

QNAP Turbo NAS
Software User Manual
(Version: 3.4.0)

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1. Notice

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 Turbo 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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DISCLAIMER

In no event shall the liability of QNAP Systems, Inc. (QNAP) exceed the price paid for the product from direct, indirect, special, incidental, or consequential software, or its documentation. QNAP makes no warranty or representation, expressed, implied, or statutory, with respect to its products or the contents or use of this documentation and all accompanying software, and specifically disclaims its quality, performance, merchantability, or fitness for any 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 your 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.

1.1 Regulatory Notice



This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of 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 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.

The changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Shielded interface cables, if any, must be used in order to comply with the emission limits.



Class B only.

1.2 Symbols in this document

 Warning	This icon indicates the instructions must be strictly followed. Failure to do so could result in injury to human body or death.
 Caution	This icon 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 icon indicates the information provided is important or related to legal regulations.

1.3 Safety Information and Precautions

1. The NAS can operate normally in the temperature of 0°C–40°C and relative humidity of 0%–95%. Please make sure 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. Make sure the temperature and humidity of the environment are in optimized level.
4. Unplug the power cord and all the connected cables before cleaning. Wipe the NAS with a dry towel. Do not use chemical or aerosol to clean the NAS.
5. Do not place any objects on the NAS for the server's normal operation and to avoid overheat.
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 you are not sure, please contact the distributor or the local power supply company.
10. Do not place any object on the power cord.
11. Do not attempt to repair your NAS in any occasions. Improper disassembly of the product may expose you to electric shock or other risks. For any enquiries, please contact the distributor.
12. The chassis (also known as rack mount) NAS models should only be installed in the server room and maintained by the authorized server manager or IT administrator. The server room is locked by key or keycard access and only certified staff is allowed to enter the server room.



Warning:

- Danger of explosion if 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.
- Do NOT touch the fan inside the system to avoid serious injuries.

2. Getting Started

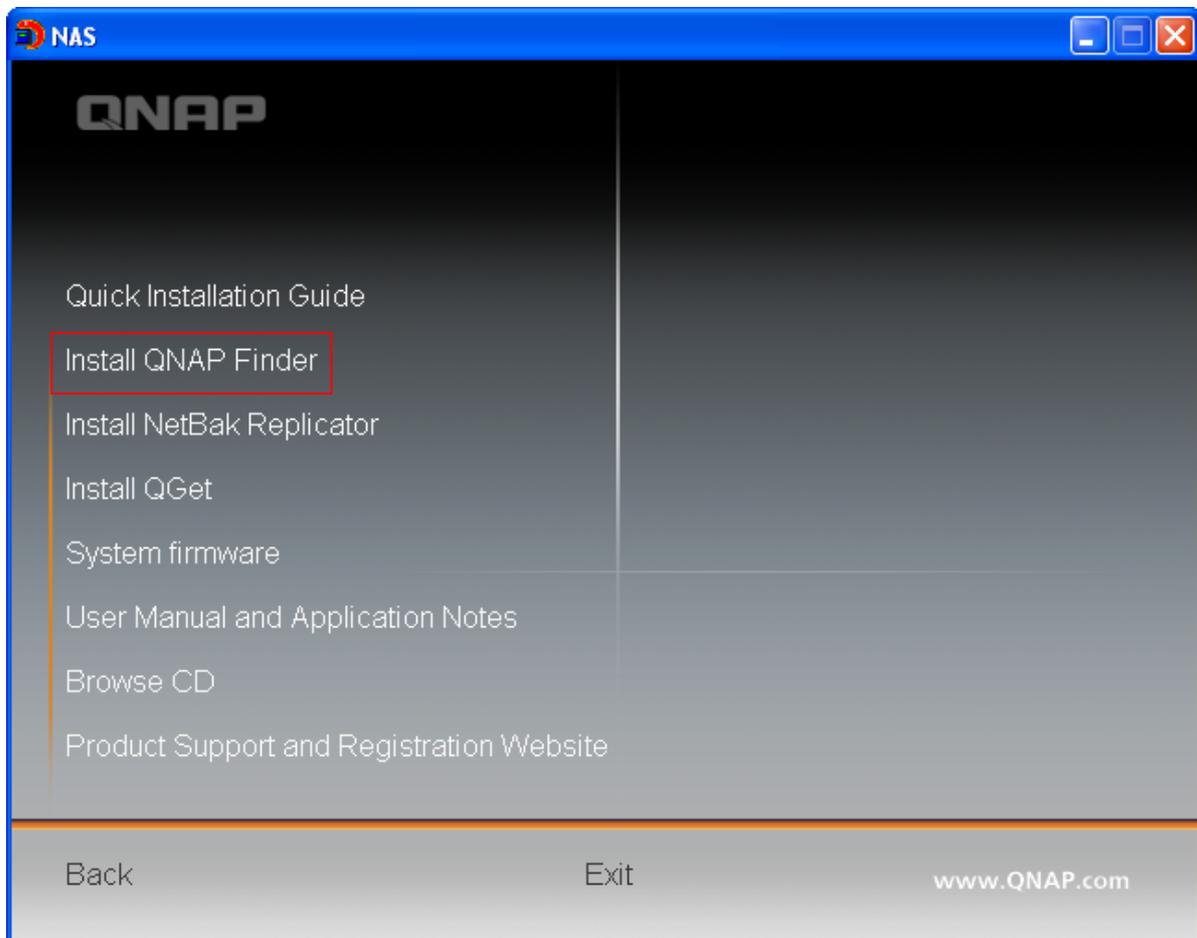
Hardware Installation

For the information of hardware installation, see the 'Quick Installation Guide' (QIG) in the product package. You can also find the QIG in the product CD-ROM or QNAP website (<http://www.qnap.com/>).

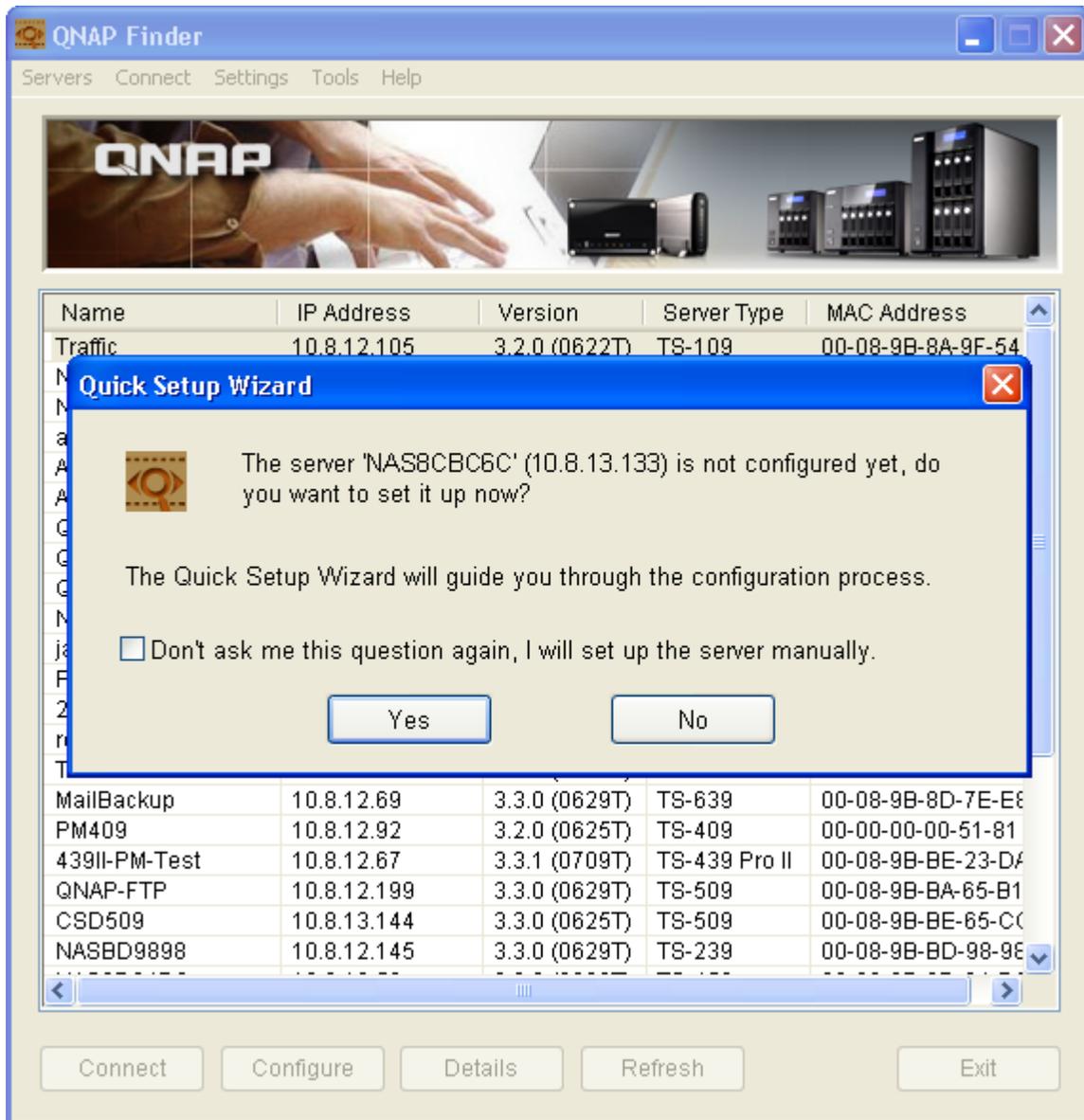
Software Installation

After you have installed the NAS hardware, you can proceed to the software installation. The following demonstration is based on Windows OS.

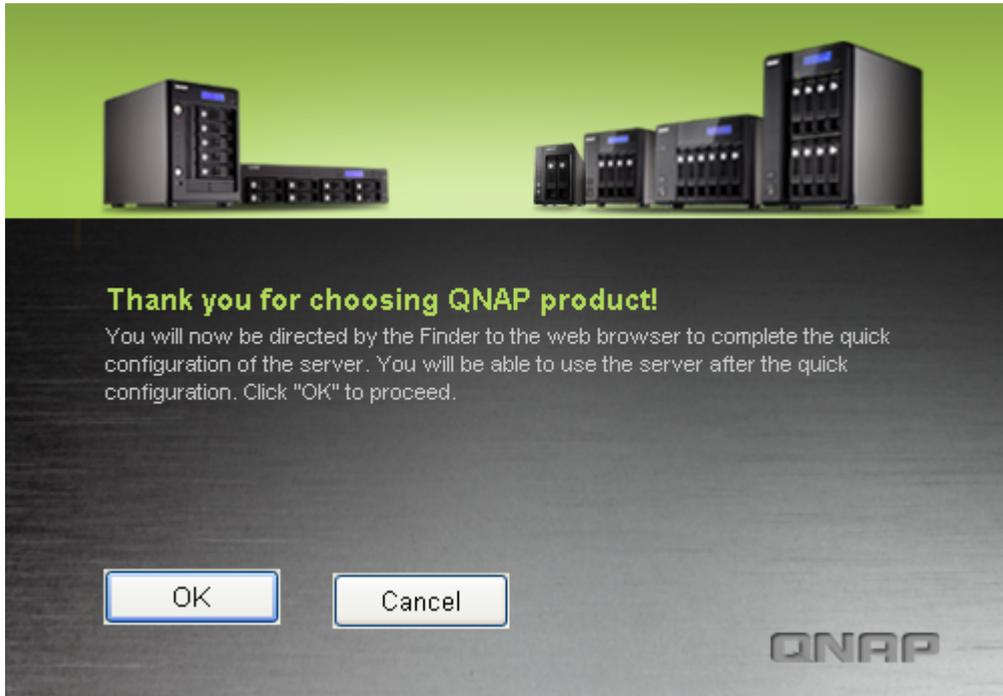
1. Install QNAP Finder from the product CD-ROM.



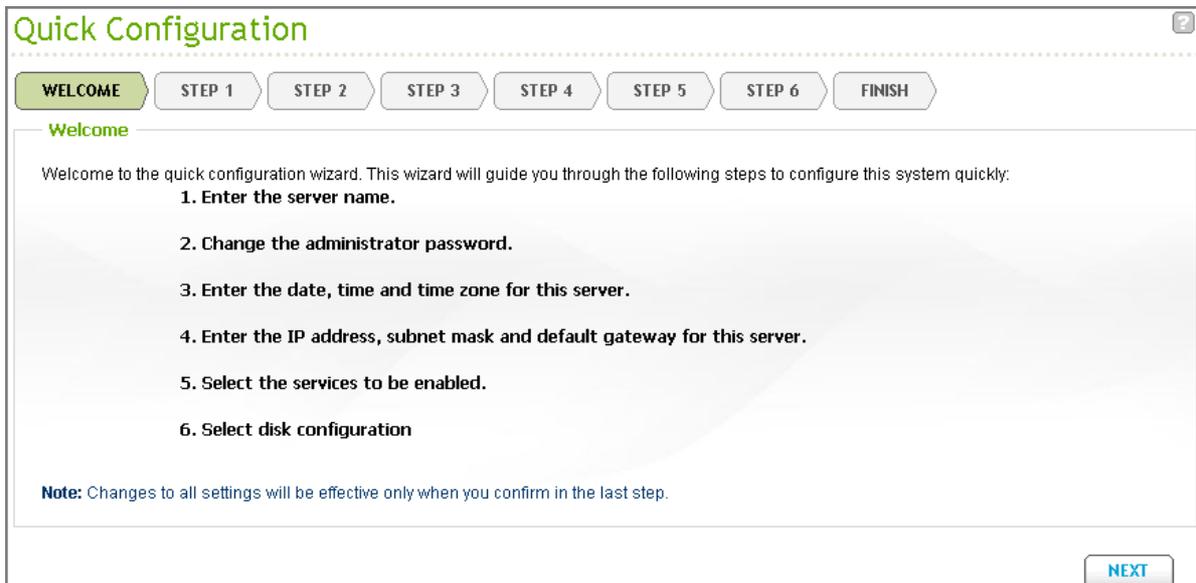
- Run QNAP Finder. If Finder is blocked by your firewall, unblock the utility.
- QNAP Finder detects your NAS which has not been configured. Click 'Yes' which you are prompted to perform quick setup of the NAS.



4. Click 'OK' to proceed.



5. Your default web browser will be opened. Follow the instructions to configure the NAS.



6. Click 'START INSTALLATION' in the last step.

Quick Configuration

WELCOME STEP 1 STEP 2 STEP 3 STEP 4 STEP 5 STEP 6 **FINISH**

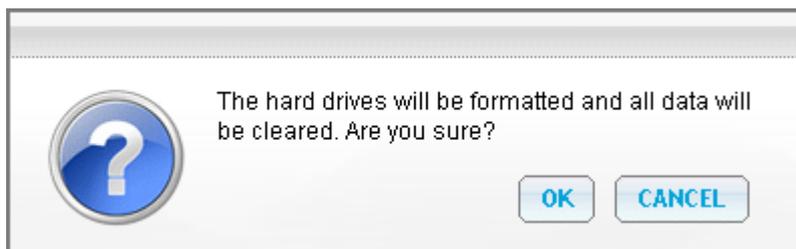
Finish

The changes you have made to the server are as below. Click "Start installation" to begin the quick configuration; or click "Back" to return to the previous steps to modify the settings.

Server Name :	NAS8C8C8C
Password:	The password is unchanged.
Time Zone :	(GMT+08:00) Beijing, Chongqing, Hong Kong, Urumqi
Time Setting:	Set the server time the same as your computer time.
Network :	Obtain TCP/IP settings automatically via DHCP
IP Address:	--
Subnet Mask:	--
Default Gateway:	--
Primary DNS Server	0.0.0.0
Secondary DNS Server	0.0.0.0
Network services:	Microsoft Networking,Web File Manager,FTP Service,Download Station,Multimedia Station,Web Server
Disk configuration:	Raid 1
Encrypt disk volume:	Yes
File System:	EXT4
Drive 1:	Seagate ST3160318AS CC44 149.05 GB
Drive 2:	Seagate ST3160318AS CC44 149.05 GB

BACK **START INSTALLATION**

7. All the installed hard disk drives will be formatted and all the data will be cleared. Click 'OK' to proceed.



- When finished, click 'Return to system administration page' or enter the NAS IP in the web browser to connect to the web administration page of the NAS.

Quick Configuration ?

System is initializing, please wait.

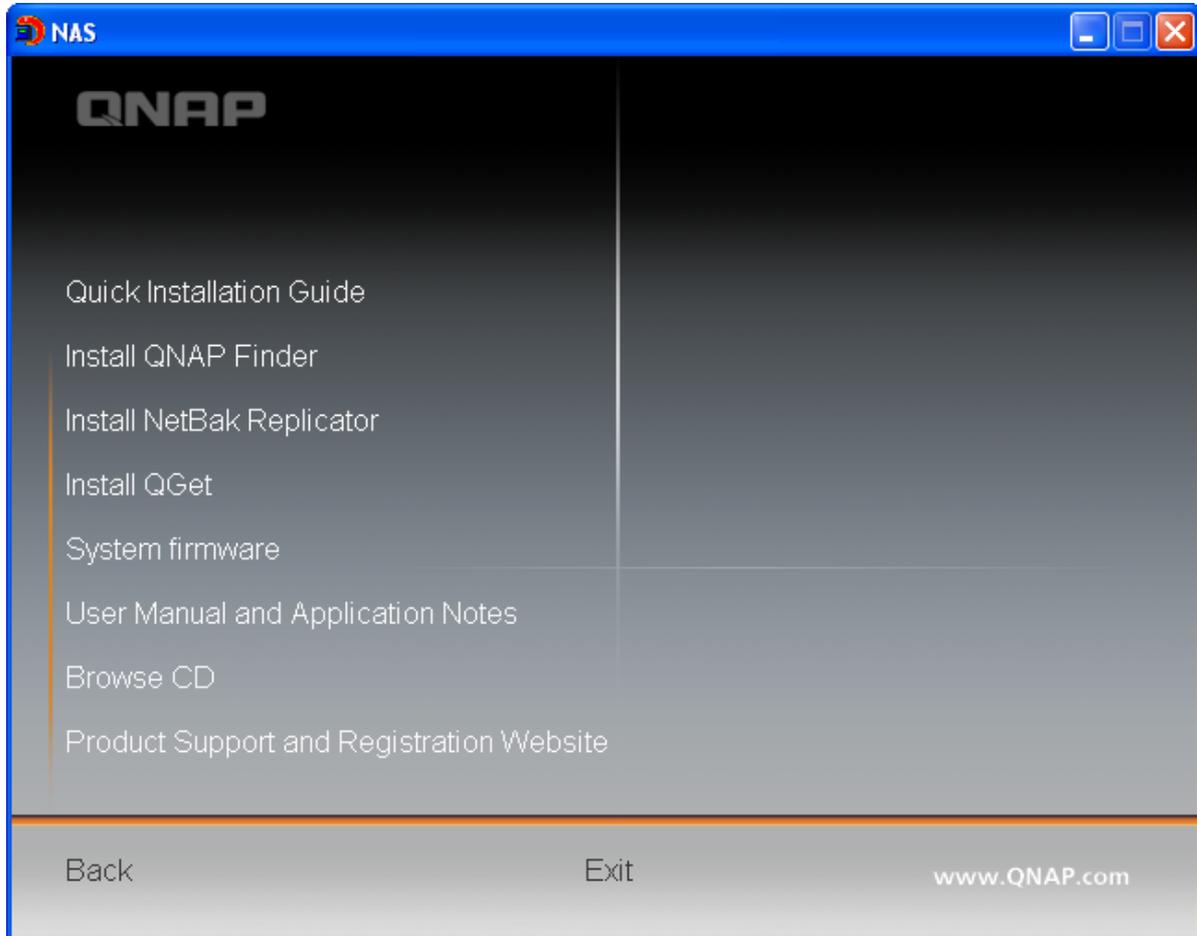
The system is being configured. Do NOT power off the server or unplug the hard drive(s).

- ✔ 1. Change the name for this server.
- ✔ 2. Change the administrator password.
- ✔ 3. Change the time settings.
- ✔ 4. Change the network settings.
- ✔ 5. Start the network services.
- ✔ 6. Initialize the hard disk.

 System configuration completed. [Return to system administration page.](#)

2.1 Browse the CD-ROM

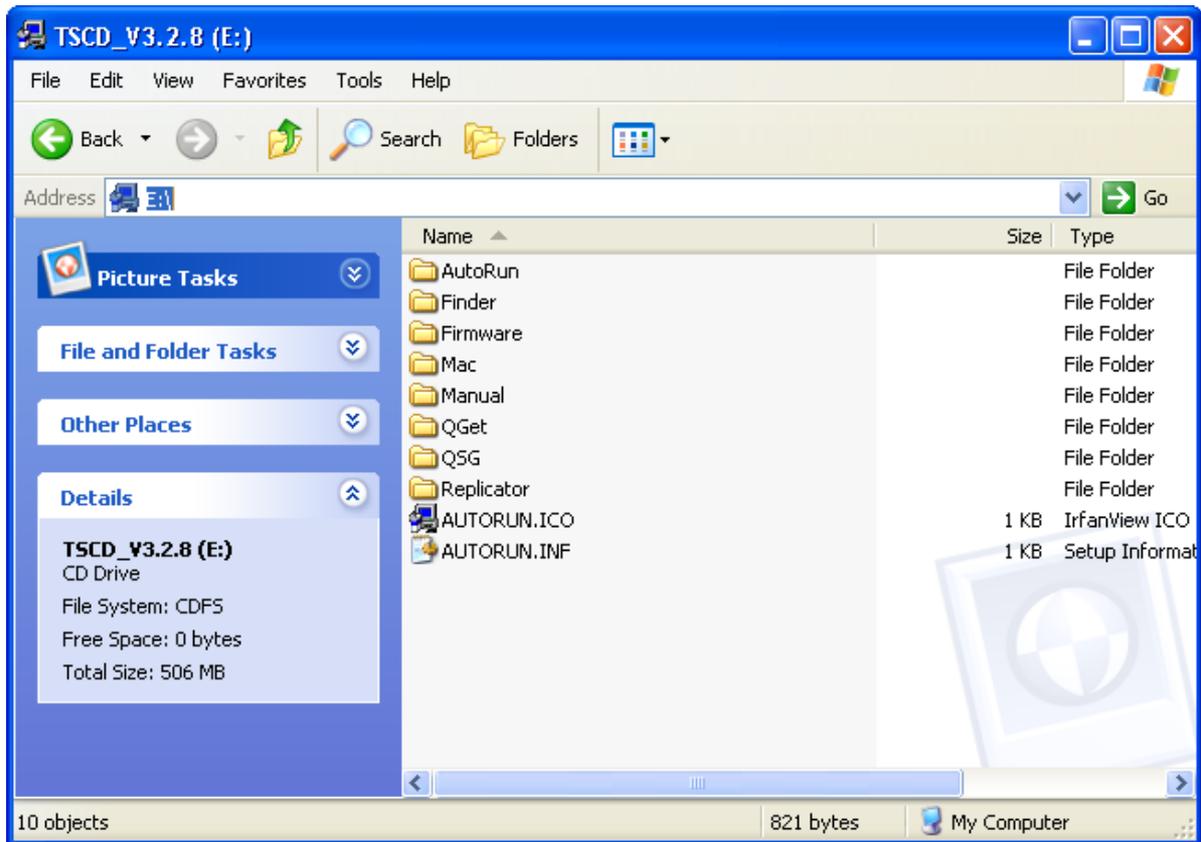
The NAS CD-ROM contains documentation including Quick Installation Guide (QIG), user manual, application notes, and software utilities QNAP Finder, NetBak Replicator, and QGet.



You can browse the CD-ROM and access the following contents:

- Finder: The setup program of QNAP Finder (for Windows OS).
- Firmware: The firmware IMG file for the NAS model you purchased.
- Mac: The setup program of QNAP Finder (for Mac OS).
- Manual: The Quick Installation Guide, software user manuals, and hardware manual of Turbo NAS.
- QGet: The setup program of QGet download utility (for Windows OS).
- QSG: View the hardware installation instructions of the NAS.
- Replicator: The setup program of NetBak Replicator (Windows utility for data backup from Windows OS to QNAP NAS).

The above contents are also available on QNAP website (<http://www.qnap.com/>).



2.2 Hard Disk Drive Compatibility List

This product works with 2.5-inch and 3.5-inch SATA hard disk drives from major hard drive brands. For the hard disk drive compatibility list, please visit <http://www.qnap.com/>.



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.

