QNAP

Tutorial Storage

How to create and use the iSCSI target service on a QNAP NAS

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"A quick, simple method of implementing network storage solutions with high ROI"

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Additional Linux commands.

8. Reference: A Comparison of Block-based and File-based LUN Features

1. An Introduction to iSCSI and its Benefits

iSCSI (Internet Small Computer System Interface) is an IP-based (Internet Protocol) storage networking standard for linking data storage facilities. By carrying SCSI commands over IP networks, iSCSI is used to facilitate location-independent data storage and retrieval over LANs (Local Area Networks) and WANs (Wide Area Networks).

iSCSI enables clients such as computers, servers, and virtual machines to use storage from your QNAP NAS as virtual disks. Clients can partition, format, and use virtual disks exactly like local disks, and then use them for storage expansion or as backup destinations.



Before you get started

iSCSI Target: An iSCSI storage server. In this tutorial the target is your NAS.

iSCSI initiator: An iSCSI client. Initiators connect to targets and use their storage.

Warning: Connecting more than one initiator to the same target might result in data loss or damage to the NAS disks.

2. Creating an iSCSI Target

1. Go to Storage & Snapshot > iSCSI Storage.

If this is the first time you have used iSCSI then QTS will prompt you to enable

the iSCSI service.



2. Click New iSCSI Target.

Storage & Snapshots				- + ×
허 Storage & Snapshots			👽 Qtier 🔹 🚺 VJBOD	\$. @ \$}
∽ Overview ∧ Storage	iSCSI Target List 🞜	New iSCSI Target Snapshot•	iSCSI ACL Settings	Action
Snapshot				
Disks/VJBOD Storage/Snapshots				
Cache Acceleration External Storage		No iSCSI LUNs.	he used by other	
Snapshot Backup Snapshot Beolica		devices or virtual machines. Click here to crea	ate a LUN.	
Snapshot Vault				
C- ISCSI				
Remote Disk LUN Import/Export				

The iSCSI Target Creation Wizard opens.

- 3. Click Next.
- 4. Specify a name and alias, and then click Next.

🌮 iSCSI Target Crea	tion Wizard	×
(i) Introduction	Configure 🧭 CHAP 🔄 Summary	
Configure:		
An iSCSI target is identified	l using its full iSCSI Qualified Name (IQN). For easier identification you can also give it a shorter alias.	
iSCSI Target Profile:		
Name	Demo	
IQN	iqn.2004-04.com.qnap:tes-3085u:iscsi.demo.0b4322	
Alias	Demo	
\checkmark	Allow clustered access to this target 🚺	
Advanced Settings▼		
CRC/Checksum:	Data is checked after transmission to prevent data corruption in an unstable network environment. Header	
	Digest should be enabled first, then Data Digest if there are still issues.	
🗌 Data Digest		
Header Digest		
Ornerl	Deale	1
Cancel	Back	

5. **Optional**: Configure CHAP authentication, and then click **Next**.

Initiators must authenticate with the specified username and password when

connecting.

	Configure 🔗 CH	IAP Summary	
	, i i i i i i i i i i i i i i i i i i i		
CHAP :			
CHAP forces iSCSI initiato	ors to authenticate when co or password.	onnecting to this target. This provides security,	as iSCSI initiators do not
Use CHAP authenticatio	n		
Username:	Demo		
Password:			
Re-enter Password		 	
		\bigcirc	
Username:			
Password:		\bigcirc	
Re-enter Password:		\odot	
Cancel			Back Next

After you have finished creating the target, QTS opens the Block-Based iSCSI

LUN Creation Wizard. Follow this wizard to create a block-based LUN.

Sum	imary:						
iSC	SI Target Profile:						
Ν	lame	Demo					
IC	QN:	iqn.2004-04.com.qna	o:tes-3085u:iscsi.d	demo.0b4322			
A	lias	Demo					
A	llow clustered access to	Yes					
th	his target:						
Adv	vanced Settings:						
[Data Digest: 🗙 Disable			Header Diges	st: 🗙 Disable		
0	CHAP authentication: 🗸	Enabled		Mutual CHAP	' authentication: 🗙	Disable	
\checkmark	Create an iSCSI LUN and	map it to this target.					

