GUI Configuration Guide for Cisco UCS E-Series Servers and the Cisco UCS E-Series Network Compute Engine Integrated Management Controller, Release 2.x

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Preface

This preface includes the following sections:

New and Changed Information

The following table provides an overview of the significant changes to this guide for the current release:

Table 1: New Features and Significant Behavioral Changes in Cisco Integrated Management Controller Software, Release 3.0.1

Feature	Description	Where Documented
NIM E-Series Network Compute Engine Support	Support for the NIM E-Series Network Compute Engine (NIM E-Series NCE).	Overview, on page 1
Faults and Logs	In the Navigation pane, under the **Server** tab, **Fault Sensors** is changed to **Faults and Logs**. Under the **Faults and Logs** tab, the following new tabs are added: **Fault History**, **Cisco IMC Log**, and **Logging Controls**. **Note** In previous releases, the **CIMC Log** (now called Cisco IMC Log) and the **Logging Controls** tabs were under the **Admin** tab.	Viewing Faults and Logs, on page 201

Feature	Description	Where Documented
Network Analysis Module (NAM) and Network Time Protocol (NTP) Settings	Support added to enable the NAM capability and NTP service.	Configuring Network-Related Settings, on page 147
Login Banner File	A banner is added to the CIMC login page. You can change the contents of the banner file from the Utilities page in the CIMC GUI.	Server Utilities, on page 209

Audience

This guide is intended primarily for data center administrators with responsibilities and expertise in one or more of the following:

- Server administration
- Storage administration
- Network administration
- Network security

Organization

This document includes the following chapters:

Chapter	Title	Description
Chapter 1	Overview	Provides an overview of the Cisco UCS E-Series Servers, the Cisco UCS E-Series Network Compute Engine, and the CIMC GUI.
Chapter 2	Installing the Server Operating System	Describes how to configure an operating system (OS) on the server.
Chapter 3	Managing the Server	Describes how to configure the server boot device order, how to manage the server power, how to configure power policies, and how to configure BIOS settings.
Chapter 4	Managing Storage Using RAID	Describes how to configure and manage RAID. **Note** The RAID feature is applicable to E-Series Servers and the SM E-Series NCE. The RAID feature is not applicable to the EHWIC E-Series NCE and the NIM E-Series NCE.
Chapter 5	Viewing Server Properties	Describes how to view the CPU, memory, power supply, storage, PCI adapter, and LOM properties of the server.

Chapter	Title	Description
Chapter 6	Viewing Server Sensors	Describes how to view the temperature, voltage, and storage sensors.
Chapter 7	Managing Remote Presence	Describes how to configure and manage the virtual KVM, virtual media, and the serial over LAN connection.
Chapter 8	Managing User Accounts	Describes how to add or modify user accounts, how to configure Active Directory to authenticate users, and how to manage user sessions.
Chapter 9	Configuring Network-Related Settings	Describes how to configure network interfaces, network settings, network security, NAM, and NTP settings.
Chapter 10	Configuring Communication Services	Describes how to configure server management communication by HTTP, SSH, IPMI, and SNMP.
Chapter 11	Managing Certificates	Describes how to generate, upload, and manage server certificates.
Chapter 12	Configuring Platform Event Filters	Describes how to configure and manage platform event filters.
Chapter 13	Firmware Management	Describes how to obtain, install, and activate firmware images.
Chapter 14	Viewing Faults and Logs	Describes how to view fault information and how to view, export, and clear the CIMC log and system event log messages.
Chapter 15	Server Utilities	Describes how to export support data, how to export and import the server configuration, how to reset the server configuration to factory defaults, and how to reboot the management interface.
Chapter 16	Diagnostic Tests	Describes how to run diagnostic tests.

Conventions

Text Type	Indication
GUI elements	GUI elements such as tab titles, area names, and field labels appear in **this font**. Main titles such as window, dialog box, and wizard titles appear in **this font**.

Text Type	Indication
User input	Text the user should enter exactly as shown or keys that a user should press appear in this font.
Document titles	Document titles appear in *this font*.
System output	Terminal sessions and information that the system displays appear in `this font`.
CLI commands	CLI command keywords appear in **this font**. Arguments in a CLI command appear in *this font*.
[ ]	Elements in square brackets are optional.
{x | y | z}	Required alternative keywords are grouped in braces and separated by vertical bars.
[x | y | z]	Optional alternative keywords are grouped in brackets and separated by vertical bars.
string	A nonquoted set of characters. Do not use quotation marks around the string or the string will include the quotation marks.
< >	Nonprinting characters such as passwords are in angle brackets.
[ ]	Default responses to system prompts are in square brackets.
!, #	An exclamation point (!) or a pound sign (#) at the beginning of a line of code indicates a comment line.

Note Means *reader take note*. Notes contain helpful suggestions or references to material not covered in the document.

Tip Means *the following information will help you solve a problem*. The tips information might not be troubleshooting or even an action, but could be useful information, similar to a Timesaver.

Caution Means *reader be careful*. In this situation, you might perform an action that could result in equipment damage or loss of data.

Timesaver Means *the described action saves time*. You can save time by performing the action described in the paragraph.

Warning IMPORTANT SAFETY INSTRUCTIONS

This warning symbol means danger. You are in a situation that could cause bodily injury. Before you work on any equipment, be aware of the hazards involved with electrical circuitry and be familiar with standard practices for preventing accidents. Use the statement number provided at the end of each warning to locate its translation in the translated safety warnings that accompanied this device.

SAVE THESE INSTRUCTIONS

Related Documentation

The Documentation Guide for Cisco UCS E-Series Servers and the Cisco UCS E-Series Network Compute Engine provides links to all product documentation.

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.

Subscribe to the *What's New in Cisco Product Documentation* as a Really Simple Syndication (RSS) feed and set content to be delivered directly to your desktop using a reader application. The RSS feeds are a free service and Cisco currently supports RSS version 2.0.

Follow Cisco UCS Docs on Twitter to receive document update notifications.

CHAPTER 1

Overview

This chapter includes the following sections:

Cisco UCS E-Series Servers and the Cisco UCS E-Series Network Compute Engine Overview

The Cisco UCS E-Series Servers (E-Series Servers) and Cisco UCS E-Series Network Compute Engine (NCE) are a family of size-, weight-, and power-efficient blade servers that are housed within the Generation 2 Cisco Integrated Services Routers (Cisco ISR G2) and the Cisco ISR 4000 series. These servers provide a general purpose compute platform for branch-office applications deployed either as bare-metal on operating systems, such as Microsoft Windows or Linux, or as virtual machines on hypervisors, such as VMware vSphere Hypervisor, Microsoft Hyper-V, or Citrix XenServer.

The E-Series Servers are purpose-built with powerful Intel Xeon processors for general purpose compute. They come in two form factors: single-wide and double-wide. The single-wide E-Series Server fits into one service module (SM) slot, and the double-wide E-Series Server fits into two SM slots.

The NCEs are price-to-power optimized modules that are built to host Cisco network applications and other lightweight general-purpose applications. They come in three form factors: SM, NIM, and EHWIC. The SM E-Series NCE fits into one SM slot, the NIM E-Series NCE fits into one NIM slot, and the EHWIC E-Series NCE fits into two EHWIC slots.

Note

- The EHWIC E-Series NCE can be installed in the the Cisco ISR G2 only.
- The NIM E-Series NCE can be installed in the Cisco ISR 4000 series only.
- The Cisco ISR 4331 has one SM slot. The Cisco ISR 4321 and the Cisco ISR 4431 have no SM slots.
- Citrix XenServer is supported on the E-Series Servers only.

Note For information about the supported E-Series Servers and NCE, and the maximum number of servers that can be installed per router, see the "Hardware Requirements" section in the *Hardware Installation Guide for Cisco UCS E-Series Servers and the Cisco UCS E-Series Network Compute Engine*.

Server Software

E-Series Servers and NCE require three major software systems:

- CIMC firmware
- BIOS firmware
- Operating system or hypervisor

CIMC Firmware

Cisco Integrated Management Controller (CIMC) is a separate management module built into the motherboard of the E-Series Server or NCE. A dedicated ARM-based processor, separate from the main server CPU, runs the CIMC firmware. The system ships with a running version of the CIMC firmware. You can update the CIMC firmware, but no initial installation is needed.

CIMC is the management service for the E-Series Servers and NCE. You can use a web-based GUI or SSH-based CLI to access, configure, administer, and monitor the server.

BIOS Firmware

BIOS initializes the hardware in the system, discovers bootable devices, and boots them in the provided sequence. It boots the operating system and configures the hardware for the operating system to use. BIOS manageability features allow you to interact with the hardware and use it. In addition, BIOS provides options to configure the system, manage firmware, and create BIOS error reports.

The system ships with a running version of the BIOS firmware. You can update the BIOS firmware, but no initial installation is needed.

Operating System or Hypervisor

The main server CPU runs on an operating system, such as Microsoft Windows or Linux; or on a hypervisor. You can purchase an E-Series Server or NCE with a preinstalled Microsoft Windows Server or VMware vSphere Hypervisor, or you can install your own platform.

Note For information about the platforms that have been tested on the E-Series Servers or NCE, see the "Software Requirements" section in the *Release Notes for Cisco UCS E-Series Servers and the Cisco UCS E-Series Network Compute Engine*.

CIMC Overview

The Cisco Integrated Management Controller (CIMC) is the management service for the E-Series Servers and the NCE. CIMC runs within the server. You can use a web-based GUI or the SSH-based CLI to access, configure, administer, and monitor the server.

You can use CIMC to perform the following server management tasks:

- Power on, power off, power cycle, reset, and shut down the server
- Configure the server boot order
- Manage RAID levels

  Note The RAID feature is applicable to E-Series Servers and the SM E-Series NCE. The RAID feature is not applicable to the EHWIC E-Series NCE and the NIM E-Series NCE.

- View server properties and sensors
- Manage remote presence
- Create and manage local user accounts, and enable remote user authentication through the Active Directory
- Configure network-related settings, including NIC properties, IPv4, VLANs, and network security
- Configure communication services, including HTTP, SSH, IPMI over LAN, and SNMP
- Manage certificates
- Configure platform event filters
- Update CIMC firmware
- Update BIOS firmware
- Install the host image from an internal repository
- Monitor faults, alarms, and server status
- Collect technical support data in the event of server failure

Almost all tasks can be performed in either the GUI interface or CLI interface, and the results of tasks performed in one interface are displayed in another. However, you *cannot*:

- Use the CIMC GUI to invoke the CIMC CLI
- View a command that has been invoked through the CIMC CLI in the CIMC GUI

- Generate CIMC CLI output from the CIMC GUI

CIMC GUI

The CIMC GUI is a web-based management interface for E-Series Servers and the NCE. You can launch the CIMC GUI and manage the server from any remote host that meets the following minimum requirements:

- Java 1.6 or later
- HTTP and HTTPS enabled
- Adobe Flash Player 10 or later

Logging In to the CIMC GUI

Before You Begin

- Make sure that you have configured the IP address to access CIMC. See the *Configuring CIMC Access* chapter in the *Getting Started Guide for Cisco UCS E-Series Server Modules*.
- If not installed, install Adobe Flash Player 10 or later on your local machine.

Procedure

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

Step 2 If a security dialog box displays, do the following:

a) (Optional) Check the check box to accept all content from Cisco.

b) Click **Yes** to accept the certificate and continue.

Step 3 In the log in window, enter your username and password.

Tip When logging in for the first time to an unconfigured system, use **admin** as the username and **password** as the password.

Step 4 Click **Log In**.

The **Change Password** dialog box appears.

Note The **Change Password** dialog box only appears the first time you log into CIMC. It does not appear for subsequent reboots.

Step 5 In the **New Password** field, enter your new password.

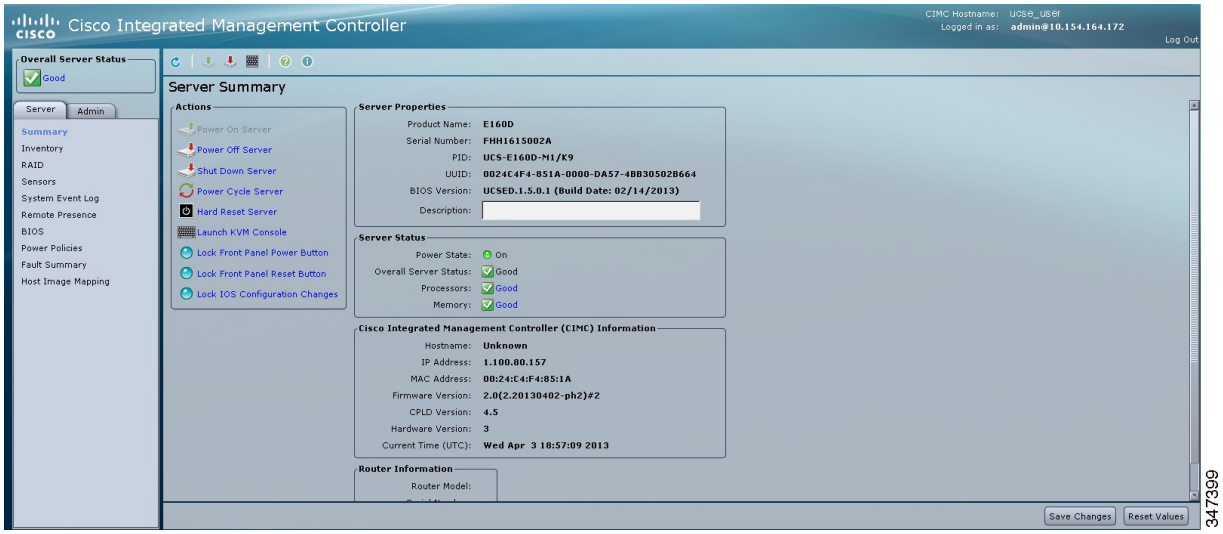
Step 6 In the **Confirm Password** field, enter the password again to confirm it.

Step 7 Click **Save Changes**.

The **Server Summary** page appears, which is the CIMC home page. See CIMC Home Page, on page 5.

CIMC Home Page

Figure 1: CIMC Home Page



Navigation and Work Panes

The **Navigation** pane displays on the left side of the CIMC GUI. Clicking links on the **Server** or **Admin** tabs in the **Navigation** pane displays the associated tabs in the **Work** pane on the right.

The **Navigation** pane has the following areas:

- **Server** tab
- **Admin** tab

Server Tab

Each node in the **Server** tab leads to one or more tabs that display in the **Work** pane. These tabs provides access to the following information:

Server Tab Node Name	Work Pane Tabs Provide Information About...
Summary	Server properties, status, BIOS version, CIMC firmware version, IP address, and MAC address.
Inventory	Installed CPUs, memory cards, power supplies, and PCI adapters.
RAID	Storage adapters and cards.
Sensors	Temperature, voltage, LEDs, and storage sensor readings.
System Event Log	System event messages.

Server Tab Node Name	Work Pane Tabs Provide Information About...
Remote Presence	KVM, virtual media, and Serial over LAN settings.
BIOS	The installed BIOS firmware version and the server boot order.
Power Policies	Power policy settings.
Fault Summary	Fault sensor readings.
Host Image Mapping	Host image mapping status and image information.

Admin Tab

Each node in the **Admin** tab leads to one or more tabs that display in the **Work** pane. These tabs provides access to the following information:

Admin Tab Node Name	Work Pane Tabs Provide Information About...
User Management	Locally-defined user accounts, Active Directory settings, and current user session information.
Network	NIC, IPv4, VLAN, and LOM properties, along with network security settings.
Communication Services	HTTP, SSH, XML API, IPMI over LAN properties.
Certificate Management	Security certificate information and management.
CIMC Log	CIMC log messages.
Event Management	Platform event filters.
Firmware Management	CIMC firmware information and management.
Utilities	Technical support data collection and system configuration import and export options.

Toolbar

The toolbar displays above the **Work** pane.

Element Name	Description
Refresh	Refreshes the current page.
Power On Server	Powers on the server.

Power Off Server	Powers off the server.
Launch KVM Console	Launches the KVM console.
Help	Launches help.
Info	Displays CIMC information.

CIMC Online Help

The CIMC user interface is divided into two main sections: a **Navigation** pane on the left and a **Work** pane on the right. To access online help for a page, do the following:

- In a particular tab in the user interface, click the **?** icon. The **?** icon is located on the toolbar above the **Work** pane.
- In a dialog box, click the **?** icon in that dialog box.

Logging Out of the CIMC GUI

Procedure

Step 1 In the upper right of CIMC, click **Log Out**.
Logging out returns you to the CIMC log in page.

Step 2 (Optional) Log back in or close your web browser.

CHAPTER 2

Installing the Server Operating System or Hypervisor

This chapter includes the following sections:

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.

- Access the WebBIOS to configure RAID, by pressing **Ctrl-H** during bootup.

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 18.

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.

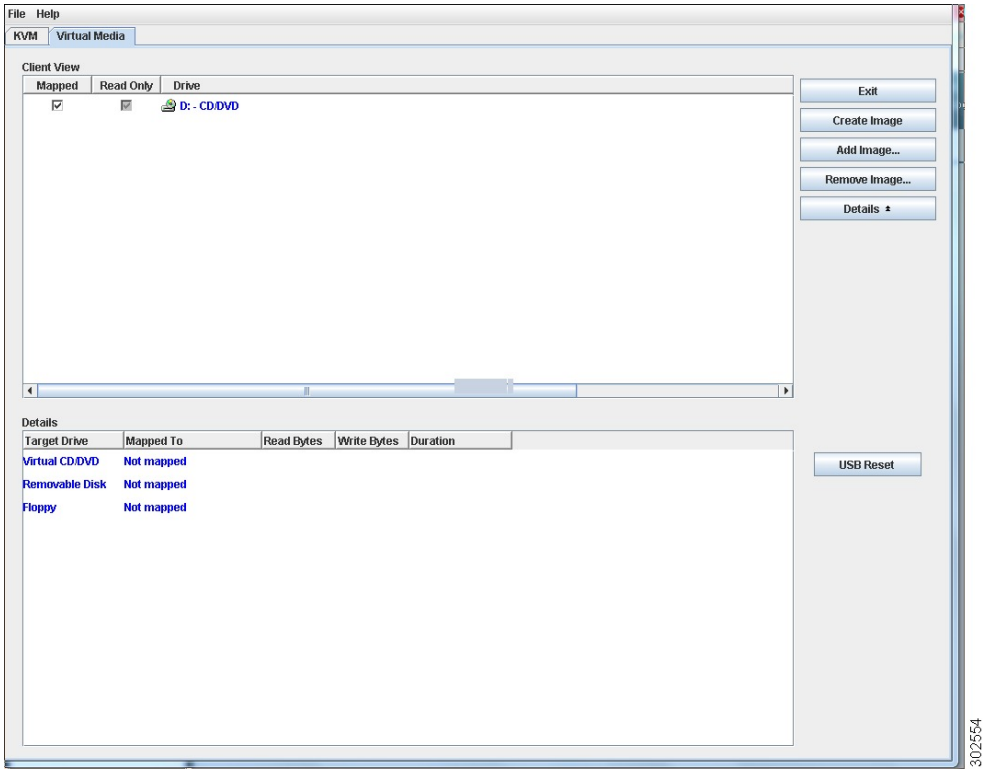
Step 2 If CIMC is not open, log into the CIMC GUI.

Step 3 In the **Navigation** pane, click the **Server** tab.

Step 4 On the **Server** tab, click **Summary**.

Step 5 From the **Actions** area, click **Launch KVM Console**.
The **KVM Console** opens in a separate window.

Step 6 From the KVM console, click the **Virtual Media** tab.



Step 7 In the **Virtual Media** tab, map the virtual media using either of the following methods:

- Check the **Mapped** check box for the CD/DVD drive containing the operating system or hypervisor installation disk.
- Click **Add Image**, 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.

Note You must keep the **Virtual Media** tab open during the installation process. Closing the tab unmaps all virtual media.

Step 8 Set the boot order to make the virtual CD/DVD drive as the boot device.
To set the boot order, see Configuring the Server Boot Order.

Step 9 Reboot the server.
When the server reboots, it begins the installation process from the virtual CD/DVD drive. Refer to the installation guide for the platform being installed to guide you through the rest of the installation process.

Step 10 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 16.

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.

Note The VMware vSphere Hypervisor requires a customized image. To download the customized image, see Downloading the Customized VMware vSphere Hypervisor Image, on page 18.

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 18.

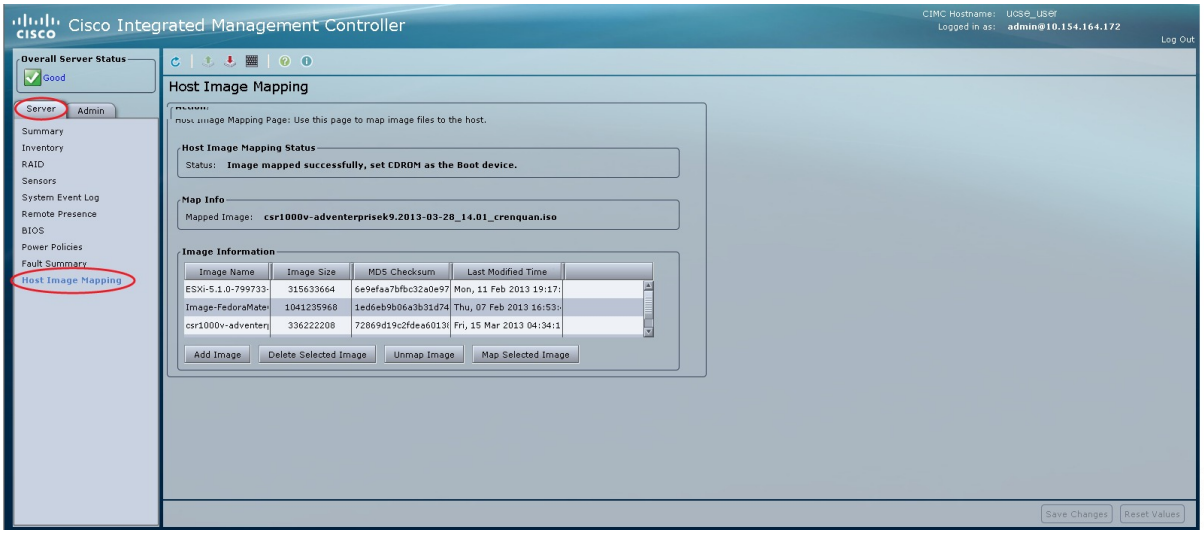
Note If you start an image update while an update is already in process, both updates will fail.

Procedure

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

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

Figure 2: Host Image Mapping



Step 3 From the **Host Image Mapping** page, click **Add Image**.
The **Download Image** dialog box opens. Complete the following fields:

Name	Description
Download Image From drop-down list	The type of remote server on which the image is located. This can be one of the following: • **FTP** • **HTTP** **Note** Depending on the remote server that you select, the fields that display change.
FTP or **HTTP Server IP Address** field	The IP address of the remote FTP or HTTP server.
FTP or **HTTP File Path** field	The path and filename of the remote FTP or HTTP server. The path and filename can contain up to 80 characters. • If you are installing a host image, that image must have .iso or .img as the file extension. • If you are installing a diagnostics image, that image must have .diag as the file extension.

Name	Description
Username field	The username of the remote server. The username can contain 1 to 20 characters. **Note** If the username is not configured, enter **anonymous** for the username and any character(s) for the password.
Password field	The password for the username. The password can contain 1 to 20 characters. **Note** If the username is not configured, enter **anonymous** for the username and any character(s) for the password.

Step 4 Click **Download**.
The **Host Image Mapping** page opens. You can view the status of the image download in the **Host Image Mapping Status** area. After the image is downloaded and processed successfully, refresh the page. After the page refreshes, the new image displays in the **Image Information** area.

Step 5 From the **Image Information** area, select the image to map, and then click **Map Selected Image**.
The image is mapped and 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
- CD/DVD—Bootable CD-ROM or DVD drive

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.

Tip To determine in which virtual drive the image is mounted, see the **Host Image Update Status** 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 16.

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 16.

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 three 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

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 190.

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.

Unmapping the Host Image

Before You Begin

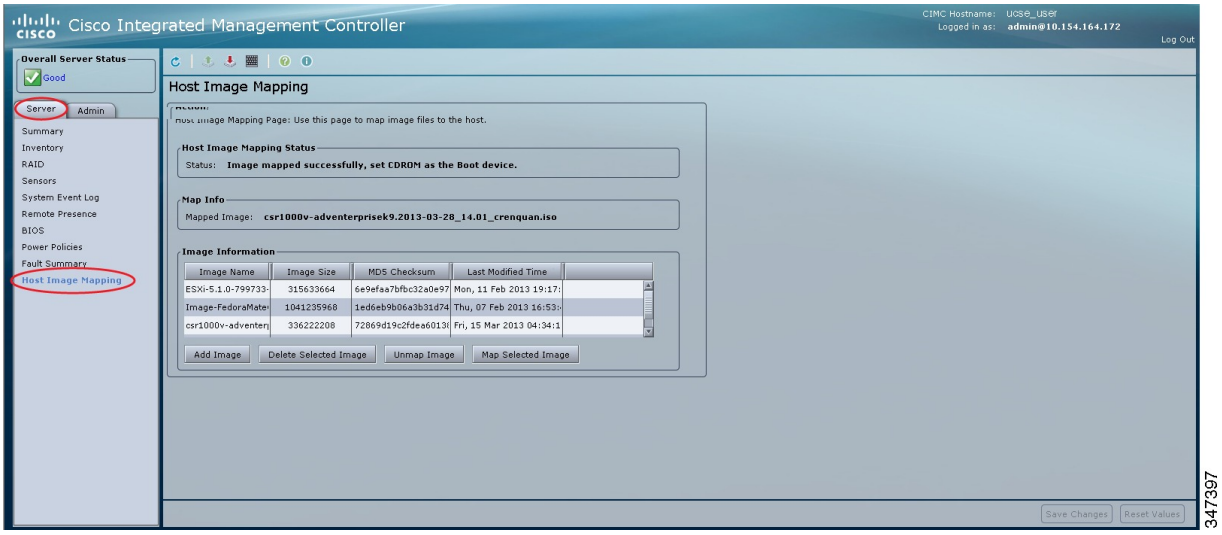
Log in to CIMC as a user with admin privileges.

Procedure

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

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

Figure 3: Host Image Mapping



Step 3 Click **Unmap Image**.
The mapped image is unmounted from the virtual drive of the USB controller.

Deleting the Host Image

Before You Begin

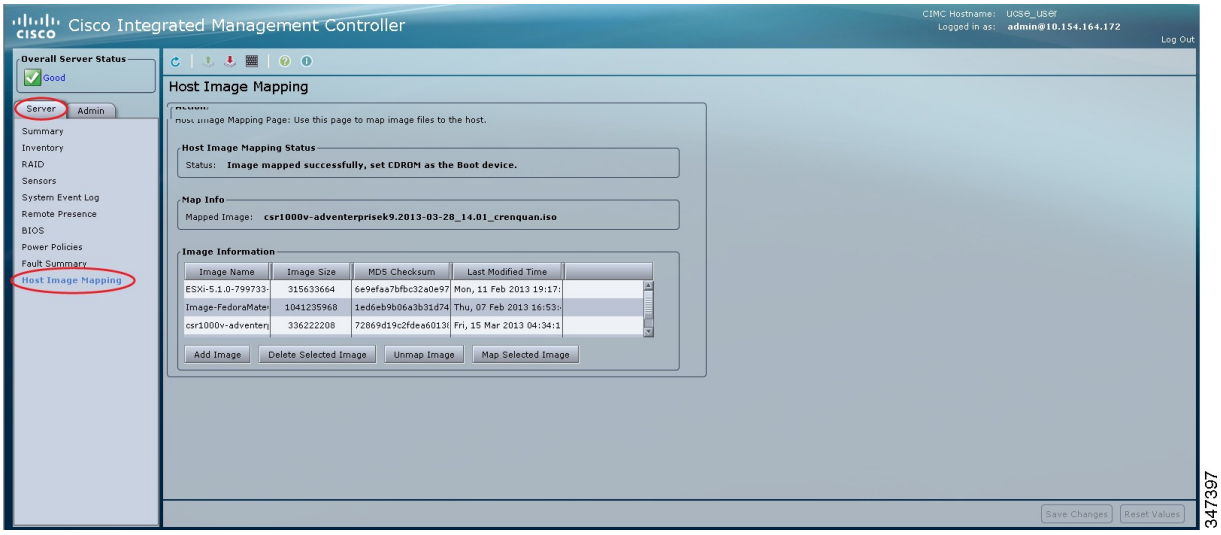
Log in to CIMC as a user with admin privileges.

Procedure

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

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

Figure 4: Host Image Mapping



Step 3 If the image that you want to delete is mapped, click **Unmap Image**.

Step 4 From the **Image Information** area, select the image to delete.

Step 5 Click **Delete Selected Image**.
The image is removed from the SD card.

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. For installation instructions, see Mapping the Host Image, on page 13.

CHAPTER 3

Managing the Server

This chapter includes the following sections:

Viewing Overall Server Status

Procedure

Step 1 In the **Overall Server Status** area of the **Navigation** pane, click the blue health report link to refresh the **Server Summary** pane.

Step 2 (Optional) Review the following information in the **Server Status** area of the **Server Summary** pane:

Note The following list shows all possible status fields. The actual fields displayed depend on the type of E-Series Server that you are using.

Name	Description
Power State field	The current power state.

Name	Description
Overall Server Status field	The overall status of the server. This can be one of the following: • **Memory Test In Progress—**The server is performing a self-test of the installed memory. This condition normally occurs during the boot process. • **Good** • **Moderate Fault** • **Severe Fault**
Processors field	The overall status of the processors. This can be one of the following: • **Good** • **Fault** Click the link in this field to view more information about the processors.
Memory field	The overall status of the memory modules. This can be one of the following: • **Good** • **Fault** • **Severe Fault** Click the link in this field to view detailed status information.

Configuring the Server Boot Order Using the CIMC GUI

Before You Begin

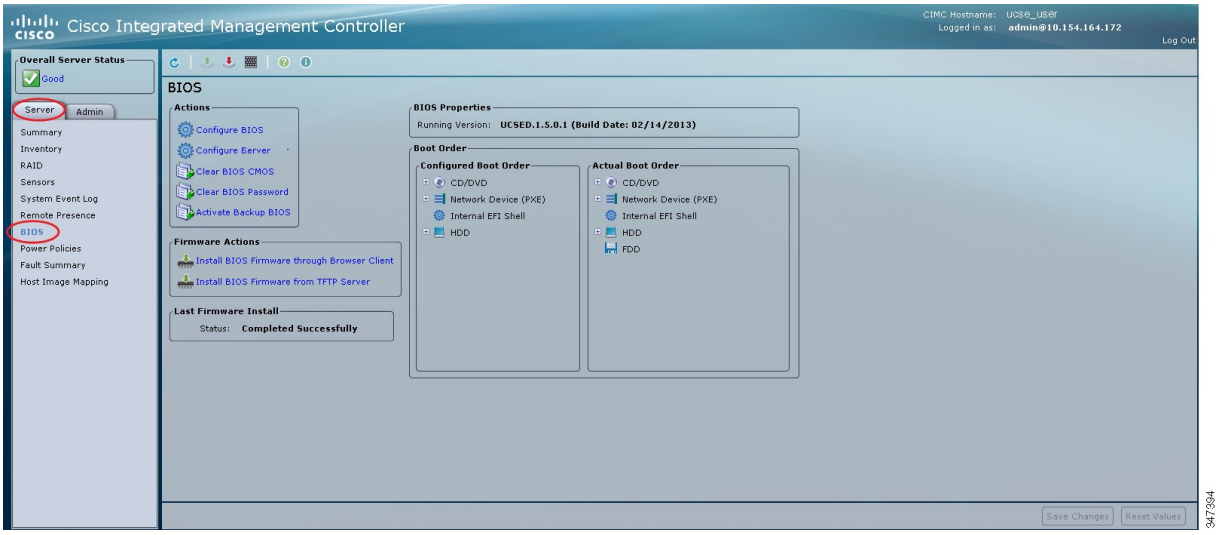
Log into CIMC as a user with admin privileges.

Procedure

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

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

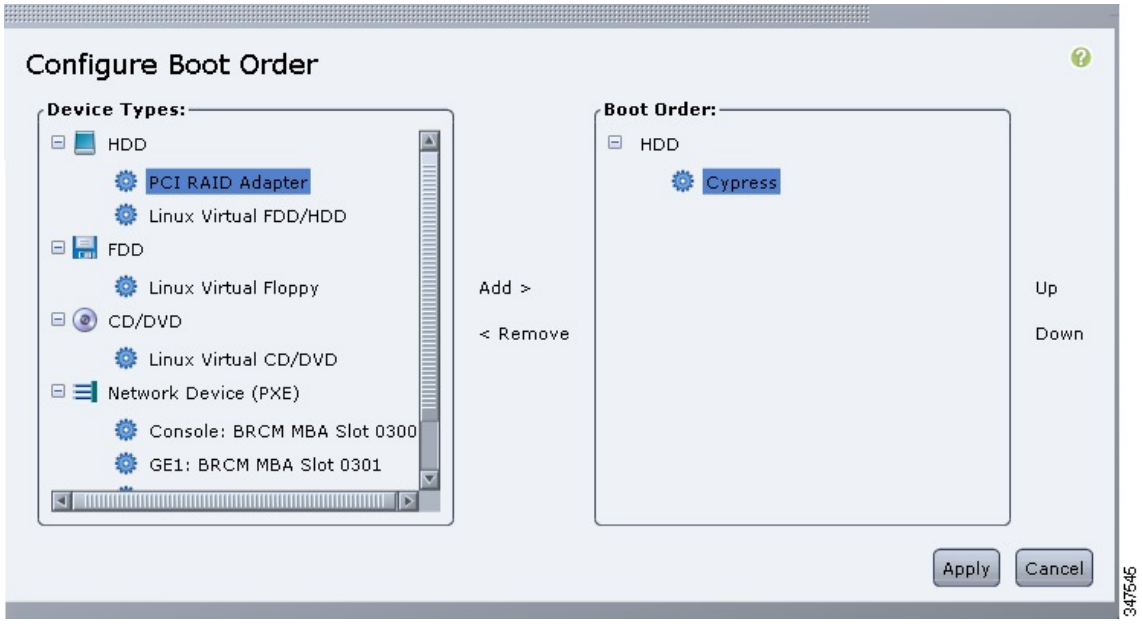
Figure 5: BIOS



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

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

Figure 6: Configure Boot Order Dialog Box



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. Contains the following options:
	  • **Cypress**
	  • **PCI RAID Adapter**
	  • **Linux Virtual FDD/HDD**
	• **FDD—**Floppy disk drive. Contains the following option:
	  ◦ **Linux Virtual Floppy**
	• **CD/DVD—**Bootable CD-ROM. Contains the following option:
	  ◦ **Linux Virtual CD/DVD**
	• **Network Devices (PXE)—**PXE boot. Contains the following options:
	  ◦ **Console**
	  ◦ **GE1**
	  ◦ **GE2**
	  ◦ **GE3—**Applicable for double-wide E-Series Servers.
	• **Internal EFI Shell—**Internal 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** tab.

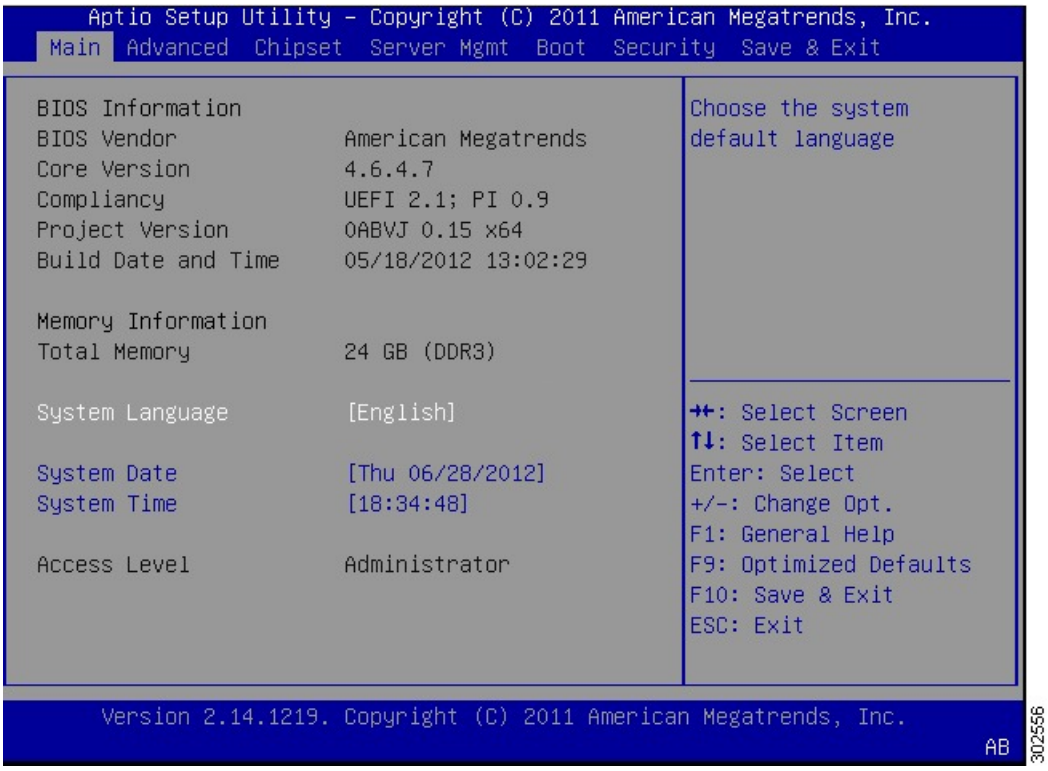
Step 2 On the **Server** tab, click **Summary**.

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 7: 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.

Resetting the Server

Before You Begin

You must log in with user or admin privileges to perform this task.

Procedure

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

Step 2 On the **Server** tab, click **Summary**.

Step 3 In the **Actions** area, click **Hard Reset Server**.
A dialog box with the message **Hard Reset the Server?** appears.

Step 4 Click **OK**.

Shutting Down the Server

Before You Begin

You must log in with user or admin privileges to perform this task.

Procedure

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

Step 2 On the **Server** tab, click **Summary**.

Step 3 In the **Actions** area, click **Shut Down Server**.
A dialog box with the message **Shut Down the Server?** appears.

Note The Citrix XenServer does not gracefully shut down when you click **Shut Down Server** or when you press the power button on the front panel of the E-Series Server.

Step 4 Click **OK**.

Note The NIM E-Series NCE might take up to 60 seconds to shut down. After two or three shut down attempts, if the NIM E-Series NCE does not shut down, enter the following commands from the router:

1. Router # **hw-module subslot 0**/*NIM-slot-number* **stop**
2. Router # **hw-module subslot 0**/*NIM-slot-number* **start**

Locking or Unlocking Cisco IOS CLI Configuration Changes

Use this procedure to allow or prevent configuration changes to be made using the Cisco IOS CLI.

Before You Begin

- Log into CIMC as a user with admin privileges.

Procedure

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

Step 2 On the **Server** tab, click **Summary**.

Step 3 To allow configuration changes to be made using the Cisco IOS CLI, from the **Actions** area, click **Unlock IOS Configuration Changes**.
The button in the GUI changes to **Lock IOS Configuration Changes**.

Step 4 To prevent configuration changes to be made using the Cisco IOS CLI, from the **Actions** area, click **Lock IOS Configuration Changes**.
If you do use the Cisco IOS CLI to make configuration changes, a warning message displays and the configuration is ignored.

The button in the GUI changes to **Unlock IOS Configuration Changes**.

Step 5 In the confirmation window, click **OK**.

Managing Server Power

Powering On the Server

Note If the server was powered off by any means other than through CIMC, it will not become active immediately when powered on. The server will remain in standby mode until CIMC completes initialization.

Before You Begin

You must log in with user or admin privileges to perform this task.

Procedure

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

Step 2 On the **Server** tab, click **Summary**.

Step 3 In the **Actions** area, click **Power On Server**.
A dialog box with the message **Power on the server?** appears.

Step 4 Click **OK**.

Powering Off the Server

Note This procedure is not applicable to the NIM E-Series NCE.

Before You Begin

You must log in with user or admin privileges to perform this task.

Procedure

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

Step 2 On the **Server** tab, click **Summary**.

Step 3 In the **Actions** area, click **Power Off Server**.
A dialog box with the message **Power Off the Server?** appears.

Step 4 Click **OK**.

Note For the NIM E-Series NCE, we recommend that you click **Shut Down Server**. If a power off is necessary, use the following commands from the router:

1. Router # **hw-module subslot 0/***NIM-slot-number* **stop**
2. Router # **hw-module subslot 0/***NIM-slot-number* **start**

Power Cycling the Server

Note This procedure is not applicable to the NIM E-Series NCE.

Before You Begin

You must log in with user or admin privileges to perform this task.

Procedure

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

Step 2 On the **Server** tab, click **Summary**.

Step 3 In the **Actions** area, click **Power Cycle Server**.
A dialog box with the message **Power Cycle the Server?** appears.

Step 4 Click **OK**.

Note
- Power cycling the server is the same as pressing the physical power button to power off and then powering on the server.
- Power hard-reset is the same as pressing the physical reset button on the server.

Note For the NIM E-Series NCE, we recommend that you click **Shut Down Server**. If a power cycle is necessary, use one of the following commands from the router:

- 1. Router # **hw-module subslot 0/***NIM-slot-number* **stop**
  2. Router # **hw-module subslot 0/***NIM-slot-number* **start**
- Router # **hw-module subslot 0/***NIM-slot-number* **reload**

  Note This command power-cycles the module. The CIMC and server reboot.

Locking or Unlocking the Server's Front Panel Power Button

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

Use this procedure to enable or disable the physical power button, which is located on the front panel of the physical server.

Before You Begin

- Log in to CIMC as a user with admin privileges.
- Power off the server.

Procedure

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

Step 2 On the **Server** tab, click **Summary**.

Step 3 To disable the power button, from the **Actions** area, click **Lock Front Panel Power Button**.
The power button is disabled. You cannot use the front panel power button to turn the server power on or off.

The button in the GUI changes to **Unlock Front Panel Power Button**.

Step 4 To enable the power button, from the **Actions** area, click **Unlock Front Panel Power Button**.
The power button is enabled. You can use the front panel power button to turn the server power on or off.

The button in the GUI changes to **Lock Front Panel Power Button**.

Step 5 In the confirmation window, click **OK**.

Locking or Unlocking the Server's Front Panel Reset Button

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

Use this procedure to enable or disable the reset button, which is located on the front panel of the physical server.

Before You Begin

- Log in to CIMC as a user with admin privileges.
- Power off the server.

Procedure

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

Step 2 On the **Server** tab, click **Summary**.

Step 3 To disable the reset button, from the **Actions** area, click **Lock Front Panel Reset Button**.
The reset button is disabled. You cannot use the front panel reset button to reset the server.

The button in the GUI changes to **Unlock Front Panel Reset Button**.

Step 4 To enable the reset button, from the **Actions** area, click **Unlock Front Panel Reset Button**.
The reset button is enabled. You can use the front panel reset button to reset the server.

The button in the GUI changes to **Lock Front Panel Reset Button**.

Step 5 In the confirmation window, click **OK**.

Configuring BIOS Settings

Activating the Backup BIOS

On rare occasions, the BIOS image might get corrupted. To recover from a corrupt BIOS image, activate the backup BIOS to boot the system.

Note The backup BIOS image is factory installed. It cannot be upgraded.

Before You Begin

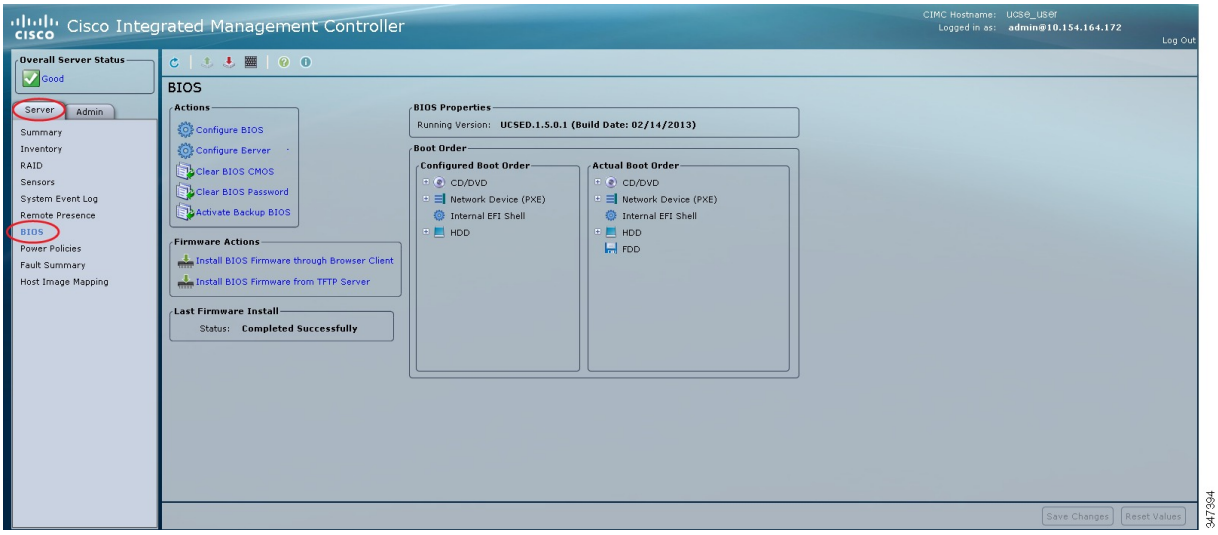
- Log into CIMC as a user with admin privileges.

Procedure

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

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

Figure 8: BIOS



Step 3 In the **Actions** area, click **Activate Backup BIOS**.

Step 4 In the confirmation window, click **OK**.

Configuring Advanced BIOS Settings

Note Depending on your installed hardware, some configuration options described in this topic may not appear.

Before You Begin

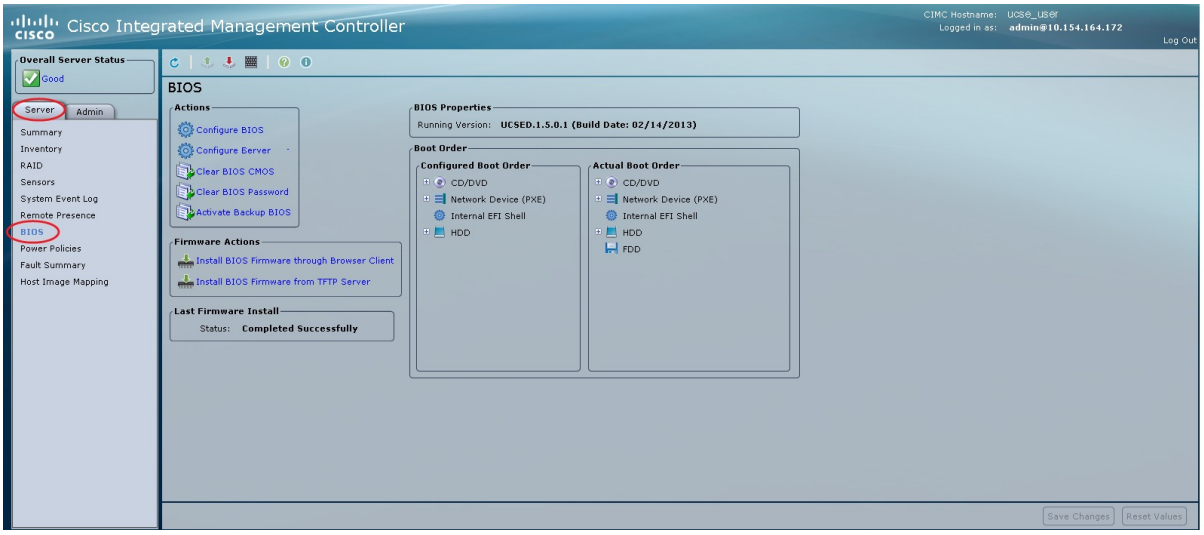
You must log in with admin privileges to perform this task.

