

# StarWind iSCSI SAN Software: Using StarWind to provide Cluster Shared Disk resources for Hyper-V Failover Clusters

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# Guide

#### Introduction

Software clustering technology works to provide a group of systems as a unified redundant network resource. Various cluster configurations can be implemented. One of the most frequently used configurations is failover cluster. This High Availability (HA) configuration assumes that if one of the cluster nodes fails, the reserved node automatically comes online, providing little or no application downtime. With this type of configuration, user workflow remains virtually uninterrupted and secured.

Failover cluster configuration requires two or more server nodes that share an external storage. Based on the iSCSI technology, the StarWind solution enables you to create an external storage system in the Windows environment without implementation of expensive Fiber Channel or external SCSI solutions. With StarWind you can create a shared disk array on a host running Microsoft Windows Server.

This document provides step-by-step instructions on configuring StarWind with Hyper-V and failover clustering.





Figure 1. StarWind provides shared-disk resources to clusters



# Preparing Shared Storage

1. Launch StarWind Management Console by clicking **Start -> All Programs -> StarWind Software -> StarWind -> StarWind**.

2. Establish a server connection.

3. Click the Add Target button on the toolbar.

4. In **Add Target Wizard** that appears, enter the target alias in the corresponding text field. Target name is generated automatically, but you can edit it ifnecessary.

Target Wizard		
ommon target parame Specify target alias and	e <b>ters</b> I target name.	G
Target Alias:		
quorum		
🔲 Target Name:		
ign.2008-08.com.starv	windsoftware:c11.test.com-quorum	



6. To select the device type, click the **High Availability device** option button.





8. Specify the partner server parameters. Enter the server's IP address or host, and specify the user name and password for the StarWind Service.

	cify partne	r server parameters.	
Host:	192.168.	1.102 Port:	3261
Auther	ntication: [	Basic	•
Üse	r Name:	root	
Pas	sword:	••••••	



10. Enter the target alias and name to be assigned to the partner target.

Target Wizard		
<b>Partner server common t</b> a Specify partner server tar	arget parameters get alias and target name.	C.
Partner Target Alias:		
guorumPartner		
Partner Target Name:		
iqn.2008-08.com.starwinds	oftware:c22.test.com-quorumpartner	



12. Specify location and name of your local virtual disks and your partner's virtual disks by clicking the .... button. If you want to create new virtual disks, select the **Create new** checkbox.

Add Target Wizard
Virtual disks parameters         Operation           Specify virtual disks parameters.         Operation
Current server virtual disk parameters
My Computer\C\quorum.img
Create new
Partner server virtual disk parameters
My Computer\C\quorumpartner.img
Create new
Size: 1024 MB 💌
< <u>B</u> ack Next > Cancel Help



14. Configure the data synchronization and heartbeat channels parameters by specifying the network interface for synchronization and heartbeat respectively. You can also define node priority by designating it as **Primary** or **Secondary**.

Add Target Wizard					×
Data synchronizati Specify data sync	ion channel paran thronization channel	n <b>eters</b> parameters	Į.		0
Current server pa	rameters				
Target Name:	iqn.2008-08.com.s	tarwindsoft	ware:c11.test	.com-quorum	
Sync.Interface:	10.10.10.1	- \$	Port:	3260	
Heartbeat	192.168.1.101	- \$	Priority:	Primary	•
🔽 Auto synchror	nization after failure				
Partner server par	rameters				
Target Name:	ign.2008-08.com.s	arwindsoft	ware:c22.tes	t.com-quorumpartne	er
Sync.Interface:	10.10.10.2	- \$	Port:	3260	
Heartbeat	192.168.1.102	- \$	Priority:	Secondary	•
📝 Auto synchror	nization after failure				
	2.2			8	
	<	: <u>B</u> ack	<u>N</u> ext >	Cancel	Help



16. Specify the method to initialize your HA device.

Add HA device
Initialization method Specify initialization method.
Select initialization method:
< <u>B</u> ack <u>N</u> ext > Cancel Help



18. Specify cache type and size of the HA device .

Add Target Wizard	
HA device cache parameters Specify HA device cache parameters.	0
Cache: Write-back caching	
Cache size in MBs:	64 🛋
Note: cache size is subject to shrink w/o noti memory.	ce if specified too large for destination machine
Cache block expiry period in ms:	5000 🚔
< <u>B</u> ack	Next > Cancel Help



20. Make sure that the device parameters are correct. Click **Back** should any changes be required.





A summary is displayed on the last wizard page.

Add Target Wizard		X
NV O	Add Target Wizard	
iscsi	The following device was created: HAImage1	
	Target name:	
₹ <u>\$\$</u>	iqn.2008-08.com.starwindsoftware:c11.test.com-quorum To close this wizard click Finish.	*
	< Back Finish Cancel H	elp

22. Click **Finish** to close the wizard.

Follow the same procedure to create the second device, that'll be used as generic.



#### **Configuring Hyper-V Severs**

This document assumes that you already have Active Directory configured and two servers on the domain. This document also assumes that you have enabled the **Failover Clustering, Multipath I/O** features and the **Hyper-V** role on the both servers.

