RocketRAID Series Data RAID Set Up Guide

Products:

RocketRAID 4522 and 4520

RocketRAID 3740A and 840A

RocketRAID 2760A

RocketRAID 2740 and 2744

RocketRAID 2722, 2721 and 2711

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Overview

This installation guide provides step and step instructions on how to configure the RocketRAID mini-SAS 6G storage to support a Data RAID. This guide also provides troubleshooting tips when problems occur.

Part 1. What is a Data RAID?

A Data RAID is setting up a RAID array (0, 1, 5, 6, 10,50 or JBOD) on the RocketRAID mini-SAS 6G series controller.
RAID arrays offers advantages of performance and protection with redundancy.

RAID Basics?

RAID stands for Redundant Array of Independent Drives. This means taking multiple matching drives and arranging them together to achieve large storage space, speed, data protection, or any combination of the three. The RocketRAID mini-SAS 6G series controller supports the following RAID types:

RAID 0 "Stripe"

Speed: Data is alternated across two or more drives to gain speed by essentially distributing the workload.
Protection: No built-in protection.
Capacity: Usable space is the combined capacity of all the drives.

RAID 5 "Stripe & Protection"

Speed: Data is striped like in a RAID 0, so significant speed gains are seen.
Protection: Utilizes mathematical parity to achieve data protection while taking up a minimum of space. One drive can fail and all data will still be accessible.
Capacity: All but one drive worth of capacity is usable. Minimum three drives are needed to create a RAID 5 array. In a three drive RAID 5 array, there is two drives worth of usable space.

RAID 6 "Enhanced RAID5"

Speed: Data is striped like in a RAID 0, so significant speed gains are seen.
Protection: Utilizes mathematical parity to achieve data protection while taking up a minimum of space. Two drives can fail and all data will still be accessible.
Capacity: All but two drives worth of capacity is usable. Minimum four drives are needed to create a RAID 6 array. In a four drives RAID 6 array, there is two drives worth of usable space.

Combined RAIDs: RAID 10/50

Speed: Combines multiple RAID 1 or RAID 5 sets by using RAID 0 "Striping" to gain speed.

Protection: There are two RAID 1 or 5 “Mirrored” sets used in order to tolerate 1-2 drives failing depending on which drives they are.
Capacity: For RAID 10 its usable space is half of the combined capacity of all the drives used, while for RAID 50 its usable space is each RAID5 capacity*RAID5 number.

RAID 1 “Mirror”
Speed: No speed benefits gained. Protection: One drive can fail and all data will still be accessible.
Capacity: One drive worth of usable space out of the two total drives used.

JBOD (Independent Drive Modes)
Speed: No significant speed gains.
Protection: No built-in data protection.
Capacity: In JBOD mode, the capacities are combined. When set up as independent drives, each drive presents its stated capacity for use.

Part 2. Pre-Requisite for Data RAID Configuration

The RocketRAID mini-SAS 6Gb/s series controller support Data RAID configurations include RAID 0, 1, 5, 10 arrays. This document will include the installations steps to configure and setup your hardware to support Data RAID arrays.
The hardware and software pre-requests are listed below:

- RocketRAID mini-SAS 6Gb/s series HBA
- RocketRAID mini-SAS 6Gb/s for Mac drivers
- Mac Pro system 2006 to Present
- RocketStor 6414S, RocketStor 6418S, NA381TB, NA333TB, NA211TB-LD, NA211TB
- Enterprise/NAS level disk drives (Drive Compatibility List)
- Mac OS X 10.6.x and above

System Requirements
Mac Pro Hardware: Intel-based Mac with an available PCIe 2.0 or 1.0 slot capable of supporting an x8 (8-lane) length PCIe card. For optimal performance, use a PCIe 2.0 slot running at x8 speeds or greater.
Slot recommendations for the RocketRAID mini-SAS 6G series controller.
Operating System: Mac OS X 10.6.x
Before, installing the RocketRAID mini-SAS 6G series controller make sure the computer is turned off and unplugged from its power source. Take appropriate electrostatic discharge precautions:
Your computer is a static-sensitive device. It is susceptible to invisible damage if not protected during installation.
We recommend proper grounding by using a grounding strap. Make sure to work in a clean and static-free area, and avoid wearing clothing that retains static charges.

