Sun Fire™ X2250 Server Operating System Installation Guide

For Solaris, Linux, Windows

Sun Microsystems, Inc.
www.sun.com

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Contents

Preface

The *Sun Fire X2250 Server Operating System Installation Guide* provides information for installing Solaris, Linux, or Windows operating systems.

This document is written for technicians, system administrators, authorized service providers (ASPs), and users who have advanced experience with installing operating systems.

How This Document Is Organized

This guide is organized into the following chapters:

- Chapter 1 contains instructions for preparing to install an operating system onto your X2250 server.
- Chapter 2 contains the instructions for installing the Solaris 10 Operating System.
- Chapter 3 contains the instructions for installing a supported Linux operating system.
- Chapter 4 contains the instructions for installing Windows Server 2003.
- Chapter 5 contains the instructions for installing Windows Server 2008.
- Appendix A contains information about launching and configuring the Sun ILOM Remote Console
- Appendix B contains information about configuring BIOS settings for new installations.

Using UNIX Commands

For more information about basic UNIX® commands and procedures such as shutting down the system, booting the system, and configuring devices, see the following the information:

- Hardware documentation that you received with your system
- Solaris™ Operating System documentation, available for download at:

  http://docs.sun.com

Shell Prompts

Shell	Prompt
C shell	*machine-name*%
C shell superuser	*machine-name*#
Bourne shell and Korn shell	$
Bourne shell and Korn shell superuser	#

Typographic Conventions

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

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

Related Documentation

The related X2250 server documentation in the following table is available online at:

`http://docs.sun.com/app/docs/coll/x2250`

Application	Title	Part Number	Format	Location
Hardware Installation	*Sun Fire X2250 Server Installation Guide*	820-4591	PDF Print	Online Server ship kit option
Service	*Sun Fire X2250 Server Service Manual*	820-4593	PDF HTML	Online
Product Notes	*Sun Fire X2250 Server Product Notes*	820-4594	PDF HTML	Online
ILOM	*Sun Integrated Lights Out Manager 2.0 User's Guide*	820-1188	PDF HTML	Online
ILOM Supplement	*Sun Intergated Lights Out Manager Supplement for Sun Fire X2250 Server*	820-4596	PDF HTML	Online

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

Documentation, Support, and Training

Sun Function	URL
Documentation	http://docs.sun.com
Support	http://www.sun.com/support/
Training	http://www.sun.com/training/

Third-Party Web Sites

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

Sun Fire X2250 Operating System Installation Guide, part number 820-4592-12.

CHAPTER 1

Operating System Installation Overview

This chapter presents an overview of the information you should consider when planning the installation of a new operating system on a Sun Fire X2250 server.

This chapter contains the following topics:

Supported Operating Systems

TABLE 1-1 identifies the minimum operating system editions supported for the X2250 server.

TABLE 1-1 Supported Minimum Operating Systems

OS	Supported OS Editions
Solaris	• Solaris 10 5/08 or later
Windows	• Microsoft Windows Server 2003 Enterprise Edition (R2 with SP2, or SP2) (32-bit and 64-bit) • Microsoft Windows Server 2003 Standard Edition (R2 with SP2, or SP2) (32-bit and 64-bit) • Microsoft Windows Server 2008, Standard Edition (32-bit and 64-bit) • Microsoft Windows Server 2008, Enterprise Edition (32-bit and 64-bit) • Microsoft Windows Server 2008, Datacenter Edition (32-bit and 64-bit)
Linux	• Red Hat Enterprise Linux Advanced Server v.4 Update 6 or later (32-bit and 64-bit) • Red Hat Enterprise Linux Server v.5 Update 1 or later (32-bit and 64-bit) • SUSE Linux Enterprise System 10 SP1 or later (32-bit and 64-bit)

For future reference, an updated list of the most recent operating systems supported or certified on the X2250 server can be found at this site:

http://www.sun.com/servers/x64/X2250/os.jsp

You can also purchase supported editions of Red Hat, SUSE, or Windows operating system software from Sun at the following site:

http://www.sun.com/software

Factory-Installed Operating Systems

For your convenience, you can order hard disk drives (HDDs)for the X2250 server with factory-installed operating system software. This means that the software for the operating system is completely installed on the HDD, including the latest operating system device drivers. However, you must perform some setup actions prior to using the operating system. For more information about performing these initial setup actions, see "Configuring the Preinstalled Solaris 10 Operating System" chapter in the *Sun Fire X2250 Server Installation Guide* (820-4591).

X2250 Server Diagnostics

Each X2250 server is shipped with a DOS-based Pc-Check Utility. You can access and execute this diagnostic program from the *Sun Fire X2250 Server Tools and Drivers CD*. The Pc-Check diagnostic program detects and tests all motherboard components, ports, and slots. If you encounter hardware-related error messages such as memory errors or hard disk errors, you can run one of the following Pc-Check diagnostic tests:

- X2250 server diagnostic burn-in test
- Specific hardware component advanced diagnostic test

For more information about these tests and how to access and execute the Pc-Check diagnostic program, see the "Performing Diagnostics" chapter in the *Sun Fire X2250 Server Service Manual* (820-4953).

Planning the OS Installation

When planning the installation of an operating system (OS) on a Sun Fire X2250 server, review the following topics before you begin the installation:

- "Supported Console Options" on page 4
- "Supported Installation Media Options" on page 6
- "Supported Installation Target" on page 7
- "Configure BIOS Settings for New Installations" on page 99
- "Using SIA When Installing a Linux or Windows Operating System" on page 8

Note that if you are planning to perform a software RAID prior to installing the Windows operating system, see "Configure Software RAID (optional)" on page 52.

Supported Console Options

When installing an OS on a Sun Fire X2250 server, you can use any of the following console options to capture the output or input of the installation.

- "Serial Console Using a Serial Port Connection" on page 4
- "Console Connection Using the VGA Port" on page 5
- "Console connection Using the Sun ILOM Remote Console (Remote KVMS)" on page 5
- "Console Connection Using SSH" on page 6

Serial Console Using a Serial Port Connection

You can establish console access to the OS installation program through the serial port on the Sun Fire X2250 server. If you choose to use this option when performing the OS installation, you must:

- Physically attach a *serial console* to the serial port on the Sun Fire X2250 server.

Note – A dumb terminal (such as VT100) or a laptop attached to a serial port are considered examples of a *serial console*.

- Log in to ILOM (Intergrated Lights Out Manager) as an Administrator. You can use the preconfigured ILOM Administrator account provided (username: `root`; `password: changeme`).

- Use the local client interface, such as a terminal window, capable of capturing the text output and input of the operating system installation.
- Start the ILOM command line interface (CLI) console on the Sun Fire X2250 server SP (service processor), for example you would type:

```
start /SP/console
```

Console Connection Using the VGA Port

You can establish console access to the OS installation program through the VGA port on the X2250 server. If you choose to use this console option to perform the OS installation, you must:

- Physically attach the console to the VGA analog port on the X2250 server.
- Physically attach a keyboard and mouse to the USB connectors on the X2250 server.

Console connection Using the Sun ILOM Remote Console (Remote KVMS)

The Sun ILOM Remote Console is a Java™ application that is launched from the ILOM web interface. For this console option, the text output device is the remote console that is running the Sun ILOM Remote Console application. The input devices are the remote keyboard and mouse.

If you choose to use the Sun ILOM Remote Console to perform the OS installation, you must:

- Have network connectivity established to the X2250 server. For details, see the Sun Integreated Lights Out Manager *2.0 User's Guide* (820-1188).
- Have the IP address for the X2250 server SP.
- Log in to ILOM as an Administrator. You can use the preconfigured ILOM Administrator account provided (username: `root`; password: `changeme`). For more information about the preconfigured ILOM administrator account, see the *Sun Integrated Lights Out Manager 2.0 User's Guide* (820-1188).
- Launch the Sun ILOM Remote Console (Java application running the Remote Console) to capture the input and output of the operating system installation.

  For details about configuring ILOM for remote KVMS and launching the Sun ILOM Remote Console, see Appendix A.

Console Connection Using SSH

You can establish console access through a Secure Shell (SSH) connection to the X2250 server SP. This console option is similar to the "console connection using serial port connection" except that it uses a SSH connection to the serial port.

If you choose to use this console option to perform the OS installation, you must:

- Have network connectivity established to the X2250 server SP. For details, see the S*un Integrated Lights Out Manager 2.0 User's Guide* (820-1188).
- Have the IP address for X2250 server SP.
- Log in to ILOM as an Administrator. You can use the preconfigured ILOM Administrator account provided (username: `root` password: `changeme`).
- Have a remote client capable of establishing a Secure Shell connection to capture the output and input of the operating system installation.
- Start the ILOM CLI console server SP. For example, you would type:

```
start /sp/console
```

Supported Installation Media Options

You can choose to use local or remote installation media when installing an operating system on a X2250 server. Which media option you choose to use will depend on the type of installation you want to perform.

- **Local Media**. When you choose to perform the installation using local media, you must use the operating system distribution CD/DVD to perform the installation.

  To use this method you must either have a local CD/DVD drive on the X2250 server or you must physically attach a CD/DVD drive to the USB connector on the X2250 server.

- **Remote Media**. When you choose to perform the installation using remote media, you can use one of the following installation media:
  - OS Distribution CD or DVD
  - Customer-provided ISO CD/DVD image
  - Customer-provided automation install image such as a Windows RIS image, Solaris JumpStart™ image, RHEL KickStart image, or a SLES AutoYaST image.

    Automating the installation process (with RIS, JumpStart, KickStart, or AutoYaST) can eliminate some or most of the manual tasks of setting up the operating system installation for the first time on multiple systems. Instead, you simply apply the properly configured image on the targeted installation servers for installation.

The remote media method does not require you to be physically near the server. You can choose to boot the installation media over the network using a virtual drive or PXE client.

- **Boot Installation Media Using Virtual Drive**. A virtual drive refers to the drive being emulated. This can include a remote CD/DVD drive or an ISO image located on a network share. If you choose to boot the installation media using a virtual drive, you must list the virtual drive as the first temporary boot device in the BIOS.
- **Boot Installation Media Using PXE Client**. A PXE client refers to the computer booting the installation media via PXE (Intel Preboot Execution Environment). The installation media uses the PXE specification implemented on the X2250 server. Specifically, the PXE technology provides the server with the capability to boot the operating system over the network using the Dynamic Host Configuration Protocol (DHCP).

Some of the hardware and software requirements to install the operating system using remote media include:

- An established network connection to the X2250 server. For information about how to configure network parameters for the Sun system, see the *Integrated Lights Out Manager 2.0 User's Guide* (820-1188).
- Properly configured network installation server that specifies one or more X2250 servers as the installation target.
- If you choose to automate the network installation process via an automated installation image (such as RIS, JumpStart, KickStart, or AutoYaST), you will also need to have an established automated server environment. Information concerning how to properly set up and deploy an automated installation image is outside the scope of this installation guide. For these details, you should consult the vendor's operating system documentation for setting up and deploying an automated installation image.

Supported Installation Target

For the initial release of the X2250 server, all operating systems must be installed to the local hard drive on the X2250 server.

Using SIA When Installing a Linux or Windows Operating System

You can choose to install a Linux or Windows operating system on the X2250 server by following the installation instructions provided in this guide. Alternatively, you can choose to use the Sun Installation Assistant (SIA) utility when installing a Linux or Windows operating system on a X2250 server.

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

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

For more information about using SIA to install a Linux or Windows operating system on a X2250 server, see the *Sun Installation Assistant for Windows and Linux User's Guide* (820-3357).

CHAPTER 2

Solaris Installation

This chapter contains instructions for installing the Solaris 10 Operating System from network or media, and is intended for experienced system administrators who are familiar with using the Solaris OS on an x86 platform.

Note – If you are configuring the preinstalled Solaris 10 Operating System that is shipped with the server, refer to the *Sun Fire X2250 Server Installation Guide*.

This chapter contains the following topics:

Installation Requirements

Before starting the Solaris 10 installation, you should ensure the following requirements are met.

- **Proper format of Solaris 10 distribution files**. Depending on the installation method chosen to install Solaris, you will need to have either the Solaris Distribution CD/DVD, ISO image, or JumpStart image readily available for installation.
- **Minimum supported Solaris OS**. The X2250 server supports the following minimum Solaris Operating System:
  - Solaris 10 5/08 or later

  You can download or order the media for Solaris 10 at `http://www.sun.com/software/solaris/get.jsp`.
- **Established console access to installation**. You should have already chosen a supported console option to display the input or output for the installation. For more information, see "Supported Console Options" on page 4.
- **Properly configured boot device in BIOS.** If your permanent boot device in the BIOS is different from the installation boot device, you can use F8 to manually select a one-time boot device during the Solaris 10 OS installation.
- **Gather the information you need to install the Solaris OS**.

  For Solaris 10 5/08 installations, see overall planning information at:

  `http://docs.sun.com/app/docs/doc/820-4038`.

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

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

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

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

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

`http://docs.sun.com/app/docs/doc/820-4040`

- **Solaris 10 5/08 documentation collection**. In addition to using the instructions in this chapter to boot the Solaris 10 installation program on a X2250 server, you should also refer to the following Solaris 10 5/08 documents:
  - *Solaris 10 5/08 Product Notes*

    `http://docs.sun.com/app/docs/doc/820-4078`
  - *Solaris 10 5/08 Installation Guide: Planning for Installation and Upgrade*

    `http://docs.sun.com/app/docs/doc/820-4038`
  - *Solaris 10 5/08 Installation Guide: Basic Installations*

    `http:// docs.sun.com/app/docs/doc/820-4039`
  - *Solaris 10 5/08 Installation Guide: Network-Based Installations*

    `http://docs.sun.com/app/docs/doc/820-4040`
  - *Solaris 10 5/08 Installation Guide: Custom Jumpstart and Advanced Installations*

    `http://docs.sun.com/app/docs/doc/820-4042`
- **Reviewed the *Sun Fire X2250 Server Product Notes***. You should review the Product Notes for any late-breaking information concerning Solaris installations or critical patches.

Checklist of Tasks to Perform

The following tasks must be performed in the order in which they are listed. Note that not all tasks are mandatory.

TABLE 2-1 Checklist for Solaris Installations

Steps	Mandatory or Optional	Task
1	Mandatory	Established installation environment. For more information see: • "Supported Console Options" on page 4 • "Supported Installation Media Options" on page 6
2	Optional	Set optimal default settings in the BIOS Setup Utility. For more information, see "Configure BIOS Settings for New Installations" on page 99.
3	Mandatory	Locate the *Sun Fire X2250 Tools and Drivers CD* provided with the X2250 server or download the required system device drivers from the following site: `http//www.sun.com/servers/x64/X2250/downloads.jsp`
4	Mandatory	Boot the Solaris 10 installation program to initiate the operating system installation. For more information see: • "Install Solaris 10 Using JumpStart Network Installation" on page 13 • "Install Solaris 10 From Local or Remote Distribution Media" on page 14 • "Install Solaris 10 Using a Serial Terminal" on page 16
5	Mandatory	Install the system device drivers required for Solaris 10 installation. For more information, see • "Install System Device Drivers (Post Solaris Installation)" on page 18

Install Solaris 10 Using JumpStart Network Installation

This section summarizes the steps for installing the Solaris 10 OS over the network using a JumpStart image.

For additional information about performing a network installation, go to http://docs.sun.com/app/docs/doc/820-4040. For specific information about performing custom JumpStart network installations, go to http://docs.sun.com/app/docs/doc/820-4042.

Note that the 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.

▼ To Install Using JumpStart Network Installation

1. **On the system that is to become the installation server, log in as root (superuser).**
2. **Insert the Solaris 10 media into the server's CD/DVD drive.**
3. **Open a terminal window.**

   Enter the commands in this procedure in the terminal window at the system prompt.
4. **Create a directory for the CD image. Type:**

   # **mkdir -p** *install_dir_path*

   install_dir_path represents the directory where the CD image is to be copied.
5. **Change to the Tools directory on the mounted disc. Type:**

   # **cd /cdrom/cdrom0/Solaris_10/Tools**
6. **Copy the image in the drive to the installation server's hard drive. Type:**

   # **./setup_install_server** *install_dir_path*

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

Note – Executing the `setup_install_server` command shows whether you have enough disk space available for the Solaris 10 Software disc images. To determine available disk space, use the `df -kl` command.

