# Oracle® Server X5-2 Installation Guide for VMware ESXi

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Oracle Server X5-2 Installation Guide for VMware ESXi

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# Contents

# Using This Documentation

- **Overview** – This installation guide contains procedures for installing the VMware ESXi software, and initial software configuration procedures for bringing the Oracle Server X5-2 to a configurable and usable state.
- **Audience** – The guide is intended for technicians, system administrators, and authorized service providers.
- **Required knowledge** – Users should have experience installing virtual machine software.

## Product Documentation Library

Documentation and resources for this product and related products are available at http://www.oracle.com/goto/X5-2/docs.

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# About VMware ESXi Installations

Before you prepare your server for a VMware ESXi installation, review the topics in this section.

| Description | Links |
|---|---|
| Review the VMware ESXi installation steps. | "VMware ESXi Installation Task Map" on page 9 |
| Determine which VMware ESXi versions are supported on the Oracle Server X5-2. | "Supported VMware ESXi Software" on page 10 |
| Review VMware ESXi installation options. | "VMware ESXi Installation Options" on page 11 |

### Related Information

- "Installing VMware ESXi" on page 39

## VMware ESXi Installation Task Map

The following table describes the high-level steps for installing the VMware ESXi software.

| Step | Description | Links |
|---|---|---|
| 1. | Install your server hardware and configure the service processor. | ■ "Installing the Server Into a Rack" in *Oracle Server X5-2 Installation Guide*<br>■ "Cabling the Server and Applying Power" in *Oracle Server X5-2 Installation Guide*<br>■ "Connecting to Oracle ILOM" in *Oracle Server X5-2 Installation Guide* |
| 2. | Review the VMware ESXi versions supported on the server. | "Supported VMware ESXi Software" on page 10 |
| 3. | Choose an installation method. | "VMware ESXi Installation Options" on page 11 |
| 4. | Obtain the VMware ESXi installation media and documentation. The VMware documentation should be used in conjunction with the installation and post installation procedures in this guide. | ■ An ISO image of the VMware ESXi installation program is available as a download at: |

| Step | Description | Links |
|---|---|---|
| | | http://www.vmware.com/download<br>■ VMware ESXi documentation is available at:<br>http://pubs.vmware.com/vsphere-55/index.jsp |
| 5. | Review the server product notes. | *Oracle Server X5-2 Product Notes* at:<br>http://www.oracle.com/goto/X5-2/docs |
| 6. | Set up the console, boot media, installation target, and boot mode that you will use to perform the installation. | "Preparing to Install VMware ESXi" on page 13 |
| 7. | Install the VMware ESXi software. | "Installing VMware ESXi" on page 39 |
| 8. | Perform the post installation tasks, if applicable. | "Post-Installation Tasks for VMware ESXi" on page 43 |

# Supported VMware ESXi Software

The server supports the following VMware ESXi software.

| VMware Software | Edition |
|---|---|
| VMware ESXi 5.5 Update 2 | 5.5 U2 |
| VMware ESXi 6.0 | 6.0 |

Additionally, you can install any other supported operating system or virtual machine software on your server. For an updated list of operating systems supported by the server, refer to the latest version of the *Oracle Server X5-2 Product Notes* at http://www.oracle.com/goto/X5-2/docs.

The VMware ESXi Hardware Compatibility List (HCL) identifies the latest operating system version supported on Oracle hardware. To find the latest VMware ESXi version supported for the Oracle Server X5-2, go to the following site and search using your server model number:

http://www.vmware.com/resources/compatibility/search.php

## Related Information

- "Installing VMware ESXi" on page 39

# VMware ESXi Installation Options

This document describes how to install VMware ESXi on a single server locally or remotely. However, there are other options for installing the software, which are detailed in the VMware documentation at `http://pubs.vmware.com/vsphere-55/index.jsp`. For more information about single-server installation methods, see the following section:


- "Single-Server Installation Methods" on page 11


## Single-Server Installation Methods

Select a method for installing VMware ESXi on the server. Use the following table to determine the installation method that best serves your needs.

| Media Delivery Method | Additional Requirements |
|---|---|
| **Local** – Uses the (optional) DVD drive on the server front panel, or a CD/DVD drive connected to one of the server USB ports. The VMware ESXi installer ISO image must be available on a CD/DVD.<br><br>This option is recommended if you have just completed the physical installation of the server in the rack. | A monitor, USB keyboard, USB mouse, CD/DVD drive, and the VMware ESXi installer ISO image on a CD/DVD. For local installations, you deliver the installation media using a CD/DVD drive attached directly to the server. |
| **Remote** – Uses a remote system running the Oracle ILOM Remote System Console Plus application. The VMware ESXi installer ISO image must be downloaded to the remote system or available on a CD/DVD in the remote system CD/DVD drive.<br><br>Alternatively, you can redirect the ISO image from another location on the network. For more information, refer to the Oracle ILOM Remote Device section in the *Oracle ILOM Administrator's Guide for Configuration and Maintenance*, or to the More Details link in the Oracle ILOM Remote Control → Host Storage Device web interface page. | A remote system with a web browser, access to the VMware ESXi installer ISO image, and network access to the server management port (NET MGT). For remote installations, you deliver the installation media using the Oracle ILOM Remote System Console Plus device redirection features. |
| **PXE Image** – Uses the server Preboot eXecution Environment (PXE) to launch the ESXi installer from a network interface. | A PXE server with the ESXi installation image.<br>**Note -** PXE booting the ESXi installation image is not included in this scope of this document. For instructions on PXE booting the ESXi installer, refer to the VMware vSphere ESXi and vCenter Server documentation. |

# Preparing to Install VMware ESXi

This section describes how to prepare your environment for a VMware ESXi installation.

| Description | Links |
|---|---|
| Set the BIOS to optimal defaults, and set the boot mode. | "Preparing the Boot Environment" on page 13 |
| Access the host console locally or remotely. | "Accessing the Host Console" on page 18 |
| Prepare the boot media. | "Preparing the Boot Media" on page 19 |
| Prepare the installation target. | "Preparing the Installation Target" on page 21 |
| Configure the Oracle Storage 12 Gb/s SAS PCIe RAID HBA Internal cache settings to support the ESXi 5.5 or 6.0 installation. | "Configuring the HBA Cache Settings to Support ESXi Installation" on page 23 |
| Gather required information for the installation. | "Gathering the Required Information" on page 36 |

## Preparing the Boot Environment

Before you install VMware ESXi, ensure that the BIOS settings are configured to support the type of installation you plan to perform. You can change BIOS settings, such as the boot order and boot mode in the BIOS Setup Utility.

The following topics provide specific instructions on how to configure BIOS to support the installation:

- "Verify the BIOS Optimal Defaults" on page 14
- "Set the Boot Mode" on page 15

For more information about changing boot properties, refer to the *Oracle X5 Series Servers Administration Guide* at `http://www.oracle.com/goto/x86AdminDiag/docs`.

# ▼ Verify the BIOS Optimal 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. By setting optimal defaults, you ensure that the server is operating efficiently with a known-good configuration. You can review the optimal defaults in the "BIOS Setup Utility Menu Options" in *Oracle Server X5-2 Service Manual*.

Any changes you make in the BIOS Setup Utility (using the F2 key) are permanent until the next time you change them.

In addition to using the F2 key to view or edit the BIOS settings, you can use the F8 key during the boot process 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.

Before you begin, 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, refer to "Servicing Storage Drives (CRU)" in *Oracle Server X5-2 Service Manual*.

1. **Access the host console.**

   For instructions, see "Accessing the Host Console" on page 18.

2. **Power on or reset the server.**

   For example, to reset the server, do one of the following:

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

The server begins the boot process, and 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.

3. **When prompted in the BIOS screen, press the F2 key to access the BIOS Setup Utility.**

   After a few moments, the BIOS Setup Utility appears.

4. **Press the F9 key to automatically load the optimal default settings.**

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

5. **In the message, highlight `OK`, and then press Enter.**

6. **Press the F10 key to save your changes and exit the BIOS Setup Utility.**

   Alternatively, you can select `Save and Reset` from the Exit menu.

# ▼ Set the Boot Mode

The server is equipped with Unified Extensible Firmware Interface (UEFI), which supports both Legacy BIOS and UEFI boot modes. Legacy BIOS boot mode is enabled by default.

VMware ESXi supports both Legacy BIOS and UEFI boot modes. However, you must run the software in the boot mode in which it was installed. That is, after you have installed VMWare

ESXi, if you decide you want to switch boot modes, you must reinstall the software. Before you install VMware ESXi, determine which boot mode is appropriate for your environment.

1. **Access the host console.**

   For instructions, see "Accessing the Host Console" on page 18.

2. **Power on or reset the server.**

   For example, to reset the server, do one of the following:

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

   The server begins the boot process, and the BIOS screen appears.

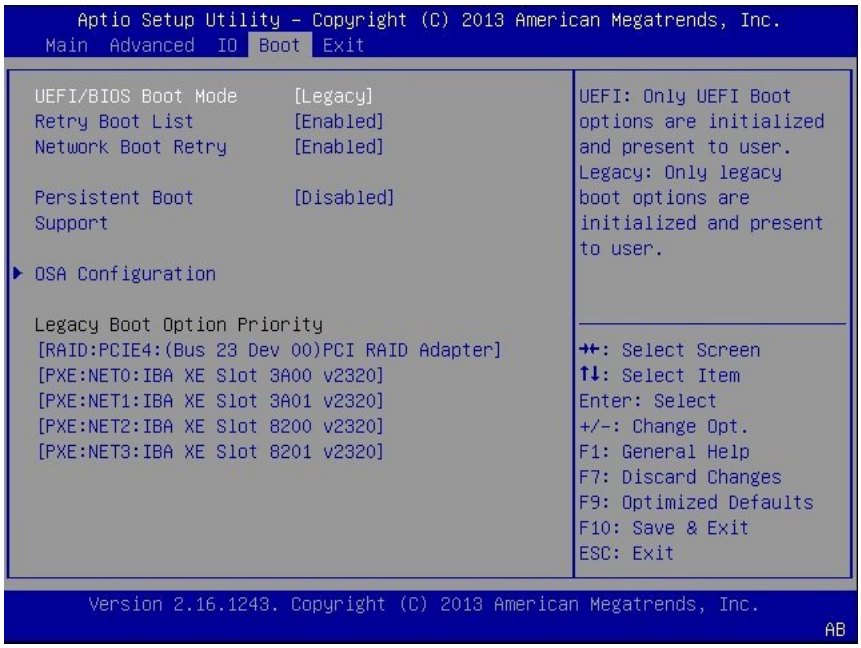

**Note -** The next events occur very quickly; therefore, focused attention is needed for the following steps. Watch carefully for these messages as they appear on the screen for a brief time.

