

How to configure iSCSI initiator in VMware 7.0

XCubeSAN and FAS Series White Paper

September 2022

PREFACE

Information, Tip and Caution

This manual 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.

TABLE OF CONTENT

Preface.....	1
Information, Tip and Caution.....	1
Table of Content.....	2
Audience	3
Environment	3
Configuration.....	4
Logging iSCSI target using software iSCSI initiator	4
Add the iSCSI device as Datastore.....	12
Create the Virtual Machine(VM) with the Datastore	15
Conclusion.....	21
Apply To	21
References	21
Announcement.....	22
Appendix	23
Related Documents	23
Technical Support.....	23

AUDIENCE

In this document, we will guide users to understand how to use the software iSCSI initiator in ESXi 7.0 to connect to XCubeSAN XS3324D. We will also demonstrate the steps pertaining to how multipath I/O be configured with XS3324D for achieving the optimized throughput.

Environment

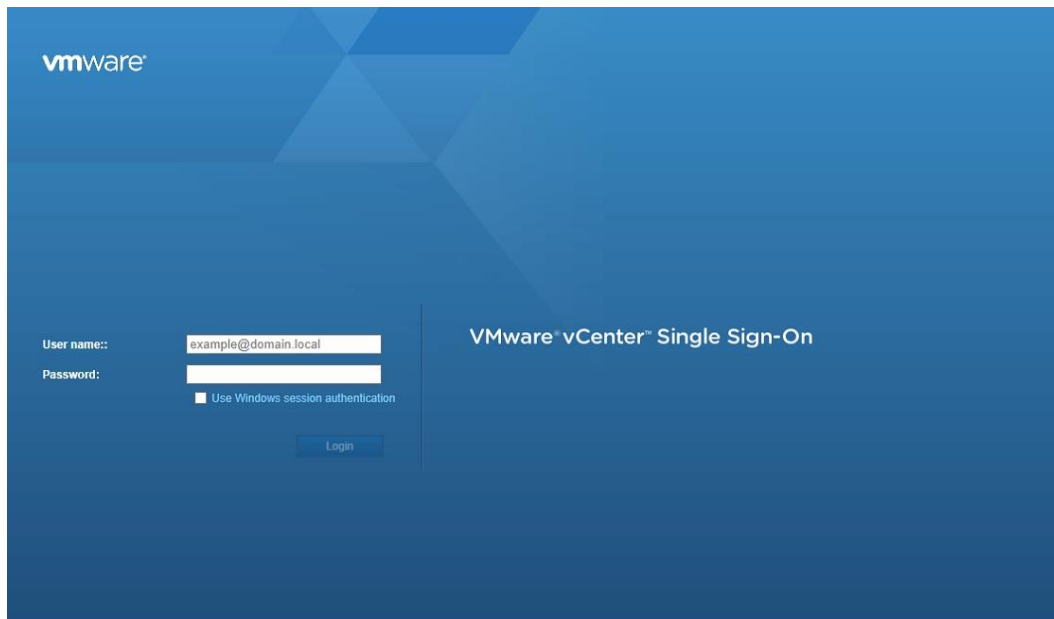
Host OS	VMware ESXi server 7.0
Storage	XS3324D
Firmware	V2.2.0
RAM	8GB
iSCSI data port	192.168.195.1/24 192.168.195.2/24

CONFIGURATION

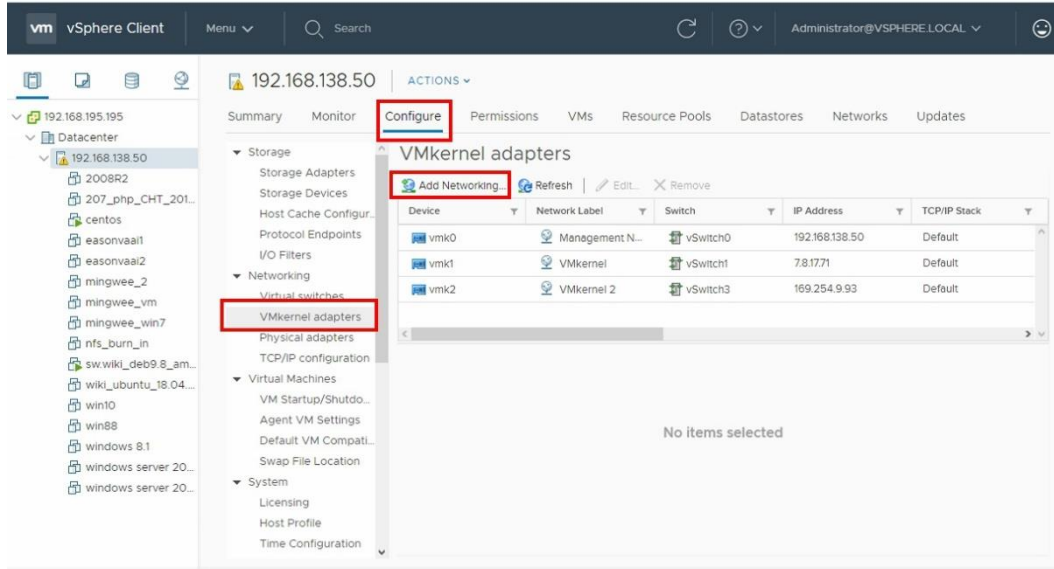
Logging iSCSI target using software iSCSI initiator

Users can either use VMware vSphere client or VMware vCenter to configure the software iSCSI initiator. We are using VMware vCenter to connect to the ESXi server directly as an example here.

1. Login the ESXi server from VMware vSphere Client.



2. In **Configuration** tab, modify **Networking** setting to add networking (It is the TCP/IP stack which handles traffic for ESXi server services, such as vMotion, iSCSI, and NFS).



3. Select VMkernel Network Adapter

192.168.138.50 - Add Networking

1 Select connection type

2 Select target device

3 Port properties

4 IPv4 settings

5 Ready to complete

Select connection type

Select a connection type to create.