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

   ```
   # cd /
   ```

8. **Eject the Solaris 10 media.**

9. **Proceed with the instructions provided in:**

   - "Install Solaris 10 From Local or Remote Distribution Media" on page 14

     or

   - "Install Solaris 10 Using a Serial Terminal" on page 16.

Install Solaris 10 From Local or Remote Distribution Media

The following procedure describes the initial steps involved for booting the Solaris 10 installation media from local or remote media (CD/DVD distribution media, ISO CD image, or JumpStart image). Use this procedure, along with the instructions for x86 platforms in *Solaris 10 5/08 Installation Guide: Basic Installations* (820-4040), to install the Solaris OS onto a X2250 server.

Note that the installation method described in this procedure includes directing the server output to the local console or to the Sun ILOM Remote Console when a local or remote CD/DVD drive is used. For additional information about redirecting storage devices in the Sun ILOM Remote Console, see Appendix A.

Prerequisite

- Reviewed and met the requirements listed in "Installation Requirements" on page 10

▼ To Install Solaris From Local or Remote Distribution Media

1. **Do one of the following:**
   - **For distribution CD/DVD**. Insert the Solaris 10 Distribution media (CD labeled #1 or the single DVD) into the local CD/DVD drive.
   - **For ISO CD image or JumpStart image**. In the `Device` menu of the Sun ILOM Remote Console, select `CD-ROM Image` to specify the location of the Solaris 10 ISO CD image or the Solaris 10 JumpStart image.
2. **Reset the X2250 server, for example:**
   - **From the ILOM web interface**, select `Reset` on the Remote Power Control tab.
   - **From the local server**, press the Power button (approximately, 1 second) 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.
3. **In the BIOS power-on self-test screen, press F8 to specify a temporary boot device for the Solaris installation.**

   The Select Boot Device menu appears.
4. **In the Select Boot Device menu, select either local, external, or virtual CD/DVD device as the first boot device then press Enter.**
   - When performing the installation from a Sun ILOM Remote Console, you should have the virtual CD/DVD device set as the temporary boot device. For more information about redirecting storage devices in the Sun ILOM Remote Console, see Appendix A.
   - When performing the installation from the local DVD drive, you should have the local DVD device set as the first boot device. Note that the local DVD device is by default the first boot device.
   - When performing the installation from an external CD/DVD device, you should have the external CD/DVD boot device set as the temporary boot device.
5. **Continue the normal Solaris installation. For more information, see**
   - "x86: Overview of Booting and Installing Solaris Over the Network With PXE" in Chapter 4 of the *Solaris 10 5/08 Installation Guide: Network-Based Installations* at `http://docs.sun.com/app/docs/doc/820-4040`.

Install Solaris 10 Using a Serial Terminal

Follow this procedure if you want to display the installation output to a serial terminal. The steps provided in this procedure only apply to the installation output.

Prerequisites:

- A serial terminal. The serial terminal can be a VT100, a PC running terminal emulation, or a terminal server.
- Configured serial terminal properties. The serial properties on the attached console should match the following default serial port settings:
  - 9600 baud
  - 8N1 (eight data bits, no parity, one stop bit)
  - Disable flow control
- 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.

▼ To Install Solaris Using Serial Terminal

1. **Connect a serial terminal to the serial port on the X2250 server.**
2. **From a serial terminal, start a terminal session by doing one of the following:**
   - **On a serial console running Solaris**:

     Type the appropriate command to start a terminal session.

     For example, you can start a terminal session on a Solaris console by typing:

     ```
     $tip -9600 /dev/ttya
     ```

   - **On a client running Windows:**

     Open the appropriate program to start a terminal session.

     For example, you can start a terminal session on a Windows console by selecting:

     ```
     Start -> Programs -> Accessories -> Communications ->
     Hyperterminal
     ```

   - **From a client running Linux:**

     Type the appropriate command to start a terminal session.

For example, to start a terminal session on a Linux console, you could launch Minicom.

Minicom is a text-based serial communication program that is included in the Linux distributions. For more information, see the man pages included in the Linux distribution.

3. **Log in to the service processor as an administrator.**

   For example:

   ```
   login: root
   password: changeme
   ```

4. **Enter the following command to use the serial console:**

   ```
   start /SP/console
   ```

5. **Restart the X2250 server.**

   For example:

   ```
   reset /SYS
   ```

   The system prompts you to confirm that you want to reset `/SYS (y/n)`?

6. **Continue the reset operation by typing `y` (for yes) and pressing Enter.**

   The message `Performing hard reset on /SYS` appears followed by the system prompt -> .

7. **At the system prompt (->), specify the following command to start the ILOM CLI console.**

   ```
   start /SP/console
   ```

   A message appears prompting you to confirm that you want to start the ILOM CLI console.

8. **Continue the operation for starting the ILOM CLI console by typing `y` (for yes) and pressing Enter.**

   The server reboots and the BIOS screen appears.

   The GRUB boot loader menu appears.

   For more information about performing the installation from a serial terminal, follow the instructions in *Solaris 10 5/08 Installation Guide: Network-Based Installations* at: `http://docs.sun.com/app/docs/doc/820-4040`.

Install System Device Drivers (Post Solaris Installation)

After installing the Solaris 10 software on the X2250 server, you should install the AST2000 VGA driver.

Prerequisites

- *Sun Fire X2250 Server Tools and Driver CD* or the *Sun Fire X2250 Tools and Driver CD ISO image.*

Note – The *Sun Fire X2250 Server Tools and Drivers CD* is provided in the Documentation and Media Kit, which is a customer orderable option. If necessary, you can also download an ISO image of the Tools and Drivers CD at `http://www.sun.com/servers/x64/X2250/downloads.jsp`.

- Established installation environment. For more information, see "Supported Console Options" on page 4 and "Supported Installation Media Options" on page 6.

Note – This installation method includes directing the server output to the local console or to the Sun ILOM Remote Console when a local or remote CD/DVD drive is used. For more information about redirecting devices to the Sun ILOM Remote Console, see Appendix A.

▼ To Install System Device Driver From Local or Remote Media

1. **Do one of the following:**
   - **For distribution CD/DVD**. Insert the X2250 Tools and Driver CD into the local or remote CD/DVD drive.
   - **For customer-provided ISO image**. In the `Device` menu of the Sun ILOM Remote Console, select `CD-ROM` image to specify the location of the customer-provided ISO image.
2. **Change to the `/cdrom/cdrom0/drivers/sx86` directory by typing the following command:**

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

3. **Run the install script by typing the following command:**

   ```
   # sh install.sh
   ```

   The system device driver(s) are now installed. The script prompts you to reboot the system for changes to take effect.

4. **Reboot the X2250 server.**

CHAPTER 3

Linux Installation

This chapter provides instructions for installing:

- Red Hat Enterprise Linux v.4 Update 6 (or later) for x86 (32-bit and 64-bit); (RHEL4-U6)
- Red Hat Enterprise Linux v.5 Update 1 (or later) for x86 (64-bit); (RHEL5-U1)
- SUSE Linux Enterprise Server 10 SP1 (or later) for x86 (32-bit and 64-bit); (SLES10SP1)

Note – Alternatively, you can choose to use the Sun Installation Assistant (SIA) to install the Linux operating system on your X2250 server. SIA provides and installs the device driver(s), if required, for you. For more information about using SIA to install an operating system, follow the instructions provided in the *Sun Installation Assistant for Windows and Linux User's Guide* (820-3357).

Topics in this chapter are organized as follows:

Installation Requirements

Before starting the Linux installation, you should ensure the following requirements are met.

- **Proper format of Linux distribution files**. Depending on the installation method chosen to install Linux, you will need to have either the Linux Distribution CD/DVD, ISO image, or KickStart image readily available for installation.
- **Minimum supported Linux operating systems**. The X2250 server supports the following minimum Linux operating systems:
  - Red Hat Enterprise Linux v.4 Update 6 (or later) for x86 (32-bit and 64-bit); (RHEL4-U6)
  - Red Hat Enterprise Linux v.5 Update 1 (or later) for x86 (64-bit); (RHEL5-U1)
  - SUSE Linux Enterprise Server 10 SP1 (or later) for x86 (32-bit and 64-bit); (SLES10SP1)
- **Established console access to installation**. You should have already chosen a supported console option to display the input or output of the installation. For more information, see "Supported Console Options" on page 4.
- **Properly configured boot device in BIOS Setup Utility.** If your permanent boot device in the BIOS is different from the installation boot device, you can use F8 to manually select a one-time boot device during the Linux OS installation.
- **Gather the information you need to install the Linux OS**. For a non-networked system, you need to know the host name of the system you are installing and the language and the locales that you intend to use on the system.

  For a networked system, use the checklist to gather the following information:
  - Host name of the system that you are installing
  - Language and locales that you intend to use on the system
  - IP address of the server
  - Subnet mask
  - Type of name service (for example, DNS, NIS, or NIS+)
  - IP address of gateway
  - Domain name
  - Host name of the name server
  - IP address of the name server
  - Root password
- **Linux documentation collection**. In addition to using the instructions in this chapter to boot the Linux installation program, you should also refer to the Linux vendor documentation in the following table.

Linux Documentation	Description
SUSE Linux Enterprise Server Documentation http://www.novell.com	• **README File**. Provides late-breaking information and is available on the SUSE documentation CD. • **SUSE Linux Enterprise Server Installation Manual**. Provides information about installation requirements, disk partitioning, the YaST installation, and other configuration options. • **SUSE Linux Enterprise Server Administration Manual**. Provides additional information about configuring your system and integrating it with your existing network services. • **SUSE Linux Enterprise Server Support Sites**. Novell provides considerable technical information about the Enterprise Server operating system at its product and support web sites. See the SUSE Linux Enterprise Server home page at http://www.novell.com/products/linuxenterpriseserver for additional support information.
Red Hat Documentation http://www.redhat.com/docs	• **README File.** Provides late-breaking information and is available on the Red Hat distribution media. • **Red Hat Enterprise Linux Quick Installation Guide**. Provides essential information to assist you during the installation of Red Hat Enterprise Linux. • **Red Hat Enterprise Linux Installation Guide.** Provides detailed information about the Red Hat Enterprise Linux installation process. • **Red Hat Enterprise Linux Introduction to System Administration.** Provides information about customizing the Red Hat Enterprise Linux software. • **System Administration for Diskless Booting.** Provides information about configuring your server and Red Hat Linux for diskless booting.

- **Reviewed the *Sun Fire X2250 Server Product Notes***. You should review the Product Notes for any late-breaking information concerning Linux installations.

Checklist of Tasks To Perform

The following tasks must be performed in the order in which they are listed. Note that not all tasks are mandatory.

TABLE 3-1 Checklist for Linux Installations

Steps	Mandatory or Optional	Task
1	Mandatory	Established installation environment. For more information see: • "Supported Console Options" on page 4 • "Supported Installation Media Options" on page 6
2	Optional	Set optimal default settings in the BIOS Setup Utility. For more information, see "Configure BIOS Settings for New Installations" on page 99
3	Mandatory	Locate the *Sun Fire X2250 Tools and Drivers CD* or download the mandatory device drivers for Linux from the following site: `http//www.sun.com/servers/x64/X2250/downloads.jsp`
4	Mandatory	Boot the Linux installation media to initiate the operating system installation. For more information see: • "Install RHEL4 or RHEL5 Using Local or Remote Media" on page 25 • "Install RHEL4 or RHEL5 Using PXE Network Environment" on page 36 • "Install SLES10 Using Local or Remote Media" on page 39 • "Install SLES10 Using a PXE Network Environment" on page 45
5	Mandatory	Installed the system device drivers required for Linux installations. For more information, see "Install System Device Drivers (Post Linux Installation)" on page 47.

Install RHEL4 or RHEL5 Using Local or Remote Media

This section describes how to install the Red Hat Enterprise Linux v.4 Update 6 or Red Hat Enterprise Linux v.5 Update 1 from Linux Distribution CD/DVD or ISO CD-images.

Note – If you are using Sun-provided RHEL4 CDs, you must upgrade the RHEL4 operating system to Update 6 immediately after completing the installation.

Prerequisite

The following requirement must be met prior to performing the RHEL installation:

- Established installation environment. For more information, see "Supported Console Options" on page 4, or "Supported Installation Media Options" on page 6, or "Supported Installation Target" on page 7.

Refer to the following procedures to install the Red Hat Enterprise Linux from local or remote media:

- "To Install RHEL4-U6 Using Local or Remote Media" on page 25
- "To Install RHEL5-U1 Using Local or Remote Media" on page 30

To install Red Hat Enterpise Linux from a PXE network environment, see "Install RHEL4 or RHEL5 Using PXE Network Environment" on page 36 for more information.

▼ To Install RHEL4-U6 Using Local or Remote Media

1. **Prepare the installation media by performing one of the following:**
   - **For Distribution CD/DVD**. Insert the Red Hat 4.0 Distribution media boot disc (CD labeled number 1 or the single DVD) into the CD/DVD drive of the X2250 server or the system hosting the ILOM Remote Console application.

     If you are using the Sun ILOM Remote Console application to perform the installation, ensure that the `CD-ROM` option is selected in the `Device` menu of the Sun ILOM Remote Console application.

- **For ISO images**. Ensure that the ISO image(s) are available and that the boot disc image (CD labeled number 1 or DVD) has been selected in the ILOM Remote Console application (`Device` menu->`CD-ROM Image`).

  For more information about redirecting storage devices in the Sun ILOM Remote Console, see Appendix A.

2. **Reset the X2250 server, for example:**

   - From the ILOM web interface, select `Reset` on the Remote Power Control tab.

   or

   - 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.

     The BIOS screen appears.

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.

As the server begins the power-on sequence it will go through a series of tests and provide you the opportunity to configure the BIOS, storage, network controllers, and boot selection.

Tip – The default boot order should have CD/DVD (external or virtual) before disk and network devices. If the boot order does not list the CD/DVD device first, then you will need to press F8 to specify the CD/DVD device as the first boot device.

After a few seconds, the splash screen for the Red Hat installation appears. The bottom half of the splash screen lists instructions, function keys, and the boot prompt.

3. **In the Red Hat Enterprise Linux splash screen, press Enter to continue the normal user interactive installation.**

4. **In the Testing CD Media screen, press the Tab key to select `Skip` and press Enter.**

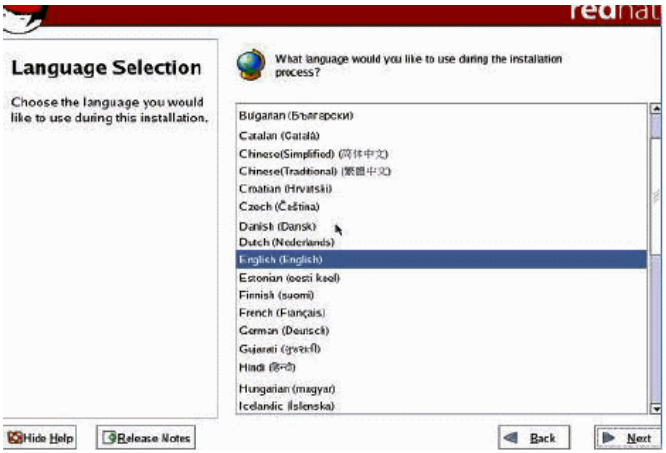
Note – If you are experiencing problems with the initial setup for the installation, it may be necessary to test the installation CD media by selecting OK.

A message appears about running Anaconda, the Red Hat Enterprise Linux system installer. After a few seconds the Red Hat splash screen appears displaying the Welcome screen.

5. **In the Red Hat Welcome screen, press Next to continue the installation.**

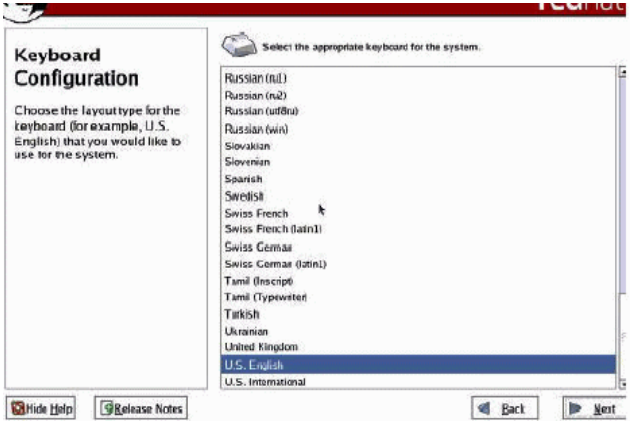
The Language screen appears.

