



Sun Fire™ X4150, X4250, and X4450 Servers Operating System Installation Guide

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Preface

This Sun Fire™ X4150, X4250, and X4450 Servers Operating System Installation Guide contains operating system installation and initial software configuration procedures for bringing the server to a configured and usable state.

Typographic Conventions

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

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

Related Documentation

For a description of the document set your server, see the *Where To Find Documentation* sheet that is packed with your server and also posted at the product's documentation site. Navigate to the documentation at:

<http://docs.sun.com/app/docs/prod/sf.x4150>

<http://docs.sun.com/app/docs/prod/sf.x4250>

<http://docs.sun.com/app/docs/prod/sf.x4450>

Translated Documentation

Translated versions of some of these documents are available at:

<http://docs.sun.com>

Select a language from the drop-down list and navigate to the server document collection using the Servers and x64 Servers product category links.

Available translations for the Sun Fire X4150, X4250, and X4450 servers include Simplified Chinese, Traditional Chinese, French, Japanese, and Korean.

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

Documentation, Support, and Training

| Sun Function | URL | Description |
|----------------------|--|--|
| Documentation | http://docs.sun.com/ | Download PDF and HTML documents, and order printed documents. |
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Sun Fire X4150, X4250, and X4450 Servers Operating System Installation Guide, 820-1853-16

Operating System Installation Overview and Preparation

This chapter contains an overview for installing a new Linux, ESX, or Solaris operating system (OS) on your Sun Fire X4150, X4250, or X4450 server. It also provides the OS installation preparation procedures.

This chapter contains the following sections:

- [“Supported Operating Systems” on page 2](#)
- [“OS Installation Tasks” on page 3](#)

Note – If you have the Solaris™ 10 OS preinstalled on your server, see the installation guide for your server for information about configuring the OS.

Supported Operating Systems

Your server supports the following operating systems:

- Solaris 10
- Red Hat Enterprise Linux (RHEL)
- SUSE Linux Enterprise Server (SLES)
- VMware ESX Server
- Windows 2003 Server and Windows 2008 Server

For the latest supported versions, see your server's product notes.

For Windows Server installation information, see the *Sun Fire X4150, X4250 and X4450 Windows Operating System Installation Guide*.

Preinstalled Solaris OS

A version of the Solaris OS might be preinstalled on your server. If you do not plan to use the preinstalled Solaris OS, you can install one of the supported OS versions listed at:

<http://www.sun.com/servers/x64/x4150/os.jsp>

<http://www.sun.com/servers/x64/x4250/os.jsp>

<http://www.sun.com/servers/x64/x4450/os.jsp>

Retain the Packaged Installation Instructions

Instructions for installing these operating systems are provided in the media sets that are packaged with the OS software. Retain these installation instructions for use in these procedures.

Ordering Supported Versions of Linux from Sun

You can order supported versions of Red Hat and SUSE OS from Sun at:

<http://www.sun.com/software/linux/index.html>.

OS Installation Tasks

The following is an overview of the procedures for installing a new OS.

| Step | Task | Description |
|------|---|--|
| 1. | Set up the display environment. | If you are not planning to use the local CD/DVD drive and a locally attached monitor to prepare and install the OS, see the section, “Accessing the Server Output During Installation” on page 3. |
| 2. | Erase the primary boot disk. | If you have the Solaris OS preinstalled on the server, you will need to remove it before installing a new OS. See “Erasing the Primary Boot Hard Disk” on page 6. |
| 3. | Configure your server for RAID. | If you plan to configure your server for RAID operation, you will need to perform some setup tasks before installing the OS. See “Configuring Your Server for RAID” on page 7. |
| 4. | Decide on an OS installation method. | Review the installation options for your OS. See “Choosing an OS Installation Method” on page 9. |
| 5. | Install the OS, update the drivers, and run the OS updates, as necessary. | See “Choosing an OS Installation Method” on page 9 and the chapter that corresponds to the OS that you want to install: <ul style="list-style-type: none">• “Configuring RAID” on page 11• “Linux Operating System Installation” on page 43• “Installing VMware ESX Server” on page 57 |

The Preinstalled Diagnostic Partition

A diagnostic partition is preinstalled on the your server. If the diagnostic partition has been removed from the server, see your service manual for information about how to reinstall it from the Tools and Drivers CD.

Accessing the Server Output During Installation

When you install an operating system, you need to view the system console output. You have a number of choices about how to do this:

- If you are using the local CD/DVD drive and a monitor, you can use the default settings. They should work without requiring any display-related changes.

- You can use the remote KVMs Over IP feature of the ILOM or ELOM to do the same thing from a remote system.
- You can view the messages on a serial port, either through the service processor (SP) secure shell (SSH), or by connecting directly to the server's serial port.
 - If you use the direct connection to the serial port, you must configure the BIOS to direct output to the serial port.
 - If you use the SP SSH option, you must configure the BIOS to direct output to the serial port, and you must configure the SP to connect to the console.

Note – You can also connect to the SP directly through the SP serial port, which is different from the host serial port. See your SP documentation to use this option.

Console Output Overview

Video Port

During an OS installation all console output goes to the video port until the operating system assumes control of the display. When and how this happens differs, depending on which operating system is being installed, but they all have two things in common:

- They don't do this until the install is advanced enough that you don't need the console output.
- They have a method of displaying console output once the OS is installed.

Serial Port

Any time you boot or restart the system, all output is also displayed on the serial port, up to and including POST test results, and a message that prompts you to enter the BIOS.

Whether or not any more output goes to the serial port depends on the remote access/external port setting in the BIOS. See [“Configuring the BIOS to Send Console Output to the Serial Port” on page 5](#).

Service Processor

The service processor provides a command to enter console mode. In this mode, it acts like a serial port connected to the console. The commands are:

- > **start /SP/console** (for ILOM)
- > **start /SP/AgentInfo/Console** (for ELOM)

Configuring the BIOS to Send Console Output to the Serial Port

Complete the following steps if you are going to use the serial port to view console output during the installation:

- 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)

Note – If you are accessing the system through the SP with SSH, skip this step.

- 2. Power on the server.**
- 3. Boot the system, and press F2 (F4 on the remote keyboard) to enter the BIOS.**
- 4. 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.
- 5. 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.
- 6. Use the Down arrow to highlight the External Serial Port option.**
- 7. Use the - and + key to change the External Serial Port setting from SP to System.**
- 8. To save the change and exit BIOS, press the F10 key.**

The system is now configured to send console output to the serial port.

Erasing the Primary Boot Hard Disk

Your Sun Fire X4150, X4250, and X4450 servers server might have the Solaris 10 OS preinstalled on the hard drive, depending on your hard drive configuration. If you want to install a different OS, or reinstall the Solaris 10 OS, use the Erase Primary Boot Hard Disk option on the Tools and Drivers CD main menu. This option enables you to erase previously installed operating systems to make room for the new installation.



Caution – Selecting the Erase Primary Boot Hard Disk option from the Tools and Drivers CD erases all partitions on the hard drive, with the exception of the diagnostic partition. All user data is lost. Be sure to back up all data on the hard drive before performing this action.

▼ To Erase the Primary Boot Hard Drive

- 1. Back up all data that you want to save on the hard drive.**
- 2. Insert the Tools and Drivers CD into the server's optional CD/DVD drive.**

If you have a system that does not have a CD/DVD drive, see your service manual for instructions on booting the Tools and Drivers CD from a PXE server.
- 3. Boot the system from the Tools and Drivers CD.**

The Tools and Drives CD main menu appears.
- 4. From the main menu, select the following option from the Tools and Drivers CD main menu:**

Erase Primary Boot Hard Disk

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

Configuring Your Server for RAID

Your Sun Fire X4150, X4250, and X4450 servers server supports the Sun StorageTek™ and the LSI SAS3081E-INT RAID controller cards. More information about these two cards is available in the following sections:

- “RAID Support Using the Sun StorageTek RAID Card” on page 7
- “RAID Support Using LSI SAS3081E-INT Card” on page 8

Note – The LSI SAS3081E-INT card is also known as the LSI SG-XPCIE8SAS.

RAID Support Using the Sun StorageTek RAID Card

The Sun StorageTek RAID card supports a number of hardware RAID configurations (see [TABLE 1-1](#)). All your server’s operating systems support this card. See the chapter that corresponds to the OS that you want to install for further information about configuring RAID using the StorageTek controller card.

- See your service manual for instructions on installing the StorageTek card.
- See the *Sun x64 Server - Disk Management (Adaptec) Documentation* collection for detailed configuration instructions.

TABLE 1-1 RAID Drive Options Based on SAS Card

| SAS CARD | RAID Configuration Supported |
|----------------|--|
| Sun StorageTek | Volume: 1 disk RAID 0 Striping, 2 disk minimum, no redundancy RAID 1 Mirror, 2 disk minimum, 50% drive usage RAID 1E 3-drive minimum, 50% drive usage RAID 10 4-drive minimum, 50% drive usage RAID 5 3-drive minimum, 67–94% drive usage RAID 5EE 4-drive minimum, 50–88% drive usage RAID 50 6-drive minimum, - 67–94% drive usage RAID 6 4-drive minimum, 50–88% drive usage RAID 60 8-drive minimum, 50–88% drive usage Spanned Volume 2-drive minimum, 100% drive usage RAID Volume 4-drive minimum, 50-100% drive usage |

TABLE 1-1 RAID Drive Options Based on SAS Card

| SAS CARD | RAID Configuration Supported |
|----------------|---|
| LSI SAS3081E-S | IM (Integrated Mirror) array. 2-disk minimum, plus up to 2 hot spare disks. Data on primary disk <i>might</i> be merged. IME (Integrated Mirror Enhanced) array. 3 to 8 disks including up to 2 Hot Spares. All data will be deleted during creation. IS (Integrated Striping) array. 2 to 8 disks. All data will be deleted during creation. |

RAID Support Using LSI SAS3081E-INT Card

The LSI SAS3081E-S SAS card supports all operating systems for SAS hard disks, and several RAID levels (see [TABLE 1-1](#)).

