

Achieve DR Solution in VMware with Snapshot Consistency

Application Note

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ANNOUNCEMENT

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PREFACE

Executive Summary

This document provides technical guidance for setting up DR (Disaster Recovery) solution in VMware environment and making sure that the replicated data will be consistent with special script implemented in ESXi server, and it leads XCubeFAS, XCubeSAN, XCubeNXT, and XCubeNAS products being able to achieve real DR with snapshot consistency, it is no longer necessary to install any agent in the environment before achieving this.

Audience

This document is applicable for QSAN customers and partners who are interested in learning about DR solution on VMware. It assumes the reader is familiar with QSAN products and has general IT experience, including knowledge as a system or network administrator. If there is any question, please refer to the user manuals of products, or contact QSAN support for further assistance.

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Information, Tip, and Caution

This document uses the following symbols to draw attention to important safety and operational information.



INFORMATION

INFORMATION provides useful knowledge, definition, or terminology for reference.



TIP

TIP provides helpful suggestions for performing tasks more effectively.



CAUTION

CAUTION indicates that failure to take a specified action could result in damage to the system.



1. INTRODUCTION

In virtualization environments, the ever-increasing data production and demand continue to grow, resulting in an increasing demand for stable backups of virtual machines. This document introduces the concept of DR (Disaster Recovery) and provides technical guidance for setting up a DR solution in the VMware environment.

1.1. Disaster Recovery

DR (Disaster Recovery) is about preventing total failure of mission critical business systems and to recover within minimum time and impact. Preventing data loss requires a continuous data protection method. This includes preparation for and recovery from events of human error, software and hardware failure, network down, internal or external power failure and all other events. To beat this challenge, IT managers must plan for redundancy of one or more backup systems at different locations. This involves constant or periodically data duplication to infrastructures at different sites to ensure business continuity from constant availability.



1.2. Challenge

Today, backup is considered to be one of the most important parts of implementing a data center environment. Backing up data in a single location is no longer sufficient to prevent



disasters. IT managers may need to prepare another copy of important data at a remote site. Disaster recovery solution becomes the best choice. Virtualization environments may have their own DR applications, but they are usually more expensive. Storage vendors support the same backup function locally at no additional charge, but the headache here is the cached data stored in the server memory.

For those Brand A suppliers, this is not a problem, because they have implemented an additional tool installed in the environment to support the function of requesting the server to queue its I/O when taking a snapshot on the storage side, even if shooting It is the complete image of the data written after the snapshot is completed. Without this feature, the copied data will be inconsistent, but the effort to install the agent is another matter.

This document will help you set up the environment, and the results are as above, but you don't need to install any agent in the environment before that. This can be easily achieved through simple scripts and snapshot copies stored in QSAN.



2. DISASTER RECOVERY SOLUTION IN VMWARE

In this chapter, we provide detailed operations for configuring the DR solution in the VMware environment, and ensure that the replicated data is consistent with the special script implemented in the ESXi server. The procedure is as follows.

- 1. The prerequisite is to set up an ESXi server.
- 2. Configure a remote replication task to backup VM files.
- 3. Create a script in the ESXi server to rotate the snapshots.
- 4. Roll back replication task for disaster drills.

You can implement this DR solution in XCubeFAS, XCubeSAN, XCubeNAS, and XCubeNAS series products. These series of products are separated in step 2 and step 4, and there are different setting methods.

2.1. Setup ESXi server

The environment prepared here is an ESXi 6.5 server, installed with a 10G HBA card, directly connected to QSAN storage, and ensure that the ESXi server is managed by vCenter.



Figure 2-1 ESXi Server Architecture

2.2. Configure Remote Replication

To configure a remote replication task, you need to set up two QSAN storage systems, and the available space of the target unit must be greater or equal to the source unit. Otherwise, the snapshot replica function may fail due to insufficient storage space. Although the setting method is different, the following sections describe the configuration separately.

