

RocketStor6434TS&6438TS User Manual



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HighPoint Technologies, Inc.

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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)

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Product Overview

The RocketStor 6434TS/6438TS bundle package includes an enclosure for housing your physical drives and a RAID Controller to manage and create RAID arrays of different levels.

- RocketStor 6434S/6438S Enclosure
- HighPoint RocketRAID 3742A Controller

Kit Contents

Before getting started, check to see if any items are missing, damaged, or incorrect. For any discrepancy contact your reseller or go to <https://www.highpoint-tech.com/support-and-services> for online support.

RocketStor 6438TS Kit Contents

- 1x 8-Bay Tower Enclosure
- 1x 16-Port SAS 12Gb/s PCIe3.0 x8 Host Adapter
- 2x SFF-8644(Mini-SAS) Cable
- 40x 3.5" HDD mounting screws
- 40x 2.5" SSD mounting screws
- 1x UL Power Cord
- 1x Quick Installation Guide

RocketStor 6434TS Kit Contents

- 1x 4-Bay Tower Enclosure
- 1x 16-Port SAS 12Gb/s PCIe3.0 x8 Host Adapter
- 1x SFF-8644(Mini-SAS) Cable
- 20x 3.5" HDD mounting screws
- 20x 2.5" SSD mounting screws
- 1x UL Power Cord
- 1x Quick Installation Guide

Feature Specifications	RocketStor 6434TS	RocketStor 6438TS
Form Factor	External SFF-8644(Mini-SAS)	
Host Port	1x SFF-8644(Mini-SAS) Cable	2x SFF-8644(Mini-SAS) Cable
RAID Controller /Bus Interface	RocketRAID 3742A / PCIe 3.0 x8	
RAID Level	0, 1, 5, 6, 10, JBOD	0, 1, 5, 6, 10, 50, JBOD
Max. Capacity	No current limitations	
Number Of drives	Up to 4	Up to 8
Drive Interface	12Gb/s SAS & 6Gb/s SAS/SATA	
Drive Form Factor	3.5" & 2.5" SSD or HDD	
Chassis Material	Brushed Aluminum Housing	
Portable components	Bearing less than or equal to 18KG	
Warranty	2 Year	
Advanced RAID Features	Configurable RAID Block Size up to 1MB (No)	
	Flash ROM for Upgradeable Firmware	
	DV Mode Technology (No)	
	Storage Health Inspector	
	Redundant RAID Configurations	
	Multiple RAID Partitions supported	
	Online Array Roaming	
	Online RAID Level Migration (ORLM) (macOS is not support)	
	Online Capacity Expansion (OCE)	
	RAID Initialization Background/Foreground/Quick	
	Global Hot Spare Disk support	
	Automatic and configurable RAID Rebuilding Priority	
	NVRAM with Write Journaling enhances RAID integrity (No)	
	Disk Format compatible: 512, 512e, 4Kn	
	Larger than 2 TB Drive and RAID Array support	
	Spin down Massive Arrays of Idle Disks support	
Native Command Queuing		
Stagger Drive Spin Up		

	Write Back and Write Through
Storage Monitoring and Management Suite	
RAID Management Suites:	BIOS/Firmware configuration tool, Browser-Based management tool CLI (Command Line Interface) - scriptable configuration tool, API package
SMTP	Email Alert notification
Alarm Buzzer	Buzzer beeping for Fan Failure or Temperature exceeds 60°C
Operating System Support	
Windows	Windows 7 and later Windows Server 2008 and later Microsoft Hyper-V
Linux	Linux kernel 3.10 and later (Redhat/Ubuntu/Debian/Fedora) Support Linux Driver auto Compile
Mac OS	macOS 10.13 ~ macOS Monterey 12.x Support Intel and M1 chip
Operating Environment	
Temperature	(operating) 5°C - 45°C (non-operating) -40°C - 65°C
Relative Humidity	(operating) 8% - 90% RH (Non-condensing) (non-operating) 5% - 95% RH (Non-condensing)
Certification	CE FCC RoHS REACH WEEE

[Step1: Preparing the RocketRAID HBA \(Host Bus Adapter\)](#)

The following instructions describe how to prepare your RocketRAID 3742A HBA for use.

To install your RocketRAID 3742A

Important: Before installing the RocketRAID 3742A Controller, ensure your system is powered OFF.

1. Locate a PCI Express 3.0 x8 slot (or compatible slot) on your PC motherboard.
 - **Note1:** Refer to your PC manual for instructions on how to access your motherboard.
 - **Note2:** Refer to your motherboard manual for instructions on how to locate your PCI Express slot.
2. Align the RocketRAID 3742A with the PCI Express slot and push straight down until the card is fully seated.
3. Tighten the connection by fastening the RocketRAID bracket and enclosure together with a screw.
4. Continue to **Step 2: Install/Update Drivers**
 - **Note3:** A PCI-Express 3.0 x8 card is compatible with PCI-Express 3.0/4.0 x16 slot

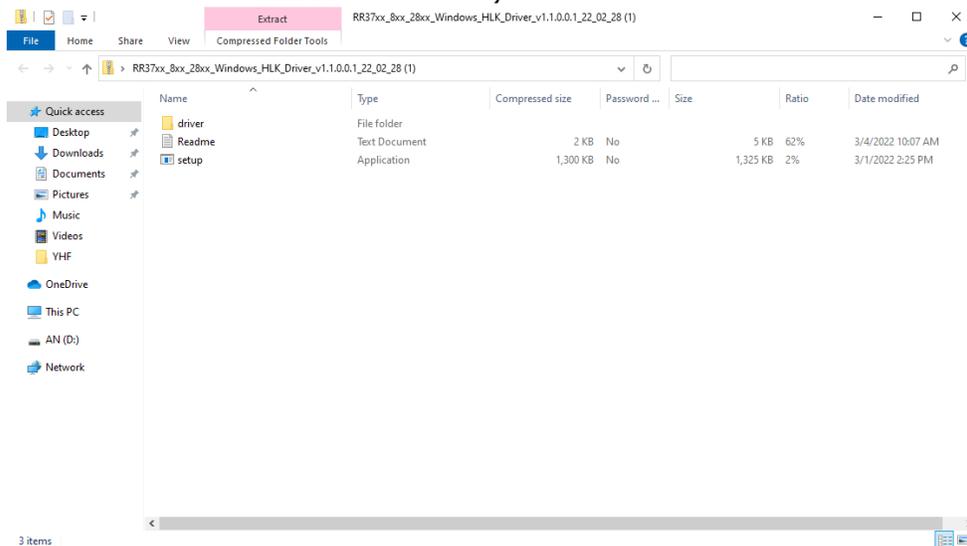
Step 2: Install/Update Drivers

Installing Drivers on an Existing Operating System

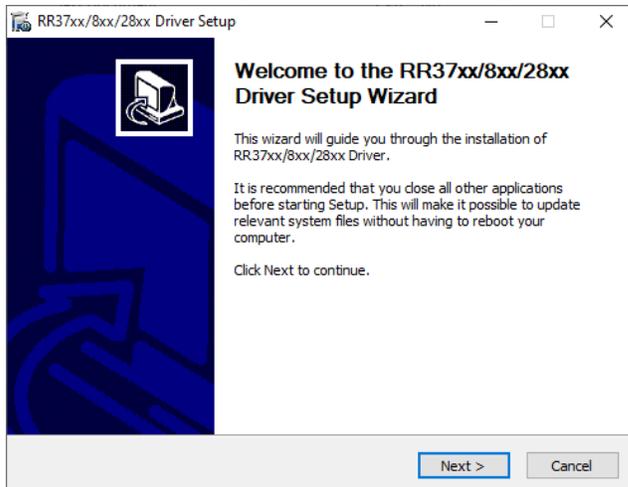
Drivers provide a way for your operating system to communicate with your new hardware. Updating to the latest drivers ensures your product has the latest performance, stability, and compatibility improvements. Drivers are updated regularly at <https://www.highpoint-tech.com/rs6430ts-overview>

For Windows Users:

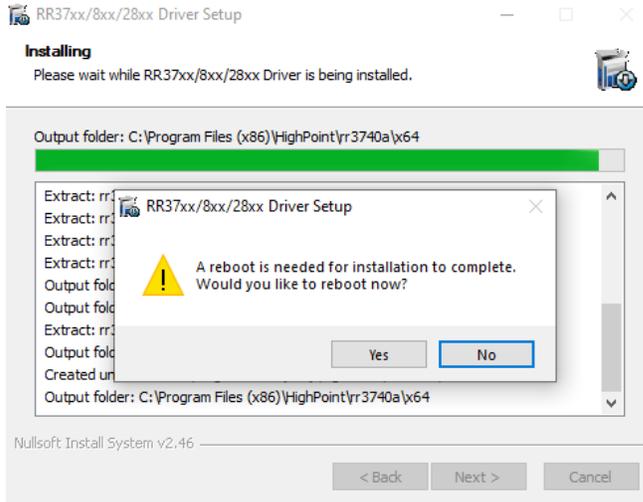
1. Download the latest driver files from our website <https://www.highpoint-tech.com/rs6430ts-overview>
2. Extract the downloaded files onto your PC and note the location of the files.



3. Double click **setup** to start installing the driver



4. Click **Next** and wait for the automatic installation to complete
5. **Reboot** for changes to take effect.



For Mac Users:

1. Obtain latest driver online at <https://www.highpoint-tech.com/rs6430ts-overview>

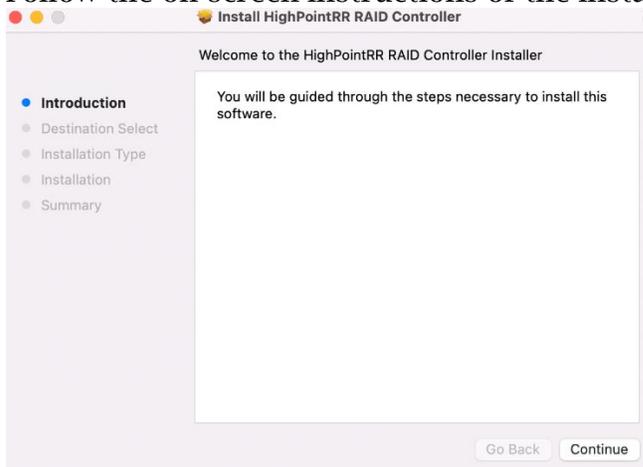
2. Click the downloaded file.



3. A mounted volume will appear on the desktop. Click the icon to open the volume.
4. Click the driver package to start installation (.pkg file)

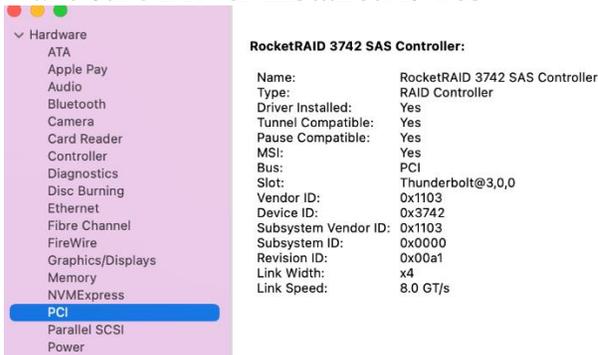


5. Follow the on-screen instructions of the installer.



6. **Reboot** computer for changes to take effect.

7. Make sure **Driver Installed** is **Yes**



Click Apple Icon > About this Mac> System Report > PCI

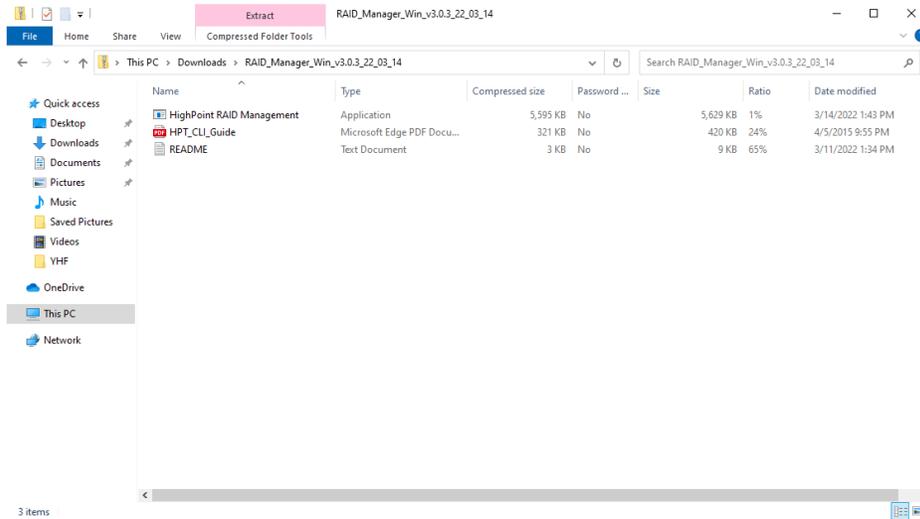
Step 3: Install HighPoint RAID Management (WebGUI)

The HighPoint RAID Management (WebGUI) software is a useful tool used to create, maintain, and view your RAID arrays.

For Windows Users:

Download the latest WebGUI from our website at <https://www.highpoint-tech.com/rs6430ts-overview>

1. Extract and open the contents of the downloaded file.



2. Double-click **HighPoint RAID Management.exe**.



3. Follow the on-screen instructions to complete the WebGUI installation
4. Double-click the **HighPoint RAID Management** desktop icon to start the WebGUI. Alternatively, type <http://localhost:7402> in your browser address bar.



5. Your default web browser will open and prompt for a username and password (Default username: **RAID** / password: **hpt**). Username and password are case-sensitive.

For Mac Users:

1. Download the latest WebGUI from our website <https://www.highpoint-tech.com/rs6430ts-overview>
2. Double Click the downloaded Mac WebGUI file.



3. Double click the **HighPointWebGUI.pkg** to start the WebGUI installer.



4. Follow the installer on-screen instructions to complete the WebGUI installation.
5. Double-click the HighPoint RAID Management desktop icon to start the WebGUI.

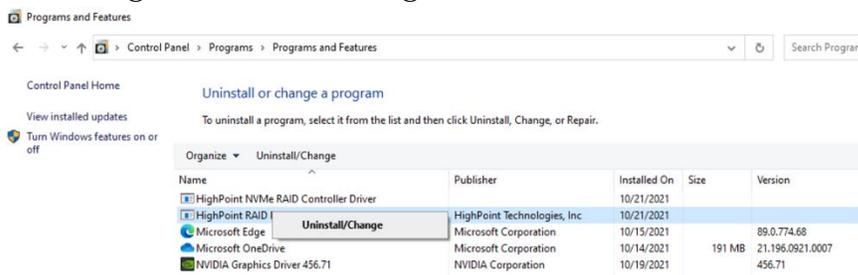


6. Your default web browser will open and prompt for username and password (Default username: **RAID** / password: **hpt**). Username and password are case-sensitive.

