Oracle® Server X5-8 Installation Guide for Linux Operating Systems

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Oracle Server X5-8 Installation Guide for Linux Operating Systems

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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.

Contents

Using This Documentation

- **Overview**: This installation guide contains procedures for installing and configuring the Linux operating system on your Oracle Server X5-8.
- **Audience**: Technicians, system administrators, authorized service providers, and system users.
- **Required knowledge**: Experience installing operating systems.

This section describes how to get the latest firmware, software, and documentation for the Oracle Server X5-8. It also provides feedback links and a document change history.

- "Oracle Server X5-8 Model Naming Convention" on page 7
- "Getting the Latest Firmware and Software" on page 7
- "Documentation and Feedback" on page 8
- "Contributors" on page 8
- "Change History" on page 8

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

Oracle Server X5-8 Model Naming Convention

The Oracle Server X5-8 name identifies the following:

- X identifies an x86 product.
- The first number, 5, identifies the generation of the server.
- The second number, 8, identifies the maximum number of processors.

Getting the Latest Firmware and Software

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

You can obtain the latest version in the following ways:

- Oracle System Assistant: This is a factory-installed option for Oracle x86 servers. It has all the tools and drivers you need and resides on a USB drive installed in most servers.
- You can download updates from My Oracle Support: https://support.oracle.com

Documentation and Feedback

Documentation	Link
All Oracle products	https://docs.oracle.com
Oracle Server X5-8	http://www.oracle.com/goto/X5-8/docs-videos
Oracle Integrated Lights Out Manager (ILOM). Refer to the Oracle ILOM documentation.	http://www.oracle.com/goto/ILOM/docs
Oracle Hardware Management Pack. Refer to the documentation for your supported version of Oracle Hardware Management Pack as listed in the *Product Notes*.	http://www.oracle.com/goto/ohmp/docs

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

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Change History

The following lists the release history of this documentation set:

- December 2015. Technical updates.
- July 2015. Initial publication.

About Linux Operating System Installs

This section contains an overview for installing a new Linux operating system (OS) on your Oracle Server X5-8.

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.	"Local or Remote Installation Options" on page 13
Review installation target options and how to set them up.	"Selecting the Installation Target Option" on page 16
Review OS installation options.	"Linux OS Installation Options" on page 18
Review Oracle System Assistant.	"Oracle System Assistant" in *Oracle X5 Series Servers Administration Guide*

Note - This document describes how to install a supported Linux OS either manually or by using the Oracle System Assistant. If your system came with a preinstall OS, refer to your server's Installation Guide for information on configuring it.

Related Information

- "Installing a Linux Operating System" on page 29

Supported Linux Operating Systems

The Oracle Server X5-8 supports the following minimum Linux operating systems.

Linux OS Version	Edition
Oracle	Oracle Linux 6.6 and 7.1 OS for x86 (64-bit) with the Oracle Unbreakable Enterprise Kernel for Linux Release 3 update 5 **Note -** Optionally, the Red Hat Compatible Kernel can be used on Oracle Linux 6.6 and 7.1 OS for x86 (64-bit).
Red Hat	Red Hat Enterprise Linux 6.6 and 7.1 OS for x86 (64-bit) **Note -** Optionally, the Oracle Unbreakable Enterprise Kernel for Linux Release 3 u5 can be installed on Red Hat Enterprise Linux 6.6 and 7.1 OS for x86 (64-bit).

The Linux Hardware Compatibility List (HCL) identifies hardware that is compatible with Linux operating systems. To find the latest Linux versions supported for the Oracle Server X5-8, go to the following sites and search using your server model number:

- Oracle Linux: `http://linux.oracle.com/pls/apex/f?p=117:1:3991604960223967`
- Red Hat Enterprise Linux: `https://access.redhat.com/certifications`

Note - For all late-breaking requirements for the operating system, refer to the latest version of the *Oracle Server X5-8 Product Notes*. 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 X5-8 Product Notes* at `http://www.oracle.com/goto/X5-8/docs-videos`.

Note - If the Oracle Linux 6.6 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 6.6 OS with the UEFI/ BIOS Boot Mode set to UEFI, you must perform a fresh installation of Oracle Linux 6.6 OS.

Related Information

- "Installing a Linux Operating System" on page 29
- "Supported Operating Systems" in *Oracle Server X5-8 Product Notes*

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 6.6 and 7.1 OS and can be installed on Red Hat Enterprise Linux 6.6 and 7.1 OS. 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

- For the latest information about operating system compatibility and pointers to installation information, refer to corresponding release notes at:

  `http://docs.oracle.com/cd/E37670_01/index.html` for Linux 6, and `https://docs.oracle.com/cd/E52668_01/index.html` for Oracle Linux 7
- "Supported Operating Systems" in *Oracle Server X5-8 Product Notes*
- "Installing a Linux Operating System" on page 29

Selecting the Console Display Option

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

- "Console Display Options" on page 11
- "Set Up the Local Console" on page 11
- "Set Up the Remote Console" on page 12

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 "Modify Network Settings From the Oracle ILOM Web Interface" in *Oracle Server X5-8 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 shell command line in a terminal window, 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

Local or Remote Installation Options

The installation begins when you boot a copy of the installation ISO file, which can be on a DVD, a network location, or mounted on the server SP.

To download and prepare the installation ISO image, see "Obtaining and Preparing a Full Installation ISO Image" on page 21.

You can perform the installation on the local server or over the network on a remote server:

- **Local Installation:** For a local installation, connect a USB DVD drive to one of the server USB ports and insert a DVD containing the installation ISO image in it.
- **Remote Installation:** On a remote server, you can either:
  - Insert a DVD containing the installation ISO image into a DVD drive connected to the server.
  - Place the installation ISO image on a network location that is set up for virtual redirection.
  - Mount the installation ISO image on the service processor (SP).

For more on remote installations, see: "Set Up a Remote Installation" on page 14

▼ Set Up a Remote Installation

Remote installation enables you to boot the installation ISO image over the network.

Remote boot sources include:

- **Installation ISO image on a DVD** installed in a remote DVD drive
- **Installation ISO image on the network** in a location that is available for virtual redirection

Other remote alternatives include:

- **Installation ISO image mounted on the server service processor (SP)**

  For instructions on mounting an installation image onto the server SP, refer to:

  - *Oracle ILOM Administrator's Guide for Configuration and Maintenance* at `http://www.oracle.com/goto/ILOM/docs`.
  - More Details link in the Oracle ILOM Remote Control > Remote Device web interface page.

- **Installation 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 6.6 or 7.1 Using PXE Network Boot" on page 62
  - "Install RHEL 6.6 or 7.1 Using PXE Network Boot" on page 70

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

1. **Access the installation ISO image:**

   - **For an installation ISO image on a DVD**, insert the media into the built-in or external DVD-ROM drive on a remote server.
   - **For an installation ISO image on a network location**, ensure that ISO image is available on a network shared location or is mounted on the server service processor (SP).

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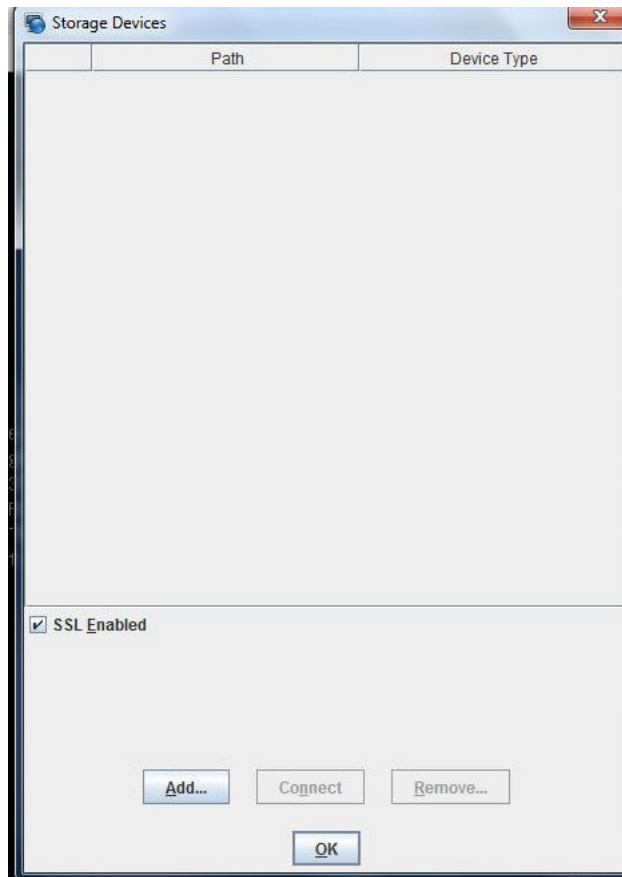
c. **In the Storage Devices dialog, click Add.**

The Add Storage Device dialog appears.
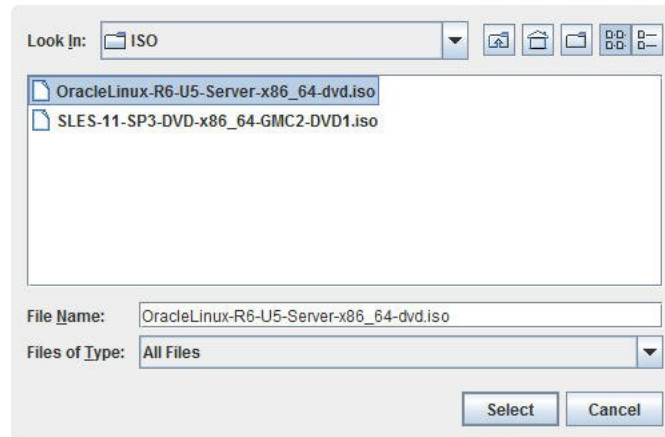
d. **Browse to the ISO image, select it, and click `Select`.**

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

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

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.