2.3 Check System Status (LED and Alarm Buzzer)

LED Display & System Status Overview

LED	Colour	LED Status	Description
System Status	Red/ Green	Flashes green and red alternately every 0.5 sec	<ol style="list-style-type: none"> 1) The hard disk drive on the NAS is being formatted 2) The NAS is being initialised 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	<ol style="list-style-type: none"> 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	<ol style="list-style-type: none"> 1) The NAS is starting up 2) The NAS is not configured 3) The hard disk drive is not formatted
		Green	The NAS is ready
		Off	All the hard disk drives on the NAS are in standby

LED	Colour	LED Status	Description
			mode
LAN	Orange	Orange	The disk data is being accessed and a read/write error occurs during the process
		Flashes orange	The NAS is connected to the network
HDD	Red/ Green	Flashes red	The NAS is being accessed from the network
		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	<ol style="list-style-type: none"> 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	<ol style="list-style-type: none"> 1) A front USB device is detected (after the device is mounted) 2) The NAS has finished copying the data to or from the USB device connected to the front USB port
		Off	No USB device can be detected
eSATA*	Orange	Flashes	The eSATA device is being accessed
		Off	No eSATA device can be detected

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

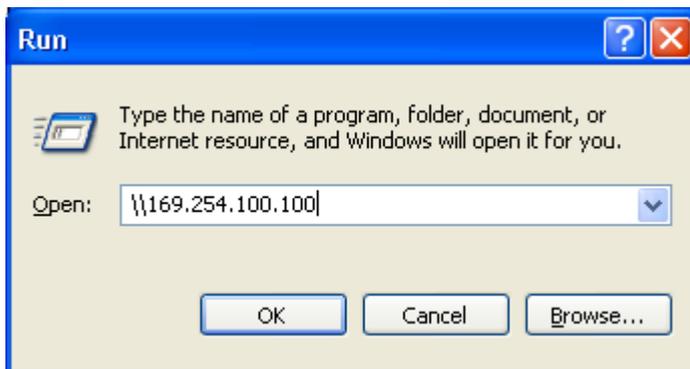
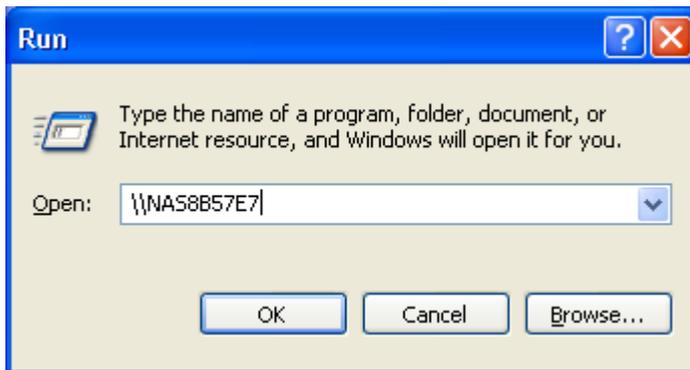
Alarm Buzzer (the alarm buzzer can be disabled in 'System Tools' > 'Hardware Settings')

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

2.4 Connect to the NAS Network Shares

Windows Users

1. You can connect to the network shares of the NAS by the following means:
 - a. Open My Network Places and find the workgroup of the NAS. If you cannot find the server, browse the whole network to search for the NAS. Double click the name of the NAS for connection.
 - b. Use the Run function in Windows. Enter \\NAS name or \\NAS IP



2. Enter the default administrator name and password.

Default user name: admin
Default password: admin

3. You can upload files to the network shares.

Mac Users

1. Choose 'Go' > 'Connect to Server'.
2. There are two ways to mount a disk:
 - AFP: type NAS IP or afp://NAS_IP
 - SMB: type smb://NAS_IP or NAS_name

For example, 169.254.100.100 or smb://169.254.100.100

3. Click 'Connect'.

Linux Users

On Linux, run the following command:

```
mount -t nfs <NAS IP>:/<Network Share Name> <Directory to Mount>
```

For example, if the IP address of your NAS is 192.168.0.1 and you want to link the network share folder 'public' under the /mnt/pub directory, use the following command:

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

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

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

2.5 Connect to the NAS by Web Browser

Connect to the NAS by web browser on Windows or Mac OS

1. You can connect to the web administration page of the NAS by the following methods:
 - a. Use Finder to find the NAS.
 - b. Open a web browser and enter `http://NAS IP:8080`

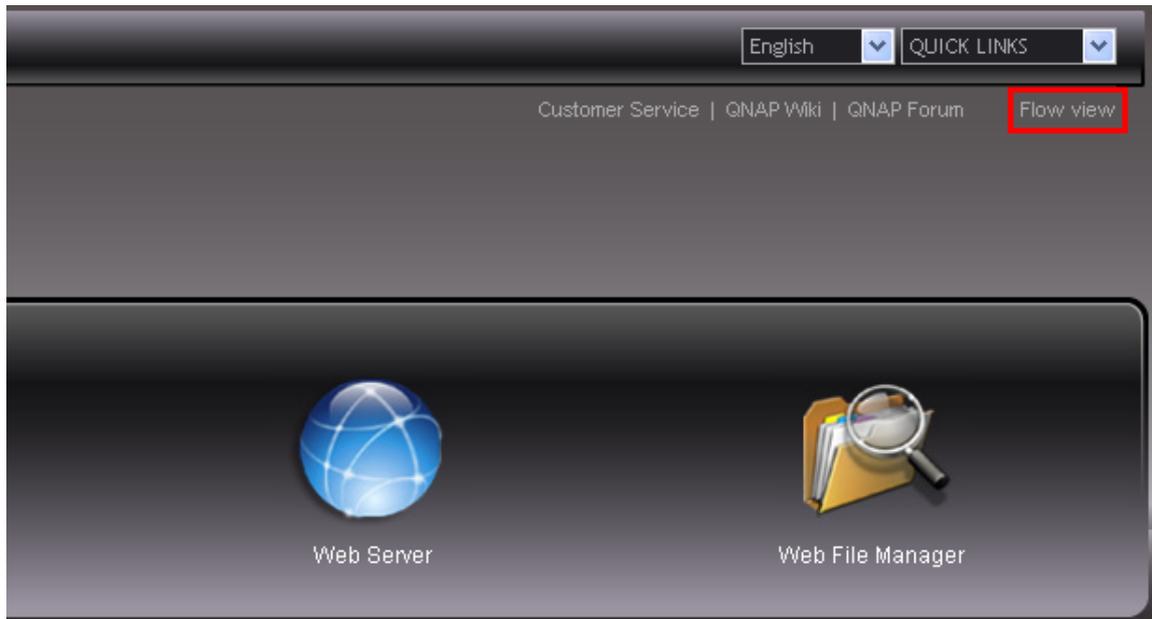
Note: The default NAS IP is 169.254.100.100:8080. If you have configured the NAS to use DHCP, you can use Finder to check the IP address of the NAS. Make sure the NAS and the computer that runs Finder are connected to the same subnet. If you cannot search for the NAS IP, connect the NAS to your computer directly and run Finder again.

2. Choose the display language from the drop-down menu on the login page of the NAS or after you login the NAS.



3. You can select to browse the NAS UI with Standard view or Flow view.

Standard view



Flow view



4. To configure the NAS, click 'ADMINISTRATION'. Enter the administrator name and password.

Default user name: admin
Default password: admin

Note that if you login the administration interface with a user account without the administration right, you can only change your login password.



5. You can turn on the option 'SSL login' (Secure Sockets Layer login) to allow secure connection to the NAS.

Note: If your NAS is placed behind an NAT gateway and you want to access the NAS by secure login from the Internet, you must open the port 443 on your NAT and forward this port to LAN IP of the NAS.

A screenshot of a login form window. On the left is a green user icon. The form contains fields for 'User Name' (filled with 'admin') and 'Password' (filled with seven dots). Below these are three checkboxes: 'Remember user name' (unchecked), 'Remember password' (unchecked), and 'SSL login' (checked, highlighted with a red box). At the bottom are 'SUBMIT' and 'CANCEL' buttons. The window title bar shows 'Close | X'.

After you login the NAS, the home page will be shown. You can find the software wizards for convenient setup of some features, links to QNAP technical support, forum, and Wiki, and the latest RSS news feeds from QNAP*.

Home Welcome admin | Logout English

Turbo Station Wizard

 Create a User Create a user and assign the privileges	 Create Multiple Users Create multiple users and assign the privileges	 Create a User Group Create a user group and assign the privileges
 Create a Share Folder Create a shared folder and assign the privileges	 FTP Service Set up the FTP service	 Remote Replication Set up the backup schedule

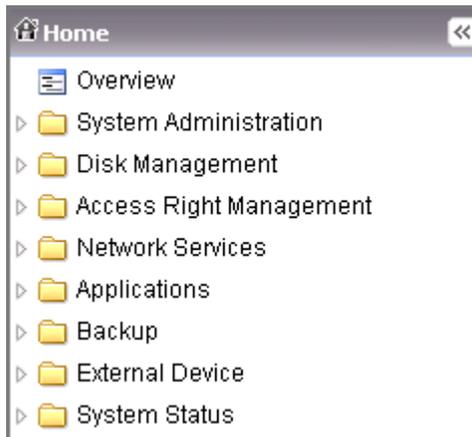
Support and Forum

 Support Form	 QNAP Forum	 QNAP Wiki
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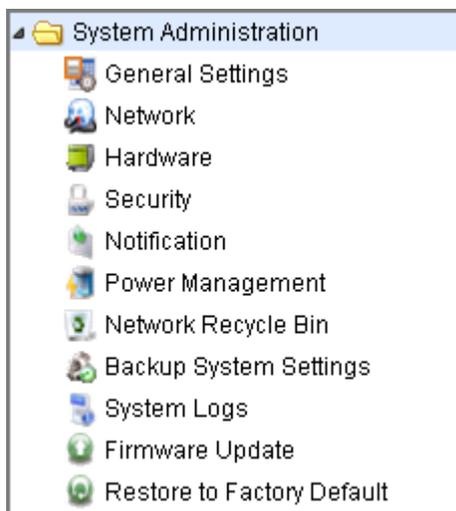
QNAP Latest News

- [\(2010.04.28\) \[Firmware\] TS-239 Turbo NAS Official Firmware Released \(v3.2.6 Build 0423\)](#)
- [\(2010.04.28\) \[Firmware\] TS-239 Pro II Turbo NAS Official Firmware Released \(v3.2.6 Build 0423\)](#)

There are 8 main sections in the server administration.



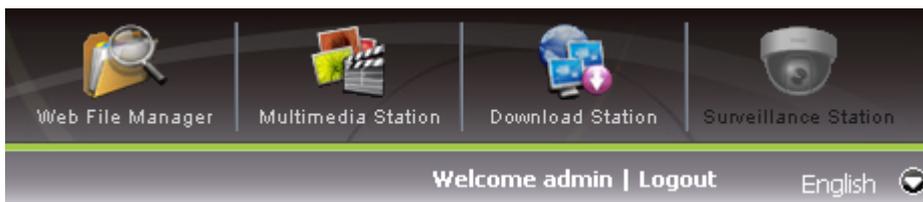
Click the triangle icon next to the section name to expand the tree and view the items listed under each section.



To use the services such as Web File Manager, Download Station, Multimedia Station, and Surveillance Station, choose the services from the drop-down menu or click the icons on the login page.



After you login the NAS, you can click the icons on top of the page to access the services.



2.6 System Migration

System migration allows existing QNAP NAS users to upgrade your NAS to another new QNAP NAS model without the need to transfer the data or reconfigure the system. You only need to install the original hard disk drives on the new NAS following its original hard drive order and restart the NAS.

Due to different hardware design, the NAS will automatically check if a firmware update is required before system migration. After the migration has finished, all the settings and data will be kept and applied to the new NAS. However, the system settings of the source NAS cannot be imported to the destination NAS via 'System Administration' > 'Backup/Restore Settings'. You may need to configure the NAS again if the settings were lost.

The following table shows the NAS models which support system migration.

Source NAS	Destination NAS	Remarks
TS-x10, TS-x19, TS-x39, TS-509, TS-809, SS-x39, TS-x59	TS-x10, TS-x19, TS-x39, TS-509, TS-809, SS-x39	Firmware update required.
TS-x10, TS-x19, TS-x39, TS-509, TS-809, SS-x39, TS-x59	TS-x59	Firmware update not required.

Note:

- The destination should contain enough drive bays to house the number of hard disk drives in the disk volume of the source NAS.
- SS-x39 series supports only 2.5-inch hard disk drives.
- A NAS with encrypted disk volume cannot be migrated to a NAS which does not support file system encryption. File system encryption 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+.

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.

Follow the steps below to perform system migration.



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

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 the web administration interface as an administrator (default login: admin; password: admin).
6. If you are informed 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.

Some system settings will be removed after system migration due to different system design. You may need to configure the following settings again on the new NAS.

- Windows AD
- Some QPKG's need to be resintalled (e.g. XDove)

3. System Administration

You can configure general system settings, network settings, and hardware settings, update the firmware, and more in this section.

General Settings [32](#)

Network [36](#)

Hardware [54](#)

Security [57](#)

Notification [60](#)

Power Management [63](#)

Network Recycle Bin [65](#)

Backup/Restore Settings [66](#)

System Logs [67](#)

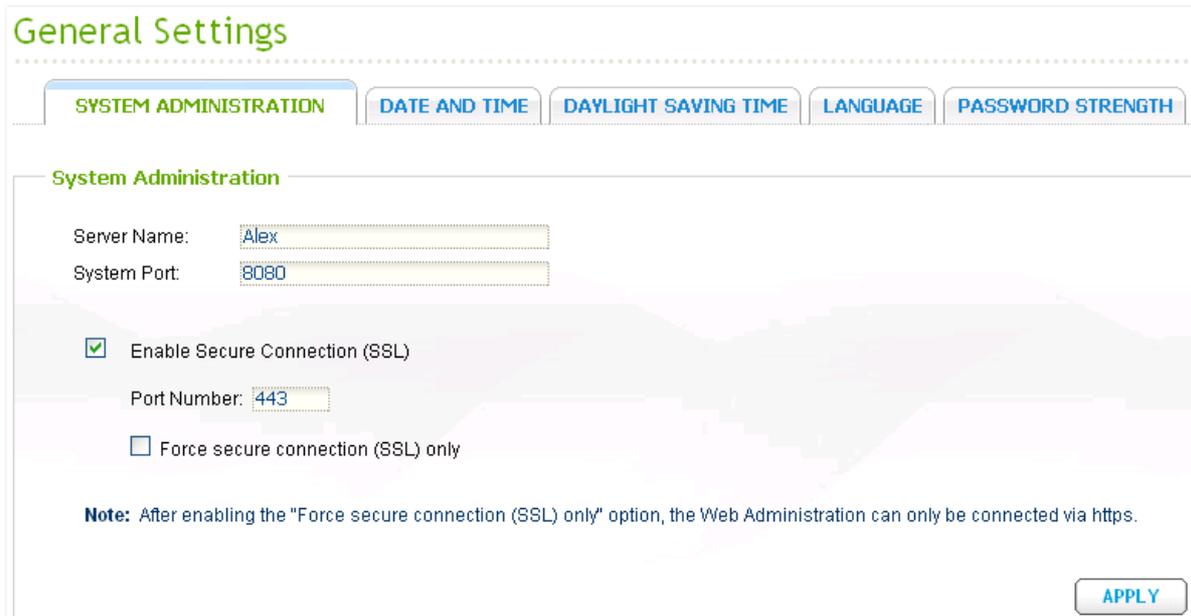
Firmware Update [71](#)

Restore to Factory Default [75](#)

3.1 General Settings

System Administration

Enter the name of the NAS. The server name supports maximum 14 characters and can be a combination of the alphabets, numbers, and hyphen (-). The server name does not accept the names with space, period (.), or names in pure number.



The screenshot shows the 'General Settings' interface with the 'SYSTEM ADMINISTRATION' tab selected. The 'System Administration' section contains the following fields and options:

- Server Name:
- System Port:
- Enable Secure Connection (SSL)
- Port Number:
- Force secure connection (SSL) only

Note: After enabling the "Force secure connection (SSL) only" option, the Web Administration can only be connected via https.

Assign a port for the system management. The default port is 8080. The services which use this port include: System Management, Web File Manager, Multimedia Station, and Download Station. If you are not sure about this setting, use the default port number.

Enable Secure Connection (SSL)

To allow the users to connect the NAS by https, turn on secure connection (SSL) and enter the port number. If you turn on the option 'Force secure connection (SSL) only', the users can only connect to the web administration page by https connection.

Date and Time

Adjust the date, time, and time zone of the NAS according to your location. If the settings are incorrect, the following problems may occur:

- When using a web browser to access the server or save a file, the display time of the action will be incorrect.
- The time of the event log displayed will be inconsistent with the actual time when an action occurs.

Set the server time the same as your computer time

To synchronize the server time with the time of your computer, click 'Update now' next to this option.

Synchronize with an Internet time server automatically

You can turn on this option to synchronize the date and time of the NAS automatically with specified 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: The first time synchronization may take several minutes to complete.

General Settings

SYSTEM ADMINISTRATION | **DATE AND TIME** | DAYLIGHT SAVING TIME | LANGUAGE | PASSWORD STRENGTH

Current date and time

2010/11/29 12:33:34 Monday

Date and Time

Time Zone: (GMT+08:00) Taipei

Date Format: yyyy/MM/DD

Time Setting: 24HR

Manual Setting

Date/Time: 2010/11/29 / 12 : 31 : 53

Synchronize with an internet time server automatically

Server: pool.ntp.org

Time Interval: 1 day(s)

Set the server time the same as your computer time **UPDATE NOW**

APPLY

Daylight Saving Time

If your region adopts daylight saving time (DST), you can turn on the option 'Adjust system clock automatically for daylight saving time'. Click 'Apply'. The latest DST schedule of the time zone you select in the 'Date and 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.

The screenshot shows the 'General Settings' page with the 'DAYLIGHT SAVING TIME' tab selected. The 'Daylight Saving Time' section displays the following information:

- Time Zone: (GMT+08:00) Taipei
- Recent daylight saving time: Start time: --
- End time: --
- Offset: -- minutes

There are two checkboxes:

- Adjust system clock automatically for daylight saving time.
- Enable customized daylight saving time table.

An 'APPLY' button is located at the bottom right of the section.

To enter the daylight saving time table manually, select the option 'Enable customized daylight saving time table'. Click 'Add Daylight Saving Time Data' and enter the daylight saving time schedule. Then click 'Apply' to save the settings.

This screenshot shows the 'Daylight Saving Time' section with the following changes:

- The checkbox 'Enable customized daylight saving time table.' is now checked and highlighted with a red box.
- The 'APPLY' button is visible.
- The 'Customized Daylight Saving Time Tables' section is expanded, showing a table with columns: Start Time, End Time, Offset, and Action.
- The 'Add Daylight Saving Time Data' button is highlighted with a red box.
- A 'Delete' button is visible at the bottom left of the table.

Language

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

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

General Settings

SYSTEM ADMINISTRATION DATE AND TIME DAYLIGHT SAVING TIME **LANGUAGE** PASSWORD STRENGTH

Language

Filename Encoding: English ▼

APPLY

Password Strength

You can specify the password rules. After applying the setting, the NAS will automatically check the validity of the password.

General Settings

SYSTEM ADMINISTRATION DATE AND TIME DAYLIGHT SAVING TIME LANGUAGE **PASSWORD STRENGTH**

Password Strength

- 1. Please select a new password that contains characters from at least three of the following classes: lowercase letters, upper case letters, digits, and special characters.
- 2. No character in the new password may be repeated more than three times consecutively.
- 3. The new password must not be the same as the associated username, or the username reversed.

APPLY

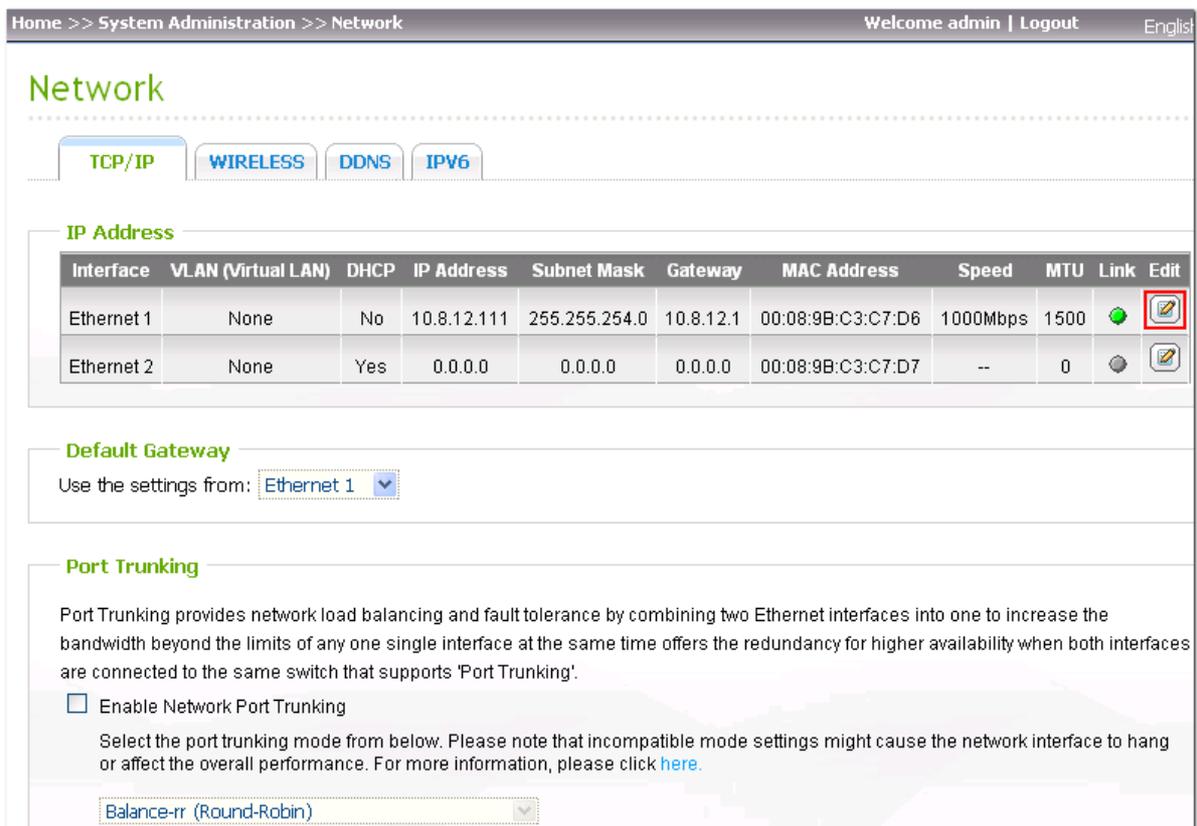
3.2 Network

TCP/IP

(i) IP Address

You can configure the TCP/IP settings of the NAS on this page. Click the Edit button () to edit the network settings. For the NAS which supports two LAN ports, you can connect both network interfaces to two different switches and configure the TCP/IP settings. The NAS will acquire two IP addresses which allow the access from two different subnets. This is known as multi-IP setting*. When using Finder 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 mode for dual LAN connection, see section (iii).

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



Home >> System Administration >> Network Welcome admin | Logout English

Network

TCP/IP | WIRELESS | DDNS | IPV6

IP Address

Interface	VLAN (Virtual LAN)	DHCP	IP Address	Subnet Mask	Gateway	MAC Address	Speed	MTU	Link	Edit
Ethernet 1	None	No	10.8.12.111	255.255.254.0	10.8.12.1	00:08:9B:C3:C7:D6	1000Mbps	1500		
Ethernet 2	None	Yes	0.0.0.0	0.0.0.0	0.0.0.0	00:08:9B:C3:C7:D7	--	0		

Default Gateway

Use the settings from: Ethernet 1

Port Trunking

Port Trunking provides network load balancing and fault tolerance by combining two Ethernet interfaces into one to increase the bandwidth beyond the limits of any one single interface at the same time offers the redundancy for higher availability when both interfaces are connected to the same switch that supports 'Port Trunking'.

Enable Network Port Trunking

Select the port trunking mode from below. Please note that incompatible mode settings might cause the network interface to hang or affect the overall performance. For more information, please click [here](#).

Balance-rr (Round-Robin)



On the TCP/IP Property page, configure the following settings:

Network Speed

Select the network transfer rate according to the network environment to which the NAS is connected. Select auto negotiation and the NAS will adjust the transfer rate automatically.

Obtain the IP address settings automatically via DHCP

If your network supports DHCP, select this option and the NAS will obtain the IP address and network settings automatically.

Use static IP address

To use a static IP address for network connection, enter the IP address, subnet mask, and default gateway.

Enable DHCP Server

If no DHCP is available on the LAN where the NAS locates, you can turn on this function to make the NAS a DHCP server. The NAS will allocate dynamic IP address to the DHCP clients on the LAN.

You can set the range of IP addresses allocated by the DHCP server and the lease time. The lease time refers to the time that an IP address is leased to the clients by the DHCP server. When the lease time expires, the client has to acquire an IP address from the DHCP server again.

Note:

- If there is an existing DHCP server on the LAN, do not enable this function. Otherwise, there will be IP address conflicts and network access errors.
- This option is available to Ethernet 1 only when both LAN ports of the dual LAN NAS are connected to the network.

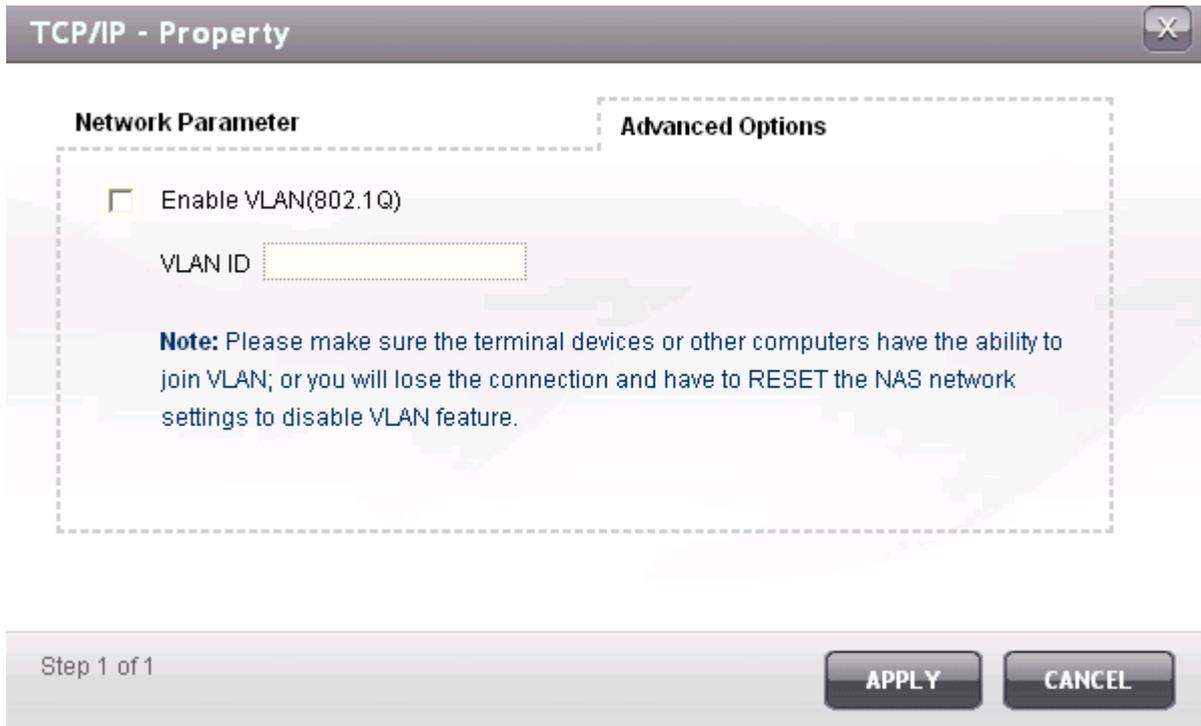
Advanced Options

A Virtual LAN (VLAN) is a group of hosts which communicate as if they were attached to the same broadcast domain even if they were located in different physical locations. You can join the NAS to a VLAN and configure the NAS as a backup storage of other devices on the same VLAN.

To join the NAS to a VLAN, select 'Enable VLAN' and enter the VLAN ID (a value between 0 and 4094). Please keep your VLAN ID safe and make sure your client devices are able to join the VLAN. If you forgot the VLAN ID and were not able to connect to the NAS, you would need to press the reset button of the NAS to reset the network settings. Once the NAS is reset, the VLAN feature will be disabled. If your NAS supports two Gigabit LAN ports and only one network interface is configured to enable VLAN, you may also connect to the NAS via the other network interface.

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

Intel-based NAS refers to TS-239 Pro, TS-239 Pro II, TS-259 Pro, SS-439 Pro, TS-439 Pro, TS-439 Pro II, TS-439U-SP/RP, TS-459 Pro, TS-459U-SP/RP, TS-509 Pro, TS-559 Pro, TS-639 Pro, TS-659 Pro, SS-839 Pro, TS-859 Pro, TS-809 Pro, TS-809U-RP, TS-859U-RP, TS-259 Pro+, TS-459 Pro+, TS-559 Pro+, TS-659 Pro+.



