

## **Sun Server X3-2 (formerly Sun Fire X4170 M3)**

Installation Guide for Oracle VM



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# Using This Documentation

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This installation guide contains procedures for installing the Oracle VM software, and initial software configuration procedures for bringing the Sun Server X3-2 from Oracle to a configurable and usable state.

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**Note** – The Sun Server X3-2 was formerly named the Sun Fire X4170 M3 server. This former name might still appear in the software. The new product name does not indicate any change in system features or functionality.

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

This section describes how to get the latest software and firmware, documentation and feedback, and support and accessibility information.

- [“Getting the Latest Software and Firmware” on page vii](#)
- [“About This Documentation” on page viii](#)
- [“Related Documentation” on page viii](#)
- [“Feedback” on page viii](#)
- [“Access to Oracle Support” on page ix](#)

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## Getting the Latest Software and Firmware

Firmware, drivers and other hardware-related software for each Oracle x86 server, server module (blade), and blade chassis are updated periodically.

You can obtain the latest version in one of three ways:

- Oracle System Assistant – This is a new factory-installed option for Oracle x86 servers. It has all the tools and drivers you need and is built into the server.
- My Oracle Support: <http://support.oracle.com>
- Physical media request

For more information, see “Getting Server Firmware and Software” on page 33.

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## About This Documentation

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

A PDF version that includes all information on a particular subject (such as hardware installation or product notes) can be generated by clicking the PDF button in the upper left corner of the HTML page.

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## Related Documentation

Documentation	Link
All Oracle documentation	<a href="http://www.oracle.com/documentation">http://www.oracle.com/documentation</a>
Sun Server X3-2	<a href="http://www.oracle.com/pls/topic/lookup?ctx=SunServerX3-2">http://www.oracle.com/pls/topic/lookup?ctx=SunServerX3-2</a>
Oracle Integrated Lights Out Manager (ILOM) 3.1	<a href="http://www.oracle.com/pls/topic/lookup?ctx=ilom31">http://www.oracle.com/pls/topic/lookup?ctx=ilom31</a>
Oracle Hardware Management Pack 2.2	<a href="http://www.oracle.com/pls/topic/lookup?ctx=ohmp">http://www.oracle.com/pls/topic/lookup?ctx=ohmp</a>

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## Access to Oracle Support

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# About Oracle VM Installs

This section contains an overview for installing Oracle VM on your server.

Description	Links
Learn about Oracle VM software installation steps.	<a href="#">“Oracle VM Installation Task Map” on page 1</a>
Learn which Oracle VM software versions are supported.	<a href="#">“Supported Oracle VM Software” on page 3</a>
Learn about console display options and how to set them up.	<a href="#">“Selecting the Console Display Option” on page 3</a>
Learn about boot media options and how to set them up.	<a href="#">“Selecting the Boot Media Option” on page 6</a>
Learn about installation target options and how to set them up.	<a href="#">“Selecting the Installation Target Option” on page 8</a>
Learn about Oracle VM install options.	<a href="#">“Oracle VM Installation Options” on page 9</a>
Learn about Oracle System Assistant.	<a href="#">“Oracle System Assistant Overview” on page 12</a>

## Related Information

- [“Installing Oracle VM” on page 19](#)

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# Oracle VM Installation Task Map

The following table describes the steps for installing the Oracle VM software.

Step	Description	Links
1.	Install your server hardware and configure the Oracle ILOM service processor.	<ul style="list-style-type: none"> <li>• <i>Sun Server X3-2 Installation Guide</i>, “Installing the Server Into a Rack” on page 21</li> <li>• <i>Sun Server X3-2 Installation Guide</i>, “Cabling the Server” on page 59</li> <li>• <i>Sun Server X3-2 Installation Guide</i>, “Connecting to Oracle ILOM” on page 65</li> </ul>
2.	Set up a second system with a static IP address on which you can install the Oracle VM Manager. This system must have one of the following operating systems installed: <ul style="list-style-type: none"> <li>• Oracle Linux 5.5, 64-bit or subsequent releases</li> <li>• Red Hat Enterprise Linux Release 6, 64-bit or subsequent releases</li> </ul>	Oracle VM Server Release Notes and the Oracle VM Manager Release Notes at: <a href="http://docs.oracle.com/cd/E20065_01/index.htm">http://docs.oracle.com/cd/E20065_01/index.htm</a>
3.	Obtain the Oracle VM installation media and the Oracle VM documentation. The Oracle VM documentation should be used in conjunction with the install procedures referenced below in Step 7.	<ul style="list-style-type: none"> <li>• An ISO image of the Oracle VM installation program is available as a download at: <a href="http://www.oracle.com/virtualization">http://www.oracle.com/virtualization</a></li> <li>• The Oracle VM documentation is available for download at: <a href="http://docs.oracle.com/cd/E20065_01/index.htm">http://docs.oracle.com/cd/E20065_01/index.htm</a></li> </ul>
4.	Review the product notes.	<i>Sun Server X3-2 Product Notes</i> at: <a href="http://www.oracle.com/pls/topic/lookup?ctx=SunServerX3-2">http://www.oracle.com/pls/topic/lookup?ctx=SunServerX3-2</a>
5.	Setup the console, the media, and the installation target that you will use to perform the installation.	<ul style="list-style-type: none"> <li>• “Selecting the Console Display Option” on page 3</li> <li>• “Selecting the Boot Media Option” on page 6</li> <li>• “Selecting the Installation Target Option” on page 8</li> </ul>
6.	Verify BIOS settings for new OS installations.	“Verify the BIOS Factory Defaults” on page 15
7.	Install the Oracle VM Server and, if necessary, Oracle VM Manager.	For procedures for installing both the Oracle VM Server and the Oracle VM Manager, see “Installing Oracle VM on a Single System Using Media” on page 24
8.	Perform the post installation tasks, if applicable.	“Post Installation Tasks for Oracle VM” on page 29

## Related Information

- [“Preparing to Install Oracle VM” on page 15](#)

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# Supported Oracle VM Software

The server supports the following Oracle VM software.

VM Software	Edition
Oracle VM	Release 3.0, 3.1, and 3.2

If you requested Oracle VM software to be preinstalled on your server when you ordered the server, Oracle VM 3.0 was preinstalled at the factory. If the Oracle Solaris operating system is preinstalled on your server, but you do not want to use it, you can do a fresh install of Oracle VM 3.0, 3.1, or 3.2.

Additionally, you can install any other supported operating system or virtual machine software on your server. For a complete list of operating systems supported by the server, see the latest version of the *Sun Server X3-2 Product Notes* at: <http://www.oracle.com/pls/topic/lookup?ctx=SunServerX3-2> for updated information.

## Related Information

- [“Installing Oracle VM” on page 19](#)

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# Selecting the Console Display Option

This section describes the options for connecting a console to perform the installation.

