

Sun Server X4-2

Installation Guide for Linux Operating Systems



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Using This Documentation

This installation guide contains procedures for installing the Linux operating systems, and initial software configuration procedures for bringing the Sun Server X4-2 from Oracle to a configurable and usable state.

This document is written for technicians, system administrators, authorized service providers (ASPs), and users who have experience with installing operating systems.

This section describes how to get the latest software and firmware, documentation and feedback, and support and accessibility information.

- “Getting the Latest Software and Firmware” on page vii
- “About This Documentation” on page viii
- “Related Documentation” on page viii
- “Feedback” on page viii
- “Access to Oracle Support” on page ix

Getting the Latest Software and Firmware

Firmware, drivers and other hardware-related software for each Oracle x86 server, server module (blade), and blade chassis are updated periodically.

You can obtain the latest version in one of three ways:

- Oracle System Assistant – This is a new factory-installed option for Oracle x86 servers. It has all the tools and drivers you need and is built into the server.
- My Oracle Support: <http://support.oracle.com>
- Physical media request

For more information, see the *Sun Server X4-2 Installation Guide*, “Getting Server Firmware and Software Updates” on page 31.

About This Documentation

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

A PDF version that includes all information on a particular subject (such as hardware installation or product notes) can be generated by clicking the PDF button in the upper left corner of the HTML page.

Related Documentation

Documentation	Link
All Oracle documentation	http://www.oracle.com/documentation
Sun Server X4-2	http://www.oracle.com/goto/X4-2/docs
<i>Oracle X4 Series Servers Administration Guide</i>	http://www.oracle.com/goto/x86AdminDiag/docs
Oracle Integrated Lights Out Manager (ILOM) 3.1	http://www.oracle.com/goto/ILOM/docs
Oracle Hardware Management Pack 2.2	http://www.oracle.com/goto/OHMP/docs

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About Linux Operating System Installs

This section contains an overview for installing a new Linux operating system (OS) on your server.

Description	Links
Learn which Linux operating systems are supported.	“Supported Linux Operating Systems” on page 1
Learn about the Oracle Unbreakable Enterprise Kernel for Linux and where it can be used.	“Oracle Unbreakable Enterprise Kernel for Linux” on page 2
Learn about console display options and how to set them up.	“Selecting the Console Display Option” on page 3
Learn about boot media options and how to set them up.	“Selecting the Boot Media Option” on page 5
Learn about installation target options and how to set them up.	“Selecting the Installation Target Option” on page 7
Learn about OS installation options.	“Linux OS Installation Options” on page 9
Learn about Oracle System Assistant.	“Oracle System Assistant Overview” on page 11

Related Information

- [“Installing a Linux Operating System” on page 21](#)

Supported Linux Operating Systems

The server supports the following Linux operating systems:

Linux OS Version	Edition
Oracle	Oracle Linux 5.9, 5.10, 6.3, 6.4, and 6.5 for x86 (64-bit) with the Oracle Unbreakable Enterprise Kernel for Linux Note - Oracle Linux 5.9, 5.10, 6.4, and 6.5 for x86 (64-bit) can also be used with the Red Hat Compatible Kernel.
Red Hat	Red Hat Enterprise Linux 5.9, 5.10, 6.4, and 6.5 for x86 (64-bit)
SUSE	SUSE Linux Enterprise Server 11 SP2 and SP3 (64-bit)

Additionally, you can install any other supported operating system or virtual machine software on your server. See the latest version of the *Sun Server X4-2 Product Notes* at <http://www.oracle.com/goto/X4-2/docs>. You can also view the list of supported operating systems at <http://wikis.oracle.com/display/SystemsComm/Sun+Server+X4-2+-+Operating+Systems>.

Note – If the Oracle Linux 6.x OS was preinstalled, it was installed with the server set to Legacy BIOS. If you choose to boot the server in UEFI BIOS Boot Mode, the preinstalled image is not accessible. Therefore, if you want to use the Oracle Linux 6.x OS with the UEFI/ BIOS Boot Mode set to UEFI BIOS, you must perform a fresh installation of Oracle Linux 6.x.

Related Information

- [“Installing a Linux Operating System” on page 21](#)

Oracle Unbreakable Enterprise Kernel for Linux

Release 2 and Release 3 of the Oracle Unbreakable Enterprise Kernel for Linux are supported in this release of the server software.

- **Oracle Unbreakable Enterprise Kernel Release 2 for Linux:** Release 2 is installed by default on Oracle Linux 5.9, 5.10, 6.3, and 6.4 and can be installed on Red Hat Enterprise Linux 5.9, 5.10, and 6.4. Release 2 is based on the 3.0.51 mainline Linux kernel and contains improvements and new features that have been incorporated into mainline Linux since the first version of the kernel.
- **Oracle Unbreakable Enterprise Kernel Release 3 for Linux:** Release 3 is installed by default on Oracle Linux 6.5 and can be installed on Oracle Linux 6.4 and Red Hat 6.4 and 6.5. Release 3 is based on the 3.8.x mainline Linux kernel and contains improvements and new features that have been incorporated into mainline Linux since Release 2 of the kernel.

Related Information

- **Oracle Unbreakable Enterprise Kernel Release 2 for Linux:** For the latest information about operating system compatibility and pointers to installation information, see the *Oracle Unbreakable Enterprise Kernel Release 2 Release Notes* at:
<http://oss.oracle.com/ol6/docs/RELEASE-NOTES-UEK2-en.html>
- **Oracle Unbreakable Enterprise Kernel Release 3 for Linux:** For the latest information about operating system compatibility and pointers to installation information, see the *Oracle Unbreakable Enterprise Kernel Release 3 Release Notes* at:
http://oss.oracle.com/ol6/docs/RELEASE-NOTES-UEK3-en.html#ol_instav
- “Installing a Linux Operating System” on page 21

Selecting the Console Display Option

This section describes the options for connecting a console to perform the installation.

- “Console Display Options” on page 3
- “Set Up the Local Console” on page 4
- “Set Up the Remote Console” on page 4

Console Display Options

You can install the OS and administer the server by attaching a local console directly to the server’s service processor (SP). The server supports two types of local consoles:

- A terminal connected to the serial management port (SER MGT)

You can connect the terminal directly to the port or connect it to a terminal emulator that is connected directly to the port.

- A VGA monitor, USB keyboard, and USB mouse connected directly to the video port (VGA) and the two rear USB connectors

You can also install the OS and administer the server from a remote console by establishing a network connection to the server SP. There are two types of remote consoles:

- Web-based client connection using the Oracle ILOM Remote Console application
- Secure Shell (SSH) client connection to the network management port (NET MGT)

▼ Set Up the Local Console

1. To connect a local console, do one of the following:

- Connect a terminal to the serial management port (SER MGT) either directly or through a terminal emulator.
- Connect a VGA monitor, keyboard, and mouse to the video port (VGA) and the USB ports.

2. For serial management port (SER MGT) connections only, to establish a connection to the host serial port:

a. Type your Oracle ILOM user name and password.

b. At the Oracle ILOM prompt, type:

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

The serial management port output is automatically routed to the Linux host serial local console.

Related Information

- Oracle Integrated Lights Out Manager (ILOM) 3.1 Documentation Library at: <http://www.oracle.com/goto/ILOM/docs>

▼ Set Up the Remote Console

1. View or establish an IP address for the server SP.

To login to Oracle ILOM remotely using either the command-line interface or the web interface, you must know the IP address of the server's service processor (SP). For instructions, see the *Sun Server X4-2 Installation Guide*, "Determining the IP Address of the Server SP" on page 89.

2. If you are using a web-based client connection, perform these steps; otherwise go to the next step.
 - a. In a web browser, type the IP address for the server SP.
 - b. Log in to the Oracle ILOM web interface.
 - c. Redirect the video output from the server to the web client by launching the Oracle ILOM Remote Console.
 - d. If necessary, enable device redirection (mouse, keyboard, etc.) in the Devices menu.
3. If you are using an SSH client connection, perform these steps.
 - a. From a serial console, establish an SSH connection to the server SP (`ssh root@hostname`, where *hostname* can be the DNS name or the IP address for the server SP).
 - b. Log in to Oracle ILOM.
 - c. Redirect the serial output from the server to the SSH client by typing:
-> `start /HOST/console`

Related Information

- Oracle Integrated Lights Out Manager (ILOM) 3.1 Documentation Library at <http://www.oracle.com/goto/ILOM/docs>.

Selecting the Boot Media Option

You can start the operating system installation to a server by booting a local or remote installation media source. This section identifies the supported media sources and the setup requirements for each source.

- “Boot Media Options Requirements” on page 5
- “Set Up the Local Boot Media Option” on page 6
- “Set Up the Remote Boot Media Option” on page 7

Boot Media Options Requirements

This section describes the requirements for using local and remote media.

- “Local Boot Media Requirements” on page 6

- [“Remote Boot Media Requirements” on page 6](#)

Local Boot Media Requirements

Local boot media permits a built-in storage device on the server, or an external storage device attached to the server.

The CD/DVD installation media can be made available in any of the following ways:

- The installation media CD/DVD can be installed on the server DVD drive.
- The installation media CD/DVD can be installed on an external DVD drive that is attached to the server.
- The installation media can be copied to a USB flash drive and installed in one of the server’s external or internal USB ports.

Remote Boot Media Requirements

Remote media requires you to boot the install over the network. You can start the network install from a redirected boot storage device or another networked system that exports the installation over the network using a Pre-Boot eXecution Environment (PXE).

Supported OS remote boot media sources can include:

- The CD/DVD-ROM installation media installed in remote DVD drive
- The DVD/ISO image available in a location on the network that is setup for virtual redirection
- The DVD/ISO image made available as a PXE network boot. The instructions for performing PXE network installations for the supported Linux operating systems are provided in the following sections:
 - [“Install Oracle Linux 5.x or 6.x Using PXE Network Boot” on page 51](#)
 - [“Install RHEL 5.x or 6.x Using PXE Network Boot” on page 63](#)
 - [“Install SLES 11 Using PXE Network Boot” on page 78](#)

▼ Set Up the Local Boot Media Option

To set up the local boot media, you must insert a storage device that contains the Linux OS installation media into the server using one of the following options:

- 1. If the server is equipped with an optional DVD drive, insert the Linux OS installation DVD into the DVD drive located on the front of the server; otherwise, proceed to the next step.**

2. If your server does not contain a DVD drive, insert a USB flash drive that contains the Linux OS installation media into one of the external USB ports located on the front and rear of the server.

Note – For information about the location of the server’s external USB ports, see the *Sun Server X4-2 Installation Guide*, “About Server Features and Components” on page 19.

▼ Set Up the Remote Boot Media Option

To redirect the boot media from a remote storage device, perform the following steps:

1. **Insert the boot media into the storage device, for example:**
 - For **CD/DVD-ROM**, insert media into the built-in or external CD/DVD-ROM drive on a remote workstation.
 - For **CD/DVD-ROM ISO image**, ensure that ISO image(s) are readily available on a network shared location.
2. **Establish a web-based client connection to the server Oracle ILOM SP and launch the Oracle ILOM Remote Console application.**

For more details, see the Setup Requirements for web-based client connection in “Selecting the Console Display Option” on page 3.
3. **In the Devices menu of the Oracle ILOM Remote Console application, specify the location of the boot media, for example:**
 - For **CD/DVD-ROM boot media**, select CD-ROM.
 - For **CD/DVD-ROM ISO image boot media**, select CD-ROM Image.

Selecting the Installation Target Option

This section describes how to set up the installation target.

- “Installation Target Options” on page 8
- “Set Up a Local Storage Drive (HDD or SSD) as the Installation Target” on page 9
- “Set Up a Fibre Channel Storage Area Network Device as the Installation Target” on page 9

Installation Target Options

With the exception of the embedded Oracle System Assistant USB flash drive (which is reserved for Oracle System Assistant), you can install the operating system on any of the storage drives installed in the server. These include hard disk drives (HDDs) and solid state drives (SSDs).

Note – SSDs are only supported on Oracle Engineered Systems.

For servers equipped with Fibre Channel PCIe host bus adapters (HBAs), you can choose to install the operating system to an external FC storage device.

Important: Internal, USB Embedded Oracle System Assistant Flash Drive Should Not Be Used as a Boot or Storage Drive

The server ships with an embedded Oracle System Assistant USB flash drive. This drive contains the Oracle System Assistant, device drivers, and firmware for Oracle ILOM, BIOS, and supported IO devices. During the installation of all supported operating systems, this USB flash drive is detected as a SCSI disk with a single partition that is read/write capable and is displayed as `Oracle_SSM` in the list of drives. You should be careful not to overwrite this device when performing any of the following operations:

- Operating system installations
- Disk or partition formatting operations
- General disk, partition or filesystem maintenance

In the event that this USB flash drive is overwritten, the original contents can be restored. To restore the contents of the USB flash drive, obtain the Oracle System Assistant recovery and ISO update image and use it to perform a restore operation.

For instructions for downloading the Oracle System Assistant recovery and ISO update image and restoring the server's Oracle System Assistant USB flash drive, see the *Oracle X4 Series Servers Administration Guide* at:

<http://www.oracle.com/goto/x86AdminDiag/docs>.

▼ Set Up a Local Storage Drive (HDD or SSD) as the Installation Target

- **Ensure that the HDD or SSD is properly installed and powered on.**

For information about installing and powering on a HDD or SSD, refer to the *Sun Server X4-2 Service Manual*, “Servicing Storage Drives (CRU)” on page 45.

Note – SSDs are only supported on Oracle Engineered Systems.

▼ Set Up a Fibre Channel Storage Area Network Device as the Installation Target

1. **Ensure that the PCIe HBA is properly installed in the server.**

For information about installing a PCIe HBA option, refer to the *Sun Server X4-2 Service Manual*, “Servicing PCIe Cards (CRU)” on page 84.

2. **Ensure that the storage area network (SAN) is installed and configured to make the storage device visible to the server’s host.**

For instructions, refer to the documentation supplied with the Fibre Channel HBA.

Linux OS Installation Options

You can choose to install an OS on a single server or on multiple servers. The scope of this document is for single server OS installations. The table below provides some information about these two installation options.

Option	Description
Multiple servers	You can use Oracle Enterprise Manager Ops Center to install an OS on multiple servers. For information, go to: http://www.oracle.com/technetwork/ops-center/index.html

Option	Description
Single server	<p>Install an OS to a single server using one of the following methods:</p> <ul style="list-style-type: none"> • Locally: OS installation is performed locally at the server. This option is recommended if you have just completed the physical installation of the server in the rack. • Remotely: OS installation is performed from a remote location. Uses the Oracle ILOM Remote Console application to access the Oracle System Assistant or to perform a manual OS installation. <p>Note - Oracle recommends the use of Oracle System Assistant for single server OS installations.</p>

For more information about single-server OS installation methods and Oracle System Assistant, see:

- [“Single-Server Installation Methods” on page 10](#)
- [“Oracle System Assistant Overview” on page 11](#)

Single-Server Installation Methods

Select a method for providing the OS installation media. Use the following information to determine the local or remote OS installation that best serves your needs.

Media Delivery Method	Additional Requirements
<p>Local assisted OS installation – Uses Oracle System Assistant. (Recommended)</p>	<p>A monitor, USB keyboard and mouse, a USB device, and OS distribution media. For more information, see “Assisted Linux OS Installation” on page 11.</p>
<p>Remote assisted OS installation – Uses Oracle System Assistant. (Recommended)</p>	<p>Oracle ILOM Remote Console application, a redirected CD/DVD drive or ISO image file, and OS distribution media. For more information, see “Assisted Linux OS Installation” on page 11.</p>
<p>Local OS install using a CD/DVD drive – Uses a physical CD/DVD drive connected to the server.</p>	<p>A monitor, USB keyboard and mouse, a USB CD/DVD drive, and OS distribution media. For more information, see “Manual Linux OS Installation” on page 11.</p>

Media Delivery Method	Additional Requirements
Remote OS install using a CD/DVD ISO image – Uses a redirected physical CD/DVD drive or DVD ISO image on a remote system running the Oracle ILOM Remote Console application.	A remote system with a browser, an attached physical CD/DVD drive or ISO image file, OS distribution media, and network access to the server’s management port. For more information, see “Manual Linux OS Installation” on page 11.

Assisted Linux OS Installation

This is the recommended method for installing a supported OS on your server. This method involves using Oracle System Assistant. You deliver the OS installation media on either a local or remote CD/DVD drive, USB device, or CD/DVD image, and Oracle System Assistant guides the process and gathers and installs the drivers when necessary. Your server must support Oracle System Assistant, and it must be installed in the server.

