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4 Port PCIe 2.0 SATA III 6Gbps RAID Controller Card with HyperDuo

Actual product may vary from photos

User Manual

SKU#: PEXSAT34RH

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Compliance Statements

FCC Compliance 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

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Safety Statements

Safety Measures

- Wiring terminations should not be made with the product and/or electric lines under power.
- Product installation and/or mounting should be completed by a certified professional as per the local safety and building code guidelines.
- Cables (including power and charging cables) should be placed and routed to avoid creating electric, tripping or safety hazards.

Mesures de sécurité

- Les terminaisons de câblâge ne doivent pas être effectuées lorsque le produit et/ou les câbles électriques sont sous tension.
- L'installation et/ou le montage du produit doit être réalisé par un professionnel certifié et dans le respect des normes locales et du code de construction local.
- Les câbles (y compris les câbles d'alimentation et de chargement) doivent être placés et acheminés de façon à éviter tout risque électrique, de chute ou de sécurité

安全対策

- 電源が入っている状態の製品または電線の終端処理を行わないでください。
- 製品の設置やマウントは、使用地域の安全ガイドラインおよび建築基準に従い、有資格の専門業者が行うようにしてください。
- ケーブル（電源ケーブルと充電ケーブルを含む）は、適切な配置と引き回しを行い、電気障害やつまづきの危険性など、安全上のリスクを回避するようにしてください。

Misure di sicurezza

- I terminali dei fili elettrici non devono essere realizzate con il prodotto e/o le linee elettriche sotto tensione.
- L'installazione e/o il montaggio dei prodotti devono essere eseguiti da un tecnico professionale certificato che conosca le linee guida locali sulle norme edilizie e sulla sicurezza.
- I cavi (inclusi i cavi di alimentazione e di ricarica) devono essere posizionati e stesi in modo da evitare pericoli di inciampo, rischi di scosse elettriche o pericoli per la sicurezza.
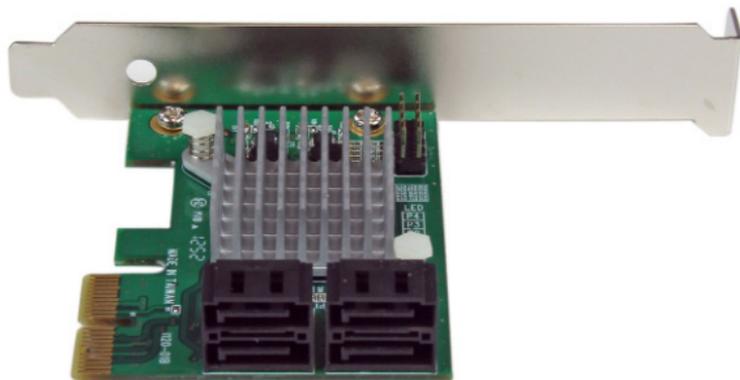
Säkerhetsåtgärder

- Montering av kabelavslutningar får inte göras när produkten och/eller elledningarna är strömförda.
- Installation och/eller montering får endast göras av behöriga yrkespersoner och enligt gällande lokala förordningar för säkerhet och byggnormer.
- Kablar (inklusive elkablar och laddningskablar) ska dras och placeras på så sätt att risk för snubblingsolyckor och andra olyckor kan undvikas.

Table of Contents

Product Diagram

4 x SATA III Ports
x 2

Product Information

Packaging Contents

- PCIe SATA Controller Card x 1
- Low Profile Bracket x 1
- Driver CD x 1
- User Manual x 1

System Requirements

Host Computer

- PCI Express enabled computer with an available PCI Express x2 slot

Operating System

- Windows® XP (32/64-bit), Server 2003(32/64-bit), Vista (32/64-bit), 7 (32/64-bit), Server 2008 R2, or 8 (32/64-bit),
- Mac OS® 10.6, 10.7, or 10.8
- Linux®

Installation

Hardware Installation

Warning! PCI Express cards, like all computer equipment, can be severely damaged by static electricity. Be sure that you are properly grounded before opening your computer case or touching your PCI Express card. StarTech.com recommends that you wear an anti-static strap when installing any computer component. If an anti-static strap is unavailable, discharge yourself of any static electricity build-up by touching a large grounded metal surface (such as the computer

case) for several seconds. Also be careful to handle the PCI Express card by its edges and not the gold connectors.

