



Managing the Server

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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	<p>The overall status of the server. This can be one of the following:</p> <ul style="list-style-type: none"> • 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	<p>The overall status of the processors. This can be one of the following:</p> <ul style="list-style-type: none"> • Good • Fault <p>Click the link in this field to view more information about the processors.</p>
Memory field	<p>The overall status of the memory modules. This can be one of the following:</p> <ul style="list-style-type: none"> • Good • Fault • Severe Fault <p>Click the link in this field to view detailed status information.</p>

Configuring the Server Boot Order Using the CIMC GUI

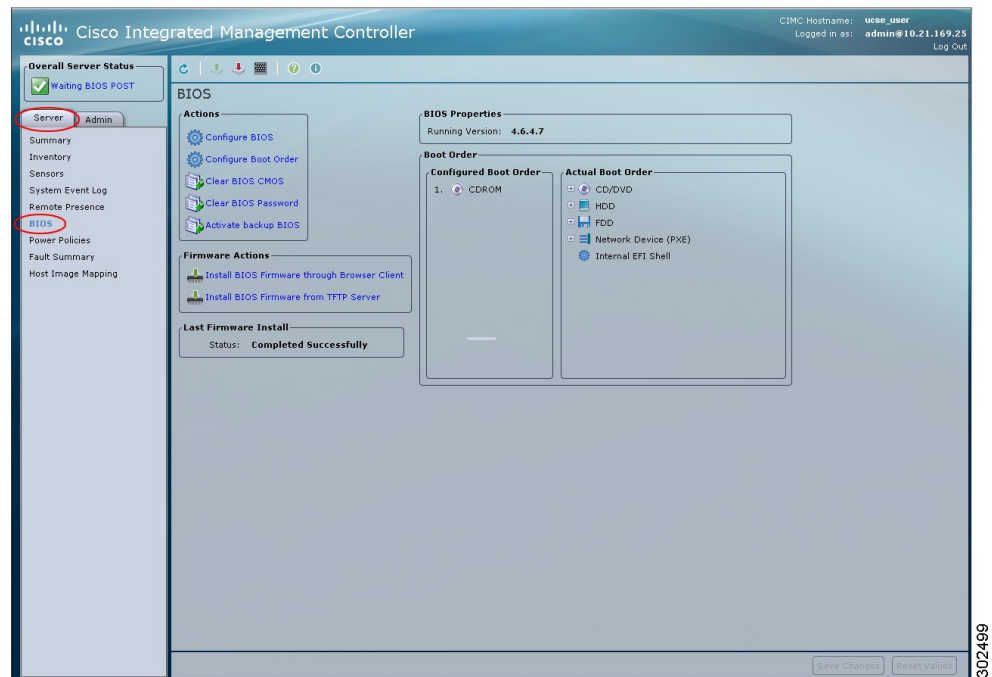
Before You Begin

Log into CIMC as a user with admin privileges.

Procedure

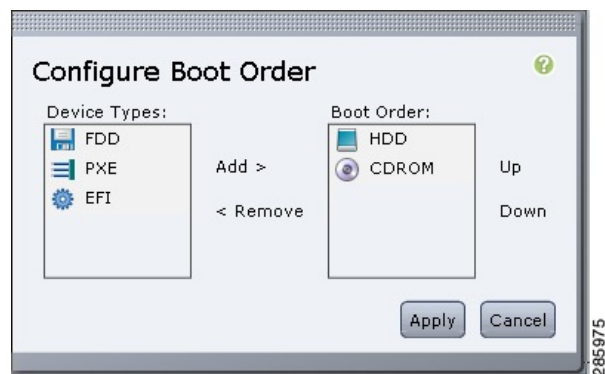
- Step 1** In the **Navigation** pane, click the **Server** tab.
- Step 2** On the **Server** tab, click **BIOS**.

Figure 1: BIOS



- Step 3** In the **Actions** area, click **Configure Boot Order**. The **Configure Boot Order** dialog box appears.

Figure 2: 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	<p>The server boot options. You can select one or more of the following:</p> <ul style="list-style-type: none"> • HDD—Hard disk drive • FDD—Floppy disk drive • CDROM—Bootable CD-ROM • PXE—PXE boot • EFI—Extensible Firmware Interface <p>Note You cannot configure second-level boot order from the Configure Boot Order dialog box. For example, within the HDD category, you cannot select SD Card or Hard Drive. You can configure second-level boot order from the BIOS setup menu. See Configuring the Boot Order Using the BIOS Setup Menu.</p>
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.
- If you want the server to boot from an external bootable device, such as an USB or an external CD ROM drive, which is directly connected to the E-Series Server, you must change the boot order priority. See [Configuring the Boot Order Using the BIOS Setup Menu](#).

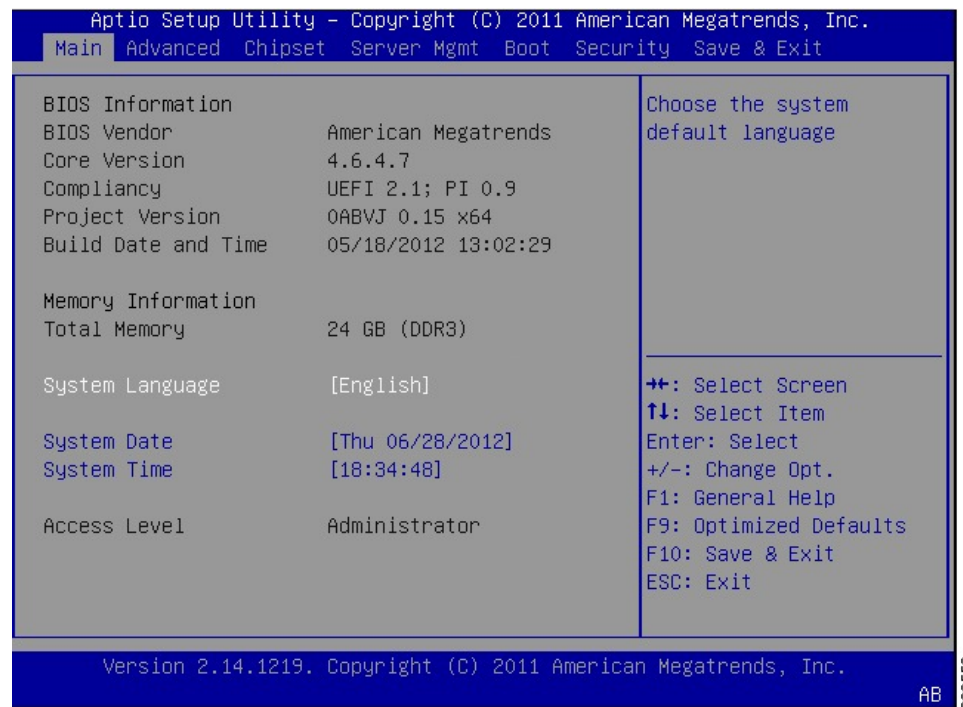
Configuring the Boot Order Using the BIOS Setup Menu

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

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 3: 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 shutdown 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**.

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

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**.
-

Power Cycling 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 **Power Cycle Server**.
A dialog box with the message **Power Cycle the Server?** appears.
- Step 4** Click **OK**.
-

Managing RAID

RAID Options

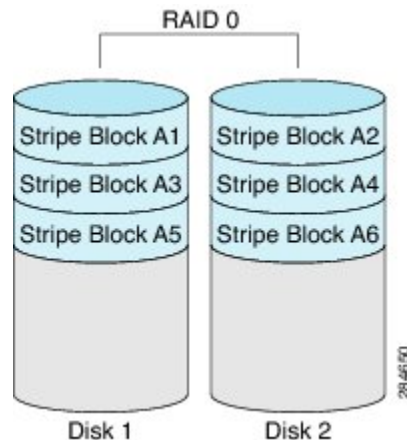
You can choose to store the E-Series Server data files on local Redundant Array of Inexpensive Disks (RAID). The following RAID levels are supported:

- Single-wide E-Series Server supports RAID 0 and RAID 1 levels.
- Double-wide E-Series Server supports RAID 0, RAID 1, and RAID 5 levels.
- Double-wide E-Series Server with 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 4: 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.

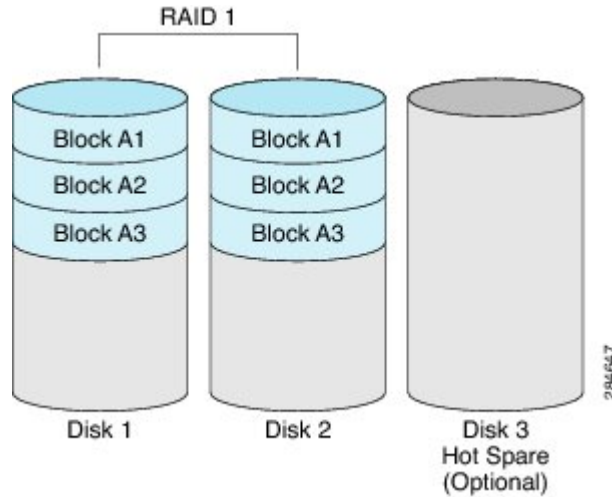
However, there is no fault tolerance, error checking, hot spare, or hot-swapping. If one disk drive fails, the data in the entire array is destroyed. Because there is no error checking or hot-swapping, the array is susceptible to unrecoverable errors.