(ii) Default Gateway

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

(iii)Port Trunking

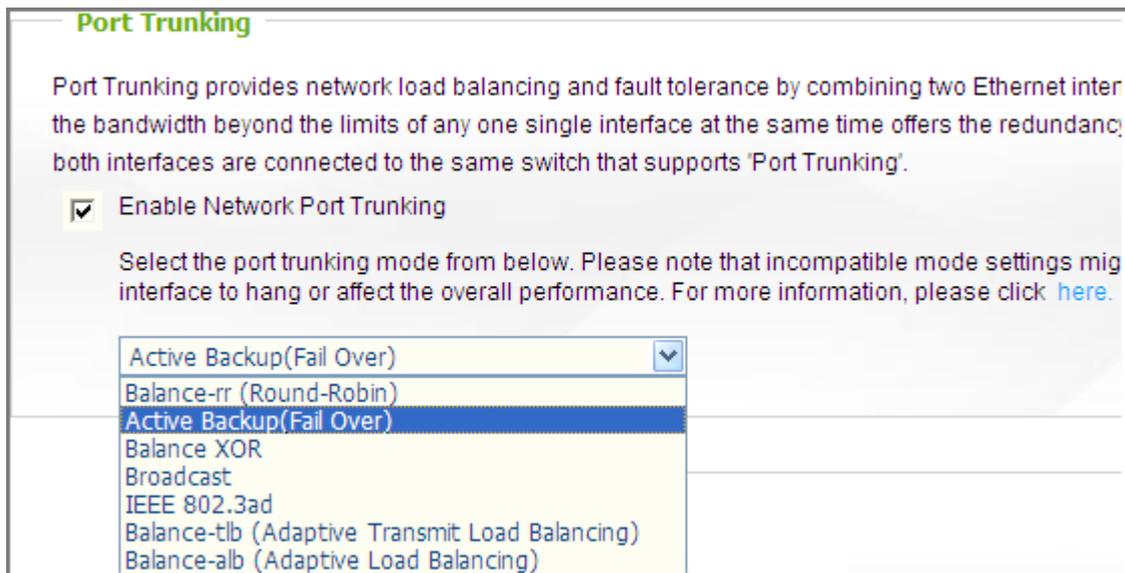
Applicable to NAS models with two LAN ports only.

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

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

Follow the steps below to configure port trunking on the NAS:

1. Select the option 'Enable Network Port Trunking'.
2. Choose a port trunking mode from the drop-down menu. The default option is Active Backup (Failover).



3. Click 'Apply'.

- The Ethernet interfaces will be combined as Ethernet 1+2. Click the Edit button to edit the network settings.

Network

TCP/IP WIRELESS DDNS IPV6

IP Address

Interface	VLAN (Virtual LAN)	DHCP	IP Address	Subnet Mask	Gateway	MAC Address	Speed	MTU	Link	Edit
Ethernet 1+2	None	Yes	10.8.12.72	255.255.254.0	10.8.12.1	00:08:9B:C3:C7:D6	1000Mbps	1500		

- After applying the settings, make sure the network cables of the two Ethernet interfaces are connected to the correct switch and the switch has been configured to support the port trunking mode selected on the NAS.

Refer to the table below about 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 uses only 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 MAC address is coupled with destination MAC address. Alternate transmit policies maybe selected via the xmit_hash_policy option. Balance XOR mode provides load balancing and fault tolerance.	Supports static trunking. Make sure static trunking is enabled on the switch.
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
---	--	------------------

(iv) 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:

- Please 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, for example, BT download, you must enter at least one DNS server IP for proper URL connection. Otherwise, the function may not work properly.
- If you select to obtain the IP address by DHCP, there is no need to configure the primary and the secondary DNS servers. In this case, enter '0.0.0.0'.

(v) Jumbo Frame Settings (MTU)

This feature is not supported by TS-509 Pro, TS-809 Pro, and TS-809U-RP.

'Jumbo Frames' refer to the 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 your network appliances support Jumbo Frame setting, select the appropriate MTU value for your network environment. The NAS supports 4074, 7418, and 9000 bytes for MTU.

Note: The Jumbo Frame setting is valid in Gigabit network environment only. All the network appliances connected must enable Jumbo Frame and use the same MTU value.

Wireless

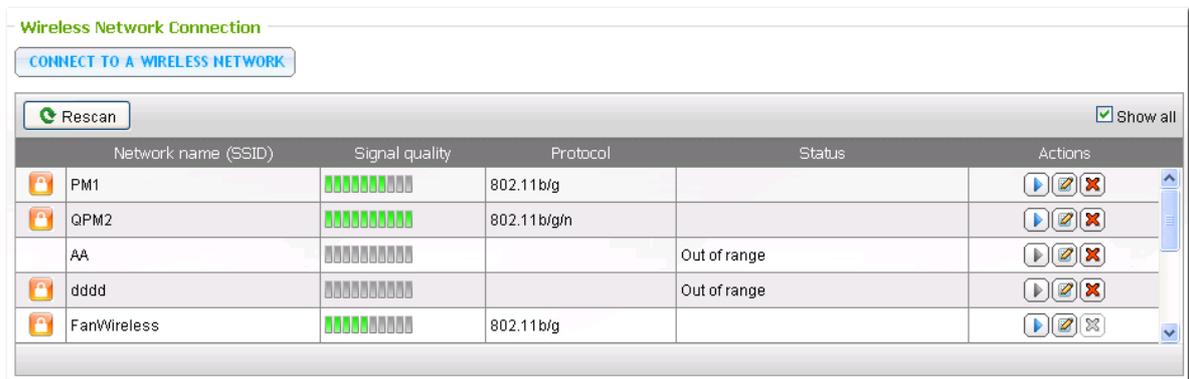
To connect the NAS to a wireless network, plug in a wireless dongle into a USB port of the NAS. The NAS will detect a list of wireless access points. You can connect the NAS to the wireless network in two ways.

Note:

- The wireless connection performance depends on many factors such as the adapter model, the USB adapter's performance, and the network environment. For higher connection performance, you are recommended to use wired connection.
- The system supports only one USB Wi-Fi dongle at a time.

1. Connect to an existing wireless network:

A list of wireless access points with signal strength are displayed on the 'Wireless Network Connection' panel.



Icons and Options	Description
Rescan	To search for the wireless networks in range.
 (Secured network)	This icon shows that the wireless network requires a network key; you need to enter the key to connect to the network.
 (Connect)	To connect to wireless network. If a security key is required, you will be prompted to enter the key.

 (Edit)	To edit the connection information. You may also select to connect to the wireless network automatically when it is in range.
 (Disconnect)	To disconnect from the wireless network.
 (Remove)	To delete the wireless network profile from the panel.
Show all	Select this option to display all the available wireless networks. Unselect this option to show only the configured network profiles.

Click 'Rescan' to search for available wireless networks in range. Select a wireless network to connect to and click the Connect button (). Enter the security key if it is a security-key enabled network. Click 'NEXT' and the NAS will attempt to connect to the wireless network.



Rescan		Show all			
Network name (SSID)	Signal quality	Protocol	Status	Actions	
 QPM2	██████████	802.11b/g/n	Connecting	  	
 PM1	██████████	802.11b/g		  	
AA	██████████		Out of range	  	

You can view the status of the configured network profiles.

Message	Description
Connected	The NAS is currently connected to the wireless network.
Connecting	The NAS is trying to connect to the wireless 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 wireless network but could not get an IP address from the DHCP server. Please check your router settings.
Association failed	The NAS cannot connect to the wireless network. Please check your router settings.
Incorrect key	The security key entered is incorrect.
Auto connect	Automatically connect to the wireless network if it is in range.

2. Manually connect to a wireless network:

To manually connect to a wireless network that does not broadcast its SSID (network name), click 'CONNECT TO A WIRELESS NETWORK'.

The screenshot shows a web interface for network configuration. At the top, there's a 'Network' header with a help icon. Below it are several tabs: 'TCP/IP', 'WIRELESS' (which is highlighted in green), 'DDNS', and 'IPV6'. Under the 'WIRELESS' tab, there's a section for 'IP Address' with a table showing details for the 'WLAN 1' interface. Below that, there's a section for 'Wireless Network Connection' with a button labeled 'CONNECT TO A WIRELESS NETWORK' that is highlighted with a red rectangular box.

Interface	DHCP	IP Address	Subnet Mask	Gateway	MAC Address	Speed	MTU	Link	Edit
WLAN 1	Yes	0.0.0.0	0.0.0.0	0.0.0.0	00:1F:1F:55:4E:3C	--	0		

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.



Enter the network name (SSID) of the wireless network and select the security type.

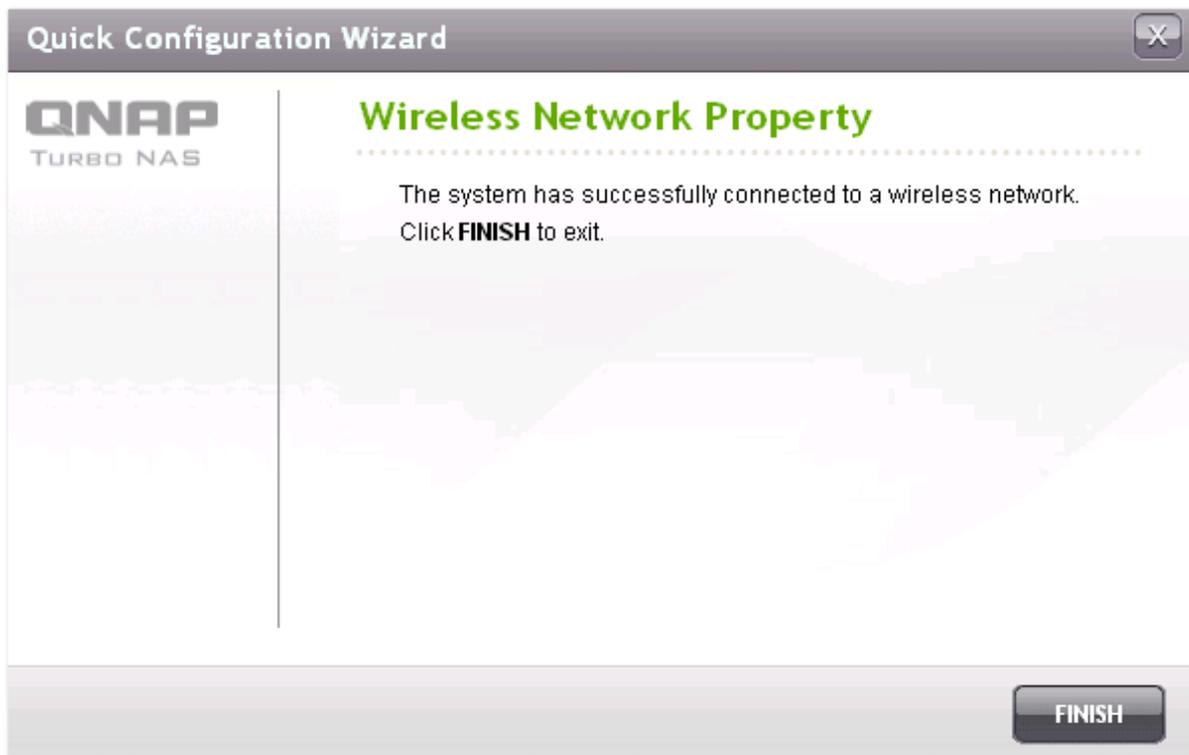
- No authentication (Open): No security key required.
- WEP: Enter up to 4 WEP keys and choose 1 key to be used for authentication.
- WPA-Personal: Choose either the AES or TKIP encryption type and enter the encryption key.
- WPA2-Personal: Enter a security key.

Note:

- The WEP key must be 10 (WEP-64bit) or 26 (WEP-128bit) hexadecimal characters. The WPA key must be 8 to 63 ASCII characters (case-sensitive) or 64 hexadecimal characters.
- If you have trouble connecting to an encrypted wireless network, check your wireless router/AP settings and change the transfer rate from 'N-only' mode to 'B/G/N mixed' or similar settings.
- Users of Windows 7 with WPA2 encryption cannot establish ad-hoc connection with the NAS. Please change to use WEP encryption on Windows 7.
- You must use a fixed IP address for the wireless interface in order to establish an ad-hoc connection.



Click 'FINISH' after the NAS has added the wireless network.



To edit the IP address settings, click the Edit button . You can select to obtain the IP address automatically by DHCP or configure a fixed IP address.

Network

TCP/IP WIRELESS DDNS IPV6

IP Address

Interface	DHCP	IP Address	Subnet Mask	Gateway	MAC Address	Speed	MTU	Link	Edit
WLAN 1	Yes	192.168.11.6	255.255.255.0	0.0.0.0	00:1F:1F:55:4E:3C	54Mbps	1500		

If the wireless connection is the only connection between your NAS and the router/AP, you must select 'WLAN1' as the default gateway in 'Network' > 'TCP/IP' page. Otherwise, the NAS will not be able to connect to the Internet or communicate with another network.

Network

TCP/IP WIRELESS DDNS IPV6

IP Address

Interface	DHCP	IP Address	Subnet Mask	Gateway	MAC Address	Speed	MTU	Link	Edit
Ethernet 1	No	10.8.13.59	255.255.254.0	10.8.12.1	00:08:9B:C5:A3:01	1000Mbps	1500		

Default Gateway

Use the settings from: WLAN 1

DDNS

To set up a server on the Internet and enable the users to connect to it easily, a fixed and easy-to-remember host name is often required. However, if the ISP provides only dynamic IP address, the IP address of the server will change from time to time and is difficult to recall. You can enable the DDNS service to solve the problem.

After enabling the DDNS service of the NAS, whenever the NAS restarts or the IP address is changed, the NAS will notify the DDNS provider immediately to record the new IP address. When the user tries to connect to the NAS by the host name, the DDNS will transfer the recorded IP address to the user.

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/>.

For the information of setting up the DDNS and port forwarding on the NAS, see here⁴⁷⁸.

The screenshot shows the 'Network' configuration page with the 'DDNS' tab selected. The 'DDNS Service' section includes a checkbox for 'Enable Dynamic DNS Service', a dropdown for 'Select DDNS server' (set to 'www.dyndns.com'), and input fields for 'User Name', 'Password', and 'Host Name'. There is also a checkbox for 'Check the External IP Address Automatically' set to '10 minutes' and a display of the 'Current WAN IP: 219.85.63.13'. The 'Recent DDNS Update Result' section shows fields for 'Connection IP Last Checked:', 'Next Check for Connection IP:', 'Last DDNS Update Time:', and 'Update Server Response:'. An 'APPLY' button is located at the bottom right.

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 acquire IPv6 addresses from the NAS automatically. The NAS services which support IPv6 include:

- Remote replication
- Web Server
- FTP
- iSCSI (Virtual disk drives)
- SSH (putty)

Network

TCP/IP WIRELESS DDNS **IPv6**

IP Address

Enable IPv6

Interface	Auto Configuration	IPv6 Address	Prefix Length	Gateway	Link	Edit
-----------	--------------------	--------------	---------------	---------	------	------

DNS Server

.....

.....

APPLY

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

IPv6 - Property

IPv6 Auto-Configuration

Use static IP address

Fixed IP Address:

Prefix Length:

Default Gateway:

Enable Router Advertisement Daemon (radvd)

Prefix:

Prefix Length:

Step 1 of 1

APPLY **CANCEL**

IPv6 Auto Configuration

If you have an IPv6 enabled router on the network, select this option to allow the NAS to acquire the IPv6 address and the configurations automatically.

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. You may contact your ISP for the information of the prefix and the prefix length.

✓ **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. You may contact your ISP or network administrator for the information. If you select IPv6 auto configuration, leave the fields as '::'.

3.3 Hardware

You can set the hardware functions of the NAS.

Hardware

Hardware

- Enable configuration reset switch
- Enable hard disk standby mode (if no access within Status LED will be off)
- Enable light signal alert when the free size of disk is less than the value: MB
- Enable write cache (for EXT4)

Buzzer Control

Enable alarm buzzer

- System operations (startup, shutdown, and firmware upgrade)
- System events (error and warning)

Smart Fan Configuration

Fan Rotation Speed Settings:

- Low speed
- Medium speed
- High speed

Enable configuration reset switch

When this function is turned on, you can press the reset button for 3 seconds to reset the administrator password and the system settings to default. The disk data will be retained.

Enable hard disk standby mode

When this function is turned on, the hard drive enters standby mode if there is no access within the specified period.

Enable light signal alert when the free size of SATA disk is less than the value:

The status LED flashes red and green when this function is turned on and the free space of the SATA hard drive is less than the value. The range of the value is 1-51200 MB.

Enable write cache (for EXT4)

If the disk volume of the NAS is in EXT 4 format, you can gain better write performance by turning on this option. Note that an unexpected system shutdown may lead to incomplete data transfer when data write is in process. This option will be turned off when any of the following services is enabled:

Download Station, MySQL service, user quota, and Surveillance Station. You are recommended to turn this option off if the NAS is set as a shared storage in a virtualized or clustered environment.

Enable alarm buzzer

You can select to turn on the alarm buzzer when system operation (startup, shutdown, and firmware upgrade) and system events (error and warning) occur.

Smart Fan Configuration**(i) Enable smart fan (recommended)**

Select to use the default smart fan settings or define the settings manually. When the system default settings are selected, the fan rotation speed is automatically adjusted when the server temperature, CPU temperature, and hard drive temperature meet the criteria. It is recommended to enable this option.

(ii) Set fan rotation speed manually

By manually setting the fan rotation speed, the fan rotates at the defined speed continuously.

Enable warning alert for redundant power supply on the web-based interface:

If you have installed two power supply units (PSU) on the NAS and connected them to the power sockets, both PSU will supply the power to the NAS (applied to 1U and 2U models). You can turn on redundant power supply mode in 'System Administration' > 'Hardware' to receive warning alert for the redundant power supply. The NAS will sound and record the error messages in 'System Logs' when the PSU is plugged out or does not correspond correctly.

If you have installed only one PSU on the NAS, you are suggested NOT to enable this option.

* This function is disabled by default.



3.4 Security

Security Level

Enter the IP address or network domain from which the connections to this server 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 local server.

After changing the settings, click 'Apply' to save the changes. The network services will be restarted and current connections to the server will be terminated.

The screenshot shows a web-based configuration interface for a server's security settings. The main heading is "Security" in green. Below it are three tabs: "SECURITY LEVEL" (selected), "NETWORK ACCESS PROTECTION", and "SSL SECURE CERTIFICATE & PRIVATE KEY". Under the "Security Level" tab, there are three radio button options: "High: Allow connections from the list only", "Medium: Deny connections from the list", and "Low: Allow all connections". The "Low" option is selected. Below these options is a text input field with the placeholder text "Enter the IP address or network from which the connections to this server will be allowed or rejected." To the right of the input field are two buttons: a plus sign (+) and a minus sign (-). Below the input field is a table with three columns: "Genre", "IP address or network domain", and "Time left for IP blocking". The table is currently empty. At the bottom right of the interface is a blue "APPLY" button.

Genre	IP address or network domain	Time left for IP blocking
-------	------------------------------	---------------------------

Network Access Protection

The network access protection enhances system security and prevents unwanted intrusion. You can select to block the IP for a certain period of time or forever if the IP fails to login the server from a particular connection method.

Security

SECURITY LEVEL **NETWORK ACCESS PROTECTION** **SSL SECURE CERTIFICATE & PRIVATE KEY**

Network Access Protection

Enable network access protection

<input checked="" type="checkbox"/> SSH:	In	1 minutes	, after unsuccessful attempts for	5 time(s)	, block the IP for	5 minutes
<input checked="" type="checkbox"/> Telnet:	In	1 minutes	, after unsuccessful attempts for	5 time(s)	, block the IP for	5 minutes
<input checked="" type="checkbox"/> HTTP(S):	In	1 minutes	, after unsuccessful attempts for	5 time(s)	, block the IP for	5 minutes
<input type="checkbox"/> FTP:	In	1 minutes	, after unsuccessful attempts for	5 time(s)	, block the IP for	5 minutes
<input type="checkbox"/> SAMBA:	In	1 minutes	, after unsuccessful attempts for	5 time(s)	, block the IP for	5 minutes
<input type="checkbox"/> AFP:	In	1 minutes	, after unsuccessful attempts for	5 time(s)	, block the IP for	5 minutes

APPLY

Import SSL Secure Certificate

The Secure Socket Layer (SSL) is a protocol for encrypted communication between web servers and browsers for secure data transfer. You can upload a secure certificate issued by a trusted provider. After you have uploaded a secure certificate, you can connect to the administration interface by SSL connection and there will not be any alert or error message. The NAS supports X.509 certificate and private key only.

SECURITY LEVEL **NETWORK ACCESS PROTECTION** **SSL SECURE CERTIFICATE & PRIVATE KEY**

SSL Secure Certificate & Private Key

You can upload a secure certificate issued by a trusted provider. After you have uploaded a secure certificate successfully, you can access the administration interface by SSL connection and there will not be any alert or error message.

If you upload an incorrect secure certificate, you may not be able to login the server via SSL. To resolve the problem, you can restore the secure certificate to default and access the system again.

Status: Default secure certificate being used

Certificate: Please enter a certificate in X.509PEM format below. [View sample](#)

Private Key: Please enter a certificate or private key in X.509PEM format below. [View sample](#)

CLEAR **UPLOAD**

3.5 Notification

Configure SMTP Server

The NAS supports email alert to inform you of system errors and warning. To receive the alert by email, configure the SMTP server.

- 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.
- Sender: Enter the sender information.
- Enable SMTP Authentication: When this function is turned on, the system will request the authentication of the mail server before the message is sent.
- User Name and Password: Enter the login information of your email account, for example, your Gmail login name and password.
- Use SSL/TLS secure connection: If the SMTP server supports this function, you can turn it on.

The screenshot shows a web interface for configuring notification settings. At the top, there is a header 'Notification' in green. Below it are three tabs: 'CONFIGURE SMTP SERVER' (highlighted in green), 'CONFIGURE SMSC SERVER', and 'ALERT NOTIFICATION'. The main content area is titled 'Configure SMTP Server' and contains the following fields and options:

- SMTP Server:
- Port Number:
- Sender:
- Enable SMTP Authentication
 - User Name:
 - Password:
- Use SSL/TLS secure connection
 - Protocol Type:

An 'APPLY' button is located at the bottom right of the configuration area.

Configure SMS Server

You can configure SMS server settings to send SMS messages from the NAS. 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 you select 'Add SMS service provider', enter the name of the SMS provider and the URL template text.

Note: You will not be able to receive the SMS properly if the URL template text entered does not follow the standard of your SMS service provider.

Notification

[CONFIGURE SMTP SERVER](#) [CONFIGURE SMSC SERVER](#) [ALERT NOTIFICATION](#)

Configure SMSC Server

You can configure the SMSC settings to send instant system alerts via the SMS service provided by the SMS provider.

SMS Service Provider: <http://www.clickatell.com>

Enable SSL Connection

SSL Port:

SMS Server Login Name:

SMS Server Login Password:

SMS Server API_ID:

Alert Notification

You can select to receive instant SMS or email alert when a system error or warning occurs. Enter the email address and mobile phone number to receive the alerts. Make sure you have entered the correct SMTP server and the SMSC server settings. If you do not want to receive any alerts, select 'No alert' for both settings.

For more information, see here⁴⁸⁶.

CONFIGURE SMTP SERVER **CONFIGURE SMSC SERVER** **ALERT NOTIFICATION**

Alert Notification

When a system event occurs, an alert email/SMS will be sent automatically.

Send system error alert by: ▼

Send system warning alert by: ▼

E-mail Notification Settings

E-mail address 1:

E-mail address 2:

Note: The SMTP server must be configured first for alert mail delivery.

SMS Notification Settings

Country Code: ▼

Cell Phone No. 1: +93

Cell Phone No. 2: +93

Note: You must configure the SMSC server to be able to send SMS notification properly.

3.6 Power Management

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

Restart/Shutdown

Restart or shut down the NAS immediately.

If you try to restart or turn off the NAS from the web-based interface or the LCD panel when a remote replication job is in process, the NAS will prompt you to ignore the running replication job or not.

Turn on the option 'Postpone the restart/shutdown schedule when replication job is in process' to allow the scheduled system restart or 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.

Wake on LAN

Turn on this option to allow the users to power on the NAS remotely by Wake on LAN. Note that if the power connection is physically removed (in other words, the power cable is unplugged) when the NAS is turned off, Wake on LAN will not function whether or not the power supply is reconnected afterwards.

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-112, TS-212, TS-412.

Power resumption settings

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.

Power on/power off/restart schedule

You can select every day, weekdays, weekend, or any days of the week and set the time for automatic system power on, power off, or restart. Weekdays stand for Monday to Friday; weekend stands for Saturday and Sunday. Up to 15 schedules can be set.

Power Management

Restart/ Shutdown

Execute system restart/ shutdown immediately.

Configure Wake on LAN

Enable
 Disable

When the AC power resumes:

Resume the server to the previous power-on or power-off status.
 Turn on the server automatically.
 The server should remain off.

Set power on/ power off/ restart schedule

Enable schedule

Postpone the restart/shutdown schedule when a replication job is in progress.

Shutdown Daily 7 0

3.7 Network Recycle Bin

Network Recycle Bin

This function enables the files deleted on the shares of the NAS to be removed to Network Recycle Bin to reserve the files temporarily. To turn on this function, select the option 'Enable Network Recycle Bin' and click 'Apply'. The NAS will create a network share named 'Network Recycle Bin' automatically. Note that Network Recycle Bin only supports file deletion via SAMBA and AFP.

Empty Network Recycle Bin

To delete all the files in network recycle bin, click 'Empty Network Recycle Bin'.

Network Recycle Bin

Network Recycle Bin

After enabling Network Recycle Bin, all the deleted files on the network folders of the NAS are moved to the "Network Recycle Bin" network folder.

Enable Network Recycle Bin

Empty Network Recycle Bin

Click **[EMPTY NETWORK RECYCLE BIN]** to delete all the files in network recycle bin.

[EMPTY NETWORK RECYCLE BIN]

[APPLY]

3.8 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.

Restore System Settings

To restore all the settings, click 'Browse' to select a previously saved setting file and click 'Restore'.

Backup/Restore Settings

Backup System Settings

To backup all settings, including user accounts, server name and network configuration etc., click **[BACKUP]** and select to open or save the setting file.

Restore System Settings

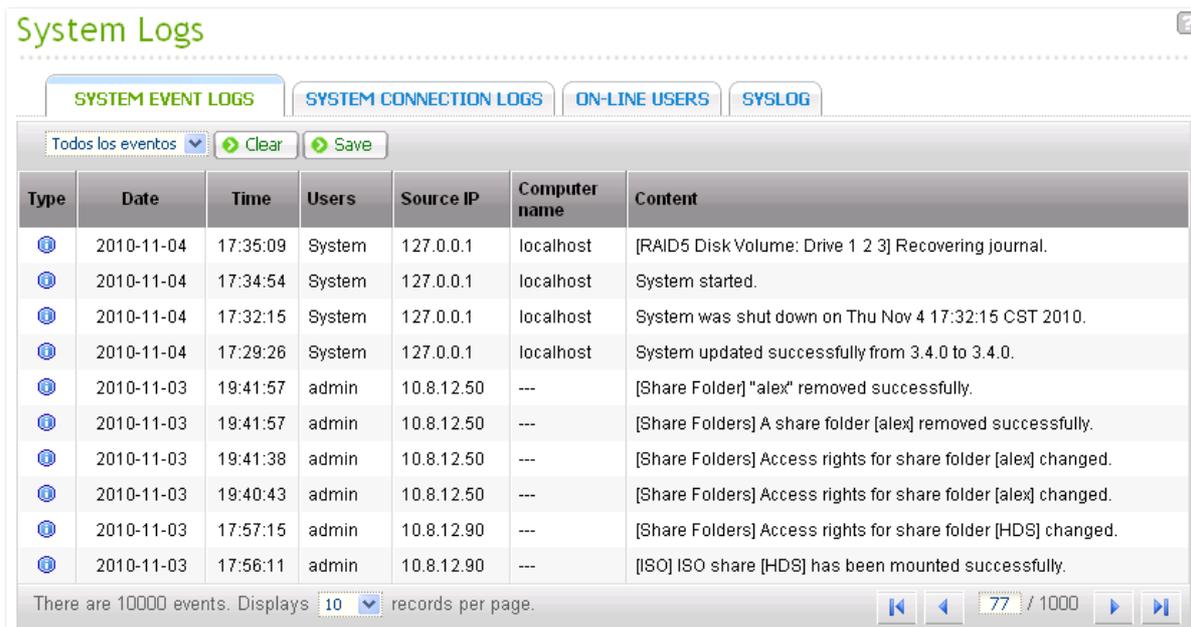
To restore all settings, click **[Browse...]** to select a previously saved setting file and click **[RESTORE]** to confirm.