Uninstalling HighPoint RAID Management (WebGUI)

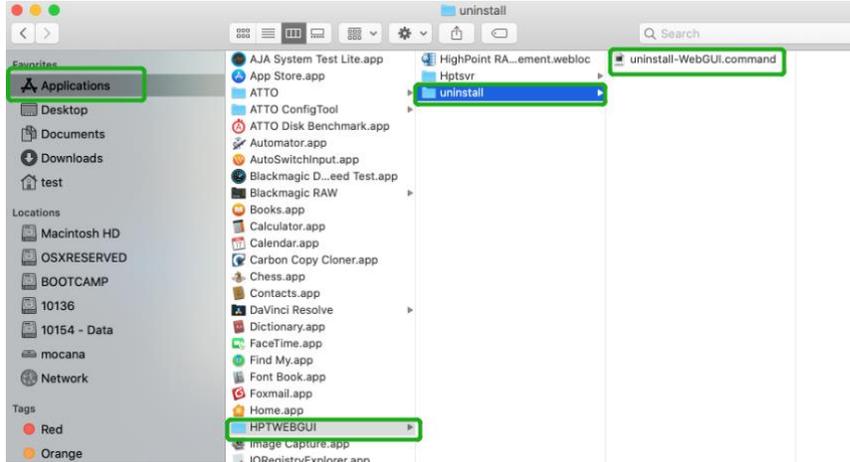
For Windows Users:

1. Open Control Panel.
2. Click Uninstall a program.
3. Select HighPoint RAID Management to uninstall.



For Mac Users:

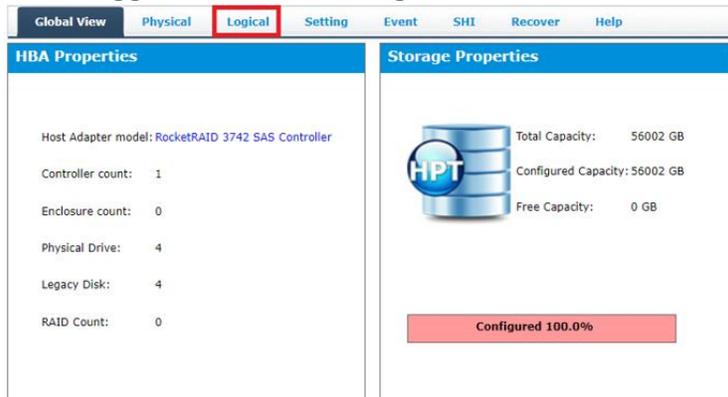
1. Navigate to /Applications/HPTWEBGUI/uninstall.
2. Click on the uninstall script.
3. Type in the Administrator password when prompted.



Step 4A: Create RAID Arrays using WebGUI

For Mac and Windows users:

1. Login to WebGUI (Default username: **RAID** / password: **hpt**).
2. Once logged in, click the Logical tab.



3. Click Create Array:

Logical Device Information						
Name	Type	Capacity	BlockSize	SectorSize	OS Name	Status
Device_1_1	Hard Disk	256.06 GB			HPT DISK 0_0	Legacy
Device_1_2	Hard Disk	256.06 GB			HPT DISK 0_1	Legacy
Device_1_3	Hard Disk	1.00 TB			HPT DISK 0_2	Legacy
Device_1_4	Hard Disk	3.00 TB			HPT DISK 0_3	Legacy

Physical Device Information				
Location	Model	Capacity	Max Free	
1/1	Samsung SSD 860 PRO 256GB-S42WNF0K401266V	256.06 GB	0.00 GB	
1/2	Samsung SSD 860 PRO 256GB-S42WNX0R701472T	256.06 GB	0.00 GB	
1/3	ST1000NM0033-92M173-Z1W110F6	1.00 TB	0.00 GB	
1/4	TOSHIBA DT01ACA300-Y731JWPAS	3.00 TB	0.00 GB	

4. The RAID creation page provides many features, options, and settings.
5. Select **RAID 5** for Array Type.
6. If desired name the array. The example shown below uses the name “Tutorial Array”.
7. Select **Quick Init** as the initialization method. (**Note:** Quick Init gives immediate access to the array by skipping parity synchronization. Recommended for testing/verification purposes or when new disks are used.)
8. Select **Write Back** as the **Cache Policy** for better disk write performance.
9. Select **64K** as the **Block Size**.
10. Select all 4 available disks.
11. Leave the **Capacity** setting at their default values.
12. Click **Create**.

Create Array					
Array Type:	RAID 5				
Array Name:	Default				
Initialization Method:	Quick Init				
Cache Policy:	Write Back				
Block Size:	64K				
	<input type="button" value="Select All"/>				
Available Disks:	<input checked="" type="checkbox"/>	1/1	Samsung SSD 860 PRO 256GB-S42WNF0K401266V	256.06 GB	0.00 GB
	<input checked="" type="checkbox"/>	1/2	Samsung SSD 860 PRO 256GB-S42WNX0R701472T	256.06 GB	0.00 GB
	<input checked="" type="checkbox"/>	1/3	ST1000NM0033-92M173-Z1W110F6	1.00 TB	0.00 GB
	<input checked="" type="checkbox"/>	1/4	TOSHIBA DT01ACA300-Y731JWPAS	3.00 TB	0.00 GB
Capacity: (According to the max free space on the selected disks)	<input type="text" value="Maximum"/> (MB)				
<input type="button" value="Create"/>					

13. Once created, the WebGUI will acknowledge the array has been created and the system will prompt you to initialize the new volume.

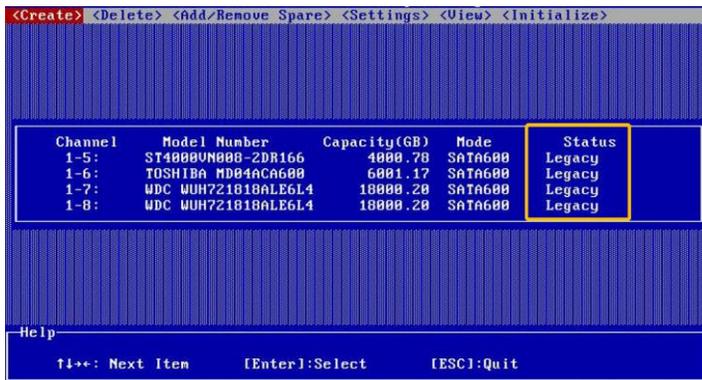
14. Tutorial_Array can now be seen under Logical Device Information. (Take note that the OS name is HPT DISK 0_0; this will help identify which volume to initialize)

Logical Device Information						
Name	Type	Capacity	BlockSize	SectorSize	OS Name	Status
 Tutorial_Array	RAID 5	18.00 TB	64k	512B	HPT DISK 0_0	Normal Maintenance

Step 4B: Create RAID Array using RocketRAID BIOS (PC only)

RAID arrays can also be created using the RocketRAID BIOS. To enter the RocketRAID 3742A BIOS menu, press **CTRL + H** during PC boot up.

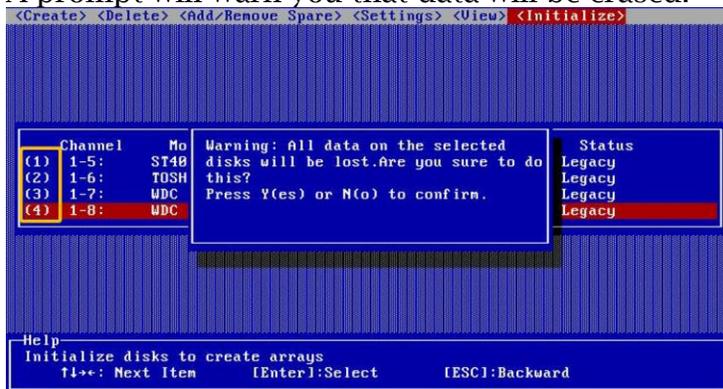
Legacy disks, or disks that contain previous partitions, have to be **initialized** before they can be used for RAID.



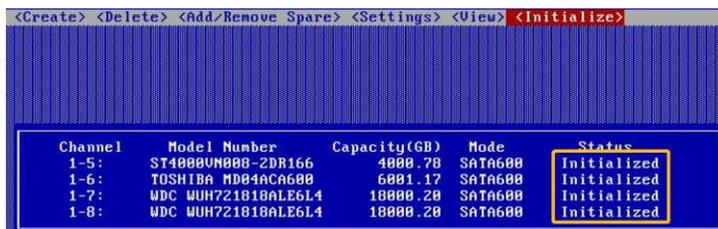
Initializing Disks

Before initializing, you must make sure you have the '**Initialize**' window selected. The red frame represents your current selection. By default, you start on the '**Create**' panel.

1. Enter the '**Initialize**' window, press '**Enter**', the red frame represents the currently selected disk, press '**Enter**' again to select the disk.
2. A prompt will warn you that data will be erased.

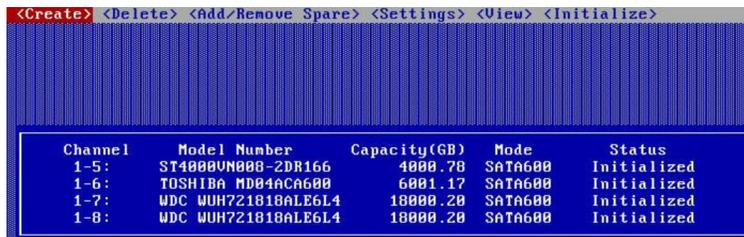


3. Select **Yes** (enter 'y' from the keyboard), Initialization successful.



4. Once initialized, you can proceed to create an array.
Create Arrays

a. Navigate to the 'Create' panel



b. Press 'Enter', select the RAID type you want to create.



c. E.g create RAID0

01. Press 'Enter', select RAID0: Striping

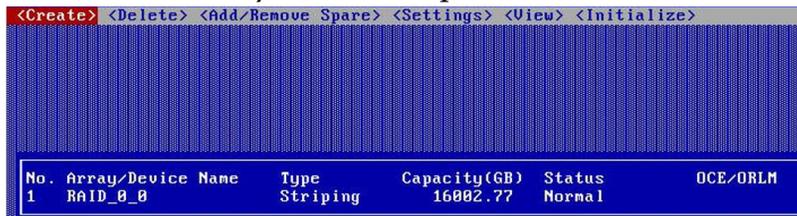
02. Select 'Array/Device Name' and press 'Enter' to modify the name of the Array

03. Select 'Select Devices' and press 'Enter', select the disks to create the RAID, the rest of the parameters can use the default setting

04. Select 'Start Creation' and press 'Enter'



d. Your created array will show up in the Create window.



- e. Exit the BIOS, press 'Esc', enter 'y' from the keyboard



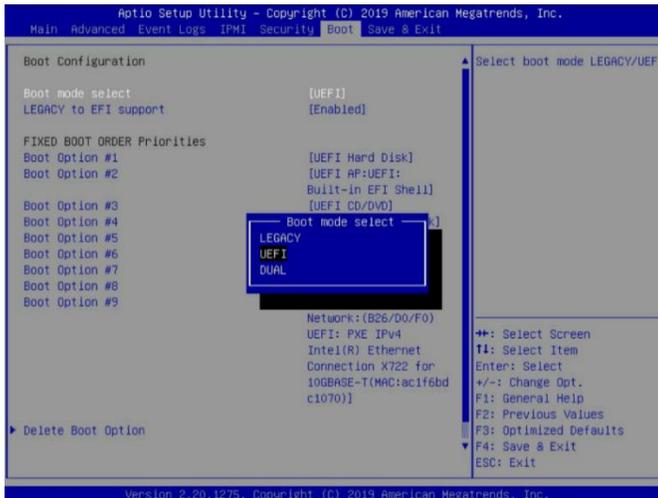
Step 4C: Create RAID Arrays using the RocketRAID Series UEFI

UEFI BIOS Setting

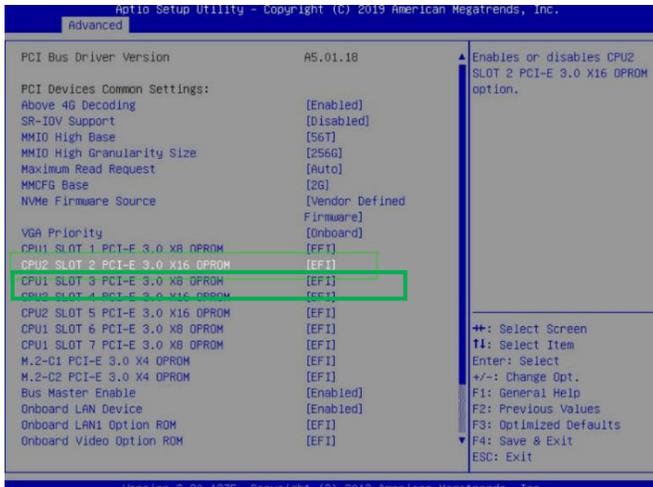
Different motherboards will provide different UEFI-related BIOS settings. Please consult your motherboard's user manual for more information.

Set UEFI setting with SuperMicro X11DPH-T motherboard as an example.

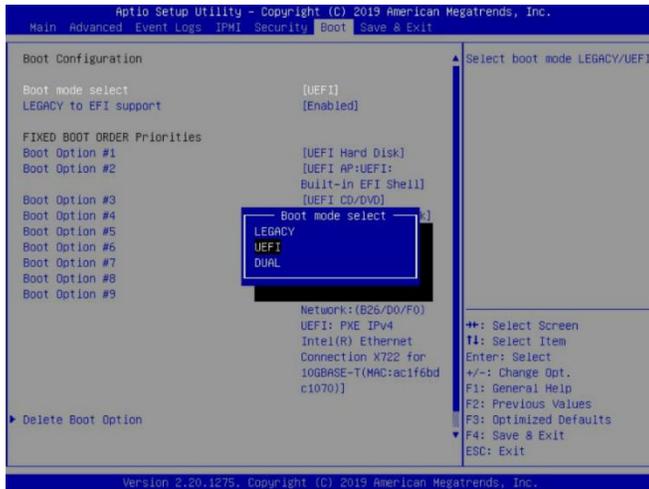
1. Set "Boot Mode Select" to "UEFI"



2. Under "Advanced->PCIe/PCI/PnP Configuration->", change "CPUx Slot x PCI-E OPRM" to "EFI". "x" represents the PCIe slot assignment. For this example, the RR3740 is installed into "CPU2 Slot 2".



