Oracle® Server X5-2L Installation Guide for Linux Operating Systems

Part No: E48330-06
October 2016

Oracle Server X5-2L Installation Guide for Linux Operating Systems

Part No: E48330-06

Access to Oracle Support

Oracle customers that have purchased support have access to electronic support through My Oracle Support. For information, visit `http://www.oracle.com/pls/topic/lookup?ctx=acc&id=info` or visit `http://www.oracle.com/pls/topic/lookup?ctx=acc&id=trs` if you are hearing impaired.

Référence: E48330-06

Accès aux services de support Oracle

Les clients Oracle qui ont souscrit un contrat de support ont accès au support électronique via My Oracle Support. Pour plus d'informations, visitez le site `http://www.oracle.com/pls/topic/lookup?ctx=acc&id=info` ou le site `http://www.oracle.com/pls/topic/lookup?ctx=acc&id=trs` si vous êtes malentendant.

Contents

Using This Documentation

- **Overview** – This installation guide contains procedures for installing the Linux operating systems, and initial software configuration procedures for bringing the Oracle Server X5-2L to a configurable and usable state.
- **Audience** – Technicians, system administrators, authorized service providers, and system users.
- **Required knowledge** – Experience installing operating systems.

Product Documentation Library

Documentation and resources for this product and related products are available at http://www.oracle.com/goto/X5-2l/docs.

Feedback

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

About Linux Operating System Installs

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

Description	Links
Review which Linux operating systems are supported.	“Supported Linux Operating Systems” on page 9
Review the Oracle Unbreakable Enterprise Kernel for Linux and where it can be used.	“Oracle Unbreakable Enterprise Kernel for Linux” on page 10
Review console display options and how to set them up.	“Selecting the Console Display Option” on page 11
Review boot media options and how to set them up.	“Selecting the Boot Media Option” on page 13
Review installation target options and how to set them up.	“Selecting the Installation Target Option” on page 17
Review OS installation options.	“Linux OS Installation Options” on page 19
Review Oracle System Assistant.	“Oracle System Assistant Overview” on page 21

Related Information

- “Installing a Linux Operating System ” on page 31

Supported Linux Operating Systems

The server supports the following Linux operating systems:

Linux OS Version	Edition
Oracle	Oracle Linux 6.5, 6.6, and 7 for x86 (64-bit) with the Oracle Unbreakable Enterprise Kernel for Linux Release 3 Update 3 **Note -** Optionally, the Red Hat Compatible Kernel can be used on Oracle Linux 6.5, 6.6, and 7 for x86 (64-bit).
Red Hat	Red Hat Enterprise Linux 6.5, 6.6, and 7 for x86 (64-bit)

Linux OS Version	Edition
SUSE	SUSE Linux Enterprise Server (SLES) 11 SP3 (64-bit), and SLES 12

Additionally, you can install any other supported operating system or virtual machine software on your server. Refer to the latest version of the *Oracle Server X5-2L Product Notes* at `http://www.oracle.com/goto/X5-2l/docs`.

The Oracle Solaris Hardware Compatibility List (HCL) identifies the latest operating system version supported on Oracle hardware. To find the latest versions of Linux supported for the server, go to the following sites and search using your server model number:

- Red Hat Enterprise Linux –`https://access.redhat.com/certifications`
- SUSE Linux Enterprise Server – `https://www.suse.com/yessearch/Search.jsp`
- Oracle Linux –`http://linux.oracle.com/pls/apex/f?p=117:1:3991604960223967`

Note - If the Oracle Linux 6.5 OS was preinstalled, it was installed with the server set to Legacy BIOS. If you choose to boot the server in UEFI Boot Mode, the preinstalled image is not accessible. Therefore, if you want to use the Oracle Linux 6.5 OS with the UEFI/ BIOS Boot Mode set to UEFI, you must perform a fresh installation of Oracle Linux 6.5 OS.

Related Information

- “Installing a Linux Operating System ” on page 31

Oracle Unbreakable Enterprise Kernel for Linux

Release 3 of the Oracle Unbreakable Enterprise Kernel for Linux is supported in this release of the server software. Release 3 is installed by default on Oracle Linux 6.5, 6.6, and 7, and can be installed on Red Hat Enterprise Linux 6.5, 6.6, and 7. 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 3 for Linux: For the latest information about operating system compatibility and pointers to installation information, refer to *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 31

Selecting the Console Display Option

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

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 any of the four exterior 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 System Console Plus 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.**

      The default Oracle ILOM user name is `root` and the default password is `changeme`.

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) 3.2 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 log in to Oracle ILOM remotely using either the command-line interface (CLI) or the web interface, you must know the IP address of the server's service processor (SP). For instructions, refer to "Viewing or Modifying the Service Processor Network Settings" in *Oracle Server X5-2L Installation Guide* .

2. **If you are using a web-based client connection, perform these steps; otherwise go to the step 3.**

   a. **In a web browser, type the IP address for the server SP.**

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

      The default Oracle ILOM user name is `root` and the default password is `changeme`.

   c. **Redirect the video output from the server to the web client by launching the Oracle ILOM Remote System Console Plus application.**

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. Type: `ssh root@`*hostname*, where *hostname* can be the DNS name or the IP address for the server SP).**

   b. **Log in to Oracle ILOM.**

      The default Oracle ILOM user name is `root` and the default password is `changeme`.

c. Redirect the video output from the server to the web client by launching the Oracle ILOM Remote System Console Plus application.

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

Related Information

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

Selecting the Boot Media Option

You can start the operating system installation to the 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 13
- "Set Up the Boot Media for a Local Installation" on page 14
- "Set Up the Boot Media for a Remote Installation" on page 15

Boot Media Options Requirements

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

- "Local Boot Media Requirements" on page 13
- "Remote Boot Media Requirements" on page 14

Local Boot Media Requirements

Local boot media requires 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 boot media enable you to boot the install over the network. You can start the installation from a redirected boot storage device or another networked system that exports the ISO image over the network using a PreBoot eXecution Environment (PXE).

Supported OS remote boot media sources can include:

- CD/DVD-ROM installation media installed in remote DVD drive, and a remote USB removable flash drive installation media
- CD/DVD ISO image available in a location on the network that is setup for virtual redirection
- CD/DVD-ROM installation media image mounted on the server service processor (SP)

  For instructions on mounting an installation image onto the server SP, refer to the *Oracle ILOM Administrator's Guide for Configuration and Maintenance* at `http://www.oracle.com/goto/ILOM/docs`. Alternatively, refer to the More Details link in the Oracle ILOM Remote Control → Remote Device web interface page.
- 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 6.5, 6.6, or 7 OS Using PXE Network Boot” on page 64
  - “Install RHEL 6.5, 6.6, or 7 OS Using PXE Network Boot” on page 72
  - “Install SLES OS Using PXE Network Boot” on page 101

▼ Set Up the Boot Media for a Local Installation

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 have a DVD drive, insert an external USB DVD drive or 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, refer to “Server Features and Components” in *Oracle Server X5-2L Installation Guide*.

▼ Set Up the Boot Media for a Remote Installation

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 the 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 is readily available on a network shared location or is mounted on the server service processor (SP).

   For instructions on mounting an installation image onto the server SP, refer to the *Oracle ILOM Administrator's Guide for Configuration and Maintenance* at `http://www.oracle.com/goto/ILOM/docs`. Alternatively, refer to the More Details link in the Oracle ILOM Remote Control → Remote Device web interface page.

2. **Establish a web-based client connection to the server Oracle ILOM SP and launch the Oracle ILOM Remote System Console Plus application.**

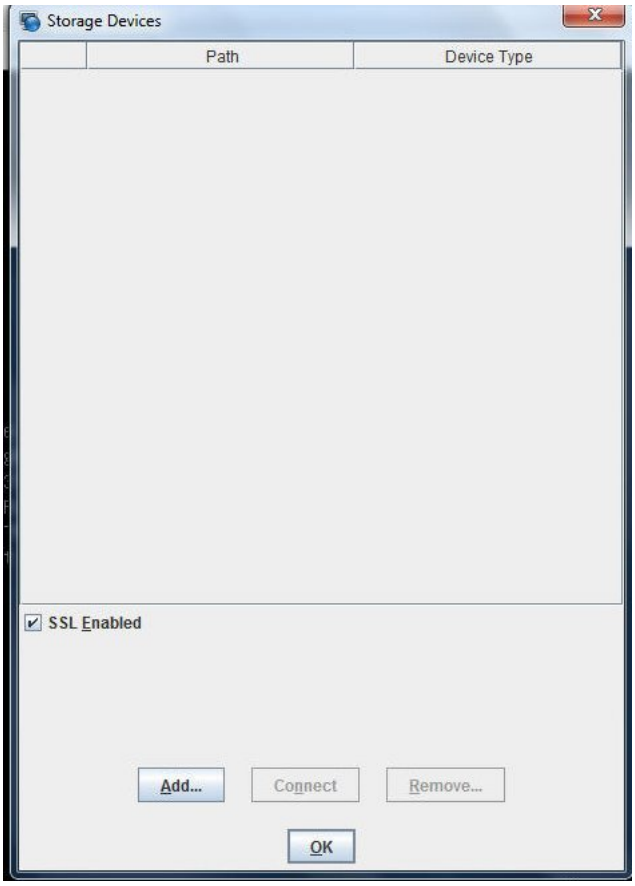
   For more details, see the setup requirements for web-based client connection in “Selecting the Console Display Option” on page 11.

3. **In the remote console, do the following:**

   a. **Click KVMS to display the KVMS drop-down menu.**

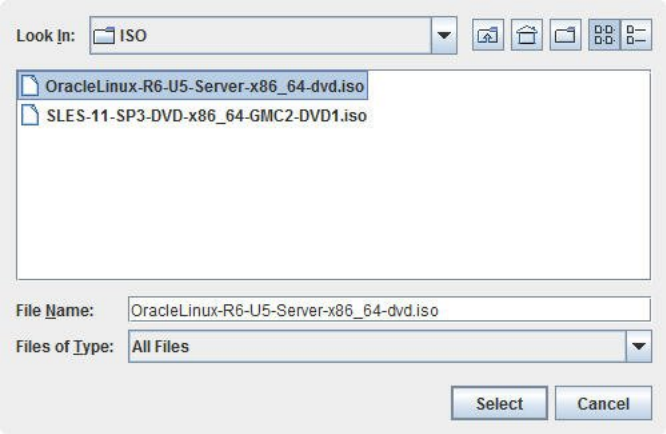
   b. **Click Storage.**

The Storage Devices dialog appears.



c. **In the Storage Devices dialog, click `Add`.**

The Add Storage Device dialog appears.



d. **Browse to the ISO image, select it, and click `Select`.**
The Storage Devices screen appears and lists the ISO image.

e. **Select the ISO image and click `Connect`.**
The ISO image is mounted to the remote console and can be used to perform the OS installation.

Selecting the Installation Target Option

This section describes how to set up the installation target.

- "Installation Target Options" on page 17
- "Set Up a Local Storage Drive (HDD or SSD) as the Installation Target" on page 18
- "Set Up a Fibre Channel Storage Area Network Device as the Installation Target" on page 19

Installation Target Options

With the exception of the embedded Oracle System Assistant USB flash drive (which is reserved for Oracle System Assistant) and the optional NVMe drives (located in the server front

panel), 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 - NVMe drives are not supported on Red Hat Enterprise Linux or SUSE Linux Enterprise Server operating systems. NVMe drives are supported only on servers running the Oracle Linux operating system; however, NVMe drives should not be used as installation targets because these drives do not support booting of operating systems.

For servers equipped with Fibre Channel (FC) PCIe host bus adapters (HBAs), you can choose to install the operating system to an external fibre channel 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. Do not overwrite this device when performing any of the following operations:

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

If 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, refer to the *Oracle X5 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 target drive (HDD or SSD) is properly installed and powered on.**

  For information about installing and powering on a HDD or SSD, refer to "Servicing Storage Drives and Rear Drives (CRU)" in *Oracle Server X5-2L Service Manual* .

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

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

   For information about installing a fibre channel PCIe HBA option, refer to "Servicing PCIe Cards (CRU)" in *Oracle Server X5-2L Service Manual* .

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/oem/ops-center/index.html`.
Single server	Install an OS to a single server using one of the following methods: ■ Locally: Perform the OS installation locally at the server. This option is recommended if you have just completed the physical installation of the server in the rack. ■ Remotely: Perform the OS installation from a remote location. Uses the Oracle ILOM Remote System Console Plus application to access the Oracle System Assistant or to perform a manual OS installation. **Note -** Oracle recommends the use of Oracle System Assistant for single server OS installations.

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

- "Single-Server Installation Methods" on page 20
- "Oracle System Assistant Overview" on page 21

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
Local assisted OS installation – Uses Oracle System Assistant. (Recommended)	A monitor, USB keyboard and mouse, a USB device, and OS distribution media. For more information, see "Assisted Linux OS Installation" on page 20.
Remote assisted OS installation – Uses Oracle System Assistant. (Recommended)	Oracle ILOM Remote System Console Plus application, a redirected CD/DVD drive or ISO image file, and OS distribution media. For more information, see "Assisted Linux OS Installation" on page 20.
Local OS install using a CD/DVD drive – Uses a physical CD/DVD drive connected to the server.	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 20.
Remote OS install using a CD/DVD drive or 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 System Console Plus 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 20.

Assisted Linux OS Installation

Assisted Linux OS installation is the recommended method for installing a supported OS on your server. This method uses Oracle System Assistant. You deliver the OS installation media on either a local or remote CD/DVD drive, USB device, or CD/DVD image. 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 the manual Linux OS installation 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 web 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, its own Oracle System Assistant functionality, 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 System Console Plus 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 configuring the server. Once the server is operational, you can conveniently access Oracle System Assistant remotely while still retaining full-featured functionally.

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:

- "Get Updates and Install OS Tasks" on page 21
- "Obtaining Oracle System Assistant" on page 22

For more information, refer to the *Oracle X5 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 retrieves 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, refer to the *Oracle X5 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 download instructions, refer to "Setting Up Software and Firmware Using Oracle System Assistant" in *Oracle Server X5-2L Installation Guide*.

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 X5 Series Servers Administration Guide* at `http://www.oracle.com/goto/x86AdminDiag/docs`.

Related Information

- *Oracle X5 Series Servers Administration Guide* at: `http://www.oracle.com/goto/x86AdminDiag/docs`

Preparing to Install a Linux Operating System

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

Description	Links
Verifying and setting the server UEFI optimized defaults.	“Preparing the Boot Environment” on page 23
Configuring boot mode.	“Set the Boot Mode ” on page 26
Configuring RAID on the server.	“Configuring RAID” on page 29

Related Information

- “Installing a Linux OS on a Single System Using Oracle System Assistant” on page 31
- “Installing Oracle Linux on a Single System Manually” on page 35
- “Installing Red Hat Enterprise Linux OS on a Single System Manually” on page 67
- “Installing SUSE Linux Enterprise Server OS on a Single System Manually” on page 76

Preparing the Boot Environment

Legacy BIOS Boot Mode is enabled by default. Because all supported Linux operating systems support both Legacy BIOS and Unified Extensible Firmware Interface (UEFI), you have the option of setting the boot mode to either Legacy BIOS or UEFI before you perform the OS installation. Before you install a Linux operating system, you should ensure that UEFI settings are configured to support the type of installation you plan to perform.

For detailed instructions for switching the BIOS mode from UEFI to Legacy BIOS, or vice versa, see the *Oracle X5 Series Servers Administration Guide* at `http://www.oracle.com/goto/x86AdminDiag/docs`.

Note - After you have installed the operating system, if you decide you want to switch from Legacy BIOS to UEFI Boot Mode, or vice versa, you must reinstall the operating system.

The following topics provide specific instructions on how to configure UEFI to support the installation:

- “Verify the UEFI Optimal Defaults” on page 24
- “Set the Boot Mode ” on page 26

For more information about changing boot properties, refer to the *Oracle X5 Series Servers Administration Guide* at `http://www.oracle.com/goto/x86AdminDiag/docs`.

▼ Verify the UEFI Optimal Defaults

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

In the BIOS Setup Utility, you can set optimal defaults, as well as view and edit UEFI settings, as needed. By setting optimal defaults, you ensure that the server is operating efficiently with a known and good configuration. You can review the optimal defaults in the *Oracle Server X5-2L Service Manual*.

Any changes you make in the BIOS Setup Utility using the F2 key are permanent until the next time you change them.

In addition to using the F2 key 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 using F2 will be in effect after booting from the temporary boot device.

Before You Begin 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, refer to “Servicing Storage Drives and Rear Drives (CRU)” in *Oracle Server X5-2L Service Manual* .
- A console connection is established to the server. For details, see “Selecting the Console Display Option” on page 11.

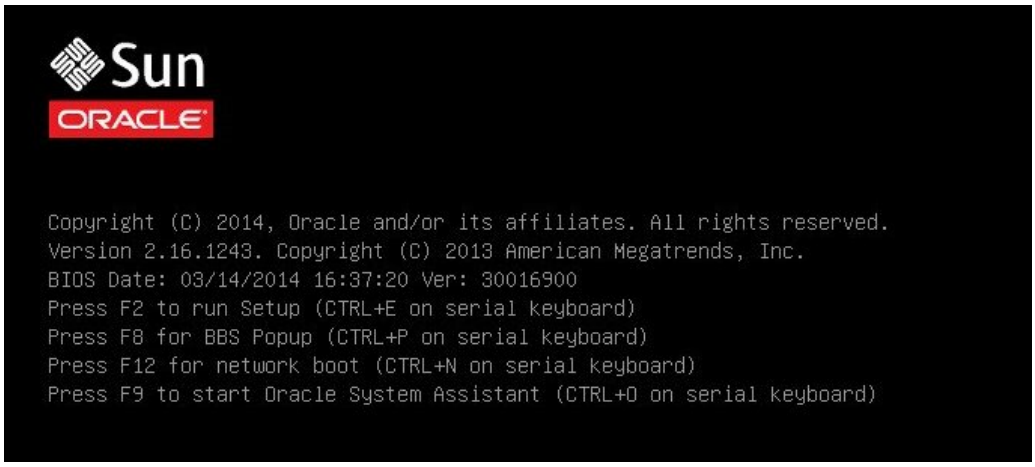
1. **Reset or power on the server.**

   For example, do one of the following:

   - **From the local server**, press the Power button (approximately 1 second) on the front panel of the server to turn the server off, then press the Power button again to power on the server.

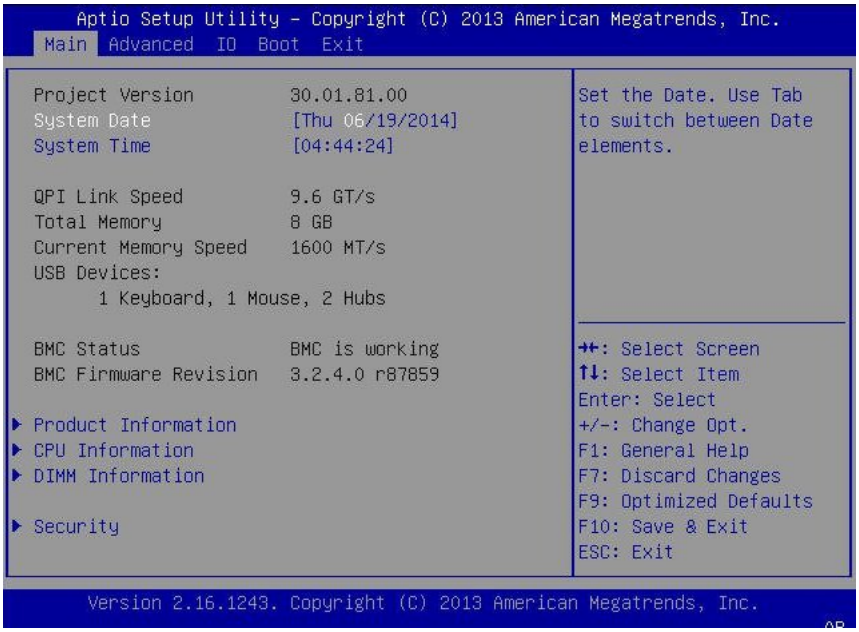
- **From the Oracle ILOM web interface**, click Host Management → Power Control, select Reset from the Select Action list box, then click Save.
- **From the Oracle ILOM CLI**, type: **`reset /System`**

The server begins the boot process. After a few moments, the BIOS screen appears.