7. Click Apply.

QTS creates the target. You can view it at Storage & Snapshots > iSCSI Storage > iSCSI Target List.

3. Creating an iSCSI LUN

An iSCSI LUN is a portion of storage space that can be utilized by initiators by connecting it to a target. There are two types of LUNs available in QTS.

Block-based LUNs use space from a storage pool.

File-based LUNs use space from a volume.

Generally speaking, block-based LUNs should be used instead of file-based LUNs, as they support more snapshot and virtualization features. For a more detailed comparison, see the table at the end of this tutorial.

- 1. Go to Storage & Snapshots > Storage/Snapshots.
- 2. Create a LUN by performing one of the following methods.

LUN Type	Steps
Block-based	 Select a storage pool. Select Create > New Block-Based iSCSI LUN.

LUN Type	Steps
File-based	 Select a volume. Select Create > New File-Based iSCSI LUN.

In this tutorial we will create a block-based LUN.

Storag	e & Snapshots			(0)					- + ×
	Storage & Snaps	hots						💊 Qtier 🔹 🍼 VJBOD	\$ @ \$
(⁻)	Overview		Total - Storage Pool: 2, Volu	me: 3, LUN: 0 🧯	3			Create New Snapshot	• Manage
	Starage		Name/Alias	Status	Туре		Snapshot	New Storage Pool (New)	ent Used
	Storage		 Storage Pool 1 	🧭 Ready				New Volume	
	Snapshot		🕞 System (System)	🧭 Ready	Thin volu	me	-	New Block-Based iSCSI LUN	
	Storage		✓ Storage Pool 2	🥑 Ready				Create Virtual JBOD	
	Disks/VJBOD		✓ Static Single Volume(s)						
	Storage/Snapshots								
	Cache Acceleration								
	External Storage								
10	Snapshot Backup								
	Snapshot Replica								
	Snapshot Vault								
\$	iscsi								
	iSCSI Storage								
	Remote Disk								
	LUN Import/Export								

The iSCSI creation wizard opens.

3. Select a storage pool.

Reg. Block-Based iSCSI LUN Creation Wizard	×
Select Space Configure 💮 Map to Target 🔄 Summary	
Select Space:	
Welcome to the iSCSI LUN Creation Wizard:	
Block-based iSCSI LUNs are created in a storage pool. This LUN type is recommended for general usage, as it provides good read/write performance, flexibility and support for advanced virtualization features.	
Note: If there is no available pool space, you can still create a File-based iSCSI LUN.	
Location: Storage Pool 2 🔻 🕂 Free Size: 1.06 TB	
LUN Allocation: Thick instant allocation(Preallocate space for the LUN) 	
O Thin provisioning(Use space only when data is written to the LUN) (i)	
Cancel	-

4. Select the allocation type, and then click **Next**.

Allocation Type	Description
Thick Instant Allocation	QES allocates pool space when creating the LUN. This guarantees that the space will be available for connected iSCSI initiators.
Thin provisioning	QTS allocates storage pool space to a LUN only when it is needed. This offers greater flexibility as empty space is not wasted. However, QTS cannot save data to the LUN if the storage pool runs out of space.

5. Specify the LUN name.

Real Block-Based is	SCSI LUN Creation Wizard
Select Space	Configure Map to Target Summary
Configure:	
Capacity:	
LUN Name:	LUN_0
LUN Canacity	
Lon oupdeny.	
Storago pool copo	
Storage poor capa	Allocated: 67.93 % Free: 32.07 %
Note: Storage featur	es such as expansion, thin allocation and snapshots can be affected by low storage pool space. You should try to
leave some space fr	ee and perform expansion later when needed.
Advanced Settings V	
Sector Size:	512 bytes (Default) 🔹 🚺
Accelerate perfo	rmance with SSD cache
Report volatile v	rrite cache for data safety 👔
FUA bit support	0
Canaal	Deale
Cancel	Back

- 6. Specify the LUN capacity.
- 7. Optional: Configure advanced settings.