The following is needed for LSI RAID support:

- LSI SAS3081E-S card and cables installed
- Up to 8 SAS hard disks

For additional information, see:

- The chapter that corresponds to the OS that you want to install for more information about configuring RAID:
 - The Solaris OS: See [“Configuring RAID” on page 11](#).
 - RHEL and SUSE: See [“Linux Operating System Installation” on page 43](#).
- See your service manual for instructions on installing and cabling the LSI card.
- See the *Sun x64 Server - Disk Management (LSI) Documentation* collection for detailed information about the LSI SAS3081E-S card.

Note – The LSI SAS3081E-S card is also referred to as the LSI SG-XPCIE8SAS-I-Z card.

Choosing an OS Installation Method

This section provides an overview of the four OS installation methods:

| Method | Section/Procedure |
|----------------------------|--|
| Sun Installation Assistant | “Using Sun Installation Assistant” on page 9 |
| CD/DVD | “Using CD/DVD” on page 9 |
| Network/PXE | “Using Network Installation” on page 9 |
| Remote KVMS | “Using Remote KVMS Over IP With Virtual CD-ROM” on page 10 |

Using Sun Installation Assistant

The Sun Installation Assistant (SIA) is a convenient, front-end application designed to assist you in installing supported versions of Linux and Windows on your server. SIA supplements the standard installation utilities and procedures that ship with your operating system; it does not replace them. For more information about SIA, see the *Sun Installation Assistant for Windows and Linux User’s Guide*, at:

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

Using CD/DVD

This method includes installing the OS directly onto the server, using the server’s CD/DVD drive, and a keyboard, video, mouse and storage (KVMS) attached to the system.

For information about CD/DVD installation for your OS, see the instructions included in your installation software or the online documentation referenced in the specific OS chapters in this document.

Using Network Installation

This method involves setting up an installation on a host server, and then installing the OS using the Preboot Execution Environment (PXE) Protocol over the network. Network installation methods include:

- AutoYast for the SUSE
- Kickstart for RedHat
- Jumpstart™ for the Solaris OS

For information about network installation for your OS, see the instructions included in your installation software or the specific OS chapters in this document.

Using Remote KVMs Over IP With Virtual CD-ROM

This method includes using a remote networked system to install the OS onto the your server. The CD/DVD drive of the remote system (virtual CDRom) is used to access the OS media, and all output of your server is displayed on the remote system (remote console). Information about using KVMs over IP (remote KVMs) can be found in the ELOM or ILOM documentation, the instructions included in your installation software, or the specific OS chapters in this document.

Configuring RAID

This chapter provides information about configuring RAID on your server. It contains instructions for the two supported SAS controller cards, the Sun StorageTek and the LSI SAS3081E-S. It also contains instructions for setting up a non-RAID configuration.

This chapter includes the following sections:

- [“Configuring RAID” on page 12](#)
- [“Creating RAID for the LSI SAS3081E-S Controller Card” on page 12](#)
- [“Creating RAID for the Sun StorageTek Controller Card” on page 13](#)

Configuring RAID

Your server supports two RAID controller cards, the Sun StorageTek and LSI SAS3081E-S. The supported RAID configuration is different for each card (see [TABLE 1-1](#)).

RAID configuration is performed in the card's BIOS. See the following sections for instructions on configuring RAID for each card:

- LSI SAS3081E-S
 - If you have an LSI SAS3081E-S RAID controller and you are configuring a RAID array, see [“Creating RAID for the LSI SAS3081E-S Controller Card” on page 12](#).
 - If you have an LSI SAS3081E-S RAID controller and you are not configuring RAID, skip this chapter.
- Sun StorageTek
 - If you have a Sun StorageTek card, you must configure all disks, whether they are going to be part of a RAID array or not. Disks that are not going to be included in a RAID array must be configured as single-drive volumes.
See [“Creating RAID for the Sun StorageTek Controller Card” on page 13](#).

Creating RAID for the LSI SAS3081E-S Controller Card

Use this section to configure RAID for the LSI SAS3081E-S controller card, by accessing the LSI BIOS utility.

Before You Begin

To create a RAID for your server, using the LSI SAA3081E-S controller card, you must have:

- The LSI SAS3081E-S controller card installed in the server. For SAS controller card installation instructions, see your server service manual.
- The *Sun LSI 106x RAID User's Guide*. In the following procedures you will need to reference the user guide's RAID BIOS setup instructions.
- The Tools and Drivers CD.
- Set up your display to access the server output (see [“Accessing the Server Output During Installation” on page 3](#)).

▼ To Create a RAID for the LSI Logic SAS3081E-S Controller Card

1. Power on the server.
2. Watch the video output, and when the LSI SAS card is recognized, press Control-C to access the LSI controller card's BIOS utility.
3. Set up the RAID according to the instructions in the *Sun LSI 106x RAID User's Guide*.
4. Exit the RAID utility.
5. Install the OS you want to use.
6. Download the latest LSI utilities for managing RAID at <http://www.lsi.com> or from the Tools and Drivers CD under the RAIDmgmt directory.

Creating RAID for the Sun StorageTek Controller Card

This procedure provides an outline of the steps used to create a RAID array on systems with a Sun StorageTek controller using the BIOS utility.

If your system has a Sun StorageTek controller card, you must configure all disks in the system. Any drive which is not part of an array *must* be configured as a single-disk array, otherwise known as a volume.



Caution – In systems with Sun StorageTek controllers, you must complete the following procedure for all disks, whether they are going to be part of RAID arrays or not. The BIOS cannot access disks unless they are configured as arrays or single-disk volumes.

For detailed instructions, see the *Sun Intel Adaptec BIOS RAID Utility User's Manual* and the other Sun StorageTek documentation at:

<http://docs.sun.com/app/docs/prod/sf.x4150~sf-hba#hic>

<http://docs.sun.com/app/docs/prod/sf.x4250~sf-hba#hic>

<http://docs.sun.com/app/docs/prod/sf.x4450~sf-hba#hic>

Before You Begin

To create a RAID array for your server using the Sun StorageTek controller card, you must have:

- The Sun StorageTek controller card installed in the server. For controller card installation instructions, see your server service manual.
- Set up your display to access the server output (see [“Accessing the Server Output During Installation”](#) on page 3).

▼ To Create a RAID Array for the Sun StorageTek Controller Card

1. Power on the server.
2. Watch the video output, and when the Sun StorageTek card is recognized, press Control-A to enter the Sun StorageTek controller card's BIOS utility.
3. Set up the RAID according to the instructions in the *Sun Intel Adaptec BIOS RAID Utility User's Manual*.
4. Exit the RAID utility.
5. Install the OS.
6. Linux users must run `install.sh` from the Tools and Drivers CD to update to the latest RAID driver.
7. Install the latest Sun StorageTek management software located on the Tools and Drivers CD under RAIDmgmt.

Solaris 10 Operating System Installation

This chapter provides instructions for installing the Solaris 10 OS and server-specific drivers on your Sun Fire X4150, X4250, and X4450 servers server.

This chapter includes the following sections:

- [“Installing the Solaris 10 OS” on page 16](#)
- [“Installing Server-Specific Drivers” on page 26](#)

Note – Before you begin to install the OS you must have already configured the BIOS for your controller card (see [“Configuring RAID” on page 11](#)).

Installing the Solaris 10 OS

This section provides guidelines for the installation of the Solaris 10 OS. It contains the following:

- “Solaris 10 OS Installation Overview” on page 16
- “Solaris 10 OS Installation Methods” on page 17
- “Installing the Drivers Using KVMs Over IP” on page 27
- “Installing Drivers Directly Onto the Server” on page 27

Solaris 10 OS Installation Overview

The procedures in this chapter cover the installation of the Solaris OS and supported drivers for a new installation. See [TABLE 3-1](#) for the Solaris OS installation task map.

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. | See your server’s installation guide |
| Prepare your server for OS installation. | Set the display environment.If necessary, erase the primary boot disk. | Chapter 1 Operating System Installation Overview and Preparation |
| Set up your system for a RAID or non-RAID configuration based on the SAS controller card. | Your server supports two SAS controller cards. RAID set up is different for each card. | Chapter 2: Configuring RAID |
| Review the your server’s product notes. | The product notes contain late-breaking news about the Solaris OS software and patches. | See your server’s product notes |
| Install the Solaris OS. | Choose an installation method and locate the installation instructions. | “Solaris 10 OS Installation Methods” on page 17 |
| Install the server-specific drivers from the Tools and Drivers CD. | Install the server-specific drivers needed to run the Solaris 10 OS on the your server. | “Installing Server-Specific Drivers” on page 26 |
| Install patches, if necessary. | Patches are available from the SunSolve Patch Portal at: http://www.sunsolve.sun.com | See your server’s product notes |

Firmware Versions and Their Impact on Installation

The way ttya and ttyb are handled in some procedures depends on the level of firmware installed on the system. These instances are noted in the corresponding procedures.

- Systems with newer firmware use ttya
- Systems with older firmware use ttyb

Use [TABLE 3-2](#) to identify whether your system has newer or older firmware:

TABLE 3-2 Release Levels for Newer and Older Firmware

| System | Firmware |
|------------------------------------|---|
| Systems with newer firmware | |
| X4150 | Tools and Drivers 1.3 and later, including DVD 2.0. SP 4.0.08 or later BIOS v022 or later |
| X4250 | All X4250 systems have newer firmware |
| X4450 | Tools and Drivers v1.1d or later SP v4.18 or later BIOS v3B17 or later |
| Systems with older firmware | |
| X4150 | Tools and Drivers CD v1.2 or earlier SP v4.0.06 or earlier BIOS v1ADQW020 or earlier |
| X4250 | No X4250 systems have older firmware |
| X4450 | Tools and drivers CD v1.1c or earlier. SP v4.1.6 or earlier BIOS v3B16 or earlier |

Solaris 10 OS Installation Methods

This section describes the methods you can use to install the Solaris OS on a Sun Fire X4150, X4250, and X4450 servers server.

See [TABLE 3-3](#) for installation methods.

