Oracle® Server X5-4 Installation Guide

Part No: E56401-04
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Access to Oracle Support

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Référence: E56401-04

Accès aux services de support Oracle

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Contents

Using This Documentation

This section describes how to get the latest firmware and software for the system, documentation and feedback, and a document change history.

Oracle Server X5-4 Model Naming Convention

The Oracle Server X5-4 name identifies the following:

- X identifies an x86 product.
- The first number, 5, identifies the generation of the server.
- The second number, 4, identifies the number of processor sockets in the server.

Getting the Latest Firmware and Software

Firmware, drivers, and other hardware-related software for each Oracle x86 server are updated periodically.

You can obtain the latest version in the following ways:

- Oracle System Assistant: A factory-installed option for Oracle x86 servers. It has all the tools and drivers you need and resides on an internal USB flash stick.
- My Oracle Support: The Oracle support web site located at `https://support.oracle.com`.

Documentation and Feedback

Documentation	Link
All Oracle products	https://docs.oracle.com/
Oracle Server X5-4	http://www.oracle.com/goto/X5-4/docs-videos
Oracle Integrated Lights Out Manager (ILOM). Refer to the documentation for your supported version of Oracle ILOM as listed in the *Product Notes*.	http://www.oracle.com/goto/ILOM/docs
Oracle Hardware Management Pack. Refer to the documentation for your supported version as listed in the *Product Notes*.	http://www.oracle.com/goto/ohmp/docs

Provide feedback on this documentation at: http://www.oracle.com/goto/docfeedback.

About This Documentation

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

Contributors

Primary Authors: Ray Angelo, Mark McGothigan, Ralph Woodley, Michael Bechler

Contributors: Kenny Tung, Johnny Hui, Prafull Singhal, Barry Wright, Cynthia Chin-Lee, David Savard, Tamra Smith-Wasel, Todd Creamer, William Schweickert

Change History

The following lists the release history of this documentation set:

- December 2015. Technical updates.
- June 2015: Initial publication.

Oracle X5-4 Server Feature Overview

The Sun Server X5-4 is a 3RU rack-mount server system that features an Intel Xeon ® processor in either a two or four processor configuration. The system memory is contained on memory riser (MR) cards, each with the capacity for up to 12 low-voltage DDR3 DIMMs. The server can support up to eight MR cards (in a four-CPU system). The server has two redundant hot-plug capable power supplies and slot capability for up to 11 PCI-Express Gen 3 low-profile cards. An internal HBA card provides connectivity to the six SAS-3 drive slots supporting three storage drive technologies.

For more information, see:

- "Server Features and Components" on page 13
- "Physical Specifications" on page 15

Server Features and Components

This section describes the server features and supported components.

Component	Oracle Server X5-4
Processor (CPU)	Supported model: Intel Xeon® E7-8895 v3 processor 18-core 2.6 GHz processor with 3RU heat sink Supported configurations: ■ Two processors installed in sockets 0 and 1. ■ Four processors installed in sockets 0 through 3.
Memory	Up to eight memory riser cards are supported (two risers per CPU) in the server chassis. Each memory riser supports up to 12 DDR3-1600 ECC low-voltage registered or load-reduced DIMMs, allowing up to 24 DIMMs per processor. Installed DIMMs must be the same type and size. ■ In a two CPU system, you can install four memory riser cards and up to a maximum of 1.5 TB of system memory. ■ In a four CPU system, you can install eight memory riser cards and up to a maximum of 3 TB of system memory.

Component	Oracle Server X5-4
	Refer to the *Service Manual* for DIMM population rules and supported configurations.
Storage devices	For internal storage, the server chassis provides: ■ Six 2.5-inch drive bays, accessible at the front of the server. Supported storage drive technologies include: **Note -** For a list of supported drives, refer to: *Oracle Server X5-4 Product Notes* ■ SAS-3 HDD ■ SAS-3 SSD ■ PCIe Gen 3 NVMe ■ SAS-3 HBA PCIe card options: ■ Sun Storage 12 Gb SAS PCIe RAID HBA. Supports RAID levels : 0, 1, 1E, 10, 5, 5EE, 6 with Battery Backed Write Cache (BBWC). ■ PCIe SWITCH CARD. Required for NVMe technology. ■ An optional DVD+/-RW drive on the front of the server, below the drive bays. This SATA DVD drive connects to a USB-SATA bridge, so that the drive appears to the system as a USB storage device.
USB 2.0 ports (6)	■ Two ports on the front of the server ■ Two ports on the back of the server ■ Two interanl ports on the motherboard **Note -** One of the internal USB port (P0) might contain the optional factory-installed Oracle System Assistant flash drive—a dedicated boot device used to set up the server. The Oracle System Assistant USB flash drive is not a storage drive. It must contain only files specific to Oracle System Assistant.
VGA ports	Two high-density DB-15 video ports are available: one on the front of the system and one on the back. The server includes an embedded VGA 2D graphics controller (with 8 MB cache), which supports resolutions up to 1600 x 1200 x 16bits @ 60 Hz (1024 x 768) when viewed remotely using Oracle ILOM Remote Console Plus RKVMS. **Note -** The VGA port available on the back panel supports VESA Device Data Channel for monitor identification.
PCI Express 3.0 I/O slots	Eleven PCI Express 3.0 slots that accommodate low-profile PCIe cards. In configurations that include a SAS HBA card, the HBA card is installed in slot 2. All slots support x8 PCIe connections. Two slots are also capable of supporting x16 PCIe cards. ■ Slots 1 through 7, 9, and 10: x8 connector ■ Slots 8 and 11: x8 or x16 connector **Note -** PCIe slots 7 through 11 are only functional in four CPU systems.
PCI Express I/O cards	For a list of customer-orderable I/O cards, go to the Oracle x86 Servers web site and navigate to the Oracle Server X5-4 configuration support page: http://www.oracle.com/technetwork/server-storage/oracle-x86/overview/index.html
Ethernet ports	Four 10 GbE RJ-45 Ethernet ports on back panel.
Service processor	Emulex Pilot 3 baseboard management controller (BMC):

Component	Oracle Server X5-4
	■ Mounted on a daughterboard. ■ Supports industry-standard IPMI feature set. ■ Supports remote KVMS, USB, DVD, CD, floppy, and ISO image over IP. ■ Supports Ethernet access to SP through a dedicated RJ-45 Gigabit Ethernet (10/100/1000) management port and optionally through one of the host 10 GbE ports (sideband management).
Power supplies	Two 1030/2060 Watt AC input auto-ranging hot-swappable power supplies. **Note -** A two-CPU system can operate with low-line 100 - 127 VAC or high-line 200 - 240 VAC sources. A four-CPU system can only operate with high-line 200 - 240 VAC sources.
Cooling fans	Six hot-swappable, redundant, front-side, top-loading fans (cooling zones 0-2) and two redundant fans in each power supply (cooling zone 3).

Server management software	The following server management software options are available:
	■ Single-server management options:
	  ■ Oracle Integrated Lights Out Manager (ILOM) on the service processor.
	  ■ Oracle System Assistant (OSA) on an optional internal USB flash drive.
	  ■ Oracle Hardware Management Pack on the optional OSA internal USB flash drive.
	■ Multiple server option: Oracle Enterprise Management Ops Center, downloadable from the Oracle site.

Physical Specifications

The following table lists the physical specifications for the Oracle Server X5-4.

Parameter	Value
Height	129.9 mm (5.1 inches)
Width	436.5 mm (17.2 inches)
Depth	732 mm (28.8 inches) 752.35 mm (29.6 inches) with PSU ejectors
Weight	40 kg (88 lbs)

Installation Procedure Overview

This document describes the Oracle Server X5-4 installation process and provides initial server setup and configuration tasks to the point of first power-on and operating system (OS) installation. The following table lists the tasks that you need to perform to properly install the server.

Step	Description	Links
1	Prepare for installation.	“Preparing to Install the Server” on page 19
2	Install the server into a rack.	“Installing the Server Into a Rack” on page 33
3	Attach data cables and power cords to the server.	“Cabling the Server” on page 49
4	Set up server using the server management tools.	“Setting Up Single-Server Management” on page 55
5	Configure or install an operating system.	“Installing an Operating System” on page 89
6	Review procedures for getting server firmware and software updates.	“Getting Server Firmware and Software” on page 133
7	Review procedures for controlling system power.	“Controlling System Power” on page 139
8	If needed, troubleshoot installation issues.	“Troubleshooting Installation Issues” on page 153

Preparing to Install the Server

This section describes how to prepare for installing the Oracle Server X5-4.

Description	Links
Review announcesments and late-breaking information about the server hardware, firmware, and software.	"Review the Server *Product Notes*" on page 19
In advance of receiving the server, review the server specifications guidelines and prepare the site.	"Server Specifications, Guidelines, Checklists" on page 19
Inspect server packaging, unpack the server, and inventory the ship kit contents.	"Shipping Inventory" on page 22
Assemble the tools required for installation.	"Tools and Equipment Needed" on page 24
Review ESD requirements and take safety precautions.	"ESD Precautions" on page 24
Review the features of the server front and back panels.	"Front and Back Panel Features" on page 24
Inspect the server and install any optional components.	"Inspect the Server and Install Optional Components" on page 27

▼ Review the Server *Product Notes*

This procedure provides instrucions for accessing and reviewing the server *Product Notes*, which contain important information about the server, including late-breaking issues, workarounds, and announcements for hardware, firmware, and software.

- **Review the *Oracle Server X5-4 Product Notes*.**
  The Oracle Server X5-4 documentation library is at: `http://www.oracle.com/goto/x5-4/docs-videos`.

Server Specifications, Guidelines, Checklists

This section describes the information you need in advance of the delivery of your Oracle Server X5-4.

Note - For server physical specifications, see "Physical Specifications" on page 15.

Electrical Specifications

The following table lists the electrical specifications for the Oracle Server X5-4.

Note - For up-to-date information about power consumption, go to the Oracle x86 Servers web site and navigate to the Oracle Server X5-4 page: `http://www.oracle.com/technetwork/server-storage/sun-x86/overview/index.html`.

Parameter	Value
Nominal input frequencies	50/60 Hz
Operating input voltage range	100-127 VAC (two-CPU configuration) 200-240 VAC (two or four-CPU configuration)
Rated input current	100-127 VAC 12A 200-240 VAC 10A
Maximum power consumption	2000W
Maximum heat output	6824 BTU/hr

Environmental Specifications

The following table lists the environmental requirements for the Oracle Server X5-4.

Parameter	Value
Operating temperature (single, non-rack system)	At sea level: 5° C to 35° C (41° F to 95° F) At altitude: 5° C to 31° C (41° F to 88° F)

Parameter	Value
Non-operating temperature (single, non-rack system)	-40° C to 68° C (-40° F to 154° F)
Operating humidity (single, non-rack system)	10% to 90% relative humidity, non-condensing
Non-operating humidity (single, non-rack system)	Up to 93% relative humidity, non-condensing
Operating altitude (single, non-rack system)	Up to 3,000 m (9,840 ft), maximum ambient temperature is derated by 1 degree C per 300m above 900 m, except in China where regulations might limit installations to a maximum altitude of 2,000 m
Non-operating altitude (single, non-rack system)	0 m to 12,000 m (0 ft to 40,000 ft)
Acoustic noise	LwAd: 8.9 B (idle and operating, room temp.), 8.9 B (max. ambient); LpAm: 75 dBA (bystander position, max. ambient)

Ventilation Guidelines

The Oracle Server X5-4 has been designed to function while installed in a natural convection airflow. The following environmental specifications must be met:

- Ensure that server air intake is at the front of the rack, and the air outlet is at the back of the rack.

  Rack-mount servers, including the Oracle Server X5-4, draw cool air in through the front of the server and exhaust warm air out the back of the server.
- Ensure that there is adequate airflow through the server.
  - Allow a minimum clearance of 1,232 mm (48.5 inches) at the front of the server, and 914 mm (36 inches) at the back of the server.

    The clearance provides for airflow and ventilation space at the air intake and outlet areas.
  - Ensure that ventilation openings such as cabinet doors, for both the inlet and exhaust of the server are not obstructed.

    For example, Oracle's Sun Rack II is optimized for cooling. Both the front and back doors have 80 percent perforations that provide a high level of airflow. Ensure that these perforations are not blocked.
  - Ensure that the front and back clearance of the server allows a minimum of 2.5 mm (1 inch) at the front of the server and 80 mm (3.15 inch) at the back of the server when mounted.

    These clearance values are based on the inlet and exhaust impedance (available open area) stated here and assume a uniform distribution of the open area across the inlet and exhaust areas. These values also improve cooling performance.

Note - The combination of inlet and exhaust restrictions, such as cabinet doors and the spacing of the server from the doors, can affect the cooling performance of the server. You must evaluate these restrictions. Server placement is particularly important in high-temperature environments.

- Ensure unobstructed airflow through the server chassis internals.

  The server uses internal blowers that can achieve a total airflow of 100 CFM. Airflow through the server must be consistent and direct. Chaotic airflow inside the server can be created by obstructions from dust and debris in the intake and outlet vents, misaligned components, such as air baffles and dividers, and improperly dressed cables, both inside and outside of the server.
- Ensure that air temperature rise through the server is no greater than 68°F (20°C).
- Take care to prevent recirculation of exhaust air within a rack or cabinet.
- Manage cables within the rack to minimize interference with the server exhaust vent.

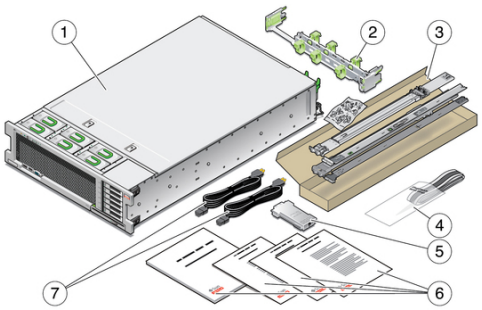
Shipping Inventory

This section describes the contents of the server carton. When the server and optional components arrive, inspect the shipping cartons for evidence of physical damage. If the cartons are damaged, request that the carrier's agent be present when the damaged carton is opened. Keep all contents and packing material for the agent's inspection.

- “Server Carton” on page 22
- “Optional Components” on page 23

Server Carton

The following illustration shows items that are typically packaged with the Oracle Server X5-4:



Callout	Description	Callout	Description
1	Server	5	RJ-45 to DB-9 crossover adaptor
2	Cable management assembly	6	Printed documents
3	Rackmount kit	7	2 AC power cords
4	Antistatic wrist strap		

Optional Components

Components that are part of the standard server configurations are installed in the server at the factory. However, optional components that you purchased independent of the standard configurations are not installed at the factory and require installation. These components might be shipped separately.

The following optional components can be ordered and purchased separately:

- PCIe cards
- DDR3 DIMM memory kits
- Storage drives
- Software media

Note - If possible, install optional components before installing the server in a rack. For instructions for installing server options, see “Inspect the Server and Install Optional Components” on page 27.

Tools and Equipment Needed

This section describes the tools and equipment you need to install the server:

- A mechanical device capable of lifting 250 pounds.
- Number 2 Phillips screwdriver
- ESD mat and grounding strap
- A system console device, such as one of the following:
  - Workstation
  - ASCII terminal
  - Terminal server
  - Patch panel connected to a terminal server
- The following devices:
  - VGA monitor
  - USB keyboard
  - USB mouse

ESD Precautions

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

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

Front and Back Panel Features

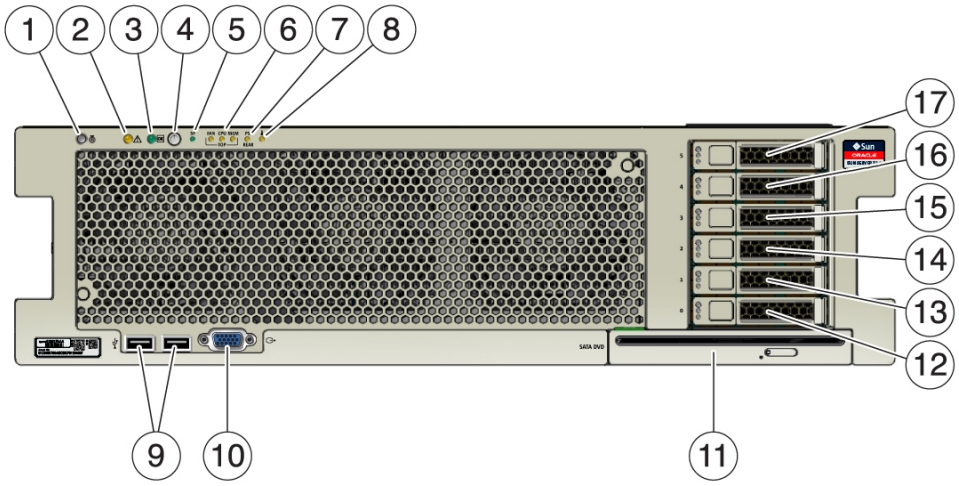
This section describes the features of the server front and back panels:

- “Front Panel Features” on page 25

- “Back Panel Features” on page 26

Front Panel Features

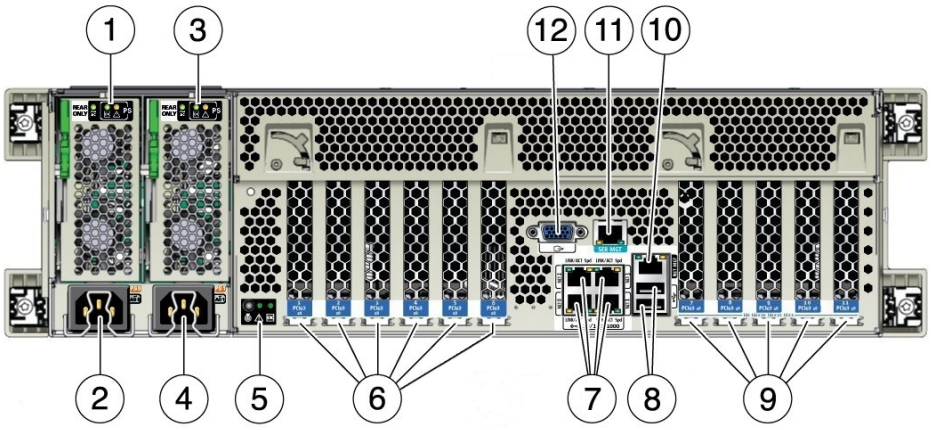
The following figure shows the Oracle Server X5-4 front panel and describes its components.



Callout	Description
1	Locator indicator/button: white
2	Service Action Required indicator: amber
3	Power/OK indicator: green
4	Power button
5	SP OK indicator: green/amber
6	Service Action Required indicators (3) for Fan Module (FAN), Processor (CPU) and Memory: amber
7	Power Supply (PS) Fault (Service Action Required) indicators: amber
8	Over Temperature Warning indicator: amber
9	USB 2.0 ports (2)
10	DB-15 video port
11	SATA DVD drive (optional)
12–17	Storage drive slots 0–5 (from bottom to top)

Back Panel Features

The following figure shows the Oracle Server X5-4 back panel and describes its components.

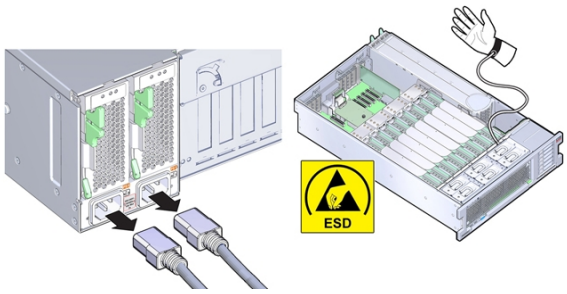


Callout	Description
1	Power supply unit (PSU) 0 indicator panel
2	PSU 0 AC inlet
3	PSU 1 indicator panel
4	PSU 1 AC inlet
5	System status indicator panel
6	PCIe card slots 1–6
7	Network (NET) 10 GbE ports: NET0–NET3
8	USB 2.0 ports (2)
9	PCIe card slots 7–11
10	Service processor (SP) network management (NET MGT) port
11	Serial management (SER MGT)/RJ-45 serial port
12	DB-15 video port

Inspect the Server and Install Optional Components

This procedure provides instructions for inspecting the server and installing optional components before you install the server in the rack.

Caution - Electrical hazard. Ensure that the server is disconnected from the power source.



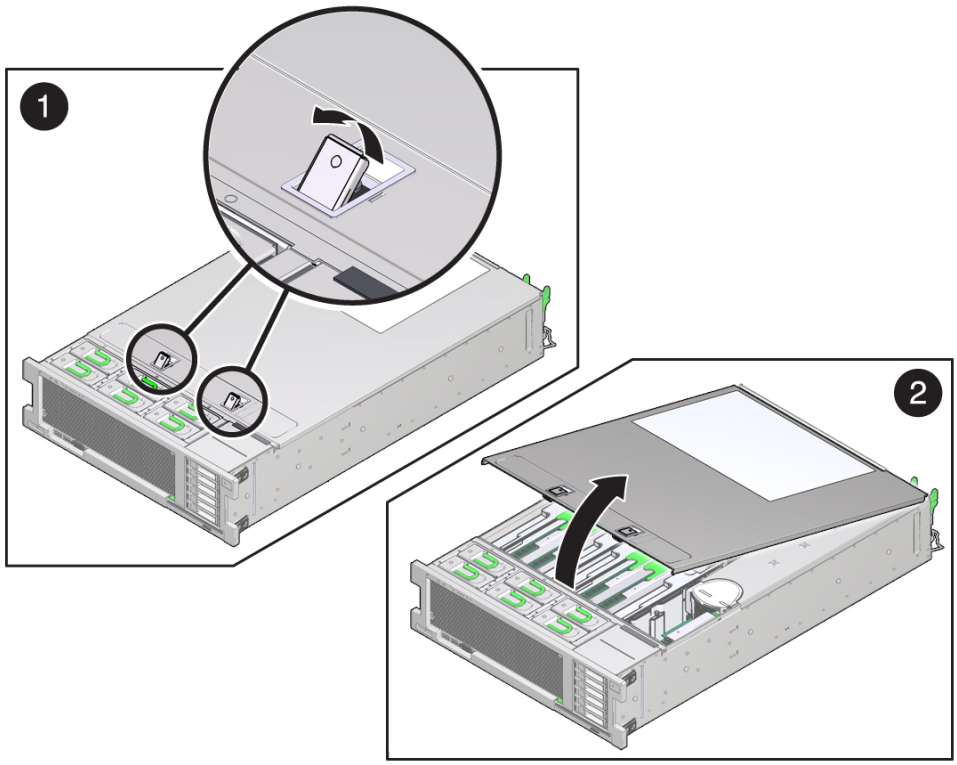
Caution - Component damage. The server contains components that are sensitive to electrostatic discharge. When working inside the server, wear an antistatic wrist strap and use an antistatic mat.

Before You Begin

- See “Front and Back Panel Features” on page 24
- See “ESD Precautions” on page 24
- See “Tools and Equipment Needed” on page 24

1. **Ensure that the server is disconnected from the power source.**
2. **Use an antistatic wrist strap that it is secured to a grounded surface.**
3. **Remove the server top cover.**
   a. **Lift the two spring-loaded latches on top of the cover to their fully open position and pull the front edge of the cover upward.**

In the following illustration, frame 1 shows the two spring-loaded latches lifted to their fully open position, and frame 2 shows the cover pulled up and away from the server.



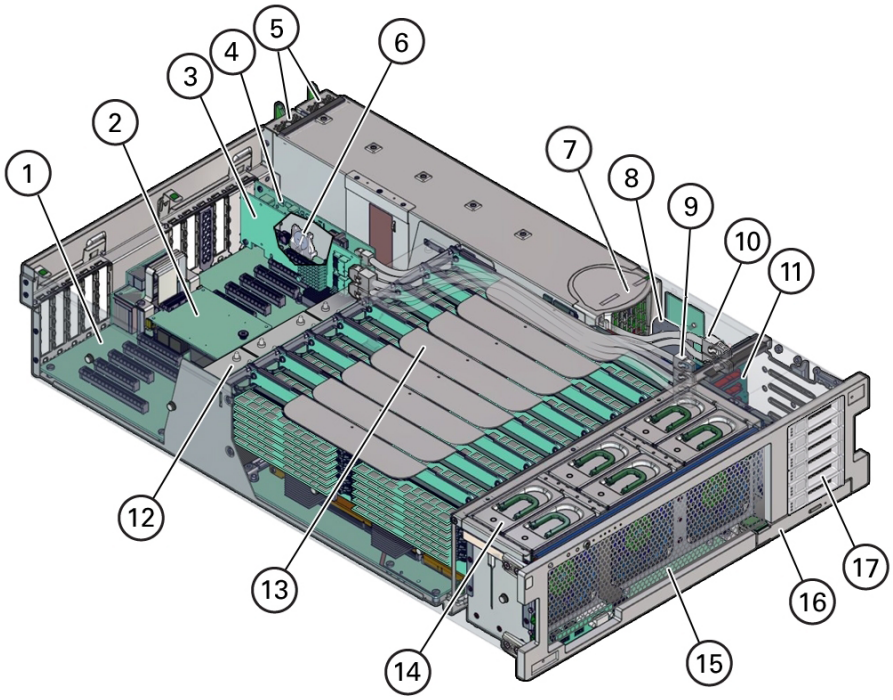
b. Remove the cover from the server and set it aside.

Caution - Component damage. An interlock switch component is attached to the underside of the server cover. Take care not to damge the component.

4. Ensure that all replaceable components and cable connectors are seated and locked in place. If necessary, reseat (remove and install) components.

