Cisco UCS B-Series Blade Servers VMware Installation Guide

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Cisco UCS B-Series Blade Servers VMware Installation Guide
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CONTENTS

Preface v

Related Documentation v

Obtaining Documentation and Submitting a Service Request v

CHAPTER 1 **VMware vSphere ESX Installation** 1-1

Installation on an Internal Drive 1-1

Prerequisites 1-1

Pre-Installation Service Profile Configuration Checklist 1-2

Installation Procedure 1-3

SAN Boot Installation 1-10

Prerequisites 1-10

Pre-Installation Service Profile Configuration Checklist 1-11

Installation Procedure 1-12

CHAPTER 2 **VMware vSphere ESXi Installation** 2-1

Installation on an Internal Drive 2-1

Prerequisites 2-1

Pre-Installation Service Profile Configuration Checklist 2-2

Installation Procedure 2-3

SAN Boot Installation 2-9

Prerequisites 2-9

Pre-Installation Service Profile Configuration Checklist 2-10

Installation Procedure 2-11

APPENDIX A **How to Determine Which Devices Are Installed in Your Server** A-1

Viewing Installed Devices Using the UCS Manager GUI A-1

Viewing Installed Devices Using the UCS Manager CLI A-2

Viewing Installed Devices Using the KVM Console A-2

Preface

This preface describes the *Cisco UCS B-Series Servers VMware Installation Guide*. It also provides information on how to obtain related documentation and submit a service request.

This guide contains procedures for installing VMware to an internal drive and to a bootable SAN-connected device.

Related Documentation

A roadmap that lists all documentation for Cisco Unified Computing System (Cisco UCS) is available at the following URL:

Cisco UCS B-Series Documentation Roadmap

Obtaining Documentation and Submitting a Service Request

For information on obtaining documentation, submitting a service request, and gathering additional information, see the monthly *What's New in Cisco Product Documentation*, which also lists all new and revised Cisco technical documentation, at:

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CHAPTER 1

VMware vSphere ESX Installation

This chapter contains two procedures:

- Installation on an Internal Drive, page 1-1
- SAN Boot Installation, page 1-10

Installation on an Internal Drive

This section describes how to install VMware vSphere ESX 4.0 and required drivers on an internal drive by using the virtual media feature.

This section contains two topics:

- Prerequisites, page 1-1
- Installation Procedure, page 1-3

Note Not all optional hardware components are qualified for use with VMware at this time. For the exact VMware ESX versions and the hardware components supported on this server, see the hardware and software interoperability matrix for the B-Series servers on Cisco.com: http://www.cisco.com/en/US/products/ps10477/prod_technical_reference_list.html

Prerequisites

The following items or actions are required before you begin this procedure:

- If installing to one of the LSI RAID controllers, configure a LUN to which you will install the OS.
- The VMware installation ISO image (or CD/DVD), and any activation keys for this software installation.

Note This document describes a procedure for installing the OS from an ISO image that you map as a virtual device. You can also install from a physical disk, but that method requires that you attach an external USB CD/DVD drive to the server targeted for installation. Attach a KVM cable to the blade server's front-panel console connector to provide the USB connector.

- A fully installed and configured UCS system.

  See the "Pre-Installation Service Profile Configuration Checklist" section on page 1-2 for a checklist of the minimum UCS configuration items required for this operating system installation.

Pre-Installation Service Profile Configuration Checklist

The installation-target server must have a configured service profile associated with that server. The service profile contains all of the information and settings that are applied to the server.

A minimum checklist of the UCS preconfiguration actions that you must perform for this OS installation follows. Detailed instructions for completing each item are beyond the scope of this document. Information and instructions for configuring all of these items are described in the following documents:

- *Cisco UCS 5108 Server Chassis Installation Guide*
- *Cisco UCS Manager GUI Configuration Guide*
- *Cisco UCS Manager CLI Configuration Guide*

1. Install and cable the UCS system hardware to make the physical connections to your network.
2. Use UCS Manager to configure pools that identify the physical and logical resources on your network. You select from these pools as you build the service profile for the server.

   For example, the UCS system uses WWN pools to identify available nodes and ports on FC HBAs. The UCS system also allows you to define pools for servers, MAC addresses, UUID suffixes, and management IP addresses.
3. Use UCS Manager to configure any policies that you require to manage the server. A specific boot policy is required, as described below in step 6.
4. Configure one named VSAN for each uplink fabric to which the target server is networked.

   A named VSAN creates a connection to a specific external SAN fabric.
5. Associate each VSAN with a physical uplink port on each VSAN's corresponding fabric interconnect.

   For example, you associate the VSAN that you created for Fabric A with an available physical port on Fabric Interconnect A.
6. Create a boot policy for this particular operating system installation.

   For this installation, create a boot policy that defines the following boot order:

   a. CD-ROM

   b. Local disk
7. Create a service profile for the target blade server. If you are using the Create Service Profile wizard, part 5 of the creation process is Server Boot Order. Select the boot policy that you created in step 6.

   If there is already an existing service profile associated with the target server, you can modify the boot policy that is associated with that service profile. Select the boot policy that you created in step 6.

Note VMware installation might fail unless you disable port security for the target server's vNIC in the UCS Manager service profile. Otherwise, port security secures only the first MAC address and drops traffic that is sourced with a different MAC address. The VMware installation process requires more than one MAC address. When configuring the network control policy for the vNIC, set **MAC Security** to **allow**.

8. Associate the service profile that you created with the target server.

   When the target server is rebooted, the settings in the service profile are assigned to it.

   At this point, you can begin the OS installation procedure.

Installation Procedure

To install the software, follow these steps:

Note The values and settings shown in the screen captures in this procedure are examples only. Your actual settings might differ.

Step 1 Determine whether you need custom drivers, in addition to the standard system drivers that are included with the operating system.

At the time of this publishing, only the latest add-on cards for these servers require custom drivers. These cards are:

- UCS M72KR-E converged network adapter (Emulex OneConnect 10GbE CNA)
- UCS M72KR-Q converged network adapter (QLogic 8100 Series 10GbE CNA)

See How to Determine Which Devices Are Installed in Your Server, page A-1.

- If your server does not have these cards, you do not need custom drivers. Skip to Step 2.
- If your server has these cards, obtain the latest drivers for them from VMware.com and save the driver ISO files on a workstation such as a laptop. You will mount these ISOs as virtual devices during the VMware installation process.

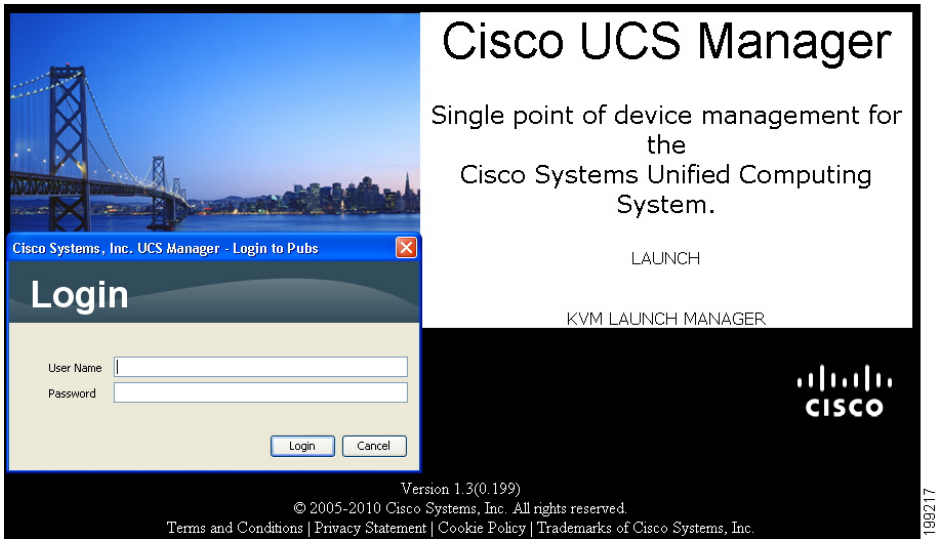
Step 2 Verify that the UCS Manager service profile for the server includes a boot policy that has the boot order of devices described in the prerequisites for this procedure (Pre-Installation Service Profile Configuration Checklist, page 1-2):

a. CD-ROM

b. Local disk

Step 3 Use a browser to connect to the UCS Manager interface using your UCS Virtual Management IP address.

Step 4 Click **Launch**, then log in to UCS Manager using your administrator username and password.



Step 5 Open a KVM console window for the target server (the blade server that contains the target drive):

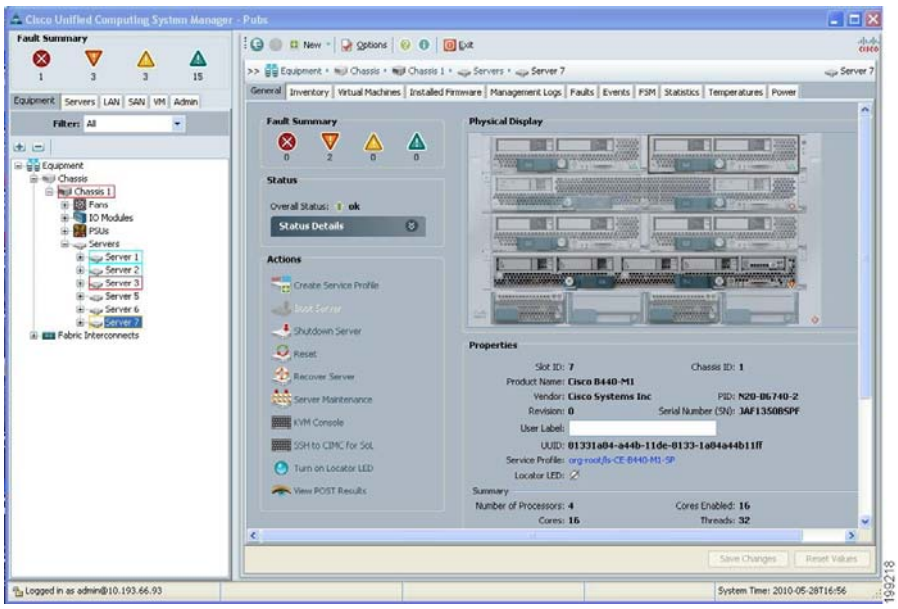
a. In the UCS Manager main window, click the **Equipment** tab in the Navigation pane.

b. On the Equipment tab, expand **Equipment > Chassis >** *Chassis_Number* **> Servers**.

