# Sun Installation Assistant 2.3 through 2.4 User's Guide for x64 Servers

Part No: 821–0694–13
May 2010, Revision A

100511@24119

# Contents

# Preface

This preface describes related documentation and the process for submitting feedback. It also includes a document change history.



## About This Documentation (PDF and HTML)

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

## Typographic Conventions

The following table describes the typographic conventions that are used in this book.

**TABLE 1** Typographic Conventions

| Typeface | Meaning | Example |
|---|---|---|
| `AaBbCc123` | The names of commands, files, and directories, and onscreen computer output | Edit your `.login` file.<br>Use `ls -a` to list all files.<br>`machine_name% you have mail.` |
| **`AaBbCc123`** | What you type, contrasted with onscreen computer output | `machine_name%` **`su`**<br>`Password:` |
| *aabbcc123* | Placeholder: replace with a real name or value | The command to remove a file is `rm` *filename*. |

**TABLE 1** Typographic Conventions *(Continued)*

| Typeface | Meaning | Example |
|---|---|---|
| *AaBbCc123* | Book titles, new terms, and terms to be emphasized | Read Chapter 6 in the *User's Guide*.<br>A *cache* is a copy that is stored locally.<br>Do *not* save the file.<br>**Note:** Some emphasized items appear bold online. |

# Shell Prompts in Command Examples

The following table shows the default UNIX system prompt and superuser prompt for the C shell, Bourne shell, and Korn shell.

**TABLE 2** Shell Prompts

| Shell | Prompt |
|---|---|
| C shell | `machine_name%` |
| C shell for superuser | `machine_name#` |
| Bourne shell and Korn shell | `$` |
| Bourne shell and Korn shell for superuser | `#` |

# We Welcome Your Comments

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

# Change History

The following changes have been made to the documentation set (formatting and minor editorial text changes are not listed).

- September 2009. Initial documentation published.
- November 2009. Updated to add Windows Server 2008 variables to the "Contents of the SIA State File" on page 78. Updated to add section about "Installing Service Tags" on page 113. Updated path information when selecting imaged-based OS installation media over the network when "Installing Windows With SIA" on page 37 or "Installing Linux With SIA" on page 49. Updated instructions for "Creating a Bootable SIA USB Flash Drive" on page 101 on a Linux system.

- January 2010. Removed section on performing an unattended installation of Windows using WDS and a RIS image.
- May 2010. Added information about SIA 2.4. Added support for Oracle Enterprise Linux (OEL) installation. Added information about SIA CD autorun feature. Added information for SAS–2 HBA RAID configuration through SIA.

# Introduction to Sun Installation Assistant

This section introduces Oracle's Sun Installation Assistant (SIA) version 2.3 through 2.4 and describes how to get started using SIA to perform deployment or recovery tasks on your Sun Fire and Sun Blade x86/x64 servers.

| Description | Link |
|---|---|
| Learn about requirements and tasks that can be performed using SIA. | "Getting Started With Sun Installation Assistant" on page 13 |
| Start and prepare SIA for deployment or recovery tasks from local or remote media. | "Starting SIA and Preparing for Deployment or Recovery Tasks" on page 17 |
| Create RAID-1 volumes on internal disk drives. | "Configuring RAID" on page 29 |
| Perform an assisted operating system installation of Microsoft Windows. | "Installing Windows With SIA" on page 37 |
| Perform an assisted operating system installation of Linux. | "Installing Linux With SIA" on page 49 |
| Perform a system firmware upgrade (system BIOS and ILOM, disk controller HBA or disk expander). | "Using SIA to Upgrade System Firmware" on page 59 |
| Recover from a corrupt or inaccessible service processor. | "Using SIA to Recover a Service Processor" on page 67 |
| Perform an SIA task (OS installation or firmware upgrade) using a PXE-based SIA image in attended mode. | "Performing an SIA PXE-Based Attended Installation" on page 71 |
| Perform an SIA task (OS installation or firmware upgrade) using a PXE-based SIA image in unattended mode. | "Performing an SIA PXE-Based Unattended Installation" on page 77 |
| Troubleshoot an SIA installation. | "Troubleshooting SIA" on page 97 |

# Getting Started With Sun Installation Assistant

Oracle's Sun Installation Assistant (SIA) is a tool designed to be used with x86/x64 processor architecture Sun Fire and Sun Blade servers to assist in the deployment of supported Linux and Microsoft Windows operating systems (OS), as well as system firmware upgrades. With SIA, your deployment tasks can be completed using the graphical wizard-based interface or in unattended mode.

- For operating system installation, when used in interactive mode by booting the SIA interface, SIA assists in the OS installation process. You will need to provide a retail version of OS distribution media and SIA will hand you off to the OS native installer as required. SIA will automatically inventory your system hardware and download the latest device drivers supported by Oracle. This means you will not need to create a separate drivers disk. SIA does that work for you.
- For system firmware upgrades, SIA can be used to upgrade the system BIOS/service processor firmware, an optional HBA (host bus adapter used for disk control), or disk expander firmware with the latest fixes and enhancements.
- For automated deployment, SIA can be used in unattended mode to automate the process of OS installation or system firmware upgrades. A special text-based SIA state file is used to automatically answer prompts you would have answered in interactive (attended) mode.

For more information about SIA, see:


- "SIA Version 2.3 Through 2.4 Features and Benefits" on page 13
- "SIA Task List" on page 14
- "Supported Servers and SIA Media Availability " on page 15
- "Supported Operating Systems" on page 15


## SIA Version 2.3 Through 2.4 Features and Benefits

SIA versions 2.3 through 2.4 provides the following features and benefits:

- Multiple media options. SIA is available on a variety of bootable media. You can boot SIA from either a local drive attached to the server (CD/DVD or USB flash drive), a remote redirected network drive (virtual CD-ROM or ISO image), or from an image available on your PXE network environment.

- SIA update option that updates the SIA software from the Oracle download site to ensure your SIA session has the latest drivers and firmware.
- Assisted RAID configuration for supported servers that include an LSI–based integrated disk controller. Supports RAID-1 integrated mirror or integrated mirror enhanced (striping). *New with SIA 2.4:* assisted RAID 1 configuration for LSI-based SAS-2 controllers (926x, 9280).
- Assisted installation for supported Windows or Linux (Oracle, SLES and RHEL) operating systems. This includes the most recent Oracle-supported device drivers required for your system. Supports OS installation on hard disk, solid state disk, or compact flash.

---

**Note –** SIA does not provide the operating system software. You must have a licensed retail version of the operating system software available during the SIA installation.

---

- Provides Oracle's Sun Service Tags installation packages. Following an assisted OS install, Service Tags installation package are copied to a folder on the server. A service tag enables automatic discovery of systems, software, and services (gear). A service tag uniquely identifies each tagged piece of gear, and allows information about the gear to be shared over a local network in a standard XML format.
- System BIOS and device firmware upgrade capabilities. Upgrade options are server-specific.
- Recovery from a non-functional (corrupt or inaccessible) service processor. This feature is server-specific.
- Attended or unattended installations (including OS installation and firmware upgrades) using PXE-based SIA.
- An SIA session event log is created for troubleshooting issues. The log file located at `/root` for Linux, or `C:\` for Windows on the newly installed server.
- On a Windows client, SIA supports an autorun menu that allows you to perform additional tasks outside of the SIA environment. *New with SIA 2.4.*

# SIA Task List

SIA can perform the following server-specific deployment and recovery tasks. The table below provides a list of tasks that may be performed in SIA from the Task Selection dialog screen, however *the list of tasks is server-dependant and not all tasks are available for all servers.*

| Task | Description |
|---|---|
| Operating System Installation | Assisted operating system installation of supported versions of Microsoft Windows and Linux. |

| Task | Description |
|---|---|
| RAID Configuration | For supported Sun servers with an LSI disk controller. This tool allows you to setup RAID 1 volume(s) on your internal drives. |
| System BIOS and ILOM Upgrade | Upgrades the system BIOS and ILOM Service Processor firmware. Displays the installed version and what version is available for an upgrade. These components are upgraded together so that tested version levels are matched. Requires a server reboot to use the new version. |
| HBA Firmware Upgrade | Upgrades the firmware of the server's integrated HBA (Host Bus Adapter). Displays the installed version and what version is available for an upgrade. Requires a server reboot to use the new version. |
| Expander Firmware Upgrade | Upgrades the firmware of the server's integrated disk expanders. Displays the installed version and what version is available for an upgrade. Requires a server reboot to use the new version. |
| SP Recovery | This feature may be used to recover a service processor that is non-functional (either inaccessible, or displays corrupt data). Requires a server reboot to use the recovered version. |

# Supported Servers and SIA Media Availability

The SIA CD/DVD is available for Sun servers (it might come with the server or be available as an X-option). An ISO CD-ROM image or a USB flash drive image of SIA is also available for download from Oracle. A complete list of supported Sun server platforms and a link to their software download page can be found at:

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

**Note –** Updates to the latest system drivers and firmware can be easily obtained during an SIA installation by using the SIA Update option.

# Supported Operating Systems

SIA is available for supported Microsoft Windows and Linux installations. You can see a full list of supported operating systems when you go through the operating system installation task. A list of supported operating systems is also available from the **Release Notes** tab on the SIA **Welcome** page.

An HTML version of the SIA release notes is also available on the SIA download page for your system.

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

# Starting SIA and Preparing for Deployment or Recovery Tasks

This section explains how to start the Sun Installation Assistant (SIA) and prepare it to perform deployment tasks, such as operating system installation or system firmware upgrades (BIOS and ILOM, HBA or disk expander), or a service processor recovery.

---

**Note –** If you plan on performing a PXE-based unattended installation using SIA (for an OS install, or firmware upgrade), proceed to "Performing an SIA PXE-Based Unattended Installation" on page 77.

---

Choose a topic.



## Local and Remote Media Options

This section describes the different methods for running SIA in attended mode on supported Sun Fire or Sun Blade servers. Choose a method that best matches your server type and installation environment.

**TABLE 3** SIA Installation Methods for Sun Fire and Sun Blade Servers

| Supported Methods for Sun Fire Servers | Supported Methods for Sun Blade Servers |
|---|---|
| Use SIA to install an operating system or upgrade system firmware on supported **Sun Fire** servers using one of the following methods:<br>■ Locally at the server using the SIA CD/DVD or a USB flash drive prepared with SIA software. Boot SIA from a CD/DVD in the server's CD/DVD drive, or via USB flash drive prepared with SIA software (as described in "Creating a Bootable SIA USB Flash Drive" on page 101) directly connected to one of the server's USB ports.<br>■ Remotely using a remote console through the server's service processor. This method allows you to boot SIA from a virtual CD/DVD-ROM. Refer to your server's Integrated Lights Out Manager (ILOM) documentation for information on the ILOM remote console. (Note that there are multiple versions of ILOM, be sure to refer to the guide that matches your server's installed version).<br>■ Remotely over the network using a PXE network boot image and running SIA in attended mode. Using this method can significantly reduce the installation time. Instructions for configuring PXE network boot can be found in "Performing an SIA PXE-Based Attended Installation" on page 71. Other remote installation options include "Performing an SIA PXE-Based Unattended Installation" on page 77. | Using SIA with supported **Sun Blade** server modules is similar to Sun Fire servers, however the boot setup is different. On a Sun Blade server module, SIA can install an operating system or upgrade system firmware using one of the following methods:<br>■ Locally at the server using the SIA CD/DVD or USB flash drive prepared with SIA software. Server modules do not have internal CD/DVD drives. Boot SIA from a USB CD/DVD drive, or a USB flash drive prepared with SIA software (as described in "Creating a Bootable SIA USB Flash Drive" on page 101) that is directly connected to the server module's USB dongle port. This method assumes you have set up a VGA console with keyboard and mouse as described in your Sun Blade server module installation documentation.<br>■ Remotely using the server module remote console either through the chassis CMM or directly through the server module's service processor. This method allows you to boot SIA from a virtual CD/DVD-ROM. Refer to your server's Integrated Lights Out Manager (ILOM) documentation for information on the ILOM remote console. (Note that there are multiple versions of ILOM, be sure to refer to the guide that matches your server's installed version).<br>■ Remotely over the network using a PXE network boot image. The network ports for the server modules are provided either through a network express module (NEM) or PCI ExpressModule (PCI EM) installed on the back of the chassis. Refer to the chassis documentation for information on how the NEM and PCI EM ports correspond to the server modules. Instructions for configuring PXE network boot can be found in "Performing an SIA PXE-Based Attended Installation" on page 71. Other remote installation options include "Performing an SIA PXE-Based Unattended Installation" on page 77. |

## How to Start SIA and Prepare for Tasks Using Local or Remote Media

This section guides you through the initial steps of identifying the system hardware, setting up network access, updating SIA software, and preparing you for a deployment task (such as assisted operating system installation or system firmware upgrade) or recovery task (such as service processor recovery).

---

**Note –** In the instructions that follow, example dialog screen shots have been provided as a reference. Information displayed in each dialog may differ depending on your server model.

---

1 **Start SIA using one of the supported methods:**

- **Locally using a CD/DVD:** Insert the SIA CD/DVD into the server's CD/DVD drive and power on or reboot the server.
- **Locally using a USB flash drive:** Plug the USB flash drive prepared with SIA software directly into one of the server's USB ports. Redirect the server to boot from the USB flash drive as described in "Creating a Bootable SIA USB Flash Drive" on page 101.
- **Remotely from a CD/DVD or image file:** Log in to the server's service processor from a remote console (or KVMS) using its ILOM (*Integrated Lights Out Manager*) interface and use the Remote Control Launch Redirection feature to redirect the server to the virtual CD/DVD-ROM that contains the SIA CD/DVD image. Then, reboot the server and direct it to boot from your virtual CD/DVD-ROM (typically done using the F8 menu available during server boot).

  ---

  **Note –** Starting SIA from a redirected CD/DVD or ISO media can take up to several minutes. During that time the Launching SIA screen displays with a progress indicator.

  ---

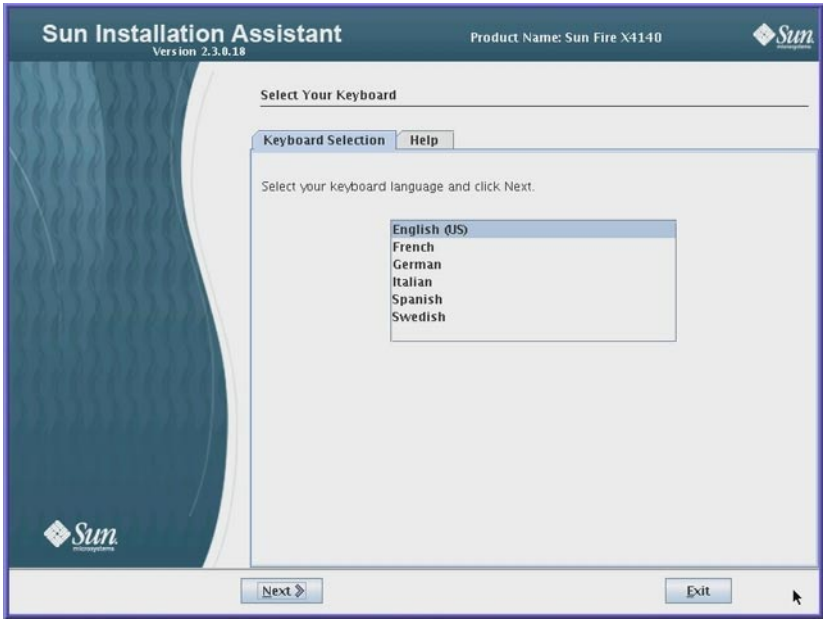
- **Remotely using a PXE-based image:** If you are using PXE network booting to load the Sun Installation Assistant image from a Linux-based PXE server, proceed to "Performing an SIA PXE-Based Attended Installation" on page 71.

---

**Note –** The instructions below assume local CD/DVD drive access. Be sure to modify the instructions accordingly if you are using a local USB flash drive prepared with SIA software, or if you are running SIA from a remote console (or KVMS) with CD-ROM redirection.

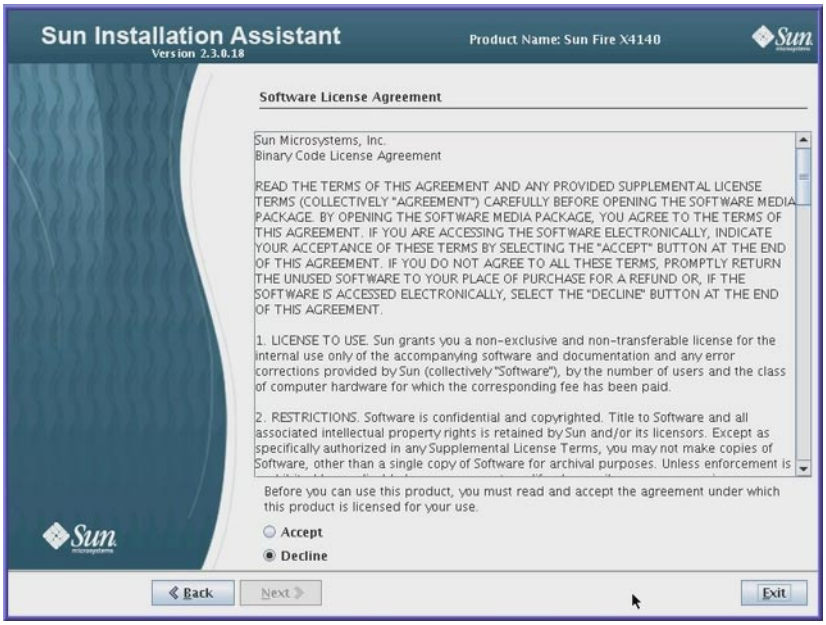
---

As SIA starts, you will see various start up messages and then the Select Your Keyboard Language page appears.



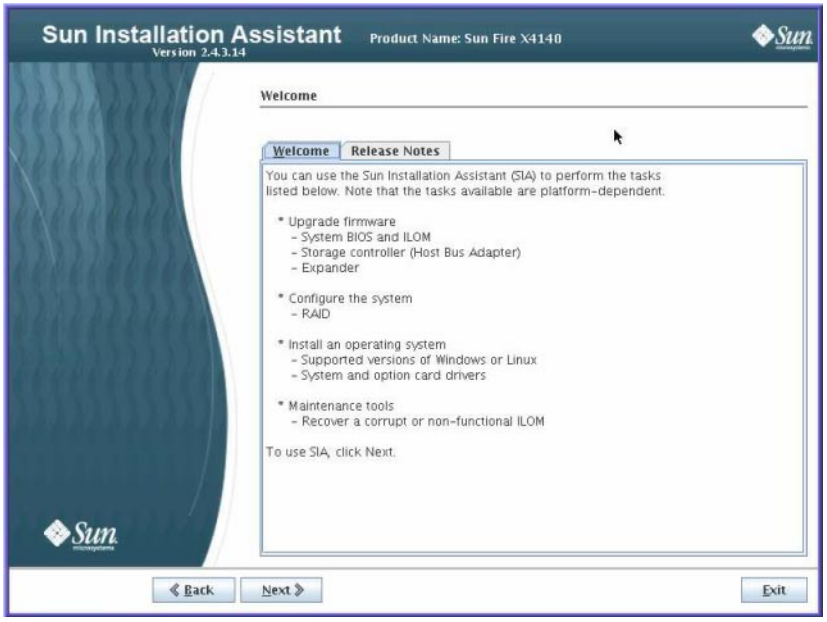
**2 In the Select Your Keyboard Language, view the list of supported keyboards, select the language of the keyboard you are using, and then click Next.**

The Software License Agreement page appears.



3 **In the Software License Agreement page, click Accept to accept the license agreement, and then click Next.**

The SIA Welcome page appears describing the available tasks that can be performed.



