



Sun Fire™ X4100/X4100 M2 and X4200/X4200 M2 Servers Linux, ESX, and Solaris OS Installation Guide

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Preface

This Installation Guide contains detailed procedures for bringing the server to a configurable, usable state. It includes operating system installation and initial software configuration.

For information about installing Windows OS, refer to the *Sun Fire™ X4100/X4100 M2 and X4200/X4200 M2 Servers Windows Operating System Installation Guide*.

Product Updates

For product updates that you can download for the Sun Fire X4100/X4100 M2 or Sun Fire X4100/X4100 M2 server, please visit the following go to the following sites:

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

<http://www.sun.com/servers/entry/x4200/downloads.jsp>

These sites contain updates for firmware and drivers, as well as CD-ROM ISO images.

Related Documentation

For a description of the document set for your Sun Fire™ X4100/X4100M2 or X4200/X4200M2 server, see the Where To Find Documentation sheet that is packed with your system and also posted at the product's documentation site. Navigate to your product at <http://www.sun.com/documentation>.

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

For Solaris and other software documentation, go to <http://docs.sun.com>.

The following table lists the available documents.

Information	Title and Format	Part Number
Safety information	<i>Important Safety Information About Sun Hardware</i> (included in system box)	819-7190
Safety notices and international compliance certification statements	<i>Sun Fire X4100/X4100 M2 and X4200/X4200 M2 Servers Safety and Compliance Guide: Sun Fire X4100/X4100 M2/X4200/X4200 M2 Server</i> (PDF, and HTML)	819-1161
Server setup, including rack installation and configuring the pre-installed Solaris 10 operating system	<i>Sun Fire X4100/X4100 M2 and X4200/X4200 M2 Servers Installation Guide: Sun Fire X4100/X4100 M2/X4200/X4200 M2 Server</i> (included in system box, PDF, and HTML)	819-1155
Operating system installation	<i>Sun Fire X4100/X4200 and Sun Fire X4100 M2/X4200 M2 Servers Operating System Installation Guide</i> (PDF and HTML)	819-1158
Setting up hardware RAID	<i>Sun LSI 106x RAID User's Manual</i>	820-4933
System management	<i>Integrated Lights-Out Manager (ILOM) Administration Guide</i> (PDF and HTML)	Depends on your servers ILOM version
Server and software setup	<i>Sun Fire X4100/X4100 M2 and X4200/X4200 M2 Servers Service Manual: Sun Fire X4100/X4100 M2/X4200/X4200 M2 Server</i> (PDF and HTML)	819-1157

Information	Title and Format	Part Number
Troubleshooting and diagnostics	<i>Sun Fire X4100/X4100 M2 and X4200/X4200 M2 Servers Diagnostics Guide: Sun Fire X4100/X4100 M2/X4200/X4200 M2 Server</i> (PDF and HTML)	819-3284
Late-breaking information and issues	<i>Sun Fire X4100/X4100 M2 and X4200/X4200 M2 Server Product Notes</i> (PDF and HTML)	819-1162
	<i>Sun Fire X4100 M2 and Sun Fire X4200 M2 Server Product Notes</i> (PDF and HTML)	819-5038
Software release-specific information	<i>Sun Fire X4100/X4200 Servers Release Notes for Software Release</i>	820-0828
	<i>Sun Fire X4100 M2/X4200 M2 Servers Release Notes For Software Release</i>	820-0827
Diagnostic software	<i>SunVTS 6.0 User's Guide</i> (HTML)	817-7664
Diagnostic software patch information	<i>SunVTS 6.0 Patch Set Documentation Supplement for x86 Platforms</i> (HTML)	819-2948

Documentation, Support, and Training

The Sun web site provides information about the following additional resources:

Sun Function	URL
Documentation	http://www.sun.com/documentation
Support	http://www.sun.com/support/index.jsp
Training	http://www.sun.com/training/
Warranty	http://www.sun.com/service/support/warranty/index.html

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

Sun Fire™ X4100/X4100 M2 and X4200/X4200 M2 Servers Operating System
Installation Guide, 819-1158-25.

Overview

This book applies to the Sun Fire X4100 and X4200 servers, and to Sun Fire X4100 M2 and Sun Fire X4200 M2 servers.

Installing an Operating System on a Sun Fire X4100/X4100 M2 or X4200/X4200 M2 Server

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

Note – This document only covers supported Solaris, Linux, and VMware OS. For instructions on installing the Windows Server 2003 Operating System onto the Sun Fire X4100/X4100 M2 or Sun Fire X4200/X4200 M2 servers, see the *Sun Fire X4100/X4200 Server Windows Operating System Installation Guide* (819-4346), or the *Sun Fire X4100 M2/X4200 M2 Server Windows Operating System Installation Guide* (820-5837).

Prerequisites

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

- Install the server hardware.
- (Optional) Configure the service processor (you can do this after installation if you prefer).

- (Solaris only) Install and set up the software on the Resource/Tools and Drivers CD.
- (Linux only) Create a Driver CD or use the Sun Installation Assistant (recommended procedure). See the sections about creating a driver CD for your particular Linux OS or [Chapter 2](#) about the Sun Installation Assistant.
- Gather needed information, such as IP address and netmask.

Things You Must Decide

In addition to the prerequisites listed above, you must also decide the following:

- Which operating system are you installing on your Sun Fire X4100/X4100 M2 or X4200/X4200 M2server?

For a current list of supported operating systems for the Sun Fire X4100 or X4100 M2 server, go to <http://www.sun.com/servers/entry/x4100/os.jsp>.

For a current list of supported operating systems for the Sun Fire X4200 or X4200 M2 Series server, go to <http://www.sun.com/servers/entry/x4200/os.jsp>.

- Are you configuring the server for diskless booting?

Use the table below to determine reference documents for diskless booting for your OS.

Operating System	Relevant Documentation on Diskless Configurations
Solaris 10	See <i>"About Solaris OS Installation"</i> on page 8 or <i>Solaris 10 Installation Guide: Network-Based Installations</i> at http://docs.sun.com/app/docs/doc/817-5504
Red Hat Linux	See <i>Red Hat Enterprise Linux System Administration Guide</i> at https://www.redhat.com/docs/manuals/enterprise/
SUSE Linux	See <i>SUSE LINUX Enterprise Server 9 Administration Guide</i> at http://www.novell.com/documentation/oes/index.html?page=/documentation/oes/sles_admin/data/front.html

- Which installation method do you use?

Use the table below to determine your installation method.

Operating System Installation Method	Solaris	Red Hat	SUSE
Preinstalled on the server	YES	NO	NO
Assisted installation using Sun Installation Assistant (this method provides an easy-to-use process for locally, or remotely, installing your operating system)	NO	YES	YES
Manual installation using one of these methods: <ul style="list-style-type: none"> • 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

* The Sun Fire X4100/X4100 M2 and X4200/X4200 M2 servers 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 Administration Guide (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 and drivers?

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

- 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>.

Drivers for Option Cards

Option cards supported by operating systems are listed on the platform-specific product web page under Companion Products. To check if the driver of your option card is available for download, check the Option Cards link on the Product Page.

For example, Sun Fire X4100 M2 platform page and related option card are:

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

For complete platform listings please visit:

<http://www.sun.com/servers/index.jsp?tab=2>

What to Do Next

- See the appropriate chapter in this guide for your OS.
- Gather the installation, administration, and configuration documentation distributed with the operating system.

Using the Sun Installation Assistant (SIA)

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 for and download the most recent supported Sun device drivers, nor do 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 helps 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 describes some of what you need to know to install the Solaris™ Operating System (Solaris OS) on a Sun Fire X4100, X4100 M2, X4200, or X4200 M2 server and points you to the Solaris OS documentation for the more detailed information you need to complete the installation.

Note – If you want to mirror your OS, you must create the RAID before you install the OS. See [“Configuring RAID for Any Operating System from the BIOS” on page 87](#)

This Chapter contains the following sections:

- [“About Solaris OS Installation” on page 8](#)
- [“Preparing to Install the Solaris OS” on page 12](#)
- [“Booting a Server in a GRUB-Based Environment” on page 14](#)
- [“Booting a Server Over the Network By Using PXE” on page 14](#)
- [“Installing the Solaris OS From Distribution Media” on page 16](#)
- [“Using a Serial Console to Install the Solaris OS” on page 17](#)

About Solaris OS Installation

Note – This chapter contains instructions for installing the Solaris 10 operating system from network or media, and is intended for experienced system administrators who are familiar with using the Solaris OS on an x86 platform. If you are configuring the preinstalled Solaris 10 operating system that is shipped with the server, refer to the *Sun Fire X4100/X4100 M2 and X4200/X4200 M2 Servers Installation Guide* (819-1155).

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

Note – 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, available at <http://www.sunsolve.sun.com>.

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

You can download or order the media for Solaris 10 at:
<http://www.sun.com/software/solaris/get.jsp>.

Solaris 10 might be preinstalled on the hard drive. Additional software is shipped separately on the Tools and Drivers CD for your Sun Fire server. Contact your Sun service provider if you need to order the Solaris OS or if you are missing the Tools and Drivers CD.