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

`[Setup Selected]` and the Boot Mode (Legacy or UEFI) are displayed at the bottom of the BIOS screen. After a few moments, the BIOS Setup Utility appears.



3. **Press the F9 key to automatically load the optimal default settings.**
   A message appears prompting you to continue this operation by selecting `OK` or to cancel this operation by selecting `CANCEL`.
4. **In the message, highlight `OK`, and then press Enter.**
5. **To save your changes and exit the BIOS Setup Utility, press the F10 key.**
   Alternatively, you can select `Save and Exit` from the Exit menu.

▼ Set the Boot Mode

The server UEFI firmware supports both Legacy BIOS and UEFI boot modes. Legacy BIOS Boot Mode is enabled by default. Because all supported Linux operating systems support both Legacy BIOS and UEFI, you have the option of setting the boot mode to either Legacy BIOS or UEFI 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 Boot Mode, or vice versa, you must reinstall the operating system.

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

   For example, to reset the server, do one of the following:

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

   The server begins the boot process and the BIOS screen appears.

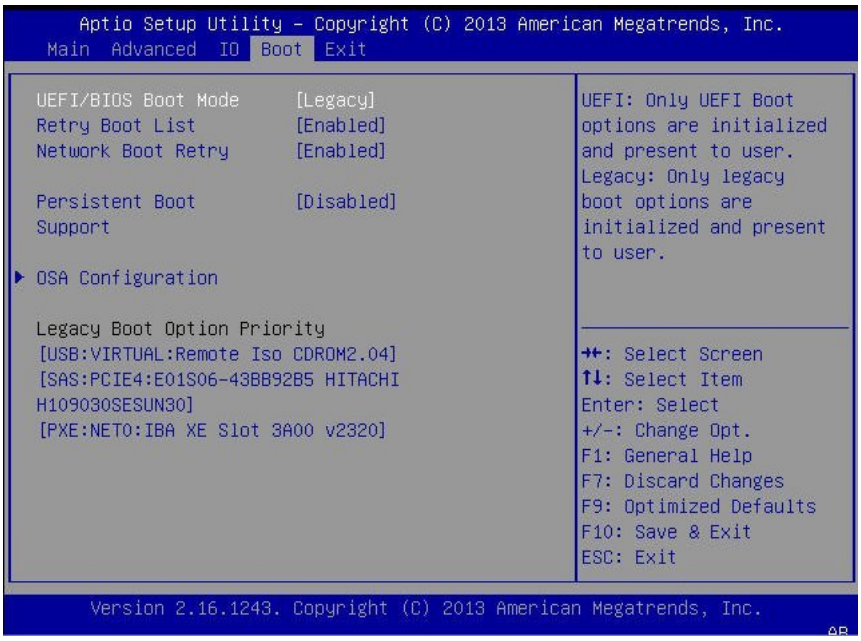
Note - The next steps occur very quickly so be ready to press the F2 key.

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

   After a few moments, the BIOS Setup Utility appears.

3. **In the BIOS Setup Utility, use the arrow keys to navigate to the Boot menu.**

The Boot Menu screen appears.



Note - The options in the boot order list differ depending on the storage drive configuration and whether you have enabled the Persistent Boot Support feature. For more information about Persistent Boot Support, refer to the *Oracle X5 Series Servers Administration Guide* at `http://www.oracle.com/goto/x86AdminDiag/docs`.

---

4. **Use the down arrow key to select the `UEFI/BIOS Boot Mode` field, and then press Enter.**

5. **Select your preferred boot mode, and then press Enter.**

6. **To save changes and exit BIOS, press the F10 key.**

Note - You must select the desired boot mode, Legacy BIOS or UEFI, before starting the operating system installation.

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 "Configuring Storage Drives for Operating System Installation" in *Oracle Server X5-2L Installation Guide*.

Note - If you are not using a preinstalled OS from Oracle, you must create a bootable volume on a drive before installing an OS. The system does not recognize a drive unless it has been incorporated into a volume by the HBA. Therefore, the volume that the OS is installed on must be set as the bootable volume.

Related Information

- *Oracle X5 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 on the server.

Description	Links
Using Oracle System Assistant to install a Linux operating system on a single server.	"Installing a Linux OS on a Single System Using Oracle System Assistant" on page 31
Using media to install the Oracle Linux operating system on a single server.	"Installing Oracle Linux on a Single System Manually" on page 35
Using media to install the Red Hat Enterprise Linux operating system on a single server.	"Installing Red Hat Enterprise Linux OS on a Single System Manually" on page 67
Using media to install the SUSE Linux Enterprise Server operating system on a single server.	"Installing SUSE Linux Enterprise Server OS on a Single System Manually" on page 76

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 31

▼ Install a Linux OS Using Oracle System Assistant

Before You Begin

Ensure that the following requirements are met:

- Perform the procedures in "Preparing to Install a Linux Operating System" on page 23.
- 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, refer to "Configuring Storage Drives for Operating System Installation" in *Oracle Server X5-2L Installation Guide*.

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 System Console Plus application has mounted the ISO image.

     For additional information about how to set up the installation media, see "Selecting the Boot Media Option" on page 13.

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

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

      The Oracle ILOM Summary Information page appears.

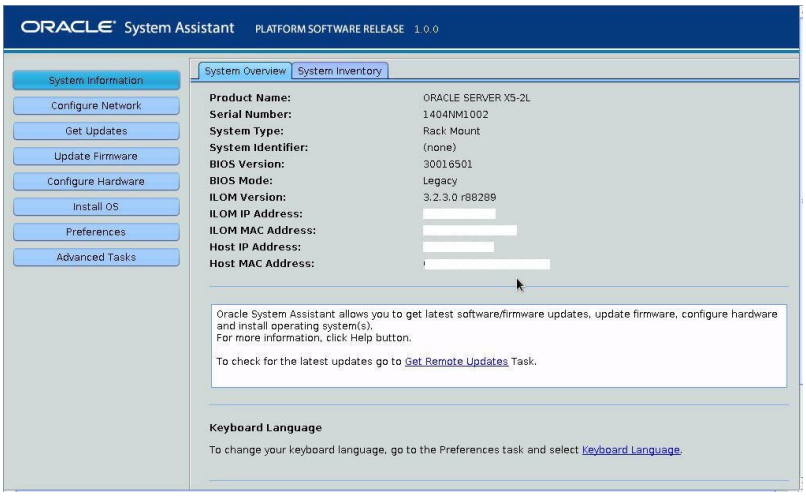
   b. **Ensure that the server is powered off.**

      The server power state is indicated in the Actions panel.

      If the server is powered on, a message appears instructing you to power off the host before attempting to launch Oracle System Assistant.

   c. **In the Actions panel on the Oracle ILOM Summary Information page, click the Oracle System Assistant Launch button.**

The Oracle ILOM Remote Console Plus window appears, and the server is powered on. After a few moments, the Oracle System Assistant System Overview screen appears.



d. Proceed to Step 4.

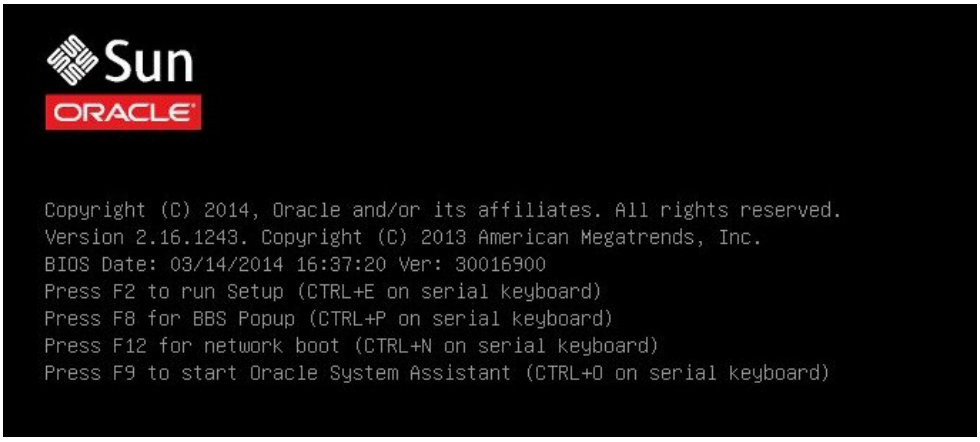
3. To launch Oracle System Assistant locally using BIOS, perform the following steps:

a. Connect a VGA monitor, USB keyboard, and mouse to the server.

b. Ensure that the server is powered off.

c. Power on the server.

d. **When prompted in the BIOS screen, press the F9 key to launch Oracle System Assistant.**



Note - The Oracle Assistant Overview screen might take a while to appear. Please be patient.

4. **To update your version of Oracle System Assistant, click the Get Updates button in Oracle System Assistant.**
   This action ensures that the server has the latest version of Oracle System Assistant 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 Linux OS, click the Install OS button.**
   The Operating System Installation screen appears.

7. **From the Supported OS drop-down list, select the Linux OS (Oracle Linux, Red Hat Enterprise Linux, or SUSE Linux Enterprise Server) that your want to install.**

8. **In the Current BIOS mode portion of the screen, select the BIOS mode (UEFI or Legacy BIOS) that you want to use for the Linux OS installation.**

9. **In the Select Your Install Media Location portion of the screen, select the location of the installation media.**
   This is the location of the OS distribution media. The options are CD/DVD and Network.

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

10. **In the Boot Disk portion of the screen, select the device to which the Linux OS will be installed.**

11. **Click Installation Details.**
    The Installation Details dialog appears.

12. **In the Installation Details dialog, deselect any items that you do not want to install.**

    Note - In the Installation Details dialog, the OS and Drivers options are mandatory and cannot be deselected.

13. **At the bottom of the Install Operating System screen, click the Install OS button.**

14. **Follow the prompts until the installation is finished.**
    The server boots.

15. **Perform the Linux operating system post installation tasks as required.**
    For post installation tasks, see the following sections:

    - “Post Installation Tasks for Oracle Linux 6.5, 6.6, or 7 OS” on page 67
    - “Post Installation Tasks for RHEL 6.5, 6.6, or 7 OS” on page 75
    - “Post Installation Tasks for SLES OS” on page 104

Installing Oracle Linux on a Single System Manually

This section provides information about installing the Oracle Linux 6.5, 6.6, or 7 for x86 (64-bit) operating system.

- “Oracle Linux 6.5, 6.6, or 7 OS Installation Task Map” on page 36
- “Before You Begin” on page 36
- “Install Oracle Linux 6.5 or 6.6 OS Manually Using Local or Remote Media” on page 37

- "Install Oracle Linux 7 OS Manually Using Local or Remote Media" on page 58
- "Install Oracle Linux 6.5, 6.6, or 7 OS Using PXE Network Boot" on page 64
- "Post Installation Tasks for Oracle Linux 6.5, 6.6, or 7 OS" on page 67

Oracle Linux 6.5, 6.6, or 7 OS Installation Task Map

The following table lists and describes the high-level steps for installing the Oracle Linux OS for a new installation.

Step	Description	Links
1.	Install the server hardware and configure the Oracle ILOM service processor.	■ "Installing the Server Into a Rack" in *Oracle Server X5-2L Installation Guide* ■ "Cabling the Server and Applying Power" in *Oracle Server X5-2L Installation Guide* ■ "Connecting to Oracle ILOM " in *Oracle Server X5-2L Installation Guide*
2.	Review the Oracle Linux version supported on the server.	"Supported Linux Operating Systems" on page 9
3.	Obtain the Oracle Linux installation media.	You can download or order the installation media at: `http://linux.oracle.com/pls/apex/f?p=117:1:3991604960223967`
4.	Review the product notes.	*Oracle Server X5-2L Product Notes* at: `http://www.oracle.com/goto/X5-2l/docs`
5.	Set up the console, the Oracle Linux media, and the installation target that you will use to perform the installation.	■ "Selecting the Console Display Option" on page 11 ■ "Selecting the Boot Media Option" on page 13 ■ "Selecting the Installation Target Option" on page 17
6.	Set BIOS settings for new OS installations.	"Preparing the Boot Environment" on page 23
7.	Install the Oracle Linux OS.	■ "Install Oracle Linux 6.5 or 6.6 OS Manually Using Local or Remote Media" on page 37 ■ "Install Oracle Linux 6.5, 6.6, or 7 OS Using PXE Network Boot" on page 64
8.	Perform the post installation tasks.	"Post Installation Tasks for Oracle Linux 6.5, 6.6, or 7 OS" on page 67

Related Information

- "Preparing to Install a Linux Operating System" on page 23

Before You Begin

Ensure that the following requirements are met:

- 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, refer to "Configuring Storage Drives for Operating System Installation" in *Oracle Server X5-2L Installation Guide*.

Note - If you are not using a preinstalled OS from Oracle, you must create a bootable volume on a drive before installing an OS. The system does not recognize a drive unless it has been incorporated into a volume by the HBA. Therefore, the volume that the OS is installed on must be set as the bootable volume.

- Set the firmware to the desired boot mode, Legacy BIOS or UEFI. For instructions on how to set the UEFI boot mode, see "Set the Boot Mode " on page 26.
- Verify that the UEFI firmware settings are set correctly. For instructions on how to verify and, if necessary, set the UEFI firmware settings, see "Preparing the Boot Environment" on page 23.
- The console display option is selected and set up prior to performing the installation. For more information about this option, see "Selecting the Console Display Option" on page 11.
- The boot media option is 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 13.
- The installation target option is 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 17.

▼ Install Oracle Linux 6.5 or 6.6 OS Manually 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 6.5 or 6.6 CD or DVD set (internal or external CD/DVD)
- Oracle Linux 6.5 or 6.6 ISO DVD image (network repository)

If you are booting the installation media from a PXE environment, refer to "Install Oracle Linux 6.5, 6.6, or 7 OS Using PXE Network Boot" on page 64 for instructions.

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

   - **For Distribution DVD**, insert the Oracle Linux 6.5 or 6.6 Distribution media boot disc (DVD) into the local or remote CD/DVD-ROM drive.

- **For ISO image**, ensure that the Oracle Linux 6.5 or 6.6 ISO image is available and that the ISO image has been mounted in the Oracle ILOM Remote System Console Plus application using the KVMS menu.

For additional information about how to set up the installation media, see "Selecting the Boot Media Option" on page 13.

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

For example, do one of the following:

- **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 , select Reset from the Select Action list box, then click Save.
- **From the Oracle ILOM CLI**, type: `reset /System`

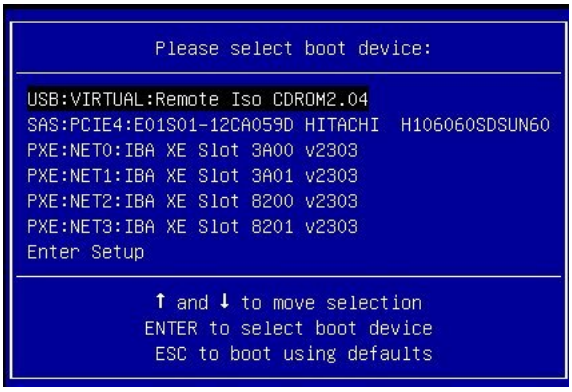
The server begins the boot process and the BIOS screen appears.

Note - The next event occurs 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.

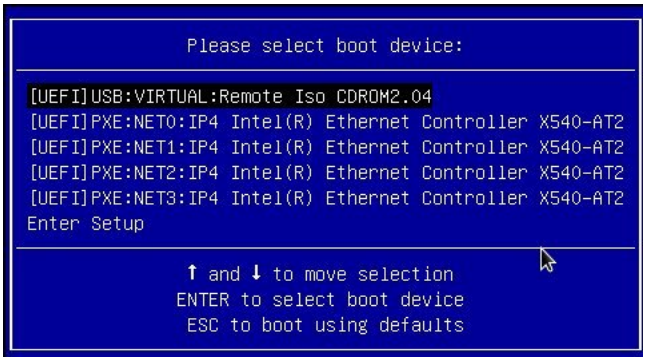
3. **In the BIOS screen, press the F8 key to specify a temporary boot device for the Linux OS installation.**

`[Boot Pop Up Menu Selected]` appears at the bottom of the BIOS screen, and then the Please Select Boot Device menu appears. The screen that appears will differ depending on whether you have the UEFI/BIOS Boot Mode configured for Legacy BIOS or UEFI.

- For Legacy BIOS Boot Mode, a screen similar to the following appears:



- For UEFI Boot Mode, a screen similar to the following appears:



Note - The Please Select Boot Device menu that appears in your installation might differ depending on the type of disk controller and other hardware, such as PCIe network cards, installed in your server.

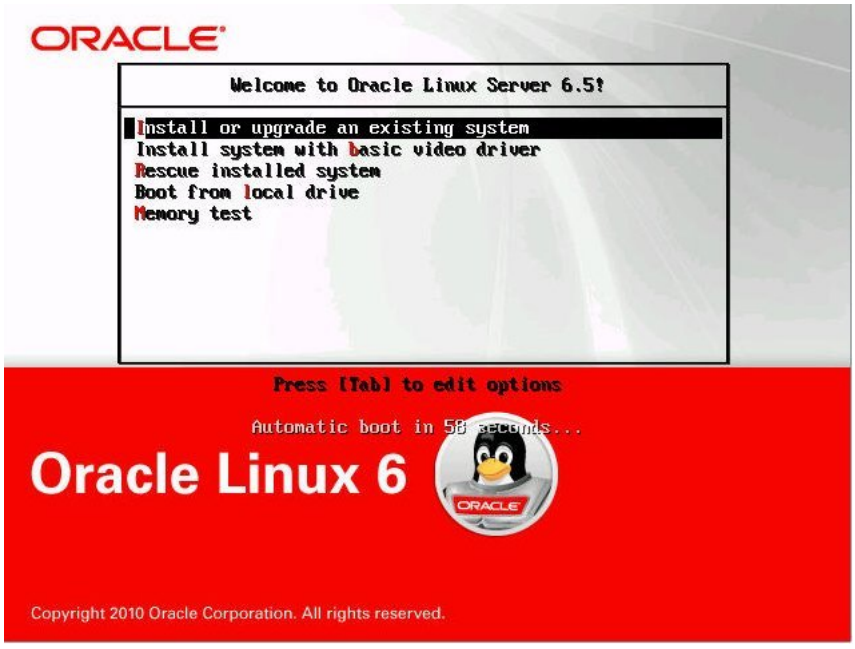
4. **In the Please Select Boot Device menu, select the menu item according to the Linux OS media installation method and the BIOS mode you elected to use, then press Enter.**

   For example:

   - **If you elected to use the Oracle ILOM Remote System Console Plus application delivery method in Legacy BIOS Boot Mode, select `USB:VIRTUAL: Remote Iso CDROM2.04` from the Legacy BIOS screen.**
   - **If you elected to use the Oracle ILOM Remote System Console Plus application delivery method in UEFI Boot Mode, select `[UEFI]USB:VIRTUAL: Remote Iso CDROM2.04` from the UEFI screen.**

5. **The next screen displayed by the installation program depends on whether you selected the Legacy BIOS Boot Mode or the UEFI Boot Mode.**

   - If you selected Legacy BIOS Boot Mode, the Welcome to Oracle Linux Server boot screen appears. For example, for Oracle Linux 6.5:



- If you selected UEFI Boot Mode, the Booting Oracle Linux Server boot screen appears. For example, for Oracle Linux 6.5:

6. **For the purposes of this installation, do one of the following:**

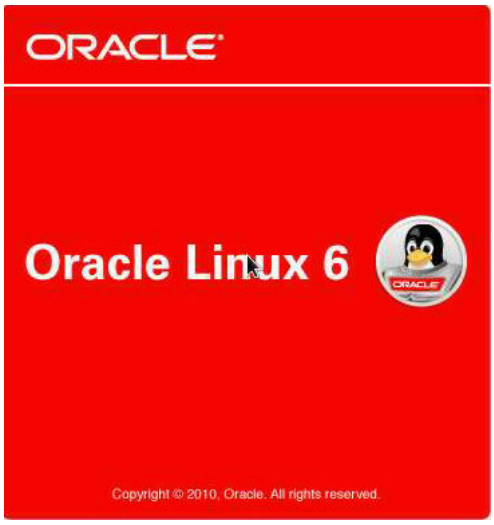
   - If you elected to do the installation in the Legacy BIOS Boot Mode, accept the default and press Enter.
   - If you elected to do the installation in the UEFI Boot Mode, press Enter or allow the screen to timeout.