For more information on a setting, click its tip.

- 8. Click Next.
- 9. Map the LUN to a target.

Mapping an iSCSI LUN to a target allows iSCSI initiators to connect to it.

Q.I	Block-Based	liscs	SI LUN Creation Wizard				
•	Select Space		Configure Map to Target	Sur	mmary		
1	Map to Target: Map the new iSCSI	I LUN to	a target. If no targets are available, you (can create a ne	ew one at "iSCSI Storage'	,	
[Do not map it to	a target	for now.		1-36-4 ID	01-1	
	Demo		iqn.2004-04.com.qnap:tes-3085u:iscsi.demo.0	lb4322		Ready	
(Cancel					Back	Next

10. Click Next.

11. Review the summary, and then click **Finish**.

Summary:			
Configure LUN Setting	js:		
LUN Name:	LUN_0		
LUN Type	Block-based iSCSI LUN		
LUN Location:	Storage Pool 2		
LUN Allocation:	Thick instant allocation		
LUN Capacity:	500.00 GB		
Sector Size:	512 bytes (Default)		
Advanced Settings:			
Accelerate performa	nce with SSD cache: 🗸 Enabled		
Report volatile write	cache for data safety: 🗙 Disable	FUA bit support: 🗙 Disable	
Map to Target: Demo	(iqn.2004-04.com.qnap:tes-3085u:iscsi.o	demo.0b4322)	
inap to raiget being			

QTS creates the iSCSI LUN. You can view it at Storage & Snapshots > iSCSI Storage > iSCSI Target List.

4. Managing iSCSI Targets and LUNs

Go to **Storage & Snapshots > iSCSI Storage > iSCSI Target List** to view and modify iSCSI targets, iSCSI LUNs, and their mappings. Mapped LUNs appear nested under their target.

Storage	e & Snapshots										- + ×
0	Storage & Snapsł	nots					Qtie	r •) 🕑 V	JBOD	Ę	@ 🔅
(²)	Overview	~	iSCSI Target List 💭	New	iSCSI Target	Snapshot∙	iscs	SI ACL	Settings		Action •
\sim	Ctorogo		Alias (IQN)	Туре	Snapshots	Capacity	Allocated	Status		Initiato	r IP
	Storage		Demo (iqn.2004-04.com.qnap:tes-3085u:	iscsi.demo.0b4	322)			Ready			
_	Snapsnot		ID: 0 - LUN_0 (Block-based LUN fro…	Thick LUN		500.00 GB	100 %	Enabled			
	Storage	^									
	Disks/VJBOD										
	Storage/Snapshots										
	Cache Acceleration										
	External Storage										
l0	Snapshot Backup	^									
	Snapshot Replica										
	Snapshot Vault										
¢-	iscsi	^									
	iSCSI Storage										
	Remote Disk										
	LUN Import/Export										

You can also go to **Storage & Snapshots > Storage/Snapshots** to view the storage status of block-based iSCSI LUNs.

Storage	e & Snapshots								- + ×
	Storage & Snapsho	ots					Qtier 🔹	🕑 VJBOD 🕴 🤻 🕐	्रि ()
<i>(</i> ??)	Overview		Total - Storage Pool: 2, Volu	ıme: 3, LUN: 1 💋			Create New	Snapshot Ma	anage
\sim			Name/Alias	Status	Туре	Snapshot	Snapshot Re	Capacity Percent Used	
	Storage		∽ Storage Pool 1	🧭 Ready				228.97 GB	
	Snapshot		🕞 System (System)	🧭 Ready	Thin volume	-		98.57 GB	
8	Storage /	^	∽ Storage Pool 2	🥑 Ready				1.79 TB	
	Disks/VJBOD		🗲 금 DataVol1	🧭 Ready	Thin volume	-		1.59 TB	
	Storage/Snapshots		🗲 🛅 LUN_0 (Mapped t	🧭 Ready	Block-based Thick LUN			500.00 GB	
	Cache Acceleration		\checkmark Static Single Volume(s)						
	External Storage								
l0	Snapshot Backup	\sim							
	Snapshot Replica								
	Snapshot Vault								
\$	iscsi	\sim							
	iSCSI Storage								
	Remote Disk								
	LUN Import/Export								

