



Netra™ X4200 M2 Server Operating System Installation Guide

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Preface

This *Netra X4200 M2 Server Operating System Installation Guide* contains detailed procedures for bringing the server from the packing box to a configurable, usable state. Hardware installation and initial software configuration are covered.

Product Updates

For product updates that you can download for the Sun Fire X4100 or X4200 servers, please visit the following Web site:

<http://www.sun.com/servers/entry/x4100/downloads.jsp>

This site contains updates for firmware and drivers, as well as CD-ROM .iso images.

Related Documentation

For the most up-to-date information on the Netra X4200 M2 server, go to this site:

<http://docs.sun.com/app/docs/prod/nt4200m2.srvr#hic>

Information	Title and Format	Part Number
Safety information	<i>Important Safety Information About Sun Hardware</i> (included in system box)	819- 7190
Safety notices and international compliance certification statements	<i>Netra X4200 M2 Server Safety and Compliance Guide</i> (PDF)	820-0068
Server setup, including rack installation	<i>Netra X4200 M2 Server Setup Guide</i> (PDF)	820-0062
Operating system installation	<i>Netra X4200 M2 Server Operating System Installation Guide</i> (PDF)	820-0065
System management	System Management (PDF and HTML)	819-1160
Server and software setup	Setup and Maintenance Guide (PDF and HTML)	819-1157
Late-breaking information and issues	<i>Netra X4200 M2 Server Product Notes</i> (PDF)	820-0067
RAID	Sun LSI 106x RAID User's Guide	820-4933
Diagnostic software patch information	SunVTS 6.0 Patch Set Documentation Supplement for x86 Platforms (HTML)	819-2948

Translated versions of some of these documents are available at the web sites described above in French, Simplified Chinese, Traditional Chinese, Korean, Japanese, and German.

Note that the English documentation is revised more frequently and might therefore be more up-to-date than the translated documentation.

Using UNIX Commands

This document might not contain information about basic UNIX® commands and procedures such as shutting down the system, booting the system, and configuring devices. Refer to the following for this information:

- Software documentation that you received with your system
- Solaris™ Operating System documentation, which is at:
<http://docs.sun.com>

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Typographic Conventions

Typeface*	Meaning	Examples
AaBbCc123	The names of commands, files, and directories; on-screen computer output	Edit your <code>.login</code> file. Use <code>ls -a</code> to list all files. % You have mail.
AaBbCc123	What you type, when contrasted with on-screen computer output	% su Password:
<i>AaBbCc123</i>	Book titles, new words or terms, words to be emphasized. Replace command-line variables with real names or values.	Read Chapter 6 in the <i>User's Guide</i> . These are called class options. You must be superuser to do this. To delete a file, type <code>rm filename</code> .

* The settings on your browser might differ from these settings.

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Please include the title and part number of your document with your feedback:

Netra X4200 M2 Server Operating System Installation Guide, part number 820-0065-11

Overview

About Installing an Operating System on a Netra X4200 Server

There are several supported operating system (OS) distributions and several ways to install each. This topic is intended only as a general guide that refers you to detailed procedures.

Note – This document only covers supported Solaris and Linux OS installation. For instructions on installing the Windows Server 2003 Operating System onto the Netra X4200 servers, see the *Sun Fire X4000 Series Servers Windows Operating System Installation Guide* (819-4346).

Prerequisites

You must complete the following prerequisite steps before you can begin the installation.

- Install the server hardware.
- (Optional) Configure the service processor. (You can do this after installation if you prefer.)
- (Solaris only) Install and set up the software on the Resource CD.
- (Linux only) Create a Driver CD or use the Sun Installation Assistant (recommended procedure). See the topic about creating a Driver CD for your particular Linux OS or the topics about the Sun Installation Assistant.
- Gather needed information, such as IP address and netmask.

Things You Must Decide

In addition, you must decide the following.

- Which operating system are you installing?

Operating System	Supported Versions and Notes
Solaris 10	64-bit version
Red Hat Linux	Red Hat Enterprise Linux 5
SUSE Linux	SUSE Linux Enterprise Server 10

- Are you configuring the server for diskless booting?

Operating System	Relevant Documentation on Diskless Configurations
Solaris 10	See “About Solaris OS Installation” on page 5 or <i>Solaris 10 Installation Guide: Network-Based Installations</i> at http://docs.sun.com/app/docs/doc/817-5504
Red Hat Linux	See <i>Red Hat Enterprise Linux System Administration Guide</i> at https://www.redhat.com/docs/manuals/enterprise/
SUSE Linux	See <i>SUSE LINUX Enterprise Server 9 Administration Guide</i> at http://www.novell.com/documentation/oes/index.html?page=/documentation/oes/sles_admin/data/front.html

- Which installation method will you use?

Method	Solaris	Red Hat	SUSE
Preinstalled on disk	YES	NO	NO
Install from distribution media (CD/DVD) on the server	YES	YES	YES
Install from distribution media (CD/DVD) via KVMs	YES	YES	YES
Install from network using PXE	YES	YES	YES
Sun Installation Assistant (Linux only)	NO	YES	YES

Note – The Netra X4200 server supports industry-standard KVMs via devices connected to it via a USB port or the ILOM Remote Console application. For more information on setting up USB connections to your system, see your server hardware documentation. For more information on setting up a remote KVMs connection to your server via the ILOM Remote Console application, see the Integrated Lights Out Manager Administration Guide (819-1160).

For relevant procedures, see the appropriate chapter of this guide for your particular OS.

- Will you need to update the operating system and drivers?

In general, you need to perform updates once the operating system has been installed. For details, see the appropriate chapter for your particular OS.

What Next

The sections in this guide provide detailed installation information—see the appropriate chapter for your OS.

You should also gather the installation, administration, and configuration documentation distributed with the operating system. These documents generally accompany the distribution media as printed manuals, or else are included as PDF files on the media itself. In many cases, the latest versions of such documents are also downloadable from the web site of the OS vendor.

Solaris 10

About Solaris OS Installation

Note – This chapter contains instructions for installing the Solaris 10 operating system from network or media. If you are configuring the preinstalled Solaris 10 operating system that is shipped with the server, refer to the *Netra X4200 Server Setup Guide* for information on configuring a preinstalled Solaris Operating System (820-0062).

This chapter describes some of what you need to know to install the Solaris™ Operating System (Solaris OS) on a Netra X4200 server and points you to the Solaris OS documentation for the more detailed information you will need to complete the installation.

Overview

This Solaris release supports systems that use the SPARC® and x86 families of processor architectures: UltraSPARC®, SPARC64, IA-32, AMD64.

The supported SPARC based systems are listed in the Solaris Sun Hardware Platform Guide at <http://docs.sun.com>. The supported x86 based systems appear in the Solaris Hardware Compatibility List at <http://www.sun.com/bigadmin/hcl>. This document cites any implementation differences between the platform types.

In this document the term “x86” refers to the Intel 32-bit family of microprocessors and compatible 64-bit and 32-bit microprocessors made by AMD. For supported systems, see the Solaris Hardware Compatibility List.

The minimum Solaris OS for a Netra X4200 server is Solaris 10 3/05 HW1 for the x86/x64 family of 64-bit and 32-bit AMD processors. The recommended version to use is Solaris 10 11/06 U1. You can download or order the media for Solaris 10 11/06 U1 at

<http://www.sun.com/software/solaris/get.jsp>

Solaris 10 3/05 HW1 might be preinstalled on the hard drive. Additional software is shipped separately on a Resource CD. Contact your Sun service provider if you need to order the Solaris OS or if you are missing the Resource CD.

For updates on Solaris 10 versions and hardware compatibility, go to

<http://www.sunsolve.sun.com>

Note – The Solaris 10 Operating System box contains the CD and DVD media and documentation that you will need to install the Solaris OS software for both SPARC and x86 platforms. For a Netra X4200 server, use the media for x86 platforms.

The Netra X4200 server supports the following Solaris OS installation methods:

- Install one server from DVD or CD-ROM media interactively with the Solaris installation program.
- Install one or several servers over the network with Preboot Execution Environment (PXE) technology and the following installation methods:
 - Solaris installation program over the network from remote DVD or CD images
 - JumpStart™ installation
 - Diskless boot
 - Install using a serial console
- Boot from the preinstalled Solaris 10 OS image on the hard drive.

The Solaris Installation Program on the Solaris 10 Operating System media can be run with a graphical user interface (GUI) or as an interactive text installer in a console session. The Solaris Device Configuration Assistant is included in the Solaris Installation Program.

Use [TABLE 2-1](#) to identify the steps you need to perform to install the Solaris OS.

Note – This topic is intended for experienced system administrators who are familiar with using the Solaris OS on an x86 platform.

TABLE 2-1 Task Map for Initial Solaris OS Installation

Task	Description	Instructions
Set up your server.	Install your server hardware and configure the service processor.	<i>Netra X4200 M2 Server Setup Guide (820-0062)</i>
Review the Netra X4200 Server Release Notes.	The release notes contain late-breaking news about the Solaris OS software and patches.	<i>Netra X4200 M2 Server Release Notes (820-0067)</i>
Review the system requirements.	Verify that your server meets the minimum system requirements.	TABLE 2-2
Gather the information you need to install the Solaris OS.	The type of information you need to collect depends on your environment and the method you choose to install the Solaris OS.	“About Solaris OS Installation” on page 5
Locate the Solaris OS documentation.	The Solaris OS documentation included with your software contains most of what you need to know about installation.	“Where to Find Solaris 10 Information” on page 9
Install the Solaris OS.	Choose an installation method and locate the installation instructions.	TABLE 2-3
Install additional software, if necessary.	The Solaris OS drivers for the server are bundled in the Solaris OS. However, you may need to install additional software from the Resource CD.	<i>Netra X4200 M2 Server Release Notes (820-0067)</i>
Install patches, if necessary.	Patches are available from the SunSolve Patch Portal at: http://www.sunsolve.sun.com	<i>Netra X4200 M2 Server Release Notes (820-0067)</i>

TABLE 2-2 Minimum System Requirements

Requirement	Description
Hardware requirements	The server hardware and the initial service processor configuration must be installed before you install the Solaris OS.
Minimum Solaris OS	Solaris 10 3/05 HW1 for x86/x64 platforms or later compatible versions.
Memory to install	256 Mbytes is the recommended size. 64 Mbytes is the minimum size.
Disk space	12 Gbytes or greater.

TABLE 2-2 Minimum System Requirements (*Continued*)

Requirement	Description
Swap area	512 Mbytes is the default size.
x86/x64 processor requirements	x86/x64 120-MHz or faster processor is recommended. Hardware floating point support is required.
BIOS	Industry standard x86/x64 BIOS (resident in FLASH). The BIOS must be able to boot from CD or DVD media.

TABLE 2-3 Installation Methods

Method	Description	Instructions
Install from DVD or CD-ROM media.	Use the Solaris Installation Program on the CD or DVD media to install one server interactively.	“How to Install the Solaris OS From Distribution Media” on page 13
Install from the network by using PXE.	You need a PXE installation to install the Solaris OS over the network from remote DVD or CD images or to automate the installation process and install several systems with a JumpStart installation. To boot over the network by using PXE, you need to set up an install server and a DHCP server, and configure the BIOS on each server to boot from the network.	To set up for a PXE installation, see “x86: Guidelines for Booting with PXE,” in the <i>Solaris 10 Installation Guide: Network-Based Installations</i> To boot by using PXE, see “How to Boot a Server Over the Network By Using PXE” on page 11
Boot from the preinstalled image.	Depending on your configuration, a Solaris OS image may be preinstalled on a hard drive.	<i>Solaris 10 Installation Guide: Basic Installations</i>
Install from a serial console.	Use a serial console to install the Solaris OS in a PXE-based network installation.	“How to Use a Serial Console to Install the Solaris OS” on page 14
Perform a diskless boot.	Boot the Solaris OS on a Netra X4200 server without a hard drive. Use this method with a PXE-based network installation.	“x86: Booting and Installing Over the Network PXE,” in the <i>Solaris10 Installation Guide: Network-Based Installations</i>

Note – The Solaris OS provides additional programs for installation, such as booting over a wide area network (WAN), but the Netra X4200 server supports only those methods listed in this topic.

