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Network and storage settings of ES NAS high-availability network storage services

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Before the Setup

Purpose

This article is intended to guide users who have completed ES NAS installation and system initialization to configure network and storage settings for a high-availability storage environment.

Glossary

RAID group: RAID groups combine multiple physical hard disks into a logical unit to provide better capacity, read/write performance and/or protection.

Storage pool: Combines physical hard disks or RAID groups into large storage space. The ES NAS storage pool is created by adding a new RAID group, or adding hard disk to an existing storage pool.

Shared folder: Shared folders are created in a storage pool. They are used to store files that can be shared with users or groups with access rights.

NFS: Network File System (NFS) is a distributed file system protocol. The most important feature of NFS is that through network and mounting, it allows different devices with different operating systems to share files with each other. Through NFS, you can open an NFS Serverside directory or file system to NFS Client for data access. In other words, the NFS Client can mount the NFS Server's shared folder to the local host, so it can be easily manipulated as if operating on a local disk.

iSCSI LUN: iSCSI (Internet Small Computer System Interface) is a standard derived from Internet Protocol (IP) that can be used to link data storage devices. The program used to connect to the storage device is called an iSCSI initiator, and the connected device is collectively referred to as the iSCSI device or target. iSCSI LUNs are logical disks mounted to iSCSI target.

Host: Host refers to the device that is connected to the ES NAS for data access, or has mounted the ES NAS shared folder or iSCSI LUN to the local device.

System Deployment Architecture

The following figures and table shows the settings of a deployment example:



ES NAS						
Interface	IP Address					
Interface	SCA	SCB				
Management	192.168.101.13	192.168.101.14				
Ethernet 1	10.1.1.13	10.1.1.14				
Ethernet 3	10.1.2.13	10.1.2.14				

He	ost
Interface	IP Address
Data Port 1	10.1.1.10
Data Port 2	10.1.2.10

Preparation before Setup

Before setting up the network environment and storage, make sure that you have completed the following tasks.

- 1. The system hard disks are initialized.
- 2. The firmware has been updated to the latest version
- 3. You have logged in to QES using a web browser

To complete the above steps, refer to the <u>QNAP Enterprise Storage Device ES NAS Series</u> <u>Quick Setup Guide</u>.

Network Environment Settings

Technical Overview

ES NAS places strong emphasis on high availability and failover, so network configuration is divided into two different use cases: "management" and "data transmission". ES NAS has two controllers, each with a management port and two data ports. The management port is used to open the QES desktop to manage the NAS using a web browser, and the data port is used for data access (such as Samba, NFS, and iSCSI). To achieve complete failover deployment, it is recommended that the data port on each controller be connected to a different network switch and that the data ports on both sides of the controller be configured with static IP addresses. For example, data port 1 of controller A should be set on the same subnet as data port 1 of controller B, and the same should be set for data port 2. As a result, when one controller fails, another controller will automatically take over. The server side can still connect to the controller that has taken over through the original IP address, so that the previous ongoing data access is continued.



Network Setup Steps

Follow the below steps to set up:

1. After logging in to QES, click "Network" on the main menu.



2. Click "Edit All".

$\boxed{\text{Search}} \bigcirc \bigcirc \longleftarrow \rightarrow \qquad \qquad$							
Uverview	ТС		TD:/6	Service Bi	nding Provv		
🔅 System Settings		F/1F	IFVO	Service Di	Hung Proxy		
🔣 General Settings	1	P Addre	ess				
👹 Storage Manager		<u> </u>		-			
🔏 Network	L.	Edit	All				
🔒 Security		Edit	Link	Controller	Interface	VLAN ID	DHCP
Hardware			•	SCA	Management		No
			0	SCA	Ethernet 1		No
V Power			\bigcirc	SCA	Ethernet 2		No
Rotification			0	SCA	Ethernet 3		No
🧧 Firmware Update			0	SCA	Ethernet 4		No
👾 Backup / Restore			0	504	Ethornot E		No

3. Double-click the IP Address and Subnet Mask fields to modify the settings. If the Interface field displays "Management", it is the management port. If it shows "Ethernet x", it is a data port. Set the IP Address setting of SCA Ethernet x and SCB Ethernet x to the same subnet as the static IP. For example, if the IP Address setting of SCA Ethernet 3 is 10.1.2.13 with subnet mask of 255.255.255.0, set the IP address of SCB Ethernet 3 to 10.1.2.x, for example 10.1.2.14.