For component removal and installation procedures, refer to the service label on the top cover of the server or the component removal and replacement procedures in the *Oracle Server X5-4 Service Manual*

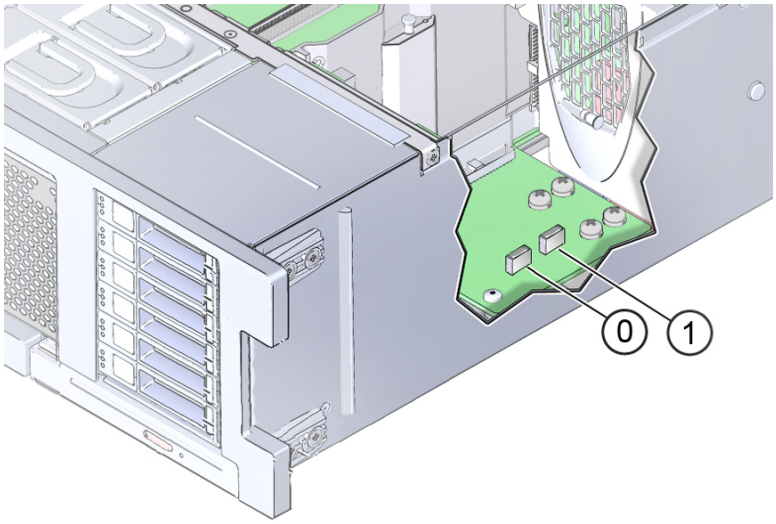
The following illustration shows the location of replaceable components.



Call Out	Description	Call Out	Description
1	Motherboard	10	HBA SAS cables (2)
2	SP card	11	Storage drive backplane board
3	HBA card	12	Heatsinks and CPUs (2 or 4)
4	PCIe NVMe Switch card	13	Memory riser cards (4 or 8)
5	Power supplies (2)	14	Fan modules (6)
6	System battery	15	Fan board
7	Power supply backplane	16	DVD Drive
8	ESM	17	Storage drive slots (6)
9	NVMe cables (4)		

5. **Check that the Oracle System Assistant USB flash drive is installed.**

   If you ordered Oracle System Assistant, check that the dedicated USB flash drive is installed in the internal USB port, P0. The following illustration, shows the two internal USB ports, which are located behind the storage drives. USB port P0 is located next to USB port P1 but closer to the front of the server



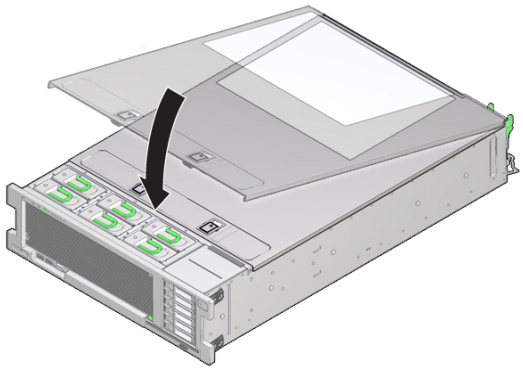
6. **Install optional components.**

   Install any optional components that might have been shipped separately. Optional components include:

   - PCIe cards
   - DDR3 DIMM memory kits
   - Storage drives

   To install optional components, refer to the service label on the top cover of the server or the component removal and replacement procedures in the *Oracle Server X5-4 Service Manual*

7. **Install the server cover.**



   a. **Align the cover on top of the server, ensuring that the back end of the cover is secured under the lip on the rear edge of the server.**

   b. **Lower the front edge of the cover until it is flat on the server.**

   c. **Push down on the front edge until the latches lock into place with an audible click.**

8. **Verify that the cover is locked.**

Installing the Server Into a Rack

This section describes safety precautions and provides instrucions for how to install the server into a rack using the rail assembly in the rackmount kit.

Description	Links
Review safety precautions.	“Safety Precautions” on page 33
Review the compatibility requirements for your rack.	“Rack Compatibility” on page 34
Install mounting brackets onto the server.	“Install Mounting Brackets” on page 35
Attach the tool-less slide-rail assembly to the rack.	“Attach Slide-Rail Assemblies” on page 36
Install the server into the slide-rail assembly.	“Install Server Into the Slide-Rail Assemblies” on page 39
(Optional) Install the cable management arm for routing server cables.	“Install Cable Management Arm” on page 42
Verify that the slide-rails and cable management arm are working correctly.	“Verify Operation of Slide-Rails and CMA” on page 47

Safety Precautions

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

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

Caution - Elevated operating ambient temperature. If the server is installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment might be greater than room ambient temperature. Therefore, consideration should be given to installing the equipment in an environment compatible with the maximum ambient temperature (Tma) specified for the server. For server environmental requirements, see “Environmental Specifications” on page 20.

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

Caution - Equipment damage or personal injury. Mounting of the equipment in the rack should be such that a hazardous condition is not achieved due to uneven mechanical loading.

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

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

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

Rack Compatibility

This section describes rack compatibility considerations.

Check that your rack is compatible with the slide-rail and cable management arm (CMA) options. The optional slide-rails are compatible with a wide range of equipment racks that meet the standards shown below:

- The rack must be a four-post rack (mounting at both front and rear). Two-post racks are not compatible.
- Rack horizontal opening and unit vertical pitch must conform to ANSI/EIA 310-D-1992 or IEC 60927 standards. Only M6 tapped or 9.5 mm square holes are supported.
- The distance between front and rear mounting planes must be a minimum 610 mm and maximum 915 mm (24 inches to 36 inches).
- Clearance depth in front of front mounting plane (distance to front cabinet door) is at least 25.4 mm (1 inch).
- Clearance depth behind front mounting plane (distance to rear cabinet door) is at least 900 mm (35.5 inches) with the cable management arm, or 770 mm (30.4 inches) without the cable management arm.

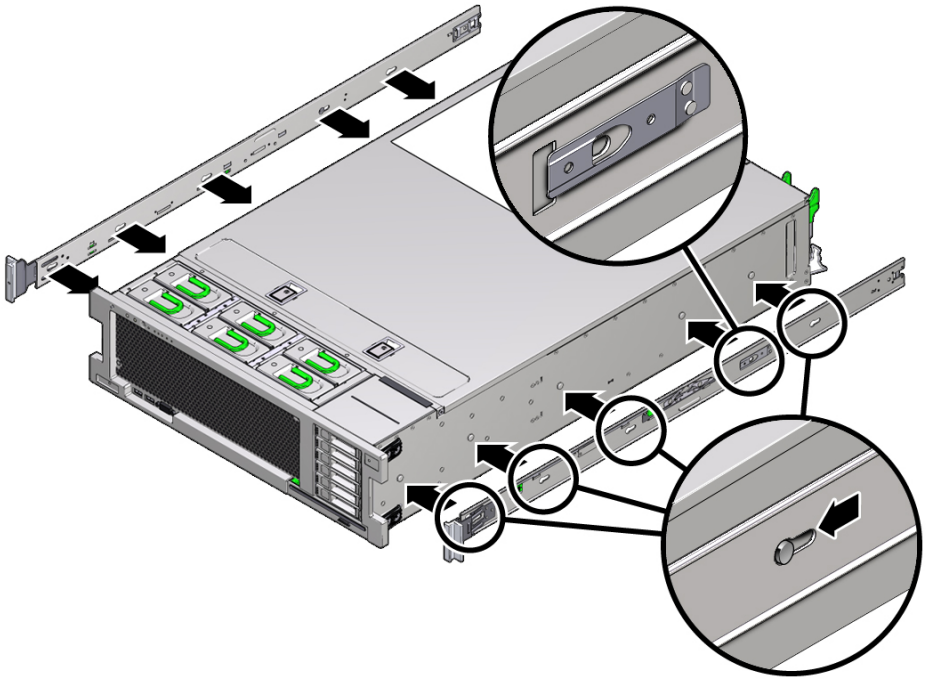
- Clearance width between front and rear mounting planes (distance between structural supports and cable troughs) is at least 456 mm (18 inches).
- Server dimensions:
  - Depth: (not including PSU ejectors): 732 mm (28.8 inches).
  - Width: (not including ears): 436.5 mm (17.2 inches).
  - Height: 129.9 mm (5.1 inches).

▼ Install Mounting Brackets

This procedure provides instructions for securing the mounting brackets to both 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.**

Note - The mounting brackets are identical and can be installed on either side of the chassis.



2. **With the heads of the five chassis locating pins protruding though the five keyhole openings in the mounting bracket, pull the mounting bracket toward the front of the chassis until the mounting bracket clip locks into place with an audible click.**
3. **Verify that the rear locating pin has engaged the mounting bracket clip.**
4. **Repeat Steps 1 through 3 to install the remaining mounting bracket on the other side of the server.**

▼ Attach Slide-Rail Assemblies

This procedure provides instructions for securing the side-rail assemblies to the inside of the rack.

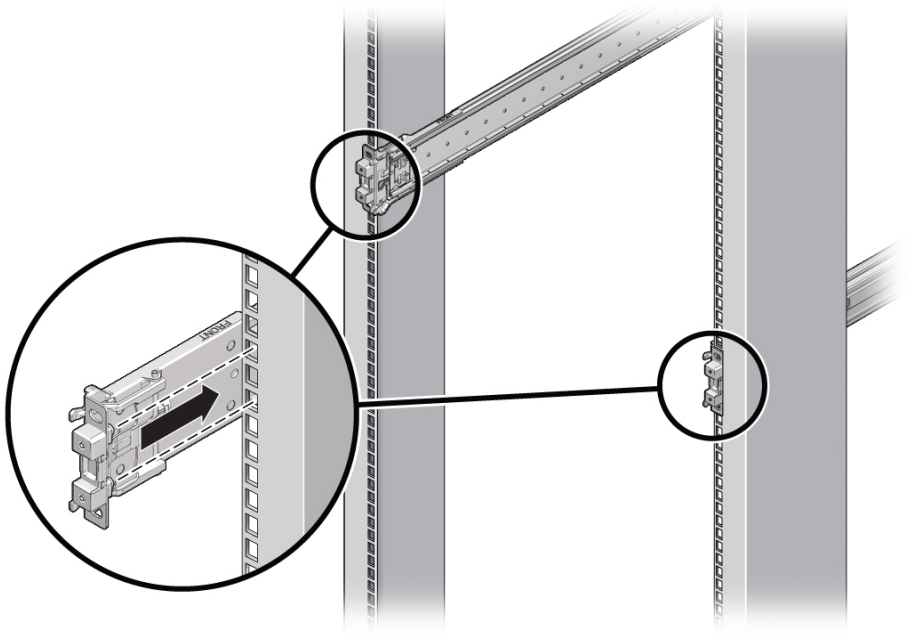
Note - The slide rail assemblies support only racks with 9.5-mm square holes and M6 round holes. All other racks, including those racks with 7.2-mm, M5, or 10-32 mounting holes, are *not* supported. Refer to your rack documentation for information about the size of its rail holes.

To attach slide-rail assemblies to the rack:

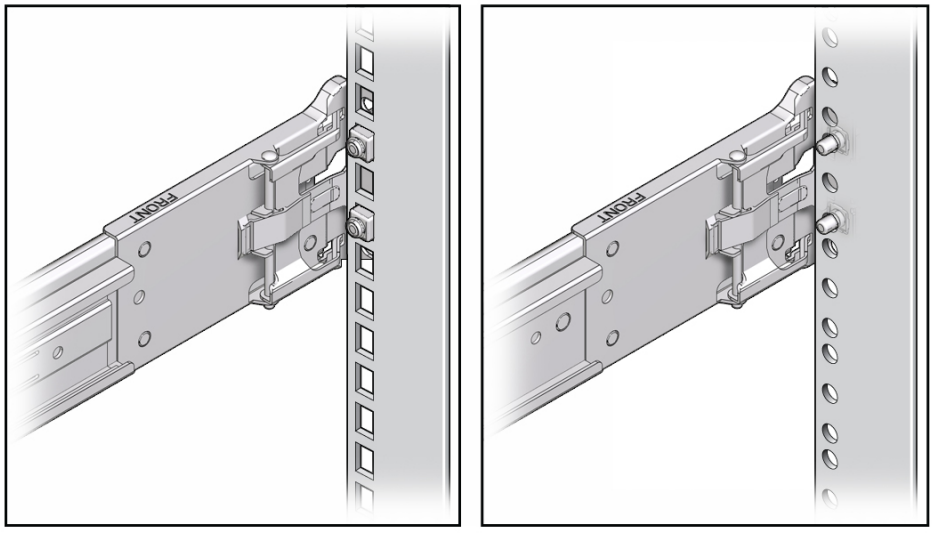
1. **(Optional) If you need to move the rack with the server installed, it is recommended that you attach the slide-rail assembly with mounting screws and cage nuts.**
   Refer to the *Rail Rackmount Kit Overview and Information* card for instructions on inserting these cage nuts. This card is included with the rack kit.

2. **Position a slide-rail assembly in your rack so that the slide-rail assembly front bracket is on the outside of the front rack post and the slide-rail assembly rear bracket is on the inside of the rear rack post.**

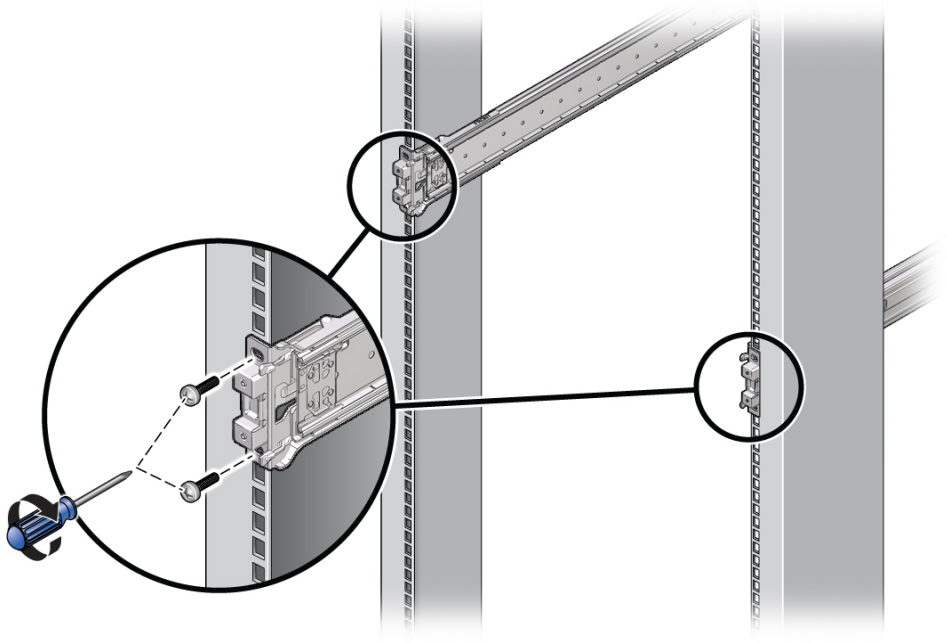
3. **Align the slide-rail assembly mounting pins with the front and rear rack post mounting holes. Then lock the assembly into place by pushing the assembly toward the rear of the rack until the mounting pins engage the rack.**



Note - The slide assembly mounting pins accommodate either 9.5-mm square mounting holes or M6 round mounting holes. No other mounting hole sizes are supported.



4. **(Optional) If you chose to attach the slide-rail assembly with mounting screws and cage nuts, insert the M6 mounting screws through both front and rear slide-rail brackets and rack posts, then secure them with the cage nuts.**



5. **Repeat Steps 2 through 4 for the remaining slide-rail assembly.**

▼ Install Server Into the Slide-Rail Assemblies

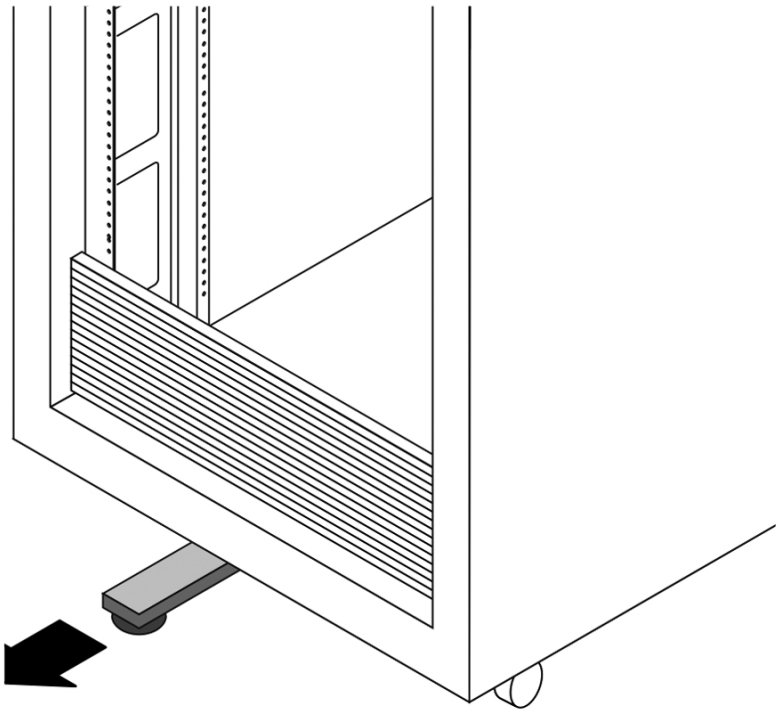
This procedure provides instructions for installing the server, with mounting brackets attached, into the slide-rail assemblies that are mounted inside the rack.

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

1. **If available, enagage the rack anti-tip mechanism.**

   Your rack might use a different type of anti-tip bar than the one shown in the following illustration. Refer to your rack documentation for instructions.



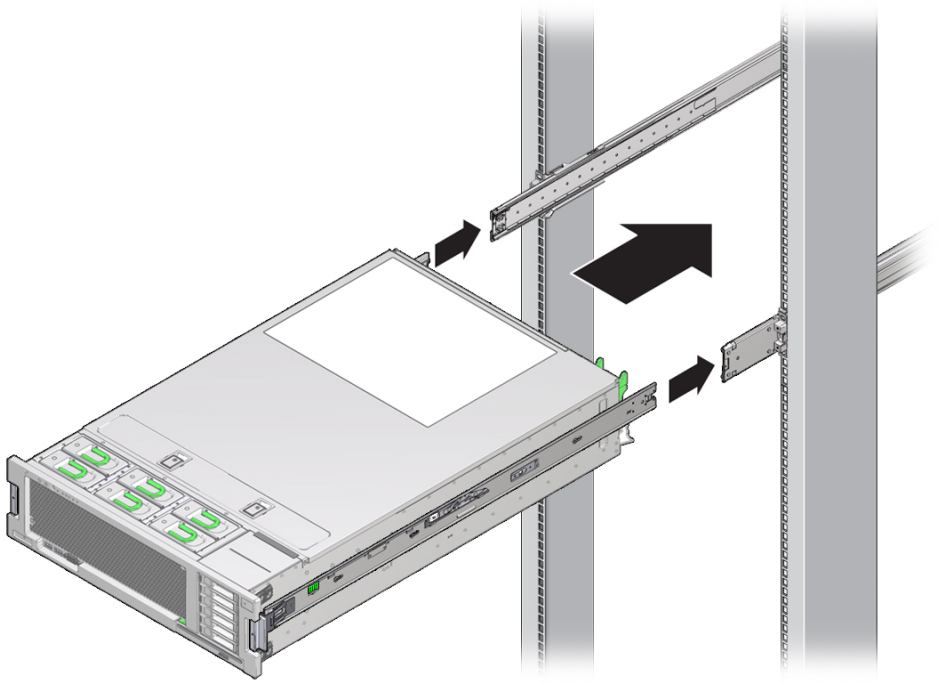
Caution - Equipment damage or personal injury If your rack does not have an anti-tip bar, the rack could tip over.

2. **Push the slide-rails into the slide-rail assemblies in the rack as far as possible.**

3. **Raise the server so that the rear ends of the mounting brackets are aligned with the slide-rail assemblies that are mounted in the rack.**

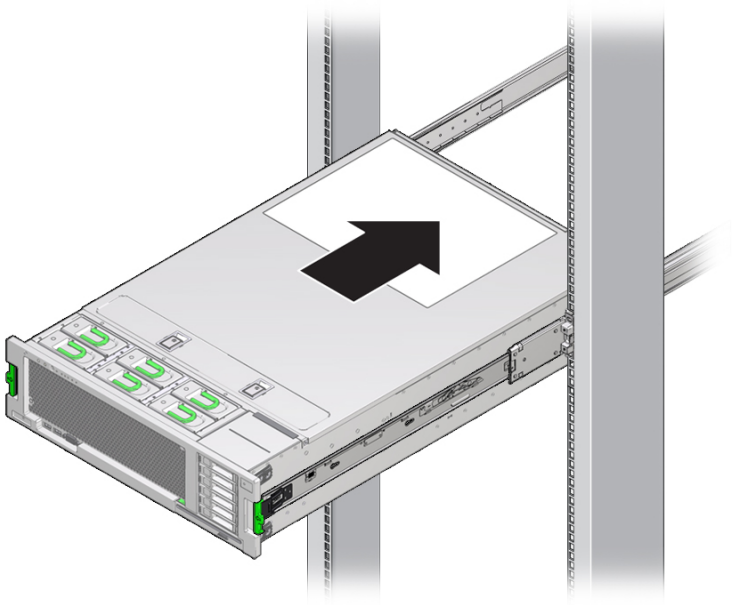
4. **Insert the mounting brackets into the slide-rails, then push the server into the rack until the mounting brackets encounter the slide-rail stops (approximately 12 inches, or 30 cm).**

Caution - Equipment damage or personal injury. When inserting the server into the slide-rail, ensure that both the top and bottom mounting lips of the mounting brackets are inserted into the slide-rail. The server should slide forward and backward easily if correctly installed. If the unit does not slide easily, ensure that each mounting lip is inserted properly. If the mounting brackets are not inserted properly, the unit might fall when removing it from the rack.



5. **Simultaneously push and hold the green slide-rail release buttons on each mounting bracket while you push the server into the rack. Continue pushing**

until the slide-rail locks (on the front of the mounting brackets) engage the slide-rail assemblies.



Caution - Equipment damage or personal injury. Verify that the server is securely mounted in the rack and that the slide-rail locks are engaged with the mounting brackets before continuing.

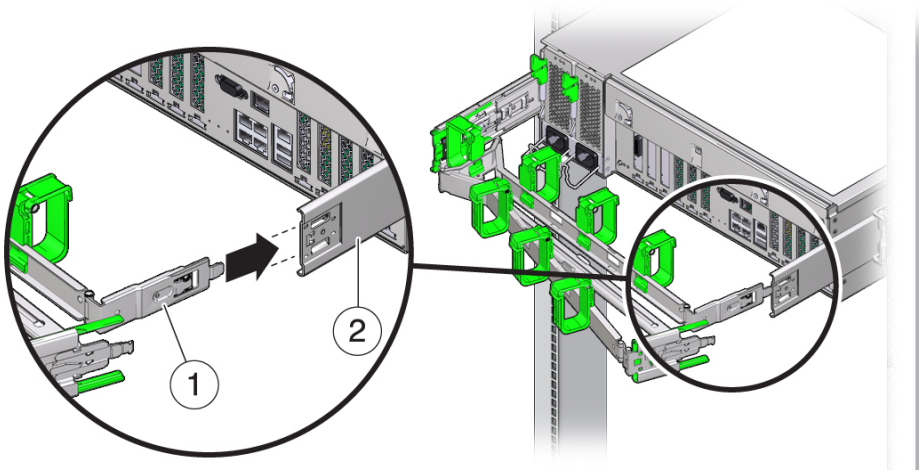
Install Cable Management Arm

This procedure provides instructions for attaching the optional cable management arm (CMA) to the back of the server.

1. **Unpack the CMA parts.**
2. **Take the CMA to the back of the equipment rack and ensure that you have adequate room to work around the back of the server.**

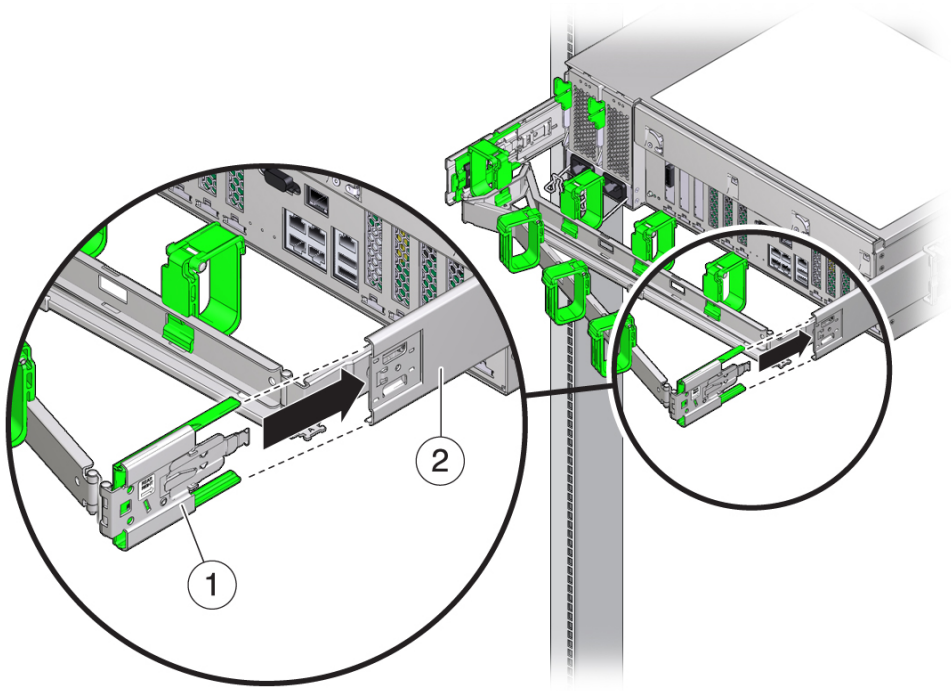
Note - References to “left” or “right” in this procedure assume that you are facing the back of the equipment rack.