Where to Find Solaris 10 Information

Solaris OS documentation is available from the web at: <http://docs.sun.com/>

Select `Solaris 10` to display the list of documents in the Solaris 10 Documentation Collection.

- For the Solaris 10 installation guides, see <http://docs.sun.com/app/docs/coll/1236.1>
- For the Solaris 10 administration guides, see <http://docs.sun.com/app/docs/coll/47.16>
- For information about upgrading your system, see <http://docs.sun.com/app/docs/doc/817-5505>
- For troubleshooting information, see Appendix A at: <http://docs.sun.com/app/docs/doc/817-5504>

Solaris 10 documentation is also available on the Solaris Documentation DVD included with your Solaris OS software.

About Preparing to Install the Solaris OS

You need to gather information about your system before you install the Solaris OS. The amount of planning and initial set up that you need to perform varies depending on whether you are preparing for a local installation from DVD or CD, or you are preparing for a Preboot Execution Environment (PXE)-based network installation.

You also need to obtain the appropriate media for your installation.

Media	Title
DVD	Solaris 10 Operating System <version> DVD
CD-ROM	Solaris 10 Operating System <version> Software CDs Solaris 10 HW1 Languages for x86 Platforms CD Netra X4200 Resource CD
Patches	See the <i>Netra X4200 Server Release Notes</i> for information about patches.

Installation Prerequisites

You must complete the following tasks before you install the Solaris OS.

1. Verify that your system meets the minimum system requirements.

See the System Requirements section in the related topic about Solaris OS installation.

If you are using the Solaris Installation Program GUI or text installer, you need a local DVD-ROM or CD-ROM drive or network connection, keyboard, and monitor. For more information, see the *Solaris 10 Installation Guide: Basic Installations*.

2. Gather the information you need to install the Solaris OS.

See the “Checklist for Installation,” in Chapter 1, at <http://docs.sun.com/app/docs/doc/817-0544>.

For a non-networked system, you need to know the host name of the system you are installing and the language and the locales that you intend to use on the system.

For a networked system, use the checklist to gather the following information:

- Host name of the system that you are installing
 - Language and locales that you intend to use on the system
 - IP address of the name server
 - Subnet mask
 - Type of name service (for example, DNS, NIS, or NIS+)
 - IP address of gateway
 - Domain name
 - Host name of the name server
 - IP address of the name server
 - Root password
- ## 3. If you are installing the Solaris OS over the network, you need to set up a PXE-based network installation before you install the Solaris OS.

For information about setting up a PXE-based network installation, see *Solaris 10 Installation Guide: Network-Based Installations* at

<http://docs.sun.com/app/docs/doc/817-5504>.

Note – Consult the appropriate platform guide that ships with Solaris 10 for detailed information about remote installation via USB. If USB-based installation is not supported, use PXE.

How to Boot a Server in a GRUB-Based Environment

Starting with the Solaris 10 11/06 release, the open-source GNU Grand Unified Bootloader (GRUB) has been implemented on x86-based systems that are running the Solaris OS. GRUB is the boot loader that is responsible for loading a boot archive into a system's memory. The boot archive contains the kernel modules and configuration files that are required to boot the system. For more information on GRUB, you can see the grub(5) man page.

For information on how to boot a Netra X4200 server that is running Solaris 10 11/06 in a GRUB-based environment, refer to the *Solaris 10 System Administration Guide: Basic Administration*, at this URL:

<http://docs.sun.com/app/docs/doc/819-2379>

How to Boot a Server Over the Network By Using PXE

Use this procedure along with the instructions in *Solaris 10 Installation Guide: Networked-Based Installations*.

The Netra X4200 server implements the Intel Preboot Execution Environment (PXE) specification required for a PXE network boot. PXE technology provides your server with the capability to boot the Solaris OS over the network using the Dynamic Host Configuration Protocol (DHCP). Using a PXE-based network installation, you can install the Solaris OS onto a server from the network with remote CD or DVD images. You can also automate the installation process and install the Solaris OS on several Netra X4200 servers using a JumpStart scenario.

A PXE network boot is a direct network boot. No boot media is required on the Netra X4200 client system.

Before You Begin

To boot over the network by using PXE, you first need to do the following:

1. Set up an install server.
2. Add the Netra X4200 clients to be installed.
3. Set up a DHCP server.

For instructions, see Step 1 below.

What to Do

1. **Perform the tasks in “Guidelines for Booting with PXE,” located in *Solaris 10 Installation Guide: Network-Based Installations*, located at <http://docs.sun.com/app/docs/doc/817-5504>.**

If you have already set up the systems you need for a PXE boot, review the Task Map to verify that you have performed all the steps.

2. **Boot the server over the network by using PXE.**

Complete the steps in *Solaris 10 Installation Guide: Network-Based Installations* at <http://docs.sun.com/app/docs/doc/817-5504>. Follow the instructions on the screen.

When the BIOS comes up, press F12 to tell the BIOS to perform a network boot from the PXE server.

How to Install the Solaris OS From Distribution Media

Use this procedure along with the instructions for x86 platforms in *Solaris 10 Installation Guide: Basic Installations* to install the Solaris OS onto a Netra X4200 server from CD or DVD media. This procedure describes an interactive installation using the Solaris Installation Program.

The Solaris Installation Program on the Solaris 10 Operating System media can be run with a graphical user interface (GUI) or as an interactive text installer in a console session. The GUI or command-line interface (CLI) uses wizard panels to guide you step-by-step through installing the OS.

Note – Solaris 10 3/05 HW1 is preinstalled. You do not need to follow this procedure unless you are installing a new OS version.

Before You Begin

Perform the tasks described in the Related topic about how to prepare for installing the Solaris OS.

What to Do

1. **Insert the Solaris 10 Operating System DVD or CD into your Netra X4200 server.**
2. **Boot the system by shutting it down and then turning it off and on.**

The server BIOS supports booting from a DVD or CD.

3. **Continue the installation procedure by performing the steps in the procedure: “x86: To Install or Upgrade with the Solaris Installation Program,” in Chapter 2 at <http://docs.sun.com/app/docs/doc/817-0544>.**

Start the procedure at Step 4. When prompted, answer the configuration questions to complete the installation.

You can accept the default values on the screens to format the entire hard disk, use auto-layout file systems, and install a preselected set of software. Or, you can customize the installation to modify the hard disk layout, modify a Solaris fdisk partition, and select the software that you want to install.

How to Use a Serial Console to Install the Solaris OS

The Solaris text installer enables you to type information in a terminal or a console window to interact with the Solaris OS Installation Program. Use this procedure to use a serial console to install the Solaris 10 OS on a Netra X4200 server with a PXE-based network installation.

Before You Begin

Before you set up the serial console, you need to set up the following systems for a PXE-based network installation:

- An install server
- A DHCP server

To set up these systems, see *Solaris 10 Installation Guide: Network-Based Installations* at <http://docs.sun.com/app/docs/doc/817-5504>.

What to Do

To use a serial console to install the Solaris OS, do the following.

Note – For Steps 1 through 3, see *Solaris 10 Installation Guide: Network-Based Installations* at <http://docs.sun.com/app/docs/doc/817-5504>.

1. Connect a terminal to the serial port on the service processor.

A terminal can be a VT100, a PC running terminal emulation, or a terminal server.

2. Set the terminal to receive at 9600 baud.

3. Add an x86 install client to an install server and specify a boot device to use during the installation.

If you specify the boot device when you set up the install client, you are not prompted for this information by the Device Configuration Assistant during the installation.

The examples below use the following values:

- Client IP address: 00:07:e9:04:4a:bf
- Server IP address (GRUB only): 192.168.0.123
- Client macro name (GRUB only): 01000039FCF2EF

Use the commands specified in the examples below for the operating system version that you are using:

- For a Solaris 10 3/05 HW1 system:

```
# cd /export/boot/Solaris_10/Tools
# ./add_install_client -d -e "00:07:e9:04:4a:bf" \
  -b "console=ttya" \
  -b "bootpath=/pci@0,0/pci1022,7450@1/pci8086,1011@1"
  i86pc
```

- For Solaris 10 11/06 or later system with GRUB booting:

```
# cd /export/boot/Solaris_10/Tools
# ./add_install_client -d -e "00:07:e9:04:4a:bf" i86pc
# dhtadm -A -m 01000039FCF2EF \
  -d ":BootSrvA=192.168.0.123:BootFile=01000039FCF2EF:"
# pntadm -f 01 -A $CLIENT_IP -i 01000039FCF2EF \
  -m 01000039FCF2EF $CLIENT_NET
```

Note – See the man pages for these commands for more information on the commands and options.

4. Log in to the service processor as an Administrator.

5. Type this command to use the serial console:

```
start /SP/console
```

6. Boot the Netra X4200 server.

Follow the instructions in *Solaris 10 Installation Guide: Network-Based Installations* at: <http://docs.sun.com/app/docs/doc/817-5504>. When prompted, use the following setting:

To boot via PXE, press F12 at the BIOS.

7. After the system is installed, log in to the system and use the eeprom command to change bootenv.rc:

```
eeprom input-console=ttya
```

Sun Installation Assistant CD

About the Sun Installation Assistant CD

Note – The Sun Installation Assistant CD can be used remotely with the ILOM Remote CD-ROM feature and the Remote Console Application. For more details, see the topic that describes the Remote Console application.

The Sun™ Installation Assistant CD helps you to install a supported Linux operating system (OS) on your Netra X4200 server. It provides a set of Sun-supported drivers that have been tested for quality assurance.

By using the Sun Installation Assistant CD, you can install the operating system, the appropriate drivers, and additional software on your system. The Sun Installation Assistant eliminates the need to create a Driver CD.

Note – The Sun Installation Assistant CD does not automate the OS installation process. You will still need to follow the procedures provided in the Help topics about Red Hat Enterprise Linux and SUSE Linux Enterprise Server 9 installation, but you will not need to create a Driver CD. The Sun Installation Assistant automatically installs the Sun-supported drivers.

The Sun Installation Assistant performs the following tasks:

- Identifies the hardware on your system.
- Installs the operating system.
- Identifies and installs drivers and platform-specific software.

The use of the Sun Installation Assistant CD is optional but is provided to make the installation of Linux easier for the user.

Error Messages

If the Sun Installation Assistant encounters an error or an unexpected condition, it will generate an error message. You might encounter a number of straightforward error messages such as the following:

You have inserted Disc 3 but the system requires Disc 2. Please insert Disc 2.

You might also attempt to use the Sun Installation Assistant with versions of Linux that are not supported. In that case you might see error messages such as the following:

The media you have provided is not a release that is supported by Sun Microsystems, Inc. on this platform. You cannot use the Sun Installation Assistant to install this product and associated software.

In this case, choose one of the following options:

- To install a supported product, click Back and then insert the appropriate media.
- To install this unsupported product, click Exit to exit the Sun Installation Assistant and reboot the system. You can now install the unsupported product as you normally would.

Log File

A log file of the Sun Installation Assistant is written to the `/root` directory of the newly installed system.

To review this log file, refer to the file `/root/SunInstallationAssistant.log`.

How to Use the Sun Installation Assistant

This procedure explains how to use the Sun Installation Assistant to install Linux on your server.

Note – The Sun Installation Assistant does not automate the OS installation process. However, you will not need to create a driver CD because the Sun Installation Assistant automatically installs the Sun supported drivers. Once the installation is complete, you will return to the Sun Installation Assistant screen.