1. Turn your computer off and any peripherals connected to the computer (i.e. Printers, external hard drives, etc.). Unplug the power cable from the rear of the power supply on the back of the computer and disconnect all peripheral devices.

2. Remove the cover from the computer case. See documentation for your computer system for details.

3. Locate an open PCI Express x2 slot and remove the metal cover plate on the rear of the computer case (Refer to documentation for your computer system for details).

   Note: This card will work in PCI Express slots of additional lanes (i.e.x4, x8, or x16 slots).

4. Gently insert the card into the open PCI Express slot and fasten the bracket to the rear of the case.

   Note: If installing the card into a small form factor/low profile system, replacing the pre-installed full profile bracket with the included low profile installation bracket may be necessary.

5. Connect SATA cables from the ports on the card to the SATA devices inside the computer.

6. Place the cover back onto the computer case.

7. Insert the power cable into the socket on the power supply and reconnect all other connectors removed in Step 1.
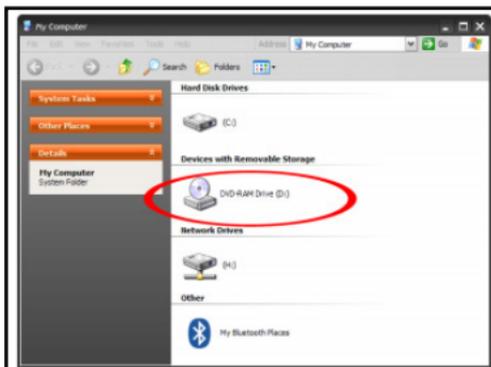
Driver Installation

Windows XP

> *Note: The latest driver is available from www.startech.com.*

1. Once the computer has started and the operating system is fully loaded, insert the provided Driver CD into the computer's CD/DVD drive.

2. AutoPlay should give you the option to browse the files on the CD or automatically open the CD.

Autoplay screen

3. If AutoPlay does not start, go into "My Computer" and access the CD/DVD drive that the CD is in.

My Computer screen

4. Open the folder "SATA6G_M9128". Run the file 'drvSetup. exe'. Follow the onscreen instructions to complete the driver installation.

Windows Vista/ 7/ 8

The driver is natively supported by newer Operating Systems. The driver should automatically install through Windows Update.

Management Utility Installation - Windows Only

RAID and/or HyperDuo configuration can be accomplished either through the integrated card-BIOS utility, or through the Marvell Storage Utility (MSU). Details for installing the MSU are below.

1. Download the RAID Management Tool from: StarTech.com/Support.

2. Open the **"Win"** folder from the main directory and launch the **MSUSetupX.X.XXXX(.exe)** setup file. You may receive a Windows Security Warning alerting you that the application has been launched. Click **Run**.

3. The windows installation wizard will walk you through the remaining installation steps. To complete the installation, click the **Next** button on each window, and accept the License Agreement when displayed.

4. Once installation is complete, click the **Finish** button. The Marvell Storage Utility has now been installed.

Operation

RAID Configuration

Card BIOS Method

> *Warning! Creating a RAID virtual disk destroys all data on the physical disks included in the virtual disk set. Make sure to back up all data before continuing.*

1. When prompted on startup, press **Ctrl+M** to enter the card BIOS utility. Press <Ctrl>+<M> to enter BIOS Setup or <Space> to continue.

