

StarWind iSCSI SAN Software: Using an existing SAN for configuring High Availability with VMWare vSphere and ESX server



www.starwindsoftware.com

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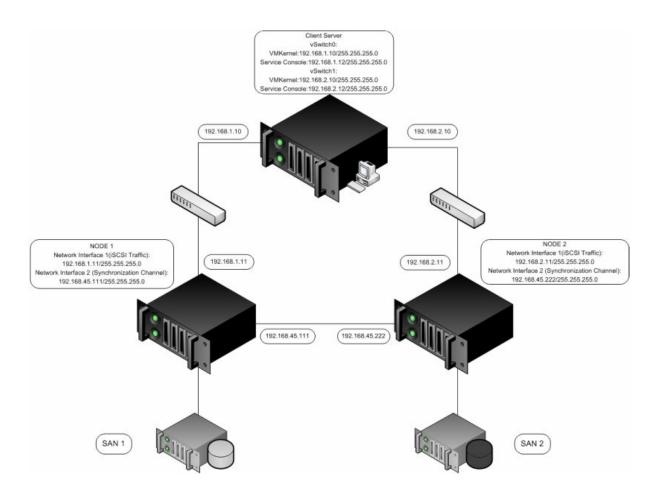
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Guide

Introduction



Note: Data Synchronization Channel redundancy is required, use NIC teaming (link aggregation).

Both StarWind servers must have StarPort installed and registered.



Configuring StarWind Server

Preconfiguring and connecting storage

Using HA requires some minor modifications to the servers you will use as nodes for providing HA storage to the clients. You will have to configure iscsi initiator service to start before starwind service starts. This guarantees the fact that in the moment when starwind service is started, MS iSCSI Initiator is already up and have connected your storage where the virtual disk files are stored. The other thing is you need to bind volumes so that each time the initiator connects them to your server, they receive a constant drive letter.

To set StarWind service dependent go Start->Run, type "cmd" and click OK. In the command line type "sc config starwindservice depend= msiscsi" and press enter button.

Now connect to your SAN using Microsoft iSCSI Initiator, initialize and format the disk you have connected, assign a drive letter to it.

In the MS Initiator window go to the **Volumes and Devices** tab and click **Auto Configure** button.

This will bind the volumes with the drive letters you have assigned to them. The procedure described above has to be performed on both StarWind Servers.

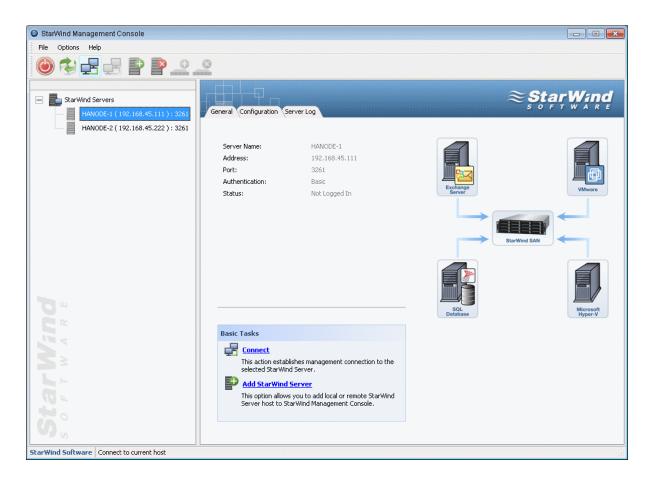


Preparing Storage

Launch the StarWind Console: **Start -> All Programs -> StarWind Software -> StarWind**. Whenever the StarWind Console is running, its icon will appear in the system tray.

The StarWind Console may be accessed by double-clicking the icon using the left mouse button, or with a single click using the right mouse button and selecting Start Management from the pop-up menu.

From the Connections tree, select the computer you want to provision the iSCSI target device on.



Double-click the host to connect.



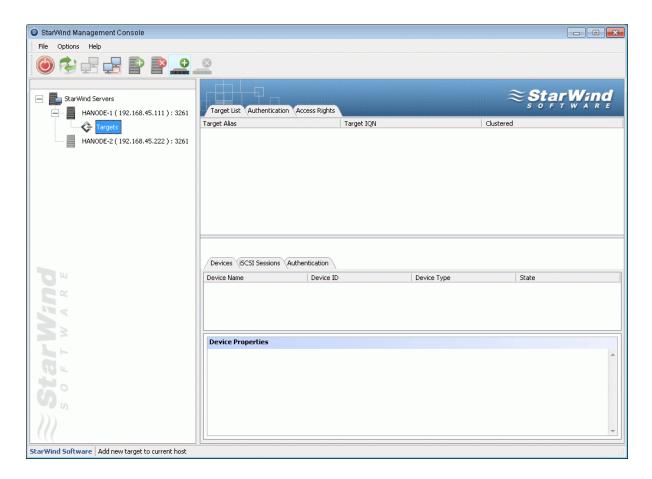
You will be prompted to enter the login and password.