The Sun Installation Assistant can be booted from either the server's CD-ROM, remote KVM with CD-ROM redirection or via a PXE network boot. Instructions for configuring PXE network boot can be found in the topic that describes how to configure the Sun Installation Assistant for PXE boot. In the steps below that mention booting from the CD-ROM, simply substitute selecting network boot.

Media for the Linux system to be installed can be either a network image or a CD-ROM. Installation from a network image on a LAN is significantly faster to install.

Before You Begin

Installing the Sun Installation Assistant software consists of the following procedures:

1. **Boot the Sun Installation Assistant via the local CD, remote KVM with CD-ROM redirection, or via PXE booting the images contained on the CD.**
2. **Follow the prompts to provide the media or network image from which to install Linux.**

See the Help topic about how to update the operating system and drivers.

What to Do

To use the Sun Installation Assistant, do the following.

- 1. Insert the Sun Installation Assistant CD into the server's CD/DVD drive, use PXE booting, or use the remote KVM with CD-ROM redirection. See the topic that describes how to PXE boot or how to start and stop CD-ROM drive redirection.**

- 2. Power on or reboot the server.**

Your server boots the Sun Installation Assistant. This can take a few minutes. The first screen that appears is the Software License Agreement screen.

- 3. Read through the terms of the agreement.**

You must scroll to the bottom of the license text window to make active the Accept radio button.

- If you agree, select the Accept radio button and click Next to continue. (The Next button becomes active only when you select the Accept radio button.) The Welcome screen now appears with an introduction to the Sun Installation Assistant.
- If you do not agree, select the Decline radio button and click Exit to close the Sun Installation Assistant. The system then prompts you to reboot the server.

- 4. On the Welcome screen, click Next.**

The Welcome screen explains what the Sun Installation Assistant will do. Click Next to proceed.

- 5. Enable networking.**

If you want to use an HTTP or FTP install image, select Yes to bring up the Ethernet interface to reach that network install image. Select No to install from CD-ROM, and skip to [Step 7](#).

- 6. Configure networking.**

Answer questions for the IP configuration and click Next. The Assistant now identifies the hardware on which it is running and scans for any SCSI devices, as the following example shows:

```
Identifying hardware... identified as .  
Scanning for SCSI devices... done.
```

It will then automatically proceed to the next screen.

- 7. Select installation method.**

Select whether you want to install the Linux distribution from CD, HTTP, or FTP. If the network has not been enabled yet and you select HTTP or FTP, you will be prompted to enable the network.

8. Provide installation media.

Installing from HTTP or FTP:

If you selected network installation, you will be prompted to supply the URL of the network image to install from. For example:

```
http://host.name/path/to/install/image
```

```
http://ip.address/path/to/install/image
```

```
ftp://host.name/path/to/install/image
```

```
ftp://ip.address/path/to/install/image
```

Installing from CD:

The Assistant now identifies the hardware on which it is running and scans for any SCSI devices. It will then eject the Sun Installation Assistant CD and display a list of supported Linux distributions. This list of distributions is specific to the server hardware.

The Netra X4200 server supports the following Linux distributions:

- Red Hat Linux 3.0 Update 5 and later updates, 32-bit and 64-bit
- Red Hat Linux 4.0 Update 1 and later updates, 64-bit
- SUSE Linux Enterprise Server 9 SP1 and later SPs, 64-bit

Insert Disc 1 for one of the supported distributions into the server's CD/DVD drive.

Note – To install SLES9 SP1, insert the SLES9 CD 1 first. You will be prompted to insert the SP1 CD after the SLES9 installation is complete.

Note – For the administrator's convenience, the CD-ROM redirection feature of the SP can be used. See the topic that describes how to start and stop CD-ROM drive redirection.

Note – You must supply the OS media on the same CD-ROM as you booted the Sun Installation Assistant.

9. Click Next.

The Assistant identifies the Linux distribution, as the following example shows: Identifying distribution... identified as Red Hat Enterprise Linux 4 Update 1 AS - 64bit.

Note – If you provide an unsupported media, you will see an error message.

10. Click Next to start the installer for this distribution.

The installation software specific to the version of Linux that you are installing now takes over.

11. Proceed through the installer screens.

12. After the installation is complete, the Sun Installation Assistant installs RPMs for the Linux OS kernel(s) that you have just installed.

The Assistant installs only those RPMs for your specific Linux OS kernel.

Note – This operation replaces the steps for manually upgrading the drivers for your server, as outlined in the Help topics that describe how to update the drivers.

13. Verify that the correct software has been installed.

The final screen identifies additional software that is installed, as the following example shows:

```
The Red Hat Enterprise Linux 4 Update 1 AS - 64bit installation has
completed.
```

```
Installing drivers... completed.
```

```
The installation has completed.
```

Note – You will be prompted to insert the SLES9 SP1 CD from this screen before the drivers are installed. Installing the patches from the SP1 CD will take a few minutes.

14. Click Reboot to reboot the server with the newly installed operating system.

How to Configure the Sun Installation Assistant for PXE Boot

This procedure explains how to configure a Preboot Execution Environment (PXE) to boot the Sun Installation Assistant on your server.

What to Do

Note – This section presumes the user is already familiar with configuring a PXE boot server. The following information is relevant to adding the Sun Installation Assistant boot target on an existing PXE boot server.

Configuring the Sun Installation Assistant software for PXE boot consists of the following procedures:

1. **Preconfigure your network to support PXE as described in [Appendix A](#).**
2. **Create a new subdirectory in the PXE Linux directory for the Sun Installation Assistant images.**

```
# mkdir /home/pxeboot/suninstall
```

3. **Insert the Sun Installation Assistant CD into the PXE server CD drive and mount the CD.**
4. **Copy the `vmlinuz` and `initrd` files from the CD to the PXE Linux directory. Use the correct path to the mounted CD image. This example uses `/mnt/cdrom`.**

```
# cp /mnt/cdrom/boot/isolinux/vmlinuz /home/pxeboot/suninstall
```

```
# cp /mnt/cdrom/boot/isolinux/initrd.img /home/pxeboot/suninstall
```

5. **Add the Sun Installation Assistant to the PXE configuration file. Enter the following lines to `/home/pxeboot/pxelinux.cfg/default`:**

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

```
default suninstall
label suninstall
kernel vmlinuz
append initrd=initrd.img vga=0x314 ramdisk_size=400000 root=
/dev/ram netboot
```

6. Unmount and remove the CD.

Booting the Sun Installation Assistant From the PXE Server

1. **Connect the Netra X4200 server to the same network as the PXE server and power on the system.**
2. **Press the F12 key on your system while it is initializing to start a network boot. The system will attempt to get an IP address from the DHCP server.**
3. **Press the F8 key to begin the downloading of the PXE boot image.**
4. **When you are prompted at the boot: prompt, type in `suninstall`.**
5. **The Sun Installation Assistant image downloads onto your system. You can continue with the installation as described in [“How to Use the Sun Installation Assistant”](#) on page 19.**

Red Hat Enterprise Linux

About Red Hat Enterprise Linux Installation

If you have installed Red Hat Enterprise Linux software on other Intel or AMD Opteron servers, you are already familiar with how to install it on a Netra X4200 server. The two most common methods to install Red Hat Enterprise Linux on your server are:

- Installation from your Red Hat Enterprise Linux distribution media
- Automatic kickstart installation from Red Hat Enterprise Linux software (installation tree) stored on a Preboot Execution Environment (PXE) network server

Note – The Sun Installation Assistant is a convenient, front-end application designed to assist you in installing Red Hat Enterprise Linux on your server. The Sun Installation Assistant supplements the standard installation utilities and procedures that ship with Red Hat Enterprise Linux; it does not replace them.

Red Hat Installation and Administration Documentation

Before you install the Red Hat Enterprise Linux software on a Netra X4200 server, consult the following Red Hat Enterprise Linux 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/
<i>Red Hat Enterprise Linux Quick Installation Guide</i>	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
<i>Red Hat Enterprise Linux Installation Guide</i>	Full version of the printed <i>Quick Installation Guide</i> .	Included on the Red Hat Documentation CD, and available for download from http://www.redhat.com/docs/
<i>Red Hat Enterprise Linux Introduction to System Administration</i>	Introductory information for Red Hat Enterprise Linux system administrators.	Available for download from http://www.redhat.com/docs/manuals/enterprise/
<i>Red Hat Enterprise Linux System Administration Guide</i>	Information on customizing the Red Hat Enterprise Linux software.	Available for download from http://www.redhat.com/docs/manuals/enterprise/
<i>System Administration for Diskless Booting</i>	Information on configuring your server and Red Hat Linux for diskless booting.	Available for download as the <i>Red Hat Enterprise Linux Installation Guide for the x86, Itanium™, and AMD64 Architectures</i> at http://www.redhat.com/docs/manuals/enterprise/
<i>Red Hat Enterprise Linux Security Guide</i>	Guide for securing the Red Hat Enterprise Linux software.	Available for download from http://www.redhat.com/docs/manuals/enterprise/

Task Map for Red Hat Enterprise Linux Installation

Consult the following table to determine which topics documented in this Help system are relevant to the installation tasks that you want to perform.

Installation Task (Goal)	Relevant Topic
Collect information about your system and network.	“About Preparing to Install Red Hat Enterprise Linux” on page 28
Create a Red Hat Enterprise Linux driver CD.	“How to Create a Red Hat Enterprise Linux Driver CD” on page 29
Install Red Hat Enterprise Linux from distribution media using a local or network-attached CD or DVD drive.	“How to Install Red Hat Enterprise Linux From Distribution Media” on page 31
Update Red Hat Enterprise Linux operating system files and drivers.	“How to Update the Red Hat Enterprise Linux Operating System and Drivers” on page 33
Run the Sun Installation Assistant.	“How to Use the Sun Installation Assistant” on page 19

About Preparing to Install Red Hat Enterprise Linux

Although you can install the Red Hat Enterprise Linux software from a local CD/DVD, a remote CD/DVD, or the network, you will need to collect some information about your system and your network before you proceed with any of these installation methods.

Installation Prerequisites

The following is information you might need to collect relevant to the installation of the Red Hat Enterprise Linux software on the server.

Item to Verify	Value
DHCP server name	servername
MAC address of server	MAC_address

Additional Software Updates or Patches

After installing the Red Hat Enterprise Linux software on the server, you might also need to update your system software with the following patches and packages.

Patch or Software Package	Explanation
SCSI drivers	Download the driver RPMs from the product pages for the server. See the Help topic about updating the operating system and drivers for details.
Operating system update	Use the Red Hat up2date program. See the Help topic about updating the operating system and drivers for details.

How to Create a Red Hat Enterprise Linux Driver CD

If you are installing a RHEL 4 Update 2 or later version, the drivers needed to install the OS are incorporated into installation image. You do not need to create an additional driver CD.

Note – The Sun Installation Assistant automatically installs this driver. You can skip this procedure if you use that application. For details, see [“How to Use the Sun Installation Assistant” on page 19](#).

The LSISAS1064 SCSI controller on your Netra X4200 server is new to the market. The driver for that SCSI controller has not yet been made available on the Red Hat Enterprise Linux distribution, so Sun Microsystems has provided the driver on its Resource CD. To install this driver on your server, you must create a Red Hat-specific CD that contains an installation-ready driver image.

Before You Begin

Before you create a Red Hat-specific Driver CD, you must have access to a functioning Linux server or Linux workstation that can burn a CD.

What to Do

To create a Red Hat-specific Driver CD from the driver images distributed on the Resource CD, do the following.