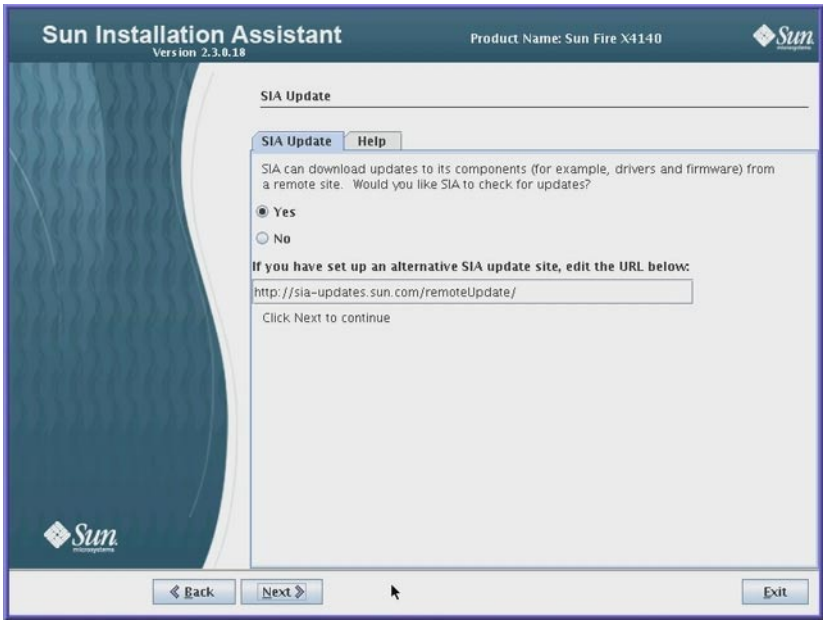

---

**Note –** Not all servers support all tasks. The tasks available to you are server-dependant.

---

4 **In the SIA Welcome page, click the Release Notes tab to check for important information about this version of SIA. When done, click Next.**

The SIA Update page appears.




5 **In the SIA Update page, select Yes to download the latest software updates from Oracle for the current session of SIA, and then click Next.**

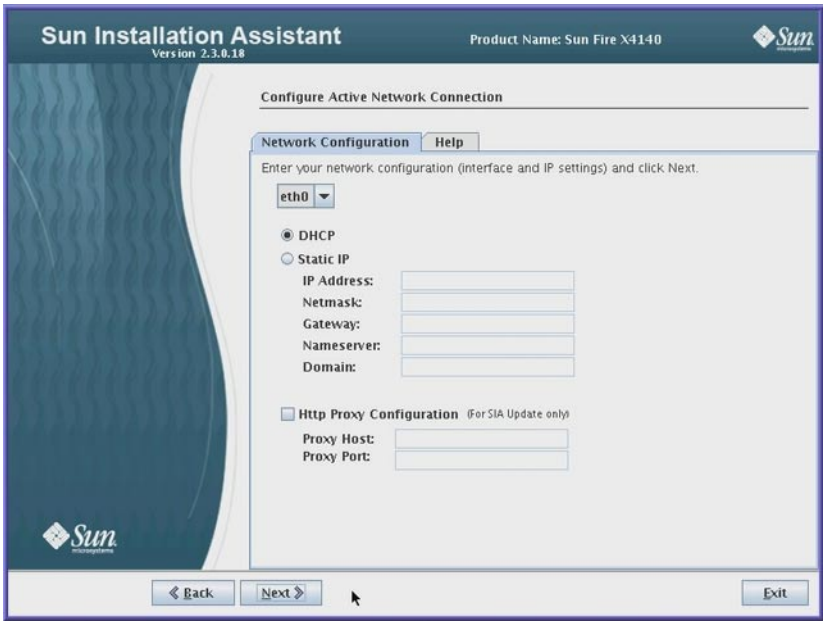
SIA Update from the Oracle site requires that your server have Internet access (typically through a proxy server). If you opt not to perform an update, SIA will use firmware and drivers available with the booted SIA image.

---

**Note –** The use of an alternate SIA update site is currently unsupported.

---

**6 If you selected Yes to perform an update of the current SIA session, the Configure Active Network Connection page is displayed.**




Do the following:

**a. Select the active network interface on your server (for example: eth0).**

This will enable the network interface used to access the update image. If your server has multiple network cards, be sure to use the network-connected interface that enables access to the host where the update image files reside (Internet access is required if you are using Oracle's SIA update site).

**b. Select the network interface configuration method (DHCP or Static IP).**

If static method is selected, provide the necessary information (for example, your server's IP address, netmask address, gateway address, and so on).

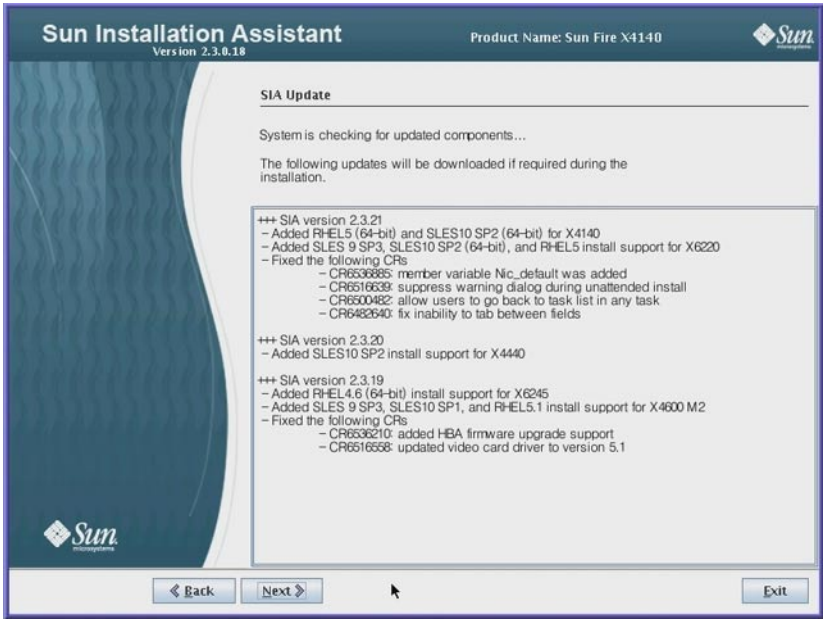
**c. Provide proxy information if an HTTP proxy is needed for Internet access (proxy host and port for client connections), for example:**

`Proxy Host:` *webproxy.mycompany.com*

`Proxy Port: 8088`

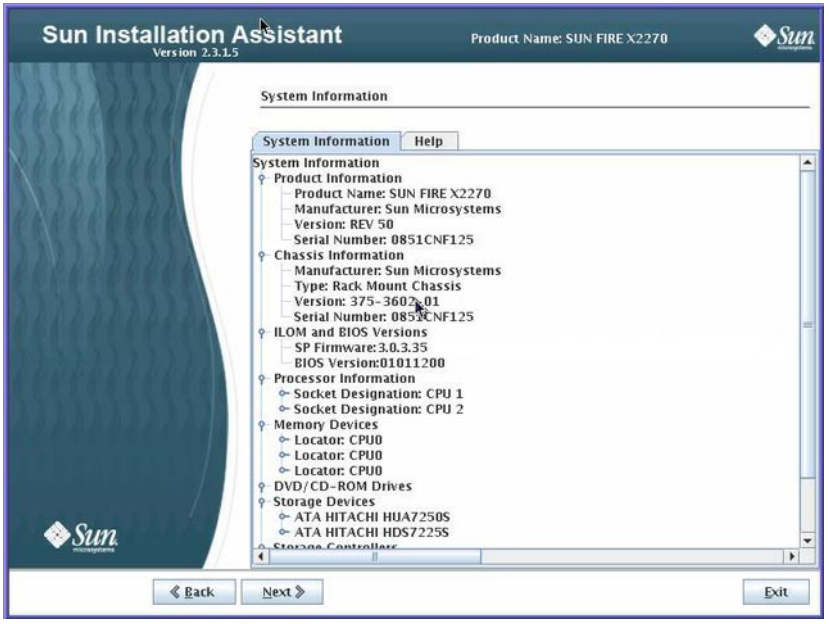
**d. Click Next to establish a connection to the SIA Update site.**

The update process checks for updates to SIA components. If updates are available the update components are listed.



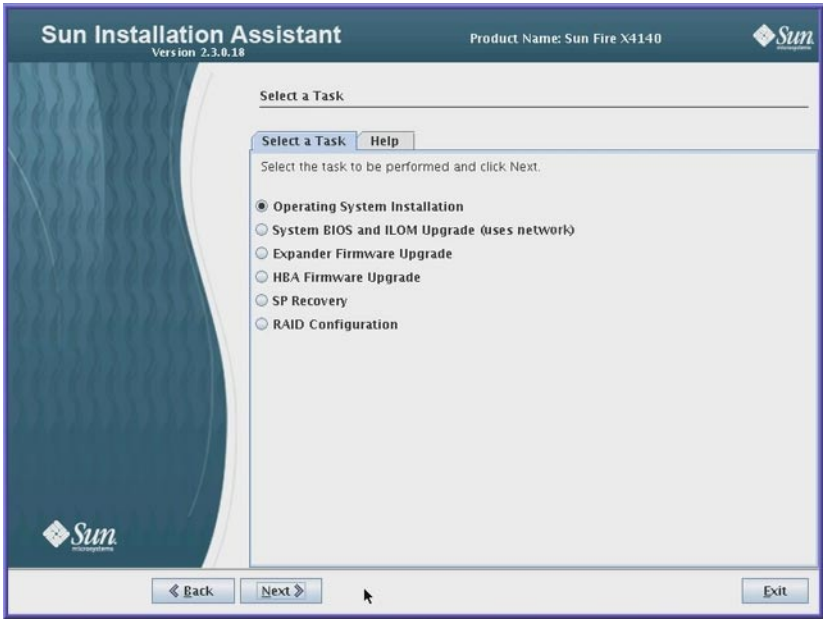
**e. Click Next to proceed with the update.**

When done, the System Information page appears.



7 **In the System Information page you can click the expand/collapse icon for any hardware component listed for more information about it. Explore components as desired, and click Next when done.**

The Select a Task page appears.




**Note –** The Task Selection dialog will only appear if your server supports more SIA tasks than OS installation. If it does not, SIA will proceed to OS installation.

8 **In the Select a Task page, choose a deployment or recovery task to perform.**

**Note –** *Only task options supported for your server are listed.* For example, your list may include operating system installation, server BIOS and ILOM upgrade, or other tasks.

**Next Steps** Refer to the appropriate section listed below for task–related information.

- If you plan on including your operating system boot disk as part of a RAID configuration and your server has an LSI-based disk controller, proceed to "Configuring RAID" on page 29.
- If you need to install a supported operating system for your server, proceed to "Installing Windows With SIA" on page 37 or "Installing Linux With SIA" on page 49.
- If you need to upgrade system firmware (BIOS/ILOM, HBA or disk expander), proceed to "Using SIA to Upgrade System Firmware" on page 59.

- If you need to recover from a corrupt or inaccessible ILOM service processor, proceed to "Using SIA to Recover a Service Processor" on page 67.

# Configuring RAID

This section explains how to configure RAID for a Sun server that has an LSI disk controller (integrated or optional) that supports RAID.

---

**Note –** If you want to include your boot drive as part of a RAID configuration, you must do so before you install an operating system on the boot drive.

---



## RAID Support Using SIA

SIA currently only supports RAID configuration on systems that include an integrated LSI 1068E controller, or optional LSI SAS-2 controllers (926x, 9280). If your system does not include any of these controllers, the RAID configuration task in SIA will not be available.

SIA can only be used to configure RAID 1 (mirroring) on available SAS or SATA disk drives. You **cannot** mix SAS and SATA drives in a RAID volume. If you plan on using SAS and SATA disks, they must reside in separate RAID volumes.

The types of RAID 1 volumes that can be configured using SIA depends on the controller type you are using.

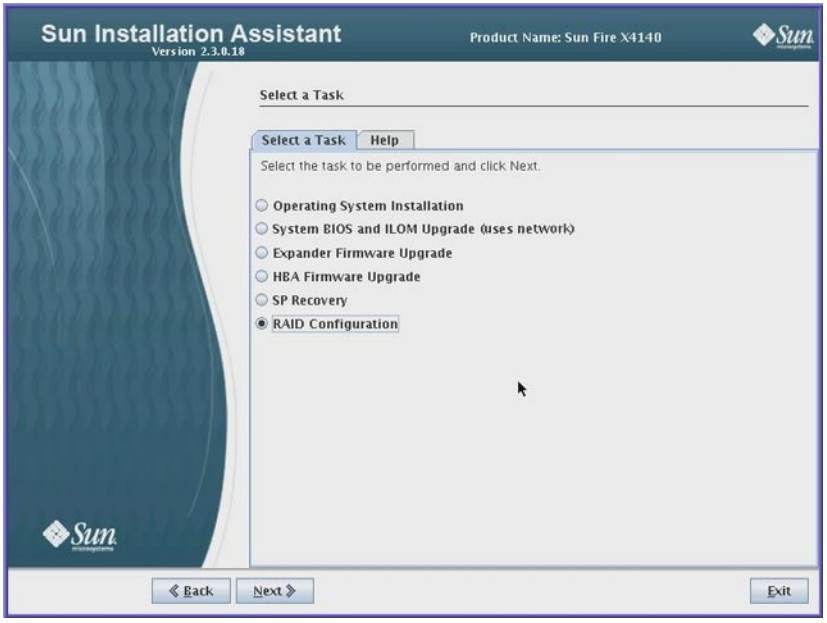
- For LSI 1068E controllers you can configure:
  - RAID IM — An Integrated Mirroring volume that uses two mirrored disks. Up to two RAID volumes are supported. Each volume must have 2 disks. Hot spares cannot be configured using SIA. To configure hot spares, use the disk controller's BIOS configuration tool available during system boot.
  - RAID IME — An Integrated Mirroring Enhanced volume that can have three to ten striped, mirrored disks. Up to two RAID volumes can be configured for the system. The two volumes can have up to 12 disks. Hot spares cannot be configured using SIA. To configure hot spares, use the disk controller's BIOS configuration tool available during system boot.
- For LSI MegaRAID (926x, 9280) SAS-2 controllers you can configure:

- RAID 1 — A mirrored volume that uses two mirrored disks. Up to 32 RAID volumes are supported. Each volume must have 2 disks. Hot spares cannot be configured using SIA. To configure hot spares, use the disk controller's BIOS configuration tool available during system boot.

## How to Create a RAID Volume Using SIA

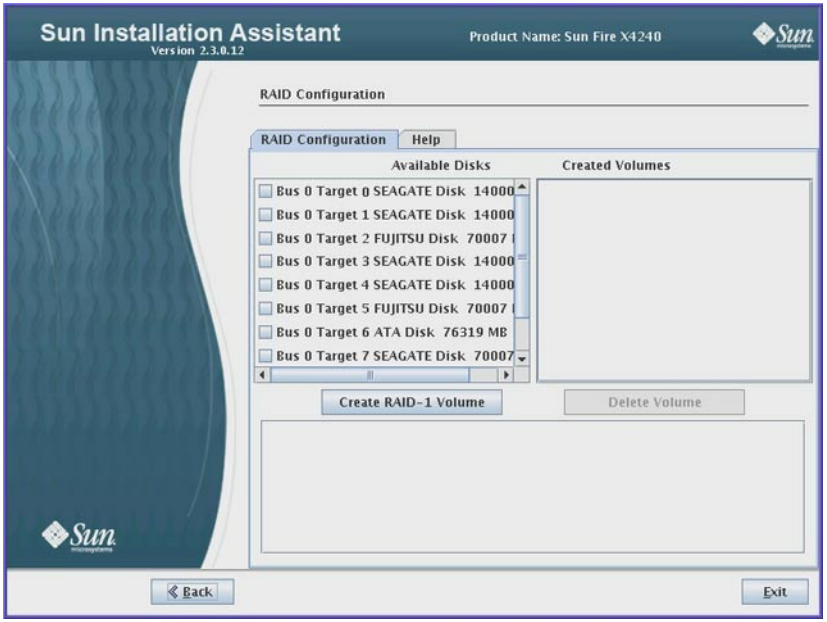
1 **You should have already started SIA and prepared it for tasks as described in "Starting SIA and Preparing for Deployment or Recovery Tasks" on page 17.**

The Select a Task menu should be displayed.



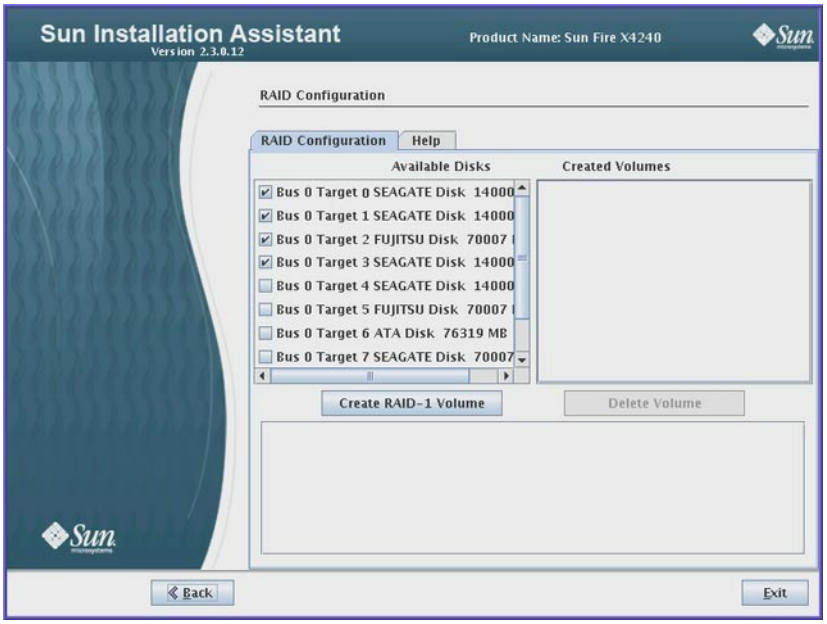
2 **Select the RAID Configuration task, and then click Next.**

The RAID Configuration page appears.




3 **At the RAID Configuration page, select the disks to be included in the RAID volume from the Available Disks box.**

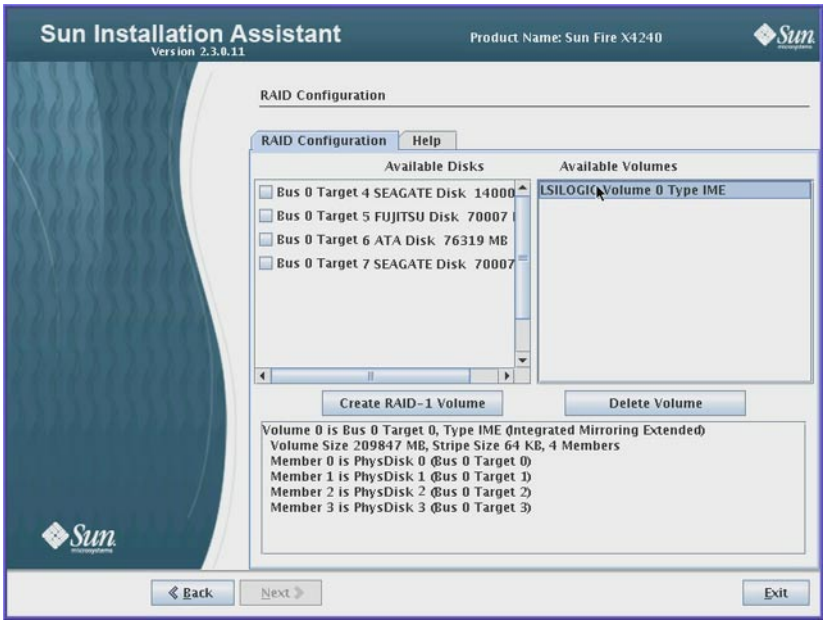
- **For a RAID 1 or a RAID IM volume, select two disks.**
- **For an integrated mirror enhanced (IME) volume, select from 3 to 10 disks.**




**Note –** The interface will not allow you to select more disks per volume than is supported by your disk controller. If your controller does not support IME volumes, you will only be allowed to select two disks per volume.

4 **Click the Create RAID-1 Volume button.**

The volume is created and listed in the Created Volumes box. Click on the created volume to see additional details.




