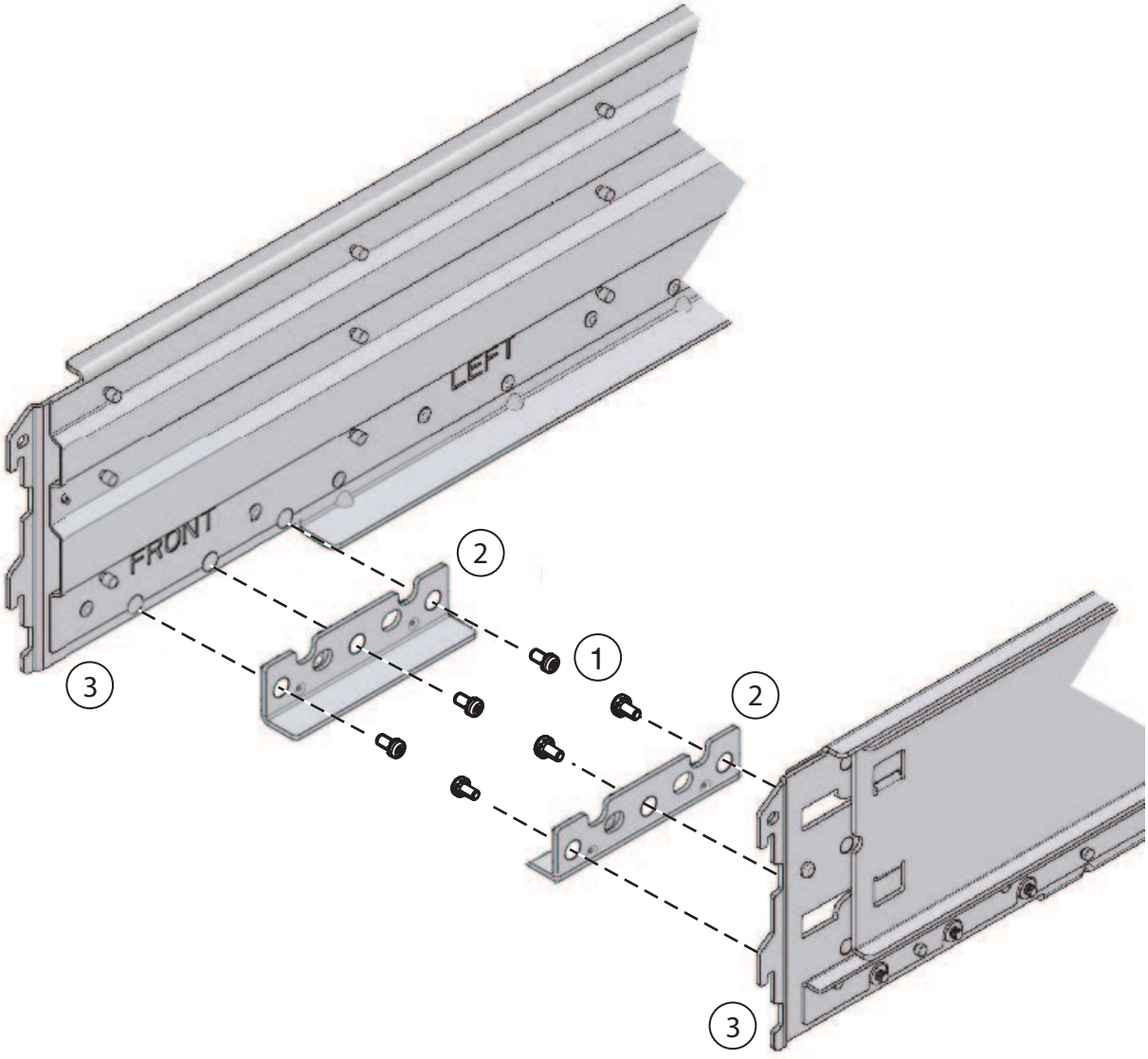
Install two M6 cage nuts (4) per side and then use two M6 x 16 screws (3).

Before tightening the screws, slide the braces (1) up as far as they will go. The holes on the braces are oval-shaped so they can move a little up and down when the screws are loose.



7 Remove the six screws (1) that hold the left and right shelf extenders (2) on the shelf rails (3), and then remove the shelf extenders.

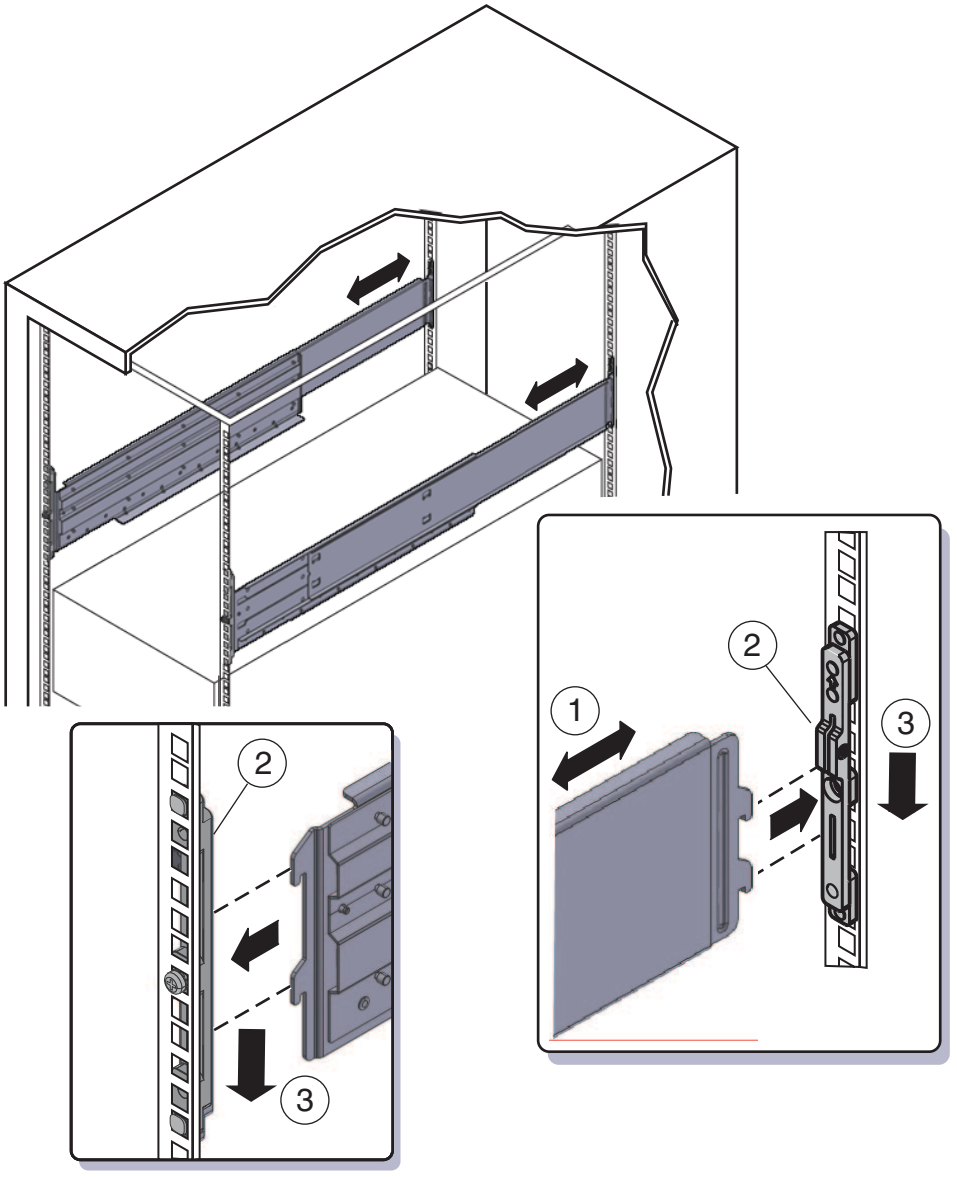
You must remove the shelf extenders before installing the server in the rack. They are used for other products.



8 Place the shelf rails into the rack.

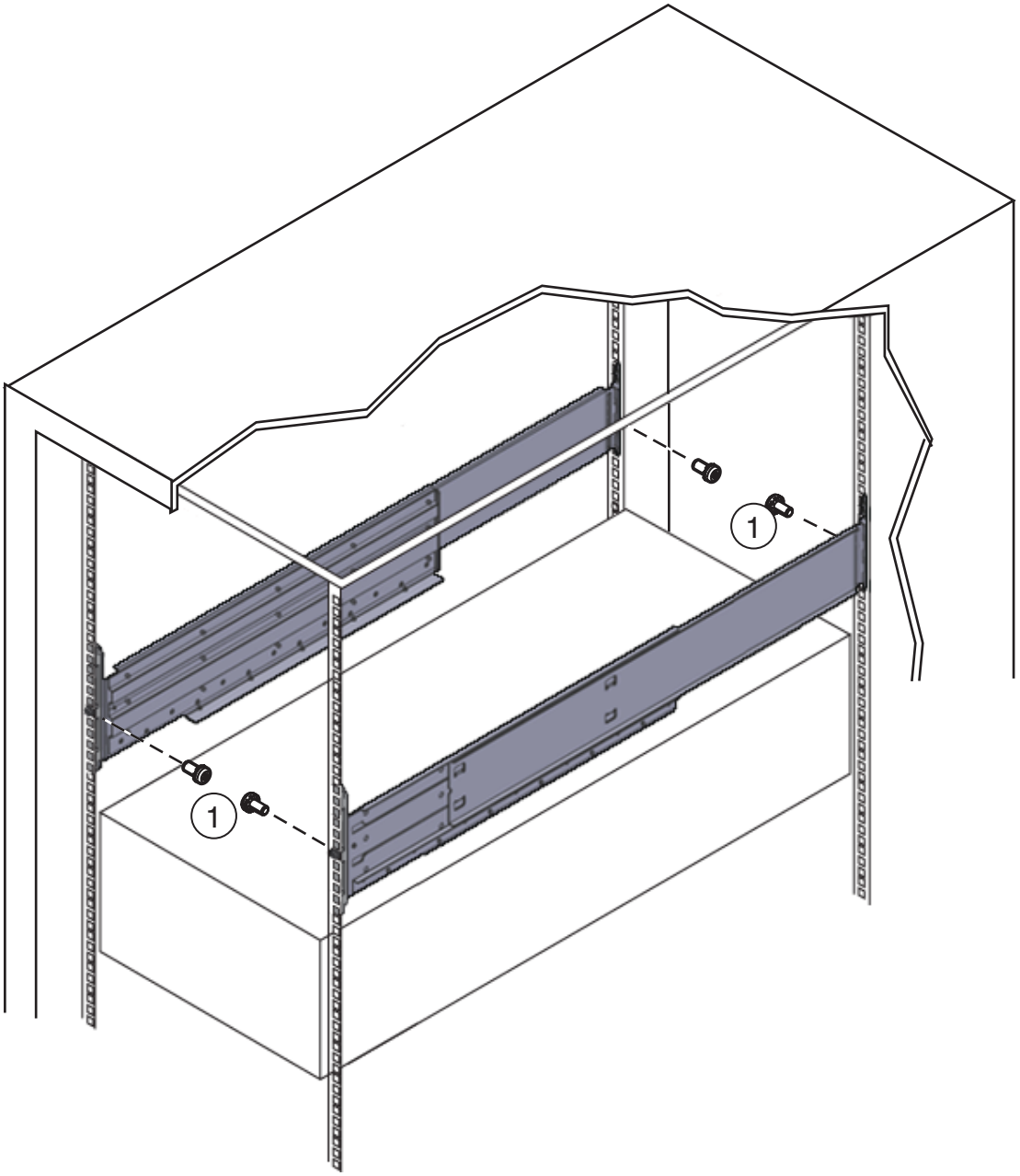
The shelf rails expand (1) to fit the rack, then slip into the slots on the adapter brackets (2), and drop into place (3).

Be certain to place the shelf rails in the proper orientation. They are labelled “FRONT LEFT” and “FRONT RIGHT”.



9 Thread the four M4 X 10 flathead locking screws (1) into the adapter brackets.

These prevent the shelf rails from accidentally lifting out of the adapter brackets.



Next Steps "How to Insert the Server Into the Rack" on page 72

How to Install the Rack Mounting Hardware in a Round-Hole Rack

The rack mounting kit consists of adapter brackets, rear braces, shelf rails, cage nuts, and screws.

Caution – The server weighs about 180 pounds (100 kg) when fully loaded with components. To reduce the risk of serious personal injury or equipment damage, use a mechanical lift to install the server into the rack. If a lift is not available, remove components as described in "How to Remove Components to Reduce Weight" on page 49. This reduces the weight of the server to 80 pounds (45 kg).

Always load equipment into a rack from the bottom up so that it does not become top-heavy and tip over. Deploy your rack's anti-tilt bar to prevent the rack from tipping during equipment installation.

Note – To install rack mounting hardware in square-hole racks, see "How to Install the Rack Mounting Hardware in a Square-Hole Rack" on page 55.

This task uses the following screws and connectors:

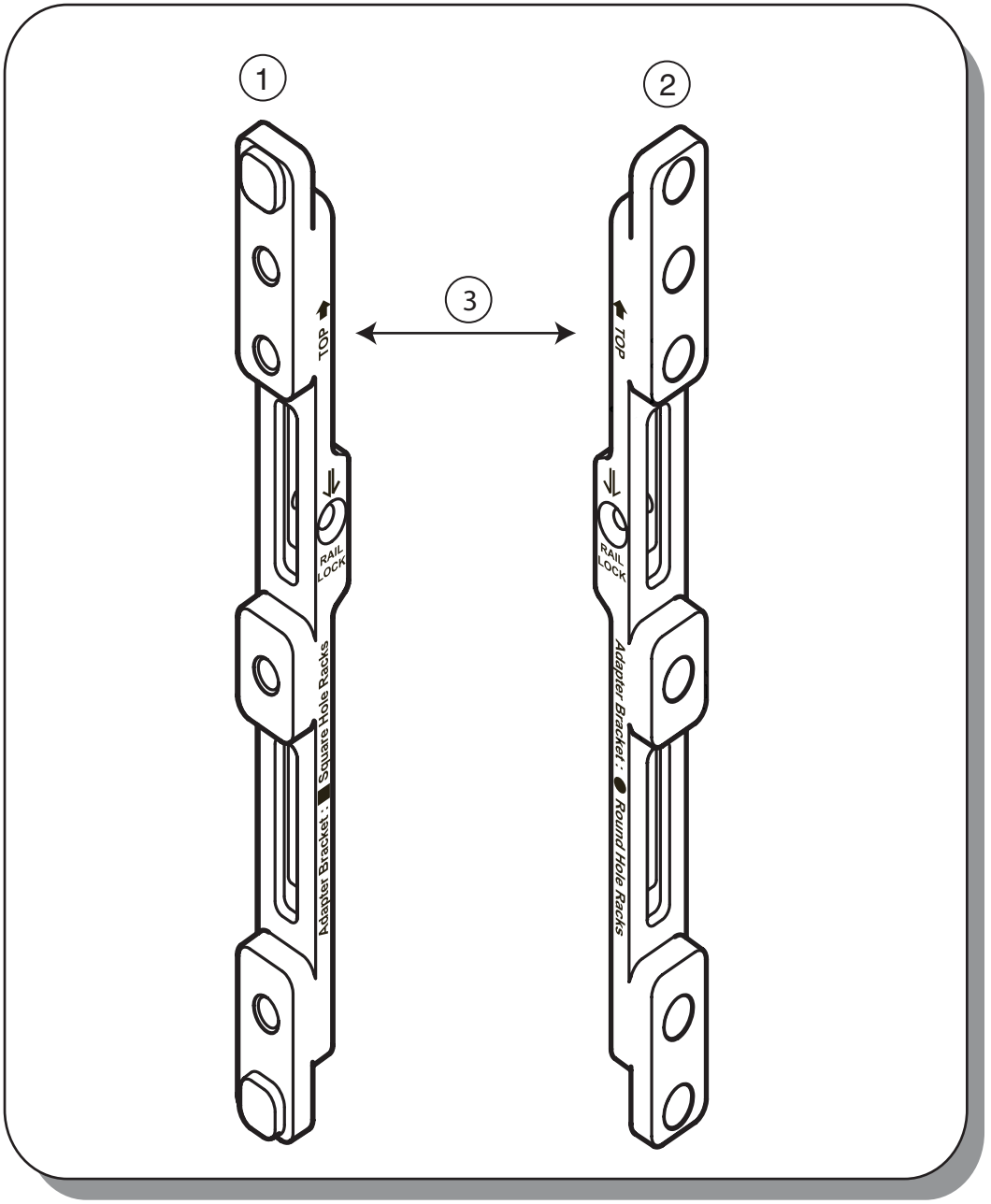
Function	Description for M6 Racks	Description for 10-32 Racks
Attach adapter brackets to front rack posts	Four M6 x 12	Four 10-32 x 10
Attach adapter brackets to rear rack posts	Four M6 x 12	Four 10-32 shoulder screws
Attach braces to rear rack posts	Four M6 x 10	Four 10-32 x 10
Locking screws for rails	Four M4 x 10 flathead	Four M4 x 10 flathead

1. **Verify that you have a 5RU space in your rack.**

2. **Select the set of adapter brackets for round-hole racks.**

   The server ships with two sets of adapter brackets: one for racks with square holes (1), and one for racks with round holes (2). The adapter brackets for square-hole racks (1) have threads. The adapter brackets for round-hole (tapped) racks (2) do not. See the following figure.

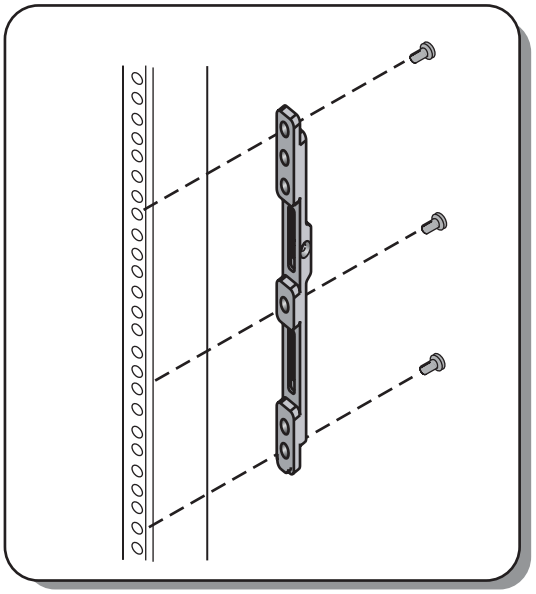
   Note – Arrows on the adapter brackets (3) indicate how they should be oriented. Be sure to install all brackets with the "Top" arrow (3) pointing up.


