

Sun Installation Assistant 2.2 User's Guide for the Sun Fire X4640 Server

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Preface

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

- “Product Information Web Site” on page 5
- “Related Books” on page 5
- “About This Documentation (PDF and HTML)” on page 7
- “We Welcome Your Comments” on page 8
- “Change History” on page 8

Product Information Web Site

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

<http://www.oracle.com/goto/x86>

Click “Previous Products” from the left nav menu.

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

Related Books

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

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

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

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

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

About This Documentation (PDF and HTML)

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

We Welcome Your Comments

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

Change History

The following changes have been made to the documentation set.

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

Introduction to Sun Installation Assistant

This section introduces the Sun Installation Assistant (SIA) version 2.2 and describes how to get started using SIA to perform deployment or recovery tasks on your Sun Fire X4640 server.

Description	Link
Learn about requirements and tasks that can be performed using SIA.	“Getting Started With Sun Installation Assistant 2.2” on page 11
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 15
Perform an assisted operating system installation of Linux.	“Installing Linux With SIA” on page 27
Perform a system firmware upgrade (system BIOS/ILOM or disk controller HBA).	“Using SIA to Upgrade System Firmware” on page 35
Perform an SIA task (OS install or firmware upgrade) using a PXE-based SIA image in attended mode.	“Performing an SIA PXE-Based Attended Installation” on page 41
Perform an SIA task (OS install or firmware upgrade) using a PXE-based SIA image in unattended mode.	“Performing an SIA PXE-Based Unattended Installation” on page 45
Troubleshoot an SIA installation.	“Troubleshooting SIA” on page 61

Getting Started With Sun Installation Assistant 2.2

The Sun Installation Assistant (SIA) is a tool designed to be used with x64 Sun Fire and Sun Blade servers to assist in the deployment of supported Linux 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.

Note – As of the release of this document, SIA 2.2 can not be used to install Windows Server 2008 R2. You will need to perform a manual installation of Windows. For more information on performing a manual installation of Windows, see the [“Introduction to Windows Installation” in Sun Fire X4640 Server Windows Installation Guide](#).

- 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 Sun. 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, and optional HBA (host bus adapter used for disk control) 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.

Note – As of the release of this document, SIA 2.2 can not be used to install Red Hat Enterprise Linux versions 4.8 or 5.3 in unattended mode. You can use a normal PXE-based installation of these operating systems that does not use SIA. For more information on performing a PXE installation of RHEL, see the [“Introduction to Linux Installation” in Sun Fire X4640 Server Linux Installation Guide](#).

For more information about SIA, see:

- [“SIA Version 2.2 Features and Benefits” on page 12](#)
- [“SIA Task List” on page 12](#)
- [“Server Support and SIA Media Availability” on page 13](#)

- [“Supported Operating Systems” on page 13](#)

SIA Version 2.2 Features and Benefits

SIA version 2.2 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.
- Remote update option that updates the SIA software from the Sun download site to ensure your SIA session has the latest drivers and firmware.
- Assisted installation for supported Linux operating systems. This includes the most recent Sun-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.

- System BIOS and device firmware upgrade capabilities. Upgrade options are 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 the /root for Linux.

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 Linux.
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.

Task	Description
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.

Server Support and SIA Media Availability

The SIA CD/DVD is available for Sun servers that support the x64 processor architecture (might come with the server or be available as an X-option). For a complete list of supported Sun server platforms, refer to the SIA information page at:

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

An ISO CD-ROM image or a USB flash drive image of SIA is also available for download from the Sun download page (select “View by Category” and then “x64 Servers & Workstations”):

<http://www.sun.com/download/index.jsp>

Updates to the SIA program can be obtained easily during the SIA installation by using the Remote Update option in the SIA.

Supported Operating Systems

SIA is available for supported Linux installations. A list of supported operating systems is available on the SIA information page:

<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/ILOM, HBA or disk expander), or a service processor recovery.

Note – SIA has a Remote Update feature that allows you to remotely update your current SIA session with the latest server drivers and firmware from Sun.

Choose a topic.

- [“Local and Remote Media Options” on page 15](#)
- [“Mouse Settings When Using SIA with ILOM Remote Console” on page 16](#)
- [“How to Start SIA and Prepare for Tasks Using Local or Remote Media” on page 16](#)

Local and Remote Media Options

Use SIA to install an operating system or upgrade system firmware on supported your Sun Fire X4640 server using one of the following methods:

- 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 65](#)) directly connected to one of the server’s USB ports.
- 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 Lights Out Manager (Integrated LOM or Embedded LOM) documentation for information on the LOM remote console. (Note that there are multiple versions of LOM, be sure to refer to the guide that matches your server’s installed version). Also see [“Mouse Settings When Using SIA with ILOM Remote Console” on page 16](#).
- Remotely over the network using a PXE network boot image. 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 41](#) or [“Performing an SIA PXE-Based Unattended Installation” on page 45](#).

Mouse Settings When Using SIA with ILOM Remote Console

The ILOM Remote Console feature allows an administrator to redirect a server's keyboard, video, and mouse to their management system. This feature is very convenient when the server and management system are not at the same location.

The ILOM Remote Console has a mouse mode setting that configures ILOM to send mouse events to the remote system using either “absolute” or “relative” mode. For the ILOM Remote Console to work properly with SIA, you must configure the mouse setting to relative mode. If your mouse is set to absolute mode, your mouse will not work when using SIA.

After using SIA, you may consider switching your ILOM Remote Console mouse setting to absolute mode; it provides a smoother mouse experience when using a Solaris or Windows host OS. However, if you are using a Linux host OS, absolute mode may not work properly and you should use the relative mode setting.

Your mouse mode settings can be set using the ILOM web interface in the Mouse Mode settings tab under the Remote Control tab. Note that some versions of ILOM require the service processor (SP) to be reset before the change will take effect. You will be prompted by an ILOM message if your SP needs to be reset.

▼ 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 65](#).
- **Remotely from a CD/DVD or image file:** Log in to the server's service processor from a remote console (or KVMs) using its LOM (*Lights Out Manager*) interface and use the Remote Control Launch Redirection feature to redirect the server to the virtual

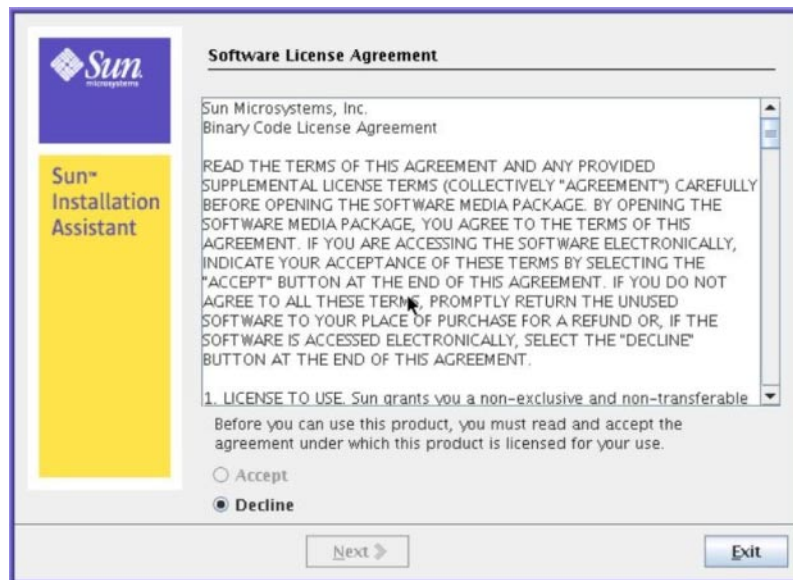
CD/DVD-ROM that contains the SIA CD/DVD image. Then, reboot the server and direct it to boot from your virtual CD/DVD-ROM (typically done using the F8 menu available during server boot).

