

Sangfor HCI Setup Guide

Application Note

November 2024

ANNOUNCEMENT

Copyright

© Copyright 2024 QSAN Technology, Inc. All rights reserved. No part of this document may be reproduced or transmitted without written permission from QSAN Technology, Inc.

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, QSAN.com, XCubeFAS, XCubeSAN, XCubeNXT, XCubeNAS, XCubeDAS, XEVO, SANOS, and QSM 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 names or their products are the property of their respective owners.

TABLE OF CONTENTS

Anno	ouncem	ent	i
Notio	ces		v
Prefa	ace		.vi
	Techn	ical Support	. vi
	Inforr	nation, Tip, and Caution	vi
1.	Introd	uction to Sangfor HCI	. 1
	1.1.	Recommended Storage for Virtualization	1
2.	Conne	ct with Sangfor HCI	. 5
	2.1.	Configure Steps	5
	2.2.	Conclusion	11
	2.3.	Appendix	12

FIGURES

Figure 1-1	Use XCalc. Tool to Obtain Recommended Storages	2
Figure 1-2	Select Virtualization Option	3
Figure 1-3	Click Proposal Details Button to View More	3
Figure 1-4	Click Export Button to Export Result	4
Figure 2-1	Demonstration Topology	6
Figure 2-2	Create a Block Volume and Add into HostGroup	6
Figure 2-3	Edit IP Address in Sangfor HCI Server	7
Figure 2-4	Discover iSCSI LUN	7
Figure 2-5	Add iSCSI Server	8
Figure 2-6	Add New Datastore Step 1	8
Figure 2-7	Add New Datastore Step 2	9
Figure 2-8	Scan for the New Disk	9
Figure 2-9	Create VM Step 1	10
Figure 2-10	Create VM Step 2	10
Figure 2-11	Create VM Step 3	11



TABLES

Table 1-1 S	Storage Options to Enhance VM Performance2	
-------------	--	--



NOTICES

Information contained in this document has been reviewed for accuracy. But it could include typographical errors or technical inaccuracies. Changes are made to the document periodically. These changes will be incorporated in new editions of the publication. QSAN may make improvements or changes in the products. All features, functionality, and product specifications are subject to change without prior notice or obligation. All statements, information, and recommendations in this document do not constitute a warranty of any kind, express or implied.

Any performance data contained herein was determined in a controlled environment. Therefore, the results obtained in other operating environments may vary significantly. Some measurements may have been made on development-level systems and there is no guarantee that these measurements will be the same on generally available systems. Furthermore, some measurements may have been estimated through extrapolation. Actual results may vary. Users of this document should verify the applicable data for their specific environment.

This information contains examples of data and reports used in daily business operations. To illustrate them as completely as possible, the examples include the names of individuals, companies, brands, and products. All these names are fictitious and any similarity to the names and addresses used by an actual business enterprise is entirely coincidental.



PREFACE

Technical Support

Do you have any questions or need help trouble-shooting a problem? Please contact QSAN Support, we will reply to you as soon as possible.

- Via the Web: <u>https://www.qsan.com/technical_support</u>
- Via Telephone: +886-2-77206355
- (Service hours: 09:30 18:00, Monday Friday, UTC+8)
- Via Skype Chat, Skype ID: qsan.support
- (Service hours: 09:30 02:00, Monday Friday, UTC+8, Summer time: 09:30 01:00)
- Via Email: <u>support@qsan.com</u>

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.



vi





CAUTION

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



1. INTRODUCTION TO SANGFOR HCI

Sangfor HCI (Hyper-Converged Infrastructure) is an advanced IT solution that integrates computing, storage, networking, and security into a single platform. This innovative architecture simplifies data center management and enhances operational efficiency by consolidating traditionally separate components into a unified system.

Chapter 2 offers a detailed guide on creating a VM (Virtual Machine) using Sangfor HCI. It walks through the steps for mounting an iSCSI LUN, configuring it as a datastore, and deploying a virtual machine. By utilizing the iSCSI protocol for block-level storage, it enables efficient resource allocation and management in virtualized environments, making it a preferred choice for high-performance storage solutions.

