RocketStor 6124V

User Manual

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Revision 1.05
HighPoint Technologies, Inc.

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Notice
Reasonable effort has been made to ensure that the information in this manual is accurate. HighPoint assumes no liability for technical inaccuracies, typographical, or other errors contained herein.

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)

Product Overview

The RocketStor 6124V utilizes high-performance USB 3.1 Gen 2 Type-C connectivity to directly support up to 4 SATA Hard Drives or SSDs in one or more RAID storage configurations. The ease of use, universal availability and affordability of USB-C connectivity, combined with the robust bandwidth delivered by USB 3.1 Gen 2 technology, make for a truly a cost-effective high-performance RAID solution for any Mac platform. The adjustable fan control allow the user to manually change the fan speed to their preference.

Key Features

- 4x Faster than USB 3.0 RAID 5 Storage
- Up to 4x 14TB Hard Drives
- RAID 0, 1, 5, 1/0, JBOD and Single Disk supported
- USB 3.1 Gen-2 port, Type -C Connector
- Backward compatible with USB Type-A Ports
- LCD screen that displays Temperature Reading and Fan Speed
- Adjustable Fan Control

Kit Contents

- 1x 4-Bay Tower Enclosure
- 4x Drive Trays
- 1x 10Gb USB Type-C to Type-C Cable (1 meter)
- 1x UL Power Cord
- 16x 3.5” HDD mounting screws
- 16x 2.5” SSD mounting screws
- 1x Quick Installation Guide

Before getting started, check to see if any items are missing, damaged, or incorrect. If you discover any discrepancies, please contact your reseller, or our Support Department via our Online Web Support Portal

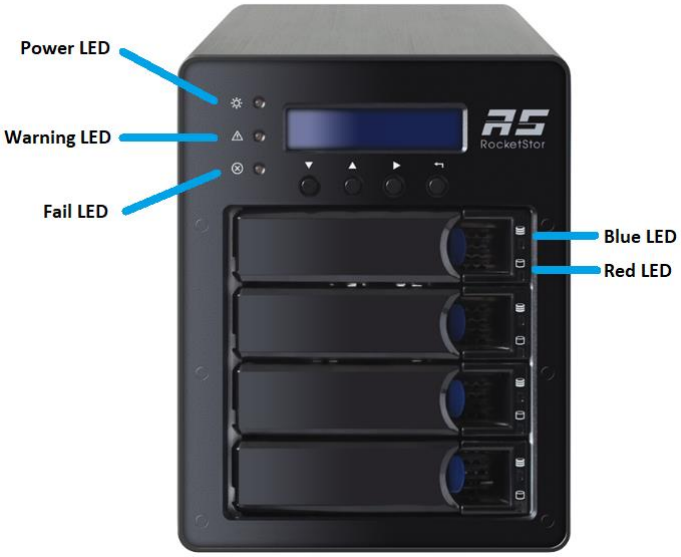
Product Information	RocketStor 6124V
Port Type	USB 3.1 Gen 2
Number of Ports	1x USB-C Port
RAID Level	0, 1, 5, 1/0 and JBOD
System Requirements	Computer with a USB-C or Thunderbolt 3 port PC with a USB Type-A Port (Requires USB-A to C cable)
	Windows 10 and later macOS 10.12 and later
Max. Capacity	Unlimited
Number Of drives	Up to 4
Drive Interface	SATA 6Gb/s
Drive Form Factor	3.5" & 2.5"

Material	Brushed aluminum housing
Dimension	5.71"(W) x 7.67"(H) x 10.23" (D)
Weight	11.9 lb (W/O Hard Disk)
Warranty	2 Years
Advanced RAID Features	Configurable RAID Block Size up to 1MB
	Storage Health Inspector
	Multiple RAID Partitions supported
	Online Array Roaming
	Online RAID Level Migration (ORLM)
	Online Capacity Expansion (OCE)
	RAID Initialization Background/Foreground/Quick
	Global Hot Spare Disk support
	Automatic and configurable RAID Rebuilding Priority
	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
	Write Back and Write Through
Storage Monitoring and Management Suite	
RAID Management Suites	Browser-Based management tool,
Password Secured RAID management Suites	Yes
LED Indicator and button	HDD Power, Present and Active
SMTP Email Alert Notification	Yes
Power Supply	AC INPUT: 100-240V ~ 5A 50/60Hz; DC OUTPUT: 250W
Internal Fan	80x80x25mm
Operating Environment	
Temperature	(operating) 5°C – 45°C
	(non-operating) – 40°C – 65°C"

Section 1: Hardware Installation

Hardware Overview

Panel Layout-Front View



Disk Present LED: Solid Blue
Disk Active LED: Flash Blue
Disk Fail LED: Solid Red
Disk Rebuilding LED: Flash Red
Disk Identify LED: Flash Blue and Red
Enclosure Power LED: Solid Blue
Temperature Warning LED: Solid Yellow
Fan/Temperature Fail LED: Solid Red

Panel Layout-Rear View

System Requirements

1. PC or Mac with a USB type C port or Thunderbolt™ 3 USB-C Port
2. Windows 10 and later
   macOS 10.12 and later

Enclosure Setup

1. Place the RocketStor 6124V on a level surface and remove each disk tray.

2. Carefully insert the 3.5” or 2.5” disk into each disk tray and secure them with the provided mounting screws.

For 3.5” disks: use 3.5” screws (black color) to mount the disk to each side of the disk tray.

For 2.5” disks: use the 2.5” Screws (silver color) to mount the disk to the bottom of the disk tray.

3. After installing the hard drives, connect the RocketStor 6124V to a power source.

4. With the power cord connected to the power source, turn on the RocketStor 6124V using the power switch on the rear panel (click the button to power on the RocketStor 6124V).

5. Connect the RocketStor 6124V to the host system with the USB Type-C to Type-C cable.

LCD Screen

- There are four main options within the LCD menu
  - Temperature
  - Fan Speed
  - Beeper
  - Backlight

1. To navigate through the menu please click on the right arrow button.
   a. By pressing the right arrow key it will take you into the option you have chosen
2. By clicking the right arrow button from the first LCD screen, this will lead you to the 4 main options.
3. To get to the next page please move the * sign down by pressing the down arrow button.
4. Once in a menu to change the option move the * to the option you would like and press the back button (1st button on the right)

Temperature

- You may choose to display Celsius or Fahrenheit

Fan Speed

- There are total 6 options to choose from
- SmartFan – Allow the computer to decided what speed the fan should run according the temperature
- Manual mode allows the user to choose what fan level to choose from and set it to that level.
- There are Level 0-4

Beeper

- You may choose to disable the beeper

Backlight

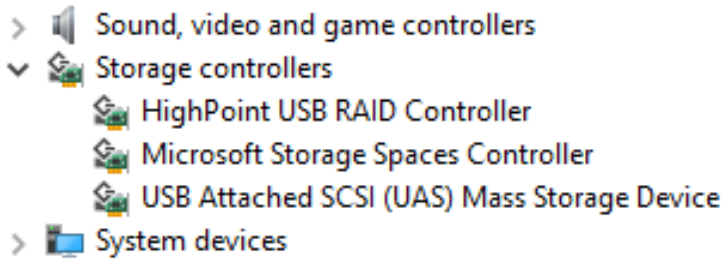
- You may choose to disable the backlight of the LCD screen

Section 2: Setting up the software for Windows Platforms

Driver Installation

Drivers provide a way for your operating system to communicate with your new hardware. Updating to the latest available driver ensures your product benefits from the most recent performance, stability, and compatibility improvements. Drivers are updated regularly at www.highpoint-tech.com

1. Boot up the Windows operating system.
2. Download the Windows driver package from the HighPoint website: http://highpoint-tech.com/USA_new/series-rs6124v-download.htm
3. Extract the package and click the setup.exe program to install the driver. The installation program will install the RocketStor 6124V driver, automatically.
4. If prompted by Windows, reboot the system after the driver is installed to complete installation.
5. After rebooting Windows, open the **Device Manager**. Verify that **HighPoint USB RAID Controller** should appear under **Storage Controllers**.



Checking your Driver Version

To check if the driver was installed successfully follow the instructions below. The same procedure can be used to determine your driver version.

1. Open **Device Manager**
2. ***Note*** Alternatively, you can search Device Manager using your start menu search bar or going to the Control Panel → Hardware and Sound → Devices and Printers → Device Manager.
3. Click the **Storage controllers** tab:
   - If the driver is installed, it will show as **HighPoint USB RAID Controller.**
   - Click **Properties**, then click the **Driver** Tab to check the version:

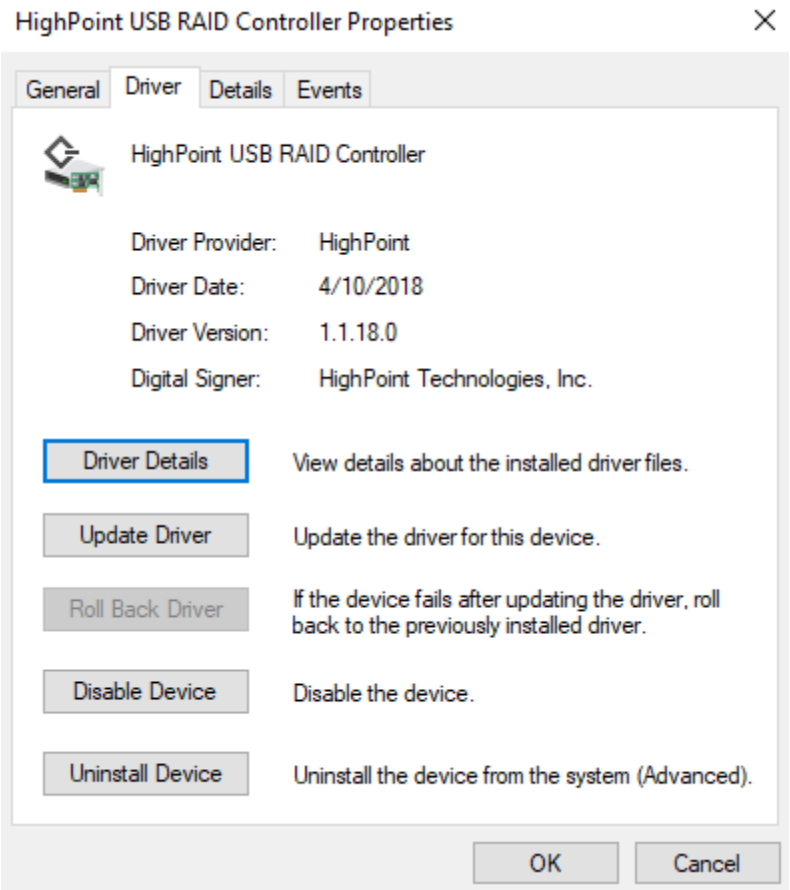


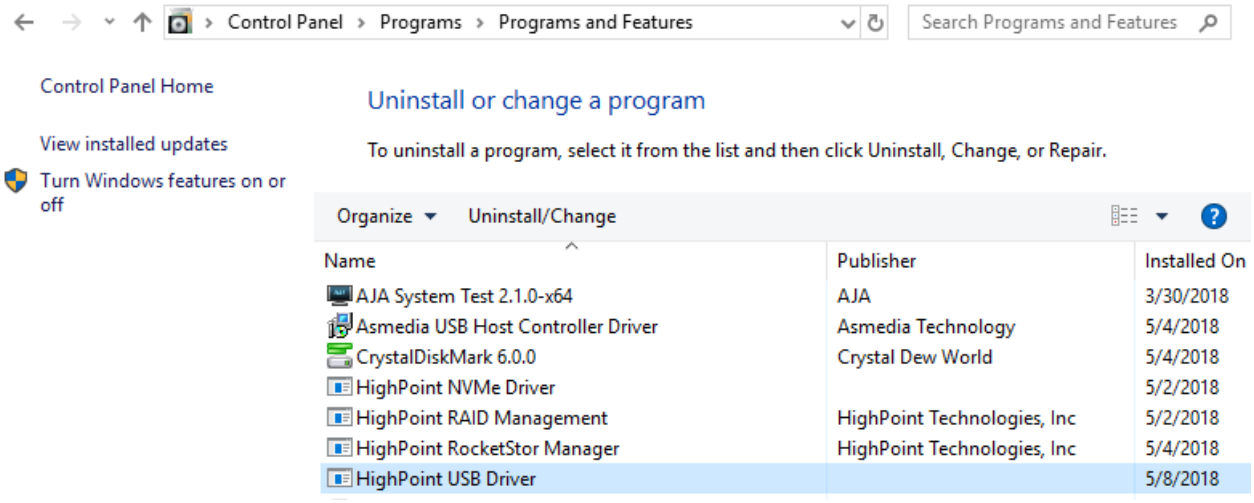
Figure 1: Driver version 1.1.18.0 for a RocketStor 6124V Driver

Updating the Drivers

If the driver was installed previously, the setup will uninstall the driver and reboot the system. You need run the setup.exe again to install the driver.

Uninstalling the Drivers

Please start the Windows Control Panel→Programs→Programs and Features, select and uninstall the “HighPoint USB Driver” .