nk	Controller	Interface	DHCP	IP Address	Subnet Mask	Gateway	MTU	VLAN ID
	SCA	Management		192.168.101.13	255.255.255.0	192.168.101.254 (default)	1500	
	SCA	Ethernet 1		10.1.1.13	255.255.255.0	-	1500	
D	SCA	Ethernet 2		1.0.0.0	255.255.255.0		1500	
0	SCA	Ethernet 3		10.1.2.13	255.255.255.0		1500	
0	SCA	Ethernet 4				_	1500	
\bigcirc	SCA	Ethernet 5					1500	
\bigcirc	SCA	Ethernet 6					1500	
•	SCB	Management		192.168.101.14	255.255.255.0	1)2.168.101.254 (default)	1500	
0	SCB	Ethernet 1		10.1.1.14	255.255.255.0		1500	
0	SCB	Ethernet 2		1.0.0.1	255.255.255.0		1500	
0	SCB	Ethernet 3		10.1.2.14	255.255.255.0		1500	

4. If the existing network architecture supports Jumbo Frame settings, then select the appropriate MTU for the network environment. Maximum Transmission Unit (MTU) refers to the size (in bytes) of the largest packet that a given layer of a communications protocol can transmit. Adjusting this value increases the amount of Ethernet traffic and reduces CPU usage for large file transfers. The NAS uses standard Ethernet frame (1500 bytes) by default.

1								
.ink Co	ontroller	Interface	DHCP	IP Address	Subnet Mask	Gateway	MTU	VLAN ID
S S	SCA	Management		192.168.101.13	255.255.255.0	192.168.101.254 (default)	1500	
S S	SCA	Ethernet 1		10.1.1.13	255.255.255.0		1500 ~	
S S	SCA	Ethernet 2		1.0.0.0	255.255.255.0		1500	
S S	SCA	Ethernet 3		10.1.2.13	255.255.255.0		7418	
S	SCA	Ethernet 4					9000	
S S	SCA	Ethernet 5					1500	
S S	SCA	Ethernet 6					1500	
S S	СВ	Management		192.168.101.14	255.255.255.0	192.168.101.254 (default)	1500	
S S	СВ	Ethernet 1		10.1.1.14	255.255.255.0		1500	
S S	СВ	Ethernet 2		1.0.0.1	255.255.255.0		1500	
S S	СВ	Ethernet 3		10.1.2.14	255.255.255.0		1500	

5. Click "Apply" to complete the settings.

				E	Edit All Wizard			
Link	Controller	Interface	DHCP	IP Address	Subnet Mask	Gateway	MTU	VLAN ID
0	SCA	Management		192.168.101.13	255.255.255.0	192.168.101.254 (default)	1500	
•	SCA	Ethernet 1		10.1.1.13	255.255.255.0		1500	
0	SCA	Ethernet 2		1.0.0.0	255.255.255.0		1500	
•	SCA	Ethernet 3		10.1.2.13	255.255.255.0		1500	
0	SCA	Ethernet 4					1500	
\bigcirc	SCA	Ethernet 5					1500	
\bigcirc	SCA	Ethernet 6					1500	
0	SCB	Management		192.168.101.14	255.255.255.0	192.168.101.254 (default)	1500	
0	SCB	Ethernet 1		10.1.1.14	255.255.255.0		1500	
0	SCB	Ethernet 2		1.0.0.1	255.255.255.0		1500	
0	SCB	Ethernet 3		10.1.2.14	255.255.255.0		1500	

Storage Space Setup

Technical Overview

ES NAS uses the QNAP flexible storage space management architecture, which is divided into three layers: disk, storage pool, and shared folder / LUN. Users can build, expand and configure storage space flexibly and dynamically at all levels of the architecture according to different requirements, and maximize physical storage device efficiency.



In addition, ES NAS uses dual active controller (Active-Active) storage system architecture. Besides providing fault-tolerant high-availability storage services, it is also different from the more common, single controller (Active-Standby / Active passive) architecture, as both controllers can be active at any time without wasting valuable hardware resources. It is recommended that users build multiple storage pools and distribute the storage pools evenly between controller A and controller B to take advantage of load balancing of the ES NAS dual active controller architecture.

Host List

The following steps will add hosts which connect to the ES NAS for data access or mount the shared folder or iSCSI LUN on the ES NAS to the local machine into the list. The Host list will be used in subsequent setup steps (Create a shared folder, Create an iSCSI Target and iSCSI LUN).

1. Click "Storage Manager" on the main menu.



2. In the left menu, click "Hosts", then click "Create Host".



3. Enter the name of the host you want to add in the "Host Alias Name" field and click "+" on the right of "IPv4 Address or Subnet".

	Create Host	
Host Alias Name	Host01	
Host Description		
IPv4 Address or Subnet		^ (+)
		-
IPv6 Address or Subnet		· .
		-
Network Name		· 主
		
ISCSI IQN		
		Ψ.
		Apply

4. Enter the port IP or subnet that will be used for data transfer between the Host and the ES NAS, and click "OK". Please note that you can enter multiple IP addresses here. Set the IP to the same subnet as the ES NAS data port.