2. Using the arrow keys to navigate, move to "HBA0: Marvell 0" and press **Enter** to select

3. Press **Enter** again to open the Configuration Wizard
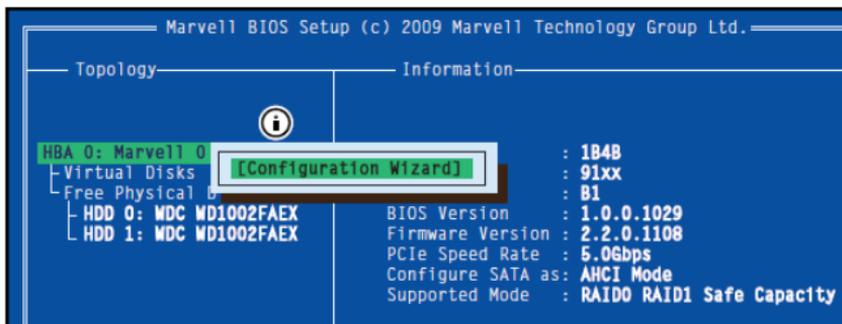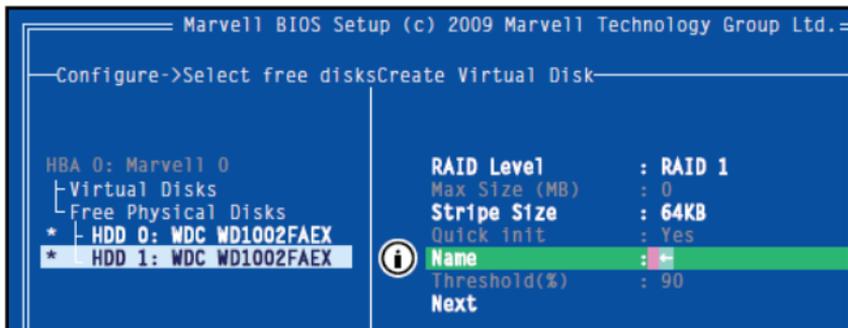
Configuration Wizard

4. Use the arrow keys to scroll through the list of free physical disks to select the drives that will be part of the RAID set. Press Space to select/de-select a disk.

   Note: When a disk is selected, an asterisk (*) appears to the left of the disk label.

5. After selecting the required disks, press Enter to continue.

6. The "Create Virtual Disk" configuration options appear in the "Information" pane (right-side), here you are able to select the RAID level and other configuration options:

   • Select 2 HDDs for RAID 0 or RAID 1
   • Select 3 HDDs for RAID 0
   • Select 4 HDDs for RAID 0 or RAID 10

Create Virtual Disk option

7. After configuring the virtual disk, highlight "Next" and press Enter. Press Y to confirm the creation of the virtual disk. It will now be listed in the Topology Pane (left).

HyperDuo Configuration

HyperDuo offers the following two modes that you can configure using either of the procedures outlined in the following sections:

- Safe mode creates a virtual disk that is optimized for best fault tolerance – the frequently accessed files copied to the SSD for performance are also stored on the HDD. It is safe to use with hard drives that contain existing data. Virtual disks created in safe mode can also be partially rebuilt if the SSD fails, but not if the HDD fails.

- Capacity mode creates a virtual disk that is optimized for maximum utilization of the SSD – the frequently accessed files are moved to the SSD (not copied). Virtual disks created in capacity mode have better read and write performance than those created in safe mode. However, they cannot be rebuilt.

  Warning! *Capacity mode is a data-destructive process. Please back up all data before using capacity mode.*

Card BIOS Method

1. When prompted on startup, press Ctrl+M to enter the card BIOS utility. Press <Ctrl>+<M> to enter BIOS Setup or <Space> to continue.

2. Using the arrow keys to navigate, move to "HBA0: Marvell 0" and press **Enter** to select

3. Press **Enter** again to open the Configuration Wizard.
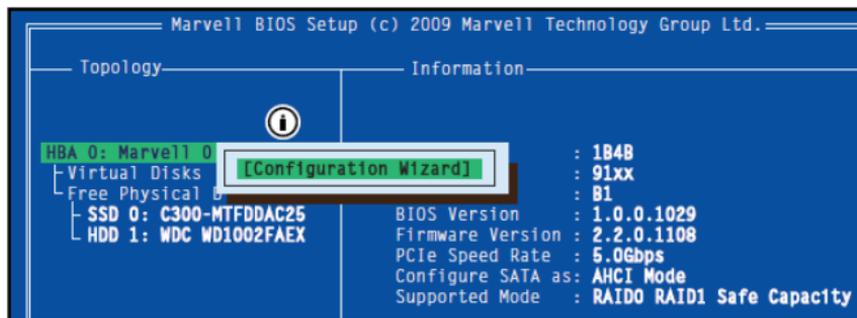
Configuration Wizard screen

4. Use the arrow keys to scroll through the list of free physical disks to select the drives that will be part of the HyperDuo set. Press Space to select/de-select a disk.