Note - NVMe drives are not supported on Red Hat Enterprise Linux operating systems. NVMe drives are supported on servers running the Oracle Linux operating system.

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" in *Oracle Server X5-8 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 and the Dual PCIe Card Carriers (DPCCs)" in *Oracle Server X5-8 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 19

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 19.
Remote assisted OS installation – Uses Oracle System Assistant. (Recommended)	Oracle ILOM Remote System Console Plus application, a redirected DVD drive or ISO image file, and OS distribution media. For more information, see "Assisted Linux OS Installation" on page 19.
Local OS install using a DVD drive – Uses a physical DVD drive connected to the server.	A monitor, USB keyboard and mouse, a USB DVD drive, and OS distribution media. For more information, see "Manual Linux OS Installation" on page 19.
Remote OS install using a DVD drive or a DVD ISO image – Uses a redirected physical 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 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 19.

Assisted Linux OS Installation

Assisted Linux OS installation is the recommended method for installing a supported OS on your server. This method involves using Oracle System Assistant. You deliver the OS installation media on either a local or remote external DVD drive, USB device, or DVD image. The 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.

For more information, see *Oracle X5 Series Servers Administration Guide* at: `http://www.oracle.com/goto/x86AdminDiag/docs`

Manual Linux OS Installation

With the manual Linux OS installation method, you deliver the Linux OS distribution media on either a local or remote external DVD drive, USB device, or 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.

Preparing to Install a Linux Operating System

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

Description	Links
Obtain an installation ISO image.	"Obtaining and Preparing a Full Installation ISO Image" on page 21
Verifying and setting the server UEFI optimized defaults.	"Preparing the Boot Environment" on page 22
	"Reset the BIOS Firmware to Default Settings (BIOS)" in *Oracle X5 Series Servers Administration Guide*
Configuring boot mode.	"Set the Boot Mode" on page 25
	"Viewing or Modifying the Current Boot Mode" in *Oracle X5 Series Servers Administration Guide*
Configuring RAID on the server.	"Configuring RAID" on page 28
	"Configure Storage Drives for OS Installation" in *Oracle Server X5-8 Installation Guide*

Related Information

- "Installing a Linux OS on a Single System Using Oracle System Assistant" on page 29
- "Installing Oracle Linux on a Single System Manually" on page 34
- "Installing Red Hat Enterprise Linux OS on a Single System Manually" on page 65
- *Oracle Server X5-8 Product Notes*

▼ Obtaining and Preparing a Full Installation ISO Image

To install Linux, you need a full installation image. Oracle provides this image in an ISO file which you must download. Then it can be written to a DVD or located on a network server.

- For Oracle Linux, you can get an image from `http://edelivery.oracle.com/linux`.
- For Red Hat Enterprise Linux, contact Red Hat to obtain an installation image.

Use the following steps to get an Oracle Linux installation image.

1. **Navigate to `http://edelivery.oracle.com/linux`.**

2. **Search for and download the desired full installation ISO image.**

   Select an image that is specifically for x86 servers.

   Note - You can also download a smaller boot ISO image, but you cannot use it to complete the Oracle Linux installation.

   ---

3. **Write the downloaded ISO image to a DVD or a network location.**

Preparing the Boot Environment

Before you install the operating system, you should ensure that Unified Extensible Firmware Interface (UEFI) settings are configured to support the type of installation you plan to perform.

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

-
-

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

UEFI is a specification that defines a software interface between an operating system and platform firmware. UEFI replaces the Basic Input/Output System (BIOS) firmware interface.

▼ UEFI (BIOS) Settings

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 X5-8 Service Manual*.

> **Note -** This procedure is optional. 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.

Any changes you make in the BIOS Setup Utility using the F2 key persist 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 is 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" in *Oracle Server X5-8 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, and 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, and 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.
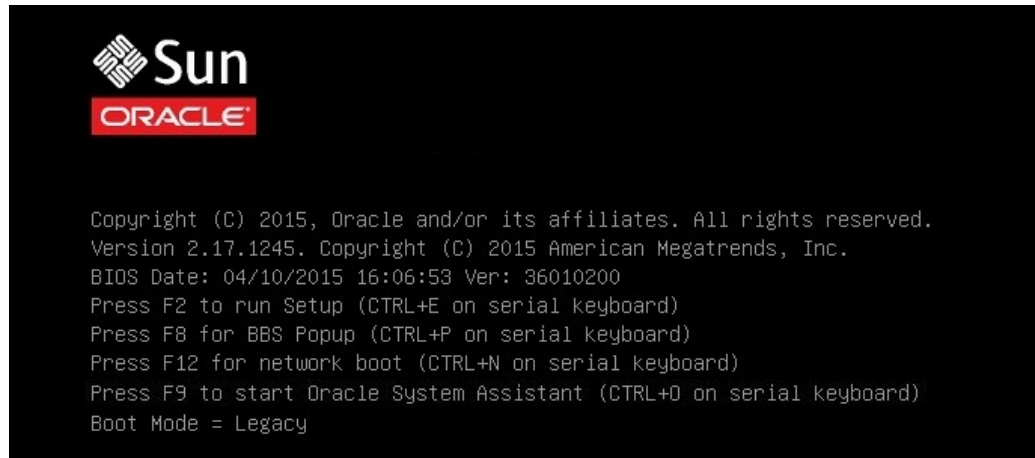
2. When prompted in the BIOS screen, press the F2 key to access the BIOS Setup Utility.

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

```
          Aptio Setup Utility - Copyright (C) 2015 American Megatrends, Inc.
          Main  Advanced  IO  Boot  Exit

          Project Version        37.01.04.00           Set the Date. Use
          System Date            [Mon 06/22/2015]       Tab to switch
          System Time            [16:22:05]             between Date
                                                        elements.
          QPI Link Speed         9.6 GT/s
          Total Memory           160 GB
          Current Memory Speed   1333 MT/s
          USB Devices:
               1 Drive, 2 Keyboards, 1 Mouse, 3 Hubs

          BMC Status             Healthy               →←: Select Screen
          BMC Firmware Revision  3.2.5.12 r100103      ↑↓: Select Item
                                                        Enter: Select
        ▶ Product Information                           +/-: Change Opt.
        ▶ CPU Information                               F1: General Help
        ▶ DIMM Information                              F7: Previous Values
                                                        F9: Optimized Defaults
        ▶ Security                                      F10: Save & Exit
                                                        ESC: Exit

              Version 2.17.1245. Copyright (C) 2015 American Megatrends, Inc.
                                                                            AB
```

3. **Press the F9 function 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, and 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, and then click Save.
   - **From the Oracle ILOM CLI**, type: `reset /System`

   The server begins the boot process and the BIOS screen appears.
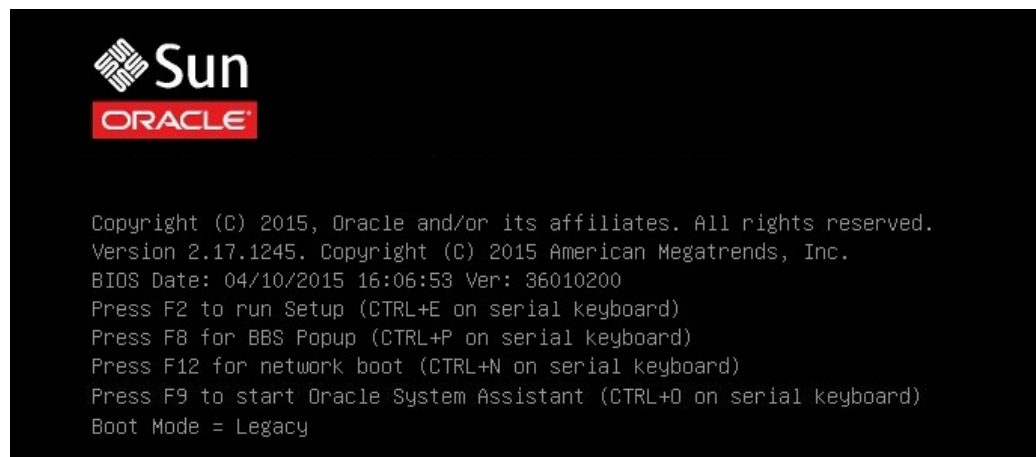
   Note - The next steps occur very quickly so be ready to press the F2 function key.