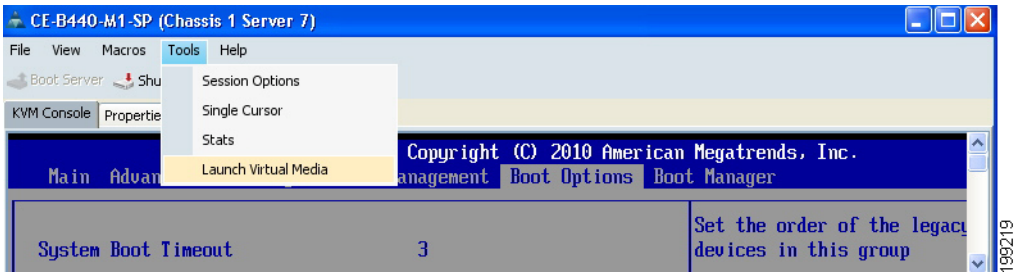
c. Choose the server that you want to access through the KVM console.

d. In the Work pane, click the **General** tab.

e. In the Actions area, click **KVM Console**. The KVM console opens in a separate window.



Step 6 When the KVM console window launches, select **Tools > Launch Virtual Media**.



Step 7 In the Virtual Media Session window, provide the path to your VMware installation image:

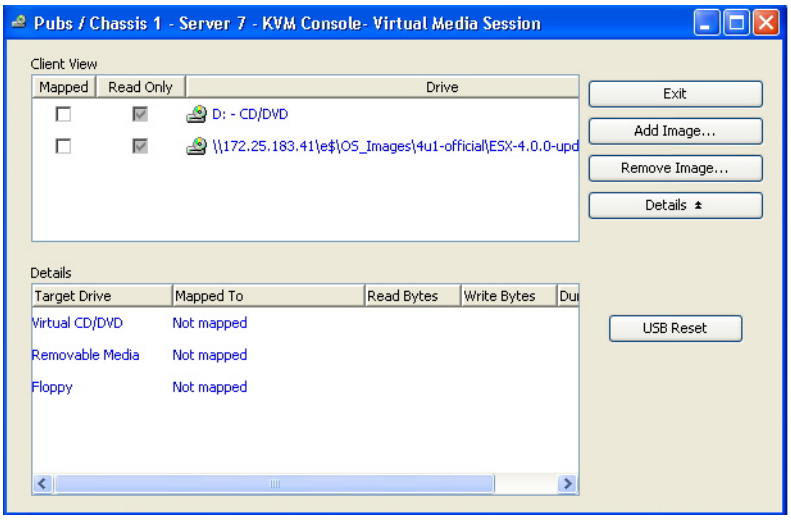
a. Click **Add Image**.

b. Use the dialog box to navigate to your VMware ISO file and select it.

The ISO image is displayed as a device in the Client View pane.

Tip Click **Details** to display the Details pane and observe the reading and writing progress.

Step 8 Check the check box in the Mapped column for the media that you added, and then wait for mapping to complete. Observe the progress in the Details pane.

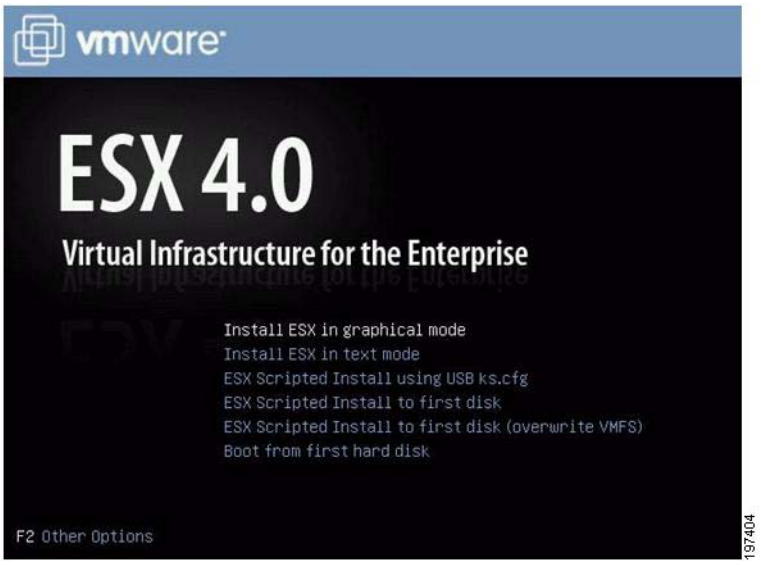


Step 9 When mapping is complete, power cycle the server so that the server reboots from the virtual CD/DVD and so the BIOS recognizes the media that you just added.

Note You can power cycle the server by pressing the Power button on the server; by selecting Macros > Ctrl-Alt-Del on the KVM Console window menu bar; or by clicking Reset in the UCS Manager Work pane for the selected server.

Note When the server power cycles, it boots from the virtual CD/DVD that is mapped to your ISO installation image. The server uses the boot order that is defined in its UCS Manager service profile (see Step 2).

Step 10 Press **Enter** when prompted to install ESX in graphical mode.



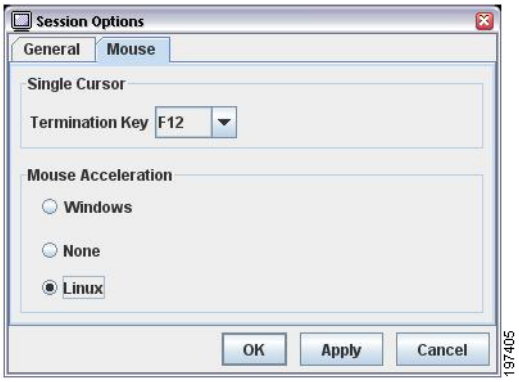
Step 11 Observe the installation process and respond to prompts in the wizard as required for your preferences and company standards. Continue with this procedure to install system drivers.

Step 12 **Optional step:** Set mouse acceleration if you experience laggy response when using the KVM window:

a. From the Virtual KVM Console window menu bar, select **Tools > Session Options**. The Session Options window opens.

b. Select the **Mouse** tab.

c. Under **Mouse Acceleration**, select **Linux** and then click **OK** to apply your changes and close the Session Options window.



Step 13 Install drivers. Do one of the following, depending on whether you need custom drivers in addition to the standard system drivers that are included in the VMware installation media:

Note At this time, only drivers for the newest generation of supported add-on cards require custom drivers in addition to the system drivers that are included with the operating system: UCS M72KR-E converged network adapter (Emulex OneConnect 10GbE CNA) and UCS M72KR-Q converged network adapter (QLogic 8100 Series 10GbE CNA).

- If you do not need custom drivers, When the Custom Drivers window prompts you with, "Do you want to install custom drivers?" select **No** and continue with Step i.
- If you need custom drivers in addition to system drivers, continue with the following steps:

a. When the Custom Drivers window prompts you with, "Do you want to install custom drivers?" select **Yes**.

b. On the Custom Drivers window, click **Add**.

The VMware installation ISO that you mapped in Step 8 is automatically unmapped.

c. When you are prompted to insert an ESX driver CD, open a KVM Virtual Media Session window as you did in Step 6.

d. In the Virtual Media Session window, click **Add Image**.

e. Use the dialog to navigate to the location where you saved the driver ISO image for your device in Step 1 and select it. The ISO appears in the Client View pane. See How to Determine Which Devices Are Installed in Your Server, page A-1 for driver locations on the Drivers disk.

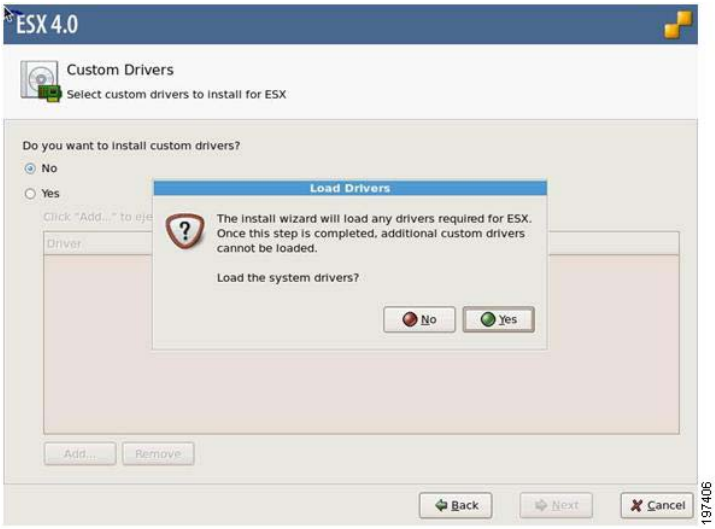
f. In the Virtual Media Session window, check the check box under Mapped to mount the driver ISO that you just selected. Wait for mapping to complete, as indicated in the Details pane. After mapping is complete, you can click **OK** on the VMware prompt and then select the driver to import.

g. If you need to add additional custom drivers, click **Add** again and repeat the process to map your driver ISO.

h. When you are done adding custom drivers, click **Next** on the VMware installation window.

i. When the pop up box prompts you whether to "Load the system drivers?" click **Yes**.

The drivers are installed.



Step 14 After custom drivers are installed, VMware prompts you to provide the path to the VMware installation ISO that was unmapped (if you did not load custom drivers, skip this step):

a. In the Virtual Media Session window, check the check box under Mapped for the VMware installation ISO.

