

HighPoint Technologies, Inc.

Web RAID Management Software (WebGUI)

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1 Array Management

Creating an Array

To create an array:

1. Select "**Manage|Array**" from the menu.
2. Click the **Create Array** button. The create array page will appear.

Location Model	Capacity	Max Free
1/5 WDC WD2500JD-00G8B0	249.98 GB	146.98 GB
1/7 FUJITSU MPG3204AH	20.40 GB	5.16 GB
1/8 WDC WD2500JD-00G8B0	249.98 GB	149.98 GB

3. Choose the array type you want to create from the drop-down list.
4. Enter a name for the array (this is optional)
5. If you are creating a redundant RAID array (RAID1, 5, 10, 50), select an initialization option for the array.

Note: An un-initialized RAID1 or RAID1/0 array can still provide redundancy in case of a disk failure. A RAID5 array, however, is not fault-tolerant until initialization is finished.

6. If you are creating RAID5, specify a cache policy for the array:

Write-back

When the write-back setting is selected, writes to the array are cached. This will result in higher performance, but data loss may occur in case of a power failure.

Write-through

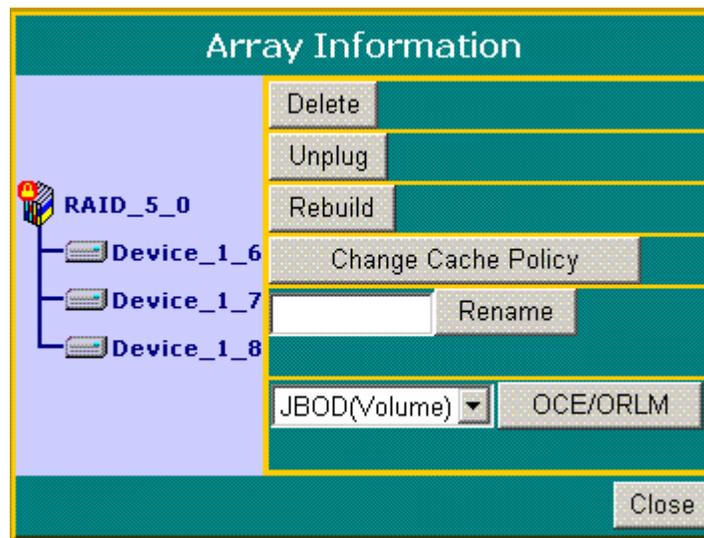
When the write-through setting is selected, writes to the array are always passed directly to the disks. Subsequent reads may still be completed from the cache, if appropriate.

7. Select disks from the **Available Disks** list.
8. Enter a capacity for the array, or use the default value (the maximum capacity for the array).
9. Click **Create**. If you have specified an initialization option, the initialization process will start automatically.

Deleting an Array

To delete an array:

1. Select "**Manage | Array**" from the menu.
2. Click on the **Maintenance** button. An Array Information window will appear.



3. Click the **Delete** button.

Note: An array in use by the operating system cannot be deleted. Any data stored on a deleted array will be inaccessible

Adding Disk to Array

When an array member in a redundant array fails, the array will be listed as *broken*. A broken array can be automatically rebuilt using available-spare disks. However, if you have no spare disks configured, you can still rebuild by manually adding any Available Disk to the array. To add a disk to a broken array:

1. Select menu "**Manage | Array**".
2. Click the **Maintenance** button.
3. Click the **Add Disk** button.
4. If the disk is successfully added to the array, rebuild process will start automatically.

Note: If the system utilizes hot-swap capable enclosures, you can add new physical disks to the RocketRAID card in order to rebuild or modify an existing array, using the "*Rescan*" feature.

Verifying an Array

For a RAID 1 or RAID1/0 array, verify process compares the data of one mirror pair with the other. For RAID 5, verify process calculates RAID5 parity and compares it to the parity data on the array. Verification checks each sector on a drive. Periodic verification of an array allows the disk drive firmware to take corrective actions on problem areas on the disk, minimizing the occurrence of uncorrectable read and write errors.

To verify an array:

1. Select menu "**Manage | Array**".
2. Click the **Maintenance** button.
3. Click the **Verify** button to start the verify process.