Manual Linux OS Installation

With this method, you deliver the Linux OS distribution media on either a local or remote CD/DVD drive, USB device, or CD/DVD image. You also need to install any necessary drivers. The drivers for your server are available on the server’s internal Oracle System Assistant flash drive (if installed) and from the My Oracle Support site as either OS-specific and server-specific packages or as an ISO image file. To install the OS, use the distribution media’s installation wizard.

Oracle System Assistant Overview

Oracle System Assistant is a single-server system management tool for Oracle x86 servers. Oracle System Assistant integrates Oracle’s single system management products, Oracle System Assistant, and a selection of related software to provide a suite of tools that allow for the quick and convenient configuration and management of your server.

You can access Oracle System Assistant locally, using a local console connection, or remotely, using the Oracle ILOM Remote Console application.

If you just completed the installation of the server, then using Oracle System Assistant locally (while physically present at the server) can be a fast and efficient method of starting up the server. Once the server is operational, you can conveniently access Oracle System Assistant remotely while still retaining full-featured functionality.

The components of Oracle System Assistant include:

- Oracle System Assistant application
- Oracle Hardware Management Pack
- User interface access to configuration and maintenance provisioning tasks (including the Install OS task)
- Oracle System Assistant command-line environment
- Operating system software, drivers, and tools
- Server-specific firmware
- Server related documentation

Oracle System Assistant resides inside the server as an embedded storage device (USB flash drive). The drive is factory configured with a server-specific version of Oracle System Assistant that is maintained as such by using online updates for all components.

For more information, see the following topics:

- [“Oracle System Assistant Tasks Overview” on page 12](#)
- [“Get Updates and Install OS Tasks” on page 13](#)
- [“Obtaining Oracle System Assistant” on page 13](#)

For more information, refer to the *Oracle X4 Series Servers Administration Guide* at: <http://www.oracle.com/goto/x86AdminDiag/docs>.

Oracle System Assistant Tasks Overview

Oracle System Assistant combines a selected set of the most common and useful single-server management provisioning tasks.

The following information and tasks allow for quick and convenient server startup and ongoing server management:

- System overview and system inventory information
- Online update acquisition for all components (including operating system software, tools, drivers, and firmware)
- System firmware (BIOS and Oracle ILOM) and host bus adapter firmware updates
- RAID, Oracle ILOM, and BIOS configuration

- Assisted OS installation
- Server network configuration
- Disable feature and embedded media integrity check
- Multilingual keyboard
- Oracle System Assistant shell terminal window allowing use of the runtime environment
- Oracle Hardware Management Pack access (using Oracle System Assistant shell)
- Oracle System Assistant recovery

For more information, see the *Oracle X4 Series Servers Administration Guide* at:
<http://www.oracle.com/goto/x86AdminDiag/docs>.

Get Updates and Install OS Tasks

If you want to use Oracle System Assistant to update the OS drivers and other firmware components (such as BIOS, Oracle ILOM, HBAs, and expanders, if applicable), you should perform the Get Updates task before you install the OS.

Oracle System Assistant's Install OS task provides a guided installation of a supported OS. You supply the OS installation media, and Oracle System Assistant guides you through the installation process. It then fetches the appropriate drivers based on your server hardware configuration. The Install OS task is not available for all server supported operating systems.

For more information, see the *Oracle X4 Series Servers Administration Guide* at:
<http://www.oracle.com/goto/x86AdminDiag/docs>.

Obtaining Oracle System Assistant

Since your server supports Oracle System Assistant, the Oracle System Assistant USB flash drive might be already installed in your server. If it is installed, you can update to the latest software release using the Oracle System Assistant Get Updates task. If Oracle System Assistant is installed in your server, but it has been corrupted or overwritten, then download the Oracle System Assistant Updater image from the My Oracle Support web site. For instructions for downloading, see the *Sun Server X4-2 Installation Guide*, "Getting Server Firmware and Software Updates" on page 31.

For more information about how to determine if your server has Oracle System Assistant or how to perform updates and recovery procedures, refer to the *Oracle X4 Series Servers Administration Guide* at:
<http://www.oracle.com/goto/x86AdminDiag/docs>.

Related Information

- *Oracle X4 Series Servers Administration Guide* at:
<http://www.oracle.com/goto/x86AdminDiag/docs>.

Preparing to Install the Operating System

This section describes how to prepare the server for installing the operating system.

Description	Links
Setting up BIOS.	“Setting Up BIOS” on page 15
Setting up the RAID configuration on the server.	“Configuring RAID” on page 20

Setting Up BIOS

Before you install the operating system, you should ensure that BIOS settings are configured to support the type of installation you plan to perform. The following topics provide specific instructions on how to configure BIOS to support the installation:

- [“Verify the BIOS Factory Defaults” on page 16](#)
- [“Switch Between Legacy BIOS and UEFI BIOS” on page 18](#)

Related Information

- [“Installing a Linux OS on a Single System Using Oracle System Assistant” on page 21](#)
- [“Installing Oracle Linux on a Single System Using Media” on page 25](#)
- [“Installing Red Hat Enterprise Linux on a Single System Using Media” on page 55](#)
- [“Installing SUSE Linux Enterprise Server on a Single System Using Media” on page 67](#)

▼ Verify the BIOS Factory Defaults

Note – If the server is newly installed and this is the first time an operating system is being installed, the BIOS is probably configured to its default settings and you do not have to perform this procedure.

In the BIOS Setup Utility, you can set defaults, as well as view and edit BIOS settings as needed. Any changes you make in the BIOS Setup Utility (through F2) are permanent until the next time you change them.

In addition to using F2 to view or edit the system's BIOS settings, you can use F8 during the BIOS start-up to specify a temporary boot device. If you use F8 to set a temporary boot device, this change is only in effect for the current system boot. The permanent boot device specified through F2 will be in effect after booting from the temporary boot device.

Ensure that the following requirements are met:

- The server is equipped with a hard disk drive (HDD) or solid state drive (SSD).
- The HDD or SSD is properly installed in the server. For instructions, see the [Sun Server X4-2 Service Manual, "Servicing Storage Drives \(CRU\)"](#) on page 45.
- A console connection is established to the server. For details, see ["Selecting the Console Display Option"](#) on page 3.

1. Reset or power on the server.

For example, to reset the server:

- **From the local server**, press the Power button (approximately 1 second) on the front panel of the server to power off the server, then press the Power button again to power on the server.
- **From the Oracle ILOM web interface**, click Host Management > Power Control and select Reset from the Select Action list box.
- **From the Oracle ILOM CLI on the server SP**, type: **reset /System**

The BIOS screen appears.



2. **When prompted in the BIOS screen, press F2 to access the BIOS Setup Utility.**
After a few moments, the BIOS Setup Utility appears.
3. **To ensure that the factory defaults are set, do the following:**
 - a. **Press F9 to automatically load the factory default settings.**
A message appears prompting you to continue this operation by selecting OK or to cancel this operation by selecting CANCEL.
 - b. **In the message, highlight OK then press Enter.**
The BIOS Setup Utility screen appears with the cursor highlighting the first value in the system time field.
4. **In the BIOS Setup Utility, do the following to edit the values associated with menu items.**
 - a. **Highlight the values you want to change.**
Use up or down arrow keys to select a menu item.
 - b. **To change the values in the highlighted fields use these keys:**
 - PLUS (+) to increment the current value shown
 - MINUS (-) to decrement the current value shown
 - ENTER to display the value popup menu for the selected item
5. **To access the boot settings, select the Boot menu.**
The Boot menu appears.
6. **In the Boot menu, verify that the UEFI/BIOS Boot Mode is set to the appropriate value for your installation.**
To change the boot mode, use the up and down arrow keys to select the UEFI/BIOS Boot Mode field and use the + and - keys to toggle between UEFI and Legacy.

Note – The UEFI/BIOS Boot Mode must be set to Legacy when installing Oracle Linux 5.x and Red Hat Enterprise Linux 5.x because these operating systems do not support UEFI BIOS.

7. In the Boot menu, use the down arrow key to select Boot Device Priority, then press Enter.

The Boot Device Priority menu appears listing the order of the known bootable devices. The first device in the list has the highest boot priority.

8. In the Boot Device Priority menu, do the following to edit the first boot device entry in the list:

a. Use the up and down arrow keys to select the first entry in the list, then press Enter.

b. In the Options menu, use the up and down arrow keys to select the default permanent boot device, then press Enter.

Note – You can change the boot order for other devices in the list by repeating Steps 8a and 8b for each device entry you want to change.

9. To save changes and exit the BIOS Setup Utility, press F10.

Alternatively, you can save the changes and exit the BIOS Setup Utility by selecting `Save` and `Reset` from the `Save & Exit` menu. A message appears prompting you to save changes and exit setup. In the message dialog, select `OK`, then press `Enter`.

Note – When using the Oracle ILOM Remote Console, F10 is trapped by the local OS. You must use the F10 option listed in the Keyboard drop-down menu that is available at the top of the Remote Console application.

▼ Switch Between Legacy BIOS and UEFI BIOS

Note – Currently Oracle Linux 6.3, 6.4, and 6.5, Red Hat Enterprise Linux 6.4 and 6.5, and SUSE Linux Enterprise Server 11 are the only supported Linux operating systems that support UEFI BIOS.

The BIOS firmware supports both Legacy BIOS and Unified Extensible Firmware Interface (UEFI). The default setting is Legacy BIOS. Because some operating systems support both Legacy BIOS and UEFI BIOS and some support Legacy BIOS only, users have the following options:

- If the operating system being installed supports Legacy BIOS only, you must make sure that BIOS is set to Legacy BIOS before you do the OS installation.
- If the operating system being installed supports both Legacy BIOS and UEFI BIOS, you have the option of setting BIOS to either Legacy BIOS Boot Mode or UEFI BIOS Boot Mode before you perform the OS installation.

Note – After you have installed the operating system, if you decide you want to switch from Legacy BIOS to UEFI BIOS, or vice versa, you must remove all partitions and reinstall the operating system.

1. Reset or power on the server.

For example, to reset the server:

- **From the local server**, press the Power button (approximately 1 second) on the front panel of the server to power off the server, then press the Power button again to power on the server.
- **From the Oracle ILOM web interface**, click Host Management > Power Control and select Reset from the Select Action list box.
- **From the Oracle ILOM CLI**, type the following command from the prompt:

```
-> reset /System
```

The BIOS screen appears.

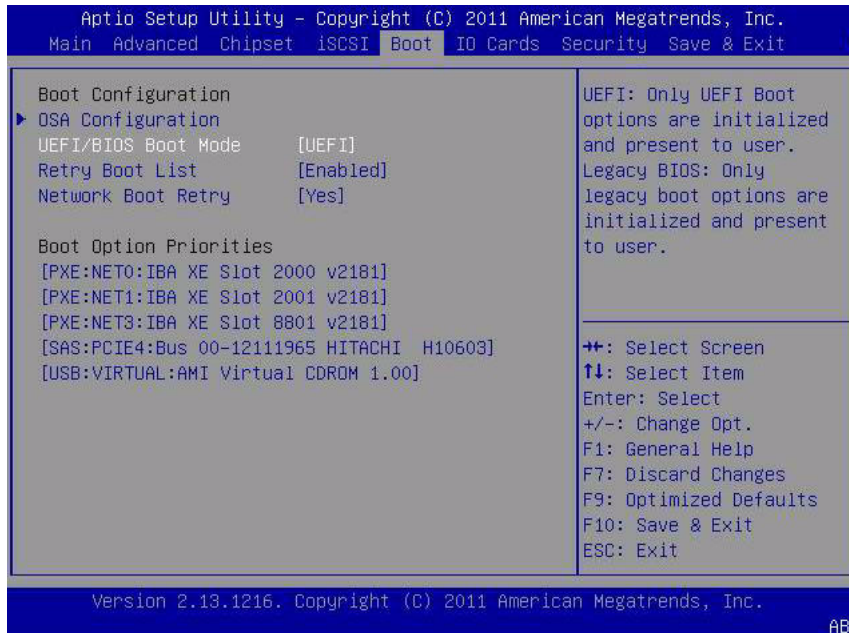


2. When prompted in the BIOS screen, press F2 to access the BIOS Setup Utility.

After a few moments, the BIOS Setup Utility appears.

3. In the BIOS Setup Utility, select Boot from the top menu bar.

The Boot Menu screen appears.



4. Select the UEFI/BIOS Boot Mode field and use the +/- keys to switch the setting to the desired mode, Legacy BIOS or UEFI.
5. To save changes and exit BIOS, press the F10 key.

Configuring RAID

If you want to configure the server storage drives in a RAID configuration, configure RAID on your server before you install a Linux OS. For instructions for configuring RAID, refer to the *Sun Server X4-2 Installation Guide*, “Configuring Server Drives for OS Installation” on page 113.

Related Information

- *Oracle X4 Series Servers Administration Guide* at:
<http://www.oracle.com/goto/x86AdminDiag/docs>.

Installing a Linux Operating System

This section provides instructions for installing the Oracle Linux, Red Hat Enterprise Linux, and SUSE Linux Enterprise Server operating systems and system-specific drivers onto the server.

Description	Links
Using Oracle System Assistant to install the Linux operating systems.	“Installing a Linux OS on a Single System Using Oracle System Assistant” on page 21
Using media to install the Oracle Linux operating system on a single server.	“Installing Oracle Linux on a Single System Using Media” on page 25
Using media to install the Red Hat Enterprise Linux operating system on a single server.	“Installing Red Hat Enterprise Linux on a Single System Using Media” on page 55
Using media to install the SUSE Linux Enterprise Server operating system on a single server.	“Installing SUSE Linux Enterprise Server on a Single System Using Media” on page 67

Installing a Linux OS on a Single System Using Oracle System Assistant

The Oracle System Assistant application’s Install OS task is the recommended method for installing a supported OS on the server.

- [“Install a Linux OS Using Oracle System Assistant” on page 21](#)

▼ Install a Linux OS Using Oracle System Assistant

Before you begin this procedure, do the following:

- Perform the steps in [“Preparing to Install the Operating System” on page 15](#).

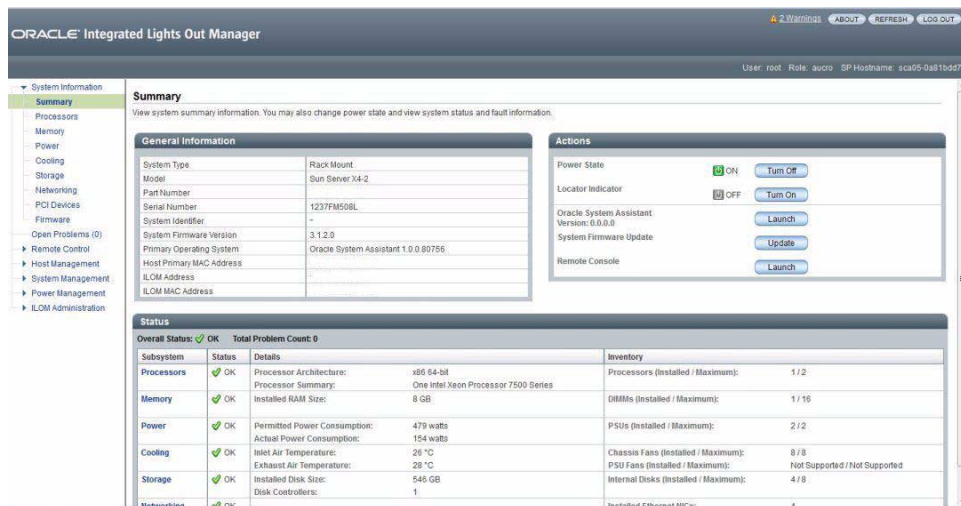
- If you want to configure the boot drive (that is, the storage drive onto which you are installing the OS) for RAID, you must do so before you install the Linux OS. For instructions on how to configure RAID on your server, see the [Sun Server X4-2 Installation Guide](#), “Configuring Server Drives for OS Installation” on page 113.