Note:

- File-based LUNs do not appear in the list at Storage & Snapshots > Storage/Snapshots.
- The health status of a file-based LUN is always the same as its parent volume.

Storage	e & Snapshots									- + ×
	Storage &	Syste	em Management						$+ \times$	X ⑦ ∯
3	Overview	Name/Alia	as: System 🧲		Remove		Expand Volume	Actions -		Ivianage
	Storage	File-Base	d iSCSI of System						-	Jsed
	Snapshot	Name/	Alias	Capacity		Thin				
	Storage	LUN_0		300.00 GB		yes				
	Disks/VJBOD	Apps inst	alled on System						- 1	
	Storage/Snaj		Name	Size	Installed on		Version		- 14	
	Cache Accele	М	Gmail Backup	63.74 MB	2017-05-26		1.4.2		- 11	
	External Stor	8	Cloud Drive Sync	96.05 MB	2017-11-10		2.1.358		- 11	
١O	Snapshot Ba		Proxy Server	120.71 MB	2018-02-06		1.3.2		- 11	
	Snapshot Re	0	CloudLink	46.36 MB	2017-04-01		2.0.77			
	Snapshot Va	×.	QVPN Service	8.18 MB	2017-05-20		1.0.17083			
4	iscsi		Photo Station	14.34 MB	2017-05-20		5.4.1		_	
~	iSCSI Storage	<u>.</u>	INF	204 1 4 MD	2010 01 21		0 1 51 0		- Ť	
	Remote Disk					_		Close		

5. Connecting to an iSCSI target using Microsoft iSCSI initiator in Windows

Microsoft iSCSI Initiator is built into all versions of Windows, starting from Windows Vista and Windows Server 2008. You can download and install it on Windows 2003, Windows XP and Windows 2000.

1. In Windows, locate and run **iSCSI Initiator**.

Depending on your Windows version, you can search for it in the Windows program search or find it at



Control Panel" > Administrative Tools.