3. **Insert the CMA mounting bracket connector into the right slide-rail until the connector locks into place with an audible click.**



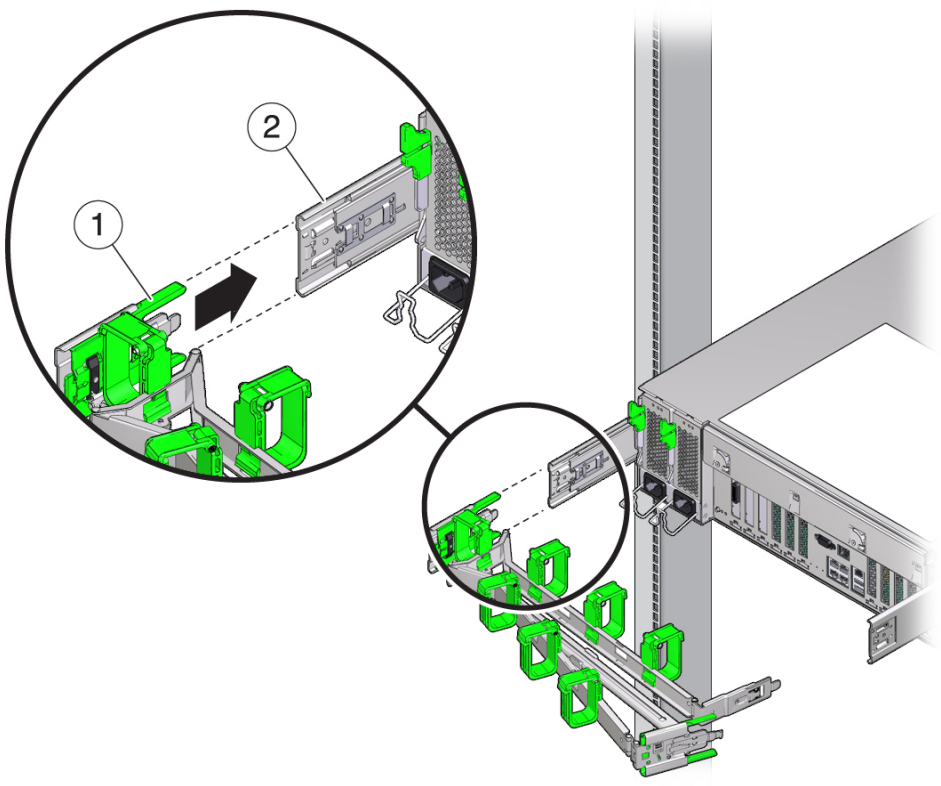
Callout	Description
1	CMA mounting bracket
2	Right slide-rail

4. **Insert the right CMA slide-rail connector into the right slide-rail assembly until the connector locks into place with an audible click.**



Callout	Description
1	CMA slide-rail connector
2	Right slide-rail

5. **Insert the left CMA slide-rail connector into the left slide-rail assembly until the connector locks into place with an audible click.**



Callout	Description
1	CMA slide-rail connector
2	Left slide-rail

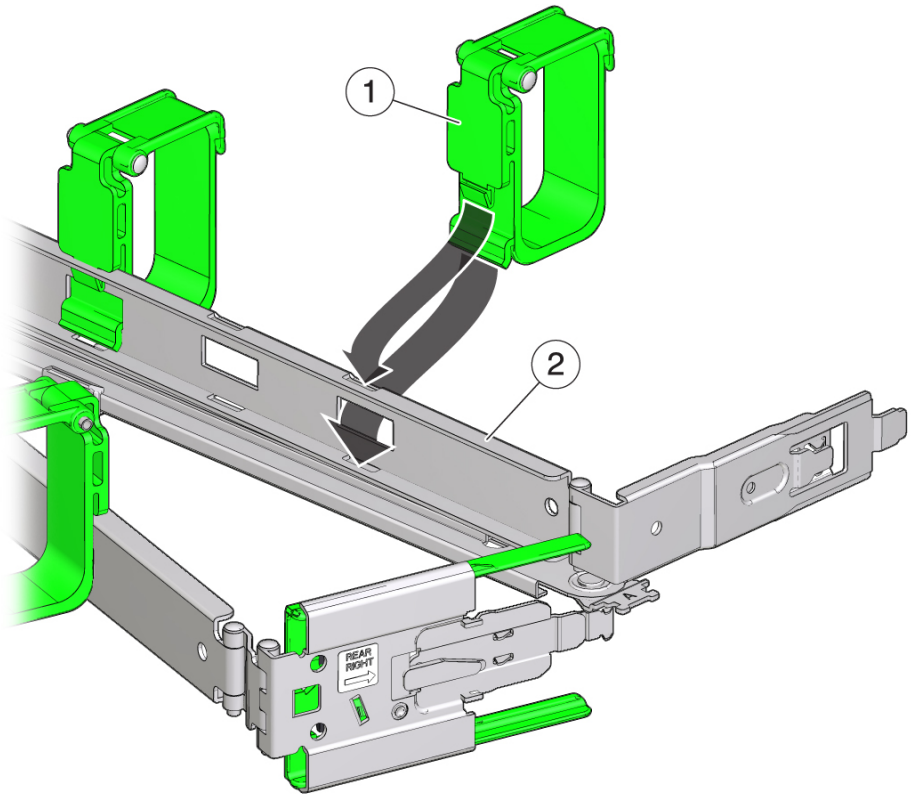
6. **Install, route, and dress the cables to the server.**

Note - Instructions for installing the server cables are provided in the "Cabling the Server" on page 49 section.

7. **If required, attach the cable hooks and loop straps to the CMA, and press them into place to secure the cables.**

Note - Cable hooks and loop straps are preinstalled on the CMA. Perform this step if you need to reinstall cable hooks and straps on the CMA.

For best results, place three cable straps, evenly spaced, on the rear-facing side of the CMA and three cable straps on the side of the CMA nearest the server.



Callout	Description
1	CMA cable strap
2	CMA arm

Verify Operation of Slide-Rails and CMA

This procedure provides instructions for verfiying that the slide-rails and CMA are operating correctly.

Note - Use two people for this procedure: one person to move the server in and out of the rack and another person to observe the cables and CMA.

---

1. **Slowly pull the server out of the rack until the slide-rails reach their stops.**
2. **Inspect the attached cables for any binding or kinks.**
3. **Verify that the CMA extends fully from the slide-rails.**
4. **Push the server back into the rack, as described in the following sub-steps.**

   When the server is fully extended, you must release two sets of slide-rail stops to return the server to the rack:

   a. **For the first set of stops, push in both green levers simultaneously and slide the server toward the rack.**

      The first set of stops are levers are located on the inside of each slide-rail, just behind the back panel of the server.

   b. **Verify that the cables and the CMA retract without binding.**

   c. **For the second set of stops, simultaneously push both of the green slide-rail release buttons, and push the server completely into the rack until both slide-rail locks engage.**

      The second set of stops are the slide-rail release buttons, located at the front of the server.

5. **Adjust the cable straps and CMA, as required.**

Cabling the Server

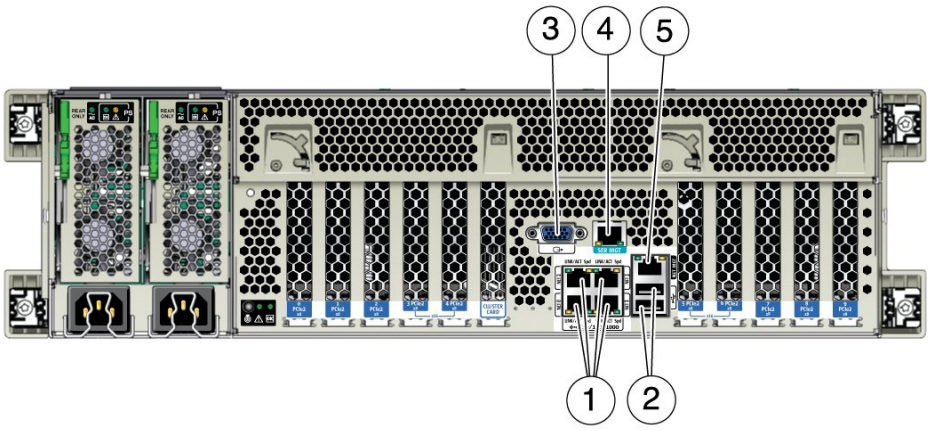
This section provides instructions for connecting power and networking cables to the back of the server, after it has been installed in a rack.

Description	Links
Connect data cables to the server.	“Cable the Server” on page 49
Connect power cords to the server.	“Connect the Power Cords” on page 50

▼ Cable the Server

This procedure describes the ports on the back of the server.

The following illustration shows the locations of the server back panel ports.



Callout	Description
1	Network 10 GbE ports: NET0–NET3
2	USB 2.0 ports (2)
3	DB-15 video port
4	Service processor serial management (SER MGT)/RJ-45 serial port
5	Service processor network management (NET MGT) Ethernet port

1. **To make a direct KVM console connection, connect a mouse and keyboard to the server's USB ports, and a monitor to the DB-15 video port.**

2. **To make a management connection to the service processor using either an Ethernet or direct serial connection, do one of the following:**

   - **Ethernet: If you plan to access the Oracle Integrated Lights Out Manager (ILOM) web or command-line interface over a network connection (separate management network recommended), connect an Ethernet cable to the network management port on the server labeled NET MGT.**

Note - The service processor (SP) uses the NET MGT (out-of-band) port by default. You can configure the SP to share one of the server's four 10 GbE Ethernet ports instead. The SP uses only the configured Ethernet port.

   - **Direct serial: If you plan to access the Oracle ILOM command-line interface using the serial management port, connect a serial null modem cable from your terminal, or client running terminal emulation software, to the RJ-45 serial port on the server labeled SER MGT.**

3. **For server network access, connect Ethernet cables to the 10 Gigabit Ethernet ports.**

Next Steps Proceed to "Connect the Power Cords" on page 50.

▼ Connect the Power Cords

This procedure provides instructions for connecting power cords to the back of the server.

Before You Begin Ensure that all physical, electrical, environmental, and ventilation specifications and guidelines are met before powering on the server to standby power mode (see "Server Specifications, Guidelines, Checklists" on page 19).

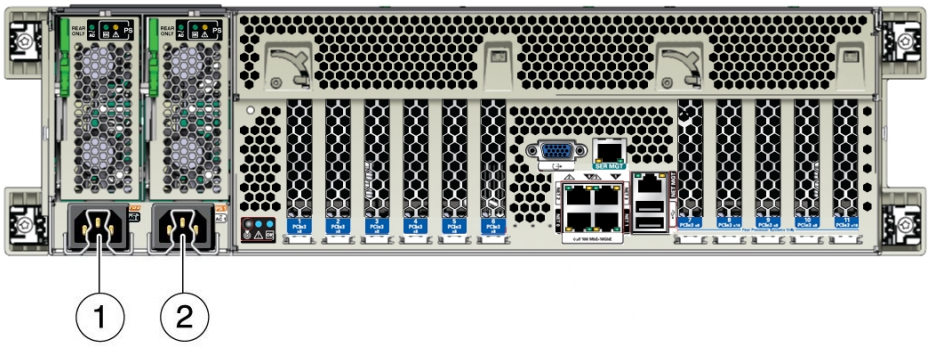
1. **Verify that the AC power at the server supply outlet is within specification for the server.**

   For electrical specification information, see "Electrical Specifications" on page 20.

   Note - A two-CPU system operates from low-line 100 to 127 VAC or high-line 200 to 240 VAC sources. A four-CPU system only operates from high-line 200 to 240 VAC sources.

2. **At the back of the server, insert the connectors for the two supplied power cords into the AC inlets on the power supply units (PSUs), and secure cords using the inlet's strain-relief cable clips.**

   In the following illustration, call out 1 and call out 2 show the location of the PSU AC inlets. The PSUs are on the left side of the server and designated from left to right. The leftmost PSU is PS0 (call out 1), and the rightmost PSU is PS1 (call out 2).



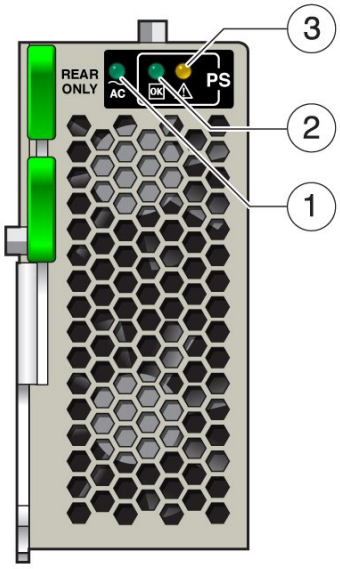
3. **Route and dress the AC cables through the rack.**

   Ensure that the cables do not interfere with the movement of the server when it is slid in and out of the rack.

4. **Insert the plug ends of the power cords to powered electrical outlets.**

5. **Verify the operation of the PSUs.**

As shown in the following illustration, the PSU has a panel with three indicators arranged in a single row from left to right: the leftmost green AC indicator (call out 1), a green OK indicator (call out 2), and the rightmost amber Service Action Required indicator (call out 3).



These indicators report on the state of the PSU as follows:

- AC: Lights green when the AC power from the outlet is within specification for the PSU. The indicator does not light if the supplied power is insufficient.
- OK: Lights green when the PSU is functioning properly and supplying the necessary voltages (AC and DC) for the server.
- Service Action Required: Lights amber when the PSU is in a fault state. The server front panel Service Action Required indicator lights as well.

6. **At the front of the server, verify that the server is booting into standby power mode (see "Standby Power Mode" on page 53).**

Note - Do not press the Power button. Do not power on the server at this time.

7. **Verify that the front panel amber Service Action Required indicators are not lit.**

Note - If any Service Action Required indicators are lit, refer to troubleshooting information in the *Oracle Server X5-4 Service Manual*

Next Steps

- "Connecting to Oracle ILOM" on page 65
- "Setting Up Software and Firmware Using Oracle System Assistant" on page 79
- "Configuring Server Drives for OS Installation" on page 91

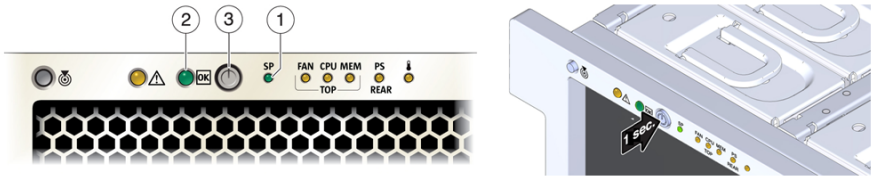
Standby Power Mode

This section describes server standby power mode.

When active AC power cables are connected to the server PSUs, the server begins booting into standby power mode. Standby power mode is a low-power mode in which power is supplied to the service processor (SP) only, allowing it to boot.

While the SP boots, the front-panel SP indicator blinks at the fast blink rate. Once the SP has booted, the server enters standby power mode, the SP indicator is on steady, and the OK indicator blinks at the slow blink rate. When you are ready to boot the server to full power mode, press and release the Power button.

The following illustration shows the SP indicator as call out 1, the OK indicator as call out 2, and the Power button as call out 3.



Setting Up Single-Server Management

This section describes the single-server management setup process. Set up server management, so you can configure the server and install an operating system.

Task	Link
Review Single-Server Management Options	“Managing the Server” on page 57
Connect to Oracle Integrated Lights Out Manager (ILOM).	“Connecting to Oracle ILOM” on page 65
Set up your system software and firmware using Oracle System Assistant.	“Setting Up Software and Firmware Using Oracle System Assistant” on page 79

Managing the Server

This section describes server managment options.

After you have connected cables to the server, you can manage it within a group of servers (multiple-system management) or individually (single-server manangement). The scope of the server management discussion in this document is about single-server management tool options.

Note - This document focuses on single-server management options. For multiple-server management options, see “Managing Multiple Servers” on page 63.

The following sections describe the single-server management tools referenced in this document.

Topic	Link
Learn about Oracle ILOM and how to use it to manage the server.	“Oracle ILOM” on page 57
Learn about Oracle System Assistant and how to use it to manage the server.	“Oracle System Assistant” on page 59
Learn about Oracle Hardware Management Pack and how to use it to manage the server.	“Oracle Hardware Management Pack” on page 61
Learn about server BIOS Boot Modes.	“Server BIOS Boot Modes” on page 61

Oracle ILOM

This section describes the Oracle Integrated Lights Out Manager (ILOM) server management option.

Oracle ILOM is a tool that resides on the server service processor (SP). You can use Oracle ILOM to monitor and manage your server.

Oracle ILOM monitor and management functions include:

- Manage the server locally or remotely, with the server power in standby or full power mode.
- Monitor vital system information, view logged events, obtain notifications, and run troubleshooting tools.
- View and edit server hardware configurations.
- Manage Oracle ILOM user accounts using your company's secure infrastructure.
- Access the host console remotely.
- Backup Oracle ILOM and server BIOS configuration information.

The hardware component of Oracle Integrated Lights Out Manager (ILOM) consists of the service processor (SP) and the management and Ethernet ports on the back of the server. The interface component of Oracle ILOM consists of either a web interface or a command-line interface.

For more information, see the following sections:

- "Oracle ILOM Hardware Components" on page 58
- "Oracle ILOM Interface Components" on page 58

Oracle ILOM Hardware Components

Oracle ILOM resides on the SP, and you can connect to the SP and access Oracle ILOM locally through the management ports or remotely through one of the Ethernet (Net) ports on the back of the server. The Ethernet ports provide access to the Oracle ILOM web interface, and the serial management ports provide access to Oracle ILOM command-line interface (CLI).

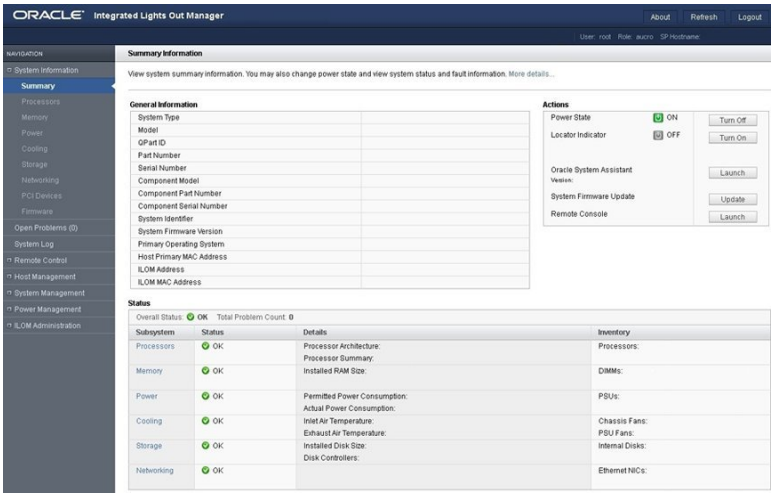
- The SP and its chipset are on a motherboard-mounted daughterboard.
- Two back panel external connections, the NET MGT port (Ethernet connection) and the SER MGT (RJ-45 serial connection) provide remote and local access to the SP and Oracle ILOM.

Oracle ILOM Interface Components

The Oracle ILOM interface components include:

- Web interface
- SSH command-line interface (CLI)
- IPMI v2.0 CLI
- SNMP v3 interface

The following illustration shows an example of the Oracle ILOM web interface:



Additional Oracle ILOM information:

- For server version information, refer to the *Oracle Server X5-4 Product Notes*
- For functionality, refer to the Oracle X5 Series Servers Administration Guide (`http://www.oracle.com/goto/x86AdminDiag/docs`).
- For information about system management tools, see: `http://www.oracle.com/goto/system-management`

Oracle System Assistant

This section describes the Oracle System Assistant server management option.

Oracle System Assistant is a task-based server provisioning tool for Oracle x86 servers. It helps you set up a server, install a supported operating system (OS), and update the server to the latest software release.

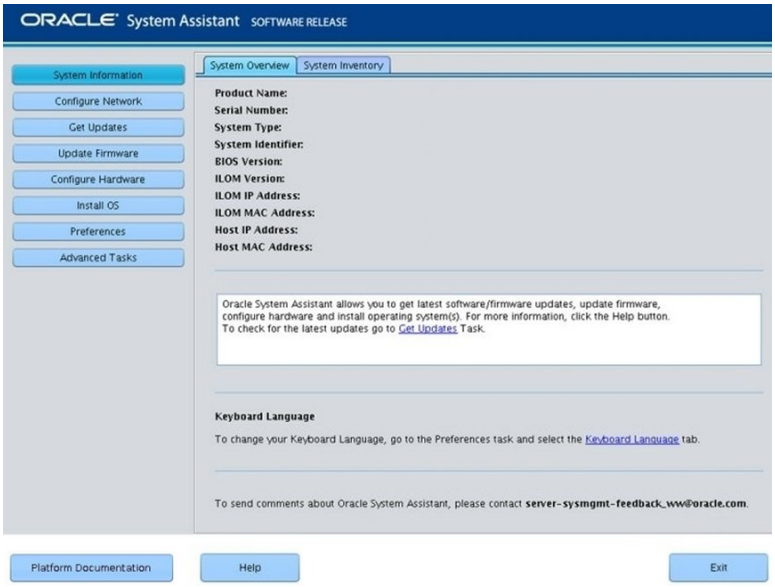
Oracle System Assistant is an option that is available when you purchase your server. It is installed at the factory. If your server includes Oracle System Assistant, it resides on a dedicated bootable internal USB flash drive. You can start Oracle System Assistant from the server boot screen or from Oracle ILOM (web interface or CLI).

Oracle System Assistant Hardware Components

Oracle System Assistant resides on a dedicated, bootable USB flash drive installed inside the server in USB port, P0. The flash dirve must be installed in port, P0, and it must only contain the Oracle System Assistant files.

Oracle System Assistant Interface Components

Oracle System Assistant interface is a task-based GUI that is organized to allow you to quickly provision a server. The following illustration shows an example of the Oracle System Assistant System main screen.



Additional Oracle System Assistant information:

- For server version information, refer to the *Oracle Server X5-4 Product Notes*
- For functionality, refer to the Oracle X5 Series Servers Administration Guide (`http://www.oracle.com/goto/x86AdminDiag/docs`).
- For information about system management tools, see: `http://www.oracle.com/goto/system-management`.

Oracle Hardware Management Pack

This section describes the Oracle Hardware Management Pack server management option.

Oracle Hardware Management Pack provides command-line tools that help you manage and configure your Oracle servers from the operating system.

Hardware Management Pack enables you to do the following:

- Enable in-band monitoring of your Oracle hardware over Simple Network Management Protocol (SNMP). You can use this information to integrate your Oracle servers into your data center management infrastructure.
- Configure BIOS, UEFI BIOS, RAID volumes, and Oracle Integrated Lights Out Manager (ILOM).
- Upgrade server component firmware.
- View hardware configuration information and the status of your Oracle servers.
- Set up an ILOM trap proxy that forwards SNMP traps from your Oracle ILOM service processor over the Host-to-ILOM Interconnect.
- Configure zoning on supported servers running the Oracle Solaris operating system.
- Access server service processors and perform management tasks using IPMItool.
- Use Oracle LInux Fault Management Architecture (FMA) host-based command-line interface to view and act on faults using fault management commands similar to those available from the Oracle ILOM Fault Management shell.

Additional Oracle Hardware Management Pack information:

- For server version information, refer to the *Oracle Server X5-4 Product Notes*
- For functionality, refer to the Oracle X5 Series Servers Administration Guide (`http://www.oracle.com/goto/x86AdminDiag/docs`).
- For more details on Oracle Hardware Management Pack, refer to:`http://www.oracle.com/goto/ohmp/docs`.
- For information about system management tools, see: `http://www.oracle.com/goto/system-management`.

Server BIOS Boot Modes

This section describes the server BIOS boot mode optoins.

The Oracle Server X5-4 contains two BIOS boot modes: Legacy BIOS Boot Mode and a boot mode that is compatible with the Unified Extensible Firmware Interface (UEFI). Both boot modes allow you to manage boot devices. However, the UEFI BIOS boot mode provides more boot option candidates than the Legacy BIOS Boot mode, and it also integrates the BIOS configuration capabilities of the host-bus adapter (HBA) cards. UEFI BIOS also provides the ability to select between UEFI and legacy boot modes.

Select the boot mode in the BIOS Setup Utility. Once the server is rebooted and the boot mode configured, you can manage your boot devices (such as storage drives) with a supported operating system.

Note - Some devices and operating systems do not yet support UEFI BIOS boot mode and can only boot with the server configured for Legacy BIOS Boot Mode.

Before changing boot modes, use the Oracle System Assistant or the Oracle ILOM backup function to preserve the existing configuration.

Note - If you change boot modes, boot candidates (such as disk drives) configured when the server was in the previous mode are no longer available. The only way to make them available is to either go back to the previous boot mode or to reconfigure them while in the new boot mode (which would wipe out any data on them).

Legacy BIOS Boot Mode

Legacy BIOS Boot Mode is the default setting in the BIOS Setup Utility. Choose Legacy BIOS Boot Mode when host bus adapters (HBAs) need to use adapter option ROMs or when adapters do not have UEFI drivers.

In Legacy BIOS Boot Mode, only boot candidates that support Legacy BIOS Boot Mode appear in the BIOS Setup Utility screens in the Boot Options Priority list.