The default login and password are "root" and "starwind." You can always change them later.

Login		
20	Enter the use	er name and password to connect to this server.
	Login:	root
	Password:	•••••
		OK Cancel



Now when You are connected to the StarWind Service on the machine you can create targets on it.



Click **Add Target** button to continue.



In the wizard that appears, specify a target name. The name must be a unique name by which the device will be declared to the iSCSI initiators connecting to StarWind over an IP network.

Add Ta	arget Wizard
Co	mmon target parameters Specify target alias and target name.
	Target Alias:
	HA-storage
	Target Name:
	iqn.2008-08.com.starwindsoftware:hanode-1-ha-storage
	< <u>B</u> ack Next > Cancel Help



Select the HA device type by going Hard Disk->Advanced Virtual->High Availability device.

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

artner server Specify partn	parameters er server paramete	ers.		
Host:	192.168.45.222		Port:	3261
Authentication	Basic			-
User Name:	root			
Password:	•••••			



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

-storagepartner	
-storagepartner	
-storagepartner	



Specify the 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, tick the Create New checkbox.

Device Type Selection
Virtual disks parameters Specify virtual disks parameters.
Current server virtual disk parameters
My Computer\H\Virtual Disks\HA-Disk1.img
Create new
Partner server virtual disk parameters
My Computer \H\Virtual Disks \HA-Disk1(partner).img
Create new
Size in MBs: 10240
< <u>B</u> ack <u>Next</u> > Cancel Help



Configure the data synchronization channel parameters by specifying the network interface for synchronization. You can also decide node priority by designating it as Primary or Secondary.

Device Type Selection		×
	ion channel parameters chronization channel parameters.	\approx
- Current server pa	ameters	
Target Name:	iqn.2008-08.com.starwindsoftware:hanode-1-ha-storage	
Interface:	192.168.45.111 💌 🤄 Port: 3260	
Priority:	Primary	
Partner server pa	rameters	
Target Name:	iqn.2008-08.com.starwindsoftware:192.168.45.222-ha-storagepartne	,
Interface:	192.168.45.222 💌 🤄 Port: 3260	
Priority:	Secondary	
ļ		
	< <u>B</u> ack Next > Cancel H	elp



Specify the method to initialize your HA device.

Device Type Selection	×
Initialization method Specify initialization method.	\approx
Select initialization method:	
Clear virtual disks (WARNING: All data will be deleted!)	
Synchronize current server virtual disk with partner server one	
Synchronize partner server virtual disk with current server one	
🗇 Do not synchronize virtual disks	
< <u>B</u> ack Next > Cancel He	*lp



Check that the device parameters are correct. Click the **Back** button should any changes be required.

Completing the Add Target W	izard 📃 🔀
	Completing the Add Target Wizard
	The following device will be added:
	HAImage1
	You specified the following settings:
	Partner Host : 192.168.45.222 Partner Management Port : 3261 Partner Authentication : 1 Partner User Name : test Partner Password : test Partner Target Name : iqn.2008-08.com.starwindsoftware:192.: Local Image : My Computer\H\Virtual Disks\HA-Disk1.img Create new : No Partner Image : My Computer\H\Virtual Disks\HA-Disk1(partner).
	Click Next to add new device.
	< Back Next > Cancel Help



A summary is displayed on the last wizard page.

Completing the Add Target Wi	izard	×
	The new target was successfully added	
	The following device was created: HAImage1	
	Target name: iqn.2008-08.com.starwindsoftware:hanode-1-ha-storage	*
	To close this wizard click Finish.	Ŧ
	< <u>B</u> ack Finish Cancel	Help

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



Configuring ESX Server

Configuring Advanced Settings

Set the following advanced Settings for the ESX/ESXi host: Set Disk.UseDeviceReset to 0 Set Disk.UseLunReset to 1