3. Set "Boot Mode Select" to "UEFI".



Preparing the USB Flash Drive and UEFI Package

When preparing the USB flash drive, make sure to format the **USB partition as FAT32**. The package must be unzipped directly to the root of the bootable USB flash drive. All of the following items must be present in the root of the USB flash drive.

efi	4/20/2022 9:27 AM	File folder	
3742uefi.rom	10/25/2021 9:13 AM	ROM File	69 KB
ArrayCreate.efi	10/14/2021 4:31 PM	EFI File	95 KB
load.efi	1/26/2021 1:27 PM	EFI File	103 KB
README	10/25/2021 9:09 AM	Text Document	4 KB
rr3742.nsh	7/15/2021 5:32 PM	NSH File	1 KB
startup.nsh	9/4/2018 4:54 PM	NSH File	1 KB

Creating or delete the RAID Array

1. Insert the USB flash drive to the motherboard, Query the files in the USB flash drive and enter the command: dir

```

FS3:\zy\RR3742_UEFI_v1.0.3_2021_10_25> dir
Directory of: FS3:\zy\RR3742_UEFI_v1.0.3_2021_10_25\
04/20/2022 09:33 <DIR>          4,096  .
04/20/2022 09:33 <DIR>          4,096  ..
10/25/2021 09:13              70,656  3742uefi.rom
10/14/2021 16:31             96,960  ArrayCreate.efi
01/26/2021 13:27            105,344  load.efi
10/25/2021 09:09              3,371  README.txt
07/15/2021 17:32              21      rr3742.nsh
09/04/2018 16:54              240     startup.nsh
04/20/2022 09:24 <DIR>          4,096  efi
        6 File(s)      276,592 bytes
        3 Dir(s)
FS3:\zy\RR3742_UEFI_v1.0.3_2021_10_25> _

```

2. Enter the following command to flash the UEFI ROM to the RR3742 RAID Controller:
rr3742.nsh

```
FS3:\zy\RR3742_UEFI_v1.0.3_2021_10_25> rr3742.nsh
FS3:\zy\RR3742_UEFI_v1.0.3_2021_10_25> load.efi 3742uefi.rom
Load Utility for Flash EPROM v1.1.1
(built at Jan 26 2021 13:27:20)

Set flash size to 69K
Found adapter 0x37421103 at PCI 2:0:0
Offset address 0x20000
EPROM Vendor: WINBOND W25X40BV
Erasing .....Succeeded
Flashing ....

Flashing Success (total retry 0)

Verifying ....

Passed !
FS3:\zy\RR3742_UEFI_v1.0.3_2021_10_25> _
```

3. Next, enter the following command to enter the RAID creation utility:
ArrayCreate.efi

```
FS3:\zy\RR3742_UEFI_v1.0.3_2021_10_25> ArrayCreate.efi
Highpoint RAID utility for UEFI (version: 20211014)
=== Controller information:
  PCI Location: 02:00:00
    Vendor: HighPoint Technologies, Inc.
    Product: RocketRAID 3742 Controller

=== Physical device list(count 4):
1/1 Samsung SSD 860 PRO 256GB-S42MNF0K401266V, 256060MB(MaxFree 0MB), Normal [MC
]
1/2 Samsung SSD 860 PRO 256GB-S42MNX0R701472T, 256060MB(MaxFree 0MB), Normal [MC
]
1/3 ST1000NM0033-92M173-Z1H110F6, 1000204MB(MaxFree 0MB), Normal [MC]
1/4 TOSHIBA DT01ACA300-Y731JWPAS, 3000592MB(MaxFree 0MB), Normal [MC]
```

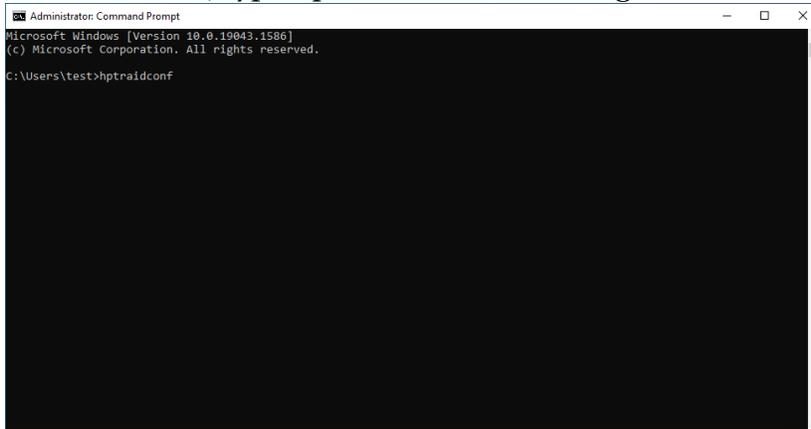
4. You can use the commands: **create RAID0**, **delete 1** to create or delete arrays

```
>>> Please specify command to execute:
<<< create RAID0
  Creating array: RAID0_000041A7.
  Array created successfully.

>>> Please specify command to execute:
<<< delete 1
  Deleting array: RAID_0_0 idx 0 9
<<<<< hpt_delete_array: id 9 options 2
  Array deleted successfully.
=====
```

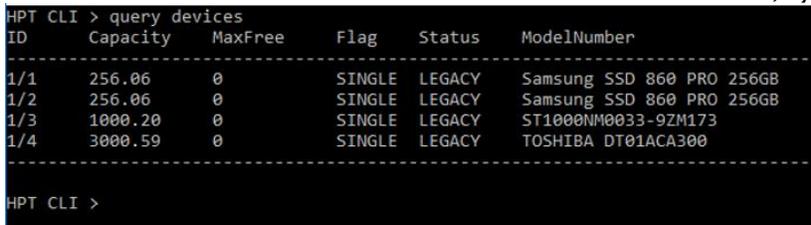
Step 4D: Create RAID Arrays using CLI (Windows / Linux / FreeBSD)

Start your operating systems console such as command prompt (Windows). On the command line, type `hptraidconf` to start HighPoint CLI.



```
Administrator: Command Prompt
Microsoft Windows [Version 10.0.19043.1586]
(c) Microsoft Corporation. All rights reserved.
C:\Users\test>hptraidconf
```

In order to see the devices connected to the controller, type **query devices**.

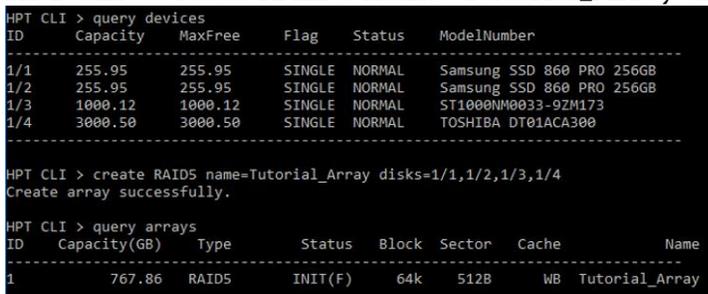


```
HPT CLI > query devices
ID      Capacity  MaxFree  Flag   Status  ModelNumber
-----
1/1     256.06    0        SINGLE LEGACY   Samsung SSD 860 PRO 256GB
1/2     256.06    0        SINGLE LEGACY   Samsung SSD 860 PRO 256GB
1/3     1000.20   0        SINGLE LEGACY   ST1000NM0033-9ZM173
1/4     3000.59   0        SINGLE LEGACY   TOSHIBA DT01ACA300
-----
HPT CLI >
```

The device ID gives the position of each drive and is needed to select which drive will be included in the array.

To create a 4 disk RAID 5 array named `Tutorial_Array` input the following command:

HPT CLI > create RAID5 name=Tutorial_Array disks=1/1,1/2,1/3,1/4



```
HPT CLI > query devices
ID      Capacity  MaxFree  Flag   Status  ModelNumber
-----
1/1     255.95    255.95   SINGLE NORMAL   Samsung SSD 860 PRO 256GB
1/2     255.95    255.95   SINGLE NORMAL   Samsung SSD 860 PRO 256GB
1/3     1000.12   1000.12  SINGLE NORMAL   ST1000NM0033-9ZM173
1/4     3000.50   3000.50  SINGLE NORMAL   TOSHIBA DT01ACA300
-----
HPT CLI > create RAID5 name=Tutorial_Array disks=1/1,1/2,1/3,1/4
Create array successfully.
HPT CLI > query arrays
ID      Capacity(GB)  Type   Status  Block  Sector  Cache  Name
-----
1       767.86        RAID5  INIT(F) 64k    512B    WB     Tutorial_Array
```

To view the created array, type **query arrays**.

For more HighPoint CLI information type `help` in the command line or refer to the documentation included in the software package.

Step 5: Initialize and format the RAID Array

Before using the newly created RAID array, you must initialize and format the new volume.

For Windows Users:

1. After creating the RAID array, open Windows **Disk Management**.
2. Disk Management will ask to initialize unknown disks either in MBR format or GPT.

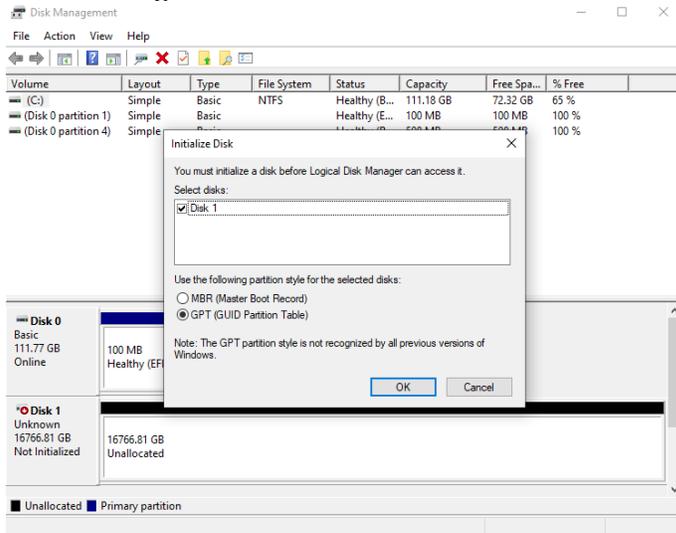
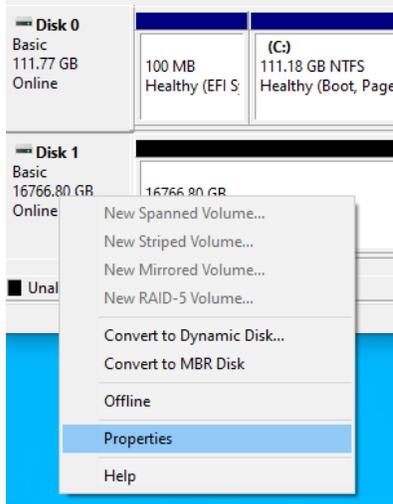


Figure. (Windows) Disk Management asks to initialize the disks before use. As a general rule, select MBR for disks less than 2TB and GPT for disks greater than 2TB.

3. Right click the new disk, and click properties.



4. In properties, check and make sure it is an HPT Disk.

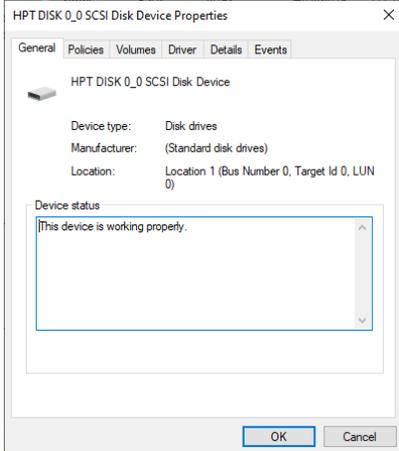


Figure. Disk properties show HPT Disk 0_0.

5. Once the disk has been confirmed, right click the unallocated space and click New Simple Volume.

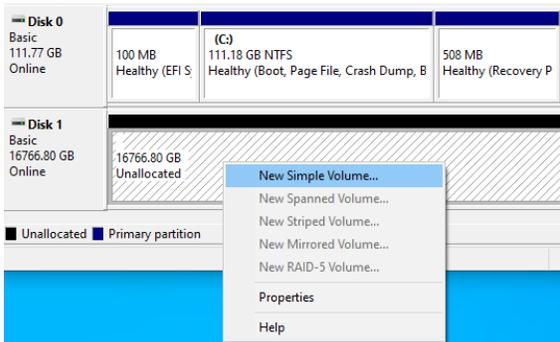


Figure. Right Click unallocated space, then click New Simple Volume.

6. Follow the on-screen instructions to configure and format the drive.
7. Once finished, the new volume will receive a drive letter and be available for use.

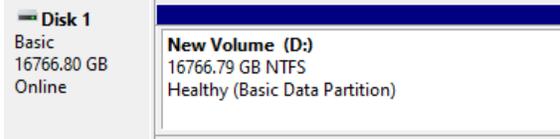


Figure. RAID array is now formatted as NTFS and drive letter D:

For Mac Users:

1. After creating a RAID array, click Initialize when prompted. (**Note:** If you ignored the prompt, simply open Disk Utility).

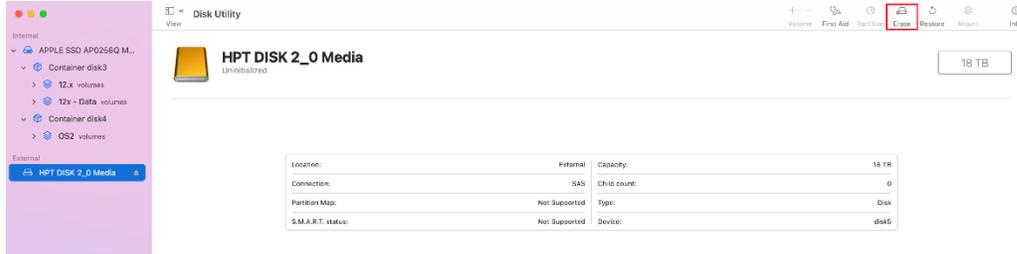
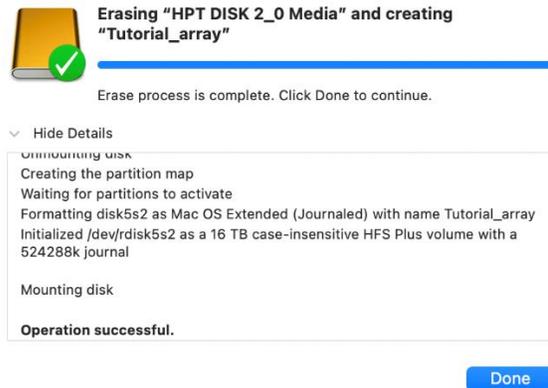


Figure. Disk Utility for Mac.

2. In Disk Utility, select the Volume you created on the right, then click the Erase tab.



3. Select the desired disk format and disk name then click **Erase**. (**Note:** All previous data on disks will be erased.)



4. When finished, your new RAID volume will be available for use.



Figure. (Mac) Tutorial_Array volume created and mounted on desktop.

Manage your RAID array

The following features allow you to monitor and maintain your arrays to prevent any critical failures from occurring:

- Spare Pool
- Email Notifications
- SMART Monitoring

RAID Spare Pool

Physical drives marked as a spare will automatically be added to a redundant RAID array (RAID levels 1, 10, 5, 50 and 6) whenever there is a disk failure. Enabling this feature minimizes the chances of data loss since it reduces the time an array is in critical status.

Add/Remove Spare Using WebGUI:

1. Log in WebGUI
2. Click **Logical**
3. Click **Spare Pool**
4. Check the box for the disk you want as a spare from **Available Disks**
5. Click **Add Spare**



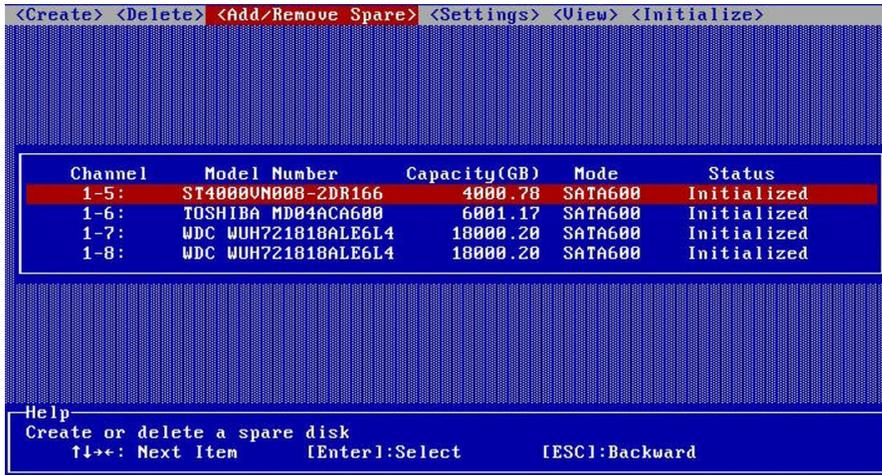
The screenshot shows the RAID WebGUI interface. The top navigation bar includes tabs for Global View, Physical, Logical (selected), Setting, Event, SHI, Recover, Logout, and Help. On the left sidebar, there are links for Create Array, Spare Pool (circled in green), Logical Device, Rescan, and Beeper Mute. The main content area is divided into two sections: Spare Pool and Available Disks. The Spare Pool section has a 'Remove Spare' button. The Available Disks section contains a table with four rows of disk information. The first row is selected with a checked checkbox. At the bottom of the Available Disks section, there is an 'Add Spare' button (circled in green).