☒ VMkernel Network Adapter

The VMkernel TCP/IP stack handles traffic for ESXi services such as vSphere vMotion, iSCSI, NFS, FCoE, Fault Tolerance, vSAN and host management.

☐ Virtual Machine Port Group for a Standard Switch

A port group handles the virtual machine traffic on standard switch.

☐ Physical Network Adapter

A physical network adapter handles the network traffic to other hosts on the network.

CANCEL

BACK

NEXT

4. Select an existing standard switch

192.168.138.50 - Add Networking

✓ 1 Select connection type

2 Select target device

3 Port properties

4 IPv4 settings

5 Ready to complete

Select target device

Select a target device for the new connection.

☐ Select an existing network

BROWSE ...

☒ Select an existing standard switch

vSwitch0

BROWSE ...

☐ New standard switch

MTU (Bytes)

1500

CANCEL

BACK

NEXT

5. Configure VMkernel port settings

192.168.138.50 - Add Networking

✓ 1 Select connection type

✓ 2 Select target device

3 Port properties

4 IPv4 settings

5 Ready to complete

Port properties

Specify VMkernel port settings.

VMkernel port settings

Network label

VMkernel test

VLAN ID

None (0)

IP settings

IPv4

MTU

Get MTU from switch

1500

TCP/IP stack

Default

Available services

Enabled services

☐ vMotion

☐ Provisioning

☐ Fault Tolerance logging

☒ Management

☐ vSphere Replication

☐ vSphere Replication NFC

☐ vSAN

CANCEL

BACK

NEXT

6. Setup a proper VMkernel network IP which is used to connect to the iSCSI data port of XS3324D

192.168.138.50 - Add Networking

✓ 1 Select connection type

✓ 2 Select target device

✓ 3 Port properties

4 IPv4 settings

5 Ready to complete

IPv4 settings

Specify VMkernel IPv4 settings.

☐ Obtain IPv4 settings automatically

☒ Use static IPv4 settings

IPv4 address

192.168.195.196

Subnet mask

255.255.128.0

Default gateway

192.168.128.254

DNS server addresses

192.168.205.1

CANCEL

BACK

NEXT

7. Check the settings selections and then click Finish button

192.168.138.50 - Add Networking

✓ 1 Select connection type

✓ 2 Select target device

✓ 3 Port properties

✓ 4 IPv4 settings

5 Ready to complete

Ready to complete

Review your settings selections before finishing the wizard.

New port group

Standard switch

VLAN ID

vMotion

Provisioning

Fault Tolerance logging

Management

vSphere Replication

vSphere Replication NFC

vSAN

VMkernel test

vSwitch0

None (0)

Disabled

Disabled

Disabled

Enabled

Disabled

Disabled

Disabled

NIC settings

MTU

1500

TCP/IP stack

Default

IPv4 settings

IPv4 address

192.168.195.196 (static)

