Sun Fire X4470 Server

Installation Guide for Linux Operating Systems

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Contents

Using This Documentation

This Linux operating system installation guide explains how to install and configure a Linux operating system on a Sun Fire X4470 Server from Oracle. This document is written for technicians, system administrators, authorized service providers (ASPs), and users who have experience with installing operating systems.

- "Product Information" on page vii
- "Related Documentation" on page viii
- "Documentation, Support, and Training" on page ix
- "Documentation Feedback" on page ix
- "Product Downloads" on page x

Product Information

For information about the Sun Fire X4770 Server, go to the following web site: (http://www.oracle.com/goto/x4470)

At that site, you can find links and navigate to the following information and downloads.

- Product information and specifications
- Supported operating systems
- Software and firmware downloads
- Supported option cards
- External storage options
- Power calculator

Related Documentation

The related documents listed in the following table are available online at:

(http://docs.sun.com/app/docs/prod/sf.x4470#hic)

Title	Content	Part Number	Format
Sun Fire X4470 Server Product Notes	Late-breaking information about the server	821-0704	PDF HTML
Sun Fire X4470 Server Getting Started Guide	Basic installation information for setting up the server	821-0333	PDF Print
Sun Fire X4470 Server Installation Guide	Detailed installation information for setting up the server	821-0332	PDF HTML Print option
Sun Fire X4470 Server Linux Operating Systems Installation Guide	Installation instructions for the Linux operating systems	821-1213	PDF HTML
Sun Fire X4470 Windows Operating Systems Installation Guide	Installation instructions for the Windows Server operating system	821-0701	PDF HTML
Sun Fire X4470 Server Service Manual	Information and procedures for maintaining and upgrading the server.	821-0703	PDF HTML
Sun Installation Assistant 2.3 through 2.4 User's Guide for x64 Servers (The Sun Installation Assistant is now called Oracle Hardware Installation Assistant.)	Instructions for using the Sun Installation Assistant to install the Windows and Linux operating systems	821-0694	PDF HTML
Oracle x86 Servers Diagnostics Guide	Information for diagnosing and troubleshooting the server	820-6750	PDF HTML
Sun Server CLI Tools and IPMItool 2.0 User's Guide	Information for using applications and utilities common to x86 servers	821-1600	PDF HTML

Title	Content	Part Number	Format
Oracle Integrated Lights Out Manager 3.0 Documentation Collection (formerly known as Sun Integrated Lights Out Manager 3.0 Documentation Collection)	Documents covering ILOM features and tasks that are common to servers and server modules that support ILOM 3.0	820-5523 820-6410 820-6411 820-6412 820-6413 820-0052 820-7329	PDF HTML
Integrated Lights Out Manager (ILOM) 3.0 Supplement for Sun Fire X4470 Server	ILOM 3.0 information that is specific to the Sun Fire X4470 Server	821-0702	PDF HTML
Sun Fire X4470 Safety and Compliance Guide	Hardware safety and compliance information for the server	821-0705	PDF
Important Safety Information for Sun Hardware Systems	Multilingual hardware safety and compliance information for all Sun hardware system	821-1590	Print

Translated versions of some of these documents are available at the web site listed above the table. English documentation is revised more frequently and might be more up-to-date than the translated documentation.

Documentation, Support, and Training

- Documentation: (http://docs.sun.com)
- Support: (http://www.sun.com/support/)
- Training: (http://www.sun.com/training/)

Documentation Feedback

Submit comments about this document by clicking the Feedback[+] link at (http://docs.sun.com). Include the title and part number of your document with your feedback:

Sun Fire X4470 Server Installation Guide for Linux Operating Systems, part number 821-1213-11

Product Downloads

To download the latest product software, go to the following web site:

(http://www.oracle.com/goto/x4470)

At that site, you can find links and navigate to the following items:

- Tools and Driver DVD image
- Oracle Hardware Installation Assistant DVD image
- Sun Validation Test Suite (SunVTS) Update

PART I   Linux Software Installation on x86 Servers

This section lists the topics that describe how to install a Linux operating system on Oracle's Sun Fire X4470 Server.

Description	Links
Novice or Experienced Users: Use Oracle Hardware Installation Assistant to perform an assisted installation of the Linux operating system. Oracle Hardware Installation Assistant provides the appropriate system drivers and platform-specific software.	Chapter 1, Assisted OS Installation With Oracle Hardware Installation Assistant
Experienced Users. Manually install the Linux operating system and the required system drivers.	• Chapter 2, Getting Started • Chapter 3, Installing Oracle Enterprise Linux • Chapter 4, Installing SUSE Enterprise Linux • Chapter 5 Installing Red Hat Enterprise Linux
Reference: Refer to these topics, as needed, to perform or complete the Linux operating system installation.	• Appendix A, Installation Methods • Appendix B, Supported Operating Systems • Appendix C, BIOS Defaults for New Installations • Appendix D, Downloading the ISO Image for the Tools and Drivers DVD.

Assisted OS Installation With Oracle Hardware Installation Assistant

Oracle Hardware Installation Assistant makes operating system installation easy. With Oracle Hardware Installation Assistant, all you need to begin is a licensed copy of Linux or Windows OS distribution media supported for your server. All software and required server-specific drivers are supplied by Oracle Hardware Installation Assistant. With a graphical wizard interface and flexible installation options, Oracle Hardware Installation Assistant brings simplicity, speed, and reliability to your server deployments.

To use Oracle Hardware Installation Assistant, simply boot the Oracle Hardware Installation Assistant program from the server's CD drive, a USB flash drive, or from a network image. Check for the latest Oracle Hardware Installation Assistant updates available. Select your OS distribution from the menu and follow the on-screen instructions. Oracle Hardware Installation Assistant scans your system to ensure that it has the drivers it needs to configure your server components[1]. It also provides you the option of having Oracle Hardware Installation Assistant check for the latest drivers available. Oracle Hardware Installation Assistant will prompt you for the appropriate media as needed and any other required information during the OS installation process (such as license keys).

Note – [1] Some option card drivers are downloaded to the server, but require manual installation. Feature enhancements are made to Oracle Hardware Installation Assistant regularly; therefore, you should check the Oracle Hardware Installation Assistant information page for the latest Oracle Hardware Installation Assistant updates and supported features (http://www.oracle.com/goto/hia).

Topics discussed in this chapter include:

- "Oracle Hardware Installation Assistant Task Overview" on page 4
- "How to Obtain Oracle Hardware Installation Assistant" on page 4
- "Oracle Hardware Installation Assistant Documentation Resources" on page 5

Oracle Hardware Installation Assistant Task Overview

You can perform the following tasks using Oracle Hardware Installation Assistant:

Note – The supported Oracle Hardware Installation Assistant installation and recovery tasks listed below are server-dependent and might vary.

- Perform an assisted installation of a Linux or Windows operating system on your Sun x86 server from Oracle. Oracle Hardware Installation Assistant provides the appropriate drivers and platform-specific software, eliminating the need to create a separate driver disk.
- Optionally create RAID-1 volumes on internal storage devices.
- Optionally upgrade your system's Integrated Lights Out Manger (ILOM) service processor (SP), BIOS, and storage device firmware (regardless of the OS on your server).
- Optionally update your Oracle Hardware Installation Assistant session with the latest firmware and drivers.
- Optionally recover from a corrupt or inaccessible ILOM service processor.

