Netra SPARC T4-2 Server

Installation Guide

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Contents

Using This Documentation

This installation guide provides instructions, background information, and reference material to help you install Oracle's Netra SPARC T4-2 server. This document is written for technicians, system administrators, authorized service providers, and users who have advanced experience installing hardware.

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=Netra_SPARCT4-2`

Related Documentation

Documentation	Links
All Oracle products	http://www.oracle.com/documentation
Netra SPARC T4-2 server	http://www.oracle.com/pls/topic/lookup?ctx=Netra_SPARCT4-2
Oracle Solaris OS and other systems software	http://www.oracle.com/technetwork/indexes/documentation/index.html#sys_sw
Oracle Integrated Lights Out Manager (Oracle ILOM) 3.0	http://www.oracle.com/pls/topic/lookup?ctx=ilom30
Oracle VTS 7.0	http://www.oracle.com/pls/topic/lookup?ctx=OracleVTS7.0

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Provide feedback on 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 For hearing impaired: 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 present the server, detail and identify components, and provide an installation overview for the server.

Related Information

- "Confirming Server and Site Specifications" on page 9
- "Preparing for Installation" on page 17
- "Installing the Server" on page 21
- "Connecting Cables" on page 55
- "Powering On the Server for the First Time" on page 67

Installation Task Overview

Step	Description	Links
1.	Review the product notes for any late-breaking news.	*Netra SPARC T4-2 Server Product Notes*
2.	Review the server features and familiarize yourself with the server components.	"Server Overview" on page 2 "Front Panel Components" on page 6 "Rear Panel Components" on page 7
3.	Review the server specifications and the site requirements.	"Confirming Server and Site Specifications" on page 9

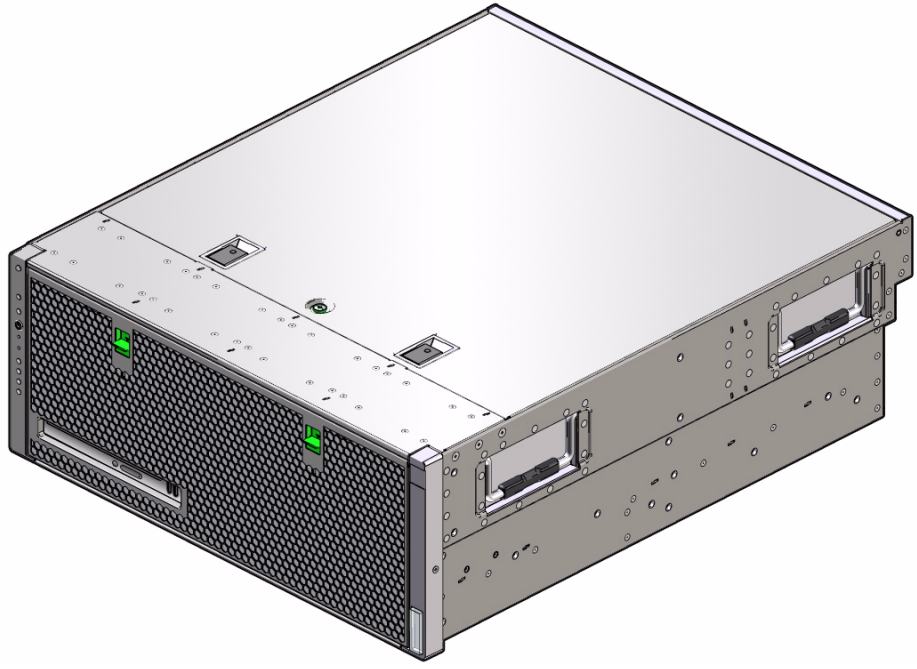
Step	Description	Links
4.	Confirm that you received all the items you ordered.	“Shipping Kit” on page 17
5.	Review safety and ESD precautions.	“Handling Precautions” on page 19 “ESD Precautions” on page 19
6.	Assemble the required tools.	“Tools Needed for Installation” on page 20
7.	Install any optional components that you ordered.	“Optional Components” on page 21
8.	Review the rack compatibility guidelines and rack cautions.	“Rack Compatibility” on page 23 “Rack Cautions” on page 24
9.	Install the server in a 4-post or 2-post rack.	“Stabilize the Rack” on page 25 “Mounting the Server Into a 4-Post Rack” on page 26 “Mounting the Server Into a 2-Post Rack” on page 46
10.	Review cabling requirements and port information. Attach data and management cables to the server.	“Connecting Cables” on page 55
11.	Prepare the power cords. Configure the Oracle ILOM SP, power on the server for the first time, and boot the operating system.	“Powering On the Server for the First Time” on page 67

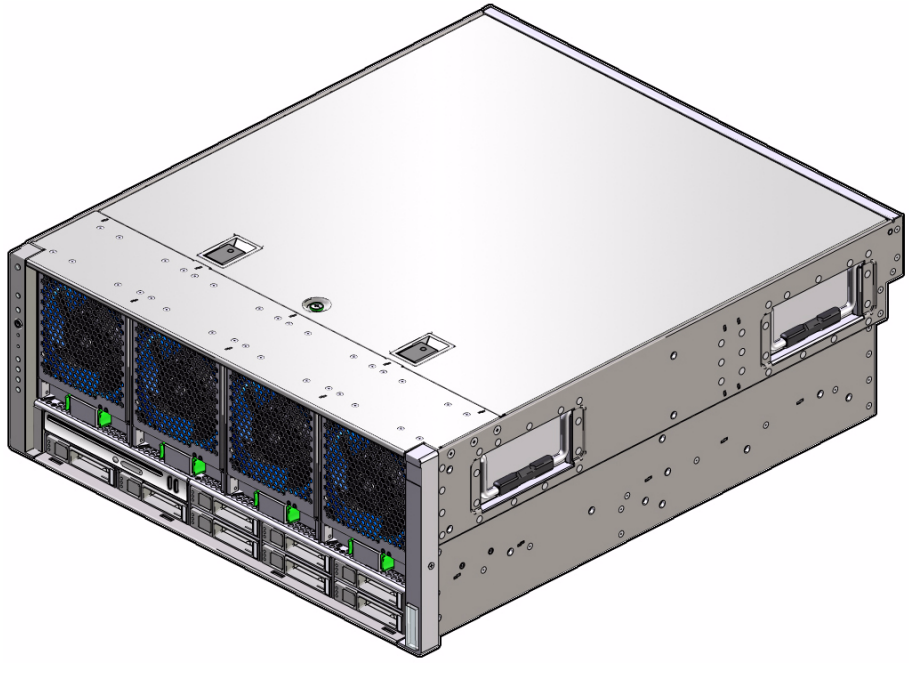
Related Information

- *Netra SPARC T4-2 Server Product Notes*
- *Netra SPARC T4-2 Server Safety and Compliance Guide*
- *Server Service*

Server Overview

The server is a carrier-grade, NEBS-certified, 4U server. The first illustration shows the server with the bezel and air filter. The second illustration shows the server without the bezel and air filter.





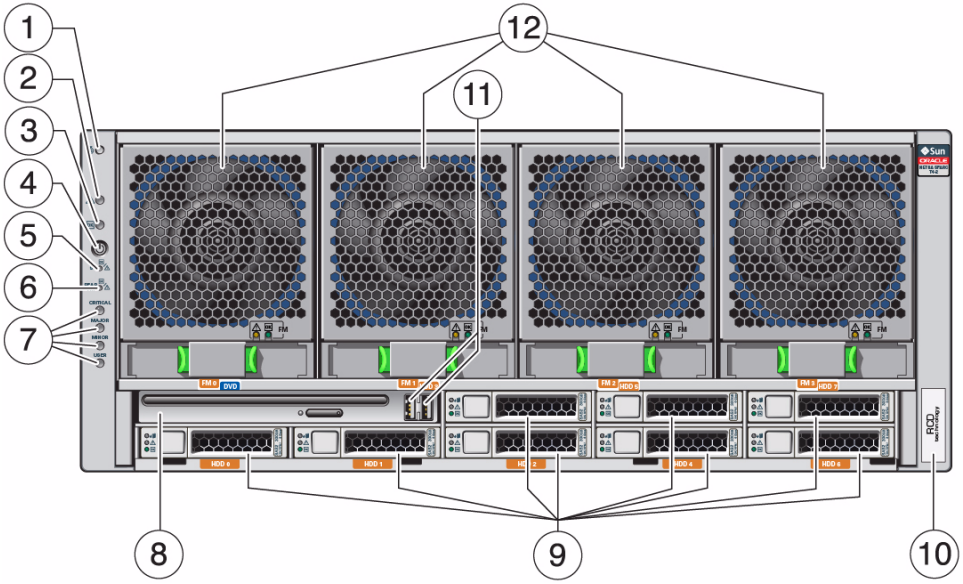
Component	Description
CPU	Two SPARC T4, 8-core, 2.85 GHz CPUs
Memory	DDR3 1066 MHz registered DIMMs with ECC 32 DDR3 memory slots (16 per CPU) 4 GB, 8 GB and 16 GB DIMM capacities supported 32 DIMM slots, supporting a maximum of 512 GB
Removable mass storage	Up to 8 SFF (2.5 in./63.5 mm) SAS drives One SATA DVD drive
Remote management (SP)	ASPEED AST2200 BMC running Oracle ILOM 3.*x*. SP firmware with provision for: • 2D graphics (HD-15 VGA connector) • 128 MB SDRAM • Serial management (RJ-45) • Network management (10/100BASE-T Ethernet RJ-45) • Complete host remote management including remote KVMS over Ethernet
TPM support	TCG TPM v1.2 functionality support
Hardware RAS	Service processor ECC memory and cache Redundant power Single Fan Failure Resiliency Hot-plug disk drives Hot-plug fan modules Temperature and environmental monitoring KVM/USB storage redirection over Ethernet (with SP)
Front I/O ports	Two USB 2.0 ports (Type A)
Rear I/O ports	From the motherboard: • Four 10/100/1000BASE-T Ethernet (RJ-45) with integratedLink/Speed LEDs • SER MGT (TIA/EIA-232 serial via RJ-45) • NET MGT 10/100BASE-T Ethernet (RJ-45) • Two USB 2.0 ports (Type A) • VGA video port (HD-15) • Optional 10Gb QSFP port with Oracle 10G Network Module (XAUI) card From the PCI mezzanine board: • Telco DCA relay connection (DB-15)

Component	Description
Front panel indicators and switches	Provision for the following indicators and switches: • Power button • System fault LED • System OK LED • Locate button with integrated white LED • SP OK/Fault LED • Rear FM OK/Fault LED • Telco alarm LEDs - Critical, Major, Minor, User • Status LEDs on the fan modules • Status LEDs on the HDDs - Ready to Remove, Service Required, OK/Activity See "Front Panel Components" on page 6 for more information
Expansion slots	PCIe Generation 2: • Two full-height-half length PCIe 2.0 slots • Eight low-profile PCIe 2.0 slots • One XAUI or netwok module slot See "PCIe2 Expansion Slot Guidelines" on page 22 for more information.

Related Information

- "Confirming Server and Site Specifications" on page 9
- "Installation Task Overview" on page 1
- "Front Panel Components" on page 6
- "Rear Panel Components" on page 7

Front Panel Components



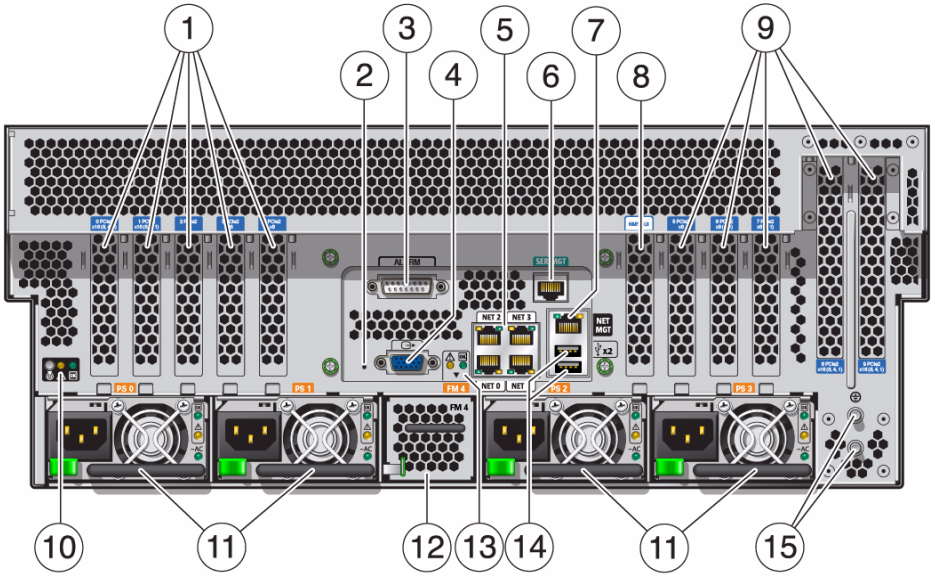
No.	Description	Links
1	Locator LED and button: white	*Server Service*, interpreting diagnostic LEDs
2	Service Action Required LED: amber	*Server Service*, interpreting diagnostic LEDs
3	Main Power/OK LED: green	*Server Service*, interpreting diagnostic LEDs
4	Power button	
5	SP OK/Fault LED: green (OK), amber (fault)	*Server Service*, interpreting diagnostic LEDs
6	Rear Fan Fault LED: green (normal), amber (fault)	*Server Service*, servicing the rear fan module
7	Alarm LEDs: Critical (red), Major (red), Minor (amber), and User (amber)	*Server Service*, interpreting diagnostic LEDs "Alarm Port" on page 56
8	DVD drive	*Server Service*, servicing the DVD

No.	Description	Links
9	Hard drives (HDD0 to HDD7) with status LEDs: blue (Ready to Remove), amber (Service Required), green (OK/Activity)	*Server Service*, servicing hard drives
10	Radio Frequency Identification (RFID) tag	
11	USB 2.0 ports (USB3, USB4)	"USB Ports" on page 60
12	Fan modules (FM0 - FM3) with status LEDs: green (normal), amber (fault)	*Server Service*, servicing front fan modules

Related Information

- "Rear Panel Components" on page 7
- "Server Overview" on page 2

Rear Panel Components



No.	Description	Links
1	Expansion slots 0 to 4	"PCIe2 Expansion Slot Guidelines" on page 22
2	Physical Presence button access hole	
3	Alarm port (DB-15)	"Alarm Port" on page 56
4	Video port (HD-15)	"Video Port" on page 61
5	Network 10/100/1000 ports (NET0 to NET3) for host	"Gigabit Ethernet Ports" on page 59
6	SER MGT RJ-45 serial port for SP	"SER MGT Port" on page 58
7	NET MGT RJ-45 network port for SP	"NET MGT Port" on page 58
8	Expansion slot NM/XAUI	"PCIe2 Expansion Slot Guidelines" on page 22
9	Expansion slots 5 to 9	"PCIe2 Expansion Slot Guidelines" on page 22
10	Service LEDs: - Locator LED and button: (white) - Service Action Required (amber) - Main Power/OK LED: (green)	*Server Service*, interpreting diagnostic LEDs
11	Power supplies (PS0 to PS3) with status LEDs: - OK (output): (green) - Service Action Required: (amber) - AC or DC (input power): (green) (Note: AC supply shown)	*Server Service*, servicing the power supplies
12	Rear fan module (FM4)	*Server Service*, servicing the rear fan module
13	Rear Fan Fault LED: green (normal), amber (fault)	*Server Service*, servicing rear fan module
14	USB 2.0 ports (USB 0, USB1)	"USB Ports" on page 60
15	Grounding studs (2)	"DC Power Source, Power Connection, and Grounding Requirements" on page 13

Related Information

- "Front Panel Components" on page 6
- "Server Overview" on page 2

Confirming Server and Site Specifications

These topics provide background information needed to install the server.

