

# StarWind Virtual SAN<sup>®</sup> Providing HA storage repositories for XenServer 6.5

2024

**TECHNICAL PAPERS** 





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#### **About StarWind**

StarWind is a pioneer in virtualization and a company that participated in the development of this technology from its earliest days. Now the company is among the leading vendors of software and hardware hyper-converged solutions. The company's core product is the years-proven StarWind Virtual SAN, which allows SMB and ROBO to benefit from cost-efficient hyperconverged IT infrastructure. Having earned a reputation of reliability, StarWind created a hardware product line and is actively tapping into hyperconverged and storage appliances market. In 2016, Gartner named StarWind "Cool Vendor for Compute Platforms" following the success and popularity of StarWind HyperConverged Appliance. StarWind partners with world-known companies: Microsoft, VMware, Veeam, Intel, Dell, Mellanox, Citrix, Western Digital, etc.

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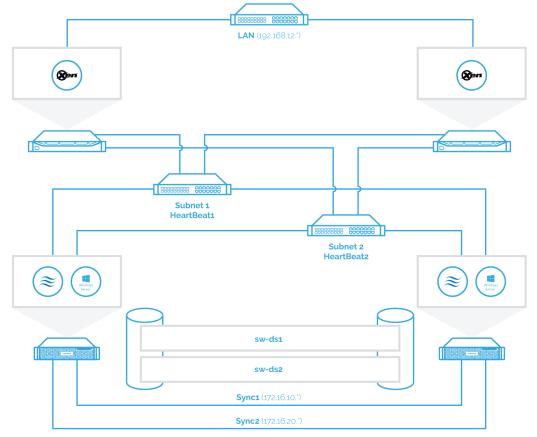


# Introduction

Traditionally XenServer Pool requires shared storage to guarantee data safety, allow virtual machines migration, enable continuous application availability and eliminate any single point of failure within an IT environment.

NOTE: Hyperconverged scenario is not officially supported with Citrix XenServer.

The network diagram below illustrates the system configuration.



# **Starwind Vsan System Requirements**

Prior to installing StarWind Virtual SAN, please make sure that the system meets the requirements, which are available via the following link: https://www.starwindsoftware.com/system-requirements

Recommended RAID settings for HDD and SSD disks: https://knowledgebase.starwindsoftware.com/guidance/recommended-raid-settings-for-h dd-and-ssd-disks/

Please read StarWind Virtual SAN Best Practices document for additional information:



https://www.starwindsoftware.com/resource-library/starwind-virtual-san-best-practices

# **Installing Starwind Vsan For Hyper-V**

1. Download the StarWind setup executable file from the StarWind website: https://www.starwind.com/registration-starwind-virtual-san

2. Launch the downloaded setup file on the server to install StarWind Virtual SAN or one of its components. The Setup wizard will appear. Read and accept the License Agreement.

Setup - StarWind Virtual SAN —		×
License Agreement Please read the following important information before continuing.	) Ø	
Please read the following License Agreement. You must accept the terms of this agreement before continuing with the installation.		
STARWIND® LICENSE AGREEMENT	^	
This StarWind License Agreement (the "Agreement") is a legal agreem between the entity indicated on the signature page as 'Licensee' or licensee entity on whose behalf this Agreement is electronically execu- by the authorized user (the "Licensee") and StarWind Software, Inc. State of Delaware, USA corporation ("StarWind," and collectively w Licensee, the "Parties" and each, (a "Party")), that is entered into as the date of acceptance hereof by both Parties hereto (the "Effect	the ted , a vith s of	
● I accept the agreement: ○ I do not accept the agreement		
<u>N</u> ext >	Cano	el

3. Carefully read the information about the new features and improvements. Red text indicates warnings for users that are updating the existing software installations.

