

HighPoint

RocketRAID 2720C2



User Manual

V1.00

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HighPoint RocketRAID 2720C2 -Cross-Sync RAID Solution

HighPoint's 6Gb/s Cross-Sync RAID Solution aims to revolutionize DAS applications. Cross-Sync synchronizes up to two RocketRAID 2720C2 controller cards to work as a single RAID storage unit. The Cross-Sync RAID Solution provides 16 SAS/SATA6Gb/s Ports over a Dual PCIe x8 Host Interface, and is capable of delivering up to 4GB/s of transfer performance!

Key Features:

- Up to 4GB/s Transfer Performance!
- Enables arrays to be created using up to 2x RAID 2720C2 HBA's
- 16x SAS/SATA 6Gb/s Ports across Dual PCIe 2.0 x8 Transfer Bandwidth

1. Kit Contents

- RocketRAID 2720C2 x2
- Low profile bracket x2
- Quick Installation Guide

2. Installing the RocketRAID 2720C2 Host Adapters

Note: Make sure the system is powered-off before installing the RocketRAID host adapters.

- 1) Open the system chassis and locate two unused PCI-Express (2.0 or 1.0) x8 slots.
- 2) Remove the PCI slot cover.
- 3) Gently insert the RocketRAID host adapters into the PCI-Express slots, and secure the brackets to the system chassis.
- 4) After installing the each adapter, attach the hard disks or disk enclosure to the RocketRAID card using the SAS or SATA cables.
- 5) Close and secure the system chassis.

3. Prepare the RocketRAID 2720C2

Before using the each RocketRAID 2720C2 HBA, a BIOS update is required. Download the corresponding software package from the official RocketRAID 272C2 product page, and follow the steps below:

- 1) Launch True DOS environment
- 2) Switch to the BIOS package directory and run following command (do not include the quotation marks):
"Load RR2720c.v10 /q"
- 3) Confirm that Flashing & verifying has Passed.



```
Found adapter 1 at bus 1, device 0
Offset address 0x0
EPROM Vendor: WINBOND W25X40BV
Erasing..Succeeded
Flashing ....
|||||
Flashing Success (total retry 0)

Verifying ....
|||||
Passed !
```

- 4) Restart the system. The BIOS Setting Utility should now report "RocketRAID 2720C".

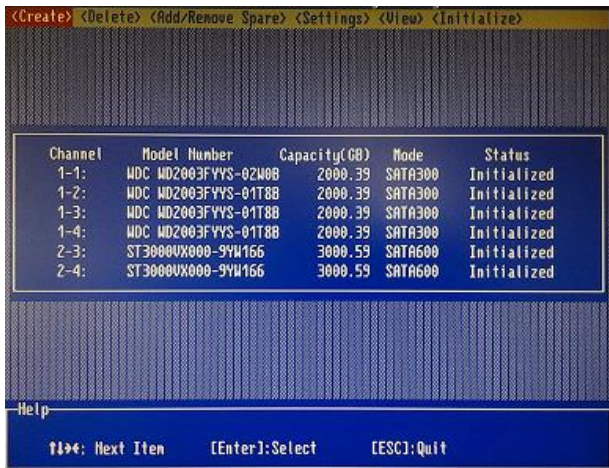
4. RocketRAID Series Controller BIOS Utility

The RocketRAID series controller will display its BIOS screen during the system's boot process. The BIOS Utility will display information about hard drives attached to the adapter. Make sure all attached drives are detected by this utility. If any of the hard drives are not detected, power down the system and check the power and cable connections.

Press the “Ctrl+H” key combination to access the controller’s BIOS Utility.

4.1 BIOS Settings Overview

The RocketRAID controller BIOS utility is an interface that provides management commands and controller related settings.



The screenshot shows the BIOS Utility interface with a menu at the top and a table of drive information. The menu options are: (Create) (Delete) (Add/Remove Spare) (Settings) (View) (Initialize). The table lists six drives with their channel, model number, capacity, mode, and status. At the bottom, there is a 'Help' section and navigation instructions: (F10): Next Item, [Enter]: Select, [ESC]: Quit.