Related Information

- "Server Overview" on page 2
- "Installing the Server" on page 21

Physical Specifications

Dimension	Value
Height	172.2 mm (6.86 in.)
Width	445 mm (17.52 in.)
Depth	530 mm (20.87 in.) maximum to PSU handles 505 mm (19.88 in.) maximum to rear I/O
Weight	36 kg (79.3 lb.) fully configured without PCI card

Dimension	Value
Minimum service access clearance (front)	91 cm (36 in.)
Minimum service access clearance (rear)	91 cm (36 in.)

Related Information

- "Electrical Specifications" on page 10
- "Input Power Information" on page 11
- "Overcurrent Protection Requirements" on page 12
- "DC Power Source, Power Connection, and Grounding Requirements" on page 13
- "Environmental Requirements" on page 14
- "Acoustic Noise Emissions" on page 15
- "Airflow Clearance" on page 15

Electrical Specifications

Use the online power calculator to determine the power consumption of a server with your configuration: http://www.oracle.com/goto/powercalculators.

Parameter	Values		
AC servers:			
Voltage (nominal)	100 - 127 VAC or 200 - 240 VAC (90 to 140 or 180 to 264 VAC ranges)		
Frequency (nominal)	50 - 60 Hz (47 to 63 Hz range)		
Input current (maximum)	@ 100 VAC	@ 110 - 127 VAC	@ 1200 - 240 VAC
All inputs	20 A	18.2 A	10 A
Single Input	10 A	9.1 A	5 A
DC servers:			
Voltage (nominal)	–48 VDC or –60 VDC (–40 to –75 VDC range)		
Input current (maximum)	@ –48 VDC	@ –60 VDC	
All inputs	40.6 A	33.3 A	
Single input	20.3 A	16.7 A	
DC input treatment	Isolated DC Return (DC-I)		

Caution – The ports of this equipment or subassembly are suitable for connection to intra-building or unexposed wiring or cabling only. The intra-building port(s) of the equipment or subassembly must not be metallically connected to interfaces that connect to the outside plant wiring. These interfaces are designed for use as intra-building interfaces only (Type 2 or Type 4 ports as described in GR-1089-CORE, Issue 4) and require isolation from the exposed outside plant cabling. The addition of primary protectors is not sufficient protection in order to connect these interfaces metallically to outside plant wiring.

Caution – The intra-building port(s) of the equipment or subassembly must use shielded intra-building cabling or wiring that is grounded at both ends.

Related Information

- "Input Power Information" on page 11
- "Overcurrent Protection Requirements" on page 12
- "DC Power Source, Power Connection, and Grounding Requirements" on page 13

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.

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 2000 Volts. You can, however, install a surge protector if your site requires an additional protector.

Caution – 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.

Related Information

- "Electrical Specifications" on page 10
- "Overcurrent Protection Requirements" on page 12
- "DC Power Source, Power Connection, and Grounding Requirements" on page 13

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.

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

Related Information

- "Electrical Specifications" on page 10
- "Input Power Information" on page 11

■ "DC Power Source, Power Connection, and Grounding Requirements" on page 13

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 – 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.

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.

- Suitable conductor material: Use copper conductors only.
- Power supply connections through the input connector: 8 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 8 AWG conductor (optional if power supply grounds are connected).
- Grounding cable insulation color: Green/yellow.
- Cable insulation rating: Minimum of 75°C (167°F). (low-smoke fume, flame retardant insulation might be required in some installations.)
- Use mating connectors, Wago part number 51204745, 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

- "Electrical Specifications" on page 10
- "Input Power Information" on page 11
- "Overcurrent Protection Requirements" on page 12
- "Powering On the Server for the First Time" on page 67

Environmental Requirements

Caution – Netra rackmounted servers are certified to meet these worst-case operating conditions only when using an approved rackmount kit. You must strictly follow the rackmounting instructions in order to meet these environmental specifications.

Specification	Operating	Nonoperating
Ambient temperature*	Maximum: 5°C to 45°C (41°F to 113°F) up to 1829 meters (6000 feet)† Optimal: 21°C to 23°C (69.8°F to 73.4°F) Short term maximum: -5°C to 55°C (23°F to 131°F)	–40°C to 70°C (–40°F to 158°F)
Relative humidity	5% - 85% RH, non condensing, but not to exceed 0.024 kg water/kg dry air (0.053 lb. water/2.205 lbs. dry air). Short term: 5%- 90% RH, non condensing, not to exceed 0.024 kg water/kg dry air (0.053 lb. water/2.205 lbs. dry air).	93%, non condensing, 40°C (104°F)
Elevation (Company requirement)	Maximum 3000 meters (9840 feet) at 40°C (104°F)	Maximum 12,000 meters (39,370 feet)
Elevation (NEBS requirement)	-60 meters to 1800 meters (-200 feet to 5905 feet) at 40°C (104°F) 1800 meters to 4000 meters (5905 feet to 13,123 feet) at 30°C (86°F)	Up to 12,000 meters (39,370 feet)

* Does not apply to removable media devices.

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

Related Information

- "Acoustic Noise Emissions" on page 15
- "Airflow Clearance" on page 15

Acoustic Noise Emissions

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

Parameter	Operating Noise Emissions
Acoustic power LwA (dBA)	72 dBA (AC server) 72 dBA (DC server)

Related Information

- *Netra SPARC T4-2 Server Safety and Compliance Guide*

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. To avoid overheating the server:

- Ensure that inlet air enters at the front of the server and exits from the rear.
- 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.

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.

Related Information

- "Physical Specifications" on page 9

Preparing for Installation

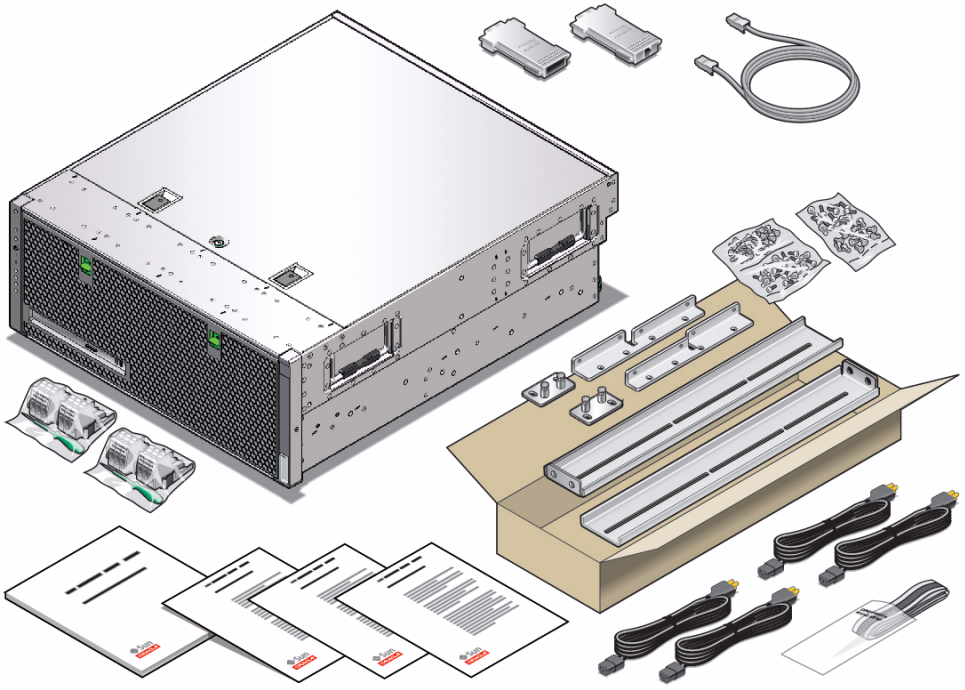
These topics provide background information needed to install the server.

Related Information

- "Confirming Server and Site Specifications" on page 9
- "Installing the Server" on page 21

Shipping Kit

Note – When you receive your server, place it in the environment where you will install it. Leave the server in its shipping crate at its final destination for 24 hours. This resting period prevents thermal shock and condensation.



Verify that you have received all of the components that ship with your server.

- Server
- RJ-45 to DB-9 crossover serial adapter
- RJ-45 to DB-25 analog to digital video adapter
- Two sets of Wago DC connectors for DC servers (two connectors per set)
- 19-inch, 4-post rackmount kit
- Antistatic wrist strap
- Four AC power cords for AC servers (if ordered)
- *Netra Rack Server Getting Started Guide* with license and safety documents

Optional components (for example, PCIe cards) are packaged separately from the other items unless they are installed at the factory as part of the system.

Related Information

- "Handling Precautions" on page 19
- "ESD Precautions" on page 19

Handling Precautions

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

Caution – The server weighs approximately 80 lb (36 kg). Two people are required to lift and mount this 4U server into a rack enclosure when using the procedures in this document.

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

Related Information

- "Physical Specifications" on page 9
- "ESD Precautions" on page 19
- "Installing the Server" on page 21

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

- "Installing the Server" on page 21
- "Handling Precautions" on page 19
- "Tools Needed for Installation" on page 20

Tools Needed for Installation

To install the system, you must have these tools:

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

In addition, you must provide a system console device, such as:

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

Related Information

- "Optional Components" on page 21
- "ESD Precautions" on page 19
- "Installing the Server" on page 21

Installing the Server

These topics provide information on optional components and describe how to install the server into an equipment rack using a rackmount kit.

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

Related Information

- "Preparing for Installation" on page 17

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 the *Server Service* and the component's documentation for installation instructions. For PCIe2 cards, also see "PCIe2 Expansion Slot Guidelines" on page 22.

Note – The list of optional components can be updated without notice. Refer to the product web pages for the most current list of components supported in the server.

Related Information

- *Server Service*
- Optional component documentation
- "PCIe2 Expansion Slot Guidelines" on page 22
- "ESD Precautions" on page 19

PCIe2 Expansion Slot Guidelines

Use these guidelines when installing PCIe2 cards in the expansion slots:

- Expansion slots 0 and 1:
  - Low profile PCIe2 cards
  - x16 lane mechanical supporting 8, 4, and 1 lane electrical PCIe2 cards
  - Maximum power for each slot is 25 watts
- Expansion slots 2, 3, and 4:
  - Low profile PCIe2 cards
  - x8 lane
  - Maximum power for each slot is 25 watts
- Expansion slot NM/XAUI:
  - Supports the Oracle 10 Gb Network Module (QSFP)

Note – The server does not support populating this slot with standard PCIe cards is not supported.

- Expansion slot 5:
  - Low profile PCIe2 cards
  - x8 lane
  - Maximum power for each slot is 25 watts
- Expansion slots 6 and 7:
  - Low profile PCIe2 cards

  - x8 lane mechanical supporting 4 and 1 lane electrical PCIe2 cards
  - Maximum power for each slot is 25 watts
- Expansion slots 8 and 9:
  - Full-height-half-lengthPCIe2 cards
  - x16 lane mechanical supporting 8, 4, and 1 lane electricalPCIe2 cards
  - Maximum power for each slot is 75 watts with integrated auxiliary power cable connection

Related Information

- "Rear Panel Components" on page 7
- *Server Service*
- Optional component documentation
- "ESD Precautions" on page 19

Rack Compatibility

Check that your rack is compatible with the slide rail options. The optional slide rails are compatible with equipment racks that meet the following standards.

Item	Requirements
Structure	4-post rack (mounting at both front and rear). 2-post racks are not compatible.
Rack horizontal opening and unit vertical pitch	Conforms to ANSI/EIA 310-D-1992 or IEC 60927 standards. Only M6 tapped or 9.5 mm square are supported.
Distance between front and rear mounting planes	Minimum is 24.5 in. (622 mm) and maximum is 35.35 in. (895 mm).
Clearance depth in front of front mounting plane	Distance to front cabinet door is at least 1.06 in. (27 mm).
Clearance depth behind front mounting plane	Distance to rear cabinet door is at least 35.5 in. (900 mm) with the CMA or 30.4 in. (770 mm) without the CMA.
Clearance width between front and rear mounting planes	Distance between structural supports and cable troughs is at least 18 in. (456 mm).

Item	Requirements
Server dimensions	Depth (not including PS handle): 28.82 in. (732 mm). Width (not including ears): 17.19 in. (436.6 mm). Height: 6.86 in. (174.2 mm).

Related Information

- "Rack Cautions" on page 24
- "Physical Specifications" on page 9

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.

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

Related Information

- "Preparing for Installation" on page 17
- "Stabilize the Rack" on page 25
- "Mounting the Server Into a 4-Post Rack" on page 26
- "Mounting the Server Into a 2-Post Rack" on page 46

▼ Stabilize the Rack

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

Refer to your rack documentation for detailed instructions for these steps.

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

   See "Rack Cautions" on page 24.