Part 3. Hardware Installation and Verification

Before installing the RocketRAID mini-SAS 6G series controller

- Make sure computer is turned off and unplugged from its power source.
- Take appropriate electrostatic discharge precaution.
- Remove the PCIe slot cover.
- Gently insert the RocketRAID mini-SAS 6G series controller into the PCIe slot and secure the bracket to the computer chassis according to your chassis specifications.
- After installing the RocketRAID mini-SAS 6G series controller, restart your computer. After your computer has started, insert the Driver & Software Installation Disc to install the necessary drivers for your computer's operating system.

Hardware Verification

Verifying the RocketRAID mini-SAS 6G series controller is installed into the Mac Pro system:

Step 1: Click on About this Mac

Step 2: Click on More Info

Step 3: Click on System Report

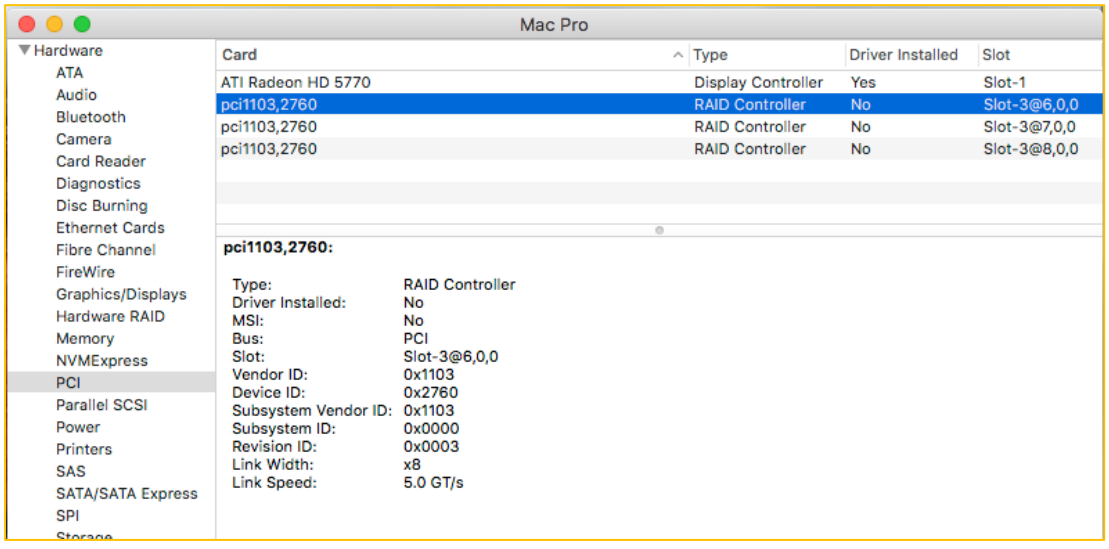
Step 4: Click on PCI Cards

Step 5: The RocketRAID mini-SAS 6G series controller will be identified as RAID Controller.

Step 6: Verify the RocketRAID mini-SAS 6G HBA is detected and no drivers are installed.

In Mac OS X 10. x ,the Driver Installed will be "No".

Once you have verified that the RocketRAID mini-SAS 6G series controller is detected you can proceed to the Driver and Software Installation. The following screenshot is an example of RR2760 HBA



Troubleshooting Tip: If the RocketRAID mini-SAS 6G series controller is not detected

please try the following troubleshooting tips.

Step 1. Shut down the Mac Pro system then remove and insert the RocketRAID mini-SAS 6G series controller then follow the steps from Hardware Verification.

Step 2. If Step 1 fails, then insert the RocketRAID mini-SAS 6G series controller into a different PCIe slot.

Step 3. If Step 2 fails, try the RocketRAID mini-SAS 6G series controller in another Mac Pro system.