   The Disc Found screen appears.

7. **If this is the first time that you are doing an install from this media, you should consider selecting `OK` to test the media; otherwise, select `Skip` and press Enter.**

Note - If you have used this disk to do installs before, select Skip; otherwise select OK and test the disk.

The Oracle Linux 6 splash screen appears.



8. **Scroll to the bottom of the Oracle Linux 6 splash screen, and click `Next`.**

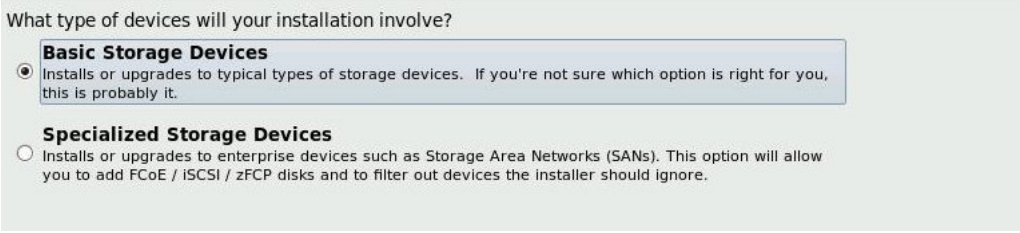
   The "What language would you like to use during the installation process?" screen appears.

9. **Select the appropriate language, and click `Next`.**

   The "Select the appropriate keyboard for the system" screen appears.

10. **Select the appropriate keyboard configuration, and click `Next`.**

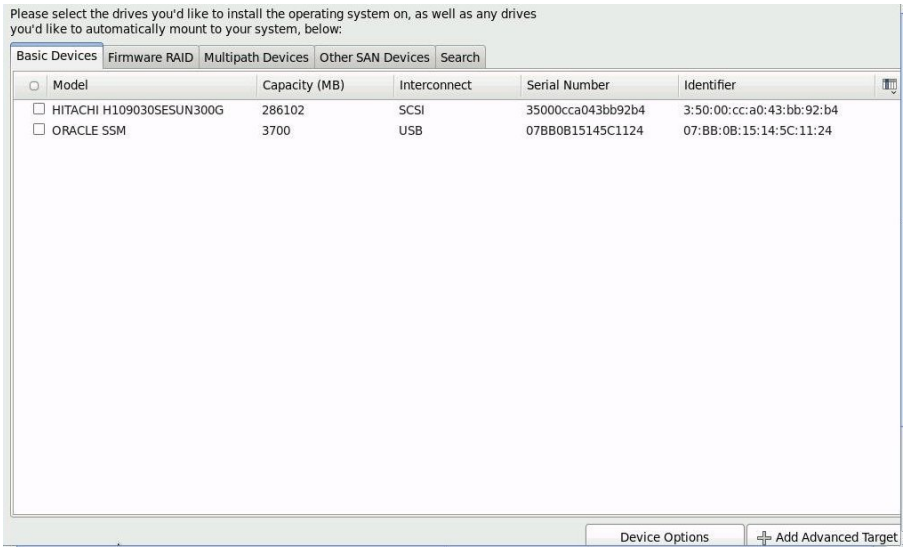
    The "What type of devices will your installation involve?" screen appears.



11. **In the above screen, select Specialized Storage Devices, then scroll to the bottom of the screen, and click `Next`.**

Note - Selecting Specialized Storage Devices allows you to deselect the Oracle SSM in the following screen. This makes the rest of this manual installation easier to perform.

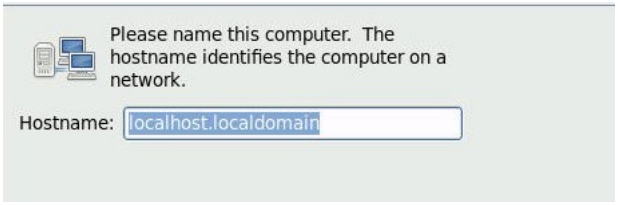
The "Please select the drive you'd like to install the operating system on" screen appears.



12. **Select the storage drive on to which you want to install the operating system, scroll to the bottom of the screen, and click `Next`.**

Caution - Do not select the Oracle SSM drive as the installation target. This drive is reserved for the Oracle System Assistant and should never be used as a boot or storage drive. For more information about the Oracle SSM flash drive, see “Installation Target Options” on page 17.

The "Please name this computer" screen appears.



13. **Enter the host name, and click `Next`.**

The Select Time Zone screen appears.

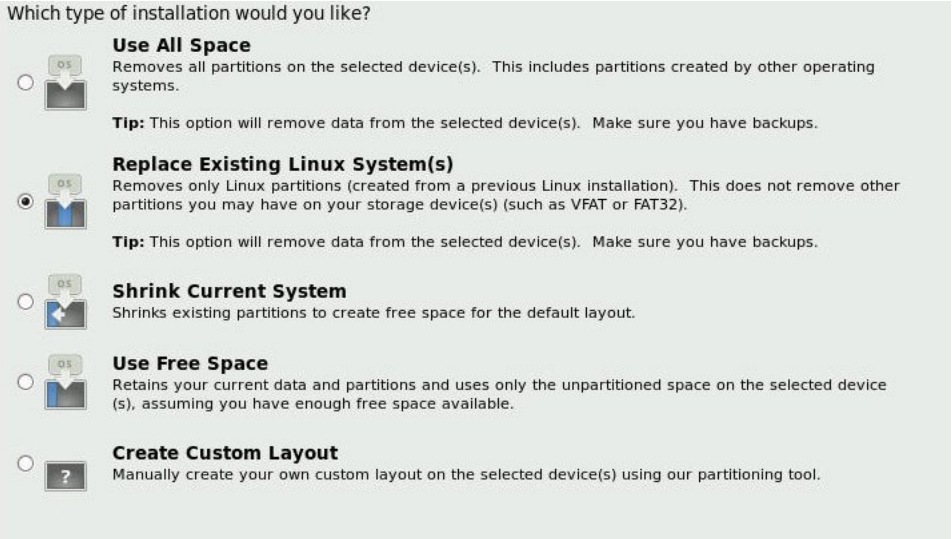
14. **Select the appropriate region and city and, click `Next`.**

Note - If you want NTP Service, you can set that up after the operating system is installed.

The Root Password screen appears.

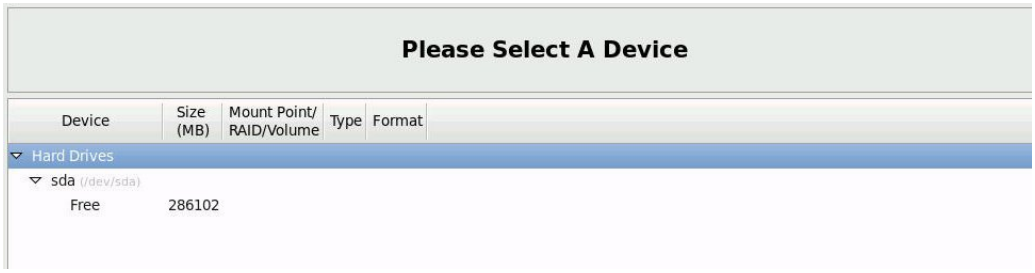
15. Enter root password, and click `Next`.

The "What type of installation would you like?" screen appears.



16. In the above screen, select the appropriate option, and click `Next`.

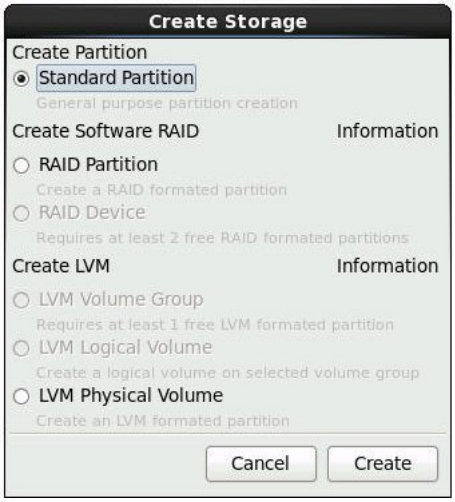
For example, if the storage drive on which you are installing operating system is blank and you select Create Custom Layout, the "Please Select a Device" screen appears.



17. To create partitions, do the following:

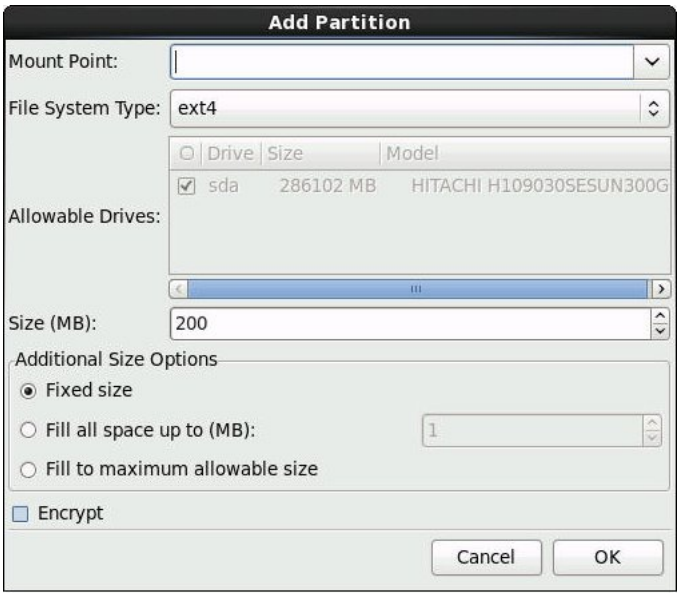
a. Scroll to the bottom of the screen, and click `Create`.

The Create Storage dialog appears.



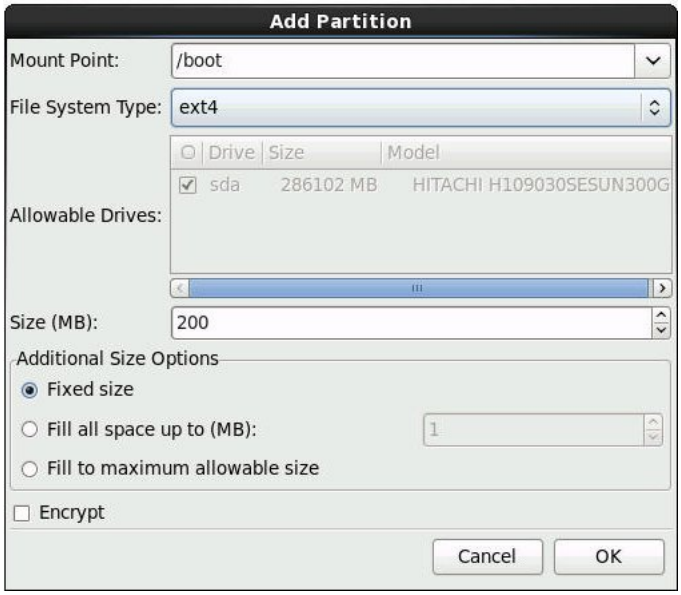
b. Select Standard Partition, and click `Create`.

The Add Partition dialog appears.



c. **In the dialog, set the Mount point to `/boot` and leave the File System Type set to `ext4` and the Size (MB) set to `200`.**

The updated Add Partition dialog appears.



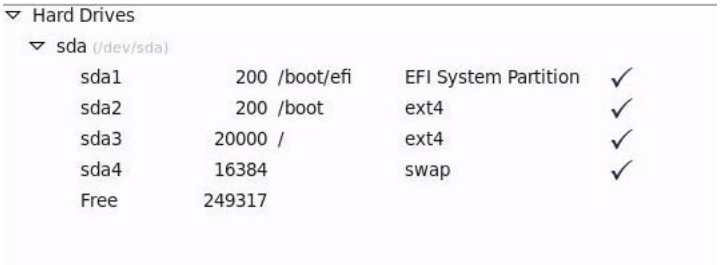
d. Click OK.

The partition is created.

e. Repeat Step a through Step d above to create the following additional partitions:

Mount Point	File System Type	Size (MB)
/boot/efi **Note -** This partition can only be created if you selected the UEFI Boot Mode. It is not supported in Legacy BIOS Boot Mode.	EFI System Partition	200
/	ext4	20000
None	swap	16384

The updated partitions screen appears.



18. Click Next to apply the partitions.

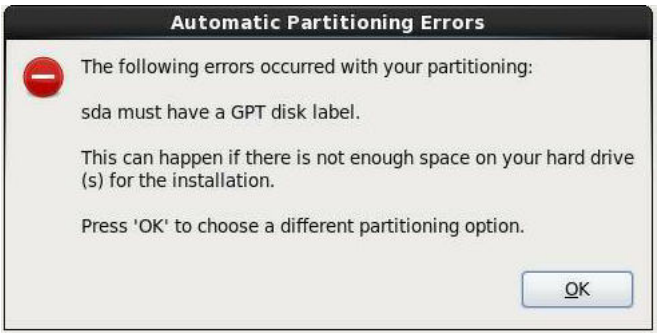
The following dialog appears.

19. Click `Write changes to disk`.

If there are no disk partitioning errors, the Install Boot Loader screen appears and you should proceed to Step 21. If there are disk partitioning errors, proceed to Step 20

20. **If there is a problem with the data format on the installation target disk, the Automatic Partitioning Errors screen appears.**

Note - The following screen appears if you are installing the operating system in UEFI Boot Mode, in which case GUID Partition Table (GPT) formatted disks are required. If you encounter disk formatting errors when you install the operating system in Legacy BIOS Boot Mode, a similar screen would be displayed indicating the Master Boot Record (MBR) formatted disks are required.