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

Related Information

- "Rack Cautions" on page 24
- Rack cabinet documentation
- *Netra SPARC T4-2 Server Safety and Compliance Guide*
- "Mounting the Server Into a 4-Post Rack" on page 26
- "Mounting the Server Into a 2-Post Rack" on page 46

Mounting the Server Into a 4-Post Rack

These topics provide installation instructions for the 4-post rackmount kits. The server ships with a 19-inch, 4-post hardmount rackmount kit. You can order an optional rackmount kit for your specific 4-post rack, the 19-inch 4-post sliding rail kit, or the 600-mm 4-post hardmount kit.

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

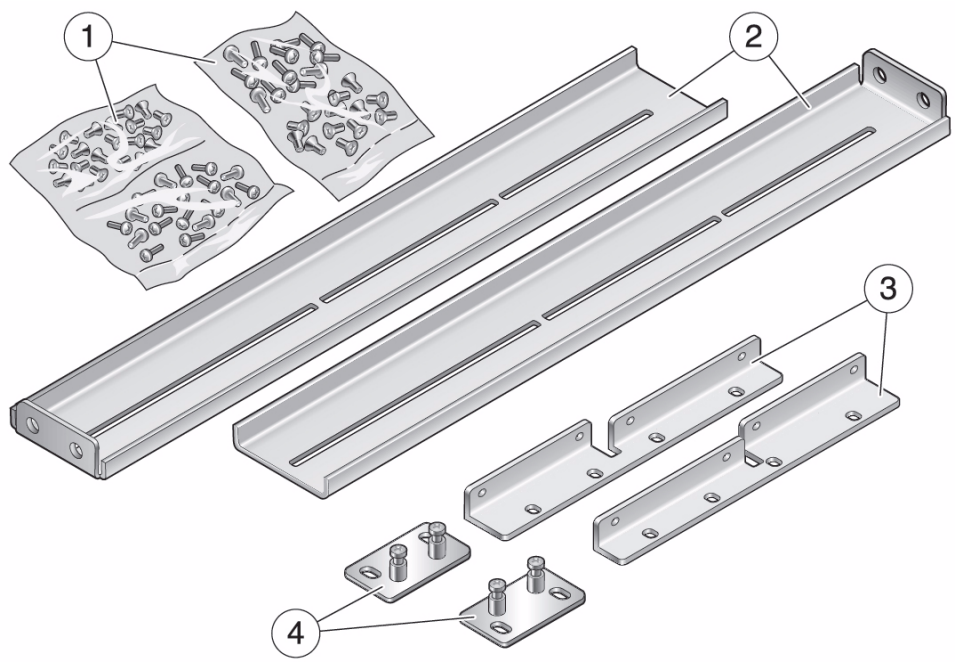
Description	Links
Mount the server using a 19-inch, 4-post hardmount rackmount kit (included with the server).	"19-Inch, 4-Post Hardmount Rackmount Kit" on page 27 "Install the Server (19-Inch, 4-Post Hardmount Rackmount Kit)" on page 28
Mount the server using an optional 19-inch, 4-post slide rackmount kit for 600–800 mm cabinet depths.	"19-Inch, 4-Post Sliding Rail Rackmount Kit" on page 32 "Install Long Bracket Extenders (19-Inch, 4-Post Sliding Rail Rackmount Kit)" on page 34 "Install the Server (19-Inch, 4-Post Sliding Rail Rackmount Kit)" on page 35
Mount the server using an optional 600 mm x 600 mm rackmount kit.	"600-mm, 4-Post Hardmount Rackmount Kit" on page 41 "Install the Server (600-mm, 4-Post Hardmount Rackmount Kit)" on page 41

Related Information

- "Preparing for Installation" on page 17
- "Rack Cautions" on page 24

- "Stabilize the Rack" on page 25

19-Inch, 4-Post Hardmount Rackmount Kit



No.	Description	No.	Description
1	Bag of fasteners	3	Front hardmount brackets
2	Side brackets	4	Rear mount flanges

Related Information

- "Install the Server (19-Inch, 4-Post Hardmount Rackmount Kit)" on page 28

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

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

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 20.

2. **Read the server cautions.**

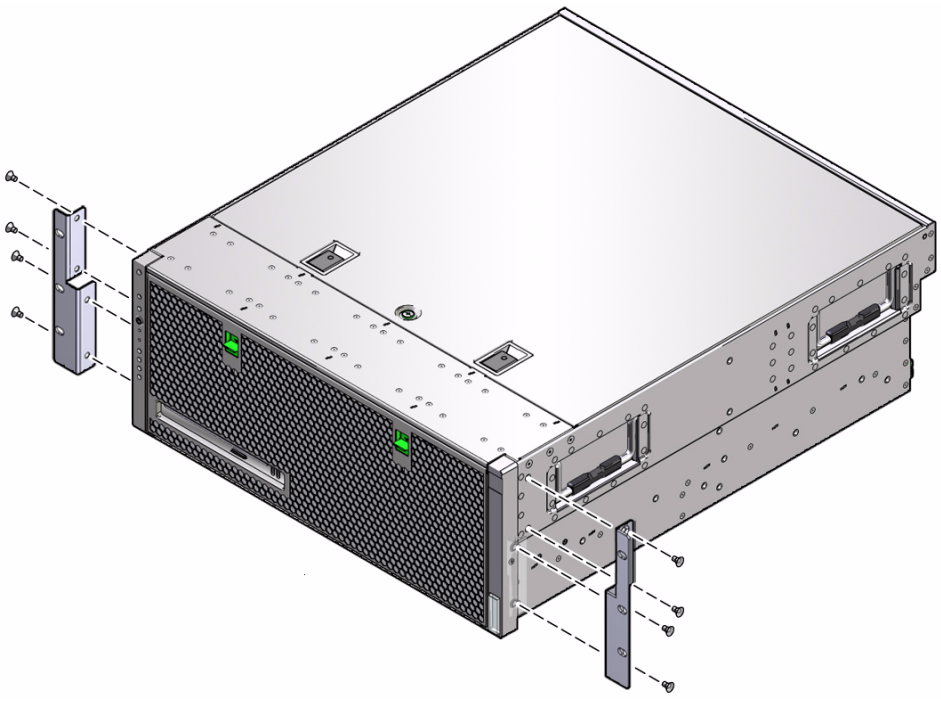
   See "Handling Precautions" on page 19 and "ESD Precautions" on page 19.

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

   See "Rack Cautions" on page 24 and "Stabilize the Rack" on page 25.

4. **Use eight M5 x 5 mm flathead Phillips screws each to fasten the front hardmount brackets to the front of the server on each side.**

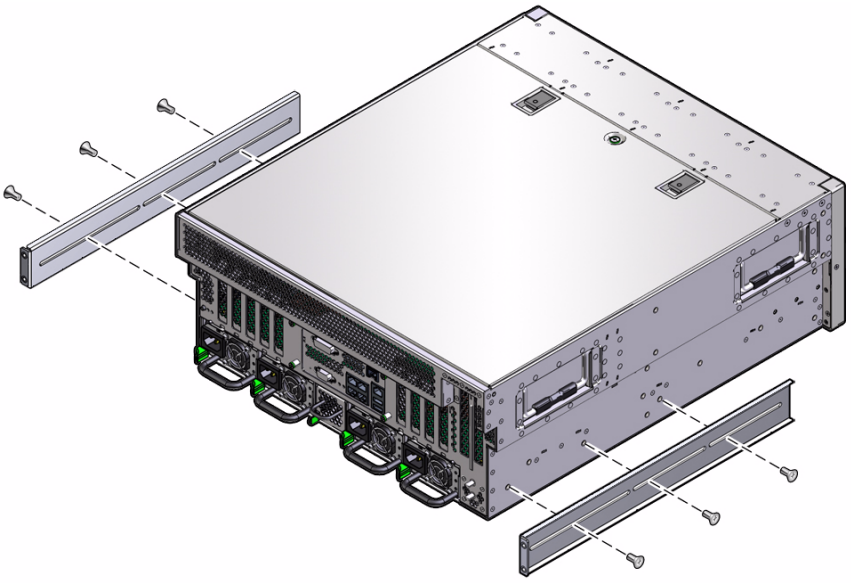
   These brackets are marked L and R for left and right.



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

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

   Use six M5 x 5 mm panhead Phillips screws for each bracket, depending on the rack depth. If your rack is especially deep, you might only be able to secure the rear mount support brackets using two screws on each side.

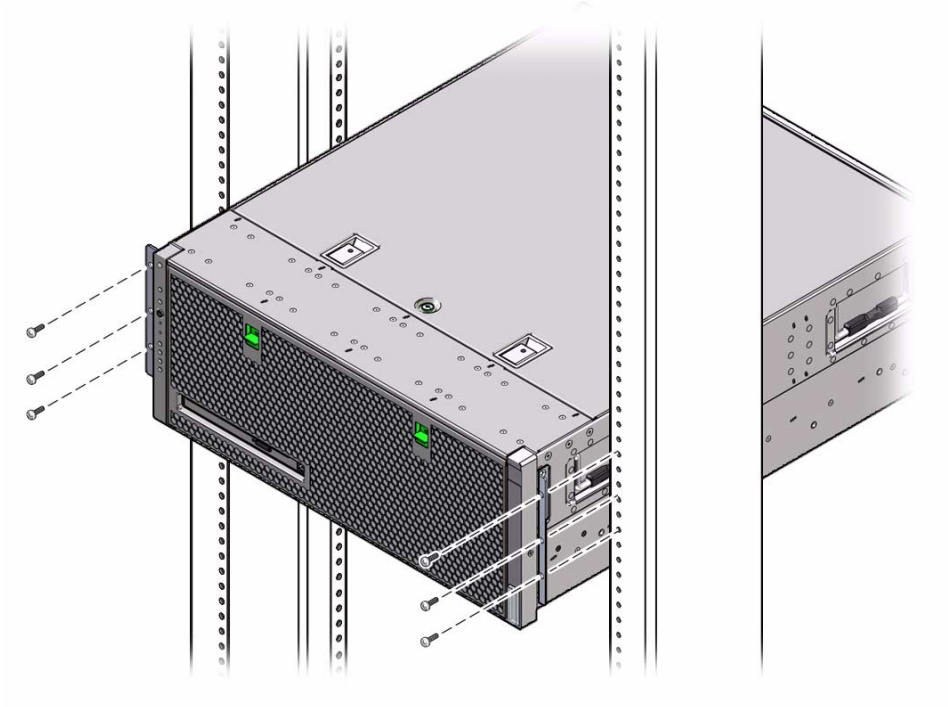


7. **Lift the server to the desired location in the front of rack.**

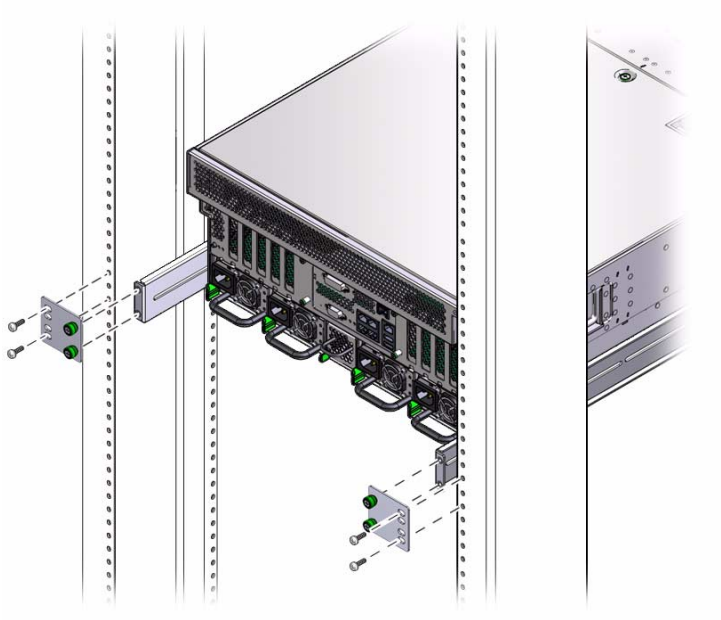
Caution – **The server weighs approximately 80 lbs (36 kg). Two people are required to lift and mount this 4U server into a rack enclosure.**

8. **Using three screws on each side, secure the two front hardmount brackets on the server to the front posts on the rack.**

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



9. **At the rear of the rack, use the two captive screws on the rear mount flanges to attach the rear mount flanges to the server's side brackets.**
10. **Using two screws for each rear mount support bracket, secure the rear mount support brackets to the rear of the rack.**



11. **Connect required and optional cables.**

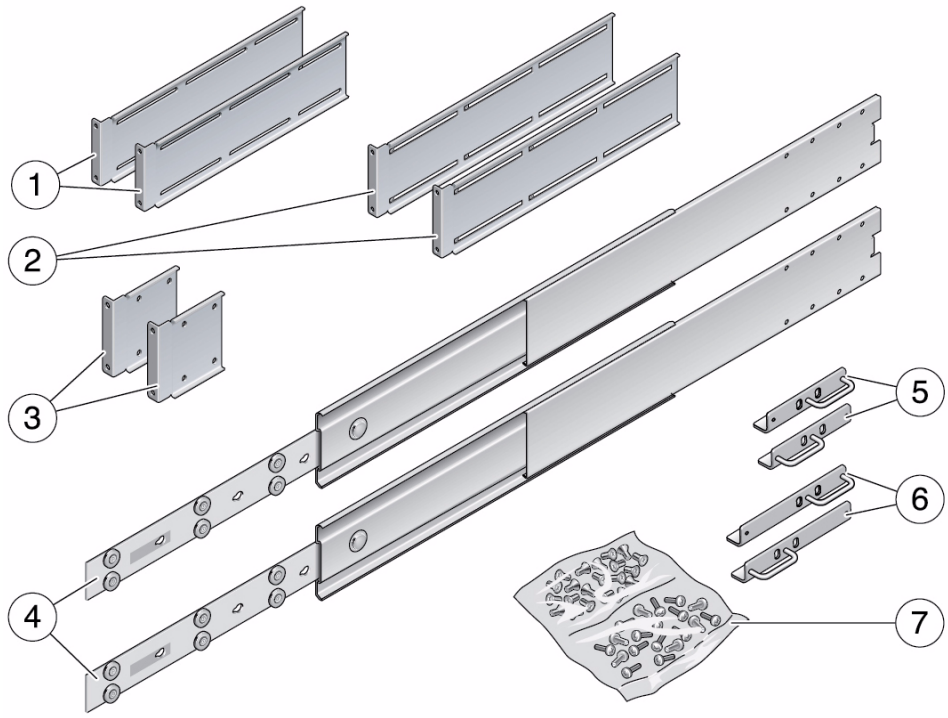
    See "Connecting Cables" on page 55.