For updates on Solaris 10 versions and hardware compatibility, go to:
<http://www.sunsolve.sun.com>.

Note – The Solaris 10 Operating System box contains the CD/DVD media and documentation that you need to install the Solaris OS software for both SPARC and x86 platforms. For a Sun Fire X4100/X4100 M2 or Sun Fire X4200/X4200 M2 server, use the media for x86 platforms.

The Sun Fire X4100/X4100 M2 or Sun Fire X4200/X4200 M2 server supports the following Solaris OS installation methods:

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

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

Use [TABLE 3-1](#) to identify the steps 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.	<i>Sun Fire X4100/X4100 M2 or Sun Fire X4200/X4200 M2 Server Installation Guide (819-1155)</i>
Review the Sun Fire X4100/X4100 M2 or Sun Fire X4200/X4200 M2 Server Product Notes.	The product notes contain late-breaking news about the Solaris OS software and patches.	<i>Sun Fire X4100/X4200 Server Product Notes (819-1162)</i> <i>Sun Fire X4100 M2/X4200 M2Server Product Notes (819-5038)</i>
Review the system requirements.	Verify that your server meets the minimum system requirements.	See TABLE 3-2 for a list of minimum requirements.
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 8
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 12

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

Task	Description	Instructions
Install the Solaris OS.	Choose an installation method and locate the installation instructions.	See TABLE 3-3 for installation methods.
Install additional software, if necessary.	The Solaris OS drivers for the server are bundled in the Solaris OS. However, you may need to install additional software from the Sun Fire server Tools and Drivers CD.	<i>Sun Fire X4100/X4100 M2 or Sun Fire X4200/X4200 M2 Server Product Notes (819-1162)</i>
Install patches, if necessary.	Review and install required Solaris-specific patches.	See the TABLE 3-4 for the Required Patch List.

TABLE 3-2 Minimum System Requirements

Requirement	Description
Hardware requirements	The server hardware and the initial service processor configuration must be installed before you install the Solaris OS.
Memory to install	256 Mbytes is the recommended size. 64 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.	“Installing the Solaris OS From Distribution Media” on page 16
Install from the network by using PXE.	You need a PXE installation to install the Solaris OS over the network from remote DVD or CD images or to automate the installation process and install several systems with a JumpStart installation. To boot over the network by using PXE, you need to set up an install server and a DHCP server, and configure the BIOS on each server to boot from the network.	To set up for a PXE installation, see “x86: Guidelines for Booting with PXE,” in the <i>Solaris 10 Installation Guide: Network-Based Installations</i> To boot by using PXE, see “Booting a Server Over the Network By Using PXE” on page 14
Boot from the preinstalled image.	Depending on your configuration, a Solaris OS image may be preinstalled on a hard drive.	<i>Solaris 10 Installation Guide: Basic Installations</i>
Install from a serial console.	Use a serial console to install the Solaris OS in a PXE-based network installation.	“Using a Serial Console to Install the Solaris OS” on page 17
Perform a diskless boot.	Boot the Solaris OS on a Sun Fire X4100/X4100 M2 or Sun Fire X4200/X4200 M2 server without a hard drive. Use this method with a PXE-based network installation.	“x86: Booting and Installing Over the Network PXE,” in the <i>Solaris10 Installation Guide: Network-Based Installations</i>

Note – The Solaris OS provides additional programs for installation, such as booting over a wide area network (WAN), but all Sun Fire X4100/X4100 M2 or Sun Fire X4200/X4200 M2 servers support only those methods listed in this topic.

TABLE 3-4 Required Patch List

Patch ID#	Description
#120012-14	SunOS 5.10_x86: kernel patch
#125419-01	SunOS 5.10_x86: in.telnetd patch

This patch list is current at the time of publication. See the *Sun Fire X4100/X4100 M2 or Sun Fire X4200/X4200 M2 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>.

Where to Find Solaris 10 Information

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

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

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

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

Preparing to Install the Solaris OS

You need to gather information about your system before you install the Solaris OS.

If you need to know the logical names of your physical Internet interfaces when configuring your OS, refer to the appendix: [“Identifying Logical and Physical Network Interface Names for Solaris OS Installation”](#) on page 101.

The amount of planning and initial set up that you need to perform varies depending on whether you are preparing for a local installation from DVD or CD, or you are preparing for a Preboot Execution Environment (PXE)-based network installation.

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

Media	Title
DVD	Solaris 10 Operating System <i>version</i> * DVD
CD-ROM	Solaris 10 Operating System <i>version</i> Software CDs Solaris 10 <i>version</i> Languages for x86 Platforms CD Sun Fire server Tools and Drivers CD.
Patches	See the <i>Sun Fire X4100/X4100 M2</i> or <i>Sun Fire X4200/X4200 M2 Server Product Notes</i> for information about patches.

* Replace *version* with the version of the Solaris Operating System you want to install.

Installation Prerequisites

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

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

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

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

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

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

For Solaris 10 installations see:

<http://docs.sun.com/app/docs/doc/819-5775>.

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

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

- Host name of the system that you are installing
- Language and locales that you intend to use on the system
- IP address of the server
- Subnet mask
- Type of name service (for example, DNS, NIS, or NIS+)
- IP address of gateway
- Domain name
- Host name of the name server
- IP address of the name server
- Root password

3. If you are installing the Solaris OS over the network, you need to set up a PXE-based network installation before you install the Solaris OS.

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

<http://docs.sun.com/app/docs/doc/817-5504> for Solaris 10.

For Solaris 10 installations see: <http://docs.sun.com/app/docs/doc/819-5776>.

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

Booting a Server in a GRUB-Based Environment

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

For information on how to boot a Sun Fire X4100/X4100 M2 or Sun Fire X4200/X4200 M2 server that is running Solaris 10 in a GRUB-based environment, refer to the *Solaris 10 System Administration Guide: Basic Administration* at <http://docs.sun.com/app/docs/doc/819-2379>.

Booting a Server Over the Network By Using PXE

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

The Sun Fire X4100/X4100 M2 or Sun Fire X4200/X4200 M2 server implements the Intel Preboot Execution Environment (PXE) specification required for a PXE network boot. PXE technology provides your server with the capability to boot the Solaris OS

over the network using the Dynamic Host Configuration Protocol (DHCP). Using a PXE-based network installation, you can install the Solaris OS onto a server from the network with remote CD or DVD images. You can also automate the installation process and install the Solaris OS on several Sun Fire X4100/X4100 M2 or Sun Fire X4200/X4200 M2 servers using a JumpStart scenario.

A PXE network boot is a direct network boot. No boot media is required on the Sun Fire X4100/X4100 M2 or Sun Fire X4200/X4200 M2 client system.

Before You Begin

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

1. Set up an install server.
2. Add the Sun Fire X4100/X4100 M2 or Sun Fire X4200/X4200 M2 clients to be installed.
3. Set up a DHCP server.

For instructions, see the next section, [To Boot a Server Over the Network Using PXE](#).

▼ To Boot a Server Over the Network Using PXE

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

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

2. **Boot the server over the network by using PXE.**
 - a. **Complete the steps in *Solaris 10 Installation Guide: Network-Based Installations* at <http://docs.sun.com/app/docs/doc/817-5504>.**
 - b. **Follow the instructions on the screen.**
 - c. **When the BIOS comes up, press F12 to tell the BIOS to perform a network boot from the PXE server.**

Installing the Solaris OS From Distribution Media

Use this procedure, along with the instructions for x86 platforms in *Solaris 10 Installation Guide: Basic Installations*, to install the Solaris OS onto a Sun Fire X4100/X4100 M2 or Sun Fire X4200/X4200 M2 server from CD or DVD media. This procedure describes an interactive installation using the Solaris Installation Program.

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

Note – Solaris 10 is preinstalled on both the Sun Fire X4100 or Sun Fire X4200 servers and on the Sun Fire X4100 M2 or Sun Fire X4200 M2 servers. You do not need to follow this procedure unless you are installing a new OS version.

Before You Begin

Perform the tasks described in the related topic [“Preparing to Install the Solaris OS” on page 12](#).

▼ To Install the Solaris OS From Distribution Media

1. **Boot the system by shutting it down and then turning it on.**

The server BIOS supports booting from a CD/DVD drive.

2. **Insert the Solaris 10 Operating System DVD or CD into your Sun Fire X4100/X4100 M2 or Sun Fire X4200/X4200 M2 server.**

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

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

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

Using a Serial Console to Install the Solaris OS

The Solaris text installer enables you to type information in a terminal or a console window to interact with the Solaris OS Installation Program. Use this procedure to use a serial console to install the Solaris 10 OS on a Sun Fire X4100/X4100 M2 or Sun Fire X4200/X4200 M2 server with a PXE-based network installation.

