

Configuring a SnapServer iSCSI Disk as a VMware ESXi Datastore

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Summary

This application note describes how to use an iSCSI disk on a SnapServer running GuardianOS 8.0.073 or later as an ESXi datastore on a VMware Hypervisor host running ESXi 5.0 or later.

Required Information, Tools, and Files

Before you begin these procedures, the following information, tools, and files are required.

Prerequisites

Prior to performing these procedures:

- Be sure you are running SnapServer GOS 8.0.073 or greater.
- If needed, access additional information on SnapServer found at the following links: https://www.overlandstorage.com/products/snapserver/index.aspx

http://docs.overlandstorage.com/snapserver

This document assumes the reader is familiar with VMware vSphere Client, vSphere Web Client, or vCenter Server as required in the VMware environment. Additional information can be obtained through VMware's online knowledge base.

Best Practices

- While both Traditional and Dynamic RAID support iSCSI targets for use as VMware datastores, Traditional RAID provides better response to the high input/output operations per second (IOPS) load exercised by VMware hosts.
- Solid State Drives (SSD) are recommended for the SnapServer storage to provide lower latency and higher IOPS than traditional hard disk drives.
- A 10gig Ethernet connection between the VMware host and SnapServer is recommended for higher throughput to iSCSI datastores.
- If multiple Ethernet interfaces are used on the SnapServer to support access to the iSCSI targets by the VMware host, they should be bonded together in load balancing or failover mode when connected to the same subnet. To use iSCSI MPIO, configure the interfaces as standalone on different subnets.
- Create thick provisioned eager zeroed virtual disks (VMDKs) on SnapServer iSCSI datastores for the best disk I/O throughput for guest virtual machines.

Creating a SnapServer iSCSI Disk

Perform the following steps to create an iSCSI Disk on a SnapServer:

- 1. Use the SnapServer Web Management Interface to log into the server.
- 2. Browse to Storage > iSCSI and click Create iSCSI Disk.

	snap ser	Ver" 🚯 Sr	ap7654321-	TP			3:45 P	M 🐔		• ተ	0	-
		Server	Network	STOR	AGE	Securit	y Mo	NITOR	MAINTE	NANCE		
		Storage Poo	s Volumes	Quotas	Snapshots	iSCSI	Snap ECR	Disks	RDX QuikSto	r		
	iscsi											
Е				The	ere are no is	SCSI disk	(5.					
								_				
			Crea	ite isčsi Di	sk VSS/\	VDS Acce	ess Close	2				

NOTE: It may be necessary to make space available for iSCSI disks on existing RAIDs or storage pools by deleting or resizing existing volumes or reducing snapshot reservation.

- **3.** Provide the following **details**:
 - Name of the RAID Set or Storage Pool to be used.
 - iSCSI Disk Name (or accept the default name).
 - Size of the disk.
 - One or more IQNs of VMware hosts that will connect to this iSCSI disk.
 - If authentication enforcement is desired, check the **Enable CHAP Logon** box and enter the CHAP **User Name** and **Target Secret**.