Related Information

- "Tools Needed for Installation" on page 20
- "Stabilize the Rack" on page 25
- "19-Inch, 4-Post Hardmount Rackmount Kit" on page 27
- "Handling Precautions" on page 19
- "ESD Precautions" on page 19
- "Rack Cautions" on page 24

19-Inch, 4-Post Sliding Rail Rackmount Kit

After installing the server using this optional 19-inch, 4-post sliding rail rackmount kit, you can extend the server out of the rack for servicing.



No.	Description	No.	Description
1	Long bracket extenders	5	Short front brackets with handles
2	Long brackets	6	Long front brackets with handles
3	Short brackets	7	Bag of fasteners
4	Slide assemblies		

Related Information

- "Install Long Bracket Extenders (19-Inch, 4-Post Sliding Rail Rackmount Kit)" on page 34
- "Install the Server (19-Inch, 4-Post Sliding Rail Rackmount Kit)" on page 35

▼ Install Long Bracket Extenders (19-Inch, 4-Post Sliding Rail Rackmount Kit)

Note – Install the long bracket extenders only if the front-to-rear rail spacing is more than 29.75in. (755.7 mm) from the outside face of the front rail to the outside face of the rear rail.

---

1. **Locate the long bracket extenders.**

   The extenders are shorter than the long brackets and do not have clip nuts attached. See "19-Inch, 4-Post Sliding Rail Rackmount Kit" on page 32.

2. **Place an extender and slide assembly next to each other inside a long bracket.**

Note – If the long brackets are already attached to the slide assembly, you might have to remove the long brackets and reinstall them using this procedure.

---

3. **Install two M5 panhead screws through the rear set of holes in the slide assembly and into the front clip nuts in the center slots of the long bracket.**

   Tighten the screws.

4. **Install two M5 panhead screws through one of the front set of holes in the slide assembly and into the matching clip nuts in the long bracket.**

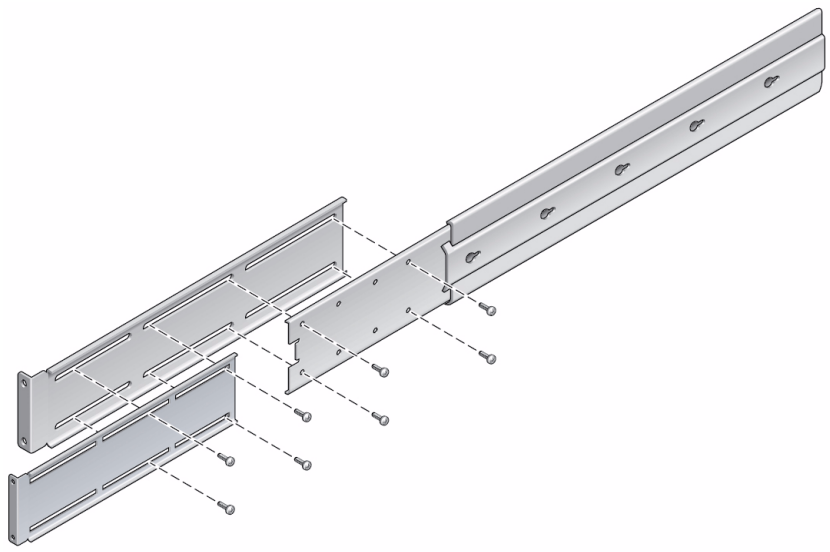
   Tighten the screws.

5. **Install two M5 panhead screws through the front slots of the bracket extender and into the rear clip nuts in the center slots of the long bracket.**

   Hand tighten the screws.

6. **Install two M5 panhead screws through the center slot of the bracket extender and into the matching clip nuts on the long bracket.**

   Hand tighten the screws.



7. **Secure the extender brackets.**

   Adjust the rails to the proper length, tighten the screws on the extenders.

8. **Install the server.**

   See "Install the Server (19-Inch, 4-Post Sliding Rail Rackmount Kit)" on page 35.

Related Information

- "19-Inch, 4-Post Sliding Rail Rackmount Kit" on page 32
- "Install the Server (19-Inch, 4-Post Sliding Rail Rackmount Kit)" on page 35

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

Note – The front-to-rear rail spacing must be at least 18.06 in. (458.7 mm) and not more than 29.75 in. (755.7 mm) from the outside face of the front rail to the outside face of the rear rail. If the spacing exceeds the maximum measurement, install the long bracket extenders. See "Install Long Bracket Extenders (19-Inch, 4-Post Sliding Rail Rackmount Kit)" on page 34.

---

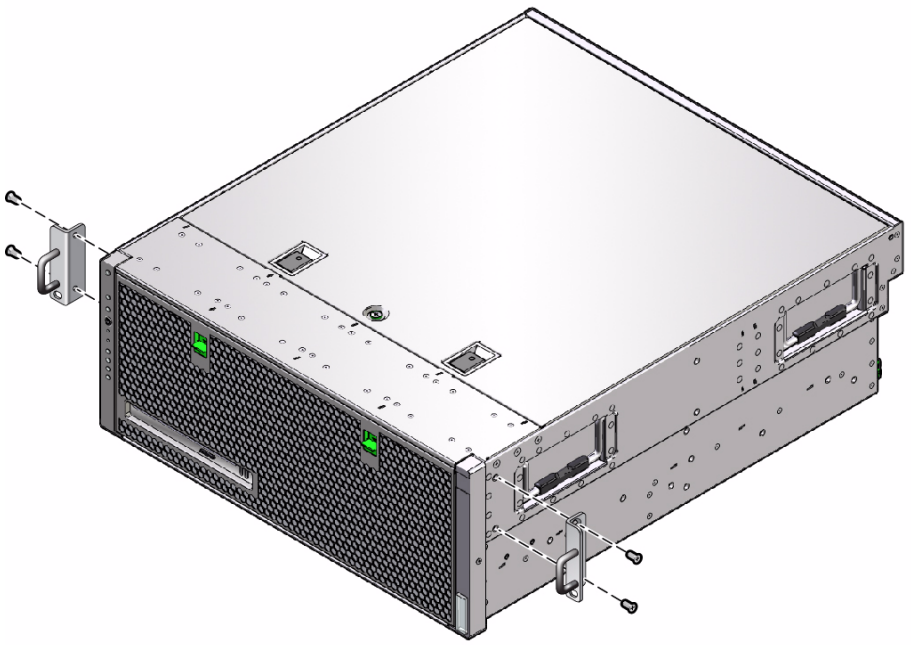
1. **Read the server cautions.**

   See "Handling Precautions" on page 19 and "ESD Precautions" on page 19.

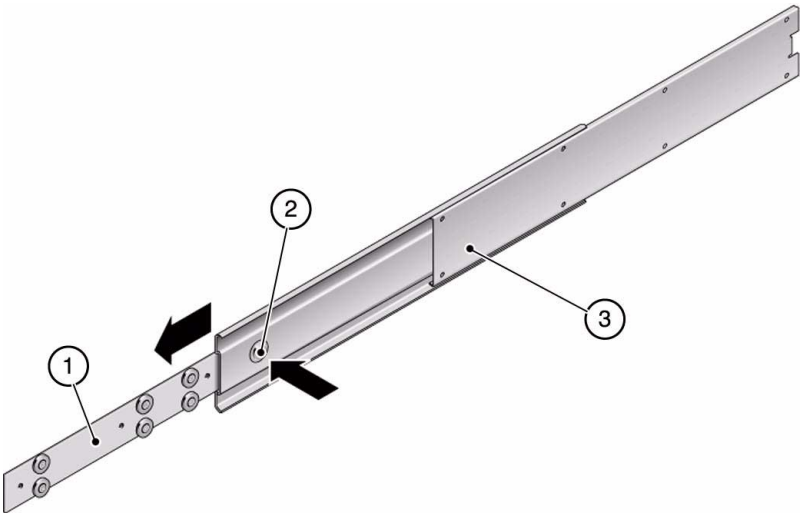
2. **Read the rack cautions and stabilize the rack.**

   See "Rack Cautions" on page 24 and "Stabilize the Rack" on page 25.

3. **Use four of the supplied M5 x 4.5 mm flathead Phillips screws to secure the short front brackets to the sides of the server (two screws for each bracket).**

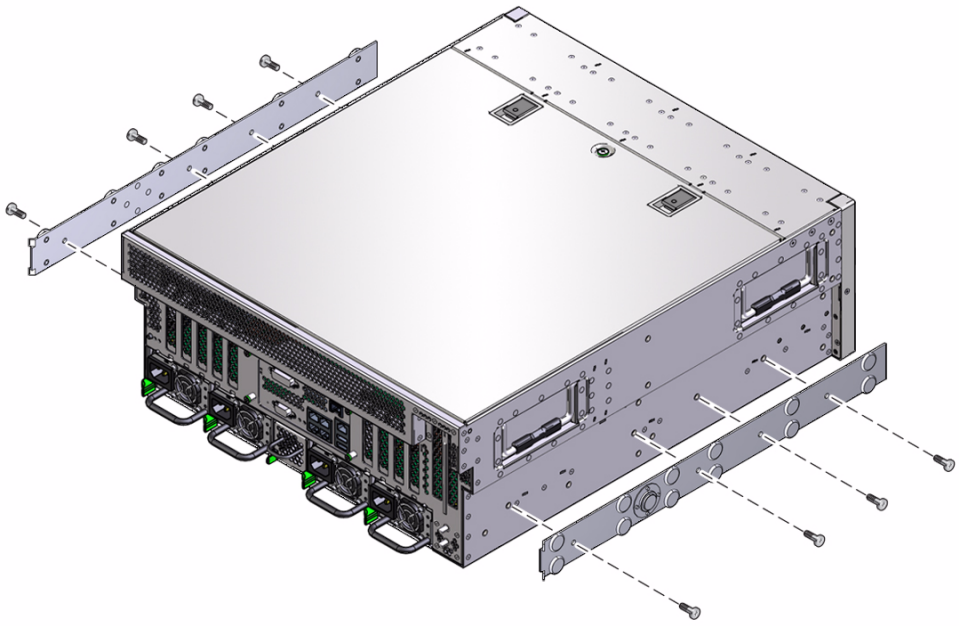


4. **Press in the release button on each slide assembly and pull the glide completely out of the slide.**



No.	Description
1	Glide
2	Release button
3	Slide assembly (two parts)

5. **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.**



6. **Attach a slide assembly to the rack at the desired location.**

   Use two of the brass M6 collar screws and M6 cage nuts (if required), to secure the short bracket to the front post.

   Use two of the brass M6 collar screws and M6 cage nuts (if required), to secure the long bracket to the rear post. If needed, loosen the four screws attaching the slide to the long bracket to adjust the slide assembly to the proper length, then retighten the screws.

7. **Attach the other slide assembly to rack.**

   Use the same instructions as you did in Step 6.

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

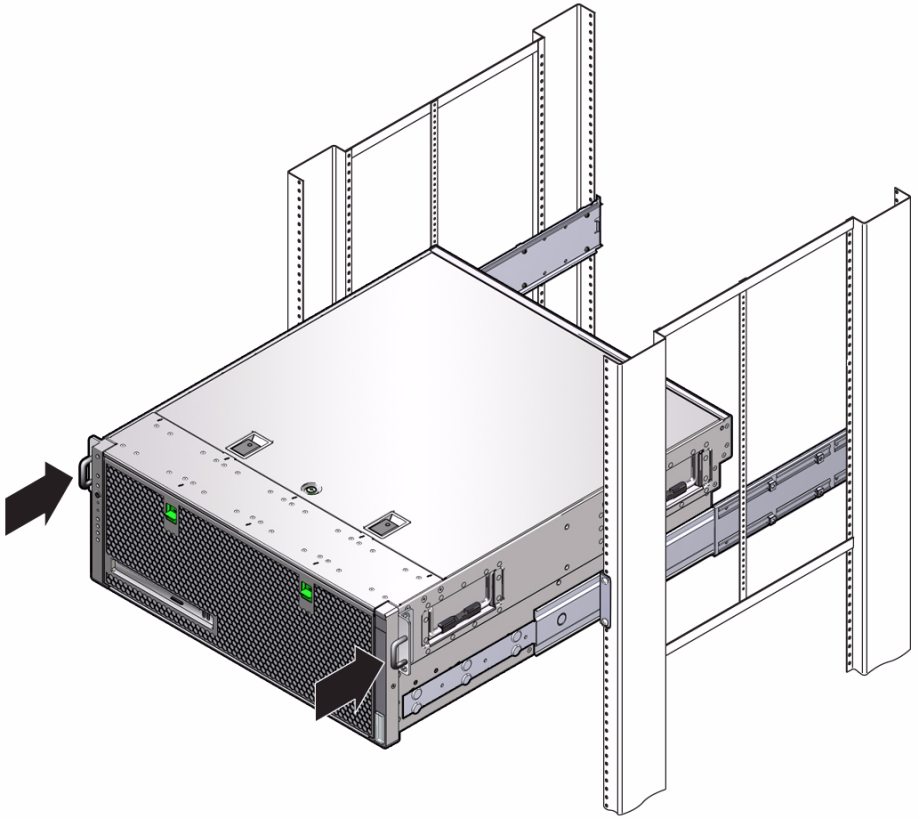
9. **Lift the server into place and align the glides attached to the server with the slide assemblies in the rack.**

Caution – The server weighs approximately 80 lbs (36 kg). Two people are required to lift and mount this 4U server into a rack enclosure.