In summary, Sangfor Hyper-Converged Infrastructure represents a comprehensive solution for organizations seeking to modernize their IT environments. Its combination of performance, scalability, cost efficiency, and robust security makes it an attractive option for businesses across various industries looking to streamline operations and support digital transformation initiatives.

1.1. Recommended Storage for Virtualization

Before starting, first understand which storage is suitable for virtualization. The table below summarizes our findings and provides a clear overview of the maximum number of VMs that each storage type can support, regardless of latency. This comprehensive analysis is designed to assist in selecting the most appropriate storage solution based on specific performance needs and workload requirements, ensuring optimal deployment and scalability of virtual environments.



STORAGE TYPE	LATENCY THRESHOLD	ADDITIONAL VMS SUPPORTED UNDER LATENCY	NUMBER OF VMS SUPPORTED
NVMe Storage	< 100 µs	50+ VMs	Up to 1,000 VMs
SAS SSD Storage	< 500 μs	20 ~ 30 VMs	Up to 300 VMs
Hybrid Drive Storage	< 1 ms	10 ~ 20 VMs	Up to 150 VMs
SAS HDD Storage	< 50 ms	3 ~ 4 VMs	Up to 15 VMs

 Table 1-1
 Storage Options to Enhance VM Performance

In addition, we provide a tool to select the appropriate storage for virtualization. Here are the steps.

- 1. Use <u>XCalc.</u> tool on the QSAN website to obtain recommended storages.
- 2. Enter the Total Usable Capacity Required and the desired RAID Level.

XC	alc.		
Input yo	ur parameters to estimate the necessary quantity of disks and find the most suitable products to support your unique environment.		
1	Total Usable Capacity Required		
	10	ТВ	
2	Single Drive Size		
	1	ТВ	
3	RAID Level		
	RAID 5		

Figure 1-1 Use XCalc. Tool to Obtain Recommended Storages

3. Select the Virtualization option.



Sangfor HCI Setup Guide Application Note

Find Out Your Suitable Storage			
Total Usable Capacity 🕕	XCubeFAS XF3126		Proposal Details 🗸
Disk Required: 13	Configuration ()	Performance ()	Highlights
Usable Space: 11 TB		Throughput(MBps) 11000	- µs-level latency - Virtualization ready - 99.9999% high availability
Select Your Plan	HEAD : XF3126 x1	IOPS 660000	- Dual active controller
O Best Price-Performance			
 Best Cost-Efficiency 			
• Virtualization	XCubeSAN XS5324		Proposal Details 🗸 🗸
○ Surveillance			
O Backup	Configuration (i)	Performance (i)	Highlights
○ File Sharing		Throughput(MBps)	- Auto tiering
○ Video Editing		8938	- Support MPIO - Support SED
○ AI ML		IOPS	
 Education Industry 	HEAD : XS5324 x1	804375	

Figure 1-2 Select Virtualization Option

4. Select the model and click the **Proposal Details** button to view more.



Figure 1-3 Click Proposal Details Button to View More

5. If necessary, click the **Export the Result** button to export the report.



Sangfor HCI Setup Guide Application Note

Find Out Your Suitable Storage		Export the Result
The Configuration for the Total Capacity: Total Usable Capacity Required: 10 TB Single Drive Size: 1 TB	XCubeNXT XN8124 Configuration	Performance
Total Usable Capacity Disk Required: :12 Usable Space: :11 TB	HEAD : XN8124 x1	Throughput(MBps) 7597 IOPS 683719
Select Your Plan: Virtualization	1 Units of XN8124	
Key Features of this Configuration		
CPU RAM	Active-Active Architecture	Redundant Modular

Figure 1-4 Click Export Button to Export Result

2. CONNECT WITH SANGFOR HCI

With the rapid advancement of virtualization technology, enterprises increasingly rely on virtual machines to enhance flexibility and resource utilization within their IT infrastructure. This document outlines the specific steps to mount the iSCSI LUN from QSM to a Windows host and explains how to create a virtual machine using Windows Hypervisor Manager. This process not only improves storage management efficiency but also supports the deployment of virtualized environments. By following the correct procedures, businesses can utilize resources more effectively, achieving sustainable development.

