Installing the Operating System or Hypervisor

Note If you purchased E-Series Server or NCE Option 1 (E-Series Server or NCE without a preinstalled operating system or hypervisor), you must install an operating system or hypervisor.

This chapter includes the following sections:

- Operating System or Hypervisor Installation Methods, on page 1
- KVM Console, on page 2
- PXE Installation Servers, on page 4
- Host Image Mapping, on page 5
- Basic Workflow for Downloading and Installing the VMware vSphere Hypervisor, on page 11
- Configuring the Server Boot Order, on page 14
- What to Do Next, on page 19

Operating System or Hypervisor Installation Methods

E-Series Servers and NCE support several operating systems and hypervisors. Regardless of the platform being installed, you can install it on your server using one of the following methods:

- KVM console
- PXE installation server
- Host image mapping

Caution You must use only one method to map virtual drives. For example, you must use either the KVM console or the Host Image Mapping method. Using a combination of methods will cause the server to be in an undefined state.

KVM Console

The KVM console is an interface accessible from the CIMC that emulates a direct keyboard, video, and mouse connection to the server. The KVM console allows you to connect to the server from a remote location. Instead of using CD/DVD or floppy drives physically connected to the server, the KVM console uses virtual media, which are actual disk drives or disk image files that are mapped to virtual CD/DVD or floppy drives. You can map any of the following to a virtual drive:

- CD/DVD or floppy drive on your computer
- Disk image files (ISO or IMG files) on your computer
- USB flash drive on your computer

You can use the KVM console to install an operating system or hypervisor on the server and to do the following:

- Access the BIOS setup menu by pressing **F2** during bootup.
- Access the CIMC Configuration Utility by pressing **F8** during bootup.

Note The CIMC Configuration Utility is not applicable to the EHWIC E-Series NCE and the NIM E-Series NCE.

- On Cisco UCS M1 and M2 servers, access the WebBIOS to configure RAID, by pressing **Ctrl-H** during bootup.

  On Cisco UCS M3 servers, access the MegaRAID controller to configure RAID, by pressing **Ctrl-R** during bootup.

Note RAID is not supported on EHWIC E-Series NCE and NIM E-Series NCE. The **Ctrl-H** and **Ctrl-R** will not work on these SKUs.

Java Requirements to Launch the KVM Console

To launch the KVM console, you must have Java release 1.6 or later installed in your system.

If the KVM console fails to launch because the certificate is revoked by Java, you must change your Java settings. Do the following:

1. Access the Java control panel.
2. Click the **Advanced** tab
3. Under **Perform certificate revocation on**, choose the **Do not check (not recommended)** radio button. For more information, see http://www.java.com/en/download/help/revocation_options.xml.

Installing an Operating System or Hypervisor Using the KVM Console

Before you begin

Locate the operating system or hypervisor installation disk or disk image file.

Note The VMware vSphere Hypervisor requires a customized image. To download the customized image, see Downloading the Customized VMware vSphere Hypervisor Image, on page 11.

Procedure

Step 1 Load the operating system or hypervisor installation disk into your CD/DVD drive, or copy the disk image files to your computer.

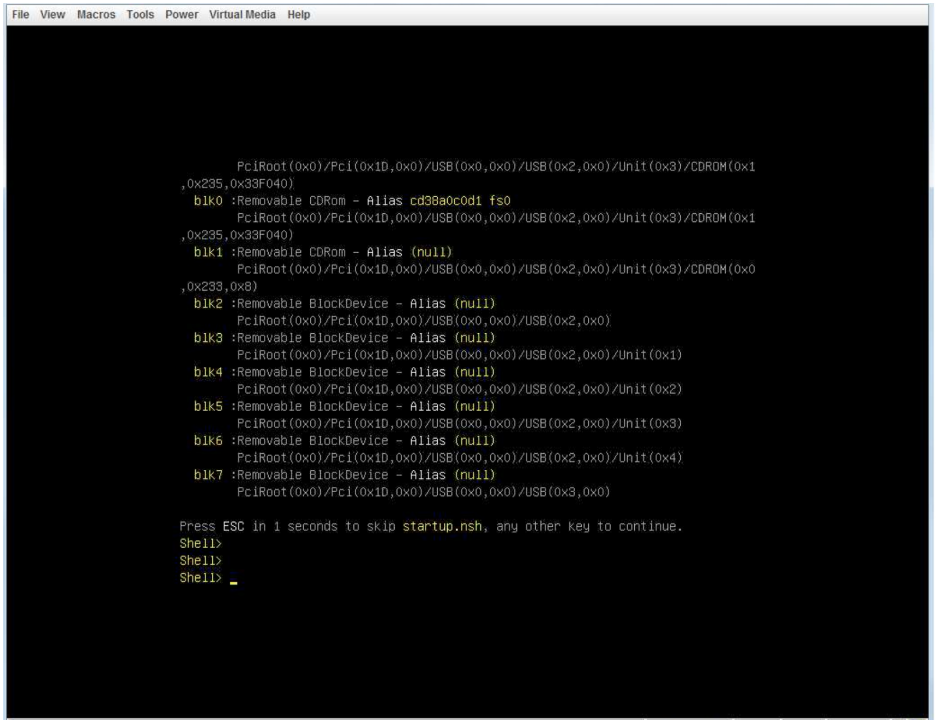
Step 2 If CIMC is not open, log into the CIMC GUI.