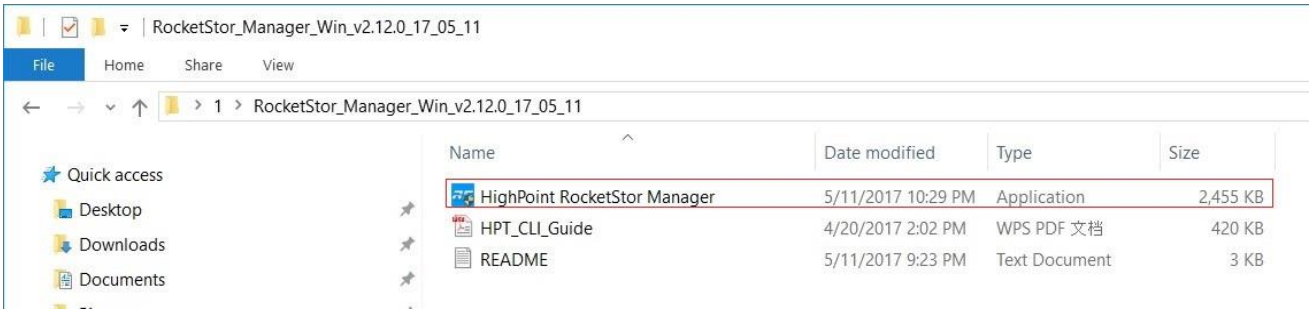


Installing the HighPoint RocketStor Manager (HRM)

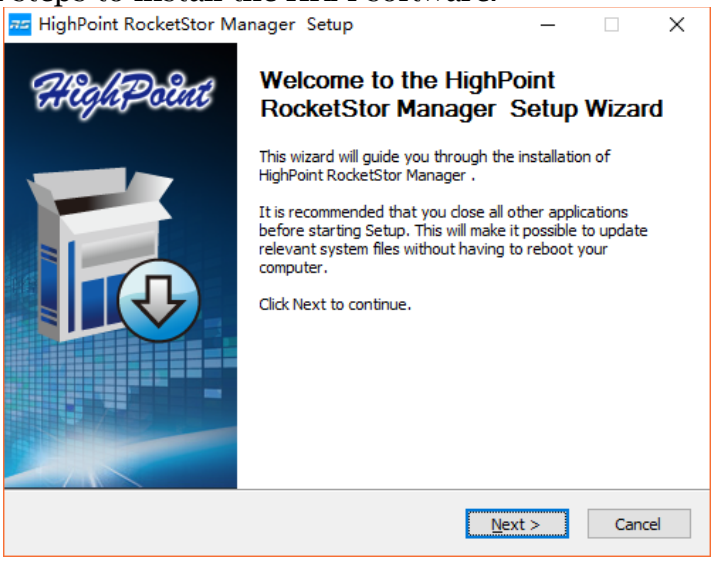
The HighPoint RocketStor Manager (HRM) is the primary link between you and your RAID array. Using the management utilities and menus offered by the HRM, you would be able to access, create, and maintain your RAID arrays.

New features are continually added to the interface; update to the latest version at http://highpoint-tech.com/USA_new/series-rs6124v-download.htm

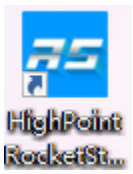
1. Locate the HRM Setup on our website and download the HRM package. Extract the contents and double click on **HighPoint RocketStor Manager.exe**



Follow the on screen steps to install the **HRM** software.



2. Log into the HRM by double clicking the desktop icon, or by typing http://localhost:7404/ in your preferred web browsers address line (we recommended using the latest version of the browser.)



Formatting the RAID Volumes

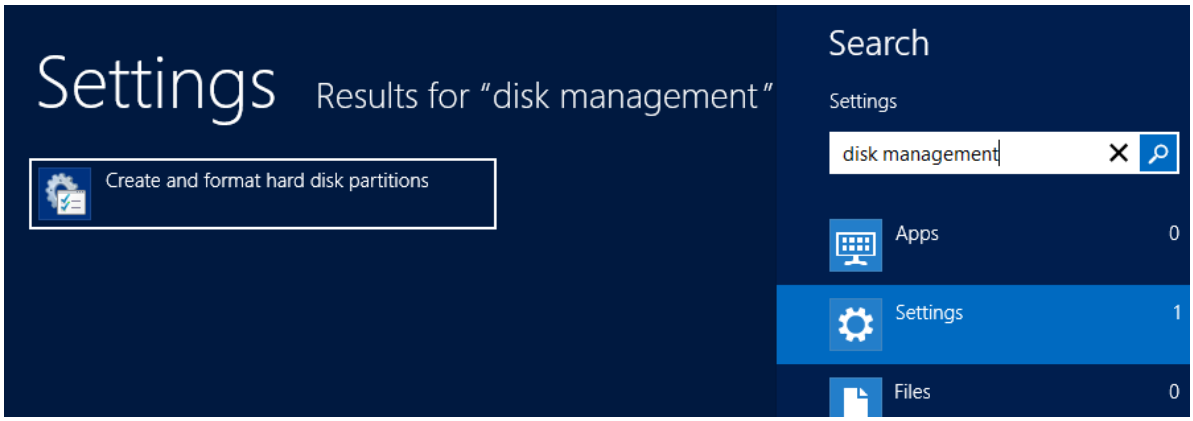
After creating a RAID array, your operating system will recognize that array as a logical disk. However, the array will not be accessible until it is formatted by the operating system.

Format the volume when you have finished the following procedures:

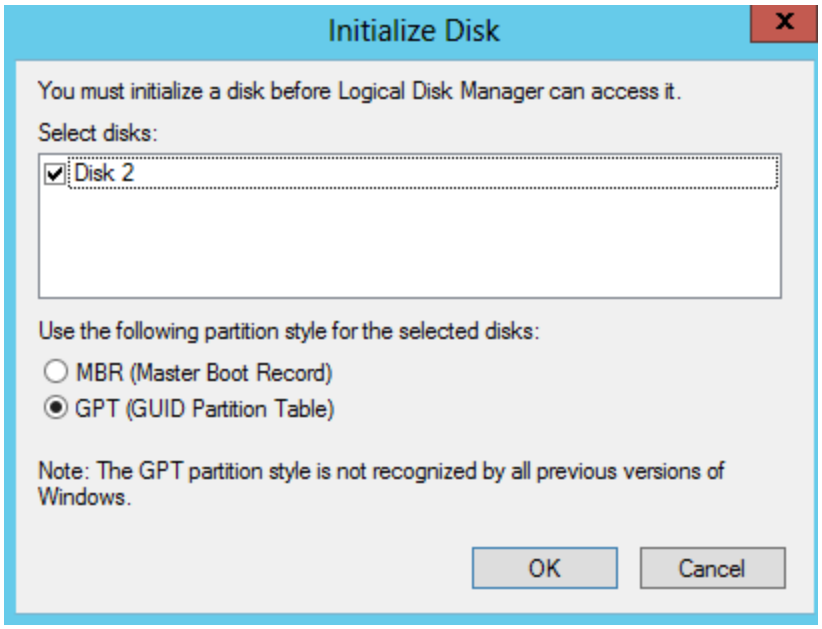
- Set up the Enclosure
- Set up the RAID Controller
- Installed Drivers
- Created an Array

For **Windows** Users:

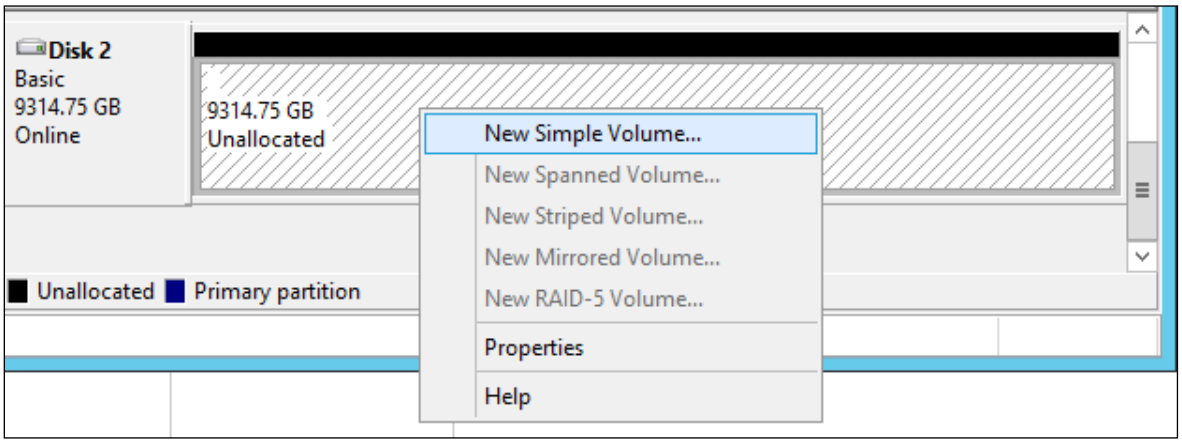
1. Use the Windows Search function and search for **Disk Management. (**Search results may show **Create and format hard disk partitions.**)



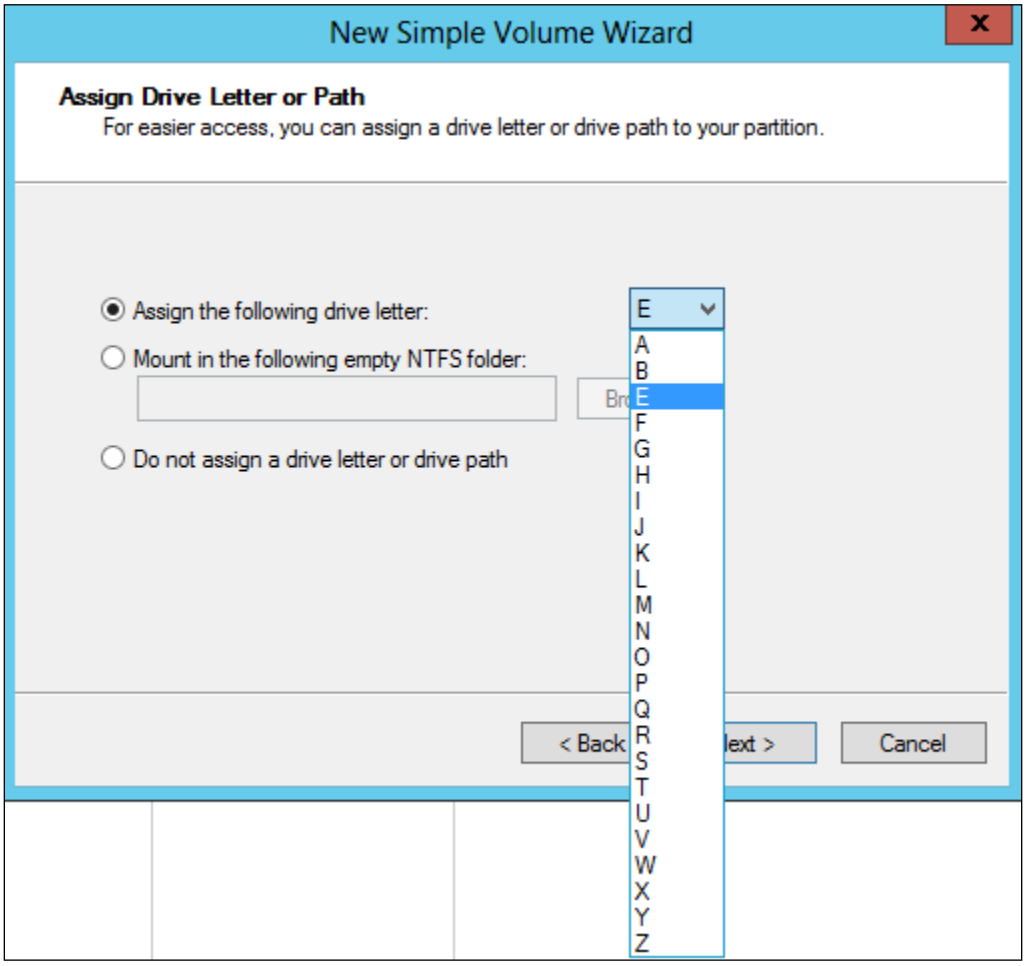
2. Alternatively, Go to **Control Panel.**
3. Under Administrative Tools, click **Create and format hard disk partitions**
   - If you just created the array, a prompt will appear after clicking disk management asking you to initialize the disk
   - MBR partition table is mainly for bootable drives and has a 2 TB limit. If your PC motherboard uses legacy BIOS, you will most likely need to use MBR for bootable drives.
   - GPT partition table has no capacity limit, but cannot be bootable unless your PC motherboard contains UEFI firmware.



4. Once initialized, right click the unallocated disk space for your disk
5. click **New Simple Volume.**



6. Follow the instructions on screen to receive a drive letter.



7. Once finished, the drive will appear in your OS with the letter you assigned.

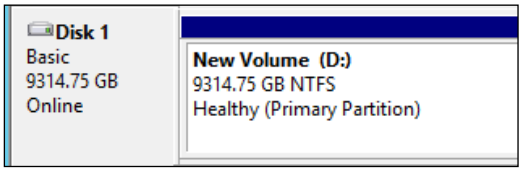
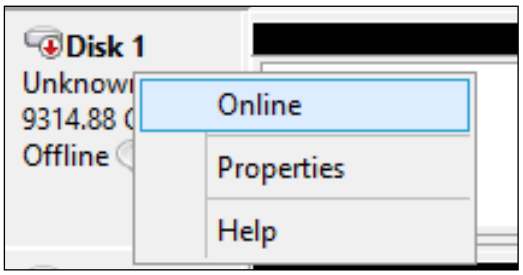


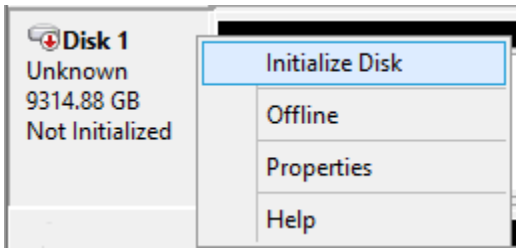
Figure 2. Disk formatted as NTFS and assigned drive letter D:

Your disk may initially appear offline to the operating system, and you may have to bring it online:

1. In Disk Management, right click the disk you wish to bring online.



2. The disk status will change to **Not Initialized**; right click the disk again to initialize it.

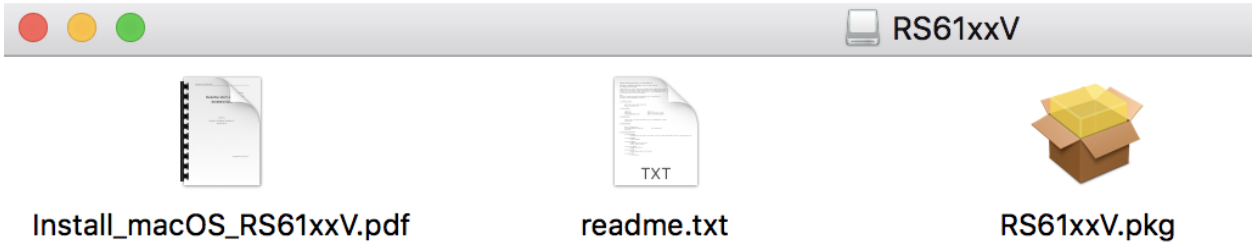


Section 3: Setting up the software for Mac Platforms

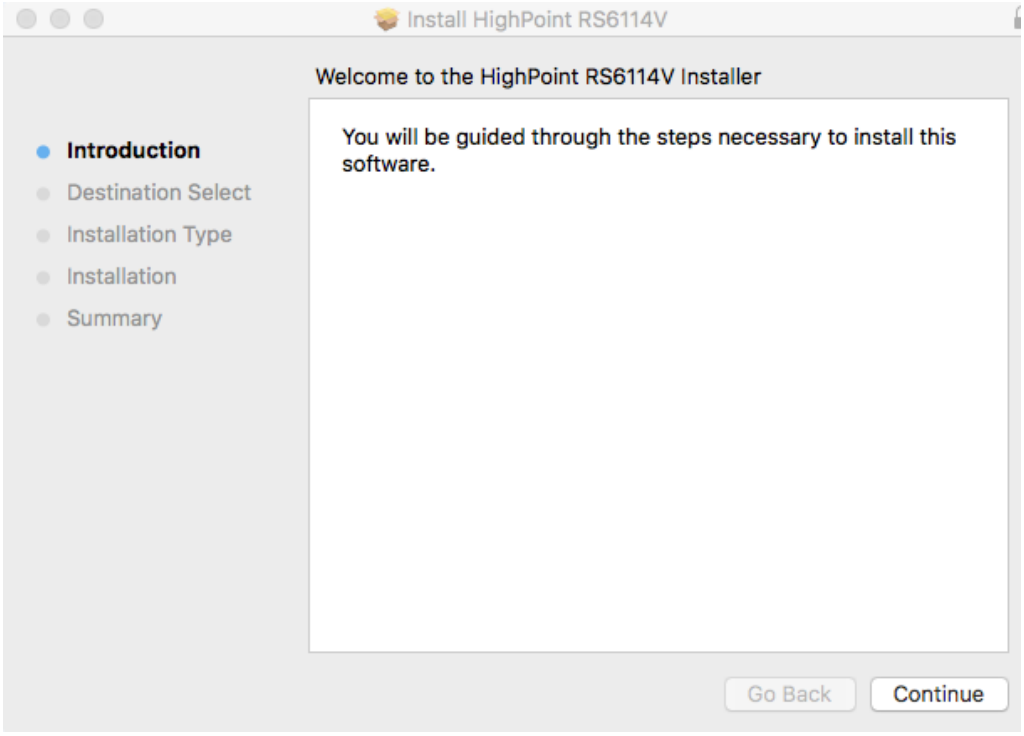
Driver Installation

1. Once downloaded, locate the folder you downloaded the driver to and double click on the file named **"RS61xxV_Mac_xxx.dmg"** .

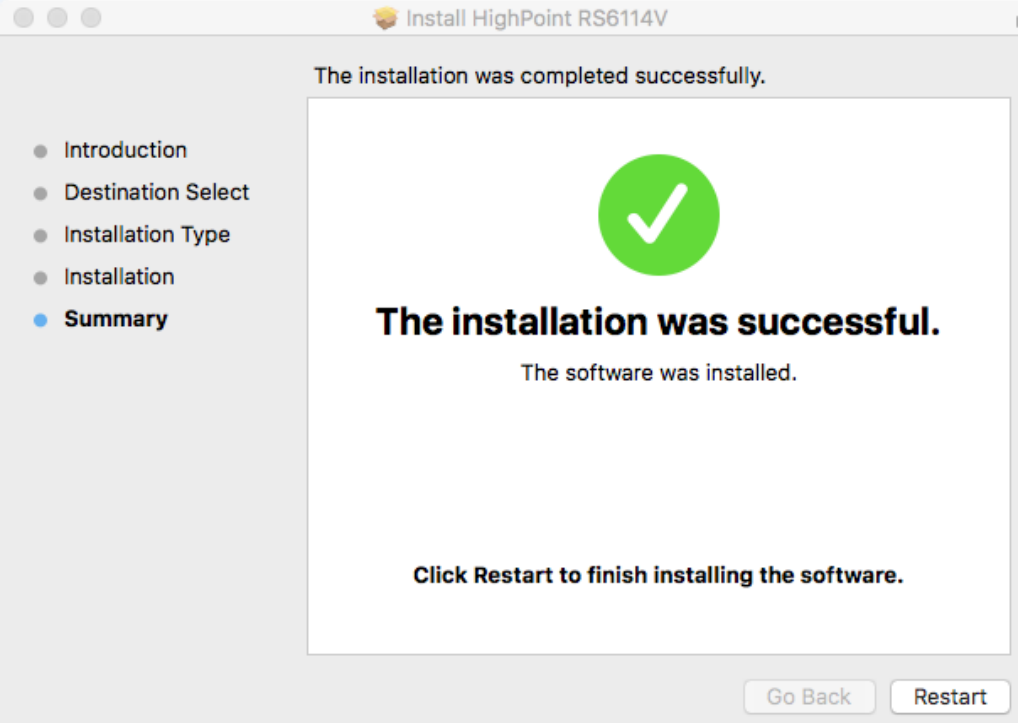
2. The file will be mounted onto the operating system, click on **RS61xxV.pkg** located on the mounted drive.



3. Follow the on-screen instructions.



4. **Reboot** computer



5. Make sure **Driver Installed** is **Yes**. To do so, go to the Apple Icon (top left) → About this Mac… → System Report →**Software** →**Library**→**Extensions**→**rs61xx**.

Installing the HighPoint RocketStor Manager(HRM)

The HighPoint HRM is the primary link between you and your RAID array. Using the management utilities and menus offered by the HRM, you will be able to access, create, and maintain your RAID arrays.

New features are continually added to the interface; update to the latest version at http://highpoint-tech.com/USA_new/series-rs6124v-download.htm

Using a new RAID Volume

After the new RAID volume has been configured or installed a new disk, OS X will display a pop-up window.

Click the Initialize button to start the disk utility.

Select the RAID volume that has been built, and select Erase on top, name the RAID volume in the center part, and then select Erase on bottom right of the pane to format the RAID volume. After formatting, the RAID volume is ready for use.

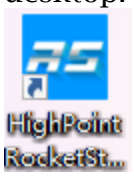
Section 4: The HighPoint RocketStor Manager (HRM)

The HRM is a universal, web-based management interface designed for HighPoint RAID storage products and solutions. The HRM is compatible with all mainstream browsers and shares a common interface regardless of hardware or operating system platform.

How to Login:

You can reach the **HRM** log in page either by:

- Double clicking on the **HighPoint RocketStor Manager** icon created on your desktop.

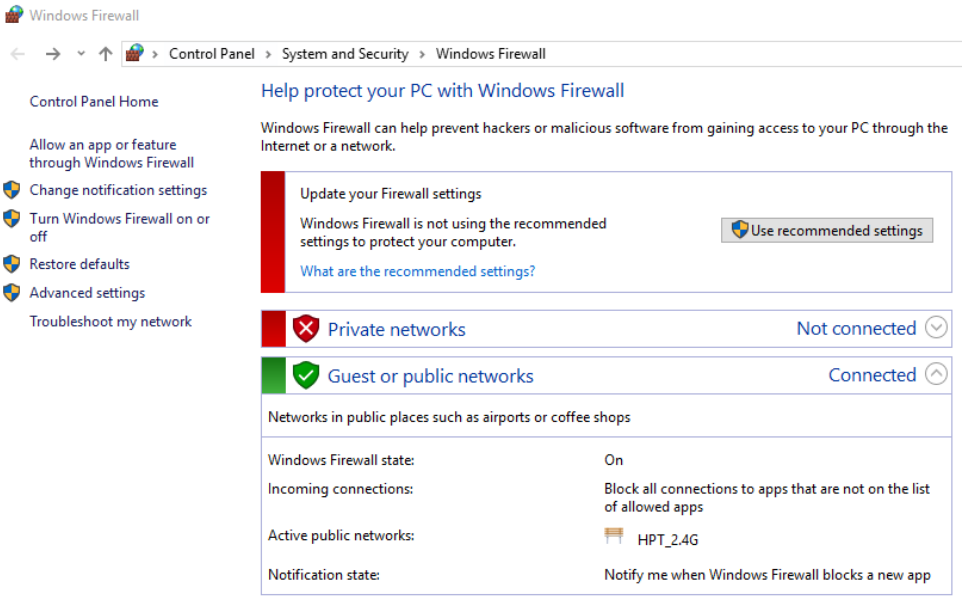


- Opening your preferred web browser and typing **http://localhost:7404** in the address bar.

Remote Login

A user connected to a local network can remotely access the HRM using the IP address of the host device. HRM has to be install on the host device to be able to use this feature.
To obtain your IP address:

1. Open a command prompt window on the host computer.
2. Type **ipconfig**
3. Look for the section that contains your network adapter information
4. Take ***Note*** the IP address
5. Disable Windows Firewall Private Networks
    - Control Panel > System and Security > Windows Firewall



6. Restart the System

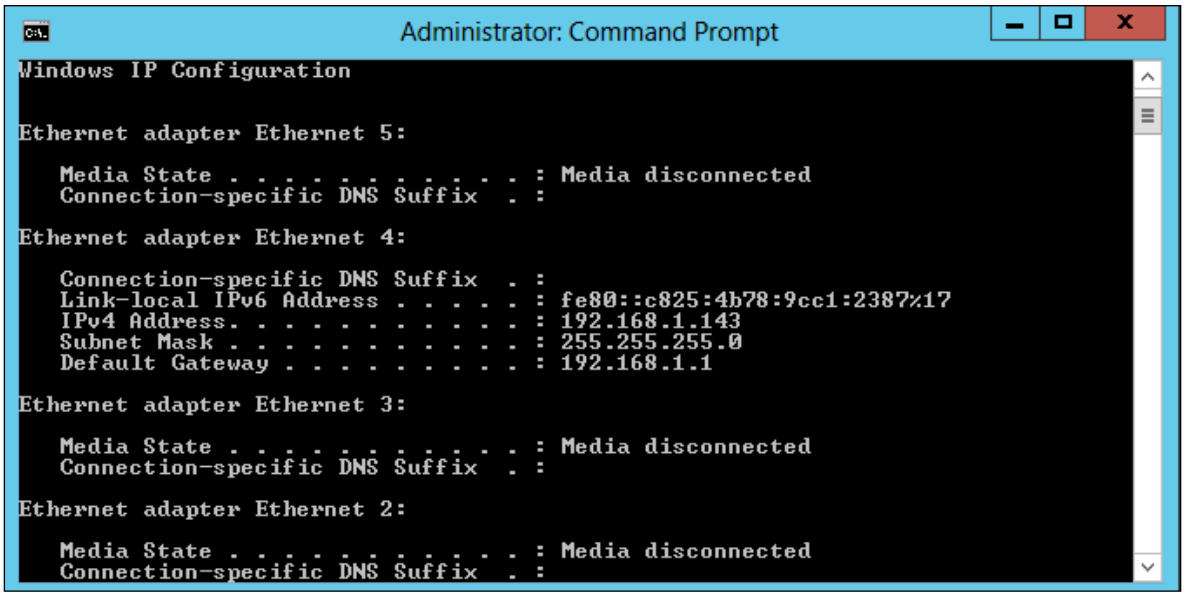


Figure 3. Example: The IPv4 address is under Ethernet adapter Ethernet 4 and is 192.168.1.143

Note: Make sure **Restrict to localhost access** is **disabled** in HRM **Setting** (Refer to **The HRM**, **Setting** tab).

You can then remotely access the HRM using any other computer that is in your local network by opening any web browser and typing **http://{IP address of host computer}:7404** (default port).

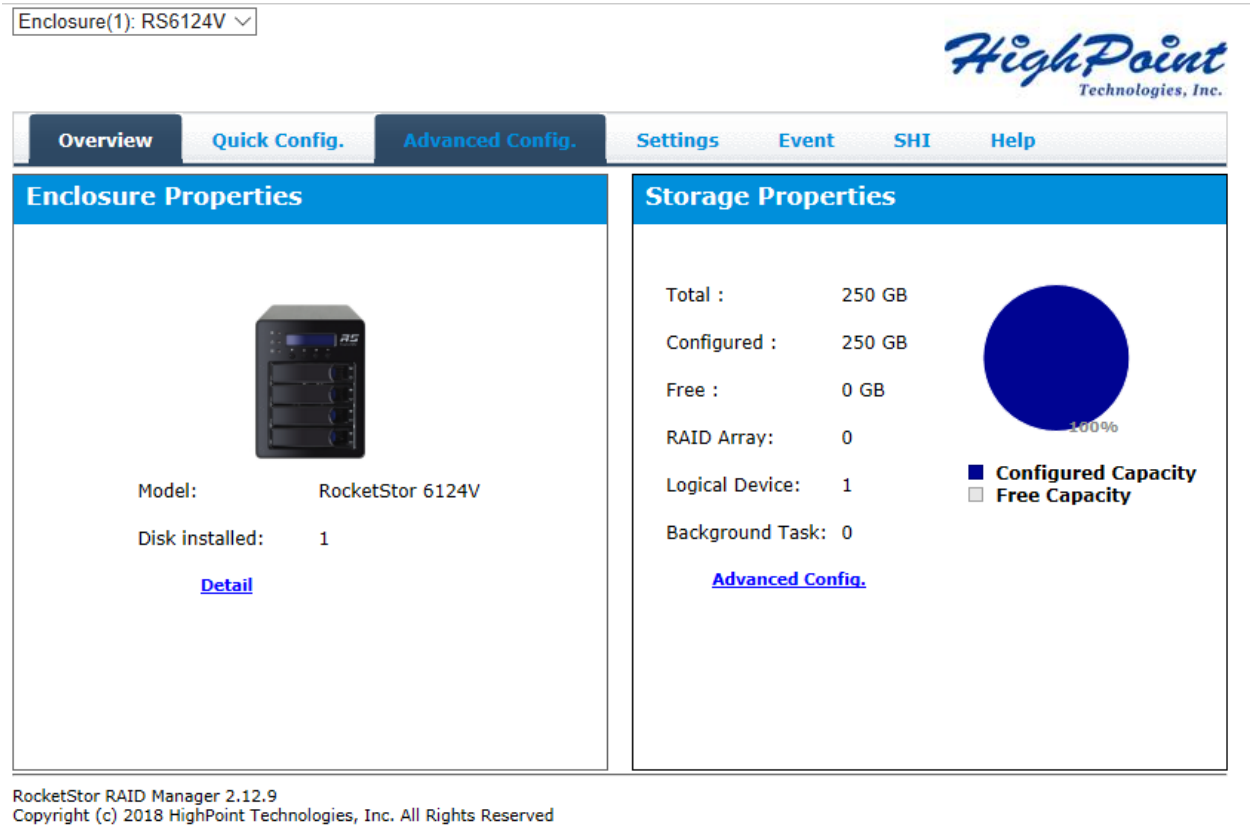
Navigating the HRM

The HRM allows you to do several key things:

- Create and remove arrays
- Monitor disk health
- Update firmware and BIOS
- Change enclosure settings
- Troubleshoot faulty drives
- View general system overview

Tab Name	Function
Overview	View Enclosure and Storage Properties
Quick Config.	A quick configuration wizard to create a new RAID array.
Advanced Config.	Manage and create RAID arrays
Settings	Adjust HRM controls settings
Event	Show HRM Event Log
SHI (Storage Health Inspector)	View and schedule S.M.A.R.T monitoring
Help	Online help，Register Product，Configuration Record

Overview Tab



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

- Enclosure 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).