Channel	Model Number	Capacity (GB)	Mode	Status
1-1:	WDC WD2003FYYS-02W0B	2000.39	SATA300	Initialized
1-2:	WDC WD2003FYYS-01T8B	2000.39	SATA300	Initialized
1-3:	WDC WD2003FYYS-01T8B	2000.39	SATA300	Initialized
1-4:	WDC WD2003FYYS-01T8B	2000.39	SATA300	Initialized
2-3:	ST3000UX000-9YW166	3000.59	SATA600	Initialized
2-4:	ST3000UX000-9YW166	3000.59	SATA600	Initialized

Help

(F10): Next Item [Enter]: Select [ESC]: Quit

4.2 Using the BIOS Utility

The following keys utilized by the RocketRAID series controller BIOS utility:

Arrow keys – Use these to move between different menu items.

Enter – Open the selected toolbar command/execute the selected command.

Esc – Move back to the previous menu, cancel the selected operation, or exit the BIOS Utility.

4.3 BIOS Menu Commands

Create – This command is used to open the RAID Creation menu.

Delete – This command will delete the selected RAID array.

Add/Remove Spare – This command is used to assign hard disks to function as spare disks. The controller is capable of using spare disks to automatically rebuild broken or faulted RAID arrays.

Settings – This command opens the settings menu (To selecting the boot disk/array, parameter setting etc.)

View – This command is used to view controller, hard disk and RAID Array information.

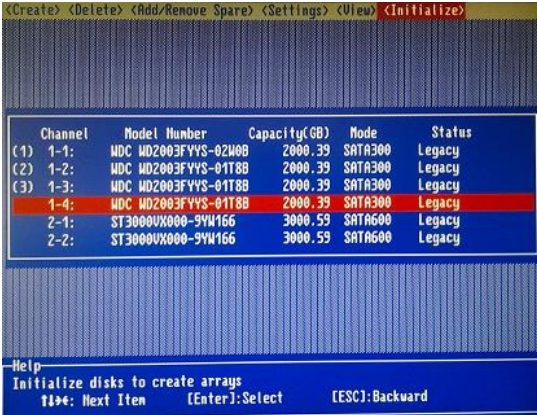
Initialize – This command is used to prepare disks for use with RAID arrays. Disks must be initialized before they can be used to create arrays.

4.4 Creating RAID Arrays

Initializing Disks:

All the single disks attached to the RocketRAID controller will be marked as “Legacy” status. A Legacy disk will be report to operating system as single disk. The Legacy disks must be initialized before creating a RAID array. To initialized disk, select the Initialize command from the toolbar, and press the Enter key.

BIOS utility will list all single Legacy disks attached to the RocketRAID controller as below:



The screenshot shows a BIOS utility menu with a toolbar at the top containing options: <Create> <Delete> <Add/Remove Spare> <Settings> <U1eu> <Initialize>. Below the toolbar is a table of disks. The table has five columns: Channel, Model Number, Capacity(GB), Mode, and Status. The row for Channel 1-4 is highlighted in red.

Channel	Model Number	Capacity(GB)	Mode	Status
(1) 1-1:	WDC WD2003FYYS-02W0B	2000.39	SATA300	Legacy
(2) 1-2:	WDC WD2003FYYS-01T8B	2000.39	SATA300	Legacy
(3) 1-3:	WDC WD2003FYYS-01T8B	2000.39	SATA300	Legacy
1-4:	WDC WD2003FYYS-01T8B	2000.39	SATA300	Legacy
2-1:	ST3000UX000-9YW166	3000.59	SATA600	Legacy
2-2:	ST3000UX000-9YW166	3000.59	SATA600	Legacy

At the bottom of the screen, there is a Help section with the text: "Initialize disks to create arrays", "↑↓: Next Item", "[Enter]: Select", and "[ESC]: Backward".