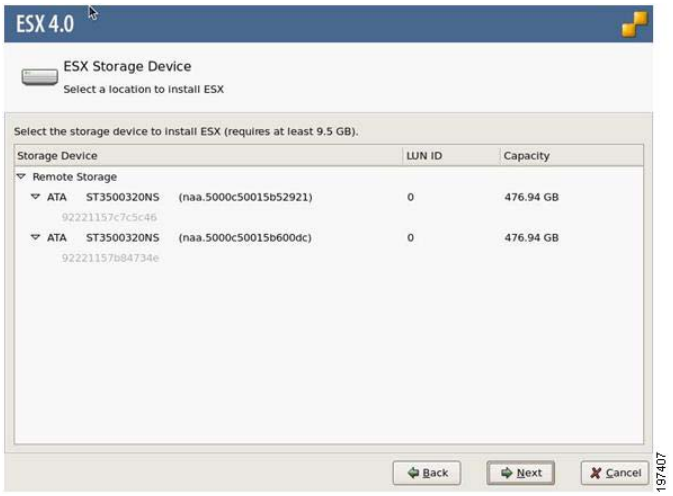
b. Wait for mapping to complete, as indicated in the Details pane. After mapping is complete, you can click **OK** on the VMware prompt to continue with the installation.

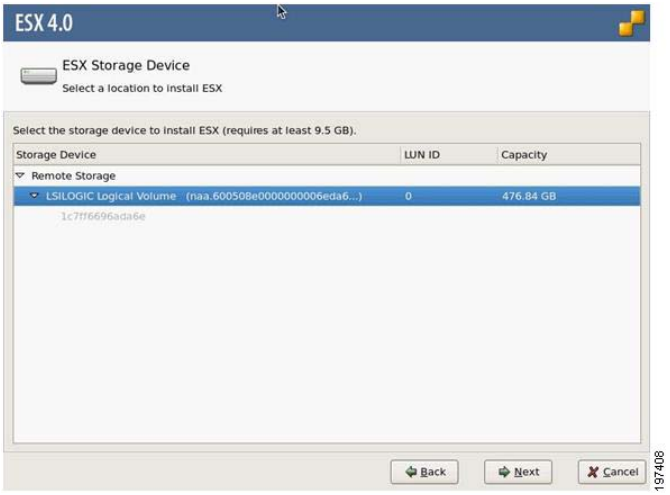
Step 15 When VMware prompts you with, "Select a location to install ESX," select the target drive to which you are installing ESX and then click **Next**.

- If you have no RAID array configured, all available drives in the B-Series server are listed (see the following graphic).

Note Do not install the OS on any eUSB drive in your server. The Cisco UCS B440 Blade Server can contain optional eUSB drives. If an eUSB drive is installed, the OS sees it as a local drive, listed as "Viking eUSB." Cisco UCS Manager does not differentiate between the types of local drives. If an OS is installed on more than one local drive or on an internal USB drive (eUSB), you cannot specify which of these local drives the server should use as the boot drive.

- If the target drive is a volume that was created by a RAID controller, it is listed as a logical volume (see the second following graphic).



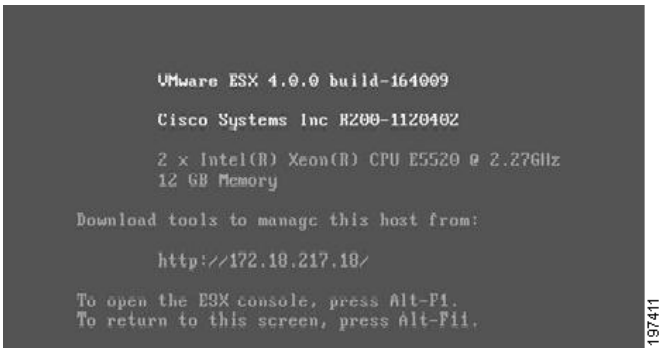


Step 16 Complete the installation according to the requirements and standards of your company. Continue to observe the installation process and answer prompts as required for your preferences.

Note During the installation steps in which you choose the partition on a RAID volume, the installation might fail with an error similar to the following:
"Your boot partition is on a disk using the GPT partitioning scheme but this machine cannot boot using GPT. This can happen if there is not enough space on your hard drive for the installation."
This is because the BIOS and boot disk of this server must use the MBR partitioning scheme, which supports a maximum partition size of 2.2 TB. If your target disk is using the GPT partitioning scheme with partitions larger than 2.2 TB, you must adjust to use the MBR partitioning scheme with no partition greater than 2.2 TB. Refer to your OS vendor's documentation for more information about partitioning.

Step 17 When the installation is complete, the following window is displayed. Click Finish to reboot the target server and start ESX software.

The server reboots. The virtual CD/DVD is automatically unmapped and the target drive in the server loads the ESX software. You can press **Alt-F1** to access the ESX Console utility when you see the following screen.



SAN Boot Installation

This section describes how to install VMware ESX and required drivers on a bootable SAN LUN (a logical disk, or RAID volume).

This section contains two topics:

- Prerequisites, page 1-10
- Installation Procedure, page 1-12

Note Not all optional hardware components are qualified for use with VMware at this time. For the exact VMware ESX versions and the hardware components supported on this server, see the hardware and software interoperability matrix for the B-Series servers on Cisco.com: http://www.cisco.com/en/US/products/ps10477/prod_technical_reference_list.html

Prerequisites

The following items or actions are required before you begin this procedure:

- If installing to a bootable SAN device, configure a LUN on the SAN, then connect to the SAN and verify that only one path exists from the SAN HBA to the LUN.
- The VMware installation ISO image (or CD/DVD), and any activation keys for this software installation.

Note This document describes a procedure for installing the OS from an ISO image that you map as a virtual device. You can also install from a physical disk, but that method requires that you attach an external USB CD/DVD drive to the server targeted for installation. Attach a KVM cable to the blade server's front-panel console connector to provide the USB connector.

- A fully installed and configured UCS system.

  See the "Pre-Installation Service Profile Configuration Checklist" section on page 1-11 for a checklist of the minimum UCS configuration items required for this operating system installation.

Pre-Installation Service Profile Configuration Checklist

The installation-target server must have a configured service profile associated with that server. The service profile contains all of the information and settings that are applied to the server.

A minimum checklist of the UCS preconfiguration actions that you must perform for this OS installation follows. Detailed instructions for completing each item are beyond the scope of this document. Information and instructions for configuring all of these items are described in detail in the following documents:

- *Cisco UCS 5108 Server Chassis Installation Guide*
- *Cisco UCS Manager GUI Configuration Guide*
- *Cisco UCS Manager CLI Configuration Guide*

1. Install and cable the UCS system hardware to make the physical connections to your network.
2. Use UCS Manager to configure pools that identify the physical and logical resources on your network. You select from these pools as you build the service profile for the server.

   For example, the UCS system uses WWN pools to identify available nodes and ports on FC HBAs. The UCS system also allows you to define pools for servers, MAC addresses, UUID suffixes, and management IP addresses.
3. Use UCS Manager to configure any policies that you require to manage the server. A specific boot policy is required, as described below in step 7.
4. Configure one named VSAN for each uplink fabric to which the target server is networked.

   A named VSAN creates a connection to a specific external SAN fabric.
5. Associate each VSAN with a physical uplink port on each VSAN's corresponding fabric interconnect.

   For example, you associate the VSAN that you created for Fabric A with an available physical port on Fabric Interconnect A.
6. Create one vHBA policy for each uplink fabric to which the target server is networked.

   This vHBA policy defines how the vHBA connects to the SAN.
7. Create a boot policy for this particular operating system installation.

   For this installation, create a boot policy that defines the following boot order:

   a. CD-ROM

   b. Storage

   – SAN Primary
   – SAN Secondary
8. Create a service profile for the target blade server. Associate the policies that you created in previous steps with the service profile. If you are using the Create Service Profile wizard, part 5 of the creation process is Server Boot Order. Select the boot policy that you created in step 7.

   If there is already an existing service profile associated with the target server, you can modify the existing boot policy. Edit the service profile to select the boot policy that you created in step 7.

Note VMware installation might fail unless you disable port security for the target server's vNIC in the UCS Manager service profile. Otherwise, port security secures only the first MAC address and drops traffic that is sourced with a different MAC address. The VMware installation process requires more than one MAC address. When configuring the network control policy for the vNIC, set **MAC Security** to **allow**.

9. Associate the service profile that you created with the target server.

   When the target server is rebooted, the settings in the service profile are assigned to it.

   At this point, you can begin the OS installation procedure.

Installation Procedure

To install the software, follow these steps:

Note The values and settings shown in the screen captures in this procedure are examples only. Your actual settings might differ.

Step 1 Determine whether you need custom drivers, in addition to the standard system drivers that are included with the operating system.

At the time of this publishing, only the latest add-on cards for these servers require custom drivers. These cards are:

- UCS M72KR-E converged network adapter (Emulex OneConnect 10GbE CNA)
- UCS M72KR-Q converged network adapter (QLogic 8100 Series 10GbE CNA)

See How to Determine Which Devices Are Installed in Your Server, page A-1.

- If your server does not have these cards, you do not need custom drivers. Skip to Step 2.
- If your server has these cards, obtain the latest drivers for them from VMware.com and save the driver ISO files on a workstation such as a laptop. You will mount these ISOs as virtual devices during the VMware installation process.

Step 2 Verify that the UCS Manager service profile for the server includes a boot policy that has the boot order of devices described in the prerequisites for this procedure (Pre-Installation Service Profile Configuration Checklist, page 1-11):

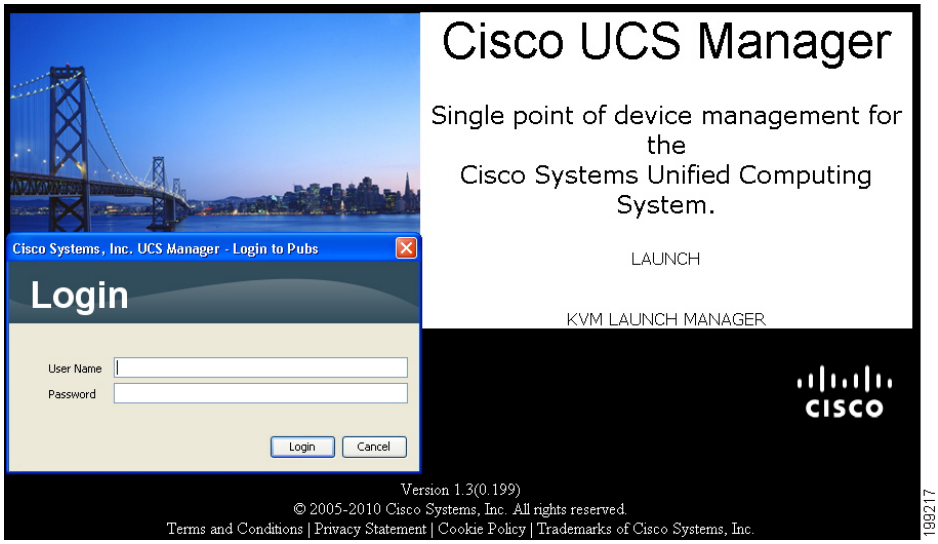
a. CD-ROM

b. Storage

- SAN Primary
- SAN Secondary

Step 3 Use a browser to connect to the UCS Manager interface using your UCS Virtual Management IP address.