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 5: RAID 1



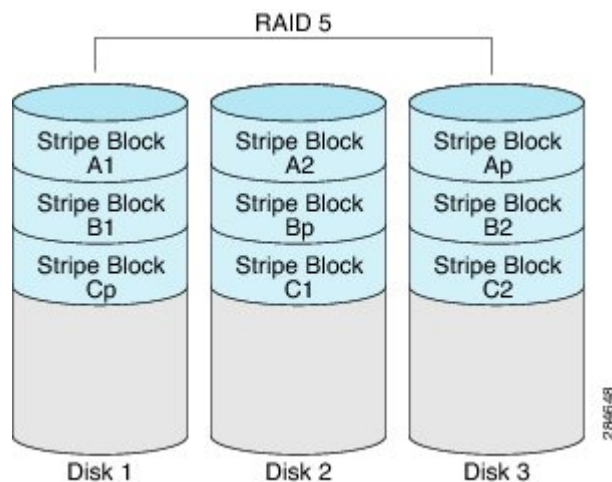
RAID 1 supports fault tolerance and hot-swapping. When one disk drive fails, you can remove the faulty disk drive and replace it with a new disk drive.

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 6: 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 Options	Description	Advantages	Disadvantages
RAID 0	Data stored evenly in stripe blocks without redundancy	<ul style="list-style-type: none"> • Better storage • Improved performance 	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • High availability • Fault tolerance • Hot spare • Hot-swapping 	<ul style="list-style-type: none"> • Less storage • Performance impact
RAID 5	Data stored in stripe blocks with parity data staggered across all disk drives	<ul style="list-style-type: none"> • Better storage efficiency than RAID 1 • Better fault tolerance than RAID 0 • Low cost of redundancy • Hot-swapping 	<ul style="list-style-type: none"> • Slow performance
Non-RAID	Disk drives not configured for RAID Also referred to as JBOD	<ul style="list-style-type: none"> • Portable 	<ul style="list-style-type: none"> • No error checking • No fault tolerance • No hot-swapping • No redundancy • No hot spare

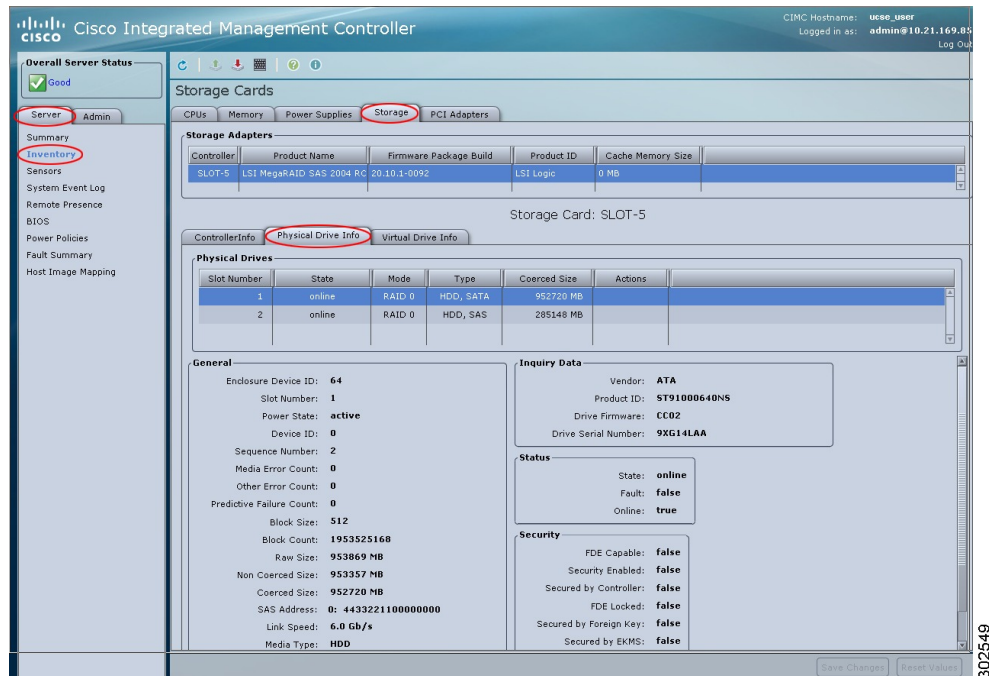
Configuring RAID Using the CIMC GUI

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 **Inventory**.
- Step 3** In the **Inventory** pane, click the **Storage** tab.
- Step 4** 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 Card** area.
- Step 5** To configure RAID, make sure that the status of each of the physical drives that you want to configure as RAID is **unconfigured good**. To change the physical drive status, do the following:
 - a) In the tabbed menu of the **Storage Card** area, click the **Physical Drive Info** tab.

Figure 7: Physical Drive Info Tab

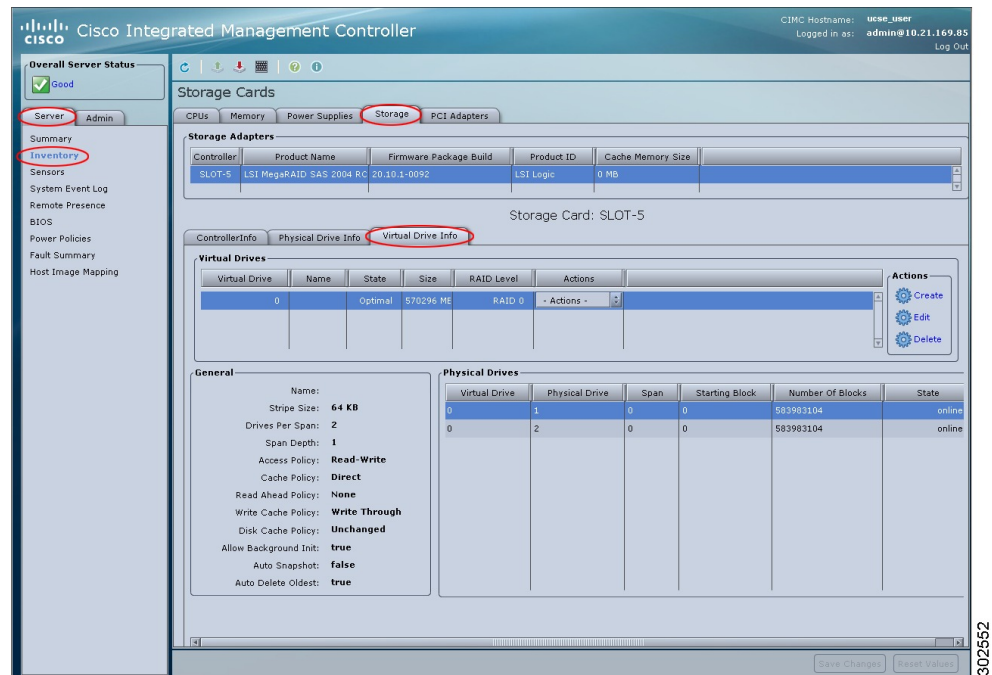


- b) From the **Actions** column in the **Physical Drives** pane, choose **Set State** from the drop-down list. The **Change Physical Drive State** dialog box appears.

- c) From the **Change Physical Drive State** to drop-down list, choose **unconfigured good**, and then click **Confirm**.

Step 6 In the tabbed menu of the **Storage Card** area, click the **Virtual Drive Info** tab.

Figure 8: Virtual Drive Info Tab



Step 7 In the **Actions** area of the **Virtual Drive Info** tab, click **Create**. The **Configure Virtual Drive** dialog box appears. Complete the following fields as appropriate:

Name	Description
RAID Level drop-down list	<p>The RAID level options. This can be one of the following:</p> <ul style="list-style-type: none"> • RAID 0—Block striping. • RAID 1—Mirroring. • RAID 5—Block striping with parity. <p>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 PCIe option supports RAID 0 and RAID 1 levels.</p>
Unconfigured Drives table	Displays the drives that are unconfigured and available for RAID configuration.
Add >	Moves the selected drives from the Unconfigured Drives table to the Selected Drives table.

Name	Description
< Remove	Removes the selected drives from the Selected Drives table.
Selected Drives table	Displays the drives that are selected for RAID configuration.

Step 8 Click **Next**.

The **Configure RAID Parameters** dialog box appears. Complete the following fields as appropriate:

Name	Description
Strip Size drop-down list	<p>The strip size options. This can be one of the following:</p> <ul style="list-style-type: none"> • 64 KB • 32 KB • 16 KB • 8 KB <p>Caution The smaller strip sizes have a known problem with VMware vSphere Hypervisor™ installation; therefore, if you are installing the vSphere platform, we recommend that you select the 64 KB strip size option.</p>
Access Policy drop-down list	<p>Configures host access privileges. This can be one of the following:</p> <ul style="list-style-type: none"> • Read-Write—The host has full access to the drive. • Read Only—The host can only read data from the drive. • Blocked—The host cannot access the drive.
Drive Cache drop-down list	<p>How the controller handles drive caching. This can be one of the following:</p> <ul style="list-style-type: none"> • Unchanged—The controller uses the caching policy specified on the drive. • Enable—Caching is enabled on the drives. • Disable—Caching is disabled on the drives.
Initialization drop-down list	<p>How the controller initializes the drives. This can be one of the following:</p> <ul style="list-style-type: none"> • Quick—Controller initializes the drive quickly. • Full—Controller does a complete initialization of the new configuration. • None—Controller does not initialize the drives.

