Sun Fire™ X4600 and Sun Fire X4600 M2
Servers Linux, ESX, and Solaris™ OS
Installation Guide

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Contents

Preface

This guide contains instructions for installing Solaris™, Linux and VMware® ESX Server operating systems onto the Sun Fire™ X4600 and Sun Fire X4600 M2 servers.

For information on installing Windows operating systems, see the *Sun Fire X4600 Windows OS Installation Guide* or the *Sun Fire X4600 M2 Servers Windows OS Installation Guide.*

For product updates that you can download for the Sun Fire X4600 or Sun Fire X4600 M2 servers, please visit the following Web site:

http://www.sun.com/servers/x64/x4600

Select the Support tab and then review the section on Downloads.

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

Related Documentation

For a description of the document set for the Sun Fire X4600 server, see the Where To Find Documentation sheet that is packed with your system and also posted at the product's documentation site. Go to the following URL, then navigate to your product.

http://docs.sun.com

For documentation pertaining to the Sun Fire X4600 and the Sun Fire X4600 M2 server, go to the following:

http://docs.sun.com/app/docs/prod/sf.x4600m2

http://docs.sun.com/app/docs/prod/sf.x4600

Translated versions of some of these documents are available on the web site described above in French, Simplified Chinese, Traditional Chinese, Korean, and Japanese. English documentation is revised more frequently and might be more up-to-date than the translated documentation.

For all Sun hardware documentation, go to the following URL:

http://docs.sun.com/app/docs/prod/

For Solaris and other software documentation, go to the following URL:

http://docs.sun.com

Using UNIX Commands

This document does 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

Third-Party Web Sites

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Typographic Conventions

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

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

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http://www.sun.com/hwdocs/feedback

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

Overview

This book applies to the Sun Fire X4600 and Sun Fire X4600 M2 servers.

About Installing an Operating System on a Sun Fire X4600 Series Server

There are several supported operating system (OS) distributions and several ways to install each. This section is intended only as a general guide that refers you to detailed procedures. For a current list of supported operating systems for the Sun Fire X4600 Series server, refer to the following web site:

http://www.sun.com/servers/x64/x4600/os.jsp

This document contains instructions for installing supported Solaris, Linux, and VMware ESX 3 operating systems.

Prerequisites

You must complete the following 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™ Operating System only) Install and set up the software on the Tools and Drivers CD.
- 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 on your Sun Fire X4600/X4600 M2 server?

For a current list of supported operating systems for the Sun Fire X4600 Series server, refer to the following web site:

http://www.sun.com/servers/x64/x4600/os.jsp

■ Are you configuring the server for diskless booting?

Operating System	Relevant Documentation on Diskless Configurations
Solaris 10	See "About Solaris OS Installation" on page 7 or *Solaris 10 Installation Guide: Network-Based Installations* at http://docs.sun.com/app/docs/doc/817-5504.
Red Hat Linux	See "About the RHEL Installation" on page 13 or Red Hat Enterprise Linux documentation at https://www.redhat.com/docs/manuals/enterprise/
SUSE Linux	See "About SLES 9 Installation" on page 36, or "About SLES 10 Installation" on page 42, or SUSE LINUX Enterprise Server 9 or 10 documentation at http://www.novell.com/documentation/suse.html

■ Which installation method are you going to use?

Operating System Installation Method	Solaris	Red Hat	SUSE	VMware
Assisted installation using Sun Installation Assistant (this method provides an easy-to-use process for locally, or remotely, installing your operating system), described in Chapter 2.	NO	YES	YES	NO
Manual installation using one of these methods: • Install from distribution media (CD/DVD) locally at the server • Install from distribution media (CD/DVD) remotely via KVMS • Install from network using PXE	YES	YES	YES	YES

Note – The Sun Fire X4600 server support industry-standard KVMS with devices connected to it through 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 with the ILOM Remote Console application, see your server's ILOM documentation (note that there are multiple versions of ILOM, be sure to refer to the guide that matches your server's installed version of ILOM).

- Do you need to update the operating system?

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

- Do you need to learn about additional server and operating system-specific utilities? For details on supported utilities, refer to your server's *x64 Utilities Reference Manual* available on the web at `http://docs.sun.com`.

What to Do Next

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

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 are included as PDF files on the media. In many cases, you can download the latest versions of such documents from the web site of the OS vendor.

CHAPTER **2**

Using the Sun Installation Assistant

This chapter describes operating system installation options using the Sun Installation Assistant (SIA). You can choose to install a Linux or Windows operating system on your Sun x64 architecture server using SIA.

About the Sun Installation Assistant (SIA)

The Sun Installation Assistant (SIA) is a tool that assists in the installation of supported Linux and Microsoft Windows operating systems (OS). With SIA, you can install the OS, the appropriate drivers, and if necessary, additional system software by simply booting the SIA media and following the prompts.

SIA does not automate the OS installation process. You still need to follow the vendor installation procedures for your OS, but you do not have to inventory your system hardware, search out and download device drivers most recently supported by Sun, nor will you need to create a separate driver CD. SIA does that work for you.

Features and Benefits

SIA provides the following features and benefits:

- Bootable media from either a local drive attached to the server (CD/DVD or USB flash drive), a remote redirected network drive (virtual CDROM or ISO image), or a PXE network boot.
- Identification of your platform hardware and installed option cards.

- Identification of the operating system media and the supported device drivers that are required for your system.

  Note that SIA does not provide the operating system software. The operating system software must be provided by the customer during the SIA installation.

- Assisted operating system installation on platform-supported bootable media (hard disk, compact flash)

- Installation (if required) of the most recent OS-level device driver(s) supported by Sun, and system software required for your system.

- Option to upgrade server BIOS and Service Processor (SP) firmware on supported servers.

- Script-based unattended SIA installation of a supported Linux OS from a Linux-based PXE server.

- Intuitive error messages if an error or unexpected condition occurs during the installation.

- Event log file readily available, if required, at the /root for Linux, or C:\ for Windows of the newly installed server.

How to Get Started Using SIA

The following information will help you get started using SIA.

- For a complete list of supported Sun server platforms, refer to the SIA information page at:

  http://www.sun.com/systemmanagement/sia.jsp

- The Sun Installation Assistant CD ships with most Sun servers that support the x64 processor architecture. You may also download the latest ISO CD image of the Sun Installation Assistant from the Sun Download page at:

  http://www.sun.com/download/index.jsp

  Updates to the SIA program can be obtained easily during the SIA installation by using the Remote Update option in the SIA.

- The *Sun Installation Assistant for Windows and Linux User's Guide* (820-3357) describes using SIA with your server and may be downloaded from the Sun documentation web site at:

  http://docs.sun.com

Installing Solaris 10

This chapter applies to the Sun Fire X4600 and X4600 M2 servers, unless otherwise noted.

About Solaris OS Installation

This chapter describes some of what you need to know to install the Solaris Operating System (Solaris OS) for x86/x64 platforms on a Sun Fire X4600 server. It points you to the Solaris OS documentation for more detailed information.

This chapter contains instructions for installing the Solaris 10 operating system from the network or media. If you are configuring the preinstalled Solaris 10 5/08 operating system that is shipped with the server, refer to the *Sun Fire X4600 and Sun Fire X4600 M2 Server Installation Guide* (819-4341).

Note – This chapter is intended for experienced system administrators who are familiar with using the Solaris OS on an x86/x64 platform.

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`.

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 Sun Fire X4600 server is Solaris 10 5/08 for the x86/x64 family of 64-bit and 32-bit AMD processors.

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/x64 platforms. For a Sun Fire X4600 server, use the media for x86 platforms.

The Sun Fire X4600 server supports the following Solaris OS installation methods:

- Install on one server from DVD or CD-ROM media interactively with the Solaris installation program.
- Install on 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
  - Installation using a serial console
- Boot from the preinstalled Solaris 10 5/08 OS image on the hard drive (refer to the *Sun Fire X4600 Server Installation Guide,* 819-4341).

The Solaris Installation Program on the Solaris 10 Operating System DVD or CD 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 3-1 to identify the tasks you need to perform to install the Solaris OS.

TABLE 3-1 Task Map for Initial Solaris OS Installation

Task	Description	Instructions
Set up your server.	Install your server hardware and configure the service processor.	*Sun Fire X4600 Server Installation Guide (819-4341)*
Review the *Sun Fire X4600 Server Product Notes.*	The Product Notes contain late-breaking news about the Solaris OS software and patches.	*Sun Fire X4600 Server Product Notes (819-4347)*
Review the system requirements.	Verify that your server meets the minimum system requirements.	TABLE 3-2

TABLE 3-1   Task Map for Initial Solaris OS Installation *(Continued)*

Task	Description	Instructions
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 7.
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 10.
Install the Solaris OS.	Choose an installation method and locate the installation instructions.	TABLE 3-3.

TABLE 3-2   Minimum System Requirements

Requirement	Description
Hardware requirements	The server hardware and the initial service processor configuration (if used) must be installed before you install the Solaris OS.
Minimum Solaris OS	Solaris 10 5/08 for x86/x64 platforms or later compatible versions.
Memory to install	1 Gbytes is the recommended size. 256 Mbytes is the minimum size.
Disk space	12 Gbytes or greater.
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 3-3   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.	Follow the instructions for x86 installation in *Solaris 10 Installation Guide: Basic Installations* at `http://docs.sun.com/app/docs/doc/817-0544`
Install from the network by using PXE.	You need to use PXE 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.	Follow the instructions for an x86 PXE installation, in *Solaris 10 Installation Guide: Network-Based Installations* at `http://docs.sun.com/app/docs/doc/817-5504`
	Use a serial console to install the Solaris OS in a PXE-based network installation.	Follow the instructions for an x86 PXE installation in *Solaris 10 Installation Guide: Network-Based Installations* at `http://docs.sun.com/app/docs/doc/817-5504`
	Boot the Solaris OS on a Sun Fire X4600 server without a hard drive. Use this method with a PXE-based network installation.	Follow the instructions for an x86 PXE installation in *Solaris 10 Installation Guide: Network-Based Installations* at `http://docs.sun.com/app/docs/doc/817-5504`
Boot from the preinstalled image.	Depending on your configuration, a Solaris OS image may be preinstalled on a hard drive.	*Sun Fire X4600 Server Installation Guide* (819-4341)

Note – The Solaris OS provides additional programs for installation, such as booting over a wide area network (WAN), but the Sun Fire X4600 server supports only those methods listed in this document.