2.1. Configure Steps

In this section we will provide an example of setting up in QSM.

2.1.1. Environment and Topology

Demonstration Environment

- Storage
 - Model: XN8116D
 Memory: 16 GB per controller
 Firmware: QSM 4.1.0
 Data Port IP: 192.168.222.91
- Server
 - Model: ASUS Server
 OS: Windows Server 2016
 Server IP: 192.168.202.121



Demonstration Topology



Figure 2-1 Demonstration Topology

2.1.2. Configure Storage

1. In XN8116D, create a pool and a block volume, then create a block HostGroup and add the volume to the HostGroup.

🔒 Block Host 🗸 🗸	Name HostGroup_001 ¢	
+ 1 items	₽ Host	\$
ISCSI HostGroup_001	6 ^g Target	>
	Connected Volume (Lun)	~
		🗶 Mapping Lus
	Lun ID Volume Name Capacity 0 essi8 Ic \$00.0 GB	
		< 1 >
	В снар	>

Figure 2-2 Create a Block Volume and Add into HostGroup





2.1.3. Configure Sangfor HCI Server

1. Visit the GUI of Sangfor HCI, navigate to the **Nodes** -> **Physical Interface** tab, and then edit the network IP address.

Hyper-Converged Infra Here Converged Infra	structure Home Com	pule Networkin	ng Storage	Nodes.	Defisibility	aSecurity	SkyOPS	System	O Hall Crest	1 1	English admin Super Admin
Nodes Physical Inter	aces Communication Interfaces	System Disks	USB Devices								
C Refresh + Add Mulliple Age	regate Interfaces + Add Multiple	VI,AN Subinterfaces	🗶 East Multiple	O Advanced ~							
Node	Name	VLAN ID	Use of interface	Description	IP Address/Netm	Gateway	Driver Type	RDMA	Link Mode	Status	Operation
192.168.203.240	etti0		Management Interfac		192.168.203.240	192,168,192,254	ign.	Net Supported	Auto-negotiation (100		Edit View LLDP
192 168 203 241	eth 1		Overlay Network Intert	2	-	2	igti	Not Supported	Auto-negotiation	~	Edi VersiLDP
192 168 203 242	cas en 2						igb.	Not Supported	Auto-negotiation	~	Edit Verw LLDP
400 408 000 040	(int)						1gb	Not Supported	Auto-megotiation	~	Edd View ULDP
102,100,203,243	etti		Etige-Connected inter		10.10.2.1/258.2		ixgbe	Not Supported	Auto-negotiation (100	~	Edit View LLDP
	ethá						ixgbe	Not Supported	Auto-megatiation	~	Edd View LLDP

Figure 2-3 Edit IP Address in Sangfor HCI Server

 Go to Storage -> Other Datastores -> iSCSI Servers tab, then add a new iSCSI server to discover the NAS iSCSI LUN.

Refeato + New Server Address Port Operation			
Server Address Port Operation			
	on		
10.10.2.20 3260 Edit Delete Scan Age	lete Scan Again		
10 10.2 10 3260 Edit Delete Scan Agi	Edt. Delete Scan Again		

Figure 2-4 Discover iSCSI LUN



3. Enter the IP address of storage, if the CHAP option is already configured in the hostgroup of storage, please check the **One-Way CHAP** item, then enter **Username** and **Password**.