3.9 System Logs

System Event Logs

The NAS can store 10,000 recent event logs, including warning, error, and information messages. If the NAS does not correspond correctly, you can refer to the event logs for troubleshooting.

Tip: You can right click a log and delete the record. To clear all the logs, click 'Clear'.



The screenshot shows the 'System Logs' interface. At the top, there are four tabs: 'SYSTEM EVENT LOGS' (selected), 'SYSTEM CONNECTION LOGS', 'ON-LINE USERS', and 'SYSLOG'. Below the tabs, there is a dropdown menu set to 'Todos los eventos', and two buttons: 'Clear' and 'Save'. The main area contains a table with the following columns: Type, Date, Time, Users, Source IP, Computer name, and Content. The table lists 11 events from 2010-11-03 to 2010-11-04. At the bottom, there is a status bar that says 'There are 10000 events. Displays 10 records per page.' and navigation buttons for page 77 of 1000.

Type	Date	Time	Users	Source IP	Computer name	Content
①	2010-11-04	17:35:09	System	127.0.0.1	localhost	[RAID5 Disk Volume: Drive 1 2 3] Recovering journal.
①	2010-11-04	17:34:54	System	127.0.0.1	localhost	System started.
①	2010-11-04	17:32:15	System	127.0.0.1	localhost	System was shut down on Thu Nov 4 17:32:15 CST 2010.
①	2010-11-04	17:29:26	System	127.0.0.1	localhost	System updated successfully from 3.4.0 to 3.4.0.
①	2010-11-03	19:41:57	admin	10.8.12.50	---	[Share Folder] "alex" removed successfully.
①	2010-11-03	19:41:57	admin	10.8.12.50	---	[Share Folders] A share folder [alex] removed successfully.
①	2010-11-03	19:41:38	admin	10.8.12.50	---	[Share Folders] Access rights for share folder [alex] changed.
①	2010-11-03	19:40:43	admin	10.8.12.50	---	[Share Folders] Access rights for share folder [alex] changed.
①	2010-11-03	17:57:15	admin	10.8.12.90	---	[Share Folders] Access rights for share folder [HDS] changed.
①	2010-11-03	17:56:11	admin	10.8.12.90	---	[ISO] ISO share [HDS] has been mounted successfully.

System Connection Logs

The NAS supports recording HTTP, FTP, Telnet, SSH, AFP, NFS, SAMBA, and iSCSI connections. Click 'Options' to select the connection type to be logged.

The file transfer performance can be slightly affected when this feature is turned on.

Tip: You can right click a log and select to delete the record or block the IP and select how long the IP should be blocked. To clear all the logs, click 'Clear'.

The screenshot shows the 'System Logs' interface with the 'SYSTEM CONNECTION LOGS' tab selected. The table below displays the log entries.

Type	Date	Time	Users	Source IP	Computer name	Connection type	Accessed resources	Action
ⓘ	2010-12-28	15:57:43	admin	10.8.12.68	---	HTTP	Administration	Login OK
ⓘ	2010-12-28	14:59:58	admin	10.8.12.43	---	HTTP	Administration	Login OK
ⓘ	2010-12-28	14:54:43	admin	10.8.12.68	---	SSH	---	Login OK
ⓘ	2010-12-28	14:53:00	admin	10.8.12.68	---	HTTP	Administration	Login OK
ⓘ	2010-12-28	14:22:23	admin	10.8.12.43	---	HTTP	Administration	Login OK
ⓘ	2010-12-28	12:39:24	admin	10.8.12.43	---	HTTP	Administration	Login OK
ⓘ	2010-12-28	10:56:12	admin	10.8.12.43	---	HTTP	Administration	Login OK
ⓘ	2010-12-27	06:50:29	admin	10.8.12.43	---	HTTP	Administration	Login OK
ⓘ	2010-12-27	03:37:26	admin	10.8.12.51	---	HTTP	Administration	Login OK
ⓘ	2010-12-27	10:24:19	admin	10.8.12.43	---	HTTP	Administration	Login OK

There are 994 events. Displays 10 records per page. 1 / 100

Archive logs: Turn on this option to archive the connection logs. The NAS generates a CSV file automatically and saves it to a specified folder when the number of logs reaches the upper limit.

Connection Type

Select the connection type to be logged.

HTTP FTP Telnet SSH
 AFP SAMBA iSCSI

When the number of logs reaches 10,000, archive the connection logs and save the file in the folder:

You can also view the file-level access logs on this page. The NAS will record the logs when users access, create, delete, move, or rename any files or folders via the connection type specified in 'Options'. To disable this feature, click 'Stop logging'.

Type	Date	Time	Users	Source IP	Computer name	Connectic type	Accessed resources	Action
	2011-01-19	08:55:28	admin	10.8.12.105	reinb	SAMBA	Public/test/New Microsoft Word Documen	Delete
	2011-01-19	08:55:26	admin	10.8.12.105	reinb	SAMBA	Public/test/New Microsoft Word Documen	Read
	2011-01-19	08:55:21	admin	10.8.12.105	reinb	SAMBA	Public/test/New Microsoft Word Documen	Read
	2011-01-19	08:55:20	admin	10.8.12.105	reinb	SAMBA	Public/test/New Microsoft Word Documen	Read
	2011-01-19	08:55:19	admin	10.8.12.105	reinb	SAMBA	Public/test/New Microsoft Word Documen	Read
	2011-01-19	08:55:19	guest	10.8.12.105	reinb	SAMBA	---	Login OK
	2011-01-19	08:55:18	admin	10.8.12.105	reinb	SAMBA	Public/test/New Microsoft Word Documen	Write
	2011-01-19	08:55:11	admin	10.8.12.105	reinb	SAMBA	Public/rename -> Public/test	Rename
	2011-01-19	08:55:02	admin	10.8.12.105	reinb	SAMBA	Public/New Folder -> Public/rename	Rename
	2011-01-19	08:54:55	admin	10.8.12.105	reinb	SAMBA	Public/New Folder	MakeDir

There are 10000 events. Displays records per page.
 / 1000

On-line Users

The information of the on-line users connecting to the NAS by networking services is shown on this page.

Tip: You can right click a log and select to disconnect the IP connection and block the IP.

The screenshot shows the 'System Logs' interface with the 'ON-LINE USERS' tab selected. It displays a table with two rows of login events. A context menu is open over the second row, showing three options: 'Disconnect this connection', 'Add to the block list', and 'Disconnect this connection and block the IP'.

Type	Login date	Login time	Users	Source IP	Computer name	Connection type	Accessed resources
	2010-12-28	15:34:55	admin	10.8.12.43	---	HTTP	Administration
	2010-12-28	14:54:43	admin	10.8.12.68	---	SSH	---

There are 2 events.

- Disconnect this connection
- Add to the block list
- Disconnect this connection and block the IP

Syslog

Syslog is a standard for forwarding the log messages on an IP network. You can turn on this option to save the event logs and connection logs to a remote syslog server.

The screenshot shows the 'System Logs' interface with the 'SYSLOG' tab selected. It displays the 'Syslog Settings' form with the following fields and options:

- Enable syslog
You can enable this option to save the event logs and connection logs to a remote syslog server.
- Syslog Server IP:
- UDP Port:
- Select the logs to record
 - System Event Logs
 - System Connection Logs (You must enable system connection logs to use this option.)

APPLY

3.10 Firmware Update

Update Firmware by Web Administration Page

Firmware Update

FIRMWARE UPDATE **LIVE UPDATE**

Firmware Update

Current firmware version: 3.4.0 Build 1117T

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

1. Download the release notes of the same version as the firmware from QNAP website <http://www.qnap.com/> Read the release notes carefully to make sure you need to update the firmware.
2. Before updating system firmware, back up all disk data on the server to avoid any potential data loss during system update.
3. Click the **[Browse...]** button to select the correct firmware image for system update. Click the **[UPDATE SYSTEM]** button to update the firmware.

Note: System update may take tens of seconds to several minutes to complete depending on the network connection status, please wait patiently. The system will inform you when system update is completed.

Note: If the system is running properly, you do not need to update the firmware.

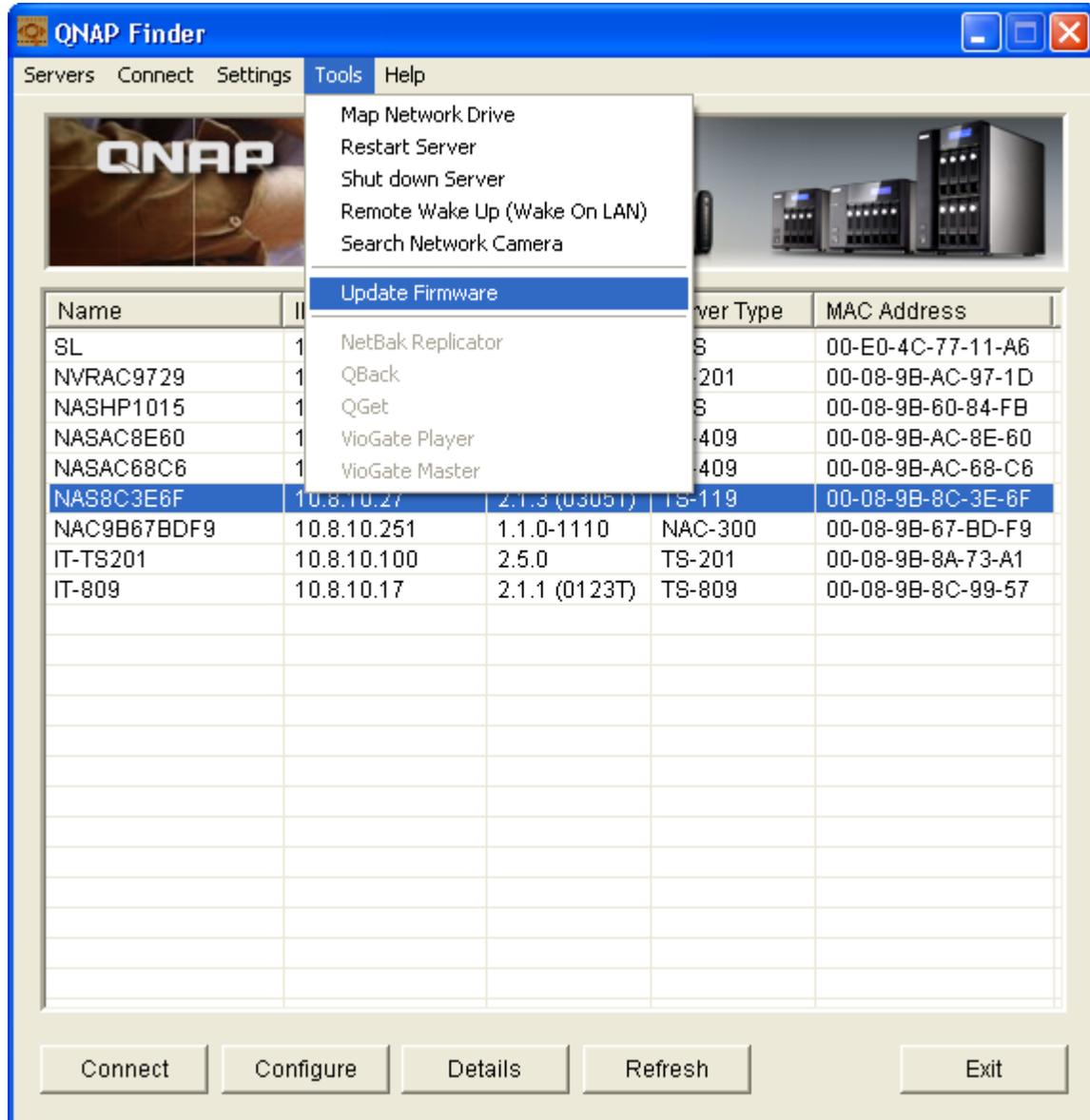
Before updating the system firmware, make sure the product model and firmware version are correct. Follow the steps below to update firmware:

- Step 1: Download the release notes of the firmware from the QNAP website <http://www.qnap.com/>. Read the release notes carefully to make sure you need to update the firmware.
- Step 2: Download the NAS firmware and unzip the IMG file to your computer.
- Step 3: Before updating the system firmware, back up all the disk data on the server to avoid any potential data loss during the system update.
- Step 4: Click 'Browse' to select the correct firmware image for the system update. Click 'Update System' to update the firmware.

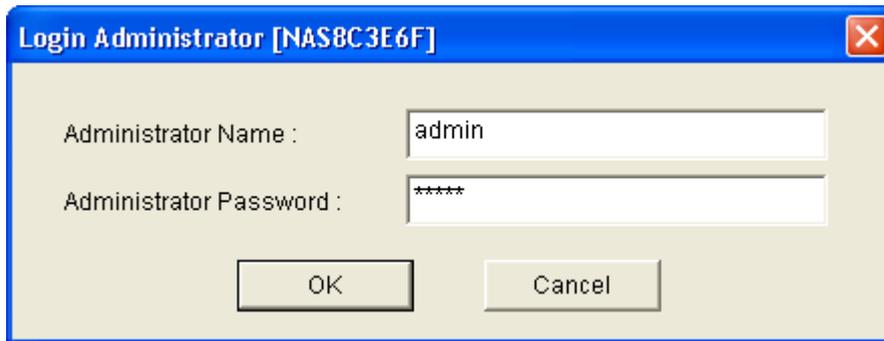
The system update may take tens of seconds to several minutes to complete depending on the network connection status. Please wait patiently. The NAS will inform you when the system update has completed.

Update Firmware by Finder

You can update the system firmware by QNAP Finder. Select a NAS model and choose 'Update Firmware' from the 'Tools' menu.

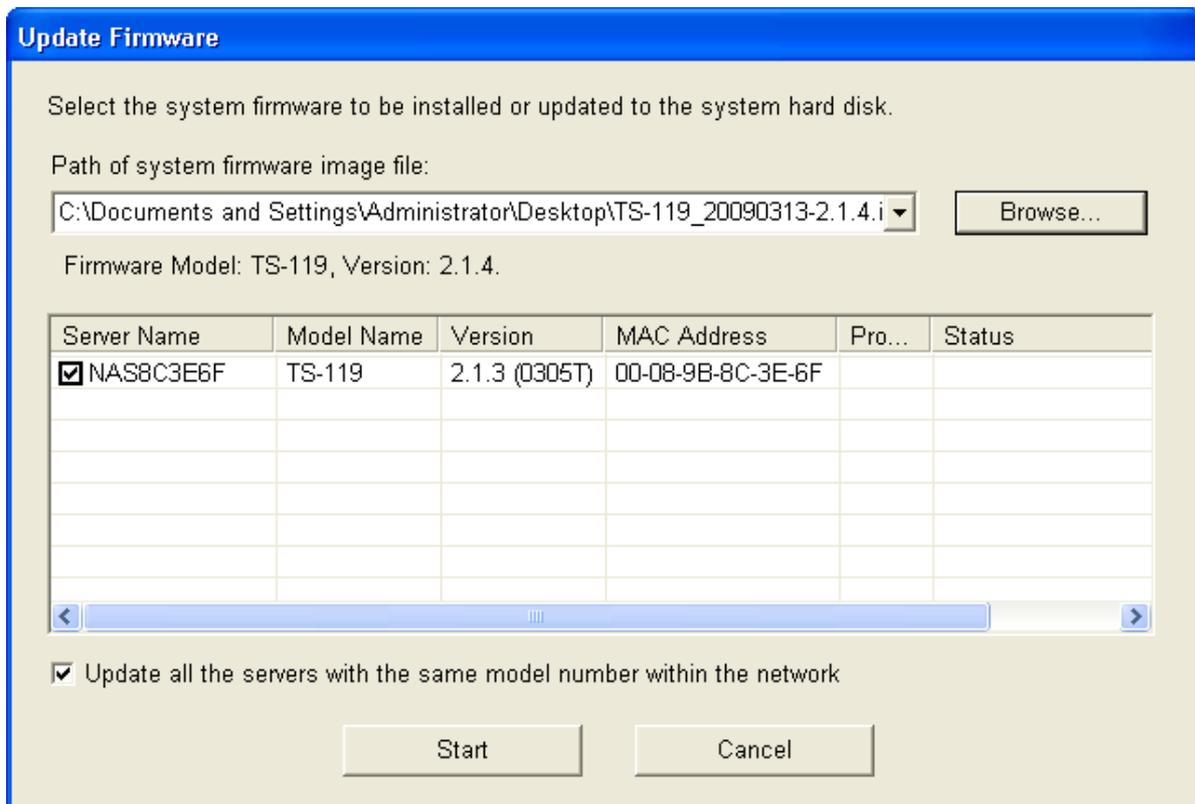


Login the NAS as a user with administrator access right.



The dialog box is titled "Login Administrator [NAS8C3E6F]". It contains two input fields: "Administrator Name" with the text "admin" and "Administrator Password" with six asterisks. Below the fields are "OK" and "Cancel" buttons.

Browse and select the firmware for the NAS. Click 'Start' to update the system.



The dialog box is titled "Update Firmware". It contains the following elements:

- Text: "Select the system firmware to be installed or updated to the system hard disk."
- Text: "Path of system firmware image file:"
- Text box: "C:\Documents and Settings\Administrator\Desktop\TS-119_20090313-2.1.4.i" with a dropdown arrow.
- Button: "Browse..."
- Text: "Firmware Model: TS-119, Version: 2.1.4."
- Table with columns: Server Name, Model Name, Version, MAC Address, Pro..., Status.
- Table content:

Server Name	Model Name	Version	MAC Address	Pro...	Status
<input checked="" type="checkbox"/> NAS8C3E6F	TS-119	2.1.3 (0305T)	00-08-9B-8C-3E-6F		

- Text: "Update all the servers with the same model number within the network" with a checked checkbox.
- Buttons: "Start" and "Cancel".

Note: You can use Finder to update all the servers of the same model on the same local network at the same time. Make sure you have administrator access to all the servers you want to update.

Live Update

Select 'Enable live update' to allow the NAS to automatically check if a new firmware version is available for download from the Internet. If a new firmware is found, you will be notified after logging in the NAS as an administrator.

You can 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

FIRMWARE UPDATE **LIVE UPDATE**

Live Update

Status: The latest update is at 2010/7/26 18:37:55

[CHECK FOR UPDATE](#)

Live Update Setting

After enabling this service, the system will automatically check if a newer firmware version is available for download when logging into the NAS web administration.

Enable live update

[APPLY](#)

3.11 Restore to Factory Default

To reset all the settings to default, click 'RESET'. Enter the administrator password and click 'OK'.



Caution: When you press 'RESET' on this page, all the disk data, user accounts, network shares, and system settings are cleared and restored to default. Make sure you have backed up all the important data and system settings before resetting the NAS.

Restore to Factory Default

Restore to Factory Default

To reset all settings to default, click **[RESET]**.

Caution: When you press **[RESET]** on this page, all drive data, user accounts, network shares and system settings are cleared and restored to default. Please make sure you have backed up all the important data and system settings before resetting the NAS.

RESET

4. Disk Management

Volume Management [\[76\]](#)

RAID Management [\[81\]](#)

HDD SMART [\[103\]](#)

Encrypted File System [\[104\]](#)

iSCSI [\[111\]](#)

Virtual Disk [\[148\]](#)

4.1 Volume Management

This page shows the model, size, and current status of the hard drives on the NAS. You can format and check the hard drives, and scan bad blocks on the hard drives. When the hard drives have been formatted, the NAS will create the following default share folders:

- Public: Share folder for file sharing by everyone.
- Qdownload/Download*: The default share folder for Download Station.
- Qmultimedia/Multimedia*: The default share folder for Multimedia Station.
- Qusb/Usb*: The default share folder for data copy function via the USB ports.
- Qweb/Web*: The default share folder for Web Server.
- Qrecordings/Recordings*: The default share folder for Surveillance Station.

*The default network shares of TS-x59 Turbo NAS series are Public, Download, Multimedia, Usb, Web, and Recordings.

Note: The default share folders are created on the first disk volume and the directory cannot be changed.

Volume Management



Single Disk Volume
Create single disk volume(s).



RAID 1 Mirroring Disk Volume
Create mirroring disk volume(s).



RAID 0 Striping Disk Volume
Create one striping disk volume.



RAID 10 Disk Volume
Combine an even number of disks (minimum 4 disks) to create a disk volume with data protection.



JBOD Linear Disk Volume
Create one linear disk volume.



RAID 5 Disk Volume
Combine 3 or more disks to create a disk volume with data protection (1 failed disk is allowed).



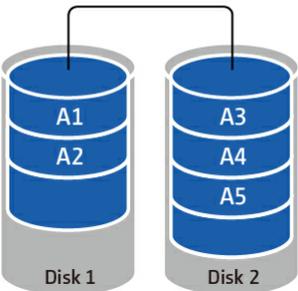
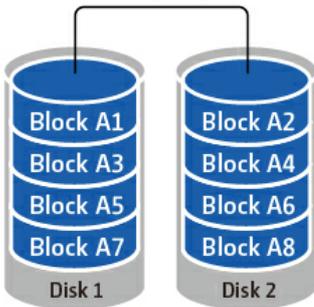
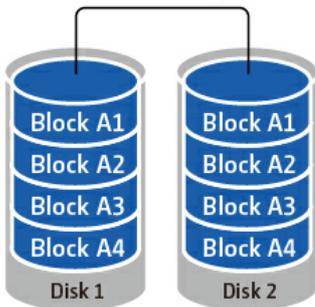
RAID 6 Disk Volume
Combine 4 or more disks to create a disk volume with data protection (2 failed disks are allowed).

Current Disk Volume Configuration : Physical Disks

Disk	Model	Capacity	Status	Bad Blocks Scan	SMART Information
Drive 1	Hitachi HDT725032VLA360 V540	298.09 GB	Ready	SCAN NOW	GOOD
Drive 2	Seagate ST3250620AS 3.AA	232.89 GB	Ready	SCAN NOW	GOOD
Drive 3	Seagate ST3250620AS 3.AA	232.89 GB	Ready	SCAN NOW	GOOD
Drive 4	--	--	No Disk	SCAN NOW	---
Drive 5	--	--	No Disk	SCAN NOW	---

Note that if you are going to 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.

Disk Configuration	Applied NAS Models
Single disk volume	All models
RAID 1, JBOD (just a bunch of disks)	2-bay models or above
RAID 5, RAID 6, RAID 5+hot spare	4-bay models or above
RAID 6+hot spare	5-bay models or above
RAID 10	4-bay models or above
RAID 10+hot spare	5-bay models or above

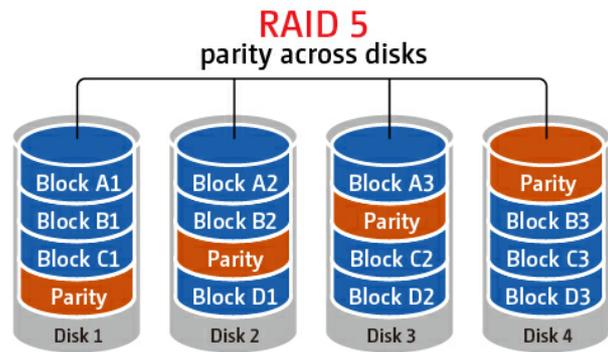
<p>Single Disk Volume</p> <p>Each hard drive is used as a standalone disk. If a hard drive is damaged, all the data will be lost.</p>	
<p>JBOD (Just a bunch of disks)</p> <p>JBOD is a collection of hard drive that does not offer any RAID protection. The data are written to the physical disks sequentially. The total storage capacity is equal to the sum of the capacity of all member hard drives.</p>	<p style="text-align: center;">JBOD</p> 
<p>RAID 0 Striping Disk Volume</p> <p>RAID 0 (striping disk) combines 2 or more hard drive 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 is equal to the sum of the capacity of all member hard drives.</p>	<p style="text-align: center;">RAID 0 striping</p> 
<p>RAID 1 Mirroring Disk Volume</p> <p>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 disk capacity is equal to (size of smallest hard drive) * (number of hard drives) / 2.</p>	<p style="text-align: center;">RAID 1 mirroring</p> 

RAID 5 Disk Volume

The data are 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.

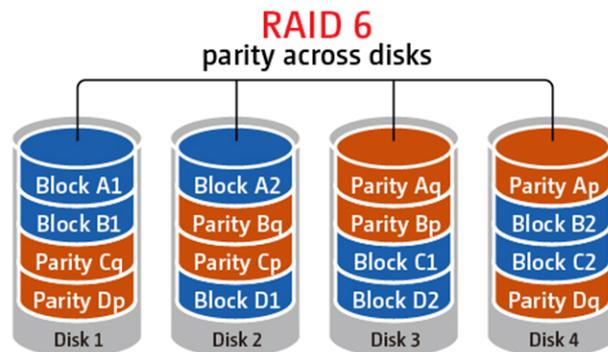
The storage capacity of a RAID 5 array is equal to $(N-1) * (\text{size of smallest hard drive})$. N is the number of hard drives in the array.



RAID 6 Disk Volume

The data are striped across all 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 failure of two hard drives.

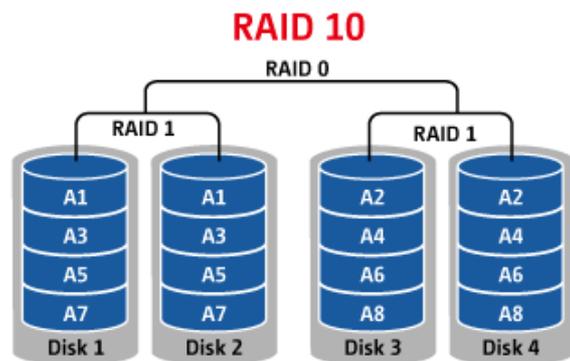
To create a RAID 6 disk volume, a minimum of 4 hard drives are required. The storage capacity of a RAID 6 array is equal to $(N-2) * (\text{size of smallest hard drive})$. N is the number of hard drives in the array.



RAID 10 Disk Volume

RAID 10 combines the advantages of RAID 0 and RAID 1 in a single system. 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 (minimum 4 hard drives). The storage capacity of RAID 10 disk volume is equal to $(\text{size of the smallest capacity disk in the array}) * N/2$. N is the number of hard drives in the volume.



Maximum 2 failed disks from 2 different pairs are allowed in RAID 10.	
---	--

4.2 RAID Management

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

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, and recover a RAID configuration on this page.

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.

RAID Management ?

This function enables capacity expansion, RAID configuration migration or spare drive configuration with the original drive data reserved.
Note: Make sure you have read the instructions carefully and you fully understand the correct operation procedure before using this function.

