QNAP Turbo NAS

Software User Manual

(Version: 4.2.1)

This manual is applicable to the following Turbo NAS models: TS-110, TS-112, TS-112P, TS-119, TS-119P+, TS-119P II, TS-120, TS-121, TS-210, TS-212, TS-212-E, TS-212P, TS-219, TS-219P, TS-219P+, TS-219P II, TS-220, TS-221, TS-239 Pro, TS-239 Pro II, TS-239 Pro II+, TS-259 Pro, TS-259 Pro+, HS-210, TS-269H, TS-410, TS-410U, TS-412, TS-412U, TS-419P, TS-419P+, TS-419P II, TS-419U, TS-419U+, TS-419U II, TS-420, TS-420U, TS-421, TS-421U, TS-439 Pro, TS-439 Pro II, TS-439 Pro II+, TS-439U-RP/SP, TS-459 Pro, TS-459 Pro II, TS-459 Pro+, TS-459U-RP/SP, TS-459U-RP+/SP+, TS-509 Pro, TS-559 Pro, TS-559 Pro+, TS-559 Pro II, TS-639 Pro, TS-659 Pro, TS-659 Pro+, TS-659 Pro II, TS-809 Pro, TS-809U-RP, TS-859 Pro, TS-859U-RP+, TS-859 Pro+, TS-859U-RP, SS-439 Pro, SS-839 Pro.

*Unless otherwise specified, the content of this manual applies to all the above NAS models.
*For user manuals of other NAS models and firmware versions, please visit http://docs.qnap.com

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1. Notice

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1.1 Legal Notice and Disclaimer

Thank you for choosing QNAP products! This user manual provides detailed instructions of using the Turbo NAS (network-attached storage). Please read carefully and start to enjoy the powerful functions of the Turbo NAS!

- The Turbo NAS is hereafter referred to as the NAS.
- This manual provides the description of all the functions of the NAS. The product you purchased may not support certain functions dedicated to specific models.

Legal Notices

All the features, functionality, and other product specifications are subject to change without prior notice or obligation. Information contained herein is subject to change without notice.
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particular purpose. QNAP reserves the right to revise or update its products, software, or documentation without obligation to notify any individual or entity.

Back up the system periodically to avoid any potential data loss. QNAP disclaims any responsibility of all sorts of data loss or recovery.

Should you return any components of the NAS package for refund or maintenance, make sure they are carefully packed for shipping. Any form of damages due to improper packaging will not be compensated.

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1.2 Regulatory Notice

FCC Notice

QNAP NAS comply with different FCC compliance classes. Please refer the Appendix for details. Once the class of the device is determined, refer to the following corresponding statement.

FCC Class A Notice

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference.
2. This device must accept any interference received, including interference that may cause undesired operation.

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy, and if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

Modifications: Any modifications made to this device that are not approved by QNAP Systems, Inc. may void the authority granted to the user by the FCC to operate this equipment.

FCC Class B Notice

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference.
2. This device must accept any interference received, including interference that may cause undesired operation.

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed

and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/television technician for help.

Modifications: Any modifications made to this device that are not approved by QNAP Systems, Inc. may void the authority granted to the user by the FCC to operate this equipment.

CE Notice

QNAP Turbo NAS models comply with different CE compliance classes. Please refer to the table for details.

FCC	CE	NAS Models
Class A	Class A	TS-EC1679U-RP, TS-EC1279U-RP, TS-EC879U-RP, TS-1679U-RP, TS-1279U-RP, TS-1270U-RP, TS-1263U-RP, TS-1263U,TS-1253U-RP, TS-1253U, TS-879U-RP, TS-870U-RP, TS-863U-RP, TS-853U-RP, TS-453U-RP, TS-1079 Pro, TS-879 Pro, TS-863U, TS-853U, TS-463U, TS-463U-RP, TS-453U-RP, TS-453U, TS-451U, TS-431U, TVS-871U-RP, TVS-1271U-RP
Class B	Class B	TS-853S Pro, TS-453S Pro, TS-870 Pro, TS-853 Pro, TS-670 Pro, TS-653 Pro, TS-470 Pro, TS-453 Pro, TS-253 Pro, TS-431+, TS-231+, TS-451S, TS-870, TS-851, TS-670, TS-651, TS-470, TVS-863+, TVS-863, TVS-663, TVS-463, TVS-471, TVS-671, TVS-871,TS-451, TS-451+, TS-431, TS-251, TS-251+, TS-251C, TS-231, TS-131, TS-269H, TS-212P, TS-112P, HS-251, HS-251+, HS-210, TS-453mini, TS-563, IS-453S, TS-531P, TS-253A, TS-453A, TS-653A, TS-853A, TS-128, TS-228, TAS-168, TS-268

1.3 Document Annotation

Annotations in this document

- ***Warning:*** This indicates the instructions must be strictly followed. Failure to do so could result in injury to human body or death.
- ***Caution:*** This indicates the action may lead to disk clearance or loss OR failure to follow the instructions could result in data damage, disk damage, or product damage.
- ***Important:*** This indicates the information provided is important or related to legal regulations.

1.4 Safety Information and Precautions

1. The NAS can operate normally in the temperature of 0ºC–40ºC and relative humidity of 0%–95%. Ensure the environment is well-ventilated.
2. The power cord and devices connected to the NAS must provide correct supply voltage (100W, 90–264V).
3. Do not place the NAS in direct sunlight or near chemicals. Ensure the usage environment's temperature and humidity is suited for using electronics.
4. Unplug the power cord and all connected cables before cleaning. Wipe the NAS with a dry towel. Do not use chemicals or aerosols to clean the NAS.
5. Do not place any objects on the NAS during normal system operations and to avoid overheating.
6. Use the flat head screws in the product package to lock the hard disk drives in the NAS when installing the hard drives for proper operation.
7. Do not place the NAS near any liquid.
8. Do not place the NAS on any uneven surface to avoid falling off and damage.
9. Make sure the voltage is correct in your location when using the NAS. If unsure, contact your distributor or the local power company.
10. Do not place any object on the power cord.
11. Never attempt to repair the NAS. Improper disassembly of the product may expose you to electric shock or other risks. For repair-related enquiries, please contact your distributor.
12. Rackmount NAS models should only be installed in server rooms and maintained by authorized server managers or IT administrators. The server room should be sufficiently locked and only certified staff allowed to enter.

Warning:

- There is the danger of explosion if a battery is incorrectly replaced. **Replace only with the same or equivalent type recommended by the manufacturer.** Dispose of used batteries according to the manufacturer's instructions.
- To avoid serious injuries **do NOT touch the fan inside the system.**

2. Getting Started

New NAS users are advised to follow the below steps to complete their NAS installation. For users who already own a QNAP NAS and would like to move the data to a new QNAP NAS, refer to Migrating from Old NAS[29] for detailed instructions.

For New NAS Users:

1. Hardware Installation[13]
2. Software Installation[19]
3. Getting Utilities[24]
4. Connecting to the Shared Folders[25]
5. Connecting to the NAS by Web Browser[28]

For Existing NAS Users:

- Migrating from Old NAS[29]

2.1 Hardware Installation

After unpacking the NAS, first follow these instructions to install your hardware:

1. Install the hard drives. Before doing so, ensure the hard drives (HDDs) that you use are compatible with the NAS. Go to the Hard Disk Drive Compatibility List 14 section for more details.
2. Connect the QNAP NAS to the same network as your PC and power it on. During your installation process, pay attention to LEDs and alarm buzzers to make sure that the NAS functions properly. Go to the Checking System Status 15 section for more details.

Note: The steps above are also illustrated in the Quick Installation Guide (QIG) that can be found in the product package or QNAP website (http://start.qnap.com).

2.1.1 Hard Disk Drive Compatibility List

This product works with 2.5-inch and 3.5-inch SATA hard disk drives and/or solid-state drives (SSD) from major hard drive brands. For a full list of compatible drives, check the compatibility list on the QNAP website (http://www.qnap.com/compatibility).

Note: If you encounter a "Device not found" message, ensure that:

1. Your NAS has been powered on;
2. The network cable is connected to the NAS and the orange and green indicator lights on its LAN port(s) are blinking; and
3. The cloud key is correct.

Important: QNAP disclaims any responsibility for product damage/malfunction or data loss/recovery due to misuse or improper installation of hard disks in any occasions for any reasons.

Caution: Note that **if you install a hard drive (new or used) which has never been installed on the NAS before, the hard drive will be formatted and partitioned automatically and all the disk data will be cleared.**

2.1.2 Checking System Status

LED Display & System Status Overview

LED	Color	LED Status	Description
System Status	Red/ Green	Flashes green and red alternately every 0.5 sec	1) The hard disk drive on the NAS is being formatted. 2) The NAS is being initialized. 3) The system firmware is being updated. 4) RAID rebuilding is in process. 5) Online RAID capacity expansion is in process. 6) Online RAID level migration is in process.
		Red	1) The hard disk drive is invalid. 2) The disk volume has reached its full capacity. 3) The disk volume is going to be full. 4) The system fan is out of function (TS-119 does not support smart fan.) 5) An error occurs when accessing (read/ write) the disk data. 6) A bad sector is detected on the hard disk drive. 7) The NAS is in degraded read-only mode (2 member hard drives fail in a RAID 5 or RAID 6 configuration, the disk data can still be read.) 8) Hardware self-test error.
		Flashes red every 0.5 sec	The NAS is in degraded mode (one member hard drive fails in RAID 1, RAID 5 or RAID 6 configuration.)
		Flashes green every 0.5 sec	1) The NAS is starting up. 2) The NAS is not configured. 3) The hard disk drive is not formatted.
		Flashes green every 2 sec	The NAS is in S3 Sleep Mode[1].

LED	Color	LED Status	Description
		Green	The NAS is ready.
		Off	All the hard disk drives on the NAS are in standby mode.
Power[1]	Green	Flashes green	The NAS is booting up.
		Green	The NAS is on and ready.
LAN	Orange	Orange	The disk data is being accessed from the network.
		Flashes orange	The NAS is connected to the network.
10 GbE*	Green	Green	The 10GbE network expansion card is installed.
		Off	No 10GbE network expansion card is installed.
HDD	Red/ Green	Red	A hard drive read/write error occurs.
		Flashes green	The disk data is being accessed.
		Green	The hard drive can be accessed.
USB	Blue	Flashes blue every 0.5 sec	1) A USB device (connected to front USB port) is being detected. 2) A USB device (connected to front USB port) is being removed from the NAS. 3) The USB device (connected to the front USB port) is being accessed. 4) The data is being copied to or from the external USB or eSATA device.
		Blue	A front USB device is detected (after the device is mounted.)
		Off	1) No USB device is detected. 2) The NAS has finished copying the data to or from the USB device connected to the front USB port of the NAS.
eSATA*	Orang	Flashes	The eSATA device is being accessed.

LED	Color	LED Status	Description
*	e	Off	No eSATA device can be detected.

*The 10 GbE network expansion function is only supported by the TS-470 Pro, TS-670 Pro, TS-870 Pro, TS-870U-RP, TS-879 Pro, TS-1079 Pro, TS-879U-RP, TS-1270U-RP, TS-1279U-RP, TS-EC879U-RP, and TS-EC1279U-RP.

**TS-210, TS-212, TS-219, TS-439U-SP/RP, TS-809 Pro, TS-809U-RP do not support eSATA port.

[1]This feature is only supported by certain NAS models. Visit http://www.qnap.com for more details.

Alarm Buzzer

The alarm buzzer can be disabled in "Control Panel" > "System Settings" > "Hardware" > " Buzzer".

Beep sound	No. of Times	Description
Short beep (0.5 sec)	1	1) The NAS is starting up. 2) The NAS is being shut down (software shutdown). 3) The user presses the reset button to reset the NAS. 4) The system firmware has been updated.
Short beep (0.5 sec)	3	The NAS data cannot be copied to the external storage device from the front USB port.
Short beep (0.5 sec), long beep (1.5 sec)	3, every 5 min	The system fan is out of function (TS-119 does not support smart fan.)
Long beep (1.5 sec)	2	1) The disk volume is going to be full. 2) The disk volume has reached its full capacity. 3) The hard disk drives on the NAS are in degraded mode. 4) The user starts hard drive rebuilding.

	1	1) The NAS is turned off by force shutdown (hardware shutdown). 2) The NAS has been turned on and is ready.

2.2 Software Installation

After installing the NAS hardware, proceed to software installation. There are three approaches for software installation:

1. Smart Installation Guide 20
2. Cloud Installation 21
3. CD Installation 22
4. HDMI Installation 23

Online installation and cloud installation are available for all new NAS models, while CD installation is only for certain models (check your package contents to see if it includes an installation CD.) All users are encouraged to use cloud and online installation if possible. Contact our technical support department if any problem arises during the installation process (http://www.qnap.com/support.)

2.2.1 Smart Installation Guide

Follow the steps in this section to complete online installation for your NAS:

1. Go to http://start.qnap.com.
2. Choose the number of HDD bays and the model of your NAS and click "Start Now".
3. Click "Hardware" and follow the on-screen instructions to get hardware ready.
4. Scroll down to "Install firmware" and click "Local Installation".
5. Choose your operating system to download, install and run Qfinder Pro.
6. After installing Qfinder Pro, launch it to search for your NAS. Double click on your NAS in Qfinder Pro to start the Smart Installation Guide. Follow the on-screen instructions to the built-in Qfinder Pro Setup Wizard will guide you along the way to complete the firmware installation.
7. Proceed to log into QTS with your account username and password to log in (QTS is the operating system for the Turbo NAS.)

2.2.2 Cloud Installation

Follow the steps in this section to complete cloud installation for your NAS:

1. Connect your NAS to the Internet, and on your PC, go to "start.qnap.com" and scroll down until the "Install firmware" section. Click "Cloud Installation" and in the "Start Cloud Installation" step, click the "Start Cloud Installation" button. Alternatively, you may scan the QR code using your mobile phone to start cloud installation.
2. Enter the cloud key (cloud key can be found from the sticker on top of your QNAP NAS) and click "Enter". Before proceeding to Step 4, activate your myQNAPcloud account after your account registration is confirmed (an email will be sent to the email address provided to create your myQNAPcloud account, and the account activation link will be included in that email.) For details, refer to myQNAPcloud Service chapter 250 in this manual.
3. Fill out all fields to register your myQNAPcloud account or sign in your myQNAPcloud account. check "I agree to myQNAPcloud Terms of Use and QNAP Privacy Policy" and click "Next Step". If you already have a myQNAPcloud account, please select "Sign in myQNAPcloud account" and login with your account credentials.
4. Type in the name of your Turbo NAS to register it and click "Register".
5. Install a hard drive on your Turbo NAS if you have not already done so.
6. Click "Begin" to install firmware on your Turbo NAS.
7. Click "Start" to start the quick setup.
8. Confirm all details and click "Proceed".
9. Follow the onscreen instructions.
10. Click "Connect and Login QTS".
11. Key in the user ID and password to login your Turbo NAS.

Note: If you encounter a "Device not found" message, ensure that:

1. Your NAS has been powered on;
2. the network cable is connected to the NAS and the orange and green indicator lights on its LAN port(s) are blinking; and
3. The cloud key is correct.

2.2.3 CD Installation

Follow the steps in this section to complete CD installation for your NAS:

1. Install the QNAP Qfinder Pro from the product CD-ROM.
2. Run the QNAP Qfinder Pro. If the QNAP Qfinder Pro is blocked by your firewall, unblock the utility.
3. The built-in Qfinder Pro Setup Wizard will guide you along the way to complete firmware installation. Next, you can use QTS account username and password to log in (QTS is the operating system for the NAS.)

Note:

- Some new NAS models, such as TS-x12, TS-x20 and TS-x21, no longer include an installation CD.
- The default login ID and password of the NAS are both "admin".

2.2.4 HDMI Installation

Follow the steps in this section to complete the HDMI installation for your NAS:

1. Connect the NAS to an HDMI display.
2. Follow the onscreen instructions to complete the firmware installation.
3. Choose to install HD Station or log into QTS with QTS account username and password (QTS is the operating system for the NAS.)

Note:

- This installation is restricted to NAS models with an HDMI port.
- The default login ID and password of the NAS are both "admin".

2.3 Getting Utilities

QNAP has prepared a number of practical and useful utilities to enhance your NAS experience. After setting up the NAS, choose from the following two methods to install the utilities:

Method 1: Downloading from the QNAP website
Visit http://www.qnap.com/ and go to "Support" > "Download" > "Utilities" and choose to download and install the utilities on your PC.

Method 2: Installing from the product CD-ROM
If the NAS contains a CD-ROM, then it will contain: QNAP Qfinder Pro, myQNAPcloud Connect and NetBak Replicator.

Browse the CD-ROM and access the following contents:

- Quick Installation Guide: View the NAS hardware installation instructions.
- Install QNAP Qfinder Pro: This will install QNAP Qfinder Pro for Windows.
- Install myQNAPcloud Connect: This will install myQNAPcloud Connect for Windows.
- Install NetBak Replicator: This will install NetBak Replicator - a backup utility for Windows.)
- User Manual and Application Notes: Instructions for installing and using the NAS.

2.4 Connecting to NAS Shared Folders

After installing the hardware and software, it is time to connect to the shared folders on the NAS. Refer to these links for the connection setup:

- Connecting to NAS shared folders in Windows 26
- Connecting to NAS shared folders in Mac or Linux 27

2.4.1 Windows

There are two methods for connecting to shared folders of the NAS when using Windows:

Method 1: Connect to the shared folders of the NAS by using QNAP Qfinder Pro

1. Launch QNAP Qfinder Pro. Select your NAS and then click "Tool" > "Map Network Drive".
2. Select a shared folder on the NAS to be mapped as a network drive and click "Map Network Drive".
3. Enter the username and password to connect to the NAS and click "OK".
4. Select a drive in the OS to map the folder chosen in Step 2 and click "Finish".
5. The mapped folder will appear when opening the File Explorer in Windows.

Note: Alternatively, you can use the Storage Plug & Connect Wizard to connect to NAS shared folders. The steps:

1. Launch QNAP Qfinder Pro;
2. Select "Storage Plug & Connect" under "Connect";
3. Check "Login with username and password" and enter the username and password;
4. Click a NAS shared folder;
5. Click "Map the Network Drive".

Method 2: Connect to the shared folders of the NAS by using File Explorer or Run

1. Open the Windows File Explorer, click on "Network" on the left and find the workgroup of the NAS. If the NAS cannot be found, browse the whole network to search for the NAS. Double click the name of the NAS to connect to it, or use the Run function in Windows (Windows key + R). Enter \\NAS_name or \\NAS_IP.
2. Enter the default administrator name and password (the default login ID and password are both "admin".).
3. Upload files to the shared folders.

2.4.2 Mac or Linux

Mac Users

There are two methods to connect shared folders on a NAS:

Method 1: Using QNAP Qfinder Pro

1. Launch QNAP Qfinder Pro, select your NAS, and go to "Connect" > "Open in File Explorer".
2. Enter your login ID and password.
3. Select the folder you want to mount and click "OK".
4. The folder is mounted.

Method 2: Connecting to Server

1. Choose "Go" > "Connect to Server".
2. Enter the NAS IP address.
3. Enter your login ID and password.
4. Select the folder you want to mount and click "OK".
5. The folder is mounted.

Linux Users

On Linux, run the following command:

```
mount -t nfs <NAS IP>:/<Shared Folder Name> <Directory to Mount>
```

For example, if the IP address of the NAS is 192.168.0.1, to connect to the shared folder "public" under the /mnt/pub directory, use the following command:

```
mount -t nfs 192.168.0.1:/public /mnt/pub
```

Log into the NAS with the specified user ID, use the mounted directory to connect to the shared folders.

Note: You must login as the "root" user to initiate the above command.

2.5 Connecting to NAS by Web Browser

To connect to the NAS by a web browser, follow these steps:

1. Enter http://NAS IP:8080 in the web browser. Or if using QNAP Qfinder Pro, simply double click on the NAS to open the login page.

Note: The default NAS IP is 169.254.100.100:8080. If the NAS has been configured to use DHCP, you can use QNAP Qfinder Pro to check the IP address of the NAS. Make sure the NAS and the computer that runs QNAP Qfinder Pro are connected to the same subnet. If the NAS cannot be found, connect the NAS to the computer directly and run QNAP Qfinder Pro again.

2. Enter the administrator's login id and password. Enable "Secure login" (Secure Sockets Layer login) to allow a secure connection to the NAS. If a user without administration rights logs into the NAS, the user can only change the login password (the default login ID and password of the NAS are both "admin".)

Note: If the NAS is behind a NAT gateway, to connect to the NAS by secure login on the Internet, port 443 must be opened on the NAT router and forwarded to the LAN IP of the NAS.

3. The NAS Desktop will be displayed.

2.6 Migrating from Old NAS

Users can migrate their existing NAS to another NAS model with all the data and configuration retained by simply installing all the hard drives of the original (source) NAS on the new (destination) NAS according to its original hard drive order and restart the NAS.

Due to differing hardware designs, the new NAS will automatically check if a firmware update is required before system migration. After the migration has finished, all of the settings and data will be retained and applied to the new NAS. However, system settings of the source NAS cannot be imported to the destination NAS via "System Administration" > "Backup/Restore Settings". Configure the NAS again if the settings were lost.

Topics covered in this chapter:

1. NAS models that support system Migration 29
2. NAS models that DO NOT support system migration 32
3. Disk Volumes Supported for System Migration 34
4. Migrating your NAS 34

NAS Models that Support System Migration

Before migrating to the destination NAS, make sure both the source and destination NAS models are powered off. NAS models that support system migration are listed below.

Source NAS		Destination NAS		Firmware Upgrade Required
Model	Firmware Version	Model	Firmware Version	
TS-x10, TS-x12, TS-x19, TS-x20, TS-x21, HS-210	3.8 4.0.x 4.1.x and later	TS-x10, TS-x12, TS-x19, TS-x20, TS-x21, HS-210	3.8.x and older 4.0.2	No
		TS-x39, TS-509, TS-809, SS-x39, TS-x59, TS-x59U, TS-x69, TS-x69U, TS-x70, TS-x70U, TS-x79, TS-x79U		

		TS-x31, TS-431U, HS-251/251+, TS-x51/x51+, TS-x53, SS-x53	4.0.5 4.1.x and later	
		TVS-x63, TS-563, TS-x63U, TS-x69, TS-x70, TVS-x71, TS-x79, TS-x80, TVS-x80, TS-x80U		
TS-x39, TS-509, TS-809, SS-x39, TS-x59, TS-x59U	3.8 4.0.x 4.1.x and later	TS-x10, TS-x12, TS-x19, TS-x20, TS-x21, HS-210	3.8.x and older 4.0.2	Yes
		TS-x39, TS-509, TS-809, SS-x39, TS-x59, TS-x59U, TS-x69, TS-x69U, TS-x70, TS-x70U, TS-x79, TS-x79U		No
		TS-x31, TS-431U, HS-251/251+, TS-x51/x51+, TS-x53, SS-x53	4.0.5 4.1.x and later	
		TVS-x63, TS-563, TS-x63U, TS-x69, TS-x70, TS-x70U, TVS-x71, TVS-x71U, TS-x79, TS-x80, TVS-x80, TS-x80U	4.0.x 4.1.x and later	
TS-x31, TS-431U, HS-251/251+, TS-x51/x51+, TS-x53, SS-x53, TS-x53S Pro	4.1.x and later	TS-x31, TS-431U, HS-251, TS-x51/x51+, TS-x53, SS-x53	4.0.5 4.1.x and later	No
		TVS-x63, TS-563, TS-x63U, TS-x69, TS-x70, TS-x70U, TVS-x71, TVS-x71U, TS-x79, TS-x80, TVS-x80, TS-x80U		
TS-x69, TS-x69U, TS-x70, TS-x70U, TS-x79, TS-x79U,	3.8.x and older 4.0.2	TS-x10, TS-x12, TS-x19, TS-x20, TS-x21, HS-210	3.8.x and older 4.0.2	No

TS-x80, TS-x80U, TVS-x80		TS-x39, TS-509, TS-809, SS-x39, TS-x59, TS-x59U, TS-x69, TS-x69U, TS-x70, TS-x70U, TS-x79, TS-x79U		
		TS-x31, TS-431U, HS-251/251+, TS-x51/x51+, TS-x53, SS-x53	4.0.5 4.1.x	
		TS-x69, TS-x70, TS-x79, TS-x80, TS-x80U	4.0.5	
	4.0.5 4.1.x and later	TVS-x63, TS-563, TS-x63U, TS-x69, TS-x69U, TS-x70, TS-x70U, TVS-x71, TVS-x71U, TS-x79, TS-x79U, TS-x80, TS-x80U, TVS-ECx80	4.0.5 4.1.x and later	
		HS-251/251+, TS-x51/x51+, TS-x53, SS-x53	4.1.2 and later	
TS-x31+	4.1.1	TVS-x71, TVS-x63, TS-563, TS-x63U, TS-x53, TS-x51/x51+, x31+	4.1.1	No
	4.1.2/4.1.3 and later	TS-x80, TVS-x80, TVS-x71U, TVS-x71, TVS-x63, TS-563, TS-x53, TS-x51/x51+, TS-x31+	4.1.2/4.1.3 and later	No
HS-251/251+, TS-x51/x51+	4.1.1	TVS-x71, TVS-x63, TS-563, TS-x63U, TS-x53	4.1.1	No
	4.1.2/4.1.3 and later	TS-x80, TVS-x80, TVS-x71U, TVS- x71, TVS-x63, TS-563, TS-x63U, TS-x53, TS-x51/x51+,	4.1.2/4.1.3 and later	No
TS-x53U, TS-x53 Pro, TS-x53S Pro	4.1.1	TVS-x71, TVS-x63, TS-563, TS-x63U, TS-x51/x51+	4.1.1	No

	4.1.2/4.1.3 and later	TS-x80, TVS-x80, TS-x71U, TVS- x71, TVS-x63, TS-x53, TS-x51/x51+	4.1.2/4.1.3 and later	No
TVS-x63, TS-563, TS-x63U	4.1.2/4.1.3 and later	TS-x80, TVS-x80, TVS-x71U, TVS- x71, TVS-x63, TS-x53, TS-x51/x51+	4.1.2/4.1.3 and later	No
TVS-x71	4.1.1	TVS-x63, TS-563, TS-x63U	4.1.1	No
	4.1.2/4.1.3 and later	TS-x80, TVS-x80, TS-x71U, TVS- x71, TVS-x63, TS-x53, TS-x51/x51+	4.1.2/4.1.3 and later	No
TVS-x71U	4.1.1	TS-x80, TVS-x80, TVS-x71U, TVS-x71, TVS-x63, TS-563, TS-x63U, TS-x69, TS-x79, TS-x70	4.1.1	No
	4.1.2/4.1.3 and later	TS-x80, TVS-x80, TVS-x71U, TVS- x71, TVS-x63, TS-563, TS-x63U, TS-x53, TS-x51/x51+	4.1.2/4.1.3 and later	No

NAS Models that DO NOT Support System Migration

NAS models that do not support direct migration are listed in the below table. For these NAS models, first initialize the destination NAS and copy your data from the source NAS to the destination NAS (refer to the RTRR or Rsync 235 chapter for details on data backup and replication.)

Source NAS		Destination NAS	
Model	**Firmware Version**	**Model**	**Firmware Version**
TS-x31, TS-431U, HS-251/251+, TS-x51/x51+, TS-x53, SS-x53	4.1.x	TS-x10, TS-x12, TS-x19, TS-x20, TS-x21, HS-210, TS-x39, TS-509, TS-809, SS-x39, TS-x59, TS-x59U, TS-x69, TS-x69U, TS-x70,	3.8.x and older 4.0.2

		TS-x70U, TS-x79, TS-x79U	
TS-x69, TS-x69U, TS-x70, TS-x70U, TS-x79, TS-x79U	4.0.5 4.1.x	TS-x10, TS-x12, TS-x19, TS-x20, TS-x21, HS-210, TS-x39, TS-509, TS-809, SS-x39, TS-x59, TS-x59U, TS-x69, TS-x69U, TS-x70, TS-x70U, TS-x79, TS-x79U	3.8.x and older 4.0.2
		TS-x31, TS-431U, HS-251/251+, TS-x51/x51+, TS-x53, SS-x53	4.0.5 4.1.1 and older

Note:

- The destination NAS should contain enough drive bays to house the hard drives of the source NAS.
- Users are encouraged to only use drives that are compatible with the NAS before system migration or the data may be inaccessible. For a compatibility list, go to http://www.qnap.com/compatibility.
- SS-x39 and SS-469 Pro series only support 2.5-inch hard disk drives.
- Encrypted disk volumes cannot be migrated to a NAS that does not support file system encryption. File system encryption is not supported by the TS-110, TS-119, TS-210, HS-210, TS-219, TS-219P, TS-x20, TS-x21, TS-410, TS-419P, TS-410U, TS-419U, TS-119P+, TS-219P+, TS-419P+, TS-112, TS-212, TS-412, TS-419U+, TS-412U, TS-420U and TS-421U.
- Multimedia Station, Download Station, iTunes Server, and DLNA Media Server features will be removed after migrating non-TS-x79 models to TS-x70U/TS-x79 models. The shared folders Multimedia/Qmultimedia, Download/Qdownload and all the downloaded files will be retained.
- The registered myQNAPcloud name on the source NAS will not be moved to the destination NAS after system migration. To use the same myQNAPcloud name on the destination NAS, change the myQNAPcloud name on the source NAS before system migration and register the same name on the destination NAS after the process is completed. Contact the QNAP technical support department if you encounter any issues during this process.

Disk Volumes Supported for System Migration

Refer to the following table for the relationship between the number of NAS bays and the disk volume supported for system migration.

Destination NAS	Disk volume supported for system migration
1-bay NAS	1-drive single disk volume
2-bay NAS	1 to 2-drive single disk volume, JBOD, RAID 0, 2-drive RAID 1.
4-bay NAS	1 to 4-drive single disk volume, JBOD, RAID 0, 2-drive RAID 1, 3 to 4-drive RAID 5, 4-drive RAID 6, 4-drive RAID 10.
5-bay NAS	1 to 5-drive single disk volume, JBOD, RAID 0, 2-drive RAID 1, 3 to 5-drive RAID 5, 4 to 5-drive RAID 6, 4-drive RAID 10.
6-bay NAS	1 to 6-drive single disk volume, JBOD, RAID 0, 2-drive RAID 1, 3 to 6-drive RAID 5, 4 to 6-drive RAID 6, 4-drive or 6-drive RAID 10.
8-bay NAS	1 to 8-drive single disk volume, JBOD, RAID 0, 2-drive RAID 1, 3 to 8-drive RAID 5, 4 to 8-drive RAID 6, 4-drive, 6-drive, or 8-drive RAID 10.

Migrating your NAS

Follow the steps below to perform system migration:

1. Turn off the source NAS and unplug the hard drives.

2. Remove the hard drives from the old trays and install them to the hard drive trays of the new NAS.
3. Plug the hard drives to the destination NAS (new model). Make sure the hard drives are installed in the original order.
4. Follow the instructions of the Quick Installation Guide (QIG) to connect the power supply and network cable(s) of the new NAS.
5. Turn on the new NAS. Login to the web administration interface as an administrator (the default login ID and password of the NAS are both "admin".)
6. If you are prompted to update the firmware of the new NAS, follow the instructions to download and install the firmware.
7. Click "Start Migrating". The NAS will restart after system migration. All the data and settings will be retained.

Caution: To avoid system damage or serious injuries, **the system migration procedure should be performed by an authorized server manager or IT administrator**.

Some system settings will be removed after system migration due to a different system design. Configure the following settings again on the new NAS:

- Windows AD
- Some Apps will need to be reinstalled.

3. QTS Basics and Desktop

QTS is a user-friendly NAS operating system designed to enhance every aspect of your NAS experience. With basic methods such as drag-and-drop or point and click, you can complete most NAS operations. Check the following links to learn more about QTS:

- Introducing QTS 37
- Using QTS Desktop 39

3.1 Introducing QTS

Built on a Linux foundation, QTS is shaped from an optimized kernel to deliver high-performance services that satisfy needs for file storage, management, backup, multimedia applications, surveillance, and more. The intuitive, multi-window and multi-tasking QTS GUI make it incredibly easy to manage your NAS, use its rich home applications, enjoy multimedia, and install more applications from an integrated App Center. QTS also adds value to business applications and effectively increase business efficiency with abundant features, including file sharing, iSCSI, virtualization, backup, privilege settings, and more. Coupled with various utilities and smart mobile apps, QTS is the ultimate platform for building a personal or private cloud, synchronizing data and sharing files.



*Click the above figure to learn more.

NAS for Home - Easily enrich home entertainment and content sharing

Tons of photos, music, videos and documents are often scattered across multiple computers in modern homes. QNAP NAS feature plenty of handy applications to let you smartly connect and manage your data and enjoy a truly digital life in a well-secured home network. No boundaries for multimedia sharing at home, and no boundaries for sharing content with family, and friends. Learn more about the exciting features that a QNAP NAS offers you:

- Intuitive GUI with Multi-Windows, Multi-Tasking, Multi-Application, Multi-Device access support
- Cross platform data storage, backup and sharing center
- Revolutionary music, photo and home video center
- Personal cloud storage
- Free and large capacity for Dropbox-style data sync
- Hundreds of install-on-demand applications from the App Center
- Energy-efficient & eco-friendly

NAS for Business - Efficiently optimize business IT infrastructure

IT efficiency, coupled with low total cost of ownership (TCO) is an essential factor for business competitiveness. QNAP NAS features advanced capabilities for keeping businesses running at maximum efficiency including business-critical applications, seamless file sharing, easy integration into existing networks, flexible virtualized IT environments, and more. Learn more about the compelling features that a QNAP NAS offers your business:

- Large data storage, backup and file sharing center
- Supports both scale-up and scale-out solutions for growing data needs
- Advanced storage management with dynamic thin-provisioning, SSD caching and JBOD expansion functions
- Trustworthy data security and data encryption
- Reliable IP SAN storage (iSCSI) as primary and secondary storage for virtualization environments
- Private cloud storage
- Free and large capacity for Dropbox-style data sync
- Hundreds of install-on-demand applications from the App Center
- Development Center for third-party partners to build apps for the NAS

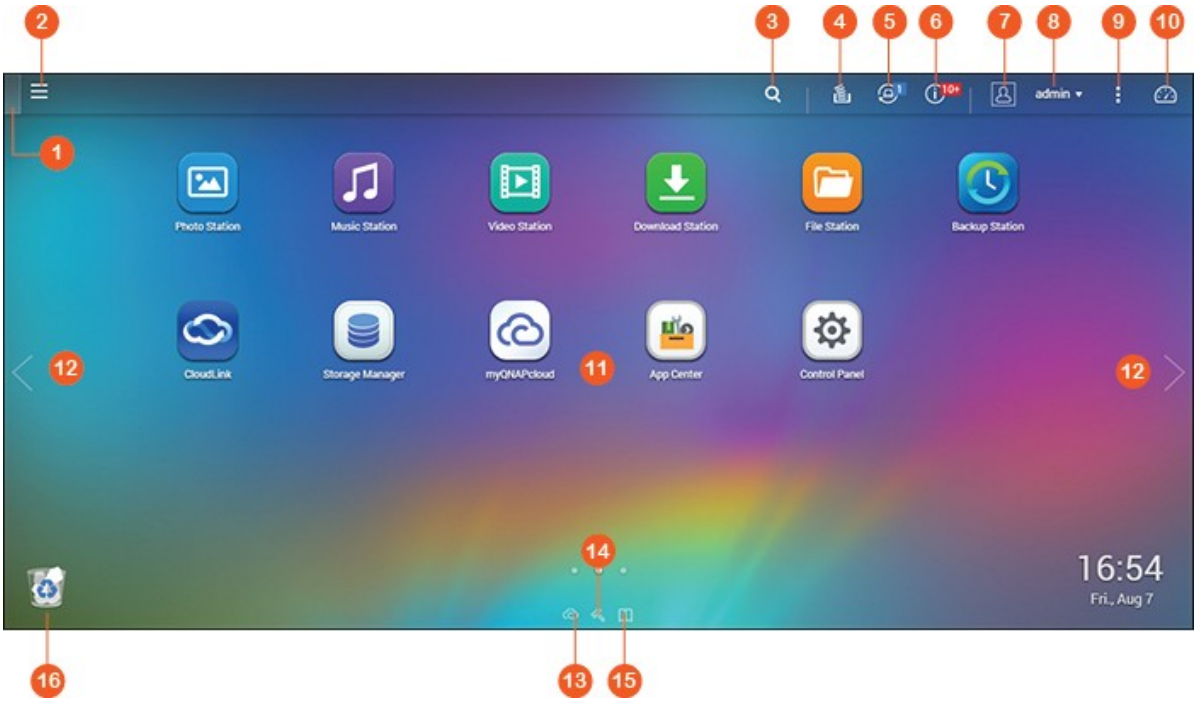
3.2 Using QTS Desktop

After you finish the basic setup and login to the NAS, the desktop will appear. Each main desktop feature is introduced in the following sections.

Topics covered in this chapter:

- QTS Desktop 39
- 2-step Verification 43

QTS Desktop



NO.	Name	Description
1	Show Desktop	Minimizes/restores all open windows.
2	Main Menu	Show the Main Menu. It includes three parts: 1) System features and settings (SYSTEMS): Key system features designed to manage or optimize your NAS; 2) QNAP applications (APPLICATIONS): Applications developed by QNAP to enhance your NAS experience; and

		3) Third-party applications: QNAP-approved applications designed and submitted by independent developers. Please note that the default Internet browser, instead of a window on the NAS Desktop, will be launched once you click a third-party application. Click the icon from the menu to launch the selected application.
3	Search	Enter a feature specific keyword in the search bar to search for the desired function and its corresponding online help. Click the result in the search bar to launch the function or open its online QTS help.
4	Background Task	Review and control (including pausing or postponing) all tasks running in the background (such as HDD SMART scanning, antivirus scanning, file backup or multimedia conversion.)
5	External Device	List all external storage devices and USB printers that are connected to the NAS via its USB or SATA ports. Click a listed device to open the File Station for that device. Click the "External Device" header to open the External Device page for relevant settings and operations (for details on File Station, refer to the File Station chapter.) Click the eject icon (up-arrow icon) to eject the external device.
6	Notification and Alert	Check for recent system error and warning notifications. Click "Clear All" to clear the list. To review all historical event notifications, click the "Event Notifications" header to open the System Logs. For details on System Logs, refer to the System Logs 134 chapter.
7	Options	• Profile: Specify your email address and change your profile picture. You can also check System Logs 134 and edit the Login Screen 49 here. • Wallpaper: Change the default wallpaper or upload your own wallpaper. • 2-step Verification: Enable 2-step Verification to enhance the security of user accounts. For details, refer to the 2-step Verification 43 section. • Change Password: Change your login password.

		• E-mail Account: Set the email address to use when sharing files via email in Music Station, Photo Station, Video Station, or File Station. • Miscellaneous: ○ Auto logout after an idle period of: Specify the idle period before the current user is automatically logged out. ○ Warn me when leaving QTS: Users will be prompted for confirmation each time they leave the QTS Desktop (such as clicking the browser back button or close the browser.) It is advised to check this option. ○ Reopen windows when logging back into QTS: Check this option, and all the current desktop settings (such as the "windows opened before your logout") will be kept after your next NAS login. ○ Show the desktop switching button: Check this option to hide the next desktop button (No. 12) and only display them when you move your mouse cursor close to the buttons. ○ Show the link bar on the desktop: Uncheck this option to hide the link bar (No. 13, No. 14 and No. 15.) ○ Show the Dashboard button: Uncheck this option to hide the Dashboard button (NO. 10). ○ Show the NAS time on the desktop: Uncheck this option to not display the NAS time in the bottom-right of the desktop. ○ Keep Main Menu open after selection: Keep the Main Menu pinned/unpinned on the desktop. ○ Show a list of actions when external storage devices are detected: Uncheck this option and the Autoplay dialog box will not appear after you plug in an external device.

8	Admin Control	Customize user-specific settings, change your user password, restart/shut down the NAS or log out your user account. • Last login time: The time the system was last logged in. • Options: Refer to No. 7 above. • Sleep: Puts your NAS into sleep mode. There are three ways to wake up the NAS: 1) Press the power button until you hear a beep; 2) Use the Wake-on-LAN (WOL) feature with QNAP Qfinder Pro or Qmanager. Note that to use the WOL must first be enabled in "Control Panel" > "Power" > "Wake-on-LAN (WOL)". For details, refer to here 108; 3) Press the power button on a RM-IR002 or MCE remote control. ○ **Note: This feature is only available on certain models.** • Restart: Restart your NAS. • Shutdown: Shut down your NAS. ○ **Note: To power off a NAS, you can also:** ▪ **Press and hold the power button on your NAS for 1.5 seconds.** ▪ **Run Qfinder Pro and click "Tools" > "Shut down Server".** • Logout: Log yourself out
9	More	• Help: Display a list of online references, including the Quick Start Guide, QTS Help and Tutorials. • Language: Choose your preferred language for the UI. • Desktop Preference: Choose the application icon display style and select your preferred application opening mode on the desktop. Application icons can be switched between small and detailed thumbnails. Applications can be opened in Tab Mode, Window Mode, or Frameless Mode. Only Tab Mode is available if you log into the NAS using a mobile device. ○ Tab Mode: In this mode, the window will be opened to fit the entire NAS Desktop and only one application window can be displayed at a time. ○ Window mode: In this mode, the application window can be resized and reshaped to a desirable style. ○ Frameless Mode: In this mode, applications will be opened without their frames. • Feedback: File a feature request and bug report.

		• About: Check the NAS model, firmware version, HDDs already installed and available (empty) bays.
10	Dashboard	Check important NAS statistics, including system and HDD health, resources, storage usage, online users, scheduled tasks, etc. Click the header within each widget to open its respective page.
11	Desktop Area	Remove or arrange all applications on the desktop, or drag one application icon over the top of another to put them in the same folder.
12	Next Desktop/ Last Desktop	Switch between desktops.
13	myQNAPcloud	Go to the myQNAPcloud website.
14	QNAP Utility	Check and download the latest and available NAS utilities.
15	Feedback	File a feature request and bug report.
16	Network Recycle Bin	All of the deleted items can be found in here. Right click on it to open the Network Recycle Bin, empty it (or permanently delete), or configure it (refer to the Network Recycle Bin 176 chapter for details.)

2-step Verification

2-step Verification enhances the security of user accounts. Once enabled, you will need to enter a one-time security code (6 digits) in addition to your password whenever you sign in to the NAS. 2-step verification requires a mobile device with an authenticator app which supports the Time-based One-Time password (TOTP) protocol. Supported apps include Google Authenticator (Android/iPhone/BlackBerry) or Authenticator (Windows Phone.)

Start 2-step verification

1. Install the authenticator App on your mobile device: For Android and iOS devices, install the Google Authenticator App from their respective App stores. For Windows Phone, install the Authenticator from its Store.
2. The system times of your mobile device and NAS must be synchronized. It is recommended to use the time provided from the Internet.
3. Go to "Options" > "2-step Verification" and click "Get Started". Complete the steps in the wizard to set up the NAS and your mobile device.
4. Configure your authenticator App by scanning the QR code or by entering the Secret Key into the App.
5. Enter the code generated from the app to the NAS to verify the correct configuration.
6. Select an alternative verification method by emailing you a security code or by answering a security question if you cannot use your mobile device. To email a security code, the SMTP server must be properly configured in "Control Panel" > "Notification" > "E-mail".

Sign in QTS with 2-step verification

After your username and password are verified, you will be promoted to enter a security code. Enter the code currently provided from the authenticator app to sign in to QTS. If you cannot use your mobile device or your device is lost, you can select "Verify another way" to sign in with your chosen alternative verification method.

Stop 2-step verification

If you want to disable 2-step verification, go to "Options" > "2-step Verification" and click "Stop". Administrators can disable 2-step verification for other NAS account users if they are locked out by going to "Control Panel" > "Users" > "Edit Account Profile"

If an administrator cannot use a mobile device to sign in to QTS and no other administrators are available to disable 2-step verification for the locked-out administrator, the NAS must be restored to factory settings by physically pressing the "RESET" button on the NAS.

Tip:

- All of the Dashboard widgets can be dragged onto the desktop for monitoring specific details.
- The Dashboard will be presented differently on different screen resolutions.

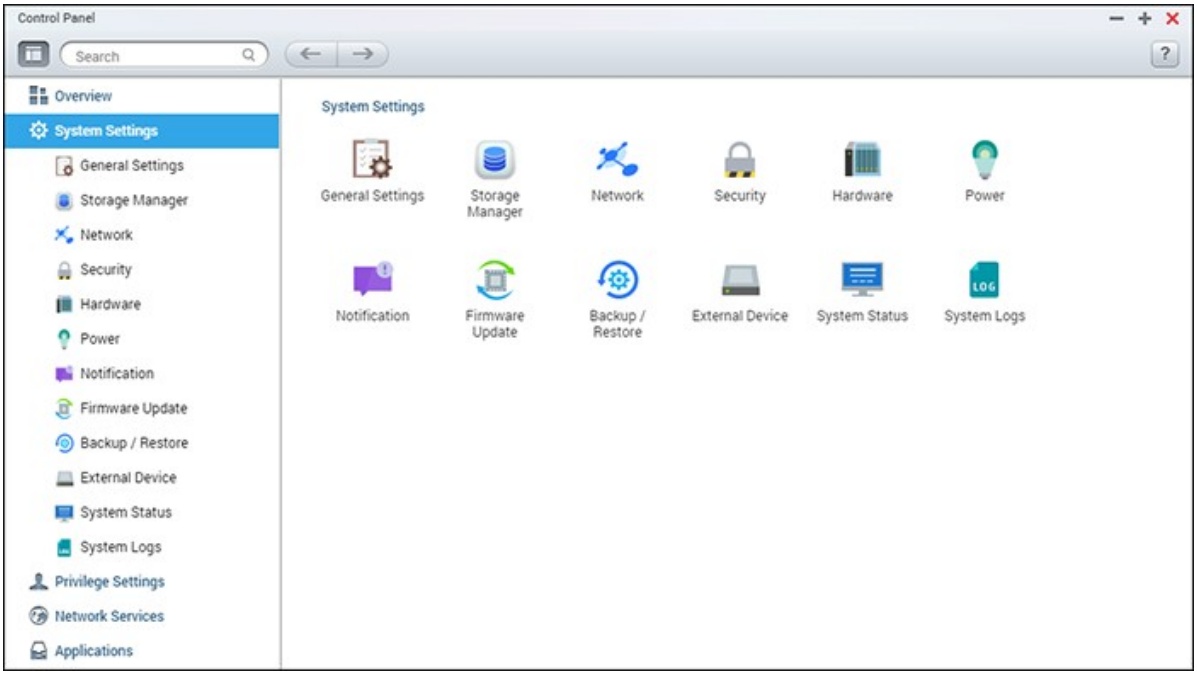
- The color of the Dashboard button will change based on the status of system health for quick recognition.

Note:

- The recommended minimum screen resolution for QTS 4.x is 1024x768.
- The sleep function will automatically be disabled if the NAS has QNAP expansion enclosure(s) connected to it.

4. System Settings

Go to "Control Panel" > "System Settings" to set up your NAS.

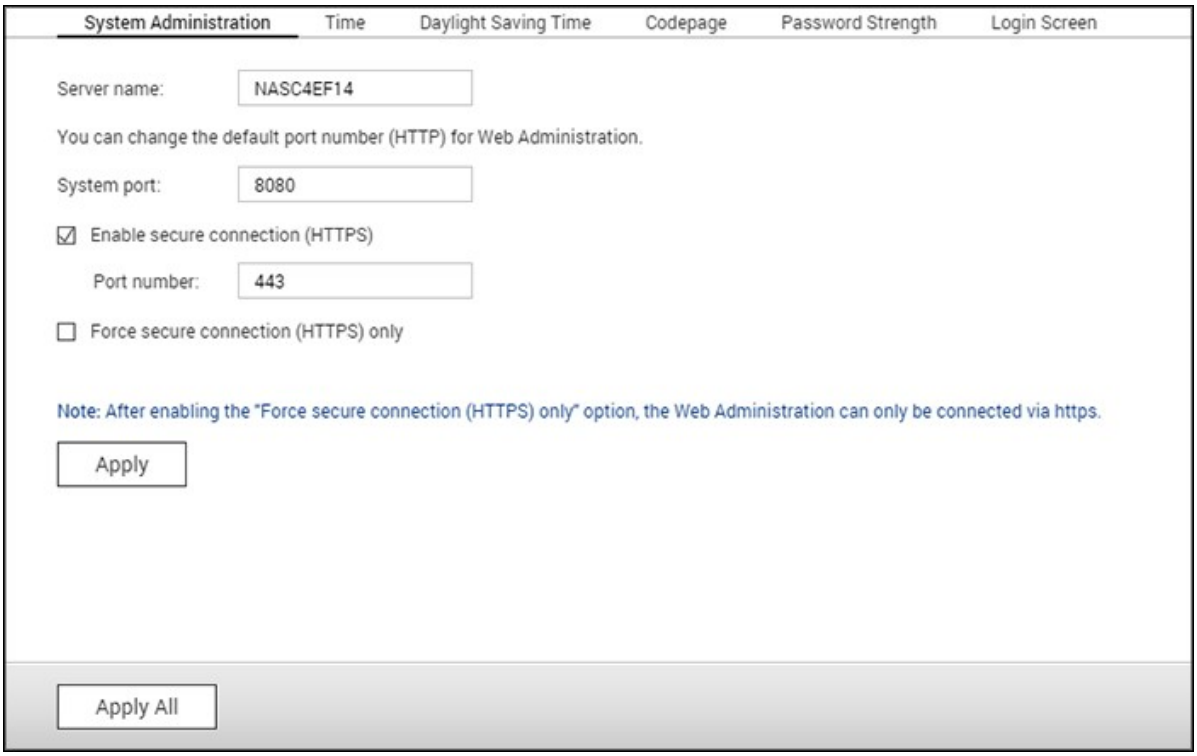


For details on the settings, refer to the following links:

- General Settings 47
- Storage Manager 50
- Network 91
- Security 102
- Hardware 104
- Power 107
- Notification 110
- Firmware Update 113
- Backup/Restore 115
- External Device 117
- System Status 132
- System Logs 134

4.1 General Settings

Go to "Control Panel" > "System Settings" > "General Settings" to configure basic settings of the NAS.



Topics covered in this chapter:

- System Administration 47
- Time 48
- Daylight Saving Time 48
- Codepage 49
- Password Strength 49
- Login Screen 49

System Administration

- **Basic Settings:** Enter the name of the NAS. The NAS name supports maximum 14 characters and can be a combination of letters (a-z, A-Z), numbers (0-9), and dash (-.) Space ( ), period (.), or pure numbers are not allowed. Enter a port number for system management. The default port is 8080. The services which use this port include: System Management, Photo Station, Music Station, File Station and Download Station. If you are not sure about this setting, use the default port

number.

- **Enable Secure Connection (HTTPS):** Allows users to connect to the NAS by HTTPS. Enable secure connection (HTTPS) and enter the port number. If the option "Force secure connection (HTTPS) only" is enabled, users can only connect to the web administration page by HTTPS.
- **Disable and hide the home/multimedia features such as Photo Station, Music Station, Surveillance Station, Download Station, iTunes server, and DLNA media server:** Multimedia features, including Photo Station, Music Station, Video Station (both 2.0 and 1.0.5), Surveillance Station, Download Station, DJ Station, iTunes server, Media Library and DLNA media server, may be hidden or disabled by default on the following NAS models: x70U, x79 Pro, x79U. To enable the multimedia features for those models, uncheck this option.

Time

- **Basic time settings:** Adjust the date, time, and time zone according to the location of the NAS. If the settings are incorrect, the following problems may occur:
  - When using a web browser to connect to the NAS or save a file, the display time of the action will be incorrect.
  - The time of the event logs will be inconsistent with the actual time when an action occurs.
- **Manual Setting:** To synchronize the time of the NAS with the computer time, click "Update now" next to this option.
- **Synchronize with an Internet time server automatically:** Enable this option to synchronize the date and time of the NAS automatically with an NTP (Network Time Protocol) server. Enter the IP address or domain name of the NTP server, for example, time.nist.gov, time.windows.com. Then enter the time interval for synchronization. This option can be used only when the NAS is connected to the Internet.

Note: First time synchronization may take several minutes to complete.

Daylight Saving Time

If your region uses daylight saving time (DST), enable "Adjust system clock automatically for daylight saving time" and click "Apply". The latest DST schedule of the time zone specified in the "Time" section will be shown. The system time will be adjusted

automatically according to the DST. Note that if your region does not adopt DST, the options on this page will not be available. To manually enter the DST table, select the option "Enable customized daylight saving time table". Click "Add Daylight Saving Time Data", enter the daylight saving time schedule, and click "Apply" to save the settings.

Codepage

Select the language the NAS uses to display files and directories.

Note: All of the files and directories on the NAS use Unicode encoding. If your FTP clients or PC OS does not support Unicode, select the language which is the same as the OS language in order to properly view files and directories on the NAS.

Password Strength

Specify the password rules. After applying the setting, the NAS will automatically check the validity of the password.

Login Screen

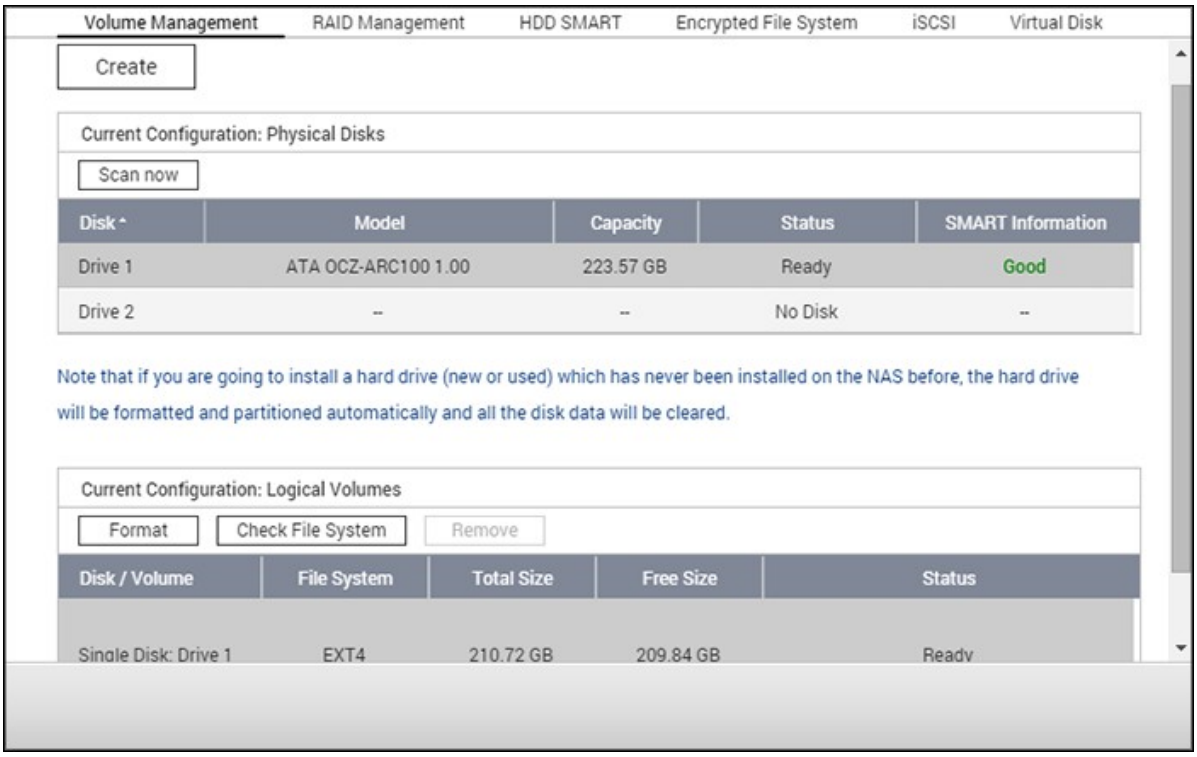
Set the login screen style. Settings available on this page include:

- Login screen template: Select the preferred login screen style. If you choose the classic login screen style, you can click "Preview" at the bottom before applying your settings.
- Show firmware version: Show the firmware version on the login page.
- Show the link bar: Show/hide shortcut links (QNAP utilities, myQNAPcloud portal site, and Feedback) on the login screen.
- Photo Wall: This part of the settings is only for the Photo Wall style login screen. Enter a personal message and choose to randomly select 100 photos stored on the NAS or display 100 photos that were recently shared. Click "Change Picture" to set a picture for your profile photo on the photo wall. Or user your profile picture. Click "Preview" to preview the photo wall login screen or "Apply" to apply the settings. To change the pictures shown on the photo wall, check the Creating and managing album section.

After you finish the above settings, click "Preview" to preview the chosen template or "Apply" to apply the chosen login screen.

4.2 Storage Manager

Manage volumes and RAID systems, monitor hard drive health, encrypt/decrypt file systems, and configure iSCSI systems and virtual disks with Storage Manager.



For storage management features, refer to the following links:

- Volume Management 51
- RAID Management 54
- Hard Disk S.M.A.R.T 67
- Encrypted File System 68
- iSCSI 72
- Virtual Disk 89

4.2.1 Volume Management

This page shows the model, size, and current status of the hard drives on the NAS. You can format, check, and scan for bad blocks on the hard drives.

Topics covered in this chapter:

- Default Shared Folders 51
- Overview on RAID Systems 51
- Disk Configuration and NAS Models 52

Default Shared Folders

When the hard drives are formatted, the NAS will create the following default share folders:

- home: The user's home folder.
- Public: The default shared folder for file sharing by everyone.
- Qdownload/Download: The shared folder for Download Station.
- Qmultimedia/Multimedia: The shared folder for Multimedia Station.
- Qusb/Usb: The shared folder for data copy function using USB ports.
- Qweb/Web: The shared folder for Web Server.
- Qrecordings/Recordings: The shared folder for Surveillance Station.

Note:

- The default shared folders of the NAS are created on the first disk volume and the directory cannot be changed.
- Depending on the NAS model, some of the above shared folders may not be created by default by the NAS.
- We recommend formatting disk volumes larger than 2TB using the EXT4 file system.

Overview on RAID Systems

- **Single Disk Volume:** Every hard drive is used as a standalone disk. If a hard drive is damaged, all the data will be lost.
- **JBOD (Just a bunch of disks)**: A collection of hard drives that does not offer any RAID protection. The data is written to the physical disks sequentially. The total

storage capacity is equal to the sum of the capacity of all member hard drives.

- **RAID 0 Striping Disk Volume**: RAID 0 (striping disk) combines 2 or more hard drives into one larger volume. The data is written to the hard drive without any parity information and no redundancy is offered. The total storage capacity of a RAID 0 disk volume is equal to the sum of the capacity of all member hard drives.
- **RAID 1 Mirroring Disk Volume**: RAID 1 duplicates the data between two hard drives to provide disk mirroring. To create a RAID 1 array, a minimum of 2 hard drives are required. The storage capacity of a RAID 1 disk volume is equal to the size of the smallest hard drive.
- **RAID 5 Disk Volume**: The data is striped across all the hard drives in a RAID 5 array. The parity information is distributed and stored across each hard drive. If a member hard drive fails, the array enters degraded mode. After installing a new hard drive to replace the failed one, the data can be rebuilt from other member drives that contain the parity information. To create a RAID 5 disk volume, a minimum of 3 hard drives are required. The storage capacity of a RAID 5 array is equal to (N-1) * (size of smallest hard drive.) N is the number of hard drives in the array.
- **RAID 6 Disk Volume**: The data is striped across all of the hard drives in a RAID 6 array. RAID 6 differs from RAID 5 that a second set of parity information is stored across the member drives in the array. It tolerates the failure of two hard drives. To create a RAID 6 disk volume, a minimum of 4 hard drives are required. The storage capacity of a RAID 6 array is equal to (N-2) * (size of smallest hard drive.) N is the number of hard drives in the array.
- **RAID 10 Disk Volume**: RAID 10 combines four or more disks in a way that protects data against loss of non-adjacent disks. It provides security by mirroring all data on a secondary set of disks while using striping across each set of disks to speed up data transfers. RAID 10 requires an even number of hard drives (a minimum of 4.) The storage capacity of a RAID 10 disk volume is equal to (size of the smallest capacity disk in the array) * N/2. N is the number of hard drives in the volume.

Disk Configuration and NAS Models

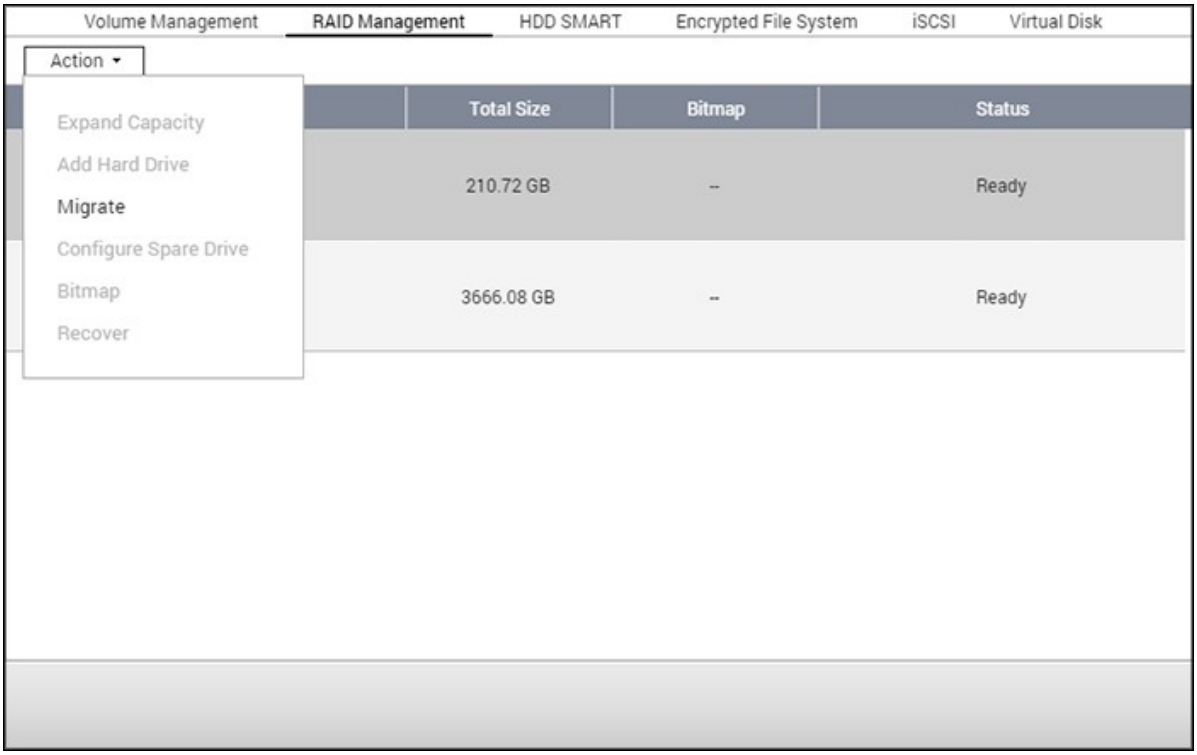
For disk configuration and applied NAS models, please refer to the table below:

Disk Configuration	Applied NAS Models
Single disk volume	All models
RAID 1, JBOD (just a bunch of disks)	2-drive models or above
RAID 5, RAID 6, RAID 5+hot spare	4-drive models or above

RAID 6+hot spare	5-drive models or above
RAID 10	4-drive models or above
RAID 10+hot spare	5-drive models or above

4.2.2 RAID Management

On this page, you can perform online RAID capacity expansion (RAID 1, 5, 6, 10) and online RAID level migration (single disk, RAID 1, 5, 10), add a hard drive member to a RAID 5, 6, or 10 configuration, configure a spare hard drive (RAID 5, 6, 10) with the data retained, enable Bitmap, recover a RAID configuration, and set a global spare.



To expand the storage capacity of a RAID 10 volume, you can perform online RAID capacity expansion or add an even number of hard disk drives to the volume.

Topics covered in this chapter:

- Expanding Capacity 55
- Adding Hard Drives 57
- Configuring Spare Drives 58
- Bitmap 59
- RAID Recovery 59
- Setting/Canceling Global Spare 61
- Further Information about RAID Management 61

Note: Online RAID capacity expansion, online RAID level migration, and RAID recovery are not supported by one-bay NAS models, the TS-210, and TS-212.

Expanding Capacity (Online RAID Capacity Expansion)

Scenario

You bought three 250GB hard drives for initial setup of a TS-509 Pro NAS and configured RAID 5 disk configuration with the three hard drives.

A half year later, the data size of the department has largely increased to 1.5TB. In other words, the storage capacity of the NAS is running out of use. At the same time, the price of 1TB hard drives has dropped to a large extent.

Operation procedure

In "Storage Manager" > "RAID Management", select the disk volume for expansion and click "Action" > "Expand Capacity".

Click "Change" for the first hard drive to be replaced. Follow the instructions to proceed.

1. When the description displays "Please remove this drive", remove the hard drive from the NAS. Wait for the NAS to beep twice after removing the hard drive.
2. When the description displays "Please insert the new drive", plug in the new hard drive to the drive slot.
3. After plugging in the hard drive, wait for the NAS to beep. The system will start rebuilding.
4. After rebuilding has completed, repeat the steps above to replace other hard drives.
5. After changing the hard drives and disk rebuilding has completed, click "Expand Capacity" to execute RAID capacity expansion.
6. Click "OK" to proceed.
7. The NAS beeps and starts to expand the capacity.

Tip: After replacing the hard drive, the description field shows "You can replace this drive". This means you can replace the hard drive to a larger one or skip this step if the hard drives have been replaced already.

Caution: When the hard drive synchronization is in process, **Do NOT turn off the NAS or plug in or unplug the hard disk drives.**

The process may take from hours to tens of hours to finish depending on the drive size. Do NOT turn off the NAS during this process.

After RAID capacity expansion has finished, the new capacity is shown and the status is "Ready". You can start to use the NAS. (In the example you have 1.8TB logical volume.)

Tip: If the description still shows "You can replace this hard drive" and the status of the drive volume says "Ready", it means the RAID volume is still expandable.

Note:

- If you have a hot spare drive set up in a RAID configuration, remember to manually remove that drive before expanding a RAID Volume or adding a drive to that volume.
- Starting with QTS 4.1.1, the maximum volume capacity supported for online RAID capacity expansion in ARM-based NAS models is 16TB. For previous versions, the maximum volume capacity supported is 8TB.

Online RAID Level Migration

During the initial setup of the TS-509 Pro, you bought a 250GB hard drive and configured it as a single disk. The TS-509 Pro is used as a file server for data sharing across departments. After six months an increasing amount of data is being saved on the TS-509 Pro. There are growing concerns regarding the hard drive capacity and health. Therefore, you planned to upgrade the disk configuration to RAID 5. You can install one hard drive for setting up the TS-509 Pro and upgrade the RAID level of the NAS with online RAID level migration in the future. The migration process can be done without turning off the NAS. All of the data will be retained.

You can do the following with online RAID level migration:

- Migrate the system from single disk to RAID 1, RAID 5, RAID 6 or RAID 10
- Migrate the system from RAID 1 to RAID 5, RAID 6 or RAID 10
- Migrate the system from RAID 5 with 3 hard drives to RAID 6

You need to:

- Prepare a hard drive of the same or larger capacity as an existing drive in the RAID configuration.
- Execute RAID level migration (migrate the system from single disk mode to RAID 5 with 4 hard drives.)

1. Go to "Storage Manager" > "Volume Management". The current disk volume configuration displayed on the page is single disk (the capacity is 250GB.)
2. Plug in the new hard drives to drive slots 2 and 3 of NAS. The NAS will detect the

new hard drives. The status of the new hard drives is "Unmounted".
3. Go to "Storage Manager" > "RAID Management", click "Action" > "Migrate".
4. Select one or more available drives and the migration method. The drive capacity after migration is shown. Click "Migrate".
5. Note that all the data on the selected hard drive will be cleared. Click "OK" to confirm.
6. When migration is in process, the required time and total drive capacity after migration are shown in the description field.
7. The NAS will enter "Read only" mode when migration is in process during 11%–49% to assure the data of the RAID configuration will be consistent after RAID migration completes.
8. After migration completes, the new drive configuration (RAID 5) is shown and the status is Ready. You can start to use the new drive configuration.

The process may take from hours to tens of hours to finish depending on the hard drive size. You can connect to the web page of the NAS to check the status later.

Online RAID Capacity Expansion

Scenario

You had a tight schedule to set up a file server and an FTP server. However, you had only one 250GB hard drive. Therefore, you set up the TS-509 Pro with a single disk configuration. The original plan was to set up a 3TB RAID 5 network data center with the TS-509 Pro. You now plan to upgrade the disk configuration of the TS-509 Pro to RAID 5 and expand the total storage capacity to 3TB with all the original data retained after the hard drives are purchased. Using online RAID level migration to migrate the system from single disk to RAID 5 the total storage capacity will be 750GB (with one 250GB hard drive and three 1TB hard drives, the disk usage will be 250GB*4 for RAID 5.) You can refer to the previous step for the operation procedure.

Use online RAID capacity expansion to replace the 250GB hard drive with a new 1TB hard drive, and then expand the logical volume from 750GB to 3TB of RAID 5. You can refer to the previous step for the operation procedure.

Adding Hard Drives

Follow the steps below to add a hard drive member to a RAID 5 or RAID 6 disk configuration.