Subnet mask

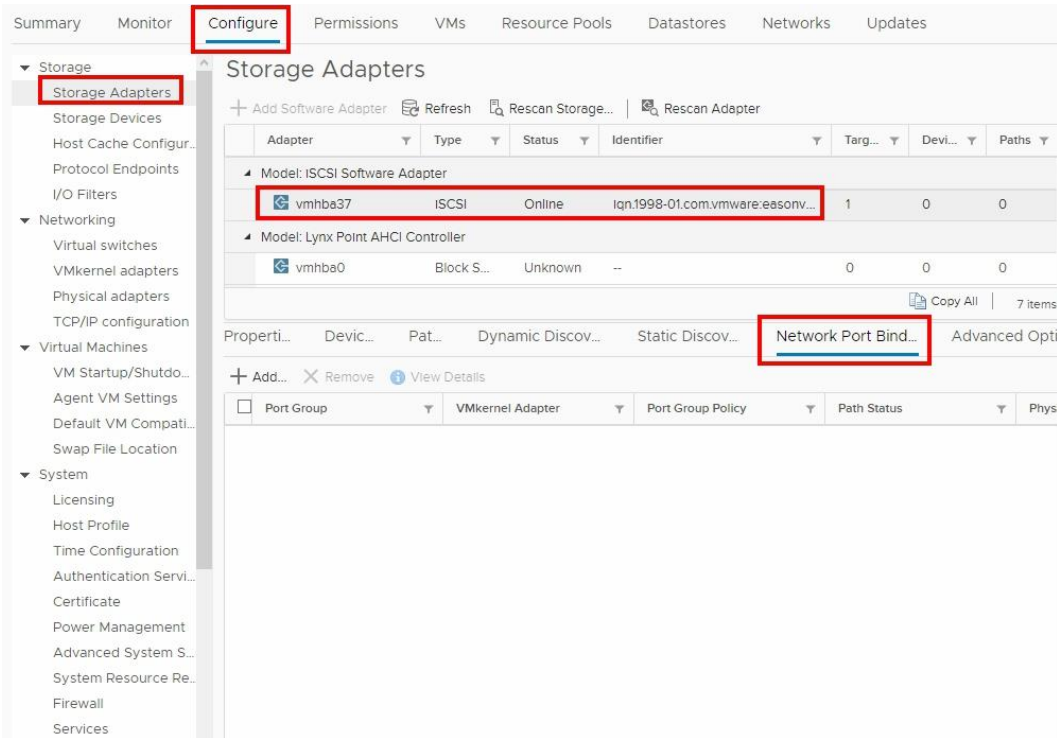
255.255.128.0

CANCEL

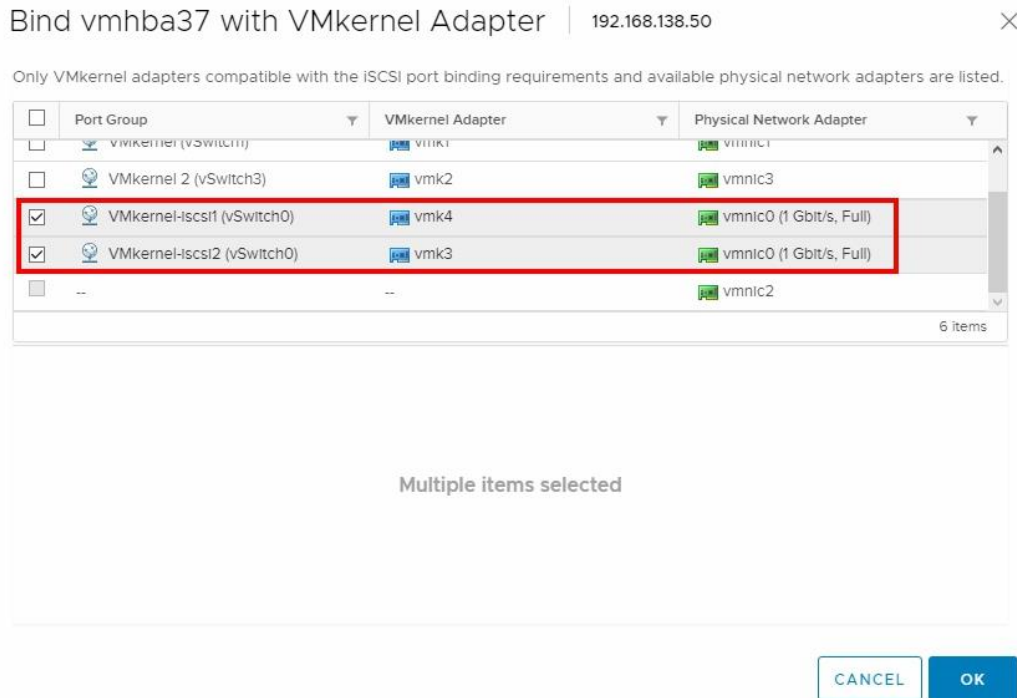
BACK

FINISH

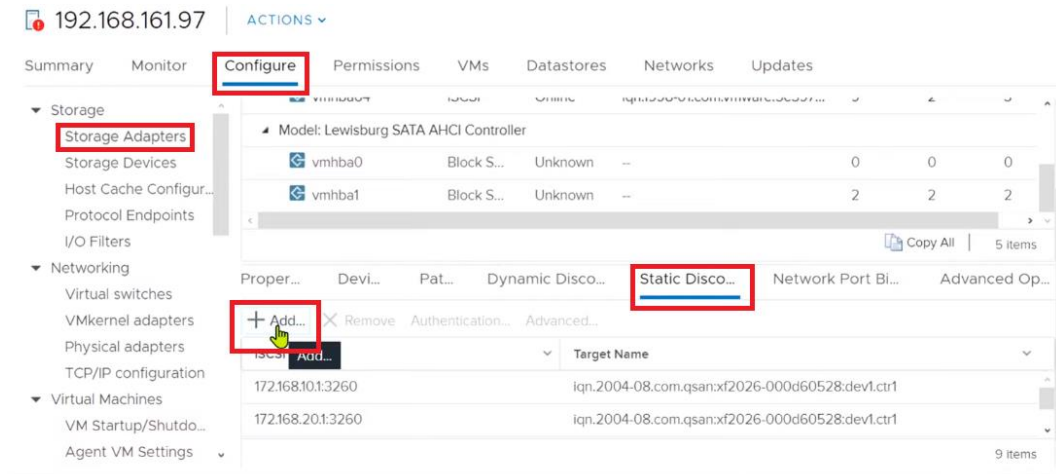
8. In **Configuration** tab, select **Storage Adapters** to list all available storage adapters. Choose iSCSI Software HBA and click **Network Port Binding** to modify the settings.



9. Select the both **VMkernel** as a port group



10. Go to Static Discovery tab, click Add button to set iSCSI target IP, here is iSCSI data port of XS3324D



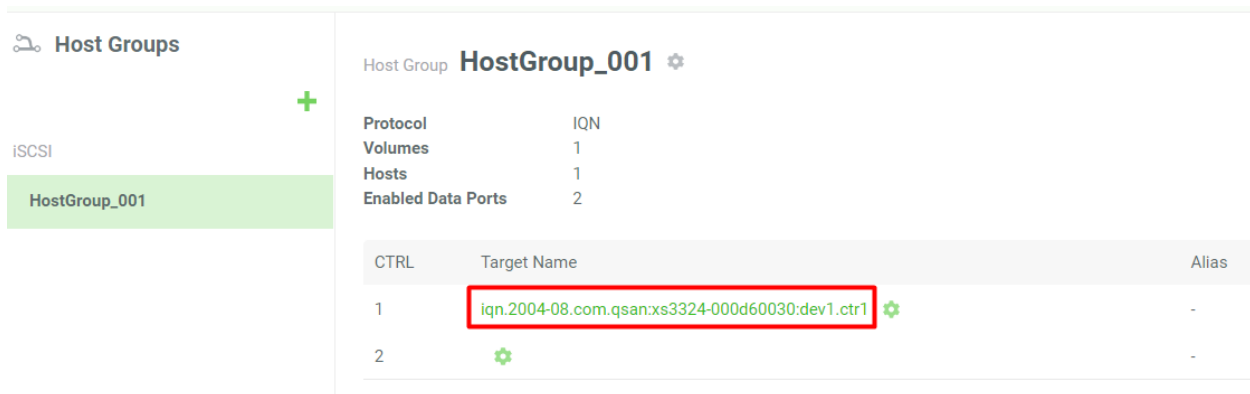
11. Type the XS3324D both iSCSI IP and target iqn name

iSCSI Server:

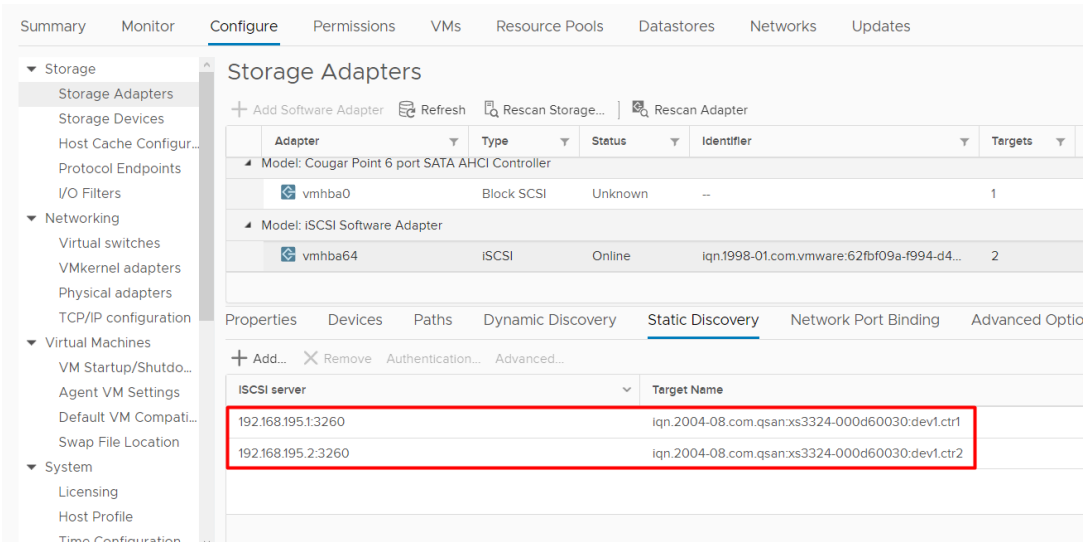
Port:

iSCSI Target Name:

☒ Inherit authentication settings from parent



12. After that, you will be able to see the both IP addresses.



Summary Monitor **Configure** Permissions VMs Resource Pools Datastores Networks Updates

Storage Adapters

+ Add Software Adapter Refresh Rescan Storage... Rescan Adapter

Adapter	Type	Status	Identifier	Targets
Model: Cougar Point 6 port SATA AHCI Controller				
vmhba0	Block SCSI	Unknown	--	1
Model: iSCSI Software Adapter				
vmhba64	iSCSI	Online	iqn.1998-01.com.vmware:62fbf09a-f994-d4...	2

Properties Devices Paths Dynamic Discovery **Static Discovery** Network Port Binding Advanced Options

+ Add... X Remove Authentication... Advanced...

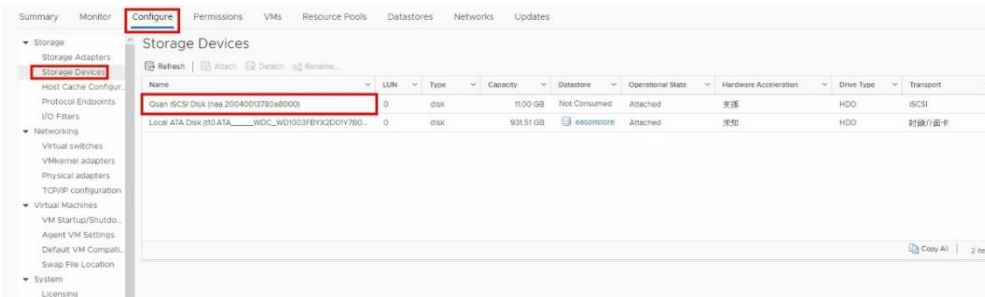
iSCSI server	Target Name
192.168.195.1:3260	iqn.2004-08.com.qsan:xs3324-000d60030:dev1.ctr1
192.168.195.2:3260	iqn.2004-08.com.qsan:xs3324-000d60030:dev1.ctr2



TIP:

The iSCSI target iqn can be found on web UI. Remember that the iqn is different if you are connecting to the iSCSI data port of controller1 and controller2 from ESXi server.

13. You can also see the iSCSI device here.



Summary Monitor **Configure** Permissions VMs Resource Pools Datastores Networks Updates

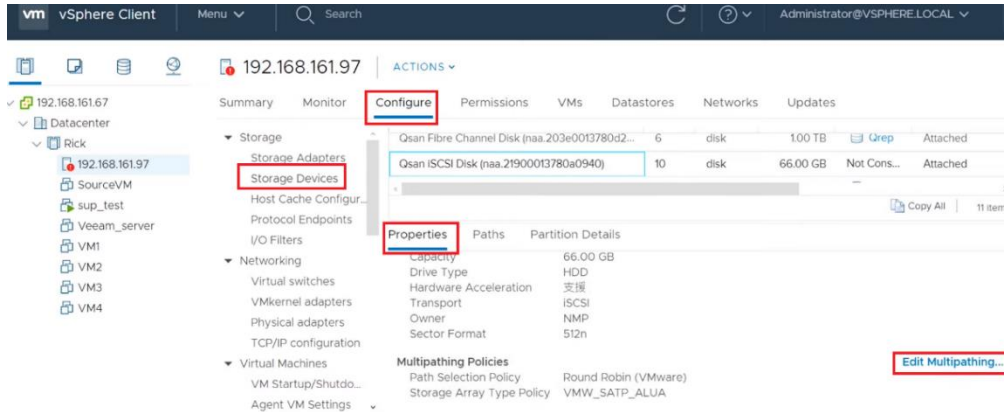
Storage Devices

Refresh Attach Detach Rename...