6. **In the Language screen, select the appropriate language and click Next.**



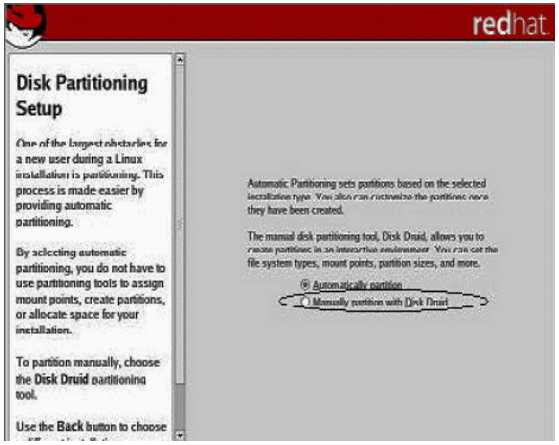
The Keyboard Configuration screen appears.

7. **In the Keyboard Configuration screen, select the appropriate keyboard configuration and click Next.**



8. **When the Disk Partitioning Setup screen appears, do the following:**

   a. **Select the** `Manual Disk Partitioning` **radio button.**



b. Partition the disk as appropriate by referring to the instructions presented on the Red Hat disk partitioning screen.

Note – If the Solaris OS is preinstalled on the disk, you can choose to partition the disk to remove Solaris; or, you can choose to keep Solaris and partition the disk to support dual-boot operating systems.

---

9. Continue the basic Red Hat installation setup.

10. Upon completing the basic Red Hat installation setup, perform the following post-installation tasks:

a. Configure your system for automatic updates.

Refer to Red Hat documentation for more information.

b. If required, download and install the latest errata and bug fixes for RHEL4-U6.

Refer to Red Hat documentation for more information.

▼ To Install RHEL5-U1 Using Local or Remote Media

1. Do one of the following:

- **For Distribution CD/DVD**. Insert the Red Hat Distribution media boot disc (CD labeled number 1 or the single DVD) into CD/DVD drive of the X2250 server or the system hosting the Sun ILOM Remote Console application.

  Note that if you are using the Sun ILOM Remote Console application to perform the installation, ensure that the `CD-ROM` option is selected in the `Device` menu of the Sun ILOM Remote Console application.

- **For ISO images**. Ensure that the ISO image(s) are available and that the boot disc image (CD labeled number 1 or DVD) has been selected in the ILOM Remote Console application (`Device` menu->`CD-ROM Image`).

  For more information about redirecting storage devices in the Sun ILOM Remote Console, see Appendix A.

2. **Reset the X2250 server, for example:**

   - From the ILOM web interface, select `Reset` on the Remote Power Control tab.

     or

   - 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.

     The BIOS screen appears.

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.

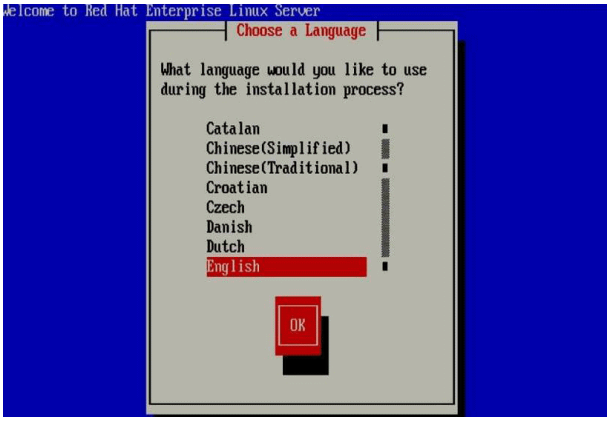
As the server begins the power-on sequence it will go through a series of tests and provide you the opportunity to configure the BIOS, storage, network controllers, and boot selection.

Tip – The default boot order should have CD/DVD (external or virtual) before disk and network devices. If the boot order does not list the CD/DVD device first, then you will need to press F8 to specify the CD/DVD device as the first boot device.

After a few seconds, the splash screen for the RHEL5-U1 installation appears. The bottom half of the splash screen lists instructions, function keys, and the boot prompt.

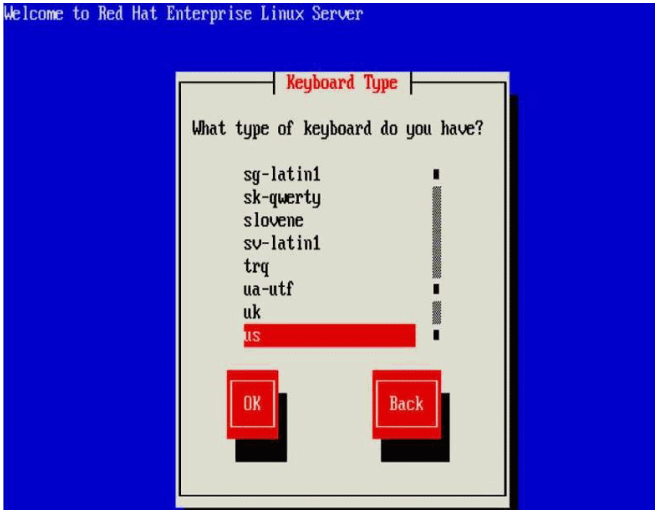
3. **In the Red Hat Enterprise Linux splash screen, press Enter to continue the normal user interactive installation process.**

4. **In the Language screen, select the appropriate language and click OK.**



The Keyboard Type screen appears.

5. **In the Keyboard Type screen, select the appropriate keyboard configuration and click OK.**

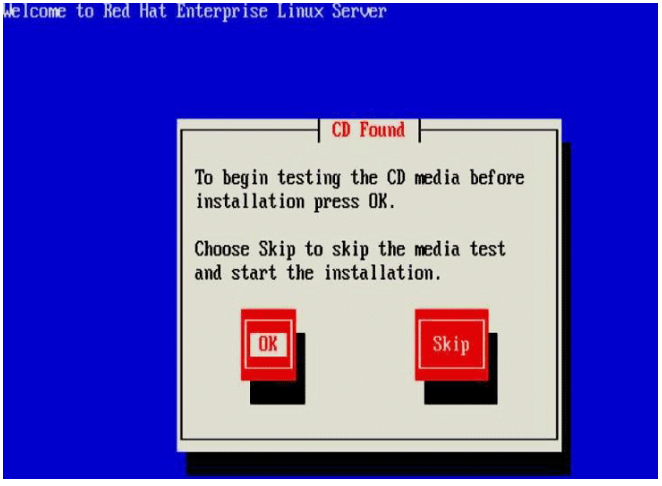


The Installation Method screen appears.

6. **In the Installation Method screen, select the appropriate installation method (Local CDROM or NFS Image) and click OK.**

The CD Found screen appears.

7. **In the CD Found screen, click Skip.**

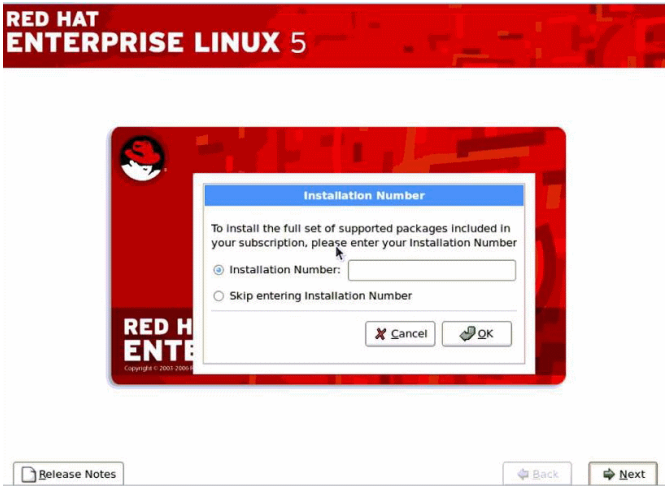


The Red Hat Enterprise Linux 5 screen appears.

8. **In the Red Hat Enterprise 5 screen, click Next.**

The Installation Number dialog appears.

9. **In the Installation Number dialog, enter the "Installation number" or click "Skip entering installation number" then click OK.**



The Default Disk Partition screen appears.

10. **In the Default Disk Partition screen, do the following:**

    a. **In the drop-down list box, select the `create custom` option.**

    b. **Partition the disk as appropriate by referring to the instructions presented on the Red Hat disk partitioning screen.**

Note – If the Solaris OS is preinstalled on the disk, you can choose to partition the disk to remove Solaris; or, you can choose to keep Solaris and partition the disk to support dual-boot operating systems.

---

11. **Continue the basic Red Hat installation setup.**

12. **Upon completing the basic Red Hat installation setup, perform the following post-installation tasks:**

    a. **Configure your system for automatic updates.**

       Refer to Red Hat documentation for more information.

    b. **If required, download and install the latest errata and bug fixes for RHEL5-U1.**

       Refer to Red Hat documentation for more information.

Install RHEL4 or RHEL5 Using PXE Network Environment

This section describes how to install the Red Hat Enterprise Linux v.4 Update 3 or *later* software from an established PXE-based network environment using a customer-provided KickStart image.

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

The following procedure documents the initial steps you must perform to install RHEL over the network.

Note – If you are installing RHEL4 and using Sun-provided RHEL4 CDs, you must upgrade the RHEL4 operating system to Update 6 or later immediately after completing the installation.

Prerequisite

- The KickStart file must be configured with the RHEL4-U6 or later; or RHEL5-U1 operating system.

Tip – Information concerning how to properly set up and deploy a KickStart installation environment is outside the scope of this installation guide. Note that setting up a KickStart environment typically involves: creating a KickStart image, creating a boot diskette containing the KickStart image or placing the KickStart image on a shared-network location, and making the installation tree available. For complete details, see Red Hat's KickStart documentation.

Note – The following procedure assumes that you are using a customer-provided KickStart image that contains all the Red Hat Enterprise Linux v.4 Update 6 (or later) OS files.

▼ To Install RHEL4-U6 or RHEL5-U1 Using PXE

1. **Reset the X2250 server, for example:**
   - From the ILOM web interface, select `Reset` on the Remote Power Control tab.

   or

   - Press the Power button (approximately, 1 second) on the front panel of the server to power off the server, then press the Power button (approximately 1 second) to power on the server.

   The BIOS screen appears

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.

---

2. **Press F12 to boot from the network.**

   A message appears prompting you to select the appropriate Ethernet port to perform the network boot.

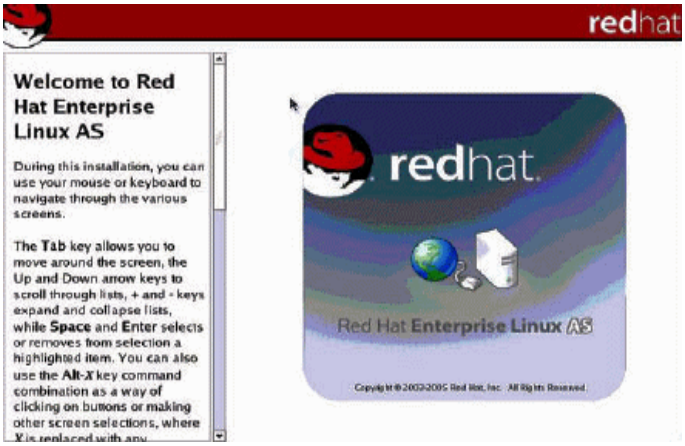
3. **In the message, select one of the two Ethernet ports listed then press enter.**

   After a few seconds, the splash screen for the Red Hat installation appears. The bottom half of the splash screen lists instructions, function keys, and the boot prompt.

4. **At the boot prompt, press Enter to initiate the installation process.**

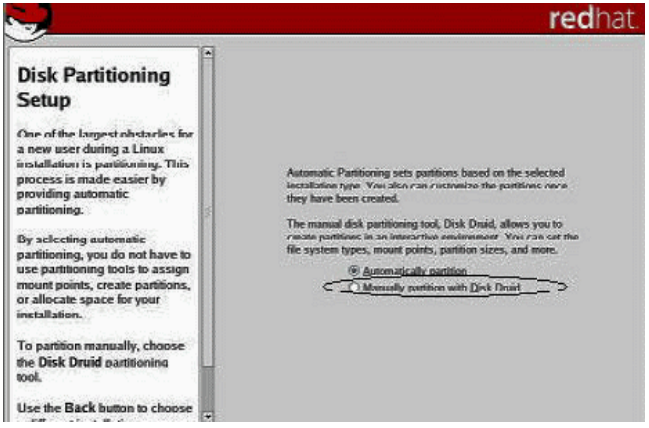
   As the Red Hat installation program initializes, a series of messages appear. After about 20 to 40 seconds, a message appears about running Anaconda, the Red Hat Enterprise Linux system installer. After a few more seconds the Red Hat splash screen appears displaying the Red Hat Welcome screen.

5. **In the Red Hat Welcome screen, press Next to continue the installation.**



6. **When the Disk Partitioning screen appears, do the following**

   a. **Select the** `Manual Disk Partitioning` **option.**



   b. **Partition the disk as appropriate.**

      Refer to the instructions presented on the Red Hat disk partitioning screen for details.

Note – If the Solaris OS is preinstalled on the disk, you can choose to partition the disk to remove Solaris; or, you can choose to keep Solaris and partition the disk to support dual-boot operating systems.

---

7. **Continue the basic Red Hat installation setup.**

8. **Upon completing the basic Red Hat installation setup, refer to the Red Hat installation documentation and perform the following post-installation tasks:**

   a. **Configure your system for automatic updates.**

   b. **If required, automatically download and install the latest errata and bug fixes for RHEL4-U6 or later.**

Install SLES10 Using Local or Remote Media

This section describes how to install the SUSE Linux Enterprise Server 10 (SLES10) with Service Pack 1 or later software from the Linux Distribution CD/DVD or ISO CD images.

SUSE Linux Enterprise Server installation program provides an easy-to-use graphical interface for installing and configuring the operating system. Whether you are using distribution CDs/DVDs to install SLES from a locally attached CD/DVD drive or from a remote CD/DVD drive attached via KVMS, the installation procedure is fundamentally the same.

Prerequisite

The following requirements must be met prior to performing the SLES10 installation:

- Established installation environment. For more information, see "Supported Console Options" on page 4, or "Supported Installation Media Options" on page 6, or "Supported Installation Target" on page 7.

▼ To Install SLES10 Using Local or Remote Media

1. **Prepare the installation media by performing one of the following:**
   - **For Distribution CD/DVD**. Insert the SLES10 boot disc (CD labeled number 1 or DVD) into the CD/DVD-ROM drive of the X2250 server or the system hosting the Sun ILOM Remote Console application.

     If you are using the Sun ILOM Remote Console application to perform the installation, ensure that the `CD-ROM` option is selected in the `Device` menu of the Sun ILOM Remote Console application.
   - **For ISO CD images**. Ensure that the ISO images are available and that the boot disc image (CD labeled number 1 or DVD) has been selected in the ILOM Remote Console application (`Device` menu->`CD-ROM Image`).

     For more information about redirecting storage devices in the Sun ILOM Remote Console, see Appendix A.
2. **Reset the X2250 server, for example:**
   - From the ILOM web interface, select `Reset` on the Remote Power Control tab.

   or

   - 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.

     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. You may want to enlarge the size of your screen to eliminate scroll bars.

As the server begins the power-up sequence it will go through a series of test(s) and provide you the opportunity to configure the BIOS, storage, network controllers, and boot selection.

Note – The default boot order should have CD/DVD (external or virtual) before disk and network devices. If the boot order does not list the CD/DVD device first, then you will need to press F8 to specify the CD/DVD device as the first the boot device.

After a few seconds the SUSE initial boot screen appears.

3. **In the initial SUSE boot installation screen, use the tab key to select the second option `Installation` and press Enter.**

   This option continues the normal user interactive installation process.

   The Language screen appears.

4. **In the Language screen, select the appropriate language option then click** `Next`**.**

Note – It may take several minutes for the Language screen to appear.