Enclosure Properties

1. Log into the HRM
2. Select the proper controller from drop down menu on the top left
3. Click **Overview**

Enclosure Properties

- **Model**: the model name of the controller

- **Disk installed**: number of drives seen by the controller

Viewing Storage Properties

1. Log into the HRM
2. Select the controller from drop down menu on the top left
3. Click **Overview**

Storage Properties

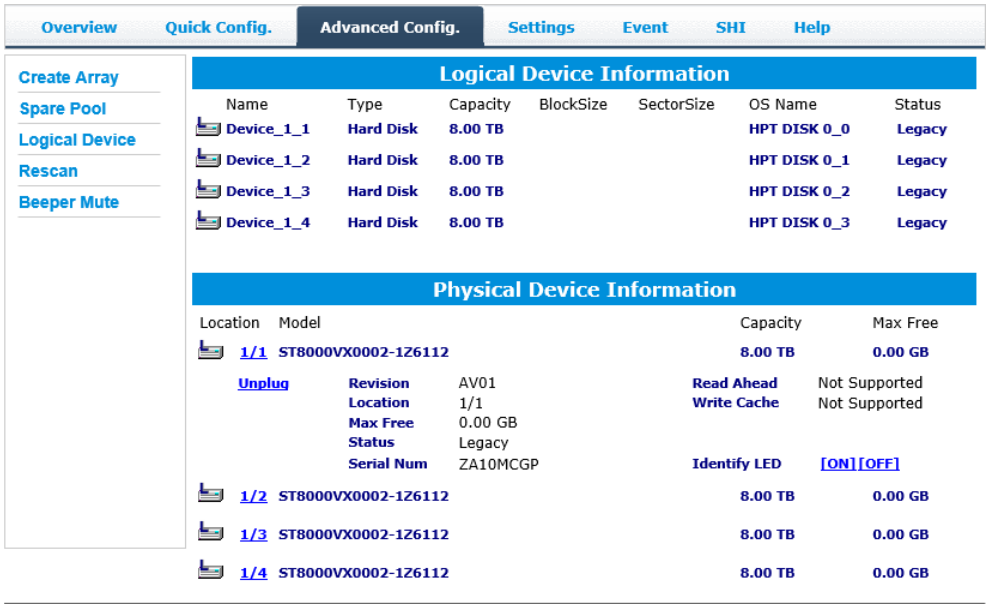
- **Total**: the combined capacity of each physical disk connected to the controller.
- **Configured**: the amount of space used for creating arrays
- **Free**: total amount of unused space
- **RAID Array**: total amount of the configured RAID array.
- **Logical Device:** total amount of logical device.
- **Background Task**: current running task.

Quick Config.

Quick Config is the easiest and quickest way to configure RAID arrays. Follow the on-screen instructions to configure your array.

Advanced Config.

1. Log into the HRM
2. Click **Advanced Config.**



The Advanced Config. tab is where you can edit, delete, and maintain your RAID configurations, as well as review the Physical Device information. The Advanced Config.tab has the following functions:

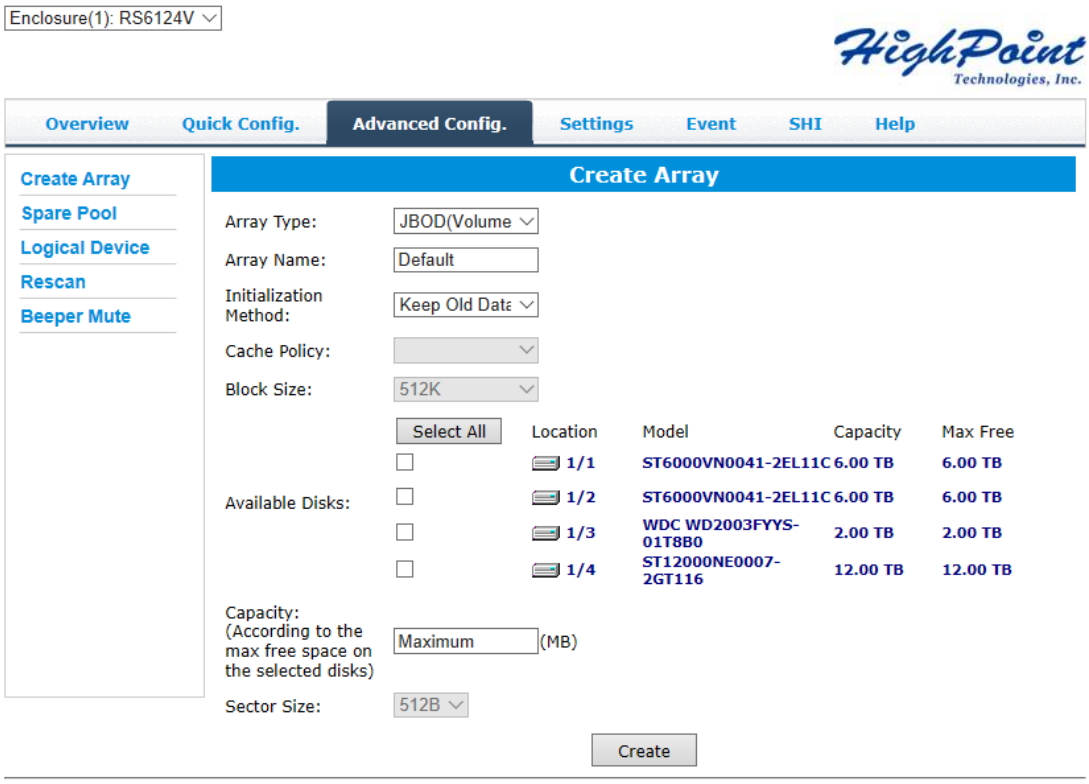
- Create Array
- Spare Pool
- Logical Device
- Rescan
- Beeper

Creating Array

To create an array:

1. Click **Advanced Config.**
2. Click **Create Array**

An array is a collection of physical disks that will be seen as one virtual drive by your Operating System (OS).



Array Type:

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

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: Initialization of a disk sets all data bits to 0, essentially clearing all the data on the drive. It is important to initialize disks as previous data physically stored on the drive may interfere with new data.

- **Keep Old Data**: This option skips the initialization process and all data on each physical disk of the array will be untouched. This option can be considered if RAID is not recognized due to the loss of RAID's metadata. This option does not apply when RAID is deleted and then rebuilt.
- **Quick Init:** This option grants immediate access to the RAID array by skipping the initialization process, but it will delete all data. **Note***:* Skipping initialization is generally not recommended as residual data on disks may interfere with new data in the future.
- **Foreground**: The array initialization process will be set at high priority. During this time array is not accessible, but the initialization process will complete much faster.
- **Background**: The array initialization process will have a lower priority. During this time the array will be accessible, but the initialization process will take much longer to complete.

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

Background and Foreground Initialization

Fully initializing the array will completely zero out the data on the disks, meaning the disk will be completely wiped and every bit on the disk will be set to 0. Foregoing initialization means the array will still be created, and you can still write new data onto the array. But when your array requires rebuilding, residual data left behind may interfere with the process.

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: 512K)

Adjusting the block size towards your disk usage can result in some performance gain.

In a typical RAID configuration, data of the virtual drive is striped (or spread across) the physical drives. Having a smaller array block size will increase the likelihood of accessing all physical drives when processing large I/O requests. Multiple physical drives working in parallel increases the throughput, meaning better performance.

For smaller I/O requests (512 bytes to 4 kilobytes), it is better to have each individual disks handle their own I/O request, improving the IOPS (I/O per second), rather than having one tiny I/O request being handled by multiple disks.

A block size of 64k is recommended because it strikes a balance between the two I/O usage scenarios.

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.

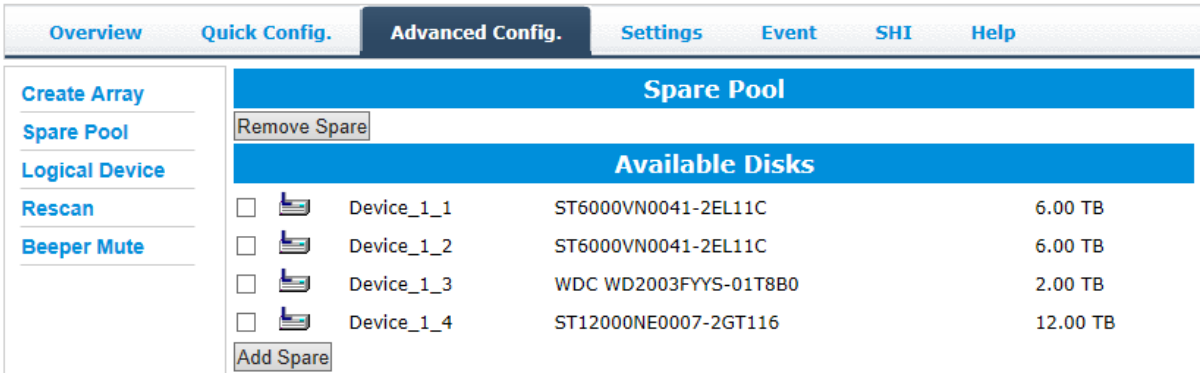
An example of how disk capacities are limited by smallest disk.

- You have 3 drives connected to the enclosure.
- The first drive is 6 TB, the second is 4 TB, and the third drive is 2 TB.
- After creating a RAID level 5 using all three drives and maximum capacity, the first drive will have 4 TB, the second 2 TB, and the third drive 0 TB of free capacity
- The free capacity on the first and second drive can be used to create a separate array.

You may also choose how much space each array will utilize. You can use the remaining space to create another array (up to 4 arrays are supported).

Adding Spare Disks

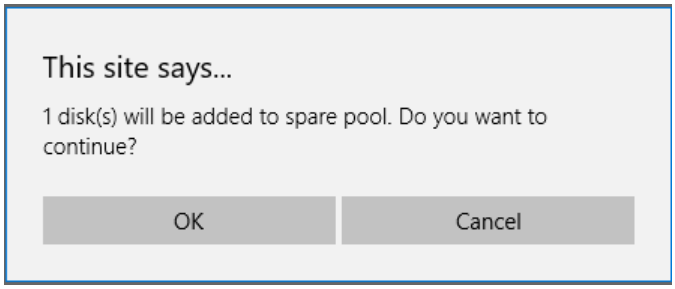
Spare disks are physical disks that will immediately replace critical disks in an array.



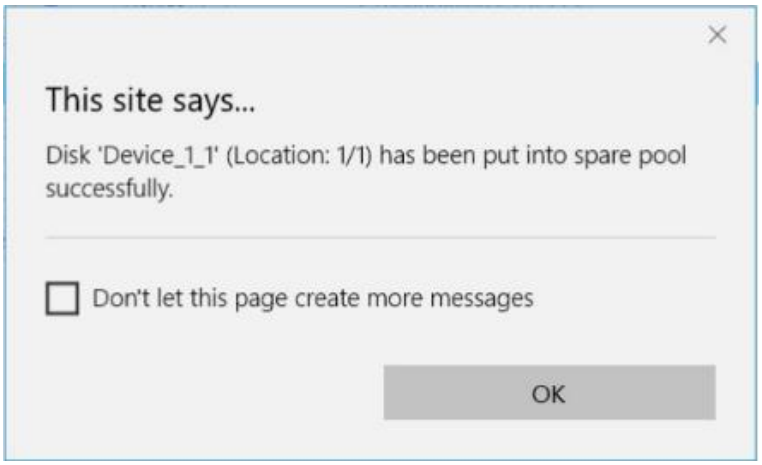
To add spare disks:

1. Click **Advanced Config.**
2. Click **Spare Pool:**

3. Check the box for the disk you want as a spare under **Available Disks.**
4. Click **Add Spare,** and confirm by selecting **OK** from the pop-up window:



5. The disk has now been assigned as a spare. Click **OK** to confirm:



Disks added to the spare pool will be displayed under **Spare Pool** and can be removed by checking the box before the target drive, then clicking the **Remove Spare** button.

Physical drives marked as a spare will automatically be added to an array whenever there is a disk failure. This feature minimizes the chances of a data loss by reducing the time an array is in the critical status.