Procedure

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

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

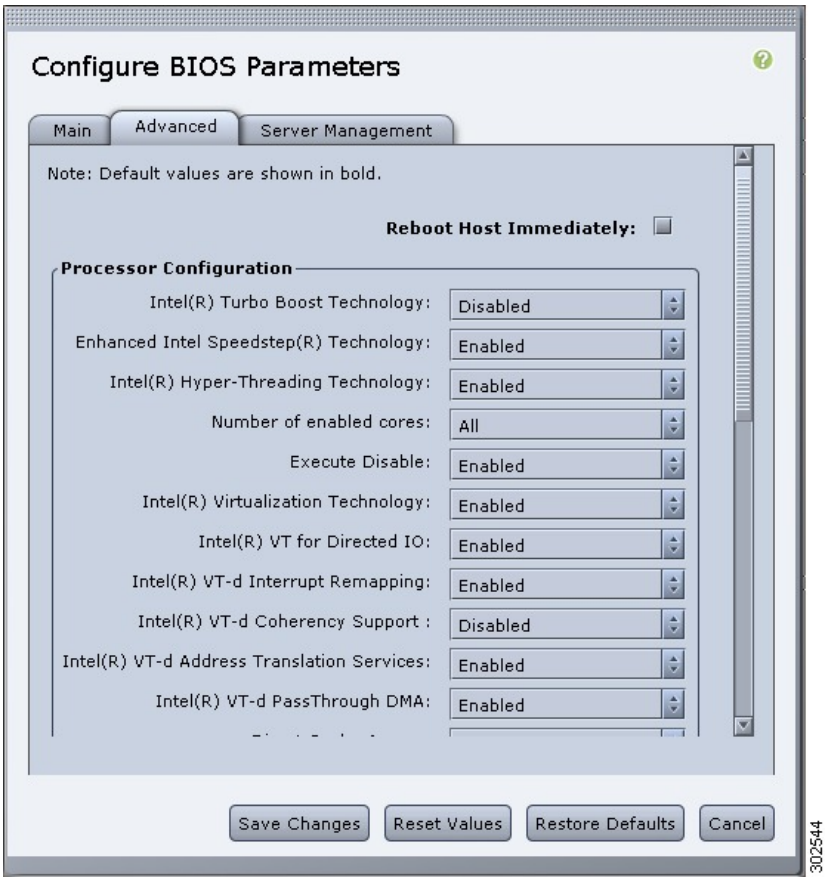
Figure 9: BIOS



Step 3 In the **Actions** area, click **Configure BIOS**.
The **Configure BIOS Parameters** dialog box appears.

Step 4 In the **Configure BIOS Parameters** dialog box, click the **Advanced** tab.

Figure 10: Advanced Tab



Step 5 Check or clear the **Reboot Host Immediately** checkbox.
If checked, the server is rebooted immediately after you make changes to the BIOS parameters.

To specify that the server should not reboot automatically, clear this check box. Any parameter changes will take effect the next time the server is rebooted.

Note This step is not applicable to the NIM E-Series NCE.

Step 6 In the **Advanced** tab, update the BIOS settings fields.
For descriptions and information about the options for each BIOS setting, see the following topics:

- Advanced: Processor BIOS Settings, on page 40
- Advanced: Memory BIOS Settings, on page 45
- Advanced: Serial Port BIOS Settings, on page 45
- Advanced: USB BIOS Settings, on page 46

Step 7 Click **Save Changes**.

Configuring Server Management BIOS Settings

Before You Begin

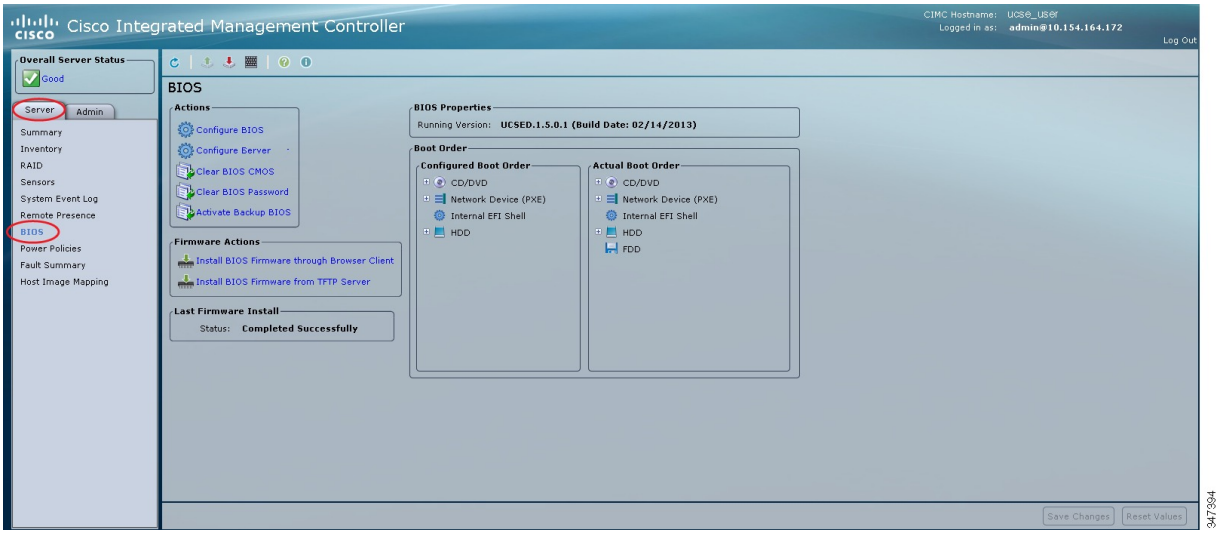
You must log in with admin privileges to perform this task.

Procedure

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

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

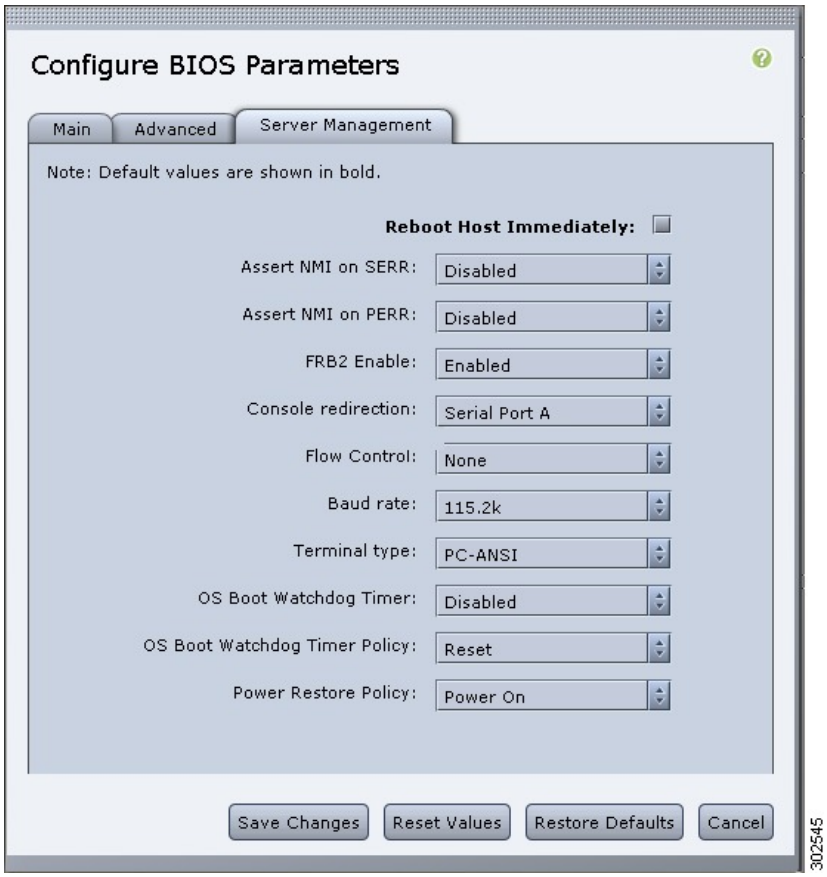
Figure 11: BIOS



Step 3 In the **Actions** area, click **Configure BIOS**.
The **Configure BIOS Parameters** dialog box appears.

Step 4 In the **Configure BIOS Parameters** dialog box, click the **Server Management** tab.

Figure 12: Server Management Tab



Step 5 Check or clear the **Reboot Host Immediately** checkbox.
If checked, the server is rebooted immediately after you make changes to the BIOS parameters.

To specify that the server should not reboot automatically, clear this check box. Any parameter changes will take effect the next time the server is rebooted.

Note This step is not applicable to the NIM E-Series NCE.

Step 6 In the **Server Management** tab, update the BIOS settings fields.
For descriptions and information about the options for each BIOS setting, see the following topic:

- Server Management BIOS Settings, on page 46

Step 7 Click **Save Changes**.

Clearing the BIOS CMOS

Note On rare occasions, troubleshooting a server may require you to clear the server's BIOS CMOS memory. This procedure is not part of the normal maintenance of a server.

Before You Begin

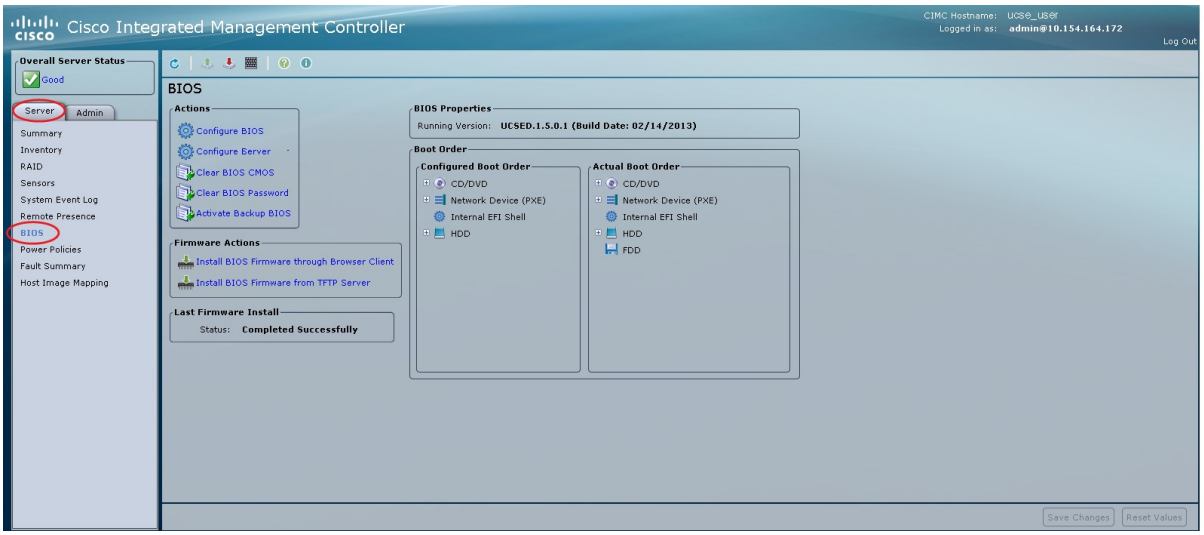
- Log into CIMC as a user with admin privileges.
- Power off the server.

Procedure

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

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

Figure 13: BIOS



Step 3 In the **Actions** area, click **Clear BIOS CMOS**.

Step 4 In the confirmation window, click **OK**.

Clearing the BIOS Password

Before You Begin

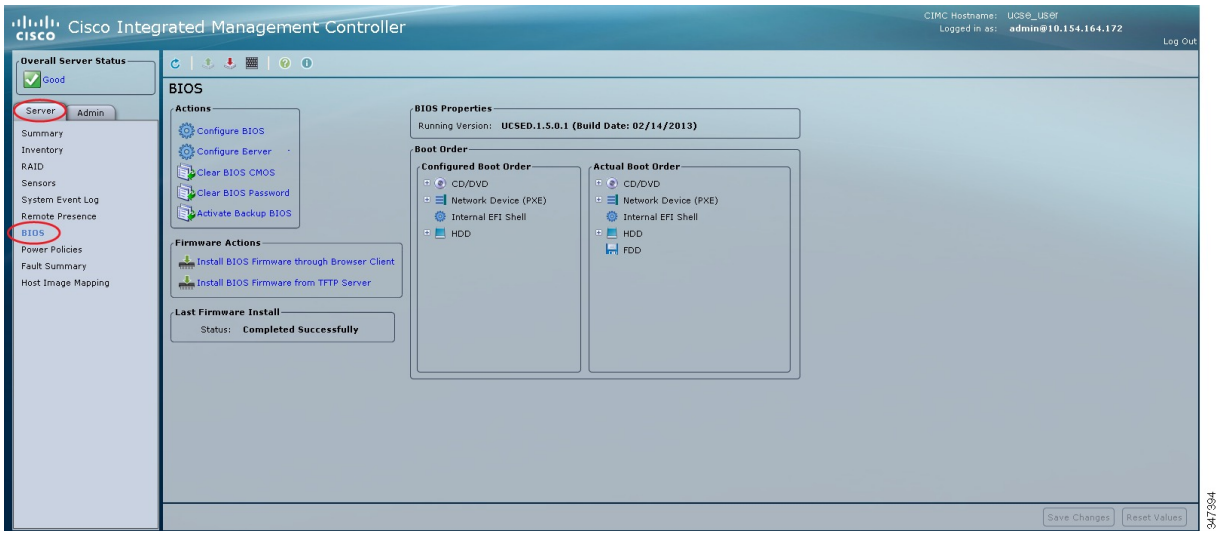
- Log into CIMC as a user with admin privileges.

Procedure

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

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

Figure 14: BIOS



Step 3 In the **Actions** area, click **Clear BIOS Password**.

Step 4 In the confirmation window, click **OK**.

What to Do Next

Reboot the server for the clear password operation to take effect. You are prompted to create a new password when the server reboots.

Server BIOS Settings

The tables in the following sections list the server BIOS settings that you can view and configure.

Note We recommend that you verify the support for BIOS settings in your server. Depending on your installed hardware, some settings may not be supported.

Main BIOS Settings

Name	Description
Reboot Host Immediately Not displayed for the NIM E-Series NCE.	If checked, the server is rebooted immediately after you click **Save Changes**. To specify that the server should not reboot automatically, clear this check box. Any parameter changes will take effect the next time the server is rebooted.

Advanced: Processor BIOS Settings

Name	Description
Enhanced Intel Speedstep Technology	Whether the processor uses Enhanced Intel SpeedStep Technology, which allows the system to dynamically adjust processor voltage and core frequency. This technology can result in decreased average power consumption and decreased average heat production. This can be one of the following: • **Disabled—**The processor never dynamically adjusts its voltage or frequency. • **Enabled—**The processor utilizes Enhanced Intel SpeedStep Technology and enables all supported processor sleep states to further conserve power. We recommend that you contact your operating system vendor to make sure the operating system supports this feature.
Intel Hyper-Threading Technology	Whether the processor uses Intel Hyper-Threading Technology, which allows multithreaded software applications to execute threads in parallel within each processor. This can be one of the following: • **Disabled—**The processor does not permit hyperthreading. • **Enabled—**The processor allows for the parallel execution of multiple threads. We recommend that you contact your operating system vendor to make sure the operating system supports this feature.

Name	Description
Number of Enabled Cores	Sets the state of logical processor cores in a package. If you disable this setting, Hyper Threading is also disabled. This can be one of the following: • **All—**Enables multi processing on all logical processor cores. • **1** through *n***—**Specifies the number of logical processor cores that can run on the server. To disable multi processing and have only one logical processor core running on the server, select 1. We recommend that you contact your operating system vendor to make sure the operating system supports this feature.
Execute Disable	Classifies memory areas on the server to specify where application code can execute. As a result of this classification, the processor disables code execution if a malicious worm attempts to insert code in the buffer. This setting helps to prevent damage, worm propagation, and certain classes of malicious buffer overflow attacks. This can be one of the following: • **Disabled—**The processor does not classify memory areas. • **Enabled—**The processor classifies memory areas. We recommend that you contact your operating system vendor to make sure the operating system supports this feature.
Intel Virtualization Technology	Whether the processor uses Intel Virtualization Technology (VT), which allows a platform to run multiple operating systems and applications in independent partitions. This can be one of the following: • **Disabled—**The processor does not permit virtualization. • **Enabled—**The processor allows multiple operating systems in independent partitions. **Note** If you change this option, you must power cycle the server before the setting takes effect.
Intel VT for Directed IO	Whether the processor uses Intel Virtualization Technology for Directed I/O (VT-d). This can be one of the following: • **Disabled—**The processor does not use virtualization technology. • **Enabled—**The processor uses virtualization technology.

Name	Description
Intel VT-d Interrupt Remapping	Whether the processor supports Intel VT-d Interrupt Remapping. This can be one of the following: • **Disabled—**The processor does not support remapping. • **Enabled—**The processor uses VT-d Interrupt Remapping as required.
Intel VT-d Coherency Support	Whether the processor supports Intel VT-d Coherency. This can be one of the following: • **Disabled—**The processor does not support coherency. • **Enabled—**The processor uses VT-d Coherency as required.
Intel VT-d Address Translation Services	Whether the processor supports Intel VT-d Address Translation Services (ATS). This can be one of the following: • **Disabled—**The processor does not support ATS. • **Enabled—**The processor uses VT-d ATS as required.
Intel VT-d PassThrough DMA	Whether the processor supports Intel VT-d Pass-through DMA. This can be one of the following: • **Disabled—**The processor does not support pass-through DMA. • **Enabled—**The processor uses VT-d Pass-through DMA as required.
Direct Cache Access	Allows processors to increase I/O performance by placing data from I/O devices directly into the processor cache. This setting helps to reduce cache misses. This can be one of the following: • **Disabled—**Data from I/O devices is not placed directly into the processor cache. • **Enabled—**Data from I/O devices is placed directly into the processor cache.

Name	Description
Processor C3 Report	Whether the processor sends the C3 report to the operating system. This can be one of the following: • **Disabled—**The processor does not send the C3 report. • **ACPI C2—**The processor sends the C3 report using the ACPI C2 format. • **ACPI C3—**The processor sends the C3 report using the ACPI C3 format.
Processor C6 Report	Whether the processor sends the C6 report to the operating system. This can be one of the following: • **Disabled—**The processor does not send the C6 report. • **Enabled—**The processor sends the C6 report.
Hardware Prefetcher	Whether the processor allows the Intel hardware prefetcher to fetch streams of data and instruction from memory into the unified second-level cache when necessary. This can be one of the following: • **Disabled—**The hardware prefetcher is not used. • **Enabled—**The processor uses the hardware prefetcher when cache issues are detected. **Note** You must select **Custom** in the **CPU Performance** drop-down list to specify this value. For any value other than **Custom**, this option is overridden by the setting in the selected CPU performance profile.
Adjacent Cache-Line Prefetch	Whether the processor uses the Intel Adjacent Cache-Line Prefetch mechanism to fetch data when necessary. This can be one of the following: • **Disabled—**The Adjacent Cache-Line Prefetch mechanism is not used. • **Enabled—**The Adjacent Cache-Line Prefetch mechanism is used when cache issues are detected. **Note** You must select **Custom** in the **CPU Performance** drop-down list in order to specify this value. For any value other than **Custom**, this option is overridden by the setting in the selected CPU performance profile.

Name	Description
Package C State Limit	The amount of power available to the server components when they are idle. This can be one of the following: • **C0 state—**The server provides all server components with full power at all times. This option maintains the highest level of performance and requires the greatest amount of power. • **C2 state—** System level coordination is in progress resulting in high power consumption. There might be performance issues until the coordination is complete. • **C6 state—**When the CPU is idle, the system reduces the power consumption further than with the C3 option. This option saves more power than C0 or C2, but there might be performance issues until the server returns to full power. • **C7 state—**When the CPU is idle, the server makes a minimal amount of power available to the components. This option saves the maximum amount of power but it also requires the longest time for the server to return to high performance mode. • **No Limit—**The server may enter any available C state. **Note** This option is used only if **CPU C State** is enabled.
Patrol Scrub	Whether the system actively searches for, and corrects, single bit memory errors even in unused portions of the memory on the server. This can be one of the following: • **Disabled—**The system checks for memory ECC errors only when the CPU reads or writes a memory address. • **Enabled—**The system periodically reads and writes memory searching for ECC errors. If any errors are found, the system attempts to fix them. This option may correct single bit errors before they become multi-bit errors, but it may adversely affect performance when the patrol scrub is running.
Demand Scrub	Whether the system allows a memory scrub to be performed on demand. This can be one of the following: • **Disabled—**The system does not allow a memory scrub to be performed on demand. • **Enabled—**The system allows a memory scrub to be performed on demand. If errors occur, the system attempts to fix them or marks the location as unreadable. This process makes the system run faster with fewer data processing errors.

Name	Description
Device Tagging	Whether the system allows devices and interfaces to be grouped based on a variety of information, including descriptions, addresses, and names. This can be one of the following: • **Disabled—**The system does not allow the devices and interfaces to be grouped. • **Enabled—**The system allows the devices and interfaces to be grouped.

Advanced: Memory BIOS Settings

Name	Description
Select Memory RAS	How the memory reliability, availability, and serviceability (RAS) is configured for the server. This can be one of the following: • **Maximum Performance—**System performance is optimized. • **Mirroring—**System reliability is optimized by using half the system memory as backup. • **Sparing—**System reliability is enhanced with a degree of memory redundancy while making more memory available to the operating system than mirroring.

Advanced: Serial Port BIOS Settings

Name	Description
Serial A Enable	Whether serial port A is enabled or disabled. This can be one of the following: • **Disabled—**The serial port is disabled. • **Enabled—**The serial port is enabled.

Advanced: USB BIOS Settings

Name	Description
USB Port 0	Whether the processor uses USB port 0. This can be one of the following: • **Disabled—**The server does not use the USB port 0. • **Enabled—**The processor uses the USB port 0.
USB Port 1	Whether the processor uses USB port 1. This can be one of the following: • **Disabled—**The server does not use the USB port 1. • **Enabled—**The processor uses the USB port 1.

Server Management BIOS Settings

Name	Description
Reboot Host Immediately Not displayed for the NIM E-Series NCE.	If checked, the server is rebooted immediately after you click **Save Changes**. To specify that the server should not reboot automatically, clear this check box. Any parameter changes will take effect the next time the server is rebooted.
Assert NMI on SERR	Whether the BIOS generates a non-maskable interrupt (NMI) and logs an error when a system error (SERR) occurs. This can be one of the following: • **Disabled—**The BIOS does not generate an NMI or log an error when a SERR occurs. • **Enabled—**The BIOS generates an NMI and logs an error when a SERR occurs. You must enable this setting if you want to enable **Assert NMI on PERR**.
Assert NMI on PERR	Whether the BIOS generates a non-maskable interrupt (NMI) and logs an error when a processor bus parity error (PERR) occurs. This can be one of the following: • **Disabled—**The BIOS does not generate an NMI or log an error when a PERR occurs. • **Enabled—**The BIOS generates an NMI and logs an error when a PERR occurs. You must enable **Assert NMI on SERR** to use this setting.

Name	Description
FRB2 Enable	Whether the FRB2 timer is used by CIMC to recover the system if it hangs during POST. This can be one of the following: • **Disabled—**The FRB2 timer is not used. • **Enabled—**The FRB2 timer is started during POST and used to recover the system if necessary.
Console Redirection	Allows a serial port to be used for console redirection during POST and BIOS booting. After the BIOS has booted and the operating system is responsible for the server, console redirection is irrelevant and has no effect. This can be one of the following: • **Disabled—**No console redirection occurs during POST. • **Serial Port A—**Enables serial port A for console redirection during POST. This option is valid for blade servers and rack-mount servers. **Note** If you enable this option, you also disable the display of the Quiet Boot logo screen during POST.
Flow Control	Whether a handshake protocol is used for flow control. Request to Send/Clear to Send (RTS/CTS) helps to reduce frame collisions that can be introduced by a hidden terminal problem. This can be one of the following: • **None—**No flow control is used. • **RTS-CTS—**RTS/CTS is used for flow control. **Note** This setting must match the setting on the remote terminal application.
Baud Rate	What BAUD rate is used for the serial port transmission speed. If you disable Console Redirection, this option is not available. This can be one of the following: • **9.6k—**A 9600 BAUD rate is used. • **19.2k—**A 19200 BAUD rate is used. • **38.4k—**A 38400 BAUD rate is used. • **57.6k—**A 57600 BAUD rate is used. • **115.2k—**A 115200 BAUD rate is used. **Note** This setting must match the setting on the remote terminal application.

Name	Description
Terminal Type	What type of character formatting is used for console redirection. This can be one of the following: • **PC-ANSI—**The PC-ANSI terminal font is used. • **VT100—**A supported vt100 video terminal and its character set are used. • **VT100-PLUS—**A supported vt100-plus video terminal and its character set are used. • **VT-UTF8—**A video terminal with the UTF-8 character set is used. **Note** This setting must match the setting on the remote terminal application.
OS Boot Watchdog Timer	Whether the BIOS programs the watchdog timer with a specified timeout value. If the operating system does not complete booting before the timer expires, the CIMC resets the system and an error is logged. This can be one of the following: • **Disabled—**The watchdog timer is not used to track how long the server takes to boot. • **Enabled—**The watchdog timer tracks how long the server takes to boot. If the server does not boot within the length of time specified in the **OS Boot Watchdog Timer Timeout** field, the CIMC logs an error and takes the action specified in the **OS Boot Watchdog Policy** field.
OS Boot Watchdog Timer Policy	The action the system takes when the watchdog timer expires. This can be one of the following: • **Do Nothing—**The state of the server power does not change when the watchdog timer expires during OS boot. • **Power Down—**The server is powered off if the watchdog timer expires during OS boot. • **Reset—**The server is reset if the watchdog timer expires during OS boot. **Note** This option is only applicable if you enable the OS Boot Watchdog Timer.

Name	Description
Power Restore Policy	The action the system takes when the AC power is restored. This can be one of the following: • **Power Off—**The server is powered off. • **Power On—**The server is powered on. • **Power Last State—**The server power is restored to its last state. **Note** The Power Restore Policy is not applicable to the Cisco ISR 4000 series.

Common Controls

The buttons described in the following table are available in all **Configure BIOS Parameters** tabs.

Name	Description
Save Changes button	Saves the settings for the BIOS parameters on all three tabs and closes the wizard. If the **Reboot Host Immediately** check box is checked, the server is rebooted immediately and the new BIOS settings go into effect. Otherwise the changes are saved until the server is manually rebooted.
Reset Values button	Restores the values for the BIOS parameters on all three tabs to the settings that were in effect when this dialog box was first opened.
Restore Defaults button	Sets the BIOS parameters on all three tabs to their default settings.
Cancel button	Closes the dialog box without making any changes.

CHAPTER 4

Managing Storage Using RAID

Note The RAID feature is applicable to E-Series Servers and the SM E-Series NCE. The RAID feature is not applicable to the EHWIC E-Series NCE and the NIM E-Series NCE.

This chapter includes the following sections:

RAID Options

Note The RAID feature is applicable to E-Series Servers and the SM E-Series NCE. The RAID feature is not applicable to the EHWIC E-Series NCE and the NIM E-Series NCE.

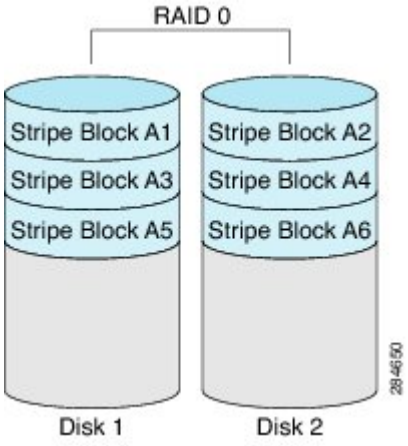
You can choose to store the E-Series Server data files on local Redundant Array of Inexpensive Disks (RAID). The following RAID levels are supported:

- The single-wide E-Series Server supports RAID 0 and RAID 1 levels.
- The double-wide E-Series Server supports RAID 0, RAID 1, and RAID 5 levels.
- The double-wide E-Series Server with the PCIe option supports RAID 0 and RAID 1 levels.

RAID 0

With RAID 0, the data is stored evenly in stripe blocks across one or more disk drives without redundancy (mirroring). The data in all of the disk drives is different.

Figure 15: RAID 0



Compared to RAID 1, RAID 0 provides additional storage because both disk drives are used to store data. The performance is improved because the read and write operation occurs in parallel within the two disk drives.

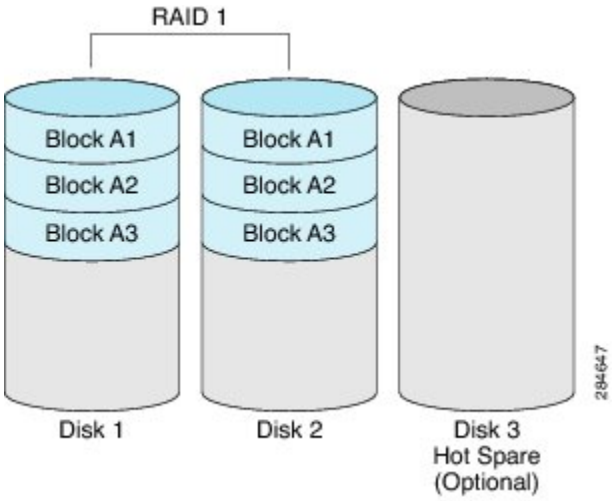
However, there is no fault tolerance, error checking, hot spare, or hot-swapping. If one disk drive fails, the data in the entire array is destroyed. Because there is no error checking or hot-swapping, the array is susceptible to unrecoverable errors.

RAID 1

RAID 1 creates a mirrored set of disk drives, where the data in both the disk drives is identical, providing redundancy and high availability. If one disk drive fails, the other disk drive takes over, preserving the data.

RAID 1 also allows you to use a hot spare disk drive. The hot spare drive is always active and is held in readiness as a hot standby drive during a failover.

Figure 16: RAID 1



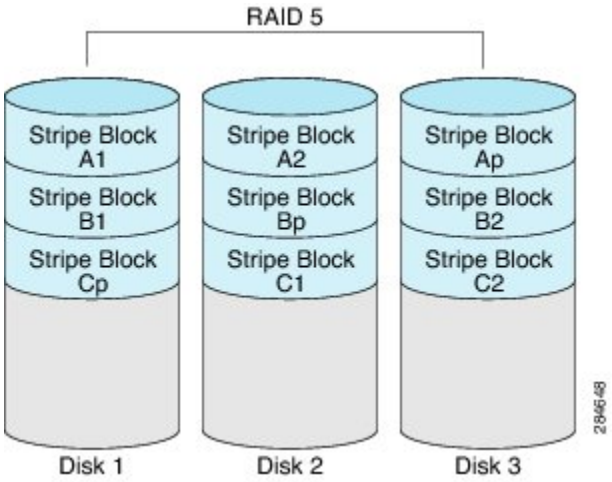
RAID 1 supports fault tolerance and hot-swapping. When one disk drive fails, you can remove the faulty disk drive and replace it with a new disk drive.

However, compared to RAID 0, there is less storage space because only half of the total potential disk space is available for storage and there is an impact on performance.

RAID 5

With RAID 5, the data is stored in stripe blocks with parity data staggered across all disk drives, providing redundancy at a low cost.

Figure 17: RAID 5



RAID 5 provides more data storage capacity than RAID 1 and better data protection than RAID 0. It also supports hot swapping; however, RAID 1 offers better performance.

Non-RAID

When the disk drives of a computer are not configured as RAID, the computer is in non-RAID mode. Non-RAID mode is also referred to as Just a Bunch of Disks or Just a Bunch of Drives (JBOD). Non-RAID mode does not support fault tolerance, error checking, hot-swapping, hot spare, or redundancy.

Summary of RAID Options

RAID Option	Description	Advantages	Disadvantages
RAID 0	Data stored evenly in stripe blocks without redundancy	• Better storage • Improved performance	• No error checking • No fault tolerance • No hot-swapping • No redundancy • No hot spare
RAID 1	Mirrored set of disk drives and an optional hot spare disk drive	• High availability • Fault tolerance • Hot spare • Hot-swapping	• Less storage • Performance impact
RAID 5	Data stored in stripe blocks with parity data staggered across all disk drives	• Better storage efficiency than RAID 1 • Better fault tolerance than RAID 0 • Low cost of redundancy • Hot-swapping	• Slow performance
Non-RAID	Disk drives not configured for RAID Also referred to as JBOD	• Portable	• No error checking • No fault tolerance • No hot-swapping • No redundancy • No hot spare

Configuring RAID

Note The RAID feature is applicable to E-Series Servers and the SM E-Series NCE. The RAID feature is not applicable to the EHWIC E-Series NCE and the NIM E-Series NCE.

Use this procedure to configure the RAID level, strip size, host access privileges, drive caching, and initialization parameters on a virtual drive. You can also use this procedure to designate the drive as a hot spare drive and to make the drive bootable.

Procedure

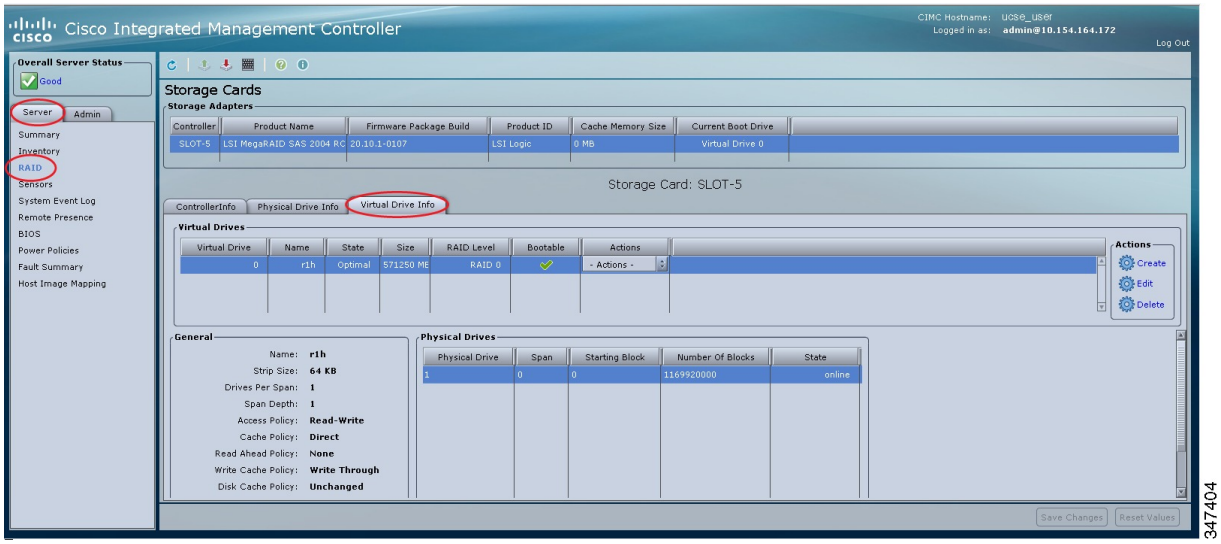
Step 1 In the **Navigation** pane, click the **Server** tab.

Step 2 On the **Server** tab, click **RAID**. Do one of the following:

- If the **Configure Virtual Drive** dialog box does not appear, proceed to the next step.
- If the **Configure Virtual Drive** dialog box appears, and the virtual drives are not configured, complete the fields as shown in Step 5.

Step 3 In the tabbed menu of the **Storage Cards** area, click the **Virtual Drive Info** tab.

Figure 18: Virtual Drive Info Tab



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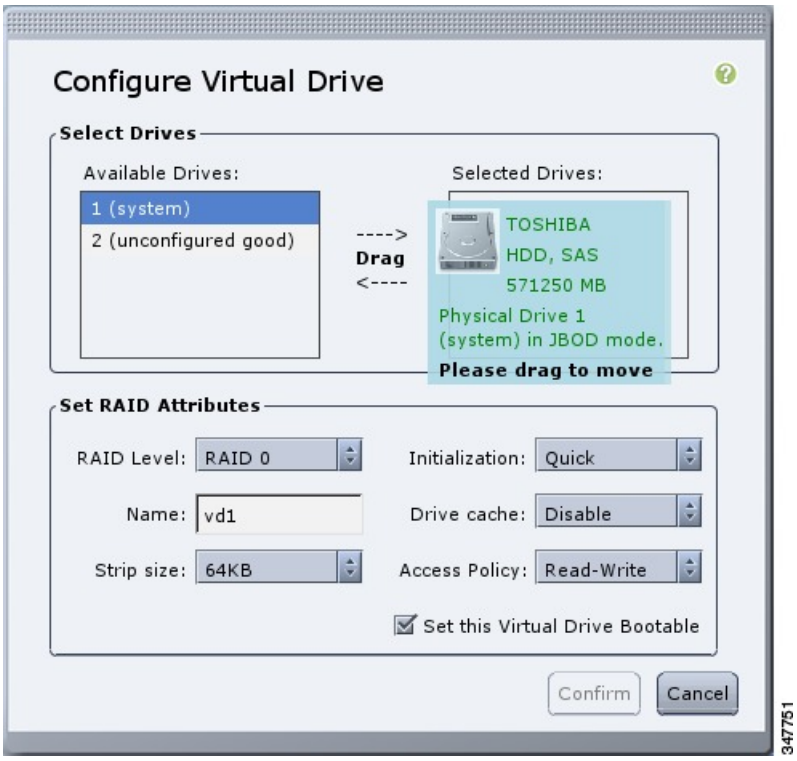
Step 4 In the **Actions** area of the **Virtual Drive Info** tab, click **Create**.

The **Configure Virtual Drive** dialog box appears.

Figure 19: Configure Virtual Drive Dialog Box



Step 5 Complete the following fields as appropriate:

Name	Description
Available Drives table	Displays the drives that are available for RAID configuration. **Note** To move a drive, click and drag a drive to the appropriate table.
Selected Drives table	Displays the drives that are selected for RAID configuration. **Note** To move a drive, click and drag a drive to the appropriate table.
RAID Level drop-down list	The RAID level options. This can be one of the following: • **RAID 0—**Block striping. • **RAID 1—**Mirroring. • **RAID 5—**Block striping with parity. **Note** The single-wide E-Series Server supports RAID 0 and RAID 1 levels. The double-wide E-Series Server supports RAID 0, RAID 1, and RAID 5 levels. The double-wide E-Series Server with the PCIe option supports RAID 0 and RAID 1 levels.

Name	Description
Name field	The name of the virtual drive. Enter a maximum of 15 characters. The characters can have numbers and upper- or lower-case letters. Special characters are not supported.
Strip Size drop-down list	The strip size options. This can be one of the following: • **64 KB** • **32 KB** • **16 KB** • **8 KB**
Initialization drop-down list	How the controller initializes the drives. This can be one of the following: • **Quick—**The controller initializes the drive quickly. This is the default and recommended option. • **Full—**The controller does a complete initialization of the new configuration. **Note** Depending on the size of the drives, full initialization can take several hours to complete. To view the progress, see the **Initialize Progress** and **Initialize Time Elapsed** fields in the **General** area. • **None—**The controller does not initialize the drives.
Drive Cache drop-down list	How the controller handles drive caching. This can be one of the following: • **Disable—**Caching is disabled on the drives. **Note** This is the default and recommended option. • **Unchanged—**The controller uses the caching policy specified on the drive. This is the default and recommended option. • **Enable—**Caching is enabled on the drives. This option minimizes the delay in accessing data. **Caution** Enabling Drive Cache, voids all warranty on the hard disk drives. This configuration option is not supported. Use this option at your own risk.

Name	Description
Access Policy drop-down list	Configures host access privileges. This can be one of the following: • **Read-Write—**The host has full access to the drive. • **Read Only—**The host can read only data from the drive. • **Blocked—**The host cannot access the drive.
Set this Virtual Drive Bootable check box	How the controller boots the drive. This can be one of the following: • **Enable—**The controller makes this drive bootable. • **Disable—**This drive is not bootable. **Note** If you plan to install an operating system or hypervisor into the RAID array, we recommend that you check this check box.
Use the Remaining Drive as Hot Spare check box	Designates the drive that is in the Available Drives table as a hot spare drive. **Note** Applicable for RAID 1 only. This check box is greyed out for other RAID levels. Applicable for double-wide E-Series Servers.

Step 6 Review the RAID configuration, and then click **Confirm** to accept the changes.

Modifying the RAID Configuration

Note The RAID feature is applicable to E-Series Servers and the SM E-Series NCE. The RAID feature is not applicable to the EHWIC E-Series NCE and the NIM E-Series NCE.

Use this procedure to enable or disable auto rebuild on the storage controller.

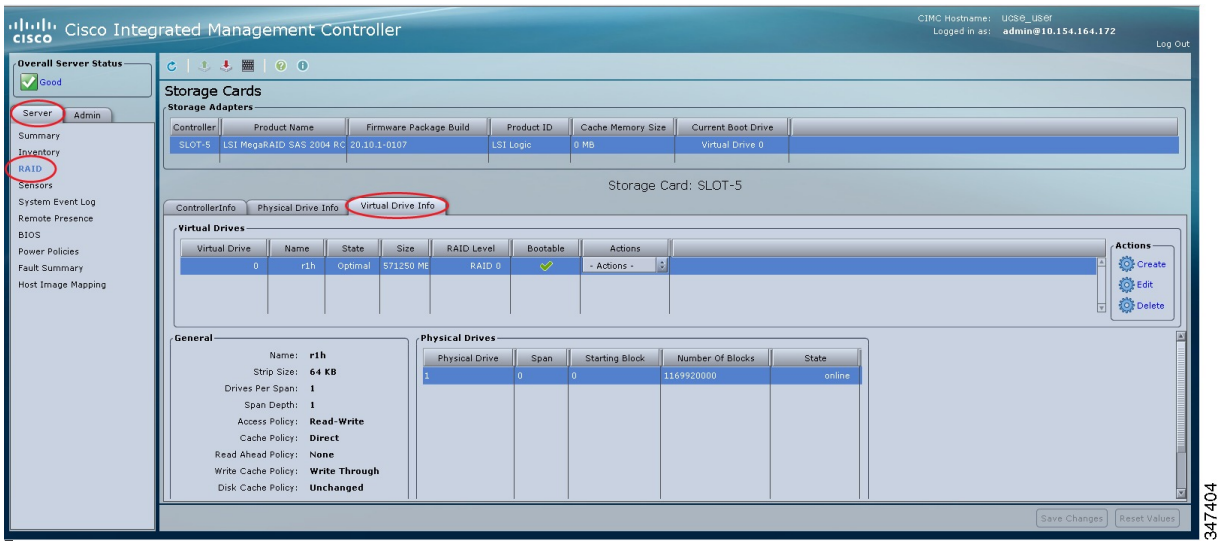
Procedure

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

Step 2 On the **Server** tab, click **RAID**.

Step 3 In the tabbed menu of the **Storage Cards** area, click the **Virtual Drive Info** tab.

Figure 20: Virtual Drive Info Tab



Step 4 In the **Actions** area of the **Virtual Drive Info** tab, click **Edit**.
The **Modify RAID Configuration** dialog box appears. Modify the following as appropriate:

Name	Description
Enable or **Disable Auto Rebuild** button	Whether the rebuild process starts on the new drive automatically when a virtual drive becomes degraded. This can be one of the following: • **Enabled**—If a drive becomes degraded and a new drive is plugged in, the rebuild process starts automatically on the new drive. **Note** The rebuild process overwrites all existing data; therefore, make sure that the drive that is plugged in does not contain important data. • **Disabled**—If a drive becomes degraded and a new drive is plugged in, the new drive is ignored. You must manually start the rebuild process on the new drive. **Important** The **Disable Auto Rebuild** button indicates that auto rebuild is enabled.

Deleting the RAID Configuration

Note The RAID feature is applicable to E-Series Servers and the SM E-Series NCE. The RAID feature is not applicable to the EHWIC E-Series NCE and the NIM E-Series NCE.

Use this procedure to clear all RAID or foreign configurations.

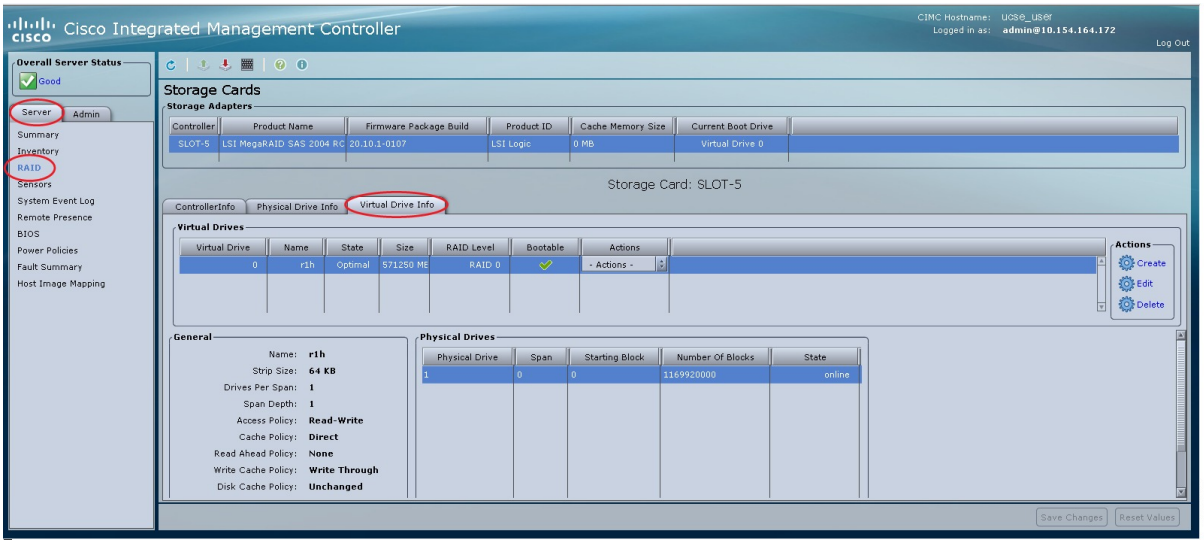
Procedure

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

Step 2 On the **Server** tab, click **RAID**.

Step 3 In the tabbed menu of the **Storage Cards** area, click the **Virtual Drive Info** tab.

Figure 21: Virtual Drive Info Tab



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Step 4 In the **Actions** area of the **Virtual Drive Info** tab, click **Delete**.
The **Clear Configurations** dialog box appears. Do the following as appropriate:

Name	Description
Clear All RAID Config radio button	Deletes all RAID configuration. **Caution** When you click this radio button, all existing data in the drives is deleted.

Name	Description
Clear Foreign Config radio button	Deletes all foreign configuration. If you plug in a drive from another E-Series Server, you must clear its foreign configuration to make it usable. **Note** When you click this radio button, only the configuration in the new plugged-in drive is deleted, while the configurations in the existing drives stay untouched.
Proceed button	Continues with the delete operation.

Changing the Physical Drive State

Note The RAID feature is applicable to E-Series Servers and the SM E-Series NCE. The RAID feature is not applicable to the EHWIC E-Series NCE and the NIM E-Series NCE.

Use this procedure to change the state of the physical drive. Options are hotspare, jbod, or unconfigured good.