Where to Find Solaris 10 Information

Solaris 10 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. Make sure to follow instructions specific to x86 systems, where specified.

- 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
- See the *Sun Fire X4600 Server Product Notes* for patch and other late-breaking information. Patches and instructions are available from the SunSolve Patch Portal at
  http://www.sunsolve.sun.com

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

Installing Red Hat Enterprise Linux

This chapter applies to the Sun Fire X4600 servers and to Sun Fire X4600 M2 servers and describes installing Red Hat Enterprise Linux (RHEL). This chapter contains the following sections:

Note – If you want to make the operating system boot drive part of a mirrored RAID configuration, the recommended procedure is to configure the RAID volume before you install the OS. To configure RAID volumes using your the server's internal disk drives, see Appendix A.

About the RHEL 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 Sun Fire X4600 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

Important RHEL Limitations

Note that some versions of Red Hat have limitations:

- Installing RHEL3 on a Sun Fire X4600 server with more than eight logical CPUs is not supported. Red Hat defines a logical CPU as any schedulable entity. This means that every core/thread in a multi-core/thread processor is a logical CPU.
- If you install RHEL 4 U3 on a server with eight or less logical CPUs, then later upgrade the server to more than eight logical CPUs, you must use the `largesmp` kernel package for 64-bit platforms. The `largesmp` kernel is included with RHEL 4 U3 and later versions.
- Some installations of RHEL 4 hang. To resolve the issue, configure the BIOS so that the USB ports use only USB 1.1.

Red Hat Installation and Administration Documentation

Before you install the Red Hat Enterprise Linux software on a Sun Fire X4600 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/
Red Hat Enterprise Linux Quick Installation Guide	Brief printed guide containing useful information to assist you during the installation of Red Hat Enterprise Linux.	Included with the Red Hat Enterprise Linux distribution media
Red Hat Enterprise Linux Installation Guide	Full version of the printed *Quick Installation Guide*.	Included on the Red Hat Documentation CD, and available for download from http://www.redhat.com/docs/
Red Hat Enterprise Linux Introduction to System Administration	Introductory information for Red Hat Enterprise Linux system administrators.	Available for download from http://www.redhat.com/docs/manuals/enterprise/

Document	Description	Where to Find
Red Hat Enterprise Linux System Administration Guide	Information on customizing the Red Hat Enterprise Linux software.	Available for download from `http://www.redhat.com/docs/manuals/enterprise/`
System Administration for Diskless Booting	Information on configuring your server and Red Hat Linux for diskless booting.	Available for download as the *Red Hat Enterprise Linux Installation Guide for the x86, Itanium™, and AMD64 Architectures* at `http://www.redhat.com/docs/manuals/enterprise/`
Red Hat Enterprise Linux Security Guide	Guide for securing the Red Hat Enterprise Linux software.	Available for download from `http://www.redhat.com/docs/manuals/enterprise/`

Task Map for Red Hat Enterprise Linux Installation

Consult the following table to determine which sections in this document are relevant to the installation tasks that you want to perform.

Installation Task	Relevant Section
Collect information about your system and network.	"Preparing to Install RHEL" on page 15.
Install Red Hat Enterprise Linux from distribution media using a local or network-attached CD or DVD drive.	"Installing RHEL From Distribution Media" on page 16.
Update Red Hat Enterprise Linux operating system files.	"Updating the Red Hat Enterprise Linux Operating System" on page 32.

Preparing to Install RHEL

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.

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 patches and packages. See "Updating the Red Hat Enterprise Linux Operating System" on page 32 for details.

Obtaining Updated Media Kits

To install Red Hat Enterprise Linux on the Sun Fire X4600 server, you will need to obtain the Red Hat Enterprise Linux 4 Update Media Kit.

To obtain this kit, log into `http://rhn.redhat.com.`

You will need your enterprise account information to download the updated ISO images. An enterprise account is an account that the customer creates to access Red Hat's support network after purchasing the Red Hat Enterprise Linux media kit.

After you obtain the updated `.iso` images, write them to CDs and use them in place of the media you obtained with your Red Hat Enterprise Linux 4 box. This updated media contains important drivers that are required by the Sun Fire X4600 server.

Installing RHEL 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. At the boot prompt, you can select the interface that you want to use. Both options are shown later in this section.

Before You Begin

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

1. Download the updated media kit from `http://rhn.redhat.com`.

   See "Obtaining Updated Media Kits" on page 16.

2. Install the Red Hat Enterprise Linux software.

3. Update the Red Hat Enterprise Linux software.

See .

Required Items

Installation from distribution media requires the following items:

- Sun Fire X4600 server equipped with:
  - DVD-ROM drive
  - USB keyboard and mouse
  - Monitor
- Red Hat Enterprise Linux media CD set.

▼ To Install From Local Media

1. **Turn on the system.**

2. **Insert the Red Hat Enterprise Linux Distribution CD 1 into the local DVD/CD drive on the Sun Fire X4600 server.**

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

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

   - For text mode, type the following command:

     ```
     boot: linux text
     ```

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

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

5. **Proceed to** "Updating the Red Hat Enterprise Linux Operating System" on page 32**.**

Installing the RHEL Using the Remote Console Application

This section explains how to install the Red Hat Enterprise Linux operating system on your server using the Integrated Lights Out Manager (ILOM) Remote Console application.

Use the following procedure to install the Red Hat Enterprise Linux 4 Update 3 or later OS using the ILOM Remote Console application.

Note – Read the *Integrated Lights Out Manager (ILOM) documentation* before completing the following steps. This guide provides details on using the ILOM Service Processor web interface to redirect the console.

▼ To Install Using the ILOM Remote Console

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

2. **Connect to the ILOM Service Processor web interface.**

3. **Click the Remote Control tab, then the Mouse Mode Settings tab.**

4. **If necessary, change the mouse mode to Relative Mouse Mode.**

   See the "Remote Console Application" information in the *Integrated Lights Out Manager (ILOM) documentation* for further instructions.

5. **Click the Redirection tab.**

6. **Click the Launch Redirection button to start the JavaRConsole application.**

7. **Log in to the JavaRConsole.**

8. **Start keyboard and mouse redirection.**

   Select Keyboard and Mouse in the Devices menu.

9. **Start CD/DVD redirection.**

   From the JavaRConsole Devices menu, you can redirect the CD in two ways:

   - If you are installing a physical CD into the remote console CD ROM drive, insert the CD into the drive and select CD-ROM.

   - If you are using an iso image installed on the remote console, select CD-ROM image and provide the location of the iso file.

Note – Floppy diskette redirection is also available through the JavaRConsole. See the *Integrated Lights Out Manager (ILOM) documentation* for more details.

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10. **Turn on the server using the ILOM web interface.**

11. **Set up the BIOS as follows:**

    a. **Press CTRL-E to enter BIOS Setup Utility.**

    b. **Select the Boot menu.**

    c. **Select CD/DVD Drives.**

    d. **Set AMI Virtual CD as the first boot device.**

    e. **Press F10 to save changes and exit.**

    f. **Reboot.**

    g. **Press CTRL-P to select CD/DVD as the boot device.**

12. **When the boot prompt appears, type `linux text`.**

13. **When prompted to test the CD media before installation, select Skip if you do not want the media test to run.**

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

Installing RHEL Using PXE

About Red Hat Enterprise Linux and PXE

The onboard network interface card (NIC) in your Sun Fire X4600 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.

Note – PXE is a powerful and convenient solution for setting up a number of Sun Fire X4600 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 Sections
Obtain the updated media kit from `http://rhn.redhat.com.`	"Obtaining Updated Media Kits" on page 16.
Set up your Linux network and PXE server.	"Preconfiguring Your Network to Support PXE Installation of RHEL" on page 21.
Install Red Hat Enterprise Linux images on that PXE server.	"Creating a PXE Install Image on the PXE Server" on page 28.
Configure your server to install from a Red Hat Enterprise Linux image on a PXE server.	"Installing RHEL From a PXE Server" on page 31.

Preconfiguring Your Network to Support PXE Installation of RHEL

This section describes 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 to use as a PXE server.

Preconfiguring your network for PXE installation involves the following procedures:

- "To Copy Files From the Tools and Drivers CD" on page 22
- "To Configure a DHCP Server" on page 22
- "To Install Portmap on Your DHCP Server" on page 24
- "To Configure the TFTP Service on Your DHCP Server" on page 24
- "To Install and Configure the neopxe Boot Server Daemon" on page 25
- "To Configure the NFS Service on Your DHCP Server" on page 26
- "To Disable the Firewall" on page 27

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
- Tools and Drivers CD

Downloading the Tools and Drivers CD Image

If you do not have access to the Tools and Drivers CD, you can download the iso image from the following URL:

http://www.sun.com/servers/x64/x4600 and select Downloads.

If you create your own CD from the download site, use this CD in place of the Tools and Drivers CD referenced in this procedure.

▼ To Copy Files From the Tools and Drivers CD

This section describes how to copy the PXE support files, which are required for PXE configurations, from the Tools and Drivers CD.

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

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1. **Insert the Tools and Drivers CD into the DHCP/PXE server.**

2. **Create a temporary directory to copy the PXE support files if** `/tmp` **does not exist. Type:**

   ```
   # mkdir /tmp
   ```

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

   ```
   # mount /dev/cdrom /mnt/cdrom
   # cp /mnt/cdrom/linux/pxe/rhel4-pxefiles.tar.gz /tmp/
   ```

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

   ```
   # cd /tmp
   # tar -zxvf rhel4-pxefiles.tar.gz
   ```

When you extract the file, a directory with all required files will be created, for example: `/tmp/rhel4u3-pxefiles/`

▼ To Configure a DHCP Server

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

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

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1. **Turn 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 5 and install the DHCP server. Type:**

    # **`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.**

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

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

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

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

6. **In the DHCP configuration file, edit the** `server-identifier` **entry:**

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

    Where *n.n.n.n* is the PXE/dhcp server's IP address.

7. **Also in the DHCP configuration file, find the subnet entry fields:**

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

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

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

    # **`service dhcpd start`**

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

    # **`chkconfig dhcpd on`**

▼ To Install Portmap 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 RHEL CD 2 and install the portmap service by typing the following commands:

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

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

3. Unmount the CD/DVD by entering the following command.

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

4. Remove the CD/DVD from the server.

▼ To Configure the TFTP Service on Your DHCP Server

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

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

2. If the TFTP server package is not listed, insert the RHEL CD 4 and install the TFTP service by typing the following commands:

```
# 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
```

▼ To Install and Configure the neopxe Boot Server Daemon

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

Note – This example uses Red Hat Enterprise Linux 4 Update 3. Replace `rhel4` with the file name that corresponds to your version and update.

