

# StarWind Virtual HCI Appliance: Configuration Guide for Red Hat Virtualization [KVM], VHCA Deployed using Automated Installation

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**TECHNICAL PAPERS** 



StarWind Virtual HCI Appliance: Configuration Guide for Red Hat Virtualization [KVM], VHCA Deployed using Automated Installation



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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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# Annotation

Relevant products

StarWind Virtual HCI Appliance (VHCA)

Purpose

This document outlines how to configure a StarWind Virtual HCI Appliance (VHCA) based on Red Hat Virtualization (RHV), with VSAN running as a Controller Virtual Machine (CVM). The guide includes steps to prepare RHV hosts for clustering, configure physical and virtual networking, and set up the Virtual SAN Controller Virtual Machine.

#### Audience

This technical guide is intended for storage and virtualization architects, system administrators, and partners designing virtualized environments using StarWind Virtual HCI Appliance (VHCA).

#### Expected result

The end result of following this guide will be a fully configured high-availability StarWind Virtual HCI Appliance (VHCA) powered by Red Hat Virtualization (RHV) that includes virtual machine shared storage provided by StarWind VSAN.

# **Prerequisites**

StarWind Virtual HCI Appliance (VHCA) system requirements

Prior to configuring StarWind Virtual HCI Appliance (VHCA), 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

Solution diagram





Prerequisites:

1. 2 servers with local storage, which have direct network connections for Synchronization and iSCSI/StarWind heartbeat traffic.

2. Servers should have local storage available for CentOS installtion and StarWind VSAN Controller Virtual Machine. CVM utilizes local storage to create replicated shared storage connected to RHV nodes via iSCSI.

3. DNS records of the RHV Nodes and RHV Engine should be added to DNS Server. It is required to use static IP addresses for both RHV node and RHV Engine.

4. StarWind HA devices require at least 2 separate network links between the nodes. The first one is used for iSCSI traffic, the second one is used for Synchronization traffic. Note. The network interfaces on each node for Synchronization and iSCSI/StarWind heartbeat interfaces should be in different subnets and connected directly according to the network diagram above. Here, the 172.16.10.x subnet is used for the iSCSI/StarWind heartbeat traffic, while the 172.16.20.x subnet is used for the Synchronization traffic.



# **Deploying Rhv Node**

1. Download Red Hat Virtualization Host iso. Note. Red Hat subscription is required.

2. Boot from the downloaded ISO.



3. Choose "Installation Destination" and choose drive, which will be used for OS installation. Choose "Custom" storage configuration.



📴 DEMO-NODE-01, , User: root, FPS: 18.8 - Go	ogle Chrome		-		×
A Not secure   https://172.16.2.115/re	stgui/vconsole/index.html#				
Boot         Power         C           ■ Virtual Media is         ■ Devices         Devices           connected         Mapped:1	hat Keyboard Screen Capture Re ovirt-node-ng-installer-la	fresh Full Screen Virtual Media atest-el8.iso is mapped to CD/DVD	Disconnect Viewer drive.(Read Only)	Console Co	ntrols
INSTALLATION DESTINATION		OVIRT E us	NODE NEXT 4.5 IN	STALLAT Hel	ION P!
Device Selection					
Select the device(s) you'd like to insta	ll to. They will be left untouched unt	il you click on the main menu's "Beg	in Installation" but	on.	
1.46 TiB		223 G	ы́В		
Flash PM1725b 1.6TB SFF i.3437563	04d3000620025384100000004	DELL PERC H330 Mini 64cd98f0	54d537002466380	61342ec9	97
nvmeln1 /	1.3 MiB free	sda /	1.97 MiB free		
Specialized & Network Disks		Disks le	ft unselected here will	not be touc	hed.
Add a disk		Disks le	ft unselected here will	not be touc	:hed.
Storage Configuration Automatic  • Custom	▶				
Eull disk summary and boot loader		1 disk selected; 22	3 GiB capacity; 1.97 M	B free <u>Ref</u>	resh

4. Click "Done" and partition your drive. At least 70 GiB should be left as available space. It will be used for StarWind VSAN Controller VM deployment.



DEMO-NODE-01, , User: root, FPS: 11.8	Google Chrome				-	o x
A Not secure https://172.16.2.11	5/restgui/vconsole/index.html#					
Boot Power	Chat Keyboard Screen Capto	ure Refresh Full Screen	Virtual Media	Disconnect Viewe	er Cons	ole Controls
Virtual Media is Devices	ovirt-node-ng-in	staller-latest-el8.iso is ma	apped to CD/D	VD drive.(Read O	nly)	
connected Mapped:1						
Done Done					4.5 INS	Help!
DATA		onn-root				
/home onn-home	1024 MiB	Mount Point:	0	Device(s):		
/var/crash onn-var_crash	10 GiB		6 7	64cd98f054d53700	n 24663806	1342ec9
/var/log	8 GiB	70 GiB		Modify		
/var/log/audit	2 GiB	Device Trees	,	(aluma Crown)		
/var/tmp	10 GiB	LVM Thin Provisio	Encrypt	onn	(0 B t	free) 🔻
SYSTEM		File System:		Modify		
/ onn-root	70 GiB 🗦	xfs 👻	Reformat			
/tmp onn-tmp	1024 MiB					
/var onn-var	5 GiB					
/boot/efi	600 MiB	Labet:		root		
/boot sda2	1024 MiB					
swap	4 GiB				Update Se	ettings
+ - C			Note: The be applied	settings you make or until you click on the	n this scree main men Installatio	n will not u's 'Begin n' button.
AVAILABLE SPACE TOTAL SPACE 82.23 GIB 223 GIB						
1 storage device selected						Reset All

