

StarWind SAN & NAS CVM 2-node Converged Scenario with VMware vSphere 7

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

StarWind SAN & NAS Controller Virtual Machine (CVM) comes as a prepackaged Linux Virtual Machine (VM) to be deployed on any industry-standard hypervisor. The solution is a fully certified shared storage for VMware vSphere Hypervisor ESXi, allowing you to repurpose your existing hardware running industry-standard hypervisor into high-performing storage.

StarWind SAN & NAS supports hardware and software-based storage redundancy configurations. The solution allows turning your server with internal storage into a redundant storage array presented as NAS or SAN, exposing standard protocols such as iSCSI, SMB, and NFS. It features Web-based UI, Text-based UI, vCenter Plugin, and Command-line interface for your cluster-wide operations.

This guide describes the deployment and configuration process of the StarWind SAN & NAS CVM.

Starwind San & Nas Virtual Machine Requirements

Prior to installing StarWind SAN & NAS virtual storage appliance, please make sure that the system meets the requirements, which are available at the following link: https://www.starwindsoftware.com/system-requirements

Pre-Configuring The Servers

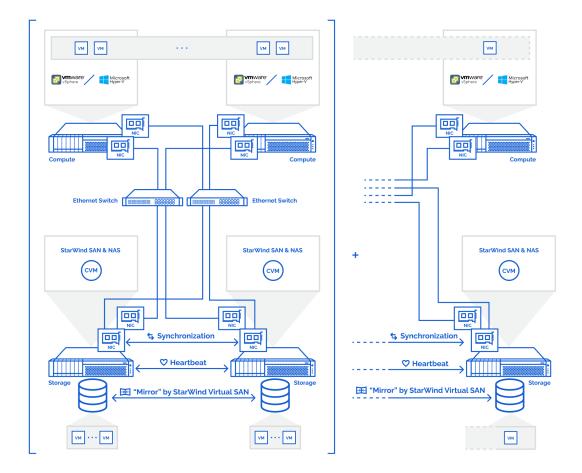
The diagrams below illustrate the common network and storage configurations of the solution for specific deployment configurations.

Please select your deployment scenario:

Highly Available Shared Storage Servers

• Dedicated 2 storage servers expose highly available shared storage for vSphere and Hyper-V clusters:





1. Install the hypervisor of your choice, VMware vSphere Hypervisor ESXi or Hyper-V Server, on two dedicated storage servers, and on the compute servers that are intended to connect and utilize the shared storage provisioned by the appliance.

2. StarWind SAN & NAS CVM is deployed on each Hyper-V Server or VMware ESXi server with commodity direct-attached storage.

3. The network interfaces on each node for Management, Data/iSCSI, and Replication interfaces should be connected to different subnets and connected directly according to the network diagram above. Here, the 172.16.10.x subnet is used for the Data (iSCSI) storage traffic, and 172.16.20.x subnet is used for the Replication storage traffic.

NOTE: The vCenter server is recommended for the deployment of multiple ESXi servers.

NOTE: The Failover Cluster feature is recommended for the deployment of multiple Hyper-V servers.



Setting Up Starwind San & Nas

This part describes how to prepare the environment to deploy and install StarWind SAN & NAS using your hypervisor of choice, either VMware ESXi and VMware vSphere web clients or Microsoft Hyper-V Server.

Please select the required option:

Configuring Converged Storage Server With Vmware Vsphere

Creating Datacenter In Vmware Vsphere

1. Connect to the vSphere Client, right-click on the "vCenter Site" menu, and select the "Create Datacenter" option.

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2. Specify the Datacenter Name and click "OK".



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3. Right-click on the Datacenter icon and select the "New Cluster..." action.

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4. Specify the cluster name and enable the required services.



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5. Right-click on "Cluster" and select the "Add Hosts" action.

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6. In the "Add Hosts" wizard, specify the IPv4 or FQDN, login, and password of each ESXi server intended to be added to the cluster and managed using VMware vSphere.

NOTE: For the converged deployment with StarWind SAN & NAS CVM running on VMware ESXi servers, it is recommended to add the VMware ESXi servers that host the CVMs.



NOTE: For the converged deployment with StarWind SAN & NAS installed bare metal, make install of StarWind vCenter plugin to manage the SAN & NAS nodes from the vSphere web interface.

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7. Manually verify the ESXi servers' certificates and accept the thumbprints. Click "OK" to proceed.

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8. Review settings and finish adding servers to the cluster.



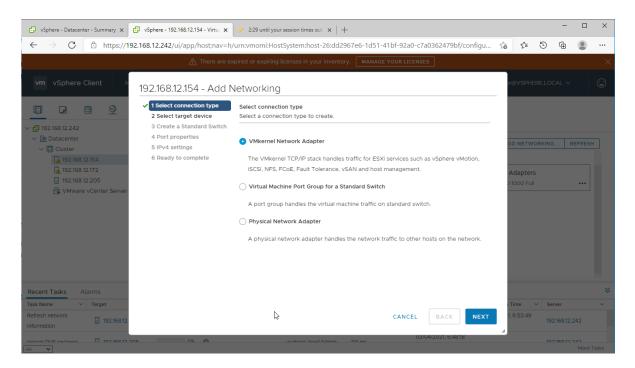
Configuring Networks On Vsphere Servers

Configure network interfaces on each node to ensure that Management and Data/iSCSI interfaces are in different subnets and connected physically according to the network diagram above. All actions below should be applied to each ESXi server for running StarWind SAN & NAS.

NOTE: Virtual Machine Port Group should be created for the Data/iSCSI and Replication vSwitches. VMKernel port should be created only for Data/iSCSI traffic. Static IP addresses should be assigned to VMKernel ports.

NOTE: It is recommended to set jumbo frames to 9000 on vSwitches and VMKernel ports for Data/iSCSI and Replication traffic. Additionally, vMotion can be enabled on VMKernel ports.

1. Using the VMware vSphere Client console, start the "Add Networking" wizard. Add a new VMKernel network adapter for the Data/iSCSI channel.



2. Create a new standard switch for the Data/iSCSI channel. Set MTU accordingly.

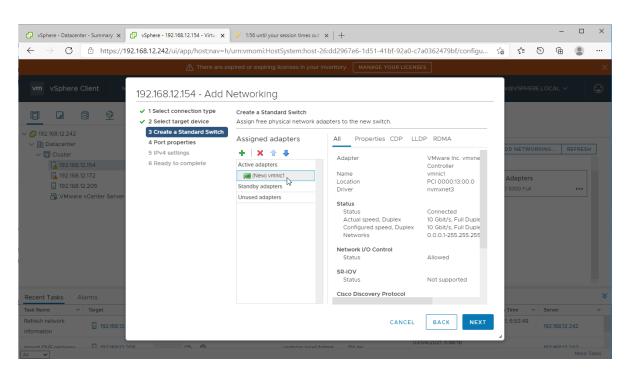


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3. Assign the second network adapter to the virtual switch. Click Next.

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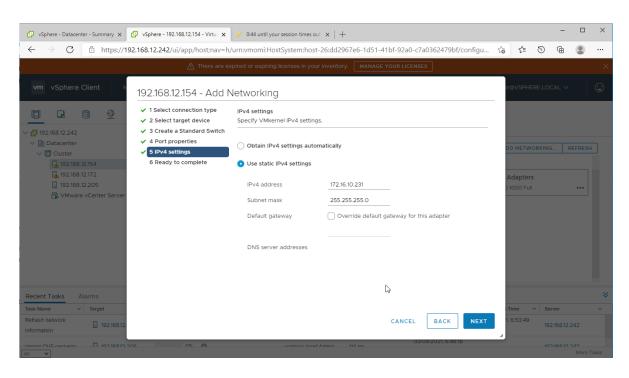
4. Specify port properties such as Network Label, MTU, and enable required services. Click Next.

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5. Assign static IPv4 address settings to the virtual switch. Click Next.

NOTE: In this document, the 172.16.10.x subnet is used for Data traffic and 172.16.20.x subnet is used for Replication traffic.





6. Review the summary of your settings and click "Finish" to add networking.

7. Start the "Add Networking" wizard again to create a "Virtual Machine Port Group for a Standard Switch".

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8. Specify the previously created vSwitch. Click Next.



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9. Set the Network label and click Next. Optionally, set VLAN ID if used.

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Update network	15 / Completed	VCDUEDE	LOCALLA 22 mc	03/04		5/04/2021	, 6:57:40		16010.0		
All 🗸										More T	asks

10. Review the port group setting and click Finish to apply.



🕑 vSphere - 192.168.12.172 - Virtu: 🗙	🕑 vSphere - 192.168.12.154 - Virtu: 🗙	+							-	×
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	192.168.12.154 - Add N	letworking								
✓	 1 Select connection type 2 Select target device 	Ready to complete Review your settings selections	before finishing the wiza	ard.						
✓ ☐ Datacenter ✓ ☐ Cluster ▲ 192.168.12.154	 ✓ 3 Connection settings 4 Ready to complete 	Virtual machine port group Standard switch	iSCSI-vSwitch vSwitch1				DD NETWO	RKING.	REF	
192.168.12.172 192.168.12.205		VLAN ID	None (0)				ICAL ADAF	TERS		
🛱 VMware vCenter Server							Adapters			
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10. Repeat steps 7-9 to configure the network for Replication traffic on each vSphere server.