Note - Rebooting the server using a different BIOS boot mode than the one used for the OS install makes the OS inaccessible. You need to switch back to the correct boot mode setting to boot the OS.

UEFI BIOS Boot Mode

Choose UEFI BIOS Boot Mode from the BIOS Setup Utility to use UEFI drivers when software and adapters have UEFI drivers.

In UEFI BIOS Boot Mode, only boot candidates that support UEFI BIOS Boot Mode appear on the BIOS Setup Utility screens in the Boot Options Priority list.

The following operating systems are available for the Oracle Server X5-4 and support UEFI BIOS Boot Mode:

- Oracle Solaris 11.1 and later
- Oracle Linux 6.5
- Red Hat Enterprise Linux 6.5
- SUSE Linux Enterprise Server 11 SP3
- Microsoft Windows Server 2008 R2 SP1 and Microsoft Windows Server 2012

All other supported operating systems (including factory preinstalled OS images) must use Legacy BIOS Boot Mode. For an up-to-date list, refer to the *Oracle Server X5-4 Product Notes*

Note - Rebooting the server using a different BIOS boot mode than the one used for the OS install makes the OS inaccessible. You need to switch back to the correct boot mode setting to boot the OS.

Addtional BIOS Information

- For server version information, refer to the *Oracle Server X5-4 Product Notes*
- For more information about UEFI BIOS, refer to Oracle X5 Series Servers Administration Guide (`http://www.oracle.com/goto/x86AdminDiag/docs`)
- For information about system management tools, see: `http://www.oracle.com/goto/system-management`

Managing Multiple Servers

This section describes multiple-server management options.

The following is an overview of some of the multiple-server system management tools:

- Oracle Enterprise Manager Ops Center allows you to manage multiple servers from a single interface, including an provisioning and updating an operating system and system firmware. For more information, refer to:

  `http://www.oracle.com/technetwork/oem/ops-center/index.html`

- If you want to monitor your enterprise servers, you can use Sun Management Center. For more details, refer to:

  http://www.oracle.com/technetwork/systems/patches/sysmgmt/smc-jsp-138444.html

- If you already have third-party system management tools, the servers can integrate with many third-party tools. For more details, refer to:

  http://www.oracle.com/goto/system-management

Connecting to Oracle ILOM

This section provides instructions for accessing Oracle ILOM using the command-line interface (CLI) or web interface to configure network settings.

Description	Link
Access and log in remotely or locally to Oracle ILOM using the CLI or web interface,	“Logging In to Oracle ILOM” on page 65
Learn about network ports and defaults.	“Modifying Network Settings for Oracle ILOM” on page 68
Verigy Oracle ILOM network settings.	“Testing Network Settings for Oracle ILOM” on page 75
Exit Oracle ILOM.	“Exit Oracle ILOM” on page 77

Logging In to Oracle ILOM

This section provides local or remote Oracle ILOM connection procedures:

- To log in locally, see “Log In to Oracle ILOM CLI Using a Local Serial Connection” on page 65.
- To log in remotely, use the IP address, hostname, or IPv6 local link name assigned to the server SP and follow the instructions in “Log In to Oracle ILOM Using a Remote Ethernet Connection” on page 66.

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

This procedure provides instructions for accessing to Oracle ILOM locally using a serial connection, and it requires that you log in to Oracle ILOM using an account with administrator privileges.

Before You Begin You must have already connected a serial cable from a terminal (or terminal emulation client) to the SER MGT port on the back of the server. For more information, see "Cable the Server" on page 49.

1. **At the terminal (or terminal emulation client), ensure that the following serial communication settings are configured:**
   - **8N1: eight data bits, no parity, one stop bit**
   - **9600 baud**
   - **Disable hardware flow control (CTS/RTS)**
2. **At the terminal keyboard, press Enter to establish the serial console connection to Oracle ILOM.**

   A login prompt to Oracle ILOM appears.
3. **Log in to the Oracle ILOM command-line interface (CLI) using an account with administrator privileges.**

   Note - The default Oracle ILOM Administrator account username is `root` and its password is `changeme`. If this account has been changed, contact your system administrator.

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

▼ Log In to Oracle ILOM Using a Remote Ethernet Connection

This procedure provides instructions for accessing Oracle ILOM remotely using an Ethernet connection. It also requires an Oracle ILOM account with administrator privileges and the IP address (or hostname) of the server service processor (SP).

Before You Begin You must have already connected a serial cable from a terminal (or terminal emulation client) to the SER MGT port on the back of the server. For more information, see "Cable the Server" on page 49.

1. **Establish a connection to Oracle ILOM using one of the following methods:**

- **From the Oracle ILOM CLI, initiate a secure shell session. Enter the command:**

Note - The default Oracle ILOM Administrator account username is `root` and its password is `changeme`. If this account has been changed, contact your system administrator.

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

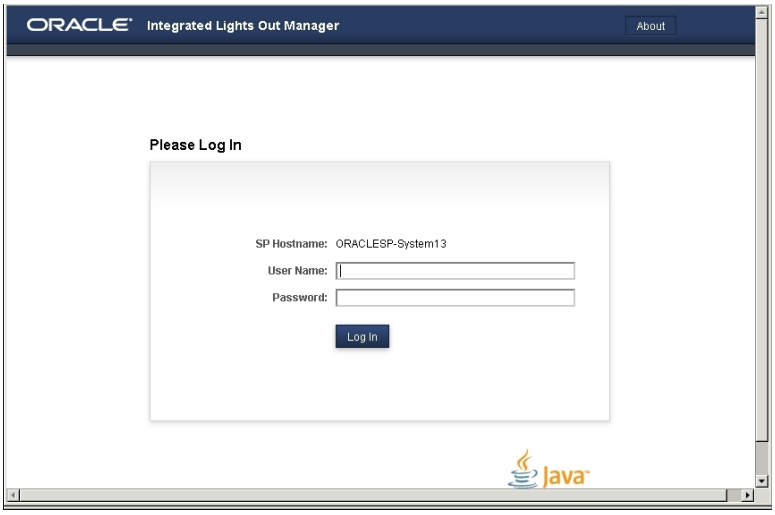
where *username* is the user name of an account with administrator privileges and *host* is either the IP address or hostname (when using DNS) of the server SP.

The Oracle ILOM password prompt appears.

```
Password:
```

- **From the Oracle ILOM web interface, type the IP address of the server in the address field of your web browser and press Enter.**

  The Oracle ILOM login page appears.



2. **Log in to Oracle ILOM using one of the following methods:**

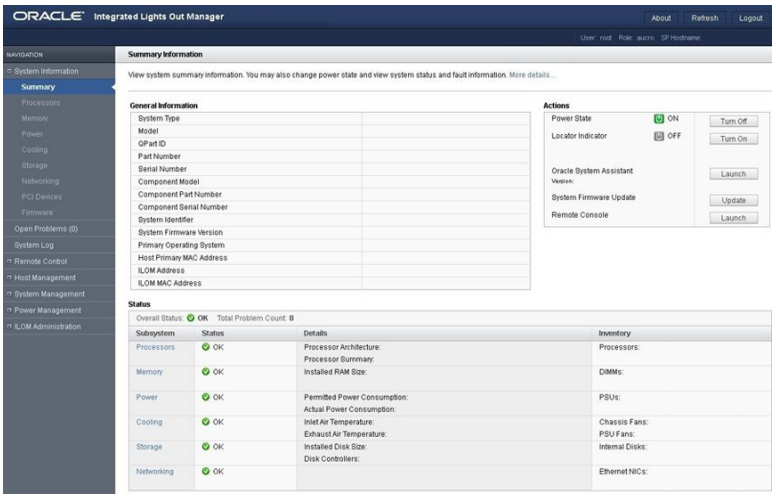
Note - The default Oracle ILOM Administrator account username is `root` and its password is `changeme`. If this account has been changed, contact your system administrator.

- **From the Oracle ILOM CLI, at the password prompt, type your password and press Enter.**

  Oracle ILOM displays a default command prompt, indicating that you have successfully logged in to Oracle ILOM.

- **From the Oracle ILOM web interface, type your user name and password at the login page, and click Log In.**

  The Summary page appears, indicating that you have successfully logged in to Oracle ILOM. For example:



Modifying Network Settings for Oracle ILOM

This section describes network defaults and provides instructions for modifying Oracle ILOM network settings.

- For network default information, see “Oracle ILOM Network Defaults” on page 69.
- To modify network setting from the Oracle ILOM CLI, see “Modify Network Settings From the Oracle ILOM CLI” on page 69.

- To log in remotely, use the IP address, hostname, or IPv6 local link name assigned to the server SP and follow the instructions in “Modify Network Settings From the Oracle ILOM Web Interface” on page 73.

Oracle ILOM Network Defaults

This section describes the Oracle ILOM dual-stack IPv4 and IPv6 default settings.

The Oracle Server X5-4 supports dual-stack IPv4 and IPv6 settings, which enable Oracle ILOM to fully operate in an IPv4 and IPv6 network environment.

In a typical configuration, accept these default settings:

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

Note - To determine an automatically assigned IP address or host name for your server, use the network tools provided with the DHCP server or IPv6 router.

▼ Modify Network Settings From the Oracle ILOM CLI

This procedure provides instructions for modifying Oracle ILOM network settings from the command-line interface (CLI).

Note - You can also change network settings using the BIOS Setup Utility. For instructions, refer to “Access the BIOS Setup Utility” in *Oracle Server X5-4 Service Manual*

---

1. **Log in to the Oracle ILOM CLI.**

   Use the relevant method:

   - **“Log In to Oracle ILOM CLI Using a Local Serial Connection” on page 65**
   - **“Log In to Oracle ILOM Using a Remote Ethernet Connection” on page 66**

2. **Perform the network configuration instructions that apply to your network environment, then test the network settings:**

   - **To view or configure IPv4 network settings, perform Step 3 and Step 4.**
   - **To view or configure IPv6 network settings, perform Steps 5 through 8.**

3. **For IPv4 network configurations, use the `cd` command to navigate to the `/SP/network` directory:**

   ```
   cd /SP/network
   ```

4. **Do one of the following:**

   - **If you have a DHCP server on the network, type the following command to view the settings assigned to the server by the DHCP server:**

     ```
     show
     ```

   - **If there is no DHCP server, or if you want to assign settings, use the `set` command to assign values for the properties shown in the table below.**

     For example:

     ```
     set pendingipdiscovery=static
     set pendingipaddress=10.8.183.106
     set pendingipnetmask=255.255.255.0
     set pendingipgateway=10.8.183.254
     set commitpending=true
     ```

Property	Value to Set	Description
`state`	`enabled` or `disabled`	The network state is enabled by default. If you disable the network connection to the SP, you can only access Oracle ILOM using the serial management port.
`pendingipdiscovery`	`static` or `dhcp`	Network discovery options include `static` for a static IP address or `dhcp` for an IP address assigned by a DHCP server (default).
`pendingipaddress`	<*ip_address*>	To assign multiple static network settings type the `set` command for each property (IP address, netmask, and gateway) along with the static value that you want to assign.
`pendingipnetmask`	<*netmask*>	
`pendingipgateway`	<*gateway*>	
`commitpending`	`true`	Type `set commitpending=true` to commit changes.

Note - Setting `commitpending` to `true` commits the changes made to the network settings. This terminates your Oracle ILOM connection. You need to log in to use the new settings and continune.

To test the IPv4 or IPv6 network settings, see Step 9.

5. **For IPv6 network configurations, use the `cd` command to navigate to the `SP/network/ipv6` directory:**

   ```
   cd SP/network/ipv6
   ```

6. **To view the IPv6 network settings, type the `show` command.**

   For example:

   ```
   show
   /SP/network/ipv6
   Targets:

   Properties:
    state = enabled
    autoconfig = stateless
    dhcpv6_server_duid = (none)
    link_local_ipaddress = fe80::214:4fff:feca:5f7e/64
    static_ipaddress = ::/128
    ipgateway = fe80::211:5dff:febe:5000/128
    pending_static_ipaddress = ::/128
    dynamic_ipaddress_1 fec0:a:8:b7:214:4fff:feca:5f7e/64

   Commands:
    cd
    show
   ```

7. **To configure an IPv6 auto-configuration option, use the `set` command to specify the following auto-configuration property values.**

   For example:

   ```
   set state=enabled

   set autoconfig=dhcpv6_stateless
   ```

Property	Value to Set	Description
`state`	`enabled` or `disabled`	The IPv6 network state is enabled by default. To enable an IPv6 auto-configuration option, this state must be set to enabled.

Property	Value to Set	Description

`autoconfig`	Values include:
	`stateless`
	`dhcpv6_stateless`
	`dhcpv6_stateful`
	`disable`
		Use `autoconfig` command followed by one of the following values:
		■ `stateless` (default setting)
		Automatically assigns IP address learned from IPv6 network router.
		■ `dhcpv6_stateless`
		Automatically assigns DNS information learned from the DHCPv6 server. The `dhcpv6_stateless` property value is available in Oracle ILOM as of 3.0.14.
		■ `dhcpv6_stateful`
		Automatically assigns the IPv6 address learned from the DHCPv6 server. The `dhcpv6_stateful` property value is available in Oracle ILOM as of 3.0.14.
		■ `disable`
		Disables all auto-configuration property values and sets the read-only property value for link local address.

Note - The IPv6 configuration options take effect after they are set. You do not need to commit these changes under the `/network` target.

Note - You can enable the `stateless` auto-configuration option to run at the same time as when the option for `dhcpv6_stateless` is enabled or as when the option for `dhcpv6_stateful` is enabled. However, the auto-configuration options for `dhcpv6_stateless` and `dhcpv6_stateful` should not be enabled to run at the same time.

8. To set a static IPv6 address, complete these steps:

a. Specify the property types. For example:

```
set state=enabled
set pending_static_ipaddress=fec0:a:8:b7:214:4fff:feca:5f7e/64
```

Property	Value to Set	Description
`state`	`enabledordisabled`	The IPv6 network state is enabled by default. To enable a static IP address this state must be set to enabled.
`pending_static_ipaddress`	*<ipv6_address>/ <subnet_mask_length_in_bits>*	Type this command followed by the property value for the static IPv6 address and netmask that you want to assign to the device. IPv6 address example:`fec0:a:8:b7:214:4fff:feca:5f7e/64`

b. **To commit the pending IPv6 static network parameters, type:**

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

Note - Network settings are considered pending until you commit them. Assigning a new static IP address to the server ends all active Oracle ILOM sessions with the server. To log back in to Oracle ILOM, create a new session using the newly assigned IP address.

---

9. **Test the IPv4 or IPv6 network configuration from Oracle ILOM using the Network Test Tools (Ping and Ping6).**

   For details, see "Test IPv4 or IPv6 Network Configuration From the Oracle ILOM CLI" on page 75.

▼ Modify Network Settings From the Oracle ILOM Web Interface

This procedure provides instructions for modifying Oracle ILOM network settings from the web interface.

Note - You can also change network settings using the BIOS Setup Utility. For instructions, refer to "Access the BIOS Setup Utility" in *Oracle Server X5-4 Service Manual*

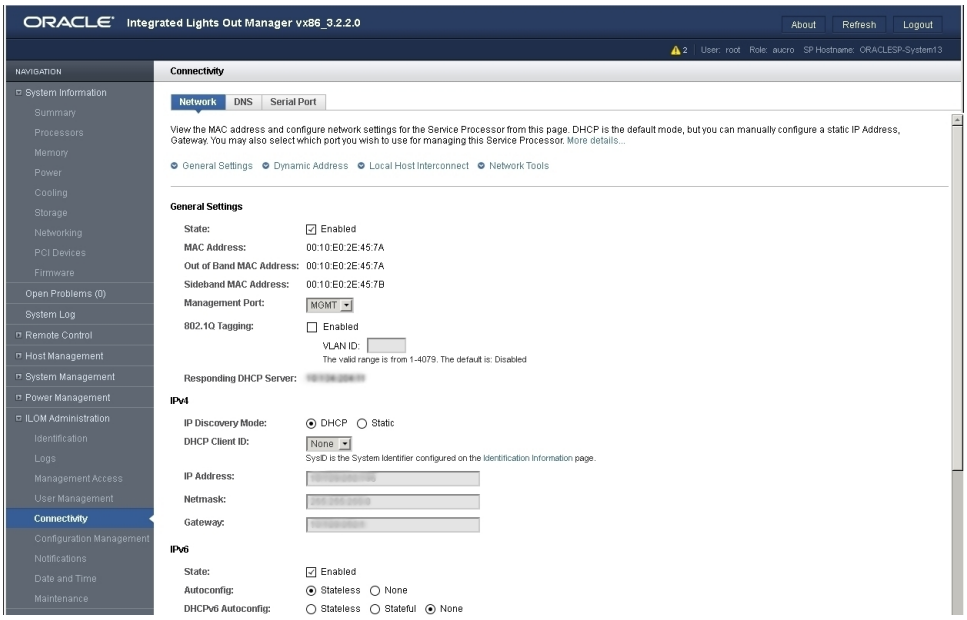
---

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

   Use the relevant steps in "Log In to Oracle ILOM Using a Remote Ethernet Connection" on page 66.

2. **Select ILOM Administration > Connectivity from the navigation tree on the left.**

The Network Settings page appears, and the settings configured on your device are shown.



3. **Perform the network configuration instructions that apply to your network environment:**

   - **IPv4: To allow the DHCP server on your network to assign network settings, ensure that the DHCP radio button is selected and click Save.**

   - **IPv4: To assign network settings, select the Static radio button and fill in the IP Address, Netmask, and Gateway fields and click Save.**

   - **IPv6: To configure an auto-configuration option, ensure that the Enabled check box next to the State property is selected. Then, select an auto-configuration value and click Save.**

   - **IPv6: To set a static IPv6 address, ensure that the Enabled check box next to the State property is selected. Then, type the static address in the format** *ipv6_address/subnet mask length in bits* **in the Static IP Address field (for example: `fec0:a:8:b7:214:4f ff:feca:5f7e/64`) and click Save.**

4. **Test the IPv4 or IPv6 network configuration from Oracle ILOM using the Network Test Tools (Ping and Ping 6).**

   For details, see "Test IPv4 or IPv6 Network Configuration From the Oracle ILOM Web Interface" on page 76.

Testing Network Settings for Oracle ILOM

This section provides instructions for how to test Oracle ILOM network settings.

- To test network setting from the Oracle ILOM CLI, see "Test IPv4 or IPv6 Network Configuration From the Oracle ILOM CLI" on page 75.
- To test network settings from the Oracle ILOM web interface, see "Test IPv4 or IPv6 Network Configuration From the Oracle ILOM Web Interface" on page 76.

▼ Test IPv4 or IPv6 Network Configuration From the Oracle ILOM CLI

This procedure provides instructions for testing Oracle ILOM network settings from the command-line interface (CLI).

1. **To navigate to the `/SP/network/test` directory, use the `cd` command:**

   ```
   cd /SP/network/test
   ```

2. **To view the network `test` targets and properties, type the `show` command at the CLI prompt.**