2.2.1. XEVO Configuration

Prepare two XCubeFAS storage systems named FAS-a and FAS-b. The following is the procedure.

- 1. Connect one of 10G ports from FAS-a to FAS-b.
- 2. In FAS-a, create a pool and a volume. And then set the snapshot space to make the snapshot replica function work normally.
- 3. In FAS-a, mount the created volume to the prepared ESXi server.
- 4. Create a VM (Virtual Machine) based on the mounted Datastore in the ESXi server.
- 5. In FAS-b, repeat steps 2 above to create the same or larger volume size as FAS-a. You may also need to set up snapshot space. Or you may skip this step if you use auto replication to configure the remote replication task.
- 6. In FAS-a, select the **Protection** tab to create a remote replication task to the replica volume in FAS-b.

Snap	oshot Tasks Rep	olication Tasks						1 items Rep	licate Now
	Volume Name	The Last Task	Capacity	Target Name	Target LUN	Created	Completed	Speed	Status
-	Volume_01 🌼	QREP163433	100GB	iqn.2004-08.com.qsan:dev0.ctr1	0	Thu Jul 16 17:19:21 2020		20 MB/s	Replicating
	Provisioned Snapshot Space	100GB 873 MB/10.00 GB							
								< [/ 1

Figure 2-2 Configure a Replication Task

7. Open the console of the VM in the ESXi server, and periodically put some files (such as robocopy utility) to continuously increase the data.

6

INFORMATION

Robocopy, for "Robust File Copy", is a command-line directory and/or file replication command for Microsoft Windows. Please see <u>Robocopy in</u> <u>Wikipedia</u>.

8. Create scheduled snapshots in this VM from the vCenter UI, in this example, we take 5 snapshots.

🕼 Manage snapshots - TestVM	
🔯 Take snapshot 🛛 🙀 Restore snapshot 🛛 🙀 Delete snapshot 🗙 Delete all	🛛 🔯 Edit snapshot 📔 🤁 Refresh
🔺 🚰 TestVM	
▲ 120 4	
▲ 1005 ▲ 1001	
▲ 🐼 2	
🔺 🔞 3	
 You are here 	
	Close
	<i>k</i>

Figure 2-3 Create a Scheduled Snapshot in the VM

9. The preparation work is over here.



INFORMATION

For more detailed information on configuring remote replication, please refer to section 7.2, Configure Protection Groups in the <u>XEVO Software</u> <u>Manual</u>.





2.2.2. SANOS Configuration

Prepare two XCubeSAN storage systems named SAN-a and SAN-b. The following is the procedure.

- 1. Connect one of 10G ports from SAN-a to SAN-b.
- 2. In SAN-a, create a pool and a volume. And then set the snapshot space to make the snapshot replica function work normally.
- 3. In SAN-a, mount the created volume to the prepared ESXi server.
- 4. Create a VM (Virtual Machine) based on the mounted Datastore in the ESXi server.
- 5. In SAN-b, repeat steps 2 above to create the same volume size or larger as SAN-a. You may also need to set up snapshot space.
- 6. In SAN-a, select the **Remote Replication** function submenu to create a remote replication task to the replica volume in SAN-b.

Remote	Remote Replications													
Task:														
	No.	Source Volume	Status	%	Shaping	Speed	Target Volume	Capaci	ity	Schedule	Time Created	Manufacturer	Model	WWN
V		SAN1				210 MB	SAN2	150.00			Mon Aug 5 17:43:20 2019			20020013780a9440
Task 'S	Task 'SAN1' Path:													
	No.	Source Port	Target IP Addres	s	Target Name				LUN	Status				
▼	▼ 1 Auto 172.168.100.2 iqn.2004-08.com.qsan.xs5226-000d60528.dev0.ctr1 0 Connected													
Create	Image: Create Rebuild Remote Replication Options Traffic Shaping Configuration													

Figure 2-4 Configure a Replication Task

7. Open the console of the VM in the ESXi server, and periodically put some files (such as robocopy utility) to continuously increase the data.