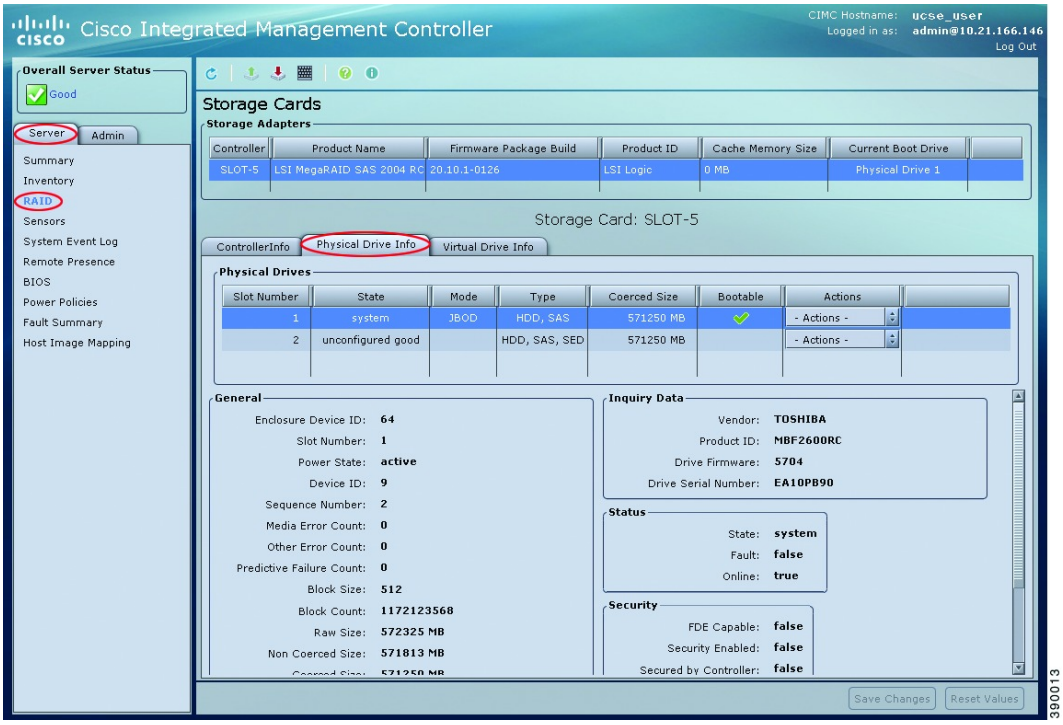
Procedure

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

Step 2 On the **Server** tab, click **RAID**.

Step 3 In the tabbed menu of the **Storage Cards** area, click the **Physical Drive Info** tab.

Figure 22: Physical Drive Info Tab



Step 4 From the **Actions** column in the **Physical Drives** pane, choose one of the following from the **Change State To** list:

- **hotspare—**The drive is designated as a spare drive.
- **jbod—**The drive is not configured as RAID.
- **unconfigured good—**The drive is ready to be assigned to a drive group or hot spare pool.

Step 5 Click **OK** to confirm.

Rebuilding the Physical Drive

Note The RAID feature is applicable to E-Series Servers and the SM E-Series NCE. The RAID feature is not applicable to the EHWIC E-Series NCE and the NIM E-Series NCE.

Use this procedure to manually start the rebuild process on the physical drive.

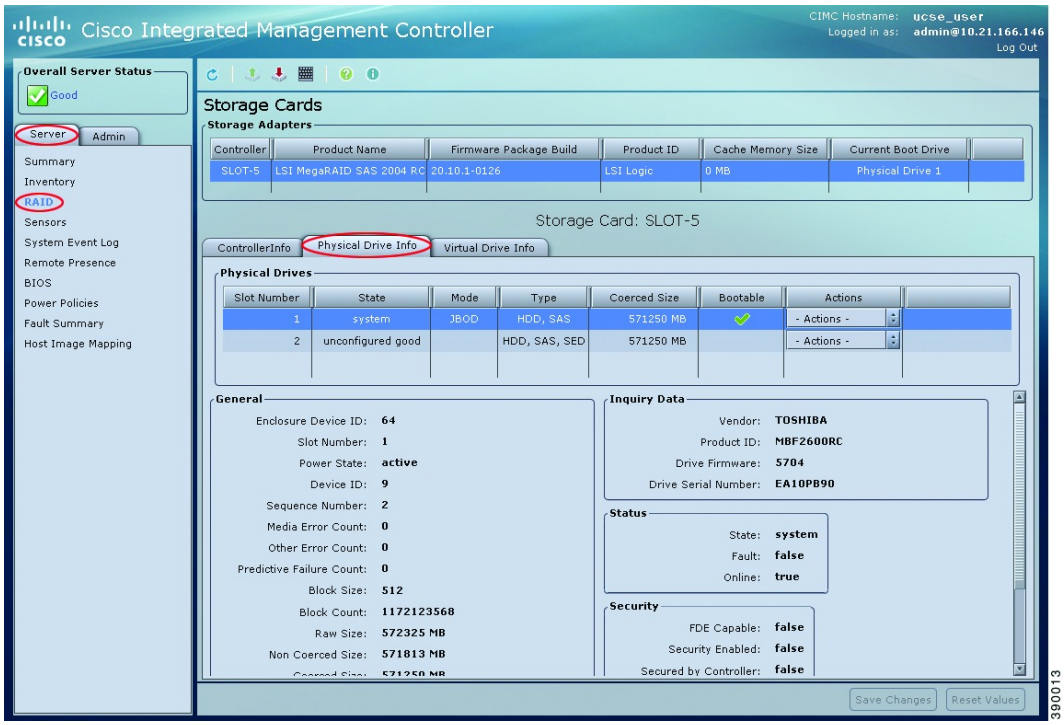
Procedure

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

Step 2 On the **Server** tab, click **RAID**.

Step 3 In the tabbed menu of the **Storage Cards** area, click the **Physical Drive Info** tab.

Figure 23: Physical Drive Info Tab



Step 4 From the **Actions** column in the **Physical Drives** pane, choose **Rebuild** from the drop-down list, and then click **OK** to confirm.
The Rebuild process takes a few hours to complete.

Note The **Rebuild** option appears in the drop-down list when the state of the physical drive is Failed or Offline.

Step 5 To view the progress of the Rebuild process, see the **Rebuilding Progress** and the **Rebuilding Time Elapsed** fields in the **General** area.

Step 6 To stop the Rebuild process, click the **Abort** button, which is located next to the **Rebuilding Progress** field in the **General** area, and then click **OK** to confirm.

Erasing the Contents of a Physical Drive

Note The RAID feature is applicable to E-Series Servers and the SM E-Series NCE. The RAID feature is not applicable to the EHWIC E-Series NCE and the NIM E-Series NCE.

Use this procedure to erase all of the contents of a physical drive and set it to zero.

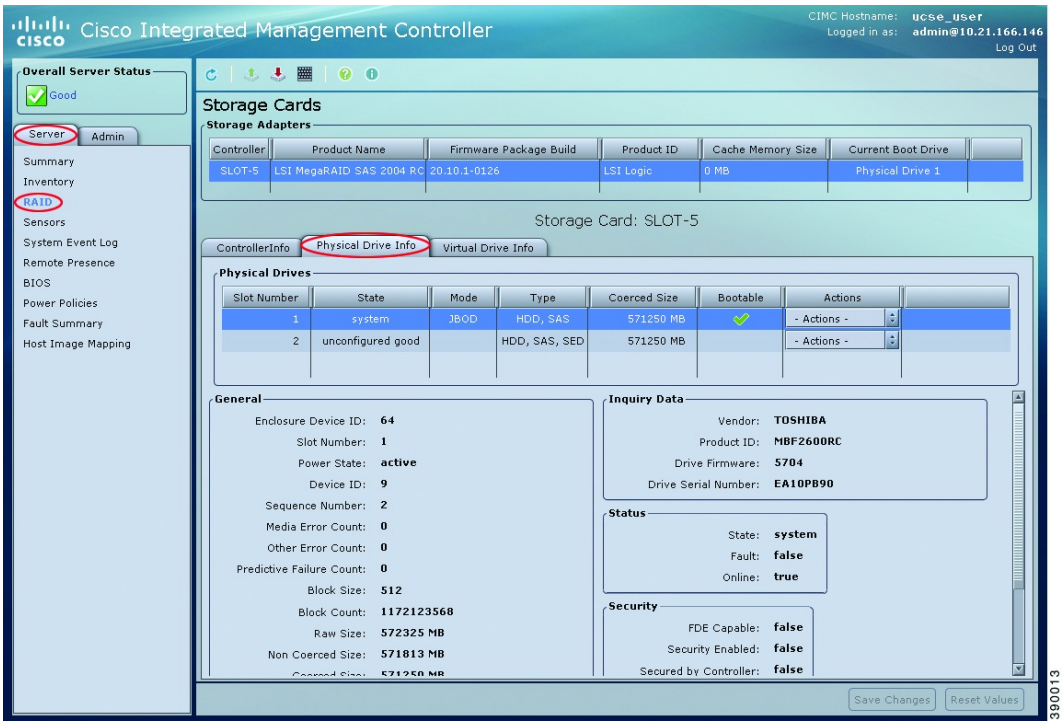
Procedure

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

Step 2 On the **Server** tab, click **RAID**.

Step 3 In the tabbed menu of the **Storage Cards** area, click the **Physical Drive Info** tab.

Figure 24: Physical Drive Info Tab



Step 4 From the **Actions** column in the **Physical Drives** pane, choose **Erase** from the drop-down list, and then click **OK** to confirm.
The Erase process takes a few hours to complete.

Step 5 To view the progress of the Erase process, see the **Erasing Progress** and the **Erasing Time Elapsed** fields in the **General** area.

Step 6 To stop the Erase process, click the **Abort** button, which is located next to the **Erasing Progress** field in the **General** area, and then click **OK** to confirm.

Enabling Auto Rebuild on the Storage Controller

Note The RAID feature is applicable to E-Series Servers and the SM E-Series NCE. The RAID feature is not applicable to the EHWIC E-Series NCE and the NIM E-Series NCE.

Use this procedure to rebuild a disk drive automatically. If one of the disk drives that is configured with RAID becomes degraded, and a new drive is plugged it, the rebuild process on the new drive starts automatically.

Procedure

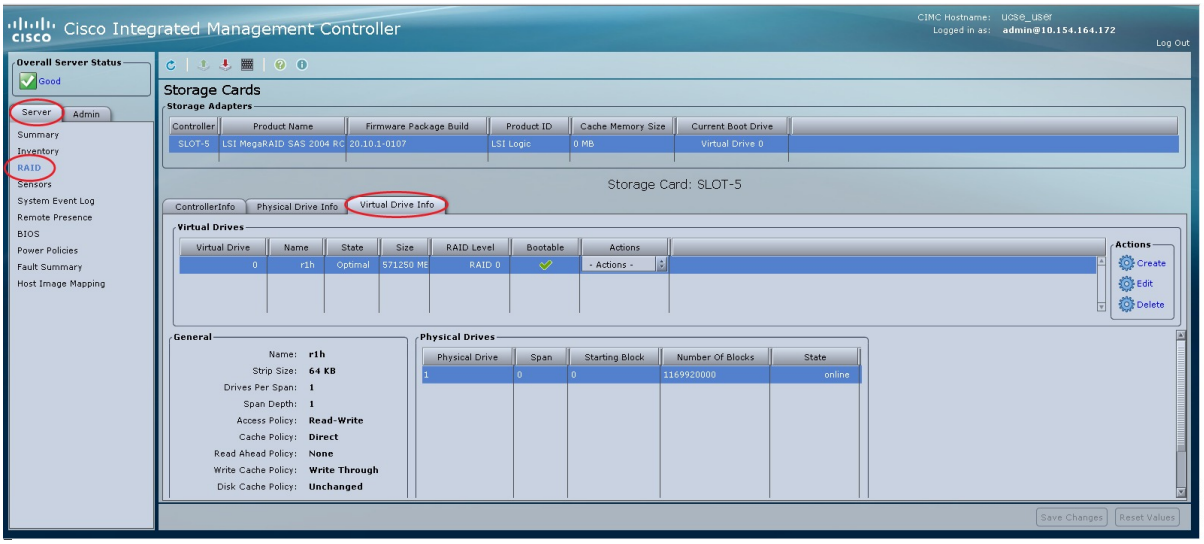
Step 1 In the **Navigation** pane, click the **Server** tab.

Step 2 On the **Server** tab, click **RAID**.

Step 3 In the **Storage Adapters** area, select the storage card.
If the server is powered on, the resources of the selected storage adapter appear in the tabbed menu in the **Storage Cards** area.

Step 4 In the tabbed menu of the **Storage Cards** area, click the **Virtual Drive Info** tab.

Figure 25: Virtual Drive Info Tab



Step 5 In the **Actions** area of the **Virtual Drive Info** tab, click **Edit**.
The **Modify RAID Configuration** dialog box appears.

Step 6 If the **Enable Auto Rebuild** button appears, click the button to make the **Disable Auto Rebuild** button appear.
The **Disable Auto Rebuild** button indicates that auto rebuild is enabled.

Caution The rebuild process overwrites all existing data; therefore, make sure that the drive that is plugged in does not contain important data.

Deleting the Virtual Drive

Note The RAID feature is applicable to E-Series Servers and the SM E-Series NCE. The RAID feature is not applicable to the EHWIC E-Series NCE and the NIM E-Series NCE.

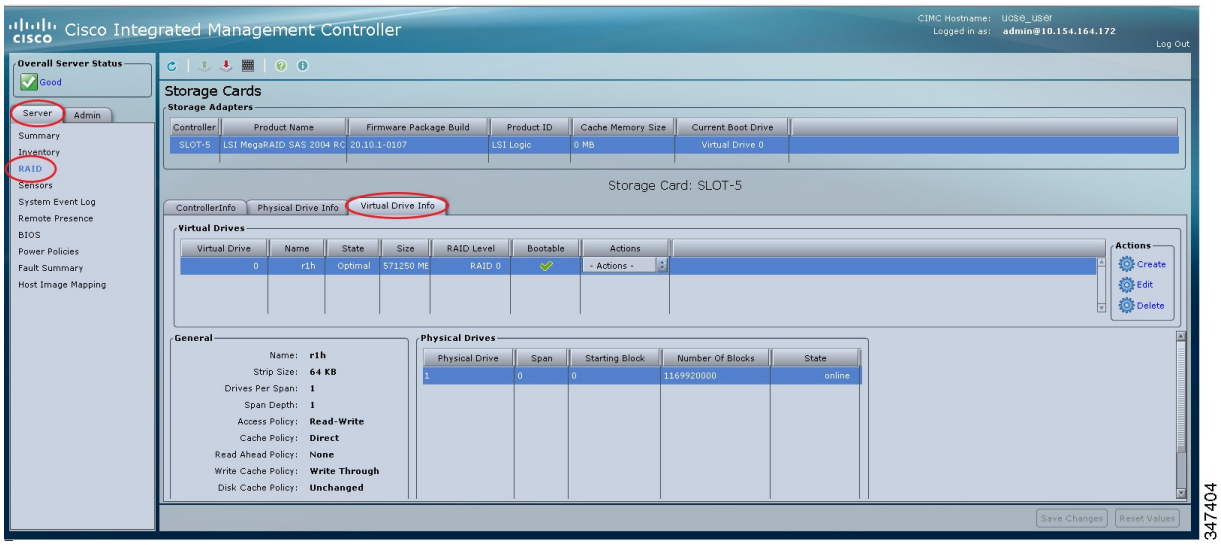
Procedure

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

Step 2 On the **Server** tab, click **RAID**.

Step 3 In the tabbed menu of the **Storage Cards** area, click the **Virtual Drive Info** tab.

Figure 26: Virtual Drive Info Tab



Step 4 From the **Actions** column in the **Virtual Drives** area, choose the **Delete** option.

Step 5 Click **OK** to confirm.

Performing a Consistency Check on Virtual Drives

Note The RAID feature is applicable to E-Series Servers and the SM E-Series NCE. The RAID feature is not applicable to the EHWIC E-Series NCE and the NIM E-Series NCE.

Use this procedure to perform a consistency check on virtual drives. This can be one of the following:

- **For RAID 1—**Checks if the data in both drives is identical.
- **For RAID 5—**Checks if the data in all of the parity stripe blocks is correct.

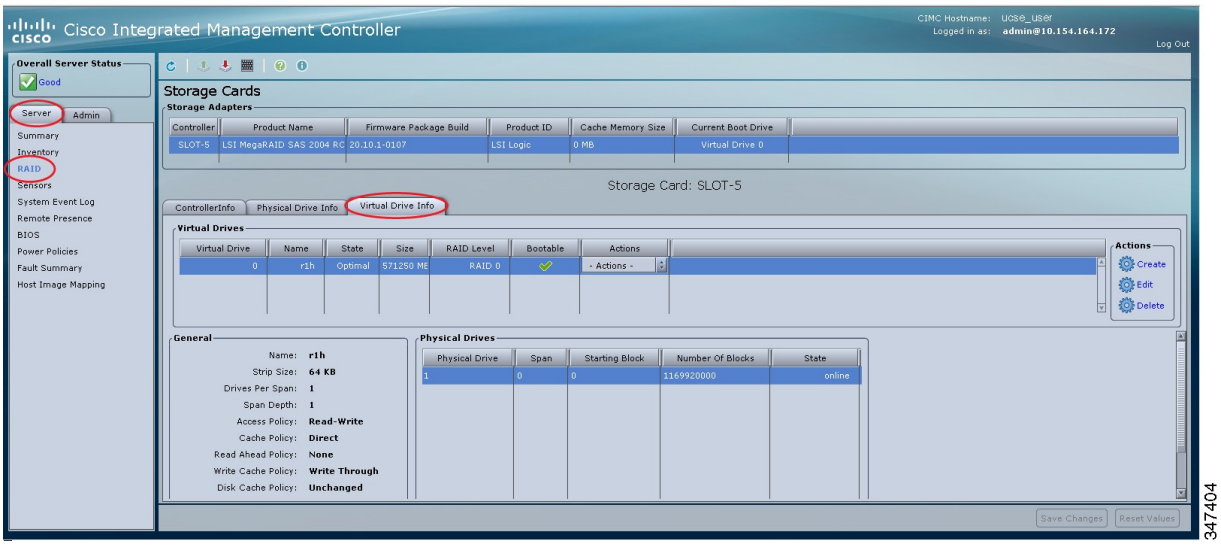
Procedure

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

Step 2 On the **Server** tab, click **RAID**.

Step 3 In the tabbed menu of the **Storage Cards** area, click the **Virtual Drive Info** tab.

Figure 27: Virtual Drive Info Tab



Step 4 From the **Actions** column in the **Virtual Drives** area, choose the **Consistency Check** option, and then click **OK** to confirm.
The Consistency Check process takes a few hours to complete.

Step 5 To view the progress of the Consistency Check process, see the **Consistency Check Progress** and the **Consistency Check Time Elapsed** fields in the **General** area.

Step 6 To stop the Consistency Check process, click the **Abort** button, which is located next to the **Consistency Check Progress** field in the **General** area, and then click **OK** to confirm.

Reconstructing the Virtual Drive Options

Note The RAID feature is applicable to E-Series Servers and the SM E-Series NCE. The RAID feature is not applicable to the EHWIC E-Series NCE and the NIM E-Series NCE.

To migrate (reconstruct) the virtual drive to a new RAID level, you might need to add or remove physical drives. When you add or remove physical drives, the size of the virtual drive is either retained or increased.

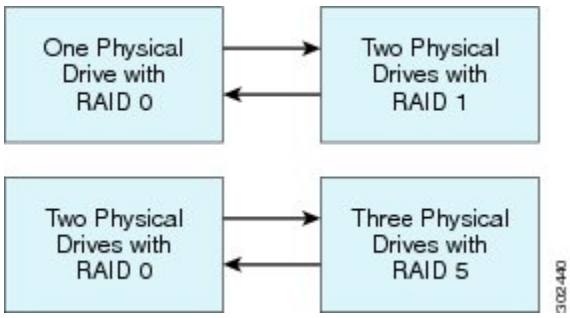
You can retain or increase the size of the virtual drive, but you cannot decrease its size. For example, if you have two physical drives with RAID 0, you cannot migrate to RAID 1 with the same number of drives. Because with RAID 1, a mirrored set of disk drives are created, which reduces the size of the virtual drive to half of what it was before, which is not supported.

Note The virtual drive reconstruction process might take several hours to complete. You can continue to use the system during the reconstruction process.

Options for Retaining the Size of the Virtual Drive

See the following figure and the table that follows for options that retain the size of the virtual drive when you migrate the virtual drive to a new RAID level.

Figure 28: Retaining the Virtual Drive Size Options



The following table lists the options that retain the size of the virtual drive and provides information about how many physical drives you must add or remove to migrate the virtual drive to a specific RAID level.

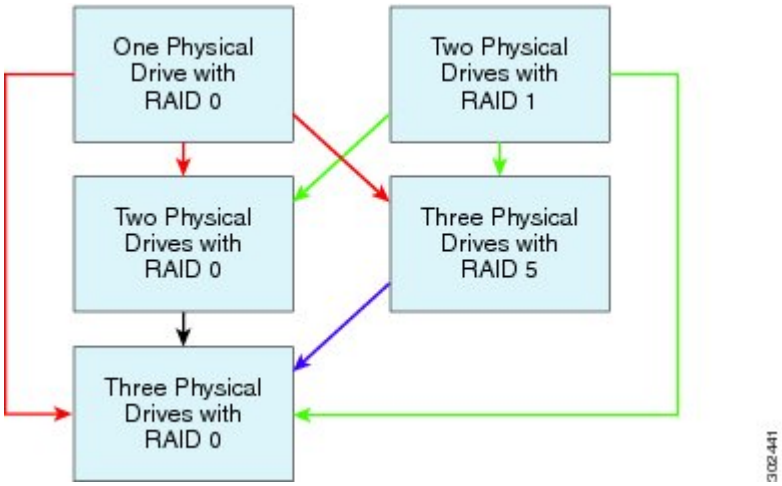
Table 2: Retaining the Virtual Drive Size

From:	Migrate to:	Add or Remove Disks
One physical drive with RAID 0	Two physical drives with RAID 1	Add one disk.
Two physical drives with RAID 1	One physical drive with RAID 0	Remove one disk.
Two physical drives with RAID 0	Three physical drives with RAID 5	Add one disk.
Three physical drives with RAID 5	Two physical drives with RAID 0	Remove one disk.

Options for Increasing the Size of the Virtual Drive

See the following figure and the table that follows for options that increase the size of the virtual drive when you migrate the virtual drive to a new RAID level.

Figure 29: Increasing the Virtual Drive Size Options



The following table lists the options that increase the size of the virtual drive and provides information about how many physical drives you must add or remove to migrate the virtual drive to a specific RAID level.

Table 3: Increasing the Virtual Drive Size

From:	Migrate to:	Add or Remove Disks
One physical drive with RAID 0 See the **red** arrows in the figure.	Two physical drives with RAID 0	Add one disk.
	Three physical drives with RAID 5	Add two disks.
	Three physical drives with RAID 0	Add two disks.
Two physical drives with RAID 1 See the **green** arrows in the figure.	Two physical drives with RAID 0	—
	Three physical drives with RAID 5	Add one disk.
	Three physical drives with RAID 0	Add one disk.
Two physical drives with RAID 0 See the **black** arrow in the figure.	Three physical drives with RAID 0	Add one disk.
Three physical drives with RAID 5 See the **purple** arrow in the figure.	Three physical drives with RAID 0	—

Reconstructing the Virtual Drive

Note The RAID feature is applicable to E-Series Servers and the SM E-Series NCE. The RAID feature is not applicable to the EHWIC E-Series NCE and the NIM E-Series NCE.

Use this procedure to migrate (reconstruct) the virtual drive to a new RAID level.

Before You Begin

See Reconstructing the Virtual Drive Options.

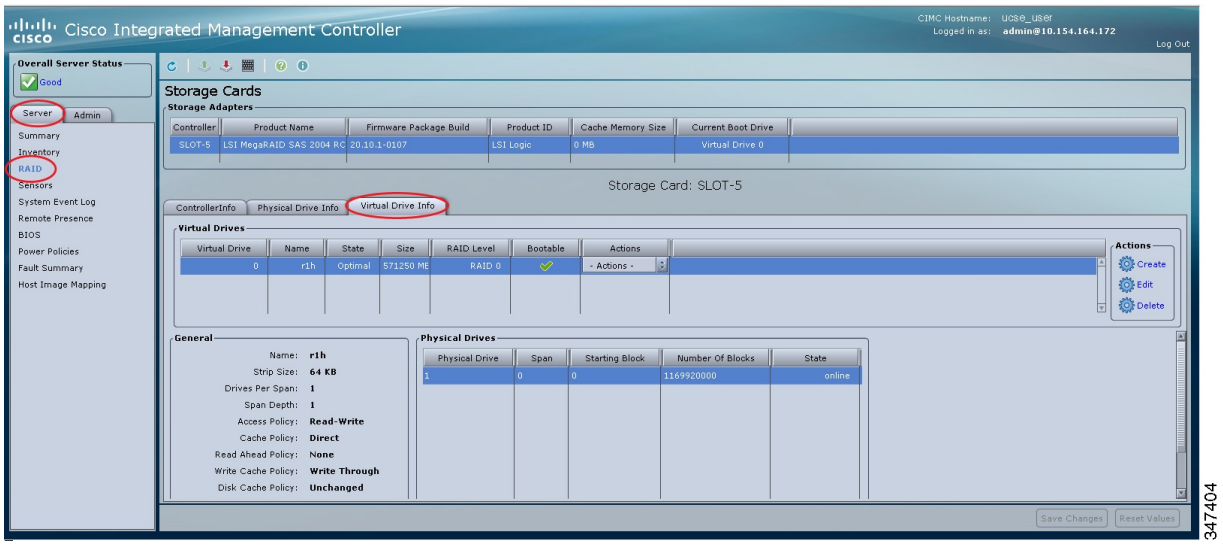
Procedure

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

Step 2 On the **Server** tab, click **RAID**.

Step 3 In the tabbed menu of the **Storage Cards** area, click the **Virtual Drive Info** tab.

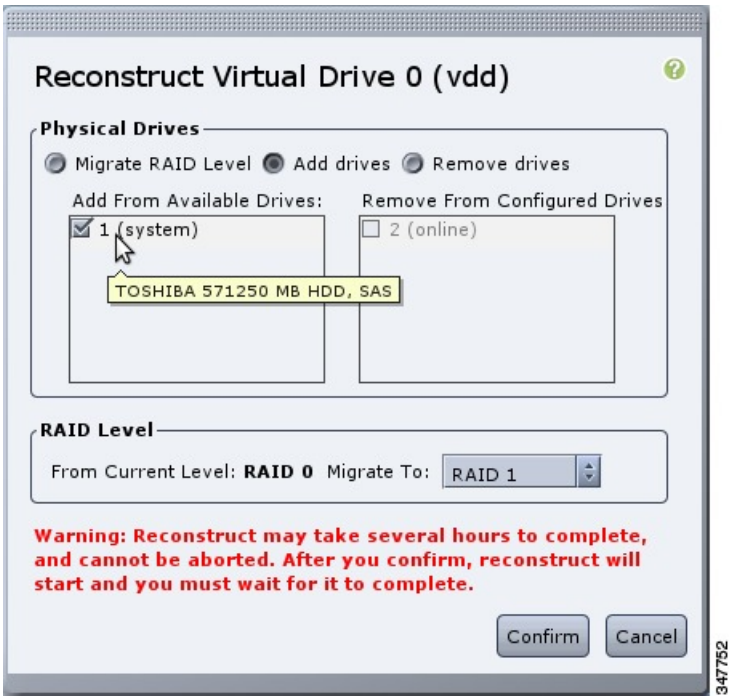
Figure 30: Virtual Drive Info Tab



Step 4 From the **Actions** column in the **Virtual Drives** area, choose the **Reconstruct** option.

The **Reconstruct Virtual Drive** dialog box appears.

Figure 31: Reconstruct Virtual Drive Dialog Box



Step 5 Complete the following as appropriate:

Name	Description
Migrate RAID Level radio button	Select this option to migrate the virtual drives to the specified new RAID level.
Add Drives radio button	Select this option, and then choose the drives to add from the **Add from Available Drives** table.
Remove Drives radio button	Select this option, and then choose the drives to remove from the **Remove from Configured Drives** table.
Add from Available Drives table	Lists the physical drives that you can add to migrate to the new RAID level. **Note** This table is active after you select the **Add Drives** radio button.
Remove from Configured Drives table	Lists the physical drives that you can remove to migrate to the new RAID level. **Note** This table is active after you select the **Remove Drives** radio button.

Name	Description
From Current Level: RAID *x* Migrate To: drop-down list	The new RAID level to which you want to migrate the drives. Starts the reconstruction process after you click **Confirm**. **Note** You can retain or increase the size of the virtual drive, but you cannot decrease its size. See Reconstructing the Virtual Drive Options.

The Reconstruct process takes a few hours to complete.

Step 6 To view the progress of the Reconstruct process, see the **Reconstruct Progress** and the **Reconstruct Time Elapsed** fields in the **General** area.

Making the Virtual Drive or Physical Drive Bootable

Note The RAID feature is applicable to E-Series Servers and the SM E-Series NCE. The RAID feature is not applicable to the EHWIC E-Series NCE and the NIM E-Series NCE.

When you configure RAID, the **Configure Virtual Drive** dialog box has a check box that allows you to make the disk drive bootable. If you did not check the **Set this Virtual Drive Bootable** check box during the RAID configuration process, you can use this procedure to make the disk drive bootable.

Procedure

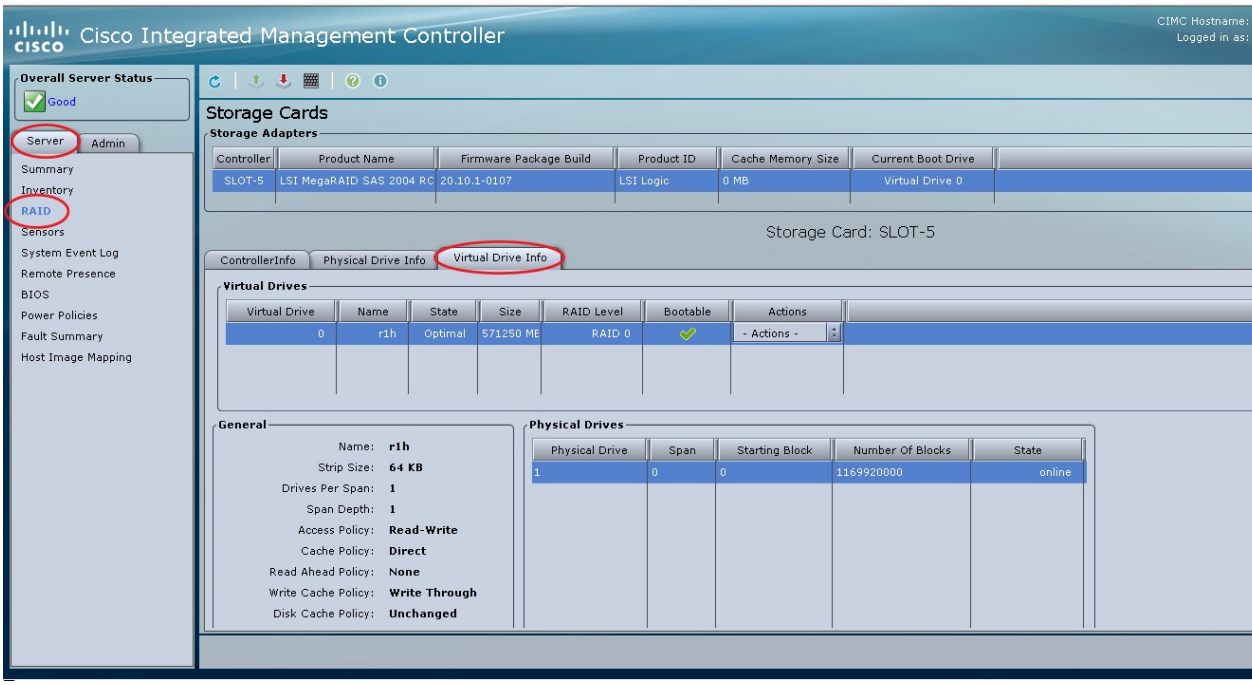
Step 1 In the **Navigation** pane, click the **Server** tab.

Step 2 On the **Server** tab, click **RAID**.

Step 3 To make a virtual drive bootable, do the following:

a) In the tabbed menu of the **Storage Cards** area, click the **Virtual Drive Info** tab.

Figure 32: Virtual Drive Info Tab



b) From the **Actions** column of the appropriate virtual drive, choose **Set Bootable** from the drop-down list.

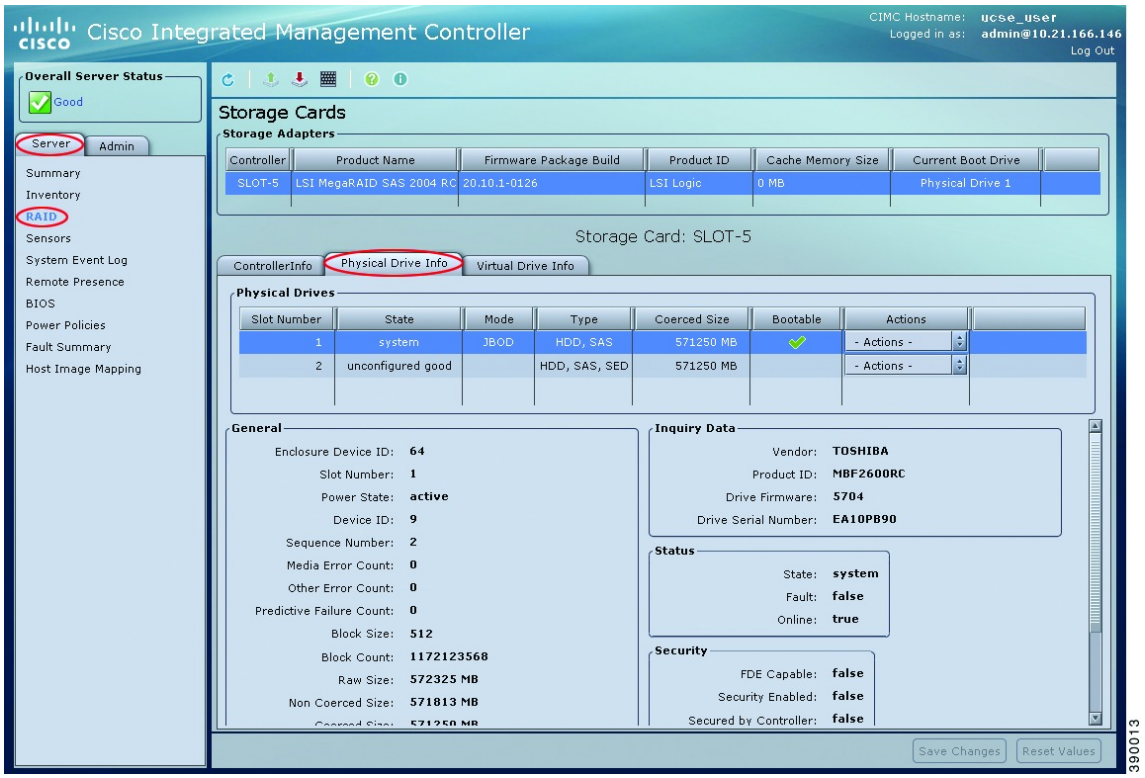
c) Click **OK** to change the boot drive to this virtual drive.

Note After you set the drive to be bootable, the **Bootable** column displays a checkmark against the configured drive.

Step 4 To make a physical drive bootable, do the following:

a) In the tabbed menu of the **Storage Card** area, click the **Physical Drive Info** tab.

Figure 33: Physical Drive Info Tab



b) From the **Actions** column of the appropriate physical drive, choose **Set Bootable** from the drop-down list.

c) Click **OK** to change the boot drive to this physical drive.

Note The physical drive must be in non-RAID mode to be bootable. After you set the drive to be bootable, the **Bootable** column displays a checkmark against the configured drive.

Installing W2K12 to Support RAID Volumes Larger than 2TB

On a UCS-E160D-M2 series server, if you want to run Windows with more than 2 TB of hard drive space installed, follow the procedure explained in this section. There are two ways you can install W2K12: Using Legacy BIOS or using UEFI:

Installing W2K12 Using Legacy BIOS to Support RAID Volumes Larger than 2TB

This workaround shows how to install W2K12 using legacy BIOS to support RAID volumes larger than 2TB. The workaround involves the following major tasks:

1. Configure all the drives in 'Unconfigured Good' state.
2. Configure a Virtual Drive 0 (VD0) using the first hard disk and put it in RAID 0. W2K12 will be installed on VD0.
3. Configure a Virtual Drive 1(VD1) using the remaining hard disks and put it in RAID 0. Use W2K12 to convert this volume to GPT so that it can access the entire storage.

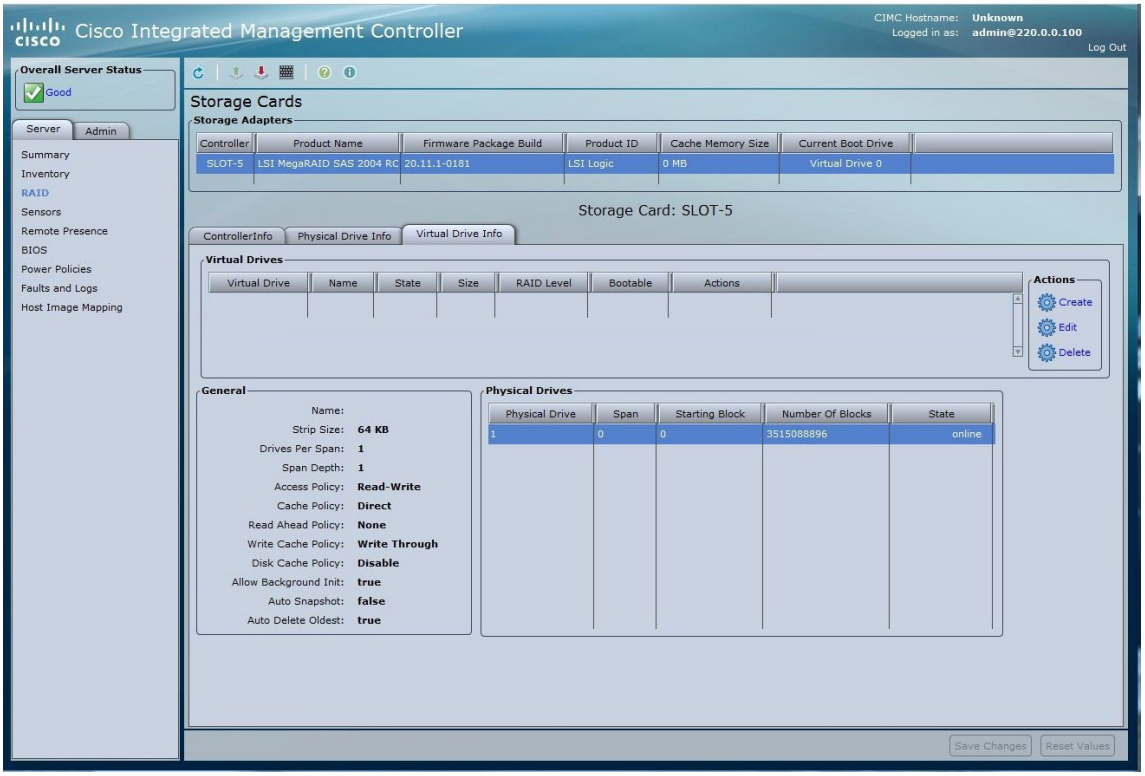
The detailed procedure is explained below:

Procedure

Step 1 Configure all the drives in 'Unconfigured Good' state. Refer Changing the Physical Drive State, on page 61

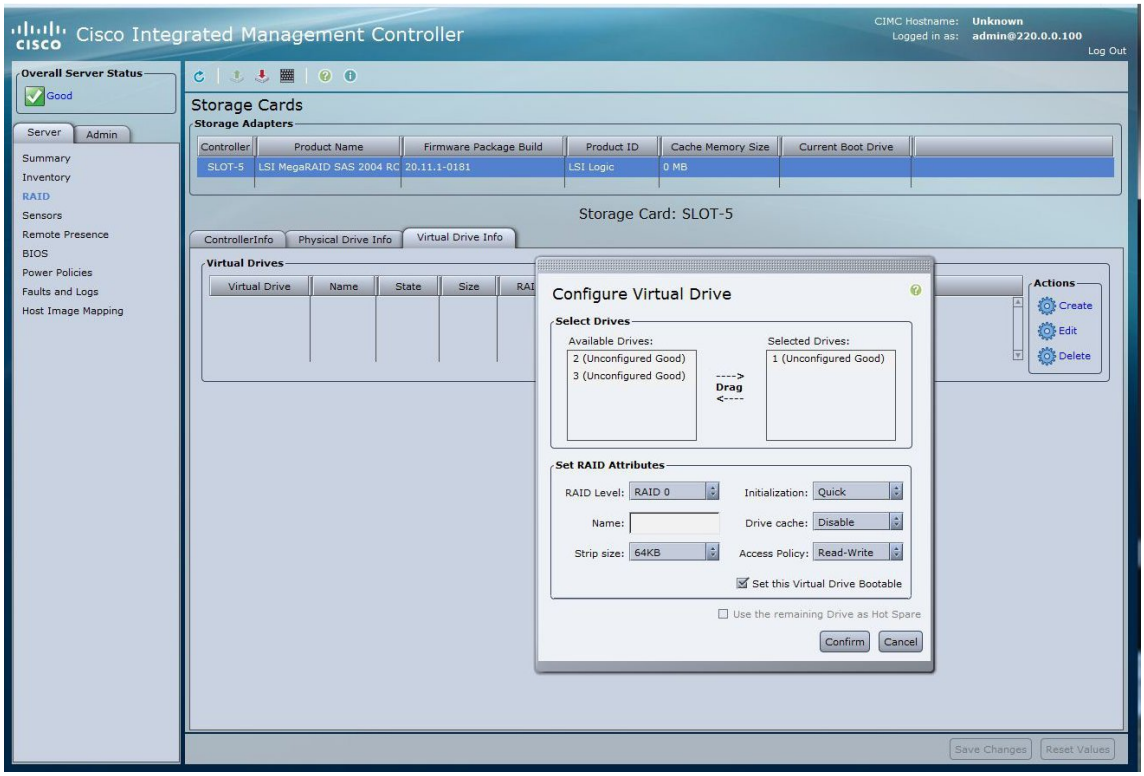
Step 2 In the tabbed menu of the **Storage Cards** area, click the **Virtual Drive Info** tab.

Figure 34: Virtual Drive Info Tab



Step 3 In the Actions area of the Virtual Drive Info tab, click **Create**. The **Configure Virtual Drive** dialog box appears:

Figure 35: Configuring Virtual Drive 0



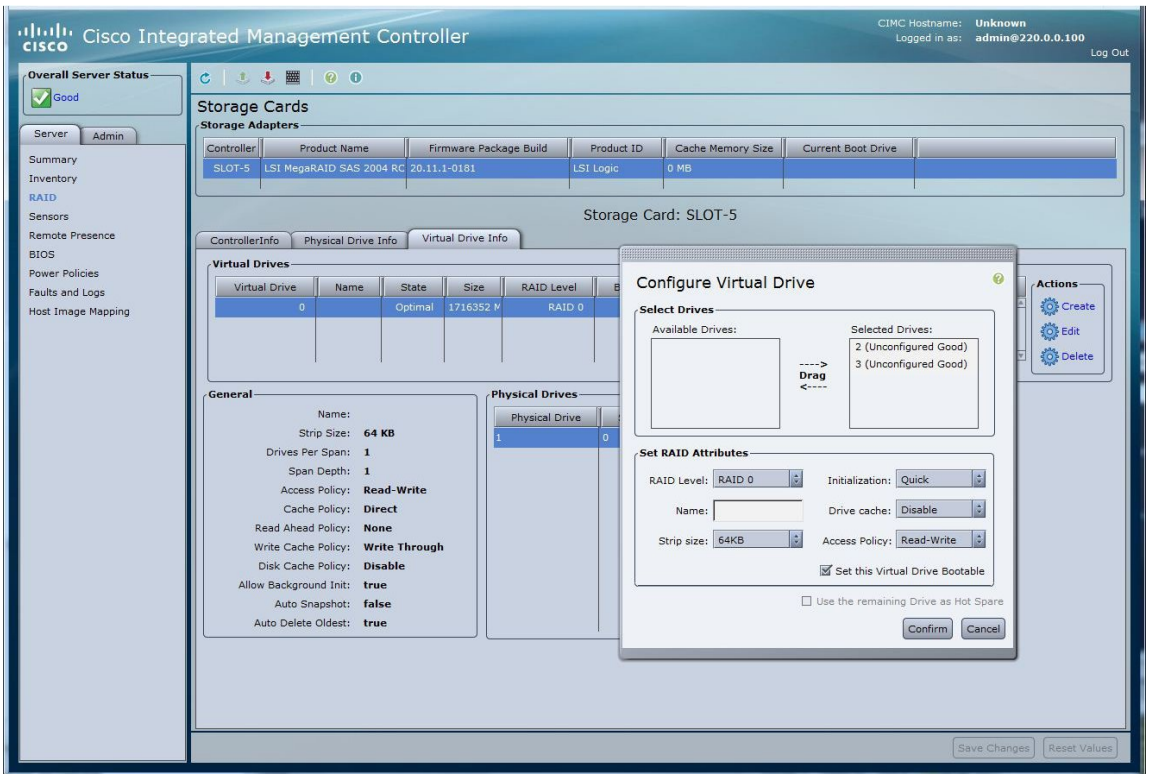
Step 4 Select drive 1 from the Available Devices and drag to Selected Devices.

Step 5 Click **Confirm**. You have now created Virtual Drive 0.

Step 6 In the Actions area of the Virtual Drive Info tab, click **Create**. The **Configure Virtual Drive** dialog box appears.

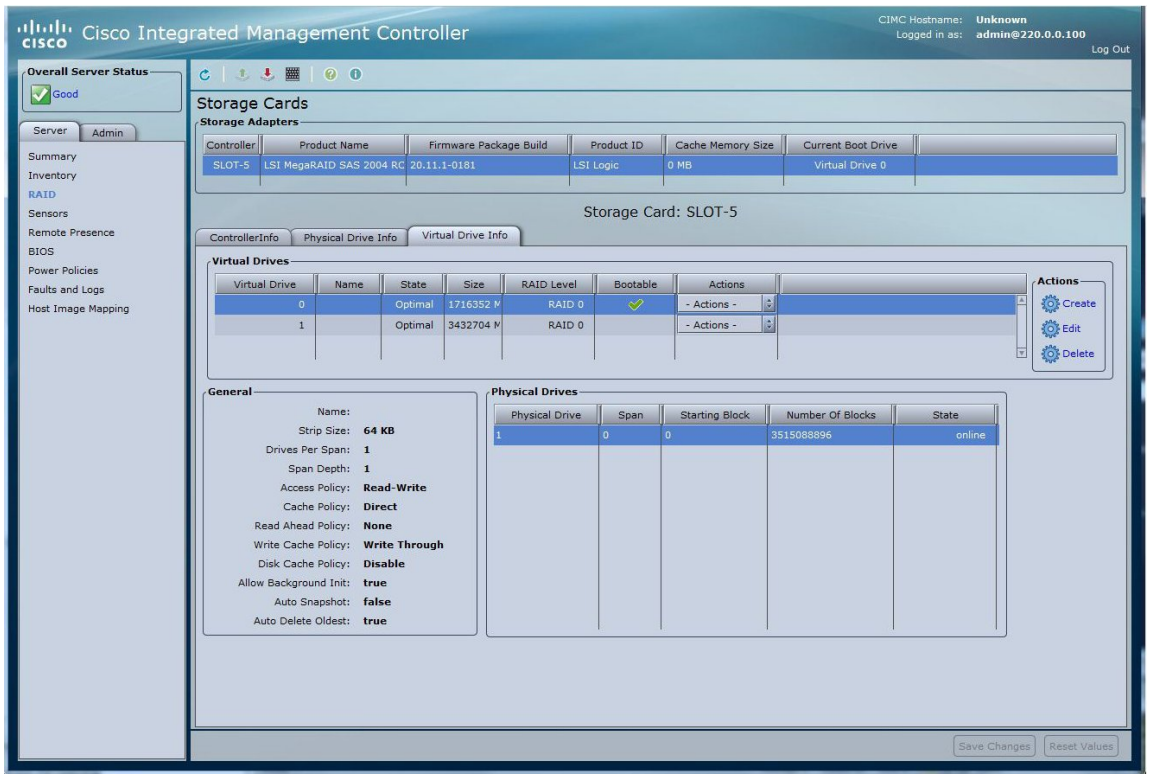
Step 7 Select the remaining drives from the Available Devices and drag to Selected Devices.