TABLE 3-3 The Solaris 10 OS Installation Methods

| Method | Description | Section/Procedure |
|--|--|--|
| Install from local or remote media. | Use the Solaris Installation Program on the CD or DVD media to install one server interactively. | Follow the instructions for x86 installation in <i>Solaris 10 Installation Guide: Basic Installations</i> at http://docs.sun.com/app/docs/doc/817-0544 |
| Install from the network by using PXE. | You need to use PXE to install the Solaris OS over the network from remote DVD or CD images or to automate the installation process and install several systems with a JumpStart installation. To boot over the network by using PXE, you need to set up an install server and a DHCP server, and configure the BIOS on each server to boot from the network. | Follow the instructions for an x86 PXE installation, in <i>Solaris 10 Installation Guide: Network-Based Installations</i> at http://docs.sun.com/app/docs/doc/817-5504 |
| Boot from the preinstalled image. | Depending on your configuration, a Solaris OS image may be preinstalled on a hard drive. | <i>See your server's installation guide</i> |
| Install from a serial console. | Use a serial console to install the Solaris OS in a PXE-based network installation. | Follow the instructions for an x86 PXE installation in <i>Solaris 10 Installation Guide: Network-Based Installations</i> at http://docs.sun.com/app/docs/doc/817-5504 |
| Perform a diskless boot. | Boot the Solaris OS on a server without a hard drive. Use this method with a PXE-based network installation. | Follow the instructions for an x86 PXE installation in <i>Solaris 10 Installation Guide: Network-Based Installations</i> at http://docs.sun.com/app/docs/doc/817-5504 |

See [“Choosing an OS Installation Method”](#) on page 9 for a description of each method.

Note – The Solaris OS provides additional programs for installation, such as booting over a wide area network (WAN). However, the Sun Fire X4150, X4250, and X4450 servers support only those methods listed in this document.

Using the Direct Installation with CD/DVD Media and a Monitor

This procedure is for an installation using CD/DVD media and a monitor connected to the server video port.

▼ To Use the Direct Installation with CD/DVD Media and a Monitor

1. **Insert the Solaris 10 OS CD/DVD media into the CD/DVD drive.**
2. **Power on the server.**
The system boots from the Solaris 10 OS CD/DVD.
3. **Follow the installation wizard to complete the installation.**

Using Direct Installation with CD/DVD Media and the Serial Port

To use the direct installation method with the serial port, you need to connect a terminal (or terminal emulation device) to the server, start the service processor, then configure the service processor to display the console output.

Note – In a normal install, you cannot use the console until after the installation is complete. If a console is required, use the Jumpstart install described in [“Installing Using Jumpstart Network Installation”](#) on page 21.

▼ To Use Direct Installation with the Serial Port

Note – The SP in your system might be an ILOM or an ELOM. The differences are noted in the procedure. See the corresponding ILOM or ELOM documentation for additional information.

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

For information about connecting to the ELOM or ILOM using a serial connection, see the ELOM or ILOM documentation.

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. Logon to the service processor.

a. Press the Enter key.

The SP login prompt appears.

b. Log in to the SP CLI.

The SP CLI prompt appears.

->

3. Insert the physical Solaris CD/DVD media.

4. Boot the server from the service processor.

If the system is powered on, use:

-> **reset /SYS**

If the system is powered off, use:

-> **start /SYS**

Alternatively, you can use the power button on the front of the server.

The installation process begins.

5. Start the console from the service processor. Enter the following command:

-> **start /SP/console** *(for ILOM)*

-> **start /SP/AgentInfo/Console** *(for ELOM)*

The Solaris OS grub menu appears.

Note – By default, the BIOS is configured to boot from CD/DVD drive. If this setting has been changed, you must reconfigure the BIOS.

6. Select the correct tty port from the grub menu:

- Select `tttya` for systems with newer firmware.

- Select `ttyb` for systems with older firmware.

See “[Firmware Versions and Their Impact on Installation](#)” on page 17 to check your firmware levels.

Solaris installation messages appear on the terminal screen.

Installing Using Jumpstart Network Installation

The system that you use as an installation server must have a CD/DVD drive, and it must be part of the site’s network and name service. If you use a name service, the server must already be in a name service, such as NIS, NIS+, DNS, or LDAP. If you do not use a name service, you must distribute information about this server by following your site’s policies.

Note – For basic instructions on setup and configuration for network installations, go to <http://docs.sun.com/app/docs/doc/817-5504>.

▼ To Install Using Jumpstart Network Installation

1. Set up the system for viewing output.
2. On the system that is to become the installation server, log in as root (superuser).
3. Insert the Solaris 10 media in the server's CD/DVD drive.
4. Open a terminal window.
Enter the commands in this procedure in the terminal window at the system prompt.
5. Create a directory for the CD image. Enter:

```
# mkdir -p install_dir_path
```

install_dir_path The directory where the CD image is to be copied.
6. Change to the Tools directory on the mounted disc. Enter:

```
# cd /cdrom/cdrom0/Solaris_10/Tools
```
7. Check to see if enough disk space is available for the Solaris 10 software disc images. Use the command:

```
# df -k1
```

8. Copy the image in the drive to the installation server's hard drive. Enter:

```
# cp ./setup_install_server install_dir_path
```

install_dir_path The directory where the CD image is to be copied.
9. Change directories to root (/). Enter:

```
# cd /
```
10. Eject the Solaris 10 media.
11. Proceed with the instructions in [“Installing Using the Serial Console”](#) on page 22 or [“Installing Using a Local Console or Remote KVM”](#) on page 24.

Installing Using the Serial Console

Please note the following before performing this procedure:

- This procedure is only needed if you want to force the installation output to the serial port.
- These steps are only for the installation output. If you want the system output to be forced out the serial port after installation, you must either manually follow the steps in [Appendix A](#) or create a finish script that will perform the steps.
- The system that you use as an installation server must include a CD/DVD drive and be part of the network and name service. If you use a name service, the system must already be in a name service, such as NIS, NIS+, DNS, or LDAP. If you do not use a name service, you must distribute information about this system by following your site's policies.

▼ To Install Using the Serial Console

1. On the system that is to become the installation server, log in as root (superuser).
2. Insert the Solaris 10 OS media in to the server CD/DVD drive.
3. Create a directory for the CD image. Enter:

```
# mkdir -p install_dir_path
```

install_dir_path The directory where the CD image is to be copied.
4. Change to the Tools directory on the mounted disc. Enter:

```
# cd /cdrom/cdrom0/Solaris_10/Tools
```

5. Check to see if enough disk space is available for the Solaris 10 software disc images. Use the command:

```
# df -k1
```

6. Copy the image in the drive to the installation server's hard disk. Enter:

```
# cp ./setup_install_server install_dir_path
```

install_dir_path The directory where the CD image is to be copied.

7. Change directories to root (/). Enter:

```
# cd /
```

8. Eject the Solaris 10 media.

9. Edit the files that are located in the miniroot on the network installation image that was created by `setup_install_server`.

To edit a Solaris 10 for x86 miniroot, your server must be running the Solaris 10 (or later) for x86 release.

- a. Unpack the network installation boot archive. Enter:

```
# /boot/solaris/bin/root_archive unpackmedia \  
install_dir_path destination_dir
```

install_dir_path The path to the x86 network installation image.

destination_dir The path to the directory that contains the unpacked boot archive.

- b. Modify the server files to enable serial console redirection.

Note – Changing the `tty` value should only be necessary on systems with older firmware, as listed below. On systems with newer firmware, this step should be unnecessary, as the `tty` value should be set properly by default. .

If necessary, edit the following lines in the `/destination_dir/boot/solaris/bootenv.rc` file to read as follows:

```
setprop input-device ttyn  
setprop output-device ttyn  
setprop console ttyn  
setprop ttyn-mode 9600,8,n,1,-
```

where *n* is

- a for systems with newer firmware (this is set correctly by default)
- b for systems with older firmware

See “[Firmware Versions and Their Impact on Installation](#)” on page 17 to identify your system firmware levels.

c. Pack the x86 boot archive. Enter:

```
# /boot/solaris/bin/root_archive packmedia \
```

d. If necessary, copy the patched miniroot to the installation image on the install server.

If you patched the miniroot on a remote Solaris 10 x86 system, you must copy the patched miniroot to the install server by entering the following command:

```
# cp remote_install_dir_path/boot/x86.miniroot \  
install_server_path/install_dir_path/boot/x86.miniroot
```

install_server_path The path to the install server system on your network.

install_dir_path The path to the x86 network installation image.

10. Depending on your server's firmware version, run one of the following commands:

■ For systems with newer firmware:

```
# add_install_client -B console=ttya, input-device=ttya,\  
output device=ttya
```

■ For systems with older firmware:

```
# add_install_client -B console=ttyb, input-device=ttyb,\  
output device=ttyb
```

See “Firmware Versions and Their Impact on Installation” on page 17 to identify your system firmware levels.

The output of the installation appears on the serial port.

11. Install the Solaris 10 OS.

Installing Using a Local Console or Remote KVM

This installation method includes directing the server output to the local console or to a remote console (RVKM) when the local CD/DVD drive is used.

▼ To Install Using a Local Console or Remote KVM

- See the instructions at <http://docs.sun.com/app/docs/doc/817-5504>.

Note – Before performing a remote installation, use the web GUI to disable the session timeout function.

Installing Using Remote KVMs Over IP With Virtual CD/DVD

This method includes using a remote networked server to install the OS onto your server. The CD/DVD drive of the remote system (virtual CDROM) is used to access the OS media, and all output of the server is displayed on the remote system (remote console).

Information about the using keyboard, mouse, video, storage (KVMs) over IP can be found in the ELOM or ILOM documentation.

Before You Begin

Requirements for Remote KVMs Over IP installation:

- Remote server connected to the network.
- One of the following browsers on the remote system: Internet Explorer, Mozilla, or Firefox.
- CD/DVD drive connected to the remote server.
- Media for installing the OS of your choice.
- SP of the server set up as instructed in the server's installation guide.
- You must be logged in to the remote server as **root**.