Obtaining Logical Device Information

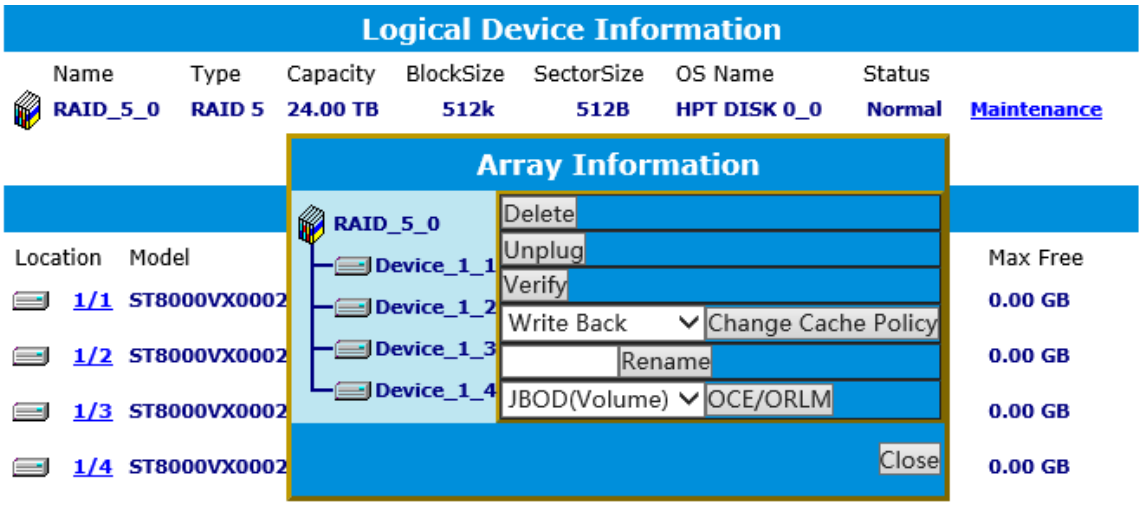
The Logical device including your RAID arrays and the individual disks your system detects.

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

Maintenance
Once an array has been created, the Maintenance menu provides options to maintain or edit it. To access the Maintenance menu, click the **Maintenance** button towards the right-hand side of the array name.

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.

Array Information &Maintenance Options: Normal Status



Arrays with the **Normal** status are healthy and functioning properly. Arrays with the **Normal** status will have the following options:

Delete – deletes the selected RAID array

Unplug – powers off the selected RAID array – once powered off, the physical disks can be safely removed from the RAID controller

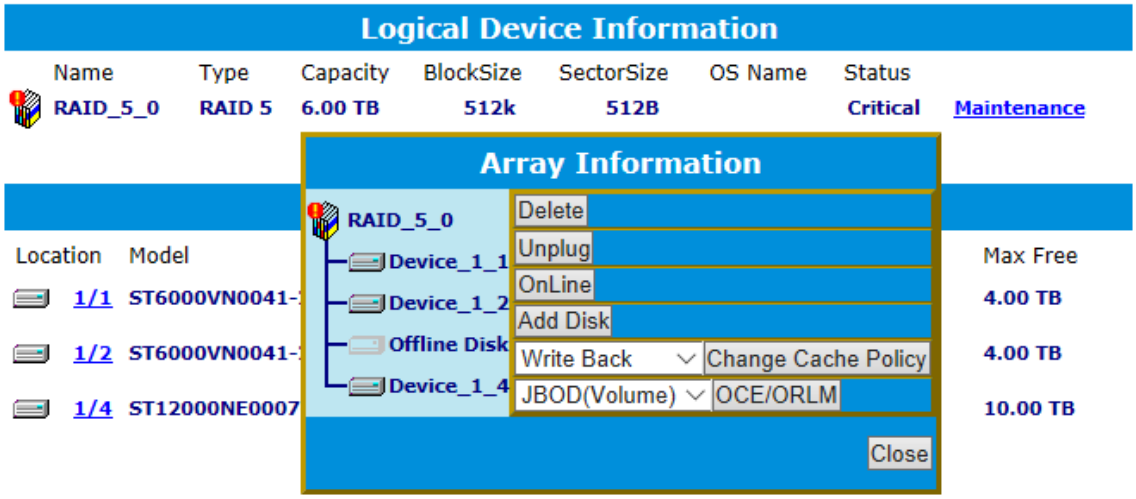
Verify – verifies the integrity of the RAID array

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

Rename – renames the RAID array.

ORLM (**O**nline **C**apacity **E**xpansion / **O**nline **R**AID **L**evel **M**igration options)-See **Expanding a RAID array** for more information.

Array Information & Maintenance Options: Critical Status



Arrays in the **Critical** status can be divided two cases:

- **Hot-plugged critical RAID with offline disks:**
  This critical RAID cannot be accessed. This main purpose is to avoid unnecessary rebuild caused by RAID's offline member disks. It is mainly applicable to the situation when some RAID's member disks are not detected in time, such as system startup or hot-plug RS6124V.
  When some RAID's member disks are missing, you should try to identify the unrecognized hard disks by some methods, such as hot-plug disks. If it is confirmed that these disks are broken and you want to access the RAID again, you can report critical RAID to OS through the **OnLine** button, but the rebuilding will be happened when new disks insert.
  If you want this critical RAID to always report to OS, you can set the option "**Report Critical RAID to OS**" to enable in setting page.
- **Other:**
  This critical RAID can be accessed and utilized.

Arrays in the **Critical** status can be accessed and utilized, but are no longer fault tolerant. A Critical array should be rebuilt as soon as possible to restore redundancy. 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
- **Online** option

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

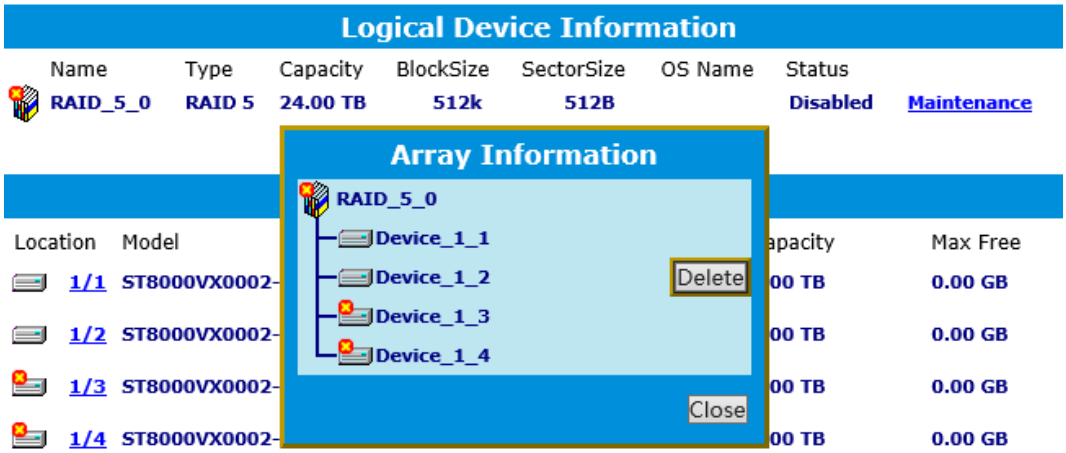
- Reinsert the same disk
- Insert new disk

Reinserting the same disk should trigger the 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.

If a spare disk is available, an array that has entered the critical state will begin rebuilding using the next available spare disk.

Array Information & Maintenance Options: Disabled Status



An array with the **Disabled** status means that the 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
- Unplug
- Verify

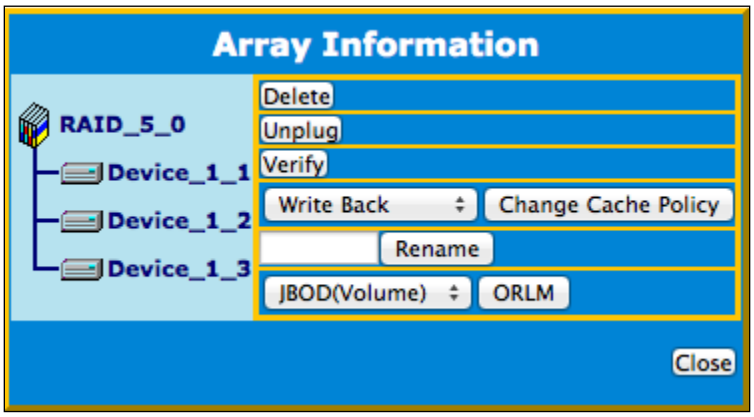
Delete – will delete the array
Unplug – will take the array offline, making it safe to remove
Verify – will attempt to verify the RAID array integrity, only the RAID1, 5 and 10 support this feature.

Expanding an Existing Array

Important: It is recommended that the array be **Verified/Rebuilt** before **Expanding** or **Migrating**. Once you start an **OCE/ORLM** procedure, you can stop the process, but it **must** be resumed until completion.

To add more capacity to your current configuration follows these steps:

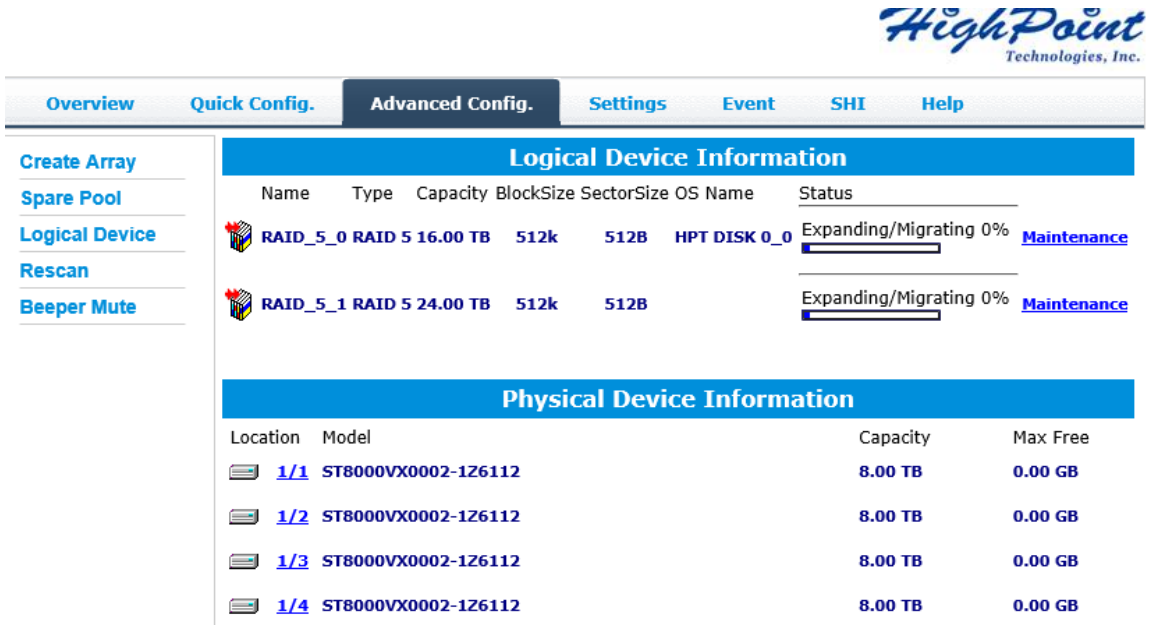
1. Click **Advanced Config.**
2. Click **Maintenance** for the array you want to change
   - Select a **different** RAID level to **Migrate.** For example, if you want to change a RAID 0 array, you will need to select a different RAID level, such as RAID 5 or 6.
   - Select the **same** RAID level to **Expand.** For example, if you want to expand the capacity of an existing RAID 5 array, you must select RAID 5 from the menu.



3. **Important**: make a note of all the physical drives currently in the target array.
4. Click **ORLM**
5. Select the physical drives you recorded earlier (step 5) and the drives you want to add
6. Click **Submit**

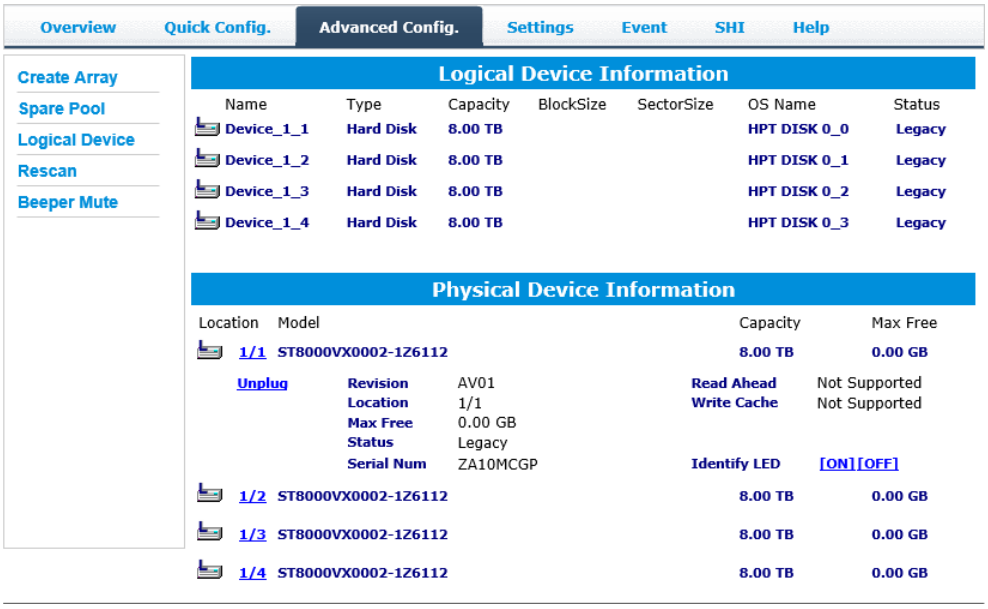
Upon submission, you will receive a prompt stating ORLM has been successfully configured.

The **Logical Device Information** will change the status to **migrating**.



Physical Device Information

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



Rescan

Clicking rescan will force the drivers to report the 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.

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, channel 2)
- **Write Cache*** – (Enable/Disable) the disk write cache
- **Max Free** – space on the disk that is not configured in an array
- **Status** – (Normal, disabled, critical) status of the disk
- **Serial Number** – serial number of the physical disk
- **Unplug** – Safely ejects the selected disk. Other methods of disk removal will trigger the alarm if enabled.

* 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.

