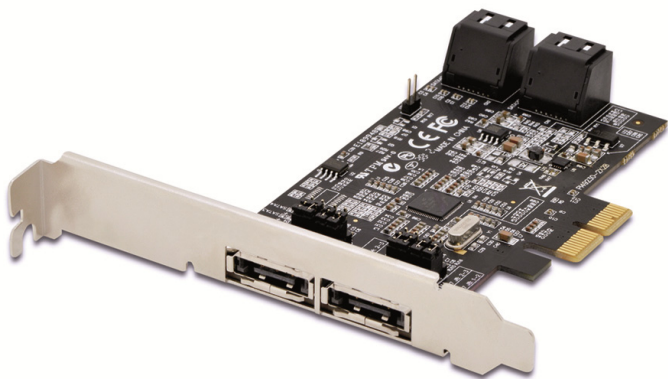




4-PORT SATA III PCI EXPRESS CARD



User Manual
DS-30104-1

Chapter 1: Introduction

1.1 Product Introduction

This board is a single-chip, PCI Express to four SATA Gen III 6Gb/s channels host controller that brings server-class features to the desktop.

This board enables the use of the industry's newest and fastest hard drives at 6Gb/s while providing backward compatibility to legacy SATA 1.5Gb/s or 3Gb/s drives. It uses the same cable and connectors as previous SATA generations to ease integration. Besides, PCI Express 2.0 double the bandwidth of the existing PCI Express bus for faster data throughput. It will enhance system performance for every type of computer user. Each PCI-Express 2.0 lane provides up to 500MB/s of throughput. It also backward compatible with previous generation of PCI Express 1.0 technology.

Using the onboard RAID firmware, the 4 SATA drives attached to this controller can be easily configured as 4 individual ports with no RAID or with RAID 0, RAID 1, RAID 10, HyperDuo.

1.2 Features

- Compliant with PCI-Express Specification v2.0 and backward compatible with PCI-Express 1.x
- Compliant with Serial ATA Specification 3.0
- PCI Express x2 interface, and compatible with PCI Express x4, x8 and x16 slots
- Supports communication speeds of 6.0Gbps, 3.0Gbps, and 1.5Gbps
- Hot plug and Hot Swap
- Supports Native Command Queuing (NCQ)
- Supports Port Multiplier FIS based switching or command based switching
- Compatible with SATA 6G, 3G and 1.5G Hard Drives
- Support RAID function: RAID 0, RAID 1, RAID 10 and HyperDuo
- Supports Windows[®] XP/Vista/7/8/10 Server 2008 R2/8, Linux 2.6.x and above

1.3 System Requirements

- PCI Express x4, x8 or x16 slot
- Windows[®] XP/Vista/7/8/10 Server 2008 R2/8, Linux 2.6.x and above

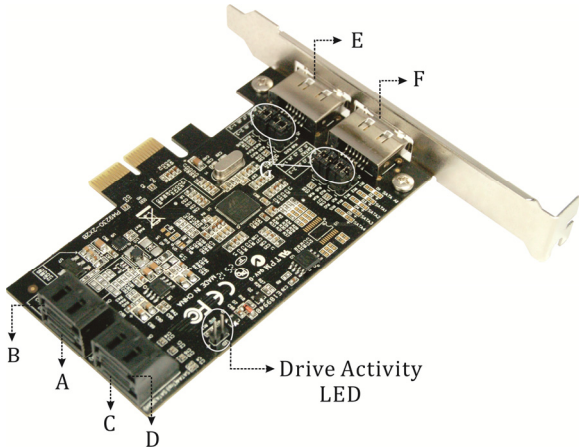
1.4 Package Contents

- 1 x PCIe SATA 6G Raid Card
- 1 x Driver CD
- 1 x User Manual

Chapter 2: Getting Started

2.1 Hardware Layout

Note: There are six SATA ports in PCIe SATA 6G Card. We name these ports character A through F. Ports A to D are internal SATA ports and E & F are external eSATA ports. By changing the jumper setting on PCIe SATA 6G Card that allows you to select between external and internal ports to use. By default, port A, B, C and D are working.