Current Disk Volume Configuration

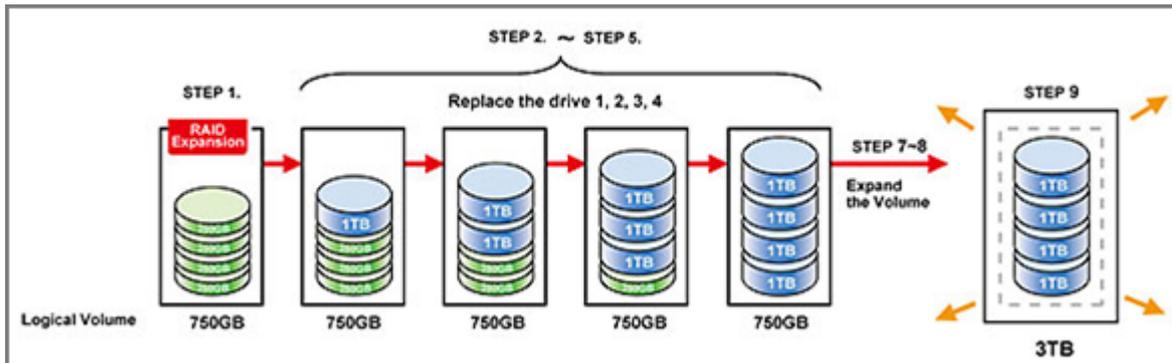
Volume	Total Size	Bitmap	Status	Description
<input type="radio"/> Mirroring Disk Volume: Drive 1 2	145.24 GB	No	Ready	The operation(s) you can execute: - Expand capacity

Expand Capacity (Online RAID Capacity Expansion)

Scenario

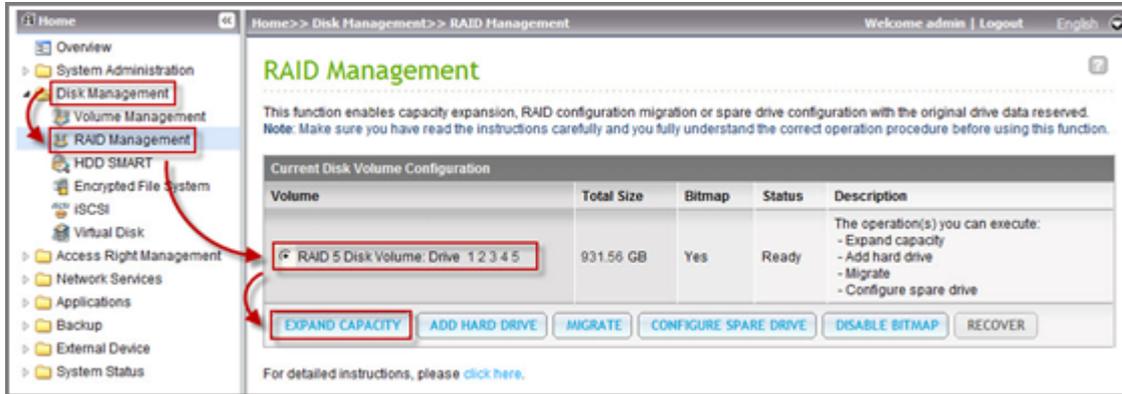
You bought four 250GB hard drives for initial setup of TS-509 Pro and configured RAID 5 disk configuration with the four hard drives.

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.

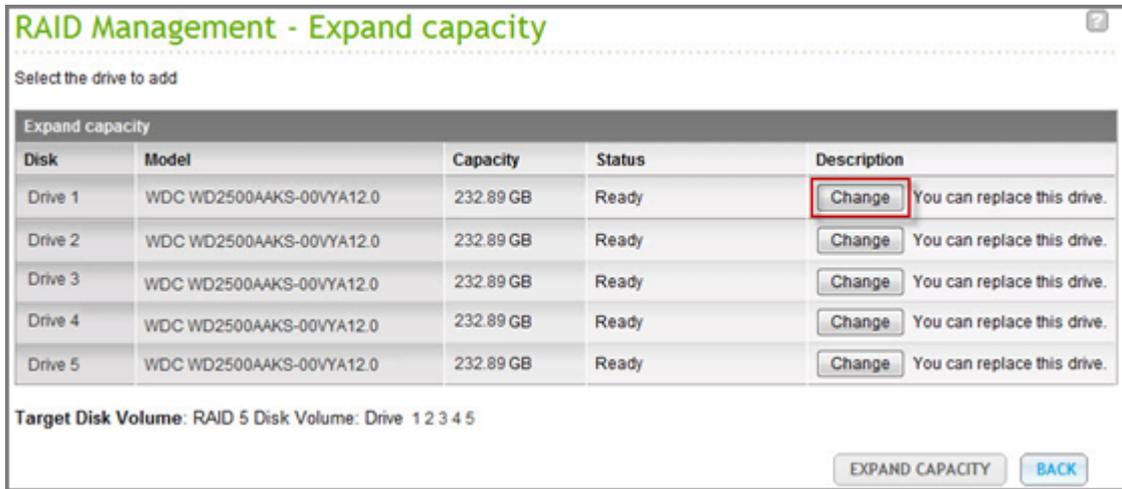


Operation procedure

In 'Disk Management' > 'RAID Management', select the disk volume for expansion and click 'EXPAND CAPACITY'.



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



Tip: After replacing the hard drive, the description field shows the message '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.

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.

RAID Management - Expand capacity

Select the drive to add

Expand capacity				
Disk	Model	Capacity	Status	Description
Drive 1	WDC WD2500AAKS-00VYA12.0	232.89 GB	Ready	Cancel Please remove the drive
Drive 2	WDC WD2500AAKS-00VYA12.0	232.89 GB	Ready	No operation can be executed on this drive or the drive is busy
Drive 3	WDC WD2500AAKS-00VYA12.0	232.89 GB	Ready	No operation can be executed on this drive or the drive is busy
Drive 4	WDC WD2500AAKS-00VYA12.0	232.89 GB	Ready	No operation can be executed on this drive or the drive is busy
Drive 5	WDC WD2500AAKS-00VYA12.0	232.89 GB	Ready	No operation can be executed on this drive or the drive is busy

Target Disk Volume: RAID 5 Disk Volume: Drive 1 2 3 4 5

EXPAND CAPACITY BACK

When the description displays 'Please insert the new drive', plug in the new hard drive to the drive slot.

RAID Management - Expand capacity

Select the drive to add

Expand capacity				
Disk	Model	Capacity	Status	Description
Drive 1	--	--	No Disk	Please insert the new drive
Drive 2	WDC WD2500AAKS-00VYA12.0	232.89 GB	Ready	No operation can be executed on this drive or the drive is busy
Drive 3	WDC WD2500AAKS-00VYA12.0	232.89 GB	Ready	No operation can be executed on this drive or the drive is busy
Drive 4	WDC WD2500AAKS-00VYA12.0	232.89 GB	Ready	No operation can be executed on this drive or the drive is busy
Drive 5	WDC WD2500AAKS-00VYA12.0	232.89 GB	Ready	No operation can be executed on this drive or the drive is busy

Target Disk Volume: RAID 5 Disk Volume: Drive 2 3 4 5

EXPAND CAPACITY BACK

After plugging in the hard drive, wait for the NAS to beep. The system starts rebuilding.

Status	Description
 Rebuilding... (0%)	No operation can be executed on this drive or the drive is busy
 Rebuilding... (0%)	No operation can be executed on this drive or the drive is busy
 Rebuilding... (0%)	No operation can be executed on this drive or the drive is busy
 Rebuilding... (0%)	No operation can be executed on this drive or the drive is busy
 Rebuilding... (0%)	No operation can be executed on this drive or the drive is busy

After rebuilding finishes, repeat the steps above to replace other hard drives.

RAID Management - Expand capacity ?

Select the drive to add

Expand capacity					
Disk	Model	Capacity	Status	Description	
Drive 1	Hitachi HD5721010KLA330 GKA0	931.51 GB	Ready	<input type="button" value="Change"/>	You can replace this drive.
Drive 2	WDC WD2500AAKS-00VYA12.0	232.89 GB	Ready	<input type="button" value="Change"/>	You can replace this drive.
Drive 3	WDC WD2500AAKS-00VYA12.0	232.89 GB	Ready	<input type="button" value="Change"/>	You can replace this drive.
Drive 4	WDC WD2500AAKS-00VYA12.0	232.89 GB	Ready	<input type="button" value="Change"/>	You can replace this drive.
Drive 5	WDC WD2500AAKS-00VYA12.0	232.89 GB	Ready	<input type="button" value="Change"/>	You can replace this drive.

Target Disk Volume: RAID 5 Disk Volume: Drive 1 2 3 4 5

After changing the hard drives and rebuilding completes, you can click 'EXPAND CAPACITY' to execute RAID expansion.

RAID Management

This function enables capacity expansion, RAID configuration migration or spare drive configuration with the original drive data reserved.
Note: Make sure you have read the instructions carefully and you fully understand the correct operation procedure before using this function.

Current Disk Volume Configuration

Volume	Total Size	Bitmap	Status	Description
RAID 5 Disk Volume: Drive 1 2 3 4 5	913.96 GB	Yes	Ready	The operation(s) you can execute: - Expand capacity

Buttons: EXPAND CAPACITY, ADD HARD DRIVE, MIGRATE, CONFIGURE SPARE DRIVE, BITMAP, RECOVER

For detailed instructions, please [click here](#).

Click 'OK' to proceed.

The NAS beeps and starts to expand the capacity.

RAID Management - Expand capacity

Select the drive to add

Expand capacity

Disk	Model	Capacity	Status	Description
Drive 1	Hitachi HD5721010KLA330 GKA0	931.51 GB	Ready	Processing...
Drive 2	Hitachi HD5721010KLA330 GKA0	931.51 GB	Ready	Processing...
Drive 3	Hitachi HD5721010KLA330 GKA0	931.51 GB	Ready	Processing...
Drive 4	Hitachi HD5721010KLA330 GKA0	931.51 GB	Ready	Processing...
Drive 5	Hitachi HD5721010KLA330 GKA0	931.51 GB	Ready	Processing...

Target Disk Volume: RAID 5 Disk Volume: Drive 1 2 3 4 5 You can expand the disk volume capacity to approximately **3726 GB**

Buttons: EXPAND CAPACITY, BACK

The process may take from hours to tens of hours to finish depending on the drive size. Please wait patiently for the process to finish. Do NOT turn off the power of NAS.

Current Disk Volume Configuration: Physical Disks					
Disk	Model	Capacity	Status	Bad Blocks Scan	SMART Information
Drive 1	Hitachi HD5721010KLA330 GKAO	931.51 GB	Ready	SCAN NOW	GOOD
Drive 2	Hitachi HD5721010KLA330 GKAO	931.51 GB	Ready	SCAN NOW	GOOD
Drive 3	Hitachi HD5721010KLA330 GKAO	931.51 GB	Ready	SCAN NOW	GOOD
Drive 4	Hitachi HD5721010KLA330 GKAO	931.51 GB	Ready	SCAN NOW	GOOD
Drive 5	Hitachi HD5721010KLA330 GKAO	931.51 GB	Ready	SCAN NOW	GOOD

Current Disk Volume Configuration: Logical Volumes				
Volume	File System	Total Size	Free Size	Status
RAID 5 Disk Volume: Drive 1 2 3 4 5	EXT3	3726.04 GB	3315.36 GB	Ready

After RAID expansion has finished, the new capacity is shown and the status is 'Ready'. You can start to use the larger capacity. (In the example you have 3.7TB logical volume)

RAID Management ?

This function enables capacity expansion, RAID configuration migration or spare drive configuration with the original drive data reserved.
Note: Make sure you have read the instructions carefully and you fully understand the correct operation procedure before using this function.

Current Disk Volume Configuration				
Volume	Total Size	Bitmap	Status	Description
<input checked="" type="radio"/> RAID 5 Disk Volume: Drive 1 2 3 4 5	3726.04 GB	Yes	Ready	The operation(s) you can execute: - Expand capacity

EXPAND CAPACITY
ADD HARD DRIVE
MIGRATE
CONFIGURE SPARE DRIVE
BITMAP
RECOVER

For detailed instructions, please [click here](#).

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.

Migrate (Online RAID Level Migration)

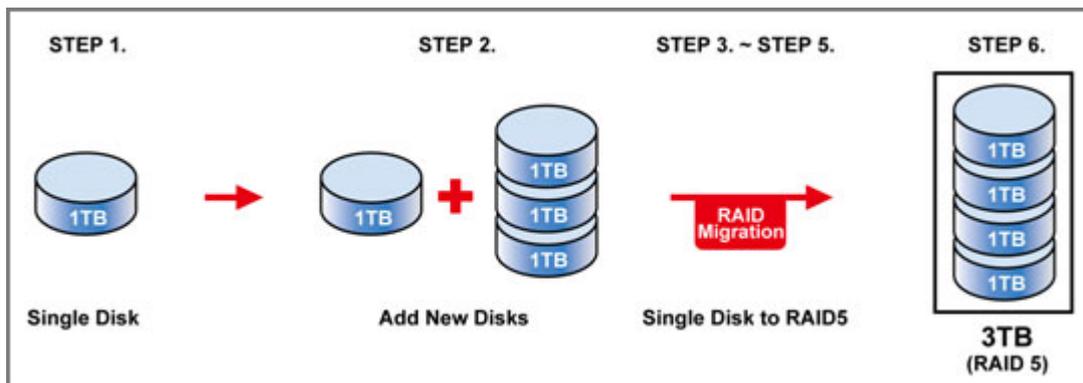
During the initial setup of TS-509 Pro, you bought a 1TB hard drive and configured it as single disk. TS-509 Pro is used as a file server for data sharing among the departments.

After a half year, more and more important data are saved on TS-509 Pro. There is a rising concern for hard drive damage and data loss. Therefore, you planned to upgrade the disk configuration to RAID 5.

Using online RAID level migration, you can install one hard drive for setting up TS-509 Pro and upgrade the RAID level in the future. The migration process can be done without turning off the server. All 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).

Go to 'Disk Management' > 'Volume Management'. The current disk volume configuration displayed on the page is single disk (the capacity is 1TB).

Current Disk Volume Configuration: Physical Disks					
Drive 1	Hitachi HD5721010KLA330 GKAO	931.51 GB	Ready	SCAN NOW	GOOD
Drive 2	--	--	No Disk	SCAN NOW	---
Drive 3	--	--	No Disk	SCAN NOW	---
Drive 4	--	--	No Disk	SCAN NOW	---
Drive 5	--	--	No Disk	SCAN NOW	---

Current Disk Volume Configuration: Logical Volumes				
Volume	File System	Total Size	Free Size	Status
Single Disk: Drive 1	EXT3	931.51 GB	524.68 GB	Ready

[FORMAT NOW](#) [CHECK NOW](#) [REMOVE NOW](#)

Plug in the new 1TB hard drives to drive slots 2, 3, 4 and 5 of NAS. The NAS will detect the new hard drives. The status of the new hard drives is 'Unmounted'.

Current Disk Volume Configuration: Physical Disks					
Drive 1	Hitachi HD5721010KLA330 GKAO	931.51 GB	Ready	SCAN NOW	GOOD
Drive 2	Hitachi HD5721010KLA330 GKAO	931.51 GB	Ready	SCAN NOW	GOOD
Drive 3	Hitachi HD5721010KLA330 GKAO	931.51 GB	Ready	SCAN NOW	GOOD
Drive 4	Hitachi HD5721010KLA330 GKAO	931.51 GB	Ready	SCAN NOW	GOOD
Drive 5	Hitachi HD5721010KLA330 GKAO	931.51 GB	Ready	SCAN NOW	GOOD

Current Disk Volume Configuration: Logical Volumes				
Volume	File System	Total Size	Free Size	Status
Single Disk: Drive 1	EXT3	931.51 GB	524.68 GB	Ready
				FORMAT NOW CHECK NOW REMOVE NOW
Single Disk: Drive 2	EXT3	--	--	Unmounted
				FORMAT NOW CHECK NOW REMOVE NOW
Single Disk: Drive 3	EXT3	--	--	Unmounted
				FORMAT NOW CHECK NOW REMOVE NOW
Single Disk: Drive 4	EXT3	--	--	Unmounted
				FORMAT NOW CHECK NOW REMOVE NOW
Single Disk: Drive 5	EXT3	--	--	Unmounted
				FORMAT NOW CHECK NOW REMOVE NOW

Go to 'Disk Management' > 'RAID Management', select the drive configuration for migration and click 'Migrate'.

The screenshot shows the QNAP RAID Management interface. The left sidebar contains a navigation menu with 'Disk Management' and 'RAID Management' highlighted. The main content area is titled 'RAID Management' and includes a table of 'Current Disk Volume Configuration'. The table has columns for Volume, Total Size, Bitmap, Status, and Description. The first row, 'Single Disk: Drive 1', is selected and has a 'Migrate' button highlighted in the interface. Below the table are buttons for 'EXPAND CAPACITY', 'ADD HARD DRIVE', 'MIGRATE', 'CONFIGURE SPARE DRIVE', 'BITMAP', and 'RECOVER'. A note at the bottom of the table states: 'No operation can be executed for this drive configuration.' for drives 2 through 5.

Volume	Total Size	Bitmap	Status	Description
<input checked="" type="radio"/> Single Disk: Drive 1	915.42 GB	--	Ready	The operation(s) you can execute: - Migrate
<input type="radio"/> Single Disk: Drive 2	--	--	Unmounted	No operation can be executed for this drive configuration.
<input type="radio"/> Single Disk: Drive 3	--	--	Unmounted	No operation can be executed for this drive configuration.
<input type="radio"/> Single Disk: Drive 4	--	--	Unmounted	No operation can be executed for this drive configuration.
<input type="radio"/> Single Disk: Drive 5	--	--	Unmounted	No operation can be executed for this drive configuration.

Select one or more available drives and the migration method. The drive capacity after migration is shown. Click 'Migrate'.

RAID Management - Migrate

Select the drive to add

Migrate				
Available drive(s)	Disk	Model	Capacity	Status
<input checked="" type="checkbox"/>	Drive 2	WD1000FYPS-01ZKB02.0	931.51 GB	Ready
<input checked="" type="checkbox"/>	Drive 3	WD1000FYPS-01ZKB02.0	931.51 GB	Ready
<input checked="" type="checkbox"/>	Drive 4	WD1000FYPS-01ZKB02.0	931.51 GB	Ready
<input checked="" type="checkbox"/>	Drive 5	WD1000FYPS-01ZKB02.0	931.51 GB	Ready

Select the migration method:

- Single Disk Volume -> RAID 1 Mirroring Disk Volume
- Single Disk Volume -> RAID 5 Disk Volume
- Single Disk Volume -> RAID 6 Disk Volume

Target Disk Volume: Single Disk: Drive 4 The drive configuration is about to be configured as RAID 5 Disk Volume, The capacity is approximately 3726 GB

MIGRATE **BACK**

Note that all the data on the selected hard drive will be cleared. Click 'OK' to confirm.

When migration is in process, the required time and total drive capacity after migration are shown in the description field.

Current Disk Volume Configuration: Physical Disks					
Drive 1	Hitachi HD5721010KLA330 GKA0	931.51 GB	Ready	SCAN NOW	GOOD
Drive 2	Hitachi HD5721010KLA330 GKA0	931.51 GB	Ready	SCAN NOW	GOOD
Drive 3	Hitachi HD5721010KLA330 GKA0	931.51 GB	Ready	SCAN NOW	GOOD
Drive 4	Hitachi HD5721010KLA330 GKA0	931.51 GB	Ready	SCAN NOW	GOOD
Drive 5	Hitachi HD5721010KLA330 GKA0	931.51 GB	Ready	SCAN NOW	GOOD

Current Disk Volume Configuration: Logical Volumes				
Volume	File System	Total Size	Free Size	Status
Single Disk: Drive 1	EXT3	931.51 GB	524.68 GB	Ready
				FORMAT NOW CHECK NOW REMOVE NOW
Single Disk: Drive 2	EXT3	--	--	Unmounted
				FORMAT NOW CHECK NOW REMOVE NOW
Single Disk: Drive 3	EXT3	--	--	Unmounted
				FORMAT NOW CHECK NOW REMOVE NOW
Single Disk: Drive 4	EXT3	--	--	Unmounted
				FORMAT NOW CHECK NOW REMOVE NOW
Single Disk: Drive 5	EXT3	--	--	Unmounted
				FORMAT NOW CHECK NOW REMOVE NOW

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.

After migration completes, the new drive configuration is shown (RAID 5 now) and the status is Ready. You can start to use the new drive configuration.

RAID Management

This function enables capacity expansion, RAID configuration migration or spare drive configuration with the original drive data reserved.
Note: Make sure you have read the instructions carefully and you fully understand the correct operation procedure before using this function.

Current Disk Volume Configuration

Volume	Total Size	Bitmap	Status	Description
Single Disk: Drive 1	915.42 GB	--	Migrating... (2%)	No operation can be executed for this drive configuration

EXPAND CAPACITY ADD HARD DRIVE MIGRATE CONFIGURE SPARE DRIVE BITMAP RECOVER

For detailed instructions, please [click here](#).

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.

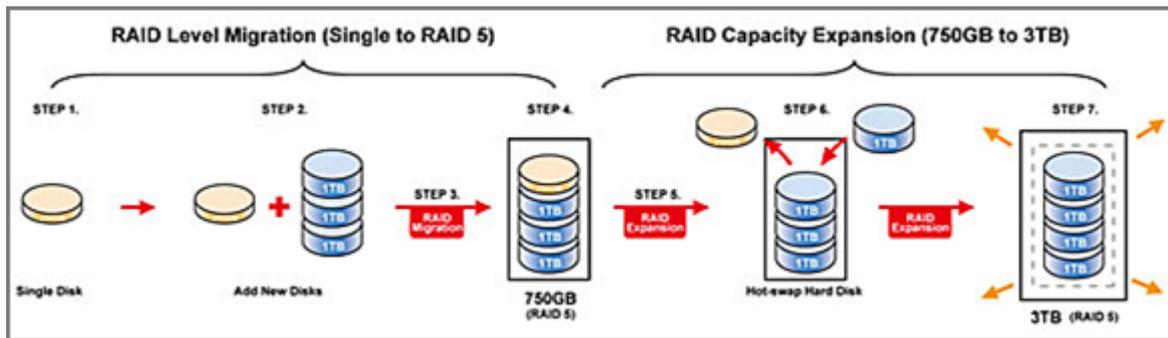
Use Online RAID Capacity Expansion and Online RAID Level Migration

Scenario

You had a tight schedule to set up the file server and FTP server. However, you had only one 250GB hard drive. Therefore, you set up the TS-509 Pro with the single disk configuration.

The original plan was to set up a 3TB RAID 5 network data centre with TS-509 Pro.

You now planned to upgrade the disk configuration of 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.



Execute online RAID level migration to migrate the system from single disk to RAID 5. The total storage capacity will be 750GB, RAID 5 (with one 250GB hard drive and three 1TB hard drives, the disk usage will be $250\text{GB} \times 4$ for RAID 5.). You can refer to the previous step for the operation procedure.

Execute 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.

Add a hard drive

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. You are recommended to use hard disk drives of the same storage 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 member. The total drive capacity after adding the drive will be shown. Click 'ADD HARD DRIVE'.
5. All the data on the new hard drive member 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 member 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. Please wait patiently for the process to finish. Do NOT turn off the NAS during this process. You can use a RAID configuration of larger capacity after the process.

Configure Spare Drive

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

Follow the steps below to use this feature.

1. Make sure the status of the RAID 5, 6, 10 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 configure this hard drive as the spare drive. You are recommended to use hard disk drives of the same storage capacity for the 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'.

Bitmap

Bitmap improves the time for RAID rebuilding after an unexpected error, or removing or re-adding a member hard drive of the RAID configuration. If an array has a bitmap, the member hard drive can be removed and re-added and only blocks changes since the removal (as recorded in the bitmap) will be re-synchronized. To use this feature, select a RAID 1, 5, or 6 disk volume and click 'ENABLE BITMAP'.

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

RAID Management ?

This function enables capacity expansion, RAID configuration migration or spare drive configuration with the original drive data reserved.
Note: Make sure you have read the instructions carefully and you fully understand the correct operation procedure before using this function.

Current Disk Volume Configuration				
Volume	Total Size	Bitmap	Status	Description
<input checked="" type="radio"/> RAID 5 Disk Volume: Drive 1 2 3	455.52 GB	No	Ready	The operation(s) you can execute: - Expand capacity

For detailed instructions, please [click here](#).

Recover (RAID Recovery)

RAID Recovery: When the NAS is configured as RAID 5 (or RAID 6) and any number of hard drives is unplugged from the server accidentally, 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.

Note: If the disconnected drive member 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

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. Please refer to the following table for the 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 HDD member	RAID 5 * 4
RAID 5 * 3	2	Add HDD member	RAID 5 * 5
RAID 5 * 3	3	Add HDD member	RAID 5 * 6
RAID 5 * 3	4	Add HDD member	RAID 5 * 7
RAID 5 * 3	5	Add HDD member	RAID 5 * 8
RAID 5 * 4	1	Add HDD member	RAID 5 * 5
RAID 5 * 4	2	Add HDD member	RAID 5 * 6
RAID 5 * 4	3	Add HDD member	RAID 5 * 7
RAID 5 * 4	4	Add HDD member	RAID 5 * 8
RAID 5 * 5	1	Add HDD member	RAID 5 * 6
RAID 5 * 5	2	Add HDD member	RAID 5 * 7
RAID 5 * 5	3	Add HDD member	RAID 5 * 8
RAID 5 * 6	1	Add HDD member	RAID 5 * 7
RAID 5 * 6	2	Add HDD member	RAID 5 * 8
RAID 5 * 7	1	Add HDD member	RAID 5 * 8
RAID 6 * 4	1	Add HDD member	RAID 6 * 5
RAID 6 * 4	2	Add HDD member	RAID 6 * 6
RAID 6 * 4	3	Add HDD member	RAID 6 * 7
RAID 6 * 4	4	Add HDD member	RAID 6 * 8
RAID 6 * 5	1	Add HDD member	RAID 6 * 6
RAID 6 * 5	2	Add HDD member	RAID 6 * 7
RAID 6 * 5	3	Add HDD member	RAID 6 * 8
RAID 6 * 6	1	Add HDD member	RAID 6 * 7
RAID 6 * 6	2	Add HDD member	RAID 6 * 8
RAID 6 * 7	1	Add HDD member	RAID 6 * 8
RAID 10 * 4	2	Add HDD member	RAID 10 * 6
RAID 10 * 4	4	Add HDD member	RAID 10 * 8
RAID 10 * 6	2	Add HDD 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

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

You can 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).

You can view the following information of each HDD on the NAS.

Field	Description
Summary	Display the HDD S.M.A.R.T. summary and the latest test result.
Hard disk information	Display the HDD details, for example, model, serial number, HDD capacity.
SMART information	Display the HDD S.M.A.R.T. information. Any items that the values are lower than the threshold are regarded as abnormal.
Test	Perform quick or complete HDD S.M.A.R.T. test.
Settings	Configure temperature alarm. When the HDD temperature is over the preset values, the NAS records the error logs. You can also set the quick and complete test schedule. The latest test result is shown on the Summary page.

HDD SMART ?

Monitor hard disk health, temperature, and usage status by the hard disk S.M.A.R.T. mechanism.

Select Hard Disk Disk 1 ▼

SUMMARY
HARD DISK INFORMATION
SMART INFORMATION
TEST
SETTINGS

Summary

Good

No errors were detected on the hard disk. Your hard disk should be operating properly.