4. Select Browse to modify the installation path if necessary. Click on Next to continue.



Setup - StarWind Virtual SAN	_		×
Select Destination Location Where should StarWind Virtual SAN be installed?		Q	
Setup will install StarWind Virtual SAN into the following fol	der.		
To continue, click Next. If you would like to select a different folder	, click Br	owse.	
C: \Program Files \StarWind Software \StarWind	В	rowse	
At least 2.4 MB of free disk space is required.			
< <u>B</u> ack <u>N</u> ex	(t >	Can	icel

5. Select the following components for the minimum setup:

- StarWind Virtual SAN Service. The StarWind Virtual SAN service is the "core" of the software. It can create iSCSI targets as well as share virtual and physical devices. The service can be managed from StarWind Management Console on any Windows computer that is on the same network. Alternatively, the service can be managed from StarWind Web Console deployed separately.
- StarWind Management Console. Management Console is the Graphic User Interface (GUI) part of the software that controls and monitors all storage-related operations (e.g., allows users to create targets and devices on StarWind Virtual SAN servers connected to the network).

NOTE: To manage StarWind Virtual SAN installed on a Windows Server Core edition with no GUI, StarWind Management Console should be installed on a different computer running the GUI-enabled Windows edition.



Setup - StarWind Virtual SAN -	_	×
Colort Components		
Select Components Which components should be installed?		גו
which components should be installed?		
Select the components you want to install; clear the components you do	not want to	
install. Click Next when you are ready to continue.		
StarWind Virtual SAN Server	~	
Service	170,8 MB 🔨	
Loopback Accelerator Driver	150.0 MD	
Cloud Replicator for VTL	158,8 MB	
SPTD Driver (Alternative driver for exporting physical devices)  StarWind Management Console	20.4 MR	
	29,4 MB	
☐ Configure user account for Web-access to Management Console ✓ Integration Component Library	0,1 MB	
PowerShell Management Library	7,8 MB	
	2,6 MB 51,5 MB ¥	
I I SMITS Adent	51,5 MD	
Current selection requires at least 207,3 MB of disk space.		
< Back Next >	Cancel	
6. Specify Start Menu Folder.		
Setup - StarWind Virtual SAN -		×
Select Start Menu Folder		
Where should Setup place the program's shortcuts?		
Setup will create the program's shortcuts in the following Start	Menu folder	
Setup will create the program's shortcuts in the following start	menu toluer.	
To continue, click Next. If you would like to select a different folder, clic	K Browse.	
StarWind Software/StarWind	Preven	

StarWind Software\StarWind Browse...

7. Enable the checkbox if a desktop icon needs to be created. Click on Next to continue.

< <u>B</u>ack

<u>N</u>ext >

Cancel

8. When the license key prompt appears, choose the appropriate option:



- request time-limited fully functional evaluation key.
- request FREE version key.
- relect the previously purchased commercial license key.
- 9. Click on the Browse button to locate the license file.
- 10. Review the licensing information.

11. Verify the installation settings. Click on Back to make any changes or Install to proceed with installation.

12. Enable the appropriate checkbox to launch StarWind Management Console right after the setup wizard is closed and click on Finish.

13. Repeat the installation steps on the partner node.

# **Creating Starwind Devices**

1. In the StarWind Management Console click to Add Device (advanced) button and open Add Device (advanced) Wizard.

2. Select Hard Disk Device as the type of device to be created.



			?	×
$\leftarrow$	Add D	evice Wizard		
	Select [	Device Type you want to create or export as iSCSI Target		
		Hard Disk Device		
	۲	Hard Disk Device		
	0	Tape Device		
	0	Optical Disc Drive		
		<u>N</u> ext	Car	ncel

#### 3. Select Virtual Disk.



			?	×
←	Add [	evice Wizard		
	Select I	Disk Device Type		
	۲	Virtual Disk		
		Virtual Disk stores User Data in File		
	0	Physical Disk		
		Export existing physical Disk as iSCSI Target		
	0	RAM Disk		
		Virtual Disk with Memory Storage		
		Next	Can	cel

4. Specify a virtual disk Name, Location, and Size.



			?	×
←	Add Device Wiza	rd		
	Marcal Distance			
	Virtual Disk Loc	ation		
	Create a New	/irtual Disk		
	Name:	<pre><device name=""></device></pre>	]	
	Location:	My Computer\D\		
	Size:	<size> GB ~</size>		
	OUse an Existing	Virtual Disk		
	Location:	~		
	Read-On	ly Mode		
		Next	Cano	:el

5. Select the Thick provisioned disk type and block size.

NOTE: Use 4096 sector size for targets, connected on Windows-based systems and 512 bytes sector size for targets, connected on Linux-based systems (ESXi/Xen/KVM).