Name	Description
HSP check-box	Designates the drive as a hot spare drive. Note Applicable for RAID 1 only.
Set Bootable check-box	How the controller boots the drive. This can be one of the following: <ul style="list-style-type: none"> • Enable—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.

Step 9 Click **Next**.
The **Confirm RAID Configuration** dialog box appears.

Step 10 Review the RAID configuration, and then click **Submit** to accept the changes.

Modifying RAID Configuration

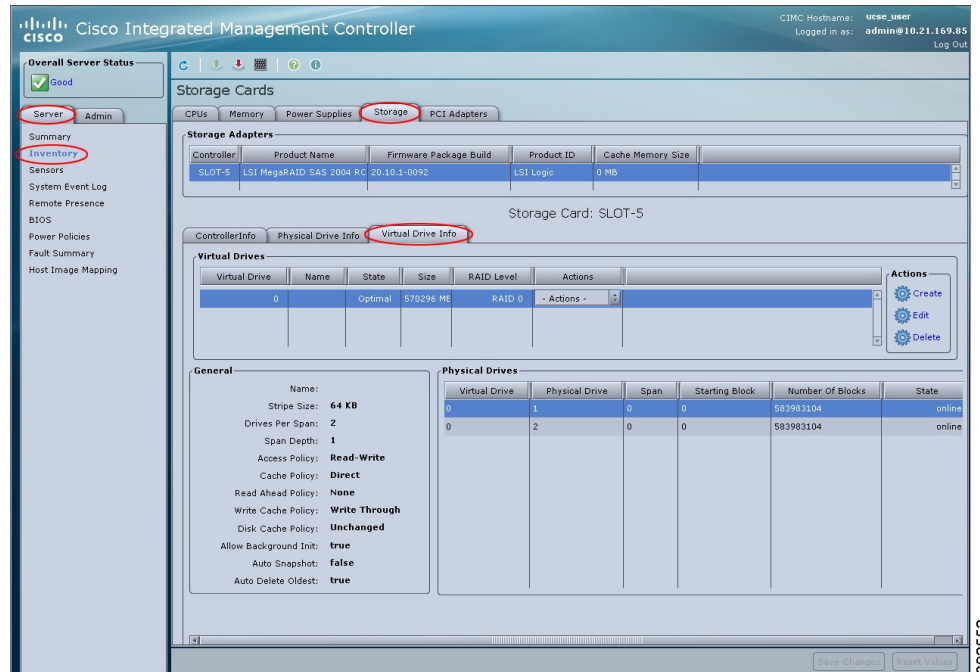
Use this procedure to enable or disable auto rebuild on the storage controller, to verify disk drives for consistency, and to reconstruct a virtual drive.

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 **Storage** tab.
- Step 4** 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 Card** area.

Step 5 In the tabbed menu of the **Storage Card** area, click the **Virtual Drive Info** tab.

Figure 9: Virtual Drive Info Tab



Step 6 In the **Actions** area of the **Virtual Drive Info** tab, click **Edit**.
The **Modify RAID Configuration** dialog box appears. Do the following as appropriate:

Name	Description
Unconfigured Drives table	Displays the drives that are unconfigured and are available for RAID configuration.
Hot Spares table	Displays the drive that is designated as a spare drive. Note Applicable for RAID 1 only.
Enable or Disable Auto Rebuild button	Whether the rebuild process starts on the new drive automatically when a virtual drive gets degraded. This can be one of the following: <ul style="list-style-type: none"> • Enabled—If a drive gets degraded and a new drive is plugged in, the rebuild process on the new drive starts automatically. 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 gets degraded and a new drive is plugged in, the new drive is ignored. You must manually start the rebuild process on the new drive.

Name	Description
Reconstruct Virtual Drive button	<p>Opens the Reconstruct Virtual Drive dialog box, which allows you to add or delete physical drives as needed to migrate the virtual drive to the specified new RAID level.</p> <p>Note You can retain or increase the size of the virtual drive but you cannot decrease its size.</p> <p>For information about the supported options to migrate the virtual drive to the specified new RAID level, see Reconstructing the Virtual Drive Options.</p>
Cancel button	Closes the dialog box without making any changes.

Reconstructing the Virtual Drive Options

To migrate (reconstruct) the virtual drive to a new RAID level, you must add or remove physical drives. When you add or remove the 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 RAID 1 creates a mirrored set of disk drives, the RAID 0 to RAID 1 migration would cause the size of the virtual drive to decrease, which is not supported.



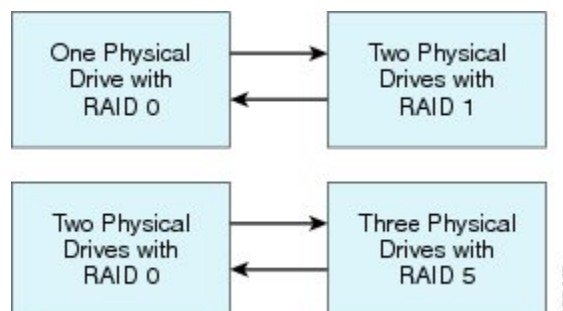
Caution

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

Retaining the Size of the Virtual Drive Options

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 10: 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.

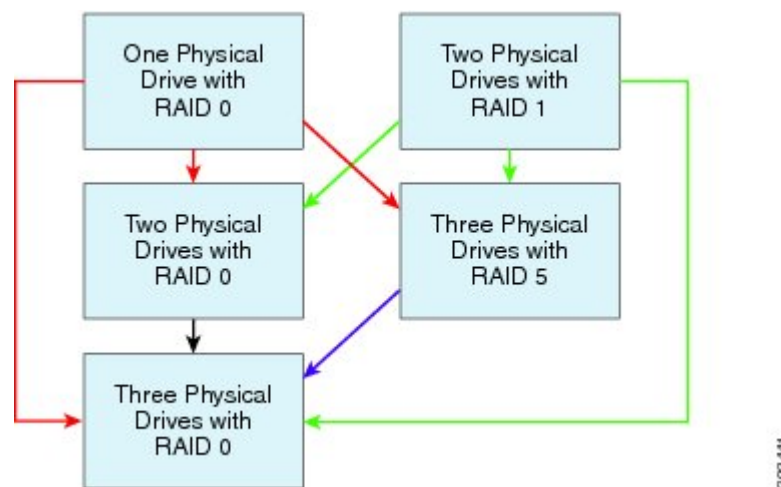
Table 1: Retaining the Virtual Drive Size

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.

Increasing the Size of the Virtual Drive Options

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 11: 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 2: 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.

From:	Migrate to:	Add or Remove 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

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

Before You Begin

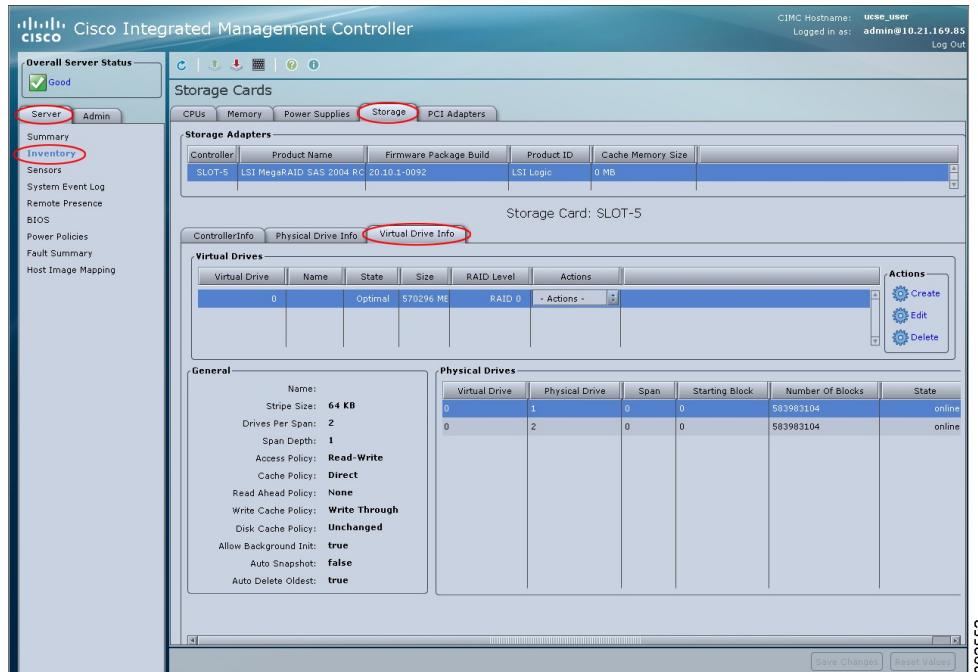
See [Reconstructing the Virtual Drive Options](#).

Procedure

-
- Step 1** In the **Navigation** pane, click the **Server** tab.
 - Step 2** On the **Server** tab, click **Inventory**.
 - Step 3** In the **Inventory** pane, click the **Storage** tab.
 - Step 4** 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 Card** area.

