Sun Fire X4640 Server Linux Installation Guide

Part No: 821–0468
December 2010, Rev A

ORACLE

121005@25097

Contents

Preface

This preface describes related documentation, submitting feedback, and a document change history.

Product Information Web Site

For information about the Sun Fire X4640 server, go to the following web site:

`http://www.oracle.com/goto/x86`

Click "Previous Products" from the left nav menu.

At that site, you can find links to the documentation, parts lists and downloads.

Related Books

The following is a list of documents related to your Oracle Sun Fire X4640 server. These and additional support documents are available on the web at:

`http://docs.sun.com/app/docs/prod/server.x64#hic`

Document Group	Document	Description
Sun Fire X4640 Server-Specific Documentation	Sun Fire X4640 Server Product Documentation	Integrated HTML version of all starred (*) documents, including Search and Index.
	Sun Fire X4640 Server Getting Started Guide	Pictorial setup quick reference.

Document Group	Document	Description
	"Installation Overview" in *Sun Fire X4640 Server Installation Guide**	How to install, rack, and configure the server up to initial power-on.
	"Overview of the Sun Fire X4640 Server Product Notes" in *Sun Fire X4640 Server Product Notes**	Important late-breaking information about the Sun Fire X4640 server.
	"Introduction to Sun Installation Assistant" in *Sun Installation Assistant 2.3 through 2.4 User's Guide for x64 Servers**	A Sun tool used to perform an assisted installation of a supported Windows or Linux OS, upgrade firmware (regardless of OS), and other tasks.
	Introduction to Solaris OS and OpenSolaris Installation*	How to install the Solaris OS on your server.
	"Introduction to Linux Installation" on page 9*	How to install a supported Linux OS on your server.
	"Introduction to Windows Installation" in *Sun Fire X4640 Server Windows Installation Guide**	How to install supported versions of Microsoft Windows on your server.
	"Introduction to ESX Installation" in *Sun Fire X4640 Server ESX Installation Guide**	How to install supported versions of the ESX OS on your server.
	*Sun ILOM 3.0 Supplement for the Sun Fire X4640 Server**	Version-specific supplemental information for your server's *Integrated Lights Out Manager*.
	*Sun Fire X4640 Server Diagnostics Guide**	How to diagnose problems with your server.
	"Sun Fire X4640 Server Service Manual Overview" in *Sun Fire X4640 Server Service Manual**	How to service and maintain your server.
	Sun Fire X4640 Server Safety and Compliance Guide	Safety and compliance information about your server.
	4U Express Rail Rackmounting Kit Label	Pictorial label on racking your server
	Sun Fire X4640 System Overview Label	Pictorial label on servicing your server
	Sun Fire X4640 Top Cover Label	Pictorial label on removing components

Document Group	Document	Description
	Sun Fire X4640 CPU Matrix Label	Pictorial label on CPU module and fillers
Sun Integrated Controller Disk Management	*Sun x64 Server Disk Management Overview*	Information about managing your server's storage.
	Sun LSI 106x RAID Users Guide	Information about LSI RAID features
x64 Servers Applications and Utilities Reference Documentation	*Sun x64 Server Utilities Reference Manual*	How to use the available utilities included with your server.
Oracle Integrated Lights Out Manager (ILOM) 3.0 Documentation	*Oracle Integrated Lights Out Manager (ILOM) 3.0 Feature Updates and Release Notes*	Information about new ILOM features
	Oracle Integrated Lights Out Manager (ILOM) 3.0 Getting Started Guide	Overview of ILOM 3.0
	Oracle Integrated Lights Out Manager (ILOM) 3.0 Concepts Guide	Conceptual information on ILOM 3.0
	Oracle Integrated Lights Out Manager (ILOM) 3.0 Web Interface Procedures Guide	How to use ILOM through the web interface
	Oracle Integrated Lights Out Manager (ILOM) 3.0 CLI Procedures Guide	How to use ILOM through commands
	Oracle Integrated Lights Out Manager (ILOM) 3.0 Management Protocols Reference Guide	Information on management protocols

About This Documentation (PDF and HTML)

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

We Welcome Your Comments

Oracle is interested in improving its documentation and welcomes your comments and suggestions. To share your comments, go to `http://docs.sun.com` and click Feedback.