Step 3 From the top menu, click **Launch KVM**.

Step 4 From the **Launch KVM** menu, click **Java Based KVM**.

The **KVM Console** opens in a separate window.

Step 5 From the KVM console, click the **Virtual Media** tab.



Step 6 In the **Virtual Media** tab,click **Activate Virtual Devices**

Step 7 Select **Accept this Session** and then click **Apply** .

Step 8 Click the **Virtual Media** tab and click **Map CD/DVD**.

Step 9 Click **Browse**, navigate to and select the operating system or hypervisor installation disk image. Click **Open** to mount the disk image, and then check the **Mapped** check box for the mounted disk image in the **Virtual Media** tab.

Step 10 Set the boot order to make the virtual CD/DVD drive as the boot device.

Step 11 Reboot the server.

When the server reboots, it begins the installation process from the virtual CD/DVD drive. Refer to the platform installation guide for the installation process.

Step 12 If the disk drives are not displayed after you install the operating system or hypervisor, you must install drivers. See the appropriate operating system or hypervisor documentation for instructions on how to install drivers.

For instructions on how to install drivers on a Microsoft Windows operating system, see Installing Drivers for the Microsoft Windows Server, on page 7.

What to do next

After the installation is complete, reset the virtual media boot order to its original setting.

PXE Installation Servers

A Preboot Execution Environment (PXE) installation server allows a client to boot and install an operating system or hypervisor from a remote location. To use this method, a PXE environment must be configured and available on your VLAN, typically a dedicated provisioning VLAN. In addition, the server must be set to boot from the network. When the server boots, it sends a PXE request across the network. The PXE installation server acknowledges the request, and starts a sequence of events that installs the operating system or hypervisor on the server.

PXE servers can use installation disks, disk images, or scripts to install the operating system or hypervisor. Proprietary disk images can also be used to install the platform, additional components, or applications.

Note PXE installation is an efficient method for installing a platform on a large number of servers. However, considering that this method requires setting up a PXE environment, it might be easier to use another installation method.

Installing an Operating System or Hypervisor Using a PXE Installation Server

Before you begin

Verify that the server can be reached over a VLAN.

Procedure

Step 1 Set the boot order to **PXE**.

Step 2 Reboot the server.

Caution If you are using the shared LOM interfaces to access CIMC, make sure that you do not use the CIMC GUI during the server reboot process. If you use the CIMC GUI, the GUI will disconnect during PXE installation as the boot agent overrides the IP address that was previously configured on the Ethernet ports.

If a PXE install server is available on the VLAN, the installation process begins when the server reboots. PXE installations are typically automated and require no additional user input. Refer to the installation guide for the operating system or hypervisor being installed to guide you through the rest of the installation process.

What to do next

After the installation is complete, reset the LAN boot order to its original setting.

Host Image Mapping

The Host Image Mapping feature allows you to download, map, unmap, or delete a host image. Download a host image, such as Microsoft Windows, Linux, or VMware from a remote FTP or HTTP server onto the CIMC internal repository, and then map the image onto the virtual drive of a USB controller in the E-Series Server or NCE. After you map the image, set the boot order to make the virtual drive, in which the image is mounted, as the first boot device, and then reboot the server. The host image must have .iso or .img as the file extension.

The Host Image Mapping feature also allows you to download and mount a diagnostics image. The diagnostics image must have .diag as the file extension.

Mapping the Host Image

Before you begin

- Log in to CIMC as a user with admin privileges.
- Obtain the host image file from the appropriate third-party.