The License Agreement screen appears.

5. **In the License Agreement screen, select** `Yes I agree` **then click** `Next`**.**

The Installation Mode screen appears.

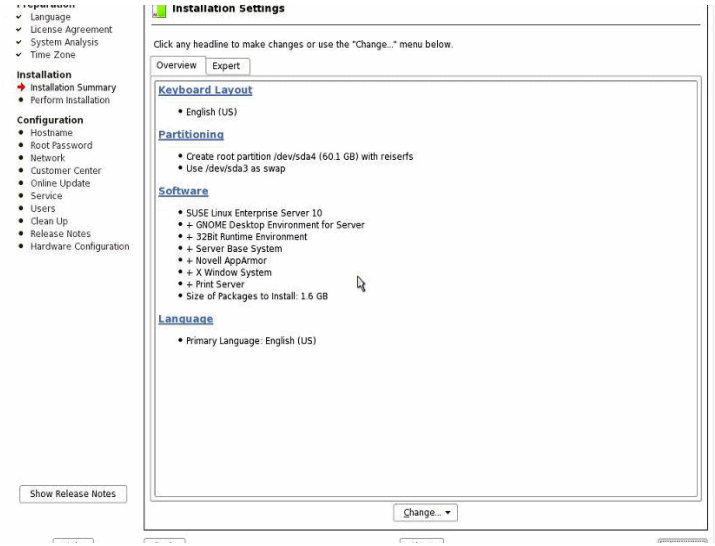
6. **In the Installation Mode screen, select** `New Installation` **then click** `Next`**.**

The Clock and Time Zone screen appears.

7. **In the Clock and Time Zone screen, select the appropriate clock and time zone settings then click** `Next`**.**

The Installation Settings screen appears.

8. **In the Installation Settings screen, click the** `Expert` **tab.**

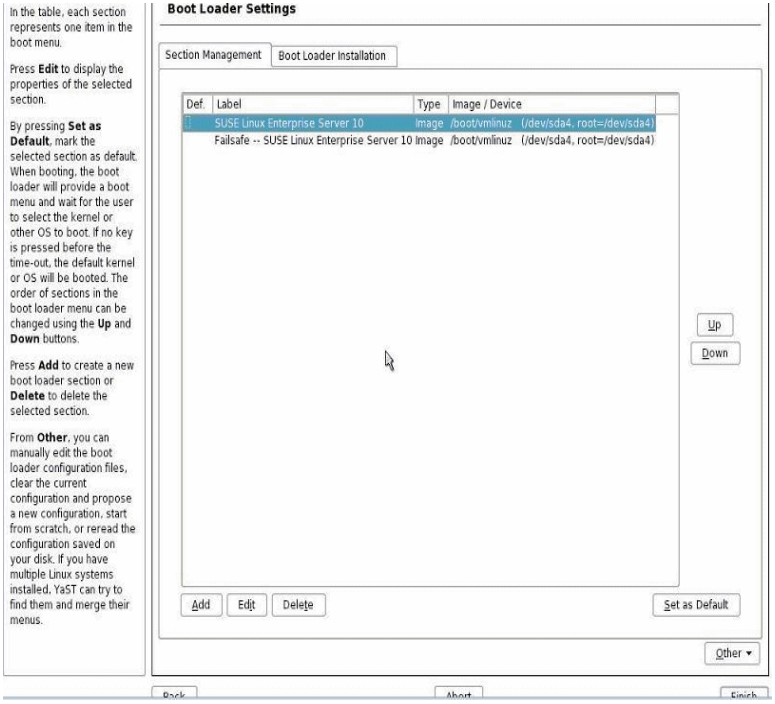


9. **In the Expert tab of the Installation Settings screen, do the following**

   a. **Click the** `Partitioning` **option.**

   b. **Click the** `Booting` **option.**

      The Boot Loader Settings screen appears.



10. **In the Boot Loader Settings screen, click the Boot Loader Installation tab.**

    The Boot Loader Installation tab appears.

11. **In the Boot Loader Installation tab, type** `Boot Loader` **then click** `Finish`**.**

Caution – Do NOT install any boot loader.

The Expert tab of the Installation Setting screen appears.

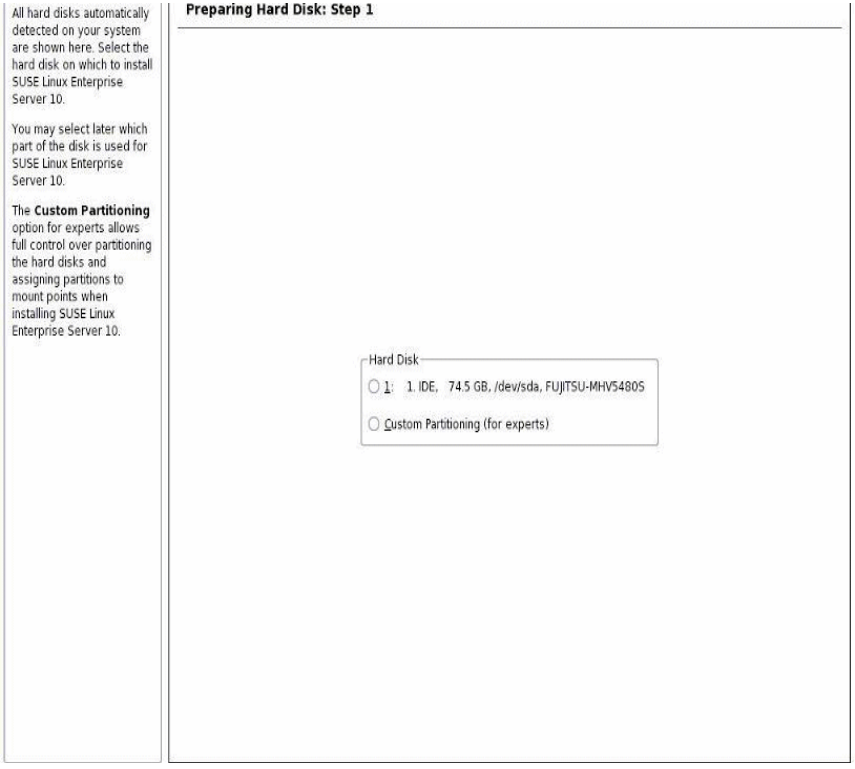
12. **In the Expert tab of the Installation Settings screen, click the** `Partitioning` **option.**

    The Suggested Partitioning screen appears.

13. **In the Suggested Partitioning screen, click the** `Create Custom Partition Setup` **option then click** `Next`**.**

    The Preparing Hard Disk screen appears.

14. **In the Preparing Hard Disk screen, click the** `Custom Partitioning` **option then click** `Next`**.**



    The Expert Partitioner screen appears.

15. **In the Expert Partitioner screen, partition the drive as appropriate then click** `Finish`**.**

    Refer to the YaST partitioning documentation for more information.

    The Expert tab of the Installation Settings screen appears.

16. **In the Expert tab of the Installation Settings screen, click the** `Booting` **option.**

    The Boot Loader Setting screen appears.

17. **In the Boot Loader Settings screen, do the following:**

    a. **In the Boot Loader Type drop-down list box, select** `GRUB`**.**

    b. **In the Boot Loader Location, select or specify the appropriate location.**
    For example, a Master Boot Record may be specified as `/dev/sda`.

    c. **Click** `Finish`**.**
    The Expert tab of the Installation Settings screen appears.

18. **In the Expert tab of the Installation Settings screen, do the following:**

    a. **Specify the appropriate software options for your installation.**

    b. **Verify that the appropriate** `Installation Settings` **are configured.**

    c. **Click** `Accept` **to begin the installation**
    A confirmation dialog appears.

    d. **In the confirmation dialog, click** `Install`**.**

19. **Continue the basic installation setup until all the SLES10 OS files are installed and the system reboots.**

20. **After completing the basic installation setup, refer to the YaST documentation and perform the following post-installation tasks:**

    a. **Provide a password for your account.**

    b. **Configure and test the Internet access and network settings.**

    c. **Automatically download and install the latest errata and bug fixes for SLES10-SP1 or later.**

Install SLES10 Using a PXE Network Environment

This section describes how to install the SLES10 SP 1 or later software over an established PXE-based network environment using an AutoYaST control file.

Novell AutoYaST is a method for installing one or more SUSE Linux systems automatically and with minimal user intervention. You must perform AutoYaST installations using a control file containing both installation and configuration data. For more information about creating the AutoYaST control file and applying it to a YaST installation, consult Novell's documentation (`http://www.novell.com`).

The following procedure documents the initial steps you must perform to install SUSE Linux over the network using an AutoYaST control file.

Prerequisite

The following requirement must be met prior to performing the SLES10 PXE installation:

- Established AutoYaST network installation environment. Information concerning how to properly set up and deploy an AutoYaST network installation environment is outside the scope of this installation guide. You should refer to the instructions in the Novell AutoYast installation documentation for setting up and configuring an AutoYaST network installation.

▼ To Install SLES10 Using AutoYaST

1. **Reset the X2250 server, for example:**
   - From the ILOM web interface, select `Reset` on the Remote Power Control tab.

   or

   - 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.

     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. You may want to enlarge the size of your screen to eliminate scroll bars.

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2. **Press F12 to boot from the network.**

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

   After a few seconds the SLES installation program will load.

   The SUSE Linux Novell License Agreement screen appears.

3. **In the SUSE Linux Novell License Agreement screen, click** `Accept`**.**

   The SUSE YaST installation program initializes. The YaST graphical installation screen appears.

   Depending on the AutoYaST file configuration, the YaST Language Selection screen might appear.

4. **If the YaST Language Selection screen appears, specify which language to use.**

   Depending on the AutoYaST file configuration, the YaST Installation Mode screen might appear.

5. **If the YaST Installation Mode screen appears, select** `New Installation`**, then click** `OK` **to continue.**

   The system's hardware is detected. The YaST Installation Settings screen appears.

6. **In the YaST Installation Settings screen, do the following:**

   a. **Click the** `Partitioning` **option.**

   b. **Select** `Create Custom Partition` **and click** `OK`**.**

   c. **Partition the disk as appropriate.**

      Refer to the YaST Partitioning instructions for more information.

Note – If the Solaris OS is preinstalled on the disk, you can choose to partition the disk to remove Solaris; or, you can choose to keep Solaris and partition the disk to support dual-boot operating systems.

---

7. **Continue the basic installation setup until all the SLES OS files are installed and the system reboots.**

8. **After completing the basic installation setup, refer to the YaST documentation and perform the following post-installation tasks:**

   a. **Provide a password for your account.**

   b. **Configure and test the Internet access and network settings.**

   c. **Register the OS, then download available updates to the operating system.**

Install System Device Drivers (Post Linux Installation)

After installing the Linux software on the X2250 server, you should install the AST2000 VGA driver.

Prerequisites

- *Sun Fire X2250 Server Tools and Driver CD* or the Sun Fire X2250 Tools and Driver CD ISO image

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Note – The *Sun Fire X2250 Server Tools and Drivers CD* in the Documentation and Media Kit, which is a customer-orderable option. If necessary, you can also download an ISO image of the Tools and Drivers CD at `http://www.sun.com/servers/x64/X2250/downloads.jsp`.

- Established installation environment. For more information, see "Supported Console Options" on page 4 and "Supported Installation Media Options" on page 6.

Note – This installation method includes directing the server output to the local console or to the Sun ILOM Remote Console when a local or remote CD/DVD drive is used. For more information about redirecting devices to the Sun ILOM Remote Console, see Appendix A.

▼ To Install System Device Drivers From Local or Remote Media

If your server has an onboard DVD drive or attached CD drive, you can install the drivers directly, using the *Sun Fire X2250 Server Tools and Drivers CD*.

1. **Prepare the installation media by performing one of the following:**
   - **For distribution CD/DVD**. Insert the *X2250 Tools and Driver CD* into the local or remote CD/DVD-ROM drive.
   - **For customer-provided ISO image**. In the `Device` menu of the Sun ILOM Remote Console, select `CD-ROM` image to specify the location of the customer provided CD image.

2. **Depending on the Linux operating system, change to the `linux/red_hat` or `linux/suse` directory by typing the one of the following commands:**

   ```
   # cd /cdrom/cdrom0/drivers/linux/red_hat
   ```

   or

   ```
   # cd /cdrom/cdrom0/drivers/linux/suse
   ```

3. **Run the install script by typing the following command:**

   ```
   # sh install.sh
   ```

   The system device drivers are now installed. The script prompts you to reboot the system for changes to take effect.

4. **Reboot the server.**

CHAPTER 4

Installing Windows Server 2003

This chapter describes the installation process for installing Windows Server 2003 on a Sun Fire X2250 server.

Note – Alternatively, you can choose to use the Sun Installation Assistant (SIA) to install Windows Server 2003 on a Sun Fire X2250 server. SIA provides and installs the required device drivers for you. For more information about using SIA to install the Windows Server 2003 operating system, see the *Sun Installation Assistant for Windows and Linux User's Guide* (820-3357)

This chapter contains the following topics:

Installation Requirements

Before starting the Windows Server installation, you should ensure that following requirements are met.

- **Supported format of Windows Server distribution files**. Depending on the installation method chosen to install Windows, you will need to have either the Windows Server distribution media, ISO CD-ROM image, or RIS image available for installation.
- **Minimum supported Windows Server operating system**. The X2250 server supports the following English-only Windows Server operating system editions:
  - Microsoft Windows Server 2003 Enterprise Edition (R2 with SP2, or SP2) (32-bit and 64-bit)
  - Microsoft Windows Server 2003 Standard Edition (R2 with SP2, or SP2) (32-bit and 64-bit)
- **Software RAID**. By default, the Sun-supplied disk drives are shipped without a RAID configuration. If you need to RAID your disk drive(s), you can configure a RAID prior to installing the Windows operating system. For more information see, "Configure Software RAID (optional)" on page 52.
- **Established console access to installation**. At this point you should have already chosen a supported console option to display the input or output of the installation. For more information, see "Supported Console Options" on page 4.
- **System device drivers required**. The *Sun Fire X2250 Server Tools and Drivers CD* provides the system device drivers that must be installed. You will be required to have this CD to install the system device drivers, which is described later in this chapter. This CD is shipped in the Documentation and Media Kit, which is a customer-orderable option. Alternatively, you can download the installation driver scripts that are provided on the CD from the following site:

  `http//www.sun.com/servers/x64/X2250/downloads.jsp`
- **Sun Fire X2250 Server Product Notes**. You should review the *Sun Fire X2250 Server Product Notes* for any late-breaking information concerning Windows Server 2003 installations.
- **Microsoft's Windows Server 2003 Installation Documentation**. In addition to using the instructions in this chapter to boot the Windows Server 2003 installation program and to install system device drivers, you should also refer to the Microsoft Windows Server 2003 documentation to complete the operating system installation.

Checklist of Tasks To Perform

The following tasks must be performed in the order in which they are listed. Note that not all tasks are mandatory.

TABLE 4-1 Checklist for Windows Installations

Steps	Mandatory or Optional	Task
1	Mandatory	Established installation environment. For more information see: • "Supported Console Options" on page 4 • "Supported Installation Media Options" on page 6
2	Optional	Set optimal default settings in the BIOS Utility. For more information, see "Configure BIOS Settings for New Installations" on page 99.
3	Mandatory	Locate the *Sun Fire X2250 Tools and Drivers CD* or download the mandatory device drivers for Windows 2003 from the following site: `http//www.sun.com/servers/x64/X2250/downloads.jsp`
4	Optional	Implement a software RAID using the BIOS Setup Utility. For more information, see: • "To Configure IDE RAID Controller in BIOS" on page 52 • "To Copy RAID Driver to a Floppy Diskette" on page 54
5	Mandatory	Boot Windows Server 2003 installation media to initiate the operating system installation. For more information see one of the following sections: • "Install Windows Sever 2003 Using Local or Remote Media" on page 55 or • "Install Windows Server 2003 Using a PXE Network Environment" on page 60
6	Mandatory	Installed the required system device drivers for Windows Server 2003 installations. For more information, see one of the following sections: • "To Install Mandatory System Device Drivers Using Local or Remote Media" on page 59 or • "To Add Drivers to the RIS Image" on page 61

Configure Software RAID (optional)

The Sun-supplied hard disk drives for the X2250 servers are shipped without a RAID configuration. If a RAID configuration is required, you will need to (1) configure the IDE RAID Controller in the BIOS Setup Utility, (2) create a RAID driver floppy diskette, then (3) load the RAID driver into system memory during the Windows Server 2003 installation.

