



Managing Storage Using RAID



Note If you purchased E-Series Server Option 1 (E-Series Server without a preinstalled operating system or hypervisor), and you want to store data files on local Redundant Array of Inexpensive Disks (RAID), you must configure RAID.



Important 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:

- [Configuring RAID, on page 1](#)

Configuring RAID

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.



Note On Cisco UCS M1 and M2 servers, you can use the CIMC GUI or the WebBIOS, which is accessible from the KVM console, to configure RAID. On Cisco UCS M3 servers, you can use the CIMC GUI or the MegaRAID controller, which is accessible from the KVM console, to configure RAID.

Configuring RAID Using the CIMC GUI



Note

On Cisco UCS M1 and M2 servers, you can use the CIMC GUI or the WebBIOS, which is accessible from the KVM console, to configure RAID. On Cisco UCS M3 servers, you can use the CIMC GUI or the MegaRAID controller, which is accessible from the KVM console, to configure RAID.

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** menu.

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 1: Virtual Drive Info Tab

The screenshot shows the Cisco Integrated Management Controller (CIMC) GUI. The top navigation bar includes 'Cisco Integrated Management Controller' and a user profile 'admin@192.168.1.1'. The main content area is titled 'MegaRAID SAS 3108 (SLOT-5) / Controller Info'. Below this, there are tabs for 'Controller Info', 'Physical Drive Info', 'Virtual Drive Info', 'Battery Backup Unit', and 'Storage Log'. The 'Virtual Drive Info' tab is active, showing a 'Create Virtual Drive from Unused Physical Drives' button. The main content area is divided into two columns: 'Health/Status' and 'Settings'. The 'Health/Status' column shows 'Composite Health: Good', 'Controller Status: Optimal', 'RAID Chip Temperature: 54', and 'Storage Firmware Log Status: Not Downloaded'. The 'Settings' column shows various parameters like 'Predictive Fail Poll Interval: 300 sec', 'Rebuild Rate: 30 %', 'Patrol Read Rate: 30 %', 'Consistency Check Rate: 30 %', 'Reconstruction Rate: 30 %', 'Cache Flush Interval: 4 sec', 'Max Drives To Spin Up At Once: 2', 'Delay Among Spinup Groups: 12 sec', 'Physical Drive Coercion Mode: 128 MB', 'Cluster Mode: false', 'Battery Warning: false', 'ECC Bucket Leak Rate: 1440 min', 'Expose Enclosure Devices: true', 'Maintain PD Fail History: false', 'Enable Copyback on SMART: true', 'Enable Copyback to SSD on SMART Error: true', 'Native Command Queuing: enabled', 'JBOD: true', 'Enable Spin Down of Unconfigured Drives: true', 'Enable SSD Patrol Read: false', and 'AutoEnhancedImport: true'. The left navigation pane shows 'Storage' selected, with 'MegaRAID SAS 3108 (SLOT-5)' highlighted.

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Figure 2: Virtual Drive Info Tab

- Step 4** In the **Actions** area of the **Virtual Drive Info** tab, click **Create**.
The **Configure Virtual Drive** dialog box appears.

Create Virtual Drive from Unused Physical Drives

RAID Level: 0

Create Drive Groups

Physical Drives Selected 0 / Total 2

ID	Size(MB)	Model	Interface	Type
2	3662208 MB	ATA	SSD	SATA
3	3662208 MB	ATA	SSD	SATA

Drive Groups

Name
No data available

Virtual Drive Properties

Name: RAID0

Access Policy: Read Write

Read Policy: No Read Ahead

Cache Policy: Direct IO

Disk Cache Policy: Unchanged

Write Policy: Write Through

Strip Size (MB): 64k

Size: MB

Generate XMLAPI Request Create Virtual Drive Close

Figure 3
Virtual Drive Dialog Box

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Configure

- 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.

