# Netra Server X3-2
# (formerly Sun Netra X4270 M3 Server)

Installation Guide


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# Using This Documentation

This document explains how to install Oracle's Netra Server X3-2 (formerly Sun Netra X4270 M3 Server) into a rack.

This document is written for technicians, system administrators, and authorized service providers.

These topics are covered:


- "Product Notes" on page vii
- "Related Documentation" on page viii
- "Feedback" on page viii
- "Support and Accessibility" on page viii


## Product Notes

For late-breaking information and known issues about this product, refer to the product notes at:

`http://www.oracle.com/pls/topic/lookup?ctx=NetraServerX3-2`

# Related Documentation

| Documentation | Links |
|---|---|
| All Oracle products | http://www.oracle.com/documentation |
| Netra Server X3-2 | http://www.oracle.com/pls/topic/lookup?ctx=NetraServerX3-2 |
| Oracle Integrated Lights Out Manager (Oracle ILOM) 3.1 software library | http://www.oracle.com/pls/topic/lookup?ctx=ilom31 |
| Oracle Solaris OS and systems software library | http://www.oracle.com/technetwork/indexes/documentation/#sys_sw |
| Oracle Linux | http://linux.oracle.com/documentation/ |

# Feedback

Provide feedback about this documentation at:

http://www.oracle.com/goto/docfeedback

# Support and Accessibility

| Description | Links |
|---|---|
| Access electronic support through My Oracle Support | http://support.oracle.com<br><br>For hearing impaired:<br>http://www.oracle.com/accessibility/support.html |
| Learn about Oracle's commitment to accessibility | http://www.oracle.com/us/corporate/accessibility/index.html |

# Understanding the Server

These topics provide an installation overview and information about the server features.


- "Installation Task Overview" on page 2
- "Server Overview" on page 3
- "Front Panel Components (Installation)" on page 5
- "Rear Panel Components (Installation)" on page 7


### Related Information


- "Confirming Server and Site Specifications" on page 9
- "Preparing for Installation" on page 19
- "Installing the Server in a 4-Post Rack" on page 27
- "Installing the Server in a 2-Post Rack" on page 51
- "Connecting Cables" on page 77
- "Powering On the Server the First Time" on page 91

# Installation Task Overview

Perform the following tasks to install and configure the server.

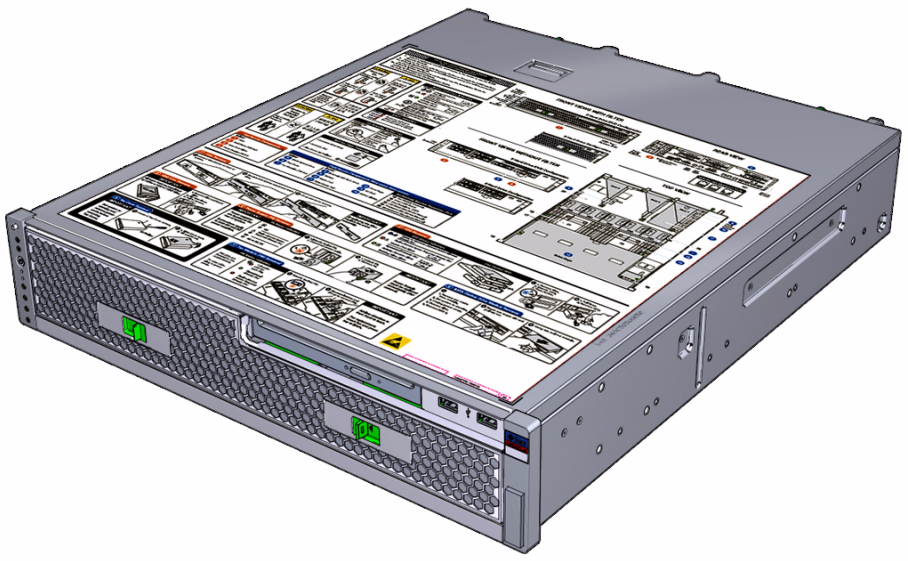
| Step | Description | Links |
|---|---|---|
| 1. | Review the product notes for any late-breaking news about the server. | *Netra Server X3-2 (formerly Sun Netra X4270 M3 Server) Product Notes* |
| 2. | Review the server features and familiarize yourself with the server components. | "Server Overview" on page 3<br>"Front Panel Components (Installation)" on page 5<br>"Rear Panel Components (Installation)" on page 7 |
| 3. | Review the server specifications and the site requirements. | "Confirming Server and Site Specifications" on page 9 |
| 4. | Confirm that you received all the items you ordered. | "Shipping Kit Inventory" on page 19 |
| 5. | Review safety and ESD precautions. | "Handling Precautions" on page 20<br>"ESD Precautions" on page 21 |
| 6. | Gather the required tools. | "Tools Needed for Installation" on page 22 |
| 7. | Install any optional components that you ordered. | "Optional Components" on page 22 |
| 8. | Review the rack cautions. | "Rack Cautions" on page 23 |
| 9. | Install the server in a 4-post or 2-post rack. | "Installing the Server in a 4-Post Rack" on page 27<br>"Installing the Server in a 2-Post Rack" on page 51 |
| 10. | Review cabling requirements and port information. Attach data and management cables to the server. | "Connecting Cables" on page 77 |
| 11. | Prepare the power cords, apply power, and start the server for the first time. | "Powering On the Server the First Time" on page 91 |

### Related Information

- "Server Overview" on page 3
- "Front Panel Components (Installation)" on page 5
- "Rear Panel Components (Installation)" on page 7
- *Server Service*

# Server Overview

The server is a carrier-grade, NEBS-certified, 2U server.



| Component | Description |
|---|---|
| CPU | Two processors from the Intel Xeon processor E5-2600 product family |
| Memory | 16 DDR3 DIMM slots that support 8 GB and 16 GB DIMM capacities (maximum of 256 GB using 16 GB DIMMs).<br>**Note -** The quantity and capacity of installed memory varies based on what was ordered. |
| Storage | Depending on the model, one of the following configurations:<br>• Up to 6 2.5-inch, hot-swappable, SAS drives and 1 SATA DVD-RW (shown)<br>• Up to 8 2.5-inch, hot-swappable, SAS drives (not shown)<br>**Note -** The total number of drives and storage capacity varies based on what was ordered, with a maximum capacity of either 6 or 8 600-GB drives. |
| Optical media | Only available in the 6-drive model: One slot-loading, slimline SATA DVD drive, supporting CD-R/-RW, CD+R/+RW, DVD-R/-RW, DVD+R/+RW (when used with supported media). |

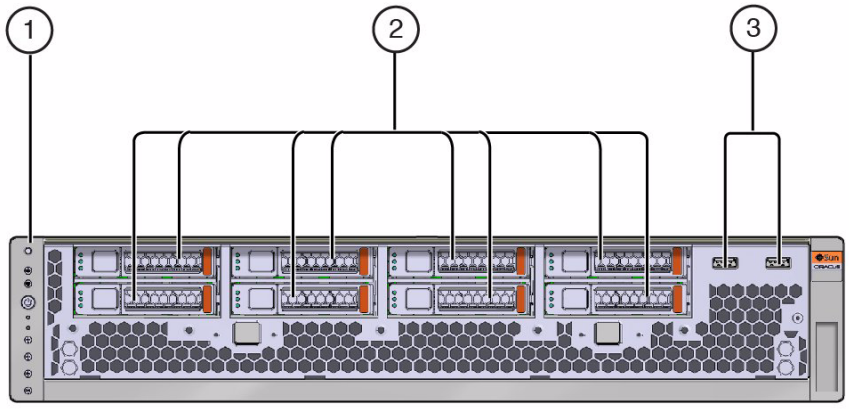
| Component | Description |
|---|---|
| Service processor | Internal AST2300 SP, providing IPMI 2.0 compliant remote management capabilities. The SP features:<br>• Oracle ILOM 3.1<br>• 2D graphics (HD-15 VGA Connector)<br>• Serial management (RJ-45)<br>• Network management (10/100BASE-T Ethernet RJ-45)<br>• Complete host remote management, including remote KVMS over Ethernet |
| Alarm connectors | Four Telco dry contact (electrically isolated) user alarms. |
| Ethernet ports | Four 10Gb/s Ethernet ports with integrated link/speed LEDs. Supports 100 Mb/s, 1000 Mb/sec, 10000 Mb/sec transfer rates. |
| PCIe slots | Six PCIe Gen3 slots with x8 electrical interface that accommodate low-profile PCIe cards. |
| USB2.0 ports | 6 ports (2 front, 2 rear, 2 internal).<br>**Note -** 1 internal USB port is preinstalled with a USB drive containing OSA. |
| Indicators and switches | • Power button switch<br>• Locate button switch with integrated LED<br>• System OK LED<br>• System Fault LED<br>• Alarm LEDs - Critical, Major, Minor, and User<br>• SP LED<br>• Rear PS LED |
| Power supplies | Depending on the model, one of the following configurations:<br>• 2 hot-swappable AC supplies (maximum 760 W)<br>• 2 hot-swappable DC supplies (maximum 660 W) |
| Cooling | 5 internal fans and one integrated power supply fan in each supply. |

## Related Information

- "Installation Task Overview" on page 2
- "Front Panel Components (Installation)" on page 5
- "Rear Panel Components (Installation)" on page 7
- *Server Service*

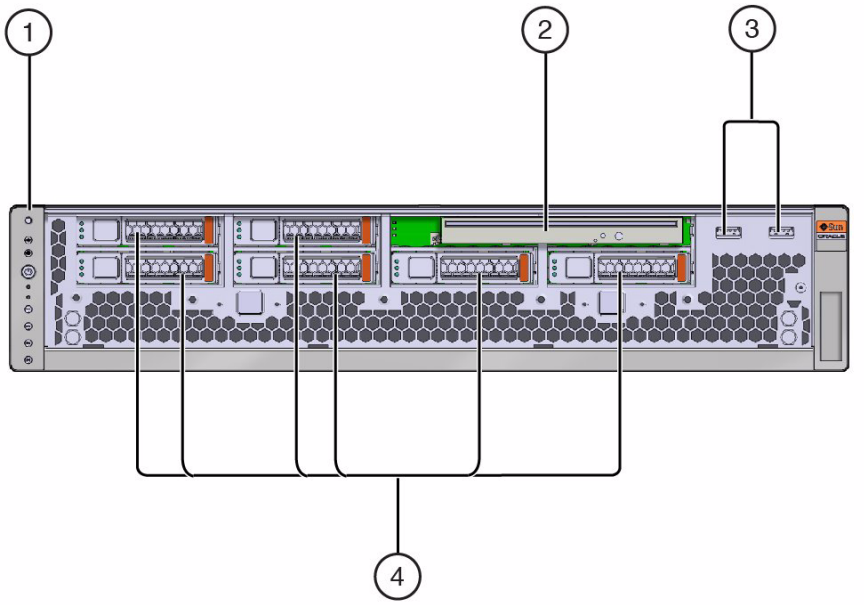
# Front Panel Components (Installation)

**FIGURE:** Front Panel, 8-Drive Model (Front Filter Removed)




| No. | Description | Links |
|---|---|---|
| 1 | Indicators and switches, top to bottom:<br>Status indicators:<br>• Locator LED and button<br>• Service Required LED<br>• System OK LED<br>• Power button<br>• SP LED<br>• Rear PS LED<br>Telco alarm indicators:<br>• Critical LED<br>• Major LED<br>• Minor LED<br>• User LED | *Server Service*, interpreting diagnostic LEDs |
| 2 | 8 SAS drive slots | *Server Service*, servicing drives |
| 3 | 2 USB 2.0 connectors | "USB Ports" on page 86 |

**FIGURE:** Front Panel, 6-Drive Model (Front Filter Removed)

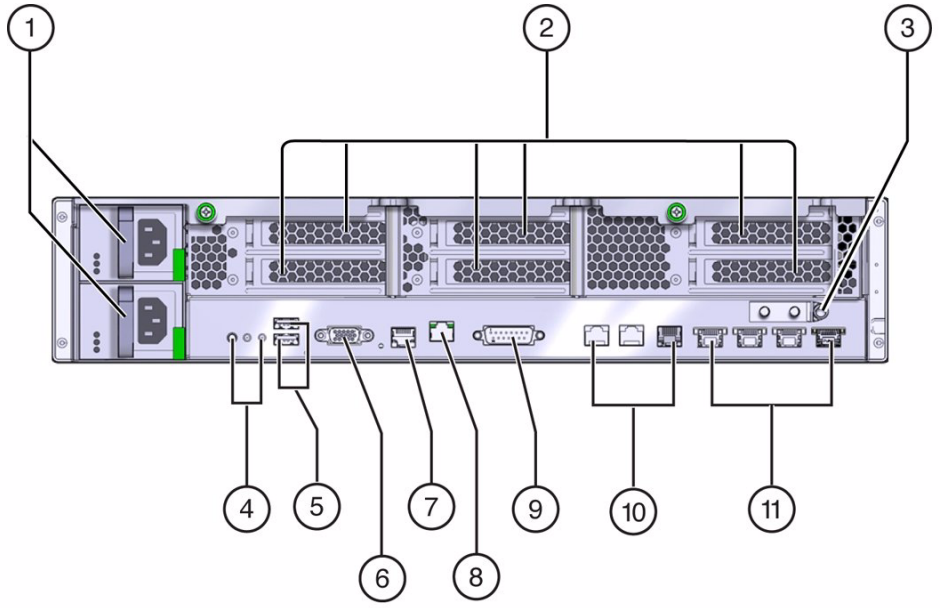



| No. | Description | Links |
|---|---|---|
| 1 | Indicators and switches, top to bottom:<br>Status indicators:<br>• Locator LED and button<br>• Service Required LED<br>• System OK LED<br>• Power button<br>• SP LED<br>• Rear PS LED<br>Telco alarm indicators:<br>• Critical LED<br>• Major LED<br>• Minor LED<br>• User LED | *Server Service*, interpreting diagnostic LEDs |
| 2 | DVD | *Server Service*, servicing the DVD |
| 3 | 2 USB 2.0 connectors | "USB Ports" on page 86 |
| 4 | 8 SAS drive slots | *Server Service*, servicing drives |

### Related Information

- "Installation Task Overview" on page 2
- "Server Overview" on page 3
- "Rear Panel Components (Installation)" on page 7
- *Server Service*

# Rear Panel Components (Installation)




| No. | Description | Links |
|---|---|---|
| 1 | Two hot-swappable power supplies (AC or DC), top to bottom: PS1, PS0 | *Server Service*, servicing power supplies |
| 2 | 6 PCIe low-profile card slots | *Server Service*, servicing PCIe cards |
| 3 | Chassis ground posts | "Connect the Chassis Ground Wire" on page 94 |
| 4 | Status indicators: Locator LED and button, Service Required LED, System OK LED | *Server Service*, identifying diagnostic LEDs |
| 5 | 2 USB 2.0 ports | "USB Ports" on page 86 |

| No. | Description | Links |
|---|---|---|
| 6 | SP 15-pin VGA video port<br>**Note -** This port is for temporary use during installation or service procedures and has a maximum cable length limit of 6 meters. | "Video Port" on page 86 |
| 7 | SP SER MGT port | "SER MGT Port" on page 83 |
| 8 | SP NET MGT port | "NET MGT Port" on page 84 |
| 9 | Alarm port, DB-15 connector | "Alarm Port" on page 88 |
| 10 | Not supported on this product. Do not connect any cables to these ports. | |
| 11 | 4 Gigabit Ethernet ports (left to right: NET 3, NET 2, NET 1, NET 0) | "Gigabit Ethernet Ports" on page 84 |

### Related Information

- "Installation Task Overview" on page 2
- "Server Overview" on page 3
- "Front Panel Components (Installation)" on page 5
- *Server Service*

# Confirming Server and Site Specifications

These topics provide information about the server specifications.


- "Physical Specifications" on page 10
- "Minimum Clearance for Service Access" on page 10
- "AC and DC Power Supply Specifications" on page 11
- "Input Power Information" on page 12
- "Overcurrent Protection Requirements" on page 13
- "DC Power Source, Power Connection, and Grounding Requirements" on page 14
- "Environmental Requirements" on page 15
- "Acoustic Noise Emissions" on page 16
- "Airflow Clearance" on page 16


### Related Information


- "Understanding the Server" on page 1
- "Preparing for Installation" on page 19
- "Installing the Server in a 4-Post Rack" on page 27
- "Installing the Server in a 2-Post Rack" on page 51
- "Connecting Cables" on page 77
- "Powering On the Server the First Time" on page 91

# Physical Specifications

| Description | U.S. | Metric |
|---|---|---|
| Height | 3.44 in. | 87.4 mm |
| Width | 17.52 in. | 445 mm |
| Depth from bezel to rear I/O | 19.74 in. | 501 mm |
| Weight* fully configured without PCIe cards | 40.8 lb | 18.5 kg |

* Weight specifications vary based on the model and internal options.

### Related Information

- "Minimum Clearance for Service Access" on page 10
- "AC and DC Power Supply Specifications" on page 11
- "Input Power Information" on page 12
- "Overcurrent Protection Requirements" on page 13
- "DC Power Source, Power Connection, and Grounding Requirements" on page 14
- "Environmental Requirements" on page 15
- "Acoustic Noise Emissions" on page 16
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# Minimum Clearance for Service Access

| Description | Specification |
|---|---|
| Clearance, front of server | 36 in. (91 cm) |
| Clearance, rear of server | 36 in. (91 cm) |

### Related Information

- "Physical Specifications" on page 10

- "AC and DC Power Supply Specifications" on page 11
- "Input Power Information" on page 12
- "Overcurrent Protection Requirements" on page 13
- "DC Power Source, Power Connection, and Grounding Requirements" on page 14
- "Environmental Requirements" on page 15
- "Acoustic Noise Emissions" on page 16
- "Airflow Clearance" on page 16


# AC and DC Power Supply Specifications

The values in this table are the power supply specifications.

| Parameter | AC | DC |
|---|---|---|
| Voltage (nominal) | 100 to 120/200 to 240 VAC<br>(90 to 132/180 to 264 VAC ranges) | -48 or -60 VDC (-40 to -72 VDC range) |
| Input current (maximum) | 6.8A @ 100-120 VAC<br>3.4A @ 200-240 VAC | 14.2A @ -48 VDC<br>11.3A @ -60 VDC |
| Frequency (nominal) | 50/60 Hz (47 to 63 Hz range) | N/A |
| DC input treatment | N/A | Isolated DC Return (DC-I) |

### Related Information


- "Physical Specifications" on page 10
- "Minimum Clearance for Service Access" on page 10
- "Input Power Information" on page 12
- "Overcurrent Protection Requirements" on page 13
- "DC Power Source, Power Connection, and Grounding Requirements" on page 14
- "Environmental Requirements" on page 15
- "Acoustic Noise Emissions" on page 16
- "Airflow Clearance" on page 16

# Input Power Information

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

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

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**Note –** The server does not require an additional surge protector for the AC power configurations if the facility has a surge protector that limits voltage surges to less than 2000V. You can, however, install a surge protector if your site requires an additional protector.

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**Note –** Safety agency requirements prohibit Oracle Corporation from changing a product from AC input to DC input or from DC input to AC input after the product has been removed from the agency approved manufacturing site.

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### Related Information


- "Physical Specifications" on page 10
- "Minimum Clearance for Service Access" on page 10
- "AC and DC Power Supply Specifications" on page 11
- "Overcurrent Protection Requirements" on page 13
- "DC Power Source, Power Connection, and Grounding Requirements" on page 14
- "Environmental Requirements" on page 15
- "Acoustic Noise Emissions" on page 16
- "Airflow Clearance" on page 16

# Overcurrent Protection Requirements

This product does not provide branch circuit overcurrent protection as defined by the U.S. NEC. To comply with the U.S. NEC, you must install this product on branch circuits that have overcurrent protection as defined by Article 240 of the U.S. NEC.

- Product power inputs with a current ratings of 16A or less must have a branch circuit, or a supplementary overcurrent protection device, rated at no more than 20A.
- Product power inputs with current ratings of more than 16A must have a branch circuit, or a supplementary overcurrent protection device, rated at no more than 160% of the product input current rating.
- Other national or local electrical codes might apply to the installation of this product.

As a general guideline, overcurrent protection devices should be rated at a minimum of 125% of the product input current rating in order to provide reliable power under high temperature and transient voltage disturbance conditions. However, you must consider the characteristics of the protection device and the applicable electrical codes when selecting the rating of a protection device for the product installation.

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

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### Related Information


- "Physical Specifications" on page 10
- "Minimum Clearance for Service Access" on page 10
- "AC and DC Power Supply Specifications" on page 11
- "Input Power Information" on page 12
- "DC Power Source, Power Connection, and Grounding Requirements" on page 14
- "Environmental Requirements" on page 15
- "Acoustic Noise Emissions" on page 16
- "Airflow Clearance" on page 16

# DC Power Source, Power Connection, and Grounding Requirements

The server power source and connections must meet the following requirements.