Software RAID Requirements

- Follow the procedure To Configure IDE RAID Controller in BIOS provided below to configure a RAID for Windows Server 2003 installations.
- After completing the software RAID configuration in the BIOS Setup Utility, you will need to prepare the RAID driver for installation . For more information see "To Copy RAID Driver to a Floppy Diskette" on page 54.
- After preparing the RAID driver for installation, you will need load the RAID driver into memory (using F6) during the Windows Server 2003 installation. Information describing when the RAID driver is loaded is provided later in "To Install Windows Server 2003 Using Local or Remote Media" on page 56.

  If you are performing a Windows Server 2003 RIS image installation, you will need to add the RAID driver to the RIS image. For more information, see"To Add Drivers to the RIS Image" on page 61

▼ To Configure IDE RAID Controller in BIOS

1. **Reboot the server and press** `F2` **when the Sun Logo appears.**

   The BIOS Utility dialog appears.

2. **In the BIOS Utility dialog, select** `Advanced -> IDE Configuration`**.**

   The IDE Configuration menu appears.

3. **In the IDE Configuration menu, select** `Configure SATA AS` **and press Enter.**

   A menu appears listing the SATA options: IDE, RAID. IDE is set by default.

4. **In the SATA Options menu, select** `RAID` **and press Enter.**

5. **Press F10 to save your changes, exit the BIOS Utility, and reboot the server.**

6. **While the server is rebooting, press <Ctrl-I> to access the RAID configuration.**

   The Intel Matrix Storage Manager option ROM dialog appears.

7. **In the main menu of the Intel Matrix Storage Manager option ROM dialog, select** `(1) Create RAID Volume` **and press Enter.**

   The Create RAID Volume menu appears.

8. **In the Create RAID Volume menu, do the following:**

   a. **Provide a name for the RAID volume and press Enter, or press Enter to accept the default name.**

   b. **Select either** `RAID 1 (Mirror)` **or** `RAID 0 (Stripe)` **as the RAID level and press Enter.**

      Use the up and down arrow keys to scroll through the available RAID level values.

   c. **Specify the volume capacity and press Enter; or press Enter to accept the default volume capacity.**

   d. **Select** `Create Volume` **and press Enter.**

      A warning message appears stating that all data could be lost. Are you sure you want to create this volume? `Y` or `N`.

   e. **In the warning message press** `Y` **to confirm the volume creation.**

      The new RAID volume is created. Information describing the RAID volume appears (for example, the RAID ID, Volume Name, Level, Status).

9. **Select** `EXIT` **and press Enter to exit the Intel Matrix Storage Manager utility.**

   A confirmation message appears confirming that you want to exit the Intel Matrix Storage Manager utility.

10. **In the confirmation message, press** `Y` **to confirm the exit.**

▼ To Copy RAID Driver to a Floppy Diskette

To prepare the RAID driver for installation, you will need to copy the RAID driver from the *Sun Fire X2250 Systems Tools and Drivers CD* to a floppy diskette.

Prerequisites

- USB floppy diskette drive attached to a Windows system
- Formatted floppy diskette
- *Sun Fire X2250 Server Tools and Drivers CD*

Follow these steps to create a floppy diskette that contains the RAID driver required during the Windows Server 2003 installation.

1. **On a Windows system, do the following:**

   a. **Insert the** *Sun Fire X2250 Server Tools and Drivers CD* **into a CD/DVD-ROM drive.**

   b. **Insert a formatted floppy diskette into an attached floppy diskette drive.**

2. **In the** *Sun Fire X2250 Server Tools and Drivers CD* **browse to the following directory:**

   `drivers/windows/RAID/Intel-ESP.`

3. **Copy the contents of one the following directories to the root directory of the floppy diskette:**

   - `2003_32`

     If your X2250 server has a 32-bit version of the Windows operating system copy the RAID driver from the 2003_32 directory.

   - `2003_64`

     If your X2250 server has a 64-bit version of the Windows operating system copy the RAID driver from the `2003_64` directory.

Install Windows Sever 2003 Using Local or Remote Media

This section describes how to boot the Windows Server 2003 installation media from local or remote media.

Prerequisites

The following requirements must be met prior to performing the Windows Server 2003 installation:

- Established installation environment. For more information, see "Supported Console Options" on page 4 and "Supported Installation Media Options" on page 6
- The BIOS Utility boot order should have the proper CD/DVD-ROM device (local, external, or virtual) specified as the first boot device. For instance:
  - When performing the installation from the ILOM Remote Console, you should have the Virtual CD/DVD-ROM device set as the temporary boot device.
  - When performing the installation from the local DVD-ROM drive, you should have the local DVD device set as the temporary boot device.
  - When performing the installation from an external CD/DVD-ROM device, you should have the External CD/DVD-ROM boot device set as the temporary boot device.

  If necessary, you can set a temporary boot device during the server's start-up phase (after Step 2 in this procedure) by pressing F8.
- If a software RAID is being implemented, you are required to:
  - Perform the procedure "Configure Software RAID (optional)" on page 52 prior to performing the Windows Server 2003 installation.
  - Insert the RAID driver floppy diskette into a floppy diskette drive that is attached to the local server or system hosting the Sun ILOM Remote Console client.

    For more information about creating the RAID driver floppy diskette, see "To Copy RAID Driver to a Floppy Diskette" on page 54. For more information about configuring redirection of a floppy storage device in the Sun ILOM Remote Console, see Appendix A.
  - Temporarily change the boot order in the BIOS Utility so that the CD/DVD drive is listed as the first boot device. Note that after installing the RAID drivers you will need to change the boot order to point to the CD/DVD-ROM drive location of the Windows Server 2003 installation media or ISO image.

▼ To Install Windows Server 2003 Using Local or Remote Media

1. **Prepare the installation media by performing one of the following:**
   - **For distribution CD/DVD**. Insert the Windows Server 2003 distribution media into either the local X2250 server CD/DVD drive or the virtual CD/DVD drive on the client hosting the Sun ILOM Remote Console application.

     Note that if you are using the Sun ILOM Remote Console application to perform the installation, ensure that the `CD-ROM` option is selected in the `Device` menu of the Sun ILOM Remote Console application.
   - **For ISO images**. Ensure that the ISO CD image containing the Windows distribution files are readily available on a network-shared location or on the system hosting the ILOM Remote Console (`Device` menu `->CD-ROM` Image).

     For more information about redirecting storage devices in the Sun ILOM Remote Console, see Appendix A.
2. **Reset the X2250 server, for example:**
   - From the ILOM web interface, select `Reset` on the Remote Power Control tab.

     or
   - Press the Power button (approximately, 1 second) to power off the server, then press the Power button again to power on the server.

     The BIOS splash screen appears.

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.

As the server begins the power-up sequence, it will go through a series of tests and provides you the opportunity to configure the BIOS boot order and storage controllers.

Tip – The default boot order in the BIOS Utility should have the proper CD/DVD (local, external, or virtual) device before disk and network devices. If the boot order does not list the appropriate CD/DVD boot device (local, external, or virtual) then you will need to press F8 to specify the proper CD/DVD device (local, external, or virtual) as the first boot device.

---

3. **When prompted,** `Press any key to boot CD`**, press any key on the keyboard to boot from CD.**

   The Windows text-mode setup program begins and the blue Windows Setup screen appears.

   A message appears informing you to press F6 to install third-party drivers.

4. **(Optional - Third Party Drivers)**

   If required, press F6 to load RAID drivers then perform the following steps.

   a. **In the Windows Setup screen, press S to manually specify the device drivers to install.**

      The Windows Setup screen listing the available drivers appears.

   b. **In the Windows Setup screen listing the available drivers, you must load the following mandatory RAID driver into memory:**

      - Intel ESB2 SATA RAID Controller (Server ESB2)

   c. **Press Enter to load the driver into memory.**

      The Windows Welcome to Setup screen appears.

5. **In the Windows Welcome to Setup screen, press Enter to set up Windows now.**

   The Windows Server Express or Custom screen appears.

6. **Continue the normal Windows installation.**

   For more details, see Microsoft's Windows Server 2003 documentation.

Note – If the Remote Access Configuration option is enabled in the BIOS, the message `"An EMS Connection has been detected on your system"` appears after the Windows Server files have been copied to the server hard disk. The Remote Access Configuration option (when enabled) enables the system to support Microsoft's Emergency Management Services (EMS) and the Special Administration Console (SAC) for out-of-band console I/O support via a serial connection. For more information about EMS, see the Microsoft TechNet web site. (This message does not appear when the Remote Access Configuration option is disabled in the BIOS.)

7. **After the Windows installation completes, you must install the mandatory system device drivers for Windows Server 2003 installations.**

   For more information, see the following section "Install Mandatory Windows System Device Drivers (Post Windows Installation)" on page 58.

Install Mandatory Windows System Device Drivers (Post Windows Installation)

After installing Windows Server 2003 software on the X2250 server, you must install, in the order specified, the following mandatory Windows system device drivers.

1. Intel Chipset
2. Ethernet driver
3. AST2000 VGA driver
4. Trusted Platform Module (TPM) security driver

Prerequisites

- Enabled auto insert notification feature (enabled by default in Windows 2003)
- *Sun Fire X2250 Server Tools and Driver CD*. You can also download the mandatory system drivers for Windows Server 2003 from the following site:

  `http//www.sun.com/servers/x64/X2250/downloads.jsp`

▼ To Install Mandatory System Device Drivers Using Local or Remote Media

The following procedure describes how to install the mandatory Windows system drivers on the X2250 server from the Sun Fire X2250 Server Tools and Drivers CD.

1. **Insert the** *Sun Fire X2250 Server Tools and Drivers CD* **into the local CD/DVD drive on the X2250 server or virtual CD/DVD drive on the client hosting the Sun ILOM Remote Console application.**

   Note that if you are using the Sun ILOM Remote Console application to perform the installation, ensure that the `CD-ROM` option is selected in the `Device` menu of the Sun ILOM Remote Console application.

   For more information about redirecting storage devices from the Sun ILOM Remote Console, see Appendix A.

   A list of menu options available on the Sun Fire X2250 Tools and Drivers CD appears.

2. **In the Sun Fire X2250 Tools and Drivers menu, select** `Install and Update System Device Drivers`**.**

   The required system device drivers for Windows Server 2003 are automatically installed on the X2250 server.

Install Windows Server 2003 Using a PXE Network Environment

This section describes how to install Windows Server 20003 over an established PXE-based network using a customer-provided Windows 2003 Remote Installation Services (RIS) image.

The procedures presented in this section document the initial steps you must perform to install Windows Server 2003 over the network using a RIS image. Specifically, this section explains:

- Guidelines for adding the mandatory Windows system device drivers to a RIS image.
- The procedure for installing Windows Server 2003 from a RIS image via a network service boot.

This section does not explain how to create a RIS image or how to setup and deploy a RIS network environment. Information concerning how to properly set up and deploy a RIS network environment is outside the scope of this installation guide. For more information, see Microsoft's documentation for deploying and using Windows Remote Installation Services.

Prerequisites

The following requirements must be met prior to performing the Windows Server 2003 installation from a RIS image:

- The PXE network install server is configured on the same network as the X2250 server.
- A customer-provided Windows Server 2003 RIS image, as well as the RIS Administrator password.

  For information concerning how to create a RIS image, see the `README.TXT` file stored in the `drivers/windows/IntelNIC/RIS` directory of the *Sun Fire X2250 Server Tools and Drivers CD*.
- Prior to performing the Windows Server 2003 PXE installation, you should add the mandatory Windows system device drivers to your RIS image. For more information, see "Add Windows System Device Drivers to the RIS Image" on page 61.

Add Windows System Device Drivers to the RIS Image

Use the following procedure to add Window System Device Drivers to a RIS image.

Prerequisites

- The X2250 server drivers that must be incorporated into a RIS image are as follows:
  - Intel Chipset
  - Ethernet driver
  - AST2000 VGA driver
  - Trusted Platform Module (TPM) security driver
  - Intel ESB2 SATA RAID Controller (Server ESB2).

Note – Note that the Intel-ESB2 SATA RAID Controller driver is only required if you are implementing a software RAID. For more information about configuring a software RAID, see "Configure Software RAID (optional)" on page 52.

- Obtain the mandatory (32-bit or 64-bit) Windows Server 2003 system device drivers from the *Sun Fire X2250 Server Tools and Drivers CD* (`drivers/windows/IntelNIC/RIS`)

▼ To Add Drivers to the RIS Image

1. **Create the following directories in `RIS_Image` (root of your Windows image on the RIS server.):**

   ```
   $OEM$\textmode
   $OEM$\$1\Sun\Drivers
   ```

2. **Add drivers from the *Sun Fire X2250 Tools and Drivers CD*. Refer to the `Readme` file on the *Sun Fire X2250 Tools and Drivers CD* for more information.**

3. **Update the `RIS_Image` with the platform-specific drivers:**
   - For 32-bit, copy the contents of the `DriverPack\32-bit` folder to the `RIS_Image\$OEM$\$1\Sun\Drivers` folder, making sure to maintain the directory structure.
   - For 64-bit, copy the contents of the `DriverPack\64-bit` folder to the `RIS_Image\$OEM$\$1\Sun\drivers` folder, making sure to maintain the directory structure.

For more information about adding the drivers to a RIS image, see the `Readme` file located in the RIS directory of the *Sun Fire X2250 Tools and Drivers CD* directory.

▼ To Install Windows Server 2003 Using PXE

1. **Reset the X2250 server, for example:**
   - From the ILOM web interface, select `Reset` on the Remote Power Control tab.

     or
   - Press the Power button (approximately, 1 second) on the front panel of the server to turn off the server, then press the Power button again to turn on the server.

   The BIOS screen appears.

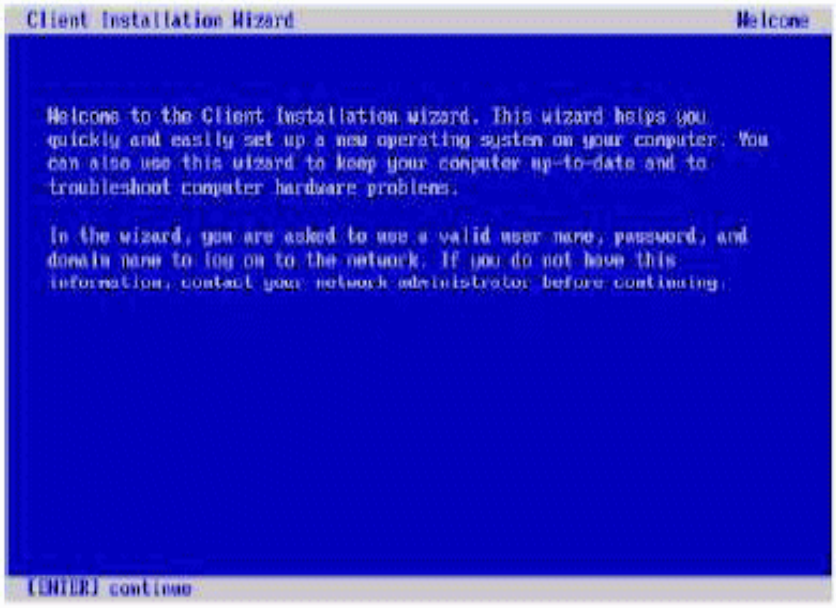
Note – The next events occur very quickly, focused attention is needed for the following steps. Watch carefully for these messages as they appear on the screen for a brief time. You might want to enlarge the size of your screen to eliminate scroll bars.

---

2. **In the Boot Agent screen, press F12 for a network service boot.**

The Welcome to Client Installation wizard appears.