Name	LUN	Type	Capacity	Datastore	Operational State	Hardware Acceleration	Drive Type	Transport
Qsan iSCSI Disk (naa.2004001779e8000)	0	disk	11.00 GB	Not Consumed	Attached	无加速	HDD	iSCSI
Local ATA Disk (st0.ATA_WDC_WD1003FBYKDY7B0...)	0	disk	931.51 GB	datastore	Attached	无加速	HDD	对换介面卡

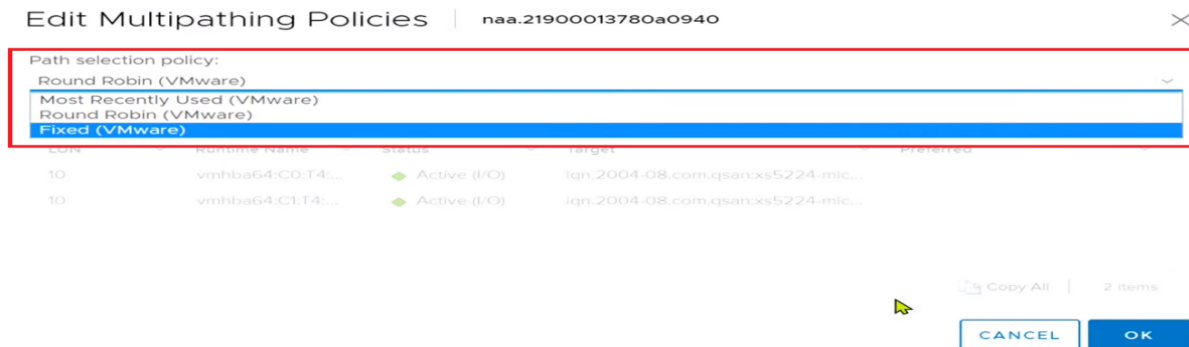
Copy All 2 items

14. The ESXi server provides settings to the multipath I/O. We can select the **Storage Devices** and click **Properties** to **Edit Multipathing** settings.



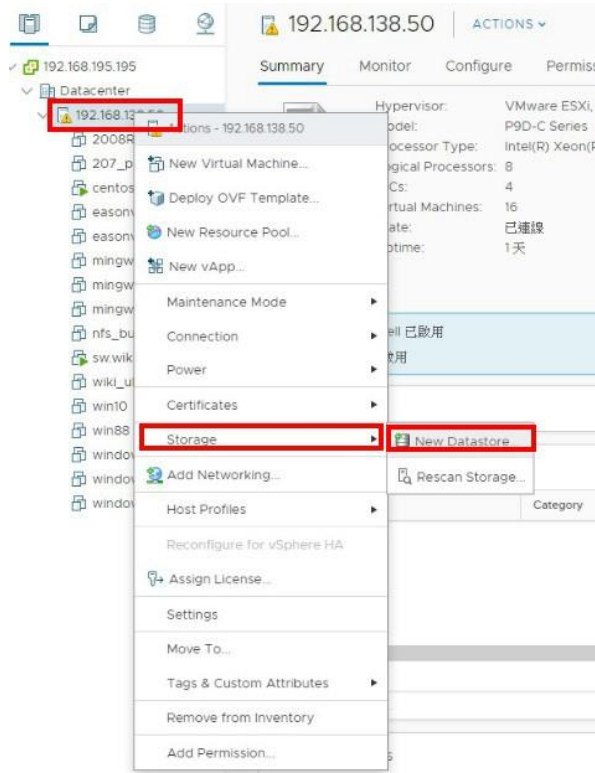
15. In **Multipathing Policies** window, it will display how many paths connect to this LUN and what path is active now. It can be modified by the drop-down menu.

There are three types available, **Fixed**, **Most Recently Used**, and **Round Robin**. The difference between **Fixed** and **Most Recently Used** is that **Fixed** will make the active path to failback once the preferred path is restored from a failure status, but **Most Recently Used** policy will keep the active path stay in used. **Fixed** and **Most Recently Used** policies will use only one path to transfer the iSCSI network traffic at the same time, whereas **Round Robin** policy will use all available paths to transfer the data. Remember to click Change button for applying the setting.



Add the iSCSI device as Datastore

1. Click **Storage** => **New Datastore**



2. Select the datastore type as **VMFS**

New Datastore

1 Type

2 Name and device selection

3 VMFS version

4 Partition configuration

5 Ready to complete

Type

Specify datastore type.

☒ VMFS
Create a VMFS datastore on a disk/LUN.

☐ NFS
Create an NFS datastore on an NFS share over the network.

☐ VVol
Create a Virtual Volumes datastore on a storage container connected to a storage provider.

CANCEL

BACK

NEXT

3. Type the Datastore name and select this iSCSI disk from XS3324D

New Datastore

✓ 1 Type
2 Name and device selection
3 Partition configuration
4 Ready to complete

Name and device selection
Select a name and a disk/LUN for provisioning the datastore.

Datastore name:

Name	LUN	Capacity	Hardware...	Drive T...	Si
Qsan iSCSI Disk (naa.200...	0	11.00 GB	Supported	HDD	..

CANCEL BACK NEXT

4. Configure the datastore size

New Datastore

✓ 1 Type
✓ 2 Name and device selection
3 Partition configuration
4 Ready to complete

Partition configuration
Review the disk layout and specify partition configuration details.

