

Server Virtualization with QNAP® Turbo NAS and Microsoft® Hyper-V



How to set up the QNAP Turbo NAS as an iSCSI storage for Microsoft Hyper-V and as an ISOs repository



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Contents

Create an iSCSI LUN on the Turbo NAS	.4
Connect Windows Server 2008 R2 to the iSCSI target	. 5
Use the new iSCSI drive in Hyper-V	14
Use Turbo NAS as a shared ISO repository by Microsoft Networking	15
Standalone mode	15
Active Directory mode	17
Additional information	21

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How to set up the QNAP Turbo NAS as an iSCSI storage for Microsoft Hyper-V and as an ISOs repository

Microsoft Hyper-V is a hypervisor-based virtualization system for x64 computers. You can use "Hyper-V" to host virtual machines on your Windows Server 2008 R2 and set up a virtualization environment. In this application note you will see how to set up QNAP NAS as a storage for Hyper-V via iSCSI and a shared ISO repository via Microsoft Networking connection.

Create an iSCSI LUN on the Turbo NAS

To set up the Turbo NAS as a storage repository for Hyper-V, you have to create an iSCSI logical unit number (LUN) on the Turbo NAS. In this example, we created a 5TB LUN named "hyperv". The complete name of the iSCSI LUN will be:

iqn.2004-04.com.qnap:ts-459:iscsi.hyperv.bda7ce

Make sure the capacity of the LUN is smaller than the maximum capacity of the NAS.

For the details of creating an iSCSI target and LUN, see the application note "Create and use the iSCSI target service on the QNAP NAS" on http://www.gnap.com/pro_features.asp

PORTAL MA	NAGEMENT TARGET MANAGEMENT	ADVANCED ACL		
Carget Mana QUICK CONFI SCSI Target L	GURATION WIZARD Quick Configuration Wiza	rd will assist you to create an iSCSI	target and LUN.	
ooon angere				
+	Alias (IC	2N)	Status	Action

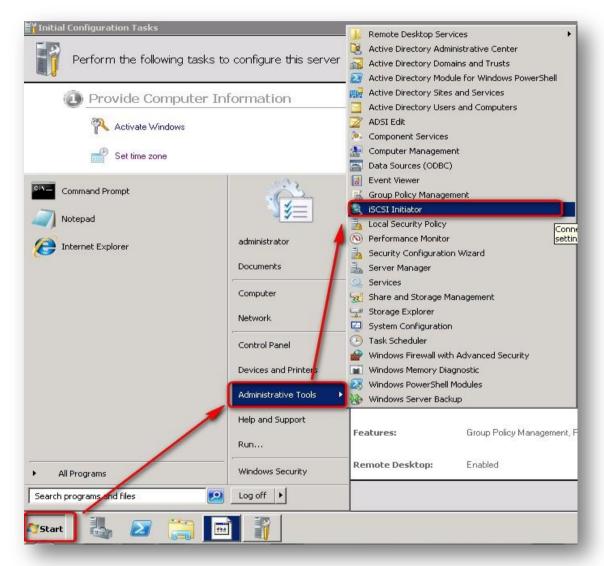


Connect Windows Server 2008 R2 to the iSCSI target

Once you have created an iSCSI target and LUN on the Turbo NAS, you can connect Windows Server to the NAS.

Start the iSCSI initiator to connect to the iSCSI target on the NAS.

From the Start menu, select "Administrative Tools" > "iSCSI Initiator".





The first time you start the iSCSI initiator, you will be prompted to start the iSCSI service. Click "Yes" to start the iSCSI service.

crosoft iSCSI		×
The Microsoft iSCSI service is not runnin tarted for iSCSI to function correctly. T he service start automatically each time putton.	o start the service now and I	nave
	Yes	No

Under the "Discovery" tab, click "Discover Portal".

Address	Port	on hollowing portals:	IP address
		over Portal. t the address above and	Discover <u>P</u> ortal <u>R</u> emove
5NS servers The system is r Name	registered on the f	ollowing (SNS servers:	Refresh
To add an iSNS	i server, click Add	Server.	Add Server
	SNS server, select	t the server above and	Re <u>m</u> ove



Enter the IP address of the NAS and click "OK".

iscover Target Portal Enter the IP address or DNS name want to add.	and port number of the portal you
To change the default settings of t the Advanced button.	the discovery of the target portal, click
	Davis (Dafault is 2260.)
IP address or DNS name:	Port: (Default is 3260.)
	Port: (Default is 3260.)