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

**Caution –** The DC power source must be reliably grounded. The server chassis must be grounded with the power supply ground pins or with the chassis ground studs. It is acceptable to have both grounds connected.

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

- Suitable conductor material: Use copper conductors only.
- Power supply connections through the input connector: 12 AWG (between the server and the source). There are three conductors:
  - -48V or -60V (negative terminal, might be marked with a minus (-) symbol).
  - Chassis ground connection (optional if chassis ground wire is connected).
  - -48V or -60V return (positive terminal, might be marked with a plus (+) symbol).
- Server chassis ground 12 AWG conductor (optional if power supply grounds are connected).
- Grounding cable insulation color: Green/yellow.
- Cable insulation rating: Minimum of 167°F (75°C). Low smoke fume, flame retardant insulation might be required in some installations.)
- Use mating connectors, Wago part number 721-103/037-000, for proper connection to the product DC inputs. Connectors are included in the server's shipping kit.
- Branch circuit cable insulation color: According to applicable national electrical codes.

- DC power source must meet TNV-2 requirements as defined by UL 60950-1 and IEC 60950-1.

### Related Information


- "Physical Specifications" on page 10
- "Minimum Clearance for Service Access" on page 10
- "AC and DC Power Supply Specifications" on page 11
- "Input Power Information" on page 12
- "Overcurrent Protection Requirements" on page 13
- "Environmental Requirements" on page 15
- "Acoustic Noise Emissions" on page 16
- "Airflow Clearance" on page 16


# Environmental Requirements

| Specification | Operating | Nonoperating |
|---|---|---|
| Ambient temperature* | Maximum: 41˚F to 104˚F (5˚C to 40˚C) up to 6000 feet (1829 meters)†<br>Optimal: 69.8˚F to 73.4˚F (21˚C to 23˚C)<br>Short-term maximum: 23˚F to 131˚F (-5˚C to 55˚C) | –40˚F to 158˚F (–40˚C to 70˚C) |
| Relative humidity | 5% to 85% noncondensing,<br>short-term 5% to 90% noncondensing, but not to exceed 0.024 kg of water per kg of dry air. | Up to 93% noncondensing<br>100.4˚ F (37.7˚C) maximum wet bulb |
| Elevation (NEBS requirement) | -200 feet to 5900 feet (-60 meters to 1800 meters) at 104˚F (40˚C)<br>5900 feet to 13100 feet (1800 meters to 4000 meters) at 86˚F (30˚C) | |

* Does not apply to removable media devices.

† Maximum ambient operating temperature is derated by 1 degree C per 500m elevation.

### Related Information


- "Physical Specifications" on page 10
- "Minimum Clearance for Service Access" on page 10

- "AC and DC Power Supply Specifications" on page 11
- "Input Power Information" on page 12
- "Overcurrent Protection Requirements" on page 13
- "DC Power Source, Power Connection, and Grounding Requirements" on page 14
- "Acoustic Noise Emissions" on page 16
- "Airflow Clearance" on page 16


# Acoustic Noise Emissions

The declared noise emissions for the server are in accordance with ISO 9296 standards.

| Parameter | Operating Noise Emissions |
|---|---|
| Acoustic sound power LwA (dBA) | 72 dBA (AC server)<br>72 dBA (DC server) |

### Related Information


- "Physical Specifications" on page 10
- "Minimum Clearance for Service Access" on page 10
- "AC and DC Power Supply Specifications" on page 11
- "Input Power Information" on page 12
- "Overcurrent Protection Requirements" on page 13
- "DC Power Source, Power Connection, and Grounding Requirements" on page 14
- "Environmental Requirements" on page 15
- "Airflow Clearance" on page 16


# Airflow Clearance

**Note –** Proper airflow into and out of the server is essential for keeping the server's internal temperatures within a safe operating range.

The server draws cool air from the front of the server and expels hot air out the rear. Prevent overheating the server by following these guidelines:

- Ensure that inlet air enters at the front of the server and exits from the back.
- Ensure unobstructed airflow through the server.
- Do not direct warm air toward the front air intake of the server.
- Prevent recirculation of exhaust air within a rack or cabinet.
- Manage cables to minimize interfering with the server exhaust vent.
- Ensure that the server ventilation openings used for intake and outflow of air provide an open area that is at least 60% of the open area perforations across the front and rear of the server.
- Allow a minimum of 0.2 in. (5 mm) clearance at the front of the system and 3.1 in. (80 mm) at the rear of the server when mounted. These clearance values are based on the preceding inlet and exhaust impedance (available open area) and assume a uniform distribution of the open area across the inlet and exhaust areas. Clearance values greater than these are recommended for improved cooling performance.

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**Note –** Be mindful that the combination of inlet and exhaust restrictions, such as cabinet doors and the spacing of the server from the doors, can affect the cooling performance of the server.

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### Related Information


- "Physical Specifications" on page 10
- "Minimum Clearance for Service Access" on page 10
- "AC and DC Power Supply Specifications" on page 11
- "Input Power Information" on page 12
- "Overcurrent Protection Requirements" on page 13
- "DC Power Source, Power Connection, and Grounding Requirements" on page 14
- "Environmental Requirements" on page 15
- "Acoustic Noise Emissions" on page 16

# Preparing for Installation

These topics explain how to prepare to install the server.


- "Shipping Kit Inventory" on page 19
- "Handling Precautions" on page 20
- "ESD Precautions" on page 21
- "Tools Needed for Installation" on page 22
- "Optional Components" on page 22
- "Rack Cautions" on page 23
- "Stabilize the Rack" on page 24


### Related Information


- "Understanding the Server" on page 1
- "Confirming Server and Site Specifications" on page 9
- "Installing the Server in a 4-Post Rack" on page 27
- "Installing the Server in a 2-Post Rack" on page 51
- "Connecting Cables" on page 77
- "Powering On the Server the First Time" on page 91


## Shipping Kit Inventory

Standard system components are installed at the factory. Options such as a PCIe2 cards or a monitor are shipped separately.

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

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

- Server
- Rackmount kit
- Package of mounting screws and nuts in assorted sizes to fit various types of racks and cabinets
- Earth grounding lug and two M5 nuts
- Hardware, cables, documents, and connectors
- Any optional components that were ordered with the server

### Related Information


- "Handling Precautions" on page 20
- "ESD Precautions" on page 21
- "Tools Needed for Installation" on page 22
- "Optional Components" on page 22
- "Rack Cautions" on page 23
- "Stabilize the Rack" on page 24


# Handling Precautions

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

**Caution –** The server is heavy. Two people are required to lift and mount this server into a rack enclosure when using the procedures in this document. See "Physical Specifications" on page 10.

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

### Related Information

- "Shipping Kit Inventory" on page 19
- "ESD Precautions" on page 21
- "Tools Needed for Installation" on page 22
- "Optional Components" on page 22
- "Rack Cautions" on page 23
- "Stabilize the Rack" on page 24

# ESD Precautions

Electronic equipment is susceptible to damage by static electricity. Use a grounded antistatic wrist strap, foot strap, or equivalent safety equipment to prevent ESD when you install or service the server.

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

### Related Information

- "Shipping Kit Inventory" on page 19
- "Handling Precautions" on page 20
- "Tools Needed for Installation" on page 22
- "Optional Components" on page 22
- "Rack Cautions" on page 23
- "Stabilize the Rack" on page 24

# Tools Needed for Installation

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

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

For the initial installation configuration, you must provide a terminal device for use as a console device. You can use these types of devices:

- ASCII terminal
- Workstation
- Terminal server
- Computer, such as a laptop running terminal emulation software
- Patch panel connected to a terminal server
- Cables needed to connect the console device to the SER MGT port

### Related Information


- "Shipping Kit Inventory" on page 19
- "Handling Precautions" on page 20
- "ESD Precautions" on page 21
- "Optional Components" on page 22
- "Rack Cautions" on page 23
- "Stabilize the Rack" on page 24


# Optional Components

Optional components, such as additional memory or PCIe2 cards that were ordered as part of the system, are installed in the server at the factory before the server is shipped. Any options not ordered with the system are shipped separately. If possible, install these components prior to installing the server in a rack.

Except for rackmount kits, if you ordered any options that are not factory-installed, refer to *Server Service* and the component's documentation for installation instructions.

### Related Information


- "Shipping Kit Inventory" on page 19
- "Handling Precautions" on page 20
- "ESD Precautions" on page 21
- "Tools Needed for Installation" on page 22
- "Rack Cautions" on page 23
- "Stabilize the Rack" on page 24


# Rack Cautions

**Caution – Equipment Loading.** Always load equipment into a rack from the bottom up so that the rack does not become top-heavy and tip over. Deploy your rack's antitip bar to prevent the rack from tipping during equipment installation.

**Caution – Elevated Operating Ambient Temperature.** If the server is installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment might be greater than room ambient temperature. Therefore, install the equipment only in an environment compatible with the Tma specified for the server.

**Caution – Reduced Air Flow.** Install the equipment in a rack so that the amount of air flow is adequate for the safe operation of the equipment.

**Caution – Mechanical Loading.** Mount the equipment in the rack so that the weight is distributed evenly. A hazardous condition can exist with uneven mechanical loading.

**Caution – Circuit Overloading.** Do not overload the power supply circuits. Before connecting the server to the supply circuit, review the equipment nameplate power ratings and consider the effect that circuit overloading might have on overcurrent protection and supply wiring.

**Caution – Reliable Grounding.** Maintain reliable grounding of rackmounted equipment. Give particular attention to supply connections other than direct connections to the branch circuit (for example, use of power strips).

**Caution –** Do not use slide rail mounted equipment as a shelf or a work space.

### Related Information


- "Shipping Kit Inventory" on page 19
- "Handling Precautions" on page 20
- "ESD Precautions" on page 21
- "Tools Needed for Installation" on page 22
- "Optional Components" on page 22
- "Stabilize the Rack" on page 24


## ▼ Stabilize the Rack

**Caution –** To reduce the risk of personal injury, stabilize the rack cabinet and extend all antitilt devices before installing the server.

Refer to your rack documentation for detailed instructions for the following steps.

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

1. **Open and remove the front and rear doors from the rack cabinet.**
2. **To prevent the rack cabinet from tipping during the installation, stabilize the cabinet using all antitilt mechanisms provided.**
3. **If there are leveling feet beneath the rack cabinet to prevent it from rolling, extend these leveling feet fully downward to the floor.**
4. **Fully extend the rack cabinet's antitilt legs or antitilt bar, which are located at the bottom front of the rack cabinet.**

### Related Information

- Documentation for your rack cabinet
- *Netra Server X3-2 (formerly Sun Netra X4270 M3 Server) Safety and Compliance Guide*
- "Shipping Kit Inventory" on page 19
- "Handling Precautions" on page 20
- "ESD Precautions" on page 21
- "Tools Needed for Installation" on page 22
- "Optional Components" on page 22
- "Rack Cautions" on page 23

# Installing the Server in a 4-Post Rack

These topics describe how to install the server into an 4-post equipment rack using one of several rackmount kits.

| Step | Description | Links |
|---|---|---|
| 1. | Install optional components. | "Optional Components" on page 22 |
| 2. | Review cautions. | "Handling Precautions" on page 20 |
| 3. | Stabilize the rack. | "Stabilize the Rack" on page 24 |
| 4. | Install the server in a 4-post rack. | "Installing the Standard 19-Inch Hardmount Kit (4-Post Rack)" on page 28<br>"Installing the 19-Inch Sliding-Rail Kit (4-Post Rack)" on page 32<br>"Installing the 600-mm Hardmount Kit (4-Post Rack)" on page 40 |

### Related Information


- "Understanding the Server" on page 1
- "Confirming Server and Site Specifications" on page 9
- "Preparing for Installation" on page 19
- "Installing the Server in a 2-Post Rack" on page 51
- "Connecting Cables" on page 77
- "Powering On the Server the First Time" on page 91

# Installing the Standard 19-Inch Hardmount Kit (4-Post Rack)

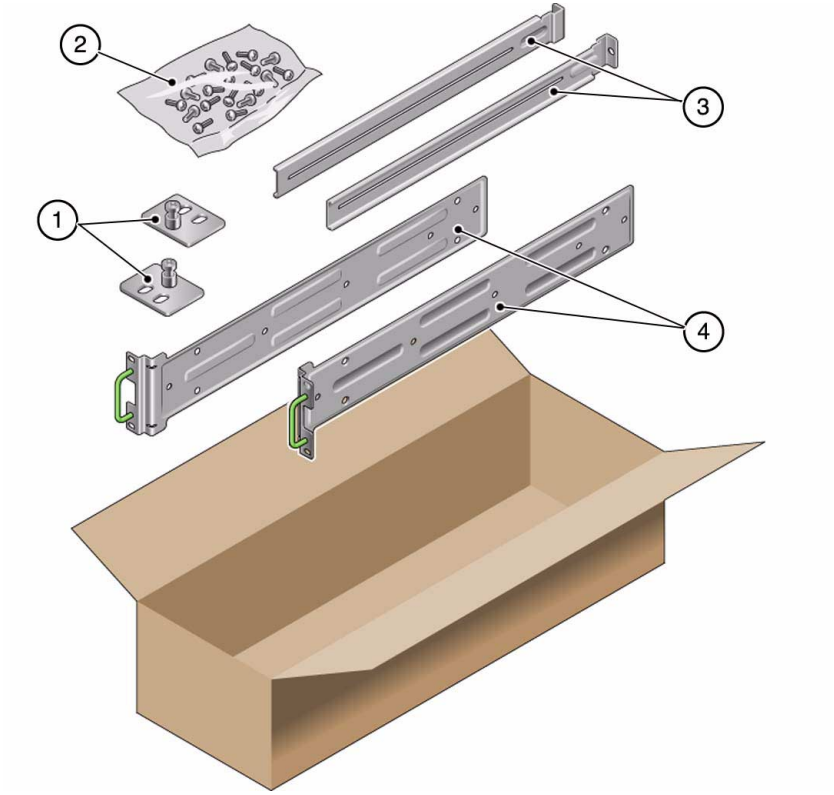
These topics provide installation instructions for the 19-inch, 4-post hardmount kit that ships with the server.


- "19-Inch Hardmount Kit (4-Post Rack)" on page 29
- "Install the Server (4-Post, 19-Inch Hardmount Kit)" on page 30


### Related Information


- "Tools Needed for Installation" on page 22
- "Handling Precautions" on page 20
- "Rack Cautions" on page 23

# 19-Inch Hardmount Kit (4-Post Rack)




| No. | Description |
|---|---|
| 1 | Rear mount flanges (2) |
| 2 | Screws (see following table) |
| 3 | Rear mount support brackets (2) |
| 4 | Hardmount brackets (2) |

## Related Information

- "Install the Server (4-Post, 19-Inch Hardmount Kit)" on page 30
- "Tools Needed for Installation" on page 22
- "Handling Precautions" on page 20
- "Rack Cautions" on page 23

# ▼ Install the Server (4-Post, 19-Inch Hardmount Kit)

**Caution –** You *must* install the server into a rack following these instructions. If you deviate from these instructions when installing the server, your installation will not be supported.

1. **Gather the required tools.**

   See "Tools Needed for Installation" on page 22.

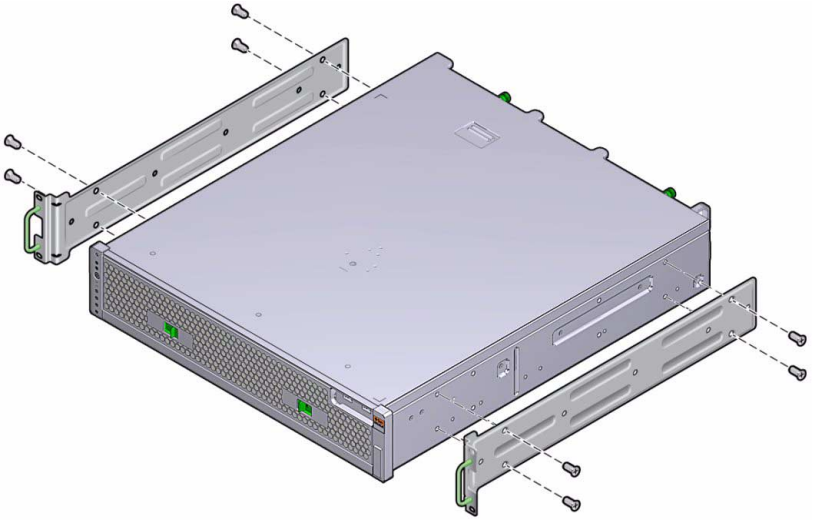
2. **Read the server cautions.**

   See "Handling Precautions" on page 20 and "ESD Precautions" on page 21.

3. **Read the rack cautions and stabilize the rack.**

   See "Rack Cautions" on page 23 and "Stabilize the Rack" on page 24.

4. **Use four of the supplied M5 x 4.5-mm flathead Phillips screws to secure each of the hardmount brackets to the sides of the server.**

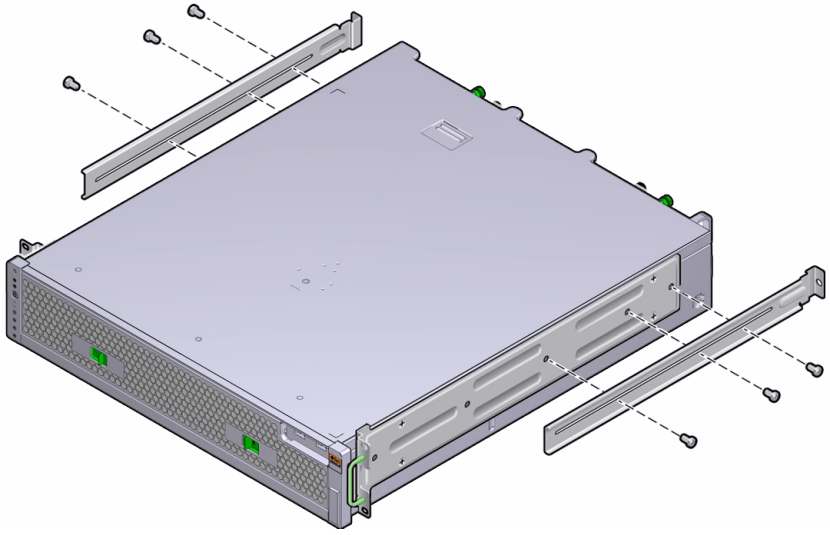


5. **Measure the depth of the rack.**

   The measurement is used in the next step.

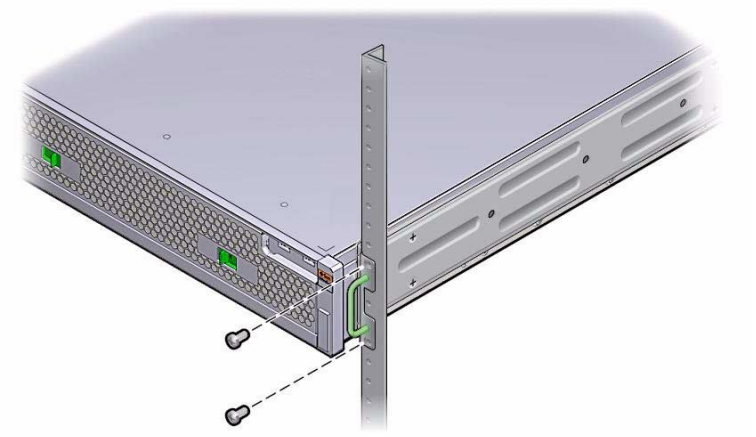
6. **Install the rear mount support brackets at the rear of the server, extending the rear mount support brackets to the measured depth of the rack.**

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

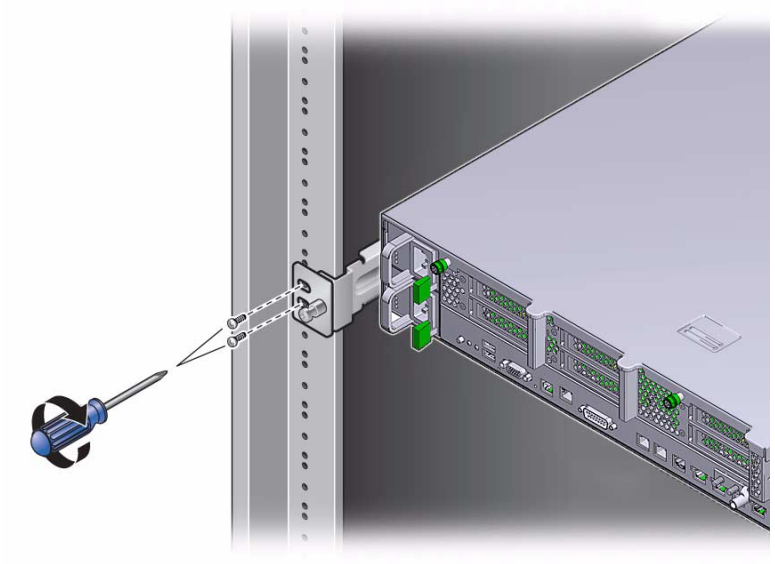


7. **Lift the server to the desired location in the rack.**

8. **Using two screws per side, secure the front of the hardmount brackets that are attached to the sides of the server.**



9. **Using two screws for each rear mount support bracket, secure the rear mount support brackets to the rear of the rack.**



10. **Connect required and optional cables.**

    See "Connecting Cables" on page 77.