**Note –** Disks included in the RAID volume are no longer listed in the Available Disks box.

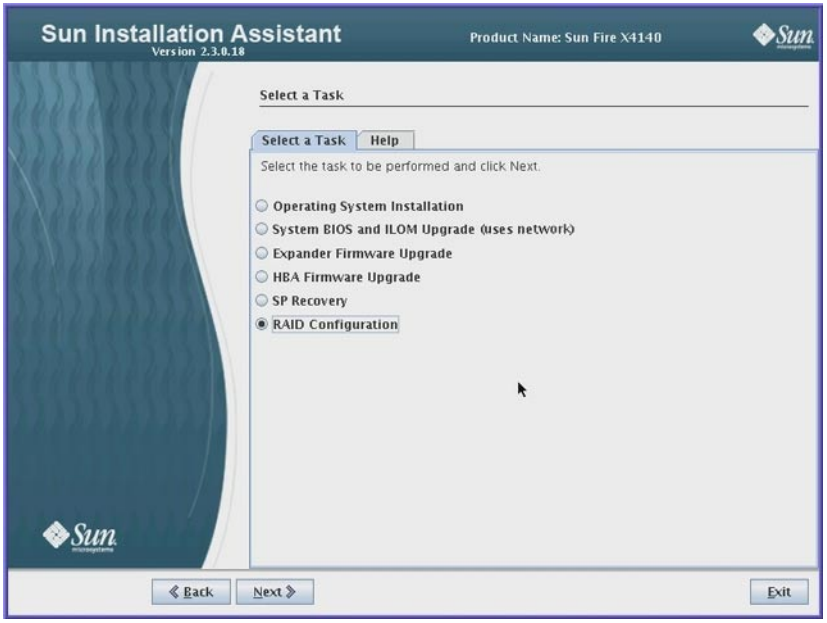
**Next Steps** Once the RAID volume(s) are created, you can install an operating system on the boot volume.

- “Installing Windows With SIA” on page 37
- “Installing Linux With SIA” on page 49

## How to Delete a RAID Volume Using SIA

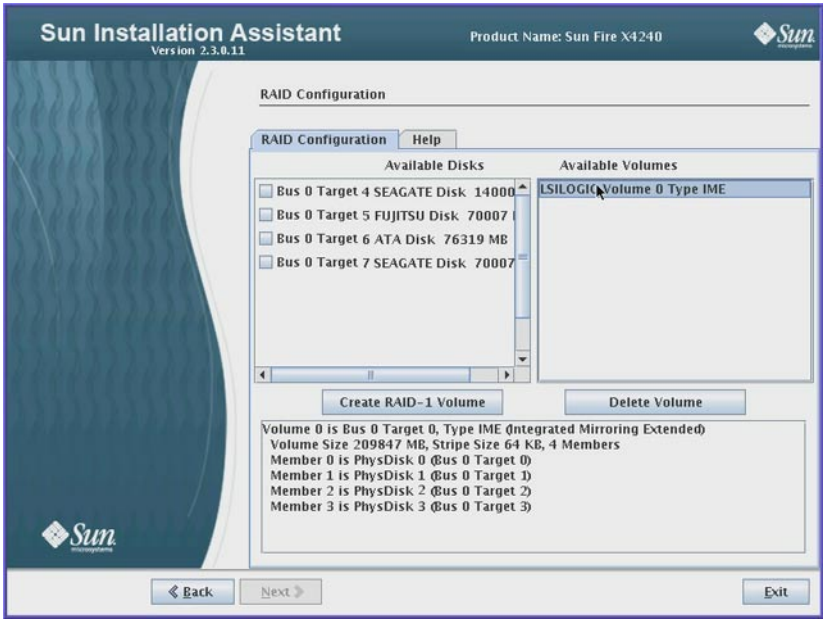
1 **You should have already started SIA and prepared it for tasks as described in "Starting SIA and Preparing for Deployment or Recovery Tasks" on page 17.**

The Select a Task menu should be displayed.



2 **Select the RAID Configuration task, and then click Next.**

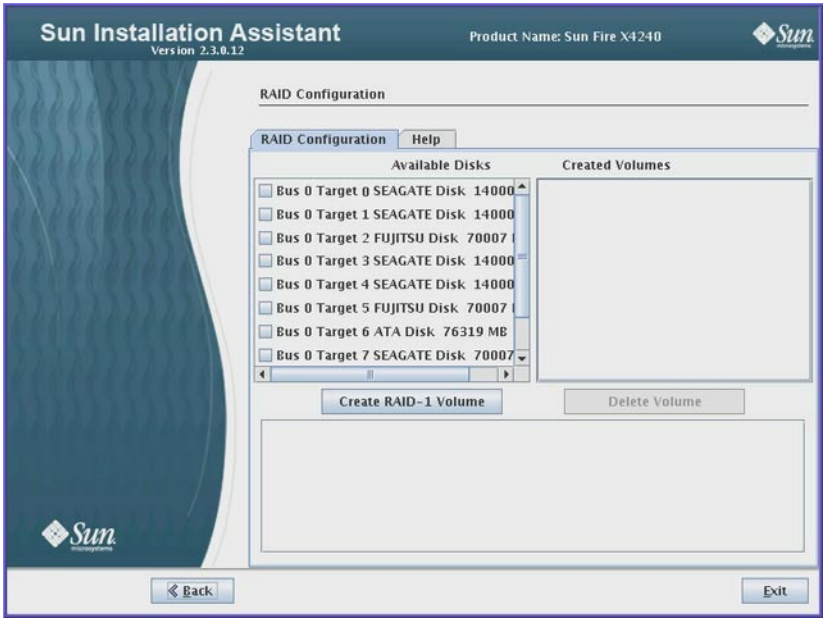
The RAID Configuration page appears.




3 **Select the RAID volume to be deleted from the Available Volumes box and click the Delete Volume button.**

**Caution –** Deleting a volume will erase all data on the volume.

Disks that were in the volume are once again listed in the Available Disks box.



# Installing Windows With SIA

This section explains how to install a supported Microsoft Windows operating system using the Sun Installation Assistant (SIA). SIA assists in the installation of supported operating systems and requires a licensed retail version of the operating system distribution media to be available locally or remotely to complete the task.

SIA provides OS-level device drivers that are certified by Oracle for optional accessory cards and other system hardware. Using SIA eliminates the need to obtain and prepare OS-level device drivers on separate media before installing the operating system.

---

**Note –** For a complete list of system and OS-level device drivers that are provided and installed by SIA, refer to the SIA CD/DVD `sia_readme.html` file and the *Product Notes* for your server.

---


- "How to Install Windows With SIA Using Local or Remote Media" on page 37

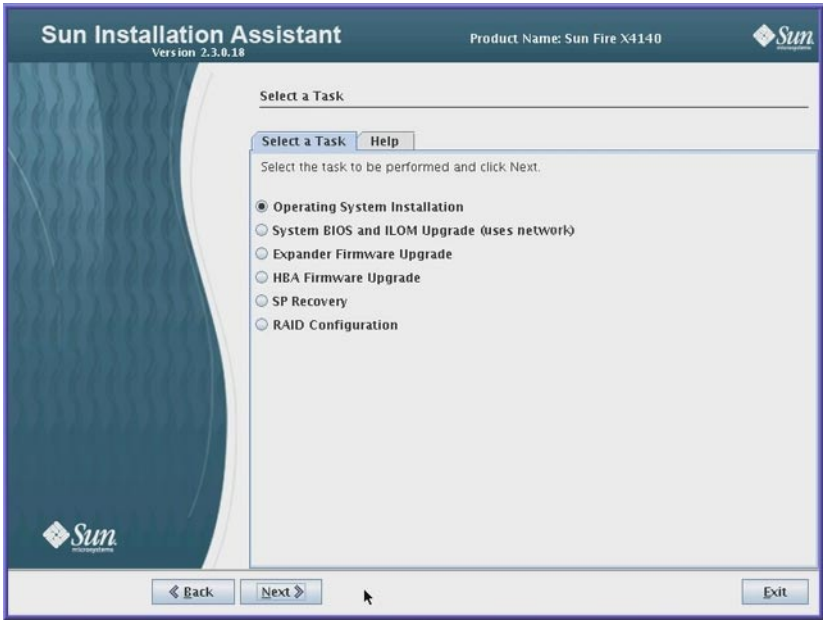

## How to Install Windows With SIA Using Local or Remote Media

**Before You Begin**

- If your server ships with an LSI-based integrated RAID controller and you want to include your boot drive as part of a RAID configuration, you will need to configure a RAID volume on it before installing the operating system. See "Configuring RAID" on page 29.
- If you have a Sun StorageTek RAID disk controller (Adaptec-based), you must configure an array volume through the Adaptec RAID Configuration Utility (accessible by pressing Ctrl-A when prompted during server boot) before it can be accessed by SIA. This must be done whether you intend to use RAID or not. Consult your platform installation guide for instructions on how to do this.
- The instructions below assume local CD/DVD drive access. Be sure to modify the instructions accordingly if you are using a local USB flash drive prepared with SIA software, or if you are running SIA from a remote console (or KVMS) with CD-ROM redirection.

1 **You should have already started SIA and prepared it for tasks as described in "Starting SIA and Preparing for Deployment or Recovery Tasks" on page 17.**

The Select a Task page should be displayed.



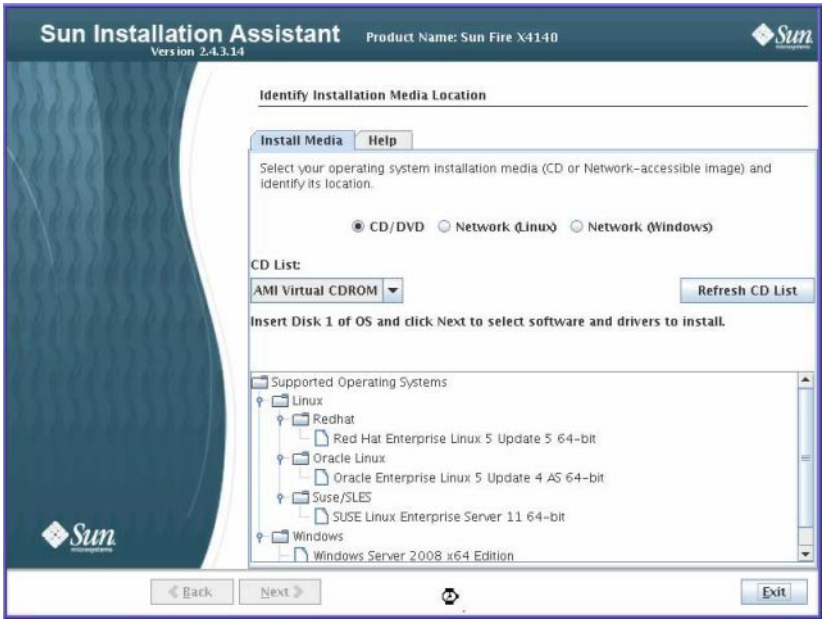

---

**Note –** This page will only appear if your server supports more tasks than OS installation. The dialog lists only task options supported for your server. For example, your list may include operating system installation, server BIOS/ILOM firmware upgrade, or other tasks.

---

2 **At the Task Selection dialog, select Operating System Installation, and then click Next.**

The Install Media Information page appears.




3 **In the Install Media Information page, specify the location of your OS installation media. Choose one of the following options:**

- **CD/DVD**—This option allows you to install the OS source from:

  - **a local CD/DVD**, or

  - **a redirected CD/DVD or ISO CD-ROM image**

- **Network (Windows)**—This option allows you to install the OS source from a network share.

4 **If you are installing from a local CD/DVD, do the following in the Install Media Information page:**

a. **Click CD/DVD, then select the server's CD/DVD drive from the CD Location drop-down list.**

b. **Eject the SIA CD/DVD from this drive then insert the first CD of the operating system distribution into the drive.**

c. **Click Next in the Install Media Information page and proceed to Step 7.**

5 **If you are installing from a redirected CD/DVD or ISO CD-ROM image using the server's ILOM (*Integrated Lights Out Manager*) remote console feature, do the following in the Install Media Information page:**

a. **Click CD/DVD.**

b. **Select the virtual CD-ROM from the CD Location drop-down list.**

c. **In the server's ILOM Remote Console, redirect the operating system installation media (`CD-ROM` or `CD-ROM Image`) using one of the following methods.**

- **If you booted SIA from a CD/DVD drive,** eject the SIA CD from this drive and insert the first disk of the operating system into the drive. In the ILOM Remote Console, select the `CD-ROM` option from the Devices menu (see graphic below for example).
- **If you booted SIA from an ISO CD-ROM image,** unmount the SIA ISO CD-ROM image from the service processor ILOM Remote Console by deselecting `CD-ROM Image` from the Devices menu (see graphic below for example), then select `CD-ROM Image` and specify the location of the ISO OS CD-ROM image.


| Figure Legend | |
|---|---|
| 1 | From an ILOM Remote Console, use the Devices menu to mount and unmount devices such as a CD or ISO CD image. |

d. **When done, click Next in the Install Media Information page and proceed to Step 7.**

6 **If you are installing from a Network share, do the following in the Install Media Information page:**

a. **Click Network (Windows).**

**b. In the address bar, specify the http or ftp accessible network address to the Windows ISO image media. See table below for examples.**

For OSes requiring multiple images (CD1, CD2, etc.), multiple address fields are available.

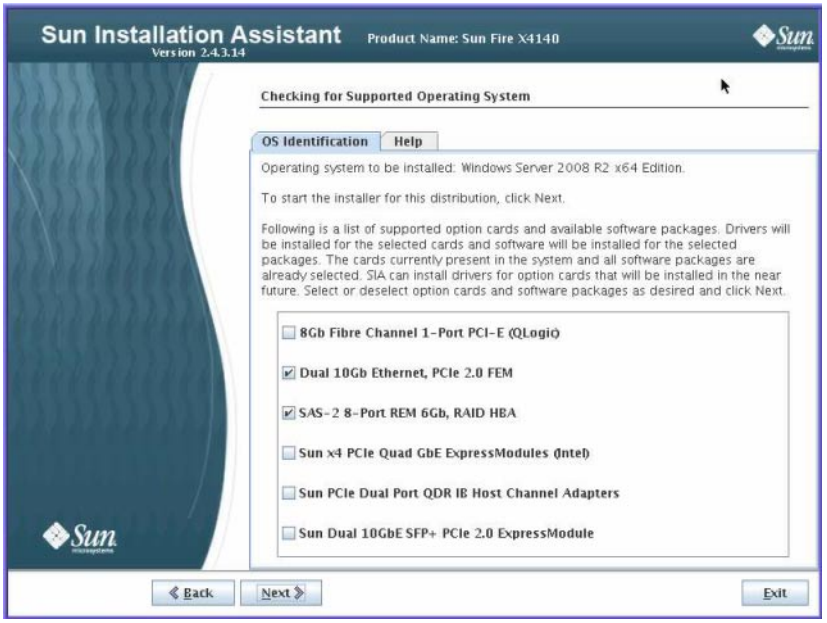
**Note –** The URL address can not contain spaces.

| Transfer Method | OS Source Location | What to Type |
|---|---|---|
| HTTP | ISO image file in a directory | Path to directory containing the OS install ISO image file. Example: http://*hostname_or_IPaddress*/*imagepath*/*ISOimage.iso* |
| FTP | ISO image file in a directory | Path to directory containing the OS install ISO image file. Example: ftp://*hostname_or_IPaddress*/*imagepath*/*ISOimage.iso* |

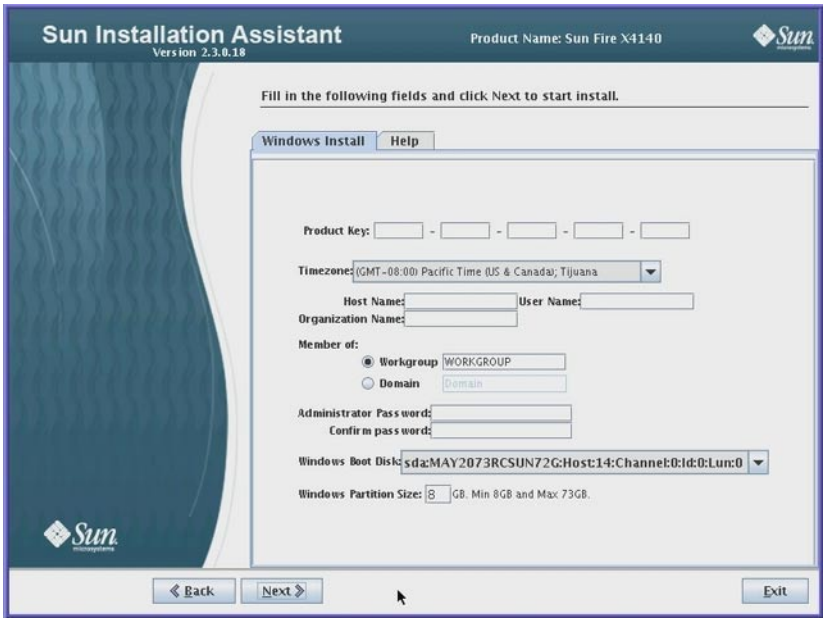
Where *hostname_or_IPaddress* is either the hostname or the IP address of the server containing the image file, and *ISOimage.iso* is the name of the Windows OS installation ISO image (.iso) file. For Windows, the complete path to the required .iso file must be included.

**c. Click Next.**

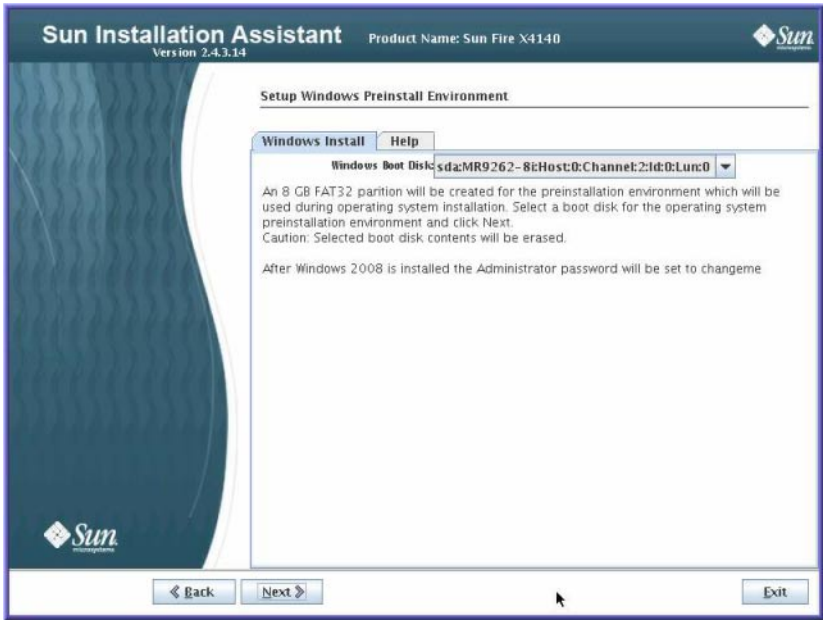
**7 SIA checks the supplied media to ensure it is a supported version and displays the results in the Identifying Distribution page. At this point, you can select option cards from the displayed list and SIA will install the option card driver(s) for you. Click Next when done.**



8 **If you are installing Windows Server 2003, the Windows Preinstallation Information page appears. Fill in the required information, click Next and then proceed to Step 11.**



9 **If you are installing Windows Server 2008, you will see the Setup WinPE Environment page (shown below). Select a boot disk on which SIA will create a WinPE partition and click Next.**



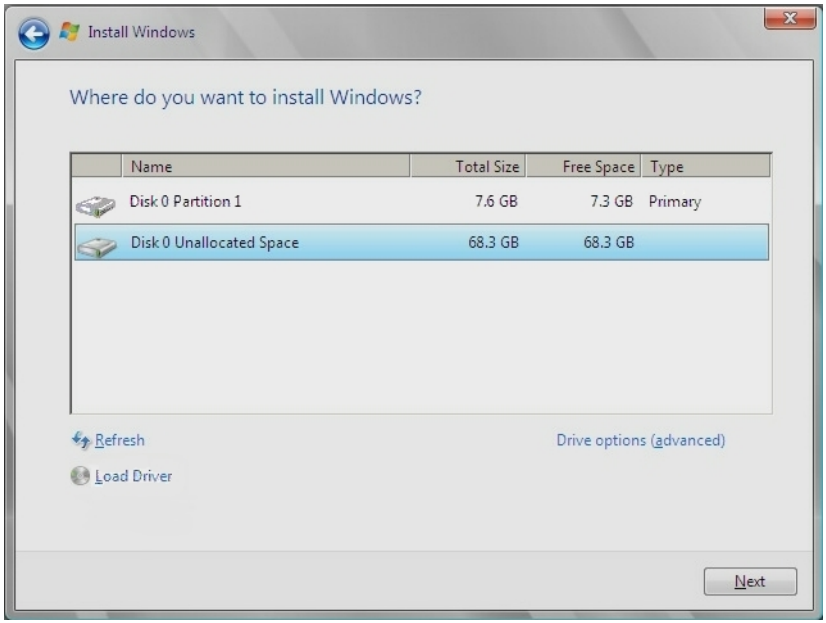

---

**Note –** This partition is required for Windows Server 2008 installation.

---

The WinPE partition for Windows Server 2008 installation is created.