5. Install RHEL on your host.

6. Configure RHVH according to Red Hat recommendations. https://access.redhat.com/documentation/id-id/red\_hat\_virtualization/4.4/html/installing\_r ed\_hat\_virtualization\_as\_a\_self-

hosted\_engine\_using\_the\_command\_line/installing\_the\_selfhosted\_engine\_deployment\_host\_she\_cli\_deploy

# **Preconfiguring Rhv Hosts**

- 1. Connect to the note via SSH or to a local console.
- 2. Download vHCl archive with StarWind CVM and configuration files to the RHV node.

curl -k -0
https://tmplink.starwind.com/StarWind\_vHCI\_KVM\_scripts.zip



3. Unzip the archive.

mkdir StarWind\_vHCI\_KVM\_scripts
unzip StarWind\_vHCI\_KVM\_scripts.zip -d
StarWind\_vHCI\_KVM\_scripts

3. Run node\_predeploy.sh script.

```
cd ./StarWind_vHCI_KVM_scripts/
chmod +x node_predeploy.sh
./node_predeploy.sh
```

4. Type node number (01 or 02). Press Enter.

```
[root@sw-demo-node-01 StarWind_VHCI_KVM_scripts]# chmod +x hode_predeptoy.sh
[root@sw-demo-node-01 StarWind_VHCI_KVM_scripts]# ./node_predeploy.sh
Input node number (01 or 02)
01
```

5. Type the name of the Management interface. Press Enter.

NAME	UUID	TYPE	DEVICE	
eno3		ethernet		
virbr0	faaa7902-2b26-4971-a3a7-85fd6935edaa			
enol	5aa0d20e-adf3-468a-9732-17ad27fellaa	ethernet		
eno2	al4f45a8-b8d6-4c1b-ae8a-b56abbd054ba	ethernet		
eno4	796650d9-37ba-463a-a528-766301c6f8e5	ethernet		
ens1f0	96773f81-946d-454b-bd6c-c036a7c26eb6	ethernet		
enslfl	203837de-9864-405b-8539-7c7ca5f49000	ethernet		
#######	"#####################################			
Input t	he name of Management Connection (e.g	enol, ensl	f0)	
########	************************			
eno3				6

Type the name of the Data interface. Press Enter.

71			
NAME	UUID	TYPE	DEVICE
ovirtmgmt	5c2b2e22-e3aa-43e4-90f0-4415ae792231	bridge	ovirtmgmt
virbr0	faaa7902-2b26-4971-a3a7-85fd6935edaa		
bridge-slave-eno3	7535b8ea-7253-412f-8a9f-1d6b46c4e17e		
enol	5aa0d20e-adf3-468a-9732-17ad27fellaa	ethernet	
eno2	a14f45a8-b8d6-4c1b-ae8a-b56abbd054ba	ethernet	
eno3	5717bfd9-19e2-4c18-b2ec-5318a4107d76	ethernet	
eno4	796650d9-37ba-463a-a528-766301c6f8e5	ethernet	
ens1f0	96773f81-946d-454b-bd6c-c036a7c26eb6	ethernet	
enslfl	203837de-9864-405b-8539-7c7ca5f49000	ethernet	
*******	#######################################		
Input the name of	Data Connection (e.g enol, enslf0)		
*******	******		
ensf10			

7. Type the name of the Replication interface. Press Enter.



NAME	UUID	TYPE	DEVICE				
iSCSI	14cbe1b0-7b69-4999-83c3-86bbfb39cd68	bridge	iSCSI				
ovirtmgmt							
virbr0	faaa7902-2b26-4971-a3a7-85fd6935edaa						
bridge-slave-eno3	7535b8ea-7253-412f-8a9f-1d6b46c4e17e						
bridge-slave-ensf10	f53ade06-0a28-4ae7-8766-7a286ea91e9c	ethernet					
enol	5aa0d20e-adf3-468a-9732-17ad27fe11aa	ethernet					
eno2	a14f45a8-b8d6-4c1b-ae8a-b56abbd054ba	ethernet					
eno3	5717bfd9-19e2-4c18-b2ec-5318a4107d76	ethernet					
eno4	796650d9-37ba-463a-a528-766301c6f8e5	ethernet					
ens1f0	96773f81-946d-454b-bd6c-c036a7c26eb6	ethernet					
ens1f1	203837de-9864-405b-8539-7c7ca5f49000	ethernet					
*****************	*********						
Input the name of Sy	nc Connection (e.g enol, enslf0)						
******	**********						
enslfl							
8. If DHCP server is available on the network, IP of the StarWind CVM will be displayed in							
the script out put							