1. Make sure the status of the RAID 5 or RAID 6 configuration is "Ready".
2. Install a hard drive on the NAS. If you have a hard drive which has already been formatted as single disk volume on the NAS, you can add this hard drive to the RAID 5 or RAID 6 configuration. It is recommended to use hard disk drives with the same capacity for the RAID configuration.
3. Select the RAID 5 or RAID 6 configuration on the "RAID Management" page and click "Add Hard Drive".
4. Select the new hard drive. The total drive capacity after adding the drive will be shown. Click "Add Hard Drive."
5. All the data on the new hard drive will be deleted during this process. The data on the original RAID 5 or RAID 6 configuration will be retained. Click "OK". The NAS will beep twice.

To add hard drives to a RAID 10 disk volume, repeat the above steps. Note that you need to add an even number of hard disk drives to a RAID 10 volume. The storage capacity of the RAID 10 volume will increase upon successful configuration.

This process may take a few hours to tens of hours to complete depending on the number and the size of the hard drive. Do NOT turn off the NAS during this process. You can use a RAID configuration of larger capacity after the process.

Configuring Spare Drives

You can add a spare drive to or remove a spare drive from a RAID 5, 6, or 10 configuration.

Follow these steps to use this feature.

1. Make sure the status of the RAID 5, 6, 10 configuration is "Ready".
2. Install a hard drive in the NAS. If you have a hard drive which has already been formatted as single disk volume on the NAS, you can configure this hard drive as the spare drive. It is recommended to use hard disk drives with the same storage capacity for RAID configuration.
3. Select the RAID volume and click "Configure Spare Drive."
4. To add a spare drive to the selected configuration, select the hard drive and click "Configure Spare Drive." To remove a spare drive, unselect the spare drive and click "Configure Spare Drive."
5. All the data on the selected hard drive will be deleted. Click "OK" to proceed.

The original data on the RAID 5, 6, or 10 disk volume will be retained. After the configuration completes, the status of the disk volume will become "Ready".

Note: A hot spare drive must be removed from the disk volume before executing the following action:

- Online RAID capacity expansion
- Online RAID level migration
- Adding a hard drive member to a RAID 5, RAID 6 or RAID 10 volume

Bitmap

Bitmap improves the time for RAID rebuilding after an unexpected error, or removing or re-adding a hard drive from/to a RAID configuration. If an array has a bitmap, the member hard drive can be removed and re-added and only block changes since the removal (as recorded in the bitmap) will be re-synchronized. To use this feature, select a RAID volume and click "Action" > "Bitmap".

Note: Bitmap support is only available for RAID 1, 5, 6, and 10.

RAID Recovery

RAID Recovery: If the NAS is configured as RAID 1, RAID 5, or RAID 6 hard drives are accidentally unplugged from the NAS, you can plug in the same hard drives into the same drive slots and click "Recover" to recover the volume status from "Not active" to "Degraded mode".

If the disk volume is configured as RAID 0 or JBOD and one or more of the hard drive members are disconnected or unplugged, you can plug in the same hard drives into the same drive slots and use this function to recover the volume status from "Not active" to "Normal". The disk volume can be used normally after successful recovery.

Disk volume	Supports RAID recovery	Maximum number of disk removal allowed
Single	No	-
JBOD	Yes	1 or more
RAID 0	Yes	1 or more

RAID 1	Yes	1 or 2
RAID 5	Yes	2 or more
RAID 6	Yes	3 or more
RAID 10	No	-

Note:

- After recovering a RAID 1, RAID 5 or RAID 6 disk volume from not active to degraded mode by the RAID recovery, you can read or write the volume normally. The volume status will be recovered to normal after synchronization.
- If the disconnected drive is damaged, the RAID recovery function will not work.

	Standard RAID 5	**QNAP RAID 5**	**Standard RAID 6**	**QNAP RAID 6**
Degraded mode	N-1	N-1	N-1 & N-2	N-1 & N-2
Read Only Protection (for immediate data backup & hard drive replacement)	N/A	N-1, bad blocks found in the surviving hard drives of the array.	N/A	N-2, bad blocks found in the surviving hard drives of the array.
RAID Recovery (RAID Status: Not Active)	N/A	If re-plugging in all original hard drive to the NAS and they can be spun up, identified, accessed, and the hard drive superblock is not damaged.	N/A	If re- plugging in all original hard drives to the NAS and they can be spun up, identified, accessed, and the hard drive superblock is not damaged.)

RAID Crash	N-2	N-2 failed hard drives and any of the remaining hard drives cannot be spun up/identified/ accessed.	N-3	N-3 and any of the remaining hard drives cannot be spun up/identified/ accessed.

N = Number of hard disk drives in the array

Setting/Canceling Global Spare

A global spare drive replaces a failed hard drive in any RAID 1, 5, 6, 10 disk volumes on the NAS automatically. When the same global spare drive is shared by multiple RAID volumes on the NAS, the spare drive will replace the first failed drive in a RAID volume.

To set a disk drive as a global spare drive, select the single disk volume and click "Action" > "Set Global Spare". **All the disk data will be cleared on the hard drive.**

Note: The capacity of the global spare drive must be equal to or larger than that of a member drive of a RAID disk volume.

To cancel a global spare drive, select the drive and click "Action" > "Cancel Spare Drive".

Further Information about RAID Management of the NAS

The NAS supports the following actions according to the number of hard disk drives and disk configurations supported. Refer to the following table for details.

Original Disk Configuration * No. of Hard Disk Drives	No. of New Hard Disk Drives	Action	New Disk Configuration * No. of Hard Disk Drives
RAID 5 * 3	1	Add hard drive member	RAID 5 * 4
RAID 5 * 3	2	Add hard drive member	RAID 5 * 5

RAID 5 * 3	3	Add hard drive member	RAID 5 * 6
RAID 5 * 3	4	Add hard drive member	RAID 5 * 7
RAID 5 * 3	5	Add hard drive member	RAID 5 * 8
RAID 5 * 4	1	Add hard drive member	RAID 5 * 5
RAID 5 * 4	2	Add hard drive member	RAID 5 * 6
RAID 5 * 4	3	Add hard drive member	RAID 5 * 7
RAID 5 * 4	4	Add hard drive member	RAID 5 * 8
RAID 5 * 5	1	Add hard drive member	RAID 5 * 6
RAID 5 * 5	2	Add hard drive member	RAID 5 * 7
RAID 5 * 5	3	Add hard drive member	RAID 5 * 8
RAID 5 * 6	1	Add hard drive member	RAID 5 * 7
RAID 5 * 6	2	Add hard drive member	RAID 5 * 8
RAID 5 * 7	1	Add hard drive member	RAID 5 * 8
RAID 6 * 4	1	Add hard drive member	RAID 6 * 5
RAID 6 * 4	2	Add hard drive member	RAID 6 * 6

RAID 6 * 4	3	Add hard drive member	RAID 6 * 7
RAID 6 * 4	4	Add hard drive member	RAID 6 * 8
RAID 6 * 5	1	Add hard drive member	RAID 6 * 6
RAID 6 * 5	2	Add hard drive member	RAID 6 * 7
RAID 6 * 5	3	Add hard drive member	RAID 6 * 8
RAID 6 * 6	1	Add hard drive member	RAID 6 * 7
RAID 6 * 6	2	Add hard drive member	RAID 6 * 8
RAID 6 * 7	1	Add hard drive member	RAID 6 * 8
RAID 10 * 4	2	Add hard drive member	RAID 10 * 6
RAID 10 * 4	4	Add hard drive member	RAID 10 * 8
RAID 10 * 6	2	Add hard drive member	RAID 10 * 8
RAID 1 * 2	1	Online RAID capacity expansion	RAID 1 * 2
RAID 5 * 3	1	Online RAID capacity expansion	RAID 5 * 3
RAID 5 * 4	1	Online RAID capacity expansion	RAID 5 * 4
RAID 5 * 5	1	Online RAID capacity expansion	RAID 5 * 5

RAID 5 * 6	1	Online RAID capacity expansion	RAID 5 * 6
RAID 5 * 7	1	Online RAID capacity expansion	RAID 5 * 7
RAID 5 * 8	1	Online RAID capacity expansion	RAID 5 * 8
RAID 6 * 4	1	Online RAID capacity expansion	RAID 6 * 4
RAID 6 * 5	1	Online RAID capacity expansion	RAID 6 * 5
RAID 6 * 6	1	Online RAID capacity expansion	RAID 6 * 6
RAID 6 * 7	1	Online RAID capacity expansion	RAID 6 * 7
RAID 6 * 8	1	Online RAID capacity expansion	RAID 6 * 8
RAID 10 * 4	1	Online RAID capacity expansion	RAID 10 * 4
RAID 10 * 6	1	Online RAID capacity expansion	RAID 10 * 6
RAID 10 * 8	1	Online RAID capacity expansion	RAID 10 * 8
Single * 1	1	Online RAID level migration	RAID 1 * 2
Single * 1	2	Online RAID level migration	RAID 5 * 3
Single * 1	3	Online RAID level migration	RAID 5 * 4
Single * 1	4	Online RAID level migration	RAID 5 * 5

Single * 1	5	Online RAID level migration	RAID 5 * 6
Single * 1	6	Online RAID level migration	RAID 5 * 7
Single * 1	7	Online RAID level migration	RAID 5 * 8
Single * 1	3	Online RAID level migration	RAID 6 * 4
Single * 1	4	Online RAID level migration	RAID 6 * 5
Single * 1	5	Online RAID level migration	RAID 6 * 6
Single * 1	6	Online RAID level migration	RAID 6 * 7
Single * 1	7	Online RAID level migration	RAID 6 * 8
Single * 1	3	Online RAID level migration	RAID 10 * 4
Single * 1	5	Online RAID level migration	RAID 10 * 6
Single * 1	7	Online RAID level migration	RAID 10 * 8
RAID 1 * 2	1	Online RAID level migration	RAID 5 * 3
RAID 1 * 2	2	Online RAID level migration	RAID 5 * 4
RAID 1 * 2	3	Online RAID level migration	RAID 5 * 5
RAID 1 * 2	4	Online RAID level migration	RAID 5 * 6

RAID 1 * 2	5	Online RAID level migration	RAID 5 * 7
RAID 1 * 2	6	Online RAID level migration	RAID 5 * 8
RAID 1 * 2	2	Online RAID level migration	RAID 6 * 4
RAID 1 * 2	3	Online RAID level migration	RAID 6 * 5
RAID 1 * 2	4	Online RAID level migration	RAID 6 * 6
RAID 1 * 2	5	Online RAID level migration	RAID 6 * 7
RAID 1 * 2	6	Online RAID level migration	RAID 6 * 8
RAID 1 * 2	2	Online RAID level migration	RAID 10 * 4
RAID 1 * 2	4	Online RAID level migration	RAID 10 * 6
RAID 1 * 2	6	Online RAID level migration	RAID 10 * 8
RAID 5 * 3	1	Online RAID level migration	RAID 6 * 4
RAID 5 * 3	2	Online RAID level migration	RAID 6 * 5
RAID 5 * 3	3	Online RAID level migration	RAID 6 * 6
RAID 5 * 3	4	Online RAID level migration	RAID 6 * 7
RAID 5 * 3	5	Online RAID level migration	RAID 6 * 8

4.2.3 Hard Disk S.M.A.R.T

Monitor the hard disk drives (HDD) health, temperature, and the usage status by HDD S.M.A.R.T. (Self-Monitoring Analysis and Reporting Technology.)

The following information of each hard drive on the NAS is available.

Field	Description
Summary	Displays the hard drive S.M.A.R.T. summary and the latest test result.
Hard disk information	Displays the hard drive details (model, serial number, HDD capacity, etc.)
SMART information	Displays the hard drive S.M.A.R.T. information. Any drives with values lower than the threshold are regarded as abnormal.
Test	Perform quick or complete hard drive S.M.A.R.T. tests.
Settings	Configures the temperature alarm. When a hard drive temperature exceeds the preset values, the NAS records the error logs. You can also set quick and complete test schedules. The latest test result is shown on the Summary page.

4.2.4 Encrypted File System

On this page, you can manage encrypted disk volumes on the NAS. Each encrypted disk volume is locked by a particular key. The encrypted volume can be unlocked by the following methods:

- Encryption Password: Enter the encryption password to unlock the disk volume. The default password is "admin". The password must be 8-16 characters long. Symbols (! @ # $ % ^ & * ( )_+ = ?) are supported.
- Encryption Key File: Upload the encryption file to the NAS to unlock the disk volume. The key can be downloaded from the "Encryption Key Management" page after the disk volume has been unlocked successfully.

Data encryption functions may be unavailable in accordance with legislative restrictions of some countries (Russia, Belarus, Ukraine, Kazakhstan, Uzbekistan, etc.)

Topics covered in this chapter:

- Data Encryption on the NAS 68
- Before you Start 69
- Creating New Encrypted Disk Volumes 69
- Encryption Verification 70
- Behavior of Encrypted Volumes upon System Reboot 70
- Encryption Key Management 70
- Unlocking Disk Volumes Manually 71

Data Encryption on the NAS

NAS disk volumes can be encrypted using 256-bit AES encryption to provide data breach protection. Encrypted disk volumes can only be mounted for normal read/write access with the authorized password. Encryption protects confidential data from unauthorized access even if the hard drives or the entire NAS were stolen.

About AES encryption:

In cryptography, the Advanced Encryption Standard (AES) is an encryption standard adopted by the U.S. government. The standard comprises three block ciphers, AES-128, AES-192 and AES-256 […]. Each AES cipher has a 128-bit block size, with key sizes of 128, 192 and 256 bits, respectively. The AES ciphers have been analyzed extensively and are now used worldwide. (Source: http://en.wikipedia.org/wiki/Advanced_Encryption_Standard)

AES volume-based encryption is applicable only to specific NAS models. Refer to the comparison table at: http://www.qnap.com/images/products/comparison/Comparison_NAS.html

Before you Start

Please be aware of the following before using data encryption on the NAS.

- NAS encryption is volume-based. A volume can be a single disk, a JBOD configuration, or a RAID array.
- Select whether or not to encrypt a disk volume before it is created on the NAS. You will not be able to encrypt a volume after it has been created unless the disk volume is initialized. Note that initializing a disk volume will clear all the disk data.
- Disk volume encryption cannot be removed without initialization. To remove the encryption on the disk volume, you have to initialize the disk volume and all of the data will be cleared.
- Keep the encryption password or key safe. If you forget the password or lose the encryption key, you will not be able to access the data.
- Before you start, read the instructions carefully and strictly adhere to the instructions.

Creating New Encrypted Disk Volumes

If the NAS has been installed, follow these steps to create a new encrypted disk volume by installing new hard drives in the NAS:

1. Install the new hard drive(s) in the NAS.
2. Login to the NAS as an administrator. Go to Storage Manager" > "Volume Management".
3. Click "Create".
4. Select the disk volume you want to configure according to the number of new hard drives.
5. Check the drive for the intended volume.
6. Select "Yes" for the "Encryption" option and enter the encryption settings. Then click "Create" to create the new encrypted volume.

All of the data on the selected drives will be DELETED! Back up your data before creating an encrypted volume.

You have created an encrypted disk volume on the NAS.

Encryption Verification

To verify the disk volume is encrypted, login to the NAS as an administrator. Go to "Storage Manager" > "Volume Management". You will be able to see the encrypted disk volume, with a lock icon in the Status column. The lock will be open if the encrypted volume has been unlocked. A disk volume without the lock icon in the Status column is not encrypted.

Behavior of Encrypted Volumes upon System Reboot

In this example, we have two encrypted disk volumes on the NAS.

- The first volume (Single Disk Drive 1) has been created with the option "Save Encryption Key" disabled.
- The second volume (Single Disk Drive 4) has been created with the option "Save Encryption Key" enabled.

After restarting the NAS, check the volume status. The first drive has been unlocked and mounted but the second drive is locked. Since the encryption key is not saved on the second disk volume, you have to manually enter the encryption password to unlock it.

- Saving the key on the NAS will protect you only if your hard drives are stolen. However, there is a risk of data breach if the entire NAS is stolen as the data is accessible after restarting the NAS.
- If you do not save the encryption key on the NAS, your NAS will be protected against data breach even if the entire NAS were stolen. The disadvantage is that you have to unlock the disk volume manually on each system restart.

Encryption Key Management

To manage encryption key settings, login to the NAS as an administrator and go to Storage Manager" > "Encrypted File System".
There are four options to manage the encryption key:

- Change the encryption key: Input your old encryption password and input the new password. (After the password is changed, any previously exported keys will not work. You must download the new encryption key if necessary.)
- Download Encryption Key File: Input the encryption password to download the encryption key file. Downloading the encryption key file will allow you to save the encryption key in a file. The file is also encrypted and can be used to unlock a

volume, without knowing the real password (see "unlock a disk volume manually" below.) Save the encryption key file in a secure place!

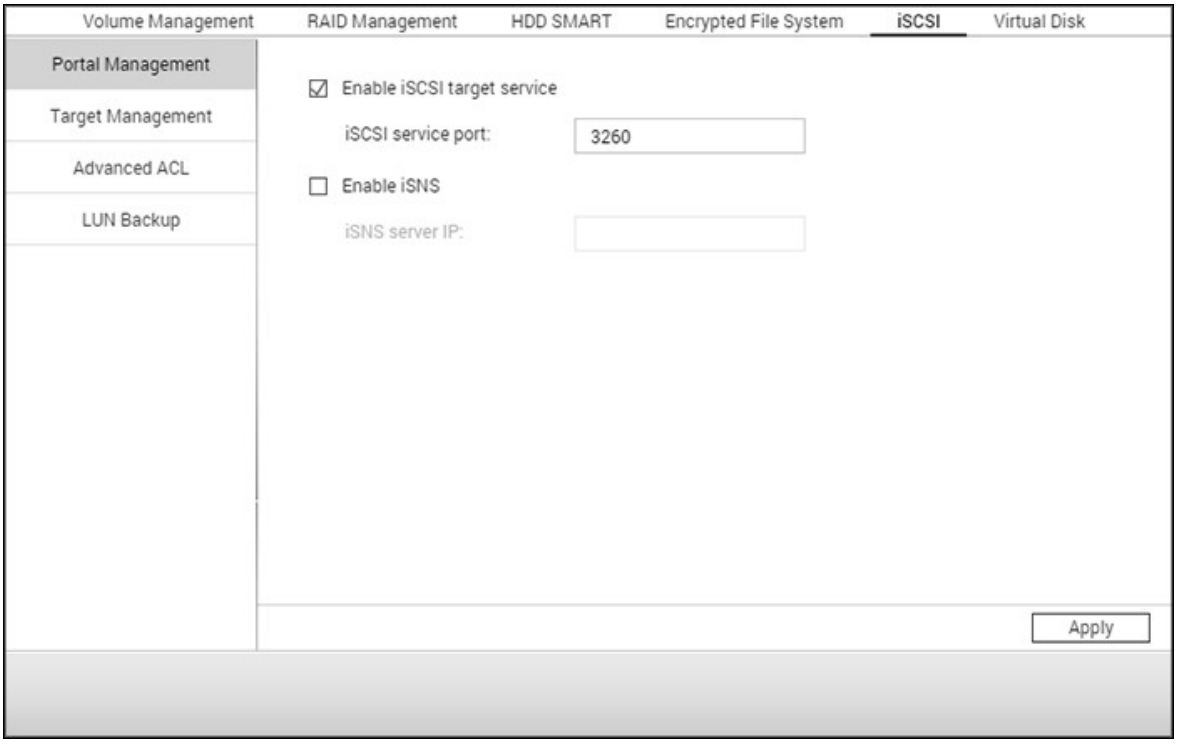
- Remove Saved Key: Remove saved keys with this option.
- Save Encryption Key: Save the encryption key on the NAS for automatic unlocking and mounting the encrypted disk volume when the NAS restarts.

Unlocking Disk Volumes Manually

Login to the NAS as an administrator and go to "Storage Manager" > "Encrypted File System". You will see your encrypted volumes and their status: locked or unlocked. To unlock your volume, first click "Unlock this device". Choose to either input the encryption password, or use the encryption key file. If the encryption password or the key file is correct, the volume will be unlocked and accessible.

4.2.5 iSCSI

Go to "Control Panel" > "System Settings" > "Storage Manager" to manage the iSCSI target service, create iSCSI target lists and the advanced ACL and back up LUNs.



For setting up relevant features, refer to the following links:

- Portal Management 73
- Target Management 76
- Advanced ACL 84
- LUN Backup 85

4.2.5.1 Portal Management

The NAS supports a built-in iSCSI (Internet Small Computer System Interface) service for server clustering and virtualized environments.

Topics covered in this chapter:

- Manual iSCSI Configuration 73
- iSCSI Quick Configuration Wizard 73
- Creating iSCSI LUNs 74

Manual iSCSI Configuration

The NAS supports built-in iSCSI service. To use this function, follow the steps below:

1. Install an iSCSI initiator on the computer (Windows PC, Mac, or Linux).
2. Enable iSCSI Target Service on the NAS and create an iSCSI target.
3. Run the iSCSI initiator and connect to the iSCSI target (NAS).
4. After logging in, format the iSCSI target (disk volume.) You can start using the disk volume on the NAS as a virtual drive on the computer.

When referring to your computer and the storage device, the computer is called an initiator because it initiates the connection to the device, which is called a target.

Note: It is NOT recommended to connect to the same iSCSI target with two different clients (iSCSI initiators) at the same time, as it may lead to data loss or disk damage.

iSCSI Quick Configuration Wizard

A maximum of 256 iSCSI targets and LUNs can be created. For example, if you create 100 targets on the NAS, the maximum number of LUNs you can create is 156. Multiple LUNs can be created for each target. However, the maximum number of concurrent connections to the iSCSI targets supported by the NAS varies depending on network infrastructure and application performance. Excessive concurrent connections may impact NAS performance.

Follow these steps to configure the iSCSI target service on the NAS.

1. Under "Portal Management" enable iSCSI target service. Apply the settings.

2. Go to "Target Management" and create iSCSI targets on the NAS. If you have not created any iSCSI targets, the Quick Installation Wizard will automatically be launched and prompt users to create iSCSI targets and LUNs. Click "OK".
3. Select to create an iSCSI target with a mapped LUN, an iSCSI target only, or an iSCSI LUN only. Click "Next."
4. Create iSCSI target with a mapped LUN.
5. Click "Next."
6. Enter the target name and target alias. You can check the options "Data Digest" and/or "Header Digest" (optional). These are the parameters that the iSCSI initiator will be verified when it attempts to connect to the iSCSI target.
7. Enter the CHAP authentication settings. If you enter the username and password settings under "Use CHAP authentication" only, only the iSCSI target authenticates the initiator, i.e. the initiators have to enter the username and password settings here to access the target.

Mutual CHAP: Enable this option for two-way authentication between the iSCSI target and the initiator. The target authenticates the initiator using the first set of username and password. The initiator authenticates the target using the "Mutual CHAP" settings.

Field	Username limitation	Password limitation
Use CHAP authentication	• The only valid characters are 0-9, a-z, A-Z • Maximum length: 256 characters	• The only valid characters are 0-9, a-z, A-Z • Maximum length: 12-16 characters
Mutual CHAP	• The only valid characters are 0-9, a-z, A-Z, : (colon), . (dot), and - (dash) • Maximum length: 12-16 characters	• The only valid characters are 0-9, a-z, A-Z, : (colon), . (dot), and - (dash) • Maximum length: 12-16 characters

Creating iSCSI LUNs

An iSCSI LUN is a logical volume mapped to the iSCSI target. Select one of the following modes to allocate disk space to the LUN:

- Thin Provisioning: Allocate disk space in a flexible manner. You can allocate disk space to the target anytime regardless of the current storage capacity available on the NAS. Over-allocation is allowed as the storage capacity of the NAS can be expanded by online RAID capacity expansion.
- Instant Allocation: Allocate the disk space to the LUN instantly. This option guarantees the disk space assigned to the LUN but may take more time to create the LUN.

1. Enter the name of the LUN and specify the LUN location (disk volume on the NAS.) Enter the capacity for the LUN. Click "Next".
2. Confirm the settings and click "Next".
3. When the target and the LUN have been created, click "Finish".
4. The target and LUN are shown on the list under the "Target Management" tab.

4.2.5.2 Target Management

You can create multiple LUNs for an iSCSI target. In this chapter, the following topics are covered:

- Creating iSCSI Targets 76
- Switching LUN Mapping 77
- iSCSI LUN Capacity Expansion 78
- Optimizing iSCSI Performance 78

Creating iSCSI Targets

Note: The following information only applies to ARM-based NAS models with firmware version **3.3.0 or later** and x86-based NAS models running firmware version **3.2.0 or later**.

You can create multiple LUNs for an iSCSI target. Follow the steps below to create more LUNs for an iSCSI target.

1. Click "Quick Configuration Wizard" under "Target Management".
2. Select "iSCSI LUN only" and click "Next".
3. Select the allocation method. Enter the name of the LUN, select the LUN directory, and specify the capacity for the LUN. Click "Next."
4. Select the target to map the LUN to (optional).
5. Confirm the settings and click "Next."
6. When the LUN has been created, click "Finish" to exit the wizard.
7. The LUNs can be mapped to and unmapped from the iSCSI target anytime. You can also unmap the LUN from a target and map it to another target.

Item	Status	Description
iSCSI target	Ready	The iSCSI target is ready but no initiator has connected to it yet.
	Connected	The iSCSI target has been connected by an initiator.
	Disconnected	The iSCSI target has been disconnected.
	Offline	The iSCSI target has been deactivated and cannot be connected by the initiator.

LUN	Enabled	The LUN is active for connection and is visible to authenticated initiators.
	Disabled	The LUN is inactive and is invisible to the initiators.

Button	Name	Description
	Deactivate	Deactivate a ready or connected target. Note that the connection from the initiators will be removed.
	Activate	Activate an offline target.
	Modify	Modify the target settings: target alias, CHAP information, and checksum settings. Modify the LUN settings: LUN allocation, name, disk volume directory, etc.
	Delete	Delete an iSCSI target. All the connections will be removed.
	Disable	Disable an LUN. All the connections will be removed.
	Enable	Enable an LUN.
	Unmap	Unmap the LUN from the target. You must disable the LUN before unmapping it. When you click this button, the LUN will be moved to "Un-Mapped iSCSI LUN List".
	Map	Map the LUN to an iSCSI target. This option is only available on the "Un-Mapped iSCSI LUN List".
	View	View the connection status of an iSCSI target.

Switching LUN Mapping

Note: The following information only applies to ARM-based NAS models with firmware version **3.3.0 or later** and x86-based NAS models running firmware version **3.2.0 or later**.

Follow the steps below to switch the mapping of an iSCSI LUN.

1. Select an iSCSI LUN to unmap from an iSCSI target and click "Disable".
2. Click "Unmap" and the LUN will appear on the Un-Mapped iSCSI LUN List. Click "Map" to map the LUN to another target.
3. Select the target to map the LUN to and click "Apply"
4. The LUN is mapped to the target.

After creating the iSCSI targets and LUN on the NAS, you can use the iSCSI initiator installed on your computer (Windows PC, Mac, or Linux) to connect to the iSCSI targets and LUN and use the disk volumes as the virtual drives on your computer.

iSCSI LUN Capacity Expansion

The NAS supports expanding the capacity of an iSCSI LUN. To do so, follow the steps below.

1. Locate an iSCSI LUN on the iSCSI target list in "iSCSI" > "Target Management". Click "Modify".
2. Specify the capacity of the LUN. Note that the LUN capacity can be increased many times up to the maximum limit but cannot be decreased.
3. Click "Apply" to save the settings.

Note:

- An iSCSI LUN must be mapped to an iSCSI target before increasing the capacity.
- For the type of LUN allocation, the maximum LUN capacity for thin provisioning is 32TB, while for instant allocation, the maximum LUN capacity is limited by the available free space on the disk volume.

Optimizing iSCSI Performance

In the environments that require high performance storage, such as virtualization, users are recommended to do the following to optimize the iSCSI and NAS hard disks performance:

- **Use instant allocation**: When creating an iSCSI LUN, select "Instant Allocation" to achieve slightly higher iSCSI performance. However, the benefits of thin provisioning will be lost.

- **Create multiple LUNs**: Create multiple LUNs according to the number of processors on the NAS (this can be found in "System Status" > "Resource Monitor".) If the NAS has four processors, it is recommended to create four or more LUNs to optimize iSCSI performance.
- **Use different LUNs for heavy load applications**: Spread applications such as databases and virtual machines that need high read/write performance to different LUNs. For example, if there are two virtual machines which intensively read and write data on LUNs, it is recommended to create two LUNs so that the VM workloads can be efficiently distributed.

Before you start to use the iSCSI target service, make sure you have created an iSCSI target with a LUN on the NAS and installed the correct iSCSI initiator for your OS.

ISCSI initiator on Windows:
Microsoft iSCSI Software Initiator is an official application for Windows that allow users to implement an external iSCSI storage array over the network.

Using iSCSI initiator:
Start the iSCSI initiator from "Control Panel" > "Administrative Tools". Under the "Discovery" tab click "Add Portal" (or "Discover Portal".) Enter the NAS IP and the port number for the iSCSI service. The available iSCSI targets and their status will then be shown under the "Targets" tab. Select the target you want to connect to and click "Connect". You can click "Advanced" to specify login information if you have configured the authentication otherwise simply click "OK" to continue. Upon logging in, the status of the target will show "Connected".

After the target has been connected Windows will detect its presence and treat it as if a new hard disk drive has been added which needs to be initialized and formatted before we can use it. Go to "Control Panel" > "Administrative Tools" > "Computer Management" > "Disk Management" and you should be prompted to initialize the newly-found hard drive. Click "OK" then format this drive as you normally would when adding a new disk. After disk initialization and formatting, the new drive is attached to your PC. You can now use this iSCSI target as a regular disk partition.

This section shows you how to use Xtend SAN iSCSI Initiator on Mac OS to add the iSCSI target (QNAP NAS) as an extra partition. Before you start to use the iSCSI target service, make sure you have created an iSCSI target with a LUN on the NAS and installed the correct iSCSI initiator for your OS.

About Xtend SAN iSCSI initiator:

ATTO's Xtend SAN iSCSI Initiator for Mac OS X allows Mac users to utilize and benefit from iSCSI. It is compatible with Mac OS X 10.4.x to 10.6.x. For more information, visit: http://www.attotech.com/products/product.php?sku=INIT-MAC0-001

Using Xtend SAN iSCSI initiator:

Follow the steps below:

1. After installing the Xtend SAN iSCSI initiator, you can find it in "Applications".
2. Click the "Discover Targets" tab and choose "Discover by DNS/IP" or "Discover by iSNS" according to the network topology. In this example, we will use the IP address to discover the iSCSI targets.
3. Follow the instructions and enter the server address, iSCSI target port number (default: 3260), and CHAP information (if applicable). Click "Finish" to retrieve the target list.
4. The available iSCSI targets on the NAS will be shown. Select the target you want to connect to and click "Add".

You can configure the connection properties of selected iSCSI target in the "Setup" tab. Click the "Status" tab, select the target to connect to. Then click "Login" to proceed. The first time you login to the iSCSI target, a message will remind you the disk is not initialized. Click "Initialize..." to format the disk. You can also open "Disk Utilities" to initialize the disk. You can now use the iSCSI target as an external drive on your Mac.

This section shows you how to use the Linux Open-iSCSI Initiator on Ubuntu to add the iSCSI target as an extra partition. Before you start using the iSCSI target service, make sure you have created an iSCSI target with a LUN on the NAS and installed the correct iSCSI initiator for your OS.

About Linux Open-iSCSI Initiator:
The Linux Open-iSCSI Initiator is a built-in package in Ubuntu 8.04 LTS (and later). You can connect to an iSCSI volume at a shell prompt with just a few commands. More information about Ubuntu is available at http://www.ubuntu.com and for information and download location of Open-iSCSI, visit: http://www.open-iscsi.org

Note: Snapshot LUNs are not supported by the Linux Open-iSCSI Initiator.

Using Linux Open-iSCSI Initiator:
Install the open-iscsi package. The package is also known as the Linux Open-iSCSI Initiator.

```
# sudo apt-get install open-iscsi
```

Follow these steps to connect to an iSCSI target with Linux Open-iSCSI Initiator:
You may need to modify the iscsid.conf for CHAP logon information, such as node.session.auth.username & node.session.auth.password.

```
# vi /etc/iscsi/iscsid.conf
```

Save and close the file, then restart the open-iscsi service.

```
# /etc/init.d/open-iscsi restart
```

Discover the iSCSI targets on a specific host, for example, 10.8.12.31 with default port 3260.

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

Check the available iSCSI nodes to connect.

```
# iscsiadm -m node
```

** You can delete the nodes you do not want to connect to when the service is on with the following command:

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

Restart open-iscsi to login all the available nodes.

```
# /etc/init.d/open-iscsi restart
```

You should be able to see the login message as below:
Login session [iface: default, target: iqn.2004-04.com:NAS:iSCSI.ForUbuntu.B9281B, portal: 10.8.12.31,3260] [OK]

Check the device status with dmesg.

```
# dmesg | tail
```

Enter the following command to create a partition, /dev/sdb is the device name.

```
# fdisk /dev/sdb
```

Format the partition.

```
# mkfs.ext3 /dev/sdb1
```

Mount the file system.

```
# mkdir /mnt/iscsi
# mount /dev/sdb1 /mnt/iscsi/
```

You can test the I/O speed using the following command.

```
# hdparm -tT /dev/sdb1
```

Below are some "iscsiadm" related commands.
Discover the targets on the host:

```
# iscsiadm -m discovery --type sendtargets --portal HOST_IP
```

Login a target:

```
# iscsiadm –m node --targetname THE_TARGET_IQN --login
```

Logout a target:

```
# iscsiadm –m node --targetname THE_TARGET_IQN --logout
```

Delete a Target:

```
# iscsiadm –m node --op delete --targetname THE_TARGET_IQN
```

4.2.5.3 Advanced ACL

Note: The following information only applies to ARM-based NAS models with firmware version **3.3.0 or later** and x86-based NAS models running firmware version **3.2.0 or later**.

You can create a LUN masking policy to configure permissions of iSCSI initiators which attempt to access the LUN mapped to the iSCSI targets on the NAS. To use this feature, click "Add a Policy" under "Advanced ACL".

Enter the policy name, the initiator IQN, and assign access rights for each LUN on the NAS.

- Read-only: The connected initiator can only read the data from the LUN.
- Read/Write: The connected initiator has read and write access right to the LUN.
- Deny Access: The LUN is invisible to the connected initiator.

If no LUN masking policy is specified for a connected iSCSI initiator, the default policy (Read/Write) will be applied. You can click "Edit" to edit the default policy.

Note: Make sure you have created at least one LUN on the NAS before editing the default LUN policy.

Hint: How do I find the initiator IQN?
Start the Microsoft iSCSI initiator and click "General". You will find the IQN of the initiator.

4.2.5.4 LUN Backup

The NAS supports backing up iSCSI LUNs to different storage locations (Windows, Linux, or local shared folders), restoring the LUNs to the NAS, or creating a LUN snapshot and mapping it to an iSCSI target.

In this chapter, the following topics are covered:

- Backing up iSCSI LUNs 85
- Restoring iSCSI LUNs 86
- Creating iSCSI LUN Snapshots 86
- Managing LUN Backup/Restore/Snapshot by Command Line 87

Backing up iSCSI LUNs

Before backing up an iSCSI LUN, make sure at least one iSCSI LUN has been created on the NAS. To create iSCSI targets and LUN, follow these steps.

1. Go to "Storage Manager" > "iSCSI" > "LUN Backup". Click "Create a new job".
2. Select "Back up an iSCSI LUN" and click "Next".
3. Select the source LUN for backup. If an online LUN is selected, the NAS will automatically create a point-in-time snapshot for the LUN.
4. Specify the destination where the LUN will be backed up to. The NAS supports LUN backup to a Linux share (NFS), a Windows share (CIFS/SMB), and a local folder on the NAS. Click "Test" to test the connection to the specified path. Then click "Next".
5. Enter a name of the backup LUN image or use the one generated by the NAS. Select the subfolder where the image file will be stored. Select to use compression or not and click "Next". (More system resources will be used for compression, but the backup LUN size can be reduced. The backup time may vary depending on the size of the iSCSI LUN.)
6. Specify the backup schedule, choose the backup period (Now, Hourly, Daily, Weekly, or Monthly) and click "Next".
7. The settings will be shown. Enter a name for the job or use the one generated by the NAS. Click "Next."
8. Click "Finish" to exit.
9. The backup job will be shown on the list.

Button	Name	Description
	Start	Start the job immediately.

	Stop	Stop the running job.
	Edit	Edit the job settings.
	View	View the job status and logs.

Restoring iSCSI LUNs

To restore an iSCSI LUN to the NAS, follow the steps below:

1. Go to "Storage Manager" > "iSCSI" > "LUN Backup". Click "Create a job".
2. Select "Restore an iSCSI LUN" and click "Next."
3. Specify the protocol, IP address/host name, and folder/path of the restore source. Click "Test" to test the connection. Then click "Next".
4. Browse and select the LUN image file and click "Next."
5. Select the destination and click "Next".
6. The settings will be shown. Enter a name for the job or use the one generated by the NAS. Click "Next".
7. Click "Finish" to exit.

The restore job will be executed immediately.

Button	Name	Description
	Stop	Stop the running job.
	Edit	Edit the job settings.
	View	View the job status and logs.

Note: For Step 5 above:

- Overwrite existing LUN: Restore the iSCSI LUN and overwrite the existing LUN on the NAS. All the data on the original LUN will be overwritten.
- Create a new LUN: Restore the iSCSI LUN to the NAS as a new LUN. Enter the name and select the location of the new LUN. Make sure you have created at least one LUN on the NAS before editing the default LUN policy.

Creating iSCSI LUN Snapshots

Before creating an iSCSI LUN snapshot, make sure at least one iSCSI LUN and one iSCSI target has been created on the NAS. To create iSCSI targets and LUN, go to "Storage

Manager" > "iSCSI" > "Target Management".

To create an iSCSI LUN snapshot, follow these steps:

1. Go to "Storage Manager" > "iSCSI" > "LUN Backup". Click "Create a job".
2. Select "Create a LUN Snapshot" and click "Next".
3. Select an iSCSI LUN on the NAS. Only one snapshot can be created for each iSCSI LUN. Click "Next".
4. Enter a name for the LUN snapshot or use the one generated by the NAS. Select an iSCSI target where the LUN snapshot is mapped to. Click "Next". The LUN snapshot must be mapped to another iSCSI target different from the original one.
5. Specify the snapshot schedule and the snapshot duration. The snapshot will be removed automatically when the snapshot duration is reached.
6. The settings will be shown. Enter a name for the job or use the one generated by the NAS. Click "Next".
7. Click "Finish" to exit.
8. The snapshot will be created immediately. The status and duration will be shown on the list.
9. Go to "iSCSI" > "Target Management", the snapshot LUN will be shown in the iSCSI Target List. Use iSCSI initiator software to connect to the iSCSI target and access the point-in-time data on the snapshot LUN.

Note: The source LUN and snapshot LUN cannot be mounted on the same NAS in certain operating systems such as Windows 7 and Windows 2008 R2. In such case, mount the LUN to a different NAS.

Managing LUN Backup/Restore/Snapshot by Command Line

NAS users can start or stop the iSCSI LUN backup, restore, or snapshot jobs by command line. Follow these instructions to use this feature.

Note: The following instructions should only be operated by IT administrators who are familiar with command line interfaces.

1. First make sure the iSCSI LUN backup, restore, or snapshot jobs have been created on the NAS in "Storage Manager" > "iSCSI" > "LUN Backup".
2. Connect to the NAS using an SSH utility such as Pietty.
3. Login to the NAS as an administrator.

4. Input the command "lunbackup". The command usage description will be shown.
5. Use the lunbackup command to start or stop an iSCSI LUN backup, restore, or snapshot job on the NAS.

4.2.6 Virtual Disk

You can use this function to add iSCSI targets of other NAS or storage servers to the NAS as virtual disks for storage capacity expansion. The NAS supports up to 8 virtual disks.

Note:

- The NAS supports a virtual disk with a maximum size of 16TB.
- When a virtual disk (iSCSI target) is disconnected, the virtual disk will disappear from the interface and the NAS will try to connect to the target in 2 minutes. If the target cannot be connected to after 2 minutes, the status of the virtual disk will become "Disconnected".

To add a virtual disk to the NAS, make sure an iSCSI target has been created and follow these steps:

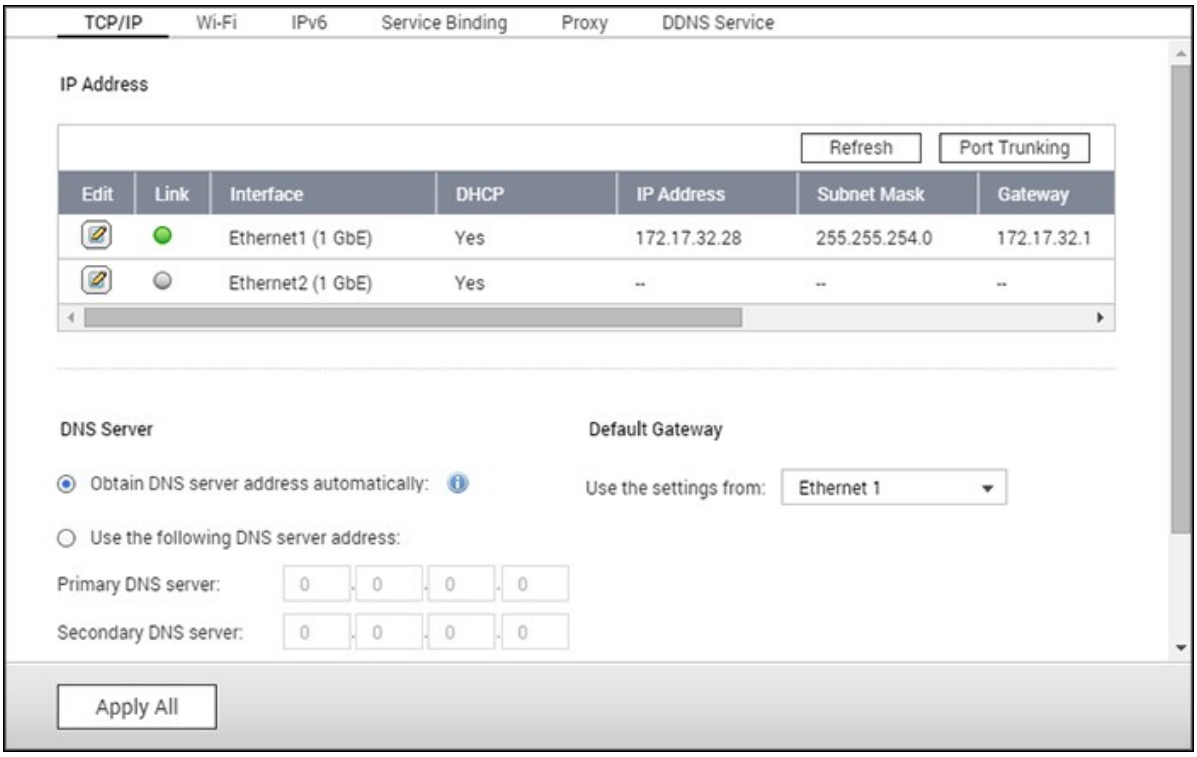
1. Click "Add Virtual Disk".
2. Enter the target server IP and port number (default: 3260.) Click "Get Remote Disk". Select a target from the list. If authentication is required, enter the login details. You can select the options "Data Digest" and/or "Header Digest" (optional.) These are the parameters that the iSCSI initiator will verify when it attempts to connect to the iSCSI target. Then, click "Next".
3. Enter a name for the virtual disk. If the target is mapped with multiple LUNs, select a LUN from the list. Make sure only this NAS can connect to the LUN. The NAS supports mounting EXT3, EXT4, FAT32, NTFS, HFS+ file systems. If the file system of the LUN is "Unknown", select "Format virtual disk now" and the file system. You can format virtual disks as EXT3, EXT4, FAT 32, NTFS, or HFS+. By selecting "Format virtual disk now", the data on the LUN will be removed.
4. Click "Finish" to exit the wizard.
5. The storage capacity of your NAS has been expanded by the virtual disk. You can go to "Privilege Settings" > "Share Folders" to create new shared folders on the virtual disk.

Icon	Name	Description
	Edit	Edit a virtual disk name or the authentication information of an iSCSI target.
	Connect	Connect to an iSCSI target.

	Disconnect	Disconnect an iSCSI target.
	Format	Format a virtual disk as EXT3, EXT 4, FAT 32, NTFS, or HFS+.
	Delete	Delete a virtual disk or iSCSI target.

4.3 Network

Go to "Control Panel" > "System Settings" > "Network" to configure the NAS network settings.



In this chapter, the following topics are covered:

- TCP/IP 91
- Wi-Fi 97
- IPv6 99
- Service Binding 100
- Proxy 101
- DDNS Service 101

TCP/IP

(i) IP Address

Configure the TCP/IP settings, DNS Server and default Gateway of the NAS on this page.

Click the "Edit" button next to an interface to edit the network settings (including "Network Parameters", "Advanced Options", and "DHCP Server".) For the NAS with two LAN ports, users can connect both network interfaces to two different switches and configure the TCP/IP settings. The NAS will acquire two IP addresses which allow access

from two different subnets. This is known as multi-IP settings*. When using Qfinder Pro to detect the NAS IP, the IP of Ethernet 1 will be shown in LAN 1 only and the IP of Ethernet 2 will be shown in LAN 2 only. To use port trunking for a dual LAN connection, see section (iii).

* TS-110, TS-119, TS-210, TS-219, TS-219P, TS-119P+, TS-219P+, TS-112, and TS-212 only have one LAN port and do not support dual LAN configuration or port trunking.

Network Parameters

Under "Network Parameters" on the TCP/IP Property page, configure the following settings:

- **Network Speed:** Select the network transfer rate according to the network environment of the NAS. Select auto negotiation and the NAS will automatically adjust the transfer rate.
- **Obtain the IP address settings automatically via DHCP:** If the network supports DHCP, select this option and the NAS will automatically obtain the IP address and network settings.
- **Use static IP address:** To use a static IP address for network connections, enter the IP address, subnet mask, and default gateway.
- **Jumbo Frame:** "Jumbo Frames" refers to Ethernet frames that are larger than 1500 bytes. It is designed to enhance Ethernet networking throughput and reduce the CPU utilization of large file transfers by enabling more efficient larger payloads per packet. Maximum Transmission Unit (MTU) refers to the size (in bytes) of the largest packet that a given layer of a communications protocol can transmit. The NAS uses standard Ethernet frames (1500 bytes) by default. If network appliances support Jumbo Frames, select the appropriate MTU value for the network environment. The NAS supports 4074, 7418, and 9000 bytes for MTU.

Note:

- Jumbo Frames is only valid in Gigabit networks. All of the connected network appliances must enable Jumbo Frames and use the same MTU value.
- Jumbo Frames are only supported by certain NAS models. Refer to the software specification page on the QNAP website for further details.

Advanced Options

A Virtual LAN (VLAN) is a group of hosts which communicate as if they were attached to the same broadcast domain even if they are located in different physical locations. The

NAS can join a VLAN and be configured as a backup storage of other devices on the same VLAN.

To join a VLAN, select "Enable VLAN" and enter the VLAN ID (a value between 0 and 4094.) Keep the VLAN ID safe and make sure the client devices are able to join the VLAN. If you forget the VLAN ID and cannot connect to the NAS, you will need to reset the network settings by pressing the NAS reset button. Once the NAS is reset, the VLAN feature will be disabled. If the NAS supports two Gigabit LAN ports and only one network interface is configured to enable VLAN, you can also connect to the NAS via the other network interface.

Note: The VLAN feature is only supported by x86-based NAS models.

DHCP Server

A DHCP (Dynamic Host Configuration Protocol) server assigns IP addresses to clients on a network. Select "Enable DHCP Server" to set the NAS a DHCP server if there are none on the local network where the NAS is located.

Note:

- Do not enable DHCP server if there is one on the local network to avoid IP address conflicts or network access errors.
- The DHCP server option is only available to Ethernet 1 when both LAN ports of a dual LAN NAS are connected to the network and configured as standalone IP settings.

- **Start IP, End IP, Lease Time:** Set the range of IP addresses allocated by the NAS to the DHCP clients and the lease time. The lease time refers to the time that an IP address is leased to the clients. During that time, the IP will be reserved to the assigned client. When the lease time expires, the IP can be assigned to another client.
- **WINS Server (optional):** WINS (Windows Internet Naming Service) resolves Windows network computer names (NetBIOS names) to IP addresses, allowing Windows computers on a network to easily find and communicate with each other. Enter the IP address of the WINS server on the network if available.
- **DNS Suffix (optional):** The DNS suffix is used for resolution of unqualified/ incomplete host names.
- **TFTP Server & Boot File (optional):** The NAS supports PXE booting of network

devices. Enter the IP address of the TFTP server and the boot file (including directory on the TFTP server and file name.) For remote booting of devices, enter the public IP address of the TFTP server.

(ii) DNS Server

A DNS (Domain Name Service) server translates between a domain name (such as google.com) and an IP address (74.125.31.105.) Configure the NAS to obtain a DNS server address automatically or to specify the IP address of a DNS server.

- Primary DNS Server: Enter the IP address of the primary DNS server.
- Secondary DNS Server: Enter the IP address of the secondary DNS server.

Note:

- Contact your ISP or network administrator for the IP address of the primary and the secondary DNS servers. When the NAS plays the role as a terminal and needs to perform independent connection (BT download, etc) enter at least one DNS server IP for proper URL connection. Otherwise, the function may not work properly.
- If you obtain the IP address by DHCP, there is no need to configure the primary and secondary DNS servers. In this case, enter "0.0.0.0".

(iii) Default Gateway

Select the gateway settings to use if both LAN ports have been connected to the network (dual LAN NAS models only.)

(iv) Port Trunking

The NAS supports port trunking which combines two Ethernet interfaces into one to increase bandwidth and offers load balancing and fault tolerance (also known as failover.) Load balancing is a feature which distributes workloads evenly across two Ethernet interfaces for higher redundancy. Failover is the capability to maintain high availability by switching to a standby network interface ("slave" interface) when the primary network interface ("master" interface) does not correspond correctly.

To use port trunking on the NAS, make sure at least two LAN ports of the NAS have been connected to the same switch and the settings described in sections (i) and (ii) have been configured.

Follow these steps to configure port trunking on the NAS:

1. Click "Port Trunking".

2. Select the network interfaces for a trunking group (Ethernet 1+2, Ethernet 3+4, Ethernet 5+6, or Ethernet 7+8.) Choose a port trunking mode from the drop-down menu. The default option is Active Backup (Failover.)
3. Select a port trunking group to use. Click "Apply".
4. Click "here" to connect to the login page.

Note:

- Make sure the Ethernet interfaces are connected to the correct switch and the switch has been configured to support the port trunking mode selected on the NAS.
- Port Trunking is only available for NAS models with two or more LAN ports.

The port trunking options available on the NAS:

Field	Description	Switch Required
Balance-rr (Round-Robin)	Round-Robin mode is good for general purpose load balancing between two Ethernet interfaces. This mode transmits packets in sequential order from the first available slave through the last. Balance-rr provides load balancing and fault tolerance.	Supports static trunking. Make sure static trunking is enabled on the switch.
Active Backup	Active Backup only uses one Ethernet interface. It switches to the second Ethernet interface if the first Ethernet interface does not work properly. Only one interface in the bond is active. The bond's MAC address is only visible externally on one port (network adapter) to avoid confusing the switch. Active Backup mode provides fault tolerance.	General switches
Balance XOR	Balance XOR balances traffic by splitting up outgoing packets between the Ethernet interfaces, using the same one for each specific destination when possible. It transmits based on the selected transmit hash policy. The default policy is a simple slave count operating on Layer 2 where the source	Supports static trunking. Make sure static trunking is enabled on the switch.

	MAC address is coupled with destination MAC address. Alternate transmit policies may be selected via the xmit_hash_policy option. Balance XOR mode provides load balancing and fault tolerance.	
Broadcast	Broadcast sends traffic on both network interfaces. This mode provides fault tolerance.	Supports static trunking. Make sure static trunking is enabled on the switch.
IEEE 802.3ad (Dynamic Link Aggregation)	Dynamic Link Aggregation uses a complex algorithm to aggregate adapters by speed and duplex settings. It utilizes all slaves in the active aggregator according to the 802.3ad specification. Dynamic Link Aggregation mode provides load balancing and fault tolerance but requires a switch that supports IEEE 802.3ad with LACP mode properly configured.	Supports 802.3ad LACP
Balance-tlb (Adaptive Transmit Load Balancing)	Balance-tlb uses channel bonding that does not require any special switch. The outgoing traffic is distributed according to the current load on each Ethernet interface (computed relative to the speed.) Incoming traffic is received by the current Ethernet interface. If the receiving Ethernet interface fails, the other slave takes over the MAC address of the failed receiving slave. Balance-tlb mode provides load balancing and fault tolerance.	General switches

Balance-alb (Adaptive Load Balancing)	Balance-alb is similar to balance-tlb but also attempts to redistribute incoming (receive load balancing) for IPV4 traffic. This setup does not require any special switch support or configuration. The receive load balancing is achieved by ARP negotiation sent by the local system on their way out and overwrites the source hardware address with the unique hardware address of one of the Ethernet interfaces in the bond such that different peers use different hardware address for the server. This mode provides load balancing and fault tolerance.	General switches

Wi-Fi

To connect to a Wi-Fi network, plug a USB wireless dongle into the NAS. The NAS will detect a list of wireless access points. You can connect the NAS to a Wi-Fi network in two ways.

Note:

- Wireless connection performance depends on many factors such as the adapter model, the USB adapter's performance, and the network environment. Wired connections will always provide greater stability and performance.
- The system only supports one USB Wi-Fi dongle at a time.
- For a list of compatible USB Wi-Fi dongles, visit http://www.qnap.com/compatibility and select "USB Wi-Fi".
- This feature is not supported by the TS-269H.

Method 1: Connecting to an existing Wi-Fi network:

A list of Wi-Fi access points with signal strength are displayed in "Wi-Fi Network Connection".

Icon / Option	Name	Description
Rescan	Rescan	Search for Wi-Fi networks in range.
	Secured	The Wi-Fi network requires a network key.

	network	
	Connect	Connect to a Wi-Fi network. If a security key is required, you will be prompted to enter the key.
	Edit	Edit the connection information. You can select to automatically connect to the Wi-Fi network.
	Disconnect	Disconnect from the Wi-Fi network.
	Remove	Delete the Wi-Fi network profile.
Show all	Show all	Display all available Wi-Fi networks. Deselect this option to only show configured network profiles.

Click "Rescan" to search for available Wi-Fi networks. Select a Wi-Fi network to connect to and click "Connect". Enter the security key if needed. Click "Next" and the NAS will attempt to connect to the wireless network. You can view the status of the configured network profiles.

Message	Description
Connected	The NAS is currently connected to the Wi-Fi network.
Connecting	The NAS is trying to connect to the Wi-Fi network.
Out of range or hidden SSID	The wireless signal is not available or the SSID is not broadcast.
Failed to get IP	The NAS is connected to the Wi-Fi network but could not get an IP address from the DHCP server. Check the router settings.
Association failed	The NAS cannot connect to the Wi-Fi network. Check the router settings.
Incorrect key	The entered security key is incorrect.
Auto connect	Automatically connect to the Wi-Fi network. This is not supported if the SSID of the Wi-Fi network is not broadcast.

Method 2: Manually connecting to a Wi-Fi network:

To manually connect to a Wi-Fi network that does not broadcast its SSID (network name), click "Connect to a Wi-Fi network".

You can choose to connect to an ad hoc network in which you can connect to any wireless devices without the need for an access point. To set up, follow these steps:

1. Enter the network name (SSID) of the wireless network and select the security type.
   - No authentication (Open): No security key required.
   - WEP: Enter up to 4 WEP keys and choose 1 key to be used for authentication.
   - WPA-Personal: Choose AES or TKIP encryption and enter the encryption key.
   - WPA2-Personal: Enter a security key.
2. Type in the security key.
3. Click "Finish" after the NAS has added the Wi-Fi network.
4. To edit IP address settings, click "Edit". You can choose to automatically obtain the IP address by DHCP or to set a fixed IP address.

If the Wi-Fi connection is the only connection between the NAS and the router/AP, you must select "WLAN1" as the default gateway in "Network" > "TCP/IP" page. Otherwise, the NAS will be unable to connect to the Internet or communicate with another network.

Note:

- The WEP key must be exactly 5 or 13 ASCII characters; or exactly 10 or 26 hexadecimal characters (0-9 and A-F.)
- If you have trouble connecting to an encrypted wireless network, check the wireless router/AP settings and change the transfer rate from "N-only" mode to "B/G/N mixed" or similar settings.
- Windows 7 users with WPA2 encryption cannot establish ad-hoc connection with the NAS. WEP encryption must be used on Windows 7.
- A fixed IP address is required for wireless interfaces to establish an ad-hoc connection.

IPv6

The NAS supports IPv6 connectivity with "stateless" address configurations and RADVD (Router Advertisement Daemon) for IPv6, RFC 2461 to allow the hosts on the same subnet to automatically acquire IPv6 addresses from the NAS. NAS services which

support IPv6 include:

- CIFS/SMB
- AFP
- NFS
- FTP
- iSCSI
- Web Server
- QTS Desktop
- RTRR
- SSH
- Qsync for Windows
- Netbak Replicator

To use this function, select the option "Enable IPv6" and click "Apply". The NAS will restart. After the system restarts, go to the IPv6 page. The settings of the IPv6 interface will be shown. Click the "Edit" button to edit the settings:

- **IPv6 Auto Configuration:** If an IPv6 enabled router is available on the network, select this option to allow the NAS to automatically acquire the IPv6 address and configurations.
- **Use static IP address:** To use a static IP address, enter the IP address (e.g. 2001:bc95:1234:5678), prefix length (e.g. 64), and the gateway address for the NAS. Contact your ISP for the prefix and the prefix length information.
    - Enable Router Advertisement Daemon (radvd): To configure the NAS as an IPv6 host and distribute IPv6 addresses to the local clients which support IPv6, enable this option and enter the prefix and prefix length.
- **IPv6 DNS server:** Enter the preferred DNS server in the upper field and the alternate DNS server in the lower field. Contact the ISP or network administrator for the information. If IPv6 auto configuration is selected, leave the fields as "::".

Service Binding

NAS services run on all available network interfaces by default. You can bind services to one or more specific network interfaces (wired or wireless). Available network interfaces on the NAS will be shown. Select at least one network interface that each service should be bound to. Then click "Apply". Users will only be able to connect to services via the specified network interfaces. If the settings cannot be applied, click "Refresh" to list the current network interfaces on the NAS and configure service binding again.

Note:

- Service binding is only available for NAS models with multiple network interfaces (wired and wireless.)
- After applying service binding settings, the connection of currently online users will be kept even if they were not connected to services via the specified network interfaces. The specified network interfaces will be used for the next connected session.

Proxy

Enter the proxy server settings to allow the NAS to access the Internet through a proxy server to update the firmware, get new virus definitions, and to download Apps.

DDNS Service

To allow remote access to the NAS using a domain name instead of a dynamic IP address, enable the DDNS service.
The NAS supports the DDNS providers: http://www.dyndns.com, http://update.ods.org, http://www.dhs.org, http://www.dyns.cx, http://www.3322.org, http://www.no-ip.com, http://www.Selfhost.de, http://www.oray.com.

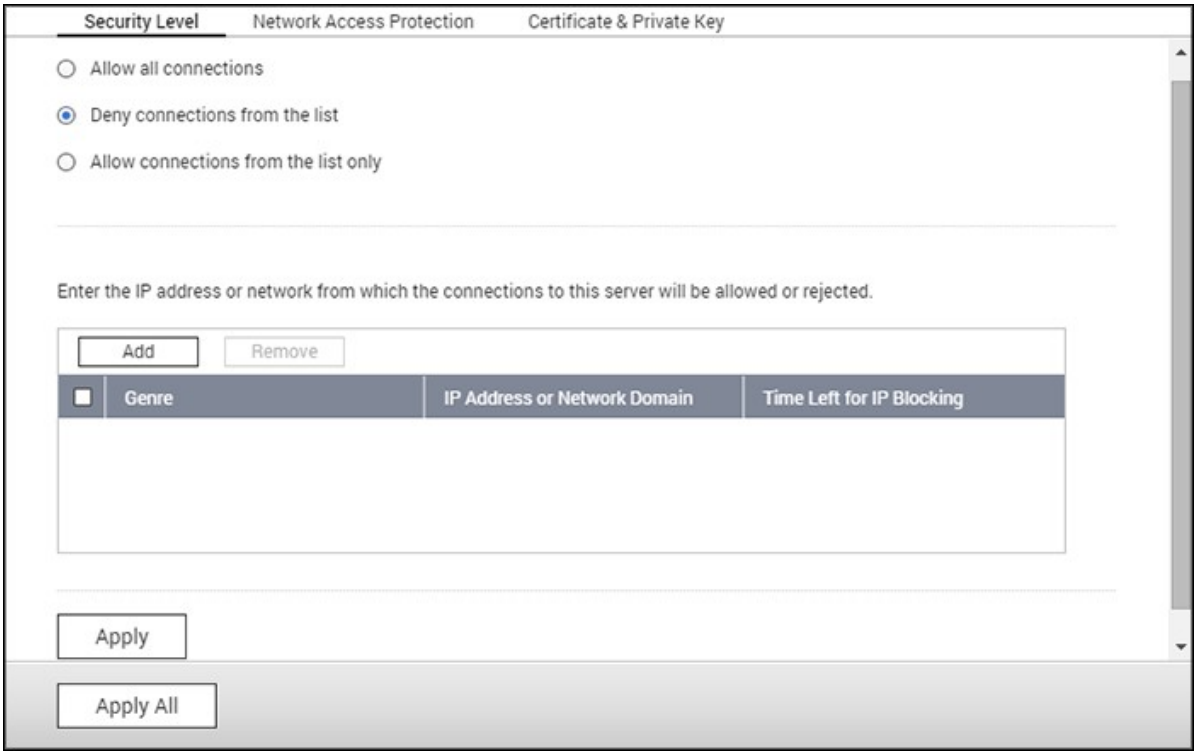
Note: Some of these DDNS services are not free.

Additional Reference:

- How to set up proxy server on QNAP Turbo NAS for optimized website access.
- Set up DDNS Service for Remote Internet Access to QNAP NAS.

4.4 Security

Go to "Control Panel" > "System Settings" > "Security" to configure relevant security settings for your NAS.



Security Level

Specify the IP address or network domain from which connections to the NAS are allowed or denied. When the connection of a host server is denied, all the protocols of that server are not allowed to connect to the NAS. After changing the settings, click "Apply" to save the changes. Network services will be restarted and current connections to the NAS will be terminated.

Network Access Protection

Network access protection enhances system security and prevents unwanted intrusion. You can block an IP for a certain period of time or indefinitely if the IP fails to login to the NAS from a particular connection method.

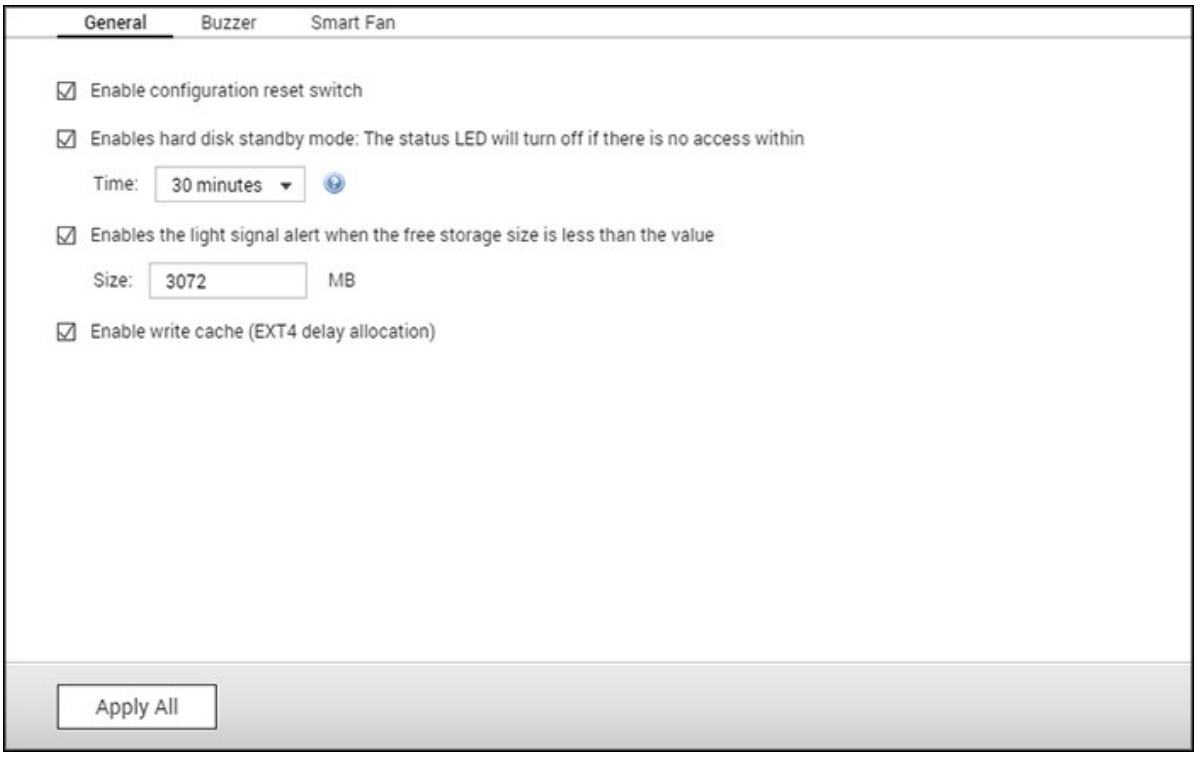
Certificate & Private Key

Secure Socket Layer (SSL) is a protocol for encrypted communication between web servers and browsers for secure data transfer. You can upload an SSL certificate issued by trusted providers. After uploading an SSL certificate, users can connect to the administration interface of the NAS by SSL and there will not be any alert or error message. The NAS only supports X.509 certificates and private keys.

- Download Certificate: Download the secure certificate which is currently in use.
- Download Private Key: Download the private key which is currently in use.
- Restore Default Certificate & Private Key: Restores the secure certificate and private key to system default. The secure certificate and private key in use will be overwritten.

4.5 Hardware

Go to "Control Panel" > "System Settings" > "Hardware" to configure the NAS hardware functions.



General

- **Enable configuration reset switch:** When this is enabled, you can press the reset button for 3 seconds to reset the administrator password and the system settings to default (NAS data will be retained) or 10 seconds for advanced system reset.
  - **Basic system reset:** You will hear a beep after pressing and holding the reset button. The following settings will be reset to default:
    - System administration password: admin.
    - TCP/IP configuration: Obtain IP address settings automatically via DHCP.
    - TCP/IP configuration: Disables Jumbo Frames.
    - TCP/IP configuration: If port trunking is enabled, the port trunking mode will be reset to "Active Backup (Failover)".
    - System port: 8080 (system service port.)
    - Security level: Low (Allows all connections.)
    - LCD panel password: (blank); this feature is only for NAS models with LCD panels.
    - VLAN will be disabled.
    - Service binding: All NAS services will be run on all available network

interfaces.

  - **Advanced system reset:** You will hear two beeps after continuously pressing the reset button. The NAS will reset all system settings to default (similar to the system reset in "Administration" > "Restore to Factory Default") except all the NAS data will be reserved. Settings such as users, user groups, and shared folders will be cleared. To retrieve old data after an advanced system reset, create the same shared folders on the NAS and the data will be accessible again.
- **Enable hard disk standby mode:** This option allows the NAS drives to enter standby mode if there is no disk access within the specified period. Note that during standby mode, the system LED on the NAS will be off but the HDD status LED will remain steady.
- **Enable light signal alert when the free size of SATA disk is less than the value:** The status LED will flash red and green if this option is enabled and the free space of the SATA hard drive is less than the set value.
- **Enable write cache (EXT4 only):** If the NAS disk volume uses EXT4, enable this option for higher write performance. Note that an unexpected system shutdown may lead to data loss. This option will be disabled if the following services are enabled: Download Station, MySQL service, user quota, and Surveillance Station. It is recommended to disable this option if the NAS is set as shared storage in a virtualized or clustered environment.
- **Enable warning alert for redundant power supply on the web-based interface:** If two power supply units (PSU) are installed on the NAS and connected to the power sockets, both PSU will supply the power to the NAS (applied to 1U and 2U models.) Turn on the redundant power supply mode in "System Settings" > "Hardware" to receive warnings for the redundant power supply. The NAS will sound and record error messages in "System Logs" if the PSU is plugged out or does not respond correctly. If only one PSU is installed on the NAS, DO NOT enable this option. This function is disabled by default.
- **Turn on LED light:** If your NAS has a LED indicator (ex. TS-453mini), you can choose to turn on its LED indicator, set the LED brightness level and configure a schedule for the brightness setting.

Note: The Turn on LED light option is only applicable on some models. To check for applicable models, please refer to the product comparison table on the QNAP website.

Buzzer

Enable alarm buzzer: Enable this option to allow the alarm buzzer to beep when certain system operations (startup, shutdown, or firmware upgrade) are executed or system events (error or warning) occur.