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

Note - This error occurs if you attempt to do a UEFI Boot Mode OS install to a storage drive that was previously used to store data in Legacy BIOS format or vice versa. UEFI uses the GPT format, while Legacy BIOS formats storage drives in the 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 Oracle Linux splash screen shown in Step 7 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/sda
GNU Parted 2.1
Using /dev/sda
Welcome to GNU Parted! Type ???help' to view a list of commands.
(parted) p
Model: HITACHI H106030SDSUN300G (scsi)
Disk /dev/sda: 300GB
Sector size (logical/physical): 512B/512B
Partition Table: msdos (or gpt for Legacy BIOS Boot Mode)
Number  Start   End     Size    Type    File system Flags
 1      1049kB  21.5GB  21.5GB  primary ext2
(parted) mklabel
New disk label type? gpt (or msdos for Legacy BIOS Boot Mode)
Warning: The existing disk label on /dev/sda 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/sda: 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 /]#
```

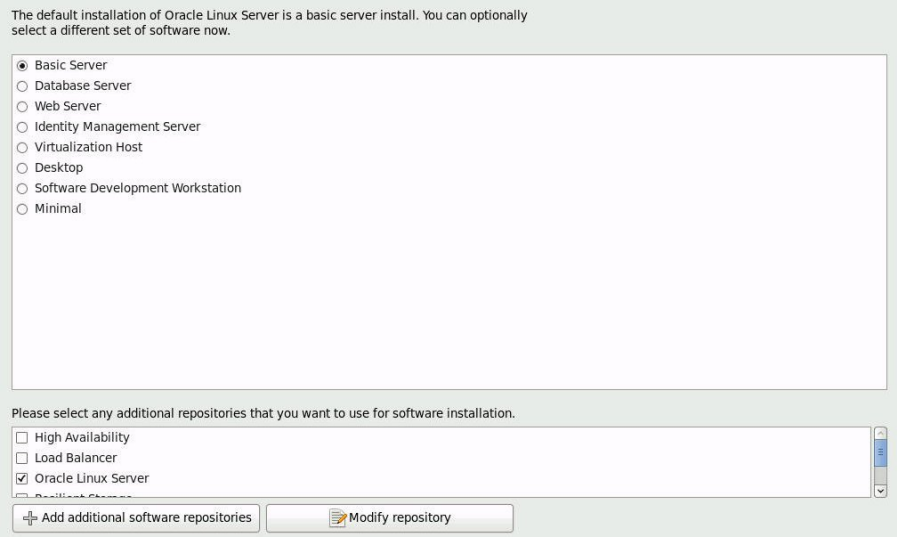
c. **Type `Ctrl+Alt+F6` to return to the graphical installation screen and continue the installation from the point of the Oracle Linux splash screen (go to Step 7).**

Note - In most cases the values that you entered for this installation have been saved, so you will not have to reenter them.

---

21. **In the Install Boot Loader screen, select Install boot loader on /dev/sda1, and click `Next`.**

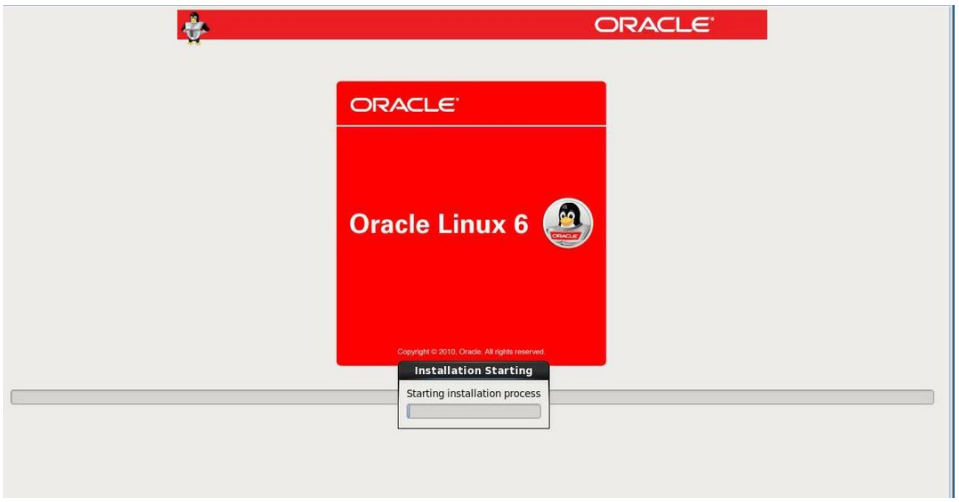
The "Select server software to install" screen appears.



While Basic Server is the default server software install, you can optionally select a different set of software. Additionally, at the bottom of this screen you can select Customize Now to do a custom install of the selected software.

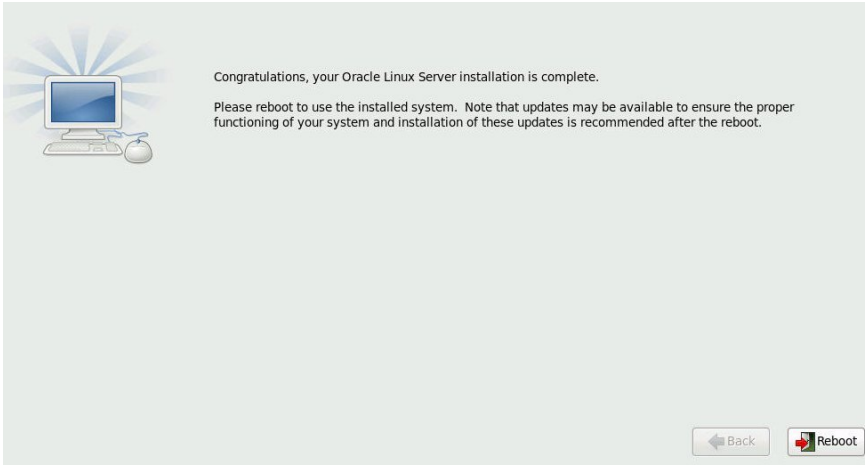
22. **For the purposes of this sample installation, accept the Basic Server default and click `Next`.**

The Starting Installation Process screen appears.



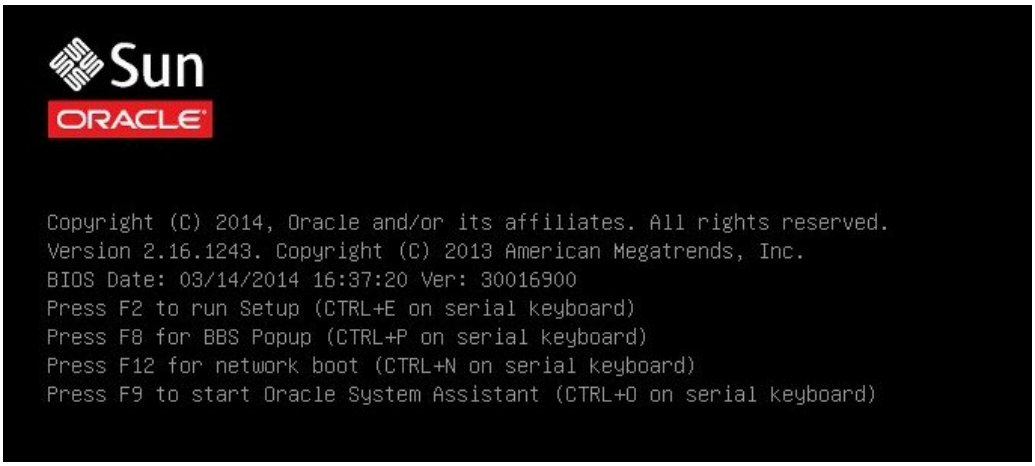
23. Wait until the Oracle Linux OS installation completes.

When the installation completes, the following screen appears.



24. To reboot the Oracle Linux installation, click Reboot.

The server reboots and the BIOS screen appears.



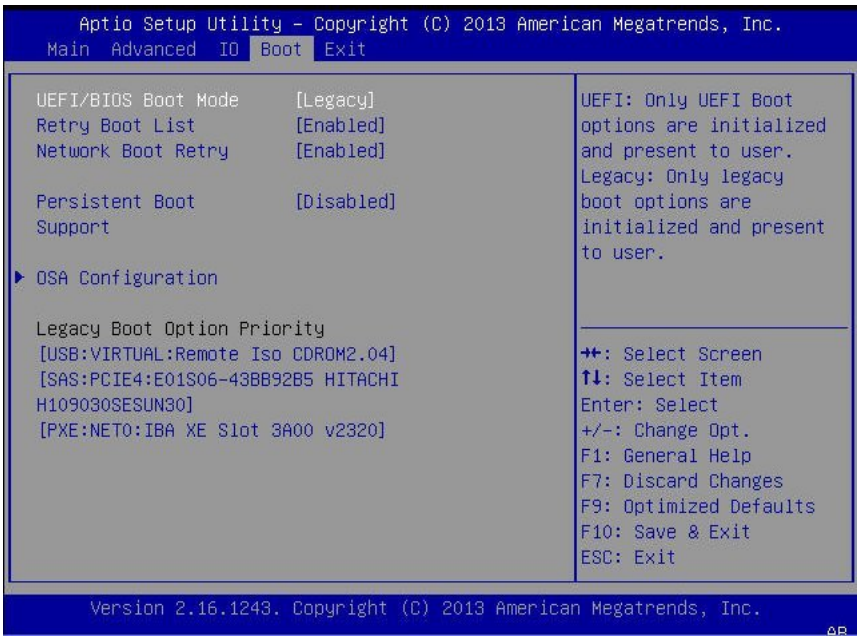
25. **To access the BIOS Setup Utility so that you can set the server to boot from the operating system you just installed, press the F2 key.**

    A BIOS Setup Utility screen appears with the Boot Menu selected. The BIOS screen displayed and the actions required to proceed with installation depend on the UEFI/BIOS Boot Mode you selected for installing the OS.

    - If you installed the OS in Legacy BIOS Boot Mode, proceed to Step 26.
    - If you installed the OS in UEFI Boot Mode, proceed to Step 27.

26. **If you installed the OS in UEFI Boot Mode, proceed to Step 27. If you installed the OS in Legacy BIOS Boot Mode, perform these steps and proceed to Step 28.**

a. In the BIOS Setup Utility Boot menu, use the down arrow key to select [USB: VIRTUAL:Remote Iso CDROM2.04] under the Legacy Boot Option Priority field, and press Enter.



Note - The BIOS Boot screen that appears for your installation might differ depending on the type of disk controller and other hardware, such as PCIe network cards, installed in your server.

The Boot Option #1 dialog appears.

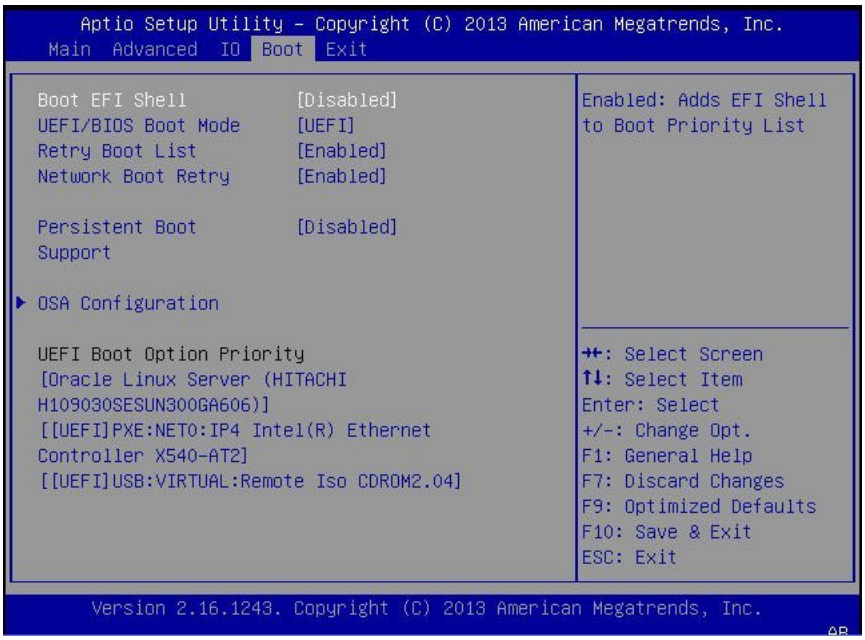
b. Select [SAS:PCIE4:E01S06-43BB92B5 HITACHI H109030SESUN30], and press Enter.

[SAS:PCIE4:E01S06-43BB92B5 HITACHI H109030SESUN30] moves to the top position.

c. Press the F10 key to save the change and exit the BIOS Setup Utility, then proceed to Step 28.

27. If you installed the OS in UEFI Boot Mode, perform these steps:

a. In the BIOS Setup Utility Boot menu screen, verify that [Oracle Linux Server (HITACHI H109030SESUN300GA606)] is listed as the first option under UEFI Boot Option Priority field.



Note - The BIOS Boot screen that appears for your installation might differ depending on the type of disk controller and other hardware, such as PCIe network cards, installed in your server.

b. Press the F10 key to exit the BIOS Setup Utility.

28. Wait while the reboot continues.

The following kernel screens 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...
```

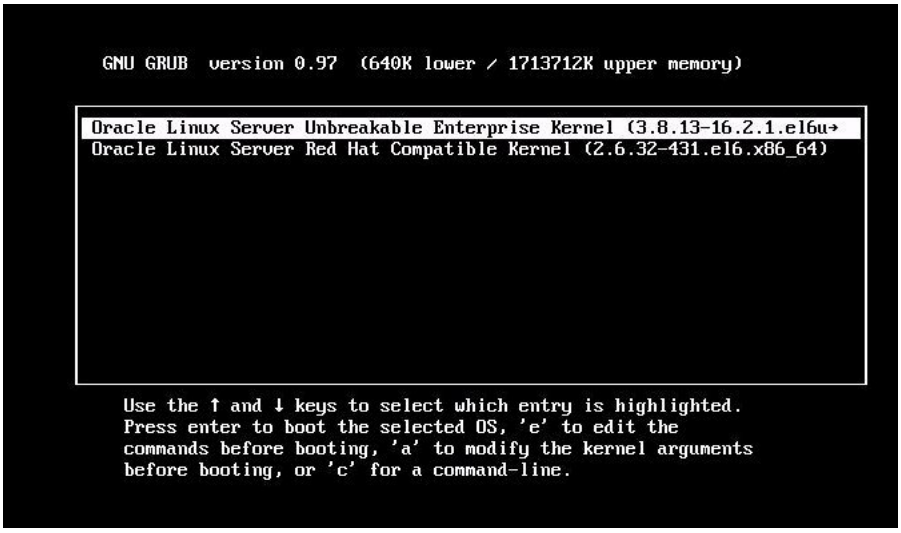
The Oracle Unbreakable Enterprise Kernel Release 3 for Linux is the default kernel.

29. **If you do *not* want to change the default Kernel, proceed to Step 31; otherwise, proceed to Step 30.**

30. **(Optional) If you are installing Oracle Linux 6.5 and you want to switch to the Red Hat compatible kernel, do the following:**

    a. **Press any character key.**

    The GNU GRUB screen appears.



    b. **For the Red Hat compatible kernel, select the second menu option, then press Enter.**

31. **After completing the Oracle Linux installation and rebooting the server with the desired Linux kernel, proceed to "Post Installation Tasks for Oracle Linux 6.5, 6.6, or 7 OS" on page 67.**

Install Oracle Linux 7 OS Manually Using Local or Remote Media

This procedure describes how to install the Oracle Linux OS 7 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 7 CD or DVD set (internal or external CD/DVD)
- Oracle Linux 7 ISO DVD image (network repository)

If you are booting the installation media from a PXE environment, refer to "Install Oracle Linux 6.5, 6.6, or 7 OS Using PXE Network Boot" on page 64 for instructions.

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

   - **For Distribution DVD**, insert the Oracle Linux 7 OS Distribution media boot disc (DVD) into the local or remote CD/DVD-ROM drive.
   - **For ISO image**, ensure that the Oracle Linux 7 OS ISO image is available and that the ISO image has been mounted in the Oracle ILOM Remote System Console Plus application using the KVMS menu.

   For additional information about how to set up the installation media, see "Selecting the Boot Media Option" on page 13.

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

   For example, do one of the following:

   - **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 , select Reset from the Select Action list box, then click Save.
   - **From the Oracle ILOM CLI**, type: `reset /System`

   The server begins the boot process and the BIOS screen appears.

   Note - The next event occurs 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 the F8 key to specify a temporary boot device for the Linux OS installation.**

`[Boot Pop Up Menu Selected]` appears at the bottom of the BIOS screen, and then the Please Select Boot Device menu appears. The screen that appears will differ depending on whether you have the UEFI/BIOS Boot Mode configured for Legacy BIOS or UEFI.

Note - The Please Select Boot Device menu that appears in your installation might differ depending on the type of disk controller and other hardware, such as PCIe network cards, 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 Oracle ILOM Remote System Console Plus application delivery method in Legacy BIOS Boot Mode, select `USB:VIRTUAL: Remote Iso CDROM2.04` from the Legacy BIOS screen.**
   - **If you elected to use the Oracle ILOM Remote System Console Plus application delivery method in UEFI Boot Mode, select `[UEFI]USB:VIRTUAL: Remote Iso CDROM2.04` from the UEFI screen.**

5. **The next screen displayed by the installation program depends on whether you selected the Legacy BIOS Boot Mode or the UEFI Boot Mode.**

   - If you selected Legacy BIOS Boot Mode, the Welcome to Oracle Linux Server boot screen appears.
   - If you selected UEFI Boot Mode, the Booting Oracle Linux Server boot screen appears.

6. **For the purposes of this installation, do one of the following:**

   - If you elected to do the installation in the Legacy BIOS Boot Mode, accept the default and press Enter.
   - If you elected to do the installation in the UEFI Boot Mode, press Enter or allow the screen to timeout.

   The Disc Found screen appears. From this screen, you can choose whether to test the media before doing the install.

7. **If this is the first time that you are doing an install from this media, you should consider selecting `OK` to test the media; otherwise, select `Skip` and press Enter.**

Note - If you have used this disk to do installs before, select Skip; otherwise select OK and test the disk.

The Oracle Linux 7 splash screen appears.

8. **Proceed with Oracle Linux 7 OS installation and setup instructions, which are included within the Oracle Linux 7 Product Documentation Library at: `http://docs.oracle.com/cd/E52668_01/index.html`.**

Note - Oracle Linux 7 contains new features and functionality that will produce behavior and results that vary from Oracle Linux 6.x. Please proceed carefully with your installation.

When the installation is complete, the server reboots and the BIOS screen appears.

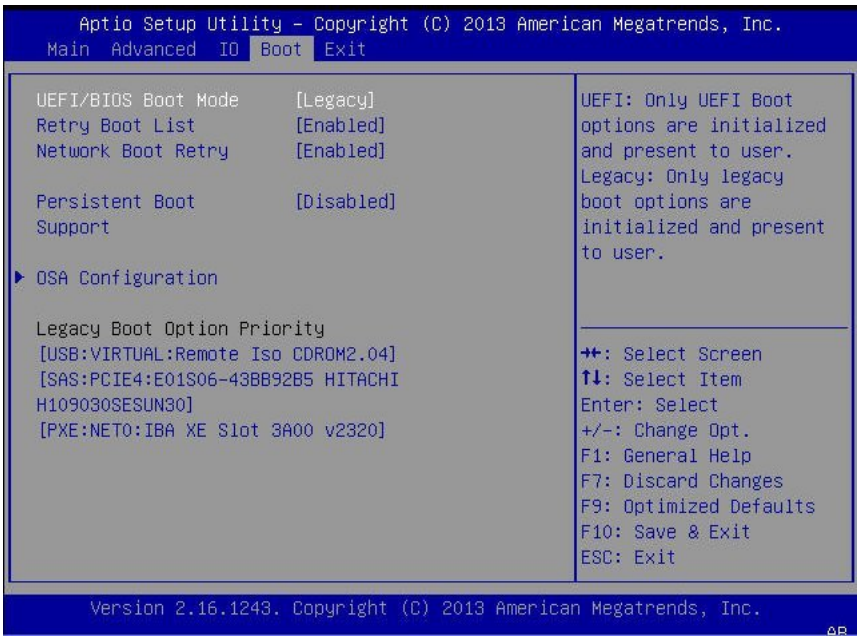
9. **To access the BIOS Setup Utility so that you can set the server to boot from the operating system you just installed, press the F2 key.**

   A BIOS Setup Utility screen appears with the Boot Menu selected. The BIOS screen displayed and the actions required to proceed with installation depend on the UEFI/BIOS Boot Mode you selected for installing the OS.

   - If you installed the OS in Legacy BIOS Boot Mode, proceed to Step 10.
   - If you installed the OS in UEFI Boot Mode, proceed to Step 11.

10. **If you installed the OS in Legacy BIOS Boot Mode, perform these steps and proceed to Step 12.**

a. In the BIOS Setup Utility screen shown below, use the down arrow key to select [USB:VIRTUAL:Remote Iso CDROM2.04] under the Legacy Boot Option Priority field, and press Enter.



Note - The BIOS Boot screen that appears for your installation might differ depending on the type of disk controller and other hardware, such as PCIe network cards, installed in your server.

The Boot Option #1 dialog appears.

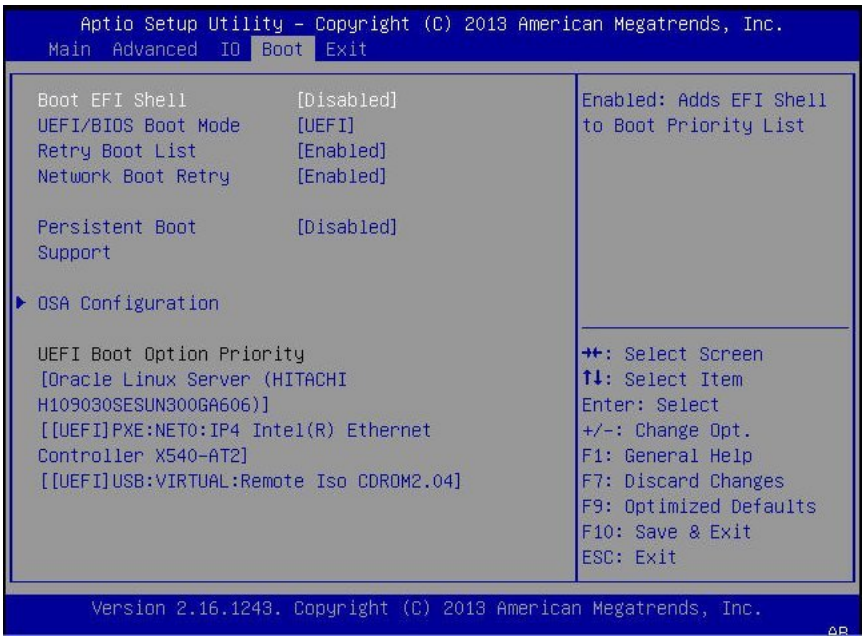
b. Select [SAS:PCIE4:E01S06-43BB92B5 HITACHI H109030SESUN30], and press Enter.

[SAS:PCIE4:E01S06-43BB92B5 HITACHI H109030SESUN30] moves to the top position.

c. Press the F10 key to save the change and exit the BIOS Setup Utility, then proceed to Step 12.

11. If you installed the OS in UEFI Boot Mode, perform these steps:

a. In the BIOS Setup Utility screen shown below, verify that [Oracle Linux Server (HITACHI H109030SESUN300GA606)] is listed as the first option under UEFI Boot Option Priority field.



Note - The BIOS Boot screen that appears for your installation might differ depending on the type of disk controller and other hardware, such as PCIe network cards, installed in your server.

b. Press the F10 key to exit the BIOS Setup Utility.