Spare Pool			
Remove Spare			
Available Disks			
<input checked="" type="checkbox"/>	Device_1_13	HGST HUSMM3216ASS200-4GV03PSX	1.60 TB
<input type="checkbox"/>	Device_1_14	WDC WD60EFRX-68MYMN1-WD-WX31DB48X74A	6.00 TB
<input type="checkbox"/>	Device_1_15	HGST SDLL1MLR038TCCA1-A016383BY122Y1227150	3.84 TB
<input type="checkbox"/>	Device_1_16	TOSHIBA KPM51RUG480G-9830A00BTTXE	480.02 GB

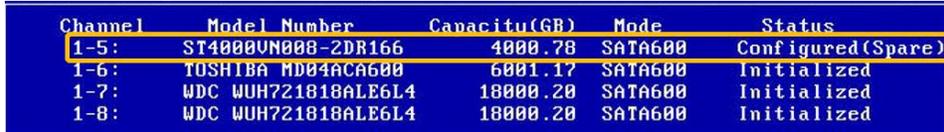
Disks added to the spare pool will show under **Spare Pool** and can be removed by checking the disk checkbox from **Spare Pool** > Click **Remove Spare**.

Using the RocketRAID 3742A BIOS menu:

1. Navigate to the 'Add/Remove Spare' window



2. Press the up and down keys to select the disk to be added as 'Spare'.



3. Press 'Enter' again to remove 'Spare'

Email Notifications

When enabled, all added recipients will receive an email notification for any event log entries.

The following topics are covered under email:

SMTP Setting

Adding Recipients

You can instruct the controller to send an email out to the recipients of your choosing when certain events trigger (for more information, see Event Tab).

SMTP settings

SMTP Setting

Enable Event Notification

Server Address (name or IP):

Mail From (E-mail address):

Login Name:

Password:

SMTP Port:

Support SSL:

SMTP Setting

Enable Event Notification

Server Address (name or IP):

Mail From (E-mail address):

Login Name:

Password:

SMTP Port:

Support SSL:

Note: After you click **Change Setting**, the password field will be reset.

To set up email alerts:

Using a **Yahoo Mail** account as an example:

1. Check the **Enable Event Notification** box.
2. Enter the ISP server address name or SMTP name
For example: **smtp.mail.yahoo.com**
3. Type in the email address of the **sender** (email account that is going to **send** the alert)
For example: hptu@yahoo.com
4. Type in the account name and password of the sender
5. Type in the SMTP port (default: 25)
6. Check the **support SSL** box if SSL is supported by your ISP (note the port value will change to 465).

Email Precautions

If you want to receive notification mail using a Webmail account, you may need to modify the mailbox's permissions. The following example is for a Yahoo and outlook webmail account.

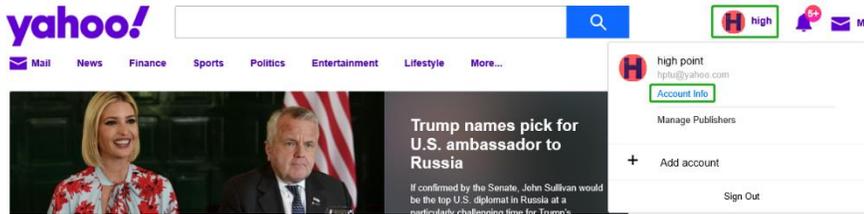
[Yahoo Setting:](#)

To change permission settings, please refer to the following link:
<https://help.yahoo.com/kb/account/SLN27791.html?impressions=true>

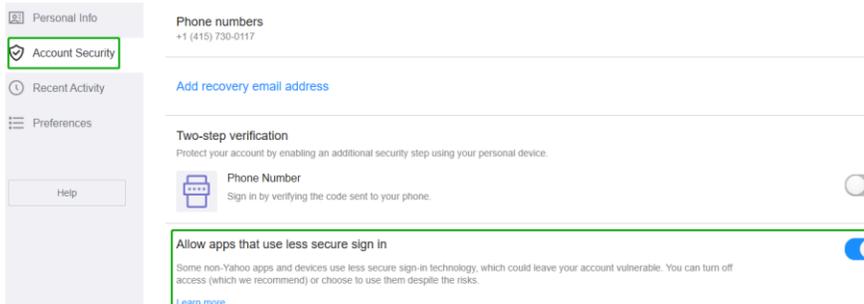
- Step 1. Log in to yahoo email; click "**Sign in**" to log in:
<https://www.yahoo.com>



Step 2. After a successful login, click "Account Info" under the user name:

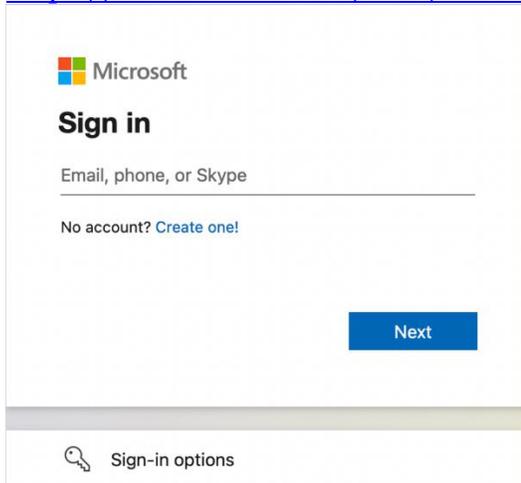


Step 3. Go to the "Account Info" page, click "Account Security". On the "Account Security" page, click the "Allow apps that use less secure sign in" button:

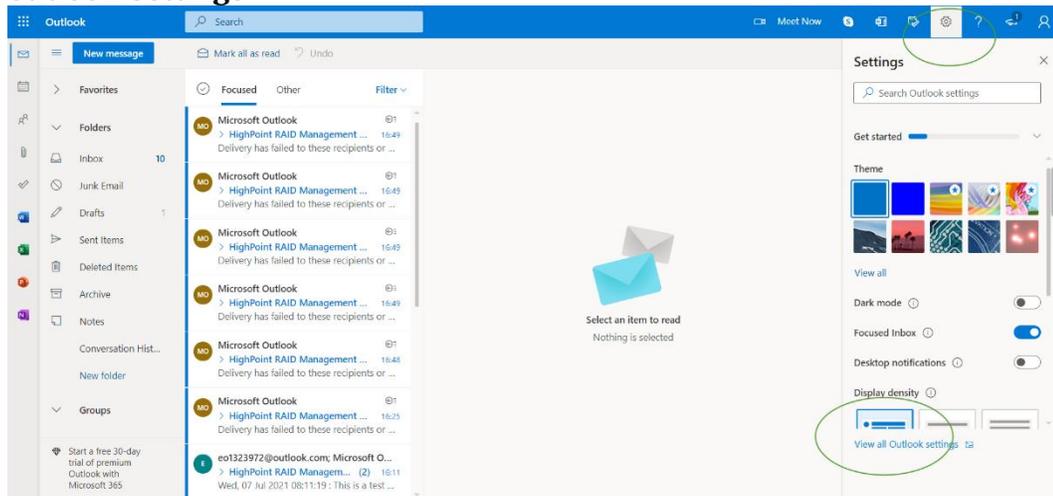


Outlook Setting:

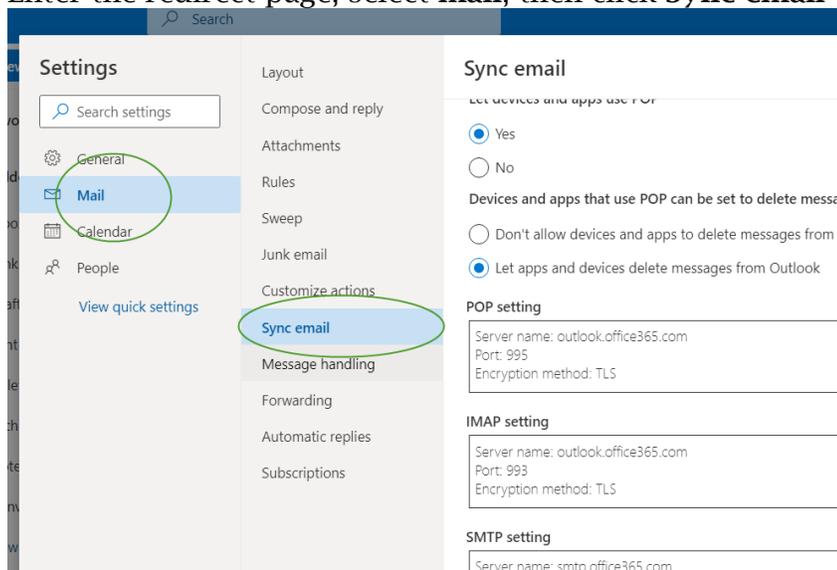
Step 1. Sign in to mail and set it up, Login email address link: <https://outlook.live.com/mail/inbox>



Step 2. Click **Settings** in the upper right corner, select the lower left corner: **View all outlook settings**



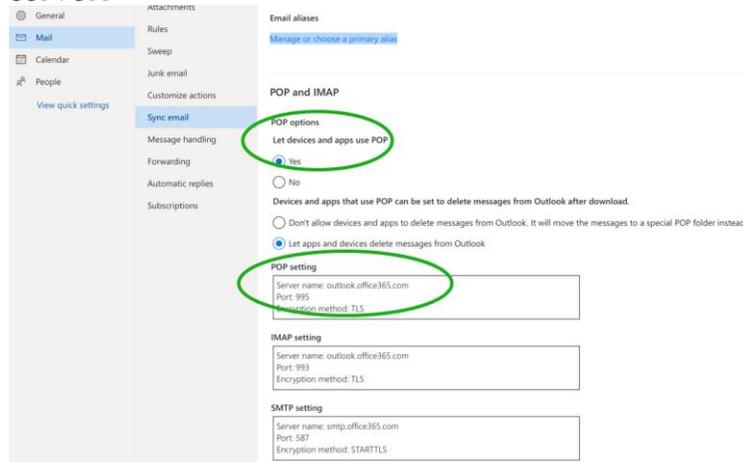
Step 3. Enter the redirect page, select **mail**, then click **Sync email**



Step 4. Let devices and apps use pop select '**yes**'

Step 5. choose 'Let app and devices delete messages from Outlook'

Note: The screenshot below can be used as a reference. The POP setting is the mailbox server.



Note: If you are having trouble configuring notification for your Email account, please contact our [Technical Support Department](#)

Adding Email Recipients

You can add multiple email addresses as receivers of a notice.

1. Type the email of the recipient in the **E-mail** text box
2. Type the name of the recipient in the **Name** text box
3. Set which type(s) of events will trigger an email using the respective **Event Level** check boxes.

A screenshot of the 'Add Recipient' form. The title bar is blue with the text 'Add Recipient'. Below the title bar, there are three input fields: 'E-mail:' with the value 'hptu@yahoo.com', 'Name:' with the value 'hpt', and 'Event Level:' with three checked checkboxes: 'Information', 'Warning', and 'Error'. At the bottom left, there is a button labeled 'Add Test'.

4. (Optional) Click **test** to confirm the settings are correct by sending out a test email

A screenshot of the 'SMTP Setting' and 'Recipients' sections. The 'SMTP Setting' section has a blue header and contains the following fields: 'Enable Event Notification' (checked), 'Server Address (name or IP):' (smtp.mail.yahoo.com), 'Mail From (E-mail address):' (hptu@yahoo.com), 'Login Name:' (hptu@yahoo.com), 'Password:' (empty), 'SMTP Port:' (465), and 'Support SSL:' (checked). Below this is a 'Change Setting' button. The 'Recipients' section has a blue header and contains a table with columns 'E-mail', 'Name', and 'Event Level'. Below the table is an 'Add Recipient' button. At the bottom, there is a white notification box with the text 'Mail has been sent successfully.' and a 'Close' button.

- Click **add** to add the 'recipient to recipient' list
- The added recipient will display in under **Recipients**

Recipients		
E-mail	Name	Event Level
<input type="checkbox"/> hptu@yahoo.com <input type="button" value="Delete"/>	hpt	Information , Warning , Error

The email will include the output recorded in the event log.

Example email message:

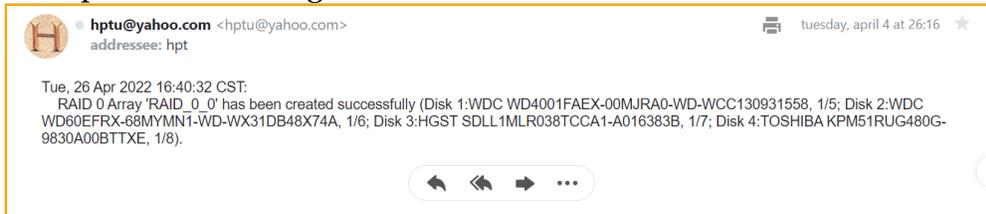


Figure. Example event log email

WebGUI Remote Login

A user connected to a local network can remotely access the WebGUI using the IP address of the host device.

To obtain your IP address

Note: If you want to use this function, please set WEBGUI login password to prevent others from changing your settings

For Windows Users:

- Open a command prompt window on the host computer.
- Type **ipconfig**.
- Look for the section that contains your network adapter information.
- Note the IP address.

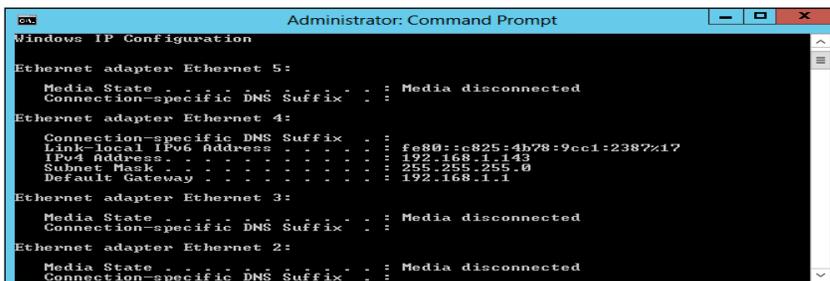


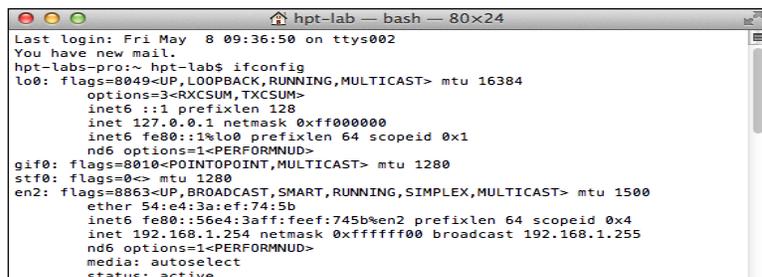
Figure. Example: The IPv4 address is under Ethernet adapter Ethernet 4 and is 192.168.1.143

Note: Make sure **Restrict to localhost access** is **disabled** in WebGUI Setting (Refer to setting)

You can then remotely access the WebGUI using any other computer that is in your local network by opening any web browser and typing **http://{IP address of host computer}:7402** (default port is 7402).

For Mac Users:

1. Open a **terminal** window on the host computer (computer that is connected to the devices.)
2. Type `ifconfig`.
3. Look for the connection that has **status: active**
4. Write the IP address located after **inet**:



```
hpt-lab — bash — 80x24
Last login: Fri May 8 09:36:50 on ttys002
You have new mail.
hpt-labs-pro:~ hpt-lab$ ifconfig
lo0: flags=8049<UP,LOOPBACK,RUNNING,MULTICAST> mtu 16384
    options=3<RXCSUM,TXCSUM>
    inet6 ::1 prefixlen 128
    inet 127.0.0.1 netmask 0xff000000
    inet6 fe80::1%lo0 prefixlen 64 scopeid 0x1
    nd6 options=1<PERFORMNUD>
gif0: flags=8010<POINTOPOINT,MULTICAST> mtu 1280
stf0: flags=0<> mtu 1280
en2: flags=8863<UP,BROADCAST,SMART,RUNNING,SIMPLEX,MULTICAST> mtu 1500
    ether 54:e4:3a:ef:74:5b
    inet6 fe80::56e4:3aff:feef:745b%en2 prefixlen 64 scopeid 0x4
    inet 192.168.1.254 netmask 0xfffff00 broadcast 192.168.1.255
    nd6 options=1<PERFORMNUD>
    media: autoselect
    status: active
```

Figure. Example: en2 has active status, the IP is 192.168.1.254

Storage Health Inspection (SHI)

The Storage Health Inspector (SHI) monitors each individual disk's health. Monitoring disk SMART attributes can prevent critical RAID failures from occurring.