Domain 'CVM01' marked as autostarted Domain 'CVM01' started IP of the VM can be found here (if DHCP server is available) {"return":[{"name":"lo", "ip-addresses":[{"ip-address-type":"ipv4", "ip-address":"127.0.0.1", "prefix":8}], "statistics":{"tx-packets ":0, "tx-errs":0, "rx-bytes":0, "rx-dropped":0, "rx-packets":0, "rx-bytes":0, "tx-dropped":0, "hardware-address":"00:00:00: 00:00:00"}, {"name":"eth0", "ip-addresses":[{"ip-address-type":"ipv4", "ip-address":"127.0.0.1", "prefix":8}], "statistics":{"tx-packets Ckets":30, "tx-errs":0, "rx-bytes":0, "rx-dropped":12, "rx-rpackets":1pv4", "ip-address":"122.16.2.38", "prefix":24}], "statistics":{"tx-packets":0, "rx-packets":22, "rx-errs":0, "rx-dropped":0}, "hardware-address":"52:54:00:66:34:57"}, {"name":"eth1", "hardware-address":"52:54:00:8b:6e:f8"}, {"name":"eth2", "hardware-address":"52:54:00:c5: a2:28"}, {"name":"eth3", "hardware-address":"52:54:00:57:66:d4"}, {"name":"eth4", "hardware-address":"52:54:00:1b:a0:aa"}]}	the script out put.
Domain 'CVM01' started IP of the VM can be found here (if DHCP server is available) {"return":[{"name":"lo", "ip-addresses":[{"ip-address-type":"ipv4", "ip-address":"127.0.0.1", "prefix":8}], "statistics":{"tx-packets ":0, "tx-errs":0, "rx-bytes":0, "rx-dropped":0, "rx-packets":0, "rx-errs":0, "tx-bytes":0, "tx-dropped":0}, "hardware-address":"00:00:00: 00:000:00"), ("name":"eth0", "ip-addresses":[{"ip-address-type":"ipv4", "ip-address":"121.16.2.38", "prefix":24}], "statistics":{"tx-packets ":0, "tx-errs":0, "rx-bytes":0, "rx-dropped":1, "rx-packets":"ipv4", "ip-address":"121.16.2.38", "prefix":24}], "statistics":{"tx-packets ":00:00:00"), ("name":"eth0", "ip-addresses":[{"ip-address-type":"ipv4", "ip-address":"121.16.2.38", "prefix":24], "statistics":{"tx-packets ":52:54:00:e6:34:57"}, {"name":"eth1", "hardware-address":"52:54:00:85:6e:68"}, {"name":"eth2", "hardware-address":"52:54:00:55:400:c5: a2:28"}, {"name":"eth3", "hardware-address":"52:54:00:57:66:d4"}, {"name":"eth4", "hardware-address":"52:54:00:1b:a0:aa"}]}	Domain 'CVM01' marked as autostarted
<pre>IP of the VM can be found here (if DHCP server is available) {"return":[{"name":"lo","ip-addresses":[{"ip-address-type":"ipv4","ip-address":"127.0.0.1","prefix":8}],"statistics":{"tx-packets":0,"tx-errs":0,"rx-bytes":0,"rx-topped:0,"hardware-address":"52:54:00:e6:34:57", {"name":"eth2", "hardware-address":"52:54:00:c5: a2:28", {"name":"eth3", "hardware-address":"52:54:00:57:66:d4", {"name":"eth4", "hardware-address":"52:54:00:1b:a0:aa"}]}</pre>	Domain 'CVM01' started
	<pre>IP of the VM can be found here (if DHCP server is available) {"return":[{"name":"lo","ip-addresses":[{"ip-address-type":"ipv4","ip-address":"127.0.0.1","prefix":8}],"statistics":{"tx-packets":0,"tx-errs":0,"rx-bytes::0,"rx-bytes::0,"r</pre>

Note. If DHCP is not available, static IP address should be configured.

9. Repeat steps 1-8 on every node.

## **Configuring Starwind Vsan Controller Vm**

- 1. Login to node via SSH.
- 2. Check VM display using the following command.

```
virsh -c qemu:///system?authfile=/etc/ovirt-hosted-
engine/virsh_auth.conf domdisplay CVM01
```

[root@sw-demo-node-01 ~]# virsh -c qemu:///system?authfile=/etc/ovirt-hosted-engine/virsh\_auth.conf domdisplay cvm01 spice://127.0.0.1:5906?tls-port=5907 [root@sw-demo-node-01 ~]#

NOTE. Depending on the output you should connect to the VM display via Spice or VNC console.

3. Create tunnel to the host using the following command using SSH client.

ssh -L 5906:127.0.0.1:5906 root@%hostipaddress%

4. Connect to VM using Virt-Viewer and login using the following credentials.



- Username: user
- Password: rds123RDS

Note. Virt-Manager can be downloaded here:

https://virt-manager.org/download.html

5. Open the file corresponding to the Management interface using a text editor, for example: sudo nano /etc/sysconfig/network-scripts/ifcfg-eth0

6. Edit the file:

Change the line BOOTPROTO=dhcp to: BOOTPROTO=static

Add the IP settings needed to the file:

IPADDR=192.168.12.10

NETMASK=255.255.255.0

GATEWAY=192.168.12.1

DNS1=192.168.1.1

7. Now, open the web browser and enter the IP address of the VM. Log into the VM using the following default credentials:

- Username: user
- Password: rds123RDS

NOTE: Make sure to check the "Reuse my password for privileged tasks" box.



