Oracle® Server X5-2 Installation Guide

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Contents

Using This Documentation

- **Overview** – This installation guide contains hardware installation and configuration procedures for the Oracle Server X5-2.
- **Audience** – This guide is intended for trained technicians, system administrators, and authorized service personnel who have been instructed on how to install server systems and hardware components.
- **Required knowledge** – Users should have advanced experience installing hardware and configuring preinstalled operating systems.

Product Documentation Library

Documentation and resources for this product and related products are available at https://www.oracle.com/goto/x5-2/docs.

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Provide feedback about this documentation at https://www.oracle.com/goto/docfeedback.

Installation Procedure

This section provides an overview of the installation procedure.

Description	Links
Review the entire installation procedure and find links to more information about each step.	“Installation Procedure Overview ” on page 13

Installation Procedure Overview

The following table lists the tasks you need to complete to install the Oracle Server X5-2.

Step	Description	Links
1	Review the product notes for any late-breaking information about the server.	*Oracle Server X5-2 Product Notes* at `https://www.oracle.com/goto/x5-2/docs`
2	Review the server site requirements, specifications, and components, and confirm that you have received all of the items you ordered; familiarize yourself with ESD and safety precautions; and assemble the required tools and equipment.	■ “Preparing for Server Installation” on page 15 ■ “Site Planning Checklists” on page 169
3	Review the server features.	“Server Features and Components” on page 27
4	Install any separately shipped optional components.	“Optional Component Installation” on page 25
5	Install the server into a rack.	“Installing the Server Into a Rack” on page 39
6	Attach data cables and power cords to the server.	“Cabling the Server and Applying Power” on page 75
7	Set up your system software and firmware using Oracle System Assistant.	“Setting Up Software and Firmware Using Oracle System Assistant” on page 101
8	Connect to Oracle Integrated Lights Out Manager (ILOM).	“Connecting to Oracle ILOM” on page 83

Step	Description	Links
9	Prepare server drives and configure RAID.	"Configuring Storage Drives for Operating System Installation" on page 111
10	If applicable, configure one of the following preinstalled operating system or virtual machine. ■ Oracle Solaris ■ Oracle Linux ■ Oracle VM Server	■ "Configuring the Preinstalled Oracle Solaris Operating System" on page 131 ■ "Configuring the Preinstalled Oracle Linux Operating System" on page 139 ■ "Configuring the Preinstalled Oracle VM Server Software" on page 145
11	If applicable, install one of the following operating systems or virtual machines: ■ Oracle Solaris ■ Oracle Linux and other Linux ■ Oracle VM Server ■ Windows Server ■ VMware ESXi	■ "Installing the Oracle Solaris Operating System" in *Oracle Server X5-2 Installation Guide for Oracle Solaris Operating System* ■ "Installing a Linux Operating System" in *Oracle Server X5-2 Installation Guide for Linux Operating Systems* ■ "Installing Oracle VM Server" in *Oracle Server X5-2 Installation Guide for Oracle VM* ■ "Installing a Windows Server Operating System" in *Oracle Server X5-2 Installation Guide for Windows Server Operating Systems* ■ "Installing VMware ESXi" in *Oracle Server X5-2 Installation Guide for VMware ESXi*
12	Review procedures for controlling system power.	"Controlling System Power" on page 159
13	Troubleshoot installation issues.	"Troubleshooting Installation Issues" on page 165
14	Review procedures for getting the latest server firmware and software.	"Getting Firmware and Software Updates" on page 153

Preparing for Server Installation

This section provides the information you need to prepare for the server installation.

Description	Links
Review the server physical specifications.	“Server Physical Specifications” on page 15
Prepare the space for rackmounting the server, receiving the packaged server, and maintaining the server in its rack.	“Space Requirements” on page 16
Review the site electrical requirements and server power requirements.	“Electrical Power Requirements” on page 18
Review temperature, humidity, and other environmental requirements for the server.	“Environmental Requirements” on page 20
Review ventilation and cooling requirements for the rackmounted server.	“Ventilation and Cooling” on page 21
Review Agency Compliance specifications for the server.	“Agency Compliance” on page 23
Unpack the server and verify the ship kit contents.	“Shipping Inventory” on page 23
Assemble the tools required for installation.	“Tools and Equipment Needed for Installation” on page 24
Review ESD requirements and take safety precautions.	“ESD and Safety Precautions” on page 24
Install any optional components into the server.	“Optional Component Installation” on page 25

Related Information

- “Installation Procedure Overview ” on page 13
- “Server Features and Components” on page 27

Server Physical Specifications

The following table lists the physical specifications for the Oracle Server X5-2.

TABLE 1 Oracle Server X5-2 Physical Specifications

Dimension	Server Specification	Measurements
Width	Server chassis	43.65 cm (17.19 inches)
Depth	Maximum overall	73.7 cm (29 inches)
Height	1-rack unit (1U) nominal	4.26 cm (1.68 inches)
Weight	Fully populated server	18 kg (40 lbs)

Related Information

- “Space Requirements” on page 16
- “Rack Requirements” on page 40

Space Requirements

The Oracle Server X5-2 is a 1 rack unit (1U) server. For physical dimensions, see “Server Physical Specifications” on page 15.

The server can be installed into a four-post rack cabinet that conforms to ANSI/EIA 310-D-1992 or IEC 60927 standards, such as Oracle's Sun Rack II. All Oracle racks have the same space requirements. The specifications for Oracle's Sun Rack II are listed in the following table.

TABLE 2 Sun Rack II Models 1242 and 1042 Specifications

Requirement	Specification
Usable rack units	42
Height	199.8 cm (78.66 inches)
Width (with side panels)	60 cm (23.62 inches)
Depth Model 1242†	120 cm (47.24 inches)
Depth Model 1042†	105.8 cm (41.66 inches)
Weight Model 1242	150.6 kg (332 lbs)
Weight Model 1042	123.4 kg (272 lbs)
Maximum dynamic load	1005 kg (2215 lbs)

†Depth is measured from front door handle to rear door handle.

The minimum ceiling height for the cabinet is 230 cm (90 inches), measured from the true floor or raised floor, whichever is higher. An additional 91.4 cm (36 inches) is for top clearance. The space above the cabinet and its surroundings must not restrict the movement of cool air between

the air conditioner and the cabinet, or the movement of hot air coming out of the top of the cabinet.

The following sections provide additional space requirements:

- "Receiving and Unpacking Guidelines" on page 17
- "Maintenance Space Guidelines" on page 17

Receiving and Unpacking Guidelines

The following table lists the dimensions and weights for the Oracle Server X5-2 shipping carton.

TABLE 3 Shipping Carton Specifications

Requirement	Specification
Shipping carton height	26.0 cm (10.24 inches)
Shipping carton width	60.65 cm (23.88 inches)
Shipping carton length	99.0 cm (38.98 inches)
Shipping carton weight	5.65 kg (12.46 lbs)

When the server is unloaded at your site, leave the server in its shipping cartons until it arrives in its installation location. Use a separate area to remove the packaging material to reduce particle contamination before entering the data center. Ensure that there are clear pathways and enough clearance for moving the server from the unpacking area to the installation location. The entire access route to the installation site should be free of raised-pattern flooring that can cause vibration.

Maintenance Space Guidelines

The maintenance area for the rackmounted Oracle Server X5-2 must have the required access space. The following table lists the maintenance access requirements for the server when it is installed in a rack.

TABLE 4 Maintenance Access Requirements

Location	Maintenance Access Requirement
Rear of the server	91.4 cm (36 inches)
Area above the rack	91.4 cm (36 inches)

Location	Maintenance Access Requirement
Front of the server	123.2 cm (48.5 inches)

Electrical Power Requirements

The Oracle Server X5-2 uses AC power. The following table lists the power supply specifications for the server.

Note - The power dissipation numbers listed in the following table are the maximum rated power numbers for the power supply used in the system. The numbers are not a rating of the actual power consumption of the system. For up-to-date information about the power consumption, go to Oracle Power Calculators web site and click on the Oracle Server X5-2 link: https://www.oracle.com/it-infrastructure/power-calculators/

TABLE 5 Power Supply Specifications

Parameter	Specification
Voltage (nominal)	100 to 127 VAC; 200 to 240 VAC
Input current (maximum)	7.2 A @ 100-127 VAC; 3.4 A @ 200-240 VAC
Frequency (nominal)	50/60 Hz (47 to 63 Hz range)

The Oracle Server X5-2 can operate effectively over a range of voltages and frequencies. However, it must have a reliable power source. Damage to the server might occur if the ranges are exceeded. Electrical disturbances such as the following might damage the system:

- Fluctuations caused by brownouts
- Wide and rapid variations in input voltage levels or in input power frequency
- Electrical storms
- Faults in the distribution system, such as defective wiring

To protect your server from such disturbances, you should have a dedicated power distribution system, power-conditioning equipment, as well as lightning arresters or power cables to protect from electrical storms.

See the following sections for additional power specifications.

- “Facility Power Guidelines” on page 19
- “Circuit Breaker and UPS Guidelines” on page 19

- “Grounding Guidelines” on page 19

Facility Power Guidelines

Electrical work and installations must comply with applicable local, state, or national electrical codes. Contact your facilities manager or qualified electrician to determine what type of power is supplied to the building.

Design the input power sources to ensure adequate power is provided to the power distribution units (PDUs). Use dedicated AC breaker panels for all power circuits that supply power to the PDU. When planning for power distribution requirements, balance the power load between available AC supply branch circuits. In the United States and Canada, ensure that the overall system AC input current load does not exceed 80 percent of the branch circuit AC current rating.

For example, PDU power cords for the Oracle's Sun Rack II are 4 meters (13.12 feet) long, and 1 to 1.5 meters (3.3 to 4.9 feet) of the cord might be routed within the rack cabinet. The installation site AC power receptacle must be within 2 meters (6.6 feet) of the rack.

Circuit Breaker and UPS Guidelines

The design of your power system must ensure that adequate power is provided to the server. Use dedicated AC breaker panels for all power circuits that supply power to the server. Electrical work and installations must comply with applicable local, state, or national electrical codes. The server requires electrical circuits to be grounded to the Earth.

Note - Circuit breakers are supplied by the customer. One circuit breaker is required for each server power cord.

In addition to circuit breakers, provide a stable power source, such as an uninterruptable power supply (UPS) to reduce the possibility of component failures. If computer equipment is subjected to repeated power interruptions and fluctuations, then it is susceptible to a higher rate of component failure.

Grounding Guidelines

The rack must use grounding-type power cords. For example, Oracle's Sun Rack II has three-wire, grounding-type power cords. Always connect the cords to grounded power outlets.

Because different grounding methods are used, depending on location, check the grounding type, and refer to documentation, such as local electrical codes, for the correct grounding method. Ensure that the facility administrator or qualified electrical engineer who verifies the grounding method for the building performs the grounding work.

Environmental Requirements

The following table lists the temperature, humidity, and altitude specifications, as well as acoustic noise, vibration, and shock specifications.

TABLE 6 Environmental Specifications

Specification	Operating	Nonoperating
Ambient temperature (Does not apply to removable media)	■ Maximum range: 41°F to 95°F (5°C to 35°C) up to 2,953 feet (900 meters) ■ Optimal: 69.8°F to 73.4°F (21°C to 23°C) **Note -** Maximum ambient operating temperature is derated by 1 degree C per 300 meters of elevation beyond 900 meters, up to a maximum altitude of 3,000 meters.	–40°F to 154°F (–40°C to 68°C)
Relative humidity	■ 10% to 90% noncondensing, short term 23°F to 113°F (–5°C to 55°C) ■ 5% to 90% noncondensing, but not to exceed 0.024 kg of water per kg of dry air (0.053 lbs water/2.205 lbs dry air)	Up to 93% noncondensing 95°F (35°C) maximum wet bulb
Altitude	Up to 9,840 feet (3,000 meters) **Note -** In China markets, regulations may limit installations to a maximum altitude of 6,562 feet (2,000 meters).	Maximum 39,370 feet (12,000 meters)
Acoustic noise	■ Maximum condition: 7.1 Bels A weighted ■ Idle condition: 7.0 Bels A weighted	Not applicable
Vibration	0.15 G (z-axis), 0.10 G (x-, y-axes), 5-500Hz swept sine IEC 60068-2-6 Test FC	0.5 G (z-axis), 0.25 G (x-, y-axes), 5-500Hz swept sine IEC 60068-2-6 Test FC
Shock	3.5 Gs, 11 ms half-sine IEC 60068-2-27 Test Ea	Roll-off: 1.25-inch roll-off free fall, front to back rolling directions Threshold: 13-mm threshold height at 0.65 m/s impact velocity ETE-1010-02 Rev A

Set conditions to the optimal temperature and humidity ranges to minimize the chance of downtime due to component failure. Operating the Oracle Server X5-2 for extended periods at

or near the operating range limits, or installing it in an environment when it remains at or near nonoperating range limits could significantly increase hardware component failure. See also:

- “Temperature Guidelines” on page 21
- “Humidity Guidelines” on page 21

Related Information

- “Ventilation and Cooling” on page 21

Temperature Guidelines

An ambient temperature range of 21° to 23° Celsius (70° to 74° Fahrenheit) is optimal for server reliability and operator comfort. Most computer equipment can operate in a wide temperature range, but near 22° Celsius (72° Fahrenheit) is desirable because it is easier to maintain safe humidity levels. Operating in this temperature range provides a safety buffer in the event that the air conditioning system goes down for a period of time.

Humidity Guidelines

The ambient relative humidity range of 45 to 50 percent is suitable for safe data processing operations. Most computer equipment can operate in a wide range (20 to 80 percent), but the range of 45 to 50 percent is recommended for the following reasons:

- Optimal range helps protect computer systems from corrosion problems associated with high humidity levels.
- Optimal range provides the greatest operating time buffer in the event of air conditioner control failure.
- This range helps to avoid failures or temporary malfunctions caused by intermittent interference from static discharges that may occur when relative humidity is too low. Electrostatic discharge (ESD) is easily generated and less easily dissipated in areas where the relative humidity level is below 35 percent. ESD risk becomes critical when levels drop below 30 percent.

Ventilation and Cooling

Always provide adequate space in front of and behind the rack to allow for proper ventilation of the rackmounted servers. Do not obstruct the front or rear of the rack with equipment or objects

that might prevent air from flowing through the rack. Rackmountable servers and equipment, including the Oracle Server X5-2, typically draw cool air in through the front of the rack and let warm air out the rear of the rack. There is no airflow requirement for the left and right sides due to front-to-back cooling.

If the rack is not completely filled with components, then cover the empty sections will filler panels. Gaps between components can adversely affect airflow and cooling within the rack. See also:

- “Ventilation Guidelines” on page 22

Ventilation Guidelines

The Oracle Server X5-2 has been designed to function while installed in a natural convection airflow. The following requirements must be followed to meet the environmental specification:

- Ensure that air intake is at the front of the system, and the air outlet is at the rear of the system. Take care to prevent recirculation of exhaust air within a rack or cabinet.
- Allow a minimum clearance of 123.2 cm (48.5 inches) at the front of the system, and 91.4 cm (36 inches) at the rear of the system for ventilation.
- Ensure unobstructed airflow through the chassis. The server uses internal fans that can achieve a total airflow of 100 CFM over the specified range of operating conditions.
- Ensure that ventilation openings such as cabinet doors, for both the inlet and exhaust of the server are not obstructed. For example, Oracle's Sun Rack II has been optimized for cooling. Both the front and rear doors have 80 percent perforations that provide a high level of airflow through the rack.
- Ensure that front and rear clearance of the server with respect to cabinet doors is at minimum of 1 inch (2.5 mm) at the front of the server and 3.15 inches (80 mm) at the rear of the server when mounted. These clearance values are based on the inlet and exhaust impedance (available open area) stated above and assume a uniform distribution of the open area across the inlet and exhaust areas. These values also improve cooling performance.

Note - 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. You must evaluate these restrictions. Server placement is particularly important for high-temperature environments.

- Manage cables to minimize interference with the server exhaust vent.

Agency Compliance

The server complies with the following specifications.

Category	Relevant Standards

Regulations[†,‡]	■ Product Safety: UL/CSA 60950-1, EN 60950-1, IEC 60950-1 CB Scheme with all country differences
	■ EMC
	  ■ Emissions: FCC CFR 47 Part 15, ICES-003, EN55022, EN61000-3-2, EN61000-3-3
	  ■ Immunity: EN55024

Certifications[‡]	■ North America (NRTL) ■ European Union (EU) ■ International CB Scheme ■ BIS (India) ■ BSMI (Taiwan) ■ RCM (Australia) ■ CCC (PRC) ■ MSIP (Korea) ■ VCCI (Japan) ■ Customs Union EAC
European Union Directives	■ 2006/95/EC Low Voltage Directive ■ 2004/108/EC EMC Directive ■ 2011/65/EU RoHS Directive ■ 2012/19/EU WEEE Directive

[†]All standards and certifications referenced are to the latest official version. For additional detail, please contact your sales representative.

[‡]Other country regulations/certifications may apply.

Related Information

- *Oracle Server X5-2 Safety and Compliance Guide*
- *Important Safety Information for Oracle's Hardware Systems*

Shipping Inventory

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.

The ship kit for the Oracle Server X5-2 includes the following items:

- Power cords, packaged separately with country kit
- Rackmount kit containing rack rails and installation instructions
- Miscellaneous hardware, cables, and connectors
- *Oracle Server X5-2 Getting Started Guide*
- Legal and safety documents

Related Information

- "Optional Component Installation" on page 25

Tools and Equipment Needed for Installation

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

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

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

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

Related Information

- "Installing the Server Into a Rack" on page 39

ESD and Safety Precautions

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

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

Read the safety information in the *Oracle Server X5-2 Safety and Compliance Guide* and in the *Important Safety Information for Oracle's Hardware Systems* before installing the server.

Caution - Deploy the anti-tilt bar or legs on the equipment rack before beginning an installation.

Caution - The server weighs approximately 18.0 kg (40.0 pounds). Two people are required to lift and mount this 1 rack unit (1U) 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

- “Safety Precautions” on page 41

Optional Component Installation

Standard system components are installed at the factory. Optional components that you purchased independent of the standard configuration are shipped separately, and in most cases should be installed before you install the server in a rack.

The following optional components can be ordered and purchased separately:

- PCIe cards
- DDR4 DIMM memory kits
- Storage drives
- Shipping bracket
- Software media

If you ordered any options that are field-replaceable units (FRUs) or customer-replaceable units (CRUs), refer to the service label on the top cover of the server or the component removal and replacement procedures in the "About System Components" in *Oracle Server X5-2 Service Manual* for installation instructions.

Supported components and their part numbers are subject to change over time and without notice. For the most up-to-date list, review the *Oracle System Handbook* at:

`https://support.oracle.com/handbook_private/Systems/index.html`

You can also log in to My Oracle Support to access the Oracle System Handbook. To access the handbook, log in to My Oracle Support. Select the Knowledge tab, and then select Oracle System Handbook. Within the handbook, click Systems, and then click the name and model of your server. On the product page that opens for the server, click Full Components List for a list of components.

Note - You must have an Oracle Service contract to access the Oracle System Handbook.

Related Information

- "Server Components" on page 27
- "About System Components" in *Oracle Server X5-2 Service Manual*

Server Features and Components

This section describes the components, status indicators (LEDs), connectors, ports, and storage drives on the server front and back panels.

Description	Links
Review server features and components.	“Server Components” on page 27
Locate status indicators, connectors, and storage drives on the server front and back panels.	“Front Panel Status Indicators, Connectors, and Drives” on page 29 “Back Panel Status Indicators, Connectors, Drives, and PCIe Slots” on page 30

Related Information

- “Cabling the Server and Applying Power” on page 75

Server Components

TABLE 7 Oracle Server X5-2 Components

Feature	Description
Processor	One or two processors with four integrated DDR4 memory controllers per processor. Processors with the following capabilities are supported: ■ 18-core, 2.3 GHz, 145W processors ■ 12-core, 2.6 GHz, 135W processors ■ 10-core, 2.6 GHz, 105W processors ■ 8-core, 2.4 GHz, 85W processors For the latest information on CPU specifications, go to the Oracle x86 servers web site and navigate to the Oracle Server X5-2 page: `https://www.oracle.com/servers/technologies/x86-servers.html`
Memory	Up to 12 DIMMs per processor for a maximum of 24 DDR4 DIMMs and a maximum of 768 GB of memory are supported in dual-processor systems.

Feature	Description
	A maximum of 12 DDR4 DIMMs and a maximum of 384-GB of memory are supported in single-processor systems. RDIMMs (8 GB and 16 GB) and LRDIMMs (32 GB) are supported.
Storage devices	The storage drive configuration can comprise both hard disk drives (HDDs) or solid state drives (SSDs). The configuration includes: ■ Up to eight 2.5-inch hot-pluggable SAS HDDs or SSDs with an optional SATA DVD **Note -** NVM-Express SSDs are only supported on servers running Oracle Linux or Oracle Solaris operating systems. **Note -** The NVM-Express PCIe switch card is required for storage drive configurations that contain NVM-Express SSDs.
PCI Express (PCIe) 3.0 I/O slots	Three PCIe Gen3 slots that accommodate low-profile PCIe cards. ■ Slots 1 and 2: x16 electrical interface ■ Slot 3: x8 electrical interface **Note -** PCIe slot 1 is nonfunctional in single-processor systems.
Internal HBA	One dedicated PCIe Gen3 slot for use with an optional internal-only host bus adapter (HBA) card. This internal HBA is used to control and manage the storage drives.
Ethernet ports	Up to four 10GBASE-T RJ-45 Gigabit Ethernet (10GbE) ports on the rear panel. **Note -** Ethernet ports NET 2 and NET 3 are nonfunctional in single-processor systems.
USB 2.0 ports	Two front, two rear, and two internal. **Note -** One of the internal USB ports might be preinstalled with a USB drive containing the Oracle System Assistant. For more information, see "Setting Up Software and Firmware Using Oracle System Assistant" on page 101.
Video (VGA) ports	One rear high-density DB-15 video port.
Service processor (SP)	The server has an integrated service processor (SP). The SP provides IPMI 2.0-compliant remote management capabilities. The SP features: ■ Oracle Integrated Lights Out Manager (ILOM) version 3.2.4 (initial version) ■ Local Oracle ILOM command-line access using a serial connection ■ Support for Ethernet access to the SP through a dedicated, 10/100/1000BASE-T management port (NET MGT) and optionally through one of the host Ethernet ports (sideband management) ■ Support for remote KVMS (keyboard, video, mouse, and storage) over IP
Management Software	■ Oracle Integrated Lights Out Manager (ILOM) on the service processor ■ Oracle System Assistant on an optional internal USB flash drive ■ Oracle Hardware Management Pack, downloadable from the Oracle site
Power supplies	Two hot-swappable and highly-redundant 600W power supplies.
Cooling fans	Four 40-mm, hot-swappable fan modules for chassis cooling. Each fan module contains two counter-rotating fan pairs (four rotors total). Each power supply has its own cooling fans.
Operating systems and virtualization software	■ Oracle Solaris (preinstall option) ■ Oracle Linux (preinstall option)

Feature	Description
	■ Oracle VM (preinstall option) ■ RedHat Enterprise Linux ■ Microsoft Windows Server 2012 ■ Microsoft Windows Server 2012 R2 ■ VMware ESXi ■ SUSE Linux Enterprise Server For a complete list of supported OS versions for your server, refer to the *Oracle Server X5-2 Product Notes* at: https://www.oracle.com/goto/x5-2/docs

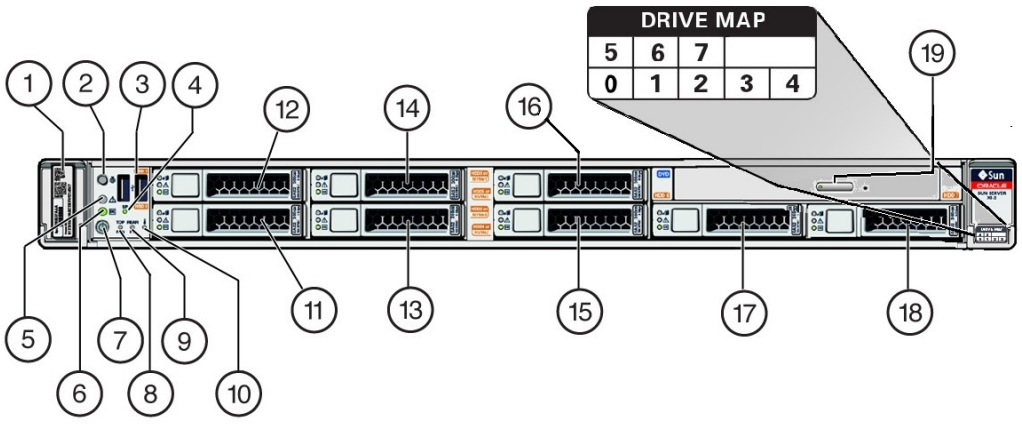
Related Information

- "Front Panel Status Indicators, Connectors, and Drives" on page 29
- "Back Panel Status Indicators, Connectors, Drives, and PCIe Slots" on page 30

Front Panel Status Indicators, Connectors, and Drives

The following figure shows the status indicators (LEDs), connectors, and drives located on the front panel of a Oracle Server X5-2 configured with eight 2.5-inch storage drives and a SATA DVD drive.

For information about how to interpret the status indicators (LEDs), refer to the *Oracle Server X5-2 Service Manual*.



Call Out	Description
1	Product Serial Number (PSN) label and Radio Frequency Identification (RFID) tag
2	Locator LED/button: white
3	USB 2.0 connectors (2)
4	SP OK LED: green
5	Service Required LED: amber
6	Power/OK LED: green
7	Power button
8	Service Required LED: Top: Fan Module (amber)
9	Service Required LED: Rear: Power Supply (amber)
10	Service Required LED: Overtemp Icon: System Over Temperature Warning (amber)
11	Storage drive 0
12	Storage drive 1
13	Storage drive 2 (Optional NVM-Express SSD)
14	Storage drive 3 (Optional NVM-Express SSD)
15	Storage drive 4 (Optional NVM-Express SSD)
16	Storage drive 5 (Optional NVM-Express SSD)
17	Storage drive 6
18	Storage drive 7
19	Optional SATA DVD Drive

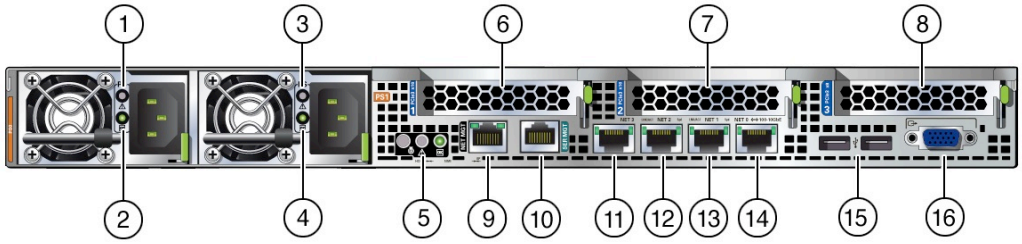
Related Information

- “Back Panel Status Indicators, Connectors, Drives, and PCIe Slots” on page 30

Back Panel Status Indicators, Connectors, Drives, and PCIe Slots

The following figure shows the Oracle Server X5-2 back panel and the location of status indicators (LEDs), connectors, and PCIe slots.

For information about how to interpret the status indicators (LEDs), refer to the *Oracle Server X5-2 Service Manual*.



Call Out	Description
1	Power Supply (PS) 0
2	Power Supply (PS) 0 status indicators: Service Required LED: amber AC OK LED: green
3	Power Supply (PS) 1
4	Power Supply (PS) 1 status indicators: Service Required LED: amber AC OK LED: green
5	System status indicators: Locator LED: white; Service Required LED: amber; Power/OK LED: green
6	PCIe card slot 1 (Nonfunctional in single-processor systems)
7	PCIe card slot 2
8	PCIe card slots 3 and 4
9	Oracle Integrated Lights Out Manager (ILOM) service processor (SP) network management (NET MGT) 10/100/1000BASE-T port
10	Serial management (SER MGT)/RJ-45 serial port
11	Network (NET) 100/1000/10000 port: NET 3 (Nonfunctional in single-processor systems)
12	Network (NET) 100/1000/10000 port: NET 2 (Nonfunctional in single-processor systems)
13	Network (NET) 100/1000/10000 port: NET 1
14	Network (NET) 100/1000/10000 port: NET 0
15	USB 2.0 connectors (2)
16	DB-15 video connector

Related Information

- “Front Panel Status Indicators, Connectors, and Drives” on page 29
- “Server Components” on page 27

Server Management

This section describes the tools you can use to manage the server.

Description	Links
Find information about managing multiple servers.	“Multiple Server Management Tool” on page 33
Learn about the tools available for managing a single server.	“Single Server Management Tools” on page 33
Read an overview of Oracle System Assistant and learn where to find more information.	“Oracle System Assistant” on page 34
Read an overview of Oracle ILOM and learn where to find more information.	“Oracle ILOM” on page 34
Read an overview of Oracle Hardware Management Pack and learn where to find more information.	“Oracle Hardware Management Pack” on page 35
Read an overview of UEFI BIOS and learn where to find more information.	“Legacy BIOS and UEFI” on page 36

Multiple Server Management Tool

If you are managing multiple servers, you can use Oracle Enterprise Ops Center. For information about Ops Center, refer to `http://docs.oracle.com/cd/E40871_01/index.html`.

Single Server Management Tools

The following table lists the tools available for managing a single server:

Tool/Link	Type and Environment	Function
“Oracle System Assistant” on page 34	Preinstalled. Embedded on a USB drive inside the server. No installation required. Boots on the host. Includes a graphical user interface and files that can be accessed	Install supported operating systems and locally or remotely configure and update server hardware.

Tool/Link	Type and Environment	Function
	from the host operating system using a file browser.	
"Oracle ILOM" on page 34	Preinstalled service processor (SP) utility. No installation required. Some initial configuration is required. Operates independently of the host. Provides a web interface and a command-line interface (CLI).	Configure and manage server components locally or remotely. Connect to a dedicated network port, a sideband port, or a local serial port.
"Oracle Hardware Management Pack" on page 35	Add-on software pack. Get it from Oracle System Assistant or download from https://www.oracle.com/goto/system-management. Provides commands and agents that operate at the operating system level, and can be used across multiple systems.	Monitor hardware through the host operating system, either remotely using SNMP or locally using command-line interface tools.
"Legacy BIOS and UEFI" on page 36	Accessed by booting system and interrupting the boot process. Provides a simple graphical user interface.	Provides hardware-level management of system functionality.

Oracle System Assistant

Oracle System Assistant enables you to set up and manage the Oracle Server X5-2. Oracle System Assistant is a task-based server provisioning tool that helps you to perform initial server setup and maintenance for Oracle x86 servers. Using Oracle System Assistant, you can install a supported Oracle Solaris, Oracle VM, Linux, or Windows operating system, update your server to the latest software release, and configure server hardware. Oracle System Assistant is a factory-installed option that is available when you purchase the server. If your server includes Oracle System Assistant, it resides on an internal USB flash drive.