6. Define a caching policy and specify a cache size (in MB). Also, the maximum available cache size can be specified by selecting the appropriate checkbox. Optionally, define the L2 caching policy and cache size.



			?	×
~	Add Dev	vice Wizard		
Sp	ecify [	Device RAM Cache Parameters		
	Mode			
	0	Write-Back Writes are performed asynchronously, actual Writes to Disk are delayed, Read are cached	s	
	0	Write-Through Writes are performed synchronously, Reads are cached		
	۲	N/A Reads and Writes are not cached		
	Set M	1aximum available Size		
	Size:	128 MB ~		
		Next	Cano	cel

7. Specify Target Parameters. Select the Target Name checkbox to enter a custom target name. Otherwise, the name is generated automatically in accordance with the specified target alias.



		?	×
←	Add Device Wizard		
	Target Parameters		
	Choose a Target Attachment Method		
	Create new Target	~	
	Target Alias		_
	<target alias="" name=""></target>		
	Target Name		
	iqn.2008-08.com.starwindsoftware:sw1- <target alias="" name=""></target>		
	Allow multiple concurrent iSCSI Connections		
	<u>N</u> ext	Can	icel

8. Click Create to add a new device and attach it to the target.



		?	×
←	Add Device Wizard		
	Creation Page		
	Press "Create" to add new Device and attach it to new Target		
	Progress		
	Creating Device Folder		
	Creating Image File		
	Creating Header		
	Creating Device		
	Creating Target and attaching Device		
	Create	Can	cel

9. Click Close to finish the device creation.

10. The successfully added devices appear in the StarWind Management Console.

### **Select The Required Replication Mode**

The replication can be configured using Synchronous "Two-Way" Replication mode: Synchronous or active-active replication ensures real-time synchronization and load balancing of data between two or three cluster nodes. Such a configuration tolerates the failure of two out of three storage nodes and enables the creation of an effective business continuity plan. With synchronous mirroring, each write operation requires control confirmation from both storage nodes. It guarantees the reliability of data transfers but is demanding in bandwidth since mirroring will not work on high-latency networks.



# Synchronous "Two-Way" Replication

1. Right-click the recently created device and select Replication Manager from the shortcut menu.

2. Select the Add Replica button in the top menu.

😴 Replication Manager for imagefile1	?	×
Refresh Add Replica Remove Replica		
Replication Partner		
Click to add replication partner		
PROPERTIES		
Host Name		
Target Name		
Mode		
Priority		
Synchronization Status		
Synchronization Channel		
	Clos	e

3. Select Synchronous "Two-Way" replication as a replication mode.



		?	×
~	Replication Wizard		
	Replication Mode		
	Synchronous "Two-Way" Replication Replication Partner must be connected to Client as Source Device as well, MPIO must be enabled, needs dedicated high Performance Network Connection for Synchronization.	on Client	
	Witness Node Witness node doesn't contain user data. In case when Node Majority policy is se Synchronous replication device and there are two storage nodes, Witness Node added to cluster to make number of nodes odd number and enable proper functi Node Majority policy.	must be	
	<u>N</u> ext	Can	cel

4. Specify a partner Host name or IP address and Port Number.

### **Selecting The Failover Strategy**

StarWind provides 2 options for configuring a failover strategy:

### Heartbeat

The Heartbeat failover strategy allows avoiding the "split-brain" scenario when the HA cluster nodes are unable to synchronize but continue to accept write commands from the initiators independently. It can occur when all synchronization and heartbeat channels disconnect simultaneously, and the partner nodes do not respond to the node's requests. As a result, StarWind service assumes the partner nodes to be offline and continues operations on a single-node mode using data written to it.