Step 5 In the tabbed menu of the **Storage Card** area, click the **Virtual Drive Info** tab.

Figure 12: Virtual Drive Info Tab



Step 6 In the **Actions** area of the **Virtual Drive Info** tab, click **Edit**.
The **Modify RAID Configuration** dialog box opens.

Step 7 Click the **Reconstruct Virtual Drive** button.
The **Reconstruct Virtual Drive** dialog box appears. Complete the following as appropriate:

Name	Description
Add Drive table	Adds the physical drives to migrate the virtual drive to the specified new RAID level. Note To select a single drive, click the drive. To select multiple drives or to unselect a drive, press the Ctrl key, and then click the left mouse button.
Remove Drive table	Removes the physical drives to migrate the virtual drive to the specified new RAID level. Note To select a single drive, click the drive. To select multiple drives or to unselect a drive, press the Ctrl key, and then click the left mouse button.
Current RAID Level drop-down list	The current RAD level configured on the drives.

Name	Description
New RAID Level 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 .
Confirm button	Starts the reconstruction process on the virtual drives.
Cancel button	Closes the dialog box without making any changes.

Deleting RAID Configuration

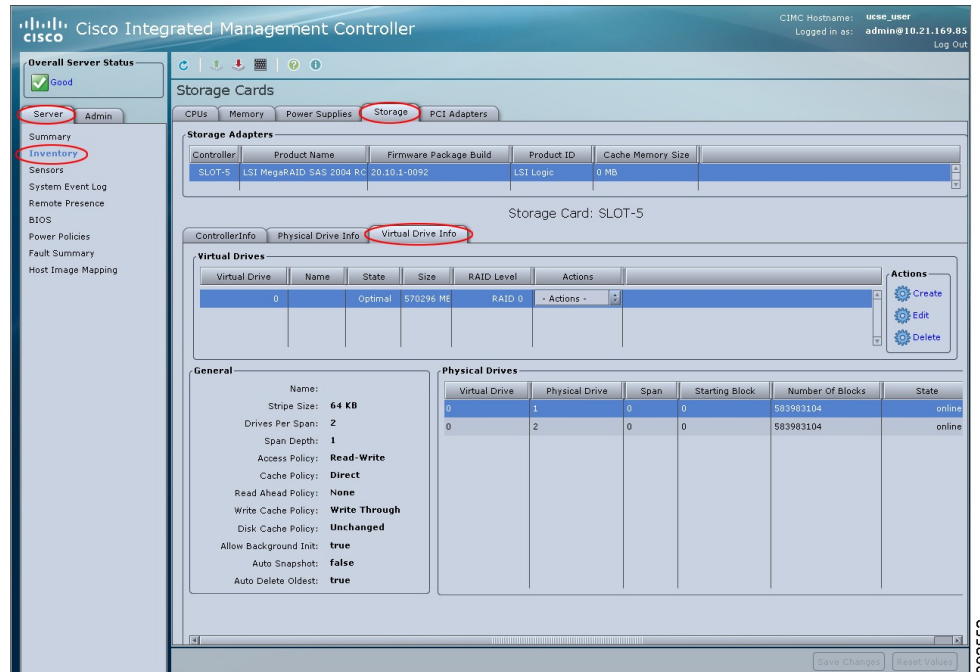
Use this procedure to clear all RAID or foreign configurations.

Procedure

- Step 1** In the **Navigation** pane, click the **Server** tab.
- Step 2** On the **Server** tab, click **Inventory**.
- Step 3** In the **Inventory** pane, click the **Storage** tab.
- Step 4** 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 Card** area.

Step 5 In the tabbed menu of the **Storage Card** area, click the **Virtual Drive Info** tab.

Figure 13: Virtual Drive Info Tab



Step 6 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.
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 configuration in the existing drives stay untouched.
Proceed button	Continues with the delete operation.

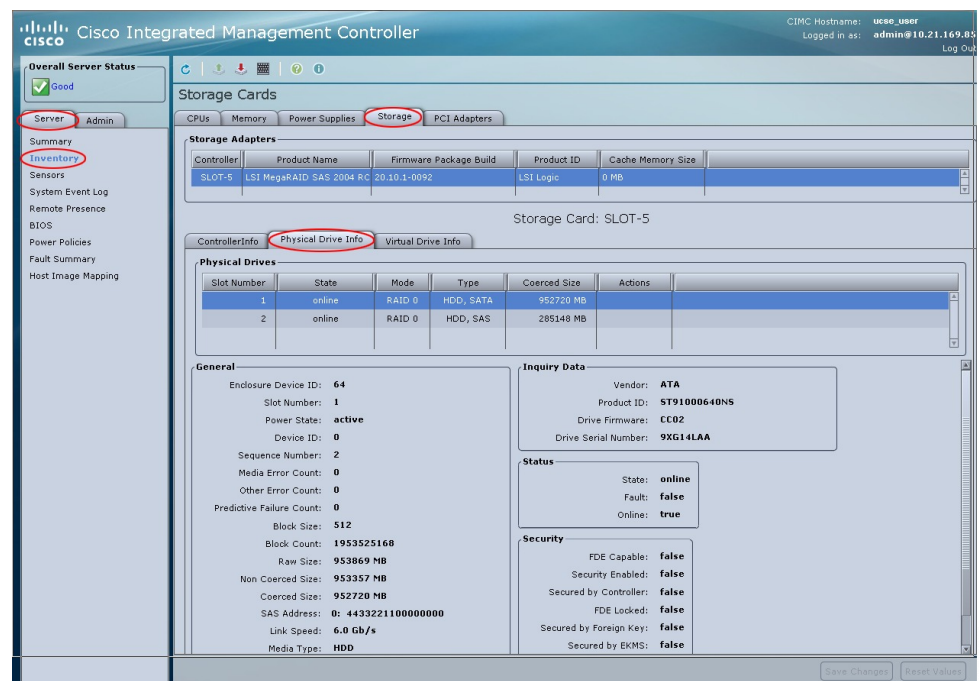
Changing the Physical Drive State

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 **Inventory**.
- Step 3** In the **Inventory** pane, click the **Storage** tab.
- Step 4** 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 Card** area.
- Step 5** In the tabbed menu of the **Storage Card** area, click the **Physical Drive Info** tab.

Figure 14: Physical Drive Info Tab



- Step 6** From the **Actions** column in the **Physical Drives** pane, choose **Set State** from the drop-down list. The **Change Physical Drive State** dialog box appears.
- Step 7** From the **Change Physical Drive State to** drop-down list, choose one of the following:
 - **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 8 Click **Confirm**.

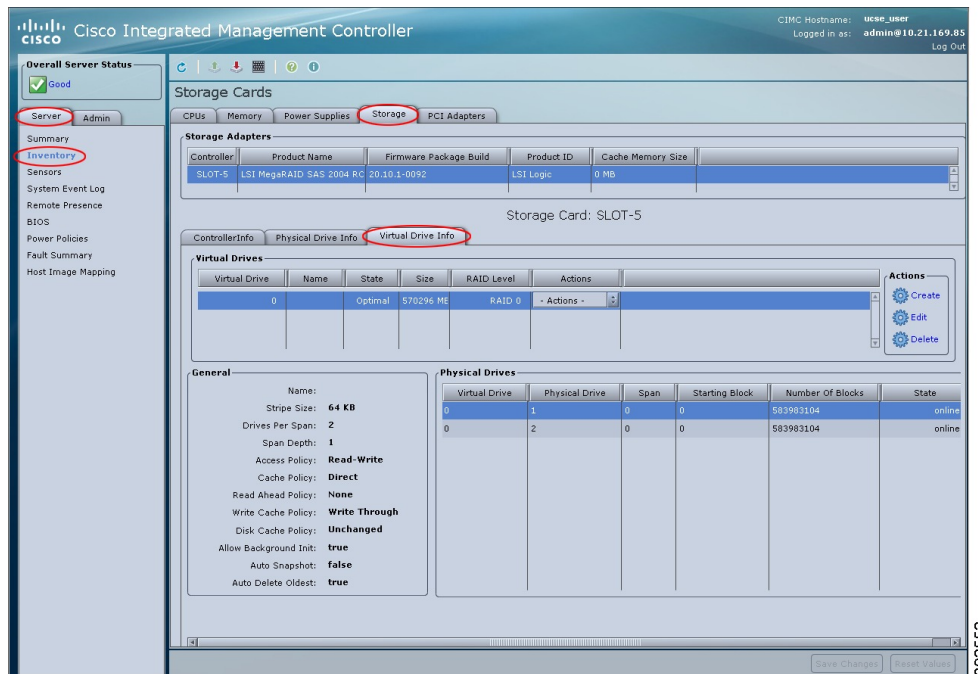
Enabling Auto Rebuild on the Storage Controller

Use this procedure to rebuild a disk drive automatically. If one of the disk drives that is configured with RAID gets 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 **Inventory**.
- Step 3** In the **Inventory** pane, click the **Storage** tab.
- Step 4** 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 Card** area.
- Step 5** In the tabbed menu of the **Storage Card** area, click the **Virtual Drive Info** tab.

Figure 15: Virtual Drive Info Tab



Step 6 In the **Actions** area of the **Virtual Drive Info** tab, click **Edit**.