Jumper Settings

JP	Description	Active Port
J1-J4	1-2 close	Enable SATA Port A
	2-3 close	Enable eSATA Port E
J5-J8	1-2 close	Enable SATA Port B
	2-3 close	Enable eSATA Port F

Port C and D are always active. With different jumper setting you can active port A, B, E and F by referencing the above table.

2.2 Hardware Installation

1. Turn off the power to your computer.
2. Unplug the power cord and remove your computer's cover.
3. Locate to an empty PCI Express x4, x8, or x16 slot on the motherboard.
4. To install the board, carefully align the card's bus connector with the selected PCIe slot on the motherboard. Push the board down firmly.
5. Attach your internal devices to the PCIe SATA 6G Raid Card.
6. Replace the slot bracket's holding screw to secure the card.
7. Replace the computer cover and reconnect the power cord.

2.3 Creating and Managing Virtual Disk

2.3.1 Creating Virtual Disks

This section describes the procedure for creating virtual disks using the BIOS **Configuration Wizard**.

To create a virtual disk

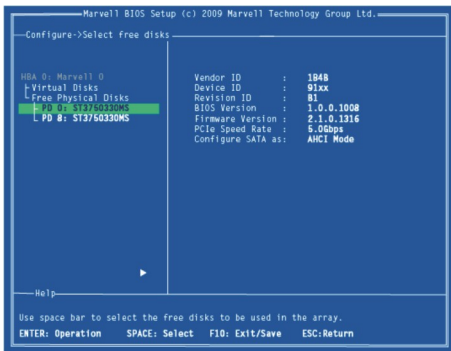
1. In the **Topology** pane, scroll to **HBA0: Marvell 0** and press Enter to select. A menu pops-up, as shown in Figure 1. Select **Configuration Wizard** and press **Enter** to begin creating the virtual disk.

Figure 1 Configuration Wizard



2. Press **Space** to select/unselect a disk a disk, as shown in Figure 2. Use the arrow keys to scroll the list of free disks.

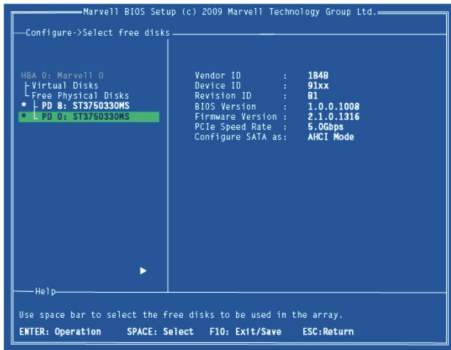
Figure 2 Select Free Disks



Note: The PCIe SATA 6G Raid Card supports the creation of RAID 0 and RAID 1 virtual disks comprising of exactly two SATA physical disks. PATA physical disks cannot be used to create RAID virtual disks.

3. After selecting the required disks, press **Enter** to continue, as shown in Figure 3.

Figure 3 Confirm Disk Selection



4. **Create Virtual Disk** by configuring its setting in the **Information** pane, as shown in Figure 4. The controls for making selection are listed in the **Help** pane when an available setting is highlighted.

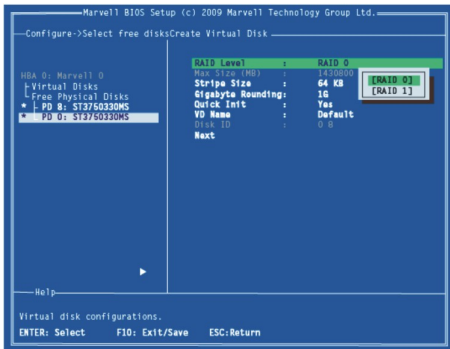
Figure 4 Configure Virtual Disk



Note: Max size (MB) and Disk ID are properties of the virtual disk that cannot be edited. Max size (MB) in the size of the RAID virtual disk as determined by the selected RAID Level. Disk ID lists the IDs of the physical disks comprising the virtual disk.