If at least one heartbeat link is online, StarWind services can communicate with each other via this link. The device with the lowest priority will be marked as not synchronized and get subsequently blocked for the further read and write operations until the synchronization channel resumption. At the same time, the partner device on the



synchronized node flushes data from the cache to the disk to preserve data integrity in case the node goes down unexpectedly. It is recommended to assign more independent heartbeat channels during the replica creation to improve system stability and avoid the "split-brain" issue.

With the heartbeat failover strategy, the storage cluster will continue working with only one StarWind node available.

Node Majority

The Node Majority failover strategy ensures the synchronization connection without any additional heartbeat links. The failure-handling process occurs when the node has detected the absence of the connection with the partner.

The main requirement for keeping the node operational is an active connection with more than half of the HA device's nodes. Calculation of the available partners is based on their "votes".

In case of a two-node HA storage, all nodes will be disconnected if there is a problem on the node itself, or in communication between them. Therefore, the Node Majority failover strategy requires the addition of the third Witness node or file share (SMB) which participates in the nodes count for the majority, but neither contains data on it nor is involved in processing clients' requests. In case an HA device is replicated between 3 nodes, no Witness node is required.

With Node Majority failover strategy, failure of only one node can be tolerated. If two nodes fail, the third node will also become unavailable to clients' requests. Please select the required option:

### Heartbeat

1. Select Failover Strategy.



		?	×
←	Replication Wizard		
	Failover Strategy		
	<ul> <li>Heartbeat         Process node and communication failures using additional communication channel (heartbeat). At least one synchronization or heartbeat channel must be function proper failover processing. Loss of all communication channels may lead to split issue, so it's recommended to use client iSCSI connection interfaces as heartbee channel.     </li> <li>Node Majority         Process node and communication failures using majority policy: node stays acti sees more than half of nodes including itself. In case of 2 storage nodes, require configuring additional witness node. Does not require additional heartbeat channel     </li> </ul>	vnal for brain at ve while res	it
	Next	Car	ncel

2. Select Create new Partner Device and click Next.

3. Select a partner device Location.

4. Select Synchronization Journal Strategy and click Next.

NOTE: There are several options – RAM-based journal (default) and Disk-based journal with failure and continuous strategy, that allow to avoid full synchronization cases.

RAM-based (default) synchronization journal is placed in RAM. Synchronization with RAM journal provides good I/O performance in any scenario. Full synchronization could occur in the cases described in this KB:

https://knowledgebase.starwindsoftware.com/explanation/reasons-why-full-synchronizati on-may-start/

Disk-based journal placed on a separate disk from StarWind devices. It allows to avoid full synchronization for the devices where it's configured even when StarWind service is being stopped on all nodes. Disk-based synchronization journal should be placed on a separate, preferably faster disk from StarWind devices. SSDs and NVMe disks are recommended as the device performance is defined by the disk speed, where the journal



is located. For example, it can be placed on the OS boot volume.

It is required to allocate 2 MB of disk space for the synchronization journal per 1 TB of HA device size with a disk-based journal configured with 2-way replication and 4MB per 1 TB of HA device size for 3-way replication.

#### Failure journal

The strategy provides good I/O performance, as a RAM-based journal, while all device nodes are in a healthy synchronized state. If a device on one node went into a not synchronized state, the disk-based journal activates and a performance drop could occur as the device performance is defined by the disk speed, where the journal is located. Fast synchronization is not guaranteed in all cases. For example, if a simultaneous hard reset of all nodes occurs, full synchronization will occur.

Continuous journal

The strategy guarantees fast synchronization and data consistency in all cases. Although, this strategy has the worst I/O performance, because of frequent write operations to the journal, located on the disk, where the journal is located.