### Related Information

- "19-Inch Hardmount Kit (4-Post Rack)" on page 29
- "Tools Needed for Installation" on page 22
- "Handling Precautions" on page 20
- "Rack Cautions" on page 23

# Installing the 19-Inch Sliding-Rail Kit (4-Post Rack)

Use these topics to install the server using this optional 19-inch sliding-rail kit:

- "19-Inch Sliding Rail Kit (4-Post Rack)" on page 33
- "Install the Server (4-Post, 19-Inch Sliding Rail Kit)" on page 34

### Related Information

- "Tools Needed for Installation" on page 22

- "Handling Precautions" on page 20
- "Rack Cautions" on page 23

# 19-Inch Sliding Rail Kit (4-Post Rack)

You also need the hardmount brackets from the standard rackmount kit that came with the server. See "19-Inch Hardmount Kit (4-Post Rack)" on page 29.

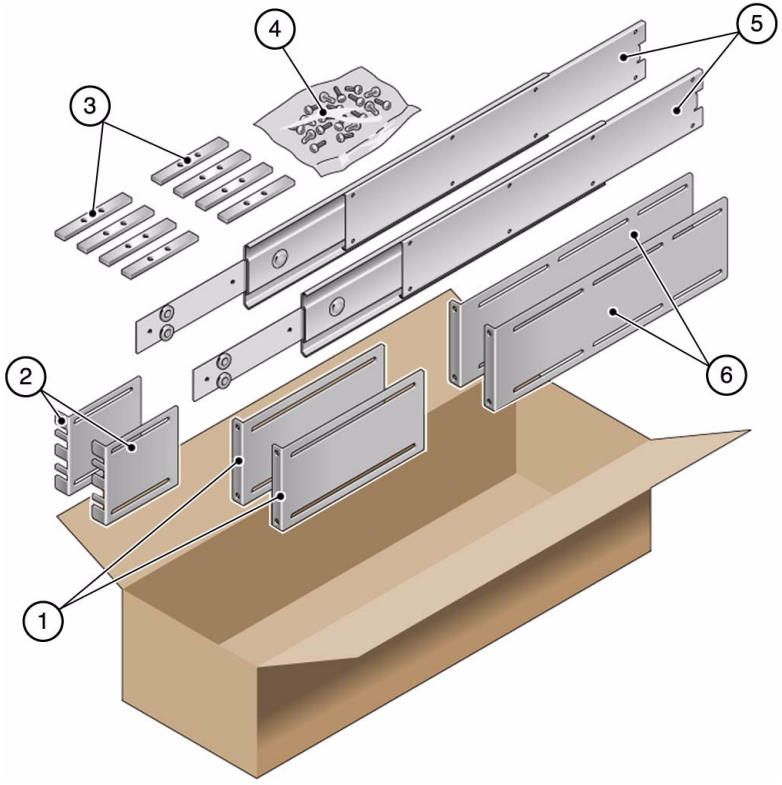



**TABLE:** 19-Inch Sliding-Rail Kit Contents

| No. | Description |
|---|---|
| 1 | Short brackets (2) |
| 2 | Extension brackets (2) |
| 3 | Threaded strips – M6 (4) and 10-32 (4) |

**TABLE:** 19-Inch Sliding-Rail Kit Contents

| No. | Description |
|---|---|
| 4 | Screws |
| 5 | Telco slide assemblies (2) |
| 6 | Long brackets (2) |

**TABLE:** 19-Inch Sliding-Rail Screws

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

### Related Information

- "Install the Server (4-Post, 19-Inch Sliding Rail Kit)" on page 34
- "Tools Needed for Installation" on page 22
- "Handling Precautions" on page 20
- "Rack Cautions" on page 23

# ▼ Install the Server (4-Post, 19-Inch Sliding Rail Kit)

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

1. **Gather the required tools.**

   See "Tools Needed for Installation" on page 22.

2. **Read the server cautions.**

   See "Handling Precautions" on page 20 and "ESD Precautions" on page 21.

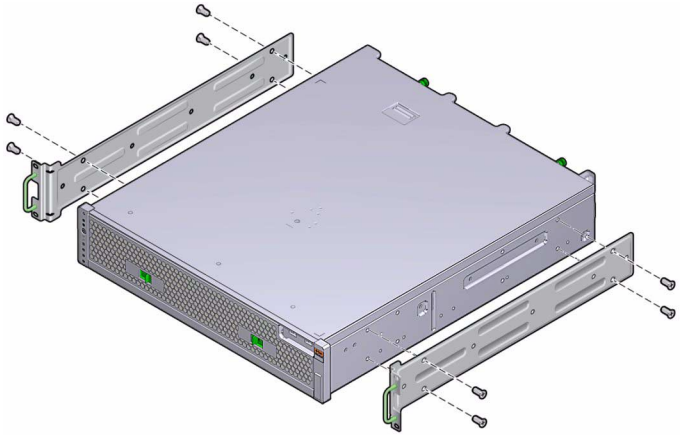
3. **Read the rack cautions and stabilize the rack.**

   See "Rack Cautions" on page 23 and "Stabilize the Rack" on page 24.

4. **Get the hardmount brackets and M5 x 4.5 mm flathead Phillips screws from the standard rack kit.**

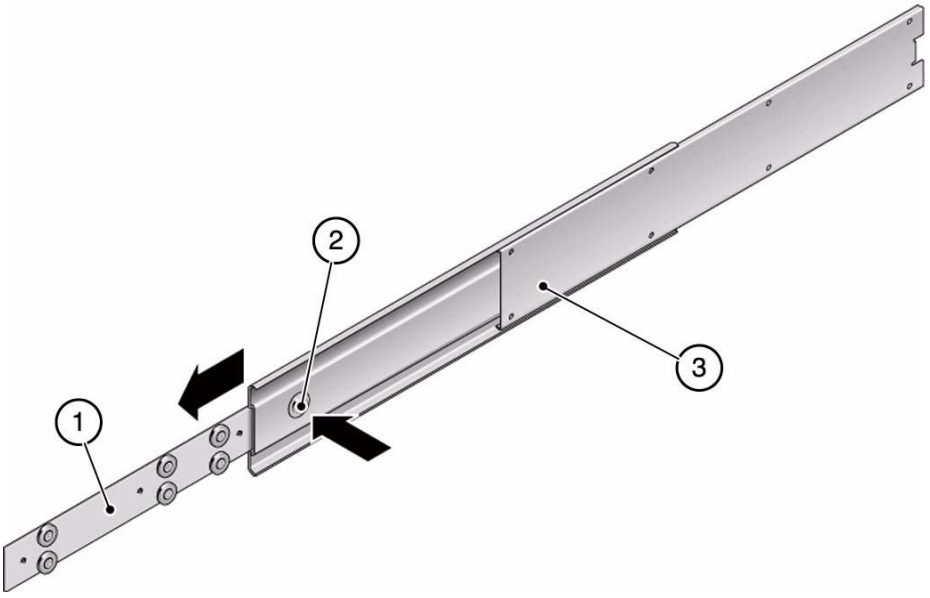
   These hardmount brackets and screws are shipped with the standard server shipping kit, not as part of the 4-post, 19-inch sliding rail kit. See "19-Inch Hardmount Kit (4-Post Rack)" on page 29.

5. **Use four of the supplied M5 x 4.5 mm flathead Phillips screws to secure each of the hardmount brackets to the sides of the server.**



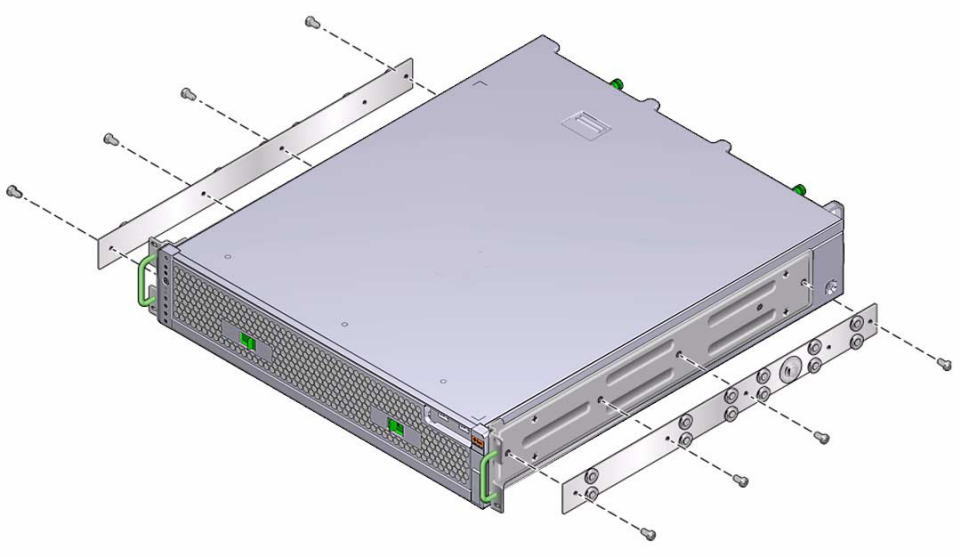
6. **Get the telco slide assemblies from the rack kit.**

7. **Press in the button on each slide and pull the glide completely out of the slide.**




| No. | Description |
|---|---|
| 1 | Glide |
| 2 | Button |
| 3 | Slide |

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



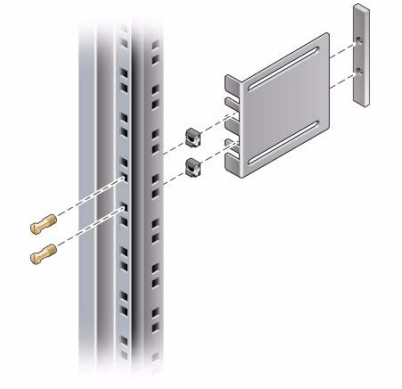
9. **Get the short brackets and long brackets from the rackmount kit.**

10. **Lift each short bracket to the desired position at the *front* of the rack and attach a short bracket to each of the front rack uprights.**

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

11. **Lift each long bracket to the desired position at the *rear* of the rack and attach a long bracket to each of the rear rack uprights.**

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

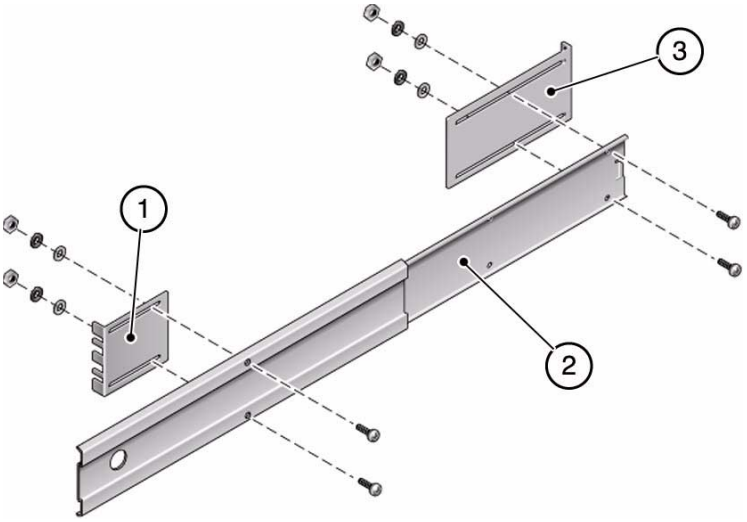


**Note –** If your rack has 10–32 holes, use the 10–32 collar screws and 10–32 threaded strips.

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

13. **Secure the slide onto the short and long brackets at the front and rear of the rack.**

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




| No. | Description |
|---|---|
| 1 | Short bracket |
| 2 | Slide |
| 3 | Long bracket |

14. **Repeat** Step 12 **and** Step 13 **for the slide on the other side of the rack.**

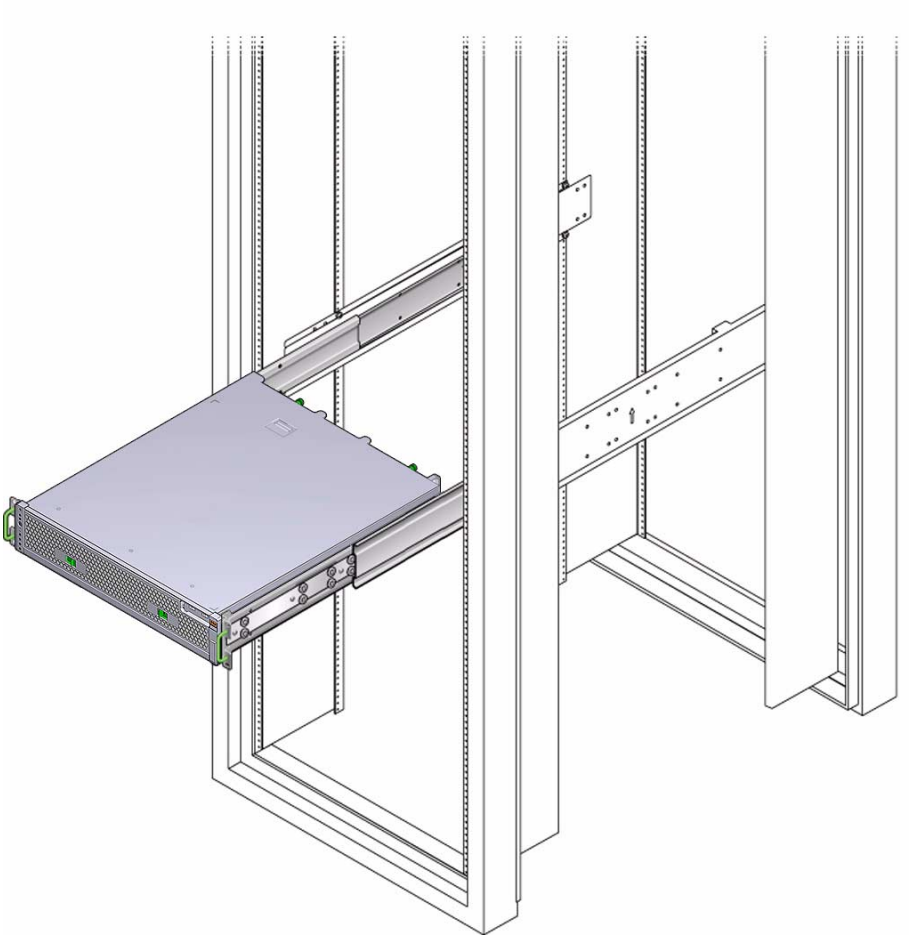
15. **Push the slides completely into the assembly on each side of the rack and release the stop catches.**

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

    You might find that there is too much or too little room between the two slides mounted in the rack. Consequently, the glides attached to the server might not align correctly with the slides in the rack. If either situation occurs, loosen the M6

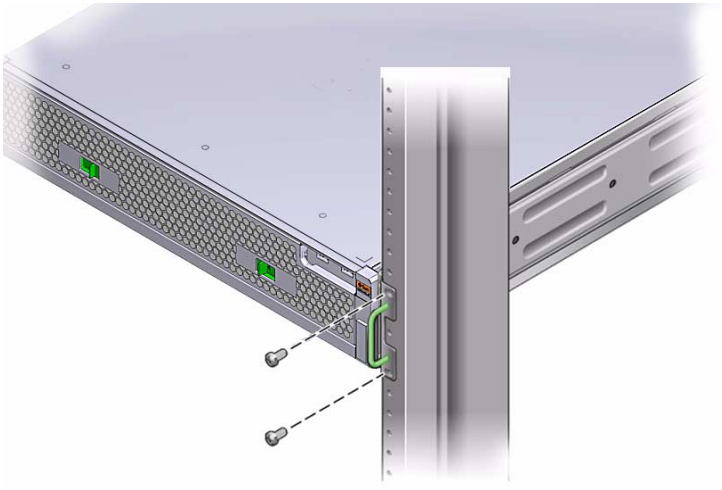
collar screws and cage nuts on the long and short brackets (Step 10 and Step 11), move the brackets inward or outward to the appropriate points, then tighten them again.

17. **Push in the slide buttons and slide the server all the way into the rack enclosure.**



18. **Using two screws per side, secure the front of the hardmount brackets that are attached to the sides of the server to the front of the rack.**

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



19. **Connect required and optional cables.**

    See "Connecting Cables" on page 77.

### Related Information

- "19-Inch Sliding Rail Kit (4-Post Rack)" on page 33
- "Tools Needed for Installation" on page 22
- "Handling Precautions" on page 20
- "Rack Cautions" on page 23

# Installing the 600-mm Hardmount Kit (4-Post Rack)

Use these topics to install the server using the optional 600mm hardmount kit:

- "600-mm Hardmount Kit (4-Post Rack)" on page 41
- "Install the Server (4-Post, 600-mm Hardmount Kit)" on page 42

### Related Information

- "Tools Needed for Installation" on page 22
- "Handling Precautions" on page 20
- "Rack Cautions" on page 23

# 600-mm Hardmount Kit (4-Post Rack)

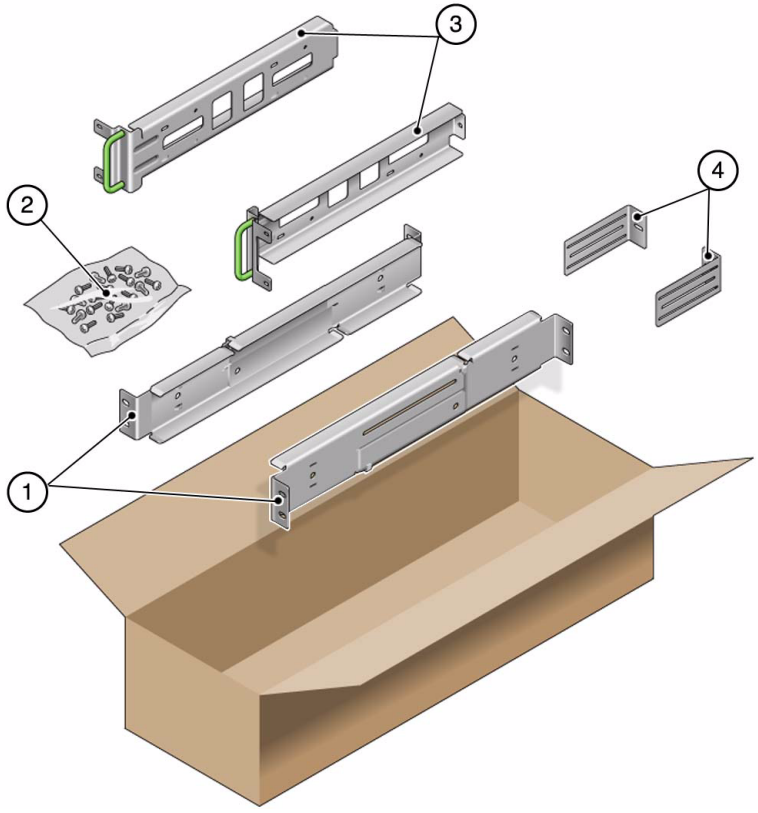



**TABLE:** 600-mm, 4-Post Hardmount Kit Contents

| No. | Description |
|---|---|
| 1 | Adjustable rails (2) |
| 2 | Screws |
| 3 | Side rails (2) |
| 4 | Rear flanges (2) |

**TABLE:** 600-mm, 4-Post Hardmount Screws

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

### Related Information

- "Install the Server (4-Post, 600-mm Hardmount Kit)" on page 42
- "Tools Needed for Installation" on page 22
- "Handling Precautions" on page 20
- "Rack Cautions" on page 23

## ▼ Install the Server (4-Post, 600-mm Hardmount Kit)

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

1. **Gather the required tools.**

   See "Tools Needed for Installation" on page 22.

2. **Read the server cautions.**

   See "Handling Precautions" on page 20 and "ESD Precautions" on page 21.

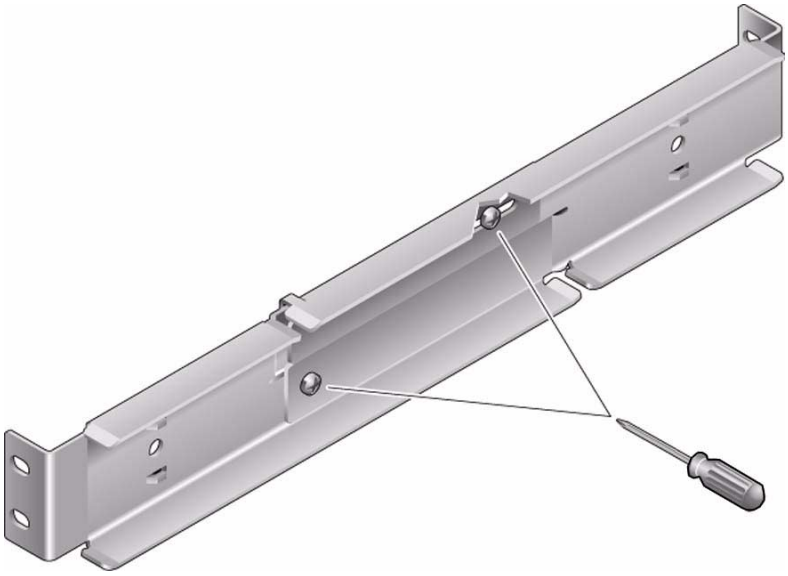
3. **Read the rack cautions and stabilize the rack.**

   See "Rack Cautions" on page 23 and "Stabilize the Rack" on page 24.