Write Cache

Better write performance can be obtained when this option is enabled. Please note that an unexpected system shutdown may cause data loss. This option is disabled when the Download Station or SQL service is enabled.

Smart Fan

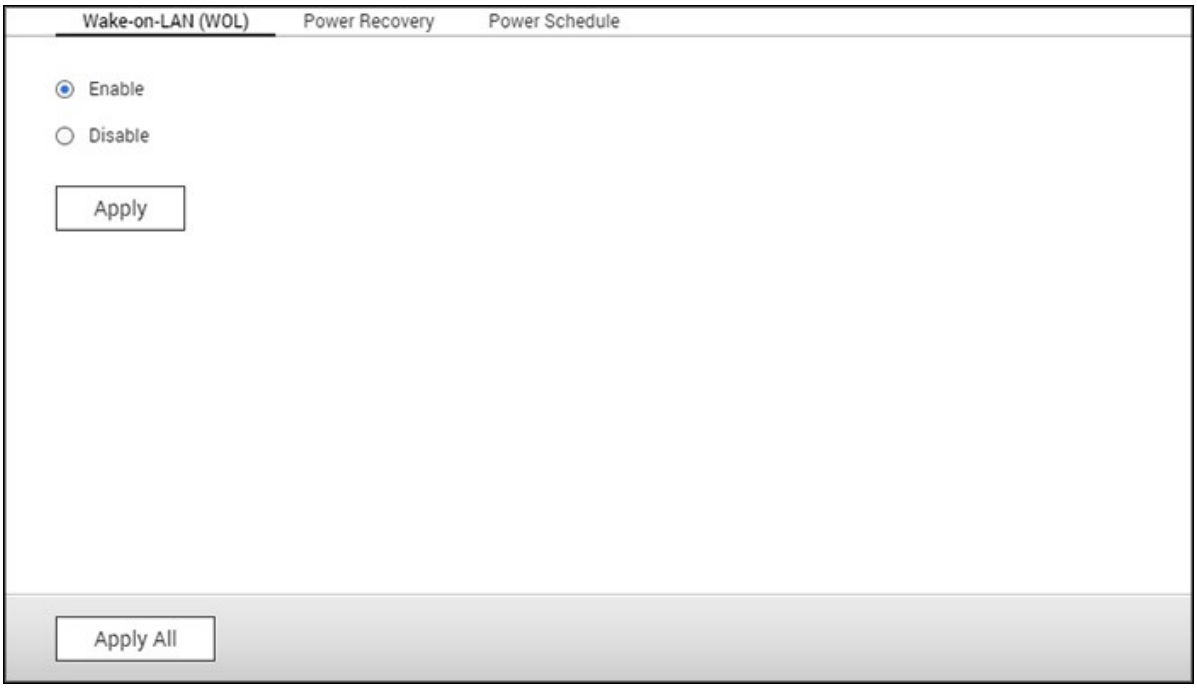
Smart Fan Configuration:

- **Enable smart fan (recommended):** Select to use the default smart fan settings or to manually define the settings. When the system default settings are selected, the fan rotation speed will be automatically adjusted when the NAS temperature, CPU temperature, and hard drive temperature meet the criteria. It is recommended to enable this option.
- **Set fan rotation speed manually:** By manually setting the fan rotation speed, the fan will continually rotate at this speed.

Note: The NAS will automatically shut down to protect itself if a temperature threshold is exceeded. The threshold values vary depending on NAS models.

4.6 Power

You can restart or shut down the NAS, specify the behavior of the NAS after a power recovery, and set the schedule for automatic system power on/off/restart on this page.



EuP Mode Configuration

EuP (also Energy-using Products) is a European Union (EU) directive designed to improve the energy efficiency of electrical devices, reduce the use of hazardous substances, increase ease of product recycling, and to improve environment-friendliness of products.

When EuP is enabled, the following settings will be affected so that the NAS maintains low power consumption (less than 1W) when the NAS is powered off:

- Wake on LAN: Disabled.
- AC power resumption: The NAS will remain off after the power restores from an outage.
- Scheduled power on, off, restart settings: Disabled.

When EuP is disabled, the power consumption of the NAS is slightly higher than 1W when the NAS is powered off. EuP is disabled by default so that you can use the functions Wake on LAN, AC power resumption, and power schedule settings properly.

This feature is only supported by certain NAS models.

Wake-on-LAN (WOL)

Enable this option to allow users to power on the NAS remotely by Wake on LAN. If the power cable is unplugged when the NAS is turned off, Wake on LAN will not function even if the power supply is reconnected afterwards. To wake up the NAS when it is in sleep mode or powered down, press the NAS power button or use the WOL feature in Qfinder Pro or Qmanager. The wake-up function on the NAS is only available after the WOL option is enabled in "Control Panel" > "System Settings" > "General Settings" > "Power" > "Wake-on-LAN (WOL)".

- For Qfinder Pro, select a NAS and click "Tools" > "Remote Wake Up (Wake on LAN)".
- For Qmanager, click ">" next to the NAS to be selected on the login page, scroll down to the bottom of the screen and click "Wake on LAN (WOL)".

This feature is only supported by certain NAS models.

Power Recovery

Configure the NAS to resume to the previous power-on or power-off status, turn on, or remain off when the AC power resumes after a power outage.

Note: Only x86-based NAS models can be turned on automatically after power recovery. To set it up, select "Turn on the server automatically" in "Control Panel" > "System Settings" > "Power" > "Power Recovery".

Power Schedule

Specify the schedule for automatic system power on/off, restart, or sleep mode. Weekdays are Monday to Friday, weekends are Saturday and Sunday. Up to 15 schedules can be set.

Enable "Postpone the sleep/restart/shutdown schedule when replication job is in process" to allow scheduled system restart/shutdown to be carried out after a running replication job completes. Otherwise, the NAS will ignore the running replication job and execute scheduled system restart or shutdown.

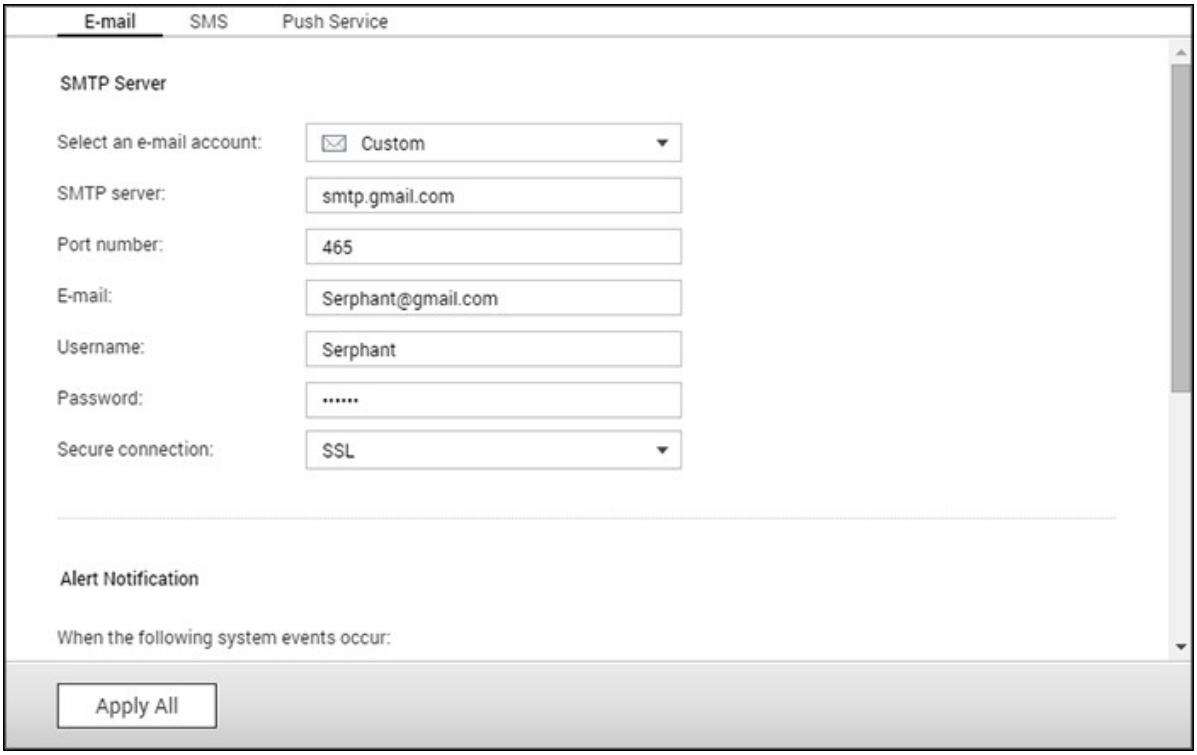
Note:

- The system cannot be shut down or restarted in sleep mode.

- If there are other QNAP storage expansion enclosures connected to the NAS, the sleep mode will be disabled automatically and system will not go into sleep mode.

4.7 Notification

Go to "Control Panel" > "System Settings" > "Notification" to configure NAS notifications.



E-mail

The NAS supports email alerts to inform the administrator of system errors and warnings. To receive alerts by email, configure the SMTP server.

- Select an email account: specify the type of email account you would like to use for email alerts.
- SMTP Server: Enter the SMTP server name (for example: smtp.gmail.com.)
- Port Number: Enter the port number for the SMTP server. The default port number is 25.
- E-mail: Enter the email address of the alert recipient.
- Username and Password: Enter the email account's login information.
- Secure connection: Choose SSL or TLS to ensure a secure connection between the NAS and SMTP server or None. It is recommended to use this if the SMTP server supports it.
- Alert Notification: Select the type of instant alerts the NAS will send when system events (warnings/errors) occur. A maximum of two email addresses can be specified to receive alerts from the NAS.

SMS

Configure the SMSC server settings to send SMS messages to specified phone numbers from the NAS. Follow these steps to set up a SMSC server:

1. Choose an SMS service provider. The default SMS service provider is Clickatell. You can add your own SMS service provider by selecting "Add SMS Provider" from the drop-down menu. When "Add SMS service provider" is selected, enter the name of the SMS provider and the URL template text.
2. Specify to enable SSL connection to the SMS service provider and fill out the server details, including the login name, login password and server API_ID.
3. Enable the alert notification by ticking the checkbox "When a system error event occurs, send a SMS notification to the following phone number". Up to two phone numbers can be specified to receive instant system alerts from the NAS.

Note: The URL template text must follow the standard of the SMS service provider to receive the SMS alert properly.

Push Service

The push service lets you receive notification messages on your mobile devices if a warning or error event occurs - allowing you to quickly receive first-hand information from your NAS and instantly react to keep your data safe. You must have "Qmanager" installed on your mobile devices to receive notifications.

Note: You must have firmware QTS 4.2.0 with Qmanager iOS 1.8.0 / Qmanager Android 2.1.0 or above.

Follow these steps to set up the push service:

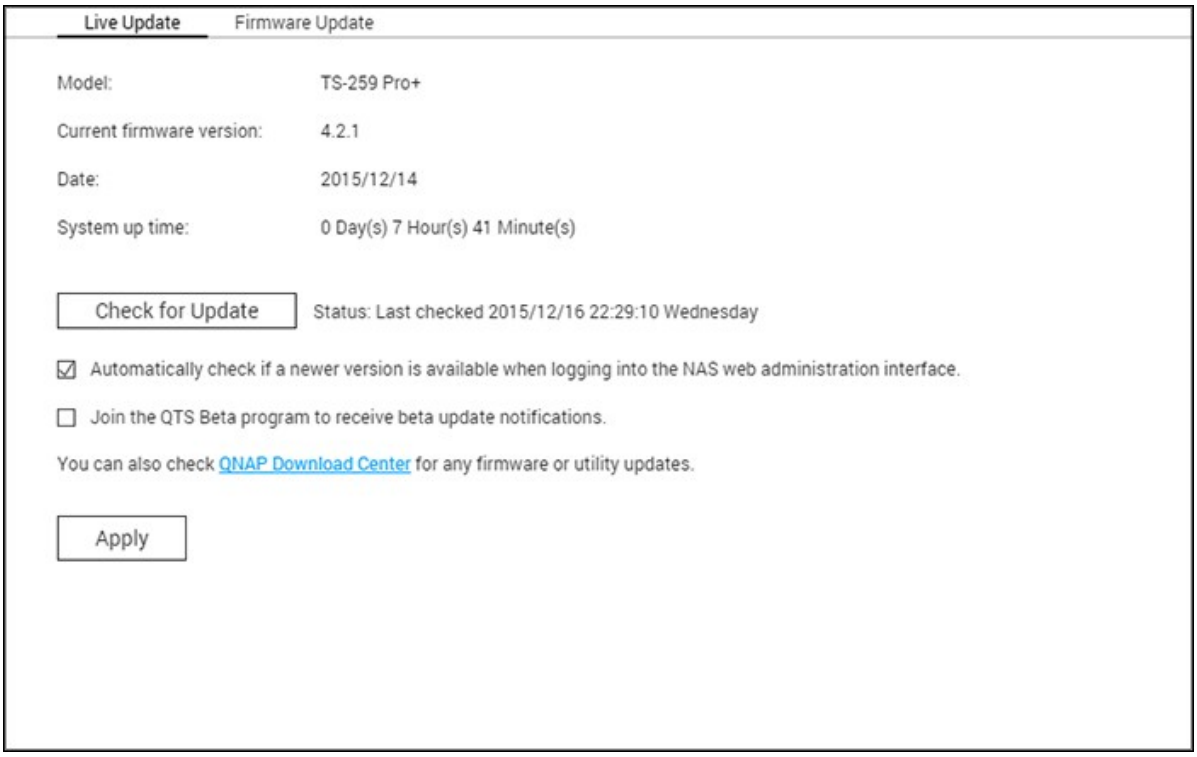
1. Log into myQNAPcloud using your QID.
2. Choose the notification types that you want to receive (warnings or errors.)
3. Install Qmanager on your mobile device (Qmanager iOS 1.8.0 / Android 2.1.0 or above.)
4. Log into the NAS using Qmanager and confirm to receive push notifications (you can also disable this service in Qmanager > click ">" next to a NAS connection > "server settings" page > change push service properties.)
5. The NAS will send alert notifications to paired mobile devices when a warning or error event occurs.

The paired devices will be listed in the "Manage Paired Devices" table. You can disable or delete a paired device from the table.

Note: On occasion you may not receive system notifications instantly due to iOS and Android server mechanisms.

4.8 Firmware Update

Go to "Control Panel" > "System Settings" > "Firmware Update" to update the firmware version of the NAS.



Live Update

Select "Automatically check if a newer version is available when logging into the NAS web administration interface" to allow the NAS to automatically check if a new firmware version is available. If a new firmware is found, you will be notified after logging in the NAS as an administrator. Click "Check for Update" to check if any firmware update is available. Note that the NAS must be connected to the Internet for these features to work.

Firmware Update

Before updating the system firmware, make sure the product model and firmware version are correct. Follow these steps to update the firmware:

1. Download the firmware release notes from the QNAP website http://www.qnap.com. Read the release notes carefully to make sure it is necessary to update the firmware.
2. Download the NAS firmware and unzip the IMG file to the computer.
3. Before updating the system firmware, back up all the NAS data to avoid any

potential data loss from unforeseen issues arising during the system update.

4. Click "Browse" to select the firmware image for the system update. Click "Update System" to update the firmware.

The system update may take seconds, minutes or longer to complete depending on the network connection status. The NAS will inform you when the system update has completed.

Note:

- If the system is running properly, you do not need to update the firmware.
- QTS does not support downgrading the firmware. However, if you choose to apply an older firmware version, please back up all of your important data before downgrading. QNAP is not responsible for any damage to the NAS or its contents after downgrading.

Update Firmware by QNAP Qfinder Pro

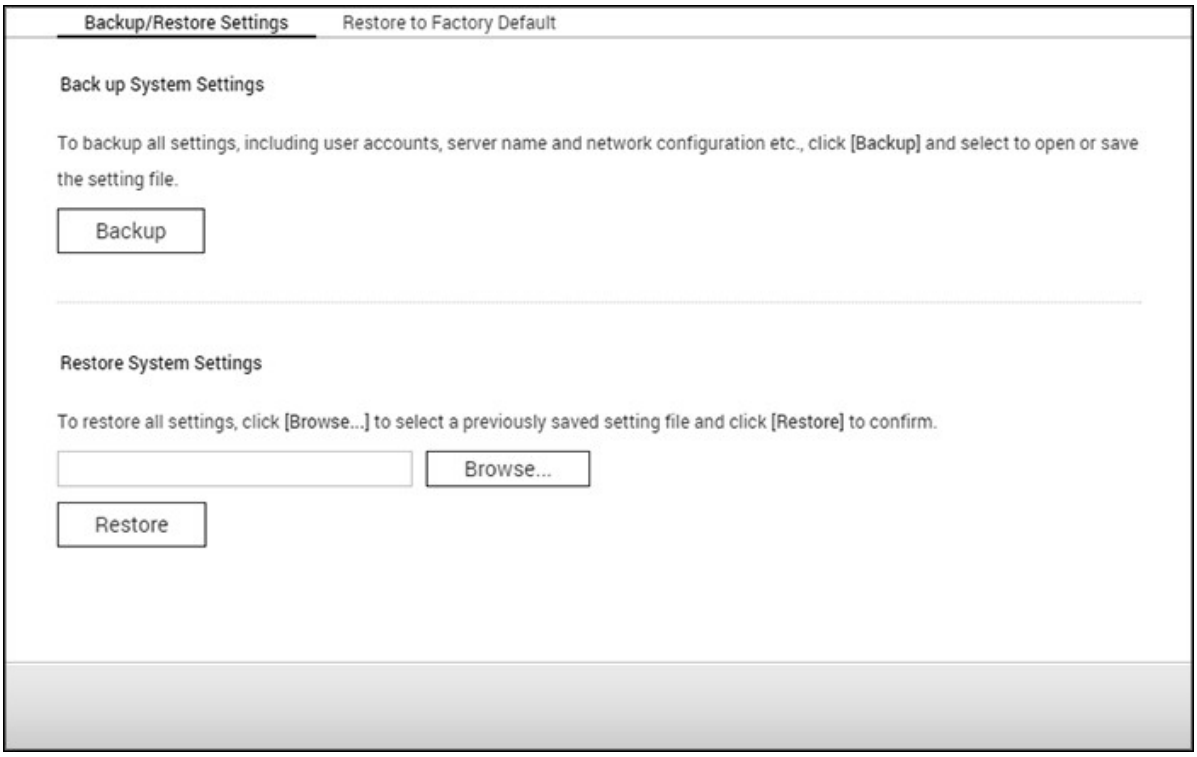
The NAS firmware can be updated using Qfinder Pro by following these steps:

1. Select a NAS model and choose "Update Firmware" from the "Tools" menu.
2. Login to the NAS as an administrator.
3. Browse and select the firmware for the NAS. Click "Start" to update the system.

Note: If you have multiple identical NAS on the same LAN, they can be updated at the same time with Qfinder Pro. Administrator access is required.

4.9 Backup/Restore

Go to "Control Panel" > "System Settings" > "Backup/Restore" to back up, restore your NAS or restore your NAS to factory default settings.



Backup/Restore Settings

- **Back up System Settings:** To back up all the settings, including the user accounts, server name, network configuration and so on, click "Backup" and select to open or save the setting file. Settings will be backed up include: User, Group, Shared Folder, Workgroup, Domain, and LDAP, Windows File Service, Mac File Service, NFS, FTP, WebDAV, Network Backup, User Home, Password Settings, SNMP, and Backup Service.
- **Restore System Settings:** To restore all the settings, click "Browse" to select a previously saved setting file and click "Restore".

Note:

- User Home includes basic service settings (excluding user data in the user home folder.)
- If the users or groups you try to restore from the backup file already exist in the current system, the users and groups in the current system will be overwritten.

Restore to Factory Default

- **Restore Factory Defaults & Format all Volumes:** Restore system settings to default and **formats all disk volumes**.
- **Reset Settings:** Restore system settings to default without erasing user data.
- **Reinitialize NAS:** **Erases all data** and reinitializes the NAS.

Caution: The administrator's password and system settings will be reset to default if you press and hold the reset button on the back of the NAS for 3 seconds (data and files on the NAS will be unaffected.) However, if you press and hold the Reset button for 10 seconds, all settings including users, user groups, and shared folders will be cleared (but user data will be unaffected.)

Note: For the above "Reset Settings" and "Reset Factory Default & Format Volume" buttons, only one of them is available on the page (depending on the NAS model.)

4.10 External Device

Go to "Control Panel" > "System Settings" > "External Storage" to configure external storage devices, USB printers and UPS systems.



For details on these features, refer to the following links:

- External Storage 118
- USB Printer 121
- UPS 128

4.10.1 External Storage

The NAS supports USB and eSATA storage devices for backup and data storage. Connect the external storage device to a USB or an eSATA port of the NAS and its details will be shown on this page.

In this chapter, the following topics are covered:

- Storage Information 118
- Format 118
- Eject 119
- Encryption Management 119
- Data Sharing 120

Storage Information

Select a storage device and click "Storage Information" to check its details. The number of USB and eSATA interfaces supported varies by model. It may take a few seconds for the NAS to detect external USB/eSATA devices.

Format

External storage devices can be formatted as EXT3, EXT4, FAT32, NTFS, or HFS+ (Mac only). Click "Format" and select the option from the drop-down menu.

Note: Starting with QTS 4.1, labeling is supported for external USB devices. To edit a USB drive's label, format it as EX3 or EX4 and click "Storage Information" to edit its label. The label will become the shared folder name of this USB device in File Station (in File Station, an USB external device will appear as a shared folder.) This feature is only supported by x69, x70 and x79 NAS models.

The NAS supports encrypting external drives. To encrypt an external storage device, click "Encryption". Select the encryption method: AES 128-, 192- or 256-bit and enter the password (8-16 characters.) Select "Save encryption key" to save the password in a hidden location on a hard drive in the NAS. The NAS will automatically unlock the encrypted external storage device when the device is connected. Click "Format" to proceed. Click "OK" and all the data will be cleared. The device will be "Ready" after disk initialization.

Note: We recommend formatting disk volumes larger than 2TB using EXT4, NTFS, or HFS+.

Eject

"Eject" offers two different options. "Disconnect disk partition" allows you to remove a single disk partition or a disk drive in a multi-drive enclosure. "Remove device" allows you to disconnect external storage devices without the risk of losing any data when the device is removed. First choose a device to eject, click "Eject" and then disconnect the disk partition or remove the device.

Note: To avoid potential data loss, always use the hardware removal function before removing your external storage device (for a Windows PC, use the "Safely Remove Hardware"; for a Mac, use the "Eject" icon; for QTS, use the "Eject" button.)

Encryption Management

If an external storage device is encrypted by the NAS, the button "Encryption Management" will appear. Click this button to manage the encryption password/key, or to lock/unlock the device.

Locking the device

1. To lock an encrypted external storage device, click "Encryption Management".
2. Select "Lock this device" and click "Next".
3. Click "Next" to lock the device.

Note:

- Before you encrypt an external storage device, you must format that device and select an encryption standard from the "Encryption" drop-down list in the "Format External Storage Drive" dialog.
- External storage devices cannot be locked if a real-time or scheduled backup job is running on it. To disable the backup job, go to "Control Panel" > "Applications" > "Backup Station" > "External Drive".

Unlocking the device

1. To unlock an encrypted external storage device, click "Encryption Management".

2. Select "Unlock this device". Click "Next".
3. Enter the encryption password or upload the key file. Select "Save encryption key" to save the password in a hidden location on a hard drive of the NAS. The NAS will automatically unlock the encrypted external storage device every time the device is connected.

Managing the encryption key

1. To change the encryption password or download an encryption key file, click "Encryption Management".
2. Select "Manage encryption key". Click "Next".
3. Select to change the encryption password or download the encryption key file to the local PC.

Data Sharing

Select one of the following settings for an external storage device connected to a 1-bay NAS:

- Data sharing: Use the external drive for storage expansion of the NAS.
- Q-RAID 1: Configure the external drive and a local hard drive on the NAS as Q-RAID 1. Q-RAID 1 enables one-way data synchronization from the NAS to the external storage device but does not offer any RAID redundancy. **Note that the external drive will be formatted when Q-RAID 1 is executed.**

After Q-RAID 1 has been executed once, the NAS data will be automatically copied to the external storage device whenever it is connected to the NAS.

Note:

- Only one external drive can be set as Q-RAID 1 at one time.
- The maximum capacity supported by Q-RAID 1 is 2TB.
- It is recommended to use an external storage device with the same capacity as the internal NAS drive. If the storage capacity of the external storage device is too small to synchronize with the internal hard drive, the device can only be used for data sharing.
- HD Station will reboot when external devices are unmounted.

4.10.2 USB Printer

The NAS supports network printing sharing service over local networks and the Internet in Windows, Mac, and Linux (Ubuntu) environments. Up to 3 USB printers are supported.

To share a USB printer, connect the printer to a USB port on the NAS. The printer will be automatically detected and its information displayed.

Printer Info

Click on a connected USB printer and then "Printer Info" to review its details.

Note:
- Connect a USB printer to the NAS after the software configuration is completed.
- The NAS does not support multifunction printers.
- The file name display for the printer job table is only available for printer jobs sent via IPP (Internet Printing Protocol).
- For a list of supported USB printers, visit http://www.qnap.com.

Printer Log

Click on a connected USB printer and then "Printer Log" to view its print job history. You can pause or cancel ongoing/pending jobs, resume paused jobs, or delete completed or pending jobs. To clear the history, click "Clear".

Note: Do NOT restart the NAS or update the system firmware when printing is in process or there are queued jobs. Otherwise all the queued jobs will be cancelled and removed.

Clean Up Spool Space

Click "Clean Up Spool Space" to clean up the data saved in the printer spool.

Settings

Click "Settings" to configure basic settings of the printer.

- **Stop printer sharing and clear print spool:** Select this option to temporarily disable the selected printer for print sharing. All of the data in the printer spool will be cleared.

- **Bonjour printer support:** Select this option to broadcast printing service to Mac users via Bonjour. When naming your printer, the name can only contain "a-z", "A-Z", "0-9", dot (.), comma (,) and dash (-).

Maximum Printer Jobs and Blacklist

- **Maximum printer jobs per printer:** Specify the maximum number of printer jobs for a printer. A printer supports up to 1,000 printer jobs. The oldest printer job will be overwritten by the newest one if the printer has reached the maximum number of printer jobs.
- **Enter IP addresses or domain names to allow or deny printing access:** To allow or deny particular IP addresses or domain names from using the NAS printing service, select "Allow printing" or "Deny printing" and enter the IP addresses or domain names. An asterisk (*) denotes all connections. To allow all users to use the printer, select "No limit". Click "Apply" to save the settings.

Note: This feature only works for printing service via IPP and Bonjour, but not Samba.

4.10.2.1 Windows 7

Follow these steps to set up your printer connection:

1. Go to Devices and Printers.
2. Click "Add a printer".
3. In the Add printer wizard, click "Add a network, wireless or Bluetooth printer".
4. While Windows is searching for available network printers, click "The printer that I want isn't listed".
5. Click "Select a shared printer by name", and then enter the address of the network printer. The address is in the following format – http://NAS_IP:631/printers/ ServernamePR, where the NAS_IP can also be a domain name address if you want to print remotely. For example, http://10.8.13.59:631/printers/NASPR3
6. The wizard will prompt you for the correct printer driver. You can also download the latest printer driver from the manufacturer's website if it is not built-into Windows operating system.
7. After installing the correct printer driver, the wizard shows the address and driver of the new network printer.
8. You can also set the network printer as the default printer or print a test page. Click "Finish" to exit the wizard.
9. The new network printer is now available for printing.

4.10.2.2 Mac OS 10.6

If you are using Mac OS 10.6, follow these steps to configure the NAS printer function:

1. First make sure that Bonjour is enabled on the NAS in "External Device" > "USB Printer" > "Settings". You can change the Service Name to better represent the printer.
2. On your Mac, go to "System Preferences", and then click "Print & Fax".
3. In the Print & Fax window, click + to add a printer.
4. The USB network printer will be listed via Bonjour. Select the default printer driver or download and install the latest one from the printer manufacturer's website. Click "Add" to add this printer.
5. Additional options may be available for your printer. Click "Continue".
6. The new network printer is now available for printing.

4.10.2.3 Mac OS 10.5

If you are using Mac OS X 10.5, follow these steps to configure the NAS printer function:

1. Go to "Network Services" > "Win/Mac/MFS" > "Microsoft Networking". Enter a workgroup name for the NAS. You will need this information later.
2. Go to "Print & Fax" on your Mac.
3. Click + to add a printer.
4. Select the NAS workgroup and find the printer name.
5. Enter the username and password to login the printer server on the NAS.
6. Select the printer driver.
7. After installing the printer driver correctly, you can start using the printer.

4.10.2.4 Mac OS 10.4

If you are using Mac OS 10.4, follow these steps to configure the NAS printer function:

1. On the toolbar, click "Go/Utilities".
2. Click "Printer Setup Utility".
3. Click "Add".
4. Hold the "alt" key and click "More Printers".
5. In the pop up window, select "Advanced" and "Windows Printer with SAMBA", enter the printer name and the printer URI (the format is smb://NAS IP/printer name. The printer name is found on the "Device Configuration" > "USB Printer page"), select "Generic" for Printer Model and click "Add".
6. The printer appears on the printer list and is ready to use.

Note:

- For "Advanced" in Step 5 above, you must hold the "alt" key and click "More Printers" at the same time to view the Advanced printer settings.
- The network printer service of the NAS supports Postscript printer on Mac OS only.

4.10.2.5 Linux (Ubuntu 10.10)

If you are using Linux (Ubuntu 10.10), follow these steps to configure the NAS printer function:

1. Click the "System" tab, choose "Administration". Then select "Printing".
2. Click "Add".
3. Click "Network Printer", and then select "Internet Printing Protocol (ipp)". Enter the NAS IP address in "Host". "/printers" is already present. Enter the printer name after "printers/" in the field "Queue".
4. Before you continue, click "Verify" to test the printer connection.
5. The operating system starts to search for the possible drivers.
6. Select the printer driver from the built-in database, or search online.
7. Choose the correct printer model and driver. Depending on the printer, some additional printer options may be available in the next step.
8. You can rename this printer or enter additional information. Click "Apply" to exit and finish.
9. The network printer is now available for printing.

4.10.3 UPS

By enabling UPS (Uninterruptible Power Supply) support, you can protect your NAS from abnormal system shutdown caused by power disruption. There are two options provided on the "UPS" page for the NAS during a power failure: 1) turn off the server after the AC power fails, or 2) enter the auto-protection mode after the AC power fails. For option 1, the NAS will shut itself down after the specified time. For option 2, the NAS will stop all running services and unmount all volumes to protect your data after the specified time. For details on NAS behavior during a power failure, refer to the "Behavior of the UPS Feature of the NAS" section. Please note that to protect your data, once the power outage starts, the NAS will automatically turn itself off or enter auto-protection mode (depending on your settings) after 30 seconds regardless of the specified time for either of the above options if the remaining UPS battery charge is < 15%.

In this chapter, the following topics are covered:

- USB Modes 128
  - Standalone Mode – USB 128
  - Standalone Mode – SNMP 128
  - Network Master Mode 129
  - Network Slave Mode 129
- Behavior of the UPS Feature of the NAS 130

USB Modes

Standalone Mode – USB

To operate under USB standalone mode, follow the steps below:

1. Plug in the USB cable on the UPS to the NAS.
2. Choose between whether the NAS will shut down or enter auto-protection mode after the AC power fails. Specify the time in minutes that the NAS should wait before executing the option you have selected. After the NAS enters auto-protection mode, the NAS resumes the previous operation status when the power restores.
3. Click "Apply All" to confirm.

Standalone Mode – SNMP

To operate under SNMP standalone mode, follow the steps below:

1. Make sure the NAS is connected to the same physical network as the SNMP-based UPS.
2. Select "APC UPS with SNMP management" from the "Protocol" drop down menu.

3. Enter the IP address of the SNMP-based UPS.
4. Choose between whether the NAS should shut down or enter auto-protection mode after the AC power fails. Specify the time in minutes that the NAS should wait before executing the option you have selected. After the NAS enters auto-protection mode, the NAS resumes the previous operation status when the power restores.
5. Click "Apply All" to confirm.

Network Master Mode

A network UPS master is responsible for communicating with network UPS slaves on the same physical network regarding critical power status. To set your NAS with UPS as network master mode, plug in the USB cable on the UPS to the NAS and follow these steps:

1. Make sure the NAS (the "UPS master") is connected to the same physical network as the network UPS slaves.
2. Click "Enable network UPS Support". This option only appears when your NAS is connected to the UPS by a USB cable.
3. Choose between whether the NAS should shut down or enter auto-protection mode after the AC power fails. Specify the time in minutes that the NAS should wait before executing the option you have selected. After the NAS enters auto-protection mode, the NAS resumes the previous operation status when the power restores.
4. Enter the "IP address" of other network UPS slaves to be notified in the event of power failure.
5. Click "Apply All" to confirm and continue the setup for the NAS systems which operate in network slave mode below.

Network Slave Mode

A network UPS slave communicates with network UPS master to receive the UPS status. To set up your NAS with UPS as network slave mode, follow these steps:

1. Make sure the NAS is connected to the same physical network as the network UPS master.
2. Select "Network UPS slave" from the "Protocol" drop down menu.
3. Enter the IP address of the network UPS server.
4. Choose between whether the NAS should shut down or enter auto-protection mode after AC power fails. Specify the time in minutes that the NAS should wait before executing the option you have selected. After the NAS enters auto-protection mode, the NAS resumes the previous operation status when the power restores.
5. Click "Apply All" to confirm.

Note: To allow the UPS device to send SNMP alerts to the NAS in the event of power loss, you may have to enter the NAS IP address in the UPS configuration page.

Behavior of the UPS Feature of the NAS

There are three phases during a power outage:

- Phase 1: Power loss starts until the end of the waiting time.
- Phase 2: From the end of the waiting time to the point when the UPS device runs out of its battery.
- Phase 3: After the UPS device runs out of its battery and until the power restores.

Phase 1:

As soon as the power loss starts, the NAS will detect the UPS device's battery. If the remaining UPS battery charge is < 15%, the system will automatically turn itself off or enter auto-protection mode (depending on your settings) after 30 seconds regardless the time you specified for either of the settings (turn off the NAS or enter auto protection mode.) If the UPS battery charge is > 15%, the NAS will wait for the specified time you entered in the "UPS" page.

If the power resumes during this phase, the NAS will remain in operation.

Phase 2:

Depending on your setting on the "UPS" page:

- If in auto-protection mode, the NAS will stop all running services and unmount all volumes. The NAS at this moment will become inaccessible.
- If the NAS is powered off, it will remain off.

If the power resumes during this phase:

- If in auto-protection mode, the NAS will reboot and resume its previous state.
- If the NAS is powered off, it will remain off.

Phase 3:

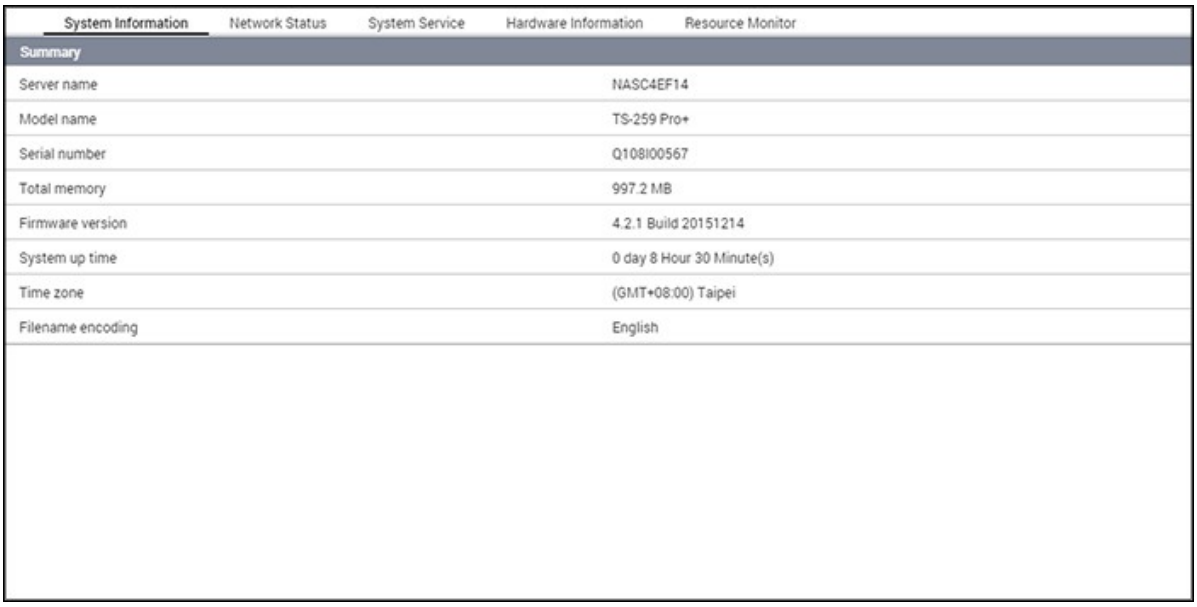
Depending on your setting on the "UPS" page:

- If in auto-protection mode, the NAS will lose its power and shut down.
- If the NAS is powered off, it will remain off.

After the power resumes during this phase, the NAS will react according to your settings in "System Settings" > "Power Recovery".

4.11 System Status

Go to "Control Panel" > "System Settings" > "System Status" to check the status of your NAS.



System Information

View the summary of system information such as the server name, CPU, memory, firmware and system up time on this page.

Note: CPU and memory information is only available on certain NAS models.

Network Status

View the current network settings and statistics on this page. They are displayed based on network interface. Click the up arrow in the top right to collapse the interface page and the down arrow to expand it.

System Service

View the current settings of system services provided by the NAS.

Hardware Information

View basic hardware information of the NAS.

Resource Monitor

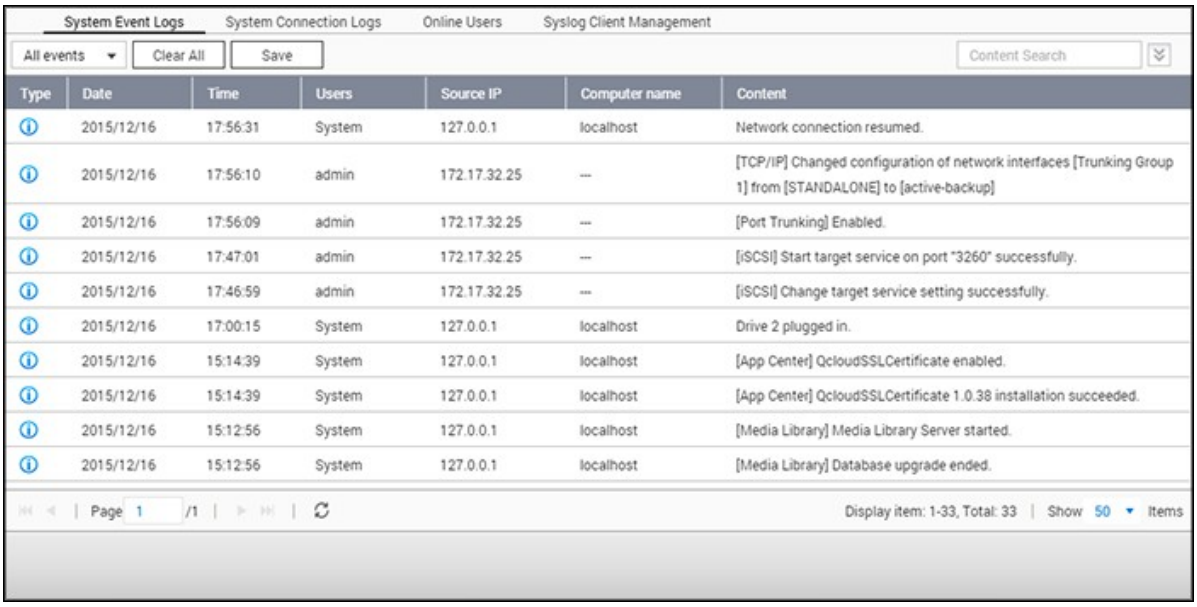
You can view the CPU usage, disk usage, and bandwidth transfer statistics of the NAS.

- CPU Usage: Shows the CPU usage of the NAS.
- Memory Usage: Shows the memory usage of the NAS by real-time dynamic graph.
- Disk Usage: Shows the disk space usage of each disk volume and its shared folders.
- Bandwidth Usage: Provides bandwidth transfer information of each available NAS LAN port.
- Process: Shows information about the processes running on the NAS.
- Disk Performance: Shows IOPS and latency of the selected volume.

Note: Disk Performance is only available on certain NAS models.

4.12 System Logs

Go to "Control Panel" > "System Settings" > "System Logs" to configure the logs settings of your NAS.



System Event Logs

The NAS can store 10,000 recent event logs, including warnings, errors, and information. If the NAS does not function correctly, refer to the event logs for troubleshooting.

> **Tip:** Right click on a record to delete it. To clear every log, click "Clear All".

System Connection Logs

The NAS can record HTTP, FTP, Telnet, SSH, AFP, SAMBA, and iSCSI connections. Click "Options" to select the connection type to be logged. File transfer performance may be slightly impacted when this feature is enabled.

> **Tip:** Right click on a record and select to delete the record or to block the IP and select how long the IP should be blocked. To clear every log, click "Clear All".

Start Logging: Enable this option to archive connection logs. When the number of logs reaches the upper limit the NAS will automatically generate a CSV file and save it to a specified folder. File-level access logs are available on this page. The NAS will record logs when users access, create, delete, move, or rename any files/folders via the connection

type specified in "Options". To disable this feature, click "Stop logging".

Note: For AFP and SSH connections, the system can only record login and logout events.

Online Users

The information of online users connected to the NAS by networking services is shown here.

Tip: Right click on a record to disconnect the IP connection and block the IP.

Syslog Client Management

Syslog is a standard for forwarding log messages on an IP network. Enable this option to save event and connection logs to a remote Syslog server. When converting connection logs into a CSV file, the connection type and action will be number coded. Refer to the table for code meanings.

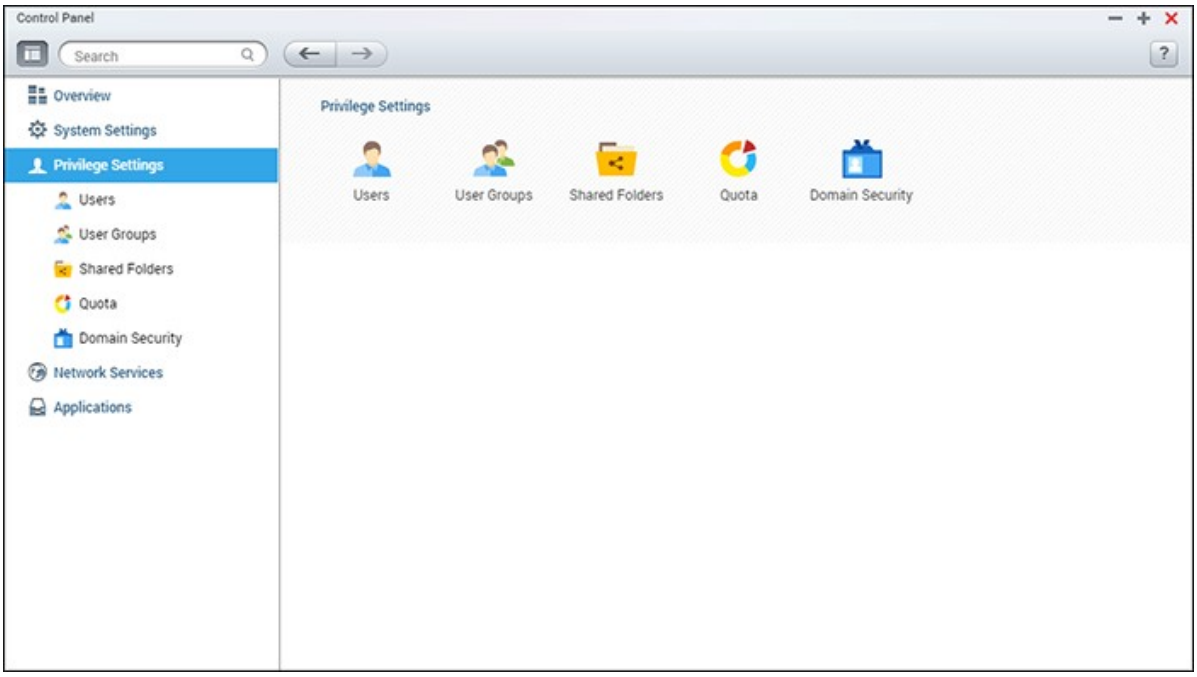
Connection type codes	Action codes
0 - UNKNOWN	0 - UNKNOWN
1 - SAMBA	1 - DEL
2 - FTP	2 - READ
3 - HTTP	3 - WRITE
4 - NFS	4 - OPEN
5 - AFP	5 - MKDIR
6 - TELNET	6 - NFSMOUNT_SUCC
7 - SSH	7 - NFSMOUNT_FAIL
8 - ISCSI	8 - RENAME
	9 - LOGIN_FAIL
	10 - LOGIN_SUCC
	11 - LOGOUT
	12 - NFSUMOUNT
	13 - COPY
	14 - MOVE
	15 - ADD

Advanced Log Search

Advanced log search is provided to search for system event logs, system connection logs and online users based on user preferences. First, specify the log type, users, computer name, date range and source IP and click "Search" to search for desired logs or reset to list all logs. Please note that for online users, only the source IP and Computer name can be specified.

5. Privilege Settings

Go to "Control Panel" > "Privilege Systems" to configure privilege settings, disk quotas and domain security on the NAS.



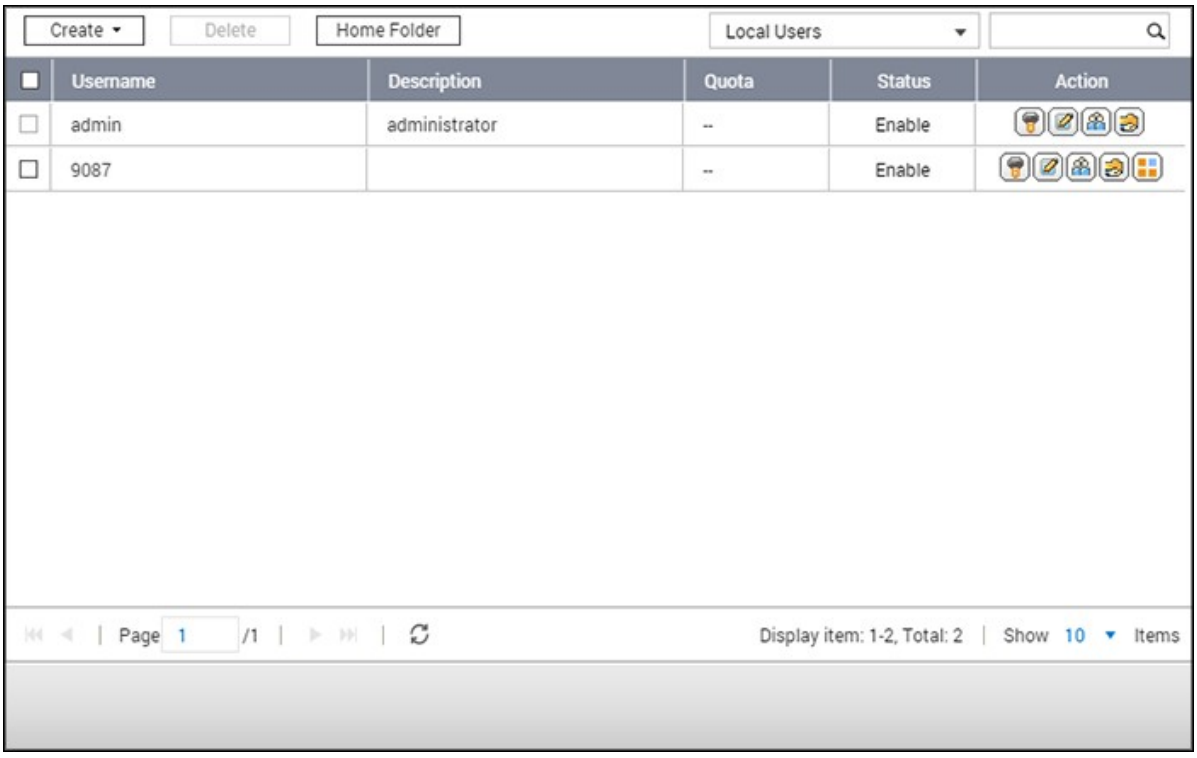
For setup details, refer to the following links:

- Users 138
- User Groups 143
- Share Folders 145
- Quota 155
- Domain Security 156

5.1 Users

The NAS creates the following users by default:

- admin: The administrator "admin" has full access to system administration and all shared folders. It cannot be deleted.
- guest: This is a built-in user and will not be displayed on the "User Management" page. A guest does not belong to any user group. The login password is "guest".
- anonymous: This is a built-in user and will not be shown on the "User Management" page. When you connect to a NAS by FTP, you can use this name to login.



The number of users you can create on the NAS varies by NAS models. If your NAS models are not listed, visit http://www.qnap.com for more details.

Maximum number of users	NAS models
1,024	TS-110, TS-210
2,048	TS-112, TS-119, TS-119P+, TS-212, TS-219P+, TS-410, TS-239 Pro II+, TS-259 Pro+
4,096	TS-412, TS-419P+, TS-410U, TS-419U, TS-412U, TS-419U+, SS-439 Pro, SS-839 Pro, TS-439 Pro II+, TS-459U-RP/SP, TS-459U-RP+/SP+, TS-459 Pro+, TS-459 Pro II, TS-559 Pro+, TS-559 Pro II, TS-659 Pro+, TS-659 Pro

	II, TS-859 Pro+, TS-859U-RP, TS-859U-RP+, TS-809 Pro, TS-809U-RP, TS-879 Pro, TS-1079 Pro, TS-879U-RP, TS-EC879U-RP, TS-1279U-RP, TS-EC1279U-RP, TS-269 Pro, TS-269L, TS-469 Pro, TS-469L, TS-569 Pro, TS-569L, TS-669 Pro, TS-669L, TS-869 Pro, TS-869L, TS-251, TS-451, TS-651, TS-851, TS-253 Pro, TS-453 Pro, TS-653 Pro, TS-853 Pro, SS-453 Pro, SS-853 Pro.

The following information is required to create new users:

- Username: The username is case-insensitive and supports multi-byte characters, such as Chinese, Japanese, Korean, and Russian. The maximum length is 32 characters. Invalid characters are: " / \ [ ] : ; | = , + * ? < > ` '
- Password: The password is case-sensitive. It is recommended to use a password of at least 6 characters. The maximum length is 64 characters.

In this chapter, the following topics are covered:

- Creating a User 139
- Creating Multiple Users 139
- Importing/Exporting Users 140
- Home Folders 141

Creating a User

To create a user on the NAS, follow the steps below:

1. Go to "Control Panel" > "Privilege Settings" > "Users".
2. Click "Create" > "Create a User".
3. Follow the wizard instructions to complete the details.

Creating Multiple Users

To create multiple users on the NAS, follow the steps below:

1. Go to "Control Panel" > "Privilege Settings" > "Users".
2. Click "Create" > "Create Multiple Users".
3. Click "Next".
4. Enter the name prefix (for example: "test".) Enter the start number for the username, e.g. 0001 and the number of users to be created (for example: 10.) The NAS will then create ten users named: test0001, test0002, test0003 ... test0010.

The password entered here is the same for all the new users.

5. Select to create a private shared folder for each user or not. The shared folder will be named after the username. If a shared folder of the same name has already existed, the NAS will not create the folder.
6. Specify the folder settings.
7. You can view the new users created in the last step. Click "Finish" to exit the wizard.
8. Check that the users have been created.
9. Check that the shared folders have been created for the users.

Importing/Exporting Users

You can import users to or export users from the NAS with this function.

Exporting users

Follow the steps below to export users from the NAS:

1. Go to "Control Panel" > "Privilege Settings" > "Users".
2. Click "Create" > "Import/Export Users".
3. Select the option "Export user and user group settings".
4. Click "Next" to download and save the account setting file (*.bin.) This file can be imported to another NAS for account setup.

Importing users

Before importing users to the NAS, make sure you have backed up the original users' settings by exporting the users. Follow these steps to import users to the NAS:

1. Go to "Control Panel" > "Privilege Settings" > "Users".
2. Click "Create" > "Import/Export Users".
3. Select "Import user and user group settings". Select the option "Overwrite duplicate users" to overwrite existing users on the NAS. Click "Browse", select the file (*.txt, *.csv, *.bin) which contains the users' information and click "Next" to import the users.
4. Click "Finish" after the users have been created.
5. The imported user accounts will be displayed.

Note:

- The password rules (if applicable) will not be applied when importing users.
- The quota settings can be only exported when the quota function is enabled in

"Privilege Settings" > "Quota".

The NAS supports importing user accounts from TXT, CSV or BIN files. To create a list of user accounts with these file types, follow these steps:

TXT

1. Open a new file with a text editor.
2. Enter a user's information in the following order and separate them by ",": Username, Password, Quota (MB), Group Name
3. Go to the next line and repeat the previous step to create another user account. Each line indicates one user's information.
4. Save the file with UTF-8 encoding if it contains double-byte characters.

Note that if the quota is left empty, the user will have no limit in using the disk space of the NAS.

CSV (Excel)

1. Open a new file with Excel.
2. Enter a user's information in the same row in the following order:
   - Column A: Username
   - Column B: Password
   - Column C: Quota (MB)
   - Column D: Group name
3. Go to the next row and repeat the previous step to create another user account. Each row indicates one user's information. Save it as a CSV file.
4. Open the CSV file with Notepad and save it in UTF-8 encoding if it contains double-byte characters.

BIN (Exported from the NAS)

The BIN file is exported from a QNAP NAS. It contains information including username, password, quota, and user group. The quota setting can only be exported when the quota function is enabled in "Privilege Settings" > "Quota".

Home Folders

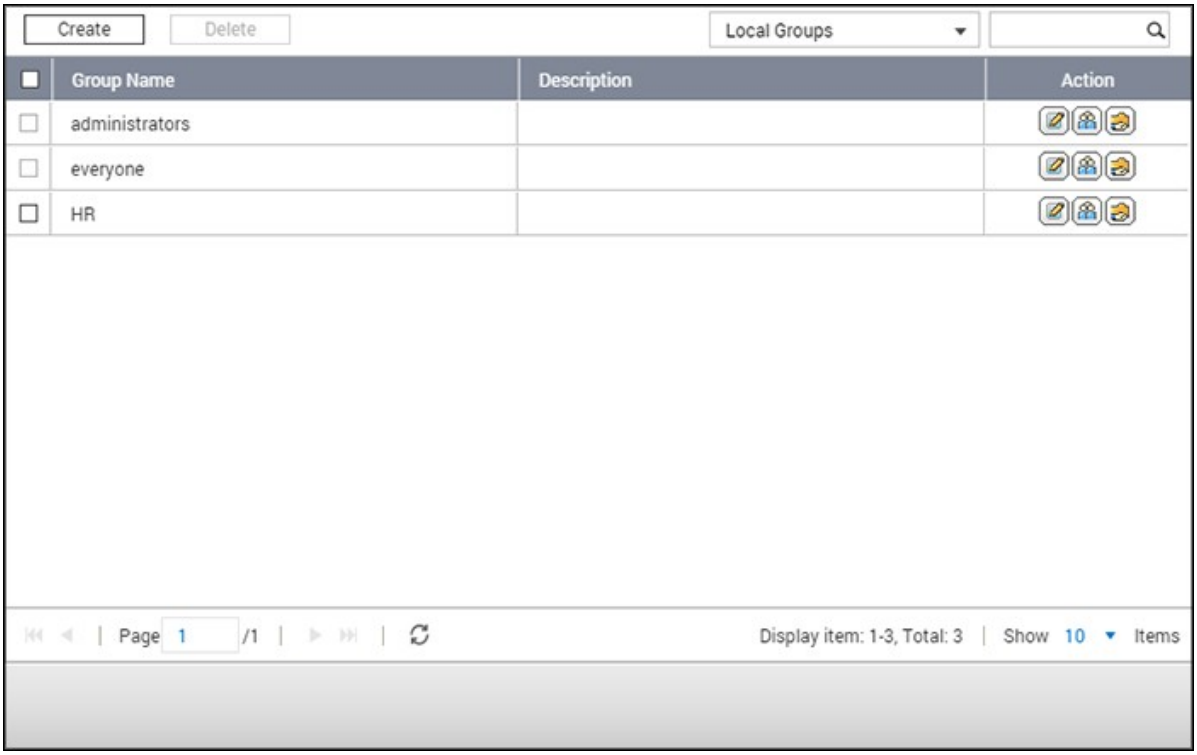
Enable Home Folders to create a personal folder to each local and domain user on the NAS. Users can access their home folders via Microsoft networking, FTP, AFP, and File

Station. All the home folders are located in the shared folder "Homes", which can only be accessed by "admin" by default.

To use this feature, click "Home Folders". Select "Enable home folder for all users" and the disk volume where the home folders will be created in. Click "Apply".

5.2 User Groups

A user group is a collection of users with the same access rights to files or folders.



The NAS creates the following user groups by default:

- administrators: All the members in this group have administration rights of the NAS. This group cannot be deleted.
- everyone: All the registered users belong to this group. This group cannot be deleted.

The number of user groups you can create on the NAS varies by NAS model. If your NAS is not listed, visit http://www.qnap.com for more details.

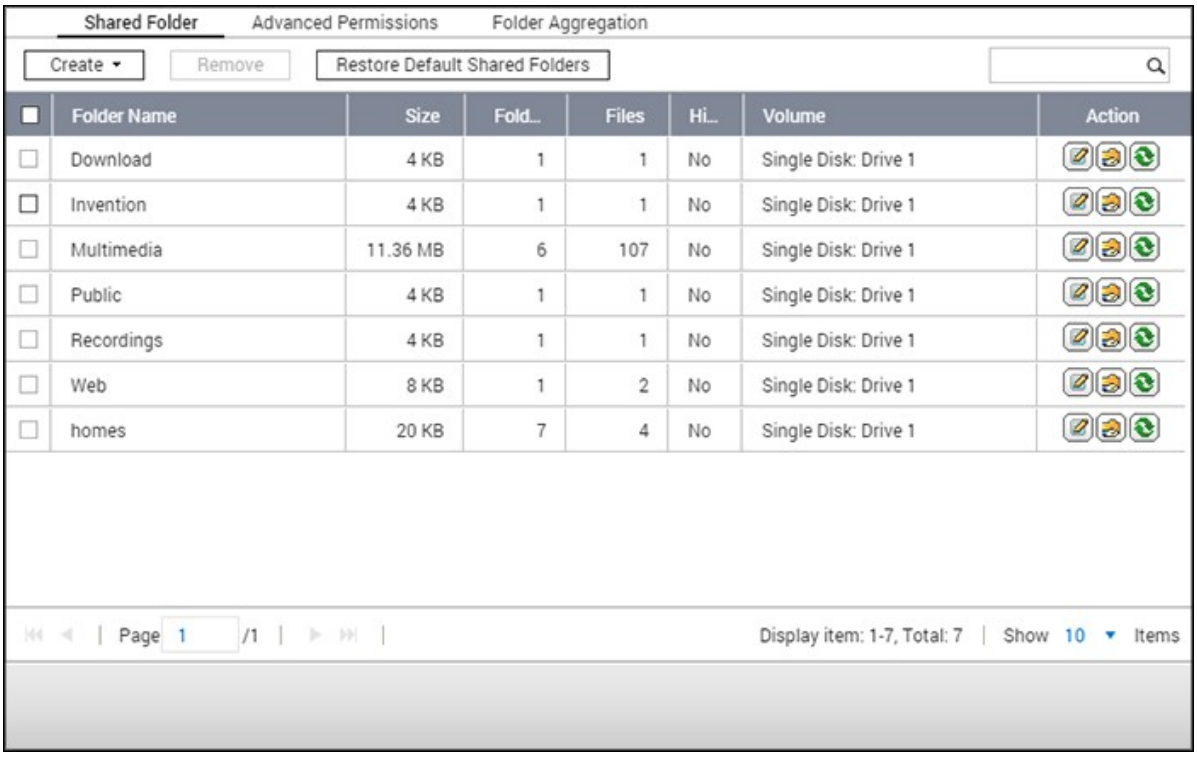
Maximum number of user groups	NAS models
128	TS-110, TS-210
256	TS-112, TS-119, TS-119P+, TS-212, TS-219P+, TS-410, TS-239 Pro II+, TS-259 Pro+

512	TS-412, TS-419P+, TS-410U, TS-419U, TS-412U, TS-419U+, SS-439 Pro, SS-839 Pro, TS-439 Pro II+, TS-459U-RP/SP, TS-459U-RP+/SP+, TS-459 Pro+, TS-459 Pro II, TS-559 Pro+, TS-559 Pro II, TS-659 Pro+, TS-659 Pro II, TS-859 Pro+, TS-859U-RP, TS-859U-RP+, TS-809 Pro, TS-809U-RP, TS-879 Pro, TS-1079 Pro, TS-879U-RP, TS-EC879U-RP, TS-1279U-RP, TS-EC1279U-RP, TS-269 Pro, TS-269L, TS-469 Pro, TS-469L, TS-569 Pro, TS-569L, TS-669 Pro, TS-669L, TS-869 Pro, TS-869L, TS-251, TS-451, TS-651, TS-851, TS-253 Pro, TS-453 Pro, TS-653 Pro, TS-853 Pro, SS-453 Pro, SS-853 Pro.

A group name cannot exceed 256 characters. It is case-insensitive and supports double-byte characters, such as Chinese, Japanese, and Korean, except the following ones: " / \ [ ] : ; | = , + * ? < > ` '

5.3 Shared Folders

Go to "Control Panel" > "Privilege Settings" > "Shared Folders" to configure shared folders of your NAS.



In this chapter, the following topics are covered:

- Shared Folders 145
- ISO Shared Folders 151
- Folder Aggregation 152

Shared Folders

You can create multiple shared folders on the NAS and specify access rights for users and user groups. The number of shared folders you can create on the NAS varies by NAS model. If your NAS model is not listed, visit http://www.qnap.com for more details.

Maximum number of shared folders	NAS models
256	TS-110, TS-210, TS-112, TS-119, TS-119P+, TS-212, TS-219P+, TS-x20, TS-x21, TS-410, TS-239 Pro II+, TS-259 Pro+
512	TS-412, TS-419P+, TS-410U, TS-419U, TS-412U,

	TS-419U+, SS-439 Pro, SS-839 Pro, TS-439 Pro II+, TS-459U-RP/SP, TS-459U-RP+/SP+, TS-459 Pro+, TS-459 Pro II, TS-559 Pro+, TS-559 Pro II, TS-659 Pro+, TS-659 Pro II, TS-859 Pro+, TS-859U-RP, TS-859U-RP+, TS-809 Pro, TS-809U-RP, TS-x70, TS-879 Pro, TS-1079 Pro, TS-879U-RP, TS-EC879U-RP, TS-1279U-RP, TS-EC1279U-RP

On the folder list, you can view the current data size, number of sub-folders and files created in the shared folder, and the folder status (hidden or not.)

To create a shared folder, follow these steps:

1. Click "Create" > "Shared Folder".
2. Enter the folder settings.
   - Folder name: Enter the name. The name does not support " / \ [ ] : ; | = , + * ? < > ` '
   - Comment: Enter an optional description of the shared folder.
   - Disk Volume: Select which disk volume on which to create the folder.
   - Path: Specify the path of the shared folder or choose to let the NAS specify the path automatically.
3. Configure Access privileges for users: Select the way you want to specify the access rights to the folder. If you select to specify the access right by user or user group, you can select to grant read only, read/write, or deny access to the users or user groups.
4. Advanced settings:
   - Guest Access Right: Specify the guest access right.
   - Media Folder: Set this folder as a media folder (refer to the Media Folder chapter for details.)
   - Hide Network Drive: Select to hide the shared folder or not in Microsoft Networking. When a shared folder is hidden, you have to enter the complete directory \\NAS_IP\share_name to access the share.
   - Lock file (oplocks): Opportunistic locking is a Windows mechanism for the client to place an opportunistic lock (oplock) on a file residing on a server in order to cache the data locally for improved performance. Oplocks is enabled by default for everyday usage and should be disabled on networks that require multiple users concurrently accessing the same files.
   - Enable Network Recycle Bin: Enable the Network Recycle Bin for created shared

folders. The option "Restrict the access of Recycle Bin to administrators only for now" will ensure that files deleted and moved to the Network Recycle Bin can only be recovered by administrators.

- Enable sync on this shared folder: Enable this option if you want to sync the contents in this shared folder.

5. Confirm the settings and click "Next".
6. Click "Finish" to complete the setup.

To delete a shared folder, select the folder checkbox and click "Remove". You can select the option "Also delete the data. (Mounted ISO image files will not be deleted)" to delete the folder and the files in it. If you do not select to delete the folder data, the data will be retained in the NAS. You can create a shared folder of the same name again to access the data.

Icon	Name	Description
	Folder Property	Edit the folder property. Select to hide or show the network drive, enable/disable oplocks, folder path, comment, restrict the access of Recycle Bin to administrators (files can only be recovered by administrators from the Network Recycle Bin) and enable or disable write-only access on FTP connection.
	Folder Permissions	Edit folder permissions and subfolder permissions.
	Refresh	Refresh the shared folder details.

Folder Permissions

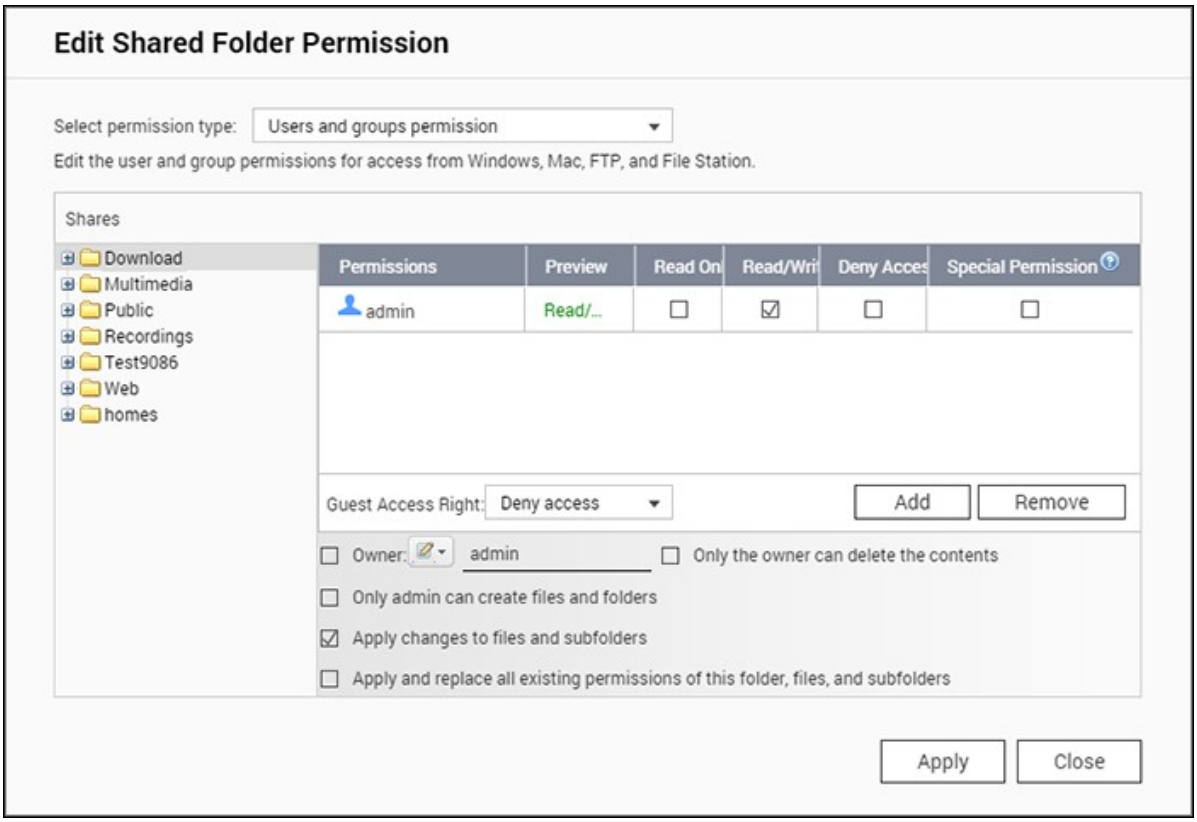
Configure folder and subfolder permissions on the NAS. To edit basic folder permissions, locate a folder name in "Privilege Settings" > "Shared Folders" and click "Folder Permissions" in the "Action" column. The folder name will be shown on the left and the users with configured access rights are shown in the panel. You can also specify guest access rights on the bottom of the panel. Click "Add" to select more users and user groups and specify their access rights to the folder. Click "Add" to confirm. Click "Remove" to remove any configured permissions. You can select multiple items by holding the Ctrl key and left clicking the mouse. Click "Apply" to save the settings.

Subfolder Permissions

The NAS supports subfolder permissions for secure management of folders and subfolders. You can specify read, read/write, and deny access to individual users for each folder and subfolder.