2. Optional: Click Yes if Windows prompts you to start the iSCSI service.

3. Enter the NAS IP address under **Targets > Target**, and then click **Quick Connect**.

.51 1110					
argets	Discovery	Favorite Targets	Volumes and Devices	RADIUS	Configuration
Quick C To disc DNS na	onnect over and log me of the ta	on to a target usir arget and then click	g a basic connection, t Quick Connect.	ype the IP	address or
<u>T</u> arget	: 172	. 17.22.234		Q	uick Connect
Discove	red targets				
					Refresh
Name				Status	
To con	nect using a	dvanced options, si	elect a target and then		Cognect
To con dick Co	nect using a mnect.	dvanced options, s	elect a target and then		Cognect
To con dick Co To com	nect using a nnect. pletely disco	dvanced options, si	elect a target and then ect the target and		Cognect
To con dick Co To com then di	nect using a nnect. pletely disco ick Disconne	dvanced options, si onnect a target, sei ct.	elect a target and then ect the target and		Connect Disconnect
To con dick Co To com then di	nect using a nnect. pletely disco ick Disconne	dvanced options, so onnect a target, sei ct.	elect a target and then ect the target and		Connect Disconnect
To con dick Co To com then di For tan	nect using a xnnect. pletely disco ick Disconne get properti the target ar	dvanced options, si onnect a target, sel ct. es, including config	elect a target and then ect the target and uration of sessions,		Cognect Disconnect Properties
To con click Co To com then cli For tar select t	nect using a nnect. pletely disco ick Disconne get properti the target a	dvanced options, si innect a target, sel ct. es, including config nd click Properties.	elect a target and then ect the target and uration of sessions,		Cognect Disconnect Properties
To con dick Co To com then di For tan select t	nect using a onnect. pletely disco ick Disconne get properti the target ar ofiguration o	dvanced options, so onnect a target, sel ct. es, including config nd click Properties. f devices associate	elect a target and then ect the target and uration of sessions, d with a target, select		Cognect Disconnect Properties
To con dick Co To com then di For tan select t For cor the tan	nect using a nnect. pletely disco ck Disconne get properti higuration o get and their	dvanced options, si prinect a target, sel ct. es, including config ind click Properties. f devices associate n click Devices.	elect a target and then ect the target and uration of sessions, d with a target, select		Cognect Disconnect Properties Deyjces
To con dick Co To com then di For tar select t For cor the tar	nect using a nnect. pletely disco ck Disconne get properti the target a nfiguration o get and ther	dvanced options, so onnect a target, sel ct. es, including config nd click Properties. f devices associate n click Devices.	elect a target and then ect the target and uration of sessions, d with a target, select		Cognect Disconnect Properties Devices
To com dick Co To com then di For tan select t For cor the tan	nect using a innect. pletely disco cick Disconner get propertis the target a nfiguration o get and ther	dvanced options, so onnect a target, sei ct. es, including config nd click Properties. f devices associate n click Devices.	elect a target and then ect the target and uration of sessions, d with a target, select		Cognect Disconnect Properties De <u>v</u> ices
To com dick Co To com then di For tan select t For cor the tan	nect using a nnect. pletely disco cic Disconne get properti the target ar nfiguration o get and ther	dvanced options, si onnect a target, sel ct. es, including config nd click Properties. f devices associate n click Devices.	elect a target and then ect the target and uration of sessions, d with a target, select		Cognect Disconnect Properties Degices
To con click Co To com For tar select t For cor the tar	nect using a nonect. pletely disconne- dc Disconne- get properti the target ar nfiguration o get and ther	dvanced options, si nnect a target, sel ct. es, including config nd click Properties. f devices associate n click Devices.	elect a target and then ect the target and uration of sessions, d with a target, select		Cognect Disconnect Properties Deyjces
To con click Co To com then cli For tar For tar For cor the tar	nect using a innect. pletely disco ck Disconner get properti the target a nfiguration o get and ther	dvanced options, so onnect a target, sei ct. es, including config nd click Properties. f devices associate n click Devices.	elect a target and then ect the target and uration of sessions, d with a target, select		Cognect Disconnect Properties Deyjces
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To com dick Co To com then di For tar select t	nect using a nonect. pletely disco ck Disconne- get properti the target ar nfiguration o get and ther	dvanced options, si nnect a target, sel ct. es, including config nd click Properties. f devices associate n click Devices.	elect a target and then ect the target and uration of sessions, d with a target, select		Cognect Disconnect Properties Devjces

iSCSI Initiator searches for available iSCSI targets and adds them to the Discovered Targets list.

Quick Connect		\times
Targets that are available for connection at the IP addre provided are listed below. If multiple targets are availab to each target individually. Connections made here will be added to the list of Favor to restore them will be made every time this computer re	ess or DNS name that you le, you need to connect ite Targets and an attempt estarts.	t
Discovered targets		
Name	Status	
iqn.2004-04.com.qnap:tes-3085u:iscsi.test.0b4322	Connected	
Progress report		
Login Succeeded.		
Connect	<u>)</u> one	

4. Optional: Add CHAP authentication credentials to the target.

If you configured CHAP authentication on the NAS, then the target will have the status Inactive. You must specify the CHAP username and password to connect.

