White Paper



How to Configure iSCSI Initiator in Microsoft Windows Server 2012 R2

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This edition applies to QSAN XCubeSAN Series. Note that this document was produced based on beta code and some screens may change when it becomes generally available.

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Configure iSCSI Initiator

Executive Summary

In this document, we will guide users to understand how to use the software iSCSI initiator in Microsoft[®] Windows[®] Server 2012 R2 to connect to QSAN XCubeSAN dual controller system. We will also demonstrate the steps pertaining to how multipath I/O be configured with XCubeSAN for achieving the expected throughput.

Audience

This document is applicable for QSAN customers and partners who are familiar with QSAN products. Any settings which are configured with basic operations will not be detailed in this document. If there is any question, please refer to the user manuals of products, or contact QSAN support for further assistance.

Test Environment

Host

- OS: Microsoft Windows Server 2012 R2
- Software: Microsoft iSCSI initiator

Storage

• QSAN XCubeSAN XS5224

Firmware Version: 1.0.0

Configuration Guide

Here is the step by step to setup Microsoft iSCSI Initiator. Please visit Microsoft website for latest iSCSI initiator.

Enable Multipath I/O feature

1. Open the Server Manager window, and click Add roles and features





2. Check the item of Multipath I/Qand click Next button to install this new feature.

elect features		DESTINATION SERVE WIN-4T40QOP1V
The destination server has Before You Begin	a pending restart. We recommend that you restart the destination Select one or more features to install on the selected server.	n server before either installing o
Server Selection Server Roles Features Confirmation Results	Group Policy Management Group Policy Management IIS Hostable Web Core Ink and Handwriting Services Internet Printing Client IP Address Management (IPAM) Server iSNS Server service LPR Port Monitor Management OData IIS Extension Media Foundation Message Queuing ✓ Multipath I/O Network Load Balancing Peer Name Resolution Protocol Ouality Windows Aurlin Video Experience ✓ Wultipath //O	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.

3. This requires a reboot of server to take effect.

Connect to iSCSI Target

- 1. Run Microsoft iSCSI Initiator.
- 2. Input IP address of the iSCSI LAN port on XS5224, and click Quick Connectbutton.



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Duick C	oppect	Favorice Targets	volumes and bevices	RADIOS	Configuration
To disc DNS na	over and lo ame of the l	g on to a target usir target and then click	ig a basic connection, t Quick Connect.	ype the IP	address or
<u>T</u> arget	: 19	2.168.21.1		<u>_</u>	iick Connect
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To con click Ci	nect using a	advanced options, se	elect a target and then		Cognect
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3. Select the target name, and then click Done button.

Quick Connect	X
Targets that are available for connection at the provided are listed below. If multiple targets ar to each target individually.	IP address or DNS name that you e available, you need to connect
Connections made here will be added to the list to restore them will be made every time this cor	of Favorite Targets and an attempt nputer restarts.
Discovered targets	
Name	Status
ign.2004-08.tw.com.qsan:dev0.ctr1	Connected
Progress report Immediate Login Succeeded.Persistent Login f after system reboot	ailed, target will not be available
Connect	Done



5CSI Initiator Properties	×
Targets Discovery Favorite Targets Volumes and Devices	RADIUS Configuration
Quick Connect	I
To discover and log on to a target using a basic connection, DNS name of the target and then click Quick Connect.	type the IP address or
Iarget:	Quick Connect,
Discovered targets	
	<u>R</u> efresh
Name	Status
ign.2004-08.tw.com.gsan:dev0.ctr1	Connected
To connect using advanced ontions, select a target and then	
click Connect.	Connect
To completely disconnect a target, select the target and then click Disconnect.	Disconnect
For target properties, including configuration of sessions, select the target and click Properties.	Properties
For configuration of devices associated with a target, select the target and then click Devices.	De <u>v</u> ices
More about basic ISCSI connections and targets	
ОК	Cancel Apply

4. It connects to an iSCSI disk now.

Setup MPIO (Multipath I/O)

- 1. If running MPIO, please continue.
- 2. Click Discovery tab to connect the second path.
- 3. Click Discover Portalbutton. Enter the IP address or DNS name of the target.



gets Discovery Favorite Targets Volumes and Devices RADIUS C Farget portals The system will look for Targets on following portals: Rei Address Port Adapter IP a 192.168.21.1 3260 Default Default To add a target portal, click Discover Portal. Ediscove Discover To remove a target portal, select the address above and then click Remove. Ber SNS servers Rei The system is registered on the following (SNS servers: Rei Name To add an ISNS server, click Add Server. Add S To remove an iSNS server, select the server above and then click Remove. Rei	
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More about Discovery and ISNS	
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Discover Target Portal	×			
Enter the IP address or DNS name a want to add.	nd port number of the portal you			
To change the default settings of the discovery of the target portal, click the Advanced button.				
IP address or DNS name:	Port: (Default is 3260.)			
192.168.22.2	3260			
Advanced	OK Cancel			