SEF	RVER N	ETWORK	STORA	GE	ECURIT	Y Mo	ONITOR	MA	INTENA	NCE		
	Storage Pools	Volumes	Quotas	Snapshots	iscsi	Snap ECR	Disks	RDX Q	uikStor			
Create iSCSI [Disk											
torage Pool	Head Unit Sto	rage (10.44 (GB available	<u>è)</u> ▼								
SCSI Disk Name	iscsi0											
ize	10.44	GB 🔻	(Max. size i	s 10.44 GB.	View <u>N</u>	<u>/lanage Voli</u>	ume Size	<u>es</u> to inc	rease a	availat	ole spa	ace.)
Specify up to 10 IQN examples: "i Warning: If you spe arget can result in	iSCSI initiators qn.2001-04.co ecify more than c data corruption.	below usin m.example one iSCSI initia Only specify	g the iSCSI " or "iqn.20 ator, be awar multiple initi	Qualified N 001-04.com e that uncont ators if your e	ame (IQ example crolled sin	N) format. e:storage.di nultaneous a ent or applica	isk2.sys1 ccess of n ation supp	l .XYZ". nultiple ir ports it.	nitiators	to the	same i	SCSI
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Specify up to 10 IQN examples: " Warning: If you spitarget can result in 1. 2. 3. 4. 5. 2 Enable CHAP	iSCSI initiators qn.2001-04.co ecify more than c data corruption.	below usin m.example ine iSCSI initia Only specify i	g the iSCSI " or "iqn.20 ator, be awar multiple initi	Qualified N 101-04.com. e that uncominators if your e	ame (IQ example crolled sin environme	IN) format. e:storage.d nultaneous a ent or applica	isk2.sys1 cccess of n ation supp	l .xyz". nultiple ir ports it.	nitiators	to the	same i	5CSI
Specify up to 10 IQN examples: " Warning: If you spicarget can result in 1. 2. 3. 4. 5. Enable CHAP User Name	iSCSI initiators qn.2001-04.co ecify more than o data corruption.	below usin m.example ine iSCSI initia Only specify	g the iSCSI " or "iqn.20 ator, be awar multiple initi	Qualified N 101-04.com. e that uncont ators if your e 6. 7. 8. 9. 9. 10.	ame (IQ example rolled sin nvironme	IN) format. e:storage.dl nultaneous a ent or applica	isk2.sys1 ccess of n ttion supp	l .xyz". nultiple ir ports it.	hitiators	to the	same i	scsi
Specify up to 10 IQN examples: " Warning: If you spi- target can result in 1. 2. 3. 4. 5. Enable CHAP User Name Target Secre Confirm Tar,	iSCSI initiators qn.2001-04.co ecify more than c data corruption.	below usin m.example ne iSCSI initia Only specify i	g the iSCSI " or "iqn.20 ator, be awar multiple initi	Qualified N 101-04.com. e that uncom ators if your e	ame (IQ example rolled sin environme 	N) format. e:storage.di nultaneous a ent or applica	isk2.sys1 ccess of n tion supp	l .xyz". nultiple ir ports it.	hitiators	to the	same i	5CSI

- 4. Click Create iSCSI Disk.
- 5. At the verification page, click Create iSCSI Disk again.
- 6. Verify that the iSCSI Disk was created with provided details.

Ser	VER NE	TWORK	STOR	AGE	Securit	y Mo	ONITOR	MAINTENA	NCE	
	Storage Pools	Volumes	Quotas	Snapshots	iscsi	Snap ECR	Disks	RDX QuikStor		
iscsi										
iSCSI Disks (1)	Storag	ge Pool	S	tatus 🗸	Ac	tive Clients	Aut	hentication	Size	
📀 iscsi0	Head Ur	nit Storage		OK		0		None	1	0.44 GB
iqn.1977-10.	com.snapserver:sr	nap7654321-tp	iscsi0							

7. Repeat Steps 2–6 for additional iSCSI disks that are to be used for VMware datastores.

Connecting the VMware iSCSI Software Adapter to SnapServer iSCSI Targets

NOTE: The examples below use vSphere Client. The configuration is similar in other VMware interfaces.

- 1. Connect to the VMware host using VMware vSphere Client, vSphere Web Client, or vCenter Server.
- 2. Navigate to Configuration > Storage Adapters and click the iSCSI Software Adapter name (for example, vmhba33).

rdware	Storage Adapters			Add	Remove	Refresh	Rescan All	
Health Status	Device	Туре	WWN					
Processors	iSCSI Software Adapter							
Memory	🕝 vmhba33	ISCSI	iqn.1998-01	.com.vmw	are:ecksi2-7	713b63c8:		
Storage	2 port SATA IDE Controller ((ICH9)						
Networking	S vmhba0	Block SCSI						
Storage Adapters	🕝 vmhba32	Block SCSI						
Network Adapters	Dell SAS 6/iR Integrated							
Advanced Settings	🕝 vmhba1	Block SCSI						
Advanced Securitys								
Power Management								
oftware								
Licensed Features	Details							
Time Configuration	vmbba33						Properties	
DNS and Bouting	Model: iSCSI	Software Adapter					rioperaco	
Authentication Comisso	iSCSI Name: ign. 19	998-01.com.vmware:ecksi	2-713b63c8					
Authentication Services	iSCSI Alias:							
virtual Machine Startup/Shutdown	Connected Targets: 2	Devices: 2	Paths:	2				
Virtual Machine Swapfile Location	View Devices Paths							
Security Profile	View. Devices Patits							
Host Cache Configuration	Name			Identifie	er			^
System Resource Reservation	LIO-ORG iSCSIDisk (naa.600	1405c838680e8a984a53a	aabc99929)	naa.600	1405c83868	0e8a984a53aa	abc99929	- v
o joten neodu ce neoer radon								

If no iSCSI Software Adapter is listed, click Add on the Storage Adapters title bar and choose Add Software iSCSI Adapter when prompted to add it. Then, repeat Step 2.