6

INFORMATION

Robocopy, for "Robust File Copy", is a command-line directory and/or file replication command for Microsoft Windows. Please see <u>Robocopy in</u> <u>Wikipedia</u>.

8. Create scheduled snapshots in this VM from the vCenter UI, in this example, we take 5 snapshots.





Figure 2-5 Create a Scheduled Snapshot in the VM

9. The preparation work is over here.



2.2.3. QSM Configuration

Prepare two XCubeNXT or XCubeNAS storage systems named NAS-a and NAS-b. The following is the procedure.

- 1. Connect one of 10G ports from NAS-a to NAS-b.
- 2. In NAS-a, create a volume and a shared folder.
- 3. Access NFS shared folders to assign RW permissions to all connected hosts.



	C	(Control Panel			٩	?
> System		Folder Map	Shared Folder	NFS Host	Windows Network Host		
 Storage File Sharing User Group Domain Security 	Fokler list Q Search folder fa1	Information Folder name Description Location WORM	fa1 fd1 None				
Folder Network Service		4 % NFS access rig	Used Available Total size	6.13 GB 143.86 GB 149.99 GB		1	
			NFS access right o				+ 🖉 🗊
		IP address		ss right I / Write	Async Yes	Root	t squash
			Add NFS Host				
	IP address or domain Access right Root squash Async write	* Read / Writ	te 🗸				
					Cancel Confirm		

Figure 2-6 Access NFS shared folders

- 4. In NAS-b, create a volume the same size or larger as the volume in NAS-a.
- 5. In NAS-a, mount the created shared folder to the prepared ESXi server.
- 6. Create a VM (Virtual Machine) based on the mounted Datastore in the ESXi server.
- 7. In NAS-a, select the **Backup Manager** function submenu to create a snapshot reaplica task to the volume in NAS-b.
- 8. Open the console of the VM in the ESXi server, and periodically put some files (such as robocopy utility) to continuously increase the data.



8

INFORMATION

Robocopy, for "Robust File Copy", is a command-line directory and/or file replication command for Microsoft Windows. Please see <u>Robocopy in</u> <u>Wikipedia</u>.

9. Create scheduled snapshots in this VM from the vCenter UI, in this example, we take 5 snapshots





Figure 2-7 Create a Scheduled Snapshot in the VM

10. The preparation work is over here.



2.3. Create a Script in ESXi server

According to the above operations, we first take a snapshot in the VM from the ESXi server itself, and then replicate the .VMDK file along with the taken snapshots to the remote site. After mounting the volume at the remote site, registering and rolling back the snapshot taken, everything will be consistent with this method.

However, VMware does not automatically delete or rotate snapshots, so it retains a large number of snapshot images, which can cause poor performance for a long time. The script we provide here is to specify a fixed quantity of snapshots. ESXi servers can maintain rotation to



prevent too many snapshots from affecting virtual machine performance. Take SAN-a as an example below. FAS and NAS are the same.

- 1. Create a "Crontabs" folder in the Datastore mounted from SAN-a.
- 2. Upload the following script "SnapshotAutoDelete.sh" to the "Crontabs" folder.

```
# cat SnapshotAutoDelete.sh
#!/bin/sh
LOG PATH="/var/log/Schedule_Snapshot.log"
[ -f "$LOG PATH" ] && rm $LOG PATH;
QTY=2 # Reserved quantity
for i in `vim-cmd vmsvc/getallvms 2>/dev/null | awk '{print $1}' | grep -e "[0-9]"`
# Grab all Vmid on esxi
do
   SNAPSHOT COUNT=`vim-cmd vmsvc/snapshot.get $i | egrep -- '--\|-CHILD|^\|-ROOT'
| wc -1`
   GuestName=$(vim-cmd vmsvc/get.summary $i | grep name | awk '{ print $3 }' | cut
-d \" -f 2)
   if [ $SNAPSHOT COUNT -qt $QTY ]; then # If the number of snapshots is greater
than the number of reservations
        DELETE COUNT=$(($SNAPSHOT COUNT-$QTY))
       OLD SNAPSHOT_ID=`vim-cmd vmsvc/snapshot.get $i | grep Id | head -
$DELETE COUNT | awk -F: '{print $2}'`
       for n in $OLD SNAPSHOT ID
        do
            vim-cmd vmsvc/snapshot.remove $i $n; ret=$?
                sleep 30s
                    if [ $ret -eq 0 ]; then
                       echo "$(date "+%F %T") : $GuestName snapshot $n Delete
Success.." >> $LOG_PATH # Output to log path after deletion
                   else
                        echo "$(date "+%F %T") : $GuestName snapshot $n Delete
FAILED.." >> $LOG PATH
                    fi
       done
    else
        echo "$(date "+%F %T") : $GuestName snapshot not found." >> $LOG PATH
    fi
done
```