   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
```

3. **To send a network test from the device to a network destination, use the `set ping` or `set ping6` command.**

   For example:

   `set ping=`*device_ipv4_address_on network*

   `set ping6=`*device_ipv6_address_on network*

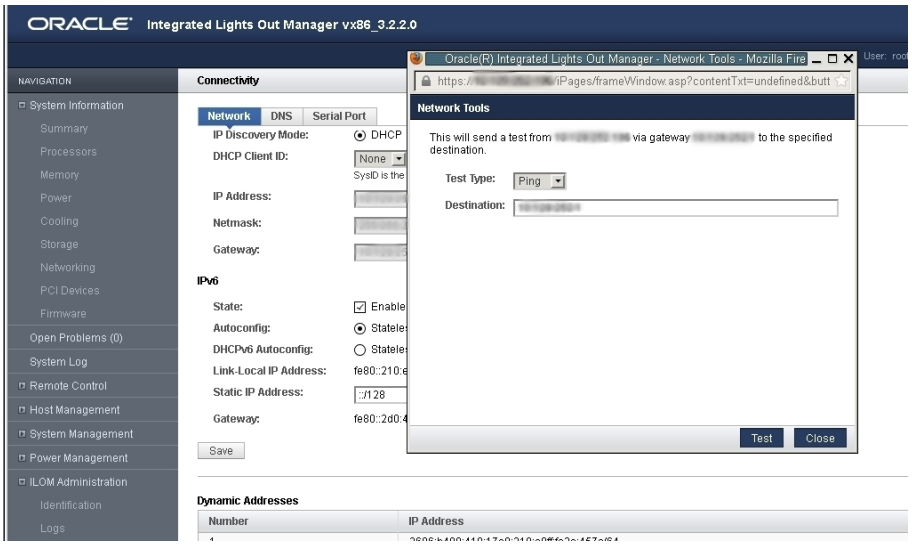
Property	Value to Set	Description
`ping`	*<IPv4_address>*	Type the `set ping=` command at the command prompt followed by the IPv4 test destination address. For example: `set ping=10.8.183.106` `Ping of 10.8.183.106 succeeded`
`ping6`	*<IPv6_address>*	Type the `set ping6=` command followed by the IPv6 test destination address. For example: `set ping6=fe80::211:5dff:febe:5000` `Ping of fe80::211:5dff:febe:5000 succeeded`

▼ Test IPv4 or IPv6 Network Configuration From the Oracle ILOM Web Interface

This procedure provides instructions for testing Oracle ILOM network settings from the web interface.

1. **From the ILOM Administration > Connectivity page, click the Tools button at the bottom of the page.**

The Network Configuration Test screen appears.



2. **Select Ping or Ping6 from the Test Type list box.**

   Choose a Ping test for an IPv4 network configuration. Choose a Ping6 test for an IPv6 network configuration.

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

   If the test was successful, the following message appears below the Destination field in the Network Configuration Test screen:

   `Ping of` *ip_address* `succeeded`

▼ Exit Oracle ILOM

This procedure provides instructions for exiting the Oracle ILOM CLI and web interface.

- **To end an Oracle ILOM session:**

  - **From the Oracle ILOM CLI, type `exit` at the CLI prompt.**

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

Setting Up Software and Firmware Using Oracle System Assistant

This section provides instructions for how to launch Oracle System Assistant and uase it to set up the server in preparation for installing a supported operating system (OS). After installing an OS, you can use Oracle System Assistant to update the server and its components to the latest software and firmware.

Description	Links
Launch Oracle System Assistant remotely from Oracle ILOM.	"Launch Oracle System Assistant Remotely Using the Oracle ILOM Web Interface" on page 79
Launch Oracle System Assistant locally.	"Launch Oracle System Assistant Locally" on page 84

See Also: For additional information about Oracle System Assistant, see the Oracle X5 Series Servers Administration Guide (`http://www.oracle.com/goto/x86AdminDiag/docs`)

▼ Launch Oracle System Assistant Remotely Using the Oracle ILOM Web Interface

This procedure provides instructions for launching Oracle System Assistant remotely using the Oracle ILOM web interface.

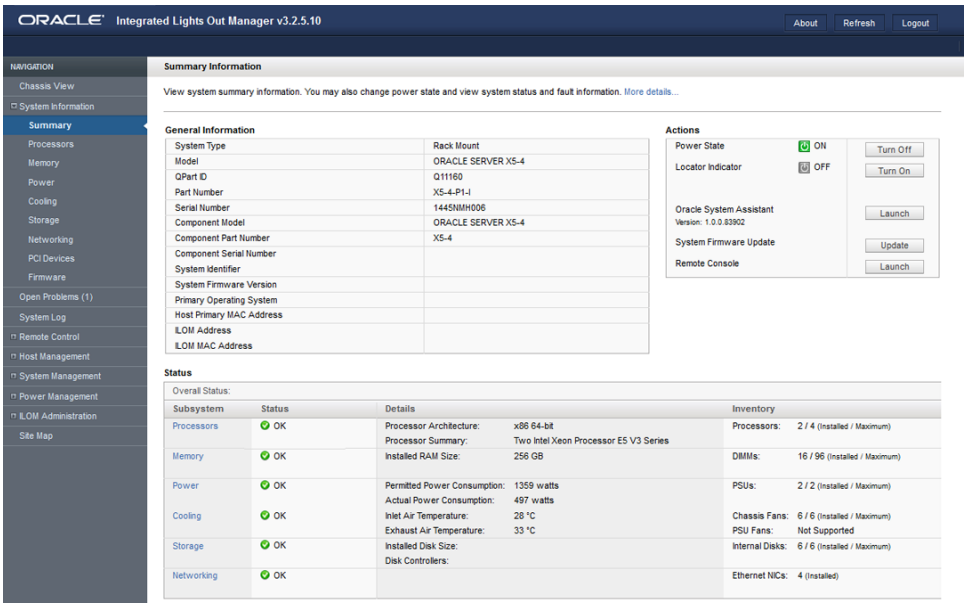
To launch Oracle System Assistant remotely, use the Oracle ILOM web interface.

Before You Begin Set up Oracle ILOM for remote Ethernet access, see "Log In to Oracle ILOM Using a Remote Ethernet Connection" on page 66.

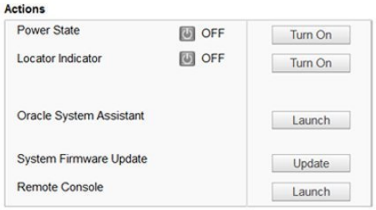
1. **Log in to the Oracle ILOM web interface.**

   In your browser's address field, type the server's SP IP address.

The System Summary screen appears.



2. **If necessary, turn off the server power in the Actions section of the Summary screen.**

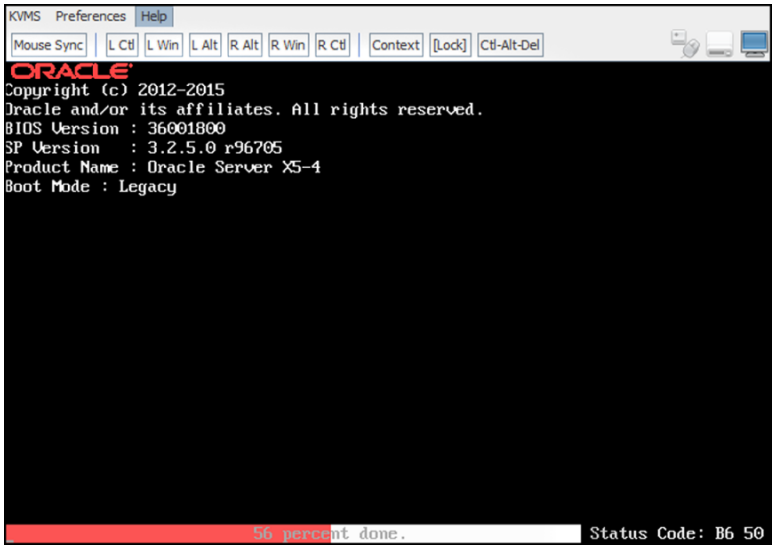


3. **When the Power State indicator shows that the server power is off, click the Oracle System Assistant Launch button in the Action section of the Summary screen.**

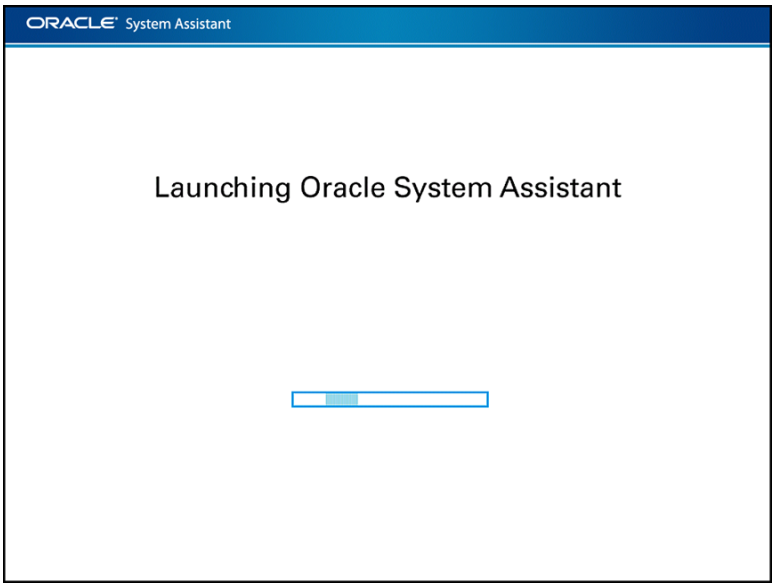
   A dialog box appears. You need to start a Remote Console session to view Oracle System Assistant.

4. **To start a Remote Console session, click Continue.**

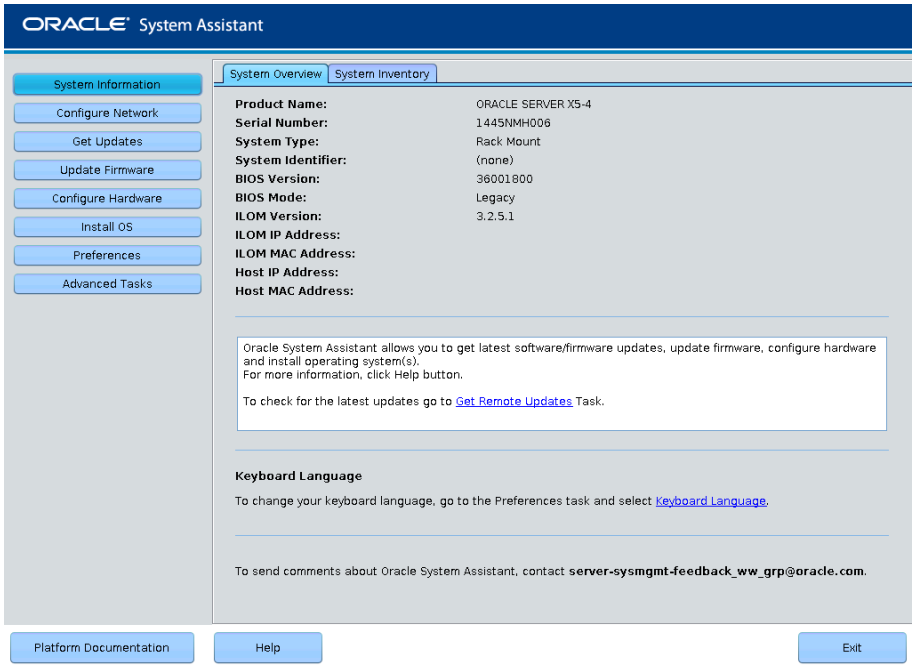
   A Remote Console session appears, and server BIOS boot messages are displayed on the screen.



After several minutes, the Launching Oracle System Assistant screen appears



And, then the Oracle System Assistant main screen appears.



5. **Use Oracle System Assistant to perform the tasks in the order shown in the following table.**

For more information about using Oracle System Assistant, refer to the Oracle X5 Series Servers Administration Guide (`http://www.oracle.com/goto/x86AdminDiag/docs`) or the embedded help on Oracle System Assistant.

Step	Task	Oracle System Assistant Screen
1	Set up Oracle System Assistant network connection.	Configure Network
2	Get latest software and firmware updates.	Get Updates
3	Update Oracle ILOM, BIOS, disk expander, or HBA firmware, if needed.	Update Firmware
4	Configure Oracle ILOM.	Configure Hardware > Service Processor Configuration
5	Configure RAID.	Configure Hardware > RAID Configuration

Step	Task	Oracle System Assistant Screen
	Note - Do **not** use this option on a disk with a preinstalled OS.	
6	Install an operating system using the Oracle System Assistant Install OS wizard. Supported operating systems include Oracle Solaris, Linux, Windows, or Oracle VM software. **Note -** Do **not** use this option if your system came with a preinstalled OS.	Install OS

Next Steps "Configuring Server Drives for OS Installation" on page 91

▼ Launch Oracle System Assistant Locally

This procedure provides instructions for launching Oracle System Assistant locally using devices attached to ports on the server.

Before You Begin To launch Oracle System Assistant locally, you must be physically present at the server and have the following devices attached to the server:

- VGA monitor
- USB keyboard
- USB mouse

1. **Ensure that the server is powered off to standby power mode.**

   See "Standby Power Mode" on page 53.

2. **Connect devices to the server.**

   For connector and port locations, see "Front and Back Panel Features" on page 24.

   a. **Connect a VGA monitor to the video port on the front of the server.**

   b. **Connect a USB keyboard and mouse to the USB connectors.**

3. **To power on the server to full power mode, press the server front-panel Power button.**

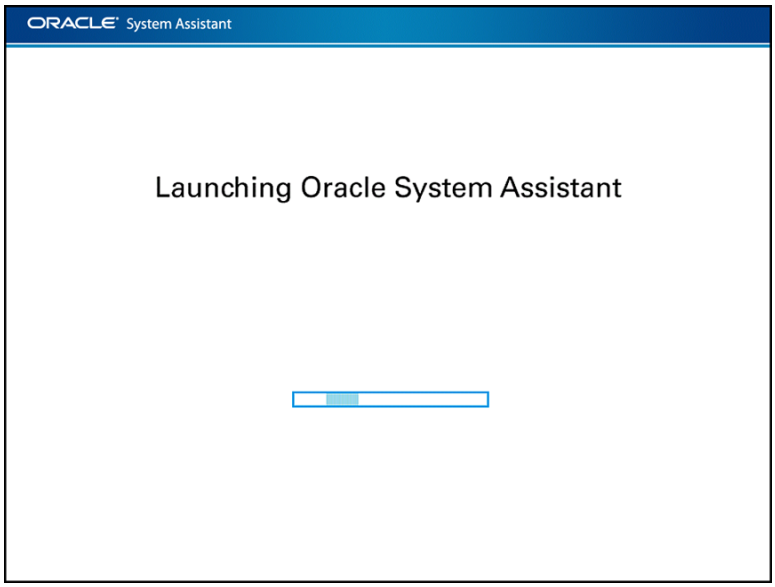
   The server boots, and BIOS boot messages appear on the monitor.

4. **Watch the screen for the list of function-key options.**

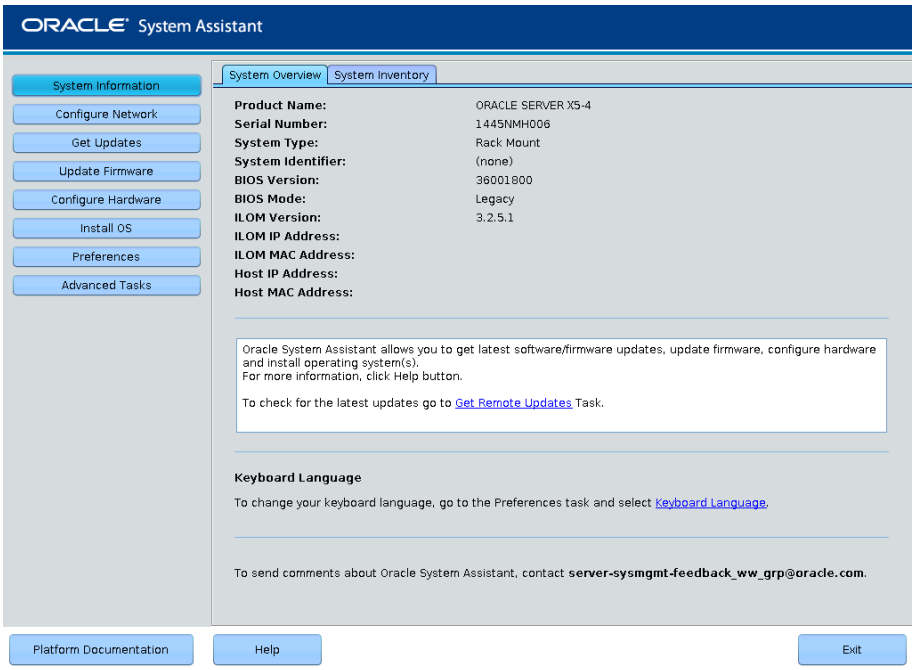
   If functioning version of Oracle System Assistant is installed in the server, the list of options includes: Press F9 to start Oracle System Assistant.

5. **To start Oracle System Assistant, press the F9 function key.**

   The server initializes, and after several minutes, Oracle System Assistant launches.



The Oracle System Assistant System Overview screen appears.



6. **Use Oracle System Assistant to perform the tasks in the order shown in the following table.**

   The tasks are located in the left-side navigation panel.

   For more information about using Oracle System Assistant, click the Help button or refer to the Oracle X5 Series Servers Administration Guide (`http://www.oracle.com/goto/x86AdminDiag/docs`).

Step	Task	Oracle System Assistant Task
1	Set up Oracle System Assistant network connection.	Network Configuration
2	Get latest software and firmware updates.	Get Updates
3	Update Oracle ILOM, BIOS, disk expander, or HBA firmware, if needed.	Update Firmware

Step	Task	Oracle System Assistant Task
4	Configure Oracle ILOM.	Configure Hardware > Service Processor Configuration
5	Configure RAID. **Note -** Do **not** use this option on a disk with a preinstalled OS.	Configure Hardware > RAID Configuration See "Configure RAID Using Oracle System Assistant" on page 93.
6	Install an operating system using the Oracle System Assistant Install OS wizard. Supported operating systems include Oracle Solaris, Linux, Windows, or Oracle VM software. **Note -** Do **not** use this option if your system came with a preinstalled OS.	Install OS

Next Steps "Configuring Server Drives for OS Installation" on page 91

Installing an Operating System

This section describes the tasks required to configure the server storage drives, install an operating system (OS), and setup a presintalled OS.

Task	Link
Set up server storage drives in preparation for installing an operating system.	“Configuring Server Drives for OS Installation” on page 91
If applicable, configure your factory preinstalled operating system or virtual machine software.	“Configuring a Preinstalled Operating System” on page 92

Configuring Server Drives for OS Installation

This section describes server storage drive configuration options and provides instructions for creating a bootable volume in preparation for installing an operating system (OS).

Description	Links
Learn about storage drive configuration options.	“Drive Configuration Options” on page 91
Configure server storage drives into RAID volumes using Oracle System Assistant.	“Configure RAID Using Oracle System Assistant” on page 93
Configure server storage drives into RAID volumes using the BIOS RAID configuration utilities.	“Configuring RAID Using the BIOS RAID Configuration Utilities” on page 102
Learn about the operating system installation and update tasks.	“Installing an Operating System and Drivers” on page 113

Drive Configuration Options

This section describes drive configuration options.

Before you can install an OS, you must configure at least one bootable RAID volume. You can configure multiple server storage drives into one or more bootable RAID volumes, or you can configure a single storage drive as a single bootable RAID volume. Regardless of the configuration you choose, the OS must be installed on a bootable volume.

However, if your server has a storage drive with a preinstalled OS, you only need to boot the OS and configure the OS settings. Do not configure a storage drive with a preinstalled OS as a RAID volume because the process for preparing a RAID volume deletes the contents of the drive (the preinstalled OS).

Choose one of the following drive configuration options:

- If your server has a storage drive with a preinstalled OS, see “Configuring a Preinstalled Operating System” on page 92
- IF your server does not have a storage drive with a preinstalled OS, see “Configuring RAID Volumes” on page 92.

Configuring a Preinstalled Operating System

This section describes configuring one of the supported preinstalled operating systems.

If you purchased an optional factory preinstalled OS, a boot drive containing the OS has already been created and installed in the server. For systems with a preinstalled OS image, you need to configure the OS settings. To do this, see one of the following sections:

- “Configuring the Preinstalled Oracle Solaris OS” on page 115
- “Configuring the Preinstalled Oracle Linux OS” on page 121
- “Configuring the Preinstalled Oracle VM Software” on page 127

Configuring RAID Volumes

This section describes the options for configuring one or more of the server storage drives as a bootable RAID volume.

Caution - Data loss. Configuring a preinstalled OS boot drive as a RAID volume deletes the contents of the drive. Do not configure a preinstalled OS boot drive as a RAID volume. For more information, see “Configuring a Preinstalled Operating System” on page 92.

Before you can install an operating system (OS), you need to configure the server storage drives. You can configure multiple server storage drives into one or more RAID volumes, or you can configure a single storage drive as a single RAID volume. Regardless of the configuration you choose, you need to make at least one of the volumes (the OS volume) bootable. The OS must be installed on a bootable volume.

To configure the server storage drives, you can use Oracle System Assistant or the LSI MegaRAID BIOS Configuration Utility that resides on the HBA:

Note - Oracle System Assistant provides an easy to use interface and context-sensitive help, and it is the recommended method for setting up the server and configuring server storage drives.

- “Configure RAID Using Oracle System Assistant” on page 93

  Use this procedure if your server is equipped with Oracle System Assistant.
- “Configuring RAID Using the BIOS RAID Configuration Utilities” on page 102.

  Use this procedure if your server is not equipped with Oracle System Assistant.

Configure RAID Using Oracle System Assistant

This procedure provides instructions for configuring server the storage drives as a bootable RAID volume using Oracle System Assistant.

Before installing an OS, you need to create at least one bootable RAID volume for the OS. The system does not recognize a storage drive unless it has a volume that has been created by the internal Sun Storage 12 Gb SAS PCIe 8-port HBA.

Note - The Oracle Server X5-4 uses Sun Storage 12 Gb SAS PCIe 8-port HBA. This HBA is also called the SGX-SAS12-R-INT-Z.

To create a bootable RAID volume, use the Oracle System Assistant RAID Configuration task. The RAID Configuration task is located in the Configure Hardware task pane.

Before You Begin Ensure that you have already set a BIOS boot mode (UEFI or Legacy) from the BIOS Setup Utility.

Note - For the RAID volume to be visible, the BIOS boot mode used for the RAID configuration must match the mode that you use when you install the OS. For instructions for switching the BIOS boot modes, refer to Oracle X5 Series Servers Administration Guide (`http://www.oracle.com/goto/x86AdminDiag/docs`).

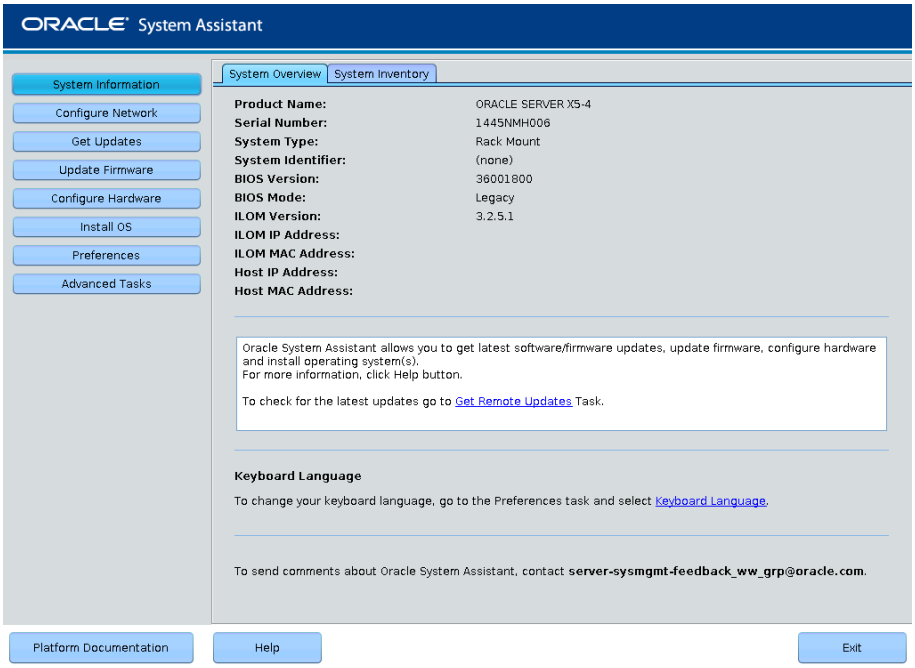
---

1. **Launch Oracle System Assistant.**

   See the “Setting Up Software and Firmware Using Oracle System Assistant” on page 79 section.

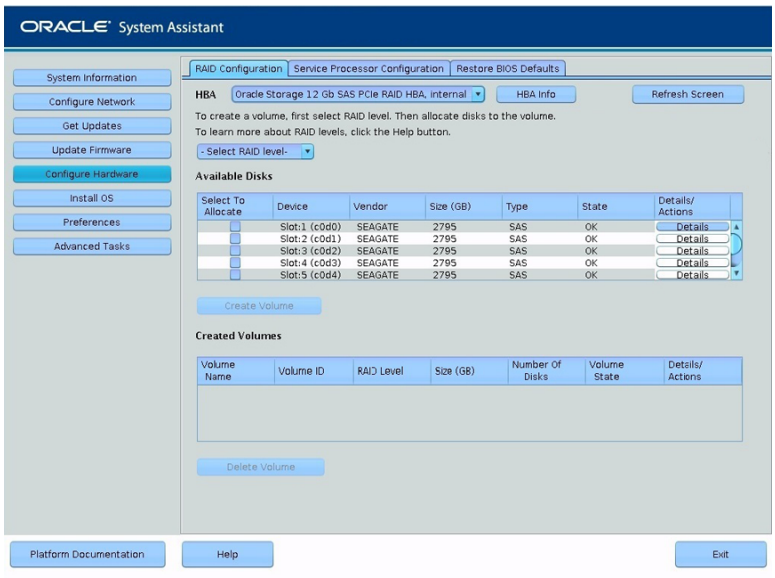
   The Oracle System Assistant System Overview screen appears.

Note - The information on the screens you see might be different from those shown in this procedure.

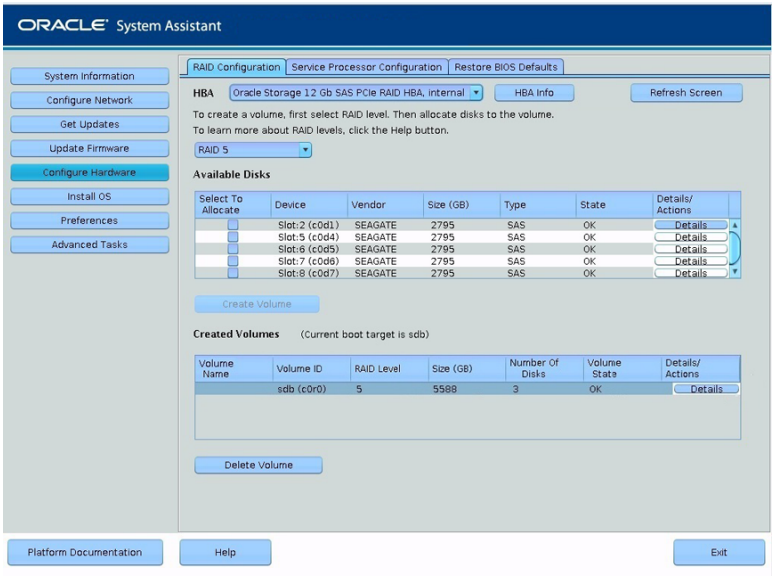


2. **Click the Configure Hardware button, and then select the RAID Configuration tab.**

3. **In the HBA list box, select the 12 GB SAS PCIe RAID Internal HBA.**

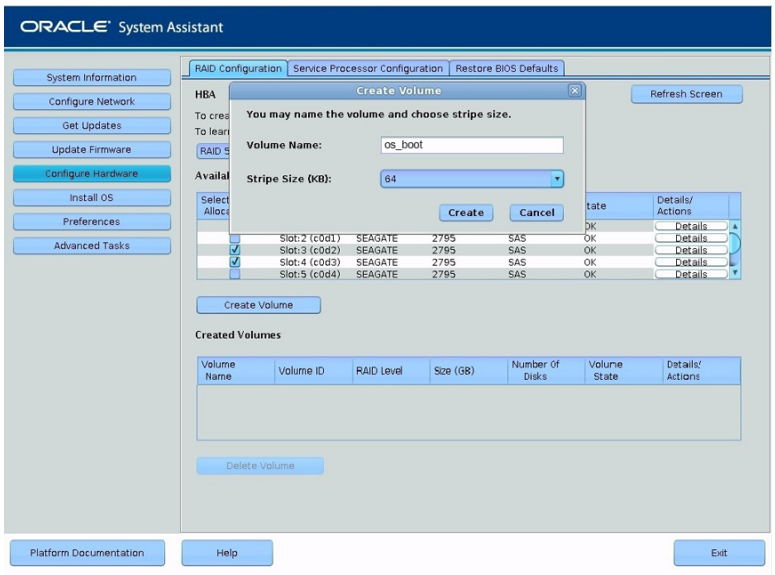


4. **In the Select RAID Level list box, select the desired RAID level.**



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

The Create Volume dialog box appears.



6. **In the Create Volume dialog box:**

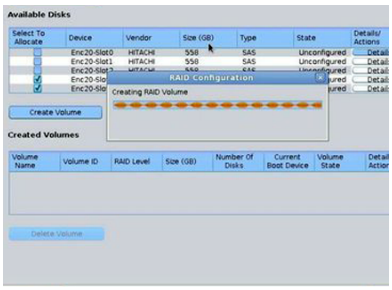
   a. **(Optional) Type the volume name.**

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

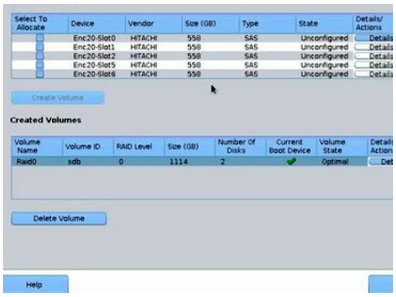
   b. **Select the volume stripe size.**

   c. **Click Create.**

The Creating RAID Volume information box appears.

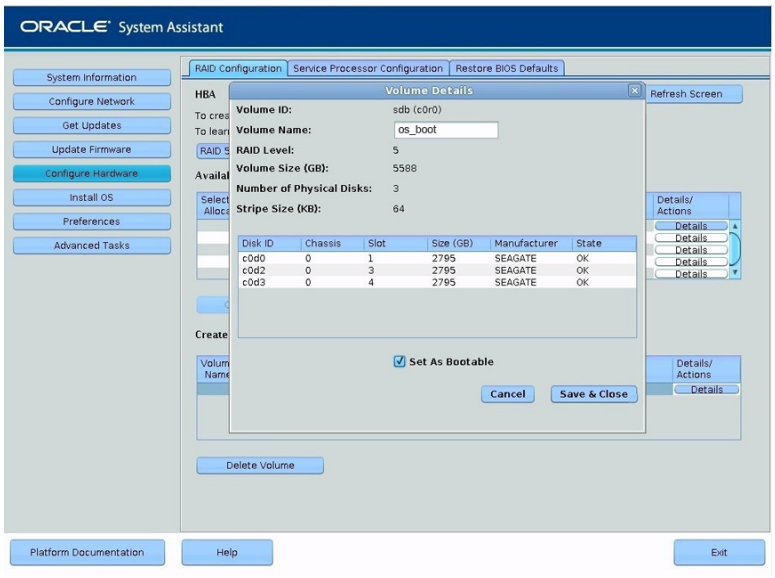


After the volume is created, it is displayed in the Created Volumes table.



7. **In the Details/Action column of the Created Volumes table, click the Details button.**

The Volume Details dialog box appears.



8. In the Volume Details dialog box:

a. Review the volume details.

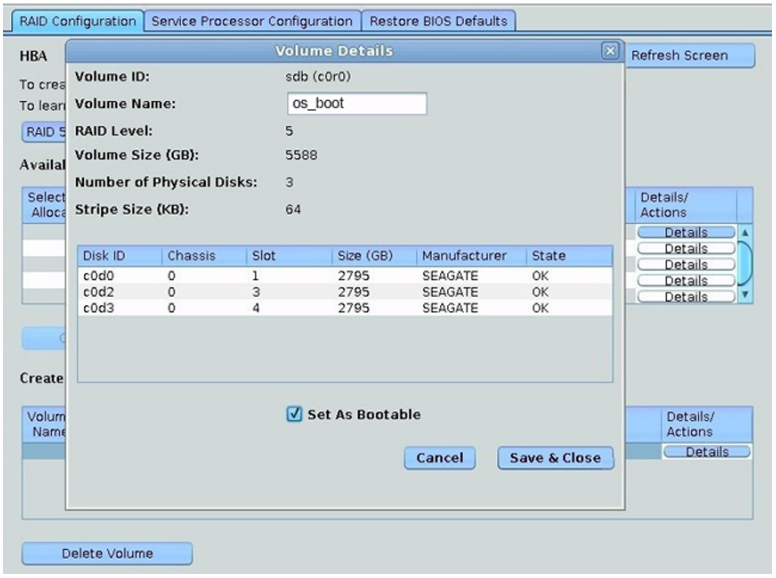
b. (Optional) In the Volume Name field, enter a volume name or modify it.

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

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

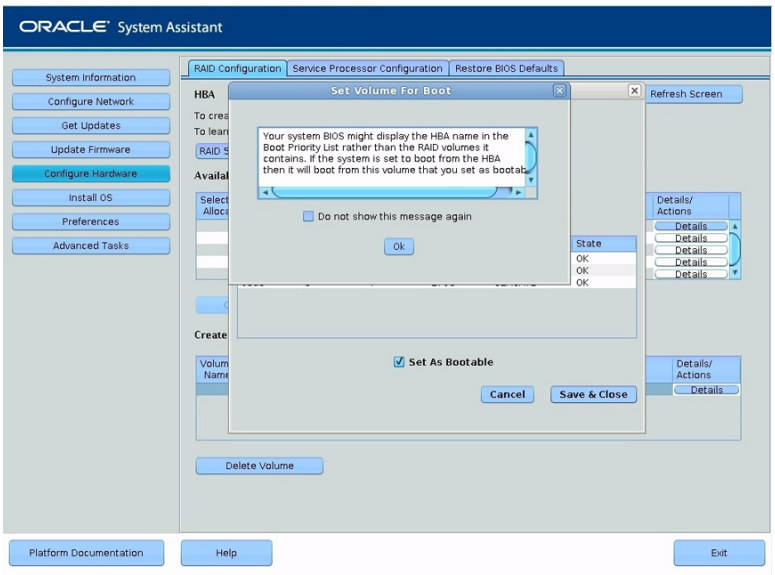
---

c. Check the Set As Bootable box.



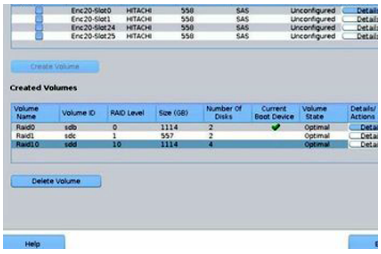
d. Click Save & Close.