These configurations can be made using Server Manager (in the **Features and Roles** sections).

1. Launch **Server Manager**, select the **Features** item and click the **Add Features** lin . Install the **Failover Clustering** feature by following the wizard's instructions.

Add Features Wizard		×
Select Features		
Features Confirmation Progress Results	Select one or more features to install on this server.         Eatures: <ul> <li>INET Framework 3.5.1 Features</li> <li>Background Intelligent Transfer Service (BITS)</li> <li>BitLocker Drive Encryption</li> <li>BranchCache</li> <li>Connection Manager Administration Kit</li> <li>Desktop Experience</li> <li>DirectAccess Management Console</li> <li>Failover Clustering</li> <li>Group Policy Management</li> <li>Ink and Handwriting Services</li> <li>Internet Printing Client</li> <li>Internet Storage Name Server</li> <li>LPR Port Monitor</li> <li>Message Queuing</li> <li>Multipath I/O</li> <li>Network Load Balancing</li> <li>Peer Name Resolution Protocol</li> <li>Quality Windows Audio Video Experience</li> <li>Remote Differential Compression</li> </ul> More about features	<ul> <li>Description:</li> <li>Failover Clustering allows multiple servers to work together to provide high availability of services and applications. Failover Clustering is often used for file and print services, database and mail applications.</li> <li>Instell Cancel</li> </ul>



2. Now open the **MPIO manager** by clicking **Start -> Administrative Tools -> MPIO**.

MPIO Properties
MPIO Devices Discover Multi-Paths DSM Install Configuration Snapshot
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

3. Click Add and enter the following: MSFT2005iSCSIBusType\_0x9.

#### 4. Click OK.

5. You will be prompted to reboot the server. Click **Yes** to proceed.



6. Launch **Server Manager**, select the **Server Roles** item, and click the **Add Roles** link.

7. In the **Roles** section, select the **Hyper-V** checkbox and follow the wizard's instructions.

Add Roles Wizard		×
Select Server Ro	les	
Before You Begin Server Roles Hyper-V Virtual Networks Confirmation Progress Results	Select one or more roles to install on this server.         Roles:         Active Directory Certificate Services         Active Directory Domain Services         Active Directory Federation Services         Active Directory Rights Management Services         Active Directory Rights Management Services         Active Directory Rights Management Services         Application Server         DHCP Server         DHCP Server         Pile Services         Yeper-Y         Network Policy and Access Services         Print and Document Services         Remote Desktop Services         Web Server (IIS)         Windows Deployment Services         Windows Server Update Services         Windows Server roles	Description: <u>Hyper-V</u> provides the services that you can use to create and manage virtual machines and their resources. Each virtual machine is a virtualized computer system that operates in an isolated execution environment. This allows you to run multiple operating systems simultaneously. :> Install Cancel

# Set Up Disks

For this step you will need to connect the previously created disks on all of the servers which will be added to the cluster.

1. Launch Microsoft iSCSI Initiator and click the Discovery tab.

2. In the **Discover Target Portal** dialog that appears, enter IP address of both StarWind servers. The **iSCSI Initiator Properties** window appears.

The such as will be	I. Con Toronto a	- 6-8	Refresh
The system will loo	OK FOR Largets o	n rollowing portais:	
Address	2240	Default	Default
192.168.1.101	3260	Default	Default
fo add a target p	ortal, click Disco	wer Portal.	Discover Portal
to remove a targe hen click Remove	et portal, select	the address above and	Remove
			Add Carrier
To remove an iSN: then click Remove	S server, select	the server above and	Remove
	wery and ISNS		



3. Click the **Targets** tab. The previously created targets are listed in the **Discovered Targets** section.

**Note:** If the created targets are not listed, check the firewall settings on the StarWind server as well as the list of networks served by the StarWind server. You can do this by clicking **StarWind Management Console** ->**Configuration -> Network**.

4. Add the targets one by one by selecting them and then clicking **Connect**.

5. In the **Connect To Target** dialogs that appears, select the **Add this connection to the list of Favorite Targets** checkbox. This is necessary to automatically reconnect to the targets upon client restart. Initiator window appears.

		Quick Connect
iscovered targets		
		Refresh
Name	St	atus
ign.2008-08.com.starwindsoftware:c22.tes ign.2008-08.com.starwindsoftware:c22.tes	t.com-generic Ca t.com-guorum Ca	nnected
o connect using advanced options, select a lick Connect.	target and then	Cognect
io connect using advanced options, select a lick Connect. io completely disconnect a target, select the hen click Disconnect.	target and then	Cognect Disconnect
To connect using advanced options, select a lick Connect. To completely disconnect a target, select the hen click Disconnect. For target properties, including configuration relect the target and click Properties.	target and then a target and n of sessions,	Cognect Disconnect Properties
To connect using advanced options, select a dick Connect. To completely disconnect a target, select the fren click Disconnect. For target properties, including configuration alect the target and click Properties. For configuration of devices associated with he target and then click Devices.	target and then a target and n of sessions, a target, select	Cognect Disconnect Properties De <u>vi</u> ces



6. Launch **Server Manager** and go to the **Disk Management** section. Bring online the disks that appear and initialize them.

tialize Disk		×
'ou must initialize a disk before Lo	ical Disk Manager can acc	ess it.
elect disks:		
✔ Disk 1		
✔ Disk 2		
Ise the following partition style for	ne selected disks:	
MBR (Master Boot Record)		
GPT (GUID Partition Table)		
lote: The GPT partition style is no Vindows. It is recommended for d anium-based computers.	recognized by all previous v ks larger than 2TB, or disks	versions of used on
	ОК	Cancel

The Server Manager window appears. Two new clean disks appeared on the system.