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 the PCIe option supports RAID 0 and RAID 1 levels.</p>
Name field	<p>The name of the virtual drive.</p> <p>Enter a maximum of 15 characters. The characters can have numbers and upper- or lower-case letters. Special characters are not supported.</p>
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
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—The controller initializes the drive quickly. This is the default and recommended option. • Full—The controller does a complete initialization of the new configuration. <p>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.</p> <ul style="list-style-type: none"> • None—The controller does not initialize the drives.

Name	Description
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"> • Disable—Caching is disabled on the drives. <p>Note This is the default and recommended option.</p> <ul style="list-style-type: none"> • 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. <p>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.</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 read only data from the drive. • Blocked—The host cannot access the drive.
Set this Virtual Drive Bootable check box	<p>How the controller boots the drive. This can be one of the following:</p> <ul style="list-style-type: none"> • Enable—The controller makes this drive bootable. • Disable—This drive is not bootable. <p>Note If you plan to install an operating system or hypervisor into the RAID array, we recommend that you check this check box.</p>
Use the Remaining Drive as Hot Spare check box	<p>Designates the drive that is in the Available Drives table as a hot spare drive.</p> <p>Note Applicable for RAID 1 only. This check box is greyed out for other RAID levels.</p> <p>Applicable for double-wide E-Series Servers.</p>

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

Configuring RAID Using the WebBIOS

**Important**

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.

**Note**

Use WebBIOS to configure RAID on M1 and M2 servers. Use MegaRAID controller to configure RAID on M3 servers. See [Configuring RAID Using the MegaRAID Controller, on page 7](#)

Procedure

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

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

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

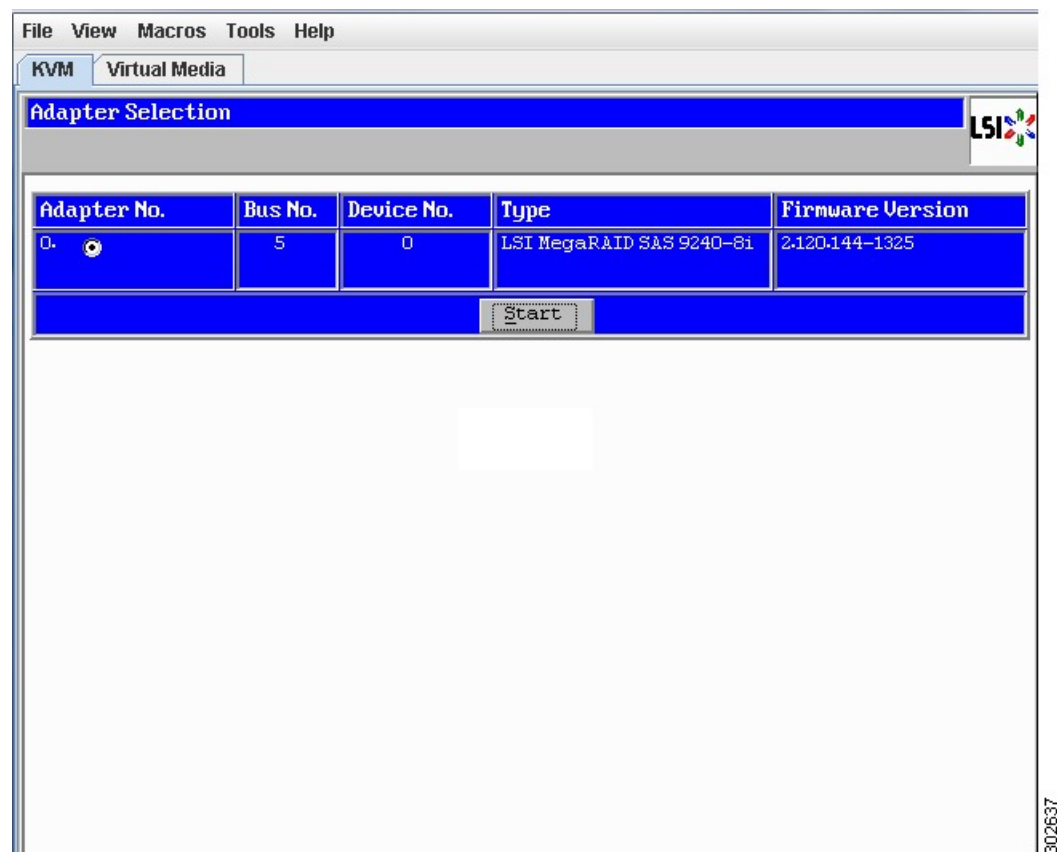
The **KVM Console** opens in a separate window.

