Sun Fire X2270 M2 Server Installation Guide for Linux Operating Systems

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Contents

Preface

This preface describes related documentation, available documentation formats, and the process for submitting feedback to Oracle. It also includes a document change history.

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Related Books

The following is a list of documents related to Oracle's Sun Fire X2270 M2 server. These and additional support documents are available on the library page at: http://www.oracle.com/pls/topic/lookup?ctx=sfx2270m2&id=homepage.

Document Group	Document	Description
Sun Fire X2270 M2 Server-Specific Documentation	Sun Fire X2270 M2 Server Product Documentation	Integrated HTML version of all starred (*) documents, including Search and Index.
	Sun Fire X2270 M2 Server Getting Started Guide	Pictorial setup quick reference.
	*Sun Fire X2270 M2 Server Installation Guide**	How to install, rack, and configure the server up to initial power-on.
	*Sun Fire X2270 M2 Server Product Notes**	Important late-breaking information about the server.
	*Sun Installation Assistant 2.3 through 2.4 User's Guide for x64 Servers**	An Oracle tool used to perform an assisted installation of a supported Windows or Linux OS, upgrade firmware (regardless of OS), and other tasks.
	*Sun Fire X2270 M2 Server Installation Guide for Oracle Solaris Operating Systems**	How to install the Oracle Solaris OS on your server.

Document Group	Document	Description
	*Sun Fire X2270 M2 Server Installation Guide for Oracle VM**	How to install Oracle VM on your server.
	*Sun Fire X2270 M2 Server Installation Guide for Linux Operating Systems**	How to install a supported Linux OS on your server.
	*Sun Fire X2270 M2 Server Installation Guide for Windows Operating Systems**	How to install supported versions of Microsoft Windows on your server.
	*Sun Fire X2270 M2 Server Installation Guide for ESX Software**	How to install supported versions of the ESX OS on your server.
	*Integrated Lights Out Manager Supplement for the Sun Fire X2270 M2 Server**	Version-specific supplemental information for your server's Integrated Lights Out Manager.
	*Sun Fire X2270 M2 Server Diagnostics Guide**	How to diagnose problems with your server.
	*Sun Fire X2270 M2 Server Service Manual**	How to service and maintain your server.
	Sun Fire X2270 M2 Server Safety and Compliance Guide	Safety and compliance information about your server.
Oracle Integrated Controller Disk Management	*Sun x64 Server Disk Management Overview*	Information about managing your server storage.
x64 Servers Applications and Utilities Reference Documentation	*Sun x64 Server Utilities Reference Manual*	How to use the available utilities included with your server.
Integrated Lights Out Manager (ILOM) 3.0 Documentation	*Oracle Integrated Lights Out Manager (ILOM) 3.0 Feature Updates and Release Notes*	Information about new ILOM features.
	Oracle Integrated Lights Out Manager (ILOM) 3.0 Getting Started Guide	Overview of ILOM 3.0.
	Oracle Integrated Lights Out Manager (ILOM) 3.0 Concepts Guide	Conceptual information about ILOM 3.0.
	Oracle Integrated Lights Out Manager (ILOM) 3.0 Web Interface Procedures Guide	How to use ILOM through the web interface.
	Oracle Integrated Lights Out Manager (ILOM) 3.0 CLI Procedures Guide	How to use ILOM through commands.

Document Group	Document	Description
	Oracle Integrated Lights Out Manager (ILOM) 3.0 SNMP and IPMI Procedures Guide	How to use SNMP and IPMI commands.
	Oracle Integrated Lights Out Manager (ILOM) 3.0 Management Protocols Reference Guide	Information about management protocols.

About This Documentation (PDF and HTML)

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

Documentation Comments

Oracle is interested in improving product documentation and welcomes your comments and suggestions. You can submit comments by going to this link:

http://www.oraclesurveys.com/se.ashx?s=25113745587BE578

▼ Download Server System Tools and Drivers

Patches and the Tools and Drivers CD/DVD ISO image file for your server are now available by from My Oracle Support (MOS). Use this procedure to access server-specific downloads on MOS.

1   Go to http://support.oracle.com.

2   Sign in to My Oracle Support.

3   At the top of the page, click the Patches and Updates tab.
The Patches and Updates screen appears.

4   In the Search screen, click Product or Family (Advanced Search).
The screen appears with search fields.

5   In the Product field, select the product from the drop-down list.
Alternatively, type a full or partial product name (for example, Sun Fire X2270 M2) until a match appears.

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

Expand the folders to see the component offerings.

7   **Click Search.**

A list of updates (patches) appears.

8   **To select a patch, click the check boxes next to the patch name (you can select more than one patch).**

A popup action panel appears. The panel contains several action options.

9   **To download the update, click Download in the popup panel.**

The download begins automatically.

Documents History

- May 2010, initial publication
- June 2010, collection refresh, revisions to –11
- March 2011, *Product Notes* document updated for document errata and SW v1.1.0 and SW v1.2.0 releases. *Windows Operating System Installation Guide* revised for document errata. *Oracle Solaris Operating System Installation Guide* revised for document errata. Service Manual revised for document errata.
- September 2011, *Product Notes* and *OS Installation Guides* updated for SW v1.3.0 release.

Introduction to Linux Installation

This document provides instructions for installing Oracle Enterprise Linux, Red Hat Linux, and SUSE Linux on your server. Use the following task map as a guide when installing a supported version of Linux.

Task	Description	Link
1	Review the server *Product Notes* document for the list of supported operating systems and up-to-date information about the server.	*Sun Fire X2270 M2 Server Product Notes*
2	Review the capabilities of Sun Installation Assistant (SIA), a single-server management tool that helps you perform a variety of deployment and recovery tasks on your server.	"Sun Installation Assistant (SIA)" on page 10
3	Prepare your server for OS installation, including how to view and configure serial and video output, and how to erase your primary boot disk, which is necessary if an OS is already installed.	"Preliminary Tasks Before Installing an OS" on page 13
4	Install Oracle Enterprise Linux on your server.	"Installing Oracle Enterprise Linux" on page 17
5	Install SUSE Linux on your server.	"Installing SUSE Linux Enterprise Server" on page 21
6	Install Red Hat Linux on your server.	"Installing Red Hat Enterprise Linux" on page 33
7	Configure a Preboot Execution Environment (PXE) server on a Linux system and use it to install Linux on your servers.	"Configuring a Linux Server to Support PXE Installation" on page 41
8	Boot from OS installation media. If you are installing locally, you can boot from physical media (CD or DVD). If you are installing remotely, you can boot from physical media or an equivalent ISO file.	"Booting From OS Distribution Media" on page 37

Task	Description	Link
9	Find the logical name (assigned by the OS) and the physical name (MAC address) of each network interface.	"Identifying Logical and Physical Network Interface Names for Linux OS Configuration" on page 57

Supported Operating Systems

The most up-to-date information about the server, including a listing of supported operating systems is available in the *Sun Fire X2270 M2 Server Product Notes*.

Sun Installation Assistant (SIA)

The Sun Installation Assistant (SIA) is a tool that helps you perform a variety of deployment and recovery tasks on your Sun x86 server. SIA can be launched from a bootable CD, a USB flash drive prepared with SIA software, or from a customized SIA image available on a PXE installation server.

- "SIA Task Overview" on page 10
- "Obtaining SIA" on page 10

SIA Task Overview

The following tasks can be performed using SIA:

Note – The available tasks are server-dependent and might vary.

- Perform an assisted installation of a supported Linux operating system. SIA installs appropriate drivers and platform-specific software, eliminating the need to create a separate driver disk. You provide the licensed OS distribution media (from a CD or network image file), and the SIA wizard sets up the installation process.

- Upgrade your system BIOS, ILOM service processor firmware, and installed storage device firmware to the latest version (regardless of the OS on your server).

- Maintain SIA with the latest firmware, tools, and drivers updates from Sun.

