

How to Configure Windows Fibre Channel MPIO with AccelStor NeoSapphire

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Version History

Version	Changed	Date
V1.0	First release	20170427



Introduction

Already supported by the majority of OS platforms, Microsoft Multipath I/O (MPIO) optimizes storage performance and provides fault-tolerant connectivity to storage. This document addresses how to configure Windows 2012 Fibre Channel (FC) MPIO with AccelStor NeoSapphire.

• If you are not familiar with how to make Windows identify volumes from an AccelStor NeoSapphire all-flash array using a Fibre Channel connection, please refer to the document entitled "How to Make Windows Identify Volumes from AccelStor NeoSapphire using Fibre Channel Connection" before proceeding.



Use Case

Multipath I/O recognizes and manages redundant data paths to an individual volume (refer to the physical cabling of the red and green lines in the Use Case diagram). It ensures greater reliability through a path failover mechanism in the event of cabling or component failure, and multiple data paths can be employed to provide greater aggregate throughput than one path can provide.



Please note:

• This scenario uses a direct attached storage structure to demonstrate how to configure Windows FC MPIO with AccelStor NeoSapphire.

• Actual field deployment usually has a switch configured in between the host and storage, so the paths can be more flexibly adjusted.

NeoSapphire

Go to Share | Volume Management > Add.

**	Share Volume Management					
P Dashboard	+ Add	🧪 Edit	🙈 Delete			
 fi System Storage Share 	Name	4	Туре	Size (MB)	Status	Comment
Volume Management						
Tibre Channel						

Enter the volume name and size.

test	
of 5138 GB 🖌 or 10 🗘 %	
n None	~
	test of 5138 GB v or 10 v %

Volume creation is completed.

Share Volume Management							
🕂 Add 📝 Edit	À Delete						
Name	Туре	Size (MB)	Status	Comment			
test	Volume	500002	Unused				

Go to Share | Fibre Channel

Make sure the FC cable is plugged into the FC port properly. If it is, the cable speed will be displayed.

Share Fibre Channel							
	Port 01	Port 02	Initiator Groups	Device Groups			
	 Save 	💲 Reset	🖋 Edit LUNs 📑 Se	essions			
	General WWPN	Settings	0:00:00:90:fa:b3:68:0	Dc	Defined LUNs	0	
Fibre Channel	WWNN	2	0:00:00:90:fa:b3:68:0	Dc	Working LUNs	0	
 Diagnostics Configuration Wizard Information 	Speed	1	6 Gbit (Negotiated)		Auto		~
	Comment	: [



Under the **Port 01** tab, click **Edit LUNs**.

**	Share Fibre Ch	annel		
Dashboard System	Port 01 Po	rt 02 Initiator Groups Device G	Groups	
	📀 Save 💲	Reset 📝 Edit LUNs 🚅 Sessions		
✓ Storage ✓ Share ✓ Volume Management	General Set	10:00:00:90:fa:b3:68:0c	Defined LUNs ()
Tibre Channel	WWNN	20:00:00:90:fa:b3:68:0c	Working LUNs	0
 Diagnostics Configuration Wizard Information 	Speed Comment	16 Gbit (Negotiated)	Auto	×

Click Add.

Edit L	UNs			×
+ Add	d 🧪 Edit 🛛	À Delete		
ID 🛎	Name	R/W Mode	Size (MB)	
-	C	Decet	Cancol	
	3	Reset	Cancel	

Select a specific volume.

Add LUN	×
ID	Assign a unique identifier to the volume optionally.
R/W Mode	Read Only
Volume Name	test 🗸 🗸
Batch Selection	Also select consequent volumes with the same name prefix, if exists.
	Save Cancel



+ Ad	d 🧪 Edit	À Delete		
ID ^	Name	R/W Mode	Size (MB)	
U	test	Read/write	500002	

A confirmation message will appear. Click Apply, then Yes.

A The config	The configuration has been changed. You must apply the changes in order for them to take effect.					
Confirm	nation					
?	Do you really want to apply the configuration?					
	Yes No					

The volume "test" has been assigned to FC Port 01.