Channel: This column identifies each disk attached to the controller (host adapter). It is used to help identify each disk’s location. The first digit represents the controller (which host adapter the selected disk is attached to). The second digit represents the disk’s port number (which port number the selected disk is attached to). If multiple controllers are installed (more than one host adapter card), the first controller will be designated as “1”, the second controller as “2”, and so on.

For Example:

“1-2” = Controller #1, Port #2

“2-3” = Controller #2, Port #3

Model Number: This column shows the disk model.

Capacity (GB): This column shows the disk capacity.

Mode: This column shows the current disk type and link speed. The disk running mode is depending on the RocketRAID controller mode and disk mode.

Status: This column shows the disk status. In this section, there will be only Legacy status. Highlight the target disks with the arrow keys, and then press the Enter key. A numeral will be displayed before each selected disk. Once all target disks have been selected, press the ESC key. The utility will display a warning, and ask you to press Y (yes) to initialize, or N (no) to cancel. Once initialized, these disks can be used to create RAID arrays.

Warning: Initialization will destroy all pre-existing data on the selected hard disks. Only initialize disks that do not contain critical data.

Create Arrays:

Use the arrow keys to highlight **Create** from the toolbar and press the Enter key.



1. Use the arrow keys to highlight the RAID level and press the Enter key.

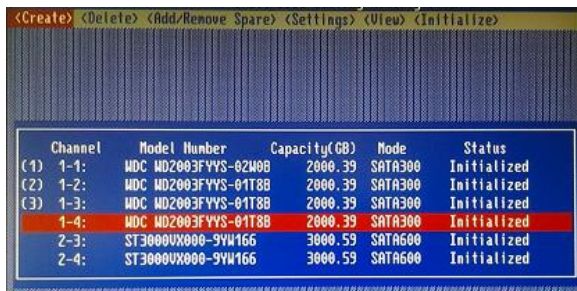
Note: The RocketRAID 2700 series HBA's RAID 6 function is not supported by the BIOS interface. RAID 6 arrays can only be created using the WebGUI while running the operating system. The operating system cannot be installed to a RAID 6 array.

2. Use the arrow keys to highlight the Array Name option and press the Enter key. The array name dialogue box will appear. Use the keyboard to input a new Array Name, and press the Enter key.



Note: the Array Name command is optional – it is not necessary to name the array. The array can be named at a later time, and the name of the array can be changed at any time.

- On the Create menu, use the arrow keys to highlight the Select Devices item and press the Enter key. A device list will appear, and display all available disks.



- Highlight the target disks that you want to use, and press the Enter key to select them. A numeral will be displayed before each selected disk. This number designates disk order. After all of the disks have been selected, press the ESC key to return to the Create Menu.
- Next, Use the ↓ arrow key to highlight the Capacity (GB) option and press the Enter key. The total available capacity will be displayed. Press the Enter key if you wish to use all available space. If you wish to reserve disk space for additional arrays/single disks, use the keyboard to input the amount of space (in GB) you wish to set aside for this particular array, and press the Enter key.



Note: Multiple arrays can be created using the same set of disk drives. One physical drive can be used to create up to 4 arrays. The Capacity option allows you to set aside disk space that be used to create another array, set as a spare disk, or partitioned to act as a single disk (by the operating system).

6. For redundant RAID arrays (RAID 1, 5, 10), select the **Cache Policy**:



Write Back – Provides higher write performance for redundant RAID arrays. Data is at risk when there is a power failure, system kernel panic and unresponsive, abnormal conditions.

Write Through – Writes directly to the disks (may reduce the risk of data loss during a critical failure, but at the cost of lower performance).

Sector Size – Also known as “Variable Sector Size”. This option allows change the RAID array’s logical sector size from 512b to 16K.

7. Use the arrow key to highlight the Start Creation item and press the Enter key. The Window will show 2 options if create RAID: Background Initialize and Quick Initialize.