4. **Get the adjustable rails from the rack kit.**

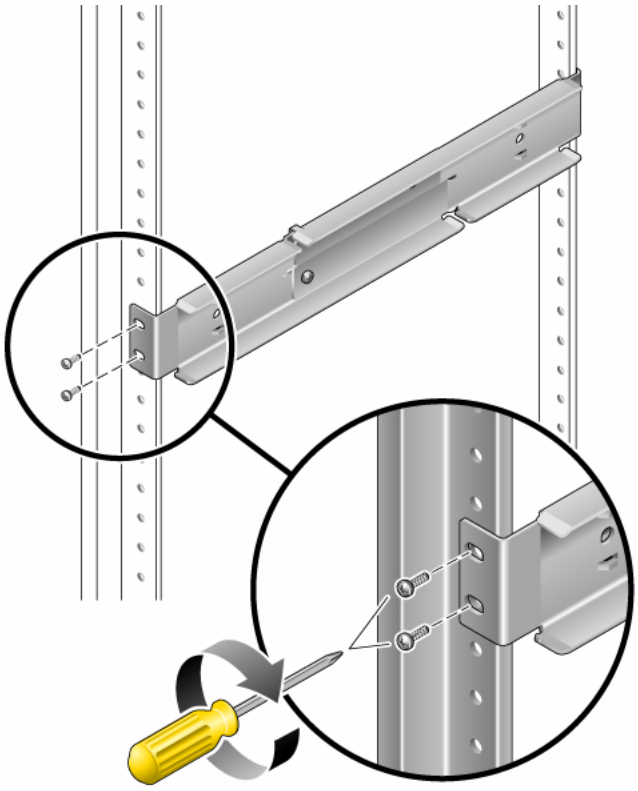
   See "600-mm Hardmount Kit (4-Post Rack)" on page 41.

5. **Loosen the two screws at the middle of each adjustable rail so that you can extend the adjustable rail.**



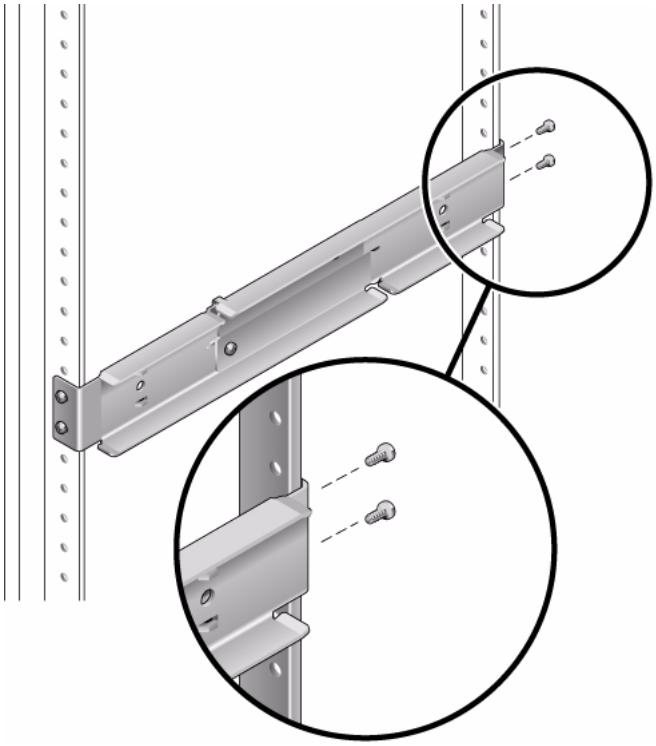
6. **Lift one of the adjustable rails to the desired location in the rack. Using two screws, secure the front of the rail in the rack.**

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



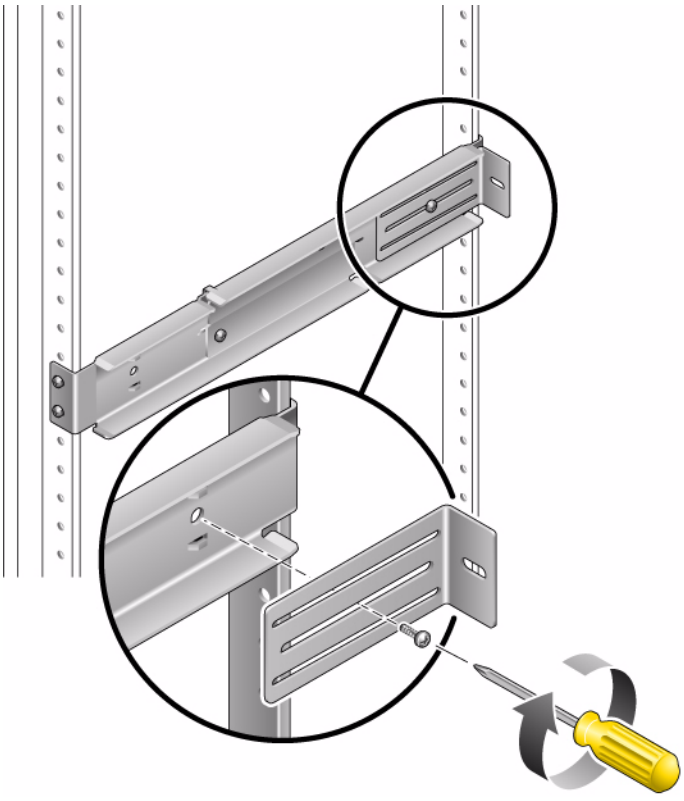
7. **At the rear of the rack, use two screws to secure the rear of the adjustable rails to the rack.**

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



8. **Tighten the two screws at the middle of each adjustable rail.**
9. **Repeat** Step 6 **through** Step 8 **to mount the other adjustable rail into the rack.**
10. **Get the rear flanges from the rack kit.**
11. **Using one M5 x 7 SEM screw for each rear flange, loosely install the rear flange onto the rear of each of the adjustable rails.**

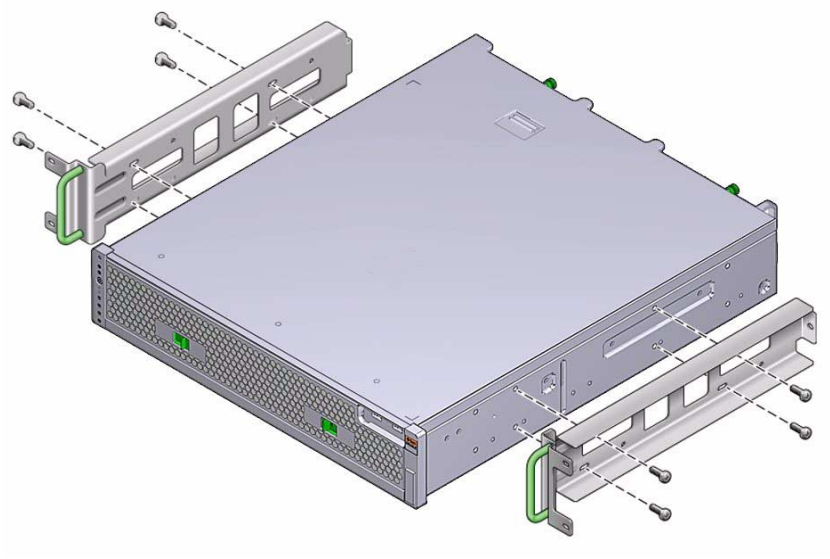
    Do not completely secure the rear flanges to the adjustable rails. You will use these flanges to set the rack depth for the server in a later step.



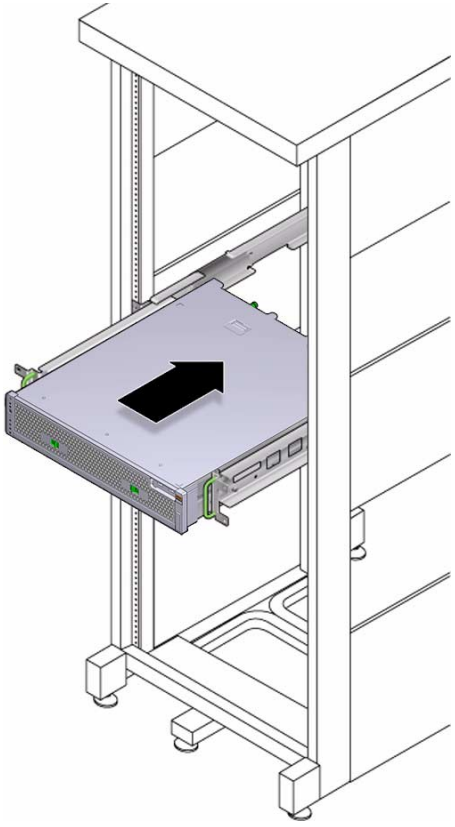
12. **Get the side rails from the rack kit.**

13. **Using eight of the M5 x 7 SEM screws (four for each side rail), secure the side rails to the sides of the server.**

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



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



15. **Push the server to the desired depth in the rack, then go to the rear of the server and push the rear flanges flush against the back of the server.**

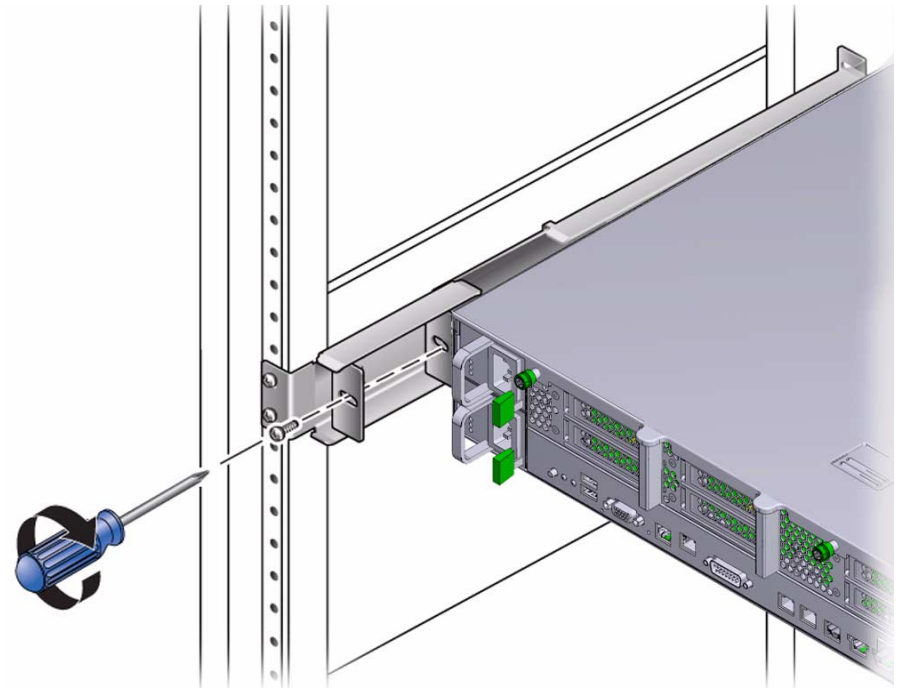
    If the rack is especially shallow, you can flip the rear flanges around so that they rest flush against the rear of the server.

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

17. **Set the rear flanges to the desired depth in the rack, then tighten the single M5 x 7 SEM screw on each of the flanges to secure them to the adjustable rails.**

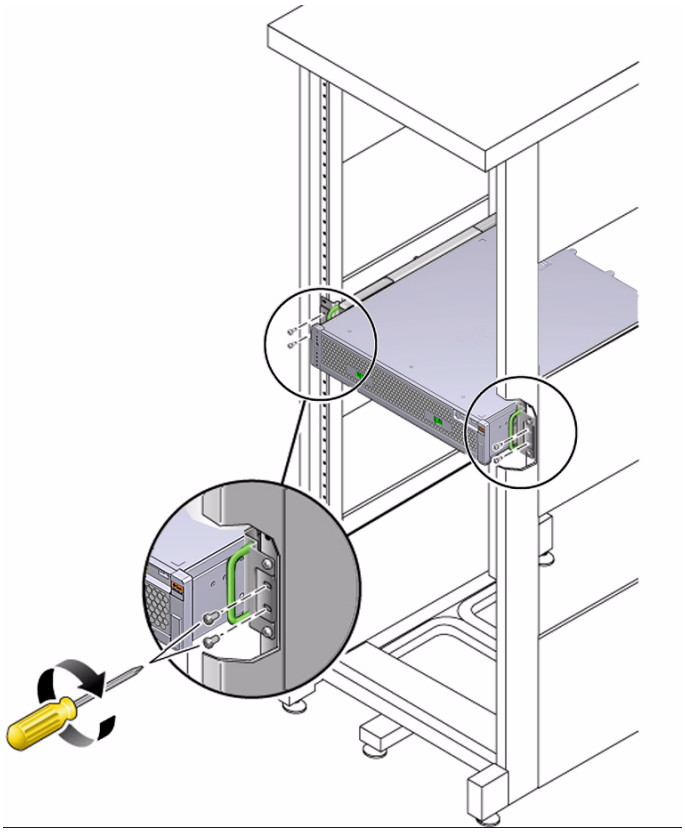
18. **Lift the server into the rack and slide it onto the adjustable rails.**

19. **Push the server backward until it rests flush against the rear flanges, then use one M5 x 7 SEM screw for each rear flange to secure the rear of the server to the rear flanges.**



20. **At the front of the rack, use two screws per side to secure the side rails that are attached to the server to the front of the rack.**

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



21. **Connect required and optional cables.**

    See "Connecting Cables" on page 77.

### Related Information

- "600-mm Hardmount Kit (4-Post Rack)" on page 41
- "Tools Needed for Installation" on page 22
- "Handling Precautions" on page 20
- "Rack Cautions" on page 23

# Installing the Server in a 2-Post Rack

These topics describe how to install the server into a 2-post equipment rack using one of several rackmount kits.

| Step | Description | Links |
|---|---|---|
| 1. | Install optional components. | "Optional Components" on page 22 |
| 2. | Review cautions. | "Rack Cautions" on page 23 |
| 3. | Stabilize the rack. | "Stabilize the Rack" on page 24 |
| 4. | Install the server in a 2-post rack. | "Installing the 19-Inch Hardmount Kit (2-Post Rack)" on page 51<br>"Installing the 19-Inch Sliding-Rail Kit (2-Post Rack)" on page 59<br>"Installing the 23-Inch Hardmount Kit (2-Post Rack)" on page 68 |

### Related Information

- "Installing the Server in a 2-Post Rack" on page 51
- "Confirming Server and Site Specifications" on page 9
- "Preparing for Installation" on page 19
- "Installing the Server in a 4-Post Rack" on page 27
- "Connecting Cables" on page 77
- "Powering On the Server the First Time" on page 91

# Installing the 19-Inch Hardmount Kit (2-Post Rack)

Use these topics to install the server using an optional 19-inch hardmount rack kit into a 19-inch wide, 2-post rack.

- "19-Inch Hardmount Rack Kit (2-Post Rack)" on page 52

- "Install the Server (2-Post, 19-Inch Hardmount Rack Kit)" on page 53

### Related Information

- "Tools Needed for Installation" on page 22
- "Handling Precautions" on page 20
- "Rack Cautions" on page 23

# 19-Inch Hardmount Rack Kit (2-Post Rack)

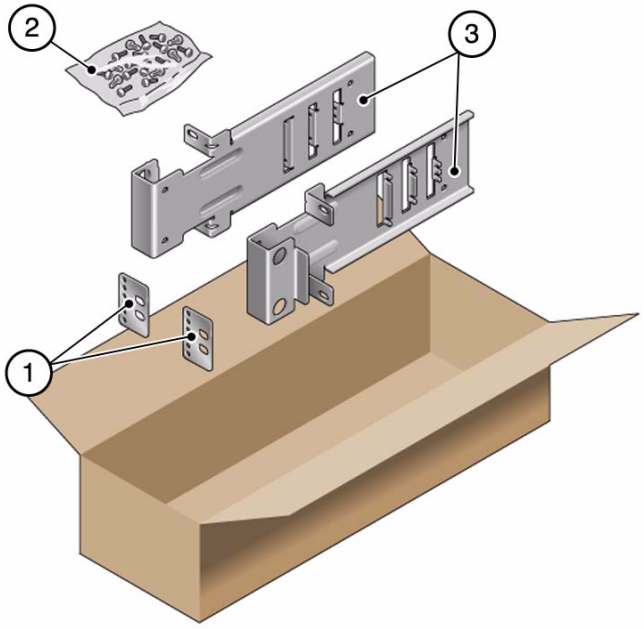



**TABLE:** 19-Inch, 2-Post Hardmount Rack Kit Contents

| No. | Description |
|---|---|
| 1 | Rear plates (2) |
| 2 | Screws |
| 3 | Side brackets (2) |

**TABLE:** 19-Inch, 2-Post Hardmount Rack Screws

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

### Related Information

- "Install the Server (2-Post, 19-Inch Hardmount Rack Kit)" on page 53
- "Tools Needed for Installation" on page 22
- "Handling Precautions" on page 20
- "Rack Cautions" on page 23

## ▼ Install the Server (2-Post, 19-Inch Hardmount Rack Kit)

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

1. **Gather the required tools.**

   See "Tools Needed for Installation" on page 22.

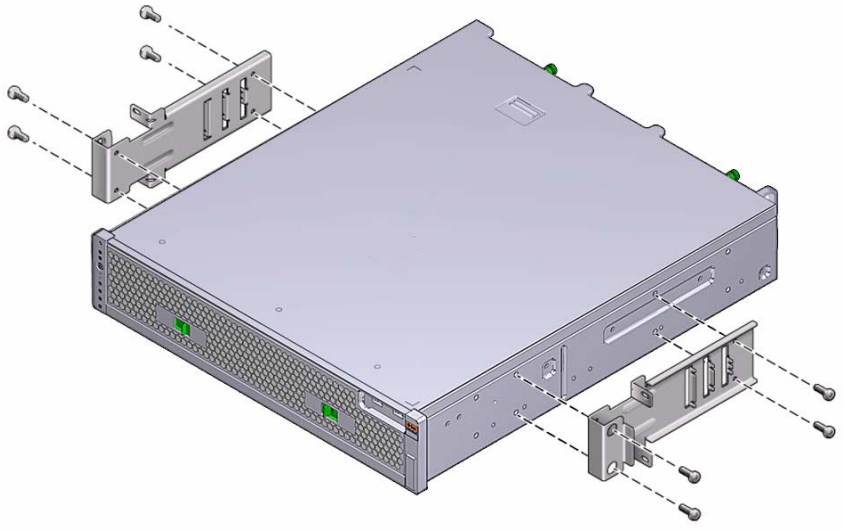
2. **Read the server cautions.**

   See "Handling Precautions" on page 20 and "ESD Precautions" on page 21.

3. **Read the rack cautions and stabilize the rack.**

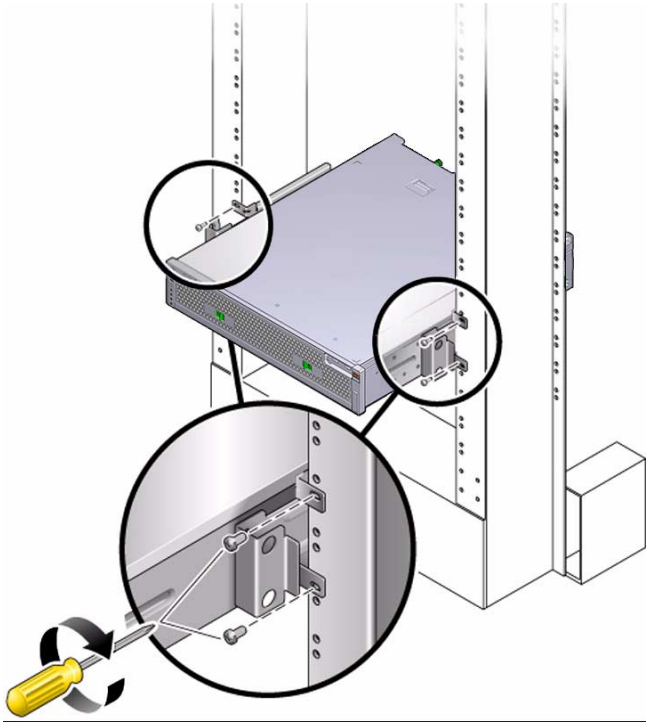
   See "Rack Cautions" on page 23 and "Stabilize the Rack" on page 24.