	Edit a host
Host Alias Name Host Description IPv4 Address or Subnet	Host01
IPvé Enter a	an IPv4 Address or Subnet
Net	OK Cancel
ISCSI IQN	
	Apply Cancel

5. When entering the IP addresses, click "Apply".

	Edit a host		
Host Alias Name	Host01		
Host Description			
IPv4 Address or Subnet	10.1.1.10 10.1.2.10	*	•
IPv6 Address or Subnet		•	•
Network Name		~	
ISCSI IQN		*	•
		Ŧ	
		Apply	Cancel

6. Return to the "Hosts" page. You should be able to find the Host information just created on the list. Repeat the above steps to add multiple Hosts to the list.

							\$
	Create Host Edit	Delete					
Overview	Host alias name Host01	Host description	10.1.1.10	IPv6 Address or Subnet	Network name	ISCSI IQN	
🚮 Utilization	Host02		10.1.1.163				
STORAGE ^							
🚇 Disks							
E Storage Space							
Cache Acceleration							
📾 iSCSI Storage							
HOST ^							
Q Hosts							

Cache Acceleration

ES NAS supports SSD caching. When using SSD, it is recommended (but not necessary) to enable cache acceleration to significantly improve data access performance. Follow these steps to enable cache acceleration:

1. Click "Storage Manager" on the main menu.



2. In the left menu, click "Cache Acceleration", then click "Set SSD".

		Ø ?
DASHBOARD ^	Cache Acceleration	Set SSD Set Caching Storage
Overview		i linne of 67A
aii Utilization		unggi u aun
STORAGE ^		Allocated: 📓 Free:
🖳 Disks	off	Usage of SCB
Storage Space	Name/Alias:	
E Cache Acceleration	Capacity of SCA:	Allocated: 🖬 Free:
₽ iSCSI Storage	Capacity of SCB: Hit Rate of SCA:	Cache port(s)
HOST ^	Hit Rate of SCB:	Name/Alias Type Capacity Status
C Hosts	Service:	NAS Hoat
	Status:	
	Hit Rate History	
	50	
	0	

3. Select the controller or expansion device where the SSD is located, and then select the SSD to be accelerated and click "OK".

Enclo	sure Unit [Tot	al: 1 Unit(s)]:	NA	S Host [avail	able disk(s): 4	/16]
Plea	se select at le	ast one disk.	-			
7	Slot Name	Model	Туре	Bus Type	Capacity	Status
	Disk 1	Intel 730	SSD	SATA	112.00 GB	Ready
	Disk 2	Intel 730	SSD	SATA	112.00 GB	Ready
	Disk 3	Intel 730	SSD	SATA	112.00 GB	Ready
	Disk 4	Intel 730	SSD	SATA	112.00 GB	Ready
Estim	ated Capacity	: 395.20 GB				
Cache	e Type:	Read-Only				

4. As this action will erase all of the data on the SSD, you will be prompted to confirm your decision.

Enclo	sure Unit (Total:	1 Unit(s)]:	NA	S Host [availa	able disk(s): 4	4/16] 🗸
Plea	Slot Name	Model	Туре	Bus Type	Capacity	Status
		_		Consul		
L		ОК		Cancel		

5. When the settings are complete, go back to the "Cache Acceleration" page. The red box below should have a status of "on", indicating that cache acceleration is enabled.

DASHBOARD ^	Cache Acceleration						Set SSD	Set Caching Storage
Overview								
an Utilization	100		Usage of SCA					
STORAGE			Allocated: 0.1 % Eree: 99.9 %					
🖳 Disks		on	Usage of SCB					
Storage Space	Name/Alias:	Cache Volume			_			
Cache Acceleration	Capacity of SCA:	199.58 GB	Allocated: 0.3 % Free: 99.7 %					
😔 iSCSI Storage	Capacity of SCB:	199.58 GB	Sector analysis					
HOFT	Hit Rate of SCB:	0.0 %	Name (Allen Dura Care	alta Chatan				_
	Service:	Enabled	NAS Host	icity status	_			
🗘 Hosts	Write Log:	Disabled	- Volume					
	Status:	🥑 Ready	Name/Alias	Car	nacity S	Status	_	
				10	1.00 GB 😽	🖌 Ready		
	Hit Rate Histo 100	Y		86	6.00 GB	Ready		
				86	6.00 GB 💊	🖌 Ready		
	50		and the second sec	86	6.00 GB 😽	🖌 Ready		
	. 100 00 1			86	6.00 GB 🧃	🖌 Ready		
	0		(and the second s	1.0	оо тв 🛛 😽	🕑 Ready		
			ISCSI LUN					
			Name/Alias	Caj	pacity S	Status		
			1000.0	16	i.00 TB 💊	🕑 Ready		
			particular and partic	10	10.00 GB	🕑 Ready		