Quick Init:	The RAID array will be immediately accessible. A. This option will delete all content on the disks. B. This option will not perform disk array initialization. When new HDD's are used this option can be ignored since there is no data on the hard disks.
Background:	The RAID array is accessible while disk initialization is being performed. A. This option will delete all content on the disks. B. The initialization time will be longer when compared to "Foreground" but the logical drives can be used during the initialization process.

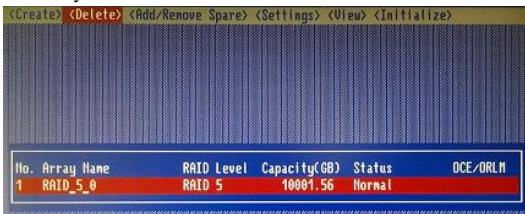
Note: The BIOS interface cannot perform Background initialization. This action must be performed using the WebGUI while running the operating system.

8. Press the Y (yes) key to create the array, or N (no) key to cancel the creation process. If you press the Y, BIOS will show the following window.

4.5 Delete Arrays

Highlight the Delete command from the toolbar, and press the Enter key.

The BIOS utility will display a list of available RAID arrays. Select the array you wish to delete, and press the Enter key.

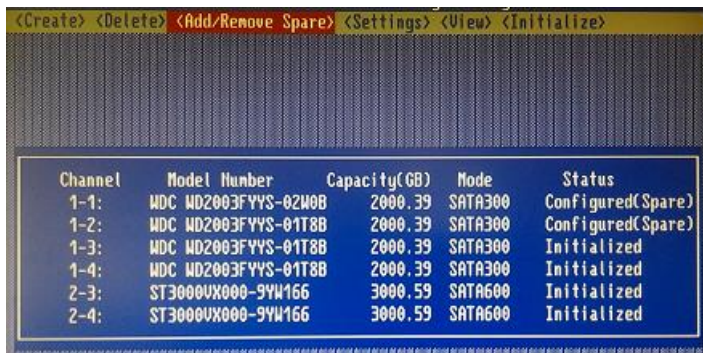


The utility will display a warning message. Press Y (yes) to delete the array, or select N (no) to cancel.

Warning: All data stored on the array will be lost – do not delete if the array contains critical data.

4.6 Add/Remove Spare Disks

The Add/Remove Spare command is used to assign a hard disk to act as a Spare Disk. Spare Disks are used to automatically rebuild Redundant RAID arrays (RAID 1, 5, 6, 10, 50) in the case of disk failure. As with creating RAID arrays, disks must be initialized before they can be used as spares. To set a hard disk to act as a Spare Disk, use the arrow keys to select the target disk from the list of initialized disks, and press the Enter key. To remove the Spare Disk setting from a hard disk, highlight the spare disk, and press the Enter key.



The screenshot shows a RAID management utility interface. At the top, there is a menu bar with the following options: <Create> <Delete> <Add/Remove Spare> <Settings> <View> <Initialize>. Below the menu bar is a table displaying the configuration of six disks. The table has five columns: Channel, Model Number, Capacity(GB), Mode, and Status.

Channel	Model Number	Capacity(GB)	Mode	Status
1-1:	WDC WD2003FYYS-02W0B	2000.39	SATA300	Configured(Spare)
1-2:	WDC WD2003FYYS-01T8B	2000.39	SATA300	Configured(Spare)
1-3:	WDC WD2003FYYS-01T8B	2000.39	SATA300	Initialized
1-4:	WDC WD2003FYYS-01T8B	2000.39	SATA300	Initialized
2-3:	ST3000VX000-9YW166	3000.59	SATA600	Initialized
2-4:	ST3000VX000-9YW166	3000.59	SATA600	Initialized

Generally, single disks are designated to act as spares (disks that are not configured into RAID arrays).

However, in some instances, disks that are members of RAID arrays may also be designated to act as a spare. If the disks in question are part of a RAID array that did not utilize the full available capacity at the time of creation, these disks may be used as spares. For example: a RAID 0 array was created between two 200GB hard disks, but only 200GB of space (out of a grand total of 400GB), was assigned to that array. In this example, 200GB of disk space remains unallocated. This unallocated space would allow these disks to be set as spares for a separate redundant array that falls into the same capacity range (200GB).