   Note: When a disk is selected, an asterisk (*) appears to the left of the disk label.

5. After selecting the required disks, press Enter to continue.

6. The "Create Virtual Disk" configuration options appear in the "Information" pane (right-side), here you are able to select HyperDuo or RAID options

   Note: The default HyperDuo mode is Safe mode.

7. Highlight "Keep original data" and press Enter to select. Select Yes or No and press Enter.

   Warning! Selecting "No" will destroy all data on the disks included in the virtual disk set. Make sure to back up all data before continuing. The "Keep original data" option is disabled when you choose Capacity mode, as it is inherently data-destructive.
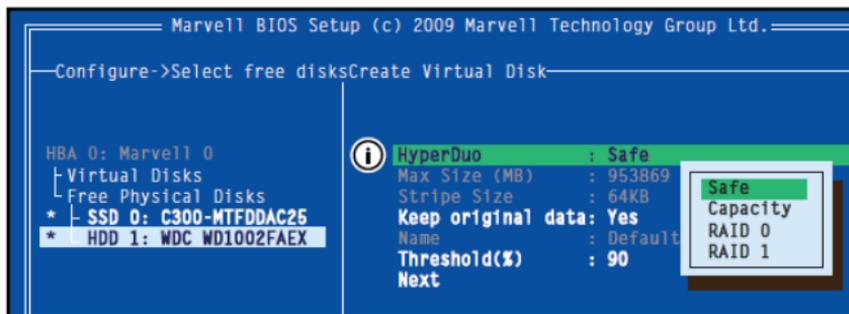
Create Virtual Disk option

8. After configuring the virtual disk, highlight "Next" and press Enter. Press Y to confirm the creation of the virtual disk. It will now be listed in the Topology Pane (left).

Software Operation

The Marvell Storage Utility (MSU) is a browser-based management utility that can create and manage RAID and HyperDuo virtual disks using your Thunderbolt hard drive enclosure.

Note: Active Scripting or JavaScript must be enabled in your default web browser.

Create a RAID Array

Warning!: In order to prepare your drives for RAID operation, this enclosure will configure newly installed drives into your desired RAID configuration. Please be aware that any data currently on the drives may be lost during this process. It is recommended that you back up all data prior to setting your RAID configuration.
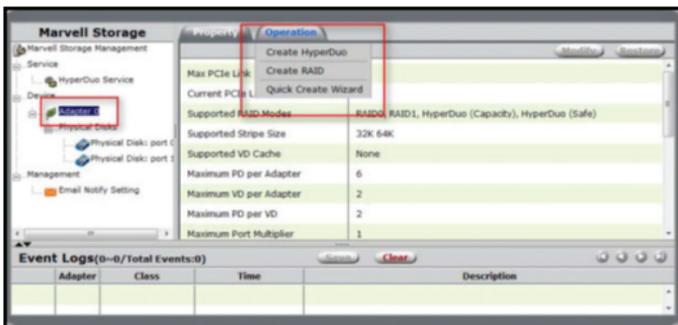
1. Launch the MSU software using the icon on your desktop.
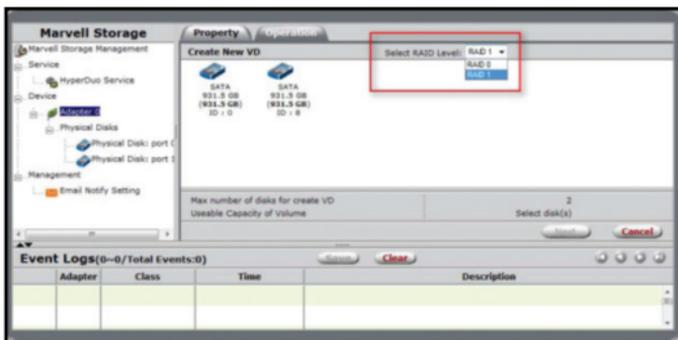