Obtaining SIA

The SIA is available as an option with most new x86 Sun servers. In addition, an ISO CD image of SIA is available for download from Sun. For a complete list of supported Sun server platforms, refer to the SIA information page at:

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

See the *Sun Installation Assistant 2.3 through 2.4 User's Guide for x64 Servers* for more information about SIA.

Preliminary Tasks Before Installing an OS

Certain tasks must be done before you can install an operating system, depending on how you are going to access the system console, and whether there is an OS already on your boot drive.

These tasks include:

-
-
-

Accessing the Console During Installation

Installing the OS requires you to view the system console output. This can appear on both the serial port and the video port.

Note – This topic describes the default video and serial port outputs. Other settings, including console commands and GRUB menu selections, can change this behavior.

Your server is equipped with a serial port and a video port.

- Serial port – From the moment you start the SP until the OS assumes control of the display, all output appears on the serial port.

    There are two ways to connect to the serial port:

    - Physically, by connecting a cable to the serial port. See "How to Configure the Serial Port" on page 14.

    - Virtually, by configuring an SSH connection to the SP, then by issuing the `start /SP/console` command. See "Communicating With the ILOM and the System Console" in *Sun Fire X2270 M2 Server Installation Guide* for more details.

- Video port – After the SP startup is complete, the system begins POST/BIOS, and displays all output on the video port. This continues until the OS assumes control of the display. Most OS configurations continue to display information on the video port.

There are two ways to connect to the video port:

- Physically, by connecting a cable to the video port on the server. See "Communicating With the ILOM and the System Console" in *Sun Fire X2270 M2 Server Installation Guide*.

- Virtually, by starting a JavaRConsole session. See the ILOM 3.0 documentation collection for details.

  http://docs.sun.com/app/docs/prod/sf.x2270m2?l=en&a=view

Other settings can affect this behavior. They include console commands, ILOM settings, and GRUB settings for operating systems that include a GRUB.

▼ How to Configure the Serial Port

1   Connect either a terminal or a laptop running terminal emulation software directly to the serial port.

Use the following terminal settings:

8,n,1 – eight data bits, no parity, one stop bit

9600 baud rate

Disable software flow control (XON/XOFF)

2   Power on the server.

Console output appears on the serial port.

If the output does not appear, it might be necessary to configure the output in the BIOS. Use the following step to configure the output in the BIOS.

3   If necessary, check the BIOS settings.

    a.   During POST, press F2 (F4 on a remote keyboard) during the boot process to enter the BIOS.

    b.   Use the right arrow key to navigate to the Server tab.

       The left and right arrow keys allow you to access the BIOS Setup Utility menu tabs.

    c.   Use the down arrow key to highlight the Remote Access Configuration option, and press Enter.

       The Configure Remote Access type and parameters submenu screen appears.

    d.   Use the Down arrow to highlight the External Serial Port option.

    e.   Use the - and + key to change the External Serial Port setting from SP to System.

    f. To save the change and exit BIOS, press the F10 key.

4 If the OS includes GRUB, it might be necessary to configure it as well.

    a. When the GRUB menu appears, press e to edit it.

    b. Type `-B console = ttya` to direct output to the serial console.

▼ How to Erase Your Boot Hard Disk

Your server might have the Solaris OS preinstalled on the hard drive. If so, you must erase it before installing Solaris.

Before You Begin   Obtain a copy of the Tools and Drivers CD before starting this procedure.

> ⚠ **Caution** – This procedure erases all data from the hard drive. Back up any data you wish to save before starting this procedure.

1 Back up any data on the hard drive that you want to save.

2 Insert the Tools and Drivers CD into the servers CD/DVD drive.

If your server does not have a CD/DVD drive, use the remote console (JavaRConsole). See the ILOM 3.0 documentation collection for details.

http://docs.sun.com/app/docs/prod/sf.x2270m2?l=en&a=view

3 Boot the system from the Tools and Drivers CD.

The tools and drivers main menu appears.

4 Select Erase Primary Boot Hard Disk from the main menu.

This erases all partitions currently on the primary hard drive except for the diagnostic partition. If the diagnostic partition is present, it is not erased.

Installing Oracle Enterprise Linux

Your server is compatible for use with Oracle Enterprise Linux (OEL) 5.4 64–bit.

This section provides the following topics:

Note – You can also install OEL using a PXE installation, as described in "Configuring a Linux Server to Support PXE Installation" on page 41

Installing OEL from Distribution Media

Before installing OEL on your server, you must obtain the following items:

- OEL media set (CD or DVD) or an equivalent ISO image. The ISO image can be used for remote installation or for creating an installation DVD. See "How to Download OEL Media" on page 18.
- DVD-ROM drive.

  Note – If you are installing remotely, the DVD-ROM drive, keyboard, mouse, and monitor are connected to the local system instead of the server. Also, you can use an ISO image instead of an actual DVD/CD-ROM.

- USB keyboard and mouse.
- Monitor.
- Obtain the following Oracle documentation.

Document	Description	Where to Find
Release Notes	Contains late-breaking information about system requirements and system configuration for your version of the Oracle Enterprise Linux software.	Online from `http://oss.oracle.com/el5/docs/`
Oracle Enterprise Linux Installation Guide	An online article with step-by-step instructions for installing Oracle Enterprise Linux.	Available for download from `http://www.oracle-base.com/articles/linux/OracleEnterpriseLinux5Installation.php`

Also see:

- "How to Download OEL Media" on page 18
- "How to Install OEL From Distribution Media" on page 18

▼ How to Download OEL Media

1 Go to the Oracle e–delivery site:

`http://edelivery.oracle.com/linux`

2 Create an account (if you do not already have one).

You need an account to download the updated ISO images.

3 Find and download Oracle Enterprise Linux.

Next Steps Proceed to "How to Install OEL From Distribution Media" on page 18.

▼ How to Install OEL From Distribution Media

Before You Begin
- If necessary, configure your console display and erase your boot hard drive. See "Preliminary Tasks Before Installing an OS" on page 13 for details.

- While configuring an operating system for a networked server, it is necessary to provide the logical names (assigned by the OS) and the physical name (MAC address) of each network interface. See "Identifying Logical and Physical Network Interface Names for Linux OS Configuration" on page 57 for details.

1 Configure the server and boot it from the distribution media, as described in "Booting From OS Distribution Media" on page 37.

The server boots from the distribution media.

2 Do one of the following at the boot prompt, depending on which type of interface you want to use:

- **For text mode, type the following command:**

  boot: linux text.

- **For graphical mode, press Enter at the boot prompt.**

3 Refer to the Oracle Enterprise Linux 5 installation article on the web at:

http://www.oracle-base.com/
articles/linux/OracleEnterpriseLinux5Installation.php

Note – If you already have an operating system besides Linux installed (for example, the Solaris OS), it appears as a partition during the installation process. If you choose to install OEL on that partition, it will overwrite the OS. If you wish to preserve the partition, you must install OEL on a different partition.

Next Steps
- Proceed to "Updating OEL" on page 19.
- "How to Update the OEL Drivers" on page 20

Updating OEL

Use this procedure to update OEL to the latest OS.

Note – If your system is on a publicly accessible network, updating your system can help to improve security.

Updating OEL consists of the following procedures:

- "How to Update the OEL Operating System" on page 20
- "How to Update the OEL Drivers" on page 20

▼ How to Update the OEL Operating System

Before You Begin You must already have OEL installed on your server.

● **Choose a method for updating your Oracle Enterprise Linux operating system:**

- **For Oracle Unbreakable Linux Network (ULN) installations, create local yum repositories and configure yum and up2date to install update packages from them.**

  See http://www.oracle.com/technology/tech/linux/htdocs/yum-repository-setup.html.

- **For OEL installations without Unbreakable Linux Network support, use the Oracle Public yum server and a yum client to install updates.**

  See http://public-yum.oracle.com/.