Server			
			_
192.168.222.68	I		
3250			
Way CHAP (server au dentials for this machin er. The initiator simply mame: sword:	menticates initiator) te will be authenticate needs to initiate con	d against this iSC: tection.	ы
al CHAP (server and i	initiator authenticate e	each offher)	
	192 198.222.99 3250 Ication -Way CHAP (server av deritals for the machar er. The initiator simply mane. and CHAP (server and desitation for the 2019)	192.108.222.04	INPL 108.222.08 I I I I I I I I I I I I I I I I I I I

Figure 2-5 Add iSCSI Server

4. Click the **New** item and select the **iSCSI** option to create a new datastore.

Hyper-Conve	rged infrastructure Ho	me Comput	e Neb	working Storage	Nodes Dosisbility	aSecurity SkyOP:	S System	ныя сних 🎇 🛃 Ө Ба	glish Super Admin
Summary V	itual Storage Other Datas	itores							
C Refresh C Upd	ate C Scan for New Disks	+ New O SC	SI Servers	Physical Disks in Use				Name	Q Advanced ¥
Status	Name	FC	Type	Total	Available	Used	Peak Read Speed	Peak Write Speed	Connected Nodes
🕙 Normal	192 158 203 240/local	C.	stage	368 08	345.6 GB	21.4 GB	0 B/s	0.8%	1
🕙 Normal	192.168.203.241/local	NPS	жәде	3.4 TB	3.4 TB	42.08	0.8/5	0.8%	1
🕗 Normai	192.168.203.242/local	Chied Storage	stage	3.4 TB	3.4 TB	4.6 G8	0.8/9	0.6%	1
📀 Normal	192.168.203.243/local	Object Storage	srage	3.4 TB	3.4 TB	4.2 GB	0.8/3	0 Bits	1
Offine	LongRun	ISCSI		0 bytes	**			24	34
Normal	TEST	ISCSI		156 TB	155.9 TB	53.4 GB	568.4 MB/s	691.9 MB/s	4
							1444		
							1-6 of 6	Entries per Page: 50	Page 1

Figure 2-6 Add New Datastore Step 1



5. Select the iSCSI LUN which just discover, then select the controller node and type a name as "SangforTest1".

torag	e Type: ISCSI) FC	O Local storage Object storage						
							Disk		Q
	Status Disk		Disk	LUN	Size			Details	
			XN81165_QSAN_32003001378129_	0	600 GB			Vew	
			L.	toft - 1	Entries per Page	50 •	Page	t	
	© 1. Ner 2. If d	ed more o	tisks or no appropriate disks found? Add New Bisks are not listed above or LUNis have been is in advance, stance new LUNis (Sant o	r ISCSI Server	saled for external storage,	piezze <u>sca</u>	n for new	r diska	

Figure 2-7 Add New Datastore Step 2

6. Click the **Scan for New Disks** item, then you can check the datastore which just created.

	d Infrastructure Home	Compute Ne	tworking Storage	Nodes Poliability	aSecurity SkyOP	S System	🕥 ныяхоны 👫 🛃 е	Eaglinh Super Admin
Summary Virtua	I Storage Other Datastores							
Rethesh C Update	C Scan for New Disks + New	Ø iSCSI Servers	Physical Disks in Use				Name	Q Advanced *
lus -	Name	Storage Type	Total	Avalatie	Used	Peak Read Speed	Peak Write Speed	Connected Nodes
Normal	192.168.200.240/lacal	Local storage	368 GB	346.6 OB	21.4 08	0 B/s	0 B/s	1
Normal	192.168.203.241/local	Local storage	3.4 78	3.4 TB	42.08	0 B/s	0 B/s	1
Normal	192.168.203.242/local	Local storage	3.4 TB	3.4 TB	4.6 GB	0 B/s	0 B/s	1
Normal	192, 168, 203, 243/local	Local storage	3.4.78	3.4 TB	4.2 GB	0 B/s	0 B/s	3
Offine	LongRum	ISCSI	0 bytes			240		40 ·
Normal	SangtorTest1		566 GE	5957 GB	272 ME		0 8/8	1
Normal	TEST	(505)	156 TB	155.9 TB	53.6 08	568.4 MB/s	691.9 MEHs	4