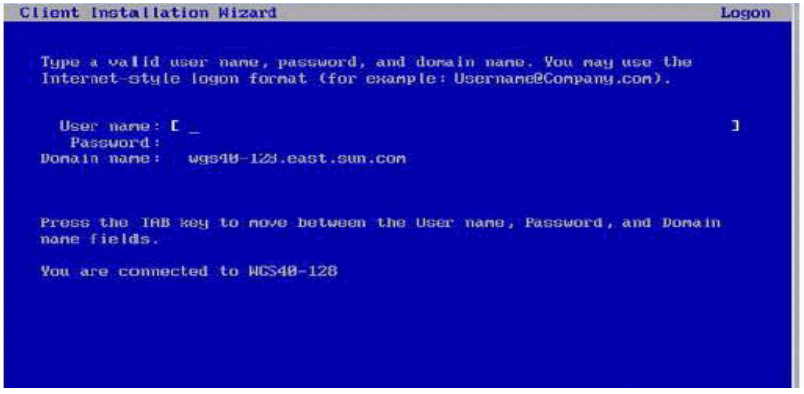
3. **In the Welcome to Client Installation wizard, press Enter to continue.**



4. **The next screen prompts you for a user name, password, and domain name.**

5. **In the user name and password screen, specify your user name and password, then press Enter.**

   Use the Tab key to move between fields.



The Windows Server 2003 version screen appears.

6. **In the Windows Server 2003 version screen, select the version (32-bit or 64-bit) you are installing, then press Enter.**

The Windows Server 2003 operating system choice screen appears.

7. **In the OS choice screen, select the OS option you are installing, then press Enter.**

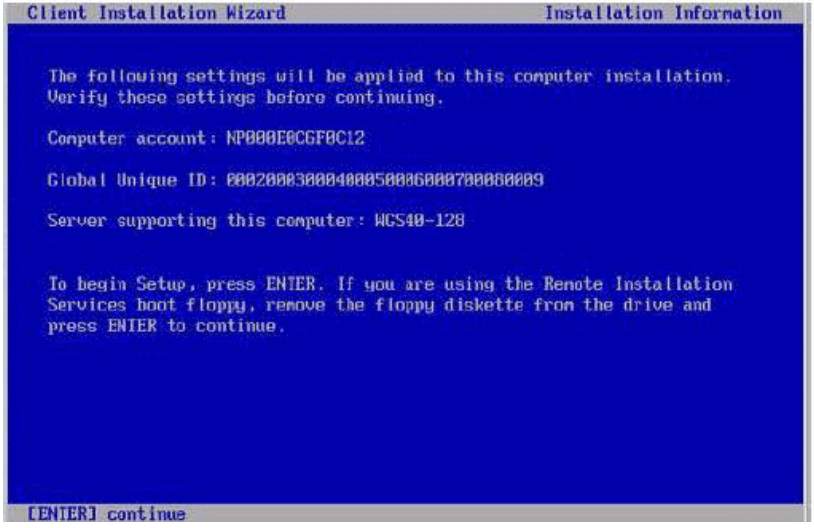
Note – The OS choice screen identifies the names of the OS images that are available for you to install from your RIS server.

A Caution screen appears.

8. **In the Caution screen, press Enter to continue.**

The Installation Information screen appears.

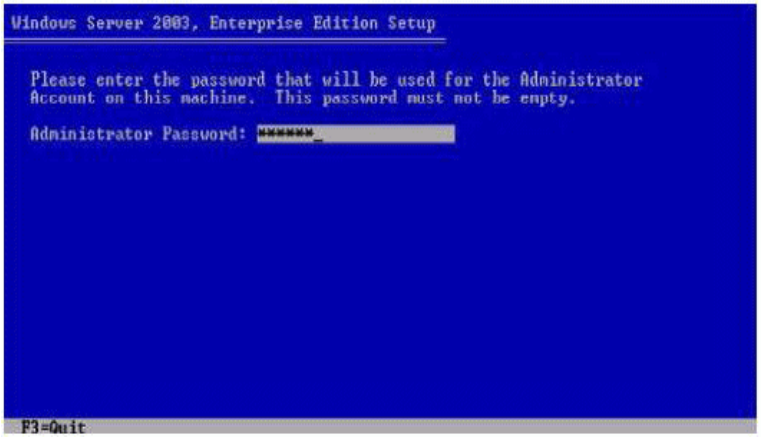
9. **In the Installation Information screen, press Enter to continue.**



The Administrator Password screen appears.

10. **In the Administrator Password screen, specify an OS Administrator password and press Enter.**

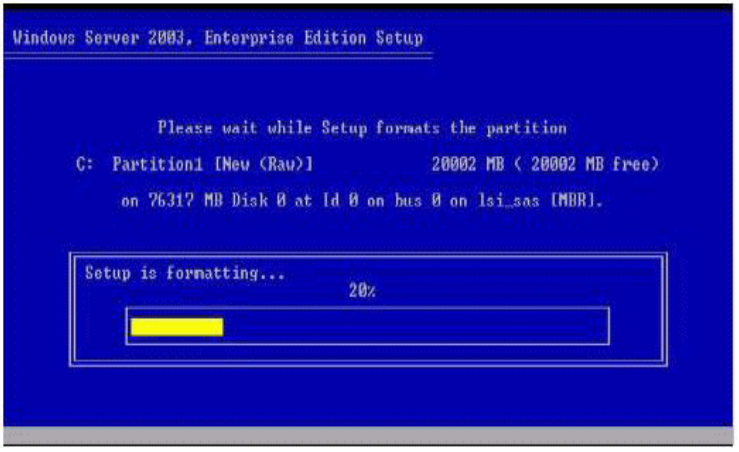
    Note that this password is assigned to the OS installation target.



    You will be asked to confirm the password.

11. **In the Administrator Password Confirmation screen, retype the password and press Enter.**

    The Windows Setup starts and a message appears that the setup is formatting the partition.



12. **Continue the normal Windows Server 2003 installation. For more details, see Microsoft's Windows Server 2003 installation documentation.**

CHAPTER 5

Installing Windows Server 2008

This chapter describes the installation process for installing Windows Server 2008 on a Sun Fire X2250 server.

Note – Alternatively, you can choose to use the Sun Installation Assistant (SIA) to install Windows Server 2008 on a Sun Fire X2250 server. For more information about using SIA to install the Windows Server 2008 operating system, see the *Sun Installation Assistant for Windows and Linux User's Guide* (820-3357).

This chapter contains the following topics:

Installation Requirements

Before starting the Windows Server installation, you should ensure that following requirements are met.

- **Supported format of Windows Server distribution files**. Depending on the installation method chosen to install Windows, you will need to have either the Windows Server distribution media, ISO CD-ROM image, or WDS image available for installation.
- **Minimum supported Windows Server operating system**. The X2250 server supports the following English-only Windows Server operating system editions:
  - Microsoft Windows Server 2008 Standard Edition (32-bit or 64-bit)
  - Microsoft Windows Server 2008 Enterprise Edition (32-bit or 64-bit)
  - Microsoft Windows Server 2008 Datacenter Edition (32-bit or 64-bit)
- **Software RAID**. By default, the Sun-supplied disk drives are shipped without a RAID configuration. If you need to create a RAID for your disk drive(s), you can configure a RAID prior to installing the Windows operating system. For more information see, "Configure Software RAID (optional)" on page 70.
- **Established console access to installation**. At this point you should have already chosen a supported console option to display the input or output of the installation. For more information, see "Supported Console Options" on page 4.
- **System device drivers required**. The *Sun Fire X2250 Server Tools and Drivers CD* provides the system device drivers that must be installed. You will be required to have this CD to install the system device drivers, which is described later in this chapter. This CD is shipped in the Documentation and Media Kit, which is a customer-orderable option. Alternatively, you can download the installation driver scripts that are provided on the CD from the following site:

  `http://www.sun.com/servers/x64/X2250/downloads.jsp`
- **Sun Fire X2250 Server Product Notes**. You should review the *Sun Fire X2250 Server Product Notes* for any late-breaking information concerning Windows Server 2008 installations.
- **Microsoft's Windows Server 2008 Installation Documentation**. In addition to using the instructions in this chapter to boot the Windows Server 2008 installation program and to install system device drivers, you should also refer to the Microsoft Windows Server 2008 documentation to complete the operating system installation.

Checklist of Tasks To Perform

The following tasks must be performed in the order in which they are listed. Note that not all tasks are mandatory.

TABLE 5-1 Checklist for Windows 2008 Installations

Steps	Mandatory or Optional	Task
1	Mandatory	Established installation environment. For more information see: • "Supported Console Options" on page 4 • "Supported Installation Media Options" on page 6
2	Optional	Set optimal default settings in the BIOS Utility. For more information, see "Configure BIOS Settings for New Installations" on page 99.
3	Mandatory	Locate the *Sun Fire X2250 Tools and Drivers CD* or download the mandatory device drivers for Windows 2008 from the following site: `http//www.sun.com/servers/x64/X2250/downloads.jsp`
4	Optional	Implement a software RAID using the BIOS Setup Utility. For more information, see: • "To Configure RAID Controller in BIOS" on page 70
5	Mandatory	Boot Windows Server 2008 installation media to initiate the operating system installation. For more information see one of the following sections: • "Install Windows Sever 2008 Using Local or Remote Media" on page 71 or • "Install Windows Server 2008 Using a PXE Network Environment" on page 79
6	Mandatory	Installed the required system device drivers for Windows Server 2008 installations. For more information, see one of the following sections: • "To Install Mandatory System Device Drivers Using Local or Remote Media" on page 78 or • "To Add Drivers to the WIM Image" on page 80

Configure Software RAID (optional)

The Sun-supplied hard disk drives for the X2250 servers are shipped without a RAID configuration. If a RAID configuration is required, you will need to configure the RAID Controller in the BIOS Setup Utility. Follow the procedures in this section to configure RAID for a Windows Server 2008 installation.

▼ To Configure RAID Controller in BIOS

1. **Reboot the server and press** `F2` **when the Sun Logo appears.**

   The BIOS Setup utility dialog appears.

2. **In the BIOS Setup utility dialog, select** `Advanced -> IDE Configuration`**.**

   The IDE Configuration menu appears.

3. **In the IDE Configuration menu, select** `Configure SATA AS` **and press Enter.**

   A menu appears listing the SATA options: IDE, RAID, and AHCI. IDE is set by default.

4. **In the SATA Options menu, select** `RAID` **and press Enter.**

5. **Press F10 to save your changes, exit the BIOS Setup utility, and reboot the server.**

6. **While the server is rebooting, press <Ctrl-I> to access the RAID configuration.**

   The Intel Matrix Storage Manager option ROM dialog appears.

7. **In the main menu of the Intel Matrix Storage Manager option ROM dialog, select** `(1) Create RAID Volume` **and press Enter.**

   The Create RAID Volume menu appears.

8. **In the Create RAID Volume menu, do the following:**

   a. **Provide a name for the RAID volume and press Enter, or press Enter to accept the default name.**

   b. **Select either** `RAID 1 (Mirror)` **or** `RAID 0 (Stripe)` **as the RAID level and press Enter.**

      Use the up and down arrow keys to scroll through the available RAID level values.

   c. **Specify the volume capacity and press Enter; or press Enter to accept the default volume capacity.**

d. **Select** `Create Volume` **and press Enter.**

   A warning message appears stating that all data could be lost.

e. **In the warning message, press** `Y` **to confirm the volume creation.**

   The new RAID volume is created. Information describing the RAID volume appears (for example, the RAID ID, Volume Name, Level, Status).

9. **Select** `EXIT` **and press Enter to exit the Intel Matrix Storage Manager utility.**

   A confirmation message appears confirming that you want to exit the Intel Matrix Storage Manager utility.

10. **In the confirmation message, press** `Y` **to confirm the exit.**

Install Windows Sever 2008 Using Local or Remote Media

This section describes how to boot the Windows Server 2008 installation media from locally attached or remote media.

Prerequisites

The following requirements must be met prior to performing the Windows Server 2008 installation:

- Established installation environment. For more information, see "Supported Console Options" on page 4 and "Supported Installation Media Options" on page 6.
- The BIOS Setup utility boot order should have the proper CD/DVD-ROM device (external or virtual) specified as the first boot device. For example:
  - When performing the installation from the ILOM Remote Console, you should have the Virtual CD/DVD-ROM device set as the temporary boot device. This procedure can be used only for systems that contain an SP module.
  - When performing the installation from a locally attached CD/DVD-ROM device, you should have the External CD/DVD-ROM boot device set as the temporary boot device.

  If necessary, you can set a temporary boot device during the server's start-up phase (after Step 2 in this procedure) by pressing F8.
- If a hardware RAID is being implemented, you are required to perform the procedures in "Configure Software RAID (optional)" on page 70 prior to performing the Windows Server 2008 installation.

▼ To Install Windows Server 2008 Using Local or Remote Media

1. **Prepare the installation media by performing one of the following:**
   - **For distribution CD/DVD**. Insert the Windows Server 2008 distribution media into either the locally attached CD/DVD drive or the virtual CD/DVD drive on the client hosting the Sun ILOM Remote Console application.

     Note that if you are using the Sun ILOM Remote Console application to perform the installation, you must ensure that the `CD-ROM` option is selected in the `Device` menu of the Sun ILOM Remote Console application.
   - **For ISO images**. Ensure that the ISO CD image containing the Windows distribution files are readily available on a network-shared location or on the system hosting the ILOM Remote Console (`Device` menu `->CD-ROM` Image).

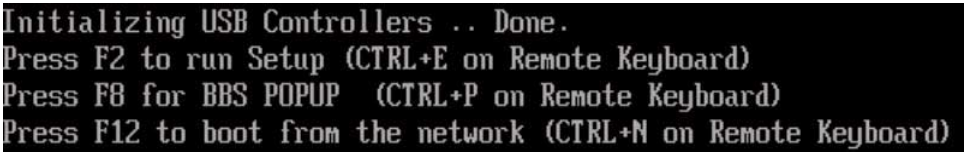
     For more information about redirecting storage devices in the Sun ILOM Remote Console, see Appendix A.
2. **Reset the Sun Fire X2250 server, for example:**
   - From the ILOM web interface, select `Reset` on the Remote Power Control tab.

     or
   - Press the Power button (approximately, 1 second) to power off the server, then press the Power button again to power on the server.

     The BIOS POST process begins.
3. **Press F8 when the `Press F8 for BBS POPUP` prompt appears on the BIOS POST screen (see FIGURE 5-1).**

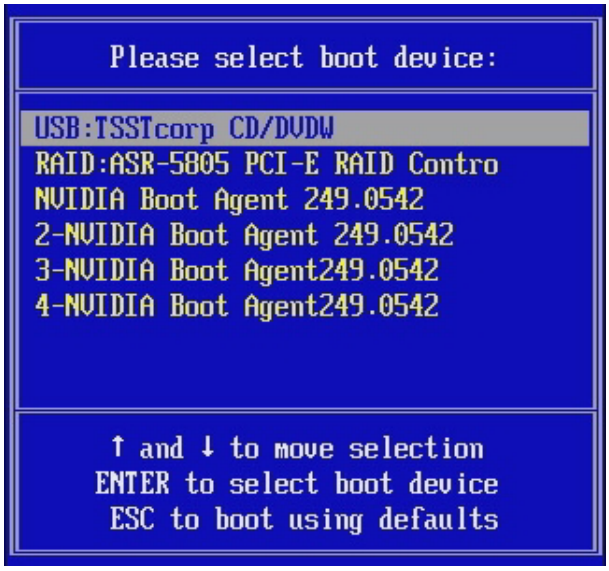
   The BBS POPUP menu will allow you to select a boot device.

