JetStor Redundant Controller and Windows Server 2008 x86 MPIO Setup Guide

Revision 1.0

### **The Test Environment**

OS: Windows Server 2008 Enterprise SP2 32bit FC HBA: Two (2) QLE2462 RAID Subsystem: EP-3163D-F4S3

NOTE: The RAID Controller Firmware version must be Dual Controller version. In Web GUI, verify in "System Information" if the Dual Controller State is "Dual Operational".

A. Create Raid Set and Volume Set, and Map to Host Channel

NOTE: When using MPIO in dual controller mode, it is recommended to create only one Volume Set in every Raid Set. For example, use 8 drives to create a Raid Set and then create a single Volume Set. Use another 8 drives to create another Raid Set, and then create a single Volume Set.

 To create Raid Set, select "RAID Set Functions" → "Create RAID Set". Select the disks to be included in the RAID Set (sample RAID Set Name: "Raid Set # 000"). Tick "Confirm The Operation" and click "Submit".  To create a Volume Set from Raid Set #000, select "Volume Set Functions" → "Create Volume Set". Select the RAID Set "Raid Set #000" that was created before. Configure the Volume Set settings, such a Volume Name (Volume---VOL#000), RAID Level, and Fibre Channel: LUN Base: LUN mapping (FC Port 0, LUN Base 0, and LUN 0).

open all close all				
Raid System Console     Quick Function     AID Set Functions     Olume Set Functions     Create Volume Set     Create Raid30/50/60	Enter The Volume Attribute			
	Volume Name Member Disks	VolumeVOL#000 8		
	Volume Raid Level Max Capacity Allowed	Raid 5		
Delete Volume Set     Modify Volume Set     Deck Volume Set	Select Volume Capacity	5250 GB		
Schedule Volume Check     Stop Volume Check	Volume Initialization Mode	Foreground Initialization		
Physical Drives     System Controls     Grading Information	Volume Stripe Size Volume Cache Mode	64 Vite Back		
RAID Set Hierarchy     System Information	Tagged Command Queuing	Enabled		
- Hardware Monitor	Volumes To Be Created			
	Confirm The Operation Submit Reset			
	P			

#### NOTE: If the capacity of the Volume Set to be created is over 2TB, select "64bit LBA" in Greater Two TB Volume Support for Windows Server 2008 OS.

#### **Greater Two TB Volume Support:**

If the Volume Set size is over 2TB, an option "Greater Two TB Volume Support" will be automatically provided in the screen as shown in the example above. There are three options to select: "No", "64bit LBA", and "4K Block").

**64bit LBA**: Use this option for UNIX, Linux kernel 2.6 or later, and Windows Server 2003 SP1 or later OS versions. The maximum Volume Set size is up to 512TB.

3. Tick "Confirm the Operation" and click "Submit". The Volume Set will initialize in Foreground mode.

 You can create another RAID Set (Raid Set # 001) and Volume Set (Volume---VOL#001). When Volume Set is initializing in Foreground mode, you need to wait for the initialization to be completed.

open all close all  ^					
Raid System Console     Quick Function     Gamma A Constructions     Gamma Constructions     Constructions	Enter The Volume Attribute				
	Volume Name	VolumeVOL#001			
	Member Disks	8			
Create Volume Set	Volume Raid Level	Raid 6 -			
Create Raid30/50/60	Max Capacity Allowed	4500 GB			
Delete Volume Set     Modify Volume Set	Select Volume Capacity	4500 GB			
Check Volume Set	Greater Two TB Volume Support	64bit LBA 👻			
Stop Volume Check	Volume Initialization Mode	Foreground Initialization -			
Physical Drives	Volume Stripe Size	64 KBytes			
	Volume Cache Mode	Write Back			
RAID Set Hierarchy	Tagged Command Queuing	Enabled -			
Hardware Monitor	Fibre Channel:LUN Base:LUN	0 • : 0 • : 1 •			
	Volumes To Be Created	1			
	Confirm The Operation				
	Submit Reset				

## **B.** Preparation

## **NOTE:** Prepare the following before installing the MPIO driver.

 Connect FC host cables to Dual Controller Host Channels. Example: If Volume Set is mapped to Fibre Channel Port 0, then FC host cable must be connected to Host Channel A.