5. **RAID Level**, as shown in Figure 4, is highlighted when the **Create Virtual Disk** screen is presented. Press **Enter** to select a **RAID Level**. A menu pops-up, as shown in Figure 5, and lists available RAID levels.
6. Scroll the list, as shown in Figure 5, and press **Enter** to select a **RAID Level** (RAID 0, RAID 1).

Figure 5 RAID Level



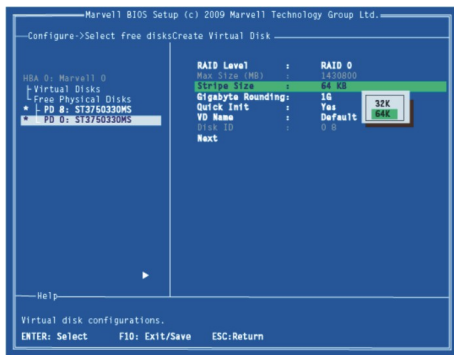
Note: The default Level is RAID 0.

7. Scroll to **Stripe Size** and press **Enter** to select.

A menu pops-up, as shown in Figure 6, and lists available stripe sizes for the selected RAID level.

8. Scroll the list, as shown in Figure 6, and press **Enter** to select **Stripe Size** (32K, 64K)

Figure 6 Stripe Size



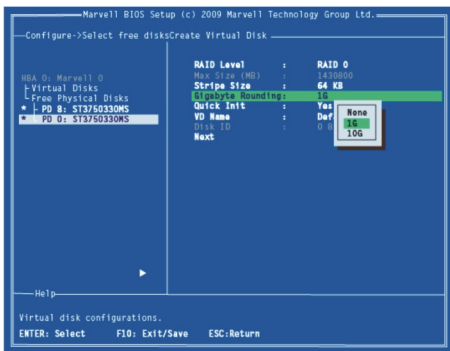
Note: The default size is 64 KB.

9. Scroll to **Gigabyte Rounding** and press **Enter** to select.

A menu pops-up, as shown in Figure 7, and lists available stripe sizes for the selected RAID level.

10. Scroll the list, as shown in Figure 7, and press **Enter** to select **Gigabyte Rounding** (None, 1G, 10G)

Figure 7 Gigabyte Rounding



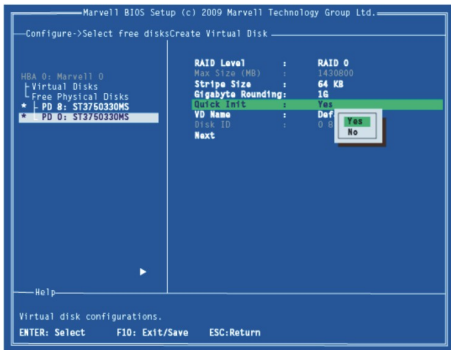
Note: The default setting for Gigabyte Rounding is 1G.

11. Scroll to **Quick Init** and press **Enter** to enable to disable quick initialization of the virtual disk.

A menu pops-up, as shown in Figure 8, and lists available options for quick initialization of the virtual disk.

12. Scroll the list, as shown in Figure 8, and press **Enter** to select **Quick Init** (Yes, No).

Figure 8 Quick Init

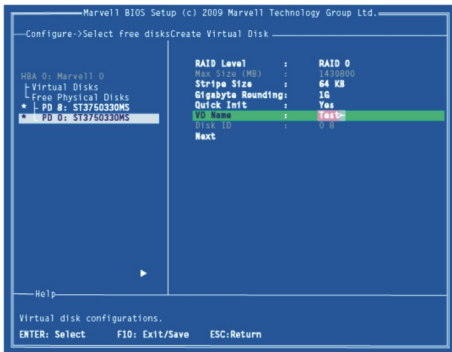


Note: The default setting for Quick Init is Yes.

13. Scroll to **VD Name** and the Default name is cleared for a new name, as shown in Figure 9.

Type a new name and press **Enter** to confirm the selection.