3. **When prompted in the BIOS screen, press the F2 key to access the BIOS Setup Utility.**

   After a few moments, the BIOS Setup Utility appears.

4. **In the BIOS Setup Utility, use the arrow keys to navigate to the Boot menu.**

The Boot menu appears.




**Note -** The options in the boot order list differ depending on the storage drive configuration and whether you have enabled the Persistent Boot Support feature. For more information about Persistent Boot Support, refer to the *Oracle X5 Series Servers Administration Guide* at `http://www.oracle.com/goto/x86AdminDiag/docs`.

5. **Use the down arrow key to select the `UEFI/BIOS Boot Mode` field, and then press Enter.**
6. **Select your preferred boot mode, and then press Enter.**
7. **Press the F10 key to save your changes and exit the BIOS Setup Utility.**

# Accessing the Host Console

To view the VMware ESXi installation wizard, you must have access to the host console, either locally or remotely. This section provides instructions for viewing graphical output from the host.



## ▼ Access the Host Console Through a Local Graphics Monitor

1. **Connect a VGA monitor to the VGA port on the server.**
2. **Connect a USB keyboard and mouse to the USB connectors on the server.**

### Related Information

- "Cabling the Server and Applying Power" in *Oracle Server X5-2 Installation Guide*

## ▼ Access the Host Console Through the Oracle ILOM Remote System Console Plus

The following procedure describes how to access the host console from a remote system through the Oracle ILOM remote console application. To log in to Oracle ILOM remotely, you must know the IP address of the server service processor (SP). For instructions, refer to "Log In to Oracle ILOM Using a Remote Ethernet Connection" in *Oracle Server X5-2 Installation Guide*.

1. **On a remote system with network access to the server network management port (NET MGT), open a web browser.**
2. **In the address bar, type the IP address of the server SP, and then press Enter.**

3. **Log in to the Oracle ILOM web interface.**

   The default Oracle ILOM user name is `root`, and the default password is `changeme`.

   The Oracle ILOM Summary Information page appears.

4. **In the Actions panel, click the Remote Console Launch button.**

   The Oracle ILOM Remote System Console Plus screen appears.

### Related Information

- Oracle ILOM 3.2 Documentation Library at: `http://www.oracle.com/goto/ILOM/docs`

# Preparing the Boot Media

The VMware ESXi installer image must be accessible to the server, either locally or remotely. The following sections describe how to prepare the VMware ESXi installer boot media:


- "Set Up the Boot Media for a Local Installation" on page 19
- "Set Up the Boot Media for a Remote Installation" on page 20


## ▼ Set Up the Boot Media for a Local Installation

1. **On a system with a CD/DVD burner, download the VMware ESXi 5.5 or 6.0 installer ISO image from the VMware web site at `https://my.vmware.com/web/vmware/downloads`.**

2. **Burn the ISO image to a CD or DVD.**

3. **Insert the VMware ESXi 5.5 or 6.0 installation CD or DVD into a DVD drive attached to the server:**

   - **If the server is equipped with an optional DVD drive, insert the installation media into the DVD drive on the server front panel.**

   - **If the server is not equipped with a DVD drive, attach a DVD drive to one of the server USB ports, and then insert the installation media into the drive.**

For information about how to attach local devices to the server, refer to "Cabling the Server and Applying Power" in *Oracle Server X5-2 Installation Guide*.

# ▼ Set Up the Boot Media for a Remote Installation

1. **On a remote system with network access to the server network management port (NET MGT), download the VMware ESXi installer ISO image from the VMware web site at `https://my.vmware.com/web/vmware/downloads`.**

   Alternatively, you can do either of the following:

   - **Burn the installation image to a CD or DVD, and then insert the installation media into a DVD drive attached to the remote system.**
   - **Download the installation image to another location on the network, and then redirect the image to the server service processor using NFS or Samba protocol.**

     For instructions on redirecting the ISO image from another location on the network, refer to the Oracle ILOM Remote Device section in the *Oracle ILOM Administrator's Guide for Configuration and Maintenance*, or to the More Details link in the Oracle ILOM Remote Control → Host Storage Device web interface page.

2. **Launch the Oracle ILOM Remote System Console Plus on the remote system.**

   For instructions, see "Access the Host Console Through the Oracle ILOM Remote System Console Plus" on page 18.

3. **In the KVMS menu of the Oracle ILOM Remote System Console Plus application, select Storage.**

   The Storage Devices dialog box appears.

4. **In the Storage Devices dialog box, perform the following steps:**

   a. **Deselect SSL Enabled, and then click Add.**

      The Add Storage Devices dialog box appears.

   b. **Browse to the ISO image, select it, and then click Select.**

      The image file appears in the Storage Devices dialog box.

   c. **Select the ISO image, and then click Connect.**

The ISO image is mounted to the remote console and can be used to perform the OS installation.

# Preparing the Installation Target

Before you boot the VMware ESXi installer, select and prepare an installation target:



## Installation Target Options

With the exception of the embedded Oracle System Assistant USB flash drive (which is reserved for Oracle System Assistant) and the optional NVM Express (NVMe) drives on the server front panel, you can install the software on any of the storage drives installed in the server. Hard disk drives (HDDs), solid state drives (SSDs), RAID volumes, and iSCSI software disks are valid installation targets for VMware ESXi 5.5 and 6.0. However, installing to an iSCSI target is not described in this guide. For more information about installing to an iSCSI target, refer to the VMware ESXi documentation at `http://pubs.vmware.com/vsphere-55/index.jsp`.

For servers equipped with a Fibre Channel PCIe host bus adapter (HBA), you can choose to install the operating system to an external Fibre Channel storage device.

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**Note -** NVMe drives are not supported on servers running the VMware ESXi software. If your server is equipped with NVMe drives, you have to install either the Oracle Solaris or Oracle Linux operating system to use them.

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### 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 file system 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 Oracle System Assistant flash drive, refer to the *Oracle X5 Series Servers Administration Guide* at `http://www.oracle.com/goto/x86AdminDiag/docs`.

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

1. **Ensure that the target hard disk drive (HDD) or solid state drive (SSD) is properly installed and powered on.**
   For more information about installing and powering on a HDD or SSD, refer to "Servicing Storage Drives (CRU)" in *Oracle Server X5-2 Service Manual*.

2. **Ensure that the target drives are configured to suit your environment.**
   By default, each physical drive on the server is configured as a logical RAID 0 volume. To implement an alternative configuration, refer to the following resources:

   - "Configuring Storage Drives for Operating System Installation" in *Oracle Server X5-2 Installation Guide*
   - *Oracle X5 Series Servers Administration Guide* at `http://www.oracle.com/goto/x86AdminDiag/docs`

## 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, refer to "Servicing PCIe Cards (CRU)" in *Oracle Server X5-2 Service Manual*.

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

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

# Configuring the HBA Cache Settings to Support ESXi Installation

The default cache settings for the Oracle Storage 12 Gb/s SAS PCIe RAID HBA (host bus adapter) Internal cause the ESXi installation to fail. To enable the installation to complete successfully, you must change the cache settings as described in the following procedures:

- "Configure the HBA Cache Settings in Legacy BIOS Boot Mode" on page 23
- "Configure the HBA Cache Settings in UEFI Boot Mode" on page 28

## ▼ Configure the HBA Cache Settings in Legacy BIOS Boot Mode

1. **Access the host console.**

   For instructions, see "Accessing the Host Console" on page 18.

2. **Power on or reset the server.**

   For example, to reset the server, do one of the following:

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

The server begins the boot process, and the BIOS screen appears.


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**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.

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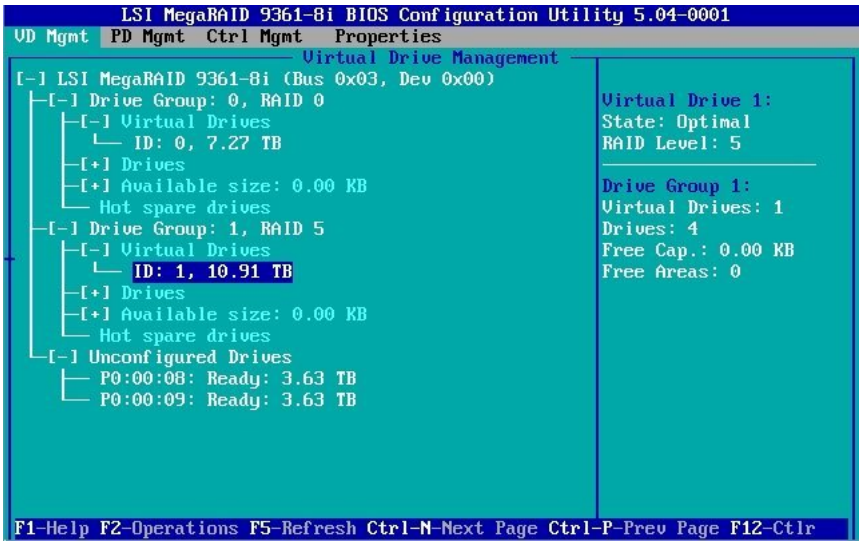
3. **When prompted in the BIOS screen, press Ctrl+R to enter the MegaRAID Configuration Utility.**

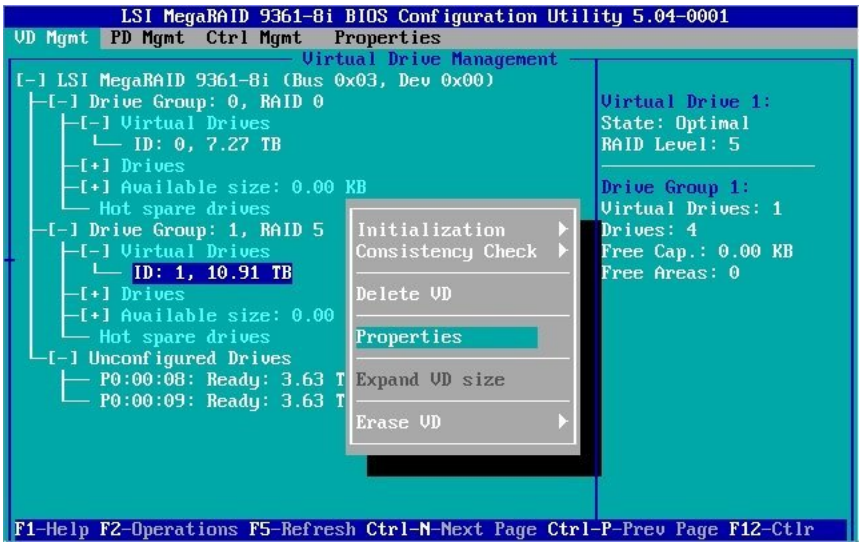
   The Virtual Drive Management screen appears.