- **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 41](#) or [“Performing an SIA PXE-Based Unattended Installation” on page 45](#).

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.

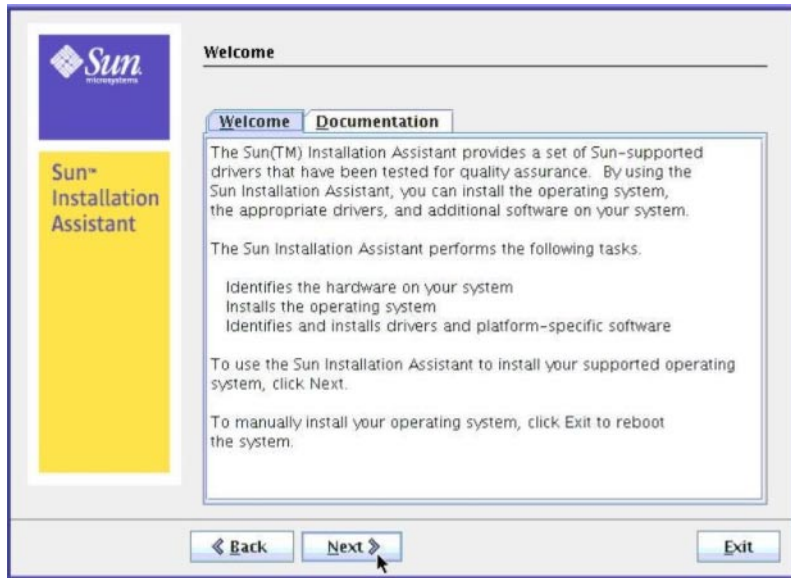
As SIA starts, you will see various start up messages and then the Software License Agreement dialog will be displayed.

- 2 **In the Software License Agreement dialog, click Accept to accept the license agreement, and then click Next.**



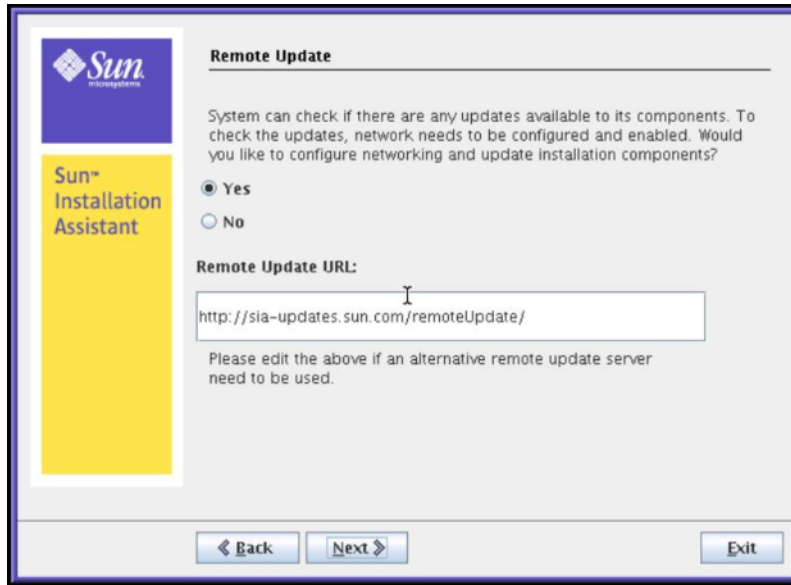
The SIA Welcome dialog appears identifying the tasks that the Sun Installation Assistant performs.

- 3 In the SIA Welcome dialog, click Next to proceed with the installation.

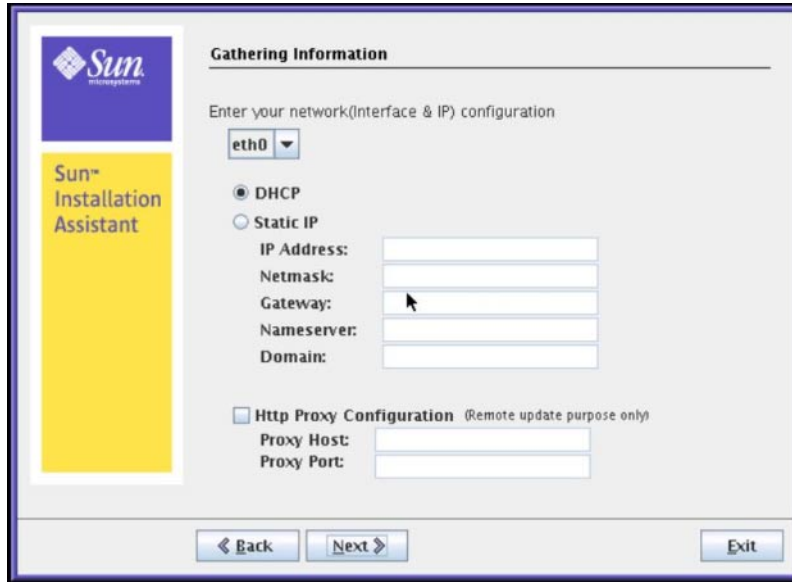


The Remote Update dialog appears.

- 4 In the Remote Update dialog, select Yes or No to allow a remote update, and then click Next. Remote Update is used to download updates to the SIA program. These updates can include server device drivers and firmware from Sun.



- 5 If you select Yes to perform a remote update of the current SIA session to obtain the latest SIA software, the Gathering Information screen 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 (whether this is the Sun remote update Internet site, or an internally mounted image on your company intranet).

- 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).

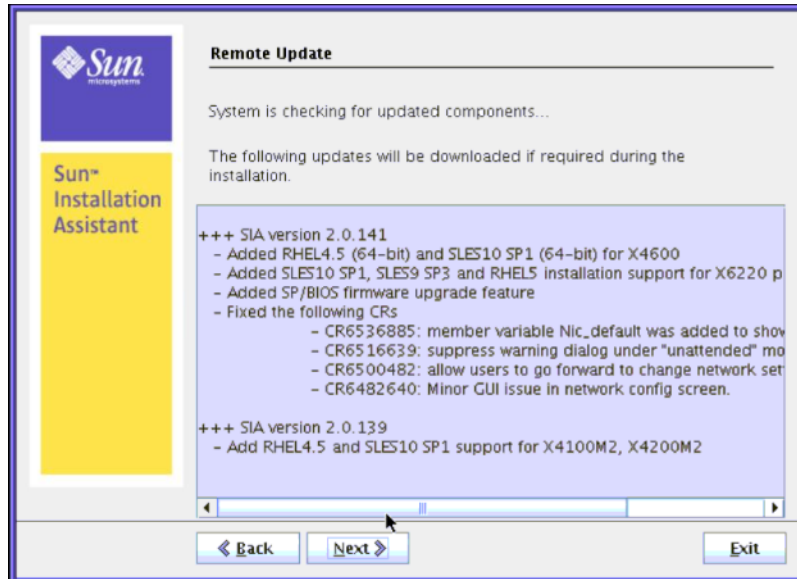
- c. Provide proxy information if an HTTP proxy is needed for Internet access (proxy host and port for client connections), for example:

Proxy Host: webproxy.mycompany.com

Proxy Port: 8088

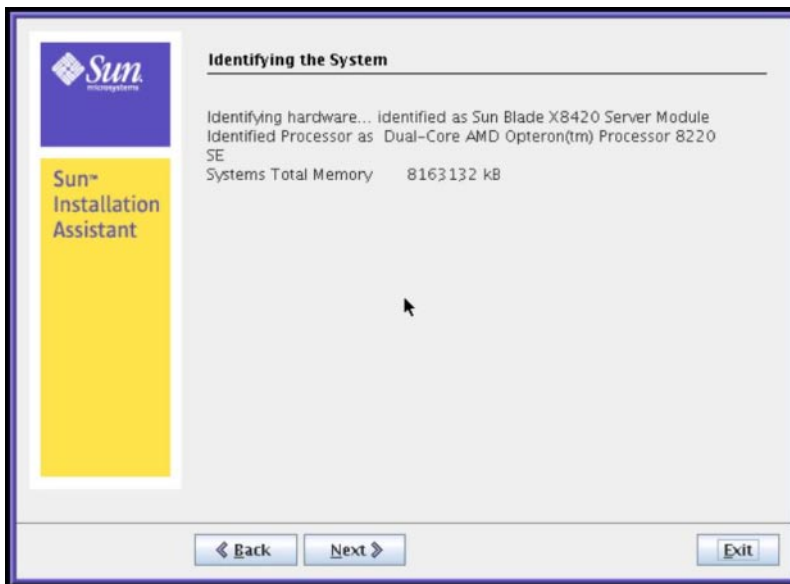
d. **Click Next to establish a connection to the Sun SIA Remote Update web site.**

The remote update process checks for updates to the SIA program (see example below). If updates are available the update components are listed.



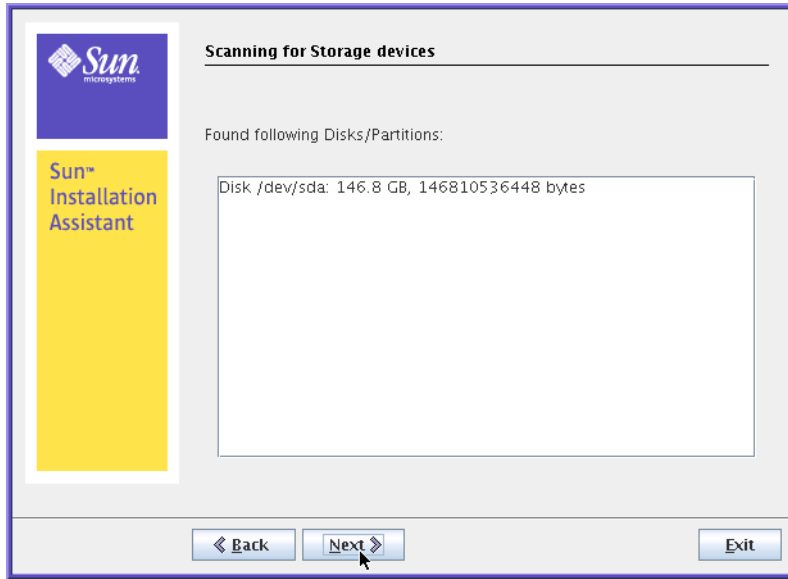
The Identifying the System dialog appears.

- 6 In the Identifying the System dialog, ensure that the appropriate hardware is installed and that there is sufficient memory for your operating system, then click Next.



SIA then scans the systems for disk drives and displays a list at the Scanning for SCSI Devices dialog.

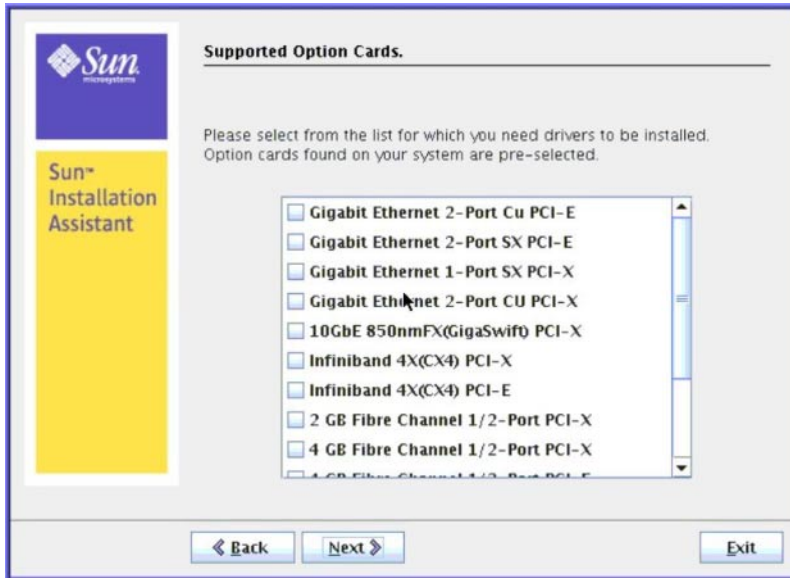
- 7 In the Scanning for Storage Devices dialog, you will see the disks identified by SIA. Click Next to proceed.



The Supported Option Cards dialog then appears.

- 8 In the Supported Option Cards dialog, if you plan on using SIA to install an operating system select the option cards for which you want SIA to install drivers. Click Next when done.

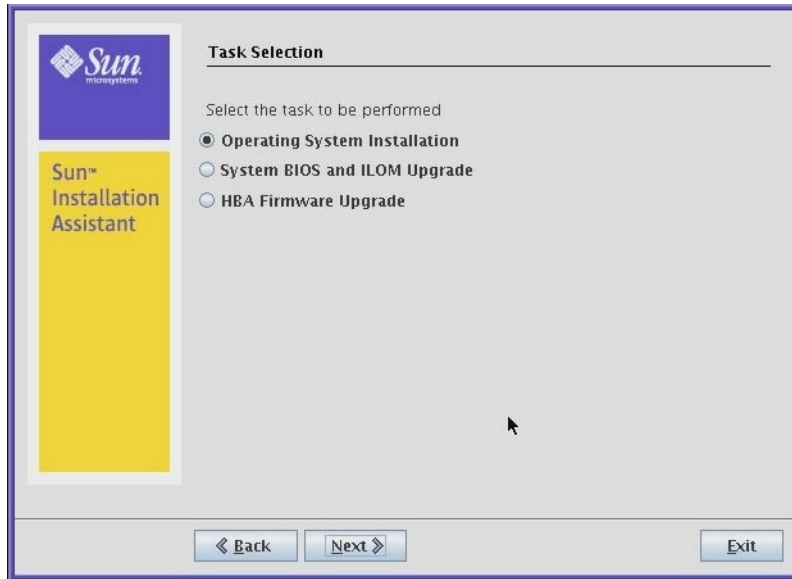
SIA automatically selects option cards it finds installed in your system. If you want to install operating system drivers for other option cards, you will need to select them.