Rebuilding an Array

When a redundant array enters a critical/broken state, a rebuild is necessary to restore the array's redundancy (security). The rebuild process for an array generally starts automatically. If you have aborted a rebuild process, you can start it manually. To rebuild an array:

1. Select menu "**Manage | Array**".
2. Click the **Maintenance** button.
3. Click the **Rebuild** button.
4. Rebuild process will start.

Expanding/Migrating an Array

With the OCE/ORLM function, you can migrate an array from one RAID level to another RAID level and/or expand the array dynamically, even under I/O load. This function implements both Online Capacity Expansion (OCE) and Online RAID Level Migration (ORLM).

To expand/migrate an array:

1. Select "**Manage | Array**" from the menu.
2. Click the **Maintenance** button.
3. Select the target array type.
3. Click the **OCE/ORLM** button.
4. The OCE/ORLM page will appear. The interface is similar to the array creation wizard.

Note:

1. When expanding a JBOD array, all the original disks must be included in the target array, and these disks must be selected in the same order (as the original array). If you want to migrate a JBOD array to another RAID level, only the first member disk can be included in the target array. For example, a JBOD comprised of 3 disks (1, 2, 3), can only be "migrated" using disk 1. Disks 2 and 3 cannot be used – disk 1 would have to be combined with other disks attached to the RocketRAID card (4, 5, 6, 7, 8).
2. You cannot change an array to another type of array with a smaller capacity. In some cases, a disk may need to be added to the RocketRAID card.
3. During the OCE/ORLM procedure, the redundancy level of the array will be the lowest of the source and target arrays; e.g. if you ORLM a RAID0 array to a RAID1 array, the array will be non-redundant until the procedure is complete.
4. The OCE/ORLM process can be aborted and continued at later time. However, you should always stop the transform progress from the RAID Management software.
5. An unexpected system crash may result in data loss while performing OCE/ORLM on an array. We strongly recommend backing up data before starting the OCE/ORLM process.

Renaming an Array

To rename an array:

5. Select "**Manage | Array**" from the menu.
6. Click on the **Maintenance** button.
7. Enter a new name for the array.
8. Click the **Rename** button.

Note: An array running background tasks cannot be renamed.

2 Device Management

Select the "**Manage | Device**" function to access the device management page.

Resan Devices		Initialize Devices		
Controller 1 (RocketRAID 182x SATA Controller)				
	Model	WDC WD2500JD-00GBB0	Read Ahead	Enabled Change
Device_1_5	Location	1/5	Write Cache	Enabled Change
Unplug	Capacity	250.05 GB	TCQ	Not Supported
SMART	Max Free	0.00 GB	NCQ	Not Supported
	Status	Normal		
	Model	ST315320A	Read Ahead	Enabled Change
Device_1_6	Location	1/6	Write Cache	Enabled Change
Unplug	Capacity	15.30 GB	TCQ	Not Supported
SMART	Max Free	0.00 GB	NCQ	Not Supported
	Status	Normal		
	Model	FUJITSU MPG3204AH	Read Ahead	Enabled Change
Device_1_7	Location	1/7	Write Cache	Enabled Change
Unplug	Capacity	20.49 GB	TCQ	Not Supported
SMART	Max Free	0.00 GB	NCQ	Not Supported
	Status	Normal		

Change Device Settings

Depending upon the capabilities RAID controller and hard disks drives in use, several configurable device settings may be available: Read Ahead, Write Cache, TCQ, and NCQ. Each feature can be enabled or disabled individually, for each hard disk.

S.M.A.R.T Status

You can view S.M.A.R.T. (Self-Monitoring, Analysis, and Reporting Technology) data about a particular hard disk to help troubleshoot problems that occur. You can also setup periodically S.M.A.R.T. status checking to send notification messages when S.M.A.R.T. thresholds are exceeded.