4.7 Settings

To access the Settings menu, highlight the Settings command from the toolbar, and press the Enter key. There are Select Boot Device and Parameter Setting options in the menu.



Select Boot Device – The RocketRAID 2720C2 can be used to boot the system. This option allows you to select which disk/array will serve as the systems boot device. The BIOS interface will display the selected boot device (disk or array) as the first device.

Note: *RocketRAID series HBA do not support bootable devices over 2TB in size. Do not install an operating system to any disk or array over 2TB.*

In order to boot from a disk/array attached to the RocketRAID 2720C2, you may be required to change the motherboard's BIOS settings, and instruct it to boot from the controller.

Staggered Spinup – This menu includes various controller related settings and features. The default value of this option is disabled. Enabling this setting will instruct the card to power up the hard disks, sequentially (one disk approximately every 2 seconds). Not all disk support this setting – consult the disk documentation for more information.

Warning: *Western Digital hard disks do not support this setting. Enabling this setting is not recommended. If enabled, these disks may not be detected by non-RAID controller*

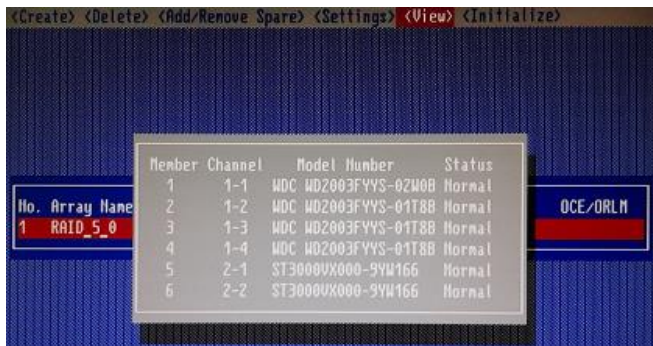
4.8 View

The View menu provides four options:



Devices – This option will display information for each disk hosted by the HBA.

RAID Array – This option will display information about each RAID array hosted by the HBA. Highlight the target device and press the Enter to view details about the configuration.



Rescan Devices – This command will prompt the HBA to scan each port for devices. Use this feature when attaching hard disks or arrays to the HBA.

5. Driver Installation (Windows)

Download the corresponding driver package from the official RocketRAID 2720C2 website. Extract the contents to a directory of your choice.

- 1) After installing the RocketRAID host adapter, boot to the Windows operating system.
- 2) Windows should automatically detect the card, and displays the “Found New Hardware Wizard”. Select “Locate and install driver software”. When Windows asks: “Windows needs your permission to continue”, select “Continue”.
- 3) When asked to search online select “Don’t Search Online”.
- 4) Select “I don’t have disc, show me other options”.
- 5) And then select “Browse my computer for driver software”.
- 6) Browse to the location of the driver and click “Next”.
- 7) When asked: “Would you like to install this driver software?” select “Install”.
- 8) Reboot the system when prompted. The RocketRAID host adapter will be ready for use after Windows reboots.

6. WebGUI Installation (Windows)

Download the corresponding WebGUI package from the official RocketRAID 2720C2 website. Extract the contents to a directory of your choice.

- 1) Double-click “Setup.exe” to start installation. If you are running a 64-bit version of Windows, you may need to right-click the icon, and select “Run as Administrator.”
- 2) Click “Run” to continue. The HighPoint Web RAID Management Service install screen will display. Click “Next” to continue.
- 3) Click “Yes” to install the Management Utility.
- 4) Specify the Destination folder and click “Next”. Confirm the install location, and click “Next”.
- 5) Select the SAF-TE configuration file for the system’s chassis. If the system does not support SAF-TE, select the default option “Skip and Configure Later”.
- 6) Specify the listening port. 7402 is the default setting, and recommended for most systems.
- 7) Choose to enable or disable Remote Access. Remote access allows the card to be managed via a Web browser from a separate system.
- 8) Click “OK” to complete the installation procedure.