6. To enable cache acceleration for individual shared folders or iSCSI LUNs, click "Set Caching Storage".

DASHBOARD ^	Cache Acceleration						Set SSD	Set Caching Storage
Overview	_		Isage of SCA					
🚮 Utilization	1000				_			
STORAGE ^			Allocated: 0.1 % 📕 Free: 99.9 %					
🚇 Disks		on	Usage of SCB					
Storage Space	Name/Alias:	Cache Volume			_			
E Cache Acceleration	Capacity of SCA:	199.58 GB	Allocated: 0.3 % 🔳 Free: 99.7 %					
🚘 iSCSI Storage	Capacity of SCB: Hit Rate of SCA:	199.58 GB	Cache port(s)					
HOST ^	Hit Rate of SCB:	0.0 %	Name/Alias Type Capacity	Status			_	
A Hoste	Service:	Enabled	NAS Host					
içe mono	Write Log:	Disabled	Volume					
	Status:	🥑 Ready	Name/Alias	Ca	apacity	Status		
				10	0.00 GB	✓ Ready		
	Hit Rate Histor 100	ry	anana ing sa	84	66.00 GB	🥑 Ready		
			and the second s	80	66.00 GB	✓ Ready		
	50		And the second se	8	66.00 GB	✓ Ready		
			and the second sec	8	56.00 GB	✓ Ready		
	0			1.	.00 TB	✓ Ready		
			ISCSI LUN					
			Name/Alias	Ca	apacity	Status		
			100.0	10	6.00 TB	✓ Ready		
			and the second sec	10	00.00 GB	✓ Ready		

7. Select the shared folders or iSCSI LUNs to enable/disable cache acceleration and select whether you want to perform large block and sequential I/O jobs in the cache space. For larger block, sequential I/O operations such as video streaming, the hit rate is lower, and by default, they are not recorded in the cache space. To record such jobs, uncheck "Bypass Prefetch Data". Click "Finish" to complete the setting.

7	Name/Alias	Туре	SSD Cache
]		Volume	Enabled
		Volume	Enabled
		Volume	Enabled
]		ISCSI LUN	Enabled
]		iSCSI LUN	Enabled

Add Storage Pool

1. Click "Storage Manager" on the main menu.



2. In the left menu, click "Storage Space", then click "Create". In the drop-down menu, click "New Storage Pool".

			\$
DASHBOARD ^	Storage Pool List - Total 0 Pool(s)	Create -	Actions •
Overview		New Storage Pool New Shared Folder	
🖼 Utilization		New ISCSI LUN	
STORAGE ^			
🚇 Disks	No Storage Pool		
Storage Space	Storage pool is used to aggregate physical disks as a single storage space and provide redundant disk protection.		
Cache Acceleration	Please Click "New Storage Pool" to add a new storage pool.		
😔 iSCSI Storage			

3. Name the storage pool, select the controller and enclosure unit to which it belongs, and select the hard disk and RAID configuration for the new storage pool, then click "Next". Please note that all of the data on the selected drives will be deleted.

Pool N	lame:			First_Pool		
Contro	oller:			SCA 👻		
Enclos	sure Unit [Tot	al: 1 Unit(s)]:	NAS Host [av	ailable disk(s)	: 12/16]
Pleas	e select at lea	st one disk.				
	Slot Name	Model	Туре	Bus Type	Capacity	Status
	Disk 5	SEAGAT	HDD	NL-SAS	932.00 GB	Ready
	Disk 6	SEAGAT	HDD	NL-SAS	932.00 GB	Ready
	Disk 7	SEAGAT	HDD	NL-SAS	932.00 GB	Ready
	Disk 8	SEAGAT	HDD	NL-SAS	932.00 GB	Ready
	Disk 9	SEAGAT	HDD	NL-SAS	932.00 GB	Ready
☑	Disk 10	SEAGAT	HDD	NL-SAS	932.00 GB	Ready
	Diek 11	SEAGAT	нор	NI - 57 5	032 00 GR	Dasdy
	-					

4. Confirm the settings again, and then click "Create".

Cre	aate Storage Pool
Pool Creation Summary	
Pool Name: Controller: Total Disk Number: NAS Host: RAID Type: Estimated Capacity:	First_Pool SCA 4 5, 6, 8, 10 RAID5 2.46 TB
	Back Create Cancel

5. A confirmation window will appear. Click "OK".

Create	Storage Pool
Pool Creation Summary	
Pool Name:	First_Pool
Controller:	SCA
Total Disk Number:	4
MAC Host	5.6.9.10
All of the data on the you sure you want to	e selected disk(s) will be erased. Are o continue?
ок	Cancel
	Back Create Cancel