4. **In the Virtual Drive Management screen, navigate to the ID field for the Drive Group that contains the software installation target.**

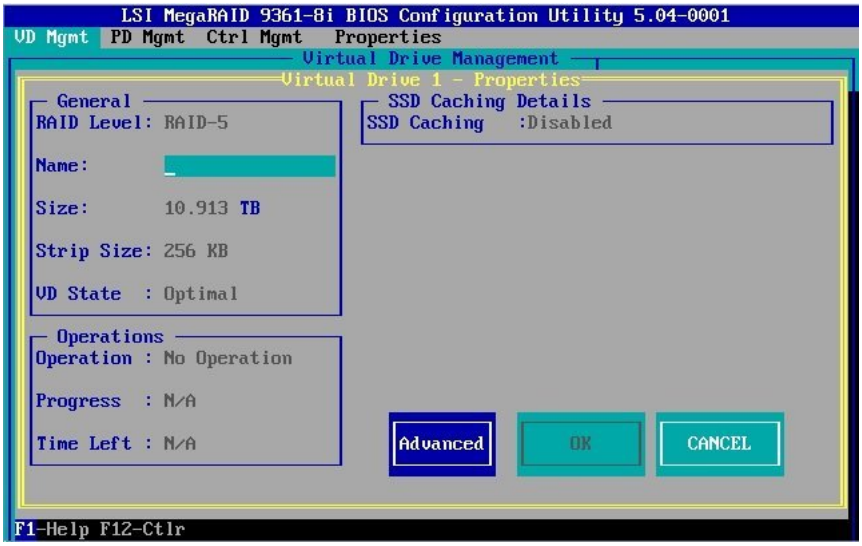
5. **Press the F2 key.**

   The Operations menu appears.



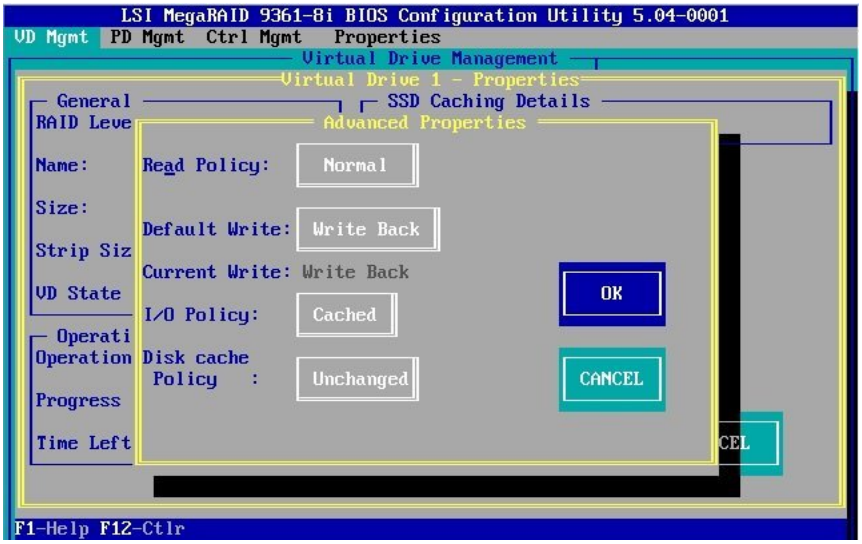

6. **In the Operations menu, navigate to the Properties option, and then press Enter.**

The Virtual Drive Properties screen appears.




7. **In the Virtual Drive Properties screen, select Advanced, and then press Enter.**

The Advanced Properties dialog box appears.




8. **In the Advanced Properties dialog box, perform the following steps:**

   a. **Set the Read Policy property to Normal.**

   b. **Set the I/O Policy property to Cached.**

   c. **Navigate to the OK button, and then press Enter to exit the Advanced Properties dialog box.**

      The Virtual Drive Properties screen reappears.

9. **Navigate to the OK button, and then press Enter to exit the Virtual Drive Properties screen.**

   The Virtual Drive Management screen reappears.

10. **Press Esc to save your changes and exit the MegaRAID Configuration Utility.**

    A message appears asking you to confirm that you want to exit.

11. **Navigate to the OK button, and then press Enter to confirm that you want to exit the utility.**

# Configure the HBA Cache Settings in UEFI Boot Mode

1. **Access the host console.**

   For instructions, see "Accessing the Host Console" on page 18.

2. **Power on or reset the server.**

   For example, to reset the server, do one of the following:

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

   The server begins the boot process, and the BIOS screen appears.

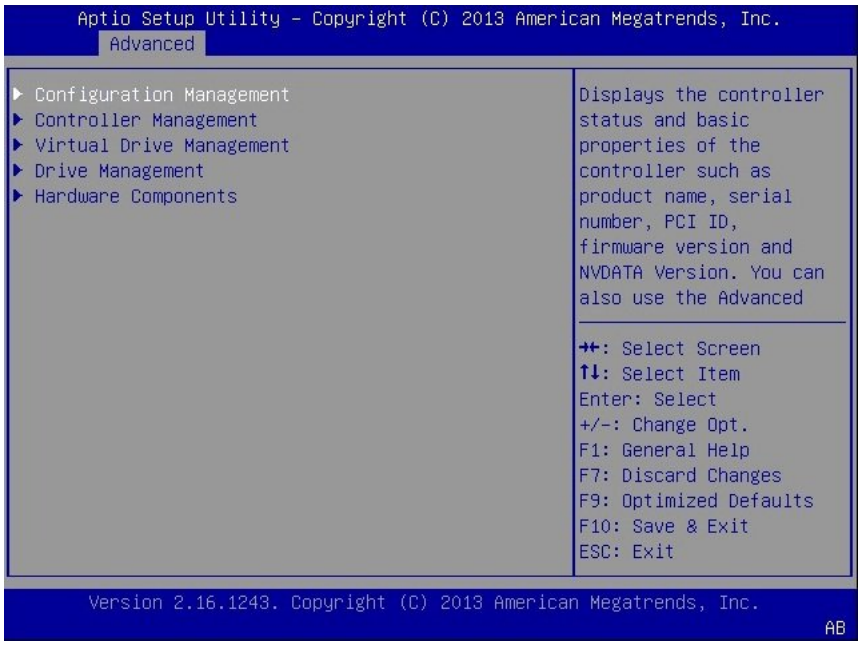

**Note -** The next events occur very quickly; therefore, focused attention is needed for the following steps. Watch carefully for these messages as they appear on the screen for a brief time.

3. **When prompted in the BIOS screen, press the F2 key to access the BIOS Setup Utility.**

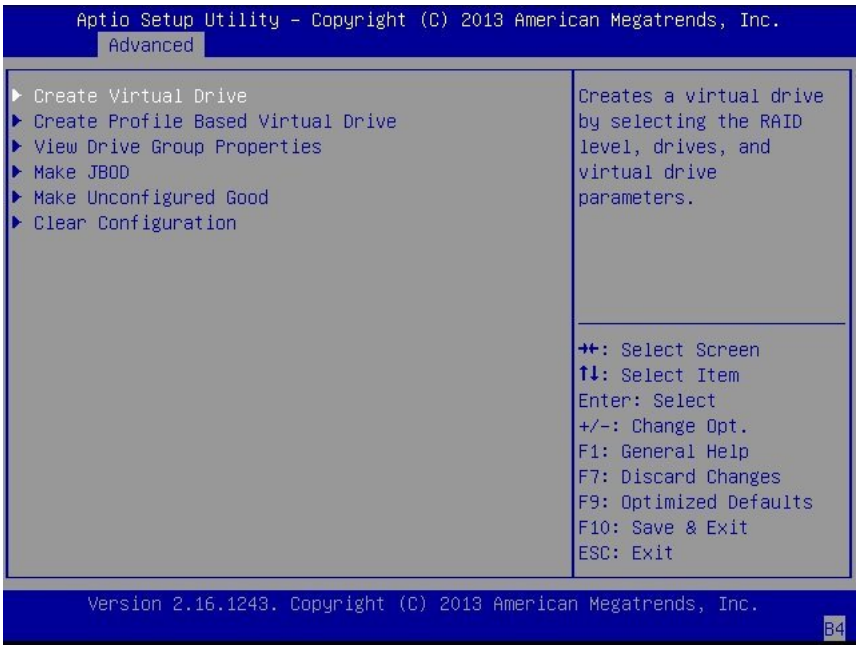
4. **Navigate to the Advanced menu.**

5. **In the Advanced menu, select LSI MegaRAID Configuration Utility.**

The LSI Human Interface Interaction (HII) Configuration Utility menu appears.