- [“Console Display Options” on page 4](#)
- [“Set Up the Local Console” on page 4](#)
- [“Set Up the Remote Console” on page 5](#)

# Console Display Options

You can install the OS and administer the server by attaching a local console directly to the server's service processor (SP). The server supports two types of local consoles:

- A terminal connected to the serial management port (SER MGT)  
You can connect the terminal directly to the port or connect it to a terminal emulator that is connected directly to the port.
- A VGA monitor, USB keyboard, and USB mouse connected directly to the video port (VGA) and the two rear USB connectors

You can also install the OS and administer the server from a remote console by establishing a network connection to the server SP. There are two types of remote consoles:

- Web-based client connection using the Oracle ILOM Remote System Console application
- SSH client connection to the network management port (NET MGT)

## ▼ Set Up the Local Console

### 1. To connect a local console, do one of the following:

- Connect a terminal to the serial management port (SER MGT) either directly or through a terminal emulator.
- Connect a VGA monitor to the video port, and a keyboard and mouse to the USB ports.

### 2. Press Enter to access Oracle Integrated Lights Out Manager (ILOM)

The Oracle login prompt appears.

a. Type your Oracle ILOM user name and password.

b. At the Oracle ILOM prompt, type:

```
-> start /HOST/console
```

The serial management port output is automatically routed to the host serial local console.

### 3. For serial management port (SER MGT) connections only, to establish a connection to the host serial port:

a. Type your Oracle ILOM user name and password.

b. At the Oracle ILOM login prompt, type:

-> **start /HOST/console**

The serial management port output is automatically routed to the Linux host serial local console.

### Related Information

- Oracle Integrated Lights Out Manager (ILOM) 3.1 Documentation Library at:  
<http://www.oracle.com/pls/topic/lookup?ctx=ilom31>

## ▼ Set Up the Remote Console

### 1. View or establish an IP address for the server SP.

For details, see the *Sun Server X3-2 Installation Guide*, “Determining the IP Address of the Server SP” on page 69.

### 2. If you are using a web-based client connection, perform these steps; otherwise go to the next step.

- a. In a web browser, type the IP address for the server SP.
- b. Log in to the Oracle ILOM web interface.
- c. Redirect the video output from the server to the web client by launching the Oracle ILOM Remote System Console.
- d. If necessary, enable device redirection (mouse, keyboard, etc.) in the Devices menu.

### 3. If you are using an SSH client connection, perform these steps.

- a. From a serial console, establish an SSH connection to the server SP (`ssh root@hostname`, where *hostname* can be the DNS name or the IP address for the server SP).
- b. Log in to Oracle ILOM.
- c. Redirect the serial output from the server to the SSH client by typing:  
-> **start /HOST/console**

### Related Information

- Oracle Integrated Lights Out Manager (ILOM) 3.1 Documentation Library at:  
<http://www.oracle.com/pls/topic/lookup?ctx=ilom31>

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# Selecting the Boot Media Option

You can start the operating system installation to a server by booting a local or remote installation media source. This section identifies the supported media sources and the setup requirements for each source.

- [“Boot Media Options Requirements” on page 6](#)
- [“Set Up the Local Boot Media Option” on page 7](#)
- [“Set Up the Remote Boot Media Option” on page 7](#)

## Boot Media Options Requirements

This section describes the requirements for using local and remote media.

- [“Local Boot Media Requirements” on page 6](#)
- [“Remote Boot Media Requirements” on page 6](#)

## Local Boot Media Requirements

Local boot media requires a built-in storage device on the server, or an external storage device attached to the server.

The only supported OS local boot media sources is CD/DVD-ROM installation media.

## Remote Boot Media Requirements

Remote media requires you to boot the install over the network. You can start the network install from a redirected boot storage device or another networked system that exports the installation over the network using a Pre-Boot eXecution Environment (PXE).

Supported OS remote boot media sources can include:

- CD/DVD-ROM installation media
- CD/DVD-ROM ISO installation image
- Automated installation image (requires PXE boot)

## ▼ Set Up the Local Boot Media Option

To set up local boot media, perform this step.

- **If your server does not contain a built-in storage device, attach the appropriate storage device to the front or rear panel of the server.**

For more information about how to attach local devices to the server, see *Sun Server X3-2 Installation Guide*, “Cabling the Server” on page 59.

## ▼ Set Up the Remote Boot Media Option

To install OS from media in a remote location, perform these steps.

1. **To redirect the boot media from a remote storage device, perform these steps; otherwise, go to the next step.**

- a. **Insert the boot media into the storage device, for example:**

- **For CD/DVD-ROM**, insert media into the built-in or external CD/DVD-ROM drive.
- **For CD/DVD-ROM ISO image**, ensure that ISO image(s) are readily available on a network shared location.

- b. **Establish a web-based client connection to the server Oracle ILOM SP and launch the Oracle ILOM Remote System Console application.**

For more details, see the Setup Requirements for web-based client connection in “Selecting the Console Display Option” on page 3.

- c. **In the Devices menu of the Oracle ILOM Remote System Console application, specify the location of the boot media, for example:**

- **For CD/DVD-ROM boot media**, select CD-ROM.
- **For CD/DVD-ROM ISO image boot media**, select CD-ROM Image.

2. **To perform the installation using PXE, perform these steps.**

- a. **Configure the network server to export the installation using PXE boot.**

- b. **Make the OS install media available for PXE boot.**

Make the OS install media available for PXE boot.

If you are using an automated OS installation image, you will need to create and provide the automated OS install image. For detailed instructions for automating the installation setup process, consult the Oracle VM documentation at: [http://docs.oracle.com/cd/E20065\\_01/index.htm](http://docs.oracle.com/cd/E20065_01/index.htm)

- c. To boot the installation media, select the PXE boot interface card as the temporary boot device.

For details, see the applicable PXE-based operating system installation procedure described in this guide.

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## Selecting the Installation Target Option

This section describes how to set up the installation target.

- [“Installation Target Options” on page 8](#)
- [“Set Up a Local Storage Drive \(HDD or SSD\) as the Installation Target” on page 9](#)
- [“Set Up a Fibre Channel Storage Area Network Device as the Installation Target” on page 9](#)

## Installation Target Options

With the exception of the embedded Oracle System Assistant flash drive (which is reserved for Oracle System Assistant), you can install the operating system on any of the storage drives installed in the server. These include hard disk drives (HDDs) and solid state drives (SSDs).

For servers equipped with Fibre Channel PCIe Host Bus Adapters (HBAs), you can use those drives as installation targets. You are not limited to storage drives internal to the server.

## Important: Internal, Embedded Oracle System Assistant USB Flash Drive Should Not Be Used as a Boot or Storage Drive

The server ships with an embedded Oracle System Assistant USB flash drive. This drive contains the Oracle System Assistant, device drivers, and firmware for Oracle ILOM, BIOS, and supported IO devices. During the installation of all supported operating systems, this USB flash drive is detected as a SCSI disk with a single partition that is read/write capable and is displayed as Oracle\_SSM in the list of drives. You should be careful not to overwrite this device when performing any of the following operations:

- Operating system installations
- Disk or partition formatting operations

- General disk, partition or filesystem maintenance

In the event that this USB flash drive is overwritten, the original contents can be restored. To restore the contents of the USB flash drive, obtain the Oracle System Assistant recovery and ISO update image and use it to perform a restore operation.