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

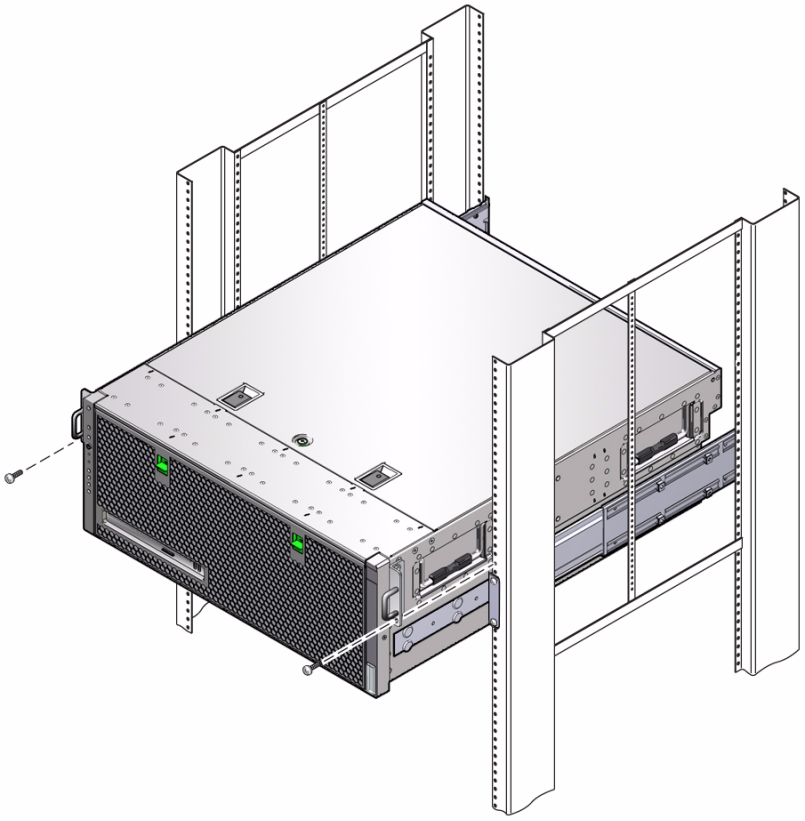
collar screws and cage nuts on the long and short brackets (Step 6 and Step 7), move the brackets inward or outward to the appropriate points, then tighten the screws and cage nuts again

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



11. **Using two screws on each 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.



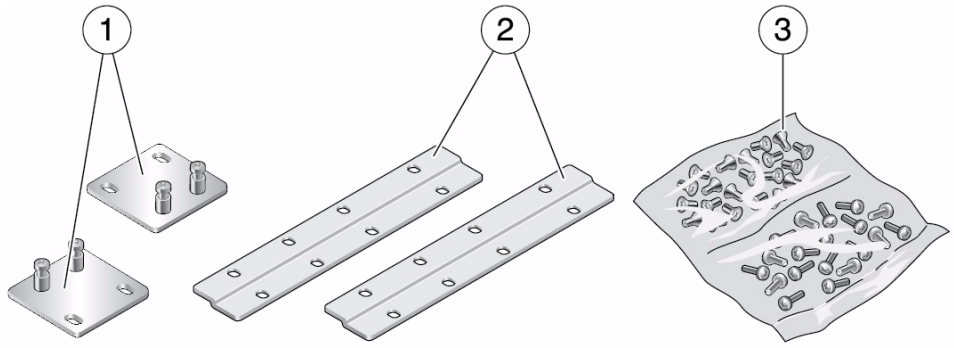
12. **Connect required and optional cables.**

    See "Connecting Cables" on page 55.

Related Information

- "Tools Needed for Installation" on page 20
- "Stabilize the Rack" on page 25
- "19-Inch, 4-Post Sliding Rail Rackmount Kit" on page 32
- "Handling Precautions" on page 19
- "ESD Precautions" on page 19
- "Rack Cautions" on page 24

600-mm, 4-Post Hardmount Rackmount Kit



No.	Description
1	Rear flanges (2)
2	Front adjuster brackets (2)
3	Bag of fasteners

Note – You also need the two hardmount brackets and two rear mount support brackets from the standard 19-inch, 4-post hardmount rackmount kit that came with your server.

Related Information

- "19-Inch, 4-Post Hardmount Rackmount Kit" on page 27
- "Install the Server (600-mm, 4-Post Hardmount Rackmount Kit)" on page 41

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

Note – The front-to-rear 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 rear rail.

1. **Read the server cautions.**

   See "Handling Precautions" on page 19 and "ESD Precautions" on page 19.

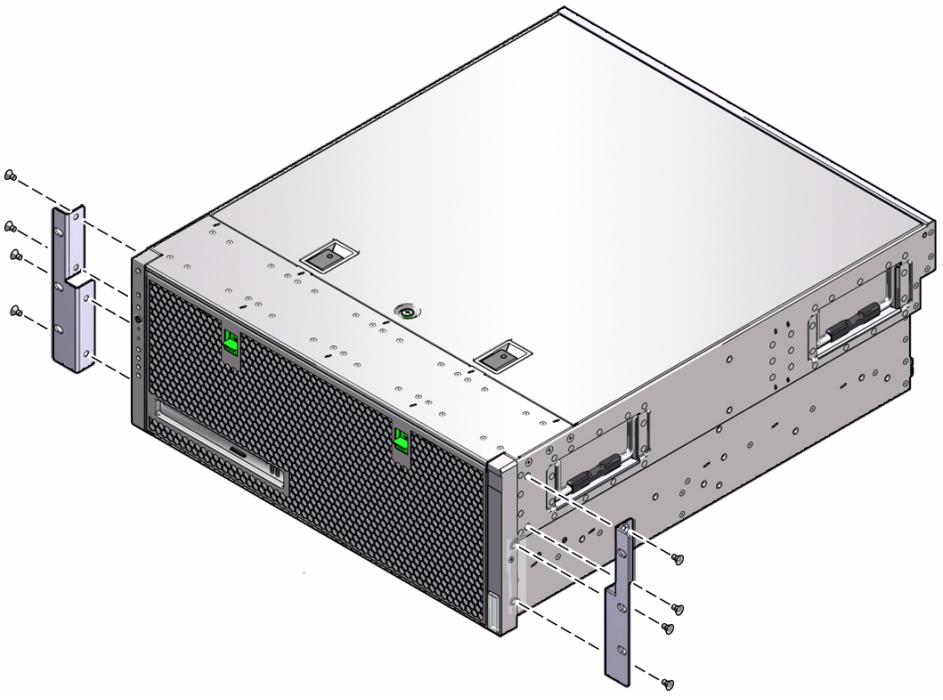
2. **Read the rack cautions and stabilize the rack.**

   See "Rack Cautions" on page 24 and "Stabilize the Rack" on page 25.

3. **Get the two front hardmount brackets from the standard rack kit.**

   These front hardmount brackets came as part of the standard server shipping kit, not as part of the 600 mm four-post rackmount shipping kit. See "19-Inch, 4-Post Hardmount Rackmount Kit" on page 27.

4. **Using eight of the supplied M5 x 8 mm flathead Phillips screws (four screws for each bracket), secure the front hardmount brackets to the sides of the server.**



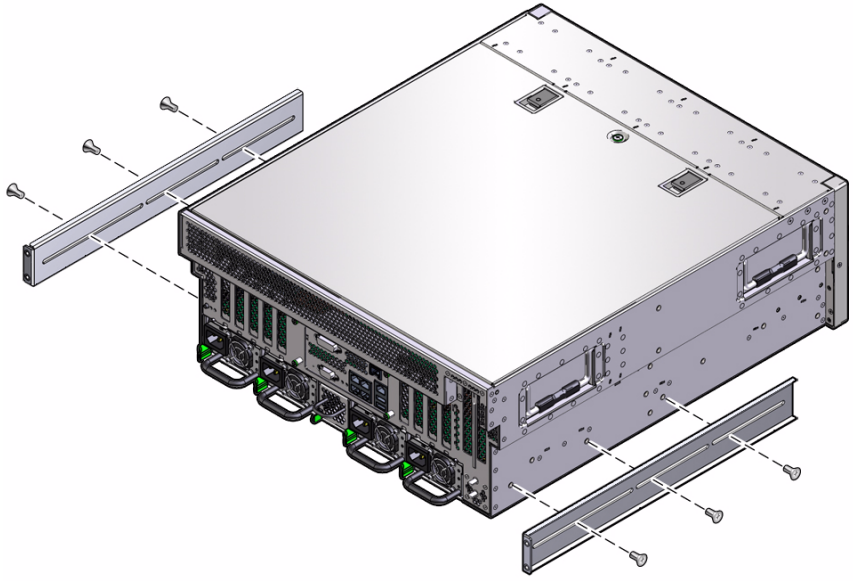
5. **Measure the depth of the rack.**

6. **Get the two rear mount support brackets from the standard rack kit.**

   These rear mount support brackets came as part of the standard server shipping kit, not as part of the 600 mm four-post rackmount shipping kit.

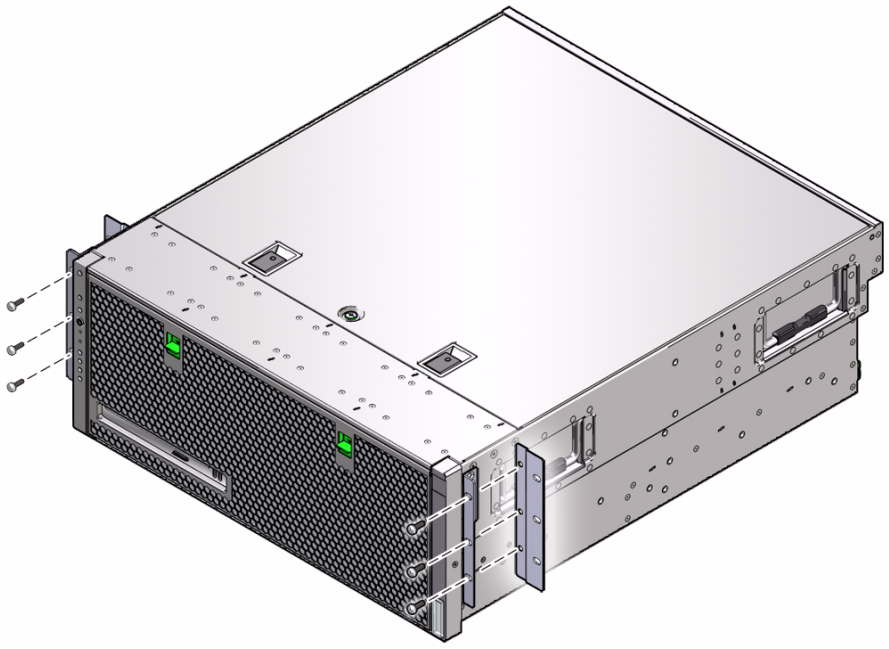
7. **Install the rear mount support brackets at the rear of the server, extending the rear mount support brackets to the measured depth of the rack.**

   Use two to three of the supplied M4 x 8 mm panhead Phillips screws for each bracket, depending on the rack depth. If your rack is especially deep, you may only be able to secure the rear mount support brackets using two screws on each side.



8. **Get the 600 mm front adjuster brackets from the rack kit.**

9. **Using eight of the supplied M5 x 8 mm panhead Phillips screws (four screws for each adjuster bracket), attach the front adjuster brackets to the front hardmount brackets.**

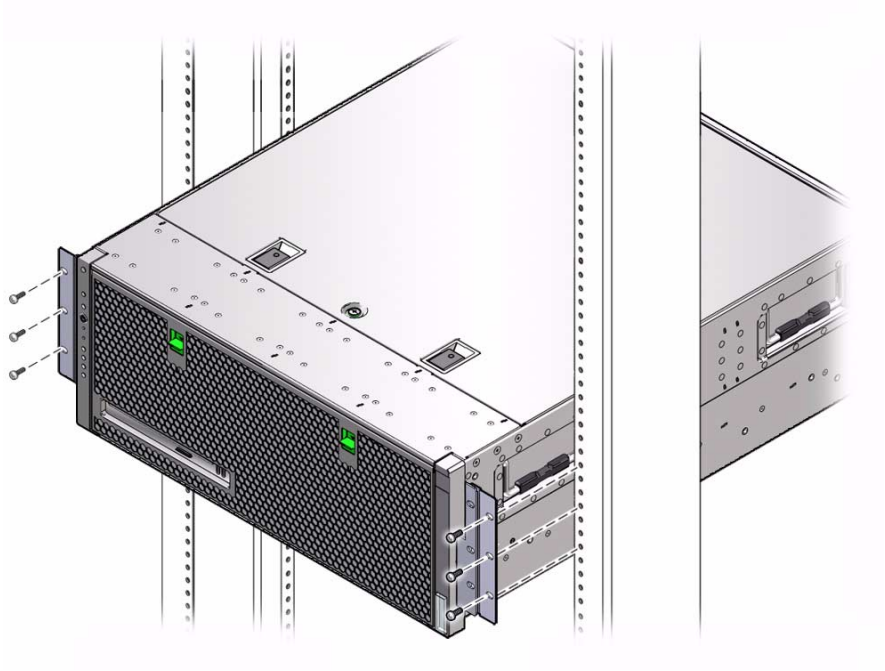


10. **Lift the server to the desired location in the rack.**

Caution – **The server weighs approximately 80 lbs (36 kg). Two people are required to lift and mount this 4U server into a rack enclosure.**

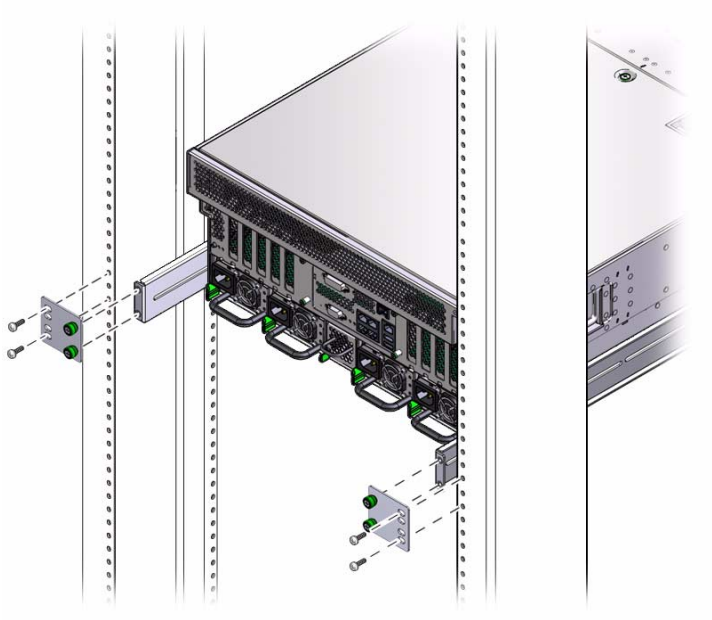
11. **Using three screws on each side, secure the front adjuster brackets to the front of the rack.**

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



12. **Get the two rear mount flanges from the rack kit.**

13. **At the rear of the rack, use the captive screws to secure the two rear mount flanges to the rear mount support brackets that are attached to the server.**



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

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

15. **Connect required and optional cables.**

    See "Connecting Cables" on page 55.