Figure 36: Configuring Virtual Drive 1



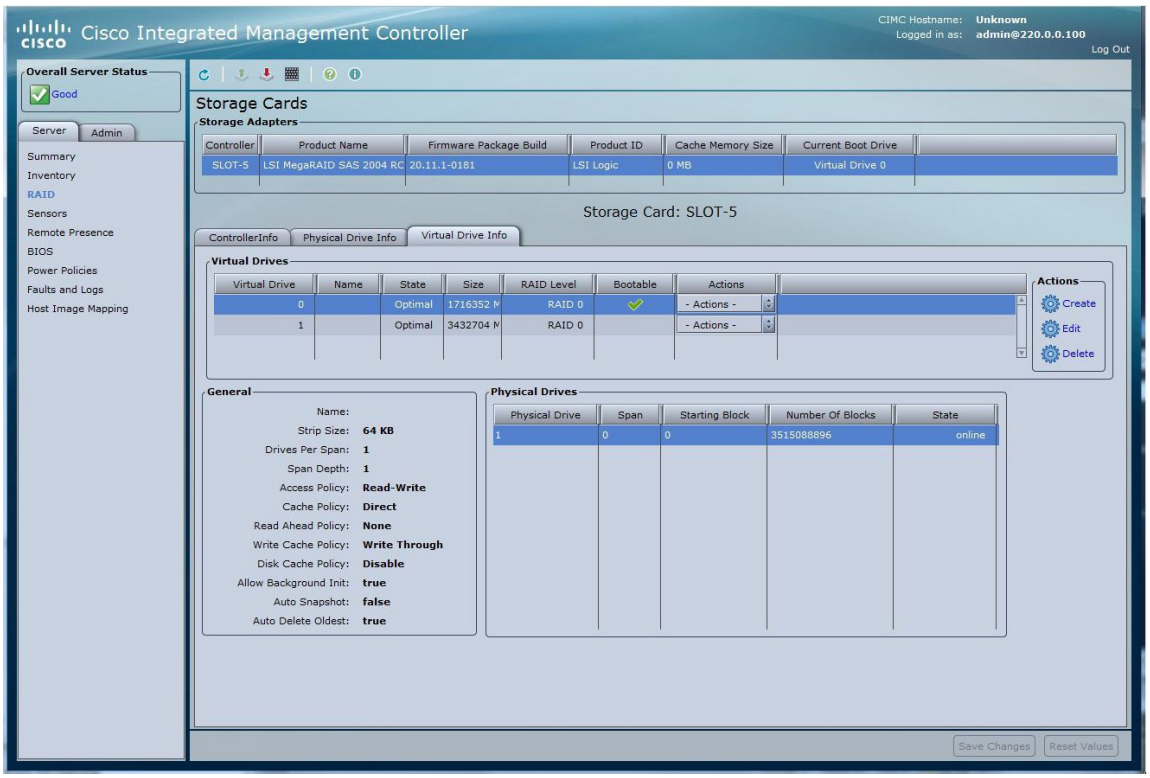
Step 8 Click **Confirm**. You have now created Virtual Drive 1. Verify the Virtual Drives.

Figure 37: Verifying Virtual Drives



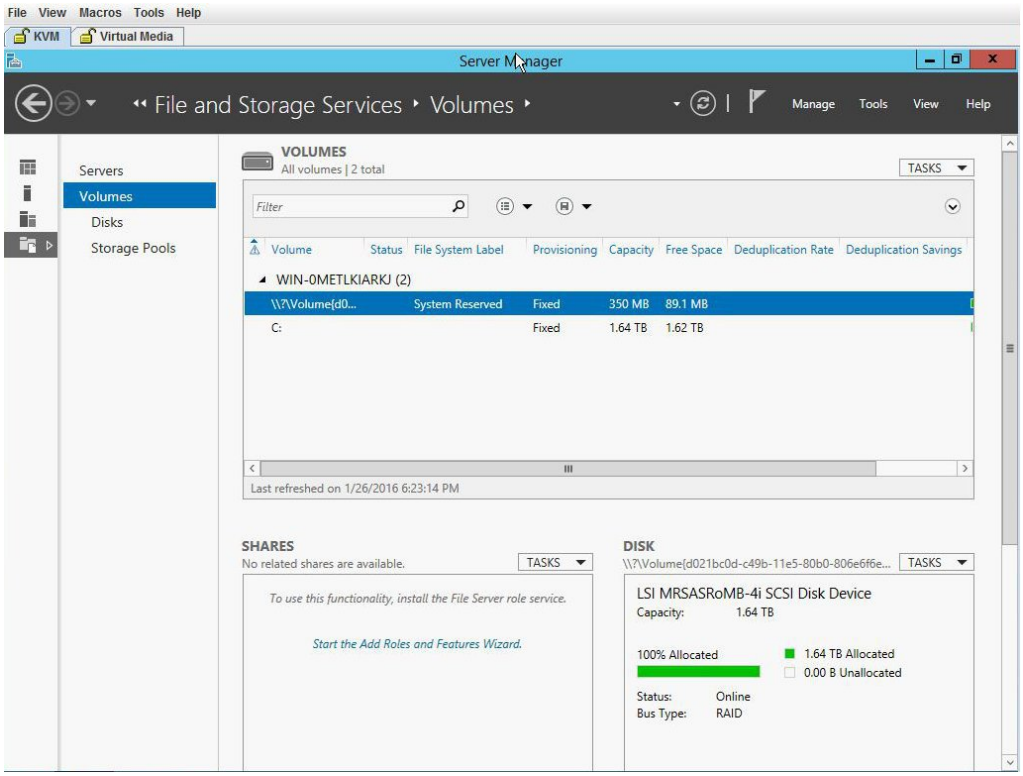
Step 9 Use Host Image Mapping or vKVM to install W2K12 on Virtual Drive 0.

Figure 38: Installing W2K12 on Virtual Drive 0



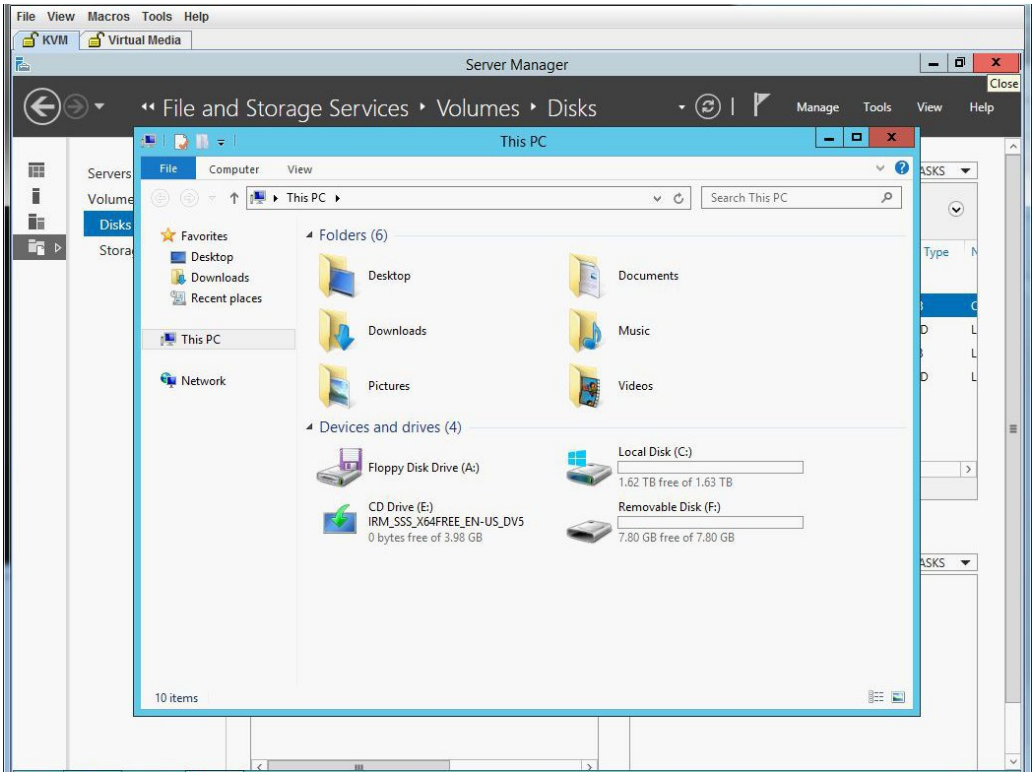
Step 10 After W2K12 installation, log in and check the status of volume.

Figure 39: Status of Volume



Step 11 Check the storage size of C drive.

Figure 40: Storage Size of C Drive



Step 12 Go to Disk and create a new volume using the Virtual Drive 1. Select Virtual Drive 1 and right click on it. Click **New Volume**. The New Volume wizard appears. This wizard helps you create a volume, assign it a drive letter, and then format it with a file system.

Figure 41: Creating a New Volume

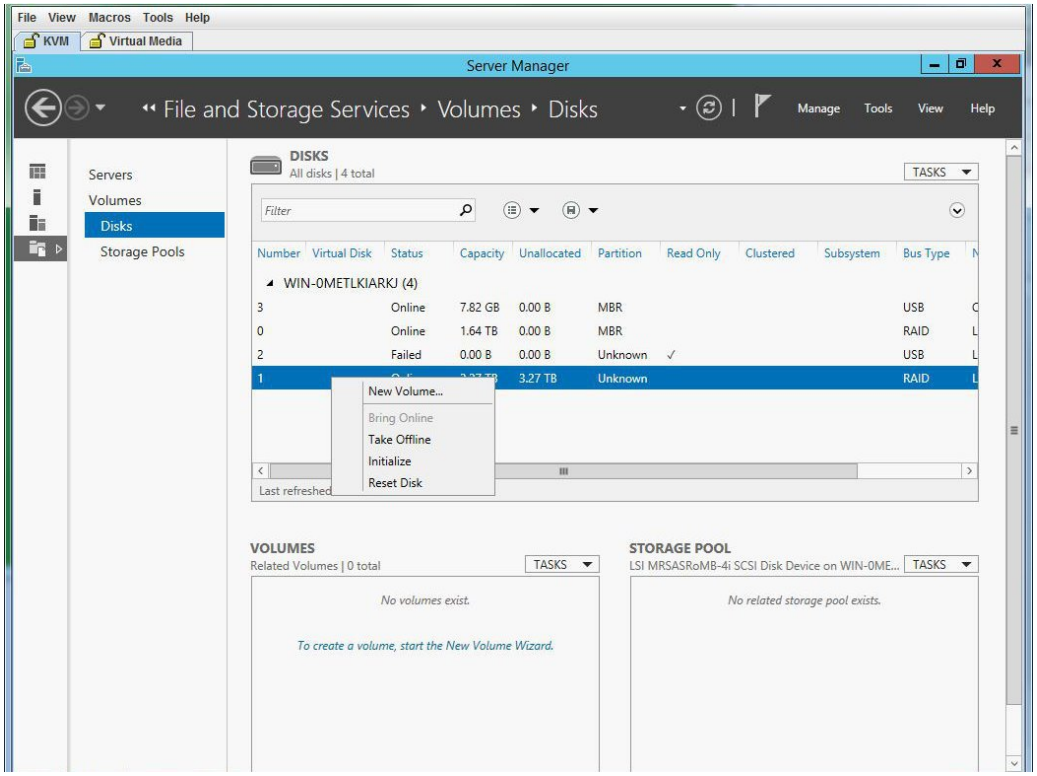
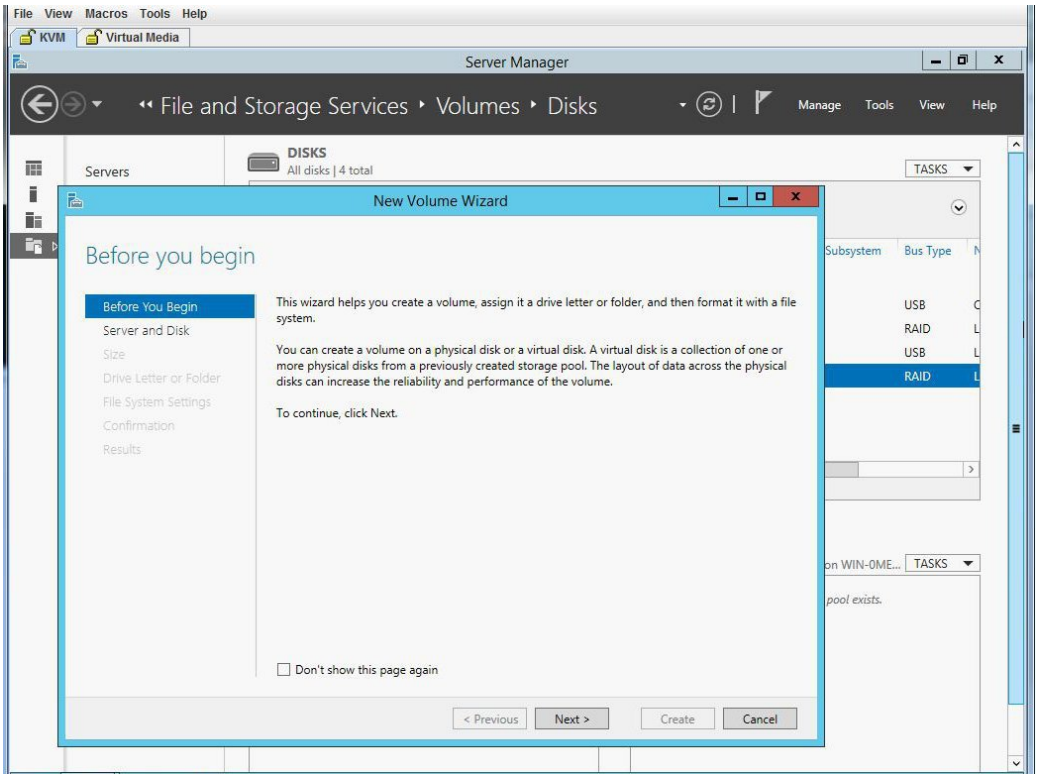
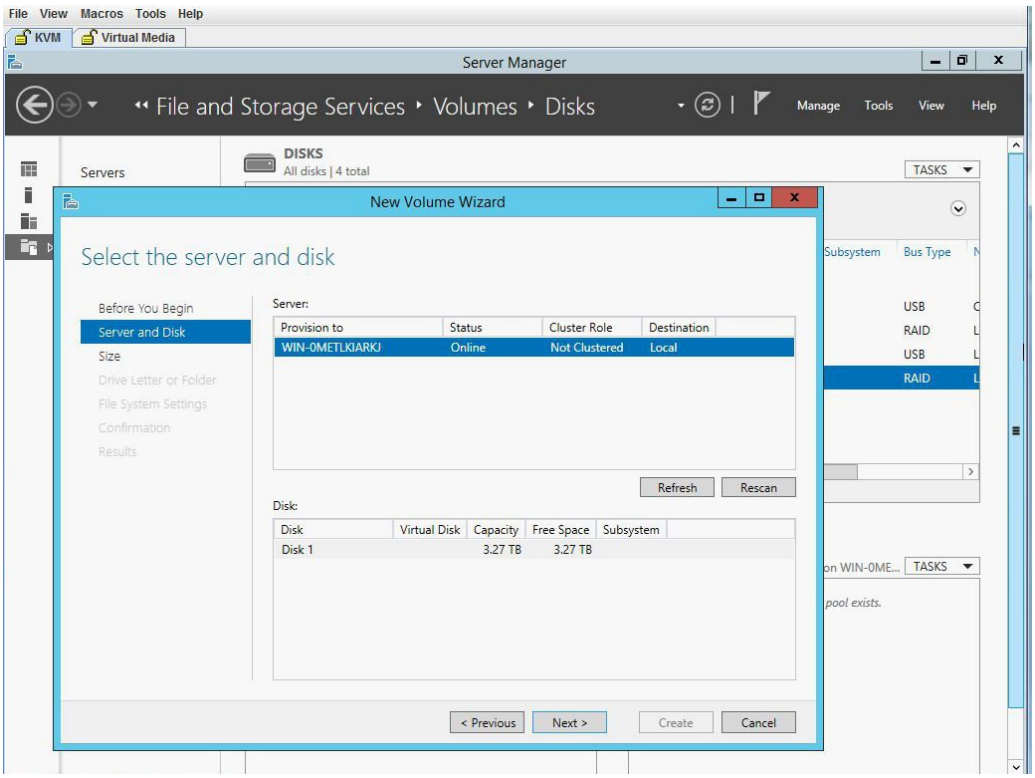


Figure 42: New Volume Wizard



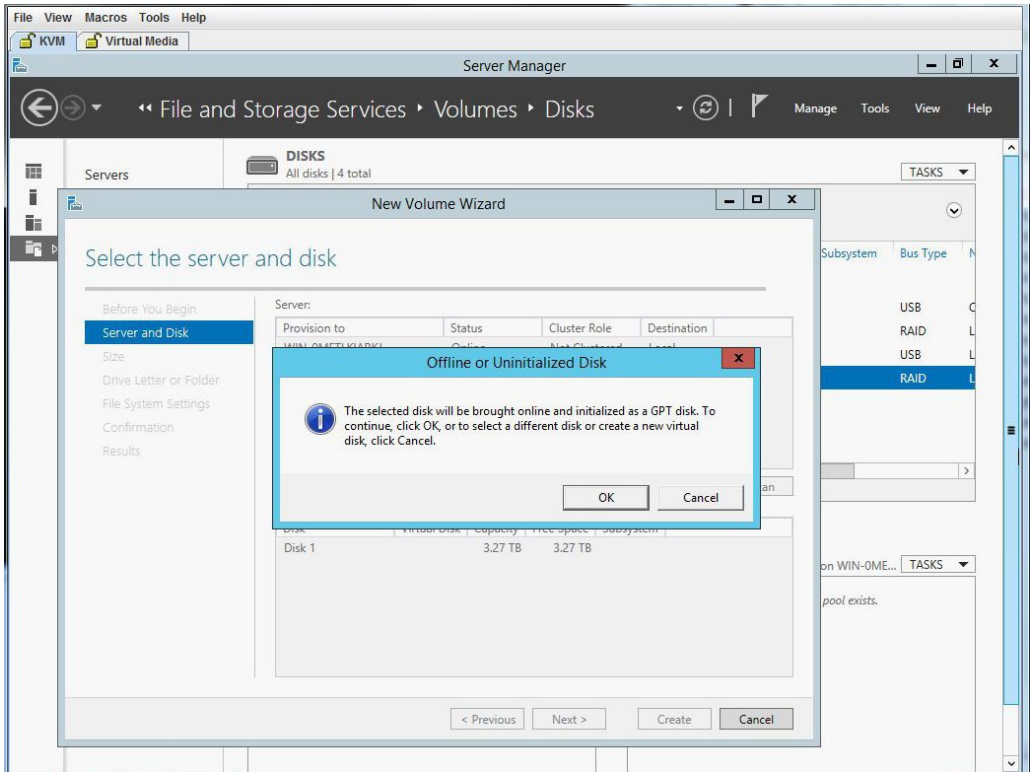
Step 13 Select the server and disk, and click **Next**. You will be prompted with a dialog box.

Figure 43: Server and Disk



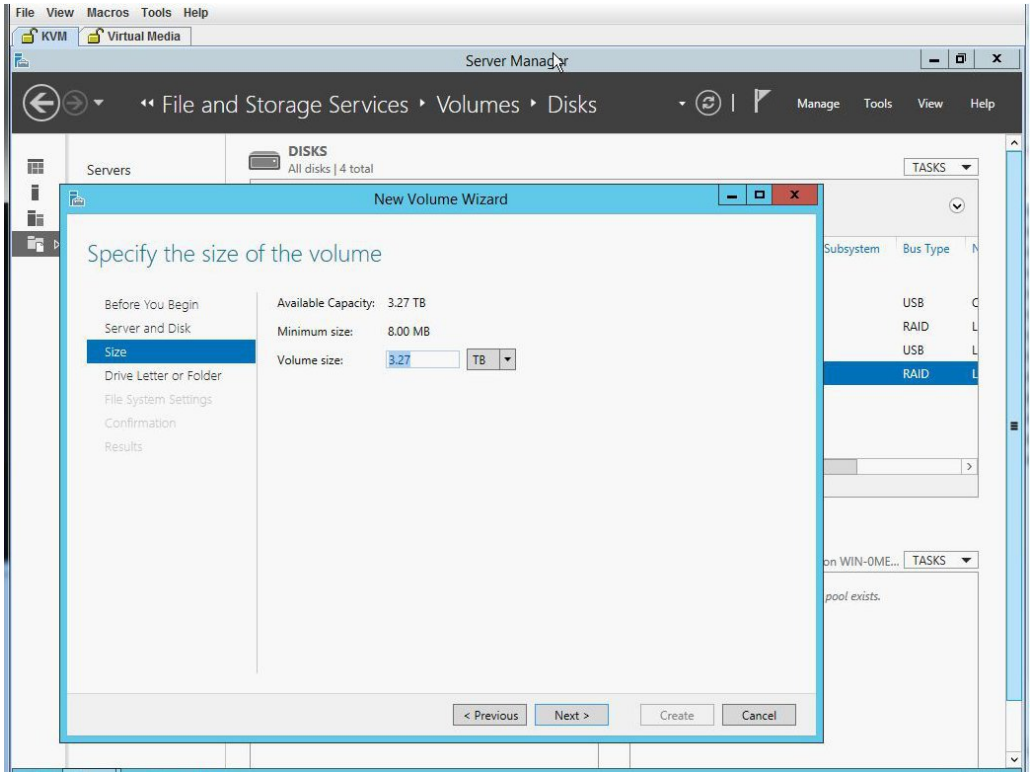
Step 14 Click **OK.**

Figure 44: Server and Disk



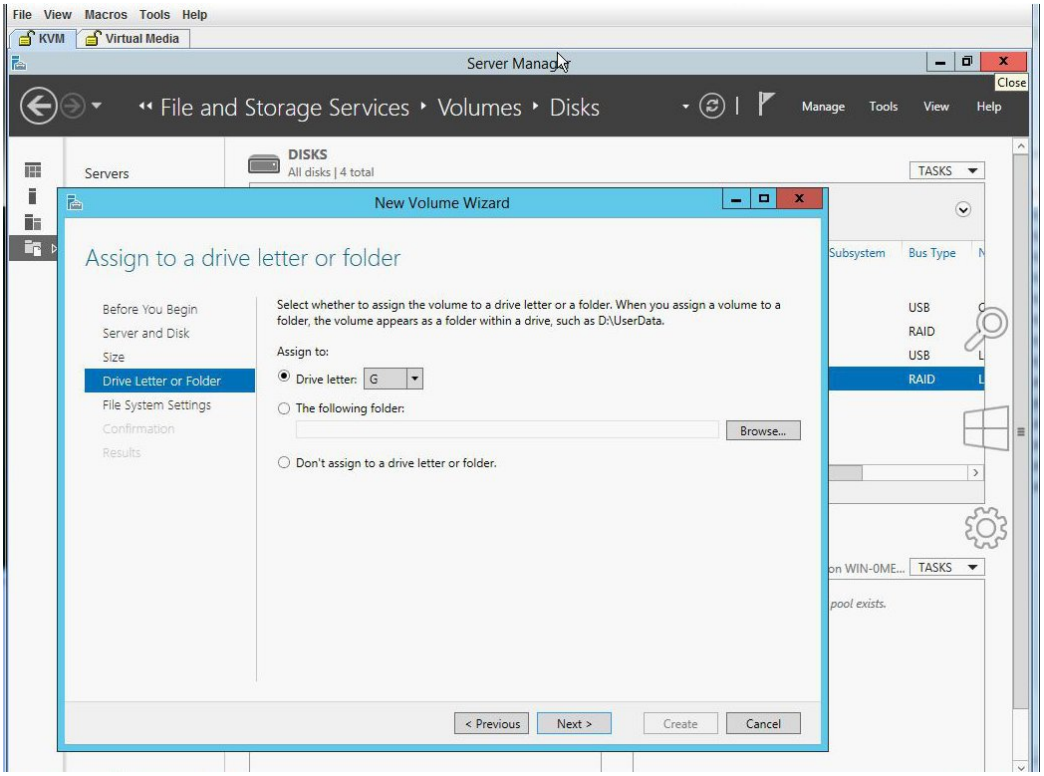
Step 15 Specify the size of the disk volume.

Figure 45: Size of the Disk Volume



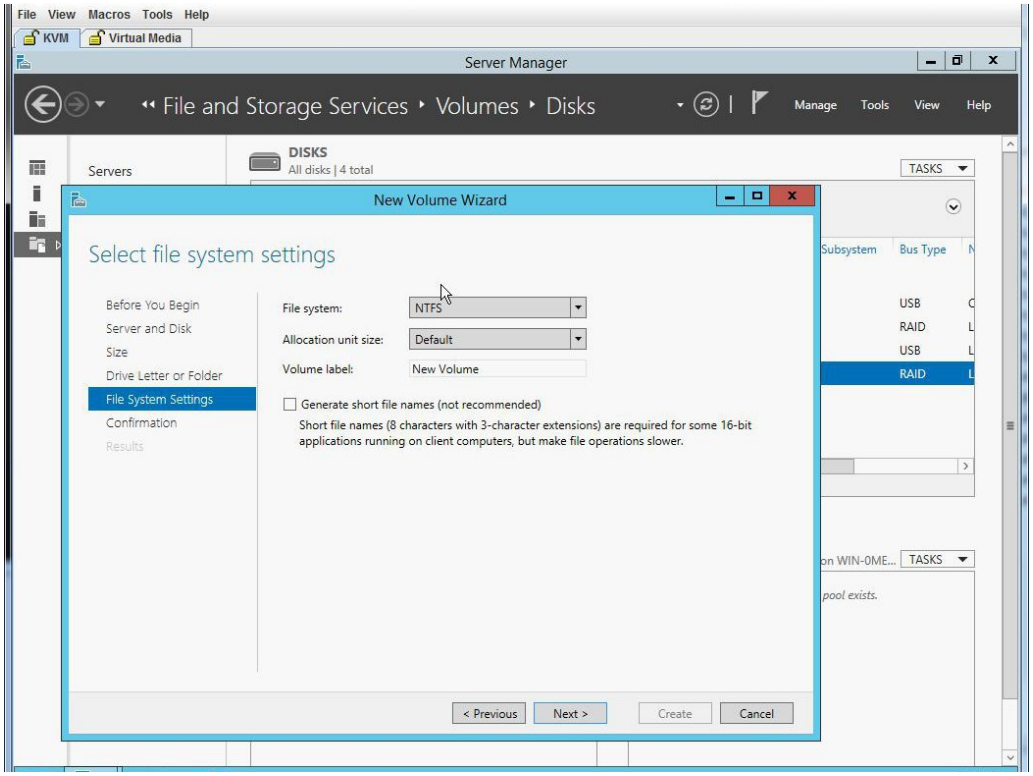
Step 16 Assign the volume to a drive letter.

Figure 46: Drive Letter or Folder



Step 17 Select the File System Settings.

Figure 47: File System Settings



Step 18 Confirm the selections and click **Create**. A completion message appears. Click **Close**.

Figure 48: Confirm Selections

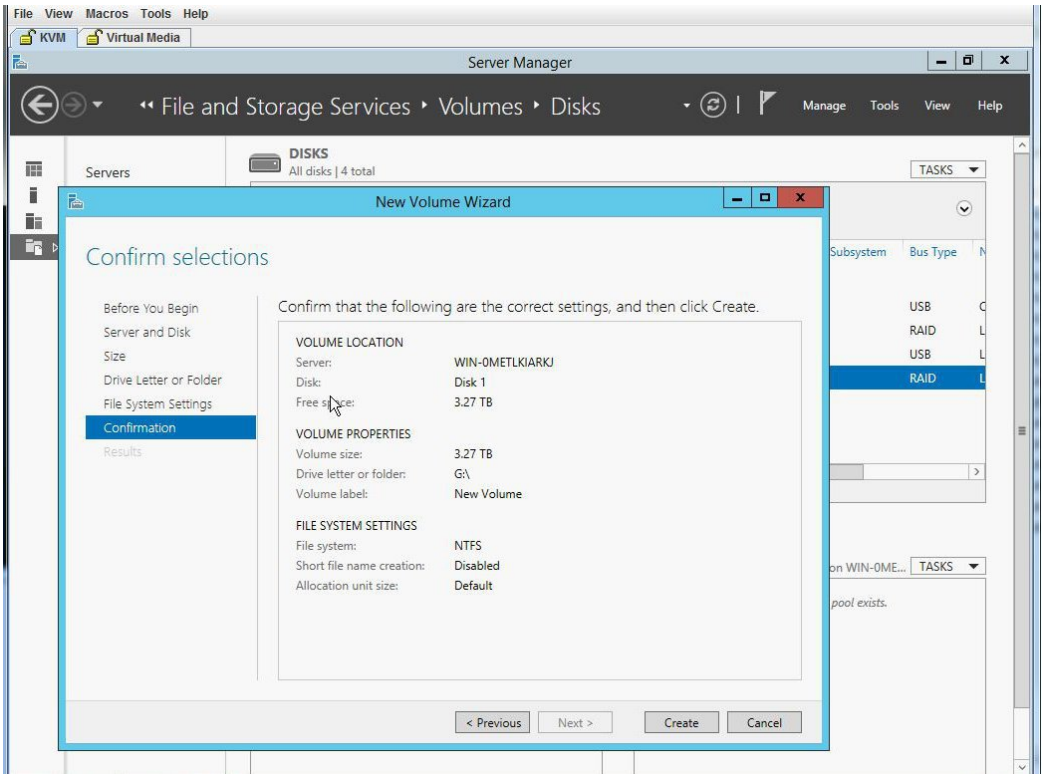
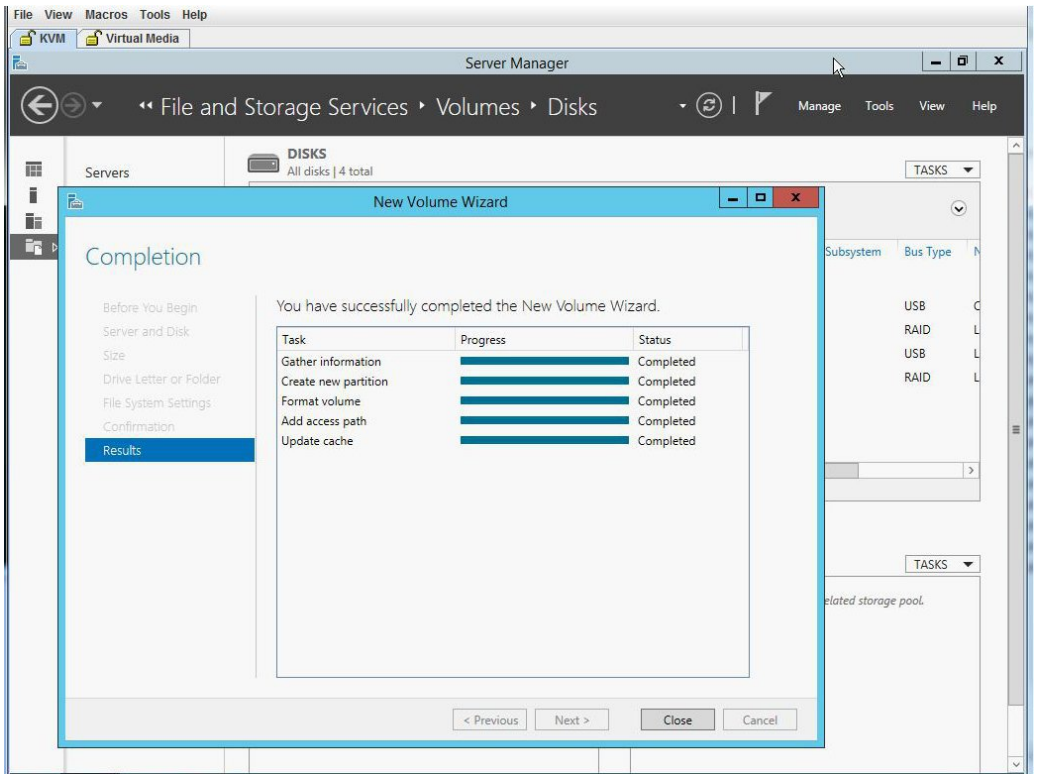
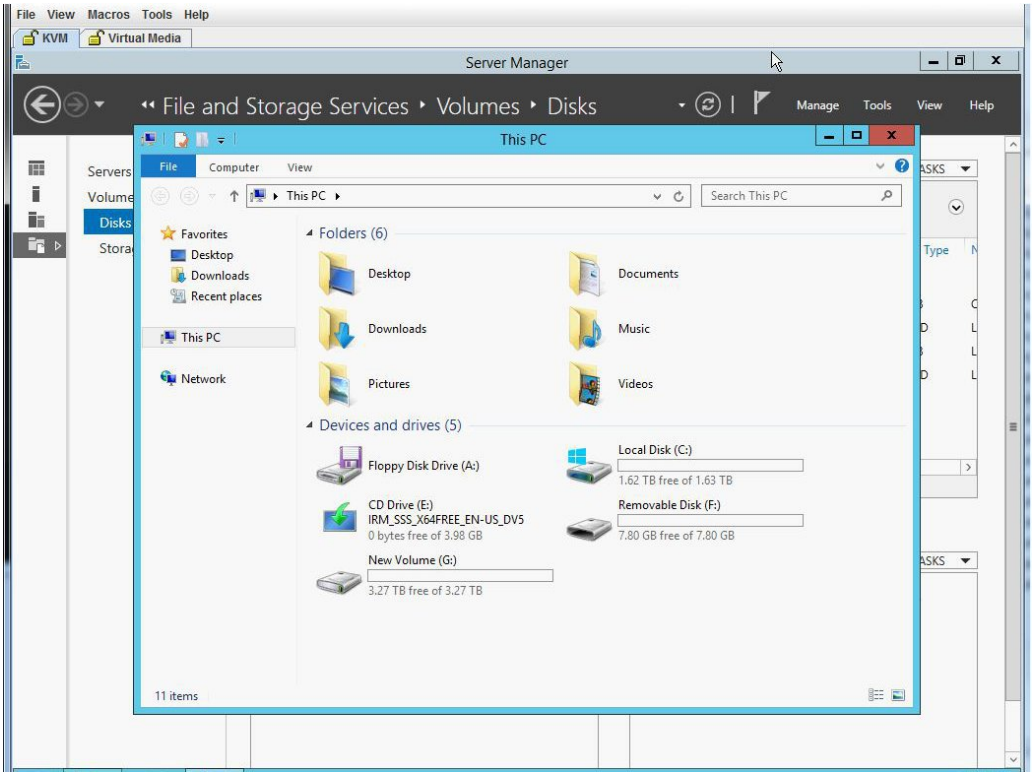


Figure 49: Completion



Step 19 Verify the new volume created and W2K12 recognizes the remaining storage.

Figure 50: Verifying the New Volume



Installing W2K12 using UEFI to Support RAID Volumes Larger than 2TB

This workaround shows how to install W2k12 using UEFI to support RAID volumes larger than 2TB. The workaround involves the following major tasks:

1. Configure all the drives in ‘Unconfigured Good’ state.
2. Configure a Virtual Drive 0 (VD0) using all the hard disks and put it in RAID 0. W2K12 will be installed on VD0 and the OS will recognize the entire storage capacity.
3. Enter BIOS setup and configure it to boot using UEFI.
4. Map W2K12 ISO using Host Image Mapping or Virtual Media using vKVM.
5. Boot UCS-E module into EFI shell.
6. From the EFI shell, navigate to the ISO and boot BOOTX64.EFI.
7. Install W2K12. During W2K12 installation, the server will reboot.
8. Enter BIOS setup and change the 'UCSM boot order rules' from 'Strict' to 'Loose'. This change disallows CIMC to override the BIOS boot order. The BIOS boot order will be used instead of the CIMC boot order.

9 Move 'Windows Boot Manager' to top of the boot order. W2K12 should now automatically boot and recognize the entire storage.

The detailed procedure is explained below:

Procedure

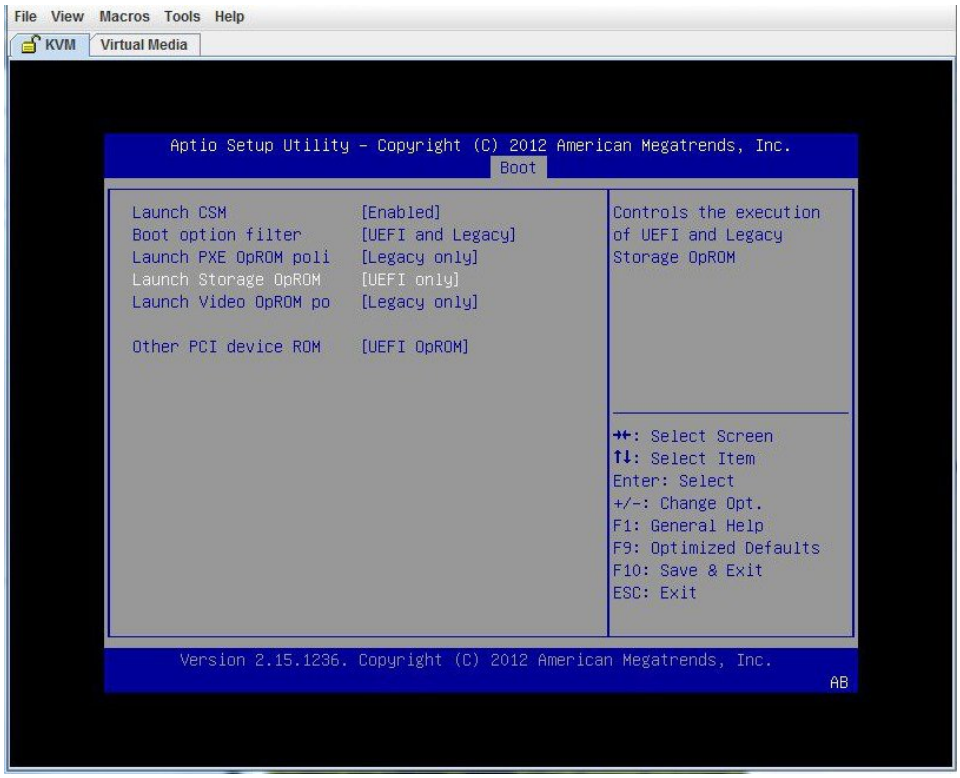
Step 1 Configure all the drives in 'Unconfigured Good' state. Refer Changing the Physical Drive State, on page 61

Step 2 Configure a Virtual Drive 0 (VD0) using all the hard disks and put it in RAID 0. W2K12 will be installed on VD0 and the OS will recognize the entire storage capacity. Refer the procedure explained in Installing W2K12 Using Legacy BIOS to Support RAID Volumes Larger than 2TB, on page 75

Step 3 Enter BIOS setup and change storage to 'UEFI only'.

a) On a Cisco UCS-E180D-M2 server, go to **Boot > Launch Storage > OpROM** and, select 'UEFI only'.

Figure 51: Configuring BIOS Setup



Step 4 Map ISO using virtual media or use the host image mapping. Configure 'CD/DVD' as the first bootable device using CIMC GUI.

Step 5 Power cycle the server. Press F2 while booting up. Enter BIOS setup and select one time boot to **EFI shell**.

Step 6 Boot from the EFI shell. Locate the file system number (fs#) that contains the 'Removable CDRom'.

Figure 52: Booting from EFI Shell

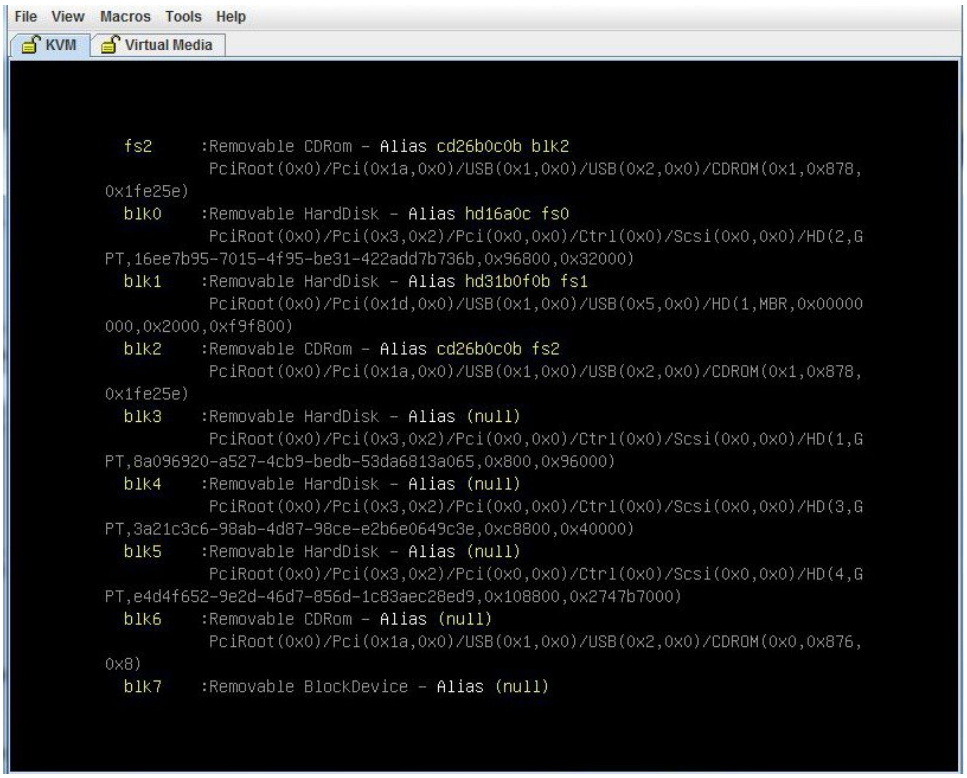
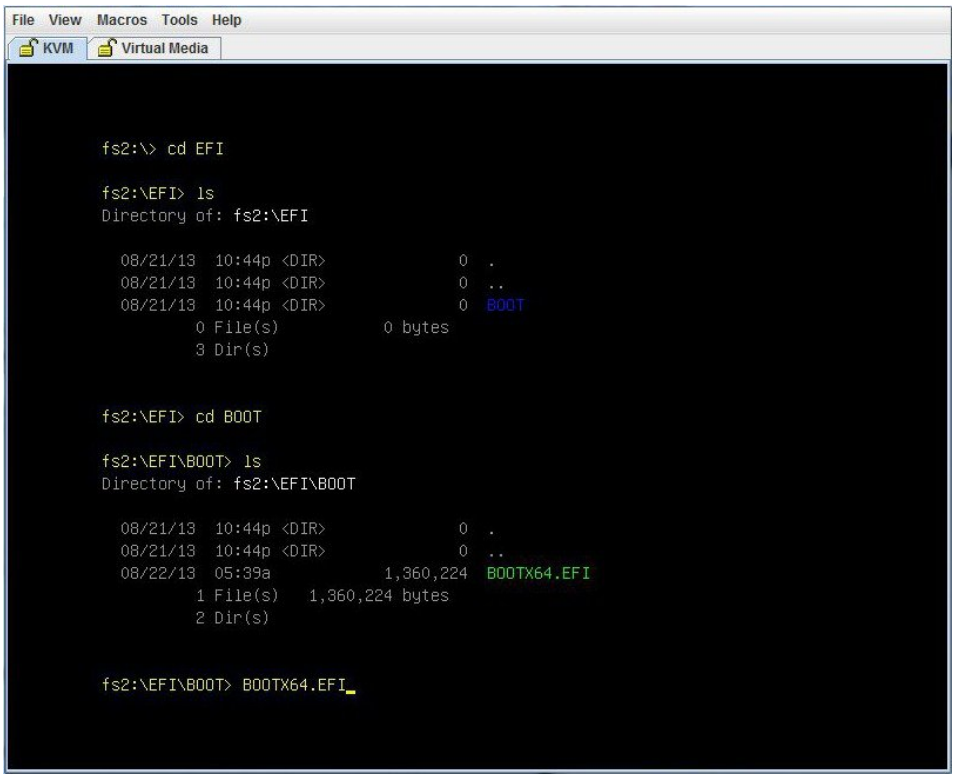
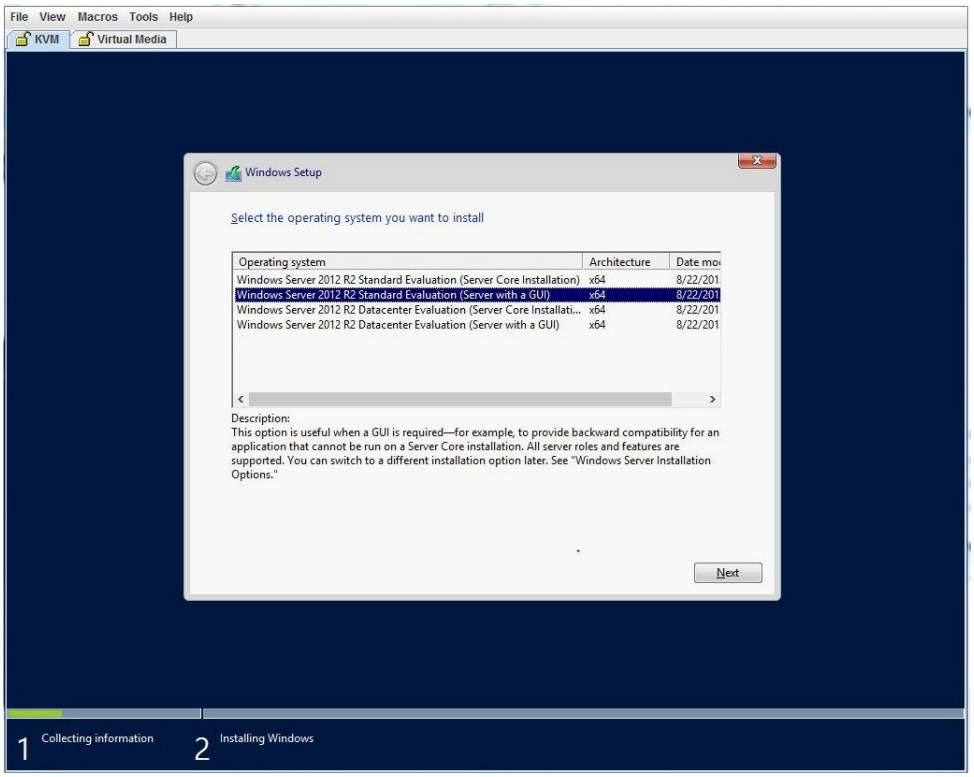


Figure 53: Booting from EFI Shell



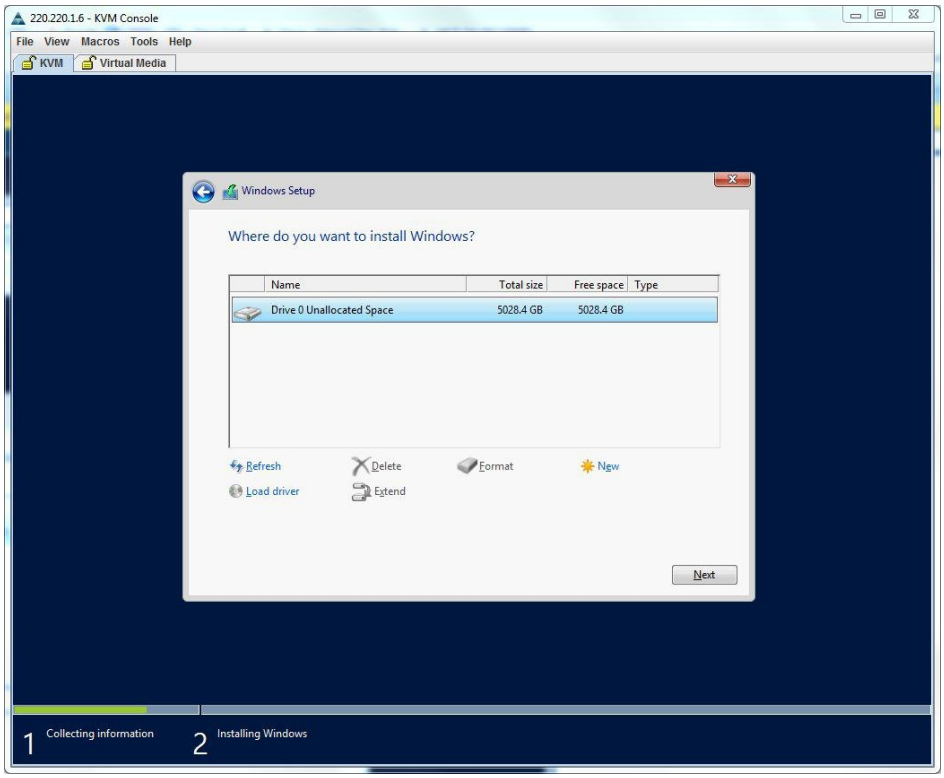
Step 7 Choose W2K12 Standard Evaluation Server with GUI. Click **Next**

Figure 54: Installing Windows Server



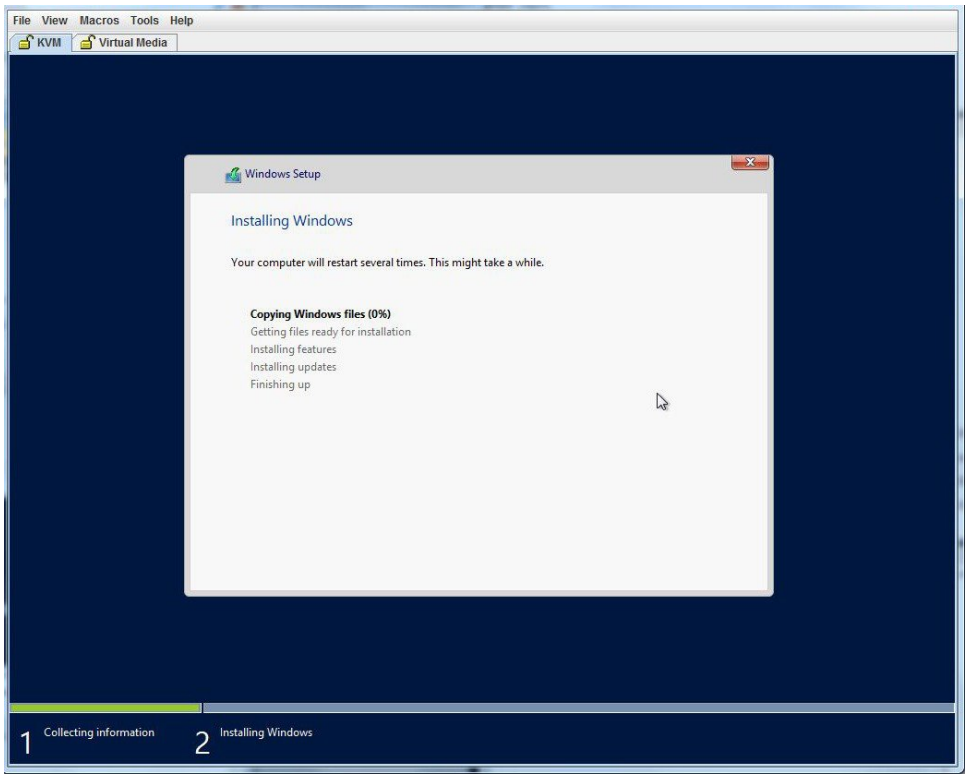
Step 8 Select the drive you want to install Windows. Click **Next**.