4. **Using four of the M5 x 7 SEM screws for each side bracket, secure the side brackets to the sides of the server.**



5. **Lift the server into the rack.**
6. **Using two screws for each bracket, secure the front of the server to the front of the rack.**

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

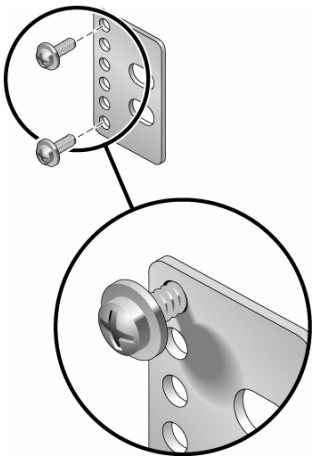


7. **(Optional) If your environment contains especially high vibrations, use the rear plates to further secure the server to the rack.**

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

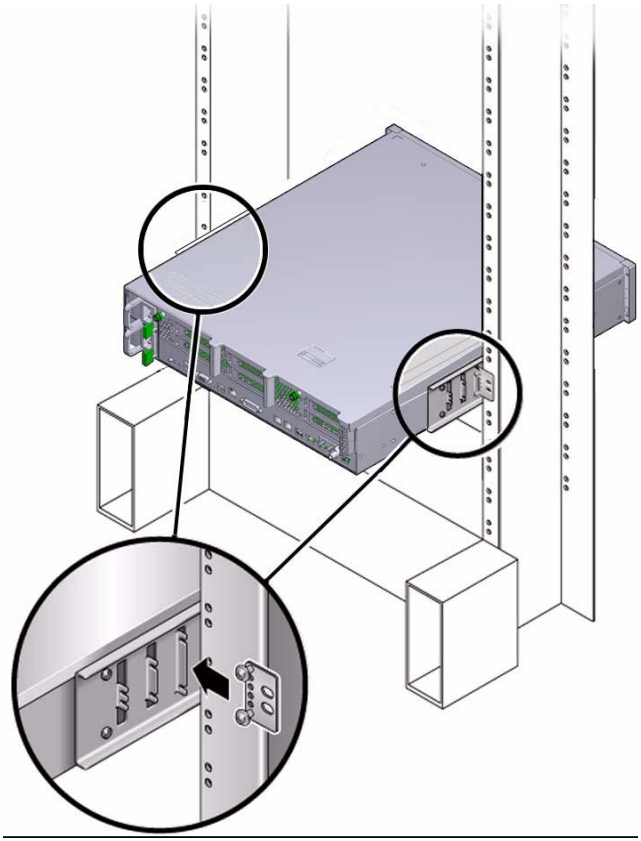
   a. **Using two of the M3 x 8 SEM screws for each rear plate, loosely install the screws in one of the six positions on the rear plate.**

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



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

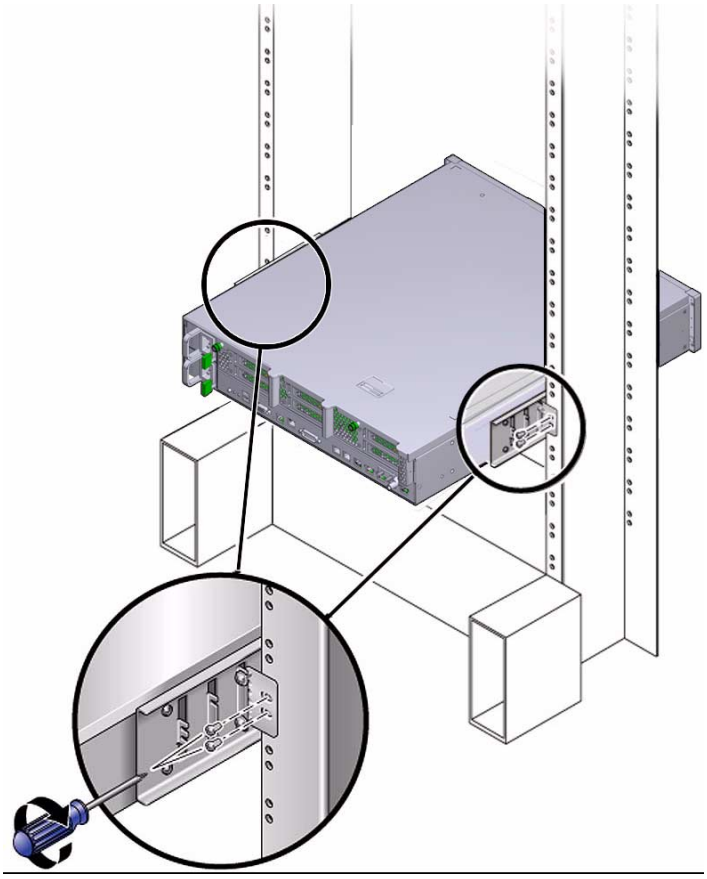
The screw heads should be facing the rear of the server. The other side of the rear plate should be in front of the rack post.



**c. Tighten the screws to secure the rear plate to the set of eyelets on the side bracket.**

**d. Using two screws, secure the other side of the rear plate to the back of the post.**

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



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

8. **Connect required and optional cables.**

   See "Connecting Cables" on page 77.

### Related Information

- "19-Inch Hardmount Rack Kit (2-Post Rack)" on page 52
- "Tools Needed for Installation" on page 22
- "Handling Precautions" on page 20
- "Rack Cautions" on page 23

# Installing the 19-Inch Sliding-Rail Kit (2-Post Rack)

Use these topics to install the server into a 2-post rack using the optional 19-inch sliding-rail kit:


- "19-Inch Sliding-Rail Kit (2-Post Rack)" on page 60
- "Install a Server (2-Post, 19-Inch Sliding-Rail Kit)" on page 61


### Related Information


- "Tools Needed for Installation" on page 22
- "Handling Precautions" on page 20
- "Rack Cautions" on page 23

# 19-Inch Sliding-Rail Kit (2-Post Rack)

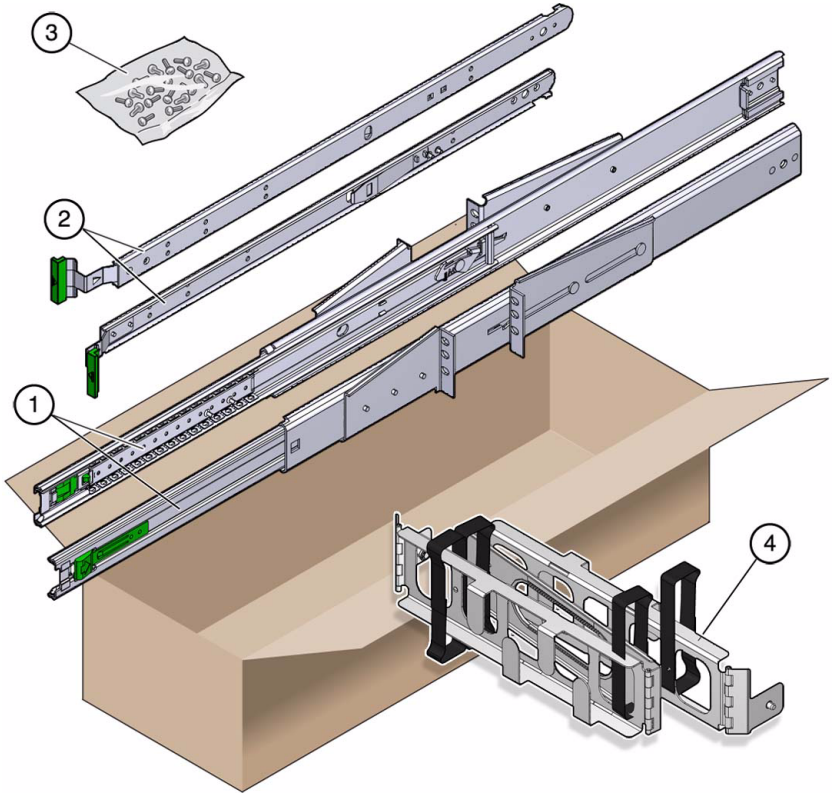



**TABLE:** 19-Inch Sliding-Rail Kit Contents

| No. | Description |
|---|---|
| 1 | Slide assemblies (2) |
| 2 | Inside glides (2) |
| 3 | Screws |
| 4 | Cable management arm |
| Not shown | Threaded strips – M6 (4) 10-32 (4) |

**TABLE:** 19-Inch Sliding-Rail Screws

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

### Related Information

- "Install a Server (2-Post, 19-Inch Sliding-Rail Kit)" on page 61
- "Tools Needed for Installation" on page 22
- "Handling Precautions" on page 20
- "Rack Cautions" on page 23

## ▼ Install a Server (2-Post, 19-Inch Sliding-Rail Kit)

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

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

1. **Gather the required tools.**

   See "Tools Needed for Installation" on page 22.

2. **Read the server cautions.**

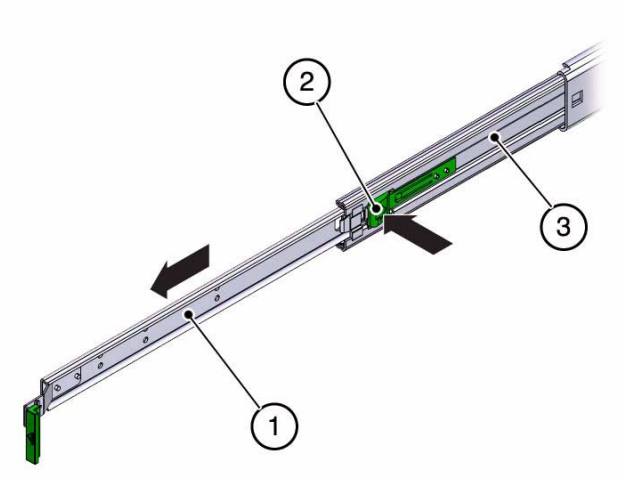
   See "Handling Precautions" on page 20 and "ESD Precautions" on page 21.

3. **Read the rack cautions and stabilize the rack.**

   See "Rack Cautions" on page 23 and "Stabilize the Rack" on page 24.

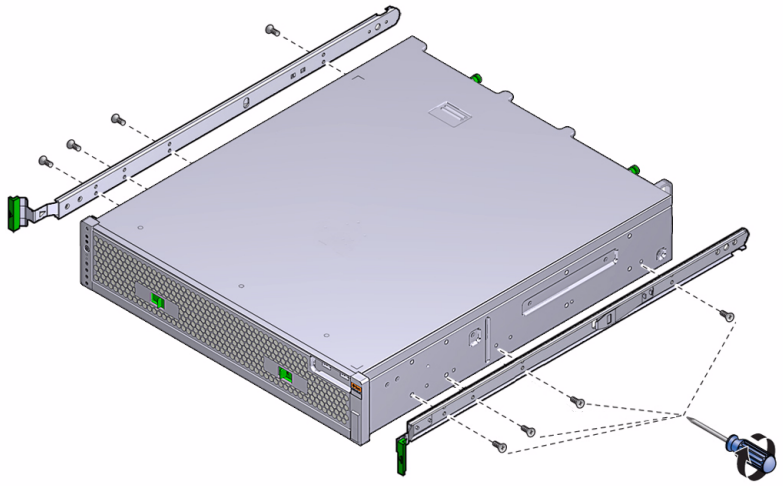
4. **Retrieve the slide assemblies from the rack kit.**

5. **Press in the green button on each slide assembly and pull the right side and left side inner glides completely out of the slides.**




| No. | Description |
|---|---|
| 1 | Glide |
| 2 | Button |
| 3 | Slide |

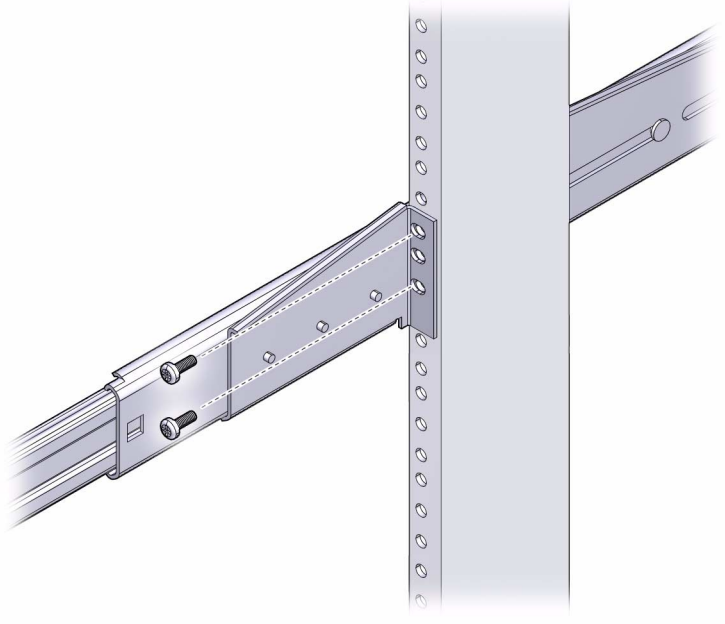
6. **Using eight of the M4 x 0.5 x 5 mm Phillips panhead screws from the rackmount kit (four for each side), attach each glide to the side of the server chassis.**



7. **Get the rack brackets (front and rear) from the rackmount kit.**

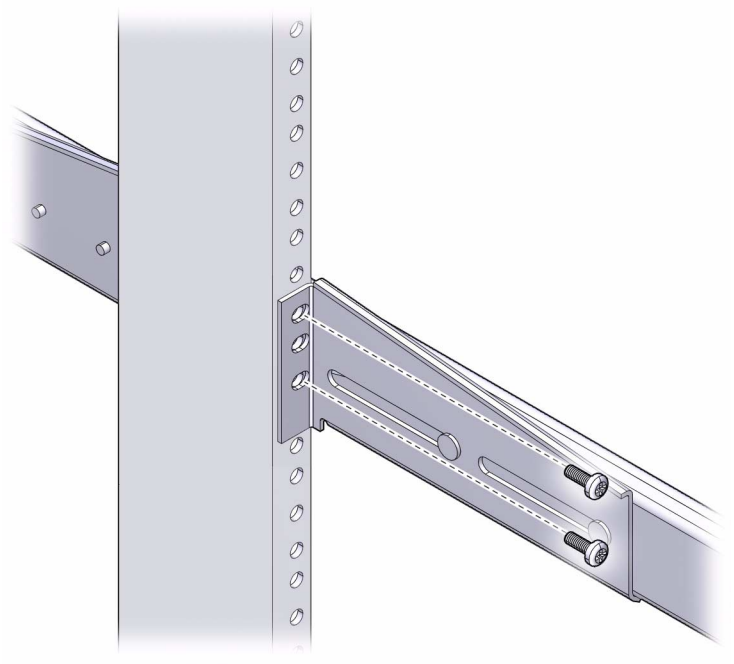
8. **Lift each front bracket to the desired position at the *front* of the rack, and attach a front bracket to each of the front rack posts.**

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



9. **Lift each rear bracket to the desired position at the *rear* of the rack, and attach a rear bracket to each of the rear rack posts.**

   To secure each bracket, use two of the M5 x 12.7 mm screws or two of the M6 x 13 mm screws, as you did in Step 8. Tighten the screws enough to secure the brackets, but leave the brackets loose enough for adjustment later.



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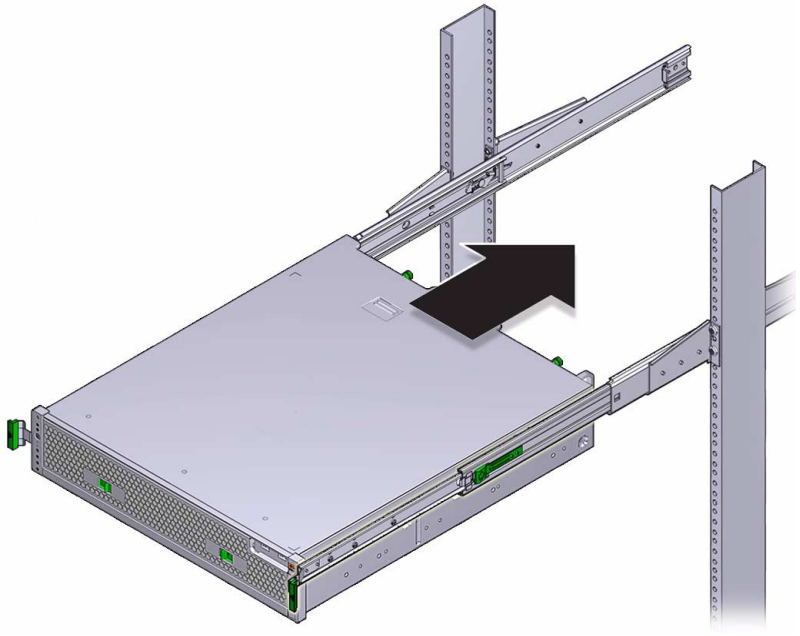
**Note –** If your rack has 10–32 holes, use the 10–32 collar screws and 10–32 threaded strips.

---

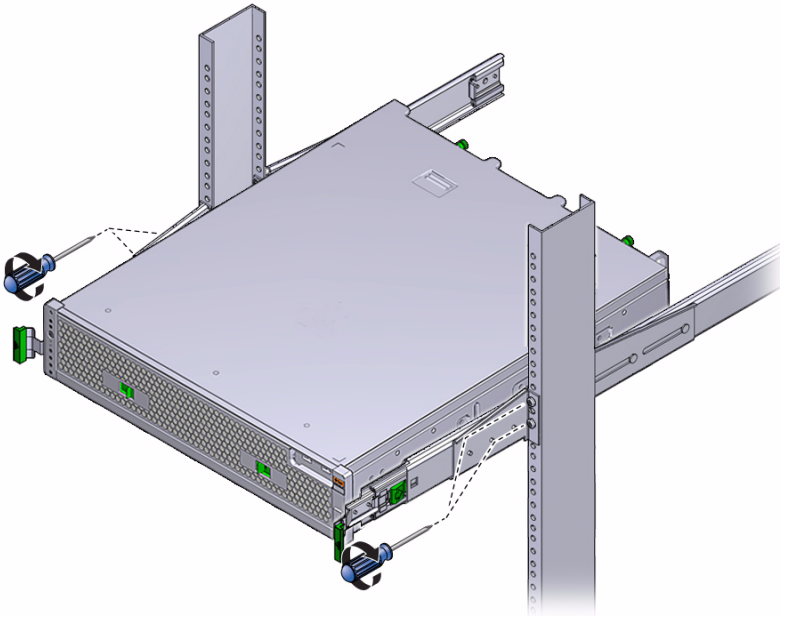
10. **Align the glides attached to the server with the slide assemblies in the rack.**

    You might find that there is too much or too little room between the two slides mounted in the rack, consequently the glides attached to the server might not align correctly with the slides in the rack. If either situation occurs, loosen the screws on the front and back brackets (Step 8 and Step 9), move the brackets inward or outward to the appropriate points, then tighten the brackets again.