Advanced Settings		
- Irq - Misc	Disk.UseDeviceReset	0
Net	Use device reset (instead of bus reset) to reset a SCSI device	
Mem Cpu	Min: 0 Max: 1	
Numa LPage	Disk.UseLunReset	1
Disk Migrate	Use LUN reset (instead of device/bus reset) to reset a SCSI device	
Scsi User	Min: 0 Max: 1	
NFS VMFS3	Disk.RetryUnitAttention	1
BufferCache	Retry all SCSI commands that return a unit attention error	
COW Power	Min: 0 Max: 1	
FSS FT	Disk.PathEvalTime	300
DirentryCache UserVars	The number of seconds between FC path evaluations	
Config VMkernel	Min: 30 Max: 1500	
	Disk.EnableNaviReg	1
	Enable automatic NaviAgent registration with EMC CLARiiON and Invista	
	Min: 0 Max: 1	
	Disk.DelayOnBusy	400
	Delay in milliseconds for completion of commands with a BUSY status	
	Min: 0 Max: 5000	
	OK Cancel H	lelp



Configuring the Firewall

For working with iSCSI connections you need to permit them in the firewall settings.

Click the **Configuration** tab. Then click **Security Profile**.

The **vSphere Client** displays a list of currently active incoming and outgoing connections with the corresponding firewall ports. Click the **Properties** link. The **Firewall Properties** dialog box will appear. Find **Software iSCSI Client** in the list Tick the option (set checkbox) to allow outgoing connection on the port shown (3260).

	efault, remote dients are prevente	ed from accessing services o	n this host, and local dien	ts are prevented	d from
	ssing services on remote hosts.				
	ovide access to a service or client matically when any of their ports a				s will start
ici con	inducting which any of a circle ports t	are opened and stop when a	i or area porta are closed		
-	Label	Incoming Ports	Outgoing Ports	Protocols	Daemon 🔺
Rea	uired Services	1	1	1	
1000	ure Shell				
	SSH Server	22		TCP	Running
	SSH Client		22	TCP	N/A
Sim	ple Network Management Pr	otocol			1.5
	SNMP Server	161	162	UDP	N/A
Ung	prouped				
2	Software iSCSI Client		3260	TCP	N/A
~	VMware vCenterAgent		902	UDP	N/A
~	faultTolerance		80	TCP	N/A
7	Active Director Kerberos		464.88	TCP.UDP	N/A
					7
					Options

Press the **OK** button to continue.



Configuring the Networking

Configuring First NIC VMkernel1

Click the **Configuration** tab. Then click **Networking**. Click the **Properties** link of the first Virtual Switch. Click the **Add...** button. Select the **VMkernel** option. Click the **Next** button to continue. Under IP Settings, set the IP address to 192.168.1.10 and the Subnet Mask to 255.255.255.0. Click the **Next** button to continue. Click the **Finish** button to close the wizard. Click **Yes** at the default gateway warning dialog box.

In the **DNS** and routing configuration box, type the same default gateway as Service Console default gateway and press the **OK** button.

Press the **Close** button to exit vSwitch properties editor.

Configuring Second NIC

VMkernel2

Click the **Configuration** tab. Then click **Networking.** Click **Add Networking...** Select the **VMkernel** option. Press the **Next** button to continue.

Choose Create a virtual switch, select the second network card and click the Next button to continue.

In IP Settings set the IP address to 192.168.2.10 and Subnet Mask to 255.255.255.0, click the **Next** button. Click the **Finish** button to close the wizard.

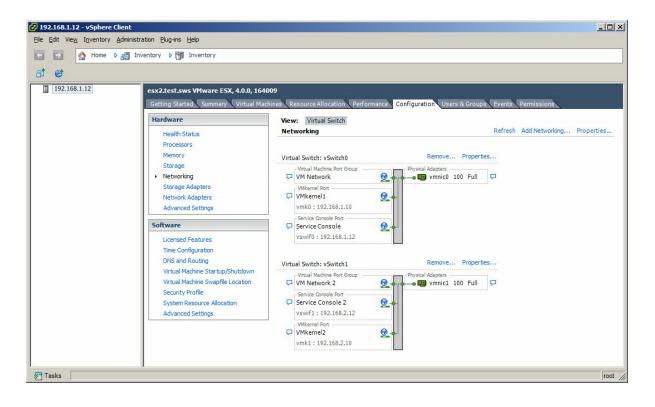
Click the properties of the recently created virtual switch. Click the **Add...** button. Select the **Service Console** option. Press the **Next** button to continue.

In IP Settings set the IP Address to 192.168.2.12 and Subnet Mask to 255.255.255.0, click the **Next** button.

Press the **Finish** button to close the wizard. Press the **Close** button to exit vSwitch properties editor.



If successful, the **vSphere Client** window should look like the sample image provided below.