How to Obtain Oracle Hardware Installation Assistant

Oracle Hardware Installation Assistant ships with most x86 Oracle server platforms and is available in CD format or a web download. Regular updates are made available to ensure that the latest OS versions are supported. You can download, per your platform server, the latest version of Oracle Hardware Installation Assistant at:

(http://www.oracle.com/goto/hia)

Oracle Hardware Installation Assistant Documentation Resources

If you have determined that you want to install a Windows or Linux operating system on your x86 server using Oracle Hardware Installation Assistant, refer to the following resources for detailed installation instructions and forum discussions.

- *Sun Installation Assistant 2.3 through 2.4 User's Guide for x64 Servers*

  `(http://docs.sun.com/app/docs/prod/install.x64svr?l=en&a=view)`

Getting Started

This chapter describes how to get started installing a Linux operating system manually on your server.

Note – The term "manually" refers to performing the installation by following the instructions provided in this guide, and not using the Oracle Hardware Installation Assistant. If you prefer to perform an assisted Linux installation by using Oracle Hardware Installation Assistant, see Chapter 1 of this guide.

Topics discussed in this chapter include:

- "Supported Linux Operating Systems" on page 7
- "Linux Installation Prerequisites" on page 8
- "Linux Installation Task Overview" on page 9

Supported Linux Operating Systems

The Sun Fire X4470 Server supports the following Linux operating systems:

Linux OS	Edition
Oracle	Oracle Linux 5.5 for x86 (64-bit) and the Oracle Unbreakable Enterprise Kernel for Linux
SUSE	SUSE Linux Enterprise Server (SLES) 10 SP3 SLES 11 (64-bit) SLES 11 SP1 (64-bit)
Red Hat	Red Hat Enterprise Linux (RHEL) 5.5 for x86 (64-bit)

For a complete and updated list of all the supported operating systems on the Sun Fire X4470 Server, go to the following web site and navigate to the Operating System link:

(http://www.oracle.com/goto/x4470)

Linux Installation Prerequisites

Refer to the following important considerations before beginning the Linux operating system installation on your server.

TABLE 2-1 Prerequisites for Installing a Linux Operating System

Requirement	Description	For more information, see:
Server is set up and operational	The server is mounted and powered-on in the rack and communication to the SP has been established.	• *Sun Fire X4470 Server Installation Guide* (821-0332)
Established deployment method that enables you to boot the Linux install program	Guidelines for deploying a Linux operating system installation.	• Appendix A
RAID volume creation	If you want to include your boot drive as part of a RAID configuration, you need to configure a RAID volume on it. Use the LSI integrated RAID controller setup utility before you install Linux.	• *LSI MegaRAID Software SAS User's Guide* at: (http://www.lsi.com/support/sun/)
Verification of BIOS settings for new OS installations	Prior to installing the Linux operating system, you should verify that the BIOS factory-default properties are set.	• Appendix C
Linux vendor documentation	Gather the applicable vendor documentation for the Linux installation. The vendor documentation should be used in conjunction with the installation instructions provided in this guide.	• (http://www.novell.com/documentation/suse) • (http://www.redhat.com/docs/manuals/enterprise/) **Note -** Installation instructions for Oracle Linux and the Oracle Unbreakable Enterprise Kernel for Linux are provided in Chapter 3 of this document.

Requirement	Description	For more information, see:
Tools and Drivers DVD	Ensure that you have the Tools and Drivers software that is provided with your server.	• (http://www.oracle.com/goto/x4470)
SLES 11 - Prepare LSI Storage Floppy Image or Floppy Disk	The SLES 11 install media does not include the LSI device drivers for the Sun Storage 6 Gb SAS PCIe HBA option cards (SG-SAS6-INT-Z or SG-SAS6-EXT-Z). If you have one of these SAS PCIe HBA option cards installed, the LSI mass storage driver for the HBA option must be mounted from a floppy image or floppy disk during the installation.	• "SAS PCIe HBAs Requiring Storage Drivers for SLES 11 Installations" on page 10
Access to late-breaking information	Review the *Sun Fire X4470 Server Product Notes* for late-breaking information about supported operating system software and patches.	• *Sun Fire X4470 Product Notes* (821-0704)

Linux Installation Task Overview

To install a Linux operating system, complete the following tasks in the order specified:

1. Gather the Linux operating system installation media and documentation. You can download the Linux installation program from the appropriate vendor's web site, for example:

   ■ For Oracle Enterprise Linux, see:
   (http://edelivery.oracle.com/linux)

   ■ For SUSE Linux Enterprise Server, see: (http://www.novell.com)

   ■ For Red Hat Enterprise Linux, see: (http://www.redhat.com)

2. If necessary, obtain the Tools and Driver DVD provided or download the latest drivers for your server as described in Appendix D.

   If you are installing SLES 11 and you have a Sun Storage 6 Gb SAS PCIe HBA card installed on your server, you must copy the LSI storage drivers for the HBA option card to a floppy disk or floppy image prior to performing the SLES 11 installation. For more details, see "SAS PCIe HBAs Requiring Storage Drivers for SLES 11 Installations" on page 10

3. Choose and set up an installation method for deploying Linux as described in Appendix A

4. Follow the instructions for performing a manual installation of a Linux Server operating system as described in:

- Chapter 3 for Oracle Linux
- Chapter 4 for SUSE Linux Enterprise Server
- Chapter 5 for Red Hat Enterprise Linux

5. Follow the specific operating system instructions for performing the post installation tasks as described in:

- "Post Oracle Linux Installation Tasks" on page 20
- "Post SLES Installation Tasks" on page 36
- "Post RHEL Installation Tasks" on page 44

SAS PCIe HBAs Requiring Storage Drivers for SLES 11 Installations

The SLES 11 installation media does not include the LSI mass storage driver for the following SAS PCIe HBA option cards described in TABLE 2-2.

Note – Some PCIe HBA option cards might not be available for purchase at the time of this publication. To determine which HBA option cards are supported and available for purchase on the Sun Fire X4470 Server, go to the following web site and navigate to the appropriate page: (http://www.oracle.com/goto/x4470).

TABLE 2-2   SAS PCIe HBA Requiring LSI Mass Storage Drivers for SLES 11

SAS PCIe HBA Option	Option Number	Driver Required During Installation
Sun Storage 6 Gb SAS PCIe HBA, Internal	SG-SAS6-INT-Z	LSI Adapter SAS Falcon
Sun Storage 6 Gb SAS PCIe HBA, External	SG-SAS6-EXT-Z	LSI Adapter SAS Falcon

If you have one of the SAS PCIe HBA option cards (described in TABLE 2-2) installed on your server and you are installing SLES 11, the LSI mass storage driver for the HBA option must be mounted from a floppy disk or floppy image during the SLES 11 installation process.

Prior to starting the SLES 11 installation, use one of the following methods to prepare the LSI mass storage driver floppy disk or floppy image:

- **Mount Floppy Disk.** Use the LSI storage floppy image on the Tools and Drivers DVD to create a floppy disk. Then, mount the floppy disk as a device from the ILOM Remote Console.

- **Mount Floppy Image**. Copy the LSI storage floppy image on the Tools and Drivers DVD to a network location; then mount the floppy image from the ILOM Remote Console.

  The LSI storage floppy image on the Tools and Driver DVD is located in the following directory: `Linux/SLES/SLES11/FloppyImages/64bit`

Instructions for loading the LSI mass storage driver during the SLES 11 installation are provided in Step 6 of the "Installing SLES 11 Using Local or Remote Media" on page 28.