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.

```
        Aptio Setup Utility - Copyright (C) 2015 American Megatrends, Inc.
    Main  Advanced  IO  Boot  Exit

   UEFI/BIOS Boot Mode      [Legacy]          UEFI: Only UEFI Boot
   Retry Boot List          [Enabled]         options are
   Network Boot Retry       [Enabled]         initialized and
                                              present to user.
   Persistent Boot          [Disabled]        Legacy: Only legacy
   Support                                    boot options are
                                              initialized and
   UEFICfg LateSync         [Disabled]        present to user.

 ▶ OSA Configuration
                                              ←→: Select Screen
   Legacy Boot Option Priority                ↑↓: Select Item
   [PXE:NET0:IBA XE Slot A000 v2208]          Enter: Select
   [RAID:PCIE2:(Bus 01 Dev 00)PCI RAID Adapter]  +/-: Change Opt.
   [PXE:NET1:IBA XE Slot A001 v2208]          F1: General Help
   [PXE:NET2:IBA XE Slot B000 v2208]          F7: Previous Values
   [PXE:NET3:IBA XE Slot B001 v2208]          F9: Optimized Defaults
   [USB:INT:ORACLE SSM PMAP]                  F10: Save & Exit
   [SATA:DVD:TEAC    DV-W28SS-W         ]     ESC: Exit

        Version 2.17.1245. Copyright (C) 2015 American Megatrends, Inc.
                                                              AB
```

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 "Configure Storage Drives for OS Installation" in *Oracle Server X5-8 Installation Guide*.

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 and Red Hat Enterprise Linux operating systems, and system-specific drivers on the server.

Description	Links
Using Oracle System Assistant to install the Linux operating systems.	"Installing a Linux OS on a Single System Using Oracle System Assistant" on page 29
Using media to install the Oracle Linux operating system on a single server.	"Installing Oracle Linux on a Single System Manually" on page 34
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 65

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

Oracle System Assistant's Install OS task is the recommended method for installing a supported OS on the Oracle Server X5-8.

- "Install a Linux OS Using Oracle System Assistant" on page 29

▼ 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 21.
- 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 "Configure Storage Drives for OS Installation" in *Oracle Server X5-8 Installation Guide*.

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

   - **For an ISO image on a DVD**, insert the DVD into the local or remote DVD-ROM drive.
   - **For an ISO image on the network**, ensure that the ISO image is 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 "Local or Remote Installation Options" 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. **In the Actions panel on the Oracle ILOM Summary Information page, click the Oracle System Assistant Launch button.**

The Oracle System Assistant System Overview screen appears.
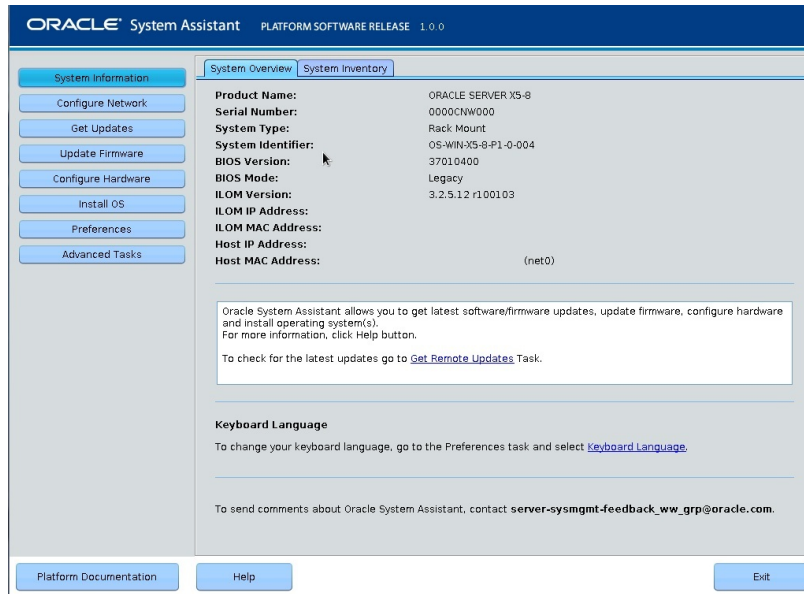
c. **Proceed to Step 4.**

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

a. **From the Oracle ILOM Summary Information page, click the Remote Console Launch button.**

The Oracle ILOM Remote System Console Plus window appears.

b. **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, and 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, and then click Save.

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

The BIOS screen appears in the Oracle ILOM Remote System Console Plus application.
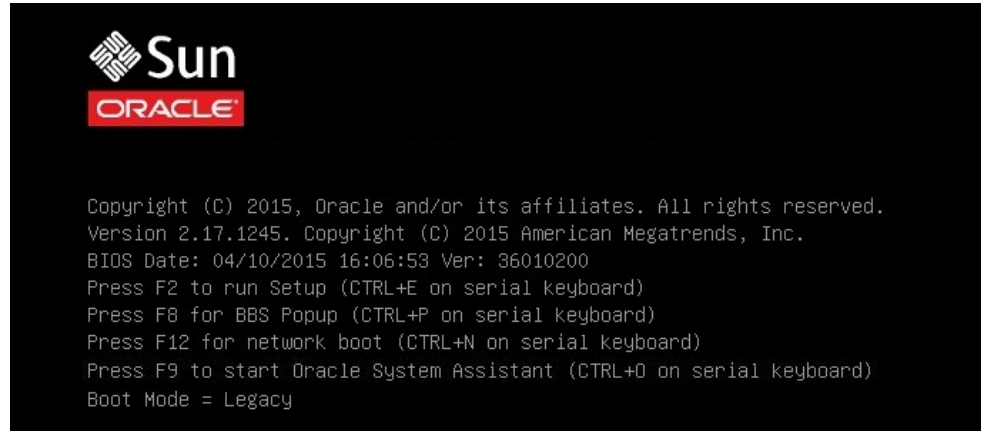
Note - The next event occurs very quickly; therefore, attention is needed for the following steps. You might want to enlarge the size of your screen to eliminate scroll bars.

c. **Press the F9 key to start Oracle System Assistant.**

   The Oracle System Assistant System Overview screen appears.

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

4. **To update Oracle System Assistant to the latest software release version, 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, or Red Hat Enterprise Linux) that your want to install.**

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

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

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 installation media. The options are 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 is to 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 6.6 or 7.1 OS" on page 65
    - "Post Installation Tasks for RHEL 6.6 or 7.1 OS" on page 73

Installing Oracle Linux on a Single System Manually

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

- "Oracle Linux 6.6 or 7.1 OS Installation Task Map" on page 34
- "Before You Begin" on page 35
- "Install Oracle Linux 6.6 OS Manually Using Local or Remote Media" on page 35
- "Install Oracle Linux 7.1 OS Manually Using Local or Remote Media" on page 56
- "Install Oracle Linux 6.6 or 7.1 Using PXE Network Boot" on page 62
- "Post Installation Tasks for Oracle Linux 6.6 or 7.1 OS" on page 65

Oracle Linux 6.6 or 7.1 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.	■ "Install the Server into the Rack" in *Oracle Server X5-8 Installation Guide* ■ "Cabling the Server" in *Oracle Server X5-8 Installation Guide* ■ "Connecting to Oracle ILOM" in *Oracle Server X5-8 Installation Guide*
2.	Review the product notes.	*Oracle Server X5-8 Product Notes*
	Review the Oracle Solaris versions supported on the server.	"Supported Operating Systems" in *Oracle Server X5-8 Product Notes* *Oracle Server X5-8 Product Notes* at: `http://www.oracle.com/goto/X5-8/docs-videos` "Supported Linux Operating Systems" on page 9
3.	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 ■ "Local or Remote Installation Options" on page 13 ■ "Selecting the Installation Target Option" on page 16
4.	Set BIOS settings for new OS installations.	"Preparing the Boot Environment" on page 22
5.	Install the Oracle Linux OS.	■ "Install Oracle Linux 6.6 OS Manually Using Local or Remote Media" on page 35 ■ "Install Oracle Linux 7.1 OS Manually Using Local or Remote Media" on page 56 ■ "Install Oracle Linux 6.6 or 7.1 Using PXE Network Boot" on page 62
6.	Perform the post installation tasks.	"Post Installation Tasks for Oracle Linux 6.6 or 7.1 OS" on page 65

Related Information

- "Preparing to Install a Linux Operating System" on page 21

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 "Configure Storage Drives for OS Installation" in *Oracle Server X5-8 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 25.
- 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 22.
- The console display option is selected and set up before 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 before performing the installation. For more information about this option and setup instructions, see "Local or Remote Installation Options" on page 13.
- The installation target option is selected and set up before performing the installation. For more information about this option and setup instructions, see "Selecting the Installation Target Option" on page 16.

▼ Install Oracle Linux 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 6.6 ISO image on a DVD
- Oracle Linux 6.6 ISO DVD image in a network repository

If you are booting the installation media from a PXE environment, refer to "Install Oracle Linux 6.6 or 7.1 Using PXE Network Boot" on page 62 for instructions.