12. Wait while the reboot continues.

The following kernel screens 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...
```

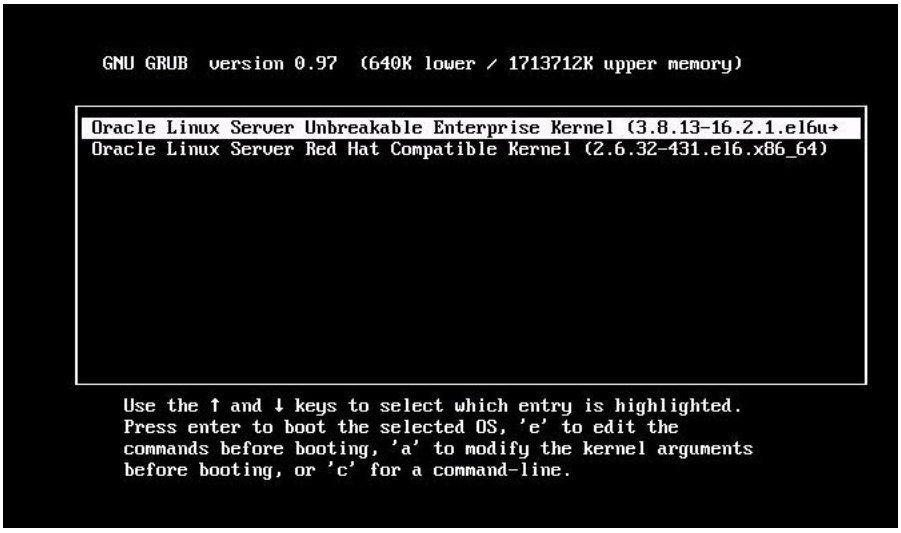
The Oracle Unbreakable Enterprise Kernel Release 3 for Linux is the default kernel.

13. **If you do *not* want to change the default Kernel, proceed to Step 15; otherwise, proceed to Step 14.**

14. **(Optional) If you are installing Oracle Linux 7 and you want to switch to the Red Hat compatible kernel, do the following:**

    a. **Press any character key.**

    The GNU GRUB screen appears.



    b. **For the Red Hat compatible kernel, select the second menu option, then press Enter.**

15. **After completing the Oracle Linux installation and rebooting the server with the desired Linux kernel, proceed to "Post Installation Tasks for Oracle Linux 6.5, 6.6, or 7 OS" on page 67.**

Install Oracle Linux 6.5, 6.6, or 7 OS Using PXE Network Boot

This procedure describes how to install Oracle Linux 6.5, 6.6, or 7 OS from a PXE network environment. This procedure assumes that you are booting the installation media from one of the following sources:

- Oracle Linux 6.5, 6.6, or 7 ISO DVD image
- Oracle Linux 6.5 , 6.6, or 7 KickStart image (network repository)

  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.

Before You Begin Ensure that the following requirements are 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).

For more information on KickStart and PXE network installation on Oracle Linux 6, refer to the *Oracle Linux Installation Guide* at: `http://docs.oracle.com/cd/E37670_01/index.html`

For more information on KickStart and PXE network installation on Oracle Linux 7, refer to the *Oracle Linux 7 Installation Guide* at: `http://docs.oracle.com/cd/E52668_01/E54695/html/index.html`

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

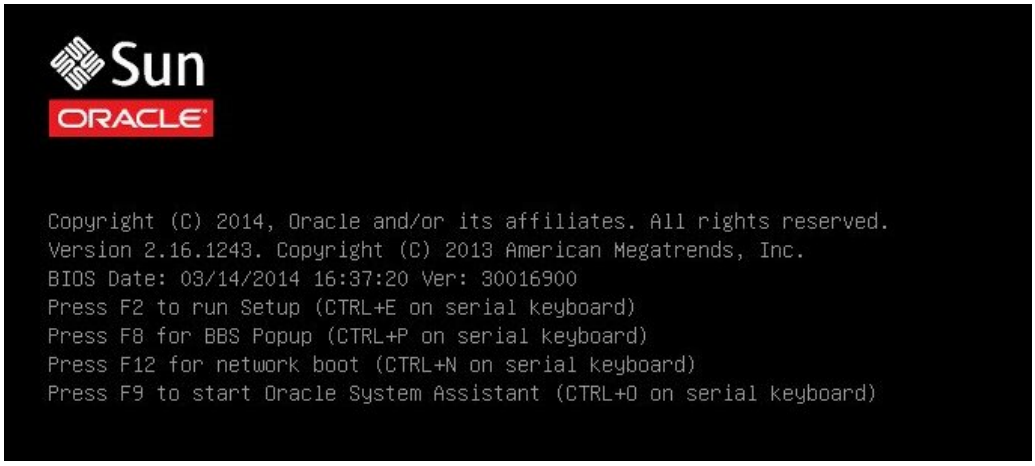
2. **Reset or power on the server.**

   For example, do one of the following:

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

The server begins the boot process and the BIOS screen appears.

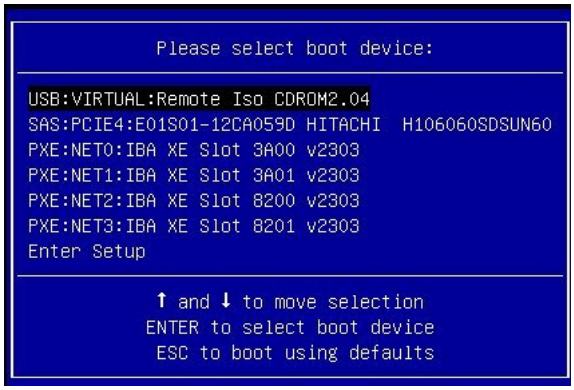
Note - The next event occurs very quickly; therefore, focused attention is needed for the following steps. Watch carefully for these messages as they appear on the screen for a brief time. You might want to enlarge the size of your screen to eliminate scroll bars.



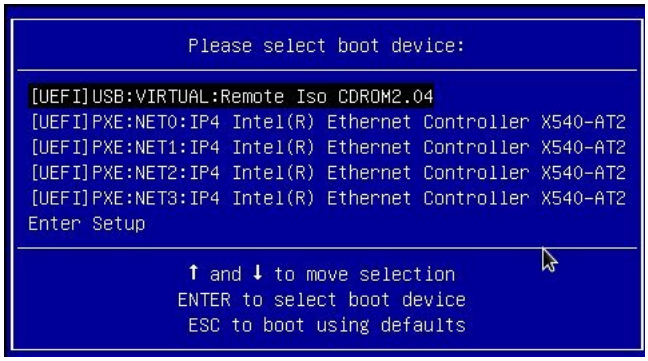
3. **In the BIOS screen, press the F8 key to specify a temporary boot device for the Linux OS installation.**

`[Boot Pop Up Menu Selected]` appears at the bottom of the BIOS screen, and then the Please Select Boot Device menu appears. The screen that appears will differ depending on whether you have the UEFI/BIOS Boot Mode configured for Legacy BIOS or UEFI.

- For Legacy BIOS Boot Mode, the following screen appears:



- For UEFI Boot Mode, the following screen appears:



Note - The Please Select Boot Device menu that appears in your installation might differ depending on the type of disk controller and other hardware, such as PCIe network cards, 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 starts to execute.

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

Post Installation Tasks for Oracle Linux 6.5, 6.6, or 7 OS

After installing Oracle Linux 6.5, 6.6, or 7 OS 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. In addition to ensuring that your server has the latest improvements to the Oracle Linux operating system, updating your server to the latest updates will ensure that it is running the latest version of the Unbreakable Enterprise Kernel (UEK) for Linux, which is needed for the proper operation of the optional NVMe storage drives, if installed.

Installing Red Hat Enterprise Linux OS on a Single System Manually

This section provides instructions for installing Red Hat Enterprise Linux (RHEL) 6.5, 6.6, or 7 OS for x86 (64-bit) and the Oracle Unbreakable Enterprise Kernel for Linux.

The following topics are covered:

RHEL 6.5, 6.6, or 7 OS Installation Task Map

The following table lists and describes the high-level steps for installing the Red Hat Enterprise Linux (RHEL) operating system.

Step	Description	Links
1.	Install your server hardware and configure the Oracle ILOM service processor.	■ "Installing the Server Into a Rack" in *Oracle Server X5-2L Installation Guide* ■ "Cabling the Server and Applying Power" in *Oracle Server X5-2L Installation Guide* ■ "Connecting to Oracle ILOM " in *Oracle Server X5-2L Installation Guide*
2.	Review the Linux versions supported by the server.	"Supported Linux Operating Systems" on page 9
3.	Obtain the RHEL installation media.	Go to: `https://access.redhat.com/downloads`
4.	Review the product notes.	*Oracle Server X5-2L Product Notes* at: `http://www.oracle.com/goto/X5-2l/docs`
5.	Set up the console, the RHEL media, and the installation target that you will use to perform the installation.	■ "Selecting the Console Display Option" on page 11 ■ "Selecting the Boot Media Option" on page 13 ■ "Selecting the Installation Target Option" on page 17
6.	Set BIOS settings for new OS installations.	"Preparing the Boot Environment" on page 23
7.	Install the RHEL OS.	■ "Install RHEL 6.5, 6.6, or 7 OS Manually Using Local or Remote Media" on page 69 ■ "Install RHEL 6.5, 6.6, or 7 OS Using PXE Network Boot" on page 72
8.	Perform the post installation tasks.	"Post Installation Tasks for RHEL 6.5, 6.6, or 7 OS" on page 75

Before You Begin

Ensure that the following requirements are met:

- 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, refer to "Configuring Storage Drives for Operating System Installation" in *Oracle Server X5-2L Installation Guide*.

  Note - If you are not using a preinstalled OS from Oracle, you must create a bootable volume on a drive before installing an OS. The system does not recognize a drive unless it has been incorporated into a volume by the HBA. Therefore, the volume that the OS is installed on must be set as the bootable volume.

- Set the firmware to the desired boot mode, Legacy BIOS or UEFI. For instructions on how to set the boot mode, see "Set the Boot Mode " on page 26.
- Verify that the firmware settings are set correctly. For instructions on how to verify and, if necessary, set the UEFI firmware settings, see "Preparing the Boot Environment" on page 23.
- The console display option is 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 11.

- The boot media is 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 13.
- The installation target option is 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 17.

▼ Install RHEL 6.5, 6.6, or 7 OS Manually Using Local or Remote Media

This procedure describes how to boot the Red Hat Enterprise Linux (RHEL) 6.5, 6.6, or 7 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 6.5, 6.6, or 7 CD or DVD set (internal or external CD/DVD)
- RHEL 6.5, 6.6, or 7 ISO DVD image