1. **Log in as root to the Linux server or workstation that has the CD recorder drive.**

2. Determine the name of the recordable CD drive. Do one of the following:

- If the recordable CD drive is an IDE (ATAPI) drive, type:

```
# cdrecord -scanbus dev=ATAPI
```

The system reports the names of matching devices:

```
scsibus0:  
0,0,0 0) 'SAMSUNG ''CDRW/DVD SM-352F''T900'Removable CD-ROM  
0,1,0 1) *  
0,2,0 2) *
```

In this example, the name of the IDE CD device is ATAPI:0,0,0.

- If the recordable CD drive is a SCSI drive, type:

```
# cdrecord -scanbus
```

The system reports the names of matching devices:

```
scsibus4:  
4,0,0 0) 'SONY''DVD RW DRU-530A''1.0e'Removable CD-ROM  
4,1,0 1) *  
4,2,0 2) *
```

In this example, the name of the SCSI CD device is 4,0,0.

3. Insert the Resource CD into the local system CD drive.

4. Mount the CD. Type:

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

5. Copy the driver image to the local /tmp directory. Type:

Note – The driver disk image in this step depends on the version of Red Hat Enterprise Linux you are attempting to install. The example shows Red Hat Enterprise Linux 3 32-bit version. For Red Hat Enterprise Linux 3 64-bit versions, use `~/mnt/cdrom/support/update_media/rhel3/64/driverUpdate.iso`. For Red Hat Enterprise Linux 4 64-bit versions, use `~/mnt/cdrom/support/update_media/rhel4/64/driverUpdate.img`.

```
# cp  
/mnt/cdrom/support/update_media/rhel3/32/driverUpdate.img  
/tmp
```

6. Unmount the Resource CD. Type:

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

7. Insert a blank CD-R disc into the CD recorder drive.

8. Create the Driver CD. Type:

```
# cdrecord dev=drivename /tmp/driverUpdate.img
```

Where *drivename* is the device name of the CD recorder you obtained in [Step 2](#).

Note – If you use a program other than `cdrecord`, it might warn you that `driverUpdate.img` is not a valid file. You can ignore this warning.

9. Remove the newly created CD from the CD recorder when the recording process is complete and the CD recorder ejects the CD.

Note – Use this Red Hat-specific Driver CD when you install the Red Hat Enterprise Linux software from the Red Hat distribution media.

How to Install Red Hat Enterprise Linux From Distribution Media

Red Hat Enterprise Linux provides both a text mode and an easy-to-use graphical interface for installing and configuring the operating system. You can select the interface that you want to use from the boot prompt, and both options are shown later in this section.

Before You Begin

Installing Red Hat Enterprise Linux software from CDs consists of the following procedures:

If you are using RHEL 4 Update 2 or later version, you do not need to do Procedure 1. Proceed to Procedure 2.

1. If necessary, create the Enterprise Driver CD or use the Sun Installation Assistant CD.

See the [“How to Create a Red Hat Enterprise Linux Driver CD”](#) on page 29 or [“How to Use the Sun Installation Assistant”](#) on page 19.

2. Install the Red Hat Enterprise Linux software.

3. Update the Red Hat Enterprise Linux software.

See “How to Update the Red Hat Enterprise Linux Operating System and Drivers” on page 33.

Required Items

Installation from distribution media requires the following items:

- Netra X4200 server equipped with:
 - DVD-ROM drive
 - USB keyboard and mouse
 - Monitor
- Red Hat Enterprise Linux media CD set
- Driver CD

You create this yourself. See the Help topic about how to create a Red Hat Enterprise Linux Driver CD.

What to Do

To perform a basic installation from local media, do the following.

1. **Insert the Red Hat Enterprise Linux Distribution CD 1 into the local DVD/CD drive on the Netra X4200 server.**

2. **Power on the system.**

The server will boot off of the CD and display a `boot :` prompt.

3. **Select one of the following installation methods at the boot prompt:**

- For text mode: Type the following command:

```
boot: linux dd
```

- For graphical mode: Press Enter.

The installer starts, and prompts you for a driver disk with the following message:

```
Do you have a driver disk?
```

The installer then prompts you to Insert your driver disk into `/dev/hda` and press Ok.

4. **Eject the Red Hat Enterprise Linux Distribution CD 1.**

5. If necessary insert the Red Hat Enterprise Linux Driver CD.

This is the CD you created earlier. See [“How to Create a Red Hat Enterprise Linux Driver CD”](#) on page 29.

6. Select Ok.

The installer loads the updated mptbase and mptscsih drivers needed to access the hard drives. When the installer is finished loading the drivers, it prompts with Do you have any more driver disks?.

7. Select No and remove the Red Hat Enterprise Linux Driver CD from the system.

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

What Next

See [“How to Update the Red Hat Enterprise Linux Operating System and Drivers”](#) on page 33.

How to Update the Red Hat Enterprise Linux Operating System and Drivers

This procedure describes how to update the Red Hat Enterprise Linux operating system and drivers.

Before You Begin

Since software is constantly being updated, your distribution media might not contain the most up-to-date versions of the operating system. In addition, the kernel that is installed on the system might not contain the proper SCSI drivers that the server requires. Updating the drivers helps ensure proper system operation.

The following two procedures assume that you have already installed the Red Hat Enterprise Linux software on the Netra X4200 server. These procedures explain how to update that Red Hat Enterprise Linux installation with the latest OS and driver software.

What to Do

Updating the Red Hat Enterprise Linux Software

Follow these steps to update the operating system software.

1. **Set up the `up2date` program on the server.**

Refer to the documentation included with your Red Hat Enterprise Linux media kit for details.

2. **Run the `up2date` program.**

Select the kernel packages in the `available package updates` section.



Caution – Do not reboot the server after running the `up2date` program. If the server is rebooted before you installed the updated SCSI driver, the server might not function properly upon restart.

3. **If necessary, After you have finished running `up2date`, proceed to the next section to update the SCSI drivers before rebooting the server.**

Note – If you did reboot the system after updating the kernel and before updating the SCSI drivers, the system might fail to boot and you must boot from the installation media in rescue mode by typing `linux rescue` at the installation boot prompt. For more information, see the *Red Hat Enterprise Linux System Administration Guide* located at <http://www.redhat.com/docs/manuals/enterprise/>

Updating the SCSI Drivers

Note – If you are installing RHEL 4 Update 2 or later version, you do not need to update the SCSI drivers.

This procedure describes how to copy the latest drivers from the Resource CD. You can also download the driver RPMs from the product page for the Netra X4200 server:

<http://www.sun.com/servers/entry/x4100/downloads.jsp>

1. Determine which kernel is currently installed on the system. Type the following command:

```
# rpm -qa --qf="%{name}-%{version}-%{release}.%{arch}\n" |  
grep ^kernel
```

The following is an example of the output you might get:

```
kernel-2.4.21-32.EL.athlon
```

```
kernel-smp-2.4.21-32.EL.athlon
```

This example shows the 2.4.21-32.EL.athlon kernel.

2. Insert the Resource CD into the server's DVD-ROM drive.
3. Mount the CD and locate the SCSI drivers by typing the following commands:

```
# mount /dev/cdrom /mnt/cdrom  
# cd /mnt/cdrom/support/drivers/rhel3/32/
```

Note – The above command assumes that you are running Red Hat Enterprise Linux 3 32-bit. If you are running Red Hat Enterprise Linux 3 64-bit or Red Hat Enterprise Linux 4 64-bit, use the following different paths to the drivers. For Red Hat Enterprise Linux 3 64-bit, use: /mnt/cdrom/support/drivers/rhel3/64. For Red Hat Enterprise Linux 4 64-bit, use: /mnt/cdrom/support/drivers/rhel4/64.

4. Determine which driver RPMs correspond to the installed kernel.

The file names of the RPMs contain the kernel version and type. Using the example kernel versions shown above, the appropriate SCSI (*mptlinux*) drivers would be:

```
mptlinux-2.06.16_2.4.21_32.EL-rhel3_1.athlon.rpm
```

```
mptlinux-smp-2.06.16_2.4.21_32.EL-rhel3_1.athlon.rpm
```

5. Type the following command to install the driver RPM files:

```
# rpm -Uvh /mnt/cdrom/support/drivers/rhel3/32/mptlinux-  
drivers.rpm
```

Where *mptlinux-drivers.rpm* refers to the appropriate SCSI driver RPM files determined in the previous step.

Note – Be sure to pick the correct architecture of the driver for the kernel you are running. For example, if you are running the i686 kernel, be sure to choose the correct driver RPM that ends with *.i686.rpm*.

6. After successful installation, reboot the system by typing:

```
# reboot
```

How to Install the Red Hat Enterprise Linux OS Using the Remote Console Application

This topic explains how to install the Red Hat Enterprise Linux operating system on your server using the ILOM Remote Console application.

What to Do

Use the following procedure to install the Red Hat Enterprise Linux 4 OS using the ILOM Remote Console application.

1. **Locate your Red Hat Enterprise Linux installation CD/DVD or the equivalent iso images.**

Note – The Remote Console application can redirect iso images.

2. **Locate the appropriate LSISAS DriverUpdate.iso file from the resource CD.**

Check the directory `/support/drivers/rhel3/32/`,
`/support/drivers/rhel3/64/`, or `/support/drivers/rhel4/64/` on the resource CD.

Note – This driver disk image can be written to a floppy disk or left as an image file because the Remote Console application can redirect a floppy image. If your hard drive is not displayed during the Red Hat installation process, verify that this driver disk was recognized during Red Hat boot.

3. **Connect to the ILOM Service Processor web GUI.**

See the topic that describes how to log in to and out of the Sun ILOM web GUI.

4. **Choose the Remote Control—Redirection tabs to start the Remote Console application.**

See the topic that describes how to launch the Remote Console application.

5. **Start keyboard and mouse redirection.**

See the topic that describes how to redirect keyboard, video, mouse, or storage devices.

6. Start CD/DVD redirection.

There are two choices of redirection type, either to redirect a CD-ROM drive using the Devices menu and to insert either installation CD 1 into the redirect CD-ROM drive, or to redirect CD-ROM images using the Devices menu. Select disk 1 iso image when prompted.

7. Start floppy drive redirection.

There are two choices of redirection type, either to redirect a floppy drive using the Devices menu and to insert the driver disk floppy into the redirect floppy drive, or to redirect floppy images using the Devices menu. Select driver image when prompted.

8. Power on the server using the ILOM web GUI.

See the topic that describes how to control power on the host server.

9. Press F2 to enter BIOS Setup and set the BIOS boot device to use AMI Virtual CDROM, or press F8 and select AMI Virtual CDROM when prompted.

10. When the boot prompt appears, type `linux dd`.

11. When prompted for the driver disk, select Yes.

12. When prompted for the driver disk source, select `sda`.

13. After the driver is done loading, select No when asked for additional driver.

14. When prompted for testing the CD media before installation, select Skip if you do not want the media test to run.

15. Proceed with Red Hat OS installation as usual.

Red Hat Enterprise Linux and PXE

About Red Hat Enterprise Linux and PXE

The network interface card (NIC) in your Netra X4200 server supports the Preboot Execution Environment (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 Red Hat Enterprise Linux image on your server. PXE is a powerful and convenient solution for setting up a number of Netra X4200 servers so their configuration is identical.

Task Map

To take advantage of Red Hat Enterprise Linux and PXE on your network, you need to perform the following tasks.

Task	Related Help Topic
Set up your Linux network and PXE server.	See Appendix A .
Install Red Hat Enterprise Linux images on that PXE server.	“How to Create a PXE Install Image on the PXE Server” on page 38
Configure your server to install from a Red Hat Enterprise Linux image on a PXE server.	“How to Install Red Hat Enterprise Linux From a PXE Server” on page 41

How to Create a PXE Install Image on the PXE Server

This procedure describes how to create a Preboot Execution Environment (PXE) install image on the same server that is your DHCP server, so that it will also act as your PXE server. The PXE server provides the operating system files to your PXE client.

Note – If you are installing RHEL 4 Update 2 or later version, you do not need to complete the steps that refer to installing the drivers.