If you do not have a copy of the Tools and Driver DVD, you can download the ISO image for the Tools and Driver DVD. For details, see Appendix D.

Note – The SLES 11 installation media includes the required LSI mass storage drivers for the Sun Storage SAS PCIe **RAID** HBA option cards SG-SAS6-**R**-INT-Z and SG-SAS6-**R**-EXT-Z.

Installing Oracle Linux

This chapter provides information about installing Oracle Linux 5 for x86 (64-bit) and the Oracle Unbreakable Enterprise Kernel for Linux.

Note – It is highly recommended that you use the Oracle Hardware Installation Assistant to install the Oracle Linux operating system on your server. The installation assistant provides and installs the device driver(s), if required, for you. For more information about using Oracle Hardware Installation Assistant to install an operating system, see Chapter 1.

This chapter includes the following topics:

Oracle Unbreakable Enterprise Kernel for Linux

The Oracle Unbreakable Enterprise Kernel for Linux is a recommended kernel that can be installed on top of Oracle Linux 5 Update 5 or Red Hat Enterprise Linux 5 Update 5. This new kernel is based on the 2.6.32 Linux Kernel and includes optimizations developed by Oracle to ensure stability and optimal performance. All patches added to the 2.6.32 mainline kernel are open source.

Oracle Unbreakable Enterprise Kernel for Linux has demonstrated its stability reliability, and performance improvements in demanding environments. and it is the kernel used in Oracle's Exadata and Exalogic systems. Furthermore, the Oracle Unbreakable Enterprise Kernel for Linux is now used in all benchmarks on Linux that Oracle participates in, as well as in Oracle's Validated Configurations program.

Because the Oracle Unbreakable Enterprise Kernel for Linux installs directly on top of Oracle Linux 5 or Red Hat Enterprise Linux 5, there is no need to upgrade to a new major release of the Linux operating system to gain the benefits and features of this new kernel. And after you have installed this new kernel, you still have the option of easily switching back to the Red Hat Enterprise Linux kernel and, then, switching back and forth between the two kernels.

Oracle highly recommends deploying the Oracle Unbreakable Enterprise Kernel for Linux in your Linux environment, especially if you are running Oracle software. Oracle Unbreakable Enterprise Kernel for Linux is optional, however, and Oracle Linux continues to include a Red Hat compatible kernel, which is compiled directly from Red Hat Enterprise Linux (RHEL) source code, for customers who require strict RHEL compatibility. Oracle also recommends this new kernel for customers running third-party software and third-party hardware.

For more information about benefits and features of the Oracle Unbreakable Enterprise Kernel for Linux, go to:

(http://www.oracle.com/us/technologies/linux/ubreakable-enterprise-kernel-linux-173350.html)

Installing Oracle Linux 5 Using Local or Remote Media

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

- Oracle Linux 5.5 (or subsequent release) CD or DVD set (internal or external CD/DVD)
- Oracle Linux 5.5 (or subsequent release) ISO DVD image (network repository)

Note – If you are booting the installation media from a PXE environment, refer to "Installing Oracle Linux 5 Using a PXE Network Environment" on page 19 for instructions.

Before You Begin

Prior to performing the installation, the following requirements must be met:

- All applicable installation prerequisites for installing an operating system should have been met. For further information about these prerequisites, see Chapter 2.
- An installation method (for example: console, boot media, and install target) should have been chosen and established prior to performing the installation. For more information about these setup requirements, see Appendix A.

After completing this procedure, you should review and perform the required post installation tasks described later in this chapter. For more details, see "Post Oracle Linux Installation Tasks" on page 20. You can also install the Oracle Unbreakable Enterprise Kernel for Linux on top of your Oracle Linux 5.5 and later distribution. For more information, see "Installing Oracle Unbreakable Enterprise Kernel for Linux Using Local or Remote Console" on page 21.

▼ Install Oracle Linux 5 Using Local or Remote Media

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

   - **For Distribution CD/DVD**. Insert the Oracle Linux 5 Distribution media boot disc (CD labeled number 1 or the single DVD) into the local or remote USB CD/DVD-ROM drive.

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

   - For additional information about how to set up the installation media, see "Installation Boot Media" on page 49.

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

   For example:

   - **From the ILOM web interface**, select the `Remote Control --> Remote Power Control` tab, then select `Reset` from the Select Action list box.

   - **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 ILOM CLI on the server SP**, type: **reset /SYS**

   The BIOS screen appears.

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

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

   The Please Select Boot Device menu appears.

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

   The device strings listed on Boot Device menu are in the format of: *device type*, *slot indicator*, and *product ID string*.

   After a few seconds, the splash screen for the Oracle Linux 5 installation appears. The bottom half of the splash screen lists instructions, function keys, and the boot prompt.

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

   Alternately, for text mode, enter the following command:

   ```
   boot: linux text
   ```


6. **In the Language screen, select the appropriate language, then click Next.**
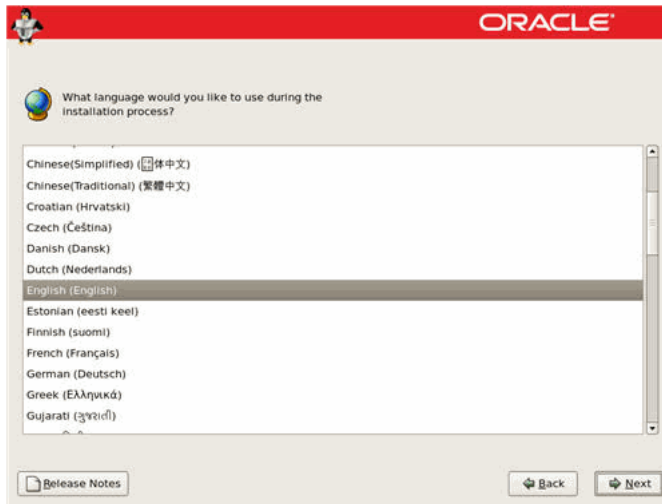
The Keyboard Type screen appears.

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

    The Installation Method screen appears.

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

    The CD Found screen appears.

9. **In the CD Found screen, click** Skip.

    The Oracle Linux 5 screen appears.

10. **In the Oracle Linux 5 screen, click** Next.

    The Installation Number dialog appears.

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

    The Disk Partition Setup screen appears.

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

    a. **Select the option for** Remove Linux partition on selected drives and create default layout **or manually partition the disk using the** Create custom layout **option of Disk Druid, then click** Next.
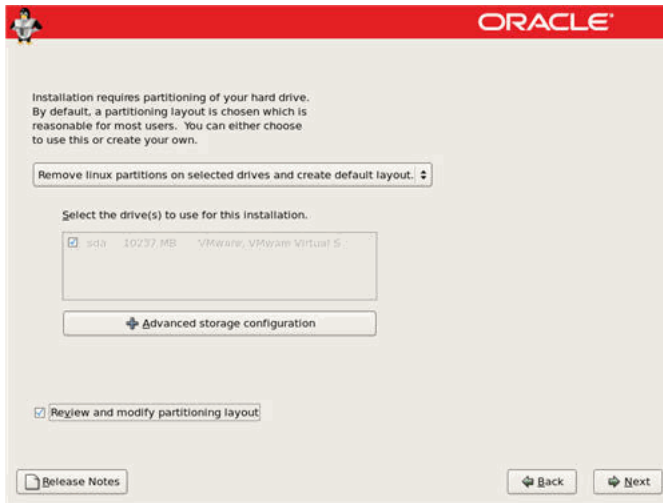
b. Partition the disk as appropriate by referring to the instructions presented on the Oracle Linux disk partitioning screen.