2. Install the two FC HBA in the server and boot up Windows Server 2008 OS, and then install (update) FC HBA Windows Driver.

 Check if Volume Sets (LUNs) are detected in "Disk Drives" in Windows "Device Manager". If not, please check the FC settings and connections. Also try to restart the controller (System Controls -> Restart Controller)

#### **NOTE:** The 2 Volume Sets must appear twice (total 4 Disk Device).

🖺 Server Manager		
File Action View Help		
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Server Manager (WIN2008)	Device Manager	Actions
Roles     Features	⊡	Device Manager 🔺
<ul> <li>Diagnostics</li> <li>Event Viewer</li> <li>Reliability and Performance</li> <li>Device Manager</li> <li>Configuration</li> <li>Storage</li> <li>Windows Server Backup</li> <li>Disk Management</li> </ul>	Computer Disk drives EP-3163D VolumeVOL#000 SCSI Disk Device EP-3163D VolumeVOL#001 SCSI Disk Device EP-3163D VolumeVOL#001 SCSI Disk Device EP-3163D VolumeVOL#001 SCSI Disk Device WDC WD500 1ABYS-0 1YNA0 ATA Device WDC WD500 1ABYS-0 1YNA0 ATA Device Display adapters UDE ATA/ATAPI controllers E	More Actions

## C. How to Install MPIO

- Server Manager Command Prompt Administrator 🥙 Windows Update Documents A Internet Explorer Computer Open Notepad Network Explore Ma 🦞 Paint Control Panel Map Network Drive. Disconnect Network Drive... Administrative Show on Desktop Rename Help and Supp Properties Run.. All Programs . Start Search 2 0
- 1. Select "Start" then right-click "Computer" and select "Manage".

2. Open "Diagnostics" and select "Device Manager". The 2 Volumes Sets that were created before will appear twice (4 Disk Device).



3. Select "Feature" and "Add Features".



4. Select (tick) the "Multipath I/O" feature. Click "Next.

Add Features Wizard		×
Select Features		
Features Confirmation Progress Results	Select one or more features to install on this server.         Eatures: <ul> <li>NET Framework 3.0 Features</li> <li>BITS Server Extensions</li> <li>Connection Manager Administration Kit</li> <li>Desktop Experience</li> <li>Failover Clustering</li> <li>Group Policy Management</li> <li>Internet Storage Name Server</li> <li>LPR Port Monitor</li> <li>Message Queuing</li> <li>Multipath 1/0</li> <li>Network Load Balancing</li> <li>Peer Name Resolution Protocol</li> <li>Quality Windows Audio Video Experience</li> <li>Remote Server Administration Tools</li> <li>Remote Server Administration Tools</li> <li>Removable Storage Manager</li> <li>RPC over HTTP Proxy</li> <li>Simple TCP/IP Services</li> <li>CHTP. Course</li> </ul>	Description: Multipath I/O, along with the Microsoft Device Specific Module (DSM) or a third-party DSM, provides support for using multiple data paths to a storage device on Windows.

5. The Confirm Installation Selections screen will be shown. Click "Install" to complete MPIO installation.

Add Features Wizard		×
Confirm Installat	ion Selections	
Features Confirmation Progress Results	To install the following roles, role services, or features, click Install.	
	< Previous Next > Install Cancel	5

6. The installation progress will be shown.

Add Features Wizard	
Installation Prog	ress
Features	The following roles, role services, or features are being installed:
Progress	Multipath I/O
Results	
	-
	Initializing installation
	Previous Next> Install Cover
<u>L</u>	Center Used Canter C

7. Verify if MPIO installation succeeded. Click "Close".

Add Features Wizard			×
Installation Resu	lts		
Features Confirmation Progress	The following roles, role service:	s, or features were installed successfully:	
Results	Multipath I/O	Installation succeeded	
	Print, e-mail, or save the installa	ation report	
		< Previous Next > Close	Cancel