Before You Begin

Before you install a Red Hat Enterprise Linux image on your PXE server, you must configure your Linux network to support PXE images. See [Appendix A](#) for instructions on preconfiguring your network to support PXE installations of Red Hat Enterprise Linux.

Required Items

The PXE installation procedure requires the following items:

- A CD/DVD drive on the DHCP Server
- Red Hat Enterprise Linux media CD set
- Resource CD

What to Do

To create a Red Hat Enterprise Linux image on your PXE server, do the following.

1. **Insert the Resource CD into the CD/DVD drive of the DHCP/PXE server.**
2. **Type the following commands to copy the Sun support files from the CD to the /tmp directory on your DHCP/PXE server:**

Note – The compressed tar file that is used in this step depends on which Red Hat Enterprise Linux you are creating an install image. The remainder of the instructions will assume that Red Hat Enterprise Linux 3 32-bit is being used. Modify the example based on the version you are using. For Red Hat Enterprise Linux 3 32-bit, use `rhel3_32-pxefiles.tar.gz`, for Red Hat Enterprise Linux 64-bit, use `rhel3_64-pxefiles.tar.gz`, for Red Hat Enterprise Linux 4 64-bit, use `rhel4_64-pxefiles.tar.gz`, for Red Hat Enterprise Linux 4 32-bit, use `rhel4_32-pxefiles.tar.gz`.

```
# mount /dev/cdrom /mnt/cdrom
# cp -a /mnt/cdrom/support/pxeboot/rhel3_32-pxefiles.tar.gz
  /tmp
# cd /tmp
# tar -zxvf rhel3_32-pxefiles.tar.gz
# umount /mnt/cdrom
```

3. **Set up the directory structure that will hold the Red Hat Enterprise Linux software. Type:**

Note – You can use a different target directory than the `/home/pxeboot/rhel3_32/` directory shown below. The examples in this procedure use this directory.

```
# mkdir -p /home/pxeboot/rhel3_32/
```

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

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

```
# cp -a /mnt/cdrom/* /home/pxeboot/rhel3_32/
```

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

Eject and insert Red Hat Enterprise Linux CDs only when the CD/DVD drive is unmounted.

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

```
# cp /tmp/rhel3_32-pxefiles/ks.cfg /home/pxeboot/rhel3_32/
```

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.

6. Copy the initial ramdisk from the PXE files uncompressed in Step 2 into the base of the PXE image. Type:

```
# cp /tmp/rhel3_32-pxefiles/initrd.img  
/home/pxeboot/rhel3_32/
```

7. If necessary, copy the updated SCSI driver RPM files to the target directory. Type:

```
# cp /tmp/rhel3_32-pxefiles/mptlinux* /home/pxeboot/rhel3_32/
```

8. On your PXE server, edit and save the kickstart file,

```
/home/pxeboot/rhel3_32/ks.cfg.
```

Edit the `nfs` line is as follows:

```
nfs --server n.n.n.n --dir /home/pxeboot/rhel3_32/
```

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.

9. 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 rhel3_32
label rhel3_32
kernel rhel3_32/vmlinuz
append ksdevice=eth0 console=tty0 load_ramdisk=1
initrd=rhel3_32/initrd.img network
ks=nfs:n.n.n.n:/home/pxeboot/rhel3_32/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.

10. Save the modified version of the `/home/pxeboot/pxelinux.cfg/default` file.
11. Insert the Red Hat Enterprise Linux Distribution CD1 into the CD/DVD drive of the DHCP/PXE server.

```
# mount /dev/cdrom /mnt/cdrom
# cp /mnt/cdrom/images/pxeboot/vmlinuz
/home/pxeboot/rhel3_32/
```

How to Install Red Hat Enterprise Linux From a PXE Server

This procedure describes how to configure your Netra X4200 server to initiate the request to download the boot image file from the PXE/DHCP server and how to install the Red Hat Enterprise Linux boot image onto your Netra X4200 server.

Note – If you are installing RHEL 4 Update 2 or later version, you do not need to complete the steps that refer to updating the drivers.

Before You Begin

Before you configure your server to install Red Hat Enterprise Linux from a PXE server, you need to have done the following:

- Configured your Linux network to support a PXE server. See the topic that describes how to preconfigure your network to support PXE installation of Red Hat Enterprise Linux.
- Installed a Red Hat Enterprise Linux image on that Linux PXE server. See the topic that describes how to create a PXE install image on the PXE server.

What to Do

To configure your server to install a Red Hat Enterprise Linux image from a PXE server, do the following.

- 1. Connect the PXE client to the same network as the PXE server, and power on the PXE client.**

The PXE client is the target Netra X4200 server to which you are installing Red Hat Enterprise Linux software.

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

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

- 3. Press the F8 key to begin the downloading of the PXE boot image.**

- 4. When you are prompted at the `boot:` prompt, type in the label you gave the image when you installed a Red Hat Enterprise Linux image on the PXE server.**

The Red Hat Enterprise Linux install image downloads onto the target Netra X4200 server.

- 5. To configure the Linux operating system for your server, refer to the manual that is shipped with your Red Hat Enterprise Linux media kit.**

- 6. Update the operating system files and driver files, if necessary.**

See [“How to Update the Red Hat Enterprise Linux Operating System and Drivers”](#) on page 33.

SUSE Linux Enterprise Server 9

About SUSE Linux Enterprise Server 9 Installation

If you have installed the SLES9 operating system (OS) on other x86-based servers, you are already familiar with how to install Linux on your Netra X4200 server. The most common methods to install SLES9 on your server are:

- Installation from your SLES9 Distribution CD (local or remote)
- Installation from the network, either from a Preboot Execution Environment (PXE) image stored on a PXE server on your local network or from an image stored elsewhere on your network.

Note – The Sun Installation Assistant is a convenient, front-end application designed to assist you in installing SUSE Linux on your server. The Sun Installation Assistant supplements the standard installation utilities and procedures that ship with SLES9; it does not replace them.

Important SLES 9 Version Installation Guidelines

Read the following guidelines for specific versions of the SLES 9 operating system:

- The minimum supported SUSE Linux Enterprise Server (SLES) version is SLES 9 Service Pack 1 (SP1).

- If you are installing SP1, you will need to first install the base SLES9 package before installing SLES 9 SP1, because SP1 consists of packages that are installed on top of the base SLES9 operating system. See SLES9 version guidelines for more information.
- If you are installing SP2, you cannot install the SP on top of the base SLES9 package. If the base SLES9 package is already installed on the system, you will need to remove the base package, and install SLES9 SP2 by inserting the SP2 CD first.
- If you are installing a version higher than SLES 9 SP1, refer to the SLES documentation for installation information. You will not need Sun-supplied drivers for SP2 and higher.

SUSE Linux Installation and Configuration Documentation

Before you install SLES9 Linux on your server, consult the following SUSE Linux Enterprise Server 9 documentation:

- README file—The README file on your SUSE Linux Enterprise Server 9 Documentation CD contains late-breaking information about system requirements and system configuration for your version of SUSE Linux Enterprise Server 9.
- *SUSE Linux Enterprise Server 9 Installation Manual*—This manual provides detailed information about installation requirements, disk partitioning, the YaST2 installation application, and other configuration options.
- *SUSE Linux Enterprise Server 9 Administration Manual*—This manual provides additional information about configuring your system and integrating it with your existing network services.
- SUSE Linux Enterprise Server 9 Support Sites—SUSE provides considerable technical information about the Enterprise Server operating system at its product and support web sites. See the SUSE Linux Enterprise Server 9 Home Page at <http://www.novell.com/products/linuxenterpriseserver> for additional support information.

Task Map for SUSE Linux Enterprise Server 9 Installation

Consult the following table to determine which procedures documented in this Help system are relevant to the installation task(s) that you need to perform.

Installation Task (Goal)	Relevant Procedure(s) or Source(s)
Collect information about your system and network.	“About Preparing to Install SUSE Linux Enterprise Server 9” on page 46
Create a Driver CD.	“How to Create a SLES9 or SLES9 SP1 Driver CD” on page 46
Run the Sun Installation Assistant.	“How to Use the Sun Installation Assistant” on page 19
Install SLES9 and SLES9 SP1 from local or remote CD/DVD drive.	“How to Install SLES9 From Distribution Media” on page 51
Install SLES9 SP2 or later version from local or remote CD/DVD drive or PXE server.	<i>SUSE Linux Enterprise Server 9 Installation Manual</i>
Install SLES9, SLES9 SP1, or SLE9 SP2 from an image stored on a networked system.	<i>SUSE Linux Enterprise Server 9 Installation Manual</i>
Install SLES9 and SLES9 SP1 from a PXE server.	Appendix A: “Preconfiguring Your Network to Support PXE Installation” on page 65 “How to Create a SLES9 SP1 PXE Install Image on the PXE Server” on page 59 “How to Install SLES9 From a PXE Server” on page 63
Update SLES9 and SLES9 SP1 software and drivers.	“How to Update the SLES9 Operating System” on page 49 “How to Update the SLES9 SCSI Driver” on page 50

Note – SLES9 SP2 and later versions do not require additional Sun-supported drivers. Make sure to include the all of the drivers recommended by SUSE when installing the operating system. See [“SUSE Linux Installation and Configuration Documentation” on page 44](#) for more information on installing SLES 9 SP2 and later, and obtaining the correct drivers.

Before you install SUSE Linux from CD, from DVD, or from the network, you need to gather information about your system and your local area network.

About Preparing to Install SUSE Linux Enterprise Server 9

Although you can install the SUSE Linux Enterprise Server 9 (SLES9) operating system (OS) from a local CD/DVD, remote CD/DVD, or the network, you will need to collect some information about your system before you proceed with any one of these installation.

The server ships with a DVD-ROM device. However, an external CD-ROM device can also be used.

Note – The Sun Installation Assistant is a convenient, front-end application designed to assist you in installing SUSE Linux on your server. The Sun Installation Assistant supplements the standard installation utilities and procedures that ship with SLES9; it does not replace them.

Installation Prerequisites

Before installing SLES9 on your server, verify or collect the following information:

- DHCP server name
- MAC address on system label

How to Create a SLES9 or SLES9 SP1 Driver CD

Note – The Sun Installation Assistant automatically installs this driver. You can skip this procedure if you use that application. For details, see [“How to Use the Sun Installation Assistant” on page 19](#).

The LSISAS1064 SCSI controller on your Netra X4200 server is new to the market. The driver for that SCSI controller is not yet available on the SUSE Linux distribution, so Sun Microsystems has provided that driver on its Resource CD. You must install this

new driver. To install this driver on your server, you must create a SLES9 or SLES9 SP1-specific CD that contains an installation-ready image of the driver distributed on the Resource CD.

Note – SLES9 SP2 and later versions do not require additional Sun-supported drivers. Make sure to include the all of the drivers recommended by SUSE when installing the operating system. See [“SUSE Linux Installation and Configuration Documentation” on page 44](#) for more information on installing SLES 9 SP2 and later, and obtaining the correct drivers.

Before You Begin

Before you create a SLES9 or SLES9 SP1-specific Driver CD, you must have the following:

- Access to another Linux server or Linux workstation that can burn a CD.
- The name of the CD device on that Linux server or workstation that can create the SUSE-specific Driver CD. Type one of the following commands on the Linux server or workstation to determine the name of that CD device:

- If your Linux server or workstation uses IDE drives, type the following:

```
# cdrecord -scanbus dev=ATAPI
```

The system reports the names of matching devices:

```
scsibus0:
```

```
0,0,0 0) 'SAMSUNG' 'CDRW/DVD SM-352F' 'T900' Removable CD-ROM
```

```
0,1,0 1) *
```

```
0,2,0 2) *
```

In this example, the name of the CD drive would be ATAPI:0,0,0.