**10 For Windows Server 2008 installation, you will be prompted to select a partition on which the operating system will be installed (see below). Select available space on the disk other than the WinPE partition, and click Next.**



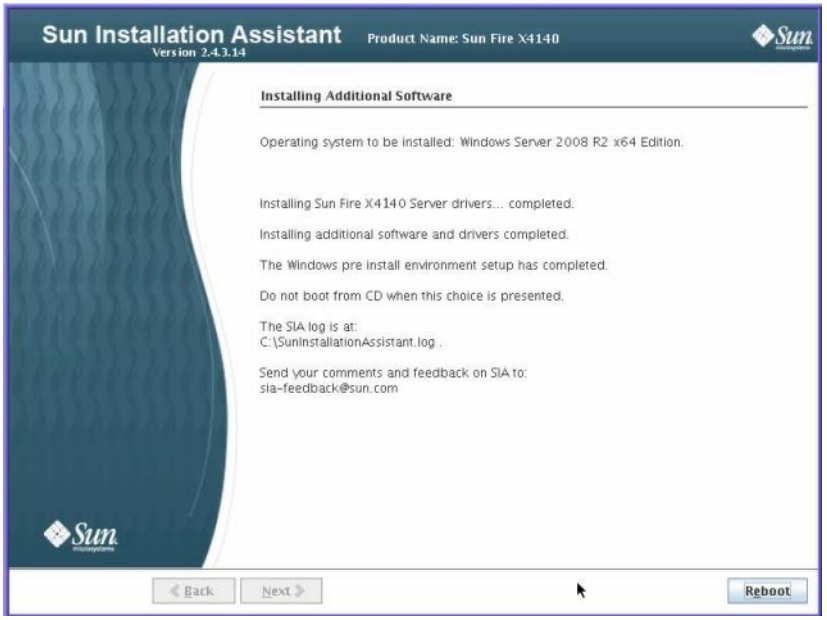

---

**Note –** The first 8GB of the disk is reserved for the WinPE partition and cannot be used for anything else.

---

The Windows boot partition is created and the operating system preinstallation environment completes.

**11 Depending on the version of Windows you are installing, the Installing Additional Software page might appear (see below). SIA will install any additional software or drivers. Review the information presented to ensure there are no errors.**




---

**Note –** If you see an error listed during installation, check the `SunInstallationAssistant.log` file for more details.

---

**12 Remove the SIA media and click the Reboot button.**

Boot from the hard disk on which the operating system will be installed. Follow the on-screen instructions as prompted to complete any additional operating system setup tasks.

---

**Note –** If you are installing the OS on a disk other than disk 0, you need to change the system boot order to identify the proper boot disk. This can be done either through the system BIOS setup program (if your disk is connected to an integrated disk controller), or an option card BIOS setup program (if your disk is connected to an optional HBA). Follow the instructions in your system and/or option card documentation to set boot order.

---

**Note –** The default administrator account password for Windows Server 2008 is `changeme`.

---

**Next Steps** Once the operating system is installed, complete the following post installation tasks, as necessary:

- Install and configure additional drivers for your server not installed by SIA. This provides you the supported feature set for installed server components and option cards (for example, additional drivers may include ACPI, video, network and mass storage). Additional drivers can be found on the latest *Tools and Drivers* CD/DVD for your server.
- Install Sun-specific optional software and utilities available on the latest *Tools and Drivers* CD/DVD for your server.
- Install Sun Service Tags. The installation files are automatically copied to your server during OS installation, but must be run by the system administrator for the server in order to be properly installed. See "Installing Service Tags" on page 113.

# Installing Linux With SIA

This section explains how to install a supported Linux operating system using the Sun Installation Assistant (SIA). SIA assists in the installation of supported operating systems and requires a licensed retail version of the operating system distribution media to be available locally or remotely to complete the task.

SIA provides OS-level device drivers that are certified by Oracle for optional accessory cards and other system hardware. Using SIA eliminates the need to obtain and prepare OS-level device drivers on separate media before installing the operating system.

---

**Note –** For a complete list of system and OS-level device drivers that are provided and installed by SIA, refer to the SIA CD/DVD `sia_readme.html` file and the *Product Notes* for your server.

---


- "How to Install Linux With SIA Using Local or Remote Media" on page 49

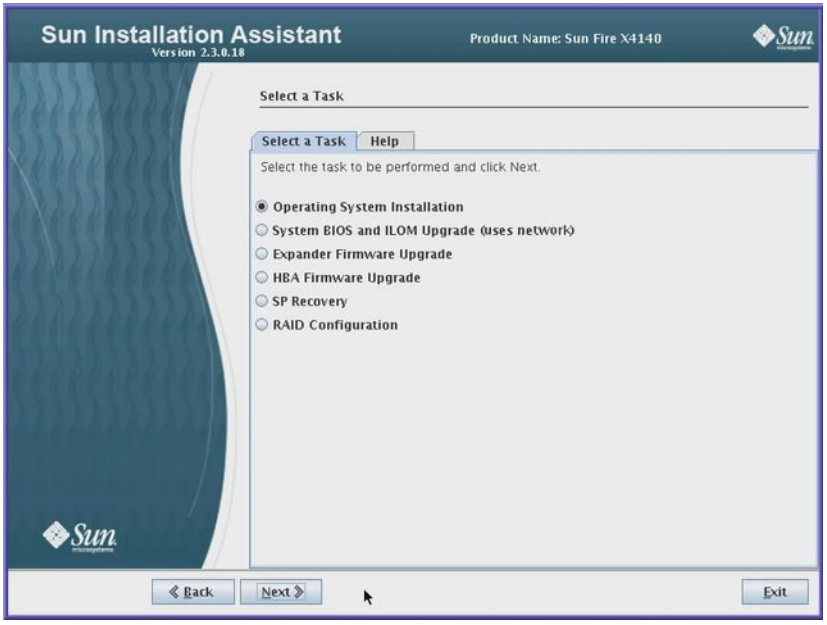

## How to Install Linux With SIA Using Local or Remote Media

**Before You Begin**

- If your server ships with an LSI-based integrated RAID controller and you want to include your boot drive as part of a RAID configuration, you will need to configure a RAID volume on it before installing the operating system. See "Configuring RAID" on page 29.
- If you have a Sun StorageTek RAID disk controller (Adaptec-based), you must configure an array volume through the Adaptec RAID Configuration Utility (accessible by pressing Ctrl-A when prompted during server boot) before it can be accessed by SIA. This must be done whether you intend to use RAID or not. Consult your platform installation guide for instructions on how to do this.
- The instructions below assume local CD/DVD drive access. Be sure to modify the instructions accordingly if you are using a local USB flash drive prepared with SIA software, or if you are running SIA from a remote console (or KVMS) with CD-ROM redirection.

1 **You should have already started SIA and prepared it for tasks as described in "Starting SIA and Preparing for Deployment or Recovery Tasks" on page 17.**

The Select a Task page should be displayed.



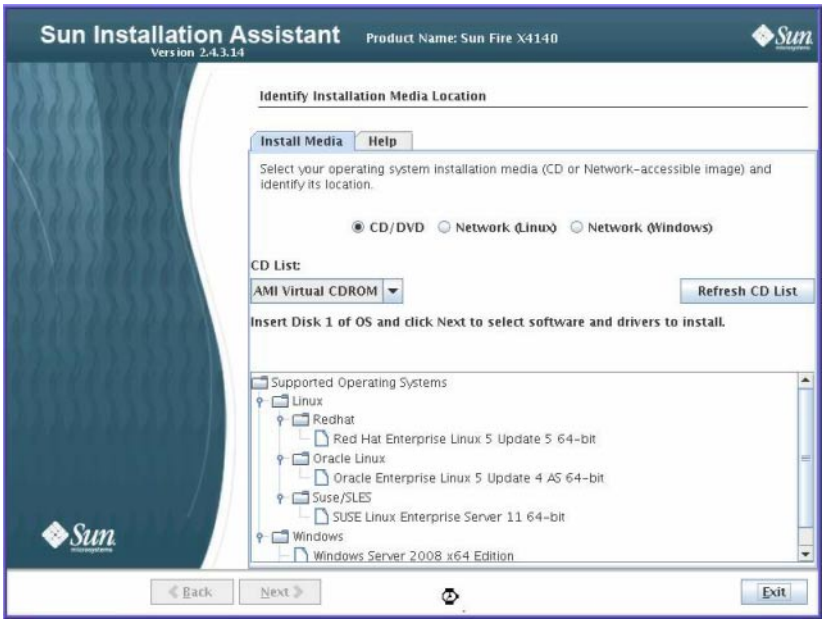

---

**Note –** This page will only appear if your server supports more tasks than OS installation. The dialog lists only task options supported for your server. For example, your list may include operating system installation, server BIOS/SP firmware upgrade, or other tasks.

---

2 **At the Task Selection dialog, select Operating System Installation, and then click Next.**

The Install Media Information page appears.




3 **In the Install Media Information page, specify the location of your OS installation media. Choose one of the following options:**

- **CD/DVD**—This option allows you to install the OS source from:

  - **a local CD/DVD**, or

  - **a redirected CD/DVD or an ISO CD-ROM image**

- **Network (Linux)**—This option allows you to install the OS source from a network share.

4 **If you are installing from a local CD/DVD, do the following in the Install Media Information page:**

a. **Click CD/DVD, then select the server's CD/DVD drive from the CD Location drop-down list.**

b. **Eject the SIA CD/DVD from this drive then insert the first CD of the operating system distribution into the drive.**

---

**Note –** SIA might not recognize the Linux installation media if you chose to use a CD/DVD ROM device other than the one you previously used to boot the SIA program. Therefore, insert the Linux OS media into the same device that you used to boot the SIA program.

---

c. **Click Next in the Install Media Information page and proceed to Step 7.**

5 **If you are installing from a redirected CD/DVD or ISO CD-ROM image using the server's ILOM (*Integrated Lights Out Manager*) remote console feature, do the following in the Install Media Information page:**

a. **Click CD/DVD.**

b. **Select the virtual CD-ROM from the CD Location drop-down list.**

c. **In the server's ILOM Remote Console, redirect the operating system installation media (`CD-ROM` or `CD-ROM Image`) using one of the following methods.**

- **If you booted SIA from a CD/DVD drive,** eject the SIA CD from this drive and insert the first disk of the operating system into the drive. In the ILOM Remote Console, select the `CD-ROM` option from the Devices menu (see graphic below for example).
- **If you booted SIA from an ISO CD-ROM image,** unmount the SIA ISO CD-ROM image from the service processor ILOM Remote Console by deselecting `CD-ROM Image` from the Devices menu (see graphic below for example), then select `CD-ROM Image` and specify the location of the ISO OS CD-ROM image.


| Figure Legend | |
|---|---|
| 1 | From an ILOM Remote Console, use the Devices menu to mount and unmount devices such as a CD or ISO CD image. |

d. **When done, click Next in the Install Media Information page and proceed to Step 7.**

6 **If you are installing from a Network share, do the following in the Install Media Information page:**

a. **Click Network (Linux).**

**b. In the address bar, specify the http or ftp accessible network address to the Linux extracted ISO media (.iso files cannot be used for this method). See table below for examples.**

For OSes requiring multiple images (CD1, CD2, etc.), multiple address fields are available.

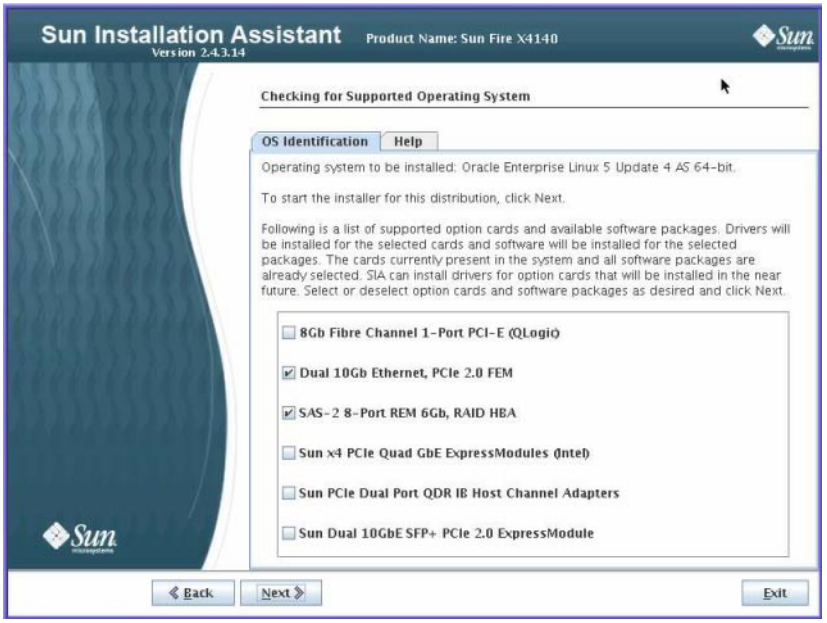
**Note –** The URL address can not contain spaces.

| Transfer Method | OS Source Location | What to Type |
|---|---|---|
| HTTP | Content extracted from an ISO image to a directory | Path to directory containing the extracted OS install ISO content files. Example:<br>http://*hostname_or_IPaddress*/*extractedISOdirectory* |
| FTP | Content extracted from an ISO image to a directory | Path to directory containing the extracted OS install ISO content files. Example:<br>ftp://*hostname_or_IPaddress*/*extractedISOdirectory* |

Where *hostname_or_IPaddress* is either the hostname or the IP address of the server containing the ISO image, *extractedISOdirectory* is the directory containing the extracted Linux OS installation ISO image files. For Linux, only the path to the directory containing the ISO image source files should be used; individual files cannot be part of the URL path.

**c. Click Next.**

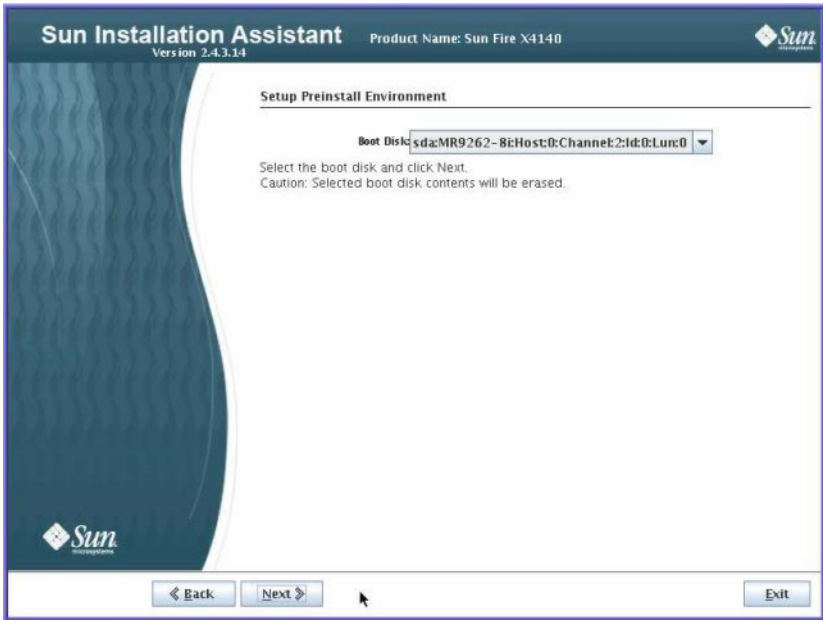
7 **SIA checks the supplied media to ensure it is a supported version and displays the results in the Identifying Distribution page. At this point, you can select option cards from the displayed list and SIA will install the option card driver(s) for you. Click Next when done to start the OS installer.**



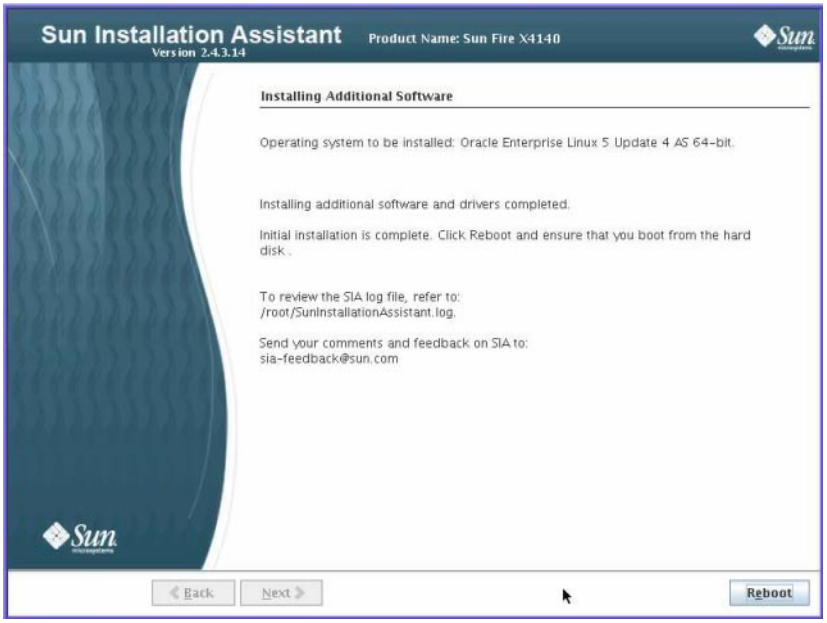

8 **As the OS installer starts, do one of the following depending on your installation:**

- **If you are installing Linux on a Sun Fire X4500, you must perform OS-specific steps to identify the boot drive and ensure proper installation. Proceed to "Identifying a Linux Boot Device on a Sun Fire X4500 Server" on page 109.**
- **Otherwise, if you are installing Linux from redirected CD or ISO image, proceed to Step 9.**

**9 If you are installing a Linux OS that uses a pre-installation environment, you will see the Pre–installation Environment setup page (shown below). Select a boot disk on which SIA will create the Pre–installation Environment partition and click Next.**



**10 Depending on the version of Linux you are installing, the Installing Additional Software page might appear (see below). SIA will install any additional software or drivers. Review the information presented to ensure there are no errors.**




---

**Note –** If you see an error listed during installation, check the `SunInstallationAssistant.log` file for more details.

---

**11 Remove the SIA media and click the Reboot button.**

Boot from the hard disk on which the operating system will be installed. Follow the on-screen instructions as prompted to complete any additional operating system setup tasks.

---

**Note –** If you are installing the OS on a disk other than disk 0, you need to change the system boot order to identify the proper boot disk. This can be done either through the system BIOS setup program (if your disk is connected to an integrated disk controller), or an option card BIOS setup program (if your disk is connected to an optional HBA). Follow the instructions in your system and/or option card documentation to set boot order.

---

**Next Steps** Complete the following post installation tasks, as necessary:

- Download and install the latest Linux operating system updates and fixes from the Linux operating system vendor's web site.

- Install and configure additional drivers for your server not installed by SIA. This provides you the supported feature set for installed server components and option cards (for example, additional drivers may include ACPI, video, network and mass storage). Additional drivers can be found on the latest *Tools and Drivers* CD/DVD for your server.
- Install Sun server-specific optional software and utilities available on the latest *Tools and Drivers* CD/DVD for your server.
- Install Sun Service Tags. The installation files are automatically copied to your server during OS installation, but must be run by the system administrator for the server in order to be properly installed. See "Installing Service Tags" on page 113.

# Using SIA to Upgrade System Firmware

This section explains how to upgrade system firmware (including system BIOS, ILOM service processor, disk controller HBA and disk expander) from local or remote SIA.

SIA provides system BIOS and firmware certified by Oracle for your Sun server. Using SIA eliminates the need to obtain and run separate packages and programs to keep your system firmware up-to-date.

---

**Note –** For a complete list of systems that support the firmware upgrade capabilities of SIA, refer to the SIA CD/DVD `sia_readme.html` file and the *Product Notes* for your server.

