

# Oracle® Servers X7-2 and X7-2L Installation Guide

ORACLE®

Part No: E72440-11  
April 2021



**Part No: E72440-11**

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## Using This Documentation

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- **Overview** – Provides specifications and describes how to install and power on Oracle Server X7-2 and Oracle Server X7-2L for the first time
- **Audience** – Technicians, administrators, developers, and authorized service providers who need to perform the tasks or learn about the concepts in this document.
- **Required knowledge** – Advanced experience troubleshooting hardware installations and configuring preinstalled operating systems

## Product Documentation Library

Documentation and resources for these products and related products are available at <https://www.oracle.com/goto/x7-2/docs> and <https://www.oracle.com/goto/x7-2l/docs>

## Feedback

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# Installation Procedure

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This section provides an overview of the installation procedure. Review the entire installation procedure and find links to more information about each step.

- [“Installation Procedure Overview” on page 11](#)

## Installation Procedure Overview

The following table lists the tasks you need to complete to install Oracle Server X7-2 or Oracle Server X7-2L.

Step	Description	Links
1	Review the product notes for any late-breaking information about the server.	<ul style="list-style-type: none"><li>■ <a href="http://www.oracle.com/goto/x7-2/docs">http://www.oracle.com/goto/x7-2/docs</a></li><li>■ <a href="http://www.oracle.com/goto/x7-2l/docs">http://www.oracle.com/goto/x7-2l/docs</a></li></ul>
2	<ul style="list-style-type: none"><li>■ Review the server site requirements, specifications, and components</li><li>■ Confirm that you received all the items you ordered</li><li>■ Familiarize yourself with electrostatic discharge (ESD) and safety precautions</li><li>■ Assemble the required tools and equipment</li></ul>	<ul style="list-style-type: none"><li>■ <a href="#">“Preparing for Server Installation” on page 13</a></li><li>■ <a href="#">“Site Planning Checklists” on page 137</a></li></ul>
3	Review the server features.	<a href="#">“Server Features and Components” on page 25</a>
4	Install any separately shipped optional components.	<ul style="list-style-type: none"><li>■ <a href="#">“About System Components” in Oracle Server X7-2 Service Manual</a></li><li>■ <a href="#">“About System Components” in Oracle Server X7-2L Service Manual</a></li></ul>

Step	Description	Links
5	Review the server management features.	<a href="#">“Server Management” on page 35</a>
6	Install the server into a rack.	<a href="#">“Installing the Server Into a Rack” on page 39</a>
7	<ul style="list-style-type: none"> <li>■ Attach cables and power cords to the server</li> <li>■ Power on the server.</li> </ul>	<a href="#">“Connecting Cables and Applying Power” on page 71</a>
8	Connect to Oracle Integrated Lights Out Manager (ILOM).	<a href="#">“Using Oracle ILOM” on page 83</a>
9	Prepare storage drives and configure RAID.	<a href="#">“Configuring Storage Drives for Operating System Installation” on page 97</a>
10	<p>If applicable, install one of the following operating systems or virtual machines:</p> <ul style="list-style-type: none"> <li>■ Oracle Solaris</li> <li>■ Oracle Linux</li> <li>■ Red Hat Enterprise Linux</li> <li>■ Oracle VM Server</li> <li>■ Windows Server</li> </ul>	<ul style="list-style-type: none"> <li>■ <a href="#">“Installing an Operating System” on page 117</a></li> <li>■ <a href="#">Oracle Servers X7-2 and X7-2L Operating Systems Installation Guide</a></li> </ul>
11	Review procedures for controlling system power.	<a href="#">“Controlling System Power” on page 119</a>
12	Review procedures for getting the latest server firmware and software.	<a href="#">“Getting Firmware and Software” on page 125</a>
13	Troubleshoot installation issues.	<a href="#">“Troubleshooting Installation Issues” on page 131</a>

# Preparing for Server Installation

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These sections provide the information you need to prepare for the server installation.

- “Server Physical Specifications” on page 13
- “Receiving and Unpacking Requirements” on page 14
- “Rack Space Requirements” on page 14
- “Maintenance Space Requirements” on page 15
- “Environmental Requirements” on page 15
- “Ventilation and Cooling Requirements” on page 17
- “Electrical Requirements” on page 18
- “Agency Compliance” on page 20
- “Shipping Inventory” on page 21
- “Tools and Equipment” on page 21
- “Optional Component Installation” on page 22
- “PCIe Cards” on page 23

## Server Physical Specifications

The following tables list the physical specifications for the Oracle Server X7-2 and Oracle Server X7-2L.

### Oracle Server X7-2:

Dimension	Server Specification	Measurement
Width	Server chassis	48.2 cm (18.9 inches)
Depth	Maximum overall	73.70 cm (29.02 inches)
Height	1-rack unit (1U) nominal	4.26 cm (1.68 inches)

Dimension	Server Specification	Measurement
Weight	Fully populated server	40 lbs (18.1 kg)

**Oracle Server X7-2L:**

Dimension	Server Specification	Measurements
Width	Server chassis	48.2 cm ( 18.9 inches)
Depth	Maximum overall	75.9 cm (29.9 inches)
Height	2-rack unit (2U) nominal	8.69 cm (3.42 inches)
Weight	Fully populated server	64 lbs (29.03 kg)

## Receiving and Unpacking Requirements

When the server is unloaded at your site:

- Leave the server in its shipping carton until it arrives at its installation location.
- Use a separate area to remove the packaging material to reduce particle contamination before the server is taken to the data center.
- Ensure that there is enough clearance and clear pathways to move the server from the unpacking area to the installation location.
- Ensure the entire access route to the installation site is free of raised-pattern flooring that causes vibration.

## Rack Space Requirements

The Oracle Server X7-2 is a 1 rack unit (1U) server. Oracle Server X7-2L is a 2U server. For physical dimensions, see [“Server Physical Specifications” on page 13](#).

You can install the server into a four-post rack cabinet that conforms to ANSI/EIA 310-D-1992 or IEC 60297 standards, such as Oracle Rack Cabinet 1242 or Sun Rack II 1242. See [“Rack Compatibility” on page 42](#).

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) of ceiling height is required 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.

## Maintenance Space Requirements

The maintenance area for the rackmounted Oracle Server X7-2 and Oracle Server X7-2L must have the required access space. The following table lists the maintenance access requirements for the server when it is installed in a rack.

Location	Maintenance Access Requirement
Back of the server	91.4 cm (36 inches)
Area above the rack	91.4 cm (36 inches)
Front of the server	123.2 cm (48.5 inches)

## Environmental Requirements

The following table describes the environmental specifications for the servers.



**Caution** - Set conditions to the optimal temperature and humidity ranges to minimize the chance of downtime due to component failure. Operating the servers for extended periods at or near the operating range limits, or installing them in an environment where they remain at or near nonoperating range limits could significantly increase hardware component failure.

Specification	Operating	Nonoperating
Ambient temperature (Does not apply to removable media)	<ul style="list-style-type: none"> <li>■ Maximum range: 41°F to 95°F (5°C to 35°C) up to 2,953 feet (900 meters)</li> <li>■ Optimal: 69.8°F to 73.4°F (21°C to 23°C)</li> </ul> <p><b>Note</b> - 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.</p>	-40°F to 154°F (-40°C to 68°C)
Relative humidity	<ul style="list-style-type: none"> <li>■ 10% to 90% noncondensing, short term 23°F to 113°F (-5°C to 55°C)</li> <li>■ 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)</li> </ul>	Up to 93% noncondensing 95°F (35°C) maximum wet bulb

Specification	Operating	Nonoperating
Altitude	Up to 9,840 feet (3,000 meters) <b>Note</b> - 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	<ul style="list-style-type: none"> <li>■ Maximum condition: 7.1 Bels A weighted</li> <li>■ Idle condition: 7.0 Bels A weighted</li> </ul>	Not applicable
Vibration	<ul style="list-style-type: none"> <li>■ 0.15 G (z-axis)</li> <li>■ 0.10 G (x-, y-axes), 5-500Hz swept sine</li> </ul> IEC 60068-2-6 Test FC	<ul style="list-style-type: none"> <li>■ 0.5 G (z-axis),</li> <li>■ 0.25 G (x-, y-axes), 5-500Hz swept sine</li> </ul> IEC 60068-2-6 Test FC
Shock	3.5 G, 11 ms half-sine  IEC 60068-2-27 Test Ea	<ul style="list-style-type: none"> <li>■ Roll-off: 1.25-inch roll-off free fall, front to back rolling directions</li> <li>■ Threshold: 13-mm threshold height at 0.65 m/s impact velocity</li> <li>■ ETE-1010-02 Rev A</li> </ul>

### Related Information

- [“Temperature Guidelines” on page 16](#)
- [“Humidity Guidelines” on page 16](#)
- [“Ventilation and Cooling Requirements” on page 17](#)

## 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 approximately 22° Celsius (72° Fahrenheit) is recommended 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 is not running for a period of time.

## Humidity Guidelines

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

- Helps protect computer systems from corrosion problems associated with high humidity levels.



- Provides the greatest operating time buffer in the event of air conditioner control failure.
- Reduces or eliminates failures or temporary malfunctions caused by intermittent interference from static discharges, which might occur when relative humidity is too low. Electrostatic discharge (ESD) is easily generated and not easily dissipated in areas where the relative humidity level is below 35 percent.



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**Caution** - ESD risk becomes critical when levels drop below 30 percent.

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## Ventilation and Cooling Requirements

Always provide adequate space in front of and behind the rack to allow for proper ventilation of rackmounted servers. Do not obstruct the front or back of the rack with equipment or objects that might prevent air from flowing through the rack. Rackmountable servers and equipment, including Oracle Server X7-2 and Oracle Server X7-2L, draw cool air in through the front of the rack and release warm air out the back 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, cover the empty sections with filler panels. Gaps between components can adversely affect airflow and cooling in the rack.

The servers function while installed in a natural convection airflow. Follow these environmental specifications for optimal ventilation:

- Ensure that air intake is in the front of the system, and the air outlet is in the back. Take care to prevent recirculation of exhaust air in a rack or cabinet.
- Allow minimum clearance of 123.2 cm (48.5 inches) in the front of the system, and 91.4 cm (36 inches) in the back.
- Ensure unobstructed airflow through the chassis. The Oracle Server X7-2 uses internal fans that can achieve a total airflow of 90 CFM and Oracle Server X7-2L uses internal fans that can achieve 140 CFM, within the specified range of operating conditions.
- Ensure that ventilation openings, such as cabinet doors for both the inlet and exhaust of the server, are unobstructed. For example, Oracle Rack Cabinet 1242 and Sun Rack II cabinets are optimized for cooling. Both the front and back doors have 80 percent perforations that provide a high level of airflow through the rack.
- Ensure that front and back clearances between the cabinet doors is a minimum of 2.5 cm (1 inch) at the front of the server and 8 cm (3.15 inches) at the back of the server when mounted. These clearance values are based on the inlet and exhaust impedance (available open area) and assume a uniform distribution of the open area across the inlet and exhaust areas, which improve cooling performance.

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**Note** - The combination of inlet and exhaust restrictions, such as cabinet doors and the distance 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.

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

## Electrical Requirements

The servers use AC power. The following table contains the power supply specifications for the servers.

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**Note** - The power dissipation numbers listed in the following table are the maximum rated power numbers for the power supply used in the server. The numbers are not a rating of the actual power consumption of the server. For up-to-date information about power consumption, go to the Oracle Power Calculators web site: <https://www.oracle.com/it-infrastructure/power-calculators/>, and click the Oracle Server X7-2 or Oracle Server X7-2L link.

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Parameter	Specification
Voltage (nominal)	100-240 VAC
Input current (maximum)	100 to 127 VAC 10.0 A; and 200 to 240 VAC 7.0 A
Frequency (nominal)	50/60 Hz (47 to 63 Hz range)
Maximum power consumption	100 to 127 VAC 800 W; 200 to 240 VAC 1200 W
Maximum heat output	11600 BTU/Hr

The servers can operate effectively over a range of voltages and frequencies.




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**Caution** - Servers must have a reliable power source. If the system exceeds the ranges, damage to the server might occur. 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, use a dedicated power distribution system, power-conditioning equipment, and lightning arresters or power cables for protection from electrical storms.

See the following additional power specifications.

- [“Facility Power Guidelines” on page 19](#)
- [“Circuit Breaker and UPS Guidelines” on page 19](#)
- [“Grounding Guidelines” on page 20](#)

## Facility Power Guidelines

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

To prevent failures:

- 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 current load of the overall system AC input does not exceed 80 percent of the branch circuit AC current rating.

PDU power cords for the Oracle Rack Cabinet 1242 and 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 in 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

To prevent failures:

- Ensure the design of your power system provides adequate power to the server.
- Use dedicated AC breaker panels for all power circuits that supply power to the server.
- Ensure that electrical work and installations comply with applicable local, state, or national electrical codes.

- Ensure the electrical circuits are grounded.
- 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

Use the following guidelines for grounding the server:

- Always connect the cords to grounded power outlets.
- Because different grounding methods are used, depending on location, verify the grounding type. For the correct grounding method, refer to local electrical codes.
- Ensure that a facility administrator or qualified electrical engineer verifies the grounding method for the building and performs the grounding work.

## Agency Compliance

The server complies with the following specifications.

Category	Relevant Standards
Regulations <sup>†,‡</sup>	<ul style="list-style-type: none"> <li>■ Product Safety: UL/CSA 60950-1, EN 60950-1, IEC 60950-1 CB Scheme with all country differences</li> <li>■ EMC                             <ul style="list-style-type: none"> <li>■ EMC: Emissions: FCC 47 CFR 15, ICES-003, EN55022, EN55032, KN32, EN61000-3-2, EN61000-3-3</li> <li>■ Immunity: EN 55024, KN35</li> </ul> </li> </ul>
Certifications <sup>‡</sup>	<ul style="list-style-type: none"> <li>■ North America Safety (NRTL)</li> <li>■ European Union (EU)</li> <li>■ International CB Scheme</li> <li>■ BIS (India)</li> <li>■ BSMI (Taiwan)</li> <li>■ RCM (Australia)</li> <li>■ CCC (PRC)</li> <li>■ MSIP (Korea)</li> <li>■ VCCI (Japan)</li> <li>■ Morocco</li> </ul>

Category	Relevant Standards
	<ul style="list-style-type: none"> <li>■ Republic of Srpska</li> </ul>
European Union Directives	<ul style="list-style-type: none"> <li>■ Restriction of Hazardous Substances (RoHS) Directive 2011/65/EU</li> <li>■ Low Voltage Directive 2014/35/EU</li> <li>■ EMC Directive 2014/30/EU</li> <li>■ WEEE Directive 2012/19/EU</li> </ul>

<sup>†</sup>All standards and certifications referenced are to the latest official version. For additional detail, contact your sales representative.

<sup>‡</sup>Other country regulations/certifications may apply.

### Related Information

- *Oracle Server X7-2 Safety and Compliance Guide*
- *Oracle Server X7-2L 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 agent be present when the carton is opened. Keep all contents and packing material for the agent inspection.

The carton contains these components:

- Oracle server
- Country kit includes power cords
- Rackmount kit includes rack rails, mounting brackets, screws, and Rackmounting Template
- *Getting Started Guide*
- Legal and safety documents

## Tools and Equipment

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

- Antistatic wrist strap
- Antistatic mat

You must provide a system console device, such as one of the following:

- ASCII terminal
- Workstation
- Terminal server
- Laptop running terminal emulation software

### Related Information

- [“Installing the Server Into a Rack” on page 39](#)

## Optional Component Installation

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

You can order and purchase the following optional components separately:

- PCIe cards
- DDR4 DIMM memory kits
- Storage drives

If you ordered 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 installation procedures in the [Oracle Server X7-2 Service Manual](#) or [Oracle Server X7-2L Service Manual](#).

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, which is available from the My Oracle Support website.

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**Note** - You must have an Oracle Service contract to access the Oracle System Handbook from My Oracle Support. Customers with service contracts can also access the Oracle System Handbook at: [https://support.oracle.com/handbook\\_private/](https://support.oracle.com/handbook_private/).

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To access the handbook, log in to My Oracle Support at <https://support.oracle.com>, click the Knowledge tab, and in the knowledge links, click Oracle System Handbook. In the handbook, click Current 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.

**Related Information**

- “Server Components” on page 25
- “About System Components” in *Oracle Server X7-2 Service Manual*

## PCIe Cards

The Oracle Server X7-2 has four PCIe slots, one of which can only accommodate an internal HBA card. The Oracle server X7-2L has eleven PCIe slots, and an additional twelfth nonstandard slot. These can contain cards installed at the factory, or ordered from Oracle and installed on site. All PCIe cards must be of a type supported for your server.

Some PCIe cards require configuration, either when you install the server, or when you add or change them. Review the server product notes for a complete list of supported PCIe cards:

- <https://www.oracle.com/goto/x7-2/docs>
- <https://www.oracle.com/goto/x7-2l/docs>





# Server Features and Components

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

- “Server Components” on page 25
- “X7-2 Front Panel Features” on page 27
- “X7-2 Back Panel Features” on page 29
- “X7-2L Front Panel Features” on page 30
- “X7-2L Back Panel Features” on page 32

## Server Components

Feature	System Components
Processor	<p>One or two processors with six integrated DDR4 memory controllers per processor. Processors with the following capabilities are supported (factory installed):</p> <ul style="list-style-type: none"><li>■ Intel Xeon 8168, 24 core, 2.7 GHz, 205W (Oracle Server X7-2L only)</li><li>■ Intel Xeon 8160, 24 core, 2.1 GHz, 150W</li><li>■ Intel Xeon 6140, 18 core, 2.3 GHz, 140W</li><li>■ Intel Xeon 6128, 6 core, 3.4 GHz, 115W</li><li>■ Intel Xeon 4114, 10 core, 2.0-2.2 GHz, 85W</li></ul> <p>For the latest information on processor specifications, go to the Oracle x86 servers web site and navigate to the Oracle Server X7-2 or Oracle Server X7-2L page: <a href="https://www.oracle.com/servers/x86/index.html">https://www.oracle.com/servers/x86/index.html</a></p>
Memory	<p>Up to 12 DDR4 DIMMs per processor for a maximum of 24 RDIMMs (16 GB and 32 GB) and LRDIMMs (64 GB) with speeds up to 2667 MT/sec in dual-processor systems.</p>
Storage Drives (Oracle Server X7-2)	<p>The storage drive configuration can comprise both hard disk drives (HDDs) or solid state drives (SSDs). The configuration includes:</p> <ul style="list-style-type: none"><li>■ Up to eight 2.5-inch hot-pluggable SAS3 HDDs or SATA3 SSDs, with optional support for up to eight 2.5-inch NVMe-Express (NVMe) SSDs</li><li>■ Two internal SATA/PCIe M.2 flash modules</li></ul>

Feature	System Components
Storage Drives (Oracle Server X7-2L)	<p>The storage drive configuration can comprise both hard disk drives (HDDs) or solid state drives (SSDs). The configuration includes:</p> <ul style="list-style-type: none"> <li>■ Up to twelve 3.5-inch hot-pluggable SAS3/SATA3 HDDs/SSDs, or optional support for up to twelve 2.5-inch NVMe-Express (NVMe) SSDs</li> <li>■ Two internal hot-pluggable SATA/PCIe M.2 flash modules</li> </ul> <p><b>Note</b> - The NVMe-Express PCIe switch card is required for storage drive configurations that contain NVMe SSDs.</p>
PCI Express (PCIe) slots (Oracle Server X7-2)	<p>Four PCIe Gen3 slots that accommodate low-profile PCIe cards.</p> <ul style="list-style-type: none"> <li>■ Slots 1 and 2: x16 electrical interface</li> <li>■ Slot 3: x8 electrical interface</li> <li>■ One additional internal x8 PCIe slot for use with an optional internal host bus adapter (HBA) card. This internal HBA card is used to control and manage the storage drives.</li> </ul> <p><b>Note</b> - PCIe slot 1 is nonfunctional in single-processor systems.</p>
PCI Express (PCIe) slots (Oracle Server X7-2L)	<p>Eleven PCIe Gen3 slots that accommodate low-profile PCIe cards.</p> <ul style="list-style-type: none"> <li>■ Slots 1 and 7: x16 electrical interface</li> <li>■ Slots 1 through 6, and slots 8 through 11: x8 electrical interface</li> </ul> <p><b>Note</b> - PCIe slots 1 through 5 are nonfunctional in single-processor systems.</p>
I/O ports (Oracle Server X7-2)	<ul style="list-style-type: none"> <li>■ One RJ-45 serial management (SER MGT) port</li> <li>■ One 10/100/1000BASE-T RJ-45 Oracle Integrated Lights Out Manager (ILOM) service processor (SP) network management (NET MGT) port</li> <li>■ One 100/1000BASE-T RJ-45 Gigabit Ethernet (GbE) port, labeled NET 0</li> <li>■ Two 10/25GbE SFP+ Ethernet ports, labeled NET 1 and NET 2</li> <li>■ Two 10GBASE-T RJ-45 Gigabit Ethernet (GbE) ports, labeled NET 1 and NET 2</li> </ul> <p><b>Note</b> - The 10/25GbE SFP+ Ethernet ports (NET 1 and NET 2) are the default network ports for the server. When using an SFP+ port, network connectivity is disabled on the 10GBASE-T RJ-45 GbE (NET 1 and NET 2) Ethernet ports.</p>
I/O ports (Oracle Server X7-2L)	<ul style="list-style-type: none"> <li>■ One RJ-45 serial management (SER MGT) port</li> <li>■ One 10/100/1000BASE-T RJ-45 Oracle Integrated Lights Out Manager (ILOM) service processor (SP) network management (NET MGT) port</li> <li>■ One 100/1000BASE-T RJ-45 Gigabit Ethernet (GbE) port, labeled NET 0</li> </ul>
USB 3.0 ports	One back panel, and one internal.
Service processor (SP)	<p>The server has an integrated service processor (SP), features include:</p> <ul style="list-style-type: none"> <li>■ Oracle Integrated Lights Out Manager (ILOM) version 5.0</li> <li>■ Local Oracle ILOM command-line access using a serial connection</li> <li>■ Support for Ethernet access to the SP through a dedicated management port (NET MGT) and optionally through one of the host Ethernet ports (sideband management)</li> <li>■ Support for remote KVMS (keyboard, video, mouse, and storage) over IP</li> </ul>