If you are booting the installation media from a PXE environment, refer to "Install RHEL 6.5, 6.6, or 7 OS Using PXE Network Boot" on page 72 for instructions.

For further details about installing a RHEL OS, see the RHEL documentation collection at `https://access.redhat.com/documentation/en/`.

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

   - **For Distribution CD/DVD**, insert the Red Hat 6.5, 6.6, or 7 Distribution media boot disc (CD labeled number 1 or the single DVD) into the local or remote USB CD/DVD-ROM drive.
   - **For ISO image**, ensure that the Red Hat 6.5, 6.6, or 7 ISO image is available and that the ISO image has been mounted in the Oracle ILOM Remote System Console Plus application using the KVMS menu.

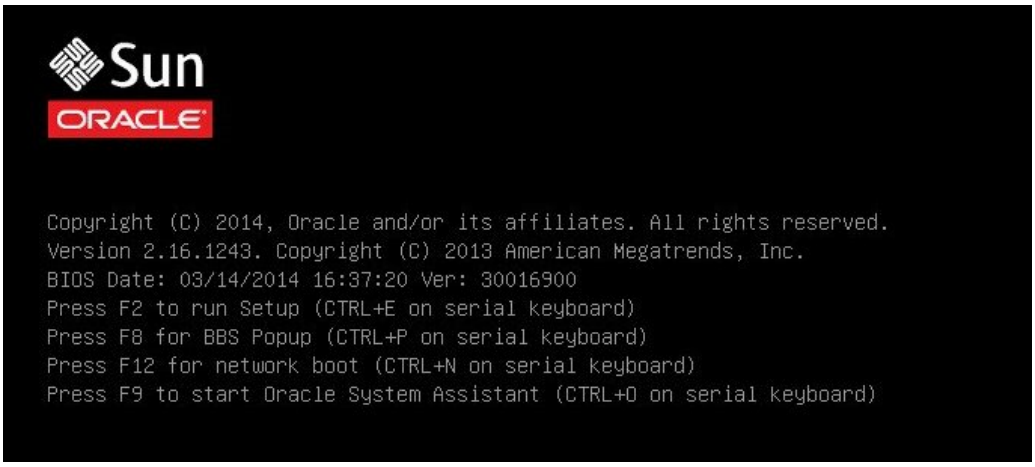
   For additional information about how to set up the installation media, see "Selecting the Boot Media Option" on page 13.

2. **Reset or power on the server.**
   For example, do one of the following:

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

- **From the Oracle ILOM CLI**, type: `reset /System`

The server begins the boot process and the BIOS screen appears.

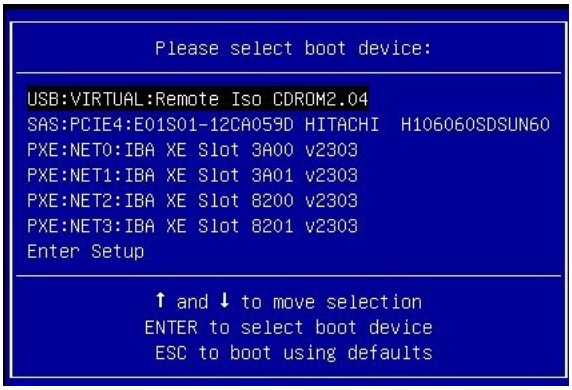


Note - The next event occurs very quickly; therefore, focused attention is needed for the following steps. Watch carefully for these messages as they appear on the screen for a brief time. You might want to enlarge the size of your screen to eliminate scroll bars.

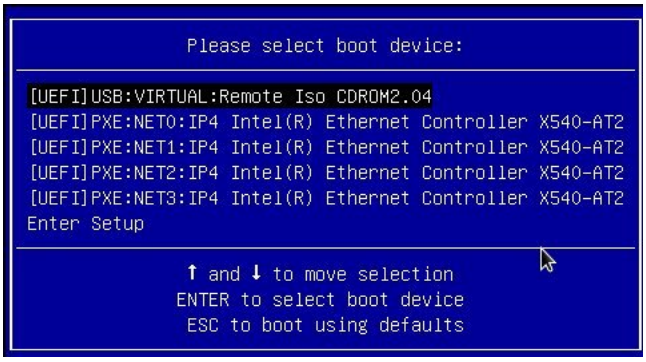
3. **In the BIOS screen, press the F8 key to specify a temporary boot device for the RHEL installation.**

`[Boot Pop Up Menu Selected]` appears at the bottom of the BIOS screen, and then the Please Select Boot Device menu appears. The screen that appears will differ depending on whether you have the UEFI/BIOS Boot Mode configured for Legacy BIOS or UEFI.

- For Legacy BIOS Boot Mode, a screen similar to the following appears:



- For UEFI Boot Mode, a screen similar to the following appears:



Note - The Please Select Boot Device menu that appears in your installation might differ depending on the type of disk controller and other hardware, such as PCIe network cards, 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 Installation Guides at:

   https://access.redhat.com/documentation/en/

Note - If the Oracle Linux or Oracle VM 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 post installation tasks listed in "Post Installation Tasks for RHEL 6.5, 6.6, or 7 OS" on page 75.**

▼ Install RHEL 6.5, 6.6, or 7 OS Using PXE Network Boot

This procedure describes how to boot the Red Hat Enterprise Linux (RHEL) 6.5, 6.6, or 7 from a PXE network environment. It assumes that you are booting the install media from RHEL 6.5, 6.6, or 7 KickStart image (network repository).

KickStart is Red Hat's 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 Red Hat Linux installation. Typically, a KickStart image is placed on a single network server and read by multiple systems for installation.

Before You Begin Ensure that the following requirements are met prior to performing the RHEL 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 Administration Guides at:

https://access.redhat.com/documentation/en/

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

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

   For example, do one of the following:

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

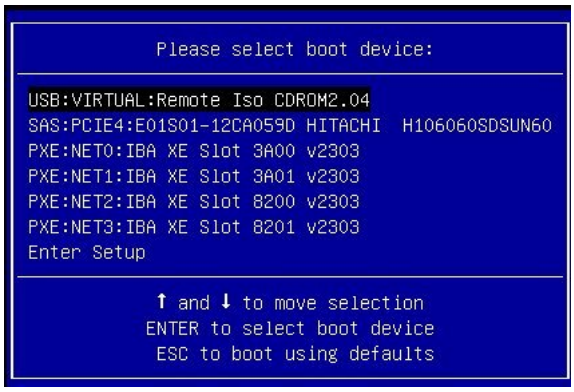
   The server begins the boot process and the BIOS screen appears.

Note - The next event occurs 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.

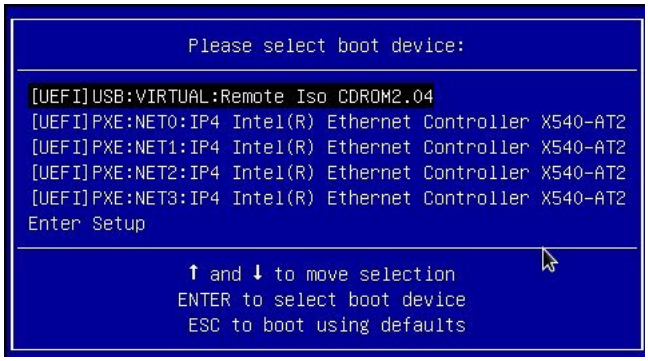
3. **In the BIOS screen, press the F8 key to specify a temporary boot device for the RHEL installation.**

   `[Boot Pop Up Menu Selected]` appears at the bottom of the BIOS screen, and then the Please Select Boot Device menu appears. The screen that appears will differ depending on whether you have the UEFI/BIOS Boot Mode configured for Legacy BIOS or UEFI.

   - For Legacy BIOS Boot Mode, a screen similar to the following appears:



   - For UEFI Boot Mode, a screen similar to the following appears:



Note - The Please Select Boot Device menu that appears in your installation might differ depending on the type of disk controller and other hardware, such as PCIe network cards, installed in your server.

4. **In the Please Select Boot Device menu, select the PXE install boot device (physical 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. **From this point on, the installation procedure is site specific as determined by the site KickStart file.**

Post Installation Tasks for RHEL 6.5, 6.6, or 7 OS

After completing the Red Hat Enterprise Linux (RHEL) 6.5, 6.6, or 7 installation, you should review the following post installation tasks and perform the tasks that are applicable to your system.

- "Register RHEL and Activate Automatic Updates" on page 75
- "Download and Install OS Updates" on page 75
- "(Optional) Install Oracle Unbreakable Enterprise Kernel for Linux on RHEL Using Local or Remote Console" on page 75

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/en/services/support`

Download and Install OS Updates

After installing If required, dowload and install the latest errata and bug fixes for the RHEL OS. Refer to the Red Hat documentation for more details: `https://access.redhat.com/documentation/en/`

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

After you have installed the Red Hat Enterprise Linux 6.5, 6.6, or 7, you have the option of installing and using the Oracle Unbreakable Enterprise Kernel 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

Installing SUSE Linux Enterprise Server OS on a Single System Manually

This section provides instructions for installing SUSE Linux Enterprise Server (SLES) 11 SP3 for x86 (64-bit).

SLES 11 SP3 OS Installation Task Map

The following table lists and describes the high-level installation steps for the SUSE Linux Enterprise Server (SLES) 11 SP3 operating system.

Step	Description	Instructions
1.	Install your server hardware and configure the Oracle ILOM service processor.	■ "Installing the Server Into a Rack" in *Oracle Server X5-2L Installation Guide* ■ "Cabling the Server and Applying Power" in *Oracle Server X5-2L Installation Guide* ■ "Connecting to Oracle ILOM " in *Oracle Server X5-2L Installation Guide*
2.	Review the Linux versions supported on the server.	"Supported Linux Operating Systems" on page 9
3.	Obtain the SLES installation media.	Go to: https://www.suse.com/products/server/
4.	Review the product notes.	*Oracle Server X5-2L Product Notes* at: http://www.oracle.com/goto/X5-2l/docs
5.	Set up the console, the SLES media, and the installation target that you will use to perform the installation.	■ "Selecting the Console Display Option" on page 11 ■ "Selecting the Boot Media Option" on page 13 ■ "Selecting the Installation Target Option" on page 17