▼ To Install Using Remote KVMs Over IP With Virtual CD/DVD

1. **On a remote system, open a browser, and enter the IP address of the service processor of the server on which you want to install the OS.**

The login screen appears.

2. **Enter a user name and password that has administrator privileges.**

The web GUI main screen appears.

3. **Disable the session timeout.**

- a. **To access the Session Time-Out screen, click the System Information tab, and then click the Session Time-Out submenu tab.**

The Session Time-Out screen appears.

- b. **Click the Disable Timeout radio button, and then click Submit.**

4. **From the main menu, click the Remote Control tab and select Redirection.**

The Redirection screen appears with a Launch Redirection button.

5. **Click the Launch Redirection button to open a remote console window.**

A screen appears with a Launch button. It also identifies your current host name, IP address, and user name.

6. **Click Launch.**

7. **Insert the OS CD/DVD to be installed on the server into the local CD/DVD drive.**

8. **In the remote console window, select Storage, and then select Mount devices.**

The Device Configuration window appears.

Note – If the local server has a CD/DVD drive, be sure that it does not contain bootable medium, or configure the server’s BIOS so that the virtual CD/DVD drive is higher on the boot list than the local CD/DVD drive.

9. **In the Storage 1 Source field, from the drop-down list, select the CD/DVD drive that you are using to install the OS.**

10. **Click Submit.**

11. **The instructions for installing the OS are the same as the instructions for using a local CD/DVD drive and monitor. See [“Using Direct Installation with CD/DVD Media and the Serial Port”](#) on page 19.**

Installing Server-Specific Drivers

You can use the methods described in the following sections to install server-specific drivers onto your server:

- [“Using the Driver Installation Script”](#) on page 27
- [“Installing the Drivers Using KVMs Over IP”](#) on page 27
- [“Installing Drivers Directly Onto the Server”](#) on page 27

Using the Driver Installation Script

The driver installation script is available on the Sun Tools and Drivers CD, which is included with your server. You can download an ISO image of the Tools and Drivers CD ISO at:

<http://www.sun.com/servers/x64/x4150/downloads.jsp>

<http://www.sun.com/servers/x64/x4250/downloads.jsp>

<http://www.sun.com/servers/x64/x4450/downloads.jsp>

Note – The driver installation script also mounts a diagnostic partition. If a diagnostic partition is present, running the script creates and mounts it on `diagpart`.

Installing the Drivers Using KVMS Over IP

This method is for installing the drivers on a server without a CD/DVD drive or KVM attached.

See the instructions in “[Installing Using Remote KVMS Over IP With Virtual CD/DVD](#)” on [page 25](#) or the ELOM or ILOM documentation for details.

Installing Drivers Directly Onto the Server

If your server has an onboard CD/DVD drive or attached CD/DVD drive, you can install the drivers directly, using the Tools and Drivers CD.

▼ To Install Driver Directly Onto the Server

1. **Log in to the server as root (superuser).**
2. **Insert the Tools and Drivers CD into the CD/DVD drive.**
The CD is automatically mounted by the Solaris 10 OS.
3. **Change to the `/cdrom/cdrom0/drivers/sx86` directory by entering the following command:**

```
# cd /cdrom/cdrom0/drivers/sx86
```

4. Run the installation script by entering the following command:

```
# sh install.sh
```

The AST2000 VGA drivers are now installed.

The script prompts you to reboot the server for changes to take effect.

5. Reboot the server.
6. When Xserver choices are displayed, select the default Xorg.
7. When prompted for networking information about your server, enter the networking information for your server.

Installing the RAID Management Utility Software

If your server is equipped with a Sun StorageTek RAID controller card, perform the following procedure, [“To Install Driver Directly Onto the Server” on page 27](#). LSI does not provide Solaris support for its RAID management software. If your server is equipped with an LSI SAS3081E-S controller card, you must manage RAID using the controller card’s BIOS.

Note – Perform this procedure only if you are using the StorageTek RAID controller card.

▼ To Install the Sun StorageTek RAID Management Utility Software

1. Insert the Tools and Drivers CD into the CD/DVD drive.
2. Navigate to the RAIDmgt/SunStorageTEK/sx8 directory using the following command:

```
# cd /cdrom/cdrom0/RAIDmgt/SunStorageTEK/sx8
```

3. Enter the following command:

```
# pkgadd -d
```


OpenSolaris Installation

This chapter provides information about installing the OpenSolaris 2009.06 operating system (OpenSolaris OS) on the Sun Fire X4150, X4250, and X4450 servers.

This chapter includes the following topics:

- [“OpenSolaris Installation Overview”](#) on page 30
- [“Installation Methods”](#) on page 31
- [“Installing OpenSolaris OS Using Local or Remote Media”](#) on page 33
- [“OpenSolaris Post-Installation Tasks”](#) on page 41

For information describing how to configure the preinstalled OpenSolaris OS image, see your server installation guide for setup instructions.

Note – Before you begin to install the OS you must have already configured the BIOS for your controller card (see [“Configuring RAID”](#) on page 11).

OpenSolaris Installation Overview

The procedures in this chapter cover the installation of the OpenSolaris OS and supported drivers for a new installation. See [TABLE 4-1](#) for the OpenSolaris installation task map

TABLE 4-1 Task Map for Initial OpenSolaris OS Installation

| Task | Description | Instructions |
|---|---|---|
| Set up your server. | Install your server hardware and configure the service processor. | See your server's installation guide. |
| Prepare your server for OS installation. | Set the display environment. If necessary, erase the primary boot disk. | Chapter 1: Operating System Installation Overview and Preparation |
| Set up your system for a RAID or non-RAID configuration based on the SAS controller card. | Your server supports two SAS controller cards. RAID setup is different for each card. | Chapter 2: Configuring RAID |
| Review the your server's product notes. | The product notes contain late-breaking news about the OpenSolaris OS software and patches. | See your server's product notes. |
| Install the OpenSolaris OS. | Choose an installation method and locate the installation instructions. | "Installation Methods" on page 31 |
| Install patches, if necessary. | Patches are available from the SunSolve Patch Portal at: http://www.sunsolve.sun.com | See your server's product notes. |

Installation Methods

See [TABLE 4-1](#) for installation methods.

TABLE 4-1 The OpenSolaris OS Installation Methods

| Method | Description | Section/Procedure |
|-----------------------------------|--|---|
| Install from local media. | Use the OpenSolaris Installation Program on the CD or DVD media to install one server interactively. | “Installing Using a Local Drive” on page 31. |
| Install from a remote console. | Use the ILOM Remote Console to in the OpenSolaris OS. | “Installing Using the ILOM Remote Console” on page 32 |
| Boot from the preinstalled image. | Depending on your configuration, a OpenSolaris OS image may be preinstalled on a hard drive. | See your server installation guide. |

Installing Using a Local Drive

This installation method requires direct access to the local server on which you want to install OpenSolaris.

Before You Begin

Requirements for remote console installation:

- CD/DVD drive connected to the local server
- Monitor, keyboard and mouse connected to the local server
- Media for installing OpenSolaris 2009.06 (or subsequent release)

For installation procedures, see [“Installing OpenSolaris OS Using Local or Remote Media” on page 33.](#)

Installing Using the ILOM Remote Console

This installation method includes directing the server output to the local console or to a remote console (RVKM) when the local CD/DVD drive is used.

This method includes using a remote networked server to install the OS onto your server. The CD/DVD drive of the remote system (virtual CDROM) is used to access the OS media, and all output of the server appears on the remote system (remote console).

Information about the using keyboard, mouse, video, storage (KVMS) over IP can be found in the ELOM or ILOM documentation.

Before You Begin

Requirements for remote console installation:

- Remote server connected to the network.
- One of the following browsers on the remote system: Internet Explorer, Mozilla, or Firefox.
- CD/DVD drive connected to the remote server.
- Media for installing OpenSolaris 2009.06 (or subsequent release).
- SP of the server set up as instructed in the server's installation guide.
- You must be logged in to the remote server as **root**.

▼ To Install Using the ILOM Remote Console

1. **On a remote system, open a browser, and enter the IP address of the service processor of the server on which you want to install the OS.**

The login screen appears.

2. **Enter a user name and password that has administrator privileges.**

The web GUI main screen appears.

3. **Disable the session timeout.**

- a. **To access the Session Time-Out screen, click the System Information tab, and then click the Session Time-Out submenu tab.**

The Session Time-Out screen appears.

- b. **Click the Disable Timeout radio button, and then click Submit.**

4. **From the main menu, click the Remote Control tab and select Redirection.**
The Redirection screen appears with a Launch Redirection button.
5. **Click the Launch Redirection button to open a remote console window.**
A screen appears with a Launch button. It also identifies your current host name, IP address, and user name.
6. **Click Launch.**
7. **Insert the OS CD/DVD to be installed on the server into the local CD/DVD drive.**
8. **In the remote console window, select Storage, and then select Mount devices.**
The Device Configuration window appears.

Note – If the local server has a CD/DVD drive, make sure that it does not contain a bootable medium, or configure the server’s BIOS so that the virtual CD/DVD drive is higher on the boot list than the local CD/DVD drive.

9. **In the Storage 1 Source field, from the drop-down list, select the CD/DVD drive that you are using to install the OS.**
10. **Click Submit.**
11. **The instructions for installing the OS are the same as the instructions for using a local CD/DVD drive and monitor. See “[Installing OpenSolaris OS Using Local or Remote Media](#)” on page 33.**

Installing OpenSolaris OS Using Local or Remote Media

The following procedure describes how to boot the OpenSolaris 2009.06 operating system installation from local or remote media. It assumes that you are booting the installation media from one of the following sources:

- OpenSolaris 2009.06 (or subsequent release) Live CD/DVD (internal or external CD/DVD)
- OpenSolaris 2009.06 (or subsequent release) Live CD ISO image (network repository)

Before You Begin

Prior to performing the installation, the following requirements must be met:

- All applicable installation prerequisites for installing an operating system should have been met. For further information about these prerequisites, see [“OpenSolaris Installation Overview” on page 30](#).
- An installation method (for example: console, boot media, and installation target) should have been chosen and established prior to performing the installation. For information about these setup requirements, see [“Installation Methods” on page 31](#).