For information about using Oracle System Assistant, see the *Oracle X5 Series Servers Administration Guide* at https://www.oracle.com/goto/x86admindiag/docs.

Oracle ILOM

Oracle Integrated Lights Out Manager (ILOM) enables you to manage the Oracle Server X5-2. Use Oracle ILOM to connect to the server's service processor (SP). The server is shipped initially with Oracle ILOM version 3.2.4.

The Oracle ILOM software resides on the server's service processor. Use Oracle ILOM software to monitor and manage server components. Oracle ILOM software functions include:

- Configuring network information
- Viewing and editing hardware configurations for the SP
- Monitoring vital system information and viewing logged events
- Managing Oracle ILOM user accounts

You can access the server's SP in either of the following ways:

- “Log In to Oracle ILOM Using a Local Serial Connection” on page 84
- “Log In to Oracle ILOM Using a Remote Ethernet Connection” on page 85

For more information about Oracle ILOM, refer to the Oracle Integrated Lights Out Manager (ILOM) 5.0 Documentation Library at https://www.oracle.com/goto/ilom/docs.

Oracle Hardware Management Pack

Oracle Hardware Management Pack (HMP) provides command-line interface (CLI) tools for managing your servers, and an SNMP monitoring agent.

- You can use the Oracle Server CLI tools to configure Oracle servers. The CLI tools work with Oracle Solaris, Oracle Linux, Oracle VM, other variants of Linux, and Windows Server operating systems. The tools can be scripted to support multiple servers, as long as the servers are of the same type.
- With the Hardware Management Agent SNMP Plugins, you can use SNMP to monitor Oracle servers and server modules from the operating system using a single host IP address. This prevents you from having to connect to two management points (Oracle ILOM and the host).
- Oracle Linux Fault Management Architecture (FMA) allows you to manage faults at the operating system level using commands similar to those in the Oracle ILOM Fault Management shell on systems with Oracle Linux 6.5 or newer. This feature is available on Hardware Management Pack 2.3.

For more details on Oracle Hardware Management Pack, refer to the Documentation Library at https://www.oracle.com/goto/ohmp/docs.

Legacy BIOS and UEFI

The Oracle Server X5-2 is equipped with a Unified Extensible Firmware Interface-compatible BIOS (UEFI BIOS) that can be configured to support either UEFI or Legacy BIOS boot modes. Legacy BIOS is the default mode. Some operating systems cannot boot in UEFI Boot Mode, so the UEFI BIOS provides the ability to select between UEFI and Legacy boot modes.

If you change BIOS boot modes, the boot candidates from the previously selected mode are no longer available from the Boot Options Priority List in the BIOS Setup Utility. The boot candidates from the new mode appear in the Boot Options Priority List only after you select Save Changes and Reset from the BIOS Setup Utility menu. Use the Oracle ILOM BIOS Backup and Restore function to preserve the BIOS configuration in case you want to switch back to the previously selected mode. For information, refer to the *Oracle X5 Series Servers Administration Guide* at `https://www.oracle.com/goto/x86admindiag/docs`.

Most supported operating systems can use either UEFI Boot Mode or Legacy BIOS Boot Mode. However, once you choose a boot mode and install an operating system, the installed image can only be used in the mode in which it was installed. For instructions for selecting either UEFI Boot Mode or Legacy BIOS Boot Mode, refer to "Using UEFI" in *Oracle Server X5-2 Service Manual*.

The following operating systems supported by the Oracle X5-2 Server can use either UEFI Boot Mode or Legacy BIOS Boot Mode:

- Oracle Solaris
- Oracle Linux
- Windows Server
- VMware ESXi
- SUSE Linux Enterprise Server

The following operating system only uses Legacy BIOS Boot Mode:

- Oracle VM software

The table below describes the BIOS boot modes.

Boot Mode	Description
Legacy BIOS Boot Mode	Choose Legacy BIOS Boot Mode to enable host bus adapters (HBAs) to use option ROMs, and when software or adapters do not have UEFI drivers. Legacy BIOS is the default boot mode. In Legacy BIOS Boot Mode, only boot candidates that support Legacy BIOS Boot Mode appear in the Boot Options Priority List in the BIOS Setup Utility.

Boot Mode	Description
UEFI BIOS Boot Mode	Choose UEFI Boot Mode when the installed operating system, software, and adapters use UEFI drivers. You can manually select UEFI Boot Mode during system setup. In UEFI Boot Mode, only boot candidates that support UEFI Boot Mode appear in the Boot Options Priority List in the BIOS Setup Utility. For instructions on making the selection, refer to the *Oracle X5 Series Servers Administration Guide* at https://www.oracle.com/goto/x86admindiag/docs.

Installing the Server Into a Rack

This section describes how to install the server into a rack using the rail assembly in the rackmount kit. Perform these procedures if you purchased the rail assembly.

Note - In this guide, the term "rack" means either an open rack or a closed cabinet.

Description	Links
Complete all installation prerequisite tasks.	“Installation Prerequisites” on page 40
Check that your rack meets the requirements for installation of this server.	“Rack Requirements” on page 40
Review safety precautions.	“Safety Precautions” on page 41
Verify that you have received all components of the rackmount kit.	“Rackmount Kit Contents” on page 42
Stabilize the rack.	“Stabilize the Rack for Installation” on page 43
Install mounting brackets onto the server.	“Install Mounting Brackets On the Server ” on page 44
Mark the rackmount location.	“Mark the Rackmount Location” on page 45
Connect AC power cables in the Sun Rack II 1042.	“Connect AC Power Cables Before Installing Tool-less Slide-Rails in Sun Rack II 1042” on page 47
Attach the tool-less slide-rail assembly to the rack.	“Attach Tool-less Slide-Rail Assemblies” on page 49
Install the server into the slide-rail assembly.	“Install the Server Into the Slide-Rail Assemblies” on page 52
(Optional) Install the cable management arm for routing server cables.	■ “Install the Cable Management Arm” on page 58 ■ “Remove the Cable Management Arm” on page 70
(Optional) Install the Shipping Bracket With Cable Trough for shipping the server in a rack.	“Install the Shipping Bracket With Cable Trough (Optional)” on page 54

Related Information

- “Installation Procedure” on page 13
- “Preparing for Server Installation” on page 15

Installation Prerequisites

Ensure that the following tasks are complete before you start the rackmount procedures:

- Install all optional components purchased for the server. See “Optional Component Installation” on page 25.
- Ensure that your site meets the required electrical and environmental requirements. See “Preparing for Server Installation” on page 15.

Rack Requirements

The rack into which you install the Oracle Server X5-2 must meet the requirements listed in the following table. Oracle's Sun Rack II is compatible with the Oracle Server X5-2. For information about Oracle's Sun Rack II, see “Preparing for Server Installation” on page 15.

TABLE 8 Rack Requirements

Item	Requirement
Structure	Four-post rack (mounting at both front and rear). Supported rack types: square hole (9.5 mm) and round hole (M6 or 1/4-20 threaded only. Two-post racks are not compatible.
Rack horizontal opening and unit vertical pitch	Conforms to ANSI/EIA 310-D-1992 or IEC 60927 standards.
Distance between front and rear mounting planes	Minimum 61 cm and maximum 91.5 cm (24 inches to 36 inches).
Clearance depth in front of front mounting plane	Distance to front cabinet door is at least 2.54 cm (1 inch).
Clearance depth behind front mounting plane	Distance to rear cabinet door is at least 90 cm (35.43 inches) with the cable management arm, or 80 cm (31.5 inches) without the cable management arm.
Clearance width between front and rear mounting planes	Distance between structural supports and cable troughs is at least 45.6 cm (18 inches).
Minimum clearance for service access	■ Clearance, front of server: 123.2 cm (48.5 inches) ■ Clearance, rear of server: 91.4 cm (36 inches)

Related Information

- “Preparing for Server Installation” on page 15

Safety Precautions

This section describes safety precautions you must follow when installing the server into a rack.

Caution - Leveling feet position: When unpacking at the installation site, or when repackaging and moving the rack to a new location, verify that the leveling feet are up before moving the rack.

Caution - Leveling feet position: When unpacking at the installation site, or when repackaging and moving the rack to a new location, verify that the leveling feet are up before moving the rack.

Caution - Stabilize rack: Deploy the anti-tilt bar or legs on the equipment rack before beginning an installation.

Caution - Equipment loading: Always load equipment into a rack from the bottom up so that the rack will not become top-heavy and tip over. Deploy your rack's anti-tilt 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, consideration should be given to installing the equipment in an environment compatible with the maximum ambient temperature (Tma) specified for the server. For server environmental requirements, see “Environmental Requirements” on page 20.

Caution - Reduced airflow: Installation of the equipment in a rack should be such that the amount of airflow required for safe operation of the equipment is not compromised.

Caution - Mechanical loading: Mounting of the equipment in the rack should be such that a hazardous condition is not created due to uneven mechanical loading.

Caution - Circuit overloading: Consideration should be given to the connection of the equipment to the supply circuit and the effect that overloading of the circuits might have on over-current protection and supply wiring. Appropriate consideration of equipment nameplate power ratings should be used when addressing this concern.

Caution - Reliable earthing: Reliable earthing of rackmounted equipment should be maintained. Particular attention should be given to supply connections other than direct connections to the branch circuit (for example, use of power strips).

Caution - Mounted equipment: Slide-rail-mounted equipment is not to be used as a shelf or a work space.

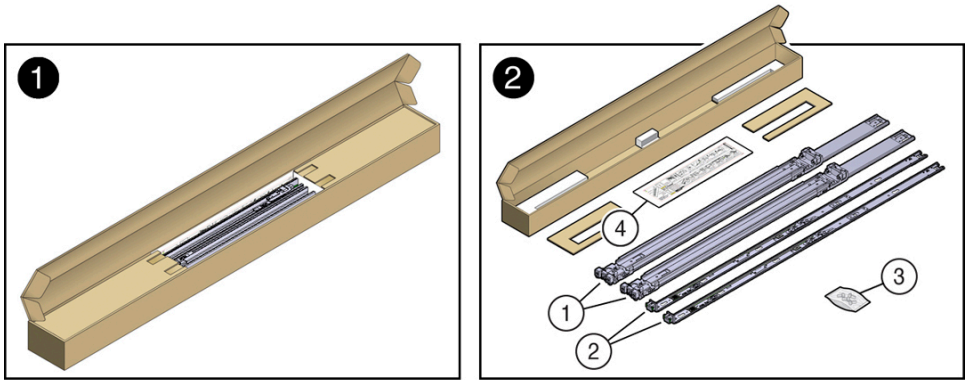
Related Information

- "ESD and Safety Precautions" on page 24

Rackmount Kit Contents

The rackmount kit contains two slide-rails, two mounting brackets, and optional securing screws.

Note - Refer to the rackmount kit installation card for instructions on how to install your server into a four-post rack, using the slide-rail and cable management arm options.



Call Out	Description
1	Slide-rails
2	Mounting brackets
3	Four M4 x 5 fine-pitch mounting bracket securing screws (optional)

Call Out	Description
4	Installation card

Related Information

- “Rack Requirements” on page 40

Stabilize the Rack for Installation

Caution - To reduce the risk of personal injury, stabilize the rack cabinet, and extend all anti-tilt devices before installing the server.

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

1. **Open and remove the front and rear doors from the rack cabinet.**

Note - The front and rear doors need to be removed only if they impinge on the mounting bay.

2. **To prevent the rack cabinet from tipping during the installation, fully extend the rack cabinet's anti-tilt legs or anti-tilt bar, which are located at the bottom front of the rack cabinet.**
3. **If there are leveling feet beneath the rack cabinet to prevent it from rolling, extend these leveling feet fully downward to the floor.**

Caution - When moving the rack to a new location, including repacking, verify that the leveling feet are up before moving the rack.

4. **After the cabinet is installed in its location, you can use the shipping brackets to secure the cabinet to the floor.**

Caution - Shipping brackets are not for use for bracing or anchoring the rack during seismic events.

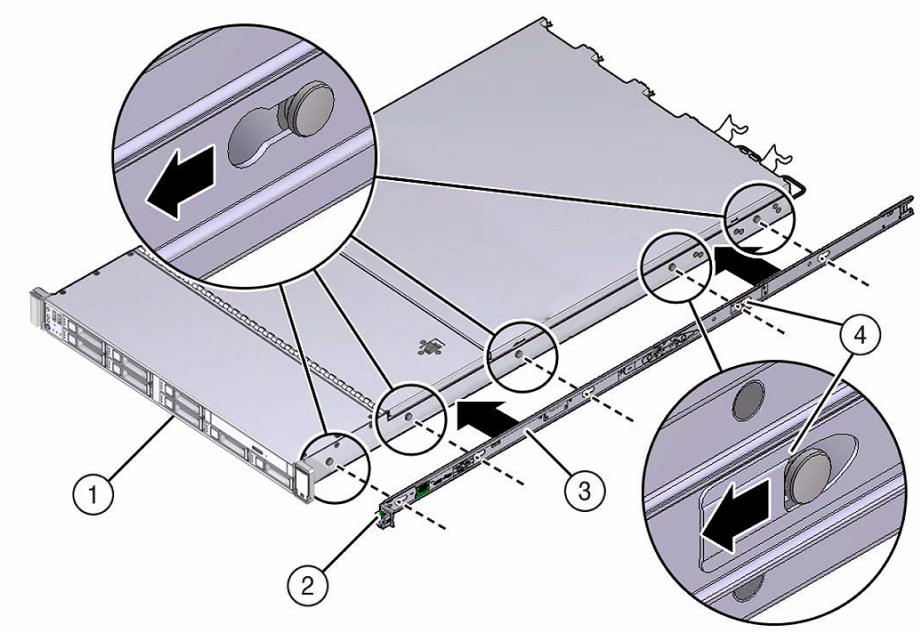
Related Information

- “Safety Precautions” on page 41
- “Preparing for Server Installation” on page 15
- Your rack cabinet documentation

Install Mounting Brackets On the Server

To install the mounting brackets onto the sides of the server:

1. **Position a mounting bracket against the chassis so that the slide-rail lock is at the server front, and the five keyhole openings on the mounting bracket are aligned with the five locating pins on the side of the chassis.**



Number	Description
1	Chassis front
2	Slide-rail lock
3	Mounting bracket
4	Mounting bracket clip

2. **With the heads of the five chassis locating pins protruding through the five keyhole openings in the mounting bracket, pull the mounting bracket toward the front of the chassis until the mounting bracket clip locks into place with an audible click.**

3. **Verify that the rear locating pin has engaged the mounting bracket clip.**

4. **Repeat Step 1 through Step 3 to install the remaining mounting bracket on the other side of the server.**

Related Information

- “Mark the Rackmount Location” on page 45
- “Attach Tool-less Slide-Rail Assemblies” on page 49

▼ Mark the Rackmount Location

Identify the location in the rack where you want to place the server. The server requires one rack unit (1U).

Use the rackmount installation card to identify the correct mounting holes for the slide-rails.

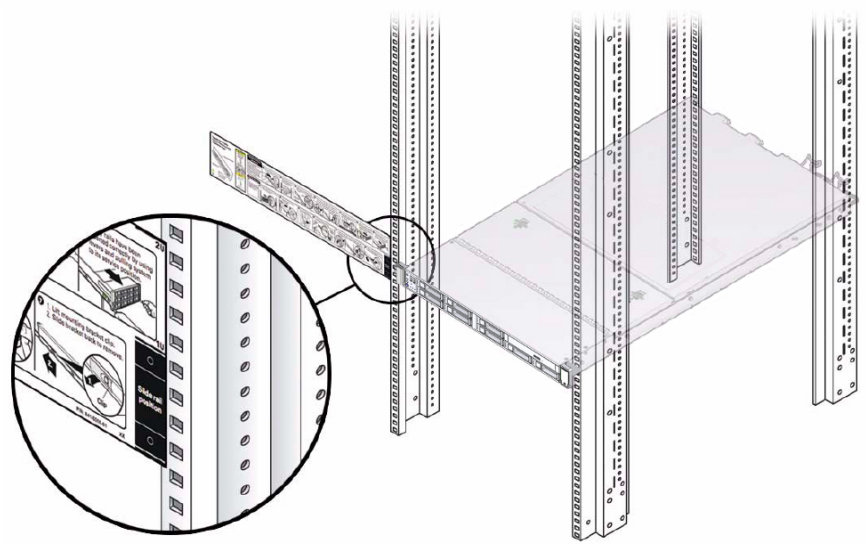
Note - Load the rack from bottom to top.

1. **Ensure that there is at least 1 rack unit (1U) of vertical space in the rack cabinet to install the server.**

   See “Rack Requirements” on page 40.

2. **Place the rackmount installation card against the front rails.**

The bottom edge of the card corresponds to the bottom edge of the server. Measure up from the bottom of the installation card.



3. **Mark the mounting holes for the front slide-rails.**

4. **Mark the mounting holes for the rear slide-rails.**

Related Information

- “Rack Requirements” on page 40
- “Install Mounting Brackets On the Server ” on page 44
- “Attach Tool-less Slide-Rail Assemblies” on page 49

Connect AC Power Cables Before Installing Tool-less Slide-Rails in Sun Rack II 1042

Note - You must perform the procedure in this section if you are installing the Oracle Server X5-2 in the Sun Rack II 1042 (1000-mm) system rack. This procedure does not need to be performed if you are installing the Oracle Server X5-2 in the Sun Rack II 1242 system rack.

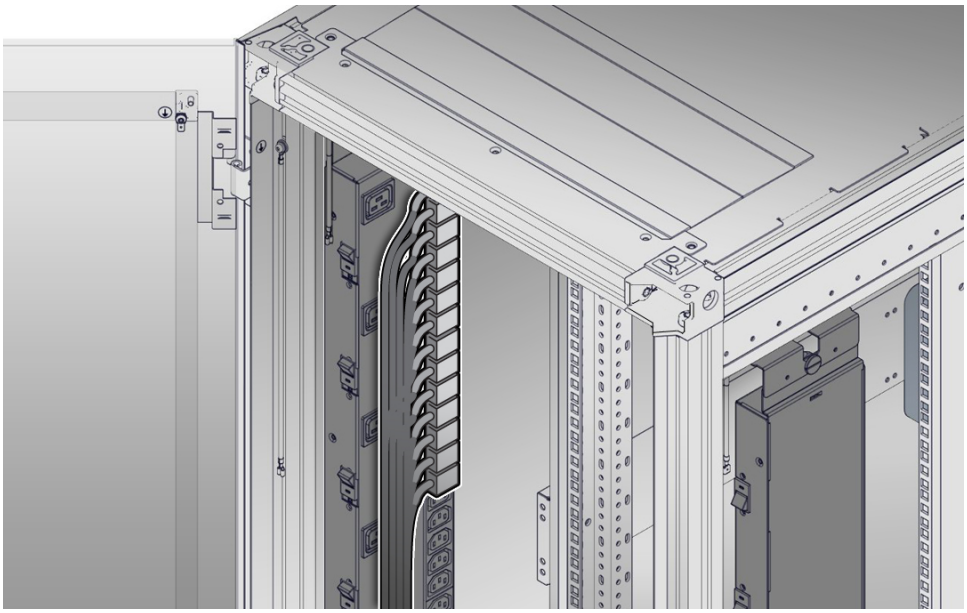
Right-angle AC power cables must be installed before the tool-less slide-rails when installing the Oracle Server X5-2 into a Sun Rack II 1042 (1000-mm) system rack. The standard rail kit tool-less slide-rails impede access to the 15kVA and 22kVA Power Distribution Unit (PDU) electrical sockets in the 1000-mm rack. If you use the standard AC power cables and then install the slide-rails into the rack, you will be unable to disconnect or remove the AC power cables.

You must use the following 2-meter right-angle AC power cable for this procedure:

- 7079727 - Pwrcord, Jmpr, Bulk, SR2, 2m, C14RA, 10A, C13

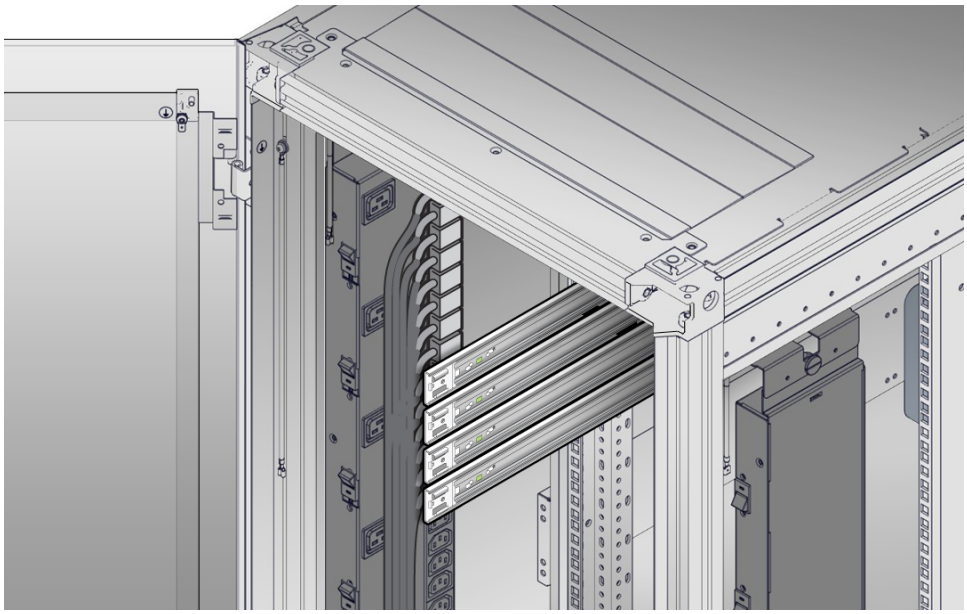
▼ Install AC Power Cables and Slide-Rails

1. **Prior to installing the slide-rails into the rack, install right-angle AC power cables into the left-side and right-side PDU electrical sockets for the servers you are going to rack mount.**



2. **Install the slide-rails into the rack.**

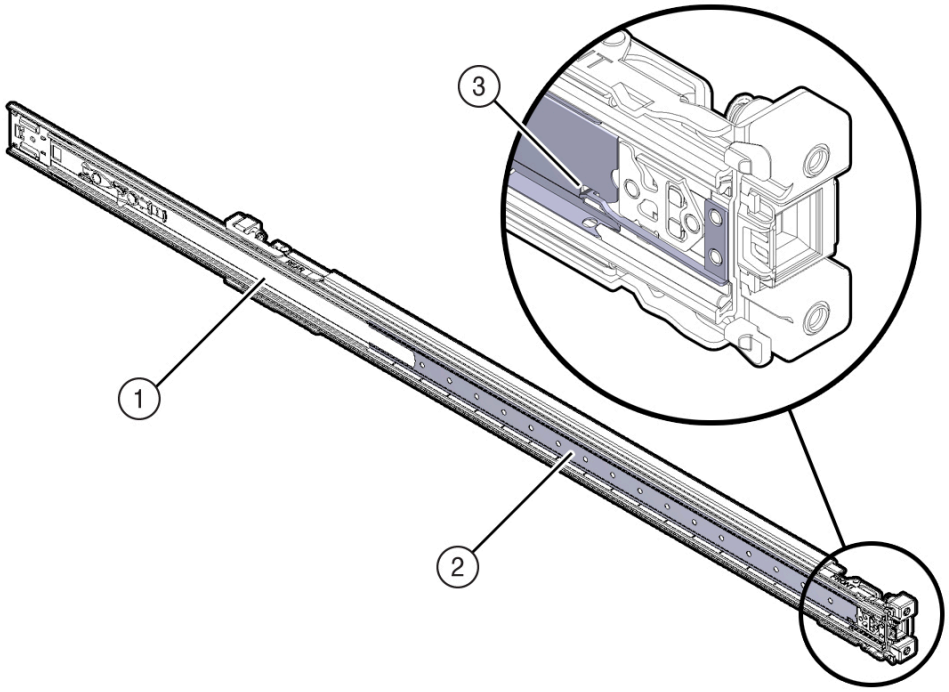
See “Attach Tool-less Slide-Rail Assemblies” on page 49.



▼ Attach Tool-less Slide-Rail Assemblies

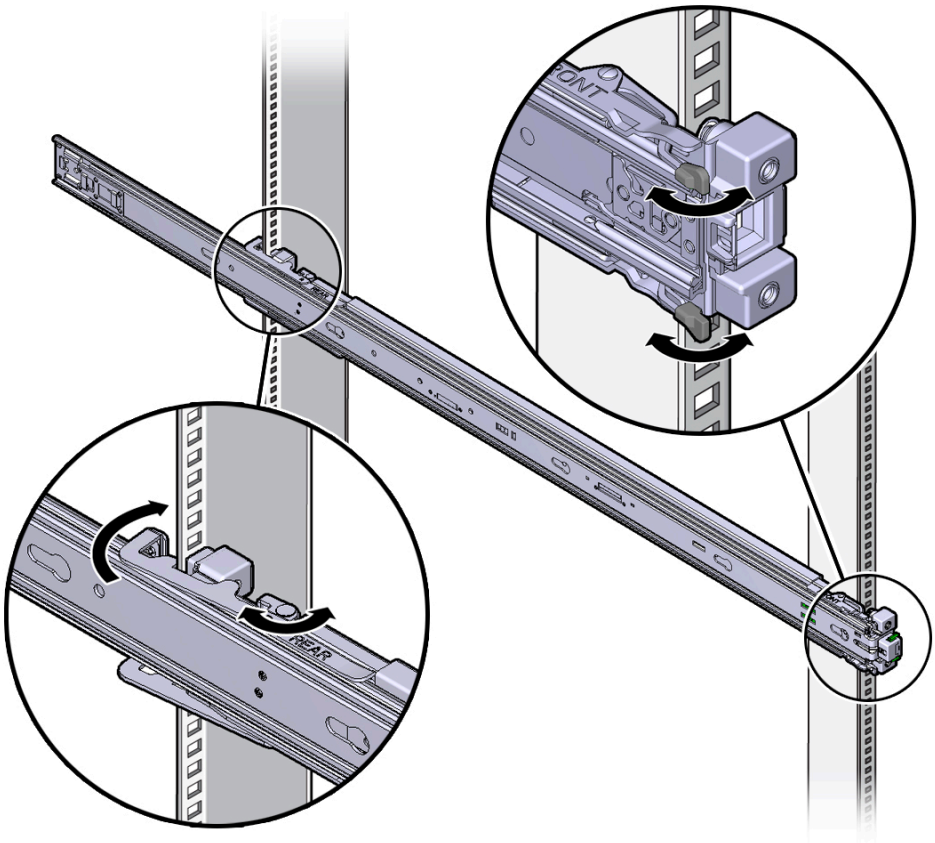
Use this procedure to attach tool-less slide-rail assemblies to the rack.

1. **Orient the slide-rail assembly so that the ball-bearing track is forward and locked in place.**



Number	Description
1	Slide-rail
2	Ball-bearing track
3	Locking mechanism

2. **Starting with either the left or right side of the rack, align the rear of the slide-rail assembly against the inside of the rear rack rail, and push until the assembly locks into place with an audible click.**



3. **Align the front of the slide-rail assembly against the outside of the front rack rail, and push until the assembly locks into place with an audible click.**

4. **Repeat Step 1 through Step 3 to attach the slide-rail assembly to the other side of the rack.**

Related Information

- “Install Mounting Brackets On the Server ” on page 44

- “Mark the Rackmount Location” on page 45
- “Install the Server Into the Slide-Rail Assemblies” on page 52

Install the Server Into the Slide-Rail Assemblies

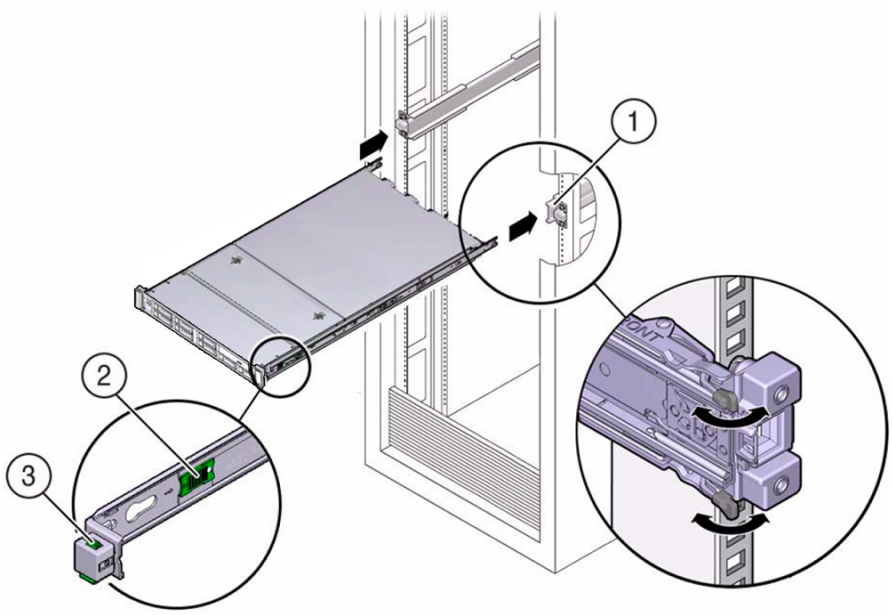
Use this procedure to install the server chassis, with mounting brackets, into the slide-rail assemblies that are mounted to the rack.

Caution - This procedure requires a minimum of two people because of the weight of the server. Attempting this procedure alone could result in equipment damage or personal injury.

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

1. **Push the slide-rails as far as possible into the slide-rail assemblies in the rack.**
2. **Position the server so that the rear ends of the mounting brackets are aligned with the slide-rail assemblies that are mounted in the rack.**

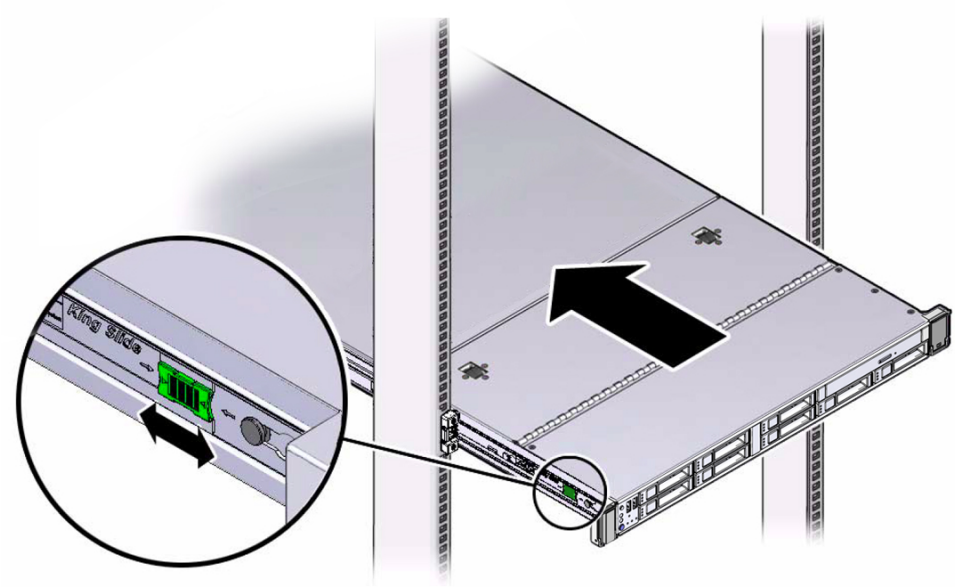
3. **Insert the mounting brackets into the slide-rails, and then push the server into the rack until the mounting brackets encounter the slide-rail stops (approximately 30 cm, or 12 inches).**



Number	Description
1	Inserting mounting bracket into slide-rail
2	Slide-rail release button
3	Slide-rail lock

4. **Simultaneously push and hold the green slide-rail release buttons on each mounting bracket while you push the server into the rack. Continue pushing the server into the rack until the slide-rail locks (on the front of the mounting brackets) engage the slide-rail assemblies.**

You will hear an audible click.