Change History

The following changes have been made to the documentation set.

- October 2009, initial publication
- January 2010, two documents revised
  - Service Manual - Revised DIMM population rules and addressed illustration issues
  - Product Notes - Revised software information and fixed bugs
- April 2010, one document revised
  - Installation Guide - Revised power specifications
- December 2010, two documents revised
  - Service Manual - Revised motherboard FRUID update instructions
  - Product Notes - Revised software information and fixed bugs

Introduction to Linux Installation

This document provides instructions for installing Red Hat Linux and SUSE Linux on Oracle's Sun Fire X4640 server. The following topics are included:

Description	Link
Describes how to use the Sun Installation Assistant (SIA), a tool that helps you perform a variety of deployment and recovery tasks on your Sun x64 server.	"Sun Installation Assistant (SIA)" on page 11
Describes how to install Red Hat Linux on your server.	"Installing Red Hat Enterprise Linux" on page 13
Describes how to install SUSE Linux on your server.	"Installing and Updating SUSE Linux Enterprise Server" on page 19
Describes how to configure a Preboot Execution Environment (PXE) server on a Linux system and use it to install Linux on your servers.	"Configuring a Linux Server to Support PXE Installation" on page 23
Describes how to boot from OS installation media. If you are installing locally, you can boot from physical media (CD or DVD). If you are installing remotely, you can boot from physical media or an equivalent ISO file.	"Booting From OS Distribution Media" on page 39
Describes how to prepare your server for OS installation, including how to view and configure serial and video output, and how to erase your primary boot disk, which is necessary if an OS is already installed.	"Preliminary Tasks Before Installing An OS" on page 43
Describes how to find the logical name (assigned by the OS) and the physical name (MAC address) of each network interface.	"Identifying Logical and Physical Network Interface Names for Linux OS Configuration" on page 47

Your server supports RHEL 4.8, RHEL 5.3, SLES10 SP2, and SLES 11. For a complete list of supported operating system, see `http://www.sun.com/servers/x64/x2270/os.jsp`

Sun Installation Assistant (SIA)

The Sun Installation Assistant (SIA) is a tool that helps you perform a variety of deployment and recovery tasks on your Sun x64 server. SIA can be launched from a bootable CD, a USB flash drive prepared with SIA software, or from a customized SIA image available on a PXE installation server.

SIA Task Overview

The following tasks can be performed using SIA:

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

- Upgrade your system BIOS, ILOM service processor firmware, and installed storage device firmware to the latest version (regardless of the OS on your server).
- Perform an assisted installation of a supported Linux operating system. SIA installs appropriate drivers and platform-specific software, eliminating the need to create a separate driver disk. You provide the licensed OS distribution media (from CD or network image file) and the SIA wizard guides you through the installation.

  Note – As of the release of this document, SIA can not be used to install Windows Server 2008 R2. You will need to perform a manual installation of Windows as described in this document.

- Update your SIA session with the latest firmware and drivers from Sun.

Obtaining SIA

The SIA is available as an option with most new x64 Sun servers. In addition, an ISO CD image of SIA is available for download from Sun. For a complete list of supported Sun server platforms, refer to the SIA information page at:

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

Documentation describing how to use your version of SIA can be found on the Sun documentation web site:

http://docs.sun.com/app/docs/prod/install.x64svr

Installing Red Hat Enterprise Linux

Your server supports Red Hat Enterprise Linux (RHEL) 4.8 and RHEL 5.3. The related topics include:

Overview of Red Hat Enterprise Linux Installation

This topic provides instructions for installing RHEL from distribution media. You can also install RHEL using a PXE installation, as described in "Configuring a Linux Server to Support PXE Installation" on page 23.