Part 4. Driver and Software Installation

The RocketRAID mini-SAS 6G series controller comes with a disc containing the drivers and software for Mac Pro system. For the latest drivers and software visit the product page for the RocketRAID mini-SAS 6G series controller on http://www.hptmac.com/

Mac OS X 10. x

Once you have installed the RocketRAID mini-SAS 6G series controller and booted into your Mac, follow these instructions to install the drivers and the RocketRAID mini-SAS 6G series controller software:

1. Download the Mac software package from the product page.
2. Double-click on the file to mount the image containing the Mac OS X software and drivers.
3. Double-click on the installer package to start the installation process.
4. Follow the on-screen steps to complete the installation process and you will be prompted to restart your computer.

Verify Software Installation

Step 1. Click on About this Mac

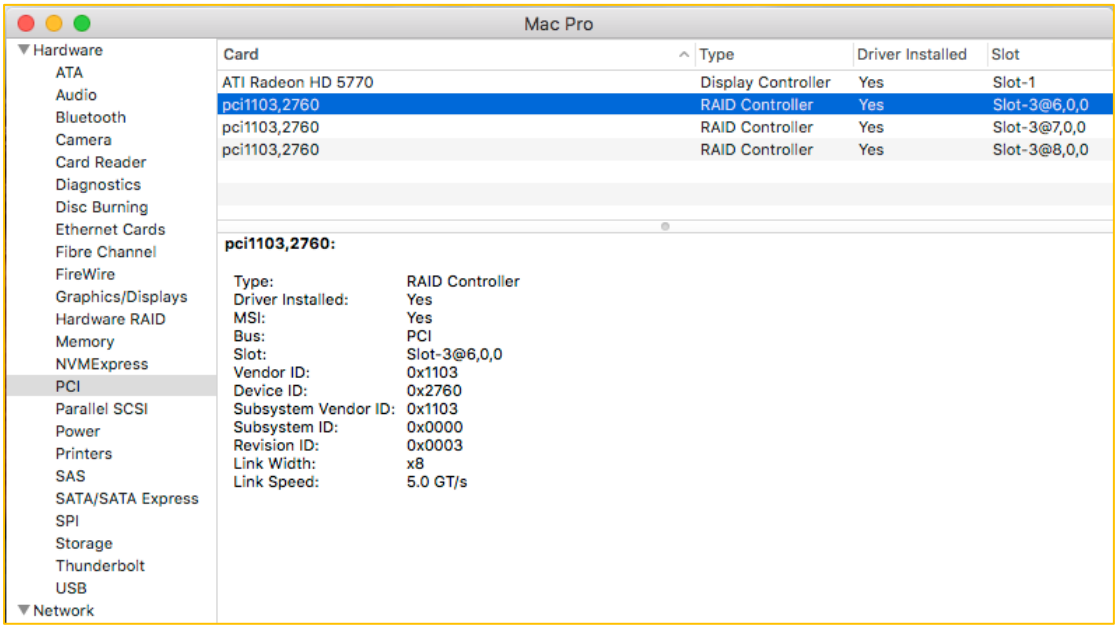
Step 2. Click on More Info

Step 3. Click on System Report

Step 4. Click on PCI Cards

Step 5. The RocketRAID mini-SAS 6G series controller will be identified as PCI RAID Controller.

Step 6. Verify the RocketRAID mini-SAS 6G HBA is detected and Driver Installed is "Yes".



For Mac 10.x the driver and WebGUI are in one package so once Driver Installed is verified as “Yes”, the WebGUI will also need to be installed. You can just start the browser to log in WebGUI.

Troubleshooting Tip: If the after installing the software package and the Driver Installed is still “No”, please try the following troubleshooting tips.

Step 1. Confirm that you have the RocketRAID mini-SAS 6G series controller software package and not another HighPoint RocketRAID series controller that support Mac OS X.