3. Change the permission of the script to 777, from the SSH session of ESXi server.

[root@local:-] cd vmfs/volumes/SAN1/Crontabs/ [root@local:/umfs/volumes/5d445d0a-fae8654e-a676-001b21d4d680/Crontabs] chmod 777 SnapshotAutoDelete.sh [root@local:/umfs/volumes/5d445d0a-fae8654e-a676-001b21d4d680/Crontabs] ls -al drwxr-xr-x 1 root root 73728 Aug 2 16:38 . drwxr-xr-t 1 root root 73728 Aug 2 16:38 . -vmxrwxrwx 1 root root 1088 Aug 2 18:52 SnapshotAutoDelete.sh [root@local:/vmfs/volumes/5d445d0a-fae8654e-a676-001b21d4d680/Crontabs]





4. Locate the Datastore via the following command in the SSH session.

esxcli storage filesystem list

ount Point	Volume Name	UUID	Mounted	Туре	Size	Fre
vmfs/volumes/5bc3fd0f-f996289d-ba94-001018edee60	datastorel	5bc3fd0f-f996289d-ba94-001018edee60	true	VMFS-6	492042190848	44217715916
vmfs/volumes/5d445d0a-fae8654e-a676-001b21d4d680	SAN1	5d445d0a-fae8654e-a676-001b21d4d680	true	VMFS-6	160792838144	8822613606
vmfs/volumes/5ceb8d20-96976e3b-25ef-08606e151c65		5ceb8d20-96976e3b-25ef-08606e151c65	true	vfat	299712512	8048640
vmfs/volumes/9bfaa77a-a157614d-7923-8cc7a16bcdea		9bfaa77a-a157614d-7923-8cc7a16bcdea	true	vfat	261853184	26184499
vmfs/volumes/3d40c777-b5b2f4fb-b003-5dfeca8c4b86		3d40c777-b5b2f4fb-b003-5dfeca8c4b86	true	vfat	261853184	11381964
vmfs/volumes/5ceb8d28-4a26e650-7a8a-08606e151c65		5ceb8d28-4a26e650-7a8a-08606e151c65	true	vfat	4293591040	426423091

5. Use the following command to add a cron job to execute the script at 23:30 every day. You can specify the time point according to your environment. This point in time should be earlier than the periodic snapshot task created by vCenter. Or you can edit this file directly.

echo "30 23 * * * sh /vmfs/volumes/5d445d0a-fae8654e-a676-00lb2ld4d680/Crontabs/SnapshotAutoDelete.sh" >> /var/spool/cron/crontabs/root



INFORMATION

The <mark>YELLOW</mark>' word above is the UUID of the Datastore, please check yours with the above command.