		?	$\times$
←	Replication Wizard		
	Synchronization Journal Setup		
	RAM-based journal Synchronization journal placed in RAM. Synchronization with RAM journal provid IO performance in any scenario.	es good	
	O Disk-based journal Synchronization journal placed on disk.		
	Failure journal The strategy provides good IO performance while all device nodes are in state.	a healthy	
	<ul> <li>Continuous journal</li> <li>The strategy guarantees fast synchronization and data consistency in all</li> </ul>	cases.	
	Current Node My Computer\C\		
	Partner Node My Computer\C\		
	Next	Cano	:el

5. Click Change Network Settings.



		?	×
←	Replication Wizard		
	Network Options for Replication		
	Networks for Synchronization and Heartbeat		
	Press "Change Network Settings" to configure Interfaces		
	Networks for Heartbeat		
	Press "Change Network Settings" to configure Interfaces		
	Change Network Settings		
	ALUA preferred		
	Change ALUA Settings		
	Next	Can	cel

6. Specify the interfaces for Synchronization and Heartbeat Channels. Click OK and then click Next.

Interfaces	Networks	Synchronization and H	Heartbeat	
Host Name: 12	7.0.0.1			
172.16.10.10	172.16.10.0	<b>v</b>	Γ	
172.16.20.10	172.16.20.0			
172.16.30.10	172.16.30.0		~	
172.16.40.10	172.16.40.0		<b>~</b>	
192.168.12.10	192.168.12.0		<b>v</b>	
Host Name: SW				
172.16.10.20	172.16.10.0			
172.16.20.20	172.16.20.0			
172.16.30.20	172.16.30.0			
172.16.40.20	172.16.40.0			
192.168.12.20	192.168.12.0			

7. In Select Partner Device Initialization Mode, select Synchronize from existing Device and click Next.

8. Click Create Replica. Click Finish to close the wizard. The successfully added device appears in StarWind Management Console.

9. Follow the similar procedure for the creation of other virtual disks that will be used as storage repositories.

# **Node Majority**

There are two ways to configure Witness for 2-nodes StarWind HA device, created with Node Majority Failover Strategy: File Share (SMB) as Witness and additional server as Witness Node.

- Creating HA device with File SHare(SMB) as Witness:



SMB Witness is a file, located on SMB share, which can be accessed by both nodes and help them to eliminate the split-brain issue in case of synchronization connection interruption between the nodes. To set up the SMB file share as a Witness for 2-nodes HA device with Node Majority Failover Strategy, perform the actions, described on this page:

https://www.starwindsoftware.com/help/ConfiguringFileShareSMBasWitness.html

- Creating HA device with Witness Node:
- 1. Select the Node Majority failover strategy and click Next.

			?	×
←	Replie	cation Wizard		
	Failove	r Strategy		
	0	Heartbeat Process node and communication failures using additional communication channel (heartbeat). At least one synchronization or heartbeat channel must be functiona proper failover processing. Loss of all communication channels may lead to split br issue, so it's recommended to use client iSCSI connection interfaces as heartbeat channel.		
	۲	<b>Node Majority</b> Process node and communication failures using majority policy: node stays active sees more than half of nodes including itself. In case of 2 storage nodes, requires configuring additional witness node. Does not require additional heartbeat channe	;	
		Next	Canc	el

2. Choose Create new Partner Device and click Next.

3. Specify the partner device Location and modify the target name if necessary. Click Next. Select Synchronization Journal strategy and location and click Next.

4. In Network Options for Replication, press the Change network settings button and select the synchronization channel for the HA device.

5. In Specify Interfaces for Synchronization Channels, select the checkboxes with the appropriate networks and click OK. Then click Next.



6. Select Synchronize from existing Device as the partner device initialization mode.

7. Press the Create Replica button and close the wizard.

8. The added devices will appear in StarWind Management Console. Repeat the steps above to create other virtual disks if necessary.

### Adding Witness Node

Witness node can be configured on a separate host or as a virtual machine in a cloud. It requires StarWind Virtual SAN service installed on it.

NOTE: Since the device created in this guide is replicated between 2 active nodes with the Node Majority failover strategy, a Witness node must be added to it.

1. Open StarWind Management Console, right-click on the Servers field and press the Add Server button. Add a new StarWind Server which will be used as the Witness node and click OK.

📑 Add new StarWind Server		?	×
Host: witness-sw		: 3261	
Advanced >>	ОК	Cano	el

2. Right-click on the HA device with the configured Node Majority failover policy and select Replication Manager and press the Add Replica button.