This section covers the following:

- Enabling SMART Monitoring
- Disabling SMART Monitoring
- Changing HDD Temperature Threshold

Enabling SMART Monitoring



The screenshot shows the SHI web interface with the 'SHI' tab selected. It displays a table of storage health data and an HDD Temperature Threshold setting.

Storage Health Inspector(SHI)						
Controller ID	Location#	Device Serial Number	RAID	°F	Bad Sectors Found & Repaired	S.M.A.R.T
1	1	S42WNFK401266V	None	80	None	Detail
1	2	S42WNX0R701472T	None	86	None	Detail
1	3	Z1W110F6	None	102	None	Detail
1	4	Y731JWPAS	None	100	None	Detail

HDD Temperature Threshold

Set harddisk temperature threshold : °F

To access the SMART attributes of an individual disk:

1. Log in to WebGUI (default **user:** RAID **password:** hpt).
2. Select the proper controller using the drop down menu on the top left.
3. Click the **SHI** tab.
4. Click **SMART** on the desired disk.
5. Click **Enable** to enable SMART monitoring.

Disabling SMART monitoring

You have the option to disable SMART monitoring on each individual disk:

1. Select the proper controller using the drop down menu on the top left.
2. Click the **SHI** tab.
3. Click **SMART** on desired disk.
4. Click **Disable**.

Note: Disabling SMART will prompt the Storage Health Inspector to change the disk status to 'Failed'. The RocketRAID alarm will **not** alert you when this setting is disabled. Any potential warnings related to S.M.A.R.T attribute technology will not trigger.

Changing HDD Temperature Threshold

To ensure hard disk temperatures remain cool, enable SMART to monitor disk temperatures. In **SHI**, you can set a threshold so that the WebGUI or controller alarm (if enabled) can warn you when physical disks get too hot.

1. Log in to WebGUI.
2. Select the controller from the drop down on the top left.
3. Click **SHI**.
4. Type the desired harddisk temperature threshold (°F).
5. Click **Set**.

Utilizing the Health Inspector Scheduler

The **Health Inspector Scheduler (HIS)** enables you to periodically check your disk/arrays to ensure they are functioning optimally.

Controller(1): RR3742 ▾

HighPoint
Technologies, Inc.

Global View Physical Logical Setting Event **SHI** Recover Help

Tasks List

New Verify Task

RAID_5_0
Task Name:

Occurs one time on 2022-3-29 at 0:0:0

Occurs every 1 (Day(s)) on Sunday 1 at 0:0:0

Schedule: Start date: 2022-3-29 End date: 2022-3-29
 No end date

New Check Disk Task

Device_1_13(ST14000NM0018-2H4101S)
 Device_1_14(WDC WUH721818ALE6L4J)
 Device_1_15(WDC WUH721818ALE6L4J)
 Device_1_16(ST6000VN0041-2EL11C4)

Auto fix the bad sector:

Task Name:

Occurs one time on 2022-3-29 at 0:0:0

Occurs every 1 (Day(s)) on Sunday 1 at 0:0:0

Schedule: Start date: 2022-3-29 End date: 2022-3-29
 No end date

Health Inspector Scheduler

Task Name:

Select a Schedule: Daily Weekly Bi-Weekly Monthly

Select a time: Sunday 1 0:0:0

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Creating a New Verify Task

All arrays will appear under New Verify Task

1. Log in to WebGUI.
2. Select the proper controller from the top left drop down.
3. Click **SHI**.
4. Click **Schedule**.
5. Select the array you want to schedule the verify task.
6. Type the name in **Task Name** entry box.
7. Choose whether you want to schedule.
 - One time verify task on specific date (YYYY-MM-DD) at (HH:MM:SS, 24-hr clock).
 - Or a specific schedule you can adjust based on Daily, Weekly, or Monthly options.
8. Click **Submit**.
9. Your entry will appear under **Tasks List**.

Note: New Verify Task box only appears if you have normal status arrays. If you have a critical array, New Rebuild Task will replace New Verify Task.

RAID Expansion (OCE/ORLM)

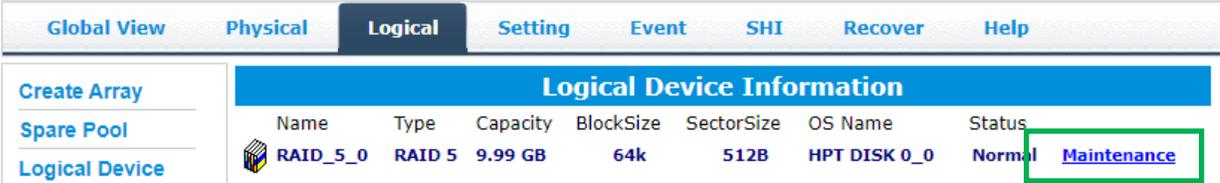
Important: Before using OCE/ORLM, we recommend that you Verify the current RAID array, using the WebGUI's Verify function, under Maintenance. The OCE/ORLM process is irreversible; once you start an OCE/ORLM procedure, the process can be temporarily paused (using the Maintenance option), but it must ultimately be resumed until completion.

OCE – Online Capacity Expansion

OCE allows you to add storage capacity to an existing RAID array while preserving your existing data. In most cases, this feature is used when adding one or more physical drives to an array (for example, expanding from a 3-drive RAID 5 configuration to a 7-drive RAID 5 configuration).

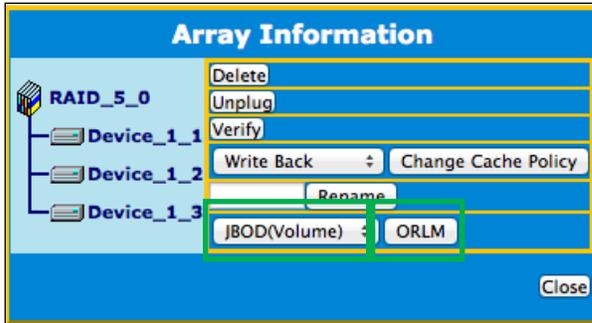
To Expand an Array:

1. Start the WebGUI and click the **Logical** tab
2. Locate the array you want to expand, and click the **Maintenance** option displayed to the far-right of the interface:

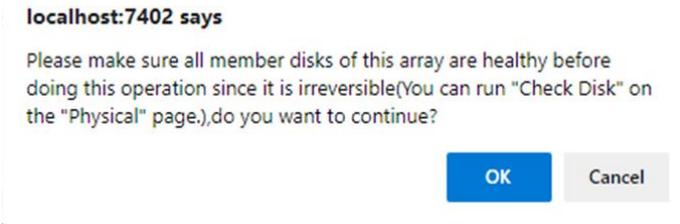


Logical Device Information							
Name	Type	Capacity	BlockSize	SectorSize	OS Name	Status	
 RAID_5_0	RAID 5	9.99 GB	64k	512B	HPT DISK 0_0	Normal	Maintenance

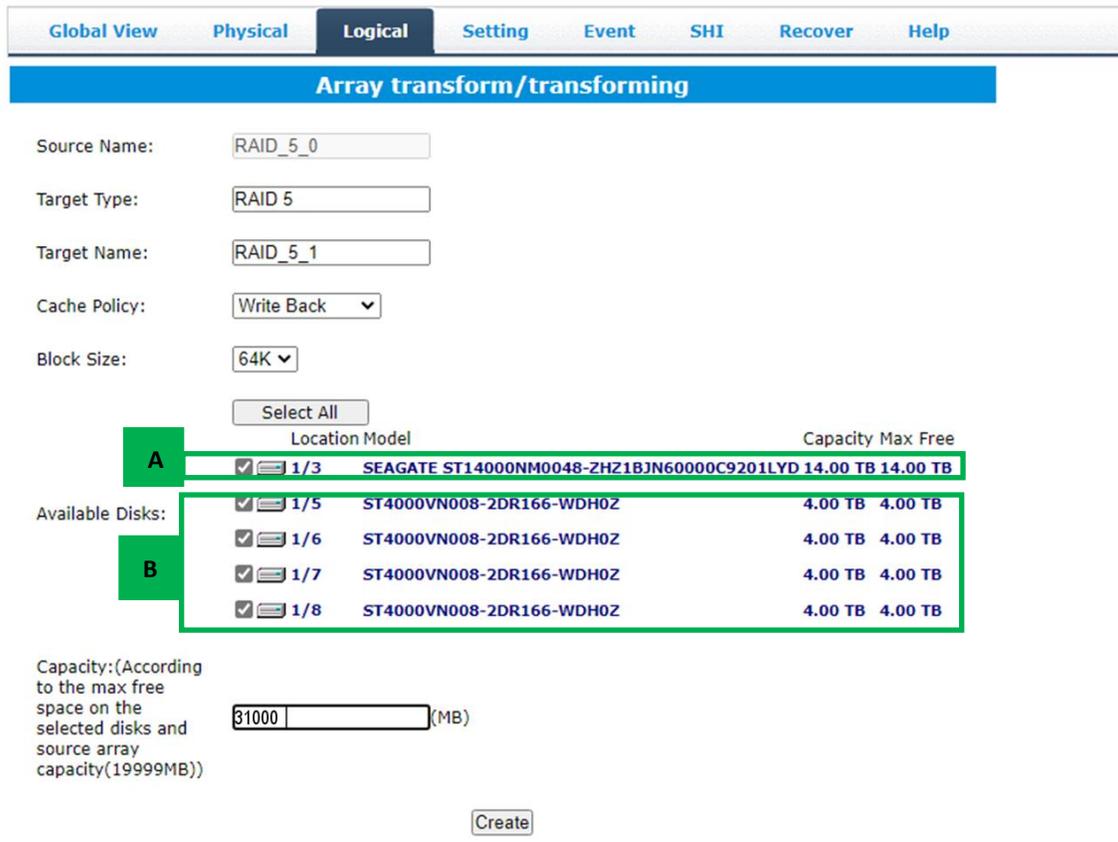
3. Under the “**JBOD/Volume**” drop-down menu, make sure you select **the array’s current RAID level**. In this example, the target array is a RAID 5 configuration:



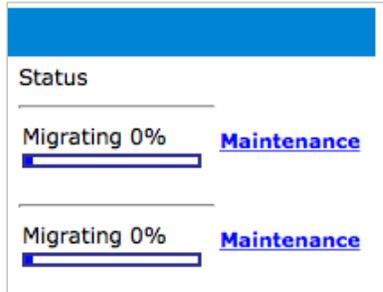
- Click the “ORLM” button continue. The WebGUI will display the following warning message. Click **OK** if you wish to proceed.



- This will open the “Array transform/transforming” menu:



6. First, check the box before the top entry (A) - this is the current array.
7. Next, check the box for each additional drive you want to add to the array (B)
8. Click “Create”. The WebGUI will announce that your new configuration was created successfully. Click OK to continue.
9. The Status will change to “Migrating” and will display a progress bar:



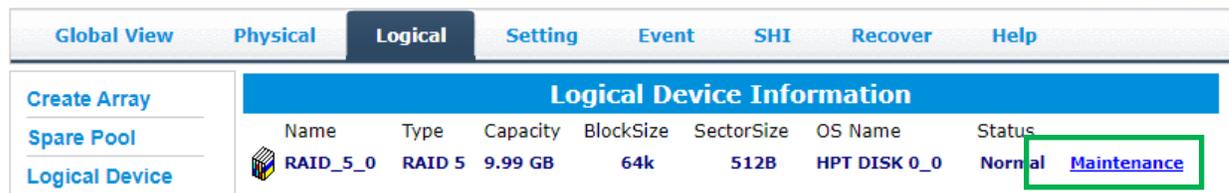
10. Once complete, your operating system will recognize the additional capacity as unpartitioned space - you are free to partition/format this space as a separate volume, or expand the current partition to include this space.

ORLM - Online RAID Level Migration

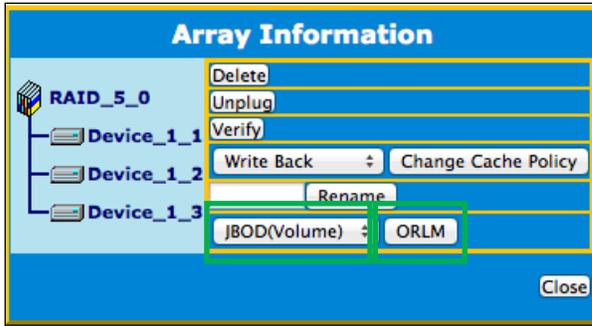
ORLM allows you to change one RAID level to another RAID level while preserving your existing data; for example, converting a RAID 5 array to a RAID 6 array.

To Migrate a RAID Array to another RAID Level:

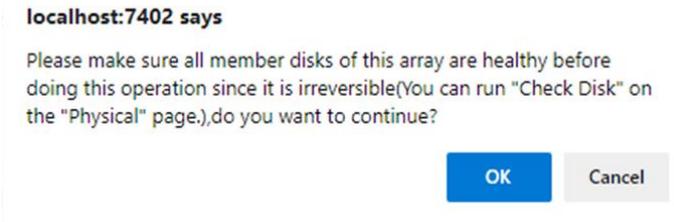
1. Start the WebGUI and click the **Logical** tab
2. Locate the array you want to expand, and click the **Maintenance** option displayed to the far-right of the interface:



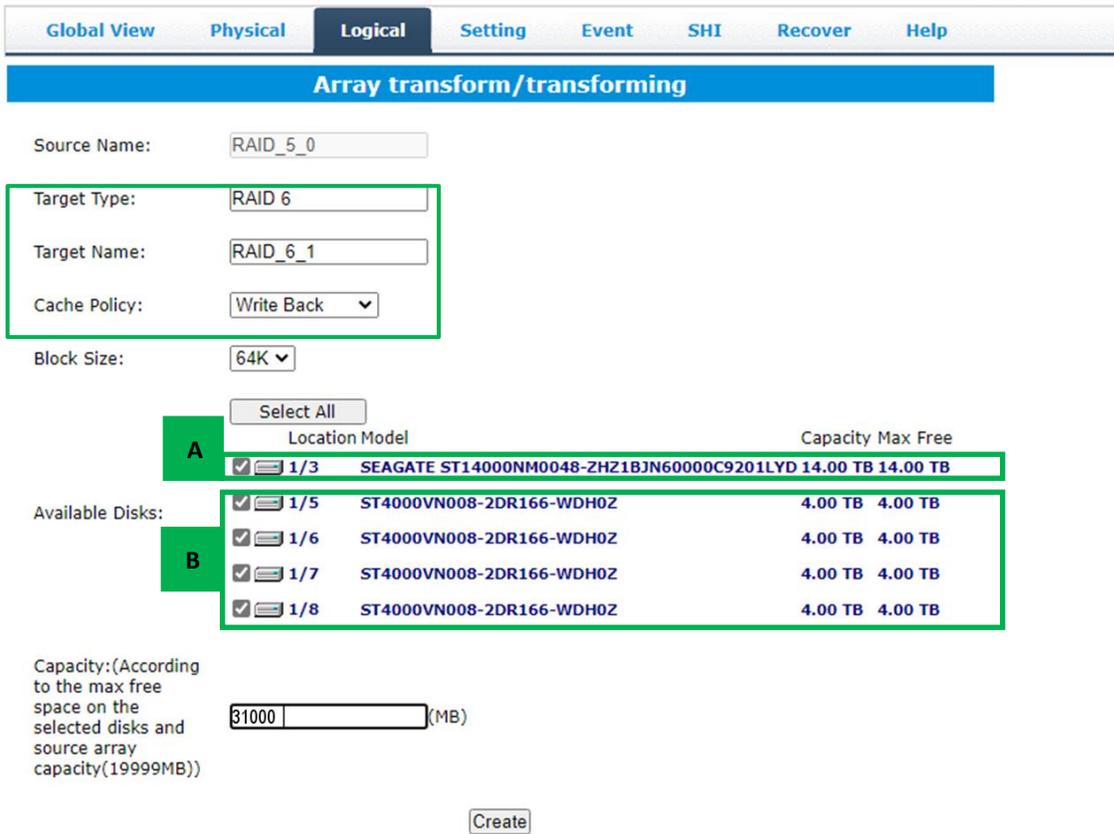
3. Under the “JBOD/Volume” drop-down menu, make sure you specify the new **RAID level you want to create**. In this example, the target array is a RAID 5 configuration. They will add 4 additional drives and change the array to RAID 6:



- Click the “ORLM” button continue. The WebGUI will display the following warning message. Click **OK** if you wish to proceed.