The Task Selection dialog 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.

- 9 In the Task Selection dialog, choose a deployment or recovery task to perform. Refer to the appropriate section for more information.



The dialog lists only task options supported for your server. For example, your list may include operating system installation, server BIOS/ILOM upgrade, or other tasks.

- See Also**
- If you need to install a supported operating system for your server, proceed to [“Installing Linux With SIA”](#) on page 27.
 - If you need to upgrade system firmware (BIOS/ILOM, HBA or disk expander), proceed to [“Using SIA to Upgrade System Firmware”](#) on page 35.

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 Sun 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 README.html file and the *Product Notes* for your server.

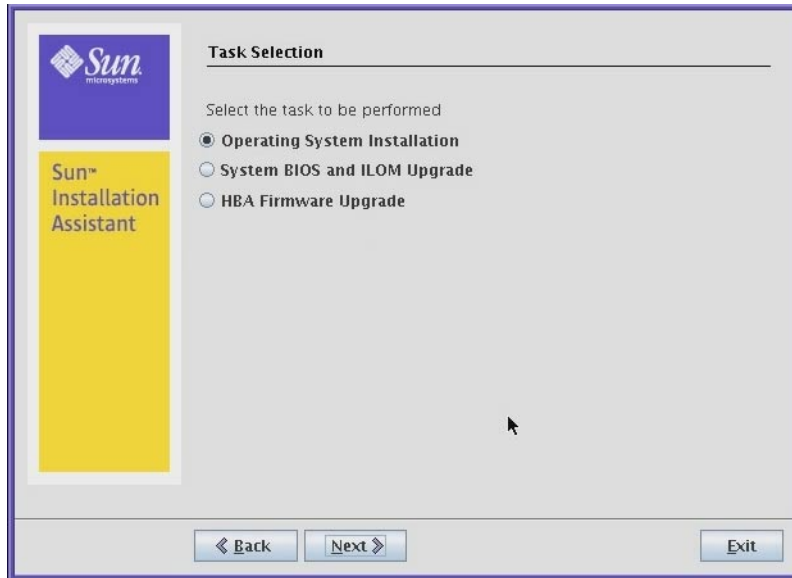
- [“How to Install Linux With SIA Using Local or Remote Media” on page 27](#)

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

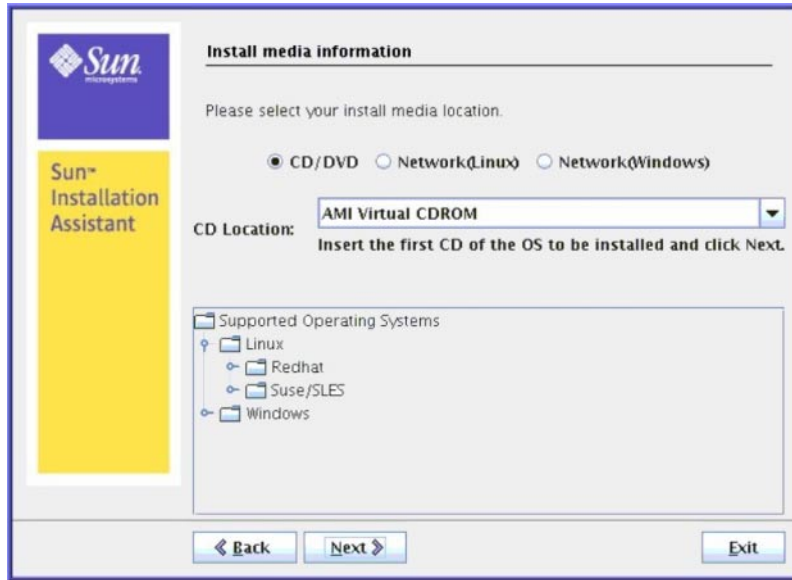
- Before You Begin**
- If your server ships with an integrated RAID controller (LSI-based) and you want to include your boot drive as part of a RAID configuration, you will need to configure a RAID volume on it using the controller’s setup utility (accessible by pressing Ctrl-C when prompted during server boot) before you install the operating system. Consult your platform installation guide for instructions on how to do this.
 - 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 KVM) 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 15](#). At the Task Selection dialog, select **Operating System Installation**, and then click **Next**.

This dialog 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 As the Operating System installation process begins, you see the Install Media Information dialog.



At this dialog, you need to specify the location of your OS installation media. Choose one of the following:

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

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, it might be necessary to insert the Linux OS media into the same device that you used to boot the SIA program.

- 3 If you are installing from a local CD/DVD, do the following:
- a. In the Install Media Information dialog, 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. In the Install Media Information dialog, click Next to continue.
The Identifying Distribution dialog appears.
 - d. Proceed to [Step 6](#).
- 4 If you are installing from a redirected CD/DVD or ISO CD-ROM image using the server's LOM (*Lights Out Manager* remote console feature, do the following:
- a. In the SIA Install Media Information dialog, click CD/DVD.
 - b. Select the virtual CD-ROM from the CD Location drop-down list.
 - c. In the server's LOM (*Lights Out Manager*) 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 service processor LOM Remote Console, select the CD-ROM option from the appropriate menu (see graphic below for an *integrated* LOM example).
 - If you booted SIA from an ISO CD-ROM image, unmount the SIA ISO CD-ROM image from the service processor LOM Remote Console by deselecting CD-ROM Image from the appropriate menu (see graphic below for an *integrated* LOM 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. In the SIA Install Media Information dialog, click Next to continue.

The Identifying Distribution dialog appears.

- e. Proceed to [Step 6](#).
- 5 If you are installing from a Network share, do the following in the Install Media Information page:

a. Click Network.

b. In the address bar, specify the `nfs`, `ftp`, or `http` accessible network address to the Linux ISO image media. See table below for examples and restrictions.

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

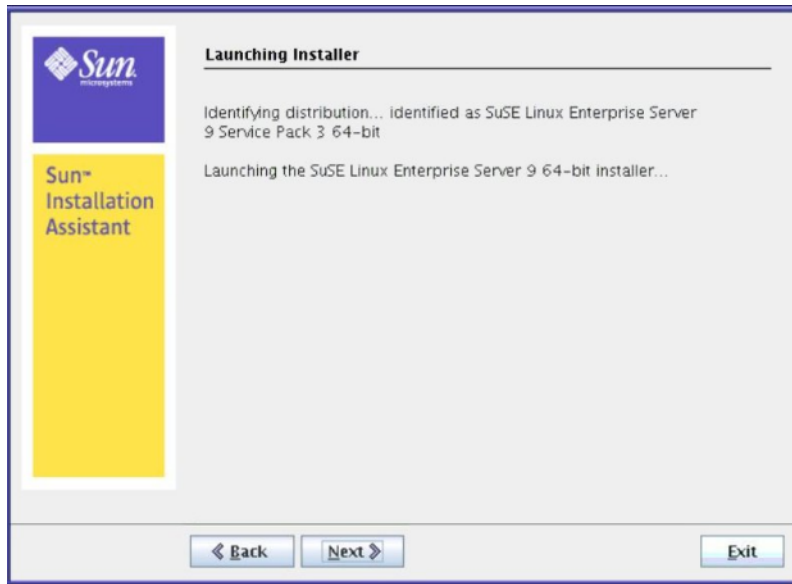
Note – The URL address can not contain spaces.