📕 Server Manager				
Eile Action View Help				
♦ ♦ 2 1 2 1 4	<b>1</b>			
Server Manager (C1)	)isk Managemei	nt Volume List + Graphical View	Act	ions
E P Roles	/olume Layout	Type File System Status Capac	tity Dis	k Management 🔺
Diagnostics	∍ (C:) Simple	Basic NTFS Healthy (System, Boot, Page File, Active, Crash Dump, Primary Partition) 232.8	9 GB	More Actions
Configuration     Storage				
Windows Server Backup				
🔤 Disk Management				
l É				
	Disk 0	163		
	232.89 GB	(C;) 232,89 GB NTF5		
	Ormine	Healthy (System, Boot, Page Hie, Active, Crash Jump, Primary Partition)		
	Disk 1			
	Basic 1023 MB	1023 MB		
	Online	Unallocated		
	Basic			
	10.00 GB Online	10.00 GB		
	Unallocated	Primary partition		
J				

To create the partitions and format the new disks:

1. Right-click each of the disks, and then click **New Simple Volume**.

📕 Server Manager				
Eile Action Yiew Help				
🗢 🔿 🙋 📅 😰 🛛	e 😼			
Server Manager (C1)	Disk Managen	nent Volume List + Graphic	al View	Actions
	Volume Layout	: Type File System Statu	is Capac	ty Disk Management 🔺
Diagnostics	C:) Simple	Basic NTFS Health	hy (System, Boot, Page File, Active, Crash Dump, Primary Partition) 232.8	GB More Actions
Configuration				
Windows Server Backup				
Disk Management				
	Basic	((;)		-
	232.89 GB	232.89 GB NTFS Healthy (System Boot J	Page File Active Crach Dump Drimary Partition)	
			r ago may receive, crash bamp, minary rareadiny	
	Disk 1			
	Basic 1023 MB	1023 MB	//////////////////////////////////////	
	Online	Unallocated	New Simple Volume	
			New Striped Volume	
	Basic		New Mirrored Volume	
	10.00 GB Online	10.00 GB Unallocated	New RALD-5 Volume,	
			Properties	
			Help	
	Unallocate	d <b>Primary partition</b>		
	1-			



2. Create partitions by following the wizard's instructions. The **Server Manager** window appears.

📕 Server Manager					]_	⊐×
File Action View Help						
🗢 🔿 🔰 📅 🔽 🖬 🔮 🖆	7 😼					
Server Manager (C1)	Disk Manageme	nt Volume List +	Graphical View		Actions	
	Volume Layout	Type File System	Status	Capacity	Disk Management	
Diagnostics	C:) Simple	Basic NTFS	Healthy (System, Boot, Page File, Active, Crash Dump, Primary Pa Healthy (Drimary Partition)	artition) 232.89 GB	More Actions	•
Gonfiguration	N Simple	Basic NTFS	Healthy (Primary Partition)	10.00 GB		
Windows Server Backup						
🚔 Disk Management						
	4			N		
		1				
	Disk 0	(5)				
	232.89 GB	232.89 GB NTF5				
	Online	Healthy (System	, Boot, Page File, Active, Crash Dump, Primary Partition)			
	Dick 1			]		
	Basic	New Volume (	Q:)			
	Online	1021 MB NTFS Healthy (Primary	Partition)			
	Disk 2					
	Basic 10.00 GB	New Volume ( 10.00 GB NTFS	R:)			
	Online	Healthy (Primary	Partition)			
		1				
	Unallocated	Primary partit	ion			
	<u>,                                    </u>	-			,	



The same actions need to be made on the other servers as well, except that creating partitions will no longer be necessary:

1. Launch Microsoft iSCSI Initiator, and click the Discovery tab.

2. Add IP address of the StarWind server to the Target Portals.

3. Click the **Targets** tab and connect to the targets by selecting the **Add this connection to the list of Favorite Targets** checkbox.

4. Bring online the disks that appear.

5. Launch **Server Manager**, go to the **Disk Management** section, and bring online the disks that appear. The **Server Manager** window appears.

