CHAPTER 6

# Configure RAID

When you click the **Configure RAID** button in the navigation pane, you are taken to the Create a New RAID Array page. The navigation bar across the top contains links to this section's subpages.

- **Add Array** links to Create a New RAID Array
- **Rename Array** links to Rename RAID Arrays
- **Delete Array** links to Delete a RAID Array
- **Array Owner** links to RAID Array Ownership
- **Add Spare** links to Add Hot Spare
- **Delete Spare** links to Delete Hot Spare
- **Spare Mode** links to Configure Hot Spare Mode
- **Lost Data** links to Lost Data/Bad Blocks
- **Rebuild Ack** links to Acknowledge Rebuild

## Create a New RAID Array

Clicking **Configure RAID** takes you to the Create a New RAID Array page, which allows you to create RAID arrays from two or more unused disks.

**Note** If your Cisco Video Surveillance Storage System component has an attached expansion unit, you are first prompted to select which unit the new RAID array will be built on. Select the enclosure and click **Next** to be taken to the New Array Configuration tool.

When you have selected the desired enclosure, or if your Cisco Video Surveillance Storage System is a single unit, the New Array Configuration tool is displayed. The disks in the unit are represented in a similar fashion to the unit summary diagram on the Home page (see Chapter 3, "Home Screen").

Regardless of the kind of Cisco Video Surveillance Storage System unit you are working with, the New Array Configuration tool asks for the following information:

- **Array name**: Enter a name for the array. Array names can be up to 63 characters in length. If this field is left blank, a default array name ("Array #*N*") will be assigned.

**Note** Array names can be changed on the Rename RAID Arrays page (see Rename RAID Arrays, page 6-3).

- **Select RAID level**: Choose the RAID level that the array will be configured for. You can choose from the following:

  **RAID 0 (striped)**
  **RAID 1 (mirrored)**
  **RAID 4 (parity)**
  **RAID 5 (rotating parity)** (default)
  **RAID 6 (rotating dual parity)**

  **Note** RAID 10 is also available by selecting RAID 1 (mirrored) and using an even number of drives, with a minimum of four.

  **Note** For more information on RAID levels, see Appendix A, "RAID Levels".

- **Select stripe size**: The default stripe size is **128Kbytes**. You can choose to use smaller stripes by selecting **64Kbytes**, **32Kbytes**, or **16Kbytes**.
- **Select array owner**: Select the RAID Controller that will be primarily responsible for accessing and monitoring this array. Choose **Controller 0** (the default) or **Controller 1**.
- **Online Create**: When this box is checked (the default), volumes on this array will be available immediately, with RAID creation continuing in the background. This does, however, slow down the RAID creation process. You can speed up the creation process by unchecking this box, in which case volumes will be unavailable until RAID creation is complete.
- **DiskN**: Select the check box beneath each disk that you wish to include in this array.

  **Note** On CPS-SS-4RU units, there is a section below the Create RAID Set button that allows you to select a section of disks all at once. On a CPS-SS-4RU unit, click the check box next to **Pod0/1/2 left pair** or **Pod0/1/2 right pair**, or any combination, then click **Refresh** page. The disks in the left half and/or right half of each selected active drive drawer are selected.

When you have entered all necessary information and selected the desired disks, click **Create RAID Set**. You are immediately taken to the Configure Logical Volume page (see Create a Logical Volume, page 7-1). The message "Array has been successfully configured" is displayed at the top of the page, along with an additional message:

- If you selected Online Create, the message displayed is "Performance will be degraded until verification is completed".
- If you did not select Online Create, the message displayed is "Volumes will not be accessible until initialisation is completed".

**Note** If at any time you wish to return the New RAID Configuration Tool to its initial state, click **Reset**.

The array construction process takes many hours, depending on how many disks are in the array and on whether you selected **Online Create** in the New Array Configuration tool. You can check the progress of array construction by clicking **RAID Information > Progress** (see RAID Array Utility Progress, page 4-3).

# Rename RAID Arrays

Clicking **Configure RAID > Rename Array** takes you to the Rename RAID Arrays page. Each array is displayed in a separate section, which includes the Array name, Array number, RAID level, Number of members, array icon, array status, and array capacity. For information on these items, see RAID Array Information, page 4-1.