Note the following conditions:

- If you are going to install your OS on a disk that is part of a RAID array, you must configure the RAID array before installing your OS. See your disk management documentation collection for details.
- While configuring an operating system for a networked server, it is necessary to provide the logical names (assigned by the OS) and the physical name (MAC address) of each network interface. See "Identifying Logical and Physical Network Interface Names for Linux OS Configuration" on page 47 for details.

Remote Installation Using the ILOM Remote Console

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

After you have configured the remote console session, you can boot from the distribution media image (either a CD/DVD or equivalent ISO file). From then on, the installation proceeds as described in this topic.

For more information, see "How to Connect Remotely Using the ILOM Web Interface" in *Sun ILOM 3.0 Supplement for the Sun Fire X4640 Server*.

Red Hat Installation and Administration Documentation

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

Document	Description	Where to Find
README file	Contains late-breaking information about system requirements and system configuration for your version of the Red Hat Enterprise Linux software.	On the Red Hat Enterprise Linux CD 1, and online from `http://www.redhat.com/docs/`
Red Hat Enterprise Linux Quick Installation Guide	Brief printed guide containing useful information to assist you during the installation of Red Hat Enterprise Linux.	Included with the Red Hat Enterprise Linux distribution media
Red Hat Enterprise Linux Installation Guide	Full version of the printed *Quick Installation Guide*.	Included on the Red Hat Documentation CD, and available for download from `http://www.redhat.com/docs/`
Red Hat Enterprise Linux Introduction to System Administration	Introductory information for Red Hat Enterprise Linux system administrators.	Available for download from `http://www.redhat.com/docs/manuals/enterprise/`
Red Hat Enterprise Linux System Administration Guide	Information on customizing the Red Hat Enterprise Linux software.	Available for download from `http://www.redhat.com/docs/manuals/enterprise/`
System Administration for Diskless Booting	Information on configuring your server and Red Hat Linux for diskless booting.	Available for download as the *Red Hat Enterprise Linux Installation Guide for the x86, Itanium, and AMD64 Architectures* at `http://www.redhat.com/docs/manuals/enterprise/`
Red Hat Enterprise Linux Security Guide	Guide for securing the Red Hat Enterprise Linux software.	Available for download from `http://www.redhat.com/docs/manuals/enterprise/`

Installing RHEL From Distribution Media

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

Step	Description	Link
1	Download the updated media kit from `http://www.redhat.com/docs/manuals/enterprise`	"How to Download RHEL Media Kits" on page 15
2	Install the Red Hat Enterprise Linux software	"How to Install RHEL From Distribution Media" on page 16
3	Update the Red Hat Enterprise Linux software	"How to Update the Red Hat Enterprise Linux Software" on page 17
4	Update the SCSI drivers	"How to Update the RHEL SCSI Drivers" on page 17

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

- Red Hat Enterprise Linux media set (CD or DVD) or an equivalent ISO image. The ISO image is only used for remote installation only.
- DVD-ROM drive.

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

- USB keyboard and mouse.
- Monitor.

How to Download RHEL Media Kits

Before You Begin If necessary, configure your console display and erase your boot hard drive. See "Preliminary Tasks Before Installing An OS" on page 43 for details.

1 Obtain your enterprise account information.

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

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

See Also
- "How to Install RHEL From Distribution Media" on page 16
- "How to Update the Red Hat Enterprise Linux Software" on page 17
- "How to Update the RHEL SCSI Drivers" on page 17

▼ How to Install RHEL From Distribution Media

1. **Configure the server and boot it from the distribution media, as described in "Booting From OS Distribution Media" on page 39.**

   The server boots from the distribution media.

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

   - **For text mode, type the following command: `boot: linux text`.**
   - **For graphical mode, press Enter at the boot prompt.**

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

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

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4. **Proceed to "How to Update the Red Hat Enterprise Linux Software" on page 17.**

See Also

- "How to Update the Red Hat Enterprise Linux Software" on page 17
- "How to Update the RHEL SCSI Drivers" on page 17

Updating RHEL

Use this procedure to update RHEL to the latest OS.