Hard Disk Model	Hitachi Deskstar T7K500
Drive Capacity	298.09 GB
Hard Drive Health	Good
Hard Drive Temperature	44 °C ▼
Test Time	---
Test Result	Not tested

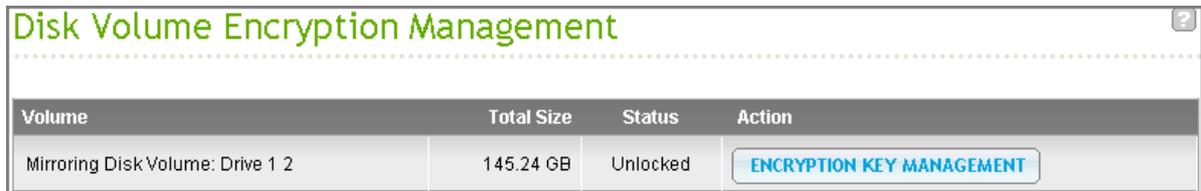
4.4 Encrypted File System

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-419U+, TS-112, TS-212, TS-412.

You can manage the encrypted disk volumes on the NAS on this page. 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: You can upload the encryption file to the server to unlock the disk volume. The key can be downloaded from 'Encryption Key Management' page after you have unlocked the disk volume successfully.

The data encryption functions may not be available in accordance to the legislative restrictions of some countries.



Volume	Total Size	Status	Action
Mirroring Disk Volume: Drive 1 2	145.24 GB	Unlocked	ENCRYPTION KEY MANAGEMENT

How to use the data encryption feature on QNAP Turbo NAS

The data encryption feature on the Turbo NAS allows you to encrypt the disk volumes on the NAS with 256-bit AES encryption for data breach protection. The encrypted disk volumes can only be mounted for normal read/ write access with the authorized password. The encryption protects the confidential data from unauthorized access even if the hard drives or the entire server 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)

The AES volume-based encryption is applicable only to specific QNAP NAS models.

Please refer to the comparison table at: http://www.qnap.com/images/products/comparison/Comparison_NAS.html

Before you start

Please beware of the following before you start to use the data encryption feature of the Turbo NAS.

- The encryption feature of the Turbo NAS is volume-based. A volume can be a single disk, a JBOD configuration, or a RAID array.
- You have to select whether or not to encrypt your data when you create a disk volume on the NAS. In other words, you will not be able to encrypt a volume after it has been created unless you initialize the disk volume. Note that initializing a disk volume will clear all the existing disk data on it.
- The encryption on the disk volume cannot be removed without initialization. To remove the encryption on the disk volume, you have to initialize the disk volume and all the data will be cleared.
- Please keep the encryption password or key safe. If you forget your password or lose your encryption key, you will not be able to retrieve your data!
- Before you start, please read this document carefully and strictly adhere to the instructions.

Activating disk volume encryption on the NAS

Encrypt the disk volume during the NAS installation

Follow the instructions of the Quick Installation Guide (QIG) to initialize the NAS by the web-based interface. In the Step 6 of the quick configuration, select 'Yes' for the 'Encrypt disk volume' option.

Note: You can execute disk volume encryption by the LCD panel if your NAS is equipped with one. Please refer to the QIG for the instructions.

Once you have selected to encrypt the disk volume, the encryption settings will appear.

Step 6

Step 6/6: Select the disk configuration

Note: All drive data will be cleared unless you select not to initialize the hard drives.

Please select the disk configuration for the initialization.

Disk configuration:

File System:

Total available storage capacity: 464.26 GB

You may select to use the hard drives as single disk volumes. However, when a drive failure occurs, all data will be lost.

Encrypt disk volume:

Input Encryption Password:

Verify Encryption Password:

Use Default Value Save Encryption Key

Enter an encryption password, which will be used to unlock the encrypted volume. The encryption password must be 8-16 characters long and cannot contain spaces (). Try to select a long password which combines letters and numbers.

* Use Default Value: Select to use the default encryption password 'admin'.

* Save Encryption Key: Select to save the encryption key on the NAS (this option can be changed later).

- o If checked: The NAS will unlock the encrypted disk volume automatically using the saved password when it starts up.

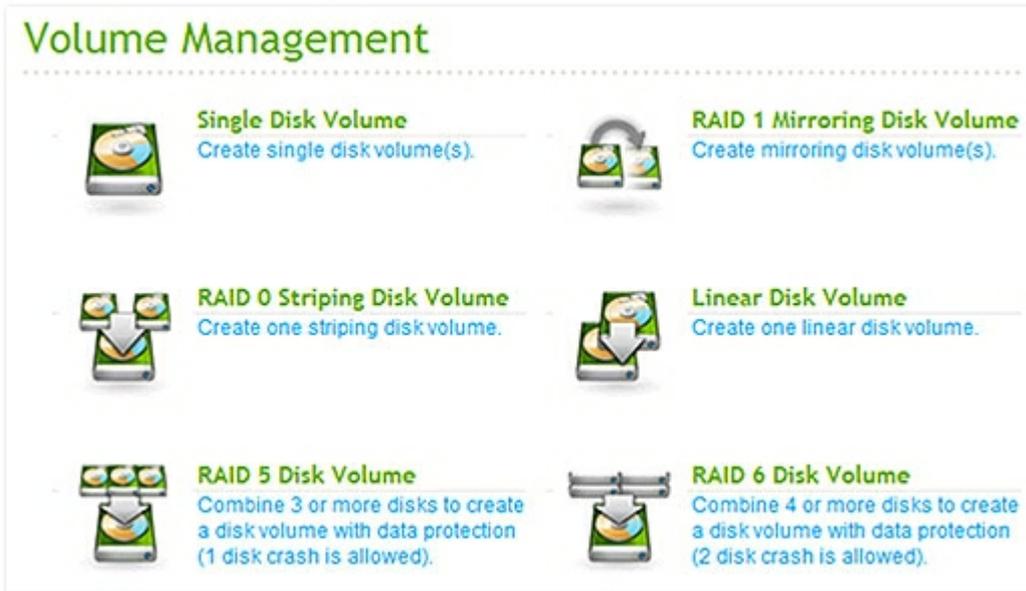
- o If not checked: The encrypted disk volume is locked when the NAS starts up. You have to login the NAS as an administrator and enter the encryption password to unlock the disk volume.

Then proceed to the next step and finish the NAS installation.

Create a new encrypted disk volume with new hard drives

If your NAS has been installed and you want to create a new encrypted disk volume by installing new hard drives on the server, follow the steps below.

1. Install the new hard drive(s) to the NAS.
2. Login the NAS as an administrator. Go to 'Disk Management' > 'Volume Management'.
3. Select the disk volume you want to configure according to the number of new hard drives installed.



4. Select the hard drive(s) for creating the disk volume. In this example, we select to create a single drive. The procedure applies also to a RAID configuration.

Disk	Model	Capacity	Status	
<input type="checkbox"/>	Drive 2	SAMSUNG HD502HI 1AG0	465.76 GB	Ready
<input checked="" type="checkbox"/>	Drive 5	Seagate ST3500320NS SN16	465.76 GB	Ready

Encryption **No** ▼

File System: **EXT4** ▼

5. Select 'Yes' for the 'Encryption' option and enter the encryption settings.

Disk	Model	Capacity	Status	
<input type="checkbox"/>	Drive 2	SAMSUNG HD502HI 1AG0	465.76 GB	Ready
<input checked="" type="checkbox"/>	Drive 5	Seagate ST3500320NS SN16	465.76 GB	Ready

Encryption **Yes** ▼

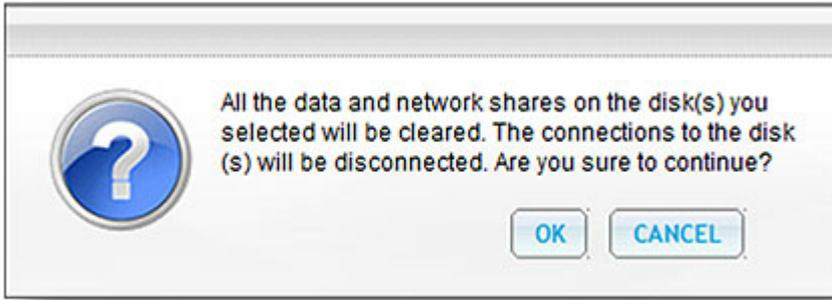
Input Encryption Password: ●●●●●●●●

Verify Encryption Password: ●●●●●●●●

Use Default Value Save Encryption Key

File System: **EXT4** ▼

6. Then click 'CREATE' to create the new encrypted volume. Note that all the data on the selected drives will be DELETED! Please back up your data before creating the encrypted volume.



You have created a encrypted disk volume on the NAS.

Verify that disk volume is encrypted

To verify the disk volume is encrypted, login the NAS as an administrator. Go to 'Disk Management' > '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.

Current Disk Volume Configuration: Logical Volumes				
Volume	File System	Total Size	Free Size	Status
Single Disk: Drive 2	EXT4	456.98 GB	456.78 GB	Ready
<input type="button" value="FORMAT NOW"/> <input type="button" value="CHECK NOW"/> <input type="button" value="REMOVE NOW"/>				
Single Disk: Drive 5	EXT4	456.98 GB	456.79 GB	Ready
<input type="button" value="FORMAT NOW"/> <input type="button" value="CHECK NOW"/> <input type="button" value="REMOVE NOW"/>				

Behavior of an encrypted volume upon system reboot

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

The first volume (Single Disk Drive 2) has been created with the option 'Save Encryption Key' enabled. The second volume (Single Disk Drive 5) has been created with the option 'Save Encryption Key' disabled.

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.

Current Disk Volume Configuration: Logical Volumes				
Volume	File System	Total Size	Free Size	Status
Single Disk: Drive 2	EXT4	456.98 GB	456.78 GB	Ready
<input type="button" value="FORMAT NOW"/> <input type="button" value="CHECK NOW"/> <input type="button" value="REMOVE NOW"/>				
Single Disk: Drive 5	Unknown	--	--	Unmounted
<input type="button" value="FORMAT NOW"/> <input type="button" value="CHECK NOW"/> <input type="button" value="REMOVE NOW"/>				

- 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 select not to save the encryption key on the NAS, your NAS will be protected against data breach even if the entire server is stolen. The disadvantage is that you have to unlock the disk volume manually on each system restart.

Encryption key management: new password, save encryption key, export encryption key

To manage the encryption key settings, login the NAS as an administrator and go to 'Disk Management' > 'Encrypted File System'.

Click 'ENCRYPTION KEY MANAGEMENT' on the 'Action' column of an unlocked disk volume.



Volume	Total Size	Status	Action
Single Disk: Drive 2	456.98 GB	Unlocked	ENCRYPTION KEY MANAGEMENT
Single Disk: Drive 5	--	Locked	Input Encryption Password [Input Field] [Open]

You can perform the following actions:

- Change the encryption key
- Save the encryption key on the NAS
- Download the encryption key file



- Change the encryption key:
Input your old encryption password and input the new password. (Note that after the password is changed, any previously exported keys will not be working anymore. You have to download the new encryption key if necessary, see below).
- Save Encryption Key:
Save the encryption key on the NAS for automatic unlocking and mounting the encrypted disk volume when the NAS restarts.
- 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). Please save the encryption key file in a secure place!

Unlock a disk volume manually

To unlock a volume, login the NAS as an administrator. Go to 'Disk Management' > 'Encrypted File System'.

You will be able to see your encrypted volumes and their status: locked or unlocked.

Encryption Key Management ?

Volume	Total Size	Status	Action
Single Disk: Drive 2	456.98 GB	Unlocked	ENCRYPTION KEY MANAGEMENT
Single Disk: Drive 5	--	Locked	<input type="text" value="Input Encryption Password"/> <input type="button" value="Open"/>

To unlock your volume, you can either input the encryption password, or use the encryption key file that has been exported previously.

Encryption Key Management ?

Volume	Total Size	Status	Action
Single Disk: Drive 2	456.98 GB	Unlocked	ENCRYPTION KEY MANAGEMENT
Single Disk: Drive 5	--	Locked	<input type="text" value="Input Encryption Password"/> <input type="button" value="Open"/>

If the encryption password or the key file is correct, the volume will be unlocked and become available.

Volume	Total Size	Status	Action
Single Disk: Drive 2	456.98 GB	Unlocked	ENCRYPTION KEY MANAGEMENT
Single Disk: Drive 5	456.98 GB	Unlocked	ENCRYPTION KEY MANAGEMENT

4.5 iSCSI

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

iSCSI Configuration

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

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

In between the relationship of your computer and the storage device, your computer is called an initiator because it initiates the connection to the device, which is called a target.

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

The description below applies to non Intel-based NAS models running firmware **prior to** version 3.3.0 and Intel-based NAS models running firmware **prior to** version 3.2.0 only.

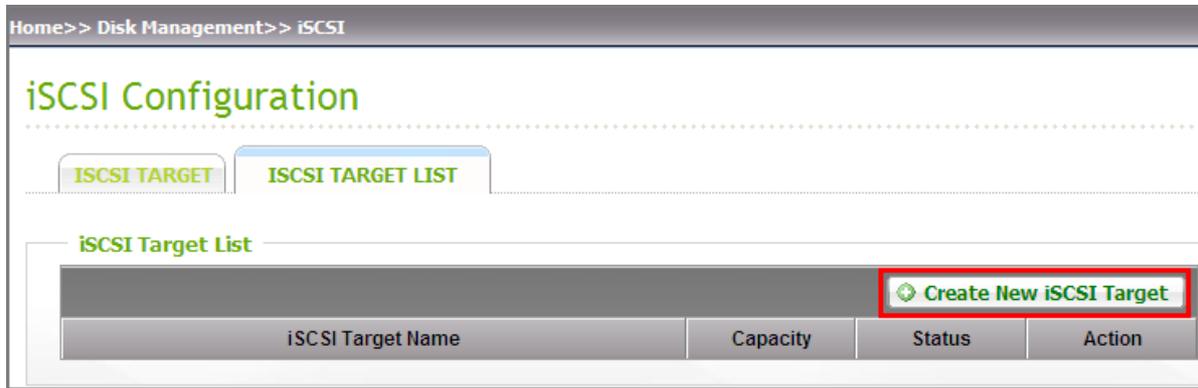
Non Intel-based NAS refers to TS-110, TS-119, TS-210, TS-219, TS-219P, TS-410, TS-419P, TS-410U, TS-419U, TS-119P+, TS-219P+, TS-419P+, TS-112, TS-212, TS-412.

Intel-based NAS refers to TS-239 Pro, TS-239 Pro II, TS-259 Pro, SS-439 Pro, TS-439 Pro, TS-439 Pro II, TS-439U-SP/RP, TS-459 Pro, TS-459U-SP/RP, TS-509 Pro, TS-559 Pro, TS-639 Pro, TS-659 Pro, SS-839 Pro, TS-859 Pro, TS-809 Pro, TS-809U-RP, TS-859U-RP, TS-259 Pro+, TS-459 Pro+, TS-559 Pro+, TS-659 Pro+.

Follow the steps below to create iSCSI targets and LUN on the NAS.

A logical unit number (LUN) will be created for each iSCSI target you create. A maximum of 4 targets and 4 LUNs can be created.

Under the tab 'iSCSI TARGET LIST', click 'Create New iSCSI Target'.



Enter the information required. Specify the target name. Specify the volume on which the iSCSI target will be created on and the size of the target, also whether or not to pre-allocate the disk space.

The screenshot shows the 'Create New iSCSI Target' form. It is divided into two main sections: 'iSCSI Target Profile' and 'iSCSI Target LUN'.
In the 'iSCSI Target Profile' section, there is a 'Target Name' field containing the text 'mytarget'. Below it, the 'iSCSI Target IQN' is displayed as 'iqn.2004-04.com.qnap.ts-219:iscsi.mytarget.8cdd00'.
In the 'iSCSI Target LUN' section, there is a checkbox labeled 'Allocate the disk space now' which is currently unchecked. Below this, there is a 'Volume' dropdown menu set to 'Single Disk: Drive 1' and a 'Free Size' indicator showing '913GB'. At the bottom, there is a 'Capacity' slider and a text input field set to '10' GB.

Enter the CHAP authentication settings (optional) if your NAS is located on a public or untrusted network. If you enter the user name and password settings under 'CHAP' only, only the iSCSI target authenticates the initiator. In other words, the initiators have to enter the user name password to connect to the target.

Mutual CHAP: Turn on this option for two-way authentication between the iSCSI target and the initiator. The target authenticates the initiator using the first set of user name and password. The initiator authenticates the target using the 'Mutual CHAP' settings.

Field	User name limitation	Password limitation
Use CHAP authentication	<ul style="list-style-type: none"> The only valid characters are 0-9, a-z, A-Z Maximum length: 256 characters 	<ul style="list-style-type: none"> The only valid characters are 0-9, a-z, A-Z Maximum length: 12-16 characters
Mutual CHAP	<ul style="list-style-type: none"> The only valid characters are 0-9, a-z, A-Z, : (colon), . (dot), and - (dash) Maximum length: 12-16 characters 	<ul style="list-style-type: none"> The only valid characters are 0-9, a-z, A-Z, : (colon), . (dot), and - (dash) Maximum length: 12-16 characters

Type

None

CHAP

User Name: (A~Z, a~z, 0~9)

Password: (A~Z, a~z, 0~9)

Re-enter Password:

Mutual CHAP

Initiator Name: (A~Z, a~z, 0~9)

Password: (A~Z, a~z, 0~9)

Re-enter Password:

CRC/Checksum (optional)

Data Digest

Header Digest

Upon successful creation the iSCSI target will be shown on the iSCSI Target List.

The screenshot shows the 'iSCSI Configuration' page with two tabs: 'iSCSI TARGET' and 'iSCSI TARGET LIST'. The 'iSCSI TARGET LIST' tab is active, displaying a table with one entry. A 'Create New iSCSI Target' button is visible in the top right of the table area.

iSCSI Target Name	Capacity	Status	Action
iqn.2004-04.com.qnap.ts-219:iscsi.mytarget.8cdd00	10.00 GB	Offline	

Select the option 'Enable iSCSI Target Service' under the tab 'iSCSI TARGET' and click 'Apply'. The iSCSI target will become ready.

The screenshot shows the 'iSCSI Portal' configuration page with two tabs: 'PORTAL MANAGEMENT' and 'TARGET MANAGEMENT'. The 'TARGET MANAGEMENT' tab is active. Under the 'iSCSI Portal' section, the 'Enable iSCSI Target Service' checkbox is checked and highlighted with a red box. The 'iSCSI Service Port' is set to 3260. The 'Enable iSNS' checkbox is unchecked. An 'iSNS Server IP' field is empty. An 'APPLY' button is located at the bottom right.

iSCSI Quick Configuration Wizard

The description below applies to non Intel-based NAS models running firmware version 3.3.0 **or later** and Intel-based NAS models running firmware version 3.2.0 **or later** only.

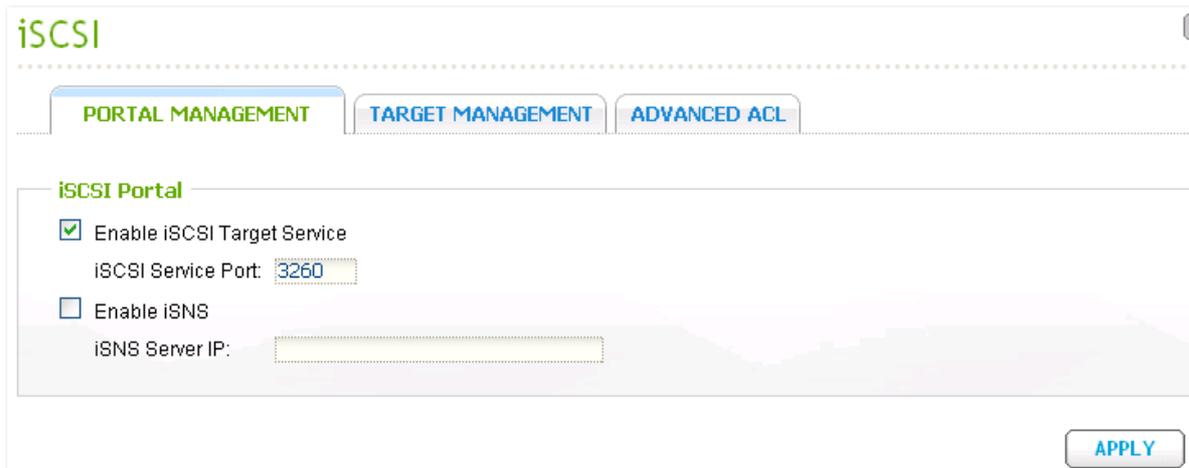
Non Intel-based NAS refers to TS-110, TS-119, TS-210, TS-219, TS-219P, TS-410, TS-419P, TS-410U, TS-419U, TS-119P+, TS-219P+, TS-419P+, TS-112, TS-212, TS-412.

Intel-based NAS refers to TS-239 Pro, TS-239 Pro II, TS-259 Pro, SS-439 Pro, TS-439 Pro, TS-439 Pro II, TS-439U-SP/RP, TS-459 Pro, TS-459U-SP/RP, TS-509 Pro, TS-559 Pro, TS-639 Pro, TS-659 Pro, SS-839 Pro, TS-859 Pro, TS-809 Pro, TS-809U-RP, TS-859U-RP, TS-259 Pro+, TS-459 Pro+, TS-559 Pro+, TS-659 Pro+.

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 your network infrastructure and the application performance. Too many concurrent connections may slow down the performance of the NAS.

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

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



The screenshot shows the 'iSCSI' configuration window with three tabs: 'PORTAL MANAGEMENT', 'TARGET MANAGEMENT', and 'ADVANCED ACL'. The 'PORTAL MANAGEMENT' tab is active. Under the 'iSCSI Portal' section, there are two checkboxes: 'Enable iSCSI Target Service' (checked) and 'Enable iSNS' (unchecked). Below the first checkbox is a text input field for 'iSCSI Service Port' containing the value '3260'. Below the second checkbox is a text input field for 'iSNS Server IP'. An 'APPLY' button is located at the bottom right of the window.

2. Next, go to the 'Target Management' tab and create iSCSI targets on the NAS. If you have not created any iSCSI targets, the Quick Installation Wizard will show up and prompt you to create iSCSI targets and LUN (Logical unit number). 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: Click 'Next'.



5. Enter the target name and target alias. You may 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.



The image shows a screenshot of the 'iSCSI Quick Configuration Wizard' window. The title bar reads 'iSCSI Quick Configuration Wizard' with a close button on the right. The main content area is titled 'Create New iSCSI Target' in green text. On the left side, there is a logo for 'QNAP TURBO NAS'. The main area contains the following fields and options:

- iSCSI Target Profile**
- Target Name:
- iSCSI Target IQN:
- Target Alias:
- CRC/Checksum (optional)**
- Data Digest
- Header Digest

At the bottom left, it says 'Step 2 of 6'. At the bottom right, there are three buttons: 'BACK', 'NEXT', and 'CANCEL'.

- Enter the CHAP authentication settings. If you enter the user name and password settings under 'Use CHAP authentication' only, only the iSCSI target authenticates the initiator, i.e. the initiators have to enter the user name 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 user name and password. The initiator authenticates the target using the 'Mutual CHAP' settings.

Field	User name limitation	Password limitation
Use CHAP authentication	<ul style="list-style-type: none"> The only valid characters are 0-9, a-z, A-Z Maximum length: 256 characters 	<ul style="list-style-type: none"> The only valid characters are 0-9, a-z, A-Z Maximum length: 12-16 characters
Mutual CHAP	<ul style="list-style-type: none"> The only valid characters are 0-9, a-z, A-Z, : (colon), . (dot), and - (dash) Maximum length: 12-16 characters 	<ul style="list-style-type: none"> The only valid characters are 0-9, a-z, A-Z, : (colon), . (dot), and - (dash) Maximum length: 12-16 characters

iSCSI Quick Configuration Wizard

QNAP TURBO NAS

CHAP Authentication Settings

Use CHAP authentication

User Name:

Password:

Re-enter Password:

Mutual CHAP

User Name:

Password:

Re-enter Password:

Step 3 of 6

BACK **NEXT** **CANCEL**

7. Create an iSCSI LUN.

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

- Thin Provisioning: Select this option to allocate the disk space in a flexible manner. You can allocate the disk space to the target anytime regardless of the current storage capacity available on the NAS. Over-allocation is allowed since the storage capacity of the NAS can be expanded by online RAID capacity expansion.
- Instant Allocation: Select this option to 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.

Enter the LUN name and specify the LUN location (disk volume on the NAS). Enter the capacity for the LUN. Click 'Next'.

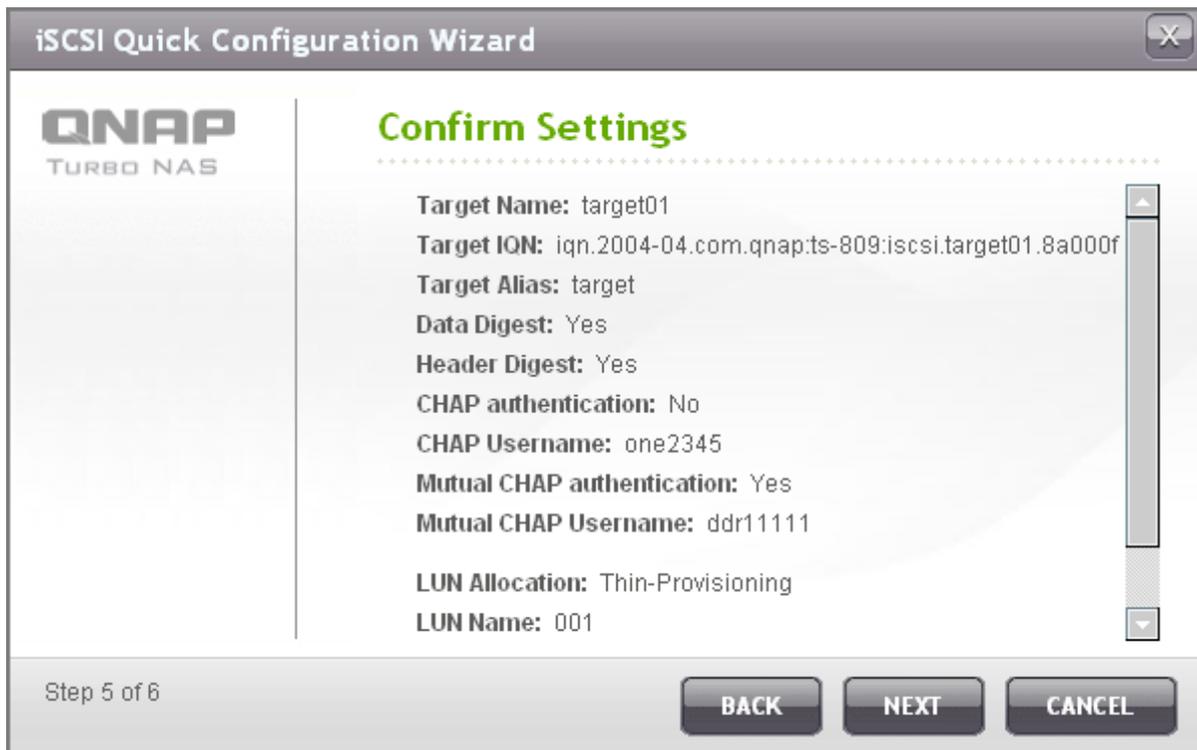


The screenshot shows a window titled "iSCSI Quick Configuration Wizard" with a close button in the top right corner. On the left side, there is a logo for "QNAP TURBO NAS". The main content area is titled "Create an iSCSI LUN" in green text. Below the title, there are four configuration fields:

- LUN Allocation:** Two radio buttons are present. "Thin-Provisioning" is selected (indicated by a filled circle), and "Instant Allocation" is unselected (indicated by an empty circle). An information icon (i) is next to "Instant Allocation".
- LUN Name:** A text input field containing the value "001".
- LUN Location:** A dropdown menu showing "/share/HDB_DATA" with a downward arrow. To the right of the dropdown, it says "Free Size: 281.6GB".
- Capacity:** A slider control with a house-shaped handle. To the right of the slider is a text input field containing "50" followed by "GB".