8. After a successful login, click Accounts on the left sidebar.

9. Select a user and click Set Password.



accounts - starwindv 🖉	sa-346658:× +				~ -	o x
$\leftarrow \rightarrow \mathbf{C}$	O A https://192.168.12.214:9			☆	© ⊻ €	മ ≡
STARWIND VIRTUAL SAN						💄 user 🗸
🗐 starwindvsa-34	Accounts > user	Set Password				
System	user	Old Password New Password			Terminate Session	Delete
Logs Storage	Full Name user	Confirm New Password				
Networking	Roles 🗹 Server Administrator					
Accounts	Last Login Invalid Date			Cancel Set		
Services	Access 🛛 Lock Account	Never	lock account			
Terminal	Password Set Password Force	Change Never	expire password			
	Authorized Public SSH Keys					٠
	There are no authorized public keys fo	r this account.				

10. On the left sidebar, click Networking.

💐 Networking - starwindv	sa-3466∶× +				
← → C	O A https://192.168.12.2	14:9090/network		☆	ල ± 0 ද ≡
STARWIND VIRTUAL SAN					🔒 Privileged 💄 user 🗸
starwindvsa-34	Kbps Sending		Kbps Receiving		
System Logs	400		400		
Storage	20:32	20:33 20:34 20:35	20:32	20:33 20:34	20:35
Networking	Firewall				
Accounts	0 Active Rules				
Services					
Terminal	Interfaces Name	IP Address	Sending	Add Bond Add Team	Add Bridge Add VLAN
	eth0	192.168.12.214/23	8.36 Kbps	8.46 Kbp	55
	eth1	172.16.10.10/24	0 bps	14.8 Kbp	25
	eth2	172.16.20.10/24	3.23 Kbps	11.4 Кыр	55
	Networking Logs				
	May 8, 2023				
	20:35 <info> [168356735</info>	7.4612] audit: op="checkpoint-destroy" arg="/d	org/freedesktop/NetworkManager/Chec	kpoint/4" Network	Manager
	20:35 <info> [168356735</info>	7.4607] checkpoint[0x561a96b655b0]: destroy /	org/freedesktop/NetworkManager/Chec	kpoint/4 Network	Manager

Here, the Management IP address of the StarWind Virtual SAN Virtual Machine can be configured, as well as IP addresses for iSCSI and Synchronization networks. In case the Network interface is inactive, click on the interface, turn it on, and set it to Connect automatically.

- 11. Configure IP addresses for each interface.
- 12. The result should look like in the picture below:



📚 Networking - starwindv	sa+3466°× +				~	-		×
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STARWIND VIRTUAL SAN							ed 💄	
starwindvsa-34	Kbps Sending		Kbps Receiving					
System Logs	400		400					
Storage	20:32	20:33 20:34 20:35	20:32	20:33	20:34	20:3	5	
Networking	Firewall						(	
Accounts	0 Active Rules							
Services								
Terminal	Interfaces			Add Bond	Add Team	Add Bridge	Add V	LAN
	Name	IP Address	Sending		Receivin	g		
	eth0	192.168.12.214/23	8.36 Kbps		8.46 Kbp	s		
	eth1	172.16.10.10/24	0 bps		14.8 Kbp	5		
	eth2	172.16.20.10/24	3.23 Kbps		11.4 Kbp	s		
	Networking Logs							
	May 8, 2023		(Freedericker (Neburghiller and (Ch	advandant (47	Hattanald			
	20:35 <info> [16835673]</info>	7.4007] dudit: op=-cneckpoint-destroy" arg="/org 7.4607] checkpoint[0x561a96b655b0]: destroy /org	/freedesktop/NetworkManager/Ch	eckpoint/4	Networkh	lanager		

NOTE: It is recommended to set MTU to 9000 on interfaces dedicated for iSCSI and Synchronization traffic. Change Automatic to 9000, if required.

😂 Networking - starwin	Nsa-3466:× +		
$\leftarrow \rightarrow \mathbf{C}$	O A https://192.168.12.214:9090/network#/eth1	\$	ල ් € ව ≡
STARWIND VIRTUAL SAN			🔒 Privileged 💄 user 🗸
🗟 starwindvsa-34	Networking > eth1		
System	Kbps Sending	Kbps Receiving	
	800	800	
Logs	400	400	
Storage	0 20:34 20:35 20:36 20:37 20:38	20:34 20:35	20:36 20:37 20:38
Networking			
Accounts	eth1 hv_netvsc 00:15:5D:0C:39:03		
Services	Status 172.16.10.10/24, fe80:0:0:5804:44b8:3955:e9bc/64		
Terminal	Carrier 1 Gbps		
remina	General Connect automatically		
	IPv4 Address 172.16.10.10/24		
	IPv6 Automatic		
	MTU 9000		