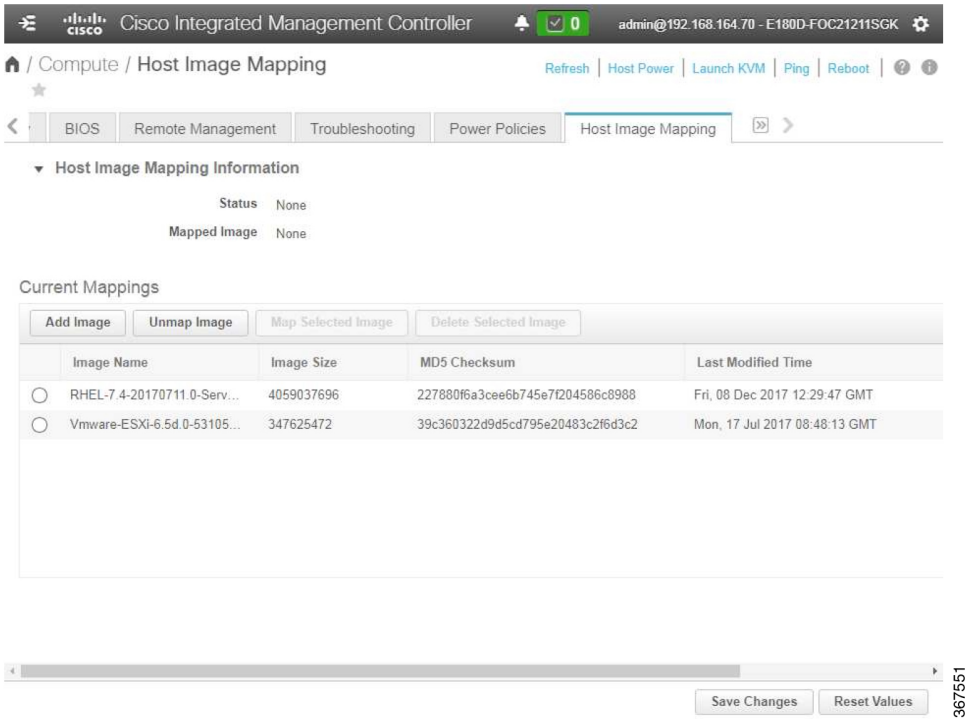
Note The VMware vSphere Hypervisor requires a customized image. To download the customized image, see Downloading the Customized VMware vSphere Hypervisor Image, on page 11.

Note If you start an image update while an update is already in process, both updates will fail.

Procedure

Step 1 In the Navigation pane, click the **Compute** menu.

Step 2 On the **Compute** tab, click **Host Image Mapping**.



Step 3 In the **Install Pane**, complete the following fields:

Name	Description
URL field	The URL of the remote server on which the image is located. If the remote server requires user authentication, you must add the username and password of the remote server in the URL. The remote server can be an FTP, FTPS, HTTP, or HTTPS server. The URL syntax must be: *protocol://username:password@server-ip-address/path/filename*
Image Name field	The name of the image. • If you are installing a host image, that image must have .iso as the file extension. • If you are installing a diagnostics image, that image must have .diag as the file extension.

Step 4 Click **Download**.

The image file is downloaded from the specified FTP, FTPS, HTTP, or HTTPS server onto the CIMC internal repository.

Step 5 Click **Map Image to Host**.

The image is mounted on the virtual drive of a USB controller. The virtual drive can be one of the following:

- HDD—Hard disk drive
- FDD—Floppy disk drive
- CDROM—Bootable CD-ROM

Step 6 Set the boot order to make the virtual drive in which the image is mounted as the first boot device.

To set the boot order, see Configuring the Server Boot Order, on page 14.

Tip To determine in which virtual drive the image is mounted, see the **Host Image Update** area in the **Host Image Mapping** page.

Step 7 Reboot the server.

Step 8 If the image contains an answer file, the operating system or hypervisor installation is automated and the image is installed. Otherwise, the installation wizard is displayed. Follow the wizard steps to install the image.

Step 9 If disk drives are not displayed after you install the operating system or hypervisor, you must install drivers. See the appropriate operating system or hypervisor documentation for instructions on how to install drivers.

For instructions on how to install drivers on a Microsoft Windows operating system, see Installing Drivers for the Microsoft Windows Server, on page 7.

What to do next

- After the installation is complete, reset the virtual media boot order to its original setting.
- Unmap the host image. See Unmapping the Host Image, on page 10.

Installing Drivers for the Microsoft Windows Server

Note If you purchased an E-Series Server or NCE Option 1 (E-Series Server or NCE without a preinstalled operating system or hypervisor), and you installed your own version of the Microsoft Windows Server, you must install drivers.