FIGURE 5-1 F8 Prompt Example



4. **Once the BIOS POST process is complete, the Boot Device menu appears (see FIGURE 5-2). Insert the Windows media DVD into the locally attached DVD drive or the virtual DVD drive on the client hosting the Sun ILOM Remote Console application.**

FIGURE 5-2 Boot Device Menu Example

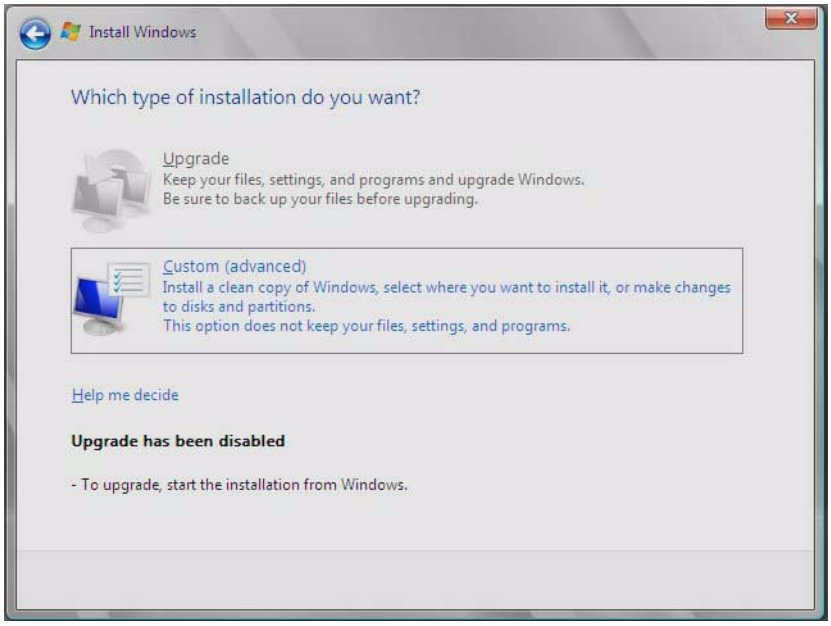


5. **Select** `CD/DVDW` **from the Boot Device menu and press Enter.**

   If prompted with `Press any key to boot from CD`, quickly press any key.

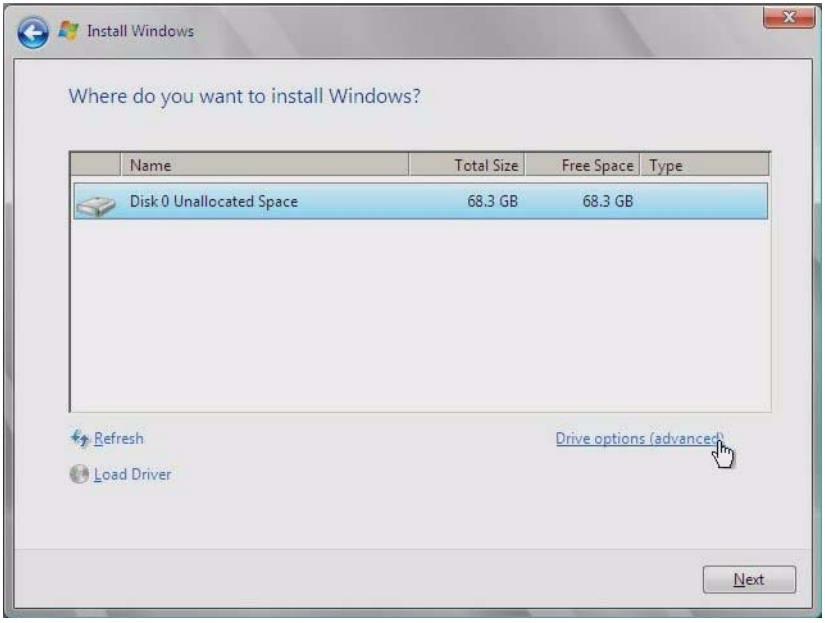
6. **The Windows installation wizard starts. Proceed through the installation wizard until you see the Installation Type page displayed, and then click Custom (advanced).**

FIGURE 5-3 Select Installation Type Page



7. **You will then see the Where Do You Want to Install Windows page (see** FIGURE 5-4**). Do one of the following:**

FIGURE 5-4 Where to Install Windows Page Example

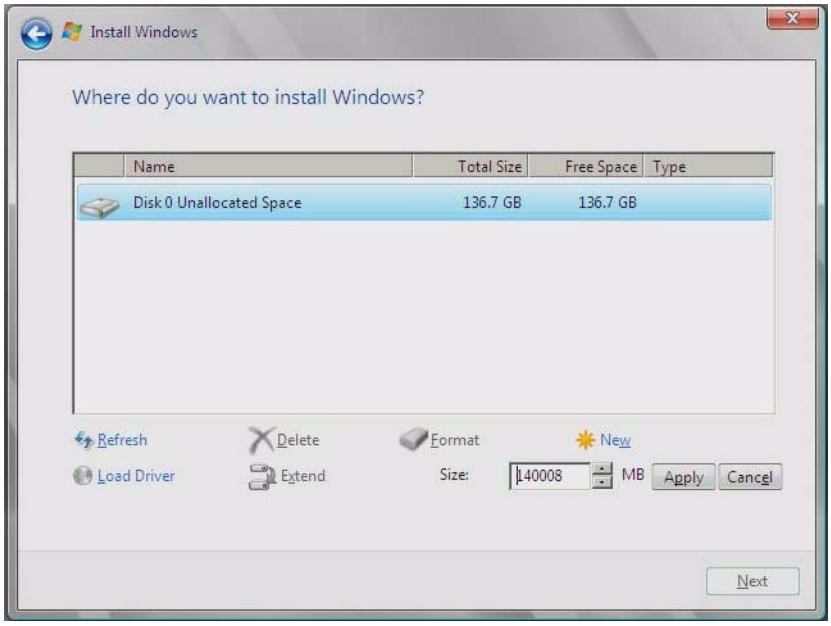


- **If you *do not* want to override the Windows Default partition information, skip to** Step 9**.**
- **If you *do* want to override the Windows default partition information, click the Driver Options (advanced) option and proceed to the next step.**

Caution – Formatting or re-partitioning a pre-existing partition will destroy all data on the partition.

8. At the Advanced Driver Options page (see FIGURE 5-5**), do the following:**

FIGURE 5-5 Windows Partition Management Page



a. Click Delete to delete the existing partition.

b. Click New to create the new partition.

c. Change size settings as needed, and then click Apply.

d. Click Next and proceed to the next step.

9. **The Windows installation begins.**

   The server will reboot multiple times during the installation process.

10. **When Windows installation is complete, Windows starts and prompts you to change the user password. Click OK and proceed to set up the initial user login account.**

Note – Windows 2008 enforces stronger password schemes for user accounts. Password standards include restrictions on length, complexity and history. For more details, click the Accessibility link at the account creation page.

Once the initial user account is created, the Windows Server 2008 desktop is displayed.

11. **After the Windows installation completes, you must install the mandatory system device drivers for Windows Server 2008 installations.**

    For more information, see the following section "Install Mandatory Windows System Device Drivers (Post Windows Installation)" on page 77.

Install Mandatory Windows System Device Drivers (Post Windows Installation)

After installing Windows Server 2008 software on the Sun Fire X2250 server, you must install, in the order specified, the following mandatory Windows system device drivers.

1. Intel Chipset
2. Ethernet driver
3. AST2000 VGA driver
4. Trusted Platform Module (TPM) security driver

Prerequisites

- Enabled auto insert notification feature (enabled by default in Windows 2008)
- *Sun Fire X2250 Server Tools and Driver CD*. You can also download the mandatory system drivers for Windows Server 2008 from the following site:

  `http://www.sun.com/servers/x64/X2250/downloads.jsp`

▼ To Install Mandatory System Device Drivers Using Local or Remote Media

The following procedure describes how to install the mandatory Windows system drivers on the Sun Fire X2250 server from the Sun Fire X2250 Server Tools and Drivers CD.

1. **Insert the** *Sun Fire X2250 Server Tools and Drivers CD* **into the locally attached CD/DVD drive on the Sun Fire X2250 server or virtual CD/DVD drive on the client hosting the Sun ILOM Remote Console application.**

   Note that if you are using the Sun ILOM Remote Console application to perform the installation, you must ensure that the `CD-ROM` option is selected in the `Device` menu of the Sun ILOM Remote Console application.

   For more information about redirecting storage devices from the Sun ILOM Remote Console, see Appendix A.

   A list of menu options available on the Sun Fire X2250 Tools and Drivers CD appears.

2. **In the Sun Fire X2250 Tools and Drivers menu, select** `Install and Update System Device Drivers`**.**

   The required system device drivers for Windows Server 2008 are automatically installed on the Sun Fire X2250 server.

Install Windows Server 2008 Using a PXE Network Environment

This section describes how to install Windows Server 2008 over an established PXE-based network using a customer-provided Windows Imaging Format (WIM) image. WIM files are installed using Windows Deployment Services (WDS).

This chapter is not a tutorial on WDS; it provides guidance on how to incorporate the X2250 drivers into the WIM image. This chapter contains the following sections:

Determine Required Drivers

The X2250 server drivers that must be incorporated into the WIM image are as follows:

- Intel Chipset
- Ethernet driver
- AST2000 VGA driver
- Trusted Platform Module (TPM) security driver

Add Drivers to a WIM Image

This section contains information about adding Sun Fire X2250 server drivers to the WIM image.

Before You Begin

Before creating your WIM image, you need to do the following:

- The Windows Automated Installation Kit (Windows AIK or WAIK) must be installed. The kit can be downloaded from Microsoft. Sun recommends using version 2.0 or later of the WAIK.
- Read the Windows AIK documentation.

- Windows Remote Installation Services must be running on a Windows Server. Read the Windows Deployment Services snap-in documentation.
- Have the latest Sun Fire X2250 Server Tools & Drivers CD.

▼ To Add Drivers to the WIM Image

1. **Copy all of the appropriate files for a 32-bit or 64-bit Windows installation from the version folders on the Sun Fire X2250 Server Tools & Drivers CD to the appropriate folder structure on a network share. See** Step a **and** Step b **below:**

   a. **Identify the appropriate version files.**

      In the examples below, `cdromdrive` is the driver letter of the CD/DVD drive that contains the Sun Fire X2250 Server Tools & Drivers CD:

```
Tools & Drivers CD/DVD Windows 2008 32-bit files:
cdromdrive:\drivers\windows\Display\2008_32
                        ...\RAID\LSI\2003_32
                        ...\RAID\StorageTEK\2008
                        ...\IntelNIC\PROXGB\Win32
                        ...\InetlNIC\PRO1000\Win32
```

```
Tools & Drivers CD/DVD Windows 2008 64-bit files:
cdromdrive:\drivers\windows\Display\2008_64
                        ...\RAID\LSI\2003_64
                        ...\RAID\StorageTEK\2008\amd64
                        ...\IntelNIC\PROXGB\Winx64
                        ...\InetlNIC\PRO1000\Winx64
```

b. Copy the files identified in Step a from their version folders and into the appropriate folder structure on your network share.

In the examples below, `\\yourshare\share` is the share path you have set up on the network, `DriverPack\x64` is for 64-bit Windows, and `DriverPack\x86` is for 32-bit Windows. **All files must reside directly under the `x64` or `x86` folder or component subfolder (there should be no version subfolders as found on the Tools & Drivers CD).** See examples below:

```
Windows 2008 32-bit WIM folder structure:
\\yourshare\share\DriverPack\x64\Display
                              ...\RAID\LSI
                              ...\RAID\StorageTEK
                              ...\IntelNIC\PROXGB
                              ...\InetlNIC\PRO1000
```

```
Windows 2008 64-bit WIM folder structure:
\\yourshare\share\DriverPack\x64\Display
                              ...\RAID\LSI
                              ...\RAID\StorageTEK
                              ...\IntelNIC\PROXGB
                              ...\InetlNIC\PRO1000
```

2. Select the service image to update and export the image:

a. Click Start, click Administrative Tools, and then click Windows Deployment Services.

b. Find the image to service. Right-click the image and then click Disable.

c. Right-click the image and click Export Image. Follow the Wizard directions to export the image to the location of your choice.

3. Mount the Windows image you just exported. For example,

```
imagex /mountrw C:\windows_distribution\sources\install.wim 1
C:\win_mount
```

The first Windows image in the `Install.wim` file is mounted to `C:\wim_mount`

4. **Use Windows System Image Manager (Windows SIM, available in Windows AIK) to create an answer file that contains the paths to the device drivers that you intend to install.**

   See the Microsoft documentation for the Windows Automated Installation Kit for the details of starting the Windows SIM application.

5. **Add the** `Microsoft-Windows-PnpCustomizationsNonWinPE` **component to your answer file in the** `offlineServicing` **pass.**

6. **Expand the** `Microsoft-Windows-PnpCustomizationsNonWinPE` **node in the answer file. Right-click** `DevicePaths`**, and then select Insert New PathAndCredentials.**

   A new PathAndCredentials list item appears.

7. **In the** `Microsoft-Windows-PnpCustomizationsNonWinPE` **component, specify the path to the architecture (**`x86` **or** `x64`**) folder in the** `DriverPack` **folder on the network share, and the credentials used to access the network share.**

   For example, the path and credentials for a 64-bit image might be:

   ```
   <Path>\\yourshare\share\DriverPack\x64</Path>
   <Credentials>
       <Domain>MyDomain</Domain>
       <Username>MyUserName</Username>
       <Password>MyPassword</Password>
       </Credentials>
   ```

8. **Save the answer file and exit Windows SIM. The answer file must be similar to the following sample.**

   The sample assumes the architecture is 64-bit.

```
<?xml version="1.0" ?>
<unattend xmlns="urn:schemas-microsoft-com:asm.v3" xmlns:wcm=
"http://schemas.microsoft.com/WMIConfig/2002/State">
   <settings pass="offlineServicing">
      <component name="Microsoft-Windows-PnpCustomizationsNonWinPE"
processorArchitecture="x64" publicKeyToken="31bf3856ad364e35"
language="neutral" versionScope="nonSxS">
         <DriverPaths>
            <PathAndCredentials wcm:keyValue="1">
               <Path>>\\yourshare\share\DriverPack\x64</Path>
               <Credentials>
                  <Domain>MyDomain</Domain>
                  <Username>MyUserName</Username>
                  <Password>MyPassword</Password>
               </Credentials>
            </PathAndCredentials>
         </DriverPaths>
      </component>
   </settings>
</unattend>
```

9. **Use Package Manager to apply the unattended installation answer file to the mounted Windows image. Specify a location for the log file to create.**

   For more information about using Package Manager, see the Microsoft Windows AIK documentation. For example,

   ```
   pkgmgr /o:"C:\wim_mount\;C:\wim_mount\Windows" /n:"C:\
   unattend.xml" /l:"C:\pkgmgrlogs\logfile.txt"
   ```

   The `.inf` files referenced in the path in the answer file are added to the Windows image. A log file is created in the directory `C:\Pkgmgrlogs\`.

10. **Review the contents of the `%WINDIR%\Inf\` directory in the mounted Windows image to ensure that the `.inf` files were installed.**

    Drivers added to the Windows image are named `oem*.inf`. This is to ensure unique naming for new drivers added to the computer. For example, the files `MyDriver1.inf` and `MyDriver2.inf` are renamed `oem0.inf` and `oem1.inf`.

11. **Unmount the `.wim` file and commit the changes.**

    For example:

    ```
    imagex /unmount /commit C:\wim_mount
    ```

12. **Replace the service image and Enable the image.**

    a. **If the Windows Deployment Services snap-in is not running, click Start, click Administrative Tools, and then click Windows Deployment Services.**

    b. **Find the image to service. Right-click the image and then click Replace Image. Follow the Wizard directions to replace the service image with the Windows image that was updated.**

    c. **Right-click the service image and then click Enable.**

    The service image is now available and all of the X2250 drivers are added to the image.

Install Windows Server 2008 Using PXE

This section explains how to install the Windows Server 2008 operating system over an established PXE-based network via a customer-provided WDS image.

Note that the procedure presented in this section documents the initial steps to install Windows 2008 over the network using a WDS image. Specifically, it explains the steps for selecting the server PXE network interface card that will communicate with your WDS install server. For further information about using a WDS image to install the Windows Server 2008 operating system, see Microsoft's Windows Deployment Services documentation.

Before You Begin

- 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 that are necessary for PXE booting.
  - Configure the Sun server MAC network port address to boot from the PXE configuration.
  - Configure DHCP.
- If you are using a WIM image to perform the installation, you must:
  - Add the required system device drivers to the WIM install image.

    Follow the instructions in "Determine Required Drivers" on page 79.
  - Create the WIM installation image.

    Follow the instructions in "Add Drivers to a WIM Image" on page 79.
  - Add the required system device drivers to the WIM install image.
  - Create a WIM Administrator password.

▼ To Install Windows Server 2008 Using PXE

1. **Reset the Sun Fire X2250 server.**
   - From the ILOM web interface, select `Reset` on the Remote Power Control tab.

     or
   - Press the Power button (approximately, 1 second) on the front panel of the server to turn off the server, then press the Power button again to turn on the server.