Partition Configuration

Datastore Size GB

Empty 11.0 GB

CANCEL BACK NEXT

5. Review the Datastore setting and click **FINISH**

New Datastore

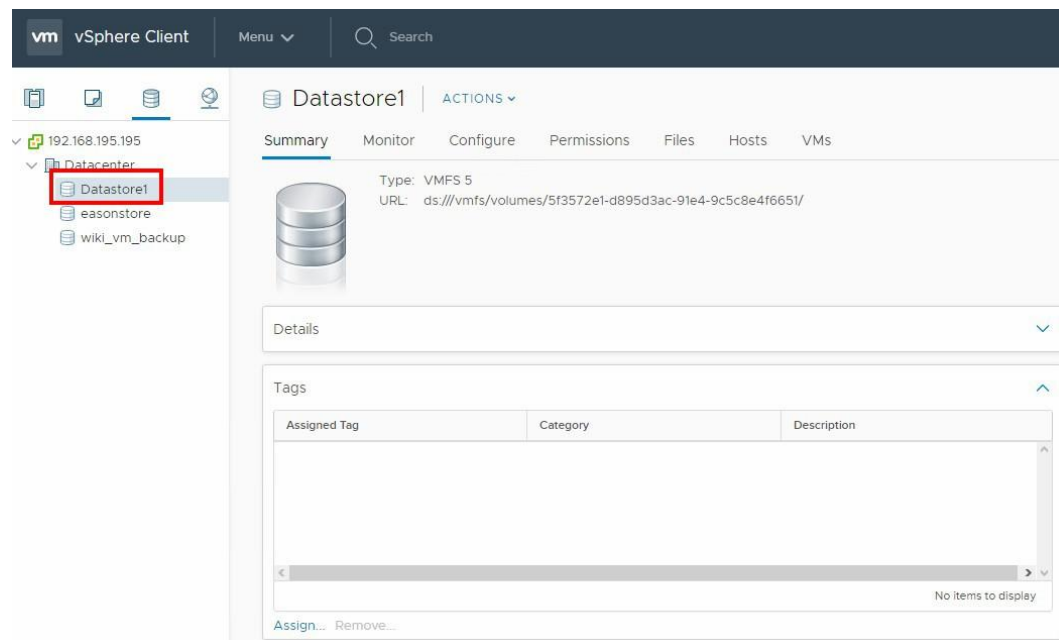
✓ 1 Type
✓ 2 Name and device selection
✓ 3 Partition configuration
4 Ready to complete

Ready to complete
Review your settings selections before finishing the wizard.

General	
Name:	Datastore1
Type:	VMFS
Datastore size:	11.00 GB
Device and Formatting	
Disk/LUN:	Qsan iSCSI Disk (naa.20040013780a8000)
Partition Format:	GPT
VMFS Version:	VMFS 5

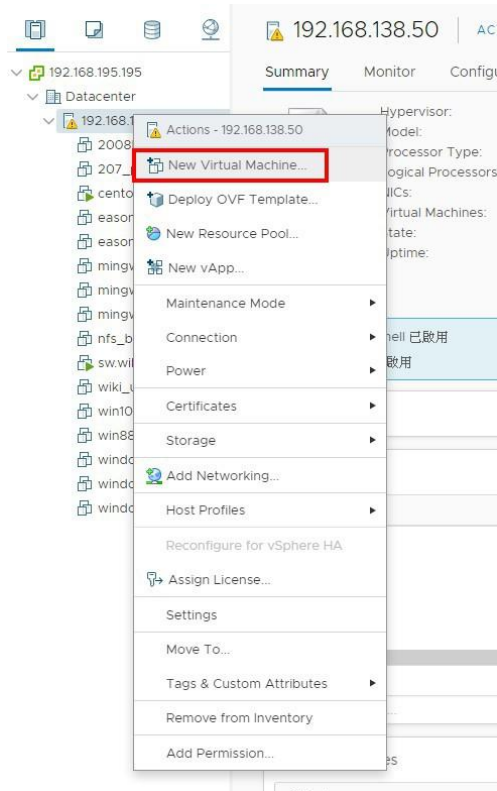
CANCEL BACK **FINISH**

6. Here can see the Datastore is created successfully



Create the Virtual Machine(VM) with the Datastore

1. Click New Virtual Machine



2. Select the VM type as “Create a new virtual machine”

New Virtual Machine

The screenshot shows the 'New Virtual Machine' wizard at Step 1: 'Select a creation type'. On the left, a list of steps is shown, with Step 1 highlighted. The main area is titled 'Select a creation type' and 'How would you like to create a virtual machine?'. A list of options is displayed, with 'Create a new virtual machine' highlighted by a red rectangle. To the right of the list, a description states: 'This option guides you through creating a new virtual machine. You will be able to customize processors, memory, network connections, and storage. You will need to install a guest operating system after creation.' At the bottom right, there are three buttons: 'CANCEL', 'BACK', and 'NEXT'.

1 Select a creation type
2 Select a name and folder
3 Select a compute resource
4 Select storage
5 Select compatibility
6 Select a guest OS
7 Customize hardware
8 Ready to complete

Select a creation type
How would you like to create a virtual machine?

- Create a new virtual machine
- Deploy from template
- Clone an existing virtual machine
- Clone virtual machine to template
- Clone template to template
- Convert template to virtual machine

This option guides you through creating a new virtual machine. You will be able to customize processors, memory, network connections, and storage. You will need to install a guest operating system after creation.

CANCEL BACK NEXT

3. Specify a unique name for the VM

New Virtual Machine

The screenshot shows the 'New Virtual Machine' wizard at Step 2: 'Select a name and folder'. On the left, a list of steps is shown, with Step 2 highlighted. The main area is titled 'Select a name and folder' and 'Specify a unique name and target location'. A text field for 'Virtual machine name:' contains 'New Virtual Machine-1'. Below this, a section titled 'Select a location for the virtual machine.' shows a tree view with '192.168.195.195' expanded and 'Datacenter' selected. At the bottom right, there are three buttons: 'CANCEL', 'BACK', and 'NEXT'.

✓ 1 Select a creation type
✓ 2 Select a name and folder
3 Select a compute resource
4 Select storage
5 Select compatibility
6 Select a guest OS
7 Customize hardware
8 Ready to complete

Select a name and folder
Specify a unique name and target location

Virtual machine name: New Virtual Machine-1

Select a location for the virtual machine.