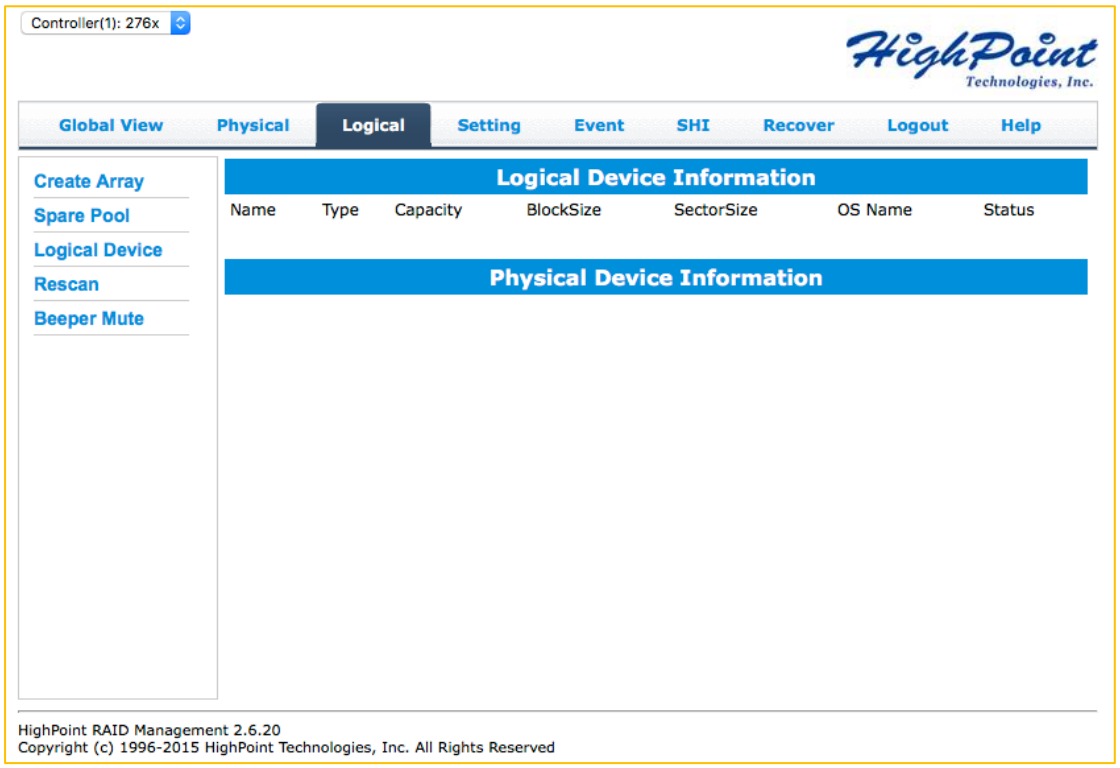
Step 2. Run the uninstall script, reboot the Mac Pro system and reinstall the RocketRAID mini-SAS 6G series controller software once more.

Part 5. Ready to Experience RAID Management WebGUI

Log into the WebGUI by entering opening a browser and entering the following URL: https://localhost:7402

Troubleshooting Tip: If you are not able to login to the URL, please check previous troubleshooting steps to verify that the driver is install and that the RocketRAID mini-SAS 6G series controller is detected.