3. Click Properties in the Details section.

Hardware	Storage Adapters				Add	Remove	Refresh	Rescan All.	
Hoalth Status	Device		Туре	WWN					
Processors	iSCSI Software Adap	ter							
Processors	🕝 vmhba33		ISCSI	iqn.1998-0	1.com.vm	ware:ecksi2-	713b63c8:		
Memory	2 port SATA IDE Cor	troller (ICH9)							
Storage	vmhba0		Block SCSI						
Networking	vmhba32		Block SCSI						
 Storage Adapters 	Dell SAS 6/iR Integr	ated							
Network Adapters	A vmhba1		Block SCSI						
Advanced Settings									
Power Management									
öoftware	D-1-1-								
Licensed Features	Details								_
Time Configuration	vmhba33							Properties.	
DNS and Routing	Model:	iSCSI Softwa	re Adapter						_
Authentication Services	iSCSI Name:	iqn. 1998-01.	com.vmware:ecks	i2-713b63c8					
Virtual Machine Startun/Shutdown	iSCSI Alias:								
Virtual Machine Startup/Sridtdown	Connected Targets	: 2	Devices: 2	Paths:	2				
Virtual Machine Swapfile Location	View: Devices P	athe							
Security Profile	VICW. DEVICES I	ucita							
Host Cache Configuration	Name				Identif	ier			^
System Resource Reservation	LIO-ORG iSCSIDisk	(naa.6001405c	38680e8a984a53	aabc99929)	naa.60	01405c83868	80e8a984a53a	abc99929	~
Agent VM Settings	<							>	

4. In the Properties screen, select the Dynamic Discovery tab and click Add.

💋 iSCSI Initiator (vmhba33) Properties	—		×
General Network Configuration Dynamic Discovery Static Discovery			,
Send Targets			
Discover iSCSI targets dynamically from the following locations (IPv4, host name):			
ISCSI Server Location			
<u>A</u> dd	move	Settings.	
		<u>C</u> lo	se

- **NOTE:** Alternatively, you can connect the VMware software iSCSI adapter only to specific SnapServer iSCSI disks using the **Static Discovery** tab and iSCSI Disk IQN of each iSCSI disk (the IQN can be found on the **iSCSI Disk Properties** page in the SnapServer Web Management Interface). Once configured, proceed to Step 8.
- 5. At the Add Send Target Server dialog box, configure as necessary and click OK:

🛃 Add Se	end Target Se	erver			×
iSCSI Se	rver:	10.25.2.83			
Port:		3260			
Parent:					
	Authenticatio be established	n may need to be d with any discov	configured be ered targets.	efore a se	ssion can
			CHAP.	A	dvanced
				ж	Cancel

- iSCSI Server Enter the server name, fully-qualified name (FQDN), or IP address of the SnapServer Ethernet interface to be used to access the iSCSI disk.
 - **NOTE:** If using a hostname or FQDN, ensure the VMware host can resolve that name to the SnapServer's IP address. If using an IP address, ensure the IP is assigned statically or via a DHCP reservation. In both cases, ensure the VMware host connects to the desired SnapServer network interface to use for datastore storage communication.
- **Port** Leave the **Port** set to default **3260**.
- CHAP If necessary, click the CHAP button and configure CHAP authentication.

6. Verify that the SnapServer target appears in the iSCSI Server Location field.



7. Select the Static Discovery tab and verify the discovered iSCSI targets.



8. Click Close and, when prompted to rescan the adapter, click Yes.



9. Verify the **iSCSI Software Adapter** successfully connects to each SnapServer iSCSI disk and displays it in the adapter's **Details** list.