- 192.168.195.195
 - Datacenter

CANCEL BACK NEXT

4. Select the destination of this VM

New Virtual Machine

✓ 1 Select a creation type
✓ 2 Select a name and folder
3 Select a compute resource
4 Select storage
5 Select compatibility
6 Select a guest OS
7 Customize hardware
8 Ready to complete

Select a compute resource
Select the destination compute resource for this operation

▼ Datacenter

192.168.138.50

Compatibility

✓ Compatibility checks succeeded.

CANCEL BACK NEXT

5. Select the datastore which we just create “Datastore1”

New Virtual Machine

✓ 1 Select a creation type
✓ 2 Select a name and folder
✓ 3 Select a compute resource
4 Select storage
5 Select compatibility
6 Select a guest OS
7 Customize hardware
8 Ready to complete

Select storage
Select the datastore in which to store the configuration and disk files

☐ Encrypt this virtual machine (Requires Key Management Server)

VM Storage Policy: Datastore Default

Name	Capacity	Provisioned	Free	Type
Datastore1	10.75 GB	885 MB	9.89 GB	VM
easonstore	924 GB	1.07 TB	255.91 GB	VM
wiki_vm_backup	7.14 TB	60.04 GB	7.08 TB	NF

Compatibility

✓ Compatibility checks succeeded.

CANCEL BACK NEXT

6. Select the compatibility version as “ESXi 6.0 and later”

New Virtual Machine

✓ 1 Select a creation type

✓ 2 Select a name and folder

✓ 3 Select a compute resource

✓ 4 Select storage

5 Select compatibility

6 Select a guest OS

7 Customize hardware

8 Ready to complete

Select compatibility

Select compatibility for this virtual machine depending on the hosts in your environment

The host or cluster supports more than one VMware virtual machine version. Select a compatibility for the virtual machine.

Compatible with: ESXi 6.0 and later ⓘ

This virtual machine uses hardware version 11, which is compatible with ESXi 6.0 and later. Some virtual machine hardware features are unavailable with this option.

CANCEL BACK NEXT

7. Select the guest OS of VM

New Virtual Machine

✓ 1 Select a creation type

✓ 2 Select a name and folder

✓ 3 Select a compute resource

✓ 4 Select storage

✓ 5 Select compatibility

6 Select a guest OS

7 Customize hardware

8 Ready to complete

Select a guest OS

Choose the guest OS that will be installed on the virtual machine

Identifying the guest operating system here allows the wizard to provide the appropriate defaults for the operating system installation.

Guest OS Family: Windows

Guest OS Version: Microsoft Windows Server 2016 (64 位元)

Compatibility: ESXi 6.0 and later (VM version 11)

CANCEL BACK NEXT

8. Configure the VM hardware settings

New Virtual Machine

✓ 1 Select a creation type

✓ 2 Select a name and folder

✓ 3 Select a compute resource

✓ 4 Select storage

✓ 5 Select compatibility

✓ 6 Select a guest OS

7 Customize hardware

8 Ready to complete

Customize hardware

Configure the virtual machine hardware

Virtual Hardware VM Options

ADD NEW DEVICE

> CPU *	1	
> Memory	4	GB
> New Hard disk *	5	GB
> New SCSI controller *	LSI Logic SAS	
> New Network *	VM Network	<input checked="" type="checkbox"/> Connect...
> New CD/DVD Drive *	Client Device	<input type="checkbox"/> Connect...
> Video card *	Specify custom settings	
VMCI 裝置	支援虛擬機器通訊介面之虛擬機器 PCI 匯流排上的裝置	
> Other	Additional Hardware	

Compatibility: ESXi 6.0 and later (VM version 11)

CANCEL

BACK

NEXT

9. Check the all settings and then click FINISH

New Virtual Machine

✓ 1 Select a creation type

✓ 2 Select a name and folder

✓ 3 Select a compute resource

✓ 4 Select storage

✓ 5 Select compatibility

✓ 6 Select a guest OS

✓ 7 Customize hardware

8 Ready to complete

Ready to complete

Click Finish to start creation.

Provisioning type	Create a new virtual machine
Virtual machine name	New Virtual Machine-1
Folder	Datacenter
Host	192.168.138.50
Datastore	Datastore1
Guest OS name	Microsoft Windows Server 2016 (64 位元)
Virtualization Based Security	Disabled
CPUs	1
Memory	4 GB
NICs	1
NIC 1 network	VM Network
NIC 1 type	E1000E
SCSI controller 1	LSI Logic SAS

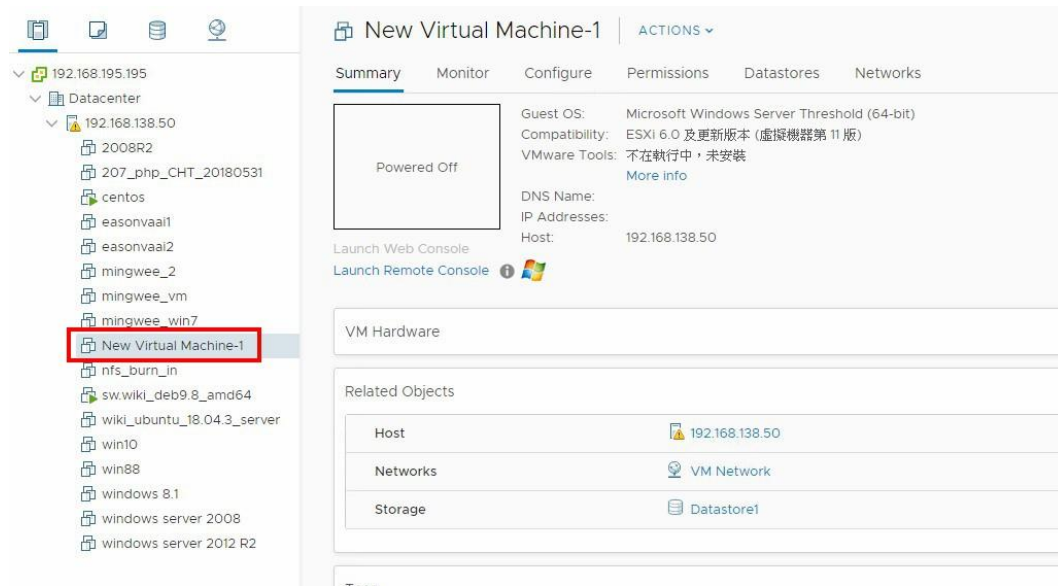
Compatibility: ESXi 6.0 and later (VM version 11)