Related Information

- "Tools Needed for Installation" on page 20
- "Stabilize the Rack" on page 25
- "600-mm, 4-Post Hardmount Rackmount Kit" on page 41
- "Handling Precautions" on page 19
- "ESD Precautions" on page 19
- "Rack Cautions" on page 24

Mounting the Server Into a 2-Post Rack

These topics provide installation instructions for the optional 2-post rackmount kits.

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

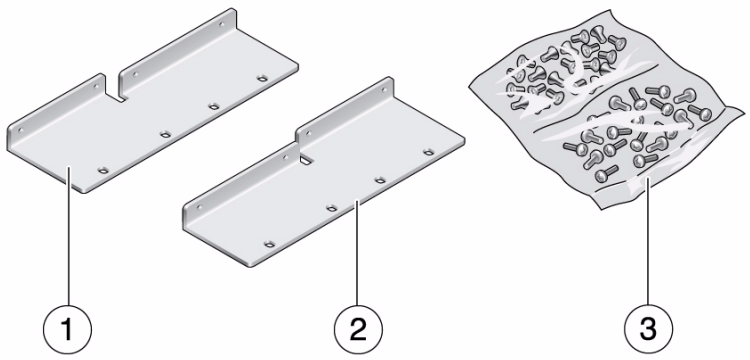
Caution – You *must* install the server into a rack following these instructions. If you deviate from these instructions when installing the server, your installation will not be supported.

Description	Links
Install the server using a 23-inch 2-post rackmount kit.	"23-Inch, 2-Post Hardmount Rackmount Kit" on page 47 "Install the Server (23-Inch, 2-Post Hardmount Rackmount Kit)" on page 48
Install the server using a 19-inch 2-post rackmount kit.	"19-Inch, 2-Post Hardmount Rackmount Kit" on page 51 "Install the Server (19-Inch, 2-Post Hardmount Rackmount Kit)" on page 51

Related Information

- "Preparing for Installation" on page 17
- "Rack Cautions" on page 24
- "Stabilize the Rack" on page 25

23-Inch, 2-Post Hardmount Rackmount Kit



No.	Description
1	Left side bracket
2	Right side bracket
3	Bag of fasteners

Related Information

- "Install the Server (23-Inch, 2-Post Hardmount Rackmount Kit)" on page 48

▼ Install the Server (23-Inch, 2-Post Hardmount Rackmount 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. **Read the server cautions.**

   See "Handling Precautions" on page 19 and "ESD Precautions" on page 19.

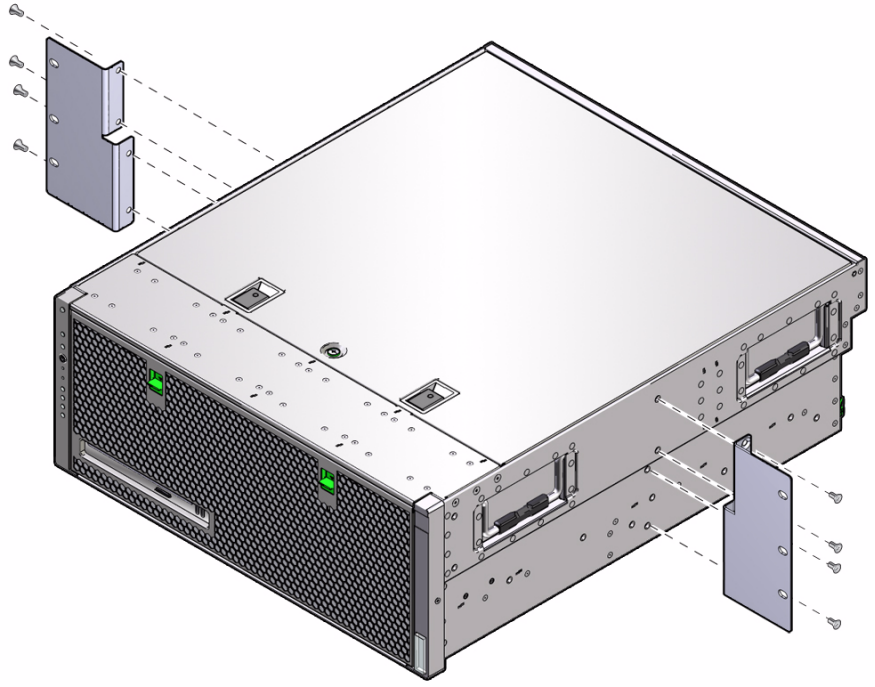
2. **Read the rack cautions and stabilize the rack.**

   See "Rack Cautions" on page 24 and "Stabilize the Rack" on page 25.

3. **Get the side brackets from the rack kit.**

4. **Using eight of the M5 x 8 mm panhead Phillips screws (four for each side bracket), secure the side brackets to the sides of the server.**

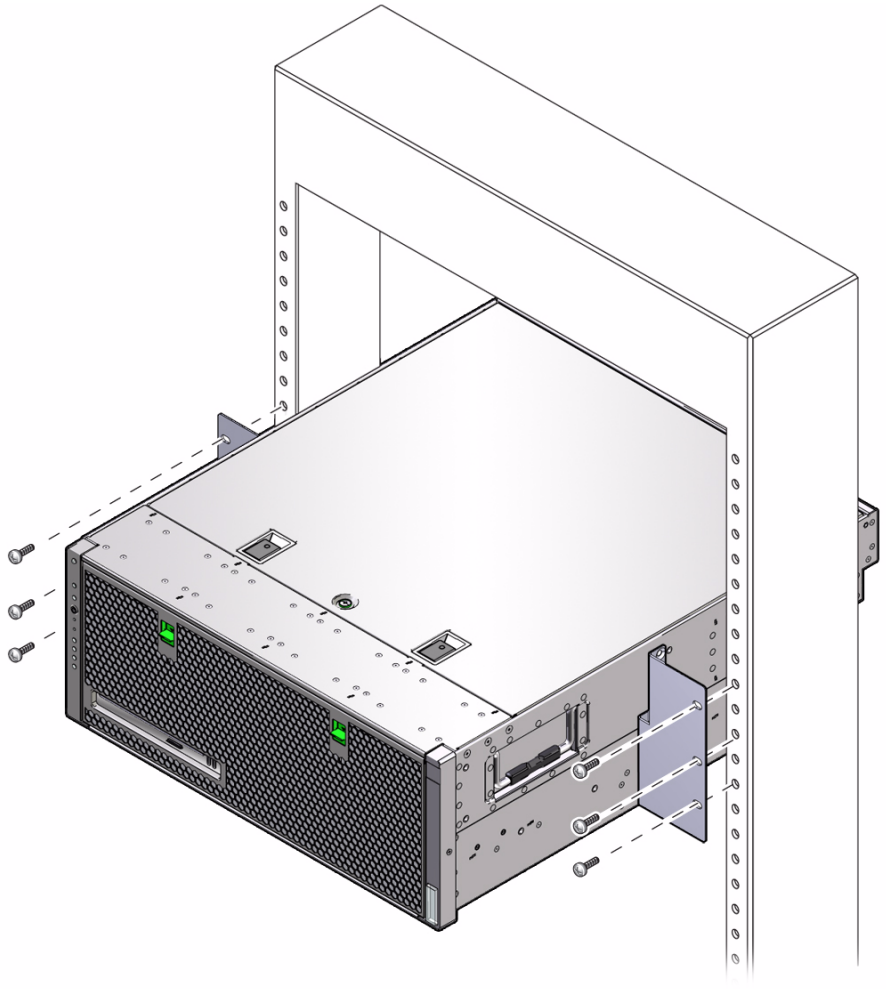
   The side bracket are labeled with L and R for left and right.



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

6. **Using three screws per side, secure the front hardmount brackets attached to the sides of the server to the front of the rack.**

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



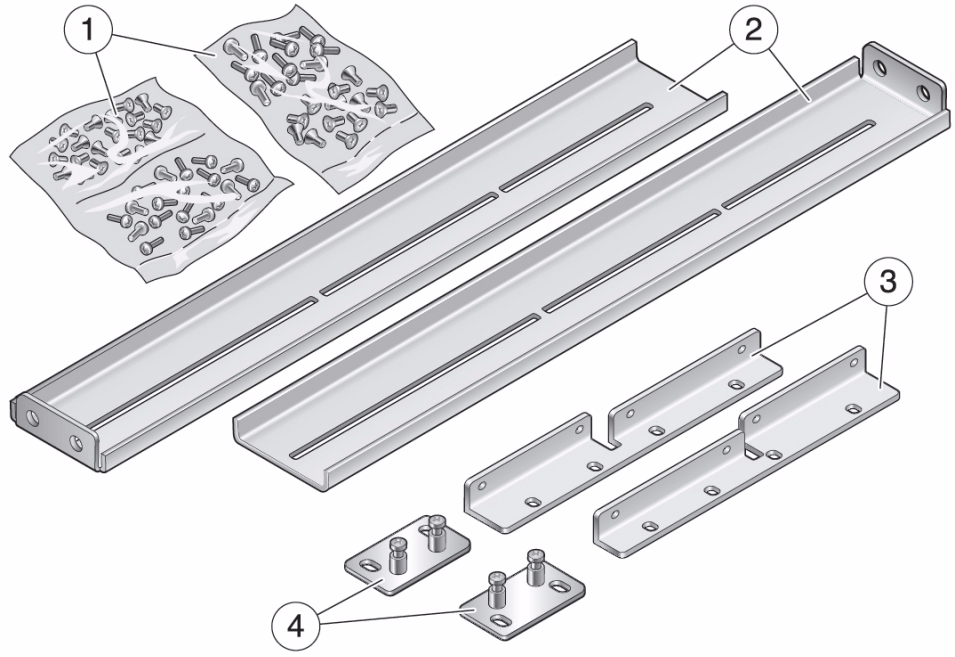
7. **Connect required and optional cables.**

   See "Connecting Cables" on page 55.

Related Information

- "Tools Needed for Installation" on page 20
- "Stabilize the Rack" on page 25
- "23-Inch, 2-Post Hardmount Rackmount Kit" on page 47
- "Handling Precautions" on page 19
- "ESD Precautions" on page 19
- "Rack Cautions" on page 24

19-Inch, 2-Post Hardmount Rackmount Kit



No.	Description	No.	Description
1	Bag of fasteners	3	Front hardmount brackets
2	Side brackets	4	Rear mount flanges

Related Information

- "Install the Server (19-Inch, 2-Post Hardmount Rackmount Kit)" on page 51

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

1. **Read the server cautions.**

   See "Handling Precautions" on page 19 and "ESD Precautions" on page 19.

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

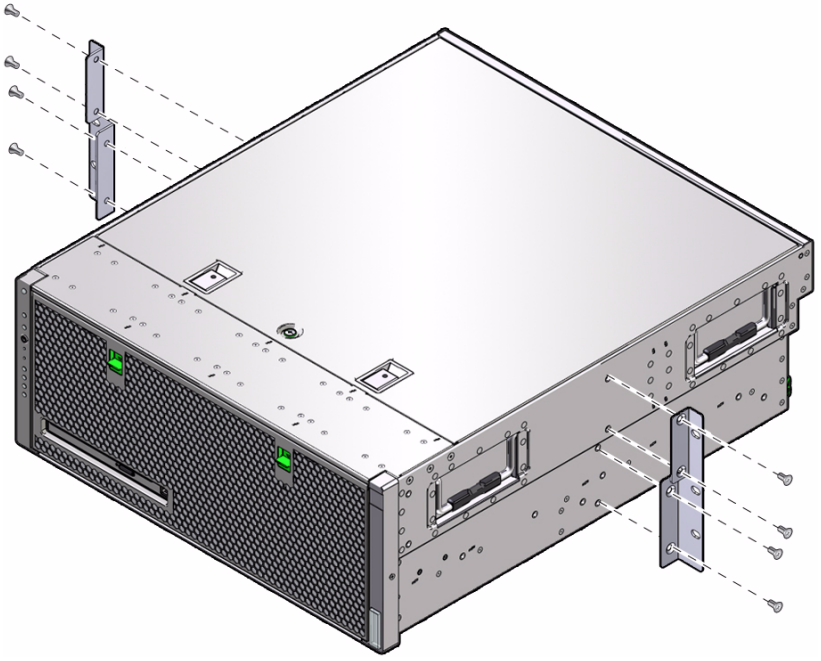
   See "Rack Cautions" on page 24 and "Stabilize the Rack" on page 25.

3. **Get the two front hardmount brackets from the rack kit.**

4. **Using eight of the M5 x 8 mm panhead Phillips screws (four for each side bracket), secure the side brackets to the sides of the server.**

   The side bracket are labeled with L and R for left and right.

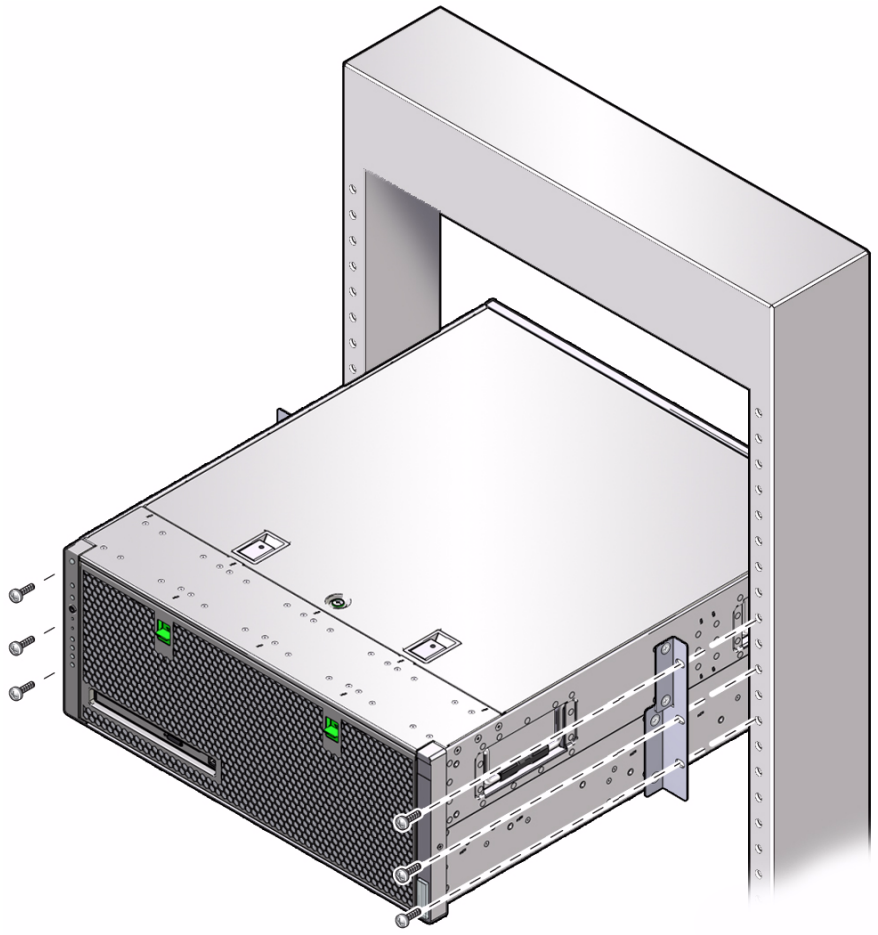
Note – The wide, flat side of the brackets are facing the rear of the server for this rackmount option, not the front.