The Microsoft Windows operating system requires that you install the following drivers:

- On-Board Network Drivers for Windows 2008 R2
- LSI Drivers (On-Board Hardware RAID Controller) for Windows 2008 R2
- Intel Drivers for Windows 2008 R2
- Intel Server Chipset Driver for Windows
- Intel Network Adapter Driver for Windows Server 2012 R2

Note The driver 'Intel Network Adapter Driver for Windows Server 2012 R2' is applicable only for the following servers:

- UCS-E160S-M3 Server
- UCS-EN140N-M2 Server
- UCS-EN120E-M2 Server
- UCS-E180D-M3/K9 Server
- UCS-E1120D-M3/K9 Server

Note Additional drivers are not needed for Windows 2012.

If you have purchased a 10-Gigabit add-on card, you must also install the 10G PCIe Network Drivers for Windows 2008 R2.

Procedure

Step 1 Download the drivers from Cisco.com. See Obtaining Software from Cisco Systems, on page 8.

Step 2 Copy the driver files into a USB flash drive.

Step 3 Install your own version of Microsoft Windows Server.

During the installation process, you will be prompted for the LSI Drivers.

Step 4 Plug the USB flash drive into the USB slot in the E-Series Server and then install the LSI Drivers.

This step is applicable to E-Series Servers and the SM E-Series NCE. This step is not applicable to the EHWIC E-Series NCE and the NIM E-Series NCE.

Step 5 After the Microsoft Windows Server installation is complete, install the On-Board Network Drivers (Broadcom) and the Intel Drivers.

Obtaining Software from Cisco Systems

Use this procedure to download drivers, BIOS and CIMC firmware, and the diagnostics image.

Procedure

Step 1 Navigate to http://www.cisco.com/.

Step 2 If you are not already logged in, click **Log In** at the top right-hand edge of the page and log in using your Cisco.com credentials.

Step 3 In the menu bar at the top, click **Support**.

A roll-down menu appears.

Step 4 From the Downloads (center) pane, click **All Downloads** (located at the bottom right corner).

The **Download Software** page appears.

Step 5 From the left pane, click **Products**.

Step 6 From the center pane, click **Unified Computing and Servers**.

Step 7 From the right pane, click **Cisco UCS E-Series Software**.

Step 8 From the right pane, click the name of the server model for which you want to download the software.

The **Download Software** page appears with the following categories.

- **Unified Computing System (UCSE) Server Drivers**—Contains drivers.
- **Unified Computing System (UCSE) Server Firmware**—Contains the Host Upgrade Utility and the BIOS, CIMC, and PLD firmware images.
- **Unified Computing System (UCSE) Utilites**—Contains the diagnostics image.

Step 9 Click the appropriate software category link.

Step 10 Click the **Download** button associated with software image that you want to download.

The **End User License Agreement** dialog box appears.

Step 11 (Optional) To download multiple software images, do the following:

a) Click the **Add to cart** button associated with the software images that you want to download.

b) Click the **Download Cart** button located on the top right .

All the images that you added to the cart display.

c) Click the **Download All** button located at the bottom right corner to download all the images.

The **End User License Agreement** dialog box appears.

Step 12 Click **Accept License Agreement**.

Step 13 Do one of the following as appropriate:

- Save the software image file to a local drive.
- If you plan to install the software image from a TFTP server, copy the file to the TFTP server that you want to use.

  The server must have read permission for the destination folder on the TFTP server.

What to do next

Install the software image.