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

Updating RHEL consists of the following procedures:

- "How to Update the Red Hat Enterprise Linux Software" on page 17
- "How to Update the RHEL SCSI Drivers" on page 17

How to Update the Red Hat Enterprise Linux Software

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

Your server must have access to the Internet.

1. **Run the `yum` update program.**

   ```
   # yum
   ```

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

   You should periodically update your system using `yum`.

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

   ```
   # man yum
   ```

See Also "How to Update the RHEL SCSI Drivers" on page 17

How to Update the RHEL SCSI Drivers

1. **Insert the Tools and Drivers CD for your server and mount it onto the directory /mnt.**

2. **Type the following commands:**

   ```
   # cd /mnt/Linux/drivers
   # rpm -ivh driver-filename
   ```

   For example:

   ```
   # cd /mnt/Linux/drivers
   # rpm -ivh mptlinux-4.00.43.00-1-rhel5.x86_64.rpm
   ```

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

   Installation of the new drivers is now complete.

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

Installing and Updating SUSE Linux Enterprise Server

This topic provides instructions for installing SUSE Linux Enterprise Server (SLES) on your server. Your server supports SLES 10 SP 2 and SLES 11.

The related topics include.

Introduction to Installing SLES From Distribution Media

This topic describes how to install SLES from distribution media.

Note the following conditions:

- If you are going to install your OS on a disk that is part of a RAID array, you must configure the RAID array before installing your OS. See your disk management documentation collection for details.
- While configuring an operating system for a networked server, you must provide the logical names (assigned by the OS) and the physical name (MAC address) of each network interface. See "Identifying Logical and Physical Network Interface Names for Linux OS Configuration" on page 47 for details.

Remote Installation Using the ILOM Remote Console

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

Once the remote console session is configured, it allows you to boot from the distribution media image (either a CD/DVD or equivalent ISO file). From then on, the installation proceeds as described in this topic.

For more information, see "How to Connect Remotely Using the ILOM Web Interface" in *Sun ILOM 3.0 Supplement for the Sun Fire X4640 Server*.

▼ How to Install SLES From Distribution Media

Before You Begin If necessary, configure your console display and erase your boot hard drive. See "Preliminary Tasks Before Installing An OS" on page 43 for details.

1 **Configure the server to boot from the distribution media, as described in "Booting From OS Distribution Media" on page 39.**

The server boots from the distribution media.

2 **Follow the installation instructions provided with your SLES installation documentation to complete the installation of the system software.**

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

See Also "How to Update SLES" on page 20

▼ How to Update SLES

This task uses YaST to update SLES.

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

Before You Begin Obtain a Novell Customer Center username and password, and a SLES product activation code.

1 **Log in as superuser.**

2 **Open the YaST Online Update service.**

```
# you
```

The YaST user window appears.

3 **If you are behind a network firewall and need to use a proxy server to access the Internet, configure YaST with the correct proxy information.**

a. **Select the Network Services tab.**

b. **Select the Proxy screen on the right of the display.**

c. **Enter the correct proxy URLs in both the HTTP and HTTPS fields.**

d. Exit YaST.