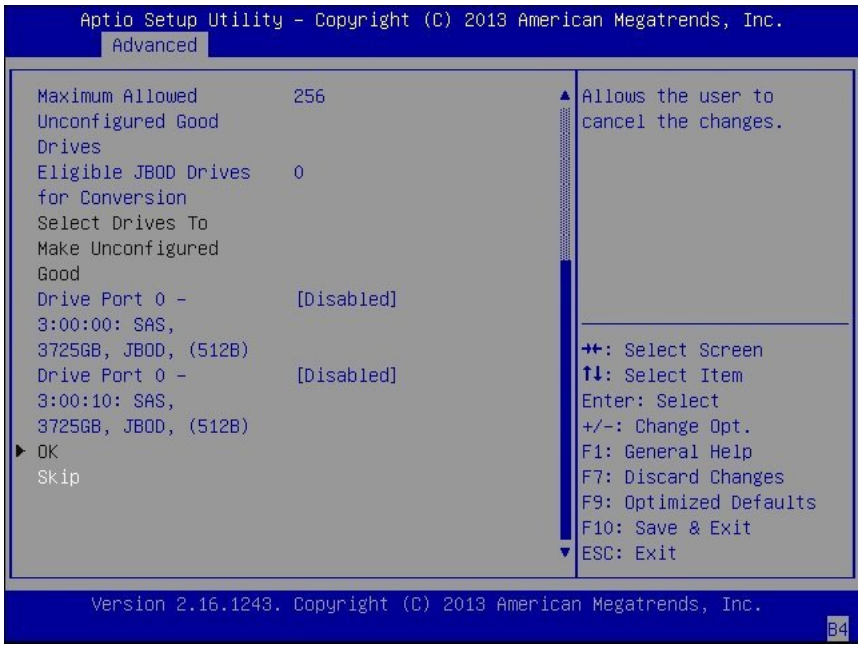


6. **Select Configuration Management.**



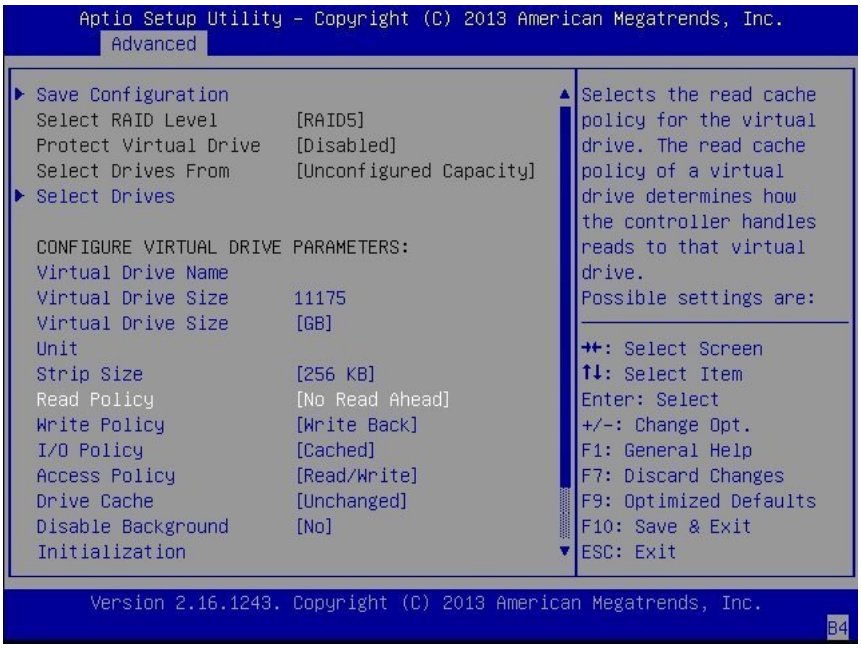

7. **Select Create Virtual Drive.**

The JBOD Conversion screen appears.




8. **Scroll to the bottom of the JBOD Conversion screen, and then select Skip to exit the screen.**

The Create Virtual Drive screen appears.




9. **In the Configure Virtual Drive Parameters portion of the screen, perform the following steps:**

   a. **Set the Read Policy to No Read Ahead.**

   b. **Set the I/O Policy to Cached.**

   c. **Select Save Configuration.**

      A confirmation screen appears.

   d. **Set the Confirm field to Enabled.**

   e. **Select Yes.**

10. **Press the F10 key to save your changes and exit the BIOS Setup Utility.**

# Configuring the Input/Output Settings to Support the VMware ESXi Installation

The server defaults to 64-bit MMIO (Memory Mapped I/O). This allows additional PCIe memory address space to be mapped above the standard 32-bit 4 GB of space for PCIe cards that include option ROMs. However, VMware ESXi is incompatible with MMIO space above the standard 4 GB. Therefore, before you install VMware ESXi, you must set the 64 Bit Resources Allocation property to Disabled in the BIOS Setup Utility.

Attempting to install VMware ESXi without disabling the 64 Bit Resources Allocation property might cause the installation to fail or the PCIe cards in the system to function improperly.

To disable this property, see the following procedure:

- "Disable the PCI 64 Bit Resources Allocation Property" on page 33

## ▼ Disable the PCI 64 Bit Resources Allocation Property

1. **Access the host console.**

   For instructions, see "Accessing the Host Console" on page 18.

2. **Power on or reset the server.**

   For example, to reset the server, do one of the following:

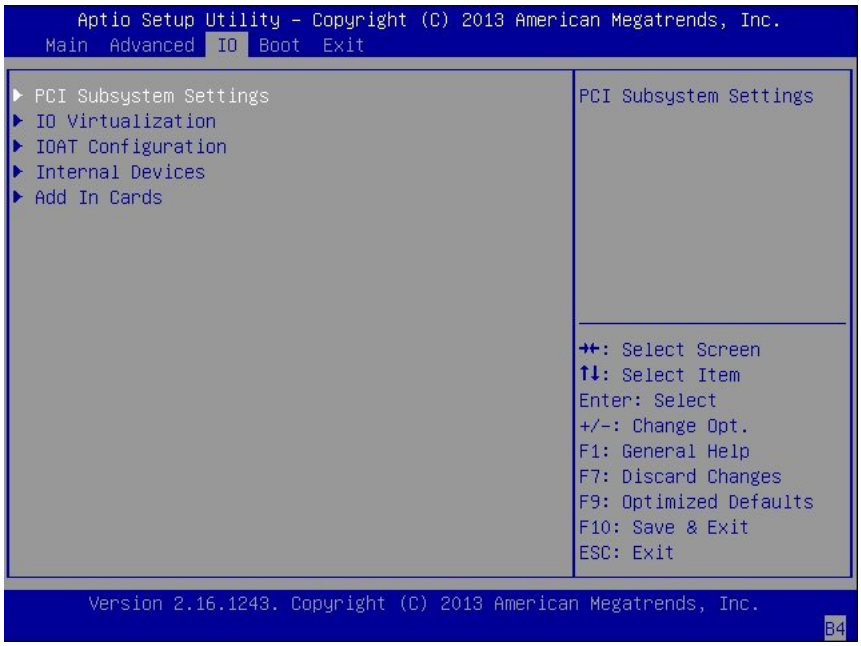
   - **From the local server,** press the Power button on the front panel of the server (for approximately 1 second) to power off the server, and then press the Power button again to power on the server.
   - **From the Oracle ILOM web interface**, select Host Management → Power Control, and then select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

The server begins the boot process, and 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.

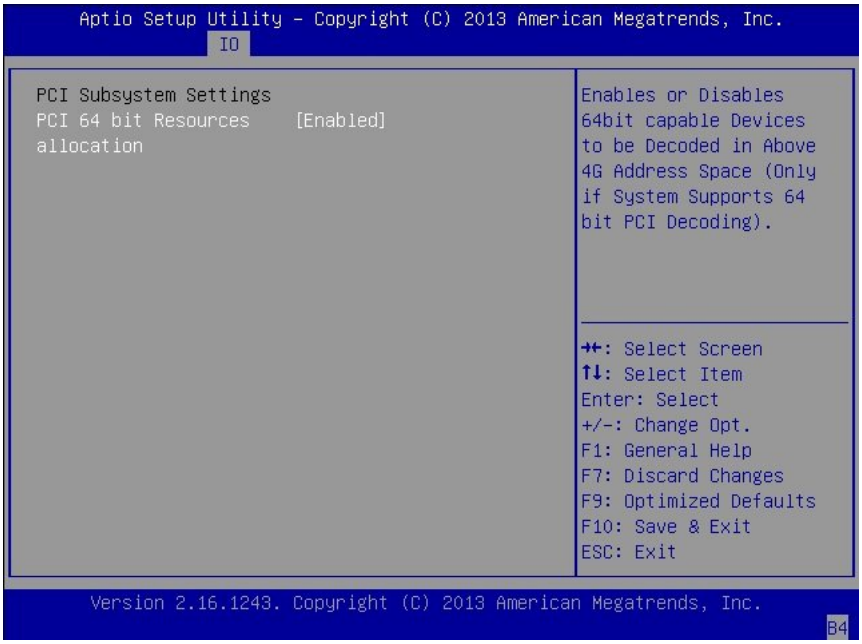
3. **When prompted in the BIOS screen, press the F2 key to access the BIOS Setup Utility.**

4. **Navigate to the IO menu.**




5. **In the IO menu, select PCI Subsystem Settings.**

The PCI Subsystem Settings screen appears.




6. **Set the PCI 64 Bit Resources Allocation property to Disabled.**
7. **Press the F10 key to save your changes and exit the BIOS Setup Utility.**

# Gathering the Required Information

During a VMware ESXi installation, the installer prompts you for information about the system. Use the table that follows to gather the information you will need.