1. Ensure that the installation media is available to boot.

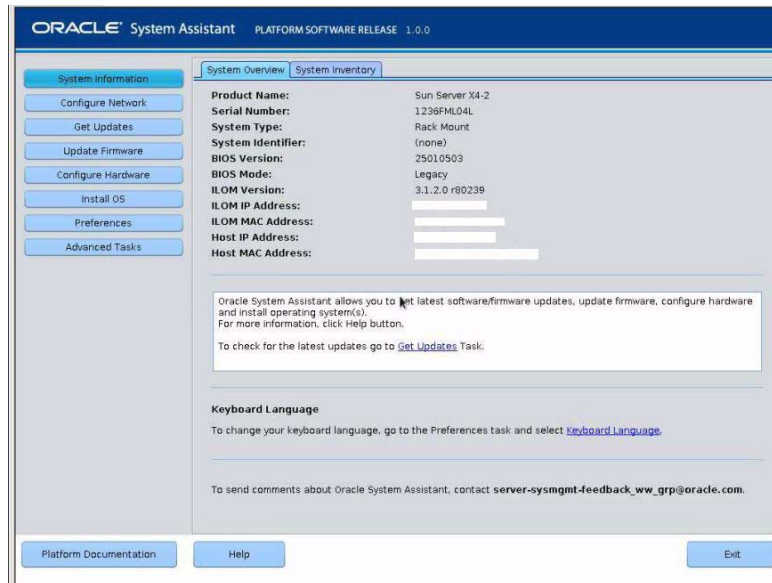
- **For Distribution CD/DVD.** Insert the Linux media (CD labeled number 1 or the single DVD) into the local or remote CD/DVD-ROM drive.
- **For ISO image.** Ensure that the ISO images are available and that the Oracle ILOM Remote Console application is aware of the first ISO image location. For additional information about how to set up the installation media, see “Selecting the Boot Media Option” on page 5.

2. To launch Oracle System Assistant directly from the Oracle ILOM Interface (recommended), perform the following steps; otherwise proceed to Step 3.

- a. In the Actions panel on the Oracle ILOM web interface (shown below), click the Oracle System Assistant Launch button.



The Oracle System Assistant System Overview screen appears.



b. Proceed to [Step 4](#).

3. To launch Oracle System Assistant using the Oracle ILOM Remote Console and BIOS, perform the following steps:

a. From the Oracle ILOM web interface, click **Summary > Launch Remote Console**.

The Oracle ILOM Remote Console screen appears.

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

For example:

- **From the local server**, press the Power button (approximately 1 second) on the front panel of the server to power off the server, then press the Power button again to power on the server.
- **From the Oracle ILOM web interface**, click Host Management > Power Control and select Reset from the Select Action list box.
- **From the Oracle ILOM CLI**, type: **reset /System**

The BIOS screen appears in the Oracle ILOM Remote Console.



```
Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.  
BIOS Date: 05/11/2012 11:52:57 Ver: 18021000  
Press F2 to run Setup (CTRL+E on serial keyboard)  
Press F8 for BBS Popup (CTRL+P on serial keyboard)  
Press F12 for network boot (CTRL+N on serial keyboard)  
Press F9 to start Oracle System Assistant (CTRL+O on serial keyboard)
```

Note – The next events occur very quickly; therefore, focused attention is needed for the following steps. Watch carefully for these messages as they appear on the screen for a brief time. You might want to enlarge the size of your screen to eliminate scroll bars.

c. Press the F9 key.

The Oracle System Assistant System Overview screen appears.

4. To update to the latest software release package, click the Get Updates button in Oracle System Assistant.

This action ensures that the server has the latest software release package installed before you begin the OS installation.

Note – Server web access is required to update Oracle System Assistant.

5. To update the server firmware, click the Update Firmware button.

This action ensures that the server has the latest firmware and BIOS before you begin the OS installation.

6. To install the OS, click the Install OS button.

The Operating System Installation screen appears.

7. From the Supported OS drop-down list, select your OS.

8. In the Select a BIOS mode if applicable portion of the screen, select the BIOS mode (UEFI or Legacy BIOS) that you want to use for the OS installation.

Currently Oracle Linux 6.3 and 6.4, Red Hat Enterprise Linux 6.4, and SUSE Linux Enterprise Server 11 are the only supported Linux operating systems that support UEFI BIOS mode.

9. Indicate the location of the installation media in the Select your install media location section.

This is the location of the OS distribution media. The options are CD/DVD devices.

Oracle System Assistant does not support Preboot eXecution Environment (PXE) installs.

10. Click View Installation Options.

The Installation Options dialog appears.

11. In the Installation Options dialog, deselect any items that you do not want to install.

In the Installation Options dialog, the OS and Drivers options are mandatory and cannot be deselected.

12. Click the Install OS button at the bottom of the Operating System Installation screen.

13. Follow the prompts until the installation is finished.

The server boots.

14. Perform the Linux operating system post installation tasks as required.

For post installation tasks, see the following sections:

- [“Post Installation Task for Oracle Linux” on page 54](#)
- [“Post Installation Tasks for RHEL” on page 66](#)
- [“Post Installation Tasks for SLES 11” on page 80](#)

Installing Oracle Linux on a Single System Using Media

This section provides information about installing Oracle Linux 5.9, 6.3, 6.4, and 6.5 for x86 (64-bit) operating system.

- [“Oracle Linux OS Installation Task Map” on page 26](#)
- [“Before You Begin” on page 27](#)
- [“Install Oracle Linux 5 Using Local or Remote Media” on page 27](#)
- [“Install Oracle Linux 6.x Using Local or Remote Media” on page 36](#)
- [“Install Oracle Linux 5.x or 6.x Using PXE Network Boot” on page 51](#)
- [“Post Installation Task for Oracle Linux” on page 54](#)

Oracle Linux OS Installation Task Map

These procedures describe the steps for installing Oracle Linux OS for a new installation.

Step	Description	Links
1.	Install the server hardware and configure the Oracle ILOM service processor.	<ul style="list-style-type: none">• <i>Sun Server X4-2 Installation Guide</i>, “Installing the Server Into a Rack” on page 39• <i>Sun Server X4-2 Installation Guide</i>, “Cabling the Server” on page 77• <i>Sun Server X4-2 Installation Guide</i>, “Connecting to Oracle ILOM” on page 85
2.	Obtain the Oracle Linux installation media.	You can download or order the installation media at: http://www.oracle.com/us/technologies/linux/index.html
3.	Review the product notes.	<i>Sun Server X4-2 Product Notes</i> at: http://www.oracle.com/goto/X4-2/docs
4.	Set up the console, the Oracle Linux media, and the installation target that you will use to perform the installation.	<ul style="list-style-type: none">• “Selecting the Console Display Option” on page 3• “Selecting the Boot Media Option” on page 5• “Selecting the Installation Target Option” on page 7
5.	Set BIOS settings for new OS installations.	“Setting Up BIOS” on page 15
6.	Install the Oracle Linux OS.	<ul style="list-style-type: none">• “Install Oracle Linux 5 Using Local or Remote Media” on page 27• “Install Oracle Linux 6.x Using Local or Remote Media” on page 36• “Install Oracle Linux 5.x or 6.x Using PXE Network Boot” on page 51
7.	Perform the post installation tasks.	“Post Installation Task for Oracle Linux” on page 54

Related Information

- “Preparing to Install the Operating System” on page 15

Before You Begin

Ensure that the following requirements are met:

- The console display option should have been selected and set up prior to performing the installation. For more information about this option, see [“Selecting the Console Display Option” on page 3](#).
- The boot media option should have been selected and set up prior to performing the installation. For more information about this option and setup instructions, see [“Selecting the Boot Media Option” on page 5](#).
- The installation target option should have been selected and set up prior to performing the installation. For more information about this option and setup instructions, see [“Selecting the Installation Target Option” on page 7](#).
- Verify that the BIOS settings are set correctly. For instructions on how to verify and, if necessary, set the BIOS settings, see [“Setting Up BIOS” on page 15](#).

Note – For Oracle Linux 5.x installations, BIOS must be set to Legacy BIOS Boot Mode, because Oracle Linux 5.x does not support UEFI BIOS.

- For local installation, have the Oracle Linux installation media available to insert into the attached physical CD/DVD-ROM drive when prompted.
- For remote installation, insert the Oracle Linux installation media into the Oracle ILOM Remote Console system’s CD/DVD-ROM drive. Ensure you have selected CD-ROM from the Oracle ILOM Remote Console system’s Devices menu.
- If you are using an Oracle Linux image, ensure that the Oracle Linux ISO image is accessible from the Oracle ILOM Remote Console system. Ensure you have selected CD-ROM Image from the Oracle ILOM Remote Console system’s Devices menu.

▼ Install Oracle Linux 5 Using Local or Remote Media

This procedure describes how to install the Oracle Linux operating system installation from local or remote media. The procedure assumes that you are booting the Oracle Linux installation media from one of the following sources:

- Oracle Linux 5.9 or 5.10 CD or DVD set (internal or external CD/DVD)
- Oracle Linux 5.9 or 5.10 ISO DVD image (network repository)

Note – For Oracle Linux 5.x installations, BIOS must be set to Legacy BIOS Boot Mode, because Oracle Linux 5.x does not support UEFI BIOS.

Note – Currently Oracle Linux 6.3, 6.4, and 6.5, Red Hat Enterprise Linux 6.4 and 6.5, and SUSE Linux Enterprise Server 11 are the only supported Linux operating systems that support UEFI BIOS.

Note – If you are booting the installation media from a PXE environment, refer to [“Install Oracle Linux 5.x or 6.x Using PXE Network Boot”](#) on page 51 for instructions.

After completing this procedure, you should review and perform the required post installation tasks described later in this chapter. For more details, see [“Post Installation Task for Oracle Linux”](#) on page 54.

1. Ensure that the installation media is available to boot.

- **For Distribution CD/DVD.** Insert the Oracle Linux 5.9 or 5.10 Distribution media boot disc (CD labeled number 1 or the single DVD) into the local or external CD/DVD-ROM drive.
- **For ISO images.** Ensure that the ISO image is available for Oracle Linux 5.9 or 5.10 and that the boot disc image (CD labeled number 1 or DVD) has been selected in the Oracle ILOM Remote Console application (Devices menu > CD-ROM Image).

For additional information about how to set up the installation media, see [“Selecting the Boot Media Option”](#) on page 5.

2. Reset or power on the server.

For example, to reset the server:

- **From the local server,** press the Power button (approximately 1 second) on the front panel of the server to power off the server, then press the Power button again to power on the server.
- **From the Oracle ILOM web interface,** click Host Management > Power Control and select Reset from the Select Action list box.
- **From the Oracle ILOM CLI on the server SP,** type: `reset /System`

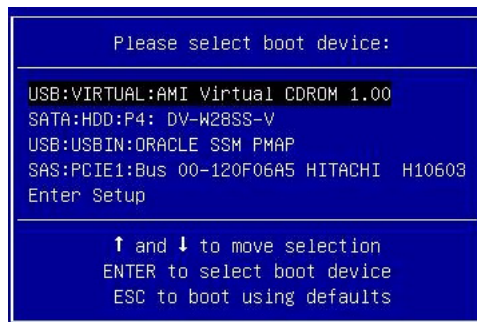
The BIOS screen appears.



Note – The next events occur very quickly; therefore, focused attention is needed for the following steps. Watch carefully for these messages as they appear on the screen for a brief time. You might want to enlarge the size of your screen to eliminate scroll bars.

3. In the BIOS screen, press F8 to specify a temporary boot device for the Linux OS installation.

The Please Select Boot Device menu appears.



Note – The boot device menu that appears in your installation might differ depending on the type of disk controller installed in your server.

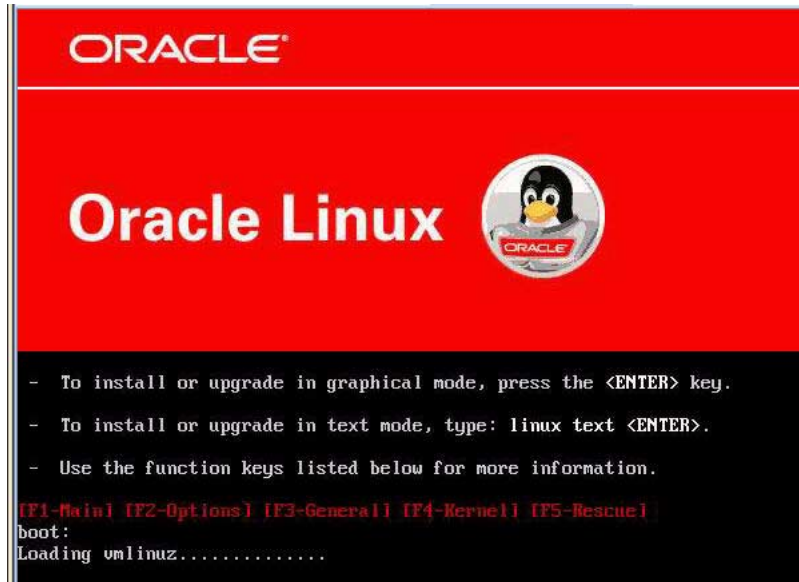
4. In the Please Select Boot Device menu, select the menu item according to the Linux media installation method and BIOS mode you elected to use, then press Enter.

For example:

- If you elected to use the Linux OS local delivery method, select `SATA:HDD:P4 DV-W28SS-V` from the screen.

- If you elected to use the Oracle ILOM Remote Console delivery method, select USB:VIRTUAL:AMI VIRTUAL CDRUM 1.00 from the screen.

The Oracle Linux 5 Install screen appears.

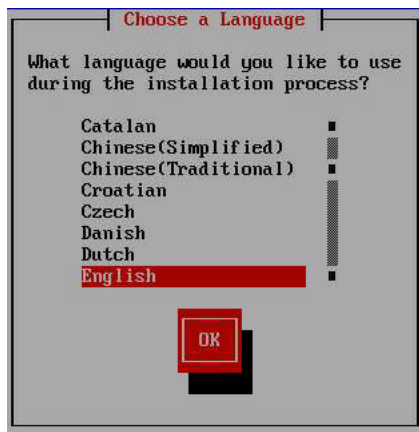


5. In the Oracle Linux 5 Install screen, press Enter to continue the normal user interactive installation.

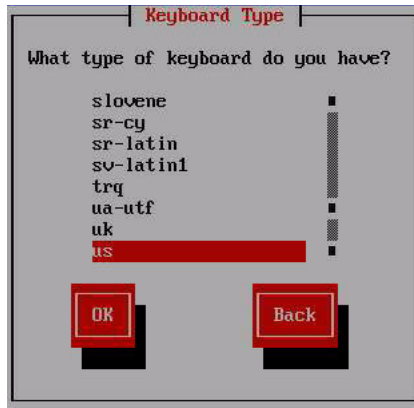
Alternately, for text mode, enter the following command:

```
boot: linux text
```

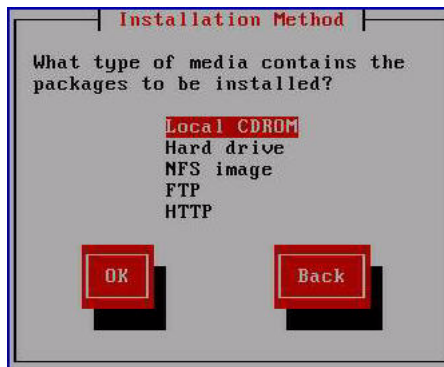
The language screen appears.



6. In the Choose a Language screen, select the appropriate language, then click OK.
The Keyboard Type screen appears.



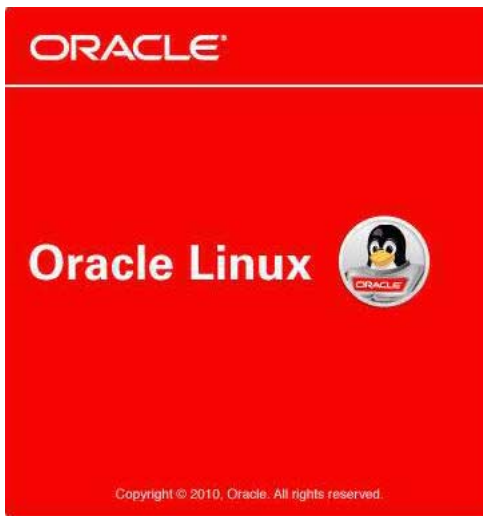
7. In the Keyboard Type screen, select the appropriate keyboard configuration, then click OK.
The Installation Method screen appears.



8. In the Installation Method screen, select the appropriate installation method (either Local CDROM or NFS image), then click OK.
The Disc Found screen appears.



9. If this is the first time that you are doing an install from this media, it is recommended that you click **OK** to test the media; otherwise, click **Skip**. The Oracle Linux 5 splash screen appears.