MSU Software icon

2. Once the application window is opened you will need to login using your OS account user name and password.

3. Select Adapter from the Marvell Storage menu, then hover-over the operation tab, and select Create RAID.


Operations tab

4. The Create New VD window is now displayed, using the Select RAID Level drop down menu choose your desired RAID mode.

Select Raid Level drop-down menu

5. Physically installed hard drives will be represented on the Create New VD screen.

6. Select each drive you would like included in your RAID array.

7. Click the Next Button, a default name will now be assigned to your RAID array.

   Note: The Next button will not be selectable, until the correct number of physical hard drives have been selected to build your desired array.
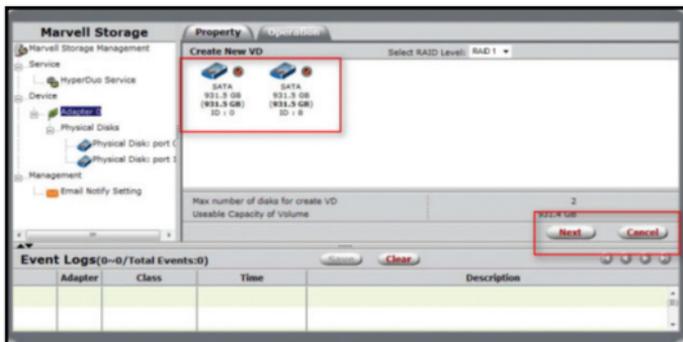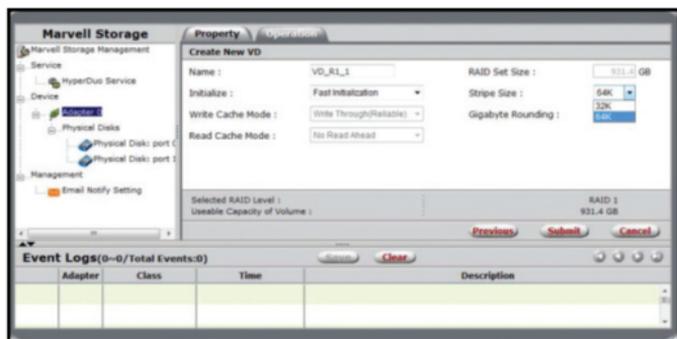

Create New VD screen

8. To rename the array, click the Name field and type your desired name.

9. Select the Initialization method for your choice from the drop-down menu.
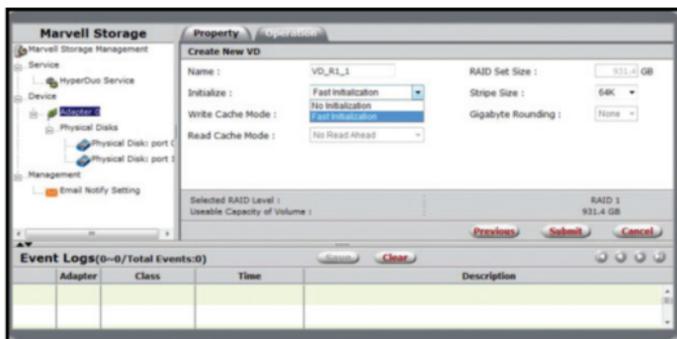

Select Initialization method

10. Select your desired stripe size using the Stripe size drop down menu.

11. Click the Submit button, to rename the array.

Submit button

> ***Note:*** *a number of advanced options can also be changed such as Name, Initialize setting, Cache Modes, RAID Set Size, Stripe Size, and Gigabyte Rounding (It is recommended that they are left as their defaults).*