Caution - Verify that the server is securely mounted in the rack and that the slide-rail locks are engaged with the mounting brackets before you install the optional cable management arm.

Related Information

- "Install the Cable Management Arm" on page 58

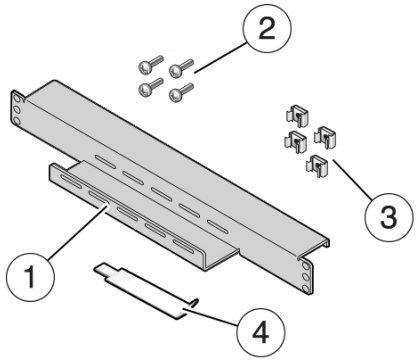
Install the Shipping Bracket With Cable Trough (Optional)

If you plan to ship the server in a rack with a space of one or more rack units below the server, you must install the Shipping Bracket With Cable Trough to prevent damage to the server. The bracket is required for each server in the rack that meets this requirement.

The Shipping Bracket With Cable Trough is a separately orderable option. For information about ordering the Shipping Bracket With Cable Trough, contact your Oracle Sales representative.

1. **Unpack the Shipping Bracket With Cable Trough and components.**

   The following components are needed for the installation:



Number	Description
1	Shipping Bracket With Cable Trough
2	Four 16-mm M6 screws
3	Four cage nuts
4	Cage nut insertion tool

2. **For racks configured with square hole RETMA rails, install the four cage nuts as follows.**

Note - This step is not necessary for racks configured with threaded RETMA rails.

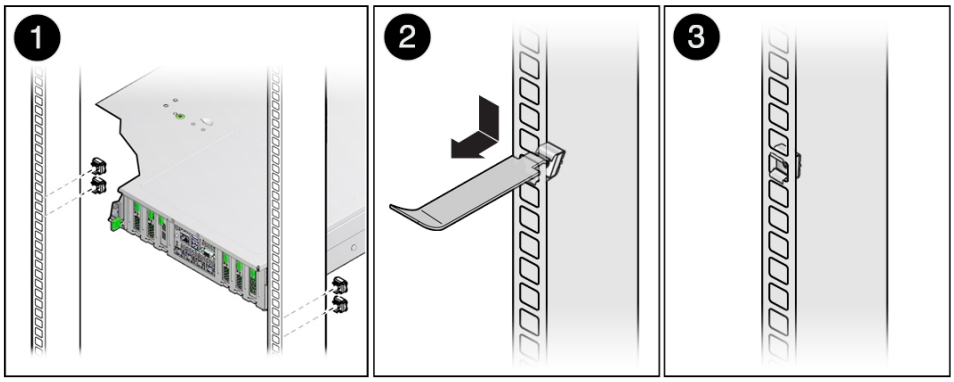
   a. **Using your equipment's rack alignment template, or other equipment documentation, locate the first and third rail holes below the rear panel of the server, along the left and right sides of the chassis. [1]**

b. **Retrieve a cage nut and hook the bottom lip of the cage nut in one of the rail holes.**

c. **Insert the tip of the cage nut insertion tool through the rail hole and hook the top lip of the cage nut. [2]**

d. **Using the insertion tool, pull the cage nut through the hole until the top lip snaps into place.**

e. **Repeat Step 2a through Step 2d for the remaining cage nuts.**



3. **Slide the bracket underneath the rear bottom edge of the server chassis with the cable trough facing up, aligning the top holes in the bracket with the first rail holes below the rear panel of the server.**

4. **Using a No. 2 Phillips screwdriver, secure the bracket to the rack using four 16-mm M6 screws.**

   Ensure that the bracket rests firmly against the bottom of the server chassis.

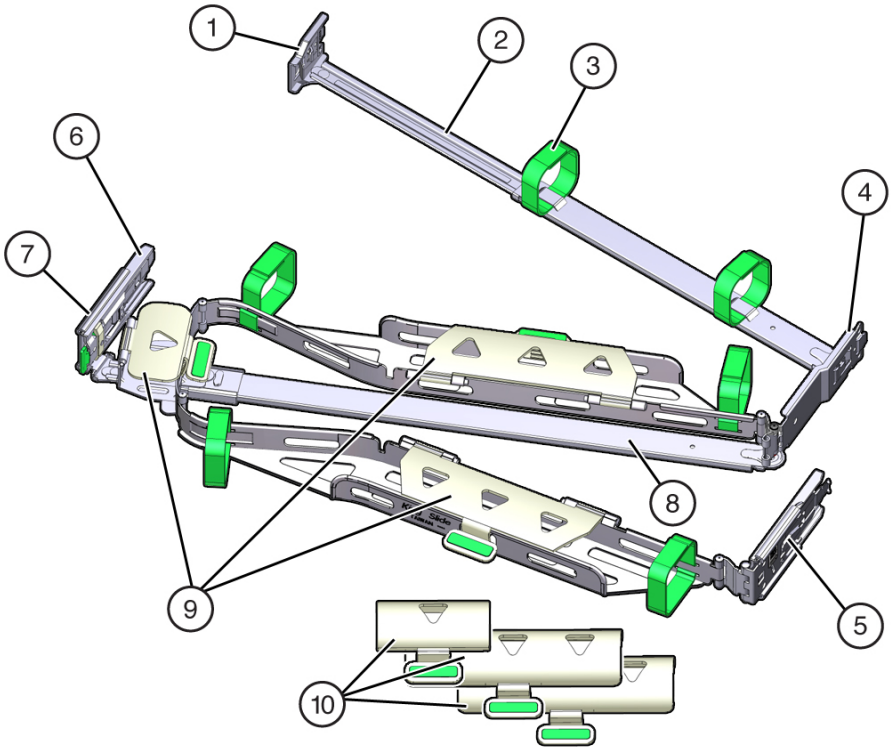
5. **If necessary, lay any cables protruding from the server back panel into the cable trough.**

Install the Cable Management Arm

Follow this procedure to install the cable management arm (CMA), which you can use to manage cables connected to the rear of the server.

1. **Unpack the CMA.**

   The following figure shows the CMA components.



Number	Description
1	Connector A

Number	Description
2	Front slide bar
3	Velcro straps (6)
4	Connector B
5	Connector C
6	Connector D
7	Slide-rail latching bracket (used with connector D)
8	Rear slide bar
9	Oracle Server X5-2 cable covers
10	Oracle Server X5-2L cable covers

2. Ensure that the correct cable covers for your server are installed on the CMA.

- The Oracle Server X5-2 (1U system) uses the flat cable covers.
- The Oracle Server X5-2L (2U system) uses the round cable covers.

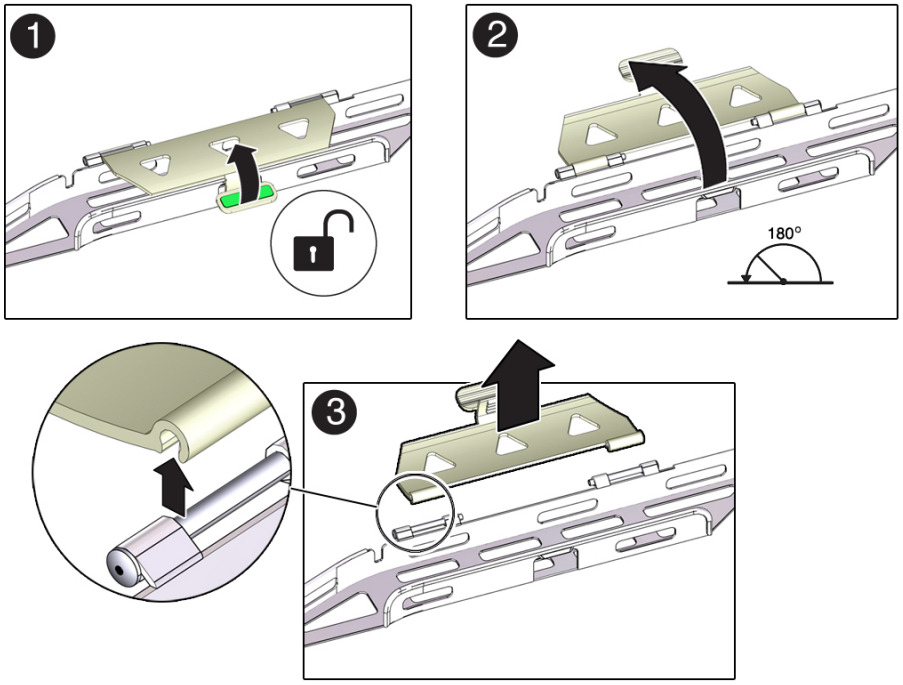
Note - The CMA ships with three, flat cable covers installed. If you are going to install the CMA on a Oracle Server X5-2L, you need to remove the flat cable covers and install the round cable covers.

3. If you are installing the CMA on an Oracle Server X5-2L, remove the flat cable covers and install the round cable covers; otherwise proceed to the next step.

To remove the flat cable covers and install the round cable covers, perform these steps:

a. Lift up on the cable cover handle (the handle is colored green) and open it 180 degrees to the horizontal position as shown in the following figure [frames 1 and 2].

Note - The CMA has three cable covers, two with two hinges (one of which is shown the following figure), and one with a single hinge. All three cable covers are shown in the illustration in Step 1.



b. **Apply upward pressure to the outside edge of each hinge connector until the hinge connector comes off the hinge [frame 3].**

c. **Repeat Step 3a and Step 3b to remove all three cable covers.**

d. **One at a time, position each round cable cover horizontally over the hinges, and align the hinge connectors with the hinges.**

e. **Using your thumb, apply downward pressure on each hinge connector to snap the hinge connector into place.**

f. **Swing the cable covers down and press down on the cable cover handle to lock them into the closed position.**

4. **Ensure that the six Velcro straps are threaded into the CMA.**

Note - Ensure that the two Velcro straps located on the front slide bar are threaded through the opening in the top of the slide bar as shown in the illustration in Step 1. This prevents the Velcro straps from interfering with the expansion and contraction of the slide bar when the server is extended out of the rack and returned into the rack.

---

5. **To make it easier to install the CMA, extend the server approximately 13 cm (5 inches) out of the front of the rack.**

6. **Take the CMA to the back of the equipment rack, and ensure that you have adequate room to work at the back of the server.**

Note - References to “left” or “right” in this procedure assume that you are facing the back of the equipment rack.

Note - Throughout this installation procedure, support the CMA and do not allow it to hang under its own weight until it is secured at all four attachment points.

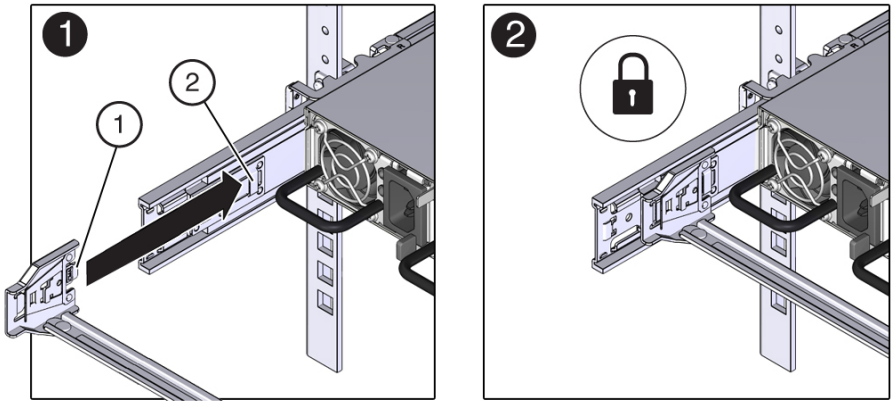
---

7. **To install the CMA's connector A into the left slide rail:**

a. **Insert the CMA's connector A into the front slot on the left slide-rail until it locks into place with an audible click [frames 1 and 2].**

The connector A tab (callout 1) goes into the slide-rail's front slot (callout 2).

b. Gently tug on the left side of the front slide bar to verify that connector A is properly seated.



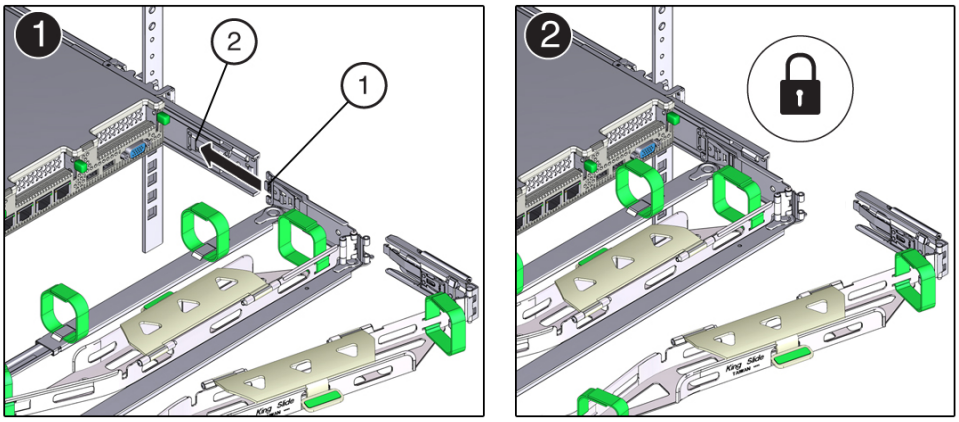
Number	Description
1	Connector A tab
2	Left slide-rail front slot

8. To install the CMA's connector B into the right slide-rail:

a. Insert the CMA's connector B into the front slot on the right slide-rail until it locks into place with an audible click [frames 1 and 2].

The connector B tab (callout 1) goes into the slide-rail front slot (callout 2).

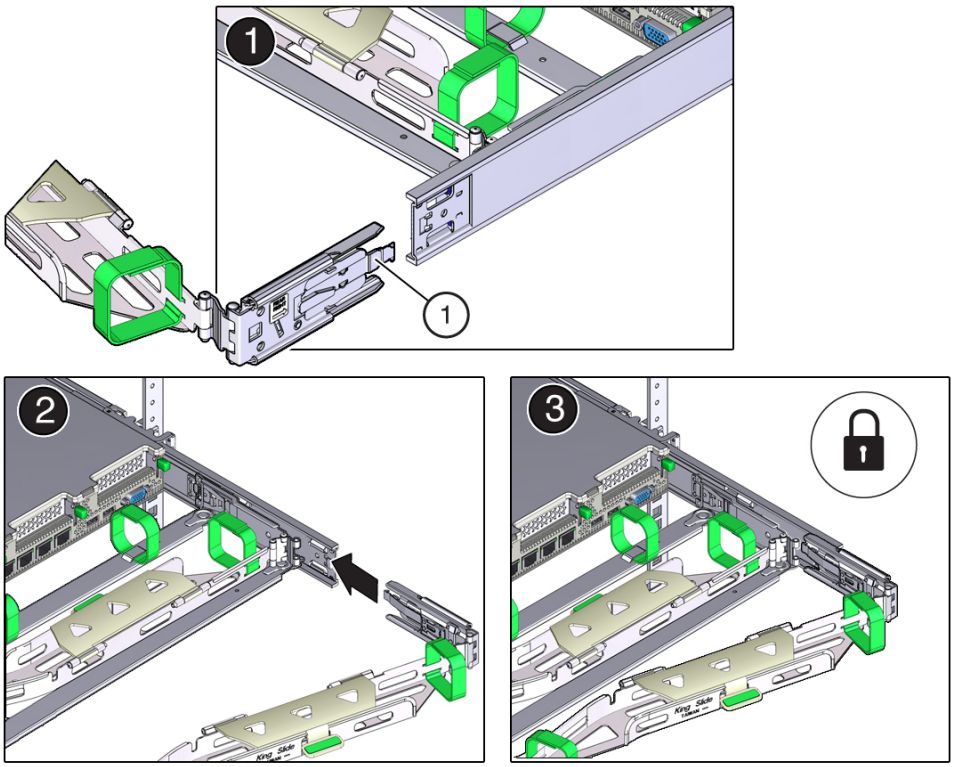
b. **Gently tug on the right side of the front slide bar to verify that connector B is properly seated.**



Number	Description
1	Connector B tab
2	Right slide-rail front slot

9. **To install the CMA's connector C into the right slide-rail:**

a. **Align connector C with the slide-rail so that the locking spring (callout 1) is positioned inside (server side) of the right slide-rail [frame 1].**



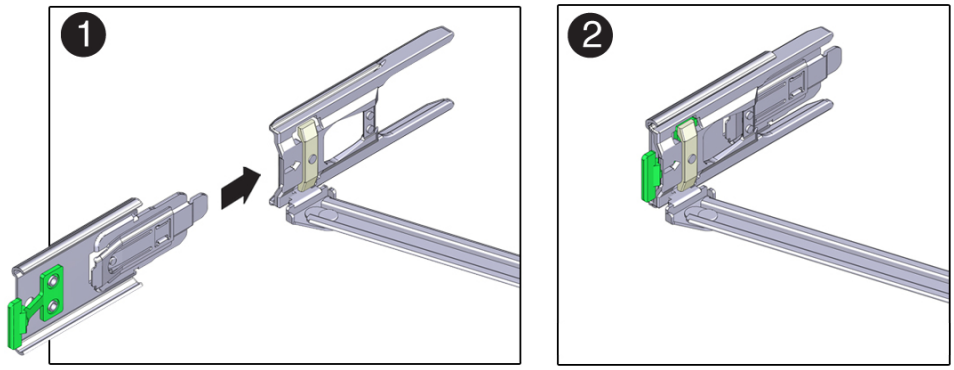
Number	Description
1	Connector C locking spring

b. **Insert connector C into the right slide-rail until it locks into place with an audible click [frames 2 and 3].**

c. **Gently tug on the right side of the CMA's rear slide bar to verify that connector C is properly seated.**

10. **To prepare the CMA's connector D for installation, remove the tape that secures the slide-rail latching bracket to connector D and ensure that the latching bracket is properly aligned with connector D [frames 1 and 2].**

Note - The CMA is shipped with the slide-rail latching bracket taped to connector D. You must remove the tape before you install this connector.



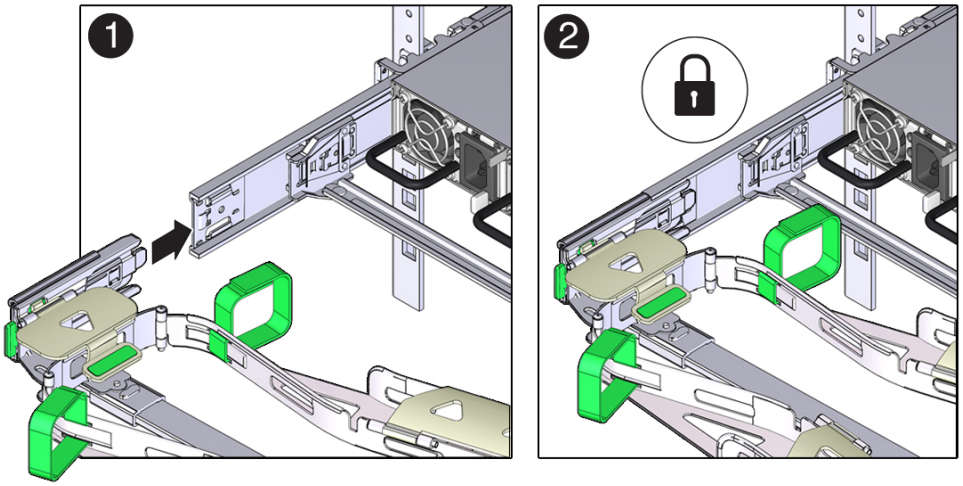
11. **To install the CMA's connector D into the left slide-rail:**

    a. **While holding the slide-rail latching bracket in place, insert connector D and its associated slide-rail latching bracket into the left slide-rail until connector D locks into place with an audible click [frames 1 and 2].**

Note - When inserting connector D into the slide-rail, the preferred and easier method is to install connector D and the latching bracket as one assembly into the slide-rail.

    b. **Gently tug on the left side of the CMA's rear slide bar to verify that connector D is properly seated.**

Note - The slide-rail latching bracket has a green release tab. This tab is used to release and remove the latching bracket so that you can remove connector D.



12. **Gently tug on the four CMA connection points to ensure that the CMA connectors are fully seated before you allow the CMA to hang by its own weight.**

13. **To verify that the slide-rails and the CMA are operating properly before routing cables through the CMA:**

    a. **Extend all rack anti-tilt devices to prevent the rack from tipping forward when the server is extended.**

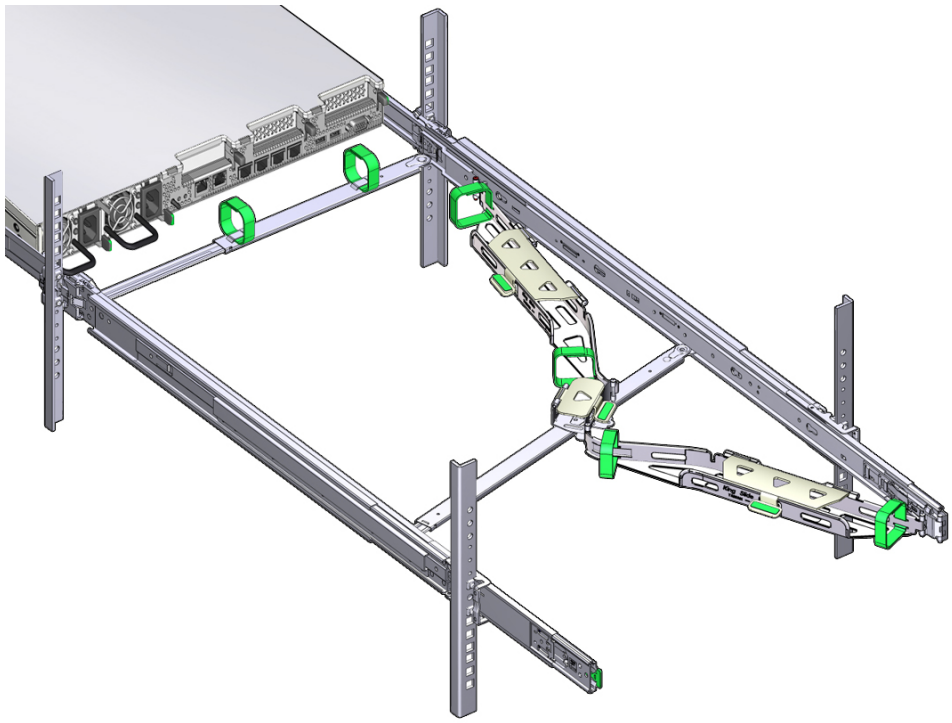
Caution - To reduce the risk of personal injury, stabilize the expansion rack cabinet and extend all anti-tilt devices before extending the server from the rack.

For instructions for stabilizing the rack, see "Stabilize the Rack for Installation" on page 43.

    b. **Slowly pull the server out of the rack until the slide-rails reach their stops.**

    c. **Inspect the attached cables for any binding or kinks.**

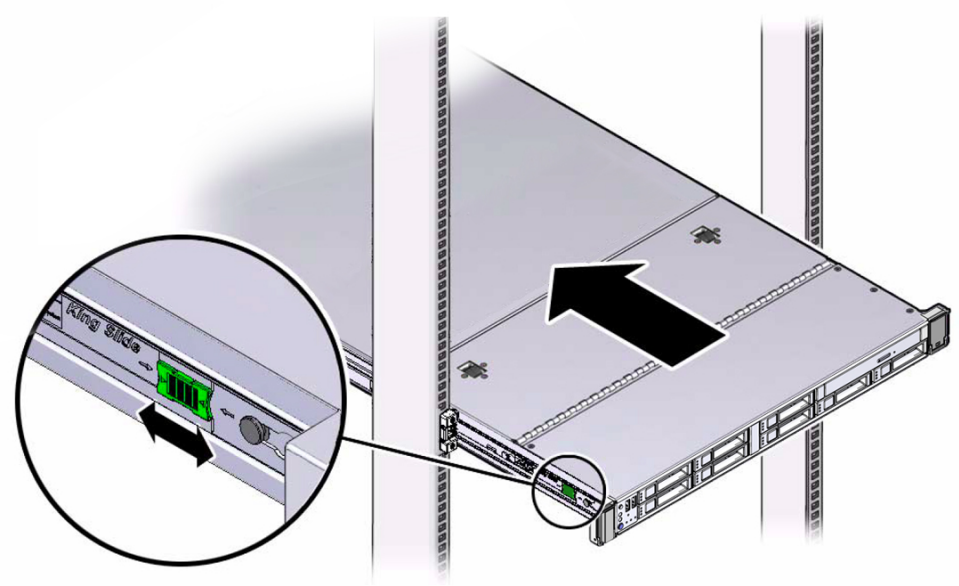
d. **Verify that the CMA extends fully with the slide-rails.**



14. **To return the server to the rack:**

    a. **Simultaneously pull and hold the two green release tabs (one on each side of the server) toward the front of the server while you push the server into the rack. As you push the server into the rack, verify that the CMA retracts without binding.**

Note - To pull the green release tabs, place your finger in the center of each tab, not on the end, and apply pressure as you pull the tab toward the front of the server.



b. Continue pushing the server into the rack until the slide-rail locks (on the front of the server) engage the slide-rail assemblies.

You will hear an audible click when the server is in the normal rack position.

15. Connect cables to the server, as required.

Instructions for connecting the server cables are provided in "Cabling the Server and Applying Power" on page 75.

16. Open the CMA cable covers, route server cables through the CMA's cable troughs, close the cable covers, and secure the cables with the six Velcro straps.

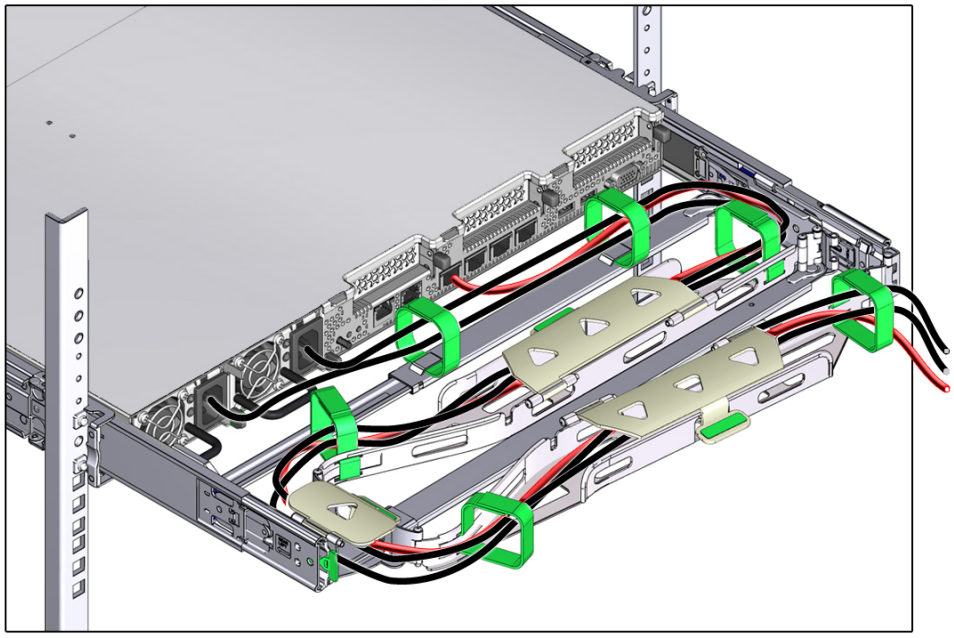
Route the cables through the cable troughs in this order:

a. First through the front-most cable trough

b. Then through the small cable trough

c. Then through the rear-most cable trough

Note - When securing the cables with the Velcro straps located on the front slide bar, ensure that the Velcro straps do not wrap around the bottom of the slide bar; otherwise, expansion and contraction of the slide bar might be hindered when the server is extended from the rack and returned to the rack.



17. Ensure that the secured cables do not extend above the top or below the bottom of the server to which they are attached; otherwise, the cables might snag on other equipment installed in the rack when the server is extended from the rack or returned to the rack.

Note - If necessary, bundle the cables with additional Velcro straps to ensure that they stay clear of other equipment. If you need to install additional Velcro straps, wrap the straps around the cables only, not around any of the CMA components; otherwise, expansion and contraction of the CMA slide bars might be hindered when the server is extended from the rack and returned to the rack.

Related Information

- “Remove the Cable Management Arm” on page 70

Remove the Cable Management Arm

Follow this procedure to remove the cable management arm (CMA).

Before you begin this procedure, refer to the illustrations in Step 1 to identify CMA connectors A, B, C, and D. You should disconnect the CMA connectors in the reverse order in which you installed them, that is, disconnect connector D first, then C, then B, and finally A.

Throughout this procedure, once you disconnect any of the CMA's four connectors, do not allow the CMA to hang under its own weight.

Note - References to “left” or “right” in this procedure assume that you are facing the back of the equipment rack.

1. **To prevent the rack from tipping forward when the server is extended, extend all rack anti-tilt devices.**

Caution - To reduce the risk of personal injury, stabilize the rack cabinet and extend all anti-tilt devices before extending the server from the rack.

For instructions for stabilizing the rack, see “Stabilize the Rack for Installation” on page 43.