To rename one or more arrays, do the following:

**Step 1** Enter the new name into the **Enter new name** field.

**Note** NOTE: If you leave one or more **Enter new name** fields blank, those arrays retain their previous names.

**Step 2** Click **Save Settings**.

The arrays are immediately renamed.

**Note** If at any time you wish to return the Rename RAID Arrays page to its initial state, click **Reset**.

# Delete a RAID Array

Clicking **Configure RAID > Delete Array** takes you to the Delete a RAID Array page. Each array is displayed in a separate section, which includes the Array name, Array number, RAID level, Number of members, array icon, array status, and array capacity. For information on these items, see RAID Array Information, page 4-1.

**Note** RAID arrays cannot be deleted if they contain volumes. If you try to delete an array that contains volumes, a message is displayed, telling you to delete the volumes first. See Delete a Logical Volume, page 7-3.

To delete a RAID array, do the following:

**Step 1** Select the array you wish to delete by clicking the button next to the array icon.

**Step 2** Click **Delete RAID Array**.

A confirmation page is displayed, asking you to confirm that you wish to delete the array.

**Step 3** Do one of the following:

- To cancel the delete operation, click **CANCEL Delete**.
- To delete the array, click the confirmation check box, then click **Confirm Delete Command**.

A message is displayed, informing you that the array has been deleted. Click the **Back** button to go to the Home page.

# RAID Array Ownership

Clicking **Configure RAID > Array Owner** takes you to the RAID Array Ownership page.

Each array is displayed in a separate section, which includes the Array name, Array number, RAID level, Number of members, array icon, and array capacity. For information on these items, see RAID Array Information, page 4-1.

Each section also displays **Controller *N*** selection buttons. The selected button indicates which controller the array is currently assigned to.

To assign an array to a different controller, do the following:

**Step 1** Click the selection button next to the desired controller.

**Step 2** Click **Save Changes**.

A message is displayed, informing you that the settings have been updated. Click the **Back** button to return to the RAID Array Ownership page.

**Note** Any conflicting LUNs will be set to “unmapped”.

# Add Hot Spare

Clicking **Configure RAID > Add Spare** takes you to the Add Hot Spare page, which allows you to designated specific disk drives as “spares” which will be used to reconstruct RAID arrays when array disks fail.

**Note** If your Cisco Video Surveillance Storage System component has an attached expansion unit, you are first prompted to select which unit the new spare is in. Select the enclosure and click **Next** to be taken to the Add Hot Spare tool.

When you have selected the desired enclosure, or if your Cisco Video Surveillance Storage System is a single unit, the Add Hot Spare tool is displayed. The disks in the unit are represented in a similar fashion to the unit summary diagram on the Home page (see Home Page, page 3-2).

To designate an unused disk as a Pool Spare (a disk that can be used by any array in the unit), do the following:

**Step 1** Next to **Add spare disk(s) to**, select **Enclosure** (this is the default).

**Step 2** Select the check box beneath each disk that you wish to designate as a Pool Spare.

**Step 3** Click the **Add Hot Spare** button.

A message is displayed, informing you that the new Pool Spares have been added.

**Step 4** Click the **Back** button to return to the Add Hot Spare page.

To designate an unused disk as a Dedicated Spare (a disk that is assigned as a spare for a specific array), do the following:

**Step 1** Next to **Add spare disk(s) to**, select the ***Array Name***.

**Step 2** Select the check box beneath each disk that you wish to designate as a Dedicated Spare for that array.

**Note** All disks selected will be added to the same array, as selected in step 1. To add disks to multiple arrays, you must repeat steps 1 and 2 for each.

**Step 3** Click the **Add Hot Spare** button.

A message is displayed, informing you that the new Dedicated Spares have been added.

**Step 4** Click the **Back** button to return to the Add Hot Spare page.

The new spares now appear in the system diagram with a blue bar (see Single Storage Unit, page 3-2).

**Note** If at any time you wish to return the Add Hot Spare page to its initial state, click **Reset**.

# Delete Hot Spare

Clicking **Configure RAID > Delete Spare** takes you to the Delete Hot Spares page, which allows you to remove the "spare" designation from a disk and return it to unused status.