📕 Server Manager					_ <b>_</b> X
<u>File Action View Help</u>					
🗇 🔿 🞽 🖬 🔽 🖬 📓					
Server Manager (C2)	Disk Managemen	t Volume List + Graphical	View		Actions
🕀 💕 Roles	Volume	Layout Type File Syst	em Status	Capacity	Disk Management 🔺
Diagnostics	📼 (C:)	Simple Basic NTFS	Healthy (Boot, Page File, Crash Dump, Primary Partition)	232.79 GB	More Actions
🕀 🁬 Configuration	New Volume (Q:)	Simple Basic NTFS	Healthy (Primary Partition)	1021 MB	
🖃 🚟 Storage	New Volume (R:)	Simple Basic NTFS	Healthy (Primary Partition)	10.00 GB	
Windows Server Backup	System Reserved	i Simple Basic NTFS	Healthy (System, Active, Primary Partition)	TOO MB	
Disk management.					
	•			Þ	
	Basic	System Reserved	(C)		
	232.88 GB	100 MB NTFS	232.79 GB NTF5		
	Online	Healthy (System, Active,	Healthy (Boot, Page File, Crash Dump, Primary Partition)		
		1	۱ 		
	Disk 1	New Yolume (Or)			
	1023 MB	1021 MB NTFS			
	Reserved	Healthy (Primary Partition)			
	Disk 2				
	Basic	New Volume (R:)			
	Online	Healthy (Primary Partition)			
	Unallocated	Primary partition			
	1				1
J					]



#### **Create a Cluster**

To create a cluster:

#### 1. Launch Failover Cluster Manager.

2. Before creating a cluster, you will need to validate your configuration. In the **Actions** section, click **Validate a Configuration**.

👹 Failover Cluster Manager		_ 🗆 ×
<u>Eile Action View H</u> elp		
📲 Failover Cluster Manager	Failover Cluster Manager	Actions
	Create failover clusters, validate hardware for optential failover clusters, and perform configuration changes to your	Failover Cluster Manager 🔺
	failover clusters.	Validate a Configuration
		Create a Cluster
	▲ Overview	Manage a Cluster
	A failover cluster is a set of independent computers that work together to increase the availability of services and applications. The clustered servers (called nodes) are connected by physical cables and by software. If one of the	View
	nodes fails, another node begins to provide services (a process known as failover).	Properties
	Chusters	<table-cell> Help</table-cell>
	Charles	
	^ Management	
	To begin to use failover clustering, first validate your hardware configuration, then create a cluster. After these steps are complete, you can manage the cluster. Managing a cluster can include migrating services and applications to it from a cluster running Windows Server 2003, Server 2008, er Windows Server 2008 R2.	
	S Validate a Configuration I Understanding cluster validation tests	
	Create a Cluster   Creating a failover cluster or adding a cluster node	
	Manage a Cluster   Managing a failover cluster	
	Migrating services and applications from a cluster	
	* More Information	
	Failover cluster topics on the Web	
	Failover cluster communities on the Web	
	Microsoft support page on the Web	



3. In the **Validate a Configuration Wizard** that appears, familiarize yourself with the information presented on the window.

👹 Validate a Configu	uration Wizard	×
Before Y	'ou Begin	
Before You Begin Select Servers or a Cluster Testing Options Confirmation Validating Summary	This wizard runs validation tests to determine whether this configuration of servers and attached storage is set up correctly to support failover. A cluster solution is supported by Microsoft only if the complete components in the cluster solution must be "Certified for Windows Server 2008 R2". If you want to validate a set of unclustered servers, you need to know the names of the servers. Important: the storage connected to the selected servers will be unavailable during validation tests. If you want to validate an existing failover cluster, you need to know the name of the cluster or one of its nodes. You must be a local administrator on each of the servers you want to validate. To continue, click Next. More about preparing your hardware for validation More about cluster validation tests	
	<u>N</u> ext > Cancel	



5. Add the servers that need to be validated.

Validate a Configuration Wizard					
Before You Begin Select Servers or a Cluster Testing Options Confirmation Validating	To validate a set of se To test an existing clus <u>E</u> nter name: <u>S</u> elected servers:	vers, add the names of all the servers. ter, add the name of the cluster or one of it [ c1.test.com c2.test.com	s nodes.       Browse       Add       Bernove		
Junnay			Temore		
		< <u>P</u> rev	rious <u>N</u> ext > Cancel		



7. Define the set of tests you would like to conduct by clicking either **Run all tests** (recommended), or **Run only tests I select** option button.

🦉 Yalidate a Configu	uration Wizard				
Testing Options					
Before You Begin	Choose between running all tests or running selected tests.				
Select Servers or a Cluster	The tests include Inventory tasks, Network tests, Storage tests, and System Configuration tests.				
Testing Options Confirmation	Microsoft supports a cluster solution only if the complete configuration (servers, network, and storage) can pass all tests in this wizard. In addition, all hardware components in the cluster solution must be "Certified for Windows Server 2008 R2".				
Validating					
Summary					
	Run all tests (recommended)				
	O Run only tests I select				
	More about cluster validation tests				
	< <u>P</u> revious <u>N</u> ext > Cancel				



9. Make sure that all of the previously defined options are correct. Click **Previous** if something needs to be changed.

Validate a Config Confirma	uration Wizard ation		
Before You Begin Select Servers or a Cluster	You are ready to start validation. Please confirm that the following settings are correct:		
esting Options	Servers to Test		-
Confirmation	c1.test.com		
alidating	c2.test.com		
ummary			
	Tests Selected by the User	Category	
	List BIOS Information	Inventory	
	List Environment Variables	Inventory	
	List Fibre Channel Host Bus Adapters	Inventory	-
	To continue, click Next.		
	More about cluster validation tests		
		< <u>P</u> revious <u>N</u> ext >	Cancel



11. The validation process starts. The completed validation process results in a report. Carefully review the report and fix any configuration deficiencies found by the **Validate a Configuration Wizard**.