e. Enter 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/
```

f. Restart YaST.

4 To register with the Novell Customer center:

a. Select the Software tab.

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

This requires your Novell Customer Center username and password, and a SLES product activation code.

5 Select the Online Update tab to perform the software update.

Configuring a Linux Server to Support PXE Installation

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

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

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

Configuring a PXE server consists of the following procedures.

Step	Description	Link
1	Copy files from the Tools and Drivers CD to the server system.	"How to Copy Files from the Tools and Drivers CD" on page 25
2	Verify the presence of, or install, the following servers and services:	■ DHCP – See "How to Install and Configure a DHCP Server" on page 25. ■ Portmap – See "How to Install Portmap on Your DHCP Server" on page 27. ■ TFTP – See "How to Configure the TFTP Service on Your DHCP Server" on page 28. ■ Neopxe – See "How to Install and Configure the neopxe Boot Server Daemon" on page 29. ■ NFS – See "How to Configure the NFS Service on Your PXE Server" on page 30.
3	Disable the firewall.	"Disabling the Firewall" on page 32
4	Create a PXE installation image.	"How to Create a PXE Installation Image for Red Hat Linux" on page 33 "Creating a PXE Image for SUSE Linux" on page 35

Step	Description	Link
5	Install Linux from a PXE server.	"How to Install RHEL and SUSE Linux From a PXE Server" on page 36

Overview of PXE Servers

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

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

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

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

Linux Distribution CDs and DVDs

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

TABLE 1 Linux Distribution CDs and DVDs

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

▼ How to Copy Files from the Tools and Drivers CD

Before You Begin Obtain the following items:

- Linux server equipped with:
  - DVD drive
  - USB keyboard
  - Monitor
- SUSE or Red Hat Linux media set
- Tools and Drivers CD

1. **If required, obtain a copy of the Tools and Drivers CD image.**

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

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

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

   ```
   # mkdir /tmp
   ```

4. **Copy the files to the `/tmp` directory:**

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

   where *name* is `rhel4`, `rhel5`, `sles10` or `sles11`.

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

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

   where *name* is `rhel4`, `rhel5`, `sles10` or `sles11`.

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

Next Steps "How to Install and Configure a DHCP Server" on page 25

▼ How to Install and Configure a DHCP Server

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

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

---

1. **Turn on the server and log in as superuser.**

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

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

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

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

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

   b. **Install the DHCP server.**

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

7 **Start the DHCP service.**

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

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

8 **Configure the server to always start DHCP.**

- For Red Hat, type:

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

  ```
  # yast > system > Runlevel Editor
  ```

Next Steps "How to Install Portmap on Your DHCP Server" on page 27

▼ How to Install Portmap on Your DHCP Server

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

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

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

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

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

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

b. **Install the portmap server.**

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

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

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

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

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

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

- For SLES11, insert DVD1 and type:

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

c. Unmount the CD/DVD drive. Type:

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

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

Next Steps "How to Configure the TFTP Service on Your DHCP Server" on page 28

▼ How to Configure the TFTP Service on Your DHCP Server

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

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

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

a. Mount the CD/DVD drive.

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

b. Install TFTP.

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

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

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

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

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

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

- For SLES11, insert DVD1 and type:

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

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

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

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

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

Make the following changes:

- **Change the `-s /tftpboot` entry to `-v -s /home/pxeboot`.**
- **Change the disable attribute to `no`.**

4 **Restart the inetd server.**

```
# service xinetd restart
```

Next Steps "How to Install and Configure the neopxe Boot Server Daemon" on page 29

▼ How to Install and Configure the neopxe Boot Server Daemon

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

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

---

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

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

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

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

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

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

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

4 **Configure the PXE Linux image.**

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

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

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

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

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

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

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

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

6 **Start the neopxe daemon.**

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

Next Steps "How to Configure the NFS Service on Your PXE Server" on page 30

▼ How to Configure the NFS Service on Your PXE Server

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

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

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

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

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

   b. **Install the NFS server package.**

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

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

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

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

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

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

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

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

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

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

   d. **Remove the CD or DVD from the server.**

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

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

4. **Start the NFS service.**

   ```
   # service nfs start
   ```

5. **Configure the server to always start the NFS service.**

   ```
   # chkconfig nfs on

   # chkconfig nfslock on
   ```

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

Next Steps "Disabling the Firewall" on page 32

Disabling the Firewall

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

- "How to Disable the Firewall for SUSE Linux" on page 32
- "How to Disable the Firewall for Red Hat Linux" on page 32

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

▼ How to Disable the Firewall for SUSE Linux

- **Use YaST to edit services for run levels. For example:**

```
yast > system > Runlevel Editor
```

Next Steps "Creating a PXE Image for SUSE Linux" on page 35

▼ How to Disable the Firewall for Red Hat Linux

1. **Stop the ipchains service.**

```
# service ipchains stop
```

2. **Stop the iptables service.**

```
# service iptables stop
```

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

```
# chkconfig ipchains off
```

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