4. Click OK button.



SCSI Initiator Properties	×
Targets Discovery Favorite Targets Volumes and Devices	RADIUS Configuration
Quick Connect	
To discover and log on to a target using a basic connection, I DNS name of the target and then click Quick Connect.	type the IP address or
Iarget:	Quick Connect
Discovered targets	
	<u>R</u> efresh
Name	Status
iqn.2004-08.tw.com.qsan:dev0.ctr1	Connected
ign.2004-08.tw.com.gsan:dev0.ctr2	Inactive
To connect using advanced options, select a target and then	Connect
click Connect.	
to completely disconnect a target, select the target and then click Disconnect.	Disconnect
For target properties, including configuration of sessions, select the target and click Properties.	Properties
For configuration of devices associated with a target, select the target and then click Devices.	De <u>v</u> ices
More about basic ISCSI connections and targets	
ОК	Cancel Apply

Connect To Target	×
Target name:	
iqn.2004-08.tw.com.qsan:dev0.ctr2	
✓ Add this connection to the list of Favorite Targets. This will make the system automatically attempt to restore the connection every time this computer restarts.	
✓ Enable multi-path	
Advanced	Cancel

- 5. Click Targets tab, select the second path, and then click Connect button.
- 6. Enable Enable multi-path checkbox. Then click OK button.
- 7. Done, it connects to an iSCSI disk with multi-path.

Enable MPIO Support

1. For the iSCSI storage, use the iSCSI Initiatorto connect to the XS5224 with volume attached to LUN on it first.





2. In Device Manager, under Disk drives, it will display one or more disks, depends on how many paths available to a single volume on the storage. There are two identical SCSI devices to one volume on XS5224 as two paths are available from the host to the storage.

Qsan XS5224 SCSI Disk Device Qsan XS5224 SCSI Disk Device

3. After adding the Multipath I/O feature, MPIO support for iSCSI devices can be added or removed via MPIO tool.



4. In MPIO Propertieswindow, switch to the label of Discover MultiPaths, check the option of Add support for iSCSI deviceand click Add button. A reboot for the host is required for this setting to take effect.

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MPIO Properties	x
MPIO Devices Discover Multi-Paths DSM Install Config	uration Snapshot
SPC-3 compliant	
Device Hardware Id	
Add support for iCOST devices	
Add support for SAS devices	
	Add
Qthers	
Device Hardware Id	
	Add
	A <u>u</u> u
ОК	Cancel

5. After reboot, logon the iSCSI target again. The iSCSI disk drive in Device Managerbecomes a multi-path disk device now.



- 6. For FC (Fibre Channel) volume, the steps to enable the MPIO support are similar as the iSCSI storage. Here is an example, connecting the host with HBA to the storage, and there is a volume attached with a LUN.
- 7. In MPIO Properties window, switch to the label of Discover MultiPaths. The FC device will be listed in the SPC-3 compliant column. Select the Qsan and click Add button. It will take about half minutes to accomplish the setting, and then a reboot on the server is necessary to let it take effect.



	MIPIO P	roperties	
4PIO Devices	Discover Multi-Paths	DSM Install	Configuration Snapsho
SPC-3 comp	slant		
Device Ha	ardware Id		1.6
Qsan			
Add sup	port for (SCSI devices		
Add sup	port for ISCSI devices port for SAS devices		

8. After reboot, the volume on XS5224 in Device Manager becomes a multi-path disk device.

Configure Multipath Policy

1. For the iSCSI disk, the multipath policy can be specified inside the Microsoft iSCSI initiator.

Devices X Na Device Details X Dis MPIO	Devices X Na Device Details X Dis MPIO			iSCSI Initiator	Propertie	es	L	2
Na Device Details X Dis MPIO	Na Device Details X Dis MPIO			Devices			×	
Note MPIO Load balance policy: Round Robin Fail Over Only Round Robin Round Robin V Fail Over Only Round Robin Round Robin With Subset Least Blocks Least Blocks Least Blocks Vol This device has the following paths: Les Path Id Status Type Weight Session ID 0x7704000 Conne Active n/a fffe000009c6020-4t	Name MPIO Load balance policy: Round Robin Round Robin Vision Round Robin With Subset Least Elocks Least Blocks Least Blocks Vol This device has the following paths: Les Path Id Status Der 0x77040000 Col Conne	Na		Device I	Details		x	
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- 2. For the FC disk, the multipath policy can be specified by right clicking on the multi-path disk device in the Device manager, and then select Properties
- 3. In MPIO label, the policy can be modified.



2. Done, the iSCSI device disconnect successfully.

Conclusion

QSAN XCubeSAN series products provide Active-Active dual controller and support ALUA, user don't have to pre-configure any option on XCubeSAN system to achieve the redundancy between Windows server and XCubeSAN, just make sure the multipath I/O session is well-configured and the failover/back mechanism will automatically be executed once one of controllers gets failed.

Apply To

- XCubeSAN Series
- AegisSAN Q500 Series
- AegisSAN LX Series
- AegisSAN V100 Series

Reference

Obsolete QSAN White Paper

• QWP201201-How_To_Enable_MPIO_in_WS2008.pdf