To configure subfolder permissions, follow these steps:

1. Go to "Privilege Settings" > "Shared Folders" > "Advanced Permissions" tab. Select "Enable Advanced Folder Permissions" and click "Apply All".
2. Go to "Privilege Settings" > "Shared Folders" > "Shared Folder" tab. Select a root folder (for example, "Dept") and click "Folder Permissions". The shared folder name and its first-level subfolders are shown on the left. The users with configured access rights are shown in the panel, with special permission below. Double click on first-level subfolders to view the second-level subfolders. Select the root folder (Dept). Click "+ Add" to specify read only, read/write, or deny access for users and user groups.
3. Click "Add" when you have finished the settings.
4. Specify other permissions below the folder permissions panel.
   - Guest Access Right: Specify to grant full or read only access or deny guest access.
   - Owner: Specify the owner of the folder. By default, the folder owner is the creator.
5. To change the folder owner, click the "Folder Property" button next to the owner field.



6. Select a user from the list or search a username. Then click "Set".
   - Only the owner can delete the contents: When you apply this option to a folder (for example, "Dept"), only the folder owner can delete the first-level subfolders and files. Users who are not the owner but possess read/write permission to the folder cannot delete the folders Admin, HR, Production, Sales, and test in this example. This option does not apply to the subfolders of the selected folder even if the options "Apply changes to files and subfolders" and "Apply and replace all existing permissions of this folder, files, and subfolders" are selected.
   - Only admin can create files and folders: This option is only available for root folders. Select this option to allow admin to create first-level subfolders and files in the selected folder only. For example, in the folder "Dept", only the admin can create files and subfolders Admin, HR, Production, and so on. Other users with read/write access to Dept can only create files and folders in the second and lower-level subfolders such as Admin01, Admin02, HR1, and HR2.
   - Apply changes to files and subfolders: Apply permissions settings except owner protection and root folder write protection settings to all the files and subfolders within the selected folder. These settings include new users, deleted users, modified permissions, and folder owner. The options "Only the owner can delete the contents" and "Only admin can create files and folders" will not be applied to subfolders.

- Apply and replace all existing permissions of this folder, files, and subfolders: Select this option to override all previously configured permissions of the selected folder and its files and subfolders except owner protection and root folder write protection settings. The options "Only the owner can delete the contents" and "Only admin can create files and folders" will not be applied to subfolders.
- Special Permission: This option is only available for root folders. Select this option and choose between "Read only" or "Read/Write" to allow a user to access to all the contents of a folder irrespectively of the pre-configured permissions. A user with special permission will be identified as "admin" when he/she connects to the folder via Microsoft Networking. If you have granted special permission with "Read/Write" access to the user, the user will have full access and is able to configure the folder permissions on Windows. Note that all the files created by this user belong to "admin". Since "admin" does not have quota limit on the NAS, the number and size of the files created by users with special permission will not be limited by their pre-configured quota settings. This option should only be used for administrative and backup tasks.

7. After changing the permissions, click "Apply" and then "YES" to confirm.

Note:

- You can create up to 230 permission entries for each folder when Advanced Folder Permission is enabled.
- If you have specified "deny access" for a user on the root folder, the user will not be allowed to access the folder and subfolders even if you select read/write access to the subfolders.
- If you have specified "read only access" for a user on the root folder, the user will have read only access to all the subfolders even if you select read/write access to the subfolders.
- To specify read only permission on the root folder and read/write permission on the subfolders, you must set read/write permission on the root folder and use the option "Only admin can create files and folders" (to be explained later).
- If an unidentified account ID (such as 500) is shown for a subfolder on the permission assignment page after you click the "Access Permissions" button next to a shared folder in "Control Panel">"Privilege Settings">"Shared Folders">"Shared Folder", it is likely that the permission of that subfolder has been granted to a user account that no longer exists. In this case, select the unidentified account ID and click "Remove" to delete it.

Microsoft Networking Host Access Control

NAS folders can be accessed via Samba (Windows) by default. You can specify authorized IP addresses and hosts by following these steps:

1. Click "Folder Permissions".
2. Select "Microsoft Networking host access" from the drop-down menu at the top of the page.
3. Specify authorized IP addresses and host names. The following IP address and host name are used as an example:
   - IP address: 192.168.12.12 or 192.168.*.*
   - Host name: dnsname.domain.local or *.domain.local
4. Click "Add" to enter the IP address and host name and then "Apply".

Notifications on characters used:

- Wildcard characters: You can enter wildcard characters in an IP address or host name entry to represent unknown characters.
- Asterisk (*): Use an asterisk (*) as a substitute for zero or more characters. For example, if you enter *.domain.local, the following items are included: a.domain.local, cde.domain.local, or test.domain.local
- Question mark (?): Use a question mark (?) as a substitute for only one character. For example, test?.domain.local includes the following: test1.domain.local, test2. domain.local, or testa.domain.local

When you use wildcard characters in a valid host name, dot (.) is included in wildcard characters. For example, when you enter *.example.com, "one.example.com" and "one. two.example.com" are included.

ISO Shared Folders

You can mount ISO image files on the NAS as ISO shares. The NAS supports mounting up to 256 ISO shares.

TS-110, TS-119, TS-120, TS-121, TS-210, TS-219, TS-219P, TS-220, TS-221, TS-410, , TS-119P+, TS-219P+, TS-112, TS-212 support up to 256 network shares only (including 6 default network shares.) The maximum number of ISO image files supported by these models is less than 256 (256 minus 6 default shares minus number of network recycle bin folders.)

Follow these steps to mount an ISO file on the NAS:

1. Login to the NAS as an administrator. Go to "Share Folders" > "Create". Click "Create an ISO Share".
2. Select an ISO image file on the NAS. Click "Next".
3. The image file will be mounted as a shared folder of the NAS. Enter the folder name.
4. Specify the access rights of NAS users or user groups to the shared folder. You can also select "Deny Access" or "Read only" for the guest access right. Click "Next".
5. Confirm the settings and click "Next".
6. Click "Finish".
7. After mounting the image file, you can specify access rights for the users over different network protocols such as SMB, AFP, NFS, and WebDAV by clicking the Access Permission icon in the "Action" column.

The NAS supports mounting ISO image files and you can preview them using File Station. Refer to the File Station 258 chapter for more details.

Note:

- ARM-based NAS models do not support using Cyrillic characters for the name of a subfolder in an ISO shared folder (the name will be incorrectly displayed if a subfolder is created with a Cyrillic name.) Please name the subfolder with a different language before an ISO file is created.
- For Mac OSX, mounting a folder that contains the # character in the folder name through WebDAV is not supported. Please rename the folder before mounting it if necessary.

Folder Aggregation

You can aggregate the shared folders on Microsoft network as a portal folder on the NAS and let NAS users access the folders through your NAS. Up to 10 folders can be linked to a portal folder. To use this function, follow these steps:

1. Enable folder aggregation.
2. Click "Create A Portal Folder".
3. Enter the portal folder name. Select to hide the folder or not, and enter an optional comment for the portal folder.
4. Click the "Link Configuration" button under "Action" and enter the remote folder settings. Make sure the folders are open for public access.
5. Upon successful connection, you can connect to the remote folders through the

NAS.

Note:

- Folder Aggregation is only supported in Microsoft networking service and is recommended for a Windows AD environment.
- If there is permission control on the folders, you need to join the NAS and the remote servers to the same AD domain.

Advanced Permissions

"Advanced Folder Permissions" and "Windows ACL" provide subfolder and file level permissions control. They can be enabled independently or together.

Protocols	Permission	Options	How to Configure
Advanced Folder Permissions	FTP, AFP, File Station, Samba	3 (Read, Read & Write, Deny)	NAS web UI
Windows ACL	Samba	13 (NTFS permissions)	Windows File Explorer
Both	FTP, AFP, File Station, Samba	Please see the application note (https://www.qnap.com/i/en/trade_teach/con_show.php?op=showone&cid=6) for more details.	Windows File Explorer

Advanced Folder Permissions

Use "Advanced Folder Permissions" to directly configure subfolder permissions on the NAS. There is no depth limitation for subfolder permission, but it is highly recommended to only change permissions on the first or second subfolder level. When "Advanced Folder Permissions" is enabled, click "Folder Permissions" under the "Shared Folders" tab to configure subfolder permission settings. See Shared Folders" > "Folder Permission of this section for details.

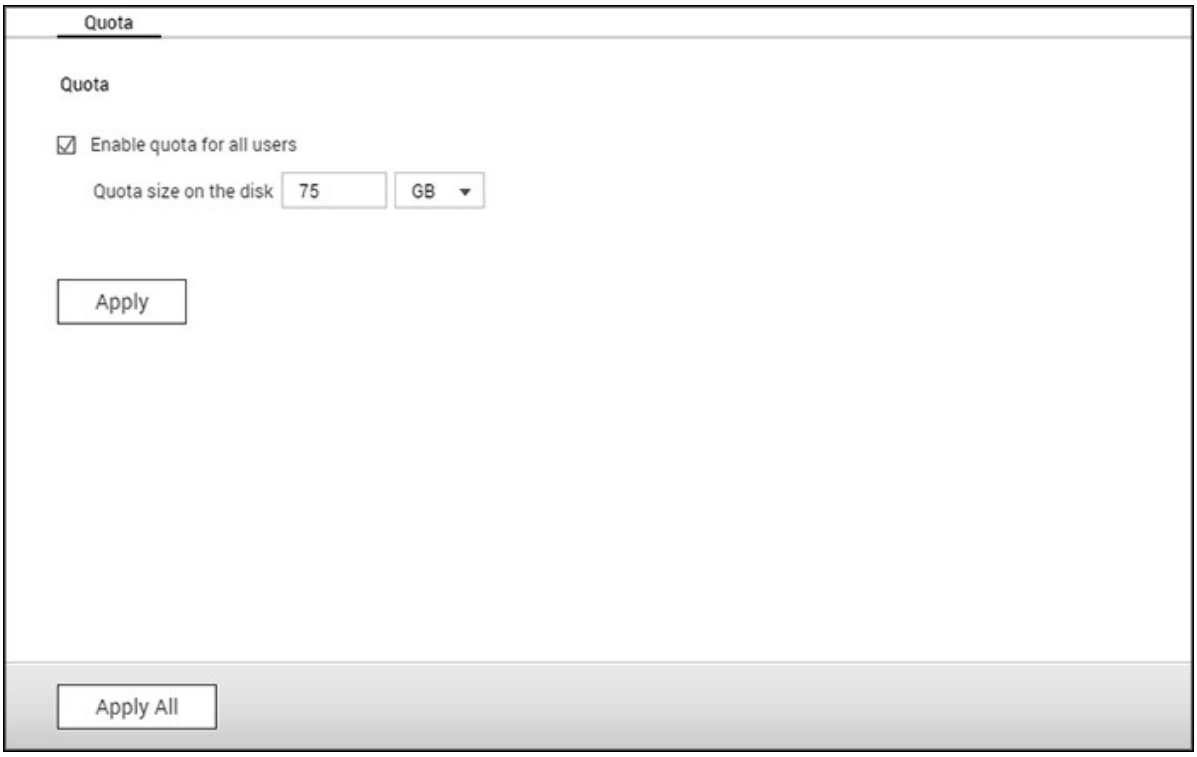
Windows ACL

Use "Windows ACL" to configure the subfolder and file level permissions from Windows File Explorer. All Windows Permissions are supported. For detailed Windows ACL behavior, please refer to standard NTFS permissions: http://www.ntfs.com/ntfs-permissions.htm

- To assign subfolder and file permissions to a user or a user group, full control share-level permissions must be granted to the user or user group.
- When Windows ACL is enabled when "Advanced Folder Permissions" is disabled, subfolder and file permissions will only have effect when accessing the NAS from Windows File Explorer. Users connecting to the NAS via FTP, AFP, or File Station will only have share-level permissions.
- When Windows ACL and Advanced Folder Permissions are both enabled; users cannot configure Advanced Folder Permissions from the NAS. Permissions (Read only, Read/Write, and Deny) of Advanced Folder Permissions for AFP, File Station, and FTP will automatically follow Windows ACL configuration.

5.4 Quota

To efficiently allocate storage space, you can specify quotas that can be used by each user.



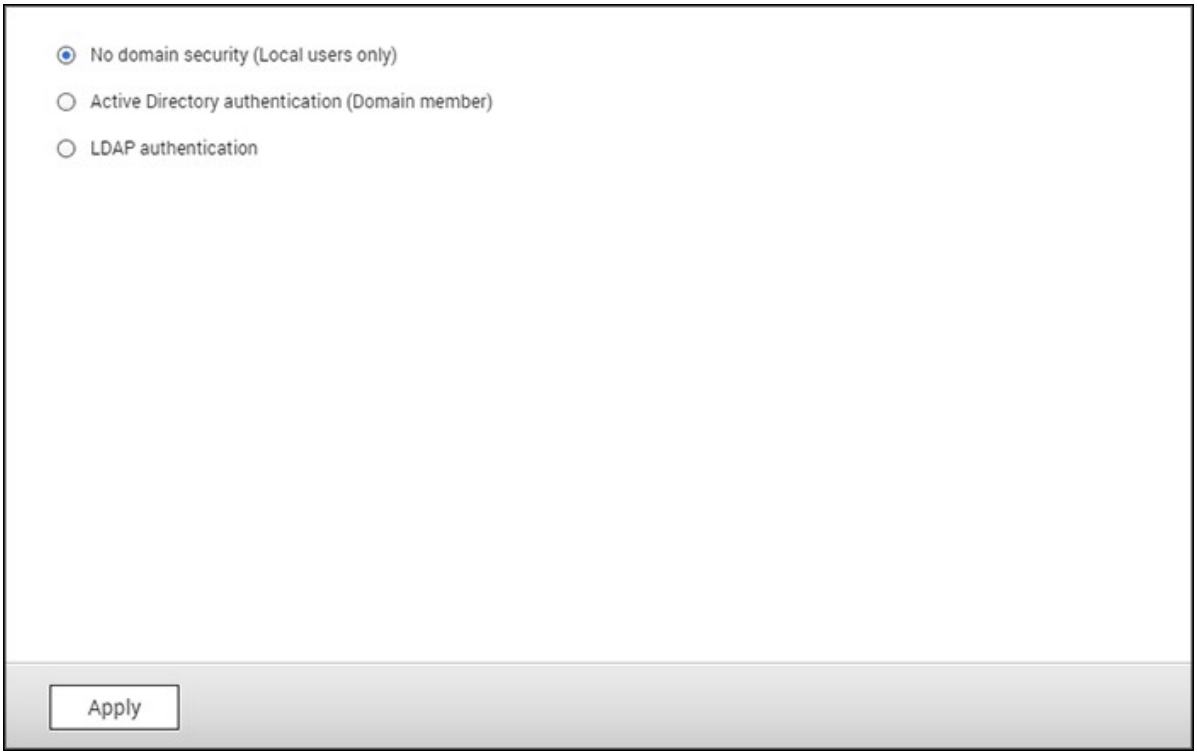
When this is enabled and a user has reached the quota, the user cannot upload any more data to the NAS. By default, no limitations are set for the users. You can modify the following options:

- Enable quota for all users
- Quota size on each disk volume

After applying the changes, the quota settings will be shown. Click "Generate" to generate a quota settings file in CSV format. After the file has been generated, click "Download" to save it to your specified location.

5.5 Domain Security

The NAS supports user authentication by local access right management, Microsoft Active Directory (Windows Server 2003/2008/2012), and Lightweight Directory Access Protocol (LDAP) directory.



By joining the NAS to an Active Directory or a LDAP directory, the AD or LDAP users can access the NAS using their own accounts without extra user account setup on the NAS.

- **No domain security:** Only the local users can access the NAS.
- **Active Directory authentication (domain members):** Join the NAS to an Active Directory. The domain users can be authenticated by the NAS. After joining the NAS to an AD domain, both the local NAS users and AD users can access the NAS via the following protocols/services:
  - Samba (Microsoft Networking)
  - AFP
  - FTP
  - File Station
- **LDAP authentication:** Connect the NAS to an LDAP directory. The LDAP users can be authenticated by the NAS. After connecting the NAS to an LDAP directory, either the local NAS users or the LDAP users can be authenticated to access the NAS via Samba (Microsoft Networking). Both the local NAS users and LDAP users can access the NAS via the following protocols/services:

- AFP
- FTP
- File Station

5.5.1 Joining NAS to Active Directory (Windows Server 2003/2008/2012)

Active Directory is a directory used in Windows environments to centrally store, share, and manage a network's information and resources. It is a hierarchical data centre which centrally holds information for users, user groups, and the computers for secure access management. The NAS supports Active Directory (AD.) By joining the NAS to the Active Directory, all the user accounts of the AD server will be automatically imported to the NAS. AD users can use their same login details to access the NAS. If you are using Active Directory with Windows Server 2008 R2, you must update the NAS firmware to at least 3.2.0 to join the NAS to the AD.

Joining the NAS to Active Directory Manually

Follow the steps below to join the QNAP NAS to the Windows Active Directory.

1. Login to the NAS as an administrator. Go to "System Settings" > "General Settings" > "Time". Set the date and time of the NAS, which must be consistent with the time of the AD server. The maximum time disparity tolerated is 5 minutes.
2. Go to "System Settings" > "Network" > "TCP/IP". Set the IP of the primary DNS server as the IP of the Active Directory server that contains the DNS service. It must be the IP of the DNS server that is used for your Active Directory. If you use an external DNS server, you will not be able to join the domain.
3. Go to "Privilege Settings" > "Domain Security". Enable "Active Directory authentication (domain member)", and enter the AD domain information.

Note:

- Enter a fully qualified AD domain name, for example, qnap-test.com
- The AD user entered here must have administrator access rights to the AD domain.
- WINS Support: If you are using a WINS server on the network and the workstation is configured to use that WINS server for name resolution, you must set up the WINS server IP on the NAS (use the specified WINS server.)

Joining the NAS to Active Directory (AD) by Quick Configuration Wizard

To join the NAS to an AD domain by the Quick Configuration Wizard, follow these steps:

1. Go to "Privilege Settings" > "Domain Security". Select "Active Directory authentication (domain member)" and click "Quick Configuration Wizard".
2. Read the wizard introduction. Click "Next".

3. Enter the domain name of the domain name service (DNS.) The NetBIOS name will be automatically generated when you enter the domain name. Specify the DNS server IP for domain resolution. The IP must be the same as the DNS server of your Active Directory. Click "Next".
4. Select a domain controller from the drop-down menu. The domain controller is responsible for time synchronization between the NAS and the domain server and user authentication. Enter the domain administrator name and password. Click "Join".
5. Upon successful login to the domain server, the NAS has joined to the domain. Click "Finish" to exit the wizard.
6. Go to "Privilege Settings" > "Users" or "User Groups" to load the domain users or user groups to the NAS.

Windows 2003

The AD server name and AD domain name can be checked in "System Properties" in Windows. As an example, for Windows 2003 servers, if you see "node1.qnap-test.com" as the "Full computer name" on the system properties dialog window, the AD server name is "node1" and NOT "node1.qnap-test.com" and the domain name remains the same as qnap-test.com.

Windows Server 2008

Check the AD server name and domain name in "Control Panel" > "System" in Windows. In the system dialog window, the AD server name will appear as the computer name and the domain name can be found in the domain field.

Note:

- After joining the NAS to the Active Directory, the local NAS users who have access rights to the AD server should use "NASname\username" to login. AD users should use their own usernames to login to the AD server.
- For TS-x09 series NAS, if the AD domain is based on Windows 2008 Server, the NAS firmware must be at least version 2.1.2.

Windows 7

If you are using a Windows 7 PC that is not a member of an Active Directory, while your NAS is an AD domain member and its firmware version is earlier than v3.2.0, change your PC settings as shown below to allow your PC to connect to the NAS:

1. Go to "Control Panel" > "Administrative Tools".

2. Click "Local Security Policy".
3. Go to "Local Policies" > "Security Options". Select "Network security: LAN Manager authentication level".
4. In "Local Security Setting" select "Send LM & NTLMv2 – use NTLMv2 session security if negotiated" from the list. Then click "OK".

Verifying the settings

To verify that the NAS has successfully joined the Active Directory, go to "Privilege Settings" > "Users" and "User Groups". A list of users and user groups will be shown on the "Domain Users" and "Domain Groups" lists respectively. If you have created new users or user groups in the domain, you can click the reload button to add users and user group lists from the Active Directory to the NAS. The user permission settings will be synchronized in real time with the domain controller.

5.5.2 Connecting NAS to an LDAP Directory

LDAP (Lightweight Directory Access Protocol) is a directory that can store the information of every user and group in a centralized server. Administrators can use LDAP to manage users in the LDAP directory and allow them to connect to multiple NAS with the same login details. This feature is intended for use by administrators and users who have knowledge of Linux servers, LDAP servers, and Samba. A running LDAP server is required when using this feature.

Requirements

Required information/settings:

- The LDAP server connection and authentication information
- The LDAP structure, where the users and groups are stored
- The LDAP server security settings

Connecting QNAP Turbo NAS to LDAP Directory

Follow the steps below to connect the QNAP NAS to an LDAP directory:

1. Login to the NAS as an administrator.
2. Go to "Privilege Settings" > "Domain Security". By default, "No domain security" is enabled. This means only local NAS users can connect to the NAS.
3. Select "LDAP authentication" and complete the settings.
   - LDAP Server Host: The host name or IP address of the LDAP server.
   - LDAP Security: Specify how the NAS will communicate with the LDAP server:
     - ldap:// = Use a standard LDAP connection (default port: 389.)
     - ldap:// (ldap + SSL) = Use an encrypted connection with SSL (default port: 686.) This is normally used by older version of LDAP servers.
     - Ldap:// (ldap + TLS) = Use an encrypted connection with TLS (default port: 389.) This is normally used by newer version of LDAP servers
   - BASE DN: The LDAP domain. For example: dc=mydomain,dc=local
   - Root DN: The LDAP root user. For example cn=admin, dc=mydomain,dc=local
   - Password: The root user password.
   - Users Base DN: The organization unit (OU) where users are stored. For example: ou=people,dc=mydomain,dc=local
   - Groups Base DN: The organization unit (OU) where groups are stored. For example ou=group,dc=mydomain,dc=local

4. Click "Apply" to save the settings. Upon successful configuration, the NAS will be able to connect to the LDAP server.
5. Configure LDAP authentication options.
   - If Microsoft Networking has been enabled (Network Services > Win/Mac/NFS > Microsoft Networking) when applying the LDAP settings, specify the users who can access the NAS via Microsoft Networking (Samba.)
     - Local users only: Only local NAS users can access the NAS via Microsoft Networking.
     - LDAP users only: Only LDAP users can access the NAS via Microsoft Networking.
   - If Microsoft Networking is enabled after the NAS has already been connected to the LDAP server, select the authentication type for Microsoft Networking.
     - Standalone Server: Only local NAS users can access the NAS via Microsoft Networking.
     - LDAP Domain Authentication: Only LDAP users can access the NAS via Microsoft Networking.
6. When the NAS is connected to an LDAP server, the administrator can:
   - Go to "Privilege Settings" > "Users" and select "Domain Users" from the drop-down menu. The LDAP users list will be shown.
   - Go to "Privilege Settings" > "User Groups" and select "Domain Groups" from the drop-down menu. The LDAP groups will be shown.
   - Specify the folder permissions of LDAP domain users or groups in "Privilege Settings" > "Shared Folders" > click the "Access Permissions" button next to the folder to be configured.

Note: Both LDAP users and local NAS users can access the NAS via File Station, FTP, and AFP.

LDAP Authentication Technical Requirements with Microsoft Networking

Required items to authenticate the LDAP users on Microsoft Networking (Samba):

1. A third-party software to synchronize the password between LDAP and Samba in the LDAP server.
2. Importing the Samba schema to the LDAP directory.

A. Third-party software

Some software applications are available and allow management of LDAP users, including Samba password. For example:

- LDAP Account Manager (LAM), with a web-based interface, available from: http://www.ldap-account-manager.org/
- smbldap-tools (command line tool)
- webmin-ldap-useradmin - LDAP user administration module for Webmin.

B. Samba schema

To import the a Samba schema to the LDAP server, please refer to the documentation or FAQ of the LDAP server. A samba.schema file is required and can be found in the directory examples/LDAP in the Samba source distribution. Example for open-ldap in the Linux server where the LDAP server is running (it can be different depending on the Linux distribution):

Copy the samba schema:

```
zcat /usr/share/doc/samba-doc/examples/LDAP/samba.schema.gz > /etc/ldap/schema/samba.schema
```

Edit /etc/ldap/slapd.conf (openldap server configuration file) and make sure the following lines are present in the file:

```
include /etc/ldap/schema/samba.schema
include /etc/ldap/schema/cosine.schema
include /etc/ldap/schema/inetorgperson.schema
include /etc/ldap/schema/nis.schema
```

Configuration examples

The following are some configuration examples. They are not mandatory and need to be adapted to match the LDAP server configuration:

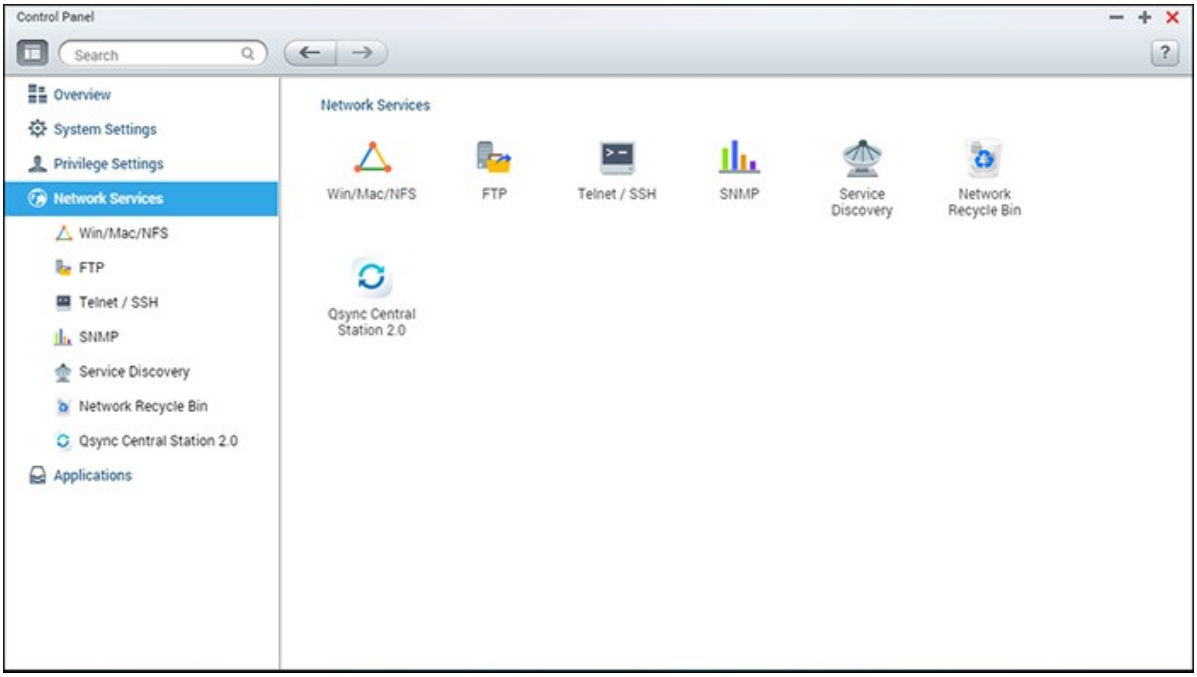
1. Linux OpenLDAP Server
   - Base DN: dc=qnap,dc=com
   - Root DN: cn=admin,dc=qnap,dc=com
   - Users Base DN: ou=people,dc=qnap,dc=com
   - Groups Base DN: ou=group,dc=qnap,dc=com

2. Mac Open Directory Server
   - Base DN: dc=macserver,dc=qnap,dc=com

- Root DN: uid=root,cn=users,dc=macserver,dc=qnap,dc=com
- Users Base DN: cn=users,dc=macserver,dc=qnap,dc=com
- Groups Base DN: cn=groups,dc=macserver,dc=qnap,dc=com

6. Network Services

Go to "Control Panel" > "Network Services" to configure network services on the NAS.

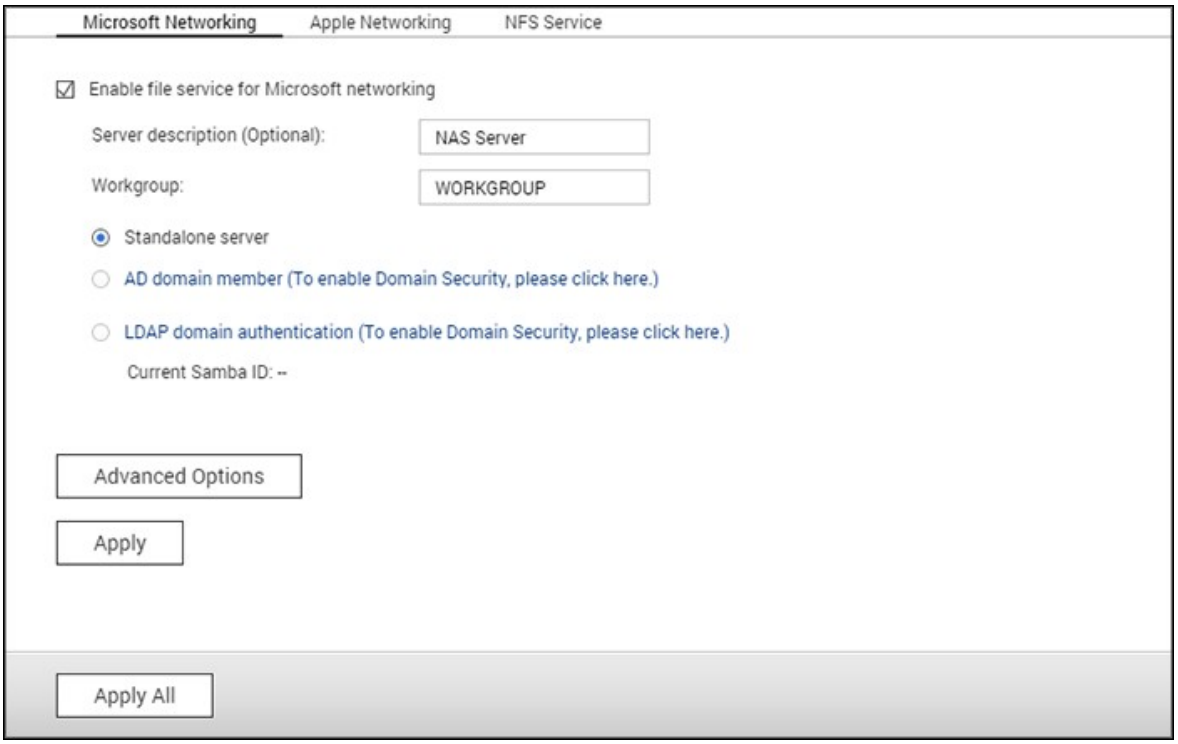


For setup details, refer to the following links:

- Win/Mac/NFS 166
- FTP 170
- Telnet/SSH 172
- SNMP Settings 173
- Service Discovery 175
- Network Recycle Bin 176
- Qsync Central Station 178

6.1 Win/Mac/NFS

Go to "Control Panel" > "Network Services" > "Win/Mac/NFS" to configure networking services.



In this chapter, the following topics are covered:

- Microsoft Networking 166
- Apple Networking 168
- NFS Service 169

Microsoft Networking

To allow access to the NAS on Microsoft Windows Network, enable file service for Microsoft networking. Also specify how users will be authenticated.

Standalone Server

Use local users for authentication. The NAS will use local user account information (created in "Privilege Settings" > "Users") to authenticate users who access the NAS.

- Server Description (optional): Describe the NAS so that users can easily identify it on a Microsoft Network.

- Workgroup: Specify the workgroup to which the NAS belongs. A workgroup name supports up to 15 characters but cannot contain: " + = / \ : | * ? < > ; [ ] % , `

AD Domain Member

Use Microsoft Active Directory (AD) to authenticate users. To use this option, enable Active Directory authentication in "Privilege Settings" > "Domain Security" and join the NAS to an Active Directory.

LDAP Domain Authentication

Use an LDAP directory to authenticate the users. To use this option, enable LDAP authentication and specify the settings in "Privilege Settings" > "Domain Security". When this option is enabled, you need to select either the local NAS users or the LDAP users that can access the NAS via Microsoft Networking.

Advanced Options

- **WINS server:** If you have a WINS server on your network and want to use this server, enter the WINS server IP. The NAS will automatically register its name and IP address with the WINS service. Do not enable this option if you are unsure about the settings.
- **Local Domain Master:** A Domain Master Browser is responsible for collecting and recording resources and services available for each PC on the network or a workgroup of Windows. When you find the waiting time for loading network resources to be too long, it may be caused by a failure of an existing master browser or a missing master browser on the network. If there is no master browser on your network, select the option "Domain Master" to configure the NAS as the master browser. Do not enable this option if you are unsure about the settings.
- **Allow only NTLMv2 authentication:** NTLMv2 stands for NT LAN Manager version 2. When this option is enabled, login to the shared folders by Microsoft Networking will only be allowed using NTLMv2 authentication. If the option is disabled, NTLM (NT LAN Manager) will be used by default and NTLMv2 can be negotiated by the client. The default setting is disabled.
- **Name resolution priority:** You can select to use DNS server or WINS server to resolve client host names from IP addresses. When you set up your NAS to use a WINS server or to be a WINS server, you can choose to use DNS or WINS first for name resolution. When WINS is enabled, the default setting is "Try WINS then DNS". Otherwise, DNS will be used for name resolution by default.

- **Login style: DOMAIN\USERNAME instead of DOMAIN+USERNAME for FTP, AFP, and File Station:** In an Active Directory environment, the default login formats for the domain users are:
  - Windows shares: domain\username
  - FTP: domain+username
  - File Station: domain+username
  - AFP: domain+username

  When you enable this option, users can use the same login name format (domain\username) to connect to the NAS via AFP, FTP, and File Station.
- **Automatically register in DNS:** When this option is enabled and the NAS is joined to an Active Directory, the NAS will automatically register itself in the domain DNS server. This will create a DNS host entry for the NAS in the DNS server. If the NAS IP changes, the NAS will automatically update the IP in the DNS server.
- **Enable trusted domains:** Select this option to load users from trusted Active Directory domains and specify their NAS access permissions in "Privilege Settings" > "Shared Folders". Domain trusts are only set up in Active Directory, not on the NAS.)

Apple Networking

To connect to the NAS from Mac OS X, enable Apple Filing Protocol. If the AppleTalk network uses extended networks and is assigned with multiple zones, assign a zone name to the NAS. Enter an asterisk (*) to use default settings. This setting is disabled by default. To allow access to the NAS from Mac OS X 10.7 Lion, enable "DHX2 authentication support". Click "Apply" to save the settings. You can use the Finder to connect to a shared folder from Mac. Go to "Go" > "Connect to Server", or simply use the default keyboard shortcut "Command+k". Enter the connection information in the "Server Address" field, such as "afp://*YOUR_NAS_IP_OR_HOSTNAME*". Here are some examples:

- afp://10.8.12.111
- afp://NAS-559
- smb://192.168.1.159

Note: Mac OS X supports both Apple Filing Protocol and Microsoft Networking. To connect to the NAS via Apple Filing Protocol, the server address should start with "afp://". To connect to the NAS via Microsoft Networking, please use "smb://".

NFS Service

To connect to the NAS from Linux, enable the NFS service. To configure NFS access rights to shared folders on the NAS, go to "Privilege Settings" > "Share Folders" and click the Access Permission button on the "Action" column. Select NFS host access from the drop-down menu on the top of the page and specify the access rights. For either the "read/write" or "read-only" option, you can specify the IP address or domains that are allowed to connect to the folder by NFS.

- read/write: Allow users to create, read, write, and delete files or folders in the shared folder and any subdirectories.
- read-only: Allow users to read files in the shared folder and any subdirectories but they are not allowed to write, create, or delete any files.

Connecting to the NAS by NFS
On Linux, run this command:

```
mount -t nfs <NAS IP>:/<Shared Folder Name> <Directory to Mount>
```

For example, if the IP address of your NAS is 192.168.0.1 and you want to link the shared folder "public" under the /mnt/pub directory, use this command:

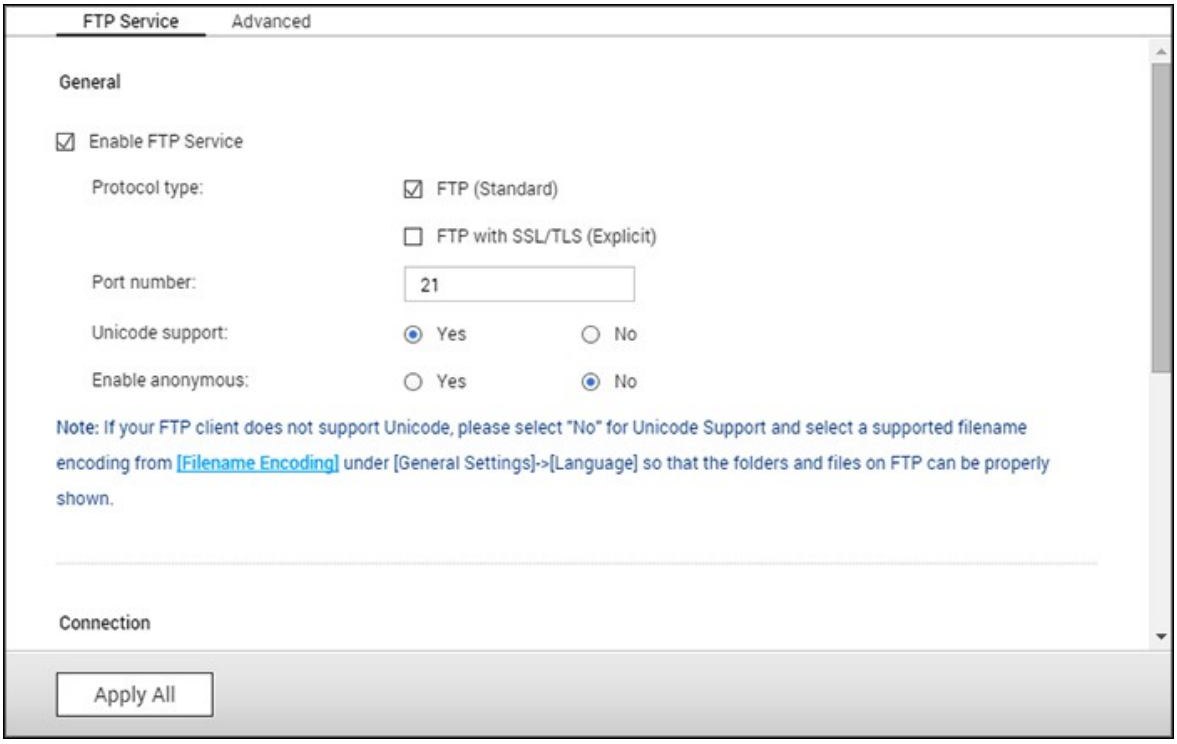
```
mount -t nfs 192.168.0.1:/public /mnt/pub
```

Note: You must login as the "root" user to use the above command.

Login as the user ID you define, you can use the mounted directory to connect to your shared files.

6.2 FTP

Go to "Control Panel" > "Network Services" > "FTP" to Configure the FTP server.



FTP Service

When you enable the FTP service, you can specify the port number and the maximum number of users that are allowed to connect to the NAS by FTP at the same time. To use the FTP service of the NAS, enable this function. Open an IE browser and enter ftp://NAS IP. Enter the username and the password to login the FTP service.

- **Protocol Type:** Select to use standard FTP connection or SSL/TLS encrypted FTP. Select the correct protocol type in your client FTP software to ensure successful connection.
- **Port number:** Specify the port number of the FTP service.
- **Unicode Support:** Toggles Unicode support. The default setting is No. If your FTP client does not support Unicode, it is recommended to disable this option and select the specified language in "General Settings" > "Codepage" so that the file and folder names can be correctly displayed. If your FTP client supports Unicode, enable this option for both your client and NAS.
- **Enable Anonymous:** Enable this option to allow anonymous access to the NAS by FTP. Anonymous users can connect to files and folders which are open for public access. If this option is disabled, users must enter an authorized username and password to connect to the NAS.

- **Connection:** Enter the maximum number of allowed FTP connections for the NAS and a single account and check "Enable FTP transfer limitation" to specify the maximum upload and download rates.

Note: The maximum number of FTP connections varies based on the size of RAM installed on the NAS:

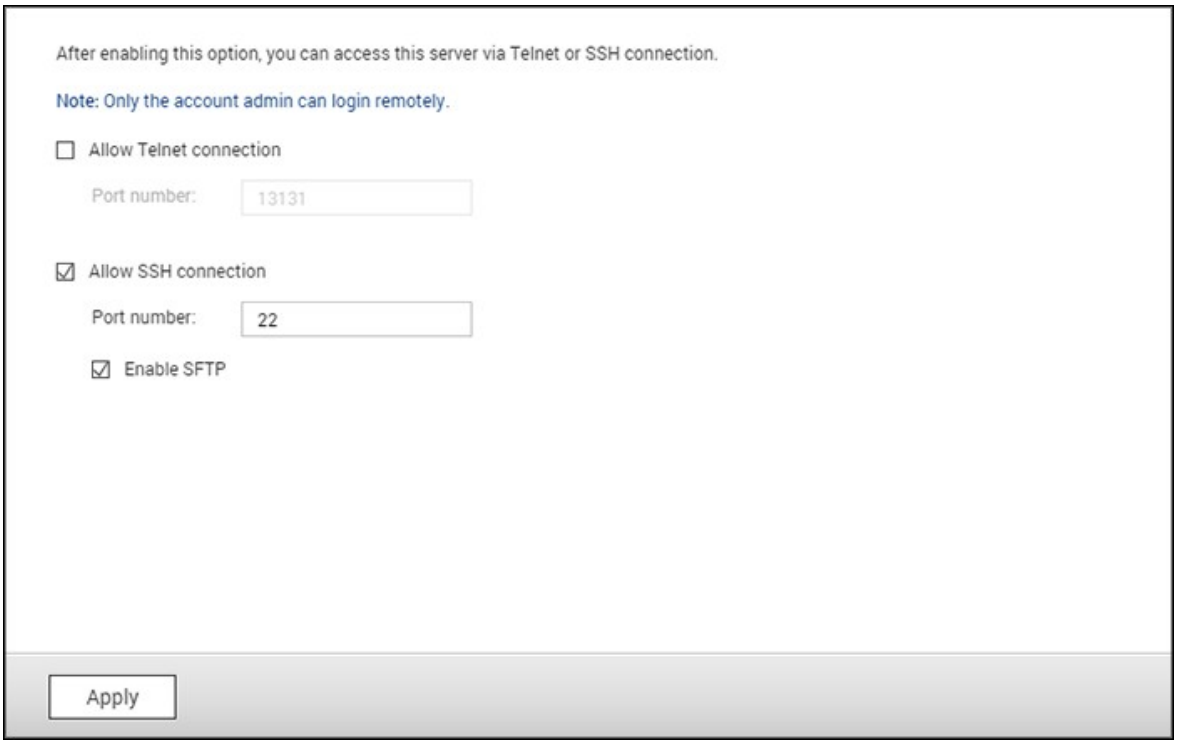
- If the NAS memory =< 1 GB, the maximum is 256.
- If the NAS memory = 2 GB, the maximum is 512.
- If the NAS memory >= 3 GB, the maximum is 1024.

Advanced

- **Passive FTP Port Range:** You can use the default port range (55536-56559) or specify a port range larger than 1023. When using this function, make sure you have opened the ports on your router or firewall.
- **Respond with external IP address for passive FTP connection request:** Enable this function when a passive FTP connection is in use, the FTP server (NAS) is behind a router, and a remote computer cannot connect to the FTP server over the WAN. When this is enabled, the NAS replies with the specified IP address or automatically detects an external IP address so that the remote computer is able to connect to the FTP server.

6.3 Telnet/SSH

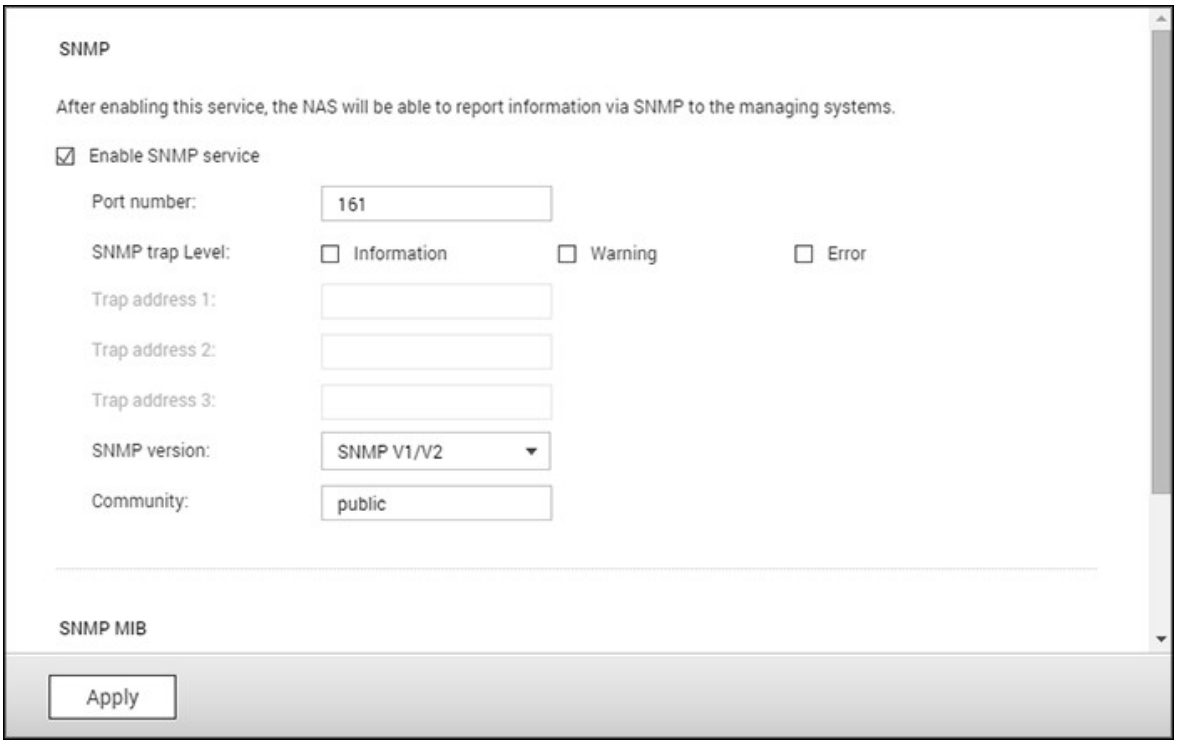
Enable this option to connect to the NAS by Telnet or SSH encrypted connection (only the "admin" account can remotely login.) Use Telnet or SSH connection clients, for example, putty for connecting. Make sure the specified ports have been opened on the router or firewall.



To use SFTP (SSH File Transfer Protocol/Secure File Transfer Protocol), make sure the option "Allow SSH connection" has been enabled.

6.4 SNMP Settings

Enable SNMP (Simple Network Management Protocol) on the NAS and enter the trap address of the SNMP management stations (SNMP manager) - for example, a PC with SNMP software installed. When an event, warning, or error occurs on the NAS, it will report a real-time alert to SNMP management stations.



The fields are described as below:

Field	Description
SNMP Trap Level	Select information to be sent to the SNMP management stations.
Trap Address	The IP address of the SNMP manager. Specify up to 3 trap addresses.
SNMP MIB (Management Information Base)	The MIB is a type of database in ASCII text format used to manage the NAS in the SNMP network. The SNMP manager uses the MIB to determine the values or understand the messages sent from the agent (NAS) within the network. You can download the MIB and view it with any word processor or text editor.

Community (SNMP V1/ V2)	An SNMP community string is a text string that acts as a password. It is used to authenticate messages that are sent between the management station and the NAS. The community string is included in every packet that is transmitted between the SNMP manager and the SNMP agent.
SNMP V3	The NAS supports SNMP version 3. Specify the authentication and privacy settings if available.

6.5 Service Discovery

Go to "Control Panel" > "Network Services" > "Service Discovery" to configure the UPnP discovery service and Bonjour.



UPnP Discovery Service

When a UPnP device is added to the network, the UPnP discovery protocol allows the device to advertise its services to the network control points. By enabling UPnP Discovery Service, the NAS can be discovered by any systems that support UPnP.

Bonjour

By using Bonjour, your Mac will automatically discover network services (such as FTP) running on the NAS without needing to enter IP addresses or configuring DNS servers.

Note: You must activate the services on their setup pages and then enable them in this section so that the NAS can advertise them using Bonjour.

6.6 Network Recycle Bin

The Network Recycle Bin retains files deleted on the NAS. Within each shared folder, a dedicated folder with the name @Recycle is created after the initial QTS installation. Specify the number of days (1-180) to retain files and the daily time. You can also specify the file extensions to be excluded from the bin. This feature only supports file deletion via Samba, AFP, FTP and File Station.



Using Network Recycle Bin

- To delete all the files in the bin, click "Empty All Network Recycle Bin".
- To recover deleted files from the Network Recycle Bin, right click on the files in the @Recycle folder and select "RECOVER".
- To permanently delete a file in the recycle bin, right click on the file in the @Recycle folder and select "Del (from recycle)".
- To empty the recycle bin for an individual shared folder, right click inside the recycle bin and select "Empty Recycle Bin".

Restricting Access to Network Recycle Bin

The Network Recycle Bin can be restricted to administrators usage by going to "Control Panel" > "Privilege Settings" > "Shared Folders". Click "Property" under "Action" for the shared folder to be configured and check "Restrict the access of Recycle Bin to administrators only for now".

Caution: **All of the files in network recycle bins will be permanently deleted when files are deleted in "@Recycle" on the network share or when you click "Empty All Network Recycle Bins".** The Network Recycle Bin feature is not supported for USB/eSATA external storage devices and virtual disks.

6.7 Qsync Central Station

Qsync Central Station 2.0 is a cloud-based file synchronization service on the NAS. Simply add files to your local Qsync folder, and they will be available on your NAS and all its connected devices.



In this chapter, the following topics are covered:

- Before you Start 178
- Starting Qsync Client 179
- Synchronization 179
- Sharing 180
- Remote Access 181
- Synchronization Management 182
- Version Control 184
- Managing or Monitoring Qsync Status via Web Browser 186
- Using Centralized Mode for Centralized Management 187

Before you Start

Follow the 3 steps below before Qsync deployment.

1. Creating user accounts on the NAS,
2. Downloading the Qsync Client utility on your computers and Qfile on your mobile devices,
3. Logging into the NAS (serving as a Qsync server) from your computers or mobile devices (referred to in this document as "Qsync clients".)

1. Creating user accounts on the NAS

- Go to "Control Panel" > "Privilege Settings" > "Users" > click "Create" (or go to "Qsync Central Station 2.0" > "Users" > "Create a User".)
- Only NAS administrators can create accounts.

2. Downloading Qsync Client

Follow the instructions on the "Overview" page to download the utility (log into the NAS > click "Qsync Central Station 2.0" on the NAS Desktop > "Overview" page,) or directly download the utility from the QNAP website: "Support" > "Download" > "Utilities".

- For computers, download the Qsync Client utility (only available for Windows.)
- For mobile devices, download and install Qfile from the iOS or Android app stores.

3. Setting up Qsync Client

Launch the installer and follow these steps to set up the Qsync Client:

1. To locate the NAS within a LAN, simply click "Search" or key in its IP address or name (e.g. IP address: 10.8.1.20 or 192.168.1.100.) To connect to a remote NAS (over the Internet) use your myQNAPcloud address (e.g. andy@myQNAPcloud.com.)
2. Enter the NAS login username and password.
3. Set up the Qsync local folder on your PC.
4. Assign a name to identify the local PC for the Qsync server.
5. Click "Apply" .
6. Pair a local folder with the shared folder on the NAS.

Note: If the NAS connection ports have been changed, please append the port number to the IP address; otherwise only enter an IP address. (Default port number: 8080)

Starting Qsync Client

Double click the Qsync shortcut in Windows to open the Qsync local folder. Click the Qsync Client icon on the taskbar to bring up the menu. If you copy/move files to the local Qsync folder on one of your devices, the files will be synced with all the other devices (devices with the Qsync Client installed that are connected to the NAS.) From now on, there is no need to copy files back-and-forth between your PC and these other devices or worry about the size of files as you try to attach them to an email.

Synchronization

There are several methods for synchronizing files. Qsync Central Station will automatically synchronize the files across your computers and mobile devices that have the Qsync Client installed, and they will also be synchronized to the Qsync folder on the NAS:

1. For PCs, drag and drop files to the local Qsync folder.
2. For mobile devices (Qfile), copy or move files into the local Qsync folder.
3. For the NAS, copy or move files to the Qsync folder using File Station.

Note:

- If files are "dragged and dropped" to the local Qsync folder, they will be moved (and not copied) to that folder if the files and the local Qsync folder are on the same disk drive. This behavior is the same as Windows File Explorer.
- The maximum size of a single file that Qsync can transmit across a LAN is 50GB.
- Qsync does not support SAMBA, FTP or AFP for files access. Please access files using File Station or a Qsync Client.
- Qfile only synchronizes the file list and does not download the files to a mobile device. Please download the files when you need them.

Offline editing

You can edit your files offline and Qsync Central Station will automatically synchronize the changes made once your device is online.

Sharing

Sharing files by download links

You can share files by sending download links to those who have not installed Qsync Client.

For Windows:

1. Right click on the file that you want to share in the local Qsync folder and click "Share the link".
2. Choose to send the link via email or copy the link to directly share it.
3. Click "Settings" to see more options, including creating a SSL link, the expiration date, or password.

For the NAS, right click on the file that you want to share in the Qsync folder within

File Station and click "Share".

For mobile devices, launch Qfile to share the file in the local Qsync folder by clicking the icon to the right and click "Share".

The file recipients can click the link or copy and paste it to a web browser to download the file.

Sharing folders with a group

You can share a folder with a user group. If any member from the group shares the files in the folder, other members can receive the file.

1. Create user accounts in the NAS for each group member.
2. Ensure that a Qsync Client is installed on each member's device.
3. Right click on the folder you want to share in the local Qsync folder and click "Share this folder as a team folder".
4. Select users from the list of local or domain users.

All of the members in the group will receive a file sharing invitation. Once accepted, the group members can start accessing this shared folder.

Note:

- The team folder will only take effect after users accept their invitation.
- Users cannot share team folders that have been shared with them.
- Only the folders under /home on your NAS can be shared as a Team Folder.

Remote Access

Accessing the NAS over the Internet

To connect to a remote NAS (over the Internet), the administrator must first configure the device name for the NAS in "myQNAPcloud". The administrator can then share the myQNAPcloud address to allow users to access the remote NAS. (e.g. andy@myQNAPcloud.com)

Note:

- A connection with a NAS over the Internet will be slower compared to a LAN environment.
- As you switch back to a LAN-based NAS, ensure that you reconnect to the NAS

via LAN to get a better connection quality.

- To improve file transmission performance, it is recommended that you configure port forwarding on the router.

Synchronizing photos and videos automatically

Qsync Central Station can synchronize your photos and videos from mobile devices to the Qsync folder across all Qsync client devices.

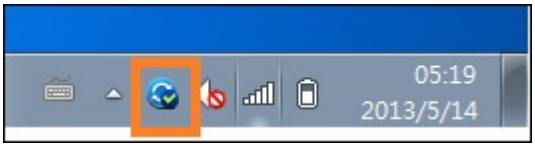
Steps:

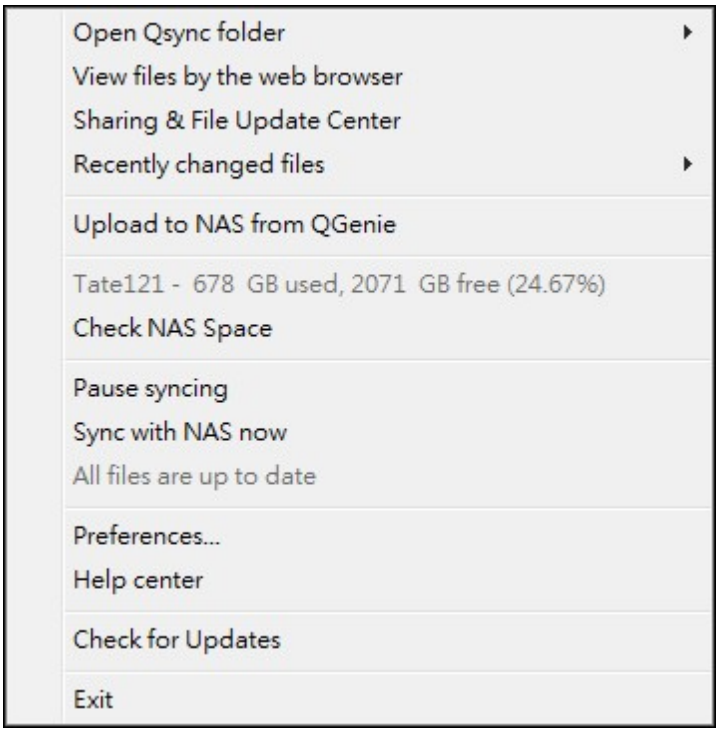
1. Install Qfile on your mobile devices by following instructions outlined on the Qsync Central Station Overview page on the NAS or find it from your device's app store.
2. Launch Qfile.
3. Click "Settings" on the bottom-right side of the screen.
4. Scroll down and look for "Auto upload from photo gallery" and click on "Set up now".
5. Select a NAS to upload photos and videos to.
6. Select the folder.
7. Select "Use default setting" (/Qsync/Camera Uploads) or select "Set up manually" to set the path.
8. Select if you want to upload all photos from the photo gallery immediately.
9. You can tick the checkbox "Limit to Wi-Fi" to ensure that you only upload files through Wi-Fi and not your phone's network.
10. The uploaded files will be synchronized to the "Camera Uploads" folder under the Qsync folder on Qsync client devices.

Note: If files that were previously uploaded are deleted from the "Camera Uploads" folder, Qfile will not upload those copies in the photo library again.

Synchronization Management

Click the Qsync Client icon on the taskbar to see the management functions:





1. Add files and view the synchronization result on the NAS:
   a. Open Qsync folder: Open the local Qsync folder to add files.
   b. View files by the web browser: Browse files in the Qsync folder using File Station.
2. Control synchronization progress:
   a. Pause syncing / Resume syncing: Click to pause or resume syncing.
   b. Sync with NAS now: Force Qsync to scan again and refresh the synchronization list.
3. Information for syncing and sharing:
   a. Sharing & File Update Center
      i. File Update Center: List the file or folder update logs.
      ii. Sharing Center: List the folders or files shared with others. Users can choose to accept or decline the team folders. However, users cannot share team folders that are shared by others.
   b. Recently changed files: Lists the recently updated files.
4. Preference:
   a. General:
      i. Link Status: Shows the current status. Click "Logout" to change users.
      ii. Network Recycle Bin: Browse or recover files deleted from the Qsync folder.
   b. Sync:
      i. Manage paired folders: Add, delete, or edit folder pair settings.
      ii. Import photos and videos: Import photos and videos when an USB device is

connected. This feature only checks for photos and videos in the "DCIM" folder in the root directory of USB devices.

iii. Default folder: choose a folder to import files from external drives or QGenie.

iv. Do not remove any files on the NAS when synchronizing: You can remove files within the local Qsync folder, and files deleted from your computer will not be synchronized with the NAS. The NAS will still retain copies of deleted files.

c. Policy:

i. Conflict Policies: The policies for handling the name conflicts between the Qsync server (NAS) and clients after it is back online from a disconnection:
1) Rename the local files,
2) Rename the remote NAS files,
3) Replace local files with remote NAS files, or
4) Replace remote NAS files with local files.

ii. Sharing Policies: The policies of the team folders when other Qsync users share them to this local computer:
1) Always reject sharing,
2) Automatically accept sharing, or
3) Send a notification message once sharing occurs.

iii. Filter Settings: During file synchronization, Qsync will skip the file types specified in filter settings.

d. E-Mail:

i. Set up E-mail: Set up an email account for sharing file links. You can use the NAS SMTP server settings (for administrators only), your PC's mail server settings, or configure a new SMTP server.

e. Proxy:

i. Set up Proxy: Use a proxy server for the Qsync client device.

f. Advanced:

i. Debug log: The system will record all of the synchronization activities between your computer and the NAS for diagnosing technical problems.

Note: The "Sync" and "Proxy" tab is not available on Mac.

Version Control

This will retain one copy of a file as a version whenever you add or modify it, allowing you to retrieve a specific previous version at any time. Or, if you accidently overwritten a previous version made by others while editing the file in team folder, you can still

restore the previous version. And you can restore the previous versions even if you have deleted the file from the recycle bin.

Viewing the version history

You can view the version history by using File Station. Right click on a file or folder in the Qsync folder in File Station and select "Previous Versions" to show the version list (or you can access it from menu bar "More Action" > "Previous Versions". Or, just click the "Show Right Panel" > "Version". You can also access it from the Qsync client utility. Right click on a file of folder in the Qsync folder and select "Previous Versions".

Restoring the previous versions

In the version history page, select the version you want to restore and click "Restore".

- Click "Download" to download the version to the local computer.
- Click "Delete All" to delete all of the listed versions.
- Click "Refresh" to update the status of the version history.

Restoring versions of a deleted file

Version control retains versions in a separate location, so even you delete the file, you can still restore the previous versions of the file - even if the file has been deleted from the recycle bin.

To restore the version of a deleted file, click on any folder/file in the Qsync folder, and then click "More Action" > "Show Deleted Files" in the menu bar. To view the version history, right click on a file/folder in Qsync folder and select "Previous Versions". Or you can access it from the menu bar, "More Action" > "Previous Versions". Or just click the "Show Right Panel" > "version" to show the version list.

Restoring previous versions

In the version history page, select the version you want to restore and click "Restore".

- Click "Download" to download the version to the local computer.
- Click "Delete All" to delete all of the listed versions.
- Click "Refresh" to update the status of the version history.

Note: If you click "Delete All", then click "Refresh" and the associated files will be removed from the list.

To exit the view of the deleted file list, right click on any file/folder and select "Hide Deleted Files". Or access it from menu bar, "More Action" > "Hide Deleted Files".

Managing and setting version control

To access the management and settings of version control, click the Qsync button on the desktop of the NAS, then click "Version Control" in the right-side menu.

The target folder

"Enable version control" is the main switch of the version control. Disabling this option will not delete versions that have already been created. "Enable version for my Qsync folder" allows each user to apply the function to their files.

Target folder for version control

You can apply the version control to the files under specific Qsync folders to save space. To assign specific folders, select "Assign specific subfolder under the Qsync folder", then click "Add" to add folders. You can add up to 5 folders. Click "Delete" to remove all versions under the selected folders and subfolders. This will not take effect until you click "Apply" or "Apply All".

Advanced

Maximum Number of Versions: You can choose how many versions you want to retain. This is a control only for administrators. The more versions you keep the more storage space will be taken up. To know how much space has been used for version control, click "Check" in the "Disk Used for Version Control" section.

Note:

- If you reduce the maximum number of versions, it will impact the versions that have been created and if the volume of versions exceeds the new settings, the earlier versions will be dropped. Only the equivalent number of latest versions as of the new settings will be kept.
- The deletion will only take effect after you click "Apply" or "Apply All".
- The maximum number of versions supported for Version Control is 64.

Managing or Monitoring Qsync Status via Web Browser

Log into the NAS via web browser and click Qsync Central Station 2.0.

1. Overview: This page shows the mode of use management (User Customization Mode or Central Configuration Mode) and the total number of online users and devices. It also provides links to File Station and for installing Qsync. In addition, you can

enable or disable the Qsync service (for administrators only.)

2. Management settings: This provides a centralized management for administrators to edit Qsync Client default settings. For details on the management settings, please refer to the Using Centralized Mode for Centralized Management 187 section.
3. Users: Lists the information of online users, and you can manage the users of Qsync service here (for administrators only.)
4. Devices: This table lists the status of connected devices. It also provides options for you to manage each device, allowing you to edit their settings, block them, or to remotely erase them.
   a. If users log in from their PC, the name of the device will be shown as their computer name.
   b. If users log in from Qfile, the name of the device will be shown as "Qfile-Android" or "Qfile-iPhone".
   c. If users move or copy files to the Qsync folder in the File Station, the name of the device will be shown as "Qsync-File Station".
5. Event Logs: Lists activity details by user.
6. Team Folder: Lists information about team folders, including folders that you shared and folders that are shared with you.
7. Shared Folder: Administrators can decide which shared folders will be synced with client devices. If a user has Read/Write or Read-only and synchronization privileges on a shared folder, it can then be synced with their client device.
8. Shared File Links: Lists the status of shared links.
9. Version Control: You can set the maximum number of version for your files and check the space used for Version Control.

Using Centralized Mode for Centralized Management

Administrators can now apply pre-configured settings to devices that connect to the NAS for the first time, restrict users' right on modifications to all or certain preference settings of their client utilities, edit settings for individual Qsync client devices online, or set a management password (a master password for all client devices.)

To apply pre-configured settings on connected devices, follow these steps:

1. Log into the NAS as an administrator > "Qsync Central Station 2.0" > Management settings,
2. Click "Edit default settings".
3. Under the "Synchronize" tab, choose whether to remotely remove any files on the NAS during synchronization.

4. Under the "Policy" tab, set conflict policies, and filter settings.
5. Under the "Mails" tab, set up the email option and sender details.
6. Click "Apply".

To allow all users to configure their own client utility, follow these steps:

1. Log into the NAS as an administrator > "Qsync Central Station 2.0" > Management settings,
2. Select "Central Configuration Mode" and tick the preference settings that users are allowed to modify for their Qsync client device.
3. Click "Apply".

To edit settings for individual Qsync client devices, follow these steps:

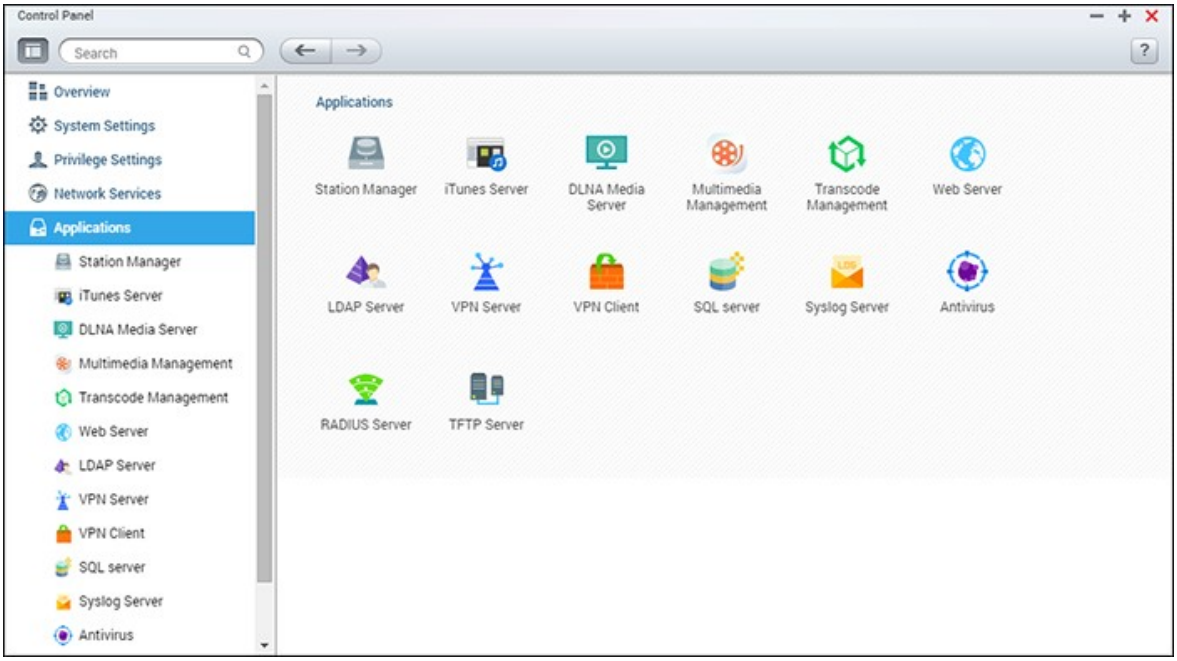
1. Log into the NAS as an administrator and navigate to the "Devices" page in Qsync Central Station.
2. Click the "Edit settings for Qsync utility" icon under "Action" for the device to be modified
3. Modify its preference settings (including synchronization, policy and mail settings.)

To set a management password, follow these steps:

1. Log into the NAS as an administrator and navigate to the "Management Settings" page in Qsync Central Station.
2. Select Central Configuration Mode.
3. Tick "Enable your management password".
4. Enter the password and click "Lock".

7. Applications

Go to "Control Panel" > "Applications" to configure NAS applications.