The Set Volume For Boot confirmation dialog appears.



9. Click OK.

The RAID Configuration screen appears, and the volume is listed in the Created Volumes table with a check mark in its Current Boot Device column.



10. If you want to designate the created volume as a global hot spare, perform the following steps; otherwise, go to the next step.

a. Click the Details button in the Details/Actions column.

The Disk Details dialog box appears.

b. Check the Set as Hot Spare box.

Note - With the Sun Storage 12 GB SAS PCIe RAID Internal HBA, you can create a maximum of 256 hot spares.

---

c. Click Save.

Tip - If you want to delete a volume, select it and click the Delete Volume button.

The server is now ready for OS installation.

Next Steps "Installing an Operating System and Drivers" on page 113

Configuring RAID Using the BIOS RAID Configuration Utilities

This section describes the BIOS-based options for configuring the server storage drives a bootable RAID volume.

Before installing an operating system (OS), you need to create at least one bootable RAID volume. The system does not recognize a storage drive unless it has a volume that has been created by the internal Sun Storage 12 Gb SAS PCIe 8-port HBA. To create a bootable RAID volume, use the LSI MegaRAID BIOS Configuration Utility.

The LSI MegaRAID BIOS Configuration Utility is located in the HBA firmware. Access to the HBA firmware depends on the server BIOS Boot Mode setting. If the server is set for Legacy Boot Mode, you can access the utility from the server boot screen. If the server is set to UEFI Boot Mode, you can access the utility through the server BIOS Setup utility.

Note - Some operating systems and virtual machine software only support the Legacy BIOS Boot Mode. For a list of operating systems and virtual machine software that do not support UEFI BIOS Boot Mode, see "Server BIOS Boot Modes" on page 61.

- "Configure RAID in UEFI Boot Mode" on page 103
- "Configure RAID in Legacy Boot Mode" on page 109

▼ Configure RAID in UEFI Boot Mode

This procedure provides instructions for configuring server the storage drives as a bootable RAID volume when the server is in UEFI boot mode.

Note - Oracle System Assistant provides an easy to use interface and context-sensitive help. It is the recommended method for setting up the server and configuring server storage drives.

Use this procedure to access the LSI MegaRAID BIOS Configuration Utility when the server is set to UEFI Boot Mode and Oracle System Assistant is not installed in the server.

Before You Begin Ensure that the server is in standby power mode (see "Standby Power Mode" on page 53).

1. **To power on server, do one of the following:**

   - **From the local server:**
     Press and immediately release the front panel Power button (approximately 1 second).
   - **From the Oracle ILOM web interface:**
     Click the server power Turn On button in the Actions section of the Summary screen.
   - **From the Oracle ILOM CLI:**
     Type: `start /System`

   The BIOS screen appears.

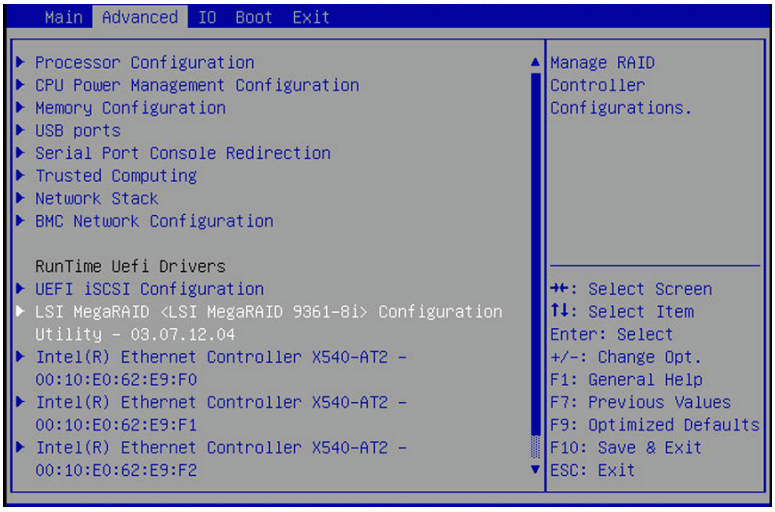
2. **To access the BIOS Setup Utility, watch the screen, and when the list of function keys appears, press F2.**

The BIOS Setup Utility appears.

3. **Navigate to the Advanced menu.**

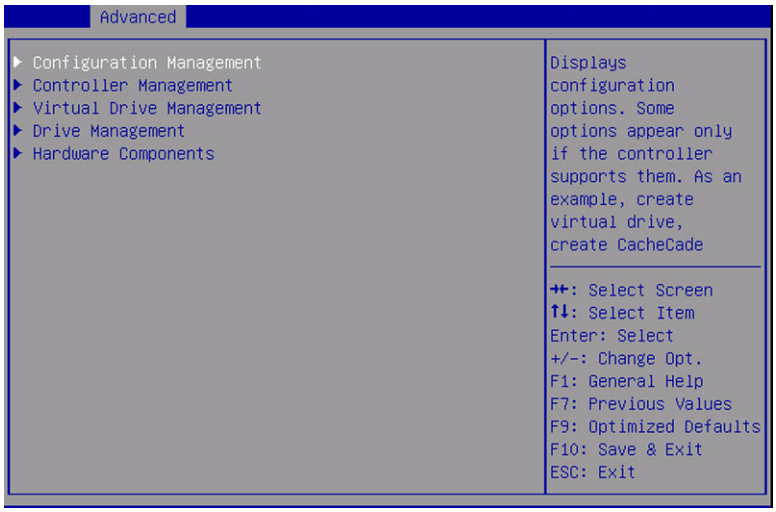
   Use the arrow keys.

Note - The screens you see might be different from those shown in this procedure.



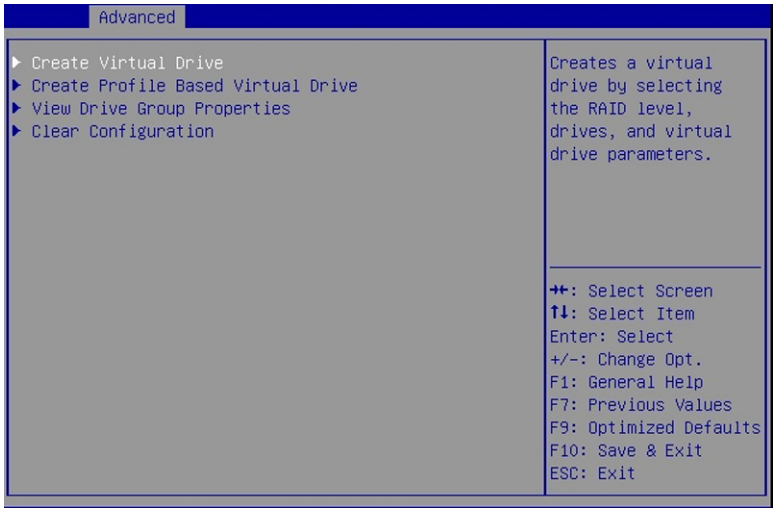
4. **Navigate to the LSI MegaRAID Configuration Utility menu option and press Enter.**

The LSI MegaRAID Configuration Utility menu appears.

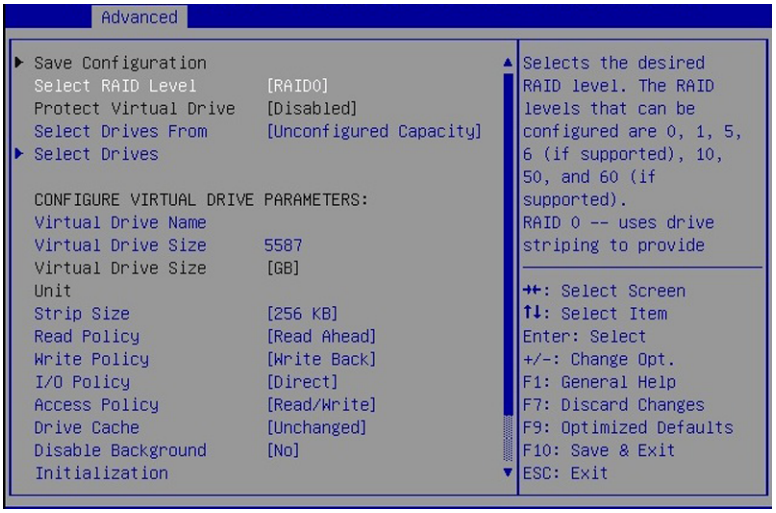


5. Navigate to the Virtual Drive Management option and press Enter.

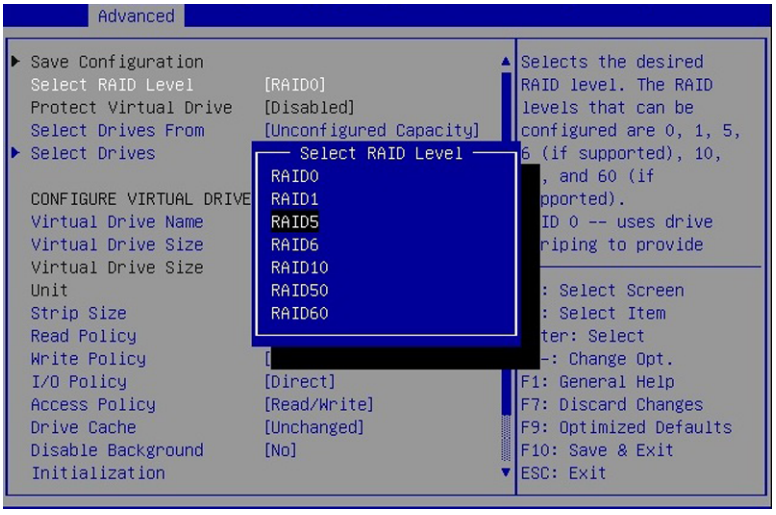
The Virtual Drive Management menu screen appears.



6. **Navigate to the Create Configuration option and press Enter.**
   The Create Configuration menu screen appears.



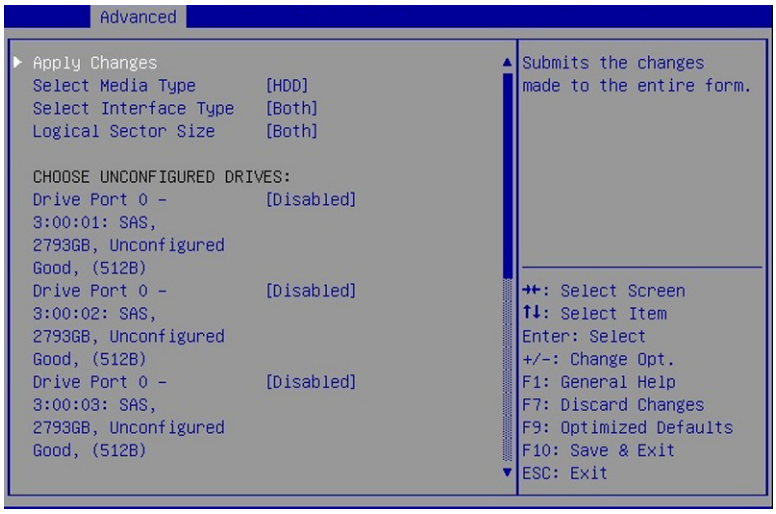
7. **Navigate to the Select RAID Level option and press Enter.**
   The Select RAID Level dialog box appears.



8. **Select the desired RAID level and press Enter.**

9. **Navigate to the Select Drives option and press Enter.**

   The Drive Selection screen appears.



10. **Select the media type, the interface type, and choose the drives to be included in the RAID configuration.**

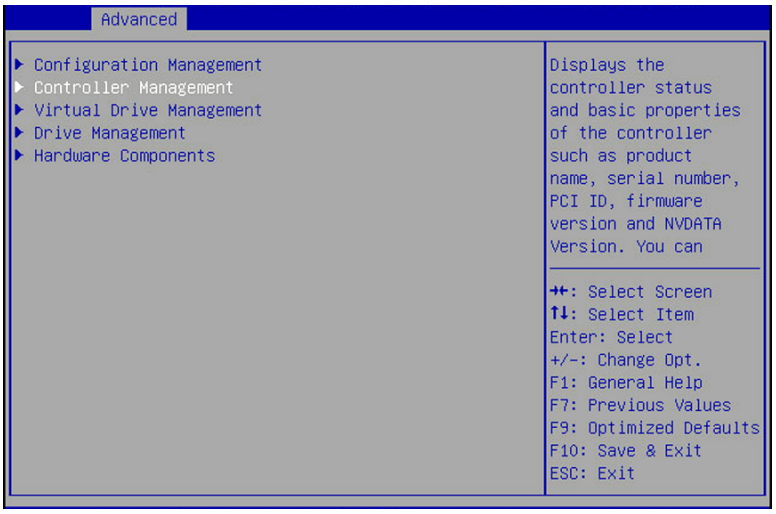
11. **Navigate to the Apply Changes option and press Enter.**

    The RAID Configuration Confirmation screen appears.

12. **Select OK and press Enter to accept the RAID confirmation.**

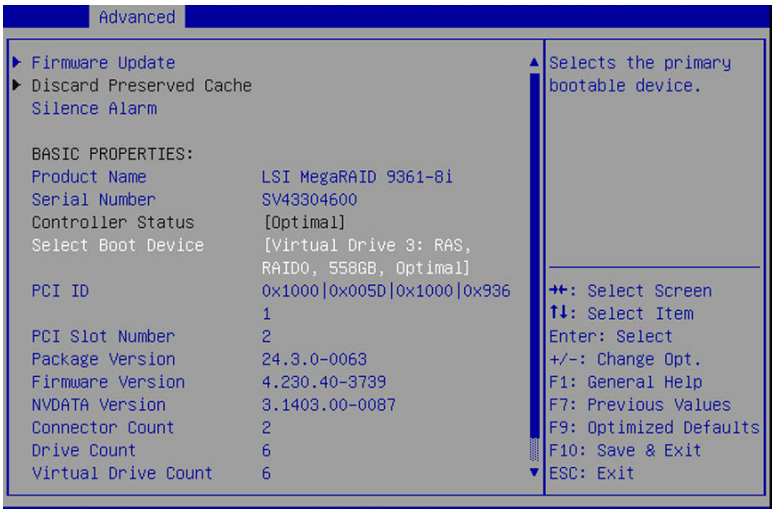
    This completes the RAID configuration.

13. **To make a virtual drive bootable, navigate to the top level of the Advanced menu.**



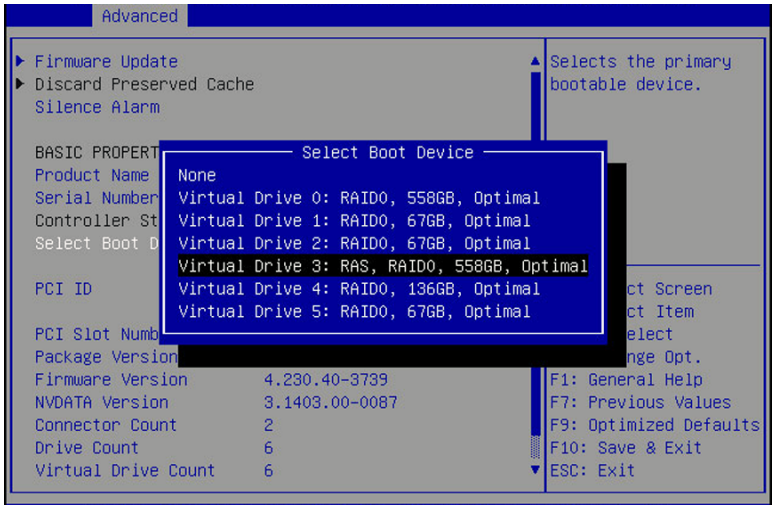
14. **Navigate to the Controller Management selection and press Enter.**

The Controller Management screen appears.



15. **Navigate to the Select Boot Device selection and press enter.**

    The Select Boot Device screen appears with a list of the virtual drive candidates that you created.



16. **From the list of candidates, navigate to the drive and press Enter.**

17. **Navigate to the Apply Changes selection and press Enter.**

    The confirmation screen appears

18. **Confirm changes.**

19. **Press F10 to save your changes and exit from the BIOS Setup Utility.**

Next Steps “Installing an Operating System and Drivers” on page 113

▼ Configure RAID in Legacy Boot Mode

This procedure provides instructions for configuring server the storage drives as a bootable RAID volume when the server is in Legacy boot mode.

Note - Oracle System Assistant provides an easy to use interface and context-sensitive help. It is the preferred method for setting up the server and configuring server storage drives.

Use this procedure to access the LSI MegaRAID BIOS Configuration Utility when the server is set to Legacy Boot Mode and Oracle System Assistant is not installed on the server.

Before You Begin

- For addtional instructions on configuring the system drives using the LSI MegaRAID BIOS Configuration Utility, refer to the 12 Gb SAS PCIe 8-port HBA user's guide at `http://www.lsi.com/sep/Pages/oracle/index.aspx`.
- If you are local to the server, connect a VGA monitor and a USB keyboard and mouse to the front of the server, so you can respond to system prompts and navigate the utility. If you are remote to the server, use the Oracle ILOM Remote Console application.
- Ensure that the server is in standby power mode (see "Standby Power Mode" on page 53).

1. **To power on server, do one of the following:**

   - **From the local server:**

     Press and immediately release the front panel Power button.

   - **From the Oracle ILOM web interface:**

     Click the server power Turn On button in the Actions section of the Summary screen.

   - **From the Oracle ILOM CLI:**

     Type: **`start /System`**

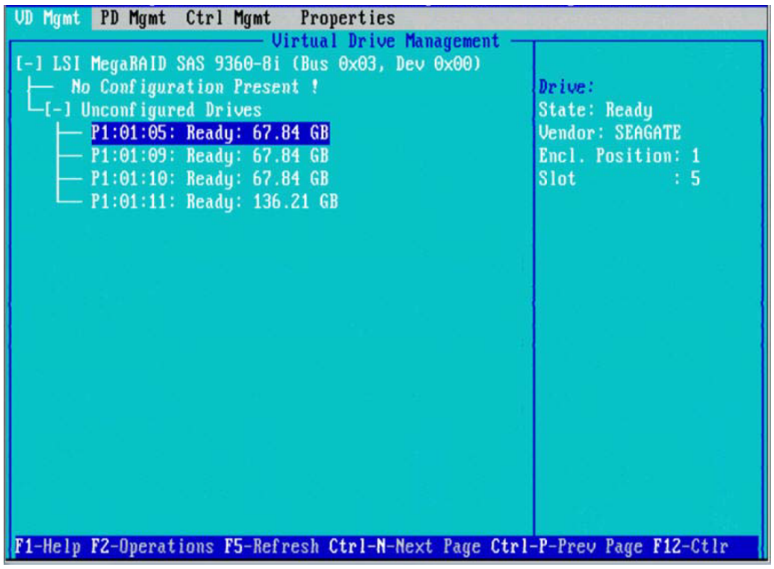
   The server powers on and BIOS boot messages appear.

2. **Watch the screen for the following prompt:**

   ```
   Press Ctrl><R> for WebBIOS....
   ```

3. **To access the LSI MegaRAID utility, press the `Ctrl+R`.**

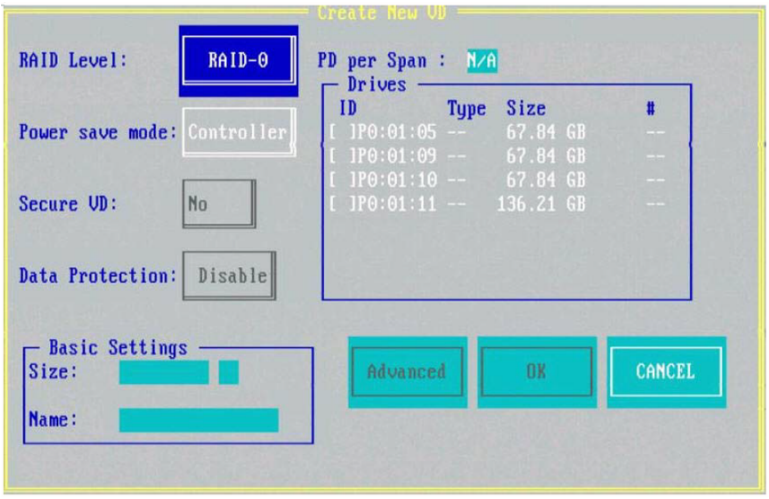
The virtual drive management (VD Mgmt) screen appears.



4. **Navigate to the controller and press the F2 key.**

5. **Press Enter.**

The Create New VD screen appears.



6. **Set up the parameters for the virtual drive.**

   Use the Create New VD screen to:

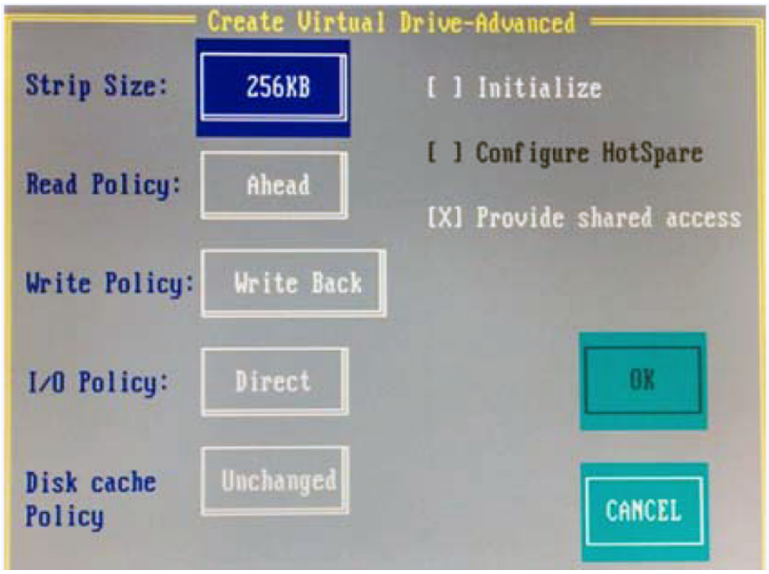
   - Set the RAID level.
   - Set the Power save mode to Auto, Max, or Controller defined.
   - Use the Secure VD field to set data encryption.
   - Use the Data Protection field to use the data protection feature.
   - Arrange the sequence of physical drives in the Drive box.
   - Enter drive group size and group name in Basic Settings box.

7. **Click OK.**

   The Create New VD screen appears again.

8. **In the Create New VD screen, click Advanced.**

The Create Virtual Drive - Advanced screen appears.



9. **Select the Initialize check box.**
10. **To create and initialize the drive, click OK.**
11. **To make the virtual drive bootable, use the Ctrl-N key combination to navigate to the Ctrl Mgmt menu tab.**

    The Controller Settings screen appears.
12. **Use the arrow keys to navigate to the Boot Device field and press Enter to get a list of bootable devices.**
13. **Select the virtual drive.**
14. **Click Apply.**

Installing an Operating System and Drivers

This section describes the OS-specific installation documentation.

After you have configured the drives, you can install a supported OS for your server. The following table describes how to access information about installing a supported OS.

What do you want to do?	Refer to this documentation
Install a supported OS and update drivers	■ *Oracle Server X5-4 Installation Guide for Oracle Solaris Operating System* ■ *Oracle Server X5-4 Installation Guide for Linux Operating Systems* ■ *Oracle Server X5-4 Installation Guide for Oracle VM Server* ■ *Oracle Server X5-4 Installation Guide for Windows Operating Systems*

Configuring the Preinstalled Oracle Solaris OS

This section describes how to configure a preinstalled version of the Oracle Solaris operating system (OS). If you purchased the preinstalled OS option, finish the installation by configuring the OS. The preinstalled OS image contains all of the necessary drivers for your server model..

Note - For up-to-date information about supported OS versions, see the *Oracle Server X5-4 Product Notes*

Perform the procedures in the following sections in the order listed.

Step	Task	Links
1	Fill out the configuration worksheet for your server environment.	"Oracle Solaris OS Preinstallation Configuration Worksheet" on page 115
2	Configure the preinstalled Oracle Solaris OS.	"Configure the Preinstalled Oracle Solaris Operating System" on page 118
3	Review the Oracle Solaris OS documentation for information about registering, updating and using the Oracle Solaris OS.	"Oracle Solaris Operating System Documentation" on page 120

Oracle Solaris OS Preinstallation Configuration Worksheet

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

Information for Installation	Description or Example	Your Answers: Defaults (*)
Language	Select from the list of available languages for the OS.	English*
Locale	Select your geographic region from the list of available locales.	

Information for Installation	Description or Example	Your Answers: Defaults (*)
Terminal	Select the type of terminal that you are using from the list of available terminal types.	
Network connection	Is the system connected to a network?	■ Networked ■ Non-networked*
DHCP	Can the system use Dynamic Host Configuration Protocol (DHCP) to configure its network interfaces?	■ Yes ■ No*
If you are not using DHCP, note the network address:	IP address If you are not using DHCP, supply the IP address for the system. Example: 192.168.100.1	
Subnet	If you are not using DHCP, is the system part of a subnet? If yes, what is the netmask of the subnet? Example: 255.255.255.0	255.255.0.0*
IPv6	Do you want to enable IPv6 on this machine?	■ Yes ■ No*
Host name	Choose a host name for the system.	
Kerberos	Do you want to configure Kerberos security on this machine?	■ Yes ■ No* If yes, gather this information: Default realm: Administration server: First KDC: (Optional) Additional KDCs:
Name service	Name service If applicable, which name service should this system use?	■ NIS+ ■ NIS ■ DNS ■ LDAP ■ None*
Domain name	Provide the name of the domain in which the system resides. DNS or NIS	
NIS+ and NIS	*If you chose NIS+ or NIS*, do you want to specify a name server, or let the installation program find one? If you choose NIS:	■ Specify One ■ Find One*

Information for Installation	Description or Example	Your Answers: Defaults (*)
	■ Specify a NIS domain, or ■ Indicate whether to specify a NIS server or search for one.	
DNS	*If you chose DNS*, provide IP addresses for the DNS server. You must enter at least one IP address, but you can enter up to three addresses. You can also enter a list of DNS domains to search when a DNS query is made.	Search domain: Search domain: Search domain:
LDAP	*If you chose LDAP*, provide information about your LDAP profile.	Profile name: Profile server: If you specify a proxy credential level in your LDAP profile, gather the following information: Proxy-bind distinguished name: Proxy-bind password:
Default route	Do you want to specify a default route IP address, or let the OS installation program find one? The default route provides a bridge that forwards traffic between two physical networks. An IP address is a unique number that identifies each host on a network. You have the following choices: ■ **You can specify the IP address.** An `/etc/defaultrouter` file is created with the specified IP address. When the system is rebooted, the specified IP address becomes the default route. ■ **You can let the OS installation program detect an IP address.** However, the system must be on a subnet that has a router that advertises itself by using the Internet Control Message Protocol (ICMP) for router discovery. If you are using the command-line interface, the software detects an IP address when the system is booted. ■ **You can select None if you do not have a router or do not want the software to detect an IP address at this time.** The software automatically tries to detect an IP address on reboot.	■ Specify one ■ Detect One ■ None*
Time zone	How do you want to specify your default time zone?	■ Geographic region* ■ Offset from GM ■ Time zone file
Root password	Choose a root password for the system.	

Configure the Preinstalled Oracle Solaris Operating System

This procedure provides instructions for configuring a preinstalled Oracle Solaris operating system (OS).

After you have completed the "Oracle Solaris OS Preinstallation Configuration Worksheet" on page 115, use the following procedure to configure the preinstalled Oracle Solaris OS.

1. **Log in to Oracle ILOM web interface or CLI.**

   See the "Connecting to Oracle ILOM" on page 65 section.

2. **Power on the server, using one of the following methods:**

   - **From the Oracle ILOM web interface:**

     a. **Select the System Information > Summary screen from the navigation tree.**

     b. **In the Actions section of the Summary screen, click the Turn On button next to Power State.**

   - **From the Oracle ILOM CLI, type the following command from the prompt:**

     ```
     start /System
     ```

     When prompted, type **y** to confirm:

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

     Starting /System
     ```

   The server begins the boot process.

3. **Start the Remote Console.**

   - **From the Oracle ILOM web interface, select Remote Control > Redirection in the navigation panel. Then, click the Launch Remote Console button to launch video console redirection.**

   - **From the Oracle ILOM CLI, type the following command at the CLI prompt:**

     ```
     start /HOST/console
     ```

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

Serial console started.
```