For instructions for downloading the Oracle System Assistant recovery and ISO update image and restoring the server's Oracle System Assistant flash drive, see the [Sun Server X3-2 Administration Guide](#), "Restore Oracle System Assistant" on page 83.

## ▼ Set Up a Local Storage Drive (HDD or SSD) as the Installation Target

- **Ensure that the HDD or SSD is properly installed and powered on.**

For more information about installing and powering on a HDD or SSD, see the [Sun Server X3-2 Service Manual](#), "Servicing Storage Drives (CRU)" on page 49.

## ▼ Set Up a Fibre Channel Storage Area Network Device as the Installation Target

1. **Ensure that the PCIe host bus adapter (HBA) is properly installed in the server.**

For more information about installing a PCIe HBA option, see the [Sun Server X3-2 Service Manual](#), "Servicing PCIe Cards (CRU)" on page 88.

2. **Ensure that the storage area network (SAN) is installed and configured to make the storage device visible to the server's host.**

For instructions, refer to the documentation supplied with the Fibre Channel HBA.

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# Oracle VM Installation Options

You can choose to install Oracle VM on a single server or on multiple servers. The scope of this document is for single server Oracle VM installations. The table below provides some information about these two installation options.

Option	Description
Multiple servers	You can use Oracle Enterprise Manager Ops Center to install an operating system on multiple server. For information, go to <a href="http://www.oracle.com/technetwork/em/ops-center/index.html">http://www.oracle.com/technetwork/em/ops-center/index.html</a>
Single server	<p>Installs an Oracle VM to a single server using one of the following methods:</p> <ul style="list-style-type: none"> <li>• Locally: Oracle VM installation is performed locally at the server using the Oracle System Assistant. This option is recommended if you have just completed the physical installation of the server in the rack.</li> <li>• Remotely: Oracle VM installation is performed from a remote location. Uses the Oracle ILOM Remote System Console application to access the Oracle System Assistant or to perform a manual Oracle VM installation.</li> </ul> <p><b>Note</b> - You should use of Oracle System Assistant for single server Oracle VM installations.</p>

## Related Information

- [“Oracle System Assistant Overview” on page 12](#)

## Single-Server Installation Methods

Select a method for providing the Oracle VM installation media. Use the following information to determine the local or remote Oracle VM installation that best serves your needs.

Media Delivery Method	Additional Requirements
<b>Local assisted OS installation</b> – Uses Oracle System Assistant. (Recommended)	A monitor, USB keyboard and mouse, a USB device, and Oracle VM distribution media. For more information, see <a href="#">“Assisted Oracle VM Installation” on page 11</a> .

Media Delivery Method	Additional Requirements
<b>Remote assisted OS installation</b> – Uses Oracle System Assistant. (Recommended)	Oracle ILOM Remote System Console application, a redirected CD/DVD drive or ISO image file, and Oracle VM distribution media. For more information, see <a href="#">“Assisted Oracle VM Installation” on page 11</a> .
<b>Local using a CD/DVD drive</b> – Uses a physical CD/DVD drive connected to the server.	A monitor, USB keyboard and mouse, a USB CD/DVD drive, and Oracle VM distribution media. For more information, see <a href="#">“Manual Oracle VM Installation” on page 11</a> .
<b>Remote using a CD/DVD drive or CD/DVD ISO image</b> – Uses a redirected physical CD/DVD drive on a remote system running the Oracle ILOM Remote System Console application.	A remote system with a browser, an attached physical CD/DVD drive, Oracle VM distribution media, and network access to the server’s management port. For more information, see <a href="#">“Manual Oracle VM Installation” on page 11</a> .

## Assisted Oracle VM Installation

This is the recommended method for installing Oracle VM on your server. This method involves using the Oracle System Assistant application. You deliver the Oracle VM installation media on either a local or remote CD/DVD drive, USB device, or CD/DVD image. The Oracle System Assistant guides the installation process and gathers and installs the needed drivers when necessary. Your server must support Oracle System Assistant, and it must be installed in the server.

## Manual Oracle VM Installation

With this method, you deliver the Oracle VM distribution media on either a local or remote CD/DVD drive, USB device, or CD/DVD image. You also need to install any necessary drivers. The drivers for your server are available on the server’s internal Oracle System Assistant USB flash drive (which must be installed for the drivers to be accessible) and from the My Oracle Support web site as either OS-specific and server-specific packages or as an ISO image file. To install Oracle VM, use the distribution media’s installation wizard.

# Oracle System Assistant Overview

Oracle System Assistant is a single-server system management tool for Oracle x86 Sun Fire and Sun Blade servers. It integrates Oracle's Single System Management products, the Oracle System Assistant application, and a selection of related software to provide a suite of tools that allow for the quick and convenient startup and maintenance of your server. The components of Oracle System Assistant include:

- Oracle System Assistant application
- Oracle Hardware Management Pack
- User interface access to startup and maintenance provisioning tasks (including Install OS task)
- Oracle System Assistant command-line environment
- Operating system drivers and tools
- Server-specific firmware
- Server-related documentation

Oracle System Assistant resides inside the server as an embedded USB storage device (flash drive) and is factory configured with a server-specific version of tools and drivers that is maintained as such through use of online updates.

## Related Information

- [“Oracle System Assistant Tasks” on page 12](#)
- [“Oracle System Assistant Install OS Task” on page 13](#)
- [“Obtaining Oracle System Assistant” on page 14](#)

# Oracle System Assistant Tasks

The Oracle System Assistant application combines a selected set of the most common and useful single-server management provisioning tasks.

The following tasks allow for quick and convenient server startup and ongoing server management:

- System overview and system inventory information
- Online update acquisition for all components (including tools, drivers, and firmware)
- System firmware (BIOS and Oracle ILOM) and host bus adapter firmware updates
- RAID, Oracle ILOM, and BIOS configuration
- Assisted OS installation
- Network configuration

- Disable feature and embedded media integrity check
- Multilingual keyboard
- Oracle System Assistant shell terminal window allowing use of the runtime environment
- Oracle Hardware Management Pack access (using Oracle System Assistant shell)
- Oracle System Assistant recovery

### Related Information

- [Sun Server X3-2 Administration Guide, “Setting Up the Server Using Oracle System Assistant” on page 35](#)

## Oracle System Assistant Install OS Task

The Oracle System Assistant application’s Install OS task provides a guided installation of a supported OS. You supply the OS installation media, and Oracle System Assistant guides you through the installation process. It then fetches the appropriate drivers based on your server hardware configuration. The Install OS task is not available for all server supported operating systems.

If you want to use Oracle System Assistant to update the OS drivers and other firmware components (such as BIOS, Oracle ILOM, HBAs, and expanders, if applicable), you should perform the updates before you install the OS.

You can access Oracle System Assistant locally, using a local console connection, or remotely, using the Oracle ILOM Remote System Console application.

If you just completed the installation of the server, then using Oracle System Assistant locally (while physically present at the server) can be a fast and efficient method of starting up the server. Once the server is operational, you can conveniently access Oracle System Assistant remotely while still retaining full-featured functionality.