```
# chkconfig iptables off
```

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

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

Next Steps "How to Create a PXE Installation Image for Red Hat Linux" on page 33

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

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

Before you install a Red Hat Enterprise Linux image on your PXE server, you must configure your Linux network to support PXE images. See "Overview of PXE Servers" on page 24.

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

- A CD/DVD drive on the DHCP Server.
- Red Hat Enterprise Linux media set. This can be a set of CDs or a DVD.
- A copy of the Red Hat files from the Tools and Drivers CD. See "How to Copy Files from the Tools and Drivers CD" on page 25 for details.

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

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

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

---

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

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

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

# cp -r /mnt/cdrom/* /home/pxeboot/rhel4/

# umount /mnt/cdrom
```

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

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

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

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

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

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

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

   ```
   key --skip
   ```

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

   Edit the `nfs` line is as follows:

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

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

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

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

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

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

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

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

Next Steps "How to Install RHEL and SUSE Linux From a PXE Server" on page 36

Creating a PXE Image for SUSE Linux

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

- "How to Set Up and Copy SUSE Software to a Directory" on page 35
- "How to Set Up SUSE PXE Files" on page 36

How to Set Up and Copy SUSE Software to a Directory

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

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

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

Before You Begin You must have a copy of the files from the Tools and Drivers CD. See "How to Copy Files from the Tools and Drivers CD" on page 25 for details.

1. **Set up the directory structure that will hold the SUSE Linux Enterprise Server 10 or 11. Type:**

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

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

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

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

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

3. **Remove the media from the server.**

   - **If you are installing SLES 10 or SLES 11 from a DVD, you are done. You do not need to copy DVD2.**
   - **If you are installing SLES 10 from CDs, repeat Step 2 and Step 3, copying the contents of each CD into the same directory.**

Next Steps "How to Set Up SUSE PXE Files" on page 36

How to Set Up SUSE PXE Files

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

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

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

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

Type the text block from `append` through `autoinst.xml` below as one continuous line with no returns.

Note – Substitute `sles11` for `sles10` if it is appropriate.

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

Next Steps "How to Install RHEL and SUSE Linux From a PXE Server" on page 36

How to Install RHEL and SUSE Linux From a PXE Server

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

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

1 **Power on the PXE client.**

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

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

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

A list of PXE servers appears.

3 **Select a PXE server from the list.**

The corresponding Linux installation image downloads onto the PXE client.

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

5 **Update the operating system.**

- **For Red Hat Linux, see "How to Update the Red Hat Enterprise Linux Software" on page 17.**
- **For SUSE Linux, perform an Online Software Update to update the operating system files.**

Booting From OS Distribution Media

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

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

▼ How to Boot From OS Media Locally

1 Connect to the console.

For more information, see "Connecting to the System Console" described the *Sun Fire X4640 Server Installation Guide*.

2 Power on or reset the server.

BIOS messages appear on the console.

3 Insert the distribution media.

Additional BIOS messages appear on the console.

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

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

After a delay, a menu offers a selection of boot devices.

```
    Please select boot device:
--------------------------------
USB CD/DVD
PXE:IBA GE Slot 1000 v1331
PXE:IBA GE Slot 1001 v1331
PXE:IBA GE Slot 4100 v1331
PXE:IBA GE Slot 4101 v1331
PXE:IBA GE Slot 8100 v1331
```

```
PXE:IBA GE Slot 8101 v1331
PXE:IBA GE Slot C100 v1331
PXE:IBA GE Slot C101 v1331

-------------------------------
```

5. **Select CD/DVD from the list.**

   Control passes to the OS installation program on the media.

6. **Follow the steps in your vendor's OS Installation guide.**

How to Boot From OS Distribution Media or ISO File Remotely

You can boot from the physical media (CD or DVD) or from an equivalent ISO image.

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

2. **Start and configure a remote console session.**

   For more information, see "Communicating With the ILOM and the System Console" in the *Sun Fire X4640 Server Installation Guide*.

   a. **Connect to the console.**

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

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

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

   Your remote console session is configured.