Note – If Oracle Solaris OS or Oracle VM 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.

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

Note – For more information on installing the Oracle Linux, see the *Red Hat Enterprise Linux 5: Installation Guide* at:
(http://www.redhat.com/docs/manuals/enterprise)

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14. **After completing the basic Oracle Linux installation setup, perform the following post installation tasks:**

    a. **Perform the post installation tasks as described in** "Post Oracle Linux Installation Tasks" on page 20**.**

    b. **(Optional) Install the Oracle Oracle Unbreakable Enterprise Kernel for Linux on top of the Oracle Linux 5 Update 5 operating system.**

       For installation instructions, see "Installing Oracle Unbreakable Enterprise Kernel for Linux Using Local or Remote Console" on page 21.

Installing Oracle Linux 5 Using a PXE Network Environment

This section describes how to boot the Oracle Linux 5 from a PXE network environment. It assumes that you are booting the installation media from one of the following sources:

- Oracle Linux 5.5 CD or DVD set (internal or external CD/DVD)
- Oracle Linux 5.5 ISO DVD image or KickStart image (network repository)

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

Before You Begin

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

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

Follow the PXE network installation instructions in the *Red Hat Enterprise Linux 4: System Administration Guide* at:

(http://www.redhat.com/docs)

▼ Install Oracle Linux 5 Using PXE Network Boot

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

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

   For example:

   - **From the ILOM web interface**, select the `Remote Control --> Remote Power Control` tab, then select `Reset` from the Select Action list box.

   - **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 ILOM CLI on the server SP**, type: `reset /SYS`

   The BIOS screen appears.

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

   ---

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

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

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

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

5. **To complete the installation, refer to Step 5 of** "Install Oracle Linux 5 Using Local or Remote Media" on page 15**.**

Post Oracle Linux Installation Tasks

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

- "Configure Support for TPM" on page 21
- "Register Oracle Linux and Activate Automatic Updates" on page 21

Configure Support for TPM

If you intend to use the Trusted Platform Module (TPM) feature set that is provided in Oracle Linux, you must configure your server to support this feature. For instructions, see the service manual for the server:

■ *Sun Fire X4470 Server Service Manual* (821-0703)

Note – TPM enables you to administer the TPM security hardware in your server. For additional information about implementing this feature, refer to the TPM documentation available for Oracle Linux.

Register Oracle Linux and Activate Automatic Updates

After installing Oracle Linux, you should register your system and activate your subscription with Oracle to receive automatic updates to the software. For more details, see Oracle Linux Support at:

(http://www.oracle.com/support/purchase.html)

Installing Oracle Unbreakable Enterprise Kernel for Linux Using Local or Remote Console

Before You Begin

Before installing the Oracle Unbreakable Enterprise Kernel for Linux, you must have Oracle Linux 5, Update 5 or Red Hat Enterprise Linux (RHEL) 5, Update 5 installed on your server.

▼ Install Oracle Unbreakable Enterprise Kernel for Linux Using Local or Remote Console

1. **Ensure that your system is running Oracle Linux 5, Update 5 or Red Hat Enterprise Linux 5, Update 5 before installing the Oracle Unbreakable Enterprise Kernel for Linux.**

2. **To download the Oracle Linux 5 Yum repository file to your system, enter the following commands:**

   a. # `cd /etc/yum.repos.d`

   b. # `wget http://public-yum.oracle.com/public-yum-el5.repo`

3. **Open the** /etc/yum.repos.d/etc/public-yum-el5.repo **file in an editor.**

4. **Edit both the** [el5_u5_base] **and** [ol5_u5_base] **stanzas and change** enable=0 **to** enable=1 **as follows:**

```
[el5_u5_base]
name=Enterprise Linux $releasever U5 - $basearch - base
baseurl=http://publicyum.
oracle.com/repo/EnterpriseLinux/EL5/5/base/$basearch/
gpgkey=http://public-yum.oracle.com/RPM-GPG-KEY-oracle-el5
gpgcheck=1
enable=1

[ol5_u5_base]
name=Oracle Linux $releasever - U5 - x86_64 - base
baseurl=http://publicyum.
oracle.com/repo/OracleLinux/OL5/5/base/x86_64/
gpgkey=http://public-yum.oracle.com/RPM-GPG-KEY-oracle-el5
gpgcheck=1
enable=1
```

5. **To update your system kernel, do one of the following**

   - To update your system kernel to the Oracle Unbreakable Enterprise Kernel for Linux, enter the following command:

     # `yum install kernel`

     Or

   - To update your system kernel to the Oracle Unbreakable Enterprise Kernel for Linux and upgrade all the recommended packages associated with it, enter the following command:

     # `yum install oracle-linux`

6. **To run the newly installed Oracle Unbreakable Enterprise Kernel for Linux, reboot your system.**

Note – For more information on the Oracle Unbreakable Enterprise Kernel for Linux, see the release notes at: (http://oss.oracle.com/el5/docs).

Installing SUSE Linux Enterprise Server

This chapter provides information about installing SUSE Linux Enterprise Server (SLES) 10 SP3 or SLES 11 (or subsequent release) for x86 (64-bit) on the Sun Fire X4470 Server.

Note – It is highly recommended that you use the Oracle Hardware Installation Assistant to install the SUSE Linux Enterprise Server operating system on your server. Oracle Hardware Installation Assistant provides and installs the device driver(s), if required, for you. For more information about using Oracle Hardware Installation Assistant to install an operating system, see Chapter 1.

This chapter includes the following topics:

Installing SLES Using Local or Remote Media

The following procedure describes how to boot the SLES operating system from local or remote media. It assumes that you are booting the SLES installation media from one of the following sources:

- SLES 10 SP3 or SLES 11 (or subsequent release) CD or DVD set (internal or external CD/DVD)

- SLES 10 SP3 or SLES 11 (or subsequent release) ISO DVD image (network repository)

Note – If you are booting the installation media from a PXE environment, refer to "Installing SLES Using a PXE Network Environment" on page 34 for boot instructions.

To install SLES using local or remote media, refer to the following topics:

- "Before You Begin" on page 26
- "Installing SLES 11 Using Local or Remote Media" on page 28

For further details about installing SLES, see the SUSE Linux Enterprise Server documentation collection from Novell at:
(http://www.novell.com/documentation/suse)

Before You Begin

Prior to performing the installation, the following requirements must be met:

- All applicable installation prerequisites for installing this operating system should have been met. For further information about these prerequisites, see Chapter 2.
- An installation method (for example: console, boot media, and install target) for booting the SLES installation media should have been chosen and established prior to performing the installation. For more information about these setup requirements, see Appendix A.

After completing this procedure, you should review and perform the required post installation tasks described later in this chapter. For more details, see "Post SLES Installation Tasks" on page 36.

▼ Install SLES10 SP3 Using Local or Remote Media

1. **Ensure that the install media is available to boot.**
    - **For Distribution CD/DVD**. Insert the SLES10 SP3 boot disc (CD labeled number 1 or DVD) into the local or remote USB CD/DVD-ROM drive.
    - **For ISO images**. Ensure that the ISO images are available and that the boot disc image (CD labeled number 1 or DVD) has been selected in the ILOM Remote Console application (`Devices` menu --> `CD-ROM Image`).

    For additional information about how to set up the install media, see Appendix A.

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

   For example:

   - **From the ILOM web interface**, select the `Remote Control --> Remote Power Control` tab, then select `Reset` from the Select Action list box.