Figure 55: Installing Windows Server



Step 9 Wait till the installation completes.

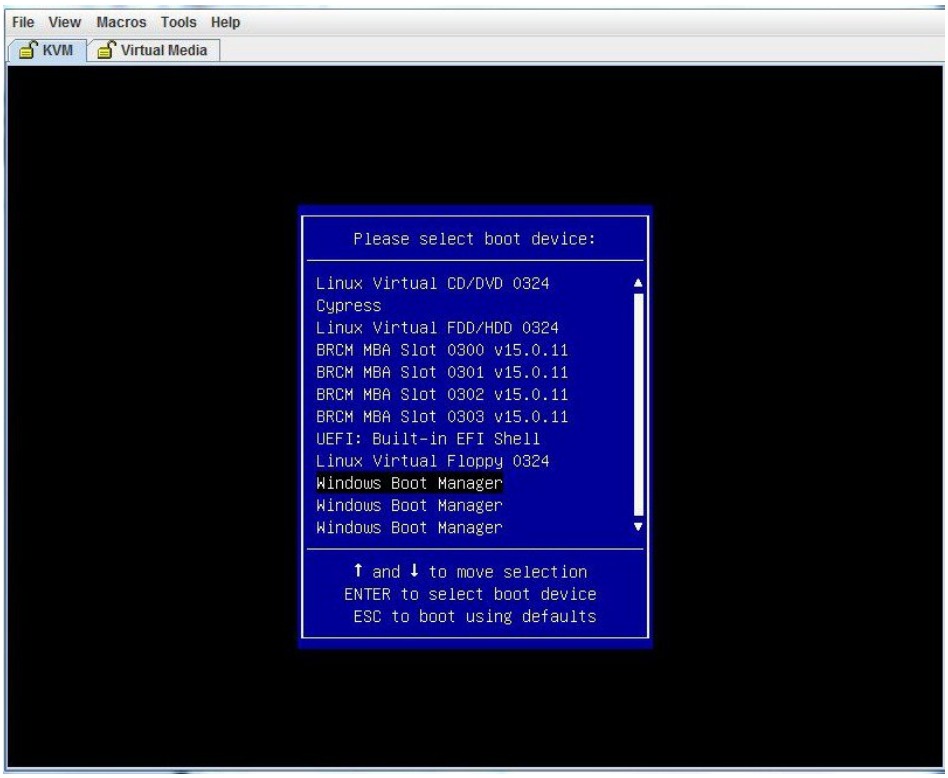
Figure 56: Installing Windows Server



Step 10 After the installation, enter BIOS setup (press F2) or BIOS Boot Menu (press F6) and boot using Windows Boot Manager. You may find several Windows Boot Manager. Select the one that works.

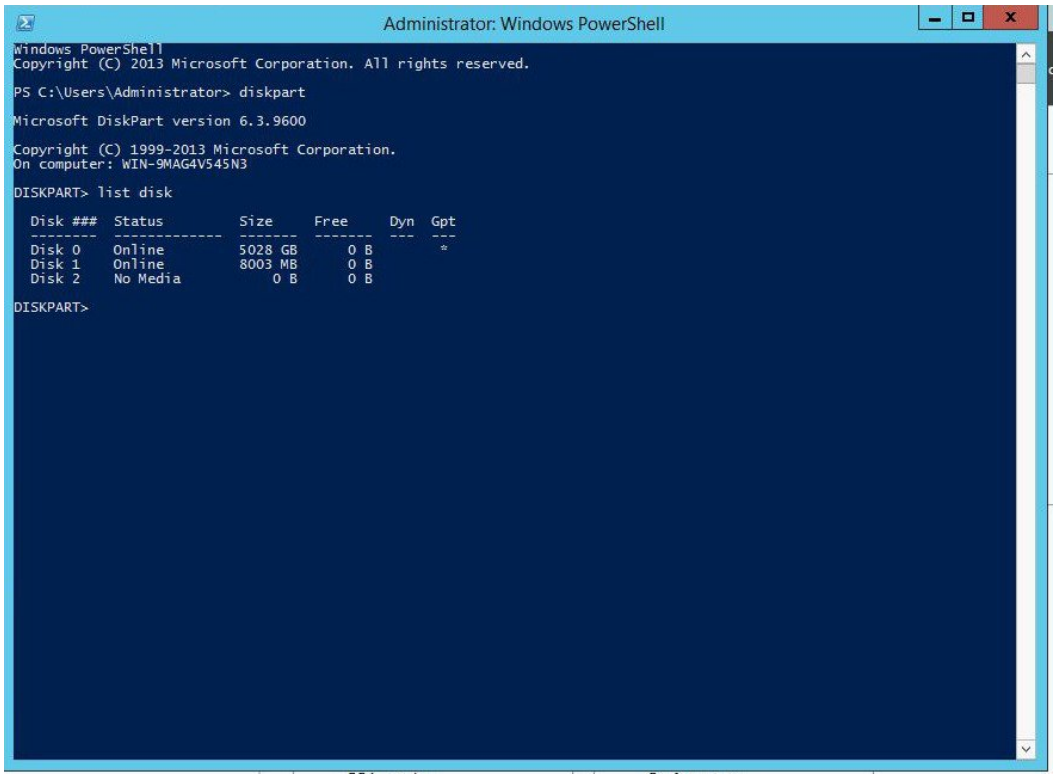
Figure 57: Booting Using Windows Boot Manager from F2 Bios Setup

Figure 58: Booting Using Windows Boot Manager from F6 BIOS Boot Menu



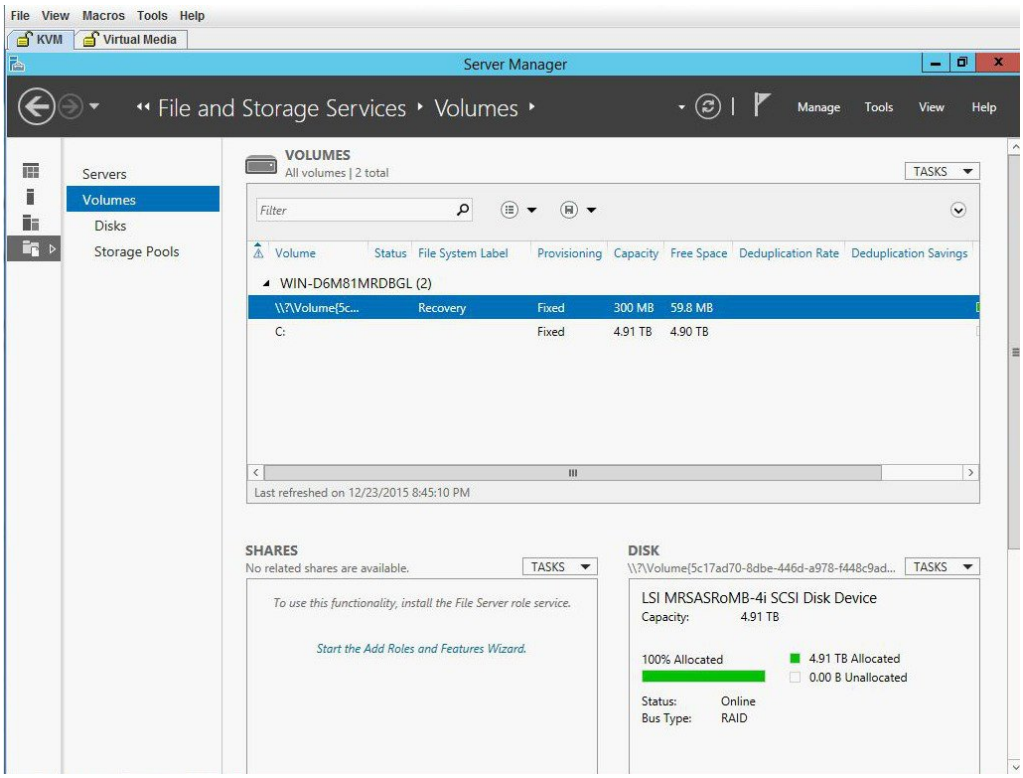
Step 11 After W2K12 boots up, verify the GPT volume using the **diskpart** command.

Figure 59: Verifying the GPT Volume



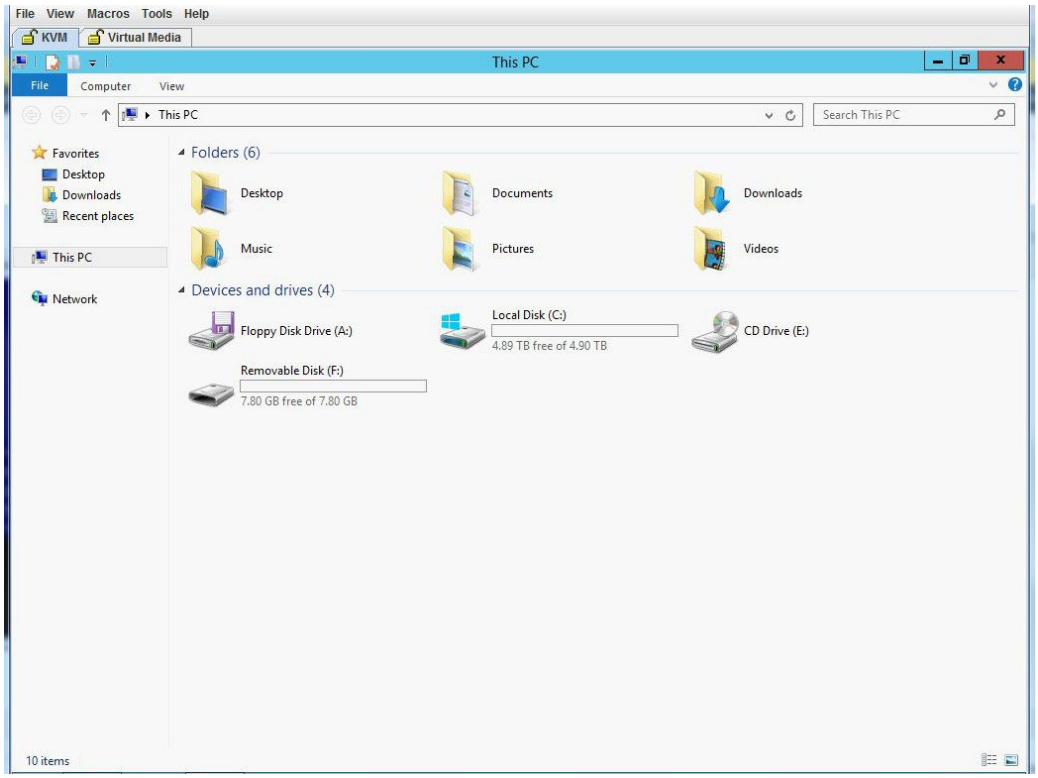
Step 12 Verify W2K12 recognizes the entire volume.

Figure 60: Verifying the Volume



Step 13 Verify W2K12 recognizes the full storage of C drive.

Figure 61: Verifying the Storage Capacity

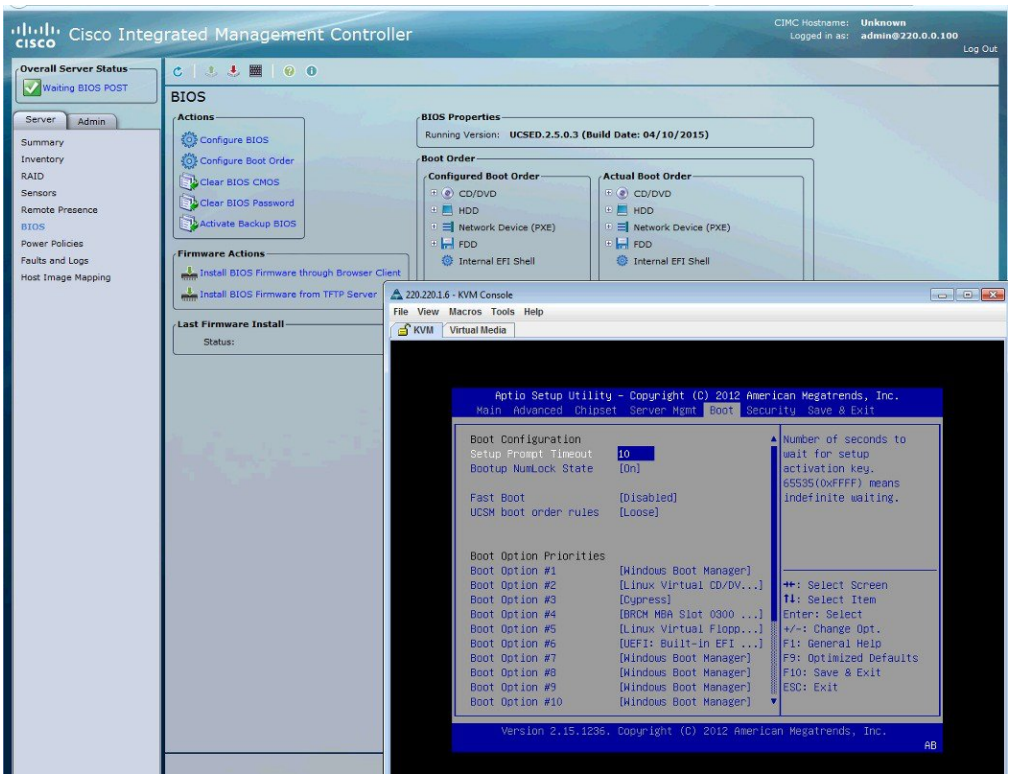


Step 14 To make W2K12 boot automatically, enter BIOS and make the following changes:

a) Change 'UCSM boot order rules' from 'Strict' to 'Loose'. This change disallows CIMC to override BIOS boot order. The BIOS boot order will be used instead of CIMC boot order.

b) Move 'Windows Boot Manager' to top of the boot order.

Figure 62: BIOS Settings



Step 15 Finally, save your changes and exit BIOS setup.

CHAPTER 5

Viewing Server Properties

This chapter includes the following sections:

Viewing Server Properties

Procedure

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

Step 2 On the **Server** tab, click **Summary**.

Step 3 In the **Server Properties** area of the **Server Summary** pane, review the following information:

Name	Description
Product Name field	The model name of the server.

Name	Description
Serial Number field	The serial number for the server.
PID field	The product ID.
UUID field	The UUID assigned to the server.
BIOS Version field	The version of the BIOS running on the server.
Description field	A user-defined description for the server.

Viewing CIMC Information

Procedure

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

Step 2 On the **Server** tab, click **Summary**.

Step 3 In the **Cisco Integrated Management Controller (CIMC) Information** area of the **Server Summary** pane, review the following information:

Name	Description
Hostname field	A user-defined hostname for the CIMC.
IP Address field	The IP address for the CIMC.
MAC Address field	The MAC address assigned to the active network interface to the CIMC.
Firmware Version field	The current CIMC firmware version.
CPLD Version field	The programable hardware logic version.
Hardware Version field	The printed circuit board version.
Current Time field	The current date and time according to the CIMC clock.

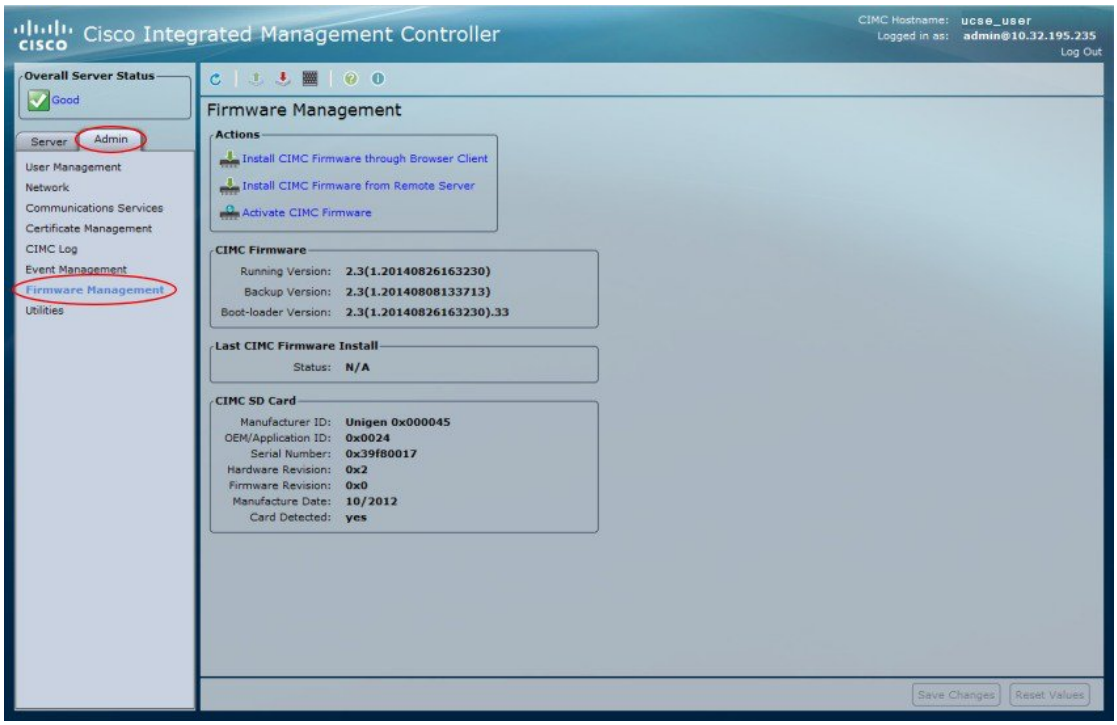
Viewing SD Card Information

Procedure

Step 1 In the **Navigation** pane, click the **Admin** tab.

Step 2 On the **Admin** tab, click **Firmware Management**.

Figure 63: Firmware Management



Step 3 In the **CIMC SD Card** area, review the following information:

Name	Description
Manufacturer ID field	The vendor ID of the manufacturer.
OEM/Application ID field	The OEM or application ID for the SD card.
Serial Number field	The serial number for the SD card.
Hardware Revision field	The hardware revision for the SD card.
Firmware Revision field	The firmware version associated with the SD card.
Manufacture Date field	The date the SD card was manufactured, in the format mm/yy.

Name	Description
Card Detected field	If this field displays **yes**, the SD card is present and is functional.

Viewing Router Information

Procedure

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

Step 2 On the **Server** tab, click **Summary**.

Step 3 In the **Router Information** area of the **Server Summary** pane, review the following information:

Name	Description
Router Model field	The model number of the router.
Serial Number field	The serial number of the router.
Slot Number field	The slot number of the router in which the server is installed.

Viewing CPU Properties

Procedure

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

Step 2 On the **Server** tab, click **Inventory**.

Step 3 In the **Inventory** pane, click the **CPUs** tab.

Step 4 Review the following information for each CPU:

Name	Description
Socket Name field	The socket in which the CPU is installed.
Vendor field	The vendor for the CPU.
Status field	The status of the CPU.

Name	Description
Family field	The family to which this CPU belongs.
Speed field	The CPU speed, in megahertz.
Version field	The CPU version.
Number of Cores field	The number of cores in the CPU.
Signature field	The signature information for the CPU.
Number of Threads field	The maximum number of threads that the CPU can process concurrently.

Viewing Memory Properties

Procedure

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

Step 2 On the **Server** tab, click **Inventory**.

Step 3 In the **Inventory** pane, click the **Memory** tab.

Step 4 In the **Memory Summary** area, review the following summary information about memory:
Displayed for the E-Series Servers and the SM E-Series NCE. Not displayed for the EHWIC E-Series NCE and the NIM E-Series NCE.

Name	Description
Memory Speed field	The memory speed, in megahertz.
Failed Memory field	The amount of memory that is currently failing, in megabytes.
Total Memory field	The total amount of memory available on the server if all DIMMs are fully functional.
Ignored Memory field	The amount of memory currently not available for use, in megabytes.
Effective Memory field	The actual amount of memory currently available to the server.
Number of Ignored DIMMs field	The number of DIMMs that the server cannot access.
Redundant Memory field	The amount of memory used for redundant storage.
Number of Failed DIMMs field	The number of DIMMs that have failed and cannot be used.

Name	Description
Memory RAS Possible field	Details about the memory configuration the server supports. This can be one of the following: • **Memory configuration can support mirroring** • **Memory configuration can support sparing** • **Memory configuration can support either mirroring or sparing** • **Memory configuration can support lockstep** • **Memory configuration cannot support RAS**
Memory Configuration field	The current memory configuration. This can be one of the following: • **Maximum Performance—**The system automatically optimizes the memory performance. • **Mirroring—**The server maintains two identical copies of the data in memory. This option effectively halves the available memory on the server, because one half is automatically reserved for mirrored copy. • **Sparing—**The system reserves some memory for use in the event a DIMM fails. If that happens, the server takes the DIMM offline and replaces it with the reserved memory. This option provides less redundancy than mirroring, but it leaves more of the memory available for programs running on the server. • **Lockstep—**The system uses two memory channels at a time and provides a higher level of protection. This option is most reliable, but it reduces the total memory capacity by one-third.
DIMM Location Diagram	Displays the location of DIMMs in the physical server.

Step 5 In the **Memory Details** table, review the following detailed information about each DIMM:

Tip Click a column header to sort the table rows, according to the entries in that column.

Name	Description
Name column	The name of the DIMM slot in which the memory module is installed.
Capacity column	The size of the DIMM.
Channel Speed column	The clock speed of the memory channel, in megahertz.
Channel Type column	The type of memory channel.
Memory Type Detail column	The type of memory used in the device.

Name	Description
Bank Locator column	The location of the DIMM within the memory bank.
Manufacturer column	The vendor ID of the manufacturer. This can be one of the following: • **0x2C00—**Micron Technology, Inc. • **0x5105—**Qimonda AG i. In. • **0x802C—**Micron Technology, Inc. • **0x80AD—**Hynix Semiconductor Inc. • **0x80CE—**Samsung Electronics, Inc. • **0x8551—**Qimonda AG i. In. • **0xAD00—**Hynix Semiconductor Inc. • **0xCE00—**Samsung Electronics, Inc.
Serial Number column	The serial number of the DIMM.
Asset Tag column	The asset tag associated with the DIMM, if any.
Part Number column	The part number for the DIMM assigned by the vendor.
Visibility column	Whether the DIMM is available to the server.
Operability column	Whether the DIMM is currently operating correctly.
Data Width column	The amount of data the DIMM supports, in bits.

Viewing Power Supply Properties

Procedure

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

Step 2 On the **Server** tab, click **Inventory**.

Step 3 In the **Inventory** pane, click the **Power Supplies** tab.

Step 4 Review the following information for each power supply:

Tip Click a column header to sort the table rows, according to the entries in that column.

Name	Description
Device ID column	The identifier for the power supply unit.
Input column	The input into the power supply, in watts.
Max Output column	The maximum output from the power supply, in watts.
FW Version column	The firmware version for the power supply.
Product ID column	The product identifier for the power supply assigned by the vendor.

Viewing Storage Properties

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

Procedure

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

Step 2 On the **Server** tab, click **RAID**.

Step 3 In the **Storage Adapters** area, review the information about the available adapter cards.
This area contains a table listing all RAID controllers on the server that can be managed through CIMC. To view details about a particular storage device, select it in the table and view the information in the tabs below.

If a particular storage device does not appear on this tab, it cannot be managed through CIMC. To view the status of an unsupported device, see the documentation for that device.

Tip Click a column header to sort the table rows, according to the entries in that column.

Step 4 In the **Storage Adapters** area, click a row to view the detailed properties of that adapter.
The properties of the selected storage adapter appear in the tabbed menu below the **Storage Adapters** area.

Step 5 Select the **Controller Info** tab and review the information.
If a RAID controller is selected in the **Storage Adapters** table, this tab shows the following information:

- Firmware versions
- PCI information
- Running firmware image information
- Virtual and physical drive counts
- General settings

- Capabilities
- Hardware configuration
- Error counters

Step 6 Select the **Physical Drive Info** tab and review the information.
This tab shows the following information for the controller selected in the **Storage Adapters** table:

- General drive information
- Identification information
- Drive status
- Security information

Step 7 Select the **Virtual Drive Info** tab and review the information.
This tab shows the following information for the controller selected in the **Storage Adapters** table and allows you to create, edit, and clear RAID configuration:

- General drive information
- Physical drive information

Viewing PCI Adapter Properties

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

Before You Begin

The server must be powered on, or the properties will not display.

Procedure

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

Step 2 On the **Server** tab, click **Inventory**.

Step 3 In the **Inventory** pane, click the **PCI Adapters** tab.

Step 4 In the **PCI Adapters** area, review the following information for the installed PCI adapters:

Name	Description
Slot ID column	The slot in which the adapter resides.
Product Name column	The name of the adapter.

Name	Description
Vendor ID column	The adapter ID assigned by the vendor.
Sub Vendor ID column	The secondary adapter ID assigned by the vendor.
Device ID column	The device ID assigned by the vendor.
Sub Device ID column	The secondary device ID assigned by the vendor.

Viewing Power Statistics

Procedure

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

Step 2 On the **Server** tab, click **Power Policies**.

Step 3 In the **Power Statistics** area, review the information in the following fields:

Name	Description
Current Consumption field	The power currently being used by the server, in watts.
Maximum Consumption field	The maximum number of watts consumed by the server since the last time it was rebooted.
Minimum Consumption field	The minimum number of watts consumed by the server since the last time it was rebooted.

Viewing the MAC Address of an Interface

Before You Begin

You must log in as a user with admin privileges to view the system-defined interface names and the MAC address that is assigned to each interface.

Procedure

Step 1 In the **Navigation** pane, click the **Admin** tab.

Step 2 On the **Admin** tab, click **Network**.

Step 3 In the **Network** pane, click the **Network Settings** tab.

Step 4 In the **LOM Properties** area, you can view the system-defined interface names and the MAC address that is assigned to each interface.

Viewing the Status of CIMC Network Connections

Before You Begin

You must log in as a user with admin privileges to view the status of the CIMC network connections; whether the link is detected (physical cable is connected to the network interface) or not detected.

Procedure

Step 1 In the **Navigation** pane, click the **Admin** tab.

Step 2 On the **Admin** tab, click **Network**.

Step 3 In the **Network** pane, click the **Network Settings** tab.

Step 4 In the **Link State** area, review the following information:

Name	Description
Interface column	The system-defined name of the interface.
Link State column	The status of the CIMC network connection. This can be one of the following: • **Link Detected—**A physical cable is connected to the network interface. • **No Link Detected—**A physical cable is not connected to the network interface.

CHAPTER 6

Viewing Server Sensors

This chapter includes the following sections:

Viewing Temperature Sensors

Procedure

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

Step 2 On the **Server** tab, click **Sensors**.

Step 3 In the **Sensors** pane, click the **Temperature** tab.

Step 4 View the following temperature-related statistics for the server:

Tip Click a column header to sort the table rows according to the entries in that column.

Name	Description
Sensor Name column	The name of the sensor. This can be one of the following: • **TEMP_AMB_*X*—** Ambient temperature, obtained from sensors located inside the module. • **P1_TEMP_SENS—**Processor core temperature. • **DDR3_P1_*X*0_TMP—**Memory module temperature.

Name	Description
Status column	The status of the sensor. This can be one of the following: • **Unknown** • **Informational** • **Normal** • **Warning** • **Critical** • **Non-Recoverable**
Temperature column	The current temperature, in Celsius.
Warning Threshold Min column	The minimum warning threshold.
Warning Threshold Max column	The maximum warning threshold.
Critical Threshold Min column	The minimum critical threshold.
Critical Threshold Max column	The maximum critical threshold.

Viewing Voltage Sensors

Procedure

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

Step 2 On the **Server** tab, click **Sensors**.

Step 3 In the **Sensors** pane, click the **Voltage** tab.

Step 4 View the following voltage-related statistics for the server:

Tip Click a column header to sort the table rows according to the entries in that column.

Name	Description
Sensor Name column	The name of the sensor.

Name	Description
Status column	The status of the sensor. This can be one of the following: • **Unknown** • **Informational** • **Normal** • **Warning** • **Critical** • **Non-Recoverable**
Voltage column	The current voltage, in volts.
Warning Threshold Min column	The minimum warning threshold.
Warning Threshold Max column	The maximum warning threshold.
Critical Threshold Min column	The minimum critical threshold.
Critical Threshold Max column	The maximum critical threshold.

Viewing LED Sensors

Procedure

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

Step 2 On the **Server** tab, click **Sensors**.

Step 3 In the **Sensors** pane, click the **LEDs** tab.

Step 4 View the following LED-related statistics for the server:

Name	Description
Sensor Name column	The name of the sensor. This can be one of the following: • **LED_HLTH_STATUS—**Status sensor (not a physical LED), shows the overall health of the system. • **LED_DIMM_STATUS—**Status sensor (not a physical LED), shows the health of the DIMM. • **LED_CPU_STATUS—**Status sensor (not a physical LED), shows the health of the CPU. • **LED_SYS_ACT—**System activity, indicates if the system is powered on and has finished booting. **Note** Not displayed for the NIM E-Series NCE.
LED State column	Whether the LED is on, blinking, or off.
LED Color column	The current color of the LED. For details about what the colors mean, see the hardware installation guide for the type of server you are using.

Viewing Storage Sensors

Procedure

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

Step 2 On the **Server** tab, click **Sensors**.

Step 3 In the **Sensors** pane, click the **Storage** tab.

Step 4 View the following storage-related statistics for the server:

Name	Description
Name column	The name of the storage device. This can be: **HDD***X***_PRS—**Indicates the presence or absence of each hard drive.
Status column	A brief description of the status of the storage device.

Name	Description
LED Status column	The current LED color, if any. To make the physical LED on the storage device blink, select **Turn On** from the drop-down list. To let the storage device control whether the LED blinks, select **Turn Off**.

CHAPTER 7

Managing Remote Presence

This chapter includes the following sections:

Managing the Virtual KVM

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.

- Access the WebBIOS to configure RAID, by pressing **Ctrl-H** during bootup.

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.

Configuring the Virtual KVM

Before You Begin

You must log in as a user with admin privileges to configure the virtual KVM.

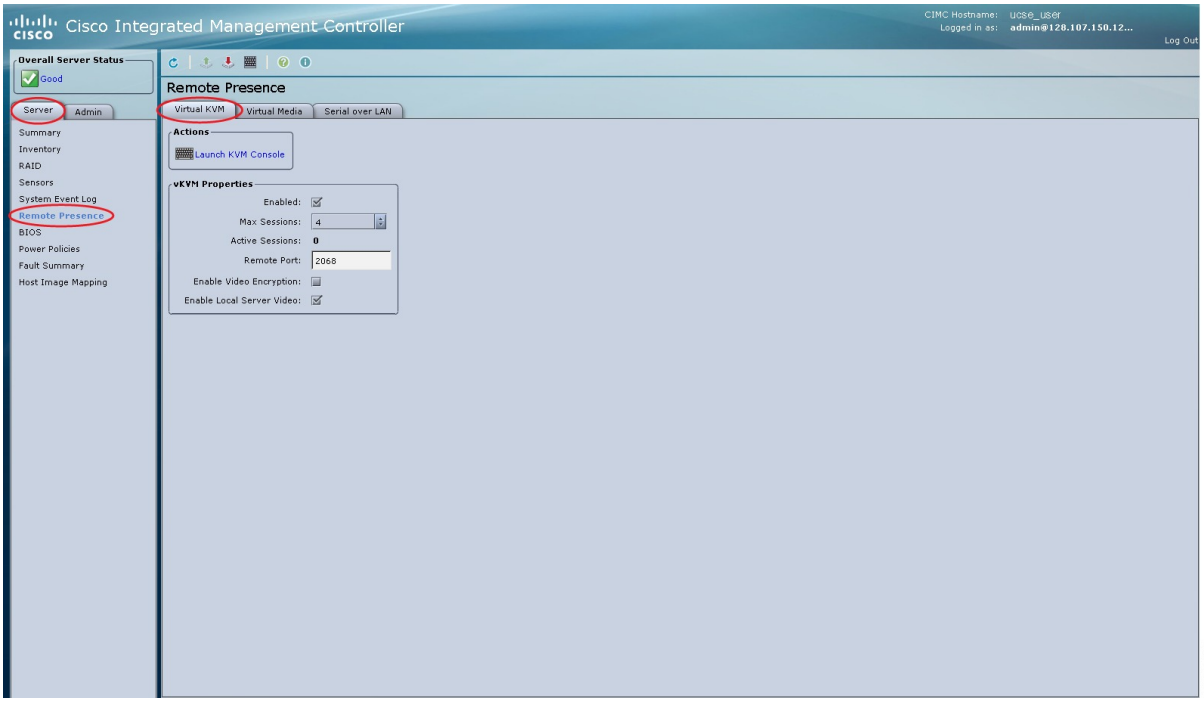
Procedure

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

Step 2 On the **Server** tab, click **Remote Presence**.

Step 3 In the **Remote Presence** pane, click the **Virtual KVM** tab.

Figure 64: Virtual KVM Tab



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Step 4 In the **vKVM Properties** area, complete the following fields:

Name	Description
Enabled check box	If checked, the virtual KVM is enabled. **Note** The virtual media viewer is accessed through the KVM. If you disable the KVM console, CIMC also disables access to all virtual media devices attached to the host.
Max Sessions drop-down list	The maximum number of concurrent KVM sessions allowed. You can select any number between 1 and 4.
Active Sessions field	The number of KVM sessions running on the server.
Remote Port field	The port used for KVM communication.
Enable Video Encryption check box	If checked, the server encrypts all video information sent through the KVM.
Enable Local Server Video check box **Note** Not displayed for the EHWIC E-Series NCE.	If checked, the KVM session is also displayed on any monitor attached to the server.

Step 5 Click **Save Changes**.

Enabling the Virtual KVM

Before You Begin

You must log in as a user with admin privileges to enable the virtual KVM.

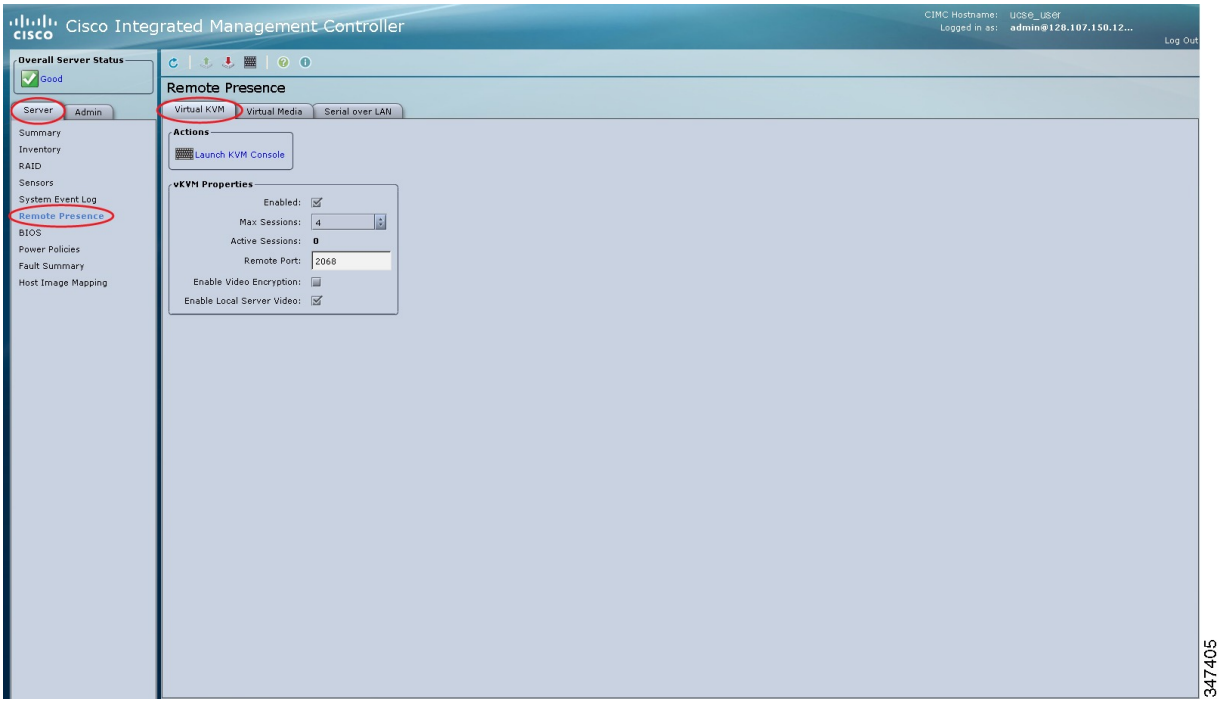
Procedure

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

Step 2 On the **Server** tab, click **Remote Presence**.

Step 3 In the **Remote Presence** pane, click the **Virtual KVM** tab.

Figure 65: Virtual KVM Tab



Step 4 In the **vKVM Properties** area, check the **Enabled** check box.

Step 5 Click **Save Changes**.

Disabling the Virtual KVM

Before You Begin

You must log in as a user with admin privileges to disable the virtual KVM.

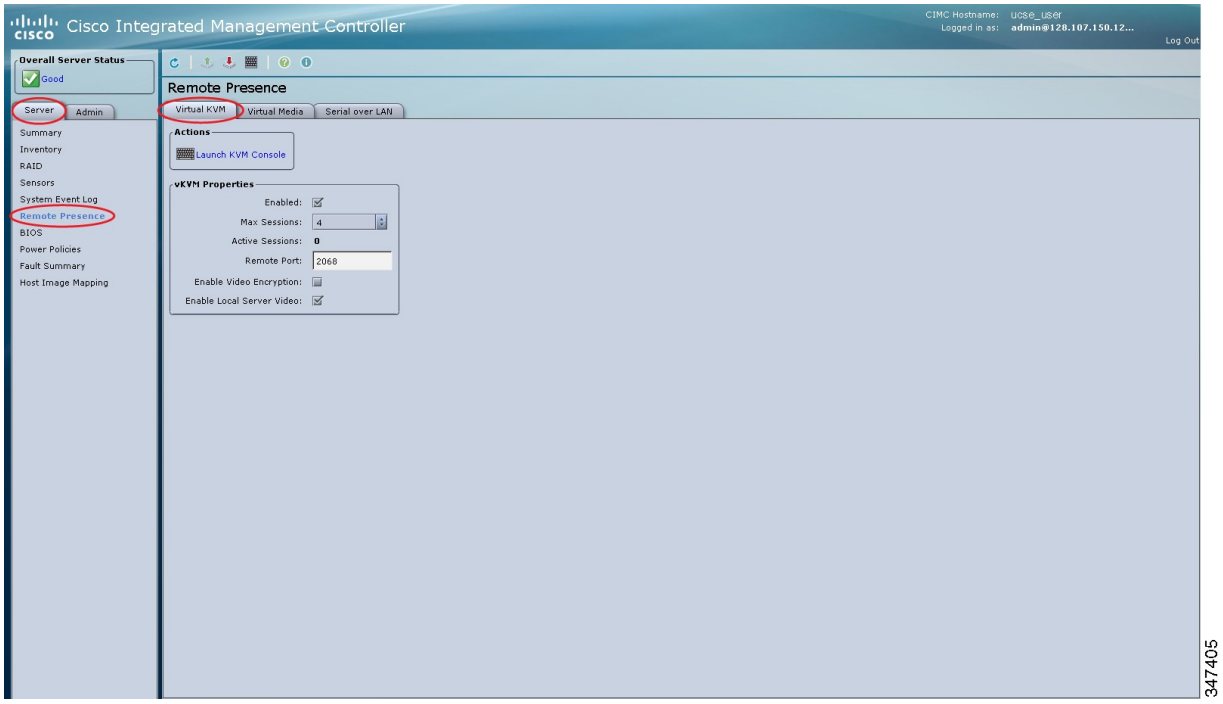
Procedure

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

Step 2 On the **Server** tab, click **Remote Presence**.

Step 3 In the **Remote Presence** pane, click the **Virtual KVM** tab.

Figure 66: Virtual KVM Tab



Step 4 In the **vKVM Properties** area, uncheck the **Enabled** check box.

Step 5 Click **Save Changes**.

Configuring Virtual Media

Before You Begin

You must log in as a user with admin privileges to perform this task.

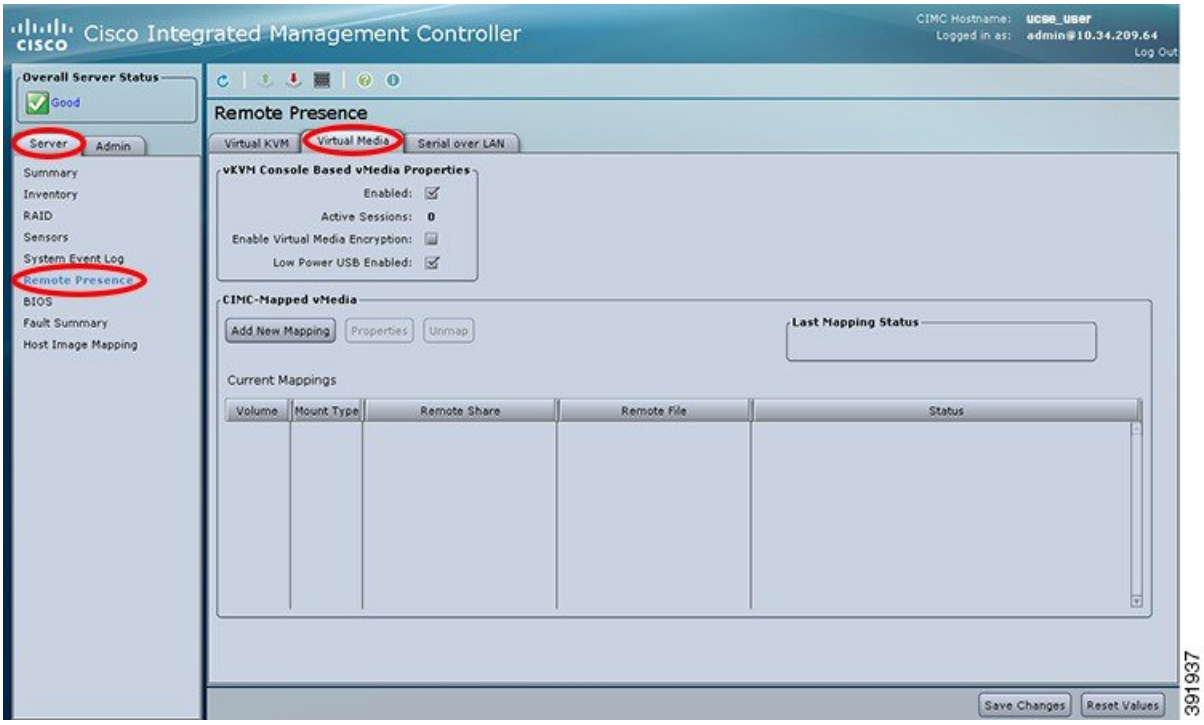
Procedure

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

Step 2 On the **Server** tab, click **Remote Presence**.

Step 3 In the **Remote Presence** pane, click the **Virtual Media** tab.

Figure 67: Virtual Media Tab



Step 4 In the **Virtual Media Properties** area, update the following properties:

Name	Description
Enabled check box	If checked, virtual media is enabled. **Note** If you clear this check box, all virtual media devices are automatically detached from the host.
Active Sessions field	The number of virtual media sessions that are currently running.
Enable Virtual Media Encryption check box	If checked, all virtual media communications are encrypted.

Name	Description
Low Power USB enabled check box	If checked, low power USB is enabled. If the low power USB is enabled, after mapping the ISO and rebooting the host, the virtual drives appear on the boot selection menu. But, while mapping an ISO to a server that has a UCS VIC P81E card and the NIC is in Cisco Card mode, this option must be disabled for the virtual drives to appear on the boot selection menu.

Step 5 Click **Save Changes**.

Creating a CIMC-Mapped vMedia Volume

Before You Begin

You must log in as a user with admin privileges to perform this task.