7. Go to the **Compute** -> **Sangfor Technologies HCI** tab, and click the **Create VM** function.

ose à wa	y to create a new virtual machine.		
×	Create VM Create new vitual machine from an ISO image file.		Create Standaione Oracle Database Use the vicant to create a new standaione Oracle database.
J	Clone VM Cone an exerting virtual machine.	6	Create Oracle RAC Database (cluster) Use the witant to create an Oracle RAC database
*	Import VM Import a new virtual machine from a local file on this PC.	5	Create SQL Server Use the wicard to create a SQL Server
æ	aDesk Apps	>	

Figure 2-9 Create VM Step 1

8. Enter a new virtual machine name and select the Datastore and Guest OS, then set the hardware configuration and load ISO image file from the local drive.

							•	
	Name:	Sangfor//M1						
340	Group:	Default Group						
•• [25	Tag:	Select						
	HA	Restart VM on a	another node if the node fail	s HA	Settings			
	Datastore	estore: SangtorTest1 +						
	Run Location:	«Auto»						
D2	Guest OS:	Windows Server						
	VM Features:	High Priority (p						
		High Performan	ce 🕥					
	Advanced							
Standard: Low	Typical His	'n	Cores: 8					
Processor	8 core(s)							
Memory	16 GB		Vintual Sockets: 1 *					
Disk 1	120 GB		Cores per Socket:	Cores per Socket: 8 .				
	Name							

Figure 2-10 Create VM Step 2



 Click the **OK** button to create a virtual machine, then select it and click the **Power On** button.

Hyper-Converged Infras	structu	re Home	Compute	Networking	Storage Nodes	Deliabili	ly aSec	curity Sk	YOPS	System	O HART C	- 4	e Esglish	admin Super Admi	
Sangfor Technologies HCI VM	ware vC	Center													
La View by Group ~	11	≣ litt	⊖Retresh ⊙	New 🕒 New Gro	up 🕨 Power On Sh	t Down ••••Mc	æ					VM sume, IP	address Q	Advanced	1.v.
N E Group Q						© Twee	a machawor gwa	ng alleft. View							
Cefault Group (6)	Met	Resources	Basics N	throughput	10 Speed Host Resource	Backup	Permissions	Olilians 5	Hanna	t limite d	Manage III .	Sterner 1	lined files	1 Character 1	
		Alert	Test	÷ PrAddress ÷	Certault Group	8 cores	4.30 GHz	CPU Usage (16 OB	+ Used Me	100%	129 06	0.6 GB	÷ Storage C	15
	0	O Powere	Original		Default Group	4 cores	4.30 GHz		4 GB	0.8		40 GB	0.8		
		O Powere	SangtorVM1		Default Group	4 cores	4.30 GHz		a GE	08		200 GB	08		
	0	O Powere	VMIT		Default Group	4 cores	4.30 GHz		4 08	0.8		500 08	0.8		
	Ο.	O Powers	VM12		Default Group	4 cores	4.30 GHz		4 GB	0.8		500 G8	0.8		
	Ω.	O Powers.	VN13		Default Group	4 cores	4.30 GHz		4 GB	0.8		500 GB	08		

Figure 2-11 Create VM Step 3

10. Now you can install the guest OS from ISO image file and start your virtualization application.

2.2. Conclusion

In this chapter, we will guide you to create an iSCSI LUN using QSAN storage managed by QSM and mount it to Sangfor HCI as a datastore. The process begins with configuring the iSCSI LUN on the XCubeNXT to ensure optimal performance and reliability. After the LUN is set up, it will be integrated into the Sangfor HCI system as a datastore. Finally, we will create a virtual machine to demonstrate the seamless interoperability between QSAN storage and Sangfor HCI, providing a powerful and efficient virtual environment.



2.3. Appendix

2.3.1. Apply To

QSM firmware 4.1.0 and later

2.3.2. Reference

Document

<u>QSM 4 Software Manual</u>