3. **Power on or reset the server.**

   BIOS messages appear on the console.

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

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

After a delay, a menu offers a selection of boot devices.

```
    Please select boot device:
--------------------------------
Virtual CD/DVD
PXE:IBA GE Slot 1000 v1331
PXE:IBA GE Slot 1001 v1331
PXE:IBA GE Slot 4100 v1331
PXE:IBA GE Slot 4101 v1331
PXE:IBA GE Slot 8100 v1331
PXE:IBA GE Slot 8101 v1331
PXE:IBA GE Slot C100 v1331
PXE:IBA GE Slot C101 v1331

--------------------------------
```

5 **Select a boot device from the list.**

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

Control passes to the OS installation program on the media.

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

Preliminary Tasks Before Installing An OS

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

These tasks include:

Accessing the Server Output During Installation

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

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

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

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

  There are two ways to connect to the serial port:

  - Physically, by connecting a cable to the serial port. See "How to Configure the Serial Port" on page 44.
  - Virtually, by configuring an SSH connection to the SP, then by issuing the `start /SP/console` command. See "Communicating With the ILOM and the System Console" in *Sun Fire X4640 Server Installation Guide* for more details.
- Video Port – After the SP startup is complete, the system begins POST/BIOS, and displays all output on the video port. This continues until the OS assumes control of the display. Most OS configurations continue to display information on the video port.

There are two ways to connect to the video port:

- Physically, by connecting a DB9 cable to the video port on the server. See "Installing the Server Hardware" in *Sun Fire X4640 Server Installation Guide*.
- Virtually, by starting a JavaRConsole session. See "Communicating With the ILOM and the System Console" in *Sun Fire X4640 Server Installation Guide*.

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

▼ How to Configure the Serial Port

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

Use the following terminal settings:

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

9600 baud rate

Disable software flow control (XON/XOFF)

2 **Power on the server.**

Console output appears on the serial port.

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

3 **If necessary, check the BIOS settings.**

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

b. **Use the Right Arrow key to navigate to the Server tab.**

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

c. **Use the Down Arrow key to highlight the Remote Access Configuration option, and press Enter.**

The Configure Remote Access type and parameters submenu screen appears.

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

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

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

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

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

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

How to Erase Your Boot Hard Disk

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

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

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

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

2. **Insert the Tools and Drivers CD into the server's CD/DVD drive.**

   If your server does not have a CD/DVD drive, use the remote console (JavaRConsole). See "How to Connect Remotely Using the ILOM Web Interface" in *Sun Fire X4640 Server Installation Guide*.

3. **Boot the system from the Tools and Drivers CD.**

   The tools and drivers main menu appears.

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

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

Identifying Logical and Physical Network Interface Names for Linux OS Configuration

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

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

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

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

This 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.

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

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

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

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

   The user shell launches and the Rescue Login prompt appears.

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

   The Rescue prompt appears.

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

   ```
   # ifconfig -a
   ```

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

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

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

   ```
   # ifconfig eth#
   ```

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

   ```
   # ifconfig eth0
   ```

   The output for `eth0` appears:

   In the sample output above:

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

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

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

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

   - **From the ILOM web interface, select Remote Control > Remote Power Control >Reset.**
   - **From other consoles, type `reboot` at the Rescue prompt (#), then press Enter.**

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

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

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

This 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.

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

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

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

   ```
   # ifconfig -a
   ```

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

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

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

   ```
   # ifconfig eth#
   ```

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

   ```
   # ifconfig eth0
   ```

The output for **eth0** appears:

In the sample output above:

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

8. **Record the Red Hat logical network interface name with the physical port MAC address for future reference. You will need to refer to this record when configuring the network interfaces during the Red Hat OS installation.**
9. **When you are done, do one of the following to exit the user shell.**
   - **From the ILOM, select Remote Control > Remote Power Control > Reset.**
   - **From the ILOM Remote Console, select Ctrl Alt Delete in the Keyboard menu.**
   - **From other consoles, press Ctrl > Alt >Delete.**
10. **Restart the Linux Red Hat installation program.**

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