Feature	System Components
Management software	<ul style="list-style-type: none"> <li>■ Oracle Integrated Lights Out Manager (ILOM) on the service processor</li> <li>■ Oracle Hardware Management Pack, included as part of the Oracle Solaris OS starting with Oracle Solaris 11.2, or available as a standalone product for other supported operating systems. Refer to the support matrix for specific information: <a href="https://www.oracle.com/goto/ohmp">https://www.oracle.com/goto/ohmp</a></li> </ul>
Power supplies	Two hot-swappable and highly-redundant 1200W power supplies.
Cooling fans (Oracle Server X7-2)	<p>Four 40-mm, hot-swappable fan modules for chassis cooling. Each fan module contains two counter-rotating fan pairs.</p> <p>Each power supply has its own cooling fans.</p>
Cooling fans (Oracle Server X7-2L)	<p>Four 80-mm, hot-swappable fan modules for chassis cooling. Each fan module contains one pair of counter-rotating fans.</p> <p>Each power supply has its own cooling fans.</p>
Operating systems and virtualization software	<ul style="list-style-type: none"> <li>■ Oracle Solaris</li> <li>■ Oracle Linux</li> <li>■ Oracle VM</li> <li>■ Microsoft Windows Server</li> <li>■ VMware ESXi</li> </ul>

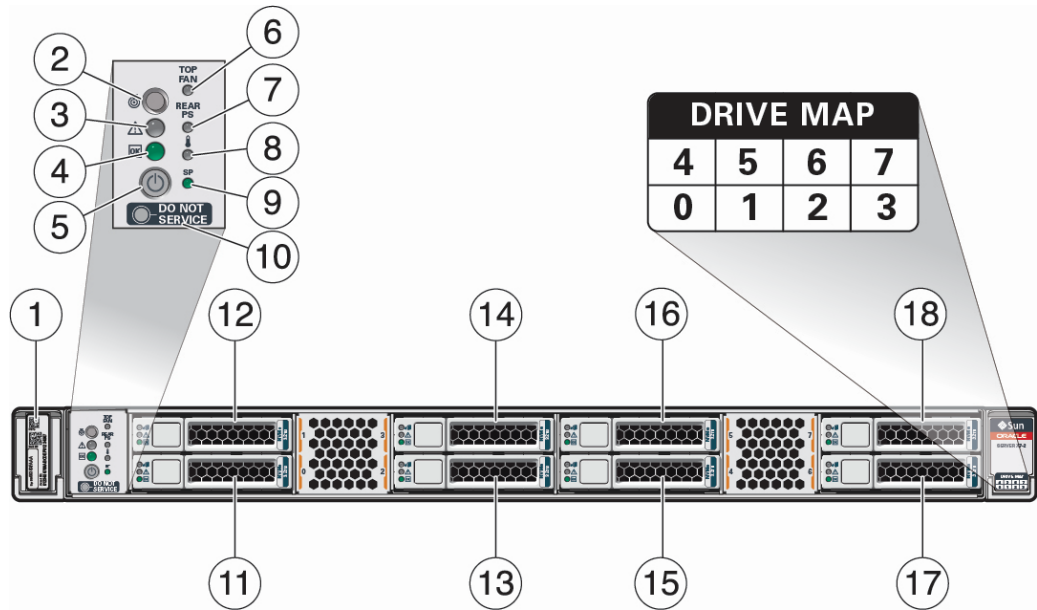
### Related Information

- [“X7-2 Front Panel Features” on page 27](#)
- [“X7-2 Back Panel Features” on page 29](#)

## X7-2 Front Panel Features

The following figure shows the status indicators (LEDs), connectors, and drives located on the front panel of Oracle Server X7-2 with eight 2.5-inch storage drives.

For information about how to interpret the status indicators (LEDs), refer to the *Oracle Server X7-2 Service Manual*.



Call Out	Description
1	Product Serial Number (PSN) label and Radio Frequency Identification (RFID) tag
2	Locate LED/button: white
3	Fault - Service Required LED: amber
4	System OK LED: green
5	On/Standby button
6	Service Required LED: Top: Fan Module (amber)
7	Service Required LED: Rear: Power Supply (amber)
8	Service Required LED: Overtemp Icon: System Over Temperature Warning (amber)
9	SP OK LED: green
10	Do Not Service Indicator
11	Storage drive 0 HDD/SSD/NVM-Express
12	Storage drive 1 HDD/SSD/NVM-Express
13	Storage drive 2 HDD/SSD/NVM-Express
14	Storage drive 3 HDD/SSD/NVM-Express
15	Storage drive 4 HDD/SSD/NVM-Express
16	Storage drive 5 HDD/SSD/NVM-Express
17	Storage drive 6 HDD/SSD/NVM-Express

Call Out	Description
18	Storage drive 7 HDD/SSD/NVM-Express

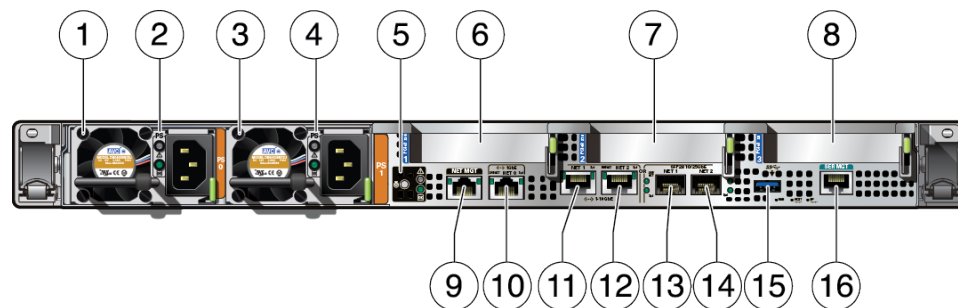
## Related Information

- [“X7-2 Back Panel Features” on page 29](#)

## X7-2 Back Panel Features

The following figure shows the Oracle Server X7-2 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 X7-2 Service Manual*.



Call Out	Description
1	Power Supply (PS) 0
2	Power Supply (PS) 0 status indicators: Fault-Service Required LED: amber; AC OK LED: green
3	Power Supply (PS) 1
4	Power Supply (PS) 1 status indicators: Fault-Service Required LED: amber; AC OK LED: green
5	System status indicators: Locate Button/LED: white; Fault-Service Required LED: amber; System OK LED: green
6	PCIe card slot 1 (Nonfunctional in single-processor systems)

Call Out	Description
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) RJ-45 10/100/1000BASE-T port
10	Network (NET) 100/1000BASE-T RJ-45 Gigabit Ethernet (GbE) port: NET 0
11	Network (NET) 10GBASE-T RJ-45 GbE port: NET 1
12	Network (NET) 10GBASE-T RJ-45 GbE port: NET 2
13	Network (NET) 10/25GbE SFP+ port: NET 1
14	Network (NET) 10/25GbE SFP+ port: NET 2
15	USB 3.0 connector
16	Serial management (SER MGT) RJ-45 serial port

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**Note** - The 10/25 GbE SFP+ Ethernet ports (NET1 and NET2) are the default network ports.

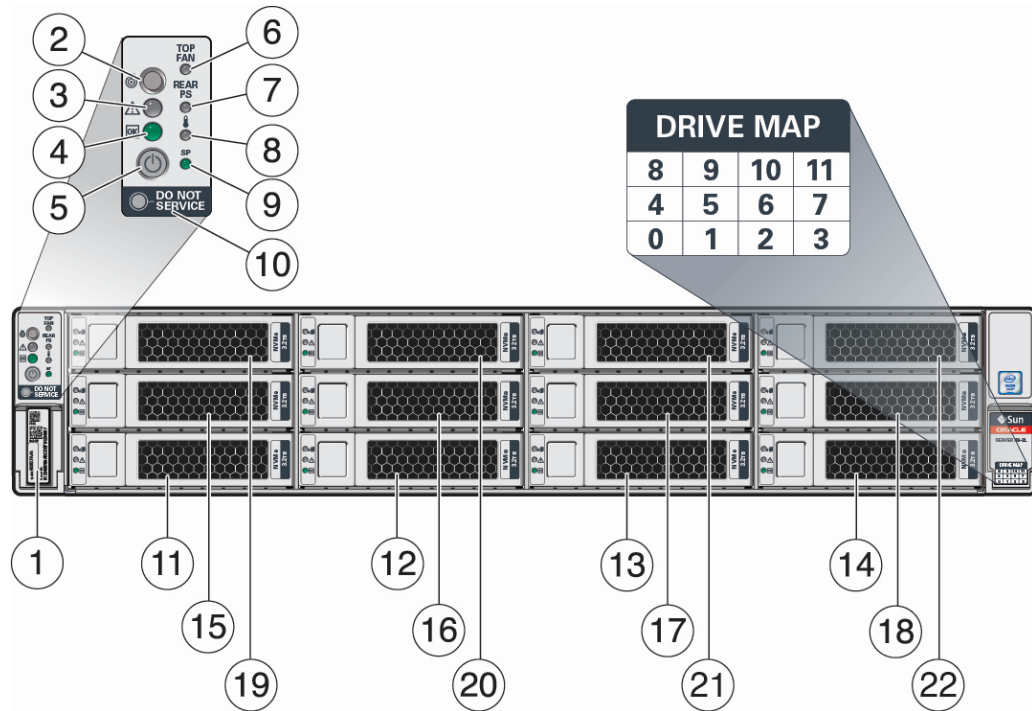
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### Related Information

- [“X7-2 Front Panel Features” on page 27](#)
- [“Server Components” on page 25](#)

## X7-2L Front Panel Features

The following figure shows the status indicators (LEDs), connectors, and drives located on the front panel of a Oracle Server X7-2L configured with twelve 3.5-inch storage drives.



Call Out	Description
1	Product Serial Number (PSN) label and Radio Frequency Identification (RFID) tag
2	Locate LED/Locator button: white
3	Fault - Service Required LED: amber
4	System OK LED: green
5	On/Standby button
6	Service Required LED: Top: Fan Module (amber)
7	Service Required LED: Rear: Power Supply (amber)
8	Service Required LED: Overtemp Icon: System Over Temperature Warning (amber)
9	SP OK LED: green
10	Do Not Service Indicator
11	Storage drive 0 HDD/SSD/NVM-Express
12	Storage drive 1 HDD/SSD/NVM-Express
13	Storage drive 2 HDD/SSD/NVM-Express
14	Storage drive 3 HDD/SSD/NVM-Express

Call Out	Description
15	Storage drive 4 HDD/SSD/NVM-Express
16	Storage drive 5 HDD/SSD/NVM-Express
17	Storage drive 6 HDD/SSD/NVM-Express
18	Storage drive 7 HDD/SSD/NVM-Express
19	Storage drive 8 HDD/SSD/NVM-Express
20	Storage drive 9 HDD/SSD/NVM-Express
21	Storage drive 10 HDD/SSD/NVM-Express
22	Storage drive 11 HDD/SSD/NVM-Express

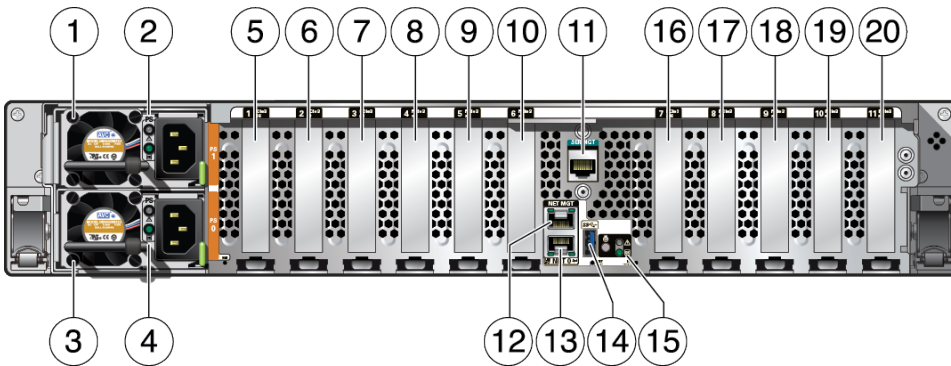
### Related Information

- [“X7-2L Back Panel Features” on page 32](#)

## X7-2L Back Panel Features

This section shows the Oracle Server X7-2L 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 X7-2L Service Manual](#).





Call Out	Description
1	Power supply unit 0 (PSU0)
2	Power Supply (PS) 0 status indicators: Service Required LED: amber AC OK LED: green
3	Power supply unit 1 (PSU1)
4	Power Supply (PS) 1 status indicators: Service Required LED: amber AC OK LED: green
5	PCIe slot 1 (Nonfunctional in single-processor systems)
6	PCIe slot 2 (Nonfunctional in single-processor systems)
7	PCIe slot 3 (Nonfunctional in single-processor systems)
8	PCIe slot 4 (Nonfunctional in single-processor systems)
9	PCIe slot 5 (Nonfunctional in single-processor systems)
10	PCIe slot 6
11	Serial management (SER MGT) RJ-45 serial port
12	Oracle Integrated Lights Out Manager (ILOM) service processor (SP) network management (NET MGT) RJ-45 10/100/1000BASE-T port
13	Network (NET) 100/1000BASE-T RJ-45 Gigabit Ethernet (GbE) port: NET 0
14	USB 3.0 connector
15	System status LEDs: Locate/Button: white; Fault - Service Required: amber; System OK: green
16	PCIe slot 7
17	PCIe slot 8
18	PCIe slot 9
19	PCIe slot 10
20	PCIe slot 11

### Related Information

- [“X7-2L Front Panel Features” on page 30](#)
- [“Server Components” on page 25](#)



# Server Management

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

- “Single Server Management Tools” on page 35
- “Oracle ILOM” on page 36
- “Oracle Hardware Management Pack” on page 37
- “Multiple Server Management Tools” on page 37

## Single Server Management Tools

The following single system management tools are available for the server:

- **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>

You can find descriptions of new Oracle ILOM 5.0 features in the *Oracle ILOM Feature Updates and Release Notes*.

- **Oracle Hardware Management Pack**, available with the Oracle Solaris OS or as a standalone product with other OS. 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 2.4 Documentation Library at: <https://www.oracle.com/goto/ohmp/docs>

Oracle Hardware Management Pack for Oracle Solaris 11.4 Documentation Library at [https://docs.oracle.com/cd/E79568\\_01/index.html](https://docs.oracle.com/cd/E79568_01/index.html)

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

Tool/Link	Type and Environment	Function
<a href="#">“Oracle ILOM” on page 36</a>	■ Preinstalled service processor (SP) with integrated firmware. No installation	■ Configure and manage server components locally or remotely.

Tool/Link	Type and Environment	Function
<a href="#">“Oracle Hardware Management Pack” on page 37</a>	<p>required. Some initial configuration is required.</p> <ul style="list-style-type: none"> <li>■ Operates independently of the host.</li> <li>■ Provides a web interface and a command-line interface (CLI).</li> </ul>	<ul style="list-style-type: none"> <li>■ Connect to a dedicated network port, a sideband port, or a local serial port.</li> </ul>
	<ul style="list-style-type: none"> <li>■ Provides commands and agents that operate at the operating system level, and can be used across multiple systems.</li> <li>■ Is included as part of the Oracle Solaris OS starting with Oracle Solaris 11.2, or available as a standalone product for other supported operating systems. Refer to the support matrix for specific information: <a href="https://www.oracle.com/goto/ohmp">https://www.oracle.com/goto/ohmp</a></li> </ul>	<p>Monitor hardware through the host operating system, either remotely using SNMP or locally using command-line interface tools.</p>

## Oracle ILOM

Oracle Integrated Lights Out Manager (ILOM) enables you to connect to the server service processor (SP) and then manage Oracle Server X7-2 and X7-2L. The servers are shipped initially with the latest version of Oracle ILOM.

Oracle ILOM software resides on the server SP and allows you to monitor and manage server components. The 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 SP in either of the following ways:

- [“Log In to Oracle ILOM Using a Local Serial Connection” on page 85](#)
- [“Log In to Oracle ILOM Using a Remote Ethernet Connection” on page 86](#)

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

## Oracle Hardware Management Pack

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

- **Oracle Hardware Management Pack CLI**
  - Allows you to configure Oracle servers
  - Works with Oracle Solaris, Oracle Linux, and Oracle VM, other variants of Linux, and Windows operating systems
  - You can script the tools to support multiple servers, providing that the servers are of the same type
- **Hardware Management Agent SNMP Plugins**
  - Allows you to use SNMP to monitor Oracle servers from the operating system using a single host IP address
  - Connect to two management points (Oracle ILOM and the host) with only one connection
- **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
  - Works on systems with Oracle Linux 6.5 or newer
  - Available on Hardware Management Pack 2.3 and later versions

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

## Multiple Server Management Tools

In addition, the following software is available to manage multiple systems in a data center:

**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>



# Installing the Server Into a Rack

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This section describes how to install the server into a rack using the slide-rail assembly in the Rackmount Kit. Figures for the rackmounting procedures depict Oracle Server X7-2L. The procedures are the same for the Oracle Server X7-2.

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

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- [“Installation Prerequisites” on page 39](#)
- [“Safety Precautions” on page 39](#)
- [“ESD Precautions” on page 41](#)
- [“Rack Compatibility” on page 42](#)
- [“Rackmount Kit Contents” on page 43](#)
- [“Rackmounting the Server” on page 44](#)

## Related Information

- [“Installation Procedure” on page 11](#)
- [“Preparing for Server Installation” on page 13](#)

## Installation Prerequisites

Before you start the rackmount procedures, ensure that that your site meets the required electrical and environmental requirements. See [“Preparing for Server Installation” on page 13](#).

## Safety Precautions

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



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**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.

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**Caution - Stabilize rack:** Deploy the anti-tilt bar on the equipment rack before starting an installation.

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

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

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**Caution - Lifting equipment:** Oracle Server X7-2 weighs approximately 35 lbs (15.88 kg). Oracle Server X7-2L weighs 64 lbs (29.03 kg). Two people are needed to mount either server into the rack enclosure.

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**Caution - Communicate instructions:** When performing a two-person procedure, communicate your intentions clearly to the other person before, during, and after each step to minimize confusion.

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**Caution - Elevated operating ambient temperature:** If you install the server in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment might be higher than the room ambient temperature. Install the equipment in an environment compatible with the maximum ambient temperature (T<sub>ma</sub>) specified for the server. For server environmental requirements, see [“Environmental Requirements” on page 15](#).

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**Caution - Reduced airflow:** Install the equipment in a rack so that it does not compromise the amount of airflow required for safe operation of the equipment.

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**Caution - Mechanical loading:** Mount the equipment in the rack so that it does not cause a hazardous condition due to uneven mechanical loading.

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**Caution - Circuit overloading:** Consider the connection of the equipment to the supply circuit and the effect that overloading the circuits might have on over-current protection and supply wiring. Also consider the equipment nameplate power ratings used when you address this concern.

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**Caution - Reliable earthing:** Maintain reliable earthing of rackmounted equipment. Pay attention to supply connections other than direct connections to the branch circuit (for example, use of power strips).

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**Caution - Mounted equipment:** Do not use slide-rail-mounted equipment as a shelf or a workspace.

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## ESD Precautions

Electronic equipment is susceptible to damage by static electricity. To prevent electrostatic discharge (ESD) when you install or service the server:

- Use a grounded antistatic wrist strap, foot strap, or equivalent safety equipment
- Place components on an antistatic surface, such as an antistatic discharge mat or an antistatic bag
- Wear an antistatic grounding wrist strap connected to a metal surface on the chassis when you work on system components



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**Caution - Equipment damage:** Electrostatic damage can permanently disable the system or require repair by authorized service technicians.

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Before installing the server, read the safety information in either the *Oracle Server X7-2 Safety and Compliance Guide* or the *Oracle Server X7-2L Safety and Compliance Guide* and in the *Important Safety Information for Oracle's Hardware Systems*.

## Rack Compatibility

The rack into which you install Oracle Server X7-2 or Oracle Server X7-2L must meet the requirements listed in the following table. Oracle Rack Cabinet 1242 and Sun Rack II are compatible with both servers. For information about the racks, see [“Preparing for Server Installation” on page 13](#).

Item	Requirement
Structure	<ul style="list-style-type: none"> <li>■ Four-post rack (mounting at both front and back). Supported rack types: square hole (9.5 mm) and round hole (M6 or 1/4-20 threaded only).</li> <li>■ Two-post racks are not compatible.</li> </ul>
Rack horizontal opening and unit vertical pitch	Conforms to ANSI/EIA 310-D-1992 or IEC 60297 standards.
Distance between front and back 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 back 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 back mounting planes	Distance between structural supports and cable troughs is at least 45.6 cm (18 inches).
Minimum clearance for service access	<ul style="list-style-type: none"> <li>■ Clearance, front of server: 123.2 cm (48.5 inches)</li> <li>■ Clearance, back of server: 91.4 cm (36 inches)</li> </ul>

The following table contains Sun Rack II Model 1242 and Sun Rack II Model 1042 rack 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 <sup>†</sup>	120 cm (47.24 inches)
Weight Model 1042	123.4 kg (272 lbs)
Depth Model 1042 <sup>‡</sup>	105.8 cm (41.66 inches)
Weight Model 1242	150.6 kg (332 lbs)

Requirement	Specification
Maximum dynamic load	1005 kg (2215 lbs)

<sup>†</sup>Depth is measured from front door handle to back door handle.