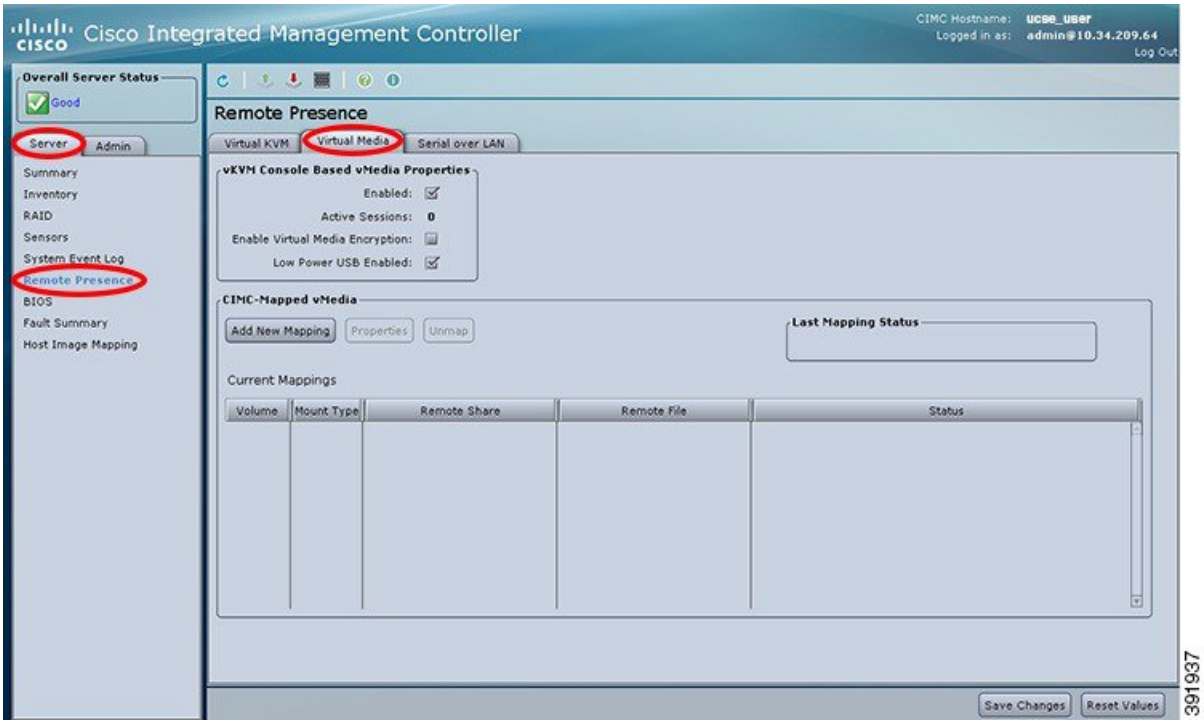
Procedure

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

Step 2 On the **Server** tab, click **Remote Presence**.

Step 3 In the **Remote Presence** pane, click the **Virtual Media** tab.

Figure 68: Virtual Media Tab



Step 4 In the **CIMC-Mapped vMedia** area, click **Add New Mapping**.

Step 5 In the **CIMC-Mapped vMedia** dialog box, update the following fields:

Name	Description
Volume field	The identity of the image mounted for mapping.
Mount Type drop-down list	The type of mapping. This can be one of the following: • **NFS—**Network File System. • **CIFS—**Common Internet File System. • **WWW(HTTP/HTTPS)—**HTTP-based or HTTPS-based system.

Name	Description
Remote Share field	The URL of the image to be mapped. The format depends on the selected **Mount Type**: • **NFS—**Use serverip:/share. • **CIFS—**Use //serverip/share. • **WWW(HTTP/HTTPS)—**Use http[s]://serverip/share.
Remote File field	The name and location of the .iso or .img file in the remote share.
Mount Options field	Industry-standard mount options entered in a comma separated list. The options vary depending on the selected **Mount Type**. If you are using **NFS**, leave the field blank or enter one or more of the following: • ro • rw • nolock • noexec • soft • port=VALUE • timeo=VALUE • retry=VALUE If you are using **CIFS**, leave the field blank or enter one or more of the following: • soft • nounix • noserverino • guest • username=VALUE—ignored if guest is entered. • password=VALUE—ignored if guest is entered. If you are using **WWW(HTTP/HTTPS)**, leave the field blank or enter the following: • noauto
User Name field	The username for the specified **Mount Type**, if required.
Password field	The password for the selected username, if required.

Step 6 Click **Save**.

Viewing CIMC-Mapped vMedia Volume Properties

Before You Begin

You must log in as a user with admin privileges to perform this task.

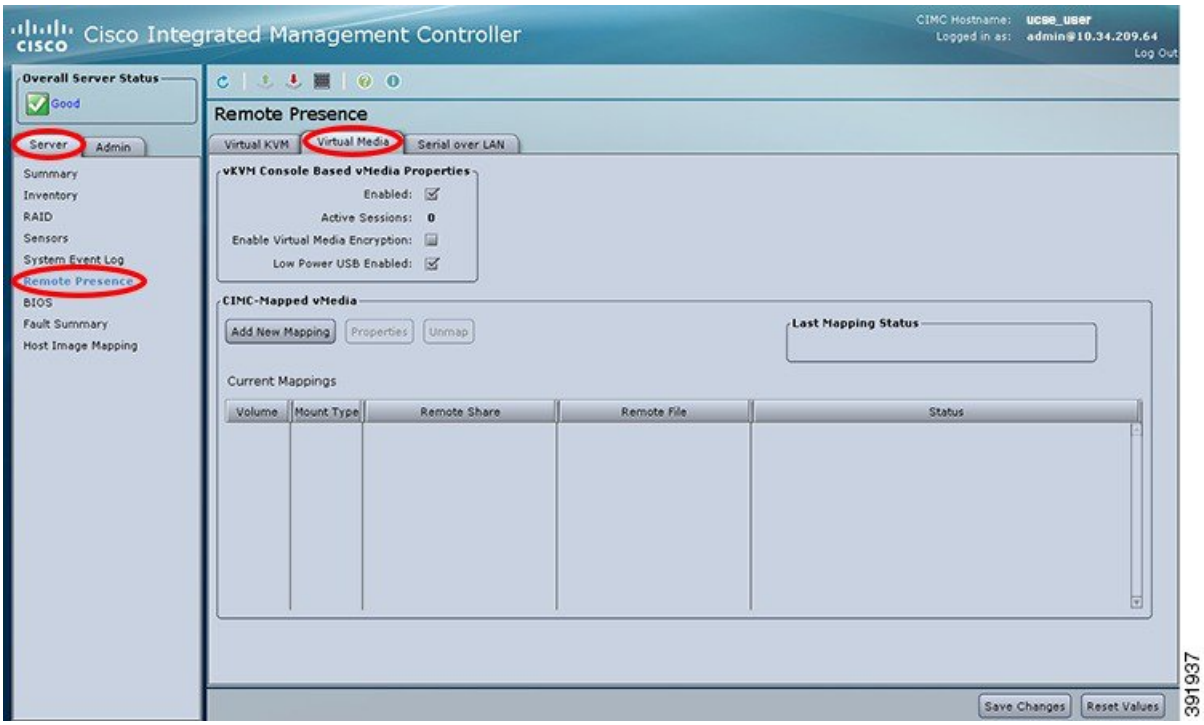
Procedure

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

Step 2 On the **Server** tab, click **Remote Presence**.

Step 3 In the **Remote Presence** pane, click the **Virtual Media** tab.

Figure 69: Virtual Media Tab



Step 4 In the **CIMC-Mapped vMedia** area, select a row from the **Current Mappings** table.

Step 5 Click **Properties** and review the following information:

Name	Description
Volume field	The identity of the image mounted for mapping.
Mount Type drop-down list	The type of mapping. This can be one of the following: • **NFS—**Network File System. • **CIFS—**Common Internet File System. • **WWW(HTTP/HTTPS)—**HTTP-based or HTTPS- based system.
Remote Share field	The URL of the image to be mapped.
Remote File field	The name and location of the .iso or .img file in the remote share.
Mount Options field	The selected mount options.
User Name field	The username, if any.
Password field	The password for the selected username, if any.

Removing a CIMC-Mapped vMedia Volume

Before You Begin

You must log in as a user with admin privileges to perform this task.

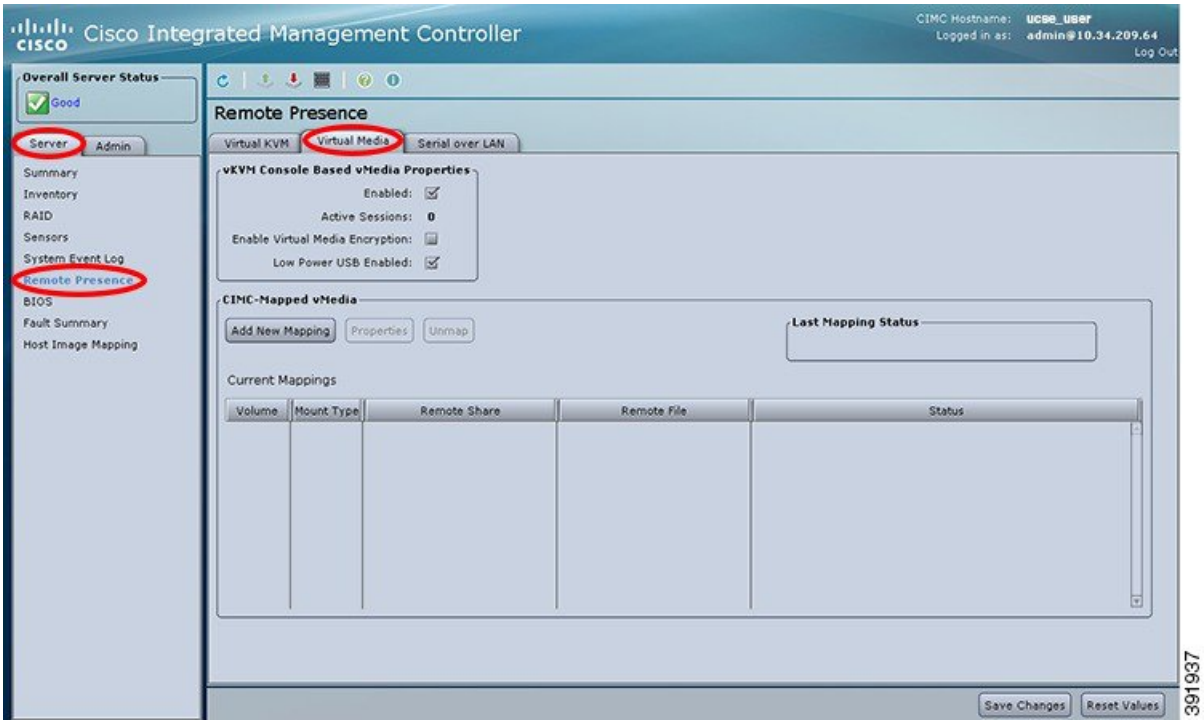
Procedure

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

Step 2 On the **Server** tab, click **Remote Presence**.

Step 3 In the **Remote Presence** pane, click the **Virtual Media** tab.

Figure 70: Virtual Media Tab



Step 4 In the **CIMC-Mapped vMedia** area, click **Unmap**.

Configuring Serial Over LAN

Serial over LAN enables the input and output of the serial port of a managed system to be redirected over IP. Configure and use serial over LAN on your server when you want to reach the host console with CIMC.

Note Some operating systems, such as Red Hat Enterprise Linux, require extra configuration to redirect the serial console.

Before You Begin

You must log in as a user with admin privileges to configure serial over LAN.

Procedure

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

Step 2 On the **Server** tab, click **Remote Presence**.

Step 3 In the **Remote Presence** pane, click the **Serial over LAN** tab.

Step 4 In the **Serial over LAN Properties** area, update the following properties:

Name	Description
Enabled check box	If checked, Serial over LAN is enabled on this server.
Baud Rate drop-down list	The baud rate the system uses for Serial over LAN communication. You can select one of the following: • **9600 bps** • **19.2 kbps** • **38.4 kbps** • **57.6 kbps** • **115.2 kbps**

Step 5 Click **Save Changes**.

CHAPTER 8

Managing User Accounts

This chapter includes the following sections:

Configuring Local Users

Before You Begin

You must log in as a user with admin privileges to configure or modify local user accounts.

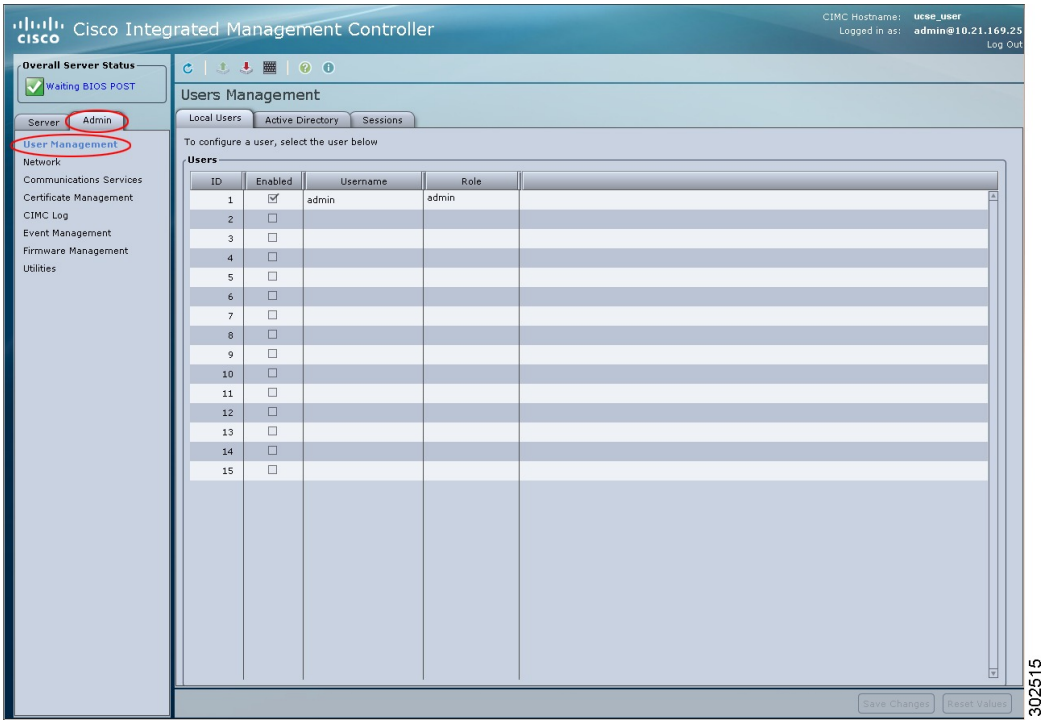
Procedure

Step 1 In the **Navigation** pane, click the **Admin** tab.

Step 2 On the **Admin** tab, click **User Management**.

Step 3 In the **User Management** pane, click the **Local User** tab.

Figure 71: Local Users Tab



Step 4 To configure or modify a local user account, click a row.

Step 5 In the **User Details** dialog box, update the following properties:

Name	Description
ID column	The unique identifier for the user.
Enabled check box	If checked, the user is enabled on the CIMC.
Username column	The username for the user.

Name	Description
Role column	The role assigned to the user. This can be one of the following: • **read-only—**This user can view information but cannot make changes. • **user—**This user can: ◦ View all information ◦ Manage the power control options such as power on, power cycle, and power off ◦ Launch the KVM console and virtual media ◦ Clear all logs • **admin—**This user can perform all actions available through the GUI, CLI, and IPMI.

Step 6 Enter password information.

Step 7 Click **Save Changes**.

LDAP Servers (Active Directory)

CIMC supports directory services that organize information in a directory, and manage access to this information. CIMC supports Lightweight Directory Access Protocol (LDAP), which stores and maintains directory information in a network. In addition, CIMC supports Microsoft Active Directory (AD). Active Directory is a technology that provides a variety of network services including LDAP-like directory services, Kerberos-based authentication, and DNS-based naming. The CIMC utilizes the Kerberos-based authentication service of LDAP.

When LDAP is enabled in the CIMC, user authentication and role authorization is performed by the LDAP server for user accounts not found in the local user database. The LDAP user authentication format is username@domain.com.

By checking the Enable Encryption check box in the **LDAP Settings** area, you can require the server to encrypt data sent to the LDAP server.

Configuring the LDAP Server

The CIMC can be configured to use LDAP for user authentication and authorization. To use LDAP, configure users with an attribute that holds the user role and locale information for the CIMC. You can use an existing LDAP attribute that is mapped to the CIMC user roles and locales or you can modify the LDAP schema to add a new custom attribute, such as the CiscoAVPair attribute, which has an attribute ID of 1.3.6.1.4.1.9.287247.1.

Important For more information about altering the schema, see the article at http://technet.microsoft.com/en-us/library/bb727064.aspx.

Note This example creates a custom attribute named CiscoAVPair, but you can also use an existing LDAP attribute that is mapped to the CIMC user roles and locales.

The following steps must be performed on the LDAP server.

Procedure

Step 1 Ensure that the LDAP schema snap-in is installed.

Step 2 Using the schema snap-in, add a new attribute with the following properties:

Properties	Value
Common Name	CiscoAVPair
LDAP Display Name	CiscoAVPair
Unique X500 Object ID	1.3.6.1.4.1.9.287247.1
Description	CiscoAVPair
Syntax	Case Sensitive String

Step 3 Add the CiscoAVPair attribute to the user class using the snap-in:

a) Expand the **Classes** node in the left pane and type U to select the user class.
b) Click the **Attributes** tab and click **Add**.
c) Type C to select the CiscoAVPair attribute.
d) Click **OK**.

Step 4 Add the following user role values to the CiscoAVPair attribute, for the users that you want to have access to CIMC:

Role	CiscoAVPair Attribute Value
admin	shell:roles="admin"
user	shell:roles="user"
read-only	shell:roles="read-only"

Note For more information about adding values to attributes, see the article at http://technet.microsoft.com/en-us/library/bb727064.aspx.

What to Do Next

Use the CIMC to configure the LDAP server.

Configuring LDAP Settings and Group Authorization in CIMC

Before You Begin

You must log in as a user with admin privileges to perform this task.

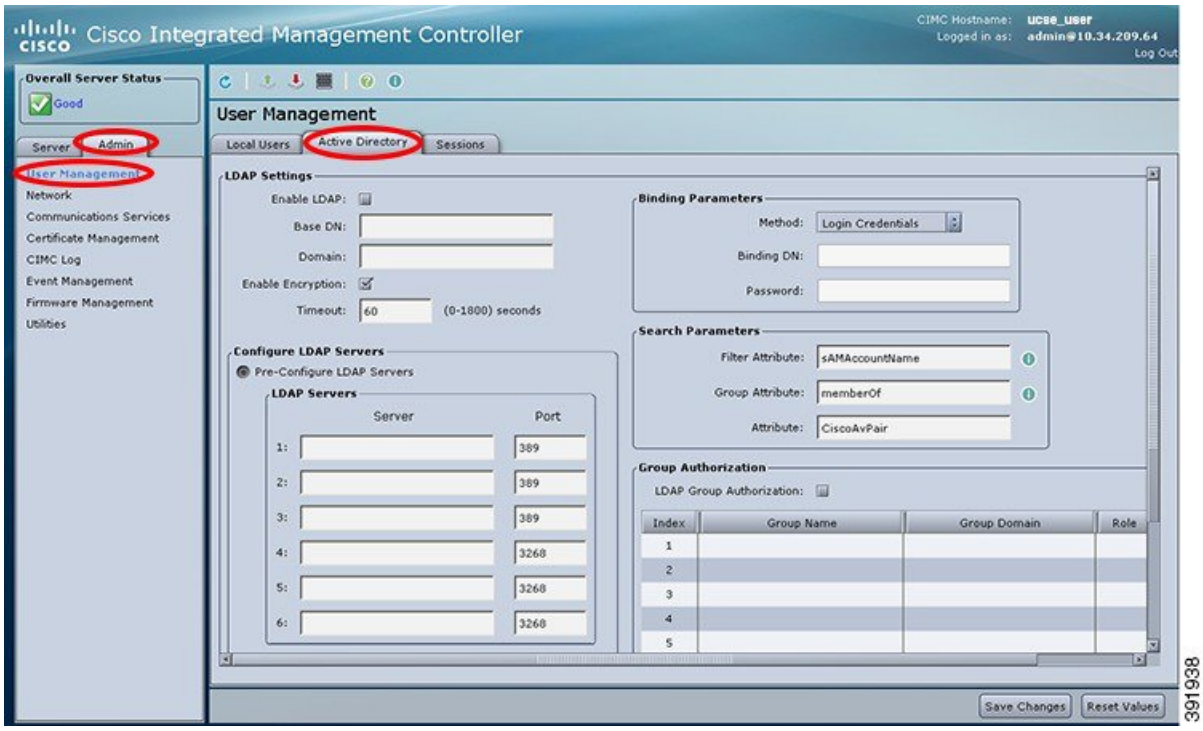
Procedure

Step 1 In the **Navigation** pane, click the **Admin** tab.

Step 2 On the **Admin** tab, click **User Management**.

Step 3 In the **User Management** pane, click the **Active Directory** tab.

Figure 72: Active Directory Tab



Step 4 In the **LDAP Settings** area, update the following properties:

Name	Description
Enable LDAP check box	If checked, user authentication and role authorization is first performed by the LDAP server, and then by the user accounts that are not found in the local user database.
Base DN field	Base Distinguished Name. Specifies the location from where to load the users and groups. The Base DN must be in the dc=domain,dc=com format for Active Directory servers.
Domain field	The IPv4 domain name. All users must be in the IPv4 domain. This field is required unless you specify at least one Global Catalog server address.
Enable Encryption check box	If checked, the server encrypts all information it sends to the LDAP server.
Timeout (0 - 1800) seconds field	The number of seconds the CIMC waits until the LDAP search operation times out. If the search operation times out, CIMC tries to connect to the next server listed on this tab, if one is available. **Note** The value you specify for this field could impact the overall time.

Step 5 In the **Configure LDAP Servers** area, update the following properties:

Name	Description
Pre-Configure LDAP Servers radio button	If checked, the Active Directory uses the pre-configured LDAP servers.
LDAP Servers area	
Server column	The IP address of the six LDAP servers. If you are using Active Directory for LDAP, then servers 1, 2, and 3 are domain controllers, and servers 4, 5, and 6 are Global Catalogs. If you are not using the Active Directory for LDAP, then you can configure a maximum of six LDAP servers. **Note** You can provide the IP address of the host name as well.

Name	Description
Port column	The port numbers for the servers. If you are using Active Directory for LDAP, then for servers 1, 2, and 3, which are domain controllers, the default port number is 389. For servers 4, 5, and 6, which are Global Catalogs, the default port number is 3268. LDAPS communication occurs over the TCP 636 port. LDAPS communication to a global catalog server occurs over TCP 3269 port.
Use DNS to Configure LDAP Servers radio button	If checked, you can use DNS to configure access to the LDAP servers.
DNS Parameters area	
Source drop-down list	Specifies how to obtain the domain name used for DNS SRV request. This can be one of the following: • **Extracted—**Uses the extracted-domain from the login ID. • **Configured—**Uses the configured-search domain. • **Configured-Extracted—**Uses the domain name extracted from the login ID instead of the configured-search domain.
Domain to Search field	A configured domain name that acts as a source for a DNS query. This field is disabled if the source is specified as **Extracted**.
Forest to Search field	A configured forest name that acts as a source for a DNS query. This field is disabled if the source is specified as **Extracted**.

Step 6 In the **Binding Parameters** area, update the following properties:

Name	Description
Method drop-down list	This can be one of the following: • **Anonymous—**Requires NULL username and password. If this option is selected and the LDAP server is configured for anonymous logins, then the user can gain access. • **Configured Credentials—**Requires a known set of credentials to be specified for the initial bind process. If the initial bind process succeeds, then the distinguished name (DN) of the user name is queried and re-used for the re-binding process. If the re-binding process fails, then the user is denied access. • **Login Credentials—**Requires the user credentials. If the bind process fails, the user is denied access. **Note** **Login Credentials** is the default option.
Binding DN field	The distinguished name (DN) of the user. This field is editable only if you have selected **Configured Credentials** option as the binding method.
Password field	The password of the user. This field is editable only if you have selected **Configured Credentials** option as the binding method.

Step 7 In the **Search Parameters** area, update the following fields:

Name	Description
Filter Attribute field	This field must match the configured attribute in the schema on the LDAP server. By default, this field displays **sAMAccountName**.
Group Attribute field	This field must match the configured attribute in the schema on the LDAP server. By default, this field displays **memberOf**.

Name	Description
Attribute field	An LDAP attribute that contains the role and locale information for the user. This property is always a name-value pair. The system queries the user record for the value that matches this attribute name. The LDAP attribute can either use an existing LDAP attribute that is mapped to the CIMC user roles and locales or can modify the schema so that a new LDAP attribute can be created. For example, **CiscoAvPair**. **Note** If you do not specify this property, the user cannot login. Although the object is located on the LDAP server, it should be an exact match of the attribute that is specified in this field.

Step 8 (Optional) In the **Group Authorization** area, update the following properties:

Name	Description
LDAP Group Authorization check box	If checked, user authentication is also done on the group level for users that are not found in the local user database or who are not individually authorized to use CIMC in the Active Directory.
Group Name column	The name of the group in the LDAP server database that is authorized to access the server.
Group Domain column	The LDAP server domain the group must reside in.
Role column	The role assigned to all users in this LDAP server group. This can be one of the following: • **read-only—**This user can view information but cannot make changes. • **user—**This user can: ◦ View all information ◦ Manage the power control options such as power on, power cycle, and power off ◦ Launch the KVM console and virtual media ◦ Clear all logs • **admin—**This user can perform all actions available through the GUI, CLI, and IPMI.

Step 9 Click **Save Changes**.

Viewing User Sessions

Procedure

Step 1 In the **Navigation** pane, click the **Admin** tab.

Step 2 On the **Admin** tab, click **User Management**.

Step 3 In the **User Management** pane, click the **Sessions** tab.

Step 4 View the following information about current user sessions:

Tip Click a column header to sort the table rows, according to the entries in that column.

Name	Description
Session ID column	The unique identifier for the session.
Username column	The username for the user.
IP Address column	The IP address from which the user accessed the server.
Type column	The method by which the user accessed the server. For example, CLI, vKVM, and so on.
Action column	If your user account is assigned the **admin** user role, this column displays **Terminate** if you can force the associated user session to end. Otherwise it displays **N/A**. **Note** You cannot terminate your current session from this tab.

CHAPTER 9

Configuring Network-Related Settings

This chapter includes the following sections:

CIMC NIC Configuration

CIMC NICs

Two NIC modes are available for connection to the CIMC.

NIC Mode

The **NIC Mode** drop-down list in the **NIC Properties** area determines which ports can reach the CIMC. The following mode options are available, depending on your platform:

- Dedicated—A connection to the CIMC is available through the management Ethernet port or ports.
- Shared LOM—A connection to the CIMC is available through the LAN On Motherboard (LOM) Ethernet host ports and through the router's PCIe and MGF interfaces.

Note In shared LOM mode, all host ports must belong to the same subnet.

Note Dedicated mode is not applicable to the EHWIC E-Series NCE.

NIC Redundancy

The **NIC Redundancy** drop-down list in the **NIC Properties** area determines how NIC redundancy is handled:

- None—Redundancy is not available.
- Active-Standby—One port fails over to the other.

The available redundancy modes vary depending on the selected network mode and your platform.

Configuring CIMC NICs

Use this procedure to set the NIC mode and NIC redundancy.

Before You Begin

You must log in as a user with admin privileges to configure the NIC.

Procedure

Step 1 In the **Navigation** pane, click the **Admin** tab.

Step 2 On the **Admin** tab, click **Network**.

Step 3 In the **Network** pane, click the **Network Settings** tab.

Step 4 In the **NIC Properties** area, update the following properties:

Name	Description
NIC Mode drop-down list	The NIC mode. This can be one of the following: • **Dedicated—**The management port is used to access the CIMC. • **Shared LOM—**The LOM (LAN On Motherboard) ports are used to access the CIMC. **Note** Dedicated mode is not applicable to the EHWIC E-Series NCE.

Name	Description
NIC Redundancy drop-down list	The NIC redundancy options depend on the mode chosen in the **NIC Mode** drop-down list and the model of the server that you are using. If you do not see a particular option, then it is not available for the selected mode or server model. The available options are: • **none**—Each port associated with the configured NIC mode operates independently. The ports do not fail over if there is a problem. • **active-standby**—If a port associated with the configured NIC mode fails, traffic will fail over to one of the other ports associated with the NIC mode. **Note** If you select this option, make sure all ports associated with the configured NIC mode are connected to the same subnet to ensure that traffic is secure regardless of which port is used.
NIC Interface field	The interface used by the NIC. **Important** If you are using the external GE2 interface on an EHWIC E-Series NCE or the NIM E-Series NCE to configure CIMC access, you might lose connectivity with CIMC during server reboot. This is expected behavior. If you must maintain connectivity with CIMC during a reboot, we recommend that you use one of the other network interfaces to configure CIMC access. See the "CIMC Access Configuration Options—EHWIC E-Series NCE" and the "CIMC Access Configuration Options—NIM E-Series NCE" sections in the *Getting Started Guide for Cisco UCS E-Series Servers and the Cisco UCS E-Series Network Compute Engine*.
MAC Address field	The MAC address of the CIMC network interface selected in the **NIC Mode** field.

Note The available NIC mode options may vary depending on your platform.

If you select Shared LOM, make sure that all host ports belong to the same subnet.

Step 5 Click **Save Changes**.

Configuring Common Properties

Use common properties to describe your server.

Before You Begin

You must log in as a user with admin privileges to configure common properties.

Procedure

Step 1 In the **Navigation** pane, click the **Admin** tab.
Step 2 On the **Admin** tab, click **Network**.
Step 3 In the **Network** pane, click the **Network Settings** tab.
Step 4 In the **Hostname** field, enter the name of the host.
Step 5 Click **Save Changes**.

Configuring IPv4

Before You Begin

You must log in as a user with admin privileges to configure IPv4.

Procedure

Step 1 In the **Navigation** pane, click the **Admin** tab.
Step 2 On the **Admin** tab, click **Network**.
Step 3 In the **Network** pane, click the **Network Settings** tab.
Step 4 In the **IPv4 Properties** area, update the following properties:

Name	Description
Enable IPv4 check box	If checked, IPv4 is enabled.
Use DHCP check box	If checked, the CIMC uses DHCP.
IP Address field	The IP address for the CIMC.
Subnet Mask field	The subnet mask for the IP address.
Gateway field	The IP address of the gateway.
Obtain DNS Server Addresses from DHCP check box	If checked, the CIMC retrieves the DNS server addresses from DHCP.
Preferred DNS Server field	The IP address of the primary DNS server.
Alternate DNS Server field	The IP address of the secondary DNS server.

Step 5 Click **Save Changes**.

Connecting to a VLAN

Before You Begin

You must be logged in as admin to connect to a VLAN.

Procedure

Step 1 In the **Navigation** pane, click the **Admin** tab.

Step 2 On the **Admin** tab, click **Network**.

Step 3 In the **Network** pane, click the **Network Settings** tab.

Step 4 In the **VLAN Properties** area, update the following properties:

Name	Description
Enable VLAN check box	If checked, the CIMC is connected to a virtual LAN.
VLAN ID field	The VLAN ID.
Priority field	The priority of this system on the VLAN.

Step 5 Click **Save Changes**.

Network Security Configuration

Network Security

The CIMC uses IP blocking as network security. IP blocking prevents the connection between a server or website and certain IP addresses or ranges of addresses. IP blocking effectively bans undesired connections from those computers to a website, mail server, or other Internet servers.

IP banning is commonly used to protect against denial of service (DoS) attacks. The CIMC bans IP addresses by setting up an IP blocking fail count.

Configuring Network Security

Configure network security if you want to set up an IP blocking fail count.

Before You Begin

You must log in as a user with admin privileges to configure network security.

Procedure

Step 1 In the **Navigation** pane, click the **Admin** tab.

Step 2 On the **Admin** tab, click **Network**.

Step 3 In the **Network** pane, click the **Network Security** tab.

Step 4 In the **IP Blocking Properties** area, update the following properties:

Name	Description
Enable IP Blocking check box	If checked, enables IP blocking.
IP Blocking Fail Count field	The number of times a user can attempt to log in unsuccessfully before the system locks that user out for a specified length of time. The number of unsuccessful login attempts must occur within the time frame specified in the **IP Blocking Fail Window** field. Enter an integer between 3 and 10.
IP Blocking Fail Window field	The length of time, in seconds, in which the unsuccessful login attempts must occur in order for the user to be locked out. Enter an integer between 60 and 120.
IP Blocking Penalty Time field	The number of seconds the user remains locked out if they exceed the maximum number of login attempts within the specified time window. Enter an integer between 300 and 900.

Step 5 Click **Save Changes**.

Enabling the Network Analysis Capability

Before You Begin

You must log in with user or admin privileges to perform this task.

Procedure

Step 1 In the **Navigation** pane, click the **Admin** tab.

Step 2 On the **Admin** tab, click **Network**.

Step 3 In the **Network** pane, click the **Network Analysis** tab.

Step 4 In the **Network Analysis Capability** area, check the **Enabled** check box.
The router is notified to turn on the Network Analysis Module (NAM) capability.

Step 5 Click **Save Changes**.

NTP Settings Configuration

NTP Settings

By default, when CIMC is reset, it synchronizes the time with the host. With the introduction of the Network Time Protocol (NTP) service, you can configure CIMC to synchronize the time with an NTP server. The NTP server does not run in CIMC by default. You must enable and configure the NTP service by specifying the IP or DNS address of at least one server or a maximum of four servers that function as NTP servers or time source servers. When you enable the NTP service, CIMC synchronizes the time with the configured NTP server. The NTP service can be modified only through CIMC.

Note To enable the NTP service, it is preferable to specify the IP address of a server rather than the DNS address.

Configuring NTP Settings

Configuring NTP disables the IPMI **Set SEL time** command.

Before You Begin

You must log in with user or admin privileges to perform this task.

Procedure

Step 1 In the **Navigation** pane, click the **Admin** tab.

Step 2 On the **Admin** tab, click **Network**.

Step 3 In the **Network** pane, click the **NTP Settings** tab.

Step 4 In the **NTP Settings** area, update the following properties:

Name	Description
Enable NTP check box	If checked, enables the NTP service.

Name	Description
Server 1	The IP address or domain name of one of the four servers that act as an NTP server or the time source server.
Server 2	The IP address or domain name of one of the four servers that act as an NTP server or the time source server.
Server 3	The IP address or domain name of one of the four servers that act as an NTP server or the time source server.
Server 4	The IP address or domain name of one of the four servers that act as an NTP server or the time source server.

Step 5 Click **Save Changes**.

CHAPTER 10

Configuring Communication Services

This chapter includes the following sections:

Configuring HTTP

Before You Begin

You must log in as a user with admin privileges to perform this task.

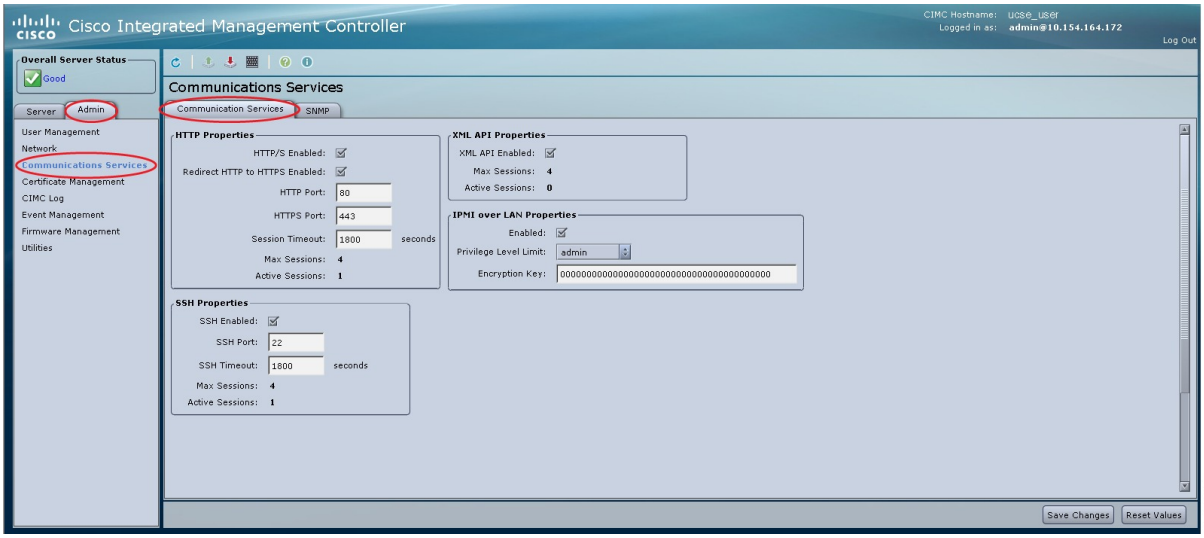
Procedure

Step 1 In the **Navigation** pane, click the **Admin** tab.

Step 2 On the **Admin** tab, click **Communications Services**.

Step 3 In the **Communications Services** pane, click the **Communication Services** tab.

Figure 73: Communication Services Tab



Step 4 In the **HTTP Properties** area, update the following properties:

Name	Description
HTTP/S Enabled check box	Whether HTTP and HTTPS are enabled on the CIMC.
Redirect HTTP to HTTPS Enabled check box	If enabled, all attempts to communicate via HTTP are redirected to the equivalent HTTPS address. We strongly recommend that you enable this option if you enable HTTP.
HTTP Port field	The port to use for HTTP communication. The default is 80.
HTTPS Port field	The port to use for HTTPS communication. The default is 443
Session Timeout field	The number of seconds to wait between HTTP requests before the CIMC times out and terminates the session. Enter an integer between 60 and 10,800. The default is 1800 seconds.
Max Sessions field	The maximum number of concurrent HTTP and HTTPS sessions allowed on the CIMC. This value may not be changed.

Name	Description
Active Sessions field	The number of HTTP and HTTPS sessions currently running on the CIMC.

Step 5 Click **Save Changes**.

Configuring SSH

Before You Begin

You must log in as a user with admin privileges to configure SSH.

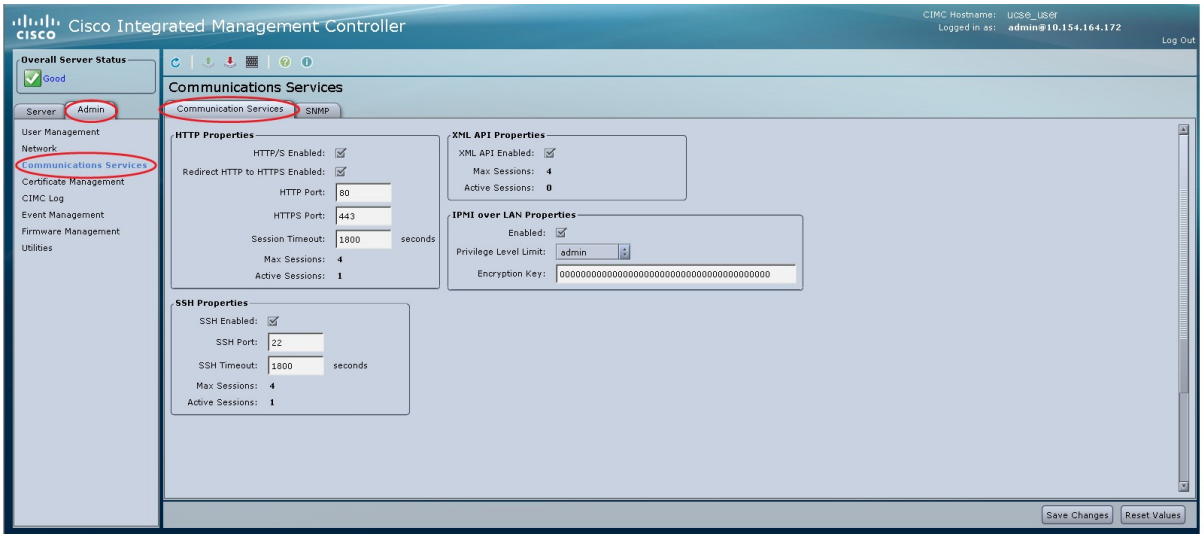
Procedure

Step 1 In the **Navigation** pane, click the **Admin** tab.

Step 2 On the **Admin** tab, click **Communications Services**.

Step 3 In the **Communications Services** pane, click the **Communication Services** tab.

Figure 74: Communication Services Tab



Step 4 In the **SSH Properties** area, update the following properties:

Name	Description
SSH Enabled check box	Whether SSH is enabled on the CIMC.

Name	Description
SSH Port field	The port to use for secure shell access. The default is 22.
SSH Timeout field	The number of seconds to wait before the system considers an SSH request to have timed out. Enter an integer between 60 and 10,800. The default is 1,800 seconds.
Max Sessions field	The maximum number of concurrent SSH sessions allowed on the CIMC. This value may not be changed.
Active Sessions field	The number of SSH sessions currently running on the CIMC.

Step 5 Click **Save Changes**.

Configuring the XML API

XML API for the CIMC

The Cisco CIMC XML application programming interface (API) is a programmatic interface to the CIMC for the E-Series Server. The API accepts XML documents through HTTP or HTTPS.

For detailed information about the XML API, see the *CIMC XML API Programmer's Guide for Cisco UCS E-Series Servers*.

Enabling the XML API

Before You Begin

You must log in as a user with admin privileges to perform this task.

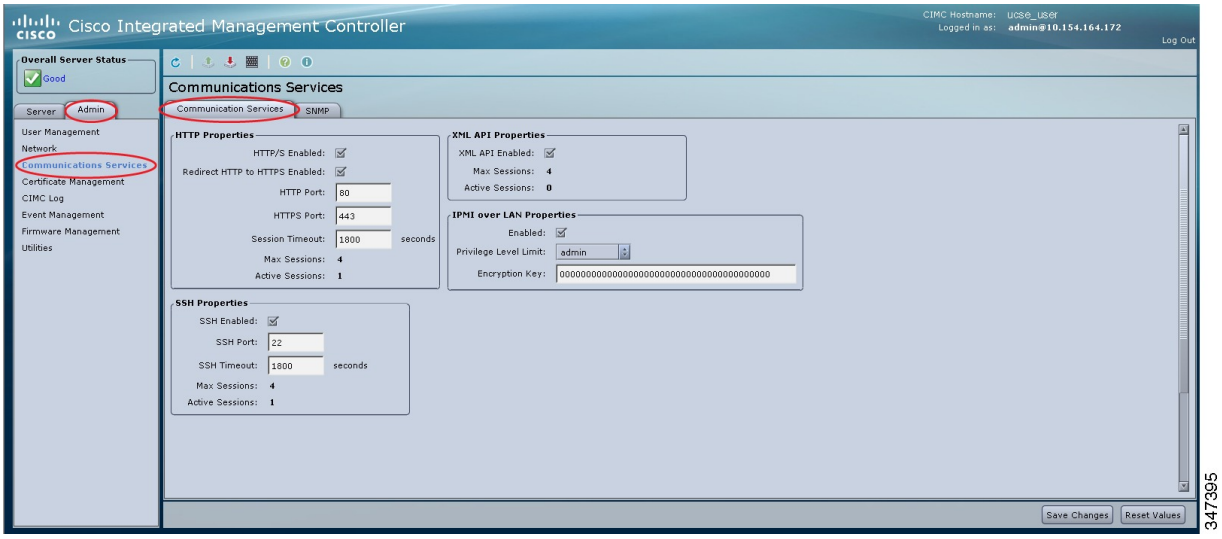
Procedure

Step 1 In the **Navigation** pane, click the **Admin** tab.

Step 2 On the **Admin** tab, click **Communications Services**.

Step 3 In the **Communications Services** pane, click the **Communication Services** tab.

Figure 75: Communication Services Tab



Step 4 In the **XML API Properties** area, update the following properties:

Name	Description
XML API Enabled check box	Whether API access is allowed on this server.
Max Sessions field	The maximum number of concurrent API sessions allowed on the CIMC. This value may not be changed.
Active Sessions field	The number of API sessions currently running on the CIMC.

Step 5 Click **Save Changes**.

Configuring IPMI

IPMI over LAN

Intelligent Platform Management Interface (IPMI) defines the protocols for interfacing with a service processor embedded in a server platform. This service processor is called a Baseboard Management Controller (BMC) and resides on the server motherboard. The BMC links to a main processor and other on-board elements using a simple serial bus.

During normal operations, IPMI lets a server operating system obtain information about system health and control system hardware. For example, IPMI enables the monitoring of sensors, such as temperature, fan speeds and voltages, for proactive problem detection. If the server temperature rises above specified levels, the server operating system can direct the BMC to increase fan speed or reduce processor speed to address the problem.

Configuring IPMI over LAN

Configure IPMI over LAN when you want to manage the CIMC with IPMI messages.

Before You Begin

You must log in as a user with admin privileges to perform this task.

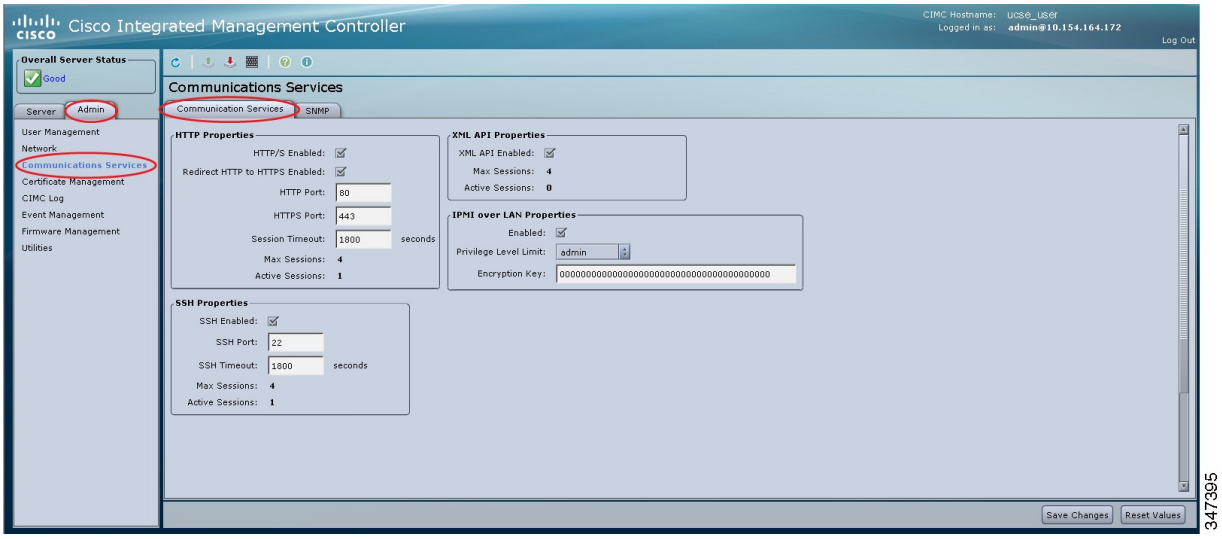
Procedure

Step 1 In the **Navigation** pane, click the **Admin** tab.

Step 2 On the **Admin** tab, click **Communications Services**.

Step 3 In the **Communications Services** pane, click the **Communication Services** tab.

Figure 76: Communication Services Tab



Step 4 In the **IPMI over LAN Properties** area, update the following properties:

Name	Description
Enabled check box	Whether IPMI access is allowed on this server.
Privilege Level Limit drop-down list	The highest privilege level that can be assigned to an IPMI session on this server. This can be one of the following: • **read-only**—IPMI users can view information but cannot make any changes. If you select this option, IPMI users with the "Administrator", "Operator", or "User" user roles can only create read-only IPMI sessions, regardless of their other IPMI privileges. • **user**—IPMI users can perform some functions but cannot perform administrative tasks. If you select this option, IPMI users with the "Administrator" or "Operator" user role can create user and read-only sessions on this server. • **admin**—IPMI users can perform all available actions. If you select this option, IPMI users with the "Administrator" user role can create admin, user, and read-only sessions on this server.
Encryption Key field	The IPMI encryption key to use for IPMI communications.

Step 5 Click **Save Changes**.

Configuring SNMP

SNMP

The Cisco UCS E-Series Servers support the Simple Network Management Protocol (SNMP) for viewing server configuration and status and for sending fault and alert information by SNMP traps. For information on Management Information Base (MIB) files supported by CIMC, see the *MIB Quick Reference for Cisco UCS* at this URL: http://www.cisco.com/en/US/docs/unified_computing/ucs/sw/mib/reference/UCS_MIBRef.html.