12. Your RAID array has now been created. The Property tab will now be displayed for your newly created RAID array.
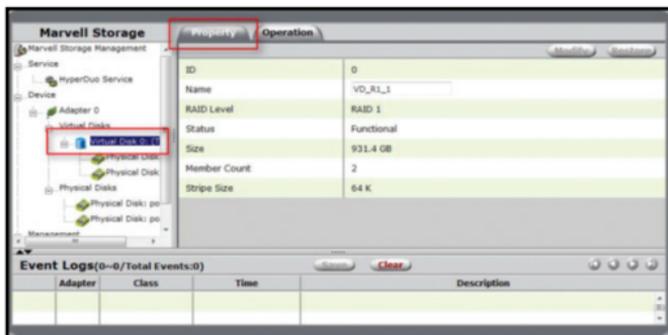

Property tab

Create a HyperDuo Array

Warning! In order to prepare your drives for HyperDuo operation, this enclosure will configure newly installed drives into HyperDuo configuration. Please be aware that any data currently on the drives may be lost during this process. It is recommended that you back up all data prior to setting your HyperDuo configuration.

1. Select Adapter from the Marvell Storage menu, then hover-over the operation tab, and select Create HyperDuo.
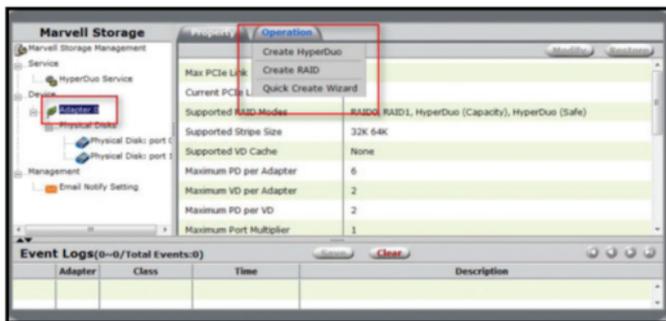
Operation tab

2. The Create HyperDuo screen is now displayed. Using the Mode drop down menu, select:

   • **Safe:** Creates an array for optimal fault tolerance.
   • **Capacity:** Creates an array for optimal performance (Capacity Mode will delete all content currently saved on your drives).

3. Click the Submit button, to create the HyperDuo array.
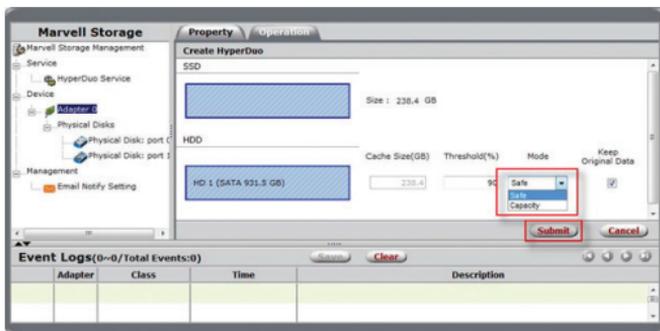
Submit button

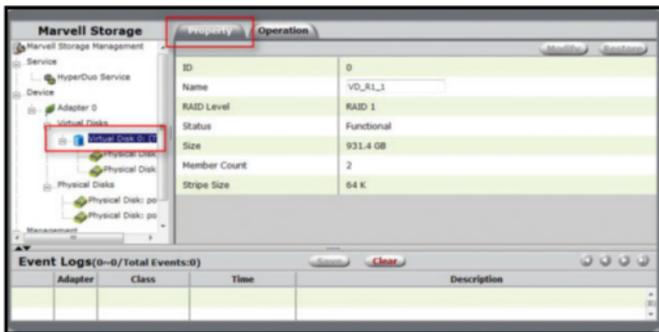4. The Property tab will now be displayed for your newly created HyperDuo array.

   Note: It can take up to 30 minutes for the HyperDuo array to be created.