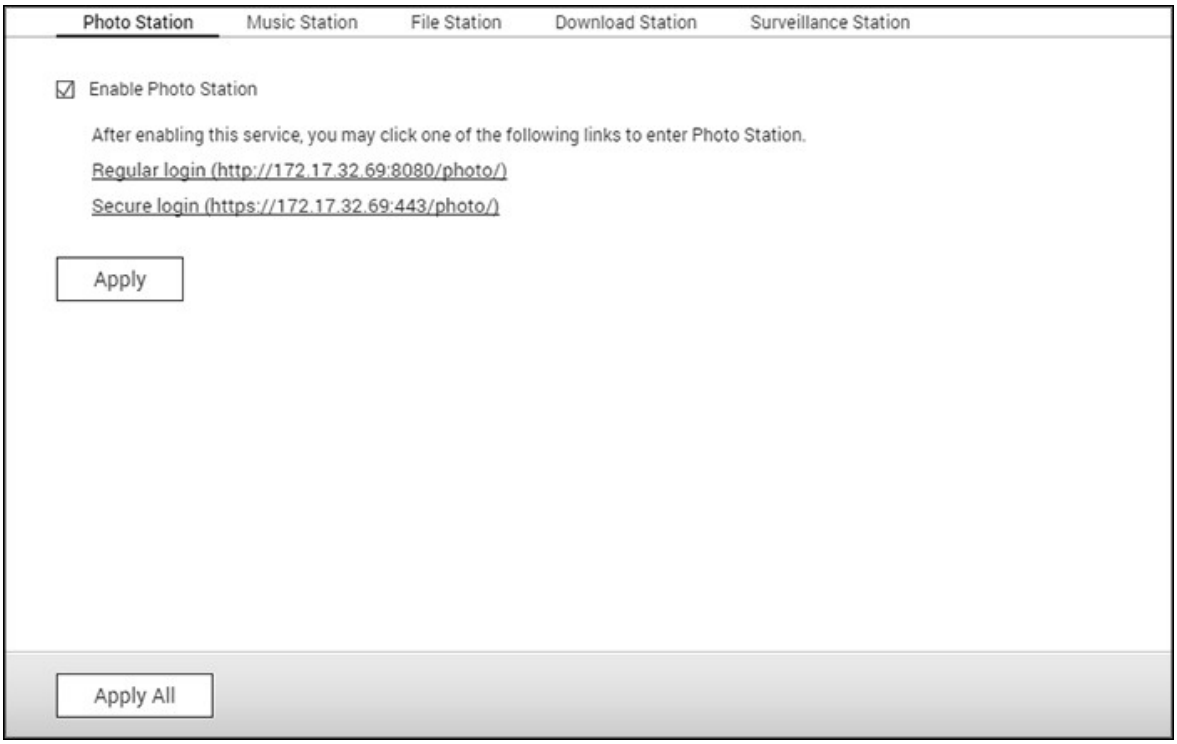


For setup details, refer to the following links:

- Station Manager 190
- iTunes Server 192
- DLNA Media Server 193
- Multimedia Management 195
- Transcode Management 197
- Web Server 200
- LDAP Server 206
- VPN Server 208
- VPN Client 213
- SQL Server 216
- Syslog Server 218
- Antivirus 221
- RADIUS Server 225
- TFTP Server 227

7.1 Station Manager

The Station Manager is an integrated control panel for all QNAP Stations and they can be enabled or disabled here.



Enabling Photo Station

Check "Enable Photo Station" and click the below links to directly login to the application. Check "Show the photos of Sharing Management on the login screen" to display photo albums on the login page. This will allow users to directly view the photos of the chosen album as a guest. Photo Station can only be launched after it is enabled in the Station Manager. For more Photo Station details please refer to the Photo Station 287 chapter.

Enabling Music Station

Check "Enable Music Station" and click the below links to directly login to the application. Music Station can only be launched after it is enabled in the Station Manager. For more Music Station details please refer to the Music Station 304 chapter

Enabling File Station

Check "Enable File Station" and click the below links to directly login into the

application. File Station can only be launched after it is enabled in the Station Manager. For more File Station details please refer to the File Station 258 chapter

Enabling Download Station

Check "Enable Download Station" and click the below links to directly login to the application. Download Station can only be launched after it is enabled in the Station Manager. For more Download Station details please refer to the Download Station Download Station 312 chapter

Enabling Surveillance Station

Check "Enable Surveillance Station" under "Settings" and click the below links to directly login to the application. Surveillance Station offers two free recording channel. To add extra recording channels, please purchase a license from the QNAP License Store (http://license.qnap.com) or contact an authorized reseller in your region for details.

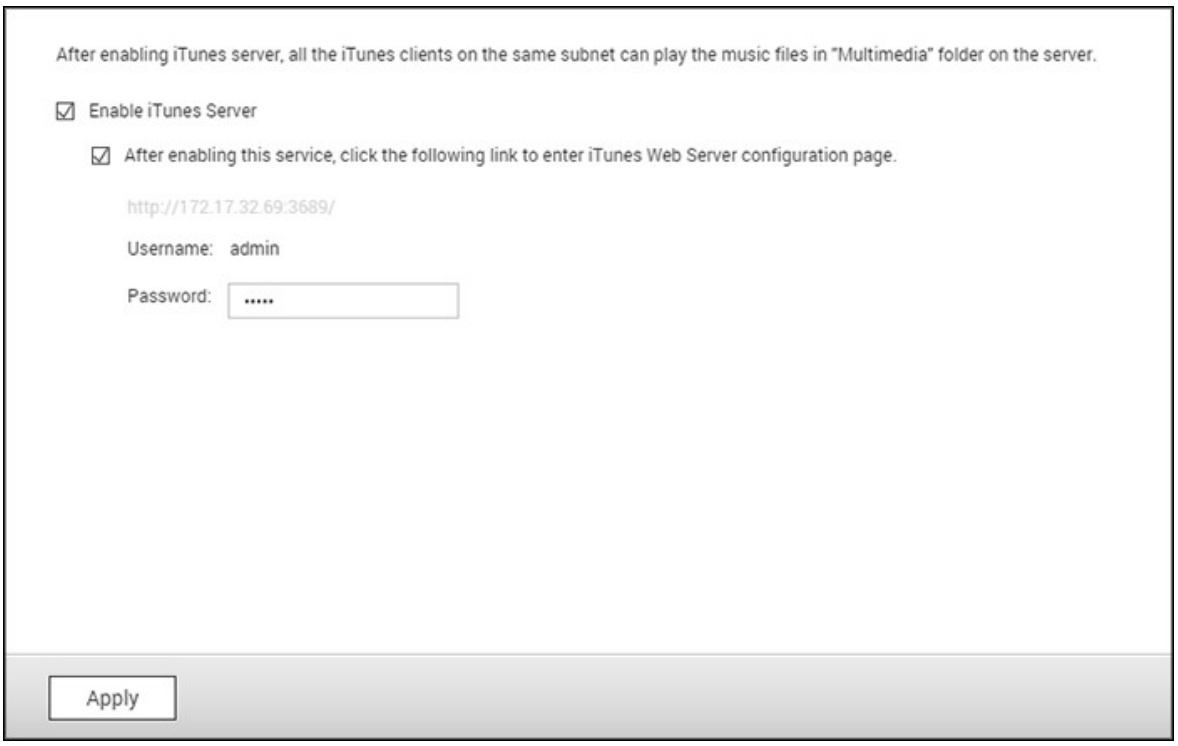
Note:

- The number of recording channels supported varies by NAS model. Please refer to the QNAP License Store (http://license.qnap.com/) for more details before purchasing or activating a license on the NAS.
- The maximum number of recording channels supported is for reference only. The actual recording performance may vary depending on the IP cameras, video content, network bandwidth, recording settings, and other applications running on the NAS. Please contact an authorized reseller or camera vendors for more information.
- For a step-by-step tutorial on adding extra channels, please refer to https://www.qnap.com/i/en/trade_teach/con_show.php?op=showone&cid=49.
- Windows users are advised to use IE 10+, Chrome or Firefox for live view and playback.
- Mac users are recommended to use the QNAP Surveillance Client for Mac for live view and playback operations. QNAP Surveillance Client for Mac can be downloaded from http://www.qnap.com/download.

To check on license details, switch to the "License Management" page.

7.2 iTunes Server

Using this service MP3 files in the Qmultimedia/Multimedia folder of the NAS can be shared with iTunes. Computers on the LAN with iTunes installed will be able to find, browse, and play the shared music files.



To use the iTunes Server, enable this feature and then upload music files to the Qmultimedia/Multimedia folder of the NAS.

Note: iTunes Server may be disabled or hidden on the following business models: TS-x70U, TS-x79 Pro and TS-x79U. To enable iTunes server, please refer to "System Administration" in the General Settings 48 section.

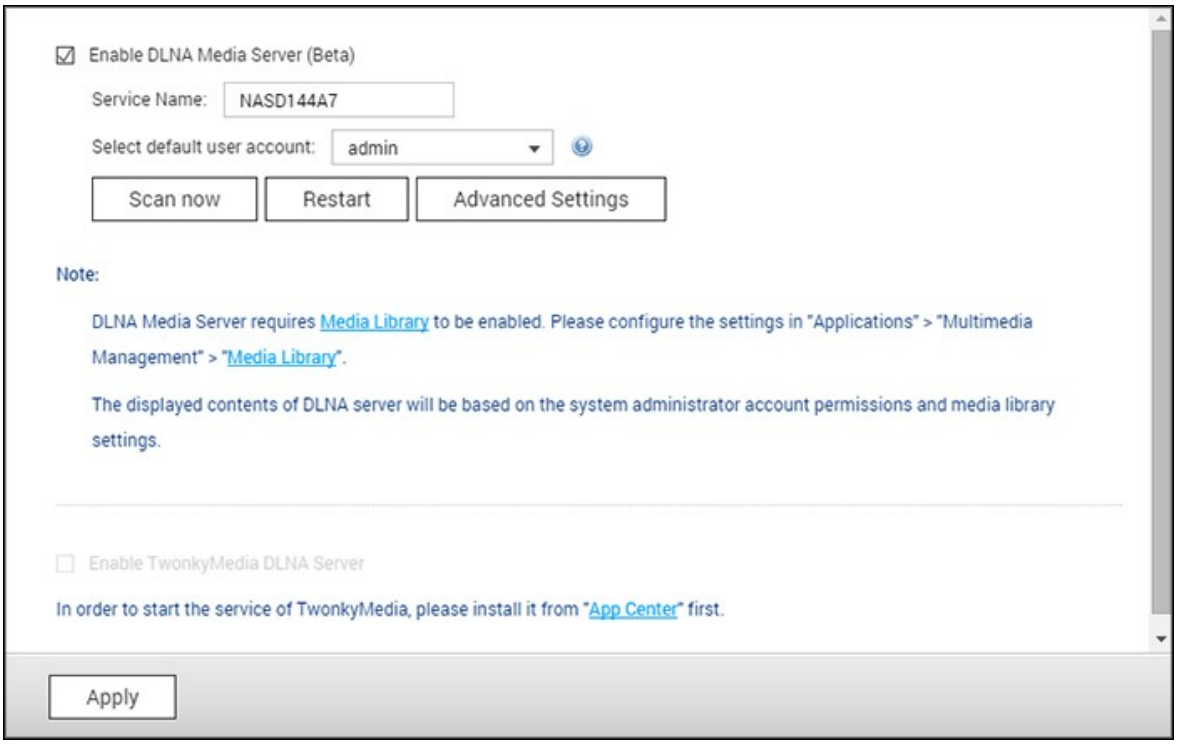
To configure the iTunes server settings and add smart playlists, login to the iTunes server web page (http://NAS-IP:3689/index.html.) Connect the PC and the NAS to the same LAN and run iTunes on the PC. Find the NAS name under "SHARED" and music and playlists will be available.

Additional Reference:

- Setup iTunes Music Server on QNAP.

7.3 DLNA Media Server

The NAS supports two types of DLNA Media Servers: QNAP DLNA Media Server and Twonky Media DLNA Server.



QNAP DLNA Media Server is developed by QNAP, and Twonky Media DLNA Server is a third-party media server. To allow DLNA media players to access and play the NAS multimedia content via QNAP DLNA Media Server, enable the QNAP DLNA Media Server and configure the Media Library and the default user account.

Note:

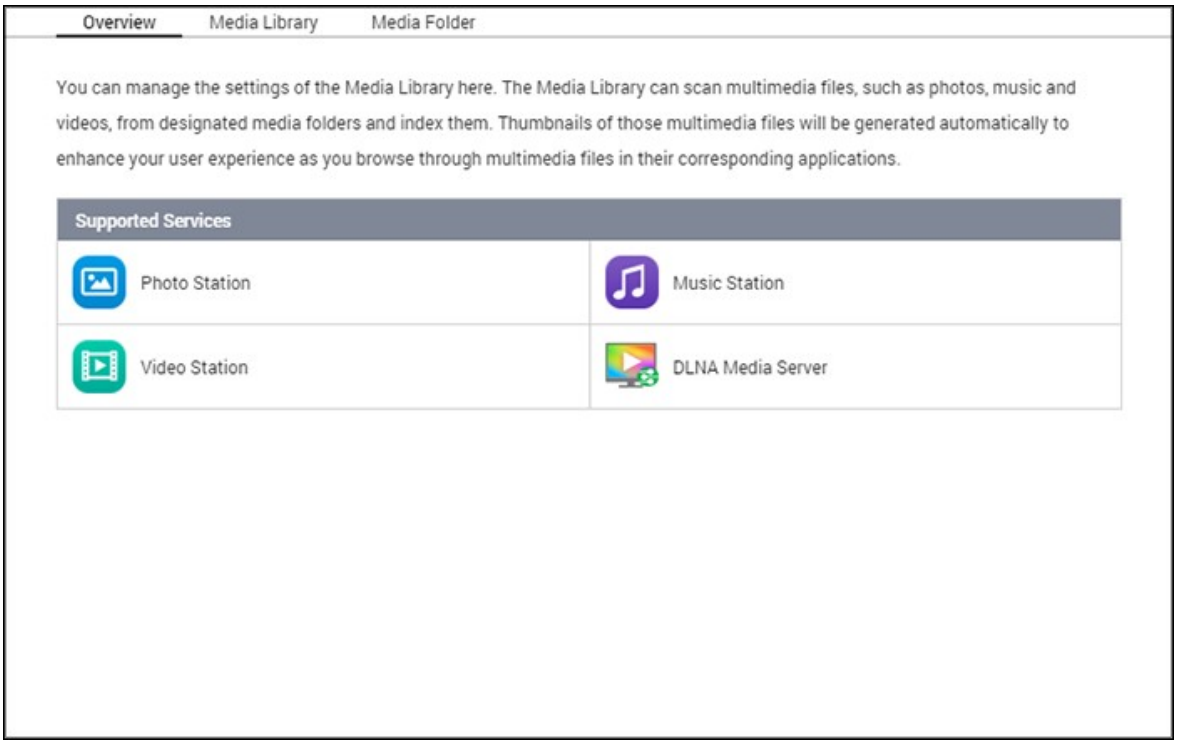
- The contents allowed to be browsed on devices connected to the media server are based on the shared folder permission set for the default user account. Viewers can only watch multimedia contents from the media folders that the default user account is assigned the permission with. For media folder setup, please refer to the chapter on Multimedia Management. For permission assignment, please refer to the chapter on Shared Folder 145.
- Twonky server must be installed separately on certain NAS models. Please refer to the product software specification table for details (http://www.qnap.com/products.)

To allow DLNA players to access and play NAS multimedia content via Twonky Media DLNA Server, enable it and click the link (http://NAS IP:9000/) to enter the TwonkyMedia DLNA Media Server configuration page. Go to "TwonkyMedia Settings" > "Basic Setup" to configure basic server settings. The Qmultimedia or Multimedia folder contents will be shared to digital media players by default. You can go to "Basic Setup" > "Sharing" > "Content Locations" to change the folder or add more folders. After configuring the settings, you can upload music, photos, and videos to these specified folders.

Note: If you upload multimedia files to the default folder but the files are not shown in the Media Player, click "Rescan content directories" or "Restart server" on the DLNA Media Server configuration page.

7.4 Multimedia Management

The Media Library service scans for photos, music, and videos from designated media folders and indexes them for usage in multimedia applications. Thumbnails for the media files will be automatically generated to enhance your user experience as you browse through them in their corresponding applications.



Media Library

- Scan Setting: Three options are provided for the media scan:
  - Real-time scan: New files are scanned in as soon as they are added to media folders.
  - Scan by schedule: Specify a start and end time for the scan, and it will be automatically conducted on a daily basis.
  - Manual Scan: You must click "Scan now" to check for new media.
- Set media scanning priority to high: The option will allow the media library to immediately process media files in order to quickly generate thumbnails. When the NAS needs to run scan tasks and transfer files at the same time, it will lower the file transfer speed and prioritize media scan tasks.
- Multimedia code page setting: Change this setting to the corresponding code for non-UTF media files for fonts and characters in the associated applications to be displayed correctly.
- Rebuild media library indexing: By rebuilding the media library, the NAS will scan the

specified media folders and replace the existing library with a new one.

The media library is enabled by default. In some cases, the media library needs to be disabled (when multimedia applications are not installed on the NAS.) To disable the media library, click "Deactivate Media Library". If the media library is not enabled, services like Photo Station Video Station, and Music Station, as well as the DLNA Media Server will not function correctly. To re-enable the media library, click "Activate Media Library".

Note:

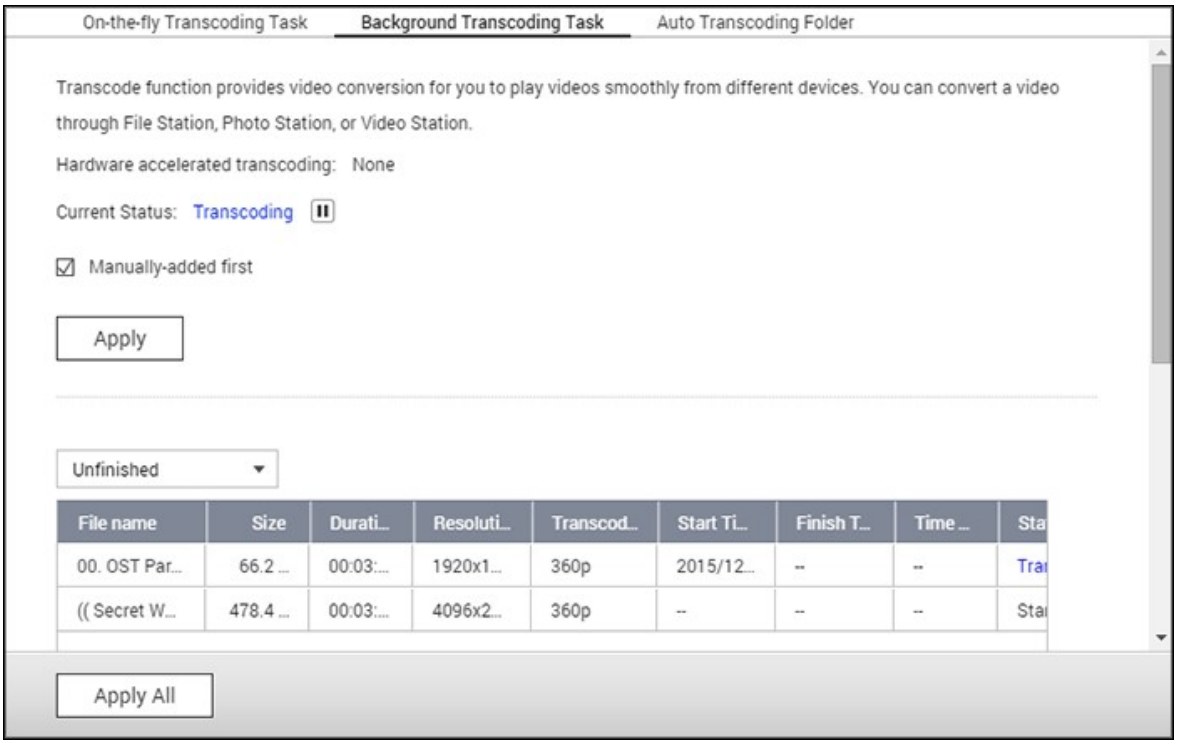
- If the media library is disabled, services like Photo Station, Music Station, and the DLNA Media Server will not function correctly.
- Image files with a width or height less than 400 pixels will not be indexed and will not have any thumbnails generated.

Media Folder

Media folders are shared folders on the NAS that are scanned for multimedia files. "/Multimedia" and "/Home" are the default media folders on the NAS (from QTS 4.1, all default shared folders on the NAS are identified as media folders for the purpose of multimedia application services.) To add media folders: click "Add", select media types and folders from the list, and click "Add". To change scanned file types for the media folders, first uncheck the media file types and click "Apply". To remove media folders, first select media folders from the list, and then click "Delete" and "Apply".

7.5 Transcode Management

Transcoding is the process of converting video files into an universal format (*.MP4) that is compatible with the broadest range of media players such as mobile devices and Smart TVs. Converted files with a range of resolutions can be used across different network environments for a better viewing experience. After transcoding tasks are created, they can be managed here. The transcoding service is enabled by default.



On-the-fly Transcoding Task

On-the-fly transcoding will simultaneously convert and stream a video while you watch it. This will consume more CPU resources. If your NAS has hardware transcoding acceleration, it is recommended to install the CodexPack to increase transcoding speeds and reduce CPU load. You are able to view and manage who is using on-the-fly transcoding services.

Manage transcoding tasks using the following buttons:

Button	Name	Description
Refresh	Refresh	Refresh the list.

Manage each task with the following buttons:

Button	Name	Description
	Priority	Adjust the order each task is executed.
	Remove	Remove the selected task from the list.

Note: This feature is only available for specific NAS models. Please check the product page (software specification) on the QNAP website (www.qnap.com) to see if this feature is available for your model.

Background Transcoding Task

Background transcoding is when a video file is converted in advance, potentially avoiding high CPU usage if the video will be simultaneously accessed by many users. You can manually add videos to be transcoded using File Station, Photo Station, or Video Station. Video files can be converted to 240p, 360p, 480p, 720p and 1080p and will be saved in the "@Transcode" folder that is in the same directory as the video.

Manage all transcoding tasks using the following buttons:

Button	Name	Description
Stop Transcoding	Stop Transcoding	Suspend all ongoing tasks in the list.
Remove All Incomplete Tasks	Remove All Incomplete Tasks	Remove all tasks that are yet to finish from the list.
Remove All Complete Tasks	Remove All Complete Tasks	Remove all complete tasks from the list.
Refresh	Refresh	Refresh the list.

Manage each task with the following buttons:

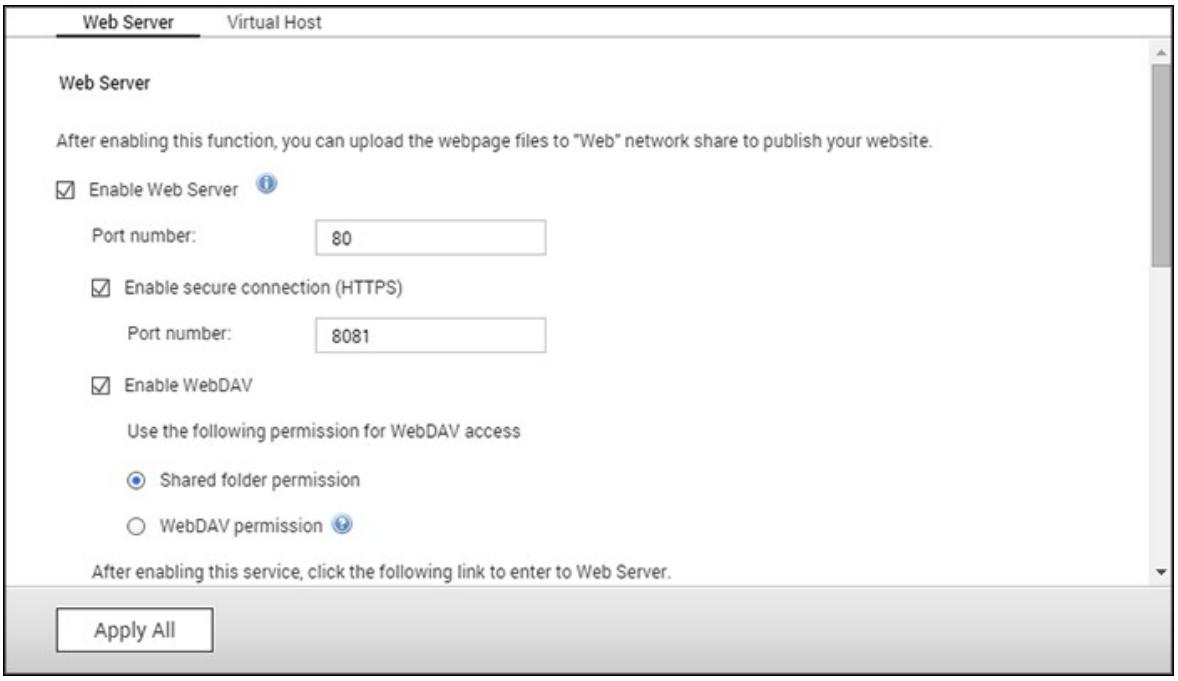
Button	Name	Description
	Priority	Adjust the order each task is executed.
	Remove	Remove the selected task from the list.

Auto Transcoding Folder

This feature is designed to convert the contents of an entire folder, and within the folder, the resolution of each subfolder can be specified independently. Click "Add" to add a new folder and select the video quality (resolution) and the folder to add it to the task list.

7.6 Web Server

Go to "Control Panel" > "Applications" > "Web Server" to configure the web server and virtual host.



Web Server

The NAS can host web sites including those that use Joomla!, PHP and MySQL/SQLite to establish an interactive website. To use the Web Server, follow these steps.

1. Enable the service and enter the port number. The default number is 80.
2. Configure other settings:
   a. Maintenance: Click "Restore" to restore the web server configuration to default.
   b. php.ini Maintenance: Choose to upload, edit or restore php.ini.
3. Secure Connection (HTTPS): Enter the port number for SSL connection.
4. Upload HTML files to the shared folder (Qweb/Web) on the NAS. The file index.html, index.htm or index.php will be the home path of your web page.
5. You can access the web page you upload by entering http://NAS IP/ in the web browser. When the Web Server is enabled, you must enter http://NAS IP:8080 in your web browser to access the NAS login page.

Note:

- If the Web Server is disabled, all relevant applications including Music Station, Photo Station, Happy Get, or QAirplay will become unavailable.
- To use PHP mail(), go to "System Settings" > "Notification" > "SMTP Server" and

configure the SMTP server settings.

WebDAV

WebDAV (Web-based Distributed Authoring and Versioning) is a set of extensions to the HTTP(S) protocol that allows users to edit and manage files collaboratively on remote servers. After enabling this function, you can map shared folders of your NAS as network drives of a remote PC over the Internet. To edit the access rights, go to "Privilege Settings" > "Shared Folders" page.

Note: WebDAV currently supports NAS user accounts and AD domain user accounts. LDAP user accounts are not supported.

To map a NAS shared folder as a network drive on your PC, enable WebDAV and follow these steps.

1. Go to "Privilege Settings" > "Shared Folders". Click "Access Permissions" for the designated folder under the "Action" column.
2. Select "WebDAV access" from the dropdown menu on the top of the page and specify the access rights. Choose the authentication level or scroll down to search for the account to grant its access rights. Click "Apply".
3. Next, mount the NAS shared folders as the shared folders on your computer using WebDAV.

Windows Vista

If you are using Windows Vista, you may need to install "Software Update for Web Folders (KB907306)". This update is only for 32-bit versions of Windows Vista. http://www.microsoft.com/downloads/details.aspx?FamilyId=17c36612-632e-4c04-9382-987622ed1d64&displaylang=en

1. Right click on "Computer" and select "Map Network Drive..."
2. Click "Connect to a Web site that you can use to store your documents and pictures".
3. Select "Choose a custom network location".
4. Enter the NAS URL with the folder name. Format: http://NAS_IP_or_HOST_NAME/SHARE_FOLDER_NAME
5. Enter the account login details that have WebDAV access rights to connect to the folder.

6. Enter a name for this network place.
7. The Web folder has been successfully created.
8. You can locate the web folder in the "Network Location" section in "Computer".
9. You can connect to the folder though this link via HTTP/WebDAV.

Mac OS X

Follow these steps to connect to your NAS via WebDAV on Mac OS X.

Client Operating System: Mac OS X Snow Leopard (10.6.1)

1. Open "Finder" > "Connect to Server", and enter the URL of the folder. Format: http://NAS_IP_or_HOST_NAME/SHARE_FOLDER_NAME
2. Enter the account login details that have WebDAV access rights to connect to the folder.
3. You can connect to the folder through this link via HTTP/WebDAV.
4. You can also find the mount point in the "SHARED" category in Finder and make it one of the login items.

These instructions are based on Mac OS X 10.6, and can be applied to 10.4 or later.

Ubuntu

Follow these steps to connect to your NAS via WebDAV on Ubuntu.

Client Operating System: Ubuntu 9.10 Desktop

1. Open "Places" > "Connect to Server..."
2. Select "WebDAV (HTTP)" or "Secure WebDAV (HTTPS)" for the Service type according to your NAS settings and enter your host information. Enter the account login details that have WebDAV access rights to connect to the folder. Click "Connect" to initialize the connection.
3. The WebDAV connection has been successfully established, a linked folder will be automatically created on the desktop.

MySQL Management

Install phpMyAdmin and save program files in the Web or Qweb share of the NAS. You can change the folder name and connect to databases by entering the URL in the browser.

Note: The default username of MySQL is "root". The password is "admin". Change the root password **immediately** after logging in to the phpMyAdmin management interface.

SQLite Management

Follow these steps or refer to the INSTALL file in the downloaded SQLiteManager-*.tar.gz? to install SQLiteManager.

1. Unpack the downloaded file SQLiteManager-*.tar.gz.
2. Upload the unpacked folder SQLiteManager-* to \\NAS IP\Web\ or \\NASIP\Qweb.
3. Open a web browser and go to http://NAS IP/SQLiteManager-*/.?:
    - The symbol "*" refers to the version number of SQLiteManager.

7.6.1 Virtual Host

A virtual host is a web server technique that provides the capability to host more than one domain (website) on one physical host and offers a cost-effective solution for personal and small businesses with such need. You can host up to 32 websites on the NAS with this feature.

Before you Start

In this tutorial we will use the information provided in the below table as a reference guide.

Host name	WAN/LAN IP and port	Document root	Demo web application
site1.mysite.com	WAN IP: 111.222.333.444 LAN IP: 10.8.12.45 (NAS) Port: 80 (NAS)	/Qweb/ site1_mysite	Joomla!
site2.mysite.com		/Qweb/ site2_mysite	WordPress
www.mysite2. com		/Qweb/ www_mysite2	phpBB3

Before starting, make sure you have checked the following items:

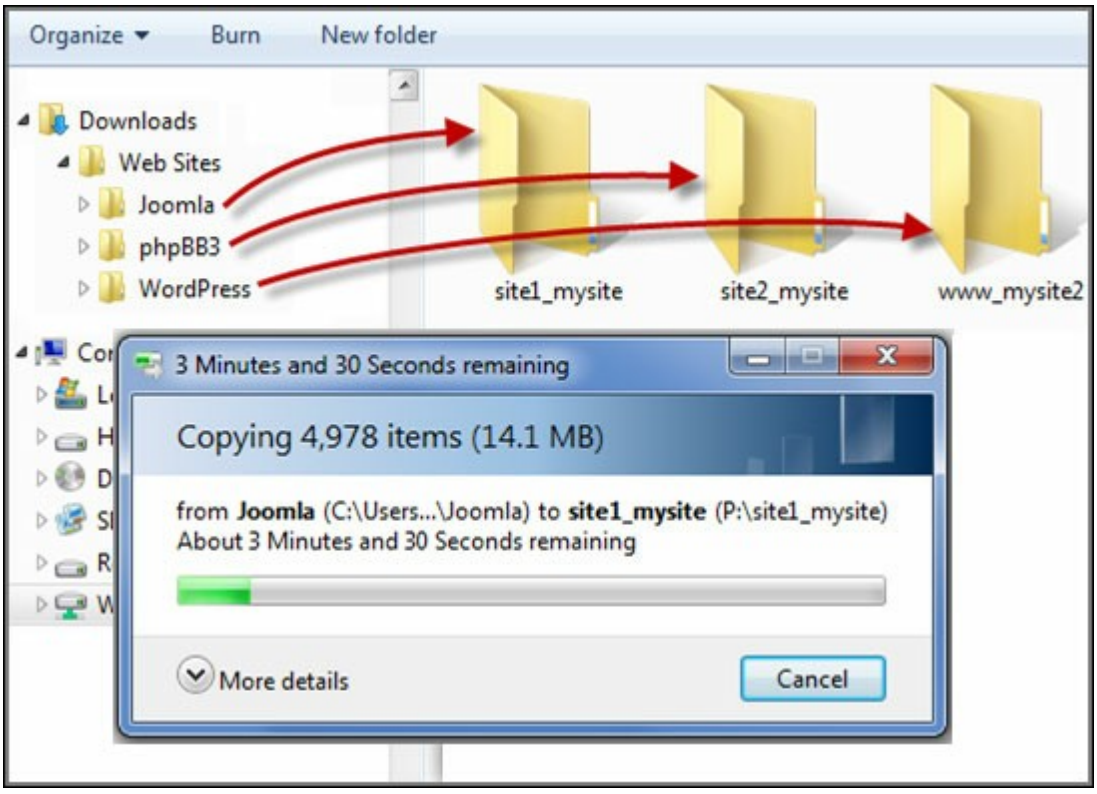
- Web Server: Enable Web Server in "Applications" > "Web Server".
- DNS records: The host name must point to the NAS WAN IP. You can normally configure this from your DNS service providers.
- Port forwarding: If the web server listens on port 80 you need to configure port forwarding on your router to allow inbound traffic from port 80 to the LAN IP (10.8.12.45) of your NAS.
- SSL certificate import: If you are going to enable SSL connection for the website and intend to use your own trusted SSL certificates you can import certificates from within the administration backend under "System Settings" > "Security" > "Certificate & Private Key".

Using Virtual Host

Follow these steps to use virtual host:

1. Select "Enable Virtual Host" and click "Apply".
2. Click "Create a Virtual Host".

3. Enter the host name and specify the folder (under Web or Qweb) where the web files will be uploaded to.
4. Specify the protocol (HTTP or HTTPS) for connection. If you select HTTPS, make sure the option "Enable Secure Connection (SSL)" in Web Server has been enabled.
5. Specify the port number for connection.
6. Click "Apply".
7. Continue to enter the information for the rest of the sites you want to host on the NAS.
8. Create a folder for each website (site1_mysite, site2_mysite, and www_mysite2) and start transferring the website files to the corresponding folders.



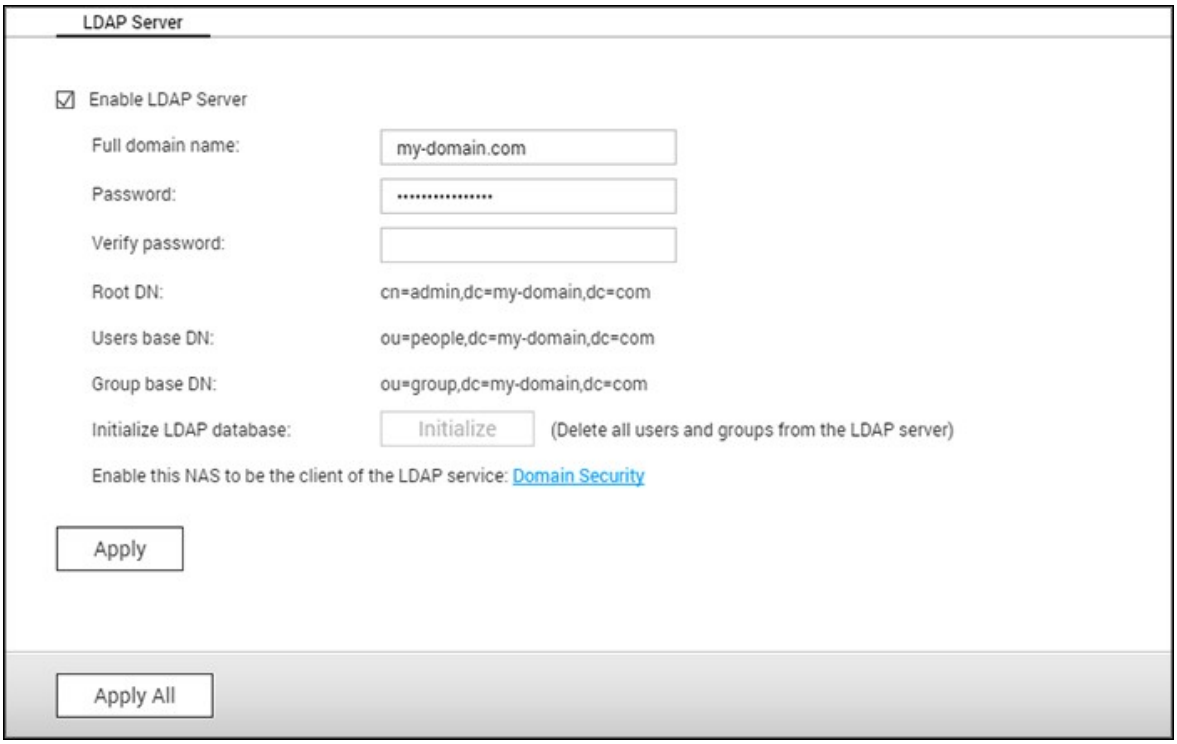
Once the files transfer is complete, point your web browser to the websites by http://NAS_host_name or https://NAS_host_name according to your settings. In this example, the URLs are:

- http://site1.mysite.com
- http://site2.mysite.com
- http://www.mysite2.com

Using the above example, you would see the Joomla!, phpBB3, and WordPress sites respectively.

7.7 LDAP Server

The LDAP server of the NAS allows the administrator to create users to access multiple NAS servers with the same username and password.



Configuring LDAP Server

Follow these instructions to configure the LDAP server.

1. Enable LDAP Server: Login to the NAS as "admin". Go to "Applications" > "LDAP Server" and enable the LDAP server. Enter the full LDAP domain name and the password for the LDAP server, then click "Apply".
2. Create LDAP Users: Under the "Users" tab, click "Create a User" or "Create Multiple Users" or "Batch Import Users". Follow the wizard instructions to create LDAP users. Once you have created the LDAP users, the NAS can be joined to the domain. You can set the permissions of LDAP users and allow them to be authenticated by the NAS.
3. Join a NAS to LDAP Domain: To allow LDAP users to connect to the NAS, join the NAS to the LDAP domain. Go to "Privilege Settings" > "Domain Security". Select "LDAP authentication" and choose "LDAP server of local NAS" as the server type. Then click "Apply". The NAS is now a client of the LDAP server. To view the domain users or groups, go to "Privilege Settings" > "Users" or "User Groups", then select "Domain Users" or "Domain Groups". You can also set the folder permission for the domain users or groups.

4. Join a Second NAS to LDAP Domain: You can join multiple NAS to the same LDAP domain and allow the LDAP users to connect to these NAS using the same login credentials. To join another NAS to the LDAP domain, login to the NAS and go to "Privilege Settings" > "Domain Security", select "LDAP authentication" and set "LDAP server of a remote NAS" as the server type. Enter the DNS name or IP address of the remote NAS, the name of the previously-created LDAP domain, and enter the LDAP server password. Click "Apply".

Backing up/Restoring LDAP Database

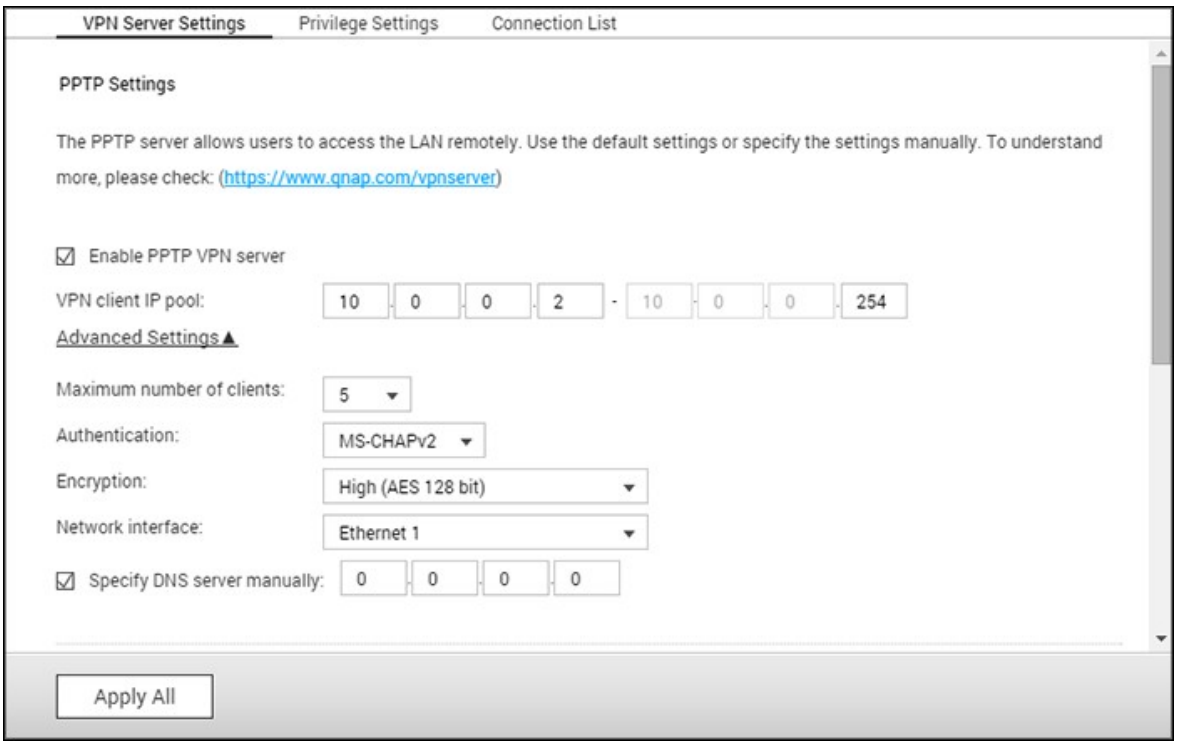
To back up the LDAP database on the NAS, select "Back up Database" and specify the backup frequency, destination folder on the NAS and other options. To restore an LDAP database, browse to select the *.exp file and click "Import".

Note:

- If the name of a user is changed in a LDAP server, it is necessary to assign the folder permissions again on the NAS.
- To avoid account conflicts, do not create NAS local user accounts that already exist in the LDAP directory.

7.8 VPN Server

The NAS supports Virtual Private Network (VPN) service for users to access the NAS and resources on a private network from the Internet. Set your NAS as a VPN server on this page.



In this chapter, the following topics are covered:

- VPN Server Setup 208
- Third Party VPN Client Setup and Connection 209
- Privilege Settings 211
- Connection List 211

VPN Server Setup

1. Enable PPTP or OpenVPN service: The NAS supports PPTP and OpenVPN for VPN connection. Select either one option and configure the settings.
   - PPTP: Point-to-Point Tunneling Protocol (PPTP) is one of the most commonly used methods for VPN connection. It is natively supported by Windows, Mac, Linux, Android, and iPhone. You can also specify the VPN client IP pool and advanced settings (including the maximum number of clients, authentication protocol, encryption method, network interface and DNS server.)
   - OpenVPN: OpenVPN is an open source VPN solution which utilizes SSL encryption for secure connection. To connect to the OpenVPN server, OpenVPN client must

be installed on your PC. Click "Download Configuration File" to download the VPN client settings, certificate/key and installation guide from the NAS and upload the files to the OpenVPN client. You can also specify the VPN client IP pool and advanced settings (including the VPN server port, maximum number of clients, encryption method, network interface, DNS server, and whether to use the redirect-gateway and compressed data before their transfer via VPN.)

2. Configure port forwarding by auto router configuration: The NAS supports auto port forwarding for UPnP (Universal Plug-and-Play network protocol) routers. Go to "myQNAPcloud" > "Auto Router Configuration" to enable UPnP port forwarding and open the ports of the PPTP or OpenVPN service on the router.
3. Register myQNAPcloud service: You can connect to the NAS by WAN IP or myQNAPcloud name. To configure myQNAPcloud service, check the chapter on myQNAPcloud Service or visit myQNAPcloud (https://www.myqnapcloud.com).
4. Add VPN users: Go to "Applications" > "VPN Server" > "Privilege Settings", click "Add VPN Users". The local NAS users will be listed. Select the users who are allowed to use the VPN service and their connection method (PPTP, OpenVPN, or both). Click "Add".
4. Connect to the private network by a VPN client: Now you can use your VPN client to connect to the NAS via the VPN service.

Note:

- The default NAS IP is 10.0.0.1 under PPTP VPN connection.
- Upload the configuration file to the OpenVPN client every time the OpenVPN settings, myQNAPcloud name, or the secure certificate is changed.
- To connect to the PPTP server on the Internet, the PPTP passthrough options on some routers have to be opened. PPTP uses only port TCP-1723; forward this port manually if your router does not support UPnP.

Additional Reference:

- You can add an extra layer of security to the VPN service by installing L2TP/IPsec from the App Center. Please refer to the NAS Add-ons 342 chapter for details.

Third Party VPN Client Setup and Connection

PPTP on Windows 7

1. Go to "Control Panel" > "Network and Sharing Center". Select "Set up a new connection or network".

2. Select "Connect to a workplace" and click "Next".
3. Select "Use my Internet connection (VPN)".
4. Enter the myQNAPcloud name or the WAN IP of the NAS and enter a name of the connection. Then click "Next".
5. Enter your username and password which is added from the NAS for VPN access. Click "Connect".

PPTP on Mac OS X 10.7

1. Choose "Apple menu" > "System Preferences", and click "Network".
2. Click "Add (+)" at the bottom of the list, and choose "VPN" as the interface.
3. Choose the VPN type according to the NAS settings to connect. Enter the service name.
4. In "Server Address", enter the myQNAPcloud name or the WAN IP of the NAS. In "Account Name", enter your username which is added from the NAS.
5. Click "Authentication Settings", and enter the user authentication information given by the network administrator.
6. After entering the user authentication information, click "OK", and then click "Connect".

PPTP on iOS 5

1. Go to "Settings" > "General" > "Network", select "VPN".
2. Select "Add VPN Configuration".
3. Select "PPTP", and enter the Description, Server, Account, and Password for the connection.
4. Return to "Settings" > "General" > "Network" > "VPN", and enable "VPN".

OpenVPN on Windows

1. Download OpenVPN from http://openvpn.net/
2. Install the OpenVPN client on Windows. The default installation directory is C:\Program Files\OpenVPN.
3. Open OpenVPN as an administrator.
4. Download the OpenVPN configuration file and certificate from the NAS ("Applications" > "VPN Server" > "VPN Server Settings" > "OpenVPN Settings")
5. Edit openvpn.ovpn and replace "OPENVPN_SERVER_IP" with the OpenVPN server IP.
6. Put "ca.crt" and "openvpn.ovpn" into the configuration folder under the OpenVPN configuration subdirectory (C:\Program Files\OpenVPN\config.)

Note: If the OpenVPN client is running on Windows 7, add the firewall rules in the

advanced settings of OpenVPN.

OpenVPN on Linux

1. Download OpenVPN from http://openvpn.net/index.php
2. Install the OpenVPN client on Linux.
3. Download the OpenVPN configuration file and certificate from the NAS ("Applications" > "VPN Server" > "VPN Server Settings" > "OpenVPN Settings".)
4. Edit openvpn.ovpn and replace "OPENVPN_SERVER_IP" with the OpenVPN server IP.
5. Put "ca.crt" and "openvpn.ovpn" into the configuration folder under the OpenVPN configuration subdirectory.
6. Run OpenVPN.

OpenVPN on Mac

1. Download the disk image of OpenVPN client from http://code.google.com/p/tunnelblick/
2. Launch Tunnelblick.
3. Download the OpenVPN configuration file and certificate from the NAS ("Applications" > "VPN Service" > "VPN Server Settings" > "OpenVPN Settings".)
4. Edit openvpn.ovpn and replace OPENVPN_SERVER_IP (alfred.myqnapnas.com) with OpenVPN server IP.
5. Put "ca.crt" and "openvpn.ovpn" into the configuration folder under the OpenVPN configuration subdirectory.
6. Run OpenVPN.

Privilege Settings

Select the VPN users and specify their privileges.

Add VPN users

Click "Add VPN Users" and follow the wizard to select the system users and set their privileges.

Delete VPN users

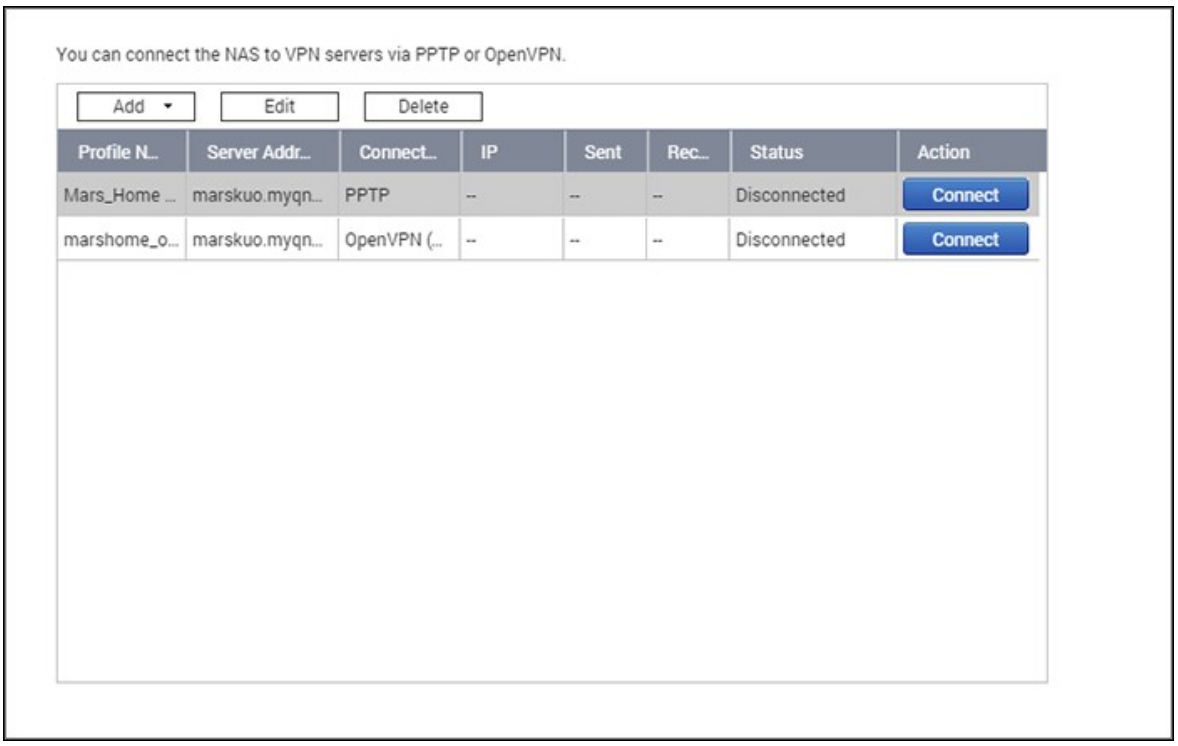
Click "Delete" to remove the VPN users. The users will not be able to connect to the VPN service after being deleted.

Connection List

This list shows the connection status of the VPN clients. You can right click a client on the list and select to disconnect the client.

7.9 VPN Client

The NAS provides the VPN client service which can connect to a VPN server via PPTP or OpenVPN. The NAS also supports saving multiple VPN settings to easily switch between different connections.



Topics covered in this chapter:

- Before you Start 213
- Connect a VPN Server via PPTP 213
- Connect a VPN Server via OpenVPN 215

Before you start

Before starting the VPN client service, please ensure that your NAS has been set up as follows:

- The Internet connection is normal.
- Your QTS version is at least 4.1.2.
- If you have an active VPN server service, you must disable it. The client and server services cannot run at the same time.

Connect a VPN server via PPTP

The Point-to-Point Tunneling Protocol (PPTP) is a commonly-used method for

implementing VPN and is supported by most clients, including Windows, Mac OS X, Linux, and mobile devices.

1. Go to "Control Panel" > "VPN Client".
2. Click "Add" > "PPTP" to connect a VPN server.
3. Enter the connection configuration settings, including the profile name, server address (that you want to connect to), and the username and password of the VPN server.
4. Choose any of the following authentication mechanisms from the "Authentication" menu to protect VPN client's password during authentication:
   - MS-CHAPv2: The password will be encrypted using Microsoft CHAP version 2.
   - MS-CHAP: The password will be encrypted using Microsoft CHAP version 1.
   - PAP: The password will not be encrypted.
   - CHAP: The password will be encrypted using CHAP.
5. If you choose MS-CHAP or MS-CHAPv2, go to the "Encryption" menu and select an option:
   - None: The VPN connection will not be encrypted.
   - Medium (AES 40/128 bit): The VPN connection will be encrypted using a 40-bit or 128-bit key.
   - High (AES 256 bit): The VPN connection will be encrypted using a 256-bit key (the highest-possible level.)
6. Tick the following checkboxes depending on your configurations:
   - Use the default gateway on remote network: This will allow all packets to be transferred via the VPN server.
   - Allow other network devices to connect to the VPN through the NAS: This will allow network devices on the same LAN as the NAS to connect to the same VPN.
   - Reconnect when the VPN connection is lost: This will automatically reconnect to the VPN server when the connection is lost.
7. Select "Connect" to start.

Note: If you check "Use the default gateway on remote network", the default gateway on your NAS will change to the VPN server's default gateway.

If you check "Allow other network devices to connect to the VPN through the NAS", the network device can access the VPN via the NAS. To enable this function, you must change the default gateway on that other device. Using a Windows PC as an example:

1. Go to "Control Panel" > "Network an Sharing Center" > "Change adapter settings".
2. Right click on the connection icon and choose "Properties".

3. Select "Internet Protocol Version 4 (TCP/IP)" and click "Properties".
4. Choose "Use the following IP address" and change the Default gateway to the IP address of the NAS that is operating the VPN Client service (in this case, it is 192.168.1.14) then click "OK".

Connect a VPN server via OpenVPN

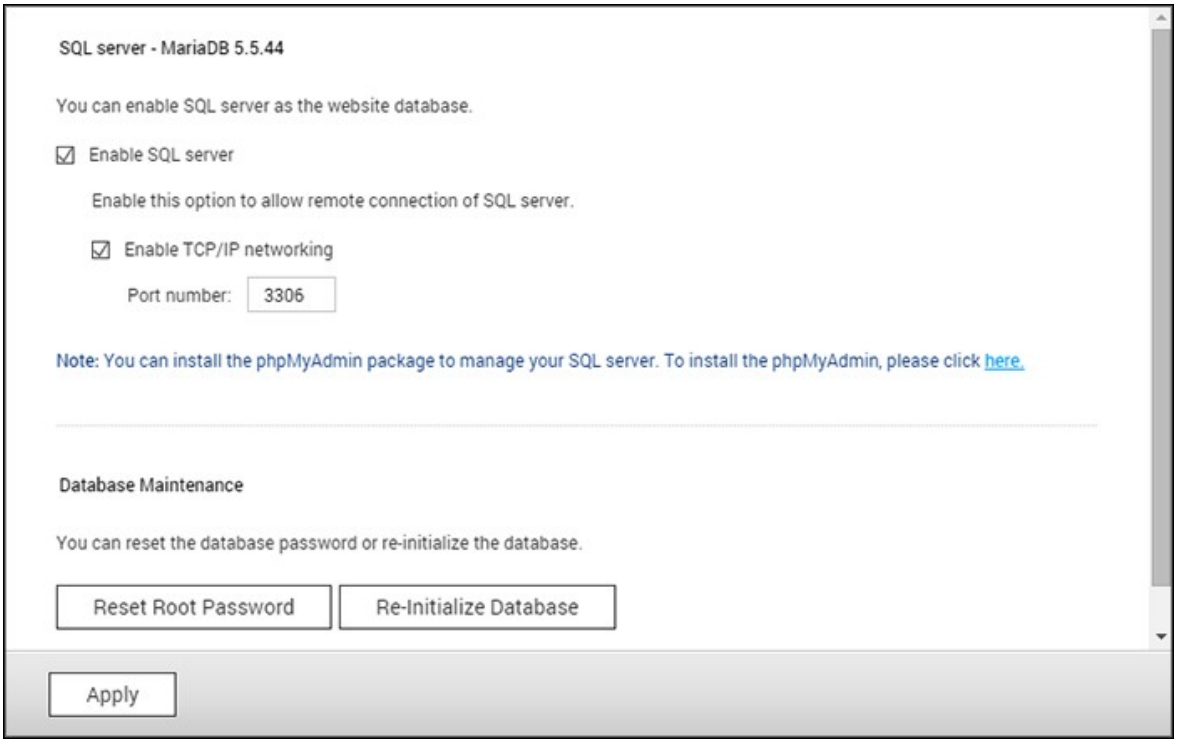
The NAS also supports OpenVPN, which is an open-source solution for VPN services. It protects a VPN's connection with the SSL/TLS encrypting mechanism. It is also available on Windows, Mac OS X, Linux, Android and iOS.

To connect to a VPN server via OpenVPN, follow these steps:

1. Log into the NAS and go to "Control Panel" > "Application" > "VPN Client" > click "Add" and choose "OpenVPN" to connect to a VPN server.
2. Enter the connection configuration settings, including the profile name, server address (that you want to connect to), and the username and password of the VPN server. Choose the same configuration as the OpenVPN server in "Server Port".
3. Click "Certification" to import the certificate (ca.crt) exported from the OpenVPN server.
4. Tick the following checkboxes depending on your configurations:
   - Enable compressed VPN link: This will compress data before transferring via VPN.
   - Use the default gateway on remote network: This will allow all packets to be transferred via the VPN server.
   - Allow other network devices to connect to the VPN through the NAS: This will allow network devices on the same LAN as the NAS to connect to the same VPN.
   - Reconnect when the VPN connection is lost: This will automatically reconnect to the VPN server when the connection is lost.
5. Click "Connect" to start.
   - If you check "Use the default gateway on remote network", the default gateway on your NAS will change to the VPN server's default gateway.
   - If you check "Allow other network devices to connect to the VPN through the NAS", please refer to the above tutorial for more details.

7.10 SQL Server

You can enable an SQL Server to be a website database.



Note: For legacy ARM models (TS-x21, TS-x20, TS-x19, TS-x12 and TS-x10), MySQL will still be used as the default SQL server. If you are using a legacy ARM model, you can still install MariaDB from the App Center.

Enable TCP/IP Networking

You can enable this option to configure MySQL server of the NAS as a database server of another web server in remote site through Internet connection. If this option is disabled, your MySQL server will only be configured as a local database server for the web server of the NAS. After enabling remote connection, assign a port for the remote connection service of the MySQL server. The default port is 3306. After the first-time installation of the NAS, a phpMyAdmin folder is created in the Qweb/Web network folder. You can enter http://NAS IP/phpMyAdmin/ in the web browser to enter the phpMyAdmin page and manage the MySQL database.

Database Maintenance

- Reset root password: Reset the password of MySQL root as "admin".

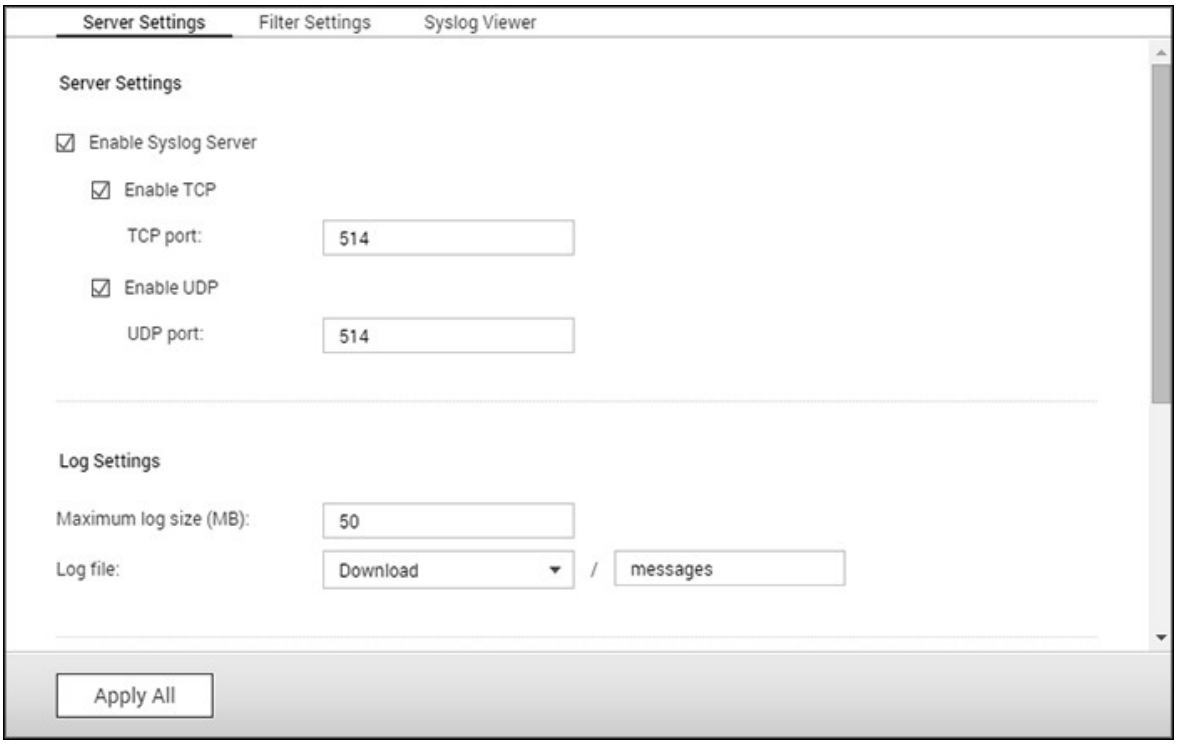
- Re-initialize database: Delete all the data on the MySQL database.

Note:

- To use this feature on the TS-x39/509/809 series NAS, please update the system firmware with the image file enclosed in the product CD or download the latest system firmware from http://www.qnap.com.
- Do not delete the phpMyAdmin folder. You can rename the folder but the link on the MySQL server page will not be updated. To connect to the renamed folder, you can enter the link http://NAS IP/renamed folder in the web browser.
- The phpMyAdmin folder is created after the first-time installation. When you update the firmware, the folder will remain unchanged.

7.11 Syslog Server

Configure the NAS as a Syslog server, create Syslog filters and view available Syslog messages on this page.



Server Settings

- **Server Settings:** To configure the NAS as a Syslog server and allow it to receive Syslog messages from clients, enable Syslog Server. Select the protocols (TCP and/ or UDP) the NAS uses to receive Syslog messages. Specify the port numbers if necessary or use the default port number 514. Click "Apply" to save the settings. After enabling the NAS as a Syslog server, enter the NAS IP as the Syslog server IP on the Syslog clients to receive Syslog messages from them.
- **Log Settings:** Specify the maximum log size (1-100 MB) of Syslog messages, the location (NAS shared folder) where the logs will be saved, and the file name. Once the logs have reached their maximum size, the log file will be automatically archived and renamed with the archive date as MyLogFile_yyyy_mm_dd, for example MyLogFile_2011_12_31. If multiple log files are archived on the same day, the file will be named as MyLogFile_yyyy_mm_dd.[number]. For example, MyLogFile_2011_12_31.1, MyLogFile_2011_12_31.2, and so on. Click "Apply" to save the settings.
- **Email Notification:** The NAS supports sending email alerts to up to 2 dedicated email addresses (configured in "System Settings" > "Notification" > "Alert

Notification") when the severity of the received Syslog messages match the specified level. To use this feature, configure the SMTP server settings in "System Settings" > "Notification" > "SMTP Server". Next, enable email notification and select the severity level in "Applications" > "Syslog Server" > "Server Settings". Click "Apply" to save the settings.

Severity	Level (smallest number the highest)	Description
Emerg	0	Emergency: the system is unusable. Alert emails will be sent when Syslog messages of levels 0-4 are received.
Alert	1	Alert: immediate action required. Alert emails will be sent when Syslog messages of levels 1-4 are received.
Crit	2	Critical: critical conditions. Alert emails will be sent when Syslog messages of levels 2-4 are received.
Err	3	Error: error conditions. Alert emails will be sent when Syslog messages of levels 3-4 are received.
Warning	4	Warning: warning conditions. Alert emails will be sent when Syslog messages of level 4 are received.

Filter Settings

This feature should only be operated by administrators who are familiar with Syslog filters. Follow these steps to create Syslog filters for the NAS to receive Syslog messages that match the criteria:

1. Click "Add a Filter".
2. Define the filter settings and click "Add". To edit the filters or to manually add filters, click "Manual Edit" and modify the contents in the dialog. Click "Apply" to save the filter.
3. The filters will be shown on the list. The NAS will only receive Syslog messages that

match the filters which are in use.

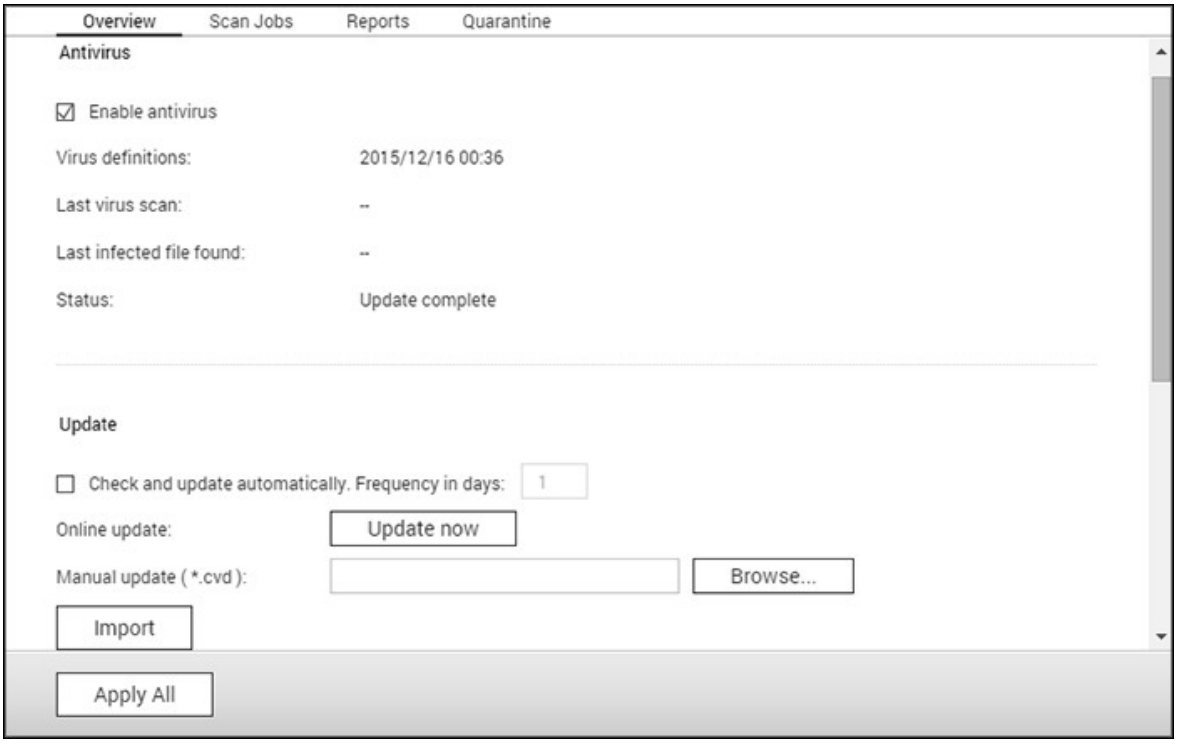
Button	Name	Description
	Enable	Enable a filter
	Disable	Disable a filter
	Edit	Edit filter settings
Delete	Delete	Delete filters

Syslog Viewer

Use the Syslog viewer to view the available Syslog messages on the NAS. Select to view the latest logs or the logs in a particular archived file. Log files can be accessed on the directory configured in "Syslog Server" > "Server Settings" > "Log Settings".

7.12 Antivirus

Configure antivirus features on this page.



Overview

- Antivirus: Use the antivirus to scan the NAS manually or on recurring schedules. It will delete, quarantine, or report files infected by viruses, malware, Trojans, and other malicious threats. To use this feature, select "Enable antivirus" and click "Apply".
- Update: Select "Check and update automatically" and specify the intervals in days to automatically update the antivirus definitions. Click "Update Now" to check for new antivirus definitions and to update if necessary. Users can also download updated definitions from http://www.clamav.net and manually update the antivirus definitions. The NAS must be connected to the Internet to use this feature.
- Quarantine: View the quarantine information of the disk volumes on the NAS. For more details, go to "Applications" > "Antivirus" > "Quarantine".

Note: The antivirus engine selector next to the "Enable antivirus" checkbox is only available after an antivirus App has been installed from the App Center[332].

Scan Jobs

The NAS supports manual and scheduled scanning of all or specific shared folders. Up to 64 schedules can be created and up to 5 scan jobs can run concurrently. To create a scan job, follow these steps.

1. Go to "Applications" > "Antivirus" > "Scan Jobs". Click "Add a Scan Job".
2. Enter the job name and select the shared folders to scan. To scan a specific shared folder, select the share and click "Add".
3. Multiple shared folders can be selected. To remove a shared folder, click the "Delete (X)" button next to the share name and click "Next". Define the scan job schedule and click "Next".
4. Select to scan all the files in the shared folder(s) or quick scan to scan only potentially dangerous files. Select "Exclude files or folders" and specify a file, a folder, or a file extension to be excluded from the virus scan and click "Next". Separate each entry with a space in the same line or enter one entry per line. For example:
   - /Public/testfile.txt
   - /Download
   - *.log
   - *.exe *.com
   - *.txt; click "Next".
5. Enable other scan options and click "Next":
   - Specify the maximum file size (1-4096 MB) allowed for scanning.
   - Enable "Scan compressed files" to include these files in shared folders. Specify the maximum amount of data (1-4096 MB) in a compressed file for scanning (if applicable). The maximum compressed file size may vary based on the NAS model and available memory.
   - To scan MS Office and Mac Office files, RTF, PDF, and HTML files, select "Deep scan for document files".
6. Specify the actions to take when infected files are discovered and click "Finish" to create the scan job.
   - Only report the virus: The virus scan reports are recorded under the "Reports" tab. No actions will be taken for the infected files.
   - Move infected files to quarantine: The infected files will be quarantined and cannot be accessed from their original shared folders. Users can view the virus scan reports under the "Reports" tab and delete/restore the infected files under the "Quarantine" tab.
   - Delete infected files automatically: Infected files will be deleted and cannot be

recovered.