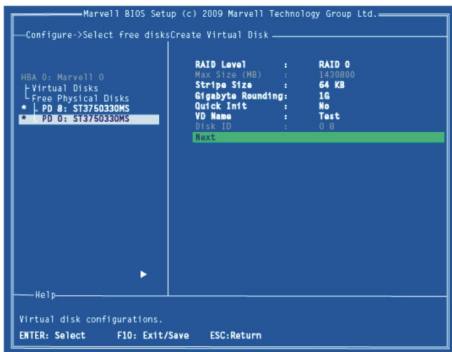
Figure 9 VD Name



14. After configuring the virtual disk, scroll to **Next**, as shown in Figure 10.

Press **Enter** to create the virtual disk.

Figure 10 Create Virtual Disk



15. Please **Y** to select **Yes**, as shown in Figure 11, to confirm the creation of the virtual disk. The virtual disk is now listed in the **Topology** pane, as shown in Figure 12.

Figure 11 Create Virtual Disk Confirmation

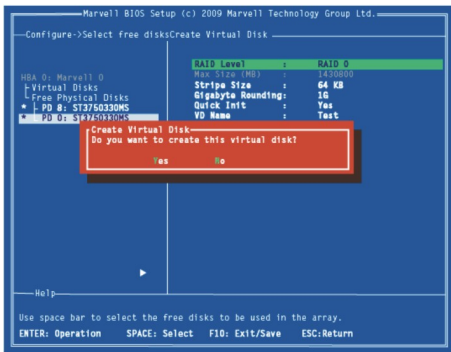
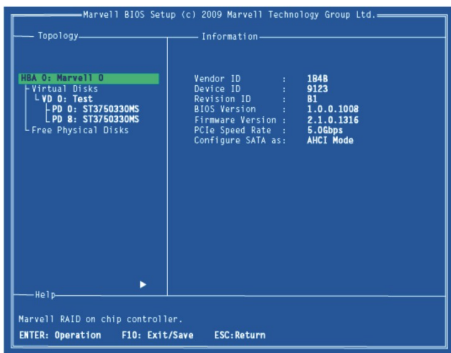


Figure 12 Virtual Disk in Topology Pane



2.3.2 Managing Virtual Disks

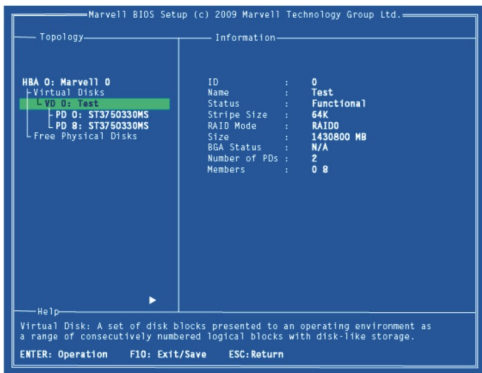
This section contains the following topics:

- Viewing Properties of Virtual Disk
- Erasing RAID Configuration Data
- Rebuilding Virtual Disk
- Deleting Virtual Disk

Viewing Properties of Virtual Disk

To view the properties of a virtual disk, scroll to the **Virtual Disk (VD 0: Default** in Figure 13) in the **Topology** pane. The properties of the virtual disk are displayed in the **Information** pane when **VD 0: Default** is highlighted, as shown in Figure 13.

Figure 13 Virtual Disk Properties: Functional VD



Erasing RAID Configuration Data

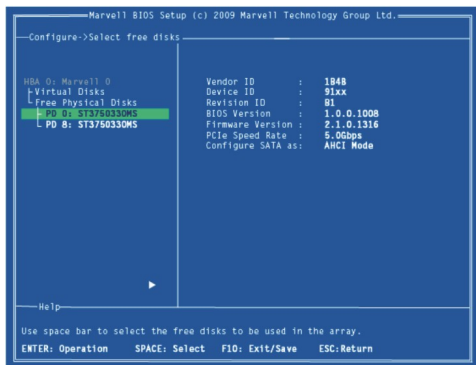
Note: The RAID controller stores RAID configuration data on all physical disks that are part of a virtual disk. RAID configuration data must be erased on the physical disk before it can be used with another virtual disk.

1. In the **Topology** pane, select **Physical Disk (VD 0: Default > PD 0: ST3750330MS** in Figure 14) and press **Enter**.

A menu pops-up, as shown Figure 14.