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

- **If you are using a DVD**, insert the DVD into the local or remote DVD-ROM drive.
- **If you are using an ISO image on the network**, ensure that the 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 "Local or Remote Installation Options" 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, and 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, and then click Save.
- **From the Oracle ILOM CLI**, type: `reset /System`

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


```
Copyright (C) 2015, Oracle and/or its affiliates. All rights reserved.
Version 2.17.1245. Copyright (C) 2015 American Megatrends, Inc.
BIOS Date: 04/10/2015 16:06:53 Ver: 36010200
Press F2 to run Setup (CTRL+E on serial keyboard)
Press F8 for BBS Popup (CTRL+P on serial keyboard)
Press F12 for network boot (CTRL+N on serial keyboard)
Press F9 to start Oracle System Assistant (CTRL+O on serial keyboard)
Boot Mode = Legacy
```

Note - The next event occurs very quickly; therefore, attention is needed for the following steps. 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 might 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:

```
                Please select boot device:

 USB:SUN

 PXE:NET0:IBA XE Slot 3A00 v2303
 PXE:NET1:IBA XE Slot 3A01 v2303
 PXE:NET2:IBA XE Slot 8200 v2303
 PXE:NET3:IBA XE Slot 8201 v2303

 Enter Setup

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

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

```
                Please select boot device:

 [UEFI]USB:SUN
 [UEFI]PXE:NET0:IP4 Intel(R) Ethernet Controller X540-AT2
 [UEFI]PXE:NET1:IP4 Intel(R) Ethernet Controller X540-AT2
 [UEFI]PXE:NET2:IP4 Intel(R) Ethernet Controller X540-AT2
 [UEFI]PXE:NET3:IP4 Intel(R) Ethernet Controller X540-AT2
 Enter Setup

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

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 boot mode you elected to use, and 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:SUN` 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:SUN` 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.

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 disc to do installs before, select Skip; otherwise select OK and test the disc.

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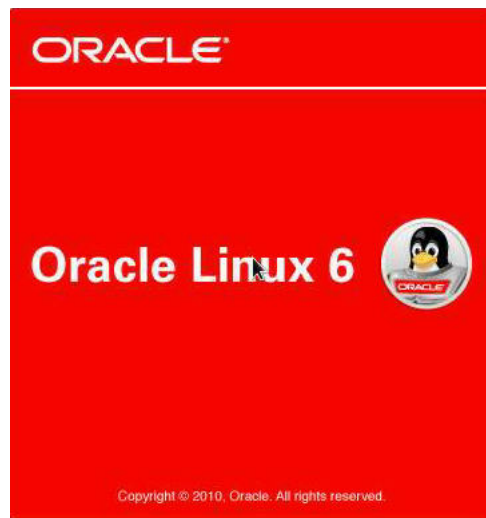
8. **Scroll to the bottom of the Oracle Linux 6 splash screen, and click Next.**

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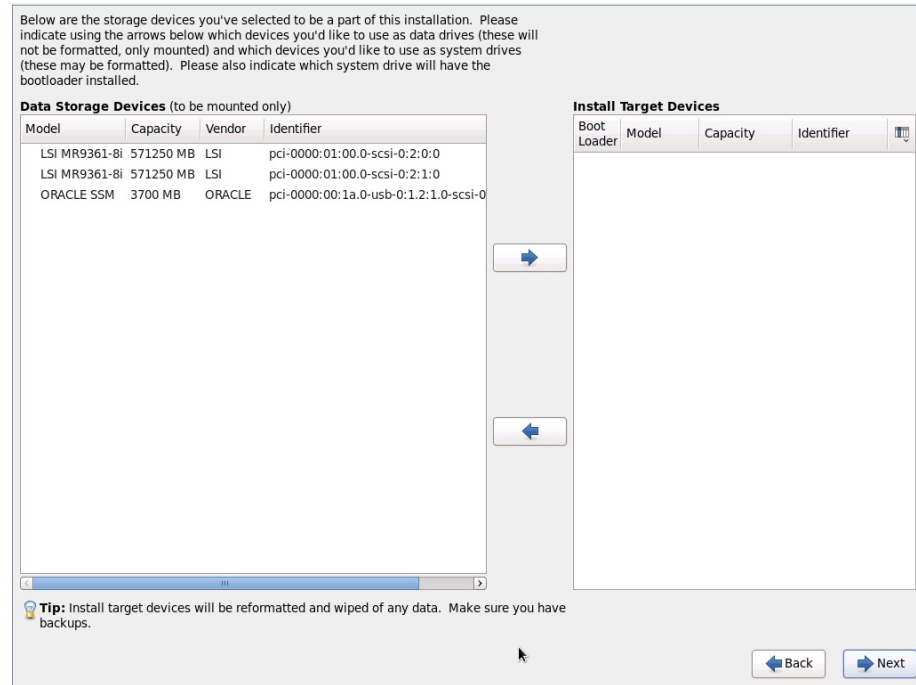
12.   **Select the storage drive on to which you want to install the operating system, scroll to the bottom of the screen, and click `Next`.**

⚠ **Caution -** Loss of functionality. Using the Oracle System Assistant flash drive as an installation target overwrites the contents of the drive. Do not use the Oracle System Assistant drive as a boot or storage drive. For more information about the Oracle System Assistant flash drive, see "Installation Target Options" on page 17.

The "Please name this computer" screen appears.
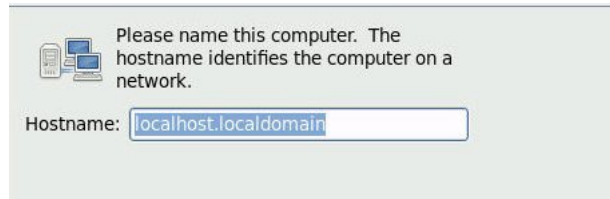
13. **Enter the host name, and click `Next`.**

The Select Time Zone screen appears.

14. **Select the appropriate region and city and, click `Next`.**
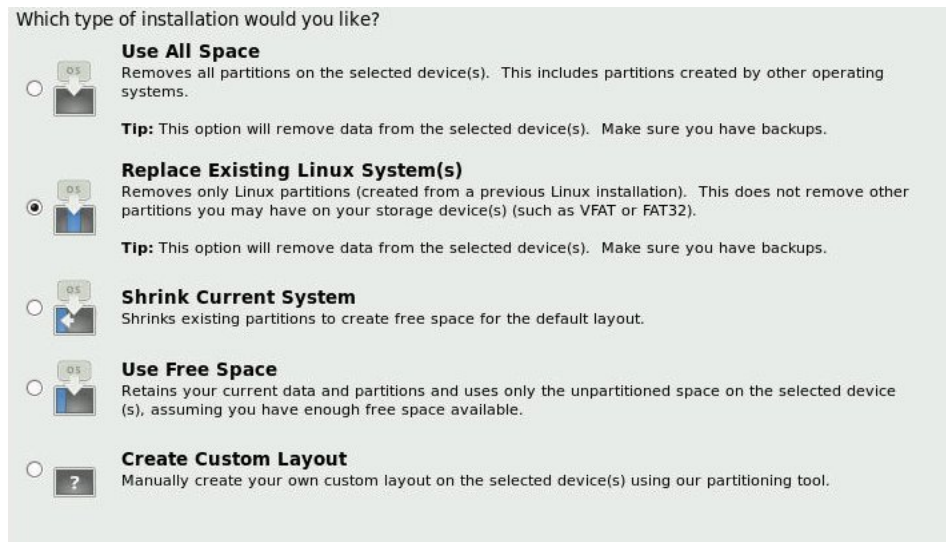
Note - If you want NTP Service, you can set that up after the operating system is installed.

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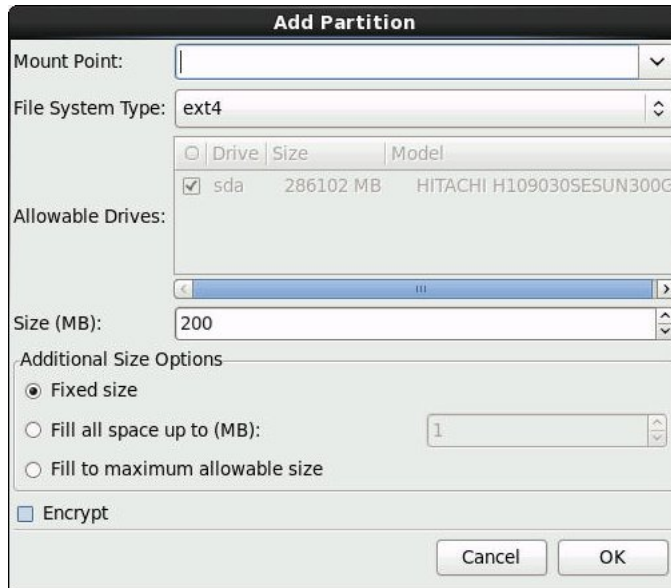
   a. **Scroll to the bottom of the screen, and click Create.**

   The Create Storage dialog appears.
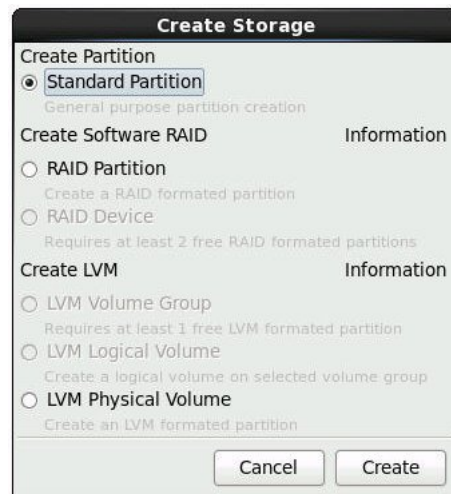
   b. **Select Standard Partition, and click Create.**