- If your Linux server or workstation uses SCSI drives, type the following:

```
# cdrecord -scanbus
```

The system reports the names of matching devices:

```
scsibus4:
```

```
4,0,0 0) 'SONY' 'DVD RW DRU-530A' '1.0' Removable CD-ROM
```

```
4,1,0 1) *
```

```
4,2,0 2) *
```

In this example, the name of the CD drive would be 4,0,0.

What to Do

To create a SLES9 or SLES9 SP1-specific Driver CD from the driver images distributed on your Resource CD, do the following.

Note – The instructions below show how to create a driver disk for SLES9. For SLES9 SP1 or substitute the SLES9 SP1 or driver disk iso.

1. Log in as root to the Linux server or workstation that has a CD recorder drive.
2. Insert the Resource CD into the local system CD drive.
3. Mount the CD. Type:

```
# mount /dev/cdrom /mnt/cdrom
```
4. Copy the driver image from the Resource CD to the local /tmp directory. Type:

```
# cp  
/mnt/cdrom/support/update_media/sles9/64/driverUpdate.iso  
/tmp
```
5. Unmount the Resource CD. Type:

```
# umount /mnt/cdrom
```
6. Remove the Resource CD.
7. Insert a blank CD into the CD recorder drive.
8. Create a SUSE-specific Driver CD from the local copy of the driver image. Type:

Note – Use the device name of the CD recorder obtained in the [“Before You Begin” on page 47](#).

```
# cdrecord -v -eject dev=ATAPI:0,0,0 /tmp/driverUpdate.iso
```

9. Remove the newly created CD from the CD recorder when the recording process is complete and the CD recorder ejects the CD.

Note – Use this SUSE-specific Driver CD when you install SLES9 Linux from the SUSE Distribution CDs.

How to Update the SLES9 Operating System

The operating system installation media shipping with SUSE Linux Enterprise Server 9 (SLES9) software might not contain the most up-to-date versions of the SUSE software. Since the media has been released, there have been many updates to the SLES9 software that you should install. This procedure describes how to update the SUSE operating system software on your Netra X4200 server after you have installed it from a PXE server or from Distribution CDs.

What to Do

To update your SLES9 operating system files, do the following.

1. **Log in as the superuser.**
2. **Type the following command to run the YaST Online Update:**
`# you`
3. **Follow the directions on the screen.**



Caution – Do not reboot your system after the YaST Online Update has completed its updates. You must update your SCSI driver before rebooting. See the topic that describes how to update the SLES9 SCSI driver.

Note – If a newer kernel is installed as part of the update, it might downgrade some drivers. Refer to the topic that describes how to update the SLES9 SCSI driver.

How to Update the SLES9 SCSI Driver

The kernel that is installed on your system might not load the optimal drivers that ensure proper system performance. Periodically Sun releases sets of drivers that have been optimized for your system and for your operating environment. This procedure describes how to locate and install the latest SUSE Linux Enterprise Server 9 (SLES9) SCSI driver distributed by Sun for your server. Sun distributes updated drivers for your server in two ways:

- On the Resource CD
- At Sun server product web sites:

<http://www.sun.com/servers/entry/x4100/downloads.jsp>

Note – SLES9 SP2 and later versions do not require additional Sun-supplied drivers. Make sure to include all of the drivers recommended by SUSE when installing the operating system. See [“SUSE Linux Installation and Configuration Documentation” on page 44](#) for more information on obtaining the correct drivers.

What to Do

To update the SLES9 SCSI driver distributed by Sun Microsystems on the Resource CD, do the following.

Note – For updating SLES9 Service Pack 1 (SP1), substitute SLES9 SP1 driver RPMs in the following example.

1. **Determine which kernel is currently installed on the system. Type:**

```
# rpm -qa | grep kernel
```

The following is an example of the output you might get:

```
kernel-smp-2.6.5-7.97
```

2. **Insert the Resource CD into the local DVD-ROM drive of your Netra X4200 server.**

3. **Mount the CD and locate the SCSI driver. Type:**

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

```
# ls /mnt/cdrom/support/drivers/sles9/64
```

4. **Determine which driver RPM corresponds to the kernel version as determined in Step 1.**

The file names of the RPM contain the kernel version and type. For example, for the kernel version in Step 1, the SCSI (mptlinux) drivers would be: `mptlinux-smp-3.02.18_2.6.5_7.97-sles9_1.x86_64.rpm`

Where `3.02.18_2.6.5_7.97` represents the kernel number that corresponds to `kernel-smp-2.6.5-7.97`.

5. **Type the following command to install the RPM files:**

```
# rpm -Uvh /mnt/cdrom/support/drivers/sles9/64/mptlinux-driver.rpm
```

Where `mptlinux-driver` refers to the appropriate SCSI driver RPM files, as determined in [Step 4](#).

6. **After successful installation, remove the CD and reboot the system. Type:**

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

How to Install SLES9 From Distribution Media

SUSE Linux Enterprise Server 9 (SLES9) provides an easy-to-use graphical interface for installing and configuring the operating system. Whether you are using Distribution CDs to install SUSE Linux from a locally attached CD/DVD drive or from a remote CD/DVD drive attached via KVMs, the installation procedure is fundamentally the same. The following procedure documents how to install SUSE Linux from a local CD/DVD drive.

Note – To install SLES9 SP2 or later versions, use the instructions in the documentation listed in the documentation in [“SUSE Linux Installation and Configuration Documentation”](#) on page 44.

Before You Begin

Installing SUSE software from CD consists of the following procedures:

1. **Create the Driver CD or use the Sun Installation Assistant CD.**

See [“How to Create a SLES9 or SLES9 SP1 Driver CD”](#) on page 46 or [“How to Use the Sun Installation Assistant”](#) on page 19.

2. **Install the SLES9 software.**

3. **Update the SLES9 software.**

See [“How to Update the SLES9 Operating System”](#) on page 49 and [“How to Update the SLES9 SCSI Driver”](#) on page 50.

Required Items

Installation from distribution media requires the following items:

- Netra X4200 server equipped with:
 - DVD-ROM drive

Note – The server ships with a DVD-ROM device. However, an external CD-ROM device can also be used.

- USB keyboard and mouse
- Monitor
- SUSE Linux Enterprise Server 9 media CD set
- Driver CD

You create this yourself. See [“How to Create a SLES9 or SLES9 SP1 Driver CD”](#) on page 46.

What to Do

To perform a basic installation from local CD/DVD drive, do the following.

1. **Insert the SUSE Linux Enterprise Server 9 CD 1 (or the DVD) into your local CD/DVD drive.**

Note – During the installation process, you will be prompted to swap Distribution CDs and to remove media before reboots. Follow the prompts.

2. **Power on the system.**

SUSE Linux boots from the Distribution CD. The graphical boot loader displays several boot options.

Note – You can change the video resolution of the installer by pressing the corresponding Function key on your keyboard displayed on the selection menu.

3. **Press F6 Driver Update so the installer will prompt you for the additional driver disk that you created when you followed the procedure that explained how to create a SLES9 or SLES9 SP1 Driver CD.**
4. **Select Installation from the driver boot menu.**
The SLES9 boot loader prompts you to insert a CD with updated drivers into the CD/DVD drive.
5. **Eject the SLES9 Distribution CD and insert the SLES9-specific Driver CD that you created from the Resource CD.**
6. **Click OK to begin installation of the updated drivers.**

Note – You might be prompted to specify the name of the CD/DVD drive containing the updated Driver CD from the list of available devices.

7. **Click OK once the SLES9 boot loader has completed installation of the updated drivers.**
The SLES9 boot loader installs the updated drivers and prompts you to replace the updated Driver CD with the SLES9 Distribution CD.
8. **Eject the updated Driver CD and insert the SLES9 Distribution CD.**
9. **Click Back from the SUSE boot loader menu to continue installing SUSE Linux from CD/DVD.**
10. **Follow the installation instructions provided with the SLES9 Installation Guide to complete installation of the system software.**

What Next

Proceed to the Help topics on updating the SUSE operating system and updating SLES9 drivers.

How to Upgrade From SLES9 to SLES9 SP1

Note – The Sun Installation Assistant will install SUSE Linux Enterprise Server 9 (SLES9) and SLES9 with Service Pack 1 (SP1) for you. You can skip this procedure if you use the Sun Installation Assistant. For details, see the topic that describes using the Sun Installation Assistant.

This procedure describes how to upgrade from SLES9 to SLES9 SP1.

Note – If the base version of SLES 9 is already installed on a system, SLES 9 SP2 cannot be installed until the base SLES 9 version is removed. To install SLES9 SP2, use the instructions in the documentation listed in the documentation in [“SUSE Linux Installation and Configuration Documentation” on page 44.](#)

Before You Begin

Before upgrading your system, you must gather the following:

- Netra X4200 Resource CD
- SLES9 SP1 disks
- System with SLES9 preinstalled

What to Do

Follow these steps to upgrade from SLES9 to SLES9 SP1.

1. **Perform the SLES9 installation described in the Related topic.**
2. **Log in as root.**
3. **Insert the Resource CD and copy the RPM driver files to the hard drive. Type:**

```
# mount /dev/cdrom /mnt/cdrom
# cp /mnt/cdrom/support/drivers/sles9/64/*rpm /tmp
# umount /mnt/cdrom
```
4. **Remove the Resource CD from the DVD-ROM drive.**

5. Insert the SLES9 SP1 update disk. Type:
`mount /dev/cdrecorder /mnt/cdrom`
6. Execute the command for YaST. Type:
`# yast`
7. Within YaST, select “software->change source of installation.”
8. Select Add and choose the Local Directory option. Type:
`/mnt/cdrom`
YaST will read the SLES9 SP1 update disk and add it to the source of installation list.
9. Select Finish.
10. Within YaST, select “software->system update.”
A summary of the updates will be displayed. At this point you can customize the update or do nothing and accept the default, which is recommended.
11. Select Next to continue.
Installation of the update will start and proceed automatically.
12. When the installation is complete, exit YaST and return to the command prompt.



Caution – Do not reboot your system after the YaST Update has completed its updates. You must update your SCSI drivers before rebooting.

13. Remove the SLES9 SP1 CD after you type the following command:
`umount /mnt/cdrom`
14. Determine whether you are using an SMP or default kernel. Type:
`# ls -l /boot/vmlinux`
This command will return the kernel that will be used at the next boot. You will see a kernel of type `-default` or `-smp`.
15. Install the updated storage driver.
 - In the previous step, if you see a file that has `-smp`, type the following:
`# rpm -Uvh /tmp/mplinux-smp-3.02.18_2.6.5_7.139-sles9_1.x86_64.rpm`
 - In the previous step, if you see a file that has `-default`, type the following:
`# rpm -Uvh /tmp/mplinux-default-3.02.18_2.6.5_7.139-sles9_1.x86_64.rpm`

16. Verify that mptlinux drivers for kernel version 2.6.5_7.139 were installed correctly. Type:

```
# rpm -qa | grep 139
```

You will get a list of RPMs. Verify that you see the mptlinux for kernel 2.6.5_7.139.

If you do not see the correct drivers, repeat Steps 11 through 13.

The update to SLES9 SP1 is now complete.

17. Reboot your system. Type:

```
# shutdown -r now
```

How to Install the SLES9 OS Using the Remote Console Application

This topic explains how to install the SLES9 OS on your Netra X4200 server using the ILOM Remote Console application.

Note – To install SLES9 SP2 or later versions, use the instructions in the documentation listed in [“SUSE Linux Installation and Configuration Documentation”](#) on page 44.

What to Do

Use the following procedure to install the SLES9 OS on your Netra X4200 server using the ILOM Remote Console application.

1. Locate your SLES9 installation CD/DVD or the equivalent iso images.

Note – The Remote Console application can redirect iso images.

2. Locate the appropriate DriverUpdate.iso file from the resource CD.

Check the directory /support/drivers/sles9/64 on the resource CD.