### Related Information

- [“Installing Oracle VM on a Single System Using Oracle System Assistant” on page 20](#)

# Obtaining Oracle System Assistant

Since your server supports Oracle System Assistant, the Oracle System Assistant USB flash drive might be already installed in your server. If it is installed, you can update to the latest software release using the Oracle System Assistant Get Updates task. If Oracle System Assistant is installed in your server, but it has been corrupted or overwritten, then download the recovery ISO image from the My Oracle Support website. For download instructions, see [“Getting Server Firmware and Software” on page 33](#).

## Related Information

- [Sun Server X3-2 Administration Guide, “Setting Up the Server Using Oracle System Assistant” on page 35](#)

# Preparing to Install Oracle VM

These topics describe how to prepare the server for installing Oracle VM.

Description	Links
Verify and set server BIOS settings to factory defaults.	<a href="#">“Verify the BIOS Factory Defaults” on page 15</a>
Configure RAID on the server.	<a href="#">“Configuring RAID” on page 17</a>

## ▼ Verify the BIOS Factory Defaults

**Note** – If the server is newly installed and this is the first time that an operating system has been installed, then BIOS is probably configured to its default settings and you do not have to perform this task.

In the BIOS Setup Utility, you can set optimal defaults, as well as view and edit BIOS settings as needed. Any changes you make in the BIOS Setup Utility (through F2) are permanent until the next time you change them.

In addition to using F2 to view or edit the system’s BIOS settings, you can use F8 during the BIOS start-up to specify a temporary boot device. If you use F8 to set a temporary boot device, this change is only in effect for the current system boot. The permanent boot device specified through F2 will be in effect after booting from the temporary boot device.

Ensure that the following requirements are met:

- The server is equipped with a hard disk drive (HDD) or solid state drive (SDD).
- The HDD or SDD is properly installed in the server. For instructions, see the [Sun Server X3-2 Service Manual](#), “Servicing Storage Drives (CRU)” on page 49.
- A console connection is established to the server. For details, see [“Selecting the Console Display Option” on page 3](#).

## 1. Reset or power on the server.

For example:

- **From the local server**, press the Power button (approximately 1 second) on the front panel of the server to power off the server, then press the Power button again to power on the server.
- **From the Oracle ILOM web interface**, select Host Management > Power Control, then select Reset from the Select Action list box.
- **From the Oracle ILOM CLI**, type: **reset /System**

The BIOS screen appears.



## 2. When prompted in the BIOS screen, press F2 to access the BIOS Setup Utility.

After a few moments, the BIOS Setup Utility appears.

## 3. To ensure that the factory defaults are set, do the following:

### a. Press F9 to automatically load the optimal factory default settings.

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

### b. In the message, highlight OK then press Enter.

The BIOS Setup Utility screen appears with the cursor highlighting the first value in the system time field.

## 4. In the BIOS Setup Utility, do the following to edit the values associated with the system time or date.

### a. Highlight the values you want to change.

Use up or down arrow keys to change between the system time and date selection.

### b. To change the values in the highlighted fields use these keys:

- PLUS (+) to increment the current value shown
- MINUS (-) to decrement the current value shown

- ENTER to move the cursor to the next value field
- 5. **To access the boot settings, select the `Boot` menu.**

The Boot Settings menu appears.
- 6. **In the Boot Settings menu, use the down arrow key to select `Boot Device Priority`, then press Enter.**

The Boot Device Priority menu appears listing the order of the known bootable devices. The first device in the list has the highest boot priority.
- 7. **In the Boot Device Priority menu, do the following to edit the first boot device entry in the list:**
  - a. **Use the up and down arrow keys to select the first entry in the list, then press Enter.**
  - b. **In the Options menu, use the up and down arrow keys to select the default permanent boot device, then press Enter.**

---

**Note** – You can change the boot order for other devices in the list by repeating Steps 7a and 7b for each device entry you want to change.

---

The device strings listed on the Boot Device Priority list and Options menu are in the format of: *device type*, *slot indicator*, and *product ID string*

- 8. **To save changes and exit the BIOS Setup Utility, press F10.**

Alternatively, you can save the changes and exit the BIOS Setup Utility by selecting `Save` and `Reset` on the `Saved Exit` menu. A message appears prompting you to save changes and exit setup. In the message dialog, select `OK`, then press Enter.

---

**Note** – When using the Oracle ILOM Remote System Console, F10 is trapped by the local OS. You must use the F10 option listed in the Keyboard drop-down menu that is available at the top of the Remote System Console application.

---

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## Configuring RAID

If you want to use RAID, you must configure RAID on your server before you install Oracle VM. For instructions for configuring RAID, refer to the [Sun Server X3-2 Installation Guide, “Configuring Server Drives for OS Installation”](#) on page 91.

## **Related Information**

- *Sun Server X3-2 Administration Guide*, “Configuring RAID” on page 101

# Installing Oracle VM

---

This section provides instructions for installing Oracle VM onto the server.

Description	Links
Pre-installation requirements.	<a href="#">“Before You Begin” on page 19</a>
Using Oracle System Assistant to install Oracle VM.	<a href="#">“Installing Oracle VM on a Single System Using Oracle System Assistant” on page 20</a>
Using media to install the Oracle VM software on a single server.	<a href="#">“Installing Oracle VM on a Single System Using Media” on page 24</a>
Performing post installation tasks.	<a href="#">“Post Installation Tasks for Oracle VM” on page 29</a>

---

## Before You Begin

Ensure that the following requirements are met:

- If you want to configure RAID (Redundant Array of Independent Disks) on the server’s storage drives, you must do so before you install Oracle VM. For instructions for configuring RAID, see [Sun Server X3-2 Installation Guide, “Configuring Server Drives for OS Installation” on page 91](#).

---

**Note** – If the server is equipped with the Sun Storage 6 Gb SAS PCIe RAID, Internal HBA (SGX-SAS6-R-INT-Z), you must create a RAID and a bootable volume before installing Oracle VM; otherwise, the HBA will not be able to identify the server’s storage drives.

---

- The console display option should have been selected and set up prior to performing the installation. For more information about this option and setup instructions, see [“Selecting the Console Display Option” on page 3](#).

- The boot media option should have been selected and set up prior to performing the installation. For more information about this option and setup instructions, see [“Selecting the Boot Media Option” on page 6](#).
- The installation target option should have been selected and set up prior to performing the installation. For more information about this option and setup instructions, see [“Selecting the Installation Target Option” on page 8](#).
- Verify that the BIOS settings are set to the defaults. For instructions on how to verify and, if necessary, set the BIOS settings, see [“Verify the BIOS Factory Defaults” on page 15](#).
- For local installation, have the Oracle VM installation media available to insert into the attached physical CD/DVD-ROM drive when prompted.
- For remote installation, insert the Oracle VM installation media into the Oracle ILOM Remote System Console system’s CD/DVD-ROM drive. Ensure that you have selected CD-ROM from the Oracle ILOM Remote System Console system’s Devices menu.
- If you are using a Oracle VM image, ensure that the ISO image is accessible from the Oracle ILOM Remote System Console system. Ensure that you have selected CD-ROM Image from the Oracle ILOM Remote System Console system’s Devices menu.
- Ensure that two systems with static IP addresses have been set up.
  - One system to install Oracle VM Server.
  - One system for Oracle VM Manager with either Oracle Linux (release 5.5, 64-bit, or a subsequent release) or Red Hat Enterprise Linux (release 6, 64-bit or a subsequent release)
- Gather the Oracle VM documentation so that you can use it in conjunction with the instructions provided in this section. Oracle VM documentation is available at: [http://docs.oracle.com/cd/E20065\\_01/index.htm](http://docs.oracle.com/cd/E20065_01/index.htm)

---

## Installing Oracle VM on a Single System Using Oracle System Assistant

The Oracle System Assistant application’s Install OS task is the recommended method for installing Oracle VM on the server.