12. Click **Finish** to complete working with the wizard.



To create a cluster:

1. Click the Create a Cluster item in the Actions section.

2. In the **Create Cluster Wizard** that appears, familiarize yourself with the information given on the window.

🚏 Create Cluster Wizard 🛛 🛛 🔀					
Before Yo	ou Begin				
Before You Begin Select Servers Validation Warning Access Point for Administering the Cluster Confirmation Creating New Cluster Summary	This wizard creates a cluster, which is a set of servers that work together to increase the availability of clustered services and applications. If one of the servers fails, another server begins hosting the clustered services and applications (a process known as failover). Before you run this wizard, we strongly recommend that you run the Validate a Configuration wizard to ensure that your hardware and hardware settings are compatible with failover clustering. Microsoft supports a cluster solution only if the complete configuration (servers, network, and storage) can pass all tests in the Validate a Configuration wizard. In addition, all hardware components in the cluster solution must be "Certified for Windows Server 2008 R2". You must be a local administrator on each of the servers you want to include in the cluster. To continue, click Next.				
	More about the name and IP address information needed for a new cluster           Do not show this page again				
	Cancel				



4. Specify the servers that will be included into the cluster.

Create Cluster Wiz	zard ervers		
Before You Begin Select Servers	Add the names of all	he servers that you want to have in the clus	ter. You must add at least one server.
Administering the Cluster	Enter server name:		Browse
Confirmation Creating New Cluster Summary	Selected servers:	c1.test.com c2.test.com	<u>A</u> dd <u>R</u> emove
		< <u>P</u> re	vious <u>N</u> ext > Cancel



6. Specify the cluster name.

**Note:** If the cluster servers get IP addresses over DHCP, then the cluster will get its IP address over DHCP as well. If the IP addresses are set statically, then you will need to set an IP address for the cluster as well.

🍀 Create Cluster Wiz	zard	×
Access P	Point for Administering the Cluster	
Before You Begin	Type the name you want to use when administering the cluster.	
Select Servers	Cluster Name: Testcluster	
Access Point for Administering the Cluster	One or more DHCP IPv4 addresses were configured automatically. All networks were configured automatically.	
Confirmation		
Creating New Cluster		
Summary		
	More about the administrative Access Point for a cluster	
	< <u>Previous</u> <u>N</u> ext > Cancel	

8. Make sure that all of the previously defined options are correct. Click **Previous** if something needs to be changed.

Create Cluster Wi	zard		×
Before You Begin Select Servers Access Point for Administering the Cluster Confirmation Creating New Cluster Summary	You are ready to create a The wizard will create you Cluster: Node: Node: IP Address:	cluster. Ir cluster with the following settings: Testcluster c1.test.com c2.test.com DHCP address on 192.168.1.0/24	
	To continue, click Next.	< <u>P</u> revious <u>N</u> ext > Can	<b>v</b> icel



10. The process of creating the cluster begins. After creation of cluster is completed, a report with additional information appears. Read through this report.

🊏 Create Cluster Wiz	ard		X
Summary			
Before You Begin Select Servers	You have suc	ccessfully completed the Create Cluster Wizard.	
Access Point for Administering the Cluster		Create Cluster	
Confirmation		create cluster	
Creating New Cluster			
Summary	Cluster:	Testcluster	
	Node:	c1.test.com	
	Quorum:	Node and Disk Majority ( Cluster Disk 2 )	*
	, To view the report cre. To close this wizard, c	ated by the wizard, click View Report. lick Finish.	<u>V</u> iew Report

11. Click **Finish** to complete working with the wizard.



After these actions, the Failover Cluster Manager window appears.

👹 Failover Cluster Manager				
Eile Action View Help				
🗢 🔿 者 🖬 🛛 🖬				
Railover Cluster Manager	Storage		Recent Cluster Events: None in the last 24 hours	Actions
Falover Cluster Manager Testcluster. Itest.com Nodes c1 c2 Storage Networks Luster Events	Storage Storage Storage: 2 Total Disks - 2 online 1 Available Disks - 1 online 1 In Use Disks - 1 online Disk Disk Witness in Quorum Custer Disk 2 Volume: (Q) Available Storage Custer Disk 1 Volume: (R)	tige Total Capacity: Total 10.99 GB Free Space: 10.87 GB Percent Free: 98.9% Status	Recent Cluster Events: None in the last 24 hours         Available Capacity: Total: 10 GB Free Space: 9.92 GB Percent Free: 9.92 GB         Current Owner       0         c2.test.com       1,021 MB (95.7% free )         c1.test.com       10 GB (99.2% free )	Actions         Storage         Add a disk         View         Refresh         Help

#### **Enable Cluster Shared Volumes**

To enable **Cluster Shared Volumes (CSV)** which is necessary to work with Hyper-V virtual machines:

1. Right-click the cluster, and click **Enable Cluster Shared Volumes.** 

👹 Failover Cluster Mana	jer				
File Action View Help					
🗢 🔿 🔰 📊 🛛	1				
Failover Cluster Manager	Cluster Testcluster.	est.com			Actions
Services and at	Configure a Service or Application				Testcluster.test.com 🔺
🗆 🎬 Nodes	Validate This Cluster	luster SwScluster		4	Configure a Service or Application
c1 c2	View Validation Report	plications/services and 2 nodes			🦉 Validate This Cluster
📒 Storage	Enable Cluster Shared Volumes	Net	tworks: Cluster Network 1, Cluster Network 2		🧗 View Validation Report
Retworks     Ouster Events	Add Node	Sub	bnets: 2 IPv4 and 0 IPv6		😤 Enable Cluster Shared Volumes
	Close Connection	de and Disk Majority ( Cluster Disk	2)		P Add Node
	More Actions	one in the last 24 hours			Close Connection
	View •				More Actions +
	Refresh	a specific service or application, an	dd one or more servers (podes), or migrate services		View 🕨
i i	Properties	er running Windows Server 2003, V	Windows Server 2008, or Windows Server 2008 R2.		🖸 Refresh
	Help	Application I Servi availa	ices and applications you can configure for high ability		Properties
-	Validate This Cluster	- ? Unde	erstanding cluster validation tests		? Help
	Enable Cluster Shared	Volumes Inderstanding Cluster Shared Volumes	erstanding Cluster Shared Volumes		Name: Testcluster 🔺
	Add Node	👔 Add a	a server to your cluster		Bring this resource online
	Migrate services and	oplications Migrating a cluster from Windows Server 2003, Windows		🙀 Take this resource offline	
	Neufante la Obrana l	Serve	er 2008, or Windows Server 2008 R2		Show the critical events for this res
					Show Dependency Report
	▲ Navigate				More Actions •
	Services and applicat	ons	Nodes		Properties
	Storage		Networks		? Help
	Cluster Events	-			
				-	
This action enables the restric	ted feature Cluster Shared Volumes.				

2. A dialog appears with information about CSV and purpose to use it. Familiarize yourself with this information.

Note: Use the CSV feature for its intended purpose only.



Enable Cluster Shared Volumes	×
The Cluster Shared Volumes feature is only supported for use with Windows Server 2008 R2 Hyper-V ro Creation, reproduction and storage of files on Cluster Shared Volumes that were not created by the Hyper role, including any user or application data stored under the ClusterStorage directory of the system drive every node, are not supported and may result in unpredictable behavior, including data corruption or dat loss on these shared volumes.	ile. er-V on ta
For information regarding support services, please see <u>http://go.microsoft.com/fwlink/?LinkId=137158</u> .	
I I have read the above notice.	
OK Cancel	1

3. Click OK.

4. Cluster Shared Volumes item appears in the Actions section. Right-click this item, and click Add storage.

🗱 Failover Cluster Manager	
Elle Action View Help	
Recent Cluster Shared Volumes Recent Cluster Events: None in the last 24 hours	Actions
☐ wire lesticuster itest com	Cluster Shared Volumes
Summary of Cluster Shared Volumes	🛋 Add storage
Cluster Shared Volumes Add storage	View
I otal Lapacity:     I otal Lapacity:     I otal Dates	Q Refresh
13 Cluster Events Free Space: 0 Bytes	7 Help
Refresh Percent Free: 0%	
Help	
Disk Status Current Uwner	
There are no shared volumes in this cluster.	
This action assigns new storage resources to Cluster Shared Volumes.	



5. In the **Add Storage** dialog that appears, specify the disk to be added.

ld Storage			>
Select the disk or disks that	you want to add.		
Available disks:			
Name	Status	Capacity	
☑ □ □ □ Cluster Disk 1 Volume: (R)	⑦ Online File System: NTFS	10 GB (99.2% free )	
		<u> </u>	el

6. Click OK.



7. The Failover Cluster Manager window appears .

👹 Failover Cluster Manager			
Eile Action View Help			
🗢 🔿 🖄 📅 🚺 🖬			
Failover Cluster Manager	Cluster Shared Volumes	Recent Cluster Events: None in the last 24 hours	Actions
<ul> <li>I estcluster.test.com</li> <li>I is Services and applications</li> </ul>	Summary of Cluster Shared Vo	lumes	Cluster Shared Volumes 🔺
🗈 👰 Nodes		iulies	📫 Add storage
Cluster Shared Volumes	Character Table Care		View 🕨
🕀 🌉 Networks	1 Total Disks - 1 online Total: 10 GB	July.	Q Refresh
Cluster Events	Free Space: Percent Free	9.92 GB	👔 Help
	1 BICGIR HEE	. 0.2%	Cluster Disk 1 🔹
			Bring this resource online
	Disk Status	Current Owner	🙀 Take this resource offline
	□ 🖵 🛫 Cluster Disk 1 🛛 👔 Online C\\ClusterStorage\Volume1 — File System: N1	c1 [FS 10.GB (99.2% free.]	Move this shared volume to anothe 🕨
		,	Remove from Cluster Shared Volumes
			5 Show the critical events for this res
			More Actions
			Properties
			🛛 Help
	1		
	,		