1
2
3
TOP
RAIL LOCK
Adapter Bracket : ■ Square Hole Racks
TOP
RAIL LOCK
Adapter Bracket : ● Round Hole Racks

3 Attach the adapter brackets to the front posts.

Place the adapter brackets so that the bottom of the adapter bracket is aligned with the bottom of the (5RU) space where the server will go, and that the arrow labelled "top" points up.

Use three M6 x 12 or 10-32 x 10 screws for each side. Pass the screws from the inside of the rack, through the adapter bracket, and into the threads on the post.



Note – The accessory box includes a printed template that you can use to help align the adapter brackets.

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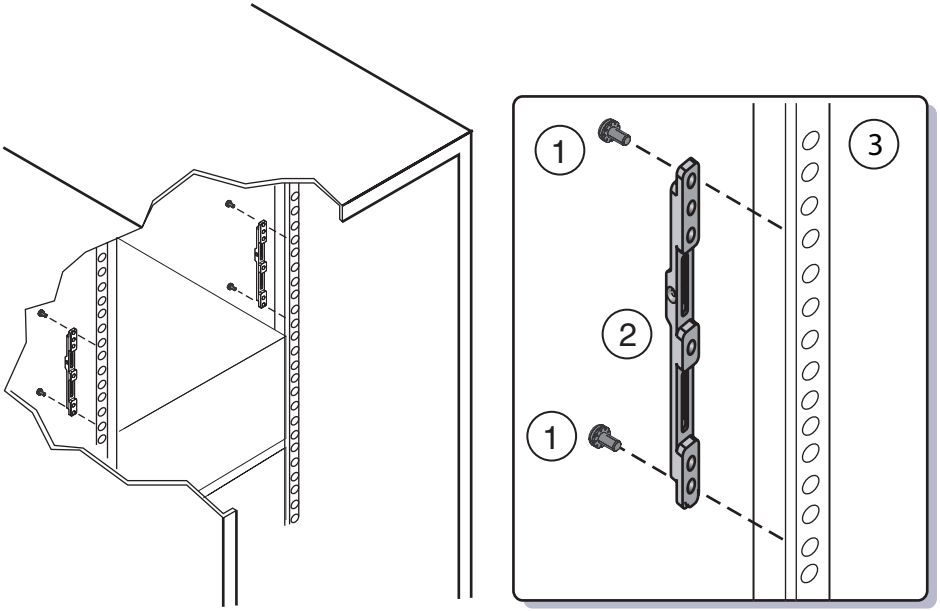
4 Attach the adapter brackets to the rear posts.

Place the adapter brackets so that the bottom of the adapter bracket is aligned with the bottom of the (5RU) space where the server will go, and that the arrow labelled "top" points up.

Pass two screws (1) from the inside of the rack, *through the top and bottom holes in the adapter bracket* (2), and thread them into the post (3).

Note – Do not use the center screw in the adapter bracket. It is reserved for the optional shipping bracket kit described in "Installing and Removing the Universal Rack Mounting Kit Shipping Brackets" on page 76.

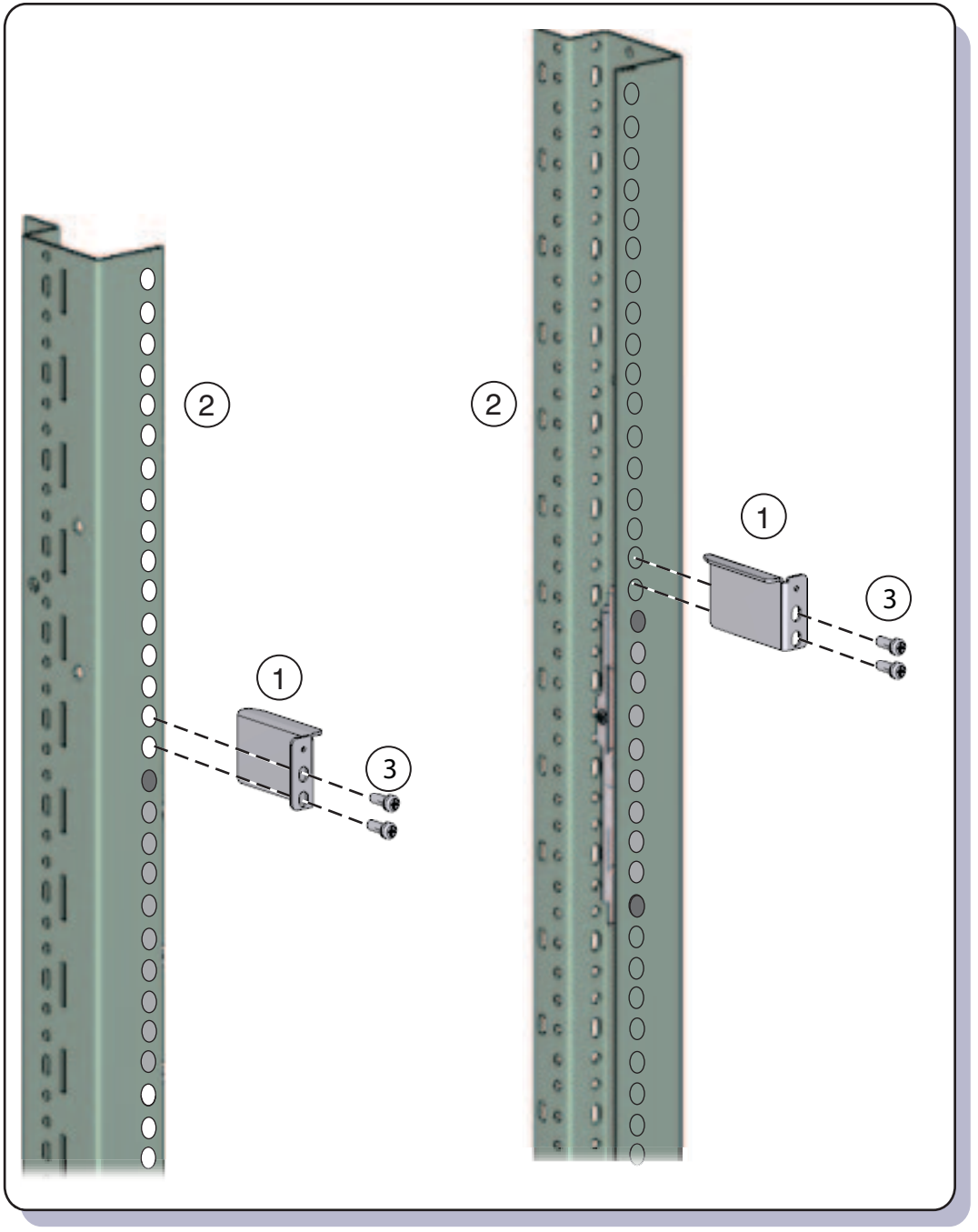
- For M6 racks, use two M6 x 12 screws per side.
- For 10-32 racks, use two 10-32 shoulder screws per side.



5 Attach upper rear braces (1) to the rack posts (2) directly above the adapter brackets, as shown in the following figure.

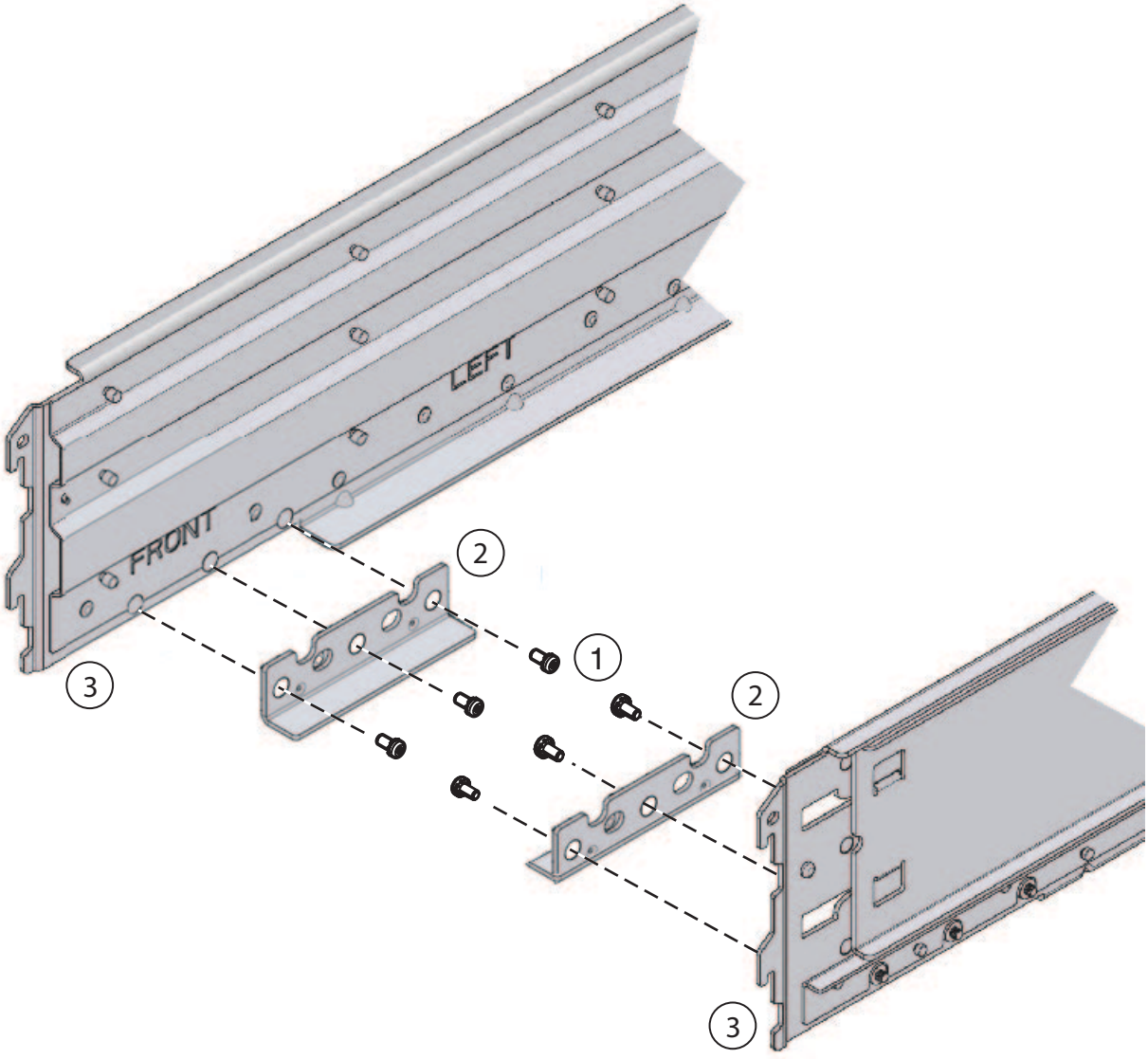
Use either two M6 x 16 or two 10-32 x 10mm screws (3) per side.

Before tightening the screws, slide the braces (1) up as far as they will go. The holes on the braces are oval-shaped so they can move a little up and down when the screws are loose.



6 Remove the six screws (1) that hold the left and right shelf extenders (2) on the shelf rails (3), and then remove the shelf extenders.

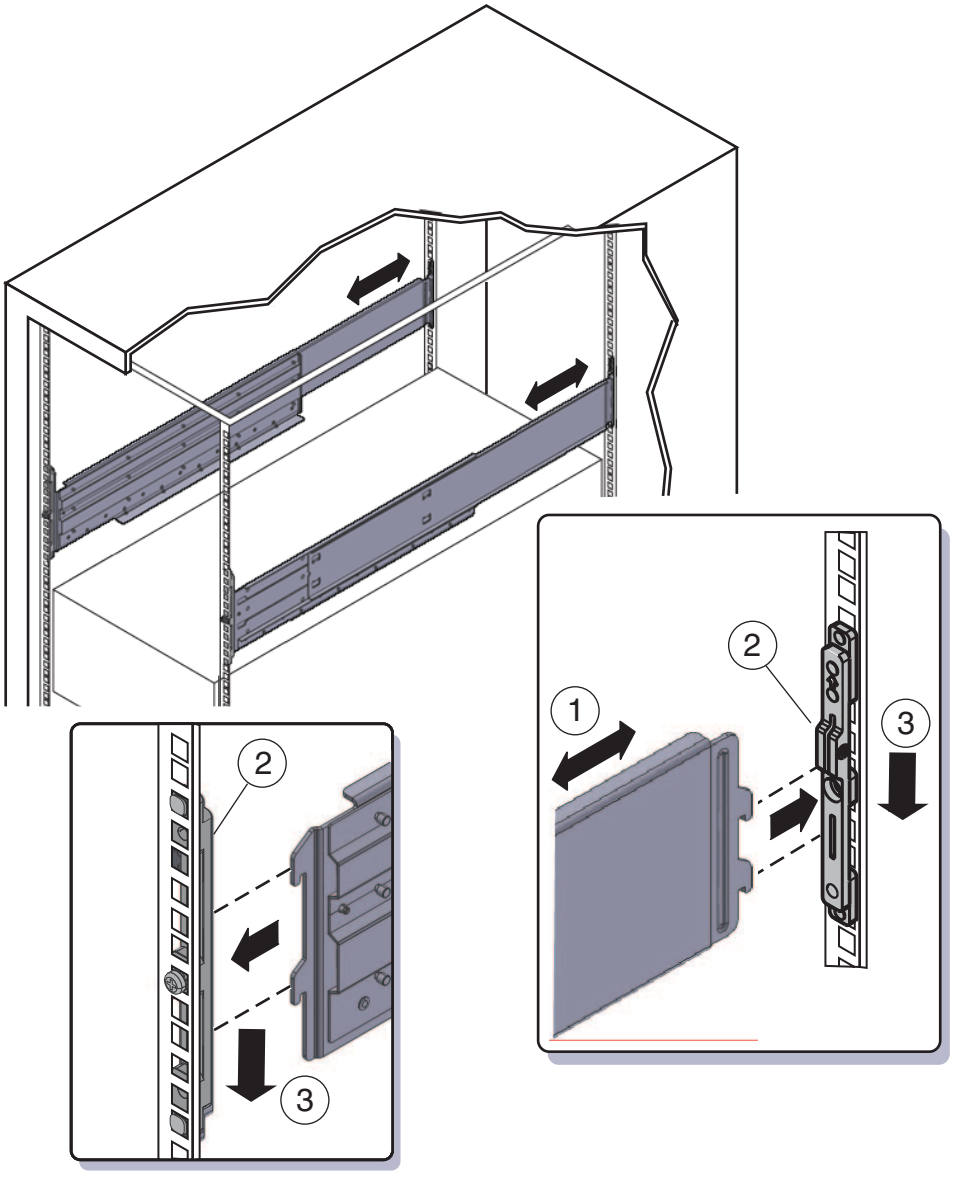
You must remove the shelf extenders before installing the server in the rack. They are used for other products.



7 Place the shelf rails into the rack.

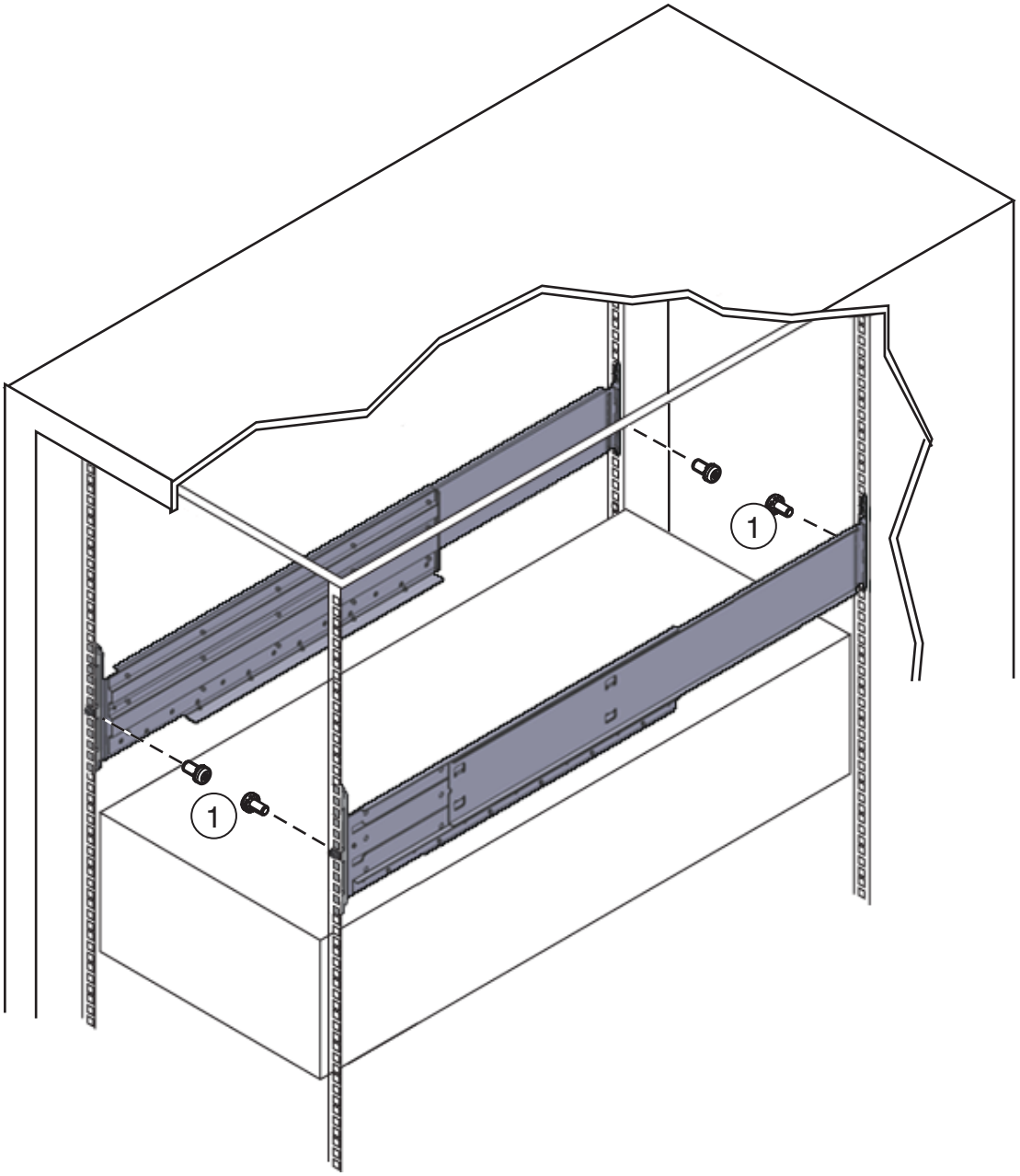
The shelf rails expand (1) to fit the rack, then slip into the slots on the adapter brackets (2), and drop into place (3).