Note – This image can be transferred to a floppy disk or left on a hard disk drive because the Remote Console application can redirect a floppy image. If your hard drive is not displayed during the SLES9 installation process, verify that this driver is loaded.

3. Connect to the ILOM Service Processor web GUI.

See the topic that describes how to log in to and out of the Sun ILOM web GUI.

4. Choose Remote Control—Redirection to start the Remote Console application.

5. Start keyboard and mouse redirection.

See the topic that describes how to redirect keyboard, video, mouse, or storage devices.

6. Start CD/DVD redirection.

There are two choices of redirection type, either to redirect a CD-ROM drive using the Devices menu and to insert either installation CD 1 into the redirect CD-ROM drive, or to redirect CD-ROM images using the Devices menu. Select disk 1 iso image when prompted.

7. Power on the server using the ILOM web GUI.

See the topic that describes how to control power on the host server.

8. Press F2 to enter BIOS Setup and set the BIOS boot device to use AMI Virtual CDROM, or press F8 and select AMI Virtual CDROM when prompted.

9. When the SLES9 installation menu appears, use arrow keys to select Installation. Do not press ENTER.

Note – Make this selection quickly before another value (the default) executes.

10. (Optional) Press F2 to change the display resolution to 1024x768.

This is the default display resolution for the Remote Console application.

11. Press F6 to load the driver.

SLES9 will indicate that you must have a driver floppy/CD ready.

12. Press ENTER to continue with the installation.

SLES9 will prompt you for that driver disk.

13. Insert the driver disk into the redirected CD/DVD drive or (if using iso images) switch images by selecting CD-ROM Image from the Devices menu.

14. Select the CD/DVD image again and select driver iso image when prompted.

15. Select `sr0` and press ENTER when SLES9 prompts you for which device the driver disk is in.
16. Select OK when SLES9 finishes installing the driver.
17. Choose Back.
18. Switch back to the SLES9 installation CD-1 or iso image-1 when SLES9 prompts you to insert CD-1 into the drive.

Note – If SLES9 at this point indicates that there is not enough memory for graphical installation and that you must use text-based installation, use Tab keys to navigate options.

19. Proceed with SLES9 installation as usual.

SUSE Linux Enterprise Server 9 and PXE

About SUSE Linux Enterprise Server 9, SP1 and PXE

The network interface card (NIC) in your Netra X4200 server supports the Preboot Execution Environment (PXE) network booting protocol. The system BIOS and network interface BIOS on your server automatically query the network for a DHCP server. PXE is a powerful and convenient solution for setting up a number of Netra X4200 servers so their configuration is identical.

Task Map

To take advantage of SUSE Linux Enterprise Server 9 (SLES9), Service Pack 1 (SP1) and PXE on your network, you need to perform the following tasks.

Task	Related Help Topic
Set up your Linux network and PXE server.	Appendix A
Install SUSE Linux images on that PXE server.	“How to Create a SLES9 SP1 PXE Install Image on the PXE Server” on page 59
Configure your server to boot from or to install from a SLES9 or SLES9 SP1 image on a PXE server.	“How to Install SLES9 From a PXE Server” on page 63

How to Create a SLES9 SP1 PXE Install Image on the PXE Server

This procedure describes how to create a Preboot Execution Environment (PXE) install image on the same server that is your DHCP server, so that it will also act as your PXE server. The PXE server provides the operating system files to your PXE client.

Before You Begin

Before you install a SUSE Linux Enterprise Server 9 (SLES9) image on your PXE server, you must configure your Linux network to support PXE images. See [Appendix A](#) for instructions on how to preconfigure your network to support PXE installations of SLES9.

Required Items

The PXE installation procedure requires the following items:

- The DHCP server that you set up when you preconfigured your network to support PXE installation, equipped with a CD-ROM or DVD-ROM drive
- SUSE Linux Enterprise Server 9 media CD set
- SUSE Linux Enterprise Server 9 SP1 media CD set
- Netra X4200 Resource CD

What to Do

Follow these steps to create a PXE install image on the PXE server.

Note – Before you start this procedure, verify that your network has been configured as described in the topic about preconfiguring your network to support PXE installation.

1. Insert the Resource CD into the DVD-ROM drive.
2. Copy the PXE support files from the Resource CD into the `/tmp` directory by typing the following commands:

```
# mount /dev/cdrom /mnt/cdrom
# cp -a /mnt/cdrom/support/pxeboot/sles9-pxefiles.tar.gz /tmp/
# cd /tmp
# gunzip sles9-pxefiles.tar.gz
# tar xvf sles9-pxefiles.tar
# umount /mnt/cdrom
```
3. Set up the directory structure that will hold the SUSE Linux Enterprise Server 9 software. Type:

Note – You can use a different target directory than the `/home/pxeboot/sles9/` directory shown. The examples in this procedure use this directory.

- ```
mkdir -p /home/pxeboot/sles9/sles9/CD1
mkdir -p /home/pxeboot/sles9/core9/CD{1,2,3,4,5}
```
4. Insert SUSE Linux Enterprise Server 9 CD 1 into your server and copy its contents to your PXE server. Type:

```
mount /dev/cdrom /mnt/cdrom
cp -a /mnt/cdrom/* /home/pxeboot/sles9/sles9/CD1
```
  5. Remove SUSE Linux Enterprise Server 9 CD 1 from the server after you type the following command:

```
umount /mnt/cdrom
```
  6. Insert SUSE Linux Enterprise Server 9 CD 2 into your server and copy its contents to your PXE server. Type:

```
mount /dev/cdrom /mnt/cdrom
cp -a /mnt/cdrom/* /home/pxeboot/sles9/core9/CD1
```

7. Remove SUSE Linux Enterprise Server 9 CD 2 from the server after you type the following command:  

```
umount /mnt/cdrom
```
8. Insert SUSE Linux Enterprise Server 9 CD 3 into your server and copy its contents to your PXE server. Type:  

```
mount /dev/cdrom /mnt/cdrom
cp -a /mnt/cdrom/* /home/pxeboot/sles9/core9/CD2
```
9. Remove SUSE Linux Enterprise Server 9 CD 3 from the server after you type the following command:  

```
umount /mnt/cdrom
```
10. Insert SUSE Linux Enterprise Server 9 CD 4 into your server and copy its contents to your PXE server. Type:  

```
mount /dev/cdrom /mnt/cdrom
cp -a /mnt/cdrom/* /home/pxeboot/sles9/core9/CD3
```
11. Remove SUSE Linux Enterprise Server 9 CD 4 from the server after you type the following command:  

```
umount /mnt/cdrom
```
12. Insert SUSE Linux Enterprise Server 9 CD 5 into your server and copy its contents to your PXE server. Type:  

```
mount /dev/cdrom /mnt/cdrom
cp -a /mnt/cdrom/* /home/pxeboot/sles9/core9/CD4
```
13. Remove SUSE Linux Enterprise Server 9 CD 5 from the server after you type the following command:  

```
umount /mnt/cdrom
```
14. Insert SUSE Linux Enterprise Server 9 CD 6 into your server and copy its contents to your PXE server. Type:  

```
mount /dev/cdrom /mnt/cdrom
cp -a /mnt/cdrom/* /home/pxeboot/sles9/core9/CD5
```
15. Remove SUSE Linux Enterprise Server 9 CD 6 from the server after you type the following command:  

```
umount /mnt/cdrom
```

16. Insert the SUSE Linux Enterprise Server 9 SP $x$  CD 1 into your server and copy its contents to your PXE server. Type:

```
mount /dev/cdrom /mnt/cdrom
cp -a /mnt/cdrom/* /home/pxeboot/sles9/SP x /CD1
```

Replace  $x$  with 1 for SP1.

17. Remove the SUSE Linux Enterprise Server 9 SP $x$  CD 1 from the server after you type the following command:

```
umount /mnt/cdrom
```

Replace  $x$  with 1 for SP1.

18. Insert SUSE Linux Enterprise Server 9 SP $x$  CD 2 into your server and copy its contents to your PXE server. Type:

```
mount /dev/cdrom /mnt/cdrom
cp -a /mnt/cdrom/* /home/pxeboot/sles9/SP x /CD2
```

Replace  $x$  with 1 for SP1.

19. Remove SUSE Linux Enterprise Server 9 SP $x$  CD 2 from the server after you type the following command:

```
umount /mnt/cdrom
```

Replace  $x$  with 1 for SP1.

20. Set up the boot environment for the client system to boot from. Type:

```
cd /home/pxeboot/sles9
ln -s sles9/CD1/boot .
```

21. Set up the content and media directories. Type:

```
ln -s sles9/CD1/content .
ln -s sles9/CD1/media.1 .
ln -s sles9/CD1/control.xml .
```

22. Set up the appropriate content and instorder files. Type:

```
mkdir yast
cp /tmp/sles9-pxefiles/order yast/
cp /tmp/sles9-pxefiles/instorder yast/
```

23. Copy the `autoyast.xml` file from the `/tmp/sles9-pxefiles/` directory to the root of the PXE image. Type:

```
cp /tmp/sles9-pxefiles/autoyast.xml /home/pxeboot/sles9/
```

24. Copy the updated `initrd` file from the `/tmp/sles9-pxefiles/` directory to the root of the PXE image. Type:  

```
cp /tmp/sles9-pxefiles/initrd /home/pxeboot/sles9/
```
25. Create a directory to hold the updated Ethernet and SCSI driver RPMs. Type:  

```
mkdir /home/pxeboot/sles9/rpms
```
26. Copy the Ethernet and SCSI RPMs into this new directory. Type:  

```
cp /tmp/sles9-pxefiles/*.x86_64.rpm
/home/pxeboot/sles9/rpms/
```
27. On your PXE server, modify and save the file  
`/home/pxeboot/pxelinux.cfg/default` to add the following entry to it:

---

**Note** – Type the text block from `append` through `autoyast.xml` as one continuous line with no returns.

---

```
default sles9
label sles9
kernel sles9/boot/loader/linux
append textmode=1 initrd=sles9/initrd install=
nfs://n.n.n.n/home/pxeboot/sles9 insmod = mptbase insmod=
mptscsih
autoyast=nfs://n.n.n.n/home/pxeboot/sles9/autoyast.xml
```

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.

---

## How to Install SLES9 From a PXE Server

This procedure describes how to configure your Netra X4200 server to initiate the request to download the boot image file from the PXE/DHCP server and how to install the SUSE Linux Enterprise Server 9 (SLES9) boot image onto your Netra X4200 server.

## Before You Begin

Before you configure your server to install SUSE Linux from a PXE server, you need to have done the following:

- Configured your Linux network to support a PXE server. See the topic that describes how to preconfigure your network to support PXE installations of SLES9.
- Installed a SLES9 image on that Linux PXE server. See the topic that describes how to create a PXE install image on the PXE server.

## What to Do

To configure your server to install a SLES9 image from a PXE server, do the following.

1. **Connect the PXE client to the same network as the PXE server, and power on the PXE client.**

The PXE client is the target Netra X4200 server to which you are installing SUSE Linux Enterprise Server 9 software.

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

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

3. **Press the F8 key to begin the downloading of the PXE boot image.**

4. **When you are prompted at the boot: prompt, type in the label you gave the image when you installed a SUSE image on the PXE server.**

The SLES9 install image downloads onto the target Netra X4200 server.

5. **To configure the Linux operating system for your server, refer to the manual that is shipped with your SLES9 media kit.**

6. **Update the operating system files.**

See the topic that describes how to update the SUSE Linux operating system.

7. **Update system driver files.**

See the topic that describes how to update the SCSI drivers.

## Preconfiguring Your Network to Support PXE Installation

---

This appendix contains procedures for preconfiguring your network prior to performing a PXE installation.