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`.**

Here is the updated Add Partition dialog.
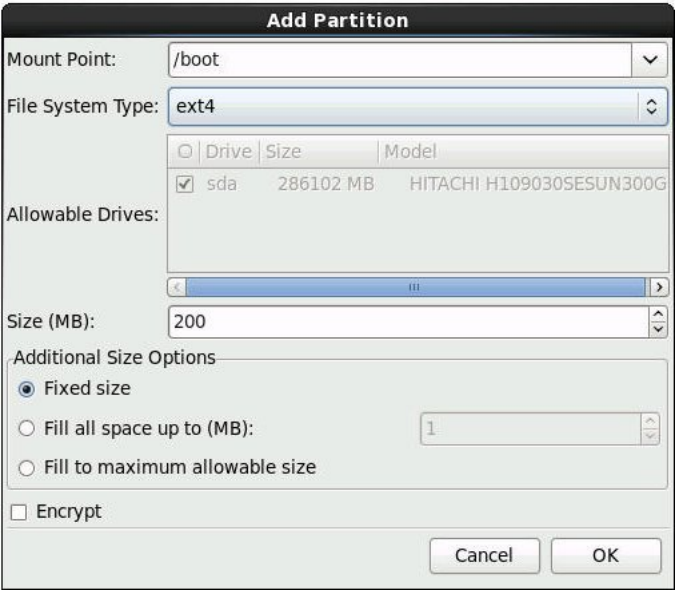
d. **Click OK.**

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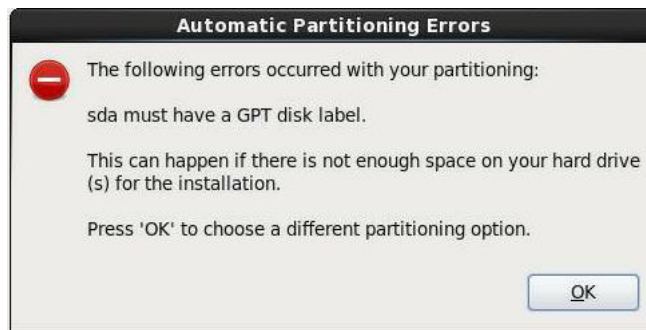
If the above screens appears, the disk to which you are attempting to install Oracle Linux is formatted incorrectly and it needs to be reformatted.

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 do 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: LSI MR9361 (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: LSI MR9361 (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 do 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.
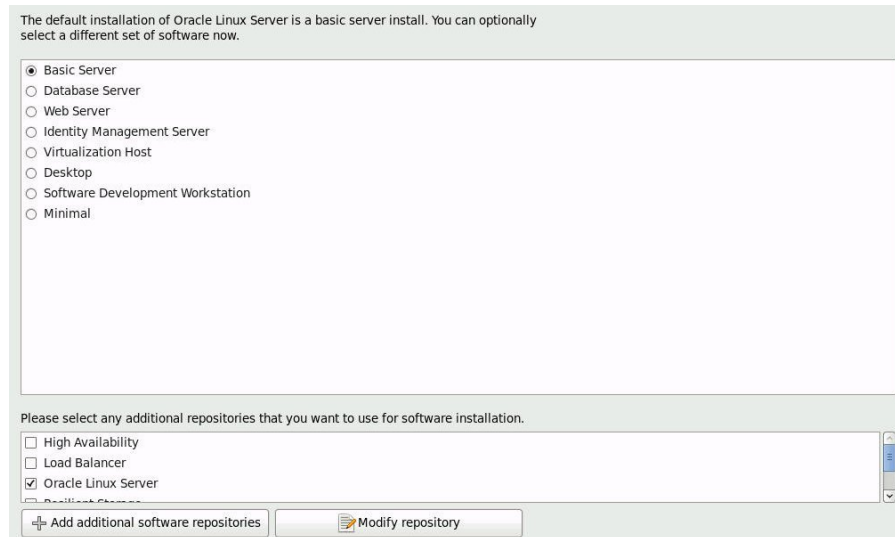
While Basic Server is the default server software to install, you can select a different set of software. Additionally, at the bottom of this screen you can select Customize Now to do a custom install of the selected software.

22. **Accept the Basic Server default and then 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.
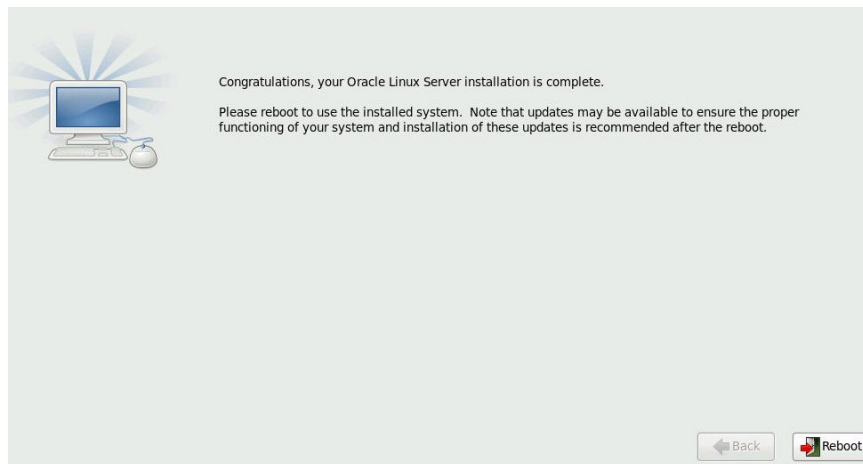
24.   **To reboot the Oracle Linux installation, click Reboot.**

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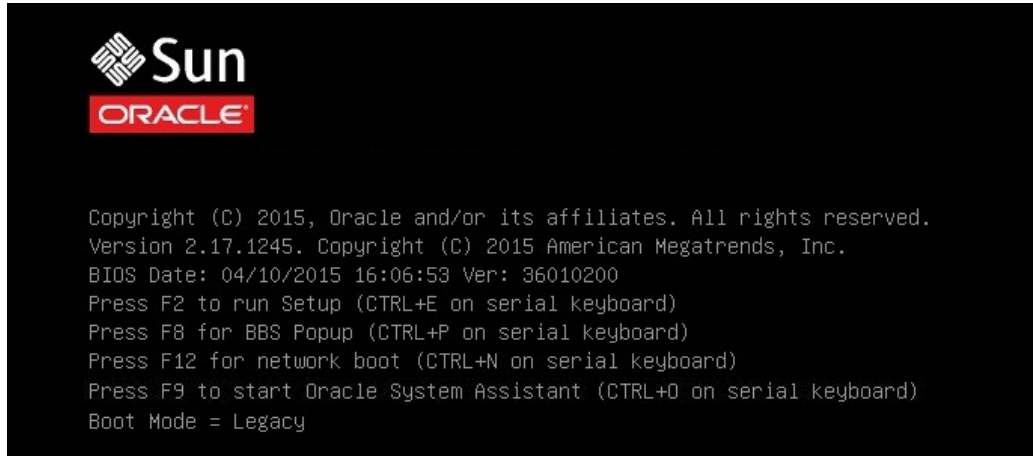
25. **To access the BIOS Setup Utility so that you can set the server to boot from the operating system you just installed, press the F2 key.**

    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 Legacy BIOS Boot Mode, perform these steps and proceed to Step 28.**

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

```
        Aptio Setup Utility - Copyright (C) 2015 American Megatrends, Inc.
    Main  Advanced  IO  Boot  Exit

  UEFI/BIOS Boot Mode      [Legacy]              UEFI: Only UEFI Boot
  Retry Boot List          [Enabled]             options are
  Network Boot Retry       [Enabled]             initialized and
                                                 present to user.
  Persistent Boot          [Disabled]            Legacy: Only legacy
  Support                                        boot options are
                                                 initialized and
  UEFICfg LateSync         [Disabled]            present to user.

▶ OSA Configuration
                                                 ↔: Select Screen
  Legacy Boot Option Priority                    ↑↓: Select Item
  [PXE:NET0:IBA XE Slot A000 v2208]              Enter: Select
  [RAID:PCIE2:(Bus 01 Dev 00)PCI RAID Adapter]   +/-: Change Opt.
  [PXE:NET1:IBA XE Slot A001 v2208]              F1: General Help
  [PXE:NET2:IBA XE Slot B000 v2208]              F7: Previous Values
  [PXE:NET3:IBA XE Slot B001 v2208]              F9: Optimized Defaults
  [USB:INT:ORACLE SSM PMAP]                      F10: Save & Exit
  [SATA:DVD:TEAC    DV-W28SS-W          ]        ESC: Exit

        Version 2.17.1245. Copyright (C) 2015 American Megatrends, Inc.
                                                                       AB
```

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 [RAID: PCIE2: (...) PCI RAID Adapter], and press Enter.**

[RAID: PCIE2: (...) PCI RAID Adapter] moves to the top position.