To view the S.M.A.R.T status of a hard disk:

1. Select "**Manage | Device**" from the menu.
2. Click the "**SMART**" link to display the S.M.A.R.T information page.

S.M.A.R.T. Status Continued

Model Number WDC WD2500JD-00GB80

S.M.A.R.T. Enabled

Status **OK**

S.M.A.R.T Attributes					
ID	Name	Threshold	Worst	Value	Status
1	Read Error Rate	51	200	200	OK
3	Spin-up Time	21	105	108	OK
4	Start/Stop Count	40	100	100	OK
5	Re-allocated Sector Count	140	200	200	OK
7	Seek Error Rate	51	200	200	OK
9	Power-on Hours Count	0	99	99	OK
a	Spin-up Retry Count	51	100	100	OK
b	Drive Calibration Retry Count	51	100	100	OK
c	Drive Power Cycle Count	0	100	100	OK
c2	HDA Temperature	0	253	103	OK
c4	Relocation Event Count	0	200	200	OK
c5	Current Pending Sector Count	0	200	200	OK
c6	Off-line Scan Uncorrectable Sector Count	0	200	200	OK
c7	Ultra ATA CRC Error Rate	0	253	200	OK
c8	Multi-zone Error Rate	51	155	200	OK

Preferences

Poll this disk every Minutes

Note: S.M.A.R.T attribute data is drive-specific. The software includes a list of definitions for popular drive models/manufacturers. Unknown S.M.A.R.T. attributes will be shown as "unknown". You can add the attribute definitions for your drive in the file smart.def (which resides in the software installation directory).

Rescan Devices

When you physically add drives to the controller while the system is running, you can rescan the controller to reflect the change.

To rescan the devices:

1. Select menu "**Manage | Device**".
2. Click "**Rescan Devices**" button.

Note: When you are hot-plugging an entire array, run rescan **only** after all array members (hard disks) have been physically plugged or unplugged from the system. You can rescan all the devices at once using the Rescan function on the **Array Management** page.

3 Configuring Spare Disks

To configure spare disks attached to the RocketRAID card, select the "**Manage | Spare**" function. The Spare Pool Management page will be displayed.



The screenshot displays the Spare Pool Management interface. It is divided into two main sections: 'Spare Pool' and 'Available Disks'. The 'Spare Pool' section contains one entry for 'Device_1_5' with a capacity of 249.98 GB and a 'Remove Spare' button. The 'Available Disks' section contains three entries: 'Device_1_6' (20.40 GB), 'Device_1_7' (249.98 GB), and 'Device_1_8' (15.23 GB), with an 'Add Spare' button at the bottom.

Spare Pool				
<input type="checkbox"/>		Device_1_5	WDC WD2500JD-00GBB0	249.98 GB
<input type="button" value="Remove Spare"/>				

Available Disks				
<input type="checkbox"/>		Device_1_6	FUJITSU MPG3204AH	20.40 GB
<input type="checkbox"/>		Device_1_7	WDC WD2500JD-00GBB0	249.98 GB
<input type="checkbox"/>		Device_1_8	ST315320A	15.23 GB
<input type="button" value="Add Spare"/>				

Adding a Spare Disk

To add a spare disk, select a disk from the *Available Disks* list and click **Add Spare** button. This will add the disk to the *Spare Pool* list.

Removing a Spare Disk

To remove a spare disk, select it from the *Spare Pool* list and click the **Remove Spare** button. This will remove the disk from the *Spare Pool* list.

4 Managing Events and Tasks

The HighPoint Web RAID Management Software automatically logs all controller related events that have occurred (for all controllers/cards managed by the software). In addition you can configure E-mail Notification to receive information about these events (see Section 5 Settings)

View Events

To view logged events, Please select "**Event**" from the menu. The *Event Management* page will be displayed.



Date Time	Description
2005/3/14 9:40:17	User RAID(from 127.0.0.1) exited from system.
2005/3/14 9:54:55	User TRAIID(from 127.0.0.1) failed to log on system.
2005/3/14 9:54:58	User RAID(from 127.0.0.1) logged on system.
2005/3/14 9:56:11	User RAID(from 127.0.0.1) exited from system.
2005/3/14 10:38:40	Plugging device detected.(FUJITSU MPG3204AH' at Controll
2005/3/14 10:38:40	Plugging device detected.(ST315320A' at Controller1-Chan
2005/3/14 10:39:42	Array 'RAID_1_0' has been deleted successfully.
2005/3/14 10:40:1	RAID 1/0 Array 'RAID10_0' has been created successfully (D 1,Channel 8; Disk 2:Device_1_7, Controller 1,Channel 7; Di: 1,Channel 6; Disk 4:Device_1_5, Controller 1,Channel 5).
2005/3/14 10:40:16	Disk 'WDC WD2500JD-00GBB0' at Controller1-Channels fail
2005/3/14 10:41:57	Array 'RAID10_0' has been deleted successfully. RAID 0 Array 'RAID_0_0' has been created successfully (Disk

Click the **Clear** button to clear the event log.