**Note** If your Cisco Video Surveillance Storage System component has an attached expansion unit, you are first prompted to select which unit the spare is in. Select the enclosure and click **Next** to be taken to the Delete Hot Spares tool.

When you have selected the desired enclosure, or if your Cisco Video Surveillance Storage System is a single unit, the Delete Hot Spares tool is displayed. The disks in the unit are represented in a similar fashion to the unit summary diagram on the Home page (see Home Page, page 3-2).

To delete one or more spares, do the following:

**Step 1** Click the check box below the spare or spares that you wish to return to the unused state.

**Note** On CPS-SS-4RU units, there is a section below the **Delete Hot Spare** button that allows you to select a section of disks all at once. On a CPS-SS-4RU unit, click the check box next to **Pod0/1/2 left pair** or **Pod0/1/2 right pair**, or any combination, then click **Refresh page**. All of the spare disks in the left half and/or right half of each selected active drive drawer are selected.

**Step 2** Click **Delete Hot Spare**.

A message is displayed, informing you that the spares have been deleted and are now unassigned.

**Step 3** Click the **Back** button to return to the Delete Hot Spares page.

**Note** If at any time you wish to return the Delete Hot Spares page to its initial state, click **Reset**.

# Configure Hot Spare Mode

Clicking **Configure RAID > Spare Mode** takes you to the Configure Hot Spare Mode page.

To change the Hot Spare Mode setting, do the following:

**Step 1** Select one of the two options:

- **Inserted disks automatically used as hot spares**: This is the default setting. New disk drives, when inserted into a drive slot and recognized by the system, are automatically configured as pool spares.
- **Inserted disks must be manually configured as hot spares**: When this setting is active, new disk drives are configured as unused disks which are available for use in a RAID array or as either pool or dedicated spares.

**Step 2** Click **Set Spare Mode**.

A message is displayed, informing you that the setting has been updated.

**Step 3** Click the **Back** button to return to the Set Hot Spare Mode page.

# Lost Data/Bad Blocks

Clicking **Configure RAID > Lost Data** takes you to the Lost Data/Bad Blocks page. In RAID 0 arrays, data is lost if any of the component disks fail or develop errors. In RAID 1, RAID 4, and RAID 5 arrays, data is only lost if two or more component disks fail or develop errors simultaneously. In RAID 6 arrays, data is only lost if three or more component disks fail or develop errors simultaneously See Appendix A, “RAID Levels” for more information.

Click the **Acknowledge Lost Data Warning** button to acknowledge the warning. A message is displayed, confirming the acknowledgement. Click the **Back** button to return to the Lost Data/Bad Blocks page.

**Note** After acknowledging lost data, it is STRONGLY RECOMMENDED that you run an array verification immediately. See Verify RAID Arrays, page 10-5 for instructions.

**Note** NOTE: Lost data warnings also appear on the Home page and can be acknowledged from there (see Alarms and Warnings, page 3-4).

# Acknowledge Rebuild

Clicking **Configure RAID > Rebuild Ack** takes you to the Acknowledge Rebuild page. When a RAID array has been rebuilt after a component disk failure, this page displays a warning and allows you to acknowledge that you have seen it.

Click the **Acknowledge RAID Array Reconstruction** button to acknowledge the rebuild. A message is displayed, confirming the acknowledgement. Click the **Back** button to return to the Acknowledge Rebuild page.

**Note** RAID array reconstruction warnings also appear on the Home page and can be acknowledged from there (see Alarms and Warnings, page 3-4).

# RAID 6 Configuration

The default configuration of the hard drive bundle from the factory is RAID 5 set comprised of ten disk drives. To change the RAID 5 set to a RAID 6 set, perform the following steps using the GUI:

**Procedure**

**Step 1** Identify the RAID 5 set to be modified and delete it.

**Step 2** Select a set of ten unconfigured disk drives.

**Step 3** Create RAID 6 set using the ten drives. Leave the default stripe size.

**Step 4** Create a single LUN inside the new RAID 6 set.

**Step 5** Expose the new LUN through the external interfaces by selecting a unique LUN ID number.

**Step 6** (Optional) Repeat Steps 1 to 5 to change additional RAID 5 sets to RAID 6 sets.