2. Select **Delete** to delete the virtual disk, as shown in Figure 14.
3. Select **Yes** when prompted to confirm the erase operation.

Figure 14 Erase RAID Configuration Data



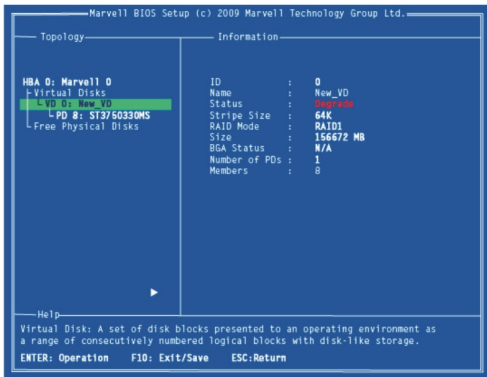
Rebuilding Virtual Disk

Note: The PCIe SATA 6G Raid Card BIOS supports manual rebuilding of RAID 1 virtual disks. The rebuild process is both initiated and complete in the BIOS. The Marvell RAID Utility (MRU), which runs in an OS environment, cannot be used to either initiate, resume, or complete the rebuild process. Spare physical disks are not supported.

To manually rebuild a RAID 1 virtual disk

1. When a virtual disk is degraded, the **Status** of a virtual disk is changed from **Functional** to **Degrade**, as shown in Figure 15.

Figure 15 Virtual Disk Properties: Degrade VD

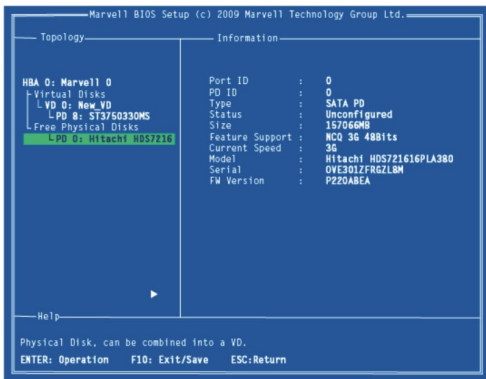


2. Replace the faulty physical disk with an identical physical disk.

Note: If an identical disk is unavailable, use a replacement physical disk or larger size or one with a slightly smaller size as determined the Gigabyte Rounding setting for the virtual disk.

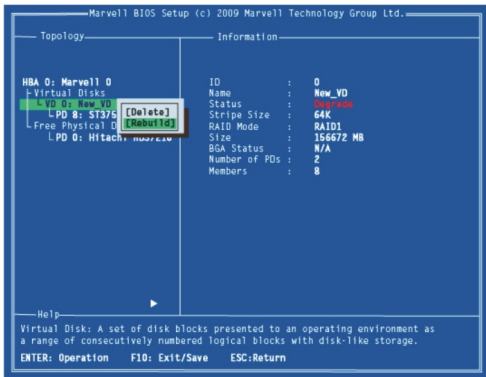
The PCIe SATA 6G Raid Card detects the new physical disk and lists the device under Free Physical Disks in the Topology pane, as shown in Figure 16.

Figure 16 Replace Physical Disk



3. In the **Topology** pane, scroll to **Virtual Disks** (**VD 0: New_VD** in Figure 17), and press **Enter** to select. A menu pops-up, as shown in Figure 17. Scroll to **Rebuild** and press **Enter** to configure the rebuild process.

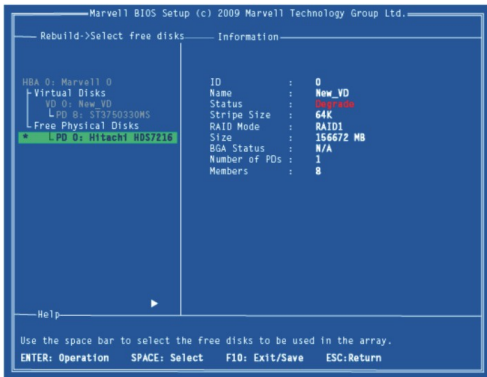
Figure 17 Rebuild Virtual Disk



4. Scroll through the list of free disk, as shown Figure 18, and press **Space** to select or unselect a replacement physical disk.