11. Repeat steps 1-9 for any other links intended for the Data/iSCSI and Replication connections on each vSphere server.

Deploying Starwind San & Nas Cvm On Vsphere Servers

1. Download the zip archive that contains StarWind SAN & NAS CVM https://www.starwindsoftware.com/san-and-nas#download

2. Extract the virtual machine files.

3. Deploy the control virtual machine to the VMware vSphere. Right-click on the Datacenter, cluster, or node menu and select the "Deploy OVF Template..." option from a drop-down menu.



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vcenter01.star	wind,local	enter Actions V Monitor Configure Permissions Hosts & Clusters VMs Datastores Networks Updates	
> 🔝 Datacenter	Actions - Datacenter	osts: 1 CPU	Free: 14.18 GHz
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	W New Cluster	etworks: 2 atastores: 2 Used: 15.75.69	Capacity: 32 GB
	Distributed Switch	Storage	Free: 213.2 GB Capacity: 899.5 GB
	🏠 New Virtual Machine	UMM. 100.3 36	Capacity, Gee.5 OD
	Deploy OVF Template	s ^ Tags	^
	Storage	Value Assigned Tag Category Description	
	Edit Default VM Compatibility		
	🚜 Migrate VMs to Another Network		
	Move To		
	Rename		
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ask Name	Add Permission	✓ Details ✓ Initiator ✓ Queued For ✓ Start Time ↓ ✓ Completion Time √ Serve	er v
	Alarms		
- V	× Delete		More Tasks

4. In the first step of the wizard, point to the location of the OVF template. Select the VM files and click Next.

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vm vSphere Client Menu ∨ Q Search in all environm				
C Contractor Contract	Select an OVF template Select an OVF template from remote URL or local file system Enter a URL to download and install the OVF package from the internet, or browse to a location accessible from your computer, such as a local hard drive, a network share, or a CD/DVD drive. O URL http://temoteserver-address/filetodeploy.ovf i.ova e Local file UPLOAD FILES 4 files	ption	Free: 18.2 Capacity: 20.1 Free: 18.1 Capacity: 2 Free: 23 Capacity: 899	2 GHz 24 GB 32 GB .2 GB
Recent Tasks Alarms Task Name Target		v Serve	er	~
Import OVF package 192.168.12.154 0% 🛞	vsphere.local/Admin 162 ms 05/28/2021, 4:33:18	vcen	ter01.starwir Mor	nd.l e Tasks

5. Specify the VM name and target location.



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v center01.starwind.local	Deploy OVF Template		_				
> 📑 Datacenter	2 Select a name and folder	Select a name and folder Specify a unique name and target location			Free		łz
	3 Select a compute resource 4 Review details	Virtual machine name: SW1	-			y: 20.8 GF e: 16.24 G	
	5 Select storage 6 Ready to complete	Select a location for the virtual machine.			Cap	acity: 32 G	в
	o Ready to complete	v 🗗 vcenter01.starwind.local	1	_		e: 213.2 G	
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Import OVF package 192.168.12.154	0% 🛞	vsphere.local/Admin 162 ms		vce	nter01.st	arwind.l	

6. Select a compute resource intended to run the StarWind SAN & NAS CVM

🗗 vSphere - Datacenter - Summary 🗙 🕂					-	- 0	×
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vm vSphere Client Menu	✓ Q Search in all environme	ents	C (?) v Administrator@VS	SPHERE	LOCAL	~	
	Deploy OVF Template	<u>þ</u>					
 	 1 Select an OVF template 2 Select a name and folder 3 Select a compute resource 4 Review details 5 Select storage 6 Ready to complete 	Select a compute resource Select the destination compute resource for this operation Datacenter Image: Datacenter Image: Datacenter		ipt	C	Free: 18.21 (apacity: 20.8 (Free: 18.24 Capacity: 32 Free: 213.2 apacity: 800.5	GHz 4 GB 2 GB 2 GB 5 GB
		 Compatibility checks succeeded. 		ł			
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Import OVF package 192.168.12.154	0% 😵	vsphere.local\Admin 162 ms	05/28/2021, 4:33:18		vcenter	01.starwind More	d.l Tasks

7. Review the template details. Click Next.



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Deploy OVF Templat	e						
 ✓ I Select an OVF template ✓ 1 Select an OVF template ✓ 2 Select a name and folder 	Review details Verify the template details.				Free:	18.21 GH	
 3 Select a compute resource 4 Review details 5 Select storage 6 Select networks 		package contains advanced configuration options, which might pose a sk. Review the advanced configuration options below. Click next to accept the configuration options.					
7 Customize template 8 Ready to complete	Publisher	No certificate present		Capacity: 899.5		B	
	Product	StarWind SAN & NAS				^	
	Vendor	StarWind Software	ip	tion			
	Download size	1.9 GB					
	Size on disk	Unknown (thin provisioned) 50.0 GB (thick provisioned)					
	Extra configuration	nvram = ovf:/file/file2					
			- 1				
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Import OVF package 192.168.12.154 0% All V	vsphere.local\Admin 50	05/28/2021, 4:34:47		vcen	iter01.sta	arwind.l. More Ta	

8. In the second step of the wizard, specify the virtual machine provisioning type, VM Storage Policy, and select the direct-attached storage for the appliance system drive. Click Next.

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vm vSphere Client Menu	✓ Q Search in all environm	ents		C	? ~	Administrator@\	/SPHERE	LOCAL V	r	<u>.</u>
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Venter01.starwind.local Datacenter	✓ 1 Select an OVF template✓ 2 Select a name and folder	Select storage Select the storage for the con	figuration and dis	< files					ree: 18.21 G	
	 ✓ 3 Select a compute resource ✓ 4 Review details 5 Select storage 	Encrypt this virtual machin	ie (Requires Key M						acity: 20.8 G Free: 16.24 (GB
	6 Select networks 7 Customize template	Select virtual disk format: VM Storage Policy:			Lazy Zeroed v				apacity: 32 (Free: 213.2 (
1	8 Ready to complete	Name DAS	Capacity 699.75 GB	Provisioned 613.4 GB	Free 94.94 GB	Type VMFS 6		Cap	acity: 899.5 (3B
		Datastore	199.75 GB	90.09 GB	118.25 GB	VMFS 6	inti		^	
		Compatibility								
		 Compatibility checks such 	ceeded.							
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Import OVF package 192.168.12.154	0% 😣	vsphere.local\Adm	In 50 ms	05/28	/2021, 4:34:47			vcenter0	1.starwind. More T	

9. Select the destination network for each network adapter assigned to the VM.

The default naming for virtual switches:



- the Management virtual switch is "Management vSwitch",
- the iSCSI virtual switch is "Data/iSCSI vSwitch",
- the Synchronization virtual switch is "Replication/Sync vSwitch ".

Specify corresponding network connections according to your virtual network naming. Click Next.

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vm vSphere Client Menu ∨ O.	Search in all environments		C ?~ Adi	ministrator@VSPHI	ERE.LOC	al V		<u>;</u>
	OVF Template							
> Datacenter		n network for each source ne	twork.			Free: 1		
✓ 3 Select✓ 4 Review		Ŧ	Destination Network			Capacity: Free:	20.8 GHz 18.24 GB	
✓ 5 Select 6 Select	networks DATA Network	WORK	Management ISCSI_Data	~				
	to complete			2 items		Capacity:		
	IP Allocation S	ettings					^	
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	IP protocol:	IPv	/4					
Recent Tasks Alarms			CANCEL BACK	NEXT				*
Task Name V Target			05/28/2021, 4:34:47	5	Serv			~
Import OVF package 192.168.12.154	ovs 😵 vsphe	re.local\Admin 50 ms	014		vcer	nter01.star	rwind.i More Tas	ks

10. Specify the hostname, static IPv4 address, gateway, DNS, and additional network settings for Management and iSCSI/Data network interfaces:



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\leftarrow \rightarrow \bigcirc \blacktriangle Not secure ht	tps ://192.168.12.242/ui/app/data	center;nav=h/urn:vmomi:Datacen	ter:datacenter-3:00850be0-4c08-4437-97a 🖒	¢ €	Ē	٢		
vm vSphere Client Menu v	Q Search in all environmen	ts	C ? ~ Administrator@V	SPHERE.L	DCAL 🗸		٢	
	Deploy OVF Template							
Center01.starwind.local Datacenter	 ✓ 1 Select an OVF template ✓ 2 Select a name and folder 	 Management interface network settings 	6 settings	18		e: 18.21 Gł		
	 3 Select a compute resource 4 Review details 5 Select storage 	Hostname	Hostname of StarWind SAN & NAS VM			ity: 20.8 GH ee: 18.24 G pacity: 32 G	зв	
	 6 Select networks 7 Customize template 8 Ready to complete 	Choose DHCP or Static for Management interface	If DHCP, leave fields below empty	B	Fr	ee: 213.2 G ity: 899.5 G	ЗB	
		IPv4 address for Management IPv4 address for Management Interface (examinterface 192.168.1.100)						
		IPv4 netmask for Management interface	IPv4 netmask for Management interface (example 24)	I				
		IPv4 gateway for	IPv4 gateway for Management interface (example					
Recent Tasks Alarms			CANCEL BACK NEXT		Server		*	
Import OVF package 192.168.12.154	0% 🔇	vsphere.local/Admin 5	05/28/2021, 4/34/47 0 ms		/center01.s	t arwind . More T		

NOTE: To manage the SAN & NAS appliance via StarWind vCenter plugin, the static IPv4 address must be assigned.