<sup>‡</sup>Depth is measured from front door handle to back door handle.

The following table contains the Oracle Rack Cabinet 1242 rack specifications:

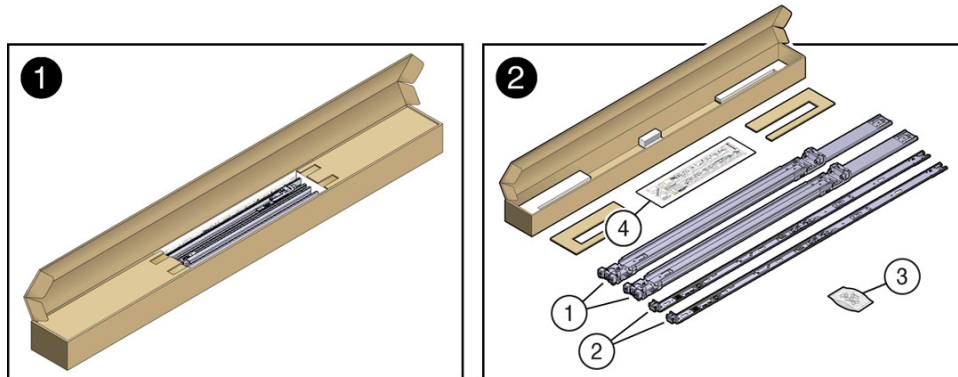
Requirement	Specification
Usable rack units	42
Height	199. cm (78.74 inches)
Width (with side panels)	60 cm (23.62 inches)
Maximum dynamic load	1005 kg (2215 lbs)

### Related Information

- [“Preparing for Server Installation” on page 13](#)

## Rackmount Kit Contents

The following figure shows the Rackmount Kit contents. For instructions on how to install your server in a four-post rack using the slide-rail and cable management arm options, refer to the Rackmounting Template.



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

### Related Information

- [“Rack Compatibility” on page 42](#)

## Rackmounting the Server

To rackmount the server, stabilize the rack, and install the slide rails and mounting brackets. Then, install the server into the rack.

### ▼ Stabilize the Rack



**Caution** -To reduce the risk of personal injury, stabilize the rack cabinet, and extend the anti-tilt bar before you install the server.

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

1. **Open and remove the front and back doors from the rack cabinet, only if they impinge on the mounting bay.**
2. **To prevent the rack cabinet from tipping during the installation, fully extend the rack cabinet anti-tilt bar, which is located at the bottom front of the rack cabinet.**
3. **If the rack includes 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.

---

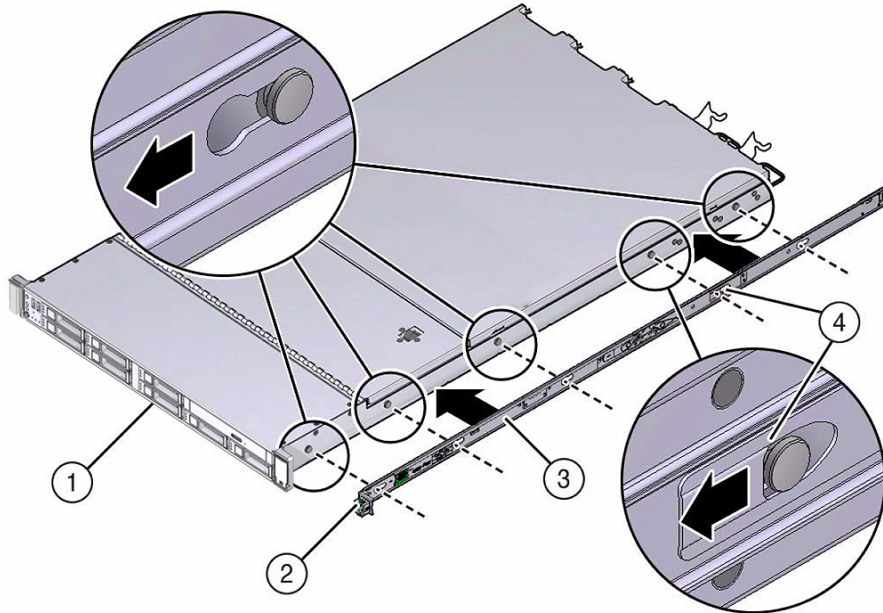
#### **Related Information**

- [“Safety Precautions” on page 39](#)
- [“Preparing for Server Installation” on page 13](#)
- Rack cabinet documentation

## **▼ Install Mounting Brackets on the Server**

To install the mounting brackets on 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.



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

2. When the heads of the five chassis locating pins protrude 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 back locating pin is engaged with 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 47](#)
- [“Attach the Slide-Rails” on page 50](#)

## ▼ Mark the Rackmount Location

Identify the location in the rack where you want to place the server. The Oracle Server X7-2 requires one rack unit (1U). The Oracle Server X7-2L requires two rack units (2U). Use the Rackmounting Template to identify the correct mounting holes for the slide-rails.



---

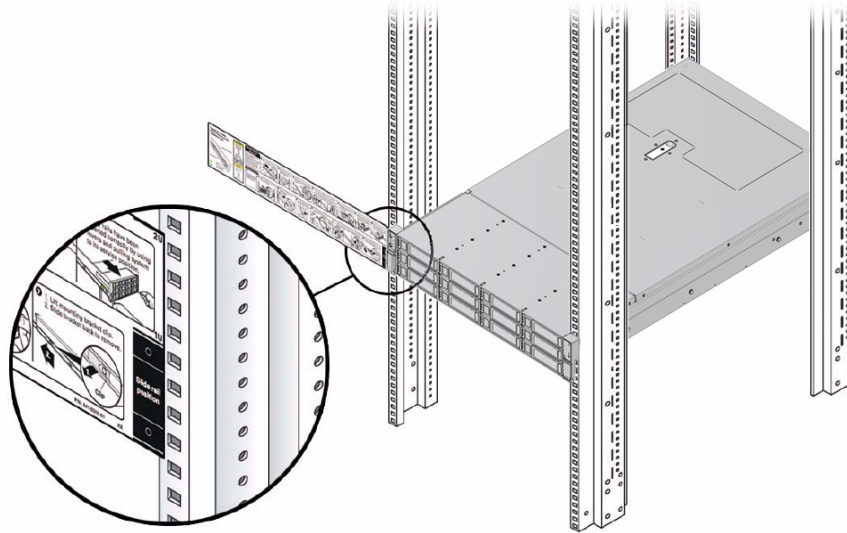
**Caution** - Always load equipment into a rack from the bottom up so that the rack does not become top-heavy and tip over. Extend the rack anti-tilt bar to prevent the rack from tipping during equipment installation.

---

1. **Ensure that there is at least 1 rack unit (1U) or two rack units (2U) of vertical space in the rack cabinet to install the server.**

See [“Rack Compatibility” on page 42](#).

2. Place the Rackmounting Template against the front rails, aligning the bottom edge of the card with the bottom edge of the server, and measure up from the bottom of the Rackmounting Template.



3. Mark the mounting holes for the front slide-rails.
4. Mark the mounting holes for the back slide-rails.

#### Related Information

- [“Rack Compatibility” on page 42](#)
- [“Install Mounting Brackets on the Server” on page 45](#)
- [“Attach the Slide-Rails” on page 50](#)

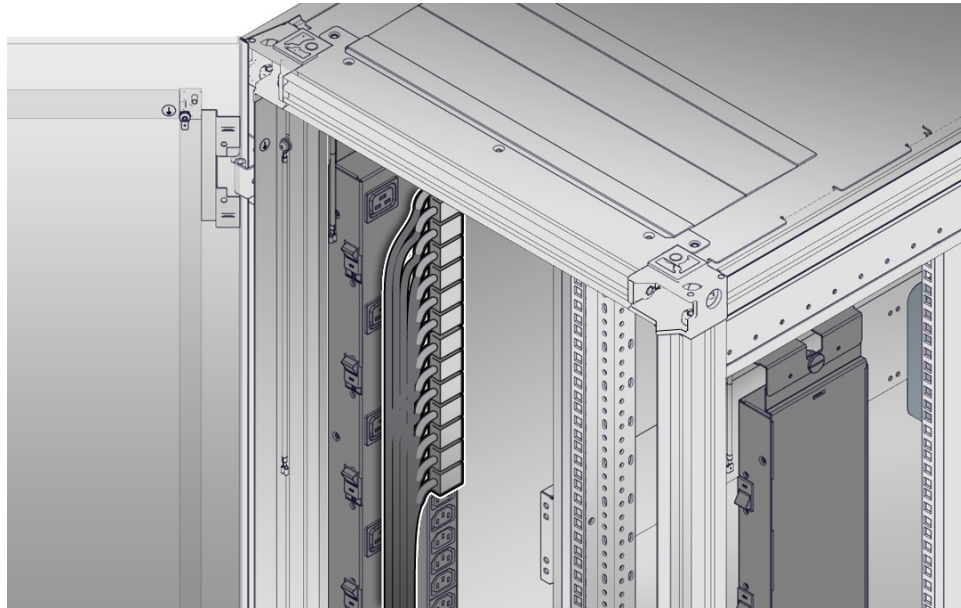
## ▼ Install AC Power Cables and Slide-Rails

1. Before you install the slide-rails into the rack, install right-angle AC power cables into the left-side and right-side PDU electrical sockets.

Use the following 2-meter right-angle AC power cable for this procedure:

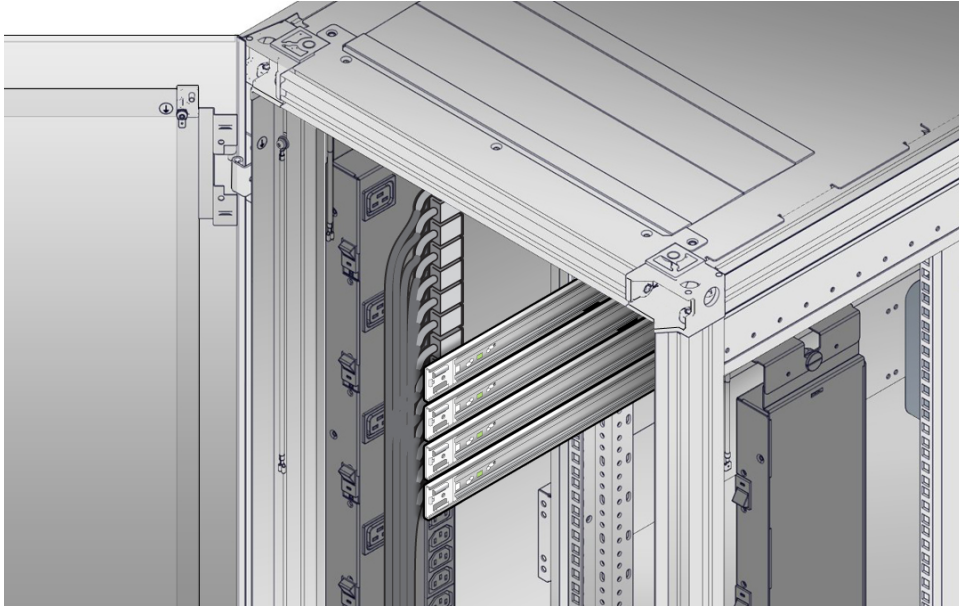


- 7079727 - Pwrcord, Jmpr, Bulk, SR2, 2m, C14RA, 10A, C13



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

See [“Attach the Slide-Rails” on page 50](#).



## ▼ Attach the Slide-Rails

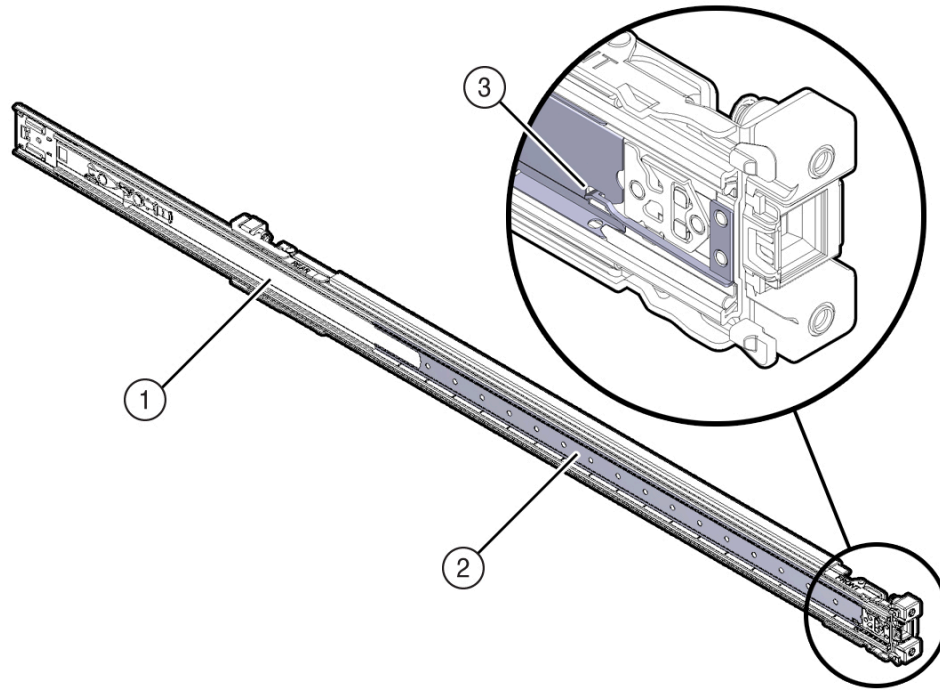
Use this procedure to attach slide-rail assemblies to the rack.

---

**Note** - Before you install the slide-rails, be sure to install right-angle AC power cables (part number 7079727 - Pwrcord, Jmpr, Bulk, SR2, 2m, C14RA, 10A, C13). In the 1000 mm rack, the standard rail kit slide-rails obstruct access to the front of the 15kVA and 22kVA Power Distribution Unit (PDU) electrical sockets. If you use the standard AC power cables, first plug them in, and then install the slide-rails into the rack. After you install the slide-rails, you cannot disconnect or remove the standard AC power cables from the PDU but you can remove them from the system.

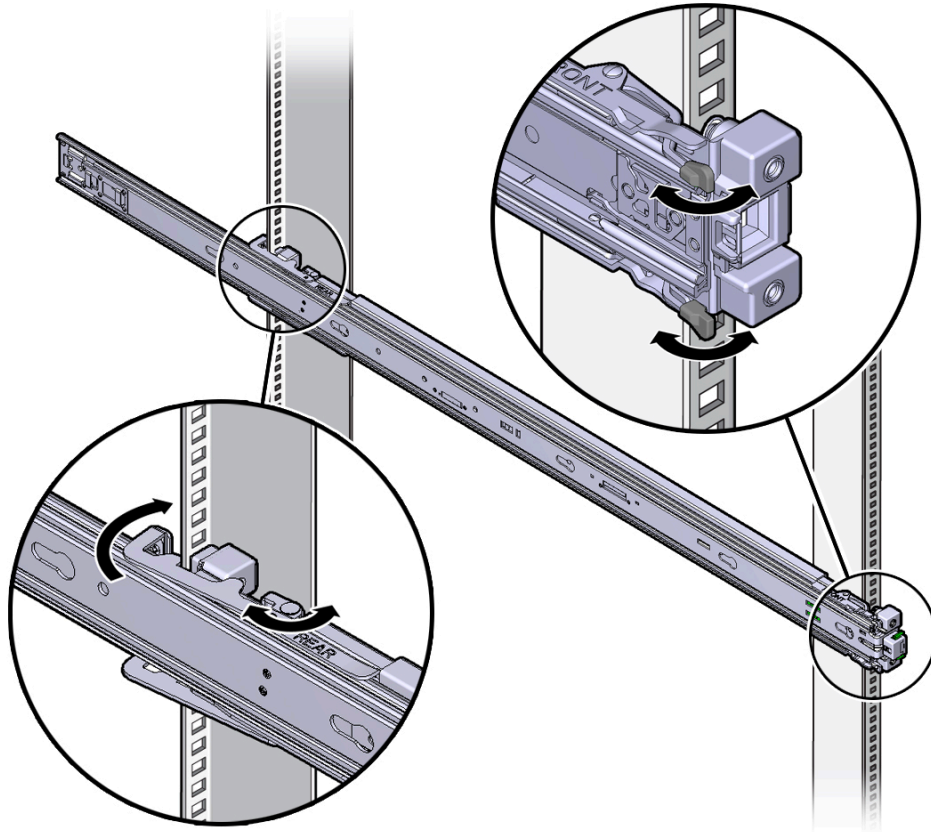
---

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



Callout	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 back of the slide-rail assembly against the inside of the back 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 45](#)

- [“Mark the Rackmount Location” on page 47](#)
- [“Install the Server Into the Slide-Rail Assemblies” on page 53](#)

## ▼ 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 - Personal Injury or Equipment Damage:** 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.

---



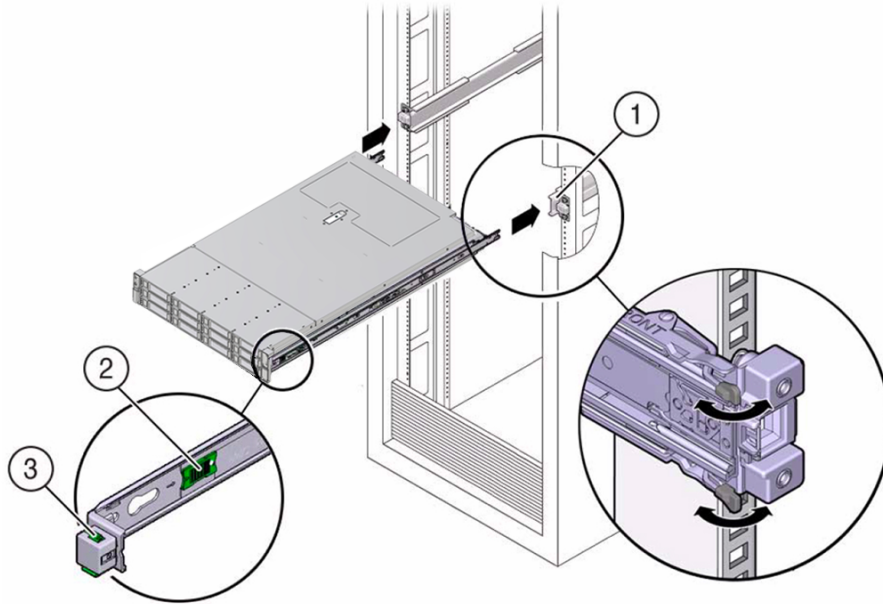
---

**Caution - Personal Injury or Equipment Damage:** Always load equipment into a rack from the bottom up so that the rack does not become top-heavy and tip over. Extend the rack 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 back ends of the mounting brackets are aligned with the slide-rail assemblies that are mounted in the rack.**

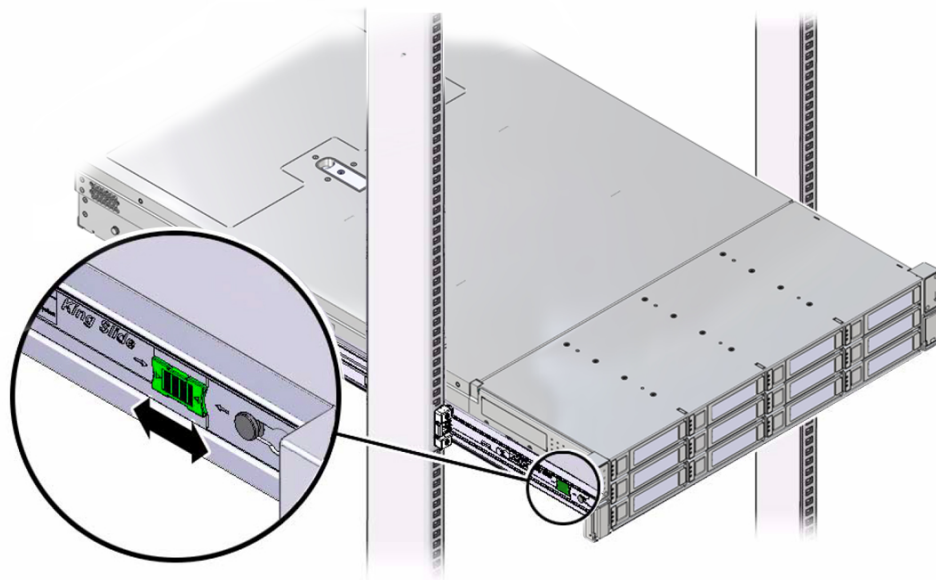
3. **Insert the mounting brackets into the slide-rails, and then push the server into the rack until the mounting brackets are flush with the slide-rail stops (approximately 30 cm, or 12 inches).**



Callout	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 with an audible click.