- [“Install Oracle VM Using Oracle System Assistant” on page 21](#)

## ▼ Install Oracle VM Using Oracle System Assistant

Before you begin this procedure, do the following:

- Perform the steps in [“Preparing to Install Oracle VM”](#) on page 15.
- If you want to configure the boot drive (that is, the storage drive onto which you are installing Oracle VM) for RAID, you must do so before you install Oracle VM. For instructions on how to configure RAID on your server, see the [Sun Server X3-2 Installation Guide](#), [“Configuring Server Drives for OS Installation”](#) on page 91.

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

- **For Distribution CD/DVD.** Insert the Oracle VM media (CD labeled number 1 or the single DVD) into the local or external CD/DVD-ROM drive.
- **For ISO image.** Ensure that the ISO images are available and that the Oracle ILOM Remote System Console application is aware of the first ISO image location.

For additional information about how to set up the installation media, see [“Selecting the Boot Media Option”](#) on page 6.

### 2. Launch Oracle System Assistant one of two ways:

- **From the Oracle ILOM web interface,** click Summary > Launch Oracle System Assistant.

The screenshot displays the Oracle Integrated Lights Out Manager (ILOM) web interface. The top header shows "ORACLE Integrated Lights Out Manager" and the user "root" with role "auro" and session ID "SP-H". The left sidebar contains a navigation menu with options like System Information, Summary, Processors, Memory, Power, Cooling, Storage, Networking, PCI Devices, Firmware, Open Problems (0), Remote Control, Host Management, System Management, Power Management, and ILOM Administration. The main content area is titled "Summary" and includes a description: "View system summary information. You may also change power state and view system status and fault information." Below this, there are three main sections: "General Information", "Actions", and "Status".

General Information	
Model	SUN FIRE X4170 M3
Serial Number	012345678
System Type	Rack Mount
System Identifier	OSA Team Test Nashua
System Firmware Version	ILOM: 3.1.0.0 BIOS: 17010608
Primary Operating System	-
Host Primary MAC Address	-
ILOM Address	10.153.55.202
ILOM MAC Address	00:21:29:D5:CD:CE

Actions	
Power State	<input checked="" type="checkbox"/> ON <input type="button" value="Turn Off"/>
Locator Indicator	<input type="checkbox"/> OFF <input type="button" value="Turn On"/>
Oracle System Assistant Version: 1.0.0.0	<input type="button" value="Launch"/>
System Firmware Update	<input type="button" value="Update"/>
Remote Console	<input type="button" value="Launch"/>

Status			
Overall Status: <input checked="" type="checkbox"/> OK		Total Problem Count: 0	
Subsystem	Status	Details	Inventory
Processors	<input checked="" type="checkbox"/> OK	Processor Architecture: x86 64-bit Processor Summary: 2 Intel Xeon Processor E5 Series	Processors (Installed / Maximum):
Memory	<input checked="" type="checkbox"/> OK	Installed RAM Size: 16 GB	DIMMs (Installed / Maximum):
Power	<input checked="" type="checkbox"/> OK	Permitted Power Consumption: 590 watts	PSUs (Installed / Maximum):

- Reset or power on the server.

For example:

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

- **From the Oracle ILOM web interface**, click Host Management > Power Control and select Reset from the Select Action list box.
- **From the Oracle ILOM CLI**, type: **reset /System**  
The BIOS screen appears.



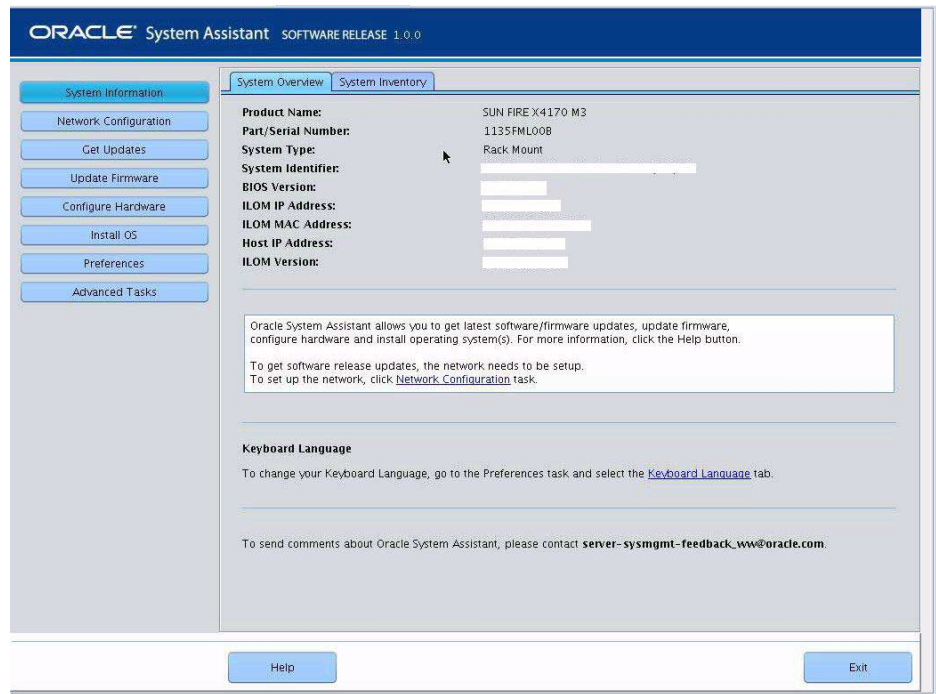
---

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

---

### 3. Press the F9 key.

The Oracle System Assistant System Overview screen appears.



4. To update the latest software release package, click the **Get Updates** button in Oracle System Assistant.

This action ensures that the application has the latest software release package installed before you begin the OS installation.

---

**Note** – Server web access is required to update Oracle System Assistant.

---

5. To update the server firmware, click the **Update Firmware** button.

This action ensures that the server has the latest firmware and BIOS before you begin the OS installation.

6. To install Oracle VM, click the **Install OS** button.

The Install Operating System screen appears.

7. From the **Supported OS** drop-down list, select your OS.

8. In the **Current BIOS mode** portion of the screen, select **Legacy BIOS**.

Oracle VM only supports Legacy BIOS; therefore, do not select UEFI.