At the bottom of the window, there is a status bar that says "Step 4 of 6" on the left and three buttons: "BACK", "NEXT", and "CANCEL" on the right.

8. Confirm the settings and click 'Next'.



9. When the target and the LUN have been created, click 'Finish'.



10. The target and LUN are shown on the list under the 'Target Management' tab.

iSCSI Target List			
	Alias (IQN)	Status	Action
	01 (iqn.2004-04.com:ts-239:iscsi.target01.8cbc6c) └ id:0 - 001 (1.00 GB)	Ready Enabled	    

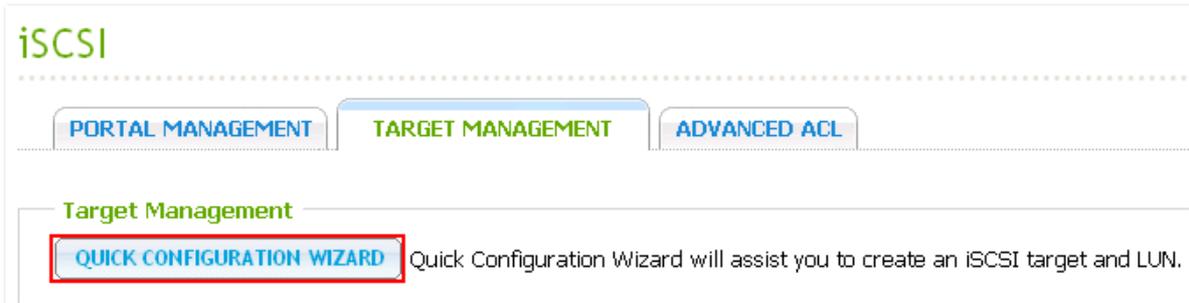
Total: 1 | Display 10 entries per page.   1 / 1  

Create more LUN for a target

The description below applies to non Intel-based NAS models running firmware version 3.3.0 **or later** and Intel-based NAS models running firmware version 3.2.0 **or later** only.

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

1. Click 'Quick Configuration Wizard' under 'Target Management'.



2. Select 'iSCSI LUN only' and click 'Next'.



3. Select the LUN allocation method. Enter the LUN name, select the LUN directory, and specify the capacity for the LUN. Click 'Next'.

iSCSI Quick Configuration Wizard

QNAP
TURBO NAS

Create an iSCSI LUN

LUN Allocation: Thin-Provisioning Instant Allocation ⓘ

LUN Name:

LUN Location: Free Size: 281.6GB

Capacity: GB

Step 1 of 4

NEXT **CANCEL**

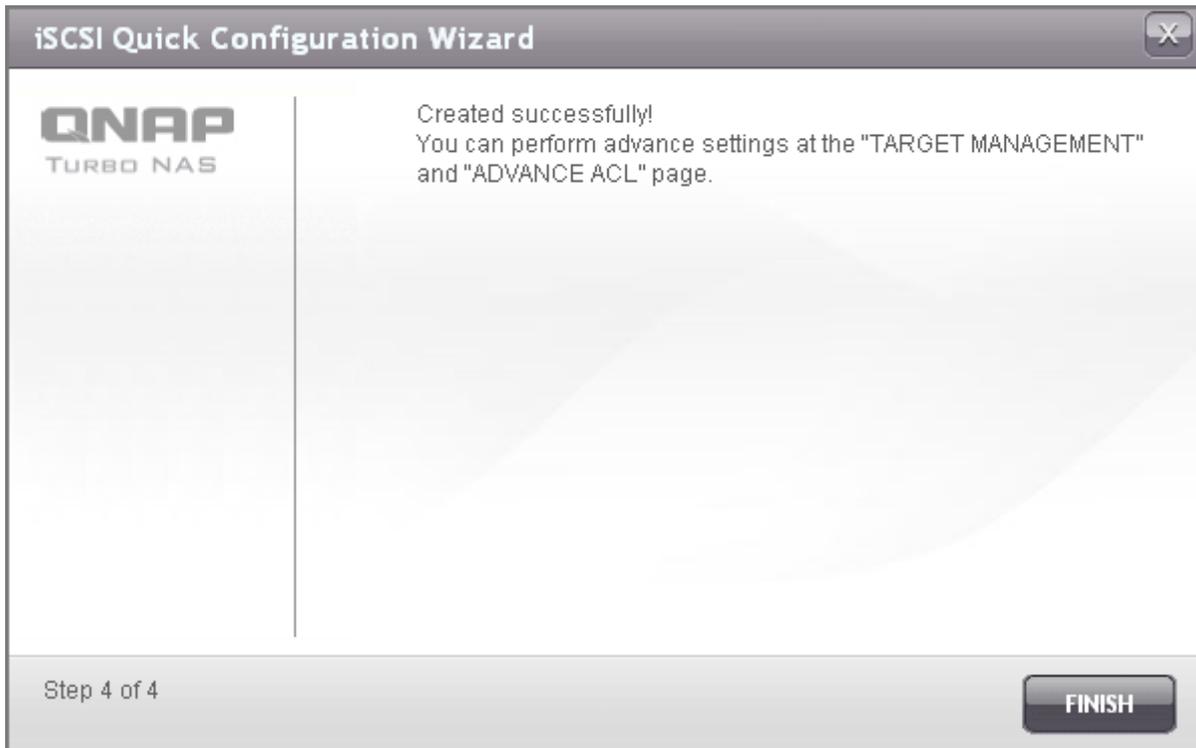
4. Select the target to map the LUN to. You can also select not to map the LUN for now.



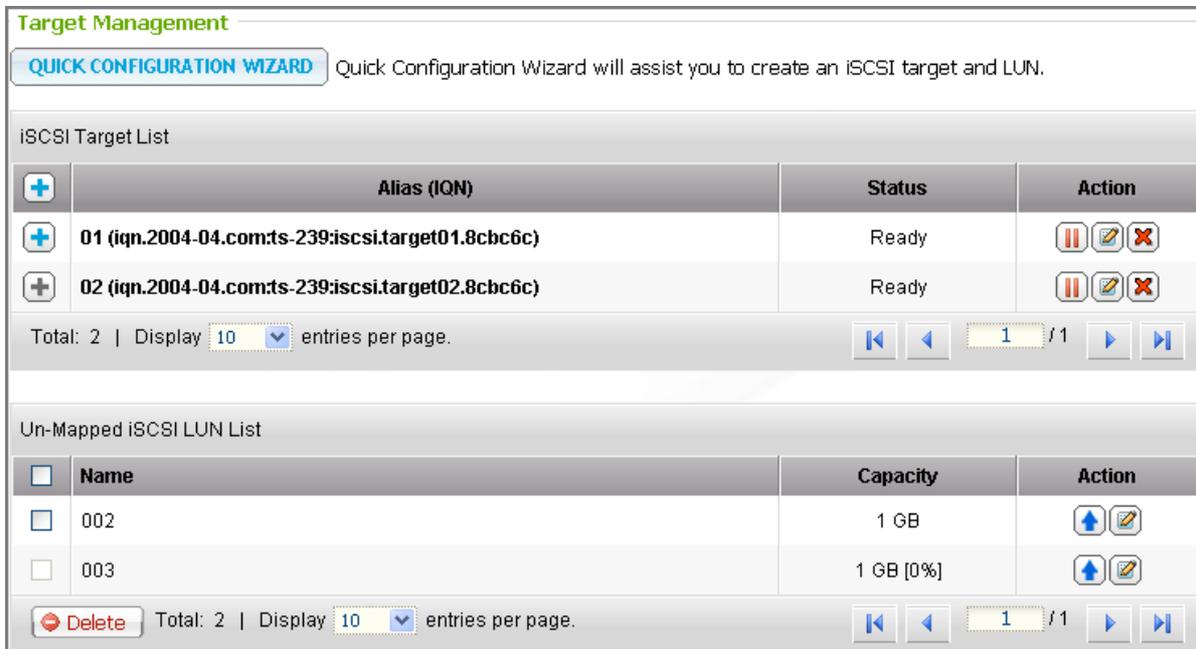
5. Confirm the settings and click 'Next'.



6. When the LUN has been created, click 'Finish' to exit the wizard.



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

Switch the mapping of LUN

The description below applies to non Intel-based NAS models running firmware version 3.3.0 **or later** and Intel-based NAS models running firmware version 3.2.0 **or later** only.

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

1. Select an LUN to unmap from an iSCSI target and click  (Disable).

iSCSI Target List			
	Alias (IQN)	Status	Action
	01 (iqn.2004-04.com:ts-239:iscsi.target01.8cbc6c) └ id:0 - 001 (1.00 GB)	Ready Enabled	    

2. Next, click  (Unmap) to unmap the LUN. The LUN will appear on the Un-Mapped iSCSI LUN List.

Click  (Map) to map the LUN to another target.

iSCSI Target List			
	Alias (IQN)	Status	Action
	01 (iqn.2004-04.com:ts-239:iscsi.target01.8cbc6c) └ id:0 - 001 (1.00 GB)	Ready Disabled	     
	02 (iqn.2004-04.com:ts-239:iscsi.target02.8cbc6c)	Ready	  
Total: 2 Display <input type="text" value="10"/> entries per page.		  <input type="text" value="1"/> / 1  	
Un-Mapped iSCSI LUN List			
<input type="checkbox"/>	Name	Capacity	Action
<input type="checkbox"/>	002	1 GB	 

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.

Connect to the iSCSI targets by Microsoft iSCSI initiator on Windows

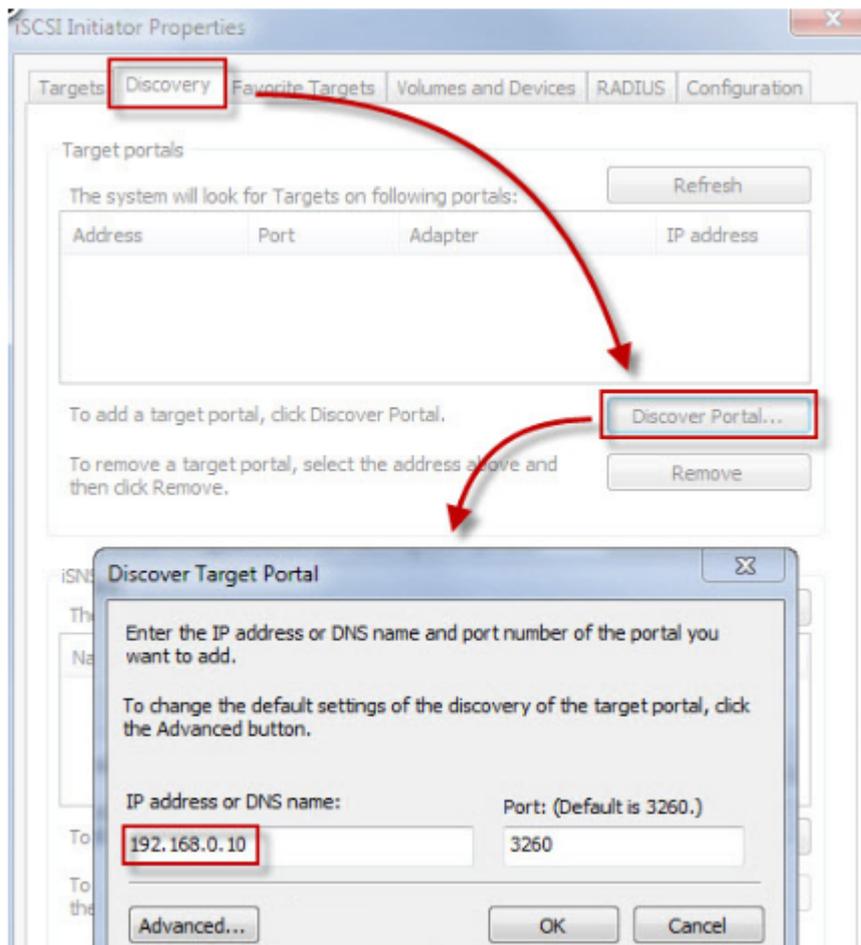
Before you start to use the iSCSI target service, make sure you have created an iSCSI target with a LUN on the NAS and installed the correct iSCSI initiator for your OS.

iSCSI initiator on Windows

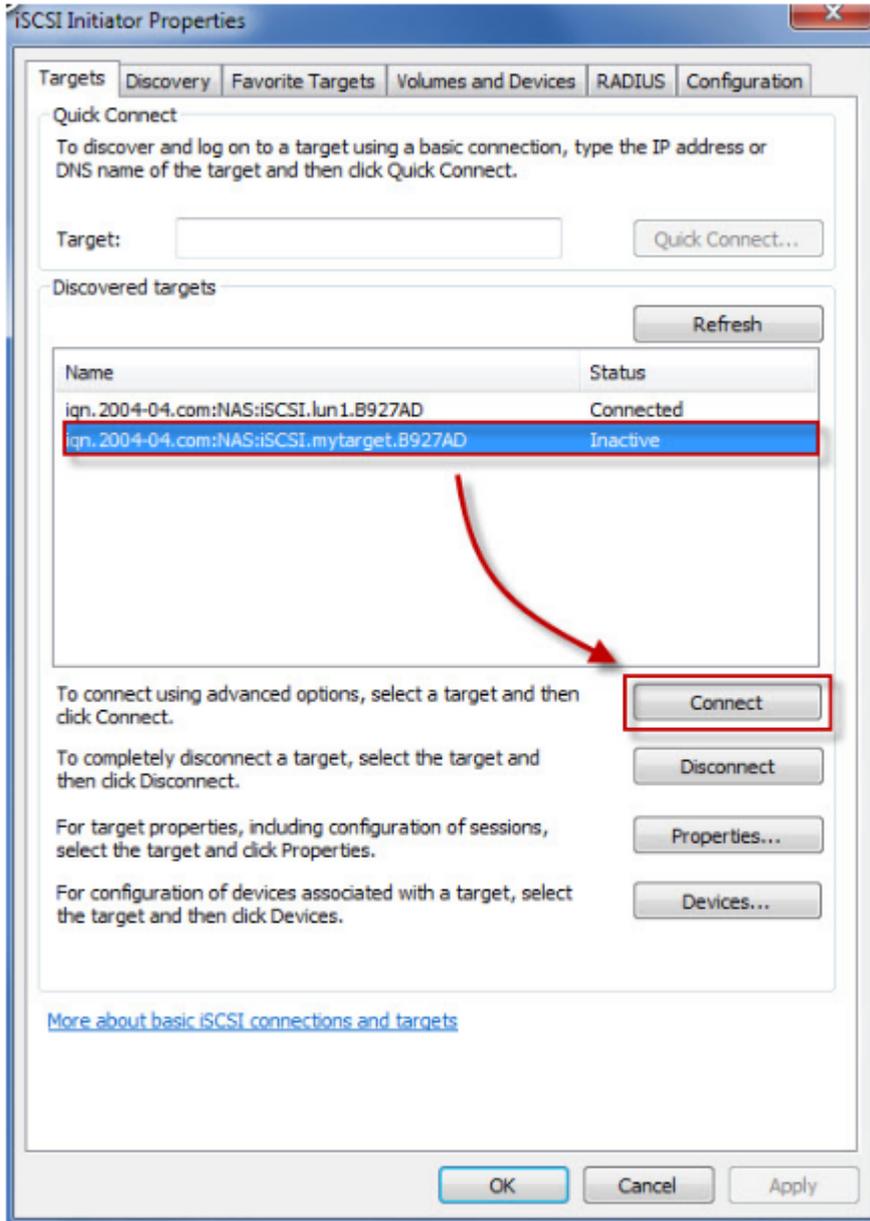
Microsoft iSCSI Software Initiator v2.07 is an official application for Windows OS 2003, XP, and 2000 to allow users to implement an external iSCSI storage array over the network. If you are using Windows Vista or Windows Server 2008, Microsoft iSCSI Software Initiator is included. For more information and the download location, visit:

<http://www.microsoft.com/downloads/details.aspx?familyid=12cb3c1a-15d6-4585-b385-befd1319f825&displaylang=en>

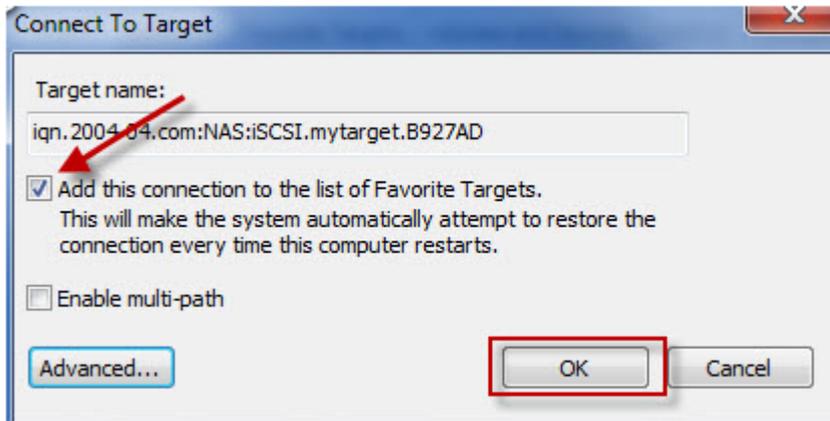
Start iSCSI initiator from 'Control Panel' > 'Administrative Tools'. Under the 'Discovery' tab click 'Add Portal'. Enter the NAS IP and the port number for the iSCSI service.



The available iSCSI targets and their status will then be shown under the 'Targets' tab. Select the target you wish to connect then click 'Connect'.



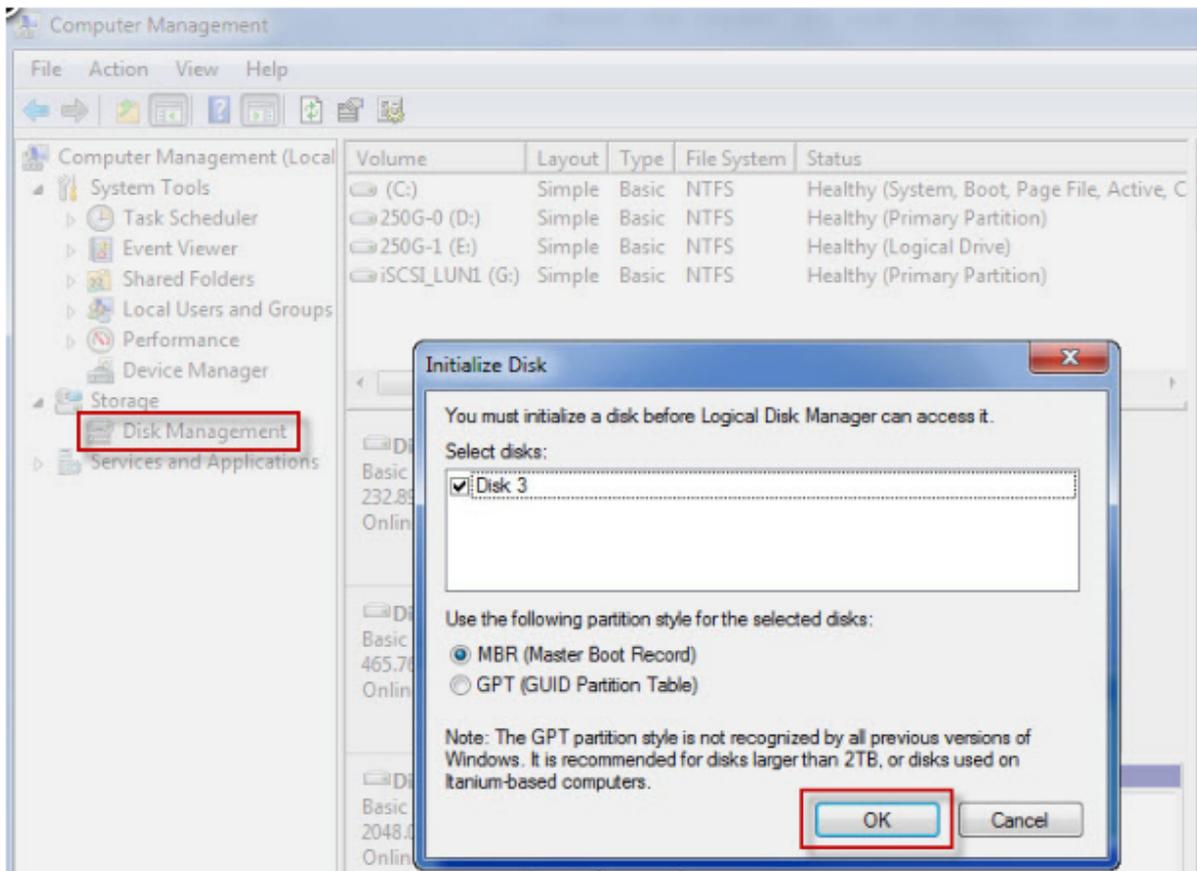
You may click 'Advanced' to specify the logon information if you have configured the authentication otherwise simply click 'OK' to continue.



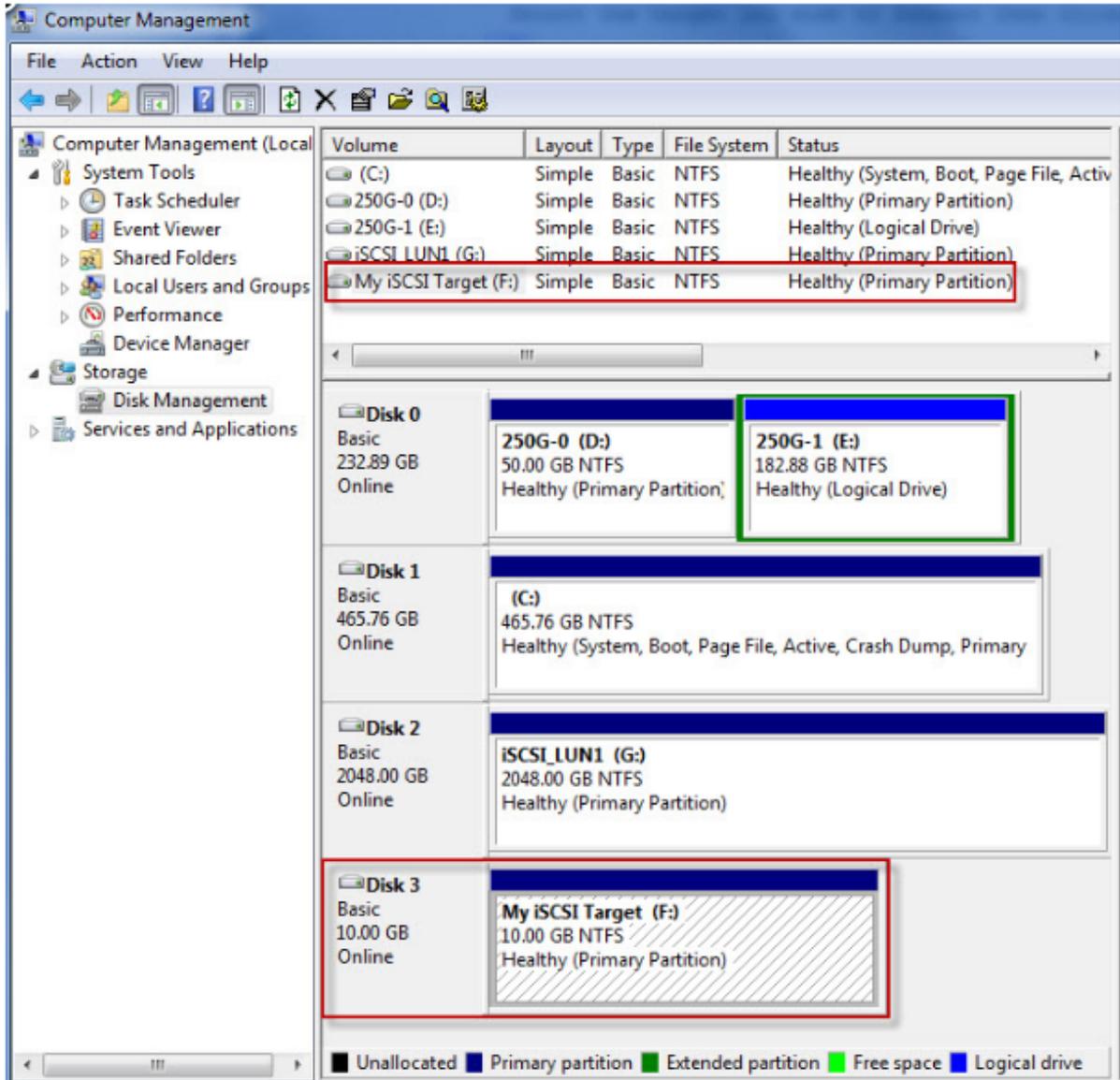
Upon successful logon, the status of the target now shows 'Connected'.

Name	Status
iqn.2004-04.com:NAS:iSCSI.lun1.B927AD	Connected
iqn.2004-04.com:NAS:iSCSI.mytarget.B927AD	Connected

After the target has been connected Windows will detect its presence and treat it as if there was a new hard disk drive has been added which needs to be initialized and formatted before we can use it. Right-click 'My Computer' > 'Manage' to open the 'Computer Management' window then go to 'Disk Management' and a window should pop-up automatically asking whether you want to initialize the newly found hard drive. Click 'OK' then format this drive as normally you 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.