10. On the bottom of the Oracle Linux 5 splash screen, click **Next**. If there is a problem with the data format on the installation target disk, the Partitioning Error warning appears.



Note – Because Oracle Linux 5.9 does not support booting from GUID Partition Table (GPT) format, it can only be installed to a hard disk drive that is less than 2-terabyte in size.

If this is the storage drive that you want to use for the installation, you need to reformat the drive; otherwise, you can ignore this warning.

Note – The storage drives that ship with the server are new, so they are unformatted. You will not encounter this error when installing to an unformatted disk.

To reformat the disk, click *Yes*.

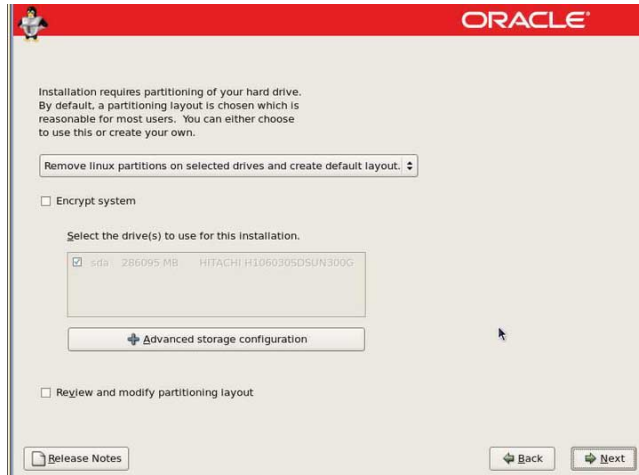
Otherwise, the Installation Number dialog appears.

- 11. In the Installation Number dialog, enter the “Installation number” or click Skip entering installation number, then click OK.**

The Disk Partition Setup screen appears.

- 12. In the Disk Partition Setup screen, do the following:**

- a. Select the option for Remove Linux partition on selected drives and create default layout, or manually partition the disk using the Create custom layout option of Disk Druid, then click Next.**



b. Partition the disk as appropriate by referring to the instructions presented on the Oracle Linux disk partitioning screen.

Note – If the Oracle Linux 6.x OS or Oracle VM 3.2 software is preinstalled on the disk, you can choose to partition the disk to remove the preinstalled OS; or, you can choose to keep the preinstalled OS and partition the disk to support dual-boot operating systems.

13. Continue the basic Oracle Linux installation setup by following the on-screen instructions.

14. After completing the installation, reboot the server.

The BIOS screen appears.

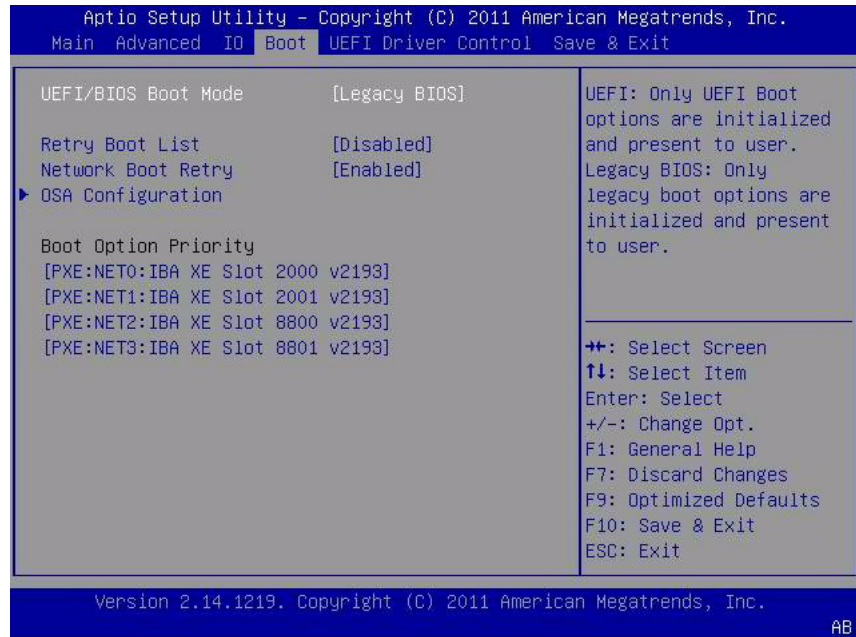


15. To run the BIOS Setup Utility, press F2.

The BIOS Setup Utility appears.

16. Select the Boot menu.

The Boot Menu appears.



17. To make the newly installed OS the default boot, move the target installation storage drive to the top of the Boot priorities list, then press F10 to save the changes and exit the BIOS Setup Utility.

As the reboot continues, one of the kernel screens appears.

```
Press any key to enter the menu
Booting Oracle Linux Server (2.6.39-300.26.1.el5uek) in 2
seconds...
```

The Oracle Unbreakable Enterprise Kernel Release 2 for Linux is the default kernel.

18. If you do not want to change the default kernel, proceed to [Step 20](#); otherwise, proceed to [Step 19](#).

19. (Optional) If you want to switch to the Red Hat compatible kernel, do the following:

a. Press any key.

The GNU GRUB kernel select screen appears.

```
GNU GRUB version 0.97 (613K lower / 2087424K upper memory)

Oracle Linux Server (2.6.39-300.Z6.1.el5uek)
Oracle Linux Server-base (2.6.18-348.el5)

Use the ↑ and ↓ 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
```

- b. For the Red Hat compatible kernel, select the second menu option, then press Enter.
20. After completing the Oracle Linux installation and rebooting the server with the desired Linux kernel, perform the post installation tasks as described in [“Post Installation Task for Oracle Linux”](#) on page 54.

▼ Install Oracle Linux 6.x Using Local or Remote Media

This procedure describes how to install the Oracle Linux operating system from local or remote media. The procedure assumes that you are booting the Oracle Linux installation media from one of the following sources:

- Oracle Linux 6.3, 6.4, or 6.5 CD or DVD set (internal or external CD/DVD)
- Oracle Linux 6.3, 6.4, or 6.5 ISO DVD image (network repository)

Note – If you are booting the installation media from a PXE environment, refer to [“Install Oracle Linux 5.x or 6.x Using PXE Network Boot”](#) on page 51 for instructions.

1. **Ensure that the installation media is available to boot.**
 - **For Distribution CD/DVD.** Insert the Oracle Linux 6.3, 6.4, or 6.5 Distribution media boot disc (CD labeled number 1 or the single DVD) into the local or remote CD/DVD-ROM drive.

- **For ISO images.** Ensure that the ISO image is available for Oracle Linux 6.3, 6.4, or 6.5 and that the boot disc image (CD labeled number 1 or DVD) has been selected in the Oracle ILOM Remote Console application (Devices menu > CD-ROM Image).

For additional information about how to set up the installation media, see [“Selecting the Boot Media Option”](#) on page 5.

2. Reset or power on the server.

For example, to reset the server:

- **From the local server,** press the Power button (approximately 1 second) on the front panel of the server to power off the server, then press the Power button again to power on the server.
- **From the Oracle ILOM web interface,** click Host Management > Power Control and select Reset from the Select Action list box.
- **From the Oracle ILOM CLI on the server SP,** type: `reset /System`

The BIOS screen appears.



Note – The next events occur very quickly; therefore, focused attention is needed for the following steps. Watch carefully for these messages as they appear on the screen for a brief time. You might want to enlarge the size of your screen to eliminate scroll bars.

3. In the BIOS screen, press F8 to specify a temporary boot device for the Linux OS installation.

The Please Select Boot Device menu appears. The screen that appears will be different depending on whether you have BIOS configured for Legacy BIOS or UEFI BIOS.

- For Legacy BIOS, the following screen appears:

```
Please select boot device:
-----
SAS:PCIE4:Bus 00-434A35D1 SEAGATE ST9300
SAS:PCIE4:Bus 00-1210B5E5 HITACHI H10603
SATA:HDD:P4: DV-W28SS-V
USB:USBIN:ORACLE SSM PMAP
PXE:NET0:IBA XE Slot 4000 v2193
PXE:NET1:IBA XE Slot 4001 v2193
Enter Setup

↑ and ↓ to move selection
ENTER to select boot device
ESC to boot using defaults
```

- For UEFI BIOS, the following screen appears:

```
Please select boot device:
-----
[UEFI]USB:VIRTUAL:USB USB CD/DVD Drive
[UEFI]PXE:NET0:Intel(R) Ethernet Controller 10 Gigabit X540-AT2
[UEFI]PXE:NET1:Intel(R) Ethernet Controller 10 Gigabit X540-AT2
[UEFI]PXE:PCIE2:Intel(R) Ethernet Server Adapter X520-2
[UEFI]PXE:PCIE2:Intel(R) Ethernet Server Adapter X520-2
[UEFI]PXE:NET2:Intel(R) Ethernet Controller 10 Gigabit X540-AT2
[UEFI]PXE:NET3:Intel(R) Ethernet Controller 10 Gigabit X540-AT2
[UEFI]Built-in EFI Shell
Enter Setup

↑ and ↓ to move selection
ENTER to select boot device
ESC to boot using defaults
```

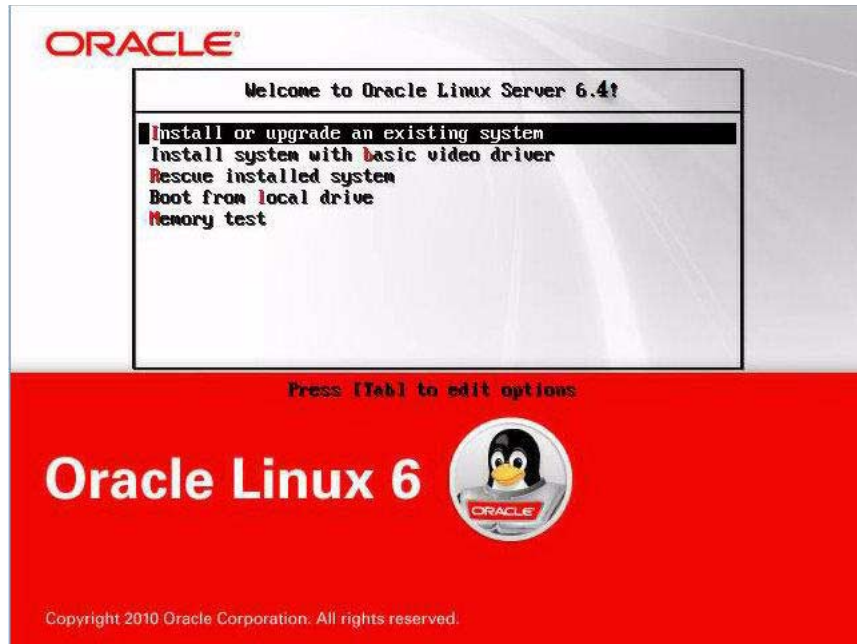
Note – The boot device menu that appears in your installation might differ depending on the type of disk controller installed in your server.

4. In the Please Select Boot Device menu, select the menu item according to the Linux OS media installation method and the BIOS mode you elected to use, then press Enter.

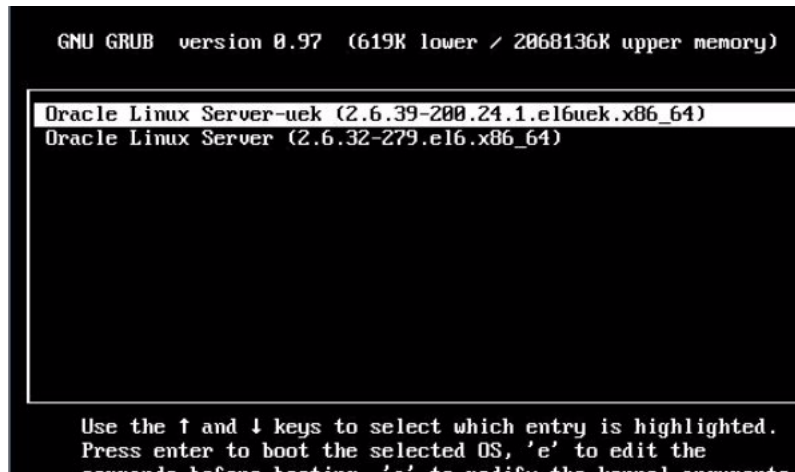
For example:

- If you elected to use the Linux OS local console delivery method in Legacy BIOS, select SATA:HDD:P4 DV-W28SS-V from the Legacy BIOS screen.
- If you elected to use the Oracle ILOM Remote Console delivery method in UEFI BIOS mode, select [UEFI]USB:VIRTUAL:USB USB CD/DVD Drive from the UEFI BIOS screen.

For Legacy BIOS, the Oracle Linux 6.x Welcome screen appears.



For UEFI BIOS, the Oracle Linux 6.x GNU GRUB screen appears.



5. Depending on the BIOS mode that you selected, do one of the following:

- To install from Legacy BIOS Boot Mode, select Install or Upgrade an Existing System from the Oracle Linux 6.x Welcome screen, click Next at the bottom of the screen, follow the on-screen prompts to complete the interactive installation, then proceed to [Step 17](#).

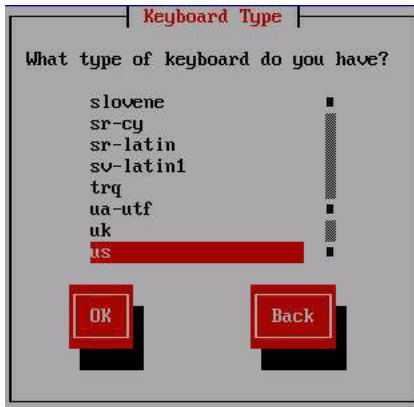
- To install from UEFI BIOS Boot Mode, select Oracle Linux Server 6.x from the GNU GRUB screen and press Enter.

The Choose a Language screen appears.



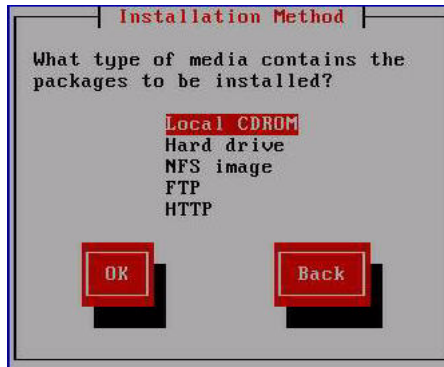
6. In the Choose a Language screen, select the appropriate language, then click OK.

The Keyboard Type screen appears.



7. In the Keyboard Type screen, select the appropriate keyboard configuration, then click OK.

The Installation Method screen appears.



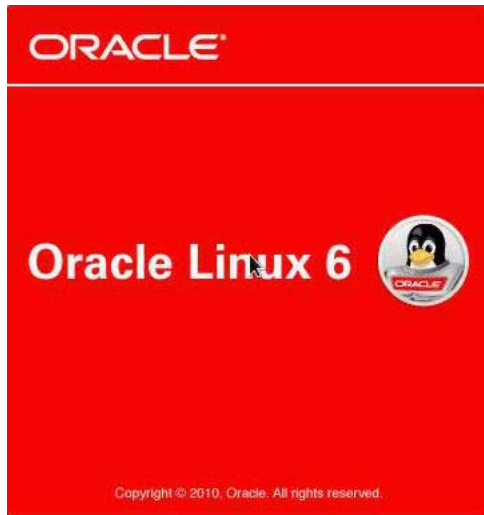
8. In the Installation Method screen, select the appropriate installation method (either Local CDROM or NFS image), then click OK.

The Disc Found screen appears.



9. If this is the first time that you are doing an install from this media, it is recommended that you click OK to test the media; otherwise, click Skip.

The Oracle Linux 6 splash screen appears.



10. At the bottom of the Oracle Linux 6 splash screen, click Next.

If there is a problem with the data format on any target disk, the Partitioning Error warning appears.