- To receive an alert email when an infected file is found or after scanning has completed, configure the SMTP server settings in "System Settings" > "Notification" > "SMTP Server".

7. The scan job will run according to its schedule.

Button	Name	Description
	Run	Run the scan job now.
	Stop	Stop the scan job.
	Edit	Edit the scan job settings.
	View last run log	Open the last virus scan summary.
	Delete	Delete the scan job.

Reports

View or download the reports of the latest scan jobs on the NAS.

Button	Name	Description
	Download	Download the virus scan report. The file can be opened by any text editor.
	Delete	Delete an entry on the list.
DOWNLOAD	Download All	Download all the virus scan logs on the list as a zip file.

Report options

- Specify the number of days (1-999) to retain the logs
- Enable the option "Archive logs after expiration" and specify the shared folder to save the logs to once the retention period has been reached. Click "Apply All" to save the changes.

Quarantine

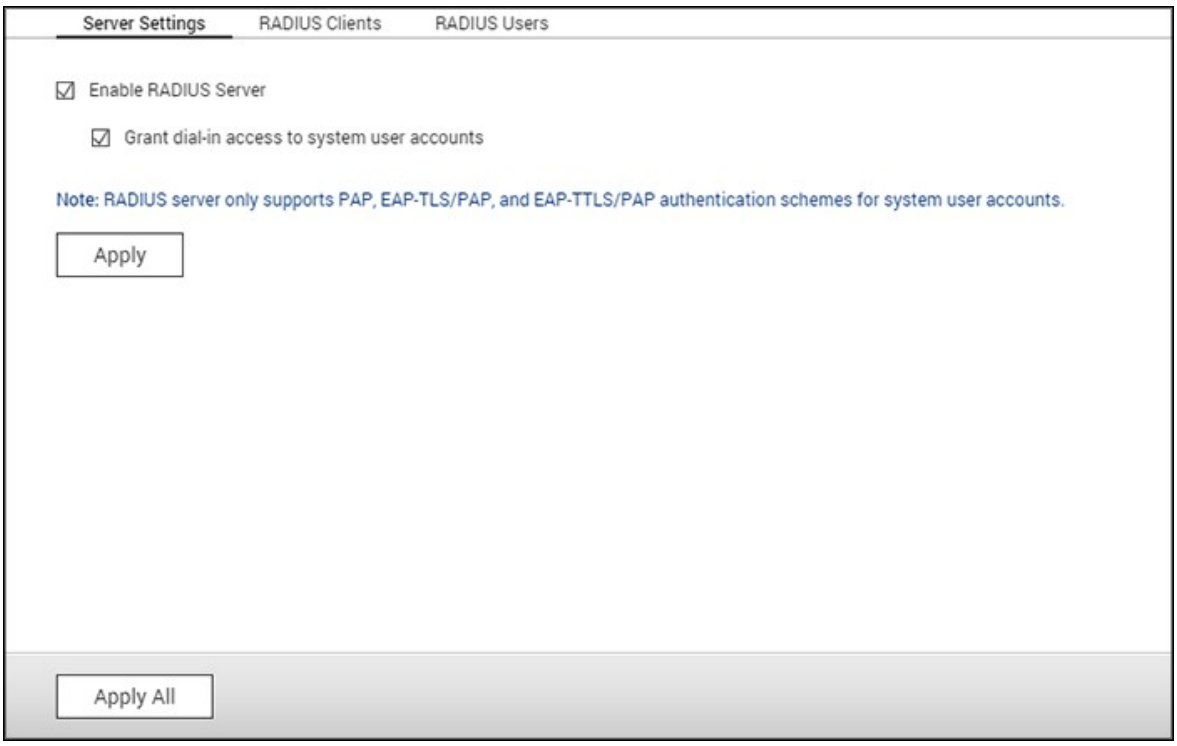
This page shows the quarantined files on the NAS. Users can manually delete or restore

quarantined files, or restore and add the files to the exclude list.

Button	Name	Description
	Delete	Delete an infected file. The file cannot be recovered.
	Restore	Restore an infected file to its original shared folder.
	Exclude List	Restore an infected file and add the file into the exclude list (scan filter).
Restore Selected Files	Restore Selected Files	Restore multiple files on the list.
Delete Selected Files	Delete Selected Files	Delete multiple files on the list. The files cannot be recovered.
Delete All Files	Delete All Files	Delete all of the files on the list. The files cannot be recovered.

7.13 RADIUS Server

The NAS can be configured as a RADIUS (Remote Authentication Dial In User Service) server to provide centralized authentication, authorization, accounting management for computers to connect and use a network service.



To use this feature, follow these steps:

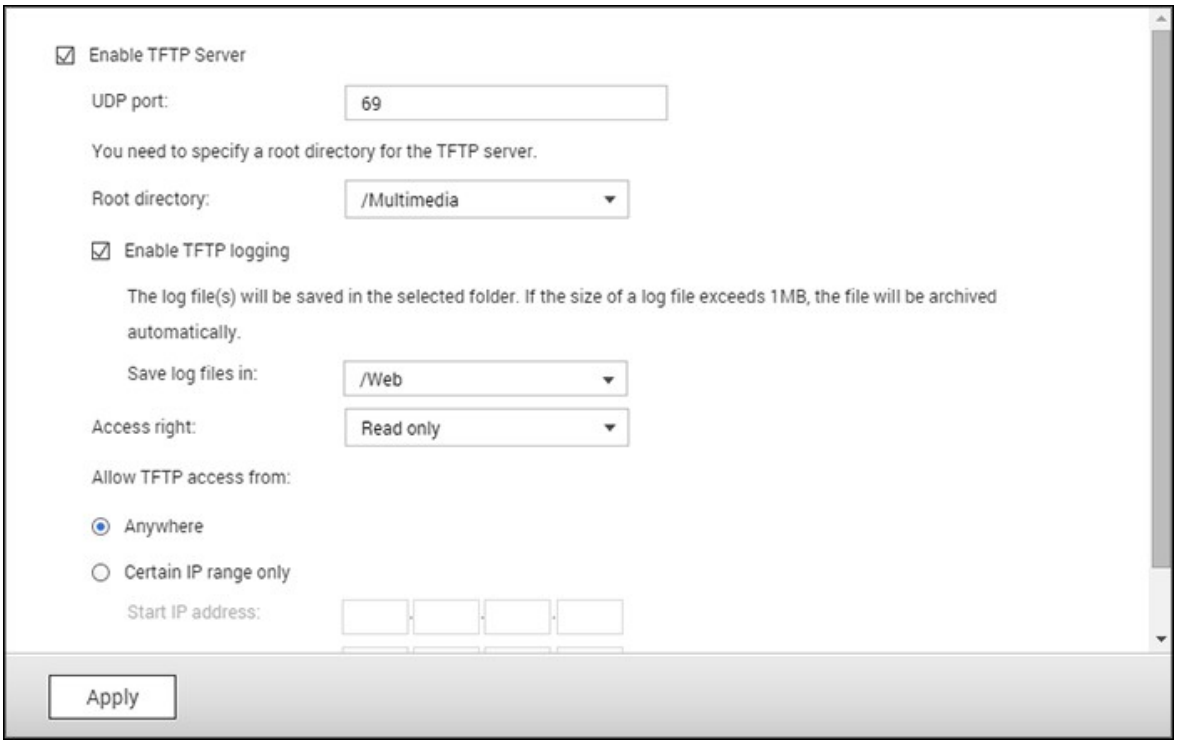
1. Enable RADIUS Server on the NAS in "RADIUS Server" > "Server Settings". Click "Apply".
2. Add RADIUS clients, such as Wi-Fi access points and VPN, on the NAS in "RADIUS Server" > "RADIUS Clients". Up to 10 RADIUS clients are supported. Click "Create a Client".
3. Enter the client information and click "Apply".
4. The clients are shown on the list.
5. Create RADIUS users and their password in "RADIUS Server" > "RADIUS Users". The users will be authenticated when trying to access the network through RADIUS clients. The maximum number of RADIUS users the NAS supports is the same as the maximum number of local NAS users supported. See the chapter on Users 138 for details. Click "Create a User".
6. Enter the username and password. The username only supports letters (a-z and A-Z) and numbers (0-9). The password must be 8-32 characters in length.

7. Specify to grant dial-in access to local NAS users. Enable this option to allow local NAS users to access network services via RADIUS clients using their NAS login name and password.

Note: The RADIUS server only supports PAP, EAP-TLS/PAP, and EAP-TTLS/PAP authentication for local NAS user accounts.

7.14 TFTP Server

Configure the NAS as a TFTP (Trivial File Transfer Protocol) server for configuration management of network devices and remote network booting of computers for system imaging or recovery. TFTP is a file transfer protocol with the functionality of a very basic form of FTP. TFTP does not provide user authentication and cannot be connected to using a standard FTP client.



Follow these steps to use this feature:

1. Select "Enable TFTP Server".
2. The default UDP port for file transfer is 69 and you should only change it if necessary.
3. Specify a folder on the NAS as the root directory of the TFTP server.
4. Enable TFTP Logging: Enable this option and specify the directory to save the TFTP log file (opentftpd.log.) It is recommended to view the log file using Microsoft Excel or WordPad on Windows OS or by TextEdit on Mac OS.
5. Assign read only or full access to the clients.
6. Restrict the TFTP client access by specifying the IP address range or select "Anywhere" to allow any TFTP client access.
7. Click "Apply".

Note: To set up PXE with your NAS, please use a static IP for your NAS, enable its

DHCP service and specify the TFTP server IP and name of the boot file in "Control Panel" > "Network" > click the "Edit" button next to the LAN port > "DHCP server". For more details, please refer to the DHCP Server 93 chapter

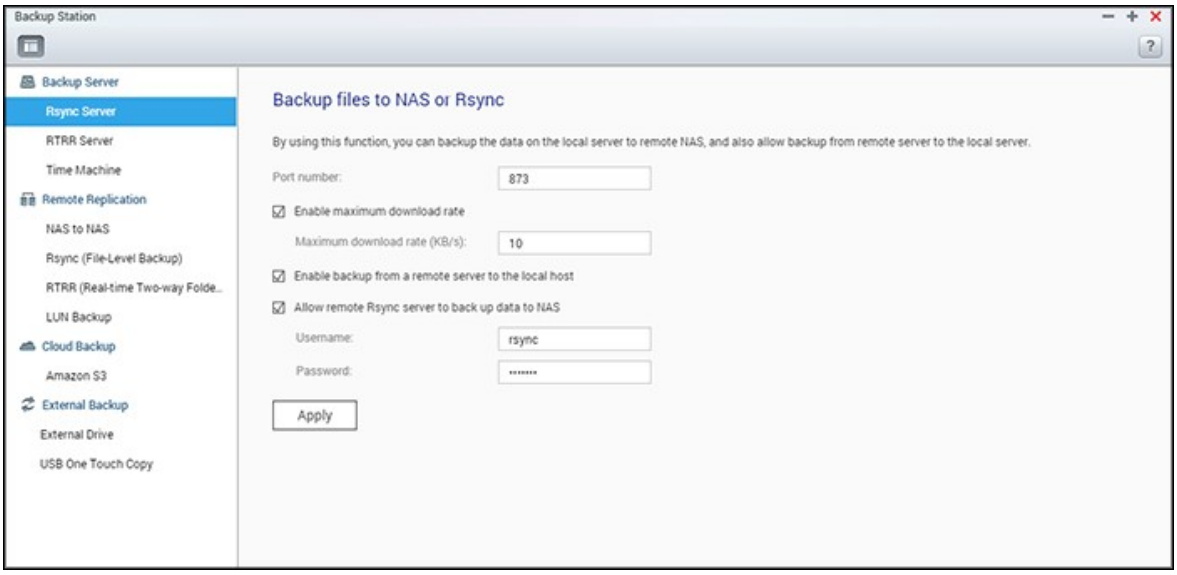
8. QNAP Applications

Various applications are provided by QNAP to enhance your user experiences. For details on these applications, refer to the following links:

- Backup Station 230
- myQNAPcloud Service 250
- File Station 258
- Video Station 274
- Photo Station 287
- Music Station 304
- Download Station 312
- HybridDesk Station 320
- App Center 332

8.1 Backup Station

Configure the NAS as a backup server, remote replication, cloud backup and external backup with the Backup Station.

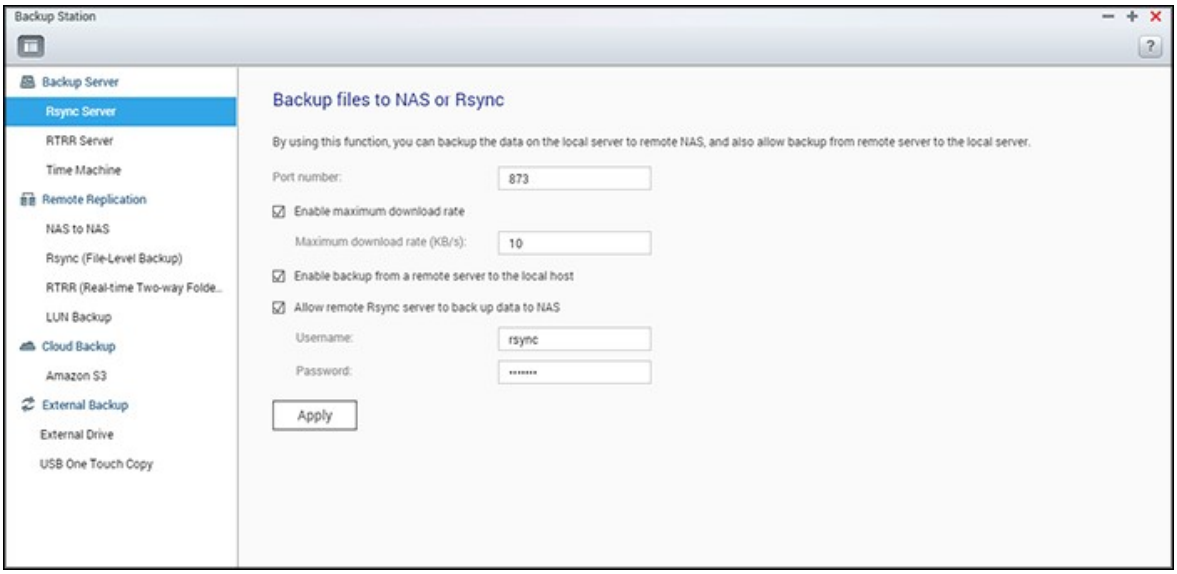


For details on the features, please refer to the following links:

- Backup Server 231
- Remote Replication 235
- Cloud Backup 243
- External Backup 244

8.1.1 Backup Server

Rsync Server

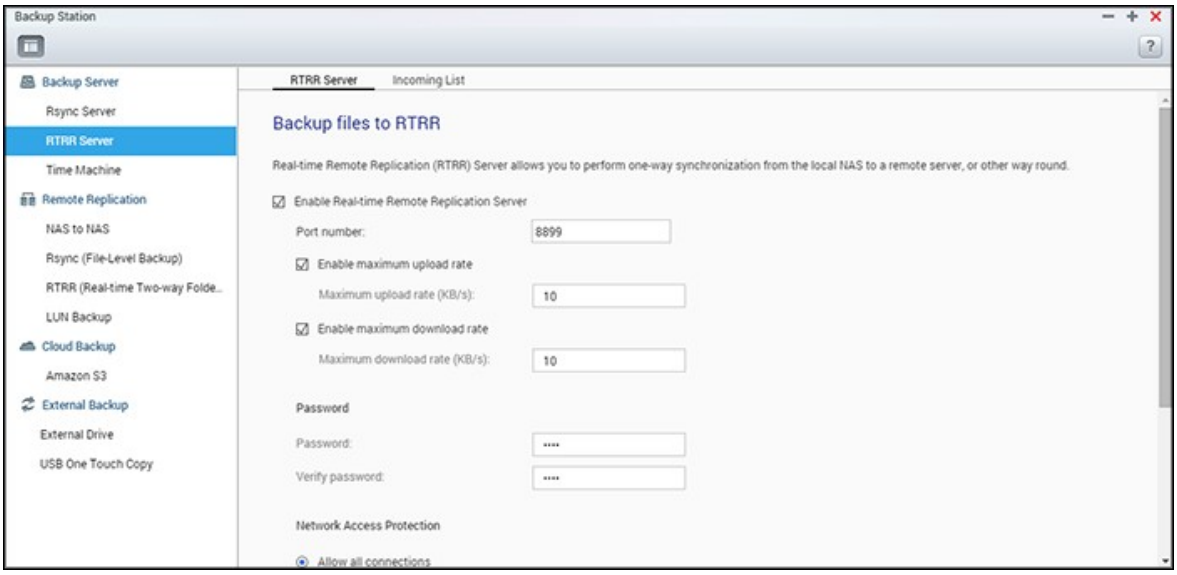


Enable Rsync server to configure the NAS as a backup server for data backup from a remote Rsync server or NAS server. The default port number for remote replication via Rsync is 873. Specify the maximum download rate for bandwidth control. 0 means unlimited.

- **Enable backup from a remote server to the local host:** Select this option to allow data backup from a remote server (NAS) to the local server (NAS).
- **Allow remote Rsync server to back up data to the NAS:** Select this option to allow data backup from an Rsync server to the local server (NAS). Enter the username and password to authenticate the Rsync server which attempts to back up data to the NAS.

Note: You can only create up to 64 rsync jobs on the NAS.

RTRR Server



To allow real-time or schedule data replication from a remote server to a local NAS, select "Enable Real-time Remote Replication Server". You can specify the port number for remote replication. The default port number is 8899. Specify the maximum upload and download rate for bandwidth control. 0 means unlimited. To only allow authenticated access to back up data to the local NAS, specify the access password. The client server will be prompted to enter the password to back up data to the NAS via RTRR.

You can specify the IP addresses or host names which are allowed to access the NAS for remote replication. Up to 10 rules can be configured. To allow all connections, select "Allow all connections". To specify IP addresses or host names, select "Allow connections from the list only" and click "Add".

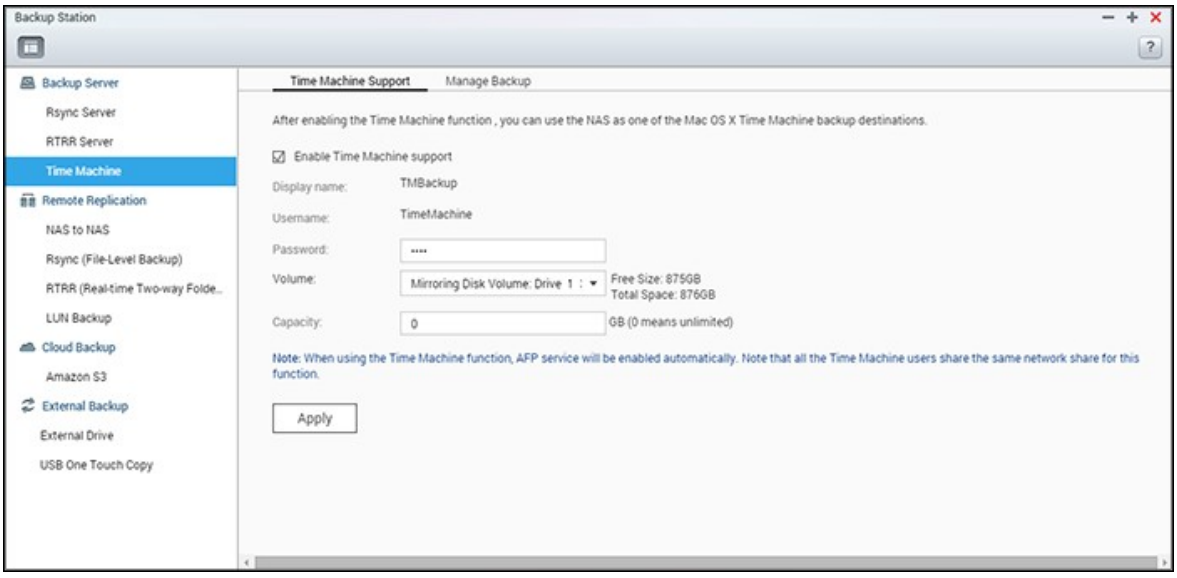
Enter an IP address or specify a range of IP addresses by entering the IP and subnet mask. Select the access right "Read Only" or "Read/Write". By selecting "Read/Write", the client server is allowed to delete files on the local NAS. Click "Finish" to exit. After saving the access rule, click "Apply" and the NAS will restart to apply the settings.

Check backup jobs from other NAS

You can check and manage backup jobs from other NAS that use the current NAS as a target destination for their backup. To check backup jobs, click the "Incoming List" tab and the details (including the job name, source NAS, destination NAS, job schedule and job status) of the backup jobs will be shown in the list. You can also manage backup jobs in this list. To do so, select backup jobs under "Incoming List" > choose to clear job records, open the backup folder, or deny access of the backup jobs to your NAS.

Time Machine

You can enable Time Machine support to use the NAS as a backup destination for Macs by the Time Machine feature on OS X.



To use this function, follow these steps.

Configure the settings on the NAS:

1. Enable Time Machine support.
2. Enter the Time Machine password. The password is empty by default.
3. Select a volume on the NAS as the backup destination.
4. Enter the storage capacity that Time Machine backup is allowed to use. The maximum value is 4095GB, 0 means unlimited.
5. Click "Apply" to save the settings.

All the Time Machine users share the same shared folder for this function. Configure the backup settings on Mac:

1. Open Time Machine on your Mac and click "Select Backup Disk".
2. Select the TMBackup on your NAS from the list and click "Use for Backup".
3. Enter the username and password to login to the NAS and click "Connect".
   - Registered username: TimeMachine
   - Password: The password you have configured on the NAS. It is empty by default.
4. Upon successful connection, the Time Machine is switched "ON". The available space for backup is shown and the backup will start in 120 seconds.

The first backup may take more time according to the data size on the Mac. To recover data to the Mac OS, please see a tutorial on http://www.apple.com.

Managing Backup

You can manage existing backups on this page.

- Volume (drop down menu on top right side of the screen): Display Time Machine backup tasks stored in the volume.
- Name: The name of the Time Machine backup (the sparse bundle disk image which was created by Time Machine.)
- Size: Size of this Time Machine backup.
- Date Modified: Last modified date of this Time Machine backup.
- Delete: Delete the selected Time Machine backup.

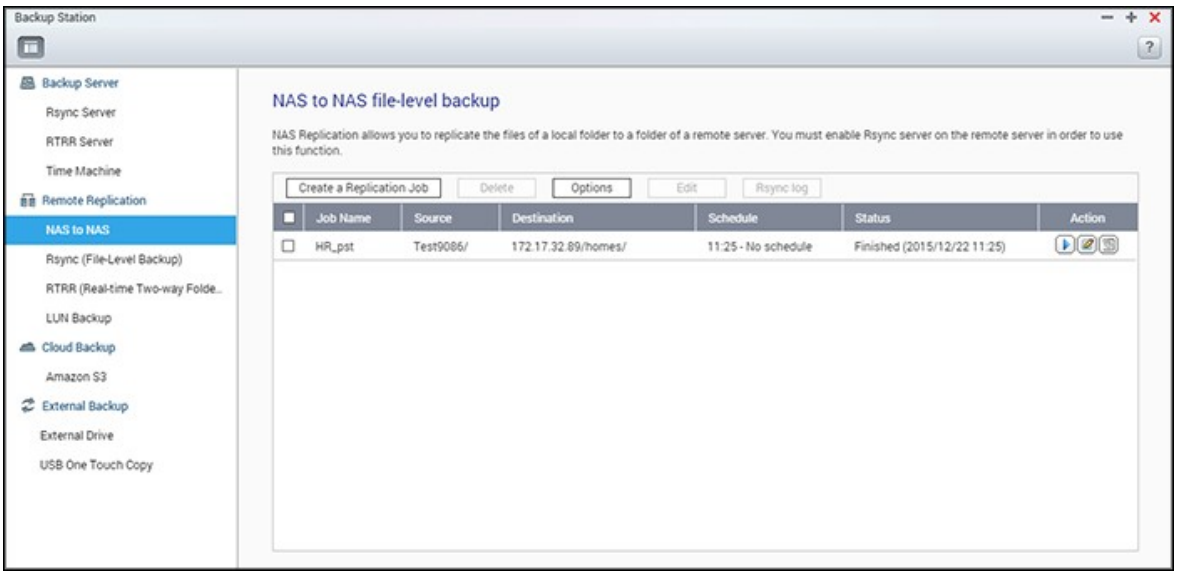
8.1.2 Remote Replication

This chapter covers the following topics:

- NAS to NAS and Rsync 235
- RTRR 237
- Downloading Replication Job Logs 242

NAS to NAS and Rsync

The NAS data can be backed up to a remote NAS or Rsync server using Rsync remote replication.



If the backup destination is a NAS, go to "Main Menu" > "Backup Station" > "Rsync Server" and enable the remote NAS as an Rsync backup server.

1. To create a replication job, click "Create a Replication Job".
2. Specify the server type (NAS or Rsync server) of the remote server. Enter a job name. Click "Next".
3. Enter the IP address, port number, username and password to login to the remote server. The default port number is 873. The login username must have read/write access to the remote server and a sufficient quota limit on the server. Click "Test" to verify the connection, then click "Apply".
4. Specify the local folder by clicking the Source folder box. After expanding and locating the folder, double click on it to set it as the directory where the data will be replicated from.
5. Specify the destination folder Destination folder box. Locate the folder in the folder tree and double click on it to set it as the directory where the data will be replicated to. And, click "Add" to add this pair of replication folders.

6. Click "Backup frequency" to configure the backup frequency. Select to immediately replicate the data or to specify a backup schedule.
7. Specify the following options for remote replication jobs by clicking "Options" and click "Apply".
   - Enable encryption: Select this option to execute encrypted remote replication. Note that you must enable "Allow SSH connection" in "Network Services > "Telnet/SSH" and specify the same port number for SSH and encrypted remote replication.
   - Activate file compression: Allows file compression during the data transfer process. This option is recommended for low bandwidth environments or remote replication over WAN.
   - Perform incremental replication: When this option is enabled, after the first-time replication, the NAS will only back up files that have been changed since the last backup. The files of the same name, size, and modified time will not be copied again. Enabling this option is recommended for replication jobs that will be executed multiple times in order to shorten the backup time.
   - Delete extra files on remote destination: Select this option to synchronize the source data with the destination data (one-way synchronization.) Extra files on the destination will be deleted. Source data will remain unchanged.
   - Handle sparse files efficiently: A sparse file is a type of computer file that contains large blocks of zero-byte data. Turning on this option may reduce the time required for remote replication.
8. Click "Apply". If you selected "Execute backup immediately", the replication task will start at once. Otherwise it will be performed according to your schedule. Note that the job is recursive. Do not turn off the local NAS and the remote server when remote replication is running.

Note: For step 5, the order of selecting the source and destination folders can be changed. The above is just an example.

Icon	Name	Description
	Start	Start a replication job immediately.
	Stop	Stop a running replication job.
	View	View Rsync logs (replication results).

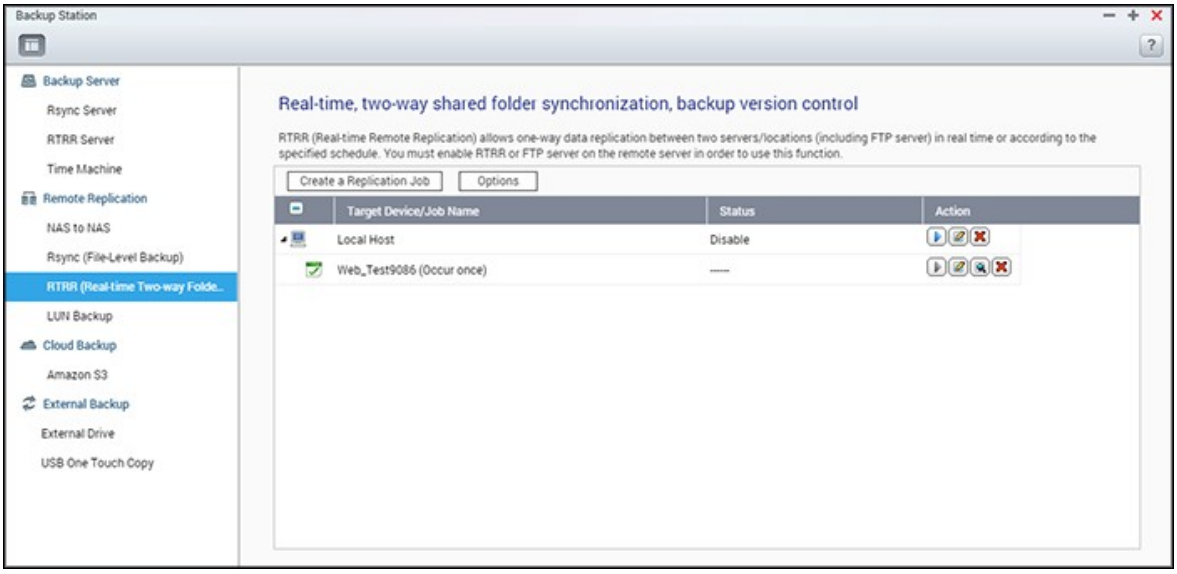
	Edit	Edit a replication job.
	Disable	Disable replication schedule.
	Enable	Enable replication schedule.

To configure the timeout and retry settings of the replications jobs, click "Options".

- Timeout (second): Specify a timeout value for each replication job. This is the maximum number of seconds to wait until a replication job is cancelled if no data has been received.
- Number of retries: Specify the number of times the NAS should try to execute a replication job if it fails.
- Retry intervals (second): Specify the number of seconds to wait in between each retry.

For example, if you entered 600 seconds for timeout, 3 retries, and 60 seconds for retry intervals, a replication job will timeout in 600 seconds if no data is received. The NAS will wait for 60 seconds and try to execute the job a second time. If the job timed out again, the NAS wait for another 60 seconds and retry for a third and final time.

RTRR



Real-time Remote Replication (RTRR) provides real-time or scheduled data replication and one-way and two-way data synchronization between two locations (such as a local NAS and a remote NAS, local NAS and an FTP server, or local NAS and an external drive, or replication between two local folders.) In real-time mode, the source folder will be monitored and any files that are new, changed, and renamed will be immediately replicated to the target folder. In scheduled mode, the source folder will be replicated to the target folder according to the pre-defined schedule.

One way synchronization refers to data synchronization from the source to the destination, while two-way synchronization means both the source and destination are synchronized after new files are copied in either side or files stored on either side are changed or deleted.

If the backup destination is a NAS, the RTRR server ("Main Menu" > "Backup Station" > "RTRR Server") or FTP service must first be enabled ("Main Menu" > "Control Panel" > "Network Services" > "FTP") on the remote NAS.

NAS models	Firmware	Maximum number of replication jobs supported
x86-based NAS	Prior to v3.5.0	64*
	v3.5.0 or above	32*
ARM-based NAS	Prior to v3.5.0	RTRR replication not supported.
	v3.5.0 or above	8*

*Each job supports up to 16 folder pairs.

If your NAS models are not listed here, visit http://www.qnap.com for more details.

x86-based NAS	TS-x39 series, TS-x59 series, TS-x69 series, TS-509, TS-809, TS-809 Pro, TS-809U-RP, SS-439 Pro, SS-839 Pro, TS-x59 Pro+, TS-879 Pro, TS-1079 Pro, TS-879U-RP, TS-EC879U-RP, TS-1279U-RP, TS-EC1279U-RP
ARM-based NAS	TS-x10, TS-x12, TS-x19 series

Follow these steps to create a replication job.

1. Click "Create a Replication Job".
2. When the wizard shows up, click "Next".
3. Select the synchronization locations and click "Next". Make sure the destination device has been formatted and folders have been created. Select the action to take (Backup, Synchronize, or Restore), the synchronization locations, and click "Next". Make sure the destination device has been formatted and folders have been created. For comparison between available actions and their folder pairs, refer to the following table:

Direction / Action	Local folder to remote folder	Local folder to local folder/ external drive	Remote folder to local folder
Backup	✔	✔	
Synchronization	✔	✔	✔
Restoration		✔	✔

   Two synchronization options are available: one-way synchronization and two-way synchronization.
   - For one-way synchronization, you can choose to:
     - Synchronize data from a local folder to a remote folder (NAS or FTP server)
     - Synchronize data from a remote folder (NAS or FTP server) to a local folder
     - Synchronize data from a local folder to another local folder or an external drive
   - For two-way synchronization, you can choose to:
     - Synchronize data between the source and destination
4. Enter the IP address or host name. Select the server type (Windows Share (CIFS/ SMB), FTP server or NAS server with RTRR service enabled; For two-way synchronization, only the NAS server is available.)
   - **Remote replication to FTP server:** Specify the port number and if you want to enable FTP with SSL/TLS (Explicit) for encrypted data transfer. If the FTP server is behind a firewall, enable passive mode. Enter the username and password with read/write access to the server. Click "Next".
   - **Remote replication to NAS with RTRR service:** Enter the IP address of the RTRR service-enabled server. Specify the connection port and select whether or not to enable secure connection. The default port number for remote replication via RTRR is 8899. Enter the password for RTRR connection. Click "Next".

- **Remote replication to Windows Share (CIFS/SMB):** Enter the IP address of the Windows server. Specify the destination folder, username and password and click "Next".

5. Select the folder pair for data synchronization.
6. Each sync job supports up to 5 folder pairs. Select more folder pairs and click "Add". Click "Next".
7. Choose between real-time and scheduled synchronization. Real-time synchronization copies files that are new, changed, and renamed from the source folder to the target folder as soon as the changes are made after the first-time backup. Scheduled synchronization copies files from the source folder to the target folder according to the pre-configured schedule. The options are:
   - Replicate Now: Replicate data immediately.
   - Periodically: Enter the time interval in hours and minutes that the backup should be executed. The minimum time interval is 5 minutes.
   - Hourly: Specify the minute when an hourly backup should be executed (for example, enter "01" to execute backup on the first minute of every hour.)
   - Daily: Specify the time when a daily backup should be executed (for example: 02:02 every day.)
   - Weekly: Select a day of the week and the time when a weekly backup should be executed.
   - Monthly: Select a day of the month and the time when a monthly backup should be executed.
   - Occurs once at: Specify the date and time the scheduled replication job will once be executed and this replication job will be executed only once.

Note:

- If a folder or its parent folder or child folder has been selected as the source or destination in a folder pair of a replication job, you cannot select the folder as the source or destination of another folder pair of the same job.
- You can also create a folder as you select the folder pair. To do so, enter the folder name and click the folder icon from the drop down list.
- From QTS 4.1, RTRR can also back up the entire FTP site. To do so, select the root (/) from the folder drop-down list. Please note that this is only the case when the source is a FTP site.
- Two-way synchronization only supports scheduled data replication.
- The expiration time setting is not available for "Replicate Now" and "Occurs once at" in Step 7.

- Bandwidth Control in both RTRR and Rsync only works if both NAS servers of a replication job (sender and receiver) are QNAP NAS and use firmware version 3.6 or above.

8. To configure synchronization policy, select "Configure policy and filter" and click "Next". Select whether or not to enable the following options:
   - Delete extra files: Delete extra files in the target folder. Deletions made on the source folder will be repeated on the target folder. This option is not available for real-time synchronization.
   - Detect sparse files: Select this option to ignore files of null data.
   - Check file contents: Specify to examine file contents, date, size, and name to determine if two files are identical. This option is not available for real-time synchronization.
   - Compress files during transmissions: Specify whether or not the files should be compressed for synchronization operations. Note that more CPU resources will be used.
   - Ignore symbolic links: Select this option to ignore symbolic links in the pair folder.
   - Extended attributes: Select this option to keep the information in extended attributes.
   - Timeout and retry settings: Specify the timeout period and retry settings if a synchronization operation fails.
9. Specify the file size, file types to include/exclude, and file date/time to filter data synchronization. Enter a job name.
   - File size: Specify the minimum and maximum size of the files to be replicated.
   - Last modified: Specify the number of days files are last modified for replication.
   - Include file types: Specify the file types to be replicated.
   - Exclude file types: Specify the file types to be excluded for replication.
   - File date/time: Specify the date and time of the files to be replicated.
10. Click "Next".
11. Confirm the settings and click "Next".
12. Click "Finish" to exit the wizard.

Icon	Name	Description
	Enable and Start	Enable connection to a remote server. Start a replication job.

	Stop	Stop connection to a remote server or external drive.
	Stop	Stop a replication job.
	View	View job status and logs; download logs.
	Edit	Edit the connection settings of a remote server. Edit the settings of a replication job.
	Delete	Delete connection settings to a remote server. Delete a replication job. This button is available only after a replication job is stopped or the connection to the remote server is stopped.

To edit the replication job properties, click "Options".

Under "Event Logs" you can enable "Download Detailed Logs" and specify the maximum file size of log files. You can also set up sending email alerts when synchronization fails or completes. SMTP server settings must be set up on the NAS before using email alerts ("System Settings" > "Notification".)

Specify the replication policy in "Policy" and filter settings in "Filter". These will become the default settings for all RTRR replication jobs.

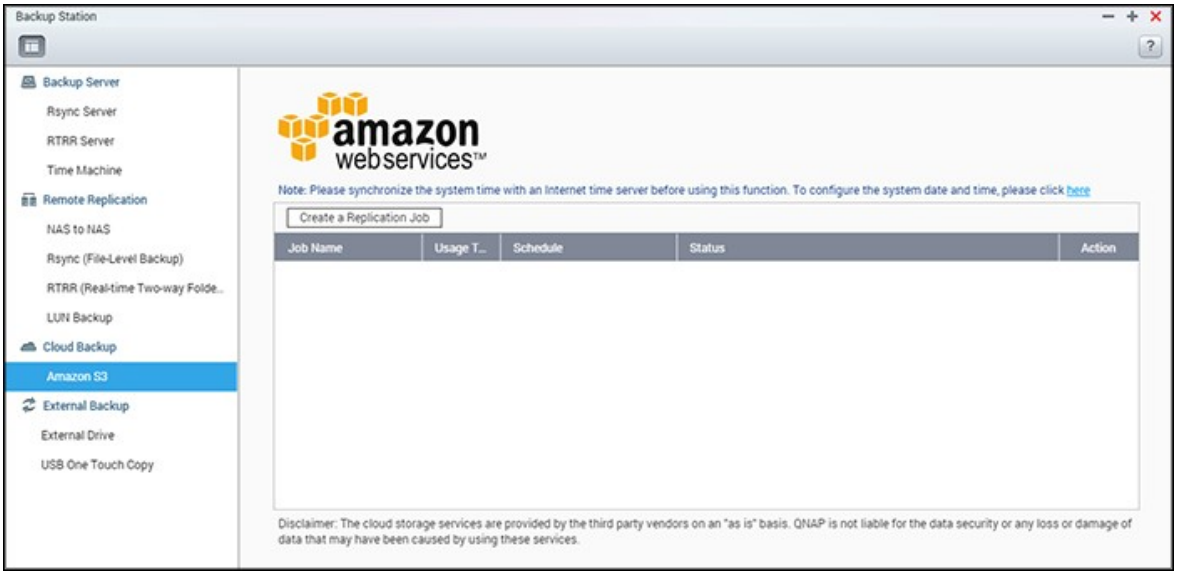
Downloading Replication Job Logs

To view the status and logs of a replication job, click the "View" button under "Action". You can view job logs or download them by clicking "Download Logs". Log files can be opened by Microsoft Excel or text editors. This button is only available after you have enabled "Download Detailed Logs" in "Options" > "Event Logs" and executed at least one replication job.

8.1.3 Cloud Backup

Amazon S3

Amazon S3 (Simple Storage Service) is an online storage web service offered by AWS (Amazon Web Services.) It provides a simple web service interface that can be used to store and retrieve data from anywhere on the web. With Amazon S3, you can upload data from your NAS to Amazon S3 or download the data from Amazon S3 to your NAS. You need to register an AWS account from http://aws.amazon.com and pay for the service. After signing up, you need to create at least one bucket (root folder) on Amazon S3 using an Amazon S3 application. We recommend the Mozilla Firefox add-on "S3Fox" for beginners.



After setting up the Amazon S3 account, follow these steps to back up or retrieve data from Amazon S3 using the NAS.

1. Click "Create a Replication Job".
2. Enter the remote replication job name.
3. Select the usage type: "Upload" or "Download" and enter other settings. A bucket is the root directory on Amazon S3. You can test the connection to the remote host testing by clicking "Test". Other settings are optional.
4. Specify the local directory on the NAS for replication.
5. Enter the replication schedule.
6. Click "Finish". The replication job will be executed according to your schedule.

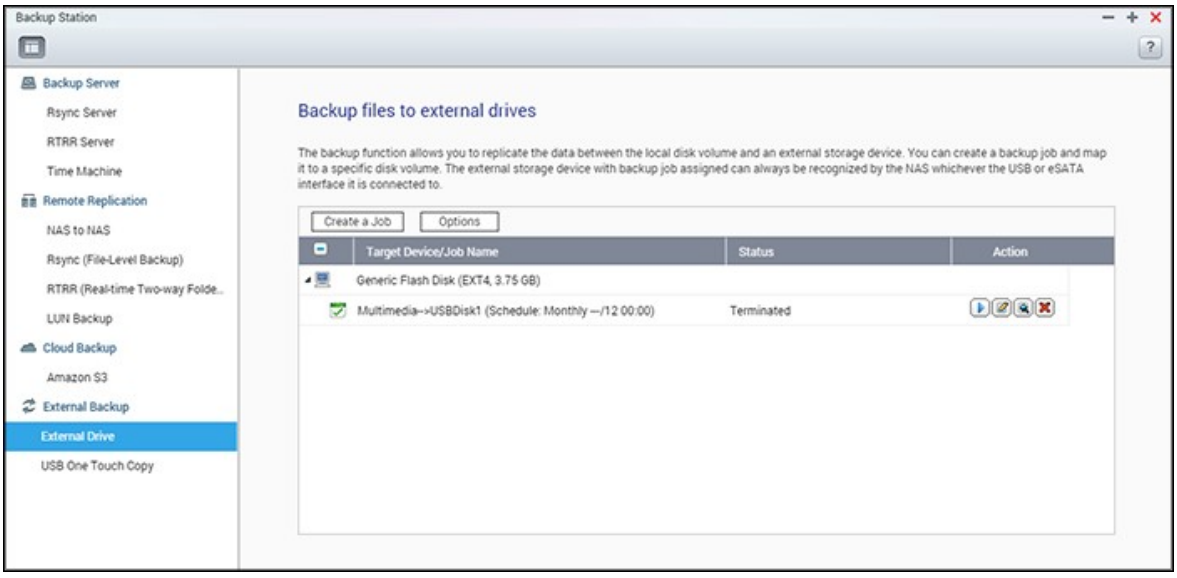
8.1.4 External Backup

The following topics are covered in this chapter:

- External Drive 244
- USB One Touch Copy 247

External Drive

The NAS supports real-time and scheduled data backup between internal disks volumes on the NAS and external USB/eSATA storage devices.



To use this feature, follow these steps.

Note: If an external storage device is encrypted by the NAS, make sure it is unlocked in "External Device" > "External Storage" before creating any backup jobs.

1. Connect one or more storage devices to the USB or eSATA (if available) interfaces of the NAS.
2. Click "Create a new job".
3. When the wizard is shown, read the instructions carefully and click "Next".
4. Select the backup locations.
   a. Select an external disk volume from the drop-down menu. The NAS supports EXT3, EXT4, FAT, NTFS, and HFS+. The storage device's general information will be shown.
   b. Select "Map this backup job to the volume ID only" to map the backup job to this particular external storage device. The NAS will recognize the device and

automatically execute the backup job according to the settings every time it is connected to the NAS via any USB/eSATA interface.

c. Select to back up the data from a local disk volume to the external storage or vice versa.

d. Click "Next".

5. Select the source and destination folders for backup. Then click "Add". Up to 128 folder pairs can be created. Click "Next".

Note:

- Multiple partitions on the external storage device will be recognized as individual disk volumes.
- If a folder or its parent folder or child folder has been selected as the source or destination in a folder pair of a backup job, the same folder cannot be selected as the source or destination of another folder pair of the same backup job.
- External Drive supports up to 16 jobs and each job supports up to 8 folder pairs.

6. Choose between real-time and scheduled backup. Real-time backup copies files that are new, changed, and renamed from the source folder to the target folder as soon as the changes are made after the first-time backup. Scheduled backup copies files from the source folder to the target folder according to the schedule. The options are:
   - Replicate Now: Copy the data immediately.
   - Periodically: Enter the time interval in hours and minutes that the backup job should be executed. The minimum time interval is 5 minutes.
   - Hourly: Specify the minute when an hourly backup should be executed (for example, enter "01" to execute backup on the first minute of every hour).
   - Daily: Specify the time when a daily backup should be executed (for example: 02:02 every day).
   - Weekly: Select a day of the week and the time when a weekly backup should be executed.
   - Monthly: Select a day of the month and the time when a monthly backup should be executed.
   - Auto-Backup: Execute data backup automatically every time the device is connected and detected by the NAS.
7. Choose to automatically eject the external drive after the job is finished.
8. To configure the backup policy and filter settings, select "Configure policy and filter" and click "Next". Select whether or not to enable the following options:

- Delete extra files: Deletes extra files in the target folder. Deletions made on the source folder will be repeated on the target folder. This option is not available for real-time data backup.
- Detect sparse files: Select this option to ignore files with null data.
- Overwrite the file if the source file is newer or the file size is different ·
- Check file contents: Examine the file contents, date, size, and name to determine if two files are identical. This option is not available for real-time data backup.
- Ignore symbolic links: Select this option to ignore symbolic links in the pair folder.

9. Create filters for the backup job.
   - File size: Specify the minimum and maximum sizes of the files to be copied.
   - File date/time: Specify the date and time of the files to be copied.
   - Include file types: Specify the file types to be copied.
   - Exclude file types: Specify the file types to be excluded from the data copy.
10. Enter a name for the backup job. A job name supports up to 63 characters and cannot start or end with a space.
11. Confirm the settings and click "Next".
12. Click "Finish" to exit the wizard.
13. The backup job and the status will be shown on the list.

Button	Name	Description
	Start	Start a backup job.
	Stop	Stop a backup job.
	Edit	Edit the backup job.
	View / Download	View the job status and logs. Download the backup job logs.
	Delete	Delete a backup job. This button is only available after a backup job is stopped.

To disable a backup job's schedule, click "Edit" and select "Disabled" under "Settings" > "Schedule Type" and click "OK".

Default Backup Job Settings

1. To edit the default backup job properties, click "Options".

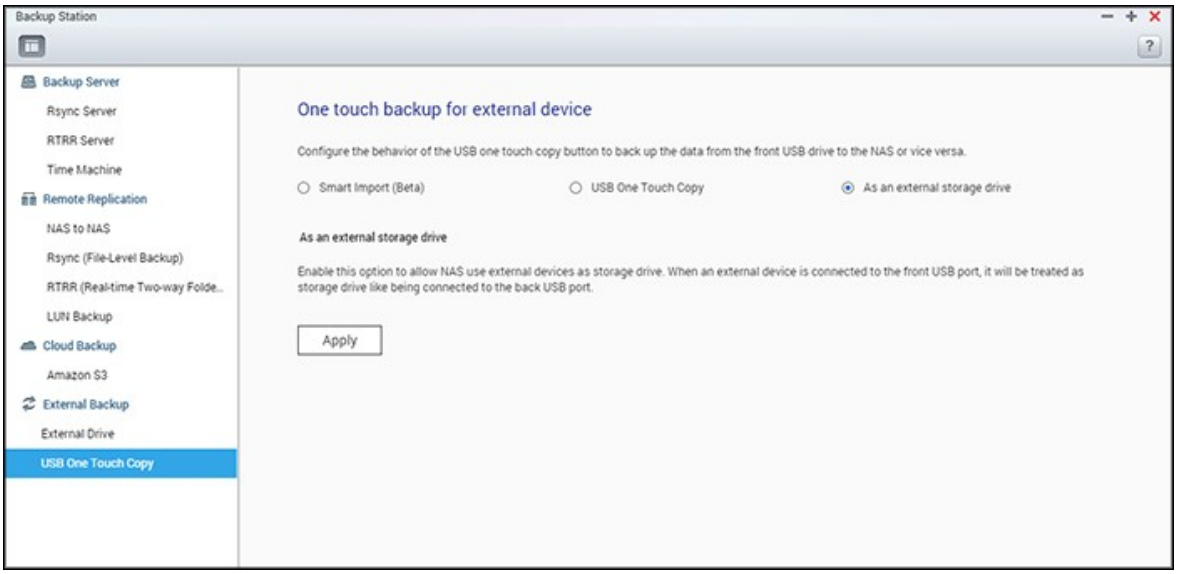
2. Under "Event Logs" you can select to enable "Download Detailed Logs" and specify the maximum file size of the log file. Select to send an email alert when a backup job fails or completes. Note that the SMTP server settings must be properly set up in "System Settings" > "Notification".
3. Specify the backup policy in "Policy" and filter settings in "Filter". These will become the default settings for all the backup jobs.

Download Backup Logs

1. To download a backup job's logs, make sure the option "Download Detailed Logs" is enabled in "Options" > "Event Logs".
2. Click the "View / Download" button in "Action" column of a backup job.
3. Go to "Job Logs" and click "Download Logs". The log file can be opened by Microsoft Excel or any text editor. This button is only available after you have enabled "Download Detailed Logs" in "Options" > "Event Logs" and executed a backup job.

USB One Touch Copy

Enable the USB one touch copy button to back up data from USB storage connected to the front-panel USB port to the NAS or vice versa.



This feature is not supported by the TS-809U-RP, TS-879U-RP, TS-EC879U-RP, TS-1279U-RP, and TS-EC1279U-RP.

Smart Import (Beta)

When a USB device (such as a camera) is connected to the front USB port, all of the photos and videos on the device will be automatically imported to the NAS without

pressing the "Copy" button. Imported files will be stored in "SmartImport," a newly-created folder, under the default backup directory. During each import, only new photos and videos will be imported to a new folder.

USB One Touch Copy

For customized backup configuration, please select "USB One Touch Copy."

- Backup direction: From the front USB drive to the NAS or vice versa.
- Backup method:
  - Create directory: A new directory will be created on the destination and the source data will be copied to this directory. The new directory will be named as the backup date (YYYYMMDD). If there are two or more backups on the same day, the directory will be named with YYYYMMDD-1, YYYYMMDD-2... and so on.
  - Copy: Back up data to the destination share. If the same file exists, the destination file will be overwritten.
  - Synchronize: Back up data to the destination share and clear the redundant files. If the same file exists, the destination file will be overwritten.
- Handle sparse files efficiently: A sparse file is a type of computer file that contains large blocks of zero-byte data. Turn on this option may reduce the time required for backup.
- Source and destination folders: Specify the folder pairs for backup and click "Add". Maximum 9 folder pairs can be added.
- Options: Click "Options" to set up notification of the backup jobs by email, SMS, or instant messaging (IM).
- Unmount the front USB drive manually: When enabled, users can press the Copy button for about 8–10 seconds until the USB LED light turns off and remove the front USB drive from the NAS.
- Enable the alarm buzzer:
  - One short beep: Backup has started.
  - Two short beeps: The front USB drive is being unmounted.

Note: If there are multiple partitions on the source storage device, a new folder will be created for each partition on the destination as the backup folder. The backup folder will be named with the backup date and the partition number (YYYYMMDD-1 for partition 1, YYYYMMDD-2 for partition 2, etc). If the source storage device only contains one partition, the backup folder will be named YYYYMMDD.

Data copy using front USB port

The NAS supports instant data copy backup from USB devices to the NAS or vice versa using the one touch copy button. To use this function, follow these steps:

1. Make sure a hard drive is installed and formatted on the NAS.
2. Configure the behavior of the Copy button in "Backup Station" > "USB One Touch Copy".
3. Connect the USB device to the front USB port of the NAS.
4. Press the Copy button once. The data will be copied according to your settings.

Note: Incremental backup is used for this feature. After the first data backup, the NAS only copies the files changed since the last backup.

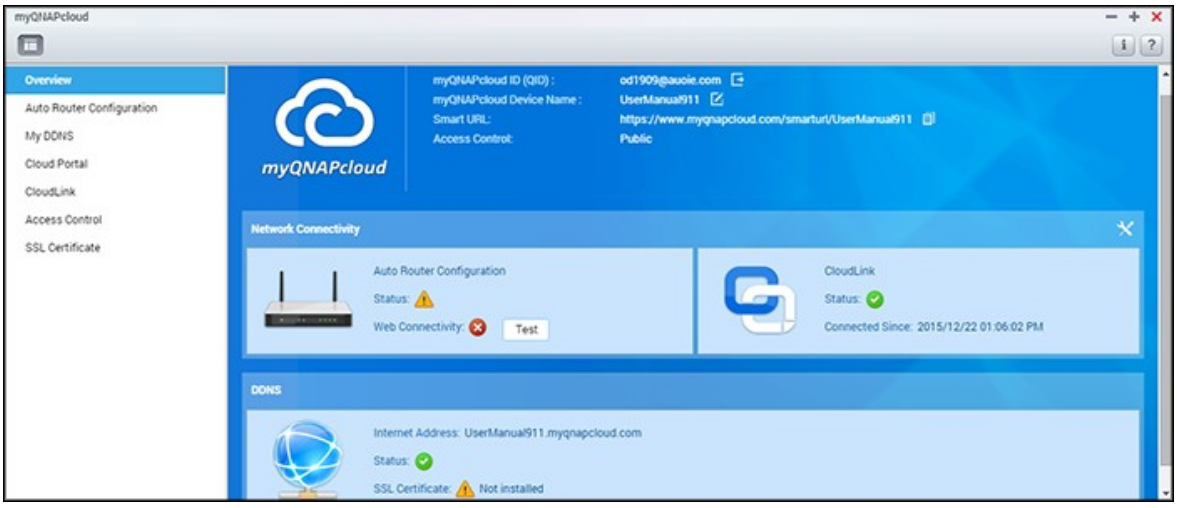
Caution: Files are copied from the source to the destination. **Extra files in the destination will be deleted. Files with the same names will be overwritten by the source.** Source data will remain unchanged.

As an external storage drive

When an external device is connected to the front USB port, it will be identified as an external storage drive connected to the port.

8.2 myQNAPcloud Service

myQNAPcloud provides host name registration, mapping of a dynamic NAS IP to a domain name, and auto port mapping for UPnP routers on the local network. Use the myQNAPcloud wizard to register a unique host name for the NAS, configure automatic port forwarding on the UPnP router, and publish NAS services for remote access over the Internet.



To use the myQNAPcloud service, make sure the NAS has been connected to an UPnP router and the Internet and click the myQNAPcloud shortcut from the NAS Desktop or Main Menu.

This chapter includes two parts. The first part deals with the myQNAPcloud App you use on the NAS and covers the following setup:

- myQNAPcloud Wizard 250
- Auto Router Configuration 251
- My DDNS 252
- Cloud Portal 252
- CloudLink 253
- Access Control 253
- SSL Certificate 253

The second part of the chapter focuses on the following topic:

- myQNAPcloud Portal 255 (a portal for remote accessing and managing multiple NAS across the Internet.)

myQNAPcloud Wizard

It is recommended to use the wizard the first time you use myQNAPcloud. Follow these

steps:

1. Click "Get Started" to use the wizard.
2. Click "Start".
3. Fill out your myQNAPcloud ID(QID) and password. Click "Next" (or click "Create myQNAPcloud account" to sign up a myQNAPcloud account if you don't already have an account.)
4. Enter a name to register your NAS and click "Next".
5. Select to enable the myQNAPcloud services (Auto Router Configuration, DDNS, Publish Services and CloudLink) and set the level of access control. Click "Next".
6. The wizard will configure your router automatically.
7. Review the summary page and click "Finish" to complete the wizard.

Auto Router Configuration

In "Auto Router Configuration", you can enable/disable UPnP port forwarding. When enabled, your NAS is accessible from the Internet via the UPnP router.

Note: If there is more than one router on the network, only the one which is set as the default gateway of the NAS will be detected.

If no UPnP router is found on the local network, click "Rescan" and "Diagnostics" to check the diagnostic logs. If the UPnP router is incompatible with the NAS, click the tooltip icon (!) and then click "UPnP Router Compatibility Feedback..." (http://www.qnap.com/go/compatibility_router.html) to contact technical support. Select the NAS services to be allowed for remote access and click "Apply to Router". The NAS will automatically configure the port forwarding on the UPnP router. You will then be able to access NAS services from the Internet.

Note:

- If more than two NAS are connected to one UPnP router, please specify a different port for each NAS. If the router does not support UPnP, users must manually configure port forwarding on the router. Please refer to these links:
- Application notes: http://www.qnap.com/go/notes.html
- FAQ: http://www.qnap.com/faq
- UPnP router compatibility list: http://www.qnap.com/UPnP_Router_Compatibility_List

My DDNS

By enabling the myQNAPcloud DDNS service, you can connect to the network services on your NAS by using your specified internet address. To change your myQNAPcloud DDNS domain name, click the "here" link on the page. Your recent DDNS information will be shown here and you can click the "Update" button to refresh the result.

Cloud Portal

With the Cloud Portal, web-based NAS services (including File Station, Web Server, Photo Station, Music Station, Secure File Station, Secure Web Server, Secure Photo Station and Secure Music Station) can be published to http://www.myqnapcloud.com. By enabling the NAS services here, they will be opened for remote access even if they are not published. Enable the myQNAPcloud DDNS service and the NAS will automatically notify the myQNAPcloud server if the WAN IP address of the NAS has changed. To use the myQNAPcloud service, make sure the NAS has been connected to a UPnP router and the Internet.

Note:

- The myQNAPcloud name of each QNAP NAS is unique. One myQNAPcloud name can only be used for one NAS.
- A registered myQNAPcloud name will expire in 120 days if your NAS remains offline within that period. Once the name is expired, it will be released for registration by other users.
- For My DDNS, if the default port is not used, you will need to specify the port number when accessing network services.

1. In "Cloud Portal", web-based NAS services are shown. Select "Publish" to publish the NAS services to the myQNAPcloud website. Select "Private" to hide published NAS services from public access. The private services on the myQNAPcloud website are only visible to specified users with the myQNAPcloud access code. If a disabled NAS service is published, the service will be inaccessible even if the corresponding icon is shown on the myQNAPcloud website (http://www.myQNAPcloud.com.)
2. Set myQNAPcloud Access Code: Enter a 6-16 characters (a-z, A-Z, 0-9 only) code that NAS users will need to enter when they attempt to view private NAS services on the myQNAPcloud website.
3. Click "Add Users" and specify up to 9 local NAS users who are allowed to view

private NAS services published on the myQNAPcloud website.

4. Select the connection method: the myQNAPcloud Connect (VPN) utility and/or myQNAPcloud website.
5. To send instructions to use the myQNAPcloud service to users via email, select the users and click "Send Invitation".
6. Enter the email address. Click "Send".

Note: To use this function, the email server settings must be properly configured in "System Settings" > "Notification" > "SMTP Server".

CloudLink

CloudLink is an innovative service provided by QNAP for remote access to your NAS over the network without changing router settings - even if UPnP is not supported. After you enable the service (click the switch on the blue banner to enable/disable the service) the direct access link will be shown on the page and you can provide this link to your friends for them to access to your NAS, using their mobile device or computer.

Access Control

This function allows you to control who can search for your device and access published NAS services on the myQNAPcloud website or with mobile apps remotely via CloudLink. The following options are available:

- Public: Everyone can search for your device on the myQNAPcloud website and access your public services.
- Private: Only you can access your NAS remotely on the myQNAPcloud website or with mobile apps via CloudLink.
- Customized: You can specify who is allowed to access your device on the myQNAPcloud website or with mobile apps by entering their registered accounts here. Or you can add email addresses of your friends who are not currently myQNAPcloud members to send them an invitation. To set access controls, first set the "Device access controls" to "Customized", then click "Add" to add QID account holders.

SSL Certificate

myQNAPcloud SSL certificates are used to provide secured connections between the

NAS and web browsers, providing authorization and connection encryption. Encrypted connections secure data and transactions. Before installing a myQNAPcloud certificate, an error may occur when you try to connect to your NAS using HTTPS (for example: https://nossl.myqnapcloud.com.) The data transmitted in the connection is not protected against security threats. Unauthorized users have the potential to intercept data being sent between a NAS and web browser.

Purchasing and installing a myQNAPcloud SSL certificate will bring you better protection when connecting your NAS via DDNS.

Note: A myQNAPcloud SSL certificate can only be used on NAS with QTS 4.2 or above.

Purchasing myQNAPcloud SSL certificates

1. Sign into the myQNAPcloud website with your myQNAPcloud account and go to "SSL Certificate" on the left side.
2. Read and agree to the terms and conditions.
3. Choose the number of certificates you want to buy (only one certificate can be used on one device at a time) and complete the purchase and checkout process.
4. Confirm the order and return to the "SSL Certificate" page on the myQNAPcloud website.

Installing myQNAPcloud SSL certificates

1. Log into your NAS as an administrator and launch myQNAPcloud.
2. Select "SSL Certificate" on the left panel > click "Download and install" to install the certificate.
3. Choose one of your purchased certificates from the list > click "Confirm".

To install the same certificate on another device, log into the NAS as an administrator, go to myQNAPcloud > "SSL Certificate" and click "Release" to release the certificate. Then, follow the same above steps to install that released myQNAPcloud SSL certificate on another device.

On the myQNAPcloud portal site, you can review the transaction history in "SSL Certificate" > "Transaction record". There are three transaction types:

- Apply: The certificate has been installed.
- Release: The certificate has been released from the device.

- Reissue: The certificated has been reissued due to a DDNS name change.
- Extend: The certificate's validity has been extended.

The system will remind you of the expiration date within 30 days of expiration. Please renew your certificate before it expires. To extend your certificate, log into the myQNAPcloud website and go to "SSL Certificate" > "Certificate License".

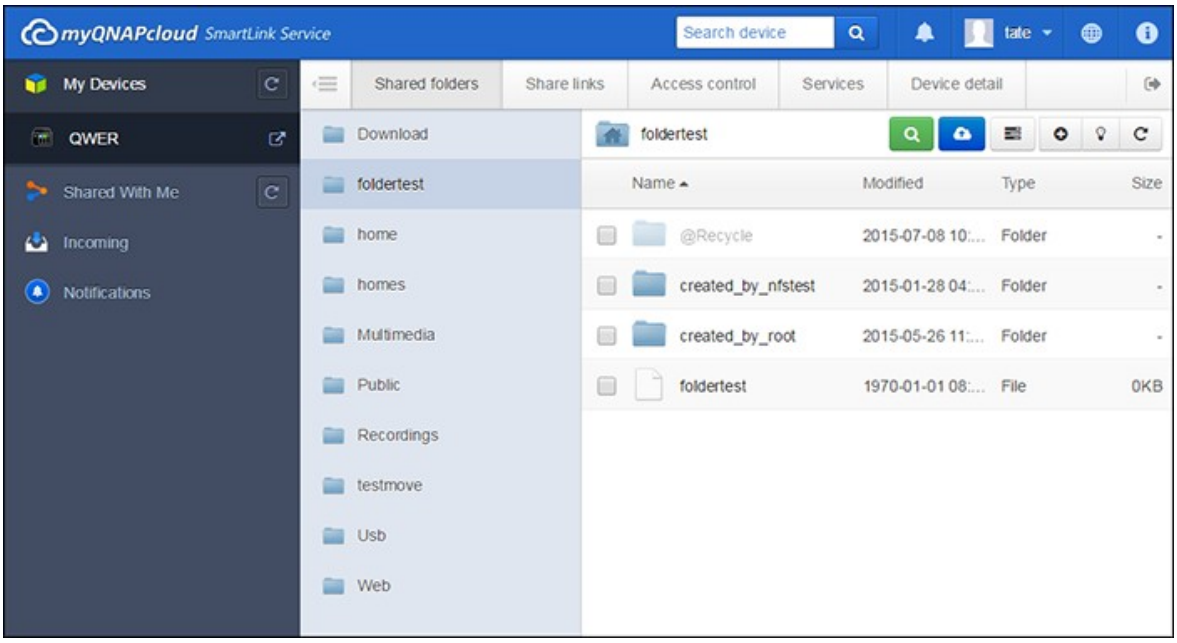
Note:

- A myQNAPcloud SSL certificate can only be used on a NAS with QTS 4.2 or above.
- To use this service, first download and install the myQNAPcloud SSL Certificate QPKG from the App Center.

myQNAPcloud Portal

The myQNAPcloud portal (www.myqnapcloud.com) is an integrated web interface that allows you to:

- Manage and configure your myQNAPcloud account
- Access NAS servers
- Use published services from other NAS
- Open links shared with you
- Be notified of myQNAPcloud activities



You must configure your myQNAPcloud account using the myQNAPcloud App before

logging into the myQNAPcloud portal.

Managing and Configuring your myQNAPcloud Account

After launching myQNAPcloud or logging into your account on the myQNAPcloud website, click on your nickname (next to the notification icon in the top-right corner) > "User Profile". On this page, you can:

- Update your profile
- Change your myQNAPcloud login password
- Add or edit your contact list
- Check application logs
- Monitor myQNAPcloud activities

Accessing NAS Servers via myQNAPcloud Website

After you log into the myQNAPcloud web portal, you will see a list of NAS servers under "My Devices" on the left of the screen. Click on any of the NAS and there will be a list of available actions to perform and you will be able to:

- Perform basic file management tasks as in File Station
- Manage share links
- Configure access controls (check the above Access Control 253 section for more details)
- View and access published and private services (for private services, check the above Cloud Portal 252 section for more details)
- Review and refresh device details or unregister the device

Note:

- Once you unregister your device from myQNAPcloud, all of the services will be stopped.
- You must install the CloudLink QPKG in the App Center before performing basic file management tasks or managing share links on the myQNAPcloud portal site.

Using published Services from other NAS Servers via myQNAPcloud Website

The "Shared with me" feature allows you to quickly find your friend's devices and access their published NAS services. Follow these steps to add a device and access its published services:

1. Log into the myQNAPcloud web portal
2. Type the device name of your friend's device in the search box in top right corner.
3. Click the "Add to Shared With Me" button (the gray heart icon)

4. Click "Shared With Me" to the left of the screen.
5. Click the newly added device from the list and the service you want to access.
6. Choose an access method.

Sharing Files and Opening Links Shared with You via myQNAPcloud Website

If you share data to your friends who have registered on myQNAPcloud, they will see these shared links here.

To share a file on the myQNAPcloud portal site, follow these steps:

1. Log into the site
2. Select a device under "My Devices" on the left panel
3. Log into your device
4. Choose the folders or files you want to share
5. Click "Share" and fill out the required fields for the link (link name, domain name/IP, expiration, and password protection) > "Next" > and finish link recipient and email details > "Share".

To open a such link, first log into the myQNAPcloud website and click "Incoming" to the left of the screen and you will see the links you can click to access them.

Note: Before you use this feature, you must install the CloudLink QPKG in the App Center.

Be notified for myQNAPcloud activities

The portal will notify you of myQNAPcloud activities. Examples of such activities are:

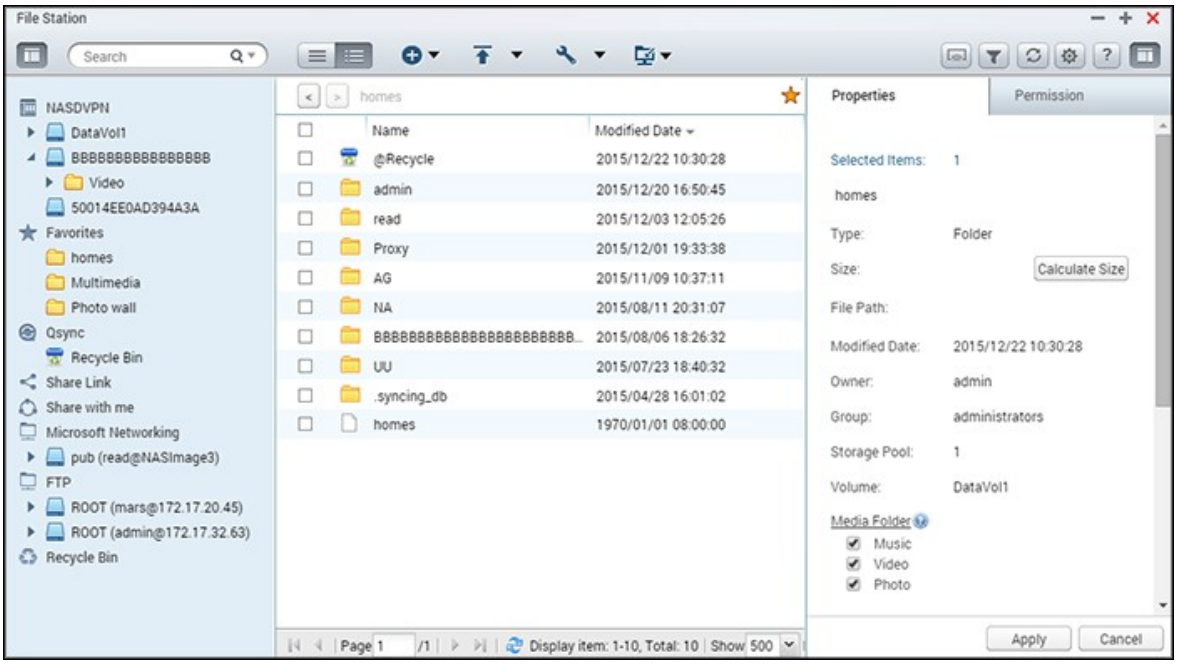
- Your friends have added your device as a favorite
- Your friends have created a shared link for you.
- Your friends have shared their device with you.