---

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

---

### Related Information

- [“Install the Cable Management Arm \(Optional\)” on page 55](#)

## ▼ Install the Cable Management Arm (Optional)

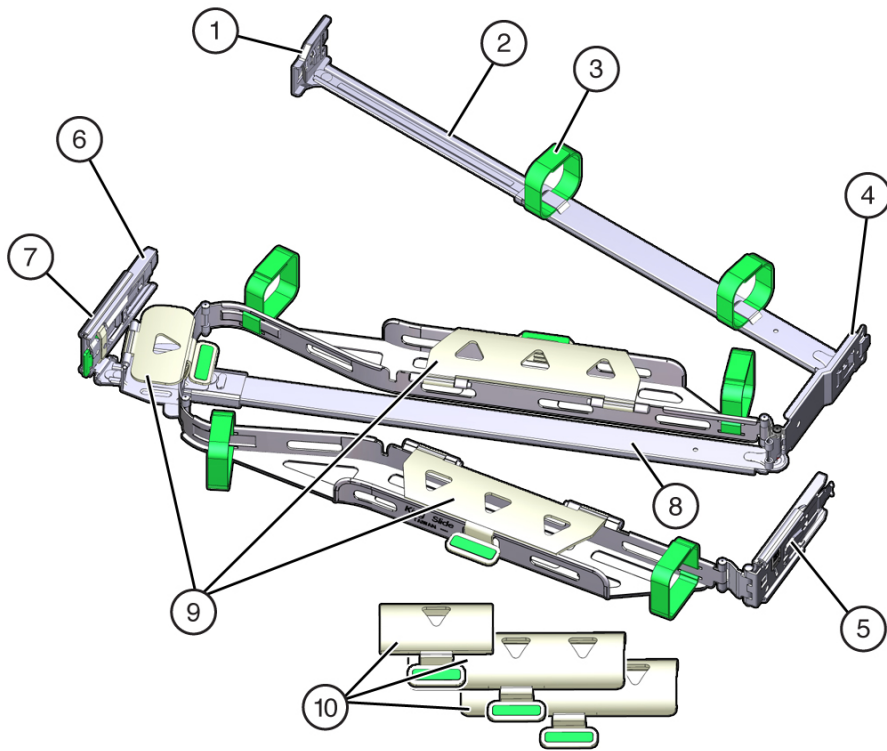
Follow this procedure to install the cable management arm (CMA), which you can use to manage cables connected to the back of the server.

---

**Note** - Before you install the CMAs, ensure that the right-angle AC power cables are long enough to connect to the rackmounted servers when routed through the CMAs.

---

**1. Unpack the CMA, which contains the following components.**



Callout	Description
1	Connector A
2	Front slide bar
3	Velcro straps (6)
4	Connector B
5	Connector C
6	Connector D



Callout	Description
7	Slide-rail latching bracket (used with connector D)
8	back slide bar
9	Server flat cable covers
10	Server round cable covers

2. **Ensure that you install the flat cable covers for your server on the CMA.**
3. **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 to the rack.

---

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

---



---

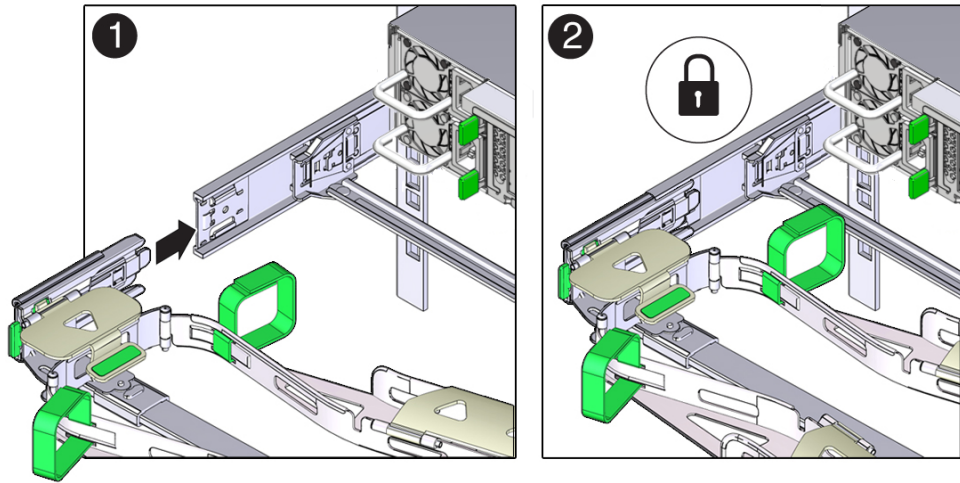
**Note** - Throughout this installation procedure, support the CMA and do not allow it to hang under its own weight until it is secured at all four attachment points.

---

6. **To install CMA connector A into the left slide-rail:**
  - a. **Insert CMA 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 front slot (callout 2).



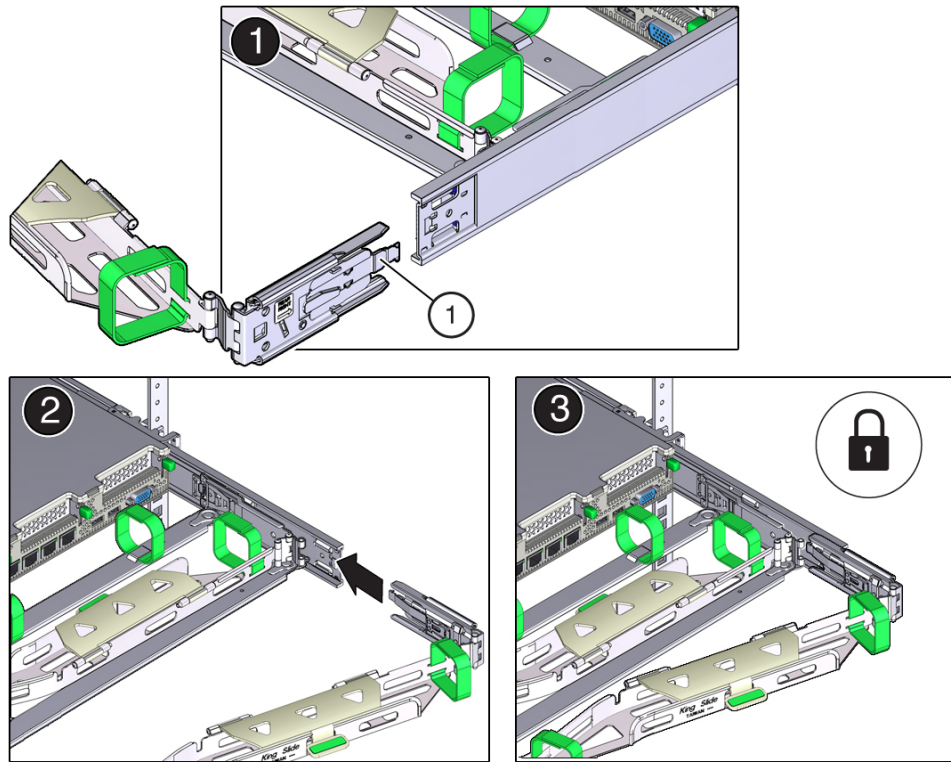
- b. Gently tug on the right side of the front slide bar to verify that connector B is properly seated.



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

8. To install CMA 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].



Callout	Description
1	Connector C locking spring

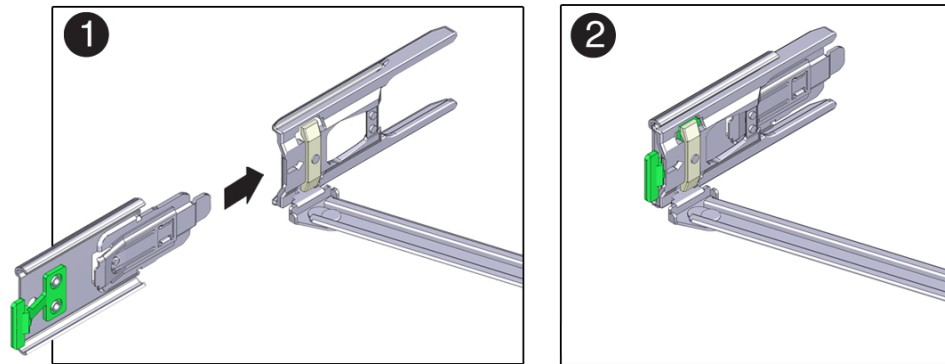
- b. Insert connector C into the right slide-rail until it locks into place with an audible click [frames 2 and 3].
- c. Gently tug on the right side of the CMA back slide bar to verify that connector C is properly seated.

9. To prepare CMA 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.

---



10. To install CMA 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].

---

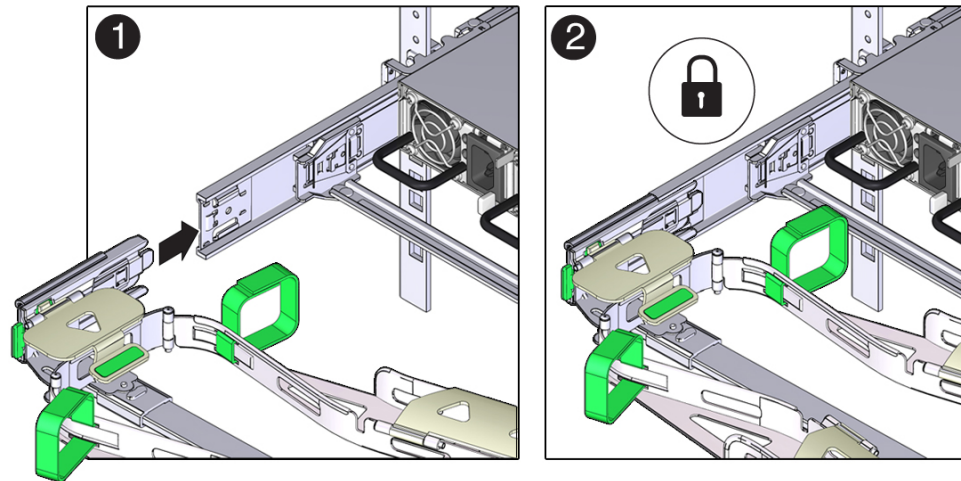
**Note** - When inserting connector D into the slide-rail, the preferred and easier method is to install connector D and the latching bracket as one assembly into the slide-rail.

---

- b. Gently tug on the left side of the CMA back 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.

---



11. 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.
12. To verify that the slide-rails and the CMA are operating properly before routing cables through the CMA:
  - a. Ensure that the rack anti-tilt bar is extended to prevent the rack from tipping forward when the server is extended.



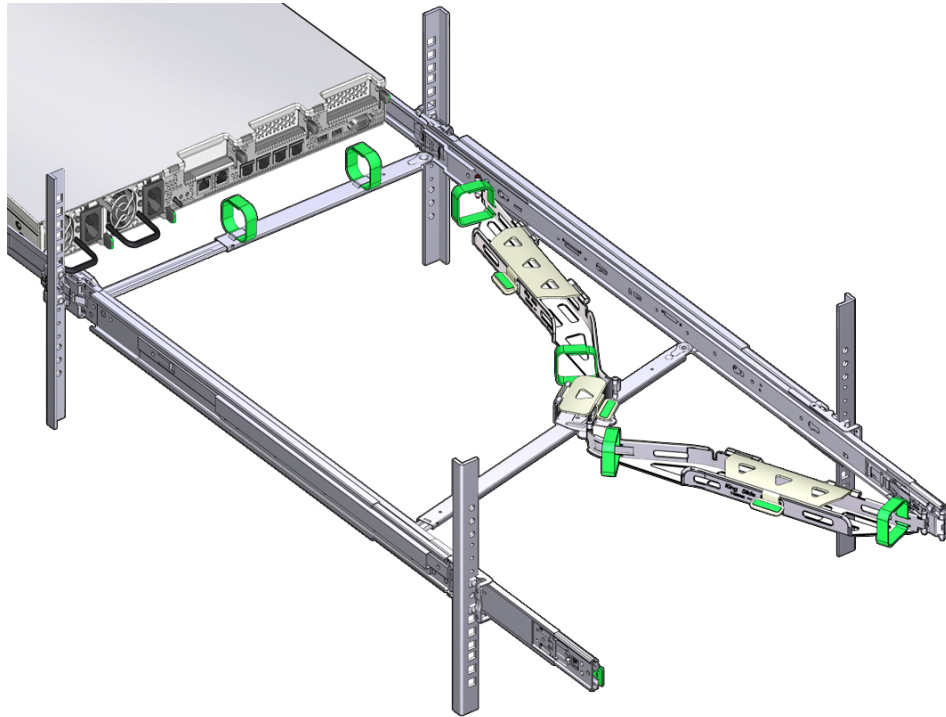
**Caution** -To reduce the risk of personal injury, stabilize the rack cabinet and extend the anti-tilt bar before extending the server from the rack.

---

For instructions to stabilize the rack, see [“Stabilize the Rack”](#) on page 44.

- 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.



13. 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.

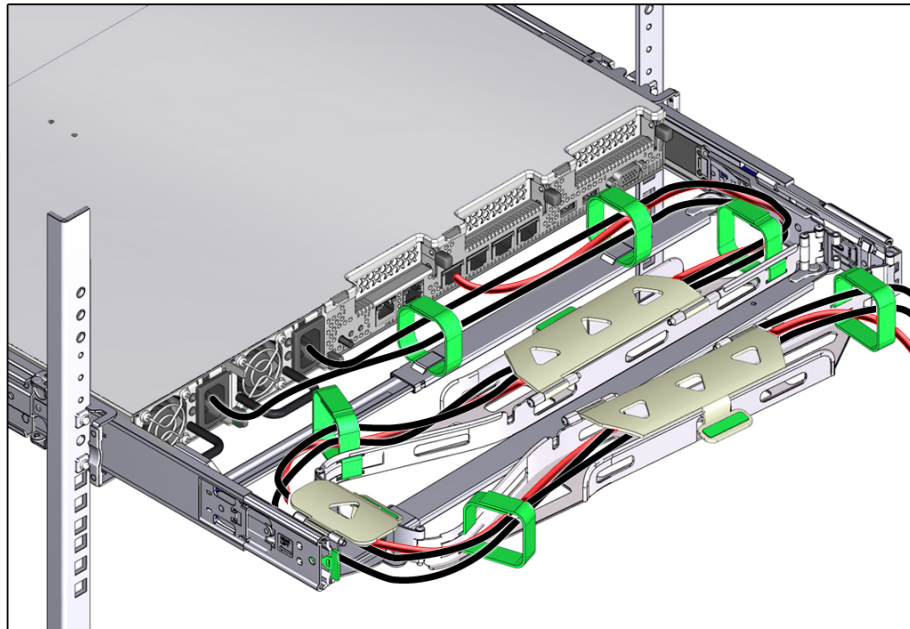




**c. Then through the back-most cable trough**



**Caution** - 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.



16. 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.
17. 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 66](#)

## ▼ Remove the Cable Management Arm

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

Before you begin this procedure, refer to the illustration provided in [Step 1](#) in the procedure [“Install the Cable Management Arm \(Optional\)” on page 55](#) to identify CMA connectors A, B, C, and D. 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, after you disconnect any of the CMA 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, ensure that the rack anti-tilt bar is extended.**



---

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

---

For instructions to stabilize the rack, see [“Stabilize the Rack” on page 44](#).

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 back 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:

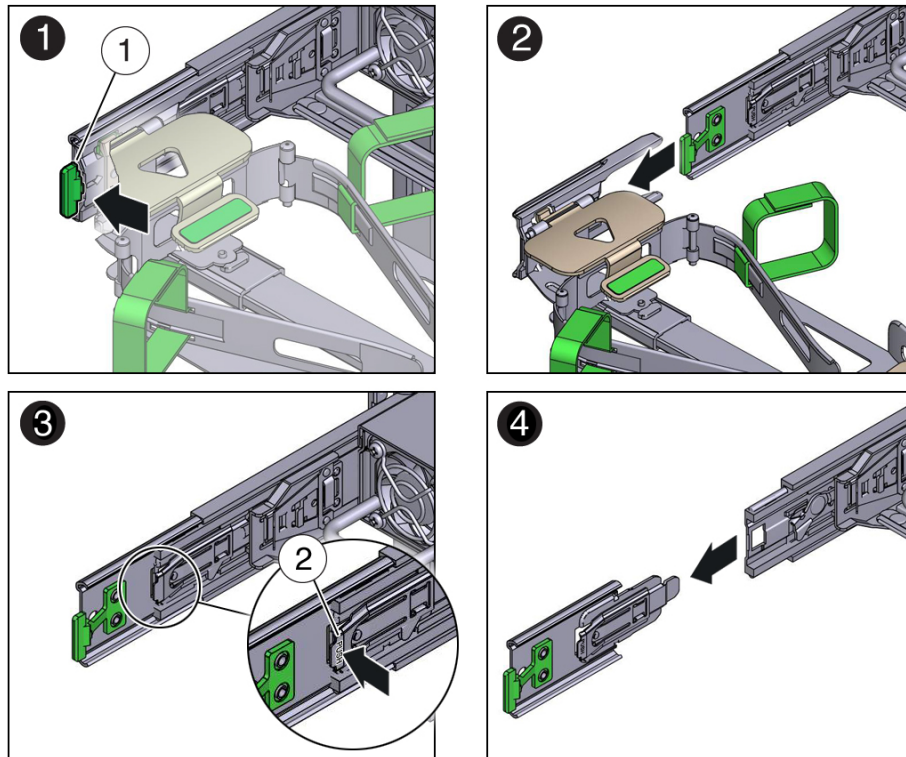
- a. Press the green release tab (callout 1) on the slide-rail latching bracket toward the left and slide the connector D out of the left slide-rail [frames 1 and 2].

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** - After you disconnect connector D, do 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.

---

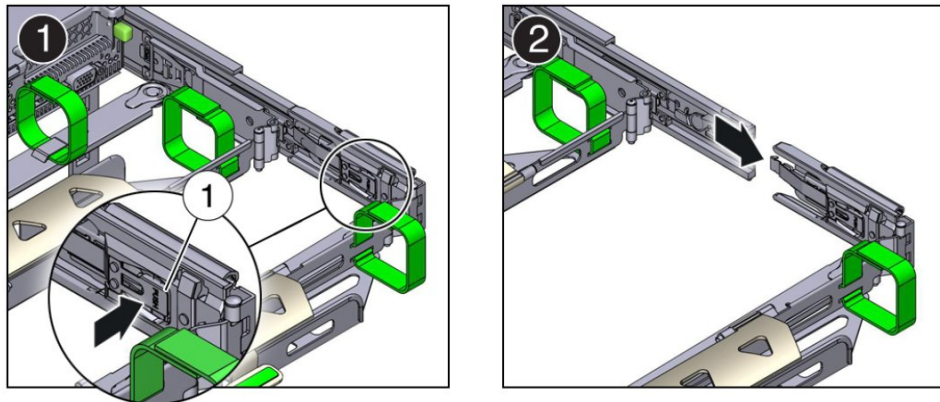


Callout	Description
1	Connector D release tab (green)
2	Slide-rail latching bracket release tab (labeled PUSH)

- 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:

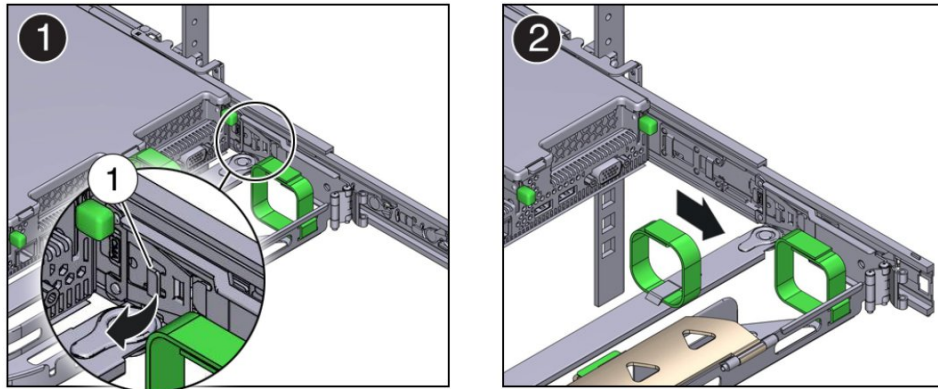
- a. Place your left arm under the CMA to support it.
- b. Use your right thumb to push in (toward the right) on the connector C release tab labeled PUSH (callout 1), and pull connector C out of the right slide-rail [frames 1 and 2].



Callout	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 back 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].

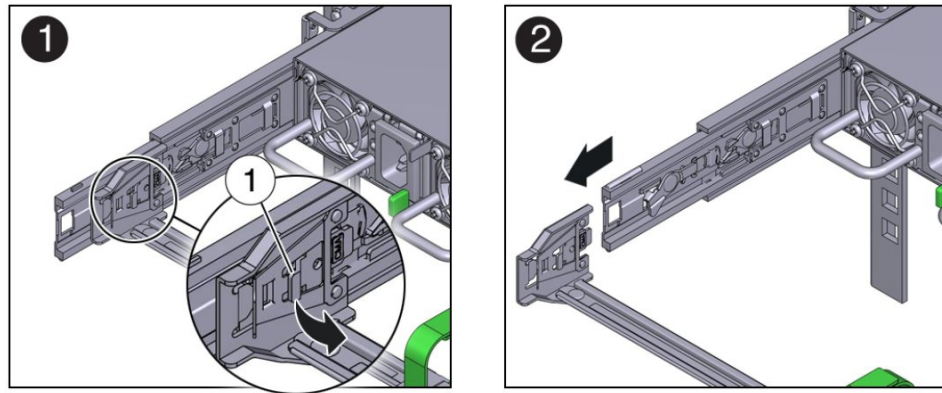


Callout	Description
1	Connector B release lever

**7. To disconnect connector A:**

- a. Place your left arm under the CMA to support it and grasp the back 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].



Callout	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 \(Optional\)” on page 55](#)

## Connecting Cables and Applying Power

---

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

- [“Cabling Requirements” on page 71](#)
- [“X7-2 Back Panel Connectors and Ports” on page 72](#)
- [“X7-2L Back Panel Connectors and Ports” on page 73](#)
- [“Preparing for Installation and Power On” on page 78](#)
- [“Logging In to Oracle ILOM and Powering On the Server” on page 79](#)

### Related Information

- [“Installation Procedure Overview” on page 11](#)
- [“Using Oracle ILOM” on page 83](#)

## Cabling Requirements

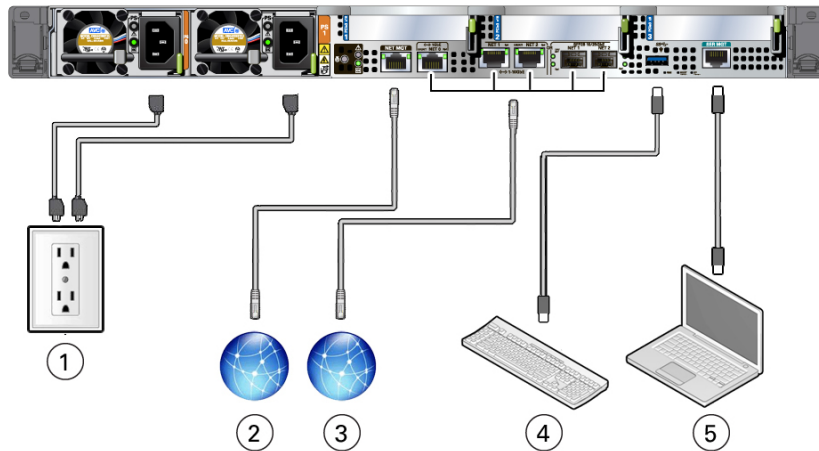
Read the following cable requirements for connecting the server.