For future use, note the values that you use during the installation.

| Information | Required or Optional | Default | Comments |
|---|---|---|---|
| Keyboard Layout | Required | U.S. English | |
| VLAN ID | Optional | None | VMware ESXi accepts a VLAN ID between 0 and |

| Information | Required or Optional | Default | Comments |
|---|---|---|---|
| | | | 4094. For more information about VLAN IDs, refer to "Modifying the Service Processor Network Settings Using Oracle ILOM" in *Oracle Server X5-2 Installation Guide*. |
| IP address | Optional | DHCP | You can allow DHCP to configure the network during installation. After installation, you can change the network settings. |
| Subnet mask | Optional | Calculated based on the IP address | |
| Gateway | Optional | Based on the configured IP address and subnet mask | |
| Primary DNS | Optional | Based on the configured IP address and subnet mask | |
| Secondary DNS | Optional | None | |
| Host name | Required for static IP settings | None | The vSphere Web Client can use either the host name or the IP address to access the ESXi host. |
| Install location | Required | None | Must be at least 5 GB if you install the components on a single disk. |
| Migrate existing ESX or ESXi settings. Preserve existing VMFS datastore. | Required if you are installing ESXi on a drive with an existing ESXi or ESX installation. | None | If you have an existing ESX/ESXi 4.x or ESXi 5.0 installation, the ESXi installer offers a choice between preserving or overwriting the VMFS datastore during installation. |
| Root password | Optional | None | The root password must contain between 7 and 64 characters. |

# Installing VMware ESXi

This section provides instructions for installing VMware ESXi on the server.

| Description | Links |
|---|---|
| Review the preinstallation requirements. | "Before You Begin" on page 39 |
| Install VMware ESXi on the server. | "Installing VMware ESXi on a Single System Using Media" on page 40 |

## Before You Begin

Ensure that the following requirements are met:

- You have prepared the boot environment. For more information, see "Preparing the Boot Environment" on page 13.
- You have access to the host console. For more information, see "Accessing the Host Console" on page 18.
- You have prepared the boot media. For more information, see "Preparing the Boot Media" on page 19.
- You have selected the installation target and ensured that it is properly installed. For more information, see "Preparing the Installation Target" on page 21.
- You have configured the Oracle Storage 12 Gb/s SAS PCIe RAID HBA (host bus adapter) Internal to support the installation. For more information, see "Configuring the HBA Cache Settings to Support ESXi Installation" on page 23.
- You have disabled the 64 Bit Resources Allocation property in the BIOS Setup Utility. For more information, see "Configuring the Input/Output Settings to Support the VMware ESXi Installation" on page 33.
- You have determined the network management interface you will use for the VM service console.

  The VM service console and management interface require a network interface. The service console does not automatically use the first interface with a live connection. Therefore, you

will need to select a network interface for the service console during installation since the network interface defaults to vmnic0. For more information, see “Configuring Network Interfaces” on page 65.

- You have access to the VMware ESXi installation documentation. VMware ESXi documentation is available at `http://pubs.vmware.com/vsphere-55/index.jsp`.

# Installing VMware ESXi on a Single System Using Media

The following procedure describes how to boot the VMware ESXi installer from a local or remote source:

- “Installing VMware ESXi on a Single System Using Media” on page 40

For information about alternative installation options, see “VMware ESXi Installation Options” on page 11.

## ▼ Install VMware ESXi Using Local or Remote Media

Before you begin, review the installation prerequisites in “Before You Begin” on page 39.

1. **Access the host console.**

   For instructions, see “Accessing the Host Console” on page 18.

2. **Ensure that the installation media is available to boot.**

   For instructions, see “Preparing the Boot Media” on page 19.

3. **Power on or reset the server.**

   For example, to reset the server, do one of the following:

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

The server begins the boot process, and 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.

4. **In the BIOS screen, press the F8 key to specify a temporary boot device for the VMware installation.**

   The Please Select Boot Device menu appears.


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

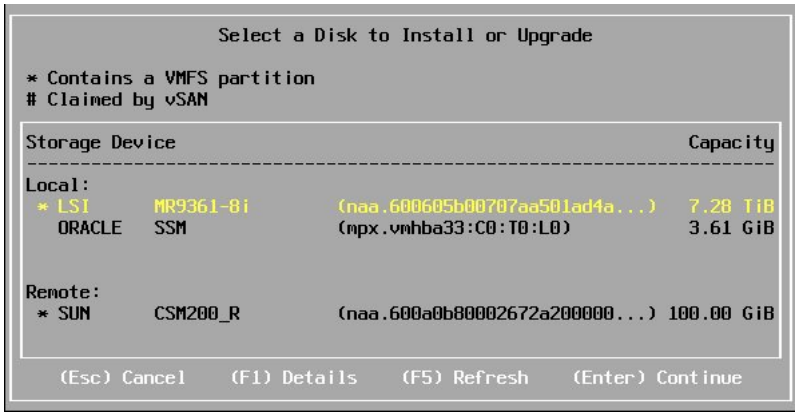
   The device strings listed in the Boot Device menu are in the following format: *device type*, *slot indicator*, and *product ID string*.

After a few seconds, the splash screen for the VMware installation program appears.

6. **To complete the installation, refer to the VMware ESXi installation documentation.**

   You can access the VMware ESXi installation documentation at http://pubs.vmware.com/vsphere-55/index.jsp.

7. **When the following screen appears, select the storage drive on which to install the ESXi software.**




**Caution -** In the 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 software installation drive. Installing VMware ESXi to the `Oracle SSM` drive will overwrite the Oracle System Assistant software and Oracle System Assistant will have to be restored. For instructions for restoring Oracle System Assistant, refer to the *Oracle X5 Series Servers Administration Guide* at http://www.oracle.com/goto/x86AdminDiag/docs.

8. **After completing the VMware ESXi installation, proceed to "Post-Installation Tasks for VMware ESXi" on page 43.**

# Post-Installation Tasks for VMware ESXi

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

| Description | Link |
|---|---|
| Determine the MAC address for a connected port. | "Determine the MAC Address of a Connected Server Network Port" on page 43 |
| Configure the network adapters. | "Configure Network Adapter Settings" on page 44 |
| Replace the VMware ESXi driver for the Oracle Storage 12 Gb/s SAS PCIe RAID HBA (host bus adapter) Internal. | "Enable the `megaraid_sas` Driver" on page 50 |
| Set the Oracle Storage 12 Gb/s SAS PCIe RAID HBA (host bus adapter) Internal cache settings to default values in Legacy BIOS Boot Mode. | "Return the HBA Cache Settings to Default Values in Legacy BIOS Boot Mode" on page 53 |
| Set the Oracle Storage 12 Gb/s SAS PCIe RAID HBA (host bus adapter) Internal cache settings to default values in UEFI Boot Mode. | "Return the HBA Cache Settings to Default Values in UEFI Boot Mode" on page 58 |
| Update the VMware ESXi software. | "Update the VMware ESXi Software" on page 63 |
| Manage the VMware ESXi resources. | "Manage VMware ESXi Resources" on page 63 |

## ▼ Determine the MAC Address of a Connected Server Network Port

The server has four network ports: NET 0, NET 1, NET 2, and NET 3. When any of these ports is connected to the network, VMware ESXi polls the system for the port MAC address.

To change the network interface for the VMware ESXi service console you should know the MAC address for your preferred management port. Perform the following procedure to determine the MAC address for a server network port.

**Note -** NET 2 and NET 3 are non-functional in single processor systems.

1. **Log in to the Oracle ILOM command-line interface.**

   For instructions, refer to "Connecting to Oracle ILOM" in *Oracle Server X5-2 Installation Guide*.

2. **Issue the following command:**

   -> **show /System/Networking/Ethernet_NICs/Ethernet_NIC_***n*

   Where *n* is 0, 1, 2, or 3, corresponding to the server Ethernet ports.

   For example, if Ethernet port `NET0` is connected to the network, then the command produces the following output:

```
-> show /System/Networking/Ethernet_NICs/Ethernet_NIC_0
/System/Networking/Ethernet_NICs/Ethernet_NIC_0
  Targets:
  Properties:
    health = OK
    health_details = -
    location = NET0 (Ethernet NIC 0)
    manufacturer = INTEL
    part_number = X540
    serial_number = Not Available
    mac_addresses = 00:21:28:3D:B7:96
  Commands:
    cd
    show
->
```

**Note -** If you are unsure of which network adapter to select, contact your network administrator.

# ▼ Configure Network Adapter Settings

VMware ESXi assigns a device name to each port, for example `vmnic`*n*, where *n* might not correspond to the port number on the server.

By default, `vmnic0` is the network interface for the VMware ESXi service console. If `vmnic0` is not connected to the network, you need to change the network adapter settings in the service console. To change these settings, perform the following procedure.

**Note -** NET 2 and NET 3 are non-functional in single processor systems.

Before you begin, determine the MAC address of your preferred management port. For instructions, see "Determine the MAC Address of a Connected Server Network Port" on page 43.

1. **After you complete the VMware ESXi installation, reset or power on the server.**

   For example, to reset the server, do one of the following:

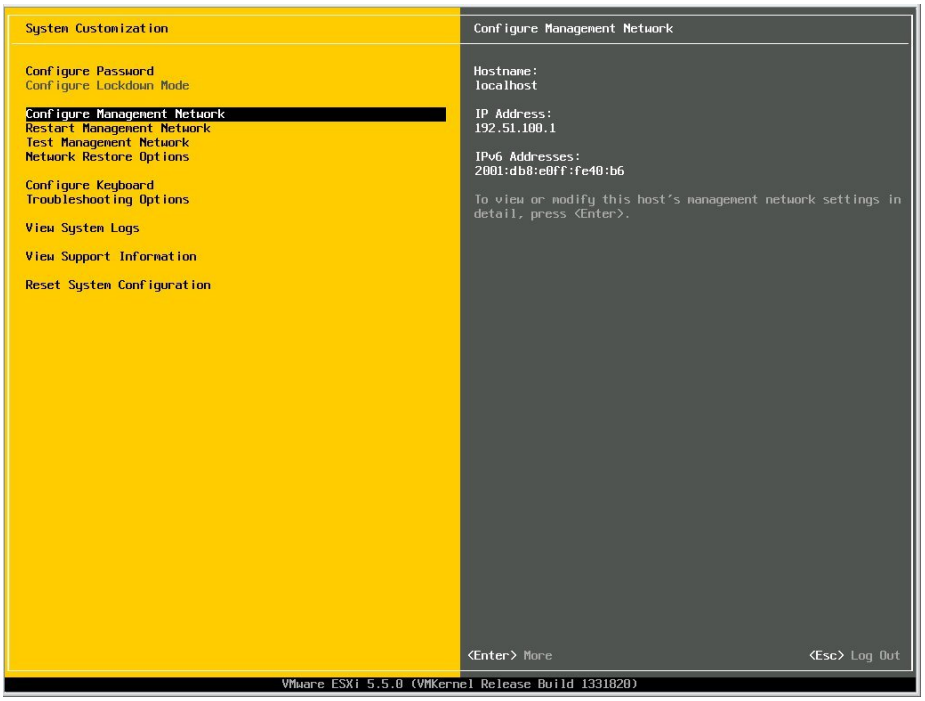
   - **From the local server,** press the Power button on the front panel of the server (for approximately 1 second) to power off the server, and then press the Power button again to power on the server.
   - **From the Oracle ILOM web interface**, select Host Management → Power Control, and then select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

When you power on the server for the first time after installing VMware ESXi, the host enters an autoconfiguration phase. After the host is autoconfigured, the VMware ESXi direct console appears on the screen.