Unmapping the Host Image

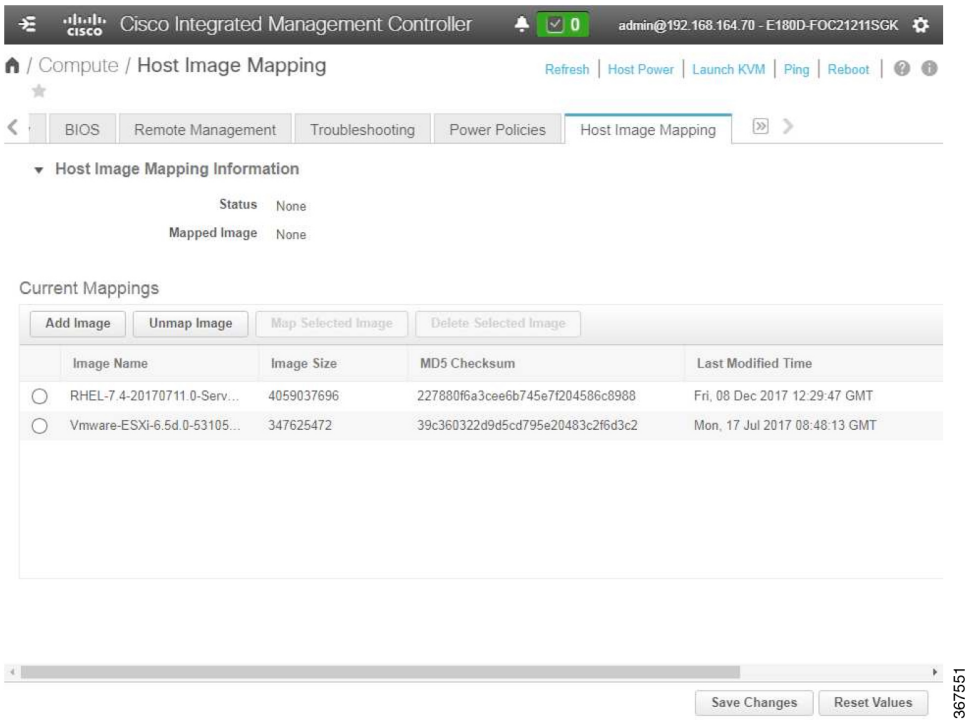
Before you begin

Log in to CIMC as a user with admin privileges.

Procedure

Step 1 In the Navigation pane, click the **Compute** menu.

Step 2 On the **Compute** tab, click **Host Image Mapping**.



Step 3 Click **Unmap Image**.

The mapped image is unmounted from the virtual drive of the USB controller.

Basic Workflow for Downloading and Installing the VMware vSphere Hypervisor

Caution If you are using the VMware FL-SRE-V-HOST license (equivalent to VMware vSphere Hypervisor 5.X), make sure that the RAM that you are using is 32 GB or less. If the RAM is more than 32 GB, you will get an error message, and you will not be able to apply the license. If you want to use 48 GB of RAM, upgrade your license to FL-SRE-V-HOSTVC.

1. Download the customized VMware vSphere Hypervisor image.
2. Install the VMware vSphere Hypervisor image.
3. Assign a static IP address to the VMware vSphere Hypervisor.
4. Download and install the vSphere Client.

Downloading the Customized VMware vSphere Hypervisor Image

Procedure

Step 1 Navigate to https://my.vmware.com/web/vmware/login.

The VMware login page appears.

Step 2 Enter your VMware credentials, and then click **Log In**.

If you do not have an account with VMware, click **Register** to create a free account.

Step 3 Click **Downloads**, and then select **All Products** from the drop-down list.

Step 4 Do one of the following as appropriate:

- To download the VMware vSphere Hypervisor 5.1 image, enter **ESXi-5.1.0-799733-custom-Cisco-2.1.0.3.iso** in the **Search** field, and then click the **Search** icon. From the **Search Results**, click **VMware vSphere > Drivers & Tools > Cisco Custom Image for ESXi 5.1.0 GA Install CD**, and then click **Download**.
- To download the VMware vSphere Hypervisor 5.5 image, enter **ESXi-5.5.0-1331820-custom-Cisco-5.5.0.1.iso**, in the **Search** field, and then click the **Search** icon. From the **Search Results**, click **VMware vSphere > Drivers & Tools > CISCO Custom Image for ESXi 5.5.0 GA Install CD**, and then click **Download**.

What to do next

Install the VMware vSpere Hypervisor image.

Assigning a Static IP Address to the VMware vSphere Hypervisor

Use this procedure to assign a static IP address to the VMware vSphere Hypervisor.

Before you begin

- Download the customized VMware vSphere Hypervisor image. See Downloading the Customized VMware vSphere Hypervisor Image, on page 11.

Note You must have an account with VMware to download the customized image.

- Install the image onto the E-Series Server or NCE. For installation instructions, see Mapping the Host Image, on page 5.

Procedure

Step 1 In your web browser, enter the IP address that you configured to access CIMC during initial setup and then log into CIMC.

The CIMC Home page, which is the **Server Summary** page, appears.

Step 2 From the **Actions** area of the **Server Summary** page, click the **Launch KVM Console** icon.

The **KVM Console** opens in a separate window.

Step 3 From the KVM console, click the **KVM** tab, and then do the following to configure the IP address:

a) Press **F2** to access the VMware vSphere Hypervisor DCUI customization menu.

The **DCUI** login page appears.

b) Log into the **DCUI**.

The **System Customization** page appears.

c) From the **System Customization** page, click **Configure Management Network**.

The **Configure Management Network** page appears, which has several menu options, including **Network Adapter**. The **Network Adapter** menu option allows you to view the existing network adapters and activate them.

Note By default, the network adapter, **vmnic0**, is activated. Make sure that it stays activated.

d) From the **Configure Management Network** page, click the **IP Configuration** menu option.

To assign a static IP address, do the following:

- In the **IP Configuration** dialog box, click the radio box to specify that a static IP address will be used.
- In the appropriate fields, enter the IP address, network mask, and the gateway IP address, and then press **Enter**. The **Configure Management Network** page appears.