- **Minimum cable connections for the server:**
  - At least one server on-board Ethernet network connection (NET port)
  - Serial management port (SER MGT): Service Processor (SP) local connection for Oracle ILOM boot messages
  - Power cables for the server power supplies
- **SP management ports:**
  - The SER MGT port uses an RJ-45 cable and is always available. This port is the default connection to the Oracle ILOM SP.
  - The network management port (NET MGT) is the optional connection to the Oracle ILOM SP. The NET MGT port is configured to use DHCP by default. To set a static IP address, see [“Modifying Network Settings” on page 88](#). The SP network management port uses an RJ-45 cable for a 10/100/1000 BASE-T connection.

- **Ethernet ports:**
  - The Ethernet ports, labeled NET 0, NET 1, and NET 2, connect the server to the network.
  - The Ethernet interfaces operate at 100 Mbps, 1000 Mbps, and 10,000 Mbps.
- **USB Ports:** You can connect and disconnect USB cables and peripheral devices while the server is running without affecting server operations.
- **AC power cables:** Two power supply connectors, one for each power supply.

## X7-2 Back Panel Connectors and Ports

The following figure shows the locations of cable connectors and ports on the back of the Oracle Server X7-2 and the cables and devices that you connect to them.



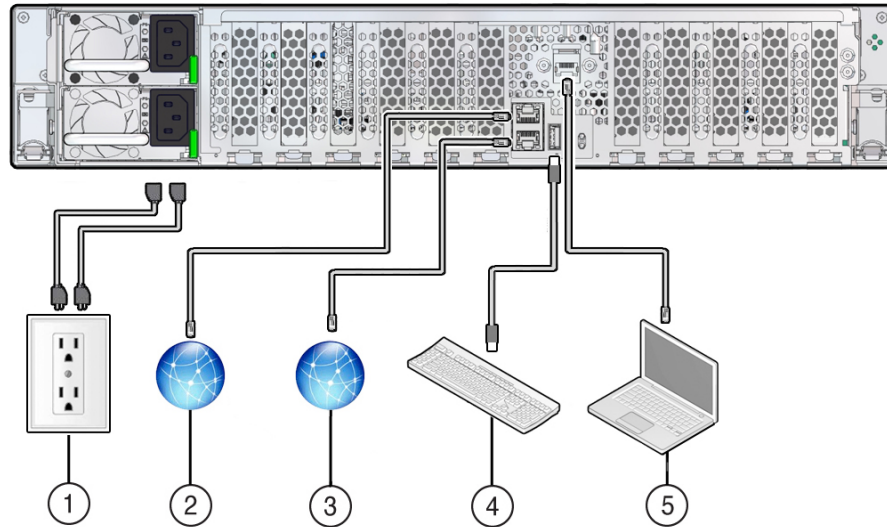
No.	Cable Port or Expansion Slot	Description
1	Power supply 0 input power Power supply 1 input power	The server has two power supply connectors, one for each power supply. Do not attach power cables to the power supplies until you finish connecting the data cables to the server. The server goes into Standby power mode, and the Oracle ILOM service processor initializes when the AC power cables



No.	Cable Port or Expansion Slot	Description
2	Network management port (NET MGT)	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. <b>Note</b> - Oracle ILOM signals a fault on any installed power supply that is not connected to an AC power source, since it might indicate a loss of redundancy.
3	Ethernet ports: <ul style="list-style-type: none"> <li>■ NET 0, 100/1000BASE-T RJ-45 GbE port</li> <li>■ NET 1 and NET 2, 10/25GbE SFP+ ports</li> <li>■ NET 1 and NET 2, 10GBASE-T RJ-45 GbE ports</li> </ul>	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.  The five Gigabit Ethernet (GbE) ports enable you to connect the system to the network.  Up to 10GbE is supported when using copper Gigabit Interface Converters (GBICS); up to 25GbE is supported when using optical GBICS. <b>Note</b> - The 10/25GbE SFP+ ports are the default network ports for the server. When using an SFP+ port, network connectivity is disabled on the 10GBASE-T RJ-45 GbE ports.
4	USB port	The USB port supports hot-plugging. You can connect and disconnect a USB cable or a peripheral device while the server is running without affecting system operations.
5	Serial management port (SER MGT)	The service processor SER MGT port uses an RJ-45 cable and terminal (or emulator) to provide access to the Oracle ILOM command-line interface (CLI). Using Oracle ILOM, you can configure it to connect to the system console. <b>Note</b> - This port does not support network connections.

## X7-2L Back Panel Connectors and Ports

The following figure shows the locations of cable connectors and ports on the back of the Oracle Server X7-2L and the cables and devices that you connect to them.



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 the 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. <b>Note</b> - 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	Ethernet port (NET 0)	The Ethernet port enables you to connect the system to the network. The Ethernet port uses an RJ-45 cable for a 100/1000BASE-T connection.
4	USB port	The USB port support hot-plugging. You can connect and disconnect a USB cable or a peripheral device while the server is running without affecting system operations.
5	Serial management port (SER MGT)	The service processor SER MGT port uses an RJ-45 cable and terminal (or emulator) to provide access to the Oracle ILOM command-line interface (CLI). Using Oracle ILOM, you can configure it to connect to the system console.

No.	Cable Port or Expansion Slot	Description
		<b>Note</b> - This port does not support network connections.

## USB Port

One USB 3.0 port is located at the rear panel. For Oracle Server X7-2 see the location of the USB port at [“X7-2 Back Panel Features” on page 29](#) . For Oracle Server X7-2L, see the location of the USB port at [“X7-2L Back Panel Features” on page 32](#). The USB port supports hot-plugging. You can connect and disconnect a USB cable or a peripheral device while the server is running without affecting server operations.

Each USB port supplies 5V output at 2A.

## SER MGT Ports

The SER MGT RJ-45 port, located on the rear panel, provides the default connection to the Oracle ILOM SP. For DTE to DTE communications, you can use a RJ-45 to DB-9 crossover adapter with a standard RJ-45 cable to achieve the required null modem configuration. See [“X7-2 Back Panel Features” on page 29](#) or [“X7-2L Back Panel Features” on page 32](#) for more information.



## NET MGT Port

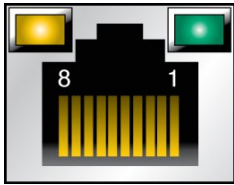
The NET MGT port, located on the rear panel, provides an optional Ethernet connection from Oracle ILOM to the SP. The NET MGT port uses an RJ-45 cable for a 10/100/1000 BASE-T connection. If your network does not use a DHCP server, this port is not available

until you configure network settings through the SER MGT port. See [“X7-2 Back Panel Features” on page 29](#) or [“X7-2L Back Panel Features” on page 32](#) for more information.

---

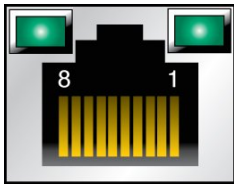
**Note** - You can configure the host network media for the network ports in Oracle ILOM or the BIOS options for the BCM network controller. See [“Configure the Oracle Server X7-2 Network Media” on page 77](#).

---



## Ethernet Ports

The Oracle Server X7-2 has three RJ-45 Gigabit Ethernet (GbE) ports (labeled NET0, NET1, and NET2) and two SFP+/SFP28 10/25GbE ports (labeled NET1 and NET2) on the server back panel. RJ-45 port NET0 supports 100/1000 GbE, and RJ-45 ports NET1 and NET2 support 1/10 GbE. The Oracle Server X7-2L has one RJ-45, 100/1000 GbE port, labeled NET0. Use any of these ports to connect the server to the network.



---

**Note** - To achieve 10 GbE network speeds, use Category 6 (or better) cables and network devices that support 1000BASE-T networks.

---

There are two status indicators (LEDs) for each Ethernet port:

- Indicators for RJ-45 ports are located above each port and display Link/Activity (left) and Speed (right)

- Indicators for SFP28 ports (Oracle Server X7-2 only) are located above and below each port and display Link/Activity (top) and Speed (bottom)

The following tables list the Ethernet transfer rates and the Speed LED colors for each server.

## Oracle Server X7-2

Connection Type	IEEE Terminology	Speed LED Color	Transfer Rate
Gigabit Ethernet (RJ-45)	100BASE-T	Off	1,000 Mbits/sec
Gigabit Ethernet (RJ-45)	10GBASE-T	Green	10,000 Mbits/sec
10 Gigabit Ethernet (SFP+/SFP28)	10GBASE-T	Off	10,000 Mbits/sec
25 Gigabit Ethernet (SFP+/SFP28)	25GBASE-T	Green	25,000 Mbits/sec

## Oracle Server X7-2L

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

## ▼ Configure the Oracle Server X7-2 Network Media

The Oracle Server X7-2 provides three network ports, one i210 based Gigabit Ethernet copper port and two ports attached to the BCM onboard network controller, which use either two 1/10-Gigabit Ethernet RJ-45 copper ports or two 10/25-Gigabit Ethernet SFP+/SFP28 ports. Configure network media by selecting the media type for the Ethernet ports using either Oracle ILOM or the BIOS options for the BCM network controller.

When the Oracle ILOM `auto_media_detection` option is enabled (default), either plug an Ethernet cable into the RJ-45 port or connect an SFP+/SFP28 transceiver into an SFP port. The system automatically configures the `active_media` option. If both SFP and RJ-45 ports are plugged in, the system defaults to the SFP port, and the RJ-45 ports are not usable.

To manually change the network media selection, perform the following procedure.

1. In Oracle ILOM, change the network media selection.

For example, change `active_media` from SFP28 to RJ45. Then reset or power cycle the system to change `current_active_media` to RJ45.

```
-> cd /HOST/network
/HOST/network
-> ls
/HOST/network
Targets:
Properties:
  active_media = SFP28
  auto_media_detection = disabled
  current_active_media = SFP28
Commands:
  cd
  set
  show
-> show current_active_media
/HOST/network
Properties:
  current_active_media = SFP28
-> set active_media=RJ45
Set 'active_media' to 'RJ45'
```

2. **Reset or power cycle the system for the new media selection to take effect.**

## Preparing for Installation and Power On

Setting up the server for the first time takes about 1 hour. If you are installing optional components and rackmounting hardware, plan for additional time.



---

**Caution - Do not apply main power until instructed to do so.** The server uses a service processor (SP) to configure and boot the host server. To 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.

---

### ▼ Prepare to Power On the Server

1. **Choose the preferred way to set up your server network environment.**  
The instructions in this guide work for any networking environment and require a terminal device for connecting the server to the Oracle ILOM SP and to power on the server. You

can establish a physical management connection to Oracle ILOM SP locally using the serial management port (SER MGT) or remotely using the Ethernet network management port (NET MGT). To establish a remote connection, see [“Log In to Oracle ILOM Using a Remote Ethernet Connection” on page 86](#).

2. **Obtain a terminal device to communicate with the SP, which can be a terminal, a terminal server, or a laptop running terminal emulation software.**

3. **Set up the terminal device to use 9600 baud, 8 bit, no parity, and 1 stop bit.**

For DTE-to-DTE communication, use an RJ-45 crossover adapter with a standard RJ-45 cable to set up a null modem configuration so that transmit and receive signals are crossed over.

## Logging In to Oracle ILOM and Powering On the Server

You can log in to Oracle ILOM and then power on the server using the management connection you established for connecting the Oracle ILOM SP.

### ▼ Log In to Oracle ILOM and Power On the Server

The following procedure explains how to cable the server for the first time to connect to the Oracle ILOM SP through the serial management (SER MGT) port.

1. **Connect a serial cable between the SER MGT port on the server and the terminal device.**

This connection enables the initial command-line interface (CLI) communication with the Oracle ILOM SP.

2. **Use the power cords to connect the power supplies to two separate AC power sources.**

The server is equipped with two power supplies. The server can operate with one power source; however, using only one power source eliminates redundancy.

After you connect the power cords to the server AC inlets and power sources, the following actions occur:

- The green AC OK power supply LEDs illuminate.
- During the Oracle ILOM SP initialization, the green SP OK LED flashes rapidly.
- After the Oracle ILOM SP fully initializes, the SP OK LED is steady on and the green System OK LED flashes slowly, indicating the host is in Standby power mode.

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

3. **Press Enter on the terminal device to create a connection between the terminal and the Oracle ILOM SP.**
4. **At the Oracle ILOM Login prompt, log in to Oracle ILOM using the root user account and the password changeme:**

*host-name* login: root

Password: changeme

The Oracle ILOM CLI prompt -> appears.

---

**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, change the default password (changeme) for the default Administrator account (root) after your initial login.

If this default Administrator account has since been changed, contact your system administrator for an Oracle ILOM user account with Administrator privileges.

For information about how to change the root password, refer to the Oracle Integrated Light Out Manager (ILOM) Documentation library at: <https://www.oracle.com/goto/ilom/docs>

---



---

**Caution** - Do not apply main power to the server until you are ready to install an operating system. At this point, power is supplied only to the SP and the power supply fans.

---

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

-> **start /System**

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

->**start /HOST console**

Are you sure you wan to start /HOST console (y/n)? **y**

serial console started

The host boots and the server enters Main power mode. The host power-on self-test (POST) and BIOS output appear on the service terminal device. The following actions occur:

- The green System OK LED on the server front panel flashes rapidly to indicate that the host is booting.
- The green System OK lights are steady on when the host is booted and the server is in Main power mode.



For information about powering on the server using other methods, see [“Controlling System Power” on page 119](#).



# Using Oracle ILOM

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The Oracle Server X7-2 and Oracle Server X7-2L are shipped with the latest version of Oracle Integrated Lights Out Manager (ILOM). Oracle ILOM is system management firmware embedded on the service processor (SP). It provides extensive management and monitoring capabilities for the server.

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

- [“Connecting to Oracle ILOM” on page 83](#)
- [“Oracle ILOM Hardware and Interfaces” on page 84](#)
- [“Accessing Oracle ILOM” on page 84](#)
- [“Modifying Network Settings” on page 88](#)
- [“Redirecting the Host Console Using Oracle ILOM” on page 92](#)
- [“Troubleshooting Oracle ILOM” on page 131](#)

## Related Information

- [“Installation Procedure Overview” on page 11](#)
- [“Connecting Cables and Applying Power” on page 71](#)

## Connecting to Oracle ILOM

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

- **Direct connection to SER MGT port (CLI only)** – For information, see [“Log In to Oracle ILOM Using a Local Serial Connection” on page 85](#).
- **Dedicated remote network management connection** – For information, see [“Log In to Oracle ILOM Using a Remote Ethernet Connection” on page 86](#).
- **Remote sideband management connection** – For information, refer to Sideband Network Management Connection in the *Oracle ILOM Administrator's Guide for Configuration and Maintenance, Firmware Release 5.0.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 5.0.x* at <https://www.oracle.com/goto/ilom/docs>.

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

## Oracle ILOM Hardware and Interfaces

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

Component	Function
Hardware	<ul style="list-style-type: none"> <li>■ Embedded service processor (SP) chipset that monitors the status and configuration of components such as fans, storage drives, and power supplies</li> <li>■ Two back panel external connections: NET MGT port Ethernet connection and SER MGT port RJ-45 serial management connection</li> </ul>
Interfaces	<ul style="list-style-type: none"> <li>■ Web browser interface</li> <li>■ Command-line interface (CLI), available over SSH or through a direct connection to the SER MGT port</li> <li>■ IPMI TLS (Refer to <i>IPMI TLS</i> in the <i>Oracle ILOM Protocol Management Reference for SNMP and IPMI</i>)</li> <li>■ SNMP v3 interface</li> </ul>

### Related Information

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

## Accessing Oracle ILOM

You can log in to the Oracle ILOM command-line interface (CLI) locally using the RJ-45 serial management port (SER MGT). You also can log in to the Oracle ILOM web interface or CLI remotely using one of the network ports on the server.

To log in to Oracle ILOM, follow these procedures:

- [“Log In to Oracle ILOM Using a Local Serial Connection” on page 85](#)

- [“Log In to Oracle ILOM Using a Remote Ethernet Connection” on page 86](#)

To log out of Oracle ILOM, follow this procedure:

- [“Exit Oracle ILOM” on page 88](#)

## ▼ Log In to Oracle ILOM Using a Local Serial Connection

---

**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, change the default password (changeme) for the default Administrator account (root) after your initial login.

If this default Administrator account has since been changed, contact your system administrator for an Oracle ILOM user account with Administrator privileges.

For information about how to change the root password, refer to the Oracle Integrated Light Out Manager (ILOM) Documentation library at: <https://www.oracle.com/goto/ilom/docs>

---

**Note** - To prevent unauthorized access to Oracle ILOM, create user accounts for each user. For details, refer to the Oracle Integrated Lights Out Manager (ILOM) Documentation Library at <https://www.oracle.com/goto/ilom/docs>.

---

1. **Ensure that the server is cabled for a local serial connection to Oracle ILOM.**  
See [“Connecting Cables and Applying Power” on page 71](#).
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 press Enter.**
4. **At the password prompt, type the password associated with your user name, and press Enter.**

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

### Related Information

- [“Connecting Cables and Applying Power” on page 71](#)

- “Troubleshooting Oracle ILOM” on page 131

## ▼ Log In to Oracle ILOM Using a Remote Ethernet Connection

You can log in to the Oracle ILOM web interface or CLI remotely using one of the network ports on the server.

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 “[Troubleshooting Oracle ILOM](#)” on page 131.

---

**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, change the default password (changeme) for the default Administrator account (root) after your initial login.

If this default Administrator account has since been changed, contact your system administrator for an Oracle ILOM user account with Administrator privileges.

For information about how to change the root password, refer to the Oracle Integrated Light Out Manager (ILOM) Documentation library at: <https://www.oracle.com/goto/ilom/docs>

---

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.**

For instructions on establishing a physical management connection to Oracle ILOM see “[Connecting Cables and Applying Power](#)” on page 71.

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

- **From the web interface:**

- a. Type the IP address of the server in the address field of your web browser and press Enter.**
- b. On the Oracle ILOM login screen, type your user name and password, and click Log In.**

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

The screenshot shows the Oracle ILOM web interface. The 'Summary Information' page is active, displaying a navigation menu on the left and a main content area. The main content area is divided into 'General Information' and 'Status' sections.

**General Information:**

System Type	Rack Mount
Model	ORACLE SERVER X7-2
Chassis ID	Q12997
Part Number	7238287
Serial Number	1787XC391B
RFID Serial Number	unknown
System Identifier	-
System Firmware Version	4.0.0.0
Firmware Operating System	Not Available
Host Primary MAC Address	00:10:9d:c3:b8:02
ILOM Address	10.153.03.52
ILOM BMC Address	00:10:9d:c3:b8:06

**Actions:**

- Power State:  CFF
- Locator Indicator:  CFF
- System Firmware Update:
- Remote Console:

**Status:**

Subsystem	Status	Details	Inventory
Processors	OK	Processor Architecture: x86_64-bit Processor Summary: Two Intel Xeon E7-4000 Installed RAM Size: 32 GB	Processors: 2 / 2 (Installed / Maximum) DIMMs: 2 / 24 (Installed / Maximum)
Memory	OK		
Power	OK	Permitted Power Consumption: 910 watts Actual Power Consumption: 30 watts	PSUs: 2 / 2 (Installed / Maximum)
Cooling	OK	Hot Air Temperature: 26 °C Chassis Air Temperature: 33 °C	Chassis Fans: 16 / 16 (Installed / Maximum) PSU Fans: Not Supported
Storage	Not Available	Installed Disk Size: Not Available Disk Controller: Not Available	Internal Disks: 3 / 10 (Installed / Maximum)
Networking	OK		Ethernet NICs: 3 (Installed) InfiniBand HCA: 0 (Installed)

- **From the 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 successfully logged in to Oracle ILOM.

## ▼ Exit Oracle ILOM

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

- **To end an Oracle ILOM session:**
  - **Oracle ILOM web interface** – Click the **Log out** button in the top-right corner of the screen.
  - **From the Oracle ILOM CLI** – Type **exit** at the CLI prompt.

## Modifying Network Settings

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

- [“Modifying Network Settings” on page 88](#)
- [“Test the IPv4 or IPv6 Network Configuration” on page 90](#)

The servers support dual-stack IPv4 and IPv6 settings, which enable Oracle ILOM to fully operate in an IPv4 or IPv6 network environment.

- **IPv4 configurations** – DHCP is enabled by default, allowing a DHCP server on the network to automatically assign network settings to the service processor.
- **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, accept the default settings. However, if you want to modify the service processor network settings, use the following procedures.

## ▼ Modify 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 interface and CLI instructions for viewing and modifying the network settings that are assigned to the SP.



1. **Log in to Oracle ILOM as an Administrator from the web interface or CLI. For details, see “[Accessing 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:**
    - a. **Click ILOM Administration → Connectivity → Network.**
    - b. **Modify the settings on the Network Settings page, as required. For details, click the *More Details* link.**
    - c. **Click Save.**

---

**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:**
  - 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 state=disabled), Oracle ILOM supports an IPv4-only network connection.