OS Source	Transfer Method	What to Type
Content extracted from an ISO image to a directory	HTTP	Path to directory containing the extracted OS install files. Example: <code>http://hostname_or_IPaddress/extractedISODirectory</code>
	FTP	Path to directory containing the extracted OS install files. Example: <code>ftp://hostname_or_IPaddress/extractedISODirectory</code>
	NFS	Path to directory containing the extracted OS install files. Example: <code>nfs://hostname_or_IPaddress/extractedISODirectory</code>
Single ISO image file in a directory	NFS	Path to directory containing the OS install ISO image file. Example: <code>http://hostname_or_IPaddress/ISOimagedirectory</code> Note – The directory can not contain more than one ISO image file.

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, and `ISOimagedirectory` the directory containing the Linux OS installation ISO image file. For Linux, only the path to the directory containing the ISO image source should be used; individual files (including `.iso`) cannot be part of the URL path.

c. Click Next.

- 6 In the Identifying Distribution dialog, review the information presented in the dialog then click Next to start the OS installer.

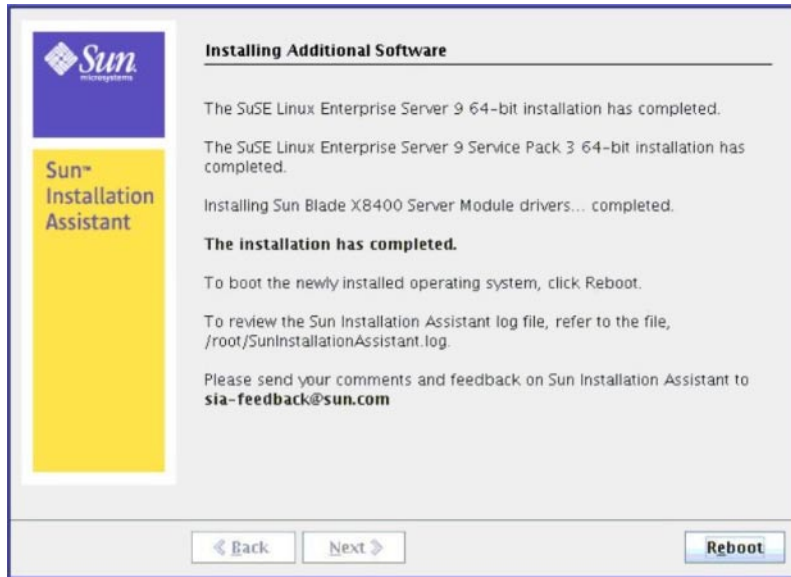


- 7 If you are installing RHEL, you will see the Pre-installation Environment setup page (shown below). Select a boot disk on which SIA will create the Red Hat pre-installation environment partition and click Next.



After setting up the pre-installation environment, the SIA Installing Additional Software dialog appears.

- 8 In the Installing Additional Software dialog, SIA installs additional platform-specific drivers, as needed. Review the information presented.



- 9 Remove the SIA media and click the Reboot button.

The server reboots and continues with the installation of the operating system. If remote 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 After completing the OS installation, do the following:

- Install and configure additional drivers and utilities for your server not installed by SIA. This provides you the supported feature set for installed server components (for example, additional drivers may include ACPI, video, network and mass storage).
- Install Sun-specific optional software available on your server's *Tools and Drivers* (also known as *Resource*) CD/DVD as described in your server OS installation and *Product Notes* documentation.
- Download and install the latest Linux operating system updates and fixes from the Linux operating system vendor's web site.

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 Sun for your Sun x64 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 README.html file and the *Product Notes* for your server.

- [“How to Upgrade the System BIOS and ILOM Firmware” on page 35](#)
- [“How to Upgrade HBA Firmware” on page 37](#)

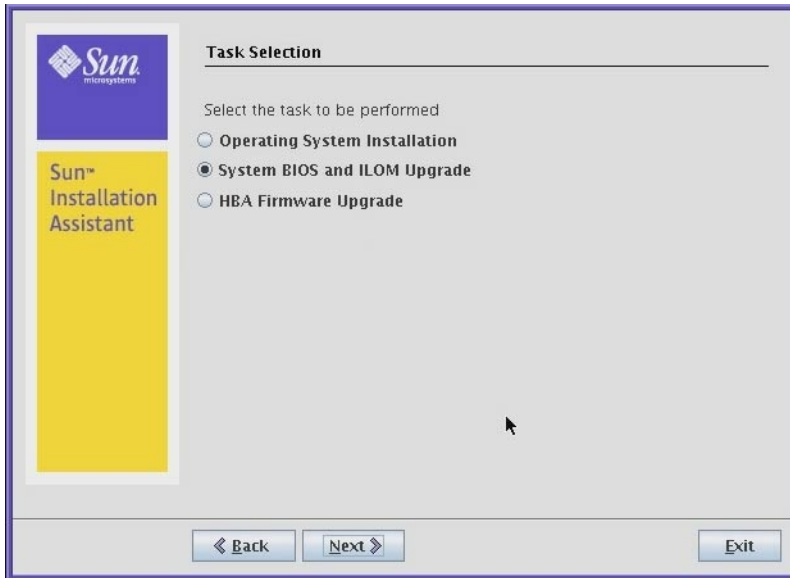
▼ How to Upgrade the System BIOS and ILOM Firmware

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 15](#) and the Task Selection dialog should be displayed.

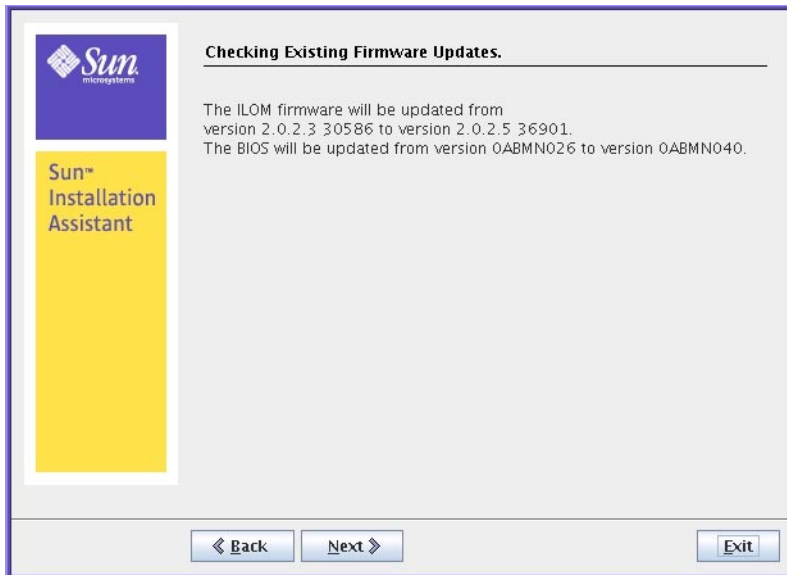
Note – The instructions below assume local CD/DVD drive access. Be sure to modify the instructions accordingly if you are using a local USB flash drive prepared with SIA software, or if you are running SIA from a remote console (or KVMS) with CD-ROM redirection.