2. **To make it easier to remove the CMA, extend the server approximately 13 cm (5 inches) out of the front of the rack.**

3. **To remove the cables from the CMA:**

   a. **Disconnect all cables from the rear of the server.**

   b. **If applicable, remove any additional Velcro straps that were installed to bundle the cables.**

   c. **Unwrap the six Velcro straps that are securing the cables.**

   d. **Open the three cable covers to the fully opened position.**

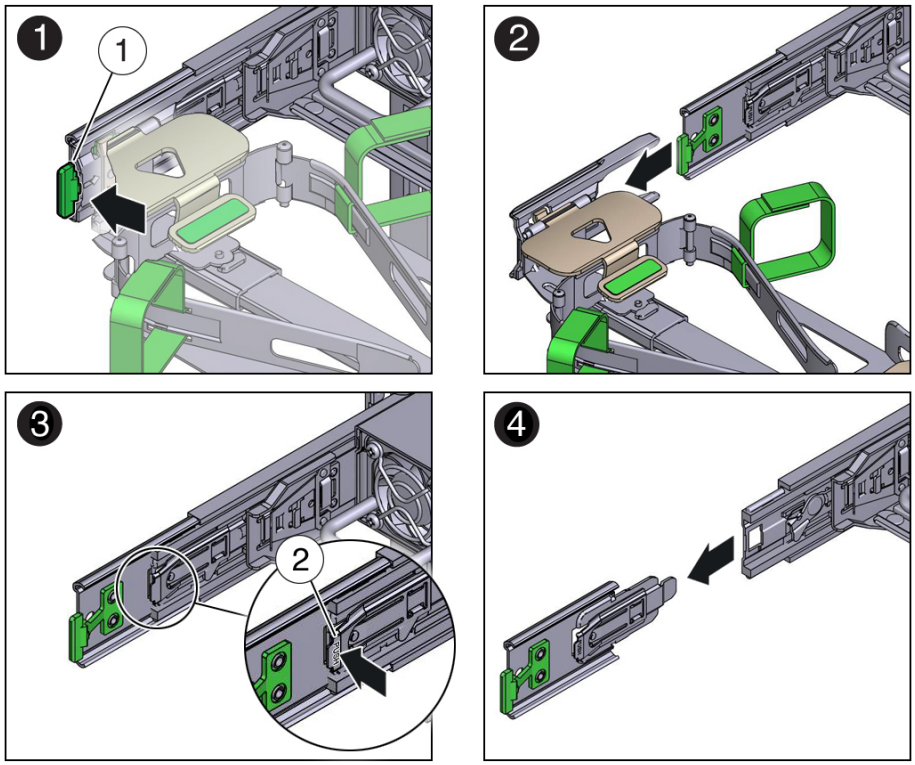
   e. **Remove the cables from the CMA and set them aside.**

4. **To disconnect connector D:**

   a. **Press the green release tab (callout 1) on the slide-rail latching bracket toward the left and slide the connector D out of the left slide-rail [frames 1 and 2].**

      When you slide connector D out of the left slide-rail, the slide-rail latching bracket portion of the connector remains in place. You will disconnect it in the next step.

Note - Once you have disconnected connector D, you must not allow the CMA to hang under its own weight. Throughout the remainder of this procedure, the CMA must be supported until all the remaining connectors are disconnected and the CMA can be placed on a flat surface.



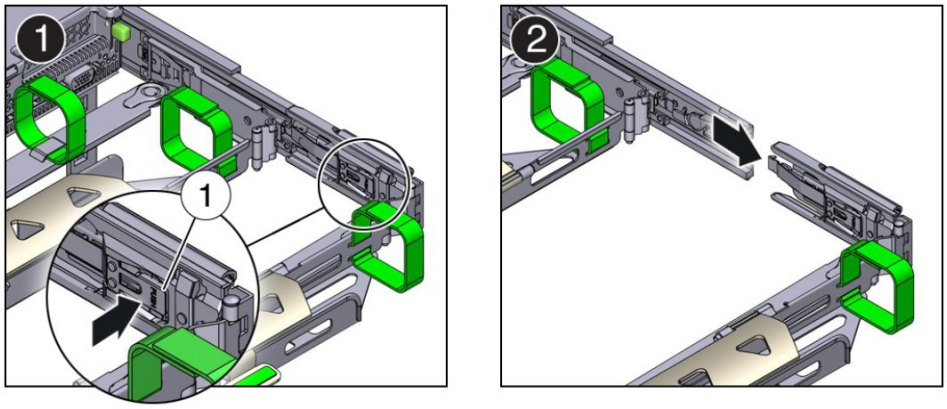
Number	Description
1	Connector D release tab (green)
2	Slide-rail latching bracket release tab (labeled PUSH)

b. Use your right hand to support the CMA and use your left thumb to push in (toward the left) on the slide-rail latching bracket release tab labeled PUSH (callout 2), and pull the latching bracket out of the left slide-rail and put it aside [frames 3 and 4].

5. To disconnect connector C:

a. Place your left arm under the CMA to support it.

b. Use your right thumb to push in (toward the right) on the connector C release tab labeled PUSH (callout 1), and pull connector C out of the right slide-rail [frame 1 and 2].

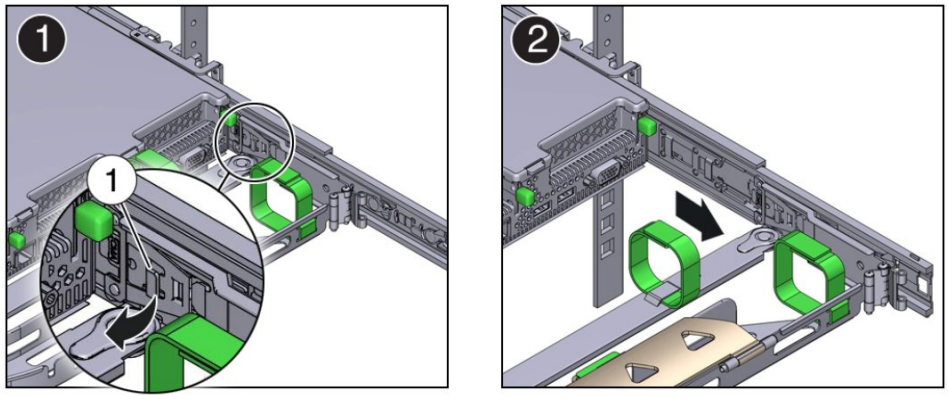


Number	Description
1	Connector C release tab (labeled PUSH)

6. To disconnect connector B:

a. **Place your right arm under the CMA to support it and grasp the rear end of connector B with your right hand.**

b. **Use your left thumb to pull the connector B release lever to the left away from the right slide-rail (callout 1) and use your right hand to pull the connector out of the slide-rail [frames 1 and 2].**

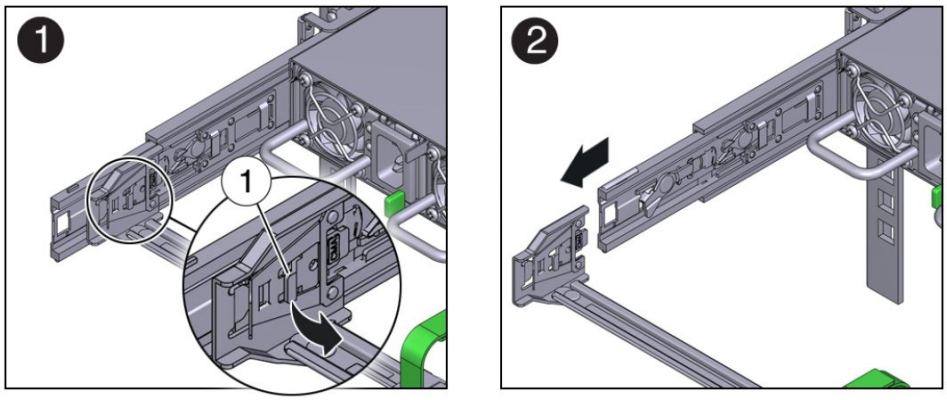


Number	Description
1	Connector B release lever

7. **To disconnect connector A:**

a. **Place your left arm under the CMA to support it and grasp the rear end of connector A with your left hand.**

b. **Use your right thumb to pull the connector A release lever to the right away from the left slide-rail (callout 1), and use your left hand to pull the connector out of the slide-rail [frames 1 and 2].**



Number	Description
1	Connector A release lever

8. **Remove the CMA from the rack and place it on a flat surface.**
9. **Go to the front of the server and push it back into the rack.**

Related Information

- “Install the Cable Management Arm” on page 58

Cabling the Server and Applying Power

This section contains procedures for connecting data and server management cables and power cords to the server.

Description	Links
Review connector port locations.	“Rear Cable Connections and Ports” on page 75
Learn about server Ethernet ports.	“Ethernet Ports” on page 77
Connect data cables and power cords to the server.	“Connecting Cables and Power Cords” on page 78

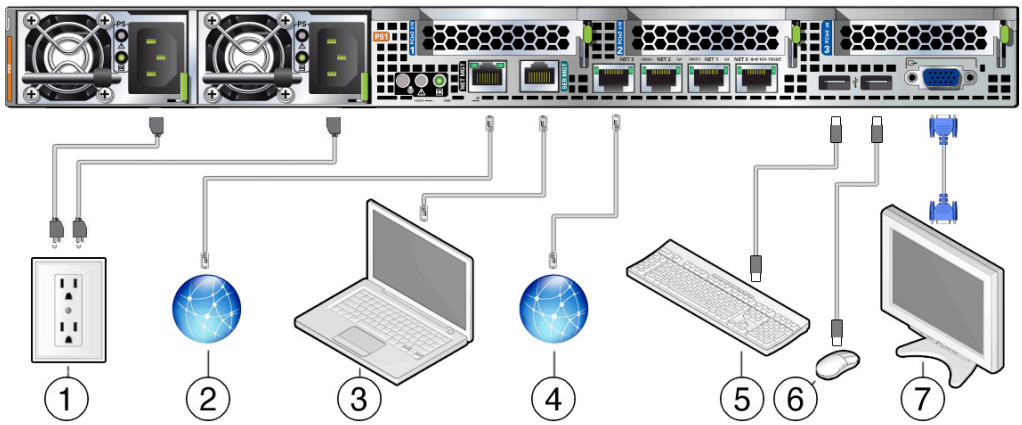
Related Information

- “Installation Procedure Overview ” on page 13
- “Setting Up Software and Firmware Using Oracle System Assistant” on page 101
- “Connecting to Oracle ILOM” on page 83

Rear Cable Connections and Ports

The following figure shows the locations of cable connectors and ports on the back of the Oracle Server X5-2 and the cables and devices that you would typically connect to them.

FIGURE 1 Rear Panel Cabling Reference



No.	Cable Port or Expansion Slot	Description
1	Power supply 0 input power Power supply 1 input power	The server has two power supply connectors, one for each power supply. Do not attach power cables to any installed power supplies until you have finished connecting the data cables to the server. The server goes into standby power mode and the Oracle ILOM service processor initializes when the AC power cables are connected to the power source. System messages might be lost after 60 seconds if the server is not connected to a terminal, PC, or workstation. **Note -** Oracle ILOM will signal a fault on any installed power supply that is not connected to an AC power source, since it might indicate a loss of redundancy.
2	Network management port (NET MGT)	The service processor NET MGT port is the optional connection to the Oracle ILOM service processor. The NET MGT port is configured by default to use Dynamic Host Configuration Protocol (DHCP). The service processor NET MGT port uses an RJ-45 cable for a 10/100/1000BASE-T connection.
3	Serial management port (SER MGT)	The service processor SER MGT port uses an RJ-45 cable and is the default connection to the Oracle ILOM service processor. This port supports local connections to the server and only recognizes Oracle ILOM command-line interface (CLI) commands. Typically you connect a terminal or a terminal emulator to this port. **Note -** This port does not support network connections.
4	Ethernet ports (NET 3, NET 2, NET 1, NET 0)	The four 10-Gigabit Ethernet ports enable you to connect the system to the network. See “Ethernet Ports” on page 77 for more information.

No.	Cable Port or Expansion Slot	Description
		Note - Ethernet ports NET 2 and NET 3 are nonfunctional in single-processor systems.
5, 6	USB ports (USB 0, USB 1)	The two USB ports support hot-plugging. You can connect and disconnect USB cables and peripheral devices while the server is running, without affecting system operations.
7	Video port (VGA, DB-15)	Use a 15-pin video cable to connect a VGA video device to the server. Optionally, you can connect to the VGA port when installing the operating system.

Related Information

- “Ethernet Ports” on page 77
- “Connecting Cables and Power Cords” on page 78

Ethernet Ports

The server has four RJ-45, 10-Gigabit Ethernet (10GbE) network connectors, labeled NET3, NET2, NET1, and NET0 from left to right on the server rear panel. Use these ports to connect the server to the network.

Note - Ethernet ports NET 2 and NET 3 are nonfunctional in single-processor systems.

The LEDs located above each NET port are Link/Activity (left) and Speed (right) indicators for each port. The following table lists the Ethernet transfer rates and the Speed LED color.

Connection Type	IEEE Terminology	Speed LED Color	Transfer Rate
Fast Ethernet	100BASE-TX	Off	100 Mbits/sec
Gigabit Ethernet	1000BASE-T	Amber	1,000 Mbits/sec
10 Gigabit Ethernet	10GBASE-T	Green	10,000 Mbits/sec

Related Information

- “Rear Cable Connections and Ports” on page 75
- “Connecting Cables and Power Cords” on page 78

Preparing for Installation and Power On

Setting up the server for the first time takes about 1 hour. Plan for additional time if you are also installing optional components and rackmounting hardware.

Caution - Do not apply full main power until instructed to do so. The server includes a service processor (SP) that is used to configure and boot the host server. To properly configure the host server and to view SP messages, do not apply AC power to the server until the SP and host networking connections are made, as described in this guide.

▼ Prepare to Install the Server

1. **Choose the best way to set up your server environment.**

   The instructions in this guide work for any networking environment and require a terminal device for connecting to the server's serial management port (SER MGT). If you have a networking environment running Dynamic Host Control Protocol (DHCP), you can configure your network using the Ethernet management port (NET MGT).

2. **Obtain a terminal device.**

   To communicate with the SP, you need a terminal device, which can be terminal, a terminal server, or a laptop running terminal emulation software. Set up the terminal device to communicate using 9600 baud, 8 bit, no parity, and 1 stop bit. For DTE-to-DTE communication, use the supplied RJ-45 crossover adapters with a standard RJ-45 cable to set up a null modem configuration so that transmit and receive signals are crossed over.

Connecting Cables and Power Cords

The following procedure explains how to cable the server for the first time, and then how to connect to the Oracle Integrated Lights Out Manager (ILOM) service processor (SP) using a serial connection.

You can also connect to Oracle ILOM using one of these methods:

- **Dedicated remote network management connection –** For information, see “Log In to Oracle ILOM Using a Remote Ethernet Connection” on page 85.
- **Remote sideband management connnection –** For information, refer to "Sideband Network Management Connection" in the *Oracle ILOM Administrator's Guide for*

Configuration and Maintenance, Firmware Release 3.2.x at https://www.oracle.com/goto/ilom/docs.

- **Host-to-ILOM interconnect –** For information, refer to "Dedicated Interconnect SP Management" in the *Oracle ILOM Administrator's Guide for Configuration and Maintenance, Firmware Release 3.2.x* at https://www.oracle.com/goto/ilom/docs.

Caution - Do not apply full main power to the server until instructed to do so. To properly configure the server and to view SP messages, cable the server as described in this procedure before applying power to the server.

Connect Cables and Power Cords

Refer to Figure 1, “Rear Panel Cabling Reference,” on page 76 to locate the ports and AC inlets on the server back panel.

1. **Connect a serial cable between the server's serial management port (SER MGT) and a terminal device.**

   This connection provides the initial communication to the SP.

2. **(Optional) Connect an Ethernet cable between the network management port (NET MGT) and the network to which connections to the Oracle ILOM SP and host will be made.**

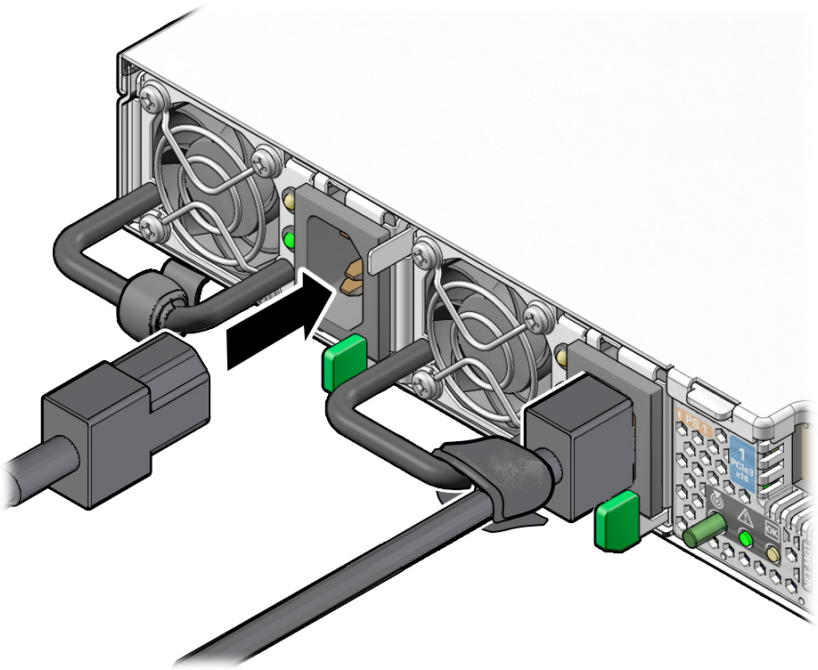
   Configure the server for the first time using the SER MGT port. After initial configuration, you can set up communication between the SP and host through this Ethernet interface.

3. **For network access, connect an Ethernet cable between one of the server's Ethernet NET ports (NET0-3) and the network to which the server will communicate.**

   Note - Ethernet ports NET2 and NET3 are non-functional in single-processor systems.

4. **Connect the power cords to the two AC inlets on the back panel of the server.**

Use a Velcro strap to secure the power cords to the power supply handle as shown in the following figure.



Caution - Do not operate the server unless all fans, component heak sinks, air baffles, and the top cover are installed. Damage to server components can occur if the server is operated without adequate cooling mechanisms.

Powering On the Server

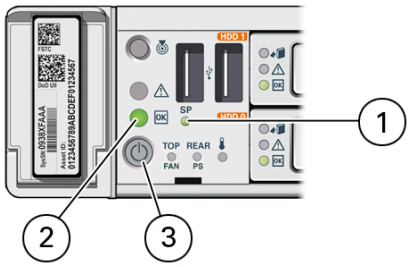
This section explains how to power on the server locally using a serial connection and Oracle ILOM.

If you want to power on the server remotely using an Ethernet connection and Oracle ILOM, see “Log In to Oracle ILOM Using a Remote Ethernet Connection” on page 85 for instructions.

Power On the Server

The following procedure explains how to power on the server locally using a serial connection to Oracle ILOM. For more information about powering on the server using other methods, see "Controlling System Power" on page 159.

The following figure shows the location of the status indicators (LEDs) on the server front panel.



1 – SP OK LED	2 – Power/OK LED	3 – Power button

1. **Connect the grounded power cords to two separate power sources.**

   The server is equipped with two power supplies. Connect the power supplies to separate power sources to provide power redundancy. The server can operate with one power source; however, using only one power source eliminates redundancy.

   When the power cords are connected to the server's AC inlets and power sources, the following actions occur:

   - The green AC OK power supply LEDs light.
   - While the Oracle ILOM SP initializes, the green SP OK LED flashes rapidly.
   - Once the Oracle ILOM SP has fully initialized, the SP OK LED is steady on and the green Power/OK LED flashes slowly, indicating that the host is in Standby power mode.

   In Standby power mode, the server is not initialized or powered on.

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

   The Oracle ILOM Login prompt appears.

3. **Log in to Oracle ILOM using the command-line interface (CLI); use the `root` user account and the password `changeme`:**

   host-name `login:` **`root`**
   `Password:` **`changeme`**

   The Oracle ILOM CLI prompt (->) appears.

Caution - Do not apply full power to the server until you are ready to configure a preinstalled operating system or perform a fresh installation of an operating system. At this point, power is supplied only to the SP and the power supply fans.

4. **Power on the server to Full power mode:**

   `->` **`start /System`**
   `Are you sure you want to start /System (y/n/)?` **`y`**

   The host boots and the server enters Full power mode.

   When the server boots and goes to Full power mode, the following actions occur:

   - The green Power/OK flashes rapidly to indicate that the host is booting.
   - The green Power/OK LED lights steady on when the host is booted and the server is in Full power mode.

Connecting to Oracle ILOM

The Oracle Server X5-2 is shipped initially with Oracle Integrated Lights Out Manager (ILOM) version 3.2.4. Oracle ILOM is system management firmware embedded on the service processor (SP).

For a complete list of Oracle ILOM features, refer to the Oracle Integrated Lights Out Manager (ILOM) 3.2 Documentation Library at `https://www.oracle.com/goto/ilom/docs`.

This section describes how to access and get started using Oracle ILOM for your server.

Description	Links
Learn about Oracle ILOM hardware and interfaces.	“Oracle ILOM Service Processor and User Interfaces” on page 83
Log in to Oracle ILOM locally using a terminal connected to the serial port.	“Log In to Oracle ILOM Using a Local Serial Connection” on page 84
Log in to Oracle ILOM over the network using an Ethernet connection.	“Log In to Oracle ILOM Using a Remote Ethernet Connection” on page 85
View or modify the service processor network settings.	“Modifying the Service Processor Network Settings Using Oracle ILOM” on page 89
Access the host console through Oracle ILOM.	“Redirecting the Host Console Using Oracle ILOM” on page 93
Troubleshoot the service processor connection.	“Troubleshooting Oracle ILOM” on page 97

Related Information

- “Installation Procedure Overview ” on page 13
- “Connecting Cables and Power Cords” on page 78

Oracle ILOM Service Processor and User Interfaces

The following table lists the components and functions of Oracle ILOM.

Component	Function
Hardware	■ Embedded service processor (SP) chipset that monitors the status and configuration of components such as fans, storage drives, and power supplies. ■ Two rear panel external connections: NET MGT port Ethernet connection and SER MGT port RJ-45 serial management connection.
Interfaces	■ Web browser interface ■ SSH command-line interface (CLI) ■ IPMI v2.0 CLI ■ SNMP v3 interface

Related Information

- Oracle Integrated Lights Out Manager (ILOM) 3.2 Documentation Library at: https://www.oracle.com/goto/ilom/docs

Logging In or Out of Oracle ILOM

You can log in to the Oracle ILOM command-line interface (CLI) locally using the RJ-45 serial management port (SER MGT) on the server.

You can also log in to the Oracle ILOM web interface or command-line interface remotely using the network management port (NET MGT) on the server.

To log in to Oracle ILOM, follow these procedures:

- “Log In to Oracle ILOM Using a Local Serial Connection” on page 84
- “Log In to Oracle ILOM Using a Remote Ethernet Connection” on page 85

To log out of Oracle ILOM, follow this procedure:

- “Logging Out From Oracle ILOM” on page 88

▼ Log In to Oracle ILOM Using a Local Serial Connection

You do not need to know the IP address of the service processor (SP) to log in to Oracle ILOM locally.

Note - To enable first-time login and access to Oracle ILOM, a default Administrator account and its password are provided with the system. To build a secure environment and enforce user authentication and authorization in Oracle ILOM, you must change the default password (`changeme`) for the default Administrator account (`root`) after your initial login to Oracle ILOM. If this default Administrator account has since been changed, contact your system administrator for an Oracle ILOM user account with Administrator privileges.

Note - To prevent unauthorized access to Oracle ILOM, create user accounts for each user. For details, refer to the *Oracle X5 Series Servers Administration Guide* at `https://www.oracle.com/goto/x86admindiag/docs`.

1. **Ensure that the server is cabled for a local serial connection to Oracle ILOM and that the power cords are connected to the power sources.**

   For instructions for establishing a serial management connection to Oracle ILOM see "Connect Cables and Power Cords" on page 79.

   When the power cords are connected to the power source, the server enters Standby power mode. In Standby power mode, the server is not initialized or powered-on.

2. **Press Enter on the terminal device that is connected to the server.**

3. **At the Oracle ILOM login prompt, type your user name, and then press Enter.**

4. **At the password prompt, type the password associated with your user name, and then press Enter.**

   Oracle ILOM displays a default command prompt (->), indicating that you have successfully logged in.

▼ Log In to Oracle ILOM Using a Remote Ethernet Connection

You need to know the IP address or host name of the service processor (SP) to log in to Oracle ILOM remotely. If you do not know the IP address of the SP, see "Modifying the Service Processor Network Settings Using Oracle ILOM" on page 89.

Note - To enable first-time login and access to Oracle ILOM, a default Administrator account and its password are provided with the system. To build a secure environment, you must change the default password (`changeme`) for the default Administrator account (`root`) after your initial login to Oracle ILOM. If this default Administrator account has since been changed, contact your system administrator for an Oracle ILOM user account with Administrator privileges.

To improve response times, disable the web browser proxy server (if one is enabled).

1. **Ensure that the server is cabled for a remote network management connection to Oracle ILOM and that the power cords are connected to the power source.**

   For instructions for establishing a remote management connection to Oracle ILOM see "Connect Cables and Power Cords" on page 79.

2. **Establish a connection to Oracle ILOM using the CLI or web interface.**

   - **CLI:**

     a. **Initiate a secure shell session. Type:**

     `ssh` *username*`@`*host*

     Where *username* is the user name of an Oracle ILOM account with Administrator privileges and *host* is either the IP address or hostname (when using DNS) of the server SP.

     The Oracle ILOM password prompt appears.

     ```
     Password:
     ```

     b. **At the Oracle ILOM password prompt, type your password and press Enter. For example:**

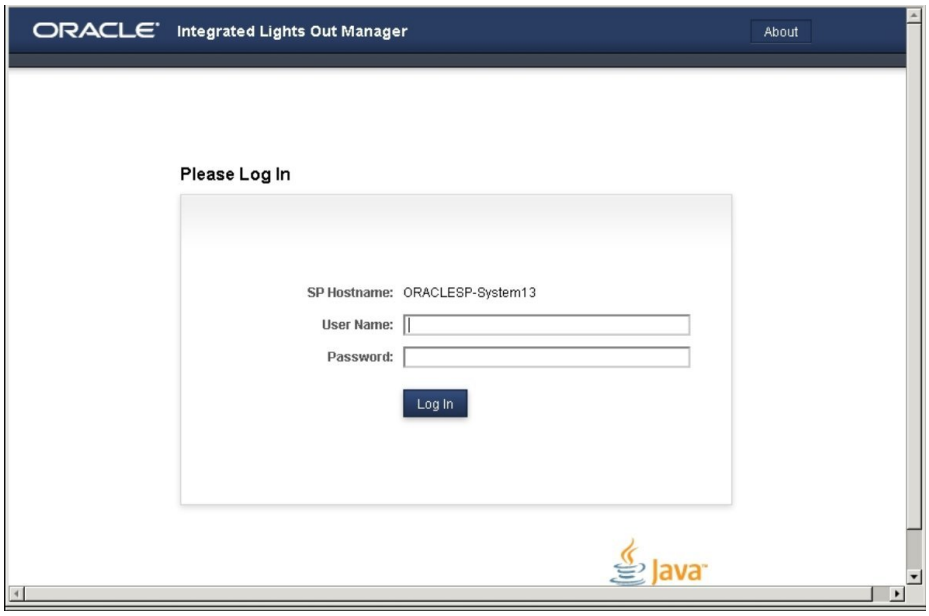
     ```
     Password: changeme
     ```

     Oracle ILOM displays the default command prompt (->), indicating that you have successfully logged in to Oracle ILOM.

   - **Web interface:**

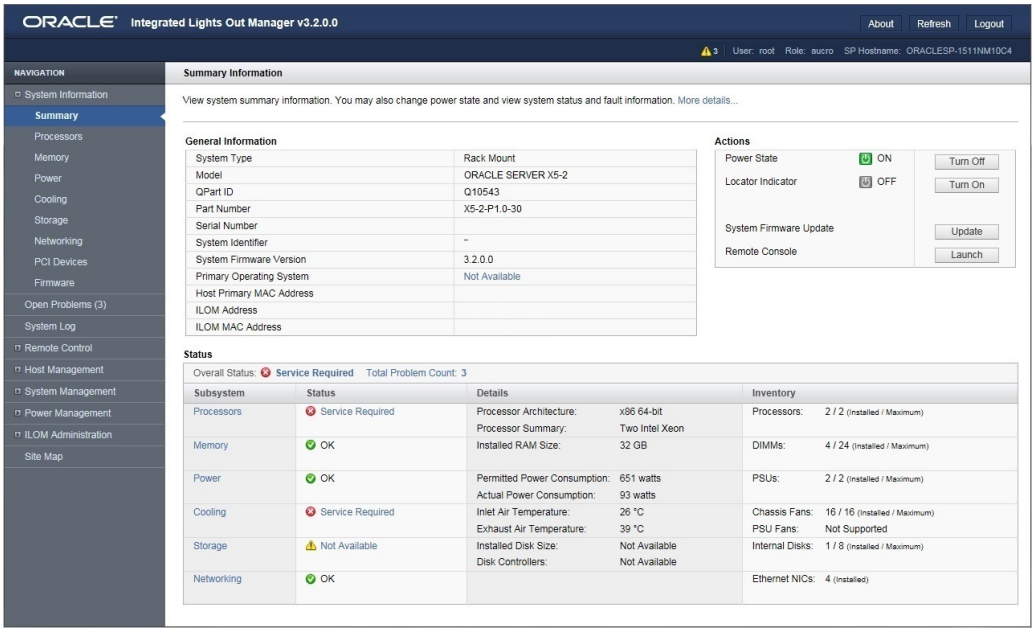
     a. **Type the IP address of the server in the address field of your web browser and press Enter.**

The Oracle ILOM login screen appears.



b. At the Oracle ILOM login screen, type your user name and password, and then click Log In.

The Summary Information screen appears, indicating that you have successfully logged in to Oracle ILOM.



You are now logged in to Oracle ILOM. For more information about using Oracle ILOM, refer to the Oracle Integrated Lights Out Manager (ILOM) 3.2 Documentation Library at https://www.oracle.com/goto/ilom/docs.

Logging Out From Oracle ILOM

See the following procedure to log out from the Oracle ILOM web interface or CLI.

▼ Log Out From Oracle ILOM

- **To end an Oracle ILOM session:**
  - **From the Oracle ILOM CLI, type `exit` at the CLI prompt.**

- **From the Oracle ILOM web interface, click the Log Out button at the top-right corner of the screen.**

Modifying the Service Processor Network Settings Using Oracle ILOM

This section provides information about the default network settings on the service processor (SP), as well as procedures for viewing and modifying those settings in Oracle ILOM:

- "Modify Oracle ILOM SP Network Settings " on page 89
- "Test the IPv4 or IPv6 Network Configuration" on page 91

The SP network settings may also be viewed and modified from Oracle System Assistant or the BIOS Setup Utility. For more information about alternative methods of configuring the SP network interface, or to configure the Ethernet controller network settings, see the *Oracle X5 Series Servers Administration Guide* at `https://www.oracle.com/goto/x86admindiag/docs`.