After the server boots, the GRUB menu appears. For example (your preinstalled version might be different):

```
GNU GRUB Version 1.99 ,5.11.0.175.1.0.0.24.2

Oracle Solaris 11.1 - Serial Port ttya
Oracle Solaris 11.1 - Graphics Adapter
```

Note - When the GRUB menu appears, you have five seconds to make a selection.

4. **From the GRUB menu, do one of the following:**

   - **If you are using the Oracle ILOM CLI, use the up/down arrow keys to select the Serial Port (ttya) option and press Enter.**
   - **If you are using Oracle ILOM Remote Console Plus (or a direct video port connection), use the up/down arrow keys to select the Graphics Adapter option and press Enter.**

Note - If you do not make a selection, Serial Port (ttya) is used by default. This means that for the remainder of the OS configuration process, the system directs its output to the serial port and not to the video port.

Note - If needed, at the GRUB menu you can type `e` to edit commands before booting, or type `c` for a command line.

5. **Follow the Oracle Solaris installer on-screen prompts to configure the operating system.**

   Use the information gathered in "Oracle Solaris OS Preinstallation Configuration Worksheet" on page 115 to help you enter the system and network information as you are prompted.

   The order of the configuration screens that appear may vary, depending on the method that you chose for assigning network information to the server (DHCP or static IP address).

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

See Also For information about using the Oracle Solaris OS, including updating and registration, see "Oracle Solaris Operating System Documentation" on page 120.

Oracle Solaris Operating System Documentation

Oracle Solaris operating system (OS) documentation is available at:

http://www.oracle.com/technetwork/documentation/solaris-11-192991.html

Configuring the Preinstalled Oracle Linux OS

This section describes how to configure a preinstalled version of the Oracle Linux operating system (OS). If you purchased the preinstalled OS option, finish the installation by configuring the OS. The preinstalled OS image contains all of the necessary drivers for your server model..

Note - For up-to-date information about supported OS versions, see the *Oracle Server X5-4 Product Notes*

Perform the procedures in the following sections in the order listed.

Step	Task	Links
1	Fill out the Oracle Linux configuration worksheet for your server environment.	“Oracle Linux Configuration Worksheet” on page 121
2	Configure the preinstalled Oracle Linux OS.	“Configure the Preinstalled Oracle Linux OS” on page 122
3	Review the Oracle Linux 6 documentation for information about registering, updating and using the Oracle Linux OS.	“Oracle Linux Operating System Documentation” on page 125

Oracle Linux Configuration Worksheet

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

Required Installation Information	Description	Your Answers
Oracle Linux root password	Choose a root password to replace the factory default password (no restrictions on the characters or length).	

Required Installation Information	Description	Your Answers
Network interface	Choose the network interface connection for the server (`eth#`). (Once Linux is up and running, the `ifconfig -a` command can be used to help identify server network ports.)	
Network configuration (if you are not using DHCP)	Supply the IP address for the server. Example: 172.16.9.1	
	If the server is part of a subnet, supply the netmask of the subnet. Example: 255.255.0.0	
	If the server is accessed through a gateway, supply the IP address of the gateway.	
	Supply the IP address for the domain name server (DNS). *One (and only one) DNS is required.*	

See Also: "Configure the Preinstalled Oracle Linux OS" on page 122

▼ Configure the Preinstalled Oracle Linux OS

This procedure provides instructions for configuring a preinstalled Oracle Linux operating system (OS).

1. **Log in to Oracle ILOM web interface or CLI.**
   See the "Connecting to Oracle ILOM" on page 65 section.

2. **Power on the server, using one of the following methods:**

   - **From the Oracle ILOM web interface:**

     a. **Select the System Information > Summary screen from the navigation tree.**

     b. **In the Actions section of the Summary screen, click the Turn On button next to Power State.**

   - **From the Oracle ILOM CLI, type the following command from the prompt:**

     ```
     start /System
     ```

     When prompted, type **y** to confirm:

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

Starting /System
```

The server begins the boot process.

3. **From Oracle ILOM, start the host console using *one* of the following methods:**

   - **From the Oracle ILOM web interface, click Remote Control > Launch Remote Console.**

   - **From the Oracle ILOM CLI, type:**

     ```
     start /HOST/console
     ```

     When prompted, type **y** to confirm:

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

Note - When the GRUB menu appears, you have five seconds to make a selection.

After the server boots, the GRUB menu appears (the menu for your preinstalled version might look different than the example below):

```
    GNU GRUB  version 0.97  (612K lower / 2082932K upper memory)

+-------------------------------------------------------------------------------+
   Oracle VM Server-ovs (xen-4.1.3 2.6.39-300.32.6.el5uek)
   Oracle VM Server-ovs serial console (xen-4.1.3 2.6.39-300.32.6.el5uek)




+-------------------------------------------------------------------------------+
      Use the ^ and v keys to select which entry is highlighted.
      Press enter to boot the selected OS, 'e' to edit the
      commands before booting, 'a' to modify the kernel arguments
      before booting, or 'c' for a command-line.

      The highlighted entry will be booted automatically in 5 seconds.
```

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

   Options include:

Note - For all enterprise applications, select Oracle Linux Server with the Unbreakable Enterprise Kernel.

- The Unbreakable Enterprise Kernel
- The Red Hat Compatible Kernel

Once you have selected the installation option, Linux boots and the login prompt appears.

For example:

```
Oracle Linux Server release 6.5
Kernel 3.8.13-16.2.1.el6uek.x86_64 on an x86_64

systemname login:
```

5. **Log in.**

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

6. **Complete the configuration of your server using standard Linux tools. Tasks include:**

   - For security, change the factory default password for **root**.
   - Configure your server for the network (if DHCP is not used). See "Oracle Linux Configuration Worksheet" on page 121.
   - Configure a proxy, as needed, for Internet access.
   - Register and update your server. See "Oracle Linux Operating System Documentation" on page 125.
   - Install desired packages.

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

   - **From the Oracle ILOM web interface, close the Remote Console window to terminate the session.**
   - **From the Oracle ILOM CLI, press the Esc key, followed by Shift+9 keys to terminate the serial redirect session.**

8. **Log out of Oracle ILOM.**

See Also For information about using the Oracle Linux OS, including updating and registration, see"Oracle Linux Operating System Documentation" on page 125.

Oracle Linux Operating System Documentation

Oracle Linux 6 operating system documentation is available at:

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

Configuring the Preinstalled Oracle VM Software

This section describes how to configure a preinstalled version of the Oracle VM software. If you purchased the preinstalled option, finish the installation by configuring it. The preinstalled image contains all of the necessary drivers for your server.

Note - For up-to-date information about supported OS versions, see the *Oracle Server X5-4 Product Notes*.

Perform the procedures in the following sections in the order listed.

Step	Tasks	Links
1	Review requirements for Oracle VM software.	"Preinstalled Oracle VM Server Compatibility Requirements" on page 127
2	Gather the configuration information.	"Oracle VM Configuration Worksheet" on page 128
3	Configure the preinstalled Oracle VM software.	"Configure the Preinstalled Oracle VM Server" on page 128
4	Review the Oracle VM documentation for information about registering, updating and using Oracle VM.	"Oracle VM Documentation" on page 132

Preinstalled Oracle VM Server Compatibility Requirements

If you use the Oracle VM Server software that is preinstalled on your system, you must ensure that it is compatible with the version of Oracle VM Manager that you use to manage your Oracle VM infrastructure. If necessary, upgrade your Oracle VM Server or Oracle VM Manager so that both are at the same version.

For information about upgrading the Oracle VM software, see the *Oracle VM Installation and Upgrade Guide* at the: `http://docs.oracle.com/cd/E50245_01/index.html`

Oracle VM Configuration Worksheet

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

Information for Configuration	Description or Example	Your Answers
Oracle VM Server root account password	Choose a root password; there are no restrictions on the characters or length.	
Oracle VM agent password	Choose an Oracle VM agent password; password must be at least six characters.	
Network interface	Supply the interface (eth#) to be used to manage the server.	
Static IP address	Supply the IP address for the server. A static IP address is required. Example: 192.0.2.0	
Netmask	If the server is part of a subnet, supply the netmask of the subnet. Example: 255.255.0.0	
Gateway	If the server is accessed by a gateway, supply the IP address of the gateway.	
DNS server	Supply the IP address for the domain name server (DNS). One (and only one) DNS is required.	
Host name	Supply the fully qualified domain name for the server. Example: xxx.oracle.com	

▼ Configure the Preinstalled Oracle VM Server

This procedure provides instructions for configuring a preinstalled Oracle VM Server software.

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

1. **Log in to the Oracle ILOM web interface or CLI.**
   See "Connecting to Oracle ILOM" on page 65.

2. **Power on the server using one of the following methods:**

   - **From the Oracle ILOM web interface:**

     a. **Select the System Information > Summary screen from the navigation tree.**

     b. **In the Actions section of the Summary screen, click the Turn On button next to Power State.**

   - **From the Oracle ILOM CLI, type the following command from the prompt:**

     ```
     start /System
     ```

     When prompted, type **y** to confirm:

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

   The server begins the boot process.

3. **From Oracle ILOM, start the host console using** *one* **of the following methods:**

   - **From the Oracle ILOM web interface, click Remote Control > Launch Remote Console.**

   - **From the Oracle ILOM CLI, type:**

     ```
     start /HOST/console
     ```

     When prompted, type **y** to confirm:

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

Note - When the GRUB menu appears, you have five seconds to make a selection.

After the server boots, the GRUB menu appears (the menu for your preinstalled version might look different than the example below):

```
    GNU GRUB  version 0.97  (612K lower / 2082932K upper memory)

+-------------------------------------------------------------------------------+
```

```
   Oracle VM Server-ovs (xen-4.1.3 2.6.39-300.32.6.el5uek)
   Oracle VM Server-ovs serial console (xen-4.1.3 2.6.39-300.32.6.el5uek)
```

```
+------------------------------------------------------------------------------+
      Use the ^ and v keys to select which entry is highlighted.
      Press enter to boot the selected OS, 'e' to edit the
      commands before booting, 'a' to modify the kernel arguments
      before booting, or 'c' for a command-line.

      The highlighted entry will be booted automatically in 5 seconds.
```

4. **From the GRUB menu, do one of the following:**

   - **If you are using Oracle ILOM Remote Console Plus (or a direct video port connection), use the up/down arrow keys to select the option that does *not* specify "serial console" and press Enter.**
   - **If you are using the Oracle ILOM CLI, use the up/down arrow keys to select the serial console option and press Enter.**

   Note - If you do not make a selection, the serial console option is selected by default, and the system directs its output to the serial port and not to the video port.

   Note - If needed, at the GRUB menu you can type `e` to edit commands before booting, or type `c` for a command line.

5. **When prompted, enter the `root` password and the `Oracle VM Agent` password.**

   For example:

```
Starting OVM console server:           [ OK ]
Starting OVM ovmwatch services:        [ OK ]
Starting ovs-agent:                    [ OK ]
Starting ovs-agent services:           [ OK ]

Configuring Oracle VM...               [ OK ]

Enter new root password:
Confirm password:

Enter new Oracle VM Agent password:
Confirm password:
```

```
Configuring network.
```

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

6. **Follow the prompts to select the onboard network interface controller (NIC) to configure and enter other required configuration information related to the network.**

```
This tool is used to select the NIC used by the OVM Manager.
You can exit at any time by pressing CTRL-C.

Here's the list of current available network interfaces.
  eth0   eth1   eth2   eth3

Please select interface(s) to be used for OVM management.
These interfaces will be configured for redundancy.
eth1
```

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

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