The **Modify RAID Configuration** dialog box appears.

- Step 7** Make sure the **Enable Auto Rebuild** button appears, otherwise, click the **Disable Auto Rebuild** to enable it.

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

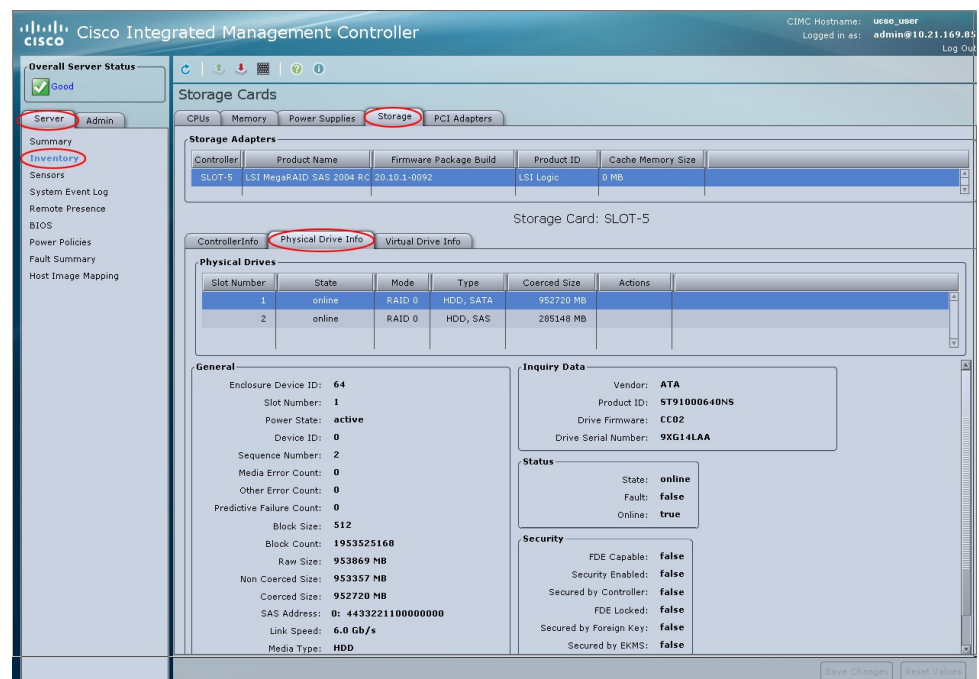
Rebuilding the Physical Drive

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 **Inventory**.
- Step 3** In the **Inventory** pane, click the **Storage** tab.
- Step 4** 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 Card** area.
- Step 5** In the tabbed menu of the **Storage Card** area, click the **Physical Drive Info** tab.

Figure 16: Physical Drive Info Tab



- Step 6** From the **Actions** column in the **Physical Drives** pane, choose **Rebuild Physical Drive** from the drop-down list.
The **Rebuild Physical Drive** dialog box appears.
- Step 7** In the **Rebuild Physical Drive** dialog box, click **Confirm**.
-

Making the Disk Drive Bootable

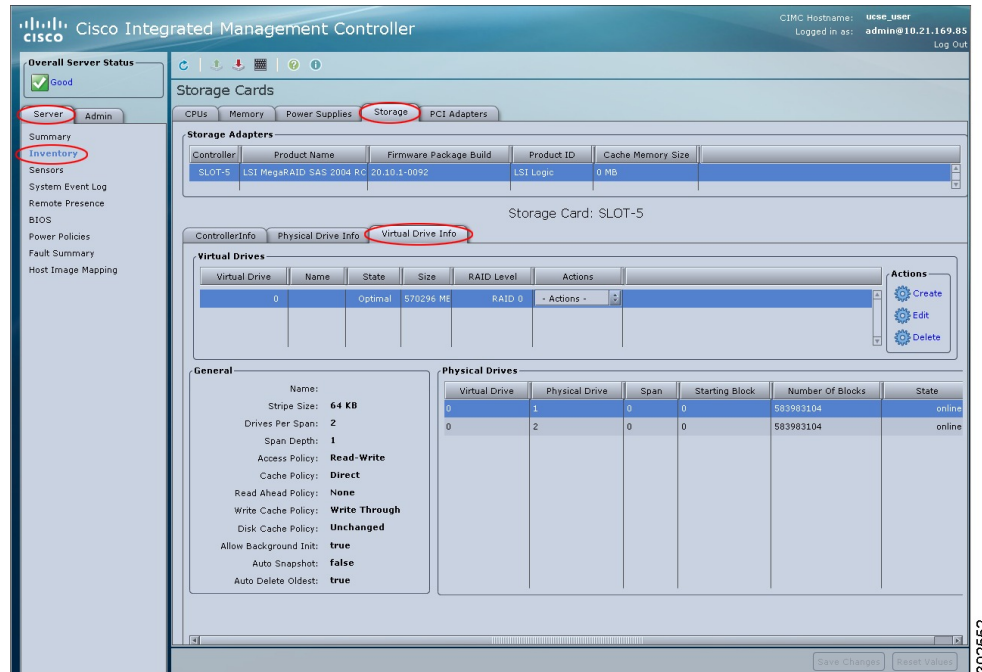
When you configure RAID, the RAID configuration wizard has a check box that allows you to make the disk drive bootable. If for some reason you did not check the **Set Bootable** checkbox during the RAID configuration process, you can use this procedure to make the disk drive bootable.

Procedure

- Step 1** In the **Navigation** pane, click the **Server** tab.
- Step 2** On the **Server** tab, click **Inventory**.
- Step 3** In the **Inventory** pane, click the **Storage** tab.
- Step 4** 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 Card** area.
- Step 5** To make a virtual drive bootable, do the following:

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

Figure 17: Virtual Drive Info Tab

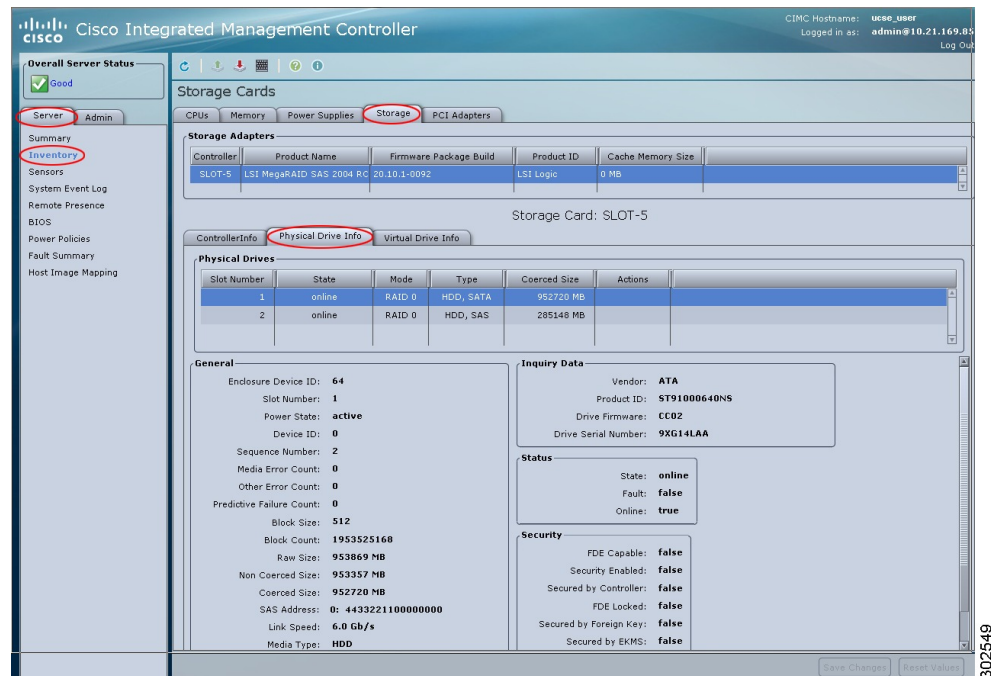


- b) From the **Actions** column of the appropriate virtual drive, choose **Set Bootable** from the drop-down list. The **Change Boot Drive** dialog box appears.
- c) Click **Confirm** to change the boot drive to this virtual drive.

Step 6 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 18: Physical Drive Info Tab



- b) From the **Actions** column of the appropriate physical drive, choose **Set Bootable** from the drop-down list. The **Change Boot Drive** dialog box appears.
- c) Click **Confirm** to change the boot drive to this physical drive.
- Note** The physical drive must be in non-RAID mode to be bootable.

Step 7 To verify which drive is bootable, click the **Controller Info** tab, and see the **Current Boot Drive** information in the **Settings** area.