Follow the procedures in the section appropriate for your operating system:

- [“How to Preconfigure Your Network to Support PXE Installation of Red Hat Enterprise Linux” on page 65.](#)
- [“How to Preconfigure Your Network to Support PXE Installation of SUSE Enterprise Linux Server” on page 72.](#)

---

## How to Preconfigure Your Network to Support PXE Installation of Red Hat Enterprise Linux

These procedures describe how to preconfigure your network running Red Hat Enterprise Linux to support PXE installation of Red Hat Enterprise Linux software on your server. These procedures assume that you already have a bootable server that is running a version of the Red Hat Enterprise Linux operating system.

---

**Note** – Some of the following procedures might not be necessary if you confirm that the server packages are already in place and are configured.

---

Preconfiguring your network for PXE installation involves the following procedures:

- Copying Files From the Resource CD
- Configuring a DHCP Server
- Installing Portmap
- Configuring the TFTP Service
- Installing and Configuring the neopxe Boot Server Daemon
- Configuring the NFS Service
- Disabling the Firewall

## Required Items

Preconfiguring your network for PXE installation requires the following items:

- Red Hat Enterprise Linux server equipped with:
  - DVD drive
  - USB keyboard
  - Monitor
- Red Hat Enterprise Linux media set
- Resource CD

## Copying Files From the Resource CD

This section describes how to copy the PXE support files, which are required for PXE configurations, from the Resource CD. You can also download the driver RPMs from the Netra X4200 server. The download links are at:

<http://www.sun.com/servers/>

1. **Insert the Resource CD into the DHCP/PXE server.**
2. **Create a temporary directory to copy the PXE support files in to. Type:**  
**# `mkdir /tmp`**
3. **Type the following commands to copy the files to the `/tmp/` directory:**

---

**Note** – The compressed tar file that is used in this step depends on which version of Red Hat Enterprise Linux you are preconfiguring. The remainder of the instructions will assume that Red Hat Enterprise Linux 3 32-bit is being used. Modify the example based upon the version you are using. For Red Hat Enterprise Linux 3 32-bit, use `rhel3_32-pxefiles.tar.gz`. For Red Hat Enterprise Linux 3 64-bit, use `rhel3_64-pxefiles.tar.gz`. For Red Hat Enterprise Linux 4 64-bit, use `rhel4_64-pxefiles.tar.gz`.

---

```
#mount /dev/cdrom /mnt/cdrom
cp /mnt/cdrom/support/pxeboot/rhel3_32-pxefiles.tar.gz
/tmp/
```

4. **Uncompress and extract the contents of the tar file into the `/tmp/` directory.**  
Type:

```
cd /tmp
tar -zxvf rhel3_32-pxefiles.tar.gz
```

When you extract the file, a directory with all required files is created at `/tmp/rhel3_32-pxefiles/`

## Configuring a DHCP Server

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

1. **Power on the server and log in as superuser.**
2. **Determine whether the DHCP server package is already installed on the server.** Type:

```
rpm -qa | grep dhcp-
```
3. **If the DHCP server package is not listed, insert the Red Hat Enterprise Linux CD 1 and install the DHCP server.** Type:

---

**Note** – For Red Hat Enterprise Linux 4, insert CD 5.

---

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

4. **Remove the CD from the server after you type the following command:**

```
umount /mnt/cdrom
```

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

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"; }
```

---

**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/rhel3\_32-pxefiles directory.

---

6. **Start the DHCP service. Type:**

```
service dhcpd start
```

7. **Configure the server to always start DHCP. Type:**

```
chkconfig dhcpd on
```

## Installing Portmap

Complete the following steps on your DHCP server.

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

```
rpm -qa | grep portmap
```

2. **If portmap is not listed, insert the Red Hat Enterprise Linux CD 2 and install the portmap service with the following commands:**

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

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

3. **Remove the CD from the server after you type the following command:**

```
umount /mnt/cdrom
```

## Configuring the TFTP Service

Complete the following steps 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 the TFTP server package is not listed, insert the Red Hat Enterprise Linux CD 1 and install the TFTP service with the following commands:

---

**Note** – For Red Hat Enterprise Linux 4, insert CD 4.

---

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

3. Remove the CD from the server after you type the following command:

```
umount /mnt/cdrom
```

4. 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`.

5. Restart the `inetd` server. Type:

```
service xinetd restart
```

## Installing and Configuring 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.

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

```
cd /tmp/rhel3_32-pxefiles/neopxe-0.2.0
./configure
make
make install
```

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. Type:

```
mkdir /home/pxeboot
cp /tmp/rhel3_32-pxefiles/pxelinux.0 /home/pxeboot
```

4. Configure the PXE Linux image. Type:

```
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/rhel3_32-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
```

Where:

- *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.

For example:

```
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. Type:

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

# Configuring the NFS Service

Complete the following steps on your DHCP server.

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

```
rpm -qa | grep nfs-utils
```
2. If the NFS service package is not listed, insert the Red Hat Enterprise Linux CD 1 and install the NFS service with the following commands:  

```
mount /dev/cdrom /mnt/cdrom
rpm -Uvh /mnt/cdrom/RedHat/RPMS/nfs-utils-*
```
3. Remove the CD from the server after you type the following command:  

```
umount /mnt/cdrom
```
4. Edit and save the `/etc/exports` file to add the following line to it:  

```
/home/pxeboot *(no_root_squash,no_subtree_check,insecure)
```
5. Start the NFS service. Type:  

```
service nfs start
```
6. Configure the server to always start the NFS service. Type:  

```
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.

---

## Disabling the Firewall

If you enabled firewall security when you installed Red Hat Enterprise Linux software on the system that will be your PXE server, complete the following steps to disable the firewall so that PXE clients can download from the server.

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.

---

---

**Note** – When you disable the firewall protection on the system that is 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.

---

## Installing Red Hat Enterprise Linux From the Network

When you have completed all the previous configuration steps, do the following.

1. Reboot the PXE/DHCP server.
2. Refer to [“How to Create a PXE Install Image on the PXE Server”](#) on page 38.

---

## How to Preconfigure Your Network to Support PXE Installation of SUSE Enterprise Linux Server

These procedures describe how to preconfigure your network running SUSE Linux Enterprise Server 9 (SLES9) software to support PXE installation of SUSE Linux software on your Netra X4200 server. These procedures assume that you already have a bootable server that is running a version of the SLES9 operating system.

---

**Note** – Some of the following procedures might not be necessary if you confirm that the server packages are already in place and are configured. You might be prompted for a UnitedLinux CD.

---

Preconfiguring your network for PXE installation involves the following procedures:

- Copying Files From the Netra X4200 Resource CD
- Configuring a DHCP Server
- Installing Portmap
- Configuring the TFTP Service
- Installing and Configuring the neopxe Boot Server Daemon
- Configuring the NFS Service
- Disabling the Firewall

## Required Items

Preconfiguring your network for PXE installation requires the following items:

- SUSE Linux Enterprise Server 9 server equipped with:
  - CD/DVD drive
  - USB keyboard
  - Monitor (optional)
- SUSE Linux Enterprise Server 9 media set
- Netra X4200 Resource CD

## Copying Files From the Resource CD

This section describes how to copy the PXE support files, which are required for PXE configurations, from the Resource CD. You can also download the driver RPMs from the Netra X4200 web site. The downloads links are at:

<http://www.sun.com/servers/entry/x4100/downloads.jsp>

---

**Note** – This procedure provides instructions for copying files from the Resource CD on SLES9. However, these instructions are also valid for SLES9 with Service Pack (SP1). For SP1, substitute SLES9SP1 where SLES9 appears in the commands.

---

1. **Insert the Resource CD into the DHCP/PXE server.**
2. **Create a temporary directory to copy the PXE support files to. Type:**

```
mkdir /tmp
```

3. Type the following commands to copy the files to the `/tmp/` directory:  

```
mount /dev/cdrom /mnt/cdrom
cp /mnt/cdrom/support/pxeboot/sles9-pxefiles.tar.gz /tmp/
```
4. Uncompress and extract the contents of the tar file into the `/tmp/` directory. Type:  

```
tar -zxf /tmp/sles9-pxefiles.tar.gz
```

When you extract the file, a directory with all required files is created at `/tmp/sles9-pxefiles/`
5. Remove the Resource CD from the server after you type the following command:  

```
umount /mnt/cdrom
```

## Configuring a DHCP Server

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

1. Power on the server and log in as superuser.
2. Determine whether the DHCP server package is already installed on the server. Type:  

```
rpm -qa | grep dhcp-server
```
3. If the DHCP server package is not listed, install the package using YaST. Type:  

```
yast -i dhcp-server
```
4. Set up your DHCP configuration file (for example, `/etc/dhcpd.conf`) so that only PXEClient requests receive PXEClient responses.  
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"; }
```

---

**Note** – You can start with a sample DHCP configuration file in the `/tmp/sles9-pxefiles` directory.

---

5. **Edit the `/etc/sysconfig/dhcpd` file and verify that the `DHCPD_INTERFACE` is set to the interface that is connected to the network you are planning to run the PXE server.**

For example, if you are using Ethernet interface 0, the `DHCPD_INTERFACE` variable would be set as follows:

```
DHCPD_INTERFACE="eth0"
```

6. **Start the DHCP service. Type:**  

```
/etc/init.d/dhcpd start
```
7. **Configure the server to always start DHCP. Type:**  

```
chkconfig dhcpd on
```

## Installing Portmap

Complete the following steps on your DHCP server.

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 the package using YaST. Type:**  

```
yast -i portmap
```

## Configuring the TFTP Service

Complete the following steps on your DHCP server.

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

```
rpm -qa | grep tftp
```
2. **If the TFTP server package is not listed, install the package using YaST. Type:**  

```
yast -i tftp
```
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. Type:**  

```
/etc/init.d/xinetd restart
```

# Installing and Configuring 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.

1. If a compiler is not installed on the server, use YaST to install gcc with the following commands:

```
yast -i gcc
yast -i make
```

2. Install the neopxe boot server daemon onto your system that is your DHCP server. Type:

```
cd /tmp/sles9-pxefiles/neopxe-0.2.0
./configure
make
make install
```

3. 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/boot.local
```

4. Copy the PXE Linux image from the `/tmp/` directory. Type:

```
mkdir /home/pxeboot
cp /tmp/sles9-pxefiles/pxelinux.0 /home/pxeboot
```

5. Configure the PXE Linux image. Type:

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

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

- If the `/usr/local/etc/` directory does not exist, create it with the following command:

```
mkdir /usr/local/etc
```

- If you need to create the `neopxe.conf` file, you can copy it from the `/tmp/sles9-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
```

Where:

- `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.

For example:

```
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.

---

#### 7. Start the neopxe daemon. Type:

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

## Configuring the NFS Service

Complete the following steps on your DHCP server.

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

Type:

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

2. If the NFS service package is not listed, install the package using YaST. Type:

```
yast -i nfs-utils
```

3. Edit and save the `/etc/exports` file to add the following line to it:

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

4. Start the NFS service. Type:

```
/etc/init.d/nfsserver start
```

5. Configure the server to always start the NFS service. Type:

```
chkconfig nfslock on
chkconfig nfsserver 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.

---

## Disabling the Firewall

If a firewall is enabled on your PXE/DHCP server, you must disable it before attempting to install a PXE image onto the client system.

---

**Note** – When you disable the firewall protection on the system that is 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.

---

1. Execute the YaST command. Type:

```
yast
```

2. Choose Security & Users.

3. Choose Firewall.

- Choose none to disable the firewall for all network interfaces.
- Choose specific interfaces to enable the firewall on those only.

# Installing SLES9 and SLES9 SP1 From the Network

When you have completed all the previous configuration steps, do the following.

1. **Reboot the PXE/DHCP server.**
2. **Refer to the [“How to Create a SLES9 SP1 PXE Install Image on the PXE Server”](#) on page 59.**



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