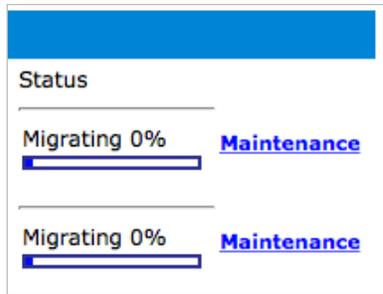


- This will open the “Array transform/transforming” menu:



- First, check the box before the top entry (A) – this is the current array.
- Next, check the box for each additional drive you want to add to the array (B)

8. Click **“Create”**. The WebGUI will announce that your new configuration was created successfully. Click **OK** to continue.
9. The Status will change to **“Migrating”** and will display a progress bar:



10. Once complete, your operating system will recognize the additional capacity as un-partitioned space; you are free to partition/format this space as a separate volume, or expand the current partition to include this space.

Updating RocketRAID HBA BIOS/Firmware

Having the latest BIOS ensures you have the latest firmware stability and performance improvements. Updating the BIOS may fix boot up or system resource issues; make sure to read the README before making any changes.

A few reasons as to why update BIOS/Firmware:

BIOS resource issue	Inefficient BIOS code may cause your boot-up to hang during POST.
Compatibility fixes	Updating firmware may fix issues that occur when using new hardware
Bug fixes	Bugs that are discovered post release are fixed in subsequent updates.

Updating BIOS/Firmware using WebGUI

Keeping the firmware up to date ensures that your RAID controller has the latest compatibility and performance updates.

1. Locate the latest firmware on our webpage at <https://www.highpoint-tech.com/rs6430ts-overview>

2. Extract the contents of the file.
3. Refer to the readme (if included) to make sure you have the correct firmware for your HBA **Note:** Your HBA name and properties can be found in the **WebGUI > Physical Tab**.
4. Locate the proper firmware file
5. Login to WebGUI, then click the Physical tab.
6. Under **Update Firmware**, click **Browse** and browse to your firmware file.
7. Click **Submit**.
8. **Reboot** for changes to take effect.

Updating BIOS/Firmware using a bootable USB

Create a bootable USB using a utility such as Rufus. **Caution:** Creating a bootable USB will erase all previous data stored on it.

1. Download the latest BIOS/Firmware file found at <https://www.highpoint-tech.com/rs6430ts-overview>
2. Extract the file contents onto the bootable USB
3. Read the README for instructions on how to flash the BIOS onto your hardware.
4. Reboot your computer into DOS mode by:
 - Setting boot priority to the bootable USB
 - Removing all bootable drives (OS, CD Drives) from motherboard and leaving only the bootable USB and RocketRAID card plugged in
5. Once in DOS mode, you should see a command line interface

```

Copyright (C) 1997-2013, Intel Corporation
PXE-E61: Media test failure, check cable
PXE-M0F: Exiting Intel Boot Agent.

Intel(R) Boot Agent GE v1.5.04
Copyright (C) 1997-2013, Intel Corporation

PXE-E61: Media test failure, check cable
PXE-M0F: Exiting Intel Boot Agent.

FreeDOS kernel 2041 (build 2041 OEM:0xfd) [compiled Feb  7 2012]
Kernel compatibility 7.10 - MATCOMC - 80386 CPU required - FAT32 support

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All Rights Reserved. This is free software and comes with ABSOLUTELY NO
WARRANTY; you can redistribute it and/or modify it under the terms of the
GNU General Public License as published by the Free Software Foundation;
either version 2, or (at your option) any later version.
C: HD1, Pri[ 1], CHS=  0-1-1, start=  0 MB, size= 7788 MB

FreeCom version 0.84-pre2 XMS_Swap [Aug 28 2006 00:29:00]
Using US-English keyboard with US-English codepage [437]
C:\>_
  
```

Figure. Bootable USB formatted with Rufus Utility, FreeDOS CLI (Command Line Interface)

6. Type in the command you found in the README (ex. load.exe <filename>)
7. **Reboot**

Troubleshooting - Hardware

If you face any hardware related issues involving the RS6434S/RS6438S enclosure, disk drives or RAID controller, refer to the following sections for troubleshooting tips. For all other problems, submit a support

Enclosure Mute Button

The mute button on the back will mute the alarm for enclosure related issues such as enclosure FAN or TEMPERATURE failures. Failures associated with the RAID controller will trigger the RAID card alarm, and cannot be muted with the enclosure mute button.

LED Activity

The following information tells you how to interpret LED activity seen on the enclosure and disk trays.

Table 1. LED Status Information

LED Type	Interpretation
Power LED	<ul style="list-style-type: none">SOLID BLUE (Normal Status)
Warning LED	<ul style="list-style-type: none">FLASH YELLOW. The enclosure's temperature has exceeded the warning threshold 55°C or the fan speed is below normal operating levels 700rpm/min
Fail LED	<ul style="list-style-type: none">SOLID RED. The temperature is greater than 60°C, solid red light; the fan speed is less than 500 rpm/min, the red light is flashing, and generate an audible alarm
UNLIT	<ul style="list-style-type: none">Unit is powered OFFDisk tray is empty

Table 2. LED Diagrams

LED Location	Icon	Normal
Disk Tray Top LED		<ul style="list-style-type: none"> • SOLID BLUE: the disk tray is occupied, but the disk is not in use
Disk Tray Bottom LED		<ul style="list-style-type: none"> • FLASHING BLUE: the disk is in use (read/write I/O)
Power LED		<ul style="list-style-type: none"> • SOLID BLUE: the enclosure is powered on • UNLIT: the enclosure is not connected to an active host system
Fail LED		<ul style="list-style-type: none"> • SOLID RED: the temperature is higher than 60°C • FLASHING RED: The fan speed is less than 500 RPM
Warning LED		<ul style="list-style-type: none"> • FLASHING: The enclosure's temperature has exceeded the warning threshold 55°C or the fan speed is below normal operating levels 700rpm/min

Troubleshooting - Software

If you face any software related issues involving the HighPoint RAID Management (WebGUI), refer to the following sections for troubleshooting tips. For all other problems, submit a support ticket at <https://www.highpoint-tech.com/support-and-services>

WebGUI - Connection cannot be established

1. Check the connection of the card with its PCI Express slot. (PCIe 3.0 x8 for RR3742A)
2. Check and make sure the cables are not faulty.
3. Check Device Manager (Windows) or System Report (Mac) to verify the device and drivers are installed and detected by the OS
 - a. **For Windows Users:**
 - i. Open **Device Manager**.
 - ii. Click on the **Storage Controller** tab.
 - iii. Check to see if **RocketRAID 3742A SAS Controller** is listed.
 - iv. If **RocketRAID 3742A SAS Controller** is not listed, check to see if **RAIDController** is under **Unknown devices**.
 - v. If **RAID Controller** is under **Unknown Devices**, re-install RocketRAID drivers.
 - vi. If RAID Controller is **not** present, recheck your hardware and cables.
 - b. **For Mac Users:**
 - i. Click the Apple Icon on the menu bar.
 - ii. Click About this Mac > System Report.
 - iii. Click **PCI**.
 - iv. Check to see the **Type: RAID Controller** and **Driver Installed: Yes**.
 - v. If Driver Installed is **No**, re-install the drivers.
 - vi. If **RAID Controller** is not present, recheck your hardware and cables.

Troubleshooting - RAID

If you face any RAID related issues involving your RAID array, refer to the following sections for troubleshooting tips. For all other problems, submit a support ticket at <https://www.highpoint-tech.com/support-and-services>

Critical Arrays

When your disk is critical, that means your array as a whole is still accessible, but a disk or two is faulty (depending on your RAID level) is in danger of failing.

Common scenarios for critical array status

- Unplugging disk that is part of an array
 - Bad sector detected on a disk part of the array
 - Unrecoverable data during rebuilding
 - Defective port or cable interrupts rebuilding process
-

To recover from this situation,

1. Backup your existing data.
2. Identify which disk is faulty.
 - Refer to the WebGUI Logical tab and Event tab.
3. Replace with a new disk, and the “faulty” disk can be checked later.
 - **If Auto-Rebuild is enabled:**
Replace the faulty disk. The WebGUI should initiate a rebuild immediately after the replacement disk is detected. If the disk is not detected, or the Rebuild procedure does not start, click **Rescan**. Once a new disk is added, add the new disk into the critical array.
 - **If Auto-Rebuild is disabled:**
Replace the faulty disk.
Log in to the WebGUI
Click the **Logical** Tab
Click **Maintenance > Add disk >** and select the appropriate disk.
The Rebuild process should now begin.
If the rebuild process does not start, click **Rescan**.

Note: Rebuilding an array takes on average 2 hours per 1 Terabyte of disk capacity. The process will scan through the entire disk, even if you have very little *used* disk space.

Rebuild failed

If rebuilding fails to complete due to bad disk sector errors (check in the Event Log), the WebGUI provides an option called “**Continue Rebuilding on Error**”.

1. Log in to WebGUI.
2. Click **Setting** tab.
3. Under **System Setting**, change **Enable Continue Rebuilding on Error** to **Enabled**.

This option will enable Rebuild process to ignore bad sectors and attempt to make your data accessible. It is important to backup immediately after to rebuild is complete and replace or repair any disk(s) with bad sectors.

Critical array becomes disabled when faulty disk was removed

If this is the case, check to make sure you removed the correct disk. When you remove the wrong disk from a critical array, the array status may become disabled. Data is inaccessible for disabled arrays. Follow these steps to restore the previous state:

1. Shut down your PC.
2. Shut down the RS643xS Enclosure.
3. Place all disks, including the removed disks, back to original array configuration.
4. Boot up PC.
5. Once array is back to critical status, identify the correct disk (using the event log) and replace it.

Disabled Arrays

If two or more disks in your array go offline due to an error or physical disconnection your array will become **disabled**.

To recover a disabled array, using the ‘Recover Tab’ will yield the best results. To utilize the **Recover** tab, you will need to insert the **exact** physical drives that are listed on the recover list. The goal of using recover is to get the RAID status back to critical/normal, allowing you to access and back up your data.

Recover with RAID Maintenance

1. Log in to WebGUI.
2. Click **Maintenance** for the array that is disabled.
3. Click **Recover**.

Recover RAID with Recover Tab

Before using the Recover tab to recover your array, check to see if the RAID array is listed in your **Recover List**. Once you have confirmed the RAID array is there, proceed to delete the disabled array.

1. Log in to WebGUI.
2. Click **Maintenance** for the array that is disabled.
3. Click **delete**, to delete the disabled array.
4. Click **Recover Tab**.
5. Select the RAID configuration you just deleted.
6. Click **Recover Array**.

Setting up a Bootable RAID

For Windows Users

Creating an array and then installing Windows OS onto the RAID configuration is a bootable array. Since you cannot use the conventional method of installing drivers, the drive must be loaded during installation.

Prepare the following items for installation:

- Operating System boot disk
- Driver files for RocketRAID 3742A
- USB thumb drive

Instructions:

Note: Please download the RS6434TS&6438TS drivers from www.highpoint-tech.com in advance and extract it to USB.

1. On first boot-up, press **CTRL + H** during the HighPoint RocketRAID splash screen to enter the BIOS RAID creation utility.
2. Exit after creating the array and start from the system startup disk and start Windows Installation.
3. When prompted **Where do you want to install Windows?** Click **Load Driver**
When prompted, click **Browse**
4. Browse to your connected USB and driver files you downloaded
5. Click **OK**, and once loaded, you will see a list of drivers detected.
6. Select the HighPoint driver file
7. Click **Next**, and you should see the RAID arrays you created
8. Select the RAID array and click **Next**
9. Follow the Windows installation instructions to complete your installation.

Set Array as Boot Device

1. Enter RocketRAID BIOS during boot up (**CTRL+H**).
2. Navigate to **settings** using arrow keys.
3. Press **Enter**.
4. Press **Enter** again.
5. Select the desired RAID array.
6. You will return to the main screen once flag is set.

Online Array Roaming

One of the features of all HighPoint RAID controllers is online array roaming. Information about the RAID configuration is stored on the physical drives. So if the RR3742A fails or you wish to use another RAID controller, or you wish the drives to be moved to a different enclosure, the RAID configuration data can still be read by another HighPoint card.

Appendix A: Navigating RocketRAID 3742A BIOS Utility (PC only)

The HighPoint RocketRAID BIOS utility allows you to create, manage, and maintain your RAID arrays without the need to install the HighPoint WebGUI application.

During boot up, you will see a RocketRAID splash screen prompting you to press **CTRL + H** to enter the BIOS. The following keys will help you navigate through the menus, find information, and make adjustments to your RAID arrays



Figure. RocketRAID Splash Screen. Press CTRL + H to enter BIOS

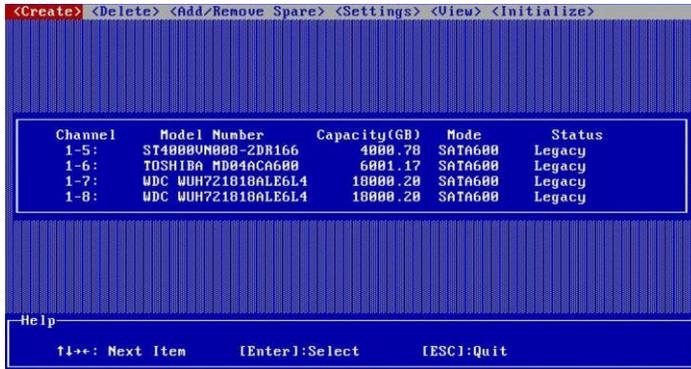


Figure. Default Screen upon entering BIOS

Table 4. Navigating the BIOS

Enter	Make a selection
ESC	Exits a selection menu or exit BIOS Utility
↑ ↓ → ←	Next Item



Figure. Snapshot of RocketRAID BIOS menu bar

Table 5. Menu Bar Key

Create	Create arrays: RAID0/1/10/5/50/JBOD
Delete	Delete Array
Add/Remove Spare	Add or Remove spare disk
Setting	Select boot device Set disk staggered spin up
View	View disks and RAID arrays
Initialize	Initialize the disk

Appendix A-1: Create Tab



E.g create RAID5, Cache Policy



'Cache Policy' default: write back

Write Back - Any data written to the array will be stored as cache, resulting in better I/O performance at the risk of data failures due to power outages. Data will be stored as cache before it is physically written to the disk; when a power outage occurs, any data in the cache will be lost.