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vm vSphere Client Menu	↓ ✓ Q Search in all environmer	nts	C	SPHERE,LOCAL	~	Ċ
	Deploy OVF Template	one contor for management	טופופייט פרויני איז אינט פווינט (פאניוויטט פוויט)			
vcenter01.starwind.local	1 Select an OVF template2 Select a name and folder	interface	192.168.1.17,192.168.8.17		Free: 18.21	
	 3 Select a compute resource 4 Review details 	 Data Interface network settings 	4 settings	Ca	pacity: 20.8 Free: 16.24	
	 ✓ 5 Select storage ✓ 6 Select networks 7 Customize template 	Choose DHCP or Static for Data interface	If DHCP, leave fields below empty Static		Capacity: 32 Free: 213.2	.2 GB
	8 Ready to complete	IPv4 address for Data interface	IPv4 address for Data interface (example 172.16.10.10)	Ca	pacity: 899.5	
			172.16.10.100	iption		
		IPv4 netmask for Data interface	IPv4 netmask for Data interface (example 24)			
		MTU for Data interface	MTU for Data interface (example 9000) 9000			
cent Tasks Alarms			CANCEL BACK NEXT			

NOTE: if a DHCP server is available on the given network, you can skip setting the additional parameters for that interface.

11. Review the deployment summary information and click to start the VM creation.



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vm vSphere Client Menu v Q	Search in all environments			C	∽ Admini	strator@VSP	HERE,L	ocal ∨		<u>:</u>	
	OVF Template										
	an OVF template Ready to comple a name and folder Click Finish to sta							Fre	e: 18.21 G⊦	iz	
	a compute resource					- 1					
 ✓ 4 Review ✓ 5 Select 			SW1						ee: 18.24 G		
✓ 6 Select	networks mize template		StarWindSANandNAS						ae: 213.2 G		
	to complete Download size		1.9 GB					Capac	Capacity: 899.5 GE		
	Size on disk		50.0 GB						~		
	Folder		Datacenter				iption				
	Resource		192.168.12.154								
	Storage mapping	а	1								
	All disks		Datastore: Datastore; Format: 1	Thick provision	lazy zeroed						
	Network mapping	g	2								
	Management	Network	Management								
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Import OVF package 192.168.12.154	vspn	here.local\Adm	nin 50 ms	DM4				center01.s			

12. Repeat the VM deployment on each partner server which is used for configuring 2node or 3-node highly available storage according to your licensing.

Configuring Appliances

Getting Started With Starwind San & Nas

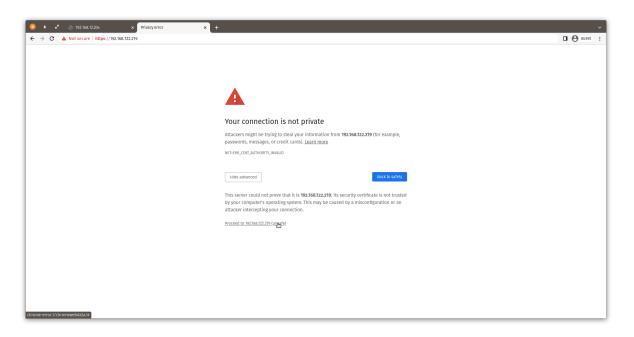
1. Start StarWind SAN & NAS CVM.

2. Launch Console to see the VM boot process and get the IPv4 address of the Management network interface.

Note: in case VM has no IPv4 address obtained from a DHCP server, use the Text-based User Interface (TUI) to set up a Management network.

3. Using the web browser, open a new tab and enter the VM IPv4 address to open StarWind SAN & NAS Web Interface. Click "Advanced" and then "Continue to..."





4. StarWind SAN & NAS welcomes you, and the "Initial configuration" wizard will guide you through the deployment process.

🧕 ≜ 🔹 🖉 Login - Monare Eski 🖈 🔝 StarWind SAN & NuS 🗙 +	~
← → C ▲ Not secure https://92.108.322.19	Guest :
Welcome to Starwind SAN & NAS	
Follow the initial configuration wizard and complete the required steps of the appliance setup Start	

5. In the following step, upload the license file.



🙁 🔹 🗈 🖉 Log in - VMware ESXi 🛛 🗙 🧮 StarWind SAN & NAS	× +	~
← → C ▲ Not secure https://192.168.122.219		Guest :
SAN & MAS Initia	onfiguration	
 Upload license Review EULA Configure manage Verify hostname Create administra Review summary Configuring setti 	upload file startWind license file (swk)	
	Back Next	

6. Read and accept the End User License Agreement to proceed.

🙁 🛨 🖍 🥐 Log in - VMware ESXi 🗙	🛃 StarWind SAN & NAS 🛛 🗙 🚽	•	v
← → C ▲ Not secure https://192.168.122.219			Guest :
	SAN & NAS Initial configuration		
	✓ Upload license	Review end-user license agreement	
	Review EULA	Review and accept the following license agreement to continue	
		STARWIND LICENSE AGREEMENT FOR FREE PRODUCTS	
		LICENSEE IS SUBJECT TO THE TERMS AND CONDITIONS OF THIS AGREEMENT WHETHER LICENSEE ACCESSES OR OBTAINS FREE SOFTWARE DIRECTLY FROM https://www.stanvindsoftware.com/, OR THROUGH ANY OTHER SOURCE. BY USING.	
and the second second		INSTALLING, AND/OR OPERATING FREE SOFTWARE, LICENSEE ACREES TO BE BOUND BY THE TERMS OF THIS AGREEMENT. LICENSEE WILL HAVE THE OPPORTUNITY TO ACCEPT THIS OFFER OF AGREEMENT THROUGH A CLICK-THROUGH PROCEMURE. IF LICENSEE DOES NOT WISH TO ACCEPT THE THEMS OF THIS AGREEMENT AND/OR TO DICLULE THIS	
		AGREEMENT, LICENSEE SHALL NOT USE, INSTALL, OR OPERATE THE FREE SOFTWARE. IF LICENSEE CHOOSES TO ACCEPT THE TERMS OF THIS AGREEMENT, LICENSEE MAY DO SO BY CHECKING "I AGREE" USING THE DESIGNATED CHECK BOX,	
		LICENSES'S CLICK OF THE "I AGREE TO TERMS OF THIS AGREEMENT" BUTTON, IS A SYMBOL OF LICENSES SOMATURE AND BY CLICKING ON THE "I AGREE TO TERMS OF THIS AGREEMENT" BUTTON, LICENSEE CONSENTS TO BE BOUND BY AND BECOME A PARTY TO THIS AGREEMENT MUI AGREES THAT THIS AGREEMENT IS INFORCEBALE AGAINST LICENSEE	
		PURSUANT TO ITS TERMS TO THE SAME EXTENT AS ANY WRITTEN NEGOTIATED AGREEMENT SIGNED BV LICENSEE IF LICENSEE DOES NOT AGREE TO ALL OF THE TERMS OF THIS AGREEMENT, THEN LICENSEE SHOULD NOT OPERATE THE FREE SOFTWARE AND LICENSEE WILL NOT BE ALLOWED TO USE. INSTALL, OR OPERATE THE FREE SOFTWARE, FOR	
		AVOIDANCE OF DOUBT, AND NOTWITHSTANDING ANYTHING TO THE CONTRARY HEREIN, STARWIND RESERVES THE RIGHT TO REFUSE ACCEPTING THIS AGREEMENT AND NOT TO PROVIDE LICENSEE WITH THE RIGHT TO USE, INSTALL, OR OPERATE THE FIREE SOFTWARE AS CONTEMPLATED HERINIDER FOR ANY REASION OR NO REASON.	
		Definitions: Each of the average indicated balance will brace in this forearment. The meaning assigned to it instable	
and the state of the		I accept the terms of the license agreement	
		Back	Next

7. Review or edit the Network settings and click Next. Note: Static network settings are recommended for the configuration.