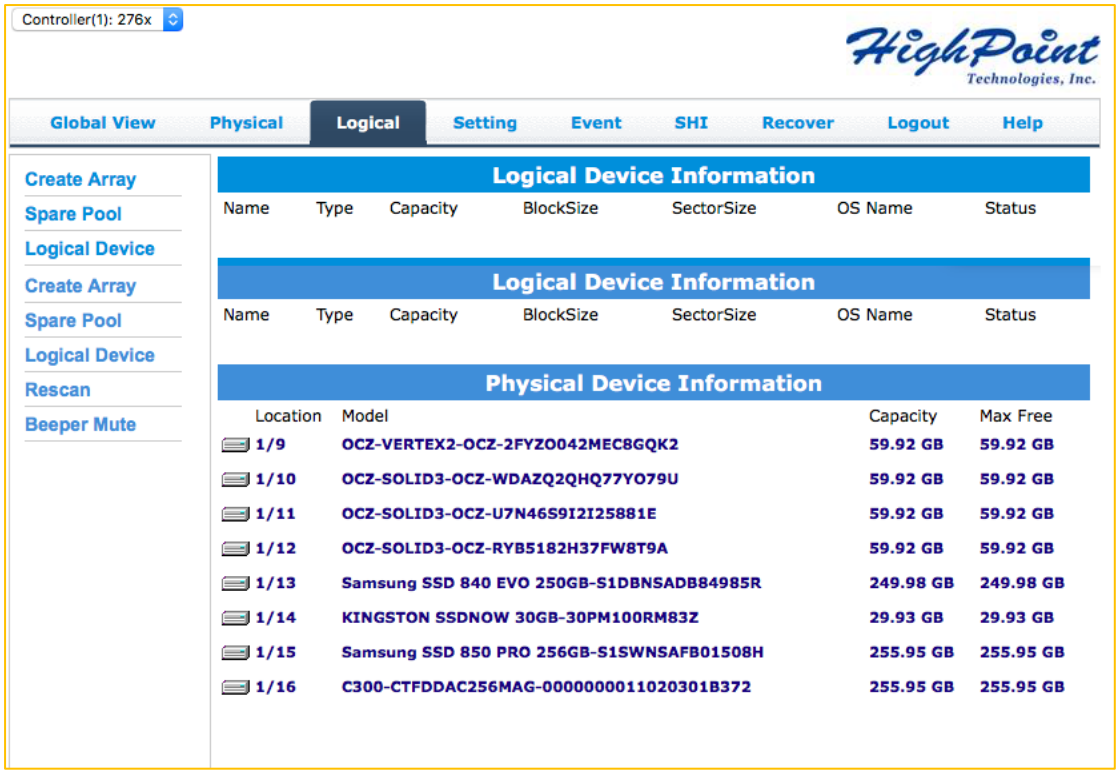
Note: make sure to use the latest S/W package from website.