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

6. **Using three screws per side, secure the front hardmount brackets attached to the sides of the server to the front of the rack.**

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



7. **Connect required and optional cables.**

   See "Connecting Cables" on page 55.

Related Information

- "Tools Needed for Installation" on page 20
- "Stabilize the Rack" on page 25
- "19-Inch, 2-Post Hardmount Rackmount Kit" on page 51
- "Handling Precautions" on page 19
- "ESD Precautions" on page 19
- "Rack Cautions" on page 24

Connecting Cables

Perform the following tasks to connect and configure the network and serial ports before you attempt to boot the server.

Step	Description	Links
1.	Review the cabling requirements.	"Cabling Requirements" on page 55
2.	Review the rear panel connectors and ports.	"Identifying Ports" on page 56
3.	Connect the management and data cables.	"Connecting Data and Management Cables" on page 62

Related Information

- "Rear Panel Components" on page 7
- "Preparing for Installation" on page 17
- "Powering On the Server for the First Time" on page 67

Cabling Requirements

Prior to cabling and powering on the server, gather the following network information from your network administrator:

- Netmask
- IP address for the service processor
- Gateway IP address

At a minimum, you must connect cables to these ports before powering on the server for the first time:

- SER MGT port
- NET MGT port

- At least one system on-board Ethernet network port
- Power cables to the power supply inlet ports

Related Information

- “Rear Panel Components” on page 7
- “Identifying Ports” on page 56

Identifying Ports

These topics provide the pin descriptions of the ports. See “Rear Panel Components” on page 7.

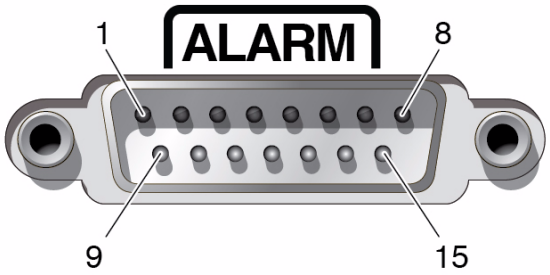
- “Alarm Port” on page 56
- “SER MGT Port” on page 58
- “NET MGT Port” on page 58
- “Gigabit Ethernet Ports” on page 59
- “USB Ports” on page 60
- “Video Port” on page 61

Related Information

- “Rear Panel Components” on page 7
- “Cabling Requirements” on page 55

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

- "Rear Panel Components" on page 7
- "Front Panel Components" on page 6
- "Connect Other Data Cables" on page 65

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. This port is the default connection to the Oracle ILOM system controller. 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.

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

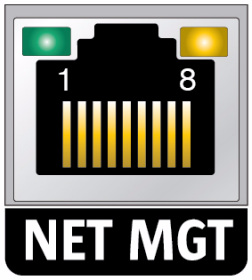
Related Information

- "Rear Panel Components" on page 7
- "Connect the SER MGT Cable" on page 62
- "Connect a Terminal or Emulator to the SER MGT Port" on page 72

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

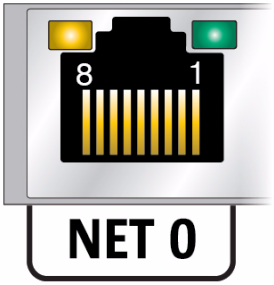
Related Information

- "Rear Panel Components" on page 7
- "Connect the NET MGT Cable" on page 63
- "Assign a Static IP Address to the SP" on page 76

Gigabit Ethernet Ports

Four RJ-45 Gigabit Ethernet connectors (NET0, NET1, NET2, NET3) can be accessed from the rear panel. The Ethernet interfaces operate at 10 Mbit/sec, 100 Mbit/sec, and 1000 Mbit/sec. These ports enable you to connect the server to the network.

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

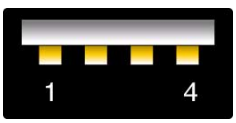
- "Rear Panel Components" on page 7
- "Connect Ethernet Network Cables" on page 64

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.

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.



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

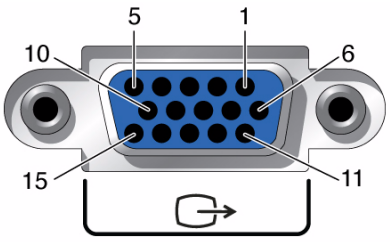
Related Information

- "Rear Panel Components" on page 7
- "Front Panel Components" on page 6

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 the supplied RJ-45 to DB-25 analog-to-digital video adapter to achieve the required connection.

Note – The cable length used to connect between monitor and the VGA port should not be over 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

Pin	Signal Description	Pin	Signal Description
8	Blue Ground		

Related Information

- “Rear Panel Components” on page 7
- “Connect Other Data Cables” on page 65

Connecting Data and Management Cables

These topics describe how to connect cables to the server.

- “Connect the SER MGT Cable” on page 62
- “Connect the NET MGT Cable” on page 63
- “Connect Ethernet Network Cables” on page 64
- “Connect Other Data Cables” on page 65

Related Information

- “Rear Panel Components” on page 7
- “SER MGT Port” on page 58
- “NET MGT Port” on page 58
- “Gigabit Ethernet Ports” on page 59
- “Alarm Port” on page 56
- “USB Ports” on page 60
- “Video Port” on page 61

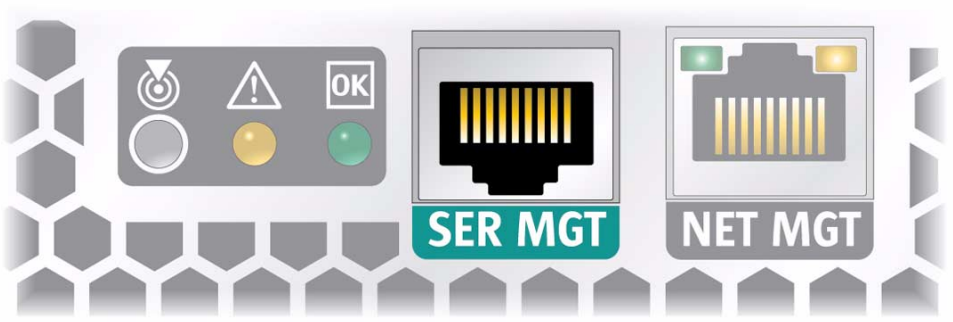
▼ Connect the SER MGT Cable

The service processor serial management port is labeled SER MGT. Use the SER MGT port *only* for server management. See “SER MGT Port” on page 58.

Caution – Do not attach a modem to this port.

- **Connect a Category 5 (or better) cable from the SER MGT to a terminal device.**

  When connecting a DB-9 cable, use the supplied RJ-45 to DB-9 crossover serial adapter to perform the crossovers given for each connector.



Related Information

- "SER MGT Port" on page 58
- "Connect the NET MGT Cable" on page 63
- "Connect Other Data Cables" on page 65

▼ Connect the NET MGT Cable

The service processor network management port is labeled NET MGT. After the initial server configuration, you can connect to the service processor over an Ethernet network using this NET MGT port. See "NET MGT Port" on page 58.

If your network uses a DHCP server to assign IP addresses, the DHCP server will assign an IP address to this NET MGT port. With this IP address, you can connect to the service processor using an SSH connection. If your network does not use DHCP, this NET MGT port will not be accessible until you configure the network settings through the SER MGT port. For instructions, see "Assign a Static IP Address to the SP" on page 76.

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

Related Information

- "NET MGT Port" on page 58
- "Connect the SER MGT Cable" on page 62
- "Connect Ethernet Network Cables" on page 64
- "Connect Other Data Cables" on page 65

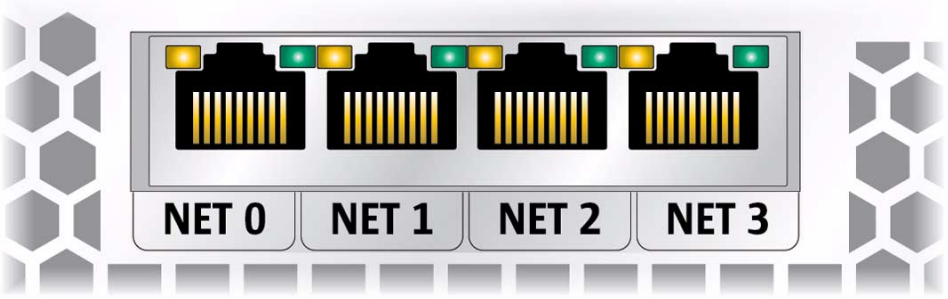
▼ Connect Ethernet Network Cables

The server has four Gigabit Ethernet network connectors, marked NET0, NET1, NET2, and NET3. Use these ports to connect the server to the network. The Ethernet interfaces operate at 10 Mbps, 100 Mbps, and 1000 Mbps. See "Gigabit Ethernet Ports" on page 59.

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

---

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



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

Related Information

- "Gigabit Ethernet Ports" on page 59
- "Powering On the Server for the First Time" on page 67
- "Connect the SER MGT Cable" on page 62
- "Connect the NET MGT Cable" on page 63
- "Connect Other Data Cables" on page 65

▼ Connect Other Data Cables

If your server includes optional PCIe cards, connect the appropriate I/O cables to their connectors.

- **If your server configuration includes optional PCIe cards, connect the appropriate I/O cables to their connectors.**

  Refer to the PCIe card documentation for specific instructions.

Related Information

- PCIe card documentation
- "Identifying Ports" on page 56
- "Rear Panel Components" on page 7
- "Connect the SER MGT Cable" on page 62
- "Connect the NET MGT Cable" on page 63
- "Connect Ethernet Network Cables" on page 64

Powering On the Server for the First Time

These topics include instructions for powering on the server for the first time, booting the server, and configuring the Oracle Solaris OS.

Step	Description	Links
1.	Review requirements for the AC or DC power source, chassis ground, the DC connectors, and the overcurrent protection.	"Electrical Specifications" on page 10 "DC Power Source, Power Connection, and Grounding Requirements" on page 13 "Input Power Information" on page 11 "Overcurrent Protection Requirements" on page 12
2.	For DC powered servers, assemble the DC power cords.	"Assemble the DC Power Cords" on page 68
3.	Prepare the power cords.	"Prepare the Power Cords" on page 71
4.	Connect a serial terminal device or terminal server to the SER MGT port.	"Connect a Terminal or Emulator to the SER MGT Port" on page 72
5.	Power on the server. Set Oracle Solaris OS configuration parameters during the process.	"Power On the Server for the First Time" on page 73 "Oracle Solaris OS Configuration Parameters" on page 75
6.	(Optional) Configure the NET MGT port to use a static IP address.	"Assign a Static IP Address to the SP" on page 76

Related Information

- "Preparing for Installation" on page 17
- "Installing the Server" on page 21
- "Connecting Cables" on page 55
- *Servers Administration*

▼ Assemble the DC Power Cords

Assemble one DC input power cable for each DC power supply in your server.

1. **Install a DC power source that meets the server's input power specifications.**

   See "Input Power Information" on page 11.

2. **Secure DC power cables that meet the server's power cabling specifications.**

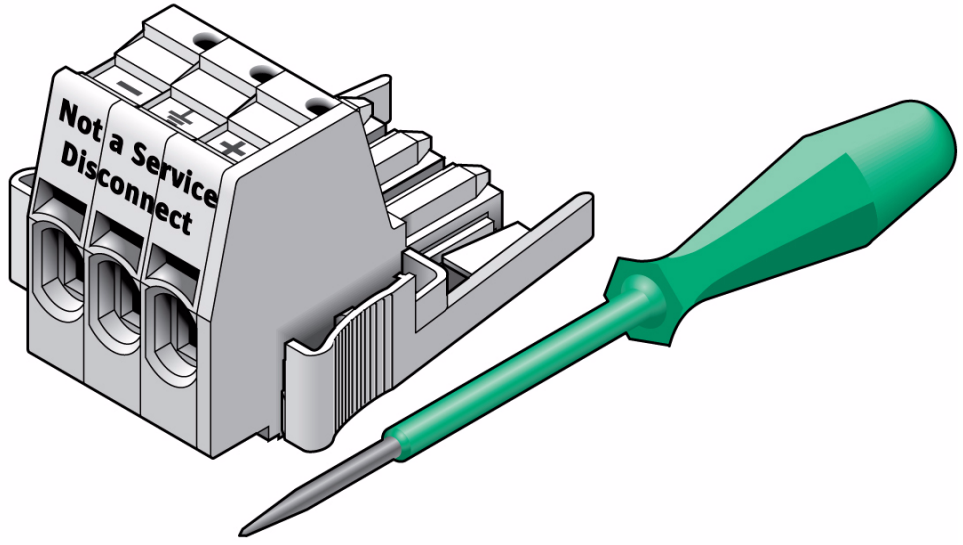
   See "DC Power Source, Power Connection, and Grounding Requirements" on page 13.

3. **Turn off power from the DC power source using the circuit breakers.**

Caution – Before proceeding with these instructions, turn off the power from the DC power source through the circuit breakers.

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

   For each cable, you need a Wago DC input plug, and a cage clamp tool or small screwdriver. These items are provided in the shipping kit that came with your server. See "Shipping Kit" on page 17.