Next, go to the "Targets" tab.

jets Discovery	' Favorite Targe	ts Volumes and Devices R	ADIUS Configuration
arget portals The system will k	ook for <u>T</u> argets o	n following portals:	Refresh
Address	Port	Adapter	IP address
10.8.12.15	3260	Default	Default



Select the LUN **iqn.2004-04.com.qnap:ts-259:iscsi.hyperv.bda7ce** and click "Connect".

DNS name of the target and then click Quick Co	connection, type the IP address on nect.	or
Target:	Quick Conn	ect
Discovered targets		
	<u>R</u> efres	h
Name ign.2004-04.com.gnap:ts 59:iscsi.hyperv.bd	a7ce Inactive	
To connect using advanced options, select a ta click Connect.	rget and then Connec	t
click Connect. To completely disconnect a target, select the ta	arget and <u>Disconne</u>	ect



You can select the option "Add this connection to the list of Favorite Targets" to reconnect the iSCSI targets whenever the server restarts.

QNAP Turbo NAS (Intel-based NAS with firmware 3.2.3 or above) supports MPIO and MC/S. You may refer to the application notes "How to connect to iSCSI targets on QNAP NAS using MPIO on Windows 2008" and "How to connect to iSCSI targets on QNAP NAS using MCS on Windows 2008" on <u>http://www.qnap.com/pro_features.asp</u> for more details.

Target name:	
iqn.2004-04.com.qnap:ts 59:iscsi.hyperv.bda7ce	
Add this connection to the list of Favorite Targets.	
This will make the system automatically attempt to restore the connection every time this computer restarts.	
🗆 Enable multi-path	

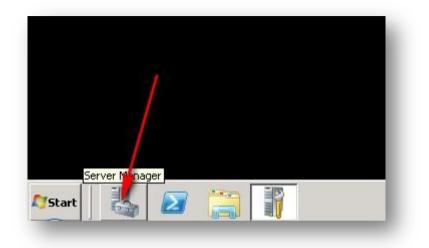
Now the target has been connected. You may exit this window.

ets Discovery Favorite Targets Volumes and Dev	vices RADIUS Configuratio
ick Connect	
discover and log on to a target using a basic connecti IS name of the target and then click Quick Connect.	on, type the IP address or
rget:	Quick Connect.
overed targets	
	<u>R</u> efresh
	Status
ame	



After connecting to the iSCSI LUN, you need to initialize and format the drive.

Go to Server Manager.





Select "Storage" and then "Disk Management". In this example the new drive is "Disk 1" with 5000GB unallocated. Select the disk and the partition style for the disk.

If the LUN is larger than 2TB, you MUST select GPT. If the LUN is smaller than 2TB, you can choose MBR. Click "OK".

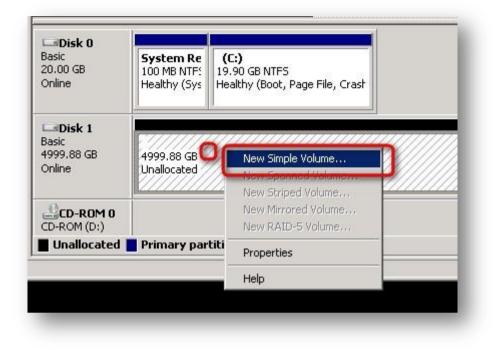
Server Manager File Action View Help	_		
🗢 🔿 🙋 📅 🚺 🚱	X 📽 🖻 🎯		
Server Manager (TESTSERVER)	Disk Management	nt Volume List + Graphical View	Act
 	Volume	Layout Type File System Status	Dis
Diagnostics	(C:)	Simple Basic NTFS Healthy (Boot, Page File, Crash Dump, Primary F	
	System Reserved		
E Storage	A STATE OF A	tialize Disk 🛛 🗶	
Disk Management	_	ou must initialize a disk before Logical Disk Manager can access it.	
		elect disks:	
		Disk 1	
		se the following partition style for the selected disks:	
		MBR (Master Boot Record)	
		GPT (GUID Partition Table)	
	Basic Note	ote: The GPT partition style is not recognized by all previous versions of	
		/indows. It is recommended for disks larger than 2TB, or disks used on anium-based computers.	
	(
	Unknown		
	5000.00 GB	5000.00 GB	
	Not Initialized	Unallocated	
	CD-ROM 0		
		×11	

After initializing the disk, it is online.