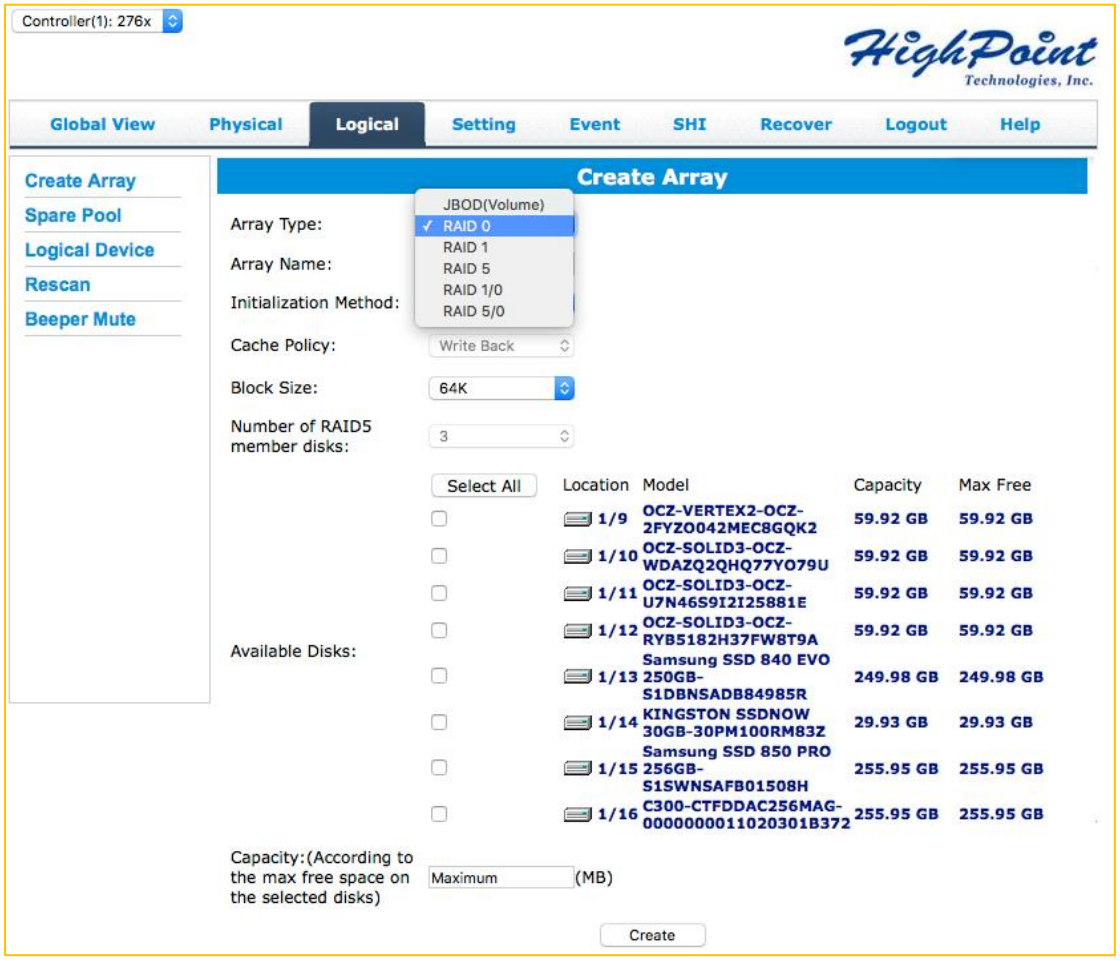
Creating a Data RAID

Once you have logged into the web GUI you are ready to create a Data RAID. You will see all of the hard drives attached to the RocketRAID mini-SAS 6G series controller.

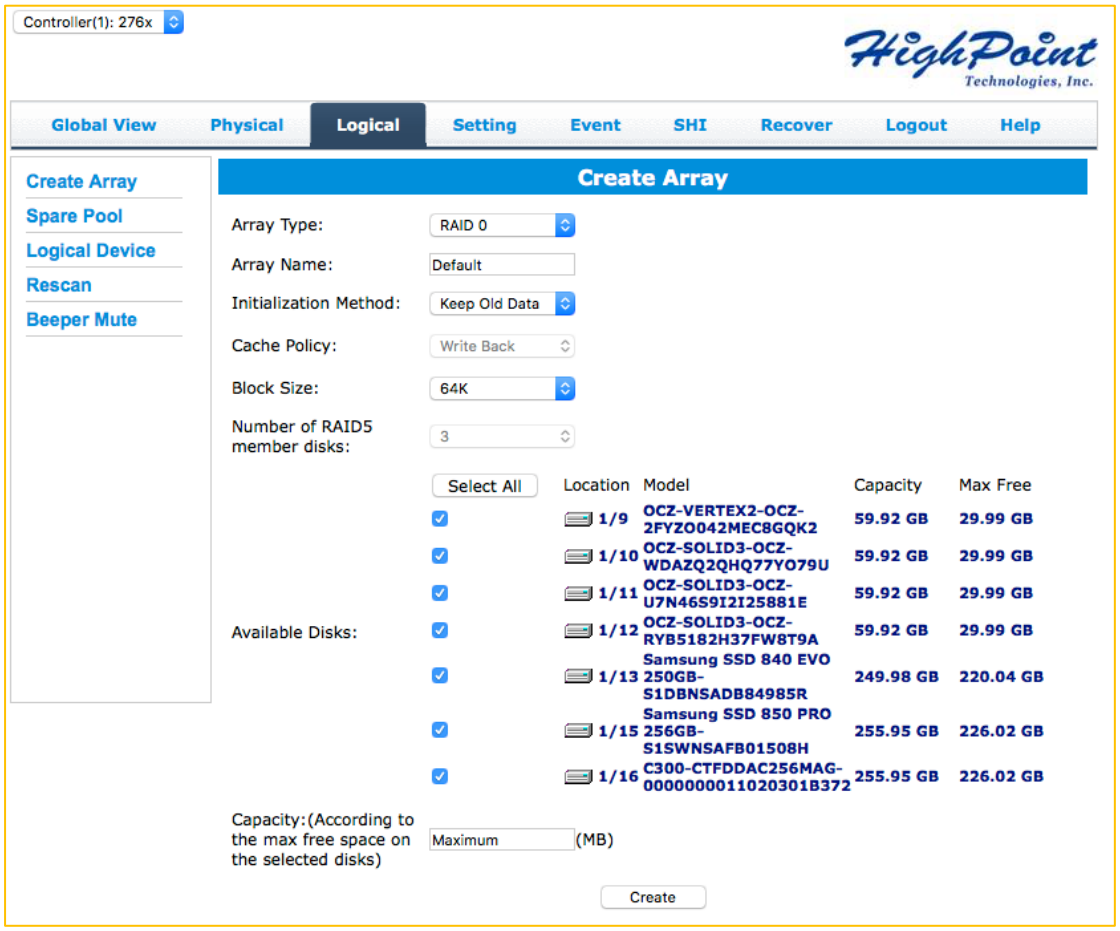
Step 1. Examine available hard drives attached to the RocketRAID mini-SAS 6G series controller for Data RAID configuration.