Be certain to place the shelf rails in the proper orientation. They are labelled “FRONT LEFT” and “FRONT RIGHT”.



8 Thread the four M4 X 10 flathead locking screws (1) into the adapter brackets.

These prevent the shelf rails from accidentally lifting out of the adapter brackets.



Next Steps "How to Insert the Server Into the Rack" on page 72

How to Insert the Server Into the Rack

The following procedure explains how to insert the server into the rack and on to the shelf rail assemblies in the rack.

Before You Begin Perform the steps in "How to Install the Rack Mounting Hardware in a Round-Hole Rack" on page 64.

1. **Lift the server to its position in the rack.**

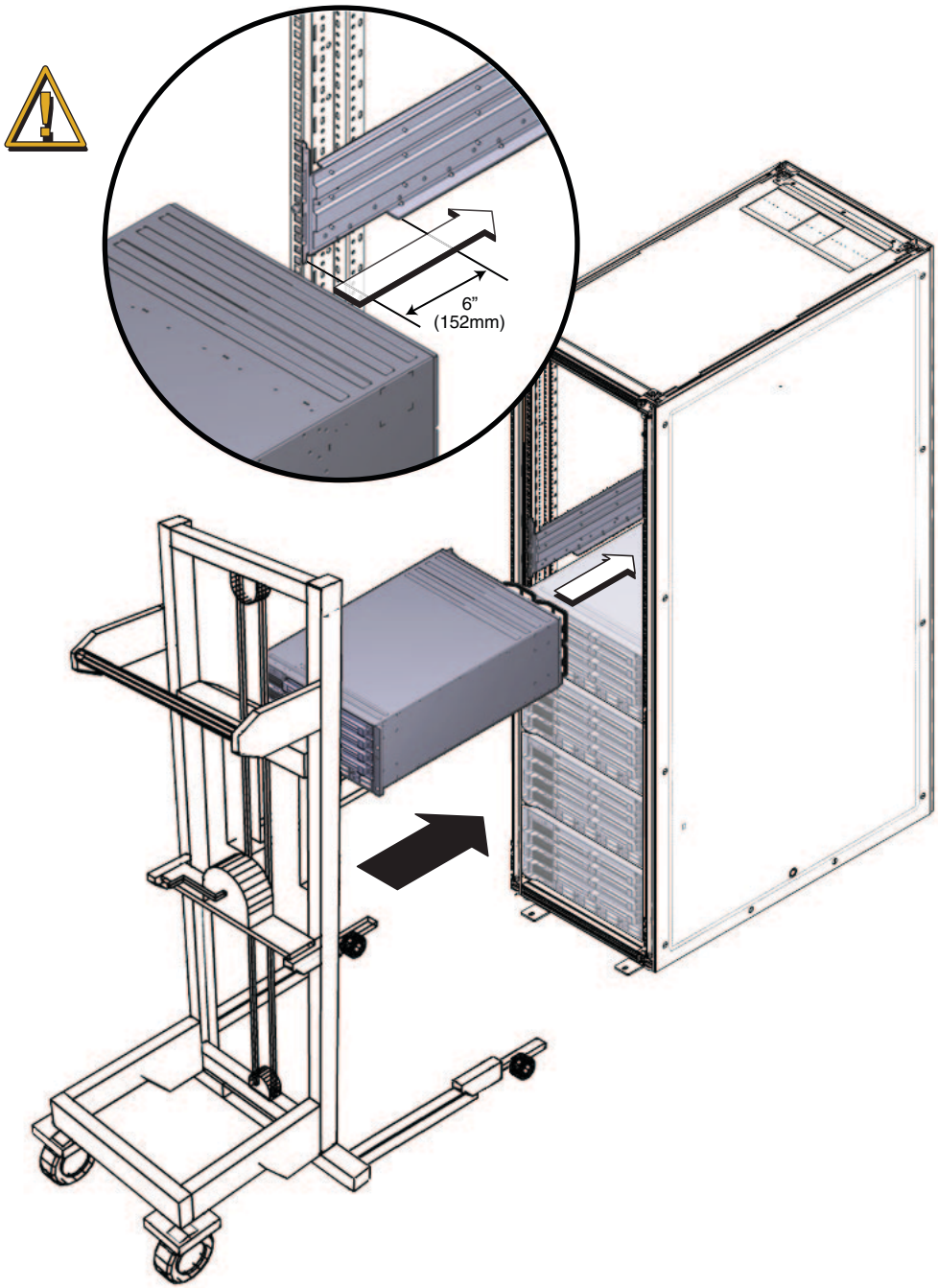
   The use of a mechanical lift is recommended.

Caution – The server weighs 180 pounds (82 kg). To reduce the risk of serious personal injury or equipment damage, use a mechanical lift to install the server into the rack. If a lift is not available, remove components as instructed in "How to Remove Components to Reduce Weight" on page 49 and use two persons to lift the server into place.

2. **Slide the server onto the shelf rails.**

Caution – Drop Hazard! Do not release the server until the rear of the server is *more* than 6 inches (152 mm) into the rack, and is firmly supported by the shelf rails. The shelf rails will not support the server until it is *more* than 6 inches (152 mm) inside the rack.

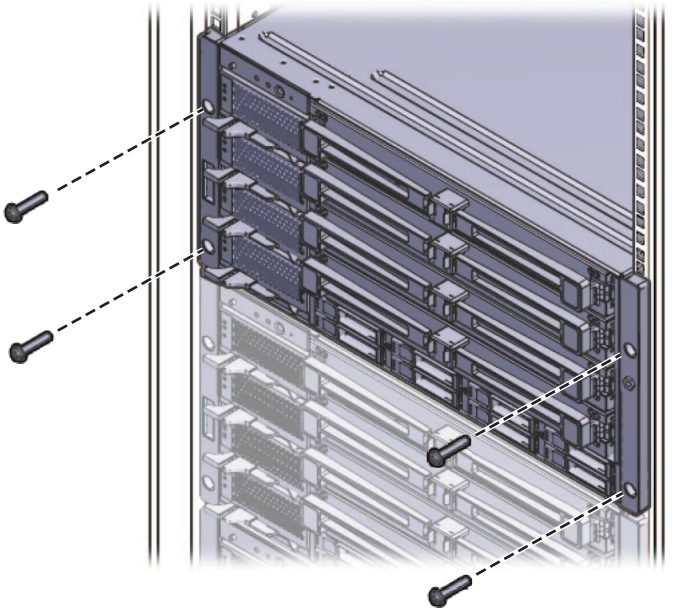
Note – If the server is still on a pallet, you can leave it on the pallet and lift both the server and the pallet with the mechanical lift, and slide the server off the pallet and onto the shelf rails.


6"
(152mm)

3 **Use four screws to attach the front bezel of the server to the front of the rack, as shown in the following figure.**

- For square-hole racks, use four M6 x 16 screws.
- For round-hole racks, use four M6 x 12, or four 10-32 x 10 screws.

Note – On square-hole racks, the screws pass through the rack and thread into the adapter bracket. On round-hole racks, the screws thread into to the rack rails.



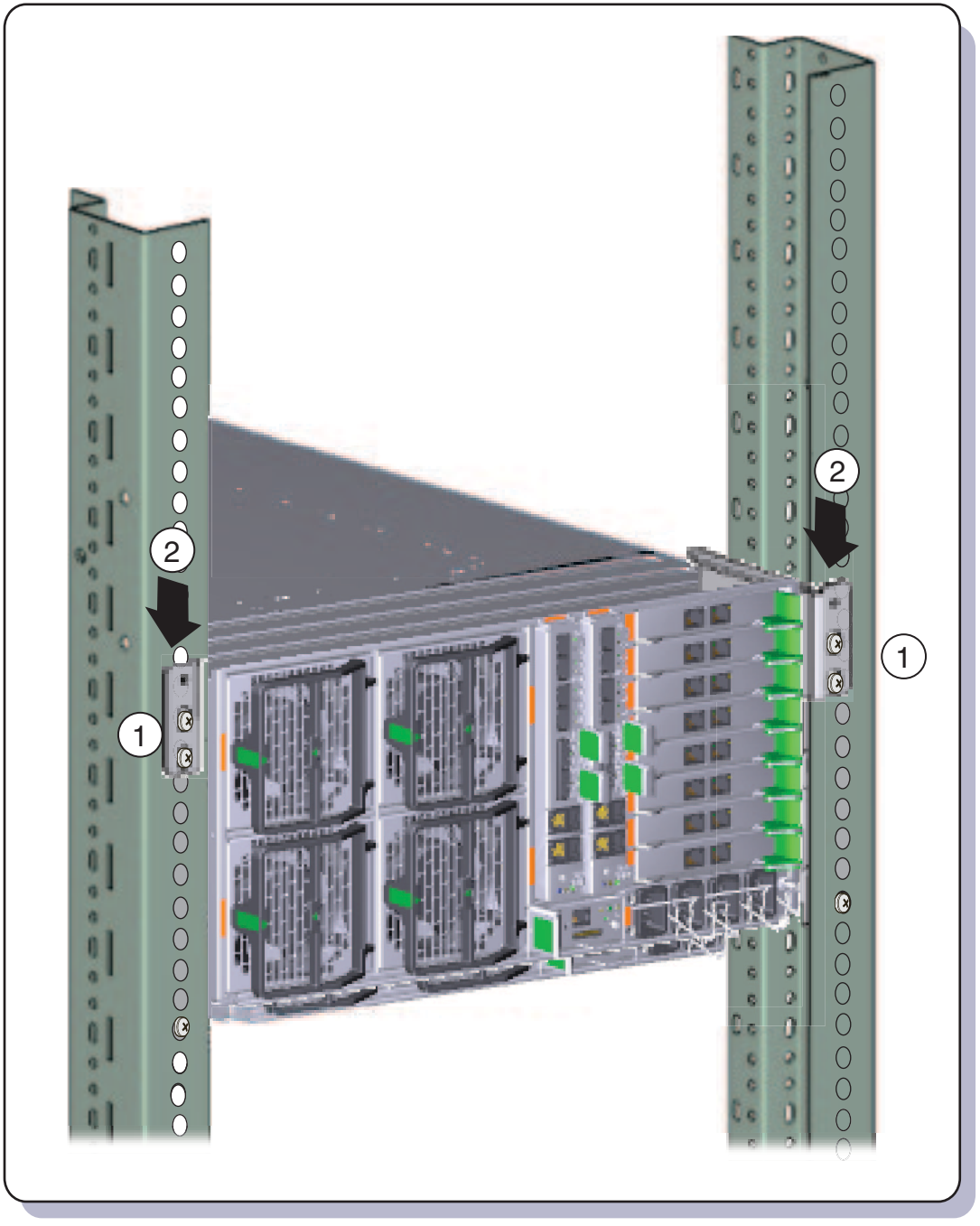
4 **Move the rear braces so they are snug against the server chassis. See the following figure.**

From the rear of the system:

a. **Loosen the screws (1).**

b. **Slide the braces down (2).**

c. **Tighten the screws (1).**


2
1
2
1

5 **If you removed components from the server, replace them after it is mounted in the rack. See "How to Remove Components to Reduce Weight" on page 49.**

See Also
- "How to Remove the Server From the Rack" on page 85
- "Cabling and Power" on page 91
- "How to Remove Components to Reduce Weight" on page 49

Installing and Removing the Universal Rack Mounting Kit Shipping Brackets

If the server is shipped in a rack, it must be supported by shipping brackets.

- If the server is shipped to you in a rack, you must remove the front brackets before placing it in service. Removing the rear brackets is optional. See "How to Remove the Universal Rack Mounting Kit Shipping Brackets" on page 80.
- If you plan to ship the server in a rack, see "How to Install the Universal Rack Mounting Kit Shipping Brackets" on page 76.

If you have ordered a server with shipping brackets, they are shipped in the accessory tray.

▼ How to Install the Universal Rack Mounting Kit Shipping Brackets

This procedure describes how to install brackets into a system equipped with the universal rack mounting kit.

The following picture shows the shipping bracket kit.

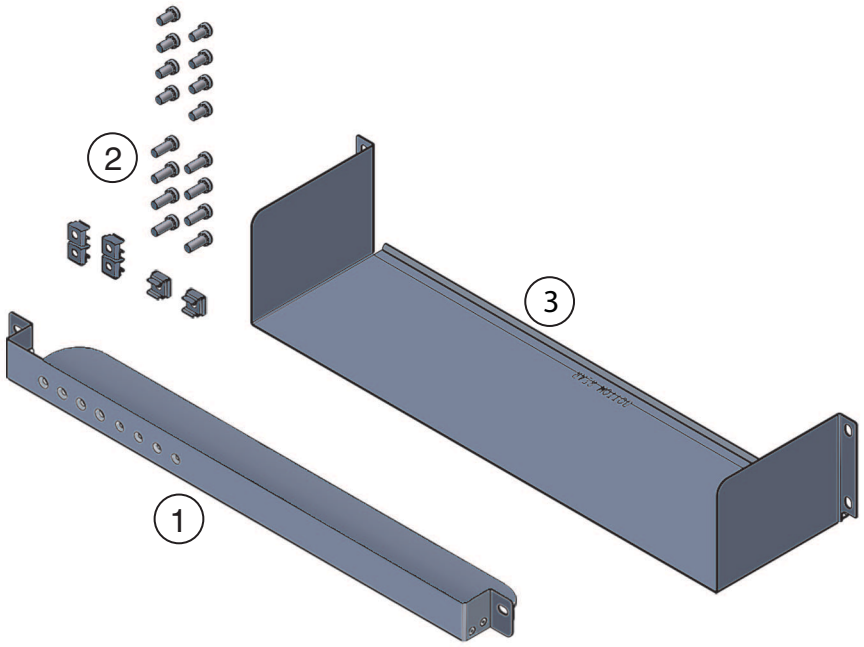


Figure Legend	
1	Front shipping bracket
2	Screws and cage nuts. The kit contains two sets of screws (M6 and 10-32), plus cage nuts. The cage nuts are not used for the Sun Fire X4800 server.
3	Bottom rear shipping bracket

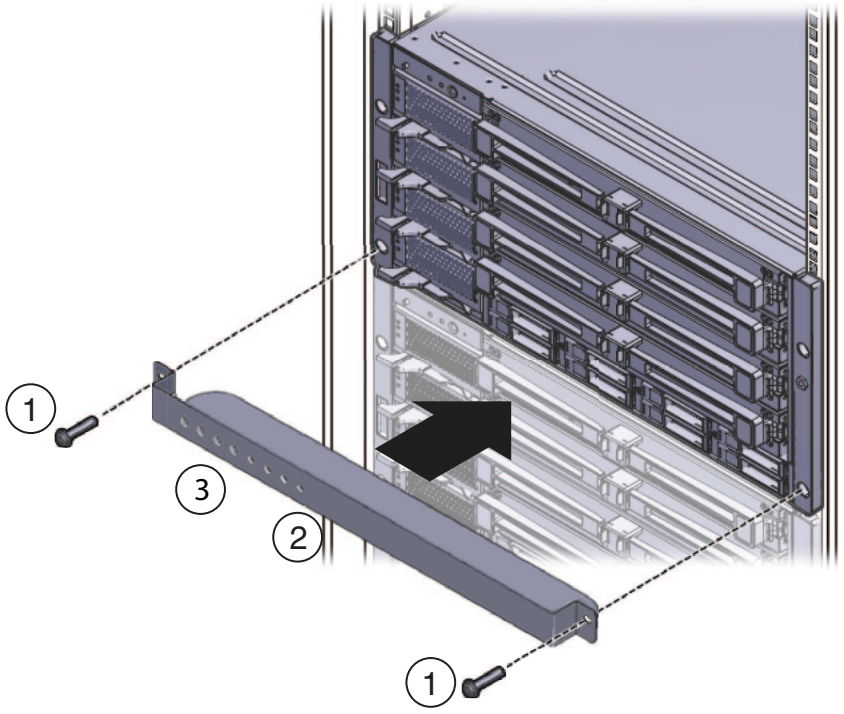
1 **Remove the two (short) screws that fasten the bottom of the bezel to the rack.**

2 **Insert the front bracket (2) into the front of the server with the supporting flange underneath the server.**

See the figure below.

3 **Use the two long screws (M6 x 25 or 10-32 x 1) (1) to fasten the shipping bracket (2) to the front of the server.**

Note – The front shipping bracket includes eight threaded holes (3) used for storing unused screws. When the shipping brackets are not installed, it holds the long screws used to install them. When the shipping brackets are installed, it stores the short screws that were used before the shipping brackets were installed.

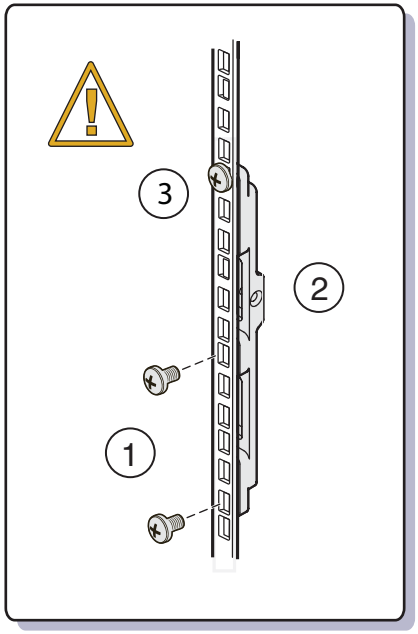


4 **Insert the short screws into the empty storage holes on the shipping bracket.**

They will be stored there to be used when you remove the shipping bracket.