9. **In the Select your install media location section of the screen, select the location of the installation media.**

This is the location of the OS distribution media.

---

**Note** – Oracle System Assistant does not support Preboot eXecution Environment (PXE) installs.

---

10. **In the Select boot disk portion of the screen, select the device to which Oracle VM is to be installed.**

11. **Click View Installation Options.**

The Installation Options dialog appears.

12. **In the Installation Options dialog, deselect any items that you do not want to install.**

---

**Note** – The Oracle VM and Drivers options are mandatory and cannot be deselected.

---

13. **Click the Install OS button at the bottom of the Install OS screen.**

14. **To confirm your selection of boot device, click Yes.**

To change boot devices, click No, and select another device.

15. **Follow the prompts until the installation is finished.**

The server boots.

---

## Installing Oracle VM on a Single System Using Media

This section provides information about installing Oracle VM 3.0 , 3.1, or 3.2 for x86 (64-bit) software.

- [“Installing Oracle VM Using Local or Remote Media” on page 25](#)
- [“Post Installation Tasks for Oracle VM” on page 29](#)

# Installing Oracle VM Using Local or Remote Media

The following procedure describes the steps for installing Oracle VM. The procedure assumes that you are booting the Oracle VM installation software from one of the following sources:

- Oracle VM 3.0 , 3.1, or 3.2 CD or DVD media set (internal or external CD or DVD)
- Oracle VM 3.0 , 3.1, or 3.2 ISO software image (network repository)

---

**Note –** The Oracle VM ISO image can be used for remote installation or for creating an installation CD or DVD.

---

Refer to the following procedure to install Oracle VM:

- [“Install Oracle VM Server Using Local or Remote Media” on page 25](#)

## ▼ Install Oracle VM Server Using Local or Remote Media

### 1. Ensure that the Oracle VM Server install media is available to boot.

- **For Distribution CD/DVD.** Insert the Oracle VM Server media boot disk into the local or remote CD/DVD-ROM drive.
- **For ISO images.** Ensure that the ISO images are available and that the boot disc image (CD labeled number 1 or DVD) has been selected in the Oracle ILOM Remote System Console application (Devices menu > CD-ROM Image).

For additional information about how to set up the installation media, see [“Selecting the Boot Media Option” on page 6](#).

### 2. Reset or power on the server.

For example:

- **From the local server,** press the Power button (approximately 1 second) on the front panel of the server to power off the server, then press the Power button again to power on the server.
- **From the Oracle ILOM web interface,** select Host Management > Power Control and select Reset from the Select Action list box.
- **From the Oracle ILOM CLI,** type: **reset /System**  
The BIOS screen appears.



Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.  
BIOS Date: 05/11/2012 11:52:57 Ver: 18021000  
Press F2 to run Setup (CTRL+E on serial keyboard)  
Press F8 for BBS Popup (CTRL+P on serial keyboard)  
Press F12 for network boot (CTRL+N on serial keyboard)  
Press F9 to start Oracle System Assistant (CTRL+O on serial keyboard)

---

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

---

**3. In the BIOS screen, press F8 to specify a temporary boot device for the Oracle VM Server installation.**

The Please Select Boot Device menu appears.

**4. In the Please Select Boot Device menu, select either the external or virtual CD/DVD device as the boot device, then press Enter.**

The device strings listed in the Boot Device menu are in the following format: *device type, slot indicator, and product ID string*.

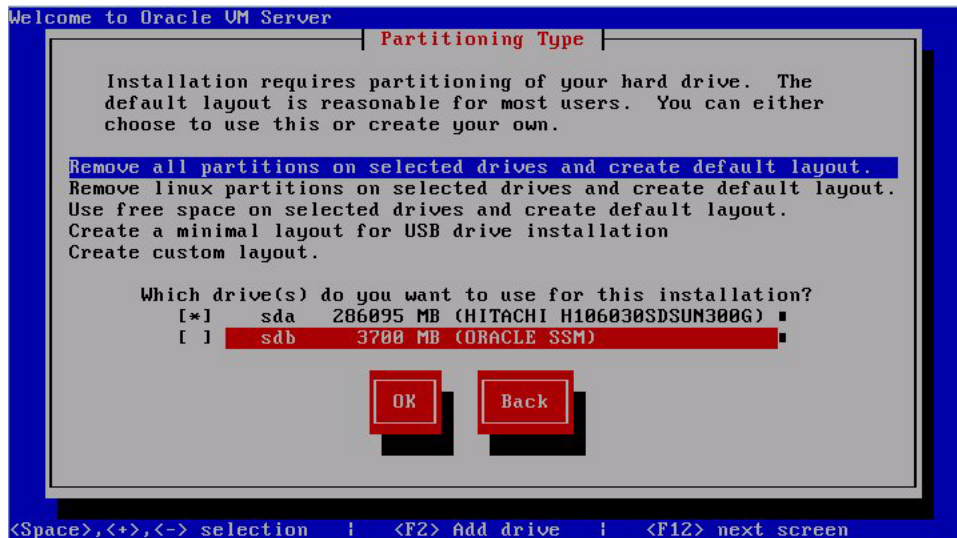
After a few seconds, the splash screen for the Oracle VM Server installation program appears.



**5. Follow the prompts to install Oracle VM Server and Oracle VM Agent.**

At this time the Oracle VM installation program installs the Oracle VM Server and the Oracle VM Agent.

The Partitioning Type screen appears.



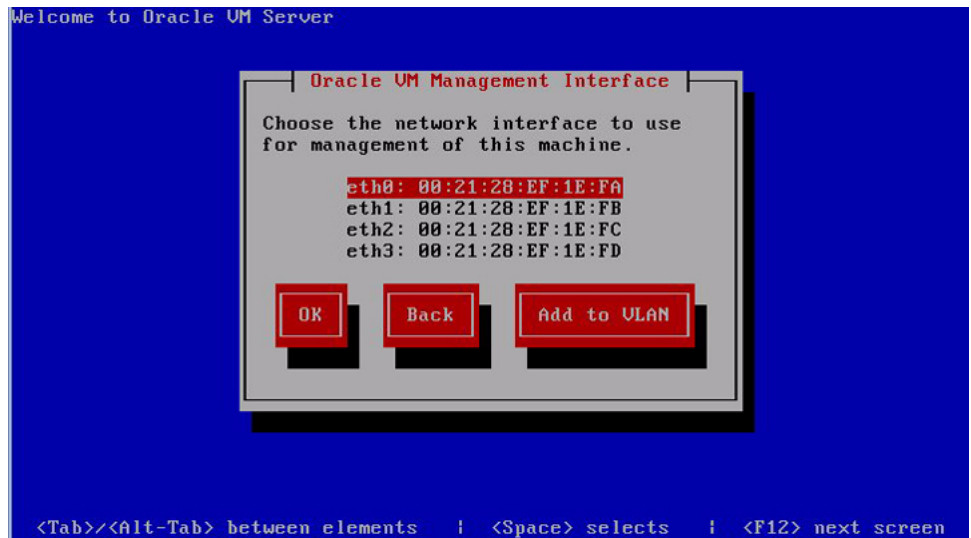
6. In the Partitioning Type screen, select the drive that you want to use for this installation, and click OK to continue.