Note – This yum server is offered without support of any kind. If you require errata, security patches and other updates, you should use Oracle Unbreakable Linux Network (ULN), available from the online store or your sales representative.

▼ How to Update the OEL Drivers

Before You Begin Check the Tools and Drivers CD shipped with your server for the latest drivers for installed components.

The Sun Fire X2270 M2 Server Tools & Drivers CD is provided in the Documentation and Media Kit, which is an option you can order. If necessary, you can also download an ISO image of the Tools & Drivers CD at:

http://wikis.sun.com/display/SystemsComm/Sun+Fire+X2270+M2+Server

1. **Ensure that the device driver media is available at boot.**
   - For a distribution CD/DVD, insert the Tools & Drivers CD into the local or remote CD/DVD-ROM drive.
   - For an ISO image, in the Device menu of the Sun ILOM Remote Console, select the CD-ROM image to specify the location of the customer-provided CD image.

2. **Change to the mounted USB CD/DVD directory by typing the following command:**
   # **cd** <*mount_point*>**/drivers/linux/**

3. **Look for drivers supported for your operating system and view the readme file for instructions on performing the update.**

4. **Reboot the server after the update for the changes to take effect.**

Installing SUSE Linux Enterprise Server

This topic provides information about installing the following operating systems:

- SUSE Linux Enterprise Server 10 SP3 (or subsequent release) for x86 (64-bit)
- SUSE Linux Enterprise Server 11 (or subsequent release) for x86 (64-bit)

Note – Sun highly recommends that you use the Sun Installation Assistant (SIA) to install the SUSE Linux operating system on your server. SIA provides and installs the device drivers, if required, for you. For more information about using SIA to install an operating system, follow the instructions provided in the "Sun Installation Assistant (SIA)" on page 10.

The related topics include:

Installing SLES10 or SLES11 From Distribution Media

This topic describes how to install the SLES10 or SLES11 operating system from local or remote media. It assumes that you are installing the SLES distribution media from one of the following sources:

- SLES10-SP3 or SLES11 CD or DVD set (internal or external CD/DVD)
- SLES10-SP3 or SLES11 ISO DVD image (network repository)

> **Note** – If you are booting the installation media from a PXE environment, refer to "Installing SLES10 or SLES 11 Using a PXE Network Environment" on page 27 for boot instructions.

Refer to the following procedures to install the SLES OS from local or remote media:

- "Installing SLES10 Using Local or Remote Media" on page 22
- "How to Install SLES11 Using Local or Remote Media" on page 24

Installing SLES10 Using Local or Remote Media

This topic describes how to install SLES10 using local or remote media.

▼ How to Install SLES10 Using Local or Remote Media

Before You Begin   Before you perform the installation, the following requirements must be met:

- All applicable installation prerequisites for installing this operating system have been met.
- An installation method (for example, console, boot media, and installation target) has been chosen and established prior to performing the installation.

> **Note** – The following procedure explains the initial steps for booting the installation media and launching the SLES installation program. For further details about installing SLES, see the SUSE Linux Enterprise Server documentation collection from Novell at:
> http://www.novell.com/documentation/suse

1   Ensure that the installation media is available to boot.

- **For a distribution CD/DVD, insert the SLES10 boot disc (CD labeled number 1 or DVD) into the local or remote 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 (Device menu —> CD-ROM Image).**

2   Reset the power on the server.

For example:

- **From the ILOM web interface, select Remote Control —> Remote Power Control, then select the Power Cycle option from the Host action drop-down list.**

- **On 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 following events occur very quickly. Watch carefully for the messages, which appear on the screen for only a brief time.

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3 **With the BIOS power-on self-test screen displayed, 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 SUSE initial boot screen appears.

5 **In the initial SUSE boot installation 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.

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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 the Solaris OS 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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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 "How to Update the SLES Operating System" on page 30 for information about how to manually update your SLES OS.

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

Refer to "Post SLES Installation Tasks" on page 29.

14 **After completing this procedure, review and perform the required post installation tasks in "Post SLES Installation Tasks" on page 29.**

▼ **How to Install SLES11 Using Local or Remote Media**

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

- For a distribution CD/DVD, insert the SLES11 boot disc (CD labeled number 1 or DVD) into the local or remote 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 (Device menu —> CD-ROM Image).

For additional information about how to set up the installation media, see "Installing SLES10 or SLES11 From Distribution Media" on page 21.

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

For example:

- From the ILOM web interface, select Remote Control —> Remote Power Control, then select the Power Cycle option from the Host action drop-down 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 following events occur very quickly. Watch carefully for the messages, which appear on the screen for only a brief time.

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3 **In the BIOS power-on self-test 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 SUSE initial boot screen appears.

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

This option continues the normal user interactive installation process.

The Welcome screen appears.

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

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6 **In the Welcome screen, use the tab key to navigate to the Language drop-down menu.**

   a. **Select the appropriate language option, then tab to the Keyboard Layout.**

   b. **Select the appropriate keyboard layout, then tab to the License Agreement.**

c. Click I Agree to the License Terms, then tab to and click Next.

The Media Check screen appears.

7 In the Media Check screen, click Start Check to verify your installation media, or alternatively, click Next to continue with the installation.

The Installation Mode screen appears.

8 In the Installation Mode screen, select New Installation, then click Next to continue.

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 to continue.

The Server Base Scenario screen appears.

10 In the Server Base Scenario screen, select Physical Machine (this is usually the correct option), Virtual Machine, or Xen Virtualization Host, then click Next to continue.

The Installation Settings screen appears.

11 In the 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 the Solaris OS 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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12 Continue the basic installation setup until all the SLES OS files are installed and the system reboots.

13 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 "How to Update the SLES Operating System" on page 30 to manually update your SLES OS.

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

Refer to "Post SLES Installation Tasks" on page 29.

Installing SLES10 or SLES 11 Using a PXE Network Environment

This section describes how to boot SLES10 or SLES11 from a PXE network environment. It assumes that you are booting the installation media from one of the following sources:

- SLES10-SP3 or SLES11 CD or DVD set (internal or external CD/DVD)
- SLES10-SP3 or SLES11 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

▼ How to Install SLES10 or SLES11 Using Network PXE Boot

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 SUSE Linux Enterprise 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 X2270 M2 MAC network port address to boot from the PXE configuration.
- Configure Dynamic Host Configuration Protocol (DHCP).
- Follow the setup instructions for booting SUSE media over the network in the SUSE Linux Enterprise 10 or SUSE Linux Enterprise 11 documentation.

After completing this procedure, you might need to perform the tasks described in"Post SLES Installation Tasks" on page 29.

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 Remote Control —> Remote Power Control, then select the Power Cycle option from the Host action drop-down list.
- 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 following events occur very quickly. Watch carefully for the messages, which appear on the screen for only a brief time.

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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 installation boot device (physical port) that is configured to communicate with your network installation server.

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

The SUSE Linux Novell License Agreement screen appears.

5 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.

6 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.

7 If the YaST Installation Mode screen appears, select New Installation, and then click OK to continue.

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

8 In the YaST Installation Settings screen, do the following:

a. Click the Partitioning option.

b. Select Create Custom Partition, and then click OK.

c. Partition the disk as appropriate.

Refer to the YaST Partitioning instructions for more information.

Note – If the Solaris OS 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.

---

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

10 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 "How to Update the SLES Operating System" on page 30 for information about how to manually update your SLES OS.

11 Review and, if necessary, perform the post installation tasks described in:

"Post SLES Installation Tasks" on page 29

Post SLES Installation Tasks

After completing the SLES10 or SLES11 installation, review the following post installation tasks and, if necessary, perform the tasks that are applicable to your system.

- "How to Update the SLES Operating System" on page 30
- "Installing System Device Drivers to Support Additional Hardware" on page 31

▼ How to Update the SLES Operating System

1   Log in 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 on the left, then the Proxy screen on the right.

b.   Type the correct proxy URLs in both the HTTP and HTTPS fields.