The following procedure explains the initial steps for booting the installation media and launching the OpenSolaris installation program.

After completing this procedure, review and perform the required post installation tasks described later in this chapter. For more details, see [“OpenSolaris Post-Installation Tasks” on page 41](#).

▼ To Install OpenSolaris OS Using Local or Remote Media

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

- **For distribution CD/DVD:** Insert the OpenSolaris 2009.06 Distribution Media (CD labeled 1 or the single DVD) into the local or remote CD/DVD-ROM drive.
- **For ISO image:** Ensure that the ISO images are available and that the Sun ILOM Remote Console application is aware of the first ISO image location.

For additional information about how to set up the installation media, see [“Installation Methods” on page 31](#).

2. Reset the power on the server.

For example:

- **From the ILOM web interface,** select the Remote Control --> Remote Power Control tab, then select the Power Cycle option from the Host action drop-down list box.
- **From the local server,** press the Power button (approximately 1 second) on the front panel of the server to turn the server off, then press the Power button again to power on the server module.
- **From the ILOM CLI on the server SP,** type: `reset /SYS`

The BIOS screen appears.



```
AMIBIOS (C) 2006 American Megatrends, Inc.  
BIOS Version: 3B56 Date: 12/15/08 13:37:28 Core: 08.00.14  
BMC Firmware Version : 03.00.03.30  
CPU : Genuine Intel(R) CPU 2.93GHz  
Speed : 2.93 GHz Count : 4  
  
Press F2 to run Setup (F4 on Remote Keyboard)  
Press F12 if you want to boot from the network  
Press F8 for BBS POPUP (F3 on Remote Keyboard)  
Initializing USB Controllers ..  
  
(C) American Megatrends, Inc.  
64-0100-000001-00101111-121508-CLKSBORO-S93_3B56-Y2KC  
6B38
```

Note – The next events occur very quickly; therefore, focused attention is needed for the following steps. Watch carefully for these messages as they appear on the screen for a brief time. You might want to enlarge the size of your screen to eliminate scroll bars.

3. In the BIOS power-on self-test screen, press F8 to specify a temporary boot device for the OpenSolaris installation.

The Please Select Boot Device menu appears.



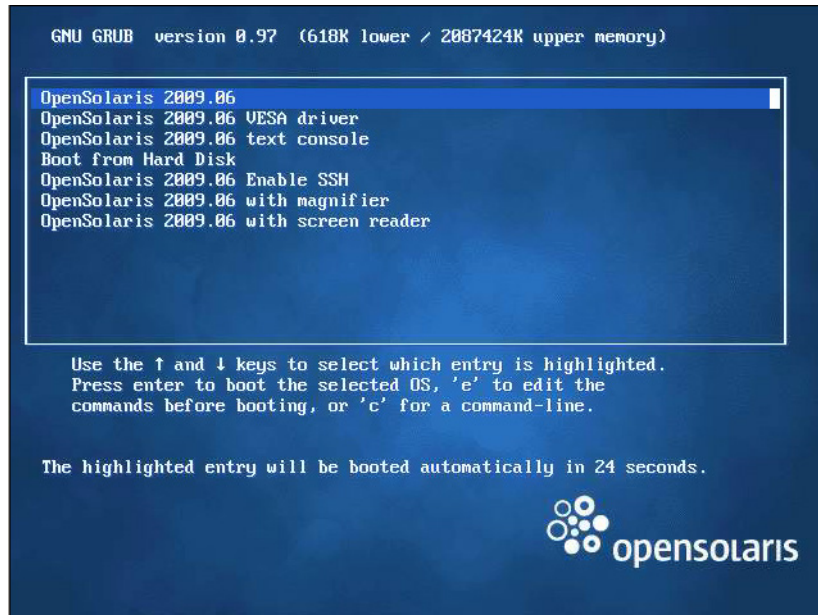
4. In the Boot Device menu, select either the external or virtual CD/DVD device as the first (temporary) boot device, then press Enter.

In the sample Boot Device menu shown in [Step 3](#), the CD/DVDW device is specified as the first boot device.

The device strings listed on the Boot Device menu are in the format of:
device type: slot indicator: product ID string

Note – If you are performing the OpenSolaris installation from the Sun ILOM Remote Console application, select the AMI Virtual CDROM, or CDROM image as the first boot device.

The GRUB menu appears.



5. In the GRUB menu, select `OpenSolaris 2009.06`, then press `Enter`.

Note – In the GRUB menu, if you want to redirect the installation output to a serial console, press “e” to edit the GRUB menu to support a serial console (`-B console = ttya`).

The system loads the OpenSolaris disk image into memory. This process can take several minutes.

The system discovers and configures the devices and interfaces. If the system discovers a keyboard, the Configure Keyboard Layout menu appears.

```
Done mounting Live image
USB keyboard
1. Albanian
2. Belarusian
3. Belgian
4. Brazilian
5. Bulgarian
6. Canadian-Bilingual
7. Croatian
8. Czech
9. Danish
10. Dutch
11. Finnish
12. French
13. French-Canadian
14. Hungarian
15. German
16. Greek
17. Icelandic
18. Italian
19. Japanese-type6
20. Japanese
21. Korean
22. Latin-American
23. Lithuanian
24. Latvian
25. Macedonian
26. Malta_UK
27. Malta_US
28. Norwegian
29. Polish
30. Portuguese
31. Russian
32. Serbia-And-Montenegro
33. Slovenian
34. Slovakian
35. Spanish
36. Swedish
37. Swiss-French
38. Swiss-German
39. Traditional-Chinese
40. TurkishQ
41. TurkishF
42. UK-English
43. US-English
To select the keyboard layout, enter a number [default 43]:
```

6. In the Configure Keyboard Layout menu, select the appropriate keyboard layout, then press Enter to continue.

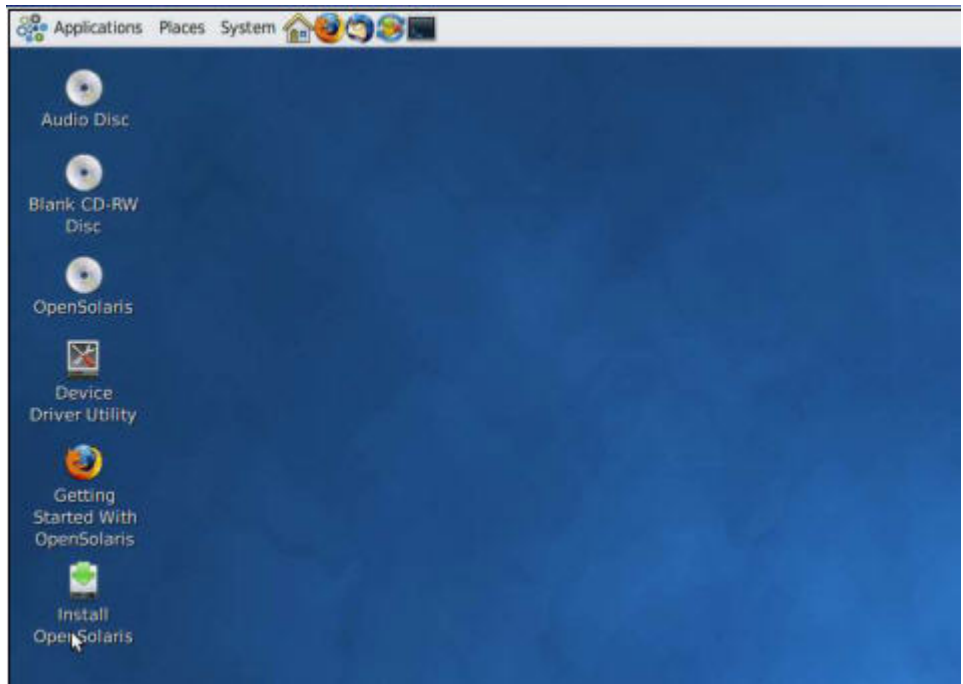
The system configures the keyboard layout selection and searches for configuration files. The Select Desktop Language menu appears.

```
22. Latin-American
To select the keyboard layout, enter a number [default 43]:

1. Arabic
2. Chinese - Simplified
3. Chinese - Traditional
4. Czech
5. Dutch
6. English
7. French
8. German
9. Greek
10. Hebrew
11. Hungarian
12. Indonesian
13. Italian
14. Japanese
15. Korean
16. Polish
17. Portuguese - Brazil
18. Russian
19. Slovak
20. Spanish
21. Swedish
To select desktop language, enter a number [default is 61]:
```

7. In the Select Desktop Language menu, select the appropriate desktop language, then press Enter to continue.

After a few moments the OpenSolaris 2009.06 desktop appears.



8. In the OpenSolaris desktop, double-click the Install OpenSolaris icon to begin the OS installation.

The OpenSolaris Installer Welcome screen appears.



9. In the Welcome screen, click Next to begin the installation.

The OpenSolaris installation program begins.

10. Follow the on-screen instructions to complete the OpenSolaris installation.

For additional information, refer to the Getting Started with OpenSolaris 2009.06 web site at:

<http://dlc.sun.com/osol/docs/content/2009.06/getstart>

Note – If you did not configure the system to automatically reboot when the installation completes, you must manually reboot the system.

11. Proceed to the section “OpenSolaris Post-Installation Tasks” on page 41 to perform the OpenSolaris post-installation tasks.

OpenSolaris Post-Installation Tasks

After completing the OpenSolaris installation and rebooting the operating system, review the following post-installation tasks and, if necessary, perform the tasks that are applicable to your system.

- “Installing System Device Drivers to Support Additional Hardware” on page 41
- “Installing Support Repository Updates” on page 41
- “Enabling the Option for Wake On LAN” on page 41 (optional)

Installing System Device Drivers to Support Additional Hardware

The Device Driver Utility enables you to connect to the Image Packaging System (IPS) and use it to search for device drivers for the devices on your system that do not have a driver attached with them.