---


- "How to Upgrade the System BIOS and ILOM Firmware" on page 59
- "How to Upgrade Expander Firmware" on page 62
- "How to Upgrade HBA Firmware" on page 64


## ▼ How to Upgrade the System BIOS and ILOM Firmware

---

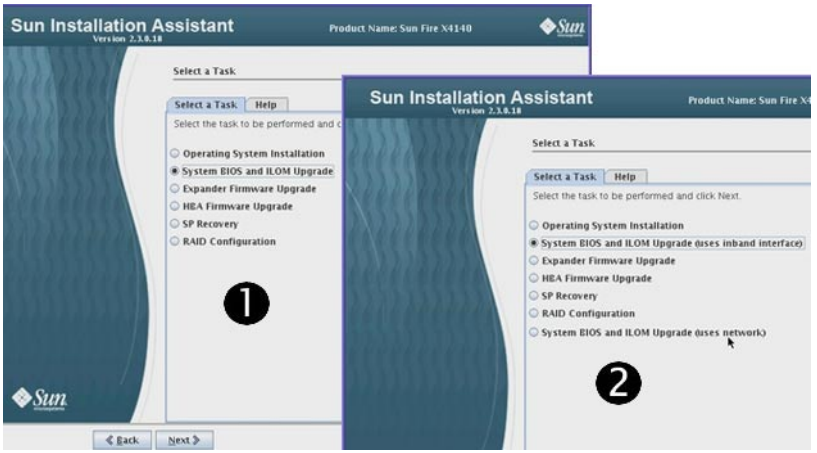
**Note –** In the instructions that follow, example dialog screen shots have been provided as a reference. Information displayed in each dialog may differ depending on your server model.

---

1 **You should have already started SIA and prepared it for tasks as described in "Starting SIA and Preparing for Deployment or Recovery Tasks" on page 17 and the Task Selection dialog should be displayed.**

**2 Select the System BIOS and ILOM Upgrade task, and then click Next.**

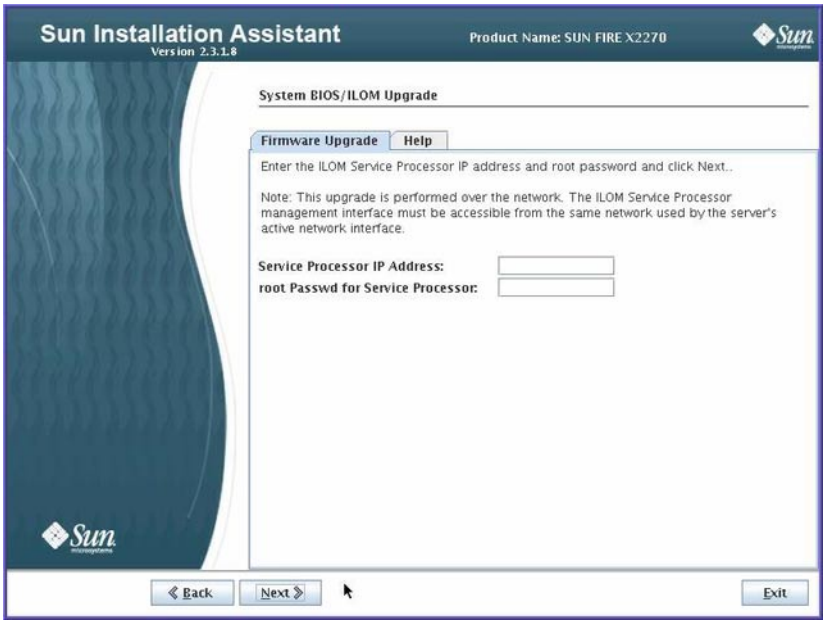
If your server supports inband upgrades (using the server's internal circuitry and not the network), the task list will show two options for System BIOS and ILOM upgrades: inband and network.




| Figure Legend | |
|---|---|
| 1 | Example task list choices if your server supports network only upgrades. |
| 2 | Example task list choices if your server supports both inband and network upgrades. |

**Note –** An inband upgrade can take up to 40 minutes to complete and is only recommended if your server's service processor is not connected, or not reachable over the network.

**3 If you are using the network method to perform the upgrade, enter the login information to your server's Service Processor and click Next.**

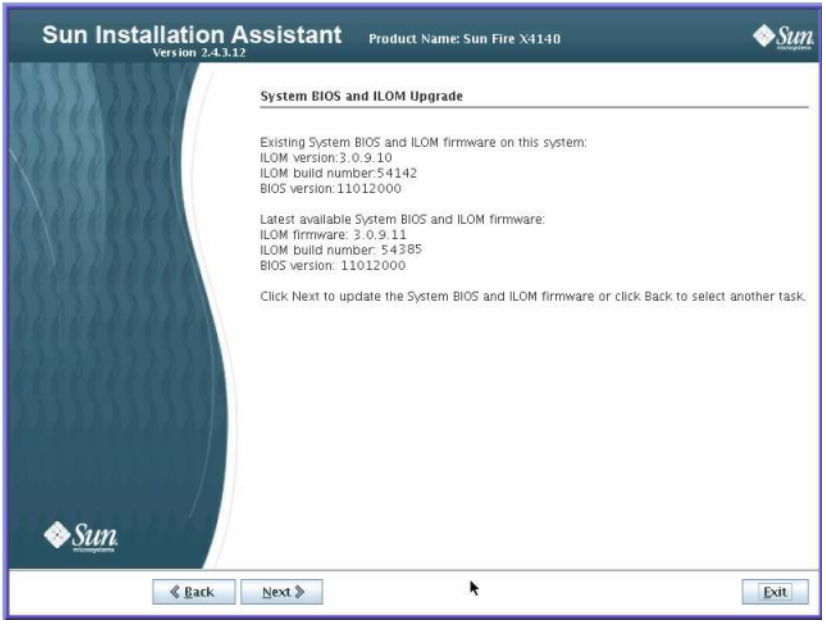



---

**Note –** The server must be able to access its management port over the network.

---

4 **SIA compares the system BIOS and ILOM versions on the server against the available BIOS and ILOM versions in SIA.**




---

**Note –** If you performed an SIA Update during the current SIA session (described in "How to Start SIA and Prepare for Tasks Using Local or Remote Media" on page 19), the latest BIOS and ILOM versions for your server will have been obtained from the Oracle software download site.

---

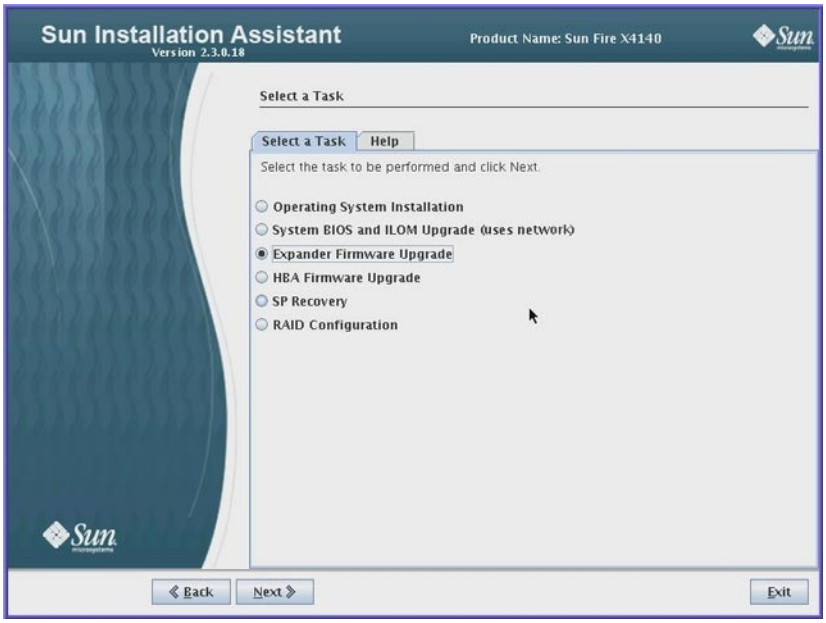
5 **If there is a later version of code available, click Next to begin the upgrade.**

Follow the on-screen instructions until the upgrade has completed. Upgraded code will not be used by the system until after a reboot.

## ▼ How to Upgrade Expander Firmware

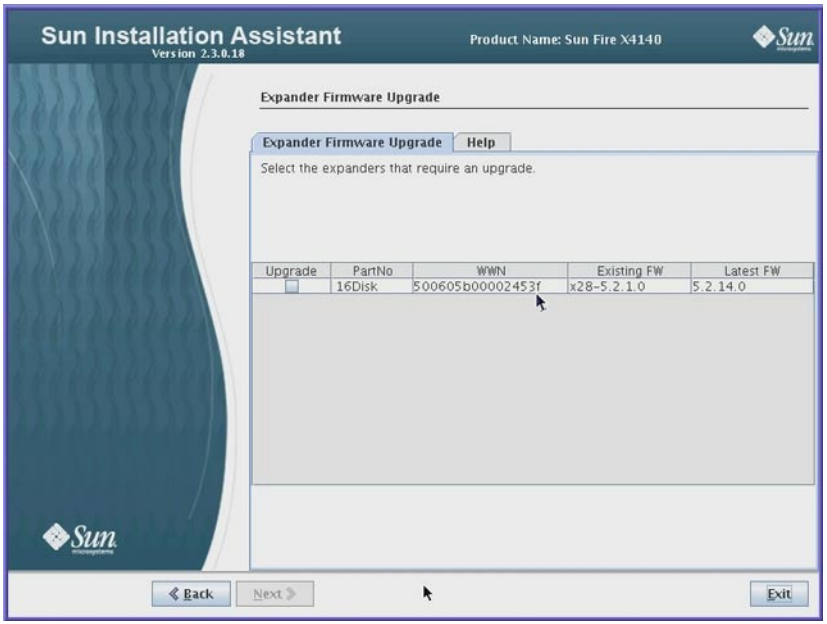
1 **You should have already started SIA and prepared it for tasks as described in "Starting SIA and Preparing for Deployment or Recovery Tasks" on page 17 and the Task Selection dialog should be displayed.**

**2 Select the Expander Firmware Upgrade task, and then click Next.**




SIA displays the current version(s) and the available upgrade version for discovered expanders.

3 **Select the expander(s) to upgrade by placing a check mark in the Upgrade box.**




---

**Note –** If you performed an SIA Update during the current SIA session (described in "How to Start SIA and Prepare for Tasks Using Local or Remote Media" on page 19), SIA will have obtained the latest code from the Oracle software download site.

---

4 **After selecting the expander(s) to upgrade, click Next.**

Follow the on-screen instructions until the upgrade has completed.

## How to Upgrade HBA Firmware

Host bus adapters control internal or external disks connected to the server. SIA has the capability to upgrade supported HBAs to allow for fixes and enhancements to HBA firmware code.

---

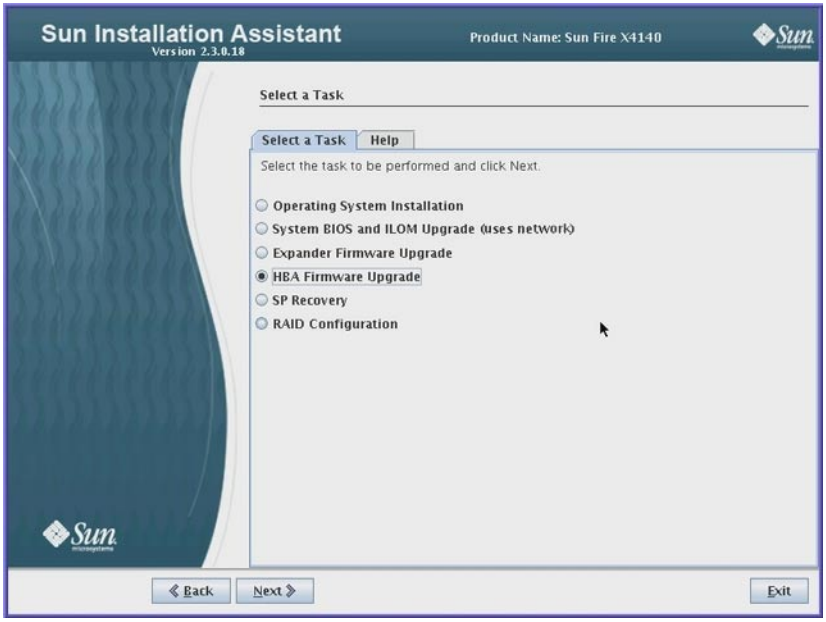
**Caution –** Though the upgrade of HBA firmware should not be destructive to connected storage, a full backup of HBA connected storage is *strongly* recommended before performing the upgrade.

---

**Note –** SIA can perform firmware upgrades only. It cannot downgrade firmware.

1 **You should have already started SIA and prepared it for tasks as described in "Starting SIA and Preparing for Deployment or Recovery Tasks" on page 17 and the Task Selection dialog should be displayed.**

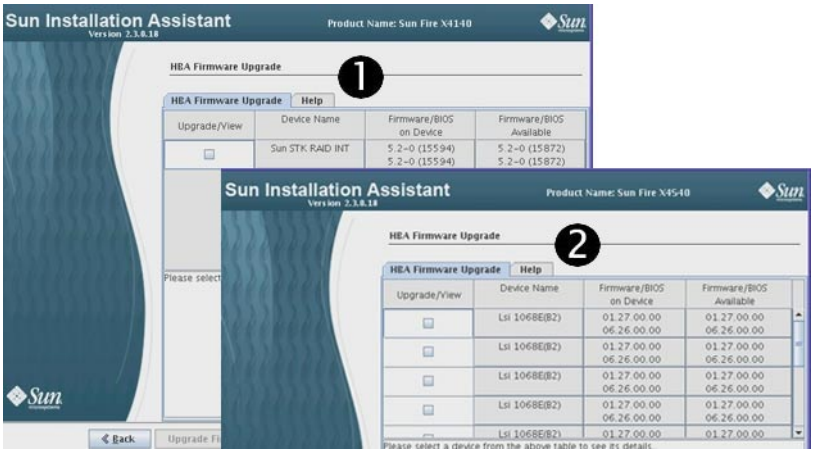
2 **Select the HBA Firmware Upgrade task, and then click Next.**




SIA displays the current version(s) and the available upgrade version for discovered HBAs.

**Note –** If you performed an SIA Update during the current SIA session (described in "How to Start SIA and Prepare for Tasks Using Local or Remote Media" on page 19), SIA will have obtained the latest code from the Oracle software download site.

**3 Select the identified HBA(s) to upgrade by placing a check mark in the Upgrade box.**




| Figure Legend | |
|---|---|
| 1 | Example of server with an optional HBA. HBAs are listed in the order in which they are discovered on the PCIe bus, with the first HBA at the top of the list. |
| 2 | Example of a Sun Fire X4540 server with multiple integrated disk controllers. Controllers are listed starting at the top with controller 0 and ending with controller 5. Controllers 0 and 1 can contain boot devices. |

**Note –** In a multi-controller system, all controllers should be at the same firmware level. However, you can upgrade non-boot controllers first, check functionality, and then upgrade boot controllers.

**4 After selecting the HBA/controllers to upgrade, click the Upgrade Firmware button.**

Follow the on-screen instructions until the upgrade has completed. Upgraded code will not be used by the system until after a reboot.

# Using SIA to Recover a Service Processor

This section explains how to recover a corrupt or inaccessible service processor (SP) using the Sun Installation Assistant (SIA). On supported servers, SIA can recover service processor firmware. This is a two step process that includes:

1. SP firmware recovery (to regain access to the SP)
2. System BIOS and ILOM firmware upgrade (to upgrade the system BIOS and ILOM code to a supported level)

---

**Note –** For a complete list of systems that support the SP recovery capabilities of SIA, refer to the SIA CD/DVD `sia_readme.html` file and the *Product Notes* for your server.

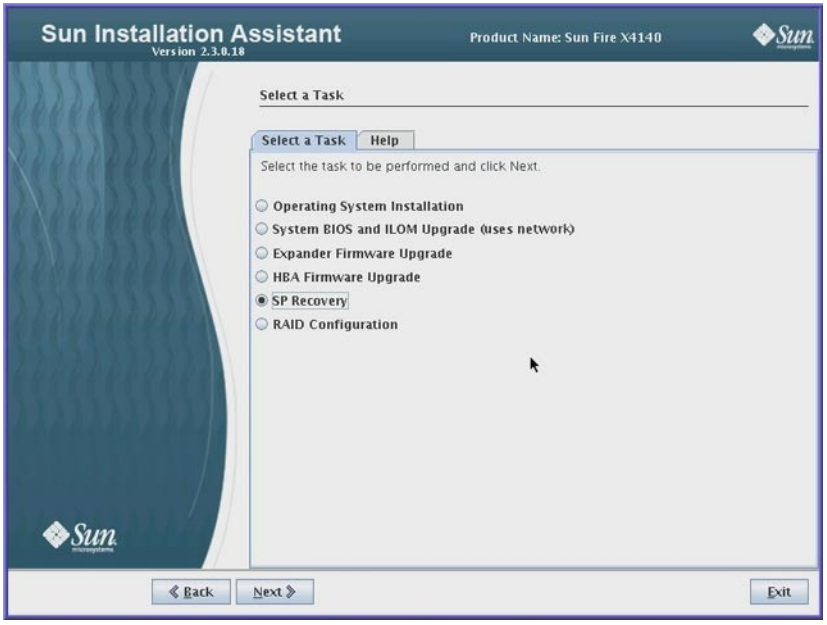
---

■ "How to Recover a Service Processor" on page 67

## ▼ How to Recover a Service Processor

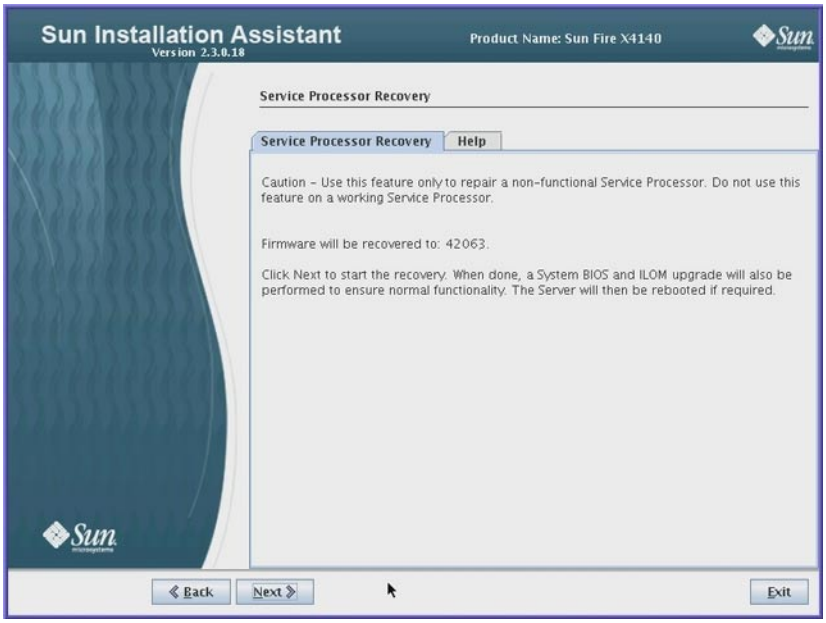
**1 You should have already started SIA and prepared it for tasks as described in "Starting SIA and Preparing for Deployment or Recovery Tasks" on page 17 and the Task Selection dialog should be displayed.**

**2 At the Task Selection dialog, choose the SP Recovery task and then click Next.**




The ILOM Recovery information dialog appears.

3 **At the ILOM Recovery dialog, click Next to start the recovery.**




Follow the on-screen instructions to complete the recovery. The recovery wizard takes you through a two step process:

- The first step recovers the Service Processor. This process can take up to 20 minutes.
- The second step performs a System BIOS and ILOM upgrade to bring system firmware to a supported revision.

**Next Steps**

- "How to Upgrade the System BIOS and ILOM Firmware" on page 59

# Performing an SIA PXE-Based Attended Installation

This section explains how to boot the Sun Installation Assistant (SIA) from a Preboot Execution Environment (PXE) and run it in attended (interactive) mode or unattended mode. These instructions are for advanced users familiar with PXE and apply, at a minimum, to SIA version 2.3.