→ C ▲ Not secure https://192.168.122.221			Guest
	SAN & NAS Initial configuration	•	
	✓ Upload license	Configure management network	
	✓ Review EULA	Specify the unique IP address (static is recommended) and configure other network settings. Management network is used to communicate with services such as DNS and NTP and to access the appliance web UI from external clients.	
	Configure management network	• Nanagement network is used to communicate with services such as UNS and N IP and to access the appliance web UI from external clients.	
		IP mode Static	
		Name servers (optional):	
		DNS 1 192.168.122.1 DNS 2	
		Time settings (optional):	
		Back	

8. Specify the hostname for the virtual machine and click Next.

🙁 ± 🖍 🛞 192.168.12.204 🛛 🗙 🔚	StarWind SAN & NAS × +		~
← → C ▲ Not secure https://192.168.122.219	_		Guest :
	SAN & NAS Initial configuration		
	 ✓ Upload license ✓ Review EULA ✓ Configure management network 	Verify hostname Check the current appliance hostname and modify it if required Of Use laten Inters, and Gush	
	 Verify hostname 	Hostmanne SW1	
		Back Back	

9. Create an administrator account. Click Next.



🤹 🔹 🖍 Log in - Winnare Essi 🛛 x 🧮 Starwind SAN & NAS 🗙 🕂	v
← → C 🛦 Not secure https://102.108.122219	Guest :
SAN & NAS Initial configuration	
Upload license Verify bostname Create administrator account Specify new credwrdials for the appliance administrator account Verify bostname Verify bostname Create administrator account Review summary Configuring settings Additional information (optional)	
E-mail Back Next	

10. Review your settings selection before setting up StarWind SAN & NAS.

🙁 🛨 🖍 🥒 Log in - VMware ESXi 🛛 🗙	🛃 StarWind SAN & NAS 🛛 🗙 🕂			~
← → C ▲ Not secure https://192.168.122.219				Guest :
	SAN & NAS initial configuration			
	✓ Upload license ✓ Review EULA	Review summary		
	 Configure management network Verify hostname 			
	 Create administrator account Review summary 	Network settings Interface		
		Bandwidth MTU IP address Appliance hostname		
		Credentials Administrator username		
			Back Configure	

11. Please standby until the Initial Configuration Wizard configures StarWind SAN & NAS for you.



🙁 🔹 🥐 🛃 Log in - VMware ESxi 🛛 🗙 🚟 StarWind SAN & NAS	+
← → C ▲ Not secure https://192.168.122.219	
SAN & NAS initial configur	
✓ Upload license ✓ Review EULA	Configuring settings Please wait until all specified settings are applied
 ✓ Configure management net ✓ Verify hostname ✓ Create administrator accourt 	Progress: 0% 👌 Time remaining:3 sec
 ✓ Review summary ● Configuring settings 	Apping license Configuring management network Creating administrator account

12. The appliance is set and ready. Click on the Done button to install StarWind vCenter Plugin right now or uncheck the checkbox to skip this step and proceed to the Login page.

🙁 🗴 🖍 Log in - Winare ESNi 🛛 x 🔛 StarWind SAN & NAS 🛛 🗙 🕂	~
← → C ▲ Not secure https://92.168.122.219	Guest :
SAN & NAS Initial configuration	
Initial configuration completed The essential settings were successfully configured. Press "Finish" to close the wizard and navigate to the login page. You can also install StarWind SAN & NAS visiblere plag in if you want to access SAN & NAS web UI from your visiblere console.	
Laura an min on a no spine page management.	
Finish	

13. Repeat the initial configuration on other StarWind SAN & NAS CVMs that will be used to create 2-node or 3-node HA shared storage.



Installing Starwind Vcenter Plugin

NOTE: This step is optional. StarWind vCenter plugin integrates the Controller Virtual Machines management into VMware vSphere user interface allowing managing compute and storage resources from a single web console.

1. To install the StarWind Plugin ensure that the version of your VMware vCenter Server Appliance 7.0 or newer, then click Next.

🔁 vSphere - SW1 - Summary 🗙 📚 StarWind vCenter Plugin 🗙 🕂		-	
← → C ▲ Not secure https://192.168.12.206:5044/#/deploy	fa f≅ (9 @ (
📚 StarWind vCenter Plugin			
Welcome			
This installer allows you to deploy StarWind vCenter Plu	gin to your VMware vCenter Server Appliance		
Prerequisites: • VMware vCenter Server Appliance 6.7u3 or higher • StarWind SAN & NAS v1			
For additional information regarding StarWind vCenter Plugin			
https://www.starwindsoftware.com/resource-library/starwind			
	Next		

2. Specify the vCenter Server FQDN or IP Address and administrator credentials and click Next.



🛃 vSphere -	- com.starwind.san_nas. 🗙 📚 StarWind vCenter Plu	igin × +				-		×
$\leftarrow \rightarrow$	C A Not secure https://192.168.12.2	206:5044/#/deploy	τô	£	9	Ē		
	≋ StarWind vCenter Plugin							
	1 PLUGIN DEPLOYMENT TARGET	Plugin Deployment Target						
		Specify the plugin deployment target settings. The target is the vCenter Server Appliance instance on which the plugin will be installed						
		VMware vCenter Server FQDN or IP address						
		Administrator username						
		Administrator password						
				No	ext			
						•		
vSphere -	- com.stanwind.san_nas 🛛 🗙 StarWind vCenter Plu	ugin x +				-		×
$\leftarrow \rightarrow$	C A Not secure https://192.168.12.2		τô	£≡	5	Ē	۲	
	📚 StarWind vCenter Plugin							
	1 PLUGIN DEPLOYMENT TARGET	Plugin Deployment Target						
		Specify the plugin deployment target settings. The target is the vCenter Server Appliance instance						
		on which the plugin will be installed						
		VMware vCenter Server FQDN or IP address 192.168.13.236						
		administrator@vsphere.local						
			ן	Ne	ext			
						~		

3. Confirm the connection to your vCenter Server Appliance.



🕑 vSphere - com.starwind.san_nas. 🗴 📚 StarWind vCenter Plug	gin x +				-		×
← → C ▲ Not secure https://192.168.12.20	06:5044/#/deploy	τô	ť≡	Ð	Ē	۲	
≳ StarWind vCenter Plugin							
2 SUMMARY							
	192.1 Certificate Warning						
	If an untrusted SSL certificate is installed on 192.168.13.236, secure communication cannot be guaranteed. Depending on your security policy, this issue does not represent a security concern.						
	The SHA1 thumbprint of the certificate is: D3:D6:66:C4:30:43:69:2C:18:AD:C4:D1:AD:13:71:CD:F4:85:29:2C						
	Cancel						
	•						

4. Review Summary and click the Install button.

C Vsphere - com:stativind san_nas: x StartWind vCenter Plugin x + x x
 StarWind vCenter Plugin PLUGIN DEPLOYMENT TARGET SUMMARY JINSTALLATION INSTALLATION COMPLETED SUMMARY Mistral completed Mistral completed
PLUGIN DEPLOYMENT TARGET Summary Summary Keview your settings selection before deploying the StarWind vCenter Plugin vCenter Server IP address 192.168.13.236 Administrator username administrator@vsphere.local Administrator password
2 SUMMARY 3 INSTALLATION 4 INSTALLATION COMPLETED Administrator password Image: Complete Comp
3 INSTALLATION 4 INSTALLATION COMPLETED Administrator password
Administrator username administrator@vsphere.local Administrator password
(4) INSTALLATION COMPLETED Administrator password (2)
Back Back

5. Wait until the plugin is installed.



🛃 vSphere -	- com.starwind.san_nas. 🗙 📚 StarWind vCenter I	Plugin x +			-	- 0	×
$\leftarrow \rightarrow$	C A Not secure https://192.168.13	2.206:5044/#/deploy	τõ	£≡	9 6		
	≋ StarWind vCenter Plugin						
	PLUGIN DEPLOYMENT TARGET	Installation					
		Please wait until the Setup Wizard deploys StarWind vCenter Plugin					
	3 INSTALLATION	Install progress:		1	00 %		
				✓ Compl	eted		
			Cancel	Nex	:		
						×	

6. Click the Open Plugin page to start using StarWind SAN & NAS via the vCenter Plugin interface.

🛃 vSphere -	- com.starwind.san_nas. 🗙 📚 StarWind vCenter R	Nugin × +				-		×
$\leftarrow \rightarrow$	C A Not secure https://192.168.12	2.206:5044/#/deploy	τô	5∕≡	${\bf \bar {\bf D}}$	œ	٩	
	📚 StarWind vCenter Plugin							
	PLUGIN DEPLOYMENT TARGET	Installation completed						
		Congratulations! StarWind vCenter Plugin has now been successfully installed						
		The full technical guidance on setting appliance is available at: https://www.starwindsoftware.com/resource-library/starwind-san-and-nas/						
• • •	4 INSTALLATION COMPLETED							
			Oper	n Plugii	n Page			
							•	

7. Repeat the plugin installation on each StarWind Controller Virtual Machine that will be managed using the StarWind Plugin in the VMware vSphere web interface.



Add Appliance

To create 2-way or 3-way synchronously replicated highly available storage, add partner appliances that use the same license key.

1. Add StarWind appliance(s) in the web console, on the Appliances page. NOTE: The newly added appliance will be linked to already connected partners.