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

27. **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 (RAID: PCIE2: (...) PCI RAID Adapter)] is listed as the first option under UEFI Boot Option Priority field.**

```
        Aptio Setup Utility - Copyright (C) 2015 American Megatrends, Inc.
         Main  Advanced  IO  Boot  Exit

     Boot EFI Shell           [Disabled]          Enabled: Adds EFI Shell
     UEFI/BIOS Boot Mode      [UEFI]              to Boot Priority List
     Retry Boot List          [Enabled]
     Network Boot Retry       [Enabled]

     Persistent Boot          [Disabled]
     Support

   ▶ OSA Configuration

     UEFI Boot Option Priority
      [Oracle Linux Server
       RAID:PCIE2:(Bus 01 Dev 00)PCI RAID Adapter]   ↔: Select Screen
      [[UEFI]PXE:NET0:IP4 Intel(R) Ethernet          ↑↓: Select Item
     Controller X540-AT2]                            Enter: Select
      [[UEFI]USB:                                    +/-: Change Opt.
                                                     F1: General Help
                                                     F7: Discard Changes
                                                     F9: Optimized Defaults
                                                     F10: Save & Exit
                                                     ESC: Exit

        Version 2.17.1245. Copyright (C) 2015 American Megatrends, Inc.
                                                                        AB
```

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 screen appears.

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

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 6.6 and you want to switch to the Red Hat compatible kernel, do the following.**

   a.   **Press any character key.**

      The GNU GRUB screen appears.
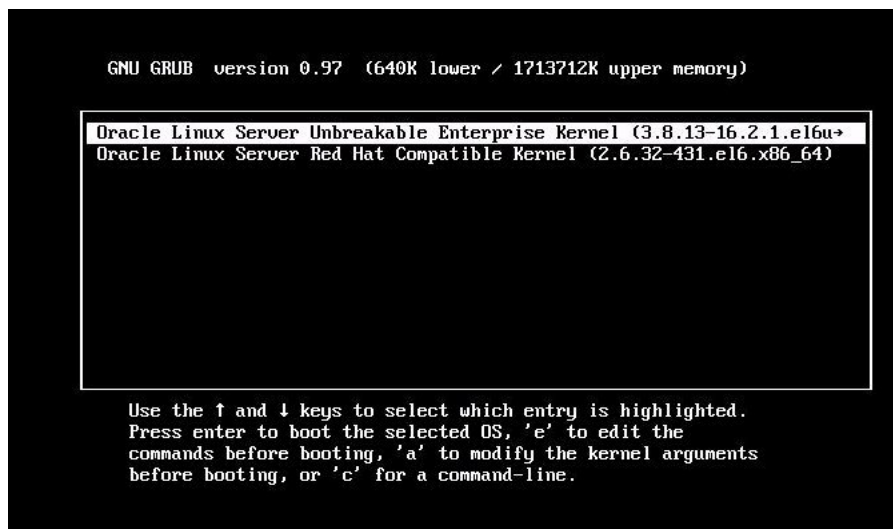
   b.   **For the Red Hat compatible kernel, select the second menu option, and then press Enter.**

31.   **After completing the Oracle Linux installation and rebooting the server with the desired Linux kernel, proceed to "Post Installation Tasks for Oracle Linux 6.6 or 7.1 OS" on page 65.**

▼ Install Oracle Linux 7.1 OS Manually Using Local or Remote Media

This procedure describes how to install the Oracle Linux OS 7.1 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 OS 7.1 ISO image on a DVD
- Oracle Linux OS 7.1 ISO image in a network repository

If you are booting the installation media from a PXE environment, refer to "Install Oracle Linux 6.6 or 7.1 Using PXE Network Boot" on page 62 for instructions.

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

- **For an ISO image on a DVD**, insert the DVD into the local or remote DVD-ROM drive.
- **For an ISO image on the network**, ensure that the 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 "Local or Remote Installation Options" 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, and 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, and 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, attention is needed for the following steps. 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 might differ depending on whether you have the UEFI/BIOS Boot Mode configured for Legacy BIOS or UEFI.
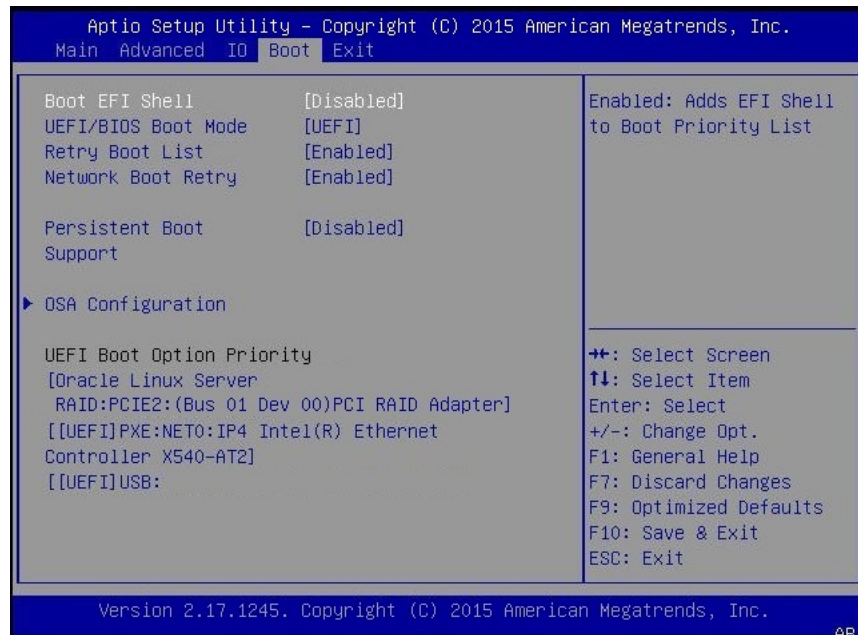

Note - The Please Select Boot Device menu that appears in your installation might differ depending on the type of disk controller and other hardware, such as PCIe network cards, installed in your server.

---

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, and 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:SUN 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:SUN 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 7.1 splash screen appears.

8. **Proceed with Oracle Linux 7.1 installation instructions, which are located at the Oracle Linux 7.1 Product Documentation Library: `http://docs.oracle.com/cd/E52668_01`.**

> **Note -** Oracle Linux 7.1 contains new features and functionality that 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:SUN] under the Legacy Boot Option Priority field, and press Enter.**

```
           Aptio Setup Utility - Copyright (C) 2015 American Megatrends, Inc.
            Main  Advanced  IO  Boot  Exit

          UEFI/BIOS Boot Mode      [Legacy]              UEFI: Only UEFI Boot
          Retry Boot List          [Enabled]             options are
          Network Boot Retry       [Enabled]             initialized and
                                                         present to user.
          Persistent Boot          [Disabled]            Legacy: Only legacy
          Support                                        boot options are
                                                         initialized and
          UEFICfg LateSync         [Disabled]            present to user.

        ▶ OSA Configuration
                                                         →←: Select Screen
          Legacy Boot Option Priority                    ↑↓: Select Item
          [PXE:NET0:IBA XE Slot A000 v2208]              Enter: Select
          [RAID:PCIE2:(Bus 01 Dev 00)PCI RAID Adapter]   +/-: Change Opt.
          [PXE:NET1:IBA XE Slot A001 v2208]              F1: General Help
          [PXE:NET2:IBA XE Slot B000 v2208]              F7: Previous Values
          [PXE:NET3:IBA XE Slot B001 v2208]              F9: Optimized Defaults
          [USB:INT:ORACLE SSM PMAP]                      F10: Save & Exit
          [SATA:DVD:TEAC    DV-W28SS-W           ]       ESC: Exit

            Version 2.17.1245. Copyright (C) 2015 American Megatrends, Inc.
                                                                         AB
```

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 [RAID: PCIE2: (...) PCI RAID Adapter], and press Enter.**

[RAID: PCIE2: (...) PCI RAID Adapter] moves to the top position.

c. **Press the F10 key to save the change and exit the BIOS Setup Utility, and 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 (RAID: PCIE2: (...) PCI RAID Adapter)] is listed as the first option under UEFI Boot Option Priority field.**

```
         Aptio Setup Utility - Copyright (C) 2015 American Megatrends, Inc.
           Main  Advanced  IO  Boot  Exit

        Boot EFI Shell          [Disabled]        Enabled: Adds EFI Shell
        UEFI/BIOS Boot Mode     [UEFI]            to Boot Priority List
        Retry Boot List         [Enabled]
        Network Boot Retry      [Enabled]


        Persistent Boot         [Disabled]
        Support

      ▶ OSA Configuration

        UEFI Boot Option Priority
         [Oracle Linux Server
          RAID:PCIE2:(Bus 01 Dev 00)PCI RAID Adapter]
         [[UEFI]PXE:NET0:IP4 Intel(R) Ethernet      ←→: Select Screen
        Controller X540-AT2]                        ↑↓: Select Item
         [[UEFI]USB:                                Enter: Select
                                                    +/-: Change Opt.
                                                    F1: General Help
                                                    F7: Discard Changes
                                                    F9: Optimized Defaults
                                                    F10: Save & Exit
                                                    ESC: Exit

            Version 2.17.1245. Copyright (C) 2015 American Megatrends, Inc.
                                                                          AB
```
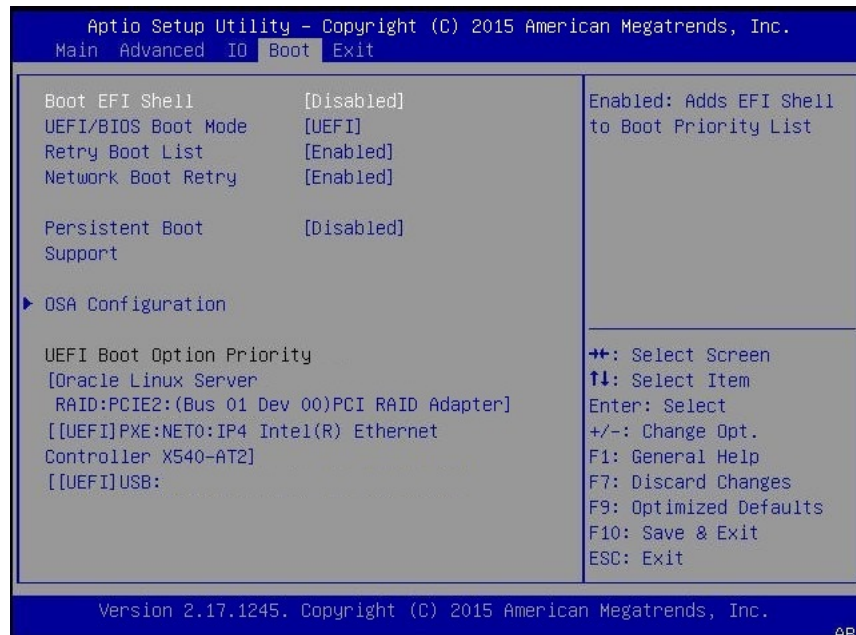
Note - The BIOS Boot screen that appears for your installation might differ depending on the type of disk controller and other hardware, such as PCIe network cards, installed in your server.