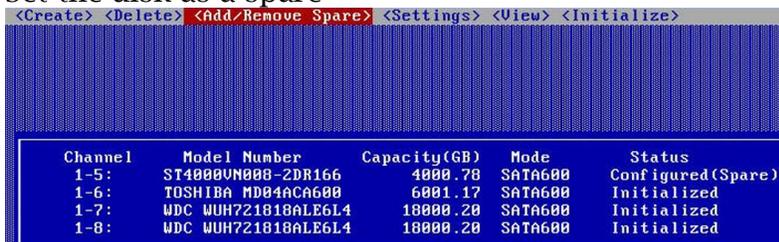
Write Through - Data written to an array is directly written onto the disk, meaning lower write performance for higher data availability. Without cache acting as a buffer, write performance will be noticeably slower but data loss due to power outages or other failures is significantly minimized.

Appendix A-2: Delete Tab

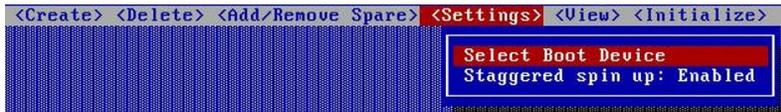


Appendix A-3: Add/Remove Spare

Set the disk as a spare



Appendix A-4: Settings



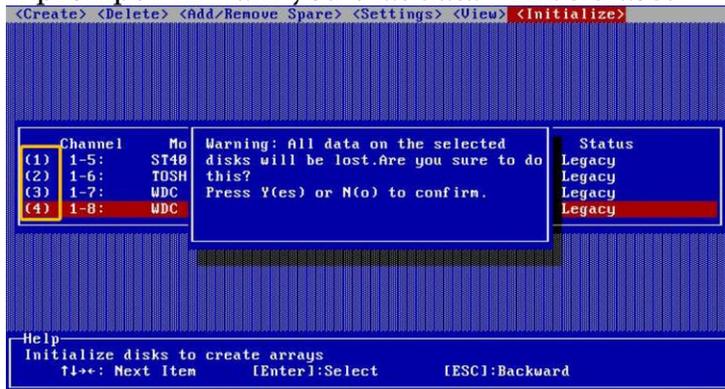
Appendix A-5: View



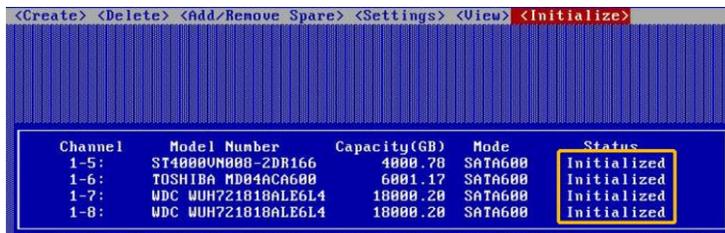
Appendix A-6: Initializing Disks

Legacy disks, or disks that contain previous partitions, have to be **initialized** before they can be used for RAID.

1. Enter the '**Initialize**' window, press '**Enter**', the red frame represents the currently selected disk, press '**Enter**' again to select the disk.
2. A prompt will warn you that data will be erased.



3. Select **Yes** (enter 'y' from the keyboard), Initialization successful.



4. Once initialized, you can proceed to create an array.

Appendix B: Navigating the HighPoint WebGUI

Tab Name	Function
Global View	View HBA (Host Bus Adapter) and Storage Properties
Physical	View Additional Controller properties Update BIOS/Firmware View disk properties Adjust selected disk behaviors
Logical	Manage and create RAID arrays
Setting	Adjust WebGUI controls settings
Event	Show WebGUI Event Log
SHI (Storage Health Inspector)	View and schedule S.M.A.R.T monitoring
Recover	Revert to previously created arrays
Logout	Logout of WebGUI, set password will appear
Help	Online Help Register Product Diagnostic- collect log information

How to Login HighPoint WebGUI

You can reach the HighPoint WebGUI log in page either by:

- Double clicking on the **HighPoint RAID Management** icon created on your desktop
- Opening your preferred web browser and typing <http://localhost:7402> in the address bar.

Appendix B-1: Global Tab

Global View	Physical	Logical	Setting	Event	SHI	Recover	Help
HBA Properties		Storage Properties					
Host Adapter model: RocketRAID 3742 SAS Controller		Total Capacity: 56002 GB					
Controller count: 1		Configured Capacity: 56002 GB					
Enclosure count: 0		Free Capacity: 0 GB					
Physical Drive: 4		Configured 100.0%					
Legacy Disk: 4							
RAID Count: 0							

The WebGUI Global view provides an overview of what each HighPoint controller card connected to your computer detects. It is also the first page you see when logging in.

- Host Bus Adapter Properties
- Storage Properties

On the top left of the page is a drop-down menu that allows you to select which controller you want to manage (if you have multiple HighPoint controllers connected).

HBA Properties

- **Host Adapter model:** the model name of the controller
- **Enclosure Count:** number of external enclosures detected
- **Physical drives:** number of drives seen by the controller
- **Legacy Disks:** number of Legacy disks connected. Legacy disks are physical drives that have previous partitions stored on them.

Storage Properties

- **Total capacity:** the combined capacity of each physical disk connected to controller
- **Configured capacity:** the amount of space used for creating arrays
- **Free Capacity:** total amount of space unused

Appendix B-2: Physical Tab

Controller Information	
Model Name:	RocketRAID 3742 SAS Controller
EFI Version:	v1.0.3.0
Vendor:	HighPoint Technologies, Inc.
PCI Bus Number:	1
PCI Device Number:	0
PCI Func Number:	0
Maximum Link Width:	x8
Current Link Width:	x8
Maximum Link Speed:	8.0 GT/s
Current Link Speed:	8.0 GT/s

Select the file to update BIOS.
This process may take some time.

No file chosen

The physical tab shows general and extended information about the controller you are using. Information about the firmware, BIOS, and operating temperatures are all located here. This information is useful for identifying what RAID controller model you have and to make sure you have the most updated version available.

The physical tab contains the following information:

- Controller Information
- Extended Information
- Update Firmware
- Physical Devices Information

Controller Information: Lists the controller model name, BIOS version, and vendor.

- Model Name: RocketRAID 3742A SAS Controller
- EFI Version: v1.0.3.0
- Vendor: HighPoint Technologies, Inc.

Extended Information: Gives you additional information concerning the HBA (Host Bus Adapter) in the enclosure

Update Firmware: Allows you to update the controller BIOS through the WebGUI.

Select the file to update BIOS.
This process may take some time.

No file chosen

The following properties are part of the **Physical Devices Information** box under the physical tab.



- **Model** - Model number of the physical drive
- **Capacity** - Total capacity of the physical drive
- **Revision** - HDD device firmware revision number
- **Read Ahead*** - (Enable/Disable) Disk read ahead.
- **Location** - Device location (example: 1/2 states controller 1, slot 2)
- **Write Cache*** - (Enable/Disable) the disk write cache
- **Max Free** - space on disk that is not configured in an array
- **Status** - (Normal, disabled, critical) status of the disk
- **NCQ*** - (Enable/Disable) Native Command Queuing
- **Serial Number** - serial number of the physical disk
- **Identify LED*** - On/Off - toggle the IDENTIFY (RED) on the front panel
- **Unplug** - Safely ejects selected disk. Other methods of disk removal will trigger alarm if enabled.
- **Check Disk** - Fix Bad Sector

* Disk properties that can be adjusted.

Read Ahead

Enabling disk read ahead will speed up read operations by pre-fetching data and loading it into RAM.

Write Cache

Enabling write cache will speed up write operations.

NCQ (Native Command Queuing)

A setting that allows disks to queue up and reorder I/O commands for maximum efficiency.

Identify LED

The Disk tray LED lights on the front panel can be toggled ON or OFF.

Rescan

Clicking rescan will immediately signal the controller to scan for any changes in the connection. Clicking this button will also stop any alarm if currently ringing.

Appendix B-3: Logical Tab

Logical Device Information							
Name	Type	Capacity	BlockSize	SectorSize	OS Name	Status	
Device_1_1	Hard Disk	256.06 GB			HPT DISK 0_0	Legacy	
Device_1_2	Hard Disk	256.06 GB			HPT DISK 0_1	Legacy	
Device_1_3	Hard Disk	1.00 TB			HPT DISK 0_2	Legacy	
Device_1_4	Hard Disk	3.00 TB			HPT DISK 0_3	Legacy	

Physical Device Information				
Location	Model	Capacity	Max Free	
1/1	Samsung SSD 860 PRO 256GB-S42WNF0K401266V	256.06 GB	0.00 GB	
1/2	Samsung SSD 860 PRO 256GB-S42WNX0R701472T	256.06 GB	0.00 GB	
1/3	ST1000NM0033-92M173-Z1W110F6	1.00 TB	0.00 GB	
1/4	TOSHIBA DT01ACA300-Y731JWPAS	3.00 TB	0.00 GB	

The Logical tab is where you are edit, delete, and maintain your RAID configurations, as well as, adding drives to your spare pool. The logical tab has the following settings:

- Create Array
- Spare Pool
- Logical Device
- Rescan
- Beeper Mute

An array is a collection of physical disks that will be seen as one virtual drive by your Operating System (OS). The RS6434TS&6438TS has a RocketRAID 3742A controller capable of creating the following array types

Create Array																									
Array Type:	RAID 5																								
Array Name:	Default																								
Initialization Method:	Quick Init																								
Cache Policy:	Write Back																								
Block Size:	64K																								
	<input type="button" value="Select All"/> <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>Samsung SSD 860 PRO 256GB-S42WNF0K401266V</td> <td>256.06 GB</td> <td>0.00 GB</td> </tr> <tr> <td>1/2</td> <td>Samsung SSD 860 PRO 256GB-S42WNX0R701472T</td> <td>256.06 GB</td> <td>0.00 GB</td> </tr> <tr> <td>1/3</td> <td>ST1000NM0033-92M173-Z1W110F6</td> <td>1.00 TB</td> <td>0.00 GB</td> </tr> <tr> <td>1/4</td> <td>TOSHIBA DT01ACA300-Y731JWPAS</td> <td>3.00 TB</td> <td>0.00 GB</td> </tr> </tbody> </table>					Location	Model	Capacity	Max Free	1/1	Samsung SSD 860 PRO 256GB-S42WNF0K401266V	256.06 GB	0.00 GB	1/2	Samsung SSD 860 PRO 256GB-S42WNX0R701472T	256.06 GB	0.00 GB	1/3	ST1000NM0033-92M173-Z1W110F6	1.00 TB	0.00 GB	1/4	TOSHIBA DT01ACA300-Y731JWPAS	3.00 TB	0.00 GB
Location	Model	Capacity	Max Free																						
1/1	Samsung SSD 860 PRO 256GB-S42WNF0K401266V	256.06 GB	0.00 GB																						
1/2	Samsung SSD 860 PRO 256GB-S42WNX0R701472T	256.06 GB	0.00 GB																						
1/3	ST1000NM0033-92M173-Z1W110F6	1.00 TB	0.00 GB																						
1/4	TOSHIBA DT01ACA300-Y731JWPAS	3.00 TB	0.00 GB																						
Available Disks:	<input checked="" type="checkbox"/> 1/1 <input checked="" type="checkbox"/> 1/2 <input checked="" type="checkbox"/> 1/3 <input checked="" type="checkbox"/> 1/4																								
Capacity: (According to the max free space on the selected disks)	Maximum (MB)																								
<input type="button" value="Create"/>																									

Array Type:

- JBOD – Just a Bunch of Disks
- RAID 0 - Striping
- RAID 1 - Mirroring
- RAID 5 – Rotating Parity bit
- RAID 10 – Striping of Mirrored Drives

- RAID 50 – Striping of Distributed Parity
- RAID 6 – Double Parity Bit

Each RAID level has its pros and cons based on the application you use it for (Note: Refer to RAID level Quick Reference)

Array Name: the name that will be displayed in Logical Device Information (**Default:** RAID_<level>_<array number>)

Initialization Method:

- **Keep Old Data:** Opts to keep all the data on each drive untouched. Best for users that already have HighPoint RAID data on the selected drives.
- **Quick Init:** Grants immediate access to the array volume. This option will delete previous user data, but will not build parity. Recommended for testing purposes only or when new disks are used. **Not recommended** for RAID 5, RAID 50, and RAID 6.
- **Foreground:** The array initialization process will be set at high priority. During this time array will be **non-accessible**, but initialization completion time will be shorter.
- **Background:** The array initialization process will have a lower priority. During this time array will be **accessible**, but initialization completion time will be longer.

Note 1: Initialization takes a significant amount of time (approximately 2 hours per 1 TB).

Cache Policy (Default: Write Back)

Write Back – Any data written to the array will be stored as cache, resulting in better I/O performance at the risk of data failures due to power outages. Data will be stored as cache before it is physically written to the disk; when a power outage occurs, any data in the cache will be lost.

Write Through – Data written to an array is directly written onto the disk, meaning lower write performance for higher data availability. Without cache acting as a buffer, write performance will be noticeably slower but data loss due to power outages or other failures is significantly minimized.

Block Size (default: 64K)
[64K, 128K are the supported block sizes]

This option allows you to specify the block size (also known as “stripe size”) for specific array types (RAID 0, 1, 5, 6, 10, and 50). Adjusting the block size allows you to tailor the array performance towards specific application. Consider the sizes of disk I/O data you are dealing with; as a general rule larger disk I/O may benefit from smaller block sizes, and smaller disk I/O may benefit from larger block sizes. A block size of 64 KB is recommended since it gives balanced performance for most applications.

Capacity (Default: Maximum)

The total amount of space you want the RAID array to take up. When creating RAID levels, disk capacities are limited by the smallest disk.

Example Capacity calculation:

A RAID 5 organizes data in the manner shown below. All parity data will become unusable for the user and not included in the total disk capacity.

Disk 1	Disk 2	Disk 3	Disk 4
Data 1	Data 2	Data 3	Parity
Data 4	Data 5	Parity	Data 6
Data 7	Parity	Data 8	Data 9
Parity	Data 10	Data 11	Data 12

Therefore, RAID 5 capacity will be [SMALLEST DISK CAPACITY] * (number of disks - 1).

Sector Size (Default: 512B)

This option is irrelevant for Windows XP 64 and later. Current OS already support larger volumes, and introduce a partitioning method known as GPT (GUID partition table). This option, also known as VSS (Variable Sector Size) allows you to specify the sector size of the array, for use with older Windows Operating Systems.

Logical Device Information

Logical device tab is the default page upon clicking the Logical tab of the WebGUI. This page contains information about your RAID arrays and individual disks your system detects.

Logical Device Information

Arrays you create and the properties associated with them will appear here.

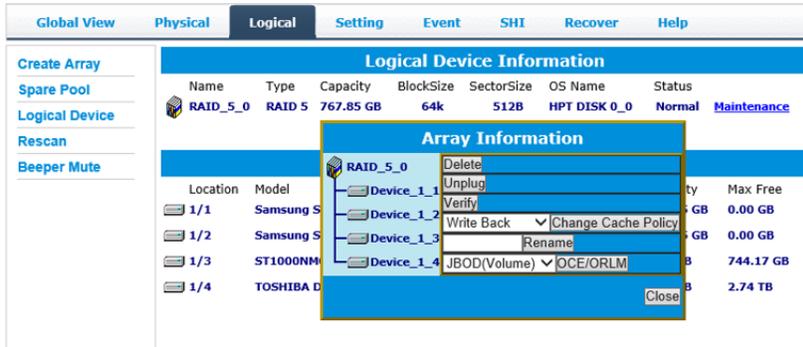
Maintenance

Once an array has been created, click maintenance for options to manage your array.

Array Information

Clicking on the maintenance button will show you the Array information box. Different array statuses (Normal, critical, disabled) will have different maintenance options.