3. Select Witness Node.



		?	×
÷	Replie	cation Wizard	
	Replica	ation Mode	
	0	<b>Synchronous "Two-Way" Replication</b> Replication Partner must be connected to Client as Source Device as well, MPIO on Client must be enabled, needs dedicated high Performance Network Connection for Synchronization	
	0	Asynchronous "One-Way" Replication Replica is used to store replicated Data, Data is stored as Snapshots, Client cannot connect to Replication Partner, mount Snapshot from Replica to get Access to replicated Data	
	۲	Witness Node Witness node doesn't contain user data. In case when Node Majority policy is set for Synchronous replication device and there are two storage nodes, Witness Node must be added to cluster to make number of nodes odd number and enable proper functioning of Node Majority policy.	
		Next Cance	1

4. Specify the Witness node Host Name or IP address. The default Port Number is 3261.



			?	×
÷	Replication Wizard			
	Add Partner Node			
	Specify Partner Host Name	e or IP Address where Replication Node would be created		
	Host Name or IP Address	witness-sw ~		
	Port Number	3261		
		Next	Car	ncel

5. In Partner Device Setup, specify the Witness device Location. Optionally, modify the target name by clicking the appropriate button.

6. In Network Options for Replication, select the synchronization channel with the Witness node by clicking the Change Network Settings button.

7. Specify the interface for Synchronization and Heartbeat and click OK.

8. Click Create Replica and then close the wizard.

9. Repeat the steps above to create other virtual disks if necessary. NOTE: To extend an Image File or a StarWind HA device to the required size, please check the article below:

https://knowledgebase.starwindsoftware.com/maintenance/how-to-extend-image-file-orhigh-availability-device/



### **Configuring Hosts With Xenserver 6.5**

- 1. Launch XenCenter.
- 2. Click New Pool.
- 3. Specify the name and description of the pool and click Add New Server.

4. In the Add New Server window, specify the first XenServer host to be added to the pool as well as User name and Password.

🔕 Add New Se	erver	?	×		
Enter the hos and your use					
<u>S</u> erver:	192.168.12.11			~	
User login cr	redentials				
<u>U</u> ser name:	root				
<u>P</u> assword:	•••••				
		<u>A</u> dd	Canc		
5. To add the	e second XenServer	host to the pool	, repea	t the pr	evious steps.
😣 Create Nev	w Pool		?	×	
	ir pool provide a name an led to the pool.	d select which serve	rs you wo	ould	
<u>N</u> ame:	SWXCenter				
<u>D</u> escription:			(op	otional)	
Servers					
<u>M</u> aster: sv	v-sup-xen1			~	
Additional	members:				
✓ sw-sup ▼ sw-sup	-xen1 Master -xen2				
📑 Add Ne	ew <u>S</u> erver				
		<u>C</u> reate Pool	Can	cel	



- 6. Specify the Master host.
- 7. Click Create Pool.

8. After creating the pool, the XenCenter window should look as shown in the screenshot below.

<u>File View P</u> ool <u>Server VM</u> Sto	rage Templates Tools I	Help		
🔁 Back 👻 💮 Forward 👻   📑 Add N	lew Server   🚏 New Pool 🕈	🛅 New Storage 🛅 New VM   🎯 Shut Down 🤀 Reboot 🕕 Sus	pend	
earch Q		Cen (Licensed with XenServer Enterprise Per-Socket)	Logged in as: Loc	al root accoun
<ul> <li>→ XenCenter</li> <li>→ SWXCenter.starwind.local</li> <li>→ Sw-sup-xen1</li> <li>→ Sw-sup-xen2</li> </ul>	General Memory Storage Server General Proper	Networking NICs GPU Console Performance Users Search rties	Expand all	Collapse all
	General Name:	sw-sup-xen1	<u>expano an</u>	
	Description: Tags:	192.168.12.11 <none></none>		
	Folder: Pool master: Enabled:	<none> Yes Yes</none>		
	iSCSI IQN: Log destination:	iqn.2019-03.com.starwind.sw-sup-xen1 Local		
	Server uptime: Toolstack uptime:	38 days 23 hours 13 minutes 49 minutes		
Infrastructure Objects	UUID:	c93f12f2-b3b9-4dda-b444-4590672e1edf		
Organization Views 🗸	Management Interfa	ices		
Saved Searches • Notifications 2	Memory			
-	Version Details			×

### Configuring Network Settings

NOTE: To switch the XenServer host to Maintenance Mode for network

configuration, right-click the XenServer and select Enter Maintenance Mode... from the shortcut menu.