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

---

c.   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/).

d.   After successfully running the command, launch YaST again.

4   Register with the Novell Customer Center.

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

---

a.   Select the Software tab on the left.

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

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

Installing System Device Drivers to Support Additional Hardware

The following table identifies the system device drivers that are available for you to install on your system. Review this table to determine which drivers, if any, are currently required for installation on your system.

TABLE 1   Additional SLES Device Drivers

Hardware Device	Device Driver
AST2100 service processor	AST2100 VGA driver
Intel NIC	1GB driver

▼ How to Install System Device Drivers Using Local or Remote Media

If your server has an on-board CD/DVD drive or an attached CD/DVD drive, you can install the drivers directly, using your server Tools & Drivers CD.

Before You Begin   The following requirements must be met before you install the drivers on your system.

- Obtain the required device drivers from the Tools & Drivers CD or ISO image.

  The Sun Fire X2270 M2 Server Tools & Drivers CD is provided in the Documentation and Media Kit, which is an option you can order. If necessary, you can also download an ISO image of the tools and drivers CD from the downloads page:

  http://wikis.sun.com/display/SystemsComm/Sun+Fire+X2270+M2+Server

- If your server *does not* contain a service processor, obtain the linux.zip file from the Sun download site. The linux.zip file contains the Linux drivers from the Sun Fire X2270 M2 Tools & Drivers CD.

- Establish an installation environment (console, boot media, installation target).

1. **Ensure that the system device driver media is available to boot.**

   - For a distribution CD/DVD, insert the Tools & Drivers CD into the local or remote CD/DVD-ROM drive.

   - For an ISO image, in the Device menu of the Sun ILOM Remote Console, select the CD-ROM image to specify the location of the driver CD image.

2. **Change to the mounted USB CD/DVD directory by typing the following command:**

   # **cd** *<mount_point>*/**drivers/linux/suse**

3   Run the install script by typing the following command:

`sh install.sh`

The system device drivers are now installed. The script prompts you to reboot the system for changes to take effect.

4   Reboot the server.

▼ How to Install the System Device Drivers Using a Network Share or USB Device

Alternately, if your server *does not* contain a service processor, you can install device drivers from a shared network location or from a locally attached USB device. To install the device drivers:

1   If you have not already downloaded the file, download the `linux.zip` file from the Sun download web site.

2   Unzip the contents of the `linux.zip` file to a USB flash device or shared network location that will be accessible during the installation.

3   Change to the mounted USB device or shared network location by typing the following command:

cd *<mount_point>*

4   Run the install script by typing the following command:

`sh install.sh`

The system device drivers are now installed. The script prompts you to reboot the system for changes to take effect.

5   Reboot the server.

Installing Red Hat Enterprise Linux

Your server supports Red Hat Enterprise Linux (RHEL) 5.4. The related topics include:

Overview of Red Hat Enterprise Linux Installation

This topic provides instructions for installing Red Hat Enterprise Linux from distribution media. You can also install RHEL using a PXE installation, as described in "Configuring a Linux Server to Support PXE Installation" on page 41.

Note the following conditions:

- If you are going to install your OS on a disk that is part of a RAID array, you must configure the RAID array before installing your OS. See your disk management documentation collection for details.
- While configuring an operating system for a networked server, you must provide the logical names (assigned by the OS) and the physical name (MAC address) of each network interface. See "Identifying Logical and Physical Network Interface Names for Linux OS Configuration" on page 57 for details.

Red Hat Installation and Administration Documentation

Before you install RHEL on your server, consult the following Red Hat documentation.

Document	Description	Where to Find
README file	Contains late-breaking information about system requirements and system configuration for your version of the Red Hat Enterprise Linux software.	On the Red Hat Enterprise Linux CD 1, and online from http://www.redhat.com/docs/

Document	Description	Where to Find
Red Hat Enterprise Linux Quick Installation Guide	Brief printed guide containing useful information to assist you during the installation of Red Hat Enterprise Linux.	Included with the Red Hat Enterprise Linux distribution media
Red Hat Enterprise Linux Installation Guide	Full version of the printed *Quick Installation Guide*.	Included on the Red Hat Documentation CD, and available for download from `http://www.redhat.com/docs/`
Red Hat Enterprise Linux Introduction to System Administration	Introductory information for Red Hat Enterprise Linux system administrators.	Available for download from `http://www.redhat.com/docs/manuals/enterprise/`
Red Hat Enterprise Linux System Administration Guide	Information about customizing the Red Hat Enterprise Linux software.	Available for download from `http://www.redhat.com/docs/manuals/enterprise/`
System Administration for Diskless Booting	Information about configuring your server and Red Hat Linux for diskless booting.	Available for download as the *Red Hat Enterprise Linux Installation Guide for the x86, Itanium, and AMD64 Architectures* at `http://www.redhat.com/docs/manuals/enterprise/`
Red Hat Enterprise Linux Security Guide	Guide for securing the Red Hat Enterprise Linux software.	Available for download from `http://www.redhat.com/docs/manuals/enterprise/`

Installing RHEL From Distribution Media

Installing Red Hat Enterprise Linux software from the distribution media consists of the following tasks.

Step	Description	Link
1	Download the updated media kit from `http://www.redhat.com/docs/manuals/enterprise`	"How to Install RHEL From Distribution Media" on page 35
2	Install the Red Hat Enterprise Linux software	"How to Install RHEL From Distribution Media" on page 35
3	Update the Red Hat Enterprise Linux software	"How to Update the Red Hat Enterprise Linux Software" on page 36

Before using either installation method on your server, you must obtain the following items:

- DVD-ROM drive

  If you are installing remotely, the DVD-ROM drive, keyboard, mouse, and monitor are connected to the local system instead of the server.

- ISO image
- USB keyboard and mouse
- Monitor

▼ How to Download RHEL Media Kits

Before You Begin If necessary, configure your console display and erase your boot hard drive. See "Preliminary Tasks Before Installing an OS" on page 13 for details.

1 Obtain your enterprise account information.

You need an enterprise account to download the updated ISO images.

2 Download the Red Hat Enterprise Linux Update Media Kit from `http://rhn.redhat.com`.

See Also ■ "How to Install RHEL From Distribution Media" on page 35
■ "How to Update the Red Hat Enterprise Linux Software" on page 36

▼ How to Install RHEL From Distribution Media

1 Configure the server and boot it from the distribution media.

For details, see "Booting From OS Distribution Media" on page 37.

The server boots from the distribution media.

2 Do one of the following at the boot prompt, depending on which type of interface you want to use:

- **For text mode, type the following command: `boot: linux text`.**

- **For graphical mode, press Enter at the boot prompt.**

3 Refer to the *Red Hat Enterprise Linux Installation Guide* **to guide you through the remainder of the installation process.**

> **Note –** If you already have an operating system besides Linux installed (for example, the Solaris OS), it appears as a partition during the installation process. If you choose to install RHEL on that partition, it will overwrite the OS. If you wish to preserve the partition, you must install RHEL on a different partition.

See Also ■ "How to Update the Red Hat Enterprise Linux Software" on page 36

Updating RHEL

Use this procedure to update RHEL to the latest OS.

> **Note –** If your system is on a publicly accessible network, updating your system can help to improve security.

Updating RHEL consists of the following procedures:

■ "How to Update the Red Hat Enterprise Linux Software" on page 36

▼ How to Update the Red Hat Enterprise Linux Software

Before You Begin You must already have RHEL installed on your server.

Your server must have access to the Internet.

1 Run the yum update program:

yum

2 Answer the questions and make your choices before the packages are downloaded and installed.

You should periodically update your system using yum.

For more information, refer to the man page. Type:

man yum

Booting From OS Distribution Media

This topic describes how to boot locally from the OS distribution media (CD or DVD), and how to boot remotely from the OS distribution media or an equivalent ISO file. It contains the following topics.