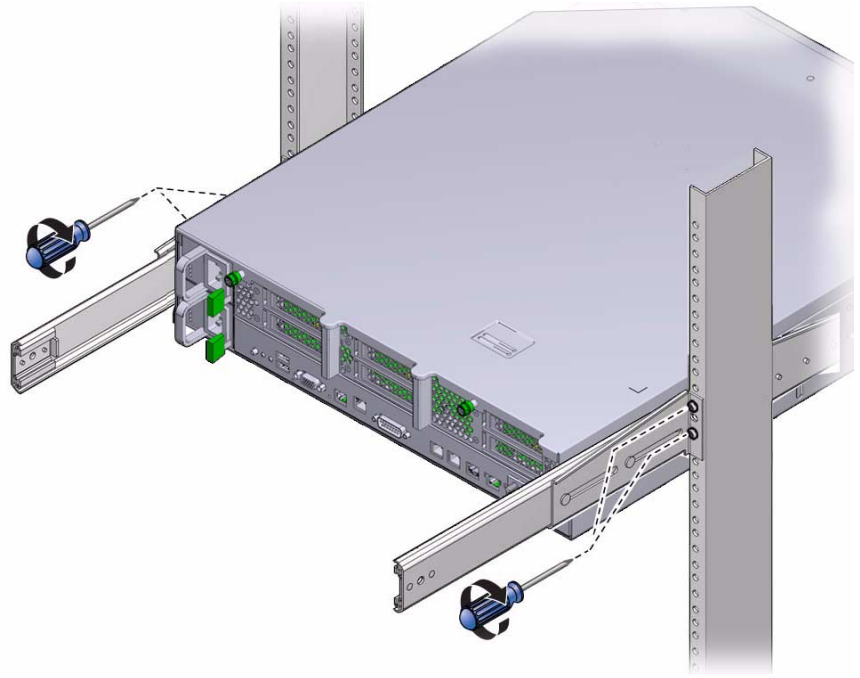
11. **Push in the slide buttons and slide the server all the way into the rack enclosure.**



12. **Fully tighten the screws on the front brackets.**

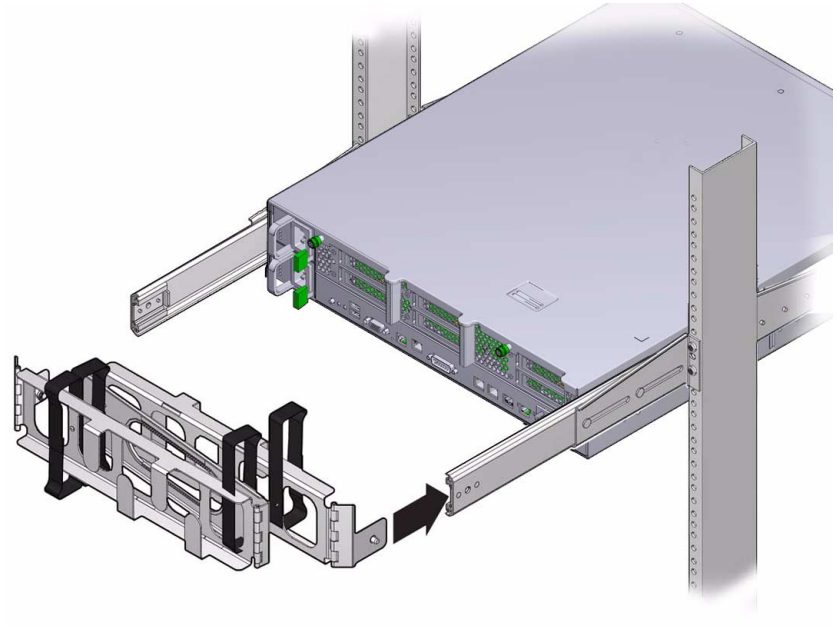


13. **Fully tighten the screws on the rear brackets.**



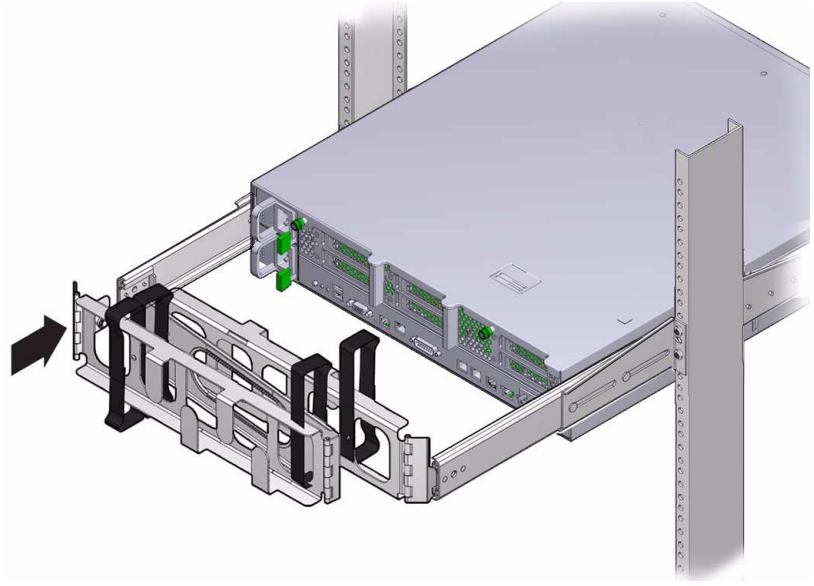
14. **Attach the CMA to the right rail (note labels on the rails and the CMA) on the right side.**

    There are labels on both the rails and the CMA. The CMA side that has an arrow attaches to the right inner glide. The other side of the CMA attaches to the outer member.



15. **Attach the CMA to the left rail.**

    There are labels on both the rails and the CMA. The CMA side that has an arrow attaches to the left inner glide. The other side of the CMA attaches to the outer member.



16. **Connect required and optional cables.**

    See "Connecting Cables" on page 77.

### Related Information

- "19-Inch Sliding-Rail Kit (2-Post Rack)" on page 60
- "Tools Needed for Installation" on page 22
- "Handling Precautions" on page 20
- "Rack Cautions" on page 23

# Installing the 23-Inch Hardmount Kit (2-Post Rack)

Use these topics to install the server into a 2-post rack using the optional 23-inch hardmount kit:

- "23-Inch Hardmount Kit (2-Post Rack)" on page 69
- "Install the Server (23-Inch Hardmount Kit)" on page 70

### Related Information

- "Tools Needed for Installation" on page 22
- "Handling Precautions" on page 20
- "Rack Cautions" on page 23

# 23-Inch Hardmount Kit (2-Post Rack)

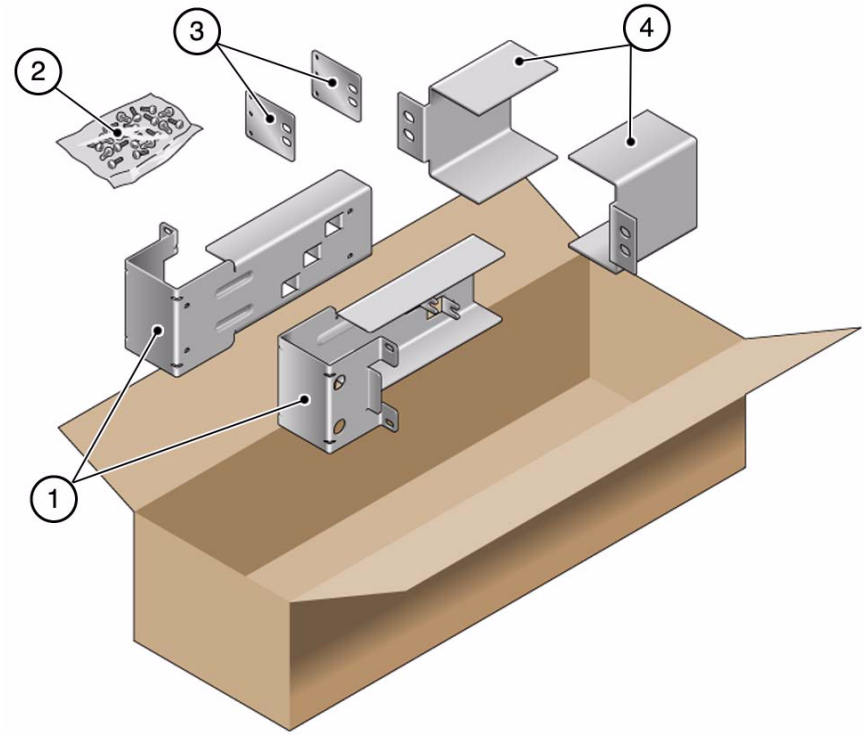



**TABLE:** 12-Inch Hardmount Kit Contents

| No. | Description |
|---|---|
| 1 | Side brackets (2) |
| 2 | Screws |
| 3 | Rear plates (2) |
| 4 | Rail guides (2) |

**TABLE:** 23-Inch Rackmount Screws

| Quantity | Description | Where Used |
|---|---|---|
| 10 | M5 x 7 SEM screws | 8 for side brackets, 2 for rear plates |
| 10 | M5 x 12.7 mm screws | 10 for rack, if appropriate |
| 10 | M6 x 13 mm screws | 10 for rack, if appropriate |

**TABLE:** 23-Inch Rackmount Screws *(Continued)*

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

### Related Information

- "Install the Server (23-Inch Hardmount Kit)" on page 70
- "Tools Needed for Installation" on page 22
- "Handling Precautions" on page 20
- "Rack Cautions" on page 23

# ▼ Install the Server (23-Inch Hardmount Kit)

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

1. **Gather the required tools.**

   See "Tools Needed for Installation" on page 22.

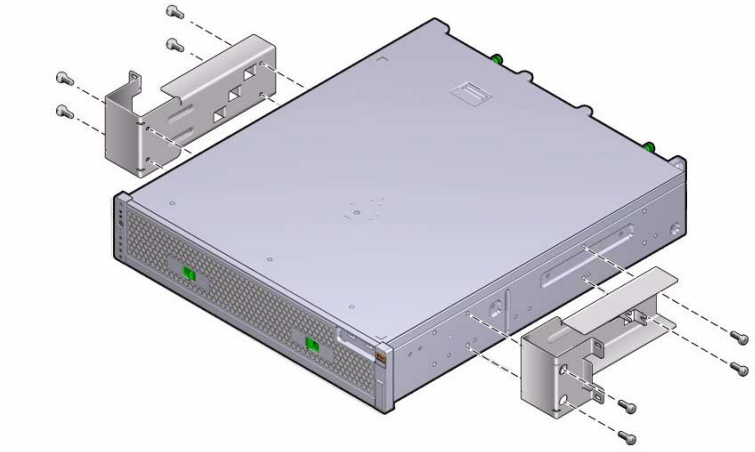
2. **Read the server cautions.**

   See "Handling Precautions" on page 20 and "ESD Precautions" on page 21.

3. **Read the rack cautions and stabilize the rack.**

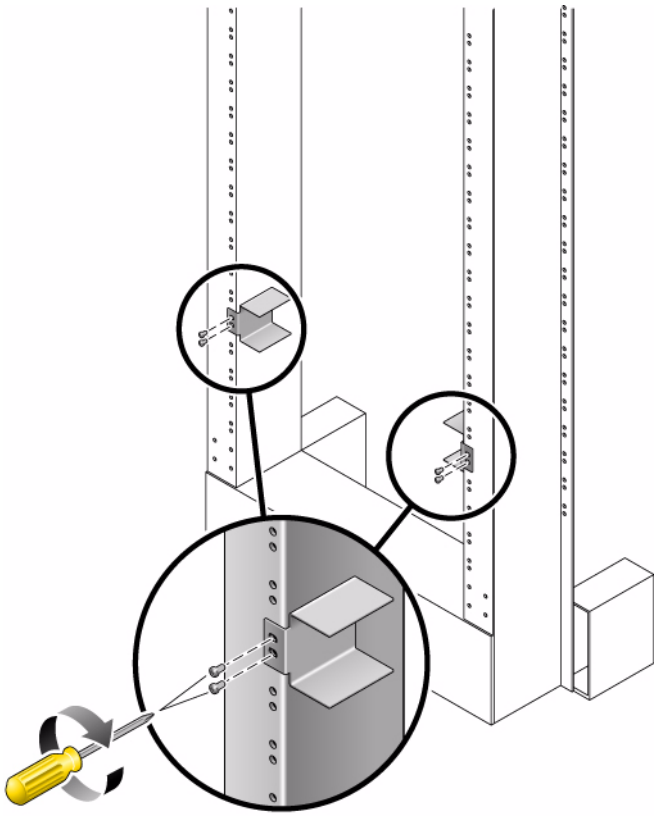
   See "Rack Cautions" on page 23 and "Stabilize the Rack" on page 24.

4. **Using eight of the M5 x 7 SEM screws (four for each side bracket), secure the side brackets to the sides of the server.**

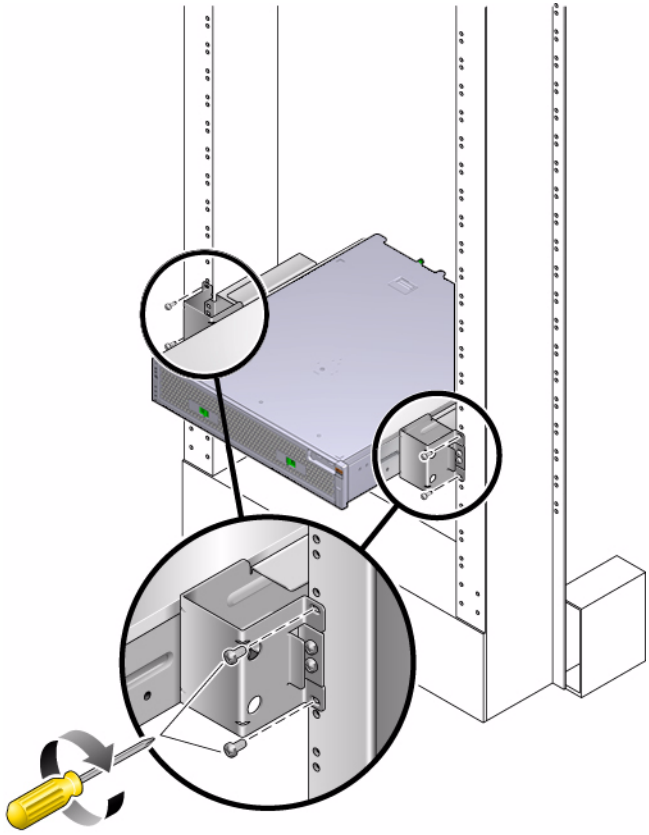


5. **Lift the rail guides to the desired height in the rack and, using two screws each, secure both rail guides to the rack.**

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



6. **Lift the server into the rack, and slide the server onto the rail guides.**



7. **Using two screws on each side, secure each side bracket on the server to the front of the rack.**

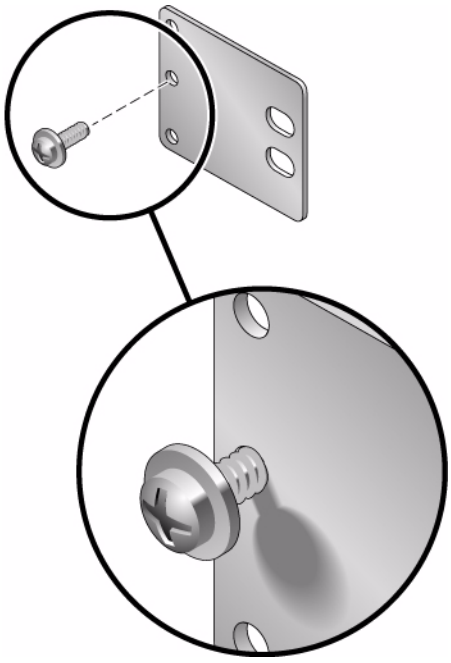
   The size of the screws varies, depending on your particular rack.

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

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

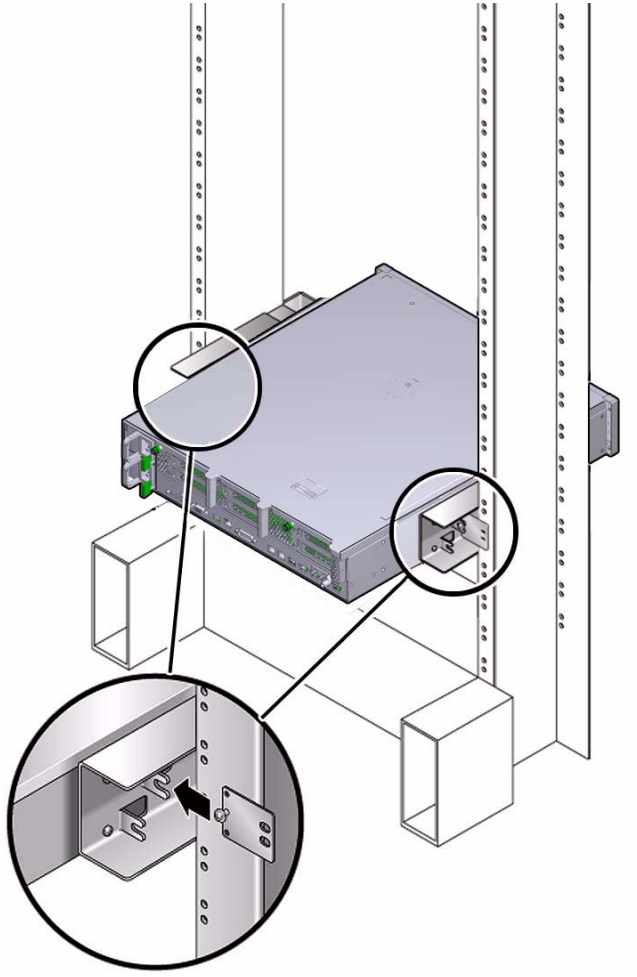
   a. **Using one M5 x 7 SEM screw for each rear plate, loosely install the screw in one of the three positions on the rear plate.**

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



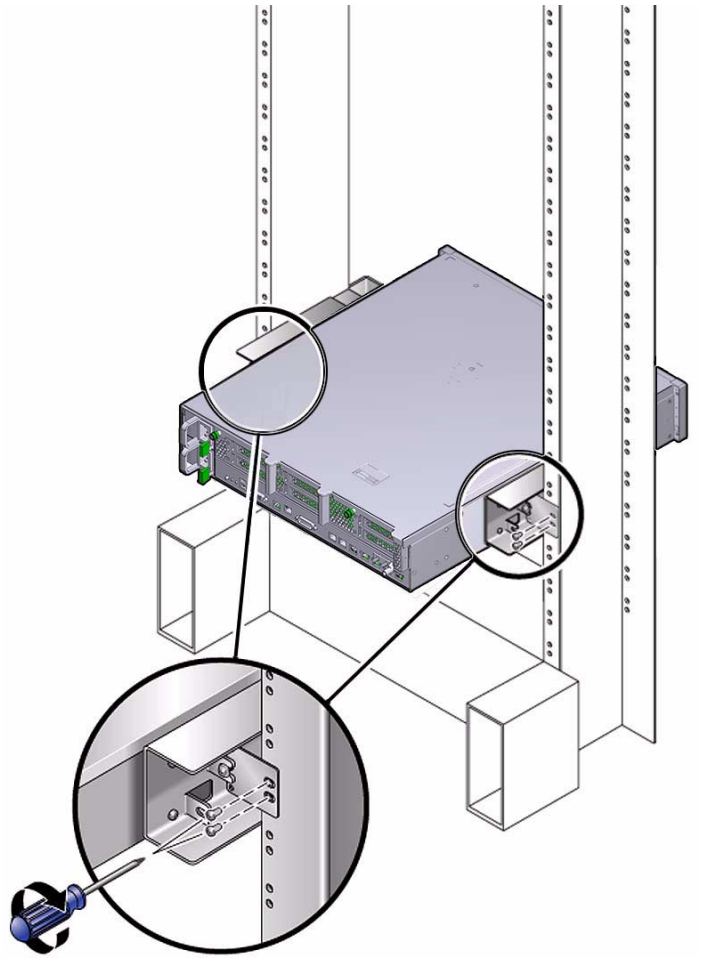
**b. Slide the rear plate in so that the screw slides into position into one of the eyelets.**

The screw head should be facing the rear of the server. The other side of the rear plate should be in front of the rack post.



**c. Tighten the screw to secure the rear plate to the eyelet on the side bracket.**

**d. Using two screws, secure the other side of the rear plate to the back of the post.**



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

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

**9. Connect required and optional cables.**

See "Connecting Cables" on page 77.

### Related Information


- "23-Inch Hardmount Kit (2-Post Rack)" on page 69
- "Tools Needed for Installation" on page 22
- "Handling Precautions" on page 20
- "Rack Cautions" on page 23

# Connecting Cables

Perform the following tasks to connect and configure the network and serial ports before you apply power to the server.

| Step | Description | Links |
|---|---|---|
| 1. | Plan and configure server connections. | "Connecting Data and Management Cables" on page 78 |
| 2. | (Optional) Review connector descriptions and pinouts. | "Identifying Ports" on page 82 |

## Related Information

- "Understanding the Server" on page 1
- "Confirming Server and Site Specifications" on page 9
- "Preparing for Installation" on page 19
- "Installing the Server in a 4-Post Rack" on page 27
- "Installing the Server in a 2-Post Rack" on page 51
- "Powering On the Server the First Time" on page 91

# Connecting Data and Management Cables

These topics describe which ports you must cable before applying power to the server.

| Step | Description | Links |
|---|---|---|
| 1. | Plan the connections you need for installing the server. | "Available Connections" on page 78 |
| 2. | Cable the SP. | "Cable the SP" on page 81 |
| 3. | Cable the Ethernet ports. | "Cable the Ethernet Ports" on page 81 |
| 4. | Cable other data cables, as needed. | "(Optional) Connect Other Data Cables" on page 82 |

### Related Information

- "Identifying Ports" on page 82
- "Rear Panel Components (Installation)" on page 7

## Available Connections

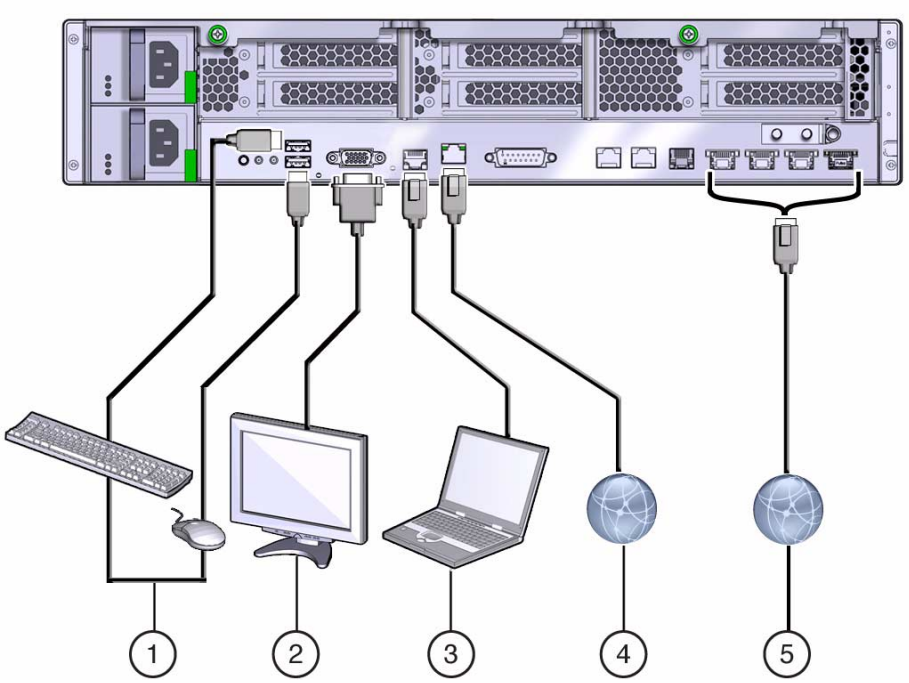
Before applying power to the server, provide connectivity to the SP and server.