6.	Set BIOS settings for new OS installations.	"Preparing the Boot Environment" on page 23
7.	Install the SLES OS.	■ "Install SLES 11 SP3 OS Manually Using Local or Remote Media" on page 77 ■ "Install SLES OS Using PXE Network Boot" on page 101

Step	Description	Instructions
8.	Perform the post installation tasks, if applicable.	"Post Installation Tasks for SLES OS" on page 104

Before You Begin

Ensure that the following requirements are met:

- 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, refer to "Configuring Storage Drives for Operating System Installation" in *Oracle Server X5-2L Installation Guide*.
- Set the firmware to the desired boot mode, Legacy BIOS or UEFI. For instructions on how to set the boot mode, see "Set the Boot Mode " on page 26.
- Verify that the UEFI firmware settings are set correctly. For instructions on how to verify and, if necessary, set the UEFI firmware settings, see "Preparing the Boot Environment" on page 23.
- The console display option is 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 11.
- The boot media option is 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 13.
- The installation target option is 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 17.

▼ Install SLES 11 SP3 OS Manually Using Local or Remote Media

This procedure describes how to boot the SUSE Linux Enterprise Server (SLES) 11 SP3 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 SP3 CD or DVD set (internal or external CD/DVD)
- SLES 11 SP3 ISO DVD image

If you are booting the installation media from a PXE environment, refer to "Install SLES OS Using PXE Network Boot" on page 101 for boot instructions.

For further details about installing SLES 11 SP3, refer to 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 SP3 boot disc (CD labeled number 1 or DVD) into the local or external CD/DVD-ROM drive.
   - **For ISO image**, ensure that the SLES 11 SP3 ISO image is available and that the ISO image has been mounted to the Oracle ILOM Remote System Console Plus application using the KVMS menu.

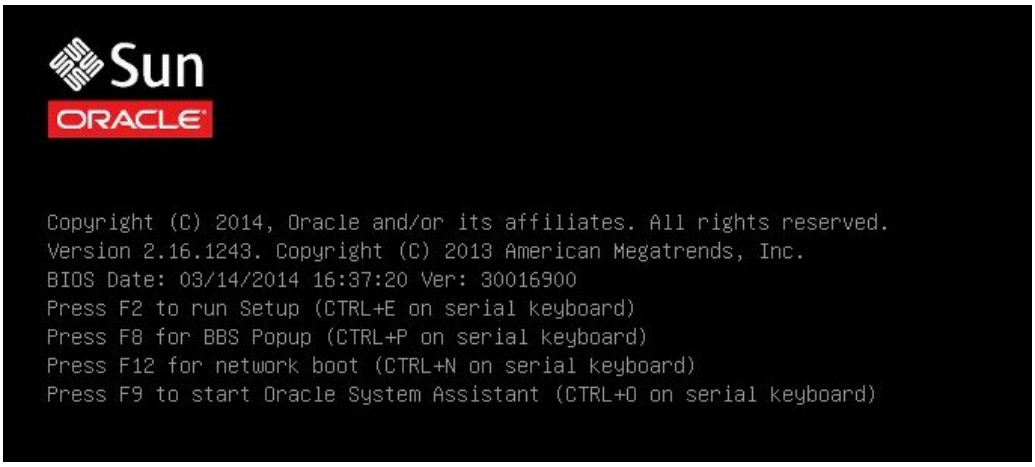
   For additional information about how to set up the install media, see "Selecting the Boot Media Option" on page 13.

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

   For example, do one of the following:

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

   The server begins the boot process and the BIOS screen appears.

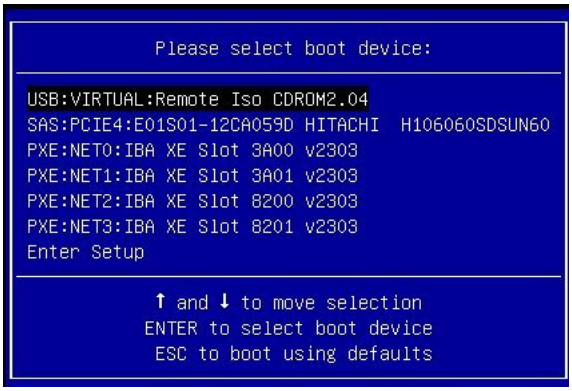


Note - The next event occurs very quickly; therefore, focused attention is needed for the following steps. Watch carefully for these messages as they appear on the screen for a brief time. You might want to enlarge the size of your screen to eliminate scroll bars.

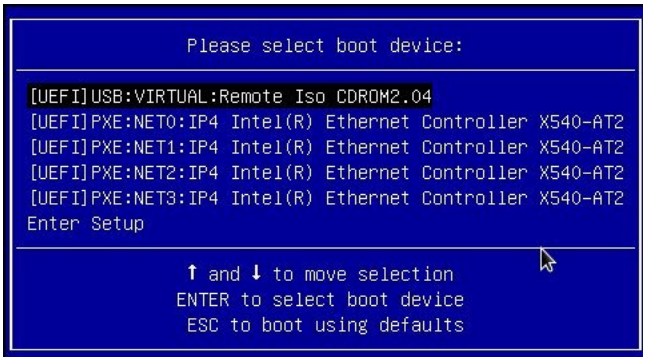
3. In the BIOS screen, press the F8 key to specify a temporary boot device for the SLES OS installation.

`[Boot Pop Up Menu Selected]` appears at the bottom of the BIOS screen, and then the Please Select Boot Device menu appears. The screen that appears will differ depending on whether you have the UEFI/BIOS Boot Mode configured for Legacy BIOS or UEFI.

- For Legacy BIOS Boot Mode, a screen similar to the following appears:



- For UEFI Boot Mode, a screen similar to the following appears:



Note - The Please Select Boot Device menu that appears in your installation might differ depending on the type of disk controller and other hardware, such as PCIe network cards, installed in your server.

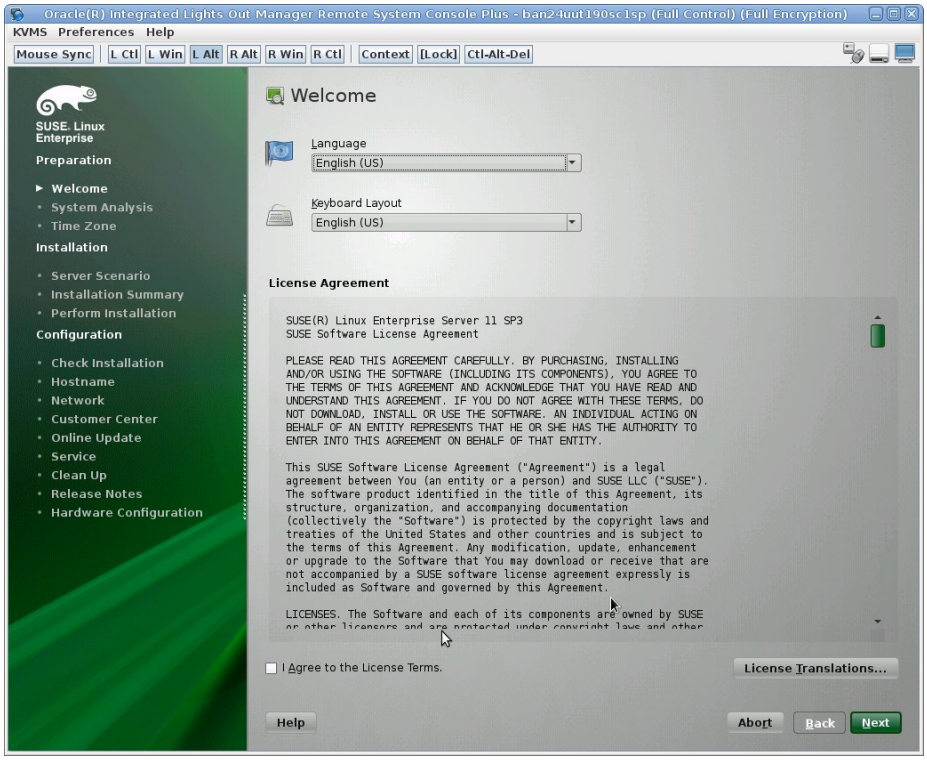
4. **In the Please Select Boot Device menu, select the menu item according to the SLES OS media installation method and the BIOS mode you elected to use, then press Enter.**

   For example, if you elected to use the remote console delivery method, select `USB:VIRTUAL:Remote Iso CDROM2.04` from the Legacy BIOS screen or `[UEFI]USB:VIRTUAL:Remote Iso CDROM.04` from the UEFI Boot Mode screen.

   The SUSE Linux Enterprise Server boot screen appears.

5. **In the 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**

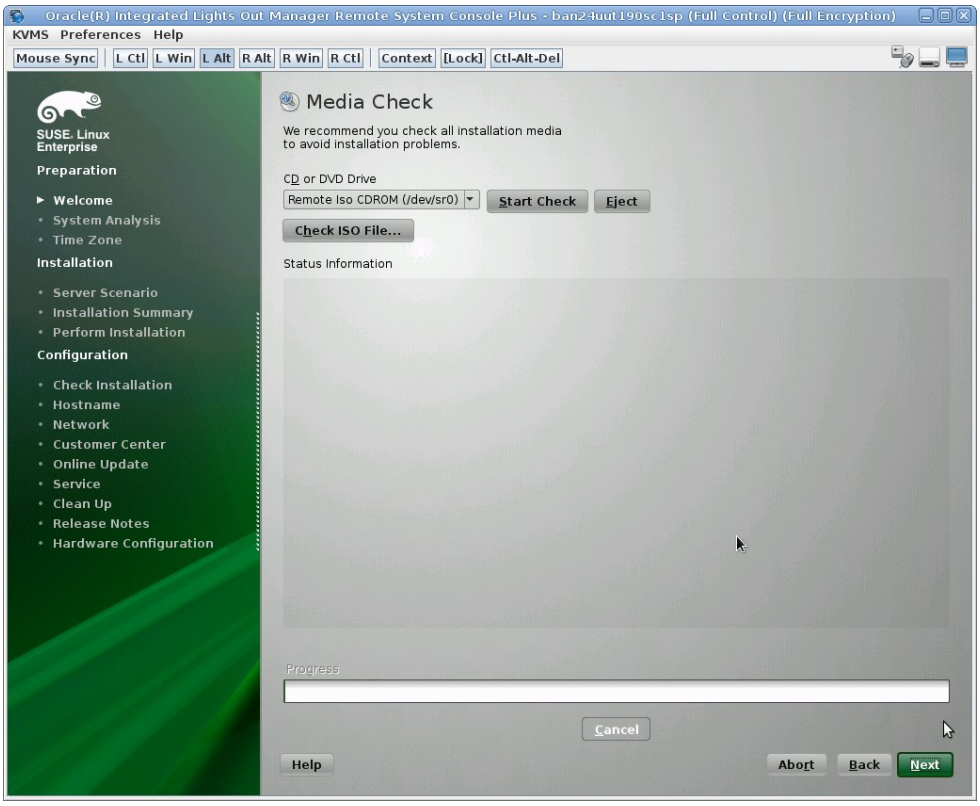
   a. **Select the appropriate Language.**

   b. **Select the Keyboard layout.**

   c. **Read and accept the License Agreement.**

   d. **Click `Next`.**

The Media Check screen appears.



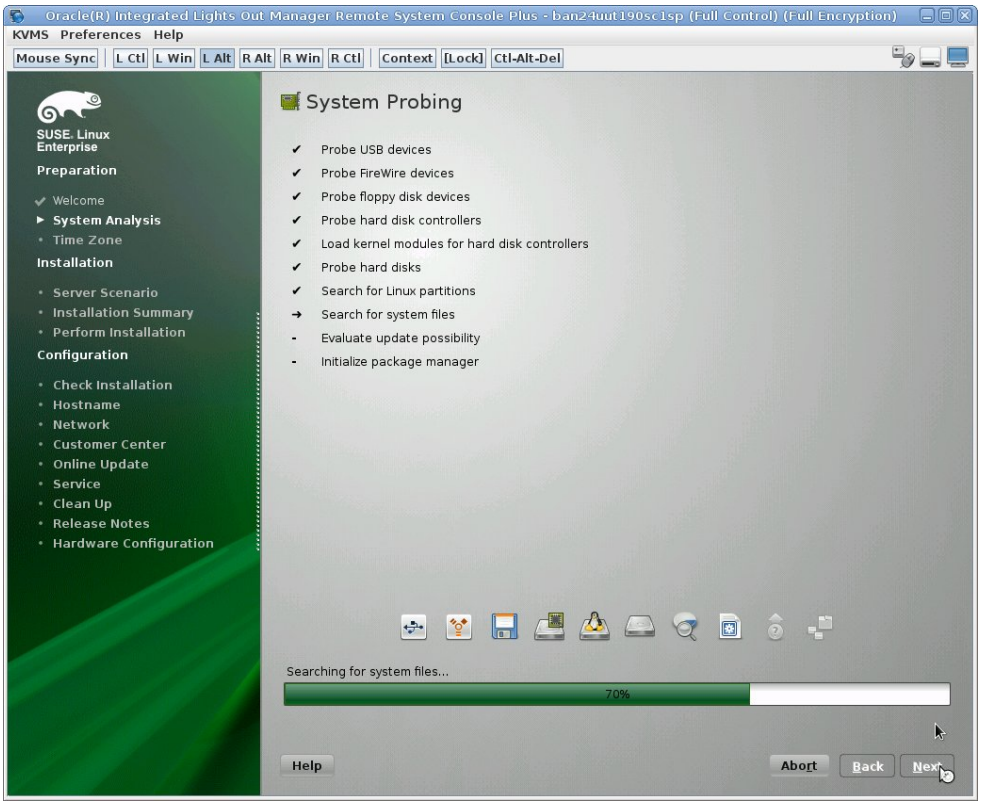
7. **If this the first time that you are doing an installation from this media, you should consider testing the media; otherwise, click `Next` and proceed to Step 9.**

8. **To check the media, do the following:**

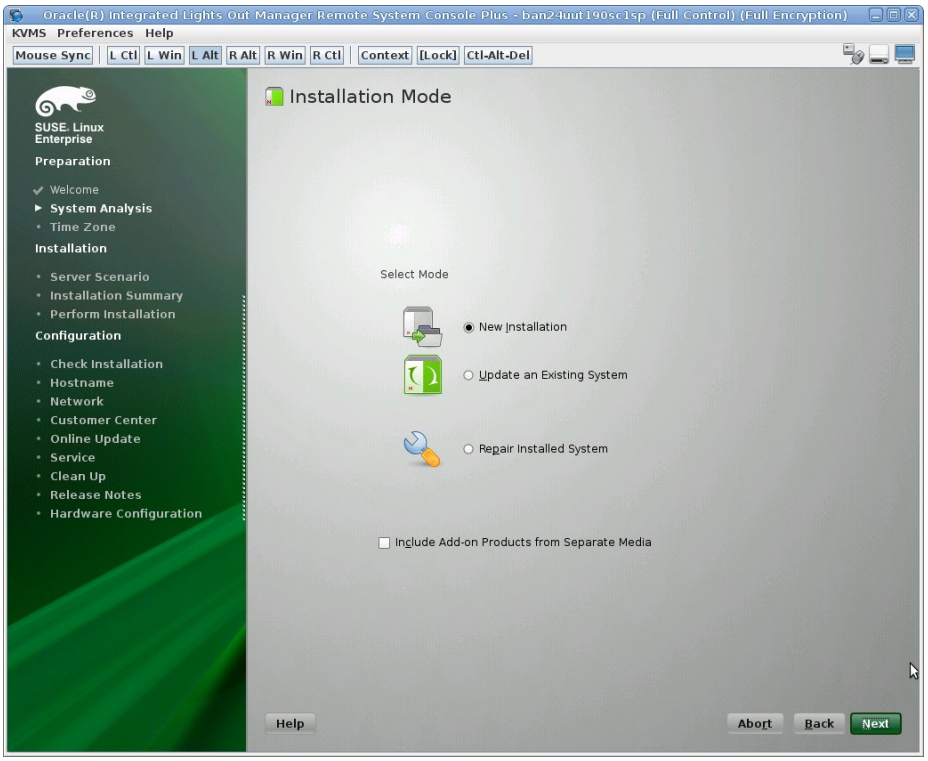
   a. **Select the media type and click the `Start Check` button.**

   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.

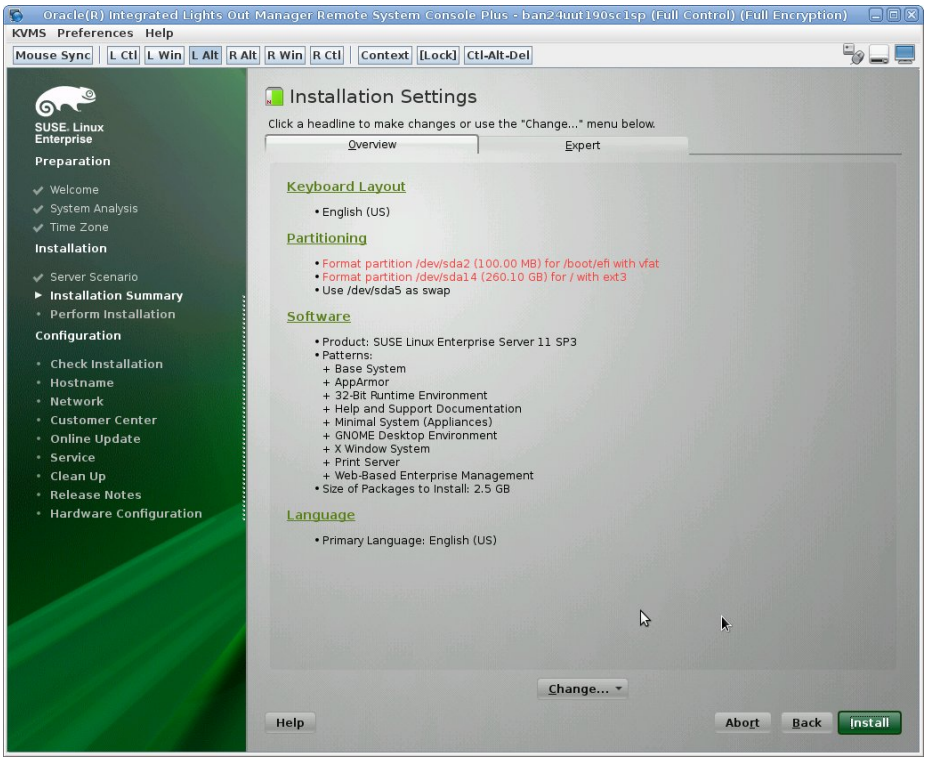
Note - If you want NTP Service, you can set that up after the operating system is installed.

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`, edit the settings, then click `Install` to apply the changes and continue the installation.**

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.**

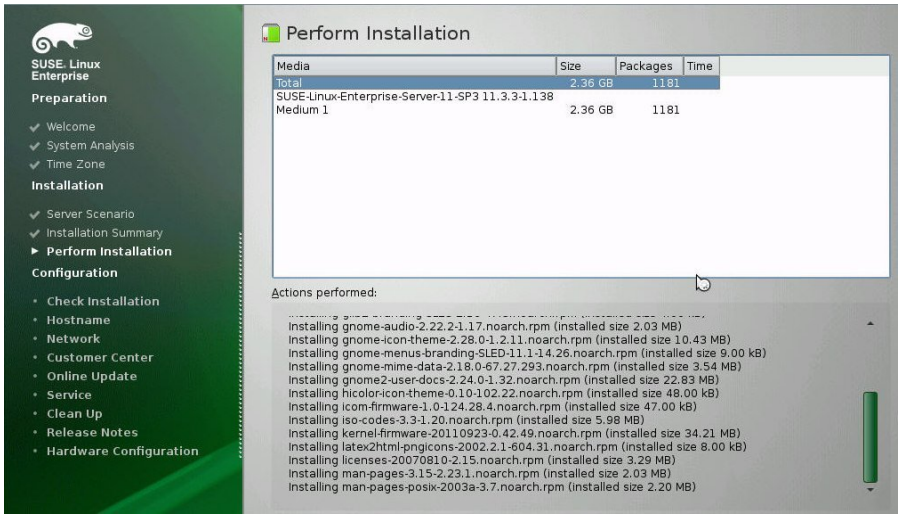
b. **Click `I Agree`.**

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 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.**

See "Post Installation Tasks for SLES OS" on page 104.

▼ Install SLES 12 OS Manually Using Local or Remote Media

This procedure describes how to boot the SUSE Linux Enterprise Server (SLES) 12 operating system from local or remote media. It assumes that you are booting the SLES 12 installation media from one of the following sources:

- SLES 12 CD or DVD set (internal or external CD/DVD)
- SLES 12 ISO DVD image

If you are booting the installation media from a PXE environment, refer to "Install SLES OS Using PXE Network Boot" on page 101 for boot instructions.

For further details about installing SLES 12, see the SUSE Linux Enterprise Server documentation collection at:

`http://www.suse.com/documentation`

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

   - **For Distribution CD/DVD**, insert the SLES 12 boot disc (CD labeled number 1 or DVD) into the local or external CD/DVD-ROM drive.
   - **For ISO image**, ensure that the SLES 12 ISO image is available and that the ISO image has been mounted to the Oracle ILOM Remote System Console Plus application using the KVMS menu.

   For additional information about how to set up the install media, see "Selecting the Boot Media Option" on page 13.

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

   For example, do one of the following:

   - **From the local server**, press the Power button (approximately 1 second) on the front panel of the server to turn the server off, then press the Power button again to power on the server.

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

The server begins the boot process and the BIOS screen appears.