6. Since the configuration will be cleared after the ESXi server restarts, you need to add the above commands to permanently save the configuration. Edit the local cron job file (/etc/rc.local.d/local.sh) of the ESXi server and add the following commands at the end of the configuration file.

```
# vi /etc/rc.local.d/local.sh
```

```
...
/bin/echo "30 23 * * * sh /vmfs/volumes/5d445d0a-fae8654e-a676-
00lb2ld4d680/Crontabs/SnapshotAutoDelete.sh" >>/var/spool/cron/crontabs/root
/bin/kill $(cat /var/run/crond.pid)
/usr/lib/vmware/busybox/bin/busybox crond
```



7. Check the quantity of retained snapshots from the ESXi UI and confirm that the snapshots have been retained as the latest two.

🕼 Manage snapsho	ots - TestVM					
🍪 Take snapshot	🙀 Restore snapshot	🙀 Delete snapshot	🗙 Delete all	诊 Edit snapshot	C Refresh	
 TestVM 2 3 						
O Yo	u are here					
					Clo	se

Figure 2-8 List the Snapshots in the VM

8. Use the following command to check the log.



9. The ESXi server configuration is complete.

2.4. Disaster Drill

We provide disaster drills to prove the effectiveness of backups. Similarly, the setting method is different; the following sections describe the configuration separately.



2.4.1. XEVO Configuration

Continue the previous section, two XCubeFAS storage systems named FAS-a and FAS-b. The following is the procedure.

1. In FAS-a, select the **Protection** tab to find the remote replication task.

nap	shot Tasks	Replication Tasks							
							1	items Rep	licate Now
	Volume Name	The Last Task	Capacity	Target Name	Target LUN	Created	Completed	Speed	Status
	Volume_01 🌣	QREP163433	100GB	iqn.2004-08.com.qsan:dev0.ctr1	0	Thu Jul 16 17:19:21 2020	0	20 MB/s	Replicating
	Provisioned Snapshot Spa	100GB ace 873 MB/10.00 GB	3						
									1 / 1

- 2. You may need to umount the original Datastore (of FAS-a) from the ESXi server to simulate a disaster on FAN-a.
- 3. In FAS-b, select the **Protection** tab to expose the replicated snapshot as a writable volume, and its exposed snapshot capacity is greater than 0 (GB) by default. This is called the writable snapshot function.

olume N		Volume_01 shot Space			
Capa	city 1	0 GB × Availible:	151 GB Minimum: 10 GB		
Snaps	shots	Deleted Snapshots			
		_		4	items 🕤 🗎
	Į.	Snapshot Name	Created / Completed	Expose	Capacity
	•	Snap_20200716_154538	Thu Jul 16 15:45:38 2020		0 MB
	•	Snap_20200716_154008	Thu Jul 16 15:40:08 2020		0 MB
	•	Snap_20200716_153735	Thu Jul 16 15:37:35 2020		0 MB
	•	Snap_20200716_144313	Thu Jul 16 14:43:13 2020		0 MB
					1 / 1

Figure 2-10 Expose the Snapshot



- 4. Map the volume as a LUN with read-write permission, and the access the vCenter UI (of the ESXi server) to mount the exposed snapshot volume to be a Datastore.
- 5. During the process of mounting the Datastore, the ESXi system will ask you to assign a New Signature or use an Existing signature. Please choose to use an Existing signature.
- 6. Right click on the Datastore, you will be able to see the VM replicated from FAS-a, then you can register this VM and try to boot up after the snapshot on the VM is rolled back.

🗗 Register VM					
😑 .snapshot	🚞 snapshotvm	🚐 snapshotvm-2019-06-27_10-18-17		snapshotvm_0.vmdk	
🚞 @recycle	snapshotvm_0.vmdk			🚳 snapshotvm.vmx	
🚞 snapshotvm	snapshotvm-2b5a			STATUS.ok	snapshotvm.vr 3.06 KB
	snapshotvm-auxxml				3.06 KB Thursday, June 27
	snapshotvm.nvram				~
	snapshotvm.vmsd				
	🞒 snapshotvm.vmx				
	snapshotvm.vmx.lck				
	📄 vmware.log				
	vmx-snapshotvm-7				
		10	111		
[clonevm] snapshotvm/si	napshotvm/snapshotvm-2019-1	06-27_10-18-17/snapshotvm.vmx			
				Re	gister Cancel

Figure 2-11 Snapshot is rolled back



TIP

It is necessary to roll back the snapshot of the VM because the .VMDK file may be inconsistent due to the data cached by the ESXi server. Please roll back the last snapshot before powering on the VM to ensure that the VM can be successfully booted up.