Disk 0 Basic 20.00 GB Online	System Re 100 MB NTF! Healthy (Sys(C:) 19.90 GB NTF5 Healthy (Boot, Page File, Crash	
Disk 1 Basic 4999.88 GB Online	4999.88 GB Unallocated	
CD-ROM 0		



Format the disk. Right click the volume and select "New Simple Volume".



Follow the wizard to format the drive.

For example, choose the drive letter S and name it as "My QNAP drive".

	O Do not format this volume
	• Format this volume with the following settings:
	File system: NTFS
 Assign the following drive letter: 	Allocation unit size: Default
C Mount in the following empty NTFS folder:	⊻olume label: My QNAP drive
	Perform a quick format
C Do not assign a drive letter or drive path	Enable file and folder compression



The drive is ready to use.

'olume	Layout Type File	System Status	Capacity	Free Spa
∍ (C:)	Simple Basic NTF	FS Healthy (Boot, Page File, Crash Dump, Primary Partition)	19.90 GB	5.91 GB
∋ My QNAP drive	e Simple Basic NTF	FS Healthy (Primary Partition)	4999	4999.63
System Reserver	ed Simple Basic NTF	FS Healthy (System, Active, Primary Partition)	100 MB	72 MB
Disk 0 Basic 20.00 GB Online	System Reserver 100 MB NTFS Healthy (System, Ar	(C:) 19,90 GB NTFS Healthy (Boot, Page File, Crash Dump, Primary		

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Use the new iSCSI drive in Hyper-V

Now start your Hyper-V Manager in Administrative Tools. Right click your Hyper-V server and select "Hyper-V Settings".



Set the default server location to the newly created drive S:. The new virtual machines will be stored on the S: drive on QNAP NAS.

Server	👸 Virtual Hard Disks	
5:\	Specify the default folder to store virtual hard disk files.	
Virtual Machines	S:(
s:\		Duamaa
User 🦓 Keyboard		Browse
Use on the virtual machine only wh		
🎒 Mouse Release Key		
CTRL+ALT+LEFT ARROW		



Use Turbo NAS as a shared ISO repository by Microsoft Networking

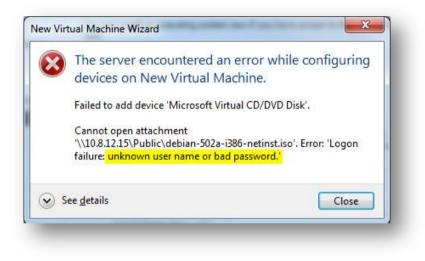
You can use an ISO file to install a virtual machine with Hyper-V. You can store all your ISO files in a shared folder on the QNAP NAS, which is accessible by the Hyper-V servers.

<u>ISO file</u>: An ISO image is an archive file (also known as a disc image) of an optical disc in a format defined by the International Organization for Standardization (ISO). You can create ISO files with free software.

Standalone mode

If the Hyper-V server is in workgroup mode (not joined to an Active Directory), you must allow "guest" to access the share folder which contains the ISO files.

If the guests are denied to access the share folder, you may encounter the following error.



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Login the NAS as an administrator. Go to "Access Right Management" > "Share

Folders". Click $\textcircled{$ to edit the folder access right.

Ho	me >>	Access Right Management >> Sha	are Folders			Welcome	admin Logout English '
5	Shar	e Folders					2
	E	SHARE FOLDERS FOLDER A	GGREGATION				
	Sha	res 💌 🔍		🔷 Net	w Share Fold	ler 🔷 Rest	tore Default Network Shares
		Folder Name	Size	Folders	Files	Hidden	Action
		Network Recycle Bin 1	4 KB	0	0	No	2
		Public	1.04 GB	29	5351	No	Z K C

Select "Read only" or "Full access" for the guest access right. Then click "Apply".

Network Share Name: Pub	lic		
Local Users	Q Total: 1	14	1 /1 💽 🕅
Name	Read only	Read/Write	Deny Access
admin		V	
		Guest Access Rig	ht: Read only 💌



Active Directory mode

If the Hyper-V is a member of an Active Directory, you have to assign permission to your server to connect to the share folder on the NAS.