   - **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 ILOM CLI on the server SP**, type: `reset /SYS`

   The BIOS screen appears.

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

---

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

   The Please Select Boot Device menu appears.

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

   The device strings listed on the Boot Device menu are in the format of: *device type*, *slot indicator*, and *product ID string*.

   After a few seconds the initial SUSE Linux boot screen appears.

5. **In the initial SUSE boot screen, use the tab key to select the second option** `Installation`**, then press Enter.**

   This option continues the normal user interactive installation process.

   The Language screen appears.

Note – The Language screen might take several minutes to appear.

---

6. **In the Language screen, select the appropriate language option, then click** `Next`**.**

   The License Agreement screen appears.

7. **In the SUSE Linux Novell License Agreement screen, click** `Accept`**.**

   The SUSE YaST installation program initializes. The YaST graphical installation screen appears.

   Depending on the AutoYaST file configuration, the YaST Language Selection screen might appear.

8. **If the YaST Language Selection screen appears, specify which language to use.**

   Depending on the AutoYaST file configuration, the YaST Installation Mode screen might appear.

9. **If the YaST Installation Mode screen appears, select** `New Installation`**, then click** `OK` **to continue.**

   The system's hardware is detected. The YaST Installation Settings screen appears.

10. **In the YaST Installation Settings screen, do the following:**

    a. **Click the** `Partitioning` **option.**

    b. **Select** `Create Custom Partition`**, then click** `OK`**.**

    c. **Partition the disk as appropriate.**

       Refer to the YaST Partitioning instructions for more information.

Note – If Oracle Solaris OS or Oracle VM 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.

---

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

12. **After completing the basic installation setup, refer to the YaST 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, then download available updates to the operating system.**

       Alternatively, see "Updating the SLES Operating System" on page 37 to manually update your SLES 10 SP3 OS.

13. **Review and, if necessary, perform the post installation tasks described later in this chapter.**

    Refer to "Post SLES Installation Tasks" on page 36.

▼ Installing SLES 11 Using Local or Remote Media

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

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

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

For additional information about how to set up the install media, see Appendix A.

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

For example:

- **From the ILOM web interface**, select `Remote Control --> Remote Power Control tab`, then select `Reset` option from the `Select Action` list box.
- **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 ILOM CLI on the server SP, type**: `reset /SYS`

The BIOS screen appears.

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

---

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

The Please Select Boot Device menu appears.

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

The device strings listed on the Boot Device menu are in the format of: *device type*, *slot indicator*, and *product ID string*.

After a few seconds the initial SUSE boot screen appears.
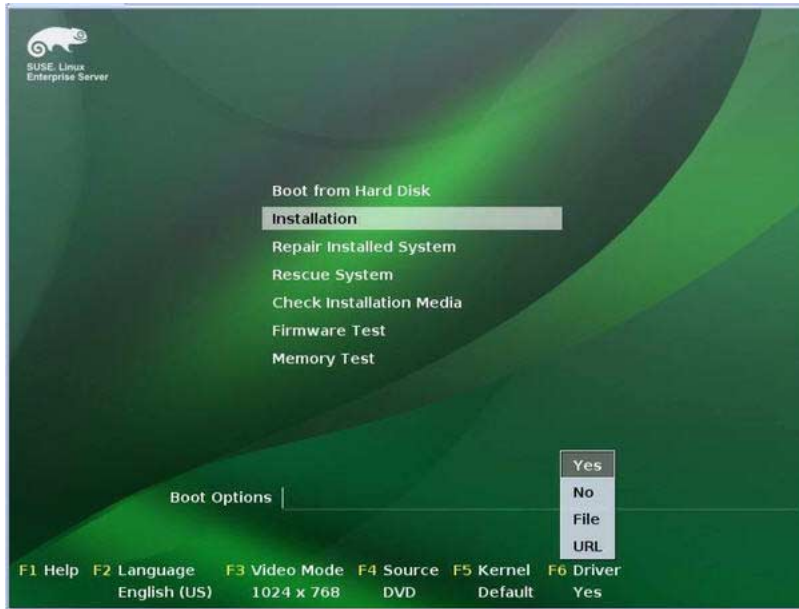
5. **In the initial SUSE boot installation screen, do one of the following:**

   ■ **For systems without a Sun Storage 6 Gb SAS PCIe HBA configuration (SG-SAS6-INT-Z or SG-SAS6-EXT-Z)**, use the tab key to select the second option `Installation` and press Enter.

   The Welcome screen appears. **Proceed to Step 7**.

   - or -

   ■ **For systems with a Sun Storage 6 Gb SAS PCIe HBA (SG-SAS6-INT-Z or SG-SAS6-EXT-Z) configuration**, press F6 to load the appropriate LSI mass storage driver.

   The Driver Update Medium dialog appears. **Proceed to Step 6**.

Note – The floppy storage media for loading LSI mass storage driver should have been mounted prior to starting the SLES 11 installation. For details about mounting the LSI floppy storage media prior to installation, see "SAS PCIe HBAs Requiring Storage Drivers for SLES 11 Installations" on page 10.

```
Please choose the Driver Update medium.

sda: USB Floppy
sr0: USB CD-ROM, AMI Virtual CDROM
sr1: USB CD-ROM, TSSTcorp CDDVDW TS-T633A
sdb1: USB Partition, Lexar USB Flash Drive
other device

    OK              Back
```

6. **(LSI storage driver for SAS PCIe HBA configurations only) To load the LSI mass storage driver for the Sun Storage 6 Gb SAS PCIe HBA option card (SG-SAS6-INT-Z or SG-SAS6-EXT-Z), perform the following steps:**

    a. **In the Driver Update Medium dialog, select the medium where the LSI floppy storage image is mounted, then click** OK.

    The driver is loaded then the Driver Update Medium dialog reappears.

    b. **In the Driver Update Medium dialog, click** Back.

    A message appears stating that the installation is being loaded then the SUSE Welcome screen appears.

7. **In the Welcome screen, do the following:**

- Select the appropriate Language.
- Select the Keyboard Layout.
- Read the license agreement and select the check box for: `I Agree to the License Terms.`
- Click `Next`.

  The System Probing screen appears with a progress bar. Upon completion of the system analysis, the Yast Installation Mode screen appears.
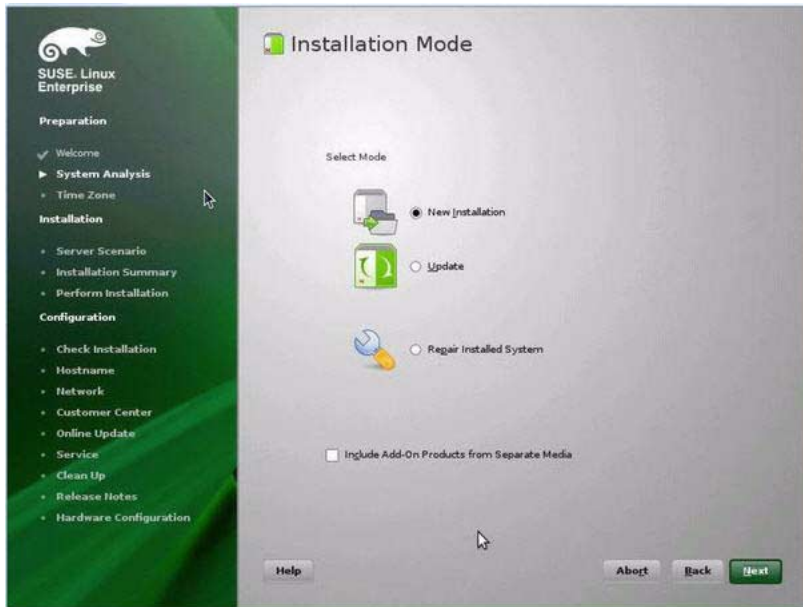
8. **In the Installation Mode screen, select** `New Installation`**, then click** `Next`**.**

   The Clock and Time Zone screen appears.