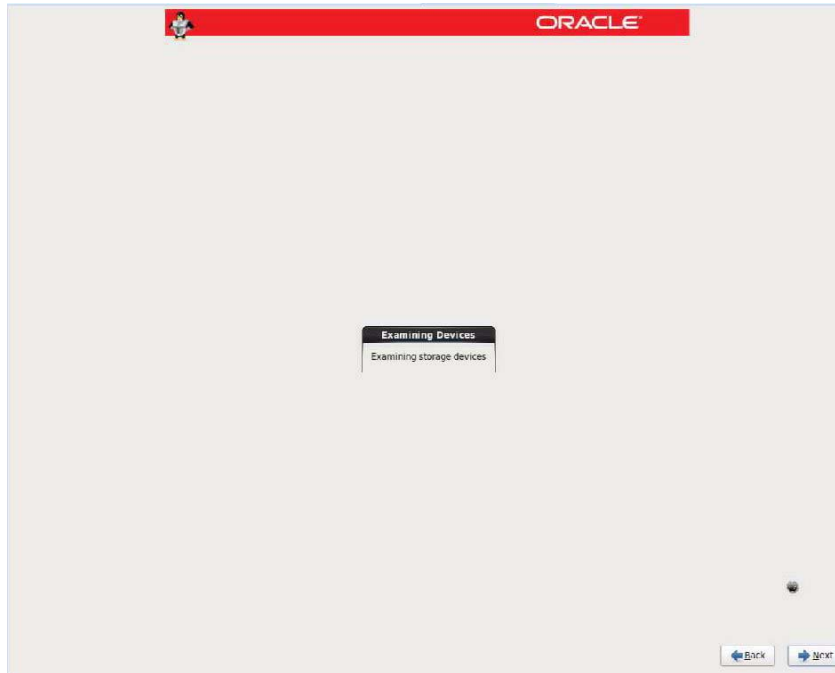
If this is the storage drive that you want to use for the installation, you need to reformat the drive; otherwise, you can ignore this warning.

To reformat the disk, click Yes.

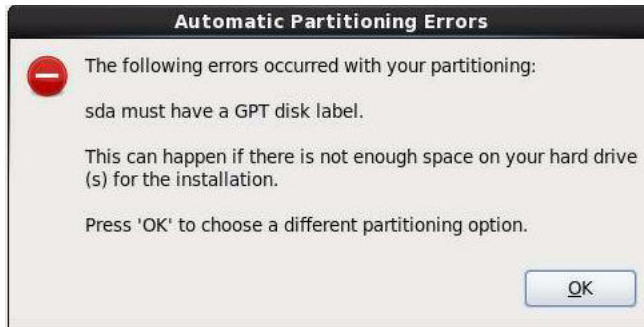
Otherwise, the Installation Devices screen appears.



11. In the Installation Devices screen, select **Basic Storage Devices** and click **Next**. The Examining Devices screen appears.



12. In the Examining Devices screen, click Next.
13. Follow the on-screen prompts and do the following:
 - a. Enter the host name.
 - b. (Optional) Configure the network.
 - c. Select the time zone.
 - d. Select the root password.
 - e. Select disk partitioning and layout.
14. If there is a problem with the data format on the installation target disk, the Automatic Partitioning Errors screen appears.



If the above screens appears, the disk to which you are attempting to install the Linux OS is formatted incorrectly and it needs to be reformatted.

Note – This error occurs if you attempt to do a UEFI BIOS OS install to a storage drive that was previously used to store data in Legacy BIOS format or vice versa. UEFI uses the GUID Partition Table (GPT) format, while Legacy BIOS formats storage drives in the Master Boot Record (MBR) format. The storage drives that ship with the server are new, so they are unformatted. You will not encounter this error when installing to an unformatted disk.

To recover and reformat the disk without aborting the install, click the keyboard Back button on the install screen several times to return to the initial splash screen shown in [Step 9](#) and perform these steps:

a. To start the recovery shell, type `Ctrl+Alt+F2`.

The shell appears.

b. To reformat the disk in GPT format or MBR format as appropriate for this installation, enter the shell commands as shown on the following screen:

```
anaconda root@localhost /]# parted /dev/sdc
GNU Parted 2.1
Using /dev/sdc
Welcome to GNU Parted! Type 'help' to view a list of commands.
(parted) p
Model: HITACHI H106030SDSUN300G (scsi)
Disk /dev/sdc: 300GB
Sector size (logical/physical): 512B/512B
Partition Table: msdos
Number  Start  End    Size  Type  File system  Flags
  1      1049kB  21.5GB  21.5GB  primary ext2
(parted) mklabel
New disk label type? gpt
Warning: The existing disk label on /dev/sdc will be destroyed and
all data will be lost.
```

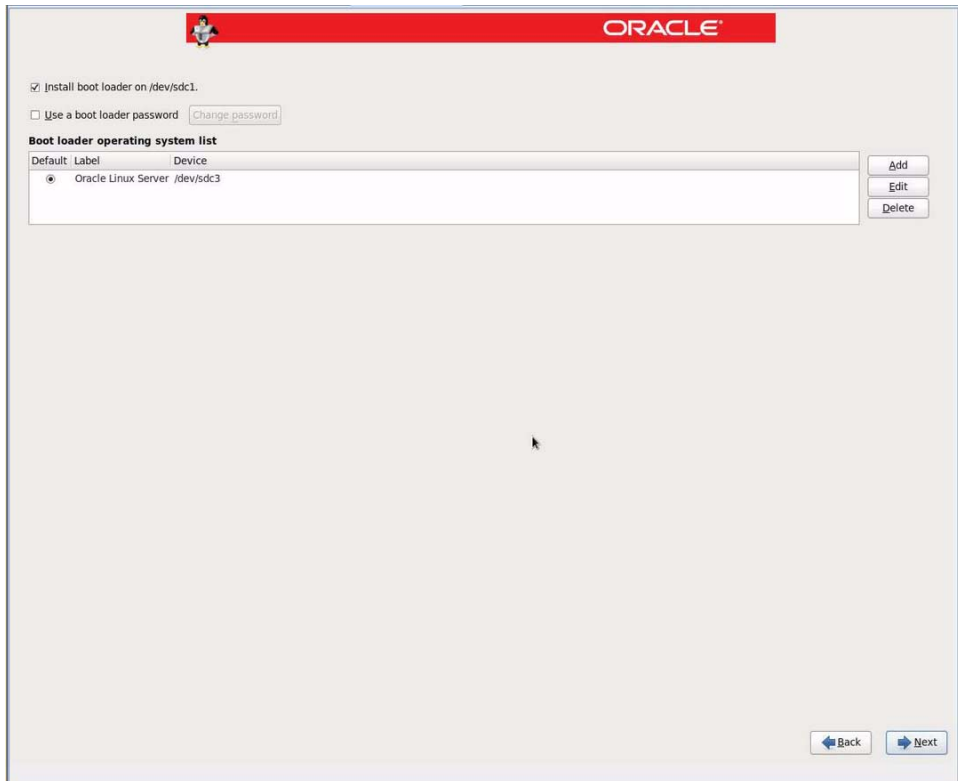
```

Do you want to continue?
Yes/No? yes
(parted) p
Model: HITACHI H106030SDSUN300G (scsi)
Disk /dev/sdc: 300GB
Sector size (logical/physical): 512B/512B
Partition Table: gpt
Number Start End Size File system Name Flags
(parted) g
Information: You may need to update /etc/fstab.
anaconda root@localhost /]#

```

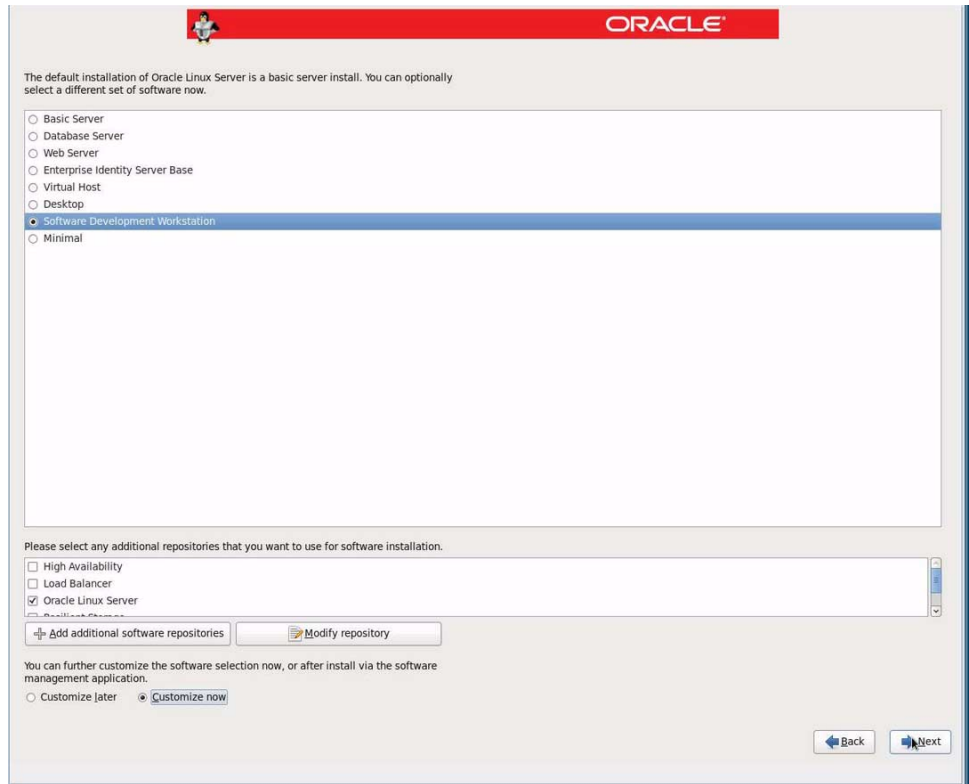
c. Type **Ctrl+Alt+F6** to return to the graphical installation screen and continue the installation from the point of the Oracle Linux splash screen (go to [Step 10](#)).

Otherwise, the Bootloader screen appears.



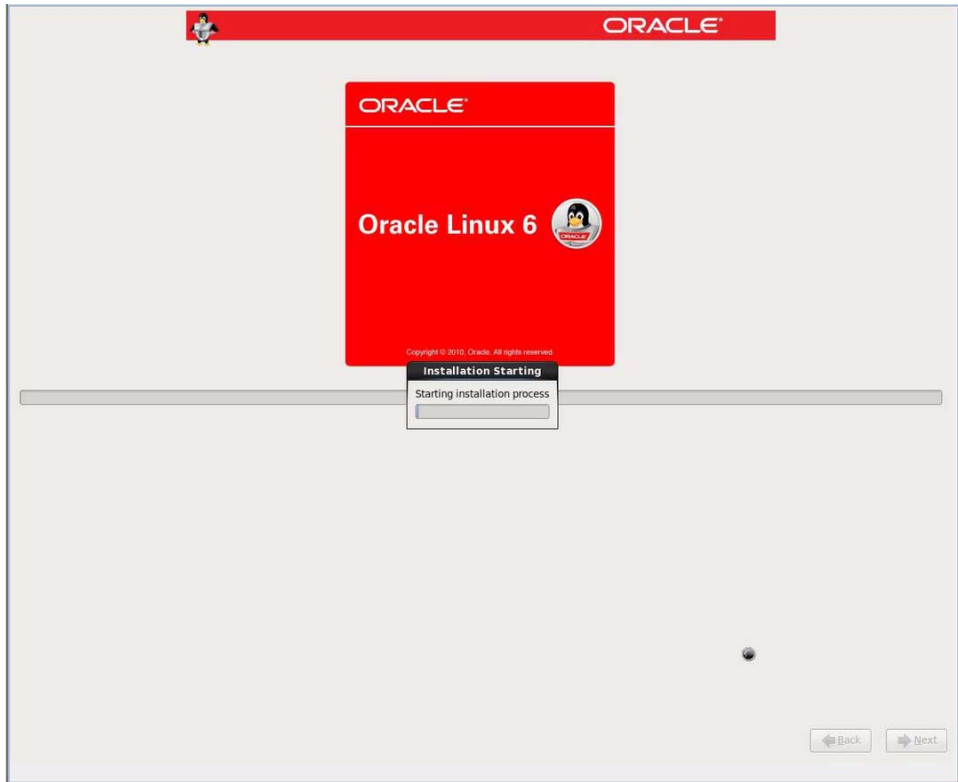
15. In the Bootloader screen click **Next**.

The Select Software screen appears.



16. Select the desired software, then click Next.

The Starting the Installation Process screen appears.



You have completed the installation user interactions.

17. After the installation completes, reboot the server.

The BIOS screen appears.



18. To run the BIOS Setup Utility, press F2.

For Legacy BIOS, the following BIOS Setup Utility appears.

```

Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.
Main Advanced IO Boot UEFI Driver Control Save & Exit

UEFI/BIOS Boot Mode      [Legacy BIOS]
Retry Boot List           [Disabled]
Network Boot Retry       [Enabled]
▶ OSA Configuration

Boot Option Priority
[PXE:NET0:IBA XE Slot 2000 v2193]
[PXE:NET1:IBA XE Slot 2001 v2193]
[PXE:NET2:IBA XE Slot 8800 v2193]
[PXE:NET3:IBA XE Slot 8801 v2193]

UEFI: Only UEFI Boot
options are initialized
and present to user.
Legacy BIOS: Only
legacy boot options are
initialized and present
to user.

+/: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F7: Discard Changes
F9: Optimized Defaults
F10: Save & Exit
ESC: Exit

Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.
AB

```

For UEFI BIOS, the following BIOS Setup Utility appears.

```

Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.
Main Advanced IO Boot UEFI Driver Control Save & Exit

UEFI/BIOS Boot Mode      [UEFI]
Retry Boot List           [Disabled]
Network Boot Retry       [Enabled]
▶ OSA Configuration

Boot Option Priority
[Oracle Linux Server]

[[UEFI]PXE:NET0:Intel(R) Ethernet Controller
10 Gigabit X540-AT2]
[[UEFI]PXE:NET1:Intel(R) Ethernet Controller
10 Gigabit X540-AT2]

UEFI: Only UEFI Boot
options are initialized
and present to user.
Legacy BIOS: Only
legacy boot options are
initialized and present
to user.

+/: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F7: Discard Changes
F9: Optimized Defaults
F10: Save & Exit
ESC: Exit

Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.
AB

```

19. To make the newly installed OS the default boot, do one of the following:

- For Legacy BIOS:
 - Select Boot in the top menu bar and verify the target installation storage drive is at the top of the list under the Boot Option Priority field.
 - If the target installation storage drive is not at the top of the list, move it to the top and press F10 to save the change and exit the BIOS Setup Utility.
- For UEFI BIOS:
 - Select Boot in the top menu bar and verify the Oracle Linux Server is at the top of the list under the Boot Option Priority field.
 - If Oracle Linux Server is not at the top of the list, move it to the top and press F10 to save the change and exit the BIOS Setup Utility.

As the reboot continues, a kernel screen appears.

- For Oracle Linux 6.3, the following screen appears.

```
Press any key to enter the menu
Booting Oracle Linux Server-uek (2.6.39-200.24.1.el6uek.x86_64) in
2 seconds...
```

- For Oracle Linux 6.4, the following screen appears.

```
Press any key to enter the menu
Booting Oracle Linux Server Unbreakable Enterprise Kernel
(2.6.39-400.17.1.el6uek.x86_64) in 2 seconds...
```

- For Oracle Linux 6.5, the following screen appears.

```
Press any key to enter the menu
Booting Oracle Linux Server Unbreakable Enterprise Kernel
(3.8.13-16.2.1.el6uek.x86_64) in 2 seconds...
```

20. If you do *not* want to change the default Kernel, proceed to [Step 22](#); otherwise, proceed to [Step 21](#).
21. (Optional) If you are installing Oracle Linux 6.4 or 6.5 and you want to switch to the Red Hat compatible kernel, do the following.

Note – The Red Hat compatible kernel is not supported on Oracle Linux 6.3.

- a. Press any key.

The GNU GRUB screen appears.

```
GNU GRUB  version 0.97  (619K lower / 2068136K upper memory)

Oracle Linux Server-uek (2.6.39-200.24.1.el6uek.x86_64)
Oracle Linux Server (2.6.32-279.el6.x86_64)

Use the ↑ and ↓ 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.
```

- b. For the Red Hat compatible kernel, select the second menu option, then press Enter.
22. After completing the Oracle Linux installation and rebooting the server with the desired Linux kernel, proceed to [“Post Installation Task for Oracle Linux” on page 54](#).

▼ Install Oracle Linux 5.x or 6.x Using PXE Network Boot

This section describes how to install Oracle Linux 5.9, 5.10, 6.3, 6.4, or 6.5 from a PXE network environment. This procedure assumes that you are booting the installation media from one of the following sources:

- Oracle Linux 5.9, 5.10, 6.3, 6.4, or 6.5 ISO DVD image or KickStart image (network repository)

Note – KickStart is an automated installation tool. It enables a system administrator to create a single image containing the settings for some or all installation and configuration parameters that are normally provided during a typical Oracle Linux installation. Typically, a KickStart image is placed on a single network server and read by multiple systems for installation.