SIA can be booted from a Linux-based PXE environment to perform deployment tasks in attended or unattended mode. In attended mode, you use SIA as you normally would to perform tasks using the interactive graphical interface. In unattended mode, SIA will automatically perform server installation tasks, such as operating system installation (of supported Linux or Windows versions) or firmware upgrades, without user intervention.



## Set Up the PXE Infrastructure

Set up your PXE infrastructure in accordance with the requirements and needs of your IT department or datacenter. The basic setup of a Linux-based PXE environment involves:

- Setting up the DHCP server
- Setting up the TFTP server with boot and/or install images
- Modifying the appropriate PXE configuration files that will direct clients to the boot or install images

Detailed instructions for setting up your Linux PXE environment are available with your Linux documentation. A useful example of setting up a PXE environment may also be found at:
`http://syslinux.zytor.com/wiki/index.php/PXELINUX`

# Obtain the SIA PXE Image Files

You can download or create a `sia_netboot.zip` file that contains all you need to setup an SIA boot image in your PXE environment. This zip file will contain:

- `vmlinuz` (Linux bootable kernel)
- `netboot.img` (bootable SIA image)
- `Version` (version information about sia_netboot)
- `sample_pxe.cfg` (sample code to be inserted into your pxelinux.cfg file)

Once obtained, the `sia_netboot.zip` file must be extracted to the appropriate directory on the TFTP server.

To obtain `sia_netboot.zip`, do one of the following:

- Download `sia_netboot.zip` by navigating to your server on the Oracle download site:

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

  —*Or*—
- Create the `sia_netboot.zip` file from the latest SIA (version 2.3 or later) DVD on a Linux system, as follows:
  1. Mount the SIA DVD.
  2. From the command line, navigate to the root of the DVD.
  3. From the root of the DVD run the following script file:

     **`# ./generate-netboot.img.sh -o /tmp/sia_netboot.zip`**

     Follow the prompts to create the `sia_netboot.zip` file.

## ▼ How to Create the SIA Image and Prepare for PXE Boot

**Before You Begin**

- You must have already set up your PXE infrastructure, see "Set Up the PXE Infrastructure" on page 71.
- You must have already obtained the `sia_netboot.zip` file, see "Obtain the SIA PXE Image Files" on page 72.

**1 On the PXE TFTP server, create a new subdirectory for the SIA image.**

For example, the following command line creates a subdirectory in the default TFTP server root to contain the SIA image:

**`# mkdir /var/lib/tftpboot/sia`**

**2 Extract the contents of `sia_netboot.zip` to the directory on the TFTP server you created for your SIA image.**

3 **Use an editor to modify your PXE configuration file (the default name for this file is `pxelinux.cfg`) to add the necessary references to your SIA image.**

Refer to the examples in `sample-pxe.cfg` file. Modify them as necessary for your setup.

**Next Steps** To boot the SIA image from the PXE environment, follow the steps presented in "How to Boot SIA From a PXE Server for an Attended Installation" on page 73.

## ▼ How to Boot SIA From a PXE Server for an Attended Installation

The following procedure explains the initial steps you must perform to boot SIA from a PXE Linux-based server. After SIA boots, you perform your installation tasks interactively using the graphical user interface (GUI).

---

**Note –** The SIA program files are Linux-based and must be configured to boot from a Linux PXE environment. However, the SIA program even when booted from a Linux-based PXE environment supports the installation of Windows or Linux from distribution media (CD or ISO image) accessible from the network.

---

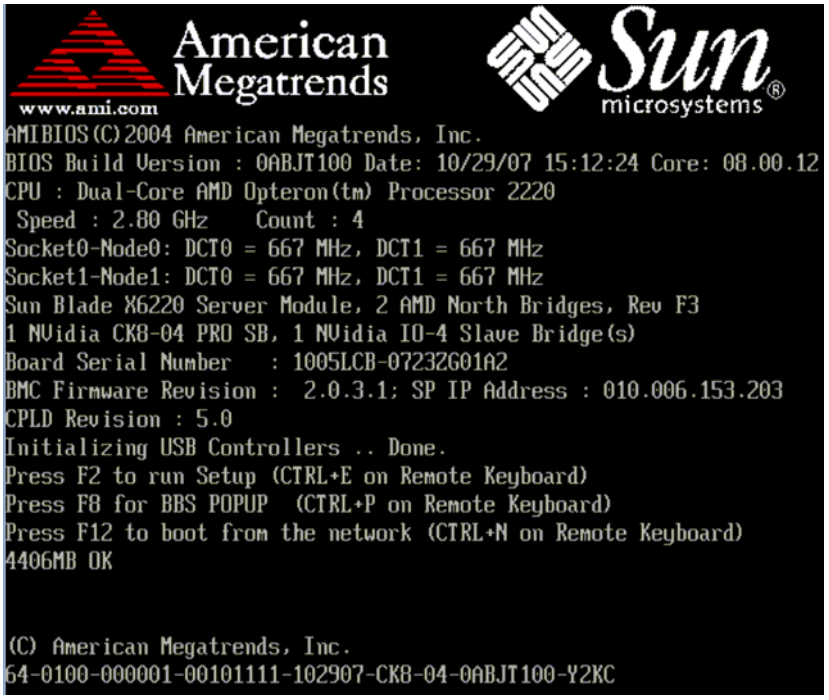
1 **Ensure that the target Sun server is attached to the network configured with the PXE boot environment.**

- From the service processor (*Integrated Lights Out Manager*) Remote Console web interface, click **Remote Control->Remote Power Control** then select `Reset` to reset the host server.

  *—Or—*

- Press the Power button on the front panel of the server to turn it off (hold the button in until the server powers off), then press the Power button to turn on the server.

  The BIOS screen appears. An example is shown below (your server's BIOS screen might look different).




---

**Tip –** 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 As the system boots, do one of the following to start a network boot:**

- Press F12 to boot from the first network boot device found.

  *—Or—*

- Press F8 to display the boot menu and specify the network boot device.

---

**Tip –** On a Sun Blade server module, you can determine the PXE interface boot device by (1) matching the *PXE:Slot#* or *Network:Slot#* (listed on the F8 `BBS Popup` menu) with the physical NEM or EM slot number label on the chassis, and (2) matching the *F#* (listed on the `Please Select Boot Device` menu) with the physical NIC port number label on the NEM (ports 0.0 to 9.0 and 0.1 to 9.1) or EM (ports 0 or port 1).

---

After the network boot device is specified, the system attempts to get the IP address from the DHCP PXE boot server. After the PXE server is found, the PXE boot prompt appears.

3 **At the PXE boot prompt, press Enter or type:** `install`

The SIA installation image downloads to the Sun server and SIA launches.

4 **For further instructions about how to continue an attended installation after booting SIA from PXE, follow the steps (beginning at Step 2) in the procedure** **"How to Start SIA and Prepare for Tasks Using Local or Remote Media" on page 19****.**

# Performing an SIA PXE-Based Unattended Installation

This section describes how to perform unattended (no user interaction required) installation tasks, such as firmware upgrades or operating system installations, utilizing a PXE-based image of SIA. These instructions are for advanced users familiar with PXE and apply, at a minimum, to SIA version 2.3.

SIA is a Linux-based program that can be booted from a Linux-based PXE server. You can create an SIA image on your Linux-based PXE server, boot from it, and use SIA to perform deployment tasks in attended or unattended mode. In attended mode, you use SIA as you normally would to perform tasks using the interactive graphical interface. In unattended mode, SIA will automatically perform server installation tasks, such as operating system installation (of supported Linux or Windows versions) or firmware upgrades, without user intervention.

This section contains the following topics. Refer to the topics that apply to your installation.



## Set Up the PXE Infrastructure

Set up your PXE infrastructure in accordance with the requirements and needs of your IT department or datacenter. The basic setup of a Linux-based PXE environment involves:

- Setting up the DHCP server
- Setting up the TFTP server with boot and/or install images
- Modifying the appropriate PXE configuration files that will direct clients to the boot or install images

Detailed instructions for setting up your Linux PXE environment are available with your Linux documentation. A useful example of setting up a PXE environment may also be found at:
`http://syslinux.zytor.com/wiki/index.php/PXELINUX`

# Obtain the SIA PXE Image Files

You can download or create a `sia_netboot.zip` file that contains all you need to setup an SIA boot image in your PXE environment. This zip file will contain:

- `vmlinuz` (Linux bootable kernel)
- `netboot.img` (bootable SIA image)
- `Version` (version information about sia_netboot)
- `sample_pxe.cfg` (sample code to be inserted into your pxelinux.cfg file)

Once obtained, the `sia_netboot.zip` file must be extracted to the appropriate directory on the TFTP server.

To obtain `sia_netboot.zip`, do one of the following:

- Download `sia_netboot.zip` by navigating to your server on the Oracle download site:

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

  —*Or*—
- Create the `sia_netboot.zip` file from the latest SIA (version 2.3 or later) DVD on a Linux system, as follows:
  1. Mount the SIA DVD.
  2. From the command line, navigate to the root of the DVD.
  3. From the root of the DVD run the following script file:

     **`# ./generate-netboot.img.sh -o /tmp/sia_netboot.zip`**

     Follow the prompts to create the `sia_netboot.zip` file.

# Contents of the SIA State File

The SIA state file provides the scripting variables required for carrying out an unattended session of SIA and performing the specified SIA tasks automatically without user intervention. A copy of the state file with all of the possible parameters can be found at the root level on the SIA CD and is accessible by command prompt during an SIA session.

To access the command prompt from SIA, do the following:

1. Boot SIA (locally or through the remote console).
2. At the first screen, press Ctrl-Alt-F2.

   A command prompt will be displayed.
3. At the command prompt enter the command:

   `# cd /root# ls`

   Look for the `externalStateVariables.txt` file.

The following table describes the state file variables for the automated tasks that may be performed.

**Note –** Each variable with its value must be on a separate line in the state file without line breaks. Due to width restrictions in the table below, some examples might show variables breaking across multiple lines.

**TABLE 4** SIA State File Variables

| Variable | Description (Defaults in Bold) | Required for Windows Install | Required for Linux Install | Required for Firmware Upgrade |
|---|---|---|---|---|
| apit.unattended | Tells SIA to run in unattended mode. Values supported: **true** \| false<br>Example: apit.unattended=true | X | X | X |
| apit.welcome.acceptlicense | Accepts the SIA license agreement. Values supported: true \| **false**<br>Example: apit.welcome.acceptlicense=true | X | X | X |
| apit.remoteUpdate | Tells SIA to look for SIA software updates. You should always perform an update to ensure you install the latest software and firmware. Values supported: true \| **false**<br>Example: apit.remoteUpdate=true | X | X | X |
| apit.remoteUpdateURL | If you specified "true" for remoteUpdate, tells SIA where to look for SIA software updates. Values supported: Any URL with updated SIA content files. You only need to specify this variable if you are *not* using the default url.<br>Default url: **http://sia-updates.sun.com/remoteUpdate** | X (if remote Update is true and default url is not used) | X (if remote Update is true and default url is not used) | X (if remote Update is true and default url is not used) |
| apit.networking | Tells SIA it has permission to work over the network. If true, SIA will configure network settings based on networkconfig variables. Values supported: true \| **false**<br>Example: apit.networking=true | X | X | X |
| apit.networkconfig.needNetwork | If you specified "true" for network, tells SIA whether network access is required for a particular task. Values supported: true \| **false**<br>Example: apit.networkconfig.needNetwork=true | X (if networking is true) | X (if networking is true) | X (if networking is true) |

**TABLE 4** SIA State File Variables *(Continued)*

| Variable | Description (Defaults in Bold) | Required for Windows Install | Required for Linux Install | Required for Firmware Upgrade |
|---|---|---|---|---|
| apit.networkconfig.activeNic | If you specified "true" for network, tells SIA which network interface is connected to the active network. Values supported: eth0 \| eth1 \| eth2 \| eth3 ... etc.<br>Example: apit.networkconfig.activeNic=eth0 | X (if networking is true) | X (if networking is true) | X (if networking is true) |
| apit.networkconfig.NetworkType | If you specified "true" for network, tells SIA the configuration of the active network interface. Values supported: static \| **dhcp**<br>Example: apit.networkconfig.NetworkType=dhcp | X (if networking is true) | X (if networking is true) | X (if networking is true) |
| apit.networkconfig.useDHCP | If you selected "dhcp" as the NetworkType, tells SIA to obtain the server's address from the DHCP server. Values supported: **true** \| false<br>Example: apit.networkconfig.useDHCP=true | X (if networking is true) | X (if networking is true) | X (if networking is true) |
| apit.networkconfig.ipfield | If you selected "static" as the NetworkType, tells SIA to use the server's IP address value you provide.<br>Example: apit.networkconfig.ipfield=*n.n.n.n* | X (if static IP is used) | X (if static IP is used) | X (if static IP is used) |
| apit.networkconfig.gatewayField | If you selected "static" as the NetworkType, tells SIA to use the IP address value you provide.<br>Example: apit.networkconfig.gatewayfield=*n.n.n.n* | X (if static IP is used) | X (if static IP is used) | X (if static IP is used) |
| apit.networkconfig.netmaskedField | If you selected "static" as the NetworkType, tells SIA to use the IP address value you provide.<br>Example: apit.networkconfig.ipfield=*n.n.n.n* | X (if static IP is used) | X (if static IP is used) | X (if static IP is used) |
| apit.http_proxy | If, for example, you specified "true" for remoteUpdate, tells SIA to use a proxy server for internet access.<br>Examples:<br>apit.http_proxy=*n.n.n.n* (IP address)<br>apit.http_proxy=file://*web-proxy-configfile*<br>apit.http_proxy=http://*web-proxy-server*<br>apit.http_proxy=http://*internal-host:portnumber* | X (if proxy used) | X (if proxy used) | X (if proxy used) |

**TABLE 4** SIA State File Variables *(Continued)*

| Variable | Description (Defaults in Bold) | Required for Windows Install | Required for Linux Install | Required for Firmware Upgrade |
|---|---|---|---|---|
| apit.taskList.selectedTask | Tells SIA which task to perform (only one task can be run per unattended session). This variable is required in the state file. Values supported: SP/Bios Firmware Upgrade \| Operating System Installation \| HBA Firmware Upgrade \| Expander Firmware Upgrade \| SP Recovery<br><br>Example: apit.taskList.selectedTask=Operating System Installation | X | X | X |
| apit.osid.installLoc | Tells SIA where the network image of the Linux operating system to be installed is located. The path is to the directory containing the image (ISO or extracted ISO), not the image itself. The directory cannot contain more than one image.<br><br>Example: apit.osid.installLoc=http://*path_to_imagedirectory* | | X | |
| apit.osid.installMedia | Tells SIA where the CD or `.iso` file for the OS installation software is located. Values supported: cdrom \| networkLinux \| networkWindows<br><br>Example: apit.osid.installMedia=cdrom | X | X | |
| apit.osid.installMethod | Tells SIA which file transfer protocol to use during the installation. Values supported: http \| ftp \| nfs<br><br>Example: apit.osid.installMethod=http | X | X | |
| apit.osid.kickstart | Tells SIA where the kickstart file is located for a Linux installation. This could be the URL to the Red Hat kickstart file or the SUSE autoyast file.<br><br>Examples:<br><br>apit.osid.kickstart=http://*url_to_kickstart*<br><br>apit.osid.kickstart=ftp://*url_to_kickstart*<br><br>apit.osid.kickstart=nfs://*url_to_kickstart* | | X | |

**TABLE 4** SIA State File Variables *(Continued)*

| Variable | Description (Defaults in Bold) | Required for Windows Install | Required for Linux Install | Required for Firmware Upgrade |
|---|---|---|---|---|
| apit.windows2008.imageName | Specifies the version of Windows Server 2008 to be installed. Values determine whether this is a full or core–only Windows installation. Core installations allow you to install Windows with only the components needed to run a small set of core network roles. Supported values:<br>■ WINDOWS LONGHORN [R2] SERVERSTANDARD<br>■ WINDOWS LONGHORN [R2] SERVERENTERPRISE<br>■ WINDOWS LONGHORN [R2] SERVERDATACENTER<br>■ WINDOWS LONGHORN R2 SERVERWEB<br>■ WINDOWS LONGHORN [R2] SERVERSTANDARDCORE<br>■ WINDOWS LONGHORN [R2] SERVERENTERPRISECORE<br>■ WINDOWS LONGHORN [R2] SERVERDATACENTERCORE<br>■ WINDOWS LONGHORN R2 SERVERWEBCORE<br>Note: The R2 value is only required for Windows Server 2008 R2. Windows Server 2008 SERVERWEB/CORE is only supported with R2.<br>Example for pre-R2:<br>apit.windows2008.imageName=WINDOWS LOGHORN SERVERENTERPRISE<br>Example for R2:<br>apit.windows2008.imageName=WINDOWS LONGHORN R2 SERVERENTERPRISE | X (2008 only) | | |

**TABLE 4** SIA State File Variables *(Continued)*

| Variable | Description (Defaults in Bold) | Required for Windows Install | Required for Linux Install | Required for Firmware Upgrade |
|---|---|---|---|---|
| apit.osid.windows.iso.url1 | Based on the installMethod you chose (http, ftp or nfs), tells SIA where the location of the first Windows OS install disk `.iso` image file is located.<br>Examples:<br>apit.osid.windows.iso.url1=http://*path_to_disk1.iso*<br>apit.osid.windows.iso.url1=ftp://*path_to_disk1.iso*<br>apit.osid.windows.iso.url1=nfs://*path_to_disk1.iso* | X | | |
| apit.osid.windows.iso.url2 | Based on the installMethod you chose (http, ftp or nfs), tells SIA where the location of the second Windows OS install disk `.iso` image file is located (if on two disks).<br>Examples:<br>apit.osid.windows.iso.url2=http://*path_to_disk2.iso*<br>apit.osid.windows.iso.url2=ftp://*path_to_disk2.iso*<br>apit.osid.windows.iso.url2=nfs://*path_to_disk2.iso* | X | | |
| apit.enclosureID.oldEnclosureID | Used as part of a two-step process that allows you to replace a Sun Blade 6000 disk module. The value for this variable must be the old enclosure ID number (also called WWN) that can be found on the circuit board of the blade being replaced. | | | |
| apit.enclosureID.newEnclosureID | Used as part of a two-step process that allows you to replace a Sun Blade 6000 disk module. This value for this variable must be the new enclosure ID number (also called WWN) that can be found on the circuit board of the replacement blade. | | | |
| apit.firmware.enabled | Tells SIA to enable or disable its firmware update function. Values supported: **true** \| false<br>Typically used in a test environment, this variable is not required to upgrade firmware. | | | |
| apit.firmware.spIP | Part of a firmware upgrade task. Tells SIA the IP address of the server's service processor.<br>Example: apit.firmware.spIP=*n.n.n.n* | | | X |

**TABLE 4** SIA State File Variables *(Continued)*

| Variable | Description (Defaults in Bold) | Required for Windows Install | Required for Linux Install | Required for Firmware Upgrade |
|---|---|---|---|---|
| apit.firmware.spPasswd | Part of a firmware upgrade task. Tells SIA the password of the server's service processor.<br>Example: apit.firmware.spIP=*changeme* | | | X |
| apit.windows.acceptEula | Tells SIA to accept the EULA (End User License Agreement), as required when installing the Windows OS.<br>Example: apit.windows.acceptEula | X (2003 only) | | |
| apit.windows.adminPasswd | Tells SIA the password you wish to use for the administrator account set up during the installation of the Windows OS. Password must comply with Windows password standards.<br>Example: apit.windows.adminPasswd=*myadminpassword* | X (2003 only) | | |
| apit.windows.computerName | Tells SIA the computer name you wish to use for the server set up during the installation of the Windows OS.<br>Example: apit.windows.computerName=*mycomputername* | X (2003 only) | | |
| apit.windows.key | Tells SIA the product key for your retail copy of the Windows OS. Required during Windows installation.<br>Example: apit.windows.key=*XXXXX-XXXXX-XXXXX-XXXXX-XXXXX* | X (2003 only) | | |
| apit.windows.orgName | Tells SIA the organization name you wish to use for the server set up during the installation of the Windows OS.<br>Example: apit.windows.orgName=*myorganization* | X (2003 only) | | |
| apit.windows.userName | Tells SIA the user name you wish to use for the initial user account set up during the installation of the Windows OS.<br>Example: apit.windows.userName=*myusername* | X (2003 only) | | |

**TABLE 4** SIA State File Variables *(Continued)*

| Variable | Description (Defaults in Bold) | Required for Windows Install | Required for Linux Install | Required for Firmware Upgrade |
|---|---|---|---|---|
| apit.done.notifyUrl | Tells SIA to access the specified URL following the completion of enabled SIA tasks. This is currently only supported for Sun N1 System Manager.<br>Example:<br>apit.done.notifyUrl=http://*my_destination_url* | | | |

## ▼ How to Prepare for an Unattended SIA Installation of Linux

**Before You Begin** The procedures presented in this section assumes the following:

- You are familiar with OEL, RHEL or SLES Linux unattended installations.
- You have created an OEL or RHEL Kickstart file, or a SLES AutoYaST file.
- You have configured the OEL or RHEL Kickstart, or SLES AutoYaST PXE image with the following options:
  - Additional drivers for your server not installed by SIA. This provides you the full supported feature set for installed server components (such as ACPI, video, network and mass storage) as described in your server installation and *Product Notes* documentation.
  - Latest operating system installation patches available from the Linux vendor.
  - Required SIA display resolution. SIA should always boot with vga=0x314 from CD-ROM or PXE.
- The Kickstart or AutoYaST file is accessible through an FTP, HTTP, or NFS server.