StarWind hyperconvergence			🗄 🌲 🏠 admin 🛩
Dashboard	App Add appliance		
🗟 Storage 👻	Credentials	Credentials	Q ±
Appliances		Specify the appliance IP address and its administrator credentials The newly added appliance will be linked to already connected partners.	Raw capacity ≑ 0 Bytes
Users Tasks and events		IP address	
		×	
		Cancel Next	
∢ Minimize			

2. Provide credentials of partner appliance.



StarWind			🗉 🌲 🏠 admin 💌
	App Add appliance		
	Credentials	Credentials	Q ±
		Specify the appliance IP address and its administrator credentials The newly added appliance will be linked to already connected partners.	Raw capacity 🗢 0 Bytes
		IP address 192.166.12.166	
		Administrator usemame admin	
		Cancel	

3. Wait for connection and validation of settings.

StarWind		
Control Contr	Add appliance • credentials summary • Credentials specify the appliance VP address and its administrator credentials. • The newly added appliance will be larked to already connected partners. • Use the appliance connected partners. • Diministrator connected partners. • Other newly added appliance will be larked to already connected partners. • Other newly added appliance will be larked to already connected partners. • Other newly added appliance will be larked to already connected partners. • Other newly added appliance will be larked to already connected partners. • Other newly added appliance will be larked to already connected partners. • Other newly added appliance will be larked to already connected partners. • Other newly added appliance will be larked to already connected partners. • Other newly added appliance will be larked to already connected partners. • Other newly added appliance will be larked to already connected partners. • Other newly added appliance will be larked to already connected partners.	
< Minimize		

4. Review the summary and click "Add appliance".



StarWind hyperconvergence			🖽 🌲 🎄 admin 💌
	App Add appliance		
	CredentialsSummary	Summary	
		Appliance name SW2 Storage capacity 0.68 Storage pools 0 Volumes 0	
		Back Add appliance	

Configure Ha Networking

1. Launch the "Configure HA Networking" wizard.

Star Wind							Ē	÷ ¢	admin 🔻
💁 Dashboard	Network								
🗟 Storage 🛛 🔻		onfigure HA networking							
A Network	🗌 Interface 🗘	Adapter model 💠	Link status 💲	Bandwidth 💠	MAC address 🗢	Role ≑	IP address 🗢	Appliance	
Appliances Users	🔲 🗖 ens160	82574L Gigabit Net	Up		00:50:56:9C:E5:A5	Management			
Tasks and events	🔲 📜 ens160	82574L Gigabit Net				Management			
	🗌 🖿 ens224	VMXNET3 Ethernet	Up			Unassigned			
	🔲 🗖 ens224	VMXNET3 Ethernet				Unassigned			
	🗌 🗖 ens256	VMXNET3 Ethernet	Down			Unassigned			
	🔲 📜 ens256	VMXNET3 Ethernet				Unassigned			
4 Minimize									



2. Select appliances for network configuration.

NOTE: the number of appliances to select is limited by your license, so can be either two or three appliances at a time.

StarWind					🗐 🌲 🛟 admin 🔻
🙆 Dashboard	Configure HA networking				
 Storage Network Appliances 	Appliances Data network Replication network	Appliances Select appliances for network configuration. Yo	u can configure up to three appliances at a time.		
💄 Users		Appliance 🗘	Status ≑	Adapters 🗢	
📋 Tasks and events 🛛 🔻		✓ SW1	Online		
		✓ SW2	Online		
				Close Next	
∢ Minimize					

3. Configure the "Data" network. Select interfaces to carry storage traffic, configure them with static IP addresses in unique networks, and specify subnet masks:

- assign and configure at least one interface on each node
- for redundant configuration, select two interfaces on each node
- ensure interfaces are connected to client hosts directly or through redundant switches

4. Assign MTU value to all selected network adapters, e.g. 1500 or 9000. Ensure the switches have the same MTU value set.



StarWind									🗐 🌲 🏠 admin 🔻
 Dashboard Storage 	Configure HA networking								
🚆 Network	AppliancesData network	 Show sample netw SW1 . 	ork diagram						
 Appliances Users 		Interface	Model	Bandwidth	MAC address	IP address	Netmask	Link status	
📋 Tasks and events 🔹 🔻			VMXNET3 Ethernet	10 Gbit 10 Gbit	00:50:56:9C:21:E1 00:50:56:9C:C4:73			Up Down	
		₩2 ▲							
		Interface ens224	Model VMXNET3 Ethernet	Bandwidth 10 Gbit	MAC address 00:50:56:9C:D8:13	IP address 172.16.10.20	Netmask ①	Link status	
			VMXNET3 Ethernet					Down	
		Cluster MTU size: MTU 9000							
							Back	Next	
4 Minimize									

5. Click Next to validate Data network settings.

StarWind		🗐 🌲 🏟 admin 🔻
	ens A Non-redundant configuration X 72.16.10.19 24 Up ens	
	Only 1 Data network is configured. Configure more Data networks to eliminate a single point of failure	
	Inter We recommended assigning at least two data network Paddress Netmask O Link status Interfaces to eliminate a single point of failure. 72 16:10:20 24 Up	
	Acknowledge and continue?	
	Cluster MTU si	
	*	

6. Configure the "Replication" network. Select interfaces to carry storage traffic, configure them with static IP addresses in unique networks, and specify subnet masks:

- assign and configure at least one interface on each node
- for redundant configuration, select two interfaces on each node



• ensure interfaces are connected to client hosts directly or through redundant switches

7. Assign MTU value to all selected network adapters, e.g. 1500 or 9000. Ensure the switches have the same MTU value set.

StarWind hyperconvergence			
Dashboard Storage	Configure HA networking		
Appliances Network Data network	 ✓ Data network ● Replication network 	Select interfaces to carry data replication traffic, configure them with unique IP addresses, and specify subnet masks. Assign and configure at least one interface on each node Ensure interfaces are connected to client hosts directly or through redundant switches Show sample network diagram	Q = ↔ ↔ Appliance Φ SW1
📋 Tasks and events 🛛 🔻		Interface Model Bandwidth MAC address IP address Netmask ① Link status Image: ens256 VMXNET3 Ethernet 10 Gbit 00:50:56:9C;C4:73 172:16:20:10 24 Down	SW2 SW1 SW2
		 SW2 * Interface Model Bandwidth MAC address IP address Netmask Ø Link status 	SW1 SW2
		9000 Back	
4 Minimize			

8. Click Next to validate the Replication network settings completion.

Star Wind							🗉 🌲 🏟 admin 🔻
👜 Dashboard							
Storage 🔻							
Appliances							
😩 Users							
💼 Tasks and events 🔻		SW1 🔺	▲ Non-redundant configuration × Only 1 Replication network is configured. Configure more Replication networks to eliminate a single point of failure. We recommended assigning at least two data network interfaces to eliminate a single point of failure. Acknowledge and continue?				
		A					
			No, cancel Yes, continue				
∢ Minimize							



StarWind			
Dashboard Storage			
Storage •			
		SW2 * Casting network settings	
4 Minimize		×	

9. Review the summary and click Configure.

StarWind						I	🗐 🌲 🏟 admin 🕶
🙆 Dashboard	Configure HA networking						
Storage 👻	 ✓ Appliances ✓ Data network ✓ Replication network Summary 	Summary					
Appliances Users Tasks and events		Appliance name Image: SW1 Data networks 172.16.10.10 Replication networks 172.16.20.10					
		Appliance name Data networks Replication networks	₩ SW2 172.16.10.20 172.16.20.20				
					Back	nfiggre	
∢ Minimize							



Add Physical Disks

Attach physical storage to StarWind Virtual SAN Controller VM:

- Ensure that all physical drives are connected through an HBA or RAID controller.
- Deploy StarWind VSAN CVM on each server that will be used to configure faulttolerant standalone or highly available storage.
- Store StarWind VSAN CVM on a separate storage device accessible to the hypervisor host (e.g., SSD, HDD).
- Add HBA, RAID controllers, or NVMe SSD drives to StarWind CVM via a passthrough device.

Learn more about storage provisioning guidelines in the KB article.

Create Storage Pool

- 1. Click the "Add" button to create a storage pool.
- 2. Select two storage nodes to create a storage pool on them simultaneously.

Star Wind		🗐 🌲 🏠 admin v	
🗳 Dashboard	Storage pools		
🛢 Storage 🔺	Selected 0 of 0 + Create a new pool pool		
👮 File shares			
👮 LUNS	There are no storage pools yet		
🔮 Volumes	Start building your storage infrastructure by creating a new one		
iii Storage pools			
Physical disks			
🚓 Network			
Appliances			
💄 Users			
💼 Tasks and events 🔻			
 Minimize 			



StarWind hyperconvergence								Ē ļ	🤹 admin 👻
🕮 Dashboard	Stor	Create storage pool							
Storage *		Appliance Physical disks Profile	Applia Select or	ance ne or more storage nodes to	o create a storage pool 😨				
C Volumes				Node name 🇢	Status \$	Available disks 🗢	Available capa 🗢		
Storage pools Physical disks				SW1	Online Online				
🚆 Network									
Appliances Users									
📋 Tasks and events 📼									
						Cancel	Next		
4 Minimize									

3. Select physical disks to include in the storage pool name and click the "Next" button. NOTE: Select identical type and number of disks on each storage node to create identical storage pools.