**Caution** – In the Partitioning Type screen shown above, the Oracle SSM drive is the Oracle System Assistant USB flash drive. You might have to scroll to the bottom of the screen to see this drive. You should *never* select the Oracle SSM drive as the OS installation drive. Installing Oracle VM to the Oracle SSM drive will overwrite the Oracle System Assistant software and the Oracle System Assistant will have to be restored. For instructions for restoring Oracle System Assistant, see the [Sun Server X3-2 Administration Guide, “Restore Oracle System Assistant”](#) on page 83.

The Oracle VM Management Interface screen appears.

7. In the Oracle VM Management Interface screen, choose the network interface and click OK.



8. Log in to Oracle VM Server as the root user, with the password you set during the installation.

---

**Note** – The Oracle VM installation will require two passwords: one for the root VM Server account and one for the VM Agent. When necessary, refer to the *Oracle VM Server Installation Guide* at:

[http://docs.oracle.com/cd/E20065\\_01/index.htm](http://docs.oracle.com/cd/E20065_01/index.htm)

---

9. Do one of the following:

- If you do not have an Oracle VM Manager configured to manage the Oracle VM Server, you will need to install the Oracle VM Manager.

For instructions for installing the Oracle VM Manager, see the *Oracle VM Manager Installation Guide* at:

[http://docs.oracle.com/cd/E20065\\_01/index.htm](http://docs.oracle.com/cd/E20065_01/index.htm)

- If you have an Oracle VM Manager configured to manage the Oracle VM Server, proceed to “Post Installation Tasks for Oracle VM” on page 29.

---

## Post Installation Tasks for Oracle VM

After completing Oracle VM software installation, review the following post installation tasks and, if necessary, perform the tasks that are applicable to your system.

- “Update the Oracle VM Software” on page 30
- “Manage Oracle VM Resources” on page 30

## Update the Oracle VM Software

The Oracle VM installation media might not contain the most up-to-date versions of the software. If necessary, update the Oracle VM software with the latest updates. For download instructions, go to this web site:

<http://www.oracle.com/virtualization>

## Manage Oracle VM Resources

To learn how to configure, access, and manage Oracle VM resources, refer to the Oracle VM Documentation Library at:

[http://docs.oracle.com/cd/E20065\\_01/index.htm](http://docs.oracle.com/cd/E20065_01/index.htm)

# Configuring Network Interfaces

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This section contains information about:

- [“NIC Connectors” on page 31](#)

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## NIC Connectors

The network interface card connectors are labeled physically on the server as follows.

**TABLE:** NIC Connector Label

NIC Connector Label	Interface Type
net0	First interface (ixgbe 0)
net1	Second interface (ixgbe 1)
net2	Third interface (ixgbe 2)
net3	Fourth interface (ixgbe 3)

---

**Note** – NET 2 and NET 3 are nonfunctional in single-processor systems.

---



# Getting Server Firmware and Software

---

This section explains the options for accessing server firmware and software.

Description	Links
Learn about server firmware and software updates.	<a href="#">“Firmware and Software Updates” on page 33</a>
Learn about options for accessing firmware and software.	<a href="#">“Firmware and Software Access Options” on page 34</a>
Review available firmware and software releases.	<a href="#">“Software Releases” on page 35</a>
Learn how to get firmware and software using Oracle System Assistant, My Oracle Support, or Physical Media Request.	<a href="#">“Getting Firmware and Software From MOS or PMR” on page 36</a>
Install firmware and software updates using other methods.	<a href="#">“Installing Updates Using Other Methods” on page 40</a>

---

## Firmware and Software Updates

Firmware and software for your server are updated periodically. These updates are made available as a software release. The software releases are a set of downloadable files (patches) that includes all available firmware, hardware drivers, tools, and utilities for the server. All these files have been tested together and verified to work with your server.

You should update your server firmware and software as soon as possible after a new software release becomes available. Software releases often include bug fixes, and updating your server ensures that your server has the latest firmware and software.

The ReadMe document that is included with each patch in a software release contains information about the patch, such as what has changed or not changed from the prior software release, as well as bugs that are fixed within the current release.

The product notes that are part of the server documentation identify which server software release is the latest release supported on your server.

---

## Firmware and Software Access Options

Use one of the following options to obtain the latest set of firmware and software for your server:

- **Oracle System Assistant** – Oracle System Assistant is a new factory-installed option for Oracle servers that allows you to easily download and install server firmware and software.

For more information about using Oracle System Assistant, refer to the *Sun Server X3-2 Administration Guide*, “Setting Up Software and Firmware” on page 29.

- **My Oracle Support** – All system firmware and software are available from My Oracle Support at <http://support.oracle.com>.

For more information on what is available on the My Oracle Support web site, see “Software Releases” on page 35.

For instructions on how to download software releases from My Oracle Support, see “Download Firmware and Software Using My Oracle Support” on page 36.

- **Physical Media Request (PMR)** – You can request a DVD that contains any of the downloads (patches) available from My Oracle Support.

For information see, “Request Physical Media (Online)” on page 38.

- **Other Methods** – You can use Oracle Enterprise Manager Ops Center, Oracle Hardware Management Pack, or Oracle ILOM to update your server software and firmware.

For information, see “Installing Updates Using Other Methods” on page 40.

---

# Software Releases

Software releases on My Oracle Support are grouped by product family (such as Sun Server), then the product (the specific server or blade), and finally the software release version. A software release contains all the updated software and firmware for your server or blade as a set of downloadable files (patches), including firmware, drivers, tools, or utilities, all tested together to be compatible with your server.

Each patch is a zip file that contains a ReadMe file and a set of subdirectories containing firmware or software files. The ReadMe file contains details on the components that have changed since the prior software release and the bugs that have been fixed.

My Oracle Support provides the set of software releases for your server as described in the following table. You can obtain these software releases by downloading the files from My Oracle Support or by submitting to Oracle a physical media request (PMR). Alternatively, you can download the same firmware and software to your server using Oracle System Assistant.

Package Name	Description	When to Download This Package
X3-2 (X4170 M3) <i>SWversion</i> – Firmware Pack	All the system firmware, including Oracle ILOM, BIOS, and option card firmware.	You need the latest firmware.
X3-2 (X4170 M3) <i>SWversion</i> – OS Pack	An OS Pack is available for each supported operating system version. Each OS Pack includes a package of all tools, drivers, and utilities for that version of the OS. Software includes Oracle Hardware Management Pack and LSI MegaRAID software. For the Windows OS, this OS Pack also includes Intel Network Teaming and Install Pack.	You need to update OS-specific drivers, tools, or utilities.
X3-2 (X4170 M3) <i>SWversion</i> – All Packs	Includes the Firmware Pack, all OS Packs, and all documents. This pack does not include Oracle VTS or the Oracle System Assistant image.	You need to update a combination of system firmware and OS-specific software.