When you are done, control passes from the BIOS to the OS installation procedures. Follow the steps in your OS installation guide.

▼ How to Boot From OS Media Locally

Before You Begin   Obtain a copy of the OS distribution media on a CD or DVD.

1. **Insert the distribution media into the CD/DVD drive.**

2. **Connect to the console.**
   For more information, see "Accessing the Console During Installation" on page 13.

3. **Power on or reset the server.**
   BIOS messages appear on the console.

4. **Insert the distribution media.**
   Additional BIOS messages appear on the console.

5. **When you see a message offering a series of selections, press F8.**
   ```
   Initializing USB Controllers .. Done.
   Press F2 to run Setup (CTRL+E on Remote Keyboard)
   Press F8 for BBS POPUP (CTRL+P on Remote Keyboard)
   Press F12 to boot from the network (CTRL+N on Remote Keyboard)
   ```

6. **Select CD/DVD from the list.**
   Control passes to the OS installation program on the media.

7. **Follow the steps in your vendor's OS installation guide.**

▼ How to Boot From OS Distribution Media or ISO File Remotely

The ILOM provides a method of installing an operating system remotely, using either a CD or DVD connected to the local machine, or an ISO image mounted on the local machine. The remote console allows you to use the keyboard, mouse, video, and storage of the local machine as if it were connected to the server where you are installing the operating system.

After you have configured the remote console session, you can boot from the distribution media image (either a CD/DVD or equivalent ISO file).

For additional information, refer to your ILOM documentation collection.

http://docs.sun.com/app/docs/prod/sf.x2270m2?l=en&a=view

Before You Begin   Obtain a copy of the distribution media (CD or DVD) or an equivalent ISO image.

1   If you are using a CD or DVD, insert it in the CD/DVD drive.

2   Start and configure a remote console session.

For more information, see the ILOM 3.0 documentation collection.

   a.   Connect to the console.

   b.   When the Remote Console window appears, open the Devices menu and select:

      ■   **CD-ROM if you are using physical media.**

      ■   **CD-ROM Image if you are using an ISO file.**

   c.   If Keyboard and Mouse are not selected, select them as well.

   Your remote console session is configured.

3   Power on or reset the server.

BIOS messages appear on the console.

4   When you see a message offering a series of selections, press F8.

```
Initializing USB Controllers .. Done.
Press F2 to run Setup (CTRL+E on Remote Keyboard)
Press F8 for BBS POPUP (CTRL+P on Remote Keyboard)
Press F12 to boot from the network (CTRL+N on Remote Keyboard)
```

5   Select a boot device from the list.

To boot from a physical CD/DVD or from an ISO image, select CD/DVD.

Control passes to the OS installation program on the media.

6   Follow the steps in your vendors OS installation guide.

See Also   See your ILOM documentation collection for additional details.

`http://docs.sun.com/app/docs/prod/sf.x2270m2?l=en&a=view`

Configuring a Linux Server to Support PXE Installation

This topic describes how to configure a Preboot Execution Environment (PXE) server on a Linux system and use it to install Linux on your servers.

PXE is a powerful and convenient solution for setting up a number of servers so their configuration is identical. It allows you to configure a server, which you can then use to install identical versions of the OS on any number of network systems.

The on-board network interface card (NIC) in your server supports the PXE network booting protocol. The system BIOS and network interface BIOS on your server automatically query the network for a DHCP server. If that DHCP server on the network has been configured to support the PXE protocol and PXE image servers on the same network, then the BIOS on your system can be used to install a bootable Linux image on your server.

Configuring a PXE server consists of the following procedures.

Step	Description	Link
1	Verify the presence of, or install, the following servers and services:	- DHCP – See "How to Install and Configure a DHCP Server" on page 42. - Portmap – See "How to Install Portmap on Your DHCP Server" on page 44. - TFTP – See "How to Configure the TFTP Service on Your DHCP Server" on page 45. - Neopxe – See "How to Install and Configure the neopxe Boot Server Daemon" on page 46. - NFS – See "How to Configure the NFS Service on Your PXE Server" on page 47.
2	Disable the firewall.	"Disabling the Firewall" on page 49
3	Create a PXE installation image.	"How to Create a PXE Installation Image for Red Hat Linux" on page 51 "Creating a PXE Image for SUSE Linux" on page 53
4	Install Linux from a PXE server.	"How to Install Linux From a PXE Server" on page 55

Overview of PXE Servers

Each PXE server supports a specific version of Linux. You can configure PXE servers for Red Hat 4, Red Hat 5, SUSE 10, and SUSE 11.

Each PXE server has a name, or label, which you assign when you create the PXE image. When you want to install the corresponding version of Linux on a system that is connected to the same network, you can boot it and select the PXE image label from the list of boot devices.

Note – Your server supports RHEL 4.8, RHEL 5.3, SLES10 SP2, and SLES 11.

The system where you configure the PXE server must be running the same brand of Linux (SUSE or Red Hat); however, it does not need to run the same version. For example, you can install two PXE servers on a system running SUSE 10; one for SUSE 10 and another for SUSE 11. However, you cannot install a PXE server for Red Hat Linux on a system running SUSE Linux. Nor can you install a PXE server for SUSE Linux on a system running Red Hat Linux.

Linux Distribution CDs and DVDs

The following table lists the supported versions of Linux and the number of CDs or DVDs in the distribution.

TABLE 2 Linux Distribution CDs and DVDs

Version	CDs	DVDs
RHEL 4.8	5	1
RHEL 5.3	6	1
SLES10 SP2	4	2
SLES11	N/A	2

▼ How to Install and Configure a DHCP Server

Complete the following steps on the server that will be your DHCP server.

Note – This example uses Red Hat Enterprise Linux 4. Replace rhel4 with the file name that corresponds to your version and update.

1 Turn on the server and log in as superuser.

2 Determine whether the DHCP server package is already installed on the server.

```
# rpm -qa | grep dhcp-
```

3 If the DHCP server package is not listed, install the DHCP server.

   a. Mount the CD/DVD drive. Type the command:

```
# mount /dev/cdrom /mnt/cdrom
```

   b. Install the DHCP server.

      ■ **For RHEL 4.8, insert the DVD or CD5 and type:**

```
# rpm -Uvh /mnt/cdrom/RedHat/RPMS/dhcp-*.rpm
```

      ■ **For RHEL 5.3, insert the DVD or CD4 and type:**

```
# rpm -Uvh /mnt/cdrom/Server/dchp*
```

      ■ **For SLES10 SP2, insert DVD1 or CD2 and type:**

```
# rpm -Uvh /mnt/cdrom/suse/x86_64/dhcp*
```

      ■ **For SLES11, insert DVD1 and type:**

```
# rpm -Uvh /mnt/cdrom/suse/x86_64/dhcp*
```

   c. Unmount the CD/DVD drive. Type:

```
# umount /dev/cdrom /mnt/cdrom
```

   d. Remove the CD or DVD from the CD/DVD drive.

4 Set up your DHCP configuration file (for example, `/etc/dhcpd.conf`) so that only PXEClient requests receive PXEClient responses.

Note – If the server does not already have a dhcpd.conf file in its /etc directory, you can copy the dhcpd.conf file from the sample DHCP configuration file in the /tmp/rhel4u3-pxefiles directory.

Add the following entry to the DHCP configuration file (refer to the dhcpd.conf man page for more information):

```
class "PXE" {match if substring(option vendor-class-identifier, 0, 9) ="PXEClient";
option vendor-class-identifier "PXEClient"; vendor-option-space PXE; next-server
n.n.n.n}
```

where *n.n.n.n* is the PXE server's IP address.

5 In the DHCP configuration file, edit the `server-identifier` entry:

```
server-identifier n.n.n.n
```

where *n.n.n.n* is the PXE/DHCP server's IP address.