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

Step 5 Press the **Ctrl** key, and then press **H** during bootup to access the WebBIOS.

The **Adapter Selection** page from LSI Logic appears, which allows you to configure RAID. For information about this page, see the LSI Logic documentation.

Figure 4: WebBIOS



Configuring RAID Using the MegaRAID Controller



Important

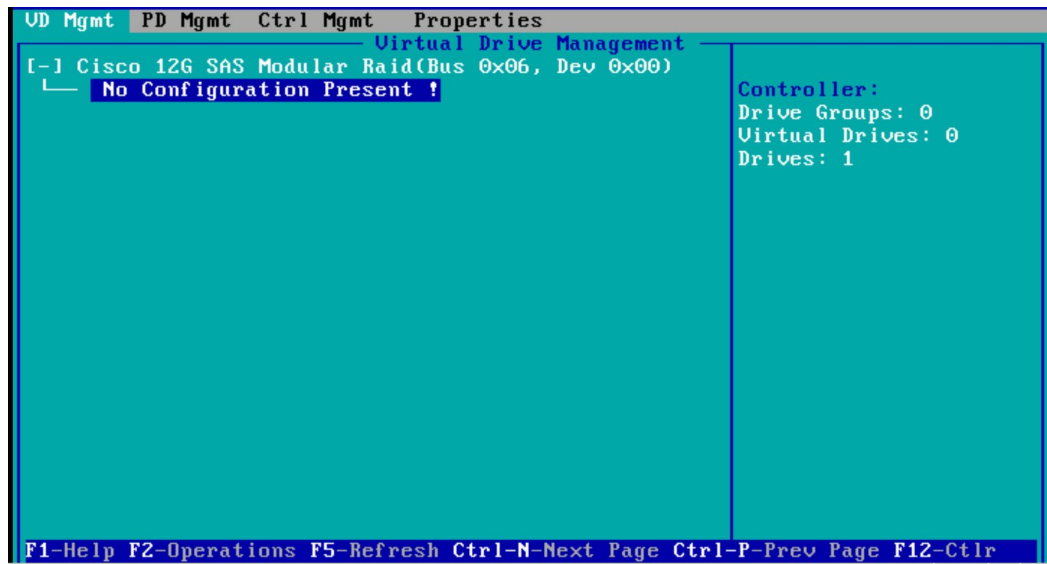
The RAID feature is applicable to E-Series Servers and the SM E-Series NCE. The RAID feature is not applicable to the EHWIC E-Series NCE and the NIM E-Series NCE.

Procedure

- Step 1** In the **Navigation** pane, click the **Server** menu.
- Step 2** In the work pane, click **Host Image Mapping** tab.
- Step 3** From the **Actions** area, click **Launch KVM Console**.
The **KVM Console** opens in a separate window.
- Step 4** From the **Server Summary** page, click **Power Cycle Server** to reboot the server.
- Step 5** Press the **Ctrl** key, and then press **R** during bootup to access the MegaRAID Controller.

The **Virtual Drive Management** page appears, which allows you to configure MegaRAID Controller.

Figure 5: MegaRAID Controller



What to Do Next

If you purchased E-Series Server or NCE Option 1 (E-Series Server or NCE without a preinstalled operating system or hypervisor), install the operating system. See [Installing the Operating System or Hypervisor](#).