5. **Locate the three wires coming from your DC power source that will be used in the connection to your server.**

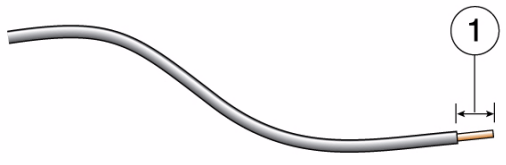
- -48V or -60V (negative terminal)
- Chassis ground
- -48V or -60V Return (positive terminal)

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.

---

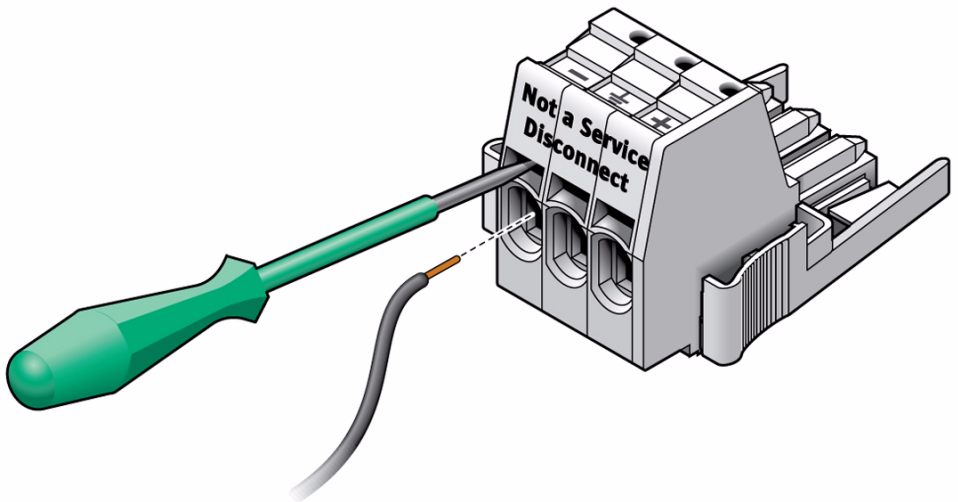
6. **Strip 1/2 in. (13 mm) of insulation from each of the wires coming from the DC power source.**

   Do not strip more than 1/2 in. (13 mm) from each wire. Doing so leaves uninsulated wire exposed from the DC connector after the assembly is complete.

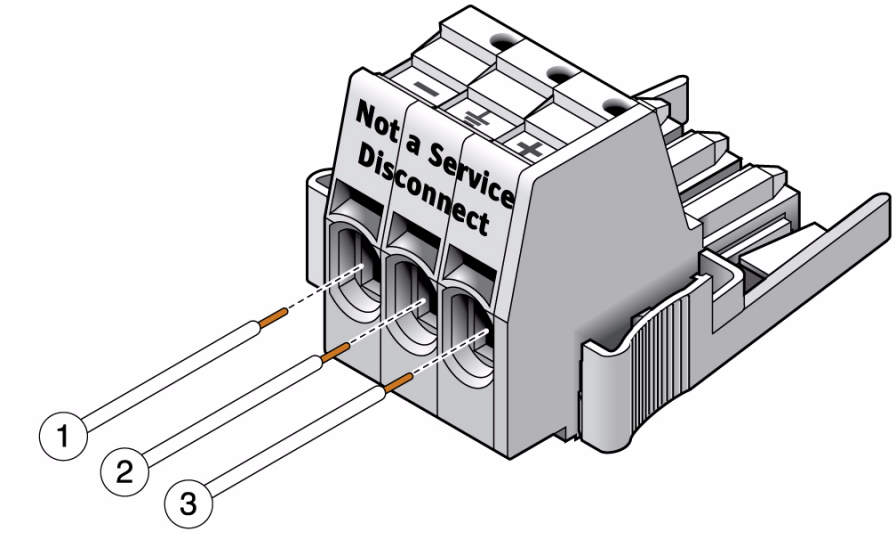


1	1/2 in. (13 mm)

7. **Open the cage clamp by inserting the cage clamp tool (or small screwdriver) into the rectangular hole directly above the hole in the DC input plug where you want to insert the first wire, and push in to open the cage clamp.**



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



1	From -48V or -60V
2	From chassis ground (green/yellow)
3	From -48V or -60V Return

Note – If you need to remove a wire from the DC input plug, insert the cage clamp operating tool or a small screwdriver into the slot directly above the wire and push in. Pull the wire from the DC input plug.

9. **Remove the cage clamp tool to secure the wire.**
10. **Repeat the procedures for the other two wires to complete the assembly of the DC input power cable.**
11. **Repeat this procedure to create as many DC input power cables as you need for your server.**
12. **Prepare the power cords.**

    See "Prepare the Power Cords" on page 71.

Related Information

- "Prepare the Power Cords" on page 71

■ "Power On the Server for the First Time" on page 73

▼ Prepare the Power Cords

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

Caution – Do not attach power cables to the power supplies until you first connect the server to a serial terminal or a terminal emulator (PC or workstation).

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 all four power supplies are not cabled at the same time, since that situation will be a nonredundant condition.

1. **Ensure that the circuit breakers are off for the AC or DC power source or that the DC input cables are de-energized with no DC power present.**
2. **Route the power cords from the power source to the rear of the server and secure the cables with nylon tie wraps.**
3. **Connect the chassis ground wires to the facility ground and ensure that this connection has proper bonding.**
4. **For DC servers, connect the -48V or -60V Return to the -48V or -60V wires to the circuit breaker.**

Caution – Do not close circuit breakers or attach power cables to the power supplies At this time.

5. **Make a serial connection to the SP.**

   See "Connect a Terminal or Emulator to the SER MGT Port" on page 72.

Related Information

- Power source documentation

▼ Connect a Terminal or Emulator to the SER MGT Port

Prior to powering on the server for the first time, make a serial connection to the SP. After making this serial connection, you will be able to view the system messages when you connect the power cords.

1. **Confirm that you have completed all of the preparations for installation.**

   See "Preparing for Installation" on page 17.

2. **Confirm that you have completed the installation of the server in a rack.**

   See "Installing the Server" on page 21.

3. **Confirm that you have connected the necessary cables.**

   See "Connecting Cables" on page 55.

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

   Configure the terminal or terminal emulator with these settings:

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

   A null modem configuration is needed, meaning the transmit and receive signals are reversed (crossed over) for DTE-to-DTE communications. You can use the supplied RJ-45 crossover adapters with a standard RJ-45 cable to achieve the null modem configuration.

Note – When you power on the server for the first time and you do not have a terminal or terminal emulator (PC or workstation) connected to the SP SER MGT port, you will not see system messages.

---

5. **Continue with the installation by powering on the server for the first time.**

   See "Power On the Server for the First Time" on page 73.

Related Information

- "Connect the SER MGT Cable" on page 62
- "SER MGT Port" on page 58
- "Rear Panel Components" on page 7
- "Power On the Server for the First Time" on page 73

▼ Power On the Server for the First Time

1. **Confirm that you have installed the server in a rack and attached all of the data cables.**

   See "Preparing for Installation" on page 17, "Installing the Server" on page 21, and "Connecting Cables" on page 55.

2. **Confirm that you have made a serial connection to the SP.**

   See "Connect a Terminal or Emulator to the SER MGT Port" on page 72.

Note – When you power on the server for the first time and you do not have a terminal or terminal emulator (PC or workstation) connected to the SP SER MGT port, you will not see system messages.

---

3. **(Optional) Connect an Ethernet cable between the server's NET MGT port and the network from which future connections to the SP and host will be made.**

   See "Connect the NET MGT Cable" on page 63.

Note – After the initial configuration of the server using the SER MGT port, communication with the SP and host is usually performed through this NET MGT port.

---

4. **Connect an Ethernet cable between one of the server's Gigabit Ethernet ports and the network to which the server will communicate.**

   See "Connect Ethernet Network Cables" on page 64.

5. **Plug the power cords into the power supplies on the server.**

6. **Plug the power cords into the power source and close the circuit breakers.**

Note – Use four power connections and two separate circuits for redundancy.

Power is immediately supplied to the SP and the front panel SP OK/Fault LED flashes (See "Front Panel Components" on page 6). 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.

7. **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 the *Servers Administration*.

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

```
-> start /SYS
Are you sure you want to start /SYS (y/n)? y
-> 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 SP host console, the server initialization takes approximately 20 minutes to complete.

9. **When prompted, follow the onscreen instructions for configuring the Oracle Solaris OS on your host and enter configuration information.**

You are prompted to confirm the configuration several times, enabling confirmation and changes. If you are not sure how to respond to a particular value, you can accept the default, and make future changes when the Oracle Solaris OS is running. See "Oracle Solaris OS Configuration Parameters" on page 75 for a description of the Oracle Solaris OS parameters you must provide during initial configuration.

10. **(Optional) Deploy the server for its intended use.**

    Once the server has been configured and you have changed the default password, the server is ready for normal use.

Related Information

- "Oracle Solaris OS Configuration Parameters" on page 75
- "Front Panel Components" on page 6
- "Preparing for Installation" on page 17
- "Connecting Cables" on page 55

Oracle Solaris OS Configuration Parameters

You must provide these parameters during initial Oracle Solaris OS configuration.

Parameter	Description
Language	Select a number from the displayed language list.
Locale	Select a number from the displayed locale list.
Terminal Type	Select a terminal type that corresponds with your terminal device.
Network?	Select `Yes`.
Multiple Network Interfaces	Select the network interfaces that you plan to configure. If you are not sure, select the first one in the list.
DHCP?	Select `Yes` or `No` according to your network environment.
Host Name	Type the host name for the server.
IP Address	Type the IP address for this Ethernet interface.
Subnet?	Select `Yes` or `No` according to your network environment.
Subnet Mask	(If subnet was `Yes`) Type the netmask for the subnet for your network environment.
IPv6	Specify whether or not to use IPv6. If you are not sure, select `No` to configure the Ethernet interface for IPv4.
Security Policy	Select either standard UNIX security (`No`) or Kerberos Security (`Yes`). If you are not sure, select `No`.
Confirm	Review the onscreen information and change it if needed. Otherwise, continue.

Parameter	Description
Name Service	Select the name service according to your network environment. If you select a name service other than None, you will be prompted for additional name service configuration information.
NFSv4 Domain Name	Select the type of domain name configuration according to your environment. If you are not sure, select `Use the NFSv4 domain derived by the server`.
Time Zone (Continent)	Select your continent.
Time Zone (Country or Region)	Select your country or region.
Time Zone	Select the time zone.
Date and Time	Accept the default date and time or change the values.
root Password	Type the `root` password twice. This password is for the superuser account for the Oracle Solaris OS on this server. This password is not the SP password.

Related Information

- "Power On the Server for the First Time" on page 73
- "Rear Panel Components" on page 7
- "Assign a Static IP Address to the SP" on page 76
- *Servers Administration*

▼ Assign a Static IP Address to the SP

If your network uses DHCP to assign IP addresses, the DHCP device will automatically assign an IP address to the SP. If your network does not use DHCP, follow this procedure to assign a static IP address to the SP.

Note – For more information on configuring Oracle ILOM, refer to the Servers Administration and the Oracle ILOM documentation.

1. **Log in to the SP using a serial connection through the SER MGT port.**

   For serial connection instructions, see "Connect a Terminal or Emulator to the SER MGT Port" on page 72. Log in to the SP as `root` (*changeme* is the default `root` password) to display the Oracle ILOM prompt.

```
hostname login: root
Password: password  (nothing displayed)

Oracle(R) Integrated Lights Out Manager

Version 3.0.12.2

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Warning: password is set to factory default.
->
```

2. **Set the SP to accept a static IP address.**

```
-> set /SP/network pendingipdiscovery=static
Set 'pendingipdiscovery' to 'static'
```

3. **Set the IP address for the SP.**

```
-> set /SP/network pendingipaddress=service-processor-IPaddr
Set 'pendingipaddress' to 'service-processor-IPaddr'
```

4. **Set the IP address for the SP gateway.**

```
-> set /SP/network pendingipgateway=gateway-IPaddr
Set 'pendingipgateway' to 'gateway-IPaddr'
```

5. **Set the netmask for the SP.**

```
-> set /SP/network pendingipnetmask=255.255.255.0
Set 'pendingipnetmask' to '255.255.255.0'
```

   This example uses `255.255.255.0` to set the netmask. Your network environment subnet might require a different netmask. Use a netmask number most appropriate to your environment.

6. **Verify that the parameters were set correctly.**

   This example shows parameters that have been set to convert an SP from a DHCP configuration to a static configuration.

```
-> show /SP/network -display properties
 /SP/network
   Properties:
       commitpending = (Cannot show property)
       dhcp_server_ip = none
       ipaddress = xxx.xxx.xxx.xxx
       ipdiscovery = dhcp
       ipgateway = xxx.xxx.xxx.xxx
       ipnetmask = 255.255.255.0
       macaddress = 00:21:28:6F:A7:BB
       managementport = /SYS/MB/SP/NETMGMT
       outofbandmacaddress = 00:21:28:6F:A7:BB
       pendingipaddress = xxx.xxx.xxx.xxx
       pendingipdiscovery = static
       pendingipgateway = xxx.xxx.xxx.xxx
       pendingipnetmask = 255.255.255.0
       pendingmanagementport = /SYS/MB/SP/NETMGMT
       sidebandmacaddress = 00:21:F8:6F:A7:BA
       state = enabled
->
```

7. **Commit the changes to the SP network parameters**

   You must perform this action for the new values to take effect.

```
-> set /SP/network commitpending=true
Set 'commitpending' to 'true'
```

8. **(Optional) Verify that the parameters have been updated.**

```
-> show /SP/network -display properties
 /SP/network
   Properties:
   :
   :
->
```

9. **Perform administrative tasks or service Oracle's Netra SPARC T4-2 server as needed.**

   Refer to the *Servers Administration* and *Server Service*.

Related Information

- "Oracle Solaris OS Configuration Parameters" on page 75
- Oracle ILOM documentation
- *Servers Administration*

Glossary

A

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

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

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.

H

HBA Host bus adapter.

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

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.

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

NAC Network Access Control.

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.

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.

POST Power-on self-test.

PROM Programmable read-only memory.

PSH Predictive self healing.

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.

S

SAS Serial attached SCSI.

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.

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*.

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.

U

UCP Universal connector port.

UI User interface.

UL Underwriters Laboratory Inc.

U.S. NEC United States National Electrical Code.

UTC Coordinated Universal Time.

UUID Universal unique identifier.

W

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

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