- In the **Configure Management Network** page, click the **ESC** key. The **Configure Management Network Confirm** dialog box appears.
- Enter **y** to accept the changes and restart the management network.

e) In the router configuration, add a route to the VMware vSphere Hypervisor host IP address.

For example, if the host IP address is 192.168.1.25 and the ucse interface is ucse 2/0, add the following route:

```
ip route 192.168.1.25 255.255.255.255 ucse2/0
```

f) Install the vSphere Client. See Downloading and Installing the vSphere Client, on page 13. From the vSphere Client, use the host IP address to log in to the VMware vSphere Hypervisor.

Downloading and Installing the vSphere Client

Before you begin

- Make sure that you have assigned a static IP address to the VMware vSphere Hypervisor. See Assigning a Static IP Address to the VMware vSphere Hypervisor, on page 12.
- Verify that you have network connectivity. To download the vSphere Client, connection to the Internet is required.

Note The vSphere Client contains an online tutorial for first time users. It also contains embedded in-line getting started assistance, which allows you to set up your virtual infrastructure through an easy to use, step-by-step process. If you are an experienced user, you can choose to turn-off the getting started in-line assistance.

Procedure

Step 1 Go to https://*hypervisor-ip-address*. You are directed to the VMware website and the Welcome page opens.

Step 2 Click **Download vSphere Client**, and then click **Run** to download the vSphere Client. The VMware vSphere Client is installed and a shortcut icon to the client appears on your desktop.

Step 3 Click the **VMware vSphere Client** icon to open the login window.

Step 4 To manage the VMware vSphere Hypervisor, enter the IP address or hostname of the VMware vSphere Hypervisor and the username and password, and then click **Login**. The vSphere Client GUI opens.

Note The default username for the preinstalled VMware vSphere Hypervisor is **root**, which cannot be changed; and the default password is **password** (For VMware 6.7 version, the default password is **password@123**). After you log in, we recommend that you change the password.

Configuring the Server Boot Order

You can use the CIMC GUI or the BIOS setup menu to configure the server boot order.

Configuring the Server Boot Order Using the CIMC GUI

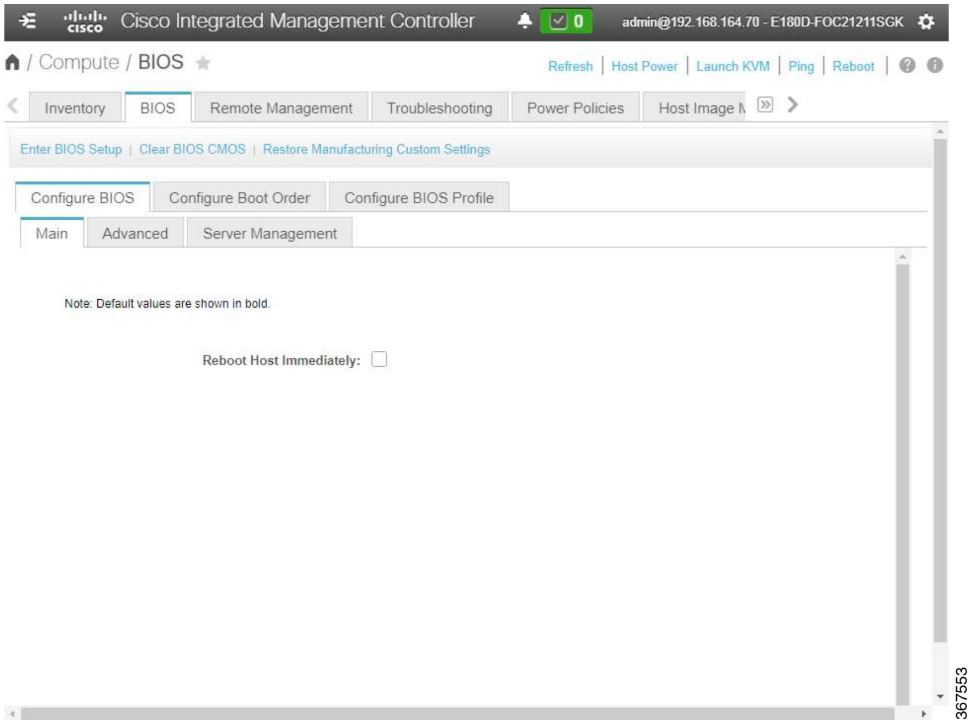
Before you begin

Log into CIMC as a user with admin privileges.