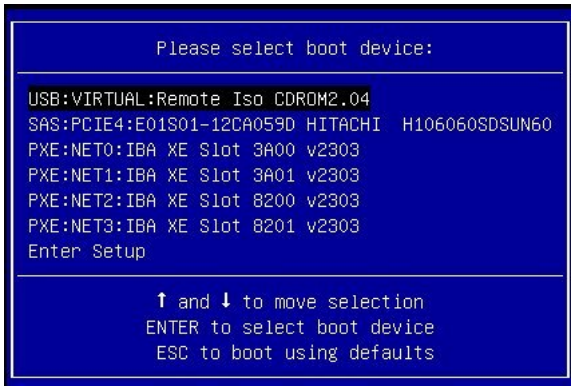
Note - The next event occurs very quickly; therefore, focused attention is needed for the following steps. Watch carefully for these messages as they appear on the screen for a brief time. You might want to enlarge the size of your screen to eliminate scroll bars.

---

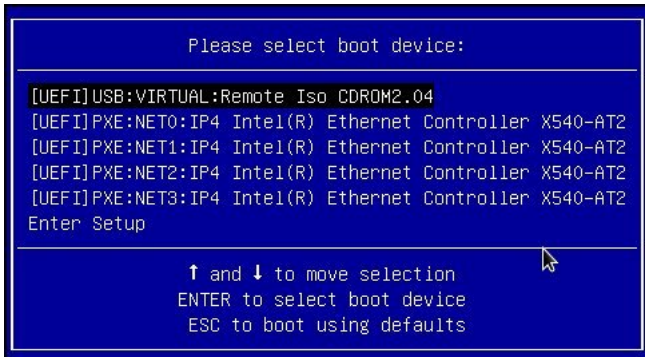
3. In the BIOS screen, press the F8 key to specify a temporary boot device for the SLES OS installation.

`[Boot Pop Up Menu Selected]` appears at the bottom of the BIOS screen, and then the Please Select Boot Device menu appears. The screen that appears will differ depending on whether you have the UEFI/BIOS Boot Mode configured for Legacy BIOS or UEFI.

- For Legacy BIOS Boot Mode, a screen similar to the following appears:



- For UEFI Boot Mode, a screen similar to the following appears:



Note - The Please Select Boot Device menu that appears in your installation might differ depending on the type of disk controller and other hardware, such as PCIe network cards, installed in your server.

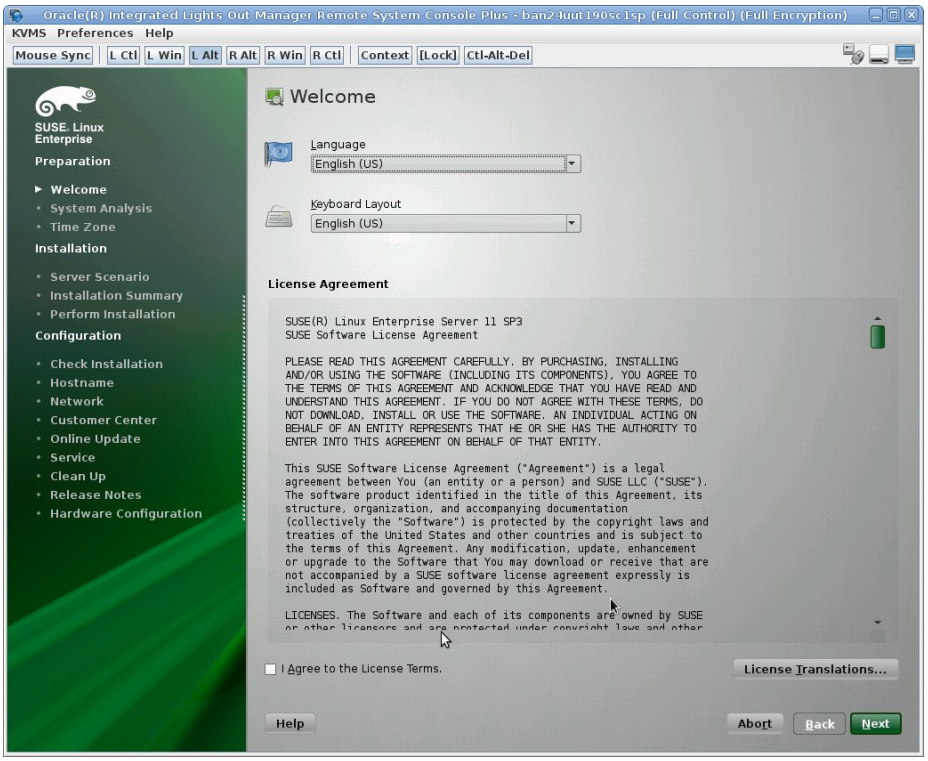
4. **In the Please Select Boot Device menu, select the menu item according to the SLES OS media installation method and the BIOS mode you elected to use, then press Enter.**

   For example, if you elected to use the remote console delivery method, select `USB:VIRTUAL: Remote Iso CDROM2.04` from the Legacy BIOS screen or `[UEFI]USB:VIRTUAL:Remote Iso CDROM.04` from the UEFI Boot Mode screen.

The SUSE Linux Enterprise Server boot screen appears.

5. **In the 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**

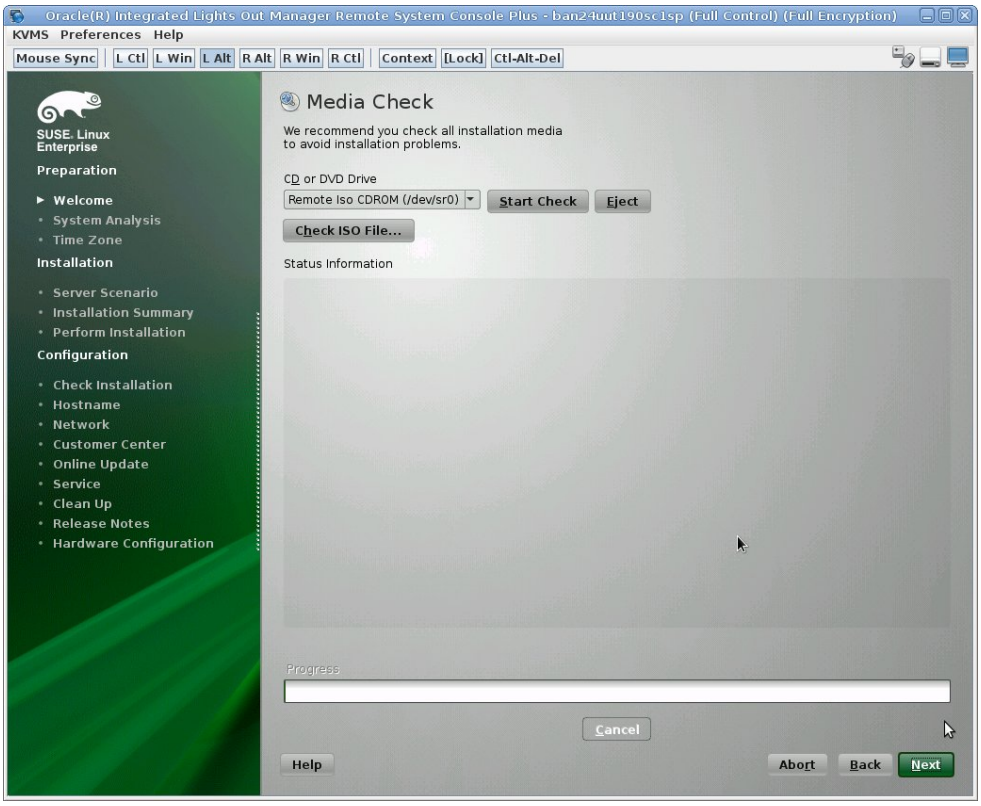
   a. **Select the appropriate Language.**

   b. **Select the Keyboard layout.**

   c. **Read and accept the License Agreement.**

   d. **Click `Next`.**

The Media Check screen appears.



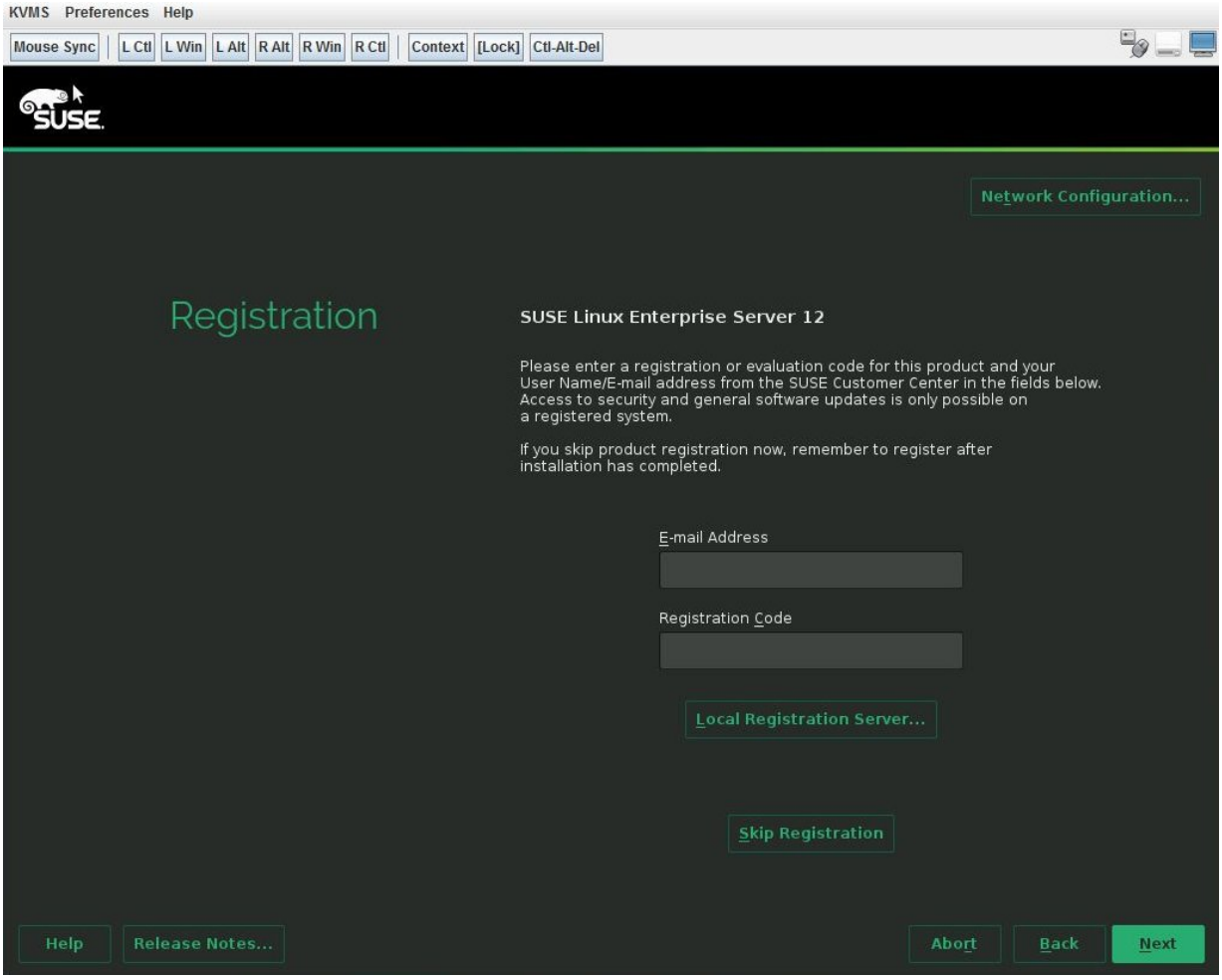
7. **If this is the first time you are doing an installation from this media, you should consider testing the media; otherwise, click `Next` to register SLES 12.**

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`**

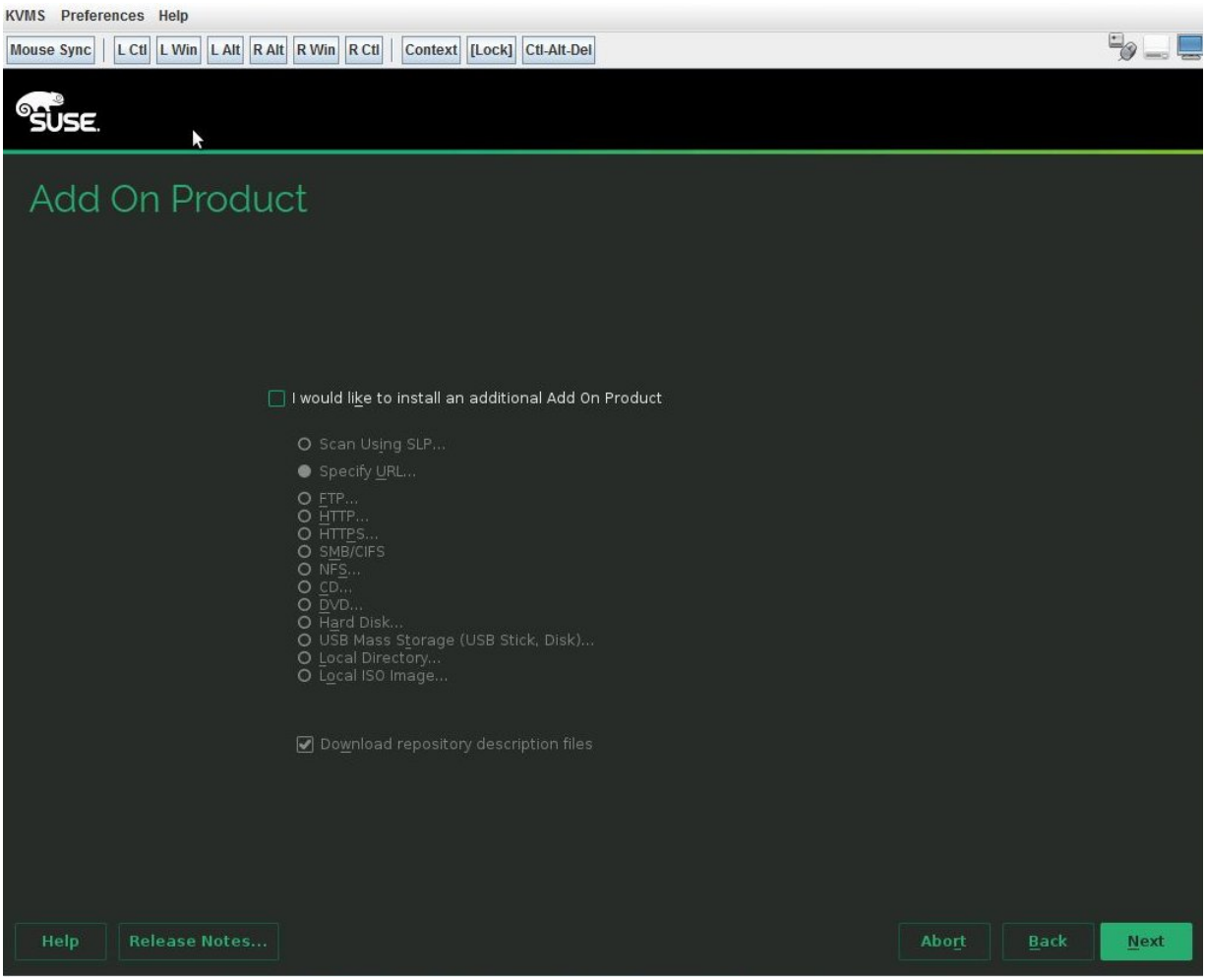
The Registration screen appears.



9. **Complete the Registration screen and then click `Next`, or click `Skip Registration` to postpone registration until after the installation is complete.**

   The Add On Product screen appears.

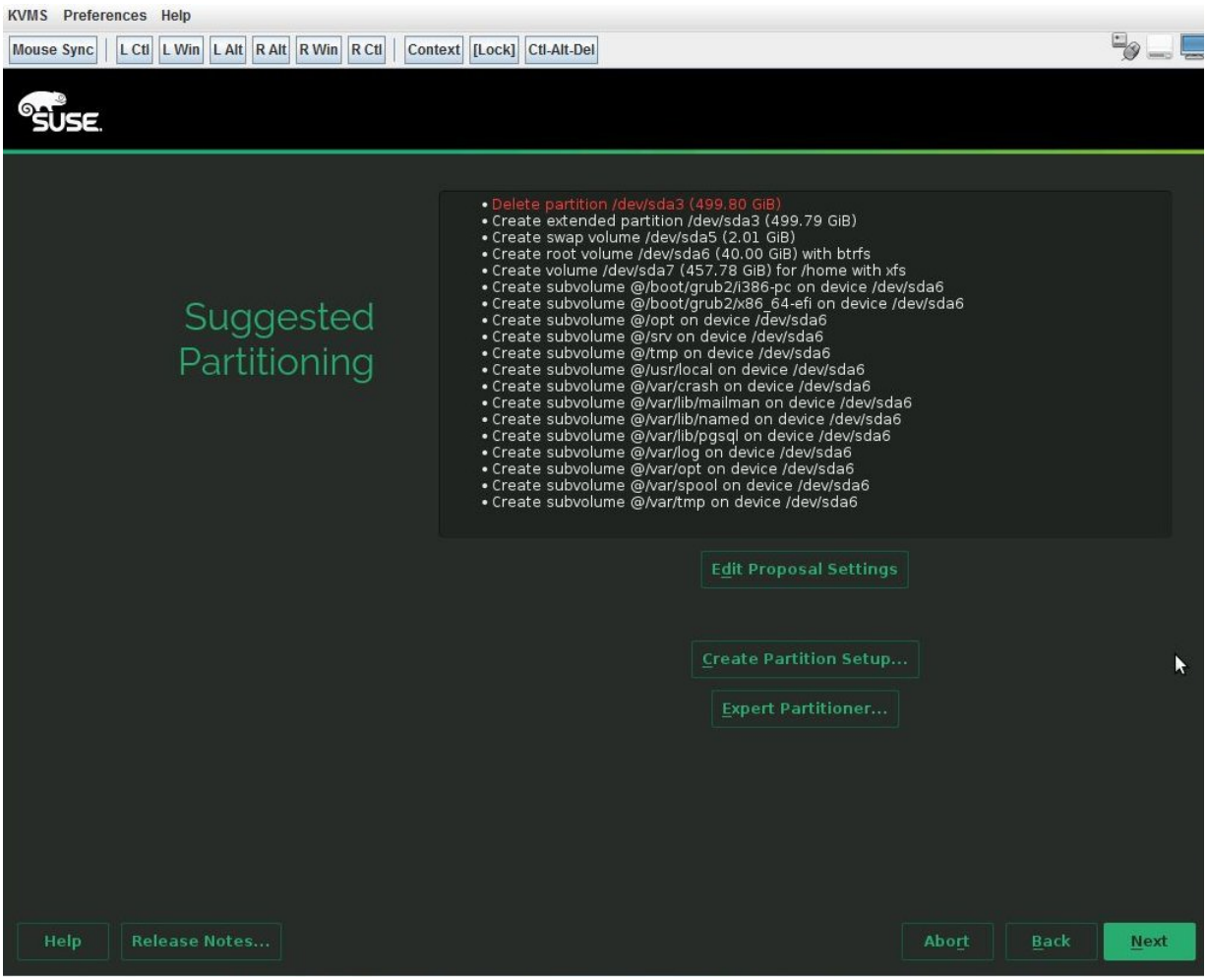
10. **In the Add On Product screen, you can install an additional product, or click `Next` for basic installation.**



The Suggested Partitioning screen appears.

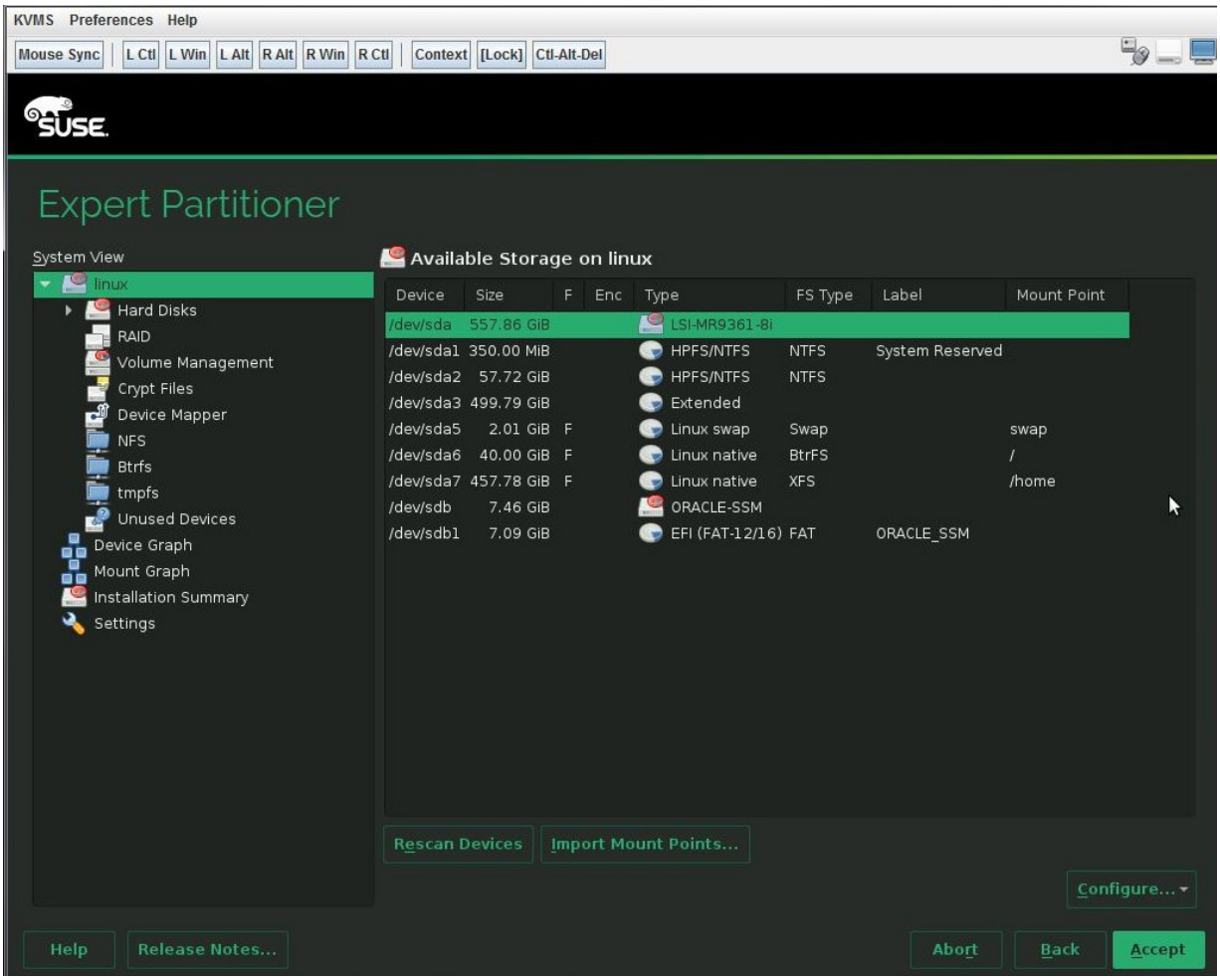
11. **In the Suggested Partitioning screen, verify that `ORACLE-SSM` is not chosen as the target partition.**

Caution - Do not select the Oracle SSM drive as the installation target. This drive is reserved for the Oracle System Assistant and should never be used as a boot or storage drive. For more information about the Oracle SSM flash drive, see "Installation Target Options" on page 17.



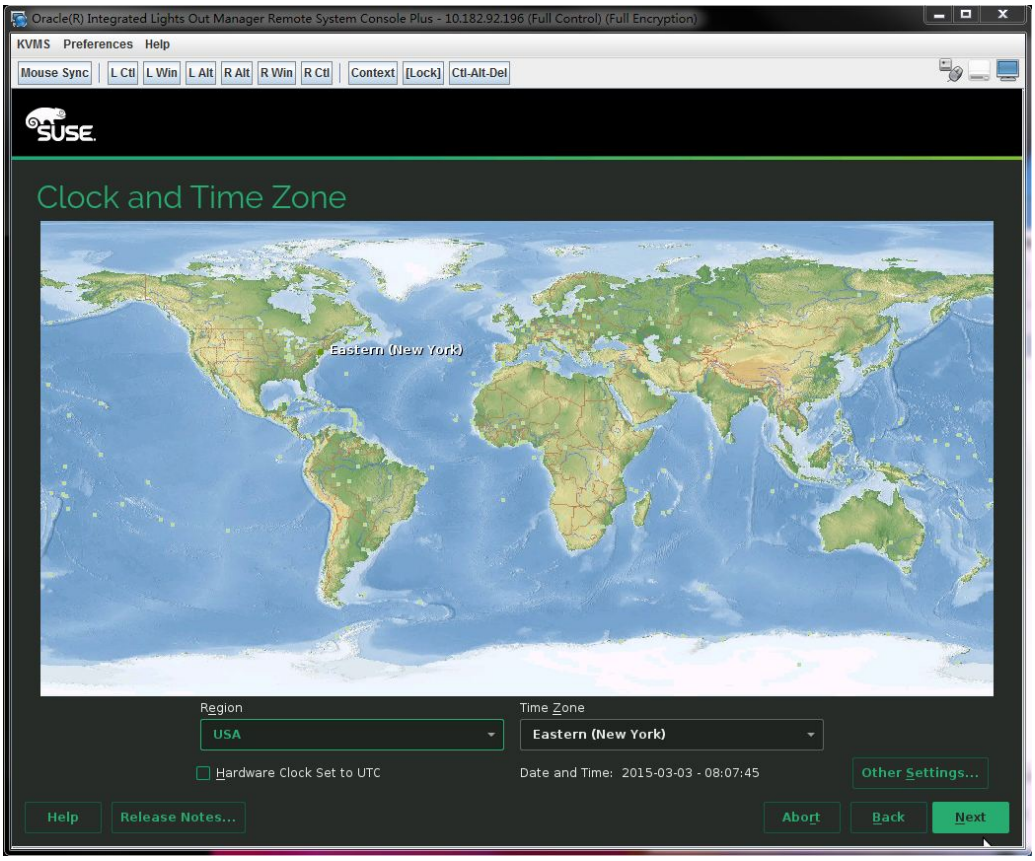
12. **If ORACLE-SSM is chosen, click `Expert Partitioner` to configure the partition manually.**

The Expert Partitioner screen appears.



13. **Select a target partition and click `Accept`.**

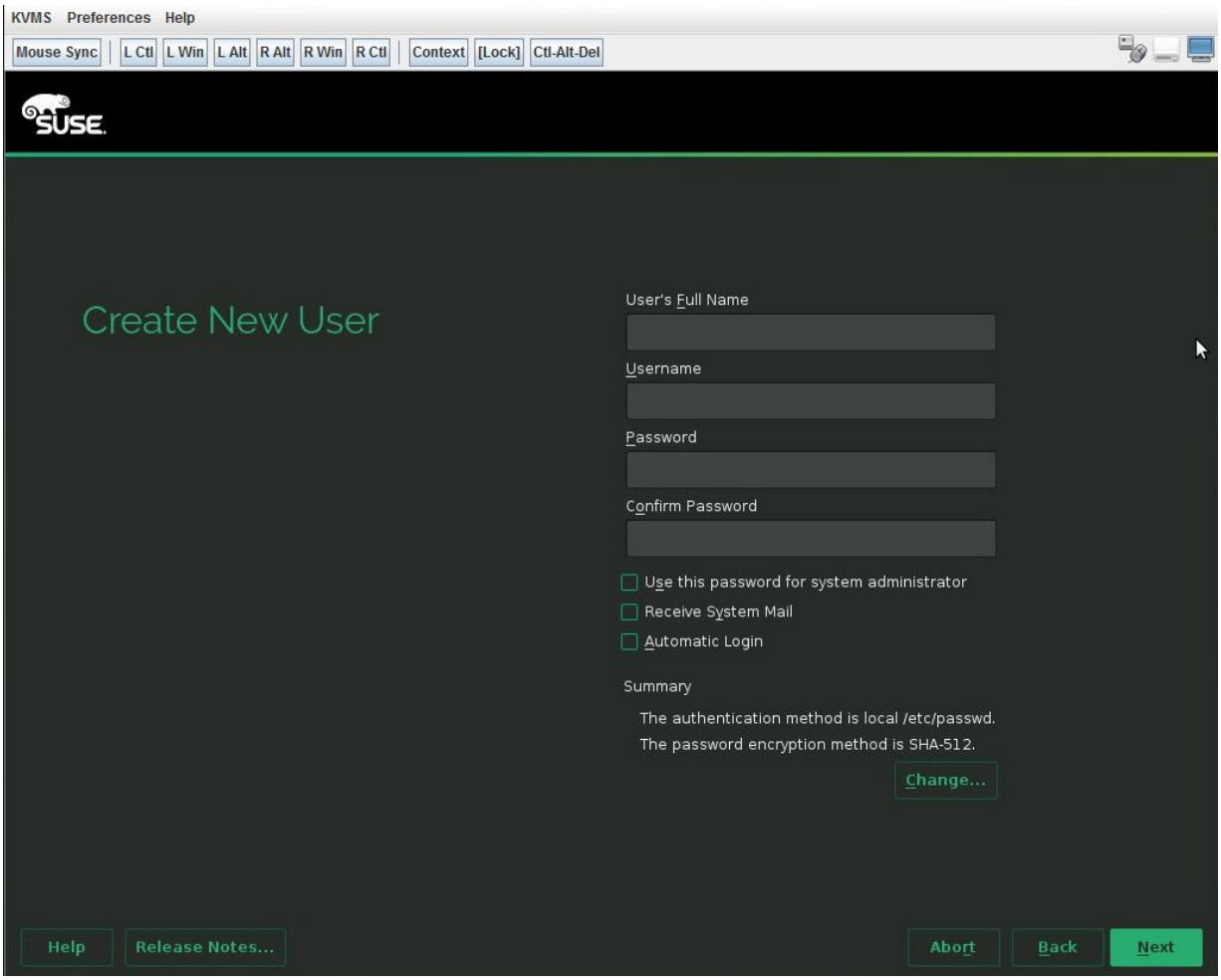
The Clock and Time Zone screen appears.



Note - If you want NTP Service, you can set that up after the operating system is installed.

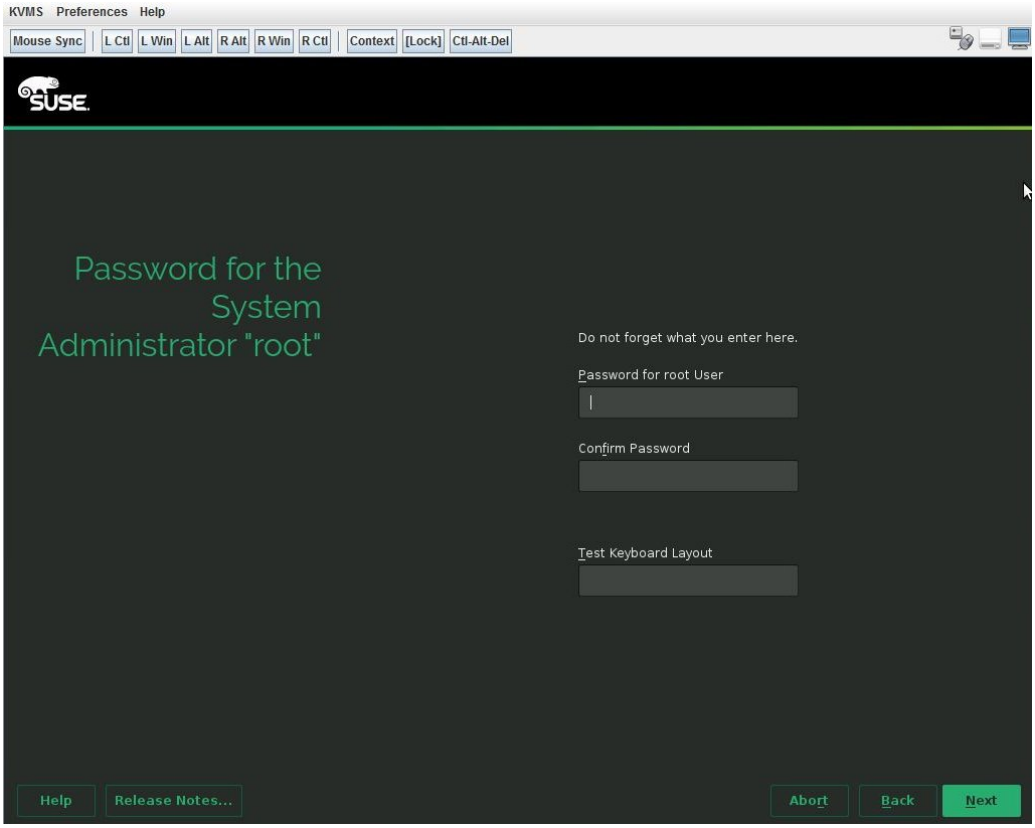
14. **In the Clock and Time Zone screen, select the appropriate region and time zone, then click `Next`.**

The Create New User screen appears.



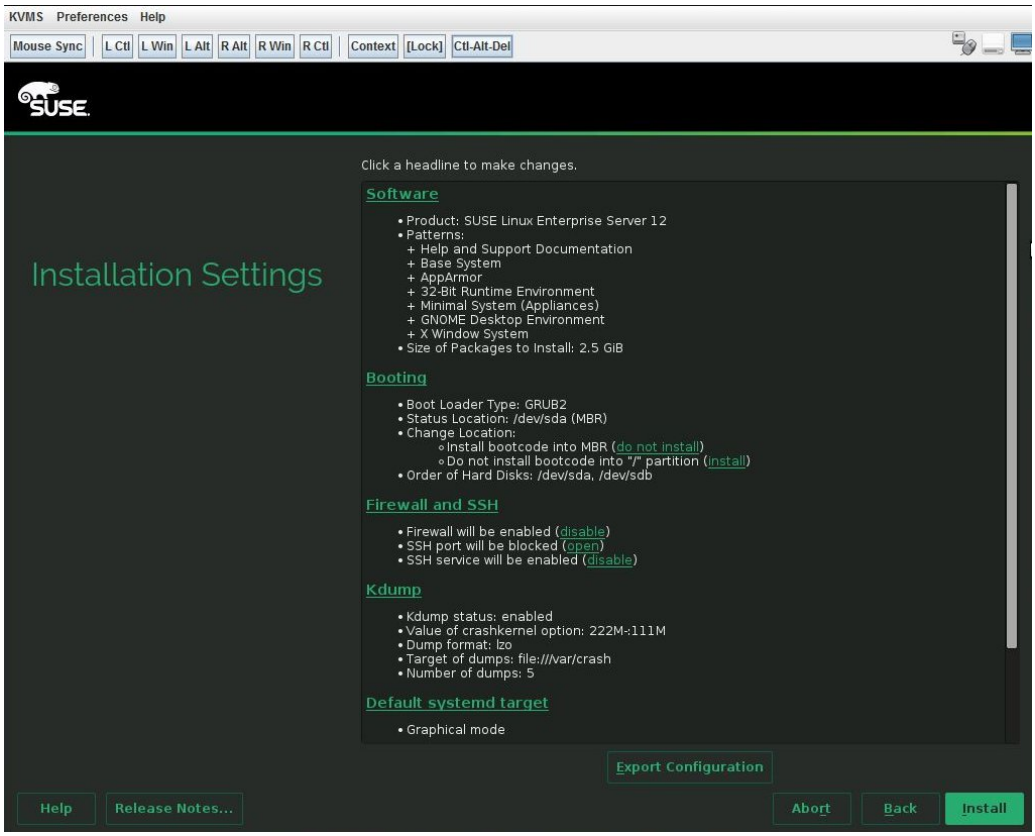
15. **Complete the fields to create a new user account, and then proceed to Step 17; or leave the fields blank and click `Next` to set a password for the System Administrator root account.**

The Password for the System Administrator "root" screen appears.



16. **Set the System Administrator "root" password, then click `Next`.**

The Installation Settings screen appears.



17. Click `Install` to start the installation process, or click `Back` to change any settings.

The installation starts. The server will reboot automatically after the installation is complete.

▼ Install SLES OS Using PXE Network Boot

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

AutoYaST enables a system administrator 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 at:

http://www.suse.com/documentation

Before You Begin Ensure that the following requirements are met prior to performing the SLES PXE installation:

- 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 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).

For instructions for booting SUSE media over the network, refer to "Automated Deployment With PXE Boot" in the *SUSE Linux Enterprise Server Deployment Guide at:*

- For SUSE Linux Enterprise Server (SLES) 11.3: https://www.suse.com/documentation/sles11/book_sle_deployment/data/book_sle_deployment.html
- For SUSE Linux Enterprise Server (SLES) 12: https://www.suse.com/documentation/sles-12/book_sle_deployment/data/book_sle_deployment.html

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

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

   For example, do one of the following:

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

The server begins the boot process and the BIOS screen appears.

Note - The next event occurs 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 the F8 key to specify a temporary boot device.**

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

4. **In the Please Select Boot Device menu, select the PXE install boot device (physical 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.

   The initial SUSE Linux boot screen appears.

5. **To continue the installation, proceed to the following instructions:**

   - For SLES 11 SP3, Step 5 in "Install SLES 11 SP3 OS Manually Using Local or Remote Media" on page 77
   - For SLES 12, Step 5 in "Install SLES 12 OS Manually Using Local or Remote Media" on page 88

Post Installation Tasks for SLES OS

After installing a SUSE Linux Enterprise Server (SLES) operating system, you should register the OS and then update to the latest version of the OS. See:

- "Update the SLES Operating System" on page 104

▼ 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

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

TABLE 1 Intel NIC Connector Label

Intel NIC Connector Label	Interface Type (Oracle Linux 6.5 and 6.6, Red Hat Enterprise Linux 6.5 and 6.6, and SLES 11.3 and 12)	Interface Type (Oracle Linux 7 and Red Hat Enterprise Linux 7)
net0	First interface (eth0)	First interface (eno0)
net1	Second interface (eth1)	Second interface (eno1)
net2	Third interface (eth2)	Third interface (eno2)
net3	Fourth interface (eth3)	Fourth interface (eno3)

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

Index

S

T

U