To check myQNAPcloud activities, follow these steps:

1. Log into the myQNAPcloud portal site
2. Click "Notifications" on the left of the screen (or the notification icon next to the device search box.)

8.3 File Station

File Station is an online file management center. With the File Station, you can access the NAS across the Internet, manage files using a web browser, quickly find files, play media files, set file and folder permissions, and easily share your files and folders on the NAS.



Topics covered in this chapter:

- Starting File Station 258
- Familiarizing yourself with File Station 258
- Using File Station 262
- Remote Connection 271

Starting File Station

Launch File Station from the Main Menu/Desktop shortcut, or directly log into File Station by going to: http://NAS_Name_or_IP/cgi-bin/filemanager.html.

Familiarizing yourself with File Station

Menu Bar



No.	Name	Description
1	Left Panel	Hide/Show the left panel.
2	Search Bar	Search files by their name, file type (music, video, or photo) or with advanced search.
3	Browsing Mode	Switch between different browsing modes (from left to right: Thumbnail browsing mode/ list browsing mode/detail browsing mode.)
4	Create	Create a folder/shared folder or share space with a user (see the below Sharing NAS space 271 section.)
5	Copy/Paste	Copy/paste folders or/and files.
6	Upload	Upload files or folders to the selected shared folder.
7	Share	Share the folder/file via email, publish the folder/file, or share the link of the folder/file on social networks and to existing NAS users, or create a shared link (see the below Sharing files 270 section.)
8	More Action	• Bookmark the selected shared folder (and it will appear under "Favorites" on the left panel.) • Perform file or folder operations including open, download, rename, copy/move, delete, cut, create desktop shortcut, compress, transcode files/folders (these options are only available when files and/or folders are selected.) • Check folder properties. • Review transcode information, background tasks (file compression, file upload and moving files within the NAS) or storage information.

9	Remote Connection	• Create remote connections • Check connection records and the current connection status (see the below Remote Connection 271 section.)
10	Network Media Player	Stream videos to compatible devices in different rooms over your home network.
11	Smart File Filter	Filter files based on conditions set by users and the conditions will apply to all folders.
12	Refresh	Refresh the current page.
13	Settings	General: • Show files and folders of my PC: Set to show/hide files and folders on the local PC. This allows you to see the contents of your PC in File Station. This feature is currently only available in Windows and requires Java to be installed (you can download it from http://java.com) • Show hidden files on NAS: Set to show/ hide hidden files. • Allow all users to create shared links. • Support multimedia playback and thumbnail display: If this option is checked, the file icon will be displayed as thumbnails. • Show Network Recycle Bin(s): Set to show/hide the "@Recycle" folder. • Only allow the admin and administrators group to use "Share to NAS user". • Only allow the admin and administrators group to permanently delete files: Check this option and 1) only administrators can permanently delete files from File Station; and 2) files deleted by other users will be moved to the Trash.

		• Remote connection: Configure the groups of users (administrators, administrators group, or specific users) that are allowed to use the Remote Connection feature.
14	Help	Review the online help and check the About information.
15	Right Panel	Show/Hide the right panel.

Tip: If you are using Google Chrome, you can drag & drop files from your PC to File Station. However, some computers may not be able to upload files that are larger than 1GB using this method due to their low performance. When this happens, please consider uploading using File Station.

Note:

- To stream media files to HDMI or Chromecast using the Network Media Player, the Media Streaming Add-On must first be installed in the App Center.
- Bonjour must be enabled when using multi-zone streaming. You can enable Bonjour in "Control Panel" > "Network Service" > "Service Discovery" > "Bonjour".
- Only MP4 video files can be directly streamed if your NAS does not support On-the-fly Transcoding. You can consider transcoding them into different media formats if they are desirable. For details on transcoding, please refer to the Transcode Management 197 chapter.
- If your NAS supports transcoding, please install the CodexPack App before using this function. The NAS will try to transcode to a suitable format for your device. If your NAS does not support transcoding, the NAS will only output the original file format and the seek function may not work properly. In this case, please make sure that your device is compatible with the file format used by the video.
- Some video formats may experience issues when streaming via DLNA, Apple TV or Chromecast. If any of these issues arise during video playback, you can consider transcoding your videos into universally-compatible media formats. For more details on transcoding, please refer to the Transcode Management 197 chapter.
- Some media players do not support pausing during playback. If this happens, playback will continue even if you use the pause feature.

- For multimedia files transcoded using on-the-fly Transcoding, the time displayed on the media player seek bar will become 00:00 while you forward or rewind the multimedia files during playback.
- The original photo files will be used for streaming if their thumbnails are not available.

Left Panel

- Volume: Every shared folder and folder on the NAS is listed here. Depending on your NAS model, the default shared folders are different and can include "Download", "homes", "Multimedia", "Public", "Recordings", "USB" and "Web". You can click "+" next to a volume to create a shared folder on the volume.
- Local folders: Folders on your local PC are listed here. The Java JRE must be installed to use this feature.
- Favorites: Bookmarked folders are listed here.
- Qsync: Folders or files synchronized from the Qsync service are listed here.
- Share Link: Links of files shared from the NAS are listed here.
- Share with me: Files and folders that have been shared to you from other NAS users are listed here.
- Recycle Bin: Deleted files or folders can be found here. Right click on deleted items in the recycle bin to permanently delete or recover them.

Right Panel

- Properties: Click this tab to review file and folder details, click "Calculate Size" to calculate the size of a folder, set the media type for the folder, and configure auto transcoding settings for the folder.
- Permission: Click this tab to configure shared folder permissions. For steps on setting folder permissions, please refer to the below "Set file/folder level permission" section.

Using File Station

Creating shared folders

To create a shared folder, click "+" next to a volume, specify the folder name, folder description, disk volume, user access privileges, and advanced settings in the shared folder creation dialog window and click "Create".

Subfolder operations

Right click on a subfolder and choose to perform the following actions:

Action	Description
Sort By	Sort all the subfolders and files within the page by name, modified date, type, or size.
Create folder	Create a subfolder.
Copy/Paste	Copy a subfolder and paste it into another shared folder.
Share	• Share the selected folder via email; • Publish the selected folder on social networks; • Set sharing details
Open	Enter the chosen subfolder.
Download	Compress and download the subfolder.
Rename	Rename the subfolder.
Move	Move the subfolder to another location on the NAS.
Delete	Delete the subfolder.
Cut/Paste	Cut a subfolder and paste it to another shared folder.
Add to Transcode (Beta)	Create transcode tasks for the files within the subfolder. If you see certain resolution options disabled in the "Add to Transcode(Beta)" window, it means the selected video files have already been transcoded into these resolutions.
Cancel/Delete Transcoding	Cancel / Delete transcode tasks created for the subfolder
Transcode Information	Bring up the Transcode Task window for your review on transcode tasks.
Add to Favorites	Bookmark the subfolder and it will appear under "Favorites" in the left panel.
Compress(Zip)	Compress the subfolder.
Properties	Switch to open the right panel.

Tip: For folders and files, the shortcut keys are provided for quick file and folder operations. Available shortcut keys include:

- Ctrl + C: Copy selected files/folders.
- Ctrl + V: Paste selected files/folders.
- Ctrl + X: Cut selected files/folders.
- Ctrl + A: Select all files/folders.
- Del: Delete selected files/folders.
- F2: Rename the selected file/folder.
- F5: Reload the current list.

File operations

Right click on a file and choose to perform the following actions:

Action	Description
Sort By	Sort all the subfolders and files within the page by name, modified date, type, or size.
Copy/Paste	Copy a subfolder and paste it to another shared folder.
Share	Share selected files/folders via email, social network, by shared links, or to other NAS users. Refer to the Sharing files 270 section for more details.
View in Office Online	Open Office files stored on the NAS using Office Online. The document will be first uploaded to Office Online and opened in a new browser tab. You must first install and sign in to the myQNAPcloud App to use this function.
View in Google Docs	Open Office files stored on the NAS using Google Docs. The document will be first uploaded to Office Online and opened in a new browser tab. You must first install and sign in to the myQNAPcloud App to use this function.
Open with Chrome Extension	Preview and edit Microsoft Office files offline with a Chrome browser extension (Chrome only and requires the "Office Editing for Docs, Sheets & Slides" Chrome extension to be installed.)
Streaming to (Network Media Player)	Stream multimedia files (videos, music, and photos) to compatible devices in different rooms over your home network.

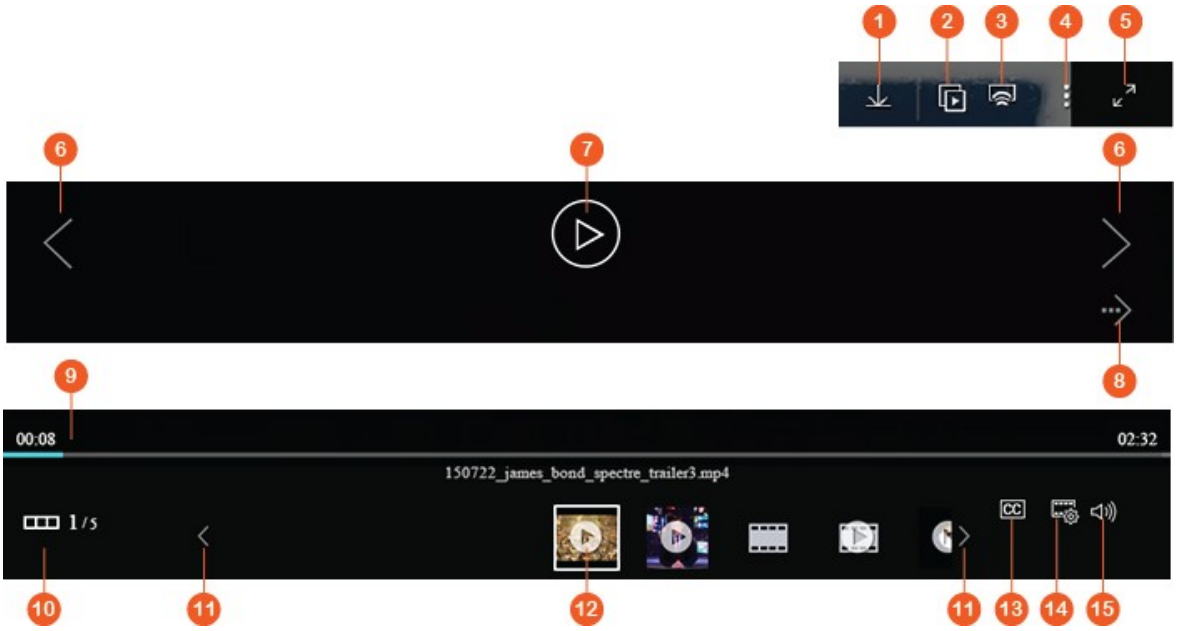
Play	Launch the Media Viewer and play the selected item.
Open	Open the file with a corresponding application on your PC. If no such applications are available, the file will be downloaded instead.
Open with VLC	If the chosen file is a video file, it will be opened in the browser (the VLC plug-in needs to be installed first.)
Download	Download the file. If the chosen file is a video that has been transcoded, you can choose its resolution and download the file. If multiple files are selected for download, they will be compressed before the download.
Rename	Rename the file.
Move	Move the file to another location on the NAS.
Delete	Delete the file.
Cut/Paste	Cut a file and paste it to another shared folder.
Add to Transcode (Beta)	Create a transcode task for the file. Create transcode tasks for files within the subfolder. If you see certain resolution options disabled in the "Add to Transcode(Beta)" window, it means the selected video files have already been transcoded into these resolutions.
Cancel/Delete Transcoding	Cancel/Delete transcode task.
Transcode Information	Bring up the Transcode Task window for you to review transcode tasks.
Extract	Extract the compressed file.
Compress(Zip)	Compress the file.
Mount ISO	Mount the iso image as a shared folder on the left panel. After the file is mounted, you can click that shared folder to access the content of that iso image. To unmount an iso file, right click on the iso-mounted shared folder in the left panel and choose "Unmount".
Properties	Switch to open the right panel.

Note:

- For IE 8, the maximum size of a file that can be uploaded to the NAS by File Station is 2GB if the Java plug-in is not installed. We recommend using a modern web browser to access File Station.
- Due to limitations with Google Chrome, when using the upload folder function of the File Station toolbar only folders that contain at least one file can be uploaded. You can use drag & drop to circumvent this limitation.
- For Chrome, multiple files and folders can be dragged & dropped into File Station to upload them directly.
- ARM-based NAS models do not support using Cyrillic characters for the name of a subfolder in an ISO shared folder (the name will be incorrectly displayed if a subfolder is created with a Cyrillic name.) Please name the subfolder with a different language before an ISO file is created.
- For Mac OSX, mounting a folder that contains the # character in the folder name through WebDAV is not supported. Please rename the folder before mounting it if necessary.
- You can preview Microsoft Office files using File Station. To do so or Mac OSX, mounting a folder that contains the # character in the folder name through WebDAV is not supported. Please rename the folder before mounting it if necessary.
- For "View in Office Online" and "View in Google Docs", please set your browser to allow pop-ups and you will need a myQNAPcloud account. Supported file formats: .doc, .docx, .xls, .xlsx, .ppt, and .pptx.
- To stream media files to HDMI or Chromecast using the Network Media Player, the Media Streaming Add-On must first be installed in the App Center.
- Bonjour must be enabled when using multi-zone streaming. You can enable Bonjour in "Control Panel" > "Network Service" > "Service Discovery" > "Bonjour".
- Only MP4 video files can be directly streamed if your NAS does not support On-the-fly Transcoding. You can consider transcoding them into different media formats if they are desirable.

Playing media files

To play media files with File Station, double click on a multimedia file (photo, music and video files) and the Media Viewer (a built-in media player on the NAS) will open to play the file. Use the following buttons to control the Media Viewer:



No	Name	Description
1	Download	Download the item.
2	Slideshow	Play all chosen photos as a slideshow. You can adjust the speed and effect of the slideshow (for photos only.)
3	Network Media Player	Stream videos to compatible devices in different rooms over your home network.
4	More Action	Rotate the photo, set the photo as the QTS the wallpaper, or delete the photo/ video.
5	Full Screen	Switch to full screen mode.
6	Previous Item/Next Item	Play the previous/next item.
7	Play/Pause (videos)	Play/Pause the video.
8	Play/Pause (photos)	Play/Pause photos as slideshow.
9	Seek Bar	Control the playback progress.
10	Show/Hide Preview Bar	Hide/show the preview bar.

11	Last Item/Next Item	Play the last/next item on the preview bar.
12	Preview Bar	Preview the items in queue.
13	Subtitle	Manage subtitles of the video.
14	Resolution	Change resolution and transcoding settings.
15	Volume	Adjust the volume.

Note:

- The media viewer can be used to play photos and music files on all NAS models. However, the feature to play videos using the media viewer is available on NAS models that support hardware-accelerated transcoding.
- To stream media files to HDMI or Chromecast using the Network Media Player, the Media Streaming Add-On must first be installed in the App Center.
- Bonjour must be enabled when using multi-zone streaming. You can enable Bonjour in "Control Panel" > "Network Service" > "Service Discovery" > "Bonjour".
- Only MP4 video files can be directly streamed if your NAS does not support On-the-fly Transcoding. You can consider transcoding them into different media formats if they are desirable. For details on transcoding, please refer to the Transcode Management 197 chapter.
- Before enabling subtitles, please save the subtitles file (.srt format) in the same folder as the video file and ensure its name is the same as the video file.

Finding your files/folders quickly

File Station supports smart searching for files, sub-folders, and folders on the NAS. You can search for files or folders using all or part of the file/folder name, by file type, or by file extension. There are two additional approaches you can quickly find your files: 1) advanced search and 2) smart file filter.

- For the advanced search, first click on the magnifier in the search bar and then "Advanced Search". Specify the search conditions (including name, size, date files are modified, location, type and owner/group) and click "Search". The files that match these conditions in the current folder will be listed.

- For the smart file filter, click on "Smart File Filter" in the Main Menu. Specify the filtering conditions (including name, size, date files are modified, type and owner/ group) and click "OK". Files that match the conditions will be listed for the folder. This is the case even if you switch to a different folder.

Note: To search across all folders on the NAS, click the drop down list in "Location" and select "...".

Setting file/folder level permission

You can set file or folder level permissions on the NAS using File Station. Right click on a file/folder and select "Properties".

If "Advanced Folder Permissions" is disabled in "Privilege Settings" > "Shared Folder" > "Advanced Permissions", the following settings will be shown. Define the Read, Write, and Execute access rights for Owner, Group, and Others.

- Owner: Owner of file or folder.
- Group: Group owner of the file or folder.
- Others: Any other (local or domain member) users who are not the owner or a member of the group owner.

If a folder is selected, you can choose "Apply changes to folder(s), subfolder(s) and file (s)" to apply the settings to all the files and subfolders within the selected folder. Click "OK" to confirm.

If the "Enable Advanced Folder Permissions" option is enabled in "Privilege Settings" > "Shared Folder" > "Advanced Permissions", you will be able to specify the file and folder permissions by users and user groups. Click + to do so.

To select users and user groups and specify the Read and Write permissions, click "Add".

To remove permissions on the list, select the users or user groups and click "–".

You can also define the file and folder owner by clicking the edit button next to the owner field. To do this, select a user from the list or search for a username, and then, click "Set".

The following options are available for folder permission settings. It is recommended to configure folder permissions and subfolder permissions in "Privilege Settings" > "Shared Folders".

- Only the owner can delete the contents: When you apply this option to a folder, the first-level subfolders and files can only be deleted by their owner.
- Only admin can create files and folders: When you apply this option to a folder, only administrators can create files or folders.
- Apply changes to files and subfolders: Apply changed permissions settings except owner protection to all the files and subfolders within the selected folder. The option "Only the owner can delete the contents" will not be applied to subfolders.
- Apply and replace all existing permissions of this folder, files, and subfolders: Select this option to override all previously configured permissions of the selected folder and its files and subfolders except owner protection. The option "Only the owner can delete the contents" will not be applied to subfolders.

Sharing files

To share files on the NAS using File Station, right click on the files/folders and select "Share". There are four sharing methods:

- Via email: Enter the required fields (including mail server from NAS or local computer, sender, recipient, subject, message, domain name/IP and link name), choose to include SSL (https://) in the URL, and optionally set an expiration time and password in "More settings" . Finally, preview the settings or directly share the file.

  Note: To share files/folders using your own email account, your email account must be set up in QTS Desktop > "Options" > "E-mail Account".
- To social networks: Enter the required fields (including the social network to share the file, post message, domain name/IP and link name) choose to include SSL (https://) in the URL, and optionally set an expiration time and password in "More settings".
- Create share links only (generate a link to provide on instant messengers or store for later use): Complete required files (domain name/IP and link name), choose to include SSL (https://) in the URL, and optionally set an expiration time and password in "More settings".
- To NAS users: Choose to share with new or existing NAS users.
  - For new NAS users, fill out account details (username and password), choose to allocate the quote, choose whether to send an email notification (and fill out message subject and content), set domain name/IP, link name and password for the link, decide whether to include SSL (https://) in the URL, and optionally set an expiration time and password in "More settings" . Click "Preview" to preview the message or "Share Now".

- For existing users, select existing user account(s), choose whether to send a notification email to the user (and fill out message subject and content), set domain name/IP, link name and password for the link, decide whether to include SSL (https://) in the URL, and optionally set an expiration time and password in "More settings" . Click "Preview" to preview the message or "Share Now".

For folders, there will be an option "Allow file upload to this folder" in the dialog window for all four sharing options. This feature is only for administrators and can allow link recipients to upload files to the folder pointed to by the link.

For the "To NAS users" option, if you choose to share with new NAS users, the system will create new user accounts. Also, the email recipients (or users you share files with) can check files shared in File Station > "Share with me" on the left panel after they log into the NAS.

Sharing NAS space

Administrators can allocate space to NAS users and specify a storage quota in File Station by following these steps:

1. Click "Create" (the "+" icon) on the Menu Bar > "Share space with a user".
2. Complete the required fields in the "Create a User" page.
3. Enable the quote feature and set the quota size in "Control Panel" > "Privilege Settings" > Quote" if you have not already done so.
4. Specify the email (optional) and phone number (optional) for the user.
5. Choose to send an email notification to the newly-created user (optional), fill out the message details (including mail server (from NAS or local computer), sender, recipient, subject, message, domain name/IP and link name) and choose to include SSL (https://) in the URL.
6. Click "Create".

Remote Connection

The remote connection service allows you to easily manage files across local devices, external devices, cloud services and remote devices from a single interface. You can easily carry out file management tasks such as copying and moving from remote to local devices or vice versa. The remote connection service supports multiple cloud services (such as Google Drive, Dropbox, and OneDrive) and remote device network protocols (such as CIFS/SMB, FTP and WebDAV.)

Create remote connections

1. Click the "Remote Connection" button on the "Menu Bar" > "Create remote connection".
2. Choose to connect to a remote storage via SMB/CIFS, FTP, or WebDAV.
3. Fill out necessary details (including the protocol, codepage, hostname/IP, username/password, destination folder and connection name) and choose to enable support for multimedia playback and thumbnail display (the system will generate thumbnails at the destination; if the destination is another QNAP NAS, it must have QTS 4.2 or above installed)
4. Click "Create".

Check recent connection records

1. Click the "Remote Connection" button on the "Menu Bar" > "Connection record".
2. Review recent connection records and their details including the connection time, connection name, protocol, Hostname/IP, port, account username, codepage and source path.
3. To sort the records, click on a header.

Check the current connection status

1. Click the "Remote Connection" button on the "Menu Bar" > "Current connection status".
2. Review the status of the current connections records and their details, including the connection time, connection name, protocol, Hostname/IP, port, account username, codepage and source path.
3. To sort records, click on a header.

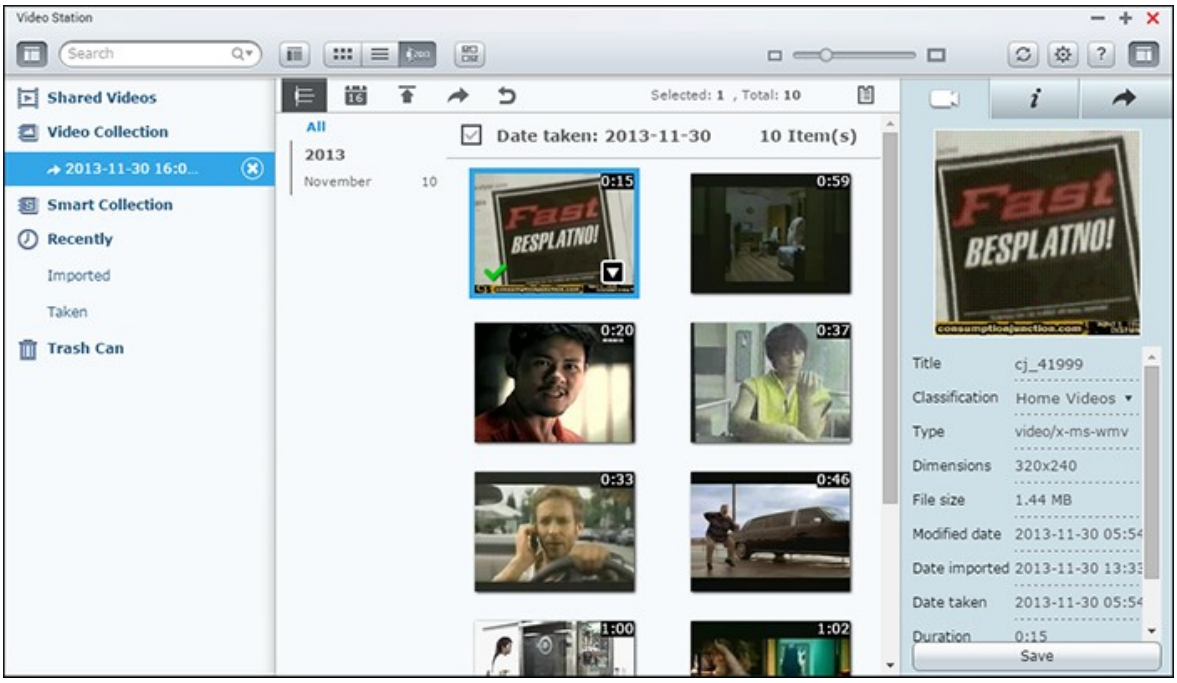
Note:

- For Remote Connection, the maximum number of connections that can be created per NAS is 256.
- OneDrive for Business is not supported for Remote Connection.
- To share links by email, the email server settings must be properly configured in "System Settings" > "Notification" > "SMTP Server".
- Up to 1000 sharing links are supported.
- For best performance, use one of the following browsers: IE 9+, Firefox 3.6+, Safari 5+, or Chrome.
- Do not close the browser before the file transfer process (upload or download) is completed or the process will fail.

- For Remote Connections, you must install the Connect to Cloud Drive app from the App Center before connecting to cloud services.
- Using a remote connection is identical to an external device and ongoing tasks will be terminated if the NAS is restarted or powered off.
- Limitations of your cloud service account may affect what files can be transferred. Please check the account details with your cloud service providers for more information regarding what files can and cannot be transferred.
- When transferring a large amount of files over CIFS/SMB using a remote connection, some antivirus software may cause the transfer to fail. If you encounter this problem, please temporarily disable your antivirus software and try again.
- Due to performance limitations of web browsers and PCs, you may not be able to upload a large amount of files in one task. If you encounter this problem, please separate your upload task into multiple tasks or use another upload method.

8.4 Video Station

Video Station (2.3) is a video management tool used to organize videos on the NAS and to share them with friends and family across the Internet. With Video Station, you can classify videos into home videos, movies, TV shows or music videos for personal collections. Smart collections can be set to automatically sort videos that match certain criteria and help you neatly manage your videos.



This chapter covers the following topics:

- Starting Video Station 274
- Familiarizing yourself with Video Station 275
- Using Video Station 280
- Media Library and Privacy Settings 285

Starting Video Station

Install and enable Video Station from the App Center (for QTS 4.1 or later) and follow these steps:

1. Upload videos to a shared folder on the NAS: You can upload videos to the NAS in 3 different ways: 1) Install Qfinder Pro on your PC or Mac, set up a network drive and upload files to your preferred shared folders. For details on setting up a network drive, please "Connecting to NAS Shared Folders 25."; 2) Click "Shared Videos" or "Private Collection" on the left panel and "Import" (up arrow) on the main menu to import videos from the local PC. A new shared folder with the date that files are

uploaded will be created on the NAS to store uploaded files (for "Shared Videos", this newly-created shared folder is located under the "/multimedia" folder; for "Private Collection", this shared folder is located under the "/home" folder.) A corresponding collection will be created under "Video Collection" as well; 3) Switch to folder view browsing mode and drag & drop videos to a preferred folder. With the first and third approach, you can choose which folder on the NAS that you want to upload videos to.

Tips on file upload:

- The maximum size of an image file is 2GB.
- The maximum size of multiple files that can be uploaded at one time is 2GB.

2. Launch Video Station from the Main Menu/Desktop shortcut, or directly log into Video Station by going to: http://NAS_Name_or_IP/video/

Note:

- Admin login credentials of Video Station is the same as that of the NAS administrator.
- Video Station supports: MP4.

Familiarizing yourself with Video Station

Menu Bar



No	Name	Description
1	Left Panel	Hide/Show the left panel.
2	Search Bar	Search video files by title, video date, tag, rating, or color label.
3	Browsing Mode	Switch between different browsing modes (from left

		to right: thumbnail browsing mode/list browsing mode/timeline browsing mode/folder browsing mode) to browse videos.
4	Multi-select	Select multiple items at the same time.
5	Resizing Bar	Resize video thumbnails.
6	Select DLNA/AirPlay Player (Network Media Player)	Locate compatible devices in different rooms over your home network.
7	Refresh	Refresh the current page.
8	Settings	Set video classification, content filters, or social network binding; configure subtitles searching settings and miscellaneous settings. • Video Classification: Add, remove and rescan folders to be classified and classify folders into the following categories (Home Videos, Movies, TV Shows, or Music Videos), or manage your custom classifications. The classified videos will be organized into a video library for smart collections. • Content Filter: Set folders as the content source of Video Station. Use this feature to hide undesired videos and only show intended contents. • Social Network Binding: bind your social network accounts to share videos on social networks (more on this in the below "Sharing collections" section.) • Search Subtitles: Enable Video Station to search for subtitles on subtitles websites (including OpenSubtitles and Shooter.) • Miscellaneous: Check "Always ask me to enter my password when accessing Private Collection and Qsync", and each time a user is trying to access those categories, that user will be prompted for a password.

9	Help	Check online help, quick start guide or version information.
10	Right Panel	Hide/Show the right panel.
11	Timeline	List videos chronologically in a timeline.
12	Date Filter	Filter videos by date.
13	Import	Import videos.
14	Sharing	Choose to email, publish, or share the link of a collection.
15	Return	Return to the root level of the "Video Collection" or "Smart Collection" when you are in your created collection.
16	Sharing History	Show the history of files that have been shared.
17	Tag Filter	Filter videos by tag.

Note:

- To stream media files to HDMI or Chromecast using the Network Media Player, the Media Streaming Add-On must first be installed in the App Center.
- Bonjour must be enabled when using multi-zone streaming. You can enable Bonjour in "Control Panel" > "Network Service" > "Service Discovery" > "Bonjour".
- Only MP4 video files can be directly streamed if your NAS does not support On-the-fly Transcoding. You can consider transcoding them into different media formats if they are desirable. For details on transcoding, please refer to the Transcode Management 197 chapter.
- If your NAS supports transcoding, please install the CodexPack App before using this function. The NAS will try to transcode to a suitable format for your device. If your NAS does not support transcoding, the NAS will only output the original file format and the seek function may not work properly. In this case, please

make sure that your device is compatible with the file format used by the video.

- Some video formats may experience issues when streaming via DLNA, Apple TV or Chromecast. If any of these issues arise during video playback, you can consider transcoding your videos into universally-compatible media formats. For more details on transcoding, please refer to the Transcode Management 197 chapter.
- Some media players do not support pausing during playback. If this happens, playback will continue even if you use the pause feature.

Left Panel

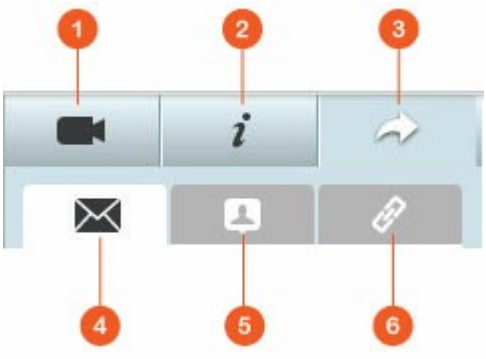
- Shared Videos: List all the videos in all shared folders on the NAS (except videos in the "/home" and "Qsync" folders) and all videos are only visible to authorized users.
- Private Collection: List all videos located in the "/home" folder, and those multimedia files can be viewed by yourself only.
- Qsync: List videos synchronized from the Qsync service.
- Video Collection: List all virtual collections. All entries listed under a collection are only links to the physical files. This can effectively conserve your NAS storage space, as you can keep only one copy of the videos even when you create a collection for a special theme. For collection operations, please refer to the below section on Using Video Station.
- Smart Collection: List all smart collections. Smart collections will only show videos that match user-defined classifications, such as Home Videos, Movies, TV Shows and Music Videos; and can save effort in managing videos. For instructions on smart collection operations, please refer to the section on Using Video Station below.
- Recently: Include recently-imported videos (within a month) from a local device or taken with a camera or recording device.
- Trash Can: All deleted videos can be found here and can be restored or permanently deleted. Only deleted files (and not virtual links) will show up in the trash can.

Note:

- The "/home" folder can only be accessed by its owner and NAS administrators. Private or personal videos should only be stored in your "/home" folder.
- For media folder configuration, refer to the Multimedia Management chapter. For user setup and configuration, refer to the User 138 section in the Privilege Settings chapter.
- If uploaded videos do not show up in Video Station, scan for them using the

Media Library. For details on the scan, please refer to the Multimedia Management 195 chapter.

Right Panel



No	Name	Description
1	Video Property	Review and edit video properties.
2	Tag and Description	Edit and browse video tags and descriptions.
3	Sharing	Drag files to this area and share them via a link (including three methods: email, social sharing and link.)
4	Email	Share a link via email. Specify the sender, recipient, subject and message body of the email and click "Send" to send the email. Make sure your email account is properly configured in QTS Desktop > "Options" > "E-mail Account".
5	Social Sharing	Share a link of selected files on social networking sites. Specify the subject and message body and click the social network icon to share.
6	Link	Share a link of selected videos by directly pasting it into an email or instant message. Drag and drop videos under "Select Videos" and under "Select Link Format", select the domain name, LAN IP or WAN IP address (note that the myQNAPcloud.com domain name is only available after it is registered in myQNAPcloud. Please refer to the myQNAPcloud 250 chapter for more details) and HTML format (click to choose a URL link, HTML code, vB Forum code or

		Alt Forum code) from the drop down menu. Click "Create", specify the name of the collection displayed on the page seen as recipients open the link. Copy and paste the URL link in the dialog window to your preferred applications.

Note: Multiple video files can be classified at the same time. To do so, select the video files, click "Video Property" on the right panel and choose their classification from the classification drop down list.

Using Video Station

Creating and managing collections

Collections can be created in two ways:

1. Switch to the folder view, right click on a shared folder, and select "Create New Collection" to turn that shared folder into a collection.
2. Drag & drop videos in "Video Collection" on the left panel.

Right click on a collection and choose to play, download, remove, rename, email the link of, publish the link, share the link of that collection, or modify the settings of that collection (the email, publish and share options are only available if "Share with the public" is enabled in "Collection Settings".)

Creating and managing smart collections

To create a smart collection, click "+" next to "Smart Collection", specify the name of the collection, the classification (Home Videos, Movies, TV Shows and Music Videos) and search criteria (all files and tag.) Right click on a smart collection and choose to play, download, remove, rename, or reset collection settings. Right click on a smart collection and choose to play, download, remove, rename, email the link of, publish the link, share the link of that collection, or modify the settings of that collection (The email, publish and share options are only available if "Share with the public" is enabled in "Collection Settings".)

Sharing collections

As you create a collection, you can choose to share it with other NAS users (choose whether all NAS users can edit the collection, or only the creator/administrator) or the public, or not to share at all (leave both options unchecked), and set the valid period on the collection creation page. If a collection is set to be shared with the public, you

can right click on the collection and select "Email" to email it, "Publish" to publish it on social networks, or "Sharing Links" to generate and paste the collection link on your blog, forum, or instant messengers. You can still edit the collection content later, and the updated content will be presented when viewers click the same link.

You can also share a number of videos as you do with collections. To do so, click "Sharing" on the right panel, drag videos from different collections and drop under "Select Videos" on the right panel and use the "Email", "Social Sharing", or "Link" button to share the videos. Then, your friends can log into Video Station with the link provided to them to watch videos from shared collections. To check the sharing history of a selected collection, click on the collection and then on "Sharing History" in the main menu.

Note: To share files/folders using your own email account, first set your email account in QTS Desktop > "Options" > "E-mail Account".

Alternatively, you can choose to bind your social network accounts and share videos with your Facebook friends. To do so, follow these steps:

1. Go to "Settings" > "Social Network Binding".
2. Check folders (under "Accessible Folder") to share on social network sites.
3. Select "Bind with Facebook".
4. You will be taken to your Facebook account to confirm that Video Station is authorized to retrieve your Facebook friend list.
5. After successfully binding, your Facebook friends can log into Video Station (http://NAS_IPorName/video/) with their Facebook account to browse all of the authorized, shared videos.

Video Operations

Right click on a video and choose to perform an action from the table.

Operation	Description
Play	Play the video online in the browser.
Open with VLC	Play the video in a browser window with the VLC player (please install the VLC plug-in first.)
Download	Download the video.
Copy to Collection	Copy the video to a collection.

Set as Cover	Set the video thumbnail as the cover of a collection.
Add to Transcode	Convert the video to the following resolutions: 240P, 360P, 480P SD, 720P HD and 1080P Full HD.
Rotate	Rotate the video 90 degrees clockwise or counter-clockwise
Add to Sharing List	Add the selected videos to the sharing list.
Streaming to	Stream videos to compatible devices in different rooms over your home network.
Remove/Delete	Delete the video.
Movie Information	Review movie information (such as genre, director, cast, etc) of the selected video.
Add Tag	Tag the video.
Rating	Rate the video.
Color Label	Color-label the video.

Note:

- The movie information option is only available after the video selected is classified as "Movies". Click the video property button on the right panel and the classification drop down menu to classify a video.
- Information is retrieved from the Internet based on the English title of video files. If the movie information is incorrect, modify the English title to retrieve the movie information.
- To stream media files to HDMI or Chromecast using the Network Media Player, the Media Streaming Add-On must first be installed in the App Center.
- Bonjour must be enabled when using multi-zone streaming. You can enable Bonjour in "Control Panel" > "Network Service" > "Service Discovery" > "Bonjour".
- Only MP4 video files can be directly streamed if your NAS does not support On-the-fly Transcoding. You can consider transcoding them into different media formats if they are desirable.

Finding your videos quickly

To quickly locate videos, you can rate or classify them. To do so, right click on the videos and then tag, rate, or color label them. To mark/classify multiple videos, click

the "Multi-select" button on the main menu (or hold the Ctrl key on the keyboard), select your desired videos and right click the videos to rate or classify them. After videos are tagged, rated, or color labeled, they can be searched by their rating, color label or tag in the search bar on the Main Menu.

Viewing videos

Double click on a video to switch to the video viewing mode and use the buttons to view videos:



No	Name	Description
1	Play/Pause	Play/Pause.
2	Stop	Stop playback.
3	Seek Bar	Control the playback progress.
4	Mute/Volume	Mute/Unmute and adjust the volume.
5	Resolution	Change resolution and transcoding settings.
6	Subtitles	Manage subtitles of the video.
7	Streaming to	Stream videos to compatible devices in different rooms over your home network.
8	Full Screen	Switch to the full screen mode.

Note:

- For HD videos, click the HD icon on top of the player window to switch video quality.
- You can also control the playback and volume with your computer keyboard:
  - Left: Rewind
  - Right: Forward
  - Up: Increase volume
  - Down: Decrease volume

- Space: Play / Pause
- To stream media files to HDMI or Chromecast using the Network Media Player, the Media Streaming Add-On must first be installed in the App Center.
- Only MP4 video files can be directly streamed if your NAS does not support On-the-fly Transcoding. You can consider transcoding them into different media formats if they are desirable.

Downloading and searching movie information online

Video Station supports downloading online information (movie poster, year, rating, director, etc) for movies. To enable this feature, follow these steps:

1. Classify a video as movie (right click on a video > "Information" > change the Classification to "Movies" under the "Video Property" tab.)
2. Switch to the "Movies" category on the left panel.
3. Right click on a movie > "Movie information" to open the movie information page for that movie.
4. If the video information downloaded from the Internet is incorrect, click the "Edit" icon in the top-right corner of the "Movie Information" page and enter the movie keyword to search again. Please note that this feature only supports English keywords.
5. If the movie poster is incorrect, you can change it by clicking the "Edit" icon on the movie poster to upload it from your PC or via URL, or restore it to the default poster.

Importing, displaying and adjusting subtitles

You can import, display and adjust subtitles files for movies.

- To import and display subtitle files:
  a. Save the subtitles file in the same directory as the video file, with an identical filename (for example, a video with the filename "video.avi" must have subtitle files named "video.eng.srt" or "video.cht.srt".) The subtitles will then be available to use when watching the video and you can switch between multiple languages.
  b. In the video player, click "CC" on the player panel > "Import subtitles" and choose the subtitles file from a computer.
  c. In the video player, click "CC" on the player panel > "Search for subtitles" and the system will search for subtitles based on the video information or by keywords. Select one of the results and the system will display the subtitles.
- Adjust Subtitles: In the video player, click "CC" on the player panel > "Adjust

subtitles" to change the subtitles font, size, color or enable background effects. Or, make subtitles display earlier or later if they are not synced with the audio.

Note:

- "Import subtitles" and "Search for subtitles" are only supported from firmware 4.2.0.
- Supported subtitles file formats: .srt, .ass and .ssa.
- If your subtitles use an incompatible format, we recommend using Aegisub to convert them.

Media Library and Privacy Settings

Videos in Video Station are listed and displayed according to shared folder privileges and media folders settings in the Media Library 195. For shared folder privileges, only users with an appropriate permission to a shared folder can view its contents in the Video Station. For example, if a user does not have read/write, or read-only permissions to a certain shared folder, that user cannot see the videos in the shared folder.

Note:

- For x86-based NAS models, all shared folders except "/recording" and "/web" are media folders by default. For ARM-based NAS models, only "/multimedia" and "/homes" are media folders by default. However, users can always add more media folders.
- In addition to shared folder privileges, you can also store private videos in your "/home" shared folder to hide them from other NAS users (except the administrator.) The contents of the "/home" folder can be found under "Private Collection". Anyone attempting to access this folder in Video Station will be prompted for a password.

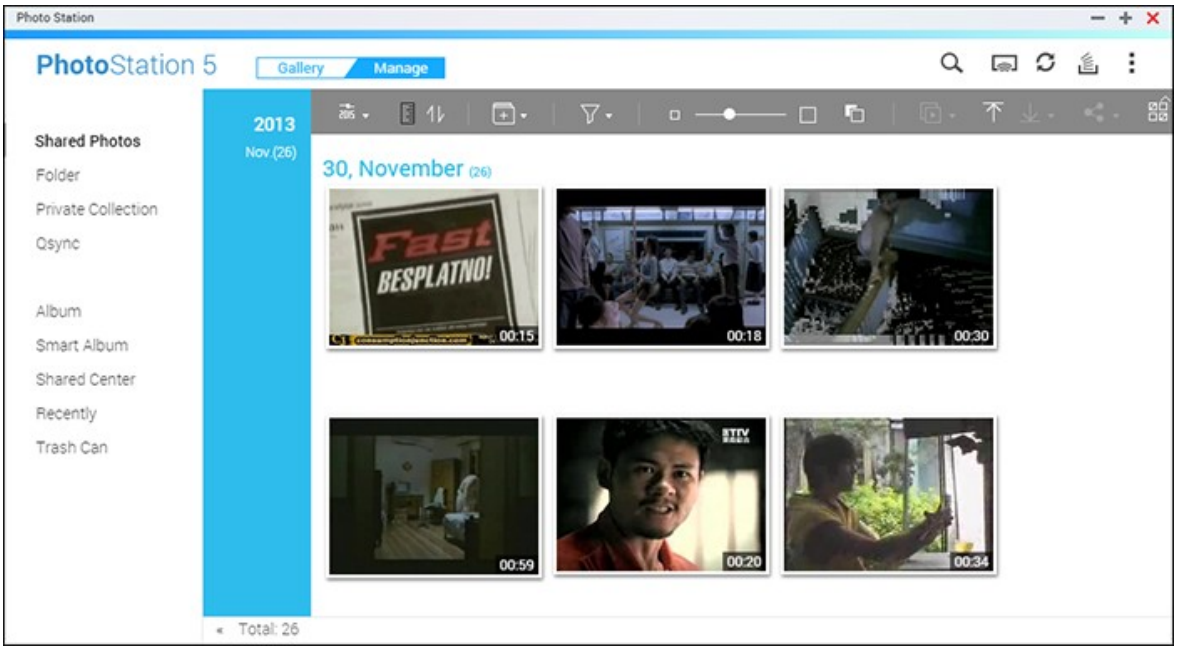
Videos stored in the shared folders are only visible after they are detected and scanned by the Media Library. To set the Media Library to scan for videos manually or by schedule go to "Control Panel" > "Multimedia Management" > "Media Library". For more details on media folder settings, please refer to the chapter on Multimedia Management.

Note: As the media folders in the Media Library are shared by Photo Station, Music Station, Video Station and DLNA Media Server as their content source, content will

be affected in those applications if new media folders are added or existing media folders are removed from the Media Library.

8.5 Photo Station

Photo Station (5.0) is an online photo album used to organize photos and videos on the NAS and to share them with friends and family across the Internet. With Photo Station, users can drag & drop photos into virtual albums, sparing them from having to tediously move/copy files around and helping to save storage space as they only need one copy of their photos on the NAS when they create albums with special themes. Smart albums can also be used to automatically collect content that matches search criteria and helps users to neatly manage their photos.



This chapter covers the following topics:

- Starting Photo Station 287
- Familiarizing yourself with Photo Station 288
- Using Photo Station 294
- Media Library and Privacy Settings 302

Starting Photo Station

Depending on your NAS model, Photo Station may be enabled by default and can be launched from the Desktop or the Main Menu. If not, install and enable it in the App Center (for QTS 4.1 or later versions only) and follow these steps:

1. Import photos and videos to a shared folder on the NAS. There are three ways to upload photos and videos to the NAS: 1) Install Qfinder Pro on your PC or Mac, set up a network drive and upload files to your preferred shared folders. For details on setting up a network drive, check the Connecting to NAS Shared Folders 25 chapter; 2) Click "Shared Photos" or "Private Collection" in the left panel in Manage mode and click "Import" on the main menu to import photos or videos from the local PC. A new shared folder named with the date that files are uploaded will be created on the NAS to store your uploaded files (for "Shared Photos", this newly-created shared folder is located under the "Multimedia" folder; for "Private Collection", this shared folder is located under the "/home" folder.) A corresponding album will be created under "Album" as well; and 3) Switch to the folder view browsing mode and drag & drop photos and videos to a preferred folder. Note that when using the first and third approach, you can choose the NAS folder to upload photos and videos into.

The Photo Station supports the following file formats:

Image	BMP, JPG, JPE, PNG, TGA, GIF, and more.
Video	API, MP4, and more.

Tips on file upload:

- The maximum size of an image file is 2GB.
- The maximum size of multiple files that can be uploaded at a time is 2GB.

2. Launch Photo Station from the Main Menu/Desktop shortcut, or directly log into Photo Station by going to: http://NAS_Name_or_IP/photo/

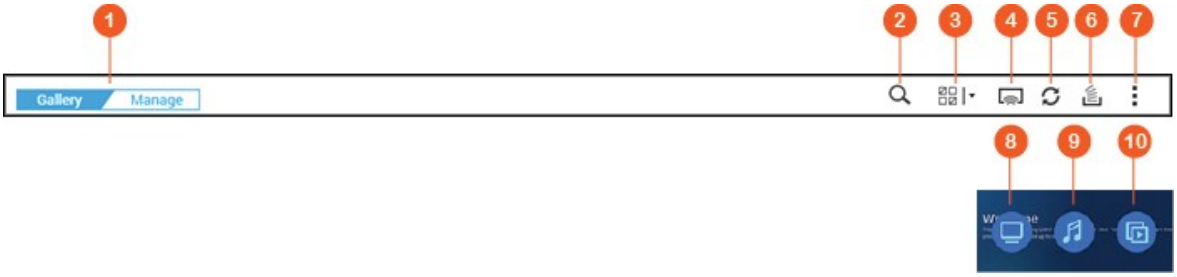
Note: The admin login credentials of Photo Station is the same as that of the NAS administrator.

Familiarizing yourself with Photo Station

In Photo Station, there are two modes that you can use: Gallery mode and Manage mode. Gallery mode is designed for a greater viewing experience, while Manage mode is provided for easier photo and video management.

Gallery Mode

Menu Bar



No	Name	Description
1	Gallery/ Manage	Switch between Gallery mode and Manage mode.
2	Advanced Search Bar	Search for photos and videos by title, date taken, file size, resolution, camera brand, color label, rating, description or tag.
3	Multi-Select	Select multiple items at the same time.
4	Network Media Player	Locate compatible devices in different rooms over your home network.
5	Refresh	Refresh the current page.
6	Background Task	Show Photo Station tasks (such as uploading photos/videos to your NAS or Picasa, Flickr, Weibo, or YouTube) that are currently running in the background.
7	Settings	Launch Quick Start and show the Photo Station online help.
8	Display	Switch between thumbnail and wallpaper display styles and configure display settings (including the gallery view, source, content filter, or sort) by moving your mouse over the button and click "Display Settings". Refer to the Viewing photos and videos 298 section for more details.
9	Music	Play/Pause background music. You can also choose the music source ("Now Playing" list in Music Station or system default) by moving your mouse over the button and clicking "Music Settings".

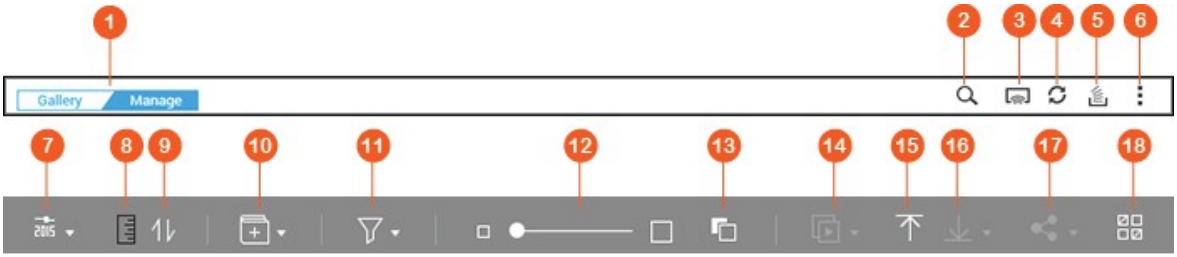
10	Slideshow	Play all of the photos in an album as a slideshow. You can also configure slideshow settings (including the speed, effect and music) by moving your mouse over the button and clicking "Slideshow Settings".

Note:

- To stream media files to HDMI or Chromecast using the Network Media Player, the Media Streaming Add-On must first be installed in the App Center.
- Bonjour must be enabled when using multi-zone streaming. You can enable Bonjour in "Control Panel" > "Network Service" > "Service Discovery" > "Bonjour".
- Only MP4 video files can be directly streamed if your NAS does not support On-the-fly Transcoding. You can consider transcoding them into different media formats if they are desirable. For details on transcoding, please refer to the Transcode Management 197 chapter.
- If your NAS supports transcoding, please install the CodexPack App before using this function. The NAS will try to transcode to a suitable format for your device. If your NAS does not support transcoding, the NAS will only output the original file format and the seek function may not work properly. In this case, please make sure that your device is compatible with the file format used by the video.
- Some video formats may experience issues when streaming via DLNA, Apple TV or Chromecast. If any of these issues arise during video playback, you can consider transcoding your videos into universally-compatible media formats. For more details on transcoding, please refer to the Transcode Management 197 chapter.
- Some media players do not support pausing during playback. If this happens, playback will continue even if you use the pause feature.

Manage Mode

Menu Bar



No	Name	Description
1	Gallery/ Manage	Switch between Gallery mode or Manage mode.
2	Advanced Search Bar	Search for photos and videos by title, date taken, file size, resolution, camera brand, color label, rating, description or tag.
3	Network Media Player	Locate compatible devices in different rooms over your home network.
4	Refresh	Refresh the current page.
5	Background Task	Show, pause, or cancel Photo Station tasks (such as uploading photos or videos to your NAS or Picasa, Flickr, Weibo, or YouTube) that are currently running in the background.
6	Settings	Configure Photo Station settings, launch the Quick Start, or show the Photo Station online help. There are four settings: • Content Filter: Select shared folders as the content source of the Photo Station. To add new shared folders as the content source, go to "Multimedia Management 195 ". • Social Network Binding: bind with social networks for your friends to log into the Photo Station and browse shared albums. • Backup/Restore: Export or import a configuration file of all albums and smart albums for their configuration backup and restoration. • Miscellaneous: ○ Always ask me to enter my password when accessing Private Collection: Photo Station will prompt users for a password every time they try to access the Private Collection. ○ Select a shared folder as the default folder to store photos uploaded to Shared Photos: Set a default shared folder to store uploaded photos.

		○ Automatically create matching album: An album with the same name you specified in the file upload process will be automatically created under "Album" on the left panel after you upload photos. If this is disabled, only the physical folder will be created under your designated upload shared folder. ○ Always start in Manage mode: Check this option to always start Photo Station in Manage mode. ○ Display Settings: Set the aspect ratio for video and image thumbnails.
7	Browsing Mode	Switch between different browsing modes (thumbnail browsing mode, list browsing mode, timeline browsing mode, and folder browsing mode) to browse photos and videos.
8	Timeline	Show/Hide the timeline.
9	Sort	Sort items chronologically in an ascending or descending order.
10	Add Album	Create an album or smart album.
11	Photo/Video Filter	Display either photos or videos, or both.
12	Zoom in/ Zoom out	Zoom in to enlarge the thumbnail size or zoom out to reduce the thumbnail size.
13	Background Color	Switch between a white and black background color.
14	Slideshow	Play selected items as a slideshow and click the down arrow to choose the slideshow speed, effect and background music.
15	Import	Import videos or photos.
16	Download	Download the selected photo or video. You can also select the resolution of the photo to download (if it is a video, then the resolution chosen is for its thumbnail.)

17	Share	Choose to share the selected items via email, on social networks, or via link. This will bring up Sharing Cart. For details on Sharing Cart, refer to the Sharing photos, videos, albums, or smart albums 295 section in this chapter.
18	Multi-Select	Select multiple items at the same time.

Note:

- To stream media files to HDMI or Chromecast using the Network Media Player, the Media Streaming Add-On must first be installed in the App Center.
- Bonjour must be enabled when using multi-zone streaming. You can enable Bonjour in "Control Panel" > "Network Service" > "Service Discovery" > "Bonjour".
- Only MP4 video files can be directly streamed if your NAS does not support On-the-fly Transcoding. You can consider transcoding them into different media formats if they are desirable. For details on transcoding, please refer to the Transcode Management 197 chapter.

Left Panel

- Shared Photos: List all photos and videos chronologically by their thumbnails (except photos and videos in the "/home" and "Qsync" folders) and all photos and videos are only visible to authorized users.
- Folder: Show the folders, photo and video files contained in a folder on the NAS (except photos and videos in the "/home" and "Qsync" folders) and all photos and videos are only visible to authorized users.
- Private Collection: List all photos and videos located in the "/home" folder, and those multimedia files can be only viewed by yourself.
- Qsync: List photos and videos synchronized from the Qsync service.
- Album: List all virtual albums. Note that all entries listed under an album are only links to files. This can effectively conserve your NAS storage space, as you can keep only one copy of the photos even if you create an album for a special theme. You can also right click on "Album" (the category header) to expand/collapse the album list or add an album. For album operations, please refer to the section on Creating and managing albums 294 below.

- Smart Album: List all smart albums. Smart albums will only show photos or videos that match specific conditions chosen by users, such as today in history, random, tag and all files and can save you effort in managing photos. You can also right click on "Smart Album" (the category header) to expand/collapse the smart album list or add an album. For instructions on smart album operations, please refer to the Creating and managing smart albums 295 section.
- Shared Center: Show the photo and video sharing history. You can check the name, link, expiration date and summary of each record and choose to re-share the shared items. You can also right click on "Shared Center" (the category header) to expand / collapse the album list.
- Faces: List albums containing photos with face tags. Please refer to the Adding face tags to photos 302 section for more details.
- Recently: Include recently-imported (within two months) photos and videos from local device or taken (within two months) with a camera or recording device.
- Trash Can: All deleted photos and videos can be found here and can be restored or permanently deleted. Only deleted files (and not virtual links) will show up in the trash can.

Note:

- The "/home" folder can only be accessed by its owner and NAS administrators. Private or personal videos should only be stored in your "/home" folder.
- For media folder configuration, refer to the Multimedia Management 195 chapter. For user setup and configuration, refer to the User 138 section in the Privilege Settings chapter.
- If uploaded photos or videos do not show up in Photo Station, scan for them using the Media Library. For details on the scan, please refer to the Multimedia Management 195 chapter.

Using Photo Station

Creating and managing albums

There are two ways to create an album:

1. Switch to the folder view in Manage mode, right click on a folder, and select "Create New Album" to turn that folder into an album.
2. Drag & drop photos or videos in "Album" on the left panel.

3. Right click on "Album" on the left panel > "Add Album" and specify to share the album with NAS users or with the public (if an album is shared with the public, photos in that album will be shown on the QTS login screen.)

To manage albums, right click on an album and choose to download, remove, rename, share, stream, play as a slideshow, open, or configure its settings.

Creating and managing smart albums

Similar to an album, there are three ways to create smart albums:

1. Switch to the folder view in Manage mode, right click on a folder and you will see two smart album options: "Create a Smart Album" and "Convert subfolder to Smart Album". Select "Create a Smart Album" to turn that folder into a collective smart album. Select "Convert subfolder to Smart Album" and all the subfolders within that selected folder will become individual smart albums under "Smart Album" on the left panel.
2. Drag & drop photos or videos in "Smart Album" on the left panel.
3. Right click "Smart Album" on the left panel > "Add Album" and choose the sharing options, file type, source path, and search criteria > Click "Create".

To manage smart albums, right click on an album under "Smart Album" in the left panel and choose to download, remove, rename, share, stream, play as a slideshow, open, or configure its settings.

Sharing photos, videos, albums, or smart albums

You can share photos, videos, albums, or smart albums with your friends via email, social networks, or sharing links using Sharing Cart or configure sharing settings when you create an album or smart album.

Sharing Cart

Sharing Cart allows you to conveniently collect photos and videos stored in different albums or folders before sharing them. After you collect items using Sharing Cart, choose one of these methods to share them:

- Email: Complete required fields (including sender email, recipient emails, password, valid period, subject and message (in "More settings") and click "Create".
  Note: To share files/folders using your own email account, please first set your email account in QTS Desktop > "Options" > "E-mail Account".

- Social network: Complete required fields (including shared way, social network, message, domain name), choose to use SSL, set the password and valid period and click "Create".
- Sharing link: Choose the link format and whether to create a secure link using SSL, set the password and valid period and click "Create".

Note that for album or smart album, all the photos/videos within that album will be loaded to Sharing Cart, while for a photo or video, only that item is loaded.

For sharing with your friends on Facebook, you can bind your Facebook account with Photo Station. After the account is successfully bound, your Facebook friends can log into Photo Station (http://NAS_Name or IP/photo/) with their account to browse photos from shared albums.

Configuring sharing settings

As you create an album, you can choose to share it with other NAS users (choose whether all NAS users can edit the album, or only the album creator/administrator can edit the album) or the public (show this album on the QTS login page - please note that this option is only available for administrators) or not to share at all (leave both options unchecked), and set the valid period on the album creation page.

Checking sharing history

To check the sharing history, click "Shared Center" on the left panel in Manage mode. You can review the details of a record or re-share the shared items.

Note:

- As a Photo Station administrator, you can also share a public album on the NAS login screen (the photo wall style login screen can be set in "Control Panel" > "General Settings" > "Login Screen".)
- If an album is set to share with the public, users can click the photo wall on the login page to check the album.
- An exclamation mark will appear on the album thumbnail if the sharing period of that album has expired.

Photo and Video Operations

After right clicking on a photo or video in Manage mode, a menu will show up, and users can choose to perform a desired action from the list.

Operation	Description
Rotation(counter-clockwise rotation icon)	Rotate the photo 90 degrees counter-clockwise (photos only.)
View(eye icon)	Launch the media viewer to view the photo (photos only.) Refer to the Viewing photos and videos 298 section for more details.
Information (i)	Display file details, properties and a description of the photo (photos only.)
View	Launch the media viewer to view the photo (photos only.) Refer to the Viewing photos and videos 298 section for more details.
Rotation(clockwise rotation icon)	Rotate the photo 90 degrees clockwise (photos only.)
View/Play	Launch Media Viewer and play the selected item.
Open in new browser tab	Play the video or photo in a browser window.
Open with VLC	Play the video in a browser window (videos only; the VLC plug-in must be installed.)
Streaming to (Network Media Player)	Stream videos to compatible devices in different rooms over your home network.
Share	Share the photo or video on social networks, via email or link.
Download	Download the photo or video. For photos, there are four sizes: small, medium, large and original; for videos, you can choose to download the video file (please choose "Original") or video thumbnail (please choose "small", "medium", or "large".)
Add to Album	Copy the photo and video to an existing album or create a new album and then copy the item to that new album.

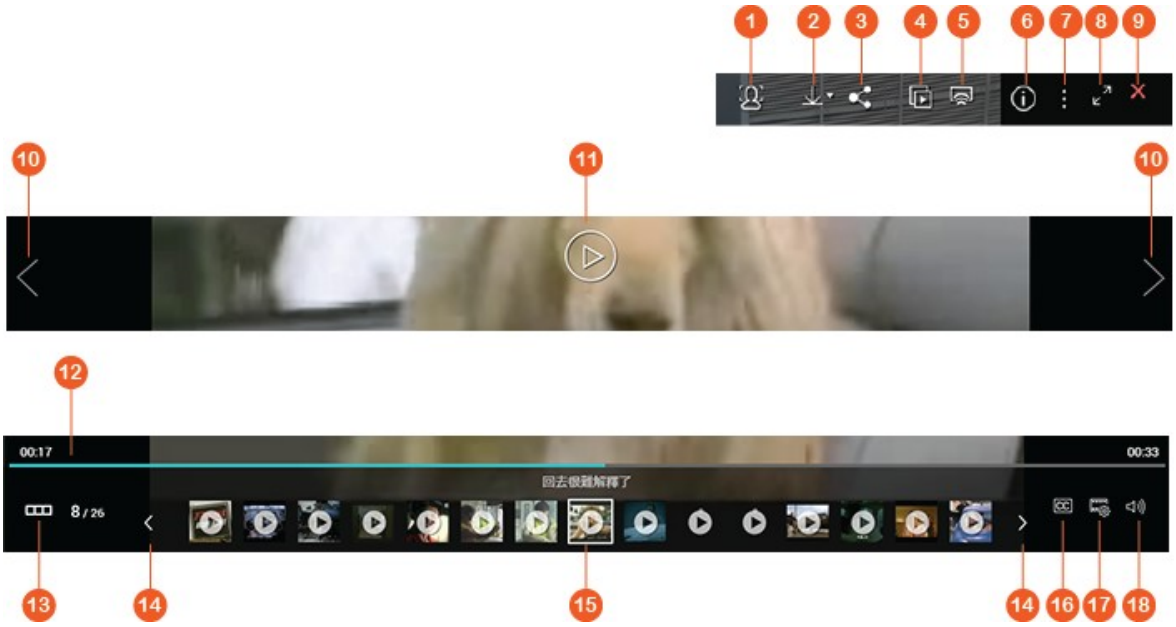
Add to Transcode	Convert the video to the following resolutions: 240P, 360P, 480P SD, 720P HD and 1080P Full HD (videos only.)
Edit	Edit the photo online using Pixlr Editor or Pixlr Express (photos only.)
Rebuild thumbnail	Rebuild thumbnail for selected photos or videos.
Delete	Delete photos or videos.
Information	Display file details, property and description of the photo/video.
Set Coordinates	Set GPS information of a photo (photos only.)
Add Tag	Add a tag to photos or videos.
Rating	Rate photos or videos.
Color Label	Color-label photos or videos.

Finding your photos and videos quickly

You can rate or classify photos/videos to quickly locate them. To do so, right click on a photo or video and then tag, rate or color label them. To batch mark or classify multiple photos or videos, first click the "Multi-select" button on the main menu (or hold the Ctrl key), select your desired photos or videos and right click the photos or videos to perform desired actions. After photos or videos are tagged, rated, or color labeled, they can be searched by their rating, color label or tag in the search bar.

Viewing photos and videos

In Gallery mode, double click on a photo or video or click the "Display" button in the thumbnail display style to launch the Media Viewer for viewing operations.



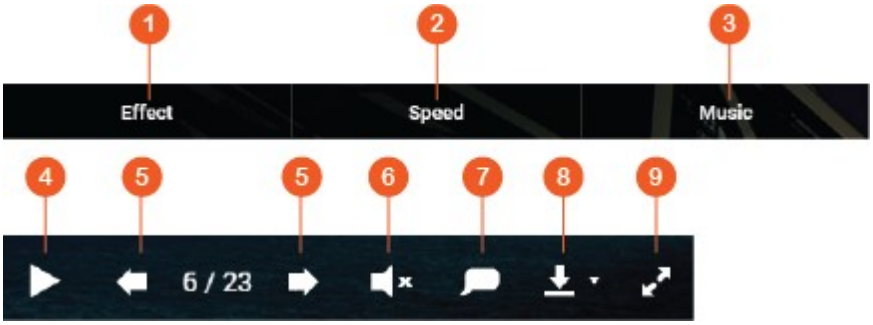
No	Name	Description
1	Face Detection	Enable Face Detection to show tagged faces. You can also manually add a face tag. Please refer to the Adding face tags to photos 302 section for more details.
2	Download	Download the photo or video. For photos, there are four sizes: small, medium, large and original; for videos, you can choose to download the video file (please choose "Original") or video thumbnail (please choose "small", "medium", or "large".)
3	Share	Share the photo or video image on social networks, via email or link.
4	Slideshow	Play the photos/videos in this album as a slideshow in full screen mode. Check the Playing photos and videos as slideshow 300 section for more details.
5	Network Media Player	Stream videos to compatible devices in different rooms over your home network.
6	Information	Display file details, property and description of the photo/video.

7	Miscellaneous Settings	Set the currently displayed photo/video image as QTS wallpaper.
8	Full Screen	View the photo or play the video in the full screen mode.
9	Return to Photo Station	Close the photo/video viewer and return to Photo Station.
10	Last Item/Next Item	Play the last/next item.
11	Play/Pause	Play the photo/video as slideshow.
12	Seek Bar	Control the playback progress.
13	Hide/Show Preview Bar	Hide/show the Preview Bar.
14	Rewind/Forward	Rewind/Forward the Preview Bar.
15	Preview Bar	Preview the photos and choose which photos or videos to preview next.
16	CC (available when the item opened is a video)	Display and adjust subtitles.
17	Resolution (available when the item opened is a video)	• Switch the resolution for the played video (Only available if your NAS model supports On-the-fly transcoding.) • Watch the video in another browser page or with VLC.
18	Volume (available when the item opened is a video)	Adjust the player volume.

Playing photos and videos as slideshow

A slideshow is a collection of photos that are played in a sequential fashion at an interval in full screen mode for your photo enjoyment. To play photos or video images as slideshow, click the "Slideshow" button in Gallery mode to switch the viewing mode.

Use the buttons on the menu bar for slideshow or album operations.



No	Name	Description
1	Effect	Set a different slide transition effect.
2	Speed	Set the slide speed.
3	Music	Switch between different playlists defined in the Music Station (from the "Playlist", personal playlist and shared playlist on the left panel.) Please refer to the chapter on Music Station 304 for more details.
4	Play/Pause	Play/Pause the slideshow.
5	Last/Next Slide	Go to the last/next slide.
6	Background Music	Turn the background music on or off.
7	Title	Show the photo title.
8	Download	Choose to download the current photo or every photo in the slideshow in large or original image size.
9	Full Screen	Switch between full screen and windowed modes.

Geotagging photos and photo map

To geotag a photo, right click on a photo and select "Set Coordinates" to set its coordinates (you can either type the coordinates or the location in the search box in the "View Map" dialog window.) Click "Save" after you finish the setting. To view photos on a map, click on the photos > "Information", and then click the red pin next to "Coordinates". This feature is only available for photos with GPS coordinates. For photos with no GPS coordinates, please follow the above steps to set their GPS coordinates.

Adding face tags to photos

1. Set face detection folders in Photo Station > "Manage Mode" > "Settings" > "Face Detection".
2. Open a photo in the Media Viewer and enable Face Detection.
3. Add face tags to the photo, or manually change the face area.

To view photos with face tags, switch to Manage mode and click "Faces" on the left panel.

Browsing PDF files

You can also browse PDF files as photos using Photo Station. To use this feature, right click on a PDF file to create a new album. After clicking on that album, you will see all the pages of the PDF file displayed as individual photos.

Note:

- Before using the Face Detection and PDF browsing features, the Photo Station Extension App must first be installed in the App Center. Face Detection is only available on x86-based NAS models while the PDF browsing feature is available on both x86 and ARM based NAS models.
- As the face detection function can affect system performance, avoid using it during peak NAS usage periods.

Media Library and Privacy Settings

Photo and video files in Photo Station are listed and displayed according to shared folder privileges and media folders settings in the Media Library[195]. For shared folder privileges, only users with an appropriate permission to a shared folder can view its contents in the Photo Station. For example, if a user does not have read/write, or read-only permissions to a certain shared folder, that user cannot see the photos and videos in the shared folder.