The Oracle Server X5-2 supports dual-stack IPv4 and IPv6 settings, which enable Oracle ILOM to fully operate in an IPv4 or IPv6 network environment.

- For IPv4 configurations, DHCP is enabled by default, allowing a DHCP server on the network to automatically assign network settings to the service processor.
- For IPv6 configurations, IPv6 stateless auto-configuration is enabled by default, allowing an IPv6 router on the network to assign the network settings.

In a typical configuration, you will accept the default settings. However, if you want to modify the service processor network settings, follow these procedures:

▼ Modify Oracle ILOM SP Network Settings

When you use Oracle ILOM to deploy or manage the server, you can optionally modify the default network settings provided for the service processor (SP).

This procedure provides web and command-line interface (CLI) instructions for viewing and modifying the network settings that are assigned to the SP.

1. **Log in to Oracle ILOM as an Administrator.**

For instructions on how launch Oracle ILOM from the CLI or web interface, see: "Logging In or Out of Oracle ILOM" on page 84.

2. **To modify the SP network settings, use either the Oracle ILOM web interface or CLI:**

   - **From the web interface, perform these steps:**

     a. **Click ILOM Administration → Connectivity → Network.**

     b. **Modify the settings on the Network Settings page as required.**

     For further details about how to configure the properties on the Network Setting page, click the *More Details* link.

     c. **Click Save to save your network property changes in Oracle ILOM.**

   Note - All user sessions on the SP are terminated upon saving the IP network property changes. To log back in to Oracle ILOM, use the newly assigned service processor IP address.

   - **From the CLI, perform these steps:**

     a. **To view the assigned IPv4 and IPv6 network settings on the SP, perform the following:**

     For IPv4, type: `show /SP/network`

     For IPv6, type: `show /SP/network/ipv6`

     b. **To view the descriptions about each IPv4 and IPv6 network property, perform the following:**

     For IPv4, type: `help /SP/network`

     For IPv6, type: `help /SP/network/ipv6`

     c. **To modify the IPv4 and IPv6 network properties on the SP, issue the `set` command.**

     IPv4 Example:

     `set /SP/network state=`*enabled*`|`*disabled* `pendingipdiscovery=`*static*`|`*dhcp* `pendingipaddress=`*value* `pendingipgateway=`*value* `pendingipnetmask=`*value*

     IPv6 Example:

```
set /SP/network/ipv6 state=enabled|disabled pending_static_ipaddress=
value/subnet_mask_value pending_static_ipgatewayaddress=value
```

Note - A dual-stack network connection is enabled when both the IPv4 and IPv6 State properties are set to enabled. By default, Oracle ILOM is factory-configured with network settings enabled for a dual stack (IPv4 and IPv6) network connection. If the IPv4 State property is enabled (**`/SP/network state=enabled`**) and the IPv6 State property is disabled (**`/sp/network/ipv6 state=disabled`**), Oracle ILOM will support an IPv4-only network connection.

d. To commit the IPv4 and IPv6 pending network changes in Oracle ILOM, type:

```
set /SP/network commitpending=true
```

Note - All user sessions on the SP are terminated upon committing the IP network property changes. To log back in to Oracle ILOM, use the newly assigned service processor IP address.

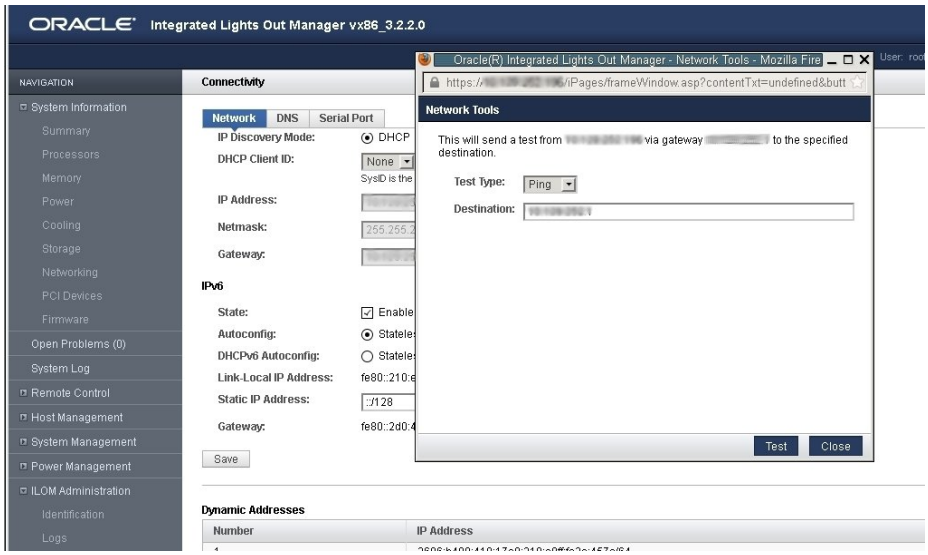
▼ Test the IPv4 or IPv6 Network Configuration

- **Use either the Oracle ILOM web interface or CLI to test the IPv4 or IPv6 network configuration.**

  - **From the Oracle ILOM web interface, perform these steps:**

    a. From the ILOM Administration → Connectivity screen, click the Tools button at the bottom of the screen.

The Network Configuration Test screen appears.



b. From the Test Type list box, select Ping (for an IPv4 configuration) or Ping6 (for an IPv6 network configuration).

c. Type the IPv4 or IPv6 test destination address in the Destination field and click Test.

If the test was successful, the message `Ping of` *ip_address* `succeeded` confirmation appears below the Destination field in the Network Configuration Test screen.

- **From the Oracle ILOM CLI, perform these steps:**

a. At the CLI prompt, type the `show` command to view the network `test` targets and properties.

For example, the following output shows the test target properties:

```
-> show
/SP/network/test
Targets:

Properties:
 ping = (Cannot show property)
```

```
 ping6 = (Cannot show property)

Commands:
 cd
 set
 show
```

b. Use the `set ping` or `set ping6` command to send a network test from the device to a network destination specified in the following table.

Property	Set Property Value	Description
`ping`	`set ping=`<*IPv4_address*>	Type the `set ping=` command at the command prompt followed by the IPv4 test destination address. For example: `set ping=192.168.10.106` `Ping of 192.168.10.106 succeeded`
`ping6`	`set ping6=` <*IPv6_address*>	Type the `set ping6=` command followed by the IPv6 test destination address. For example: `set ping6=2001::db8:5dff:febe:5000` `Ping of 2001::db8:5dff:febe:5000 succeeded`

Redirecting the Host Console Using Oracle ILOM

Use Oracle ILOM Remote System Console Plus to remotely redirect a host server desktop or a host server storage device.

Connecting to the host console through Oracle ILOM enables you to perform actions as if you were at the host. Connect to the host to perform the following tasks:

- Access the server BIOS Setup Utility remotely.
- Install an operating system on the server.
- Configure an operating system on the server.
- Configure or install other software on the server.
- Access Oracle System Assistant through Oracle ILOM.

For instructions, see the following sections:

- “Set the Mouse Mode” on page 94
- “Redirect Host Server Desktop or Storage Devices Using Oracle ILOM ” on page 94

Set the Mouse Mode

In Oracle ILOM you can set the Mouse Mode property to optimize mouse movement in the Oracle ILOM Remote System Console Plus. The mouse mode can be set to either Absolute or Relative and should be set according to the requirements of the operating system that you are using to connect to Oracle ILOM. Review the following guidelines to determine the appropriate mouse mode for your system:

- For Windows and Oracle Solaris operating systems, set the mouse mode to Absolute.
- For newer versions of Linux operating systems, such as Oracle Linux 7, Oracle Linux 6.x, Red Hat Enterprise Linux (RHEL) 7, RHEL 6.x, and SUSE Linux Enterprise Server (SLES) 11 or later, set the mouse mode to Absolute.
- For older versions of Linux operating systems, such as Oracle Linux 5.x, RHEL 5.x, and SLES 10, set the mouse mode to Relative and switch to Absolute if the mouse does not work properly.
- For Oracle VM and VMware ESXi, mouse mode settings do not apply.

For more information about selecting a mouse mode, refer to the *Oracle ILOM Administrator's Guide for Configuration and Maintenance, Firmware Release 3.2.x* at `https://www.oracle.com/goto/ilom/docs`.

To set the mouse mode, perform the following steps:

1. **Log in to the Oracle ILOM web interface.**

   See "Log In to Oracle ILOM Using a Remote Ethernet Connection" on page 85.

2. **Navigate to the Remote Control → KVMS page, and then select a mouse mode from the Mouse Mode drop-down list.**

3. **Click Save.**

Redirect Host Server Desktop or Storage Devices Using Oracle ILOM

Use Oracle ILOM Remote System Console Plus to remotely redirect a host server desktop or a host server storage device.

The Oracle ILOM Remote System Console Plus supports a full-control console video session for a primary user and a view-only console video session for all other signed-in users on the

SP. By default, a maximum of four video redirection sessions can be launched from Oracle ILOM web interface. To prevent other signed-in video session users on the SP from viewing confidential data, you can set the Maximum Client Session Count property to 1 on the KVMS page in the Oracle ILOM web interface.

Before you begin, ensure that the following requirements are met:

- The following user credentials are required:
  - Console (c) user role privileges are required to use the Oracle ILOM Remote System Console Plus.
  - A user account on the host server is required to log in to the redirected host desktop.
  - To exclusively control the storage media from the Oracle ILOM System Remote Console Plus application, you must have root privileges on a Linux client or root administrator privileges on a Windows client.
- The mouse mode is set correctly; see "Set the Mouse Mode" on page 94.
- Java Runtime Environment (JRE) 1.6 or later is installed. For IPv4 networks, a 32-bit or 64-bit JDK is required. For IPv6 networks, a 32-bit or 64-bit Java Development Kit (JDK) 170636 or higher is required.
- The remote management client is connected to a network that has access to one of the Ethernet management ports on the Oracle Server X5-2.

To launch the Oracle ILOM Remote System Console Plus application, follow these steps:

1. **Log in to the Oracle ILOM web interface.**

   For instructions, see "Logging In or Out of Oracle ILOM" on page 84.

2. **To launch Oracle ILOM Remote System Console Plus application, click Remote Control → Redirection, and then click the Launch Remote Console button.**

   After clicking the Launch Redirection Console button, the following events can occur:

   - If this is the first time launching the Oracle ILOM Remote System Console Plus application, a prompt to launch the Java web start program appears. Follow the instructions provided in the prompt to continue launching the Oracle ILOM Remote System Console Plus application.
   - If your system does not meet the Java security requirements for launching the Oracle ILOM Remote System Console Plus, a Java error message appears. Follow the instructions provided in the Java error message to launch the Oracle ILOM Remote System Console Plus application.
   - The Oracle ILOM Remote System Console Plus window for video redirection appears.
   - The redirected video console displays the remote host server in its present state. For example, if the host server is powering on, a set of boot messages appear in the video console.

- When a prompt for logging in to the host server appears, enter your user credentials for the remote host server.

  For additional details about launching the Oracle ILOM Remote System Console Plus application, click the *More Details* link on the Redirection web page.

Note - Full-control user mode is automatically enabled for the primary user. View-only user mode is automatically enabled for all subsequent signed-in session users.

3. **To take full-control or relinquish full-control of the current redirection session, click either Take Full-Control or Relinquish Full-Control in the KVMS menu.**

   A view-only user can choose to take full-control of the redirection session and force the existing primary user to view-only mode.

   The primary user can relinquish full-control privileges for the current redirection session and switch to view-only mode.

4. **To redirect storage media, perform the following actions:**

   a. **Verify you have full-control privileges for the redirection session. If not, click Take Full-Control in the KVMS menu.**

      If you are the primary user with full-control privileges, the option for Take Full-Control is disabled in the KVMS menu.

   b. **Click Storage in the KVMS menu.**

      The Storage Device dialog box appears.

   c. **To add a storage image (such as a DVD image) to the Storage Device dialog box, click Add.**

      Browse to the image file that you want to add, and then click Select.

   d. **To redirect storage media, select a storage media entry in the Storage Device dialog box, and then click Connect.**

      The Oracle ILOM Remote System Console Plus application must have exclusive control to the storage device in order to establish a redirection connection to the storage device.

      After establishing a connection to the device, the label on the Connect button in the Storage Device dialog box will change to Disconnect.

   e. **To stop a storage media redirection session, select the storage media entry in the Storage Device dialog box and click Disconnect.**

f. **To remove storage media entries listed in the Storage Device dialog box, click the storage media entry and click Remove.**

5. **To exit the Oracle ILOM Remote System Console Plus, click Exit in the KVMS menu.**
   For more information about using the Oracle ILOM Remote System Console Plus, refer to the *Oracle ILOM Administrator's Guide for Configuration and Maintenance, Firmware Release 3.2.x* at `https://www.oracle.com/goto/ilom/docs`.

▼ Access Serial Remote Host Console (CLI)

Before you begin, you can configure properties in Oracle ILOM to make the serial host console easier to view and to enable logging. For more information, refer to the *Oracle ILOM Administrator's Guide for Configuration and Maintenance, Firmware Release 3.2.x* at `https://www.oracle.com/goto/ilom/docs`.

This procedure describes how to access the host console remotely. To connect to the host console locally, see "Log In to Oracle ILOM Using a Local Serial Connection" on page 84.

1. **Log in to the Oracle ILOM command-line interface (CLI) using an account with Administrator privileges.**
   For instructions, see "Log In to Oracle ILOM Using a Remote Ethernet Connection" on page 85.

2. **At the Oracle ILOM prompt (->), type `start /HOST/console`.**
   The serial console output appears on the screen.

   Note - If the serial console is in use, stop and restart it using the `stop /HOST/console` command followed by the `start /HOST/console` command.

3. **To return to the Oracle ILOM console, press Esc followed by the open parenthesis (character (press Shift-9).**

Troubleshooting Oracle ILOM

This section addresses these issues that might occur regarding the service processor (SP):

- You need to reset the Oracle ILOM SP to complete on upgrade or to clear an error.

  Resetting the power on the server SP automatically disconnects any current Oracle ILOM sessions and renders the SP unmanageable until the reset process is complete.
- As the system administrator, you have forgotten the `root` account password and you need to recover it.

For instructions on how to address each issue, see the following sections:

- "Reset the Service Processor Using Oracle ILOM" on page 98
- "Reset the Service Processor From the Server Back Panel" on page 98
- "Recover the Root Account Password" on page 99

Reset the Service Processor Using Oracle ILOM

- **If the Oracle ILOM service processor (SP) becomes unresponsive, use one of the following methods to reset it:**

  - **From the Oracle ILOM command-line interface (CLI), type the command:**
    `reset /SP`

  - **From the Oracle ILOM web interface, click Administration → Maintenance → Reset SP.**

Note - Resetting the Oracle ILOM SP disconnects your current Oracle ILOM session. You must log in again to continue working in Oracle ILOM.

Reset the Service Processor From the Server Back Panel

If the Oracle ILOM SP is unresponsive and you cannot reset it using the Oracle ILOM web interface or the Oracle ILOM CLI command, use the following procedure to reset the SP from the server back panel.

- **Using a non-conducting stylus, press the Reset SP pinhole button located on the server back panel.**

The stylus should be non-conductive with a diameter no more than 1.5 mm. To depress the pinhole button, the stylus should reach 6.5 mm into the chassis. Care should be taken to not over penetrate into the chassis, or probe the sensitive electrical components near the button.

Caution - Using a conductive tool, such as a metal paper clip or graphite pencil, can cause a short that can cause an immediate host power off, and/or circuit damage.

Number	Description
1	SP Reset pinhole button

The SP reboots. You must log in again to continue working in Oracle ILOM.

Recover the Root Account Password

System administrators can recover the preconfigured Oracle ILOM local `root` account or the password for the local `root` account by using the preconfigured Oracle ILOM default password.

To recover the `root` account password you need a local serial management port (SER MGT) connection to Oracle ILOM. In addition, if the Physical Presence State is enabled (the default) in Oracle ILOM, you must prove that you are physically present at the server.

To recover the `root` account password, perform these steps:

1. **Establish a local serial management connection to Oracle ILOM and log in to Oracle ILOM using the `default` user account.**

   For example: `host name login: default`

```
Press and release the physical presence button

Press return when this is completed...
```

2. **Prove physical presence at the server.**

   To prove physical presence at the server, press the Locator button on the front of the server.

3. **Return to your serial console and press Enter.**

   The Oracle ILOM password prompt appears.

4. **Type the password for the `default` user account: `defaultpassword`.**

5. **Reset the account password or re-create the `root` account.**

   For more information, refer to "Configuring Local User Accounts" in the *Oracle ILOM Administrator's Guide for Configuration and Maintenance, Firmware Release 3.2.x* at `https://www.oracle.com/goto/ilom/docs`.

Setting Up Software and Firmware Using Oracle System Assistant

This section provides instructions for starting Oracle System Assistant, preparing Oracle System Assistant for use, and preparing the server for operating system installation.

Description	Links
Launch Oracle System Assistant.	"Launching Oracle System Assistant" on page 101
Set up software and firmware Using Oracle System Assistant.	"Perform Tasks Using Oracle System Assistant" on page 108
Set up an operating system and drivers using Oracle System Assistant.	"Setting Up an Operating System Using Oracle System Assistant" on page 107

Related Information

- "Installation Procedure Overview " on page 13
- "Connecting Cables and Power Cords" on page 78
- *Oracle X5 Series Servers Administration Guide* at: `https://www.oracle.com/goto/x86admindiag/docs`

Launching Oracle System Assistant

Oracle System Assistant is the preferred application for setting up your system software and firmware. Oracle System Assistant is an embedded, task-based server provisioning tool that enables you to perform initial server setup and maintenance for some Oracle x86 servers.

Using Oracle System Assistant, you can install a supported Oracle Solaris, Linux, or Windows Server operating system, install Oracle VM Server sofware, update your server to the latest software release, and configure server hardware.

Note - For Oracle Solaris installations, Oracle System Assistant does not install drivers or tools. For Linux, Oracle VM Server, and Windows Server, Oracle System Assistant installs the recommended drivers and tools that are supported by the specific operating system or virtual machine software. For the list of optional software that can be installed when you use Oracle System Assistant to install operating systems, refer to the Oracle System Assistant ReadMe.

Use one of the following methods to access Oracle System Assistant:

- "Launch Oracle System Assistant Locally" on page 102
- "Launch Oracle System Assistant Using the Oracle ILOM Web Interface" on page 104

Related Information

- "Perform Tasks Using Oracle System Assistant" on page 108
- "Setting Up an Operating System Using Oracle System Assistant" on page 107

▼ Launch Oracle System Assistant Locally

To launch Oracle System Assistant locally you must be present at the server and you must attach the following devices to the server:

- VGA monitor
- USB keyboard
- USB mouse

1. **Ensure that the server is in Standby power mode.**

   When the server is in Standby power mode, the Power/OK status indicator (LED) on the server front panel flashes slowly. For indicator location, see "Front Panel Status Indicators, Connectors, and Drives" on page 29.

2. **Connect locally to the server.**

   See "Log In to Oracle ILOM Using a Local Serial Connection" on page 84.

3. **Press the Power button on the front panel of the server to power on the server to Full power mode.**

   The server boots, and power-on self-test (POST) and boot messages appear on the monitor.

   Stay with the server and watch closely. You need to interrupt the boot process.

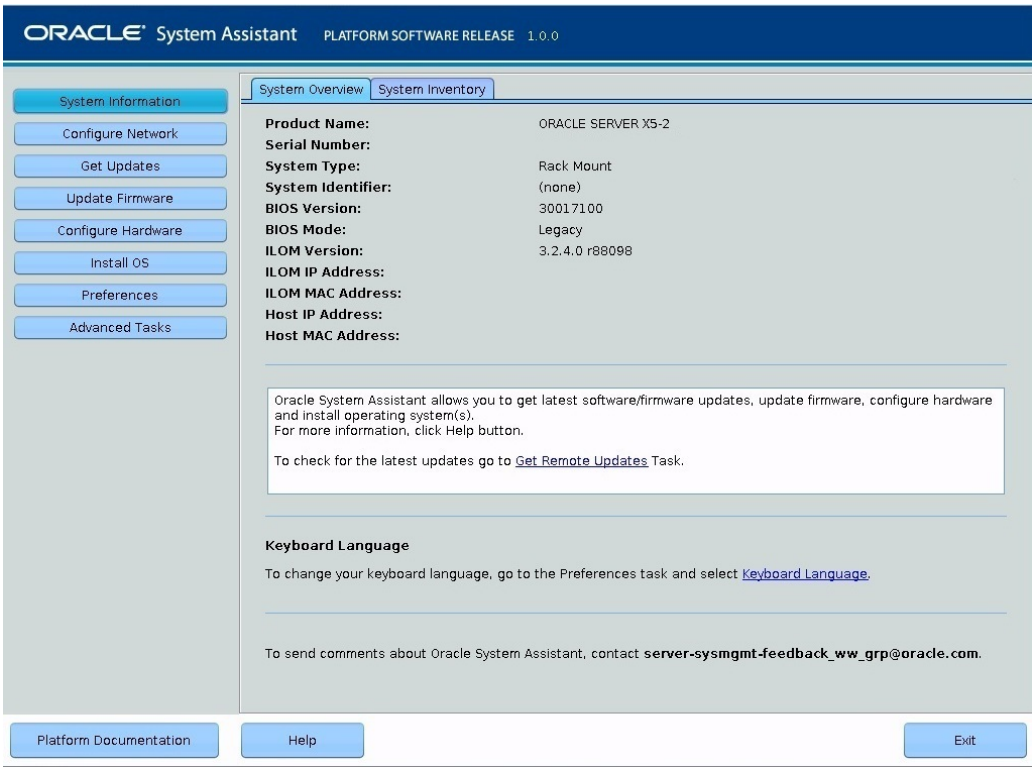
The BIOS screen appears.

4. **When prompted, press the F9 function key to start Oracle System Assistant.**

   Checkpoint messages appear, including the topic `[Oracle System Assistant Selected]`.

   If the Software License Agreement (SLA) dialog box appears, click Accept in the SLA dialog box to continue.

The Launching Oracle System Assistant screen appears, followed by the System Overview screen.



▼ Launch Oracle System Assistant Using the Oracle ILOM Web Interface

You can use Oracle ILOM to launch Oracle System Assistant locally or remotely.

Before you begin, ensure the following:

- You have Admin (a) and Console (c) role privileges in Oracle ILOM.
- Requirements for launching and using the Oracle ILOM Remote System Console Plus are met.

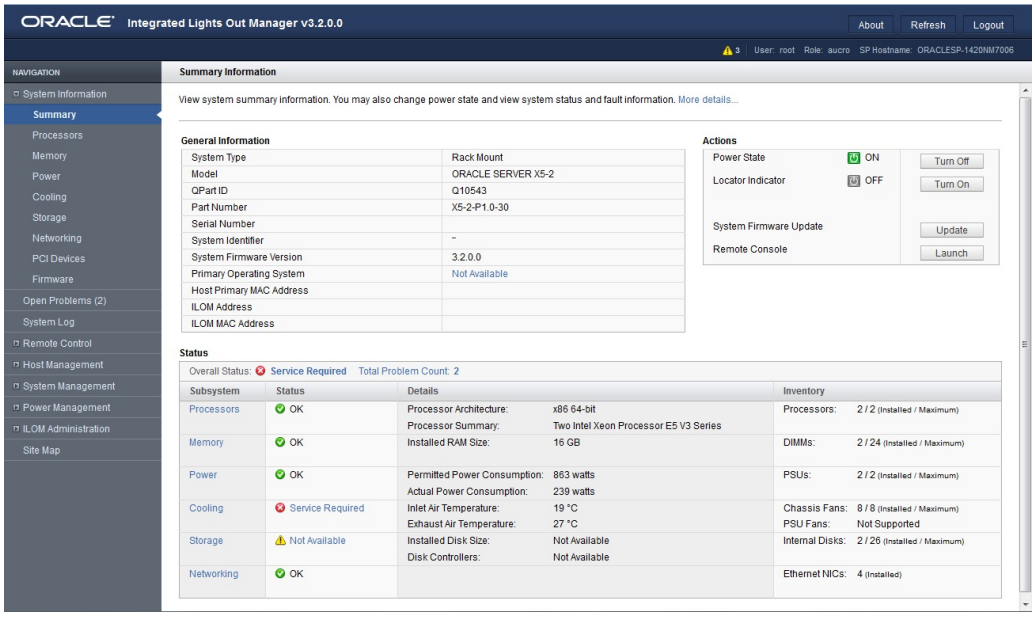
1. **Ensure that the server is in Standby power mode.**

   When the server is in Standby power mode, the Power/OK status indicator (LED) on the server front panel flashes slowly. For indicator location, see "Front Panel Status Indicators, Connectors, and Drives" on page 29.

2. **Log in to the Oracle ILOM web interface.**

   For instructions, see "Log In to Oracle ILOM Using a Remote Ethernet Connection" on page 85.

   The Summary Information screen appears.



3. **Ensure that full power is off and the server is in Standby power mode.**

   The Power State field in the Actions panel indicates the server power state.

4. **In the Actions panel, click the Oracle System Assistant Launch button.**

   Note - If the server is powered on, you will be prompted to shut it down.

5. **To run the Oracle ILOM Remote System Console Plus, click Yes.**

The Oracle ILOM Remote System Console Plus window appears, and the server is powered on to Full power mode. Boot messages appear on the server. After a few moments, the Oracle System Assistant application is started, and the System Overview screen appears.

▼ Configure Oracle System Assistant Networking

This section describes how to configure a network connection so you can use Oracle System Assistant.

When Oracle System Assistant starts, it tries to connect to DHCP on NET0.

- If NET0 is connected to a network that is DHCP enabled, and auto configuration succeeds, no more configuration is necessary.
- If NET0 is connected to a network that is not DHCP enabled, you must configure a network connection.

These settings normally need to be set once, the first time you use Oracle System Assistant.

1. **Launch Oracle System Assistant as described in "Launching Oracle System Assistant" on page 101.**
2. **Select the Network Configuration tab.**
3. **Fill in the network configuration details.**
   For details, see "Configure Network Interface Settings (Oracle System Assistant)" in *Oracle X5 Series Servers Administration Guide* at `https://www.oracle.com/goto/x86admindiag/docs`.

Preparing the Server for Operating System Installation

This section describes how to prepare your server for operating system installation.

A number of tasks must be completed before you can install an operating system. These include:

- Getting firmware and software updates
- Installing firmware updates
- Configuring Oracle ILOM network addresses
- Configuring RAID

Once these tasks are done, you can install the operating system.

You can perform these tasks using Oracle System Assistant, or using other methods. Oracle recommends that you use Oracle System Assistant.

- To use Oracle System Assistant, see "Preparing the Server for Operating System Installation" on page 106.
- To prepare the server for OS installation using other methods, see *Oracle X5 Series Servers Administration Guide* at `https://www.oracle.com/goto/x86admindiag/docs`.

Note - For Oracle Solaris installations, Oracle System Assistant does not install recommended drivers or tools. For Linux, Oracle VM, and Windows Server, Oracle System Assistant installs the recommended drivers and tools that are supported by the specific operating system or virtual machine software. For the list of optional software that can be installed when you use Oracle System Assistant to install operating systems, refer to the Oracle System Assistant ReadMe.

Related Information

- "Launching Oracle System Assistant" on page 101

Setting Up an Operating System Using Oracle System Assistant

The server supports several operating systems. Therefore, you do not have to use the preinstalled operating system on your server. If you want to install a fresh or newer version of the preinstalled operating system or a different operating system, you can do so, provided it is a supported version. For a list of supported operating systems, refer to the *Oracle Server X5-2 Product Notes* at `https://www.oracle.com/goto/x5-2/docs`.

You can configure a preinstalled operating system (OS), or install a supported OS for your server. The following table describes how to access information about installing or configuring an OS.

What do you want to do?	Which OS do you want to configure or install?	Use this tool or documentation
Configure a preinstalled OS	Preinstalled Oracle Solaris OS	"Configuring the Preinstalled Oracle Solaris Operating System" on page 131
	Preinstalled Oracle Linux	"Configuring the Preinstalled Oracle Linux Operating System" on page 139
	Preinstalled Oracle VM	"Configuring the Preinstalled Oracle VM Server Software" on page 145

What do you want to do?	Which OS do you want to configure or install?	Use this tool or documentation
Install an OS and update drivers	Oracle Solaris OS, Linux OS, Oracle VM, or Windows Server OS	Oracle System Assistant or the installation guide for the OS ■ "Installing the Oracle Solaris Operating System" in *Oracle Server X5-2 Installation Guide for Oracle Solaris Operating System* ■ "Installing a Linux Operating System" in *Oracle Server X5-2 Installation Guide for Linux Operating Systems* ■ "Installing Oracle VM Server" in *Oracle Server X5-2 Installation Guide for Oracle VM* ■ "Installing a Windows Server Operating System" in *Oracle Server X5-2 Installation Guide for Windows Server Operating Systems*
	VMware ESXi software	Installation guide for the virtual machine software: "Installing VMware ESXi" in *Oracle Server X5-2 Installation Guide for VMware ESXi*

Setting Up Software and Firmware Using Oracle System Assistant

Use Oracle System Assistant to simplify the setup and configuration of the server. For detailed information about using Oracle System Assistant, refer to the *Oracle X5 Series Servers Administration Guide* at `https://www.oracle.com/goto/x86admindiag/docs`.

- "Perform Tasks Using Oracle System Assistant" on page 108.

▼ Perform Tasks Using Oracle System Assistant

- **Use Oracle System Assistant to perform the tasks listed in the following table.** For a complete list of supported tasks, refer to the *Oracle X5 Series Servers Administration Guide* at `https://www.oracle.com/goto/x86admindiag/docs`.

Number	Task	Oracle System Assistant Screen
1	Review system information and inventory.	System Information
2	Set up Oracle System Assistant network connection.	Configure Network
3	Get the latest software and firmware that will be used by Oracle System Assistant.	Get Updates
4	Update Oracle ILOM, BIOS, disk expanders, or HBA firmware, if needed.	Update Firmware

Number	Task	Oracle System Assistant Screen
	Use the latest supported BIOS and firmware version available.	
5	Configure Oracle ILOM. This helps prepare the service processor for access.	Configure Hardware → Service Processor Configuration
6	Configure RAID. **Note -** Data loss. Do not use this option on a disk with a preinstalled OS.	Configure Hardware → RAID Configuration
7	Restore BIOS to its default settings.	Configure Hardware → Restore BIOS Defaults
8	Install an Oracle Solaris, Linux, Oracle VM, or Windows Server operating system or drivers. **Note -** Do not use this option if your system came with a preinstalled OS.	Install OS For more information see "Setting Up an Operating System Using Oracle System Assistant" on page 107 or the installation guide for the OS you plan to install.

Configuring Storage Drives for Operating System Installation

This section contains procedures for configuring the server storage drives into RAID (redundant array of independent disks) volumes.