For example, the following screen shows that the new iSCSI disk is connected to ESXi iSCSI Software Adapter **vmhba33**.

rdware	Storage Adapters				Add	Remove	Refresh	Rescan All
Health Status	Device	Туре		WWN				
Processors	iSCSI Software Ada	pter						
Memory	🕝 vmhba33	iSCSI		iqn.1998-01	.com.vm	ware:ecksi2-7	713b63c8:	
Storage	2 port SATA IDE Co	ontroller (ICH9)						
Notworking	🎯 vmhba0	Block S	CSI					
	🕝 vmhba32	Block S	CSI					
Storage Adapters	Dell SAS 6/iR Integ	rated						
Network Adapters	🕝 vmhba1	Block S	CSI					
Advanced Settings								
Power Management								
••••••	Details							
tware	vmbba33							Properties
Licensed Features	Model:	iSCSI Software Adap	ter					
Time Configuration	iSCSI Name:	ign. 1998-01.com.vm	ware:ecksi2-7	713b63c8				
DNS and Routing	iSCSI Alias:							
Authentication Services	Connected Target	ts: 5 Devices:	5	Paths:	5			
Virtual Machine Startup/Shutdown	Viewu Devices	Datha						
Virtual Machine Swapfile Location	view: Devices	Facilis						
Security Profile	Runtime Name	Target						LUN /
Host Cache Configuration	vmhba33:C0:T5:L0	iqn.1997-10.com.snap	server:snap	123456:iscs	i0:10.25.2	2.83:3260		0
System Desource Deservation	vmhba33:C0:T6:L0	iqn.1997-10.com.snap	server:snap	123456:iscs	11:10.25.2	2.83:3260		0
Apart MA Cathings	vmhba33:C0:T7:L0	ign.1997-10.com.snap	server:snap	123456:iscs	i2:10.25.2	2.83:3260		0,
Agent vm Setungs	<							>

Creating a VMware Datastore on a SnapServer iSCSI Disk

Any iSCSI disks that have previously been configured as iSCSI datastores on this or another VMware host are automatically available for use in **Storage > Datastores** when the VMware iSCSI Software Adapter connects to them. New iSCSI disks or any disks that were previously formatted by a non-VMware system must first be configured and formatted as a VMware datastore.

- 1. If necessary, log into ESXi host using VMware vSphere Client.
- 2. In the vSphere Client:

Summary Virtual Machines Resource A	llocation	Performance Co	onfiguration Users	Events Permis	sions			
Hardware	View:	Datastores Dev	vices a					_c
Health Status	Datas	tores			Refresh	Delete Add	Storage.	Rescan All
Processors	Ident	ification 🗠	Device	Drive Type	Capacity	Free	Туре	Last Update
Memory		datastore1	ATA Serial Attach	Non-SSD	144.00 GB	134.93 GB	VMFS3	9/17/2018 3:30
 Storage 		localscratch	ATA Serial Attach	Non-SSD	1.82 TB	1.13 TB	VMFS3	9/17/2018 3:30
Networking		vmstore1696	vmstore1.snapen	Unknown	5.00 TB	208.41 GB	NFS	9/17/2018 12:0
Storage Adapters		vmstore1699	vmstore1.snapen	Unknown	5.00 TB	208.41 GB	NFS	9/17/2018 12:0
Network Adapters		vmstore1-cdimag.	 vmstore1:/cdima 	Unknown	5.00 TB	208.41 GB	NFS	9/17/2018 12:0
Advanced Settings		vmstore1-enzo	vmstore1:/enzo	Unknown	5.00 TB	208.41 GB	NFS	9/17/2018 12:0
Power Management								
Software	<							>
Licensed Features	Datas	tore Details						Properties
Time Configuration								
DNS and Routing								
Authentication Services								
Virtual Machine Startup/Shutdown								
Virtual Machine Swanfile Location	1							

- **a.** Select the **Configuration** tab.
- b. Under Hardware, select Storage.
- c. In the Datastores title bar, click Add Storage.
- 3. From the first Add Storage Wizard screen, select Disk/LUN as the storage type, and click Next.
- **4.** At the next screen, select the SnapServer iSCSI disk that appears in the **Select Disk/LUN** list (expanding the **Path ID** column if necessary to view the disk IQN), and click **Next**.