5 **For square-hole racks, remove the bottom screws (1) that hold the rear adapter brackets (2) in place. See the following figure.**

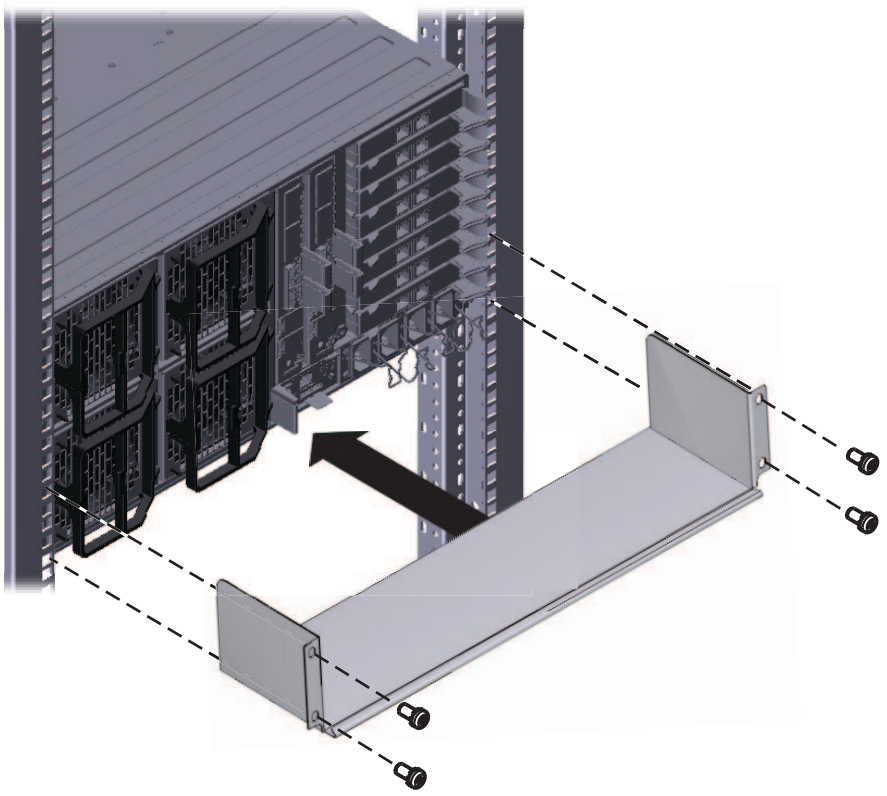
Caution – Do not remove the bottom screws unless you are certain that the upper screw (3) is in place. Otherwise, the server could fall.



6 Insert the rear bottom bracket (1) under the back of the server with the side panels facing up, as shown in the following figure.

Use four screws (2) to fasten it to the rack. *Do not finish tightening these screws.* They should be tight enough to hold the bracket in place, but you should still be able to move the bracket slightly.

- For square-hole racks, use the two screws that you removed in Step 5.
- For round-hole racks, use either 10-32 x 10 or M6 x 12.



The bracket should be fastened to the posts, but loose enough to move slightly.

7 **Push the bracket up so that it rests firmly against the bottom of the server, then finishing tightening the screws that hold the bracket in place.**

If necessary, loosen the screws enough so that you can move the bracket, then tighten them after pushing it against the bottom of the server.

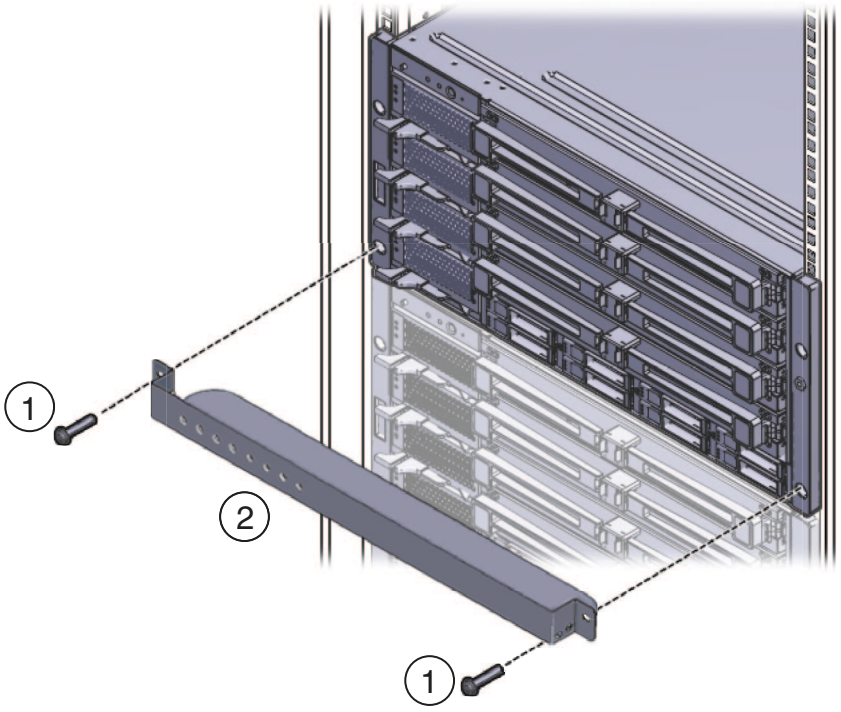
Caution – To prevent damage to the server during shipping, the bottom shipping bracket must rest firmly against the bottom of the server.

▼ How to Remove the Universal Rack Mounting Kit Shipping Brackets

This procedure describes how to remove brackets from a system equipped with the universal rack mounting kit.

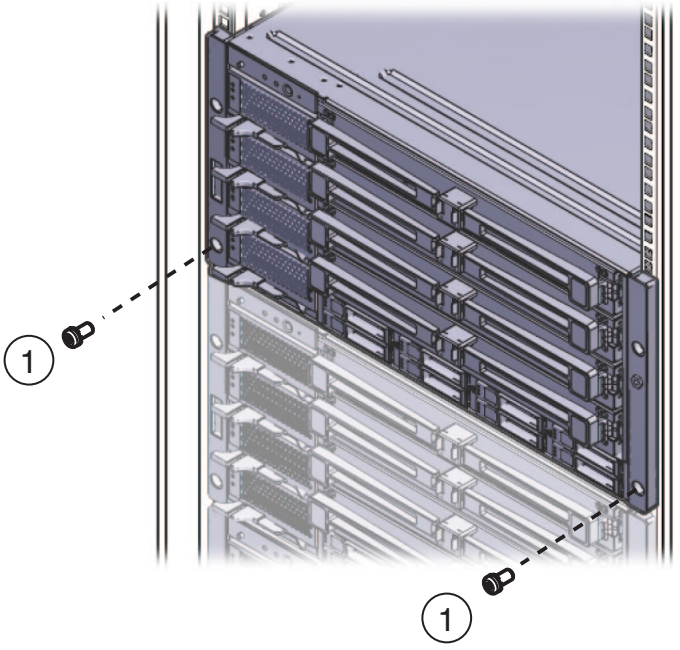
The shipping bracket kit consists of a front bracket, a rear bottom bracket, and screws to connect them to the rack. These appear in "How to Install the Universal Rack Mounting Kit Shipping Brackets" on page 76.

1 Remove the two screws (1) that fasten the front bracket (2) to the front of the server and remove it.



2 **Find the screws from the front of shipping bracket that match your rack and use them to fasten the bezel into the rack.**

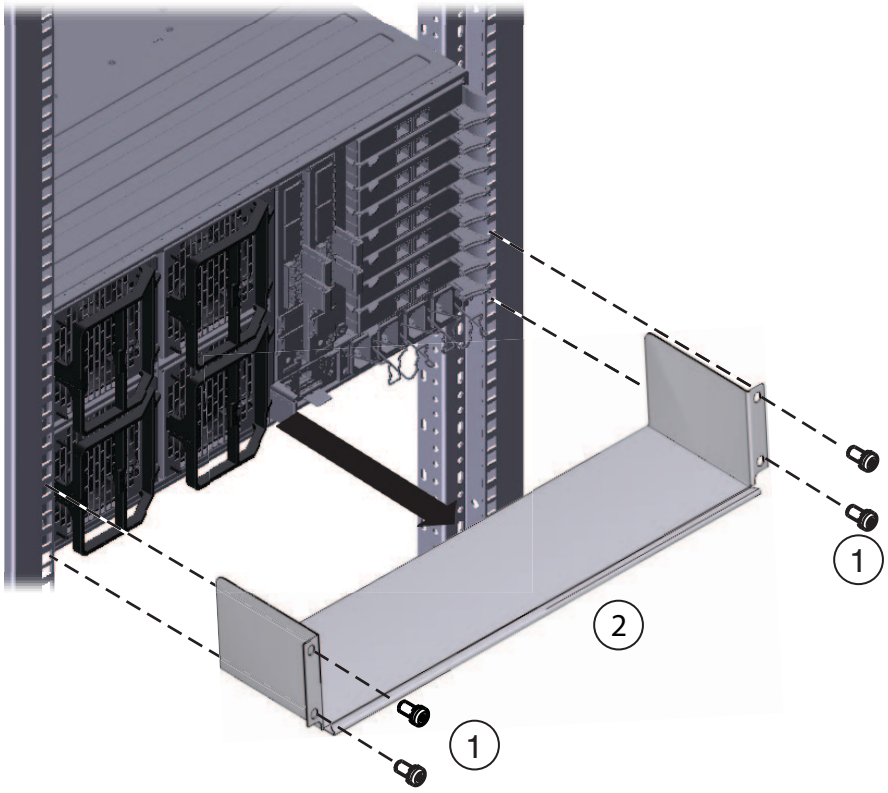
The front shipping bracket contains eight threaded holes used for storing unused screws (four M6 and four 10-32). Remove the screws that match the threads on your rack and use them to secure the server to the rack.



3 **Thread the long screws that you removed in Step 2 into the matching empty holes on the shipping bracket.**

They will be stored there in case you need to reinstall the shipping bracket.

4 **Remove the four screws (1) that fasten the rear bottom bracket (2) under the back of the server and remove it.**



5 **Replace the four screws that you removed in Step 4.**

Removing the Server From the Rack

▼ How to Remove the Server From the Rack

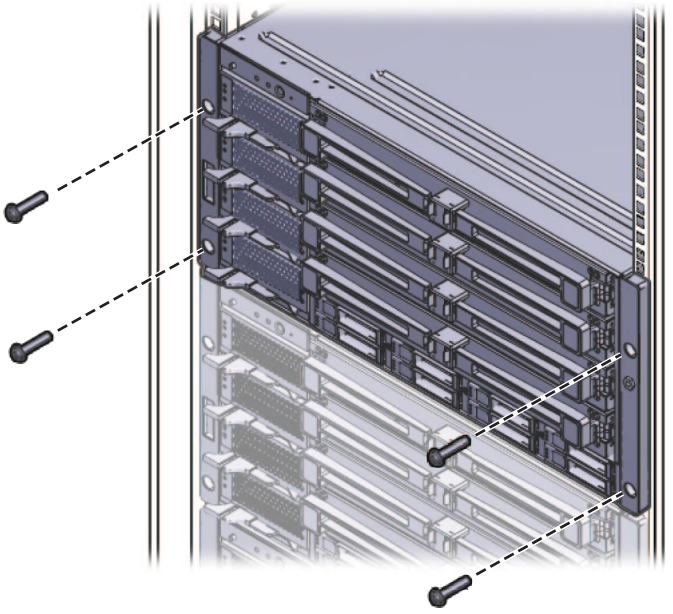
This procedure assumes that you have turned off the server, and removed any cables or cords that would restrict the movement of the server.

Before You Begin

Caution – The Sun Fire X4800 server weighs about 180 pounds (100 kg) when fully loaded with components. To reduce the risk of serious personal injury or equipment damage, use a mechanical lift to remove the sever from the rack. If a mechanical lift is not available, remove components to reduce weight and use two persons to lift it.

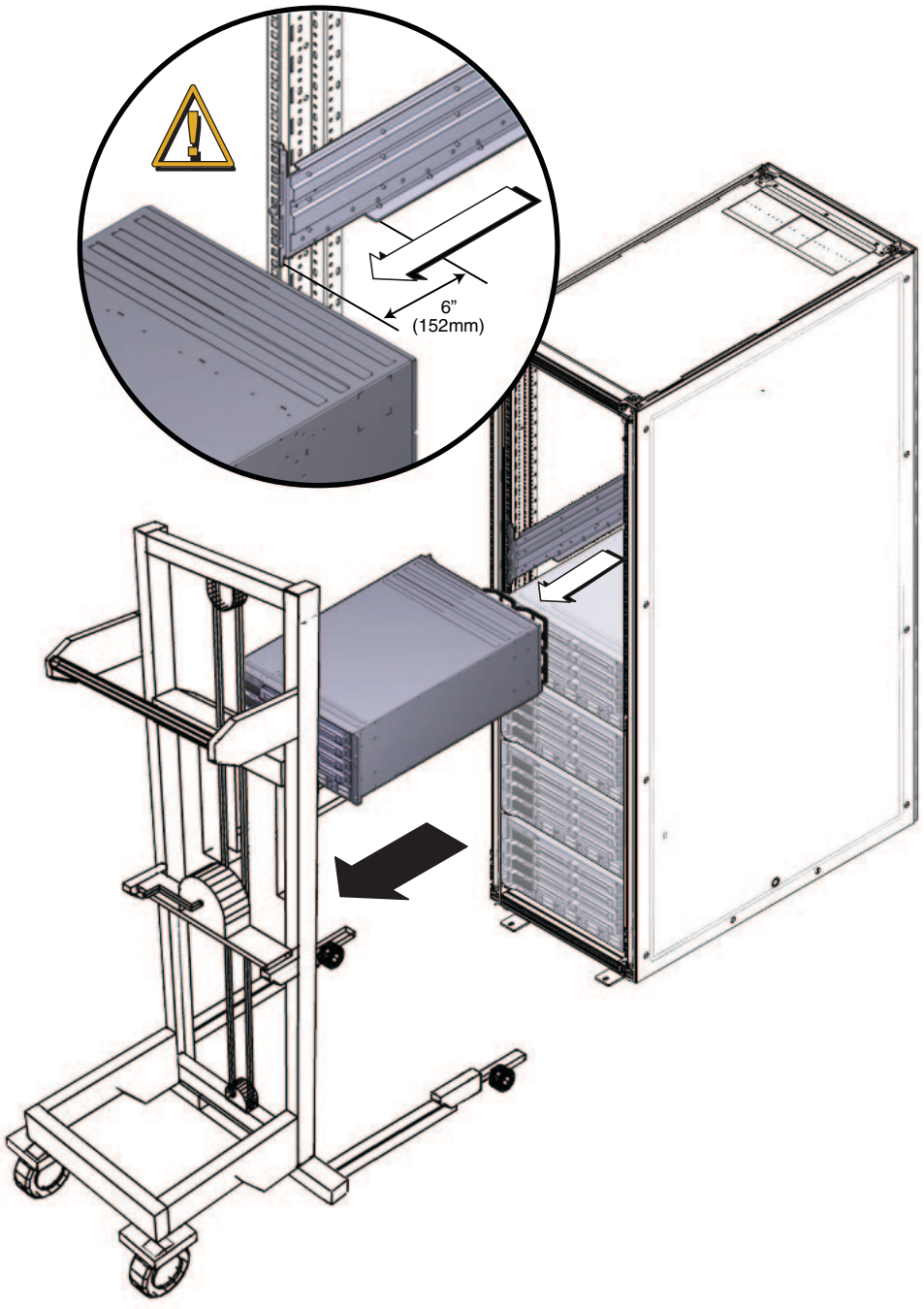
1. **Disconnect all cables from the rear of the system.**
2. **If a lift is not available, remove components to reduce the system's weight. See "How to Remove Components to Reduce Weight" on page 49.**

3 **Remove the four screws from the front bezel of the system.**



4 **Using two hands, slide the server *toward* yourself and remove it from the shelf rails.**

Caution – Drop hazard. The shelf rails release the weight of the server when it is within 6 inches of being clear of the rack. You must support the weight of the server *before* it is within 6 inches of being clear of the rack posts.


6”
(152mm)

See Also "How to Insert the Server Into the Rack" on page 72

How to Remove the Rack Mounting Hardware from the Rack

This task shows how to remove the rack mounting hardware from the universal rack and from the standard rack. This task is similar for each; however the universal rack is shown.

In this procedure, the differences between the universal rack and the standard rack are trivial, except where they are noted.

1. **Remove the four locking screws (1).**

   Perform this step for the universal rack mounting kit only. The standard rack mounting kit does not include these screws.

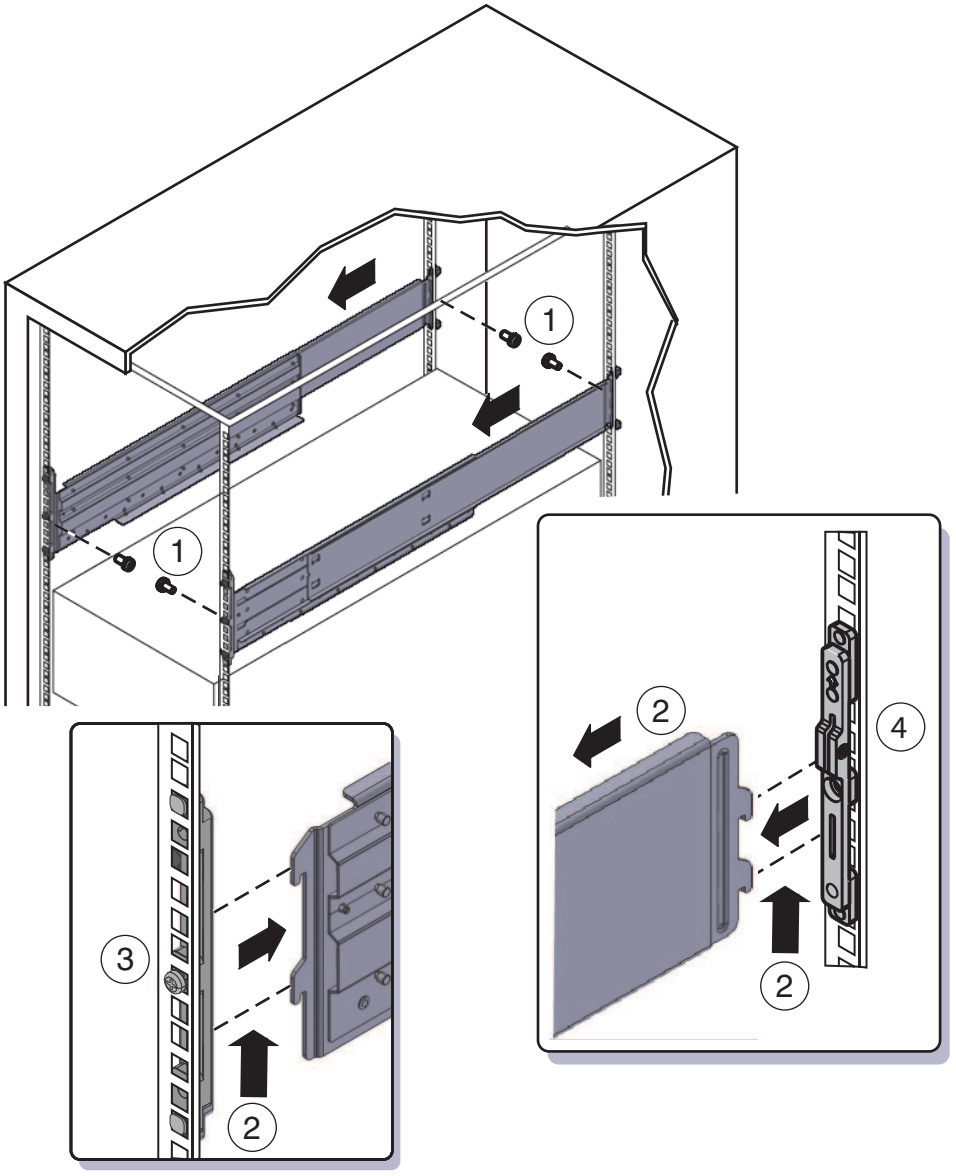
   See the following figure.