Description	Links
Learn about RAID configuration tools.	"RAID Configuration Tools" on page 111
Learn about RAID configuration options and requirements.	"RAID Configuration Requirements" on page 112
Configure server storage drives into RAID volumes using Oracle System Assistant.	"Configuring Storage Drives Into RAID Volumes Using Oracle System Assistant" on page 114
Configure server storage drives into RAID volumes using the BIOS RAID configuration utilities.	"Configuring RAID Using the BIOS RAID Configuration Utilities" on page 121

Related Information

- "Installation Procedure Overview " on page 13
- Host Bus Adapter (HBA) Documentation Collection at: `http://www.oracle.com/technetwork/documentation/oracle-storage-networking-190061.html`

RAID Configuration Tools

The server supports the Oracle Storage 12 Gb/s SAS PCIe RAID HBA, Internal (part number 7110117), which includes utilities to configure RAID. This host bus adapter (HBA) requires a RAID array to install and boot an operating system (OS).

The procedures that you will use to configure RAID depend on which server BIOS mode is selected, UEFI or Legacy BIOS. You can use either Oracle System Assistant (recommended) or the BIOS RAID configuration utilities to configure RAID on the HBA. The following table provides the links to the RAID configuration procedures for UEFI or Legacy BIOS mode.

RAID Configuration Tool	BIOS Mode Supported	RAID Configuration Procedures
Oracle System Assistant	UEFI and Legacy BIOS	"Configuring Storage Drives Into RAID Volumes Using Oracle System Assistant" on page 114
BIOS Configuration Utilities	UEFI and Legacy BIOS	■ "Configure RAID in UEFI Boot Mode" on page 121 ■ "Configure RAID in Legacy BIOS Boot Mode" on page 127

RAID Limitations on Preinstalled Operating Systems

By default, each physical drive on the server is configured as a RAID 0 volume. If you ordered the preinstalled Oracle Solaris, Oracle Linux, or Oracle VM Server operating system (OS), the OS was installed on one of these RAID 0 drives. You have the option of reconfiguring the server drives to suit your environment. However, reconfiguring the drives might erase the preinstalled OS and any other data on the drives.

For more information about installing an operating system, see "Operating System Options" on page 132.

RAID Configuration Requirements

Reconfiguring storage drives into RAID volumes is an optional task. If you choose to reconfigure the drives, it is recommended that you use Oracle System Assistant. If your server does not have Oracle System Assistant, use the BIOS RAID configuration utilities to configure RAID on the server.

You have the following options for configuring your server storage drives:

- **Option 1** – If you ordered a preinstalled operating system or virtual machine software, the operating system or software was installed on a preconfigured drive. If you reconfigure the drives, you could erase the preinstalled operating system.

  If you want to keep the preinstalled operating system on the preconfigured drive, skip this section and proceed to one of the following sections:

  - "Configuring the Preinstalled Oracle Solaris Operating System" on page 131
  - "Configuring the Preinstalled Oracle Linux Operating System" on page 139
  - "Configuring the Preinstalled Oracle VM Server Software" on page 145
- **Option 2** – If you are going to do a fresh operating system installation and you want to configure multiple server storage drives into one or more RAID volumes, you must

configure the server storage drives into RAID volumes before you install the operating system.

- If your server is equipped with Oracle System Assistant, see "Configuring Storage Drives Into RAID Volumes Using Oracle System Assistant" on page 114 and select the task that matches the internal HBA that is installed on your server.
- If your server is not equipped with Oracle System Assistant, see "Configuring RAID Using the BIOS RAID Configuration Utilities" on page 121.

- **Option 3** –You are going to do a fresh operating system installation, but you do not want to configure multiple storage drives into RAID volumes.

  For this option, you must configure a single storage drive on a RAID volume and make that volume bootable.

  - If your server is equipped with Oracle System Assistant, see "Configure RAID on Storage Drives" on page 115 and configure RAID on a single storage drive.
  - If your server is not equipped with Oracle System Assistant, see "Configuring RAID Using the BIOS RAID Configuration Utilities" on page 121 and configure RAID on a single storage drive.

Note - If you choose option 3, you must configure a single storage drive on a RAID volume and make that volume bootable; otherwise, the internal HBA will not be able to identify the storage drive to use for the installations.

- **Option 4** – You are going to do a fresh OS installation, but you do not want to configure the server storage drives into RAID volumes.

  Proceed to the installation guide for the operating system you want to install:

  - "Installing the Oracle Solaris Operating System" in *Oracle Server X5-2 Installation Guide for Oracle Solaris Operating System*
  - "Installing a Linux Operating System" in *Oracle Server X5-2 Installation Guide for Linux Operating Systems*
  - "Installing Oracle VM Server" in *Oracle Server X5-2 Installation Guide for Oracle VM*
  - "Installing a Windows Server Operating System" in *Oracle Server X5-2 Installation Guide for Windows Server Operating Systems*
  - For VMware ESXi installation instructions, go to "Installing VMware ESXi" in *Oracle Server X5-2 Installation Guide for VMware ESXi*
  - For SUSE Linux Enterprise Server installation instructions, go to "Installing SUSE Linux Enterprise Server OS on a Single System Manually" in *Oracle Server X5-2 Installation Guide for Linux Operating Systems*

For information on creating RAID volumes after installing an operating system, refer to the *Oracle X5 Series Servers Administration Guide* at https://www.oracle.com/goto/x86admindiag/docs.

Related Information

- "Configuring Storage Drives Into RAID Volumes Using Oracle System Assistant" on page 114
- "Configuring RAID Using the BIOS RAID Configuration Utilities" on page 121

Configuring Storage Drives Into RAID Volumes Using Oracle System Assistant

Use Oracle System Assistant to configure RAID on the server. If your server does not have Oracle System Assistant, you can use the BIOS utilities to configure RAID.

Note - You can use Oracle System Assistant to configure RAID 0, RAID 1, RAID 5 or RAID 10. If you need to configure RAID 6, RAID 50, or RAID 60 RAID, you must use the BIOS RAID configuration utilities. See "Configuring RAID Using the BIOS RAID Configuration Utilities" on page 121.

See the following procedures:

- "Launching Oracle System Assistant" on page 101
- "Configure RAID on Storage Drives" on page 115

Related Information

- "RAID Configuration Requirements" on page 112
- "Configuring RAID Using the BIOS RAID Configuration Utilities" on page 121

▼ Configure RAID on Storage Drives

Note - If you are not using a preinstalled operating system (OS) from Oracle, you must create a bootable volume on a drive before installing an OS. The system does not recognize a drive unless it has a volume on it created by the HBA. If there is more than a single volume on the drive you intend to use as the boot drive, the volume that the OS will be installed on should be set as the boot device.

1. **Launch Oracle System Assistant.**

   See "Launching Oracle System Assistant" on page 101.

   The Oracle System Assistant System Overview screen appears.

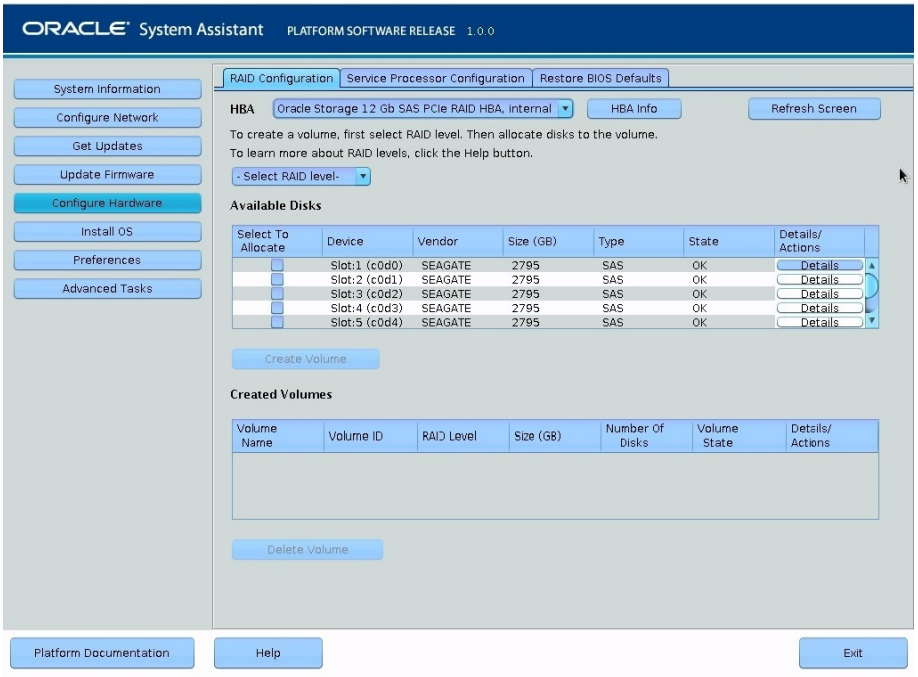
2. **In the System Overview screen, verify that the BIOS Mode is set to the boot mode (UEFI or Legacy BIOS) that you plan to use when you install the operating system.**

   Note - The BIOS mode used for the RAID configuration must match the BIOS boot mode of the operating system with which you intend to use the RAID configuration. Not all supported operating systems support UEFI Boot Mode. For a list of operating systems that support UEFI Boot Mode, see "Legacy BIOS and UEFI" on page 36. To switch between UEFI BIOS mode and Legacy BIOS mode, or vice versa, see the *Oracle X5 Series Servers Administration Guide* at `https://www.oracle.com/goto/x86admindiag/docs`.

3. **Click the Configure Hardware button, and then select the RAID Configuration tab.**

   The RAID Configuration screen appears. The Created Volumes list shows any existing volumes.

4. **In the HBA list box, select Oracle Storage 12 Gb SAS PCIe RAID HBA, Internal.**

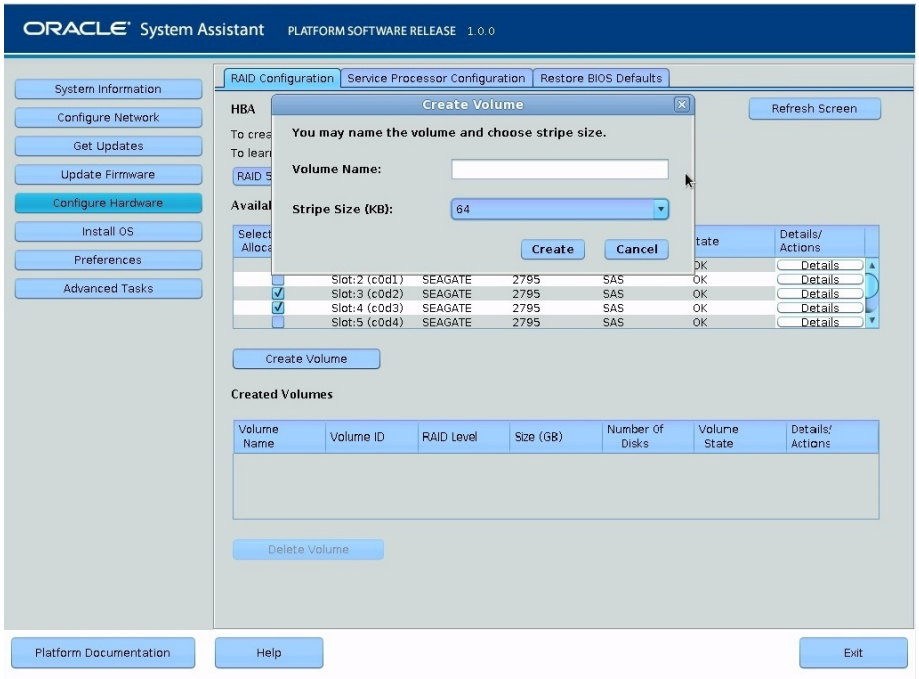


5. **In the Select RAID Level list box, select the desired RAID level.**

   Oracle System Assistant supports RAID 0, RAID 1, RAID 5, and RAID 10.

6. **In the Available Disks table, select the storage drives that you want to add to the RAID volume, and then click the Create Volume button.**

The Create Volume dialog box appears.



7. In the Create Volume dialog box:

a. (Optional) Enter the Volume Name.

Entering a volume name is optional. If you do not name the volume, Oracle System Assistant creates a volume without a name.

b. Select the volume Stripe Size or accept the default stripe size.

c. Click Create.

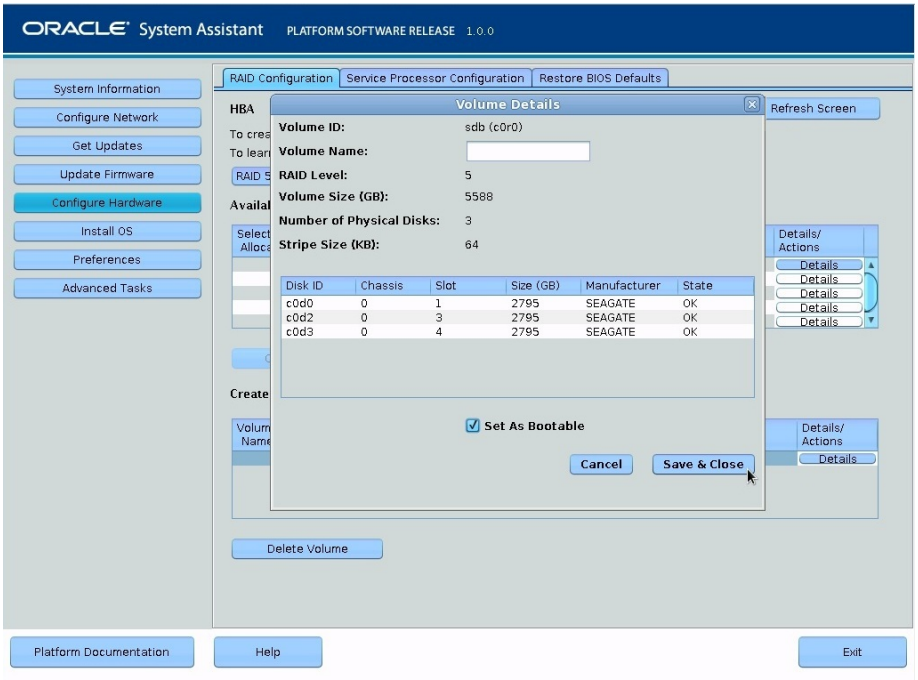
The Creating RAID Volume information box appears.

After the volume is created, it is displayed in the Created Volumes table.

8. If you plan to install on OS on the volume, set it as bootable using the following steps:

a. In the Details/Actions column of the Created Volumes table, click the Details button for the volume you want to set as bootable.

The Volume Details dialog box appears.



b. (Optional) In the Volume Name field, enter a volume name or modify it.

If you did not enter a volume name earlier, the Volume Details dialog box gives you a second chance to do so. If you entered a volume name earlier, you can modify it here; however, you cannot delete the name entirely.

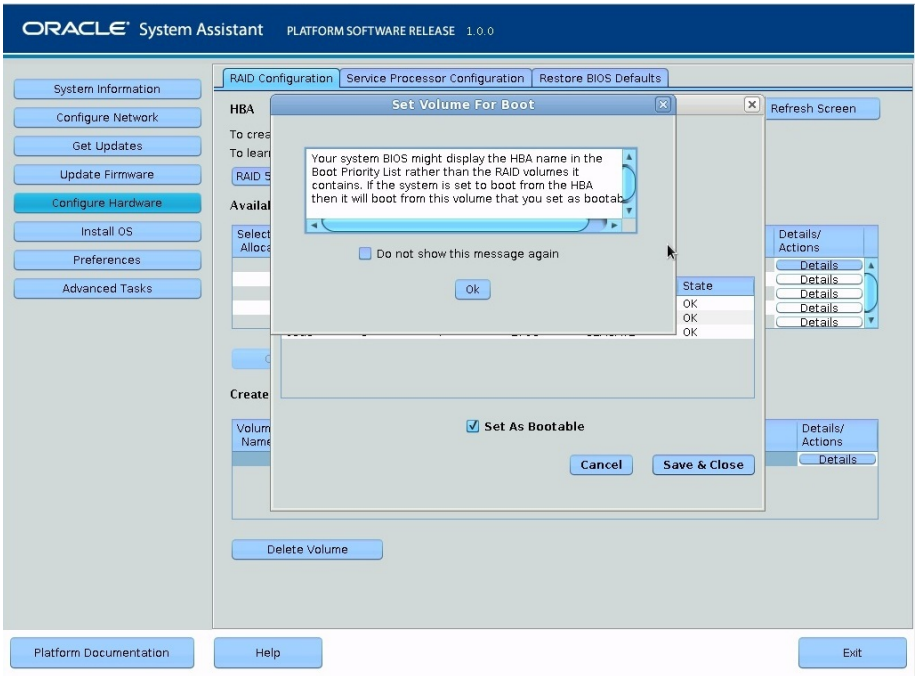
Note - Naming the volume is optional. If you do not name the volume, Oracle System Assistant creates a volume without a name. Additionally, if at any time you want to change the volume name, you can do so by clicking on the Details button in the Created Volumes table; however, once a volume name is assigned, you cannot delete it.

---

c. Select the Set As Bootable check box.

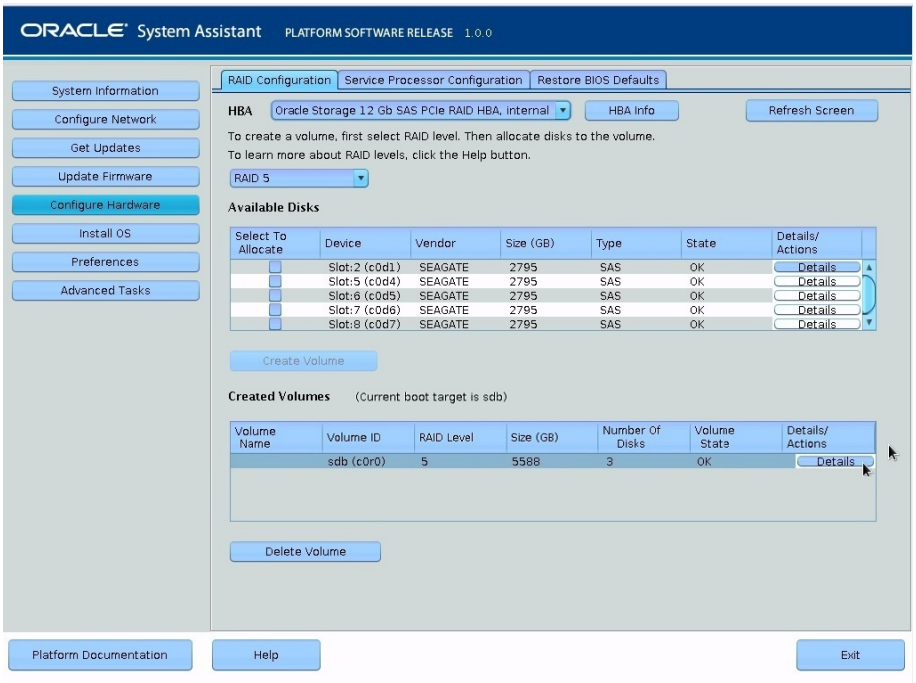
d. Click Save & Close.

The Set Volume For Boot confirmation dialog appears.



e. Click OK.

The RAID Configuration screen appears and lists the RAID volume as the current boot device.



9. **To designate a disk as a global hot spare, perform the following steps; otherwise, proceed to Step 10.**

   a. **In the Details/Actions column of the Available Disks table, click the Details button for the disk you want to set as a global hot spare.**

      The Disk Details dialog box appears.

   b. **Select the Set as Hot Spare check box.**

Note - You can create a maximum of 256 hot spares.

   c. **Click Save.**

      The Disk Details dialog box closes.

10. **To delete a volume, perform the following steps:**
    a. **Select the volume you want to delete in the Created Volumes table.**
    b. **Click the Delete Volume button.**
11. **To quit Oracle System Assistant, click Exit.**

Configuring RAID Using the BIOS RAID Configuration Utilities

If you choose not to use Oracle System Assistant to configure RAID, you can use the BIOS RAID configuration utilities that reside in the HBA firmware. The BIOS RAID configuration utilities support either UEFI BIOS Boot Mode or Legacy Bios Boot Mode. A separate utility is provided for each boot mode.

For instructions on how to use these utilities, see the following sections:

- “Configure RAID in UEFI Boot Mode” on page 121
- “Configure RAID in Legacy BIOS Boot Mode” on page 127

Related Information

- “RAID Configuration Requirements” on page 112
- “Configuring Storage Drives Into RAID Volumes Using Oracle System Assistant” on page 114

▼ Configure RAID in UEFI Boot Mode

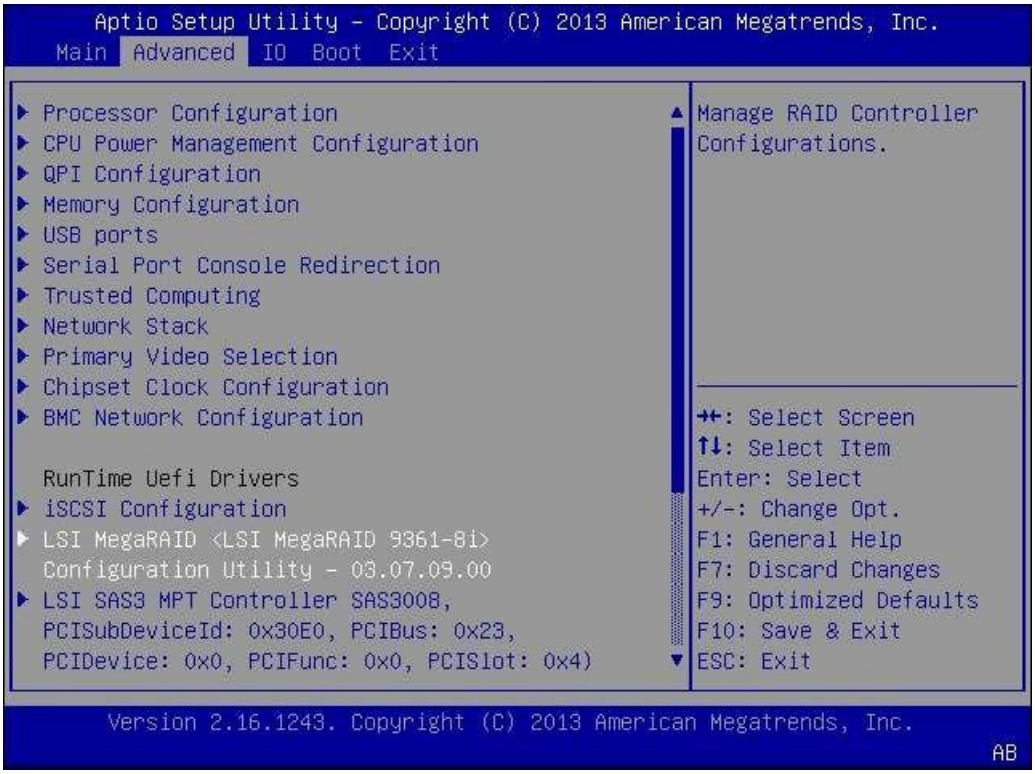
1. **Access the host console locally or through Oracle ILOM.**
   For instructions, see “Access Serial Remote Host Console (CLI)” on page 97.
2. **Power on or reset the server.**
   For example, to reset the server:
   - **From the local server,** press the Power button (approximately 1 second) on the front panel of the server to power off the server, and then press the Power button again to power on the server.

- **From the Oracle ILOM web interface,** select Host Management → Power Control, and then select Reset from the Select Action list box. Click Save, and then click OK.
- **From the Oracle ILOM CLI,** type: `reset /System`

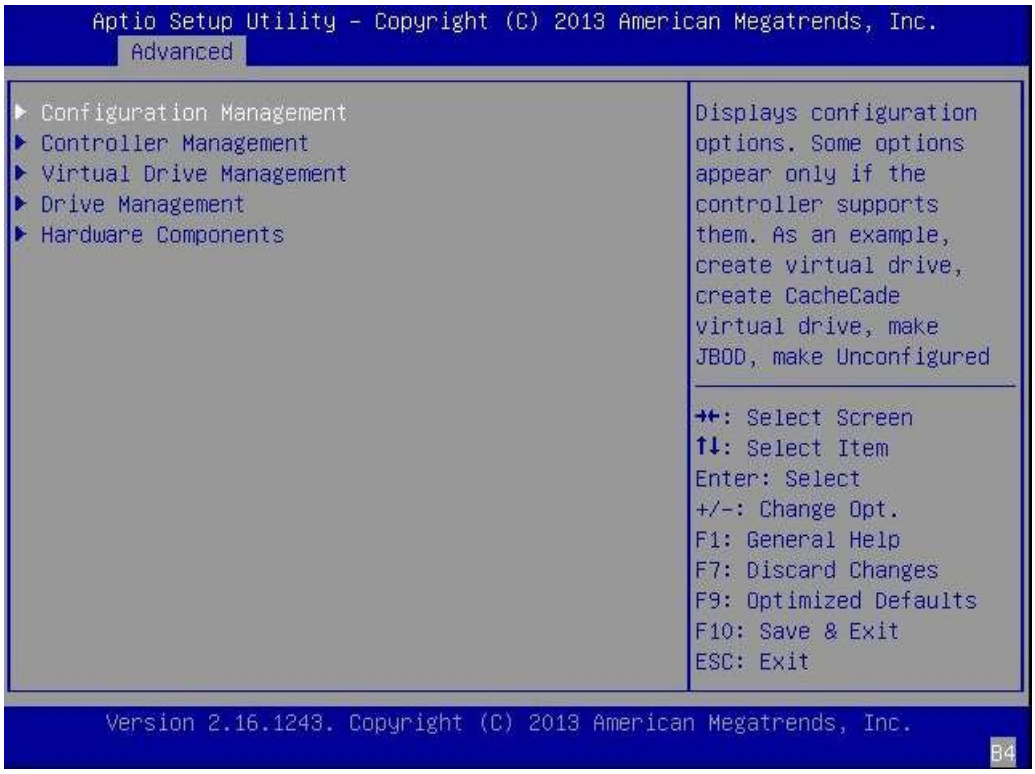
The power-on self-test (POST) sequence begins.

3. **When prompted in the BIOS screen, press the F2 function key (Ctrl+E from a serial connection) to launch the BIOS Setup Utility.**

4. **Navigate to the Advanced menu, select the LSI MegaRAID Configuration Utility, and then press Enter.**

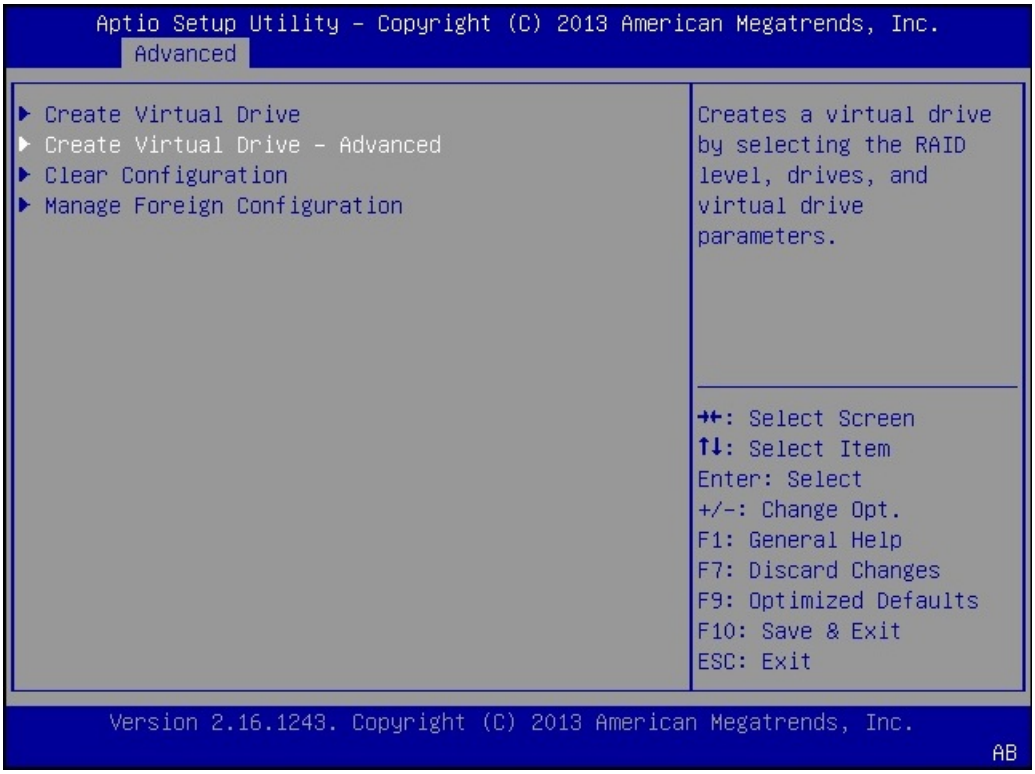


5. **Select Configuration Management, and then press Enter.**



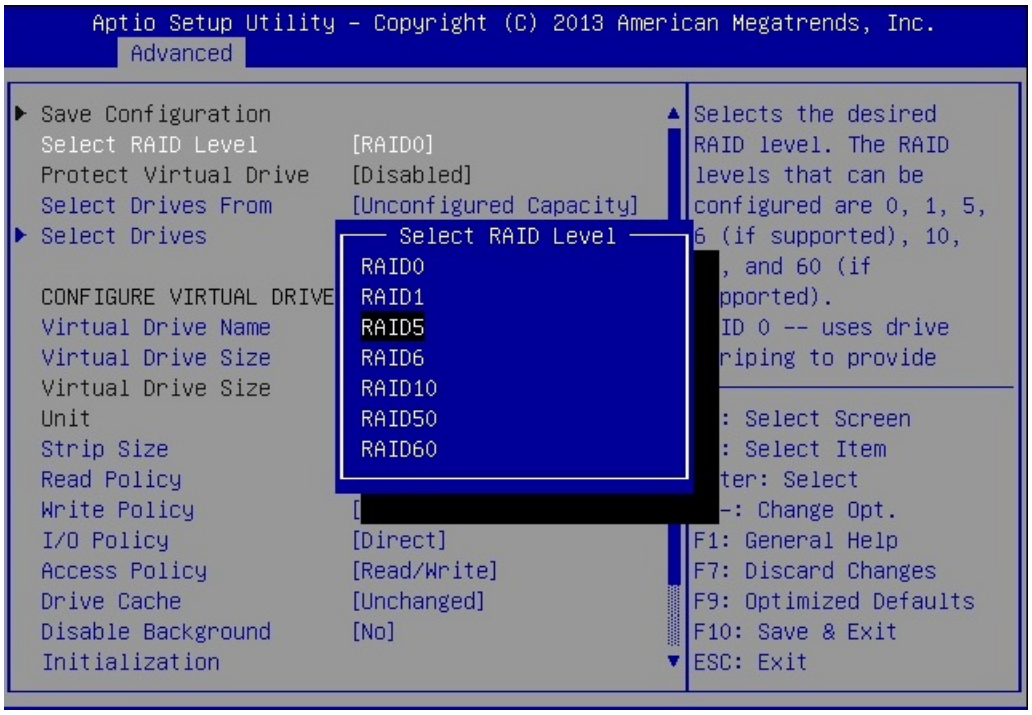
6. **Select Create Virtual Drive – Advanced, and then press Enter.**

Note - Alternatively, you can select the Create Virtual Drive option, which provides a RAID configuration wizard with no advanced settings.