▼ To Start the Device Driver Utility

- Click the Device Driver Utility icon on the OpenSolaris desktop.

Installing Support Repository Updates

A Support Repository Update (SRU) contains the latest released bug fixes for your OpenSolaris release.

Directions for accessing and installing SRUs can be found at:

<http://sunsolve.sun.com/show.do?target=opensolaris>

Enabling the Option for Wake On LAN

After installing the operating system, you might want to consider enabling the Wake On LAN (WOL) option in the BIOS Setup utility. This feature enables you to power on the server from another location over the network.

Linux Operating System Installation

This chapter contains information about installing the Red Hat Enterprise Linux (RHEL), SUSE Enterprise Linux System (SLES) and Oracle Enterprise Linux (OEL) operating systems and system-specific drivers onto your server.

This chapter includes the following sections:

- [“Installing the Operating System”](#) on page 43
- [“Installing the System-Specific Drivers”](#) on page 51
- [“Running Update Utilities”](#) on page 55

Installing the Operating System

This document provides an overview of the Linux OS installation process, and is not meant to be a comprehensive source of information for installing a Linux OS. This section provides installation methods and tasks for installing a supported version of Linux on your server.

This section contains the following sections:

- [“OS Installation Overview”](#) on page 44
- [“OS Installation Methods”](#) on page 45
- [“Installing Linux Using Sun Installation Assistant”](#) on page 45
- [“Installing Linux Using Local CD/DVD Drive”](#) on page 46
- [“Installing Linux Using PXE”](#) on page 46
- [“Installing Linux Using Remote KVMs Over IP With Virtual CD/DVD”](#) on page 49

OS Installation Overview

The following procedures are for installing drivers if you are performing a fresh installation of a Linux OS.

Note – At the time this document was written, the Sun Fire X4450 server supports Oracle Enterprise Linux (OEL) installation. The Sun Fire X4150 and Sun Fire X4250 servers do not currently support OEL.

See [TABLE 5-1](#) for the task map for OS installation.

TABLE 5-1 OS Installation Task Map

| Task | Installation Task | Instructions |
|---|---|--|
| Set up your server. | Install your server hardware and configure the service processor. | Server Installation Guide |
| Prepare your system for OS installation. | Set the display environment. If necessary, erase the primary boot disk. | Chapter 1: Operating System Installation Overview and Preparation |
| Set up your system for a RAID or non-RAID configuration based on the SAS controller card. | Your server supports two SAS controller cards. RAID setup is different for each card. | Chapter 2: Configuring RAID |
| Review your Server Product Notes. | The product notes contain late-breaking news about the Linux OS software and patches. | <i>Server Product Notes</i> |
| Install the Linux OS. | Choose an installation method and locate the installation instructions. | “OS Installation Methods” on page 45 |
| Install the system-specific drivers from the Tools and Drivers CD. | Install the system-specific drivers needed to run the Linux OS on the your server. | “Installing the System-Specific Drivers” on page 51 |
| Run the up2date or SUSEWatcher utility. | Patches are available from the SunSolve Patch Portal at: http://www.sunsolve.sun.com | “Running the up2date Utility for the RHEL OS” on page 55 or “Running the SuSEWatcher Utility for the SLES OS” on page 55 |

OS Installation Methods

See the following list of installation methods to determine the type of installation that you want to do and the information source for the installation. See “[Choosing an OS Installation Method](#)” on page 9 for a description of each method.

The following sections describe the methods that you can use:

| Method | Section/Procedure |
|----------------------------------|---|
| Sun Installation Assistant (SIA) | “ Installing Linux Using Sun Installation Assistant ” on page 45 |
| CD/DVD Media | “ Installing Linux Using Local CD/DVD Drive ” on page 46 |
| Network or PXE | “ Installing Linux Using PXE ” on page 46 |
| Remote KVMS | “ Installing Linux Using Remote KVMS Over IP With Virtual CD/DVD ” on page 49 |

Installing Linux Using Sun Installation Assistant

The Sun Installation Assistant (SIA) is a convenient, front-end application designed to assist you in installing supported versions of Linux and Windows on your server. SIA supplements the standard installation utilities and procedures that ship with your operating system; it does not replace them.

▼ To Install Linux Using Sun Installation Assistant

- See the *Sun Installation Assistant for Windows and Linux User’s Guide*, at: <http://www.sun.com/systemmanagement/sia.jsp>

Note – At the time this document was written, Oracle Enterprise Linux cannot be installed using Sun Installation Assistant.

Installing Linux Using Local CD/DVD Drive

You can install a Linux OS using the local server DVD drive or a USB connected CD or DVD drive connected to the server.

▼ To Install Linux Using Local CD/DVD Drive

- **See the instructions for basic installation in the document that corresponds to the OS you are installing:**
 - *Red Hat Enterprise Linux Installation Guide for the x86, Itanium, and AMD64 Architectures* at <http://www.redhat.com/docs/manuals/enterprise/>.
 - *SUSE Linux Enterprise Server Administration and Installation* at <http://www.novell.com/documentation/suse.html>.
 - *Oracle Enterprise Linux 4 Installation* at <http://www.oracle-base.com/articles/linux/OracleEnterpriseLinux4Installation.php>
 - *Oracle Enterprise Linux 5 Installation* at: <http://www.oracle-base.com/articles/linux/OracleEnterpriseLinux5Installation.php>

Installing Linux Using PXE

This section describes how to boot the Linux from a PXE network environment.

Before beginning the installation, take note of the prerequisites for the OS that you plan to install.

- [“Red Hat Linux and Oracle Enterprise Linux Prerequisites”](#) on page 46
- [“SUSE Linux Enterprise Server Prerequisites”](#) on page 47

When the prerequisites are in place, continue with the installation instructions in [“To Install Linux Using PXE”](#) on page 48.

Red Hat Linux and Oracle Enterprise Linux Prerequisites

KickStart is Red Hat’s automated installation tool. It enables a system administrator to create a single image containing the settings for some or all installation and configuration parameters that are normally provided during a typical Red Hat Enterprise Linux or Oracle Enterprise Linux installation. Typically, a KickStart image is placed on a single network server and read by multiple systems for installation.

The following requirements must be met prior to performing the RHEL or OEL PXE installation:

- You must have the following media available:
 - One of the following for OEL:
 - OEL4 or OEL5 CD or DVD set (internal or external CD/DVD)
 - OEL4 or OEL5 ISO DVD image or KickStart image (network repository)
 - One of the following for RHEL:
 - RHEL4 or RHEL5 CD or DVD set (internal or external CD/DVD)
 - RHEL4 or RHEL5 ISO DVD image or KickStart image (network repository)
- If you are using a KickStart image to perform the installation, you must:
 - Create a KickStart file.
 - Create the boot media with the KickStart file or make the KickStart file available on the network.

Follow the KickStart installation instructions in the *Red Hat Enterprise Linux 4: Administration Guide* (<http://www.redhat.com/docs>).

- To use PXE to boot the installation media over the network, you must:
 - Configure the network (NFS, FTP, HTTP) server to export the installation tree.
 - Configure the files on the TFTP server necessary for PXE booting.
 - Configure the Sun Fire X4150, X4250, and X4450 servers MAC network port address to boot from the PXE configuration.
 - Configure the Dynamic Host Configuration Protocol (DHCP).

SUSE Linux Enterprise Server Prerequisites

AutoYaST enables you to install the SLES operating system on multiple systems. For information about how to prepare an automated installation using AutoYaST, refer to the Novell SUSE documentation collection at:

<http://www.novell.com/documentation/suse.html>

The following requirements must be met prior to performing the SLES installation from a PXE network boot environment.

- You must have the following media available:
 - SLES9-SP4 or SLES10-SP3 CD or DVD set (internal or external CD/DVD)
 - SLES9-SP4 or SLES10-SP3 ISO DVD image or AutoYaST image (network repository)
- If you are using AutoYaST to perform the installation, you must:
 - Create the AutoYast profile.

Follow the AutoYaST installation instructions in the SUSE Linux Enterprise 9 or SUSE Linux Enterprise 10 documentation.

- To use PXE to boot the installation media over the network, you must:
 - Configure the network (NFS, FTP, HTTP) server to export the installation tree.
 - Configure the files on the TFTP server necessary for PXE booting.
 - Configure the Sun Fire X4150, X4250, and X4450 servers MAC network port address to boot from the PXE configuration.
 - Configure Dynamic Host Configuration Protocol (DHCP).

▼ To Install Linux Using PXE

1. **Ensure that the PXE network environment is properly set up and the SLES installation media is available for PXE boot.**

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

For example:

- **From the ILOM web interface**, select Remote Control --> Remote Power Control, then select the `Power Cycle` option from the Host action drop-down menu.
- **From the local server**, press the Power button (approximately 1 second) on the front panel of the server to power off the server, then press the Power button again to power on the server.
- **From the ILOM CLI on the server SP**, type: `reset /SYS`

The BIOS screen appears.

Note – The next events occur very quickly; therefore, focused attention is needed for these steps. Watch carefully for the messages, as they appear on the screen for a brief time.

3. **Press F8 to specify a temporary boot device.**

The Please Select Boot Device menu appears listing the available boot device.

4. **In the Boot Device menu, select the PXE installation boot device (physical port) that is configured to communicate with your network installation server.**

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

5. Proceed with the installation as described in the OS documentation.

- *Red Hat Enterprise Linux Installation Guide for the x86, Itanium, and AMD64 Architectures* at <http://www.redhat.com/docs/manuals/enterprise/>
- *SUSE Linux Enterprise Server Administration and Installation* at <http://www.novell.com/documentation/suse.html>
- *Oracle Enterprise Linux 4 Installation* at <http://www.oracle-base.com/articles/linux/OracleEnterpriseLinux4Installation.php>
- *Oracle Enterprise Linux 5 Installation* at: <http://www.oracle-base.com/articles/linux/OracleEnterpriseLinux5Installation.php>

Note – When configuring a PXE installation using RHEL or OEL use the GigabitEthernet ports, Net 2 and Net 3. RHEL 4 drivers do not support ports Net 0 and Net 1.