Managing Tasks

With HighPoint RAID Management Software, you can setup background rebuild and verify tasks to help maintain the integrity of your drives and data. The tasks can be scheduled periodically.

You can select menu "**Task**" to enter Task Management page.

Managing Tasks Continued

The screenshot displays three sections of a web interface for managing tasks:

- Tasks List:** A table with columns 'Name' and 'Description'. It contains one entry: 'Rebuild RAID5 Rebuild array "RAID_5_0" on 2005-3-15 at 20:2:8.' with a 'Delete' button below it.
- New Rebuild Task:** A form for creating a new rebuild task. It has a radio button selected for 'RAID_5_0', a 'Task Name' input field, and a 'Schedule' section with 'Occurs one time on' selected and date/time fields set to 2005-3-15 at 15:4:21. A 'Submit' button is at the bottom.
- New Verify Task:** A form for creating a new verify task. It has a radio button selected for 'RAID_1_0', a 'Task Name' input field, and a 'Schedule' section with 'Occurs one time on' selected and date/time fields set to 2005-3-15 at 15:4:21. There are also options for 'Occurs every' (1 Day(s) on Sunday), 'Start date' (2005-3-15), and 'End date' (2005-3-15) with a 'No end date' radio button selected. A 'Submit' button is at the bottom.

The *Tasks List* shows all added tasks.

Scheduling a Task

To add a task schedule:

1. Select the array that you want to verify or rebuild.
2. Enter a name for the task.
3. Configure the frequency for the task.
4. Check the **Submit** button.

Delete a Scheduled Task

To delete a task schedule:

1. Select a task from the *Tasks List*.
2. Click the **Delete** button.

5 Settings

Select the "**Settings**" option to access *Settings* page.

The screenshot displays a web interface with five distinct sections, each with a teal header bar:

- Listening Port:** Contains a checked checkbox for "Restrict to localhost access.", a text input field for "Port Number" with the value "7402", and a "Change" button.
- Password:** Contains two text input fields for "Password:" and "Confirm:", and a "Change Password" button.
- SMTP Setting:** Contains an unchecked checkbox for "Enable Event Notification", text input fields for "Server Address (name or IP):", "Mail From (E-mail address):", and "SMTP Port:" (with the value "25"), and a "Change Setting" button.
- Recipients:** A table with three columns: "E-mail", "Name", and "Event Level".
- Add Recipient:** Contains text input fields for "E-mail:" and "Name:", radio buttons for "Event Level:" (Information, Warning, Error), and "Add" and "Test" buttons.

Restrict to localhost access

If this option is selected, the HPT Web RAID Management Service will refuse any Remote Access request. Please connect to the local machine by entering "localhost" in the URL bar."

Change Listening Port

This is the TCP port number utilized by the HighPoint RAID Management Service in order to communicate with the management console and web browser software. When you connect to the service, the port value you enter must be in accordance with the system port value on the service. The default value is 7402.

Enter a new port number and click the "**Change Port**" button to change the listening port.

Change Password

Enter a new password and click the “**Change Password**” button to change the current user's password. Configure E-mail notification

Enabling E-mail notification:

To configure E-mail notification:

1. Select the "**Enable Event Notification**" option.
2. Enter the appropriate information for the SMTP server.
3. Click the "**Change Setting**" button.

Note: The software does not currently support SMTP servers that require user authentication.

To add a Recipient:

1. Enter the necessary information for the desired recipient.
2. Click the **Add** button.

To test E-mail notification:

1. Enter the necessary information for the recipient.
2. Click the **Test** button.