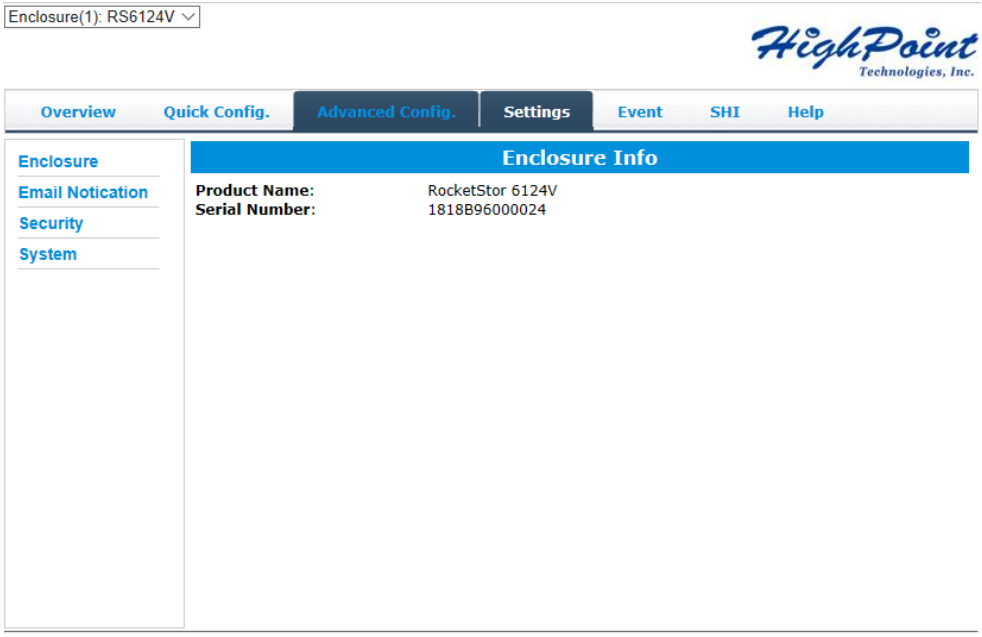
Write Cache

Enabling write cache will speed up write operations.

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.

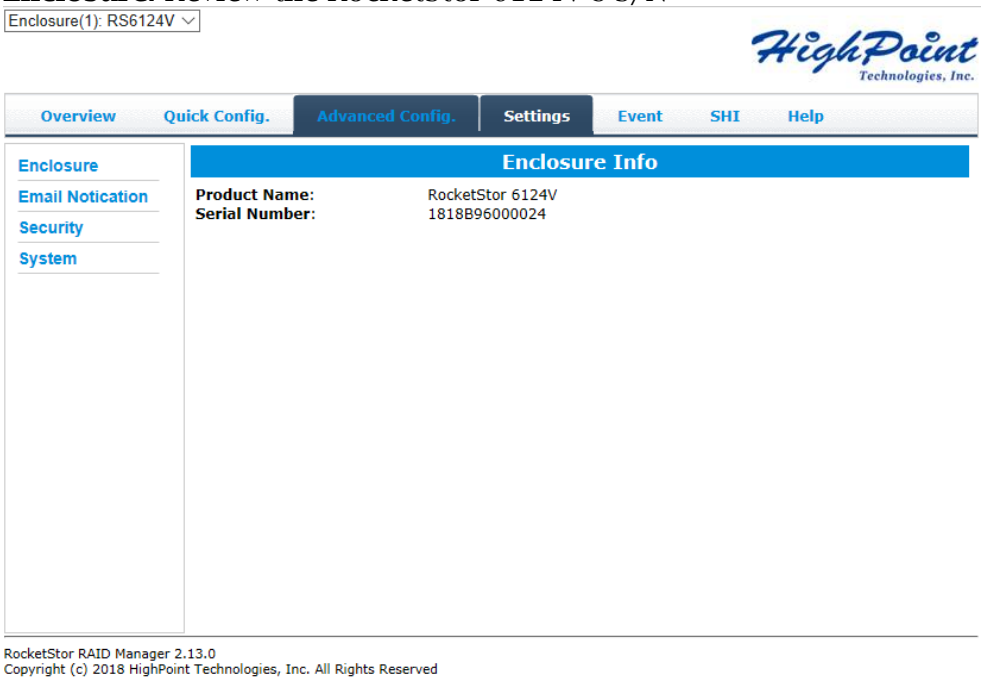
Settings Tab



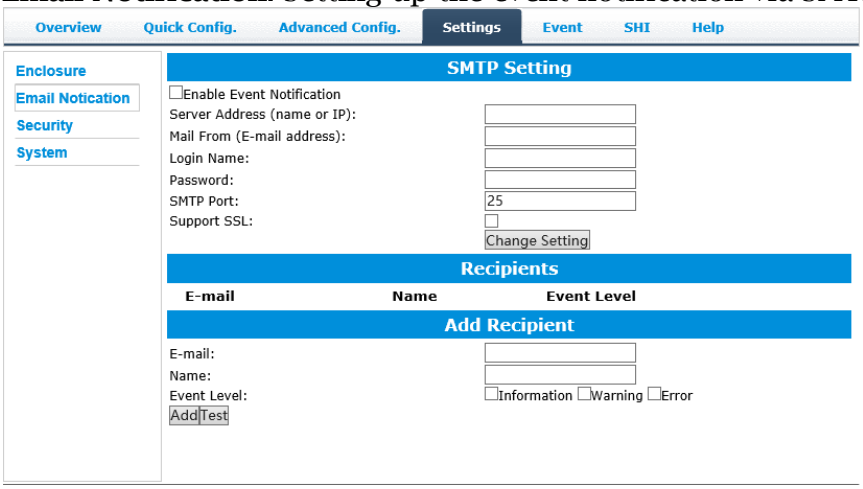
Using this tab, you can change the following:

Enclosure
Email Notification
Security
System setting

Enclosure: Review the RocketStor 6124V's S/N



Email Notification: Setting up the event notification via SMTP Email server.

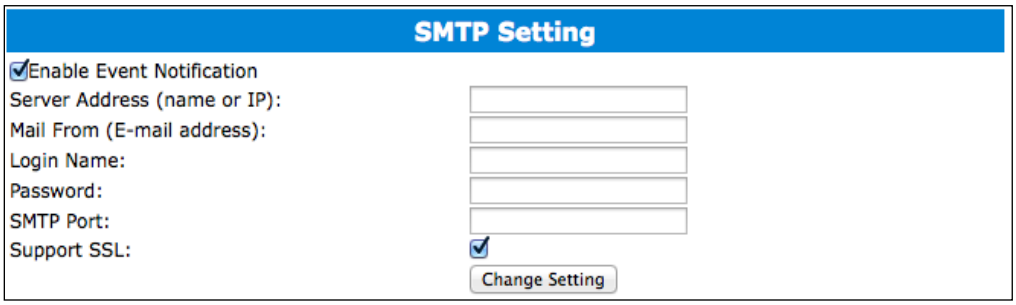


The following topics are covered under email:

- 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



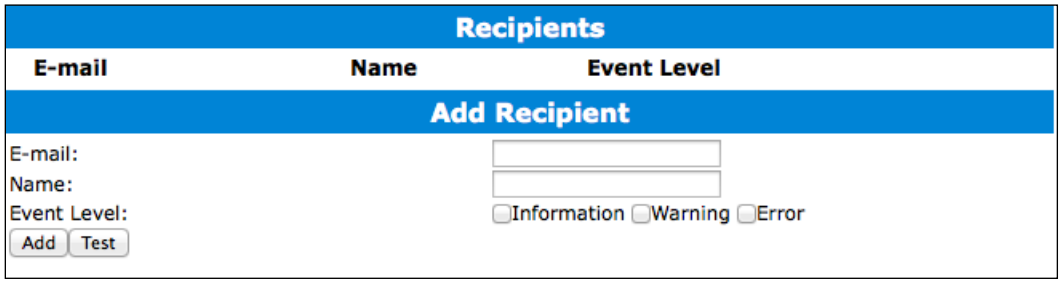
To set up email alerts:

1. Check the Enable Event Notification box.
2. Enter the ISP server address name or SMTP name
    a. The SMTP address can be found by googling the Email server SMTP address
    b. Ex. Gmail
        i. Gmail SMTP address
        ii. Smtp.gmail.com
3. Type in the email address of the **sender** (email account that is going to **send** the alert)
4. Type in the Login name (email account login ID) and password of the sender
5. Type in the SMTP port (default: **25**)

6. Check support SSL box if SSL is supported by your ISP (port value will change to **465**).

Note: After you click **Change Setting,** the password box will become blank.
You need to **Add Recipients** to receive the events that are seen in the WebGUI

How to Add 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. Check which type(s) of events will trigger an email using the respective **Event Level** check boxes.
4. (**Optional**) Click **test** to confirm the settings are correct by sending out a test email
5. Click **add** to add the recipient to recipient list
6. The added recipient will display in under **Recipients**

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

Example email message:

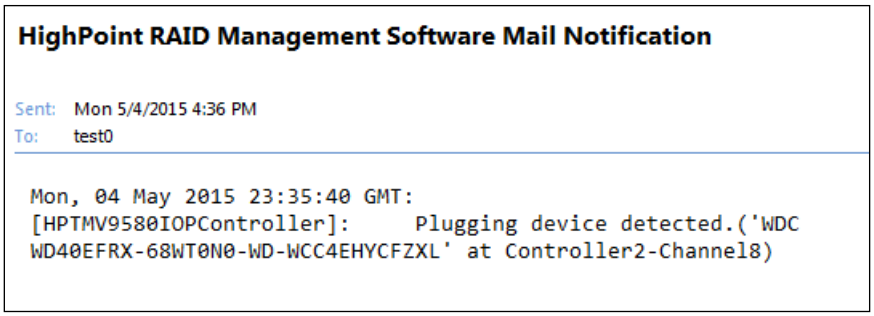
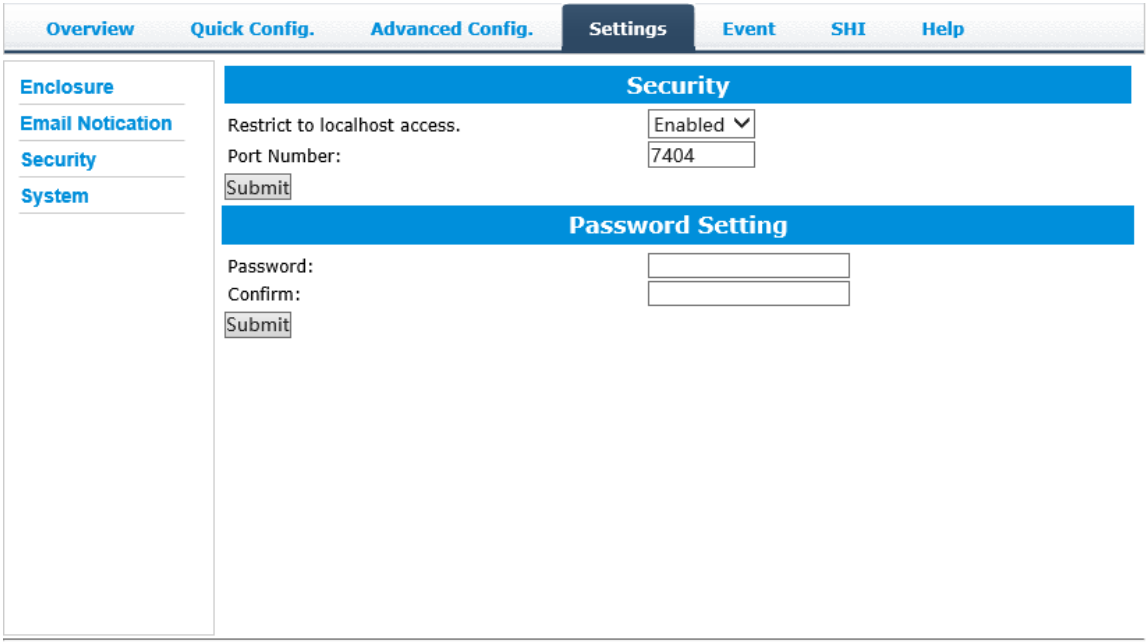


Figure 1. Example event log email

Security: Setting the HRM's log in password, remote log in availability and the port number.



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 HRM.

Port Number (default: 7404)

The default port that the HRM listens on is 7404. You may change it to any open port.

Password Settings

Changing your HRM password

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

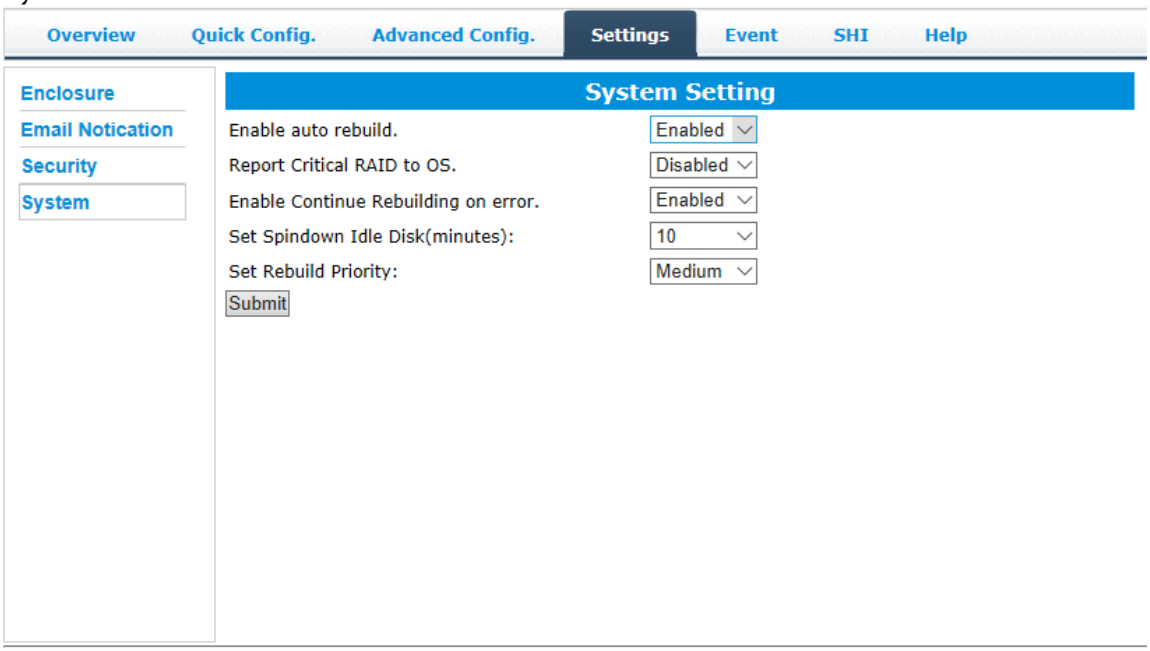
Recovering your HRM password

If you wish to revert to the default password: hpt, delete the file hptuser.dat.