Installing Linux Using Remote KVMs Over IP With Virtual CD/DVD

This method uses the RKVMS capability of the ILOM or ELOM to install the Linux OS on your server from a remote networked system. The CD/DVD drive of the remote system (virtual CD-ROM) is used to access the OS media, and all output of the server is displayed on the remote system (remote console).

Additional information about the RKVMS can be found in the ELOM or ILOM documentation.

Before You Begin

Requirements for Remote KVMs (RKVMS) over IP installation include:

- Remote system connected to the network.
- One of the following browsers on the remote system: Internet Explorer, Mozilla, or Firefox.
- CD/DVD drive connected to the remote system.
- Media for installing the OS of your choice.
- SP of your server set up as instructed in the server installation guide.
- User must be logged into the remote system as **root**.

▼ To Install Linux Using Remote KVMs Over IP With Virtual CD/DVD

1. **On a remote system, open a browser, and enter the IP address of the service processor for the server on which you want to install the OS.**

The ILOM or ELOM login screen appears.

2. **At the login screen, enter the user name and password for an account with administrator privileges, and click Login.**

The web GUI main menu appears.

3. **Disable the session timeout:**

- a. **From the main menu, click the System Information tab, and then click the Session Time-Out submenu tab.**

The Session Time-Out screen appears.

- b. **Click the Disable Timeout radio button, and then click Submit.**

4. **From the main menu, click the Remote Control tab and select Redirection.**

The Screen appears with a Launch Redirection button.

5. **Click the Launch Redirection button to open a remote console window.**

A screen appears with a Launch button. It also identifies your current host name, IP address, and user name.

6. **Click Launch.**

7. **Mount the OS CD/DVD or ISO file to be installed on the server onto the virtual CDROM.**

- For ILOM:

- a. **In the Devices menu, select the following:**

CD ROM if you are using a physical CD.

CD ROM Image if you are using an ISO file.

- b. **Depending on your selection, a dialog directs you to select either a CD/DVD drive, or a file.**

- For ELOM:

- a. **In the remote console screen, select Storage and then select Mount Devices.**

The Device Configuration screen appears.

- b. **In the Storage 1 Source drop-down list, select the CD/DVD drive to be used for installing the OS.**

8. **Click Submit.**

9. Reboot the system.

The system will boot from the virtual CD.

10. Proceed with the installation as described in the OS documentation.

- *Red Hat Enterprise Linux Installation Guide for the x86, Itanium, and AMD64 Architectures* at <http://www.redhat.com/docs/manuals/enterprise/>
- *SUSE Linux Enterprise Server Administration and Installation* at <http://www.novell.com/documentation/suse.html>
- *Oracle Enterprise Linux 4 Installation* at <http://www.oracle-base.com/articles/linux/OracleEnterpriseLinux4Installation.php>
- *Oracle Enterprise Linux 5 Installation* at: <http://www.oracle-base.com/articles/linux/OracleEnterpriseLinux5Installation.php>

Installing the System-Specific Drivers

A driver installation script is available on the Tools and Drivers CD. The CD is included with your server. You can also download the latest Tools and Drivers CD ISO image from one of the following locations:

<http://www.sun.com/servers/x64/x4150/downloads.jsp>

<http://www.sun.com/servers/x64/x4250/downloads.jsp>

<http://www.sun.com/servers/x64/x4450/downloads.jsp>

Note – The driver installation script also mounts a diagnostic partition. If a diagnostic partition is present and running, the script creates and mounts it on `diagpart`.

You can use the methods described in the following sections to install system-specific drivers onto your server:

| Method | Procedure |
|---|--|
| For a system without a CD/DVD or monitor attached | “Installing the Drivers Using KVMs Over IP” on page 52 |
| For a system that has a CD/DVD drive and monitor attached | “Installing Drivers Directly Onto the Server” on page 52 |

Installing the Drivers Using KVMs Over IP

Before performing a remote installation, use the web GUI to disable the session timeout function. This allows the installation process to proceed without interruption.

▼ To Install the Drivers Using KVMs Over IP

1. **Mount the Tools and Drivers CD according to the instructions in “Installing Linux Using Remote KVMs Over IP With Virtual CD/DVD” on page 49.**

2. **Change to the `/mountpoint/drivers/linux/operating_system` directory.**

/mountpoint The directory where the CD is mounted.

operating_system The type of Linux installed on the server (**red_hat** or **suse**).

For example:

```
# cd /mnt/dvdrom/drivers/linux/red_hat
```

Note – If you have OEL installed on the server, use the drivers in the `red_hat` directory.

3. **Run the following command to install the drivers:**

```
# sh install.sh
```

Note – If the `install.sh` script detects the Sun StorageTek controller card, it automatically updates to the latest driver.

4. **Eject the CD after the driver installation is complete.**

5. **Reboot the server.**

Installing Drivers Directly Onto the Server

If your server has a CD/DVD drive, you can install the drivers directly onto the server, using the Tools and Drivers CD.

▼ To Install Drivers Directly Onto the Server

1. **Log in to the server as root (superuser).**

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

```
cd /mountpoint/drivers/linux/operating_system
```

/mountpoint is the directory to which the CD is mounted.

operating_system is the type of Linux installed on the server (**red_hat** or **suse**).

- If the directory does not exist, the CD did not automount. In this case, you need to mount the CD and change to the correct directory as shown in [Step 3](#) and [Step 4](#).
- If you were able to access the *operating_system* directory, go to [Step 6](#).

3. If the CD does not automount, open a terminal window and mount the CD by typing the following command:

```
# mount /dev/cdrom /mountpoint
```

/mountpoint The appropriate mount point for the OS and optical drive type.

For example:

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

4. Change to the */mountpoint/drivers/linux/operating_system* directory.

/mountpoint The directory where the CD is mounted.

operating_system The type of Linux installed on the server (**red_hat** or **suse**).

For example:

```
# cd /mnt/dvdrom/drivers/linux/red_hat
```

Note – If you have OEL installed on the server, use the drivers in the **red_hat** directory.

5. Run the following command to install the drivers:

```
# sh install.sh
```

Note – If the `install.sh` script detects the Sun StorageTek controller card, it automatically updates to the latest driver.

6. Eject the CD after the driver installation is complete.

7. Reboot the server.

Installing the RAID Management Utility Software

Based on your system controller card, use the one of the methods described in the following sections to install the RAID Management utility software.

| Method | Procedure |
|--|---|
| For a system with a StorageTek RAID controller card. | “To Install the Sun StorageTek RAID Management Utility Software” on page 54 |
| For a system with a LSI RAID controller card. | “To Install the LSI RAID Management Utilities” on page 54 |

▼ To Install the Sun StorageTek RAID Management Utility Software

Note – Perform this procedure only if your server is equipped with a StorageTek RAID controller card.

Caution – If you are installing RHEL5 32-bit Linux, you must install the following package before running the Sun StorageTek Raid Management Utility:
`linux/ xorg-x11-deprecated-libs-6.8.1-12.FC3.1.i386.rpm.`

1. Insert the Tools and Drivers CD into the CD/DVD drive.
2. Navigate to the `/drivers/linux/RAID/SunStorageTEK/ASM/[32bit|64bit]` directory using the following command:

```
# cd /drivers/linux/RAID/SunStorageTEK/ASM/[32bit|64bit]
```
3. Enter the following command:

```
# rpm -ivh [32bit|64bit].rpm
```

▼ To Install the LSI RAID Management Utilities

1. Insert the Tools and Drivers CD in the server's CD/DVD drive.

2. Navigate to the `/RAIDmgmt/lsi/linux/[32bit|64bit]` directory and list the directory contents using the following commands:

```
# cd /drivers/linux/RAID/LSI/MSM
# ls -al
```

3. Run the `.bin` file, and follow the instructions to install the RAID management software.

Running Update Utilities

Choose the section that corresponds to the Linux OS that you have installed:

- [“Running the up2date Utility for the RHEL OS” on page 55.](#)
- [“Running the SuSEWatcher Utility for the SLES OS” on page 55.](#)

Running the up2date Utility for the RHEL OS

Run the `up2date` utility after installing the OS and drivers from the Tools and Drivers CD.

▼ To Run the up2date Utility for the RHEL OS

1. **Set up the `up2date` utility on the server.**
See 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.

Running the SuSEWatcher Utility for the SLES OS

Run the `SuSEWatcher` utility after installing the OS and drivers from the Tools and Drivers CD.

▼ To Run the SuSEWatcher Utility for the SLES OS

- 1. Set up the SuSEWatcher utility on the server.**

See the documentation included with your SLES 9 media kit for details.

- 2. Run the SuSEWatcher program.**

Select the kernel packages in the available package updates section.

Installing VMware ESX Server

This chapter explains the procedure to install VMware ESX Server on the Sun Fire X4150, X4250, and X4450 servers and includes the following sections:

- [“About VMware ESX Server” on page 58](#)
- [“Planning Network Interfaces” on page 59](#)
- [“Installing VMware ESX Server From a CD/DVD” on page 60](#)
- [“Installing VMware ESX Server From Local Media” on page 61](#)

About VMware ESX Server

You can install the VMware ESX Server software from a local CD/DVD drive, a remote CD/DVD drive, or the network. The most common methods to install VMware on your server are:

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

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

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

VMware ESX Server Installation and Administration Documentation

Before you begin installing VMware ESX Server software on your server, consult the following documents for VMware ESX Server 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 ESX Server Installation and Administration Documentation” on page 58. |
| Download ISO image and burn to CD. | “Installing VMware ESX Server From a CD/DVD” on page 60. |
| Begin installing the VMware ESX software using a local or network-attached CD or virtual CD drive. | “Installing VMware ESX Server From Local Media” on page 61. |
| Identify a specific network interface. | “Planning Network Interfaces” on page 59. |
| Complete the VMware ESX Server 3 software installation. | http://www.vmware.com/support/pubs/vi_pubs.html |
| Update the ESX Server 3 software if necessary. | “VMware ESX Server Updates and Patches” on page 62. |

Planning Network Interfaces

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

See your server service manual for detailed information concerning network interface cabling and the BIOS considerations of these interfaces.