Before You Begin

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

- An install server
- A DHCP server

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

▼ To Use a Serial Console to Install the Solaris OS

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

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

2. **Set the terminal to receive at 9600 baud.**

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

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

The examples below use the following values:

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

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

- For a Solaris 10 system:

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

- For Solaris 10 system with GRUB booting:

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

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

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

5. Enter the following command to use the serial console:

```
start /SP/console
```

6. Boot the Sun Fire X4100/X4100 M2 or Sun Fire X4200/X4200 M2 server.

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

- To boot via PXE, press F12 at the BIOS.

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

```
eeeprom input-console=ttya
```


Installing Red Hat Enterprise Linux

This chapter contains information about *manually* installing Red Hat Enterprise Linux (RHEL) on a Sun Fire X4100, X4100 M2, X4200, or X4200 M2 server. It contains the following sections:

- [“About the RHEL Installation” on page 22](#)
- [“Preparing to Install RHEL” on page 24](#)
- [“Installing RHEL From Distribution Media” on page 27](#)
- [“Installing RHEL Using the Remote Console Application” on page 29](#)
- [“Installing RHEL Using PXE” on page 32](#)
- [“Updating the RHEL Operating System” on page 46](#)
- [“Updating the RHEL SCSI Drivers” on page 47](#)

Note – If you want to mirror your OS, you must create the RAID before you install the OS. See [“Configuring RAID for Any Operating System from the BIOS” on page 87](#)

About the RHEL Installation

If you have installed RHEL software on other Intel or AMD Opteron servers, you are already familiar with how to install it on a Sun Fire X4100, X4100 M2, X4200, or X4200 M2 server. The two most common methods to install RHEL on your server are to use:

- The RHEL distribution medium from a local CD/DVD drive (see “[Installing RHEL From Distribution Media](#)” on page 27) or from a remote CD/DVD drive using the ILOM’s remote console function (see “[Installing RHEL Using the Remote Console Application](#)” on page 29).
- The automatic kickstart installation from RHEL software (installation tree) stored on a Preboot Execution Environment (PXE) network server (“[Installing RHEL Using PXE](#)” on page 32)

Red Hat Installation and Administration Documentation

Before you install the RHEL software on a Sun Fire X4100/X4100 M2 or X4200/X4200 M2 server, consult the following RHEL documentation.

TABLE 4-1 Sources for RHEL Documentation

Document	Description	Where to Find
README file	Contains late-breaking information about system requirements and system configuration for your version of the RHEL software.	On the RHEL CD 1, and online at http://www.redhat.com/docs/
<i>Red Hat Enterprise Linux Quick Installation Guide</i>	Brief printed guide containing useful information to assist you during the installation of RHEL.	Included with the RHEL distribution media
<i>Red Hat Enterprise Linux Installation Guide</i>	This is the full version of the printed <i>Quick Installation Guide</i> .	Included on the Red Hat Documentation CD, and available for download at http://www.redhat.com/docs/
<i>Red Hat Enterprise Linux Introduction to System Administration</i>	Contains introductory information for RHEL system administrators.	Available for download at http://www.redhat.com/docs/manuals/enterprise/

TABLE 4-1 Sources for RHEL Documentation (*Continued*)

Document	Description	Where to Find
<i>Red Hat Enterprise Linux System Administration Guide</i>	Contains information on customizing the RHEL software.	Available for download at http://www.redhat.com/docs/manuals/enterprise/
<i>System Administration for Diskless Booting</i>	Contains information on configuring your server and RHEL for diskless booting.	Available for download as the <i>Red Hat Enterprise Linux Installation Guide for the x86, Itanium™, and AMD64 Architectures</i> at http://www.redhat.com/docs/manuals/enterprise/
<i>Red Hat Enterprise Linux Security Guide</i>	This is a guide for securing the RHEL software.	Available for download at http://www.redhat.com/docs/manuals/enterprise/

If you need to know the logical names of your physical Internet interfaces when configuring your OS, refer to the appendix: “[Identifying Logical and Physical Network Interface Names for Solaris OS Installation](#)” on page 101.

Task Map for RHEL Installation

Consult [TABLE 4-2](#) to determine which sections in this guide are relevant to the installation tasks that you want to perform.

TABLE 4-2 Task Map for Installing RHEL

Installation Task)	Relevant Section
Collect information about your system and network.	“ Preparing to Install RHEL ” on page 24
Create a RHEL driver CD.	“ To Create a RHEL Driver CD ” on page 25
Install RHEL from distribution media using a local or network-attached CD or DVD drive.	“ Installing RHEL From Distribution Media ” on page 27
Update RHEL operating system files and drivers.	“ Updating the RHEL Operating System ” on page 46

Preparing to Install RHEL

You can install the RHEL software from a local CD/DVD, a remote CD/DVD, or the network; however, you need to collect some information about your system and your network before you proceed with any of these installation methods.

Installation Prerequisites

You might need to verify the following information before installing the RHEL software on the server.

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

Additional Software Updates or Patches

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

Patch or Software Package	Explanation
SCSI drivers	Download the driver RPMs from the product pages for the server. See “To Update the RHEL SCSI Drivers” on page 47 .
Operating system update	Use the Red Hat <code>up2date</code> program. See “Updating the RHEL Operating System” on page 46 .

Creating a RHEL Driver CD

This section describes the process of creating a RHEL-specific driver CD.

Before You Begin

Before you create a Red Hat-specific driver CD, you must have access to a functioning Linux server or Linux workstation that can burn a CD. Note the following:

- If you are installing a RHEL 4 U2 or later version, the drivers needed to install the OS are incorporated into the installation image. You do not need to create an additional driver CD.
- To install the driver for the LSI SAS1064 SCSI controller in the Sun Fire X4100, X4100 M2, X4200, or X4200 M2 server, you must create a Red Hat-specific CD that contains an installation-ready driver image. SIA automatically installs this driver. You can skip this procedure if you use SIA. For details, see [Chapter 2](#).
- On your Sun Fire X4100, X4100 M2, X4200, or X4200 M2 server, the driver for the LSI controller is already incorporated into the RHEL 4 Update 3 (64-bit) installed image, so there is no need to create a driver CD.

To Create a RHEL Driver CD

1. **Log in as root to the Linux server or workstation that has a recordable CD/DVD drive.**
2. **Determine the name of the recordable CD/DVD drive. Do one of the following:**

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

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

The system reports the names of matching devices:

```
scsibus0:
```

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

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

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

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

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

```
# cdrecord -scanbus
```

The system reports the names of matching devices:

```
scsibus4:
```

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

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

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

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

3. Insert the Tools and Drivers CD into the local system CD/DVD drive.

4. Mount the CD. Enter the following command:

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

5. Copy the driver image to the local /tmp directory. Enter the following command:

Note – The driver disk image in this step depends on the version of RHEL you are attempting to install. The example shows RHEL 3 32-bit version.

For RHEL 3 64-bit version, you would use:

```
/mnt/cdrom/support/update_media/rhel3/64/driverUpdate ISO
```

For RHEL 4 64-bit version, you would use:

```
/mnt/cdrom/support/update_media/rhel4/64/driverUpdate.img
```

For RHEL 5 64-bit version, you would use:

```
/mnt/cdrom/support/update_media/rhel5/64/driverUpdate.img
```

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

6. Unmount and remove the Tools and Drivers CD. Enter the following command:

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

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

8. Create the driver CD. Enter the following command:

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

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

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

When the recording process is complete the CD/DVD drive ejects the CD.

9. Remove the newly created CD from the CD/DVD drive.

Note – Use this Red Hat-specific driver CD when you install the RHEL software from the Red Hat distribution media.

Installing RHEL From Distribution Media

Note – Before proceeding be sure you have read the following sections, [“About the RHEL Installation” on page 22](#) and [“Preparing to Install RHEL” on page 24](#).

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

Before You Begin

Installing RHEL software from CDs consists of the following procedures:

Note – If you are using RHEL 4 Update 2 or later version, you do not need to create a driver CD. Proceed to Step 2.

1. If necessary, create the Enterprise driver CD.

See [“Creating a RHEL Driver CD” on page 25](#).

2. Install the RHEL software.

3. Update the RHEL software.

See [“Updating the RHEL Operating System” on page 46](#).

Required Items

Installation from distribution media requires the following items:

- Sun Fire X4100, X4100 M2, X4200, or X4200 M2 server server equipped with:
 - DVD-ROM drive
 - USB keyboard and mouse
 - Monitor
- RHEL media CD set
- Driver CD

You create this yourself. See [“Creating a RHEL Driver CD”](#) on page 25.

- *Red Hat Enterprise Linux Installation Guide*

▼ To Install RHEL From Local Media

1. **Power on the system, and insert the RHEL Distribution CD 1 into the local DVD/CD drive on the Sun Fire X4100/X4100 M2 or X4200/X4200 M2 server.**

The server boots off of the CD and displays a `boot:` prompt.

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

- For text mode, enter the following command:

```
boot: linux dd
```

-or-

- For graphical mode, press Enter.

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

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

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

3. **Remove the RHEL distribution CD 1.**
4. **If necessary, insert the RHEL driver CD.**

This is the CD you created earlier. See [“Creating a RHEL Driver CD”](#) on page 25.