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 7.1 and you want to switch to the Red Hat compatible kernel, do the following.**

   a. **Press any character key.**

   The GNU GRUB screen appears.
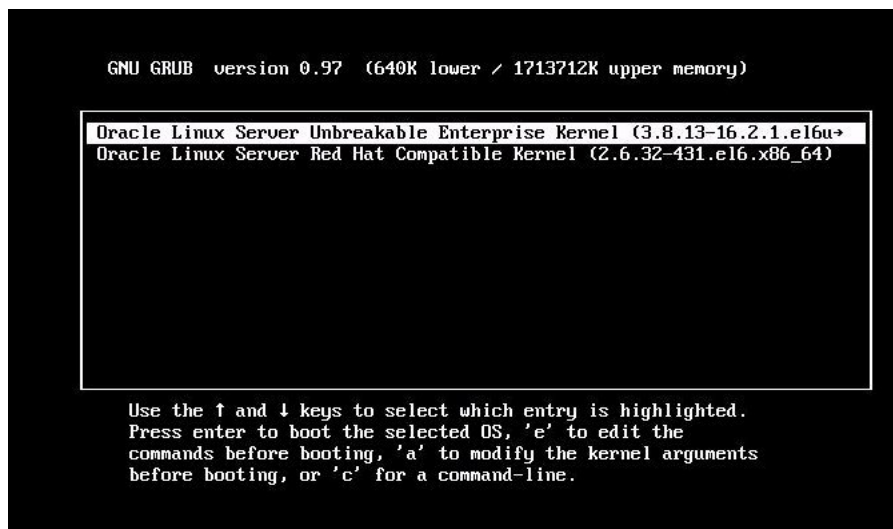
   b. **For the Red Hat compatible kernel, select the second menu option, and then press Enter.**

15. **After completing the Oracle Linux installation and rebooting the server with the desired Linux kernel, proceed to "Post Installation Tasks for Oracle Linux 6.6 or 7.1 OS" on page 65.**

▼ Install Oracle Linux 6.6 or 7.1 Using PXE Network Boot

This procedure describes how to install Oracle Linux 6.6 or 7.1 from a PXE network environment. This procedure assumes that you are booting the installation media from one of the following sources:

- Oracle Linux 6.6 or 7.1 ISO DVD image
- Oracle Linux 6.6 or 7.1 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 7.1, refer to the *Oracle Linux 7.1 Installation Guide* at: `http://docs.oracle.com/cd/E52668_01/E54695/html/index.html`
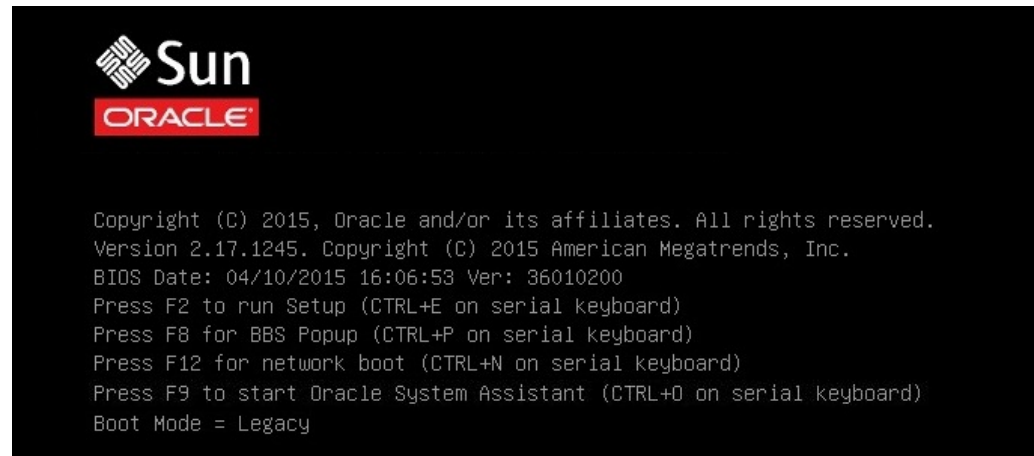
1. **Ensure that the PXE network environment is set up properly and the Oracle Linux installation media is available for PXE boot.**

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, and 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, and then click Save.
- **From the Oracle ILOM CLI**, type: `reset /System`

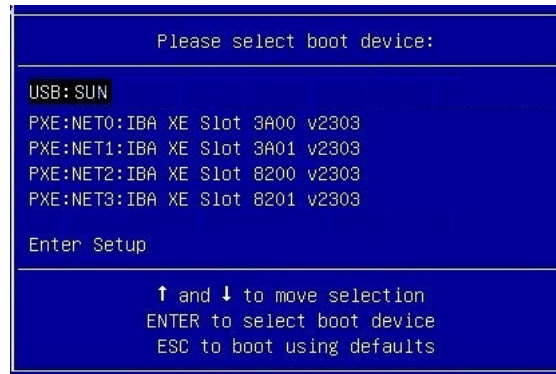The server begins the boot process and the BIOS screen appears.

Note - The next event occurs very quickly; therefore, attention is needed for the following steps. You might want to enlarge the size of your screen to eliminate scroll bars.
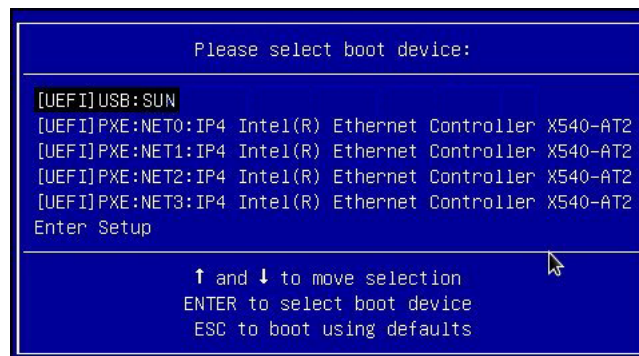
---

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 might 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:

```
          Please select boot device:

USB:SUN
PXE:NET0:IBA XE Slot 3A00 v2303
PXE:NET1:IBA XE Slot 3A01 v2303
PXE:NET2:IBA XE Slot 8200 v2303
PXE:NET3:IBA XE Slot 8201 v2303

Enter Setup

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

■ For UEFI Boot Mode, the following screen appears:

```
          Please select boot device:

[UEFI]USB:SUN
[UEFI]PXE:NET0:IP4 Intel(R) Ethernet Controller X540-AT2
[UEFI]PXE:NET1:IP4 Intel(R) Ethernet Controller X540-AT2
[UEFI]PXE:NET2:IP4 Intel(R) Ethernet Controller X540-AT2
[UEFI]PXE:NET3:IP4 Intel(R) Ethernet Controller X540-AT2
Enter Setup

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

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, and 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 6.6 or 7.1 OS

After installing Oracle Linux 6.6 or 7.1, you should register your system and activate your subscription with Oracle to receive automatic updates to the software. This ensures that the server is running the latest version of the operating system. Go to:

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

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 ensures 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) 6.7 and 7.1 for x86 (64-bit) and the Oracle Unbreakable Enterprise Kernel for Linux.