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

   The Server Base Scenario screen appears.

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

    The Installation Settings screen appears.

11. **In the Installation Settings screen, do the following:**

    ■ Click Next to accept the installation settings shown.

      - or -

    ■ Click Change to edit the settings, then click Next to accept the installation settings.

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

    The Confirm Package License screen appears.

12. **In the Confirm Package License screen, do the following:**

    ■ Read the License Agreement.

    ■ Click I Agree.

    ■ Click Install.

    A Confirm Installation dialog appears.

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

    The Perform Installation dialog appears.
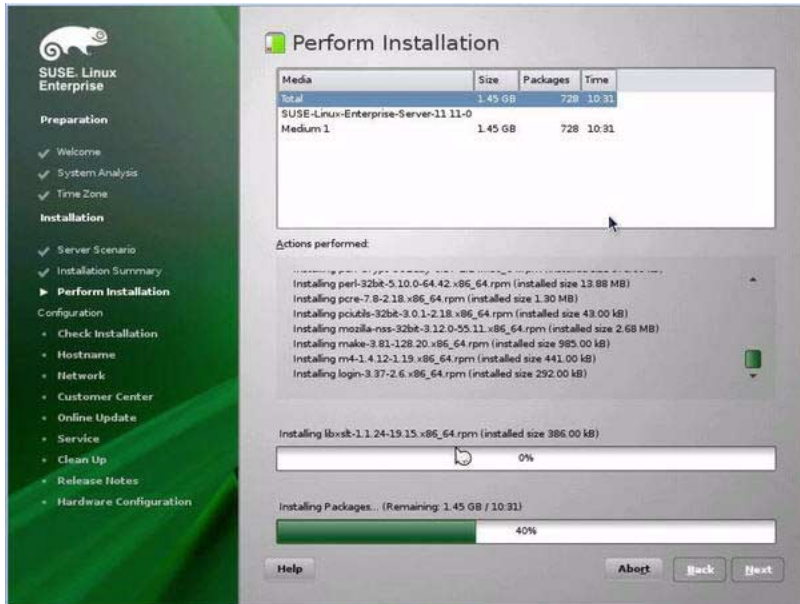
14. **Continue the basic installation setup until all the SLES 11 OS files are installed and the system reboots.**

15. **After the completing the basic installation setup, refer 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 then download the latest updates available to the operating system.**

16. **Review and, if necessary, perform the post installation tasks described later in this chapter.**

    For details, see .

Installing SLES Using a PXE Network Environment

This section describes how to boot SLES from a PXE network environment. It assumes that you are booting the install media from one of the following sources:

- SLES 10 SP3 or SLES 11 (or subsequent release) CD or DVD set (internal or external CD/DVD)
- SLES 10 SP3 or SLES 11 (or subsequent release) ISO DVD image or AutoYaST image (network repository)

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

(http://www.novell.com/documentation/suse)

Before You Begin

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

- If you are using AutoYaST to perform the installation, you must:
  - Create the AutoYast profile.

  Follow the AutoYaST installation instructions in the SUSE Linux Enterprise (10 or 11) documentation.

- To use PXE to boot the installation media over the network, you must:
  - Configure the network (NFS, FTP, HTTP) server to export the installation tree.
  - Configure the files on the TFTP server necessary for PXE booting.
  - Configure the Sun Fire X4470 Server MAC network port address to boot from the PXE configuration.
  - Configure the Dynamic Host Configuration Protocol (DHCP).

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

  After completing this procedure, you might need to perform the tasks for "Post SLES Installation Tasks" on page 36.

▼ Install SLES Using PXE Network Boot

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

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

   For example:

   - **From the ILOM web interface**, select the Remote Control --> Remote Power Control tab, then select Reset from the Select Action list box.

- **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 ILOM CLI on the server SP**, type: `reset /SYS`

The BIOS screen appears.

Note – The next events occur very quickly; therefore, focused attention is needed for these steps. Watch carefully for the 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. **Press F8 to specify a temporary boot device.**

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

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

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

   The initial SUSE Linux boot screen appears.

5. **To continue the installation, proceed to one of the following sections:**
   - For SLES 10 SP3 installations, continue the installation by following the instructions starting at Step 5 in "Install SLES10 SP3 Using Local or Remote Media" on page 26.
   - For SLES 11 installations, continue the installation by following the instructions starting at Step 5 in "Installing SLES 11 Using Local or Remote Media" on page 28.

Post SLES Installation Tasks

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

- "Updating the SLES Operating System" on page 37
- "Configuring Support for TPM" on page 38

Updating the SLES Operating System

The 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.