Normal Status



A Normal Status Array has the following options:

Delete - deletes the selected RAID array

Unplug - powers off the selected RAID array

Verify - verifies the integrity of the RAID array

Change Cache Policy - Toggles between Write through and Write back cache

Change Margin - Adjust margin when DV mode is enabled

Rename - renames the RAID array

OCE/ORLM - Online Capacity Expansion / Online RAID Level Migration

Critical Status



A critical status array has all the normal status options except the following:

- The Array can no longer be renamed
- **Add disk** replaces the **verify disk** option

Once array status changes to critical, the faulty disk will be taken offline and you can either:

- Reinsert the same disk
- Insert new disk

Reinserting the same disk should trigger rebuilding status, since data on the disk would be recognized.

If you insert a new disk, clicking **add disk** will give you the option to select that disk and add it to the array.

Disabled Status

The screenshot shows the 'Logical Device Information' page. The main table lists the RAID array 'RAID_5_0' with a status of 'Disabled' and a 'Maintenance' button. An 'Array Information' dialog box is overlaid, showing the array's components and options like 'Delete', 'Unplug', and 'Recover'.

Name	Type	Capacity	BlockSize	SectorSize	OS Name	Status
RAID_5_0	RAID 5	767.85 GB	64k	512B		Disabled Maintenance

Location	Model	Capacity	Max Free
1/1	Samsung SS	255.95 GB	0.00 GB
1/2	Samsung SS	255.95 GB	0.00 GB
1/3	ST1000NM0	1.00 TB	744.17 GB
1/4	TOSHIBA D	3.00 TB	2.74 TB

A disabled status array means that your RAID level does not have enough disks to function.

- Your data will be inaccessible.
- Rebuilding will not trigger, since the RAID array does not have enough parity data to rebuild.

Your options in Maintenance are:

Delete - will delete the array

Unplug - will take array offline, making it safe to remove

Recover - will attempt to recover the array using the list from the recover tab

Physical Device Information

The screenshot shows the 'Physical Device Information' page. The main table lists the physical disks connected to the system.

Name	Type	Capacity	BlockSize	SectorSize	OS Name	Status
Device_1_1	Hard Disk	256.06 GB			HPT DISK 0_0	Legacy
Device_1_2	Hard Disk	256.06 GB			HPT DISK 0_1	Legacy
Device_1_3	Hard Disk	1.00 TB			HPT DISK 0_2	Legacy
Device_1_4	Hard Disk	3.00 TB			HPT DISK 0_3	Legacy

Location	Model	Capacity	Max Free
1/1	Samsung SSD 860 PRO 256GB-S42WNF0K401266V	256.06 GB	0.00 GB
1/2	Samsung SSD 860 PRO 256GB-S42WNX0R701472T	256.06 GB	0.00 GB
1/3	ST1000NM0033-92M173-Z1W110F6	1.00 TB	0.00 GB
1/4	TOSHIBA DT01ACA300-Y731JWPAS	3.00 TB	0.00 GB

- **Location** - which controller and port the drive is located in
- **Model** - model number of the drive connected
- **Capacity** - total capacity of the drive
- **Max Free** - total capacity that is not configured

Rescan

Clicking rescan will force drivers to report array status. For any disk(s) you hot plug into the device, do not click rescan until all physical drives are detected and appear under Logical Device Information.

Beeper Mute

The controller emits a beeping sound whenever an

- Array falls into **critical** status
- Array falls into **disabled** status
- You unplug a disk
- Your disk fails due to bad sectors
- SMART sensors anticipate drive failure

If device is currently beeping, clicking Beeper Mute will mute the sound immediately.

Note: This button does not permanently mute the alarm. To permanently mute the alarm go to **Setting > Enable audible alarm > Disabled**.

Appendix B-4: Setting Tab

The screenshot shows a web-based management interface with a navigation bar at the top containing tabs: Global View, Physical, Logical, Setting (selected), Event, SHI, Recover, and Help. On the left side, there is a sidebar with 'System' and 'Email' links. The main content area is titled 'System Setting' and contains several configuration options, each with a dropdown menu:

Setting	Value
Enable auto rebuild.	Enabled
Enable Continue Rebuilding on error.	Enabled
Enable audible alarm.	Enabled
Set Spindown Idle Disk(minutes):	Disabled
Restrict to localhost access.	Enabled
Set Rebuild Priority:	Medium
Port Number:	7402
Temperature Unit:	°F

Below these settings is a 'Submit' button. The section is followed by a 'Password Setting' section with two input fields for 'Password:' and 'Confirm:', and another 'Submit' button.

System Settings

Enable auto rebuild (default: Enabled)

When a physical drive fails, the controller will take the drive offline. Once you re-insert or replace the disk, the controller will not automatically rebuild the array unless this option is enabled.

Enable continue rebuilding on error (default: Enabled)

When enabled, the rebuilding process will ignore bad disk sectors and continue rebuilding until completion. When rebuild is finished, the data may be accessible but data inconsistency due to ignored bad sectors may cause problems in the future. If this option is enabled, HighPoint recommends user to check the event log for bad sectors.

Enable audible alarm (default: Enabled)

When a physical disk fails, the controller will emit an audible sound signaling failure. This option mutes the alarm.

Set Spindown Idle Disk (minutes) (default: Disabled)

When set, physical drives will spindown a certain amount of time after disk activity ceases. Only 10, 20, 30, 60, 120, 180, 240 minutes setting are available.

Restrict to localhost access (default: Enabled)

Remote access to the controller will be restricted when **enabled**, other users in your network will be unable to remotely log in to the WebGUI.

Rebuild Priority (default: Medium)

You can specify the amount of system resources you want to dedicate to rebuilding the array. There are 5 levels of priority [Lowest, Low, Medium, High, Highest]

Port Number (default: 7402)

The default port that the HighPoint WebGUI listens on is 7402. You may change it to any open port.

Temperature Unit (default: °F)

The default temperature unit is Fahrenheit, you can change it to Celsius.

Password Setting

Changing your WebGUI password

Under Password Setting type your new password and confirm it, then click submit.

Email Setting

You can set the controller to send an email out to recipients of your choosing when certain events (refer to Event Tab) trigger.

Appendix B-5: Recover Tab

The screenshot shows the 'Recover' tab selected in a navigation menu. Below the menu is a 'Recover List' section with a 'Backup To File' and 'Clear All' button. A table lists RAID information:

<input type="radio"/> RAID_5_0 (RAID Level:RAID 5 Capacity:54.00 TB) (Time:2022/3/29 9:22:52)	
Location:Device_1_13	Model:WDC WUH721818ALE6L4-3WJN6AWL
Location:Device_1_14	Model:WDC WUH721818ALE6L4-3WJ9H55J
Location:Device_1_15	Model:WDC WUH721818ALE6L4-3WJRNZAJ
Location:Device_1_16	Model:WDC WUH721818ALE6L4-3WJGY7UJ

Below the table is a 'Recover Array' button. Underneath is an 'Update Recover List' section with a 'Choose File' button, the text 'No file chosen', and a 'Submit' button.

Previously created arrays will be stored under this tab. Recovering an array from here will attempt to recover a '**disabled**' array and make it '**normal**'.

The Recover List will list all your previous and current created arrays. Each entry will list the following properties:

- Array name
- RAID level
- Array Capacity
- Time created (YYYY/MM/DD, HH/MM/SS, 24 hr clock format)
- Location of physical drives
- Model of physical drives

Important: When recovering an array, it is important to note the **location** and **model** of each physical drive because you can **only** recover using those **exact** positions and drive model.

How to Backup your Recover List

The recover list is a record of your previously created arrays containing the model and location information of your physical drives. Recovering from the list could help bring a **disabled** array back to **normal** status for emergency data retrieval.

To backup your recover list:

1. Log in to WebGUI
2. Click **Recover** Tab
3. Click **Backup to File**

Note: The file will be saved as **hptrec.rec**

How to Reload your Backup Recover List

In the case that you cleared the recover list or it does not appear for any reason, you can recover it if you saved the list beforehand.

To reload your recover list

1. Log in to WebGUI
2. Click **Recover** Tab
3. Under **Update Recover List** click **Browse...**
4. Locate your previously saved **hptrec.rec** file and select it
Note: loading a back up recover list will completely replace the current recover list.
5. Click **Submit**

Appendix B-6: Event Tab

In the event tab, you can see log entries associated with the HighPoint device. The event log provides useful information when troubleshooting your set up.

In the event tab, there are four options available:

- Download - Save the log file on your computer
- Prev - View previous log page
- Next - View next log page

Table 6. Event Log Icon Guide

Icon	Name	Definition
	Information	Includes general administrative tasks: <ul style="list-style-type: none">• Create/delete arrays• Configuring spares• Rebuilding arrays• Configuring event notifications• Configuring maintenance
	Warning	Alerts issued by the Host Adapter: <ul style="list-style-type: none">• High temperatures• Sector errors• Communication errors• Verification errors
	Error	Hardware related problems <ul style="list-style-type: none">• Hard disk failure• Broken errors• Memory failure

The event view is a basic error logging tool built into the HighPoint WebGUI.

Appendix B-7: SHI (Storage Health Inspector)

- S.M.A.R.T Attributes
- HDD Temperature Threshold
- Storage Health Inspector Scheduling

The SHI outputs information collected using SMART (Self-Monitoring Analysis and Reporting Technology) Hard Drive Technology. The data provided on this tab helps you to anticipate any disk failures based on a variety of monitored hard disk properties.

Appendix C: WebGUI Icon Guide

	Critical - missing disk A disk is missing from the array bringing it to 'critical' status. The array is still accessible but another disk failure could result in data loss.
	Verifying The array is currently running a disk integrity check.
	Rebuilding The array is currently rebuilding meaning you replaced a failed disk or added a new disk to a 'critical' state array.
	Critical - rebuild required The array has all disks, but one disk requires rebuilding.
	Disabled The icon represents a disabled array, meaning more than one disk failed and the array is no longer accessible
	Initializing The array is initializing. The two types of initialization is Foreground and Background. (See Initialization)
	Uninitialized The array initialization process has been interrupted, and the process is incomplete.
	Not Initialized Disk is not initialized yet, and needs to be initialized before use
	OCE/ORLM Array is performing a OCE/ORLM operation
	OCE/ORLM has stopped The array expansion process has been stopped.
	Legacy An existing file system has been detected on the disk. These disks are classified as legacy drives.
	Spare The device is a spare drive, it will automatically replace any failed drive part of an array.
	Normal The array status is normal



Initializing

The array is initializing, either foreground or background initialization



Initialization Stopped

The initialization has been stopped. Current status is uninitialized.



Critical - Inconsistency

Data in the array is inconsistent and needs to be rebuilt.



Critical - missing disk

A disk has been removed or experienced failure, and user needs to reinsert disk or add a new disk.



Rebuilding

The array is currently rebuilding.



Verifying

The array is performing a data consistency check. Array status will show 'verifying'.



Disabled

The array does not have enough disks to maintain the RAID level. A disabled array is not accessible.



OCE/ORLM

Array is expanding its capacity or migrating to a different raid level. Status will display 'Expanding/Migrating'



OCE/ORLM stopped

The 'Expansion/Migrating' process has been stopped. The status will display 'Need Expanding/Migrating'



Critical - OCE/ORLM

A disk member is lost during the OCE/ORLM process.



Critical - OCE/ORLM - rebuild

The expanding/migrating array requires a rebuild.

Appendix D: RAID Level Reference Guide¹

Type	Description	Min. disks	Usable space	Advantage	Disadvantage	Application
JBOD	Just a bunch of disks	1	100%	Each drive can be accessed as a single volume	No fault tolerance - failure of one drive results in complete data loss	Backup
RAID0	Disk Striping	2	100%	Offers the highest performance	No fault tolerance - failure of one drive in the array results in complete data loss	Temporary file, performance driven application.
RAID1	Disk Mirroring	2	50%	Provides convenient low-cost data redundancy for smaller systems and servers. Can handle 1 disk failure.	Useable storage space is 50% of total available capacity.	Operating system, backup, and transaction database.
RAID5	Disk Striping with Rotating parity	3	67-88%	High read performance, and medium write performance with data protection with a single drive failure. Can handle 1 disk failure.	Not recommended for database applications that require frequent/heavy write sessions.	Data archives, and ideal for application that require data protection
RAID6	Disk Striping with dual rotating parity	4	50-75%	High read performance, and medium write performance with data protection in case of up to two drives failure	Not recommended for applications that require frequent/heavy write sessions.	Data archives and ideal for application that requires data protection
RAID 10	Disk Mirroring followed by stripe	4	50%	High read performance and medium write performance with data protection for up to 2-drive failures	Useable storage capacity equals total capacity of all drives in the array minus two	Fast database and application servers which need performance and data protection
RAID 50	Disk Mirroring Followed by RAID5	6	67-75%	High read performance, and medium write performance for with data protection in case of up to two drives failure	Not recommended for applications that require frequent/heavy write sessions	Data archives and ideal for application that requires data protection

¹ Refer to the RAID controller product specifications for supported RAID levels.

Help

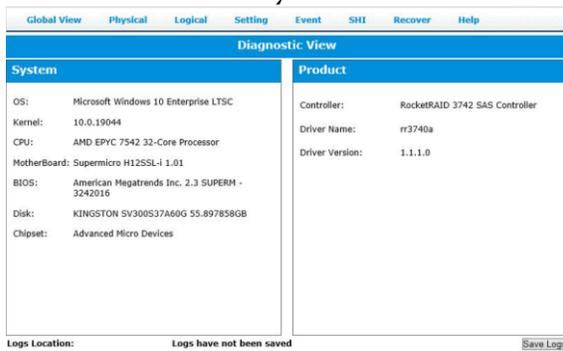
Online Help redirects you to additional documentation concerning the HighPoint WebGUI.

Register Product takes you to HighPoint's web support. On this page you can create a new customer profile where you can register your product or post an online support ticket.

Diagnostic collect log information

Diagnostic View

1. **1-Click Self-Diagnostic Solution:** Diagnostic View provides a “1-click” information collection system for troubleshooting. It will gather all necessary hardware, software and storage configuration data and compile it into a single file, which can be transmitted directly to our FAE Team via our Online Support Portal.

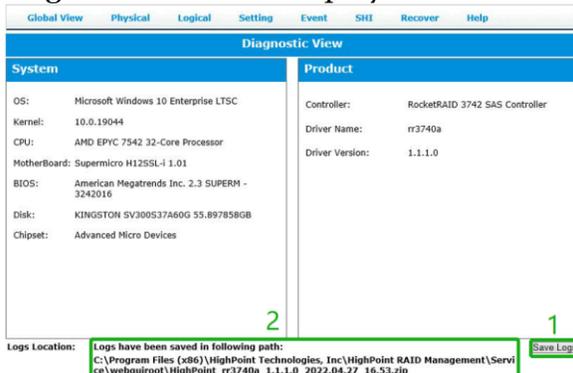


2. You can also click 'Help'→'Diagnostic' to enter the diagnostic view.



Log Saving

Click the “Save Logs” button to create the diagnostic file. 'Logs Location' will display the location of the saving path.



HighPoint List of Recommended Hard Drives

HighPoint maintains a list of tested hard drives suitable for RAID applications. Since not every hard drive in the market can be tested, this list is meant to be a general guideline for selecting hard drives operating in a RAID environment. Regular, desktop grade drives are highly not recommended for RAID use.

Contacting Technical Support

Frequently asked questions (FAQ) can be found on the online knowledge base: [HighPoint Technologies, Inc. Knowledge Base \(helpjuice.com\)](http://helpjuice.com)

For any help and support, submit a support ticket online at <https://www.highpoint-tech.com/support-and-services>.