```
|Oracle VM Server 3.2.X Console [Alt-F2 for login console]     |
|---------------------------------------------------------------|
|Local hostname         : lynxp-ovm.us.oracle.com               |
|Manager UUID           : 0004fb0000010000a060c639d1075957      |
|Hostname               : None                                  |
|Server IP              : None                                  |
|Server Pool            : None                                  |
|Clustered              : No                                    |
|Server Pool Virtual IP : None                                  |
|Cluster state          : Offline                               |
|Master Server          : No                                    |
|Cluster type           : None                                  |
|Cluster storage        : None                                  |
|                                                               |
|                                                               |
|OVS Agent      : Running                                       |
|VMs running    : 0                                             |
|System memory  : 4087                                          |
|Free memory    : 2439                                          |
|Uptime         : 0 days, 4 hours, 33 minutes                   |
```

This completes the configuration of preinstalled Oracle VM Server.

See Also For information about using Oracle VM, including updating and registration, see “Oracle VM Documentation” on page 132.

Oracle VM Documentation

Oracle VM documentation is available at:

http://www.oracle.com/technetwork/documentation/vm-096300.html

Getting Server Firmware and Software

This section describes the options for accessing server firmware and software.

Description	Links
Learn about server firmware and software updates.	“Firmware and Software Updates” on page 133
Learn about the options for accessing firmware and software.	“Firmware and Software Access Options” on page 134
View the available firmware and software packages.	“Available Software Release Packages” on page 134
Access the firmware and software packages through Oracle System Assistant or through My Oracle Support.	“Accessing Firmware and Software” on page 135
Install firmware and software updates.	“Installing Updates” on page 136

Firmware and Software Updates

Firmware and software, such as hardware drivers and tools for the server, are updated periodically. These are made available as a software release. The software release is a set of downloads (patches) that includes all available firmware, hardware drivers, and utilities for the server. All these have been tested together. The ReadMe document that is included with the download explains what has changed and what has not changed from the prior software release.

You should update your server firmware and software as soon as possible after the software release becomes available. Software releases often include bug fixes, and updating ensures that your server software is compatible with the latest server firmware and other component firmware and software.

The ReadMe file in the download package contains information about the updated files in the download package, as well as bugs that are fixed with the current release. The product notes also provide information about which server software versions are supported.

Firmware and Software Access Options

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

- **Oracle System Assistant** – Oracle System Assistant is a factory-installed option for Oracle servers that allows you to easily download and install server firmware and software.

  For more information about using Oracle System Assistant, refer to Oracle X5 Series Servers Administration Guide (`http://www.oracle.com/goto/x86AdminDiag/docs`).
- **My Oracle Support** – All system firmware and software are available from the My Oracle Support web site.

  For more information about what is available on the My Oracle Support web site, refer to `https://support.oracle.com`.

  For instructions on how to download software releases from My Oracle Support, see "Download Firmware and Software Using My Oracle Support" on page 135.

Available Software Release Packages

Downloads on My Oracle Support are grouped by product family, then product, then version. The version contains one or more downloads (patches).

For servers and blades, the pattern is similar. The product is the server. Each server contains a set of releases. These releases are not true software product releases, but rather are releases of updates for the server. These updates are called software releases and comprise several downloads, all tested together. Each download contains firmware, drivers, or utilities.

My Oracle Support has the same set of download types for this server family as shown in the following table. The same firmware and software can also be downloaded using Oracle System Assistant.

Package Name	Description	When to Download This Package
Oracle Server X5-4 SW *version* – Firmware Pack	All the system firmware, including Oracle ILOM, BIOS, and option card firmware.	You need the latest firmware.
Oracle Server X5-4 SW *version* – OS Pack	An OS Pack is available for each supported operating system version. Each OS Pack includes a package of all tools, drivers, and utilities for that version of the OS.	You need to update OS-specific drivers, tools, or utilities.

Package Name	Description	When to Download This Package
	Software includes Oracle Hardware Management Pack and LSI MegaRAID software. For the Windows OS, this OS Pack also includes Intel Network Teaming and Install Pack.	
Oracle Server X5-4 SW *version* – All Packs	Includes the Firmware Pack, all OS Packs, and all documents. This pack does not include Oracle VTS or the Oracle System Assistant image.	You need to update a combination of system firmware and OS-specific software.
Oracle Server X5-4 SW *version* – Diagnostics	Oracle VTS diagnostics image.	You need the Oracle VTS diagnostics image.
Oracle Server X5-4 SW *version* – Oracle System Assistant	Oracle System Assistant recovery and ISO update image.	You need to manually recover or update Oracle System Assistant.

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

Accessing Firmware and Software

This section preovides instructions for downloading or requesting software release files.

You can use Oracle System Assistant to easily download and use the latest software release. For further information, refer to the Oracle X5 Series Servers Administration Guide (`http://www.oracle.com/goto/x86AdminDiag/docs`).

You can also obtain updated firmware by using My Oracle Support. See: "Download Firmware and Software Using My Oracle Support" on page 135

▼ Download Firmware and Software Using My Oracle Support

1. **Go to the following web site: `https://support.oracle.com`**
2. **Sign in to My Oracle Support.**

3. **At the top of the page, click the Patches and Updates tab.**

   The Patches and Updates screen appears.

4. **In the Search screen, click Product or Family (Advanced).**

   The screen appears with search fields.

5. **In the Product field, select the product from the drop-down list.**

   Alternatively, type a full or partial product name (for example, Oracle Server X5-4) until a match appears.

6. **In the Release field, select a software release from the drop-down list.**

7. **Click Search.**

   The patches available for downloading are listed.

   See "Available Software Release Packages" on page 134 for a description of the available downloads.

8. **To select a patch for downloading, click on it (you can use the shift key to select more than one patch).**

   A pop-up action panel appears. The pop-up panel contains several action options, including the Add to Plan and Download options. For information about the Add to Plan option, click on the associated drop-down button and select "Why use a plan?"

9. **To download the patch(es), click Download in the pop-up action panel.**

   The File Download dialog box appears.

10. **In the File Download dialog box, click on the patch zip file.**

    The patch file downloads.

Installing Updates

The following sections provide information about installing firmware and software updates:

Installing Firmware

Updated firmware can be installed using one of the following:

- **Oracle Enterprise Manager Ops Center** – Ops Center Enterprise Controller can automatically download the latest firmware from Oracle, or firmware can be loaded manually into the Enterprise Controller. In either case, Ops Center can install the firmware onto one or more servers, blades, or the chassis.

  For more information, go to: http://www.oracle.com/technetwork/oem/ops-center/index.html.
- **Oracle System Assistant**– Oracle System Assistant can download and install the latest firmware from Oracle.

  For more information, see the Oracle X5 Series Servers Administration Guide (http://www.oracle.com/goto/x86AdminDiag/docs).
- **Oracle Hardware Management Pack** – The `fwupdate` CLI Tool within the Oracle Hardware Management Pack can be used to update firmware within the system.

  For more information, refer to the Oracle Hardware Management Pack Documentation Library at: http://www.oracle.com/goto/ohmp/docs
- **Oracle ILOM** – Oracle ILOM and BIOS firmware are the only firmware that can be updated using either the Oracle ILOM web interface or the command-line interface.

  For more information, refer to the documentation for your supported version of Oracle Lights Out Manager (ILOM) Documentation Library at: http://www.oracle.com/goto/ILOM/docs

Installing Hardware Drivers and OS Tools

Updated hardware drivers and operating system (OS)-related tools, such as Oracle Hardware Management Pack, can be installed using one of the following:

- **Oracle Enterprise Manager Ops Center**

  For more information, go to: http://www.oracle.com/technetwork/oem/ops-center/index.html
- **Oracle System Assistant**

  For more information, see the Oracle X5 Series Servers Administration Guide (http://www.oracle.com/goto/x86AdminDiag/docs).
- **Other deployment mechanisms,** such as JumpStart, KickStart, or third-party tools.

  For more information, refer to your operating system documentation.

Controlling System Power

This section describes how to control system power and view BIOS messages. It includes the topics shown in the following table.

Description	Links
Power on the server and view BIOS messages.	"Powering On the Server" on page 139
Power off the server if an error occurs.	■ "Powering Off the Server for Graceful Shutdown" on page 142 ■ "Powering Off the Server for Immediate Shutdown" on page 146

Powering On the Server

This section describes how to power on the locally or remotely.

Use the procedures in one of the following sections to apply main power to the server and view BIOS messages.

- "Use the Power Button to Power On the Server" on page 139
- "Use the Oracle ILOM CLI to Power On the Server" on page 140
- "Use the Oracle ILOM Web Interface to Power On the Server" on page 141

▼ Use the Power Button to Power On the Server

This procedure provides instruction for how to power on the server locally using the power button.

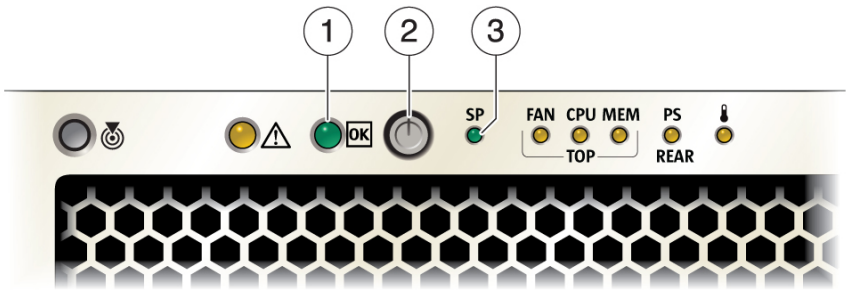
Before You Begin

The power cords must be connected and the server in standby power mode before applying main power. See "Connect the Power Cords" on page 50.

1. **Confirm that the server is in standby power mode.**

   When the server is in standby power mode, the SP indicator on the front panel is steady on.

   In the following illustration, call out 1 shows the server front panel OK indicator, call out 2 shows the Power button, and call out 3 shows the SP indicator.



2. **Press and release the the Power button.**

   Press the button for no more than one second. The Power OK indicator blinks as the server enters the boot process.

▼ Use the Oracle ILOM CLI to Power On the Server

This procedure provides instruction for how to power on the server using the Oracle ILOM command-line interface (CLI).

Before You Begin The power cords must be connected and the server in standby power mode before applying main power. See "Connect the Power Cords" on page 50.

1. **Log in to the Oracle ILOM command-line interface (CLI) using an Administrator account.**

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

2. **From the CLI prompt, type the following command:**

   ```
   start /System
   ```

   Full power mode is applied to the server.

▼ Use the Oracle ILOM Web Interface to Power On the Server

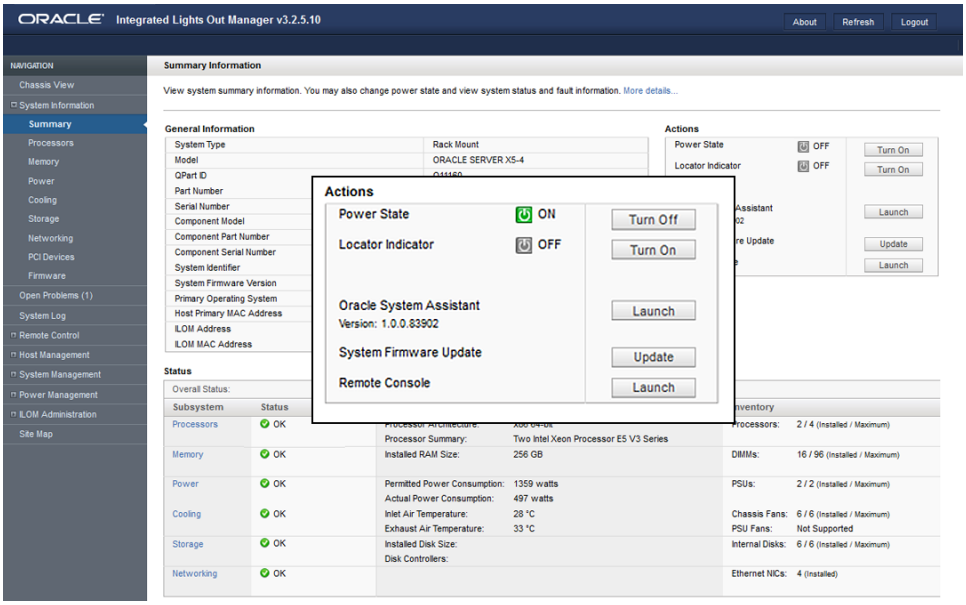
This procedure provides instruction for how to power on the server using the Oracle ILOM web interface.

Before You Begin The power cords must be connected and the server in standby power mode before applying main power. See "Connect the Power Cords" on page 50.

1. **Log in to the Oracle ILOM web interface using an Administrator account.**

   The Oracle ILOM web interface System Information > Summary page appears.

2. **From the Actions section of the Summary screen, click the Turn On button for the power state.**



Main power is applied to the server. After a short period, the Power State Off indicator lights green and the Turn On button changes to a Turn Off button.

Powering Off the Server for Graceful Shutdown

This section describes the options for powering off the server using a graceful shutdown.

Use the procedures in one of the following sections to perform a graceful shutdown of the server from full power mode to standby power mode.

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

- "Use the Power Button for Graceful Shutdown" on page 142
- "Use the Oracle ILOM CLI for Graceful Shutdown" on page 144
- "Use the Oracle ILOM Web Interface for Graceful Shutdown" on page 145

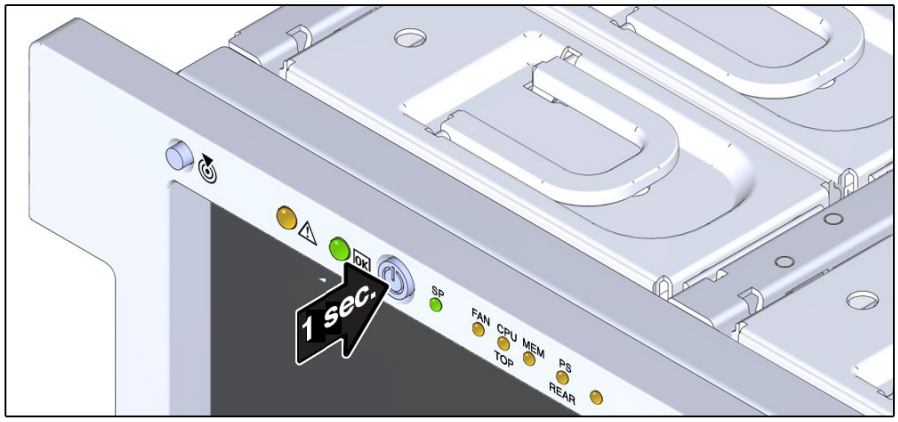
▼ Use the Power Button for Graceful Shutdown

This procedure provides instructions for how to perform a graceful shutdown of the server using the server power button.

A graceful shutdown of the server powers off the server to standby power mode. The shutdown process allows the OS to warn users and properly prepare the file system.

1. **Press and immediately release the Power button on the front panel.**

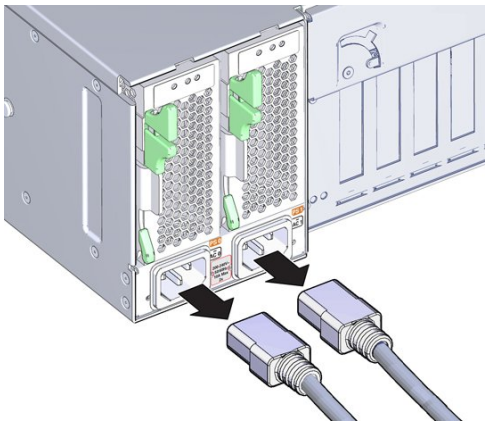
Caution - Data loss. Pressing and holding in the power button for longer than five seconds causes the server to perform an immediate shutdown of the server. An immediate shutdown powers the server to standby power mode without preparing the file system or warning users. To perform a graceful shutdown of the server, press and the release the Power button within one second.



Once main power shuts down, the system enters standby power mode. The OK indicator blinks in standby power mode.

2. **To completely power off the server from standby power mode, disconnect the power cables from the server.**

Note - Removing power from the server places it in an unpowered state. When the server has no power, you cannot access the Oracle ILOM service processor (SP).



The server powers down completely.

See Also

- “Front and Back Panel Features” on page 24
- “Use the Oracle ILOM CLI for Graceful Shutdown” on page 144
- “Use the Oracle ILOM Web Interface for Graceful Shutdown” on page 145
- “Use the Power Button for Immediate Shutdown” on page 147

▼ Use the Oracle ILOM CLI for Graceful Shutdown

This procedure provides instructions for how to perform a graceful shutdown of the server using the Oracle ILOM command-line interface (CLI).

A graceful shutdown of the server powers off the server to standby power mode. The shutdown process allows the OS to warn users and properly prepare the file system.

1. **Log in to the Oracle ILOM command-line interface (CLI) using an Administrator account.**

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

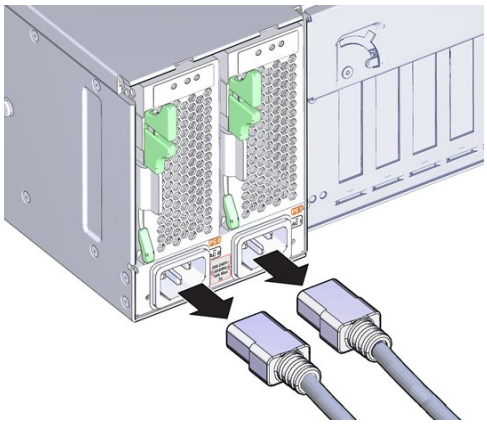
2. **From the CLI prompt, type the following command:**

```
stop /System
```

The server performs an orderly shutdown to standby power mode.

3. **To completely power off the server from standby power mode, disconnect the power cables from the server.**

Note - Removing power from the server places it in an unpowered state. When the server has no power, you cannot access the Oracle ILOM service processor (SP).



See Also

- "Use the Power Button for Graceful Shutdown" on page 142
- "Use the Oracle ILOM Web Interface for Graceful Shutdown" on page 145

▼ Use the Oracle ILOM Web Interface for Graceful Shutdown

This procedure provides instructions for how to perform a graceful shutdown of the server using the Oracle ILOM web interface.

An graceful shutdown of the server powers off the server to standby power mode. The shutdown process allows the OS to warn users and properly prepare the file system.

1. **Log in to the Oracle ILOM web interface using an Administrator account.**

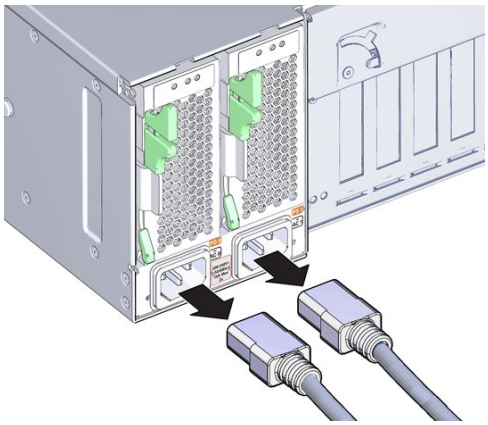
The Oracle ILOM web interface System Information > Summary page appears.

2. **In the left pane, click Host Management > Power Control, and select Graceful Shutdown and Power Off from the Select Action list box.**

3. **Click Save, and then click OK.**
   The host server performs an orderly shutdown to standby power mode.

4. **To completely power off the server from standby power mode, disconnect the power cables from the server.**

Note - Removing power from the server places it in an unpowered state. When the server has no power, you cannot access the Oracle ILOM service processor (SP).



See Also

- “Use the Power Button for Graceful Shutdown” on page 142
- “Use the Oracle ILOM CLI for Graceful Shutdown” on page 144

Powering Off the Server for Immediate Shutdown

This section describes the options for powering off the server using an immediate shutdown.

Caution - Data loss. An immediate shutdown powers the server to standby power mode without preparing the file system or warning users. Any unsaved data on the server is lost. Close files and applications and warn users before powering off the server using an immediate shutdown.

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

▼ Use the Power Button for Immediate Shutdown

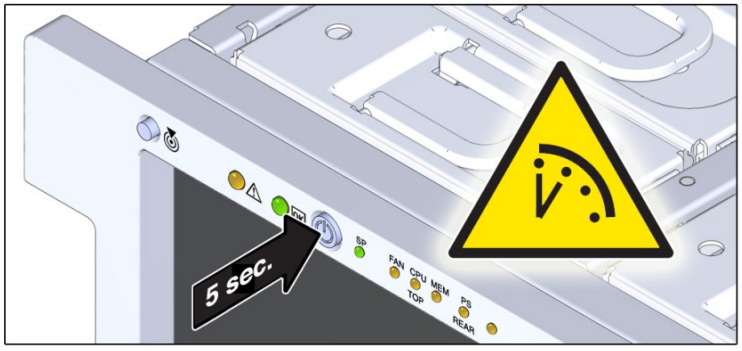
This procedure provides instructions for how to perform an immediate shutdown of the server using the server Power button.

An immediate shutdown of the server powers off the server to standby power mode. This type of shutdown process does not allow the OS to warn users nor does it properly prepare the file system.

Caution - Data loss. An immediate shutdown powers the server to standby power mode without preparing the file system or warning users. Any unsaved data on the server is lost. Close files and applications and warn users before powering off the server using an immediate shutdown.

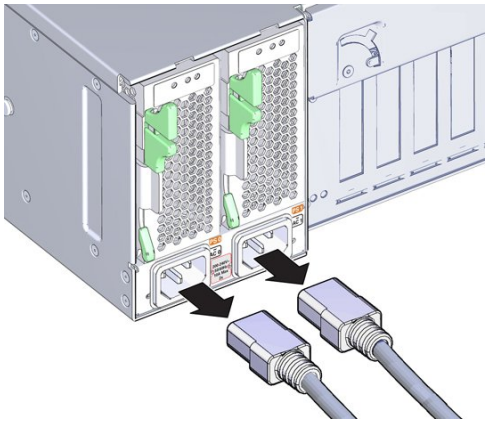
1. **Press and hold down the Power button until the main power shuts off.**

   You need to hold down the power button for several seconds. The server powers down to standby power mode. The OK indicator blinks in standby power mode.



2. **To completely power off the server from standby power mode, disconnect the power cables from the server.**

Note - Removing power from the server places it in an unpowered state. When the server has no power, you cannot access the Oracle ILOM service processor (SP).



See Also

- "Use the Oracle ILOM CLI for Immediate Shutdown" on page 148
- "Use the Oracle ILOM Web Interface for Immediate Shutdown" on page 149

▼ Use the Oracle ILOM CLI for Immediate Shutdown

This procedure provides instructions for how to perform an immediate shutdown of the server using the Oracle ILOM command-line interface (CLI).

An immediate shutdown of the server powers off the server to standby power mode. This type of shutdown process does not allow the OS to warn users nor does it properly prepare the file system.

Caution - Data loss. An immediate shutdown powers the server to standby power mode without preparing the file system or warning users. Any unsaved data on the server is lost. Close files and applications and warn users before powering off the server using an immediate shutdown.

1. **Log in to the Oracle ILOM command-line interface (CLI) using an Administrator account.**

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

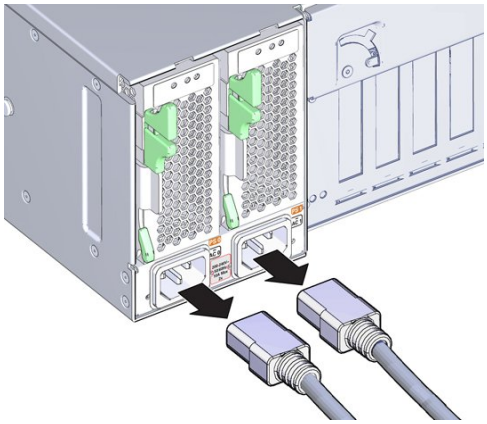
2. **From the CLI prompt, type the following command:**

```
stop -f /System
```

The server immediately powers down to standby power mode.

3. **To completely power off the server from standby power mode, disconnect the power cables from the server.**

Note - Removing power from the server places it in an unpowered state. When the server has no power, you cannot access the Oracle ILOM service processor (SP).



See Also

- "Use the Power Button for Immediate Shutdown" on page 147
- "Use the Oracle ILOM Web Interface for Immediate Shutdown" on page 149

▼ Use the Oracle ILOM Web Interface for Immediate Shutdown

This procedure provides instructions for how to perform an immediate shutdown of the server using the Oracle ILOM web interface.

An immediate shutdown of the server powers off the server to standby power mode. This type of shutdown process does not allow the OS to warn users nor does it properly prepare the file system.

Caution - Data loss. An immediate shutdown powers the server to standby power mode without preparing the file system or warning users. Any unsaved data on the server is lost. Close files and applications and warn users before powering off the server using an immediate shutdown.

1. **Log in to the Oracle ILOM web interface using an Administrator account.**

   The Oracle ILOM web interface System Information > Summary page appears.

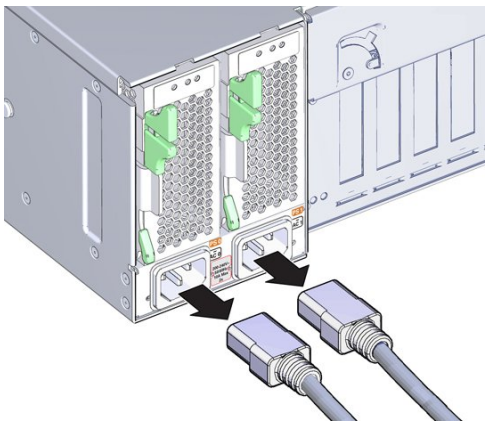
2. **In the left pane, click Host Management > Power Control, and select Immediate Power Off from the Select Action list box.**

3. **Click Save, and then click OK.**

   The server immediately powers down to standby power mode.

4. **To completely power off the server from standby power mode, disconnect the power cables from the server.**

Note - Removing power from the server places it in an unpowered state. When the server has no power, you cannot access the Oracle ILOM service processor (SP).



See Also ■ “Use the Power Button for Immediate Shutdown” on page 147

- “Use the Oracle ILOM CLI for Immediate Shutdown” on page 148

Troubleshooting Installation Issues

This section describes the available information for troubleshooting server installation issues.

Description	Links
Learn about troubleshooting and diagnostic reference information.	"Troubleshooting and Diagnostic References" on page 153
Record server information before contacting Service.	"Technical Support Information Worksheet" on page 153
Locate the system serial number before contacting Service.	"Locating the Server Serial Number" on page 154

Troubleshooting and Diagnostic References

This section describes the available information for troubleshooting and diagnostic referecences.

- For server-specific troubleshooting information, see *Oracle Server X5-4 Service Manual*
- For information about the diagnostic tools available for Oracle x86 servers, see the *Oracle x86 Server Diagnostics Guide* at: `http://www.oracle.com/goto/x86AdminDiag/docs`).
- For knowledge articles, white papers, and product updates available at the Oracle Support portal, go to: `https://support.oracle.com`.

Technical Support Information Worksheet

This section describes the information you need to gather before requesting technical support.

If the troubleshooting information fails to solve your problem, use the following table to collect information that you might need to communicate to the support personnel.

System Configuration Information Needed	Your Information
Service contract number	
System model	
Operating system	
System serial number[†]	
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	

[†]See "Locating the Server Serial Number" on page 154

Locating the Server Serial Number

This section describes the sources for obtaining the server serial number.

You might need to have your server's serial number when you ask for service on your system. Record this number for future use. Use one of the following methods to locate your server's serial number:

- On the front panel of the server, look at the bottom left of the bezel to locate the server's serial number.
- Locate the yellow Customer Information Sheet (CIS) attached to your server packaging. This sheet includes the serial number.
- From Oracle ILOM:
  - Using the Web interface, log in and view the Summary page.
  - Using the CLI, log in and enter the command:

    ```
    show /SYS
    ```
- From Oracle System Assistant:

  The serial number is shown in the System Information screen.

Site Planning Checklists

This section describes information that you can use in advance of installing the server.

Complete the checklists in this section to ensure the site is prepared for the server:

Access Route and Data Center Room Checklist

Review the following facility checklist before installing the server.

Data Center Room Considerations	Yes	No	N/A	Comment
Has the access route been checked for clearances of the packaged equipment?				
Do all the doors and entry ways conform to the width and height requirements for transportation, including the width of the unpacked unit?				
Are there any ramps, stairs, or thresholds that are in the moving path for the new hardware?				
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?				

Data Center Room Considerations	Yes	No	N/A	Comment
Is there a vacant space in the rack for the new server?				
Does the floor layout meet the equipment maintenance access requirements?				
Is there adequate space available for server maintenance?				
Have cabinet stabilization measures been considered?				
Will the hardware location require any non-standard cable lengths?				
Is the floor to ceiling height a minimum of 2914 mm or 2.9 m (9.6 feet)?				
Is the depth of the raised floor a minimum of 460 mm (18 inches)?				

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: “Ventilation Guidelines” on page 21

Facility Power Checklist

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

Facility Power Considerations	Yes	No	N/A	Comment
Do you know the required operating voltage and electric current level of the server?				
Are enough power outlets provided within 2 meters (6.5 feet) for each rack?				
Do the power outlets have appropriate socket receptacles?				
Will optional ground cables be attached to the rack?				
Are the circuit breakers for the equipment suitable in terms of voltage and current-carrying capacities?				
Does the power frequency meet the equipment specifications?				
Will system power be delivered from two separate power grids?				
Is there a UPS to power the equipment?				
Do you have the minimum required power sources to support the power load for the new hardware? Use kilowatt (kW)/kilovolt (kVA) to express power load.				

Related Information: “Server Specifications, Guidelines, Checklists” on page 19

Rackmount Checklist

Complete the following checklist prior to installing the server into a rack or cabinet.

Rackmount Considerations	Yes	No	N/A	Comment
Is the distance between the front and rear mounting planes between the minimum or 610 mm and the maximum 915 mm (24 inches to 36 inches)?				
Is the clearance depth in the front of the front mounting plane (distance to the front cabinet door) at least 25.4 mm (1 inch)?				
Does the target rack meet the following minimum load capacity:				

Rackmount Considerations	Yes	No	N/A	Comment
■ 19 kg/rack unit ■ 785 kg total				
Is the rack a four-post rack (mounting at both front and rear)? Two-post racks are not compatible.				
Does the rack's horizontal opening and unit vertical pitch conform to ANSI/EIA 310-D-1992 or IEC 60927 standards?				
Does the rack have RETMA rail support?				
Does the rack support Oracle cable management arms (CMAs)?				
Does the rack support installation of Oracle vented and solid filler panels?				
Is there sufficient space for a cable harnesses and the power distribution units (PDUs) in the rack, if required?				
Can a label with the server serial number be printed and attached to the target rack?				
Did you run the required network cables from your network equipment to the location where the server will be installed?				
Did you label the network cables that will connect to the server?				
Does the rack support installation of standard Oracle PDUs? If not, then complete this checklist.				
Can the customer provide equivalent PDUs?				
Can the customer provide a single PDU and its circuits to support the power requirements in case on PDU fails?				
Can the customer ensure power loads are evenly distributed across all circuits of a single PDU?				
Can the customer provide appropriate power drops for the PDUs?				

Related Information:

- “Server Specifications, Guidelines, Checklists” on page 19

Safety Checklist

Complete the following checklist to ensure that the safety requirements are met for the data center in which the server will be installed.

Safety Checklist Considerations	Yes	No	N/A	Comment
Is there an emergency power shut off?				
Is there a fire protection system in the data center room?				
Is the computer room adequately equipped to extinguish a fire?				
Is antistatic flooring installed?				
Is the floor below the raised floor free of obstacles and blockage?				

Related Information:

- "Server Specifications, Guidelines, Checklists" on page 19
- *Oracle Server X5-8 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?				
Do you have the host name and IP address for the server that will have Auto Service Request Manager?				
Will the system need a proxy server? If so, what is the host name and IP address for the proxy server?				
Do you have the Technical Contact information for Auto Service Request? This information should include the first name, last name, and e-mail address of the contact.				

Logistics Checklist

Complete the following checklist to ensure that the logistics requirements are met for the data center in which the server will be installed.

Logistics Checklist Considerations	Yes	No	N/A	Comment
Do you have contact information for the data center personnel?				
Is there security or access control for the data center?				
Are there any security background checks or security clearances required for vendor personnel to access the data center? If yes, then do you have a recommended agency?				
How many days in advance must background checks be completed?				
Are there any additional security access issues?				
Is computer room access available for installation personnel?				
Are laptops, cell phones, and cameras allowed in the data center?				
Does the building have a delivery dock?				
Is there a delivery/unpacking/staging area?				
Is the delivery inside?				
If the delivery is not inside, then is the site prepared for uncrating?				
Is the unpacking/staging area protected from the elements?				
Does the building have adequate receiving space?				
Is the unpacking area air-conditioned to avoid thermal shock for various hardware components?				
Will sufficient moving personnel be available to install the hardware?				
Are you prepared for uncrating and trash removal?				
Are there any restrictions on delivery and trash removal?				
Are there any restrictions on delivery truck length, width or height?				
Does the customer allow cardboard boxes and other packing material in the computer room?				
Is there a time constraint on dock access? If yes, then provide time constraints.				

Logistics Checklist Considerations	Yes	No	N/A	Comment
Is tail lift required on delivery carrier to unload the equipment at the delivery dock?				
Will any of the following be required to place equipment in computer room? Stair walkers Lifters Ramps Steel plates Floor covers				
Does the delivery carrier require any special equipment, such as non-floor damaging rollers, transport dollies, pallet jacks, or fork lifts?				

Related Information:

- “Server Specifications, Guidelines, Checklists” on page 19
- “Preparing to Install the Server” on page 19

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