Hyper-V allows you to connect to a share folder to use an ISO files stored on it. Without the correct permission you will encounter the following error.

8	The server encountered an error whon xp.	nile configuring devices
	Failed to add device 'Microsoft Virtual CD/	DVD Disk'.
	The Machine Account access to file share "\\10.8.13.54\ISOs"	does not have read .iso',
⊾ s	ee <u>d</u> etails	□



To use a shared folder, follow the instructions:

- Create a security group in Active Directory, for example "ComputerAccounts".
- Add all the computer accounts of all the Hyper-V servers in the group.

File Action View Help > => 2 📊 🔏 📋 💥 🗐 🙆 😖	
 Server Manager (WIN-2GP78EEAQHQ) Roles Active Directory Domain Services Active Directory Users and Compute adtest.local adtest.local Computers Computers Domain Controllers ForeignSecurityPrincipals GR Managed Service Accounts QNAP Groups QNAP Users QNAP Users Users DHCP Server DHCP Server Network Policy and Access Services Features Diagnostics 	QNAP Groups 7 objects [Filter Activated] Nome Type Description ComputerAcc Security Group Security Group ComputerAccounts Properties General Members Member Of Members: Members: Nome Active Directory Domain -HV2 adtest.local/Computers -HV3 adtest.local/Computers



- Login the NAS as an administrator. Go to "Access Right Management" > "Share

Fold	lers". Click 阃 to edi	it the folder a	iccess rig	ht.			
Home >>	Access Right Management >> Sha	are Folders			Welcome	e admin Logout	English '
Shar	e Folders						2
5	SHARE FOLDERS FOLDER A	GGREGATION					
Sha	res 🖌 Q		🔾 Ne	w Share Fold	ler 🔷 Res	tore Default Network	Shares
	Folder Name	Size	Folders	Files	Hidden	Action	
	Network Recycle Bin 1	4 KB	0	0	No		1
	Public	1.04 GB	29	5351	No	1 1 1 1 1 1 1 1 1 1	

- Select "Domain Groups" from the drop down menu. Select the access right of "ComputerAccounts" as read only. Click "Apply".

Network Share Name	: ISOs		
Domain Groups 🗨	iroups 🗨 🔍 Q. Total: 12		2 /2 🕨
Name	Read only	Read/Write	Deny Access
10101-02			
ADTEST+ComputerAcc	ounts 🔽		
		Guest Access Rig	ht:
		Guest Access Rig	ht:



You can use the share folder of the NAS as an ISO repository for the installation of virtual machines.

Before You Begin	You can install an operating system now if you have access to the setup media, or you can install it
pecify Name and Location	later.
ssign Memory	Install an operating system later
Onfigure Networking	Install an operating system from a boot <u>CD</u> /DVD-ROM
Connect Virtual Hard Disk	Media
Installation Options	C Physical CD/DVD drive: D:
Summary	Image file (.iso): [\10.8.13.54\ISOs\MyISO iso Browse
	Install an operating system from a boot floppy disk
	Media
	Virtual floppy disk (.vfd):
	C Install an operating system from a network-based installation server
	A your network adapter is disconnected. To perform a network-based installation, return to the
	Configure Networking page and connect the network adapter.



Additional information

"How to connect to iSCSI targets on QNAP NAS with MPIO on Windows 2008" <u>http://files.qnap.com/news/pressresource/product/How to connect to iSCSI targets o</u> <u>n QNAP NAS using MPIO on Windows 2008.pdf</u>

"How to connect to iSCSI targets on QNAP NAS with MCS on Windows 2008" http://files.qnap.com/news/pressresource/product/How to connect to iSCSI targets o n QNAP NAS using MCS on Windows 2008.pdf

"Microsoft iSCSI Software Initiator Version 2.X Users Guide" <u>http://download.microsoft.com/download/A/E/9/AE91DEA1-66D9-417C-ADE4-</u> <u>92D824B871AF/uGuide.doc</u>

Microsoft virtualization: <u>http://www.microsoft.com/virtualization</u>

Microsoft Hyper-V Server 2008 R2: http://www.microsoft.com/hyper-v-server