Procedure

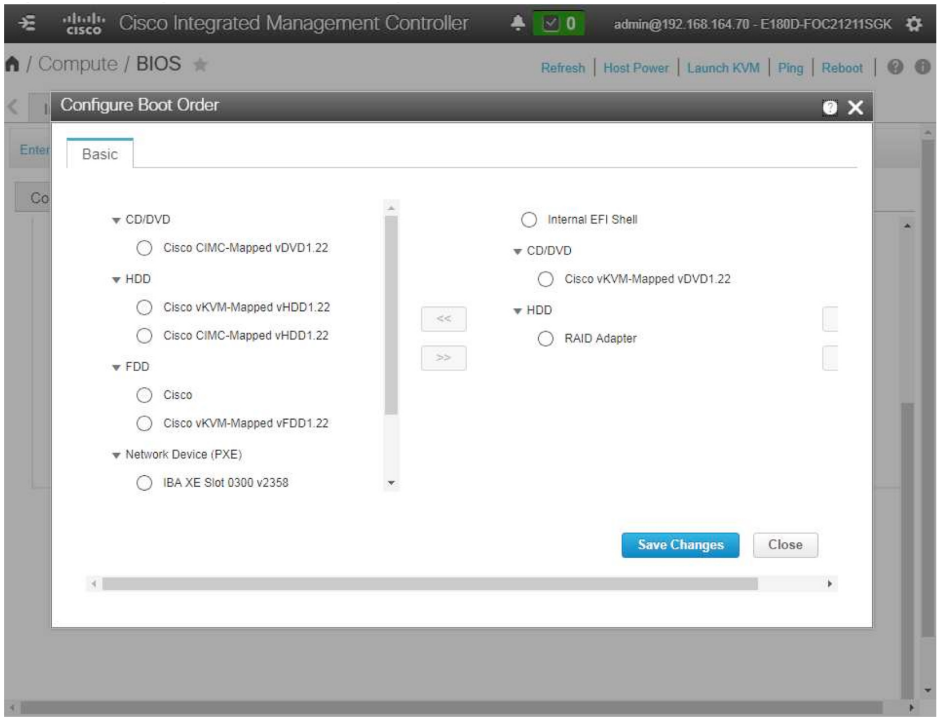
Step 1 In the Navigation pane, click the **Compute** menu.

Step 2 On the **Compute** tab, click **BIOS**.



Step 3 In the **Configure Boot Order** area, click **Configure Boot Order**.

The **Configure Boot Order** dialog box appears.



Step 4 In the **Configure Boot Order** dialog box, complete the following fields as appropriate:

Name	Description
Device Types table	The server boot options. This can be the following: • **HDD**—Hard disk drive. • **FDD**—Floppy disk drive. • **CDROM**—Bootable CD-ROM. • **PXE**—PXE boot. • **EFI** —Extensible Firmware Interface.
Add >	Moves the selected device type to the **Boot Order** table.
< Remove	Removes the selected device type from the **Boot Order** table.
Boot Order table	Displays the device types from which this server can boot, in the order in which the boot will be attempted.
Up	Moves the selected device type to a higher priority in the **Boot Order** table.
Down	Moves the selected device type to a lower priority in the **Boot Order** table.

Step 5 Click **Apply**.

Additional device types may be appended to the actual boot order, depending on what devices you have connected to your server.

What to do next

Reboot the server to boot with your new boot order.

Configuring the Boot Order Using the BIOS Setup Menu

Use this procedure if you want the server to boot from an external bootable device, such as a USB or an external CD-ROM drive that is directly connected to the E-Series Server or NCE.

Procedure

Step 1 In the **Navigation** pane, click the **Server** menu.

Step 2 In the work pane, click **Host Image Mapping** tab.

Step 3 From the **Actions** area, click **Launch KVM Console**.