Non Control															
XenCenter				-											
<u>File View P</u> ool	-		rage			Too <u>l</u> s	_	•						0	
Gack - G Forv	vard	•										Shut Down 🧕	-	t 🕕 Su	spend
Search		Q		sw-sup	o-xen	1 in 'S\	WXCe	en (Li	censed	with Xe	nServer E	nterprise Per-	Socket)		Log
XenCenter	tarwii	nd.local	Ger	neral M	emory	Stora	ge N	letworking	) NICs	GPU	Console	Performance	Users	Search	
🕀 🔂 sw-sup-x	([1		c.			al Pro	perti	es							
🕀 🔂 sw-sup-x		New V <u>M</u> New SR													
		Import													
		Enter Mainten	ance l	Mode											
		Reboot						w-sup-xe	n1						
	Shut Down							192.168.12							
		Restart Toolsta	ic <u>k</u>					<none></none>							
		Expand All						(None>							
	-2	P <u>r</u> operties						/es							
	_				cen-										
				nabled:				/es	_						
				SCSI IQN					3.com.st	arwind.sv	w-sup-xen1				
				.og desti		c.		.ocal							
			S	Server up	time:		3	38 days 23	hours 15	minutes					
			1	Foolstack	uptin	ne:	3	38 days 23	hours 12	2 minutes					
Objects	_		l	JUID:			0	d7a3f2fd-f	654-46e0	)-8df5-da	787d43c427	,			
Organization Views      Saved Searches				Manag	eme	nt Inte	rface	es							
				Memoi	y										
A Notifications				Versior	n Det	ails									

1. Select the first XenServer host, switch to the Networking tab, and click Configure.

2. In the appeared window, click Add IP address to add networks.

3. Configure the required IP address and click OK.



S Configure IP Addresses - sw-sup-xen1 ? X							
	nanagement traffic (the management interface) on 'sw-sup-xen1' here. ated storage or other types of network traffic (secondary interfaces).						
Management Management; Static	⊥ ISCSI2						
Network 1; Static	Na <u>m</u> e: ISCSI2 Network: Network 1						
- 🖕 A <u>d</u> d IP address	IP address settings: C Automatically obtain settings using DHCP ( Use these settings: IP address: 172.16.30.11 Subnet mask: 255.255.255.0 Gateway:	IP Addres	s				
Tell me more about configuring IP-based		Cance	-				

4. The window should look as shown below.



😣 XenCenter	- 0	×							
<u>F</u> ile <u>V</u> iew <u>P</u> ool <u>S</u> erver V <u>M</u> St <u>o</u>	prage <u>T</u> emplates Too <u>l</u> s <u>H</u> elp								
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5. Exit the Maintenance mode.

6. Repeat the same steps on all XenServer hosts.

Configuring iSCSI Initiator

NOTE: The following actions should be performed on each XenServer host in the pool.

1. Switch XenServer host to the Maintenance mode for iSCSI configuration.

2. Edit /etc/iscsi/initiatorname.iscsi and set the appropriate iqn for XenServer iSCSI initiator.

3. Edit the /etc/iscsi/iscsid.conf file.

Set the following values:

node.startup = automatic node.session.iscsi.FirstBurstLength = 262144 node.session.iscsi.MaxBurstLength = 262144

4. Restart the software iSCSI service:

service iscsi restart
service iscsid restart

5. Set the iSCSI services to start automatically when launching XenServer:



chkconfig iscsi on chkconfig iscsid on

Applying Multipathing

NOTE: The following actions should be performed on each XenServer host in the pool.