Configuring BIOS Settings

Installing BIOS Firmware Through the Browser

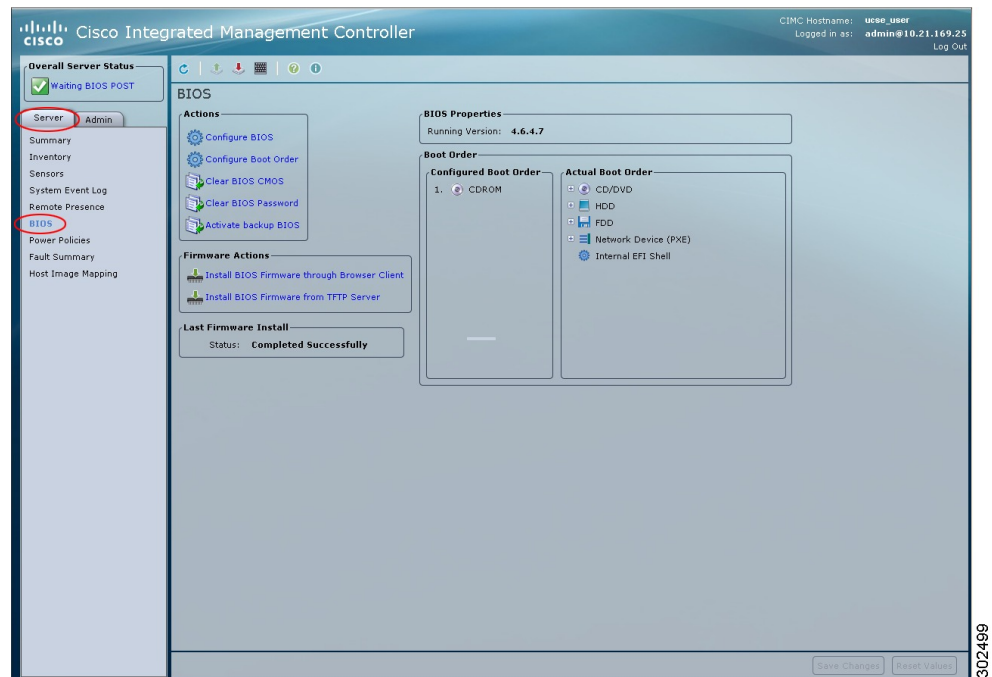
Before You Begin

- Log into CIMC as a user with admin privileges.
- Obtain the BIOS firmware file from Cisco Systems. See [Obtaining Software from Cisco](#).
- 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 19: 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

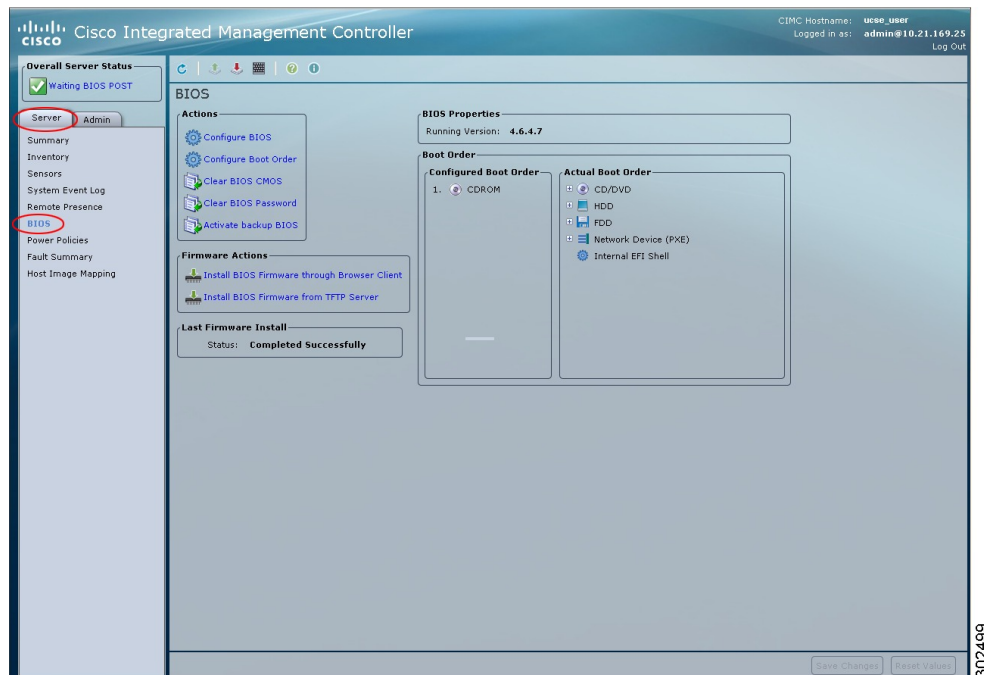
Before You Begin

- Log into CIMC as a user with admin privileges.
- Obtain the BIOS firmware file from Cisco Systems. See [Obtaining Software from Cisco Systems](#).
- 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 20: 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 firmware image resides.
Image Path and Filename field	The 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.

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

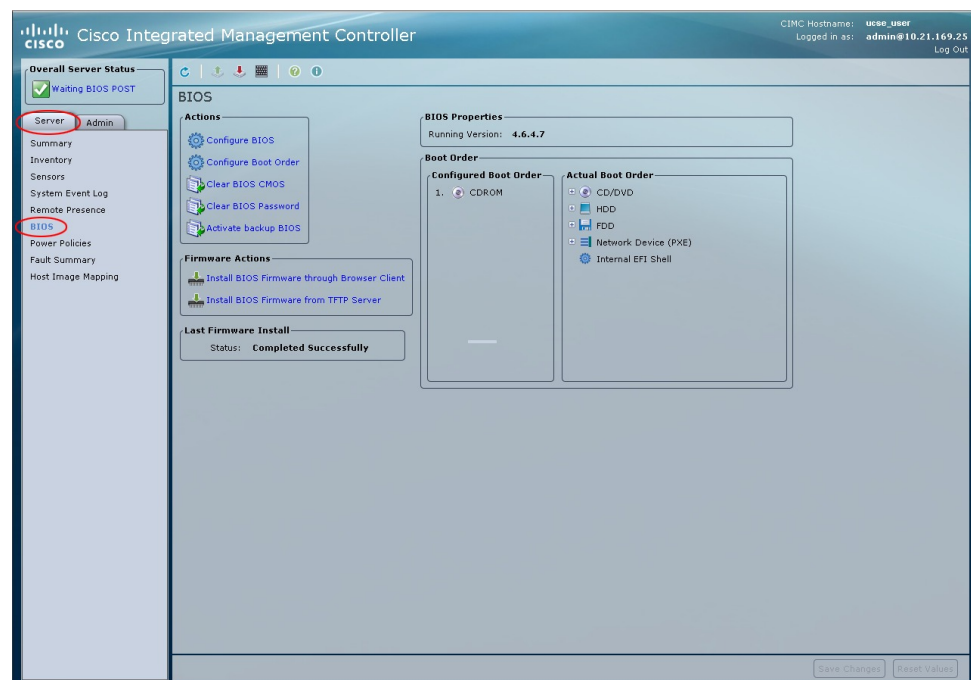
- Log into CIMC as a user with admin privileges.

Procedure

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

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

Figure 21: 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

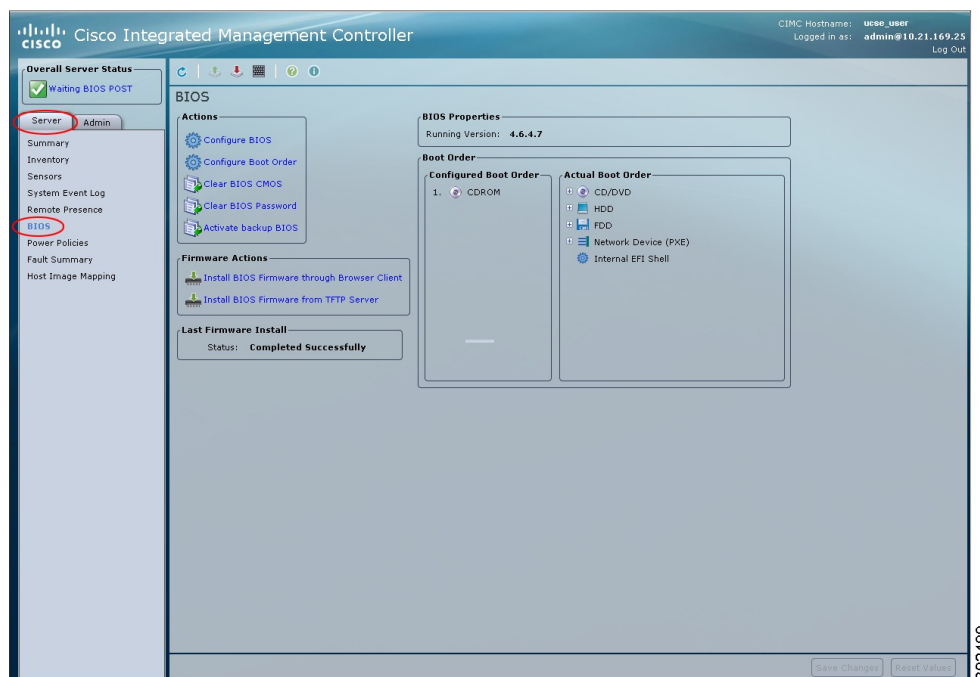
You must log in with admin privileges to perform this task.