Star Wind			🗉 🌲 🎄 admin	n 🔻
 Dashboard Storage 	Stol Create storage pool			
File shares	Selector Appliance Physical disks 	Physical disks Select physical disks to include in storage pools on each node O		
 Volumes Storage pools 		Image: SW1 ▲ Image: SW1 → SW1 ← Image: SW1 ←<	Slot † Contro †	
Physical disks A Network		Image: set bit of the set o	32.0.2.0 SAS1068 PC	
 Appliances Users 		Std HDD SAS 5 GB Total raw capacity of selected disks: 15 GB SW2 •	32:0:3:0 SAS1068 PC	
📋 Tasks and events 💌		Disk name Media t Bus pro Size Size Size Media t Size Size Size	Stot + Contro + 32.01.0 SASI068 PC	
		Z Sdc HDD SAS 5GB	32.0.2.0 SAS1068 PC	
		Selected number of disks is equal	Back Next	
< Minimize				

4. Select one of the preconfigured storage profiles or create a redundancy layout for the new storage pool manually according to your redundancy, capacity, and performance requirements.



StarWind hyperconvergence						🖽 🌲 🏠 admin 💌
	Stol Create storage pool					
	Selecte: Appliance Physical disks Profile 	Profile Choose an optimal storage pool profile. Selected disks lef	t unused will be assig	gned to hot spares.		
		Storage pool profile	Usable capacity	Fault tolerance 🕑	Hot spares	
		 High capacity (recommended) Maximize redundancy while maintaining high storage capacity (Software RAID(RAID-S) 	9.9 GB			
		High performance Maximize storage performance while maintaining redundancy (Software RADI(RAID-1)	4.95 GB			
		Manual Allows you to configure the storage pool layout manually.				
				Back	Next	

Hardware RAID, Linux Software RAID, and ZFS storage pools are supported and integrated into the StarWind CVM web interface. To make easier the storage pool configuration, the preconfigured storage profiles are provided to configure the recommended pool type and layout according to the direct-attached storage:

- hardware RAID configures Hardware RAID's virtual disk as a storage pool. It is available only if a hardware RAID controller is passed through to the CVM
- high performance creates Linux Software RAID-10 to maximize storage performance while maintaining redundancy
- high capacity creates Linux Software RAID-5 to maximize storage capacity while maintaining redundancy
- better redundancy creates ZFS Stripped RAID-Z2 (RAID 60)) to maximize redundancy while maintaining high storage capacity
- manual allows users to configure any storage pool type and layout with attached storage

5. Review "Summary" and click the "Create" button to create the pools on storage servers simultaneously.



Stol Create storage pool				
Scheeter V Appliance V Physical disks V Profile	Summary Review specified settings a ≌ SW1	nd create storage pools.		
 Summary 	Storage pool layout Raw capacity Usable capacity			
	📑 SW2			
	Storage pool layout Raw capacity			
	Usable capacity		Back	

Create Volume

- 1. To create volumes, click the "Add" button.
- 2. Select two identical storage pools to create a volume simultaneously.



StarWind		🗐 🌲 🏟 admin 🕶
🍄 Dashboard	Volumes	
🛢 Storage 🔺	Selected 0 of 0 🛧 Create a new volume nage VHR user	
File shares LUNs	There are no volumes yet	
🔮 Volumes	There are no volumes yet Start sharing your storage resources to clients by creating a new one	
Storage poolsPhysical disks		
Network		
Appliances		
Lusers ➡ Tasks and events ➡		
asks and events 👻		
4 Minimize		

StarWind hyperconvergence			
🙆 Dashboard	Voli Create volume		
Storage File shares ELUNs Volumes	Selecter Storage pool Settings Filesystem type Summary	Select storage pool Select one or more (in HA configurations) storage pools to create a volume Name Type State Resiliency Free	
Storage pools Physical disks		III SW1:md0 Software RAID Online RAID-5 9.98 GB III SW2:md0 Software RAID Online RAID-5 9.98 GB	
Appliances			
😩 Users			
		Cancel	
∢ Minimize			

3. Specify volume name and capacity.



StarWind					🗐 🌲 🏟 admin 🔻
	Volu Create volume				
	Selector Storage pool • Settings Filesystem type Summary	Specify settings Specify the volume name and size volume0 You can use Latin letters, numbers, and dash Size Available storage pool capacity: 9.98 GB			
			Back	Next	
∢ Minimize					

4. Select the Standard volume type.

 And an and a standard standard
 Storage pool First hars Units Firstystem type Summary Storage pools Storage pools Phytical disks Phytical disks Phytical disks Storage pools Sto

5. Review "Summary" and click the "Create" button to create the pool.



Star Wind			🗉 🌲 🏟 admin 💌
	Volt Create volume		
	Selector Storage pool Settings Filesystem type	Review summary Review your settings before creating a volume	
	• Summary	Storage pool ESVIImd0 Volume name volume0 Size 5 G8 Filesystem settings Standard	
		≣ SW2	
		Storage pool 📑 SW2:md0 Volume name volume0 Size 5 GB Filesystem settings Standard	
		Back	

Create Ha Lun

The LUN availability for StarWind LUN can be Standalone and High availability (2-way or 3-way replication) and is narrowed by your license.

1. To create a virtual disk, click the Add button.



StarWind		💼 🌲 🏟 admin -
🔯 Dashboard	LUNs	
Storage File shares	Selected 0 of 0 + Greate a new LUN > LUN	
E LUNS	There are no LUNs yet	
- Volumes	Start sharing your storage resources to clients by creating a new one	
III Storage pools		
📕 Physical disks		
🚓 Network		
Appliances		
🛓 Users		
🖹 Tasks and events 🔻		
✓ Minimize		

2. Select the protocol.

	LUN Create LUN		
	Protocol Protocol UN availability Select the required Protocol Appliances Volumes		
	Summary NVMe oF NVMe		
Appliances Users Tasks and events 🗢	ISC3 is a recommended protocol for most HDD based setup This option offers broader compatibility for storage clients.		
4 Minimize		Close	

3. Choose the "High availability" LUN availability type.



StarWind hyperconvergence		🗒 🌲 🏟 admin 💌
	LUN Create LUN	×
	 Protocol UN availability Appliances Volumes Fallover strategy LUN settings Summary Inter squichtonouly replicated LUN hosted on two or three identical appliances. The UUN says accessible if fair of the replication partners becomes unavailable. Inter any replicated SCSI UN hosted on a single appliance. The UN will not be accessible if fair host becomes unavailable. Back Next_ Back Next_ 	
4 Minimize		

4. Select the appliances that will host the LUN. Partner appliances must have identical hardware configurations, including CPU, RAM, storage, and networking.

StarWind Hyderconvergence						🗐 🌲 🏠 admin 🕶
Dashboard LU	Create LUN					
Storage * Select File shares	 ✓ Protocol ✓ LUN availability 	Appliances Select two or three replication parts	ers that should host the i	HALUN		
👮 LUNs	Appliances Volumes	All appliances must have identica	hardware configurations	i, including CPU, RAM, storage, and r	networking	
Storage pools Physical disks	Failover strategy LUN settings Summary	Appliance	Status Online	Software version	Capacity 15 GB	
Appliances	Junnary		Online	1.5.460.5391+76fc51b		
😩 Users 💼 Tasks and events 🛛 🔻						
				Back	Next	
4 Minimize						

5. Select a volume to store the LUN data. Selected volumes must have identical storage configurations.



StarWind hyperconvergence			🗐 🌲 🏠 admin 🔻
	LUN Create LUN		
	Selector V Protocol LUN availability Appliances Volumes	Volumes Select one volume on each appliance to store the HA LUN data. Selected volumes must have identical storage configurations. Volumes have identical configurations	
	Failover strategy LUN settings Summary	Volume that a comparations If SW1 ▲ Volume State RAID Ie Capacity Free Sp Type	
		volume0 Mounted RAID-5 5 GB 4.92 GB Standard SW2	
		Volume • State • RAID le • Capacity • Free Sp • Type • • • • • • • • • • • • • • • • • • • • • • • • • • • • • • • • • • • • • • • • • • • • • • • • • • • • • • • • • • • • • • • • • • • • • • • • • • • • • • • • • • • • • • • • • • • • • • • • • • • • • • • • • • • • •	
		Back	

6. Select the "Heartbeat" failover strategy.

NOTE: To use the Node witness or the File share witness failover strategies, the appliances should have these features licensed.