7. Driver Installation (Linux)

HighPoint provides an open source driver package for Linux platforms. Download the corresponding driver package from the official RocketRAID 2720C2 product page, and extract the contents to the directory of your choice.

Please refer to the included README file for instructions.

8. WebGUI Installation (Linux)

Download the corresponding WebGUI package from the official RocketRAID 2720C2 website. Extract the contents to a directory of your choice.

Please refer to the included README file for instructions.

9. Starting the WebGUI

- 1) Double-click the “HighPoint Web RAID Management” Icon on the Desktop to start the Web GUI. The system’s default Web Browser will open the login page.
- 2) Type in the default username and password to start the Web GUI.
- 3) User name: RAID
Password: hpt
- 4) Click Login. The Manage-Array screen will be displayed.

10. Using the WebGUI

Please refer to the online user guide for the basic function of using the WebGUI:

<http://www.highpoint-tech.com/help/>

The RocketRAID 2720C2 WebGUI provides additional cross-sync RAID functions.

Global page

Controller count indicates the number of installed RocketRAID 2720C2 host adapters.

Global View Physical Logical Setting Event SHI Recover Logout Help

HBA Properties

Host Adapter model: RocketRAID 272x_1xC SAS Controller


Controller count: 2

Enclosure count: 0

Logical Drive: 4

Physical Drive: 8

Storage Properties



Total Capacity: 2399 GB

Configured Capacity: 1200 GB

Free Capacity: 1199 GB

Configured 50.0%

Physical page

The Physical page shows controller & device information. Click Devices below each Controller entry to view information about the RocketRAID 2720C2 and hosted storage devices.

Global View Physical Logical Setting Event SHI Recover Logout Help

Controller 1

[Devices](#)





Controller 2

[Devices](#)

[Rescan](#)

Physical Devices Information

[Dump Array Info](#)

 Device 1_1 Model	SEAGATE ST3300657SS-35J01FJY	Capacity	300.00 GB
 Device 1_2 Model	SEAGATE ST3300657SS-35J1L0GF00009049LEX2	Capacity	300.00 GB
 Device 1_3 Model	SEAGATE ST3300657SS-35J1L0X900009049PPPH	Capacity	300.00 GB
 Device 1_4 Model	SEAGATE ST3300657SS-35J054PY	Capacity	300.00 GB

Logical page

The logical page shows the logical and physical device information. The RAID management function allows you to create RAID arrays with all available devices.