Procedure

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

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

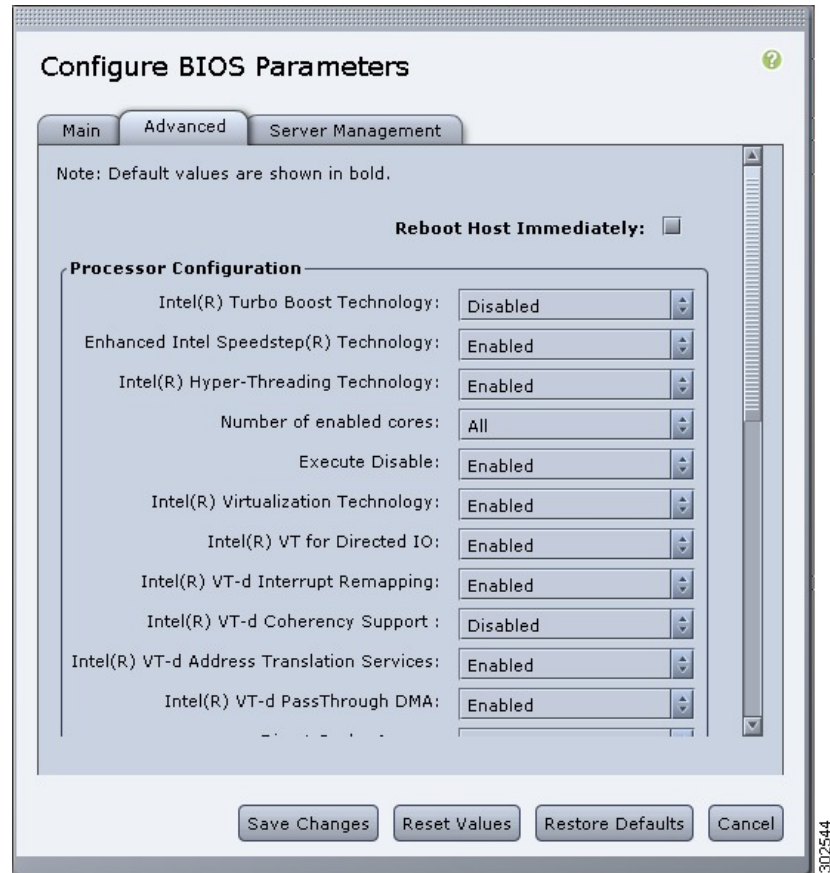
Figure 22: BIOS



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 23: 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.

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 38](#)
- [Advanced: Memory BIOS Settings, on page 43](#)
- [Advanced: Serial Port BIOS Settings, on page 43](#)
- [Advanced: USB BIOS Settings, on page 44](#)

Step 7 Click **Save Changes**.

Configuring Server Management BIOS Settings

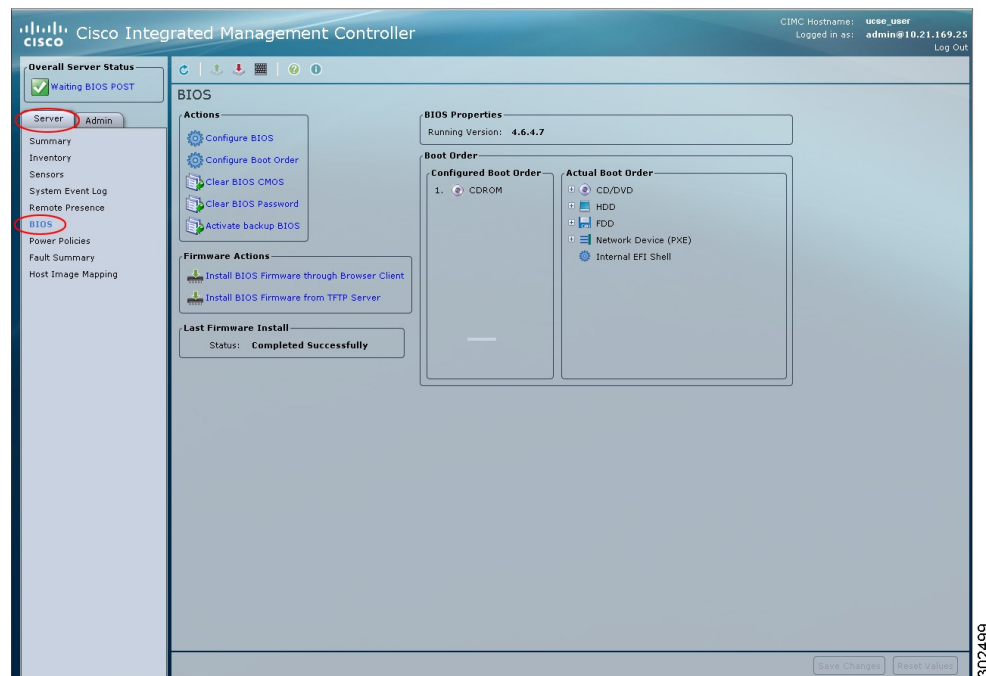
Before You Begin

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**.

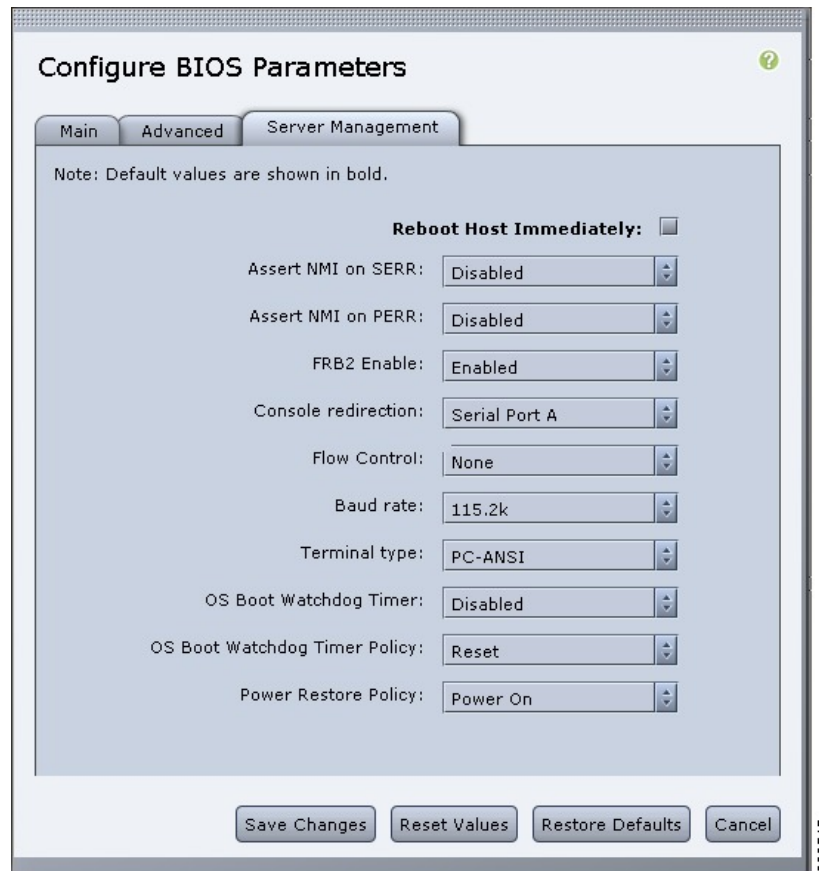
Figure 24: BIOS



- 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 25: 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.

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 44](#)

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

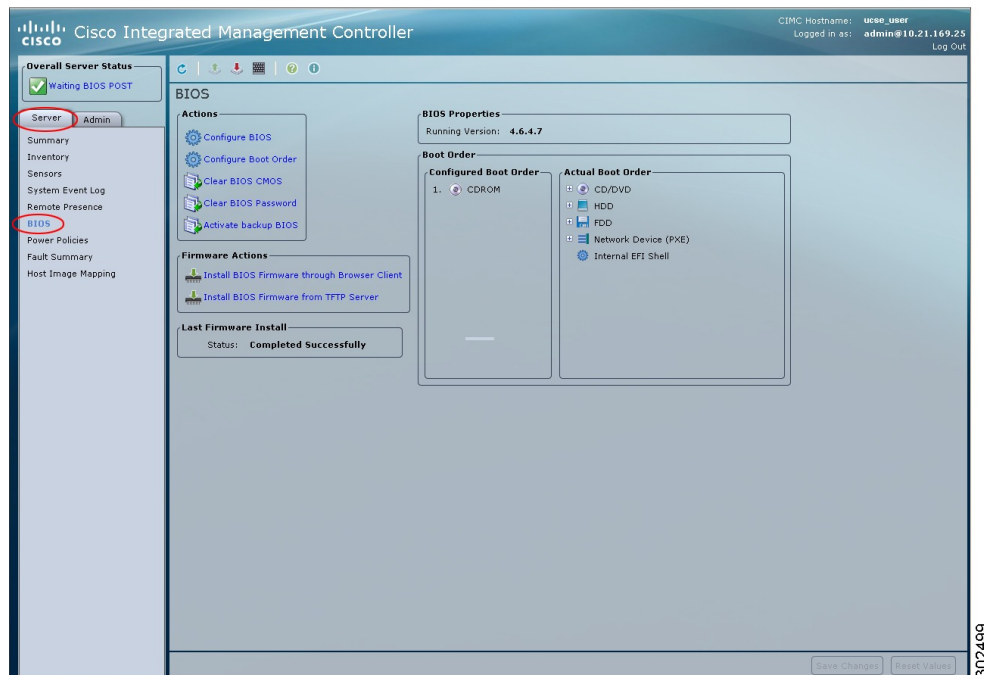
- Log into CIMC as a user with admin privileges.
- Power off the server.