6. A new storage pool is now created.

DASHBOARD ^	Storage Pool List - Total 1 Pool(s)							Create •
Overview	E 🔜 Controller A (SCA)	Name/Alias	Controller	Capacity	Allocated	Free Size	Dedup Saving	Status
🛋 Utilization	- First_Pool	First_Pool	SCA	2.46 TB	1.09 MB	2.46 TB	0.0 %	🧭 Ready
STORAGE ^	Controller B (SCB)							
🚇 Disks		Allocated: 0 % 📕 Free: 10	9% 🖡 Alert: Disabled 🖊)				
Storage Space		RAID Group of Storage Pool First	Pool					
Cache Acceleration		Name/Alias Capad	ity RAID Type			Status		
🚘 iSCSI Storage		RAID Group First_P 2.46	rb RAID5			🧭 Ready		
ноят 🔨								
Ø Hosts								

Expanding Storage Pools

To expand the storage pool capacity or create a RAID 50 or RAID 60 group, follow the below steps:

1. Click "Storage Manager" on the main menu.

Control Panel	Network	Storage Manager	Shared Folders	Domain Security	Users
High Availability	File Station	Backup Station Vir	rtualization Guide	System Status	System Logs

In the left menu, click "Storage Space", then select the controller and the storage pool under the controller in the Storage Pool List, then click "Action" at the top right, and click "Expand Pool" in the drop-down menu.

									\$
DASHBOARD ^	Storage Pool List - Total 1 Pool(s)							Create •	Actions •
Overview	E 🔜 Controller A (SCA)	Name/Alias	Controller	Capacity	Allocated	Free Size	Dedup Saving	Status	Remove Pool Expand Pool
and Utilization	First_Pool	First_Pool	SCA	2.46 TB	1.09 MB	2.46 TB	0.0 %	🥑 Rei	Scrub Pool
STORAGE ^			•••••••	2					Offline Pool
🖴 Disks		Allocated: 0 % E Fi	ee: 100 % Alert: Disabled						
Storage Space		RAID Group of Storage P	col First_Pool						
Cache Acceleration		Name/Alias RAID Group First_P	2.46 TB RAID 5			Status 🥑 Read	,		
📾 iSCSI Storage									
HOST ^									
🗘 Hosts									

3. Select the enclosure unit (you can also select the disk from the list of available hard disks) and click "Expand". ES NAS uses parallel RAID groups to extend the storage pool, so the minimum number of hard disks to select is determined by the RAID configuration of the storage pool. For example, if the RAID configuration of the storage pool is RAID5, then the number of hard disks to expand must be at least three (the minimum number of disks for RAID 5), and the RAID configuration of the storage pool after expansion will be RAID 50. Similarly, if the RAID configuration of the storage pool is RAID 6, then you must select at least four hard disks (minimum number of disks for RAID 6), and the RAID configuration of the storage pool after expansion is RAID 60.

Enclosure Unit [Total: 1 Unit(s)]: NAS Host [available disk(s): 8/16] V									
	Slot Name	Model	Туре	Bus Type	Capacity	Status			
V	Disk 7	SEAGAT	HDD	NL-SAS	932.00 GB	Ready			
✓	Disk 9	SEAGAT	HDD	NL-SAS	932.00 GB	Ready			
	Disk 11	SEAGAT	HDD	NL-SAS	932.00 GB	Ready			
	Disk 12	SEAGAT	HDD	NL-SAS	932.00 GB	Ready			
	Disk 13	SEAGAT	HDD	NL-SAS	932.00 GB	Ready			
	Diek 14	SEAGAT	нор	NI - 242	033 UU CB	Daady			
RAID	Type: RAID		~						
Curre	nt Capacity:	2.46 TB	5						
stim	ated Capacity	: 4.16 TB	5						

4. A confirmation window will appear. Click "OK".

Expandin	ng Storage Pool
Select Disk(s)	NAS Host [available disk(s): 8/16]
Please select at least one disk.	
Slot Name Model Type	e Bus Type Capacity Status
All of the data on the you sure you want to	e selected disk(s) will be erased. Are o continue? Cancel
RAID Type: RAID5	
Estimated Capacity: 2.46 TB	
	Expand Cancel