---

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

   ```
   # cd /tmp/rhel4u3-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/rhel4u3-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/rhel4u3-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`**

▼ To Configure the NFS Service 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 2 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 nfs on`

   `# chkconfig nfslock on`

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

▼ To Disable 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.

Caution – Network security vulnerability. 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. **Stop the ipchains service. Type:**

   `# service ipchains stop`

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

   `# service iptables stop`

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

   `# chkconfig ipchains off`

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

   `# chkconfig iptables off`

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

---

5. Reboot the PXE/DHCP server.

6. Refer to the "Creating a PXE Install Image on the PXE Server" on page 28**.**

Creating 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.

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 "Preconfiguring Your Network to Support PXE Installation of RHEL" on page 21.

Required Items

The PXE installation procedure requires the following items:

- A CD/DVD drive on the DHCP Server
- Red Hat Enterprise Linux 4 Update 3 (or later) media CD set (see "Obtaining Updated Media Kits" on page 16)
- Tools and Drivers CD

▼ To Create a RHEL Image on Your PXE Install Server

1. Insert the Tools and Drivers 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 for. The remainder of the instructions will assume that Red Hat Enterprise Linux 3 is being used. Modify the example based on the substitutions shown in TABLE 4-1.

TABLE 4-1 Red Hat Enterprise Linux Installation `tar` Filenames

Red Hat Enterprise Linux OS	Compressed .tar File Name
RHEL 3 32- and 64-bit	`rhel3-pxefiles.tar.gz`
RHEL 4 64-bit	`rhel4-pxefiles.tar.gz`
RHEL 5 64-bit	`rhel5-pxefiles.tar.gz`