Step 4 Click **Launch**, then log in to UCS Manager using your administrator username and password.



Step 5 Open a KVM console window for the target server (the blade server that contains the target drive):

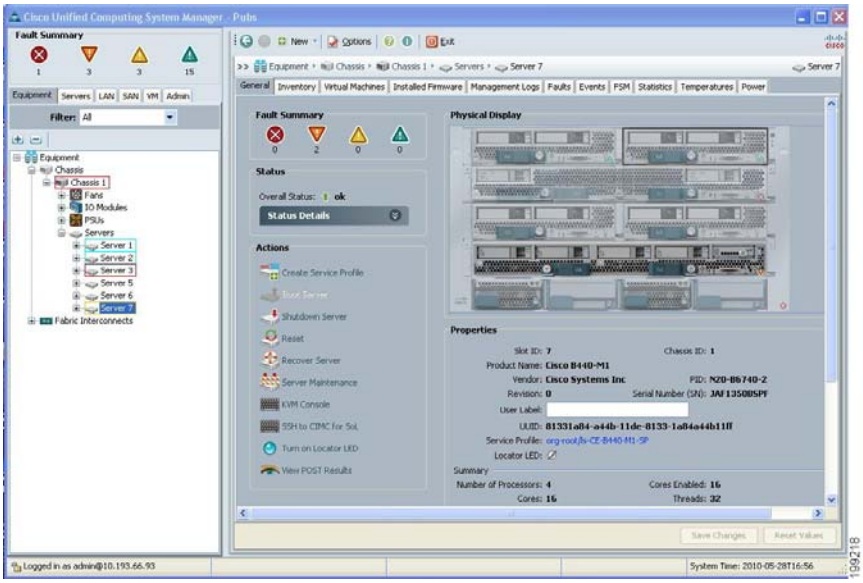
a. In the UCS Manager main window, click the **Equipment** tab in the Navigation pane.

b. On the Equipment tab, expand **Equipment > Chassis >** *Chassis_Number* **> Servers**.

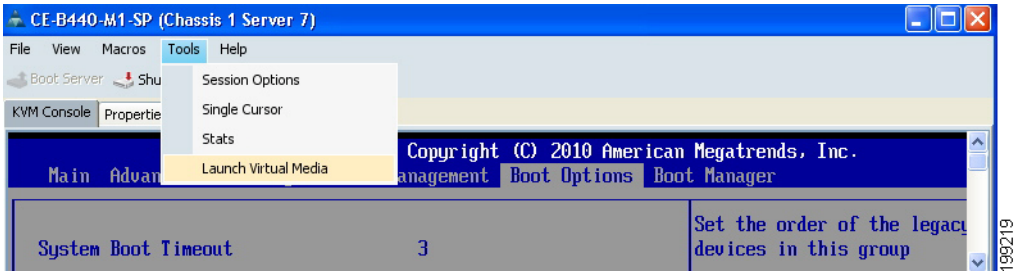
c. Choose the server that you want to access through the KVM console.

d. In the Work pane, click the **General** tab.

e. In the Actions area, click **KVM Console**. The KVM console opens in a separate window.



Step 6 When the KVM console window launches, select **Tools > Launch Virtual Media**.



Step 7 In the Virtual Media Session window, provide the path to your VMware installation image:

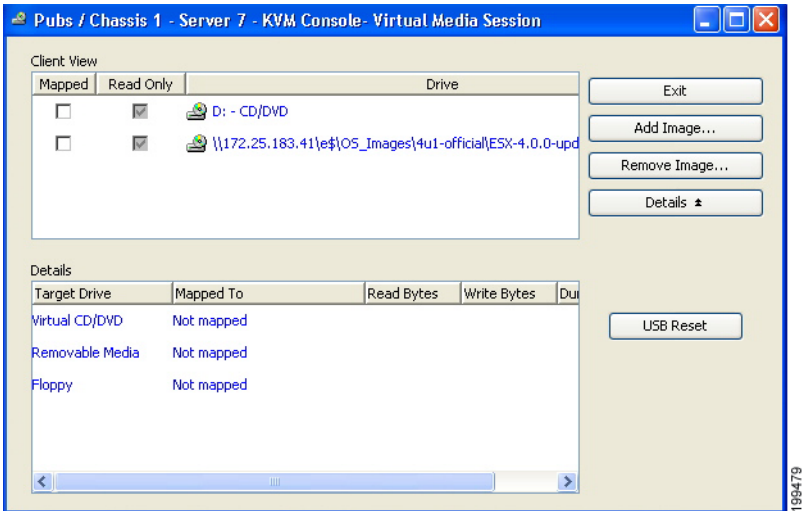
a. Click **Add Image**.

b. Use the dialog box to navigate to your VMware ISO file and select it.

The ISO image is displayed as a device in the Client View pane.

Tip Click **Details** to display the Details pane and observe the reading and writing progress.

Step 8 Check the check box in the Mapped column for the media that you added, and then wait for mapping to complete. Observe the progress in the Details pane.

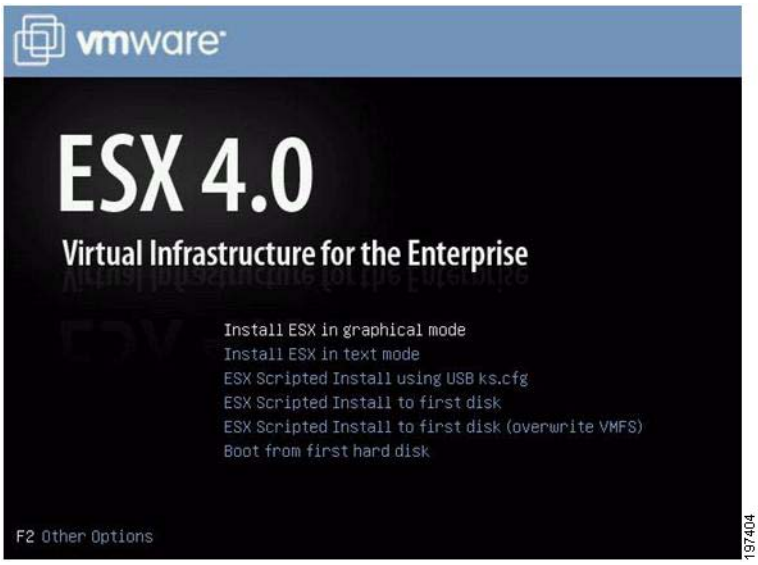


Step 9 When mapping is complete, power cycle the server so that the server reboots from the virtual CD/DVD and so the BIOS recognizes the media that you just added.

Note You can power cycle the server by pressing the Power button on the server; by selecting Macros > Ctrl-Alt-Del on the KVM Console window menu bar; or by clicking Reset in the UCS Manager Work pane for the selected server.

Note When the server power cycles, it boots from the virtual CD/DVD that is mapped to your ISO installation image. The server uses the boot order that is defined in its UCS Manager service profile (see Step 2).

Step 10 Press **Enter** when prompted to install ESX in graphical mode.



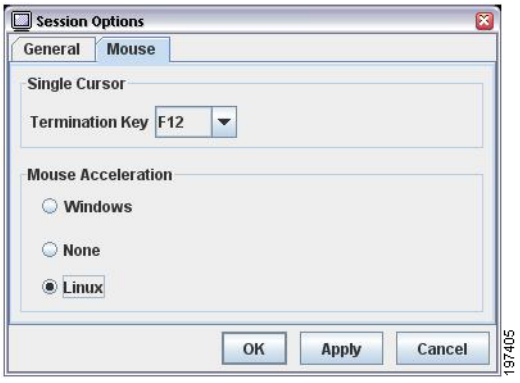
Step 11 Observe the installation process and respond to prompts in the wizard as required for your preferences and company standards. Continue with this procedure to install drivers.

Step 12 **Optional step:** Set mouse acceleration if you experience laggy response when using the KVM window:

a. From the Virtual KVM Console window menu bar, select **Tools > Session Options**. The Session Options window opens.

b. Select the **Mouse** tab.

c. Under **Mouse Acceleration**, select **Linux** and then click **OK** to apply your changes and close the Session Options window.



Step 13 Install drivers. Do one of the following, depending on whether you need custom drivers in addition to the standard system drivers that are included in the VMware installation media:

Note At this time, only drivers for the newest generation of supported add-on cards require custom drivers in addition to the system drivers that are included with the operating system: UCS M72KR-E converged network adapter (Emulex OneConnect 10GbE CNA) and UCS M72KR-Q converged network adapter (QLogic 8100 Series 10GbE CNA).

- If you do not need custom drivers, When the Custom Drivers window prompts you with, "Do you want to install custom drivers?" select **No** and continue with Step i.
- If you need custom drivers in addition to system drivers, continue with the following steps:

a. When the Custom Drivers window prompts you with, "Do you want to install custom drivers?" select **Yes**.

b. On the Custom Drivers window, click **Add**.

The VMware installation ISO that you mapped in Step 8 is automatically unmapped.

c. When you are prompted to insert an ESX driver CD, open a KVM Virtual Media Session window as you did in Step 6.

d. In the Virtual Media Session window, click **Add Image**.

e. Use the dialog to navigate to the location where you saved the driver ISO image for your device in Step 1 and select it. The ISO appears in the Client View pane. See How to Determine Which Devices Are Installed in Your Server, page A-1 for driver locations on the Drivers disk.