Configuring SNMP Properties

Before You Begin

You must log in as a user with admin privileges to perform this task.

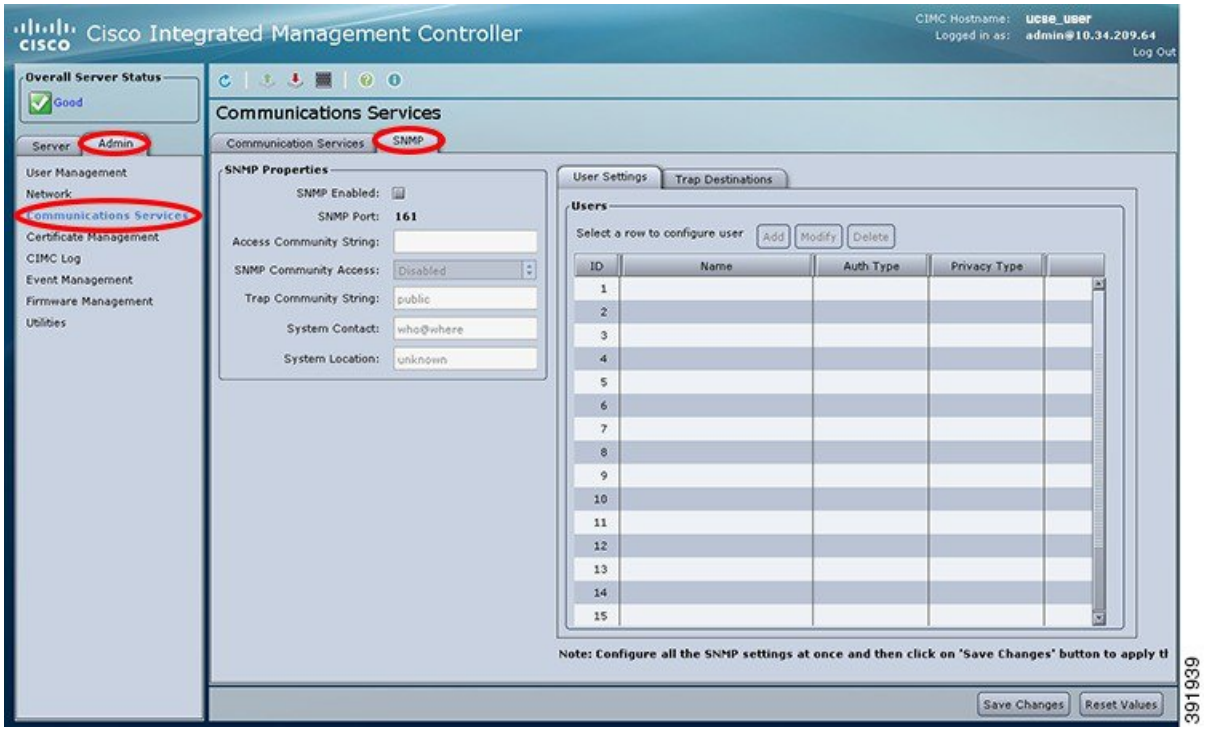
Procedure

Step 1 In the **Navigation** pane, click the **Admin** tab.

Step 2 On the **Admin** tab, click **Communications Services**.

Step 3 In the **Communications Services** pane, click the **SNMP** tab.

Figure 77: SNMP Tab



Step 4 In the **SNMP Properties** area, update the following properties:

Name	Description
SNMP Enabled check box	Whether this server sends SNMP traps to the designated host. **Note** After you check this check box, you need to click **Save Changes** before you can configure SNMP users or traps.
SNMP Port field	The port the server uses to communicate with the SNMP host. This value cannot be changed.
Access Community String field	The default SNMP v1 or v2c community name or SNMP v3 username CIMC includes on any trap messages it sends to the SNMP host. Enter a string up to 18 characters.

Name	Description
SNMP Community Access drop-down list	This can be one of the following: • **Disabled—**This option blocks access to the information in the inventory tables. • **Limited—**This option provides partial access to read the information in the inventory tables. • **Full—**This option provides full access to read the information in the inventory tables.
Trap Community String field	The name of the SNMP community group to which trap information should be sent. Enter a string up to 18 characters.
System Contact field	The system contact person responsible for the SNMP implementation. Enter a string up to 64 characters, such as an email address or a name and telephone number.
System Location field	The location of the host on which the SNMP agent (server) runs. Enter a string up to 64 characters.

Step 5 Click **Save Changes**.

What to Do Next

Configure SNMP trap settings as described in Configuring SNMP Trap Settings.

Configuring SNMP Trap Settings

Before You Begin

You must log in as a user with admin privileges to disable platform event alerts.

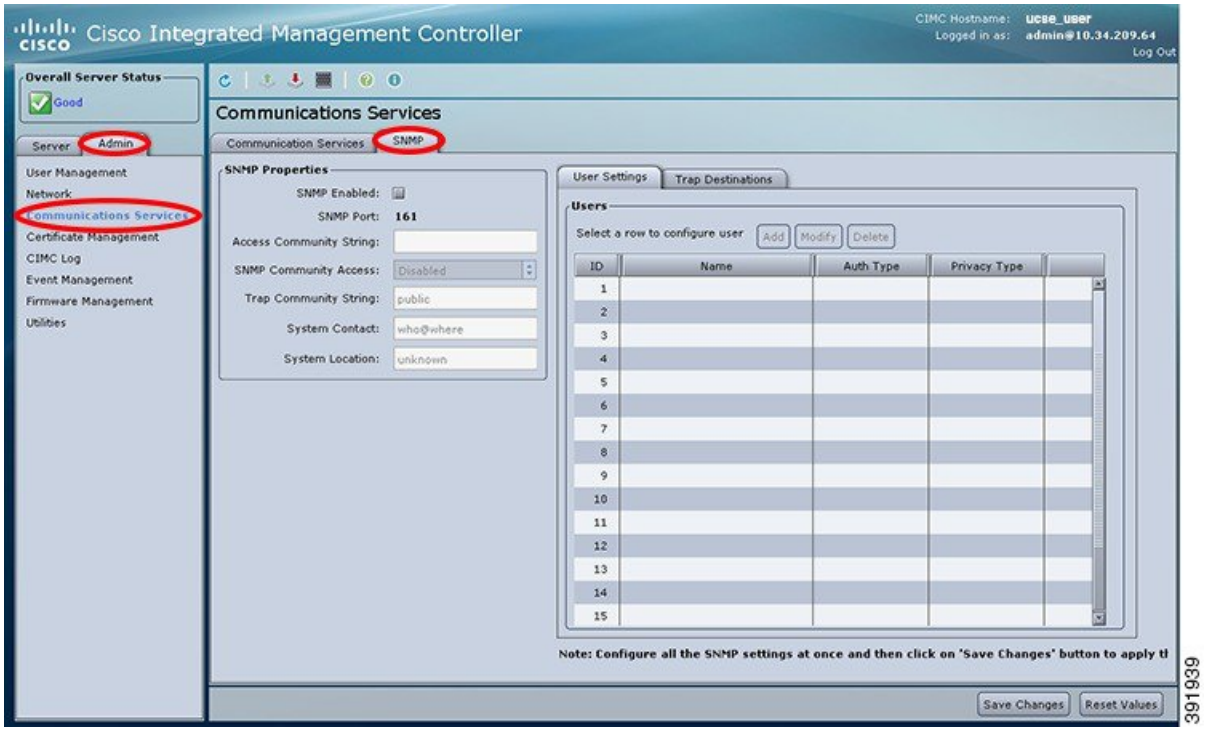
Procedure

Step 1 In the **Navigation** pane, click the **Admin** tab.

Step 2 On the **Admin** tab, click **Communications Services**.

Step 3 In the **Communications Services** pane, click the **SNMP** tab.

Figure 78: SNMP Tab



Step 4 Click on **Trap Destinations** tab.

Step 5 In the **Trap Destinations** area, you can do one of the following:

- To modify the trap destination information, select a row that is enabled, and then click **Modify**.
- To configure a new trap destination, select a row, and then click **Add**.

Note If the fields are not highlighted, select **Enabled**.

Step 6 In the **Trap Details** dialog box, complete the following fields:

Name	Description
ID field	The trap destination ID. This value cannot be modified.
Enabled check box	If checked, then this trap is active on the server.

Name	Description
SNMP Version drop-down list	The SNMP version and model used for the trap. This can be one of the following: • **V1** • **V2** • **V3**
Trap Type radio button	If you select **V2** for the version, this is the type of trap to send. This can be one of the following: • **Trap**: If this option is chosen, the trap will be sent to the destination but you do not receive any notifications. • **Inform**: When this option is chosen, you will receive a notification when a trap is received at the destination.
User drop-down list	The drop-down list displays all available users, select a user from the list.
Destination IP field	The IP address to which SNMP trap information is sent.

Step 7 Click **Save Changes**.

Step 8 To delete a trap destination, select the row, and then click **Delete**. Click **OK** in the confirmation prompt.

Sending an SNMP Test Trap Message

Before You Begin

You must log in as a user with admin privileges to perform this task.

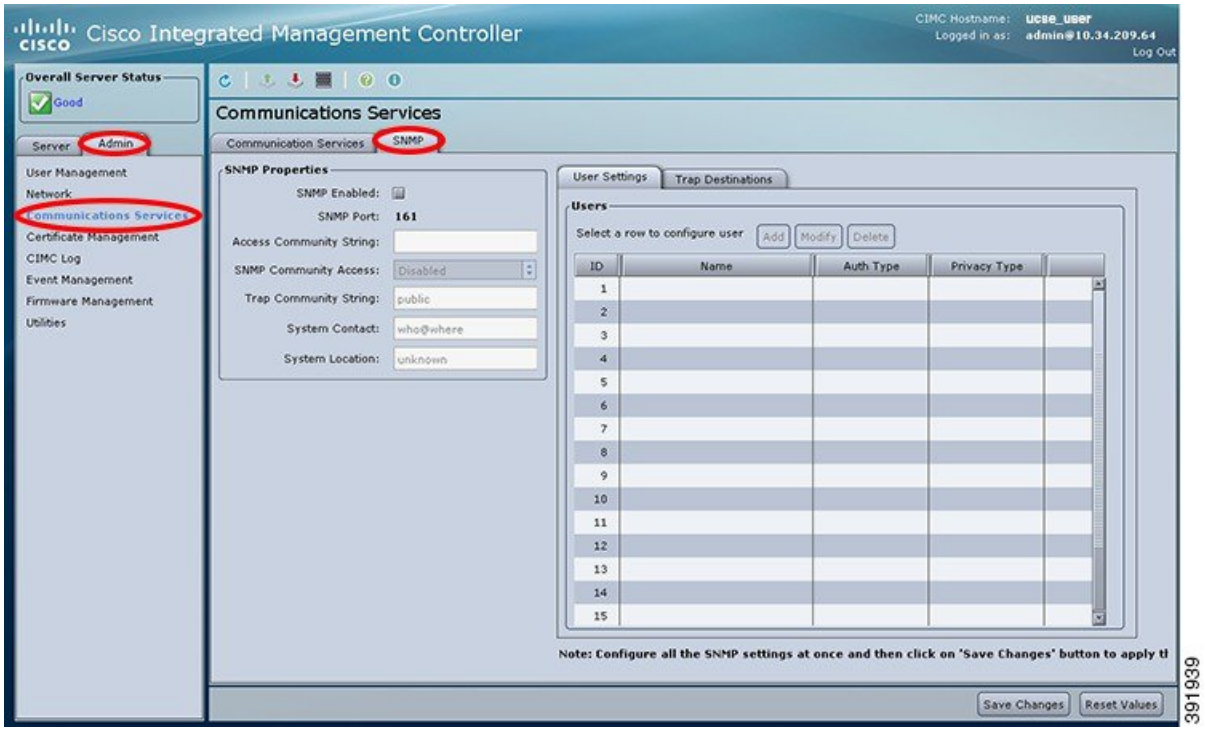
Procedure

Step 1 In the **Navigation** pane, click the **Admin** tab.

Step 2 On the **Admin** tab, click **Communications Services**.

Step 3 In the **Communications Services** pane, click the **SNMP** tab.

Figure 79: SNMP Tab



Step 4 Click the **SNMP** tab, and then click on the **Trap Destinations** tab.

Step 5 In the **Trap Destinations** area, select the row of the desired SNMP trap destination.

Step 6 Click **Send SNMP Test Trap**.
An SNMP test trap message is sent to the trap destination.

Note The trap must be configured and enabled in order to send a test message.

Configuring SNMP Users

Before You Begin

You must log in as a user with admin privileges to perform this task.

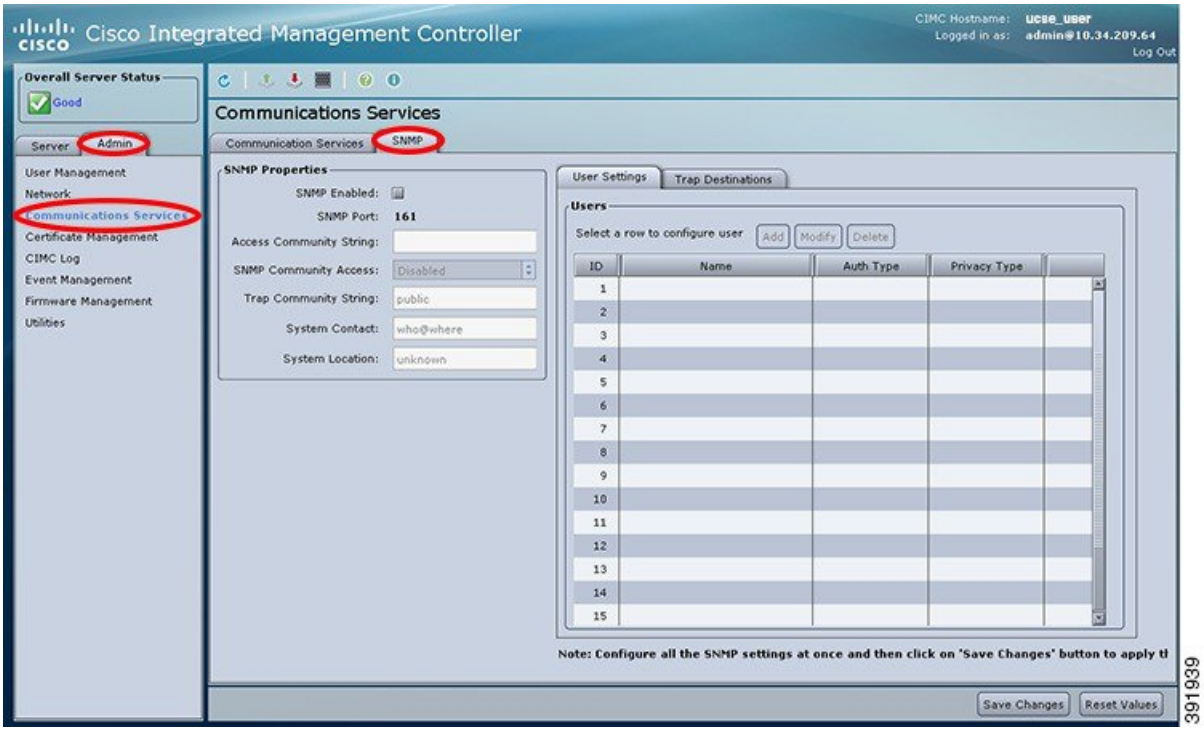
Procedure

Step 1 In the **Navigation** pane, click the **Admin** tab.

Step 2 On the **Admin** tab, click **Communications Services**.

Step 3 In the **Communications Services** pane, click the **SNMP** tab.

Figure 80: SNMP Tab



Step 4 Enable SNMP if it is not enabled. In the **SNMP Properties** area, check the **SNMP Enabled** check box, and then click **Save Changes**.

Step 5 Under the **User Settings** tab in the **Users** area, do one of the following:

- Select an existing user from the table and click **Modify**.

- Click **Add** to create a new user. The **SNMP User Details** dialog box appears.

Figure 81: SNMP User Details Dialog Box

Step 6 Update the following properties:

Name	Description
ID field	The unique identifier for the user. This field cannot be changed.
Name field	The SNMP username.
Security Level drop-down list	The security level for this user. This can be one of the following: • **no auth, no priv—**The user does not require an authorization password or a privacy password. • **auth, no priv—**The user requires an authorization password but not a privacy password. If you select this option, CIMC enables the Auth fields described below. • **auth, priv—**The user requires both an authorization password and a privacy password. If you select this option, CIMC enables the Auth and Privacy fields.

Name	Description
Auth Type field	The authorization type. This can be one of the following: • **MD5** • **SHA**
Auth Password field	The authorization password for this SNMP user.
Confirm Auth Password field	The authorization password again for confirmation purposes.
Privacy Type field	The privacy type. This can be one of the following: • **DES** • **AES**
Privacy Password field	The privacy password for this SNMP user.
Confirm Privacy Password field	The authorization password again for confirmation purposes.

Step 7 Click **Save Changes**.

Step 8 If you want to delete a user, select the user and click **Delete**.
Click **OK** in the delete confirmation prompt.

Managing SNMP Users

Before You Begin

You must log in as a user with admin privileges to perform this task.

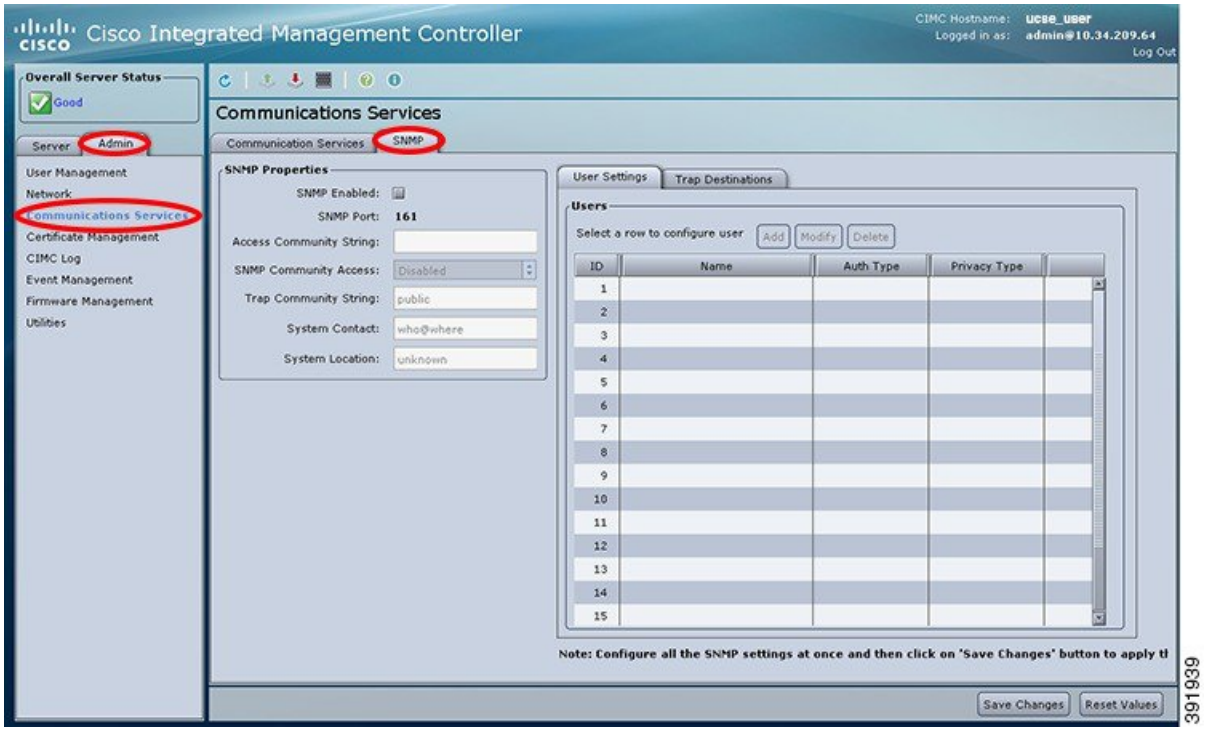
Procedure

Step 1 In the **Navigation** pane, click the **Admin** tab.

Step 2 On the **Admin** tab, click **Communications Services**.

Step 3 In the **Communications Services** pane, click the **SNMP** tab.

Figure 82: SNMP Tab



Step 4 Under the **User Settings** tab in the **Users** area, update the following properties:

Name	Description
Add button	Click an available row in the table then click this button to add a new SNMP user.
Modify button	Select the user you want to change in the table then click this button to modify the selected SNMP user.
Delete button	Select the user you want to delete in the table then click this button to delete the selected SNMP user.
ID column	The system-assigned identifier for the SNMP user.
Name column	The SNMP user name.
Auth Type column	The user authentication type.

Name	Description
Privacy Type column	The user privacy type.

Step 5 Click **Save Changes**.

CHAPTER 11

Managing Certificates

This chapter includes the following sections:

Managing the Server Certificate

You can generate a certificate signing request (CSR) to obtain a new certificate, and you can upload the new certificate to the CIMC to replace the current server certificate. The server certificate may be signed either by a public Certificate Authority (CA), such as Verisign, or by your own certificate authority.

Procedure

Step 1 Generate the CSR from the CIMC.

Step 2 Submit the CSR file to a certificate authority that will issue and sign your certificate. If your organization generates its own self-signed certificates, you can use the CSR file to generate a self-signed certificate.

Step 3 Upload the new certificate to the CIMC.

Note The uploaded certificate must be created from a CSR generated by the CIMC. Do not upload a certificate that was not created by this method.

Generating a Certificate Signing Request

Before You Begin

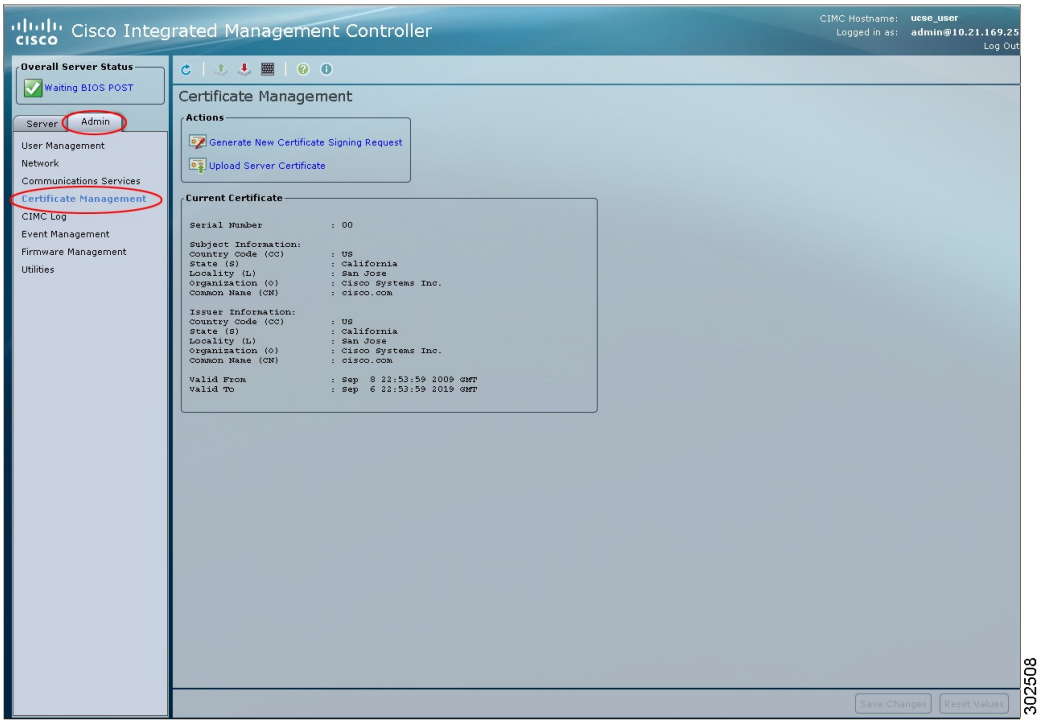
You must log in as a user with admin privileges to configure certificates.

Procedure

Step 1 In the **Navigation** pane, click the **Admin** tab.

Step 2 On the **Admin** tab, click **Certificate Management**.

Figure 83: Certificate Management



Step 3 In the **Actions** area, click the **Generate New Certificate Signing Request** link.
The **Generate New Certificate Signing Request** dialog box appears.

Step 4 In the **Generate New Certificate Signing Request** dialog box, update the following properties:

Name	Description
Common Name field	The fully qualified hostname of the CIMC.
Organization Name field	The organization requesting the certificate.
Organization Unit field	The organizational unit.
Locality field	The city or town in which the company requesting the certificate is headquartered.
State Name field	The state or province in which the company requesting the certificate is headquartered.

Name	Description
Country Code drop-down list	The country in which the company resides.
Email field	The e-mail contact at the company.

Step 5 Click **Generate CSR**.
The **Opening csr.txt** dialog box appears.

Step 6 Perform any one of the following steps to manage the CSR file, csr.txt:
a) Click **Open With** to view csr.txt.
b) Click **Save File** and then click **OK** to save csr.txt to your local machine.

What to Do Next

Submit the CSR file to a certificate authority that will issue and sign your certificate. If your organization generates its own self-signed certificates, you can use the CSR file to generate a self-signed certificate.

Creating a Self-Signed Certificate

As an alternative to using a public Certificate Authority (CA) to generate and sign a server certificate, you can operate your own CA and sign your own certificates. This section shows commands for creating a CA and generating a server certificate using the OpenSSL certificate server running on Linux. For detailed information about OpenSSL, see http://www.openssl.org.

Note These commands are to be entered on a Linux server with the OpenSSL package, not in the CIMC CLI.

Before You Begin

Obtain and install a certificate server software package on a server within your organization.

Procedure

	Command or Action	Purpose
Step 1	**openssl genrsa -out** *CA_keyfilename keysize* **Example:** `# openssl genrsa -out ca.key 1024`	This command generates an RSA private key that will be used by the CA. **Note** To allow the CA to access the key without user input, do not use the -des3 option for this command. The specified file name contains an RSA key of the specified key size.
Step 2	**openssl req -new -x509 -days** *numdays* **-key** *CA_keyfilename* **-out** *CA_certfilename*	This command generates a new self-signed certificate for the CA using the specified key. The certificate is

	Command or Action	Purpose
	Example: `# openssl req -new -x509 -days 365 -key ca.key -out ca.crt`	valid for the specified period. The command prompts the user for additional certificate information. The certificate server is an active CA.
Step 3	**echo "nsCertType = server" > openssl.conf** **Example:** `# echo "nsCertType = server" > openssl.conf`	This command adds a line to the OpenSSL configuration file to designate the certificate as a server-only certificate. This designation is a defense against a man-in-the-middle attack, in which an authorized client attempts to impersonate the server. The OpenSSL configuration file openssl.conf contains the statement "nsCertType = server".
Step 4	**openssl x509 -req -days** *numdays* **-in** *CSR_filename* **-CA** *CA_certfilename* **-set_serial 04 -CAkey** *CA_keyfilename* **-out** *server_certfilename* **-extfile openssl.conf** **Example:** `# openssl x509 -req -days 365 -in csr.txt -CA ca.crt -set_serial 04 -CAkey ca.key -out myserver05.crt -extfile openssl.conf`	This command directs the CA to use your CSR file to generate a server certificate. Your server certificate is contained in the output file.

This example shows how to create a CA and to generate a server certificate signed by the new CA. These commands are entered on a Linux server running OpenSSL.

```
# /usr/bin/openssl genrsa -out ca.key 1024
Generating RSA private key, 1024 bit long modulus
.............++++++
.....++++++
e is 65537 (0x10001)
# /usr/bin/openssl req -new -x509 -days 365 -key ca.key -out ca.crt
You are about to be asked to enter information that will be incorporated
into your certificate request.
What you are about to enter is what is called a Distinguished Name or a
DN.
There are quite a few fields but you can leave some blank
For some fields there will be a default value,
If you enter '.', the field will be left blank.
-----
Country Name (2 letter code) [GB]:US
State or Province Name (full name) [Berkshire]:California
Locality Name (eg, city) [Newbury]:San Jose
Organization Name (eg, company) [My Company Ltd]:Example Incorporated
Organizational Unit Name (eg, section) []:Unit A
Common Name (eg, your name or your server's hostname) []:example.com
Email Address []:admin@example.com
# echo "nsCertType = server" > openssl.conf
# /usr/bin/openssl x509 -req -days 365 -in csr.txt -CA ca.crt -set_serial 01 -CAkey ca.key -out server.crt
-extfile openssl.conf
```

```
Signature ok
subject=/C=US/ST=California/L=San Jose/O=Example Inc./OU=Unit
A/CN=example.com/emailAddress=john@example.com
Getting CA Private Key
#
```

What to Do Next

Upload the new certificate to the CIMC.

Uploading a Server Certificate

Before You Begin

You must log in as a user with admin privileges to upload a certificate.

The certificate file to be uploaded must reside on a locally accessible file system.

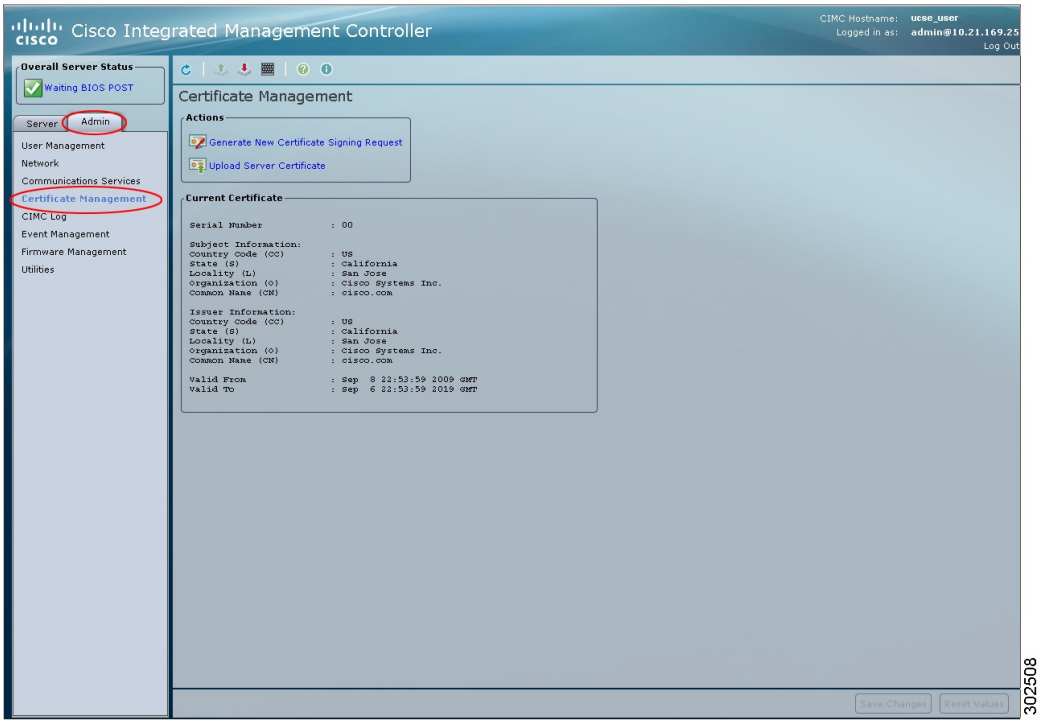
Note You must first generate a CSR using the CIMC Certificate Management menu, and you must use that CSR to obtain the certificate for uploading. Do not upload a certificate that was not obtained by this method.

Procedure

Step 1 In the **Navigation** pane, click the **Admin** tab.

Step 2 On the **Admin** tab, click **Certificate Management**.

Figure 84: Certificate Management



Step 3 In the **Actions** area, click **Upload Server Certificate**.
The **Upload Certificate** dialog box appears.

Step 4 In the **Upload Certificate** dialog box, update the following properties:

Name	Description
File field	The certificate file you want to upload.
Browse button	Opens a dialog box that allows you to navigate to the appropriate certificate file. **Caution** After you select the certificate file using the **Browse** button, do not edit the certificate file name using the **Backspace** button on your keyboard. If you do, you will be logged out of CIMC.

Step 5 Click **Upload Certificate**.

CHAPTER 12

Configuring Platform Event Filters

This chapter includes the following sections:

Platform Event Filters

A platform event filter (PEF) can trigger an action and generate an alert when a critical hardware-related event occurs. For each PEF, you can choose the action to be taken (or take no action) when a platform event occurs. You can also choose to generate and send an alert when a platform event occurs. Alerts are sent as an SNMP trap, so you must configure an SNMP trap destination before the alerts can be sent.

You can globally enable or disable the generation of platform event alerts. When disabled, alerts are not sent even if PEFs are configured to send them.

Enabling Platform Event Alerts

Before You Begin

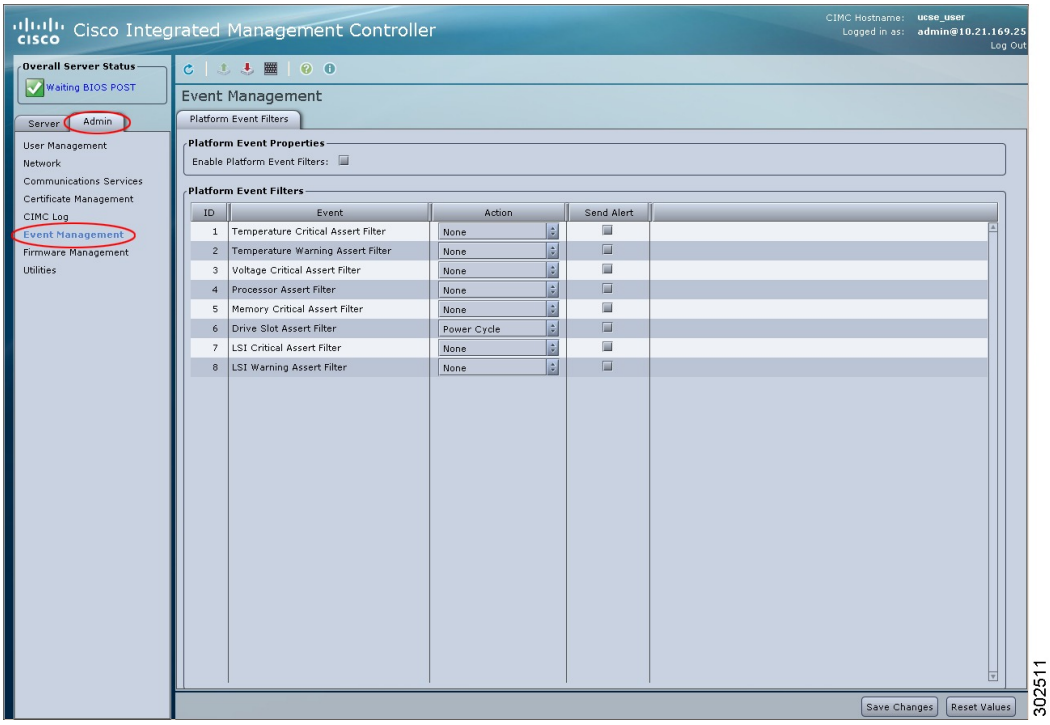
You must log in as a user with admin privileges to enable platform event alerts.

Procedure

Step 1 In the **Navigation** pane, click the **Admin** tab.

Step 2 On the **Admin** tab, click **Event Management**.

Figure 85: Event Management



Step 3 In the **Event Management** pane, click the **Platform Event Filters** tab.

Step 4 In the **Platform Event Alerts** area, check the **Enable Platform Event Alerts** check box.

Step 5 Click **Save Changes**.

Disabling Platform Event Alerts

Before You Begin

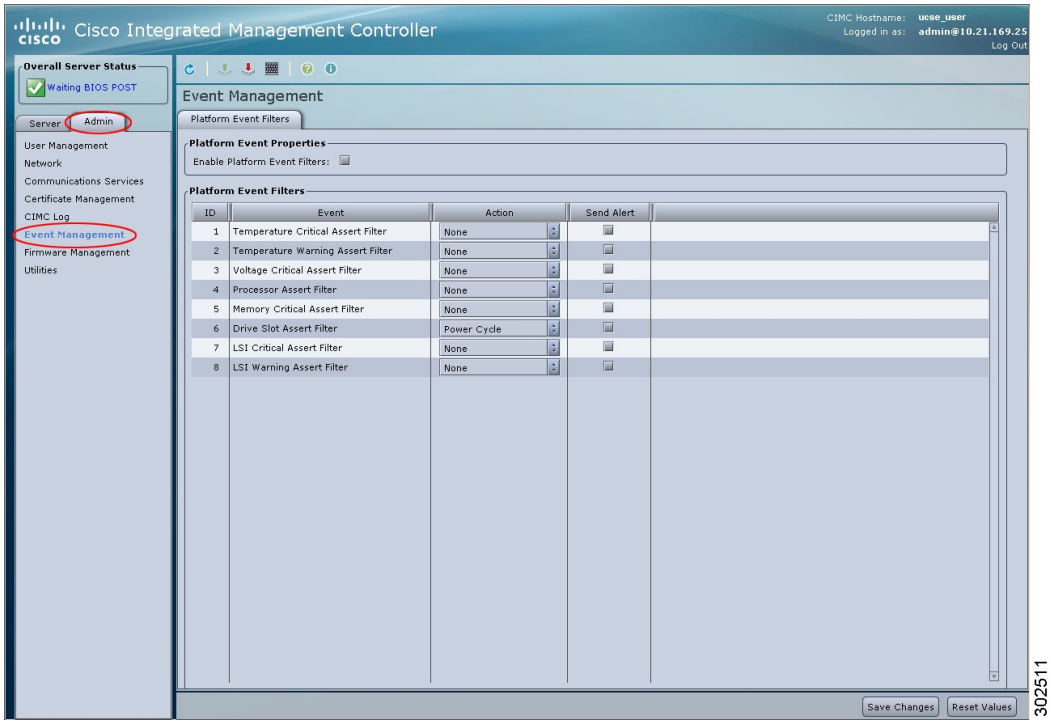
You must log in as a user with admin privileges to disable platform event alerts.

Procedure

Step 1 In the **Navigation** pane, click the **Admin** tab.

Step 2 On the **Admin** tab, click **Event Management**.

Figure 86: Event Management



Step 3 In the **Event Management** pane, click the **Platform Event Filters** tab.

Step 4 In the **Platform Event Alerts** area, uncheck the **Enable Platform Event Alerts** check box.

Step 5 Click **Save Changes**.

Configuring Platform Event Filters

Before You Begin

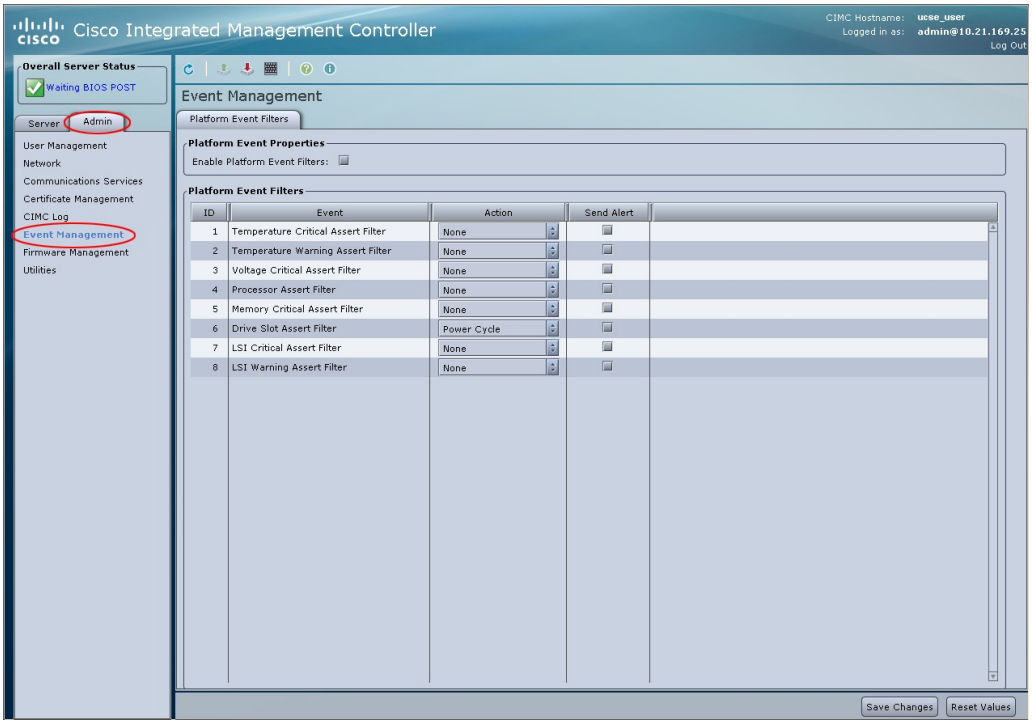
You must log in as a user with admin privileges to configure platform event filters.

Procedure

Step 1 In the **Navigation** pane, click the **Admin** tab.

Step 2 On the **Admin** tab, click **Event Management**.

Figure 87: Event Management



Step 3 In the **Event Management** pane, click the **Platform Event Filters** tab.

Step 4 In the **Platform Event Filters** area, complete the following fields for each event:

Name	Description
ID column	The unique filter ID.
Event column	The name of the event filter.
Action column	For each filter, select the desired action from the scrolling list box. This can be one of the following: • **None**—No action is taken. • **Reboot**—The server is rebooted. • **Power Cycle**—The server is power cycled. • **Power Off**—The server is powered off.

Name	Description
Send Alert column	For each filter that you want to send an alert, check the associated check box in this column. **Note** In order to send an alert, the filter trap settings must be configured properly and the **Enable Platform Event Filters** check box must also be checked.

Step 5 Click **Save Changes**.

What to Do Next

If you configure any PEFs to send an alert, complete the following tasks:

- Enabling Platform Event Alerts, on page 181
- Configuring SNMP Trap Settings

Interpreting Platform Event Traps

A CIMC platform event alert sent as an SNMP trap contains an enterprise object identifier (OID) in the form `1.3.6.1.4.1.3183.1.1.0.event`. The first ten fields of the OID represent the following information: `iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).wired_for_management(3183).PET(1).version(1).version(0)`, indicating an IPMI platform event trap (PET) version 1.0 message. The last field is an event number, indicating the specific condition or alert being notified.

Platform Event Trap Descriptions

The following table provides a description of the event being notified in a platform event trap message, based on the event number in the trap OID.

Event Number [Note 1]		Platform Event Description
0	0h	Test Trap
65799	010107h	Temperature Warning
65801	010109h	Temperature Critical
131330	020102h	Under Voltage, Critical
131337	020109h	Voltage Critical
196871	030107h	Current Warning
262402	040102h	Fan Critical
459776	070400h	Processor related (IOH-Thermalert/Caterr sensor) – predictive failure deasserted

Event Number [Note 1]		Platform Event Description
459777	070401h	Processor related (IOH-Thermalert/Caterr sensor) – predictive failure asserted
460032	070500h	Processor Power Warning – limit not exceeded
460033	070501h	Processor Power Warning – limit exceeded
524533	0800F5h	Power Supply Critical
524551	080107h	Power Supply Warning
525313	080401h	Discrete Power Supply Warning
527105	080B01h	Power Supply Redundancy Lost
527106	080B02h	Power Supply Redundancy Restored
552704	086F00h	Power Supply Inserted
552705	086F01h	Power Supply Failure
552707	086F03h	Power Supply AC Lost
786433	0C0001h	Correctable ECC Memory Errors, Release 1.3(1) and later releases, filter set to accept all reading types [Note 4]
786439	0C0007h	DDR3_INFO sensor LED - RED bit asserted (Probable ECC error on a DIMM), Generic Sensor [Notes 2,3] **Note** Displayed for the E-Series Servers and the SM E-Series NCE. Not displayed for the EHWIC E-Series NCE and the NIM E-Series NCE.
786689	0C0101h	Correctable ECC Memory Errors, Release 1.3(1) and later releases
818945	0C7F01h	Correctable ECC Memory Errors, Release 1.2(x) and earlier releases
818951	0C7F07h	DDR3_INFO sensor LED - RED bit asserted (Probable ECC error on a DIMM), 1.2(x) and earlier releases [Note 3] **Note** Displayed for the E-Series Servers and the SM E-Series NCE. Not displayed for the EHWIC E-Series NCE and the NIM E-Series NCE.
851968	0D0000h	HDD sensor indicates no fault, Generic Sensor [Note 2]
851972	0D0004h	HDD sensor indicates a fault, Generic Sensor [Note 2]
854016	0D0800h	HDD Absent, Generic Sensor [Note 2]
854017	0D0801h	HDD Present, Generic Sensor [Note 2]
880384	0D6F00h	HDD Present, no fault indicated
880385	0D6F01h	HDD Fault
880512	0D6F80h	HDD Not Present
880513	0D6F81h	HDD is deasserted but not in a fault state

Event Number [Note 1]		Platform Event Description
884480	0D7F00h	Drive Slot LED Off
884481	0D7F01h	Drive Slot LED On
884482	0D7F02h	Drive Slot LED fast blink
884483	0D7F03h	Drive Slot LED slow blink
884484	0D7F04h	Drive Slot LED green
884485	0D7F05h	Drive Slot LED amber
884486	0D7F01h	Drive Slot LED blue
884487	0D7F01h	Drive Slot LED read
884488	0D7F08h	Drive Slot Online
884489	0D7F09h	Drive Slot Degraded
Note	When the event filter is set to accept all reading types, bits 15:8 of the hex event number are masked to 0. For example, event number 786689 (0C0101h) becomes 786433 (0C0001h).	

CHAPTER 13

Firmware Management

This chapter includes the following sections:

Overview of Firmware

E-Series Servers use Cisco-certified firmware specific to the E-Series Server model that you are using. You can download new releases of the firmware for all supported server models from Cisco.com.

To avoid potential problems, we strongly recommend that you use the Host Upgrade Utility (HUU), which upgrades the CIMC, BIOS, and other firmware components to compatible levels. For detailed information about this utility, see the "Upgrading Firmware" chapter in the *Getting Started Guide for Cisco UCS E-Series Servers and the Cisco UCS E-Series Network Compute Engine*. This chapter also provides information about the compatible HUU, CIMC, and BIOS software releases.

Note The HUU is supported on CIMC, release 2.1.0 and later releases.

If you choose to upgrade the CIMC and BIOS firmware manually—instead of using the HUU—you must update the CIMC firmware first, and then the BIOS firmware. Do not install the new BIOS firmware until after you have activated the compatible CIMC firmware or the server will not boot.

The CIMC firmware update process is divided into the following stages to minimize the amount of time the server will be offline:

- **Installation—**During this stage, CIMC installs the selected CIMC firmware in the non-active, or backup, slot on the server.
- **Activation—**During this stage, CIMC sets the non-active firmware version as active and reboots the server, causing a disruption in service. When the server reboots, the firmware in the new active slot becomes the running version.

After you activate the CIMC firmware, you can update the BIOS firmware. The server must be powered off during the entire BIOS update process. Once the CIMC finishes rebooting, the server can be powered on and returned to service.

Note You can either upgrade an older firmware version to a newer one, or downgrade a newer firmware version to an older one.

Options for Upgrading Firmware

You can use either the Cisco Host Upgrade Utility (HUU) to upgrade the firmware components or you can upgrade the firmware components manually.

- **HUU—**We recommend that you use the HUU ISO file to upgrade all firmware components, which include the CIMC and BIOS firmware.

  For detailed instructions for upgrading the firmware using the HUU, see the "Upgrading Firmware" chapter in the *Getting Started Guide for Cisco UCS E-Series Servers and the Cisco UCS E-Series Network Compute Engine*.

  Note You cannot use the HUU to upgrade the Programmable Logic Devices (PLD) firmware. You must use the Cisco IOS CLI to upgrade the PLD firmware. For details, see the "Upgrading Programmable Logic Devices Firmware on the E-Series EHWIC NCE" section in the *CLI Configuration Guide for Cisco UCS E-Series Servers and the Cisco UCS E-Series Network Compute Engine*.