```
# mount /dev/cdrom /mnt/cdrom
# cp -a /mnt/cdrom/support/pxeboot/rhel4-pxefiles.tar.gz /tmp
# cd /tmp
# tar -zxvf rhel4-pxefiles.tar.gz
# umount /mnt/cdrom
```

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

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

Note – You can use a different target directory than the `/home/pxeboot/rhel4/` directory shown below. The examples in this procedure use this directory.

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

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

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

    ```
    # cp /home/pxeboot/rhel4/images/pxeboot/vmlinuz /home/pxeboot/rhel4/
    ```

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

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

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

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

    For example, to make the RHEL5 installation process fully automatic, add the following line to the end of the kickstart configuration file:

    ```
    key --skip
    ```

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

    Edit the nfs line is as follows:

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

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

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

Where n.n.n.n is the IP address of your PXE server.

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

---

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

Installing RHEL From a PXE Server

This procedure describes how to configure your Sun Fire X4600 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 Sun Fire X4600 server.

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 "Preconfiguring Your Network to Support PXE Installation of RHEL" on page 21.
- Installed a Red Hat Enterprise Linux image on that Linux PXE server. See "Creating a PXE Install Image on the PXE Server" on page 28.

▼ To Install a RHEL Image from a PXE Server

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 Sun Fire X4600 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. **When prompted, press the F8 key to begin downloading the PXE boot image.**

4. **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 Sun Fire X4600 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.**

   See "Updating the Red Hat Enterprise Linux Operating System" on page 32.

Updating the Red Hat Enterprise Linux Operating System

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

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.

The following two procedures assume that you have already installed the Red Hat Enterprise Linux software on the Sun Fire X4600 server. These procedures explain how to update that Red Hat Enterprise Linux installation with the latest OS.

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

Note – If you install RHEL 4 U3 on a server with eight or less logical CPUs, then later upgrade the server to more than eight logical CPUs, you must use the `largesmp` kernel package for 64-bit platforms. The `largesmp` kernel is included with RHEL 4 U3 and later versions. The package is called `kernel-largesmp-2.6.9-`*xxx*`.EL.`*yyy*`.rpm`. Where *xxx* specifies the kernel version, and *yyy* specifies the platform name (either **x86_64** for AMD®, or **ia64** for Intel®).

▼ To Update the Red Hat Enterprise Linux Software

These procedures assume that your system has access to the internet.

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.

▼ To Update the RHEL 5 Software

Your system must have access to the internet and be registered with the Red Hat Network.

1. **To run the** `yum` **update program, enter:**

   `# ` **`yum`**

   The program checks that the machine is registered with Red Hat Network. If so, `yum` downloads necessary updates from the Red Hat Network repository.

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

   You should periodically update your system using `yum`.

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

   `# ` **`man yum`**

Updating the RHEL SCSI Drivers

If you install your RHEL OS with SIA, these drivers are automatically updated. If you install the OS manually, you must update the drivers yourself.

▼ To Update the RHEL SCSI Drivers

1. **Insert the Tools and Drivers CD for your Sun Fire™ X4600 or X4600 M2 server and mount it onto the directory /mnt.**

2. **Enter the following commands:**

   `# ` **`cd /mnt/Linux/drivers`**

   `# ` **`rpm -ivh`** *driver-filename*

   For example, for RHEL 5.1 and 5.2, 64 bit for the Sun Fire X4600 M2 server:

   `# ` **`cd /mnt/Linux/drivers`**

   `# ` **`rpm  -ivh mptlinux-4.00.43.00-1-rhel5.x86_64.rpm`**

Note – Check the `/linux/drivers` directory on your Tools and Drivers CD for the correct driver file name for your operating system.

Installation of the new drivers is now complete.

3. Reboot the server for the changes to take effect.

Installing SUSE Linux Enterprise Server 9 and 10

This chapter comprises the following sections:

- "About SLES 9 Installation" on page 36. Describes installation from a local or remote CD

- "About SLES 10 Installation" on page 42. Describes installation from a local or remote CD

- "Prerequisites for PXE Installation of SLES 9 and SLES 10" on page 46. Describes installation from a PXE image stored on a network-attached PXE server

- "Updating the SLES 9 or 10 Operating System" on page 62. Describes updating the OS after it has been installed.

Note – If you want to make the operating system boot drive part of a mirrored RAID configuration, the recommended procedure is to configure the RAID volume before you install the OS. To configure RAID volumes using your the server's internal disk drives, see Appendix A.

About SLES 9 Installation

If you have installed the SLES 9 operating system (OS) on other x86-based servers, you are already familiar with how to install Linux on your Sun Fire X4600 server. The most common methods to install SLES 9 on your server are:

■ Installation from your SLES 9 Distribution from a local or remote CD (described in this section)

■ 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 (see "Prerequisites for PXE Installation of SLES 9 and SLES 10" on page 46)

Note – The minimum supported SUSE Linux Enterprise Server (SLES) version is SLES 9 Service Pack 3 (SP3).

SUSE Linux Installation and Configuration Documentation

Before you install SLES 9 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 (and SLES 9SP3 CD1) 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/server9 for additional support information.

Task Map for SUSE Linux Enterprise Server 9 Installation

Consult the following table to determine which procedures documented in this chapter 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.	"Preparing to Install SLES 9" on page 37.
Install SLES 9 and SLES 9 SP3 from local or remote CD drive.	"Installing SLES 9 From Distribution Media" on page 38. or "Installing SLES 9 Using the Remote Console Application" on page 39
Install SLES 9 SP3 from an image stored on a networked system.	*SUSE Linux Enterprise Server 9 Installation Manual*
Install SLES 9 SP3 from a PXE server.	"Prerequisites for PXE Installation of SLES 9 and SLES 10" on page 46
Update SLES 9 SP3 software.	"Updating the SLES 9 or 10 Operating System" on page 62

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

Preparing to Install SLES 9

Although you can install SLES 9 SP3 operating system (OS) from a local CD, remote CD, 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 CD/DVD-ROM device. However, an external CD/DVD-ROM device can also be used.

Installation Prerequisites

Before installing SLES 9 on your server, verify or collect the following:

- DHCP server name
- MAC address on system label
- SUSE Linux Enterprise Server 9 media base CD set and SP3 CD set

Making the Boot Drive Part of a RAID Configuration

If you want to mirror the volume that includes your operating system, the recommended procedure is to create a hardware RAID before you install the OS. To configure RAID volumes using your the server's internal disk drives, see Appendix A.

Installing SLES 9 From Distribution Media

SUSE Linux Enterprise Server 9 SP3 (SLES 9 SP3) 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 drive or from a remote CD drive attached via KVMS, the installation procedure is fundamentally the same.

Required Items

Installation from distribution media requires the following items:

- Sun Fire X4600 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 base CD set and SP3 CD set

▼ To Perform a Basic Installation From Local CD/DVD Drive

1. **Insert the SUSE Linux Enterprise Server 9 SP3 CD 1 (or the DVD) into your local CD/DVD drive.**

2. **Power on the system.**

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

3. **Follow the installation instructions provided with the SLES 9 Installation Guide to complete installation of the system software.**

Installing SLES 9 Using the Remote Console Application

This topic explains how to install the SLES 9 OS on your Sun Fire X4600 server using the ILOM Remote Console application.

▼ To Install SLES 9 Using the ILOM Remote Console Application

1. **Locate your SLES 9 installation CD or the equivalent iso images.**

2. **Connect to the ILOM Service Processor web interface.**

   See the topic that describes how to log in to and out of the Sun ILOM web interface in the Integrated Lights-Out Manager (ILOM) documentation.

3. **Click the Remote Control tab, then the Mouse Mode Settings tab.**

4. **If necessary, change the mouse mode to Relative Mouse Mode.**

   See Integrated Lights-Out Manager (ILOM) documentation.

5. **Click the Redirection tab.**

6. **Click the Launch Redirection button to start the JavaRConsole application.**

7. **Log in to the JavaRConsole.**

8. **Start keyboard and mouse redirection.**

   Select Keyboard and Mouse in the Devices menu.

9. **Start CD/DVD redirection.**

   From the JavaRConsole Devices menu, you can redirect the CD in two ways:

   - If you are installing a physical CD into the remote console CD ROM drive, insert the CD into the drive and select CD-ROM.

   - If you are using an iso image installed on the remote console, select CD-ROM image and provide the location of the iso file.

Note – Diskette redirection is also available through the JavaRConsole. See the ILOM documentation for more details.

---

10. **Turn on the server using the ILOM web GUI.**

11. **Set up the BIOS as follows:**

    a. **Press CTRL-E to enter BIOS Setup Utility.**

    b. **Select the Boot menu.**

    c. **Select CD/DVD Drives.**

    d. **Set AMI Virtual CD as the first boot device.**

    e. **Press F10 to save changes and exit.**

    f. **Reboot and press CTRL-P to select CD/DVD as the boot device.**

12. **When the SLES 9 installation menu appears, use arrow keys to select Installation. Do not press Enter.**

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

---

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

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

13. **Press ENTER to continue with the installation.**

    SLES 9 prompts you for the driver disk.

14. **Switch back to the SLES 9 installation CD-1 (from the SLES 9 base media set) or iso image-1 when SLES 9 installation program prompts you to insert CD-1 into the drive.**

Note – If SLES 9 indicates at this point that there is not enough memory for graphical installation and that you must use text-based installation, use Tab keys to navigate options.

---

15. **Proceed with SLES 9 installation as usual.**

About SLES 10 Installation

The most common methods to install SLES 10 on your server are:

- Installation from your SLES 10 Distribution from a local or remote CD (described in this section)
- 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 (see "Prerequisites for PXE Installation of SLES 9 and SLES 10" on page 46)

SUSE Linux Installation and Configuration Documentation

You can find help in installing SUSE Linux on your server from the following locations:

- README file—the README file on your SUSE Linux Enterprise Server 10 CD 1 contains late-breaking information about system requirements and system configuration.
- The Release Notes for SUSE Linux Enterprise Server 10 are available on the first installation CD, under the `docu` directory.
- *SUSE Linux Enterprise Server 10 Start-Up Guide*—This short manual provides a quick introduction to the installation. It is available on the first installation CD under the `docu` directory, as the file `startup.pdf` under the appropriate language directory.
- *SUSE Linux Enterprise Server 10 Installation and Administration Guide*—This manual provides detailed information about planning, deployment, configuration and administration of SUSE Linux Enterprise Server 10. It is available on the first installation CD under the `docu` directory as the file `sles-admin.pdf` under the appropriate language directory.
- SUSE Linux Enterprise Server 10 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 10 Home Page at `http://www.novell.com/products/server/` for additional support information.

Task Map for SUSE Linux Enterprise Server 10 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)
Install SLES 10 from local or remote CD/DVD drive.	"Installing SLES 10 From Distribution Media" on page 43.
Install SLES 10 from local or remote CD/DVD drive or PXE server.	*SUSE Linux Enterprise Server 10 Installation Manual*
Install SLES 10 from an image stored on a networked system.	"Installing SLES 10 Using PXE" on page 59.
Install SLES 10 from a PXE server.	"Installing SLES 10 From a PXE Server" on page 61
Update SLE10 software.	"Updating the SLES 9 or 10 Operating System" on page 62

Installing SLES 10 From Distribution Media

SUSE Linux Enterprise Server 10 (SLES 10) 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.

Required Items

- Sun Fire X4600 server equipped with internal DVD-ROM drive. An external CD-ROM device can also be used.
    - USB keyboard and mouse
    - Monitor
- SLES 10 media base CD or DVD set.

▼ To Install SLES 10 From Distribution Media

1. **Power on the system.**

2. **Press F8 and select CDROM when prompted.**

3. **Insert the SLES 10 CD 1 into your local CD/DVD drive.**

4. **Follow the installation instructions provided with the SLES 10 Installation Guide to complete the installation of the system software.**

Installing SLES 10 Using the Remote Console Application

This topic explains how to install the SLES 10 OS on your Sun Fire X4600 server using the ILOM Remote Console application.

▼ To Install SLES 10 From the Remote Console

1. **Locate your SLES 10 installation CD/DVD or the equivalent iso images.**

2. **Connect to the ILOM Service Processor web interface.**

3. **Click the Remote Control tab, then the Mouse Mode Settings tab.**

4. **If necessary, change the mouse mode to Relative Mouse Mode.**

   See the "Remote Console Application" information in the *Integrated Lights Out Manager (ILOM) documentation* for further instructions.

5. **Click the Redirection tab.**

6. **Click the Launch Redirection button to start the JavaRConsole application.**

7. **Log in to the JavaRConsole.**

8. **Start keyboard and mouse redirection.**

   Select Keyboard and Mouse in the Devices menu.

9. **Start CD/DVD redirection.**

   From the JavaRConsole Devices menu, you can redirect the CD in two ways:

   - If you are installing a physical CD into the remote console CD ROM drive, insert the CD into the drive and select CD-ROM.

- If you are using an iso image installed on the remote console, select CD-ROM image and provide the location of the iso file.

Note – Floppy diskette redirection is also available through the JavaRConsole. See the *Integrated Lights Out Manager (ILOM) documentation* for more details.

---

10. **Turn on the server using the ILOM web interface.**

11. **Set up the BIOS as follows:**

    a. **Press CTRL-E to enter BIOS Setup Utility.**

    b. **Select the Boot menu.**

    c. **Select CD/DVD Drives.**

    d. **Set AMI Virtual CD as the first boot device.**

    e. **Press F10 to save changes and exit.**

    f. **Reboot and press CTRL-P to select CD/DVD as the boot device.**

12. **When the SLES 10 installation menu appears, use arrow keys to select Installation and press Enter.**

13. **Proceed with SLES 10 installation as usual.**

Prerequisites for PXE Installation of SLES 9 and SLES 10

These procedures describe how to preconfigure your network running SLES 9 or 10 software to support PXE installation of SUSE Linux software on your Sun Fire X4600 and the Sun Fire X4600 M2 server. These procedures assume that you already have a bootable server that is running a version of the SLES 9 operating system.

Preconfiguring your network for PXE installation involves the following procedures:

- "Copying Files From the Tools and Drivers CD" on page 46
- "Configuring a DHCP Server" on page 48
- "Installing Portmap" on page 49
- "Configuring the TFTP Service" on page 49
- "Installing and Configuring the neopxe Boot Server Daemon" on page 50
- "Configuring the NFS Service" on page 52
- "Disabling the Firewall" on page 53

Required Items

Preconfiguring your network for PXE installation requires the following items:

- SLES 9 or 10 server equipped with:
  - CD/DVD drive
  - USB keyboard
  - Monitor (optional)
- SLES 9 or10 media set
- Sun Fire X4600 or X4600 M2 Tools and Drivers CD

Copying Files From the Tools and Drivers CD

This section describes how to copy the PXE support files, which are required for PXE configurations, from the Tools and Drivers CD. You can also download the driver RPMs from the Sun Fire X4600 and the Sun Fire X4600 M2 web site. The downloads links are available at:

http://www.sun.com/servers/x64/x4600/support.xml

> **Note –** This procedure provides instructions for copying files from the Tools and
> Drivers CD on SLES 9. However, these instructions are also valid for SLES 9 with
> Service Pack (SP1). For SP3, substitute `sles9-sp3` where `sles9` appears in the
> commands.

▼ To Copy Files From the Tools and Drivers CD

1. **Insert the Tools and Drivers CD into the DHCP/PXE server.**

2. **Create a temporary directory to copy the PXE support files to. Enter the
   following command:**

   `# mkdir /tmp`

3. **Mount the CD-ROM drive. Enter the command:**

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

4. **Depending on your OS version, enter the following commands to copy the files
   to the** `/tmp/` **directory:**

   For SLES 9:

   `# cp /mnt/cdrom/linux/pxe/sles9sp3-pxefiles.tar.gz /tmp/`

   For SLES 10:

   `# cp /mnt/cdrom/linux/pxe/sles10-pxefiles.tar.gz /tmp/`

5. **Depending on your OS version, uncompress and extract the contents of the tar
   file into the** `/tmp/` **directory. Enter the following command:**

   For SLES 9:

   `# tar -zxf /tmp/sles9sp3-pxefiles.tar.gz`

   For SLES 10:

   `# tar -zxf /tmp/sles10-pxefiles.tar.gz`

   When you extract the file, a directory with all required files is created at
   `/tmp/slesX-pxefiles/`. Where *X* is your OS version (9 or 10).

6. **Unmount the CD/DVD by entering the following command:**

   `# umount /mnt/cdrom`

7. **Remove the Tools and Drivers CD from the server.**

Configuring a DHCP Server

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

▼ To Configure a 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. Enter the following command:**

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

3. **If the DHCP server package is not listed, install the package using YaST. Enter the following command:**

   ```
   # 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 "PXEClinet"; vendor-option-space PXE; next-server
   n.n.n.n;}
   ```

   Where *n.n.n.n* is the IP address of the server.

Note – You can start with a sample DHCP configuration file in the /tmp/sles9-pxefiles or /tmp/sles10-pxefiles directory.

---

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

   server-identifier *n.n.n.n*

   Where *n.n.n.n* is the PXE/dhcp server's IP address.

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

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

   Edit the subnet, range, router **and** broadcast-address **entries according to the PXE/dhcp server's network configuration.**

7. **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"`

8. **Start the DHCP service. Enter the following command:**

   `# /etc/init.d/dhcpd start`

9. **Configure the server to always start DHCP. Enter the following command:**

   `# chkconfig dhcpd on`

Installing Portmap

Complete the following steps on your DHCP server.

▼ To Install Portmap

1. **Determine whether the portmap server package is already installed on the server. Enter the following command:**

   `# rpm -qa | grep portmap`

2. **If portmap is not listed, install the package using YaST. Enter the following command:**

   `# yast -i portmap`

Configuring the TFTP Service

Complete the following steps on your DHCP server.

▼ To Configure the TFTP Service

1. **Determine whether the TFTP server package is already installed on the server. Enter the following command:**

   `# rpm -qa | grep tftp`

2. **If the TFTP server package is not listed, install the package using YaST. Enter the following command:**

   `# 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/pxeboo**t
   - Change the disable attribute to `no`

4. **Restart the inetd server. Enter the following command:**

   `# /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.

▼ To Install and Configure the neopxe Boot Server Daemon

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. Depending on your OS version, enter the following command:**

   For SLES 9:

   `# cd /tmp/sles9sp3-pxefiles/neopxe-0.2.0`

   For SLES 10:

   `# cd /tmp/sles10-pxefiles/neopxe-0.2.0`

3. **Next, enter the following commands:**

   `# ./configure`

   `# make`

   `# make install`

4. **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
   ```

5. **Copy the PXE Linux image from the** `/tmp/` **directory. Enter the following commands:**

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

6. **Depending on your OS version, enter the following command:**

   For SLES 9:

   ```
   # cp /tmp/sles9sp3-pxefiles/pxelinux.0 /home/pxeboot
   ```

   For SLES 10:

   ```
   # cp /tmp/sles10-pxefiles/pxelinux.0 /home/pxeboot
   ```

7. **Configure the PXE Linux image. Enter the following commands:**

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

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

8. **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/slesX-pxefiles/neopxe-0.2.0/` directory. Where *X* is the OS version (9 or 10).