13. Access the Storage section. Locate the recently added disk in the Drives section and choose it.



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$\leftarrow \rightarrow \mathbf{C}$	O 🔒 https://192.168	.12.214:9090/storage					☆		◙	¥ (	ப	≡
STARWIND VIRTUAL SAN									<u></u>	Privileged	<b>1</b> u	iser ∽
🗐 starwindvsa-34	KIB/s Reading		KiB/s V	Vriting			RAID Dev	ices			K	1
System	64		64					No storag	ge set up a	is RAID		
Logs	32		32				Volume (	āroups			E	1
Storage	20:37 20:38	20:39 20:40	20:41	20:37	20:38 20	20:40 20:41		centos 14.8 GiB				
Networking	Filesystems											
Accounts	Name	Mount Point	Size				VDO Dev	ices				
Services	/dev/centos/root	/				2.92 / 13.2 GiB		No storaj	ge set up a	as VDO		
Terminal	/dev/sda2	/boot				235 / 1014 MiB	Drives					
	Storage Logs						¢,	Msft Virtual 16 GiB Haro R: 0 B/s V	Disk (600 I Disk V: 0 B/s	224806		
	May 8, 2023				a local		_	VMware Vir	tual disk (i	5000c2		
	20:40 g_object_notif	Fy: object class 'UDi	sksLinuxBlo	kObjec ud	isksd	2.1	2	100 GiB Hai	rd Disk			
	20:40 g_object_notif	Fy: object class 'UDi	sksLinuxLog	icalVol ud	isksd	2 1		R: 0 B/s	V: 0 B/s			
	20:40 g_object_notif	Fy: object class 'UDi	sksLinuxVolu	umeGrou ud	isksd							
	20:40 g_object_notif	Fy: object class 'UDi	sksObjectSke	eleton' ud	isksd							
	20:40 g_object_notif	Fy: object class 'UDi	sksObjectSke	eleton' ud	isksd							
	20:40 Loading module	1100015K52_1Vm2.50.		ud	LSKSO							

14. The added disk does not have any partitions and filesystem. Press the Create Partition Table button to create the partition.

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$\leftrightarrow \rightarrow c$	O A https://192.168.12.214:9090/s	orage#/sdb	☆	ම ± 0 දා ≡
STARWIND VIRTUAL SAN				🖴 Privileged 💄 user 🗸
🗐 starwindvsa-34	Storage > VMware Virtual disk (6000c2922det	d1cf1f227ad001f11438) mat Disk /dev/sdb		
System Logs	Drive Model Virtual disk Firmware Version 2.0	Erase Don't overwrite existing data ritioning Compatible with modern system and hard disks > 2TB (GPT)	· · ·	
Storage Networking Accounts	Serial Number 6000c2922debd1 World Wide Name 0x6000c2922deb Capacity 100 GiB, 107 GB,	Formatting a du	sk will erase all data on it. Cancel Format	
Services	Device File /dev/sdb			
Terminal	Content       Image: 100 G/B Unrecognized Data	14	evidb	Create Partition Table

15. Press Create Partition to format the disk and set the mount point. The mount point should be as follows: /mnt/%yourdiskname%



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$\leftarrow \rightarrow \mathbf{C}$	O 🔒 https://192.168.12.214:90	90/storage#/sdb		☆			¥ 0	٢	
STARWIND VIRTUAL SAN								<b>1</b> (	iser ~
starwindvsa-34	Storage > VMware Virtual disk (6000c29	22debd1cf1f227ad0 Create Partitio	01f11438) on on /dev/sdb						
System Lags Storage Networking Accounts Services Terminal	Drive Medel Virtual disk Firmware Version 2.0 Serial Number 6000c2922debd World Wide Name 0x6000c2922debd Capacity 100 Gi8, 107 GB, Device File /dev/sdb Content 100 GiB Free Space	Size Erase Type Name Mounting Mount Point Mount Options	Don't overwrite existing data XFS - Recommended default disk1  Encrypt data Custom /mmt/disk1  Mount at boot Mount read only Custom mount options noatime Cancel Creat	GIB v v v v c Partition		Crea	ate Partitio	ın Tabir artitior	â.

16. On the Storage section, under Content, navigate to the Filesystem tab. Click Mount.

Storage - starwindvsa-:	34665828 × +					
← → C	O 🔒 https://192.168.12.214:9090/storage#/sdb	☆	◙	⊻ 0	ப	≡
STARWIND VIRTUAL SAN					<b>±</b> u	ser 🗸
🗐 starwindvsa-34	Storage > VMware Vintual disk (6000-2922debd1cf1f227ad001f11438)					
	Drive					
System Logs	Model Virtual disk Firmware Version 2.0					
Storage	Serial Number 6000c2922debd1cf1f227ad001f11438					
Networking Accounts	World Wide Name         0x6000c2922debd1cf1f227ad001f11438           Capacity         100 GiB, 107 GB, 107374182400 bytes           Device File         /dev/sdb					
Services Terminal	Content		Crea	ate Partiti	on Table	
	✓ 100 GiB xfs File System	/dev/sdb1				
	Partition Filesystem			Delete	Format	
	Name disk1 Mount Point /mnt/disk1 Mount Options noatime Used -					

17. Repeat steps 1-16 on every node.

# **Configuring Starwind Management Console**

1. Install StarWind Management Console on each server or on a separate workstation with Windows OS (Windows 7 or higher, Windows Server 2008 R2 and higher) using the installer available here.

NOTE: StarWind Management Console and PowerShell Management Library components



are required.

2. Select the appropriate option to apply the StarWind License key.

Once the appropriate license key has been received, it should be applied to StarWind Virtual SAN service via Management Console or PowerShell.