Use the information in this topic to plan for these connections. Then gather the required network addresses and cables.

**Caution –** To comply with NEBS lightning requirements, all I/O connections (except the Ethernet and power connections) must be made using shielded cables, and both ends of the shield must be grounded.

**Caution –** All data cable connections are restricted to intra-building interfaces and must be isolated from the exposed outside plant cabling. Using primary protectors does not eliminate this restriction. Ensure that these connections do not connect metallically to interfaces that connect to the outside plant or its wiring.

This figure and table describe available ports and lists what you need to use them.




| No. | Port | Description | You Need: |
|---|---|---|---|
| 1 | Two USB | Provides USB connections to the SP. | • USB keyboard<br>• USB mouse<br>For pinout information, see "USB Ports" on page 86. |
| 2 | VGA | Provides a video connection to the SP.<br>**Note -** This port is for temporary use during installation or service procedures and has a maximum cable length limit of 6 meters. | VGA monitor and cable (not to exceed 6 meters).<br>For pinout information, see "Video Port" on page 86. |

| No. | Port | Description | You Need: |
|---|---|---|---|
| 3 | SER MGT | A serial connection through an RJ-45 connector. This port supports local connections to the SP and is limited to CLI interaction with Oracle ILOM.<br>These are the default settings:<br>• 8N1: eight data bits, no parity, one stop bit<br>• 9600 baud<br>• Disable hardware flow control (CTS/RTS)<br>• Disable software flow control (XON/XOFF) | • A terminal device – can be a terminal, a connection to a terminal server, or computer such as a laptop running terminal emulation software.<br>• A cable to connect the terminal device to the SER MGT port.<br>For pinout information, see "SER MGT Port" on page 83 |
| 4 | NET MGT | A 10/100BASE-T Ethernet connection through an RJ-45 connector. This port supports remote connections to the SP using the Oracle ILOM CLI and web interface.<br>By default, this port is configured to use DHCP or an IPv6 router to automatically obtain an IP address. Alternatively, you can assign a static IP address to this port.<br>To use this port, it must have its network settings configured. Once configured, you use the NET MGT port IP address to login to the SP using a browser or secure shell. | • An Ethernet cable to connect to the NET MGT port to your network.<br>• An IP address for this port (required from DHCP or a static address)<br>For pinout information, see "NET MGT Port" on page 84.<br>**Note -** If your environment does not provide DHCP services, first use the SER MGT port to configure the NET MGT port parameters. |
| 5 | NET (0 - 3) | Four 10 Gigabit Ethernet ports enable you to connect the server to your network. | • An Ethernet cable to connect to the NET 0 port to your network.<br>• Network parameters such as an IP address (can be provided by DHCP services or assigned a static address in the OS)<br>• Additional cables and Ethernet addresses as needed for additional connections to NET 1 - 3.<br>For pinout information, see "Gigabit Ethernet Ports" on page 84. |

## Related Information

- "Cable the SP" on page 81
- "Cable the Ethernet Ports" on page 81
- "(Optional) Connect Other Data Cables" on page 82
- "Identifying Ports" on page 82
- "Rear Panel Components (Installation)" on page 7

## ▼ Cable the SP

- **Determine which of these SP connections works in your environment and establish the connection:**
  - SER MGT port
  - NET MGT port
  - VGA video and USB keyboard and mouse

  You can configure any combination of these SP connections. See "Available Connections" on page 78.

---

**Note –** The VGA video port is for temporary use during installation or service procedures and has a maximum cable length limit of 6 meters.

---

### Related Information

- "Available Connections" on page 78
- "Cable the Ethernet Ports" on page 81
- "(Optional) Connect Other Data Cables" on page 82
- "Identifying Ports" on page 82
- "Rear Panel Components (Installation)" on page 7

## ▼ Cable the Ethernet Ports

Once the server is running the OS, these connections provide Ethernet access to the server. See "Gigabit Ethernet Ports" on page 84.

---

**Note –** The Oracle ILOM sideband management feature enables you to access the SP using one of these Ethernet ports. Refer to the *Server Administration* for instructions.

---

1. **Connect a Category 6 (or better) cable from your network switch or hub to Ethernet Port 0 (NET0) on the rear of the chassis.**
2. **(Optional) Connect Category 6 (or better) cables from your network switch or hub to the remaining Ethernet ports.**

### Related Information

- "Available Connections" on page 78
- "Cable the SP" on page 81
- "(Optional) Connect Other Data Cables" on page 82

- "Identifying Ports" on page 82
- "Rear Panel Components (Installation)" on page 7

## ▼ (Optional) Connect Other Data Cables

- **If your installation includes optional PCIe cards, USB devices, or alarms, make the appropriate connections to those devices.**

  Gather the cables and equipment to make these connections, based on your server options:

  - PCIe cards – refer to PCIe device documentation
  - USB devices – see "USB Ports" on page 86
  - Video – see "Video Port" on page 86
  - Alarms – "Alarm Port" on page 88

### Related Information

- "Available Connections" on page 78
- "Cable the SP" on page 81
- "Cable the Ethernet Ports" on page 81
- "Identifying Ports" on page 82
- "Rear Panel Components (Installation)" on page 7

# Identifying Ports

These topics provided connector descriptions and pinouts. See "Rear Panel Components (Installation)" on page 7 for the locations of the ports.

- "SER MGT Port" on page 83
- "NET MGT Port" on page 84
- "Gigabit Ethernet Ports" on page 84
- "USB Ports" on page 86
- "Video Port" on page 86
- "Alarm Port" on page 88

### Related Information

- "Connecting Data and Management Cables" on page 78

# SER MGT Port

The SER MGT RJ-45 port, located on the rear panel, provides an TIA/EIA-232 serial Oracle/Cisco standard connection to the SP. For DTE-to-DTE communications, you can use the supplied RJ-45 to DB-9 crossover adapter with a standard RJ-45 cable to achieve the required null modem configuration.

By default, this port is configured with these parameters:

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


| Pin | Signal Description | Pin | Signal Description |
|---|---|---|---|
| 1 | Clear to Send | 5 | Ground |
| 2 | Data Carrier Detect | 6 | Receive Data |
| 3 | Transmit Data | 7 | Data Terminal Ready |
| 4 | Ground | 8 | Ready to Send |

**Caution –** Do not attach a modem to this port.

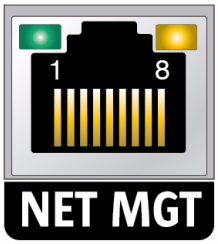
### Related Information


- "Available Connections" on page 78
- "Rear Panel Components (Installation)" on page 7
- "NET MGT Port" on page 84
- "Gigabit Ethernet Ports" on page 84
- "USB Ports" on page 86
- "Video Port" on page 86
- "Alarm Port" on page 88

# NET MGT Port

The NET MGT RJ-45 port, located on the rear panel, provides an optional Ethernet connection to the SP. The NET MGT port is an optional connection to the Oracle ILOM SP. The service processor network management port uses an RJ-45 cable for a 10/100BASE-T connection. If your network does not use a DHCP server, this port will not be available until you configure network settings through the SER MGT port.

This port does not support connections to Gigabit networks.




| Pin | Signal Description | Pin | Signal Description |
|---|---|---|---|
| 1 | Transmit Data + | 5 | No Connect |
| 2 | Transmit Data - | 6 | Receive Data - |
| 3 | Receive Data + | 7 | No Connect |
| 4 | No Connect | 8 | No Connect |

### Related Information

- "Available Connections" on page 78
- "Rear Panel Components (Installation)" on page 7
- "SER MGT Port" on page 83
- "Gigabit Ethernet Ports" on page 84
- "USB Ports" on page 86
- "Video Port" on page 86
- "Alarm Port" on page 88

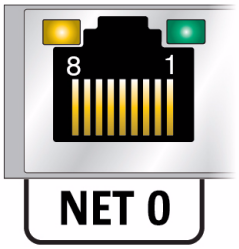
# Gigabit Ethernet Ports

The server has four RJ-45 10-Gigabit Ethernet (10GbE) network connectors, labeled NET 3, NET 2, NET 1, and NET 0 (left to right) on the server rear panel. Use these ports to connect the server to the network.

The LEDs located above each NET port are Link/Activity (left) and Speed (right) indicators for each port as described in this table:

| Connection Type | IEEE Terminology | Speed LED Color | Transfer Rate |
|---|---|---|---|
| Fast Ethernet | 100BASE-TX | Off | 100 Mbits/sec |
| Gigabit Ethernet | 1000BASE-T | Amber | 1000 Mbits/sec |
| 10 Gigabit Ethernet | 10GBASE-T | Green | 10000 Mbits/sec |

**Note –** Using the Oracle ILOM sideband management feature, you can access the SP using one of these ports. Refer to the *Server Administration* for instructions.




| Pin | Signal Description | Pin | Signal Description |
|---|---|---|---|
| 1 | Transmit/Receive Data 0 + | 5 | Transmit/Receive Data 2 - |
| 2 | Transmit/Receive Data 0 - | 6 | Transmit/Receive Data 1 - |
| 3 | Transmit/Receive Data 1 + | 7 | Transmit/Receive Data 3 + |
| 4 | Transmit/Receive Data 2 + | 8 | Transmit/Receive Data 3 - |

## Related Information


- "Available Connections" on page 78
- "Rear Panel Components (Installation)" on page 7
- "SER MGT Port" on page 83
- "NET MGT Port" on page 84
- "USB Ports" on page 86
- "Video Port" on page 86
- "Alarm Port" on page 88

# USB Ports

You can access two USB ports from the front of the server and two USB ports from the rear of the server. The USB ports support hot-plugging. You can connect and disconnect USB cables and peripheral devices while the server is running, without affecting server operations.

---

**Note –** The maximum USB cable length for connecting to the server's full-speed USB ports is 5 meters.

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**Note –** You can connect up to 126 devices to each of the four USB controllers (two ports in front, two ports in rear), for a total of 504 USB devices per server.

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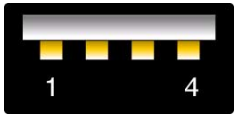



| Pin | Signal Description | Pin | Signal Description |
|---|---|---|---|
| 1 | +5V supply | 3 | Data + |
| 2 | Data - | 4 | Ground |

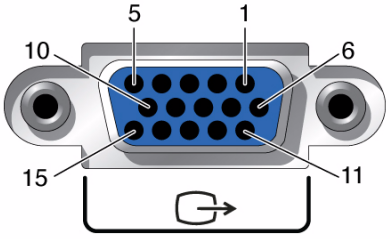
### Related Information

- "Available Connections" on page 78
- "Rear Panel Components (Installation)" on page 7
- "SER MGT Port" on page 83
- "NET MGT Port" on page 84
- "Gigabit Ethernet Ports" on page 84
- "Video Port" on page 86
- "Alarm Port" on page 88

# Video Port

The server has one 15-pin VGA video port on the rear of the server. Use a HDB-15 video cable to connect to a video device. You can also use an RJ-45 to DB-25 analog-to-digital video adapter to achieve the required connection.

**Note –** This port is for temporary use during installation or service procedures and has a maximum cable length limit of 6 meters.



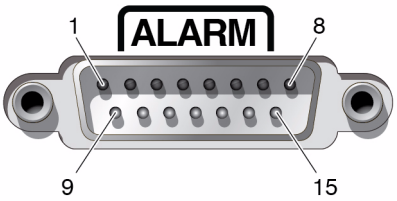

| Pin | Signal Description | Pin | Signal Description |
|---|---|---|---|
| 1 | Red Video | 9 | +5V |
| 2 | Green Video | 10 | Sync Ground |
| 3 | Blue Video | 11 | Monitor ID - Bit 0 (Ground) |
| 4 | Monitor ID - Bit 2 (Ground) | 12 | VGA 12C Serial Data |
| 5 | Ground | 13 | Horizontal Sync |
| 6 | Red Ground | 14 | Vertical Sync |
| 7 | Green Ground | 15 | VGA 12C Serial Clock |
| 8 | Blue Ground | | |

## Related Information


- "Available Connections" on page 78
- "Rear Panel Components (Installation)" on page 7
- "SER MGT Port" on page 83
- "NET MGT Port" on page 84
- "Gigabit Ethernet Ports" on page 84
- "USB Ports" on page 86
- "Alarm Port" on page 88

# Alarm Port

The alarm port on the rear panel uses a standard DB-15 connector that provides a connection for a Telco dry alarm relay cable. In a telecommunications environment, use this port to connect to the central office alarming system. The alarm port relay contacts are rated for 100V, 0.2A maximum.




| Pin | Signal Description | Pin | Signal Description |
|---|---|---|---|
| 1 | RESET0+ | 9 | ALARM1_NC |
| 2 | RESET0- | 10 | ALARM1_COM |
| 3 | RESET1+ | 11 | ALARM2_NO |
| 4 | RESET1- | 12 | ALARM2_NC |
| 5 | ALARM0_NO | 13 | ALARM2_COM |
| 6 | ALARM0_NC | 14 | ALARM3_NO |
| 7 | ALARM0_COM | 15 | ALARM3_COM |
| 8 | ALARM1_NO | CHASSIS | FRAME GND |

Each alarm has a corresponding alarm LED on the front panel:

- ALARM0 and the Critical LED
- ALARM1 and the Major LED
- ALARM2 and the Minor LED
- ALARM3 and the User LED

### Related Information


- "Available Connections" on page 78
- "Rear Panel Components (Installation)" on page 7
- "SER MGT Port" on page 83
- "NET MGT Port" on page 84
- "Gigabit Ethernet Ports" on page 84

- "USB Ports" on page 86
- "Video Port" on page 86

# Powering On the Server the First Time

Use the following information based on your server's type of input power.

| Step | | |
|---|---|---|
| 1. | Review power requirements. | "AC and DC Power Supply Specifications" on page 11<br>"Input Power Information" on page 12<br>"Overcurrent Protection Requirements" on page 13<br>"DC Power Source, Power Connection, and Grounding Requirements" on page 14 |
| 2. | Apply either AC or DC power to the server. | "Connect AC Power Cords" on page 92<br>"Assembling DC Power Cords and Applying DC Power" on page 93 |
| 3. | Power on the host for the first time. | "Power On the Host for the First Time" on page 103 |

### Related Information

- "Understanding the Server" on page 1
- "Confirming Server and Site Specifications" on page 9
- "Preparing for Installation" on page 19
- "Installing the Server in a 4-Post Rack" on page 27
- "Installing the Server in a 2-Post Rack" on page 51
- "Connecting Cables" on page 77

# ▼ Connect AC Power Cords

**Caution –** As soon as the power cables are connected to the power source, the server goes into Standby mode and the Oracle ILOM SP initializes.

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

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

**Note –** If you do not connect a serial terminal or a terminal emulator, you will not see the system messages.

1. **Ensure that you have a connection to the SP.**

   See "Cable the SP" on page 81.

**Note –** The server goes into Standby mode and the service processor initializes as soon as the AC power cord is connected to the power source. By having a connection to the SP, you can view and interact with the initialization process.

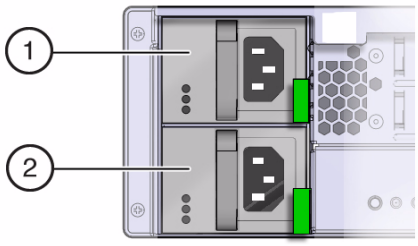
2. **(Optional for AC models) Connect the chassis ground studs to earth ground.**

   See "Connect the Chassis Ground Wire" on page 94.

3. **Route the AC power cords from the AC power source (for example, a power distribution unit) to the rear of the server.**

   Use two power connections on separate circuits for redundancy.

4. **Connect the AC power cords to both power supplies.**




| No. | Description |
|---|---|
| 1 | Power supply 1 |
| 2 | Power supply 0 |

When power is applied, the OK LED flashes while the SP initializes. After a few minutes, the OK LED slowly flashes indicating that the server is in standby power mode. See "Front Panel Components (Installation)" on page 5. The server is not yet powered on.

5. **Power on the server.**

   See "Power On the Host for the First Time" on page 103.

### Related Information

- "Connect the Chassis Ground Wire" on page 94
- "Power On the Host for the First Time" on page 103

# Assembling DC Power Cords and Applying DC Power

| Step | Description | Links |
|---|---|---|
| 1. | Connect the chassis to earth ground. | "Connect the Chassis Ground Wire" on page 94 |
| 2. | Build the DC power cords. | "Assemble the DC Input Power Cord" on page 95 |
| 3. | Install the strain relief housings. | "Install Strain Relief Housings" on page 99 |

| Step | Description | Links |
|---|---|---|
| 4. | Connect the DC power cords to the DC power source and to the server. | "Connect DC Power Cords" on page 102 |

### Related Information

- "Power On the Host for the First Time" on page 103

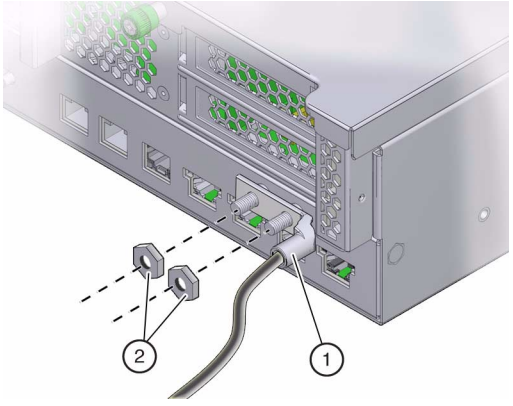
## ▼ Connect the Chassis Ground Wire

The server shipping kit contains a grounding lug for connecting a chassis grounding wire to the rear of the server. You must supply the grounding wire.

**Caution –** The DC power source must be reliably grounded. The server chassis must be grounded with the power supply ground pins or with the chassis ground studs. It is acceptable to have both grounds connected.

This procedure is optional for servers with AC input power. It is acceptable to ground the server through the supplies and chassis ground wire.

1. **Retrieve the grounding lug and two M5 nuts from the shipping kit.**
2. **Insert the grounding wire into the receptacle of the grounding lug and use a crimping tool to crimp the receptacle around the wire.**
3. **Go to the back of the server and locate the two grounding studs.**
4. **Position and align the grounding lug on the two grounding studs at the rear of the chassis.**



| No. | |
|---|---|
| 1 | Earth ground cable secured in the grounding lug |
| 2 | M5 nuts |

5. **Secure the grounding lug to the grounding studs using the two M5 nuts.**
6. **Secure the other end of the grounding wire to the earth ground in the building.**

   You can secure the grounding wire to a proper grounding point on the rack, as long as the rack is properly grounded to the earth ground in the building.
7. **Assemble the DC input power cord.**

   See "Assemble the DC Input Power Cord" on page 95.

### Related Information


- "Assemble the DC Input Power Cord" on page 95
- "Install Strain Relief Housings" on page 99
- "Connect DC Power Cords" on page 102
- "Power On the Host for the First Time" on page 103


## ▼ Assemble the DC Input Power Cord

Assemble one DC input power cable for each DC power input to your server.

1. **Verify that you have met these conditions:**
   - Install a DC power source that meets the server's input power specifications.

     See "AC and DC Power Supply Specifications" on page 11.
   - Secure DC power cables that meet the server's power cabling specifications.

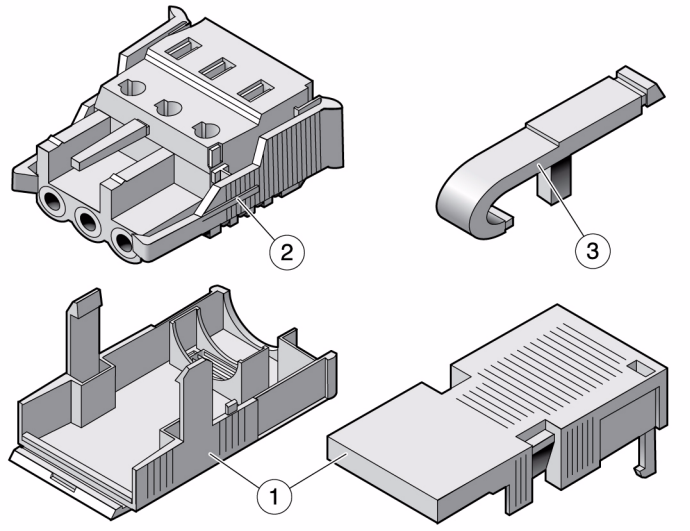
     See "DC Power Source, Power Connection, and Grounding Requirements" on page 14.
   - Attach the DC input plug to the DC input power cables. The input plug is provided in the server's shipping kit.