Port 01	Port 02 Initiator Groups	Device Groups	
Save	💲 Reset 🧪 Edit LUNs 📑 Se	ssions	
General	Settings		
WWPN	10:00:00:90:fa:b3:68:0	Defined LUNs 1	
WWNN	20:00:00:90:fa:b3:68:0	C Working LUNs 1	
Speed	16 Gbit (Negotiated)	Auto	~
-			

Follow the same steps as above to configure **Port 02**.

Share Fibre Channe	2		
Port 01 Port 02	2 Initiator Groups Device Groups		
📀 Save 💲 Rese	et 📝 Edit LUNs 📑 Sessions		
- General Settings	1		
WWPN	10:00:00:90:fa:b3:68:0d	Defined LUNs 1	
WWNN	20:00:00:90:fa:b3:68:0d	Working LUNs 1	
Speed	16 Gbit (Negotiated)	Auto	*
Comment			

Windows

Make sure all FC cables are connected properly to the Windows server. Launch the **Computer Management** console. Since a volume has been assigned to two FC ports without MPIO, Windows will display two disks.



2		Computer Management		_ _ ×		
File Action View Help						
	Er . Er . Eð					
A System Tools	Volume	Simple Basic NTFS Healthy (Boot, Page File, Crash Dump, Primary Partition)	11	Actions Disk Manager		
D Task Scheduler	System Reserved	Simple Basic NTFS Healthy (System, Active, Primary Partition)	35	More Actions		
Event Viewer Shared Folders				More Actions		
Local Users and Groups	<		>			
Device Manager						
⊿ 🚰 Storage	Basic	System Reserved (C:)				
Disk Management	111.79 GB Online	350 MB NTFS 111.45 GB NTFS Healthy (System Active Healthy (Boot Page File Crash Dump Priman/ Partit				
Services and Applications		Treading (System, Active, Treading (Soot, Fage Tile, Crash During, Finning Farth				
	Disk 1					
	Basic 465.66 GB	455.55 GP				
	Offline (1)	Unallocated				
	нер					
	G Disk 2					
	465.66 GB	465.66 GB				
	Help					
< III > Unallocated Primary partition						

To enable MPIO, open Server Management -> Add Roles and Features -> Features. Tick the Multipath I/O checkbox.

Select features DESTINATION SERVER WIN-Q2IK908L6EB Before You Begin Installation Type Select one or more features to install on the selected server. Server Selection Server Roles Features Description	A	Add Roles and Features Wizard					
Features IP Address Management (IPAM) Server (DSM) or a third-party DSM, provides support for using multiple data paths to a storage device on Windows. Confirmation LPR Port Monitor Windows. Results Management OData IIS Extension Imagement OData IIS Extension	E Select features Before You Begin Installation Type Server Selection Server Roles Features Confirmation Results	Add Roles and Features Wizard Select one or more features to install on the selected server. Features Internet Printing Client IP Address Management (IPAM) Server iSNS Server service LPR Port Monitor Management OData IIS Extension Media Foundation	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.				
Message Queuing Multipath I/O Network Load Balancing Peer Name Resolution Protocol Quality Windows Audio Video Experience RAS Connection Manager Administration Kit (CM/ Remote Assistance Remote Differential Compression < Install Cancel			Install Cancel				



Add Roles and Features Wizard					
Confirm installat	ion selections	DESTINATION SERVER WIN-Q2IK90BL6EB			
Before You Begin	To install the following roles, role services, or features on selected server, click Ins	tall.			
Installation Type	Restart the destination server automatically if required				
Server Selection	Optional features (such as administration tools) might be displayed on this page	because they have			
Server Roles	been selected automatically. If you do not want to install these optional features, their check boxes.	click Previous to clear			
Features			_		
<u>Confirmation</u> Results	Multipath I/O Export configuration settings Specify an alternate source path				
	< Previous Next > Ins	stall Cancel			

Open MPIO Properties. Select Discover Multi-Paths -> AStor NeoSapphire [model number] -> Add.