3. Open StarWind Management Console and click Add Server.

StarWind Management Console		_		×
			-	~
Refresh Connect Disconnect Add Server Remove Server Add Device Add Device (advanced) Add VTL Device Remove Target	Help			
Servers				
Add Server This Option allows you to add local or remote StarWind Server Hosts to StarWind Management Console				
٢				>
StarWind Software Ready				11.

4. Type the IP address of the StarWind Virtual SAN in the pop-up window and click OK.

Add new StarWind Server			?	×
Host:	192.168.12.10		: 3261	
Adva	anced >>	ОК	Cano	el

- 5. Select the server and click Connect.
- 6. Click Apply Key... on the pop-up window.



StarWind Manag	gement Console
IF FF US T BF AD A3 EE D CC1	StarWind Server Activation
	Apply License Key, could be Time-limited Trial Key, free Version Key or Commercial License Key delivered with Purchase
	Request free Version Key <u>Here</u> .
	Close Apply Key

7. Select Load license from file and click the Load button.

8. Select the appropriate license key.

As an alternative, PowerShell can be used. Open StarWind InstallLicense.ps1 script with PowerShell ISE as administrator. It can be found here:

C:\Program Files\StarWind

Software\StarWind\StarWindX\Samples\powershell\InstallLicense.ps1

Type the IP address of StarWind Virtual SAN VM and credentials of StarWind Virtual SAN service (defaults login: root, password: starwind).

Add the path to the license key.



Administrator: Windows PowerShell ISE	_		×
<u>File Edit View Tools Debug Add-ons H</u> elp			
1 🙆 🖬 🐇 1 🔪 1 🕫 1 🕨 💿 🔳 1 🕸 1 🖻 🗖 🗖 1		÷	
InstallLicense.ps1 X			
			$\sim$
2 # The tollowing example shows how to apply license on a server 3 #			
4 Import-Module StarWindX			
5			
6 Enable-SWXLog			
<pre>% \$server = New-SWServer -host 127.0.0.1 -port 3261 -user root -password starwind</pre>			
9			
10 try			
12 Server Connect()			
13			
14 Get-SWLicense Sserver			
15 16 Remove-Switcense Scenver			
18 #apply license key			
19 Set-SWLicense \$server "C:\License\licensekey.swk"			
20 [3] 21 catch			
22 🖂 {			
23 Write-Host \$foreground red			
24 [} 25 finally			
26 🗆 {			
27 \$server.Disconnect()			
23			~
<			>
PS C:\Program Files\StarWind Software\StarWind\StarWindX\Samples\powershell>			
<			>
Ln 1 Col 1		10	)0%

9. After the license key is applied, StarWind devices can be created. NOTE: In order to manage StarWind Virtual SAN service (e.g. create ImageFile devices, VTL devices, etc.), StarWind Management Console can be used.

# **Creating Starwind Devices**

Note. oVirt hosted engine requires shared storage to be deployed. Create StarWind HA device for hosted engine at this stage. HA devices for VMs should be created after hosted engine deployment.

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



StarWind Management Cor	nsole		- 0	×
FILE HOST TARGET OPT	TIONS HELP			
Refresh Connect Disconnect	t Add Server R	move Server Add Device (advanced)	)	
Servers			Performance	
SW1 (127.0.0.1)	← Add D	evice Wizard		^
	Select [	evice Type you want to create or export as iSCSI Target	evice (advanced)	
	۲	Hard Disk Device	<u>efresh</u>	
	0	Tape Device		
	0	Optical Disc Drive		
		Next Cancel		
	<		7	> ~
StarWind Software Ready				

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



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



			?	×
←	Add [	Device 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		
		<u>N</u> ext	Can	cel

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



			?	×
←	Add Device Wiza	rd		
	Marcal Black to a			
	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 De	vice Wizard		
	Specify [	Device RAM Cache Parameters		
	Mode			1
	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 N	1aximum available Size		1
	Size:	128 MB ~		
		<u>N</u> ext	Can	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	cel

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	Cane	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	æ		

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



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

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 chan (heartbeat). At least one synchronization or heartbeat channel must be fund proper failover processing. Loss of all communication channels may lead to sissue, so it's recommended to use client iSCSI connection interfaces as heart channel.     </li> <li>Node Majority         Process node and communication failures using majority policy: node stays a sees more than half of nodes including itself. In case of 2 storage nodes, recomfiguring additional witness node. Does not require additional heartbeat destinations.     </li> </ul>	nnel ctional for plit brain beat ctive while i quires hannel.	it
	Next	Car	icel

2. Select Create new Partner Device and click Next.

3. Select a partner device Location and click Next.

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 and 2-way replication and 4MB per 1 TB of HA device size for 3-way replication.

Failure journal – 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 – 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.

	?	×
←	Replication Wizard	
	Synchronization Journal Setup	
	RAM-based journal Synchronization journal placed in RAM. Synchronization with RAM journal provides goo IO performance in any scenario.	d
	O Disk-based journal Synchronization journal placed on disk.	
	Failure journal The strategy provides good IO performance while all device nodes are in a healt state.	hy
	<ul> <li>Continuous journal</li> <li>The strategy guarantees fast synchronization and data consistency in all cases.</li> </ul>	
	Current Node My Computer\C\	
	Partner Node My Computer\C\	
	<u>N</u> ext C	ancel

5. Click Change Network Settings.



		?	×
÷	Replication Wizard		
r	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.