👂 Add Storage			-		×
Select Disk/LUN Select a LUN to create a	a datastore or expand the curre	ent one			
<u>Disk/LUN</u> Select Disk/LUN	Name, Identifier, Path I	D, LUN, Cap	acity, Expandable or VMFS Label c 🔻		Clear
Current Disk Layout	Name	Identifier	Path ID	LUN /	Driv
Properties	LIO-ORG iSCSI Disk	naa.600	iqn.1997-10.com.snapserver:snap123456:iscsi0	0	No
rormatung dv.to.Complete	LIO-ORG ISCSI DISK	naa.600	Ign.1997-10.com.snapserver:snap123456:ISGSI2	U	NO
a) to complete	LIO-ORG iSCSI Disk	naa.600	iqn.1997-10.com.snapserver:snap123456:iscsi1	0	No
					,
			≤ Back Next ≥	Cano	el

- 5. To complete the wizard, provide the following information:
 - a. If necessary, select File System Version.
 - **b.** Review the Current Disk Layout summary.
 - c. Enter a Datastore Name to uniquely identify the datastore.
 - **d.** Select the **Formatting Capacity** to consume either the maximum available space on the iSCSI disk or a lesser amount.
 - e. Click Next.
- 6. At the Ready to Complete summary page, verify the details and click Finish.

🛃 Add Storage	-		×
Ready to Complete Review the disk layout ar	id dick Finish to add storage		
Disk/LUN	Disk layout:		
Keauy to complete	Device Drive Type Capadity LIO-ORG ISCSI Disk (naa.6001 Non-SSD 2.00 TB Location /vmfs/devices/disks/naa.6001405dd2b7b4e917a4c5f927a69411 Partition Format GPT Primary Partitions Capadity VMFS (LIO-ORG ISCSI Disk (naa.60 2.00 TB	LUN O	
	File system: Properties Datastore name: snap 123456-iscsi0 Formatting File system: vmfs-5 Block size: 1 MB Maximum file size: 2.00 TB		
	≤ Badk Einish	Cancel	

The new iSCSI datastore appears in Configuration > Storage > Datastores list and is available for use.

Summary Virtual Machines Resource Allo	ocation Performance C	onfiguration Users	Events Permiss	sions		
Hardware	View: Datastores De	evices				
Health Status	Datastores			Refresh	Delete Add S	torage Rescan All
Processors	Identification	Device	Drive Type	Capacity	Free T	ype Last Update
Memory	datastore1	ATA Serial Attach	Non-SSD	144.00 GB	134.93 GB V	MFS3 9/17/2018 3:33
 Storage 	localscratch	ATA Serial Attach	Non-SSD	1.82 TB	1.13 TB V	MFS3 9/17/2018 3:33
Networking	snap123456-iscsi	LIO-ORG iSCSI Di	Non-SSD	2.00 TB	2.00 TB V	MFS5 9/17/2018 3:33
Storage Adapters	vmstore1696	vmstore1.snapen	Unknown	5.00 TB	208.41 GB N	IFS 9/17/2018 12:0
Network Adapters	vmstore1699	vmstore1.snapen	Unknown	5.00 TB	208.41 GB N	IFS 9/17/2018 12:0
Advanced Settings	vmstore1-cdimag	vmstore1:/cdima	Unknown	5.00 TB	208.41 GB N	IFS 9/17/2018 12:0
Power Management	vmstore1-enzo	vmstore1:/enzo	Unknown	5.00 TB	208.41 GB	IFS 9/17/2018 12:0
Software	<					>
Licensed Features	Datastore Details					Dreparties
Time Configuration						Properues
DNS and Routing	snap123456-iscsi0	lumas/Eba02bd2 422fa	ALE HOLD DODENO	2	.00 TB Capacit	y 🔒
Authentication Services	Hardware Acceleration	: Supported	401-0000-002009	982.	.00 MB 🔳 Use	a (12)
Virtual Machine Startup/Shutdown				2	.00 TB 🔲 Free	
Virtual Machine Swapfile Location						
Security Profile						
Host Cache Configuration						
System Resource Reservation	Path Selection	Properties		Extents		
Agent VM Settings	Most Recently Us	Volume Label:	map 123456	LIO-ORG ISCSI D	Disk (naa.6	2.00 TB
Advanced Settings	<					>

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