5. The storage pool capacity is now expanded.

DASHBOARD ^	Storage Pool List - Total 1 Pool(s)							Create - Acti
Overview	E 🚔 Controller A (SCA)	Name/Alias	Controller	Capacity	Allocated	Free Size	Dedup Saving	Status
ភរ៍ Utilization	- First_Pool	First_Pool	SCA	4.16 TB	1.12 MB	4.16 TB	0.0 %	🧭 Ready
STORAGE ^	E 🚔 Controller B (SCB)							
Disks		📕 Allocated: 0 % 📕 Free:	100 % 🖡 Alert: Disabled 🗾					
E Storage Space		RAID Group of Storage Pool F	irst_Pool					
Cache Acceleration		Name/Alias Ca	pacity RAID Type			Status		
O iccel man		RAID Group First_P 4.3	16 TB RAIDS			🥑 Ready		
Se iscsi storage		RAID Group First_P 4.:	6 TB RAIDS			🥑 Ready	,	
HOST ^								
¢ Hosts								

Increasing the number of disks in a RAID group increases the risk of simultaneous disk failure and lengthens rebuild times. When creating a storage pool with a large number of disks you should split the disks into sub-groups using RAID 50 or RAID 60.

- RAID 5 can tolerate 1 disk failure. The number of disks in a RAID 5 group should not exceed 9. For a greater number of disks use RAID 50.
- RAID 6 can tolerate 2 disk failures. The number of disks in a RAID 6 group should not exceed 16. For a greater number of disks use RAID 60.



Create a Shared Folder

Before you can create shared folders, the storage pool and data port must be set up.

1. On the main menu, click "Shared Folders".



2. In the Storage Pool List, select a storage pool, then click [Create] on the top right, and in the drop-down menu, click [New Shared Folder].

DASHBOARD ^	Storage Pool List - Total 1 Pool(s)							Create •	Actions •
Overview	R - Controller & (SCA)	Name/Alian	Control	ler Canacibu	Allocated	Eree Size	Dedus Savina	New Storage Pool	
and Utilization	E First_Pool	First_Pool	SCA	3.40 TB	1.05 MB	3.40 TB	0.0 %	New ISCSI LUN	
STORAGE ^	E and Controller B (SCB)		_						
Pisks		Allocated: 0 % 🔳 Fre	e: 100 % 🚦 Alert	Disabled					
Storage Space		RAID Group of Storage Po	l First_Pool						
Cache Acceleration		Name/Alias	Capacity R	ND Type		Status			
-		RAID Group First_P	3.40 TB R	AID5		🥑 Ready			
📾 iSCSI Storage		RAID Group First_P	3.40 TB R	AID5		🥩 Ready			
HOST									
🗘 Hosts									

- 3. Name the folder, view and copy the folder CIFS / SMB and NFS path in "Shared Path" and "NFS Path" respectively; then in "Storage Settings and Services", select the features according to the different application scenarios. The parameters are described below.
- Thin Provision: Allows the system to over-allocate the storage capacity regardless of the physical storage limit, and the physical disk space is used only when files are written into shared folders. It provides better space utilization.
- Folder Quota: Set the size of this shared folder. If not specified, the default is the maximum available space for the Pool.
- Compression: Data in the shared folder will be compressed to save storage space.
- Deduplication: Deduplication merges duplicate content in the shared folder to optimize disk space.
- SSD Cache: Frequently-accessed data in the shared folder will be placed in the SSD cache to improve access speed.

If there are no special requirements, retain the default values (under Storage Settings, keep the two options "Thin Provision" and "Compression" checked, and all options under Storage Services checked). Once the settings are confirmed, click "Create".

older Name:	First_Share		
escription:	The first shared fo	older created.	
hared Path:	\\10.1.1.13\First_	Share 🖌 💽	
IFS Path:	10.1.1.13:/share/	/First_Share 🖌 😭	
Select the storage pool to c	reate the shared folder.	- Viet -	
Storage Pool: Storage Settings and Se Storage Settings	First_Pool (SCA)	Storage Services	se
torage Pool: Storage Settings and Se Storage Settings Thin Provision	First_Pool (SCA)	Storage Services CIFS/SMB	se
Storage Pool: Storage Settings and Se Storage Settings Thin Provision Folder Quota	First_Pool (SCA)	Storage Services CIFS/SMB NFS	se
Storage Pool: Storage Settings and Se Storage Settings Thin Provision Folder Quota Compression	First_Pool (SCA)	Storage Services CIFS/SMB NFS FTP/FTPS	se
Storage Pool: Storage Settings and Se Storage Settings Thin Provision Folder Quota Compression Deduplication Skein	First_Pool (SCA)	 ✓ Free Size: 3.40 TB Storage Services ✓ CIFS/SMB ✓ NFS ✓ FTP/FTPS 	ose

4. The shared folder is created and appears in the list at the bottom-right of the "Storage Space" page. If the Host will mount or access this shared folder via NFS protocol, click the shared folder and continue with the following steps to set the permissions for the shared folder.