#### **Create Virtual Machine**

To create a virtual machine:

1. Launch Hyper-V Manager.

2. Right-click the host name, and click **New -> Virtual Machine**.

3. In the **New Virtual Machine Wizard** that appears, familiarize yourself with the information on the window.

🏚 New Virtual Machine Wiza	rd	×
Before You E	Begin	
Before You Begin Specify Name and Location Assign Memory Configure Networking Connect Virtual Hard Disk Installation Options Summary	This wizard helps you create a virtual machine. You can use virtual machines in place of physical computers for a variety of uses. You can use this wizard to configure the virtual machine now, and you can change the configuration later using Hyper-V Manager.         To create a virtual machine, do one of the following:         • Click Finish to create a virtual machine that is configured with default values.         • Click Next to create a virtual machine with a custom configuration.         • Do not show this page again         More about creating virtual machines             Pervicus         • Next >       Einish	



#### 5. Specify the name and location of the virtual machine.

New Virtual Machine Wiza	ard Example and Location
Before You Begin Specify Name and Location Assign Memory Configure Networking Connect Virtual Hard Disk Installation Options Summary	Choose a name and location for this virtual machine.         The name is displayed in Hyper-V Manager. We recommend that you use a name that helps you easily identify this virtual machine, such as the name of the guest operating system or workload.         Name:       New Virtual Machine         You can create a folder or use an existing folder to store the virtual machine. If you don't select a folder, the virtual machine is stored in the default folder configured for this server.         Image:       Store the virtual machine in a different location         Location:       C:\ClusterStorage\Volume1\         Image:       Browse         Image:       Store the virtual machine of this virtual machine, select a location that has enough free space. Snapshots include virtual machine data and may require a large amount of space.
	< <u>Previous</u> <u>Finish</u> Cancel



7. Define the amount of memory to allocate to the virtual machine.

🏚 New Virtual Machine Wiza	rd 🛛 🔀
Assign Memo	ory
Before You Begin Specify Name and Location Assign Memory Configure Networking Connect Virtual Hard Disk Installation Options Summary	Specify the amount of memory to allocate to this virtual machine. You can specify an amount from 8         MB through 4094 MB. To improve performance, specify more than the minimum amount recommended for the operating system.         Memory:       Image: MB         Image: MB       Image: MB         Image:



9. Specify the necessary network connection options or leave the default parameters unchanged.

ኪ New Virtual Machine Wiza	rd 🛛 🔀
Configure Ne	etworking
Before You Begin Specify Name and Location Assign Memory Configure Networking Connect Virtual Hard Disk Installation Options Summary	Each new virtual machine includes a network adapter. You can configure the network adapter to use a virtual network, or it can remain disconnected.   Cgnnection: Not Connected   More about configuring network adapters
	< <u>P</u> revious <u>N</u> ext > <u>F</u> inish Cancel



#### 11. Specify name, size and location of the virtual disk.

捷 New Virtual Machine Wiza	ard	×
Connect Virt	tual Hard Disk	
Before You Begin Specify Name and Location Assign Memory	A virtual machine requires storage so that you can install an operating system. You can specify the storage now or configure it later by modifying the virtual machine's properties.	
Configure Networking	Name: New Virtual Machine.vhd	
Connect Virtual Hard Disk	Location: C:\ClusterStorage\Volume1\New Virtual Machine\ Browse	
Summary	Size: GB (Maximum: 2040 GB)	
	Use an existing virtual hard disk	
	<u>Browsenn</u>	
	< <u>P</u> revious <u>N</u> ext > <u>F</u> inish Cancel	



13. Specify the installation options of operating system or leave the default parameters unchanged.

ኪ New Virtual Machine Wiza	ard 🛛 🔀
installation	Options
Before You Begin Specify Name and Location Assign Memory Configure Networking Connect Virtual Hard Disk Installation Options Summary	You can install an operating system now if you have access to the setup media, or you can install it later.  Install an operating system later  Install an operating system from a boot CD/DVD-ROM  Media  Physical CD/DVD drive: D: C Income Sin ( iso):
	Image rile (.iso):     Browse,      Install an operating system from a boot flgppy disk      Media      Wirtual floppy disk (.vfd):     Browse,      Install an operating system from a ngtwork-based installation server
	Your network adapter is disconnected. To perform a network-based installation, return to the Configure Networking page and connect the network adapter.         < Previous       Next >         Einish       Cancel



15. Make sure that all of the parameters are correct. Click Previous should any changes be required.

🏚 New Virtual Machine Wiza	ard 🗙
Completing	the New Virtual Machine Wizard
Before You Begin Specify Name and Location Assign Memory	You have successfully completed the New Virtual Machine Wizard. You are about to create the following virtual machine. Description:
Configure Networking Connect Virtual Hard Disk Installation Options Summary	Name:       New Virtual Machine         Memory:       512 MB         Network:       Not Connected         Hard Disk:       C:\ClusterStorage\Volume1\New Virtual Machine\New Virtual Mac         Operating System:       Will be installed at a later time         Image: To create the virtual machine and close the wizard, click Finish.
	< <u>P</u> revious <u>M</u> ext > <u>Finish</u> Cancel

#### 16. Click Finish.



To make your virtual machine highly available:

1. Launch Failover Cluster Manager, go to the Services and Application section, and click the Configure a Service or Application link.