- a. Select a target in the Discovered Targets List.
- b. Click Connect.
- c. Click Advanced.
- d. Select Enable CHAP log on.
- e. Under Name, specify the CHAP username.
- f. Under Target Secret, specify the CHAP password.
- g. Click **OK** and then **OK**.

iS	CSI Initi	iator Prop	perties						\times
Т	argets	Discover	y Favori	ite Targets	Volumes and Dev	vices RAI	DIUS	Configuration	
	Quick C To disc DNS na	Connect cover and ame of the	og on to a target an	a target usir nd then click	ng a basic connecti Quick Connect.	ion, type t	he IP	address or	
	Target	:					Qu	uidk Connect	
	Discove	ered targe	ts				_		
h								Refresh	
	Name					Stat	us		
	iqn.20)04-04.com	n.qnap:te	s-3085u:isc	si.test.0b4322	Con	necte	d	
			- 4	4 14					
	To con click Co	nect using onnect.	advanced	d options, s	elect a target and	then		Connect	
	To com then cl	pletely dis ick Discon	connect a nect.	a target, sel	ect the target and			Disconnect	
	For tar select f	get prope the target	rties, indu and click f	iding config Properties.	uration of sessions	, ,	1	Properties	
	For cor the tar	nfiguratior get and t	of device nen click D	evices.	d with a target, se	ect		Devices	

The target now has the status Connected.

5. Format the connected LUN as a disk in Windows.

For this guide, we will be using Windows 10. For older Windows versions you must use **Disk Management.**

a. Search for and run Storage.



b. Click Manage Storage Spaces.

© Home Storage	
Find a setting P Local storage	
System This PC (C:) - 238 GB Display This PC (C:) - 238 GB 73.8 GB used 164 GB free	
□ Notifications & actions Storage sense	
Power & sleep Windows can automatically free up space by getting rid of files you don't need, like temporary files and content in your recycle	
□ Battery bin Off	
Storage Change how we free up space	
记 Tablet mode	
More storage settings More storage settings Change where new content is saved	
Projecting to this PC Manage Storage Spaces	
Shared experiences	

c. Click Create a new pool and storage space.

d. Select one or more iSCSI LUNs, and then click Create Pool.

🖗 Create a storag	e pool	_	\times
$\leftarrow \rightarrow \cdot \uparrow$	😻 « System and Security » Storage Spaces » Create a storage pool 🛛 🗸 🖸 Se	arch Control Panel	Q
:	Select drives to create a storage pool		
	Unformatted drives	\bigcirc	
	QNAP iSCSI Storage SCSI Disk 1 Attached via iSCSI 500 GB		

Create pool Cancel

e. Specify the pool formatting options, and then click Create Storage Space.

Create a storage space	-	\Box \times
\leftarrow \rightarrow \checkmark \bigstar 😵 « Storage Spaces » Creat	e a storage space v 🔁 Search Control Panel	م
Enter a name, resiliency t	/pe, and size for the storage space	^
Name and drive letter		
Name:	QNAP	
Drive letter:	E: ~	
File system:	NTF5 ~	
Resiliency		
Resiliency type:	Simple (no resiliency, ~	
• A simple storage space writes simple storage space requires	one copy of your data, and doesn't protect you from drive failures. A at least one drive.	
Size		
Total pool capacity:	499 GB	
Available pool capacity:	499 GB	
Size (maximum):	499 GE ~	
Includina resiliency:	499 GB	~
	Create storage space Cancel	

The iSCSI LUN space appears as a drive in Windows.