Package Name	Description	When to Download This Package
X3-2 (X4170 M3) <i>SWversion</i> – Diagnostics	Oracle VTS diagnostics image.	You need the Oracle VTS diagnostics image.
X3-2 (X1270 M3) <i>SWversion</i> – Oracle System Assistant Updater	Oracle System Assistant recovery and ISO update image.	You need to manually recover or update Oracle System Assistant.

## Getting Firmware and Software From MOS or PMR

You can use Oracle System Assistant to easily download and use the latest software release. For further information, see [“Setting Up the Server Using Oracle System Assistant” on page 35](#).

You can also obtain updated firmware and software by using My Oracle Support (MOS) or by submitting to Oracle a physical media request (PMR). For information, see:

- [“Download Firmware and Software Using My Oracle Support” on page 36](#)
- [“Requesting Physical Media” on page 37](#)

## ▼ Download Firmware and Software Using My Oracle Support

1. **Go to the following web site:** <http://support.oracle.com>.
2. **Sign in to My Oracle Support.**
3. **At the top of the page, click the Patches & Updates tab.**  
The Patch search pane appears at the right of the screen.
4. **Within the Search tab area, click Product or Family (Advanced Search).**  
The Search tab area appears with search fields.
5. **In the Product field, select the product from the drop-down list.**  
Alternatively, type a full or partial product name until a match appears, for example, Sun Server X3-2 (formerly Sun Fire X4170 M3).

**6. In the Release field, select a software release from the drop-down list.**

Expand the list to see all available software releases.

**7. Click Search.**

The Patch Advanced Search Results screen appears, listing the patches for the software release.

See [“Software Releases” on page 35](#) for a description of the available downloads.

**8. To select a patch for a software release, click the patch number next to the software release version**

You can use the shift key to select more than one patch).

A pop-up action panel appears. The pop-up panel contains several action options, including the ReadMe, Add to Plan, and Download options. For information about the Add to Plan option, click on the associated drop-down button and select “Why use a plan?”

**9. To review the ReadMe file for the patch, click ReadMe.**

**10. To download the patch for the software release, click Download.**

The File Download dialog box appears.

**11. In the File Download dialog box, click the patch zip file name.**

The patch for the software release downloads.

## Requesting Physical Media

If your processes do not allow downloads from Oracle web sites, you can receive the latest software release packages by submitting to Oracle a physical media request (PMR). The preferred method for submitting a PMR is through the My Oracle Support (MOS) web site.

The high-level tasks for submitting a physical media request are described in these sections:

- [“Gathering Information for the Physical Media Request” on page 38](#)
- [“Request Physical Media \(Online\)” on page 38](#)
- [“Request Physical Media \(By Phone\)” on page 40](#)

# Gathering Information for the Physical Media Request

You must have a warranty or support contract for your server in order to make a physical media request (PMR).

Before you make the PMR, do the following:

- **Obtain the product name, software release version, and patches required.** It will be easier to make the request if you know the latest software release version and the name of the patches for the software release that you are requesting.
  - *If you have access to My Oracle Support* – Follow the instructions in “[Download Firmware and Software Using My Oracle Support](#)” on page 36 to determine the latest software release version and view available software release packages (patches). After viewing the list of patches, you can navigate away from the Patch Advanced Search Results screen, if you do not want to continue with the download steps.
  - *If you do not have access to My Oracle Support* – Use the information in “[Software Releases](#)” on page 35 to determine which patches for the software release you want, and then request those patches for the latest software release version.
- **Have the shipping information ready.** You will need to provide a contact name, phone number, email address, company name, and shipping address as part of the request.

## ▼ Request Physical Media (Online)

Gather the information described in “[Gathering Information for the Physical Media Request](#)” on page 38 before making the request.

1. **Go to the My Oracle Support web site:** <http://support.oracle.com>.
2. **Sign in to My Oracle Support.**
3. **Click on the Contact Us link in the upper right corner of the page.**  
The Create Service Request: Problem screen appears.
4. **Describe your request as follows:**
  - a. **In the Problem Summary field, type PMR for latest software release for Sun Server X3-2.**
  - b. **From the Problem Type drop-down list, select Software & OS Media Requests.**
  - c. **In the Support Identifier field, type the Customer Support Identifier associated with your support contract.**

5. **Skip the Create Service Request: Solutions screen by clicking the Next button in the upper right corner of the screen twice.**

The Create Service Request: More Details screen appears.

6. **Provide more information about your request as follows:**

- a. **In the Additional Information section, answer the questions listed in the following table:**

Question	Your Answer
Is this a physical software media shipment request?	Yes
Which product line does the media request involve?	Sun Products
Are you requesting a required password for a patch download?	No
Are you requesting a patch on CD/DVD?	Yes
If requesting a patch on CD/DVD, please provide the patch number and OS/platform?	Enter the patch number for each download that you want for the software release.
List the product name and version requested for the physical media shipment?	<i>Product Name:</i> Sun Server X4-2 <i>Version:</i> Latest software release number
What is the OS/platform for the requested media?	If you are requesting OS-specific downloads, specify the OS here. If you are requesting system firmware only, enter Generic.
Are any languages required for this shipment?	No

- b. **Fill in the Ship-To contact information, which includes a contact name, phone number, email address, company name, and shipping address.**

7. **Click the Next button.**

The Create Service Request: Severity/Contact screen appears.

8. **Enter your contact phone number and preferred method of contact.**

9. **Click the Submit button.**

This completes the physical media request. It can take up to seven business days to receive the physical media.

## ▼ Request Physical Media (By Phone)

Gather the information described in “[Gathering Information for the Physical Media Request](#)” on page 38 before making the request.

1. **Call Oracle support, using the appropriate number from the Oracle Global Customer Support Contacts Directory at:**

<http://www.oracle.com/us/support/contact-068555.html>

2. **Tell Oracle support that you want to make a physical media request (PMR) for the Sun Server X3-2.**

- If you are able to find the specific software release package and patch number information from My Oracle Support, provide this information to the support representative.
- If you are unable to find the software release package information, request the latest software release package for the Sun Server X3-2.

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## Installing Updates Using Other Methods

In addition to using Oracle System Assistant and My Oracle Support, you can install updated firmware and software using one of the following methods:

- **Oracle Enterprise Manager Ops Center** – You can use Ops Center Enterprise Controller to automatically download the latest firmware from Oracle, or firmware can be loaded manually into the Enterprise Controller. In either case, Ops Center can install the firmware onto one or more servers, blades, or blade chassis.

For more information, go to:

<http://www.oracle.com/technetwork/oem/ops-center/index.html>.

- **Oracle Hardware Management Pack** – You can use the fwupdate CLI Tool within the Oracle Hardware Management Pack to update firmware within the system.

For more information, refer to the Oracle Hardware Management Pack Documentation Library at: <http://www.oracle.com/goto/OHMP/docs>.

- **Oracle ILOM** – You can use the Oracle ILOM web interface or command-line interface to update Oracle ILOM and BIOS firmware.

For more information, refer to the Oracle Integrated Lights Out Manager (ILOM) 3.1 Documentation Library at:

<http://www.oracle.com/pls/topic/lookup?ctx=ilom31>.

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