   The BIOS screen appears.

Note – The next events occur very quickly, 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.

---

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

   The Please Select Boot Device menu appears.

3. **In the Please Select Boot Device menu, select the appropriate PXE install boot device and press Enter.**

   The PXE install boot device is the physical network port configured to communicate with your network install server.

   The Boot Agent dialog appears.

4. **In the Boot Agent dialog, press F12 for a network service boot.**

5. **Continue the normal Windows Server 2008 WDS network installation. For additional information, consult Microsoft's Windows Deployment Services product documentation.**

APPENDIX **A**

Sun ILOM Remote Console

This appendix introduces the Sun ILOM Remote Console features and explains how to launch and configure the Sun ILOM Remote Console application.

For more information, refer to the following sections:

Sun ILOM Remote Console Overview

The Sun ILOM Remote Console is a Java application that you can launch from the ILOM web interface. When you use the Sun ILOM Remote Console, you can remotely redirect and control the following devices on a remote x64 host server:

- Keyboard
- Mouse
- Video console display
- Storage devices or images (CD/DVD, floppy device)

The Sun ILOM Remote Console enables the devices on your local client to behave as if they were directly attached to the remote host server. For instance, the redirection functionality, using a network connection to the remote host server, enables you to do the following:

- Install software from your local media drive to a remote host server.
- Run command-line utilities on a remote host server from a local client.
- Access and run GUI-based programs on a remote host server from a local client.

- Remotely configure x64 processor-based server features from a local client.
- Remotely manage x64 processor-based server policies from a local client.
- Remotely monitor x64 processor-based server elements from a local client.
- Perform almost any x64 processor-based software task from a local client that you normally could perform at a remote host server.

Installation Requirements

The Sun ILOM Remote Console does not require you to install any additional hardware or software. It is built into the ILOM software. However, to run the Sun ILOM Remote Console, you must have the following software installed on your local client:

- **Web browser** – Supported browsers include: Internet Explorer 6.0 or later; Mozilla 1.7.5 or later; Mozilla Fire Fox 1.0 or later.
- **JRE 1.5 or higher (Java 5.0 or higher)** – To download the Java 1.5 runtime environment, see `http://java.com.`

Launch and Configure ILOM for Remote Management

Prior to launching the Sun ILOM Remote Console, you must launch the ILOM web interface and configure ILOM for remote management.

- **Connect to the ILOM web interface** – You must connect to the ILOM web interface of the server that you want to remotely manage. For instructions, see "To Connect to the ILOM Web Interface" on page 89.
- **Configure ILOM remote control settings** – Prior to remotely managing a Sun x64 server using the Sun ILOM Remote Console, you must initially configure ILOM settings for remote management: `console redirection`, `supported mouse mode`, `remote` and `host power states`. For more information, see "To Configure ILOM Remote Control Settings Using the Web Interface" on page 89.

Note – Typically you will set up the remote management control settings once in ILOM with the exception of the remote host power states.

▼ To Connect to the ILOM Web Interface

Follow these steps to connect to the ILOM web interface:

1. **Open a web browser and specify the IP address of the x64 server SP that you want to remotely manage, then press Enter.**

   The ILOM Login page appears.

2. **In the ILOM Login page, enter the user name and password of a valid Administrator role account, then press Enter.**

Tip – The preconfigured administrator role account shipped with ILOM is `root/changeme`.

▼ To Configure ILOM Remote Control Settings Using the Web Interface

Prerequisite:

- Established connection to the remote host server ILOM web interface. For instructions, see "To Connect to the ILOM Web Interface" on page 89.

Follow these steps to configure ILOM settings for remote management:

1. **In the ILOM web interface, click the Remote Control tab.**

   The Remote Control page appears displaying three sub-tabs: `Redirection`, `Mouse Mode Settings`, and `Remote Power Control`.

2. In the Remote Control page, set the following remote control settings.

Console redirection settings	Click the Redirection tab and select one of the following console color redirection options: • **8-bit.** Select 8-bit redirection for slower network connections. • **16-bit.** Select 16-bit redirection for faster network connections.
Mouse mode settings *(SP setting only)*	Click the Mouse Mode Settings tab and select one of the following mouse mode settings: • **Absolute.** Select Absolute Mouse Mode for best performance when you are using Solaris or Windows operating systems. Absolute is the default setting. • **Relative.** Select Relative Mouse Mode when you are using a Linux operating system. Note that not all Linux operating systems support Absolute mode.
Power state settings	Click the Remote Power Control tab to select one of the following host server power states: • **Immediate Power Off.** Select Immediate Power Off to immediately turn off the power to the remote host server. • **Graceful Shutdown and Power Off.** Select Graceful Shutdown and Power Off to attempt to shut down the OS gracefully prior to powering off the remote host server. • **Power On**. Select Power On to turn on full power to the remote host server. Power On is the default. • **Power Cycle.** Select Power Cycle to immediately turn off the power on the remote host server, then apply full power to the remote host server. • **Reset.** Select Reset to immediately reboot the remote host server.
PC-Check diagnostic settings	Click the Diagnostics tab to enable or disable the appropriate settings for PC-Check diagnostics.

Launch and Configure Sun ILOM Remote Console for Remote Server Management

To manage a X2250 server remotely, you must launch the Sun ILOM Remote Console and configure the console features, as needed, for remote management. For more information, see these procedures:

▼ To Launch the Sun ILOM Remote Console Using the ILOM Web Interface

Prerequisites:

- Established connection to the ILOM web interface. For instructions, see "To Connect to the ILOM Web Interface" on page 89.
- Configured ILOM Remote Control Settings. For instructions, see "To Configure ILOM Remote Control Settings Using the Web Interface" on page 89.

To launch the Sun ILOM Remote Console using the ILOM web interface, follow these steps:

1. **In the ILOM web interface, click the Remote Control tab.**

   The Remote Console page appears.

2. **In the Remote Console page, click the Redirection tab.**

   The Redirection page appears.

3. **In the Redirection page, click Launch Redirection.**

   A certificate warning message might appear stating that the name of the site does not match the name on the certificate. If this message appears, click Run to continue.

   The Sun ILOM Remote Console window appears.

▼ To Add a New Server Session

Prerequisite:

- Established connection to the Sun ILOM Remote Console. For instructions, see "To Launch the Sun ILOM Remote Console Using the ILOM Web Interface" on page 91.

Follow these steps to add a new server session to the ILOM Remote Console:

1. **In the Sun ILOM Remote Console window, select Redirection --> New Session.**

   The New Session Creation dialog appears.

2. **In the New Session Creation dialog, type the IP address of a remote host x64 server SP, then click OK.**

   The Login dialog appears.

3. **In the Login dialog, type an Administrator account user name and password.**

   A session tab for the newly added remote host server appears in the tab set of the Sun ILOM Remote Console.

▼ To Start, Stop, or Restart Device Redirection

Prerequisite:

- Established connection to the Sun ILOM Remote Console. For instructions, see "To Launch the Sun ILOM Remote Console Using the ILOM Web Interface" on page 91.

Follow these steps to start, stop, or restart the redirection of devices:

1. **In the Sun ILOM Remote Console window, click the Redirection menu.**
2. **In the Redirection menu, specify, if necessary, any of the following redirection options:**

Start Redirection	Select Start Redirection to enable redirection of devices. Start Redirection is enabled by default.
Restart Redirection	Select Restart Redirection to stop and start redirection of devices. Typically, this option is used when a valid redirection is still established.
Stop Redirection	Select Stop Redirection to disable the redirection of devices

   A confirmation message appears confirming that you want to change the redirection setting.

3. **In the confirmation message, click Yes to proceed or No to cancel the operation.**

▼ To Redirect Keyboard and Mouse Devices

Prerequisite:

- Established connection to the Sun ILOM Remote Console. For instructions, see "To Launch the Sun ILOM Remote Console Using the ILOM Web Interface" on page 91.

Follow these steps to redirect a remote host server keyboard and mouse to your local client:

1. **In the Sun ILOM Remote Console window, do the following:**
   a. **Select Devices --> Mouse to enable or disable mouse redirection.**
      Enable (checkmark) is the default.
   b. **Select Devices --> Keyboard to enable or disable keyboard redirection.**
      Enable (checkmark) is the default.

▼ To Control Keyboard Modes and Key Send Options

Prerequisite:

- Established connection to the Sun ILOM Remote Console. For instructions, see "To Launch the Sun ILOM Remote Console Using the ILOM Web Interface" on page 91.

Follow these steps to control keyboard modes and individual key send options:

1. **In the Sun ILOM Remote Console window, click the Keyboard menu.**
2. **In the Keyboard menu, specify, if necessary, any of the following keyboard settings.**

Auto-keybreak Mode	Select Auto-keybreak Mode to automatically send a keybreak after every key press. Use this option to help resolve keyboard problems over slow network connections. The Auto-keybreak Mode is enabled by default.
Stateful Key Locking	Select Stateful Key Locking if your client uses stateful key locking (Solaris with XSun, OSX). Stateful Key Locking applies to these three lock keys: Caps Lock, Num Lock, and Scroll Lock.
Left Alt Key	Select the Left Alt Key to toggle the left Alt Key on or off.
Right Alt Key	Select Right Alt Key to toggle the right Alt Key on or off for non-US keyboards. When enabled, this option allows you to type the third key character on a key. This keyboard option provides the same capabilities of an Alt Graph key.
F10	Select F10 to apply the F10 function key (typically used in BIOS).
Control Alt Delete	Select Control Alt Delete to send the Control-Alt-Delete sequence.
Control Space	Select Control Space to send a Control-Space sequence to enable input on remote host.
Caps Lock	Select Caps Lock to send the Caps Lock key to enable input with Russian and Greek keyboards.

▼ To Redirect Storage Devices or ISO Images

Prerequisites:

- Established connection to the Sun ILOM Remote Console. For instructions, see "To Launch the Sun ILOM Remote Console Using the ILOM Web Interface" on page 91.
- For Solaris client systems, you must perform the following steps prior to redirecting storage devices:
  - If Volume Manager is enabled, you will need to disable this feature.
  - Assign root privilege to the processor that is running the Sun ILOM Remote Console by entering these commands:

```
su to root
ppriv -s +file_dac_read pid_javarconsole
```

- Refer to "CD and Diskette Redirection Operation Scenarios" on page 97 for more information.

Follow these steps to redirect a storage device or ISO image:

1. **In the Sun ILOM Remote Console window, select the Devices menu.**
2. **In the Devices menu, do the following:**
   a. **Enable the appropriate storage device or image setting.**

CD-ROM	Select CD-ROM to enable the local CD device. This option causes your local CD-ROM drive to behave as though it were a CD device directly attached to the remote host server.
Floppy	Select Floppy to enable the local floppy device. This option causes your local floppy drive to behave as though it were a floppy device directly attached to the remote host server.
CD-ROM Image	Select CD-ROM Image to specify the location of a CD-ROM image on your local client or network share.
Floppy Image	Select Floppy Image to specify the location of a floppy image on your local client or network share.

Tip – There are only two choices for CD/DVD redirection. You can choose to either redirect a CD-ROM drive or redirect a CD-ROM image.

Tip – If you are installing software from distribution CD/DVD, insert the CD/DVD into the redirected drive and select CD-ROM drive.

Tip – If you are installing software from an ISO image, place the ISO image on your local client or network shared file system then select CD-ROM image.

A dialog appears prompting you to specify a storage drive location or image file location.

b. To specify the storage drive location or image file location, do one of the following:

- In the Drive Selection dialog, select or type a drive location, then click OK.

or

- In the File Open dialog, browse to the location of the image, then click OK.

3. To reuse these storage settings on the host at a later time, click Devices --> Save as Host Default.

▼ To Exit the Sun ILOM Remote Console

Follow these steps to exit the Sun ILOM Remote Console and close any remote server sessions that might have remained opened:

1. In the Sun ILOM Remote Console window, select the Redirection menu.

2. In the Redirection menu, select Quit.

CD and Diskette Redirection Operation Scenarios

Use the following information to help identify different case scenarios in which the CD drive or diskette drive redirection functionality might behave during a Remote Console session.

Case	Status	DVD As Seen by Remote Host	Diskette As Seen by Remote Host
1	Remote Console application not started, or Remote Console started but DVD/diskette redirection not started	DVD device present. No medium indication is sent to the host from ILOM when the hosts asks.	Diskette device present. No medium indication is sent to the host from ILOM when the host asks.
2	Remote Console application started with no medium present in the drive	DVD device present. When the host asks, which may be automatic or when you access the device on the host, the remote client sends a status message. In this case, since there is no medium, the status is no medium.	Diskette device present. When the host asks (for example, you double-click on a drive), the remote client sends a status message. In this case since there is no medium, the status is no medium.
3	Remote Console application started with no medium, then medium is inserted	DVD device present. When the hosts asks (automatic or manual), the remote client sends a status message as medium present and also indicates the medium change.	Diskette device present. When the host asks (manual), the remote client sends a status message as medium present and also indicates the medium change.
4	Remote Console application started with medium inserted	Same as case 3.	Same as case 3.
5	Remote Console application started with medium present, then medium is removed	Next command from the host will get a status message indicating medium not present.	Next command from the host will get a status message indicating medium not present.
6	Remote Console application started with image redirection	Same as case 3.	Same as case 3.

Case	Status	DVD As Seen by Remote Host	Diskette As Seen by Remote Host
7	Remote Console application started with image, but redirection is stopped (which is the only way to stop ISO redirection).	Driver knows DVD redirection stopped, so it sends a medium absent status on the next host query.	Driver knows DVD redirection stopped so it sends a medium absent status on the next diskette query.
8	Network failure.	The software has a keep-alive mechanism. The software will detect keep-alive failure since there is no communication and will close the socket, assuming the client is unresponsive. Driver will send a no medium status to the host.	The software has a keep-alive mechanism. The software will detect unresponsive client and close the socket, as well as indicate to the driver that the remote connection went away. Driver will send a no medium status to the host.
9	Client crashes.	Same as case 8.	Same as case 8.

APPENDIX **B**

Configure BIOS Settings for New Installations

For all new installations, you should verify that the following BIOS settings are properly configured before you begin installing the Windows Server software:

- Optimal factory defaults
- System time
- System date

▼ Verify BIOS Settings for New Installations

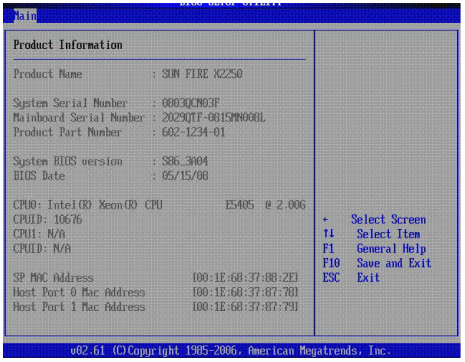
1. **Reset the X2250 server, for example:**
   - From the ILOM web interface, select `Reset` on the Remote Power Control tab.

   or

   - Press the Power button on the X2250 server.

     The BIOS screen appears.
2. **When prompted in the BIOS screen, press F2 to access the BIOS Setup utility.**

   After a few moments, the BIOS Setup utility screen appears.



3. **Ensure that the optimal factory defaults are set by doing the following:**

   a. **Press F9 to automatically load the optimal factory defaults.**

      A message appears prompting you to continue this operation by selecting `OK` or to cancel this operation by selecting `CANCEL`.

   b. **In the Load Optimal Defaults message, select `OK` to continue loading the defaults then press Enter.**

      The BIOS Setup utility screen appears with the cursor selecting the first value in the system time field.

4. **In the BIOS Setup utility, you can edit the system time or date by using these keys:**
   - PLUS (+) to increment the current value shown
   - MINUS (-) to decrement the current value shown
   - ENTER to move the cursor to the next value field
   - UP or DOWN arrows to change between the system time and date selection

5. **To save the changes made and exit the utility, press F10. However, if you are performing this step from the ILOM Remote Console, select `F10` from the ILOM Remote Console -> Keyboard menu.**

Note – When using the ILOM Remote Console, F10 is trapped by the OS. You must use the F10 option listed in the Keyboard drop-down menu.

The Exit Options menu appears.

6. **In the Exit Options menu, select the option to `Save Changes and Exit`, then press Enter.**

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