7. **Select the Select RAID Level option, and then press Enter.**

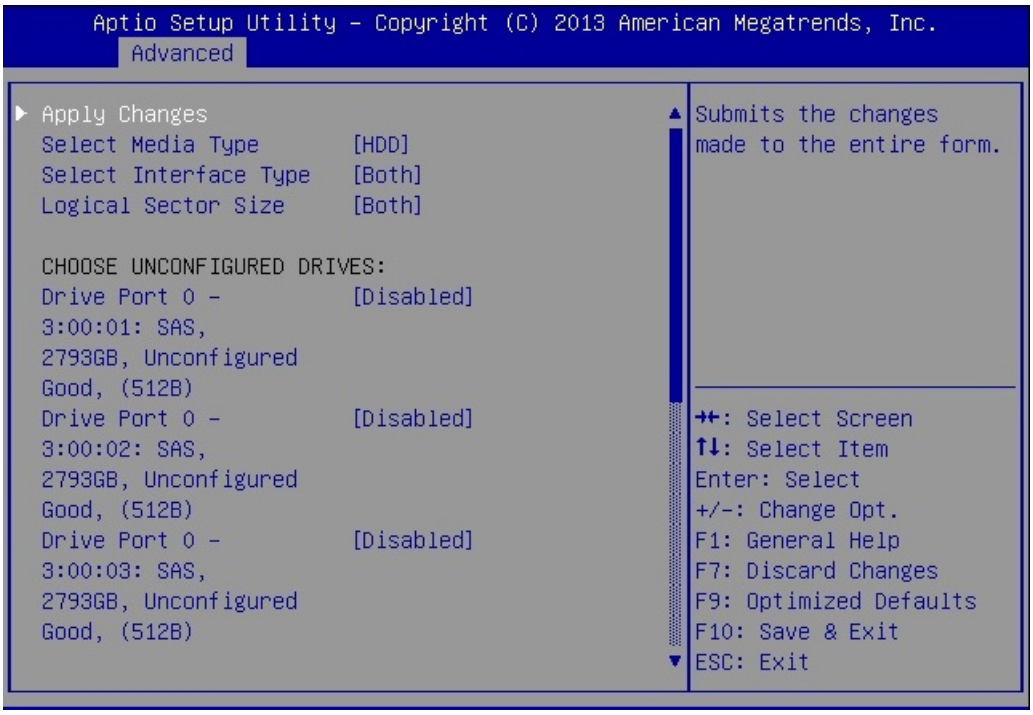
The Select RAID Level dialog box appears.



8. **Select the desired RAID level from the dialog box, and then press Enter.**

9. **Select the Select Drives option, and then press Enter.**

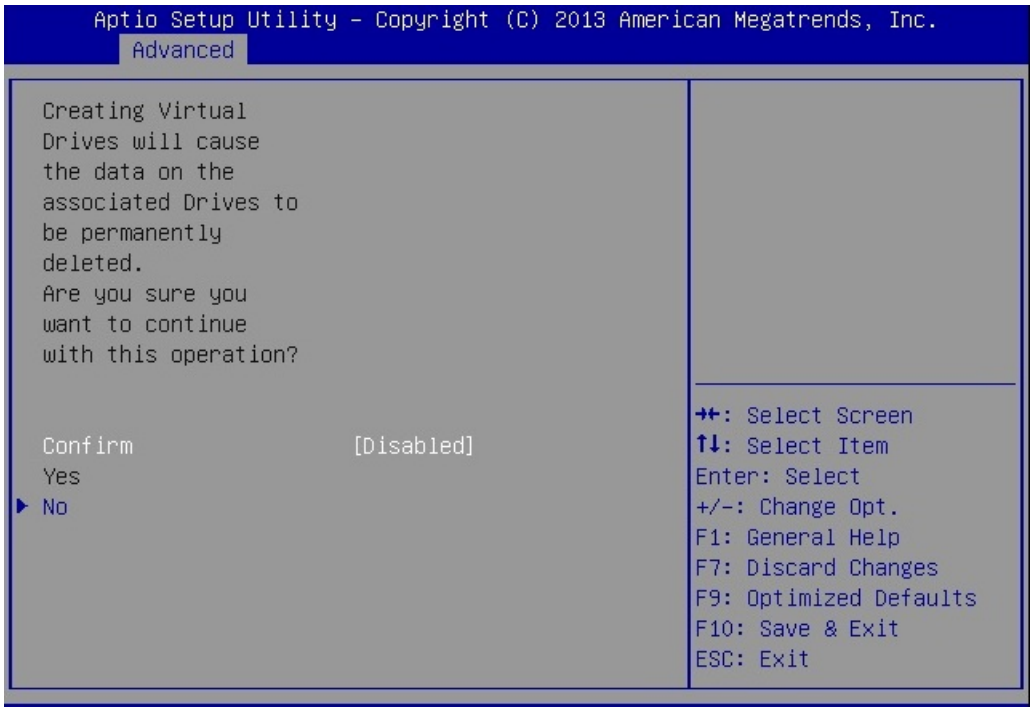
The Drive Selection screen appears.



10. **In the Drive Selection screen, select the media type, the interface type, and the drives to be included in the RAID configuration.**

11. **Select Apply Changes, and then press Enter.**

The RAID Configuration Confirmation screen appears.



12. **Confirm that you want to proceed, and then press Enter.**

    This completes the RAID configuration.

▼ Configure RAID in Legacy BIOS Boot Mode

The BIOS RAID configuration utilities reside in the HBA firmware. Use this procedure when:

- You want to configure RAID on the intended OS installation hard drive and the server does not have Oracle System Assistant or you do not want to use it.
- You want to create a RAID volume level 6, 50, or 60 using the storage drive on which you plan to install the operating system.

Note - Oracle System Assistant supports RAID 0, 1, 5, and 10 for the Oracle Storage 12 Gb/s SAS PCIe RAID HBA, Internal.

- You do not want to create a RAID volume, but the intended OS installation hard drive has not been initialized.

1. **Create one or more RAID volumes (virtual drives).**
2. **If you created more than one virtual drive, make one virtual drive bootable.**
   For instructions, refer to "Make a RAID Volume Bootable Using the LSI MegaRAID Configuration Utility" on page 128.

Note - The *MegaRAID SAS Software User's Guide* does not include instructions for making a virtual drive bootable.

Make a RAID Volume Bootable Using the LSI MegaRAID Configuration Utility

Before you begin this procedure, create at least one virtual drive, or RAID volume, using the BIOS Configuration Utility (see "Configure RAID in Legacy BIOS Boot Mode" on page 127).

Perform this procedure to make a RAID volume (virtual drive) bootable if you created more than one RAID volume using the BIOS Configuration Utility on the server. You do *not* need to perform this procedure if any of the following is true:

- You used Oracle System Assistant to create a volume and to make the volume bootable.
- You only created one virtual drive using the BIOS RAID configuration utilities.

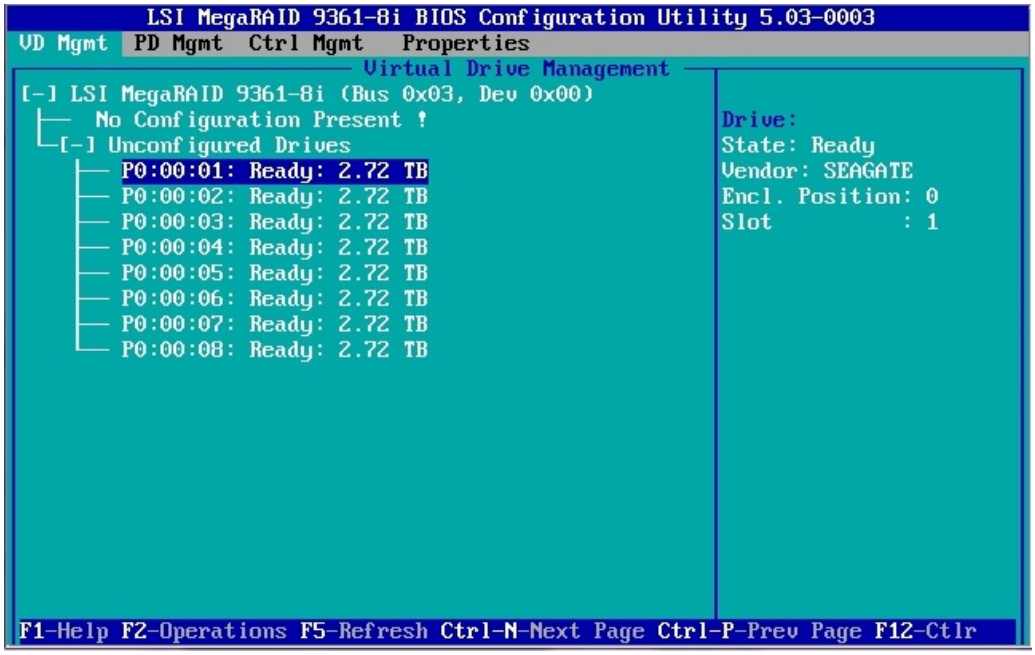
1. **Access the host console locally or through Oracle ILOM.**
   For instructions, see "Access Serial Remote Host Console (CLI)" on page 97.
2. **Reset or power on the server.**
   For example, to reset the server:
   - **From the local server,** press the Power button (approximately 1 second) on the front panel of the server to power off the server, and then press the Power button again to power on the server.

- **From the Oracle ILOM web interface,** select Host Management → Power Control, and then select Reset from the Select Action list box. Click Save, and then click OK.
- **From the Oracle ILOM CLI,** type: `reset /System`

The power-on self-test (POST) sequence begins.

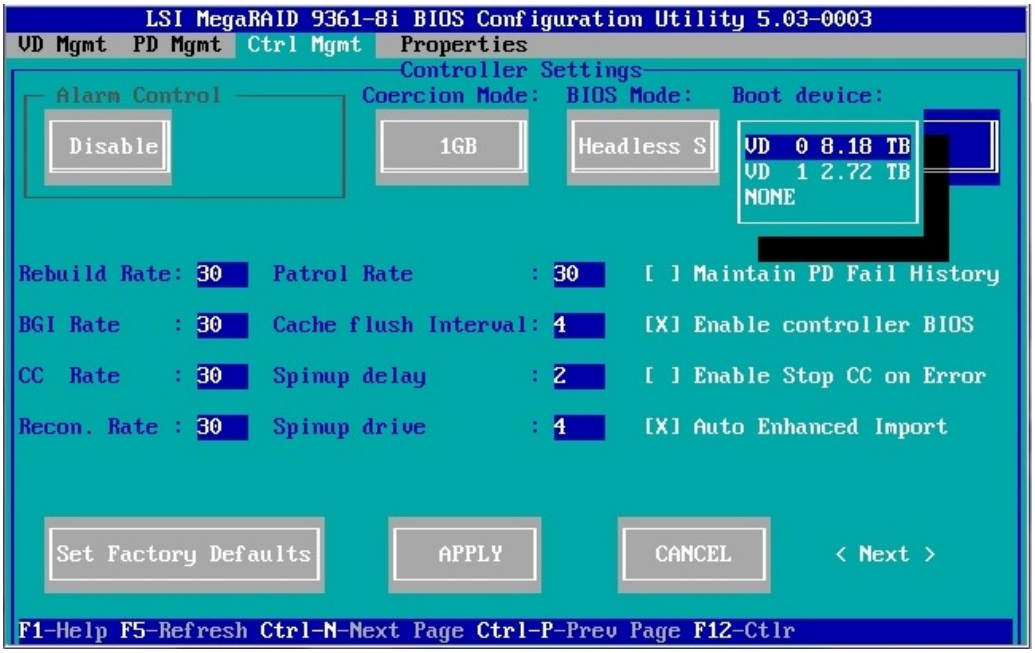
3. **While the BIOS is running the POST, and upon seeing the prompt `Press <Ctrl><H> for WebBIOS...`, immediately press the Ctrl+H key combination to access the LSI MegaRAID Utility.**

   The Virtual Drive Management screen appears.



4. **Press Ctrl-N twice to navigate to the Ctrl Mgmt menu.**

The Controller Settings screen appears.



5. **Use the Down arrow to navigate to the Boot Device field.**
6. **Select the virtual drive that you want to make bootable, and then press Enter.**
7. **Navigate to the Apply button, and then press Enter.**
8. **Press the Esc key to exit the LSI MegaRAID Utility.**

Configuring the Preinstalled Oracle Solaris Operating System

This section describes how to configure the optional Oracle Solaris 11.2 SRU5 operating system (OS) that is preinstalled on your server, if ordered. The preinstalled OS image contains all of the necessary drivers for the server.

Note - For more up-to-date information about supported versions of the Oracle Solaris operating system, refer to the *Oracle Server X5-2 Product Notes* at `https://www.oracle.com/goto/x5-2/docs`.

Description	Links
Review the BIOS boot mode restriction on the Oracle Solaris 11.2 SRU5 preinstalled image.	"Preinstalled Oracle Solaris Image BIOS Boot Mode Restriction" on page 131
Review the operating system options.	"Operating System Options" on page 132
Gather the information you will need during the configuration process.	"Oracle Solaris Configuration Worksheet" on page 132
Configure the preinstalled Oracle Solaris operating system.	"Configure the Preinstalled Oracle Solaris Operating System" on page 134
Review the Oracle Solaris documentation.	"Oracle Solaris Operating System Documentation" on page 137

Related Information

- "Installation Procedure Overview " on page 13

Preinstalled Oracle Solaris Image BIOS Boot Mode Restriction

The Oracle Solaris 11.2 SRU5 operating system (OS) image is preinstalled on the server (if ordered) in the Legacy BIOS Boot Mode. Therefore, you must boot the server in Legacy BIOS

Boot Mode (the default) to make use of the preinstalled image. If you boot the server in the UEFI Boot Mode, the server will not boot the Oracle Solaris preinstalled image and it cannot be used. If you want to switch to UEFI Boot Mode and use Oracle Solaris 11.2 SRU5, you must perform a fresh installation of the Oracle Solaris OS.

Related Information

- "Legacy BIOS and UEFI" on page 36

Operating System Options

The server supports several operating systems. Therefore, you do not have to use the preinstalled version of the Oracle Solaris operating system on your server. If you want to install a fresh or newer version of the Oracle Solaris operating system or a different operating system such as Oracle Linux or other Linux, Oracle VM, Windows Server, or VMware ESXi, you can do so, provided it is a supported version. For a list of supported operating systems, refer to the *Oracle Server X5-2 Product Notes* at `https://www.oracle.com/goto/x5-2/docs`.

Oracle Solaris Configuration Worksheet

Before you begin configuring the operating system, use the configuration worksheet in following table to gather the information that you will need. You need to collect only the information that applies to your application of the system.

TABLE 9 Worksheet for Oracle Solaris Operating System Configuration

Information for Configuration		Description and Example	Your Answers: Defaults (*)
Language		Select from the list of available languages for the OS.	English*
Locale		Select your geographic region from the list of available locales.	English (C - 7-bit ASCII)*
Terminal		Select the type of terminal that you are using from the list of available terminal types.	
Network connection		Is the system connected to a network?	■ Networked ■ Non-networked*
DHCP		Can the system use Dynamic Host Configuration Protocol (DHCP) to configure its network interfaces?	■ Yes ■ No*
If you are not using DHCP, note the network address:	IP address	If you are not using DHCP, supply the IP address for the system.	

Information for Configuration		Description and Example	Your Answers: Defaults (*)
		Example: 192.168.100.1	
	Subnet	If you are not using DHCP, is the system part of a subnet? If yes, what is the netmask of the subnet? Example: 255.255.255.0	
Host name		Choose a host name for the system.	
Name service	Name service	If applicable, which name service should this system use?	■ NIS ■ DNS ■ LDAP ■ None*
	Domain name	Provide the name of the domain in which the system resides.	
	NIS	*If you chose NIS*, do you want to specify a name server, or let the installation program find one?	■ Specify One ■ Find One*
	DNS	*If you chose DNS*, provide IP addresses for the DNS server. You must enter at least one IP address, but you can enter up to three addresses. You can also enter a list of DNS domains to search when a DNS query is made. Search domain: Search domain: Search domain:	
	LDAP	*If you chose LDAP*, provide the following information about your LDAP profile: Profile name: Profile server: If you specify a proxy credential level in your LDAP profile, gather the following information: Proxy-bind Distinguished Name: Proxy-bind password:	
Default route		Do you want to specify a default route IP address, or let the OS installation program find one?	■ Specify one ■ Detect One ■ None*
Time zone		How do you want to specify your default time zone?	■ Geographic region* ■ Offset from GMT ■ Time zone file
Root password		Choose a `root` password for the system.	

Related Information

- “Configure the Preinstalled Oracle Solaris Operating System” on page 134
- “Oracle Solaris Operating System Documentation” on page 137

▼ Configure the Preinstalled Oracle Solaris Operating System

After you have completed the configuration worksheet, use the following procedure to configure the preinstalled Oracle Solaris operating system.

1. **If you are not already logged in to Oracle ILOM, log in either locally from a serial connection, or remotely from an Ethernet connection.**
   See “Connecting to Oracle ILOM” on page 83.

2. **Power on or reset the server, as follows:**

   - To power on the server, use one of the following methods:
     - **From the Oracle ILOM web interface,** select Host Management → Power Control, and then select Power On from the Select Action list box. Click Save, and then click OK.
     - **From the Oracle ILOM CLI,** type the following command from the prompt:

       ```
       -> start /System
       ```

       When prompted, type `y` to confirm:

       ```
       Are you sure you want to start /System (y/n)? y

       Starting /System
       ```
   - To reset the server, use one of the following methods:
     - **From the Oracle ILOM web interface,** select Host Management → Power Control, and then select Reset from the Select Action list box. Click Save, and then click OK.
     - **From the Oracle ILOM command-line interface,** type the following command from the prompt:

       ```
       -> reset /System
       ```

       When prompted, type `y` to confirm:

       ```
       Are you sure you want to reset /System (y/n)? y
       ```

   The server begins the boot process.

3. **Start the remote host console using one of the following methods:**

- **From the Oracle ILOM web interface,** select Remote Control → Redirection, and then click the Launch Remote Console button to launch video console redirection.
- **From the Oracle ILOM CLI, type:**

  ```
  -> start /HOST/console
  ```

  When prompted, type `y` to confirm:

```
Are you sure you want to start /HOST/console (y/n)? y

Serial console started.
```

After the server boots, the GRUB menu appears.

```
GNU GRUB Version 1.99 ,5.11.0.175.2.3.0.0.0

Oracle Solaris 11.2 SRU5 - Serial Port ttya
Oracle Solaris 11.2 SRU5 - Graphics Adapter
```

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

4. **From the GRUB menu, use the up and down arrow keys to select the display option, and then press Enter.**

   You can choose whether you want to continue to direct the display to the serial output or direct the display to a device connected to the video port.

   - **If you are using the Oracle ILOM CLI (or a serial port connection), select the serial port option, and press Enter:**

     ```
     Oracle Solaris 11.2 SRU5 - Serial Port ttya
     ```

   - **If you are using the Oracle ILOM Remote System Console Plus (or a direct video connection), select the video port option, and press Enter:**

     ```
     Oracle Solaris 11.2 SRU5 - Graphics Adapter
     ```

Note - If you choose to display output to the video port, you must connect a device to the VGA connector on the server and an input device (USB keyboard or mouse) and then complete the configuration from that device. See "Cabling the Server and Applying Power" on page 75 for information about attaching devices to the server. You can also use the Oracle ILOM Remote System Console Plus feature, which acts as a remote KVM.

5. **When the Oracle Solaris configuration begins, follow the on-screen prompts to configure the operating system.**
   Use the information you collected earlier about your organization and network environment. The screens that are displayed will vary, depending on the method that you chose for assigning network information to the server (DHCP or static IP address).

6. **Complete the configuration procedure by entering a system root password (*required*) and your information for a user account.**

   Note - For increased security, create a standalone user account.

7. **When Oracle Solaris configuration is complete, end your console session using one of the following methods:**

   - **From the Oracle ILOM web interface**, close the Remote System Console Plus window, and then log out from Oracle ILOM.
   - **From the Oracle ILOM CLI**, press Esc followed by the open parenthesis (character (**Shift+9**), and then log out of Oracle ILOM.

Related Information

- “Connecting to Oracle ILOM” on page 83
- “Oracle Solaris Operating System Documentation” on page 137

Reinstalling the Oracle Solaris Operating System

If you want to reinstall the Oracle Solaris OS or install a different version of the Oracle Solaris OS, refer to the relevant Oracle Solaris installation guide.

You can download software for the Oracle Solaris OS from the following sites:

- To download the Oracle Solaris operating system, go to:

  `http://www.oracle.com/technetwork/server-storage/solaris11/downloads/index.html`
- To download Oracle Solaris patches, go to:

  `https://support.oracle.com`

Related Information

- “Configure the Preinstalled Oracle Solaris Operating System” on page 134

- “Oracle Solaris Operating System Documentation” on page 137

Oracle Solaris Operating System Documentation

Oracle Solaris operating system documentation is available from the Oracle documentation web site at:

https://docs.oracle.com/cd/E36784_01/index.html

Find the following documents in the Oracle Solaris 11.2 Information Library. Within the documents, follow instructions specific to x86 systems, where they are specified.

- For installation information, refer to these documents:
  - *Installing Oracle Solaris 11.2 Systems*
  - *Creating a Custom Oracle Solaris 11.2 Installation Image*
- For information about upgrading your system, refer to *Adding and Updating Oracle Solaris 11.2 Software Packages*.

For patch and other late-breaking information about Oracle Solaris that apply specifically to the server, refer to the *Oracle Server X5-2 Product Notes* at:

https://www.oracle.com/goto/x5-2/docs.

For patches and instructions for Oracle Solaris, go to the My Oracle Support web site at the following location and navigate to the appropriate page:

https://support.oracle.com

Related Information

- “Oracle Solaris Configuration Worksheet” on page 132
- “Configure the Preinstalled Oracle Solaris Operating System” on page 134

Configuring the Preinstalled Oracle Linux Operating System

This section describes how to configure the optional Oracle Linux 6.5 operating system (OS) that is preinstalled on your server, if ordered. The preinstalled OS image contains all of the necessary drivers for the server.

Note - For more up-to-date information about available versions of the Oracle Linux operating system, refer to the *Oracle Server X5-2 Product Notes* at `https://www.oracle.com/goto/x5-2/docs`.

Description	Links
Review the BIOS boot mode restriction on the Oracle Linux 6.5 preinstalled image.	“Preinstalled Oracle Linux Image BIOS Boot Mode Restriction” on page 140
Review the operating system options.	“Operating System Options” on page 140
Gather the information you will need during the installation process.	“Oracle Linux Configuration Worksheet” on page 140
Configure the preinstalled Oracle Linux operating system.	“Configure the Preinstalled Oracle Linux Operating System” on page 141
Update and register the Oracle Linux operating system.	“Register and Update Your Oracle Linux Operating System” on page 144
Review the Oracle Linux documentation.	“Oracle Linux Operating System Documentation” on page 144

Related Information

- “Installation Procedure Overview ” on page 13

Preinstalled Oracle Linux Image BIOS Boot Mode Restriction

The Oracle Linux 6.5 operating system (OS) image is preinstalled on the server (if ordered) in the Legacy BIOS Boot Mode. Therefore, to use the preinstalled image, you must boot the server in the Legacy BIOS Boot Mode (the default). If you boot the server in the UEFI Boot Mode, the server will not boot the Oracle Linux preinstalled image and it cannot be used. If you want to switch to UEFI Boot Mode and use Oracle Linux 6.5, you must perform a fresh installation of the Oracle Linux OS.

Operating System Options

The server supports several operating systems. Therefore, you do not have to use the preinstalled version of the Oracle Linux operating system on your server. If you want to install a fresh or newer version of the Oracle Linux operating system or a different operating system such as Oracle Solaris, Oracle VM, Windows Server, or VMware ESXi, you can do so, provided it is a supported version. For a list of supported operating systems, refer to the *Oracle Server X5-2 Product Notes* at `https://www.oracle.com/goto/x5-2/docs`.

Oracle Linux Configuration Worksheet

Gather the following information and have it ready for when you begin the configuration process. You need to collect only the information that applies to your organization and network environment.

TABLE 10 Worksheet for Oracle Linux Operating System Configuration

Information for Configuration	Description and Example	Your Answers
Oracle Linux root password	Choose a root password that you will use to replace the factory default password; there are no restrictions on the characters or length.	
Network interface	Choose an interface on the server (`eth#`) that will be connected to your network. (Once Linux is up and running, the `ifconfig -a` command can be used to help identify server network ports.)	
Network configuration (if you are not using DHCP)	Supply the IP address for the server.	

Information for Configuration	Description and Example	Your Answers
	Example: 198.51.100.1	
	If the server is part of a subnet, supply the netmask of the subnet. Example: 255.255.255.0	
	If the server is accessed through a gateway, supply the IP address of the gateway.	
	Supply the IP address for the domain name server (DNS). Only one DNS is required.	

Related Information

- "Configure the Preinstalled Oracle Linux Operating System" on page 141
- "Oracle Linux Operating System Documentation" on page 144

Configure the Preinstalled Oracle Linux Operating System

After you have completed the configuration worksheet, use the following procedure to configure the preinstalled Oracle Linux operating system.

1. **If you are not already logged in to Oracle ILOM, log in either locally from a serial connection, or remotely from an Ethernet connection.**

   See "Connecting to Oracle ILOM" on page 83.

2. **Power on or reset the server, as follows:**

   - To power on the server, use one of the following methods:
     - **From the Oracle ILOM web interface,** select Host Management → Power Control, and then select Power On from the Select Action list box. Click Save, and then click OK.
     - **From the Oracle ILOM CLI,** type the following command from the prompt:

       ```
       -> start /System
       ```

       When prompted, type `y` to confirm:

       ```
       Are you sure you want to start /System (y/n)? y

       Starting /System
       ```
   - To reset the server, use one of the following methods:

- **From the Oracle ILOM web interface,** select Host Management → Power Control, and then select Reset from the Select Action list box. Click Save, and then click OK.
- **From the Oracle ILOM CLI,** type the following command from the prompt:

  ```
  -> reset /System
  ```

  When prompted, type `y` to confirm:

  ```
  Are you sure you want to reset /System (y/n)? y

  Performing hard reset on /System
  ```

The server begins the boot process.

3. **Start the remote host console using one of the following methods.**

   - **From the Oracle ILOM web interface,** select Remote Control → Redirection, and then click the Launch Remote Console button to launch video console redirection.
   - **From the Oracle ILOM CLI,** type the following command at the CLI prompt:

     ```
     -> start /HOST/console
     ```

     When prompted, type `y` to confirm:

     ```
     Are you sure you want to start /HOST/console (y/n)? y
     Serial console started.
     ```

     After the server boots, the GRUB menu appears. From the GRUB menu, you can choose whether to use the Oracle Linux Server Unbreakable Enterprise Kernel or a Red Hat compatible kernel.

     ```
     GNU GRUB version 0.97 (640K lower / 1703968K upper memory)

     Oracle Linux Server Unbreakable Enterprise Kernel (3.8.13-16.2.1.e16uek.x86_64)
     Oracle Linux Server Red Hat Compatible Kernel (2.6.32-431.e16.x86_64)
     ```

4. **To pause at the GRUB menu, press a key other than Enter; otherwise, in five seconds the highlighted installation option will be used.**

5. **From the GRUB menu, use the up and down arrow keys to select an installation option, and then press Enter.**

   - **Unbreakable Enterprise Kernel. For example:**

     ```
     Oracle Linux Server Unbreakable Enterprise Kernel (3.8.13-16.2.1.el6uek.
     x86_64)
     ```

   - **Red Hat Compatible Kernel. For example:**

```
Oracle Linux Server Red Hat Compatible Kernel (2.6.32-431.el6.x86_64)
```

Note - Use Oracle Linux with the Unbreakable Enterprise Kernel for all enterprise applications.

6. **Log in to the Oracle Linux OS.**

   After you have selected an installation option, Oracle Linux starts and the Linux system login appears. For example:

   systemname login:

   For the first time login, use the **root** account and factory default password (**root**).

7. **After you have logged in, complete the configuration of your server using standard Linux tools. Tasks include:**

   - For security, change the factory default password for **root**.
   - Configure your server for the network (if DHCP is not used). See "Oracle Linux Configuration Worksheet" on page 140.
   - Configure a proxy, as needed, for Internet access.
   - Register and update your server. See "Register and Update Your Oracle Linux Operating System" on page 144.
   - Install desired packages.

8. **When configuration is complete, end your console session using one of the following methods:**

   - **From the Oracle ILOM web interface,** close the Remote System Console Plus window and log out of Oracle ILOM.
   - **From the Oracle ILOM CLI,** press Esc followed by the open parenthesis (character (Shift+9), and then log out of Oracle ILOM.

Related Information

- "Connecting to Oracle ILOM" on page 83
- "Oracle Linux Configuration Worksheet" on page 140

▼ Register and Update Your Oracle Linux Operating System

The Unbreakable Linux Network (ULN) is a comprehensive resource for Oracle Linux support subscribers, offering access to Linux software patches, updates and fixes, and information on updates and support policies.

If you are a licensed Oracle customer with an active Oracle Linux support subscription, use your Oracle Linux CSI (customer support identifier) number to register your server on ULN.

1. **If you do not already have one, create your ULN account. Use your email address and CSI and create a password.**

   https://linux.oracle.com/register

   Once your account is configured, use your email address and password to log in to ULN.

2. **Once you have an account, run the command below on the server as the root user in a terminal window or on the command line:**

   `uln_register`

   The `uln_register` wizard collects machine information and uploads it to Oracle.

   Executing the above command chooses the default channel of *ol6_<arch>_latest*.

   The *_latest* channels provide RPM Packet Managers (RPM) for all the packages in the distribution, including those errata also provided in the *_patch* channels. The version of any RPM downloadable on the *_latest* channels is always the most recent available. You can subscribe to other channels using the web interface, after you have registered.

   For more information about the registration process and about the Oracle Unbreakable Linux Network, see:

   https://linux.oracle.com/

Oracle Linux Operating System Documentation

Oracle Linux 6.5 operating system documentation is available from the Oracle documentation web site at:

https://docs.oracle.com/cd/E37670_01/index.html

Configuring the Preinstalled Oracle VM Server Software

This section describes how to configure the optional Oracle VM Server 3.3 software that is preinstalled on the server, if ordered. The preinstalled image contains all of the necessary drivers for the server.