- **Manual Upgrade—**To manually upgrade the CIMC and BIOS firmware, you must first obtain the firmware from Cisco Systems, and then use the CIMC GUI or the CIMC CLI to upgrade it. After you upgrade the firmware, reboot the system.

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.

Installing CIMC Firmware from a Remote Server

Note To avoid potential problems, we strongly recommend that you use the Host Upgrade Utility (HUU), which upgrades the CIMC, BIOS, and other firmware components to compatible levels. For detailed information about this utility, see the "Upgrading Firmware" chapter in the *Getting Started Guide for Cisco UCS E-Series Servers and the Cisco UCS E-Series Network Compute Engine*. This chapter also provides information about the compatible HUU, CIMC, and BIOS software releases.

If you choose to upgrade the CIMC and BIOS firmware manually—instead of using the HUU—you must update the CIMC firmware first, and then the BIOS firmware. Do not install the new BIOS firmware until after you have activated the compatible CIMC firmware or the server will not boot.

Before You Begin

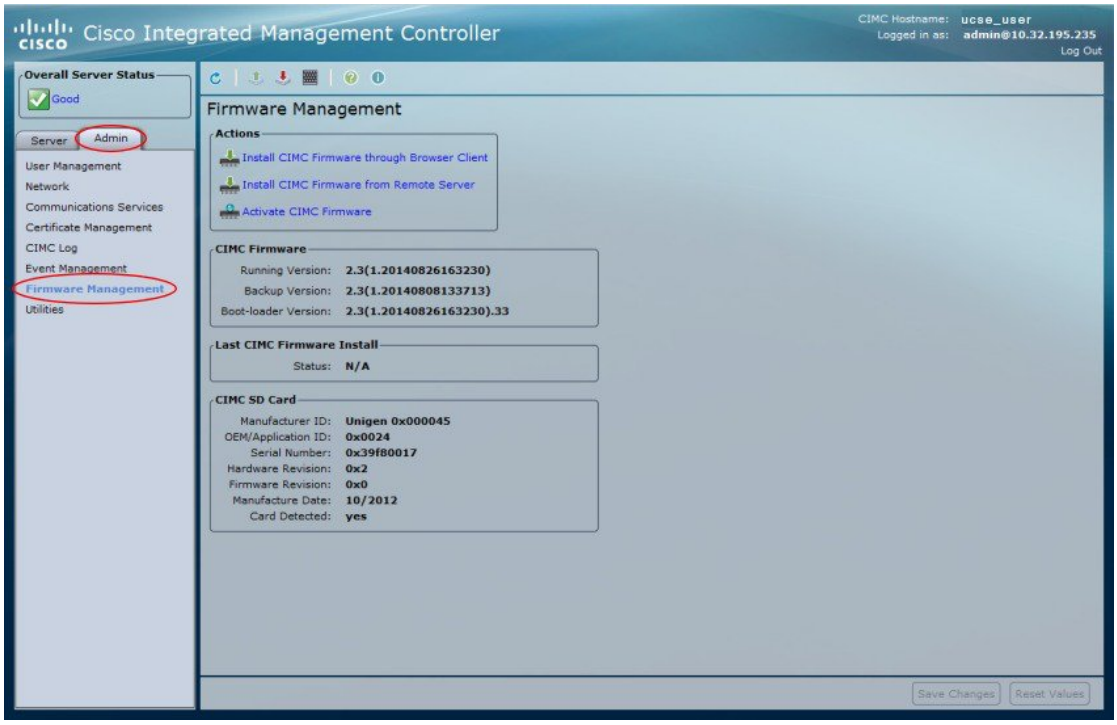
- You must log in as a user with admin privileges to install CIMC firmware through the browser.
- Obtain the CIMC firmware file from Cisco Systems. See Obtaining Software from Cisco Systems, on page 190.
- Unzip the proper .bin upgrade file on your remote server, such as TFTP, FTP, SFTP, SCP, or HTTP.

Procedure

Step 1 In the **Navigation** pane, click the **Admin** tab.

Step 2 On the **Admin** tab, click **Firmware Management**.

Figure 88: Firmware Management



Step 3 In the **Actions** area, click **Install CIMC Firmware from Remote Server**.

Step 4 In the **Install CIMC Firmware** dialog box, complete the following fields:

Name	Description
Install CIMC Firmware from drop-down list	The type of remote server on which the firmware image is located. This can be one of the following: • **TFTP Server** • **FTP Server** • **SFTP Server** • **SCP Server** • **HTTP Server** **Note** Depending on the remote server that you select from the drop-down list, the fields that display change.

Name	Description
TFTP, **FTP**, **SFTP**, **SCP**, or **HTTP Server IP/Hostname** field	The IP address or hostname of the server on which the firmware image resides.
Image Path and Filename field	The path and filename of the firmware image. When you enter the filename, include the relative path for the image file from the top of the server tree to the file location.
Username field	The username the system should use to log in to the remote server. **Note** If the username is not configured, enter **anonymous** for the username and any character(s) for the password. **Note** This field is not displayed if the remote server is TFTP or HTTP.
Password field	The password for the remote server username. **Note** If the username is not configured, enter **anonymous** for the username and any character(s) for the password. **Note** This field is not displayed if the remote server is TFTP or HTTP.

Step 5 Click **Install Firmware**.

What to Do Next

Activate the CIMC firmware.

Installing CIMC Firmware Through the Browser

Note To avoid potential problems, we strongly recommend that you use the Host Upgrade Utility (HUU), which upgrades the CIMC, BIOS, and other firmware components to compatible levels. For detailed information about this utility, see the "Upgrading Firmware" chapter in the *Getting Started Guide for Cisco UCS E-Series Servers and the Cisco UCS E-Series Network Compute Engine*. This chapter also provides information about the compatible HUU, CIMC, and BIOS software releases.

If you choose to upgrade the CIMC and BIOS firmware manually—instead of using the HUU—you must update the CIMC firmware first, and then the BIOS firmware. Do not install the new BIOS firmware until after you have activated the compatible CIMC firmware or the server will not boot.

Before You Begin

- You must log in as a user with admin privileges to install the CIMC firmware through the browser.
- Obtain the CIMC firmware file from Cisco Systems. See Obtaining Software from Cisco Systems, on page 190.

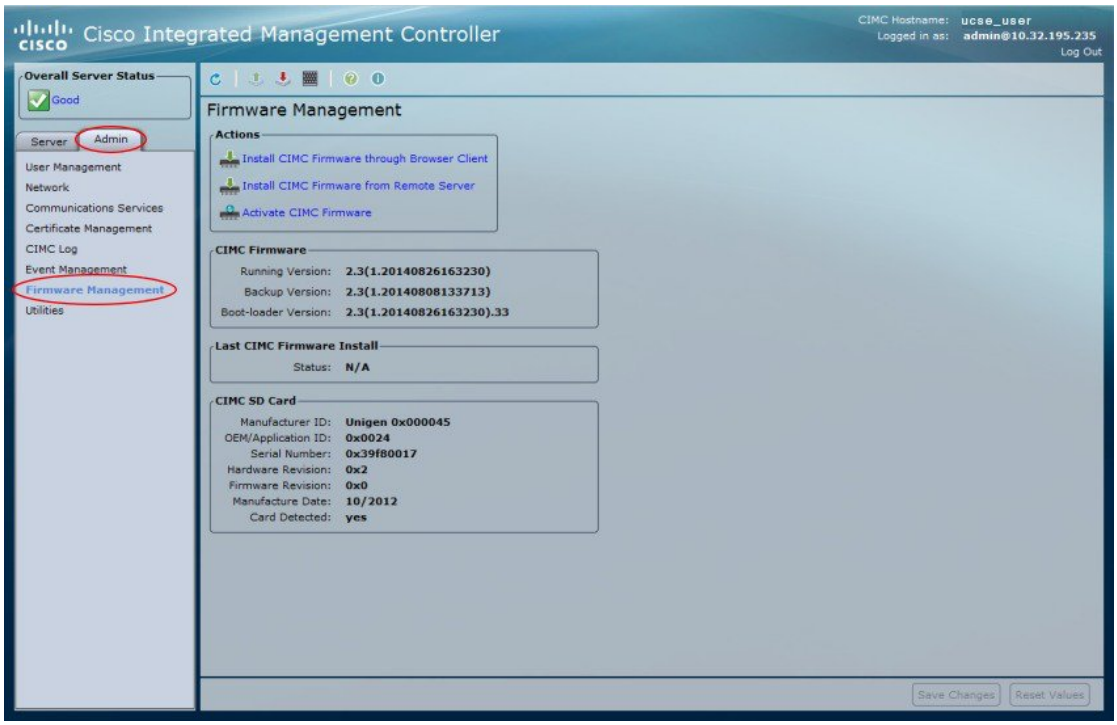
- Unzip the proper .bin upgrade file to your local machine.

Procedure

Step 1 In the **Navigation** pane, click the **Admin** tab.

Step 2 On the **Admin** tab, click **Firmware Management**.

Figure 89: Firmware Management



Step 3 In the **Actions** area, click **Install CIMC Firmware through Browser Client**.

Step 4 In the **Install CIMC Firmware** dialog box, click **Browse** and use the **Choose File** dialog box to select the .bin file you want to install.

Step 5 Click **Install Firmware**.

What to Do Next

Activate the CIMC firmware.

Activating Installed CIMC Firmware

Before You Begin

Install the CIMC firmware on the server.

Important While the activation is in progress, do not:

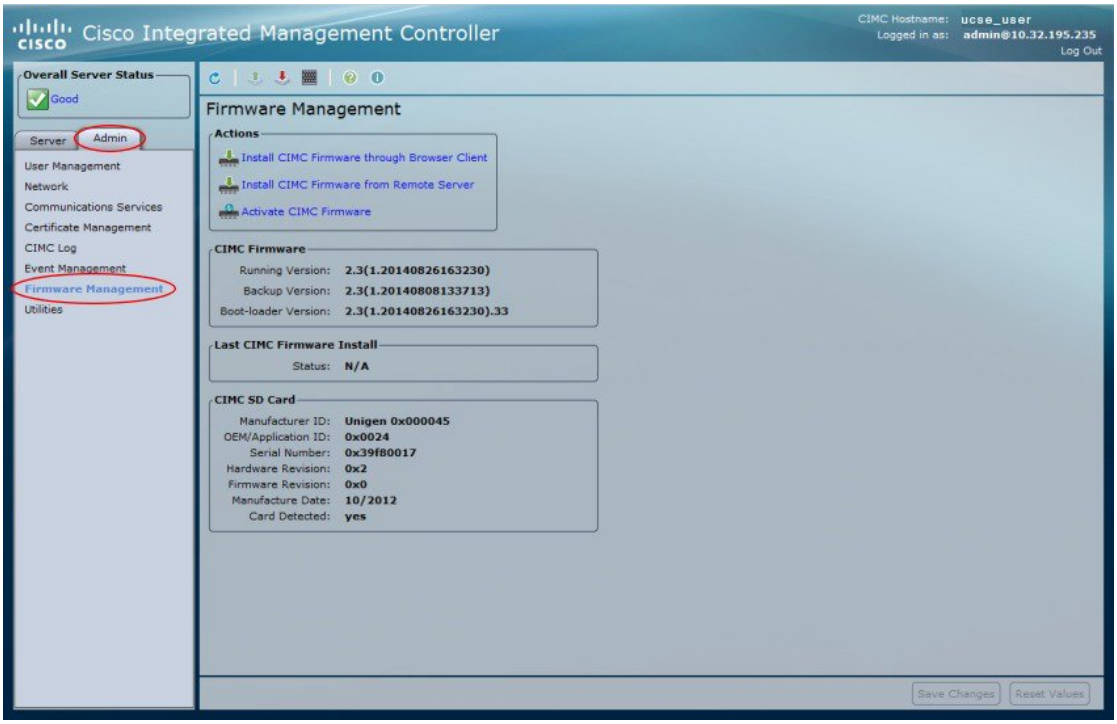
- Reset, power off, or shut down the server.
- Reboot or reset CIMC.
- Activate any other firmware.
- Export technical support or configuration data.

Procedure

Step 1 In the **Navigation** pane, click the **Admin** tab.

Step 2 On the **Admin** tab, click **Firmware Management**.

Figure 90: Firmware Management



Step 3 In the **Actions** area, click **Activate CIMC Firmware**.
The **Activate Firmware** dialog box appears.

Step 4 In the **Activate Firmware** dialog box, choose the firmware image to activate.

Step 5 Click **Activate Firmware**.

Installing the BIOS Firmware Through the Browser

Note To avoid potential problems, we strongly recommend that you use the Host Upgrade Utility (HUU), which upgrades the CIMC, BIOS, and other firmware components to compatible levels. For detailed information about this utility, see the "Upgrading Firmware" chapter in the *Getting Started Guide for Cisco UCS E-Series Servers and the Cisco UCS E-Series Network Compute Engine*. This chapter also provides information about the compatible HUU, CIMC, and BIOS software releases.

If you choose to upgrade the CIMC and BIOS firmware manually—instead of using the HUU—you must update the CIMC firmware first, and then the BIOS firmware. Do not install the new BIOS firmware until after you have activated the compatible CIMC firmware or the server will not boot.

Before You Begin

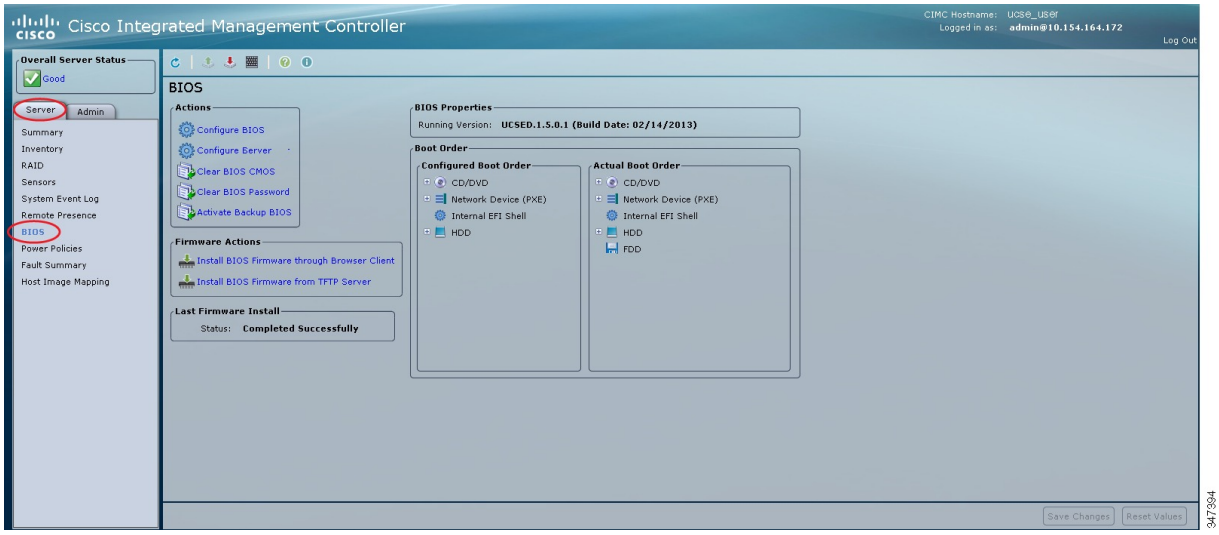
- Log in to CIMC as a user with admin privileges.
- Obtain the CIMC firmware file from Cisco Systems. See Obtaining Software from Cisco Systems, on page 190.
- Unzip the proper upgrade file to your local machine.

Procedure

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

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

Figure 91: BIOS



Step 3 In the **Firmware Actions** area, click **Install BIOS Firmware through Browser Client**.

Step 4 In the **Install BIOS Firmware** dialog box, click **Browse** and use the **Choose File** dialog box to select the file to install.

Step 5 Click **Install Firmware**.
The BIOS is downloaded, the host is powered off, the BIOS is upgraded, and then the host is powered on.

Installing the BIOS Firmware from a TFTP Server

Note To avoid potential problems, we strongly recommend that you use the Host Upgrade Utility (HUU), which upgrades the CIMC, BIOS, and other firmware components to compatible levels. For detailed information about this utility, see the "Upgrading Firmware" chapter in the *Getting Started Guide for Cisco UCS E-Series Servers and the Cisco UCS E-Series Network Compute Engine*. This chapter also provides information about the compatible HUU, CIMC, and BIOS software releases.

If you choose to upgrade the CIMC and BIOS firmware manually—instead of using the HUU—you must update the CIMC firmware first, and then the BIOS firmware. Do not install the new BIOS firmware until after you have activated the compatible CIMC firmware or the server will not boot.

Before You Begin

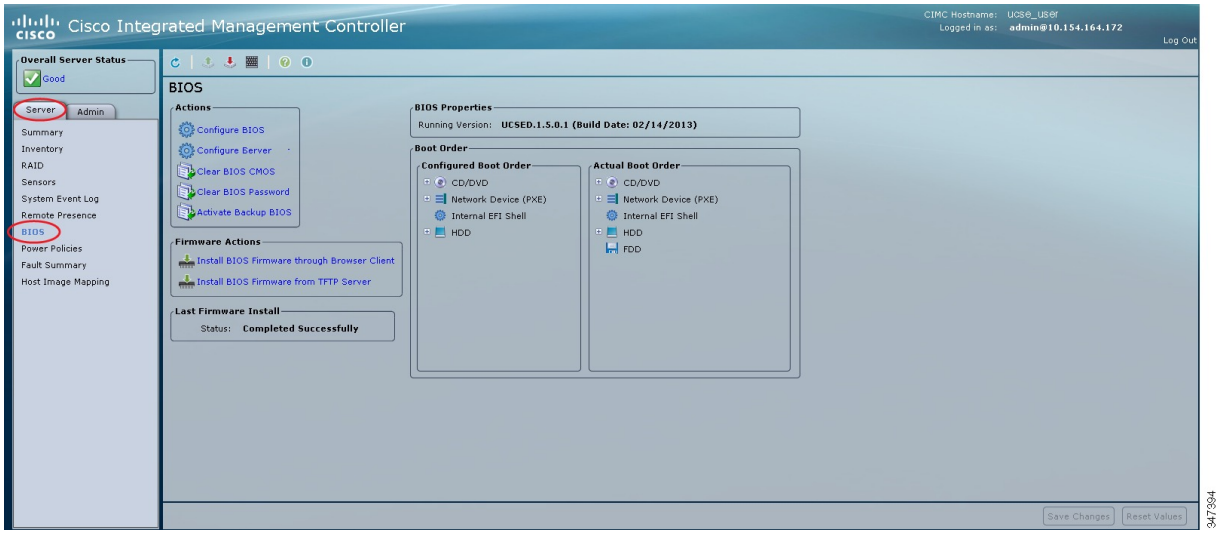
- Log in to CIMC as a user with admin privileges.
- Obtain the CIMC firmware file from Cisco Systems. See Obtaining Software from Cisco Systems, on page 190.
- Unzip the proper upgrade file on your TFTP server.

Procedure

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

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

Figure 92: BIOS



Step 3 In the **Firmware Actions** area, click **Install BIOS Firmware from TFTP Server**.

Step 4 In the **Install BIOS Firmware** dialog box, complete the following fields:

Name	Description
TFTP Server IP Address field	The IP address of the TFTP server on which the BIOS firmware image resides.
Image Path and Filename field	The BIOS firmware image filename on the server. When you enter this name, include the relative path for the image file from the top of the TFTP tree to the file location.

Step 5 Click **Install Firmware**.
The BIOS is downloaded, the host is powered off, the BIOS is upgraded, and then the host is powered on.

CHAPTER 14

Viewing Faults and Logs

This chapter includes the following sections:

Faults

Viewing the Fault Summary

Procedure

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

Step 2 On the **Server** tab, click **Faults and Logs**.

Step 3 In the **Faults and Logs** pane, click the **Fault Summary** tab.

Step 4 In the **Discrete Sensors** area, review the following information:

Name	Description
Sensor Name column	The name of the sensor.
Status column	The status of the sensor. This can be one of the following: • **Critical** • **Non-Recoverable** • **Warning**

Name	Description
Reading column	This can be one of the following: • **absent** • **present**

Step 5 In the **Threshold Sensors** area, review the following information:

Name	Description
Sensor Name column	The name of the sensor.
Status column	The status of the sensor. This can be one of the following: • **Critical** • **Non-Recoverable** • **Warning**
Reading column	The value reported by the sensor.
Units column	The units in which the sensor data is reported.
Warning Threshold Min column	The minimum warning threshold.
Warning Threshold Max column	The maximum warning threshold.
Critical Threshold Min column	The minimum critical threshold.
Critical Threshold Max column	The maximum critical threshold.

Viewing the Fault History

Procedure

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

Step 2 On the **Server** tab, click **Faults and Logs**.

Step 3 In the **Faults and Logs** pane, click the **Fault History** tab.

Step 4 Review the following information for each fault event in the log.

Name	Description
Timestamp column	The date and time the fault occurred.
Severity column	The fault severity. This can be one of the following: • **Emergency** • **Alert** • **Critical** • **Error** • **Warning** • **Notice** • **Informational** • **Debug**
Source column	The software module that logged the fault.
Probable Cause	The unique identifier associated with the event that caused the fault.
Description column	Information about the fault. It also includes a proposed solution.

Step 5 From the **Entries Per Page** drop-down list, select the number of fault events to display on each page.

Step 6 Click **<Newer** and **Older>** to move backward and forward through the pages of fault events, or click **<<Newest** to move to the top of the list.
By default, the newest fault events are displayed at the top if the list.

System Event Log

Viewing the System Event Log

Procedure

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

Step 2 On the **Server** tab, click **Faults and Logs**.

Step 3 In the **Faults and Logs** pane, click the **System Event Log** tab.

Step 4 Above the log table, view the percentage bar, which indicates how full the log buffer is.

Step 5 Review the following information for each system event in the log:

Name	Description
Time column	The date and time the event occurred.
Severity column	The severity field includes both text and color-coded icons. For the icons, green indicates normal operation, yellow is informational, and warning, critical, and non-recoverable errors are shown in shades of red.
Description column	A description of the event.
Clear Log button	Clears all events from the log file. **Note** This option is available only if your user ID is assigned the **admin** or **user** role.

Step 6 From the **Entries Per Page** drop-down list, select the number of system events to display on each page.

Step 7 Click **<Newer** and **Older>** to move backward and forward through the pages of system events, or click **<<Newest** to move to the top of the list.
By default, the newest system events are displayed at the top if the list.

Clearing the System Event Log

Before You Begin

You must log in as a user with user privileges to clear the system event log.

Procedure

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

Step 2 On the **Server** tab, click **Faults and Logs**.

Step 3 In the **Faults and Logs** pane, click the **System Event Log** tab.

Step 4 In the **System Event Log** pane, click **Clear Log**.

Step 5 In the dialog box that appears, click **OK**.

Cisco IMC Log

Viewing the CIMC Log

Procedure

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

Step 2 On the **Server** tab, click **Faults and Logs**.

Step 3 In the **Faults and Logs** pane, click the **Cisco IMC Log** tab.

Step 4 Review the following information for each CIMC event in the log.

Name	Description
Timestamp column	The date and time the event occurred.
Severity column	The event severity. This can be one of the following: • **Emergency** • **Alert** • **Critical** • **Error** • **Warning** • **Notice** • **Informational** • **Debug**
Source column	The software module that logged the event.
Description column	A description of the event.
Clear Log button	Clears all events from the log file. **Note** This option is available only if your user ID is assigned the **admin** or **user** role.

Step 5 From the **Entries Per Page** drop-down list, select the number of CIMC events to display on each page.

Step 6 Click **<Newer** and **Older>** to move backward and forward through the pages of CIMC events, or click **<<Newest** to move to the top of the list.
By default, the newest CIMC events are displayed at the top if the list.

Clearing the CIMC Log

Before You Begin

You must log in as a user with user privileges to clear the CIMC log.

Procedure

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

Step 2 On the **Server** tab, click **Faults and Logs**.

Step 3 In the **Faults and Logs** pane, click the **Cisco IMC Log** tab.

Step 4 In the **CIMC Log** pane, click **Clear Log**.

Step 5 In the dialog box that appears, click **OK**.

Configuring the CIMC Log Threshold

You can specify the lowest level of messages that will be included in the CIMC log.

Procedure

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

Step 2 On the **Server** tab, click **Faults and Logs**.

Step 3 In the **Faults and Logs** pane, click the **Logging Controls** tab.

Step 4 In the **Local Logging** area, use the **Minimum Severity to Report** drop-down list to specify the lowest level of messages to be included in the CIMC log.
You can select one of the following, in decreasing order of severity:

- **Emergency**
- **Alert**
- **Critical**
- **Error**
- **Warning**
- **Notice**
- **Informational**
- **Debug**

Note CIMC does not log any messages with a severity below the selected severity. For example, if you select **Error**, then the CIMC log will contain all messages with the severity Emergency, Alert, Critical, or Error. It will not show Warning, Notice, Informational, or Debug messages.

Sending the CIMC Log to a Remote Server

You can configure profiles for one or two remote syslog servers to receive CIMC log entries.

Before You Begin

- The remote syslog server must be configured to receive logs from a remote host.
- The remote syslog server must be configured to receive all types of logs, including authentication-related logs.
- The remote syslog server's firewall must be configured to allow syslog messages to reach the syslog server.

Procedure

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

Step 2 On the **Server** tab, click **Faults and Logs**.

Step 3 In the **Faults and Logs** pane, click the **Logging Controls** tab.

Step 4 In either of the **Remote Syslog Server** dialog boxes, complete the following fields:

Name	Description
Enabled check box	If checked, CIMC sends log messages to the Syslog server named in the **IP Address** field.
IP Address field	The IP address of the Syslog server on which the CIMC log should be stored.

Step 5 (Optional) In the **Minimum Severity to Report** drop-down list, specify the lowest level of messages to be included in the remote logs.
You can select one of the following, in decreasing order of severity:

- **Emergency**
- **Alert**
- **Critical**
- **Error**
- **Warning**
- **Notice**
- **Informational**
- **Debug**

Note CIMC does not remotely log any messages with a severity below the selected severity. For example, if you select **Error**, then the CIMC remote log will contain all messages with the severity Emergency, Alert, Critical, or Error. It will not show Warning, Notice, Informational, or Debug messages.

Step 6 Click **Save Changes**.

CHAPTER 15

Server Utilities

This chapter includes the following sections:

Exporting Technical Support Data

Exporting Technical Support Data to a Remote Server

Perform this task when requested by the Cisco Technical Assistance Center (TAC). This utility creates a summary report containing configuration information, logs, and diagnostic data that will help TAC in troubleshooting and resolving a technical issue.

Procedure

Step 1 In the **Navigation** pane, click the **Admin** tab.

Step 2 On the **Admin** tab, click **Utilities**.

Step 3 In the **Actions** area of the **Utilities** pane, click **Export Technical Support Data to Remote Server**.

Step 4 In the **Export Technical Support Data** dialog box, complete the following fields:

Name	Description
Export Technical Support Data to drop-down list	The remote server type. This can be one of the following: • **TFTP Server** • **FTP Server** • **SFTP Server** • **SCP Server** • **HTTP Server** **Note** Depending on the remote server that you select, the fields that display change.
TFTP, **FTP**, **SFTP**, **SCP**, or **HTTP Server IP/Hostname** field	The IP address or hostname of the server on which the support data file should be stored.
Path and Filename field	The path and filename that CIMC should use when exporting the file to the remote server.
Username	The username that the system should use to log in to the remote server. **Note** This field is not displayed if the remote server is TFTP or HTTP.
Password	The password for the remote server username. **Note** This field is not displayed if the remote server is TFTP or HTTP.

Step 5 Click **Export**.

What to Do Next

Provide the generated report file to Cisco TAC.

Downloading Technical Support Data to a Local File

Perform this task when requested by the Cisco Technical Assistance Center (TAC). This utility creates a summary report containing configuration information, logs, and diagnostic data that will help TAC in troubleshooting and resolving a technical issue.

Procedure

Step 1 In the **Navigation** pane, click the **Admin** tab.

Step 2 On the **Admin** tab, click **Utilities**.

Step 3 In the **Actions** area of the **Utilities** pane, click **Generate Technical Support Data for Local Download**.

Step 4 In the **Download Technical Support Data to Local File** dialog box, complete the following fields:

Name	Description
Generate Technical Support Data radio button	CIMC displays this radio button when there is no technical support data file to download. Click **Generate** to create the data file. When data collection is complete, click **Download Technical Support Data to Local File** in the **Actions** area to download the file.
Regenerate Technical Support Data radio button	CIMC displays this radio button when a technical support data file is available to download. To replace the existing support data file with a new one, select this option and click **Regenerate**. When data collection is complete, click **Download Technical Support Data to Local File** in the **Actions** area to download the file.
Download to local file radio button	CIMC enables this radio button when a technical support data file is available to download. To download the existing file, select this option and click **Download**.

What to Do Next

Provide the generated report file to Cisco TAC.

Rebooting CIMC

On rare occasions, such as an issue with the current running firmware, troubleshooting a server may require you to reboot the CIMC. This procedure is not part of the normal maintenance of a server. After you reboot the CIMC, you are logged off and the CIMC will be unavailable for a few minutes.

Note If you reboot the CIMC while the server is performing power-on self test (POST) or is operating in the Extensible Firmware Interface (EFI) shell, the server will be powered down until the CIMC reboot is complete.

Before You Begin

You must log in as a user with admin privileges to reboot the CIMC.

Procedure

Step 1 In the **Navigation** pane, click the **Admin** tab.

Step 2 On the **Admin** tab, click **Utilities**.

Step 3 In the **Actions** area of the **Utilities** pane, click **Reboot CIMC**.

Step 4 Click **OK**.

Resetting CIMC to Factory Defaults

On rare occasions, such as an issue with the current running firmware, troubleshooting a server may require you to reset the CIMC to the factory default. When this happens, all user-configurable settings are reset.

This procedure is not part of the normal server maintenance. After you reset the CIMC, you are logged off and must log in again. You may also lose connectivity and may need to reconfigure the network settings.

Before You Begin

You must log in as a user with admin privileges to reset the CIMC to factory defaults.

Procedure

Step 1 In the **Navigation** pane, click the **Admin** tab.

Step 2 On the **Admin** tab, click **Utilities**.

Step 3 In the **Actions** area of the **Utilities** pane, click **Reset CIMC to Factory Default Configuration**.

Step 4 Click **OK**.
A reboot of CIMC while the host is performing BIOS POST (Power on Self Test) or is in EFI shell will turn off the host for a short amount of time. CIMC will power on when it is ready.

Exporting and Importing the CIMC Configuration

Exporting and Importing the CIMC Configuration

To perform a backup of the CIMC configuration, you take a snapshot of the system configuration and export the resulting CIMC configuration file to a location on your network. The export operation saves information from the management plane only; it does not back up data on the servers. Sensitive configuration information such as user accounts and the server certificate are not exported.

You can restore an exported CIMC configuration file to the same system or you can import it to another CIMC system, provided that the software version of the importing system is the same as or is configuration-compatible with the software version of the exporting system. When you import a configuration file to another system

as a configuration template, you must modify system-specific settings such as IP addresses and host names. An import operation modifies information on the management plane only.

The CIMC configuration file is an XML text file whose structure and elements correspond to the CIMC command modes.

When performing an export or import operation, consider these guidelines:

- You can perform an export or an import while the system is up and running. While an export operation has no impact on the server or network traffic, some modifications caused by an import operation, such as IP address changes, can disrupt traffic or cause a server reboot.
- You cannot execute an export and an import simultaneously.

Exporting the CIMC Configuration

Note For security reasons, this operation does not export user accounts or the server certificate.

Before You Begin

Obtain the backup TFTP server IP address.

If you want the option to restore the SNMP configuration information when you import the configuration file, make sure that SNMP is enabled on this server before you create the configuration file. If SNMP is disabled when you export the configuration, the CIMC will not apply the SNMP values when the file is imported.

Procedure

Step 1 In the **Navigation** pane, click the **Admin** tab.

Step 2 On the **Admin** tab, click **Utilities**.

Step 3 In the **Actions** area of the **Utilities** pane, click **Export CIMC Configuration**.

Step 4 In the **Export CIMC Configuration** dialog box, complete the following fields:

Name	Description
Export to a Local File radio button	Select this option and click **Export** to save the XML configuration file to a drive that is local to the computer running the CIMC GUI. When you select this option, CIMC GUI displays a **Browse** dialog box that lets you navigate to the location to which the configuration file should be saved.

Name	Description
Export to Remote Server radio button	The type of remote server on which to save the XML configuration file. This can be one of the following: • **TFTP Server** • **FTP Server** • **SFTP Server** • **SCP Server** • **HTTP Server** **Note** Depending on the remote server that you select from the drop-down list, the fields that display change. • **TFTP**, **FTP**, **SFTP**, **SCP**, or **HTTP Server IP/Hostname** field—The IP address or host name of the remote server on which to save the configuration file. • **Path and Filename**—The path and filename of the remote server on which to save the configuration file. When you enter the filename, include the relative path for the file from the top of the server tree to the file location.

Step 5 Click **Export**.

Importing a CIMC Configuration

Before You Begin

If you want to restore the SNMP configuration information when you import the configuration file, make sure that SNMP is disabled on this server before you do the import. If SNMP is enabled when you perform the import, the CIMC does not overwrite the current values with those saved in the configuration file.

Procedure

Step 1 In the **Navigation** pane, click the **Admin** tab.

Step 2 On the **Admin** tab, click **Utilities**.

Step 3 In the **Actions** area of the **Utilities** pane, click **Import CIMC Configuration**.

Step 4 In the **Import CIMC Configuration** dialog box, complete the following fields:

Name	Description
Import from a Local File radio button	Select this option and click **Import** to navigate to the XML configuration file stored on a drive that is local to the computer running the CIMC GUI. When you select this option, CIMC GUI displays the **File** field and a **Browse** button that lets you navigate to the file you want to import.
Import from Remote Server radio button	The type of remote server from which to import the XML configuration file This can be one of the following: • **TFTP Server** • **FTP Server** • **SFTP Server** • **SCP Server** • **HTTP Server** **Note** Depending on the remote server that you select from the drop-down list, the fields that display change. • **TFTP**, **FTP**, **SFTP**, **SCP**, or **HTTP Server IP/Hostname** field—The IP address or hostname of the remote server on which the configuration file resides. • **Path and Filename**—The path and filename of the remote server from which to import the configuration file. When you enter the filename, include the relative path for the file from the top of the server tree to the file location.

Step 5 Click **Import**.

Changing the Contents of the Login Banner File

By default, the CIMC login page contains a banner file. Use this procedure to change the contents of the banner file.

Procedure

Step 1 In the **Navigation** pane, click the **Admin** tab.

Step 2 On the **Admin** tab, click **Utilities**.

Step 3 In the **Actions** area of the **Utilities** pane, click **Import Login Banner File**.

Step 4 In the **Import Login Banner** dialog box, complete the following fields:

Name	Description
Import from a Local File radio button	Select this option and click **Import** to navigate to the banner file stored on a drive that is local to the computer running the CIMC GUI. When you select this option, CIMC GUI displays the **File** field and a **Browse** button that lets you navigate to the file you want to import.
Import from Remote Server radio button	The type of remote server on which the banner file is located. This can be one of the following: • **TFTP Server** • **FTP Server** • **SFTP Server** • **SCP Server** • **HTTP Server** **Note** Depending on the remote server that you select from the drop-down list, the fields that display change. • **TFTP**, **FTP**, **SFTP**, **SCP**, or **HTTP Server IP/Hostname** field—The IP address or host name of the remote server on which the banner file resides. • **Path and Filename—**The path and filename of the banner file on the remote server. When you enter the filename, include the relative path for the file from the top of the server tree to the file location.

Step 5 Click **Import**.

CHAPTER 16

Diagnostic Tests

This chapter includes the following sections:

Diagnostic Tests Overview

Diagnostics is a standalone utility that runs on the E-Series Server or NCE independent of the operating system or applications running on the server. If you experience problems with the E-Series Server or NCE, you can use diagnostics tests to run a preliminary check and isolate the problem. Diagnostic tests can be executed on the server CPU, memory, and block devices. Block devices include hard drive, USB drive, and SD cards.

If the diagnostic tests pass successfully, it indicates that there is no problem with the server CPU, memory, or block devices. The problem could be with some other hardware component or with the software configuration. Open a service request with Cisco Technical Assistance Center (TAC) at: http://www.cisco.com/cisco/web/support/index.html to isolate the problem.

If the diagnostic tests fail, open a service request with Cisco TAC for further assistance.

Caution Diagnostic tests are non-destructive, but if there is a power or equipment failure when the tests are running, there is a possibility that the disk data might get corrupted. We highly recommend that you backup the data before running these tests.

Basic Workflow for Executing Diagnostic Tests

1. Backup data.
2. The diagnostics image is pre-installed on the E-Series Server or NCE at the time of purchase. You can also choose to download the most current diagnostics image from a specified FTP or HTTP server onto the CIMC internal repository.

3 Mount the diagnostics image onto the HDD virtual drive of a USB controller.
4 Set the boot order to make the Internal EFI Shell as the first boot device.
5 Reboot the server.

Note
- For E-Series Servers and SM E-Series NCE—On server reboot, the EFI Shell displays.
- For EHWIC E-Series NCE and NIM E-Series NCE—On server reboot, the AMIDiag EFI Shell displays.

6 Run diagnostic tests from the EFI Shell or the AMIDiag EFI Shell as appropriate.
7 Reset the virtual media boot order to its original setting.

Mapping the Diagnostics Image to the Host

Before You Begin

- Backup data.
- Log in to CIMC as a user with admin privileges.
- The diagnostics image is pre-installed on the E-Series Server at the time of purchase. You can also choose to download the most current diagnostics image from a specified FTP or HTTP server onto the CIMC internal repository. See Obtaining Software from Cisco Systems.

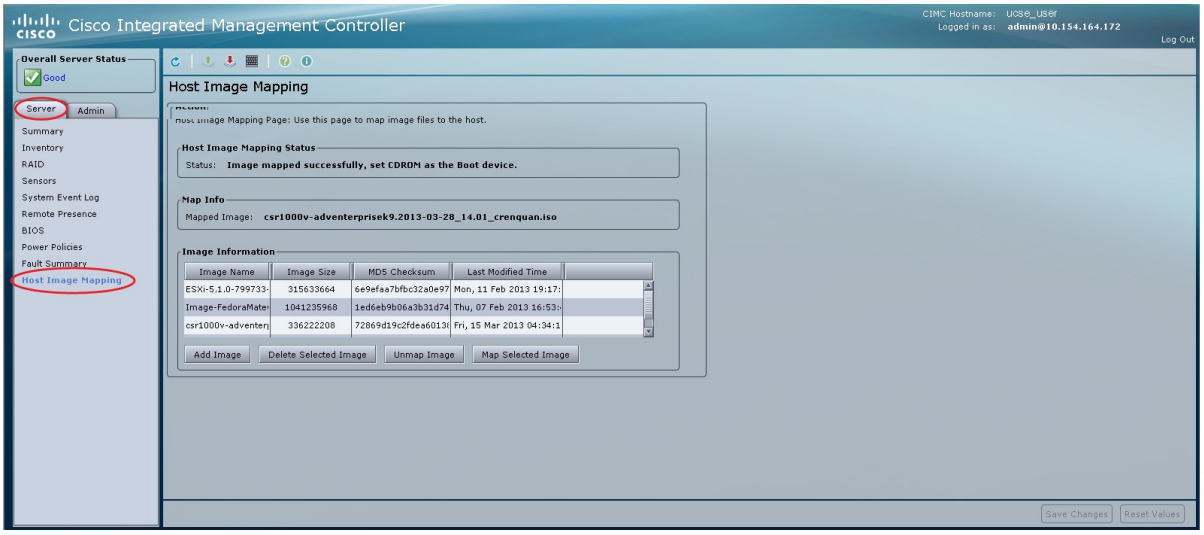
Note If you start an image update while an update is already in process, both updates will fail.

Procedure

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

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

Figure 93: Host Image Mapping



Step 3 From the **Host Image Mapping** page, click **Add Image**.
The **Download Image** dialog box opens. Complete the following fields:

Name	Description
Download Image From drop-down list	The type of remote server on which the image is located. This can be one of the following: • **FTP** • **HTTP** **Note** Depending on the remote server that you select, the fields that display change.
FTP or **HTTP Server IP Address** field	The IP address of the remote FTP or HTTP server.
FTP or **HTTP File Path** field	The path and filename of the remote FTP or HTTP server. The path and filename can contain up to 80 characters. • If you are installing a host image, that image must have .iso or .img as the file extension. • If you are installing a diagnostics image, that image must have .diag as the file extension.

Name	Description
Username field	The username of the remote server. The username can contain 1 to 20 characters. **Note** If the username is not configured, enter **anonymous** for the username and any character(s) for the password.
Password field	The password for the username. The password can contain 1 to 20 characters. **Note** If the username is not configured, enter **anonymous** for the username and any character(s) for the password.

Step 4 Click **Download**.
The **Host Image Mapping** page opens. You can view the status of the image download in the **Host Image Mapping Status** area. After the image is downloaded and processed successfully, refresh the page. After the page refreshes, the new image displays in the **Image Information** area.

Step 5 From the **Image Information** area, select the image to map, and then click **Map Selected Image**.
The image is mapped and mounted on the virtual drive of a USB controller.

Step 6 Set the boot order to make **EFI Shell** as the first boot device.
To set the boot order, see Configuring the Server Boot Order Using the CIMC GUI, on page 22.

Step 7 Reboot the server.
The EFI Shell appears.

What to Do Next

Run diagnostic tests.

Running Diagnostic Tests—E-Series Servers and SM E-Series NCE

From the EFI shell, use the following procedure to run diagnostic tests on the E-Series Servers and the SM E-Series NCE.

Before You Begin

- Back up data. All tests are non-destructive, but if there is power or equipment failure when the tests are running, there is a possibility that the disk data might get corrupted. We highly recommend that you back up data before executing these tests.
- Use the CIMC CLI or the CIMC GUI to download and map the diagnostics image onto the HDD virtual drive of the USB controller.
- Reboot the server. The EFI shell displays.

Procedure

	Command or Action	Purpose
Step 1	Shell > **dir** *virtual-media-drive-name***:**	Displays all the file packages that exist in the specified virtual media drive. The drive name starts with fs0 and can be fs0, fs1, fs2, and so on. **Note** Make sure that you add a colon after the virtual media drive name. For example, **dir fs1:**
Step 2	Shell > *virtual-media-drive-name***:**	Enters the virtual media drive in which the diagnostic file is located.
Step 3	Virtual Media Drive :\> **cp** *package-file-name* **dsh.pkg**	Copies the package file for which you are running diagnostics into the diagnostics shell package file.
Step 4	Virtual Media Drive :\> **dsh**	Enters the Diagnostics Shell. At the confirmation prompt, answer **y**.
Step 5	Server: SRV > **run all**	Executes all available diagnostic tests and displays the progress and status of the tests. Diagnostic tests are run on the server CPU, memory, and block devices. Block devices include hard drive, USB drive, and SD cards. To execute a specific diagnostic test on the server, use the **run** *test-name* command where *test-name* can be one of the following: • **cpux64—**CPU diagnostic test. • **diskx64—**Block devices diagnostic test. Block devices include hard drive, USB drive, and SD cards. • **memoryx64—**Memory diagnostic test. **Note** Diagnostic tests can run for approximately 10 minutes.
Step 6	(Optional) Server: SRV > **results**	Displays a summary of the diagnostic test with **Passed** or **Failed** test status. **Note** The summary report indicates the number of tests that failed and passed. It does not provide information about which tests failed or passed. To determine which tests failed and passed, see the output of the **run all** command.
Step 7	(Optional) Server: SRV > **show**	Displays a list of global parameters and diagnostic test modules that were administered on the server.
Step 8	Server: SRV > **exit**	Exits from Diagnostic Shell.
Step 9	Open a service request with Cisco TAC.	If the diagnostic tests pass successfully, it indicates that there is no problem with the server CPU, memory, or block devices. The problem could be with some other hardware component or with the software configuration. Open a service request with Cisco TAC to isolate the problem.

	Command or Action	Purpose
		If the diagnostic tests fail, open a service request with Cisco TAC for further assistance.

This example runs all diagnostic tests:

```
Shell > dir fs1:
  06/27/12  07:48p            1,435,424  Dsh.efi
  06/27/12  08:03p               10,036  dsh-e140d.pkg
  06/25/12  06:00p               10,140  dsh-e140s.pkg
  06/27/12  08:04p               10,042  dsh-e160d.pkg
          4 File(s)   1,465,642 bytes
Shell > fs1:
fs1:\> cp dsh-e140d.pkg dsh.pkg
copying fs0:\OBD\dsh-e140d.pkg -> fs0:\OBD\dsh.pkg
- [ok]
fs1:\> dsh
Diagnostics is a standalone utility that runs on the server module independent
of the operating system or applications running on the module.All tests are
non-destructive, but there is a possibility of disk datacorruption during
power or equipment failure when the tests are in progress. Therefore, before
executing these tests, we highly recommend that you backup the data.


For questions or concerns with this utility, please open a Service Request
with Cisco TAC at http://www.cisco.com/cisco/web/support/index.html

(Y)es to continue test. (N)o to exit(y/n): Y
Cisco Diagnostics  Shell 1.03(0.3) Thu 06/28/-16:35:08.95-canis-diag@cisco.com
UCS-E140D-M1/K9:SRV>

Server: SRV > run all
Server: SRV > results
Test Name          : all
Test Status        : Passed
Failed/Run History : 0/17
Start Time         : 06/27/12 14:38:19
End Time           : 06/27/12 14:43:36
Diag Version       : 1.03(0.3) Mon 04/02/-17:07:57.19-canis-diag@cisco.com
Board S/N          : FOC160724BY

Server: SRV > show
Server: SRV > exit
```

What to Do Next

Reset the virtual media boot order to its original setting.

Running Diagnostic Tests—EHWIC E-Series NCE and NIM E-Series NCE

Diagnostic tests are run on the server CPU, memory, and block devices. Block devices include SSD drive and USB drive.

Before You Begin

- Back up data. All tests are non-destructive, but if there is power or equipment failure when the tests are running, there is a possibility that the disk data might get corrupted. We highly recommend that you back up data before executing these tests.
- Delete previous versions of AMIDIAG_OBD.log files if any.
- Use the CIMC CLI or the CIMC GUI to download and map the diagnostics image onto the HDD virtual drive of the USB controller.
- Launch the KVM console.
- Reboot the server. The AMIDiag EFI Shell displays in the KVM console:

```
Found AMI DIAG on fs0:
Diagnostics is a standalone utility that runs on the server module independent
of the operating system or applications running on the module.All tests are
non-destructive, but there is a possibility of disk datacorruption during
power or equipment failure when the tests are in progress. Therefore, before
executing these tests, we highly recommend that you backup the data.

For questions or concerns with this utility, please open a Service Request
with Cisco TAC at http://www.cisco.com/cisco/web/support/index.html

Enter 'q' to quit, any other key to continue:

fs0:\>
```

Procedure

	Command or Action	Purpose
Step 1	From the AMIDiag EFI Shell, press any key (except q) to run the diagnostic tests.	Executes all available diagnostic tests and displays the progress. After the tests are completed, the **Pass** or **Fail** test status displays. **Note** Diagnostic tests can run for approximately 10 minutes.
Step 2	(Optional) fs0:\> **type AMIDIAG_OBD.log**	Displays the Onboard Diag log files with details.
Step 3	Server: fs0:\> **exit**	Exits from AMIDiag EFI Shell.
Step 4	Open a service request with Cisco TAC.	If the diagnostic tests pass successfully, it indicates that there is no problem with the server CPU, memory, or block devices. The problem could be with some other hardware component or with the software configuration. Open a service request with Cisco TAC to isolate the problem. If the diagnostic tests fail, open a service request with Cisco TAC for further assistance.

What to Do Next

Reset the virtual media boot order to its original setting.

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