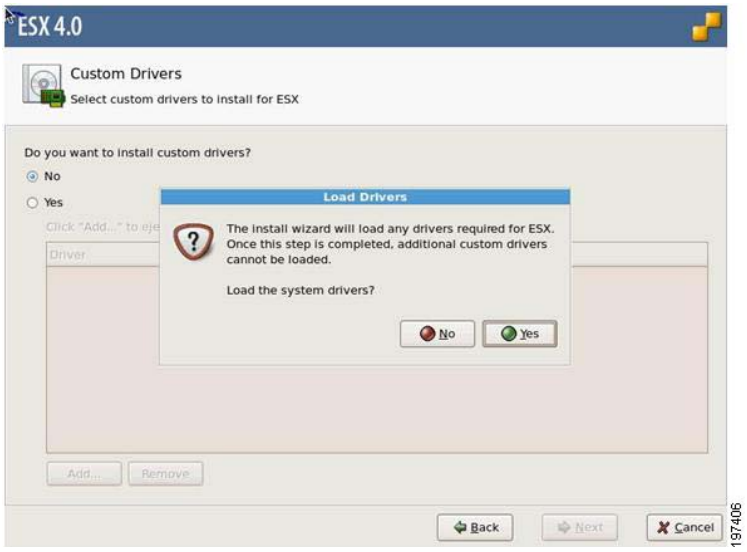
f. In the Virtual Media Session window, check the check box under Mapped to mount the driver ISO that you just selected. Wait for mapping to complete, as indicated in the Details pane. After mapping is complete, you can click **OK** on the VMware prompt and then select the driver to import.

g. If you need to add additional custom drivers, click **Add** again and repeat the process to map your driver ISO.

h. When you are done adding custom drivers, click **Next** on the VMware installation window.

i. When the pop up box prompts you whether to "Load the system drivers?" click **Yes**.

The drivers are installed.

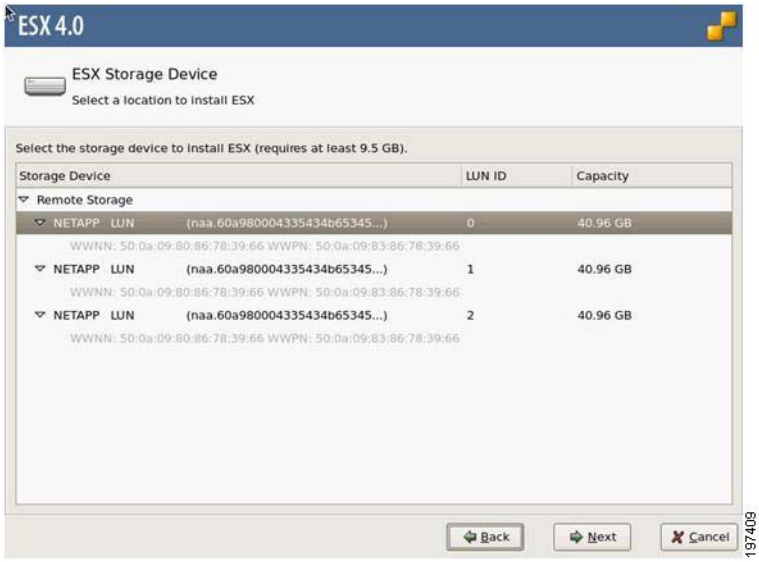


Step 14 After custom drivers are installed, VMware prompts you to provide the path to the VMware installation ISO that was unmapped (if you did not load custom drivers, skip this step):

a. In the Virtual Media Session window, check the check box under Mapped for the VMware installation ISO.

b. Wait for mapping to complete, as indicated in the Details pane. After mapping is complete, you can click **OK** on the VMware prompt to continue with the installation.

Step 15 When VMware prompts you with, "Select a location to install ESX," select the target SAN LUN to which you are installing ESX and then click **Next**.

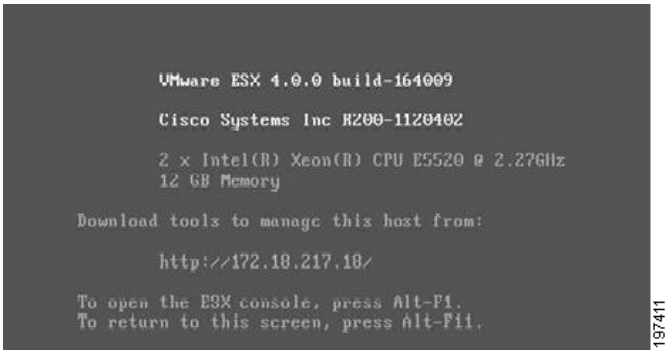


Step 16 Complete the installation according to the requirements and standards of your company. Continue to observe the installation process and answer prompts as required for your preferences.

Note During the installation steps in which you choose the partition on a RAID volume, the installation might fail with an error similar to the following:
"Your boot partition is on a disk using the GPT partitioning scheme but this machine cannot boot using GPT. This can happen if there is not enough space on your hard drive for the installation."
This is because the BIOS and boot disk of this server must use the MBR partitioning scheme, which supports a maximum partition size of 2.2 TB. If your target disk is using the GPT partitioning scheme with partitions larger than 2.2 TB, you must adjust to use the MBR partitioning scheme with no partition greater than 2.2 TB. Refer to your OS vendor's documentation for more information about partitioning.

Step 17 When the installation is complete, the window shown below is displayed. Click Finish to reboot the target server and start ESX software.

The server reboots. The virtual CD/DVD is automatically unmapped and the target SAN LUN in the loads the ESX software. You can press **Alt-F1** to access the ESX Console utility when you see the following screen.



CHAPTER 2

VMware vSphere ESXi Installation

This chapter contains two procedures:

- Installation on an Internal Drive, page 2-1
- SAN Boot Installation, page 2-9

Installation on an Internal Drive

This section describes how to install VMware vSphere ESXi 4.0 and required drivers on an internal drive by using the virtual media feature.

This section contains two topics:

- Prerequisites, page 2-1
- Installation Procedure, page 2-3

Note Not all optional hardware components are qualified for use with VMware at this time. For the exact VMware ESX versions and the hardware components supported on this server, see the hardware and software interoperability matrix for the B-Series servers on Cisco.com: http://www.cisco.com/en/US/products/ps10477/prod_technical_reference_list.html

Prerequisites

The following items or actions are required before you begin this procedure:

- If installing to one of the LSI RAID controllers, configure a LUN to which you will install the OS.
- The Linux installation ISO image (or CD/DVD), and any activation keys for this software installation.

Note This document describes a procedure for installing the OS from an ISO image that you map as a virtual device. You can also install from a physical disk, but that method requires that you attach an external USB CD/DVD drive to the server targeted for installation. Attach a KVM cable to the blade server's front-panel console connector to provide the USB connector.

- A fully installed and configured UCS system.

  See the "Pre-Installation Service Profile Configuration Checklist" section on page 2-2 for a checklist of the minimum UCS configuration items required for this operating system installation.

Pre-Installation Service Profile Configuration Checklist

The installation-target server must have a configured service profile associated with that server. The service profile contains all of the information and settings that are applied to the server.

A minimum checklist of the UCS preconfiguration actions that you must perform for this OS installation follows. Detailed instructions for completing each item are beyond the scope of this document. Information and instructions for configuring all of these items are described in detail in the following documents:

- *Cisco UCS 5108 Server Chassis Installation Guide*
- *Cisco UCS Manager GUI Configuration Guide*
- *Cisco UCS Manager CLI Configuration Guide*

1. Install and cable the UCS system hardware to make the physical connections to your network.
2. Use UCS Manager to configure pools that identify the physical and logical resources on your network. You select from these pools as you build the service profile for the server.

   For example, the UCS system uses WWN pools to identify available nodes and ports on FC HBAs. The UCS system also allows you to define pools for servers, MAC addresses, UUID suffixes, and management IP addresses.
3. Use UCS Manager to configure any policies that you require to manage the server. A specific boot policy is required, as described below in step 6.
4. Configure one named VSAN for each uplink fabric to which the target server is networked.

   A named VSAN creates a connection to a specific external SAN fabric.
5. Associate each VSAN with a physical uplink port on each VSAN's corresponding fabric interconnect.

   For example, you associate the VSAN that you created for Fabric A with an available physical port on Fabric Interconnect A.
6. Create a boot policy for this particular operating system installation.

   For this installation, create a boot policy that defines the following boot order:

   a. CD-ROM

   b. Local disk
7. Create a service profile for the target blade server. If you are using the Create Service Profile wizard, part 5 of the creation process is Server Boot Order. Select the boot policy that you created in step 6.

   If there is already an existing service profile associated with the target server, you can modify the boot policy that is associated with that service profile. Select the boot policy that you created in step 6.

Note VMware installation might fail unless you disable port security for the target server's vNIC in the UCS Manager service profile. Otherwise, port security secures only the first MAC address and drops traffic that is sourced with a different MAC address. The VMware installation process requires more than one MAC address. When configuring the network control policy for the vNIC, set **MAC Security** to **allow**.

8. Associate the service profile that you created with the target server.

   When the target server is rebooted, the settings in the service profile are assigned to it.

   At this point, you can begin the OS installation procedure.

Installation Procedure

To install the software, follow these steps:

Note The values and settings shown in the screen captures in this procedure are examples only. Your actual settings might differ.