2. **In the direct console screen, press the F2 key to select Customize System/View Logs.**

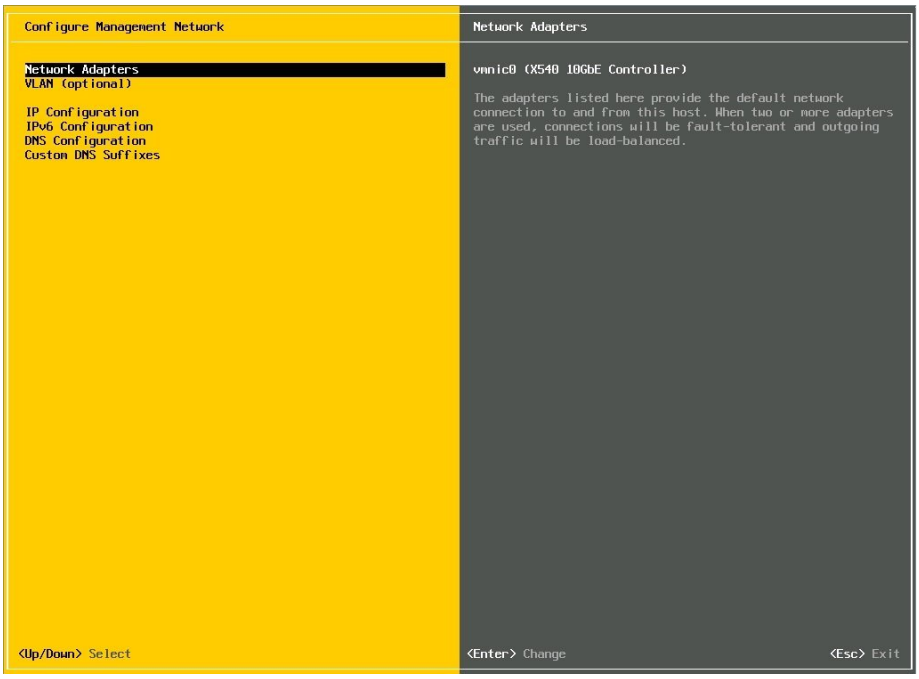
3. **Log in to the VMware ESXi server.**

The System Customization screen appears.



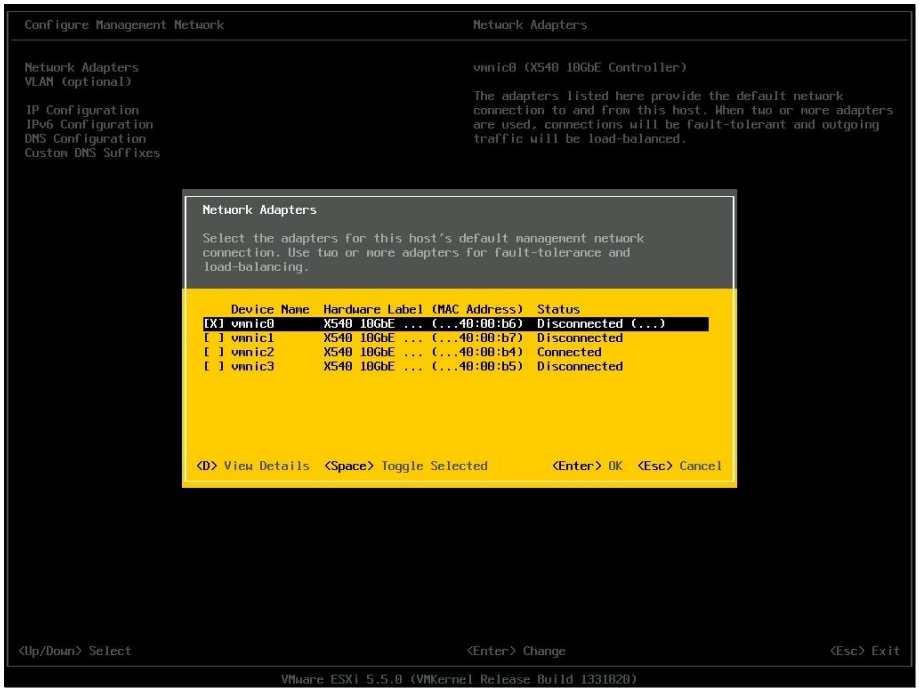

**4. In the System Customization screen, select Configure Management Network.**

The Configure Management Network screen appears.




5. **In the Configure Management Network screen, select Network Adapters.**

The Network Adapters screen appears.




6. **To change the default management port for VMware ESXi, perform the following steps:**

   a. **Deselect the current management port.**

   b. **Select your preferred management port.**

      Review the MAC address field to determine the correct port. A confirmation dialog box appears.

   c. **Select Yes to apply your changes.**

      Changing the management port might cause a brief network outage or server reset.

7. **Refer to the VMware ESXi documentation to complete the configuration.**

   The VMware ESXi documentation is available at `http://pubs.vmware.com/vsphere-55/index.jsp`.

# Enable the megaraid_sas Driver

To ensure the proper operation of VMware ESXi, you must install the megaraid_sas driver for the Oracle Storage 12 Gb/s SAS PCIe RAID Internal HBA (host bus adapter). Then, you must disable the default driver. To change the HBA driver, see the following procedure.

1. **Reset or power on the server to access the VMware ESXi direct console.**

   For example, to reset the server, do one of the following:

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

2. **In the direct console screen, press the F2 key to select Customize System/View Logs.**

3. **Log in to the VMware ESXi server.**

   The System Customization screen appears.

4. **In the System Customization screen, select Troubleshooting Options.**

   The Troubleshooting Mode Options screen appears.

5. **In the Troubleshooting Mode Options screen, enable the following:**

   - ESXi Shell
   - SSH

6. **On a system with network access to the VMware ESXi management port, use an SSH client to connect to the server.**

   Directions will vary depending on the SSH client. In general, you will need to provide the IP address or hostname of the server as well as user credentials.

   The VMware ESXi prompt appears.

7. **Download the VMware ESXi Driver for LSI MegaRAID SAS Adapters zip file from the VMware web site at:**

   https://my.vmware.com/web/vmware/details?downloadGroup=DT-ESXI55-LSI-SAS-MEGARAID_SAS-660355001VMW&productId=353.

8. **Extract the `megaraid_sas-6.603.55.00-1712343.zip` file.**

9. **Copy the `megaraid_sas-6.603.55.00-offline_bundle-1712343.zip` file to the `/tmp` directory on the ESXi server:**

```
[johnsmith@hostname ESXi55]$ ~ # cd vmfs/volumes/cert_datastore_UEFI/
/vmfs/volumes/53dfb90c-df6f16cf-7366-0010e057792c # scp  root@192.168.1.30:/root/
megaraid_sas-6.603.55.00-offline_bundle-1712343.zip
.root@192.168.1.30's password scp megaraid_sas-6.603.55.00-offline_bundle-1712343.zip
 root@10.182.93.62:/tmp/
megaraid_sas-6.603.55.00-offline_bundle-1712343.zip  100%   57KB  56.9KB/s
 00:00: password
megaraid_sas-6.603.55.00-offline_bundle-1712343.zip 100%   57KB   56.9KB/s   00:00
/vmfs/volumes/53dfb90c-df6f16cf-7366-0010e057792c #
```

10. **Issue the following command to verify that the Oracle Storage 12 Gb/s SAS PCIe RAID Internal HBA is using the `lsi_mr3` native mode driver:**

```
[johnsmith@hostname ESXi55]$ ~ # esxcfg-scsidevs -a
vmhba38 ahci link-n/a sata.vmhba38 (0:0:31.2) Intel Corporation Wellsburg AHCI
 Controller
vmhba39 ahci link-n/a sata.vmhba39 (0:0:31.2) Intel Corporation Wellsburg AHCI
 Controller
vmhba0 ahci link-n/a sata.vmhba0 (0:0:31.2) Intel Corporation Wellsburg AHCI Controller
vmhba1 lsi_mr3 link-n/a pscsi.vmhba1 (0:3:0.0) LSI MegaRAID SAS Invader Controller
vmhba40 ahci link-n/a sata.vmhba40 (0:0:31.2) Intel Corporation Wellsburg AHCI
 Controller
.
.
.
```

11. **Put the host into maintenance mode:**

```
[johnsmith@hostname ESXi55]$ vim-cmd /hostsvc/maintenance_mode_enter
```

12. **Install the `megaraid_sas-6.603.55.00-offline_bundle-1712343.zip` file from the `/tmp/` directory:**

```
[johnsmith@hostname ESXi55]$ ~ # esxcli software vib install -d "/tmp/megaraid_sas-
6.603.55.00-offline_bundle-1712343.zip"
Installation Result
Message: The update completed successfully, but the system needs to be rebooted for the
 changes to be effective.
Reboot Required: true
VIBs Installed: LSI_bootbank_scsi-megaraid-sas_6.603.53.00-1OEM.550.2.33.1331820
VIBs Removed: VMware_bootbank_scsi-megaraid-sas_5.34-9vmw.550.0.0.2068190
VIBs Skipped:
```

13. **Reboot the host, and then reconnect to it using an SSH client.**

    To reboot the host, you can issue the **reboot** command.