The following requirements must be met prior to performing the Oracle Linux PXE installation:

- If you are using a KickStart image to perform the installation, you must:
 - Create a KickStart file.
 - Create the boot media with the KickStart file or make the KickStart file available on the network.
- To use PXE to boot the installation media over the network, you must:
 - Configure the network (NFS, FTP, HTTP) server to export the installation tree.
 - Configure the files on the TFTP server necessary for PXE booting.
 - Configure the server's MAC network port address to boot from the PXE configuration.
 - Configure the Dynamic Host Configuration Protocol (DHCP).

Follow the PXE network installation instructions in the *Red Hat Enterprise Linux 5.7: System Administration Guide* at:

http://access.redhat.com/site/documentation/Red_Hat_Enterprise_Linux

1. Ensure that the PXE network environment is set up properly and the Oracle Linux installation media is available for PXE boot.

Note – To ensure the fastest possible network performance, Oracle recommends that you configure your network switch(es) to either `auto-negotiate` or to the highest line speed the switch(es) support, up to the maximum speed (10 Gb/s) supported by the server Ethernet ports (NET 0 - NET 3).

2. Reset or power on the server.

For example, to reset the server:

- **From the local server**, press the Power button (approximately 1 second) on the front panel of the server to power off the server, then press the Power button again to power on the server.
- **From the Oracle ILOM web interface**, click Host Management > Power Control and select Reset from the Select Action list box.
- **From the Oracle ILOM CLI on the server SP**, type: `reset /System`
The BIOS screen appears.

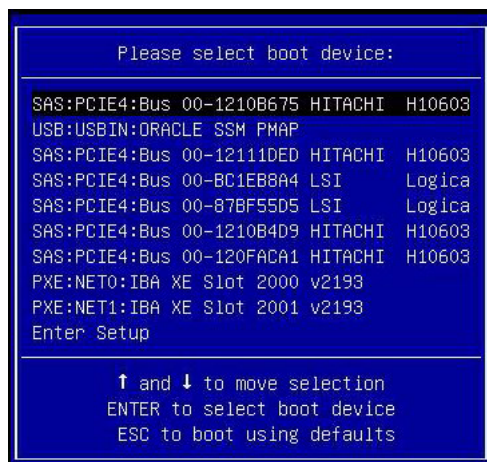
Note – The next events occur very quickly; therefore, focused attention is needed for the following steps. Watch carefully for these messages as they appear on the screen for a brief time. You might want to enlarge the size of your screen to eliminate scroll bars.



3. In the BIOS screen, press F8 to specify a temporary boot device for the Linux OS installation.

The Please Select Boot Device menu appears listing the available boot device. The screen that appears will be different depending on whether you have BIOS configured for Legacy BIOS or UEFI BIOS.

- For Legacy BIOS, the following screen appears:



- For UEFI BIOS, the following screen appears:

```

Please select boot device:

[UEFI]USB:VIRTUAL:USB USB CD/DVD Drive
[UEFI]PXE:NET0:Intel(R) Ethernet Controller 10 Gigabit X540-AT2
[UEFI]PXE:NET1:Intel(R) Ethernet Controller 10 Gigabit X540-AT2
[UEFI]PXE:PCIE2:Intel(R) Ethernet Server Adapter X520-2
[UEFI]PXE:PCIE2:Intel(R) Ethernet Server Adapter X520-2
[UEFI]PXE:NET2:Intel(R) Ethernet Controller 10 Gigabit X540-AT2
[UEFI]PXE:NET3:Intel(R) Ethernet Controller 10 Gigabit X540-AT2
[UEFI]Built-in EFI Shell
Enter Setup

↑ and ↓ to move selection
ENTER to select boot device
ESC to boot using defaults

```

Note – The boot device menu that appears in your installation might differ depending on the type of disk controller installed in your server.

4. In the Boot Device menu, select the network port that is configured to communicate with your PXE network install server.

The network bootloader loads and starts.

5. From this point on the installation procedure is site specific as determined by the site KickStart file.

Post Installation Task for Oracle Linux

After completing the Oracle Linux installation, you should review the following post installation tasks and, if necessary, perform the tasks that are applicable to your system.

- [“Register Oracle Linux and Activate Automatic Updates”](#) on page 54
- [“\(Optional\) Install Oracle Unbreakable Enterprise Kernel Release 3 for Linux”](#) on page 55

Register Oracle Linux and Activate Automatic Updates

After installing Oracle Linux, you should register your system and activate your subscription with Oracle to receive automatic updates to the software. This will ensure that the server is running the latest version of the operating system. For instructions, go to:

<http://www.oracle.com/technetwork/articles/servers-storage-admin/yum-repo-setup-1659167.html>

Note – After you have updated your server with the latest updates, be sure to reboot your server before you use the operating system.

(Optional) Install Oracle Unbreakable Enterprise Kernel Release 3 for Linux

If you have installed the Oracle Linux 6.4, you have the option of updating to the Oracle Unbreakable Enterprise Kernel Release 3 for Linux.

Note – Oracle Linux 6.4 installs the Oracle Unbreakable Enterprise Kernel Release 2 by default.

For instructions for installing the Oracle Unbreakable Enterprise Kernel Release 3, see the Release Notes for Oracle Unbreakable Enterprise Kernel Release 3 Linux at: https://oss.oracle.com/ol6/docs/RELEASE-NOTES-UEK3-en.html#ol_instav

Installing Red Hat Enterprise Linux on a Single System Using Media

This section provides instructions for installing Red Hat Enterprise Linux (RHEL) 5.9, 5.10, 6.4, and 6.5 for x86 (64-bit) and the Oracle Unbreakable Enterprise Kernel for Linux.

The following topics are covered:

- “RHEL Installation Task Map” on page 56
- “Before You Begin” on page 57
- “Install RHEL 5.x Using Local or Remote Media” on page 57
- “Install RHEL 6.x Using Local or Remote Media” on page 60
- “Install RHEL 5.x or 6.x Using PXE Network Boot” on page 63
- “Post Installation Tasks for RHEL” on page 66

RHEL Installation Task Map

These procedures describe the installation steps for the Red Hat Enterprise Linux (RHEL) operating system.

Step	Description	Links
1.	Install your server hardware and configure the Oracle ILOM service processor.	<ul style="list-style-type: none">• <i>Sun Server X4-2 Installation Guide</i>, “Installing the Server Into a Rack” on page 39• <i>Sun Server X4-2 Installation Guide</i>, “Cabling the Server” on page 77• <i>Sun Server X4-2 Installation Guide</i>, “Connecting to Oracle ILOM” on page 85
2.	Obtain the RHEL installation media.	Go to: https://access.redhat.com/downloads
4.	Review the product notes.	<i>Sun Server X4-2 Product Notes</i> at: http://www.oracle.com/goto/X4-2/docs
5.	Set up the console, the RHEL media, and the installation target that you will use to perform the installation.	<ul style="list-style-type: none">• “Selecting the Console Display Option” on page 3• “Selecting the Boot Media Option” on page 5• “Selecting the Installation Target Option” on page 7
6.	Set BIOS settings for new OS installations.	“Setting Up BIOS” on page 15
7.	Install the RHEL OS.	<ul style="list-style-type: none">• “Install RHEL 5.x Using Local or Remote Media” on page 57• “Install RHEL 6.x Using Local or Remote Media” on page 60• “Install RHEL 5.x or 6.x Using PXE Network Boot” on page 63
8.	Perform the post installation tasks, if applicable.	“Post Installation Tasks for RHEL” on page 66
9.	(Optional) Install the Oracle Unbreakable Enterprise Kernel for Linux.	“(Optional) Install Oracle Unbreakable Enterprise Kernel for Linux on RHEL Using Local or Remote Console” on page 66

Before You Begin

Ensure that the following requirements are met:

- The console display option should have been selected and set up prior to performing the installation. For more information about this option and setup instructions, see [“Selecting the Console Display Option” on page 3](#).
- The boot media option should have been selected and set up prior to performing the installation. For more information about this option and setup instructions, see [“Selecting the Boot Media Option” on page 5](#).
- The installation target option should have been selected and set up prior to performing the installation. For more information about this option and setup instructions, see [“Selecting the Installation Target Option” on page 7](#).
- Verify that the BIOS settings are set correctly. For instructions on how to verify and, if necessary, set the BIOS settings, see [“Setting Up BIOS” on page 15](#).
- For local installation, have the Red Hat Enterprise Linux installation media available to insert into the attached physical CD/DVD-ROM drive when prompted.
- For remote installation, insert the Red Hat Enterprise Linux installation media into the Oracle ILOM Remote Console system’s CD/DVD-ROM drive. Make sure that you have selected CD-ROM from the Oracle ILOM Remote Console system’s Devices menu.
- If you are using an Red Hat Enterprise Linux image, ensure that the Red Hat Enterprise Linux ISO image is accessible from the Oracle ILOM Remote Console system. Make sure that you have selected CD-ROM Image from the Oracle ILOM Remote Console system’s Devices menu.
- All applicable installation prerequisites for installing an operating system should have been met. For further information about these prerequisites, see [“Preparing to Install the Operating System” on page 15](#).

▼ Install RHEL 5.x Using Local or Remote Media

This procedure describes how to install the Red Hat Enterprise Linux (RHEL) 5.9 operating system installation from local or remote media. The procedure assumes that you are booting the Red Hat Linux installation media from one of the following sources:

- RHEL 5.9 or 5.10 CD or DVD set (internal or external CD/DVD)
- RHEL 5.9 or 5.10 ISO DVD image (network repository)

Note – For RHEL 5.9 and 5.10 installations, the BIOS mode must be set to Legacy BIOS because RHEL 5.9 and 5.10 do not support UEFI BIOS.

If you are booting the installation media from a PXE environment, refer to “Install RHEL 5.x or 6.x Using PXE Network Boot” on page 63 for instructions.

For further details about installing RHEL, see the RHEL documentation collection at:

https://access.redhat.com/site/documentation/Red_Hat_Enterprise_Linux/

1. Ensure that the installation media is available to boot.

- **For Distribution CD/DVD.** Insert the RHEL 5.9 Distribution media boot disc (CD labeled number 1 or the single DVD) into the local or external CD/DVD-ROM drive.
- **For ISO images.** Ensure that the ISO image is available for RHEL 5.9 and that the boot disc image (CD labeled number 1 or DVD) has been selected in the Oracle ILOM Remote Console application (Devices menu > CD-ROM Image).

For additional information about how to set up the installation media, see “Selecting the Boot Media Option” on page 5.

2. Reset or power on the server.

For example, to reset the server:

- **From the local server,** press the Power button (approximately 1 second) on the front panel of the server to power off the server, then press the Power button again to power on the server.
- **From the Oracle ILOM web interface,** click Host Management > Power Control and select Reset from the Select Action list box.
- **From the Oracle ILOM CLI on the server SP,** type: `reset /System`

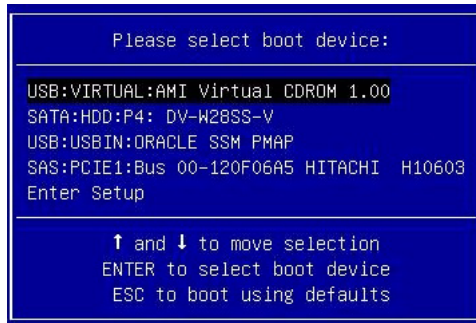
The BIOS screen appears.



Note – The next events occur very quickly; therefore, focused attention is needed for the following steps. Watch carefully for these messages as they appear on the screen for a brief time. You might want to enlarge the size of your screen to eliminate scroll bars.

3. In the BIOS screen, press F8 to specify a temporary boot device for the Linux OS installation.

The Please Select Boot Device menu appears.



```
Please select boot device:
-----
USB:VIRTUAL:AMI Virtual CDROM 1.00
SATA:HDD:P4: DV-W28SS-V
USB:USBIN:ORACLE SSM PMAP
SAS:PCIE1:Bus 00-120F06A5 HITACHI H10603
Enter Setup
-----
↑ and ↓ to move selection
ENTER to select boot device
ESC to boot using defaults
```

Note – The boot device menu that appears in your installation might differ depending on the type of disk controller installed in your server.

4. In the Please Select Boot Device menu, select the menu item according to the Linux media installation method and BIOS mode you elected to use, then press Enter.

For example:

- If you elected to use the local delivery method, select `SATA:HDD:P4 DV-W28SS-V` from the screen.
- If you elected to use the Oracle ILOM Remote Console delivery method, select `USB:VIRTUAL:AMI VIRTUAL CDROM 1.00` from the screen.

The RHEL 5.9 Install screen appears.

5. Continue the basic Red Hat installation setup by following the on-screen instructions and the Red Hat documentation.

For detailed installation instructions, see the *Red Hat Enterprise Linux 5 Installation Guide* at:

https://access.redhat.com/site/documentation/Red_Hat_Enterprise_Linux/

Note – If the Oracle Linux 6.x OS or Oracle VM 3.2 software is preinstalled on the disk, you can choose to partition the disk to remove the preinstalled OS; or, you can choose to keep the preinstalled OS and partition the disk to support dual-boot operating systems.

6. After completing the basic Red Hat installation setup, perform the following post-installation tasks:

- a. **Configure your system for automatic updates.**
Refer to Red Hat documentation for more information.
- b. **If required, download and install the latest errata and bug fixes for RHEL 5.9.**
Refer to Red Hat documentation for more information.
- c. **Review and, if necessary, perform the post installation tasks described later in this chapter.**
Refer to “Post Installation Tasks for RHEL” on page 66.

▼ Install RHEL 6.x Using Local or Remote Media

The following procedure describes how to boot the Red Hat Enterprise Linux (RHEL) 6.4 operating system installation from local or remote media. The procedure assumes that you are booting the RHEL installation media from one of the following sources:

- RHEL 6.4 or 6.5 CD or DVD set (internal or external CD/DVD)
- RHEL 6.4 or 6.5 ISO DVD image

If you are booting the installation media from a PXE environment, refer to “Install RHEL 5.x or 6.x Using PXE Network Boot” on page 63 for instructions.

For further details about installing RHEL, see the RHEL documentation collection at: https://access.redhat.com/site/documentation/Red_Hat_Enterprise_Linux/

1. Ensure that the install media is available to boot.

- **For Distribution CD/DVD.** Insert the Red Hat 6.4 or 6.5 Distribution media boot disc (CD labeled number 1 or the single DVD) into the local or remote USB CD/DVD-ROM drive.
- **For ISO images.** Ensure that the Red Hat 6.4 or 6.5 ISO image is available and that the boot disc image (CD labeled number 1 or DVD) has been selected in the Oracle ILOM Remote Console application (Devices menu > CD-ROM Image).

For additional information about how to set up the installation media, see “Selecting the Boot Media Option” on page 5.

2. Reset or power on the server.

For example, to reset the server:

- **From the local server,** press the Power button (approximately 1 second) on the front panel of the server to power off the server, then press the Power button again to power on the server.
- **From the Oracle ILOM web interface,** click Host Management > Power Control and select Reset from the Select Action list box.

- From the Oracle ILOM CLI on the server SP, type: `reset /System`
The BIOS screen appears.

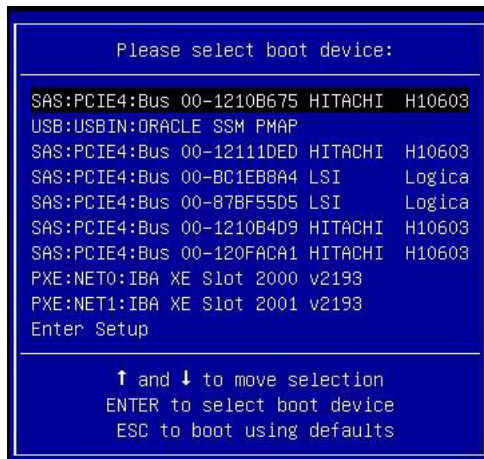


Note – The next events occur very quickly; therefore, focused attention is needed for the following steps. Watch carefully for these messages as they appear on the screen for a brief time. You might want to enlarge the size of your screen to eliminate scroll bars.