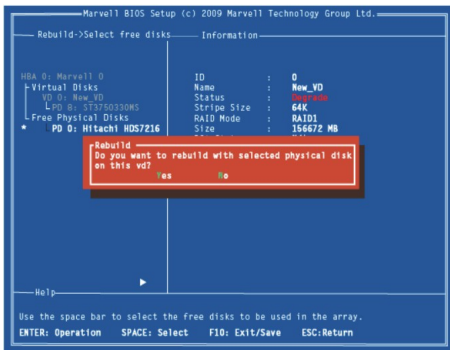
Press **Enter** to continue.

Figure 18 Select Replacement Disk



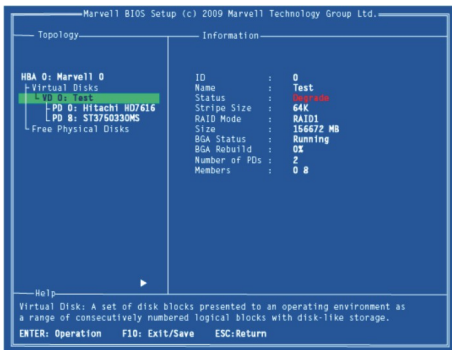
5. Press **Y** to select **Yes**, as shown in Figure 19, when prompted to confirm the rebuild process.

Figure 19 Confirm Rebuild Virtual Disk



- The status of the Rebuild process is reflected in the properties of the virtual disk, as shown in Figure 20.

Figure 20 Rebuild Status

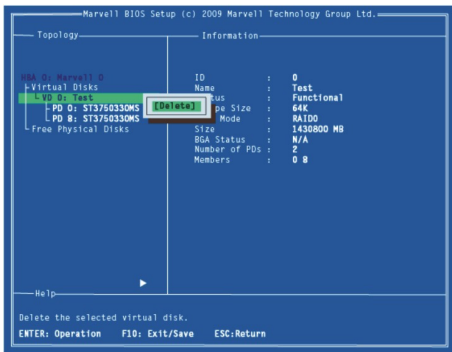


Deleting Virtual Disk

To delete a virtual disk

- In the **Topology** pane, select **Virtual Disk (VD 0: Default** in Figure 21) and press **Enter**.
A menu pops-up, as shown Figure 21.
- Select **Delete** to delete the virtual disk, as shown in Figure 21.
- Press **Y** to select **Yes** when prompted **Do you want to delete this virtual disk?**
- Press **Y** to select **Yes** when prompted **Do you want to delete MBR from this virtual disk?**

Figure 21 Delete Virtual Disk



2.4 Driver Installation

2.4.1 For Windows

1. Please insert the CD driver bound PCIe SATA 6G RAID Card into your CD-ROM drive.
2. At the Windows desktop, click **Start**, then click **Run**.
3. Type **D:\DS-30104-1\Windows\Setup.exe**, click **OK**.
(Change **D:** to match your CD-ROM drive letter)
4. Follow the on-screen instructions to complete the installation.

5. Restart Windows to complete the installation.

2.4.2 For Linux 2.6.x

Linux distributions contain Inbox drivers for AHCI devices. The drivers are installed automatically during the Linux OS installation.

2.5 To Verify Driver Installation (Windows)

1. Right click **My Computer** and click **Manage**.
2. Select **Device Manager**.
3. Look for the following:

Windows® XP: Double click **SCSI and RAID Controller:**

-Marvell 92xx SATA 6G Controller should be displayed

Windows® Vista/7/8/10 Server 2008 R2/8: Double click

Storage controller:

- Marvell 92xx SATA 6G Controller should be displayed

2.6 Note For RAID Support Under Linux

As an add-in card for an existing Operating System installation with hard drives used for the purpose of additional storage. RAID can be configured from the drives connected to this controller using Linux software RAID utilities such as MDADM, or LVM/LVM2.

“WE WILL NOT PROVIDE TECHNICAL SUPPORT ON HOW TO CONFIGURE THE HARD DRIVE AND ALSO HOW TO CREATE RAID SETS IN LINUX.”

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