Global View	Physical	Logical	Setting	Event	SHI	Recover	Logout	Help																																								
Create Array	Logical Device Information																																															
Spare Pool	<table border="1"><thead><tr><th>Name</th><th>Type</th><th>Capacity</th><th>Cache Policy</th><th>BlockSize</th><th>SectorSize</th><th>OS Name</th><th>Status</th></tr></thead><tbody><tr><td> Device_1_1</td><td>Hard Disk</td><td>300.00 GB</td><td></td><td></td><td></td><td>HPT DISK 1_0</td><td>Legacy</td></tr><tr><td> Device_1_2</td><td>Hard Disk</td><td>300.00 GB</td><td></td><td></td><td></td><td>HPT DISK 1_1</td><td>Legacy</td></tr><tr><td> Device_1_3</td><td>Hard Disk</td><td>300.00 GB</td><td></td><td></td><td></td><td>HPT DISK 1_2</td><td>Legacy</td></tr><tr><td> Device_1_4</td><td>Hard Disk</td><td>300.00 GB</td><td></td><td></td><td></td><td>HPT DISK 1_3</td><td>Legacy</td></tr></tbody></table>								Name	Type	Capacity	Cache Policy	BlockSize	SectorSize	OS Name	Status	Device_1_1	Hard Disk	300.00 GB				HPT DISK 1_0	Legacy	Device_1_2	Hard Disk	300.00 GB				HPT DISK 1_1	Legacy	Device_1_3	Hard Disk	300.00 GB				HPT DISK 1_2	Legacy	Device_1_4	Hard Disk	300.00 GB				HPT DISK 1_3	Legacy
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Logical Device	Physical Device Information																																															
Rescan	<table border="1"><thead><tr><th>Location</th><th>Model</th><th>Capacity</th><th>Max Free</th></tr></thead><tbody><tr><td> 1/1</td><td>SEAGATE ST3300657SS-3SJ01FJY</td><td>300.00 GB</td><td>0.00 GB</td></tr><tr><td> 1/2</td><td>SEAGATE ST3300657SS-3SJ1LOGF00009049LEX2</td><td>300.00 GB</td><td>0.00 GB</td></tr><tr><td> 1/3</td><td>SEAGATE ST3300657SS-3SJ1L0X900009049PPPH</td><td>300.00 GB</td><td>0.00 GB</td></tr><tr><td> 1/4</td><td>SEAGATE ST3300657SS-3SJ054PY</td><td>300.00 GB</td><td>0.00 GB</td></tr><tr><td> 2/1</td><td>SEAGATE ST3300657SS-3SJ1K6PR00009049MPRJ</td><td>299.90 GB</td><td>299.90 GB</td></tr><tr><td> 2/2</td><td>SEAGATE ST3300657SS-3SJ1LNFV00009049QVWW</td><td>299.90 GB</td><td>299.90 GB</td></tr><tr><td> 2/3</td><td>SEAGATE ST3300657SS-3SJ1GT260000905057TV</td><td>299.90 GB</td><td>299.90 GB</td></tr><tr><td> 2/4</td><td>SEAGATE ST3300657SS-3SJ05WBW</td><td>299.90 GB</td><td>299.90 GB</td></tr></tbody></table>								Location	Model	Capacity	Max Free	1/1	SEAGATE ST3300657SS-3SJ01FJY	300.00 GB	0.00 GB	1/2	SEAGATE ST3300657SS-3SJ1LOGF00009049LEX2	300.00 GB	0.00 GB	1/3	SEAGATE ST3300657SS-3SJ1L0X900009049PPPH	300.00 GB	0.00 GB	1/4	SEAGATE ST3300657SS-3SJ054PY	300.00 GB	0.00 GB	2/1	SEAGATE ST3300657SS-3SJ1K6PR00009049MPRJ	299.90 GB	299.90 GB	2/2	SEAGATE ST3300657SS-3SJ1LNFV00009049QVWW	299.90 GB	299.90 GB	2/3	SEAGATE ST3300657SS-3SJ1GT260000905057TV	299.90 GB	299.90 GB	2/4	SEAGATE ST3300657SS-3SJ05WBW	299.90 GB	299.90 GB				
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1/3	SEAGATE ST3300657SS-3SJ1L0X900009049PPPH	300.00 GB	0.00 GB																																													
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2/2	SEAGATE ST3300657SS-3SJ1LNFV00009049QVWW	299.90 GB	299.90 GB																																													
2/3	SEAGATE ST3300657SS-3SJ1GT260000905057TV	299.90 GB	299.90 GB																																													
2/4	SEAGATE ST3300657SS-3SJ05WBW	299.90 GB	299.90 GB																																													
Beeper Mute																																																

11. Customer Support and Contact Information

If you encounter any problems while utilizing the RocketRAID host adapter, or have any questions about this or any other HighPoint Technologies, Inc. product, feel free to contact our Customer Support.

Web Support: <http://www.highpoint-tech.com/websupport/>

E-mail address: suppprt@highpoint-tech.com

HighPoint Technologies, Inc. websites:

<http://www.highpoint-tech.com>

FCC Part 15 Class B Radio Frequency Interference statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Modifications not expressly approved by the manufacturer could void the user's authority to operate the equipment under FCC rules.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

European Union Compliance Statement

This Information Technologies Equipment has been tested and found to comply with the following European directives:

- European Standard EN55022 (1998) Class B
- European Standard EN55024 (1998)