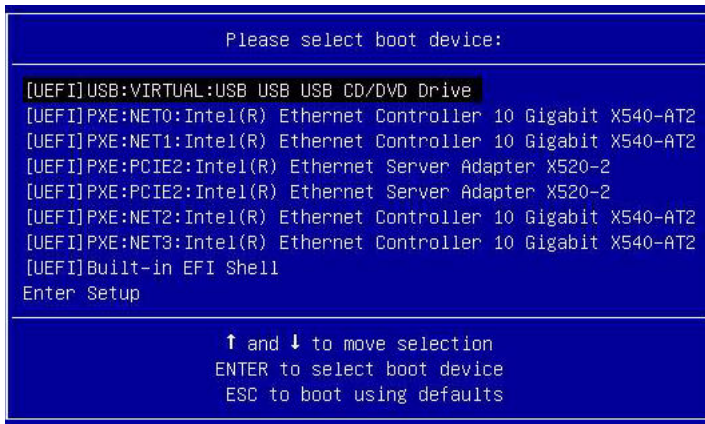
3. In the BIOS screen, press F8 to specify a temporary boot device for the RHEL installation.

The screen that appears will differ depending on whether you have BIOS configured for Legacy BIOS or UEFI BIOS.

- For Legacy BIOS, the following screen appears:



- For UEFI BIOS, the following screen appears:



Note – The boot device menu that appears in your installation might differ depending on the type of disk controller installed in your server.

- 4. In the Please Select Boot Device menu, select either the internal, external, or virtual CD/DVD device as the first boot device, then press Enter.**

After a few seconds, the splash screen for the RHEL installation appears. The bottom half of the splash screen lists instructions, function keys, and the boot prompt.

- 5. In the Red Hat Enterprise Linux splash screen, click Next to continue the normal user interactive installation.**

Alternately, for text mode, enter the following command:

```
boot: linux text
```

- 6. Continue the basic Red Hat installation setup by following the on-screen instructions and the Red Hat documentation.**

For detailed installation instructions, see the *Red Hat Enterprise Linux 6 Installation Guide* at:

https://access.redhat.com/site/documentation/Red_Hat_Enterprise_Linux/

Note – If the Oracle Linux 6.x OS or Oracle VM 3.2 software is preinstalled on the disk, you can choose to partition the disk to remove the preinstalled OS; or, you can choose to keep the preinstalled OS and partition the disk to support dual-boot operating systems.

- 7. After completing the basic Red Hat installation setup, perform the following post-installation tasks:**

- a. **Configure your system for automatic updates.**
Refer to Red Hat documentation for more information.
- b. **If required, download and install the latest errata and bug fixes for RHEL 6.4.**
Refer to Red Hat documentation for more information.
- c. **Review and, if necessary, perform the post installation tasks described later in this chapter.**
Refer to “Post Installation Tasks for RHEL” on page 66.

▼ Install RHEL 5.x or 6.x Using PXE Network Boot

The following procedure describes how to boot the Red Hat Enterprise Linux (RHEL) 5.9, 5.10, 6.4, or 6.5 from a PXE network environment. It assumes that you are booting the install media from RHEL 5.9, 5.10, 6.4, or 6.5 KickStart image (network repository).

KickStart is Red Hat’s automated installation method. It enables a system administrator to create a single image containing the settings for some or all installation and configuration parameters that are normally provided during a typical Red Hat Linux installation. Typically, a KickStart image is placed on a single network server and read by multiple systems for installation.

The following requirements must be met prior to performing the RHEL from a PXE network boot environment:

- If you are using a KickStart image to perform the installation, you must:
 - Create a KickStart file.
 - Create the boot media with the KickStart file or make the KickStart file available on the network.
- To use PXE to boot the installation media over the network, you must:
 - Configure the network (NFS, FTP, HTTP) server to export the installation tree.
 - Configure the files on the TFTP server necessary for PXE booting.
 - Configure the server’s MAC network port address to boot from the PXE configuration.
 - Configure the Dynamic Host Configuration Protocol (DHCP).

Follow the PXE network installation instructions in the *Red Hat Enterprise Linux 5: System Administration Guide* at:

https://access.redhat.com/site/documentation/Red_Hat_Enterprise_Linux/

1. **Ensure that the PXE network environment is properly set up and the RHEL installation media is available for PXE boot.**

Note – To ensure the fastest possible network performance, Oracle recommends that you configure your network switch(es) to either `auto-negotiate` or to the highest line speed the switch(es) support, up to the maximum speed (10 Gb/s) supported by the server Ethernet ports (NET 0 - NET 3).

2. Reset or power on the server.

For example, to reset the server:

- **From the local server**, press the Power button (approximately 1 second) on the front panel of the server to power off the server, then press the Power button again to power on the server.
- **From the Oracle ILOM web interface**, click Host Management > Power Control and select Reset from the Select Action list box.
- **From the Oracle ILOM CLI on the server SP**, type: `reset /System`
The BIOS screen appears.



Note – The next events occur very quickly; therefore, focused attention is needed for the following steps. Watch carefully for these messages as they appear on the screen for a brief time. You might want to enlarge the size of your screen to eliminate scroll bars.

3. In the BIOS screen, press F8 to specify a temporary boot device for the RHEL installation.

The screen that appears will differ depending on whether you have BIOS configured for Legacy BIOS or UEFI BIOS.

Note – RHEL 5.9 and 5.10 only support Legacy BIOS; RHEL 5.9 and 5.10 do not support UEFI BIOS.

- For RHEL 5.x, the following screen appears:

```
      Please select boot device:

USB:VIRTUAL:AMI Virtual CDROM 1.00
SATA:HDD:P4: DV-W28SS-V
USB:USBIN:ORACLE SSM PMAP
SAS:PCIE1:Bus 00-120F06A5 HITACHI H10603
Enter Setup

      ↑ and ↓ to move selection
      ENTER to select boot device
      ESC to boot using defaults
```

- For RHEL 6.x in Legacy BIOS, the following screen appears:

```
      Please select boot device:

SAS:PCIE4:Bus 00-1210B675 HITACHI H10603
USB:USBIN:ORACLE SSM PMAP
SAS:PCIE4:Bus 00-121110ED HITACHI H10603
SAS:PCIE4:Bus 00-BC1EB8A4 LSI Logica
SAS:PCIE4:Bus 00-87BF55D5 LSI Logica
SAS:PCIE4:Bus 00-1210B4D9 HITACHI H10603
SAS:PCIE4:Bus 00-120FACA1 HITACHI H10603
PXE:NET0:IBA XE Slot 2000 v2193
PXE:NET1:IBA XE Slot 2001 v2193
Enter Setup

      ↑ and ↓ to move selection
      ENTER to select boot device
      ESC to boot using defaults
```

- For RHEL 6.x in UEFI BIOS mode, the following screen appears:

```
      Please select boot device:

[UEFI]USB:VIRTUAL:USB USB CD/DVD Drive
[UEFI]PXE:NET0:Intel(R) Ethernet Controller 10 Gigabit X540-AT2
[UEFI]PXE:NET1:Intel(R) Ethernet Controller 10 Gigabit X540-AT2
[UEFI]PXE:PCIE2:Intel(R) Ethernet Server Adapter X520-2
[UEFI]PXE:PCIE2:Intel(R) Ethernet Server Adapter X520-2
[UEFI]PXE:NET2:Intel(R) Ethernet Controller 10 Gigabit X540-AT2
[UEFI]PXE:NET3:Intel(R) Ethernet Controller 10 Gigabit X540-AT2
[UEFI]Built-in EFI Shell
Enter Setup

      ↑ and ↓ to move selection
      ENTER to select boot device
      ESC to boot using defaults
```

Note – The boot device menu that appears in your installation might differ depending on the type of disk controller installed in your server.

4. In the Please Select Boot Device menu, select the network port that is configured to communicate with your PXE network install server, then press Enter.

The network bootloader loads and a boot prompt appears. After a few seconds the installation kernel will begin to load.

5. To continue the installation, do one of the following:

- For Red Hat 5.x, go to [Step 5 of “Install RHEL 5.x Using Local or Remote Media” on page 57.](#)
- For Red Hat 6.x, go to [Step 6 of “Install RHEL 6.x Using Local or Remote Media” on page 60.](#)

Post Installation Tasks for RHEL

After completing the Red Hat Enterprise Linux (RHEL) installation, you should review the following post installation task and perform the tasks that are applicable to your system.

- [“Register RHEL and Activate Automatic Updates” on page 66](#)
- [“\(Optional\) Install Oracle Unbreakable Enterprise Kernel for Linux on RHEL Using Local or Remote Console” on page 66](#)

Register RHEL and Activate Automatic Updates

After installing Red Hat Enterprise Linux (RHEL), you should activate your RHEL subscription to receive automatic updates to the software. For more details, see Red Hat Support at:

<https://www.redhat.com/support/>

(Optional) Install Oracle Unbreakable Enterprise Kernel for Linux on RHEL Using Local or Remote Console

After you have installed the Red Hat Enterprise Linux (RHEL) OS, you have the option of installing and using the Oracle Unbreakable Enterprise Kernel Release 2 or Release 3, depending on which version of the RHEL you installed.

- If you installed RHEL 5.9 or 5.10, you can replace the default RHEL kernel with Oracle Unbreakable Enterprise Kernel Release 2 for Linux. For instructions for installing Oracle Unbreakable Enterprise Kernel Release 2 for Linux, go to: https://oss.oracle.com/ol6/docs/RELEASE-NOTES-UEK2-en.html#ol_instav
- If you installed RHEL 6.4 or 6.5, you can replace the default RHEL kernel with Oracle Unbreakable Enterprise Kernel Release Release 3 for Linux. For instructions for installing Oracle Unbreakable Enterprise Kernel Release 3 for Linux, go to: https://oss.oracle.com/ol6/docs/RELEASE-NOTES-UEK3-en.html#ol_instav

Installing SUSE Linux Enterprise Server on a Single System Using Media

This section provides instructions for installing SUSE Linux Enterprise Server (SLES) 11 for x86 (64-bit).

The following topics are covered:

- “SLES 11 Installation Task Map” on page 67
- “Before You Begin” on page 68
- “Install SLES 11 Using Local or Remote Media” on page 69
- “Install SLES 11 Using PXE Network Boot” on page 78
- “Post Installation Tasks for SLES 11” on page 80

SLES 11 Installation Task Map

These procedures describe the installation steps for the SUSE Linux Enterprise Server (SLES) 11 operating system.

Step	Description	Instructions
1.	Install your server hardware and configure the Oracle ILOM service processor.	<ul style="list-style-type: none"> • <i>Sun Server X4-2 Installation Guide</i>, “Installing the Server Into a Rack” on page 39 • <i>Sun Server X4-2 Installation Guide</i>, “Cabling the Server” on page 77 • <i>Sun Server X4-2 Installation Guide</i>, “Connecting to Oracle ILOM” on page 85
2.	Obtain the SLES installation media.	Go to: https://www.suse.com/products/server/
3.	Review the product notes.	<i>Sun Server X4-2 Product Notes</i> at: http://www.oracle.com/goto/x4-2/docs
4.	Set up the console, the SLES media, and the installation target that you will use to perform the installation.	<ul style="list-style-type: none"> • “Selecting the Console Display Option” on page 3 • “Selecting the Boot Media Option” on page 5 • “Selecting the Installation Target Option” on page 7
5.	Set BIOS settings for new OS installations.	“Setting Up BIOS” on page 15
6.	Install the SLES OS.	<ul style="list-style-type: none"> • “Install SLES 11 Using Local or Remote Media” on page 69 • “Install SLES 11 Using PXE Network Boot” on page 78
7.	Perform the post installation tasks, if applicable.	“Post Installation Tasks for SLES 11” on page 80

Before You Begin

Ensure that the following requirements are met:

- The console display option should have been selected and set up prior to performing the installation. For more information about this option and setup instructions, see “Selecting the Console Display Option” on page 3.
- The boot media option should have been selected and set up prior to performing the installation. For more information about this option and setup instructions, see “Selecting the Boot Media Option” on page 5.

- The installation target option should have been selected and set up prior to performing the installation. For more information about this option and setup instructions, see [“Selecting the Installation Target Option” on page 7](#).
- Verify that the BIOS settings are set correctly. For instructions on how to verify and, if necessary, set the BIOS settings, see [“Setting Up BIOS” on page 15](#).
- For local installation, have the SLES OS installation media available to insert into the attached physical CD/DVD-ROM drive when prompted.
- For remote installation, insert the SLES OS installation media into the Oracle ILOM Remote Console system’s CD/DVD-ROM drive. Ensure that you have selected CD-ROM from the Oracle ILOM Remote Console system’s Devices menu.
- If you are using an SLES OS image, ensure that the SLES OS ISO image is accessible from the Oracle ILOM Remote Console system. Ensure that you have selected CD-ROM Image from the Oracle ILOM Remote Console system’s Devices menu.
- All applicable installation prerequisites for installing an operating system should have been met. For further information about these prerequisites, see [“Preparing to Install the Operating System” on page 15](#).

▼ Install SLES 11 Using Local or Remote Media

This procedure describes how to boot the SUSE Linux Enterprise Server (SLES) 11 operating system from local or remote media. It assumes that you are booting the SLES 11 installation media from one of the following sources:

- SLES 11 SP2 or SP3 CD or DVD set (internal or external CD/DVD)
- SLES 11 SP2 or SP3 ISO DVD image

Note – If you are booting the installation media from a PXE environment, refer to [“Install SLES 11 Using PXE Network Boot” on page 78](#) for boot instructions.

For further details about installing SLES 11 SP2 or SP3, see the SUSE Linux Enterprise Server documentation collection at:

<https://www.suse.com/documentation/sles11/>

1. Ensure that the install media is available to boot.

- **For Distribution CD/DVD.** Insert the SLES 11 SP2 or SP3 boot disc (CD labeled number 1 or DVD) into the local or external CD/DVD-ROM drive.

- **For ISO images.** Ensure that the SLES 11 SP2 or SP3 ISO image is available and that the boot disc image (CD labeled number 1 or DVD) has been selected in the Oracle ILOM Remote Console application (Devices menu > CD-ROM Image).

For additional information about how to set up the install media, see [“Selecting the Boot Media Option”](#) on page 5.

2. Reset or power on the server.

For example, to reset the server:

- **From the local server,** press the Power button (approximately 1 second) on the front panel of the server to power off the server, then press the Power button again to power on the server.
- **From the Oracle ILOM web interface,** click Host Management > Power Control and select Reset from the Select Action list box.
- **From the Oracle ILOM CLI on the server SP,** type: `reset /System`

The BIOS screen appears.



Note – The next events occur very quickly; therefore, focused attention is needed for the following steps. Watch carefully for these messages as they appear on the screen for a brief time. You might want to enlarge the size of your screen to eliminate scroll bars.

3. In the BIOS screen, press F8 to specify a temporary boot device for the SLES OS installation.

The Please Select Boot Device menu appears. The screen that appears will be different depending on whether you have BIOS configured for Legacy BIOS or UEFI BIOS.

- For Legacy BIOS, the following screen appears:


```
Please select boot device:
-----
USB:VIRTUAL:AMI Virtual CDROM 1.00
SATA:HDD:P4: DV-W28SS-V
USB:USBIN:ORACLE SSM PMAP
SAS:PCIE1:Bus 00-120F06A5 HITACHI H10603
Enter Setup
-----
↑ and ↓ to move selection
ENTER to select boot device
ESC to boot using defaults
```

- For UEFI BIOS, the following screen appears:

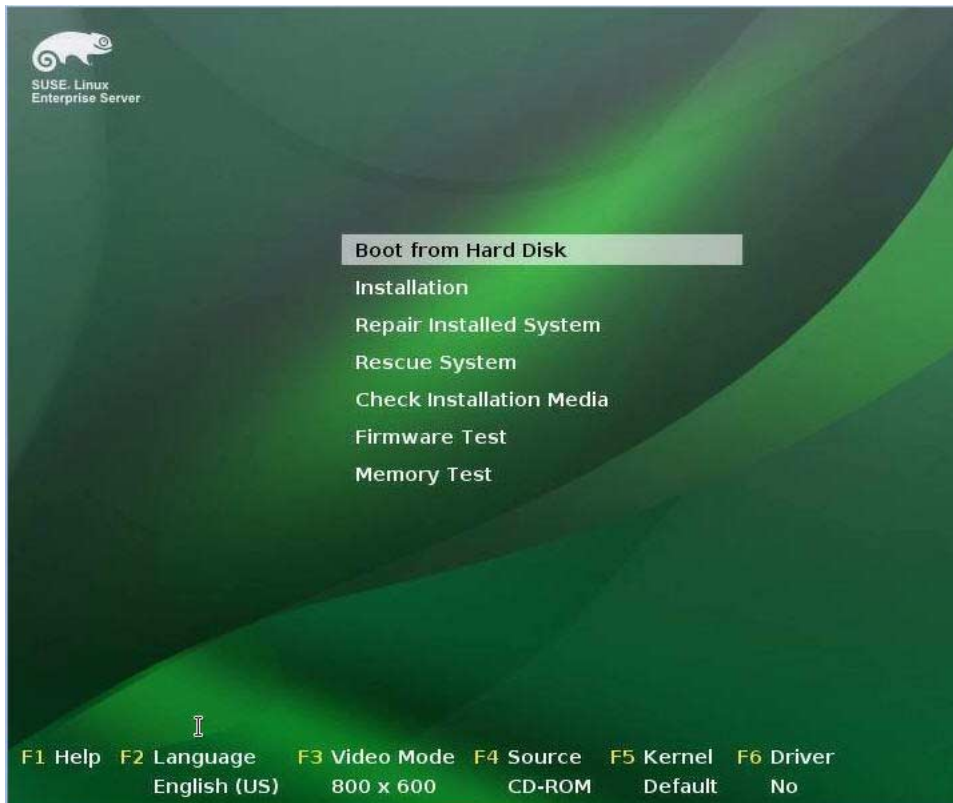
```
Please select boot device:
-----
[UEFI]USB:VIRTUAL:AMI Virtual CDROM 1.00
[UEFI]PXE:NET0:Intel(R) Ethernet Controller X540-AT2
[UEFI]PXE:NET1:Intel(R) Ethernet Controller X540-AT2
[UEFI]PXE:NET2:Intel(R) Ethernet Controller X540-AT2
[UEFI]PXE:NET3:Intel(R) Ethernet Controller X540-AT2
Enter Setup
-----
↑ and ↓ to move selection
ENTER to select boot device
ESC to boot using defaults
```

Note – The boot device menu that appears in your installation might differ depending on the type of disk controller installed in your server.