- \rightarrow \checkmark \uparrow \checkmark > This PC > QNAP (E:)	🥪 QNAP (E:) Pro	operties	×
★ Quick access	Security General	Previous Versions Quota Tools Hardware	Customize
This PC	~	QNAP	
🔚 3D Objects	Type:	Local Disk	
📜 Desktop	File system:	NTFS	
📔 Documents	Used space	e: 167,116,800 bytes	159 MB
🚺 Downloads	Free space	: 535,494,762,496 bytes	498 GB
🔈 Music			
E Pictures	Capacity:	535,661,879,296 bytes	498 GB
📕 Videos			
🐛 OS (C:)			
QNAP (E:)		Drive E:	Disk Cleanup
🛫 DesignCenter (\\designcenter.qnap.com.tw) (Y:)		DIIVE E.	•
🛫 pub (\\172.17.21.5) (Z:)	_		
network	Compress th	is drive to save disk space	
• Homegroup	I Allow files on file propertie	n this drive to have contents index S	ked in addition to
		OK Cape	al Apply

6. Connecting to an iSCSI target using globalSAN iSCSI initiator in Mac OS

Mac OS does not include an iSCSI initiator client by default. You will need to install third-party iSCSI initiator software to connect the iSCSI target on your QNAP NAS. For this tutorial we will use GlobalSAN iSCSI Initiator.

1. In Mac OS, download and install globalSAN iSCSI Initiator for OS X.

This software requires Mac OS X 10.4 or later. For details, see http://www.studionetworksolutions.com/globalsan-iscsi-initiator.

- 2. Go to System Preferences.
- 3. Double-click on globalSAN iSCSI initiator.

			System Pre	eferences		Q Se	arch
General	Desktop & Screen Saver	osao Dock	Mission Control	Language & Region	Security & Privacy	Q Spotlight	Notifications
Displays	Energy Saver	Keyboard	(*) Mouse	Trackpad	Printers & Scanners	Sound	Startup Disk
iCloud	Internet Accounts	App Store	Network	Bluetooth	Extensions	Sharing	
Users & Groups	Parental Controls	Siri	Date & Time	Time Machine	Accessibility		
globalSAN and Xtarget							

4. Click +, and then select Portal/Group.

	glob	alSAN iSCSI Initiator and Xtarget	Q Search
iSCSI Name: iSCSI Alias:	naa.a37e8a8 qnapde-mad	36a2a14b99a1c2af87e488521d c-pro.local Initiator Xtarget	
+• – License Portal/Group	Rescan	Copyright 2004-2017 Studie Solutions, LLC. All rights re www.studionetworksolutions The globalSAN initiator is in limin (Expires Apr 05 2017 Click the License button to purchat enter your existing Permanent A	s o Network eserved. ons.com ted trial mode. (8) use the initiator or Activation Key.
Target Start SLP scan	nt further		Version 5.3.1.555

- 5. Specify a name.
- 6. Specify the NAS DNS name or IP address, and then click ${\bf Add}.$

Group Name: 172.17.22.60 IP Address or DNS Name: Port:	
IP Address or DNS Name: Port:	
172.17.22.60 3260	
Cancel Add	
Check for Updates Copyright 2004-2017 Studio Network Solutions, LLC. All rights reserved. <u>www.studionetworksolutions.com</u> The globalSAN initiator is in limited trial mode. (Expires Apr 05 2018) Click the License button to purchase the initiator or	
+• - License Rescan	
Click the lock to prevent further changes.	555

7. Select a target in the left list.

	globals	SAN iSCSI Initiator and Xtarget	Q Search
iSCSI Name:	naa.a37e8a86	a2a14b99a1c2af87e488521d	
iSCSI Alias:	qnapde-mac-p	pro.local	
		Initiator Xtarget	
▼172.17.22.60 (0/1) iqn.2004-04.com.qnap.tvs-1 ● Disconnected	28213.iscsi	iqn.2004-04.com.qnap:tvs-1282t Alias:	3:iscsi.demo.10f89a
		Error detection: Header and Da	ta (recommended) ᅌ
		Connections:	Authentication
		State Address	Persistent
		 172.17.22.60 port: 3260 172.17.22.47 port: 3260 169.254.8.206 port: 3260 + - ☆ 	
+ License	Rescan	Disconneo	Connect
Click the lock to pre changes.	event further		Version 5.3.1.555