5. **Select OK.**

The installer loads the updated `mptbase` and `mptscsih` drivers needed to access the hard drives. When the installer is finished loading the drivers, it prompts with:

```
Do you have any more driver disks?
```

6. **Enter No and remove the RHEL driver CD from the system.**

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

Installing RHEL Using the Remote Console Application

This topic explains how to install the RHEL operating system on your server using the Integrated Lights Out Manager (iLOM)'s remote console application. For more information see the *Integrated Lights-Out Manager (iLOM) Administration Guide* (note that there are multiple versions of iLOM, be sure to refer to the guide that matches your server's installed version of iLOM).

▼ To Install RHEL Using the iLOM Remote Console Application

1. **Locate your RHEL installation CD/DVD or the equivalent ISO images.**

Note – The Remote Console application can redirect ISO images.

2. **Locate the appropriate LSISAS driver update ISO file from the Tools and Drivers CD.**

Note – You do not need to perform this step for RHEL 4 Update 3 and later versions because the drivers are bundled with the release software. Continue to [Step 3](#).

The LSISAS driver update file pertains to SAS drivers and is distinguished by the manufacturing prefix LSI.

To locate the LSISAS driver update file, check these directories on the Tools and Drivers CD:

/support/drivers/rhel3/32

/support/drivers/rhel3/64

/support/drivers/rhel4/64

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

3. Connect to the ILOM Service Processor web GUI.

If necessary, refer to the *Integrated Lights-Out Manager (ILOM) Administration Guide* (note that there are multiple versions of ILOM, be sure to refer to the guide that matches your server's installed version of ILOM).

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

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.

-or-

- 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 *Integrated Lights Out Manager (ILOM) Administration Guide* for more details (note that there are multiple versions of ILOM, be sure to refer to the guide that matches your server’s installed version of ILOM).

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. Reboot and press Ctrl-P to select CD/DVD as the boot device. When the boot prompt appears, enter `linux dd`.
13. When prompted for the driver disk, select Yes.
14. When prompted for the driver disk source, select sda.
15. After the driver is done loading, select No when asked for additional driver.
16. When prompted for testing the CD media before installation, select Skip if you do not want the media test to run.
17. Proceed with Red Hat OS installation.

Installing RHEL Using PXE

The procedures in this section describe how to install RHEL on your Sun Fire X4100/X4100 M2 and X4200/X4200 M2 server using the Preboot Execution Environment (PXE) network booting protocol. PXE is a powerful and convenient solution for installing an OS and for setting up multiple servers so their configuration is identical. This section contains the following:

- [“Preconfiguring Your Network to Support PXE Installation of RHEL” on page 33](#)
- [“Creating a PXE Install Image on the PXE Server” on page 41](#)
- [“Installing RHEL From a PXE Server” on page 44](#)

Before You Begin

The network interface card (NIC) in your server supports PXE. The system BIOS and network interface BIOS on your server automatically query the network for a DHCP server. If your network has a DHCP server and if it has been configured to support the PXE protocol and PXE image servers on the same network, then you can use the BIOS on your system to install a bootable RHEL image on your server. You must configure your network to support PXE installation. The Task Map in the next section shows the procedure for installing RHEL using PXE.

Task Map

To take advantage of RHEL and PXE on your network, you need to perform the following tasks.

Task	Related Topic
Set up your Linux network and PXE server.	“Preconfiguring Your Network to Support PXE Installation of RHEL” on page 33
Install RHEL images on that PXE server.	“Creating a PXE Install Image on the PXE Server” on page 41
Configure your server to install from a RHEL image on a PXE server.	“Installing RHEL From a PXE Server” on page 44

Preconfiguring Your Network to Support PXE Installation of RHEL

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

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

Preconfiguring your network for PXE installation involves the following procedures:

- [“Copying Files From the Tools and Drivers CD” on page 33](#)
- [“Configuring a DHCP Server” on page 34](#)
- [“Installing Portmap” on page 36](#)
- [“Configuring the TFTP Service” on page 36](#)
- [“Installing and Configuring the neopxe Boot Server Daemon” on page 37](#)
- [“Configuring the NFS Service” on page 39](#)
- [“Disabling the Firewall” on page 40](#)

Required Items

Preconfiguring your network for PXE installation requires the following items:

- RHEL server equipped with:
 - DVD drive
 - USB keyboard
 - Monitor
- RHEL media set
- Your Sun Fire server Tools and Drivers CD

Copying Files From the Tools and Drivers CD

This section describes how to copy the PXE configuration files from the Tools and Drivers CD to the DHCP/PXE server.

▼ 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 in to. Enter the following command:

```
# mkdir /tmp
```

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

Note – The compressed file that is used in this step depends on which version of RHEL you are preconfiguring. The remainder of the instructions assume RHEL 3 32-bit. Modify the example based upon the version you are using.

For RHEL 3 32-bit, use `rhel3_32-pxefiles.tar.gz`

For RHEL 3 64-bit, use `rhel3_64-pxefiles.tar.gz`

For RHEL 4 64-bit, use `rhel4_64-pxefiles.tar.gz`

For RHEL 5 64-bit, use `rhel5_64-pxefiles.tar.gz`

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

4. Uncompress and extract the contents of the tar file into the /tmp/ directory. Enter the following command:

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

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

Note – When installing RHEL 4-Update 3 32-bit on your system using PXE, you must edit the PXE kick-start config file to add the kernel parameter `irqfixup` to the append line.

Configuring a DHCP Server

Complete the following steps on the server that is 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-
```
3. If the DHCP server package is not listed, insert the RHEL CD 1 and install the DHCP server. Enter the following commands:

Note – For RHEL 4, insert CD 5.

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

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

```
# umount /mnt/cdrom
```
5. Set up your DHCP configuration file (for example, `/etc/dhcpd.conf`) so that only PXE Client requests receive PXE Client responses.

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

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

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

Note – If the server does not already have a `dhcpd.conf` file in its `/etc` directory, you a copy the `dhcpd.conf` file from the sample DHCP configuration file in the `/tmp/rhel3_32-pxefiles` directory.

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. Enter the following command:

```
# service dhcpd start
```

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

```
# chkconfig dhcpd on
```

Installing Portmap

To install 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, insert the RHEL CD 2 and install the portmap service by entering 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.

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-server
```


2. If the TFTP server package is not listed, insert the appropriate RHEL CD (use CD 1 for RHEL 3, or CD 4 for RHEL 4) and install the TFTP service by entering the following commands:

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

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

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

4. Remove the CD/DVD from the server.

5. 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`.

6. Restart the `inetd` server. Enter the following command:

```
# service xinetd restart
```

Installing and Configuring the neopxe Boot Server Daemon

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

▼ To Install and Configure the neopxe Boot Server Daemon

1. Install the `neopxe` boot server daemon onto your system that is your DHCP server. Enter the following commands:

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

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

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

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

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

4. Configure the PXE Linux image. Enter the following commands:

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

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

If the `neopxe.conf` file is not in the `/usr/local/etc` directory, you can copy it from the `/tmp/rhel3_32-pxefiles/neopxe-0.2.0/` directory.

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

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

Where:

- *n.n.n.n* is the IP address of your PXE server.
- *boot-prompt-string* is the character string displayed during a network boot that prompts the user to press the F8 key for a boot menu.
- *timeout* is the number of seconds the prompt is displayed before the server defaults to the first service for booting.
- *service-number* is an integer in the range of 1 to 254 that identifies the boot service.
- *boot-server* is the IP address of the boot server for that boot service.
- *boot-file* is the name of the boot file that is read from your `/home/pxeboot` directory.
- *label* is the text string that is displayed when the boot menu is invoked by pressing the F8 key.

For example:

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

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

6. Start the `neopxe` daemon. 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, insert the RHEL CD 1 and install the NFS service using the following commands:

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

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

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

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

4. Remove the CD/DVD from the server.

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

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

6. Start the NFS service. Enter the following command:

```
# service nfs start
```

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

```
# 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.

Disabling the Firewall

If you enabled firewall security when you installed RHEL software on 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.

▼ To Disable the Firewall

1. Stop the `ipchains` service. Enter the following command:

```
# service ipchains stop
```

2. Stop the `iptables` service. Enter the following command:

```
# service iptables stop
```

3. Stop the `ipchains` service from starting when you restart the server. Enter the following command:

```
# chkconfig ipchains off
```

4. Stop the `iptables` service from starting when you restart the server. Enter the following command:

```
# 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.

When you have completed all the previous configuration steps, continue to the next section, [Creating a PXE Install Image on the PXE Server](#).

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 also acts as your PXE server. The PXE server provides the operating system files to your PXE client.

Note – If you are installing RHEL 4 U2 or a later version, you do not need to complete the steps that refer to installing the drivers.

Before You Begin

Before you install a RHEL 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 33](#) for instructions on preconfiguring your network to support PXE installations of RHEL.