---

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

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

---

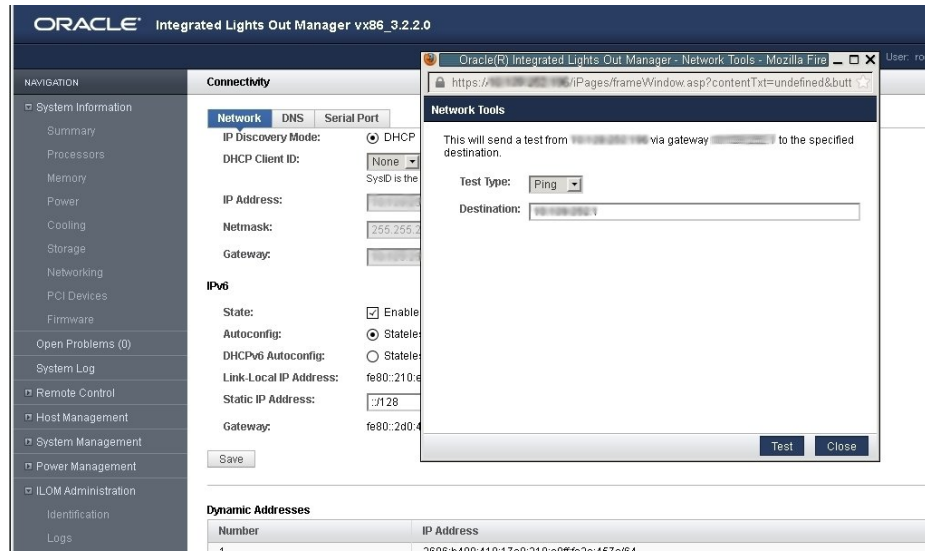
**Note** - All user sessions on the SP are terminated upon committing the IP network property changes. To log back in to Oracle ILOM, use the newly assigned service processor IP address.

---

## ▼ 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:
    - a. Click ILOM Administration → Connectivity → Network.

- b. On the Connectivity page, click the Tools button.



- c. On the Network Tools page, in the Test Type list box, select Ping (for an IPv4 configuration) or Ping6 (for an IPv6 network configuration).

If the test was successful, the message Ping of *ip\_address* succeeded message appears below the Destination field in the Network Configuration Test screen.

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

■ From the Oracle ILOM CLI

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

## 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

The Oracle ILOM Remote System Console Plus supports a full-control console video session for a primary user and view-only console video sessions for all other signed-in users. By default, a maximum of four video redirection sessions can be launched from the 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.

For instructions, see the following sections:

- [“Set the Mouse Mode” on page 93](#)
- [“Redirect Host Server Desktop or Storage Devices” 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 must be set according to the requirements of the operating system that you are using to connect to Oracle ILOM. Read the following guidelines to determine the appropriate mouse mode for your system:

Operating Systems	Mouse Mode
<ul style="list-style-type: none"> <li>■ Oracle Solaris</li> <li>■ Windows Server</li> </ul>	Absolute
<ul style="list-style-type: none"> <li>■ Oracle Linux 6.x</li> <li>■ Oracle Linux 7</li> </ul>	Absolute
Oracle VM	Not applicable

For more information about selecting a mouse mode, refer to the *Oracle ILOM Administrator's Guide for Configuration and Maintenance, Firmware Release 5.0.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 86](#).
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

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 93](#)).
- 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 server.

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 [“Accessing Oracle ILOM” on page 84](#).

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

A 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 that 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.**

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

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

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

The Oracle ILOM Remote System Console Plus application must have exclusive control of 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 changes to Disconnect.

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

**g. To remove a storage media entry 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 4.x* at <https://www.oracle.com/goto/ilom/docs>.

## ▼ Access Serial Remote Host Console

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 5.0.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 85.

1. **Log in to the Oracle ILOM CLI using an account with Administrator privileges.**

For instructions, see “[Log In to Oracle ILOM Using a Remote Ethernet Connection](#)” on page 86.

2. **At the Oracle ILOM command 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 and then press Shift + 9 to enter the open parenthesis ( character.**



# Configuring Storage Drives for Operating System Installation

---

This section describes how to prepare a server boot disk for operating system installation using the BIOS Setup Utility RAID configuration tools. For more information on configuring BIOS settings, refer to the BIOS information in the server Service Manual.

- [“Storage Drive Configuration” on page 97](#)
- [“RAID Configuration Requirements” on page 98](#)
- [“Configuring RAID” on page 99](#)
- [“Installing an Operating System” on page 117](#)

## Related Information

- [“Installation Procedure Overview” on page 11](#)
- Host Bus Adapter (HBA) Documentation Collection at: [https://docs.oracle.com/cd/F24174\\_01/index.html](https://docs.oracle.com/cd/F24174_01/index.html)

## Storage Drive Configuration

Your server may have been shipped with an internal host bus adapter (HBA) card installed. To learn more about the internal HBA card, see the *Oracle Storage 12 Gb SAS PCIe RAID HBA, internal: 16 port and 2 GB memory Internal Installation Guide* at [https://docs.oracle.com/cd/E52363\\_01/index.html](https://docs.oracle.com/cd/E52363_01/index.html).

Use the following guidelines to determine how to configure storage drives.

- If your server comes with a RAID internal HBA card installed and any amount of HDDs or SDDs, then the system is shipped with each HDD or SSD as part of its own RAID 0 configuration.

- To install an OS, ensure that the drive where you want to install the OS is visible to the system.
- To install and boot an OS, you need to create a RAID volume on the drive.
- If you do not want to use a RAID array, configure a drive as a RAID 0 volume.
- You can use the BIOS RAID configuration utilities to configure RAID on the internal HBA card. See “[Configuring RAID](#)” on page 99.

The following table lists the disk requirements for each supported RAID level:

RAID Level	Number of Disks Required
0	1
1	2
5	3
6	4
10	4
50	6
60	8

After you create a bootable RAID volume, install the OS. For details, refer to the operating system installation guide in <https://www.oracle.com/goto/x7-2/docs> or <https://www.oracle.com/goto/x7-2l/docs>.

## RAID Configuration Requirements

Reconfiguring storage drives into RAID volumes is an optional task. 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 are going to install an operating system and you want to configure multiple server storage drives into one or more RAID volumes, configure the server storage drives into RAID volumes before you install the operating system.
- **Option 2** – If you are going to install an OS, but you do not want to configure the server storage drives into RAID volumes, refer to the OS installation instruction in the *Oracle Servers X7-2 and X7-2L Operating Systems Installation Guide*.

For information on creating RAID volumes after installing an operating system, refer to the *Oracle X7 Series Servers Administration Guide* at <https://www.oracle.com/goto/x86admindiag/docs>.

## Related Information

- [“Configuring RAID” on page 99](#)

# Configuring RAID

The BIOS RAID configuration utilities support configuring RAID. You can configure RAID arrays using Rapid Storage Technology Enterprise (RSTe) or the BIOS RAID configuration Utilities.

Before you can install an OS on a storage device:

- The storage device must appear as a valid target to the OS installation program.
- If you want a RAID array, configure the RAID volume before installing the OS.



---

**Caution** - Configuring RAID removes the OS and all other data from the target drives.

---

There are two types of RAID:

- **Hardware RAID** - An internal Host Bus Adapter (HBA) card manages the array and presents the volumes to the OS as simple disks. Hardware RAID unburdens the OS and is more robust than software RAID.  
The Oracle Storage 12 Gb SAS PCIe RAID Host Bus Adapter supports hardware RAID.
- **Software RAID** - The OS manages the array, which normally must be created and configured using an OS. In a typical use case, you boot an OS on one device to create a software RAID volume on a different device.

## ▼ Configure RAID Using the Avago MegaRAID Configuration Utilities

Before you begin this procedure, create at least one virtual drive, or RAID volume, using the BIOS Configuration Utility or RSTe.

Perform this procedure to make a RAID volume (virtual drive) bootable if you created more than one RAID volume. You do *not* need to perform this procedure if you only created one virtual drive.

**1. Access the host console locally or through Oracle ILOM.**

For instructions, see [“Accessing Oracle ILOM” on page 84.](#)

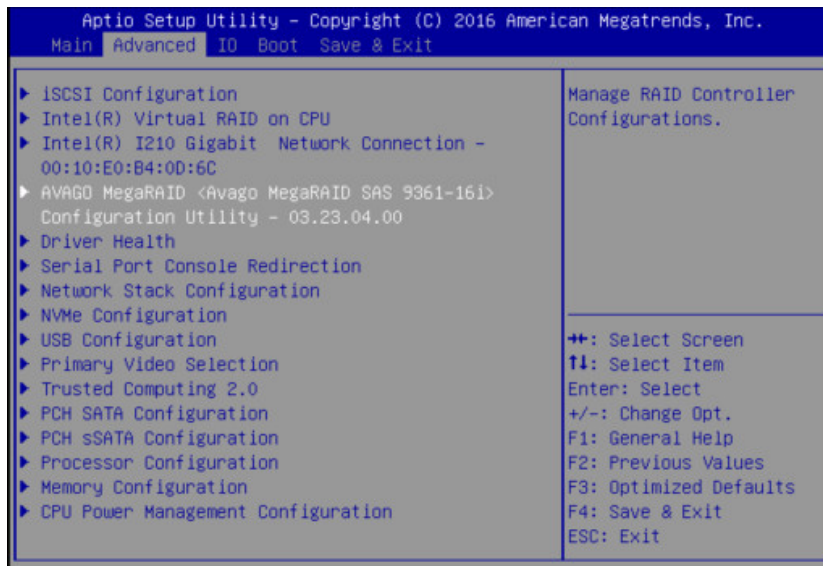
**2. Reset or power on the server.**

For example, to reset the server:

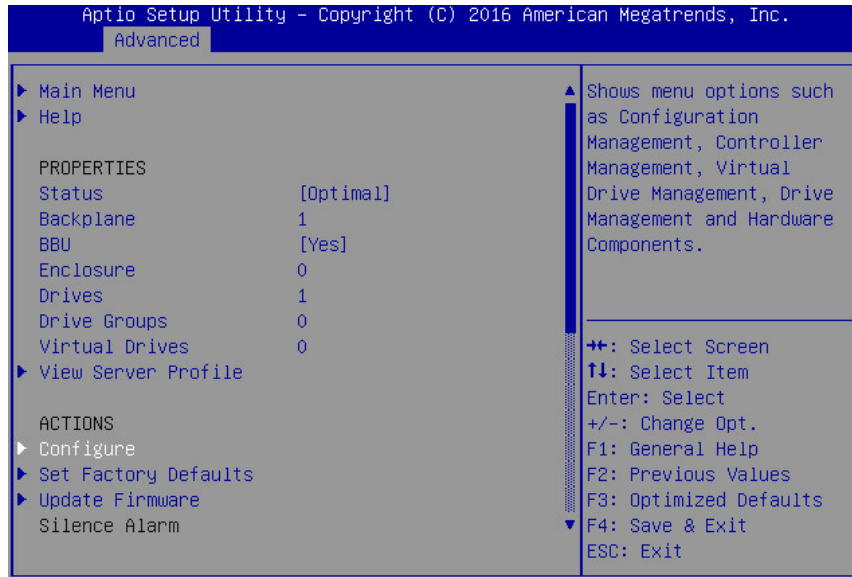
- **From the local server,** press the On/Standby button on the front panel of the server for approximately 1 second to power off the server, and then press the On/Standby button again to power on the server.
- **From the Oracle ILOM web interface,** select Host Management → Power Control, and then select 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.

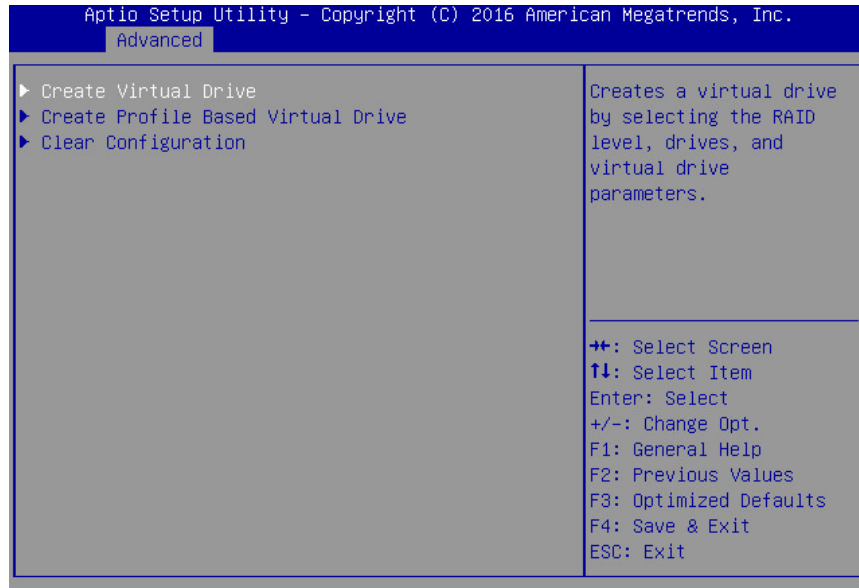
**3. On the BIOS Setup Utility screen, select the Advanced tab, select Avago MegaRAID Configuration Utility, and press Enter.**



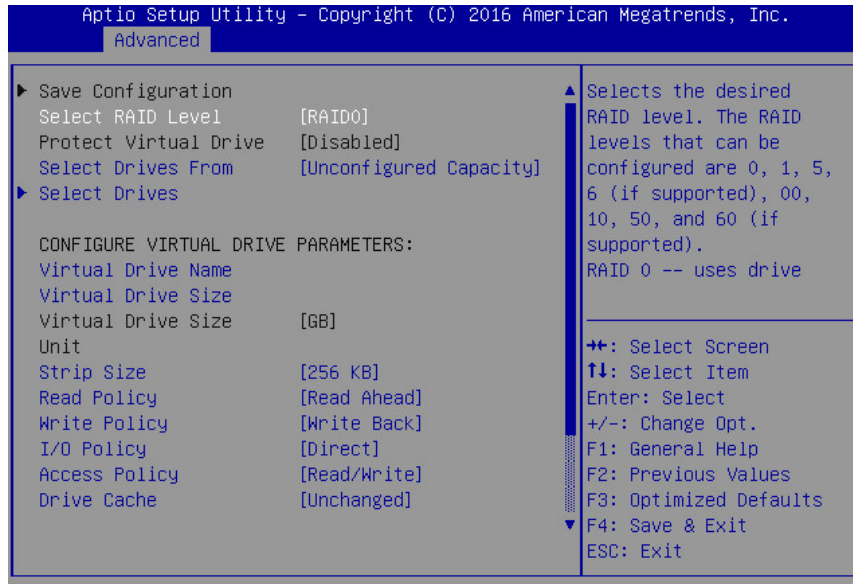
4. From the ACTIONS Menu, select Configure.



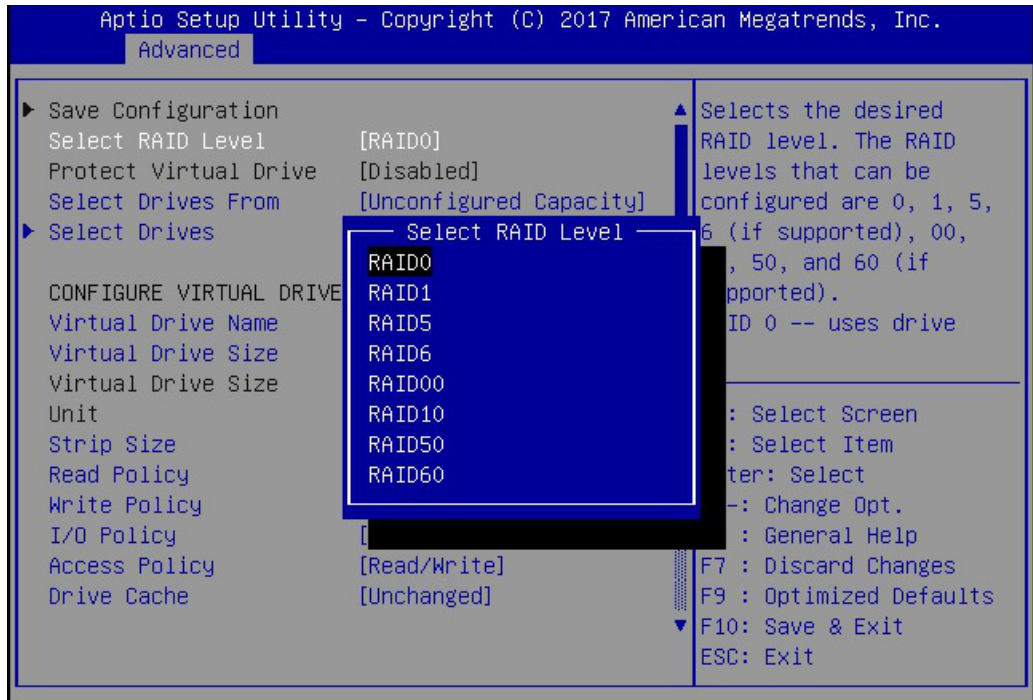
**5. Select Create Virtual Drive and press Enter.**



The Create Virtual Drive – menu appears.

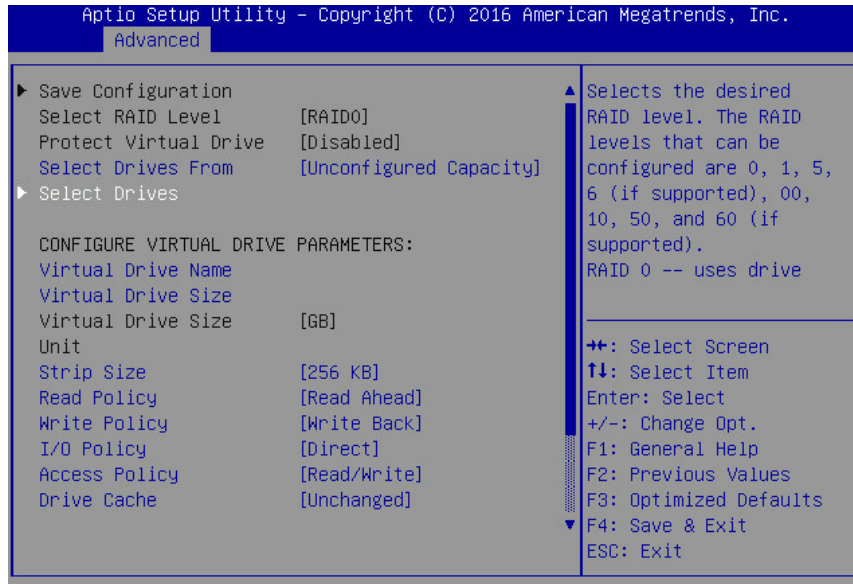


6. Select RAID Level and press Enter to set the RAID level.



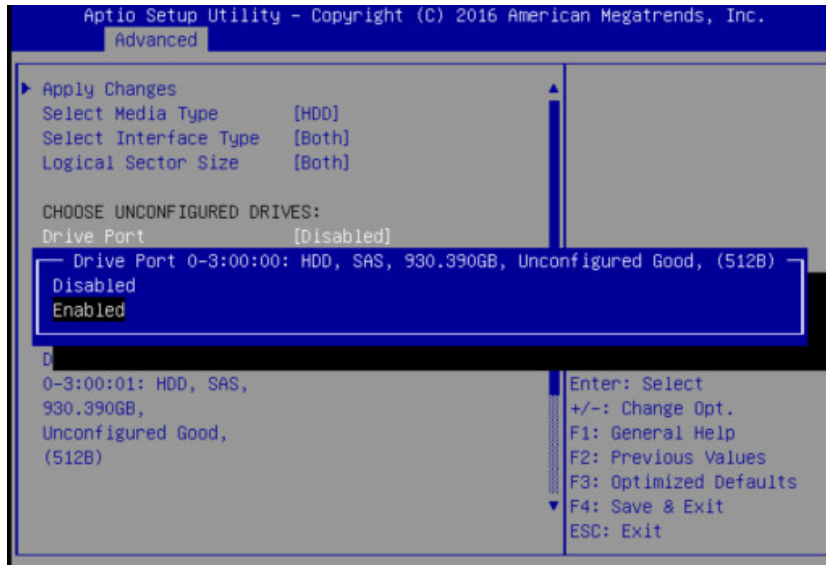


**7. Navigate to Select Drives and press Enter.**



**8. Select the drives you want to configure.**

9. To enable drives, press Enter and select Enabled. Press ESC to close the pop up.

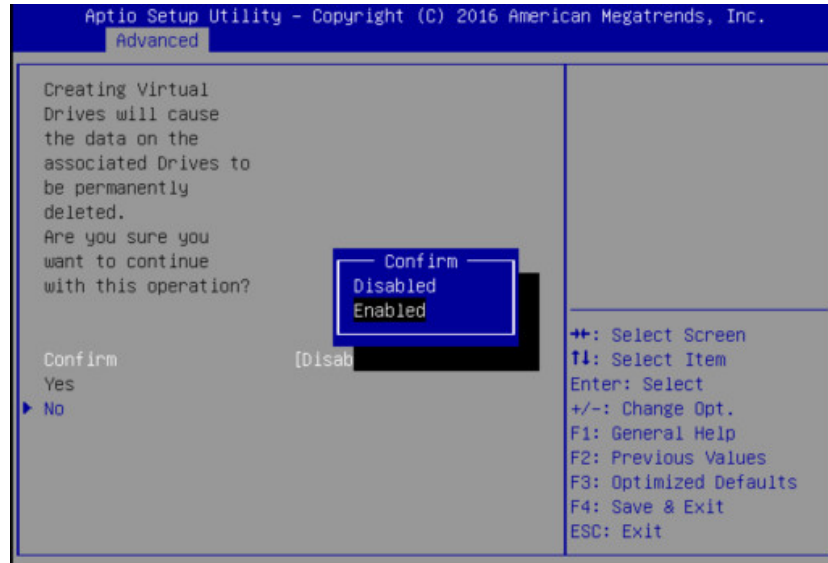


10. Select Apply Changes, and press Enter.

For more information on performing this procedure, refer to the *12GB/s MegaRAID SAS Software User's Guide* located at <https://docs.broadcom.com/docs/pub-005110>.