CANCEL

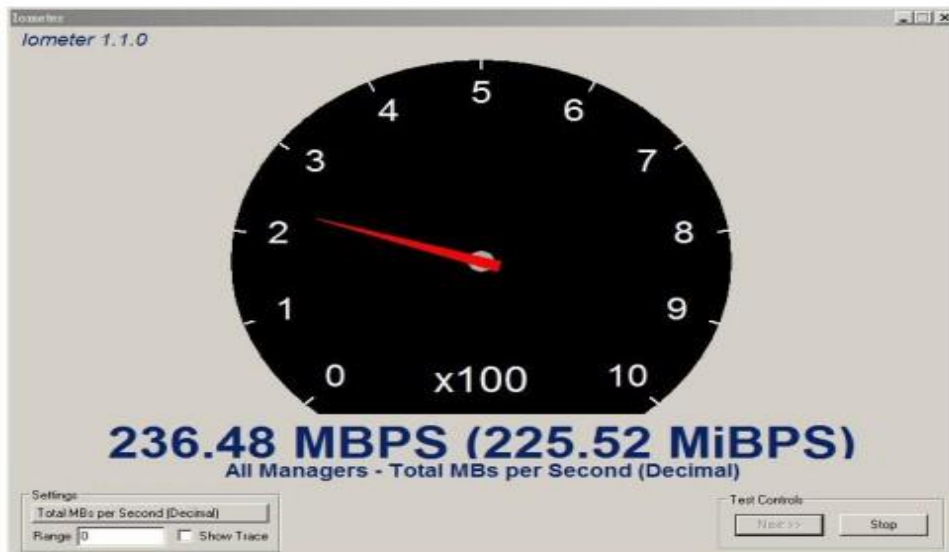
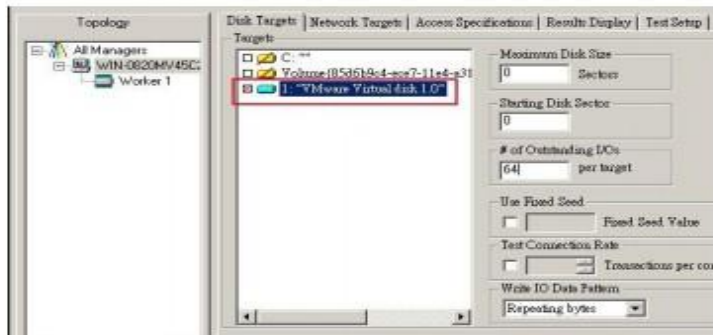
BACK

FINISH

10. Here can see the new VM had been created successfully



11. Verify that the multipath is working by Iometer on the created VM guest OS.



Conclusion

QSAN XCubeSAN series products provide Active-Active dual controller and support ALUA, user don't have to pre-configure any option on XS3324D system to achieve the redundancy between ESXi server and XS3324D, just make sure the multipath I/O session is well-configured and the failover/back mechanism will automatically be executed once one of controllers gets failed.

Apply To

XCubeSAN XS3300

XCubeFAS series

References

[XEVO Software Manual](#)

ANNOUNCEMENT

Copyright

© Copyright 2022 QSAN Technology, Inc. All rights reserved. No part of this document may be reproduced or transmitted without written permission from QSAN Technology, Inc.

September 2022

QSAN believes the information in this publication is accurate as of its publication date. The information is subject to change without notice.

Trademarks

- QSAN, the QSAN logo, XCubeSAN, and QSAN.com are trademarks or registered trademarks of QSAN Technology, Inc.
- Microsoft, Windows, Windows Server, and Hyper-V are trademarks or registered trademarks of Microsoft Corporation in the United States and/or other countries.
- Linux is a trademark of Linus Torvalds in the United States and/or other countries.
- UNIX is a registered trademark of The Open Group in the United States and other countries.
- Mac and OS X are trademarks of Apple Inc., registered in the U.S. and other countries.
- Java and all Java-based trademarks and logos are trademarks or registered trademarks of Oracle and/or its affiliates.
- VMware, ESXi, and vSphere are registered trademarks or trademarks of VMware, Inc. in the United States and/or other countries.
- Citrix and Xen are registered trademarks or trademarks of Citrix Systems, Inc. in the United States and/or other countries.
- Other trademarks and trade names used in this document to refer to either the entities claiming the marks and name or their products are the property of their respective owners.

APPENDIX

Related Documents

There are related documents which can be downloaded from the website.

- [All XCubeSAN Documents](#)
- [XCubeSAN QIG \(Quick Installation Guide\)](#)
- [XCubeSAN Hardware Manual](#)
- [XCubeSAN Configuration Worksheet](#)
- [XCubeSAN SANOS 4.0 Software Manual](#)
- [Compatibility Matrix](#)
- [White Papers](#)
- [Application Notes](#)

Technical Support

- Do you have any questions or need help troubleshooting a problem? Please contact QSAN Support, we will reply to you as soon as possible.
- Via the Web: https://www.qsan.com/en/contact_support.php
- Via Telephone: [+886-2-7720-6355](tel:+886-2-7720-6355) (Service hours: 09:30 - 18:00, Monday - Friday, UTC+8)
- Via Skype Chat, Skype ID: [qsan.support](https://www.skype.com/en/contacts/skype/qsan-support) (Service hours: 09:30 - 02:00, Monday - Friday, UTC+8, Summertime: 09:30 - 01:00)
- Via Email: support@qsan.com