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

Installing VMware ESX Server From a CD/DVD

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

Before You Begin

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

▼ To Install VMware ESX Server From a CD/DVD

1. **From a network-connected system with CD-burning capabilities, download the ISO image from:**

<http://www.vmware.com/>

2. **Burn the image to a CD.**

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

3. **Install the ESX Server software on your server.**
4. **Update the ESX Server software if necessary.**

Download available updates from:

<http://www.vmware.com/support/>

The process is detailed in the following sections.

Installing VMware ESX Server From Local Media

Installing VMware ESX Server 3.0.2 and later on your server, requires:

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

▼ To Install VMware ESX Server From Local Media

1. **Turn on the server.**

2. **Insert the media into CD-ROM drive.**

The server boots from the CD and the boot prompt appears:

```
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. **From your network-connected system go to:**

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

5. **Locate the *Installation and Upgrade Guide for VMware Infrastructure*.**

Use the document to guide you through the installation process.

6. Identify the Sun Fire-specific network interface.

In the service console window on your server, identify the available network configuration alternatives.

7. Complete the VMware installation.

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

VMware ESX Server Updates and Patches

When updated VMware ESX Server images are available you can download from:

<http://www.vmware.com/support/>

Identifying Network Interface Names for Linux and Solaris OS Configurations

When 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 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 64).
- A Red hat Enterprise Linux OS during installation (see [“Identifying Logical and Physical Network Interface Names While Installing a RHEL Linux OS”](#) on page 68).
- A preinstalled Solaris OS during installation (see [“Identifying Network Interface Names for a Pre-installed Solaris OS”](#) on page 72).
- A Solaris OS during installation (see [“Identifying Logical and Physical Network Interface Names While Installing the Solaris OS”](#) on page 74).

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. **From the SUSE installation main screen, 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:
Initializing random number generator
Starting syslog services
Starting RPC portmap daemon
Importing Net File System (NFS)
Master Resource Control: runlevel 3 has been
Skipped services in runlevel 3:
Rescue login: root

```

3
done
done
done
unused
reached
nfsboot nfs

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
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:
Initializing random number generator
Starting syslog services
Starting RPC portmap daemon
Importing Net File System (NFS)
Master Resource Control: runlevel 3 has been
Skipped services in runlevel 3:
Rescue login: root

```

```

3
done
done
done
unused
reached
nfsboot nfs

```

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

```

eth1      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:b5d00000-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:0xc000 Memory:b5de0000-b5e00000

eth6      Link encap:Ethernet  HWaddr 00:14:4F:0C:A1:72
          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:0xf000 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:16386  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 # is 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 SUSE Linux 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.
- c. **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 SUSE Linux OS installation.

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



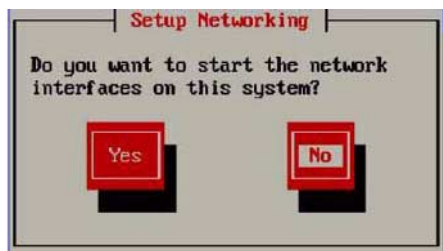
The Keyboard Type screen appears.

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



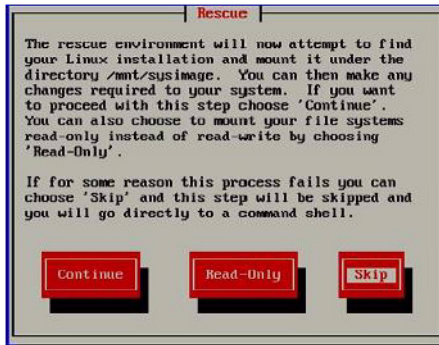
The Setup Network screen appears.

4. In the Setup Network screen, click No.



The Rescue screen appears.

5. In the Rescue screen, click Skip.



The user shell appears.

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

```

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:A1:72
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:0xf000 Memory:bbd00000-bbda0000

eth7 Link encap:Ethernet HWaddr 00:14:4F:0C:A1:73
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:0x8000 Memory:89b00000-89ba0000

~/bin/sh-3.00#

```

In the sample output above:

- `eth0` entry in the first column refers to the Red Hat Linux 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 will 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 Red Hat Linux installation program.**
-

Identifying Network Interface Names for a Pre-installed Solaris OS

The Solaris OS that might be pre-installed on your server is unconfigured. Before configuring the OS, 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.

Note – The procedure in this section is used for a *preinstalled* version of the Solaris OS. If you are *installing* a version of the Solaris OS, see [“Identifying Logical and Physical Network Interface Names While Installing the Solaris OS” on page 74.](#)

▼ To Identify Network Interface Names for the Preinstalled Solaris OS

- 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
```

An example of ifconfig-a output:

```
# 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 example 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.

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

4. When you are done, enter the following command:

```
# sys-unconfig
```

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

For example:

```
# sys-unconfig
WARNING

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

5. Reboot the system.

You will be prompted with a series of configuration questions.

6. In the Network Connection screen, select Yes.

The Configure Multiple Network Interfaces screen appears.

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

8. Continue the normal Solaris configuration.

Identifying Logical and Physical Network Interface Names While Installing the 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.

Note – Use the procedure in this section if you are *installing* a version of the Solaris OS. If you are *configuring* the preinstalled version of the Solaris OS, see [“Identifying Network Interface Names for a Pre-installed Solaris OS” on page 72.](#)

▼ To Identify Logical and Physical Network Interface Names While Installing the Solaris OS

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_08-0M-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 lmore
e1000g0: flags=1000802<BROADCAST,MULTICAST,IPv4> mtu 1500 index 2
    inet 0.0.0.0 netmask 0
    ether 0:14:4f:c:a1:ee
e1000g1: flags=1000802<BROADCAST,MULTICAST,IPv4> mtu 1500 index 3
    inet 0.0.0.0 netmask 0
    ether 0:14:4f:c:a1:ef
e1000g2: flags=1000802<BROADCAST,MULTICAST,IPv4> mtu 1500 index 4
    inet 0.0.0.0 netmask 0
    ether 0:14:4f:c:a5:d6
e1000g3: flags=1000802<BROADCAST,MULTICAST,IPv4> mtu 1500 index 5
    inet 0.0.0.0 netmask 0
    ether 0:14:4f:c:a5:d7
e1000g4: flags=1000802<BROADCAST,MULTICAST,IPv4> mtu 1500 index 6
    inet 0.0.0.0 netmask 0
    ether 0:14:4f:c:a1:4e
e1000g5: flags=1000842<BROADCAST,RUNNING,MULTICAST,IPv4> mtu 1500 index 1
    inet 0.0.0.0 netmask 0
    ether 0:14:4f:c:a1:4f
e1000g6: flags=1000802<BROADCAST,MULTICAST,IPv4> mtu 1500 index 7
    inet 0.0.0.0 netmask 0
    ether 8:0:20:b6:ce:94
e1000g7: flags=1000802<BROADCAST,MULTICAST,IPv4> mtu 1500 index 8
    inet 0.0.0.0 netmask 0
#
```

In the sample output above, the:

- e1000g# entry in the first column refers to the Solaris logical named interface. This first column in the output identifies the logical names assigned by Solaris to the network interfaces.
- ether #:#:#:#:#: entry in second column (third row) refers to the physical MAC address name of the network port.

For example:

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

4. Record the Solaris network interface name next to the physical port MAC address previously recorded (per the Configuration Worksheet).
5. When you are done, type **exit** at the command prompt.

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

Redirecting the Solaris OS Output to the Serial Port

The following procedure shows how to redirect Solaris operating system (OS) output from your server to a serial console. Use these instructions to redirect OS output after the software is installed. For information about how to redirect the server output to the console during OS installation, see the instructions in [Chapter 2](#).

Before You Begin

This procedure is required only for servers with **older** BIOS and SP firmware versions:

- For the Sun Fire X4250 server, this procedure is not required.
- See “[Firmware Versions and Their Impact on Installation](#)” on [page 17](#) to identify the firmware level on your Sun Fire X4150 and X4450 servers.

Systems with newer firmware have the default serial port set to TTYA/COM1 (Solaris OS defaults).

For systems with newer firmware, the baud rate setting in the files listed below should match the setting for the serial port mode in the BIOS →Server→Remote Access Configuration screen.

▼ To Redirect Solaris Output to the Serial Port

1. After the Solaris OS is installed, log in to the server as root (superuser).
2. Make edits to the following files:

- a. Edit the following lines in the `/boot/solaris/bootenv.rc` file to read as follows:

```
setprop console 'ttyb'  
setprop ttyb-mode 115200,8,n,1,-
```

- b. Save and close the file.

- c. Edit the following line in the `/boot/grub/menu.lst` file to read as follows:

```
kernel /platform/i86pc/multiboot -B console=ttyb
```

- d. Save and close the file.

- e. Add the following line to the end of the `/kernel/drv/asy.conf` file:

```
name="asy" parent="isa" reg=1,0x2f8,8 interrupts=3;
```

- f. Save and close the file.

- g. Edit the following line in the `/var/svc/manifest/system/console-login.xml` file as follows:

```
<propval name='label' type='astring' value='115200'/>
```

- h. Save and close the file.

3. Reboot the system with the following command:

```
reboot -- -r
```

4. Log in to the ELOM or ILOM CLI.

The CLI prompt appears:

```
>
```

5. Start the console using the `start` command.

```
-> start /SP/console (for ILOM)
```

```
-> start /SP/AgentInfo/Console (for ELOM)
```

You should now begin to see console output of the system starting up.

Network Interface Configuration

The network interface card (NIC) connectors are labeled physically on your server as follows:

TABLE C-1 NIC Connector Label

| NIC Connector Label | Interface Type |
|----------------------------|------------------------|
| net0 | First Intel interface |
| net1 | Second Intel interface |
| net2 | Third Intel interface |
| net3 | Fourth Intel interface |

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