2. **Lift the two shelf rails (2) to disengage the hooks from the adapter brackets.**

   You can compress the shelf rails once you have disengaged the hooks from the adapter brackets.

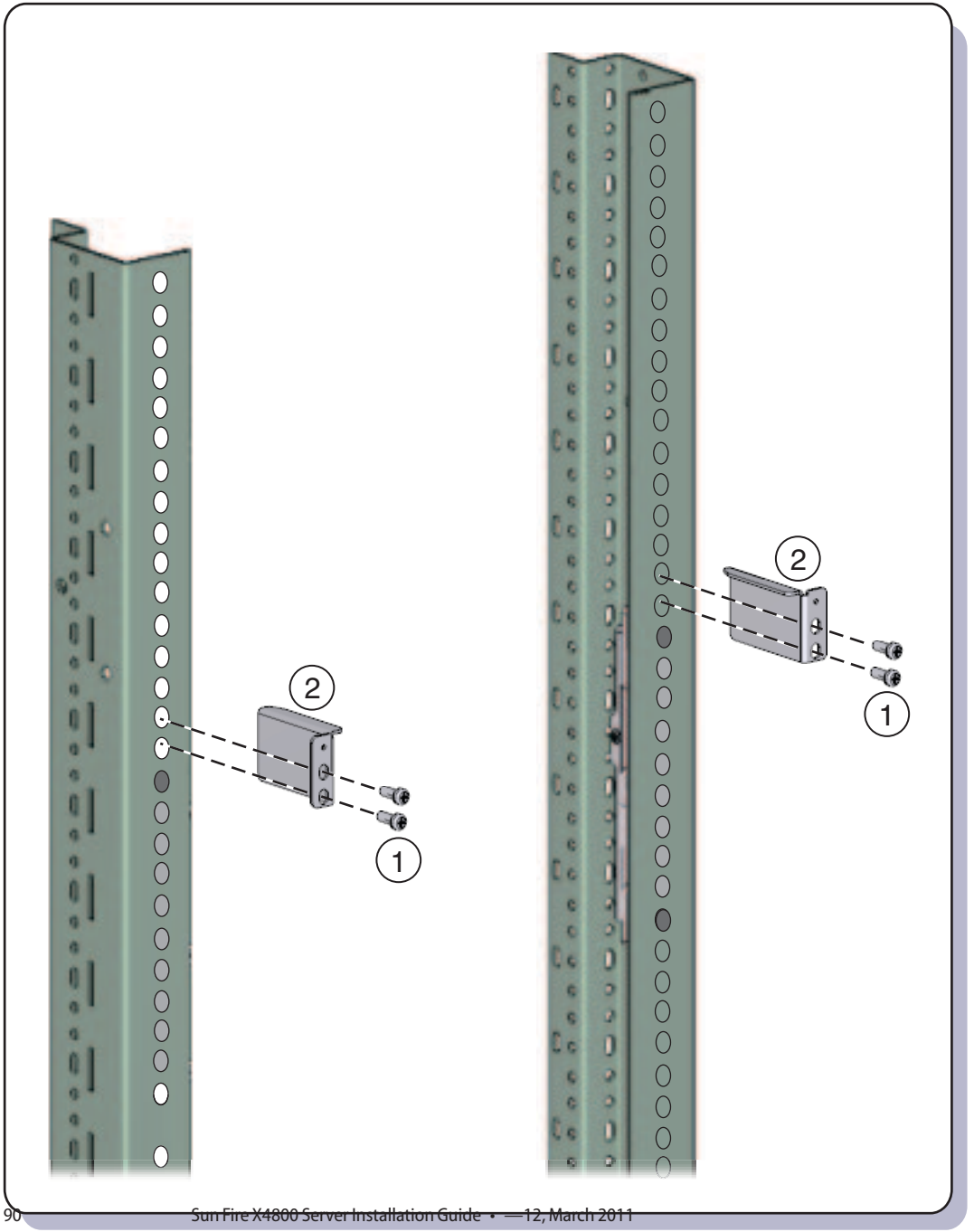
3 Remove the screws that hold the adapter brackets (3 and 4) in place and remove the brackets.

The universal rack mounting kit is shown. The standard rack mounting kit is similar, but slightly different.



4 **Remove the screws (1) that hold the rear braces (2) in place and remove the braces.**

Perform this step for the universal rack mounting kit only. The standard rack mounting kit does not include these braces.



Cabling and Power

Attaching Administration (SP) Cables

The Service Processor module (SP) provides connections used for system administration. These include serial and Ethernet cables for ILOM, and serial, video, and USB cables for the host console. Connectors are provided on the SP itself, and on the multiport cable, which connects to the SP.

See the following figures.

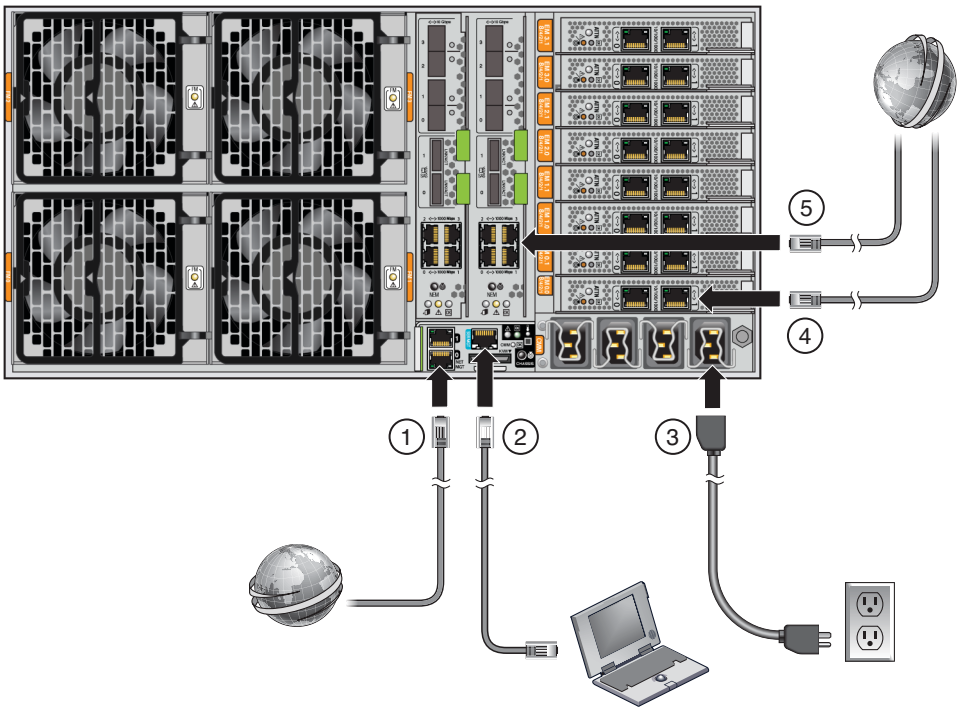


Figure Legend	
1	Connect an Ethernet cable between the NET MGT port and the network to which future connections to the SP will be made. NET MGT port 0 is the suggested default.
2	Connect a serial cable between the SER MGT port and a terminal device or a PC. You might need an adapter. The server comes with a DB9–to-RJ45 serial port adapter. The SER MGT port provides a direct serial connection to the SP. You can use this to discover the SP's IP address, and configure it if necessary. DHCP is the default, but you can configure it to use a static IP address as well. Once you know the SP's IP address, you can use a web browser or an SSH connection to communicate with the SP over the NET MGT port. Alternatively, you can continue to use the serial port to communicate with the SP command line interface (CLI). Refer to the Oracle Integrated Lights Out Manager (ILOM) 3.0 Documentation for details. Connect the multiport cable to the KVM connector. This cable provides connectors for the serial console, the video console, and USB.
3	Connect power cable to power source.
4	EM slots – see "Cabling NEMs and PCIe EMs" on page 95.
5	NEM slots – see "Cabling NEMs and PCIe EMs" on page 95.

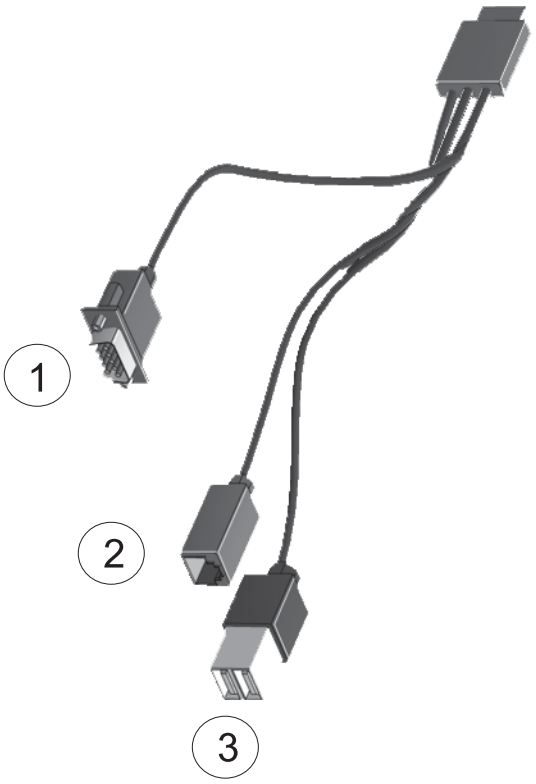


Figure Legend	
1	Video console
2	Serial console
3	USB (2 connectors)

FIGURE 1 SP Connectors

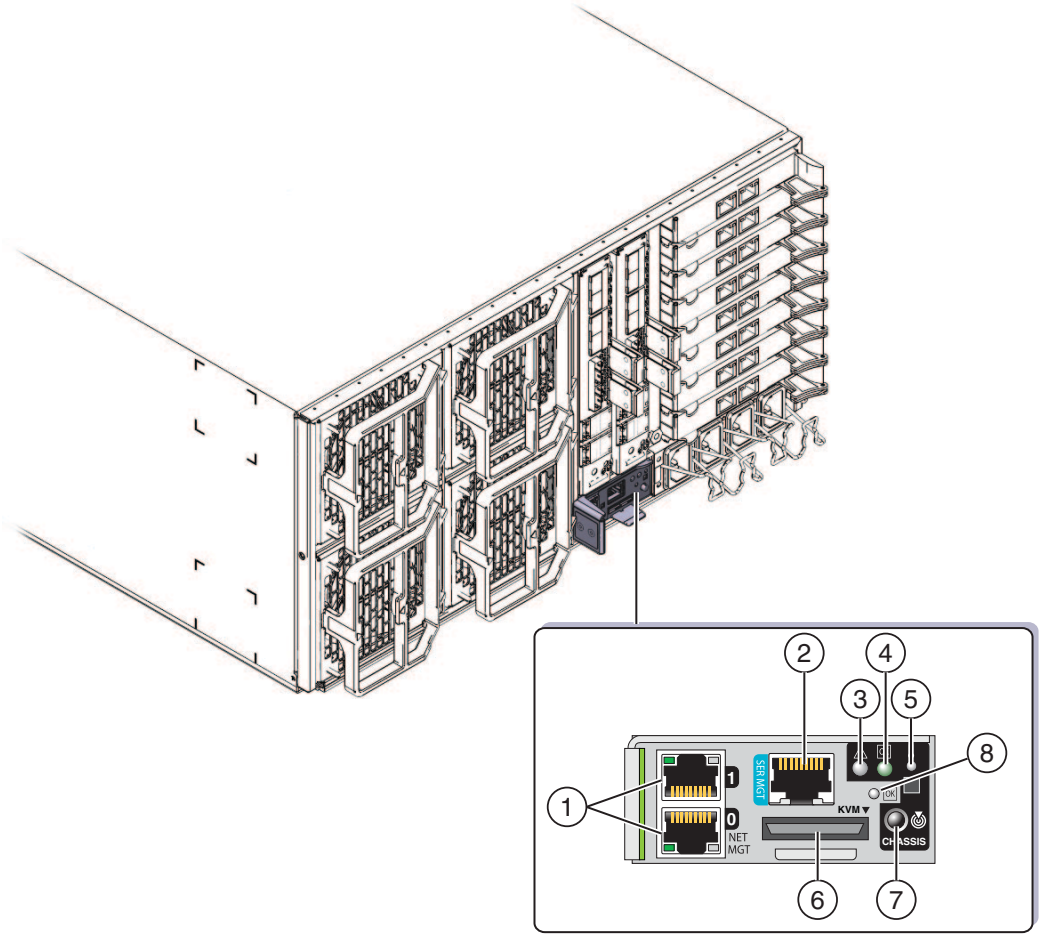


Figure Legend			
1	Net management ports 0 and 1	2	Serial management
3	Fault LED	4	Power/OK LED
5	Temperature LED	6	Multiport cable connector
7	Locate button/LED		

Cabling NEMs and PCIe EMs

Network Express modules (NEMs) and PCIe Express modules (PCIe EMs) provide connections that are used for non-administrative purposes.

- NEMs provide 1 GbE and 10 GbE connectors.

  Note – The SAS connectors on the NEMs are unsupported.

- PCIe EMs provide different connectors depending on what type is installed. See your PCIe EM documentation for details.

▼ Cabling the NEMs and PCIe EMs

1. **Connect network cables to the 1 GbE or 10 GbE connectors on the NEM.**

   - For 4P systems connect cables *only* to slots 0 and 3.

     4P systems contain CPU modules in slots 0 and 3, and filler panels in slots 1 and 2.

   - For 8P systems, connect cables to slots 0, 1, 2 and 3.

     8P systems contain CPU modules in all four slots.

2. **Connect Gigabit Ethernet, InfiniBand, or Fibre Channel cables to the connectors on each of the PCIe EMs.**

   See your PCIe EM documentation for details.

   - 4P systems support PCIe EMs in slots 0.0, 0.1, 3.0 and 3.1 (the top two and bottom two).
   - 8P systems support PCIe EMs in slots 0.0, 0.1, 1.0, 1.1, 2.0, 2.1, 3.0 and 3.1 (all slots).

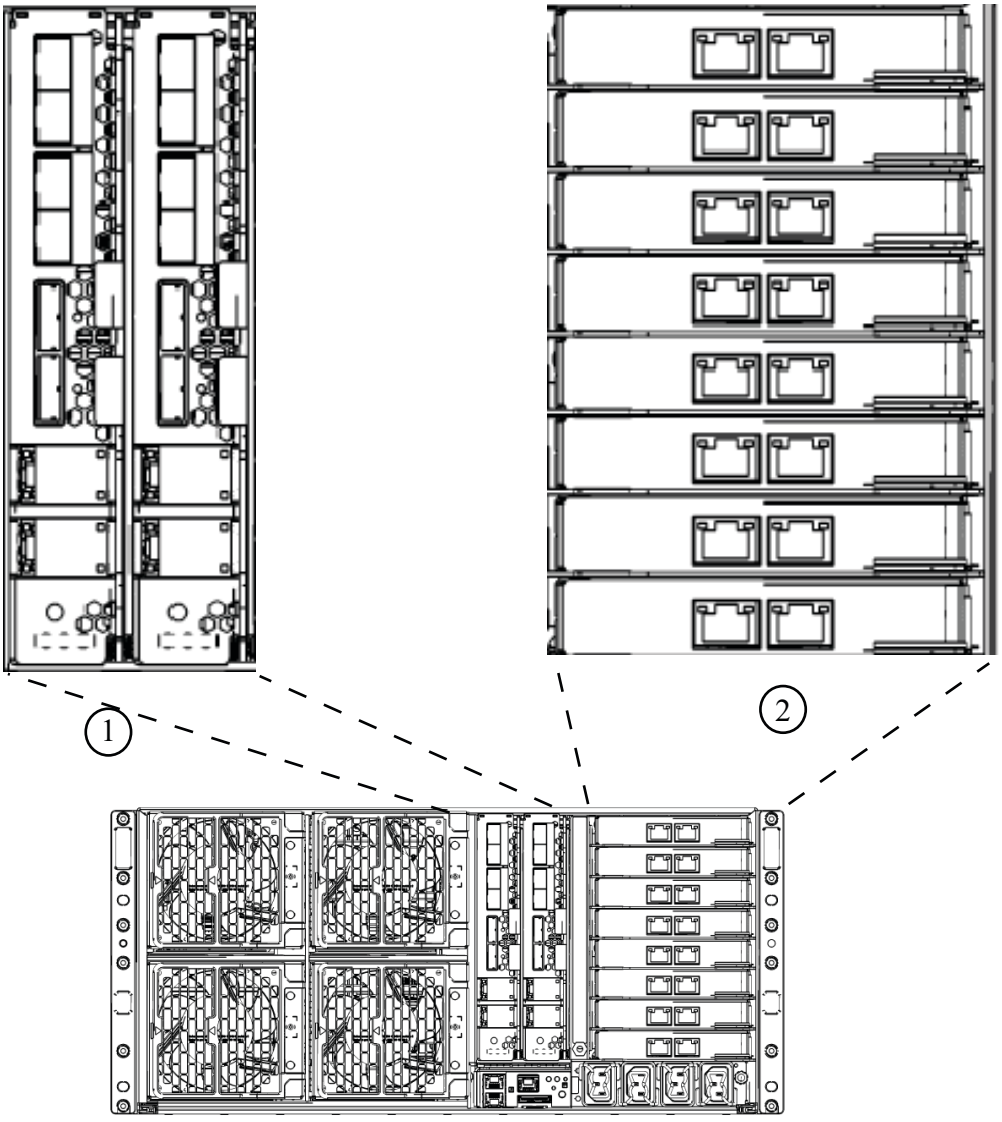


Figure Legend

1	NEMs (2 shown)
2	EM slots with PCIe EMs

Powering the Server On and Off

The server has two power modes: standby and full power.

- The server enters standby power mode automatically when it is connected to AC power. This provides power for the SP. See "How to Apply Standby Power for Initial Service Processor Configuration" on page 97.
- Full power mode is the normal operating mode. When the server enters full power mode, power is supplied to all system components, the server boots, and the operating system (OS) functions. See "How to Power On All Server Components" on page 98.
- When you power off the server, it transitions from full power mode to standby power mode. See "How to Power Off the Server" on page 98.

▼ How to Apply Standby Power for Initial Service Processor Configuration

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

Caution – Possible equipment damage. Do not operate the server without all fans, modules and components or fillers. Severe damage to server components can occur if operated without adequate cooling mechanisms.

- **Ensure that grounded AC power cords are plugged into the four AC power connectors on the back panel of the server and into grounded AC power outlets on *two separate branch circuits*.**

  When power is connected, the SP boots, and when it is done, the server is in standby power mode. The SP is ready to use, and the Power/OK LED on the front panel flashes.