   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.

---

9. **Start the neopxe daemon. Enter the following command:**

   # /usr/local/sbin/neopxe

Configuring the NFS Service

Complete the following steps on your DHCP server.

▼ To Configure the NFS Service

1. **Determine whether the NFS service package is already installed on the server. Enter the following command:**

   # rpm -qa | grep nfs-utils

2. **If the NFS service package is not listed, install the package using YaST. Enter the following command:**

   # 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. Enter the following command:**

   # /etc/init.d/nfsserver start

5. **Configure the server to always start the NFS service. Enter the following commands:**

   ```
   # 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.

Caution – Network security vulnerability. 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.

▼ To Disable the Firewall

1. **Execute the YaST command. Enter the following command:**

   yast

2. **Select Security & Users.**

3. **Select Firewall.**

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

Installing SLES 9 Using PXE

The network interface card (NIC) in your Sun Fire X4600 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 Sun Fire X4600 servers so their configuration is identical.

Task Map

To take advantage of SUSE Linux Enterprise Server 9 (SLSE 9), Service Pack 3 (SP3) and PXE on your network, you need to perform the following tasks.

Task	Related Topic
Set up your Linux network and PXE server.	"Prerequisites for PXE Installation of SLES 9 and SLES 10" on page 46 .
Install SUSE Linux images on that PXE server.	"Creating a SLES 9 Service Pack PXE Install Image on the PXE Server" on page 54.
Configure your server to boot from or to install from an SLES 9 SP3 image on a PXE server.	"Installing SLES 9 SP3 From a PXE Server" on page 58.

Creating a SLES 9 Service Pack 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 SP3 (SLES 9 SP3) image on your PXE server, you must configure your Linux network to support PXE images. See "Prerequisites for PXE Installation of SLES 9 and SLES 10" on page 46 for instructions on how to preconfigure your network to support PXE installations of SLES 9 SP3.

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 base media CD set
- SUSE Linux Enterprise Server 9 SP3 media CD set
- Sun Fire X4600 Tools and Drivers CD

▼ To Create a SLES 9 Service Pack PXE Install Image on the PXE Server

This section covers creating the PXE installation image, setting up and copying the SLES 9 software to a directory, and creating links to the PXE files.

Create a PXE Install Image

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

1. Insert the Tools and Drivers CD into the DVD-ROM drive.

Note – For installing SLES 9 SP3, both the SLES 9 base media set and the SLES 9 SP3 media set are required.

---

2. Set up the directory structure that will hold the SUSE Linux Enterprise Server 9 software. Enter the following commands:

```
# mkdir -p /home/pxeboot/sles9/sles9/CD1
# mkdir -p /home/pxeboot/sles9/core9/CD{1,2,3,4,5}
```

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

---

3. Copy the contents of SLES 9 base CD 1 to /home/pxeboot/sles9/sles9/CD1

4. Insert SUSE Linux Enterprise Server 9 CD 1 into your server and copy its contents to your PXE server. Enter the following commands:

```
# mount /dev/cdrom /mnt/cdrom
# cp -r /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. **Repeat the above procedure for copying CD media contents to corresponding directories in** /home/pxeboot/sles9/core9 **as given below. (Please note the contents of CD2 should be copied to directory CD1, contents of CD3 should be copied to directory CD2 and so on).**

   `# cp -r /mnt/cdrom/*   /home/pxeboot/sles9/core9/CD1`

   `# cp -r /mnt/cdrom/*   /home/pxeboot/sles9/core9/CD2`

   `# cp -r /mnt/cdrom/*   /home/pxeboot/sles9/core9/CD3`

   `# cp -r /mnt/cdrom/*   /home/pxeboot/sles9/core9/CD4`

   `# cp -r /mnt/cdrom/*   /home/pxeboot/sles9/core9/CD5`

   a. **Create directories for SLES 9 SP3 CDs by executing the following commands.**

      `# mkdir /home/pxeboot/sles9/sles9-sp3/CD{1,2,3}`

   b. **Copy the contents of SLES 9 SP3 CD 1 to** /home/pxeboot/sles9/sles9-sp3/CD1

7. **Insert SUSE Linux Enterprise Server 9 SP3 CD 1 into your server and copy its contents to your PXE server.Enter the following commands:**

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

   `# cp -r /mnt/cdrom/*   /home/pxeboot/sles9/sles9-sp3/CD1`

8. **Remove SUSE Linux Enterprise Server 9 SP3 CD 1 from the server after you type the following command:**

   `# umount /mnt/cdrom`

9. **Repeat for SLES 9 SP3 CD 2 and CD 3 by entering the commands:**

   `# cp -r /mnt/cdrom   /home/pxeboot/sles9/sles9-sp3/CD2`

   `# cp -r /mnt/cdrom   /home/pxeboot/sles9/sles9-sp3/CD3`

Creating Links to PXE Files

1. **Create symbol links by executing the following commands. Enter the following commands:**

   ```
   # cd /home/pxeboot/sles9
   # ln -s ./sles9/CD1/boot/ .
   # ln -s ./sles9-sp3/CD1/boot ./boot.sp3
   # ln -s ./sles9/CD1/content .
   # ln -s ./sles9/CD1/control.xml .
   # ln -s ./sles9-sp3/CD1/driverupdate .
   # ln -s ./sles9-sp3/CD1/boot/loader/initrd .
   # ln -s ./sles9-sp3/CD1/boot/loader/linux .
   # ln -s ./sles9/CD1/media.1 .
   ```

2. **Set up the appropriate content and instorder files. Enter the following commands:**

   ```
   # mkdir yast
   # cp /tmp/sles9sp3-pxefiles/order yast/
   # cp /tmp/sles9sp3-pxefiles/instorder yast/
   ```

3. **Copy the** autoyast.xml **file from the** /tmp/sles9sp3-pxefiles/ **directory to the root of the PXE image. Enter the following command:**

   ```
   # cp /tmp/sles9sp3-pxefiles/autoyast.xml /home/pxeboot/sles9/
   ```

4. **On your PXE server, modify and save the file** /home/pxeboot/pxelinux.cfg/default **to add the following entries:**