     See "Shipping Kit Inventory" on page 19.
2. **If the power cables are already connected to a DC power source, de-energize the cables by removing fuses, opening circuit breakers, or turning off the DC source.**

**Caution –** Do not proceed with these instructions until you are sure that there is no voltage present on the DC power cables.

3. **Identify the parts that you will use to assemble the DC input power cables.**

   For each cable, you need the items shown in this illustration. These items are included in the shipping kit that came with your server.



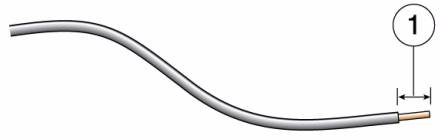

| No. | Description |
|---|---|
| 1 | Strain relief housing |
| 2 | DC input plug |
| 3 | Cage clamp operating lever |

4. **Locate the three wires coming from your DC power source that will be used for the connection to your server:**
   - -48V or -60V (negative terminal)
   - Chassis ground
   - -48V or -60V Return (positive terminal)

**Note –** Depending on the DC power source, the -48V or -60V (negative terminal) might be marked with a minus (-) symbol. The -48V or -60V Return (positive terminal) might be marked with a positive (+) symbol.

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

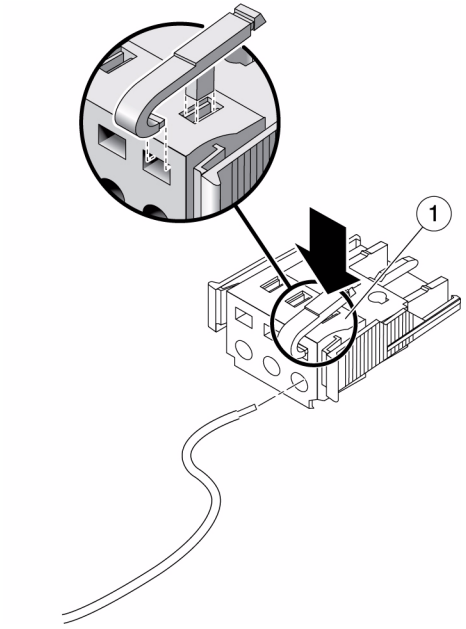
   Do not strip more than 5/16 in. (8 mm) from each wire. Doing so leaves uninsulated wire exposed from the DC connector after the assembly is complete.



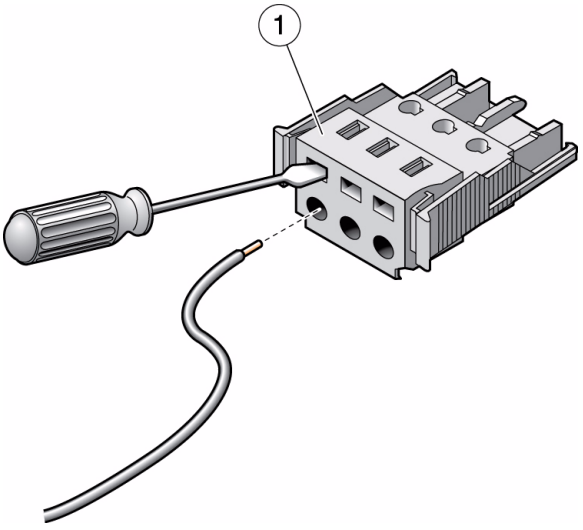

| No. | Description |
|---|---|
| 1 | 5/16 in. (8 mm) maximum |

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

   - Insert the tip of the cage clamp operating lever into the rectangular hole directly above the hole in the DC input plug where you want to insert the first wire. Press down on the cage clamp operating lever. See the first figure.
   - Insert a small slotted screwdriver into the rectangular hole directly above the hole in the DC input plug where you want to insert the first wire. Push in to open the cage clamp. See the second figure.

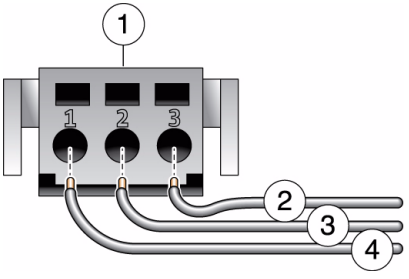


| No. | Description |
|---|---|
| 1 | DC input plug |




| No. | Description |
|---|---|
| 1 | DC input plug |

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




| No. | Description |
|---|---|
| 1 | Top of connector |
| 2 | From -48V or -60V return |

| No. | Description |
|---|---|
| 3 | From chassis ground (green/yellow) |
| 4 | From -48V or -60V |

**Note –** If you need to remove a wire from the DC input plug, insert the cage clamp operating lever or a small screwdriver and pull the wire from the DC input plug.

8. **Release the lever or remove the tool to secure the wire into the connector.**
9. **Repeat the procedures for the other two wires to complete the assembly of the DC input power cable.**
10. **Repeat this procedure to create as many DC input power cables as you need for your unit.**
11. **Install strain relief housings.**

    See "Install Strain Relief Housings" on page 99.

### Related Information


- "Connect the Chassis Ground Wire" on page 94
- "Install Strain Relief Housings" on page 99
- "Connect DC Power Cords" on page 102
- "Power On the Host for the First Time" on page 103

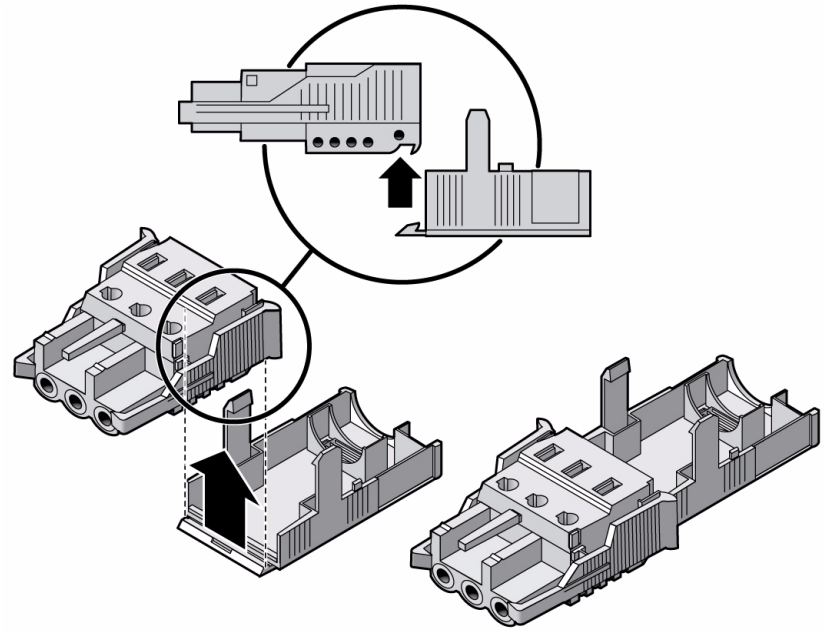

## ▼ Install Strain Relief Housings

1. **Ensure that you have connected the chassis ground wire and assembled the DC input power cords.**

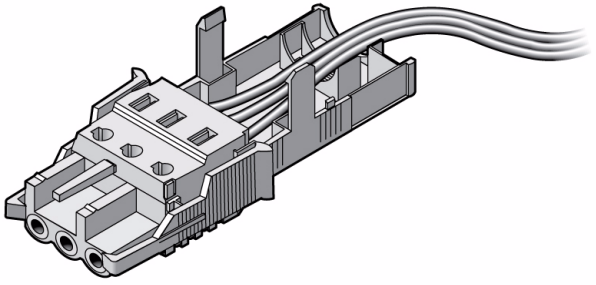
   See "Connect the Chassis Ground Wire" on page 94 and "Assemble the DC Input Power Cord" on page 95.

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

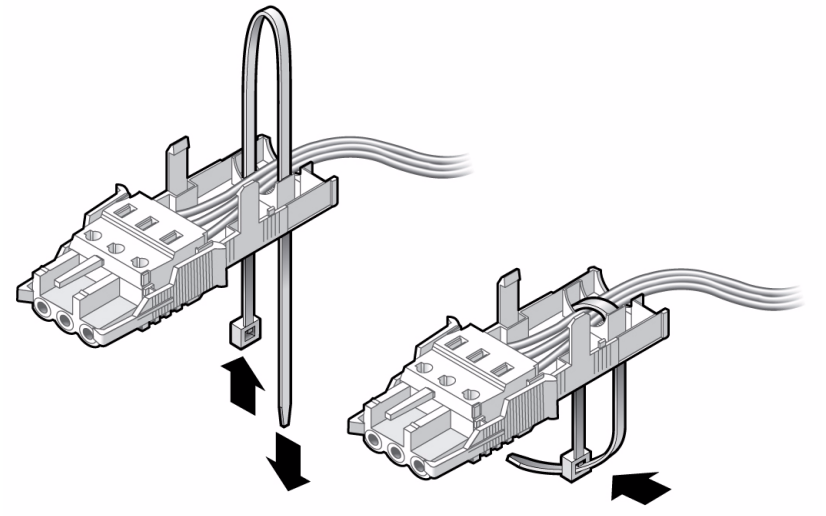
   Ensure that the strain relief housing snaps into place on the DC input plug. You cannot complete the assembly correctly if the strain relief housing is not snapped into place.



3. **Route the three wires coming from the DC power source through the opening at the bottom end of the strain relief housing.**

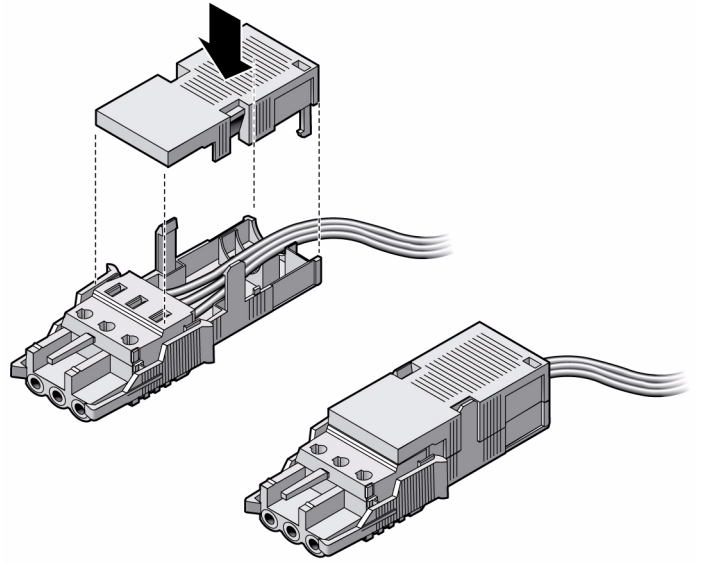


4. **Insert a tie wrap into the bottom portion of the strain relief housing.**



5. **Loop the tie wrap over the wires and back out of the strain relief housing, tightening the tie wrap to secure the wires to the strain relief housing.**
6. **Lower the top portion of the strain relief housing so that the three prongs on the top portion insert into the openings in the DC input plug.**

   Push the top and bottom portions of the strain relief housing together until they snap into place.



7. **Connect the DC power cords.**

   See "Connect DC Power Cords" on page 102.

### Related Information

- "Connect the Chassis Ground Wire" on page 94
- "Assemble the DC Input Power Cord" on page 95
- "Connect DC Power Cords" on page 102
- "Power On the Host for the First Time" on page 103

## ▼ Connect DC Power Cords

1. **Prepare the power cords by routing them from the power source to the server.**

---

**Note –** The server goes into Standby mode and the Oracle ILOM SP initializes as soon as a power cable connects a power supply to an external power source. System messages might be lost after 60 seconds if a terminal or terminal emulator is not connected to the SER MGT port before power is applied.

---

---

**Note –** Oracle ILOM will signal a fault if power is not applied to both supplies because that situation is a nonredundant condition.

---

2. **Ensure that the input cables are de-energized with no DC power present.**

---

**Caution –** Do not proceed with these instructions until you are sure that there is no voltage present on the DC power cables.

---

3. **Route the power cords from the power source to the rear of the server and secure the cables.**
4. **Connect the chassis ground wire to the facility ground and ensure that the connections are properly tightened.**

   See "Connect the Chassis Ground Wire" on page 94.

5. **Connect the -48V or -60V Return and Source wires to the circuit breaker or fuse panel if they are not already connected.**

---

**Caution –** Do not turn on the circuit breakers at this time.

---

6. **Connect the power wiring to the server by plugging each power cable into the server power supply units.**

7. **When you are ready to apply power, energize the input cables and verify that the green DC input LED is illuminated on each power supply.**

   Power is immediately supplied to the SP, and the front panel SP OK/Fault LED flashes (see "Front Panel Components (Installation)" on page 5). The SP then runs diagnostics and initializes the Oracle ILOM firmware.

   After the Oracle ILOM firmware initializes, the SP OK/Fault LED remains lit, the main power OK/Fault LED slowly flashes, and the SP login prompt displays on the terminal device. However, the host is not initialized or powered on yet.

8. **Power on the server.**

   See "Power On the Host for the First Time" on page 103.

### Related Information

- "Connect the Chassis Ground Wire" on page 94
- "Assemble the DC Input Power Cord" on page 95
- "Install Strain Relief Housings" on page 99
- "Power On the Host for the First Time" on page 103

## ▼ Power On the Host for the First Time

This procedure explains how to access and power on the host through the SER MGT port using the Oracle ILOM CLI.

1. **Ensure that these conditions are met:**

   a. **A terminal device is connected to the SER MGT port. See** "Cable the SP" on page 81**.**

   b. **Power is applied to the server. See** "Powering On the Server the First Time" on page 91

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

3. **At the terminal device, log in to the SP as `root` with the password of `changeme`.**

```
ORACLESP-xxxxxxxxxx login: root
Password: changeme
. . .
->
```

After a brief delay, the Oracle ILOM prompt is displayed (->). At this point, there are many commands you can perform using the Oracle ILOM interface.

Additional SP information, such as how to change the password and how to set up the SP network parameters is available in *Server Administration*.

4. **Power on the server and redirect the host output to display on the serial terminal device.**

```
-> start /System
Are you sure you want to start /SYS (y/n)? y
Starting /System
-> start /HOST/console
Are you sure you want to start /HOST/CONSOLE (y/n)? y
Serial console started. To stop, type #.
. . .
```

After you start the host console, the server initialization takes approximately 20 minutes to complete and the server boots.

After the server boots, the GRUB menu appears, providing prompts to install the preinstalled OS.

```
GNU GRUB Version 0.97 (607K lower / 2087168K)

s11_2011.11_a - Serial Port (ttya)
s11_2011.11_a - Graphics Adapter
```

From the GRUB menu, you can choose whether you want to continue to direct the display to the serial port, or whether you want to direct the display to a device connected to the video port.

---

**Note –** By default, the system displays the output to the serial port. If you do not select an option on the GRUB menu, after 10 seconds, the GRUB menu is no longer available, and the system continues with the output directed to the serial port.

---

5. **Either configure the preinstalled OS, or install and configure a different OS on the server.**

   To install an OS on the Netra Server X3-2 (formerly Sun Netra X4270 M3 Server) from Oracle, refer to *Server OS Installation*.

### Related Information

- "Connect AC Power Cords" on page 92
- "Assembling DC Power Cords and Applying DC Power" on page 93

# Glossary

## A

**ACPI** Advanced Configuration and Power Interface.

**ANSI SIS** American National Standards Institute Status Indicator Standard.

**ASF** Alert standard format (Netra products only).

**ASR** Automatic system recovery.

**AWG** American wire gauge.

## B

**BAT** basic assurance test.

**BIOS** Basic Input Output System.

**blade** Generic term for server modules and storage modules. *See server module and storage module*.

**blade server** Server module. See *server module*.

**BMC** Baseboard management controller.

**BOB** Memory buffer on board.

# C

**chassis** For servers, refers to the server enclosure. For server modules, refers to the modular system enclosure.

**CMA** Cable management arm.

**CMM** Chassis monitoring module. The CMM is the service processor in the modular system. Oracle ILOM runs on the CMM, providing lights out management of the components in the modular system chassis. *See Modular system and Oracle ILOM*.

**CMM Oracle ILOM** Oracle ILOM that runs on the CMM. *See Oracle ILOM*.

# D

**DHCP** Dynamic Host Configuration Protocol.

**disk module or disk blade** Interchangeable terms for storage module. *See storage module*.

**DTE** Data terminal equipment.

# E

**ECC** Error-correcting code.

**EIA** Electronics Industries Alliance.

**ESD** Electrostatic discharge.

# F

**FEM** Fabric expansion module. FEMs enable server modules to use the 10GbE connections provided by certain NEMs. *See NEM*.

**FRU** Field-replaceable unit.

# G

**GPT** GUID partition table.

**GRUB** GRand Unified Bootloader. A GNU implementation that supports booting multiple OSs on a computer.

# H

**HBA** Host bus adapter.

**HMP** Hardware Management Pack.

**host** The part of the server or server module with the CPU and other hardware that runs the Oracle Solaris OS and other applications. The term *host* is used to distinguish the primary computer from the SP. *See SP*.

# I

**ICMP** Internet Control Message Protocol.

**IDE** Integrated Development Environment.

**ID PROM** Chip that contains system information for the server or server module.

**IP** Internet Protocol.

# K

**KVM** Keyboard, video, mouse. Refers to using a switch to enable sharing of one keyboard, one display, and one mouse with more than one computer.

# L

**LwA** Sound power level.

# M

**MAC** Machine access code.

**MAC address** Media access controller address.

**MBR** Master boot record.

**Modular system** The rackmountable chassis that holds server modules, storage modules, NEMs, and PCI EMs. The modular system provides Oracle ILOM through its CMM.

**MSGID** Message identifier.

# N

**name space** Top-level Oracle ILOM CMM target.

**NEBS** Network Equipment-Building System (Netra products only).

**NEM** Network express module. NEMs provide 10/100/1000 Mbps Ethernet, 10GbE Ethernet ports, and SAS connectivity to storage modules.

**NET MGT** Network management port. An Ethernet port on the server SP, the server module SP, and the CMM.

**NIC** Network interface card or controller.

**NMI** Nonmaskable interrupt.

# O

**OBP** OpenBoot PROM.

**Oracle ILOM** Oracle Integrated Lights Out Manager. Oracle ILOM firmware is preinstalled on a variety of Oracle systems. Oracle ILOM enables you to remotely manage your Oracle servers regardless of the state of the host system.

**Oracle Solaris OS** Oracle Solaris operating system.

**OS** Operating system.

**OSA** Oracle System Assistant.

# P

**PCI** Peripheral component interconnect.

**PCI EM** PCIe ExpressModule. Modular components that are based on the PCI Express industry-standard form factor and offer I/O features such as Gigabit Ethernet and Fibre Channel.

**PDB** power distribution board.

**PMR** Physical media request.

**POST** Power-on self-test.

**PROM** Programmable read-only memory.

**PSH** Predictive self healing.

**PXE** Pre-boot eXecution environment.

# Q

**QSFP** Quad small form-factor pluggable.

# R

**REM** RAID expansion module. Sometimes referred to as an HBA *See HBA*. Supports the creation of RAID volumes on drives.

**RHEL** Red Hat Enterprise Linux.

# S

**SAN** Storage area network.

**SAS** Serial attached SCSI.

**SATA** Serial advanced technology attachment.

**SCC** System configuration chip.

**SER MGT** Serial management port. A serial port on the server SP, the server module SP, and the CMM.

**server module** Modular component that provides the main compute resources (CPU and memory) in a modular system. Server modules might also have onboard storage and connectors that hold REMs and FEMs.

**SLES** SUSE Linux Enterprise Server.

**SMART** Self-Monitoring, Analysis, and Reporting Technology.

**SNMP** Simple network management protocol.

**SP** Service processor. In the server or server module, the SP is a card with its own OS. The SP processes Oracle ILOM commands providing lights out management control of the host. *See host*.

**SRU** Support Repository Update. Used to updated the Oracle Solaris OS.

**SSD** Solid-state drive.

**SSH** Secure shell.

**storage module** Modular component that provides computing storage to the server modules.

# T

**TIA** Telecommunications Industry Association (Netra products only).

**Tma** Maximum ambient temperature.

**TPM** Trusted Platform Module (a Windows 2008 feature).

# U

**UCP** Universal connector port.

**UEFI** Unified Extensible Firmware Interface.

**UI** User interface.

**UL** Underwriters Laboratory Inc.

**U.S. NEC** United States National Electrical Code.

**UTC** Coordinated Universal Time.

**UUID** Universal unique identifier.

# V

**VM** Virtual machine.

# W

**WDS** Windows Deployment Services.

**WIM** Windows Imaging Format.

**WWN** World wide name. A unique number that identifies a SAS target.

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