Sp	Specify Interfaces for Synchronization Channels					
	Select synchronization channel					
	Interfaces	Networks	Synchronization and H	Heartbeat		
	Host Name: 127.0.0.1					
	172.16.10.10	172.16.10.0		~		
	172.16.20.10	172.16.20.0	<b>v</b>			
	192.168.12.10	192.168.12.0		~		
	Host Name: SW2					
	172.16.10.20	172.16.10.0		<b>v</b>		
	172.16.20.20	172.16.20.0				
	192.168.12.20	192.168.12.0		•		
	1					
	Allow Free Select Interfaces OK Cancel					

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 same 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.	l for ain		
	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	while it		
		Next	Cano	cel	

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	cel

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.



		? >	<
÷	Repli	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 Cancel	

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		
		121	
	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/

te 📿



# **Deploying Self-Hosted Engine**

 Login to RHV Node, which will be used for self-hosted engine deployment, via SSH. Note. Hosted engine will be deployed as a VM on a shared shared storage of the node chosen for the deployment. Second node should be added separately to the Engine.
 Remove management network from virsh.

```
virsh -c qemu:///system?authfile=/etc/ovirt-hosted-
engine/virsh_auth.conf net-destroy bridged-mgmt
virsh -c qemu:///system?authfile=/etc/ovirt-hosted-
engine/virsh_auth.conf net-undefine bridged-mgmt
```

3. Login to RHV node via web. Go to Networking page and choose management bridge. Click Delete.

```
        mgm
        Bridge
        E4.43:4B.2113:F4

        s
        172.16.2.121/24, fe80.0:0:0:0:e643:4bfffe21:13f4/64

        er
        Yes

        ral
        Z Connect automatically
```

Note. Management Network in virsh and Management Bridge must be removed before hosted engine deployment. Repeat steps 2-3 on all nodes. 4. Run the following command to install Engine.

dnf -y install ovirt-engine-appliance --nogpgcheck
hosted-engine --deploy --4

5. Follow the installation wizard and deploy Self-Hosted engine on iSCSI storage, which was created.

Note. DNS records of the Nodes and the Engine should be added before Engine deployment. It is required to use static IP addresses for the Nodes and the Engine. It is recommended to choose default settings during the deployment. IP address and iSCSI drive should be chosen.

6. Login to the Engine after successful installation deployment using the following credentials:

user: admin@ovirt

Password: Configured during engine deployment.



Sign in to ovirt-internal     X     +     C     A Not secure     Hatps://swi-ovirt-engine.sw/Jocal/ovirt-engine-auth/realms/ovirt-	Linternal/login-actions/authenticateTexecution=5ad10637.5329-4420-3483.4158/098370a18iduent_id=ovif=engine=internal8tab_id=42VVWcCa_E	v – o x ⊮ ☆ □ 🥵 i
	OVIRT-INTERNAL	
	Sign in to your account	
	Pasard Sapala	
		ctivate Windows o to Settings to activate Windows.

7. After deployment connect to all paths of iSCSI LUN on every node.

```
iscsiadm -m discovery -t st -p 172.16.10.10
iscsiadm -m node -l -T iqn.2008-08.com.starwindsoftware:cvm01-
lun01
iscsiadm -m discovery -t st -p 172.16.10.20
iscsiadm -m node -l -T iqn.2008-08.com.starwindsoftware:cvm02-
lun01
```

# **Adding Hosts To Engine**

- 1. Login to Engine and go to Compute -> Hosts.
- 2. Type Name, Hostname or IP, Password of the host, which will be added. Click OK.



New Host		×					
General >	Host Cluster	sw-cl ~					
Power Management	0	Data Center: sw-dc					
SPM	Name	sw-demo-node-01.sw.local					
Console and GPU	Comment						
Kernel	Hostname/IP 🚯	sw-demo-node-01.sw.local					
Hosted Engine	SSH Port	22					
Hosted Eligine	Activate host after install						
Affinity	Reboot host after install 6						
	Authentication User Name	root					
	Password						
	O SSH Public Key						
	Advanced Parameters						
		OK Cancel					

3. Repeat steps 1-2 for all hosts, which were not added to Engine.

# **Defining Management Network For Starwind Cvm**

- 1. Login to the node via SSH
- 2. Attach Network interface to StarWind VM.

```
virsh -c qemu:///system?authfile=/etc/ovirt-hosted-
engine/virsh_auth.conf attach-interface --domain cvm01 --type
bridge --source vdsm-ovirtmgmt --target ovirtmgmt --model
virtio --config —live
```