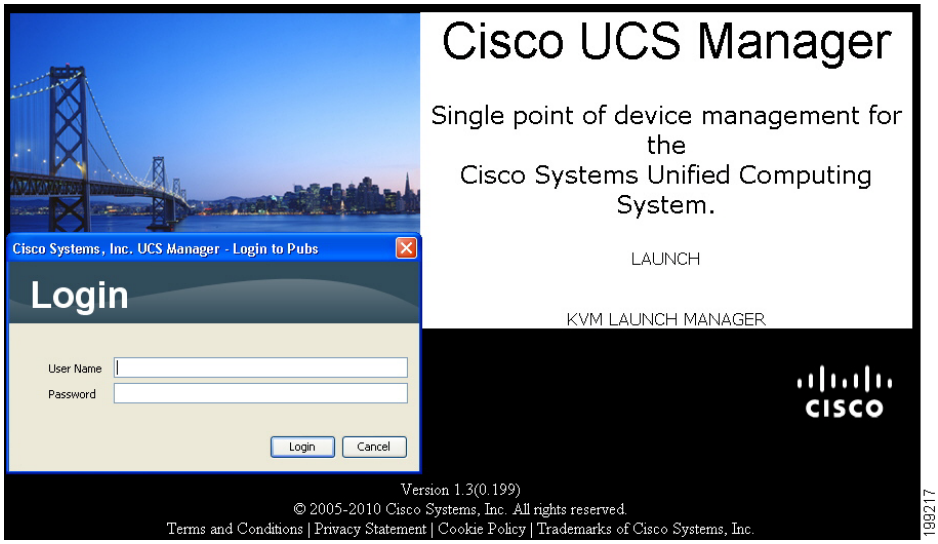
Step 1 Verify that the UCS Manager service profile for the server includes a boot policy that has the boot order of devices described in the prerequisites for this procedure (Pre-Installation Service Profile Configuration Checklist, page 2-2):

a. CD-ROM

b. Local disk

Step 2 Use a browser to connect to the UCS Manager interface using your UCS Virtual Management IP address.

Step 3 Click **Launch**, then log in to UCS Manager using your administrator username and password.



Step 4 Open a KVM console window for the target server (the blade server that contains the target drive):

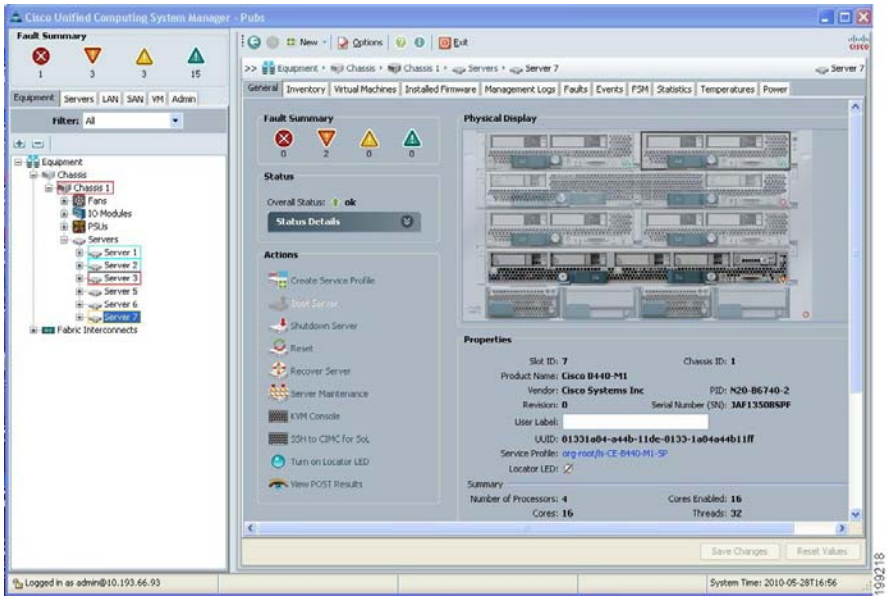
a. In the UCS Manager main window, click the **Equipment** tab in the Navigation pane.

b. On the Equipment tab, expand **Equipment > Chassis >** *Chassis_Number* **> Servers**.

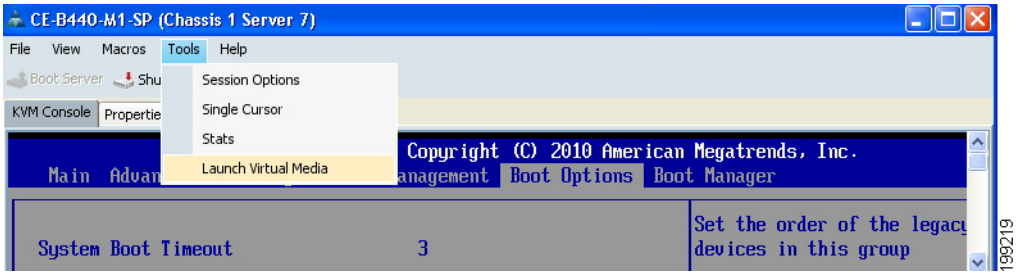
c. Choose the server that you want to access through the KVM console.

d. In the Work pane, click the **General** tab.

e. In the Actions area, click **KVM Console**. The KVM console opens in a separate window.



Step 5 When the KVM console window launches, select **Tools > Launch Virtual Media**.



Step 6 In the Virtual Media Session window, provide the path to your VMware installation image:

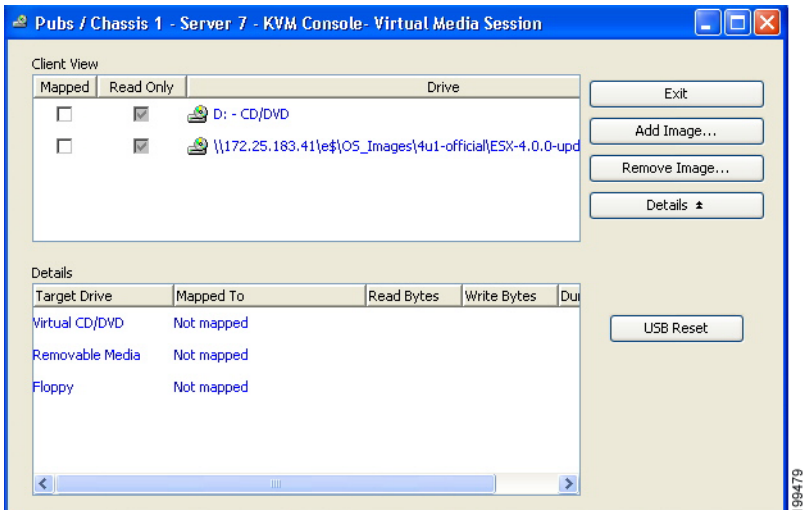
a. Click **Add Image**.

b. Use the dialog box to navigate to your VMware ISO file and select it.

The ISO image is displayed as a device in the Client View pane.

Tip Click **Details** to display the Details pane and observe the reading and writing progress.

Step 7 Check the check box in the Mapped column for the media that you added, and then wait for mapping to complete. Observe the progress in the Details pane.

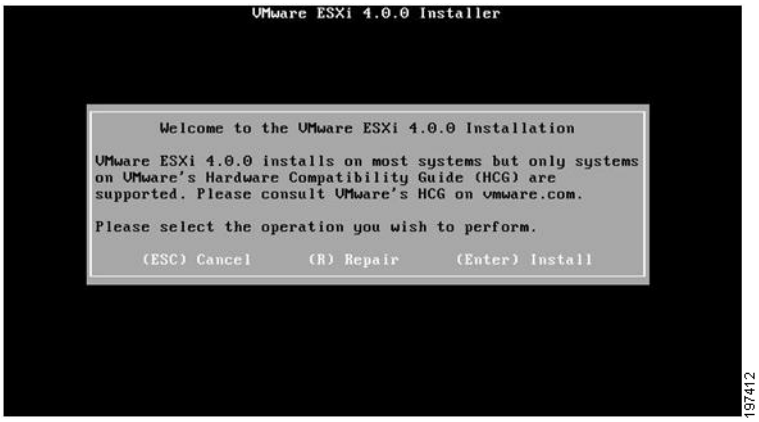


Step 8 When mapping is complete, power cycle the server so that the server reboots from the virtual CD/DVD and so the BIOS recognizes the media that you just added.

Note You can power cycle the server by pressing the Power button on the server; by selecting Macros > Ctrl-Alt-Del on the KVM Console window menu bar; or by clicking Reset in the UCS Manager Work pane for the selected server.

Note When the server power cycles, it boots from the virtual CD/DVD that is mapped to your ISO installation image. The server uses the boot order that is defined in its UCS Manager service profile (see Step 1).

Step 9 Wait until the following screen is displayed, and then press **Enter** to start the installation process.



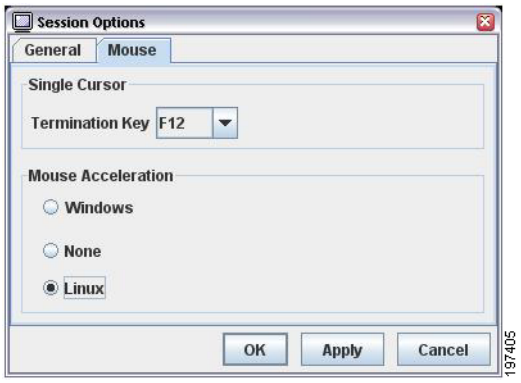
Step 10 Observe the installation process and respond to prompts in the wizard as required for your preferences and company standards, including the license agreement.

Step 11 **Optional step:** Set mouse acceleration if you experience laggy response when using the KVM window:

a. From the Virtual KVM Console window menu bar, select **Tools > Session Options**. The Session Options window opens.

b. Select the **Mouse** tab.

c. Under **Mouse Acceleration**, select **Linux** and then click **OK** to apply your changes and close the Session Options window.

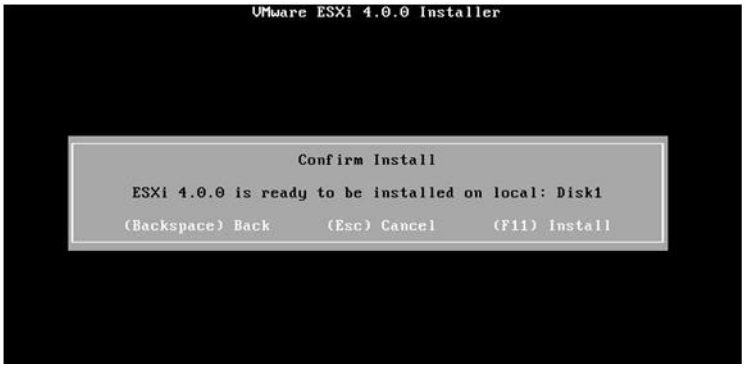


Step 12 When the following screen is displayed, select the installation target drive or logical volume and then press **Enter** to install ESXi to the drive.