For **Mac** Users:

1. We recommend uninstalling HRM, then reinstalling –this will remove the password requirement and allow you create a new one under the **Setting** tab.

System Tab:



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.

Report Critical RAID to OS(default:Disabled)

When **Enabled**, hot-plugged critical RAID with offline disks will be reported to the system, the critical RAID can be seen under **windows device management** or **macOS disk utility**. This situation applies to the case the offline member disks of Critical RAID have been confirmed to be damaged.
When **Disabled**, hot-plugged critical RAID with offline disks will not be reported to the system, the critical RAID partition under **windows device management** or **macOS disk utility.**

Enable continue rebuilding on error (default: Enabled)

When enabled, the rebuilding process will ignore bad disk sectors and continue rebuilding until completion. When the rebuild is finished, the data may be accessible but may also be inconsistent, due to any bad sectors that were ignored during the procedure. If this option is enabled, HighPoint recommends checking the event log periodically for bad sectors warnings.

Set Spindown Idle Disk(minutes) (default: 10)

The default is 10 minutes. Without any read-write operation, the disk will stop running after 10 minutes. You can set 10, 20, 30, 60, 120, 180, 240 minutes. If set to Disabled, the disk will not stop running.

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].

Event Tab

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

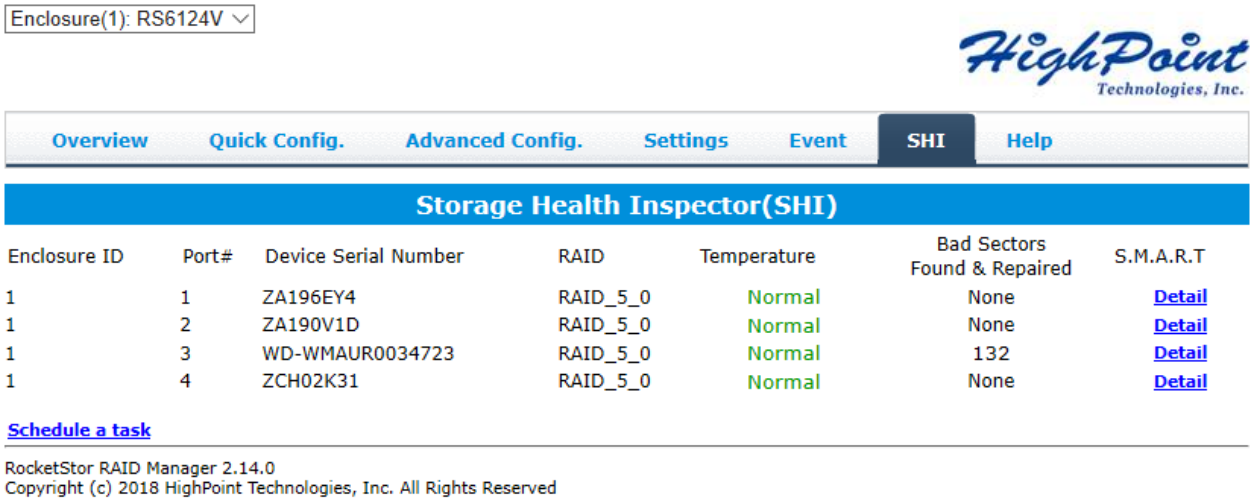
Icon	Name	Definition
	Information	Includes general administrative tasks: • Create/delete arrays • Configuring spares • Rebuilding arrays • Configuring event notifications • Configuring maintenance
	Warning	Alerts issued by the Host Adapter: • High temperatures • Sector errors • Communication errors • Verification errors
	Error	Hardware related problems • Hard disk failure • Broken errors • Memory failure

SHI (Storage Health Inspector)

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

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.

How to Enable SMART Monitoring



To access SMART attributes of an individual disk:

1. Log in to the HRM
2. Select the proper controller using the drop down menu on the top left
3. Click the **SHI** tab
4. Click **Enable** to enable SMART monitoring

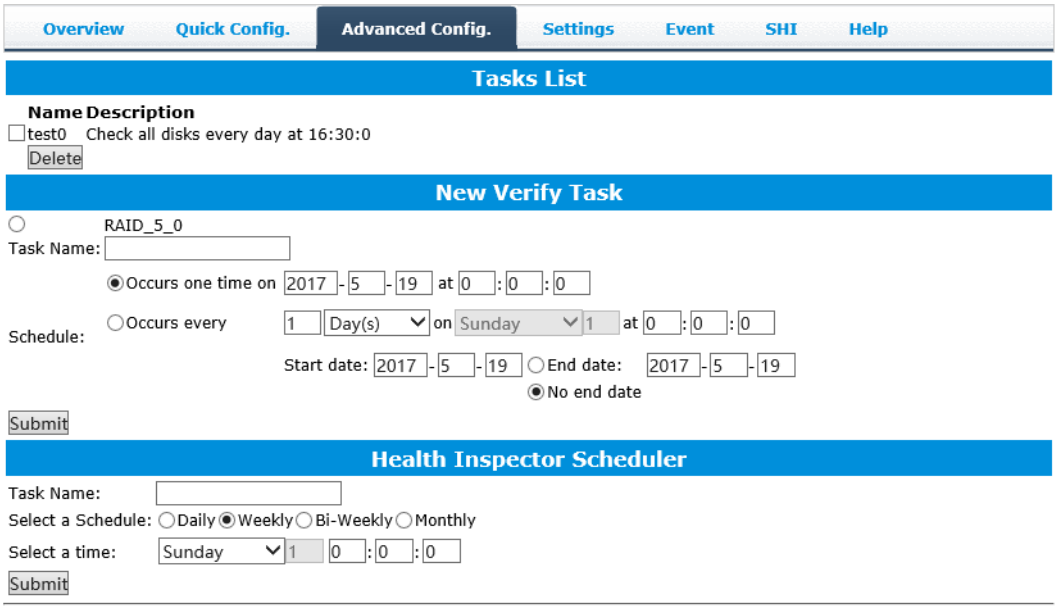
Disabling SMART monitoring

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

1. Click the **SHI** tab
2. Click Detail follow the desired disk
3. Click **Disable**

Note: Disabling SMART monitoring will disable all warnings related to SMART attributes.

How to Use the Scheduler



The **Scheduler** enables you to schedule disk/array checkups to ensure disks/array are functioning optimally.

How to Create a New Verify Task

All arrays will appear under New Verify Task

1. Log into the HRM
2. Select the proper controller from the top left drop down
3. Click **SHI**
4. Click **Schedule a task**
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
8. One time verify task on specific date (YYYY-MM-DD) at (HH:MM:SS, 24-hr clock)
9. Or a specific schedule you can adjust based on Daily, Weekly, or Monthly options
10. Click **Submit**
11. 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.

Section 4: Troubleshooting

This section provides guidelines to some problems you may encounter:

- Handling Critical Arrays
- Handling Disabled Arrays
- PC hangs when card is installed.

Handling Critical Arrays

When your disk status turns critical, your array as a whole is still accessible, but one or more disks are faulty (depending on your RAID level), and the array is in danger of failing.

Common scenarios for critical status	• **Unplugging a disk that is part of an array** • **Bad sector is detected on a disk that is part of an 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.
   - You can refer to the LED lights on the enclosure
   - Refer to the HRM Logical tab and Event tab.
3. Re-insert the faulty disk or replace with a new disk.
   - The array will rebuild automatically if your auto-rebuild setting is enabled and you reseated the faulty disk. ***Note***: Click **Rescan** if the array still does not rebuild automatically.
4. If the new disk is added and it does not automatically start rebuilding, you can manually add the disk in maintenance.
   - Log into the HRM
   - Click **Advanced Config.** Tab
   - Click **Maintenance**>**Add Disk**> select the appropriate disk
5. Rebuild should now start.
   - If rebuild does not start, click 'Rescan' on the left hand panel.

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.

Rebuilding Stops Due to Bad Sectors

If rebuilding fails to complete due to bad disk sector errors (check in the Event Log), there is an option to continue rebuilding on error in the HighPoint HRM.

1. Log into the HRM
2. Click **Settings** tab
3. Change **Enable Continue Rebuilding on Error** to **Enabled**

This option will enable rebuilding to ignore bad sectors and attempt to make your data accessible. It is important to backup immediately after backup is complete and replace or repair the disks with bad sectors.

Critical array becomes disabled when you removed faulty disk

If this is the case, you may have removed the wrong 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 array to the previous state.

1. Shut down your PC
2. Shut down the RocketStor 6124V Enclosure
3. Place all disks back to original configuration
4. Boot up PC

Your array should be back to Critical status. Identify the correct disk and rebuild from there.

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 a card fails or you wish to switch cards, the RAID configuration data can still be read by another HighPoint card.

Help

- Online Help
- Register Product
- Configuration Record

Online Help redirects you to additional documentation concerning the HRM.
Register Product takes you to the HighPoint Online Web Support Portal. On this page you can create a new customer profile where you can register your product, or post an online support ticket
Configuration Record: collect the RocketStor's storage information and send it to the HighPoint support team.
It is required to register the product on HighPoint Web Support Portal and request the support ID before submit the Configuration Record:

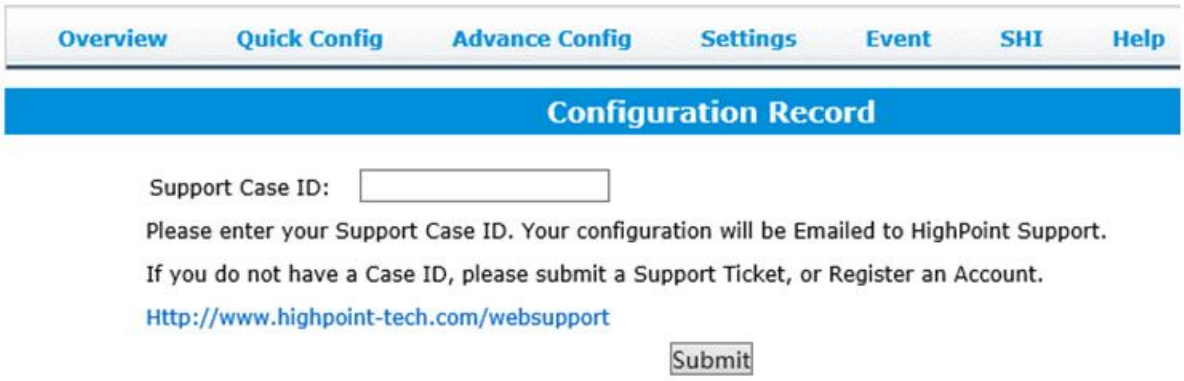


Table 1. HRM Icon Guide

	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 are 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.

Table 2. RAID Level Reference Guide

Type	Description	Min. disks	Usable space	Advantage	Disadvantage	Application
JBOD	Just a bunch of disk	1	100%	Each drive can be accessed as a single volume	No fault tolerance - failure of one drive results in complete data loss	Backup
RAID 0	Disk Striping	2	100%	Offers the highest performance	No fault tolerance – failure of one drive in the array results in complete data lose	Temporary file, performance driven application.
RAID 1	Disk Mirroring	2	50%	Provides convenient low-cost data redundancy for smaller systems and servers	Useable storage space is 50% of total available capacity. Can handle 1 disk failure.	Operating system, backup, and transaction database.
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 5	Disk Striping with Rotating parity	3	67-87%	High read performance, and medium write performance with data protection with a single drive failure	Not recommended for database applications that require frequent/heavy write sessions. Can handle 1 disk failure.	Data archives, and ideal for application that require data protection

HighPoint Recommended List of Hard Drives or SSDs

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.

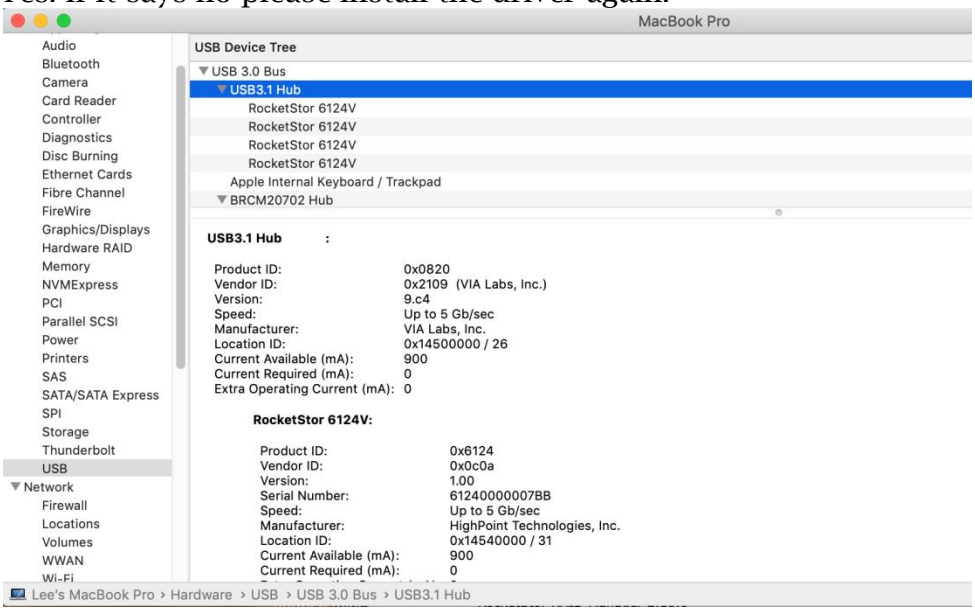
Hard Drive Compatibility list
SSD Compatibility list

Troubleshoot

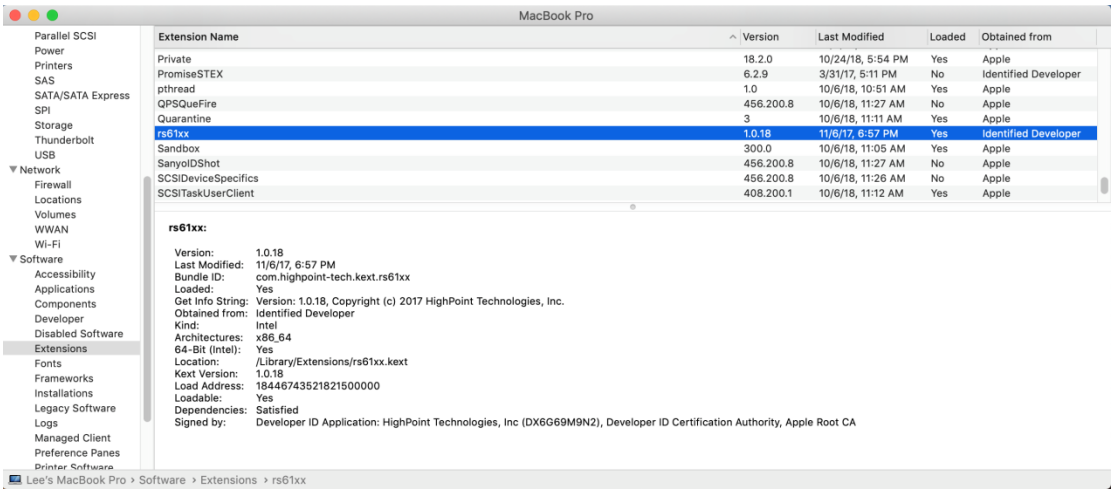
MAC

1. First check if the RS6124V device is detected in the USB device list. If the device is not recognized, re-plug the USB cable and restart the Mac.