Configuring the iSCSI Initiator

Click the **Configuration** tab. Then click **Storage Adapters.**

The list of available storage adapters appears. Select iSCSI Software Adapter.

Click **Properties**. click the **Configure** button in the iSCSI Initiator Properties dialog which appears. To enable the initiator feature tick the **Enabled** check box. Click the **OK** button to close the **General Properties** dialog and return to the **iSCSI Initiator Properties** dialog.

Switch to the **Dynamic Discovery** tab.

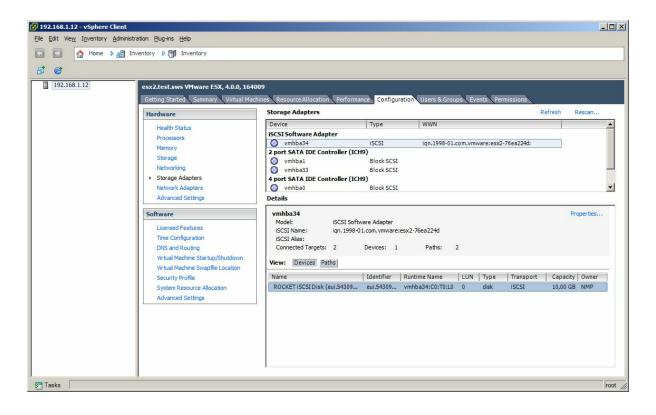
Add each of the StarWind servers by clicking the **Add...** button and specifying servers IP address.

	initiator (vmhba34			
Send	Dynamic Discovery Targets er iSCSI targets dynar		ses:	
iscsi	Server Address			
192.1	68.1.11:3260			
		<u>A</u> dd	Remove	Settings
			Close	Help

Click the **Close** button. Infrastructure client will prompt you to rescan for new iSCSI LUNs. Leave the default values and click the **Yes** button.



If successful, the **vSphere Client** window should look like the sample picture provided below.





Setting Up the Datastore

Click the Configuration tab. Then click Storage. Click the Add Storage... link. The Add Storage dialog appears. Select **Disk/LUN** storage type. Click the **Next** button to continue. Select the device.

🛃 Add Storage				
Select Disk/LUN Select a LUN to create a da	tastore or expand the curren	t one		
Disk/LUN Select Disk/LUN	Name, Identifier, Path ID	, LUN, Capacity, Expandable or VI	MFS Label c 👻 🗌	Clear
Current Disk Layout	Name	Path ID	LUN	Capacity VMFS Label
Properties Formatting	ROCKET iSCSI Disk (eui	. iqn.2008-08.com.starwindsoft	0	10,00 GB
Help			<u><</u> Back Ne	ext ≥ Cancel



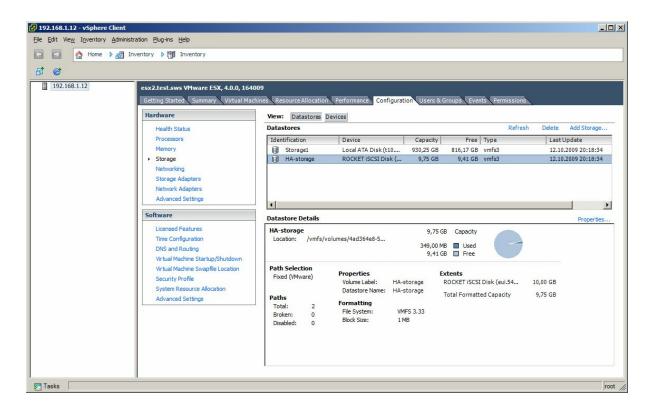
Review the disk layout,. Type in the Datastore Name, set the Disk/LUN formatting options. Confirm that the device parameters are correct and click the **Back** button should any changes be required.

<u>visk/LUN</u> Ready to Complete	Disk layout:			
icuty to complete	Device	Capacity	Available	LUN
	ROCKET iSCSI Disk (eui.54309bbcf784d2f Location /vmfs/devices/disks/eui.54309bbcf784d2f8	10,00 GB	-	0
	Primary Partitions	Capacity		
	VMFS (ROCKET iSCSI Disk (eui.54309bbcf78	10,00 GB		
	File system:			
	Properties			
	Properties Datastore name: HA-storage			
	Properties Datastore name: HA-storage Formatting			_
	Properties Datastore name: HA-storage			
	Properties Datastore name: HA-storage Formatting File system: VMFS-3			

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



If everything has been entered correctly, the **vSphere Client** window should look like the sample picture provided below.



Conclusion





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