Procedure

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

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

Figure 26: 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

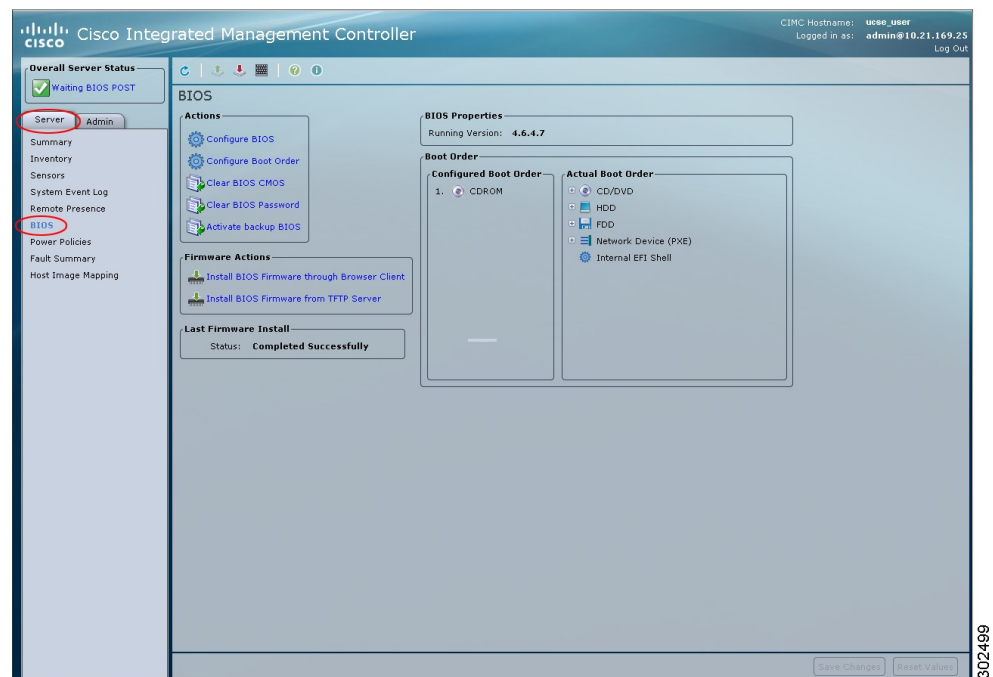
- Log into CIMC as a user with admin privileges.

Procedure

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

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

Figure 27: 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	<p>If checked, the server is rebooted immediately after you click Save Changes.</p> <p>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.</p>

Advanced: Processor BIOS Settings

Name	Description
Intel Turbo Boost Technology	<p>Whether the processor uses Intel Turbo Boost Technology, which allows the processor to automatically increase its frequency if it is running below power, temperature, or voltage specifications. This can be one of the following:</p> <ul style="list-style-type: none"> • Disabled—The processor does not increase its frequency automatically. • Enabled—The processor utilizes Turbo Boost Technology if required.
Enhanced Intel Speedstep Technology	<p>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:</p> <ul style="list-style-type: none"> • 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. <p>We recommend that you contact your operating system vendor to make sure the operating system supports this feature.</p>

Name	Description
Intel Hyper-Threading Technology	<p>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:</p> <ul style="list-style-type: none"> • Disabled—The processor does not permit hyperthreading. • Enabled—The processor allows for the parallel execution of multiple threads. <p>We recommend that you contact your operating system vendor to make sure the operating system supports this feature.</p>
Number of Enabled Cores	<p>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:</p> <ul style="list-style-type: none"> • 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. <p>We recommend that you contact your operating system vendor to make sure the operating system supports this feature.</p>
Execute Disable	<p>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:</p> <ul style="list-style-type: none"> • Disabled—The processor does not classify memory areas. • Enabled—The processor classifies memory areas. <p>We recommend that you contact your operating system vendor to make sure the operating system supports this feature.</p>

Name	Description
Intel Virtualization Technology	<p>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:</p> <ul style="list-style-type: none"> • Disabled—The processor does not permit virtualization. • Enabled—The processor allows multiple operating systems in independent partitions. <p>Note If you change this option, you must power cycle the server before the setting takes effect.</p>
Intel VT for Directed IO	<p>Whether the processor uses Intel Virtualization Technology for Directed I/O (VT-d). This can be one of the following:</p> <ul style="list-style-type: none"> • Disabled—The processor does not use virtualization technology. • Enabled—The processor uses virtualization technology.
Intel VT-d Interrupt Remapping	<p>Whether the processor supports Intel VT-d Interrupt Remapping. This can be one of the following:</p> <ul style="list-style-type: none"> • Disabled—The processor does not support remapping. • Enabled—The processor uses VT-d Interrupt Remapping as required.
Intel VT-d Coherency Support	<p>Whether the processor supports Intel VT-d Coherency. This can be one of the following:</p> <ul style="list-style-type: none"> • Disabled—The processor does not support coherency. • Enabled—The processor uses VT-d Coherency as required.
Intel VT-d Address Translation Services	<p>Whether the processor supports Intel VT-d Address Translation Services (ATS). This can be one of the following:</p> <ul style="list-style-type: none"> • Disabled—The processor does not support ATS. • Enabled—The processor uses VT-d ATS as required.
Intel VT-d PassThrough DMA	<p>Whether the processor supports Intel VT-d Pass-through DMA. This can be one of the following:</p> <ul style="list-style-type: none"> • Disabled—The processor does not support pass-through DMA. • Enabled—The processor uses VT-d Pass-through DMA as required.

Name	Description
Direct Cache Access	<p>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:</p> <ul style="list-style-type: none"> • 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.
Processor C3 Report	<p>Whether the processor sends the C3 report to the operating system. This can be one of the following:</p> <ul style="list-style-type: none"> • 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	<p>Whether the processor sends the C6 report to the operating system. This can be one of the following:</p> <ul style="list-style-type: none"> • Disabled—The processor does not send the C6 report. • Enabled—The processor sends the C6 report.
Hardware Prefetcher	<p>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:</p> <ul style="list-style-type: none"> • Disabled—The hardware prefetcher is not used. • Enabled—The processor uses the hardware prefetcher when cache issues are detected. <p>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.</p>

Name	Description
Package C State Limit	<p>The amount of power available to the server components when they are idle. This can be one of the following:</p> <ul style="list-style-type: none"> • 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. <p>Note This option is used only if CPU C State is enabled.</p>
Patrol Scrub	<p>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:</p> <ul style="list-style-type: none"> • 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	<p>Whether the system allows you to perform a memory scrub on demand. This can be one of the following:</p> <ul style="list-style-type: none"> • Disabled—The system does not allow you to perform a memory scrub on demand. • Enabled—The system allows you to perform a memory scrub on demand. If errors are found, the system attempts to fix them or marks the location as unreadable. This process allows the system to run faster and with fewer data processing errors.

Name	Description
Device Tagging	<p>Whether the system allows you to group devices and interfaces based on a variety of information, including descriptions, addresses, and names. This can be one of the following:</p> <ul style="list-style-type: none"> • Disabled—The system does not allow you to group devices and interfaces. • Enabled—The system allows you to group devices and interfaces based on a variety of information, including descriptions, addresses, and names.

Advanced: Memory BIOS Settings

Name	Description
Select Memory RAS	<p>How the memory reliability, availability, and serviceability (RAS) is configured for the server. This can be one of the following:</p> <ul style="list-style-type: none"> • 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	<p>Whether serial port A is enabled or disabled. This can be one of the following:</p> <ul style="list-style-type: none"> • 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: <ul style="list-style-type: none"> • 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: <ul style="list-style-type: none"> • 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	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: <ul style="list-style-type: none"> • 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: <ul style="list-style-type: none"> • 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	<p>Whether the FRB2 timer is used by CIMC to recover the system if it hangs during POST. This can be one of the following:</p> <ul style="list-style-type: none"> • 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	<p>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:</p> <ul style="list-style-type: none"> • 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. <p>Note If you enable this option, you also disable the display of the Quiet Boot logo screen during POST.</p>
Flow Control	<p>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:</p> <ul style="list-style-type: none"> • None—No flow control is used. • RTS-CTS—RTS/CTS is used for flow control. <p>Note This setting must match the setting on the remote terminal application.</p>
Baud Rate	<p>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:</p> <ul style="list-style-type: none"> • 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. <p>Note This setting must match the setting on the remote terminal application.</p>

Name	Description
Terminal Type	<p>What type of character formatting is used for console redirection. This can be one of the following:</p> <ul style="list-style-type: none"> • 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. <p>Note This setting must match the setting on the remote terminal application.</p>
OS Boot Watchdog Timer	<p>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:</p> <ul style="list-style-type: none"> • 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	<p>The action the system takes when the watchdog timer expires. This can be one of the following:</p> <ul style="list-style-type: none"> • 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. <p>Note This option is only applicable if you enable the OS Boot Watchdog Timer.</p>
Power Restore Policy	<p>The action the system takes when the AC power is restored. This can be one of the following:</p> <ul style="list-style-type: none"> • 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.

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.