7. Done.

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2.4.2. SANOS Configuration

Continue the previous section, two XCubeSAN storage systems named SAN-a and SAN-b. The following is the procedure.



1. In SAN-a, select the **Remote Replication** function submenu to find the remote replication task.

Remote Replications													
Task:													
	No.	Source Volume	Status	%	Shaping	Speed	Target Volume	Capacity	Schedule	Time Created	Manufacturer	Model	WWN
•		SAN1				210 MB	SAN2	150.00 GB		Mon Aug 5 17:43:20 2019	Qsan		20020013780a9440
Task 'SAN1' Path:													
	No.	Source Port	Target IP Addres	s	Target Name			LUN	Status				
V	No. 1	Source Port Auto	Target IP Addres 172.168.100.2			om.qsan:xs5	;226-000d60528:dev0		Status Connecte	d			

Figure 2-12 Remote Replication Task

- 2. You may need to umount the original Datastore (of SAN-a) from the ESXi server to simulate a disaster on SAN-a.
- In SAN-b, select the Remote Replication function submenu to expose the replicated snapshot as a writable volume, and its exposed snapshot capacity is set to be greater than 0 (GB). This is called the writable snapshot function.

Snapsho	Snapshots									
Show snapshots for volume: SAN2 *										
	Snapshot Name		Health	Used	Exposure	Permission	LUN	Time Created		
•	▼ QREP554350		Good	0 MB			None	Mon Aug 5 18:01:24 2019		
	ose Snapshot back ete	Snapshot	Schedule S	napshots	Delete Snaps	hots				

Figure 2-13 Expose the Snapshot

- 4. Map the volume as a LUN with read-write permission, and the access the vCenter UI (of the ESXi server) to mount the exposed snapshot volume to be a Datastore.
- 5. During the process of mounting the Datastore, the ESXi system will ask you to assign a New Signature or use an Existing signature. Please choose to use an Existing signature.
- 6. Right click on the Datastore, you will be able to see the VM replicated from FAS-a, then you can register this VM and try to boot up after the snapshot on the VM is rolled back.

🚏 Register VM				
🚞 .snapshot	📁 snapshotvm	늘 snapshotvm-2019-06-27_10-18-17	📃 snapshotvm_0.vmdk	
📁 @recycle	snapshotvm_0.vmdk		🔮 snapshotvm.vmx	
🚞 snapshotvm	snapshotvm-2b5a		STATUS.ok	snapshotvm.vr 3.06 KB
	snapshotvm-auxml			Thursday, June 27
	snapshotvm.nvram			
	snapshotvm.vmsd			
	🞒 snapshotvm.vmx			
	snapshotvm.vmx.lck			
	📄 vmware.log			
	vmx-snapshotvm-7			
[] [clonevm] snapshotvm/sr	apshotvm/snapshotvm-2019-06	i-27_10-18-17/snapshotvm.vmx		
			R	egister Cancel
				~
	Figure	2-14 Snapshot is rolled b	pack	



TIP

It is necessary to roll back the snapshot of the VM because the .VMDK file may be inconsistent due to the data cached by the ESXi server. Please roll back the last snapshot before powering on the VM to ensure that the VM can be successfully booted up.

7. Done.

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2.4.3. QSM Configuration

Continue the previous section, two XCubeNXT or XCubeNAS storage systems named NAS-a and NAS-b. The following is the procedure.