Required Items

The PXE installation procedure requires the following items:

- A CD/DVD drive on the DHCP Server
- RHEL media CD set
- Your Sun Fire server Tools and Drivers CD

▼ To Create a RHEL Image on Your PXE Server

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

2. Copy the Sun support files from the CD to the `/tmp` directory on your DHCP/PXE server using the following commands:

Note – The compressed `.tar` file that is used in this step depends on which RHEL you are creating an install image for. The remainder of the instructions assumes that RHEL 3 is being used. Modify the example based on the substitutions shown in [TABLE 4-3](#).

TABLE 4-3 RHEL Installation `tar` Filenames

RHEL OS	Compressed <code>.tar</code> File Name
RHEL 3 32 and 64-bit	<code>rhel3-pxefiles.tar.gz</code>
RHEL 4 32 and 64-bit	<code>rhel4-pxefiles.tar.gz</code>
RHEL 5 64-bit	<code>rhel5-pxefiles.tar.gz</code>

```
# mount /dev/cdrom /mnt/cdrom
# cp -a /mnt/cdrom/support/pxeboot/rhel3-pxefiles.tar.gz /tmp
# cd /tmp
# tar -zxvf rhel3-pxefiles.tar.gz
# umount /mnt/cdrom
```

3. Set up the directory structure that holds the RHEL software. Enter the following command:

```
# mkdir -p /home/pxeboot/rhel3/
```

Note – You can use a different target directory than the `/home/pxeboot/rhel3/` directory shown below. The examples in this procedure use this directory.

4. For each RHEL Distribution CD, enter 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/rhel3/
# umount /mnt/cdrom
```

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

5. Copy the kickstart file `ks.cfg` to your PXE server. Enter the following command:

```
# cp /tmp/rhel3-pxefiles/ks.cfg /home/pxeboot/rhel3/
```

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

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

```
# cp /home/pxeboot/rhel3/images/initrd.img /home/pxeboot/rhel3/
```

This is an example path; you may find the `initrd.img` file is copied from the OS installation CD.

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

```
# cp /tmp/rhel3-pxefiles/mptlinux* /home/pxeboot/rhel3/
```

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

```
/home/pxeboot/rhel3/ks.cfg.
```

Edit the `nfs` line is as follows:

```
nfs --server n.n.n.n --dir /home/pxeboot/rhel3/
```

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

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

Note – Type the text block from **append** through `ks.cfg` as one continuous string with no returns. Please note that for the Sun Fire X4100 M2 and X4200 M2, `eth0` is mapped to `port2` by RHEL4.5 and RHEL5. For console-based installations, add `console=ttyS0,9600` to the `append` line.

```
default rhel3
```

```
label rhel3
```

```
kernel rhel3/vmlinuz
```

```
append ksdevice=eth0 console=tty0 load_ramdisk=1
```

```
initrd=rhel3/initrd.img network
```

```
ks=nfs:n.n.n.n:/home/pxeboot/rhel3/ks.cfg
```

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

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

11. Insert the RHEL Distribution CD1 into the CD/DVD drive of the DHCP/PXE server.

```
# mount /dev/cdrom /mnt/cdrom
# cp /mnt/cdrom/images/pxeboot/vmlinuz /home/pxeboot/rhel3/
```

Installing RHEL From a PXE Server

This procedure describes how to configure your server to initiate the request to download the boot image file from the PXE/DHCP server and how to install the RHEL boot image onto your server.

Note – If you are installing RHEL 4 U2 or later version, you do not need to complete the steps that refer to updating the drivers.

Before You Begin

Before you configure your server to install RHEL 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 33.
- Installed a RHEL image on that Linux PXE server. See [“To Create a RHEL Image on Your PXE Server”](#) on page 41.

▼ 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 X4100/X4100 M2 or X4200/X4200 M2 server to which you are installing RHEL software.

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

The PXE client connects to the PXE server 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, enter in the label you gave the image when you installed a RHEL image on the PXE server.**

The RHEL install image downloads onto the target Sun Fire X4100/X4100 M2 or X4200/X4200 M2 server.

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

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

See [“Updating the RHEL Operating System”](#) on page 46.

Updating the RHEL Operating System

This procedure describes how to update the RHEL 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 procedures assume that you have already installed the RHEL software on your Sun Fire™ X4100/X4100M2 or X4200/X4200M2 server. This procedure explains how to update the RHEL installation with the latest OS.

To use the RHEL 5 update program, your server must be registered with the RedHat Network (RHN).

▼ To Update the RHEL4 Software

This procedure assumes that your system has access to the internet.

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

Refer to the documentation included with your RHEL media kit for details.

2. Run the `up2date` program.

Select the kernel packages in the available package updates section.

▼ To Update the RHEL5 Software

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

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

```
# yum
```

The program checks that the machine is registered with RedHat Network. If so, `yum` downloads necessary updates from the RedHat 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™ X4100/X4100M2 or X4200/X4200M2 server and mount it onto the directory /mnt.

2. Enter the following commands:

For RHEL 3.9, 64 bit:

```
# cd /mnt/Linux/drivers
# rpm -ivh mptlinux-2.06.77.00-1.rhel3.amd64.rpm
```

For RHEL 4.7, 32 bit and 64 bit:

```
# cd /mnt/Linux/drivers
# rpm -ivh mptlinux-redhat4.0-3.13.04.00-2.i686.rpm
```

For RHEL 5.1 and 5.2, 64 bit:

```
# cd /mnt/Linux/drivers
# rpm -ivh mptlinux-4.00.41.00-1-rhel5.x86_64.rpm
```

3. Installation of the new drivers is now complete. Reboot the server for the changes to take effect.

Installing SUSE Linux Enterprise Server 9 and 10

This chapter contains information about *manually* installing SUSE Linux Enterprise Server (SLES) 9 and 10 operating system (OS) on a SunFire X4100/X4100 M2 or X4200/X4200 M2 server. It contains the following sections:

- [“About SLES 9 Installation” on page 50](#). Describes installation from a local or remote CD
- [“About SLES 10 Installation” on page 55](#). Describes installation from a local or remote CD
- [“Installing SLES 9 or 10 Using PXE” on page 59](#). Describes installation from a PXE image stored on a network-attached PXE server
- [“Updating the SLES 9 or 10 OS and SCSI Drivers” on page 77](#). Describes updating the OS after it has been installed.
- [“Post Installation Issue: Disk Added to HBA in Slot 0 Prevents Server OS Boot” on page 79](#). Describes a known post-OS installation issue with adding a hard disk to an HBA installed in Slot 0 of the server.

Note – If you want to mirror your OS, you must create the RAID before you install the OS. See [“Configuring RAID for Any Operating System from the BIOS” on page 87](#).

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 X4100/X4100 M2 or X4200/X4200 M2 server. The most common methods to install SLES 9 on your server are to use:

- 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 “[Installing SLES 9 or 10 Using PXE](#)” on [page 59](#)).

Note – The minimum supported 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 SLES 9 documentation:

- **README file**—The README file contains late-breaking information about system requirements and system configuration for your version of SLES 9. It is available on the SLES 9 Documentation CD (and SLES 9 SP3 CD1).
- *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 information about configuring your system and integrating it with your existing network services.
- **SLES 9 Support Sites**—SUSE provides considerable technical information about the Enterprise Server operating system at its product and support web sites. See the SLES 9 home page at <http://www.novell.com/products/linuxenterpriseserver>.
- If you need to know the logical names of your physical Internet interfaces when configuring your OS, refer to the appendix: “[Identifying Logical and Physical Network Interface Names for Solaris OS Installation](#)” on [page 101](#).

Task Map for SLES 9 Installation

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

Installation Task	Relevant Procedure(s) or Source(s)
Collect information about your system and network.	“Preparing to Install SLES 9” on page 51
Install SLES 9 and SLES 9 SP3 from a local or remote CD/DVD drive.	“Installing SLES 9 From Distribution Media” on page 52 or “Installing SLES 9 Using the Remote Console Application” on page 53
Install SLES 9 SP3 from an image stored on a networked system.	<i>SUSE Linux Enterprise Server 9 Installation Manual</i>
Install SLES 9 SP3 from a PXE server.	“Installing SLES 9 or 10 Using PXE” on page 59
Update SLES 9 SP3 software.	“Updating the SLES 9 or 10 OS and SCSI Drivers” on page 77

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

Preparing to Install SLES 9

You can install the SLES 9 operating system (OS) from a local CD/DVD drive, remote CD/DVD drive, or the network; however, you need to collect some information about your system before you proceed with any one of these installation methods.

Installation Prerequisites

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

- DHCP server name
- MAC address on system label
- The SLES 9 SP3 set of CDs and SLES 9 CDs

Installing SLES 9 From Distribution Media

SLES 9 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

Installation from distribution media requires the following items:

- SLES 9 media base CD set and SP3 CD set
- Sun Fire X4100/X4100 M2 or X4200/X4200 M2 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

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

1. **Power on the system.**
2. **Insert the SLES 9 CD 1 (or the DVD) into your local CD/DVD drive.**
SUSE Linux boots from the Distribution CD. The graphical boot loader displays several boot options.
3. **During the installation process, you are prompted to swap Distribution CDs and to remove media before reboots. Follow the prompts.**

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

4. 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 X4100/X4100 M2 or X4200/X4200 M2 server using the ILOM Remote Console application.

▼ To Install SLES 9 Using the ILOM Remote Console Application

1. Locate your SLES 9 installation CD/DVD or the equivalent ISO images.

Note – The Remote Console application can redirect ISO images.

2. Connect to the ILOM Service Processor web GUI.

See the topic that describes how to log in to and out of the Sun ILOM web GUI in the *Integrated Lights-Out Manager (ILOM) Administration Guide* (note that there are multiple versions of ILOM, be sure to refer to the guide that matches your server's installed version of ILOM).

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" chapter of the *Integrated Lights Out Manager (ILOM) Administration Guide* 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 – Diskette redirection is also available through the JavaRConsole. See the *Integrated Lights Out Manager (ILOM) Administration Guide* 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 the 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 the SLES 9 installation program prompts you to insert CD 1 into the drive.

Note – If SLES 9 indicates that there is not enough memory for graphical installation and that you must use text-based installation, use the 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 “[Installing SLES 9 or 10 Using PXE](#)” on [page 59](#))

SLES 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 SLES 10 CD 1 contains late-breaking information about system requirements and system configuration.
- The Release Notes for SLES 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 SLES 10. It is available on the first installation CD under the `docu` directory as the file `sles-admin.pdf` under the appropriate language directory.
- SLES 10 Support Sites - SUSE provides considerable technical information about the Enterprise Server operating system at its product and support web sites. See the SLES 10 home page at <http://www.novell.com/products/server/> for additional support information.
- If you need to know the logical names of your physical Internet interfaces when configuring your OS, refer to the appendix: “[Identifying Logical and Physical Network Interface Names for Solaris OS Installation](#)” on [page 101](#).

Task Map for SLES 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 56 or “Installing the SLES 10 Using the Remote Console Application” on page 57
Install SLES 10 from local or remote CD/DVD drive or PXE server.	<i>SUSE Linux Enterprise Server 10 Installation Manual</i>
Install SLES 10 from an image stored on a networked system.	“Installing SLES 9 or 10 Using PXE” on page 59
Install SLES 10 from a PXE server.	“Installing SLES 9 or 10 Using PXE” on page 59
Update SLES 10 software.	“Updating the SLES 9 or 10 OS and SCSI Drivers” on page 77

Installing SLES 10 From Distribution Media

SLES 10 provides an easy-to-use graphical interface for installing and configuring the operating system. Whether you are using Distribution CDs to install SLES 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 X4100/X4100 M2 or X4200/X4200 M2 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
- SLES 10 installation guide, *SUSE Linux Enterprise Server 10 Installation and Administration Guide* (see [“SUSE Linux Installation and Configuration Documentation” on page 50](#))

▼ 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 the SLES 10 Using the Remote Console Application

This topic explains how to install the SLES 10 OS on your Sun Fire X4100/X4100 M2 or X4200/X4200 M2 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 GUI.**
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” chapter of the *Integrated Lights Out Manager (ILOM) Administration Guide* for more information (note that there are multiple versions of ILOM, be sure to refer to the guide that matches your server’s installed version of ILOM).
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) Administration Guide* for more information (note that there are multiple versions of ILOM, be sure to refer to the guide that matches your server's installed version of ILOM).

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 10 installation menu appears, use arrow keys to select Installation and press Enter.
13. Proceed with SLES 10 installation as usual.

Installing SLES 9 or 10 Using PXE

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 X4100/X4100 M2 or X4200/X4200 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 59
- “Configuring a DHCP Server” on page 61
- “Installing Portmap” on page 62
- “Configuring the TFTP Service” on page 62
- “Installing and Configuring the neopxe Boot Server Daemon” on page 63
- “Configuring the NFS Service” on page 65
- “Disabling the Firewall” on page 66

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 or 10 media set
- Sun Fire server 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 X4100/X4100 M2 or X4200/X4200 M2 web site. The download links are available at

<http://www.sun.com/servers/entry/x4100/support.xml>

or

<http://www.sun.com/servers/entry/x4200/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 (SP3). 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/support/pxeboot/sles9-pxefiles.tar.gz /tmp/
```


For SLES 10:

```
# cp /mnt/cdrom/support/pxeboot/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 -zxvf /tmp/sles9-pxefiles.tar.gz
```


For SLES 10:

```
# tar -zxvf /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 is 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 "PXEClient"; 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/pxeboot`
- 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/sles9-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/sles9-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

PXE is a powerful and convenient solution for setting up a number of Sun Fire X4100/X4100 M2 or X4200/X4200 M2 servers so their configuration is identical.

Before You Begin

The network interface card (NIC) in your Sun Fire X4100/X4100 M2 or X4200/X4200 M2 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.

Task Map

To take advantage of PXE installations on your network, you need to perform the following tasks.

Task	Related Topic
Set up your Linux network and PXE server.	“Installing SLES 9 or 10 Using PXE” on page 59
Install SUSE Linux images on that PXE server.	“Creating a SLES 9 Service Pack PXE Install Image on the PXE Server” on page 67
Configure your server to boot from or to install from a SLES 9 or SLES 9 Service Pack image on a PXE server.	“Installing SLES 9, SP3 From a PXE Server” on page 72

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 also acts as your PXE server. The PXE server provides the operating system files to your PXE client.

Before You Begin

Before you install a SLES 9 image on your PXE server, you must configure your Linux network to support PXE images. See [“Installing SLES 9 or 10 Using PXE” on page 59](#) 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/DVD drive
- SLES 9 media CD set
- SLES 9 SP3 media CD set
- Sun Fire server 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.

Note – Before you start this procedure, verify that your network has been preconfigured to support PXE installation. Refer to [“Installing SLES 9 or 10 Using PXE” on page 59](#).

1. **Reboot the PXE/DHCP server.**
2. **Insert the Tools and Drivers CD into the CD/DVD drive.**
3. **Copy the PXE support files from the Tools and Drivers CD into the `/tmp` directory by typing the following commands:**

Note – The compressed .tar file that is used in this step depends on which SLES version you are creating an install image for. The remainder of the instructions assume that SLES 9, SP 3 is being used. If you are using SLES 10, substitute `sles10-pxefiles.tar.gz`.

```
# mount /dev/cdrom /mnt/cdrom
# cp -a /mnt/cdrom/support/pxeboot/sles9sp3-pxefiles.tar.gz
  /tmp
# cd /tmp
# gunzip sles9sp3-pxefiles.tar.gz
# tar xvf sles9sp3-pxefiles.tar
# umount /mnt/cdrom
```

Note – For installing SLES 9 SP3, you require both the SLES 9 base media set and the SLES 9 SP3 media set.

Setting Up and Copying SLES 9 Software to a Directory

The following steps explain how to create the directory setup containing both the SLES 9 base and the SLES 9, SP3 files for PXE installation.

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

1. Set up the directory structure that holds the SLES 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}
```

2. Insert the SLES 9 CD 1 into the server's CD/DVD drive.

3. Mount and copy the contents of the CD to the PXE server directory `/home/pxeboot/sles9/sles9/CD1` by entering the following commands:

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

4. Unmount the SLES 9 CD 1 by entering:

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

5. Remove the SLES 9 CD 1.

6. Repeat the above steps for mounting and copying CD media contents to corresponding directories in `/home/pxeboot/sles9/core9` as given below.

```
# 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
```

7. Create directories for SLES 9 SP3 CDs by typing the following command:

```
# mkdir /home/pxeboot/sles9/sles9-sp3/CD{123}
```

8. Insert the SLES 9 SP3 CD 1 into the CD/DVD drive

9. Mount and copy the contents of the CD to the PXE server by entering the following commands:

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

10. Unmount the CD.

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

11. Remove the SLES 9, SP3 CD 1 from the CD/DVD drive.

12. Repeat the above steps to mount, copy, and unmount the SLES 9, SP3 CD 2 and CD 3. Substitute the following copy commands for CD2 and CD3.

```
# 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 command:

```
# 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 – Enter 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 X4100/X4100 M2 or X4200/X4200 M2 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 X4100/X4100 M2 or X4200/X4200 M2 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 [“Installing SLES 9 or 10 Using PXE” on page 59](#).
- Installed a SLES 9 image on that Linux PXE server. See [“Creating a SLES 9 Service Pack PXE Install Image on the PXE Server” on page 67](#).

▼ 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 X4100/X4100 M2 or X4200/X4200 M2 server to which you are installing the SLES 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, enter 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 X4100/X4100 M2 or X4200/X4200 M2 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 [“Updating the SLES 9 or 10 OS and SCSI Drivers”](#) on page 77.

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 [“Installing SLES 9 or 10 Using PXE”](#) on page 59).

The two procedures in this section are:

- [“Creating a SLES 10 PXE Install Image on the PXE Server”](#) on page 73
- [“Installing SLES 10 From a PXE Server”](#) on page 75

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/DVD drive
- SLES 10 media CD set
- Sun Fire server 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:

- Create a SLES 10 image on your PXE server.
- Set up and copy SLES 10 software to a directory.
- Set up the PXE files.