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



SIA compares the system BIOS and ILOM versions on the server against the available BIOS and ILOM versions in the current SIA session.

- 3 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.

See Also ■ [“How to Upgrade HBA Firmware” on page 37](#)

▼ 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.



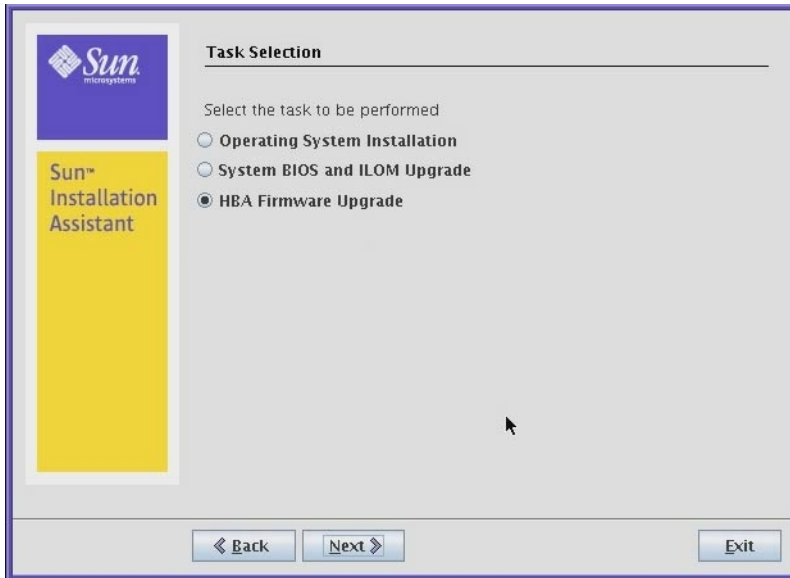
Caution – Though the upgrade of HBA firmware should not be destructive to connected storage, Sun recommends doing a full backup of HBA connected storage before performing the upgrade.

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 15](#) and the Task Selection dialog should be displayed.

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.

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

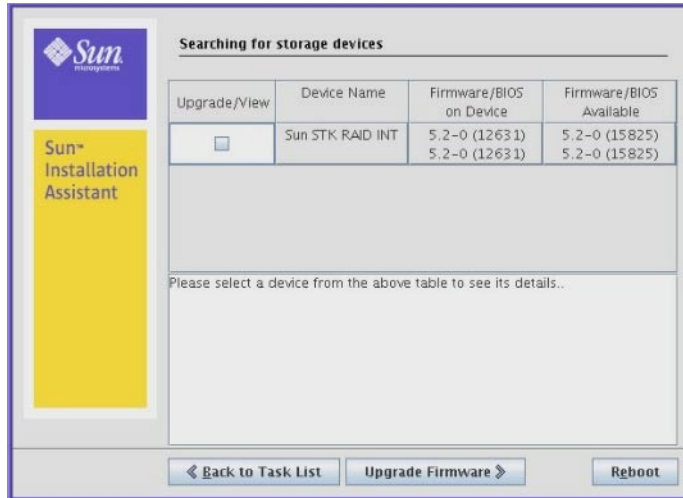


SIA displays the current version(s) and the available upgrade version for discovered HBAs.

Note – If you selected the Remote Update feature (described in [“How to Start SIA and Prepare for Tasks Using Local or Remote Media”](#) on page 16), SIA will have obtained the latest code from the Sun software download site.

- 3 Select the identified controller(s)/HBAs to upgrade by placing a check mark in the Upgrade box.

Note – Sun recommends that in a multi-controller system, all controllers should be at the same firmware level.



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.

See Also ■ [“How to Upgrade the System BIOS and ILOM Firmware”](#) on page 35

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.

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 or firmware upgrades, without user intervention.

Note – As of the release of this document, SIA can not be used to install an image of Windows Server 2008 R2. You will need to perform a Windows Deployment Services–based installation of Windows. For more information on creating a WIM image and doing a remote WDS installation of Windows, see the [“Incorporating Sun Fire Drivers Into a WIM Image”](#) in *Sun Fire X4640 Server Windows Installation Guide*.

- [“How to Create the SIA Image and Prepare for PXE Boot”](#) on page 41
- [“How to Boot SIA From a PXE Server for an Attended Installation”](#) on page 42

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

1 Preconfigure your network to support a Linux-based PXE server network installation.

You may refer to the Linux distribution documentation for more information on configuring a PXE server.

2 In the PXE Linux directory, create a new subdirectory for the SIA image(s).

On a Linux system, for example, the following command line creates a subdirectory for suninstall images:

```
# mkdir /home/pxeboot/suninstall
```

3 Insert the SIA CD/DVD into a CD/DVD drive of a Linux-based PXE server and mount the CD/DVD.

- 4 **Copy the `vmLinux` (the bootable Linux kernel) and `initrd` (initial ram disk) files from the SIA CD/DVD to the `suninstall` subdirectory that you created.**

Use the correct path to the mounted CD image. This example uses `/mnt/cdrom`:

```
# cp /mnt/cdrom/boot/isolinux/vmlinuz /home/pxeboot/suninstall
# cp /mnt/cdrom/boot/isolinux/initrd.img /home/pxeboot/suninstall
```

- 5 **Use an editor to add the following SIA references to the `pxeLinux.cfg/default` file that is stored in the `/home/pxeboot` directory.**

```
default suninstall
label suninstall
kernel suninstall/vmlinuz
append initrd=suninstall/initrd.img vga=0x314 ramdisk_size=900000 root=/dev/ram netboot
```

Type the append command line from `append initrd=` to `netboot` as one continuous string with no returns.

- 6 **Save the file, and then unmount and remove the SIA CD/DVD from the CD/DVD drive.**

Your image is now ready to be booted from.

▼ **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).


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

- From the service processor (*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).



```

www.ami.com
AMIBIOS (C) 2004 American Megatrends, Inc.
BIOS Build Version : 0ABJT100 Date: 10/29/07 15:12:24 Core: 08.00.12
CPU : Dual-Core AMD Opteron(tm) Processor 2220
Speed : 2.80 GHz Count : 4
Socket0-Node0: DCT0 = 667 MHz, DCT1 = 667 MHz
Socket1-Node1: DCT0 = 667 MHz, DCT1 = 667 MHz
Sun Blade X6220 Server Module, 2 AMD North Bridges, Rev F3
1 NVidia CK8-04 PRO SB, 1 NVidia IO-4 Slave Bridge(s)
Board Serial Number : 1005LCB-07232G01A2
BMC Firmware Revision : 2.0.3.1; SP IP Address : 010.006.153.203
CPLD Revision : 5.0
Initializing USB Controllers .. Done.
Press F2 to run Setup (CTRL+E on Remote Keyboard)
Press F8 for BBS POPUP (CTRL+P on Remote Keyboard)
Press F12 to boot from the network (CTRL+N on Remote Keyboard)
4406MB OK

(C) American Megatrends, Inc.
64-0100-000001-00101111-102907-CK8-04-0ABJT100-Y2KC

```

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: suninstall

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

4 For further instructions about how to continue an attended installation after booting SIA from a PXE server, 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 16.