14. **Issue the following command to verify that the LSI scsi-megaraid-sas installation bundle is present:**

```
[johnsmith@hostname ESXi55]$ ~ # esxcli software vib list
Name                    Version                             Vendor  Acceptance Level
 Install Date
-------------------------------------------------------------------------------------------------------
scsi-megaraid-sas       6.603.53.00-1OEM.550.0.0.1331820    LSI     VMwareCertified
 2014-04-23
ata-pata-amd            0.3.10-3vmw.550.0.0.1331820         VMware  VMwareCertified
 2014-04-21
ata-pata-atiixp         0.4.6-4vmw.550.0.0.1331820          VMware  VMwareCertified
 2014-04-21
.
.
.
```

15. **Disable the lsi_mr3 native mode driver:**

```
[johnsmith@hostname ESXi55]$ ~ # esxcli system module set --enabled=false --
module=lsi_mr3
```

16. **Return the server to normal operating mode:**

```
[johnsmith@hostname ESXi55]$ ~ # vim-cmd hostsvc/maintenance_mode_exit
```

17. **Reboot the host, and then reconnect to it using an SSH client.**

    To reboot the host, you can issue the **reboot** command.

18. **Issue the following command to verify that the Oracle Storage 12 Gb/s SAS PCIe RAID Internal HBA is using the megaraid-sas driver:**

```
[johnsmith@hostname ESXi55]$ ~ # esxcfg-scsidevs -a
vmhba38 ahci link-n/a sata.vmhba38 (0:0:31.2) Intel Corporation Wellsburg AHCI
 Controller
vmhba39 ahci link-n/a sata.vmhba39 (0:0:31.2) Intel Corporation Wellsburg AHCI
 Controller
vmhba0 ahci link-n/a sata.vmhba0 (0:0:31.2) Intel Corporation Wellsburg AHCI Controller
vmhba1 megaraid_sas link-n/a unknown.vmhba1 (0:3:0.0) LSI / Symbios Logic MegaRAID SAS
 Invader Controller
vmhba40 ahci link-n/a sata.vmhba40 (0:0:31.2) Intel Corporation Wellsburg AHCI
 Controller
.
```

.
.

# Return the HBA Cache Settings to Default Values in Legacy BIOS Boot Mode

After you have installed VMware ESXi, you must return the Oracle Storage 12 Gb/s SAS PCIe RAID HBA (host bus adapter) Internal cache settings to their default values. Reverting to the default values ensures that the server is operating efficiently.

1. **Access the host console.**

   For instructions, see "Accessing the Host Console" on page 18.

2. **Power on or reset the server.**

   For example, to reset the server, do one of the following:

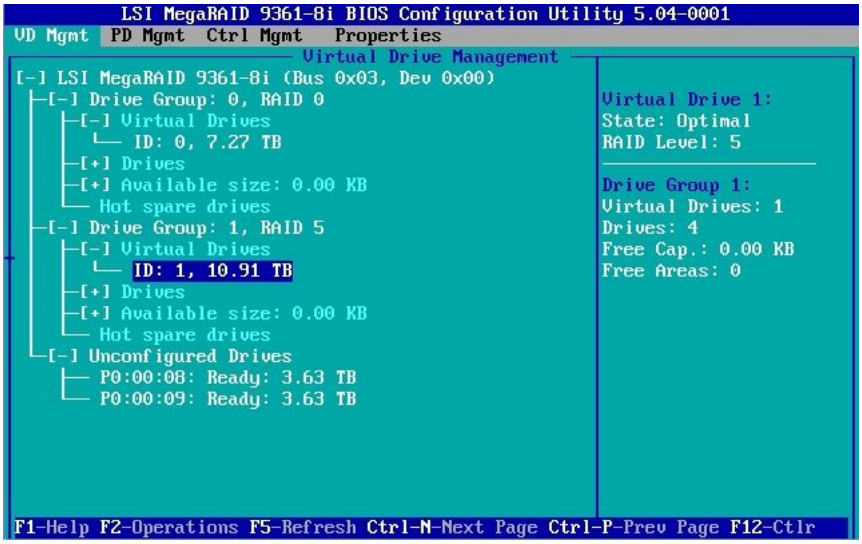
   - **From the local server,** press the Power button on the front panel of the server (for approximately 1 second) to power off the server, and then press the Power button again to power on the server.
   - **From the Oracle ILOM web interface**, select Host Management → Power Control, and then select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

   The server begins the boot process, and 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.

3. **When prompted in the BIOS screen, press Ctrl+R to enter the MegaRAID Configuration Utility.**

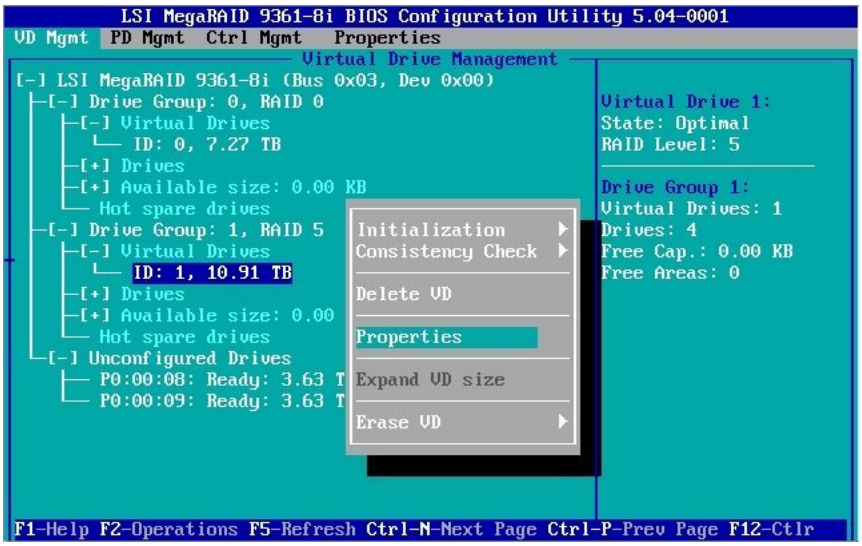
   The Virtual Drive Management screen appears.




4. **In the Virtual Drive Management screen, navigate to the ID field for the Drive Group that contains the drive on which you installed the software.**

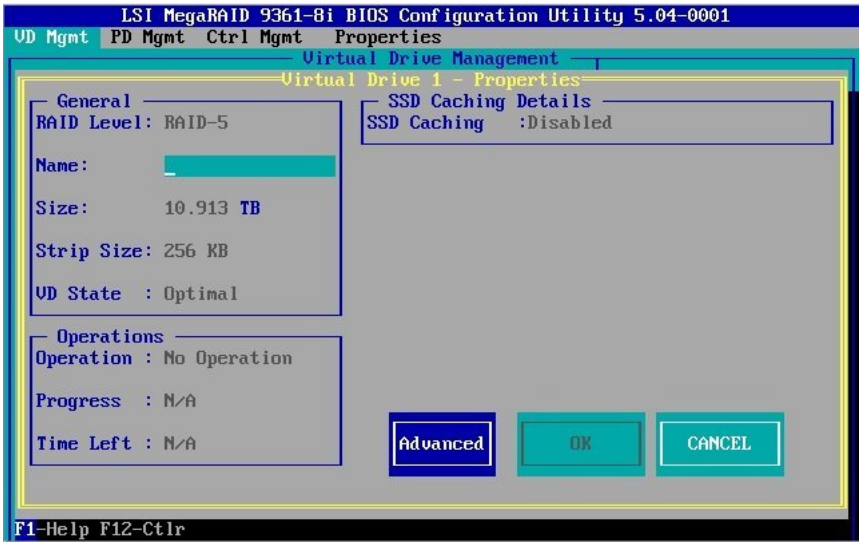
5. **Press the F2 key.**

The Operations menu appears.



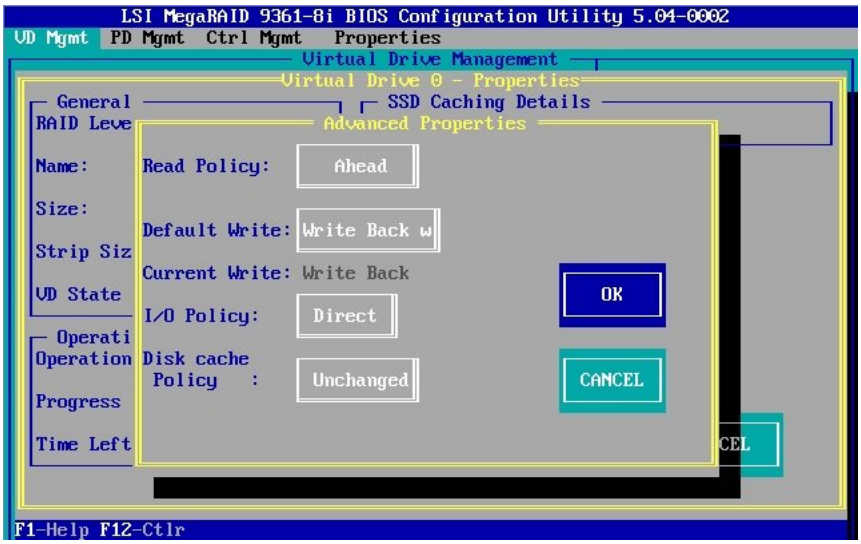

6. **In the Operations menu, navigate to the Properties option, and then press Enter.**

The Virtual Drive Properties screen appears.




7. **In the Virtual Drive Properties screen, select Advanced, and then press Enter.**

The Advanced Properties dialog box appears.




8. **In the Advanced Properties dialog box, perform the following steps:**

   a. **Set the Read Policy property to Ahead.**

   b. **Set the I/O Policy property to Direct.**

   c. **Navigate to the OK button, and then press Enter to exit the Advanced Properties dialog box.**

      The Virtual Drive Properties screen reappears.

9. **Navigate to the OK button, and then press Enter to exit the Virtual Drive Properties screen.**

   The Virtual Drive Management screen reappears.

10. **Press Esc to save your changes and exit the MegaRAID Configuration Utility.**

    A message appears asking you to confirm that you want to exit.

11. **Navigate to the OK button, and then press Enter to confirm that you want to exit the utility.**

# Return the HBA Cache Settings to Default Values in UEFI Boot Mode

After you have installed VMware ESXi, you must return the Oracle Storage 12 Gb/s SAS PCIe RAID HBA (host bus adapter) Internal cache settings to their default values. Reverting to the default values ensures that the server is operating efficiently.