1. In NAS-a, select the **Backup Manager** function submenu to find the created snapshot replica task.



8			Васкир					?
Ø			Management Replica					
1	Remote Backup	Add Destination						
9	Cloud Backup	Target list	Task list of task1	(192.168.141.181	1)			
5	Xmirror			e backup source ta	irget and destinati	on location. You ca	an choose sche	duling on the task.
• ~~	USB Backup		Add					
	Log		Task Name	Type Folder	Source(local fd1/fs1	Destination(t	Schedule Disable	Status Standby
		• task1	888	Folder	101/181	➡ fd2	Disable	otanuby
		Online						
		Offline						
		- online						

Figure 2-15 Replica Task

2. In NAS-b, select the **Backup Manager** function submenu, and clone the replicated snapshot into the volume.

8			Back	nb				?
۲				Management	Replica			
<u>ି</u> ଜ	Remote Backup Cloud Backup	Fokler and LUN list	Information		Last access status	2019. Fri	day, Jun. 28, 10:39:0	18
9	Xmirror	All v		Used Used	8.62GB	Туре	Folder	
	USB Backup Log	System/UserHome fd2/replica	6%	Snapshot	0GB 141.37GB	Max snapshot Schedule	128 Disable	
		111	Snapshot list	Capacity	149.99GB	Clone from	6 8 🗠	
					Backup time		Total snaps	hots: 2
					2019, Friday, Jun. 28, 1 2019, Friday, Jun. 28, 1			

Figure 2-16 Clone the Replicated Snapshot

3. After the clone is completed, change the permission from RO to RW in shared folder page.



	C	С	ontrol Panel			٩	0
> System		Folder Map	Shared Folder	NFS Host	Windows Networ	k Host	
✓ Storage	Create Settings						
0verview	Folder list	Location	fd2				
🔂 Disk	* ~	WORM	None				
🕋 Pool	Q Search folder		 Used 	8.61 GB	-	olders 1	
ど Volume	📒 clonedata_clone	6 %	Available	132.76 GB		iles 0	
驞 Virtual Volume			Total size	141.37 GB			
📓 Block Storage		U Threshold	d notification				
ssp SSD Cache		User	has				
Deduplication		used	6%		rmation 80%	 Warning 	90%
Performance Tuning		Permission					
 File Sharing 		Owner	admin		~		
👤 User		Owning group	Administrator_G	roup	~		
🔍 Group		Account	User	~		Q Search	user and group
🚳 Domain Security		Username	Pre	/iew	🔵 Read / Write	🕑 Read only	Deny access
Nolder		admin	Rea	d only	0	S	0
> Network Service			<	« < <mark>1</mark>	of1 >	> >>	- -
							Apply

Figure 2-17 Change the shared folder

4. Assign the folder with RW permission to the NFS protocol, just like we did in NAS-a.

	C	C	control Panel			Q	?
> System		Folder Map	Shared Folder	NFS Host	Windows Network Host		
 Storage File Sharing 	Fokler list Q Search folder \$41	Information Folder name Description	fs1				
👤 User 🧟 Group 🌊 Domain Security		Location WORM	fd1 None				
Folder Network Service		4%	 Used Available Total size 	6.13 GB 143.86 GB 149.99 GB	Files	1 0	
			NFS access right of				+ 🖍 💼
		IP address *		ss right I / Write	Async Yes	Root . No	squash
			Add NFS Host				
	IP address or domain Access right Root squesh Async write	* Read / Writ	e v				
					Cancel Confirm	n	

Figure 2-18 Assign the NFS folder

5. In NAS-b, go to ESXi server, mount the NFS shared folder as a Datastore..



6. Right click on the Datastore, you will be able to see the VM replicated from NAS-a, then you can register this VM and try to boot up after the snapshot on the VM is rolled back.