  For the LED location, see "Front and Back Features and Components" on page 11.

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

Note – Do *not* power on the server until you are ready to install or configure the operating system. In standby power mode, power is supplied only to the service processor and power supply fans.

Next Steps For information about how to begin the initial SP configuration, see "Communicating With the ILOM and the System Console" on page 113.

How to Power On All Server Components

This procedure powers on *all* server components and is different from applying standby power, which powers on the service processor only.

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 blinks.

2. **Press and release the Power button on the server front panel.**

   When main power is applied to the full server, the Power/OK LED next to the Power button remains lit and no longer blinks.

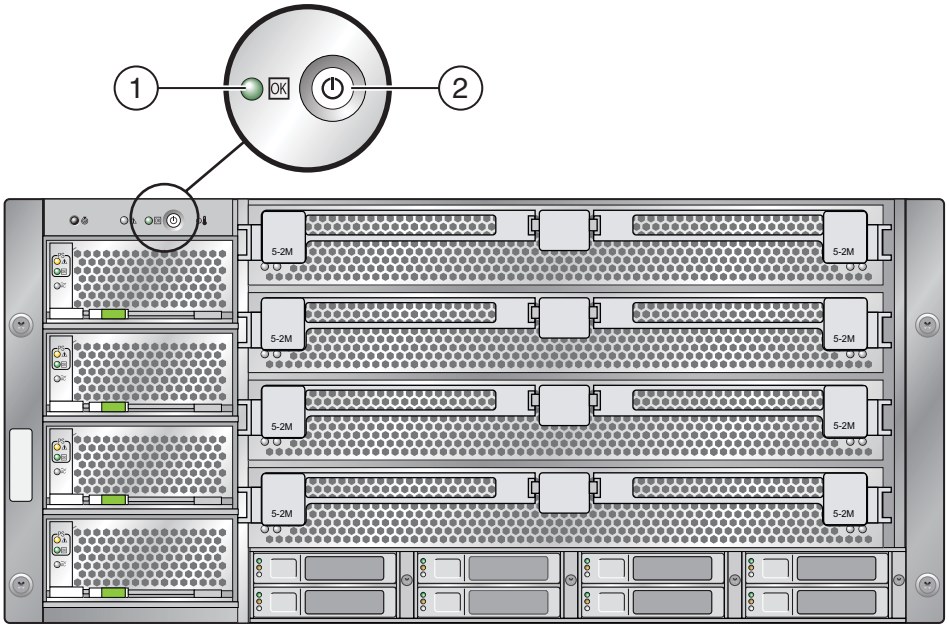


Figure Legend

1	Power/OK LED
2	Locate button/LED

See Also "Powering the Server On and Off" on page 97

How to Power Off the Server

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

- Graceful shutdown: 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.

Caution – For servers not running ACPI-enabled OSs, there is a possible data loss. This is the same as an emergency shutdown.

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

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

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

See Also

- "How to Apply Standby Power for Initial Service Processor Configuration" on page 97
- "How to Power On All Server Components" on page 98
- "Powering the Server On and Off" on page 97

Getting Service for Your Server

To get service for your server, find your server's serial number, and contact Oracle Service through the following web site:

`http://www.oracle.com/us/support/index.html`

To find your server's serial number, see "How to Find the Server's Serial Number" on page 101.

▼ How to Find the Server's Serial Number

You might need to have the serial number of your server to ask for service on your system. Keep this number handy for future use.

- **Find the serial number, using one of these methods:**
  - **To find the serial number, look at the top of the server, on the left side, toward the front.**
  - **Find the yellow Customer Information Sheet (CIS) attached to your server packaging. This sheet includes the serial number.**
  - **From ILOM, enter the `show /SYS` command or go to the System Information tab in the ILOM browser interface.**

See Also For an illustration of the front panel of the server, see "Front and Back Features and Components" on page 11.

Managing Your Server

You have several different options for managing your server, depending on your situation.

- Managing a *single* server
  - The Integrated Lights Out Manager (ILOM) is built-in software and hardware that you can use to monitor the status and configuration of your server. For more information, see "ILOM Software Overview" on page 104.
  - Oracle Hardware Assistant is an application that you can use for initial server configuration. Oracle Hardware Assistant helps you to update firmware (ILOM firmware, BIOS, and RAID controller software) and to automate installation of Linux and Windows operating systems. For more details, refer to your Oracle Hardware Assistant collection.
- Managing *many* servers

  Your server can be managed with a wide variety of system management tools, created both by Oracle and by third parties. For more information about the system management tools, see:

  `http://www.sun.com/systemmanagement/managementtools.jsp`

  Here is a *sampling* of some of these tools:

  - If your server is one of many Sun x86 and SPARC servers that you want to manage from a single interface, you can use the Oracle Enterprise Manager Op Center. For more details, see:

    `http://www.oracle.com/us/products/enterprise-manager/opscenter/index.html`
  - If you already have third-party system management tools, Sun servers can integrate with many third-party tools. For more details, see:

    `http://www.sun.com/systemmanagement/tools.jsp`

ILOM Software Overview

The Oracle Integrated Lights Out Manager (ILOM) provides advanced service processor hardware and software that you can use to manage and monitor your Sun servers. ILOM's dedicated hardware and software are preinstalled on a variety of Sun server platforms, including x86-based Sun Fire servers, Sun Blade modular chassis systems, and Sun Blade server modules, as well as on SPARC-based servers. ILOM is a vital management tool in the data center and can be used to integrate with other data center management tools already installed on your systems.

ILOM enables you to actively manage and monitor the server independently of the operating system state, providing you with a reliable Lights Out Management (LOM) system. With ILOM, you can proactively:

- Learn about hardware errors and faults as they occur
- Remotely control the power state of your server
- View the graphical and non-graphical consoles for the host
- View the current status of sensors and indicators on the system
- Determine the hardware configuration of your system
- Receive generated alerts about system events in advance using IPMI PETs, SNMP traps, or email alerts

The ILOM service processor (SP) runs its own embedded operating system and has a dedicated Ethernet port, which together provide out-of-band management capability. In addition, you can access ILOM from the server's host operating system. Using ILOM, you can remotely manage your server as if you were using a locally attached keyboard, monitor, and mouse.

ILOM automatically initializes itself as soon as power is applied to your server. It provides a full-featured, browser-based web interface and has an equivalent command-line interface (CLI). There is also an industry-standard SNMP interface and IPMI interface.

For more information about ILOM, see "Communicating With the ILOM and the System Console" on page 113.

Setting Up the Preinstalled Solaris Operating System

This section describes how to configure the optional preinstalled Oracle Solaris 10 operating system.

Before proceeding, you must configure the ILOM as described in "Communicating With the ILOM and the System Console" on page 113.

This section includes:

OS Information Links

Use the appropriate reference, depending on which OS you want to use. For additional OS considerations, refer to the *Sun Fire X4800 Server Product Notes*.

OS	See	Notes
Preinstalled Oracle Solaris 10 operating system	"Configuring the Preinstalled Oracle Solaris OS" on page 106	
Oracle Solaris 10 OS	*Sun Fire X4800 Server Installation Guide for Oracle Solaris Operating System*	Also contains procedures for installing the Oracle Solaris operating system from media
Supported Linux OS and the required drivers	For *assisted* OS installation, use the Sun Installation Assistant. Refer to the *Sun Installation Assistant 2.3 through 2.4 User's Guide for x64 Servers*	Recommended method

OS	See	Notes
	For *unassisted* OS installation, refer to the *Sun Fire X4800 Server Installation Guide for Linux Operating Systems*	Alternate method
A supported Windows OS and the required drivers,	For *assisted* OS installation, use the Sun Installation Assistant. Refer to the *Sun Installation Assistant 2.3 through 2.4 User's Guide for x64 Servers*	Recommended method
	For *unassisted* OS installation, refer to the *Sun Fire X4800 Server Installation Guide for Windows Operating Systems*	Alternate method
Oracle VM	Refer to the *Sun Fire X4800 Server Installation Guide for Oracle VM*	

Configuring the Preinstalled Oracle Solaris OS

Note – If you are connected to a monitor, when you boot the system, after the POST messages, a prompt asks if you wish to view graphic output. Select graphic output to continue viewing boot messages on the monitor.

If you allow it to time out, or make another selection, it does not display any more boot information on the monitor. However, the configuration process continues, and it continues to display messages on the serial output.

Use the Installation Worksheet to gather the information that you need for configuring the OS.

Installation Worksheet

Use the worksheet to gather the information that you need to configure the preinstalled Oracle Solaris 10 OS. You need to collect only the information that applies to your application of the system.

TABLE 1 Installation Worksheet

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

TABLE 1 Installation Worksheet *(Continued)*

Information for Installation		Description or Example	Your Answers: Asterisk (*) identifies defaults.
Name service: If the system uses a name service, provide the following information.	Name service	Which name service should this system use?	■ NIS+ ■ NIS ■ DNS ■ LDAP ■ None*
	Domain name	Provide the name of the domain in which the system resides.	
	NIS+ and NIS	Do you want to specify a name server or let the installation program find one?	■ Specify One ■ Find One*
	DNS	Provide IP addresses for the DNS server. You must enter at least one IP address, but you can enter up to three addresses. You can also enter a list of domains to search when a DNS query is made. Search Domain: Search Domain: Search Domain:	
	LDAP	Provide the following information about your LDAP profile: Profile name: Profile server: If you specify a proxy credential level in your LDAP profile, gather the following: Proxy-Bind Distinguished Name: Proxy-Bind Password:	

TABLE 1 Installation Worksheet *(Continued)*

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

▼ How to Connect to the Server Using the Server's IP Address

Before You Begin

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 by pressing the Power button on the front panel.**

   b. **Start the BIOS Setup utility by pressing the F2 key while the system is performing the power-on self-test (POST).**

   c. **When the BIOS Main menu screen is displayed, select Advanced.**

   d. **When the Advanced screen is displayed, select IPMI 2.0 Configuration.**

      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
```

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

Only accounts with Administrator privileges are enabled to configure the SP serial port. See the Integrated Lights-Out Manager (ILOM) 3.0 documentation.

5. **Follow the onscreen prompts.**

6 **Use the information gathered in the "Installation Worksheet" on page 106 to help you enter the system and network information as you are prompted.**

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

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

See Also You can access the Oracle Solaris 10 OS user documentation at:

`http://www.oracle.com/technetwork/documentation/solaris-10-192992.html`

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

Caution – This procedure is intended for advanced users of Oracle Solaris OS 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.

Before You Begin This procedure assumes you have connected to the server using the SP's IP address. See "How to Connect to the Server Using the Server's IP Address" on page 110.

- **Run the `eeprom` command at the prompt using the following arguments:**

```
/eeprom console=text/
```

▼ How to Connect to the Server Using a Serial Capture Program

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

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

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 Oracle 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. **Connect to the console by typing the following:**

```
start /SP/console
```

The SP is now configured to connect to the console.

6. **Power on main power to the server by using a ball-point pen or other pointed object to press the recessed Power button on the front panel.**

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

7. **Follow the onscreen prompts.**

8. **Use the information you gathered in Table 1 to help you enter the system and network information as you are prompted.**

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

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

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

http://www.oracle.com/technetwork/documentation/solaris-10-192992.html

Oracle Solaris OS Information Products and 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 Oracle Solaris 10 Training and Certification options, and for Oracle Solaris 10 OS user documentation, visit:

http://www.oracle.com/technetwork/documentation/solaris-10-192992.html

Communicating With the ILOM and the System Console

These topics provide instructions for connecting to the system service processor (SP) Integrated Lights Out Manager (ILOM) and the system console.

Server Connections

The ILOM and the system console access is through the SP on the system rear panel. See "Attaching Administration (SP) Cables" on page 91 for physical connection details.

- SP ILOM connections are through the SER MGT and NET MGT ports on the SP.
- The serial console connection and the video connector are connected to the multiport cable, which is itself connected to the SP.

About ILOM SP IP Addresses and the ILOM Interfaces

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

- Connection to your network must be through one of the NET MGT ports.
- DHCP services must be present on your network infrastructure.

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

Determining the SP IP Address

You need to determine the service processor (SP) IP (network) address to use the SP Integrated Lights Out Manager (ILOM) to manage the server. You can determine the IP address through either one of these ways:

- "How to Get the SP IP Address by Using the BIOS Setup Utility" on page 114
- "How to Get the SP IP Address by Using a Serial Connection and the CLI" on page 114

▼ How to Get the SP IP Address by Using the BIOS Setup Utility

Before You Begin

- Complete the hardware setup as described in "Installing the Server In the Rack Using the Standard Rack Mounting Kit" on page 21 or in "Installing the Server In the Rack Using the Universal Rack Mounting Kit" on page 45..
- Apply standby power for your server by plugging an AC cord into the system power supply. See "How to Apply Standby Power for Initial Service Processor Configuration" on page 97 for the location of the power cord connectors.

1. **Configure the server so that you can see the console output.**
2. **Reboot the server.**
3. **Press the F2 key when prompted for the BIOS Setup Utility.**
4. **In the BIOS Setup Utility, choose Advanced → IPMI 2.0 Configuration → Set LAN Configuration → IP address.**

   The IP address for the SP is displayed.

▼ How to Get the SP IP Address by Using a Serial Connection and the CLI

Before You Begin

- Complete the hardware setup as described in the hardware setup documentation.
- Apply standby power for your server. See "How to Apply Standby Power for Initial Service Processor Configuration" on page 97 for the location of the power cord connectors.

1. **Connect to the ILOM using the serial management port.**

   This is described in "How to Connect to the ILOM CLI Using the Serial Management Port" on page 115.
2. **Log in to the ILOM.**

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

b. Type the default password: `changeme`.

The SP displays its default command prompt:

```
->
```

3 To display the SP IP address, type:

```
show /SP/network
   Targets:
   test

   Properties:
   commitpending = (Cannot show property)
   dhcp_server_ip = 10.80.193.10
   ipaddress = 10.80.193.163
   ipdiscovery = DHCP
   ipgateway = 10.80.195.254
   ipnetmask = 255.255.252.0
   macaddress = 00:21:28:44:F4:EE
   pendingipaddress = 10.80.193.163
   pendingipdiscovery = DHCP
   pendingipgateway = 10.80.195.254
   pendingipnetmask = 255.255.252.0
   state = enabled
   switchconf = (none)

   Commands:
   cd
   set
   show
```

The ILOM displays network information, including the IP address.

Connecting to the ILOM

The ILOM has both a command line interface (CLI) and a web interface.

This section describes three different methods of connecting to the ILOM:

- "How to Connect to the ILOM CLI Using the Serial Management Port" on page 115
- "How to Connect to the ILOM CLI Using SSH" on page 116
- "How to Connect to the ILOM Web Interface" on page 116

▼ How to Connect to the ILOM CLI Using the Serial Management Port

Before You Begin

- Perform the hardware setup as described in the hardware setup documentation.
- Apply standby power to the server by connecting AC power. See "How to Apply Standby Power for Initial Service Processor Configuration" on page 97.
- Verify that your terminal, laptop, or terminal server is operational.

1 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)

2. **Connect a serial cable from the SP SERIAL MGT port to a terminal device.**

   See "Attaching Administration (SP) Cables" on page 91 for the location of the SERIAL MGT port.

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

   The SP displays a login prompt. For example:

   `SUNSP`*`0003BA84D777`* `login:`

4. **Log in to the ILOM.**

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

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

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

      ```
      ->
      ```

      You can now run 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 *Sun Integrated Lights Out Manager (ILOM) 3.0 CLI Procedures Guide.*

▼ How to Connect to the ILOM CLI Using SSH

Before You Begin

- Perform the hardware setup as described in the hardware setup documentation.
- Apply standby power to the server by connecting AC power to the system power supply. See "How to Apply Standby Power for Initial Service Processor Configuration" on page 97.

1. **Using a client system, access a command line and establish a Secure Shell (SSH) connection to the SP's IP address with the following command:**

   `ssh -l root` *sp_ip_address*

2. **Log in to the ILOM.**

   The default user name is `root` and the default password is `changeme`.

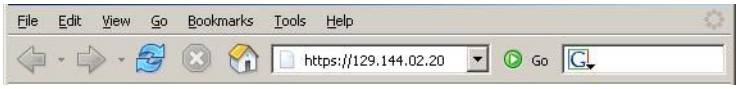
▼ How to Connect to the ILOM Web Interface

Before You Begin

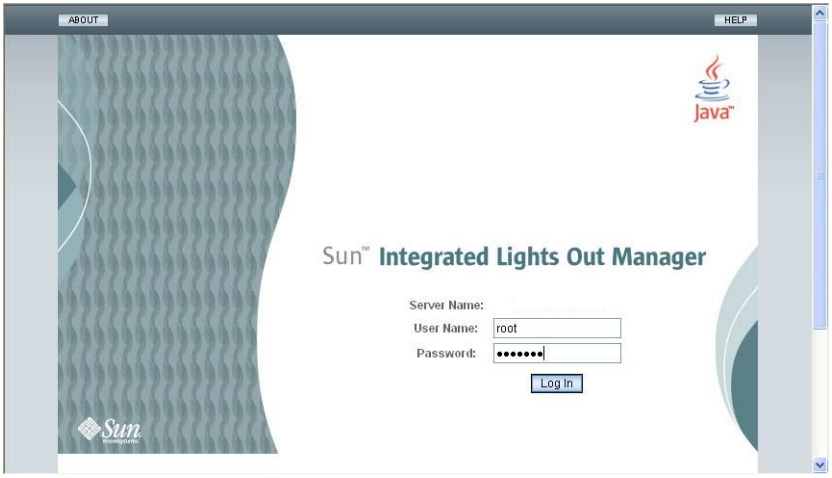
- Perform the hardware setup as described in the hardware setup documentation.

- Apply standby power to the server by connecting AC power to the system power supply. See "How to Apply Standby Power for Initial Service Processor Configuration" on page 97.

1 **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 is 129.144.02.20, you would enter it as shown:**



2 **Log in to the web interface using the default user name, `root`, and the default password, `changeme`.**



Connecting to the System Console

There are three different ways to connect to the system console.

- Physical console. See "How to Connect to the Server Locally (Physical Console)" on page 117.
- Remote console through the ILOM web interface. See "How to Connect Remotely Using the ILOM Web Interface" on page 118.
- Serial console through the ILOM command-line interface. See "How to Connect to the Host's Serial Console Using the ILOM Command-Line Interface" on page 118.

▼ How to Connect to the Server Locally (Physical Console)

If you plan to interact with the system console directly, make the connections described in this procedure. See "Attaching Administration (SP) Cables" on page 91 for the locations of the system connectors.

Before You Begin Perform the hardware setup as described in the hardware setup documentation.

1. **Connect a multiport cable to the SP, as shown in "Attaching Administration (SP) Cables" on page 91.**
2. **Connect a mouse and a keyboard to the USB connectors on the multiport cable.**
3. **Connect a VGA monitor to the video connector on the multiport cable.**

▼ How to Connect to the Host's Serial Console Using the ILOM Command-Line Interface

1. **Connect to the ILOM CLI using one of the following methods:**
   - Use the serial management port as described in "How to Connect to the ILOM CLI Using the Serial Management Port" on page 115.
   - Use a client system to establish an SSH session. See "How to Connect to the ILOM CLI Using SSH" on page 116.
2. **Log in to the service processor using an account with administrator privileges. For example:**

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

3. **To access the serial console, type the command:**