6   Also in the DHCP configuration file, find the following subnet entry fields:

```
subnet 1.2.3.0 netmask 255.255.255.0 {
range dynamic-bootp 1.2.3.100 1.2.3.200;
option routers 1.2.3.1;
option broadcast-address 1.2.3.225;
}
```

Edit the `subnet`, `range`, `router` and `broadcast-address` entries to match the PXE/DHCP server's network configuration.

7   Start the DHCP service.

- For Red Hat, type the `service dhcp start` command.

    `# service dhcpd start`
- For SUSE, use YaST to start the services.

8   Configure the server to always start DHCP.

- For Red Hat, type:

    `# chkconfig dhcpd on`
- For SUSE, use YaST to configure the services to start at bootup. For example:

    `# yast > system > Runlevel Editor`

Next Steps   "How to Install Portmap on Your DHCP Server" on page 44

▼ How to Install Portmap on Your DHCP Server

If your server does not include a portmap server, you need to install it.

1   Determine whether the portmap server package is already installed on the server. Type:

`# rpm -qa | grep portmap`

2   If portmap is not listed, install it as follows:

a.   Mount the CD/DVD drive.

`# mount /dev/cdrom /mnt/cdrom`

b.   Install the portmap server.

- **For RHEL 4.8, insert the DVD or CD2 and type:**

    `# rpm -Uvh /mnt/cdrom/RedHat/RPMS/portmap-*`

- For RHEL 5.3, insert the DVD or CD1 and type:

  ```
  # rpm -Uvh /mnt/cdrom/Server/portmap-*
  ```

- For SLES10 SP2, insert DVD1 or CD1 and type:

  ```
  # rpm -Uvh /mnt/cdrom/suse/x86_64/portmap*
  ```

- For SLES11, insert DVD1 and type:

  ```
  # rpm -Uvh /mnt/cdrom/suse/x86_64/portmap*
  ```

c. **Unmount the CD/DVD drive. Type:**

   ```
   # umount /dev/cdrom /mnt/cdrom
   ```

d. **Remove the CD or DVD from the CD/DVD drive.**

Next Steps   "How to Configure the TFTP Service on Your DHCP Server" on page 45

▼ How to Configure the TFTP Service on Your DHCP Server

1 **Determine whether the TFTP server package is already installed on the server. Type:**

```
# rpm -qa | grep tftp-server
```

2 **If TFTP is not listed, install it as follows:**

a. **Mount the CD/DVD drive.**

   ```
   # mount /dev/cdrom /mnt/cdrom
   ```

b. **Install TFTP.**

- For RHEL 4.8, insert the DVD or CD4 and type:

  ```
  # rpm -Uvh /mnt/cdrom/RedHat/RPMS/tftp-server*
  ```

- For RHEL 5.3, insert the DVD or CD2 and type:

  ```
  # rpm -Uvh /mnt/cdrom/RedHat/RPMS/tftp-server*
  ```

- For SLES10 SP2, insert DVD1 or CD1 and type:

  ```
  # rpm -Uvh /mnt/cdrom/suse/noarch/yast2-tftp-server*
  ```

- For SLES11, insert DVD1 and type:

  ```
  # rpm -Uvh /mnt/cdrom/suse/noarch/yast2-tftp-server*
  ```

   c. Unmount the CD/DVD drive.

      # u**mount /dev/cdrom /mnt/cdrom**

   d. Remove the CD or DVD from the CD/DVD drive.

3 Edit and save the `/etc/xinetd.d/tftp` file.

Make the following changes:

- **Change the `-s /tftpboot` entry to `-v -s /home/pxeboot`.**

- **Change the disable attribute to `no`.**

4 Restart the inetd server.

   # **service xinetd restart**

Next Steps "How to Install and Configure the neopxe Boot Server Daemon" on page 46

▼ How to Install and Configure the neopxe Boot Server Daemon

Complete the following steps on your DHCP server. The neopxe server is designed for use with a DHCP server that is running on the same system.

Note – Throughout this procedure, replace *name* with the corresponding version of Linux. For example, Red Hat Enterprise Linux 4 uses `rhel4-pxefiles`.

---

1 Install the neopxe boot server daemon onto the system that is your DHCP server.

```
# cd /tmp/name-pxefiles/neopxe-0.2.0
# ./configure
# make
# make install
```

where *name* is the file name corresponding to your version of Linux. For example, `rhel4-pxefiles`.

2 Append the path `/usr/local/sbin/neopxe` to the `rc.local` file by typing the following command, making sure to use two greater-than signs.

```
# echo "/usr/local/sbin/neopxe" >> /etc/rc.d/rc.local
```

3 Copy the PXE Linux image from the `/tmp/` directory.

```
# mkdir /home/pxeboot
# cp /tmp/name-pxefiles/pxelinux.0 /home/pxeboot
```

4 Configure the PXE Linux image.

```
# mkdir /home/pxeboot/pxelinux.cfg/
# touch /home/pxeboot/pxelinux.cfg/default
```

5 Edit the `/usr/local/etc/neopxe.conf` configuration file, which is read by neopxe at startup.

If the neopxe.conf file is not in the /usr/local/etc directory, you can copy it from the /tmp/*name*-pxefiles/neopxe-0.2.0/ directory.

A valid configuration file must have entries for each of the following lines, including at least one service line.

```
ip_addr=n.n.n.n
prompt=boot-prompt-string
prompt_timeout=timeout
service=service-number,boot-server,boot-file,label
```

- *n.n.n.n* is the IP address of your PXE server.

- *boot-prompt-string* is the character string displayed during a network boot that prompts the user to press the F8 key for a boot menu.

- *timeout* is the number of seconds the prompt is displayed before the server defaults to the first service for booting.

- *service-number* is an integer in the range of 1 to 254 that identifies the boot service.

- *boot-server* is the IP address of the boot server for that boot service.

- *boot-file* is the name of the boot file that is read from your /home/pxeboot directory.

- *label* is the text string that is displayed when the boot menu is invoked by pressing the F8 key.

  ```
  ip_addr=192.168.0.1
  prompt=Press [F8] for menu...
  prompt_timeout=10
  service=1,192.168.0.1,pxelinux.0,Linux
  service=2,192.169.0.1,nbp.unknown,Solaris
  ```

  Note – Refer to the neopxe.conf man page for more information.

  ---

6 Start the neopxe daemon.

```
# /usr/local/sbin/neopxe
```

Next Steps

▼ How to Configure the NFS Service on Your PXE Server

1 Determine whether the NFS service package is already installed on the server.

```
# rpm -qa | grep nfs-utils
```

2 If the NFS service package is not listed, install the NFS service with the following commands:

a. Mount the CD/DVD drive.

```
# mount /dev/cdrom /mnt/cdrom
```

b. Install the NFS server package.

- **For RHEL 4.8, insert the DVD or CD2 and type:**

  ```
  # rpm -Uvh /mnt/cdrom/RedHat/RPMS/nfs-utils-*
  ```

- **For RHEL 5.3, insert the DVD or CD1 and type:**

  ```
  # rpm -Uvh /mnt/cdrom/RedHat/RPMS/nfs-utils-*
  ```

- **For SLES10 SP2, insert DVD1 or CD1 and type:**

  ```
  # rpm -Uvh /mnt/cdrom/suse/x86_64/nfs-utils*
  ```

- **For SLES11, insert DVD1 and type:**

  ```
  # rpm -Uvh /mnt/cdrom/suse/x86_64/nfs-kernel-server*
  ```

c. Unmount the CD/DVD drive.

```
# umount /mnt/cdrom
```

d. Remove the CD or DVD from the server.

3 Add the following line to the `/etc/exports` file and save it.

```
/home/pxeboot *(no_root_squash,no_subtree_check,insecure)
```

4 Start the NFS service.

```
# service nfs start
```

5 Configure the server to always start the NFS service.

```
# chkconfig nfs on
# chkconfig nfslock on
```

Note – If you are using a DNS server, verify that DNS entries exist for the range of addresses defined in the PXE subnet dynamic-bootp entry in the dhcpd.conf file. If you are not using a DNS server, edit the /etc/hosts file to add the range of host addresses found in the PXE subnet dynamic-bootp entry in the dhcpd.conf file.