8. Select the IP address to use to connect to the iSCSI target.

9. Click Connect.

10. Optional: Click Initialize.

If this is the first time you have connected to the target then Mac OS will prompt you to format the disk.

iSCSI Alia	s: gnapde-mac-pro.lo	ocal		
	In	itiator Xtarget		
-170 17 00 00 (1/1)		, and the second second		
QNAP Target	iqr	1.2004-04.com.qn	ap:tvs-1282t3:iscsi.	demo.10f89a
Connected		Alias: Q	NAP Target	
			Leader and Data (read	
		Error detection:	reader and Data (reco	mmended) 🗸
		iSCSI Op	otions Auth	entication
	Co	onnections:		
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		 172.17.22.60 p 172.17.22.47 p 	ort: 3260 ort: 3260	
		169.254.8.206	6 port: 3260	
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7. Connecting to an iSCSI Target using Open-iSCSI Initiator on Linux

The Linux Open-iSCSI Initiator is a built-in package in Ubuntu 8.04 LTS and later. For more information on Ubuntu, see http://www.ubuntu.com.

1. Install the open-iscsi package. Run the following command.

sudo apt-get install open-iscsi

- 2. Optional: Add CHAP credentials to iscsid.conf.
 - a. Edit the file. Run the following command.

vi /etc/iscsi/iscsid.conf

- b. Add the target CHAP username under node.session.auth.username.
- c. Add the CHAP password under node.session.auth.password.
- d. Save and then close the file.
- e. Restart the open-iscsi service. Run the following command.

/etc/init.d/open-iscsi restart

3. Discover all iSCSI targets on the NAS.

In this example the NAS IP address is 10.8.12.31 and the default iSCSI port is 3260. Run the following command.

iscsiadm -m discovery -t sendtargets -p 10.8.12.31:3260

4. Check the available iSCSI nodes. Run the following command.

iscsiadm -m node

5. Optional: Delete nodes that you do not want to connect to. Run the following command.

iscsiadm -m node --op delete --targetname THE_TARGET_IQN

6. Restart the open-iscsi service to log into all of the available nodes. Run the following command.

/etc/init.d/open-iscsi restart

Linux displays a login message. Example:

Login session [iface: default, target: iqn.2004-04.com:NAS:iSCSI.ForUbuntu.B9281B, portal: 10.8.12.31,3260] [OK]

7. Check the device status with dmesg. Run the following command.

dmesg | tail

8. Create a partition.

In this example, the device name is /dev/sdb. Run the following command.

fdisk /dev/sdb

9. Format the partition. Run the following command. 10. Mount the file system. Run the following two commands.

mkdir /mnt/iscsi

mount /dev/sdb1 /mnt/iscsi/

The storage is now available to use.

Additional Linux commands.

Action	Command
Test the I/O speed of the iSCSI LUN.	# hdparm -tT /dev/sdb1
Discover targets on the host	# iscsiadm -m discoverytype sendtargetsportal HOST_IP
Log into a target	# iscsiadm -m nodetargetname THE_TARGET_IQNlogin
Log out of a target	# iscsiadm –m nodetargetname THE_TARGET_IQN logout
Delete a Target	# iscsiadm –m nodeop deletetargetname THE_TARGET_IQN

8. Reference: A Comparison of Block-based and File-based LUN Features

Feature Name	Block-Based LUN	File-Based LUN	
VAAI Full Copy	\checkmark	\checkmark	
VAAI Block Zeroing	\checkmark	\checkmark	
VAAI Hardware Assisted	\checkmark	\checkmark	

Feature Name	Block-Based LUN	File-Based LUN
Locking		
VAAI Thin Provisioning and Space Reclamation	\checkmark	
Thin provisioning	\checkmark	\checkmark
Space reclamation	✓ Supported in: VMware ESXi with VAAI, Windows Server 2012 or later, Windows 8 or later	
Microsoft ODX	\checkmark	
LUN Import/Export	\checkmark	\checkmark
LUN snapshots	√	You must take a snapshot of the parent volume.

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