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

```
default sles9
label sles9
kernel sles9/linux
append textmode=1 initrd=sles9/initrd install=
nfs://n.n.n.n/home/pxeboot/sles9
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.

Installing SLES 9 SP3 From a PXE Server

This procedure describes how to configure your Sun Fire X4600 server to initiate the request to download the boot image file from the PXE/DHCP server and how to install the SLES 9 SP3 boot image onto your Sun Fire X4600 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 "Prerequisites for PXE Installation of SLES 9 and SLES 10" on page 46 for instructions on how to preconfigure your network to support PXE installations of SLES 9 SP3
- Installed a SLES 9 SP3 image on that Linux PXE server. See "Creating a SLES 9 Service Pack PXE Install Image on the PXE Server" on page 54.

▼ To Install a SLES 9 SP3 Image From a PXE Server

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 Sun Fire X4600 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. **At the** `boot:` **prompt, type in the label you gave the image when you installed a SUSE image on the PXE server.**

   The SLES 9 SP3 install image downloads onto the target Sun Fire X4600 server.

5. **To configure the Linux operating system for your server, refer to the manual that is shipped with your SLES 9 media kit.**

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

See .

Installing SLES 10 Using PXE

Before you perform the procedures in this section, you must have configured your Linux network to support a PXE server (see).

The two procedures in this section are:

-
-

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 10 base media CD set
- Sun Fire X4600 Tools and Drivers CD

Creating a SLES 10 PXE Install Image on the PXE Server

To transfer the SLES 10 PXE files for installation you must perform these tasks:

-
-
-

You are then ready to install SLES 10 from your PXE server.

▼ To Create a SLES 10 Image on Your PXE Server

1. **Insert the Tools and Drivers CD into the DVD-ROM drive.**

2. **Copy the PXE support files from the Tools and Drivers CD into the** /tmp
   directory by typing the following commands:

   ```
   # mount /dev/cdrom /mnt/cdrom
   # cp -a /mnt/cdrom/support/pxeboot/sles10-pxefiles.tar.gz /tmp
   # cd /tmp
   # tar xfz sles10-pxefiles.tar
   # umount /mnt/cdrom
   ```

▼ To Set Up and Copy SLES 10 Software to a Directory

The following steps explain how to create the directory setup containing SLES 10 files for PXE installation.

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

---

1. **Set up the directory structure that will hold the SUSE Linux Enterprise Server 10. Type:**

   ```
   # mkdir -p /home/pxeboot/sles10/CD{1,2,3,4}
   ```

2. **Insert SLES 1 0CD 1 into your server and copy its content to your PXE server. Type:**

   ```
   # mount /dev/cdrom /mnt/cdrom
   # cp -r /mnt/cdrom/* /home/pxeboot/sles10/CD1/
   # umount /mnt/cdrom
   ```

3. **Remove SLE S10 CD 1 from the server.**

4. **Repeat the above procedure for copying CD 2, 3 and 4 to their corresponding directories in** /home/pxeboot/sles10/ **as given below:**

   ```
   # cp -r /mnt/cdrom/* /home/pxeboot/sles10/CD2/
   # cp -r /mnt/cdrom/* /home/pxeboot/sles10/CD3/
   # cp -r /mnt/cdrom/* /home/pxeboot/sles10/CD4/
   ```

▼ To Set Up PXE Files

1. **Copy the** `autoinst.xml` **file from the** `/tmp/sles10/` **directory to the root of the PXE image. Type:**

   # **`cp /tmp/sles10/autoinst.xml /home/pxeboot/sles10/`**

2. **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 "autoinst.xml" below as one continuous line with no returns.

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

Installing SLES 10 From a PXE Server

This procedure describes the final step of installing the SLES 10 boot image onto your Sun Fire X4600 or X4600 M2 server. Before proceeding with this procedure you must have done the following:

- Configured your Linux network to support a PXE server. See "Prerequisites for PXE Installation of SLES 9 and SLES 10" on page 46.
- Installed a SLES 10 image on that Linux PXE server. See "Creating a SLES 10 PXE Install Image on the PXE Server" on page 59.

▼ To Install SLES 10 From a PXE Server

1. **Connect the PXE client to the same network as the PXE server.**

2. **Power on the PXE client and press F12 to select network boot.**

3. **When you are prompted at the boot: prompt,. type in the label you gave the image when you install the SLES 10 image on the PXE server (**`sles10` **in the example above).**

4. **To configure your SLES 10 Linux server, refer to the Installation and Administration guide on SLES 10 CD 1.**

5. **Perform an Online Software Update to update the operating system files.**

Updating the SLES 9 or 10 Operating System

The SLES operating system installation media might not contain the most up-to-date versions of the SUSE software. This procedure describes how to update the SLES OS on your server after you have installed it from a PXE server or distribution CDs.

▼ To Update Your SLES Operating System

1. **Log in as the superuser.**

2. **Enter the following command to run the YaST Online Update:**

   # **you**

   Note that YaST can operate in both text and graphical modes. These directions apply to both.

3. **If you are behind a network firewall and need to use a Proxy server in order to access the internet, you must first configure YaST with the correct Proxy information.**

   a. **Select the 'Network Services' tab on the left, then the 'Proxy' screen on the right. Enter the correct proxy URLs in both the HTTP and HTTPS fields.**

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

   b. **Exit the YaST utility and run the following command:**

   # **rug set-prefs proxy-url** *Proxy URL*

   where *Proxy URL* is the fully qualified URL of your proxy server (for example: http://*proxy.yourdomain*:3128/).

   c. **After successfully running the command, launch YaST again.**

4. **Register with the Novell Customer Center. Select the 'Software' tab on the left, then select 'Novell Customer Center Configuration' and follow the directions.**

   You will need your Novell Customer Center username and password, as well as a SLES product activation code.

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

▼ To Update the SLES SCSI Drivers:

1. **Insert the Tools and Drivers CD your Sun Fire™ X4600 or X4600 M2 server**

2. **Mount it onto the directory /mnt**

   \# mount /dev/cdrom /mnt

3. **Enter the following commands:**

   \# `cd /mnt/Linux/drivers`

   \# `rpm -ivh` *driver-filename*

   For example for SLES 10 SP1 and SP2, 64-bit:

   \# `cd /mnt/Linux/drivers`

   \# `rpm -ivh mptlinux-4.00.43.00-1-sles10.x86_64.rpm`

Note – Check the `/linux/drivers` directory on your Tools and Drivers CD for the specific driver file name for your operating system.

---

4. **Installation of the new drivers is now complete. Reboot the server for the changes to take effect. Enter:**

   \# `reboot`

Installing VMware ESX 3

This chapter explains the procedure to install VMware ESX 3 on the Sun Fire X4600 and Sun Fire X4600 M2 servers.

About VMware

Although you can install the VMware ESX 3 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.

You can find detailed information and procedures concerning VMware virtualization software at:

http://www.vmware.com/support/pubs

The two most common methods to install VMware on your server are:

- Installation from downloaded image from the VMware website and burned onto CD-ROM media.
- Automatic kickstart installation from VMware software (installation tree) stored on a Preboot Execution Environment (PXE) network server.

VMware Installation and Administration Documentation

Before you begin installing VMware ESX 3 software on a Sun Fire X4600 server, consult the following required documents for VMware ESX 3 install, at:
http://www.vmware.com/support/pubs/vi_pubs.html

- *Introduction to VMware Infrastructure*
- *Quick Start Guide*
- *Installation and Upgrade Guide*
- *Basic System Administration*
- *Virtual Infrastructure Web Access Administrator's Guide*
- *Server Configuration Guide*
- To prepare for PXE install, see the VMware I*nstallation and Upgrade Guide for Virtual Infrastructure 3*. Chapter 6, "Remote and Scripted Installations."

Task Map for VMware ESX Installation

Consult the following table to determine which sections in this document are relevant to the installation tasks that you want to perform.

Installation Task	Relevant Section
Collect information about your system.	"VMware Installation and Administration Documentation" on page 65.
Identify a specific network interface.	"Planning Network Interfaces" on page 66.
Download iso image and burn to CD	"What to Do" on page 67.
Begin installing the VMware ESX software using a local or network-attached CD or virtual CD drive.	"How To Install From Local Media" on page 68.
Complete the VMware ESX 3 software installation.	Refer to: http://www.vmware.com/support/pubs/vi_pubs.html
Update the ESX 3 software if necessary.	"VMware Updates and Patches" on page 69.

Planning Network Interfaces

The Virtual Infrastructure 3 service console and management interface is dependent on a network interface. The service console does not automatically use the first interface with a live connection. If you do not physically connect all network interfaces, a live interface must be associated with the service console for host management.

Refer to your Sun Fire X4600 Server Service manual for detailed information concerning network interface cabling and the BIOS considerations of these interfaces.

By default, `vmnic0` is assigned for service console communications.

Installing VMware ESX from CD-ROM

The following procedure applies to installing VMware ESX 3 from a local CD-ROM, or a virtual CD-ROM redirected from Java Console.

Before You Begin

- Read the required documents for VMware ESX.
- If no internal CD-ROM is available, use the network-attached virtual CD (or a USB CD-ROM).

What to Do

The general procedure for installing VMware follows these steps.

From a network-connected system with CD-burning capabilities:

1. Download the `iso` image from:
   http://www.vmware.com/download/vi/eval.html

2. Burn the image to a CD.

Note – If Java Remote Console is used to redirect a CD drive or image, you can select "Host Device" as the device type.

---

3. Install the ESX software on the Sun Fire X4600 system.

4. Update the ESX software if necessary. Download available updates from:
   http://www.vmware.com/support/

   The process is detailed in the following sections.

VMware ESX Installation Requirements

Before you begin installing VMware ESX 3 on your Sun Fire X4600 or Sun Fire X4600 M2 server, you will require:

- A USB keyboard and mouse connected to rear USB ports of Sun Fire server, or access through a Java remote console.
- Monitor connected to Sun Fire server (not required if you are using Java KVMS.)
- If there is no built-in CD-ROM, choose either one of the following:
  - External USB DVD/CD-ROM drive connected to the Sun Fire server or
  - Virtual CD drive redirected through Java remote console.
- CD-ROM of VMware ESX media.
- The *Installation and Upgrade Guide* for VMware.

How To Install From Local Media

1. **Turn on the Sun Fire system.**

2. **Insert the media into CD-ROM drive. The server will boot from the CD and display a boot prompt.**

   ```
   boot:
   ```

3. **Choose the interface that you would like to work with:**

   - To work in graphical mode, press Enter.

   -or-

   - To work in text mode, enter the following command:

     esx text

4. **Refer to the *Installation and Upgrade Guide* for VMware to guide you through the installation process. From your network-connected system go to** http://www.vmware.com/support/pubs/vi_pubs.html.

5. **Identify the Sun Fire-specific network interface.**

   In the service console window on the Sun Fire system, identify the available network configuration alternatives.

ESX 3 Network Configuration Dialog Box
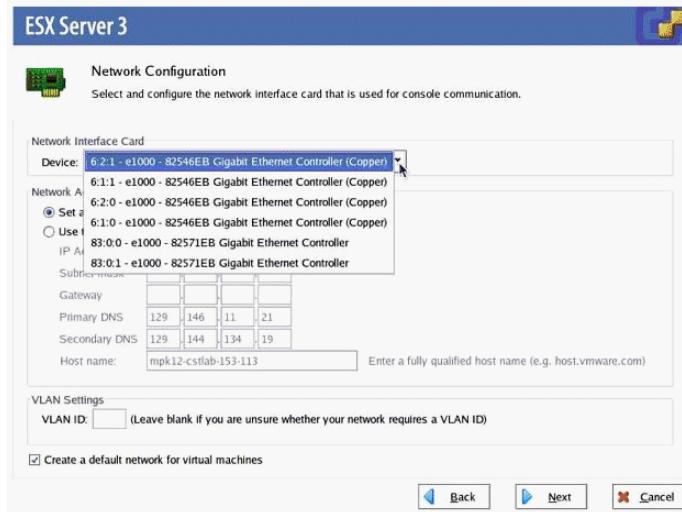
During ESX install network configuration, the interfaces are shown as these adapters if no extra or optional network controllers are installed in the Sun Fire X4600:

```
vmnic0 = "5:2:1 - e1000 - 82546EB Gigabit Ethernet Controller(Copper)"
vmnic1 = "5:1:1 - e1000 - 82546EB Gigabit Ethernet Controller(Copper)"
vmnic2 = "5:2:0 - e1000 - 82546EB Gigabit Ethernet Controller(Copper)"
vmnic3 = "5:1:0 - e1000 - 82546EB Gigabit Ethernet Controller(Copper)"
```

6. **Complete the VMware installation.**

   This is detailed in the VMware *Installation and Upgrade Guide* available at http://www.vmware.com/support/pubs/vi_pubs.html.

VMware Updates and Patches

When VMware ESX images are available for updates you can download from:
http://www.vmware.com/support/

Installing VMware ESXi Installable

This chapter explains the procedure to install VMware ESXi Installable on the Sun Fire X4600 M2 server.

About VMware

Although you can install the VMware ESXi Installable software from a local CD/DVD or a remote CD/DVD, you will need to collect some information about your system before you proceed with any of these installation methods.

You can find detailed information and procedures concerning VMware virtualization software at:

http://www.vmware.com/support/pubs

The most common method to install VMware on your server is:

■ Installation from downloaded image from the VMware website and burned onto CD-ROM media.

VMware Installation and Administration Documentation

Before you begin installing VMware ESXi Installable software on a Sun Fire X4600 server, consult the following required documents for VMware ESXi Installable install, at: http://www.vmware.com/support/pubs/vi_pubs.html

■ *Introduction to VMware Infrastructure (PDF)*
■ *Getting Started with ESX Server 3i Installable (PDF)*
■ *Configuration Maximums for VMware Infrastructure 3 (PDF)*

- *ESX Server 3i Installable Setup Guide (PDF)*
- *Upgrade Guide (PDF)*
- *Basic System Administration (PDF)*
- *ESX Server 3i Configuration Guide (PDF)*
- *Resource Management Guide (PDF)*
- *Fibre Channel SAN Configuration Guide (PDF)*
- *iSCSI SAN Configuration Guide (PDF)*
- *Virtual Machine Backup Guide (PDF)*

Task Map for VMware ESXi Installable Installation

Consult the following table to determine which sections in this document are relevant to the installation tasks that you want to perform.

Installation Task	Relevant Section
Collect information about your system.	"VMware Installation and Administration Documentation" on page 71.
Download iso image. If using a physical CD, burn to CD.	"What to Do" on page 73.
Begin installing the VMware ESXi Installable software using a local or network-attached CD or virtual CD drive.	"How To Install From Local Media" on page 74.
Complete the VMware ESXi Installable software installation.	Refer to: http://www.vmware.com/support/pubs/vi_pubs.html
Update the ESXi Installable software if necessary.	"VMware Updates and Patches" on page 74.

Installing VMware ESXi Installable from CD-ROM

The following procedure applies to installing VMware ESXi Installable from a local CD-ROM or a virtual CD-ROM redirected from Java Console.

Before You Begin

- Read the required documents for VMware ESXi Installable.
- If no internal CD-ROM is available, use a network-attached virtual CD (or a USB CD-ROM). For example, you can use ILOM Remote Console to redirect the CD image.

What to Do

The general procedure for installing ESXi Installable follows these steps.

From a network-connected system with CD-burning capabilities:

1. Download the `iso` image from:
   http://www.vmware.com/download/vi/eval.html

2. (Optional) Burn the image to a CD.

Note – If Java Remote Console is used to redirect a CD drive or image, you can select "Host Device" as the device type.

---

3. Install the ESXi Installable software on the Sun Fire X4600 M2 system.

Note – Make sure you install the operating system to a boot disk.

---

4. Update the ESXi Installable software if necessary. Download available updates from: http://www.vmware.com/support/

   The process is detailed in the following sections.

VMware ESXi Installable Installation Requirements

Before you begin installing VMware ESXi Installable on your Sun Fire X4600 M2 server, you will require:

- A USB keyboard and mouse connected to rear USB ports of the server, or access through a Java remote console
- Monitor connected to Sun Fire server (not required if you are using Java KVMS.)

- If there is no built-in CD-ROM, choose either one of the following:
    - External USB DVD/CD-ROM drive connected to the Sun Fire server or
    - Virtual CD drive redirected through Java remote console
- CD-ROM of VMware ESXi Installable media
- The *ESX Server 3i Installable Setup Guide*

How To Install From Local Media

1. **Turn on the Sun Fire system.**

2. **Insert the media into CD-ROM drive. The server will boot from the CD and display a boot prompt.**

   ```
   boot:
   ```

3. **Refer to the** *ESX Server 3i Installable Setup Guide* **to guide you through the installation process. From your network-connected system go to** http://www.vmware.com/support/pubs/vi_pubs.html.

4. **Complete the VMware installation.**

VMware Updates and Patches

When VMware ESX images are available for updates you can download from: http://www.vmware.com/support/

Configuring RAID for Any Operating System from the BIOS

If you want to install your OS on disks that are part of a hardware RAID, there is an LSI RAID configuration utility that is entered from the server's BIOS and can be used for any operating system.

1. **Power off the server and then power it back on. During the boot process, the BIOS screen appears. As the server scrolls through the various BIOS messages, watch for the LSI Logic Corp. message (see** FIGURE A-1**).**

FIGURE A-1   Example BIOS Screen Showing LSI Logic Corp. Message


```
LSI Logic Corp. MPT SAS BIOS
MPTBIOS-6.04.07.00 (2005.11.03)
Copyright 2000-2005 LSI Logic Corp.


Press Ctrl-C to start LSI Logic Configuration Utility...
```
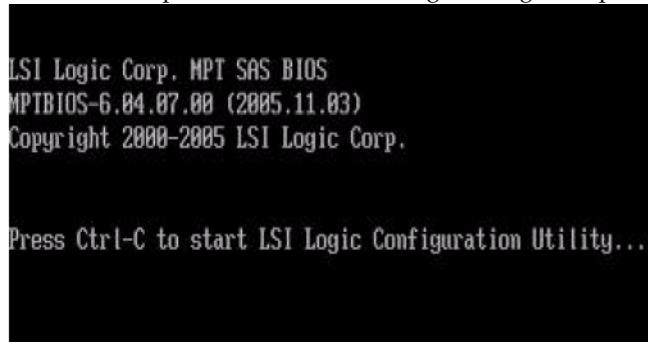
2. **When the LSI Logic Corp. message appears, quickly press Ctrl-C to start the LSI Logic Configuration Utility. If you miss it, you will need to reboot the server.**

3. **Select your adapter from the main screen and press Enter.**

   The Adapter Properties screen is displayed.

4. **From the Adapter Properties screen, select RAID Properties and follow the on-screen instructions to create a mirrored RAID.**

5. **Exit the LSI RAID configuration utility.**

6. Install your OS on this RAID volume.

Note – The LSI RAID configuration utility is described in detail in the *Sun LSI 106x* RAID User's Guide (820-4933), which is in the collection of documents for the X4600/X4600 M2 servers.

Identifying Logical and Physical Network Interface Names for Linux OS Configuration

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

You should begin by finding and recording the MAC addresses of all your physical ports from their labels.

This appendix explains how to obtain the needed logical information in these situations:

■ While configuring a SUSE Linux Enterprise Server OS during installation (see "Identifying Logical and Physical Network Interface Names While Installing a SUSE Linux OS" on page 77).

■ While configuring a Red hat Enterprise Linux OS during installation (see "Identifying Logical and Physical Network Interface Names While Installing a RHEL Linux OS" on page 82).

Identifying Logical and Physical Network Interface Names While Installing a SUSE Linux OS

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

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

▼ To Launch the User Shell and Identify the Network Interfaces

1. If you have not already done so, select `Rescue System` **and press Enter.**

```
Boot from Hard Disk
Installation
Installation - ACPI Disabled
Installation - Safe Settings
Manual Installation
Rescue System
Memory Test
```
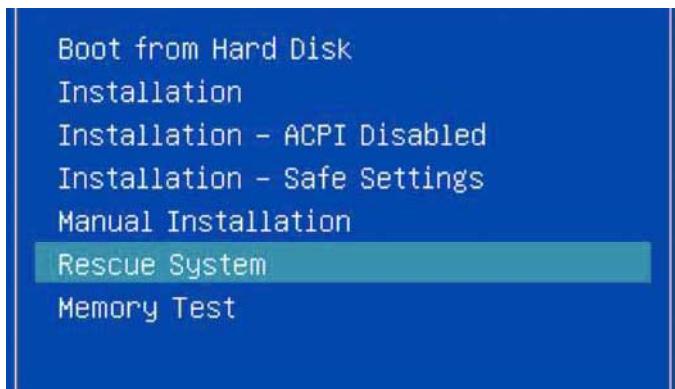
The message `Loading Linux Kernel` appears followed by the SUSE splash screen, then the Choose a Keyboard Map screen appears.

2. **In the Choose a Keyboard Map screen, select the appropriate keyboard configuration and click OK.**

The user shell launches and the Rescue Login prompt appears.

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

The Rescue prompt appears.

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

   # **ifconfig -a**

```
                                                                           done
IT: Entering runlevel: 3
ot logging started on /dev/tty1(/dev/console) at Wed May 17 19:49:24 2006
ster Resource Control: previous runlevel: N, switching to runlevel:        3
itializing random number generator                                        done
arting syslog services                                                     done
arting RPC portmap daemon                                                  done
porting Net File System (NFS)                                              unused
ster Resource Control: runlevel 3 has been                                 reached
ipped services in runlevel 3:                                     nfsboot nfs

scue login: root
scue:~ # ifconfig -a_
```

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

```
eth4      Link encap:Ethernet  HWaddr 00:14:4F:0C:A1:52
          BROADCAST MULTICAST  MTU:1500  Metric:1
          RX packets:0 errors:0 dropped:0 overruns:0 frame:0
          TX packets:0 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:0 (0.0 b)  TX bytes:0 (0.0 b)
          Base address:0xc800 Memory:b5d80000-b5da0000

eth5      Link encap:Ethernet  HWaddr 00:14:4F:0C:A1:53
          BROADCAST MULTICAST  MTU:1500  Metric:1
          RX packets:0 errors:0 dropped:0 overruns:0 frame:0
          TX packets:0 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:0 (0.0 b)  TX bytes:0 (0.0 b)
          Base address:0xcc00 Memory:b5de0000-b5e00000

eth6      Link encap:Ethernet  HWaddr 00:14:4F:0C:A4:72
          BROADCAST MULTICAST  MTU:1500  Metric:1
          RX packets:0 errors:0 dropped:0 overruns:0 frame:0
          TX packets:0 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:0 (0.0 b)  TX bytes:0 (0.0 b)
          Base address:0xf800 Memory:bbd80000-bbda0000

eth7      Link encap:Ethernet  HWaddr 00:14:4F:0C:A4:73
          BROADCAST MULTICAST  MTU:1500  Metric:1
          RX packets:0 errors:0 dropped:0 overruns:0 frame:0
          TX packets:0 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:0 (0.0 b)  TX bytes:0 (0.0 b)
          Base address:0xfc00 Memory:bbde0000-bbe00000

lo        Link encap:Local Loopback
          inet addr:127.0.0.1  Mask:255.0.0.0
          UP LOOPBACK RUNNING  MTU:16436  Metric:1
          RX packets:8 errors:0 dropped:0 overruns:0 frame:0
          TX packets:8 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:0
          RX bytes:528 (528.0 b)  TX bytes:528 (528.0 b)

Rescue:~ #
```

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

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

   # ifconfig eth#

   where # = the interface number. For example, if you type:

   # ifconfig eth0

   The output for **eth0** appears:

```
eth0      Link encap:Ethernet  HWaddr 00:14:4F:0C:A1:53
          BROADCAST MULTICAST  MTU:1500  Metric:1
          RX packets:0 errors:0 dropped:0 overruns:0 frame:0
          TX packets:0 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:0 (0.0 b)  TX bytes:0 (0.0 b)
          Base address:0xcc00 Memory:b5de0000-b5e00000
```

In the sample output above:

- eth0 entry in the first column refers to the Linux SUSE logical named interface. This first column in the output identifies the logical names SUSE assigned to the network interface.
- HWaddr 00.14.4F.0C:A1:53 entry in second column (first row) refers to the physical MAC address of the network port.

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

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

7. **When you are done, do one of the following to exit the Rescue shell.**
   - From the ILOM web interface, select Remote Control ->Remote Power Control->Reset.
   - From other consoles, type reboot at the Rescue prompt (#), then press Enter.

8. **Restart the Linux SUSE installation program.**

Identifying Logical and Physical Network Interface Names While Installing a RHEL Linux OS

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

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

▼ Launch User Shell and Identify Network Interfaces

1. **If you have not already done so, type: `linux rescue` at the boot prompt, then press Enter.**

The Choose a Language screen appears.

2. **In the Choose a Language screen, select the appropriate language and click OK.**

The Keyboard Type screen appears.

3. In the Keyboard Type screen, select the appropriate configuration then click OK.

What type of keyboard do you have?
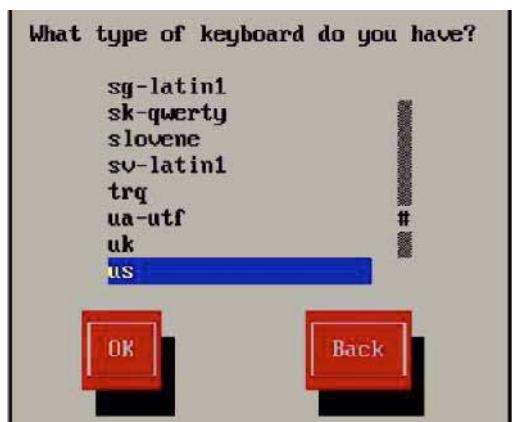
The Setup Network screen appears.

4. In the Setup Network screen, click No.

Setup Networking

Do you want to start the network interfaces on this system?
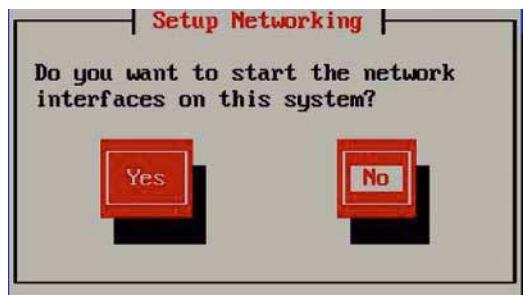
The Rescue screen appears.

5. **In the Rescue screen, click Skip.**

The user shell appears.

6. **At the command prompt (#) in the user shell, type the following command to display all network interfaces, then press Enter.**

    # `ifconfig -a`

    The output of the Linux Red Hat named network interfaces appear. See the following sample output as an example.

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

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

   # **ifconfig eth#**

   where # = the interface number. For example, if you type:

   # **ifconfig eth0**

   The output for **eth0** appears,:

```
-/bin/sh-3.00# ifconfig eth0
eth0      Link encap:Ethernet  HWaddr 00:14:4F:0C:A1:F2
          BROADCAST MULTICAST  MTU:1500  Metric:1
          RX packets:0 errors:0 dropped:0 overruns:0 frame:0
          TX packets:0 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:0 (0.0 B)  TX bytes:0 (0.0 B)
          Base address:0x8800 Memory:89b80000-89ba0000

-/bin/sh-3.00#
```

   In the sample output above:

   - eth0 entry in the first column refers to the Linux Red Hat logical named interface. This first column in the output identifies the logical names Red Hat assigned to the network interface.
   - HWaddr 00.14.4F.0C:A1:F2 entry in second column (first row) refers to the physical MAC address of the network port.

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

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

   - From the ILOM, select Remote Control ->Remote Power Control->Reset.
   - From the ILOM Remote Console, select Ctrl Alt Delete in the Keyboard menu.
   - From other consoles, press Ctrl->Alt->Delete.

10. **Restart the Linux Red Hat installation program.**

APPENDIX **C**

Identifying Logical and Physical Network Interface Names for Solaris OS Installation

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

You should begin by finding and recording the MAC addresses of all your physical ports from their labels.

This appendix explains how to obtain the needed logical information in these situations:

- *Before* configuring a pre-installed Solaris OS (see "Identifying Logical and Physical Network Interface Names for a Pre-installed Solaris OS" on page 87).

- *While* configuring a Solaris OS during installation (see "Identifying Logical and Physical Network Interface Names While Installing a Solaris OS" on page 89).

Identifying Logical and Physical Network Interface Names for a Pre-installed Solaris OS

Any pre-installed Solaris OS is unconfigured.

Prior to configuring the OS, you use the procedure below to identify the network interfaces by their logical and physical names (MAC addresses). You record this information, which you need during configuration, and then return the OS to its unconfigured state before proceeding with the configuration.

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1. **Log in to the system as root and run** `ifconfig -a plumb` **in a command shell.**

   The command discovers all installed network interfaces. The shell prompt (#) appears when the discovery completes.

2. **To output a list of all Solaris named interfaces along with their physical MAC addresses, type this command at the prompt (#):**

   # **`ifconfig -a`**

   A sample ifconfig-a output is as follows:

   # **`ifconfig -a`**

   ```
   lo0: flags=2001000849<UP,LOOPBACK,RUNNING,MULTICAST,IPv4,VIRTUAL>
   mtu 8232 index 1
   inet 127.0.0.1 netmask ff000000
   e1000g0: flags=1000802<BROADCAST,MULTICAST,IPv4> mtu 1500 index 2
   inet 0.0.0.0 netmask 0
   ether 0:14:4f:c:a1:ee
   e1000g1: flags=1000802<BROADCAST,MULTICAST,IPv4> mtu 1500 index 3
   inet 0.0.0.0 netmask 0
   ether 0:14:4f:c:a1:ef
   e1000g2: flags=1000802<BROADCAST,MULTICAST,IPv4> mtu 1500 index 4
   inet 0.0.0.0 netmask 0
   ether 0:14:4f:c:a5:d6
   e1000g3: flags=1000802<BROADCAST,MULTICAST,IPv4> mtu 1500 index 5
   inet 0.0.0.0 netmask 0
   ether 0:14:4f:c:a5:d7
   e1000g4: flags=1000802<BROADCAST,MULTICAST,IPv4> mtu 1500 index 6
   inet 0.0.0.0 netmask 0
   ether 0:14:4f:c:a1:4e
   ```

   In the sample above, the Solaris named network interfaces appear as `e1000g0`, `e1000g1`, and so on. The MAC address for each network interface appears after the word `ether`. For example, the MAC address associated to the Solaris named network interface `e1000g0` is `0:14:4f:c:a1:ee`.

3. **Record the Solaris network interface name for each MAC address previously recorded in the Configuration Worksheet list.**

4. **When you are done, type** `sys-unconfig(1M)` **at the command line.**

   This command restores the system configuration to the "as-manufactured" state.

Caution – The `sys-unconfig(1M)` command will halt the system

For example,

`sys-unconfig`

```
       WARNING
       This program will unconfigure your system.  It will cause it
       to revert to a "blank" system - it will not have a name or know
       about other systems or networks.
       This program will also halt the system.
       Do you want to continue (y/n) ?
```

5. **Reboot the system.**

    You will be prompted with a series of configuration questions.

6. **In the Network Connection screen, select** `Yes`.

    The Configure Multiple Network Interfaces screen appears.

7. **In the Configure Multiple Network Interfaces screen, consult the list of network interface names recorded in Step 3, then select the appropriate network interfaces.**

8. **Continue the normal Solaris configuration.**

Identifying Logical and Physical Network Interface Names While Installing a Solaris OS

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

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

▼ Launch User Shell and Identify Network Interfaces

1. **In the Install Type menu, select Option (6) Single User Shell and press Enter.**

    If a message appears about mounting an OS instance, select **q**. You should not mount any OS instance.

    The message "Starting Shell" appears, see the following figure.

```
    1.      Solaris Interactive (default)
    2.      Custom JumpStart
    3.      Solaris Interactive Text (Desktop session)
    4.      Solaris Interactive Text (Console session)
    5.      Apply driver updates
    6.      Single user shell

Enter the number of your choice.
Selected: 6

Single user shell

Searching for installed OS instances...

Multiple OS instances were found. To check and mount one of them
read-write under /a, select it from the following list. To not mount
any, select 'q'.

  1  /dev/dsk/c2t0d0s0      Solaris 10 6/06 s10x_u2wos_08 X86
  2  /dev/dsk/c2t1d0s0      Solaris 10 6/06 s10u2_08-ON-WOS X86

Please select a device to be mounted (q for none) [?,??,q]: q

Starting shell.
#
```

2. **At the command prompt (#), type the following command to plumb all network interfaces.**

   # **ifconfig -a plumb**

Note – The plumb process may take some time.

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3. **At the command prompt, type the following command to output a list of all network interfaces by their Solaris logical name and physical MAC address name.**

   # **ifconfig -a**

The output of Solaris named interfaces and MAC addresses appears. For an example, see the following sample output.

```
# ifconfig -a |more
e1000g0: flags=1000802<BROADCAST,MULTICAST,IPv4> mtu 1500 index 2
        inet 0.0.0.0 netmask 0
        ether 0:14:4f:c:a1:ee
e1000g1: flags=1000802<BROADCAST,MULTICAST,IPv4> mtu 1500 index 3
        inet 0.0.0.0 netmask 0
        ether 0:14:4f:c:a1:ef
e1000g2: flags=1000802<BROADCAST,MULTICAST,IPv4> mtu 1500 index 4
        inet 0.0.0.0 netmask 0
        ether 0:14:4f:c:a5:d6
e1000g3: flags=1000802<BROADCAST,MULTICAST,IPv4> mtu 1500 index 5
        inet 0.0.0.0 netmask 0
        ether 0:14:4f:c:a5:d7
e1000g4: flags=1000802<BROADCAST,MULTICAST,IPv4> mtu 1500 index 6
        inet 0.0.0.0 netmask 0
        ether 0:14:4f:c:a1:4e
e1000g5: flags=1000842<BROADCAST,RUNNING,MULTICAST,IPv4> mtu 1500 index 1
        inet 0.0.0.0 netmask 0
        ether 0:14:4f:c:a1:4f
e1000g6: flags=1000802<BROADCAST,MULTICAST,IPv4> mtu 1500 index 7
        inet 0.0.0.0 netmask 0
        ether 8:0:20:b6:ce:94
e1000g7: flags=1000802<BROADCAST,MULTICAST,IPv4> mtu 1500 index 8
        inet 0.0.0.0 netmask 0
#
```

In the sample output above, the:

- `e1000g#` entry in the first column refers to the Solaris logical named interface. This first column in the output identifies the logical names assigned by Solaris to the network interfaces.

- `ether #:#:#:#:#:#` entry in second column (third row) refers to the physical MAC address name of the network port.

  For example:

  The physical MAC address for the Solaris named network interface `e1000g0` is `0:14:4f:c:a1:ee`.

4. **Record the Solaris network interface name next to the physical port MAC address previously recorded (per the Configuration Worksheet).**

5. **When you are done, type `exit` at the command prompt.**

   The Solaris Installation program will resume where you last left off.

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