```
start /SP/console
```

   The serial console output appears on the screen.

4. **To return to the SP ILOM, type:**

```
exc (
```

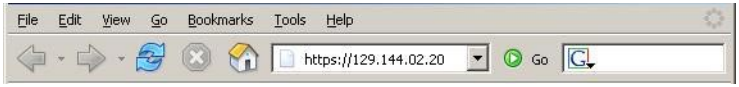
▼ How to Connect Remotely Using the ILOM Web Interface

Before You Begin The requirements for the JavaRConsole (remote console) system include:

- An operating system such as Oracle Solaris, Linux, or Windows is installed.
- The system must be connected to a network that has access to the server's Ethernet management port.
- Java Runtime Environment (JRE) 1.5 or later is installed.
- If the remote console system is running Oracle Solaris OS, volume management must be disabled for the remote console to access the physical floppy and CD/DVD-ROM drives.
- If the remote console system is running Windows, Internet Explorer Enhanced Security must be disabled.

- The remote console system and ILOM service processor are set up according to the instructions in the *Sun Integrated Lights Out Manager (ILOM) Web Interface Procedures Guide*.

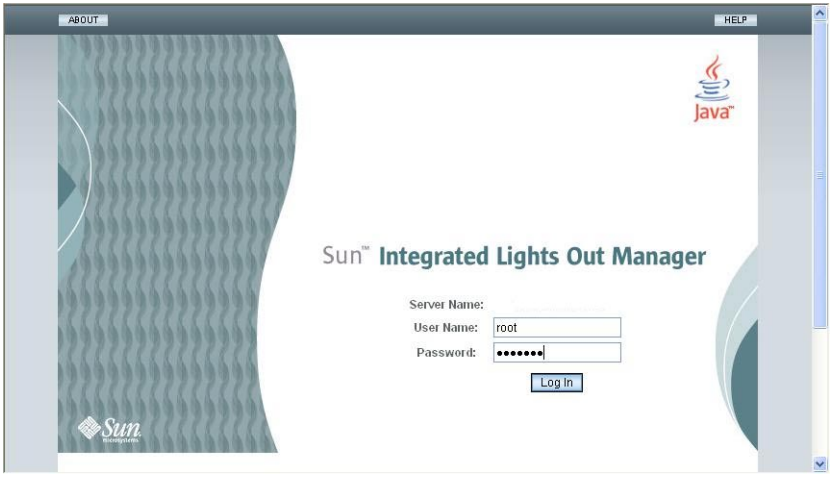
1 Start the remote console application by typing the IP address of the ILOM service processor into a browser on the remote console system.



A Security Alert dialog box might be displayed.

2 If a Security Alert dialog box appeared, click Yes.

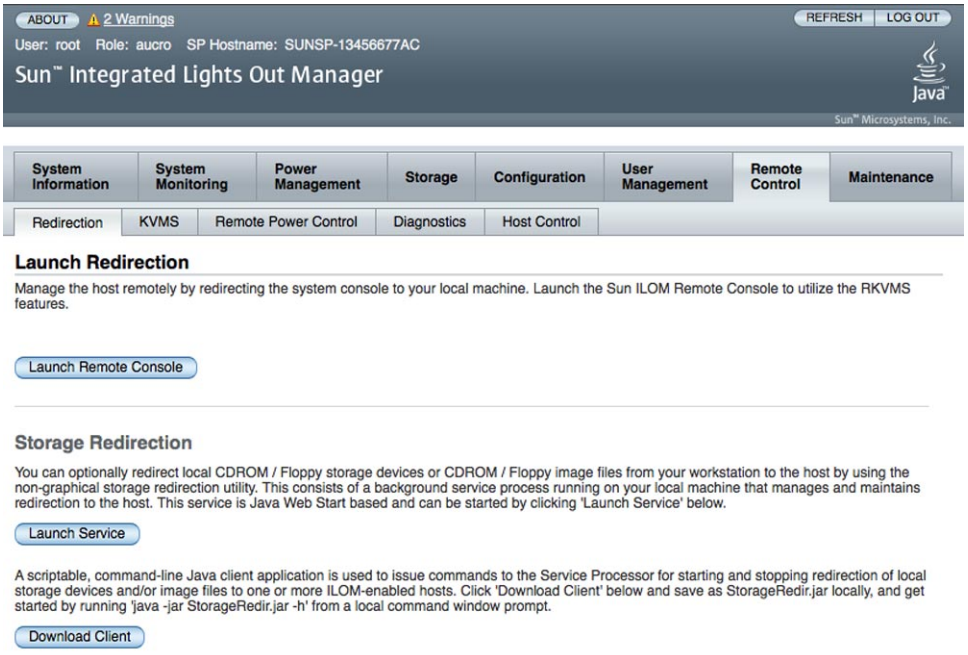
The ILOM login screen appears.



3 **Enter the user name and password and click Log In.**

The default user name is **root**, and default password is **changeme**.

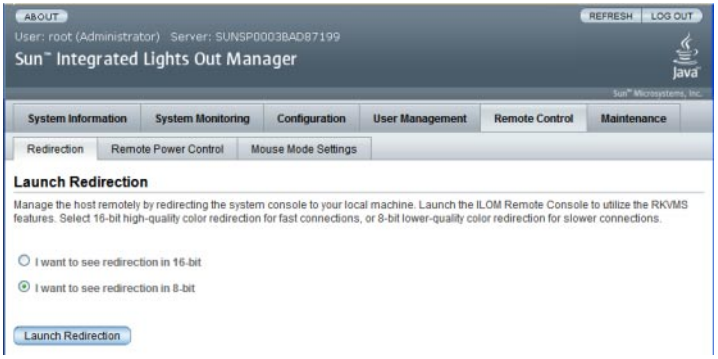
The ILOM main screen appears.



4 **Click the Remote Control tab in the ILOM Web interface.**

The Launch Redirection screen appears.

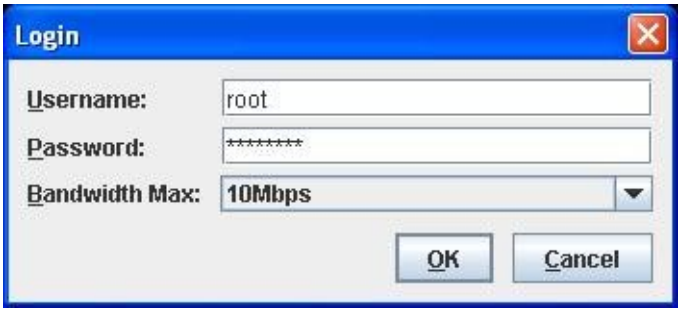
Note – Make sure that the mouse mode is set to Absolute mode in the Mouse Mode Settings tab.



5 Click 8-bit color or 16-bit color, and then click Launch Redirection.

Note – When you are using a Windows system for remote console redirection, an additional warning might appear after clicking Launch Redirection. If the Hostname Mismatch dialog box is displayed, click the Yes button.

The Remote Control dialog box appears.



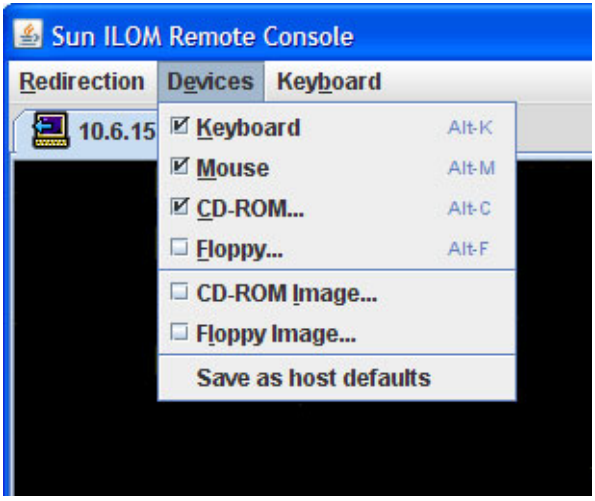
6 **In the Remote Control Login dialog box, enter your user name and password and click OK.**

Note – You must have administrator privileges.

The default user name is **`root`** and password is **`changeme`**.

The JavaRConsole screen appears.

7 **From the Devices menu, select the appropriate item based on the delivery method you have chosen.**



- **Remote Physical Floppy Disk** – Select Floppy to redirect the server to the physical floppy drive attached to the remote console.
- **Remote Floppy Image** – Select Floppy Image to redirect the server to the floppy image file located on the remote console.

- **Remote Physical CD/DVD** – Select CD-ROM to redirect the server to the CD/DVD in the CD/DVD drive attached to the remote console.
- **Remote CD/DVD Image** – Select CD-ROM Image to redirect the server to the `.iso` image file located on the remote console .

Note – Using either of the CD/DVD options to install software on your server significantly increases the time necessary to perform the installation because the content is accessed over the network. The installation duration depends on the network connectivity and traffic.

I/O and Interrupt Resource Allocation

The BIOS allocates I/O and interrupt resources when the system boots. If your system includes many I/O devices, it might not have enough of these resources for all of them. In this case, you can reconfigure the BIOS to allocate resources to specific devices.

The resources include:

- I/O space and option ROM – See "Option ROM and I/O Space Allocation" on page 125.
- MSI interrupt assignments – See "Allocating MSI Interrupt Space (Oracle Solaris OS Only)" on page 132.

Option ROM and I/O Space Allocation

Bootable devices such as onboard I/O or PCIe express modules require option ROM and I/O space to boot. However the total option ROM and I/O space for the system is limited by the PC architecture and is allocated automatically when the system is booted. If your system includes many potentially bootable devices, you must decide which ones you wish to boot from, and configure the BIOS to allocate these resources to them.

Option ROM is also required to run some configuration utilities, such as the LSI RAID configuration utility. This utility, which resides in the REM, has option ROM and I/O space allocated to it by default.

Note – These limitations apply to eight–socket systems only. Four–socket systems do not normally encounter option ROM or I/O space limitations.

In systems with the Oracle Solaris OS, an additional limitation might limit your ability to hotplug devices in EM slots 4 and 5.

Option ROM Allocation

The PC architecture provides a total of 128 Kbytes of option ROM space.

I/O Space Allocation

The PC architecture provides a total of 64 Kbytes of I/O space. By default, the BIOS allocates I/O space as shown in the Default I/O Allocation table.

- The total available space appears in the Maximum Allocation column.
- Some of the space is required for onboard devices. The remaining space appears in the Space Available column.
- PCIe express modules and fabric expansion modules require either 4 Kbytes or 8 Kbytes, depending on whether they have a PCIe bridge or not.

TABLE 2 Default I/O Allocation

CPU Module Slot	Maxmum Allocation	Space Available for EMs and FEMs	EM Slots
3	16 k	12k	3.1, 3.0
2	8k	4k	2.1, 2.0
1	16k	12k	1.1, 1.0
0 (master)	24k	8k	0.1, 0.0

How to Determine Whether You Need to Allocate Option ROM and I/O Space

If you add a PCIe express module or a fabric expansion module to an eight-socket system (with CPU modules in all four slots), when the system boots, the BIOS might not be able to allocate option ROM or I/O space to all the devices that require it.

If this happens, when you boot, POST generates error messages. These identify any devices that have not had option ROM or I/O space allocated.

1. **Power on the system to start the BIOS.**
2. **During POST, look for one or more messages, such as these.**

   - For option ROM, the messages look like this:

     ```
     Warning: Out of option ROM space for device EM0.1 [04:00:01]
     ```

   - For I/O space, the messages look like this:

     ```
     Warning: Not enough IO address space allocated for device EM0.0 [0A:00:01]
     Warning: Not enough IO address space allocated for device EM0.0 [0A:00:00]
     Warning: Not enough IO address space allocated for device EM0.1 [05:00:01]
     Warning: Not enough IO address space allocated for device EM0.1 [05:00:00]
     Warning: Not enough IO address space allocated for device EM0.1 [04:00:01]
     Warning: Not enough IO address space allocated for device EM0.1 [04:00:00]
     ```

   Each slot can generate several messages. This is normal.

It is possible that the device you added has been assigned option ROM and/or I/O space at the expense of some other device. If this is the case, the device you added does not appear in the list but the original device does. This depends on the position of each device in the probe order.

3 Decide whether you need to configure option ROM or I/O space allocation, for one of the following reasons.

- Error messages inform you that a device that you wish boot from has not been allocated option ROM and/or I/O space.
- You wish to be able to run a configuration utility such as the LSI RAID utility on a device that has not been allocated option ROM.
- (Optional) You wish to make the error messages go away.

Note – There is no need to configure option ROM or I/O space allocation simply because of these messages, unless you require the functionality provided by the option ROM and the I/O space.

See Also "How to Configure I/O Space Allocation" on page 127

▼ How to Configure I/O Space Allocation

Before You Begin Identify the devices on which you need to configure option ROM and/or I/O space allocation. See "How to Determine Whether You Need to Allocate Option ROM and I/O Space" on page 126.

1 Start the BIOS.

a. Power on the system.

b. To enter the BIOS setup menu, when the POST appears, press:

- F2 if you're connected through a Java console.
- Control E if you're connected through a serial console.

The BIOS setup menu appears.

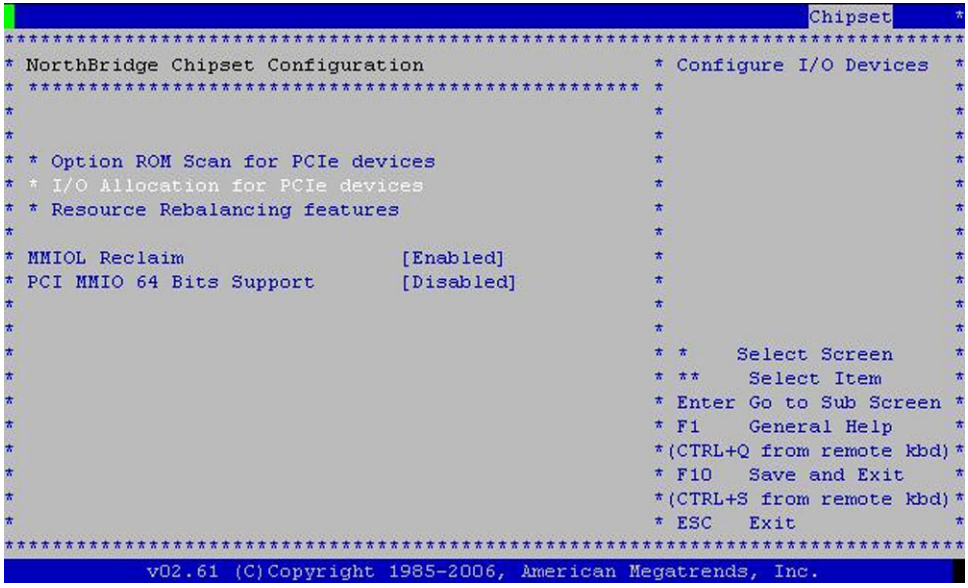
- Use the arrow and tab keys to navigate through the BIOS setup utility.
- Use the Enter key to make selections.
- When you are done, press F10, or navigate to the Exit menu screen to exit and save your changes.

2 Select Chipset.

The Advanced Chipset Settings screen appears.

3 Select North Bridge Configuration.

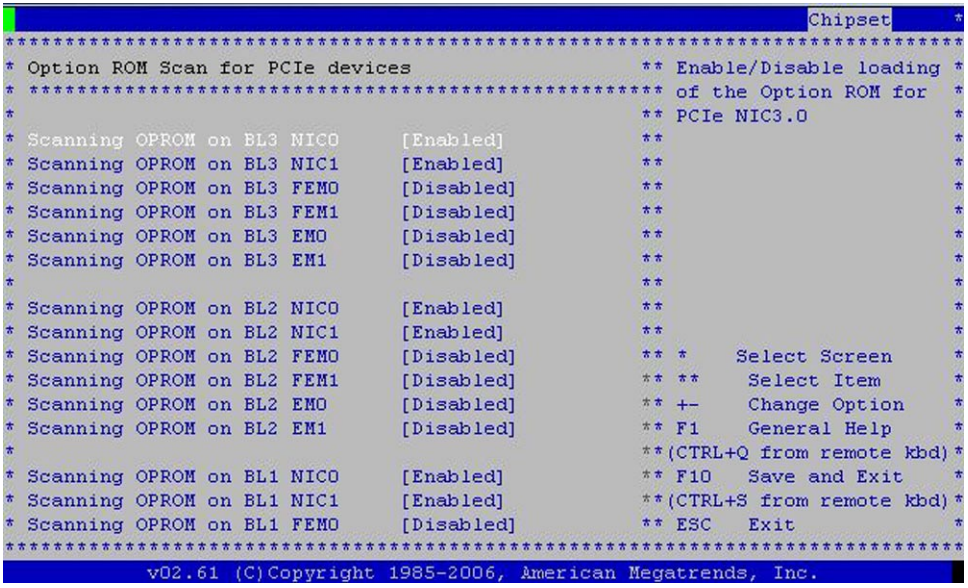
The NorthBridge Chipset Configuration screen appears.



4 To configure option ROM:

a. Select Option ROM Scan for PCIe Devices.

The Option ROM Scan appears.



b. Use this display to configure option ROM allocation as follows:

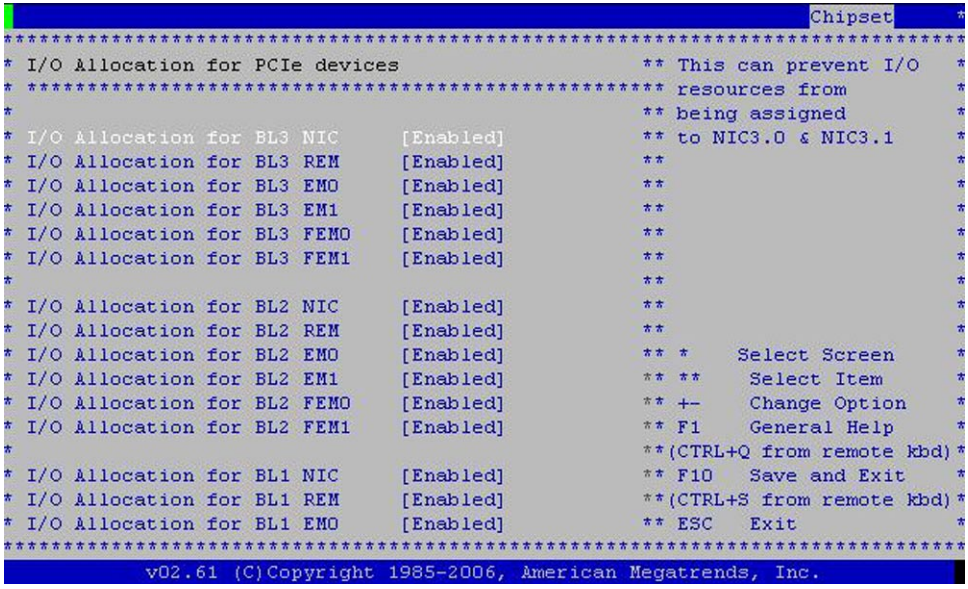
- Use the arrow keys to scroll down the list.
- Use the Enter key to toggle your selections.

c. Select ESC to return to the North Bridge screen (to configure I/O space allocation), or select F10 to save your changes.

5 To configure I/O space allocation:

a. Select I/O Allocation for PCIe Devices.

BIOS displays the I/O Allocation for all PCIe devices.



b. Use this display to enable or disable devices as required.

Enable any device you wish to boot from and disable any device you do not wish to boot from.

- Use the arrow keys to scroll down the list.
- Use the Enter key to toggle your selections.

Note – This display includes all possible devices, including those that are not present.

---

c. When you have made your selections, select F10 to save your changes and exit.

The BIOS reallocates I/O space the next time the server boots.

Allocating MSI Interrupt Space (Oracle Solaris OS Only)

The Oracle Solaris OS is designed to allocate 32 interrupt vectors at priority level six. Because each network device is assigned two interrupts, if the system contains more than 16 network devices the available interrupts at priority level 6 will be exhausted, leaving some devices non-functional.

Note – The Oracle Solaris OS is currently limited to 31 interrupts at priority level six, meaning that it can support only 15 network devices on level six. This will be fixed in a future patch or release.

▼ How to Identify and Fix Interrupt Resource Shortages

When you encounter a shortage of I/O interrupts on level 6, Oracle recommends that you assign one of the drivers to interrupt level 5 or 4.

- Interrupt level 5 is the first priority
- Interrupt level 4 is next

The following table shows the I/O devices, ports, and interrupts in an eight–socket system.

Device	Driver	Number of Ports Maximum per driver = 16	Number of Interrupts Maximum on level 6 = 32
Onboard NIC (required)	igb	2 per CPU module/8 total	4 per CPU module/16 total
Dual-port 10 Gb Ethernet EM	ixgbe	2 per EM/16 total	4 per EM/32 total
FEM	ixgbe	2 per FEM/8 total	4 per FEM/16 total
Quad-port 1 Gb Ethernet EM	e1000g	4 per EM/32 total	8 per EM/64 total
REM (1 per server)	mr_sas	1	1

1 Boot your server.

Boot messages appear.

The examples in this procedure show a system where ixgbe and igb are both on interrupt level 6, which is the default. In this system, ixgbe requires 24 interrupts and igb requires 16, for a total of 40. However, level 6 provides only 31.

2 Look for the following error messages, which appear on the screen, and in the file `/var/adm/messages`.

On the console:

```
Feb 25 15:45:04 mpk12-3214-189-156 pcplusmp: WARNING: No interrupt vector:
pciex8086,10f7 instance 1
Feb 25 15:45:04 mpk12-3214-189-156 pcplusmp: WARNING: Sharing vectors:
pciex8086,10f7 instance 1 and SCI
Feb 25 15:45:06 mpk12-3214-189-156 pcplusmp: WARNING: No interrupt vector:
pciex8086,10f7 instance 5
Feb 25 15:45:06 mpk12-3214-189-156 pcplusmp: WARNING: Sharing vectors:
pciex8086,10f7 instance 1 and pciex8086,10f7 instance 5
```

In `/var/adm/messages`:

```
Feb 25 15:44:53 mpk12-3214-189-156 ixgbe: [ID 611667 kern.info]
NOTICE: ixgbe7: Insufficient interrupt handles available: 1
Feb 25 15:44:53 mpk12-3214-189-156 ixgbe: [ID 611667 kern.info]
NOTICE: ixgbe7: Allocate MSI-X failed, trying MSI interrupts...
Feb 25 15:44:53 mpk12-3214-189-156 ixgbe: [ID 611667 kern.info]
NOTICE: ixgbe7: MSI-X not used, force rx and tx queue number to 1
```

Look at the messages in `/var/adm/messages` to identify the driver that requires more interrupts than are available. In this example, it is ixgbe.

3 Once you have determined that some devices do not have interrupts, use the commands `devfsadm -C` and `mdb -k` to show which interrupts are assigned to a particular level.

The following output shows a system that requires 24 interrupts for ixgbe, and 16 for igb, both of which are on level 6. To satisfy the needs of both requires 40 interrupts;, however only 31 are available. The display shows the 31 that are assigned.

Also note that only one interrupt is assigned to interrupt level (IPL) 5, leaving 30 available for other devices.

```
# devfsadm -C
# mdb -k
Loading modules: [ unix krtld genunix specfs dtrace cpu.generic uppc pcplusmp ufs ip
hook neti sctp arp usba uhci s1394 nca fcp fctl lofs emlxs qlc zfs nfs random sppp md
cpc crypto fcip logindmux ptm ]

> ::interrupts
>
IRQ  Vector IPL Bus   Type  CPU Share APIC/INT# ISR(s)
4    0xb0   12  ISA   Fixed 9   1     0x0/0x4   asyintr
9    0x81   9   PCI   Fixed 1   1     0x0/0x9   acpi_wrapper_isr
11   0xd1   14  PCI   Fixed 2   1     0x0/0xb   hpet_isr
16   0x88   9   PCI   Fixed 12  1     0x0/0x10  uhci_intr
18   0x86   9   PCI   Fixed 10  2     0x0/0x12  uhci_intr, ehci_intr
19   0x8a   9   PCI   Fixed 14  3     0x0/0x13  ahci_intr, uhci_intr, uhci_intr
21   0x89   9   PCI   Fixed 13  1     0x0/0x15  uhci_intr
23   0x87   9   PCI   Fixed 11  2     0x0/0x17  uhci_intr, ehci_intr
28   0x40   5   PCI   Fixed 4   1     0x1/0x4   mrsas_isr
32   0x20   2         IPI   ALL 1     -         cmi_cmci_trap
120  0x82   7         MSI   3   1     -         pepb_intr_handler
121  0x30   4         MSI   5   1     -         pepb_intr_handler
```

```
122  0x31   4         MSI   5   1     -         pepb_intr_handler
123  0x84   7         MSI   6   1     -         pepb_intr_handler
124  0x85   7         MSI   6   1     -         pepb_intr_handler
125  0x32   4         MSI   7   1     -         pepb_intr_handler
126  0x83   7         MSI   8   1     -         pepb_intr_handler
127  0x33   4         MSI   15  1     -         pepb_intr_handler
128  0x8c   7         MSI   16  1     -         pepb_intr_handler
129  0x8d   7         MSI   16  1     -         pepb_intr_handler
130  0x34   4         MSI   17  1     -         pepb_intr_handler
131  0x35   4         MSI   17  1     -         pepb_intr_handler
132  0x8b   7         MSI   18  1     -         pepb_intr_handler
133  0x36   4         MSI   19  1     -         pepb_intr_handler
134  0x8e   7         MSI   20  1     -         pepb_intr_handler
135  0x38   4         MSI   21  1     -         pepb_intr_handler
136  0x39   4         MSI   21  1     -         pepb_intr_handler
137  0x60   6         MSI-X 22  1     -         ixgbe_intr_legacy
138  0x61   6         MSI-X 23  1     -         igb_intr_rx
139  0x62   6         MSI-X 24  1     -         igb_intr_tx_other
140  0x63   6         MSI-X 25  1     -         igb_intr_rx
141  0x64   6         MSI-X 26  1     -         igb_intr_tx_other
142  0x65   6         MSI-X 27  1     -         igb_intr_rx
143  0x66   6         MSI-X 28  1     -         0
144  0x67   6         MSI-X 29  1     -         igb_intr_rx
145  0x68   6         MSI-X 30  1     -         ixgbe_intr_msix
146  0x69   6         MSI-X 31  1     -         ixgbe_intr_msix
147  0x6a   6         MSI-X 32  1     -         ixgbe_intr_msix
148  0x6b   6         MSI-X 33  1     -         ixgbe_intr_msix
149  0x6c   6         MSI-X 34  1     -         ixgbe_intr_msix
150  0x6d   6         MSI-X 35  1     -         ixgbe_intr_msix
151  0x6e   6         MSI-X 36  1     -         ixgbe_intr_msix
152  0x6f   6         MSI-X 37  1     -         ixgbe_intr_msix
153  0x70   6         MSI-X 38  1     -         ixgbe_intr_msix
154  0x71   6         MSI-X 39  1     -         ixgbe_intr_msix
155  0x72   6         MSI-X 40  1     -         igb_intr_tx_other
156  0x73   6         MSI-X 41  1     -         igb_intr_rx
157  0x74   6         MSI-X 42  1     -         igb_intr_tx_other
158  0x75   6         MSI-X 43  1     -         igb_intr_rx
159  0x76   6         MSI-X 44  1     -         igb_intr_tx_other
160  0xa0   0         IPI   ALL 0     -         poke_cpu
161  0x77   6         MSI-X 45  1     -         igb_intr_rx
162  0x78   6         MSI-X 46  1     -         igb_intr_tx_other
163  0x79   6         MSI-X 47  1     -         igb_intr_rx
164  0x7a   6         MSI-X 48  1     -         ixgbe_intr_msix
165  0x7b   6         MSI-X 49  1     -         ixgbe_intr_msix
166  0x7c   6         MSI-X 50  1     -         ixgbe_intr_msix
167  0x7d   6         MSI-X 51  1     -         ixgbe_intr_msix
168  0x7e   6         MSI   53  1     -         ixgbe_intr_msi
192  0xc0   13        IPI   ALL 1     -         xc_serv
208  0xd0   14        IPI   ALL 1     -         kcpc_hw_overflow_intr
209  0xd3   14        IPI   ALL 1     -         cbe_fire
210  0xd4   14        IPI   ALL 1     -         cbe_fire
240  0xe0   15        IPI   ALL 1     -         xc_serv
241  0xe1   15        IPI   ALL 1     -         apic_error_intr
```

Use Control D to return to the shell.

4 Reassign one of the drivers to a different interrupt level.

a. Modify the driver's `.conf` file to reassign the interrupts for one or more drivers to a different level.

This example reassigns the igb driver to level 5 by adding the following line to `/kernel/drv/igb.conf`.

```
interrupt-priorities = 5;
```

b. Reboot the system.

The server displays POST messages, and interrupts are assigned to the new level.

c. View the boot messages or the contents of `/var/adm/messages` for the error messages similar to those shown in Step 1.

If no error messages appear, the procedure was successful.

5 After reassigning the interrupts, to view the reassigned interrupts, run the `mdb -k` command.

The following example shows the system from Step 3 after igb has been reassigned to interrupt level (IPL) 5. As a result, the system is able to assign 24 interrupts to ixgbe.

```
# devfsadm -C
# mdb -k
Loading modules: [ unix krtld genunix specfs dtrace cpu.generic uppc pcplusmp ufs ip
hook neti sctp arp usba uhci s1394 nca fcp fctl lofs emlxs qlc zfs nfs random sppp md
cpc crypto fcip logindmux ptm ]

> ::interrupts

>
IRQ  Vector IPL Bus   Type  CPU Share APIC/INT# ISR(s)
4    0xb0   12  ISA   Fixed 9   1     0x0/0x4   asyintr
9    0x81   9   PCI   Fixed 1   1     0x0/0x9   acpi_wrapper_isr
11   0xd1   14  PCI   Fixed 2   1     0x0/0xb   hpet_isr
16   0x88   9   PCI   Fixed 12  1     0x0/0x10  uhci_intr
18   0x86   9   PCI   Fixed 10  2     0x0/0x12  uhci_intr, ehci_intr
19   0x8a   9   PCI   Fixed 14  3     0x0/0x13  ahci_intr, uhci_intr, uhci_intr
21   0x89   9   PCI   Fixed 13  1     0x0/0x15  uhci_intr
23   0x87   9   PCI   Fixed 11  2     0x0/0x17  uhci_intr, ehci_intr
28   0x40   5   PCI   Fixed 4   1     0x1/0x4   mrsas_isr
32   0x20   2         IPI   ALL 1     -         cmi_cmci_trap
120  0x82   7         MSI   3   1     -         pepb_intr_handler
121  0x30   4         MSI   5   1     -         pepb_intr_handler
122  0x31   4         MSI   5   1     -         pepb_intr_handler
123  0x84   7         MSI   6   1     -         pepb_intr_handler
124  0x85   7         MSI   6   1     -         pepb_intr_handler
125  0x32   4         MSI   7   1     -         pepb_intr_handler
126  0x83   7         MSI   8   1     -         pepb_intr_handler
127  0x33   4         MSI   15  1     -         pepb_intr_handler
128  0x8c   7         MSI   16  1     -         pepb_intr_handler
129  0x8d   7         MSI   16  1     -         pepb_intr_handler
130  0x34   4         MSI   17  1     -         pepb_intr_handler
131  0x35   4         MSI   17  1     -         pepb_intr_handler
132  0x8b   7         MSI   18  1     -         pepb_intr_handler
```

```
133  0x36   4         MSI   19  1     -         pepb_intr_handler
134  0x8e   7         MSI   20  1     -         pepb_intr_handler
135  0x38   4         MSI   21  1     -         pepb_intr_handler
136  0x39   4         MSI   21  1     -         pepb_intr_handler
137  0x41   5         MSI-X 22  1     -         igb_intr_tx_other
138  0x42   5         MSI-X 23  1     -         igb_intr_rx
139  0x43   5         MSI-X 62  1     -         igb_intr_tx_other
140  0x44   5         MSI-X 63  1     -         igb_intr_rx
141  0x45   5         MSI-X 64  1     -         igb_intr_tx_other
142  0x46   5         MSI-X 65  1     -         igb_intr_rx
143  0x47   5         MSI-X 66  1     -         igb_intr_tx_other
144  0x48   5         MSI-X 67  1     -         igb_intr_rx
145  0x60   6         MSI-X 68  1     -         ixgbe_intr_msix
146  0x61   6         MSI-X 69  1     -         ixgbe_intr_msix
147  0x62   6         MSI-X 70  1     -         ixgbe_intr_msix
148  0x63   6         MSI-X 71  1     -         ixgbe_intr_msix
149  0x64   6         MSI-X 72  1     -         ixgbe_intr_msix
150  0x65   6         MSI-X 73  1     -         ixgbe_intr_msix
151  0x66   6         MSI-X 74  1     -         ixgbe_intr_msix
152  0x67   6         MSI-X 75  1     -         ixgbe_intr_msix
153  0x68   6         MSI-X 76  1     -         ixgbe_intr_msix
154  0x69   6         MSI-X 77  1     -         ixgbe_intr_msix
155  0x49   5         MSI-X 78  1     -         igb_intr_tx_other
156  0x4a   5         MSI-X 79  1     -         igb_intr_rx
157  0x6a   6         MSI-X 80  1     -         ixgbe_intr_msix
158  0x6b   6         MSI-X 81  1     -         ixgbe_intr_msix
159  0x4b   5         MSI-X 82  1     -         igb_intr_tx_other
160  0xa0   0         IPI   ALL 0     -         poke_cpu
161  0x4c   5         MSI-X 83  1     -         igb_intr_rx
162  0x4d   5         MSI-X 84  1     -         igb_intr_tx_other
163  0x4e   5         MSI-X 85  1     -         igb_intr_rx
164  0x4f   5         MSI-X 86  1     -         igb_intr_tx_other
165  0x50   5         MSI-X 87  1     -         igb_intr_rx
166  0x6c   6         MSI-X 88  1     -         ixgbe_intr_msix
167  0x6d   6         MSI-X 89  1     -         ixgbe_intr_msix
168  0x6e   6         MSI-X 90  1     -         ixgbe_intr_msix
169  0x6f   6         MSI-X 91  1     -         ixgbe_intr_msix
170  0x70   6         MSI-X 92  1     -         ixgbe_intr_msix
171  0x71   6         MSI-X 93  1     -         ixgbe_intr_msix
172  0x72   6         MSI-X 94  1     -         ixgbe_intr_msix
173  0x73   6         MSI-X 95  1     -         ixgbe_intr_msix
174  0x74   6         MSI-X 96  1     -         ixgbe_intr_msix
175  0x75   6         MSI-X 97  1     -         ixgbe_intr_msix
176  0x76   6         MSI-X 98  1     -         ixgbe_intr_msix
177  0x77   6         MSI-X 99  1     -         ixgbe_intr_msix
192  0xc0   13        IPI   ALL 1     -         xc_serv
208  0xd0   14        IPI   ALL 1     -         kcpc_hw_overflow_intr
209  0xd3   14        IPI   ALL 1     -         cbe_fire
210  0xd4   14        IPI   ALL 1     -         cbe_fire
240  0xe0   15        IPI   ALL 1     -         xc_serv
241  0xe1   15        IPI   ALL 1     -         apic_error_intr
```

Use Control D to return to the shell.

Sun Fire X4800 Server Specifications

Physical Specifications for the Sun Fire X4800 Server

This section contains specifications for the Oracle Sun Fire X4800 Server.

Specification	Value
Width	17.5 inches (445 mm)
Height	8.61 inches (218.75 mm)
Depth	With bezel: 27.56 inches (700 mm)
Weight	180 pounds (81.7 kg) fully loaded

Power Specifications for the Sun Fire X4800 Server

Specification	Value
Voltage	200 – 240 VAC 50/60 Hz
Maximum input current	20 A
Maximum input current per cord	10 A
Maximum power available	4000 W
Maximum thermal load	13,648 BTUs/hr

Environmental Specifications

Specification	Value
Temperature (operating)	41° – 90° F (5 ° – 32.2° C)
Temperature (storage)	-40° – 149° F
Humidity	20% - 90% non-condensing
Operating altitude	0 – 10,000 feet (0 – 3048 m) maximum
	Decrease operating temperature 1.8° F (1° C) per 985 feet (300 m) above 2955 feet (900 m) altitude
Airflow	Airflow typical (for room temperatures 73° F and below (23 °C and below): 200 CFM
	Airflow max possible: 400 CFM.

Acoustic Specifications

Specification	Level
Idle	58 dB
Operating	71 dB

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