									Ø 3
DASHBOARD	^	Storage Pool List - Total 1 Pool(s)							Create • Actions •
Cverview		Controller A (SCA)	Name/Alias	Controller	Capacity	Allocated	Free Size	Dedup Saving	Status
ail Utilization		First_Pool	First_Pool	SCA	3.40 TB	2.03 MB	3.40 TB	0.0 %	🖌 Ready
STORAGE	^	E mm Controller B (SCB)							
🚇 Disks			Allocated: 0 % 📕 Fr	ee: 100 % 🚺 Alert: 80 %	2				
Storage Space			RAID Group of Storage Po	ol First_Pool					
Cache Acceleration			Name/Alias	Capacity RAID Typ			Status		
🚘 iSCSI Storage			RAID Group First_P RAID Group First_P	3.40 TB RAIDS			V Read	ty hi	
HOST	~						• Keeu	••	
Č Hosts			Shared Folder of Storage	Pool First_Pool					
			Name/Alias C	apacity Used	Thin Status	Snapshot			
			First_Share 3	.40 TB 202.00 KB	Yes 🥑 Ready	1651 : O			
HOST C Hosts	^		Shared Folder of Storage Name/Alias Co First_Share 3	Pool First_Pool apacity Used .40 TB 202.00 KB	Thin Status Yes 🧭 Ready	Snapshot IEI:0			

5. Click "Permissions".

		Shi	ared Folder	Manager		
Permissions					Snapshot	• Actions
Name/Alias	Capacity	Free Size	Thin	SSD Cache	Compression S	Status
First_Share	3.40 TB	3.40 TB	Yes	Disabled	0.0 %	✓ Ready
Used: 0 %	Allocated: 0 %	Alert: Disabled	2			

6.Select "NFS host access" in the "Select permission type" drop-down menu.

Isers and groups permiss Isers and groups permiss IFS host access Ilcrosoft Networking host	sion v sion n t access Read/Write	d File Station. Read Only	Read/Write	Deny Access
licrosoft Networking hos	t access Read/Write	Read Only	Read/Write	Deny Access
👤 admin	Read/Write	0	192	
			V	
			Add	Remove
				Add

7. Select "No limit" in the "Access right" drop-down menu.

		Shared Folder		
Select permission type: 1 Edit the NFS permissions.	NFS host access	~		
Shares				
First_Share	You can set the NFS a Network share name:	access right of the net First_Share	work share.	Î
	 Enable Map_Root 	and Map_All		
		User:	Group:	
	Map_Root	admin	▼ users	~
	Map_All	admin	▼ users	~
	Access right: All hosts can acce Create Host Alias Desi	Deny access No limit Read only Deny access Cripti IPv4 IPv	-6 Network iSC	SI IQN Operatin
	E Host01	10.1.1.10		•
				Apply Close

8. Select the specified Host and click "Apply" to complete the setup.

		Sha	red Folder						
Select permission type: NI Edit the NFS permissions.	FS host access			¥					
Shares	🗆 Епаріе Мар)_Koot and וי U	iap_All ser:			Group:			
	Map_Root	а	dmin		v	users		v	
	Map_All	а	dmin		~	users		*	
	Access right: All hosts ca	an access the	Io limit shared fold	ler	*				l
	Alias	Descripti	IPv4	IPv6	N	letwork	iSCSI IQN	Operatin	
	V Host01		10.1.1.10 10.1.2.10						
	✓ Host02		10.1.1.1 10.1.2.1						
	The second se								

Create an iSCSI Target and iSCSI LUN

1. To create an iSCSI Target and iSCSI LUN, click "Storage Manager" on the main menu.



2. In the left menu, click "iSCSI Storage". You will be asked if you want to launch the quick configuration wizard. Click "OK".

DASHBOARD ^	ISSSI Target List Create Snapshot • Action • Settings
Cverview	Alas (1QH) Snapakts Cardroller Copachy Allocated Status
ភាំ Utilization	
STORAGE ^	
🚇 Disks	
E Storage Space	
E Cache Acceleration	
🚍 iSCSI Storage	
HOST	
🗘 Hosts	
	2 Do you waik to adoren gokk comparison witanov

3. If you click "Cancel" in the previous step, you can still start the iSCSI Storage Quick Configuration Wizard by clicking "Create" on the iSCSI Storage page.



4. Select the iSCSI Target with a mapped LUN option and click "Next".

Quick Configuration Wizard	
Create a Job I want to create i iSCSI Target with a mapped LUN iSCSI Target only iSCSI LUN only	
Step 1/12	Next Cancel

5. Verify that you are creating an iSCSI Target and an iSCSI LUN mapped to the iSCSI Target. Click "Next".

Quick Configuration Wizard				
iSCSI Quick Configuration	Wizard			
This wizard will guide you thro * Create an iSCSI target. * Create an iSCSI LUN and m	ugh the following settings - Ip it to the target.			
Step 2/12	Back Next Cancel			

6. Enter the name and alias of the iSCSI Target you want to create in the "Target Name" and "Target Alias fields" respectively. The CRC/Checksum below is the parameter used when the iSCSI initiator is connected to the iSCSI Target. This is an optional setting. When complete, click "Next".