▼ 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 xzf sles10-pxefiles.tar
# umount /mnt/cdrom
```

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 holds the SLES 10. Enter the following command:

```
# mkdir -p /home/pxeboot/sles10/CD{1,2,3,4}
```
2. Insert SLES 10 CD 1 into your server and copy its content to your PXE server. Enter the following command:

```
# 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/
```

Setup PXE Files

1. Copy the `autoinst.xml` file from the `/tmp/sles10/` directory to the root of the PXE image. Enter the following command:

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

2. On your PXE server, modify the file `home/pxeboot/pxelinux.cfg/default` adding the following entry to it:

Note – Enter 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
```

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

3. Save and exit the file.

Installing SLES 10 From a PXE Server

This procedure describes the final step of installing the SLES 10 boot image onto your Sun Fire X4100/X4100 M2 or X4200/X4200 M2 server. Before proceeding with this procedure you must have done the following:

- Configured your Linux network to support a PXE server. See [“Installing SLES 9 or 10 Using PXE” on page 59](#).
- Installed a SLES 10 image on that Linux PXE server. See [“Creating a SLES 10 PXE Install Image on the PXE Server” on page 73](#).

▼ 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, enter 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 (see [“Updating the SLES 9 or 10 OS and SCSI Drivers”](#) on page 77).

Updating the SLES 9 or 10 OS and SCSI Drivers

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 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™ X4100/X4100M2 or X4200/X4200M2 server

2. Mount it onto the directory /mnt.

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

3. Enter the following commands:

For SLES9 SP4 and older, 64 bit

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

```
# rpm -ivh mptlinux-sles9.0-3.13.04.00-2.x86_64.rpm
```

For SLES 10 SP2 and older, 64-bit

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

```
# rpm -ivh mptlinux-4.00.41.00-1-sles10.x86_64.rpm
```

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

```
# reboot
```

Post Installation Issue: Disk Added to HBA in Slot 0 Prevents Server OS Boot

On systems running SLES 9 or 10, if you add a disk to a host bus adapter (HBA) card that is plugged into slot 0 of the server, you might not be able to boot the system. This is because SLES 9 and 10 enumerates IDE and SCSI devices in scan order, and the BIOS scans PCI devices in ascending order. The scanning priority is:

1. NIC
2. Slot 0
3. SAS
4. Slot 2
5. Slot 3
6. Slot 4
7. Slot 1

If there is only one drive in the system connected to the internal LSI SAS disk controller, it is enumerated as `/dev/sda`. Let's say you install the SLES 9 or 10 operating system on that device. If an external device is later connected to an HBA card in slot 0, that device is enumerated as `/dev/sda` and the internal device is enumerated as `/dev/sdb`. However, the SLES 9 and 10 boot device points to `/dev/sda`, which is now an external device (not the internal device on which you installed the operating system) and so the system does not boot.

The problem does not occur if the HBA card is plugged into slots 1–4 because these slots are scanned later than the internal disk controller. This problem is not specific to the server or the HBA card.

Workaround

Plug the supported HBA card into slots 1–4, and then reboot the system. Also, follow these general guidelines:

- Do not move SCSI drives around.
- Do not change bus connections for IDE drives.
- Have a rescue disk ready in case these guidelines are not followed, as you might need to run `grub` or `vi /etc/fstab`.

Installing VMware

This chapter explains the procedure to install VMware ESX Server 3 on a Sun Fire X4100, X4100 M2, X4200, or X4200 M2 server.

Note – If you want to mirror your OS, you must create the RAID before you install the OS. See “Configuring RAID for Any Operating System from the BIOS” on page 87.

About VMware

Although you can install the VMware ESX Server 3 software from a local CD/DVD, a remote CD/DVD, or the network, you 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 ISO images from the VMware website and burned onto recordable CD/DVD 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 Server 3 software on server, consult the following required documents for VMware ESX Server 3 install, at http://www.vmware.com/support/pubs/vi_pubs.html.

- *Introduction to Virtual 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 Installation and Upgrade Guide for Virtual Infrastructure 3*, Chapter 6, "Remote and Scripted Installations."

Task Map for VMware ESX Server 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 82.
Download ISO image and burn to CD.	"To Install VMware ESX Server From CD-ROM" on page 83.
Begin installing the VMware ESX software using a local or network-attached CD or virtual CD drive.	"To Install VMware ESX Server From Local Media" on page 84.
Identify a specific network interface.	"Planning Network Interfaces" on page 83.
Complete the VMware ESX Server 3 software installation.	Refer to: http://www.vmware.com/support/pubs/vi_pubs.html
Update the ESX Server 3 software if necessary.	"VMware Updates and Patches" on page 86.

Planning Network Interfaces

The Virtual Infrastructure 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 the *Sun Fire X4100/X4100 M2 and X4200/X4200 M2 Servers Service Manual* (819-1157) for detailed information concerning network interface cabling and the BIOS considerations of these interfaces.

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

Note – For the Sun Fire X4100 M2 and 4200 M2, VMware ESX 3.0.1 and earlier versions did not support the use of the bottom two built-in NICs (labeled **NET0** and **NET1**). Subsequent versions of VMware ESX 3 support all four Sun Fire X4100 M2 and 4200 M2 built-in NICs (**NET0**, **NET1**, **NET2** and **NET3**).

Installing VMware ESX Server From CD-ROM

The following procedure applies to installing VMware ESX Server 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 Server.
- If no internal CD-ROM is available, use the network-attached virtual CD (or a USB CD-ROM).

▼ To Install VMware ESX Server From CD-ROM

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

1. **Download the ISO image at**
<http://www.vmware.com/download/vi/eval.html>.
- a. **Burn the image to a CD/DVD.**

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

2. **Install the ESX Server software on the Sun Fire X4100/X4200 system.**
3. **Update the ESX Server software if necessary. Updates are available at**
<http://www.vmware.com/support/>.
The process is detailed in the following sections.

VMware ESX Server Installation Requirements

Before you begin installing VMware ESX Server 3 and later on your Sun Fire X4100/X4200 server, you require:

- USB Keyboard, 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 (only if no physical drive is present).
- CD-ROM of VMware ESX 3 media.
- The *Installation and Upgrade Guide for VMware Infrastructure*

▼ To Install VMware ESX Server From Local Media

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

2. Insert the media into CD/DVD drive. The server boots 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:

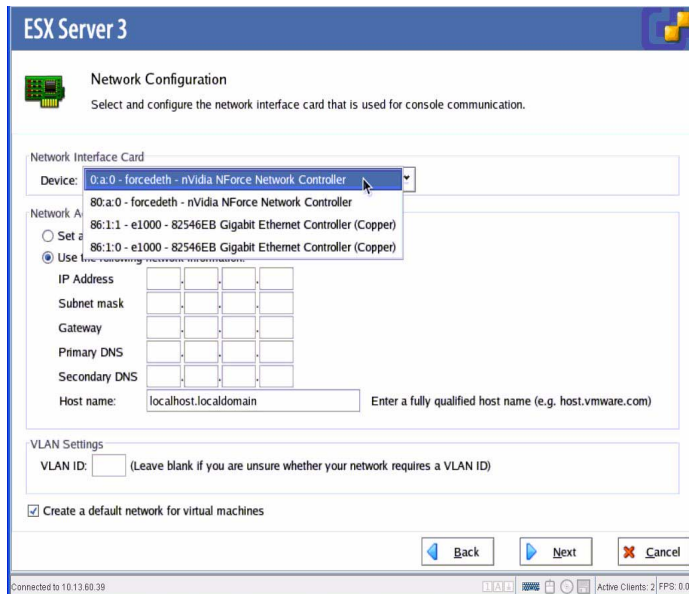
esx text

4. Refer to the *Installation and Upgrade Guide for VMware Infrastructure* 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.