Note - For more up-to-date information about supported versions of the Oracle VM, see the *Oracle Server X5-2 Product Notes* at: `https://www.oracle.com/goto/x5-2/docs`.

Description	Links
Review the BIOS boot mode restriction on the Oracle VM Server 3.3 preinstalled image.	“Preinstalled Oracle VM Server Image BIOS Boot Mode Restriction” on page 146
Learn about preinstalled Oracle VM Server and Oracle VM Manager compatibility requirements.	“Preinstalled Oracle VM Server Compatibility Requirements” on page 146
Review the operating system options.	“Operating System Options” on page 146
Gather the information you will need during the installation process.	“Oracle VM Server Configuration Worksheet” on page 146
Configure the preinstalled Oracle VM Server software.	“Configure the Preinstalled Oracle VM Server” on page 147
Review the Oracle VM documentation.	“Oracle VM Documentation” on page 151

Related Information

- “Installation Procedure Overview ” on page 13

Preinstalled Oracle VM Server Image BIOS Boot Mode Restriction

The Oracle VM Server 3.3 software image is preinstalled on the server in the Legacy BIOS Boot Mode. Therefore, to use the preinstalled image, you must boot the server in the Legacy BIOS Boot Mode (the default). If you boot the server in the UEFI Boot Mode, the server will not boot the Oracle VM preinstalled image and it cannot be used. Oracle VM 3.3 does not support UEFI. If you want to switch to UEFI Boot Mode, you must install an operating system that supports UEFI.

Preinstalled Oracle VM Server Compatibility Requirements

If you use the Oracle VM Server software that is preinstalled on your system (if ordered), you must ensure that it is compatible with the version of Oracle VM Manager that you use to manage your Oracle VM infrastructure. If necessary to achieve compatibility, upgrade your Oracle VM Manager so that it is the same version.

For information about upgrading the Oracle VM Manager software, refer to the *Oracle VM Installation and Upgrade Guide*. The Oracle VM documentation is available at:

https://docs.oracle.com/cd/E50245_01/index.html

Operating System Options

The server supports several operating systems. Therefore, you do not have to use the preinstalled version of the Oracle VM Server software on your server. If you want to install a fresh or newer version of the Oracle VM Server software or a different operating system such as Oracle Linux or other Linux, Oracle Solaris, Windows Server, or VMware ESXi, you can do so, provided it is a supported version. For a list of supported operating systems, refer to the *Oracle Server X5-2 Product Notes* at https://www.oracle.com/goto/x5-2/docs.

Oracle VM Server Configuration Worksheet

Before you begin configuring the preinstalled Oracle VM Server, use the worksheet in this section to gather the information you will need.

TABLE 11 Worksheet for Oracle VM Server Configuration

Information for Configuration		Description and Example	Your Answers
Oracle VM Server passwords	Root	Choose a root password; there are no restrictions on the characters or length.	
	Oracle VM agent	Choose an Oracle VM agent password; password must be at least six characters.	
Network interface		Supply the interface to be used to manage the server.	
Network configuration	Static IP address	Supply the IP address for the server. A static IP address is required. Example: 198.51.100.1	
	Netmask	If the server is part of a subnet, supply the netmask of the subnet. Example: 255.255.255.0	
	Gateway	If the server is accessed via a gateway, supply the IP address of the gateway.	
	DNS server	Supply the IP address for the domain name server (DNS). Only one DNS is required.	
Host name		Supply the fully qualified domain name for the server. Example: myhost.us.example.com	

▼ Configure the Preinstalled Oracle VM Server

These instructions describe only how to configure the preinstalled Oracle VM Server on your server. Oracle VM also has other components, such as Oracle VM Manager, that must be installed or already running to support the virtual machine environment.

1. **If you are not already logged in to Oracle ILOM, log in locally from a serial connection or remotely using an Ethernet connection.**

   See “Connecting to Oracle ILOM” on page 83.

2. **Power on or reset the server, as follows:**

   - **To power on the server,** use one of the following methods:
     - **From the Oracle ILOM web interface,** select Host Management → Power Control, and then select Power On from the Select Action list box. Click Save, and then click OK.
     - **From the Oracle ILOM CLI**, type:

```
-> start /System
```

When prompted, enter `y` to confirm:

```
Are you sure you want to start /System (y/n)? y

Starting /System
```

- **To reset the server,** use one of the following methods:
  - **From the Oracle ILOM web interface,** select Host Management → Power Control, and then select Reset from the Select Action list box. Click Save, and then click OK.
  - **From the Oracle ILOM CLI**, type:

    ```
    -> reset /System
    ```

    When prompted, enter `y` to confirm:

    ```
    Are you sure you want to reset /System (y/n)? y

    Performing hard reset on /System
    ```

The server begins the boot process.

3. **Start the remote host console using one of the following methods.**

   - **From the Oracle ILOM web interface,** select Remote Control → Redirection, and then click the Launch Remote Console button to launch video console redirection.
   - **From the Oracle ILOM CLI,** type:

     ```
     -> start /HOST/console
     ```

   When prompted, type `y` to confirm:

   ```
   Are you sure you want to start /HOST/console (y/n)? y

   Serial console started.
   ```

   After the server boots, the GRUB menu appears.

   ```
   GNU GRUB version 0.97 (615K lower / 1957644K upper memory)

   Oracle VM Server-ovs (xen-4.3.0 3.8.13-26.4.2.e16uek.x86_64)
   Oracle VM Server-ovs serial console (xen-4.3.0 3.8.13-26.4.2.e16uek.x86_64)
   ```

4. **To pause at the GRUB menu, press a key other than Enter; otherwise, in five seconds the highlighted installation option will be used.**

5. **From the GRUB menu, use the up and down arrow keys to select the display option, and then press Enter. Options include one for default booting, and one for serial console enabled booting.**

- **To display output to the video port (default option),** select the first option in the list and press Enter:

  `Oracle VM Server - ovs (xen-4.3.0 3.8.13-26.4.2.e16uek.x86_64)`

- **To display output to the serial port,** select the second option in the list and press Enter:

  `Oracle VM Server - ovs serial console (xen-4.3.0 3.8.13-26.4.2.e16uek.x86_64)`

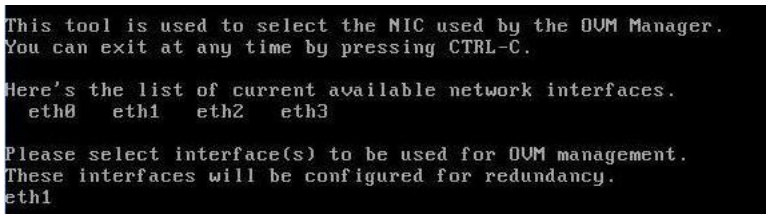
As the configuration process begins, the following screen appears:

6. **Scroll down the screen and set and confirm the `root` password and the `Oracle VM Agent` password.**

Note - The prompts for the `root` and the `Oracle VM Agent` passwords are only displayed the first time you boot the Oracle VM Server.

---

7. **Follow the prompts to select the on-board network interface controller (NIC) to configure, and then enter other required configuration information related to the network.**

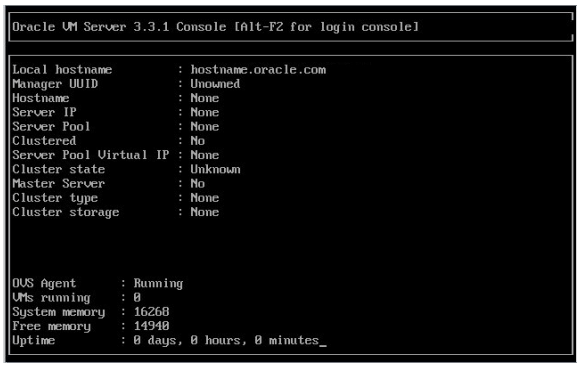


Note - Network interfaces eth2 and eth3 correspond to Ethernet ports NET2 and NET3, which are nonfunctional in single-processor systems.

8. **If all of the configuration settings are correct, type `Y` and press Enter to save the settings.**

```
Are these settings correct?(Y/n)
```

When all settings have been entered and saved, the system loads an Oracle VM Server Console session. For example:



This completes the configuration of the preinstalled Oracle VM Server to create a virtual operating system.

Related Information

- “Connecting to Oracle ILOM” on page 83
- “Oracle VM Server Configuration Worksheet” on page 146

Oracle VM Documentation

For information about using and updating Oracle VM software, refer to the Oracle VM documentation at:

https://docs.oracle.com/cd/E50245_01/index.html

Getting Firmware and Software Updates

This section explains the options for accessing server firmware and software updates using Oracle System Assistant or My Oracle Support (MOS).

Customers are required to install the latest available operating system (OS), patches, and firmware versions for optimal system performance, security, and stability.

Description	Links
Learn about server firmware and software updates.	“Firmware and Software Updates” on page 153
Learn about options for accessing firmware and software.	“Options for Accessing Firmware and Software Updates” on page 154
Review available firmware and software releases.	“Software Releases” on page 154
Learn how to get firmware and software updates using Oracle System Assistant or My Oracle Support.	“Getting Updates From Oracle System Assistant or My Oracle Support” on page 155
Learn how to install firmware and software updates using other methods.	“Installing Updates Using Other Methods” on page 157
Learn how to get support from Oracle.	“Oracle Support” on page 157

Firmware and Software Updates

Firmware and software for your server are updated periodically. These updates are made available as software releases. The software releases are a set of downloadable files (patches) that include all available firmware, software, hardware drivers, tools, and utilities for the server. All of these files have been tested together and verified to work with your server.

You must update your server firmware and software as soon as possible after a new software release becomes available. Software releases often include bug fixes, and updating your server ensures that your server has the latest firmware and software. These updates will increase your system performnce, security, and stability.

The server Product Notes list the curent server software release and firmware version that are available. To determine which firmware version is installed on your server, you can use either the Oracle ILOM web interface or the command-line interface (CLI).

- For the web interface, click System Information → Summary, then view the property value for System Firmware Version in the General Information table.
- For the CLI, at the commnad prompt, type: `show /System`

The ReadMe document that is included with each patch in a software release contains information about the patch, such as what has changed or not changed from the prior software release, as well as bugs that are fixed with the current release.

Options for Accessing Firmware and Software Updates

Use one of the following options to obtain the latest firmware and software updates for your server:

- **Oracle System Assistant** – Oracle System Assistant is a factory-installed option for some Oracle x86 servers that enables you to easily download and install the latest software releases.

  For information about using Oracle System Assistant, refer to the *Oracle X5 Series Servers Administration Guide* at `https://www.oracle.com/goto/x86admindiag/docs`.
- **My Oracle Support** – All system software releases are available from the My Oracle Support web site at `https://support.oracle.com`.

  For information about what is available from the My Oracle Support web site, see "Software Releases" on page 154.
- **Other Methods** – You can use Oracle Enterprise Manager Ops Center, Oracle Hardware Management Pack, or Oracle ILOM to update your server software and firmware.

  For information, see "Installing Updates Using Other Methods" on page 157.

Software Releases

Software releases on My Oracle Support are grouped by product family (such as Oracle Server), then the product (the specific server or blade), and finally the software release version. A software release contains all the updated software and firmware for your server or blade as a set of downloadable files (patches), including firmware, drivers, tools, or utilities, all tested together to be compatible with your server.

Each patch is a zip file that contains a ReadMe file and a set of subdirectories containing firmware or software files. The ReadMe file contains details on the components that have changed since the prior software release and the bugs that have been fixed.

My Oracle Support provides the set of software releases for your server as described in the following table. You can obtain these software releases by downloading the files from My Oracle Support. Alternatively, you can download the same firmware and software to your server using Oracle System Assistant.

TABLE 12 Software Release Packages

Package Name	Description	When to Download This Package
X5-2 SW *release* – Firmware Pack	Contains all system firmware, including Oracle ILOM, BIOS, and option card firmware.	You need the latest firmware.
X5-2 SW *release* – OS Pack	Includes a package of all tools, drivers, and utilities for a specific OS. An OS Pack is available for each supported operating system version. Software includes Oracle Hardware Management Pack, LSI MegaRAID software, and any other optional software that Oracle recommends. For the Windows OS, the OS Pack also includes Intel Network Teaming and Install Pack.	You need to update OS-specific tools, drivers, or utilities.
X5-2 SW *release* – All Packs	Includes the Firmware Pack, all OS Packs, and all documents. This pack does not include Oracle VTS or the Oracle System Assistant image.	You need to update a combination of system firmware and OS-specific software.
X5-2 SW *release* – Diagnostics	Includes Oracle VTS diagnostics image.	You need the Oracle VTS diagnostics image.
X5-2 SW *release* – Oracle System Assistant Updater	Includes Oracle System Assistant recovery/update ISO image.	You need to manually recover or update Oracle System Assistant.

Getting Updates From Oracle System Assistant or My Oracle Support

You can use Oracle System Assistant to easily download and then use the latest software release. For further information and download instructions, refer to the *Oracle X5 Series Servers Administration Guide* at `https://www.oracle.com/goto/x86admindiag/docs`.

You can also obtain updated firmware and software from the My Oracle Support web site at `https://support.oracle.com`. For instructions, see "Download Firmware and Software Updates From My Oracle Support" on page 156.

Download Firmware and Software Updates From My Oracle Support

1. **Go to the My Oracle Support web site: `https://support.oracle.com`.**
2. **Sign in to My Oracle Support.**
3. **At the top of the page, click the Patches & Updates tab.**

   The Patch Search pane appears at the right of the screen.
4. **Within the Search tab area, click Product or Family (Advanced).**

   The Search tab area appears with search fields.
5. **In the Product field, select the product from the drop-down list.**

   Alternatively, type a full or partial product name (for example, Oracle Server X5-2) until a match appears.
6. **In the Release field, select a software release from the drop-down list.**

   Expand the list to see all available software releases.
7. **Click Search.**

   The Patch Advanced Search Results screen appears, listing the patches for the software release.

   See "Software Releases" on page 154 for a description of the available software releases.
8. **To select a patch for a software release, click the patch number next to the software release version.**

   You can use the Shift key to select more than one patch.

   A pop-up action panel appears. The panel contains several action options, including the ReadMe, Download, and Add to Plan options. For information about the Add to Plan option, click the associated button and select "Why use a plan?".
9. **To review the ReadMe file for this patch, click ReadMe.**
10. **To download the patch for the software release, click Download.**
11. **In the File Download dialog box, click the patch zip file name.**

    The patch for the software release downloads.

Installing Updates Using Other Methods

In addition to using Oracle System Assistant and My Oracle Support, you can install firmware and software updates using one of the following methods:

- Oracle Enterprise Manager Ops Center, available software to manage multiple systems in a data center. For information, refer to the product information page at: https://www.oracle.com/enterprise-manager/technologies/. For documentation, refer to the Oracle Enterprise Manager Cloud Control Documentation Library at: https://docs.oracle.com/en/enterprise-manager/related-products.html
- Oracle Hardware Management Pack. For information, refer to the product information page at: https://www.oracle.com/servers/technologies/hardware-management-pack.html. For documentation and OS support matrix, refer to the Oracle Hardware Management Pack Documentation Library at: https://www.oracle.com/goto/ohmp/docs
- Oracle Integrated Lights Out Management (ILOM). For information, refer to the product information page at: https://www.oracle.com/servers/technologies/integrated-lights-out-manager.html. For documentation, refer to the Oracle Integrated Lights Out Manager (ILOM) 5.0 Documentation Library at: https://www.oracle.com/goto/ilom/docs

Oracle Support

If you need help getting firmware or software updates, or downloading a complete software application, you can call Oracle Support. Use the appropriate number from the Oracle Global Customer Support Contacts Directory at:

http://www.oracle.com/us/support/contact-068555.html

Controlling System Power

This section describes how to power off and on, and reset the server.

Description	Links
Power off the server if an error occurs, then back on when a problem is fixed.	“Powering the Host On and Off” on page 159
Reset the server.	“Reseting the Server” on page 162

Related Information

- “Installation Procedure Overview ” on page 13
- Oracle Integrated Lights Out Manager (ILOM) 5.0 Documentation Library at: `https://www.oracle.com/goto/ilom/docs`

Powering the Host On and Off

Your server has three power modes (states): power off, standby power, and full power.

Power State	Description	Indicators	Action
Power off	The server is completely powered off when the AC power cords are disconnected.	All indicators are off. The server is disconnected from all power sources.	Disconnect power cords to completely remove power. **Caution -** Equipment damage. Do not disconnect power cords when system is in Full power mode.
Standby power	When the server is in Standby power mode, the service processor is powered on but the host is powered off.	The system Power/OK indicator flashes slowly. The SP OK indicator is steady on.	If the server is completely powered off, plug in the power cords to apply Standby power. If the server is in Full power mode, use Oracle ILOM or the Power button to remove host power.

Power State	Description	Indicators	Action
			You can power the host off gracefully, or immediately. **Caution -** Data loss: To prevent data loss, prepare the operating system for shutdown before performing an immediate power off.
Full power	When you power on the host, the server enters Full power mode.	In Full power mode, the system Power/OK indicator is steady on.	Use Oracle ILOM or the Power button to apply host power.

For instructions on powering the host off and on, see the following procedures:

- “Power Off the Host Using the Power Button” on page 160
- “Power On the Host Using the Power Button” on page 161
- “Power Host On and Off Using Oracle ILOM” on page 161

▼ Power Off the Host Using the Power Button

1. **Locate the Power button on the server front panel.**
2. **Press the Power button.**

   - **To perform a graceful shutdown, press and release the Power button.**

     ACPI-enabled operating systems perform an orderly shutdown. Systems not running ACPI-enabled operating systems might ignore this event, and fail to shut down the host.

     The system Power/OK indicator flashes. The service processor SP OK indicator is steady on.

   - **To perform an immediate shutdown, press and hold the Power button for at least 5 seconds.**

     The system Power/OK indicator flashes. The service processor SP OK indicator is steady on.

Caution - Data loss. An immediate shutdown abruptly closes all applications and files without saving changes.

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

Power On the Host Using the Power Button

1. **Verify that the server is in Standby power mode.**
   The host is powered off but the SP is powered on. The power supplies are connected to a power source and the Power/OK status indicator flashes.
2. **Locate the Power button on the front panel.**
3. **Press the Power button.**
   The host boots and the server enters Full power mode. The system Power/OK indicator goes steady on when the host is fully booted.

Power Host On and Off Using Oracle ILOM

This procedure provides Oracle ILOM web interface and command-line interface (CLI) instructions to remotely power on or power off the host.

Caution - Data loss. An immediate shutdown abruptly closes all applications and files without saving changes.

- **Control power using the Oracle ILOM web interface or the CLI.**
  You must be logged in with administrator privileges. For details, see "Connecting to Oracle ILOM" on page 83.

  - **From the Oracle ILOM web interface, perform the following:**

Note - These commands affect power to the host but not to the SP. To completely power off the server, you must disconnect the power cords from the back panel of the server.

a. **In the left pane, click Host Management → Power Control.**

b. **From the Select Action list box, select one of the following:**

   - **Reset** – Assert a power-cycle to a managed server, while keeping power applied to system components (such as disk drives and so).
   - **Graceful Reset** – Gracefully shut down the host operating system prior to power-cycling the managed server.
   - **Immediate Power Off** – Directly shut down the power to the managed device.

- **Graceful Shutdown and Power Off** – Gracefully shut down the host operating system prior to shutting down the power to the managed device.
- **Power On** – Apply full power to the managed device.
- **Power Cycle** – Turn off system power to all system components and then apply full power to all system compnents.

c. **Click Save, and then click OK.**

- **From the Oracle ILOM CLI, enter one of the following commands:**
  - `reset /SYSTEM`
  - `stop /SYSTEM`
  - `stop -f /SYSTEM`
  - `start /SYSTEM`

For more information, refer to "Controlling Host Power", in the *Oracle ILOM Administrator's Guide for Configuration and Maintenance Firmware Release 5.0.x* at `https://www.oracle.com/goto/ilom/docs`.

Reseting the Server

It is not necessary to power the server off and on to reset the server. A reset will maintain host power but will cause the processors to reinitialize. In the process, some register information is retained. This is important in case of a system host panic, as error information might be available upon system recovery. Use the procedures in one of the following sections to reset the server.

Caution - Possible Data Loss. Resetting the server will cause any unsaved data on the server to be lost.

- "Reset the Server Using Oracle ILOM" on page 162

Reset the Server Using Oracle ILOM

1. **Log in to the Oracle ILOM web interface or command-line interface (CLI).**

   Use an account with admin (a) role privileges.

2. **To reset the server:**

   - **From the web interface:**

     a. **In the left pane, click Host Management → Power Control, and select Reset from the Select Action list box.**

     b. **Click Save, and then click OK.**

        The server resets.

   - **From the CLI:**

     a. **Type the following command:**

        ```
        -> reset /System
        ```

     b. **When prompted, type `y` to confirm:**

        ```
        Are you sure you want to reset /System (y/n)? y

        Performing hard reset /System
        ```

Troubleshooting Installation Issues

This section provides troubleshooting information, a technical support worksheet, and information about the location of the system serial number.

Description	Links
References for troubleshooting and diagnostics.	"Troubleshooting and Diagnostics References" on page 165
Gather information and contact technical support.	"Technical Support Information Worksheet" on page 166
Locate the system serial number.	"Locating the System Serial Number" on page 166

Related Information

- "Installation Procedure Overview " on page 13
- Oracle Integrated Lights Out Manager (ILOM) 5.0 Documentation Library at: `https://www.oracle.com/goto/ilom/docs`

Troubleshooting and Diagnostics References

The *Oracle Server X5-2 Service Manual* provides product-specific information about troubleshooting problems; refer to "Troubleshooting and Diagnostics" in *Oracle Server X5-2 Service Manual*.

The *Oracle x86 Servers Diagnostics, Applications, and Utilities Guide for Servers with Oracle ILOM 3.1 and Oracle ILOM 5.0.x* provides information about a wide variety of tools available for Oracle's x86 servers. Go to `https://www.oracle.com/goto/x86admindiag/docs`.

Knowledge articles, white papers, and product updates are available through the Oracle Support portal at `https://support.oracle.com`.

Technical Support Information Worksheet

If the troubleshooting information fails to solve your problem, use the following table to collect information that you might need to communicate to the Oracle Service personnel.

Troubleshooting Information Needed	Your Information
Service contract number	
System model	
Operating system	
System serial number (For instructions for locating this number, see "Locating the System Serial Number" on page 166.)	
Peripherals attached to the system	
Email address and phone number for you and a secondary contact	
Street address where the system is located	
Superuser password	
Summary of the problem and the work being done when the problem occurred	
IP address	
Server name (system host name)	
Network or Internet domain name	
Proxy server configuration	

Related Information

- "Troubleshooting and Diagnostics" in *Oracle Server X5-2 Service Manual*
- *Oracle x86 Servers Diagnostics, Applications, and Utilities Guide* at: `https://www.oracle.com/goto/x86admindiag/docs`

Locating the System Serial Number

You might need to have your server serial number when you ask for service on your system. Record this number for future use. Use one of the following methods to locate your server serial number:

- On the front panel of the server, look to the left of the status indicators.

For the exact location of the serial number, see “Front Panel Status Indicators, Connectors, and Drives” on page 29.

- Locate the Customer Information Sheet (CIS) attached to your server packaging. This sheet includes the serial number.
- From the Oracle ILOM web interface, go to the System Information → Summary Information page.
- From the Oracle ILOM CLI, type the `show /System` command.

Related Information

- “Front Panel Status Indicators, Connectors, and Drives” on page 29

Site Planning Checklists

This section provides reference checklists for site preparation.

Preparation Checklists

Complete the checklists in this section to ensure the site is prepared for the server.

Access Route and Data Center Checklist

Review the following facility checklist before installing the server.

TABLE 13 Access Route and Data Center Room Checklist

Data Center Room Considerations	Yes	No	N/A	Comment
Has the access route been checked for clearances of the packaged equipment?				
Do all the doors and entry ways conform to the width and height requirements for transportation, including the width of the unpacked unit?				
Are there any ramps, stairs, or thresholds that are in the moving path for the new hardware?				

Data Center Room Considerations	Yes	No	N/A	Comment
Have you confirmed that the access route is free of any obstacles that would expose the device to shock?				
If there are stairs, then is a loading elevator accessible for moving the equipment?				
Has the rack location been allocated?				
Is there a vacant space in the rack for the new server?				
Does the floor layout meet the equipment maintenance access requirements?				
Is there adequate space available for server maintenance?				
Have cabinet stabilization measures been considered?				
Will the hardware location require any non-standard cable lengths?				
Is the floor to ceiling height a minimum of 2.9 meters (9.6 feet)?				
Is the depth of the raised floor a minimum of 460 mm (18 inches)?				

Related Information

- “Rack Requirements” on page 40

Data Center Environment Checklist

Complete the following checklist to ensure that the data center environment requirements are met for the server.

TABLE 14 Data Center Environment Checklist

Data Center Environment Considerations	Yes	No	N/A	Comment
Does the computer room air handling meet temperature and humidity requirements?				
Does the installation floor layout satisfy the ventilation requirements?				
Will the equipment be positioned so that the exhaust air of one rack does not enter the air intake of another rack?				
Are the perforated floor tiles each rated at 400 CFM or greater?				
Do the data center air conditioners provide sufficient front to back airflow?				

Data Center Environment Considerations	Yes	No	N/A	Comment
Is airflow adequate to prevent hot spots?				
Can the data center continuously satisfy environmental requirements?				
Can more vented floor tiles be obtained if required?				

Related Information

- “Environmental Requirements” on page 20
- “Ventilation and Cooling” on page 21

Facility Power Checklist

Complete the following checklist to ensure that the facility power requirements are met for the data center in which the server is installed.

TABLE 15 Facility Power Checklist

Facility Power Considerations	Yes	No	N/A	Comment
Do you know the required operating voltage and electric current level of the server?				
Are enough power outlets provided within 2 meters (6.5 feet) for each rack?				
Do the power outlets have appropriate socket receptacles?				
Will optional ground cables be attached to the rack?				
Are the circuit breakers for the equipment suitable in terms of voltage and current-carrying capacities?				
Does the power frequency meet the equipment specifications?				
Will system power be delivered from two separate power grids?				
Is there a UPS to power the equipment?				
Do you have the minimum required power sources to support the power load for the new hardware? Use kilowatt (kW)/kilovolt (kVA) to express power load.				

Related Information

- “Electrical Power Requirements” on page 18

Rackmount Checklist

Complete the following checklist prior to installing the server into a rack or cabinet.

TABLE 16 Rackmount Checklist

Rackmount Considerations	Yes	No	N/A	Comment
Is the distance between the front and rear mounting planes between the minimum or 610 mm and the maximum 915 mm (24 inches to 36 inches)?				
Is the clearance depth in the front of the front mounting plane (distance to the front cabinet door) at least 25.4 mm (1 inch)?				
Does the target rack meet the following minimum load capacity: ■ 19 kg/rack unit ■ 785 kg total				
Is the rack a four-post rack (mounting at both front and rear)? Two-post racks are not compatible.				
Does the rack's horizontal opening and unit vertical pitch conform to ANSI/EIA 310-D-1992 or IEC 60927 standards?				
Does the rack have RETMA rail support?				
Does the rack support Oracle cable management arms (CMAs)?				
Does the rack support installation of Oracle vented and solid filler panels?				
Is there sufficient space for a cable harnesses and the power distribution units (PDUs) in the rack, if required?				
Can a label with the server serial number be printed and attached to the target rack?				
Did you run the required network cables from your network equipment to the location where the server will be installed?				
Did you label the network cables that will connect to the server?				
Does the rack support installation of standard Oracle PDUs? If not, then complete this checklist.				
Can the customer provide equivalent PDUs?				
Can the customer provide a single PDU and its circuits to support the power requirements in case on PDU fails?				

Rackmount Considerations	Yes	No	N/A	Comment
Can the customer ensure power loads are evenly distributed across all circuits of a single PDU?				
Can the customer provide appropriate power drops for the PDUs?				

Related Information

- "Installing the Server Into a Rack" on page 39

Safety Checklist

Complete the following checklist to ensure that the safety requirements are met for the data center in which the server will be installed.

TABLE 17 Safety Checklist

Safety Checklist Considerations	Yes	No	N/A	Comment
Is there an emergency power shut off?				
Is there a fire protection system in the data center room?				
Is the computer room adequately equipped to extinguish a fire?				
Is antistatic flooring installed?				
Is the floor below the raised floor free of obstacles and blockage?				

Related Information

- "Electrical Power Requirements" on page 18
- *Oracle Server X5-2 Safety and Compliance Guide*

Auto Service Request Checklist

Complete the following checklist if you are planning to use Auto Service Request with the server.

TABLE 18 Auto Service Request Checklist

Auto Service Request Considerations	Yes	No	N/A	Comment
Do you have a My Oracle Support Online Account to register Auto Service Request?				
Do you have your My Oracle Support Customer Support Identifier (CSI) number?				
Do you have the host name and IP address for the server that will have Auto Service Request Manager?				
Will the system need a proxy server? If so, what is the host name and IP address for the proxy server?				
Do you have the Technical Contact information for Auto Service Request? This information should include the first name, last name, and e-mail address of the contact.				

Logistics Checklist

Complete the following checklist to ensure that the logistics requirements are met for the data center in which the server will be installed.

TABLE 19 Logistics Checklist

Logistics Checklist Considerations	Yes	No	N/A	Comment
Do you have contact information for the data center personnel?				
Is there security or access control for the data center?				
Are there any security background checks or security clearances required for vendor personnel to access the data center? If yes, then do you have a recommended agency?				
How many days in advance must background checks be completed?				
Are there any additional security access issues?				
Is computer room access available for installation personnel?				
Are laptops, cell phones, and cameras allowed in the data center?				
Does the building have a delivery dock?				
Is there a delivery/unpacking/staging area?				
Is the delivery inside?				
If the delivery is not inside, then is the site prepared for uncrating?				

Logistics Checklist Considerations	Yes	No	N/A	Comment
Is the unpacking/staging area protected from the elements?				
Does the building have adequate receiving space?				
Is the unpacking area air-conditioned to avoid thermal shock for various hardware components?				
Will sufficient moving personnel be available to install the hardware?				
Are you prepared for uncrating and trash removal?				
Are there any restrictions on delivery and trash removal?				
Are there any restrictions on delivery truck length, width or height?				
Does the customer allow cardboard boxes and other packing material in the computer room?				
Is there a time constraint on dock access? If yes, then provide time constraints.				
Is tail lift required on delivery carrier to unload the equipment at the delivery dock?				
Will any of the following be required to place equipment in computer room? Stair walkers Lifters Ramps Steel plates Floor covers				
Does the delivery carrier require any special equipment, such as non-floor damaging rollers, transport dollies, pallet jacks, or fork lifts?				

Related Information

- “Server Physical Specifications” on page 15
- “Receiving and Unpacking Guidelines” on page 17
- *Oracle Server X5-2 Safety and Compliance Guide*

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