### 1 Create the SIA Unattended State File for Linux.

The SIA state file is a text file that directs the unattended installation of your Linux operating system and other SIA tasks to be performed (such as BIOS/SP firmware upgrade). Consider these requirements when creating an SIA state file:

- When SIA boots from PXE, the state file must identify the location of the OS media to be installed and the transfer protocol method (FTP, NFS, or HTTP).
- The state file must not contain extraneous spaces or punctuation of any kind.
- Each variable with its value must be on a separate line in the state file without line breaks.
- The lines specified in the SIA state file must correspond to the steps you would see if you were interactively using the SIA program to perform tasks.
- The install location must be specified as a boot argument in the configuration file (described in "How to Create the SIA Image and Prepare for PXE Boot" on page 89).

**Sample SIA State File for Linux:**

An SIA state file for an unattended Linux installation looks like the following sample, see Table 4 for an explanation of each variable.

```
[STATE_BEGIN noname apit]
apit.unattended=true
apit.welcome.acceptlicense=true
apit.networking=true
apit.networkconfig.needNetwork=true
apit.networkconfig.useDHCP=true
apit.networkconfig.needProxy=false
apit.remoteUpdate=true
apit.remoteupdateURL=http://sia-updates.sun.com/remoteUpdate
apit.http_proxy=path_to_my_http_proxy
apit.taskList.selectedTask=Operating System Installation
apit.osid.installMedia=networkLinux
apit.osid.installMethod=http, ftp or nfs
apit.osid.installLoc=path_to_PXE_file
apit.osid.kickstart=path_to_configuration file
[STATE_DONE noname apit]
```

2 **Set up an unattended configuration file and PXE OS install image for Linux.**

To set up an unattended configuration file and PXE install image of the OS, refer to the following documentation sources:

- For using Kickstart unattended installation with either Oracle Enterprise Linux or Red Hat Enterprise Linux, refer to documentation available at `http://www.redhat.com/docs`.
- For using AutoYaST unattended installation with SUSE Linux Enterprise Server, refer to documentation available at `http://www.novell.com/home/`.

**Next Steps** When done, proceed to "How to Create the SIA Image and Prepare for PXE Boot" on page 89.

## ▼ How to Prepare for an Unattended SIA Installation of Windows Server

Starting with SIA software version 2.1.0, support for a PXE-based SIA unattended installation of Window Server 2003 was added. Starting with SIA version 2.3, support for doing a PXE-based SIA unattended installation of Windows Server 2008 was added.

● **Create the SIA Unattended State File for Windows.**

The SIA state file is a text file that directs the unattended installation of your Windows Server operating system and other SIA tasks to be performed (such as BIOS/SP firmware upgrade). Consider these requirements when creating an SIA state file:

- When SIA boots from PXE, the state file must identify location of the OS media to be installed and the transfer protocol method (FTP, NFS, or HTTP).
- The state file must not contain extraneous spaces or punctuation of any kind.

- Each variable with its value must be on a separate line in the state file without line breaks.
- The lines specified in the SIA state file must correspond to the steps you would see if you were interactively using the SIA program to perform tasks.

**Sample SIA State File for Windows:**

An SIA state file for an unattended Windows Server 2003 installation looks like the following sample, see Table 4 for an explanation of each variable. Variables required for a Windows Server 2008 installation are different.

```
[STATE_BEGIN noname apit]
apit.unattended=true
apit.networking=true
apit.welcome.acceptlicense=true
apit.networkconfig.needNetwork=true
apit.networkconfig.useDHCP=true
apit.networkconfig.needProxy=false
apit.taskList.selectedTask=Operating System Installation
apit.remoteUpdate=true
apit.remoteupdateURL=http://sia-updates.sun.com/remoteUpdate
apit.http_proxy=path_to_my_http_proxy
apit.osid.installMedia=networkWindows
apit.osid.installMethod=http, ftp or nfs
apit.osid.url1=path_to_Windows_OS_CD1_iso_file
apit.osid.url2=path_to_Windows_OS_CD2_iso_file
apit.windows.key=XXXXX-XXXX-XXXXX-XXXXX-XXXXX
apit.windows.computerName=computername
apit.windows.orgName=organizationname
apit.windows.userName=username
apit.windows.adminPasswd=password
apit.windows.acceptEula=Yes
[STATE_DONE noname apit]
```

**Next Steps** When done, proceed to "How to Create the SIA Image and Prepare for PXE Boot" on page 89.

## ▼ How to Prepare for an Unattended SIA Firmware Upgrade

**Before You Begin** You can PXE-boot SIA to do an unattended system firmware upgrade on your Sun server. You can choose tasks such as system BIOS and ILOM upgrade, HBA firmware, and SP recovery. The basic steps for setting up an unattended installation include:

**Note –** *Your server must support firmware upgrades through SIA to use the firmware upgrade option.* If you enable an unattended firmware upgrade and an upgrade is not required on the target server (because the upgrade firmware image is either the same or earlier than what's on the server being upgraded), the unattended install will stop at that point, prompting user intervention to continue. To avoid this, confirm that the firmware image you are using for the upgrade is later than what is already on the target server(s). The firmware version (build number) of the upgrade image is included in the README file. The firmware version (build number) on a target server can be viewed by logging into the server's service processor and viewing the information through the LOM web interface, or by entering the `version` command through the CLI.

- **Create the SIA Unattended State File for firmware upgrade.**

  The SIA state file is a text file that directs the unattended installation of your upgraded firmware. Consider these requirements when creating an SIA state file:

  - The state file must not contain extraneous spaces or punctuation of any kind.
  - The lines specified in the SIA state file must correspond to the steps you would see if you were interactively using the SIA program to perform tasks.
  - Each variable with its value must be on a separate line in the state file without line breaks.

  An SIA state file for an unattended firmware upgrade looks like the following sample, see Table 4 for an explanation of each variable.

  **Sample SIA State File for firmware upgrade:**

  **Note –** Not all servers support the `taskList` and `firmware` options in the SIA state file. Refer to the SIA feature list for your server found on the Oracle download site if you are in doubt about support for these options.

```
[STATE_BEGIN noname apit]
apit.unattended=true
apit.networking=true
apit.welcome.acceptlicense=true
apit.networkconfig.needNetwork=true
apit.networkconfig.useDHCP=true
apit.networkconfig.needProxy=false
apit.taskList.selectedTask=SP/Bios Firmware Upgrade
apit.remoteUpdate=true
apit.remoteupdateURL=http://sia-updates.sun.com/remoteUpdate
apit.http_proxy=path_to_my_http_proxy
apit.firmware.spIP=n.n.n.n
apit.firmware.spPasswd=password_for_sp
[STATE_DONE noname apit]
```

**Next Steps** When done, proceed to "How to Create the SIA Image and Prepare for PXE Boot" on page 89.

## ▼ How to Create the SIA Image and Prepare for PXE Boot

**Before You Begin**

- You must have already set up your PXE infrastructure, see "Set Up the PXE Infrastructure" on page 77.
- You must have already obtained the `sia_netboot.zip` file, see "Obtain the SIA PXE Image Files" on page 78.
- You must have already created your state file for the SIA tasks to be performed as described in the relevant sections below:
  - "How to Prepare for an Unattended SIA Installation of Linux" on page 85
  - "How to Prepare for an Unattended SIA Installation of Windows Server" on page 86
  - "How to Prepare for an Unattended SIA Firmware Upgrade" on page 87

1. **On the PXE TFTP server, create a new subdirectory for the SIA image.**

   For example, the following command line creates a subdirectory in the default TFTP server root to contain the SIA image:

   ```
   # mkdir /var/lib/tftpboot/sia
   ```

2. **Extract the contents of `sia_netboot.zip` to the directory on the TFTP server you created for your SIA image.**

3. **Post your modified SIA state file (`externalStateVariables.txt`) on a web server that the PXE server can access (or on the PXE server itself, if it is configured as a web server).**

4. **Use an editor to modify your PXE configuration file (the default name for this file is `pxelinux.cfg`) to add the necessary references to your SIA image.**

   Refer to the examples in `sample-pxe.cfg` file. Modify them as necessary for your setup.

5. **Add the following to the `append` line in the `pxelinux.cfg` file to configure it for an unattended SIA install using your state file:**

   `splash=silent siaurl=http://`*URL_to_ externalStateVariables.txt*

   The `siaurl=` parameter must point to the state file.

6. **Save the `pxelinux.cfg` file.**

   You image is now ready to be booted from.

**Next Steps** To boot the SIA PXE image from the PXE server and begin the unattended installation, follow the steps presented in "How to Boot SIA From a PXE Server and Perform an Unattended Installation" on page 90.

## How to Boot SIA From a PXE Server and Perform an Unattended Installation

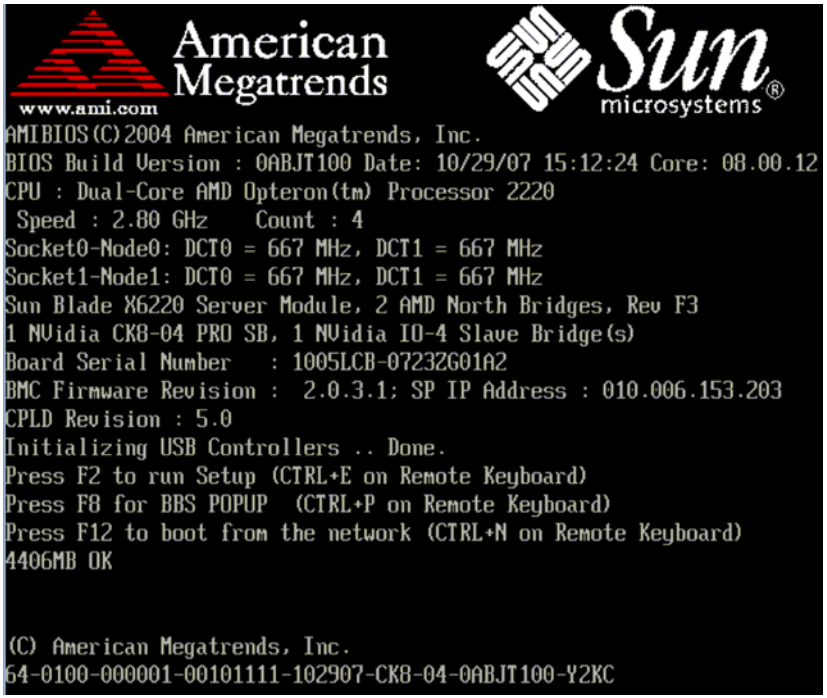
1 **Ensure that the target Sun server is configured on the same network as the PXE server, and then reset the target Sun server. For example:**

- **From the service processor (*Integrated Lights Out Manager*) Remote Console web interface, click Remote Control->Remote Power Control then select `Reset` to reset the host server.**

  *—Or—*

- **Press the Power button on the front panel of the server to turn it off (hold the button in until the server powers off), then press the Power button to turn on the server.**

The BIOS screen appears. An example is shown below (your server's BIOS screen might look different).




**Tip –** 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. **As the system boots, do one of the following to start a network boot:**

   - **When prompted, press F12 to boot from the first network boot device found.**
   - **When prompted, press F8 to display the boot menu and specify the network boot device.**

   ---

   **Tip –** On a Sun Blade server module, you can determine the PXE interface boot device by (1) matching the *PXE:Slot#* (listed on the `Please Select Boot Device` menu) with the physical NEM or EM slot number label on the chassis, and (2) matching the *F#* (listed on the `Please Select Boot Device` menu) with the physical NIC port number label on the NEM (ports 0.0 to 9.0 and 0.1 to 9.1) or EM (ports 0 or port 1).

   ---

   After the network boot device is specified, the system attempts to get the IP address from the DHCP PXE boot server. After the PXE server is found, the PXE boot prompt appears.

3. **At the PXE boot prompt, press Enter or type:** `install`

   The SIA installation image downloads to the server and the dialog for "Launching the Sun Installation Assistant" appears.

**See Also** For information on observing an unattended installation, proceed to the section "Observing an SIA PXE-Based Unattended Installation" on page 93.

# Observing an SIA PXE-Based Unattended Installation

Observing an unattended network installation enables you to view the progress of the installation, as well as any diagnostic messages that might appear if problems are encountered during the installation.

The four ways of observing an unattended network installation include:

- Viewing messages from a system console
- Viewing messages from a virtual console or secure shell connection
- Viewing messages from a virtual network computing (VNC) viewer
- Viewing messages from a serial console

If you plan to use a virtual console or VNC viewer to observe the unattended network installation, you must establish passwords for root and VNC.



## Set Up Passwords for Root and Virtual Access

Passwords are provided as boot arguments to the installer, either manually when booting from CD or through PXE, or in the PXE boot target:

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

You will need to set passwords to observe the installation using a virtual console or virtual network computing (VNC) viewer.

---

**Note –** When booting from CD, watch for the `boot:` prompt, as it is displayed for only five seconds. Press any key when the `boot:` prompt is displayed to allow time to enter the password arguments.

---

For maximum security, use the following password arguments at the CD `boot:` prompt:

- `rootpw=`*des-crypted-password*

  The `rootpw=`*des-crypted-password* argument enables SSH remote access on a PXE boot without passing a plain text password across the network.

  Create *des-crypted-password* using the following perl script:

  `# perl -e 'print crypt("`*password*`","42"). "\n"'`

  The string output is what to supply after the `rootpw=`*argument*.

- `vncauth=`*hex-string*

  This argument enables a password for VNC access.

  The remote VNC authorization file is eight binary bytes. You create those eight bytes with `vncpasswd` and then convert them to a hex-string to be entered here.

  Create the hex-string using the following commands:

```
# vncpasswd /tmp/vncauth
# od -t x1 /tmp/vncauth | awk '/0000000/ \
{print $2 $3 $4 $5 $6 $7 $8 $9}'
```

The string output is what to supply after the `vncauth=`*argument*.

- `ptextpass=`*password*

  The `ptextpass=`*password* argument provides a way of passing a plain text password that is to be used for both the root password and the VNC password.

# Using a System Console

Typically the system console displays a splash screen during an unattended network installation that prevents you from viewing the console messages. To dismiss the splash screen and view the console messages, press the Esc key.

# Using a Virtual Console or Secure Shell (SSH) Connection

The installation interface runs a Linux kernel and provides virtual console access. To access the virtual console, press Ctrl-Alt-F2. You can also use Ctrl-Alt-F3 and Ctrl-Alt-F4 for additional console screens.

Before logging into a virtual console, you must set a root password as a boot argument to the installer. For more information see "Set Up Passwords for Root and Virtual Access" on page 93.

After you have established a connection to a virtual console, you can determine the VNC server IP address and view the standard log files. Alternatively, you can also establish a SSH connection through a serial console using the VNC IP address.

# Using a VNC Viewer

When you perform an unattended network installation, virtual network computing (VNC) is enabled by default. If you perform an unattended network installation, you can enable VNC by adding `display=vnc` as a boot argument.


- "How to Establish Connection Using a VNC Viewer" on page 95


## How to Establish Connection Using a VNC Viewer

Follow these steps to establish a connection using a VNC viewer.

1. **Set a password as shown in "Set Up Passwords for Root and Virtual Access" on page 93.**

2. **Press the Esc key shortly after the SIA splash screen appears.**

   Console messages appear. After the VNC server has started, a message appears providing the IP address to connect using VNC.

3. **Connect to the VNC viewer using the IP address displayed in Step 2.**

   For example:

   ```
   # vncviewer IP_address:1.0
   ```

4. **When prompted, enter the password that you set in Step 1 and VNC starts.**

   The installer interface appears when performing a manual installation. The screens automatically move forward as the installation progresses. The VNC screens are active for input and you will disrupt the installation if you do anything in the VNC window.

# Using a Serial Console

You can redirect the system console to a workstation or laptop to connected to the server's serial management port to view an unattended installation.


- "How to Establish a Connection Using a Serial Console" on page 95


## How to Establish a Connection Using a Serial Console

Follow these steps to establish a connection using a serial console.

1. **Use the boot argument `console=ttyS0,9600` to have console output redirected to the serial console.**

   This is helpful when debugging and you want to be able to scroll back to see messages. This will disable output to the VGA console.

2. **Set up the serial console through the serial port.**

   For more information about using a serial console, see the service processor (*Lights Out Manager*) documentation. The default setup is for the service processor to be available through the serial port.

3. **Log in to the service processor and enter the following command to start the console:**

   ```
   # start /SP/console
   ```

4. **Reboot the system.**

5. **Select the Network Boot option.**

6. **Select your SIA target, and then observe the progress of the unattended network installation.**

   After booting SIA, the serial console is sometimes left in a state where it is writing black text on a black background. If this occurs, reset your terminal to view the text.

   For additional information about debugging an unattended network installation, see "Debugging Unattended Installation Problems" on page 98.

# Troubleshooting SIA

This section provides information about Sun Installation Assistant (SIA) error messages, the SIA installation log file, as well as procedures for debugging an unattended PXE-based network installation.

Topics in this section include:



## SIA Error Messages

If SIA encounters an error or an unexpected condition, it generates an error message. You might encounter a number of straightforward error messages such as the following:

```
You have inserted Disc 3 but the system requires Disc 2. Please insert Disc 2.
```

You might also attempt to use SIA with versions of Linux or Microsoft Windows that are not supported. In that case you might see error messages such as the following:

```
The media you have provided is not a release that is supported on this platform.
You cannot use the Sun Installation Assistant to install this product and
associated software.
```

In this case, choose one of the following options:

- To install a supported product, click Back and then insert the appropriate media.
- To install a product not supported by SIA, click Exit to exit the Sun Installation Assistant and reboot the system. You can now install the unsupported product as you normally would without SIA.

For a list of supported operating systems, see "Supported Operating Systems" on page 15.

# SIA Installation Log File

An SIA log file is written to the root directory of the newly installed system.

To review this log file, refer to the file `SunInstallationAssistant.log` (located at `/root` for Linux, or `C:\` for Windows).

# Debugging Unattended Installation Problems

This section includes procedures for debugging common problems that might occur when setting up an unattended network installation:


- "How to Debug a PXE Image That Does Not Boot" on page 98


## ▼ How to Debug a PXE Image That Does Not Boot

1. **Check the DHCP and TFTP server areas and the integrity of the `netboot.img` and `vmlinuz` files.**
2. **Verify that the kernel boot arguments are correct by consulting the PXE-example configuration (`boot/isolinux/isolinux.cfg`) provided on the SIA CD/DVD.**
3. **Verify that the URLs in the SIA state file, Kickstart file, or AutoYaST file are correct. To determine whether the URLs are correct:**
   a. **Test the URL with the command `wget` *URL*.**
   b. **Verify that the DNS is working or use IP addresses instead of host names.**
   c. **Check the following table for URL errors that you might encounter.**

| Problem | What you will see |
|---|---|
| The state file URL (*siaurl*) is incorrect. | If the state file URL (*siaurl*) is incorrect, the installation appears to hang.<br>Check the console for the following error message that appears after the VNC information:<br>`Unable to fetch unattended statefile:` *URL* |
| The InstallLoc in the state file URL (*siaurl*) is incorrect. | The system reboots without an error message and the console displays messages such as the following message before rebooting:<br>`Can't MD5 ...` |

| Problem | What you will see |
| --- | --- |
| The Kickstart entry in state file URL (*siaurl*) is incorrect. | The installation appears to hang and the console displays the following message:<br>`apit-magic: run: /installer/..."` |
| A parameter in the URL file is incorrect. | When connecting to VNC, you will see that the unattended network installation stopped and is waiting for input. |

**4 Verify that the VNC password is properly set.**

If the VNC password was not set, the following message displays on the console:

```
mv /dev/tty /dev/tty-node
ln -s /proc/self/fd/0 /dev/tty
echo password
/usr/X11R6/bin/vncpasswd.real /installer/vncpasswd
echo password
They don't match. Try again.
```

This issue is a timing problem. To resolve this problem, reboot the system and restart the installation.