1. Switch XenServer host to maintenance mode for multipath configuration

2. Switch to console tab, edit the multipath configuration file by running "vi /etc/multipath.conf" command.

3. Insert the following block into the "devices" section:

```
device
{
  vendor "STARWIND"
  product "STARWIND*"
  path_checker "tur"
  failback 30
  path_grouping_policy group_by_prio
  path_selector "round-robin 0"
  rr_min_io 3
  prio alua
}
```

4. Restart the multipath service:

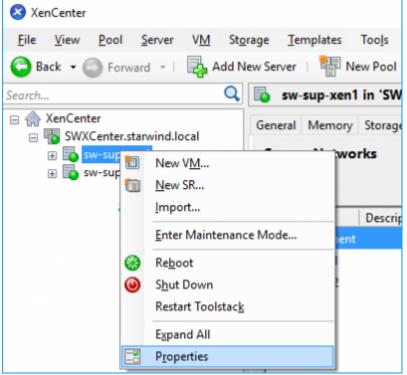
service multipathd restart service multipathd reload

5. Set the multipath service to start automatically when launching XenServer:

chkconfig multipathd on



6. Right-click the XenServer and select Properties from the shortcut menu.



7. Click Multipathing Active in the left pane. Select the Enable multipathing on this server checkbox and click OK.

S 'sw-sup-xen1' Properties ? X					
<ul> <li>'sv</li> <li>'sv</li></ul>	v-sup-xen1' Properties General sw-sup-xen1 Custom Fields <none> Alerts When control domain me Multipathing Active Power On Disabled Log Destination Local GPU Using the integrated GPU</none>	<ul> <li>?</li> <li>✓ Multipathing</li> <li>Dynamic multipathing support is available for some types of storage repository.</li> <li>The server must be in Maintenance Mode before you can change its multipathing setting. This ensures that any running virtual machines with virtual disks in the affected storage repository are migrated before the changes are made.</li> <li>✓ Enable multipathing on this server</li> </ul>			
		ОК	ancel		



8. Turn off the Maintenance mode: right-click the XenServer and select Exit Maintenance Mode from the shortcut menu.

9. Reboot the XenServer host.

Adding Shared Storage manually

- 1. Select the XenServer host. Switch to the Console tab in XenCenter.
- 2. Run discovery:

iscsiadm -m discovery -t st -p 172.16.30.10 iscsiadm -m discovery -t st -p 172.16.40.10 iscsiadm -m discovery -t st -p 172.16.30.20 iscsiadm -m discovery -t st -p 172.16.40.20

3. Connect the targets using their IQNs found by discovery:

```
iscsiadm -m node -T iqn.2008-08.com.starwindsoftware:swl-dsl -p
172.16.30.10 -l
iscsiadm -m node -T iqn.2008-08.com.starwindsoftware:swl-dsl -p
172.16.40.10 -l
iscsiadm -m node -T iqn.2008-08.com.starwindsoftware:sw2-dsl -p
172.16.30.20 -l
iscsiadm -m node -T iqn.2008-08.com.starwindsoftware:sw2-dsl -p
172.16.40.20 -l
```

- 4. Perform the steps 1-3 for all XenServer hosts in the Pool.
- 5. On Pool Master, run the following commands to add SR:

```
xe sr-probe type=lvmoiscsi device-
config:target=172.16.30.10,172.16.40.10,172.16.30.20,172.16.40.
20 device-config:targetIQN=*
```

```
xe sr-create type=lvmoiscsi \
shared=true \
name-label="sw-sr" \
device-
config:target=172.16.30.10,172.16.40.10,172.16.30.20,172.16.40.
20 \
device-config:targetIQN=* \
```



deviceconfig:multiSession="172.16.30.10,3260,iqn.2008-08.com.starwind software:sw1ds1|172.16.40.10,3260,iqn.2008-08.com.starwindsoftware:sw1ds1|172.16.30.20,3260,iqn.2008-08.com.starwindsoftware:sw2ds1|172.16.40.20,3260,iqn.2008-08.com.starwindsoftware:sw2ds1|" \ deviceconfig:multihomelist=172.16.30.10:3260,172.16.40.10:3260,172.16 .30.20:3260,172.16.40.20:3260 \ device-config:port=3260 \ device-config:SCSIid=20cfc3b5a7c6bcef2

6. In the Console tab, check if the multipath works properly on both hosts.



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