StarW:nd		🗐 🌲 🏟 admin 🔻
HYPERCONVERGENCE	LUN Creste LUN X	
File shares	Protocol Failover strategy LUN availability Select the preferred failover strategy. The default is "Heartbeat". However, you can choose another method if you do not have a UPS unit at your disposal.	
Volumes Storage pools Physical disks	Volumes Failover strategy EuRover strategy LUN settings LUN settings Summary	
 Appliances Users 	Node witness Arbid appliance acts as a "nouter" for replication partners. The working witness node excludes the possibility of a "split brain" condition.	
Tasks and events *		
	Back	
< Minimize		

7. Specify the HA LUN settings, e.g. name, size, and block size. Click Next.



StarWind hyperconvergence			🗄 🌲 🌼 admin 🔻
	LUN Create LUN		
	Selecter	LUN settings Specify the HA LUN settings Lun name Lun Lun </th <th></th>	
∢ Minimize			

8. Review "Summary" and click the "Create" button to create the LUN.

StarWind				🗄 🌲 🎄 admin 🔻
	Create LUN			
	 Protocol LUN availability Appliances Volumes Failover strategy LUN settings Summary 	Summary Protocol UN availability Appliance 1 Appliance 2 Volume names Volume names Volume sizes Failover strategy LUN name LUN size MPiO Create VMFS6 datastore IQNS	iSCSI High availability (two-way replication) S SW1 SW2 volume0, volume0 S GB Heartbeat Lun0 4 GB Enabled No ign.2008-08.com.starwindsoftware:192.168.12.206-lun0 ign.2008-08.com.starwindsoftware:192.168.12.166-lun0	
			Back Create LUN	



Connecting Starwind Luns To Vmware Vsphere Servers

1. Log in to VMware vSphere Client.

2. Select the ESXi server in the sidebar-menu, then navigate to the "Configure" tab and open the "Storage Adapters" submenu page.

3. Click the "+Add Software Adapter" button to launch the corresponding wizard.

🕑 vSphere - 192.168.12.154 - Stora 🗙 🛃 vSpher	re - 192.168.12.205 - Virtua 🗙 +	-	
\leftarrow \rightarrow C \triangle https://192.168.12.	242/ui/app/host;nav=h/urn:vmomi:Ho	stSystem:host-26:dd2967e6-1d51-41bf-92a0-c7a0362479bf/co 🤌 🏠 🖆 🔞 🌘	•
vm vSphere Client Menu v	Q Search in all environments	C (?) v Administrator@VSPHERELOCAL v	
	🚡 192.168.12.154 🛛 асти	DNS 🗸	
192.168.12.242	Summary Monitor Configure	Permissions VMs Datastores Networks Updates	
✓ In Datacenter ✓ In Cluster	Storage 🗸 🗸	Storage Adapters	
192.168.12.154	Storage Adapters	+ Add Software Adapter 🗟 Refresh 🖏 Rescan Storage 💐 Rescan Adapter 🗙 Remove	
192.168.12.172	Storage Devices	Adapter Type y Status y Identifier y Tar y Dev y	P
192.168.12.205	Host Cache Configuration	 Model: PIIX4 for 430TX/440BX/MX IDE Controller 	
🗄 swi	Protocol Endpoints	🚱 vmhba1 Block S Unknown 1 1	1
🕞 VMware vCenter Server	I/O Filters	🚱 vmhba64 Block S Unknown 0 0	С
	Networking 🗸	Model: PVSCSI SCSI Controller	
	Virtual switches	Copy All 3 ite	ems
	VMkernel adapters		
	Physical adapters		
	TCP/IP configuration		
	Virtual Machines 🗸 🗸	No items selected	
Recent Tasks Alarms			
ask Name v Target v St	tatus ~ Details ~		`
eploy OVF template 📅 SW1	✓ Completed	VSPHERE.LOCALLvp 24 ms 03/04/2021, 7:09:19 03/04/2021, 7:24:35 192:168:12:24 AM AM AM	2
nport OVF package 🔲 192.168.12.205	✓ Completed	vsphere.local\Admin 102 ms 03/04/2021, 7:07:39 03/04/2021, 7:24:36 192:168:12.24:	2
ps://192.168.12.242/ui/			More Task

4. Mark the "Add software iSCSI adapter" option and click OK.



🕑 vSphere - 192.168.12.154 - Stora 🗙	🕑 vSphere - 192.168.12.205 - Virtua 🗙 +						-		×
\leftarrow \rightarrow C $ riangle$ https://19.	2.168.12.242/ui/app/host;nav=h/urn:vi	momi:HostSystem:host-26:dd2	967e6-1d51-41bf-92a0-c7a0362479bf/co	P	to t	` ₹) @		
vm vSphere Client Mer	nu 🗸 🛛 🔍 Search in all environmen	nts	C (? ~	Adminis	trator@VS	PHERE.	LOCAL 🗸		٢
	Add Software Adapter	192.168.12.154		\times					
∨ 🗗 192.168.12.242	Add software iSCSI adapter								
✓ ☐ Datacenter ✓ ☐ Cluster	A new software iSCSI adapter will b	e added to the list. After it has be	en added, select the adapter and use the Adap	ter					
192.168.12.154	Details section to complete the con	figuration.			imes Ren				
192.168.12.172	O Add software NVMe over RDMA ada	inter			T	'ar 🔻	Dev 🔻	Pat	
192.168.12.205	Discover software NVMe adapters		A devices						
🔓 SW1 👫 VMware vCenter Server	Discover software revine adapters	associated with the following RML	A devices.				1	1	
E≱ vinware vCenter server	O Add Software FCoE Adapter								
	Discover software FCoE adapters a	ssociated with the following phys	ical network adapter.				Copy All	3 items	
	Physical Network Adapter:	vmnicO	~						
	VLAN ID:	0	Range: 0 - 4094						
	Priority Class:	3	Range: 0 - 7						
	Controller MAC Address:	00:50:56:9c:7a:06							
Recent Tasks Alarms									
Task Name ~ Target					on Time		Server		~
Deploy OVF template			CANCEL	ок	021, 7:24		192.168.12.2	42	
Import OVF package 192.168.12.20	05 V Completed	vsphere.local\Admin	102 ms	03/04	72021, 7:24	36	192.168.12.2	42	
								More T	

5. Add the IPv4 address of StarWind CVM Data\iSCSI network interface to the "Dynamic Discovery". Save the configuration

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6. Click on the "Rescan" button to discover StarWind virtual disk.



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7. Once scanned, the created StarWind LUNs appear on the "Storage Devices" submenu page.



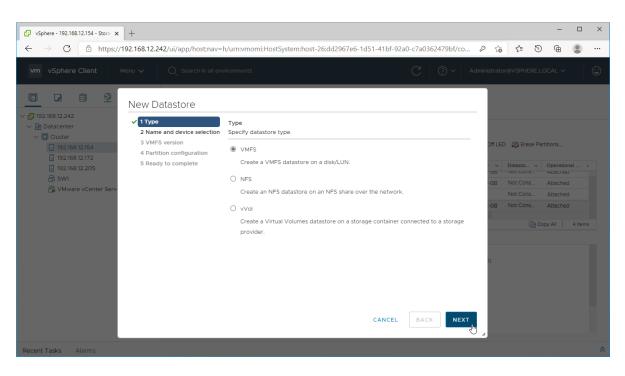
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	VMkernel adapters Physical adapters TCP/IP configuration Virtual Machines	Properties Paths Partition Details General Name STARWIND ISCSI Disk (eui.717e59bbd42796a3)
	VM Startup/Shutdown Agent VM Settings Default VM Compatibility Swap File Location	Identifier eui.77/E95bbd42796a3 Type disk Location /vmfs/devices/disks/eui.717e59bbd42796a3 Capacity 20.00 GB Drive Type HDD Hardware Acceleration Supported Transport ISSI
	System V	Owner NMP Sector Format 512n

8. Right-click on the ESXi server to open the "Actions" menu, click on "Storage" and click the "New datastore" button.

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9. The Datastore creation wizard appears. Specify the Datastore type as VMFS.



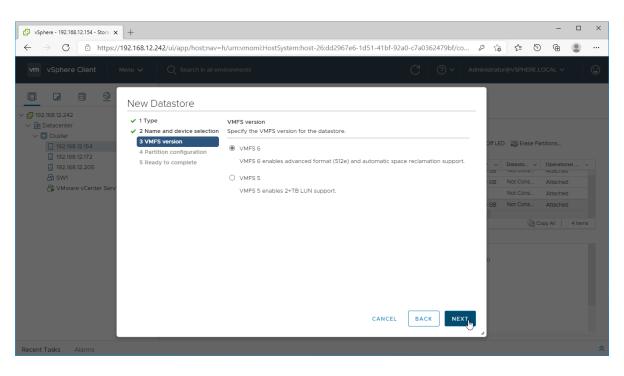


10. Specify the datastore name. Select the StarWind virtual disk.

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11. Specify the VMFS6 version for the datastore.