Managing Your Array

View Properties of your RAID/HyperDuo Array

1. Select the desired array from list of Virtual Disks in the Marvell Storage Menu.
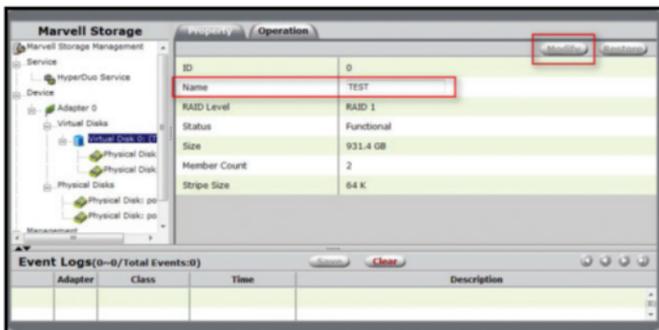
2. The Property tab will appear, listing the Properties for your array.

Property tab

Rename Your Array

1. Select the Name field on the Property tab and type your desired Name in the field.

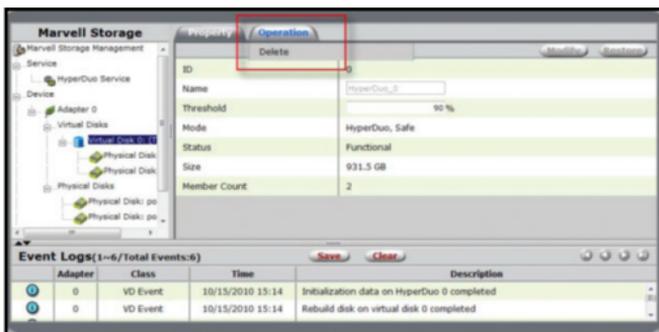2. Click the Modify button, to rename the selected array.

Modify button

Delete Your Array

> *Warning! Deleting your RAID array permanently erases any data on your virtual disk. However, you can choose to keep partition information on the virtual disk.*

1. Hover-over the Operation tab at the top of the Property page and select Delete.

Delete function

2. A warning will be displayed alerting you that all data on the virtual disk will be erased. Select OK to acknowledge the warning.

3. An additional pop-up message will appear, warning you that drive data will be lost, click Ok to continue.

4. A message will now be displayed asking: Do you want to delete the partition information if this has one? Click OK to delete the partition information or Cancel to keep the partition information stored on the drive.

View Properties of your Physical Hard Drives

- Select your desired physical disk from list of Physical Disks in the Marvell Storage Menu. The Property tab is now displayed, listing the Properties for your disk.

Property tab

*Note: Your physical disk properties cannot be edited.*

Erase Foreign RAID Configuration

Warning! When erasing previously configured RAID Data, this enclosure will erase all drive data. Please be aware that any data currently on the drives will be lost during this process. It is recommended that you back up all data prior to erasing previously configured RAID data.

RAID controllers store data on any drive within a RAID array. If your drives have been previously configured in a different RAID array, this data must be deleted before a new array can be built. Please follow the below steps to erase previously configured RAID data.

1. Select your desired physical disk from list of Physical Disks in

the Marvell Storage Menu. Hover-over the Operation tab and select Erase Foreign Configuration.
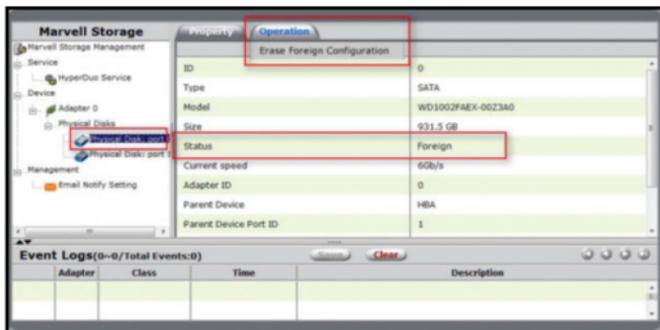
Erase Foreign Configuration function

2. Your previously installed RAID data will now be deleted.

Warranty Information

This product is backed by a two-year warranty.

For further information on product warranty terms and conditions, please refer to www.startech.com/warranty.

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