	Quick Configuration Wizard			
Create New iSCSI 1	arget			
iSCSI Target Profile				
Target Name:	FirstTarget			
iSCSI Target IQN:	iqn.2004-04.com.qnap:es1640dc:iscsi.firsttarget.0d806e.0 iqn.2004-04.com.qnap:es1640dc:iscsi.firsttarget.0d806e.1			
Target Alias:	FirstTarget			
CRC/Checksum (option	al)			
Data Digest:	none 👻			
Header Digest:	none 💌			
Step 3/12	Back Next Cancel			

7. If you need to use CHAP authentication, enter the account password, and click "Next". If you do not need CHAP authentication, just click "Next".

Use CHAP authentica	tion	
Username:	JohnDoe	
Password:	•••••	
Re-enter Password:	•••••	
Mutual CHAP		
Username:		
Password:		
Re-enter Password:		

8. Select the data ports you want to use for data transfer. If there are no special requirements, you can just use the default (all selected). Click "Next".

		0	Ethernet 1	10.1.1.13/10.1.1.14
v	2	0	Ethernet 2	
V		0	Ethernet 3	10.1.2.13/10.1.2.14
		0	Ethernet 4	
		0	Ethernet 5	
		0	Ethernet 6	

9. Change the access rights of the specified Host to "All Access" in the list and click "Access" to modify the settings. Click "Next".

		Quick Co	nfiguration Wizard		
Host Ad	ccess				
Creat	e Host			_	
Action	Alias	Network Address	ISCSI IQN	Ac	cess
	Host01	10.1.1.10 10.1.2.10		N	
	Host02	10.1.1.163 10.1.2.156		A	l Access
Step 6/12			Back	Next	Cancel

10. In this step, you can modify the iSCSI LUN name, location (which will determine the default owner of this LUN as controller A or controller B), capacity, alert threshold, performance profiling and more. If you have no special requirements, just use the defaults and click "Next".

Quick Configuration Wizard			
Create an iSCSI	LUN		
LUN Name:	FirstTarget_0		
LUN Allocation:	Thin Provisioning () Instant Allocation		
LUN Location:	First_Pool (SCA)		
Free Size:	3.29 TB		
Capacity:	100 GB ¥		
Alert threshold:	80 %		
Performance Profiling:	generic 💌		
 Synchronous I/O 	Always 🖌 🥹		
SSD Cache			
Deduplication	Skein 💙 🔮		
 Compression 			
Encryption			
tep 8/12	Back Next Cancel		

11. Return to the configuration. If it is correct, click "Next". If it is incorrect, click "Back" to return to the previous step to modify the configuration.

Quick Configuration Wizard			
Confirm the Setting	S		
Target Name:	FirstTarget		
Target IQN:	iqn.2004-04.com.qnap:es1640dc:iscsi.firsttarget.0d806e.0 iqn.2004-04.com.qnap:es1640dc:iscsi.firsttarget.0d806e.1		
Target Alias:	FirstTarget		
Data Digest:	none		
Header Digest:	none		
CHAP authentication:	Yes		
CHAP Username:	JohnDoe		
Mutual CHAP authentication:	No		
Mutual CHAP Username	::		
LUN Type:	Block-based		
LUN Allocation:	Thin Provisioning		
LUN Name:	FirstTarget_0		
LUN Location:	First_Pool (SCA)		
LUN Capacity:	100 GB		
Alert threshold:	80 %		
Step 11/12	Back Next Cancel		

12. After completion, click "Finish" to exit the wizard.

Quick Configuration Wizard				
iSCSI Quick Configuration	n Wizard			
Successfully created				
Step 12/12			Finish	

13. Return to the iSCSI Storage page. In the iSCSI Target List, you will see the iSCSI Target you just created. Double-click the iSCSI Target and the iSCSI LUN you just created will show below. This means that the iSCSI Target and iSCSI LUN have been created successfully. Under each Target, you will see two iqn, representing the target is created on controller A

and controller B (iqn ending with.0 is controller A,.1 is controller B) respectively, and the word "Preferred" at the end means that the Target is the default optimal IO path. Therefore, a LUN mounted on a Target with controller A as Preferred default will not be able to be mounted on a Target with controller B as the default. Similarly, a LUN mounted on a Target with controller B as Preferred default on a Target with controller A as Preferred on a Target with controller B as the default.