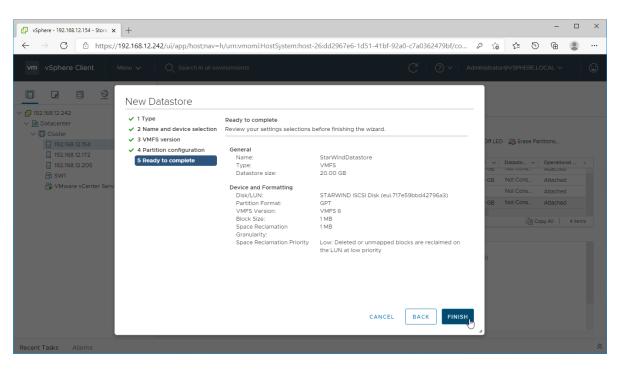


12. Specify the datastore size using the entire disk capacity.

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		=	n			
		Empty: 200 GB	,,			
		CANCEL BACK NEXT				
Recent Tasks Alarms						\$

13. Review the configuration summary and click "Finish" to create the datastore.





14. Check the StarWind datastore in the Datastores tab.

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Create VMFS	Completed VSPHERE.LOCAL\A	5 ms	03/04/2021, 7:42:53	192.168.12.242

15. Repeat the configuration steps 6-13 to add newly created StarWind LUNs as datastores on your VMware vSphere cluster.



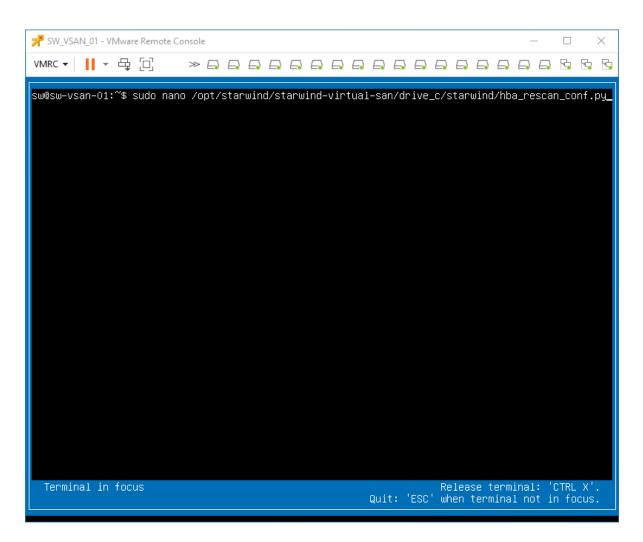
Configuring An Automatic Storage Rescan

1. Connect to the appliance via Shell Terminal in a Text-based User Interface (TUI) or using a remote SSH terminal.

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Available Options	Open Shell Terminal
Change Password	Open Shell terminal in current console screen
Additional settings	
Open Shell Terminal	
Collect Support Bundle	
<up>/<down> Select option <enter> Perform action</enter></down></up>	<esc> Log out</esc>

2. Edit file /opt/starwind/starwind-virtual-san/drive_c/starwind/hba_rescan_config.py with the following command: sudo nano /opt/starwind/starwind-virtual-san/drive_c/starwind/hba_rescan_config.py





3. In the appropriate lines, specify the IP address and login credentials of the single or multiple ESXi hosts (see NOTE below) on which the current StarWind VM is stored and will trigger the storage rescan task:

\$esxi_host_list = ['IP address']
\$username = 'Login'
\$password = 'Password'



SW_VSAN_01 - VMware Remote Console	_		\times
		5	- 5
GNU nano 4.8 /opt/starwind/starwind-virtual-san/drive_c/starwind/hba_rescan_co # ESXi/vSphere connection details # for multiple hosts enter IPs in format esxi_host_list = ['SET_ESXi_HOST_IP_1', # the username and password should be the same for multiple ESXi servers specifie # for a single host enter IP in format esxi_host_list = ['SET_ESXi_HOST_IP_1'] esxi_host_list = ['SET_ESXi_HOST_IP_1'] username = 'SET_ESXI_USER' password = 'SET_ESXI_PASSWORD'	nf.py 'SET_ES		
[Read 7 lines] ^G Get Help ^O Write Out ^W Where Is ^K Cut Text ^J Justify ^^ ^X Exit ^R Read File ^\ Replace ^U Paste Text ^T To Spell ^ Terminal in focus Release term Quit: 'ESC' when termina		Line CTRL X	

NOTE: In some cases, it makes sense to create a separate ESXi user for storage rescans. To create the user, please follow the steps below:

4. Log in to ESXi with the VMware Host Client. Click Manage, and under Security & users tab, in the Users section click Add user button. In the appeared window, enter a user name, and a password.



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← → C ▲ Not secure 192	2.168.12.225/ui/#/host/manage/secu	rity/users		\$:
vm ware [,] ESXi ^{,,}		root@19	92.168.12.225 🗸 Help 🗸 🝳 Sear	ch	P
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			Add Cancel		
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5. Create a new Role, under Roles section, and click New Role button. Type a name for the new role. Select privileges for the role and click OK.

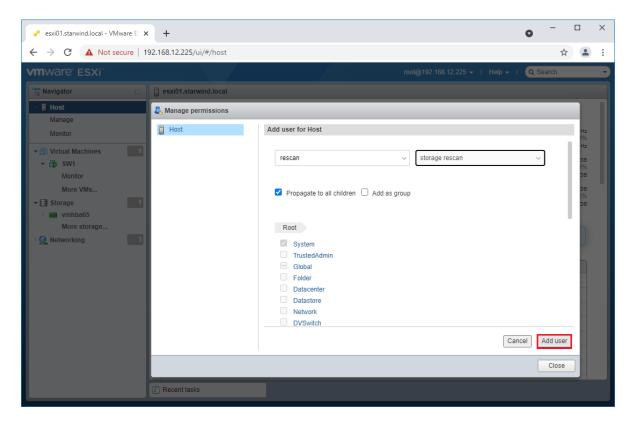
The following privileges might be assigned: Host – Inventory, Config, Local Cim, and Global – Settings.

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6. Assign permission to the storage rescan user for an ESXi host – right-click Host in the VMware Host Client inventory and click Permissions. In the appeared window click Add user.

7. Click the arrow next to the Select a user text box and select the user that you want to assign a role to. Click the arrow next to the Select a role text box and select a role from the list.

(Optional) Select Propagate to all children or Add as group. Click Add user and click Close.



Make sure that rescan script is working and execute it from the VM: sudo python3 /opt/starwind/starwind-virtual-san/drive_c/starwind/hba_rescan.py

4. Repeat all steps from this section on the other ESXi hosts.

Performance Tweaks

1. Click on the Configuration tab on all of the ESXi hosts and choose Advanced Settings.



lvanced settings	🥒 Edit option 📔 Ċ Refresh 📔 🏠 Actions	
itostart	Кеу 🔺	~ Name
ар		 Indite Delay in miniseconds for completion or commands with a boot statu
ne & date	Disk.DeviceReclaimTime	The number of seconds between device re-claim attempts
	Disk.DisableVSCSIPollInBH	Disable VSCSI_Poll in bottom half. Set to 1 to disable.
	Disk.DiskDelayPDLHelper	Delay PDL helper in secs
	Disk.DiskMaxIOSize	Max Disk READ/WRITE I/O size before splitting (in KB)
	Disk.DiskReservationThreshold	Time window within which refcounted reservations on a device are pe
	Disk.DiskRetryPeriod	Retry period in milliseconds for a command with retry status
	Disk.DumpMaxRetries	Max number of I/O retries during disk dump
	Disk.DumpPollDelay	Number of microseconds to wait between polls during a disk dump.
	Disk.DumpPollMaxRetries	Max number of device poll retries during disk dump
	Disk.EnableNaviReg	Enable automatic NaviAgent registration with EMC CLARIION and Inv
	Disk.FailDiskRegistration	Fail device registration if disk has only standby paths and supports or
	Disk EastPathRestoreInterval	Time interval (in msec) to monitor the IO latency to evaluate eligibility

2. Select Disk and change the Disk.DiskMaxIOSize parameter to 512.

System Hardware Lice	ensing Packages Services Security & users	
Advanced settings Autostart Swap Time & date	Edit option C Refresh Actions Key ▲ Disk.DeviceReclaimTime	~
	Disk.DisableVSCSIPollInBH Disk.DiskDelayPDLHelper Disk.DiskMaxIOSize	l
	Edit option - Disk.DiskMaxIOSize	
	New value 512 (long integer)	
	Save Cancel	<i>"</i>
	Quick filters	

3. To optimize performance change I/O scheduler options according to the article below: https://knowledgebase.starwindsoftware.com/guidance/starwind-vsan-for-vsphere-changi ng-linux-i-o-scheduler-to-optimize-storage-performance/

NOTE: Changing Disk.DiskMaxIOSize to 512 might cause startup issues with Windowsbased VMs, located on the datastore where specific ESX builds are installed. If the issue with VMs start appears, leave this parameter as default or update the ESXi host to the next available build.

NOTE: To provide high availability for clustered VMs, deploy vCenter and add ESXi hosts to the cluster.

Click on Cluster -> Configure -> Edit and check the turn on vSphere HA option if it's



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SWVCluster	1 🖪 🔁 🔠 🐮	🖯 🛛 🎯 Actio	ns -					
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Health and	Advanced Options		Host fail	ure	0	Restart VMs		Restart VMs using VN
iSCSI Targ			Proactive	e HA	•	Disabled		Proactive HA is not er
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