# Creating a Bootable SIA USB Flash Drive

This section describes how to prepare a USB flash drive (also known as USB thumb drive, USB key drive, etc.) for booting SIA and how to boot the SIA USB flash drive to perform SIA deployment and recovery tasks.

Preparing and booting an SIA USB flash drive is described in the following sections:



## Requirements

- SIA version 2.0.144 or later (USB flash drive support is not available on earlier versions of SIA)
- Syslinux utility version 3.52 or later
- 1 GB or larger USB 2.0 flash drive
- A system running Windows XP or Linux with a USB 2.0 compatible port
- Internet access (to download the necessary software)
- Sun server that you will be using SIA on must have USB 2.0 compatible ports

## Getting the Software

This section describes where to get the Syslinux and SIA software. You must have the Syslinux software to prepare the USB flash drive in order to boot SIA. You can use either a Windows or Linux machine to download the Syslinux and SIA software and prepare the USB flash drive for booting.

### ▼ How to Get the Syslinux and SIA Software

**Note –** Support for creating a USB flash drive version of SIA was introduced with SIA version 2.0.144 and is provided as a downloadable package from the Oracle download site. Earlier versions of SIA will not support running SIA from USB flash drive media.

1. **Go to the SIA main page on the Oracle web site:**

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

2. **Navigate to your server's download page.**

3. **Select and download the following files to a convenient file folder on a Windows XP or Linux (Red Hat or SUSE) system.**

   - `syslinux-`*version*`.zip` (where *version* is 3.52 or later)
   - `sia-`*version*`.zip` (where *version* is 2.0.144 or later)

   **Note –** These files may be available separately or bundled in a single package.

# Preparing the USB Flash Drive

This section describes how to prepare the USB flash drive in order to use it to run the SIA software on your server. You can use either a Windows or a Linux system to prepare the USB flash drive. The procedure is different for Windows and Linux systems; both procedures are described below.


- "How to Prepare the USB Flash Drive on a Windows XP System" on page 102
- "How to Prepare the USB Flash Drive on a Linux (Red Hat/SUSE) System" on page 104


### ▼ How to Prepare the USB Flash Drive on a Windows XP System

1. **Extract (unzip) the contents of the downloaded `syslinux-`*version*`.zip` archive file.**

   Where *version* represents the Syslinux version number.

2. **Insert the USB flash drive into a USB 2.0 port.**

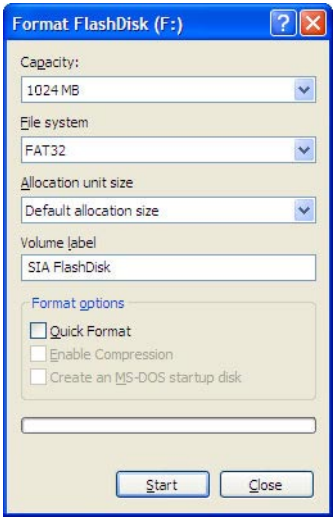
3. **After Windows has found the new hardware, double-click on My Computer from the desktop.**

**Caution –** Be sure to confirm and make a note of the device name of the USB flash drive (A:, B:, etc.). The instructions listed here require you to delete existing partition(s) on the USB flash drive. Making a mistake in identifying the device might cause you to erase a hard disk.

4 **Right-click on the flashdisk icon in the list of hard disk drives, and then click Format.**

The format dialog box will be displayed.

5 **From the File system drop-down menu, select FAT32 and enter a descriptive volume label (such as "SIA FlashDisk").**




6 **Click the Start button.**

The flash disk is formatted.

7 **After the formatting has completed, click the Close button.**

The Format dialog box closes.

8 **Click the Start button from the Windows taskbar, and then click Run.**

The Run dialog box is displayed.

9 **Run the `syslinux` executable using the `-ma` option to make the drive bootable by entering the following command:**

*path*`\win32\syslinux.exe -ma` *X*`:`

Where *path* is the folder to which you extracted Syslinux and *X* is the drive letter for your USB flash drive (for example, A:, B:, etc.)

This creates a file `ldlinux.sys` on the drive and makes it bootable.

10 **Extract (unzip) the contents of the downloaded `SIA-`*version*`.zip` archive file to the USB flash drive.**

Where *version* represents the SIA version number.

11 **To remove the USB flash drive, click the Safe to Remove Hardware icon and remove the flash drive from the system.**

The USB flash drive is now ready to boot SIA. To begin the OS installation using the SIA USB flash drive, see "Setting BIOS Parameters and Booting Off the SIA USB Flash Drive" on page 107.

## ▼ How to Prepare the USB Flash Drive on a Linux (Red Hat/SUSE) System

**Before You Begin** This procedure requires the use of `parted` utility version 1.8.6 or later. **Do not use earlier versions of `parted`.**

1 **Extract (unzip) the contents of the `syslinux-`*version*`.zip` archive file.**

```
# unzip syslinux-version.zip
```

Where *version* represents the Syslinux version number.

2 **Insert the USB flash drive into a working USB 2.0 port.**

3 **Use the `tail` command to identify the USB flash drive's device name.**

```
# tail /var/log/messages
```

You should see the device name (such as, `sda` or `sdb`). Example output is shown below:

```
Nov 12 13:19:29 server kernel: scsi 4:0:0:0: Lexar, Inc. USBdisk PQ: 0 ANSI: 0 CCS
Nov 12 13:19:29 server kernel: sd 4:0:0:0: [sdb] 1030750208 512-byte hardware sectors (1030 MB)
Nov 12 13:19:29 server kernel: sd 4:0:0:0: [sdb] Write Protect is off
Nov 12 13:19:29 server kernel: sd 4:0:0:0: [sdb] Assuming drive cache: write through
Nov 12 13:19:29 server kernel: sdb:
Nov 12 13:19:29 server kernel: sd 4:0:0:0: [sdb] Attached SCSI removable disk
Nov 12 13:19:29 server kernel: sd 4:0:0:0: Attached scsi generic sg2 type 0
```

**Caution –** Be sure to confirm and make a note of the device name of the USB flash drive (`/dev/sda`, `/dev/sdb`, etc.). The instructions listed here require you to delete existing partition(s) on the USB flash disk. Making a mistake in identifying the device might cause you to erase a hard disk.

4 **Create a single bootable partition on the USB flash drive using `parted`, as follows:**

**Note –** This procedure requires the use of `parted` utility version 1.8.6 or later. **Do not use earlier versions of** `parted`.

**Note –** These steps require superuser (`su - root`) access.

**a. If Linux has automounted the device, unmount it first.**

```
# umount /dev/sdX1
```

Where *X* is the drive letter for the USB flash drive (for example, `/dev/sda` or `/dev/sdb`), and `1` indicates the first partition.

**b. Use `parted` to delete all partitions and create a new bootable FAT32 partition:**

```
# /sbin/parted /dev/sdX
```

Where *X* is the drive letter for the USB flash drive (for example, `/dev/sda` or `/dev/sdb`).

The `parted` command prompt displays.

**c. Enter the following commands in the order listed and follow the prompts to create your bootable primary partition:**

- `(parted):` **`mklabel`**

  You will be prompted to create a disk label type. If `msdos` is not listed as the default, you will need to enter `msdos` at the appropriate prompt, as shown in the example below:

  ```
  Warning: The existing label on sdx will be destroyed and all
  data on this disk will be lost. Do you want to continue?
  Yes/No: yes
  New disk label type? msdos
  ```

- `(parted):` **`mkpartfs`**

  Creates a new partition on the disk. Answer the prompts to confirm that this will be the `primary` partition, `fat32` format, spanning the entire disk minus the last megabyte (starting at `1`, and ending at `-1`). Example output is shown below:

  ```
  Partition type? primary/extended? primary
  File system type? [ext2] fat32
  Start? 1
  End? -1
  ```

- `(parted):` **`set 1 boot on`**

  Sets the boot flag for this partition.

- `(parted):` **`set 1 lba on`**

  Sets the lba (Linear Block Addressing) flag for this partition.

- `(parted):` **`print`**

  Displays the current settings for the new partition. Example output is shown below:

```
Model: Lexar, Inc. USBdisk (scsi)
Disk /dev/sdb: 1031MB
Sector size (logical/physical): 512B/512B
Partition Table: msdos

Minor   Start   End     Size    Type     Filesystem  Flags
 1      16.4kB  931MB   1031MB  primary  fat32       boot, lba
(parted)
```

- `(parted):` **`quit`**

  Quits the `parted` utility.

**5 Navigate to the Syslinux `mbr` directory:**

# **`cd`** *path*`/mbr`

Where *path* is the folder to which you extracted Syslinux.

**6 Locate the Syslinux master boot record file `mbr.bin` in the `mbr` directory and write it to the disk using the following command:**

# **`cat mbr.bin > /dev/sd`***X*

Where *X* is the drive letter for the USB flash drive (for example, `/dev/sda` or `/dev/sdb`).

**7 Navigate to the Syslinux `unix` directory:**

# **`cd`** *path*`/unix`

Where *path* is the folder to which you extracted Syslinux.

---

**Note –** For later versions of Syslinux, the `unix` directory might be replaced with a `linux` directory. If so, replace the `unix` directory name with `linux`.

---

**8 From the Syslinux `unix` directory, enter the following command:**

# **`./syslinux /dev/sd`***X*`1`

Where *X* is the drive letter for the USB flash drive (for example, `/dev/sda` or `/dev/sdb`), and `1` indicates the first partition.

**Note –** In the next step you will need to specify the mount point. If autofs is running, it might have auto–mounted the drive partition to some other mount point. If this happens, unmount it by entering the command:

```
umount /dev/sdX1
```

9. **Mount the drive to a mount point by entering the command:**

   ```
   # mount -t vfat /dev/sdX1 /mnt
   ```

   Where *X* is the drive letter for the USB flash drive (for example, `/dev/sda` or `/dev/sdb`), and `1` indicates the first partition. For this example, the mount point is `/mnt`.

10. **Extract the contents of the `SIA-`*version*`.zip` archive file to the USB flash drive by entering the following command:**

    ```
    # unzip -q -d /mnt ~/path/SIA-version.zip -x "source/*"
    ```

    Where *path* represents the path to the directory where the `.zip` file is located, and *version* represents the SIA version number. The `"source/*"` parameter excludes the any source files from the extraction to save time and disk space.

11. **Unmount the USB flash drive:**

    ```
    # umount /mnt
    ```

12. **Remove the flash drive from client machine.**

    The USB flash drive is now ready to boot SIA.

**Next Steps** To begin the OS installation using the SIA USB flash drive, see "Setting BIOS Parameters and Booting Off the SIA USB Flash Drive" on page 107.

# Setting BIOS Parameters and Booting Off the SIA USB Flash Drive

This section describes how to set the BIOS parameters on your server and boot SIA off the USB flash drive. The procedures in this section refer to the server upon which you are installing an OS.

**Note –** You must be set up to view the system console boot messages.

## How to Set the BIOS Parameters and Boot Off the SIA USB Flash Drive

**Before You Begin** Check the *Product Notes* for your server for any issues related to USB support. Note any restrictions before attempting this procedure.

1. **Insert the SIA USB flash drive into an available USB 2.0 port.**

   **Note –** Some servers might not have USB 2.0 support on all of their USB ports. To ensure the best performance, check your server documentation to make sure you use a port that supports USB 2.0.

2. **Reboot the system, watch the display for the BIOS prompt, and when prompted enter the BIOS setup.**

   The BIOS Setup screen appears.

3. **Navigate to the Advanced -> USB Configuration -> USB controller setup screen, and configure the controller for USB 2.0 (high speed) mode.**

4. **Navigate to the Boot -> Hard Disk setup screen, and make your USB flash drive the first boot device.**

   The USB flash drive must be the first listed boot device.

5. **To save your changes and boot SIA, select Save and Exit.**

   The system exits the BIOS setup and will then boot from the SIA USB flash drive.

   **Note –** If you use the SIA USB flash drive for operating system installation, once the OS is initially installed from OS distribution media on the server hard disk, a reboot is required to finish the installation. At that point, the USB flash drive must be either unplugged or its boot priority lowered in the BIOS settings to ensure the server boots from the hard disk to finish the installation.

**Next Steps** Proceed to "Starting SIA and Preparing for Deployment or Recovery Tasks" on page 17 for instructions on how to use SIA.

# Identifying a Linux Boot Device on a Sun Fire X4500 Server

This section describes how to identify the boot drive on a Sun Fire X4500 server when installing Linux using SIA. If you do not have a Sun Fire X4500, skip this section.



## How to Identify a Linux Boot Device on a Sun Fire X4500 Server

**Before You Begin** You should have already completed the steps described in "Installing Linux With SIA" on page 49 up to the point where SIA launches the Linux native OS installer.

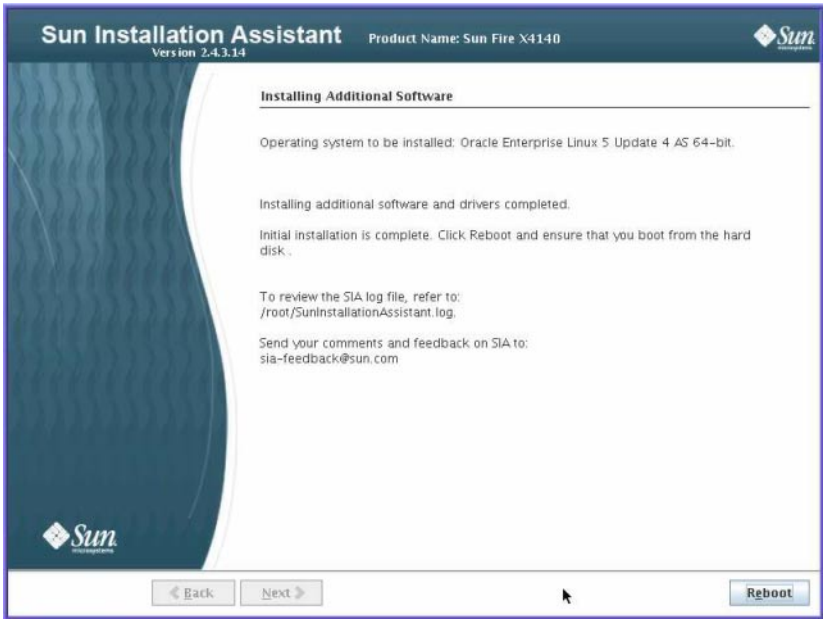
1. **For RHEL Linux installation: Configuring the GRUB Boot Loader.**
   a. **At the Boot Loader Configuration dialog, select the Configure advanced boot loader options checkbox, then click Next.**
   b. **At the Advanced Bootloader Configuration dialog, click the Change Drive Order button.**
   c. **At the Edit Drive Order dialog, select `/dev/sdy` and move it up to the top of the list using the up arrow key (this requires approximately 96 clicks), then click OK.**
   d. **Select "/dev/sdy Master Boot Record (MBR)" and click Next.**
   e. **Proceed through the OS installer until it is done. Once the installer program exits and the SIA Installing Additional Software dialog appears, go to Step 3.**
2. **For SLES Linux installation: Changing Installation Settings.**
   a. **At the Installation Settings dialog, click the Expert tab.**
   b. **Under the Expert tab, click the Change button.**
   c. **At the Boot Loader Setting dialog, select the Boot Loader Installation tab.**
   d. **In the "Boot Loader Location" section, select Other. In the entry field type: `/dev/sdy`**
   e. **Click the Boot Loader Installation Details button.**

f. **At the "Disk Order" list box, select `/dev/sdy` and move it to the top of the list using the Up button. Click OK when done.**

g. **Click the Finish button (bottom right of screen).**

h. **Proceed through the OS installer until it is done. Once the installer program exits and the SIA Installing Additional Software dialog appears.**

3 **In the Installing Additional Software dialog, review the information presented.**




4 **Remove the SIA media and click the Reboot button.**

The server reboots and continues with the installation of the operating system. If SIA update was selected, SIA retrieves the latest files from the web. Otherwise it uses the files on the OS distribution media. Follow the on-screen instructions and perform reboot(s) as prompted.

**Next Steps** Complete the following post installation tasks, as necessary:

- Download and install the latest Linux operating system updates and fixes from the Linux operating system vendor's web site.
- Install and configure additional drivers for your server not installed by SIA. This provides you the supported feature set for installed server components and option cards (for example, additional drivers may include ACPI, video, network and mass storage). Additional drivers can be found on the latest *Tools and Drivers* CD/DVD for your server.

- Install Sun server-specific optional software and utilities available on the latest *Tools and Drivers* CD/DVD for your server.
- Install Sun Service Tags. The installation files are automatically copied to your server during OS installation, but must be run by the system administrator for the server in order to be properly installed. See "Installing Service Tags" on page 113.

# Installing Service Tags

Oracle's Sun Service Tags enable automatic discovery of Oracle systems, software, and services (gear). A service tag uniquely identifies each tagged piece of gear, and allows static information about the gear to be shared over a local network in a standard XML format. Leveraging the discovery capabilities that service tags provide, IT gains a new tool in managing distributed inventory.

Sun Service Tags are automatically copied to the system when you perform an assisted operating system installation using SIA, however they are not installed. Oracle recommends the installation of service tags to register and help keep track of your Sun gear.

Sun Service Tags:

- Do not run in the background and are only used when queried.
- Have a small footprint (about 100 kilobytes).
- Do not contain any personal information.
- Do not automatically collect or send any information to Oracle.
- Can be configured for discovery per gear, TCP listener or be disabled altogether.
- Can be used by the system administrator to help register new equipment with Oracle.
- Can, with the system administrator's permission, be used by Oracle service to aid in troubleshooting.

The service tag information shared with Oracle is used solely to identify Sun gear and better support Oracle customers. Registration data is only collected when the system administrator requests gear discovery. More information about service tags can be found at `http://wikis.sun.com/display/ServiceTag/Home`.

To install Sun Service Tags, follow the instructions that apply to your server's installed OS:


- "How to Install Service Tags in Linux" on page 113
- "How to Install Service Tags in Windows" on page 114


## ▼ How to Install Service Tags in Linux

**Before You Begin**

- You must have used Oracle's Sun Installation Assistant to install a supported Linux operating system.

- You must have `xinetd` installed. If you do not, a version is available where SIA copied the service tags.

1. **On the server on which SIA installed Linux, navigate to the following directory:**

   `/var/optional`

2. **Install the hardware registration client by entering the command:**

   **`rpm –i sun-hardware-reg-`***version***`.i386.rpm`**

   Where *version* is the version number of the .rpm file.

3. **Install the service tags by entering the command:**

   **`rpm –i sun-servicetag-`***version***`.i386.rpm`**

   Where *version* is the version number of the .rpm file.

4. **The service tags and documentation can be found in the extracted directory.**

## ▼ How to Install Service Tags in Windows

**Before You Begin**

- You must have used SIA to install a supported Windows operating system.

1. **On the server on which SIA installed Windows, use Windows Explorer to navigate to the following folder:**

   `C:\sun\optional`

2. **Install the hardware registration client by double-clicking the file:**

   **`sun-hardware-reg-`***version***`.msi`**

   Where *version* is the version number of the .msi file.

3. **Install the service tags by double-clicking the file:**

   **`sun-servicetag-`***version***`.msi`**

   Where *version* is the version number of the .msi file.

4. **The service tags and documentation can be found in the extracted directory.**

# Index

## X