Next Steps

Disabling the Firewall

This topic describes how to disable the firewall so that PXE clients can download from the server. It includes separate procedures for SUSE Linux and Red Hat Enterprise Linux.

-
-

Caution – Network security vulnerability. When you disable the firewall protection on your PXE server, the security of the data on that server cannot be ensured. If this server is networked outside of your local intranet, be sure to re-enable the firewall after downloading software to PXE clients.

▼ How to Disable the Firewall for SUSE Linux

● **Use YaST to edit services for run levels. For example, type:**

rcSuSEfirewall2 stop

Next Steps

▼ How to Disable the Firewall for Red Hat Linux

1 **Stop the ipchains service. Type:**

   `# service ipchains stop`

2 **Stop the iptables service. Type:**

   `# service iptables stop`

3 **Stop the ipchains service from starting when you restart the server. Type:**

   `# chkconfig ipchains off`

4 **Stop the iptables service from starting when you restart the server. Type:**

   `# chkconfig iptables off`

Note – You might encounter error messages if the ipchains service is not installed on the server. You can safely ignore these messages.

5 **Reboot the PXE/DHCP server.**

Next Steps

▼ How to Create a PXE Installation Image for Oracle Enterprise Linux

When you create a Oracle Linux Preboot Execution Environment (PXE) installation image on the same server that is your DHCP server, it will also act as your PXE server. The PXE server provides the operating system files to your PXE client.

Before you install a Oracle Enterprise Linux image on your PXE server, you must configure your Linux network to support PXE images. See

Before You Begin   The PXE installation procedure requires the following items:

- A CD/DVD drive on the DHCP server.
- Oracle Enterprise Linux media set. This can be a set of CDs or a DVD.
- A copy of the Oracle Enterprise Linux files from the Tools and Drivers CD.

1   Set up the directory structure that will hold the Oracle Enterprise Linux software.

```
# mkdir -p /home/pxeboot/oel5/
```

2   For each Oracle Enterprise Linux Distribution CD, type the following commands to copy the contents of the each distribution CD to the appropriate PXE target subdirectory.

Note – Eject and insert CDs only when the CD/DVD drive is unmounted.

```
# mount dev/cdrom /mnt/cdrom
# cp -r /mnt/cdrom/* /home/pxeboot/oel5/
# umount /mnt/cdrom
```

If you are installing from a DVD, you have to do this only once. When the copy is done, proceed to the next step.

3   Copy the `vmlinuz` and `initrd.img` files to the appropriate PXE target subdirectory (`/home/pxeboot/oel5/`).

```
# cp /home/pxeboot/oel5/images/pxeboot/vmlinuz /home/pxeboot/oel5/
# cp /home/pxeboot/oel5/images/pxeboot/initrd.img /home/pxeboot/oel5/
```

4   Copy the kickstart file `ks.cfg` to your PXE server. Type:

```
# cp /tmp/oel5u4-pxefile/ks.cfg /home/pxeboot/oel5/
```

The kickstart configuration file contains a configuration that might not be optimal for your operating environment. Modify the file as necessary to suit your environment.

For example, to make the OEL 5.4 installation process fully automatic, add the following line to the end of the kickstart configuration file:

```
key --skip
```

5 On your PXE server, edit and save the kickstart file: `/home/pxeboot/oel5/ks.cfg`.

Edit the nfs line is as follows:

```
nfs --server n.n.n.n --dir /home/pxeboot/oel5/
```

where *n.n.n.n* is the IP address of your PXE server. Ensure that the location indicated after `--dir` is pointing to the top level of your image.

6 Add the following entry to the file `/home/pxeboot/pxelinux.cfg/default`:

Note – Type the text block from append through `ks.cfg` as one continuous string with no returns.

```
default oel5
label oel5kernel
oel5/vmlinuz
append ksdevice=eth0 console=tty0 load_ramdisk=1
initrd=oel5/initrd.img network
ks=nfs:n.n.n.n:/home/pxeboot/oel5/ks.cfg
```

where *n.n.n.n* is the IP address of your PXE server.

Note – For console-based installations, add `console=ttyS0,9600` to the append line.

---

7 Save the modified version of the `/home/pxeboot/pxelinux.cfg/default` file.

Next Steps

▼ How to Create a PXE Installation Image for Red Hat Linux

When you create a Red Hat Linux Preboot Execution Environment (PXE) installation image on the same server that is your DHCP server, it will also act as your PXE server. The PXE server provides the operating system files to your PXE client.

Before you install a Red Hat Enterprise Linux image on your PXE server, you must configure your Linux network to support PXE images. See "Overview of PXE Servers" on page 42.

Before You Begin The PXE installation procedure requires the following items:

- A CD/DVD drive on the DHCP server.
- Red Hat Enterprise Linux media set. This can be a set of CDs or a DVD.
- A copy of the Red Hat files from the Tools and Drivers CD.

1 Set up the directory structure that will hold the Red Hat Enterprise Linux software.

```
# mkdir -p /home/pxeboot/rhel4/
```

Note – The examples in this procedure use /home/pxeboot/rhel4/. You can use a different target directory if you choose. For example, you could use /home/pxeboot/rhel5/. If you used a different directory name, substitute it where appropriate.

2 For each Red Hat Enterprise Linux Distribution CD, type the following commands to copy the contents of the each distribution CD to the appropriate PXE target subdirectory.

Note – Eject and insert CDs only when the CD/DVD drive is unmounted.

```
# mount dev/cdrom /mnt/cdrom
# cp -r /mnt/cdrom/* /home/pxeboot/rhel4/
# umount /mnt/cdrom
```

If you are installing from a DVD, you have to do this only once. When the copy is done, proceed to the next step.

3 Copy the `vmlinuz` and `initrd.img` files to the appropriate PXE target subdirectory (`/home/pxeboot/rhel4/`).

```
# cp /home/pxeboot/rhel4/images/pxeboot/vmlinuz /home/pxeboot/rhel4/
# cp /home/pxeboot/rhel4/images/pxeboot/initrd.img /home/pxeboot/rhel4/
```

4 Copy the kickstart file `ks.cfg` to your PXE server. Type:

```
# cp /tmp/rhel4u3-pxefile/ks.cfg /home/pxeboot/rhel4/
```

The kickstart configuration file contains a configuration that might not be optimal for your operating environment. Modify the file as necessary to suit your environment.

For example, to make the RHEL 5.3 installation process fully automatic, add the following line to the end of the kickstart configuration file:

```
key --skip
```

5 On your PXE server, edit and save the kickstart file: `/home/pxeboot/rhel4/ks.cfg`.

Edit the `nfs` line is as follows:

```
nfs --server n.n.n.n --dir /home/pxeboot/rhel4/
```

where *n.n.n.n* is the IP address of your PXE server. Ensure that the location indicated after `--dir` is pointing to the top level of your image.

6 Add the following entry to the file `/home/pxeboot/pxelinux.cfg/default`:

```
default rhel4
label rhel4kernel
rhel4/vmlinuz
append ksdevice=eth0 console=tty0 load_ramdisk=1
initrd=rhel4/initrd.img network
ks=nfs:n.n.n.n:/home/pxeboot/rhel4/ks.cfg
```

where *n.n.n.n* is the IP address of your PXE server.

Note – For console-based installations, add console=ttyS0,9600 to the append line.

7 Save the modified version of the /home/pxeboot/pxelinux.cfg/default file.

Next Steps

Creating a PXE Image for SUSE Linux

This topic provides instructions for creating a SLES 10 or SLES 11 PXE image on the PXE server. It is divided into two tasks:

-
-

▼ How to Set Up and Copy SUSE Software to a Directory

The following steps explain how to create the directory setup containing SLES10 SP2 or SLES11 files for PXE installation.