FIGURE 6-1 Example ESX Server Network Configuration Dialog Box (the listing may differ depending on the NICs installed in the Sun Fire server)



During ESX Server install network configuration, the interfaces are shown as these adapters if no extra or optional network controllers are installed in the **Sun Fire X4100/X4200**:

```
vmnic0 = "6:2:1 - e1000 - 82546EB Gigabit Ethernet Controller (Copper) "  
vmnic1 = "6:1:1 - e1000 - 82546EB Gigabit Ethernet Controller (Copper) "  
vmnic2 = "6:2:0 - e1000 - 82546EB Gigabit Ethernet Controller (Copper) "  
vmnic3 = "6:1:0 - e1000 - 82546EB Gigabit Ethernet Controller (Copper) "
```

Or, on some versions of the **Sun Fire X4200/X4200 M2**, two types of network interface cards are available:

```
vmnic0 = "0:a:0 - forcedeth - Nvidia NForce Network Controller "  
vmnic1 = "80:a:0 - forcedeth - Nvidia NForce Network Controller "  
vmnic2 = "86:1:1 - e1000 - 82546EB Gigabit Ethernet  
Controller (Copper) "  
vmnic3 = "86:1:0 - e1000 - 82546EB Gigabit Ethernet  
Controller (Copper) "
```

6. Complete the VMware installation.

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

VMware Updates and Patches

VMware ESX Server image updates are available at:
<http://www.vmware.com/selfsupport/>

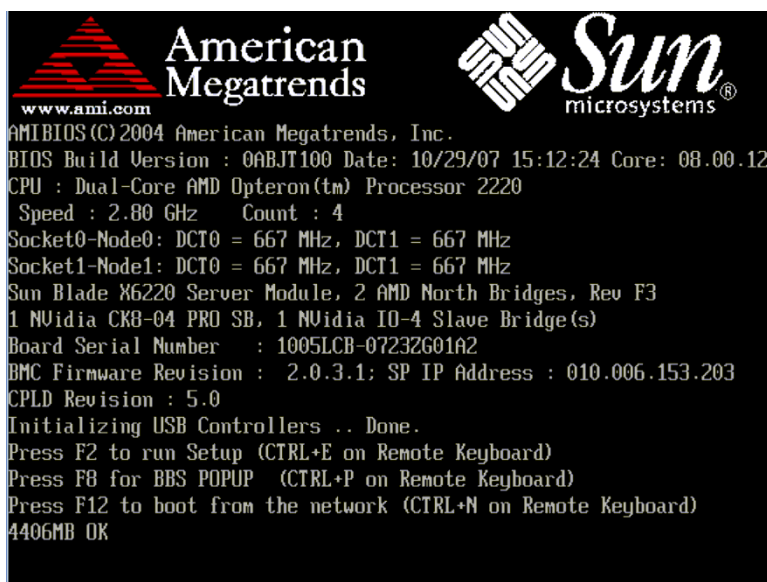
When upgrading VMware ESX, note that previous network interface mapping is retained and newly detected Nvidia NForce ethernet ports is mapped by ascending order of pci bus enumeration.

Configuring RAID for Any Operating System from the BIOS

If you want to install your OS on disks that are part of a 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 your server and then power it back on. The BIOS screen appears. Watch for the LSI Logic Corp. screen.

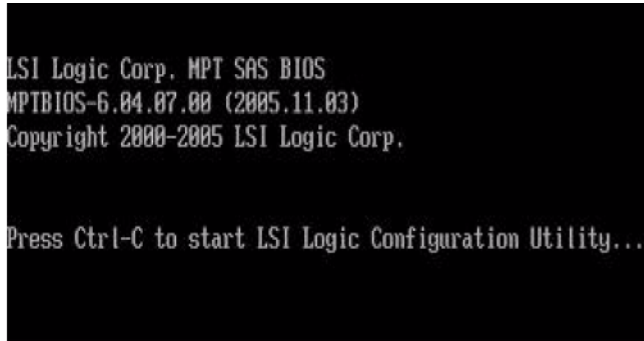
FIGURE A-1 Opening Screen of the Server BIOS



Watch for the LSI Logic prompt to press Ctrl-C.

2. When the BIOS screen shows the LSI Logic Corp. message, press Ctrl-C to start the LSI Logic Configuration Utility (see [FIGURE A-2](#)).

FIGURE A-2 BIOS Screen Showing LSI Logic Corp. Message



3. Follow the on-screen instructions to create a mirrored RAID.

You can choose between RAID 1 (two mirrored disks with an optional hot spare) or RAID 1E (three or more mirrored disks with one or two hot spares).

4. Exit the LSI RAID configuration utility.

5. 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 X4100/X4100 M2/X4200/X4200 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 89).
- 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 95).

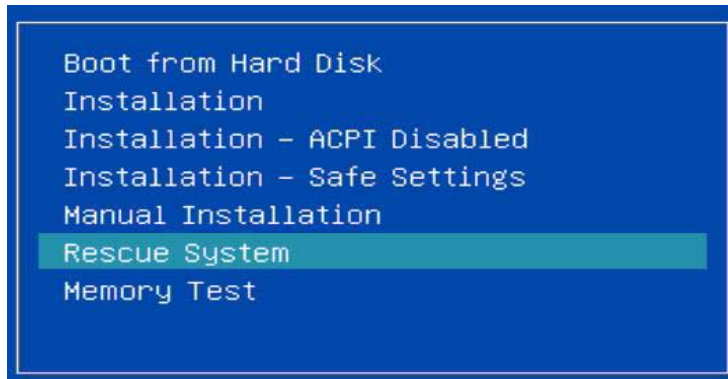
Identifying Logical and Physical Network Interface Names While Installing a SUSE Linux OS

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.

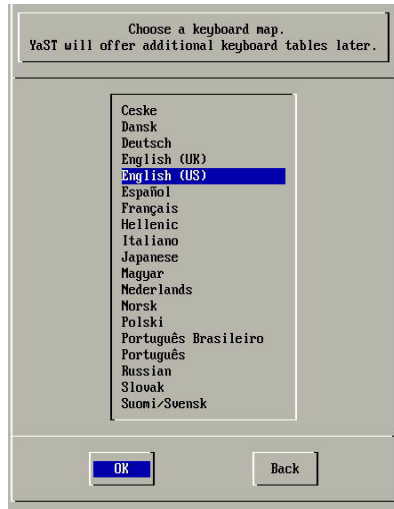
▼ Launch User Shell and Identify Network Interfaces

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



The message `Loading Linux Kernel` appears followed by the SUSE splash screen, then the `Choose a Keyboard Map` screen appears.

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



The user shell launches and the Rescue Login prompt appears.

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

```
INIT: Entering runlevel: 3
Boot logging started on /dev/tty1(/dev/console) at Wed May 17 19:49:24 2006
Master Resource Control: previous runlevel: N, switching to runlevel: 3
Initializing random number generator done
Starting syslog services done
Starting RPC portmap daemon done
Importing Net File System (NFS) unused
Master Resource Control: runlevel 3 has been reached
Skipped services in runlevel 3: nfsboot nfs

Rescue login: root
```

The Rescue prompt appears.

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

```
# ifconfig -a
```

```
INIT: Entering runlevel: 3 done  
Boot logging started on /dev/tty1(/dev/console) at Wed May 17 19:49:24 2006  
Master Resource Control: previous runlevel: N, switching to runlevel: 3  
Initializing random number generator done  
Starting syslog services done  
Starting RPC portmap daemon done  
Importing Net File System (NFS) unused  
Master Resource Control: runlevel 3 has been reached  
Skipped services in runlevel 3: nfsboot nfs  
  
Rescue login: root  
Rescue:~ # 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:bbd00000-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.
- Record the SUSE logical network interface name with the physical port MAC address for future reference.**
You need to refer to this record when configuring the network interfaces during the Linux SUSE OS installation.
6. 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.
 7. Restart the Linux SUSE installation program.

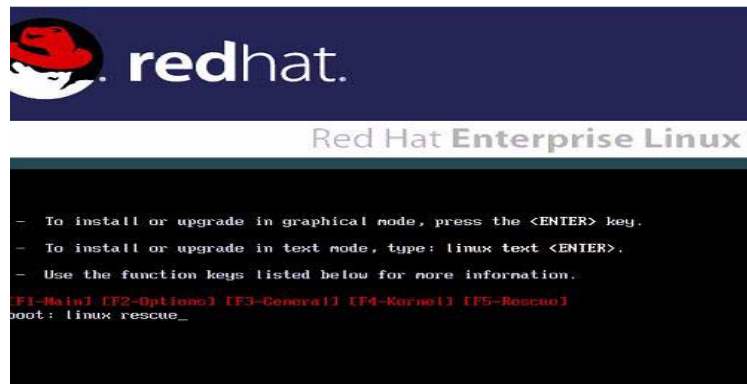
Identifying Logical and Physical Network Interface Names While Installing a RHEL Linux OS

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.



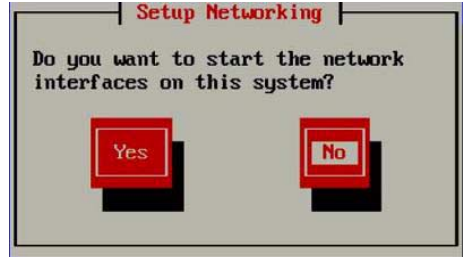
The Keyboard Type screen appears.

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



The Setup Network screen appears.

4. In the Setup Network screen, click No.



The Rescue screen appears.

5. In the Rescue screen, click Skip.



The user shell appears.

- 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.

```
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 08:14:4F:8C: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:bbd00000-bbda0000

eth7   Link encap:Ethernet  HWaddr 08:14:4F:8C: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
       LOOPBACK MTU:16436 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:0
       RX bytes:0 (0.0 B) TX bytes:0 (0.0 B)

~/bin/sh-3.00#
```

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

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 101).
- *While* configuring a Solaris OS during installation (see [“Identifying Logical and Physical Network Interface Names While Installing a Solaris OS”](#) on page 103).

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

Pre-installed Solaris OS are 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.

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 halts 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 are 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-DN-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.

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 resumes where you last left off.

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