 snapshot snapshotvm snapshotvm_0.vmdk snapshotvm_2b5a snapshotvm-auxxml snapshotvm.vmd snapshotvm.vmd<th>🚏 Register VM</th><th></th><th></th><th></th><th></th>	🚏 Register VM				
snapshotvm snapshotvm-2019-06-27_10-18-17/snapshotvm.vmx [clonevm] snapshotvm/snapshotvm/2019-06-27_10-18-17/snapshotvm.vmx	🚞 .snapshot	😑 snapshotvm	🚞 snapshotvm-2019-06-27_10-18-17	snapshotvm_0.vmdk	
3.06 KB Thursday, June 2 Snapshotm.rvram Snapshotm.rvram Snapshotm.rvrad Snapshotm.rvr	🚞 @recycle	📃 snapshotvm_0.vmdk		🚔 snapshotvm.vmx	
Thursday, June 2 snapshotm.nvram snapshotm.nvrad snapshotm.nvrad snapshotm.nvrad snapshotm.nvrad snapshotm.rvrad mvrave.log vrrave.snapshotm.7	🚞 snapshotvm	snapshotvm-2b5a		STATUS.ok	snapshotvm.v
snapshotrm.vmsd snapshotrm.vmsd snapshotrm.vmx.lck vmvare.log vmx-snapshotrm-7 []] []] []] []] []] []] []]		snapshotvm-auxxml			
image: snapshotym.vmx image: snapshotym.vmx.lck image: vmx-snapshotym.vmx.lck image: vmx-snapshotym.rmx.lck		snapshotvm.nvram			
snapshotvm.vmx.lck vmvare.log vmvcsnapshotvm-7 III IIII IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII		snapshotvm.vmsd			
vmware.log vmws.snapshotvm-7 iii iiiiiiiii		🞒 snapshotvm.vmx			
vmx-snapshotvm-7 III IIII IIIII IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII		snapshotvm.vmx.lck			
III III III III Iclonevrn] snapshotvm/snapshotvm-2019-06-27_10-18-17/snapshotvm.vmx		vmware.log			
[clonevm] snapshotvm/snapshotvm/snapshotvm-2019-06-27_10-18-17/snapshotvm.vmx		vmx-snapshotvm-7			
[clonevm] snapshotvm/snapshotvm/snapshotvm-2019-06-27_10-18-17/snapshotvm.vmx					
[clonevm] snapshotvm/snapshotvm/snapshotvm-2019-06-27_10-18-17/snapshotvm.vmx					
[clonevm] snapshotvm/snapshotvm/snapshotvm-2019-06-27_10-18-17/snapshotvm.vmx					
[clonevm] snapshotvm/snapshotvm/snapshotvm-2019-06-27_10-18-17/snapshotvm.vmx					
[clonevm] snapshotvm/snapshotvm/snapshotvm-2019-06-27_10-18-17/snapshotvm.vmx					
[clonevm] snapshotvm/snapshotvm/snapshotvm-2019-06-27_10-18-17/snapshotvm.vmx			m		ш
	-				
Register Cancel	📑 (clonevm) snapshotvm/sn	apshotvm/snapshotvm-2019-0	16-27_10-18-17/snapshotvm.vmx		
				R	egister Cancel

Figure 2-19 Snapshot is rolled back



TIP

It is necessary to roll back the snapshot of the VM because the .VMDK file may be inconsistent due to the data cached by the ESXi server. Please roll back the last snapshot before powering on the VM to ensure that the VM can be successfully booted up.

7. Done.



3. CONCLUSION

This document discusses continuous backup solutions and disaster drills in a VMware environment. Configuring a data protection solution helps prevent unexpected situations. In addition, this is a cost-effective method and does not require any agent to be installed in the environment. The solution we provide can be easily implemented with the simple script and snapshot copies stored in QSAN storage.



4. **APPENDIX**

4.1. Apply To

- XEVO firmware 2.0.0 and later
- SANOS firmware 2.0.0 and later
- QSM firmware 3.3.0 and later

4.2. Reference

Software Manuals

- <u>XEVO Software Manual</u>
- SANOS Software Manual
- <u>QSM Software Manual</u>

White Paper

<u>QReplica 3.0 White Paper</u>