8. Verify MPIO driver under "Storage controllers". It should display "Microsoft Multi-Path Bus Driver".



# D. How to Configure MPIO

1. Select "Start" then "Control Panel".



2. Double-click "MPIO".



3. The "MPIO-ed Devices" tab is shown. Note that no devices are shown.

MPIO Properties	×			
MPIO-ed Devices Discover Multi-Paths DSM Install	1			
To add support for a new device, click Add and enter the Vendor and Product Ids as a string of 8 characters followed by 16 characters. Multiple Devices can be specified using semi-colon as the delimiter. To remove support for currently MPIO'd devices, select the devices and then click Remove.				
Devices:				
Device Hardware Id				
Vendor 8Product 16				
Add Remove				
OK Cancel Apply				

4. Select "Discover Multi-Paths" tab. The available drives are listed.

PIO Properties	
MPIO-ed Devices Discover Multi-Paths DSM Install	
SPC-3 compliant	
Deuter Hardware Id	
EP-3163DVolumeVOL #000	
EP-3163DVolumeVOL#001	
Add support for iSCSI devices	Add
Others	
Device Hardware Id	
	Haa
OK Car	and locality

5. Select the 2 devices and click "Add".

1PIO-ed Devices	Discover M	Iulti-Paths	DSM Ins	tall		
SPC-3 complia	nt —					
Device Used	unana Tal					
EP-3163DVd	ware to lumeVOI #	:000				
EP-3163DVo	lumeVOL#	001				
-						
Add suppo	ort for 15C5L (	devices				
					Add	
Others						
ouncio						
	- 1					
Device Hard	ware Id					
Device Hard	ware Id					
Device Hard	ware Id					
Device Hard	ware Id					
Device Hard	lware Id					
Device Hard	ware Id				Add	
Device Hard	ware Id				Add	

6. A reboot will be required to complete the operation. Select "Yes" to reboot now.



7. Open Control Panel and MPIO. Verify in "MPIO-ed Devices" tab if the 2 Volumes are listed (added successfully).

MPIO Properties	×
MPIO-ed Devices Discover Multi-Paths DSM Install	
To add support for a new device, click Add and enter the Vendor and Product Ids as a string of 8 characters followed by 16 characters. Multiple Devices can be specified using semi-colon as the delimiter. To remove support for currently MPIO'd devices, select the devices and then click Remove.	
Devices:	
Device Hardware Id	
EP-3163DVolumeVOL#000	
EP-3163DVolumeVOL#001	
Vendor 8Product 16	
,	
Add Remove	
OK Cancel Apply	

 Open Device Manager / Disk Drives. The 4 Disk Devices will appear only as 2 Disk Devices.



9. Open Storage / Disk Management. Make the 2 Disks "Online".

Server Manager					_ 0	×
File Action View Help						
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Server Manager (WIN2008)	Disk Managemen	nt Volume List + (	Graphical View		Actions	
Roles     Features	Volume Layout T	Type File System	Status		Disk Management	•
	(C:) Simple E	Basic NTFS	Healthy (System, Boot, Page Fi	le, Active, Crasł	More Actions	×
Event Viewer      Reliability and Performance	(D:) Simple E	DASIC RAVV	Healthy (Primary Partition)			
Device Manager	•			•		
Configuration	Disk 0					
Windows Server Backup	Basic 465.76 GB	(C:) 48.83 GB NTFS	(D:) 416.93 GB RAW			
🚍 Disk Management	Online	Healthy (System,	Boot Healthy (Primary Partitio	n)		
	Disk 1					
	Unknown 4889,44 GB	4889.44 GB				
	Offline	Unallocated				
	💿 Disk 2					
	Unknown 4190.95 GB	4190.95 GB				
	Offline	Unallocated				
	Unallocated	Primary partition				
					1	=

10. Initialize the 2 Disks. Use "GPT".





	_
Initialize Disk	x
You must initialize a disk before Logical Disk Manager can access it.	
Select disks:	
Disk 1	-
Disk 2	
Use the following partition style for the selected disks:	
O MBR (Master Boot Record)	
<ul> <li>GPT (GUID Partition Table)</li> </ul>	
Note: The GPT partition style is not recognized by all previous versions of Windows. It is recommended for disks larger than 2TB, or disks used on Itanium-based computers.	
OK Cancel	



#### 11.Create Volume (format partition).