1. **Access the host console.**

   For instructions, see "Accessing the Host Console" on page 18.

2. **Power on or reset the server.**

   For example, to reset the server, do one of the following:

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

   The server begins the boot process, and the BIOS screen appears.

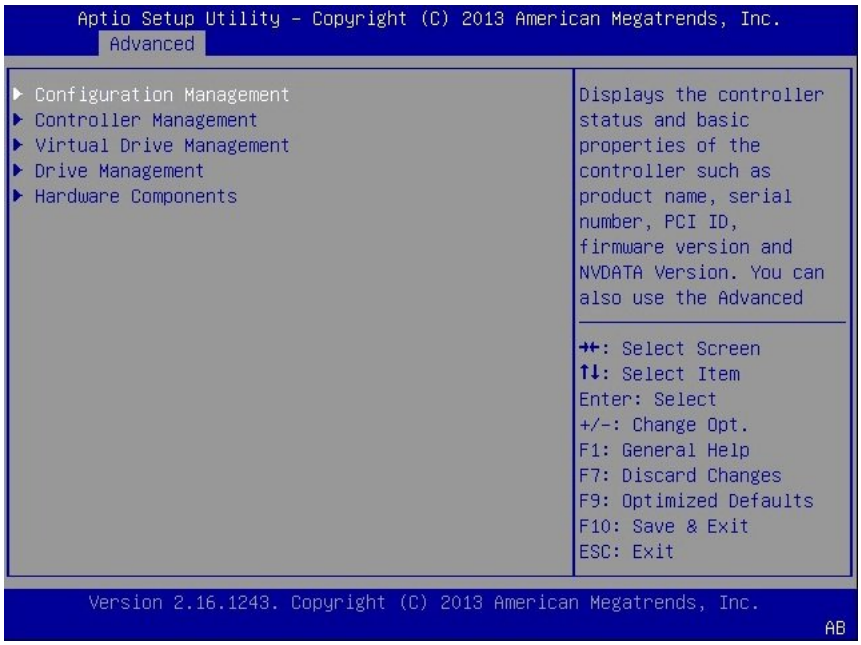

**Note -** The next events occur very quickly; therefore, focused attention is needed for the following steps. Watch carefully for these messages as they appear on the screen for a brief time.

3. **When prompted in the BIOS screen, press the F2 key to access the BIOS Setup Utility.**

4. **Navigate to the Advanced menu.**

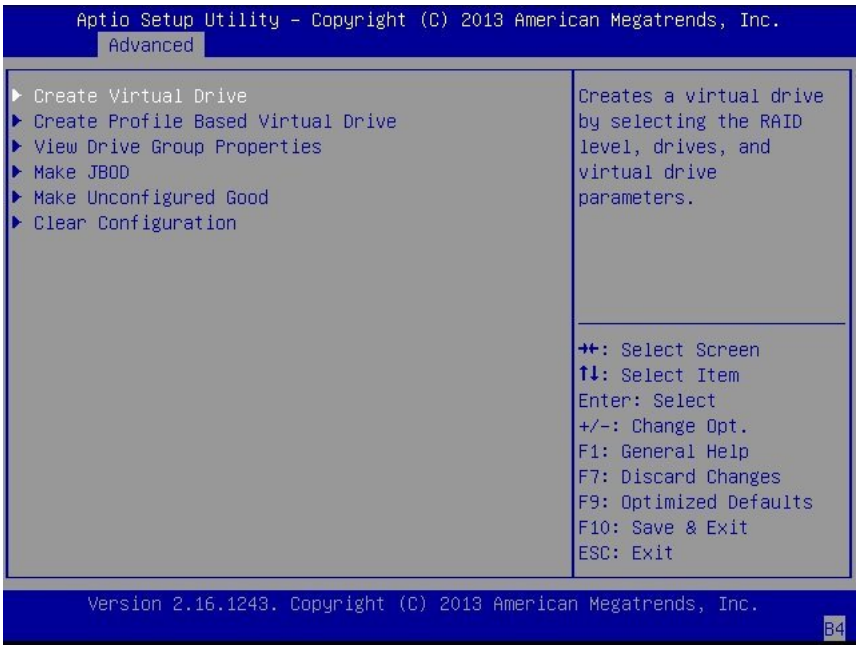
5. **In the Advanced menu, select LSI MegaRAID Configuration Utility.**

   The LSI Human Interface Interaction (HII) Configuration Utility menu appears.



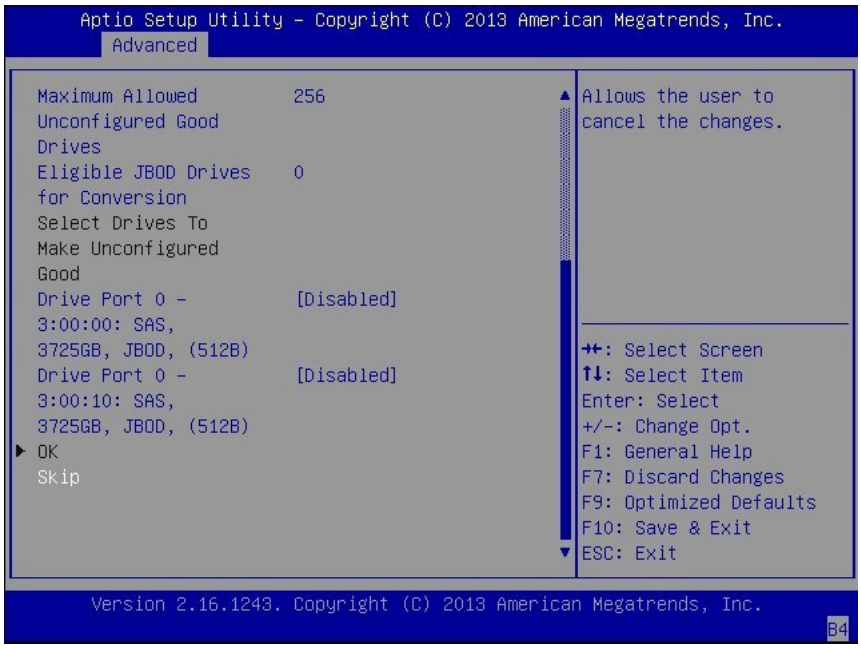

6. **Select Configuration Management.**

The Configuration Management screen appears.



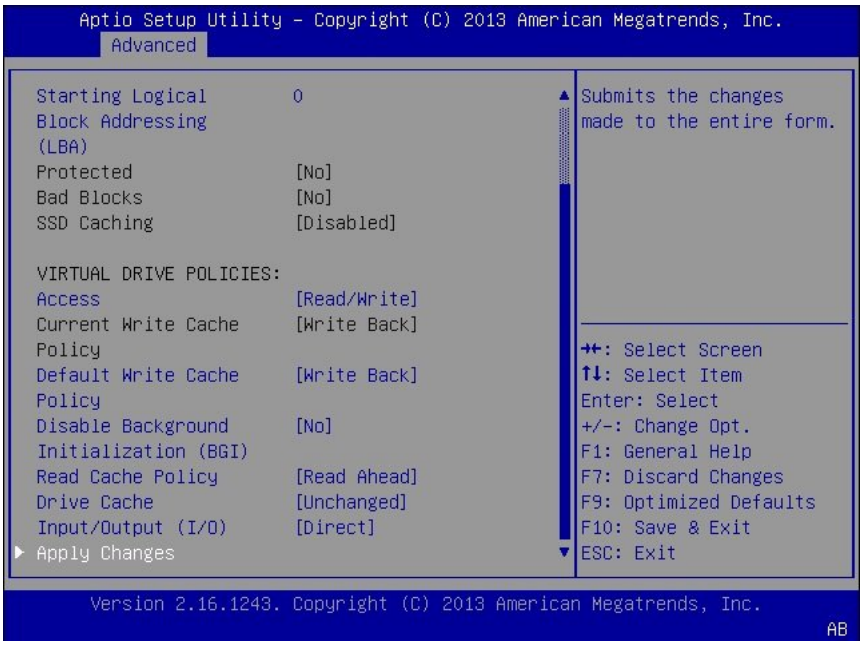

7. **Select Create Virtual Drive.**

The JBOD Conversion screen appears.




8. **Scroll to the bottom of the JBOD Conversion screen, and then select Skip to exit the screen.**

The Create Virtual Drive screen appears.




9. **In the Virtual Drive Policies portion of the screen, perform the following steps:**

   a. **Set Read Cache Policy to Read Ahead.**

   b. **Set Input/Output (I/O) property to Direct.**

   c. **Select Apply Changes.**

      A confirmation screen appears.

   d. **Set the Confirm field to Enabled.**

   e. **Select Yes.**

10. **Press the F10 key to save your changes and exit the BIOS Setup Utility.**

## ▼ Update the VMware ESXi Software

The VMware ESXi installation media might not contain the most up-to-date versions of the software. If necessary, update the VMware ESXi software with the latest updates and patches.

1. **Determine whether updates for your installation are available from the VMware ESXi download web site at `http://support.vmware.com/selfsupport/download/`.**
2. **Refer to the VMware ESXi documentation at `http://pubs.vmware.com/vsphere-55/index.jsp` to complete the update installation.**

# Manage VMware ESXi Resources

VMware provides documentation about ESXi.

To learn more about configuring and managing VMware ESXi resources, refer to the VMware ESXi documentation at:

`http://pubs.vmware.com/vsphere-55/index.jsp`

# Configuring Network Interfaces

This section contains information about the network connectors on the server:



## NIC Connectors

If there are no add-in network interface card (NIC) cards installed on the server, VMware ESXi renumbers the network ports as follows.

**Note -** These mappings might change if add-in NIC cards are installed on the server.

**TABLE 1** NIC Connector Label

| NIC Connector Label | Interface Type |
|---|---|
| NET0 | First NIC interface (vmnic0) |
| NET1 | Second NIC interface (vmnic1) |
| NET2 | Third NIC interface (vmnic2) |
| NET3 | Fourth NIC interface (vmnic3) |

**Note -** Ethernet ports NET 2 and NET 3 are non-functional in single-processor systems.

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