11. To return to the Create Virtual Drive Advanced Menu, press ESC.
12. Select Save Configuration.

13. **Select Confirm, select Enabled, and press Enter.**



14. **To save your new boot configuration, select Yes.**
15. **To exit the Avago MegaRAID Utility, press the ESC.**

## Rapid Storage Technology Enterprise (RSTe)

You can create and manage RAID arrays on the Oracle Servers X7-2 and X7-2L SATA M.2 (SSDs) using Intel Rapid Storage Technology Enterprise (RSTe) which provides the following benefits:

- Additional protection from data loss.
- Data is protected against a drive failure when you configure your system for RAID level 1 (mirror).
- Additional advantage of allowing an operating system to install directly to the RAID volume.
- BIOS exports the volumes as a target device to the operating system installer, streamlining the OS installation.
- The OS uses the system CPUs to manage and configure the RAID volumes.

You can configure the volumes from the BIOS level or from Windows or Linux operating systems.

---

**Note** - VMware ESXi and Oracle Solaris do not support RSTe. You can mirror Oracle Solaris M.2 root volumes with Oracle ZFS File System.

---

## ▼ Configure RAID Using RSTe

This procedure configures a RAID volume so that you can install an operating system.

---

**Note** - This procedure applies only to servers with SATA M.2 SSDs.

---

### 1. Access the host console locally or through Oracle ILOM.

For instructions, see [“Accessing Oracle ILOM” on page 84](#).

### 2. Reset or power on the server.

For example, to reset the server:

- **From the local server**, press the On/Standby button on the front panel of the server for approximately 1 second to power off the server, and then press the On/Standby 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.

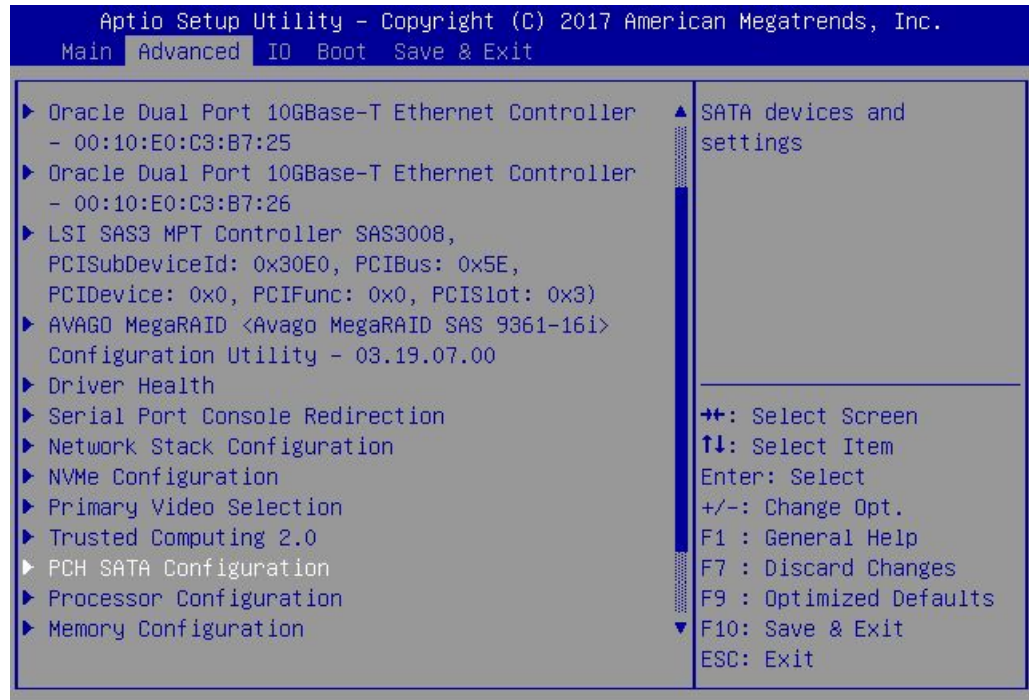
### 3. When prompted in the BIOS screen, press F2 (Ctrl+E from a serial connection) to launch the BIOS Setup Utility.

---

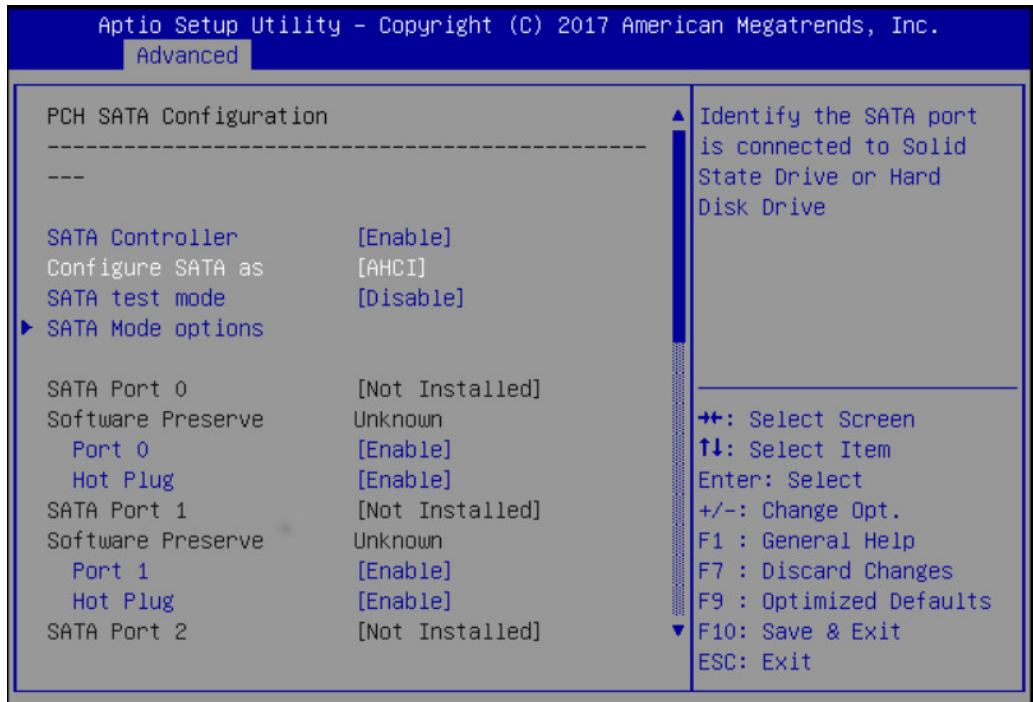
**Note** - The steps and screens in this procedure are examples. What you actually see might differ depending on your system equipment and configuration.

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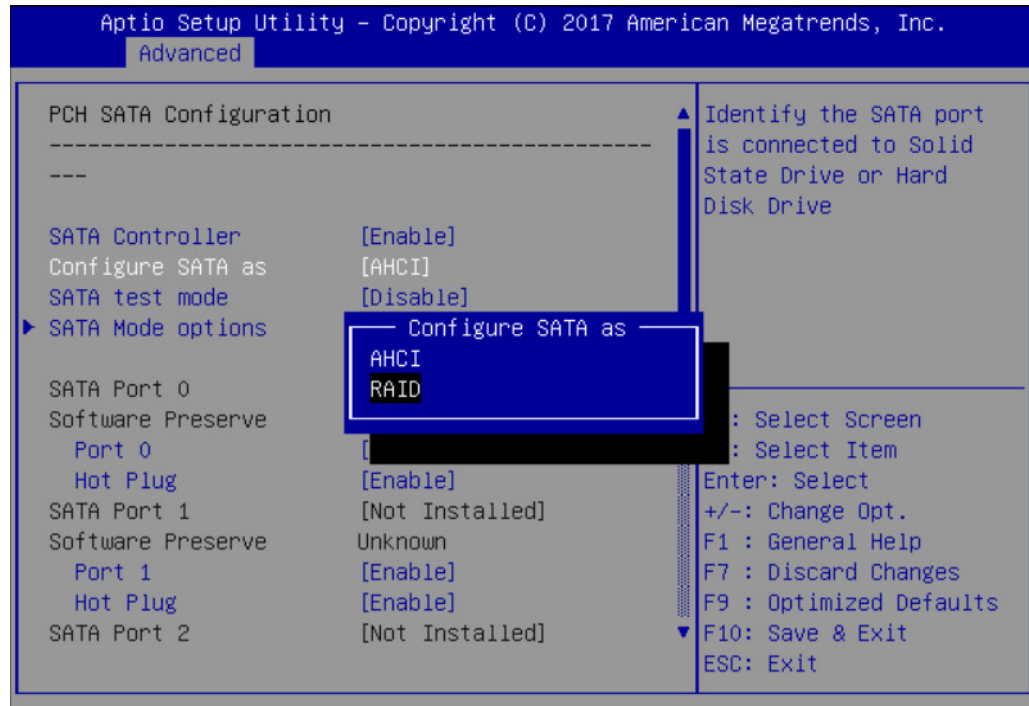
4. On the BIOS Setup Utility screen, select the Advanced tab, select PCH SATA Configuration, and press Enter.



5. On the PCH SATA Configuration screen, select Configure SATA as.

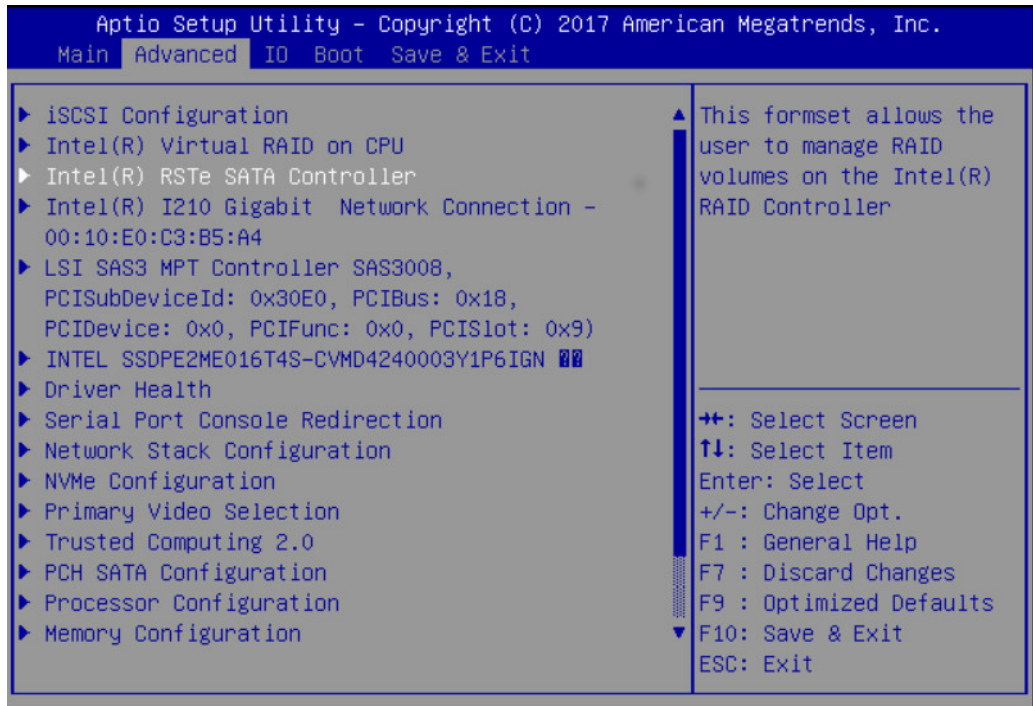


6. In the Configure SATA as pop up, select RAID and press Enter.



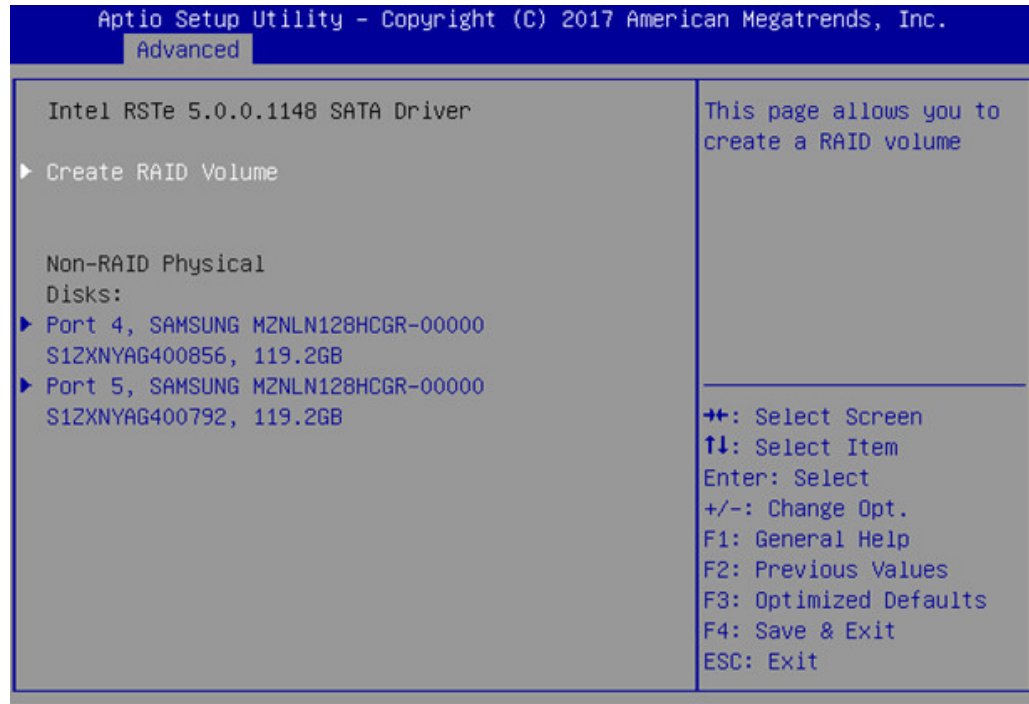
7. On the Save and Exit screen, select Save Changes and Exit and press Enter.
8. Press F2 to return to the main BIOS Setup Utility menu.

9. **Return to the Advanced tab and press Enter to select the Intel RSTe SATA controller option.**



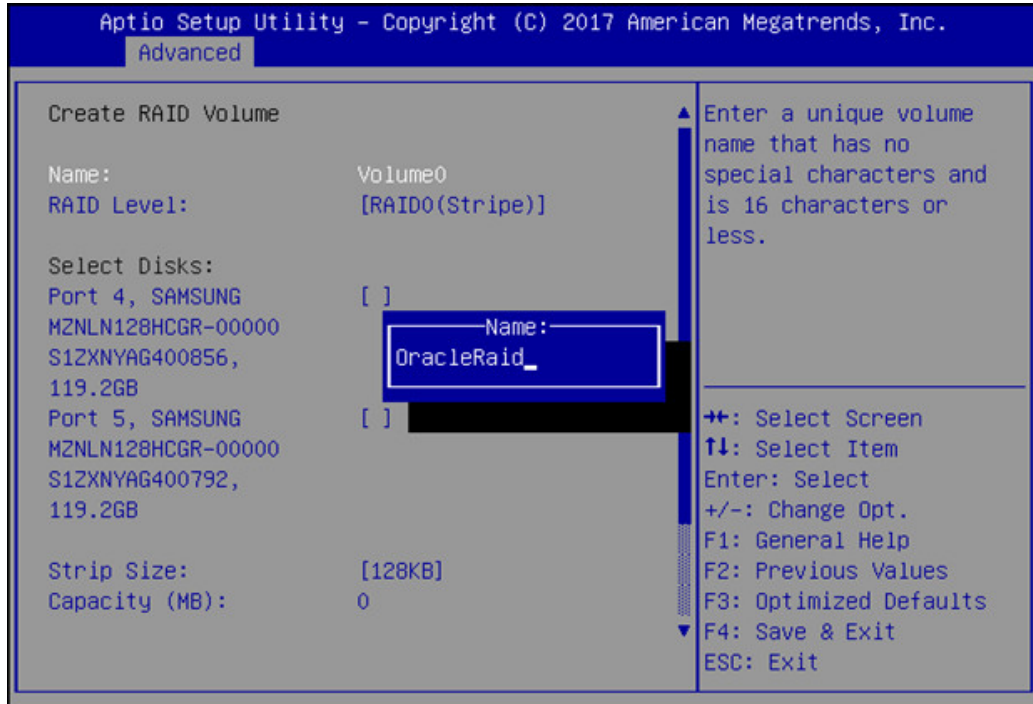


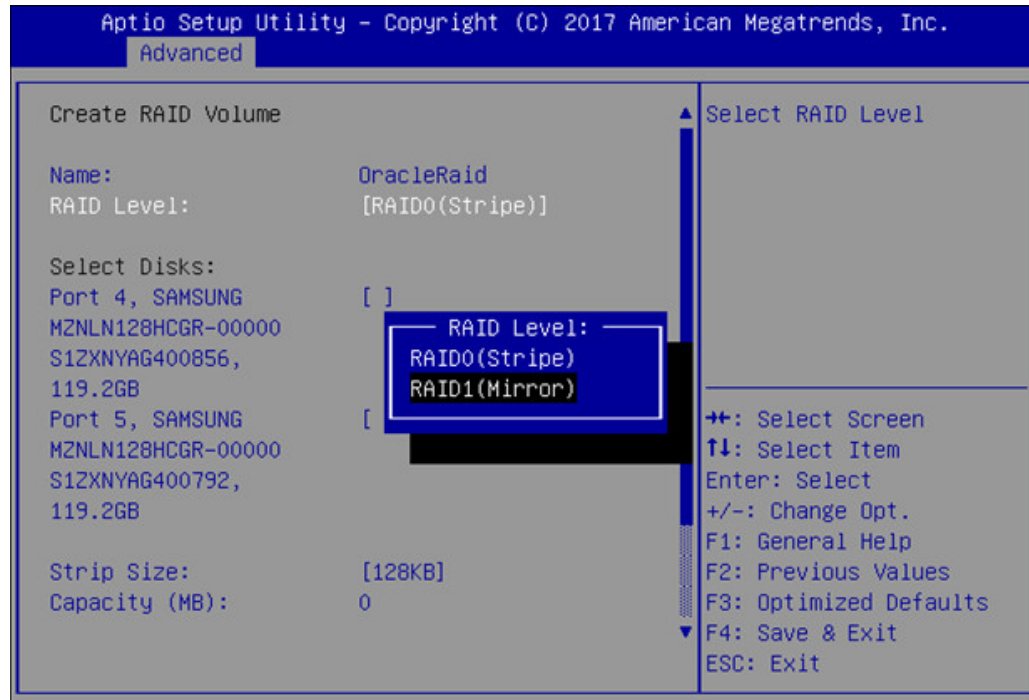
10. Select Create RAID Volume and press Enter.



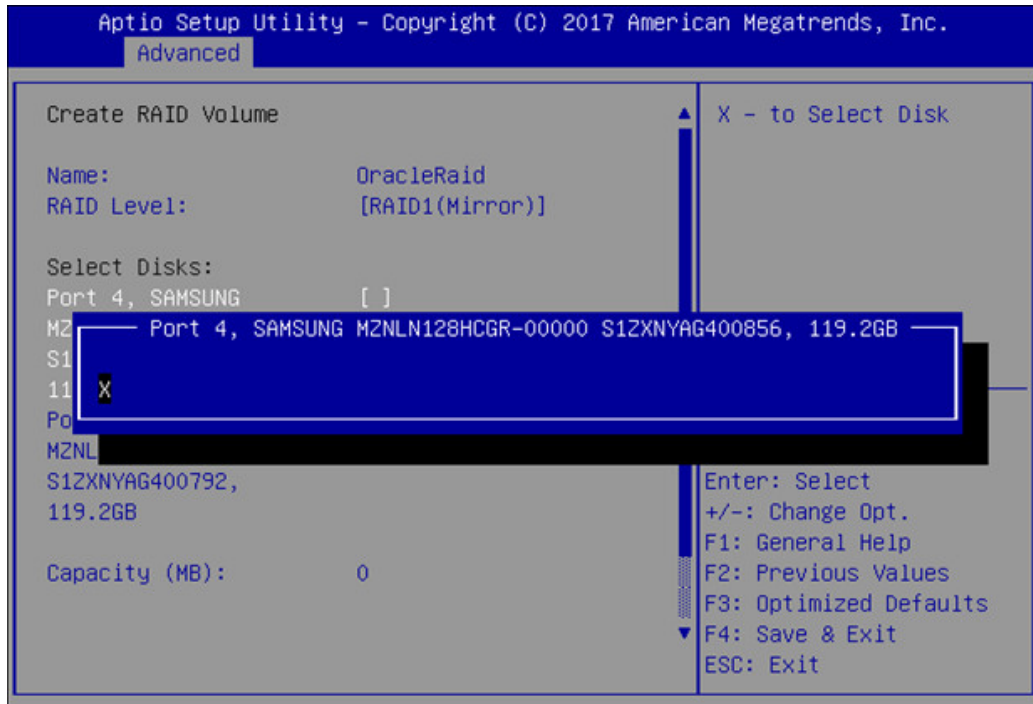
11. On the Create RAID Volume Screen, select Name, and press Enter.

You can assign a name to the RAID volume.