The following topics are covered:

- "RHEL 6.6 or 7.1 OS Installation Task Map" on page 65
- "Before You Begin" on page 66
- "Install RHEL 6.6 or 7.1 OS Manually Using Local or Remote Media" on page 67
- "Install RHEL 6.6 or 7.1 Using PXE Network Boot" on page 70
- "Post Installation Tasks for RHEL 6.6 or 7.1 OS" on page 73

RHEL 6.6 or 7.1 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.	■ "Install the Server into the Rack" in *Oracle Server X5-8 Installation Guide* ■ "Cabling the Server" in *Oracle Server X5-8 Installation Guide* ■ "Connecting to Oracle ILOM" in *Oracle Server X5-8 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 X5-8 Product Notes* at: `http://www.oracle.com/goto/X5-8/docs-videos`
5.	Set up the console, the RHEL media, and the installation target that you plan to use to perform the installation.	■ "Selecting the Console Display Option" on page 11 ■ "Local or Remote Installation Options" on page 13 ■ "Selecting the Installation Target Option" on page 16
6.	Set BIOS settings for new OS installations.	"Preparing the Boot Environment" on page 22
7.	Install the RHEL OS.	■ "Install RHEL 6.6 or 7.1 OS Manually Using Local or Remote Media" on page 67 ■ "Install RHEL 6.6 or 7.1 Using PXE Network Boot" on page 70
8.	Perform the post installation tasks.	"Post Installation Tasks for RHEL 6.6 or 7.1 OS" on page 73
9.	(Optional) Install the Oracle Unbreakable Enterprise Kernel for Linux.	"(Optional) Install Oracle Unbreakable Enterprise Kernel for Linux on RHEL Using Local or Remote Console" on page 74

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 "Configure Storage Drives for OS Installation" in *Oracle Server X5-8 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 25.

■ 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 22.

■ 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 "Local or Remote Installation Options" 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 16.

▼ Install RHEL 6.6 or 7.1 OS Manually Using Local or Remote Media

This procedure describes how to boot the Red Hat Enterprise Linux (RHEL) 6.6 or 7.1 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 6.6 or 7.1 DVD set (external DVD)
- RHEL 6.6 or 7.1 ISO DVD image

If you are booting the installation media from a PXE environment, refer to "Install RHEL 6.6 or 7.1 Using PXE Network Boot" on page 70 for instructions.

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

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

   - **For an ISO image on a DVD**, insert the DVD into the local or remote DVD-ROM drive.
   - **For an ISO image on the network**, ensure that the ISO image is 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 "Local or Remote Installation Options" on page 13.
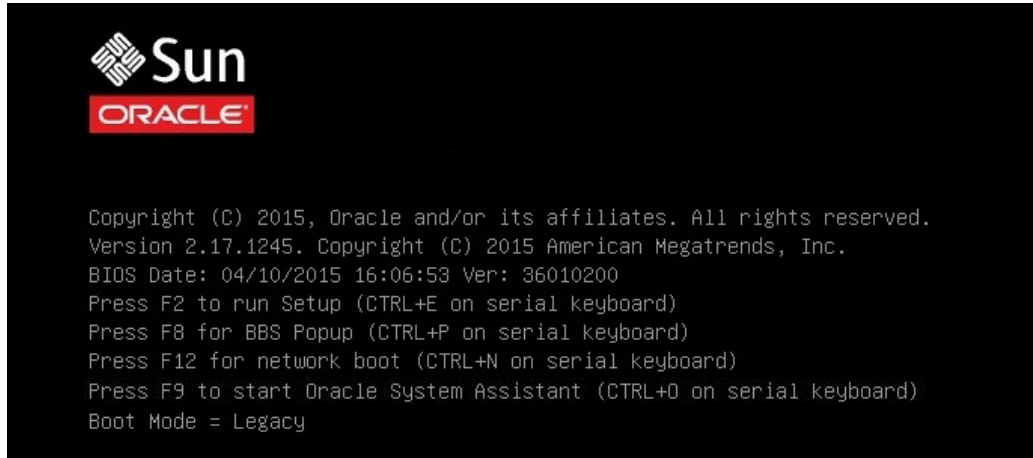
   For additional information about how to set up the installation media, see "Local or Remote Installation Options" on page 13.

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, and 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, and 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, attention is needed for the following steps. You might want to enlarge the size of your screen to eliminate scroll bars.
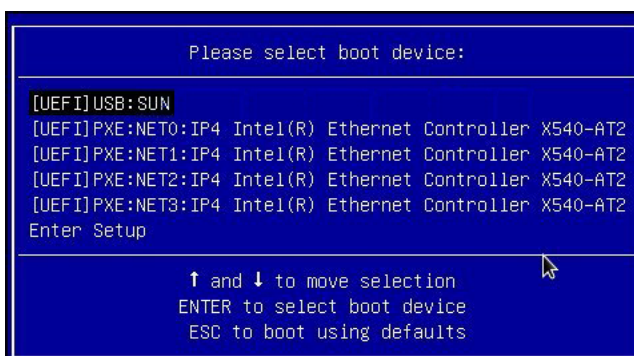
3. **In the BIOS screen, press the F8 key to specify a temporary boot device for the RHEL installation.**

   [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 might 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:

```
                Please select boot device:

USB:SUN

PXE:NET0:IBA XE Slot 3A00 v2303
PXE:NET1:IBA XE Slot 3A01 v2303
PXE:NET2:IBA XE Slot 8200 v2303
PXE:NET3:IBA XE Slot 8201 v2303

Enter Setup

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

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

```
              Please select boot device:

[UEFI]USB:SUN
[UEFI]PXE:NET0:IP4 Intel(R) Ethernet Controller X540-AT2
[UEFI]PXE:NET1:IP4 Intel(R) Ethernet Controller X540-AT2
[UEFI]PXE:NET2:IP4 Intel(R) Ethernet Controller X540-AT2
[UEFI]PXE:NET3:IP4 Intel(R) Ethernet Controller X540-AT2
Enter Setup

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

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 external, or virtual DVD device as the first boot device, and 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/site/documentation/en-US

Note - If the Oracle Linux 6.6 or 7.1 OS or Oracle VM 3.3 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 6.6 or 7.1 OS" on page 73.

▼ Install RHEL 6.6 or 7.1 Using PXE Network Boot

This procedure describes how to boot the Red Hat Enterprise Linux (RHEL) 6.6 or 7.1 from a PXE network environment. It assumes that you are booting the install media from RHEL 6.6 or 7.1 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
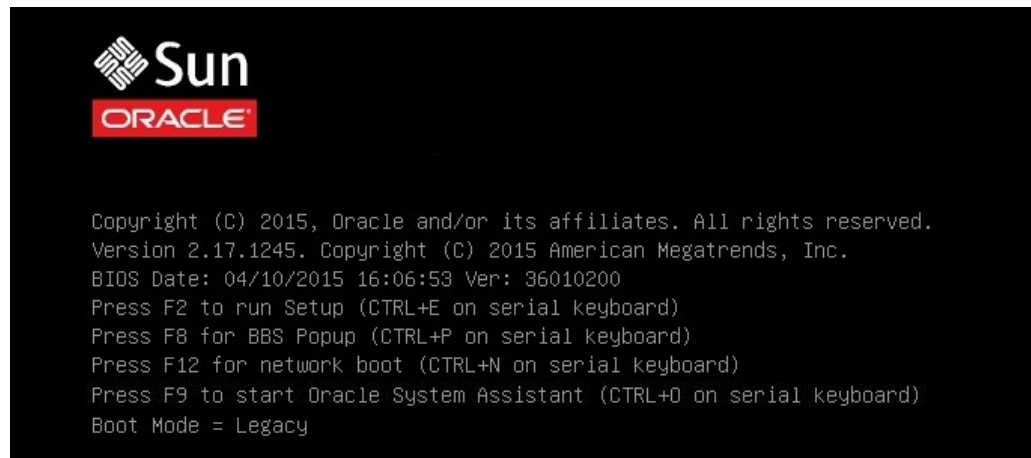Administration Guides at:

https://access.redhat.com/site/documentation/en-US

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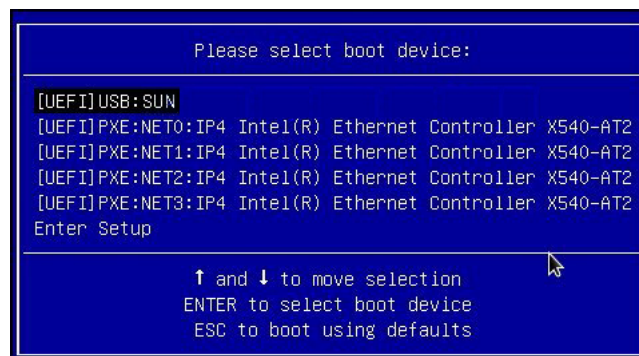
Note - The Please Select Boot Device menu that appears in your installation might differ depending on the type of disk controller and other hardware, such as PCIe network cards, installed in your server.

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, and then press Enter.**

   The network bootloader loads and a boot prompt appears. After a few seconds the installation kernel begins 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 6.6 or 7.1 OS

After completing the Red Hat Enterprise Linux (RHEL) 6.6 or 7.1 OS 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 73
- "Download and Install OS Updates" on page 73
- "(Optional) Install Oracle Unbreakable Enterprise Kernel for Linux on RHEL Using Local or Remote Console" on page 74

Register RHEL and Activate Automatic Updates

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

`https://www.redhat.com/support/`

Download and Install OS Updates

After installing Download and install the latest errata and bug fixes for the RHEL OS. Refer to the Red Hat documentation for more details: `http://access.redhat.com/site/documentation/en-US`

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

After you have installed the Red Hat Enterprise Linux 6.6 or 7.1, 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
- http://docs.oracle.com/en/operating-systems/?tab=2

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