You can use a different target directory from the /home/pxeboot/sles10/ directory shown. The examples in this procedure use this directory.

Note – You must place the entire contents of SLES10 SP2 or SLES11 in a single directory.

Before You Begin You must have a copy of the files from the Tools and Drivers CD.

1 Set up the directory structure that will hold the SUSE Linux Enterprise Server 10 or 11. Type:
mkdir -p /home/pxeboot/sles*NN*

where *NN* is 10 for SLES10 and 11 for SLES11.

2 Insert CD 1 or DVD1 into your server and copy its content to your PXE server. Type:

```
# mount /dev/cdrom /mnt/cdrom
# cp -r /mnt/cdrom/* /home/pxeboot/slesNN/
# umount /mnt/cdrom
```

where *NN* is 10 for SLES10 and 11 for SLES11.

3 Remove the media from the server.

- **If you are installing SLES 10 or SLES 11 from a DVD, you are done. You do not need to copy DVD2.**

- **If you are installing SLES 10 from CDs, repeat Step 2 and Step 3, copying the contents of each CD into the same directory.**

Next Steps "How to Set Up SUSE PXE Files" on page 54

▼ How to Set Up SUSE PXE Files

1 Copy the `autoinst.xml` file from the `/tmp/slesN/` directory to the root of the PXE image. Type:

```
# cp /tmp/slesN/autoinst.xml /home/pxeboot/slesN/
```

where *N* is 10 for SLES 10 and 11 for SLES 11.

2 Add the following entry to the `home/pxeboot/pxelinux.cfg/default` file and save it.

Type the text block from append through autoinst.xml in the following example as one continuous line with no returns.

Note – Substitute sles11 for sles10 if it is appropriate.

```
default sles10
label sles10
kernel sles10/CD1/boot/x86_64/loader/linux
append textmode=1 initrd=sles10/CD1/boot/x86_64/loader/initrd
install=nfs://n.n.n.n./home/pxeboot/sles10/CD1
autoyast=nfs://n.n.n.n/home/pxeboot/sles10/autoinst.xml
```

Next Steps "How to Install Linux From a PXE Server" on page 55

▼ How to Install Linux From a PXE Server

Before You Begin   Before you install Linux from a PXE server, you must do the following:

- Configure your Linux network to support a PXE server.
- Disable the firewall on your PXE server.
- Install a Linux image on your PXE server.
- Connect the PXE client to the same network as your PXE server.

1   Power on the PXE client.

The PXE client is the target where you are installing Linux from a PXE image on a PXE server.

2   When the PXE client prompts you for a network boot, press the F12 key.

The PXE client attempts to obtain an IP address from the DHCP server.

A list of PXE servers appears.

3   Select a PXE server from the list.

The corresponding Linux installation image downloads onto the PXE client.

4   To configure the Linux operating system for your server, refer to the manual that is shipped with your Linux media kit.

5   Update the operating system.

- **For Red Hat Linux, see "Overview of Red Hat Enterprise Linux Installation" on page 33.**

- **For SUSE Linux, perform an Online Software Update to update the operating system files. See "How to Update the SLES Operating System" on page 30.**

- **For Oracle Enterprise Linux, see "Updating OEL" on page 19.**

Identifying Logical and Physical Network Interface Names for Linux OS Configuration

While configuring an operating system for a networked server, you must provide the logical names (assigned by the OS) and the physical name (MAC address) of each network interface.

This topic explains how to obtain the needed logical information in these situations. It includes the following topics.

▼ SUSE Linux – How to Identify Logical and Physical Network Interface Names While Installing the OS

When you are configuring the SUSE Linux OS while installing it, you reach a point where you must enter the logical and physical names (MAC addresses) of the network interfaces.

This topic explains how to launch a user shell during the SUSE Linux OS configuration to obtain the logical and physical network interface names that you need to continue with the configuration.

Before You Begin   Find and record the MAC addresses of all your physical ports from their labels.

1   **If you have not already done so, select Rescue System and press Enter.**
    The message Loading Linux Kernel appears followed by the SUSE splash screen, then the Choose a Keyboard Map screen appears.

2   **In the Choose a Keyboard Map screen, select the appropriate keyboard configuration and click OK.**
    The user shell launches, and the Rescue Login prompt appears.

3   **At the Rescue Login prompt, type root to log in, then press Enter.**
    The Rescue prompt appears.

4   At the Rescue prompt (#), type the following command, then press Enter to display all network interfaces.

    `# ifconfig -a`

The output of the Linux SUSE named and physical named network interfaces appear. See the following sample output in Step 5 as an example.

If you have multiple network interfaces and the output of interfaces scrolls off the top of the screen, you can display the output per interface.

5   To view the output per network interface, type the following command at the prompt, then press Enter:

    # ifconfig *eth#*

where *eth#* is the interface number. For example, if you type:

    `# ifconfig eth0`

The output for `eth0` appears.

In the sample output above:

- **The `eth0` entry in the first column refers to the Linux SUSE logical named interface. This first column in the output identifies the logical names SUSE assigned to the network interface.**

- **The `HWaddr 00.14.4F.0C:A1:53` entry in the second column (first row) refers to the physical MAC address of the network port.**

Note – This MAC address is an example; the MAC addresses in your server will be different.

---

6   Record the SUSE logical network interface name with the physical port MAC address for future reference.

You need to refer to this record when configuring the network interfaces during the Linux SUSE OS installation.

7   When you are done, do one of the following to exit the Rescue shell.

- **From the ILOM web interface, select Remote Control —> Remote Power Control —> Reset.**

- **From other consoles, type `reboot` at the Rescue prompt (#), then press Enter.**

8   Restart the Linux SUSE installation program.

▼ RHEL – How to Identify Logical and Physical Network Interface Names While Installing the OS

When you are configuring the RHEL Linux OS while installing it, you reach a point where you must enter the logical and physical names (MAC addresses) of the network interfaces.

This topic explains how to launch a user shell during the Red Hat Linux configuration to obtain the logical and physical network interface names that you need to continue the configuration.

Before You Begin   Find and record the MAC addresses of all your physical ports from their labels.

1   If you have not already done so, type: `linux rescue` at the boot prompt, and then press Enter.
The Choose a Language screen appears.

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

3   In the Keyboard Type screen, select the appropriate configuration, and then click OK.
The Setup Network screen appears.

4   In the Setup Network screen, click No.
The Rescue screen appears.

5   In the Rescue screen, click Skip.
The user shell appears.

6   At the command prompt (#) in the user shell, type the following command to display all network interfaces, and then press Enter.
`# ifconfig -a`
The output of the Linux Red Hat named network interfaces appear.

If you have multiple network interfaces and the output of interfaces scrolls off the top of the screen, you can display the output per interface.

7   To view the output per network interface, type the following at the command prompt, then press Enter:
`# ifconfig` *eth#*
where *eth#* is the interface number. For example, if you type:

`# ifconfig eth0`
The output for `eth0` appears.

In the sample output shown:

- The `eth0` entry in the first column refers to the Linux Red Hat logical named interface. This first column in the output identifies the logical names Red Hat assigned to the network interface.

- The `HWaddr 00.14.4F.0C:A1:F2` entry in second column (first row) refers to the physical MAC address of the network port.

  Note – This MAC address is an example; the MAC addresses in your server will be different.

8   Record the Red Hat logical network interface name with the physical port MAC address for future reference. You need to refer to this record when configuring the network interfaces during the Red Hat OS installation.

9   When you are done, do one of the following to exit the user shell.

- From the ILOM, select Remote Control —> Remote Power Control —> Reset.

- From the ILOM Remote Console, select Ctrl Alt Delete in the Keyboard menu.

- From other consoles, press Ctrl —> Alt —> Delete.

10   Restart the Linux Red Hat installation program.

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