3. Repeat steps 1-2 on all nodes.

#### **Provisioning Starwind Ha Storage To Hosts**

1. Login to Engine and open Storage -> Domain. Click New Domain.



O oVirt Open Virtualization Mana	ige <b>x +</b>						~ - 🗆 X		
← → C ▲ Not secure	🗧 🔶 C 🔺 Not secure   https://sw-ovirt-engine.sw.local/ovirt-engine/webadmin/?locale=en_US#storage								
≡ oVirt open virtu	UALIZATION MAN	AGER		X	X		R � ≡⁰ 4° ⊖ 4 ·		
🚯 Dashboard	Storage > Stora	ge Domains							
Compute >	Storage:				New Domain Imp	ort Domain Manage (	Domain Remove Connections		
📅 Network >	2 v Status	Domain Name	Comment	Domain Type	Storage Type	Format	1 - 3 < > I Cross Data Center Status		
🛢 Storage 🛛 👌	<b>^</b>	node01 node02		Data (Master) Data	NFS NFS	V5 V5	Active Active		
🔅 Administration >	<	ovirt-image-repository		Image	OpenStack Glance	V1	Unattached .		
► Events									

2. Choose Storage Type – iSCSI, Host and Name of Storage Domain. Discover targets via iSCSI links, which were previously configured. Click Login All.

O oVirt	) oVirt Open Virtualization Managi x +								×			
$\leftrightarrow$ $\rightarrow$	C	A Not secure   https://sw-ovirt-eng	ine.sw.local/ovirt-engine/webadm	nin/?loca	le=en_US#storage			ė	☆	₹	0 🔇	) :
=	New	Domain							47	×		Î
øB D	Data (	Center	sw-dc (V5)	~	Name		SD01					
::::: C	Doma	in Function	Data	~	Description						Q 15 :	
an ∎	Stora; Host	ge Type	iSCSI sw-demo-node-01.sw.local	>	Comment						tus	
S 🥞	^	- ) Discover Targets							Logi	n All		
		Target Name				Address		Port			•	
						172.16.10.10		3260 3260	4			
<b> </b> ► E	argets > LU							5200				
	T LUNs > Targets	dvanced Parameters								Ŧ		

#### 3. Add LUN from each iSCSI target. Click OK.



O oVirt	Open Vir	tualizati	ion Manage × +									~	-		×
$\leftarrow \   \rightarrow$	C A Not secure   https://sw-ovirt-engine.sw.local/ovirt-engine/webadmin/?locale=en_US#storage								0 🔕	:					
=	Data Center         sw-dc (V5)         Name         SD01										Â				
@b D	Domain Function Data			Description						Q 15					
iiii c	Storage Type iSCSI v			~	Comme	nt					> :				
I I I I I I I I I I I I I I I I I I I														tus	
	^	- ) Di	iscover Targets									Logi	n All		
		Ta e iqn	irget Name .2008-08.com.starwindsoftware:1	72.16.2.47-sd	i01				Address 172.16.10.10		Port 3260	-	-		
🌣 A	> LUN	LUN ID         Size         #path         Vendor ID           22ebe1f66db375fb0         500 GiB         2         STARWINI					Product ID         Serial         Add           STARWINI         SSTARWIND_STARWIND_2EBE1F60         Add								
<b>b</b> 0	rgets	⊜ iqn	.2008-08.com.starwindsoftware:1	72.16.2.48-sd	101				172.16.10.20		3260	7			
P* 4	Ta		LUN ID 22ebe1f66db375fb0		Size 500 GiB	#path	Vendor ID STARWINI	Product ID STARWINI	Serial SSTARWINDSTARWIND 2EBE1F6	Add					
	LUNs > Targets												+		
	) A	dvanced	d Parameters								_				
											O	Car	icel		

4. Storage Domain will be added to the list of Domain and can be used as a storage for VMs.

O oVirt Open Virtualization Manag	× +						~ - 🗆 X
← → C ▲ Not secure	https://sw-ov	irt-engine.sw.local/ovirt-e	ngine/webad	min/?locale=en_US#s	storage		ie 🛧 生 🗆 🔕 i
= OVirt OPEN VIRTU	IALIZATION MAN	AGER		P	No.		I � ≣⁰ ♣⁰ 0∘ ≛∘
Dashboard	Storage > Stora	ige Domains					
Compute >	storage.				New Domain Impo	ort Domain Manage Do	main Remove Connections
Thebuards	2 -						1-4 <> :
Network >	Status	Domain Name	Comment	Domain Type	Storage Type	Format	Cross Data Center Status
	<b>A</b>	node01		Data (Master)	NFS	V5	Active
🥃 Storage 🛛 🔪	· •	node02		Data	NFS	V5	Active
	•	ovirt-image-repository		Image	OpenStack Glance	V1	Unattached
dministration >	<b>A</b>	SD01		Data	ISCSI	V5	Active
Fvents							



5. Login to each host and verify that multipathing policy has been applied using the following command.

multipath -ll

<pre>[root@sw-demo-node-01 ~]# multipath -ll 22ebelf66db375fb0 dm-13 STARWIND,STARWIND</pre>
size=500G features='l queue if no path' hwhandler='l alua' wp=rw
`-+- policy='round-robin 0' prio=50 status=active
- 16:0:0:0 sdb 8:16 active ready running
- 17:0:0:0 sdc 8:32 active ready running

## Conclusion

Following this guide, a StarWind Virtual HCI Appliance (VHCA) powered by Red Hat Virtualization was deployed and configured with StarWind Virtual SAN (VSAN) running in a CVM on each host. As a result, a virtual shared storage "pool" accessible by all cluster nodes was created for storing highly available virtual machines.



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