Note:

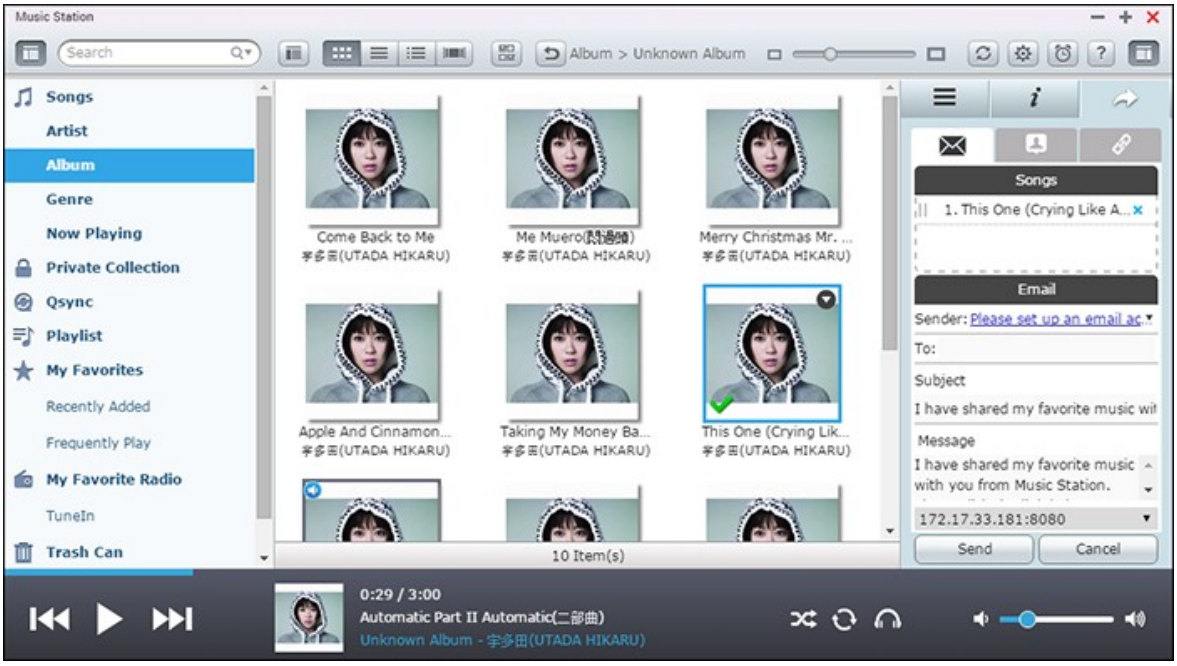
- For x86-based NAS models, all shared folders except "/recording" and "/web" are media folders by default. For ARM-based NAS models, only "/multimedia" and "/homes" are media folders by default. However, users can always add more media folders.
- In addition to shared folder privileges, you can also store private videos in your "/home" shared folder to hide them from other NAS users (except the administrator.) The contents of the "/home" folder can be found under "Private Collection". Anyone attempting to access this folder in Photo Station will be prompted for a password.
- To create a shared folder, go to "Control Panel" > "Privilege Settings" > "Shared Folders".

Photos and videos stored in the shared folders are only visible after they are detected and scanned by the Media Library. To set the Media Library to scan for photos and videos manually or by schedule go to "Control Panel" > "Multimedia Management" > "Media Library". For more details on media folder settings, please refer to the chapter on Multimedia Management.

Note: As the media folders in the Media Library are shared by Photo Station, Music Station, Video Station and DLNA Media Server as their content source, content will be affected in those applications if new media folders are added or existing media folders are removed from the Media Library.

8.6 Music Station

Music Station (4.0) helps you create a personal music center on the cloud. This web-based application is designed for users to play music files on the NAS or a media server, listen to thousands of Internet radio stations, and share your music with your friends and families. Your music collection stored on the NAS is automatically organized into categories for easy access.



This chapter covers the following topics:

- Starting Music Station 304
- Familiarizing yourself with Music Station 305
- Using Music Station 309
- Media Library and Privacy Settings 311

Starting Music Station

Depending on your NAS model, Music Station may be enabled by default and can be launched from the Desktop or the Main Menu. If not, install and enable it in the App Center (for QTS 4.1 or later versions only) and follow these steps:

1. Upload music files to a shared folder on the NAS. There are three ways to upload music files to the NAS: 1) Install Qfinder Pro on your PC or Mac, set up a network drive and upload files to your preferred shared folders. For details on setting up a network drive, please check the Connecting to NAS Shared Folders 25 chapter; 2) Click "Songs" or "Private Collection" on the left panel and click (up arrow icon) or Click (up arrow icon) to import music files from a local PC. A new shared folder

named with the date that files are uploaded will be created on the NAS to store uploaded files (for "Songs", this newly created shared folder is located under the "Multimedia" folder; for "Private Collection", this shared folder is located under the "/home" folder.) The newly uploaded music files can be found under "Recently Added" on the left panel; 3) Switch to the folder view browsing mode and drag & drop music files to a preferred folder. Note that with the first and third method, you can choose what NAS folder that you want to upload music files to.

Note:

- The admin login credentials of Music Station are the same as that of the NAS administrator.
- If it is the first time using Music Station, it is recommended to upload or copy music files to media folders and scan them using the Multimedia Management. For details on media folders, please refer to the Multimedia Management 195 chapter.

2. Launch Music Station from the Main Menu/Desktop shortcut, or directly log into Music Station by going to: http://NAS_Name_or_IP/musicstation/

Familiarizing yourself with Music Station

Menu Bar



No	Name	Description
1	Left Panel	Show/Hide the left panel.
2	Search Bar	Search songs by artist, album, title, or all songs.
3	Browsing Mode	Switch between different browsing modes (from left to right: thumbnail browsing mode/detail browsing mode/ album list browsing mode/cover flow browsing mode/folder browsing mode) to browse music files.
4	Multi-Select	Select multiple items at the same time.

5	Resizing Bar	Drag to adjust the size of the thumbnails.
6	Refresh	Refresh the current page.
7	Settings	Set user privileges on file access, NAS audio output, Internet radio, or editing song information.
8	Music Alarm	Set music alarms.
9	Help	Show Help, Quick Start and About.
10	Right Panel	Show/Hide the left panel.

Player



No	Name	Description
1	Seek Bar	Control the playback progress.
2	Previous Item	Play the previous item.
3	Play/Pause	Play/Pause.
4	Next Item	Play the next item.
5	Shuffle	Shuffle on/off.
6	Repeat	No repeat, repeat once, or repeat all.
7	Streaming Mode (Network Media Player) / USB Audio Passthrough	Stream videos to compatible devices in different rooms over your home network. To set USB Passthrough, first select an USB audio device under "NAS Audio Output" after you click this button (it will turn into a speaker icon.) Click the icon again to enable Audio Passthrough and set the sample rate.
8	Volume	Adjust the volume.

Note:

- To stream media files to HDMI or Chromecast using the Network Media Player, the Media Streaming Add-On must first be installed in the App Center.
- Bonjour must be enabled when using multi-zone streaming. You can enable Bonjour in "Control Panel" > "Network Service" > "Service Discovery" > "Bonjour".

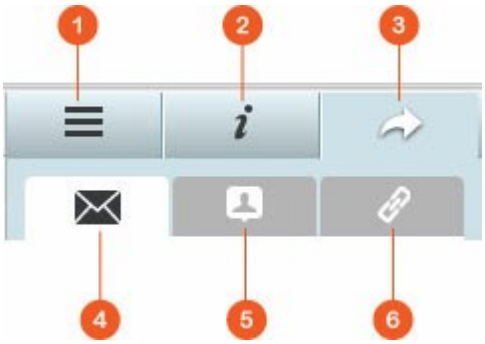
Left Panel

- Songs, Artist, Album, and Genre: All authorized music files are listed here for users by the following categories: all songs, artist, album, genre and folder. Click the upload button next to Songs to upload songs from your PC or change an album cover (refer to the Changing covers 310 section for details.) All imported contents are saved in the "/Multimedia" shared folder named with date.
- Now Playing: Songs in the "Now Playing" list can be reordered by drag & drop, and songs can be removed from the list.
- Private Collection: Personal music files in the "/home" folder are listed here. These music files belong to the user that is currently logged in.
- Qsync: List music files synchronized from the Qsync service.
- Playlist: Playlists can be created, managed, and deleted here. Up to 200 playlists can be created, and up to 600 items can be included in each playlist. To create a playlist, click "+" next to "Playlist". To add items to a playlist, simply drag & drop music files to the list. Right click on a playlist to rename or delete it, or add it to "Now Playing".
- My Favorites: All songs rated at least 1 star are listed here. All un-starred songs will be removed from here. To rate a song, switch to the detail, album list, or cover browsing mode and click the star(s) under "Rating".
- Recently Added: Songs recently added to the Media Library are listed here.
- Frequently Played: Songs most frequently played are listed here.
- My Favorite Radio: The user's favorite Internet radio stations can be added by entering the radio URL or by searching TuneIn Radio. Up to 1024 stations are supported. Please note that the type of files the radio station URL points to must be MP3.
- TuneIn: Users can browse and play Internet radio stations streamed by TuneIn.
- Trash Can: All deleted music files can be found in here and permanently deleted or restored. The Trash Can is always enabled.

Note:

- Characters not allowed for "Playlists" include: / | \ : ? < > * " ' and $.
- Entries under "Recently Added" are listed based on the time they are scanned by the Media Library.
- Music Station only supports: MP3, FLAC, OGG, WAV, AIF, AIFF, and more.

Right Panel



No	Name	Descriptions
1	Lyrics	Add lyrics to a song and browse them here.
2	Information	Edit and browse music details here.
3	Sharing	Drag music files to the area under "Songs" to share them via a link (including three methods: email, social sharing and link.)
4	Email	Share the link via email. Specify the subject and message body of the message and click "Send" to send the email. Make sure your email account is properly configured. Go to "Control Panel" > "System Settings" > "Notification" > "SMTP Server" for email configuration.
5	Social Sharing	Share a link with selected songs on social networks. Specify the subject and message body and click the social networking site to share with.
6	Link	Share a link by directly pasting it into an email or instant message. Under the "Link Code", select the domain name, LAN IP or WAN IP address for the link (Note that the myQNPcloud. com domain name is only available after it is registered in myQNAPcloud. Please refer to the myQNAPcloud chapter for more details) from the drop down menu. Click "Save", and copy

		and paste the URL link in the dialog window to your preferred applications.

Using Music Station

Import music files

Please refer to the Starting Music Station section.

Creating and managing playlists

To create a playlist, drag & drop music files in "Playlist" on the left panel, give that playlist a name and click "OK". Right click on a playlist and choose to add it to "Now Playing" on the left panel, email the link of it, publish it, share it with a link, delete it, rename it, or modify the settings of that playlist (the email, publish, and share options are only available if "Share with the public" is enabled in "Playlist Settings".)

Sharing playlists

As you create a playlist, you can choose to share it with other NAS users (choose whether all NAS users can edit the playlist, or only the album creator/administrator can edit the playlist) the public, or not to share at all (leave both options unchecked), and set the valid period on the playlist creation page. If a playlist is set to share with the public, you can right click on it and select "Email" to email it, "Publish" to publish it to social networks, or "Link Code" to generate and paste the playlist link on your blog, forum, or instant messenger programs. You can still edit the playlist later, and the updated playlist will be presented when viewers click the same link again.

You can also share a list of songs as you do with the playlist. To do so, click "Sharing" on the right panel, drag & drop songs under "Songs" on the right panel from the middle and use the "Email", "Social Sharing", or "Link" button to share this list of songs. Note that the difference between sharing a playlist and a list of songs is that for a playlist, it is the entire playlist that you created under "Playlist" on the left panel. For a list of songs, it is a list of songs you have chosen from different albums.

Note:

- To stream media files to HDMI or Chromecast using the Network Media Player, the Media Streaming Add-On must first be installed in the App Center.
- Bonjour must be enabled when using multi-zone streaming. You can enable Bonjour in "Control Panel" > "Network Service" > "Service Discovery" > "Bonjour".

Multi-zone control and streaming

Music Station works with your NAS Audio output (USB speaker, Soundcard, HDMI), Bluetooth, and Network Media Players (DLNA, Chromecast, AirPlay) making it easy to stream music to many types of devices. It can stream different music to all the supported devices in your home, or the same music in sync at the same time. You can change the output device by using the "streaming mode" button (ear piece icon) on the player panel, and then by double clicking a song to start playing it on that device. You can add more songs to the Now Playing list to play your desired songs on that device.

Note:

- To stream media files to HDMI or Chromecast, the Multimedia Extension Pack must first be installed in the App Center.
- Please check the QNAP website for supported USB speakers.
- Some models with 3.5mm audio output may not support USB audio output.
- Radio stations only support playing under streaming mode and Bluetooth.

Changing covers

Album covers can be automatically found for your music, allowing you to organize your music better. If an appropriate cover cannot be found, you can also import your own image to use as the album cover. To change album covers, follow these steps:

1. Switch to "Artist" or "Album" on the left panel in Music Station.
2. Right click the song you would like to change the cover > "Change cover".
3. Click "Upload" to upload an image file from your PC or "Search" to find an image from the Internet.

Finding your music files quickly

To quickly locate your music files, you can rate or classify them:

- To rate a music file, find it in the detail browsing mode/album list browsing mode/ cover flow browsing mode and rate it.
- To classify a music file, click the music file and "Info" on the right panel to modify its data.
- To batch rate or modify music files, click the multi-select button on the Main Menu (or hold the Ctrl key), select your desired music files and rate and modify all at once.

After music files are rated or classified, they can be searched by their artist, album, or

title in the search bar or quickly listed in "My Favorites" on the left panel.

Media Library and Privacy Settings

Music files in Music Station are listed and displayed according to shared folder privileges (media folders) and settings in the Media Library. For shared folder privileges, only users with an appropriate permission to a shared folder can view its contents in the Music Station. For example, if a user does not have read/write, or read-only permissions to a certain shared folder, that user cannot see the music files in the shared folder.

Note:

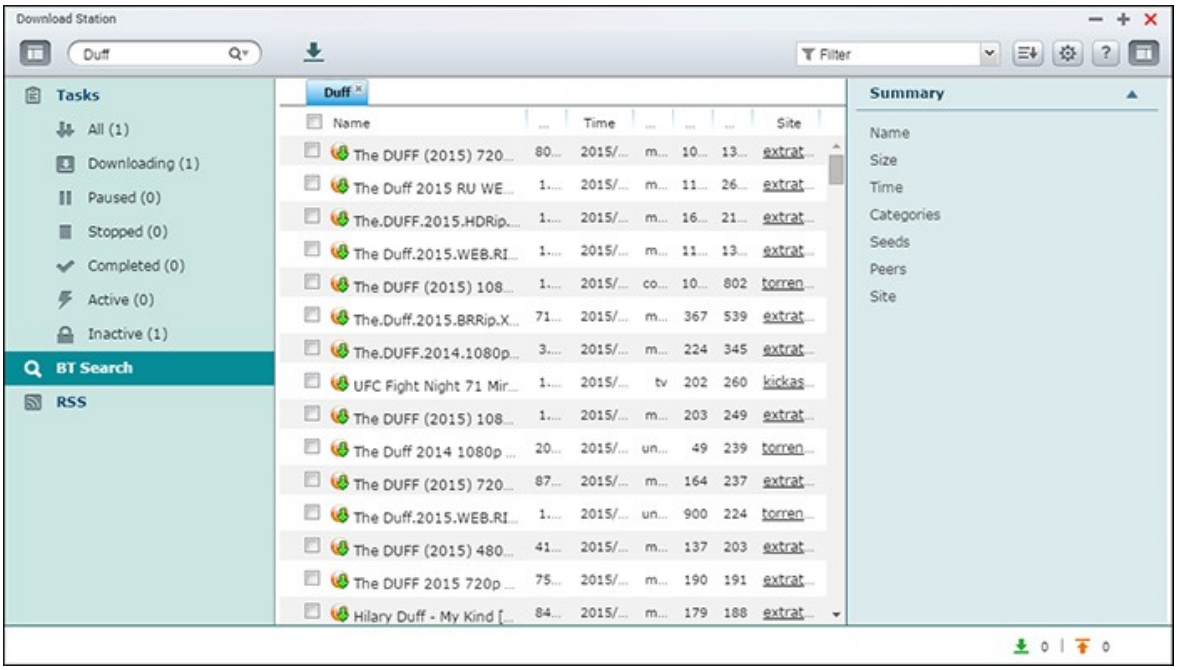
- Besides shared folder privileges, you can also import your private music files to your "/home" shared folder to hide them from other NAS users (except the NAS administrator.) Your "/home" folder contents can be found under "Private Collection".
- To create a shared folder, go to "Control Panel" > "Privilege Settings" > "Shared Folders".

Music files stored in the shared folders are only visible after they are detected and scanned by the Media Library. To set the Media Library to scan for music files manually or by schedule go to "Control Panel" > "Multimedia Management" > "Media Library". For more details on media folder settings, please refer to the chapter on Multimedia Management.

Note: As the media folders in the Media Library are shared by Photo Station, Music Station, Video Station and DLNA Media Server as their content source, content will be affected in those applications if new media folders are added or existing media folders are removed from the Media Library.

8.7 Download Station

Download Station is a web-based download tool that allows you to download files from the Internet through BT, PT, Magnet Link, HTTP/HTTPS, FTP/FTPS, Xunlei, FlashGet, qqdl as well as Baidu Cloud downloads and subscribe to RSS feeds. With the BT Search function, you can easily find BT seeds to download and make your NAS as 24/7 download center.



This chapter covers the following topics:

- Starting Download Station 313
- Familiarizing yourself with Download Station 313
- Download Station Settings 314
- Using Download Station 316

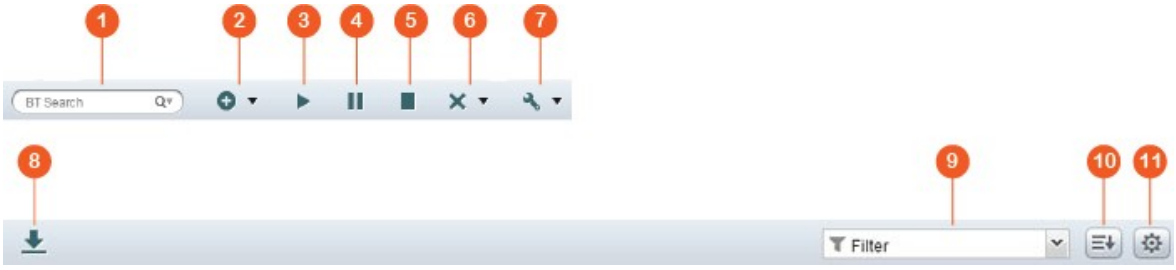
Important: **The Download Station is provided for downloading authorized files only.** Downloading or distributing unauthorized materials is against the law and may result in severe civil and criminal penalties. Users should be aware that they are subject to copyright restrictions and they will be held responsible for the consequences of their actions.
Note: For PT download, the supported client applications vary based on the PT sites. If the Download Station (libtorrent) is not in the client application list recommended by your PT sites, please search for an alternative one in the App Center.

Starting Download Station

Depending on your NAS model, Download Station may be enabled by default and can be launched from the Desktop or the Main Menu. If not, install and enable it in the App Center (for QTS 4.1 or later versions only.) Launch Download Station from the Main Menu/Desktop shortcut, or directly log into Download Station by going to: http://NAS_Name_or_IP/cgi-bin/Qdownload/qdownloadindex.cgi

Familiarizing yourself with Download Station

Menu Bar



No	Name	Description
1	Search Bar	Enter a keyword in the search bar, click the magnifier button to select the search engines and press enter to search for BT seeds. Please note that the BT search feature is only available after you agree to the terms and conditions in "Settings" button on the main menu > "BT" > "BT Search".

2	Add	Add a BT seed by entering the URL or upload a torrent file from the local PC.
3	Start	Start BT tasks.
4	Pause	Pause BT tasks
5	Stop	Stop BT tasks.
6	Remove	Remove BT tasks or remove BT tasks and their data
7	Action	Start all, pause all, or pause all download tasks for a specified time period, remove all completed tasks, remove all completed tasks and delete data.
8	Download	After you select BT seeds from the search result, click this button to download them.
9	Filter	Enter a keyword in the box or click the drop down list to select the categories and filter the searched BT seeds.
10	Sort	Sort tasks by dates that tasks are created or task types.
11	Settings	Configure BT or RSS settings (refer to the Download Station Settings section below.)

Left Panel

- Tasks: List all BT tasks based on their download status (All, Downloading, Paused, Completed, Active and Inactive.) Right click on a task to start it, pause, set priority and remove a BT task (and its data) and edit downloads.
- BT Search: List all BT seeds searched using the BT Search Bar. Right click a searched BT seed to download that seed (create a task), open the link URL, or download the torrent file.
- RSS: List, add, edit, delete or update RSS feeds.

Download Station Settings

Click "Settings" to configure Download Station.

Global Settings

- Download Schedule: Select continuous download or specify the download schedule. When setting the download schedule, select "Full speed" to use the global speed limit (unlimited) for all the download tasks. Select "Limited" to apply the speed limit settings of the downloaded services.
- Notification: Select to send a notification by email when a download task completes (SMTP settings must be configured properly in "System Settings" > "Notification".)
- Search: Agree to enable the BT search function.

HTTP

- Connection: Specify the maximum number of concurrent HTTP downloads.
- Bandwidth Limit: Specify the maximum download rate of HTTP download tasks. 0 means unlimited (the maximum number of concurrent HTTP downloads for x86-based NAS models is 30, and 10 for ARM-based NAS models.)

FTP

- Connection: Specify the maximum number of concurrent FTP downloads.
- Bandwidth Limit: Specify the maximum download rate of FTP download tasks. 0 means unlimited (the maximum number of concurrent FTP downloads for x86-based NAS models is 30, and 10 for ARM-based NAS models.)

BT

- Connection Setting:
  - Specify the ports for BT download. The default port numbers are 6881-6889.
  - Enable UPnP port mapping: Enable automatic port mapping on the UPnP supported gateway.
  - Enable DHT network: To allow the NAS to download the files even no trackers of the torrent can be connected, enable DHT (Distributed Hash Table) network and specify the UDP port number for DHT.
  - Protocol encryption: Enable this option for encrypted data transfer.
- Bandwidth Limit: Specify the maximum download rate of BT download tasks.
  - Global maximum concurrent downloads: Specify the maximum number of concurrent BT downloads (the maximum number of concurrent downloads for x86-based NAS models is 30, and 10 for ARM-based NAS models.)
  - Global maximum upload rate (KB/s): Enter the maximum upload rate for BT download. 0 means unlimited.
  - Global maximum download rate (KB/s): Enter the maximum download rate for BT download. 0 means unlimited.

- Maximum upload rate per torrent (KB/s): Enter the maximum upload rate per torrent. 0 means unlimited.
- Global maximum number of connections: The maximum number of allowed connections to the torrent.
- Maximum number of connected peers per torrent: The maximum number of allowed peers to connect to a torrent.

- Seeding Preferences: Specify the share ratio for seeding a torrent and the sharing time. The share ratio is calculated by dividing the amount of uploaded data by the amount of downloaded data.
- Proxy: specify the proxy server for BT download. Select the proxy type and enter the host IP and port, login username and password for the proxy server. For details on the setup of the proxy server, please refer to its user manual.
- BT Search: Select the BT engines to enable for BT search on the Download Station.

RSS

Update: Enable RSS download and specify the time interval to for the NAS to update the RSS feeds and check if any new contents that match the filters are available.

Add-on

You can enable and disable supported BT sites, torrent search engines and indexers on this page. New BT sites, search engines and indexers can be added as an Add-on to enrich the possibilities of Download Station.

> **Tip:** You can click the following link to download the developer guide for creating Download Station Add-ons: http://download.qnap.com/dev/download-station-addon-developers-guide_v4.pdf

File Hosting Account

You can save the login information for up to 64 HTTP and FTP accounts. To add login information, click "Add Account". Enter the host name or IP, username and password. To allow the login information to appear for account selection when configuring HTTP or FTP download, select "Enabled" next to the newly added account. To edit the settings of an account, select an entry on the list and click "Edit Account". To delete an account, select an entry on the list and click "Delete Account".

Using Download Station

Adding download task(s)

There are three ways to add download tasks:

1. Drag and drop BT/PT files from the local PC to Download Station or click "+" button to add BT/PT files or multiple URLs (HTTP/FTP/Magnet link.)
2. You can search for BT files using the BT search function to add download tasks.
3. In "RSS" on the left panel, you can add RSS feeds. Download Station will load all feeds from RSS for you to download.
4. Designate a location on the NAS for the in-progress files and completed downloads.

Note:

- The maximum number of concurrent downloads for x86-based NAS models is 60 (30 BT/PT and 30 HTTP/FTP) and 20 for ARM-based NAS models (10 BT/PT and 10 HTTP/FTP.)
- Dragging & dropping BT files from PC to Download Station is only supported by Chrome and Firefox.

Adding HTTP, FTP, Magnet download tasks

To add an HTTP, FTP, or Magnet download task, click "Start" on the Menu Bar. Enter the URL of the download task (one entry per line.) Then select the download type: HTTP/FTP, or Magnet Link. Designate a location on the NAS for the in-progress files and completed downloads. If a username and password is required to access the file, select "Use credentials" and select a pre-configured account (Settings > Account List) or enter a username and password. Then click "OK". The NAS will download the files automatically.

Note: You can enter up to 30 entries at one time.

Managing downloads in a BT seed

You can right click on a task and select "Edit Downloads" to only select the files within a BT seed that you want to download.

Limiting the download/upload speed

To limit the bandwidth usage of the Download Station, configure the settings in "Settings" > "HTTP", "FTP", or "BT" > "Bandwidth Limit".

Scheduling downloads

To set download schedules, go to "Settings" > "Global" > "Download Schedule". After enabling the download schedule, select "Full speed", "Turn off", or "Limited" and then click the preferred time slots.

Sending a notification after a download task is complete

Go to "Settings" > "Global"> "Notification" and enable "Email".

Subscribing to and managing RSS feeds

You can subscribe to RSS feeds using the Download Station and download the torrent files in the feeds:

1. Click "+" next to "RSS" on the left panel to add an RSS feed.
2. Enter the URL and the label.
3. To download a torrent file from an RSS feed, select the file and click the down arrow button or right click the feed and select "Download".
4. The NAS will automatically download the file. You can view the download status in the Downloading list.

To manage the RSS subscriptions, right click on an RSS feed label. You can open the RSS Download Manager, add, update, edit, or delete an RSS feed.

Downloading torrent files using RSS Download Manager

You can use the RSS Download Manager to create and manage filters to download particular torrent files for BT Download.

- To add a filter, first launch the RSS Download Manager, select a label and click "Add".
- Enter the filter name and specify keywords to include and exclude.
- Select the RSS feed to apply the filter settings.
- You may also specify the quality of the video torrent files (leave it as "All" if you do not need this function or the torrent file is not a video.)
- Episode number: Select this option to specify particular episodes or a series of episodes. For example, to download episodes 1-26 of season 1 of a TV program, enter 1x1-26. To only download episode 1 of season 1, enter 1x1.
- Select the time interval for automatic update of RSS feeds. The NAS will update the RSS feeds and check if any new contents that match the filters are available.
- Click "Apply" to save the filter or "Cancel" to cancel or exit.
- To delete a filter, select the filter from the list and click "Delete".

Shortening BT seeding time

Go to "Settings" > "BT" > "Bandwidth Limit">"Seeding Preferences".
Change the "Share Ratio" to a smaller percentage or modify "Share Time" to shorten BT seeding time.

Sharing by multiple users

Administrators can grant Download Station access to NAS users, enabling friends and family members to enjoy the convenience brought by Download Station. Follow these steps to grant access to NAS users:

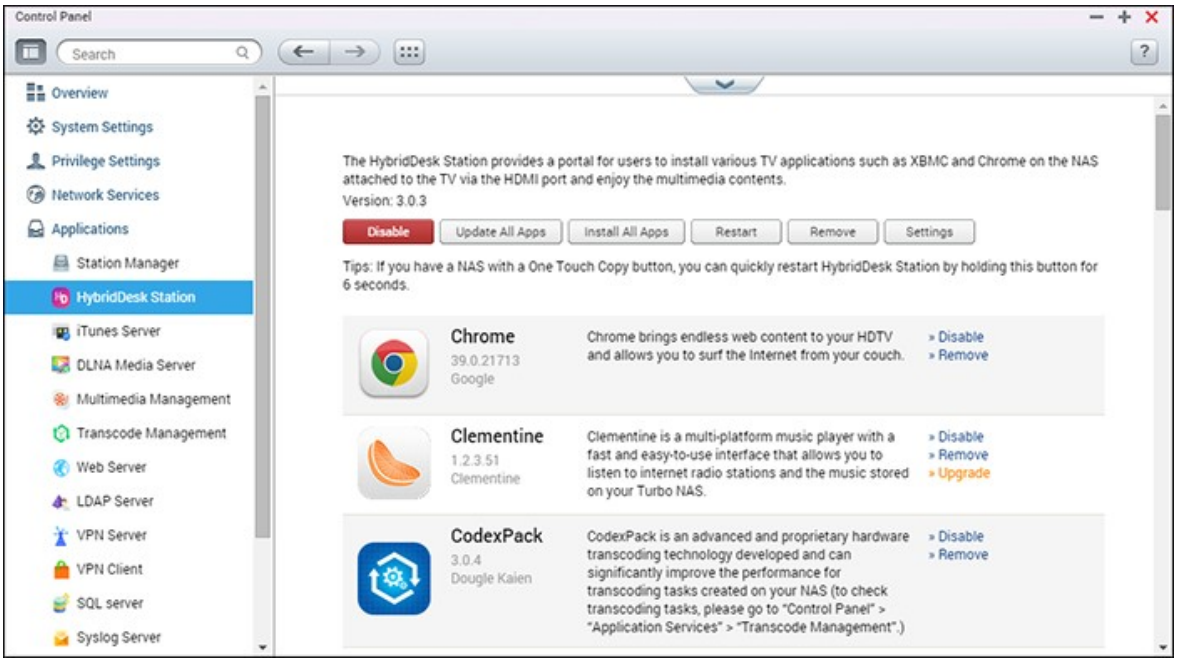
1. Go to "Control Panel" >"Privilege Settings" > "Users"
2. Click the "Edit Application Privilege" button under "Action" for the user
3. Grant permission for Download Station > "Apply".

Tip on slow BT download rates or download errors:

1. The torrent file has expired, the peers have stopped sharing this file, or there is error in the file.
2. The NAS has been configured to use a fixed IP but the DNS server is not configured or it has failed.
3. Set the maximum number of simultaneous downloads as 3-5 for the best download rate.
4. The NAS is located behind a NAT router. The port settings have led to slow BT download rate or no response. You can try the following means to solve the problem:
   a. Manually open the BT port range on NAT router. Forward these ports to the LAN IP of the NAS.
   b. Recent NAS firmware supports UPnP NAT port forwarding. If your NAT router supports UPnP, enable this function on the NAT. Then enable UPnP NAT port forwarding of the NAS. The BT download rate should be enhanced.

8.8 HybridDesk Station

HybridDesk Station is a platform where numerous home and office apps can be installed to enhance your entertainment and productivity needs.



This chapter covers the following topics:

- Setting up HybridDesk Station 320
- Using HybridDesk Station 322
- Importing Media Contents to your NAS 323
- Configuring HybridDesk Station 324
- Remote Control 325

Note: The HybridDesk Station is currently supported by the following models:

- HD Station 2.x: x69 series (x69U is not supported)
- HD Station 3.x: x51, x51+, x53, x53A, x63, x70, x70U, x71, x71U, x79, x79U, x80, x80U, HS-251, HS-251+, IS-400

Setting up HybridDesk Station

Create your lovely media environment by following these steps:

1. **Setting up the environment of the HybridDesk Station: Connect the NAS to the HDMI TV with a HDMI cable**
   - Remote controller: There are 4 different ways to control the HybridDesk Station.
     - QNAP remote controller

- MCE remote controller
- USB keyboard or mouse
- Qremote: QNAP remote app, designed exclusively for the HybridDesk Station.

Note: If you want to use Chrome, you must use the Qremote mouse function or use a USB mouse that is connected to the NAS.

2. Installing the HybridDesk Station

- Go to "Applications" > "HybridDesk Station" and click the "Get Started Now" button. The system will automatically install the HybridDesk Station.

3. Choosing the applications to install

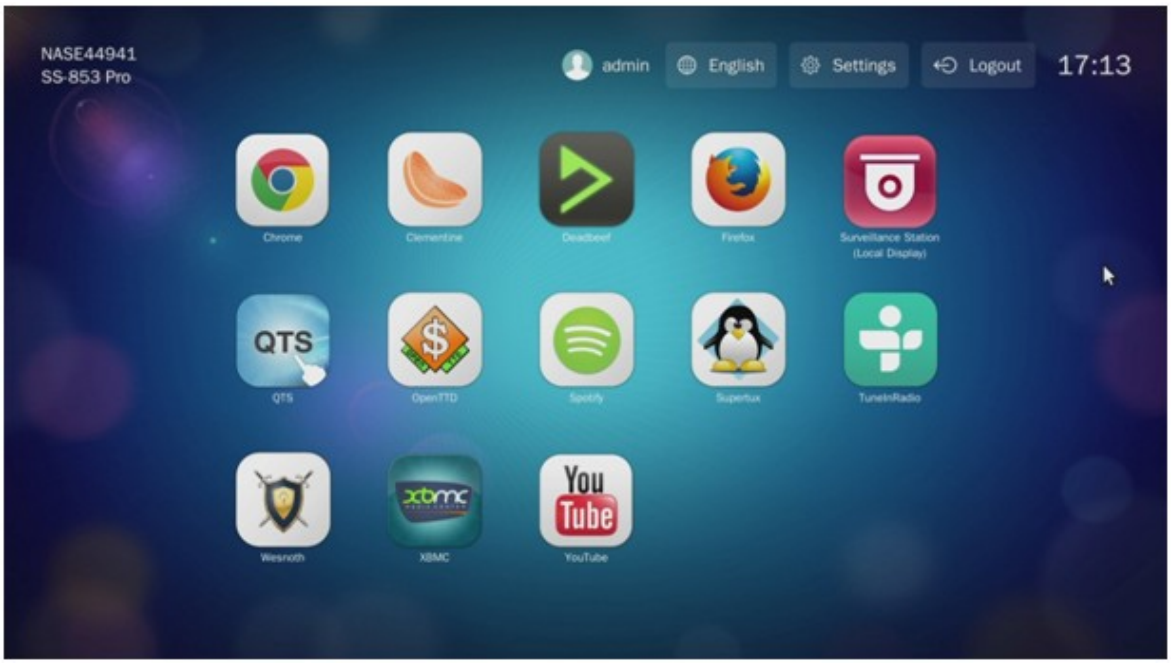
- HybridDesk Station: The HybridDesk Station portal, which allows you to use the following applications on the TV screen.
- XBMC: An application for you to operate and enjoy your multimedia data on the TV screen.
- Chrome: With the help of Chrome, the NAS brings endless web content to your HDTV. Just sit back, relax, and surf the Internet on your couch.
- YouTube: Browse and click to enjoy millions of YouTube videos on your TV.
- My NAS: Enter the local NAS administration web page to view the NAS functions and settings.
- Surveillance Station (Local Display): An application that allows NAS devices to output high-resolution video from IP cameras.

Note:

- Using Kodi, Chrome, or other applications may affect the hard drive hibernation of the NAS. Remember to exit the application and return to the HybridDesk Station portal.
- To exit an application, press the power button on the remote control for 6 seconds at any time.
- Press the one touch copy button on the NAS for 6 seconds to restart the HybridDesk Station.
- For the best HybridDesk Station experience, we recommend using a NAS with at least 2GB memory.
- To use the AirPlay function provided by Kodi, we recommend using a NAS with at least 2GB memory.

- The HybridDesk Station will restart when formatting an USB external device.
- The first time Kodi is launched, it will index the "Multimedia" shared folder and it may consume a lot of system resources if the folder contains a lot of multimedia files.

After installation, choose your preferred language on the TV screen. Then, you will see the HybridDesk Station portal as shown here.



4. **Enjoying the HybridDesk Station: At the HybridDesk Station portal, simply choose the application you want to use to start enjoying the service.**

Enjoy the comfort of your living room and play movies, photos, and music directly on your TV by XBMC or other applications.

Using HybridDesk Station

Taking Pictures with Smart Phone and Watching them on TV

The first part is done by Qfile on your phone:

1. Use Qfile to browse your NAS.
2. Choose the multimedia shared folder.
3. Select the upload function.
4. Take a picture and upload it to the NAS.

The second part is performed by the HybridDesk Station on your TV:

5. Turn on your TV and choose Kodi.
6. Choose "Pictures".
7. Select the "Multimedia" folder.
8. Double click the picture you just uploaded.

Viewing Photos on your USB Device or Camera

Steps:

1. Connect a USB device or camera to the NAS.
2. Choose "Pictures".
3. Choose "USBDisk".
4. Select the photo you want to view.

Importing Media Contents to your NAS

Use one of the several types of network protocols (Samba, AFP, FTP, and NFS) to save the media content files in the "Multimedia" or "Qmultimedia" shared folder, or copy them from an external USB or eSATA device.

To browse media contents of different folders than the default "Multimedia" shared folder, perform the following steps:

1. Choose "Files" under "Videos".
2. Choose "Add Videos".
3. Click "Browse".
4. Choose "Root filesystem".
5. Choose "share".
6. For example, if you want to add the "Download" shared folder, choose "Download". Otherwise, just choose the shared folder you would like to add as a video source.
7. Click "OK" to add this source.
8. You will see the "Download" shared folder in the list.

Note:

- If you encounter any video playback quality issues with some video formats, you can enable the following settings on Kodi: Go to "Setting" > "Video" > "Playback", and then enable "Adjust display refresh rate to match video" and "Sync playback to display".
- Depending on the data type, some files may not be playable.

Chrome

Select the Chrome application at the main page of HybridDesk Station. You can surf the web like using a web browser on your PC.

Note: If you want to use Chrome, you must use the Qremote mouse function or use a USB mouse that is connected to the NAS.

Surveillance Station (Local Display)

Monitor IP cameras and playback recordings stored on the NAS.

YouTube

Enjoy videos on YouTube via HybridDesk Station.

MyNAS

Enter the local NAS administration web page to view the NAS functions and settings.

Configuring HybridDesk Station

Configure the HybridDesk Station by choosing "Settings" at the HybridDesk Station portal and HybridDesk Station in QTS.

- HybridDesk Station portal:
  - App: Applications can be enabled or disabled here.
  - Display: Change the screen resolution and set up to turn off the screen after an amount of idle time.
  - Preferences: Here you may change the language or type of remote control and audio output. The default setting is HDMI. If there is an installed USB sound card, you can choose that option in the NAS Audio Output.
- HybridDesk Station in QTS:
  - Output resolution: Change the resolution for the HybridDesk Station portal screen. Before you change this setting, please make sure that no apps are opened in the HybridDesk Station portal.
  - Overscan: This setting can reduce the visible area of a video displayed on the HybridDesk Station portal. The higher the percentage, the more the visible area will be reduced.

Note:

- Only the QNAP remote or MCE remote control is supported. NOT all of the TS-x69 models support the internal remote control and the TS-x70 models only support the MCE remote control.
- HDMI Audio Passthrough is currently not supported by the TS-x69 series.

Remote Control


POWER
MUTE
VOL
LIST/ICON
SEARCH
TV OUT
SETTINGS
BOOKMARK
REPEAT
GUIDE
RECORD
CH −
CH +
GO TO
INFO
HOME
RESUME
OK
RETURN
OPTIONS
FR
PLAY
FF
SLOW
PAUSE
STOP
AUDIO
TOP MENU
SUBTITLE
ZOOM
POP UP
ANGLE
QNAP



RM-IR001				RM-IR002		MCE		XBMC	HD Station
Power	Power	1	N/A	Power	1	Power	1	Power menu	
	Mute	2	OK	Mute	12	Mute	13	Mute	
Number	0,1,2,3,4,5,6,7,8,9	3	OK			0,1,2,3,4,5,6,7,8,9	18	0,1,2,3,4,5,6,7,8,9	
	Vol+, Vol-	4	OK	Vol+, Vol-	9	Vol+, Vol-	12	Vol+, Vol-	

	List/ Icon	5	N/A					View mode	
	Search	6	N/A						
	TV Out	8	N/A						
	Settings	7	N/A					Settings	
Shortcut	Red - (Home)	9	OK			Red - (Home)	3	Home	
	Green (Video)	10	OK			Green (Video)	4	Video menu	
	Yellow (Music)	11	OK			Yellow (Music)	22	Music menu	
	Blue (Picture)	12	OK			Blue (Picture)	23	Photo menu	
Video Menu	Bookmark	13	N/A					Favorite	
	Repeater	14	N/A					Repeater	
	Guide	16	N/A					Help	
	Record	15	N/A						
	CH-	17	Previous			Previous	32	Skip back	

	CH+	18	Next			Next	33	Skip forward	
	Go to	20	N/A					Video progress bar	
	Info	19	OK	Info	10	Info	10	File info	
Play Control	Home	21	OK	Home	7			Home menu	
	Resume	22	N/A					Now playing	
	Return	28	OK	Return	11	Back	7	Back	
	Options	29	N/A	Menu	8	More		Playback menu	
	OK	25	OK	OK	3	OK	7	OK	OK
	Up	23	OK	Up	2	Up	7	Up	Up
	Down	26	OK	Down	5	Down	7	Down	Down
	Right	27	OK	Right	6	Right	7	Right	Right
	Left	24	OK	Left	4	Left	7	Left	Left

Video Play	Move backward	30	OK			Move backward	16	Move backward	
	Move forward	31	OK			Move forward	31	Move forward	
	Play	32	OK			Play	15	Play	
	Slow	33	N/A					Slow	
	Pause	34	OK			Pause	30	Pause	
	Stop	35	OK			Stop	33	Stop	
Video Setting	Audio	36	Audio List					Language track	
	Top/ Menu	37	Video List					Movie menu	
	Subtitle	38	OK			Subtitle	2	Subtitle track	
	Zoom	39	N/A					Zoom	
	Pop up	40	N/A					Movie menu	

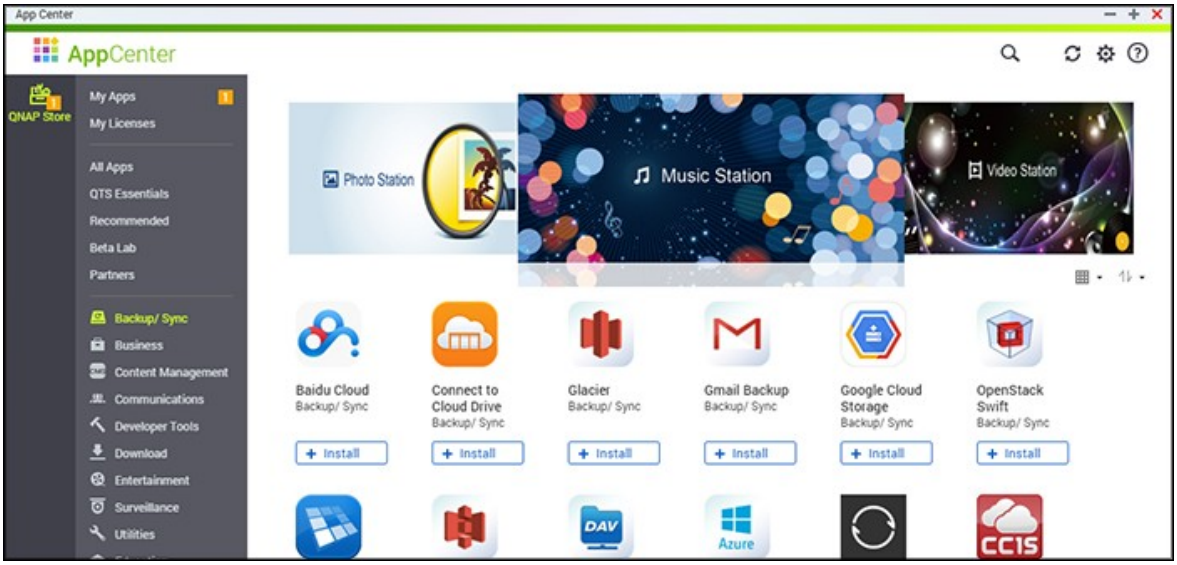
	Angle	41	N/A					Angle	
Input						Clear (N/A)	19	Clear	
	OK					Enter	34	Confirm	
						Switch 16:9 / 4:3	27		

Additional Reference:

- How to use Surveillance Station (Local Display) in HD Station.

8.9 App Center

The App Center is a platform for the distribution of NAS apps. Users can search for, install, remove and update apps developed by QNAP and third-party developers to expand services and add new features to the NAS.

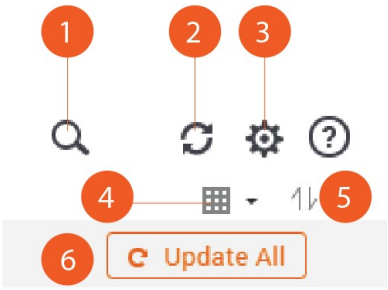


Starting App Center

The App Center can be launched from the App Center shortcut on the Main Menu or the NAS Desktop.

Familiarizing yourself with App Center

Menu Bar



No	Name	Description
1	Search	Search for Apps that are available to install on the NAS.

2	Refresh	Refresh the current page.
3	Settings	• Install Manually: Browse to upload and manually install a QPKG add-on. You can also find information on App add-on developments here. • App Repository: If you have an URL provided by a third-party community or developer, you can add or modify it here to import applications from other sources. • QTS Help
4	View Mode	Switch to item mode or list mode for the apps.
5	Sort	Sort apps by category, name, or release date, in an ascending or descending fashion.
6	Update All	Update all of the Apps that are currently installed on the NAS

Left Panel

- My Apps: List Apps that are currently installed on the NAS.
- My Licenses: List licenses for all Apps to be installed on the NAS. You can also add and activate your licenses.
- All Apps: List all Apps that can be installed on the NAS.
- QNAP Essentials: List Apps developed by QNAP.
- Recommended: List Apps recommended by QNAP (they could be either developed by QNAP or third party developers.)
- Beta Lab: Lists Apps that are currently in development.
- Partners: List Apps developed by QNAP partners.
- Apps by types: From "Backup/Sync" to "Education", those are App categories listed to facilitate your App searches.

Using App Center

Searching apps

To search for an App, enter the keyword in the search bar.

Installing, updating and removing apps

To install an app, click the "+ Install" button and the installation process will begin. After the installation process is complete, the "+ Install" button will turn to the "O Open" button and you can directly click this button to launch this newly installed app. This newly installed app will then show up in "My Apps".

Note:

- Make sure the NAS is connected to the Internet.
- QNAP is not responsible for troubleshooting any issues caused by open source software/add-ons. Users are encouraged to visit the QNAP community forum or contact the creators of the open source software for solutions.
- When installing an add-on that requires a prerequisite app, the prerequisite add-on will be automatically added to the installation queue prior to the dependent add-on.
- If the app update process is canceled before it is finished, please re-install the app from the App Center.

To update an App, click "Update" and click "OK" to confirm. Alternatively, you can click "Update All" on the menu bar to install all updates and "Refresh" to check for the latest updates. The button will turn to "Open" to signify that the update is complete. You can also click the down arrow icon on the button to open an installed app, stop an app (the button will turn to "Start" after you stop an app and you can click it to start the app again), remove an app, or set to display the app on the administrator's main menu, every user's main menu, or the login screen as a shortcut.

Note:

- Click the on/off button in an App icon to enable or disable an App.
- For more apps, please visit the QNAP official site (http://www.qnap.com/go/qpkg.html).

Offline Installation

To install apps when the NAS is offline or to install beta apps that are not officially available on the QNAP App Center, users can download the application (*.qpkg) from the QNAP website (http://www.qnap.com/go/qpkg.html) or forum (http://forum.qnap.com/), unzip the files, and click "Install Manually" on the menu bar to install the Apps manually.

9. Mobile Apps

QNAP has introduced a list of mobile apps to help users access their NAS with their mobile devices. The following are a list of benefits that QNAP mobile apps can bring you:

- Automatically update photos from your phones on your trip: When on vacation, photos on your mobile device can be automatically uploaded to your NAS, allowing you to focus on your photos instead of worrying about running out of space.
- Easily share large files with friends and families: Sharing huge files is extremely easy with QNAP mobile apps. Share them whenever and wherever you want.
- Browse files stored on your NAS: Access your multimedia (photos, videos and music) and office documents (Word, PDF, or Excel) stored on your NAS using your mobile device.
- Manage services on your NAS with ease: Check the status of your NAS or enable/ disable NAS application services remotely using your phone.

Topics covered in this chapter:

- Qfile 335
- Qmanager 336
- Qnotes 336
- Qremote 337
- Qmusic 337
- Qvideo 337
- Qphoto 338
- Qget 338
- Vmobile 338
- Vcam 339

Qfile

Qfile enables you to browse and manage the files on your NAS from your mobile device. Manage multiple QNAP NAS in different locations conveniently from your mobile device.

A simple and intuitive interface makes management easy. Thumbnails help you identify file types at a glance and you can move, copy, rename, and delete files on your NAS without needing a PC.

Download



Qmanager

Qmanager is a powerful management platform with a simple to use and intuitive interface that makes monitoring and managing your NAS from mobile devices amazingly easy.

Monitor system information, such as CPU usage, memory usage, system event info, online users, backup status, download progress, and file transfers. Use "App Center" to turn application services on or off with a single click. Restart or shut down your NAS remotely.

Download



Qnotes

Qnotes is a powerful digital notebook and workspace for organizing your to-do lists, shopping lists, lecture notes, meeting notes, and everything else you want to remember. Synchronize your notes across your devices so you can access them wherever you go. Add audio recordings or take a picture and save it to Qnotes to keep it for you. Enjoy peace of mind that your notes are securely stored, and available from anywhere.

You can easily share your notes with others. Work together with your friends, family, classmates, and colleagues. Share your notebooks with others for viewing or editing.

Download



Qremote

Qremote is QNAP's remote control for HD Station. Use Qremote to control HD Station from your mobile devices.

Download



Qmusic

Qmusic helps you enjoy the music collection on your NAS via your mobile devices at anytime, anywhere. Create and send links to share your favorite music with friends and family using social networks, instant messengers or by email.

Download



Qvideo

Qvideo helps you enjoy the videos on your NAS via your mobile devices at anytime, anywhere and also to share your videos with friends and family.

Download



Qphoto

Qphoto helps you enjoy your personal photo collection on your mobile devices at any time, from anywhere, without limits. Relive and share your special moments on the go.

Download



Qget

Qget allows you to manage all of the download tasks on your NAS using your mobile devices at anytime, anywhere. Use Qget to add and monitor your download tasks in Download Station. The Qget built-in browser helps you to add tasks from direct download links or from magnet links. Qget can also search across multiple Bit Torrent sites and add the torrent to your download queue.

Download



Vmobile

Vmobile is a mobile video surveillance application provided by QNAP that enables you to connect to and manage your video surveillance system from your mobile device at anytime from anywhere.
Connect Vmobile to a NAS with Surveillance Station installed and you can monitor IP cameras and play recordings. Monitor several servers/channels from all of your network cameras of by simply connecting to any available NAS on the network.

Download



Vcam

Vcam can turn your mobile device into a network camera, allowing you to record any moment around you to your NAS. Vcam provides a great way to deploy a home surveillance system without purchasing expensive IP cameras.

Download



10. Computer Utilities

QNAP constantly develops new ways for users to improve their NAS experience, and provides the following utilities to improve productivity:

- Qfinder Pro 340
- myQNAPcloud connect 340
- Qsync 2.0 340
- NetBak Replicator 340
- Qget 341
- vSphere Client plug-in 341
- Qsnap 341

Qfinder Pro

Qfinder Pro is a utility, available for Windows, Mac, and Linux, to quickly find and access a NAS on LAN. Install Qfinder Pro on your computer, open it, double click your NAS, and the login page is ready for you.
Download

myQNAPcloud connect

myQNAPcloud Connect helps you to quickly and securely access published services of your NAS on the Internet. myQNAPcloud Connect is designed for Windows users. By installing myQNAPcloud Connect, you will be able to connect to the NAS and easily manage files by drag & drop within the Windows File Explorer.
Download

Qsync 2.0

Qsync is a file synchronization service. Simply add files to your designated sync folder (s) and those folders and files will be available on the NAS and all devices linked to it.
Download

NetBak Replicator

The NetBak Replicator helps you easily back up files from a Windows PC to the NAS, including entire disk drives, documents, pictures, music, videos, fonts, emails, and more. The operation is very simple. You can carry out backup tasks in just a few clicks using by setting real-time synchronization, scheduled backup and auto-backup from multiple PCs to the NAS.
NetBak Replicator also supports backing up to a remote server via FTP and WebDAV through the Internet.
Download User Manual

Qget

QGet is a powerful utility for download management. The software is available for Windows and Mac computers, allowing the management of BT, HTTP, and FTP download tasks of Download Station on multiple NAS.
QGet enables you to add, remove, and monitor BT download jobs from LAN or WAN. You can manage your download tasks in school or at work. QGet supports intuitive drag & drop of torrent files, HTTP or FTP URL to the software interface for convenient adding of download tasks.
Download

vSphere Client plug-in

The NAS supports vSphere Client Plug-in that allows managing VMware datastores on the NAS directly from the vSphere client console. In a large-scale server virtualization environment, management is centralized and straightforward. Administrators can easily control the status of the NAS and datastores and create additional datastores to multiple ESXi hosts in just a few clicks.
Download

Qsnap

Qsnap is a handy utility that can assist in quickly capturing screenshots on your PC. They can be quickly edited, saved and shared allowing quick note-taking and productive communication.
Download

11. NAS Add-ons

The following NAS Add-ons (QPKG) are recommended to help you explore other NAS possibilities:

Storage and Backup

- Backup Versioning – Beta[343]
- Gmail Backup -Beta[343]
- Hybrid Backup Sync - Beta[343]

Virtualization

- Container Station – Beta[344]
- Virtualization Station - Beta[344]
- Linux Station - Beta[344]

Productivity

- Notes Station - Beta [344]
- Qsirch – Beta[345]
- Qmail Agent– Beta[345]

Entertainment

- Media Streaming Add-On [345]
- Photo Station Extension - Beta[345]
- OceanKTV - Beta[345]

Security

- L2TP/IPsec VPN Service[346]
- MyQNAPcloud SSL Certificate[346]
- Surveillance Station[346]
- Proxy Server[346]

Connectivity

- CloudLink [347]

Business

- Signage Station[347]

Tool

- Diagnostic Tool – Beta[347]

- Q'center[347]

Note:

- Some of the add-ons in this chapter are only supported by certain NAS models. Please refer to the software specification page on the QNAP website for further details. If a certain Add-on is not supported by your NAS, that Add-on will not be available when you search it in the App Center.
- For more Apps, please visit the QNAP site (http://www.qnap.com/go/qpkg.html).

Backup Versioning – Beta

Backup Versioning enables version control option in RTRR backup jobs. When creating a RTRR backup job, the option "version control" is available and allows preserving a certain amount of versions, and also a smart version recycling to be able to retain backups longer time.

Gmail Backup -Beta

Gmail backup provides Gmail backup and recovery functionality, allowing users to create individual backup or domain account backup tasks. Gmail can be backed up by schedule and the content previewed through a web management interface. Backed up mail can be restored to the original mail account or other accounts: just configure the restore account, enter the account and password and the user can restore mail to the specified account.

Hybrid Backup Sync - Beta

Hybrid Backup Sync is a comprehensive data backup and disaster recovery solution for files stored on QNAP NAS. It integrates backup, restoration and synchronization features to provide a variety of options for data backup and synchronization including USB one-touch backup, Time Machine backup, RTRR backup and synchronization through RTRR, Rsync, FTP, CIFS/SMB and various cloud services such as Amazon® S3, Amazon® Glacier, Azure™ Storage, Google Cloud Storage™, S3/OpenStack Swift/ WebDAV compatible services, Google Drive™, Microsoft® OneDrive® and Dropbox®. Hybrid Backup Sync allows users to create storage, remote and cloud account settings in advance which can help save time in creating backup jobs.

Container Station – Beta

Container Station integrates both LXC and Docker virtualization technologies. This enables the use of multiple, isolated Linux systems on the NAS. We have also engineered one-click download, install, and deployment of thin applications from the built-in Docker Hub Registry to make virtualization easier than ever.

Virtualization Station - Beta

Virtualization Station turns the NAS into an appliance server, and allows you to install virtual machines (VMs) on the NAS with Windows, Linux, UNIX and Android operating systems. It can increase the functionality of the NAS and be eco-friendly by using VMs instead of physical servers. With an easy-to-use interface, you can centrally manage all of the VMs created on the NAS with minimal effort. You can also access virtual machines remotely on PCs and mobile devices by using web browsers at anytime. Virtualization Station allows users to open the data on the NAS directly through VMs, reducing bandwidth utilization and greatly enhancing data security as all of the actions are carried out within the NAS and no data is transmitted externally. Running application services on VMs is also efficient and secure by leveraging the high-performance I/O and the comprehensive data protection of the NAS.

Linux Station - Beta

Linux Station is a standard Linux desktop platform that allows you to use QTS while simultaneously using Linux on an HDMI display. Simply connect a keyboard and mouse to the NAS to use the NAS as a PC. You can also enable the remote desktop connection to use Linux Station with a web browser.

Notes Station - Beta

Notes Station enables you to create digital notebooks on the private cloud provided by the NAS. You can also easily leverage the files, photos, music and videos stored on the NAS to enrich your notes. With Notes Station, digital memos are safely kept for instant access. Notes Station provides a straightforward interface for note taking. You can easily insert all kinds of files stored on the NAS as part of your notes or as attachment to enhance the content. The Media Library of QTS 4.1 provides multimedia file preview to help quickly find the correct files to insert.

Qsirch – Beta

With Qsirch you can enhance your productivity with a powerful full-content search. NAS allows you to store huge amounts of data, files, and information. But it can be very easy for important files to get lost as increasing amounts of data is stored on it, making productivity suffer as users spend time searching for files instead of working. Qsirch can help users locate files in the shortest possible time. Qsirch has advanced file extraction and a near real-time search engine, allowing users to quickly search through the entire NAS to find desired files as soon as possible. The uniquely crafted QNAP TF-IDF algorithm actively predicts your results as you type for lightning speed.

Qmail Agent – Beta

Qmail Agent is an online mail client that allows users to access Gmail, Outlook, Yahoo mail, and any IMAP server. It also works with Gmail Backup to review archived emails. It can easily switch accounts with its quick launch bar and provides complete functionality for composing, reading and organizing email messages. Files, photos and documents stored on the NAS can also be attached to emails. Qmail Agent also supports automatically backing up all of the emails on the server to the NAS upon logging in. In this article we will walk you through on how to use the Qmail Agent app to manage your emails on a QNAP NAS.

Media Streaming Add-On - Beta

The Media Streaming Add-On is an add-on for stations in QTS (File Station, Photo Station, Music Station and Video Station) that allows you to stream your media to different devices in different locations simultaneously using AirPlay, DLNA, Chromecast, and HDMI-connected devices. With the advanced management of the DLNA Media Server, you can also set advanced settings, such as DLNA client control, menu language and more.

Photo Station Extension - Beta

This Photo Station Extension App will enable the face detection* and pdf album import features for your Photo Station. You will be able to browse the imported pdf files as albums easily on other mobile devices.

OceanKTV - Beta

OceanKTV transforms your QNAP NAS into a high-quality karaoke machine. Just import your songs to the OceanKTV folder and start using it. A companion mobile app is also available to remotely control OceanKTV. Invite your friends to sing together now!

L2TP/IPsec VPN Service

L2TP (Layer Two Tunneling Protocol) is a combination of the Point-to-Point Tunneling Protocol (PPTP) and Layer 2 Forwarding (L2F.) Compared to PPTP, which only establishes a single tunnel between the two end points, L2TP supports the use of multiple tunnels. IPsec is often used to secure L2TP packets by providing confidentiality, authentication and integrity checks. The combination of these two protocols provides a high-security VPN solution which is known as L2TP/IPsec. L2TP/IPsec is supported by most clients, including Windows, Mac, Linux, and mobile devices.

MyQNAPcloud SSL Certificate

After installing the myQNAPcloud SSL Certificate App, you will see the user interface on QTS myQNAPcloud to download and install your purchased SSL certificates from the myQNAPcloud website (https://www.myqnapcloud.com.) SSL certificates bring better protection when connecting to your QNAP NAS via myQNAPcloud DDNS.

Surveillance Station

Surveillance Station is a professional network surveillance system and video management system. As one of the standard NAS applications, the Surveillance Station can be activated on the App Center to turn your NAS into a professional network video recorder. When used with compatible IP cameras, Surveillance Station can perform the following operations: real-time monitoring, recording, playback, alarm notifications, Intelligent Video Analytics and video management to help you secure your assets and property.

Proxy Server

The Proxy Server application provides an intuitive interface to simplify proxy server settings on your NAS, enabling you to operate your own proxy server in just a few clicks. The proxy server provides cache and connection controls for Internet services. For companies that need a boost to web response time and security, this application can be leveraged to make your NAS a web proxy server to protect other devices in your local network from Internet attacks.

CloudLink

CloudLink is the best remote access service provided by myQNAPcloud that allows you to connect to your device via the Internet using the myQNAPcloud website (www.myqnapcloud.com.) No complicated port forwarding settings on the router are required: just install CloudLink App on device App Center and sign in myQNAPcloud ID (QID) on your device. Then you can access files from the myQNAPcloud website. CloudLink will select the best connection for you according to your network environment. In addition to the web-based connection, CloudLink also allows you to connect to your QNAP device with QNAP Mobile Apps Qfile, Qmanager and the PC utility Qsync. CloudLink makes remote connectivity so easy.

Signage Station

Signage Station provides digital signage display functionalities and allows content to be managed with access permissions. Users can use iArtist Lite to design the digital signage content and upload to the NAS, and use Signage Station to display the digital signage media content on the web browser from the NAS.

Diagnostic Tool – Beta

The diagnostic tool provides a variety of system analysis functions to check the stability of a NAS. Users can export system kernel records for sending to technical support staff for further investigation and system kernel log analysis tools can quickly check if abnormal actions have occurred. There are also tools for checking the file system, hard drives and RAM to provide a simple way to test system reliability.

Q'center

Q’center is a central management platform that enables you to consolidate the management of multiple QNAP NAS. The Q’center web interface gives you the ease-of-use, cost-efficiency, convenience and flexibility to manage multiple NAS, across multiple sites, from any internet browser.

12. Use the LCD Panel

This feature is only provided by the NAS models with LCD panels.

You can use the LCD panel to perform disk configuration and view system information.

When the NAS has started up, you will be able to view the NAS name and IP address:

N	A	S	5	F	4	D	E	3					
1	6	9	.	2	5	4	.	1	0	0	.	1	0	0

For first-time installation, the LCD panel shows the number of hard drives detected and the IP address. You may select to configure the hard drives.

Number of hard drives detected	Default disk configuration	Available disk configuration options*
1	Single	Single
2	RAID 1	Single > JBOD > RAID 0 > RAID 1
3	RAID 5	Single > JBOD > RAID 0 > RAID 5
4 or above	RAID 5	Single >JBOD > RAID 0 > RAID 5 > RAID 6

*Press "Select" to choose the option, and press "Enter" to confirm.

For example, when you turn on the NAS with 5 hard drives installed, the LCD panel shows:

C	o	n	f	i	g	.		D	i	s	k	s	?	
→	R	A	I	D	5									

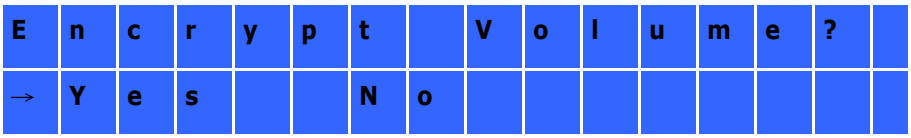
You can press "Select" to browse more options, for example, RAID 6.
Press "Enter" and the following message shows. Press "Select" to select "Yes" to confirm.

C	h	o	o	s	e		R	A	I	D	5	?		
→	Y	e	s			N	o							

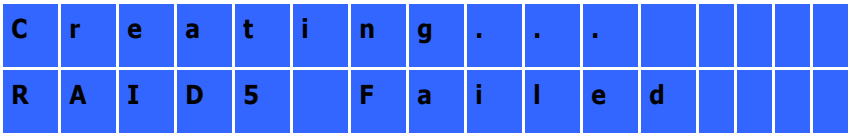
When you execute RAID 1, RAID 5, or RAID 6 configuration, the system will initialize the hard drives, create the RAID device, format the RAID device, and mount it as a volume on the NAS. The progress will be shown on the LCD panel. When it reaches 100%, you can connect to the RAID volume, for example, create folders and upload files to the folders on the NAS. In the meantime, to make sure the stripes and blocks in all the RAID component devices are ready, the NAS will execute RAID synchronization and the progress will be shown on "Storage Manager" > "Volume Management" page. The synchronization rate is around 30-60 MB/s (varies depending on the hard drive models, system resource usage, etc.)

Note: If a member drive of the RAID configuration was lost during the synchronization, the RAID device will enter degraded mode. The volume data is still accessible. If you add a member drive to the device, it will start to rebuild. You can check the status on the "Volume Management" page.

To encrypt the disk volume*, select "Yes" when the LCD panel shows <Encrypt Volume? >. The default encryption password is "admin". To change the password, login the NAS with an administrator account and change the settings in "Storage Manager" > "Encrypted File System".



When the configuration is finished, the NAS name and IP address will be shown. If the NAS fails to create the disk volume, the following message will be shown.



*This feature is not supported by TS-110, TS-119, TS-210, TS-219, TS-219P, TS-410, TS-419P, TS-410U, TS-419U, TS-119P+, TS-219P+, TS-419P+, TS-112, TS-212, TS-412, TS-419U+, TS-412U.

Data encryption functions may not be available in accordance to the legislative restrictions of some countries.

Viewing System Information on LCD Panel

When the LCD panel shows the NAS name and IP address, you can press "Enter" to go to

the Main Menu. The Main Menu consists of the following items:

1. TCP/IP
2. Physical disk
3. Volume
4. System
5. Shut down
6. Reboot
7. Password
8. Back

TCP/IP

In TCP/IP, you can view the following options:

1. LAN IP Address
2. LAN Subnet Mask
3. LAN Gateway
4. LAN PRI. DNS
5. LAN SEC. DNS
6. Enter Network Settings
   - Network Settings – DHCP
   - Network Settings – Static IP*
   - Network Settings – BACK
7. Back to Main Menu

*** In Network Settings – Static IP, you can configure the IP address, subnet mask, gateway, and DNS of LAN 1 and LAN 2.**

Physical disk

In Physical disk, you can view the following options:

1. Disk Info
2. Back to Main Menu

The disk info shows the temperature and the capacity of the hard drives.

D	**i**	**s**	**k**	**:**	**1**		**T**	**e**	**m**	**p**	**:**	**5**	**0**	**°**	**C**
S	**i**	**z**	**e**	**:**		**2**	**3**	**2**		**G**	**B**				

Volume

This section shows the hard drive configuration of the NAS. The first line shows the RAID configuration and storage capacity; the second line shows the member drive number of

the configuration.

R	A	I	D	5							7	5	0	G	B
D	r	i	v	e		1	2	3	4						

If there is more than one volume, press "Select" to view the information. The following table shows the description of the LCD messages for RAID 5 configuration.

LCD Display	Drive configuration
RAID5+S	RAID5+spare
RAID5 (D)	RAID 5 degraded mode
RAID 5 (B)	RAID 5 rebuilding
RAID 5 (S)	RAID 5 re-synchronizing
RAID 5 (U)	RAID 5 is unmounted
RAID 5 (X)	RAID 5 non-activated

System

This section shows the system temperature and the rotation speed of the system fan.

C	P	U		T	e	m	p	:		5	0	°	C		
S	y	s		T	e	m	p	:		5	5	°	C		

S	y	s		F	a	n	:	8	6	5	R	P	M		

Shut down

Use this option to turn off the NAS. Press "Select" to select "Yes". Then press "Enter" to confirm.

Reboot

Use this option to restart the NAS. Press "Select" to select "Yes". Then press "Enter" to confirm.

Password

The default password of the LCD panel is blank. Enter this option to change the password of the LCD panel. Select "Yes" to continue.

C	h	a	n	g	e		P	a	s	s	w	o	r	d	
					Y	e	s		→	N	o				

You can enter a password of maximum 8 numeric characters (0-9). When the cursor moves to "OK", press "Enter". Verify the password to confirm the changes.

N	e	w		P	a	s	s	w	o	r	d	:			
														O	K

Back

Select this option to return to the main menu.

System Messages

When the NAS encounters an error, a message will be shown on the LCD panel. Press "Enter" to view the message. Press "Enter" again to view the next message.

S	y	s	t	e	m		E	r	r	o	r	!			
P	l	s	.		C	h	e	c	k		L	o	g	s	

System Message	Description
Sys. Fan Failed	The system fan has failed.
Sys. Overheat	The system has overheated.
HDD Overheat	A hard drive has overheated.
CPU Overheat	The CPU has overheated.
Network Lost	Both LAN 1 and LAN 2 are disconnected in failover or load balancing mode.
LAN1 Lost	LAN 1 is disconnected.
LAN2 Lost	LAN 2 is disconnected.
HDD Failure	A hard drive has failed.
Vol1 Full	The disk volume (1) is full.
HDD Ejected	A hard drive has been ejected.
Vol1 Degraded	The disk volume (1) is in degraded mode.

Vol1 Unmounted	The disk volume (1) is unmounted.
Vol1 Nonactivate	The disk volume (1) is inactive.

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Version 3, 29 June 2007

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