Note During the installation steps in which you choose the partition on a RAID volume, the installation might fail with an error similar to the following:
"Your boot partition is on a disk using the GPT partitioning scheme but this machine cannot boot using GPT. This can happen if there is not enough space on your hard drive for the installation."
This is because the BIOS and boot disk of this server must use the MBR partitioning scheme, which supports a maximum partition size of 2.2 TB. If your target disk is using the GPT partitioning scheme with partitions larger than 2.2 TB, you must adjust to use the MBR partitioning scheme with no partition greater than 2.2 TB. Refer to your OS vendor's documentation for more information about partitioning.

Note Do not install the OS on any eUSB drive in your server. The Cisco UCS B440 Blade Server can contain optional eUSB drives. If an eUSB drive is installed, the OS sees it as a local drive, listed as "Viking eUSB." Cisco UCS Manager does not differentiate between the types of local drives. If an OS is installed on more than one local drive or on an internal USB drive (eUSB), you cannot specify which of these local drives the server should use as the boot drive.

Step 13 When the following screen is displayed, press **F11** to start the installation.



Note Do not press Enter to reboot at the next screen until after you remove or unmap the installation media.

Step 14 When the installation is complete, the following screen is displayed.

- If you installed from physical disc, eject that disc, then press **Enter** to boot the target installation drive with ESXi.
- If you installed from an ISO installation image, use the Virtual Media Session window to unmap the installation ISO that you mapped in Step 7, then press **Enter** to boot the target installation drive with ESXi.

After the target server reboots and loads ESXi, the following screen is displayed. You can press **F2** to access the ESXi Console utility when you see the following screen.

SAN Boot Installation

This section describes how to install VMware ESXi and required drivers on a bootable SAN LUN (a logical disk, or RAID volume).

This section contains two topics:

- Prerequisites, page 2-9
- Installation Procedure, page 2-11

Note Not all optional hardware components are qualified for use with VMware at this time. For the exact VMware ESX versions and the hardware components supported on this server, see the hardware and software interoperability matrix for the B-Series servers on Cisco.com: http://www.cisco.com/en/US/products/ps10477/prod_technical_reference_list.html

Prerequisites

The following items or actions are required before you begin this procedure:

- If installing to a bootable SAN device, configure a LUN on the SAN, then connect to the SAN and verify that only one path exists from the SAN HBA to the LUN.
- The Linux installation ISO image (or CD/DVD), and any activation keys for this software installation.

Note This document describes a procedure for installing the OS from an ISO image that you map as a virtual device. You can also install from a physical disk, but that method requires that you attach an external USB CD/DVD drive to the server targeted for installation. Attach a KVM cable to the blade server's front-panel console connector to provide the USB connector.

- A fully installed and configured UCS system.

  See the "Pre-Installation Service Profile Configuration Checklist" section on page 2-10 for a checklist of the minimum UCS configuration items required for this operating system installation.

Pre-Installation Service Profile Configuration Checklist

The installation-target server must have a configured service profile associated with that server. The service profile contains all of the information and settings that are applied to the server.

A minimum checklist of the UCS preconfiguration actions that you must perform for this OS installation follows. Detailed instructions for completing each item are beyond the scope of this document. Information and instructions for configuring all of these items are described in detail in the following documents:

- *Cisco UCS 5108 Server Chassis Installation Guide*
- *Cisco UCS Manager GUI Configuration Guide*
- *Cisco UCS Manager CLI Configuration Guide*

1. Install and cable the UCS system hardware to make the physical connections to your network.
2. Use UCS Manager to configure pools that identify the physical and logical resources on your network. You select from these pools as you build the service profile for the server.

   For example, the UCS system uses WWN pools to identify available nodes and ports on FC HBAs. The UCS system also allows you to define pools for servers, MAC addresses, UUID suffixes, and management IP addresses.
3. Use UCS Manager to configure any policies that you require to manage the server. A specific boot policy is required, as described below in step 7.
4. Configure one named VSAN for each uplink fabric to which the target server is networked.

   A named VSAN creates a connection to a specific external SAN fabric.
5. Associate each VSAN with a physical uplink port on each VSAN's corresponding fabric interconnect.

   For example, you associate the VSAN that you created for Fabric A with an available physical port on Fabric Interconnect A.
6. Create one vHBA policy for each uplink fabric to which the target server is networked.

   This vHBA policy defines how the vHBA connects to the SAN.
7. Create a boot policy for this particular operating system installation.

   For this installation, create a boot policy that defines the following boot order:

   a. CD-ROM
   b. Storage
   - SAN Primary
   - SAN Secondary
8. Create a service profile for the target blade server. Associate the policies that you created in previous steps with the service profile. If you are using the Create Service Profile wizard, part 5 of the creation process is Server Boot Order. Select the boot policy that you created in step 7.

   If there is already an existing service profile associated with the target server, you can modify the existing boot policy. Edit the service profile to select the boot policy that you created in step 7.

Note VMware installation might fail unless you disable port security for the target server's vNIC in the UCS Manager service profile. Otherwise, port security secures only the first MAC address and drops traffic that is sourced with a different MAC address. The VMware installation process requires more than one MAC address. When configuring the network control policy for the vNIC, set **MAC Security** to **allow**.

9. Associate the service profile that you created with the target server.

   When the target server is rebooted, the settings in the service profile are assigned to it.

   At this point, you can begin the OS installation procedure.

Installation Procedure

To install the software, follow these steps:

Note The values and settings shown in the screen captures in this procedure are examples only. Your actual settings might differ.

Step 1 Verify that the UCS Manager service profile for the server includes a boot policy that has the boot order of devices described in the prerequisites for this procedure (Pre-Installation Service Profile Configuration Checklist, page 2-10):

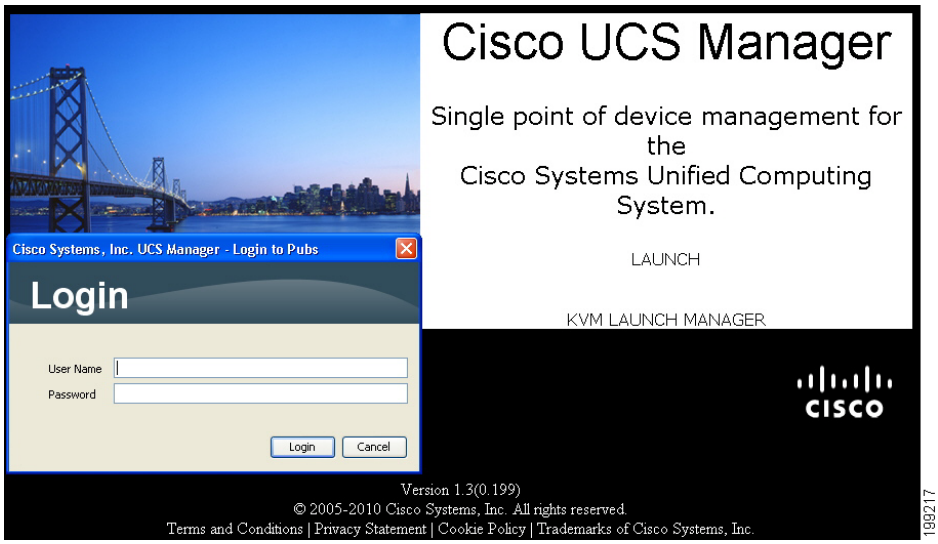
   a. CD-ROM

   b. Storage

   – SAN Primary
   – SAN Secondary

Step 2 Use a browser to connect to the UCS Manager interface using your UCS Virtual Management IP address.

Step 3 Click **Launch**, then log in to UCS Manager using your administrator username and password.



Step 4 Open a KVM console window for the target server (the blade server that contains the target drive):

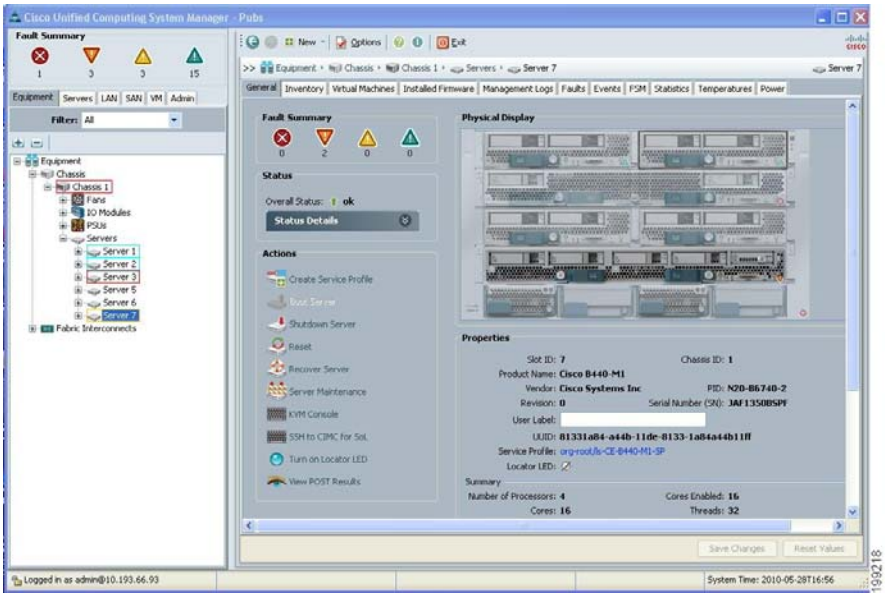
a. In the UCS Manager main window, click the **Equipment** tab in the Navigation pane.

b. On the Equipment tab, expand **Equipment > Chassis >** *Chassis_Number* **> Servers**.