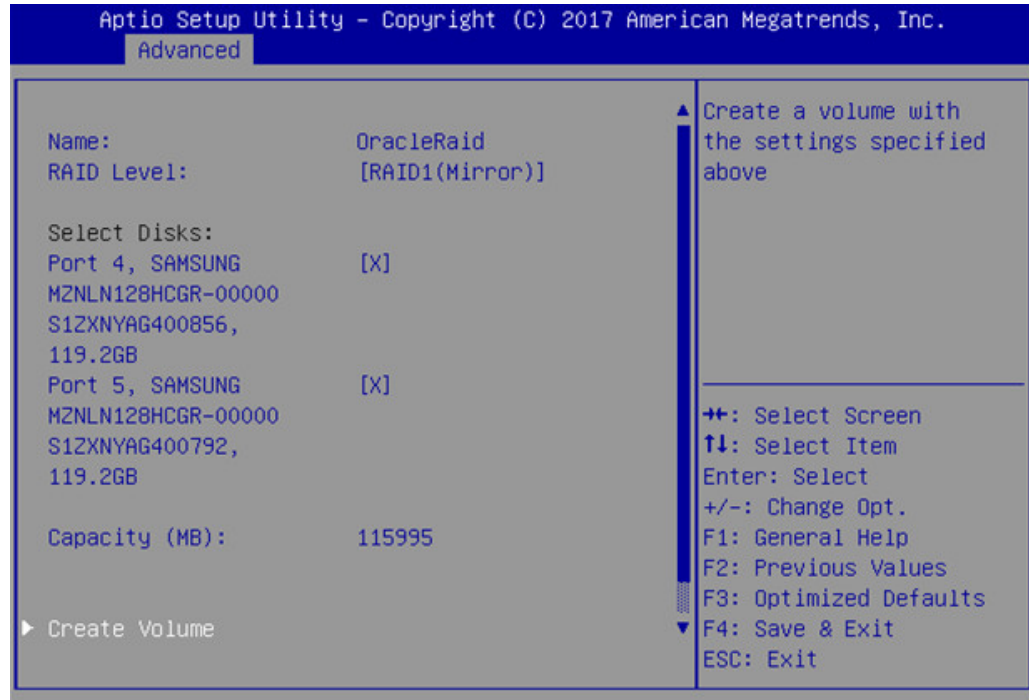


**12. Select RAID Level and press Enter to set the RAID level.**

13. Select the disk you are configuring for RAID.



14. Scroll to the bottom of the Create RAID Volume screen and select **Create Volume**. Press **Enter**.



15. The volume appears under RAID volumes. Press **ESC** to return to the Main BIOS Setup Utility menu.
16. On the **Save and Exit** screen, select **Save Changes and Exit** and press **Enter**. This completes the RAID configuration. You can now install an operating system on the volume that you created.

## Installing an Operating System

For details on installing an operating system on Oracle Server X7-2 and Oracle Server X7-2L, refer to [Oracle Servers X7-2 and X7-2L Operating Systems Installation Guide](#).

The general process for all operating system installations is as follows.

1. Review the server Product Notes.
2. Confirm the supported operating system version.
3. Install the server hardware.
4. Connect to the system.
5. Select the installation method.
6. Select the installation target.
7. Install the operating system.
8. Configure the operating system.

Refer to operating system documentation at:

- <https://docs.oracle.com/en/operating-systems/linux.html>
- <https://docs.oracle.com/en/operating-systems/solaris.html>
- <https://docs.microsoft.com/en-us/windows-server/>
- <https://docs.vmware.com/en/VMware-vSphere/index.html>

# Controlling System Power

---

This section describes how to power on, power off, and reset the server.

- [“Powering the Host On and Off” on page 119](#)
- [“Resetting the Server” on page 122](#)

## Related Information

- [“Installation Procedure Overview” on page 11](#)
- Oracle Integrated Lights Out Manager (ILOM) Documentation Library at: <http://www.oracle.com/goto/ilom/docs>

## Powering the Host On and Off

Your server has three power modes (states): power off, standby power, and main 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. <b>Caution - Electrical Hazard.</b> Equipment damage. Do not disconnect power cords when the system is in Main 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 green System OK indicator blinks slowly.  The green 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 Main power mode, use Oracle ILOM or the Power button to remove host power.  You can power the host off gracefully, or immediately.

Power State	Description	Indicators	Action
			<b>Caution</b> - Data loss. To prevent data loss, prepare the operating system for shutdown before you immediately power off.
Main power	When you power on the host, the server enters Main power mode.	The green System OK indicator is steady on.	Use Oracle ILOM or the On/Standby button to apply host power.

For instructions on powering the host off and on, see the following procedures:

- [“Power Off the Host Using the On/Standby Button” on page 120](#)
- [“Power On the Host Using the On/Standby Button” on page 121](#)
- [“Power the Host On and Off Using Oracle ILOM” on page 121](#)

## ▼ Power Off the Host Using the On/Standby Button

1. **Locate the On/Standby button on the server front panel.**
2. **Press the On/Standby button.**
  - **To perform a graceful shutdown, press and release the Power button.**  
ACPI-enabled operating systems perform an orderly shutdown. Operating systems that are not ACPI-enabled might ignore this event and fail to shut down the host.  
The System OK indicator blinks. The service processor SP OK indicator is steady on.
  - **To perform an immediate shutdown, press and hold the On/Standby button for at least 5 seconds.**  
The System OK indicator blinks. 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, disconnect the power cords from the back panel of the server.**



## ▼ Power On the Host Using the On/Standby Button

### 1. Verify that the server is in Standby power mode.

See [“Preparing for Installation and Power On” on page 78](#).

In Standby power mode:

- Host is powered off but the SP is powered on.
- Power supplies are connected to a power source.
- AC OK power supply indicators illuminate.
- SP OK indicator is steady on.
- System OK status indicator blinks slowly.

### 2. Locate and press the On/Standby button on the front panel.

With the power on:

- Host boots and the server enters Main power mode
- System OK indicator goes steady on when the host is fully booted

## ▼ Power the 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.

---

**Note** - These commands affect power to the host but not to the SP. To completely power off the server, disconnect the power cords from the back panel of the server.

---



---

**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 on with Administrator privileges. For details, see [“Using Oracle ILOM” on page 83](#).

#### ■ From the web interface:

- 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 the server, while keeping power applied to system components, such as disk drives.
- **Graceful Reset** – Gracefully shut down the host operating system before you power cycle the server.
- **Immediate Power Off** – Directly shut down the power to the server.
- **Graceful Shutdown and Power Off** – Gracefully shut down the host operating system before you shut down the power to the server.
- **Power On** — Apply full power to the system.
- **Power Cycle** — Turn off system power to all system components and apply full power to all system components.

**c. Click Save and click OK.**

■ **From the 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 <http://www.oracle.com/goto/ilom/docs>.

## Resetting the Server

During the reset process:

- It is unnecessary to power the server off and on to reset the server because a reset maintains host power but causes the processors to reinitialize.
- During the reset process, the server retains some register information. In case of a system host panic, error information might be available upon system recovery.



---

**Caution - Possible Data Loss.** Resetting the server causes any unsaved data on the server to be lost.

---

## ▼ Reset the Server Using Oracle ILOM

1. Log in to the Oracle ILOM web interface or command-line interface (CLI) using 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 click OK to reset the server.
  - 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 on /System



# Getting Firmware and Software

---

This section explains the options for accessing server firmware and software updates using My Oracle Support. It also describes how to use the Oracle Software Delivery Cloud to download complete software applications.

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

- [“Firmware and Software Updates” on page 125](#)
- [“Options for Accessing Firmware and Software Updates” on page 126](#)
- [“Software Releases” on page 126](#)
- [“Getting Updates From My Oracle Support” on page 127](#)
- [“Getting Software From Software Delivery Cloud” on page 128](#)
- [“Installing Updates Using Other Methods” on page 129](#)
- [“Oracle Support” on page 130](#)

## Firmware and Software Updates

Firmware and software for your server are updated periodically and made available in software releases. Each software release contains a set of downloadable files (patches) that include firmware, software, drivers, tools, and utilities for the server. All of these files are tested together and verified to work with your server.

Update your server firmware and software as soon as possible after a new software release becomes available. Software releases often include bug fixes. These updates increase your system performance, security, and stability.

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

- For the web interface, click System Information → Summary, and in the General Information table, for System Firmware Version, view the property value.

- For the CLI, at the command prompt, type: `show /System`

The ReadMe document that is included with each patch in a software release describes components changed since the last software release and 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:

- **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 on the My Oracle Support web site, see “[Software Releases](#)” on page 126.
- **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 129.

## Software Releases

Software releases on My Oracle Support are grouped by product family (such as Oracle Server), product (specific server), and software release version. A software release contains all the updated software and firmware for your server 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 set of software releases for your server are described in the following table. You can obtain these software release packages by downloading the files from My Oracle Support.

Package Name	Description	When to Download This Package
X7-2 or X7-2L SW release – Firmware Pack	Contains system firmware, including Oracle ILOM, BIOS, and option card firmware.	You need the latest firmware.
X7-2 or X7-2L SW release – OS Pack	Includes a package of tools, drivers, and utilities for an OS. An OS Pack	You need to update OS-specific tools, drivers, or utilities.

Package Name	Description	When to Download This Package
	<p>is available for each supported operating system version.</p> <p>Software includes Oracle Hardware Management Pack, Avago MegaRAID software, and any optional software that Oracle recommends.</p> <p>For the Windows OS, the OS Pack also includes the Intel Network Teaming and Install Pack.</p>	
X7-2 or X7-2L SW <i>release</i> – All Packs	<p>Includes the Firmware Pack, all OS Packs, and all documents.</p> <p>This pack excludes Oracle VTS image.</p>	You need to update a combination of system firmware and OS-specific software.
X7-2 or X7-2L SW <i>release</i> – Diagnostics	Includes Oracle VTS diagnostics image.	You need the Oracle VTS diagnostics image.

## Getting Updates From My Oracle Support

You can obtain updated firmware and software from the My Oracle Support web site. For information, see [“Download Firmware and Software Updates From My Oracle Support”](#) on page 127.

### ▼ Download Firmware and Software Updates From My Oracle Support

1. Go to the My Oracle Support at <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. In the Patch Search pane, in the Search tab area, click **Product** or **Family (Advanced)**.
5. In the Product field, select the product from the drop-down list or type a full or partial product name (for example, Oracle Server X7-2) until a match appears.

6. **In the Release field, select a software release from the drop-down list.**
7. **Click Search to view a list of the patches for the software release. See “[Software Releases](#)” on page 126 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.**

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, on the Add to Plan button, click the down arrow 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, and in the File Download dialog box, click the patch zip file name.**

The patch for the software release downloads.

## Getting Software From Software Delivery Cloud

You can obtain operating system and application software from the Oracle Software Delivery. For information, see <https://edelivery.oracle.com/osdc/faces/Home.jspx>.

### ▼ Download Software Using Oracle Software Delivery Cloud

Oracle Software Delivery Cloud allows you to download Oracle software, including operating systems and application software for your Oracle server.

You must have a valid user account.

1. **Navigate to the Oracle Software Delivery Cloud home page: <https://edelivery.oracle.com/osdc/faces/Home.jspx>.**
2. **At the Sign In screen, sign in.**
3. **Fill out the search information.**



For example, to search for a copy of Oracle Linux:

- a. **In the Search By drop down, select Product.**
  - b. **In the search field, type a product name.**  
For example, type **Oracle Linux**.
  - c. **Select a platform.**  
For example, click the check box next to x86 64-bit, and then click **Select**.  
Your selection appears in the **Download Queue**.
  - d. **Repeat Step a through Step c to add additional items to the Download Queue.**
  - e. **When your Download Queue is complete, click Continue.**
4. **In the list of downloadable items, select the check box next to the item(s) you want to download, and select Continue.**
  5. **On the terms and restrictions page, select the check box to accept the terms and restrictions, and select Continue.**
  6. **In the list of downloadable files, select the files you want to download, and click Download All.**
  7. **Follow the prompts to complete the download.**

## Installing Updates Using Other Methods

In addition to using 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, call Oracle Support. Refer to Oracle Support Contacts Global Directory at:

<http://www.oracle.com/support/contact.html>.

# Troubleshooting Installation Issues

---

This section provides information about troubleshooting resources, the technical support worksheet, and locating the system serial number.

- [“Troubleshooting Oracle ILOM” on page 131](#)
- [“Resources for Troubleshooting and Diagnostics” on page 134](#)

## Troubleshooting Oracle ILOM

This section addresses two issues that might occur on the Oracle ILOM service processor (SP):

- You need to reset the Oracle ILOM SP to complete an upgrade or to clear an error.  
Resetting 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 forgot the root account password and need to recover it.

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

- [“Reset the Service Processor Using Oracle ILOM” on page 131](#)
- [“Reset the Service Processor From the Server Back Panel” on page 132](#)
- [“Recover the Root Account Password” on page 133](#)

### ▼ **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 resume working in Oracle ILOM.

---

## ▼ Reset the Service Processor From the Server Back Panel

If the Oracle ILOM SP is hung 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.

1. **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.



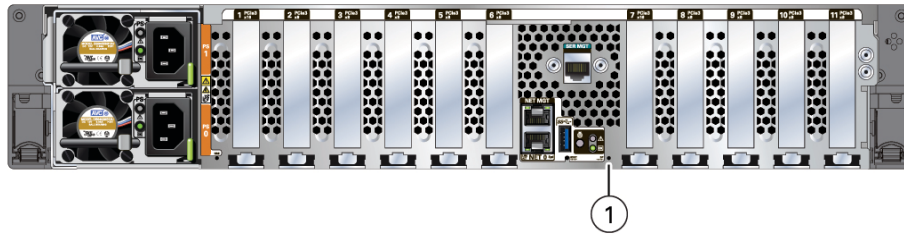
---

**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.

---



Callout	Description
1	SP Reset pinhole button



2. After the SP reboots. 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. 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 Locate button on the front of the server.

3. **Return to your serial console and press Enter.**
4. **At the Oracle ILOM prompt, 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 5.0.x* at <http://www.oracle.com/goto/ilom/docs>.

## Resources for Troubleshooting and Diagnostics

For server information about troubleshooting hardware faults, refer to “[Troubleshooting and Diagnostics](#)” in *Oracle Server X7-2 Service Manual* or *Oracle Server X7-2L Service Manual*.

You can access knowledge articles, white papers, and product updates from the My Oracle Support web site at <https://support.oracle.com>.

The following table lists diagnostic and troubleshooting resources that can assist you with resolving server issues.

Description	Reference Link
<ul style="list-style-type: none"> <li>■ x86 servers diagnostics</li> <li>■ Runtime and firmware-based tests</li> <li>■ Oracle ILOM procedures</li> <li>■ U-Boot and UEFI diagnostics tests to exercise the system and isolate subtle and intermittent hardware-related problems</li> </ul>	<p><i>Diagnostics and Troubleshooting Guide for Oracle x86 Servers</i> at <a href="http://www.oracle.com/goto/x86admindiaq/docs">http://www.oracle.com/goto/x86admindiaq/docs</a></p>
<ul style="list-style-type: none"> <li>■ Administrative information for the Oracle X7 series servers</li> <li>■ Oracle ILOM system event log (SEL) that identifies the possible source of a problem</li> </ul>	<p><i>Oracle X7 Series Servers Administration Guide</i> at <a href="http://www.oracle.com/goto/x86admindiaq/docs">http://www.oracle.com/goto/x86admindiaq/docs</a></p>
<ul style="list-style-type: none"> <li>■ Troubleshooting front and back panel status indicators</li> </ul>	<ul style="list-style-type: none"> <li>■ “<a href="#">Troubleshooting and Diagnostics</a>” in <i>Oracle Server X7-2 Service Manual</i></li> <li>■ “<a href="#">Troubleshooting and Diagnostics</a>” in <i>Oracle Server X7-2L Service Manual</i></li> </ul>
<ul style="list-style-type: none"> <li>■ Managing server hardware faults using the Oracle ILOM Fault Management Shell</li> </ul>	<ul style="list-style-type: none"> <li>■ “<a href="#">Managing Server Hardware Faults Through the Oracle ILOM Fault Management Shell</a>” in <i>Oracle Server X7-2 Service Manual</i></li> <li>■ “<a href="#">Managing Server Hardware Faults Through the Oracle ILOM Fault Management Shell</a>” in <i>Oracle Server X7-2L Service Manual</i></li> </ul>

## Technical Support Information Worksheet

If the troubleshooting information does not solve your problem, use the following table to collect information that you need to communicate to Oracle Service.

System Configuration Information Needed	Your Information
Service contract number	
System model	
Operating system	
System serial number (For instructions for locating this number, see <a href="#">“Locating the System Serial Number”</a> on page 135.)	
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	

## Locating the System Serial Number

When you ask for service on your system, you might need to have your server serial number. 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 side of the chassis and below the status LEDs.
- 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 in the Oracle ILOM web interface.
- From the Oracle ILOM CLI, type `show /System`.

## Auto Service Request

Oracle Auto Service Request (ASR) is provided to customers that have Oracle Premier Support. Oracle ASR is the fastest way to restore system availability if a hardware fault occurs. Oracle ASR software is secure and customer installable, with the software and documentation downloadable from My Oracle Support at <https://support.oracle.com>. For instructions on downloading the ASR software, refer to the knowledge article doc ID 1185493.1.

When a hardware fault is detected, Oracle ASR automatically opens a service request with Oracle and transfers electronic fault telemetry data to help expedite the diagnostic process. Oracle diagnostics analyze the telemetry data for known issues and delivers immediate corrective actions. For security, the electronic diagnostic data sent to Oracle includes only what is needed to solve the problem. The software does not use any incoming Internet connections and does not include any remote access mechanisms.

For more information about Oracle ASR, go to: <http://www.oracle.com/support/premier/auto-service-request.html>



# Site Planning Checklists

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This section provides checklists for site preparation.

## Preparation Checklists

Complete the following checklists to ensure that your site meets the physical, electrical, and environmental requirements of the Oracle Server X7-2 or Oracle Server X7-2L before you receive the server.

- [“Access Route and Data Center Checklist” on page 137](#)
- [“Data Center Environment Checklist” on page 138](#)
- [“Facility Power Checklist” on page 139](#)
- [“Rackmount Checklist” on page 139](#)
- [“Safety Checklist” on page 141](#)
- [“Auto Service Request Checklist” on page 141](#)
- [“Logistics Checklist” on page 142](#)

## Access Route and Data Center Checklist

Review the following facility requirements before you install the server.

<b>Data Center Room Considerations</b>	<b>Yes</b>	<b>No</b>	<b>N/A</b>	<b>Comment</b>
Has the access route been checked for clearances of the packaged equipment?				
Do all the doors and entryways 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?				
Have cabinet stabilization measures been implemented?				
Will the hardware location require any non-standard cable lengths?				
Is the floor to ceiling height a minimum of 2914 mm or 2.9 m (9.6 feet)?				

### Related Information

- [“Rack Compatibility” on page 42](#)

## Data Center Environment Checklist

Complete the following checklist to ensure that the data center environment requirements are met for the server.

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?				
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 15](#)
- [“Ventilation and Cooling Requirements” on page 17](#)

## Facility Power Checklist

Complete the following checklist to ensure that the facility power requirements are met for the data center where the server is installed.

Facility Power Considerations	Yes	No	N/A	Comment
Do you know the required operating voltage and electric current level of the server and peripherals?				
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 for 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 Requirements” on page 18](#)

## Rackmount Checklist

Complete the following checklist before you install the server into a rack.

Preparation Checklists

<b>Rackmount Considerations</b>	<b>Yes</b>	<b>No</b>	<b>N/A</b>	<b>Comment</b>
Is the distance between the front and back mounting planes between a minimum of 610 mm and a 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: <ul style="list-style-type: none"> <li>■ 19 kg/rack unit</li> <li>■ 785 kg total</li> </ul>				
Is the rack a four-post rack (mounting at both front and back)?  Two-post racks are not compatible.				
Do the horizontal opening and unit vertical pitch of the rack conform to ANSI/EIA 310-D-1992 or IEC 60297 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 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 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 an equivalent pair of PDUs?				
Can the customer provide two PDUs with capacity of 110kVA per PDU?				
Can the customer provide a single PDU and its circuits to support the power requirements in case a PDU fails?				
Can the customer ensure power loads are evenly distributed across all circuits of a single PDU?				

## Related Information

- [“Rack Space Requirements” on page 14](#)
- [“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 where the server will be installed.

Safety Checklist Considerations	Yes	No	N/A	Comment
Is there an emergency power shutoff?				
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 Requirements” on page 18](#)
- *Oracle Server X7-2 Safety and Compliance Guide*
- *Oracle Server X7-2L Safety and Compliance Guide*

## Auto Service Request Checklist

Complete the following checklist if you are planning to use Auto Service Request with the server.

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?				

<b>Auto Service Request Considerations</b>	<b>Yes</b>	<b>No</b>	<b>N/A</b>	<b>Comment</b>
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 must 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 where the server will be installed.

<b>Logistics Checklist Considerations</b>	<b>Yes</b>	<b>No</b>	<b>N/A</b>	<b>Comment</b>
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?				
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, and is it protected from environmental elements?				
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 truck length, width, or height?				
Are cardboard boxes and other packing material allowed in the computer room?				

<b>Logistics Checklist Considerations</b>	<b>Yes</b>	<b>No</b>	<b>N/A</b>	<b>Comment</b>
Is there a time constraint on dock access? If yes, then the provide time constraints.				
Is a tail lift required of the delivery carrier to unload the equipment at the delivery dock?				
Will any of the following items be required to place equipment in the computer room? <ul style="list-style-type: none"> <li>■ Stair walkers</li> <li>■ Lifters</li> <li>■ Ramps</li> <li>■ Steel plates</li> <li>■ Floor covers</li> </ul>				
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 13](#)
- [“Receiving and Unpacking Requirements” on page 14](#)
- [Oracle Server X7-2 Service Manual](#)
- [Oracle Server X7-2L Service Manual](#)
- [Oracle Server X7-2 Safety and Compliance Guide](#)
- [Oracle Server X7-2L Safety and Compliance Guide](#)





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