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.

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 or firmware upgrades, without user intervention.

Note – As of the release of this document, SIA can not be used to install an image of Windows Server 2008 R2. You will need to perform a Windows Deployment Services–based installation of Windows. For more information on creating a WIM image and doing a remote WDS installation of Windows, see the [“Incorporating Sun Fire Drivers Into a WIM Image”](#) in *Sun Fire X4640 Server Windows Installation Guide*.

Note – As of the release of this document, SIA can not be used to install Red Hat Enterprise Linux versions 4.8 or 5.3 in unattended mode. You can use a normal PXE-based installation of these operating systems that does not use SIA. For more information on performing a PXE installation of RHEL, see the *Sun Fire X4640 Server Linux Installation Guide*.

Support for PXE-based installations are available as follows:

- SIA v2.0.1 (and later versions) added the ability to do an SIA PXE-based unattended installation of a supported Linux operating system.

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

- [“Contents of the SIA State File”](#) on page 46
- [“Preparing for an Unattended SIA Installation of Linux”](#) on page 50
- [“Preparing for an Unattended SIA Firmware Upgrade”](#) on page 51
- [“How to Create the SIA Image and Prepare for PXE Boot”](#) on page 52
- [“How to Boot SIA From a PXE Server and Perform an Unattended Installation”](#) on page 54

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 may show variables breaking across multiple lines.

TABLE 1 SIA State File Variables

Variable	Description (Defaults in Bold)	Required for Linux Install	Required for Firmware Upgrade
apit.unattended	Tells SIA to run in unattended mode. Values supported: true false Example: <code>apit.unattended=true</code>	X	X
apit.welcome.acceptlicense	Accepts the SIA license agreement. Values supported: true false Example: <code>apit.welcome.acceptlicense=true</code>	X	X
apit.remoteUpdate	Tells SIA to look for SIA software updates. Sun highly recommends performing a remote update to ensure you always install the latest software and firmware. Values supported: true false Example: <code>apit.remoteUpdate=true</code>	X	X

TABLE 1 SIA State File Variables (Continued)

Variable	Description (Defaults in Bold)	Required for Linux Install	Required for Firmware Upgrade
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 <i>not</i> using the default url. 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)
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 Example: apit.networking=true	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 Example: apit.networkconfig.needNetwork=true	X (if networking is true)	X (if networking is true)
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. Example: apit.networkconfig.activeNic=eth0	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 Example: apit.networkconfig.NetworkType=dhcp	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 Example: apit.networkconfig.useDHCP=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. Example: apit.networkconfig.ipfield= <i>n.n.n.n</i>	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. Example: apit.networkconfig.gatewayfield= <i>n.n.n.n</i>	X (if static IP is used)	X (if static IP is used)

TABLE 1 SIA State File Variables (Continued)

Variable	Description (Defaults in Bold)	Required for Linux Install	Required for Firmware Upgrade
apit.networkconfig.netmaskedField	If you selected “static” as the NetworkType, tells SIA to use the IP address value you provide. Example: apit.networkconfig.ipfield= <i>n.n.n.n</i>	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. Examples: apit.http_proxy= <i>n.n.n.n</i> (IP address) apit.http_proxy=file:// <i>web-proxy-configfile</i> apit.http_proxy=http:// <i>web-proxy-server</i> apit.http_proxy=http:// <i>internal-host:portnumber</i>	X (if proxy used)	X (if proxy used)
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 Example: apit.taskList.selectedTask=Operating System Installation	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. Example: apit.osid.installLoc=http:// <i>path_to_imagedirectory</i>	X	
apit.osid.installMedia	Tells SIA where the CD or .iso file for the OS installation software is located. Values supported: cdrom networkLinux Example: apit.osid.installMedia=cdrom	X	
apit.osid.installMethod	Tells SIA which file transfer protocol to use during the installation. Values supported: http ftp nfs Example: apit.osid.installMethod=http	X	

TABLE 1 SIA State File Variables (Continued)

Variable	Description (Defaults in Bold)	Required for Linux Install	Required for Firmware Upgrade
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. Examples: apit.osid.kickstart=http://url_to_kickstart apit.osid.kickstart=ftp://url_to_kickstart apit.osid.kickstart=nfs://url_to_kickstart	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 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. Example: apit.firmware.spIP= <i>n.n.n.n</i>		X
apit.firmware.spPasswd	Part of a firmware upgrade task. Tells SIA the password of the server's service processor. Example: apit.firmware.spIP= <i>changeme</i>		X
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. Example: apit.done.notifyUrl=http://my_destination_url		

Preparing for an Unattended SIA Installation of Linux

The procedures presented in this section assumes the following:

- You are familiar with RHEL or SLES Linux unattended installations.
- You have created a RHEL Kickstart file or SLES AutoYaST file.
- You have configured the 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.

Creating 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.
- 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 52](#)).

Sample SIA State File for Linux

An SIA state file for an unattended Linux installation looks like the following sample, see [Table 1](#) for an explanation of each variable.

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 Sun download site if you are in doubt about support for these options.

```
[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]

```

Setting 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 OS documentation for creating an unattended configuration file and PXE install image, for example:

- Novell AutoYaST unattended installation documentation at <http://www.novell.com>
- Red Hat's Kickstart unattended installation documentation at <http://www.redhat.com/docs>

When done, proceed to “[How to Create the SIA Image and Prepare for PXE Boot](#)” on page 52.

Preparing for an Unattended SIA Firmware Upgrade

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

- “[Creating the SIA Unattended State File for Firmware Upgrade](#)” on page 52
- “[How to Create the SIA Image and Prepare for PXE Boot](#)” on page 52

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.

Creating 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:

- An SIA PXE boot image must exist on a Linux-based PXE server, see “[How to Create the SIA Image and Prepare for PXE Boot](#)” on page 52.
- 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.

Sample SIA State File for Firmware Upgrade

An SIA state file for an unattended firmware upgrade looks like the following sample, see [Table 1](#) for an explanation of each variable.

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 Sun 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]
```

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

After you have prepared for an unattended installation as described in the previous sections, follow the steps below to set up a PXE image to boot SIA and perform an unattended installation.

Tip – For additional information about setting up an SIA PXE boot image, consult the PXE sample target in the `/boot/isolinux/isolinux.cfg` file on the SIA CD/DVD.

1 Preconfigure your network to support a Linux-based PXE server network installation.

You may refer to the Linux distribution documentation for more information on configuring a PXE server.

2 In the PXE Linux directory, create a new subdirectory for the SIA image(s).

On a Linux system, for example, the following command line creates a subdirectory for `suninstall` images:

```
# mkdir /home/pxeboot/suninstall
```

3 Insert the SIA CD/DVD into a CD/DVD drive of a Linux-based PXE server and mount the CD/DVD.**4 Copy the `vmlinuz` (the bootable Linux kernel) and `initrd` (initial ram disk) files from the SIA CD/DVD to the `suninstall` subdirectory that you created.**

Use the correct path to the mounted CD image. This example uses `/mnt/cdrom`:

```
# cp /mnt/cdrom/boot/isolinux/vmlinuz /home/pxeboot/suninstall
# cp /mnt/cdrom/boot/isolinux/initrd.img /home/pxeboot/suninstall
```

5 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).**6 Use an editor to include the following SIA references in the `pxelinux.cfg/default` file that is stored in the `/home/pxeboot` directory:**

```
default suninstall
label suninstall
kernel suninstall/vmlinuz
append initrd=suninstall/initrd.img vga=0x314 ramdisk_size=900000 root=/dev/ram0
splash=silent siaurl=http://URL_to_externalStateVariables.txt
```

Note – Type the `append` command line from `append initrd=` to `siaurl=` as one continuous string with no returns. `initrd=` must point to the location of the `initrd.img` on your PXE server that you copied from the SIA CD/DVD and `siaurl=` must point to the URL for the state file.

You can also boot the installer from the network and perform a manual (attended) installation by removing the `siaurl=` argument from the PXE target.

7 Save the file, and then unmount and remove the SIA CD/DVD from the CD/DVD drive.

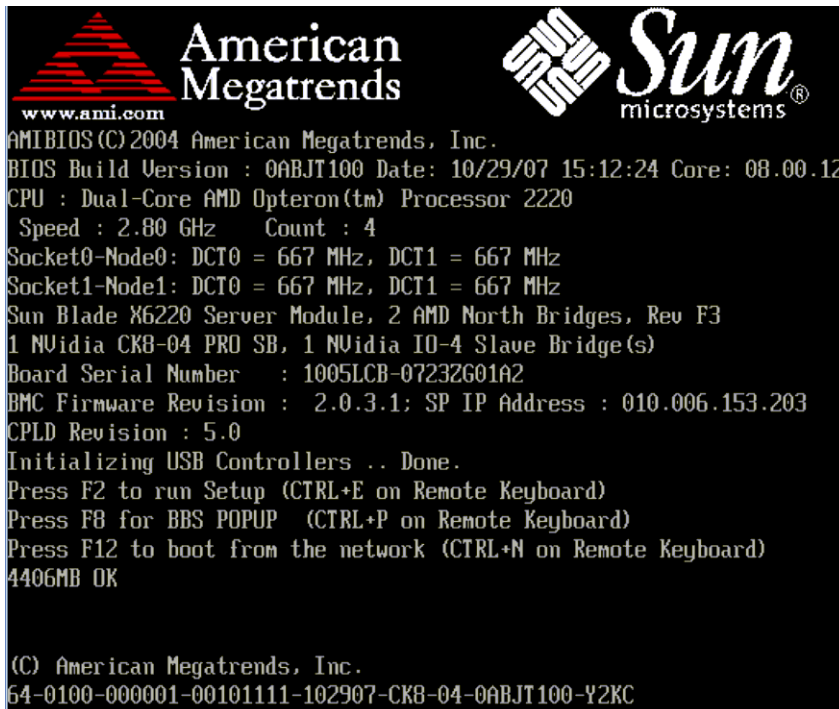
Your image is now ready to be booted from.

8 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 54](#).

▼ 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 (*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: suninstall

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 57.

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” on page 57](#)
- [“Using a System Console” on page 58](#)
- [“Using a Virtual Console or Secure Shell \(SSH\) Connection” on page 58](#)
- [“Using a VNC Viewer” on page 59](#)
- [“Using a Serial Console” on page 59](#)

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-rypted-password`

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

Create *des-rypted-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 57](#).

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.

▼ 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 57](#).

- 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.

- [“To Establish a Connection Using a Serial Console” on page 59](#)

▼ 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.

See Also For additional information about debugging an unattended network installation, see [“Debugging Unattended Installation Problems” on page 62.](#)

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” on page 61](#)
- [“SIA Installation Log File” on page 62](#)
- [“ILOM Remote Console Mouse Issue With SIA” on page 62](#)
- [“Debugging Unattended Installation Problems” on page 62](#)

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 by Sun Microsystems, Inc. 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 13](#).

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).

ILOM Remote Console Mouse Issue With SIA

The ILOM Remote Console has a mouse mode setting that configures ILOM to send mouse events to the remote system using either “absolute” or “relative” mode. For the ILOM Remote Console to work properly with SIA, you must configure the mouse setting to relative mode. If your mouse is set to absolute mode, your mouse will not work when using SIA. For more information, see [“Mouse Settings When Using SIA with ILOM Remote Console” on page 16](#).

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 62](#)
- [“SIA Boot Starts, Then Stops” on page 63](#)
- [“VNC Password Does Not Get Set” on page 63](#)

▼ How to Debug a PXE Image That Does Not Boot

- 1 Check the DHCP and TFTP server areas and the integrity of the `initrd.img` and `mlinuz` 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 (<i>siaurl</i>) is incorrect.	If the state file URL (<i>siaurl</i>) is incorrect, the installation appears to hang. Check the console for the following error message that appears after the VNC information: Unable to fetch unattended statefile: <i>URL</i>
The InstallLoc in the state file URL (<i>siaurl</i>) is incorrect.	The system reboots without an error message and the console displays messages such as the following message before rebooting: Can't MD5 ...
The Kickstart entry in state file URL (<i>siaurl</i>) is incorrect.	The installation appears to hang and the console displays the following message: 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.

SIA Boot Starts, Then Stops

The `initrd.img` file used by SIA is over 100 megabytes. The Solaris TFTP daemon is unable to support the size of the image.

If the SIA starts to boot, then stops with a blank screen and displays a time-out error message, switch to a TFTP server with a different operating system.

VNC Password Does Not Get 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” on page 65](#)
- [“Getting the Software” on page 65](#)
- [“Preparing the USB Flash Drive” on page 66](#)
- [“Setting BIOS Parameters and Booting Off the SIA USB Flash Drive” on page 71](#)

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” on page 66](#)

▼ 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 Sun 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 Sun 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 66
- “How to Prepare the USB Flash Drive on a Linux (Red Hat/SUSE) System” on page 68

▼ 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.**

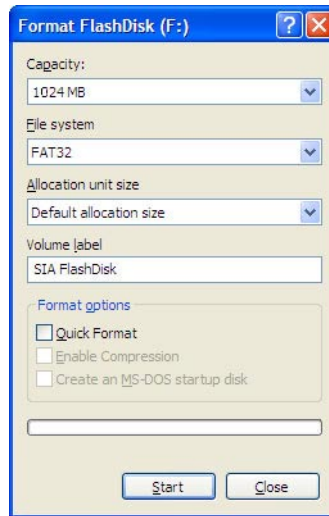


Caution – Be sure to confirm and make a note of the device name of the USB flash drive (A:, B:, etc.). The instructions listed here require you to delete existing partition(s) on the USB flash disk. Making a mistake in identifying the device might cause you to erase a hard disk.

- 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\syslinux\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` onto the drive and make 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 71.](#)

▼ 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/sdX
```

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/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.

Note – In the next step you will need to specify the mount point. If `auto fs` 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 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. 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 71](#).

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” on page 71](#)

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

Before You Begin Check the [Sun Fire X4640 Server Product Notes](#) 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.

- 6 Proceed to [“Starting SIA and Preparing for Deployment or Recovery Tasks”](#) on page 15 for instructions on how to use SIA.**

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