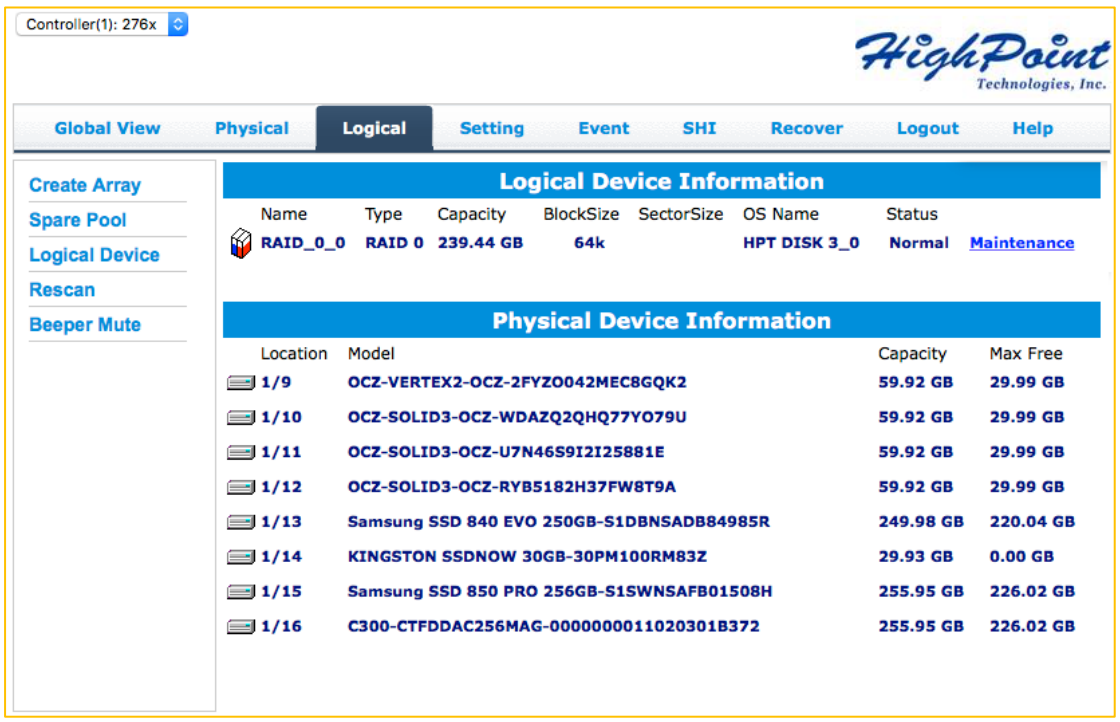
Step 2. Select the type of Data RAID you want to create RAID levels (0,1,5,6,10,50 and JBOD) are supported.



Step 3. Select the hard drives attached to the RocketRAID mini-SAS 6G series controller and click the **Create** button.



Step 4. Confirmation that the Data RAID is created.



Step 5. Format the newly created partition.