2. In the **High Availability Wizard** that appears, review the information presented on the window.





4. In the list of services that can be configured for high availability, click Virtual Machine.

🦣 High Availability V	Vizard	×
to Select Se	ervice or Application	
Before You Begin Select Service or Application Confirmation Configure High Availability Summary	Select the service or application that you want to configure for high availability:         Image: Service Service Service (SNS) Server Message Queuing Other Server Service Service Service Service Server Service Server Service Server Service Service Server Server Service Server Service Server Service Server Service Server Service Server Service Server Server Service Server Service Server Ser	



6. In the list of virtual machines, place a checkmark by the one you created before.

🧱 High Availability Y	Yizard			×
튫 Select Vi	rtual Machine			
Before You Begin	Select the virtual machine(s) that	you want to configu	ire for high availability.	
Select Service or Application	Name	Status	Host Server	
Select Virtual Machine	🗹 🔋 New Virtual Machine	Off	c1.test.com	
Confirmation				
Configure High Availability				
Summary				
				<u>Refresh</u>
			< <u>P</u> revious <u>N</u> ext >	Cancel

8. Make sure that the previously selected options are correct. Click **Previous** button if something needs to be changed.

igh Availability W	izard ion		×
Before You Begin Select Service or Application	You are ready to configure I	high availability for a Virtual Machine.	
Select Virtual Machine	Virtual Machine:	New Virtual Machine	*
Confirmation Configure High Availability			
Summary			
			~
	To continue, click Next.		
		< Previous Nevt >	Cancel



10. The process of configuring high availability for the virtual machine begins. When it is complete, a report with additional information is issued. Read it carefully.



11. Click Finish to complete working with the wizard.



12. The Failover Cluster Manager window appears.

13. Right-click the added virtual machine, and click **Start virtual machines**.

Eailover Cluster Manager							
File Action View Help							
💎 🖤   📶   🖬   🚺   🖬							
Pallover Cluster Manager     By Testcluster.test.com	Services	and applications		Recent Cluster Even	nts: None in the last 24 hours	AC	tions
Services and applications	Name	Status	Туре	Current Owner	Auto start	Se	rvices and applications
New Virtual Machine	🗓 Nem	Connect to virtual machin	Net of March 1	c1	Yes	180	Configure a Service or Applicati
Cluster Shared Volumes		Start virtual machines	105			L	Virtual Machines
C Storage	[	Turn off virtual machines	i				More Actions •
Networks     Cluster Events		Shut down virtual machin	les				View 🕨
	-	bave virgarmachines		-		Q	Refresh
		Cancel in-progress live m	ine to another hode igration			?	Help
		Quick migrate virtual mac	hine(s) to another node				
		Manage virtual machine				Ne	w virtual Machine 🛛 🔺
	1 Service	Move virtual machine(s)	to another node	•			Connect to virtual machines
		Show the critical events f	for this application			0	Start virtual machines
		Add storage		-			Turn off virtual machines
		Add a resource					Shut down virtual machines
		Disable auto start		-		0	Save virtual machines
		Show Dependency Repor	rt	-			Live migrate virtual machine to
				Preferred Owners: <none></none>	ed Owners:		Cancel in-progress live migration
		Delete					Quick migrate virtual machine(s)
		Properties		Current	t Owner:		Manage virtual machine
	Client Act	Help	Lapaoter		Concursoos:		Move virtual machine(s) to anot
	Litent Access Name: Lapacity: <none> Total: 0 Bytes Free Space: 0 Bytes IP Addresses: Percent Free: 0%</none>			2	icsources.		Show the critical events for this
							Add starses
	<none></none>						Aud storage
							Add a resource
						0	Disable auto start
nis action starts all virtual machines. Note	e that it may t	ake time for all of the virtua	al machines to finish startin	g			



14. You may also launch Hyper-V Manager and confirm that the virtual machine is running and operating successfully.

∐ ∦Hyper-¥ Manager		
Eile Action View Window	<u>i</u> elp	<u>_8×</u>
🗢 🔿 🖄 📅 🔢 🗊		
Hyper-V Manager		Actions
2 c1	Virtual Machines	C1 🔺 🔺
	New Virtual Machine Running 0 % 512 MB 00:07:05	New
		🕞 Import Virtual Machine
		🖹 Hyper-V Settings
		Virtual Network Manager
		💋 Edit Disk
		Inspect Disk
		Stop Service
	Engehate A	X Remove Server
		🔉 Refresh
	The selected virtual machine has no snapshots.	View 🕨
		New Window from Here
		👔 Help
		New Virtual Machine 🔺
		onnect
		🛐 Settings
		Turn Off
	New Virtual Machine	o Shut Down
		🙆 Save
	Created: 1/25/2011 2:40:54 PM Heartbeat: No Contact	Pause
	Notes: None Memory Usage: 512 MB	Reset
		🍺 Snapshot
		Rename



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