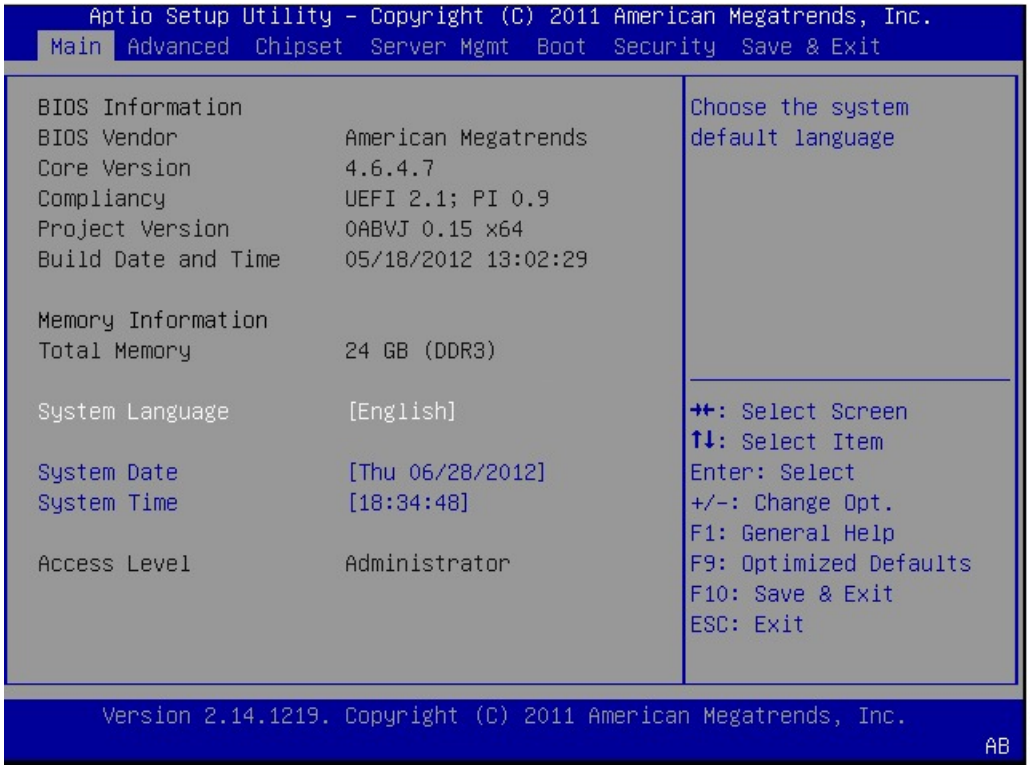
The **KVM Console** opens in a separate window.

Step 4 From the **Server Summary** page, click **Power Cycle Server** to reboot the server.

Step 5 When prompted, press **F2** during bootup to access the BIOS setup menu.

The **Aptio Setup Utility** appears, which provides the BIOS setup menu options.

Figure 1: BIOS Setup Menu



Step 6 Click the **Boot** tab.

Step 7 Scroll down to the bottom of the page below the **Boot Options Priority** area. The following boot option priorities are listed:

- Floppy Drive BBS Priorities
- Network Device BBS Priorities
- Hard Drive BBS Priorities
- CD/DVD ROM Drive BBS Priorities

Step 8 Use the **Up** or **Down arrow keys** on your keyboard to highlight the appropriate option.

Step 9 Press **Enter** to select the highlighted field.

Step 10 Choose the appropriate device as Boot Option 1.

Step 11 Press **F4** to save changes and exit.

The **Main** tab of the BIOS setup displays the device that you configured as Boot Option 1.

Verifying Operating System and Hypervisor Installation

Accessing the Microsoft Windows Server from CIMC

Before you begin

- A CIMC IP address is configured for CIMC access.
- The Microsoft Windows Server is installed on the E-Series Server.

Procedure

Step 1 In the **Navigation** pane, click the **Server** menu.

Step 2 In the work pane, click **Host Image Mapping** tab.

Step 3 From the **Actions** area of the **Server Summary** page, click the **Launch KVM Console** icon.

The **KVM Console** opens in a separate window.

Step 4 From the KVM console, access the installed Microsoft Windows Server operating system.

Accessing the VMware vSphere Hypervisor from CIMC

Before you begin

- A CIMC IP address is configured for CIMC access.
- The VMware vSphere Hypervisor is installed on the E-Series Server.

Procedure

Step 1 In the **Navigation** pane, click the **Server** menu.

Step 2 In the work pane, click **Host Image Mapping** tab.

Step 3 From the **Actions** area of the **Server Summary** page, click the **Launch KVM Console** icon.

The **KVM Console** opens in a separate window.

Step 4 From the KVM console, click the **KVM** tab.

The VMware vSphere Hypervisor Direct Console User Interface (DCUI) appears. If VMware vSphere Hypervisor has assigned an IP address to the host, then that IP address is displayed on the DCUI page, or you can specify a static IP address. See Assigning a Static IP Address to the VMware vSphere Hypervisor, on page 12.

Step 5 Make sure that you have installed vSphere Client. If not, install it. See Downloading and Installing the vSphere Client, on page 13.

Step 6 From the vSphere Client, log in to the VMware vSphere Hypervisor.

To log in, use either the IP address that is assigned by VMware vSphere Hypervisor or the static IP address that you specified in Step 4.

Note The default username for the preinstalled VMware vSphere Hypervisor is **root**, which cannot be changed, and the default password is **password** (For VMware 6.7 version the default password is **password@123**). After you log in, we recommend that you change the password.

What to Do Next

Configure a connection between the router and the server. See Configuring a Connection Between the Router and the E-Series Server or NCE.