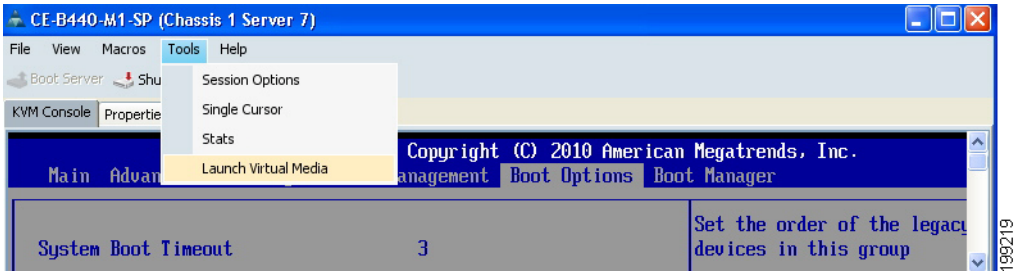
c. Choose the server that you want to access through the KVM console.

d. In the Work pane, click the **General** tab.

e. In the Actions area, click **KVM Console**. The KVM console opens in a separate window.



Step 5 When the KVM console window launches, select **Tools > Launch Virtual Media**.



Step 6 In the Virtual Media Session window, provide the path to your Linux installation image:

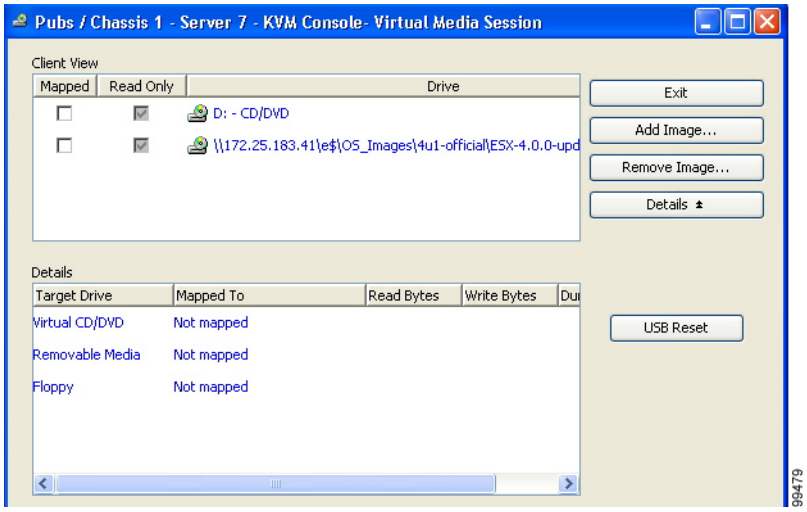
a. Click **Add Image**.

b. Use the dialog box to navigate to your Linux ISO file and select it.

The ISO image is displayed as a device in the Client View pane.

Tip Click **Details** to display the Details pane and observe the reading and writing progress.

Step 7 Check the check box in the Mapped column for the media that you added, and then wait for mapping to complete. Observe the progress in the Details pane.



Step 8 When mapping is complete, power cycle the server so that the server reboots from the virtual CD/DVD and so the BIOS recognizes the media that you just added.

Note You can power cycle the server by pressing the Power button on the server; by selecting Macros > Ctrl-Alt-Del on the KVM Console window menu bar; or by clicking Reset in the UCS Manager Work pane for the selected server.

Note When the server power cycles, it boots from the virtual CD/DVD that is mapped to your ISO installation image. The server uses the boot order that is defined in its UCS Manager service profile (see Step 1).

Step 9 Wait until the following screen is displayed, and then press **Enter** to start the installation process.

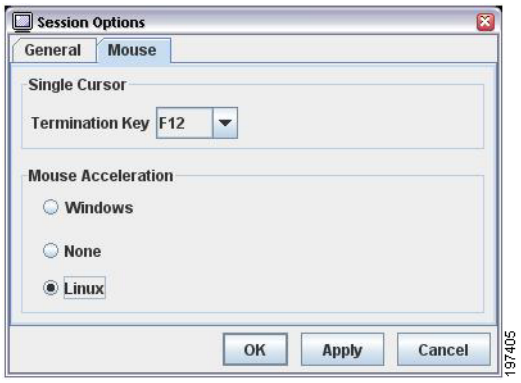
Step 10 Observe the installation process and respond to prompts in the wizard as required for your preferences and company standards, including the license agreement.

Step 11 **Optional step:** Set mouse acceleration if you experience laggy response when using the KVM window:

a. From the Virtual KVM Console window menu bar, select **Tools > Session Options**. The Session Options window opens.

b. Select the **Mouse** tab.

c. Under **Mouse Acceleration**, select **Linux** and then click **OK** to apply your changes and close the Session Options window.



Step 12 When the following screen is displayed, select the installation target LUN or logical volume and then press **Enter** to install ESXi to the drive.

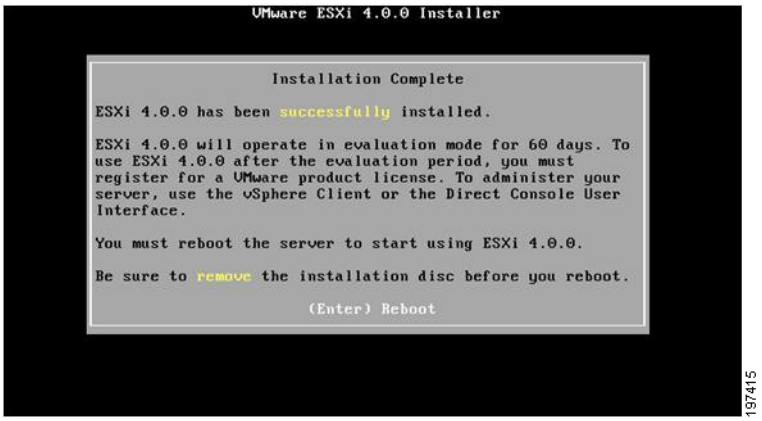
Note During the installation steps in which you choose the partition on a RAID volume, the installation might fail with an error similar to the following:
"Your boot partition is on a disk using the GPT partitioning scheme but this machine cannot boot using GPT. This can happen if there is not enough space on your hard drive for the installation."
This is because the BIOS and boot disk of this server must use the MBR partitioning scheme, which supports a maximum partition size of 2.2 TB. If your target disk is using the GPT partitioning scheme with partitions larger than 2.2 TB, you must adjust to use the MBR partitioning scheme with no partition greater than 2.2 TB. Refer to your OS vendor's documentation for more information about partitioning.

Step 13 When the following screen is displayed, press **F11** to start the installation.

Note Do not press Enter to reboot at the next screen until after you remove or unmap the installation media.

Step 14 When the installation is complete, the following screen is displayed.

- If you installed from physical disc, eject that disc, then press **Enter** to boot the target installation drive with ESXi.
- If you installed from an ISO installation image, use the Virtual Media Session window to unmap the installation ISO that you mapped in Step 7, then press **Enter** to boot the target installation drive with ESXi.



After the target server reboots and loads ESXi, the following screen is displayed. You can press **F2** to access the ESXi Console utility when you see the following screen.

APPENDIX A

How to Determine Which Devices Are Installed in Your Server

If you do not have a record of which devices (mass storage controller and HBA cards) are installed in the target server so that you can know which VMware drivers are required, you can get this information from the following sections.

- Viewing Installed Devices Using the UCS Manager GUI, page A-1
- Viewing Installed Devices Using the UCS Manager CLI, page A-2
- Viewing Installed Devices Using the UCS Manager GUI, page A-1

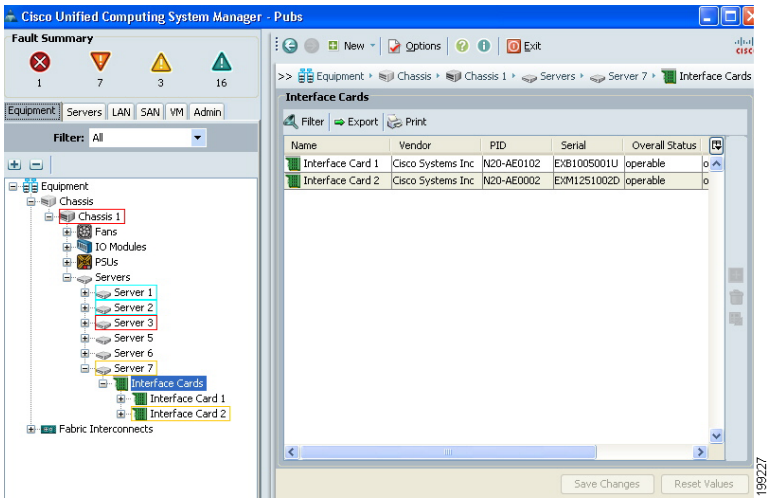
Viewing Installed Devices Using the UCS Manager GUI

To view the installed devices in the server by using the UCS Manager GUI, follow these steps:

1. In the UCS Manager main window, click the **Equipment** tab in the Navigation pane.
2. On the Equipment tab, expand **Equipment > Chassis >** *Chassis_Number* **> Servers >** *Server_Number*.

   where *Server_Number* is the target server.
3. Select **Interface Cards**.

   The interface cards installed in the target server are displayed. The product ID (PID) of each card is listed.



Viewing Installed Devices Using the UCS Manager CLI

To view the installed devices in the server by using the UCS Manager CLI, follow these steps. For more information about the UCS Manager CLI, see the *Cisco UCS Manager CLI Configuration Guide* and the *Cisco UCS Manager CLI Command Reference.*

1. Use Telnet or SSH to connect to the UCS system.
2. Use the scope command to change to chassis-server command mode:

   # **scope server** *chassis-id/blade-id*

   Where *chassis-id/blade-id* is the target server.
3. Use the show adapter command to display a list of installed interface cards in the target server. The interface cards are displayed by their PID numbers.

   /chassis/server # **show adapter**

Viewing Installed Devices Using the KVM Console

To see the names and model numbers of the devices displayed on the console screen during server bootup, follow these steps:

1. In the UCS Manager main window, click the **Equipment** tab in the Navigation pane.
2. On the Equipment tab, expand **Equipment > Chassis >** *Chassis_Number* **> Servers**.
3. Select the target server that you want to access through the KVM console.
4. In the Work pane, click the **General** tab.
5. In the Actions area, click **KVM Console**. The KVM console opens in a separate window.
6. Reboot the server and observe the information about the installed devices on the console screen during bootup.