▼ Update the SLES Operating System

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:**

   ```
   run 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 Novell Customer Center.**

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

---

   a. **Select the Software tab.**

   b. **Select Novell Customer Center Configuration and follow the directions.**

5. **Once registered, select the Online Update tab to perform the software update.**

Configuring Support for TPM

If you intend to use the Trusted Platform Module (TPM) feature set that is provided in SLES, you must configure the Sun Fire X4470 Server to support this feature. For instructions, see the configuration support for TPM information in the *Sun Fire X4470 Server Service Manual* (821-0703).

Note – TPM enables you to administer the TPM security hardware in your server. For additional information about implementing this feature, refer to the TPM documentation available for SUSE Linux Enterprise Server.

Installing Red Hat Enterprise Linux

This chapter provides information about installing Red Hat Enterprise Linux (RHEL) 5 for x86 (64-bit) and the Oracle Unbreakable Enterprise Kernel for Linux.

Note – It is highly recommended that you use the Oracle Hardware Installation Assistant to install the RHEL operating system on your server. This installation assistant provides and installs the device driver(s), if required, for you. For more information about using Oracle Hardware Installation Assistant to install an operating system, see Chapter 1.

This chapter includes the following topics:

Installing RHEL 5 Using Local or Remote Media

The following procedure describes how to boot the RHEL 5.5 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 5.5 (or subsequent release) CD or DVD set (internal or external CD/DVD)
- RHEL 5.5 (or subsequent release) ISO DVD image (network repository)

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

`(http://www.redhat.com/docs/manuals/enterprise/)`

Before You Begin

Prior to performing the installation, the following requirements must be met:

- All applicable installation prerequisites for installing an operating system should have been met. For further information about these prerequisites, see Chapter 2.
- An installation method (for example: console, boot media, and install target) should have been chosen and established prior to performing the installation. For more information about these setup requirements, see Appendix A.

After completing this procedure, you should review and perform the required post installation tasks described later in this chapter. For more details, see "Post RHEL Installation Tasks" on page 44.

▼ Install RHEL 5 Using Local or Remote Media

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

   - **For Distribution CD/DVD**. Insert the Red Hat 5.5 Distribution media boot disc (CD labeled number 1 or the single DVD) into the local or remote USB CD/DVD-ROM drive.

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

   - For additional information about how to set up the install media, see Appendix A.

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

   For example:

   - **From the ILOM web interface**, select the `Remote Control --> Remote Power Control` tab, then select `Reset` from the Select Action list box.

   - **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 ILOM CLI** on the server SP, type: `reset /SYS`

  The BIOS screen appears.

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

---

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

   The Please Select Boot Device menu appears.

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

   The device strings listed on Boot menu are in the format of: *device type*, *slot indicator*, and *product ID string*.

   After a few seconds, the splash screen for the RHEL 5 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 Red Hat documentation.**

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

   (http://www.redhat.com/docs/manuals/enterprise)

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

---

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

   a. **Configure your system for automatic updates.**

      Refer to Red Hat documentation for more information.

b. If required, download and install the latest errata and bug fixes for RHEL 5.5.

Refer to Red Hat documentation for more information.

c. Review and, if necessary, perform the post installation tasks described later in this chapter.

Refer to "Post RHEL Installation Tasks" on page 44.

Installing RHEL 5 Using a PXE Network Environment

This section describes how to boot the RHEL 5 from a PXE network environment. It assumes that you are booting the install media from one of the following sources:

■ RHEL 5.5 (or subsequent release) CD or DVD set (internal or external CD/DVD)

■ RHEL 5.5 (or subsequent release) ISO DVD image or KickStart image (network repository)

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

Before You Begin

The following requirements must be 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 a boot media with the KickStart file or make the KickStart file available on the network.

   Follow the KickStart installation instructions in the *Red Hat Enterprise Linux 4: System Administration Guide* at: (http://www.redhat.com/docs).

■ 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 Sun Fire X4470 Server 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 4: System Administration Guide* at:

(http://www.redhat.com/docs)

▼ Install RHEL 5 Using PXE Network Boot

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

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

   For example:

   - **From the ILOM web interface**, select the `Remote Control --> Remote Power Control` tab, then select `Reset` from the Select Action list box.
   - **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 ILOM CLI** on the server SP, type: `reset /SYS`

   The BIOS screen appears.

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

   ---

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

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

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

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

5. **To complete the installation, refer to** Step 5 **of** "Install RHEL 5 Using Local or Remote Media" on page 40**.**

Post RHEL Installation Tasks

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

- "Register RHEL and Activate Automatic Updates" on page 44
- "Configure Support for TPM" on page 44

Register RHEL and Activate Automatic Updates

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

(http://www.redhat.com/apps/support/)

Configure Support for TPM

If you intend to use the Trusted Platform Module (TPM) feature set that is provided in RHEL, you must configure the server to support this feature For instructions, see the service manual for your server model:

- *Sun Fire X4470 Server Service Manual* (821-0703)

Note – TPM allows you to administer the TPM security hardware in your server. For additional information about implementing this feature, refer to the TPM documentation available for Red Hat Enterprise Linux.

Installing the Oracle Unbreakable Enterprise Kernel for Linux

After you have installed RHEL 5 Update 5, you can install and use the Oracle Unbreakable Enterprise Kernel for Linux. For installation instructions, see "Installing Oracle Unbreakable Enterprise Kernel for Linux Using Local or Remote Console" on page 21.

PART II   Linux System Administrator References

Refer to the following system administrator references as needed to perform or complete the installation of the Linux operating system.

Description	Link
Guidelines for selecting and setting up an installation environment for deploying the Linux installation program	Appendix A, Installation Methods
A complete list of operating systems supported on the Sun Fire X4470 Server at the time of this publication	Appendix B, Supported Operating Systems
Instructions for ensuring that the BIOS default properties are set prior to performing the Linux installation	Appendix C, BIOS Defaults for New Installations
Instructions for downloading the ISO image for the Sun Fire X4470 Server Tools and Drivers DVD	Appendix D, Downloading ISO Image for Tools and Drivers DVD

Supported Installation Methods

To determine which installation method is best for you when installing Linux on a server, consider the following options summarized in this appendix:

- "Console Outputs" on page 47
- "Installation Boot Media" on page 49
- "Installation Targets" on page 51

Console Outputs

TABLE A-1 lists the consoles you can use to capture the output and input of the operating system installation.

TABLE A-1 Console Options for Performing an OS Installation

Console	Description	Setup Requirement

Local console	You can install the OS and administer the server by attaching a local console directly to the server SP.
	
	Examples of local consoles include:
	• Serial console
	• VGA console, with USB keyboard and mouse
		1. Attach a local console to the server.
		   For details, see the "Attaching Devices" in the *Sun Fire X4470 Server Service Manual* (821-0703).
		2. At the ILOM prompt, type your ILOM user name and password.
		3. For serial console connections only, establish a connection to the host serial port by typing `start /SP/console`.
		   The video output is automatically routed to the local console.
		
		For further details about establishing a connection to the server SP, see the *Oracle Integrated Lights Out Manager (ILOM) 3.0 Concepts Guide* (820-6410).

Remote console	You can install the OS and administer the server from a remote console by establishing a network connection to the server SP. Examples of remote consoles include: • Web-based client connection using the ILOM Remote Console application • SSH client connection using a serial console	1. View or establish an IP address for the server SP. For details, see the *Sun Fire X4470 Server Installation Guide* (821-0332). 2. View or establish a connection between a remote console and the server SP: • For web-based client connection, perform these steps: 1) In a web browser, type the IP address for the server SP; 2) log in to the ILOM web interface; 3) redirect the video output from the server to the web client by launching the ILOM Remote Console; 4) enable device redirection (mouse, keyboard, etc.) in the Devices menu. • For SSH client connection, perform these steps: 1) From a serial console, establish an SSH connection to the server SP (`ssh root@`*ipaddress*); 2) log in to ILOM; 3) redirect the serial output from the server to the SSH client by typing `start /SP/console`. For additional information about establishing a remote connection to the ILOM SP or using the ILOM Remote Console, see the *Oracle Integrated Lights Out Manager (ILOM) 3.0 Concepts Guide* (820-6410).

Installation Boot Media