MPIO Properties	X		
MPIO Devices Discover Multi-Paths DSM Install	Configuration Snapshot		
SPC-3 compliant			
Device Hardware Id			
Add support for iSCST devices			
Add support for SAS devices			
	Add		
Others			
Device Hardware Id			
Astor Neosapphire 3600			
	Add		
	Add		
More information on discovery of multipathed devices			
	OK Cancel		



Reboot Windows.

Reboot Required	x		
A reboot is required to complete the operation. Reboot Now?			
Yes No			

After rebooting, open **Computer Management**. Only a raw disk will be listed.

Computer Management						
File Action View Help						
🗢 🔿 🙍 📰 👔 🕻 🕻	X 📽 🖻 🍇 📓					
🜆 Computer Management (Local	Volume	Layout Type	File System	Status	Capacity	Free Sp
⊿ 🙀 System Tools	💼 (C:)	Simple Basic	NTFS	Healthy (Boot, Page File, Crash Dump, Primary Partition)	111.45 GB	83.48 C
Description: De	System Reserved	Simple Basic	NTFS	Healthy (System, Active, Primary Partition)	350 MB	109 ME
Event Viewer						
Shared Folders						
Local Users and Groups						
[®] Performance				>		
Bevice Manager	A Device Manager					
 Storage Windows Server Backup Disk Management Services and Applications 	Basic 111.79 GB Online	System Reserved 350 MB NTFS Healthy (Syster	ved n, Active, Prim	(C:) 111.45 GB NTFS Healthy (Boot, Page File, Crash Dump, Primary Partition		
	Disk 1 Basic 465.66 GB Offline Help	465.66 GB Unallocated				



After successfully configuring FC MPIO, effective data transmission paths can be verified with the following steps:

2	Computer Management			
File Action View Help				
🗢 🤿 🖄 📰 🔛	T 🕸 🙀 🛍			
Computer Management (Lo System Tools Carlos	Image: Select the MPIO policy: MPIO Diver Details Events Select the MPIO policy: Round Robin V V			
	DSM Name: Microsoft DSM Details			
	Parts lid			
	77010000 77010001 77010002 Path State Weight A Active/Optimized Active/Optimized			
	To edit the path settings for the MPIO policy, select a Edit To apply the path settings and selected MPIO policy, Apply click Apply.			
L	OK Cancel			

- 1. Open Computer Management and select Device Manager.
- 2. In **Disk drives**, make sure there is only one disk device for the LUN connected via multiple paths.
- 3. Right-click the disk and in the disk properties, switch to the **MPIO** tab:
 - Make sure the MPIO policy is **Round Robin** (default setting).
 - Count and verify the number of paths to the disk (in this case, two paths).
 Each should be displayed with an Active/Optimized path state.



Right-click the mouse and select **Online**.

Di	isk 1
465.6	Online
Offlir	Properties
	Help

Right-click the mouse and select **New Simple Volume**.

⊡Disk 1 Basic 465.66 GB Online	465.66 GB Unallocated	New Simple Volume	
	<u><!--/</u--></u>	New Spanned Volume New Striped Volume New Mirrored Volume New RAID-5 Volume	-
		Properties Help	-

Note: When formatting the partition, remember to set the **Allocation unit size** to **4096**.

New Simple Volume Wizard				
Format Partition To store data on this partition, you must format it first.				
Choose whether you want to format this volume, and if so, what settings you want to use.				
◯ Do not format this volume				
 Format this volume with the format 	ollowing settings:			
File system:	NTFS V			
Allocation unit size:	4096 🗸			
Volume label:	New Volume			
Perform a quick format				
Enable file and folder compression				
< Back Next > Cancel				

New Volume (D:) is now available.



Disk 1 Basic 465.66 GB Online

New Volume (D:) 465.66 GB NTFS Healthy (Primary Partition)

Run a benchmark tool to see if performance has been enhanced. (This assumes the original performance bottleneck was related to data path bandwidth.)

In this Use Case, we connected two 16 Gb/s FC cables between the server and storage. One 16 Gb/s FC cable can offer up to around 1,500 MBPS per volume; two paths can support up to around 3,000 MBPS per volume.