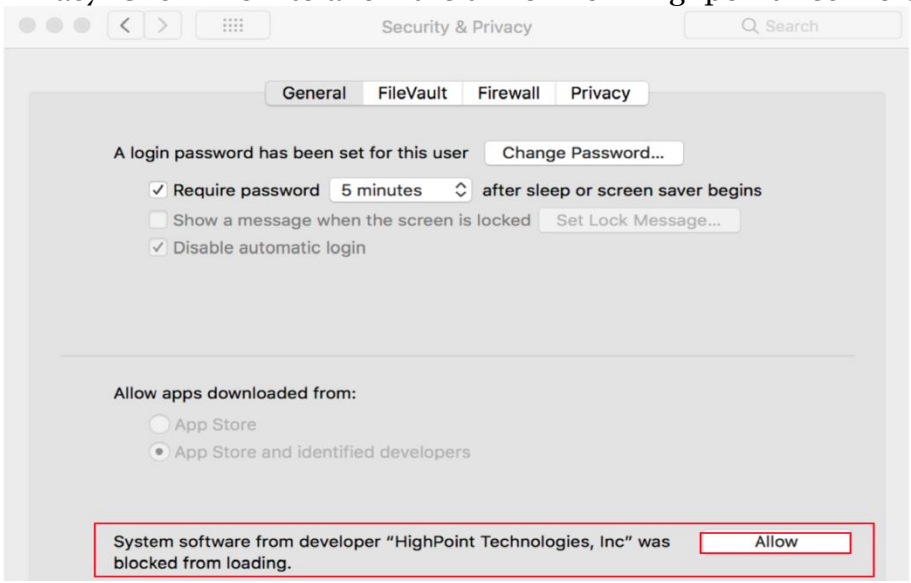
2. Check if the RS6124V device is detected in the USB device list, It will be listed as RocketStor 6124V. Also check if the driver installed correctly, If it did it will say Yes. If it says no please install the driver again.



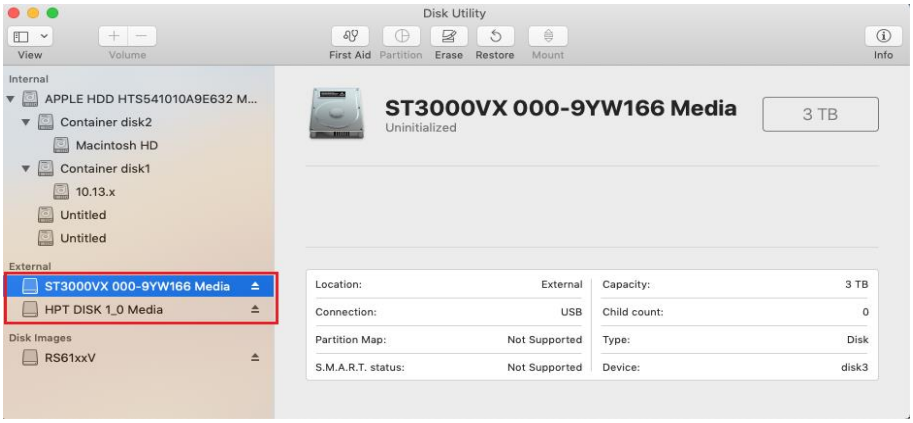
3. Check if the RS6124V driver is successfully loaded. If the driver does not load successfully, please check whether the RS6124V is recognized in the USB device list. Refer to step 1. If the RS6124V is recognized in the USB device list, you can try to uninstall the original driver:
   #rm –rf /Libiary/Extensions/rs61xx.kext , re-install the driver once;



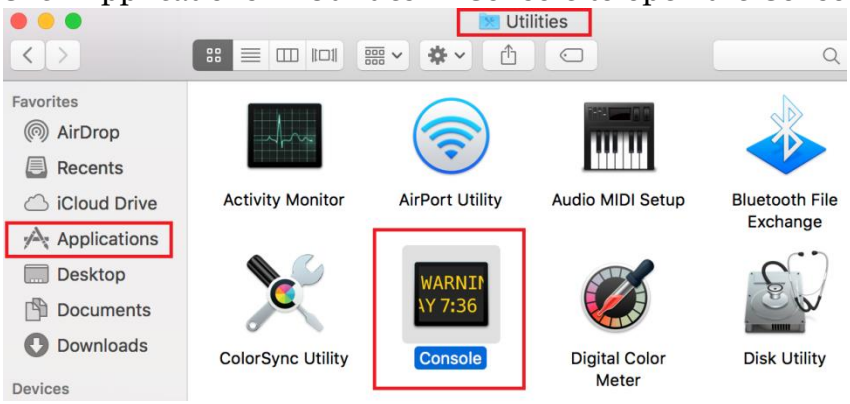
4. If step 3 still fails to load the HighPoint USB driver successfully, it may be that the system does not allow the driver to load. You need to enter Setting→Security & Privacy. Click Allow to allow the driver from Highpoint Technologies, Inc to load.



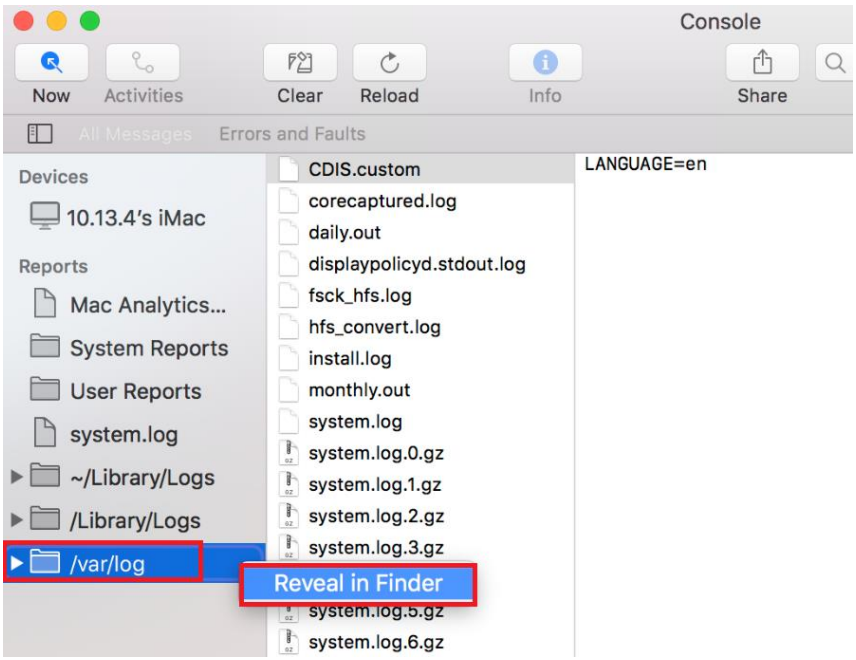
5. When the RS6124V has been detected in the USB device list, you can check the disk status on the Disk Utility. If the disk is not recognized, please try to unplug the disk and restart the Mac. If the disk is still not recognized, please try to power off the RS6124V completely. Wait for about 30s and then re-power the RS6124V to restart the Mac. View the disk's status on the disk;



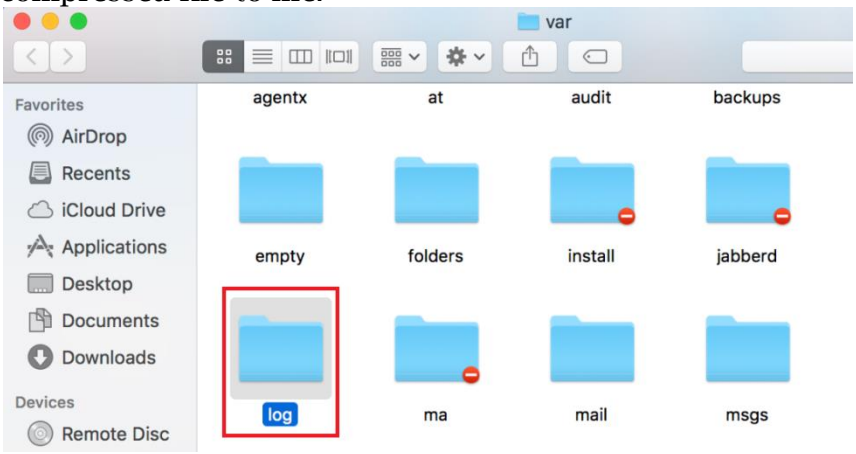
6. If none of the above steps solve the problem that the driver and management software cannot establish a connection, we will provide you with the Debug version of the driver and management software to collect the information you have encountered. Follow the installation steps of the normal version driver to install the Debug version of the driver. After the installation is complete, follow the steps below to collect information:
   1) Click Applications → Utilities → Console to open the Console;



   2) Right click on "/var/log" and select "Reveal in Finder";



3) You can copy the log folder to the desktop first, then compress it and send the compressed file to me.



4) At the same time, you also need to provide an errlog.txt file. Open the terminal and type:

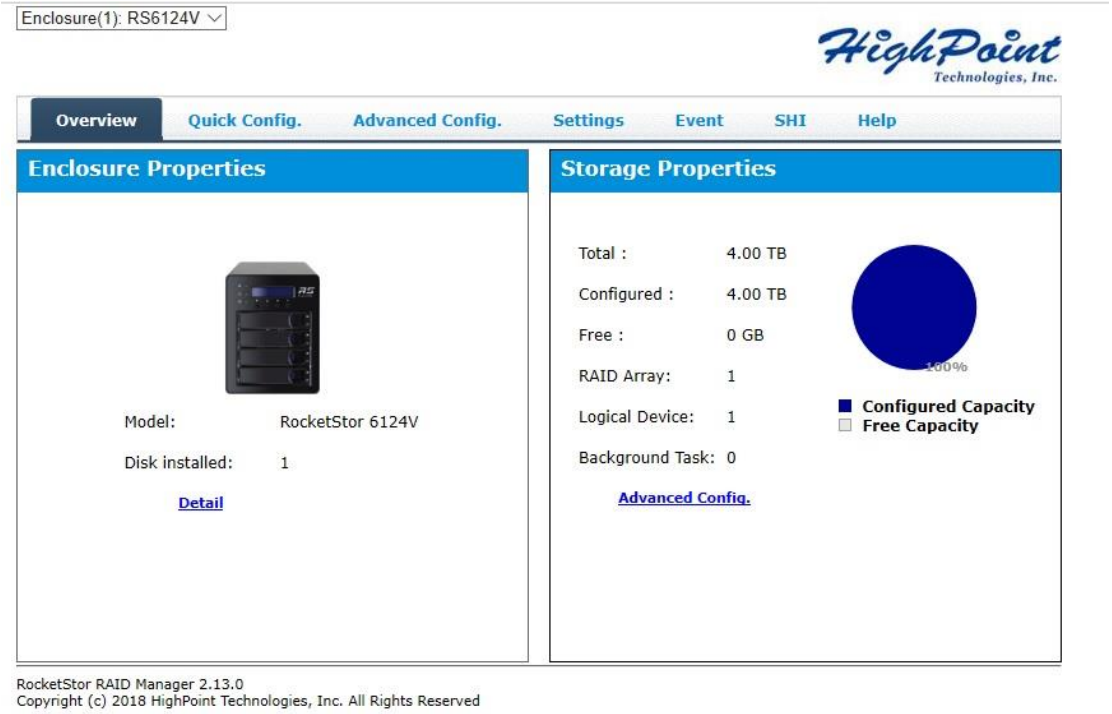
 # log show |grep kernel > errlog.txt

Please send the errlog.txt file to us along with the zip file created in the previous step.

Windows

1. First check if the RS6124V device is detected in the USB device list. If the device is not recognized, re-plug the USB cable and restart the system.

2. Check if the RS6124V device is detected in the WebGUI Manager, It will be listed as RocketStor 6124V. Also check if the driver installed correctly, If it did it list the driver that you have installed.



3. Check if the RS6124V driver is successfully loaded. If the driver does not load successfully, please check whether the RS6124V is recognized in the Device Manager. Refer to step 1. If the RS6124V is recognized, you can try to uninstall the original driver:
4. When the RS6124V has been detected in the USB device list, you can check the disk status on the Disk Management. If the disk is not recognized, please try to unplug the disk and restart the system. If the disk is still not recognized, please try to power off the RS6124V completely. Wait for about 30s and then re-power the RS6124V to restart the System. View the disk's status on the disk;
5. If none of the above steps solve the problem that the driver and management software cannot establish a connection, we will provide you with the Debug version of the driver and management software to collect the information you have encountered. Follow the installation steps of the normal version driver to install the Debug version of the driver. After the installation is complete, follow the steps that will be provided to you.

Contacting Technical Support

For any help and support, submit a support ticket online at http://www.highpoint-tech.com/websupport/ .

You may also call us during our regular business hours:
Monday – Friday (Excluding Holidays), 9 AM to 6 PM