You can start the operating system installation to a server by booting a local or remote installation media source. TABLE A-2 identifies the supported media sources and the setup requirements for each source.

TABLE A-2   Boot Media Options for Performing an OS Installation

Installation Media	Description	Setup Requirement
Local boot media	Local boot media requires a built-in storage device on the server, or an external storage device attached to the server. Supported OS local boot media sources can include: • CD/DVD-ROM installation media, and, if applicable, floppy device driver media	1. If your server does not contain a built-in storage device, attach the appropriate storage device to the front or rear panel of the server. 2. For more information about how to attach local devices to the server, see "Attaching Devices" in the *Sun Fire X4470 Server Service Manual* (821-0703).

TABLE A-2   Boot Media Options for Performing an OS Installation *(Continued)*

Installation Media	Description	Setup Requirement
Remote boot media	Remote media requires you to boot the install over the network. You can start the network install from a redirected boot storage device or another networked system that exports the installation over the network using a Pre-Boot eXecution environment (PXE). Supported OS remote media sources can include: • CD/DVD-ROM installation media, and, if applicable, floppy device driver media • CD/DVD-ROM ISO installation image and, if applicable, floppy ISO device driver media • Automated installation image (requires PXE boot)	To redirect the boot media from a remote storage device, perform these steps: 1. Insert the boot media into the storage device, for example: **For CD/DVD-ROM**, insert media into the built-in or external CD/DVD-ROM drive. **For CD/DVD-ROM ISO image**, ensure that ISO image(s) are readily available on a network shared location. **For device driver floppy ISO image**, ensure that ISO image, if applicable, is readily available on a network shared location or on a USB drive. 2. Establish a web-based client connection to the server ILOM SP and launch the ILOM Remote Console application. For more details, see the Setup Requirements for web-based client connection in TABLE A-1. 3. In the Devices menu of the ILOM Remote Console application, specify the location of the boot media, for example: **For CD/DVD-ROM boot media**, select CD-ROM **For CD/DVD-ROM ISO image boot media**, select CD-ROM Image. **For floppy device driver boot media**, if applicable, select Floppy **For floppy image device driver boot media**, if applicable, select Floppy Image. For more information about the ILOM Remote Console, see the *Oracle Integrated Lights Out Manager (ILOM) 3.0 Concepts Guide* (820-6410).

TABLE A-2   Boot Media Options for Performing an OS Installation *(Continued)*

Installation Media	Description	Setup Requirement

Remote Boot Media (*continued*)	**Note -** An automated installation image enables you to perform the OS installation on multiple servers. By using an automated image, you can ensure configuration uniformity among many systems.
	
	Automated installations use a Pre-boot eXecution Environment (PXE) technology to enable the clients without an operating system to boot remotely to the automated install server that performs the installation of the operating system.
		To perform the installation using PXE, perform these steps:
		1. Configure the network server to export the installation via PXE boot.
		2. Make the OS install media available for PXE boot.
		  If you are using an automated OS installation image, you will need to create and provide the automated OS install image. For example:
		  - Solaris Jumpstart image
		  - SLES AutoYAST image
		  - Windows WDS image
		  For detailed instructions for automating the installation setup process, consult the operating system vendor documentation.
		3. To boot the installation media, select the PXE boot interface card as the temporary boot device. For details, see the applicable PXE-based operating system installation procedure described in this guide.

Installation Targets

TABLE A-3 identifies the supported installation targets you can use to install an operating system.

TABLE A-3   Installation Targets for OS Installation

Install Target	Description	Setup Requirement	Supported OS
Local storage drive Hard disk drive (HDD) or Solid state drive (SSD)	You can choose to install the operating system to any of the storage drives installed in the server.	• Ensure that the HDD or SSD is properly installed and powered-on in the server. For more information about installing and powering on an HDD or SDD, refer to the *Sun Fire X4470 Server Service Manual* (821-0703).	• All supported operating systems listed in Appendix B.
Fibre Channel (FC) Storage Area Network (SAN) device	For servers equipped with Fibre Channel PCIe host bus adapters (HBAs), you can choose to install the operating system to an external FC storage device.	• Ensure that the FC PCIe HBA is properly installed in the server. For more information about installing an FC PCIe HBA option, refer to the *Sun Fire X4470 Server Service Manual* (821-0703). • The SAN must be installed and configured to make the storage visible to the host. For instructions, refer to the documentation supplied with the FC HBA.	• All operating systems listed in Appendix B.

Supported Operating Systems

TABLE B-1 in this appendix describes the operating systems supported on the Sun Fire X4470 Server at the time this document was published.

For an up-to-date list of the operating systems supported on the Sun Fire X4470 Server, see the Sun Fire X4470 Server web site and navigate to the Operating Systems link:

(http://www.oracle.com/goto/x4470)

Supported Operating Systems

Sun Fire X4470 Server supports the installation and use of the following operating systems, or a subsequent release of the operating system.

TABLE B-1   Supported Operating Systems

Operating System	Supported Version	For Additional Information, See
Windows	• Microsoft Windows Server 2008 SP2, Standard Edition (64-bit) • Microsoft Windows Server 2008 SP2, Enterprise Edition (64-bit) • Microsoft Windows Server 2008 SP2, Datacenter Edition (64-bit) • Microsoft Windows Server 2008 R2, Standard Edition (64-bit) • Microsoft Windows Server 2008 R2, Enterprise Edition (64-bit) • Microsoft Windows Server 2008 R2, Datacenter Edition (64-bit)	• *Sun Fire X4470 Server Installation Guide for Windows Operating Systems* (821-0701)
Linux	• Oracle Linux 5.5 (64-bit) • SUSE Linux Enterprise Server (SLES) 10 SP3 • SLES 11 (64-bit) • SLES 11 SP1 • Red Hat Enterprise Linux (RHEL) 5.5 (64-bit)	• Chapter 3 for Oracle Linux • Chapter 4 for SLES • Chapter 5 for RHEL
Solaris	• Oracle Solaris 10 10/09 • Oracle Solaris 10 09/10 or subsequent releases	• *Sun Fire X4470 Server Installation Guide for Oracle Solaris Operating System* (821-0700)
Virtual Machine Software	• Oracle VM 2.2 • VMware ESX Server 4.0 U1 and 4.1 • VMware ESXi Server 4.0 U1 and 4.1	• *Sun Fire X4470 Server Installation Guide for Virtual Machine Software* (821-1214)

BIOS Defaults for New Installations

When installing a new operating system on a storage drive, you should verify that the following BIOS settings are properly configured before you perform the operating system installation:

- System time
- System date
- Boot order

Verification of BIOS Factory Defaults

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

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

Before You Begin

Ensure that the following requirements are met prior to accessing the BIOS Setup Utility.

- 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 details, see the *Sun Fire X4470 Server Service Manual* (821-0703).

- A console connection is established to the server. For details, see TABLE A-1.

▼ View or Edit BIOS Settings for New Installations

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

   For example:

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

   The BIOS screen appears.

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

   After a few moments, the BIOS Setup Utility appears.

3. **To ensure that the factory defaults are set, do the following:**

   a. **Press F9 to automatically load the optimal factory default settings.**

      A message appears prompting you to continue this operation by selecting `OK` or to cancel this operation by selecting `CANCEL`.

   b. **In the message, highlight `OK`, then press Enter.**

      The BIOS Setup Utility screen appears with the cursor highlighting the first value in the system time field.

4. **In the BIOS Setup Utility, do the following to edit the values associated with the system time or date.**

   a. **Highlight the values you want to change.**

      Use up or down arrow keys to change between the system time and date selection.

   b. **To change the values in the highlighted fields use these keys:**

      - PLUS (+) to increment the current value shown
      - MINUS (-) to decrement the current value shown
      - ENTER to move the cursor to the next value field

5. **To access the boot settings, select the `Boot` menu.**

   The Boot Settings menu appears.

6. **In the Boot Settings menu, use the down arrow key to select** `Boot Device Priority`, **then press Enter.**

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

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

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

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

Note – You can change the boot order for other devices in the list by repeating Steps 7a and 7b for each device entry you want to change.

   The device strings listed on the Boot menu and Options menu are in the format of: *device type*, *slot indicator*, and *product ID string*.

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

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

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

Downloading the ISO Image for the Tools and Drivers DVD

Use the download instructions in this appendix if a Tools and Driver DVD was not shipped with your server or, if you need to verify that the Tools and Drivers DVD shipped with your server contains the latest tools and firmware for your server.

ISO Image Download Procedure

Follow the steps in the procedure below to download the ISO image for the Tools and Drivers DVD.

▼ Download the Tools and Drivers DVD Image

1. **Go to the Sun Fire X4470 Server web site and click the Downloads link:**

   (http://www.oracle.com/goto/x4470)

2. **Select and download the ISO image for the Tools and Drivers DVD to an accessible network location or local storage location.**

3. **Prepare the ISO image for installation by using one of the following methods:**

   - Use remote KVMS (ILOM Remote Console) to mount the ISO image.
   - Create a Tools and Drivers DVD using third-party software.

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