4. In the **Please Select Boot Device** menu, select the menu item according to the **SLES OS media installation method** and the **BIOS mode** you elected to use, then press **Enter**.

For example, if you elected to use the Oracle ILOM Remote Console delivery method, select `USB:VIRTUAL:AMI VIRTUAL CDROM 1.00` from the Legacy BIOS screen or `[UEFI]USB:VIRTUAL:AMI VIRTUAL CDROM 1.00` from the UEFI BIOS screen.

The SUSE Linux boot screen appears.

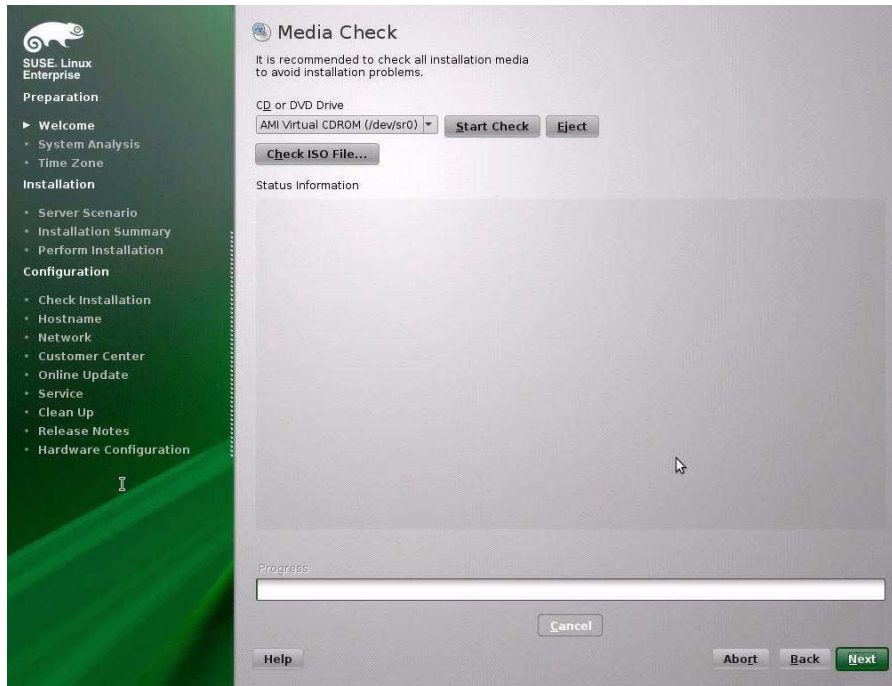


5. In the SUSE Linux boot screen, use the tab key to select the second option Installation, then press Enter.
The Welcome screen appears.



6. In the Welcome screen, do the following
 - a. Select the appropriate Language.
 - b. Select the Keyboard layout.
 - c. Read and accept the License Agreement.
 - d. Click Next.

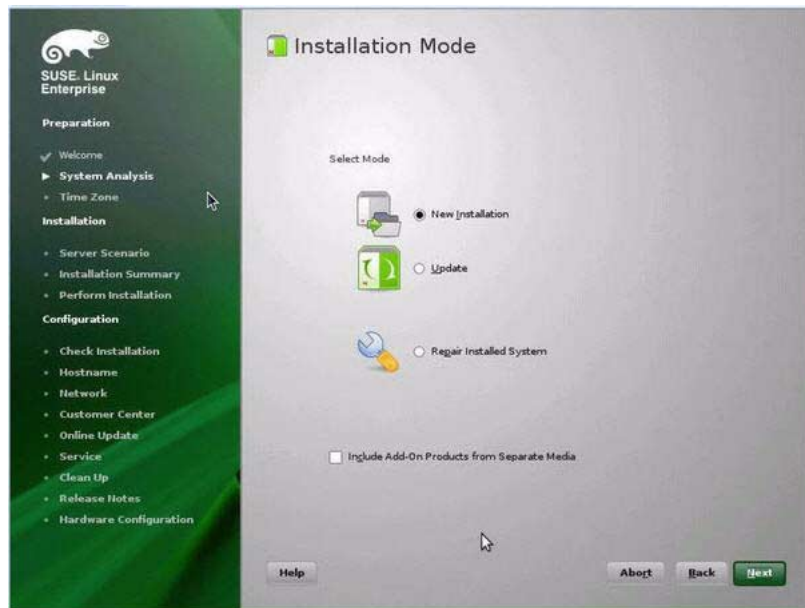
The Media Check screen appears.



7. If this the first time that you are doing an install from this media, it is recommended that you test the media; otherwise, click **Next** and proceed to [Step 9](#).
8. To check the media, do the following:
 - a. Select the media type and click the **Start Check** button.
 - b. When the media check completes, click **Next**.
The System Probing screen appears.



Upon completion of the system analysis, the Installation Mode screen appears.



9. In the Installation Mode screen, select **New Installation**, then click **Next**.

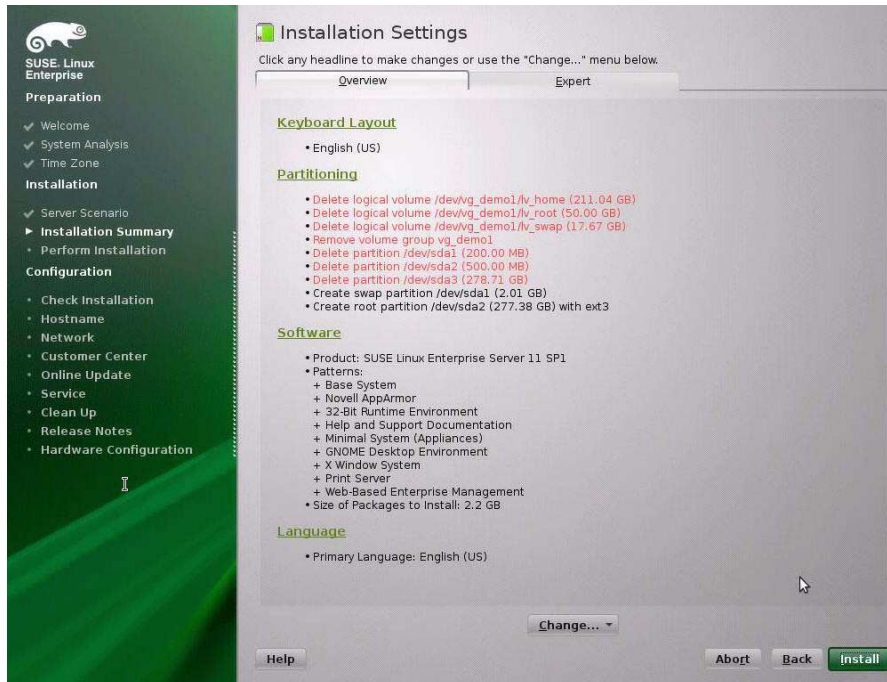
The Clock and Time Zone screen appears.

10. In the Clock and Time Zone screen, select the appropriate region and time zone, then click **Next**.

The Server Base Scenario screen appears.

11. In the Server Base Scenario screen, select **Physical Machine**, then click **Next**.

The Installation Settings screen appears.



12. In the Installation Settings screen, do either of the following:

- Click **Install** to accept the installation settings shown.
or
- Click **Change** to edit the settings, then click **Install** to install with the changes.

Note – For more information about how to create custom partitions or edit other installation settings, refer to the SLES 11 documentation.

The Confirm Package License screen appears.

13. In the Confirm Package License screen, do the following:

a. Read the License Agreement.

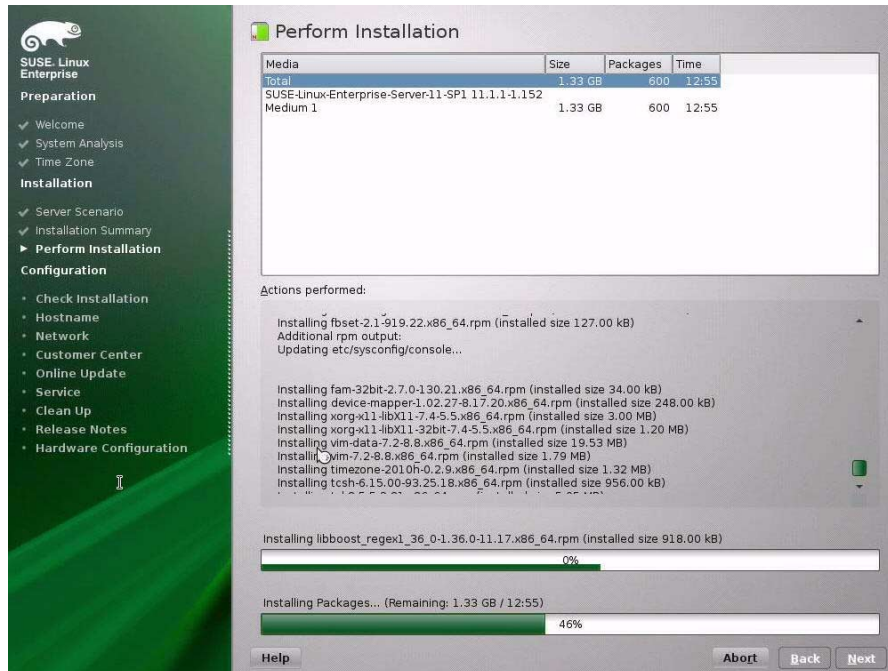
b. Click I Agree.

c. Click Install.

A Confirm Installation dialog appears.

14. In the Confirm Installation dialog, read the message and click Install to start the installation.

The Perform Installation dialog appears.



15. Continue the basic installation setup until all the SLES 11 OS files are installed and the system reboots.

16. After the completing the basic installation setup and the system reboots, refer to the SLES 11 documentation to perform the following tasks:

a. Create a password for your account.

b. Configure and test the Internet access and network settings.

c. Register the OS and download the latest updates available to the operating system.

17. Review and, if necessary, perform the post installation tasks described in "Post Installation Tasks for SLES 11" on page 80.

Related Information

- “Post Installation Tasks for SLES 11” on page 80

▼ Install SLES 11 Using PXE Network Boot

This procedure describes how to boot SUSE Linux Enterprise Server (SLES) 11 from a PXE network environment. It assumes that you are booting the install media from the following source:

- SLES 11 SP2 or SP3 AutoYaST image (network repository)

AutoYaST enables you to install the SLES operating system on multiple systems. For information about how to prepare an automated installation using AutoYaST, refer to the SUSE documentation collection at:

<https://www.suse.com/documentation/sles11/>

The following requirements must be met prior to performing the SLES 11 installation from a PXE network boot environment:

- If you are using AutoYaST to perform the installation, you must:
 - Create the AutoYast profile.
Follow the AutoYaST installation instructions in the SUSE Linux Enterprise Server 11 documentation.
- To use PXE to boot the installation media over the network, you must:
 - Configure the network (NFS, FTP, HTTP) server to export the installation tree.
 - Configure the files on the TFTP server necessary for PXE booting.
 - Configure the server MAC network port address to boot from the PXE configuration.
 - Configure the Dynamic Host Configuration Protocol (DHCP).

Follow the setup instructions for booting SUSE media over the network in the SUSE Linux Enterprise Server documentation

After completing this procedure, you might need to perform the “Post Installation Tasks for SLES 11” on page 80.

1. **Ensure that the PXE network environment is set up properly and the SLES installation media is available for PXE boot.**

Note – To ensure the fastest possible network performance, Oracle recommends that you configure your network switch(es) to either `auto-negotiate` or to the highest line speed the switch(es) support, up to the maximum speed (10 Gb/s) supported by the server Ethernet ports (NET 0 - NET 3).

2. Reset or power on the server.

For example, to reset the server:

- **From the local server**, press the Power button (approximately 1 second) on the front panel of the server to power off the server, then press the Power button again to power on the server.
- **From the Oracle ILOM web interface**, click Host Management > Power Control and select Reset from the Select Action list box.
- **From the Oracle ILOM CLI on the server SP**, type: `reset /System`

The BIOS screen appears.



Note – The next events occur very quickly; therefore, focused attention is needed for the following steps. Watch carefully for these messages as they appear on the screen for a brief time. You might want to enlarge the size of your screen to eliminate scroll bars.

3. In the BIOS screen, press F8 to specify a temporary boot device.

The Please Select Boot Device menu appears listing the available boot device.

4. In the boot device menu, select the PXE install boot device (physical port) that is configured to communicate with your PXE network install server, then press Enter.

The network bootloader loads and a boot prompt appears. Wait for the five second time-out and the installation kernel will begin to load.

The initial SUSE Linux boot screen appears.

5. To continue the installation, proceed to [Step 5 in “Install SLES 11 Using Local or Remote Media”](#) on page 69.

Related Information

- [“Post Installation Tasks for SLES 11”](#) on page 80

Post Installation Tasks for SLES 11

After installing SUSE Linux Enterprise Server (SLES) 11 SP2 or SP3, you should perform the task:

- [“Update the SLES Operating System” on page 80](#)

▼ Update the SLES Operating System

The SUSE Linux Enterprise Server (SLES) OS installation media might not contain the most up-to-date versions of the operating system. The following procedure describes how to update the SLES OS on your server.

1. **Log in to the SLES server as superuser.**
2. **Type the following command to run the YaST Online Update:**

```
# you
```

Note that YaST can operate in both text and graphical modes. These directions apply to both.

3. **If your server is behind a network firewall and you need to use a proxy server to access the Internet, you must first configure YaST with the correct proxy information.**
 - a. **Select the Network Services tab, then the Proxy screen on the right. Type the correct proxy URLs in both the HTTP and HTTPS fields.**

Note – In order for the on-line update service to function correctly through a network HTTP or HTTPS proxy, the following additional configuration step must be performed.

- b. **Exit the YaST utility and run the following command:**

```
rug set-prefs proxy-url proxy_URL
```

Where *proxy_URL* is the fully qualified URL of your proxy server (for example: `http://proxy.yourdomain:3128/`).

- c. **After successfully running the command, launch YaST again.**

4. **Register with the SUSE Customer Center.**

Note – You will need your SUSE Customer Center user name and password, as well as an SLES product activation code.

- a. **Select the Software tab.**

- b. Select SUSE Customer Center Configuration and follow the directions.**
- 5. Once registered, select the Online Update tab to perform the software update.**

Configuring Network Interfaces

This section contains information about:

- [“NIC Connectors” on page 83](#)

NIC Connectors

The network interface card (NIC) connectors are labeled physically on the server as follows.

TABLE: Intel NIC Connector Label

Intel NIC Connector Label	Interface Type
net0	First interface (Intel ixgbe 0)
net1	Second interface (Intel ixgbe 1)
net2	Third interface (Intel ixgbe 2)
net3	Fourth interface (Intel ixgbe 3)

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

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