Connect to the iSCSI targets by Xtend SAN iSCSI Initiator on Mac OS

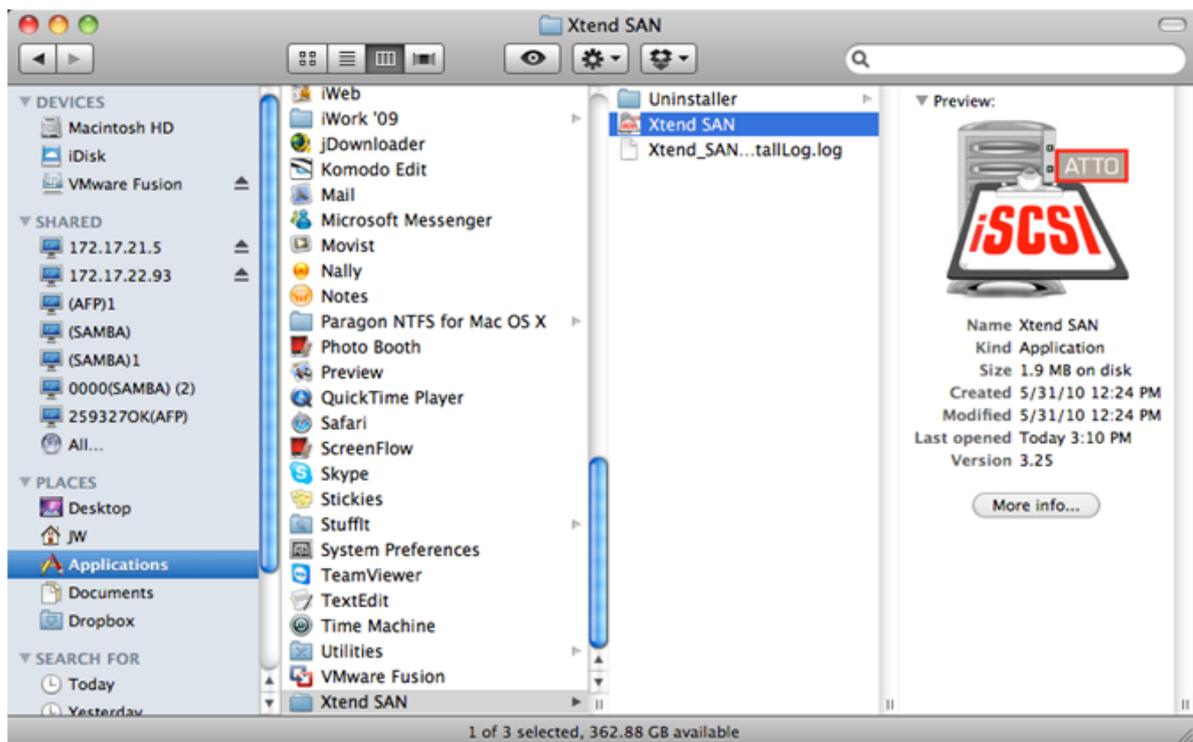
This section shows you how to use Xtend SAN iSCSI Initiator on Mac OS to add the iSCSI target (QNAP NAS) as an extra partition. Before you start to use the iSCSI target service, make sure you have created an iSCSI target with a LUN on the NAS and installed the correct iSCSI initiator for your OS.

About Xtend SAN iSCSI initiator

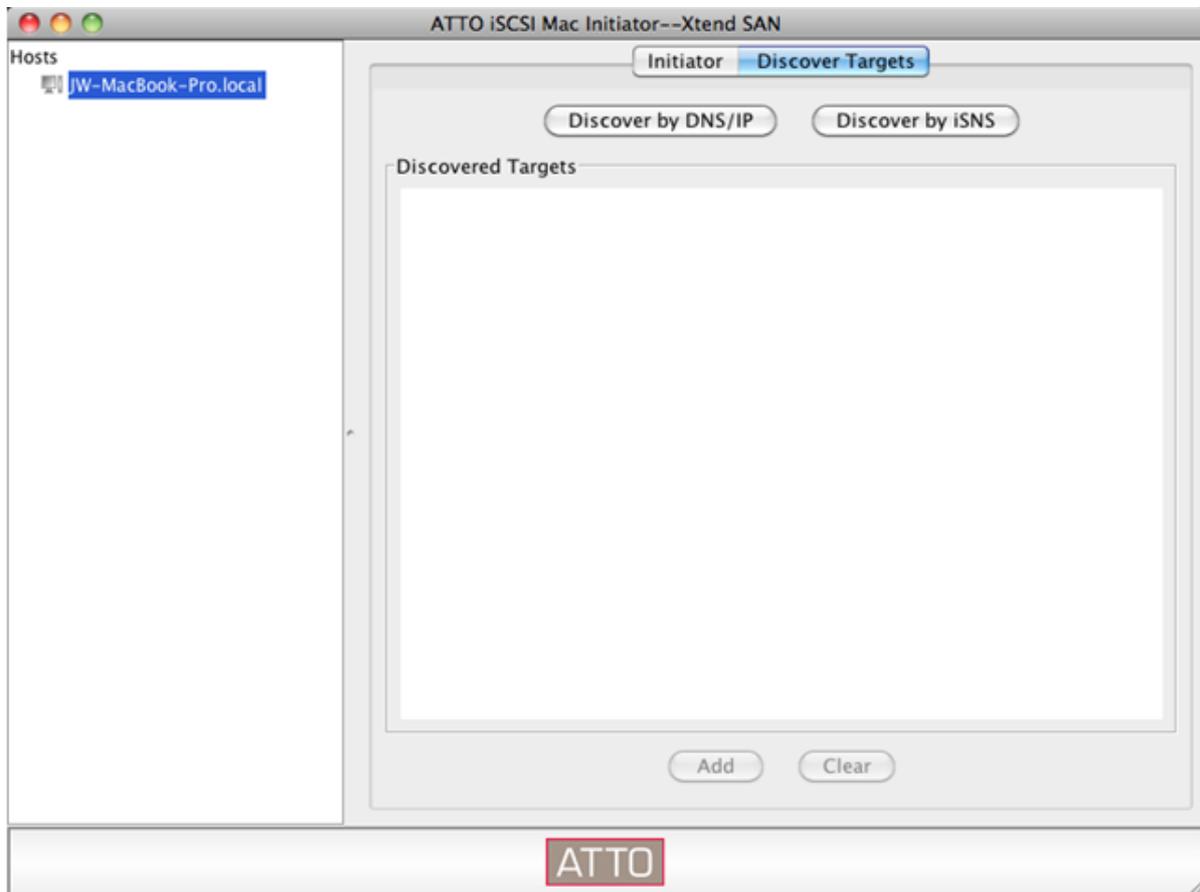
ATTO's Xtend SAN iSCSI Initiator for Mac OS X allows Mac users to utilize and benefit from iSCSI. It is compatible with Mac OS X 10.4.x to 10.6.x. For more information, please visit:

<http://www.attotech.com/products/product.php?sku=INIT-MAC0-001>

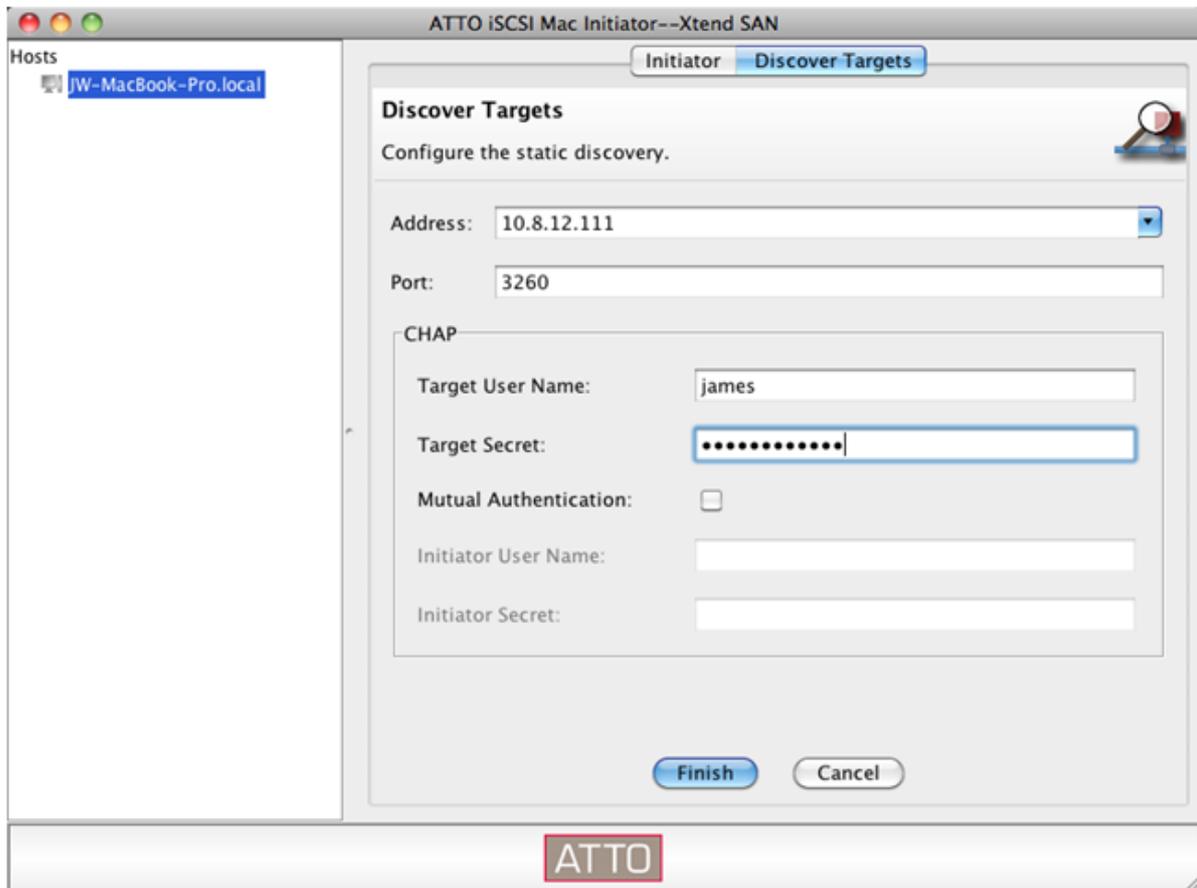
After installing Xtend SAN iSCSI initiator, you can find it in 'Applications'.



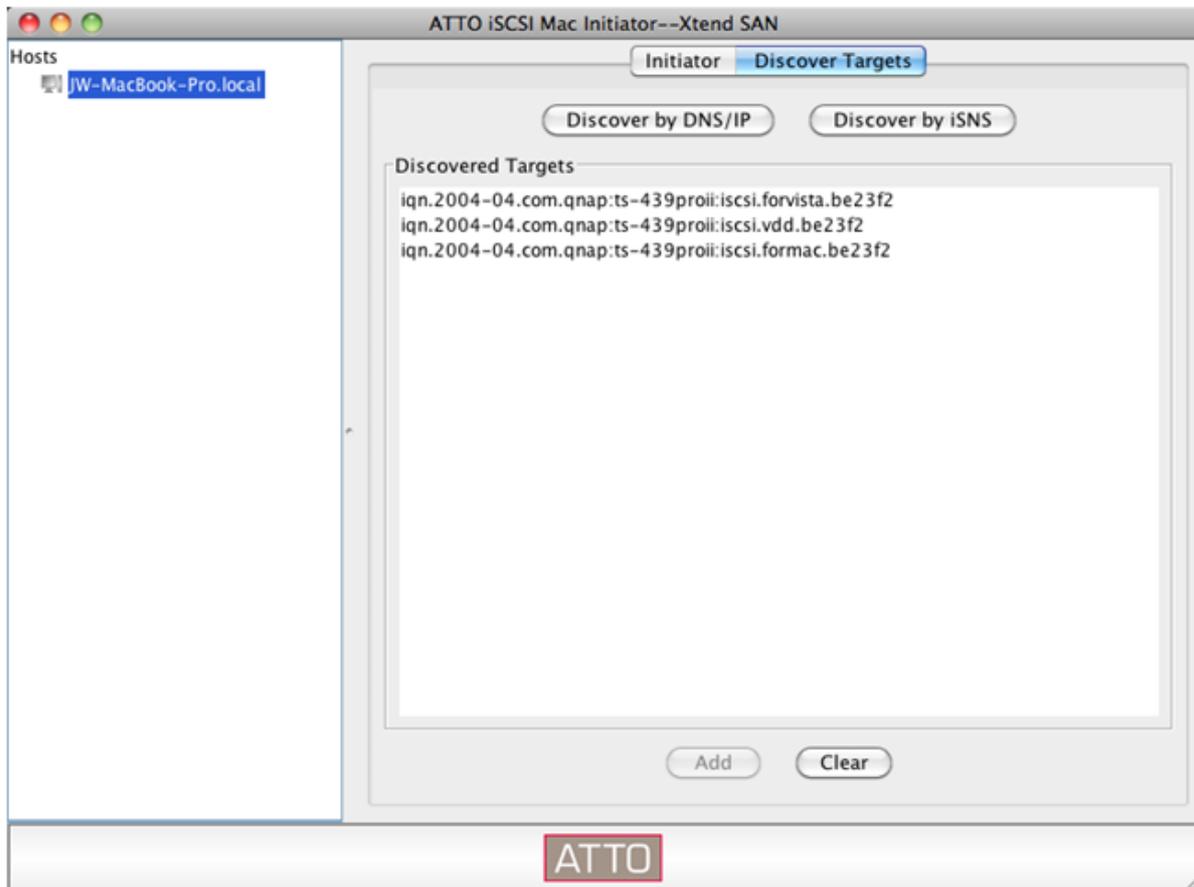
Click the 'Discover Targets' tab, you can either choose 'Discover by DNS/IP' or 'Discover by iSNS' according to the network topology. In this example, we will use the IP address to discover the iSCSI targets.



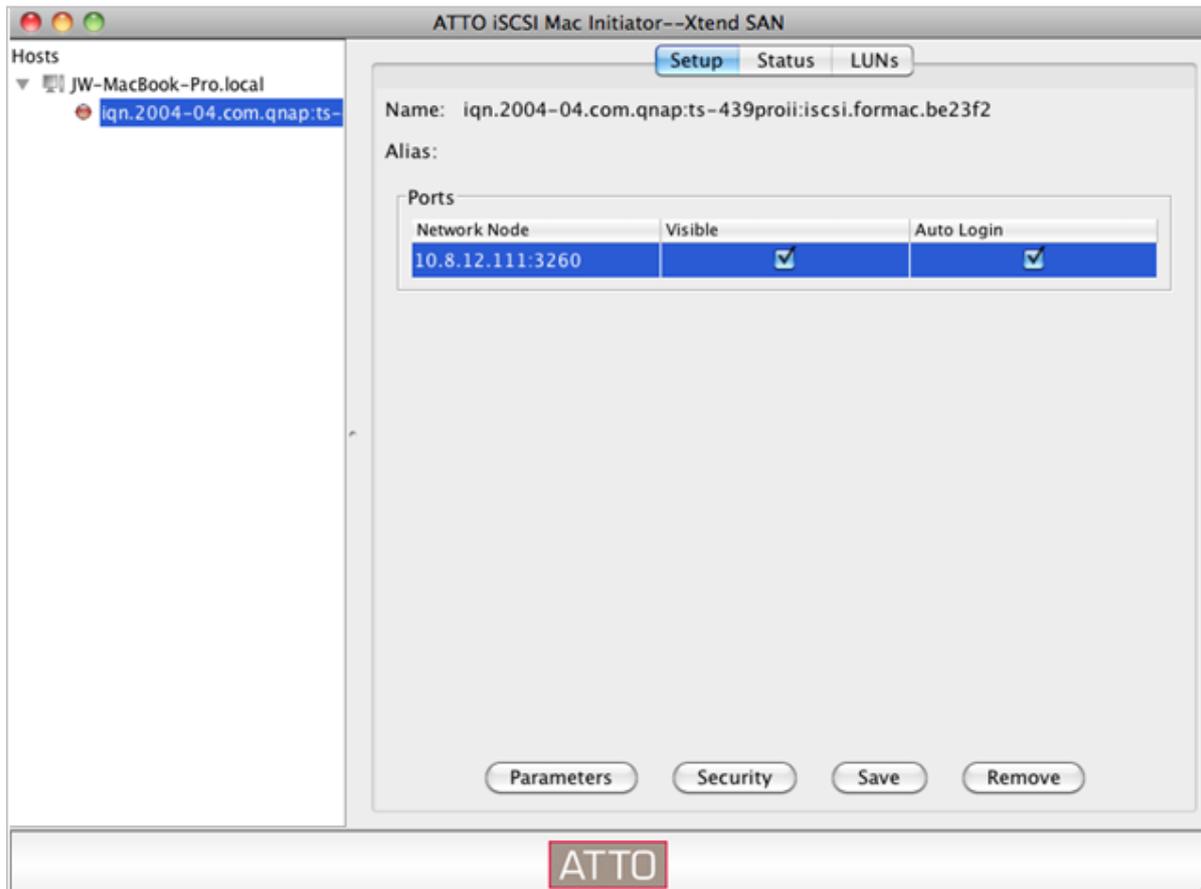
Follow the screen instructions and enter the server address, iSCSI target port number (default: 3260), and CHAP information (if applicable). Click 'Finish' to retrieve the target list after all the data have been entered correctly.



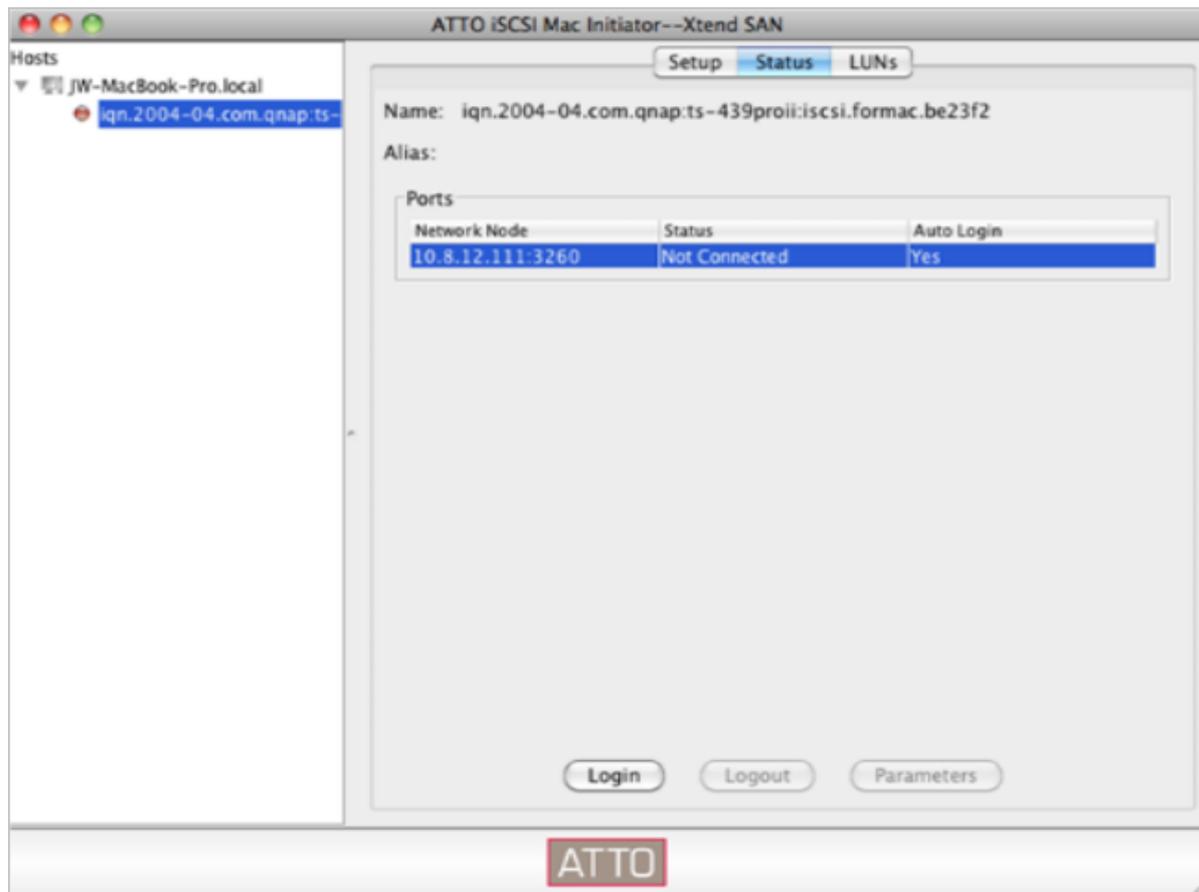
All the available iSCSI targets on the NAS will be shown. Select the target you would like to connect and click 'Add'.



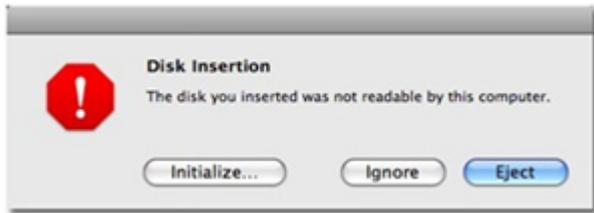
You can configure the connection properties of the selected iSCSI target in the 'Setup' tab.



Click the 'Status' tab, select the target to connect. Then click 'Login' to proceed.



The first time you logon to the iSCSI target, a popup message will be shown to remind you the disk is not initialized. Click 'Initialize...!' to format the disk. You can also open the 'Disk Utilities' application to do the initialization.



You can now use the iSCSI target as an external drive on your Mac.



Connect to the iSCSI targets by Open-iSCSI Initiator on Ubuntu Linux

This section shows you how to use Linux Open-iSCSI Initiator on Ubuntu 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 Linux Open-iSCSI Initiator

The Linux Open-iSCSI Initiator is a built-in package in Ubuntu 8.04 LTS (or 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, please visit: <http://www.open-iscsi.org/>

Before you start

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

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

Now follow the steps below to connect to an iSCSI target (QNAP NAS) 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 (the QNAP NAS in this example), 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 node(s) to connect.

```
# iscsiadm -m node
```

** You can delete the node(s) you don't 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
```

ADVANCED ACL

The description below applies to non Intel-based NAS models running firmware version 3.3.0 **or later** and Intel-based NAS models running firmware version 3.2.0 **or later** only.

You can create LUN masking policy to configure the permission of the 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'.

iSCSI

PORTAL MANAGEMENT TARGET MANAGEMENT **ADVANCED ACL**

LUN Masking

A connected iSCSI initiator is authenticated by Target ACL and LUN Masking in order to access the iSCSI LUNs mapped to the iSCSI targets on the NAS. (For detailed instructions, please click [here](#))

LUN Masking Policy List Add a Policy

<input type="checkbox"/>	Policy Name	ION	Action
<input type="checkbox"/>	Default Policy		

Delete Total: 1 | Display: 10 entries per page. 1 / 1

Enter the policy name, the initiator IQN, and assign the access right for each LUN created 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.

Add a Policy

Define the LUN Masking policy for the initiator you input below.

Policy Name:

Initiator IQN:

Name	Read Only	Read/Write	Deny Access
000	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
001	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
002	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
abb	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>

APPLY

If no LUN masking policy is specified for a connected iSCSI initiator, the default policy will be applied. The system default policy allows read and write access from all the connected iSCSI initiators. You can click  (Edit) on the LUN masking list to edit the default policy.

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

LUN Masking

A connected iSCSI initiator is authenticated by Target ACL and LUN Masking in order to access the iSCSI LUNs mapped to the iSCSI targets on the NAS. (For detailed instructions, please click [here](#))

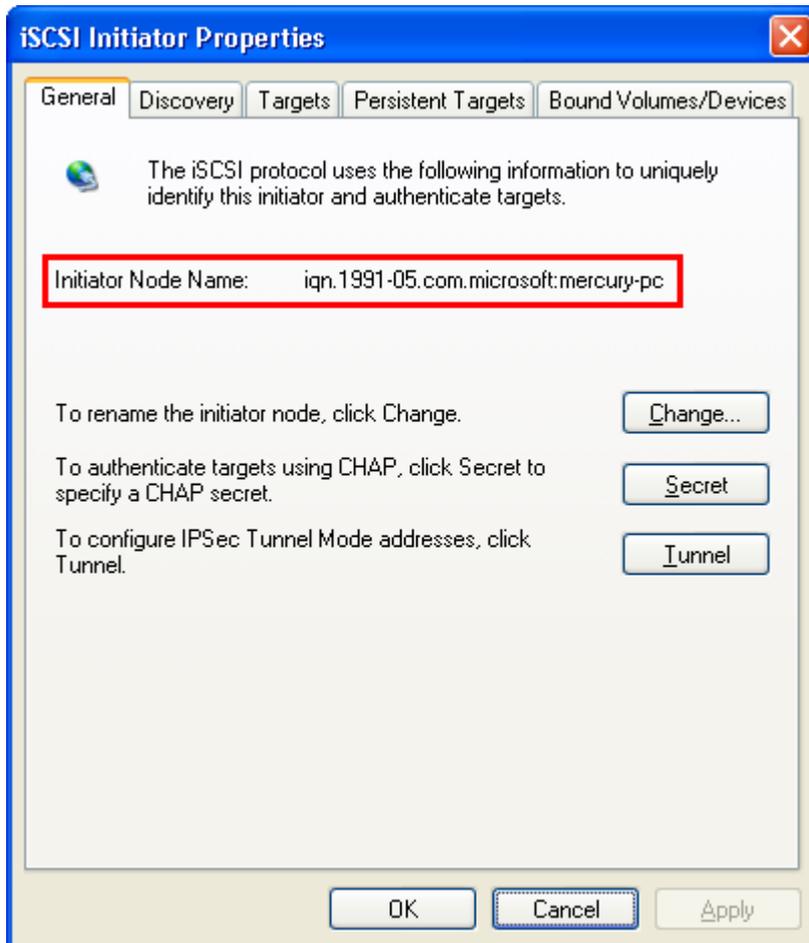
LUN Masking Policy List 

<input type="checkbox"/>	Policy Name	IQN	Action
<input type="checkbox"/>	Default Policy		

 Total: 1 | Display entries per page. 

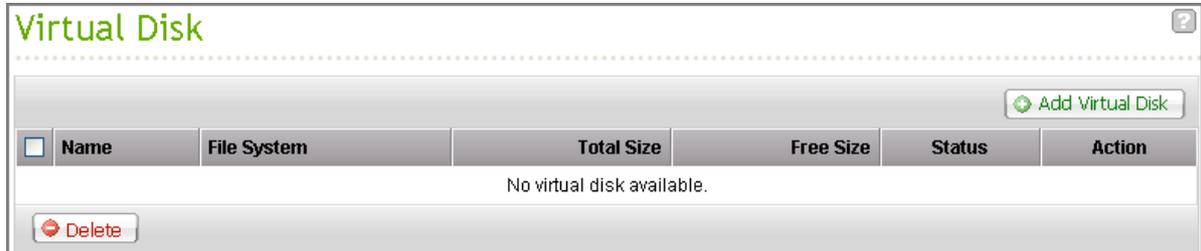
Hint: How do I find the initiator IQN?

Start Microsoft iSCSI initiator and click 'General'. You can find the IQN of the initiator as shown below.

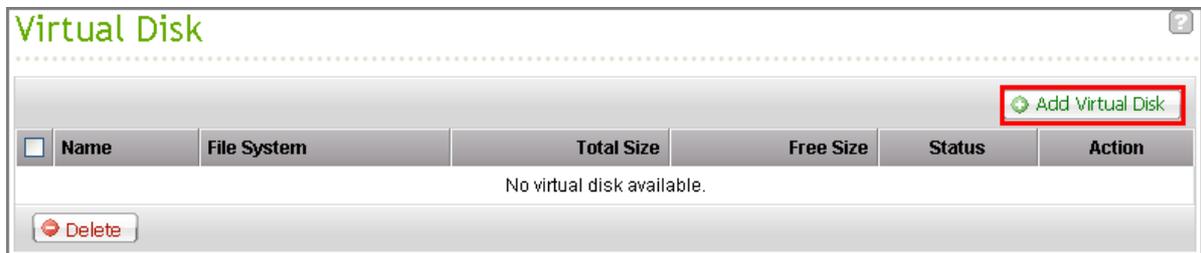


4.6 Virtual Disk

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



To add a virtual disk to the NAS, make sure an iSCSI target has been created. Click 'Add Virtual Disk'.



Enter the target server IP and port number (default: 3260). Click 'Get Remote Disk'. Select a target from the target list. If authentication is required, enter the user name and the password. You may select 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. Then, click 'NEXT'.

Add Virtual Disk

Target Server IP/Name: Port:

GET REMOTE DISK

Target Name:

Initiator IQN: iqn.2004-04.com.qnap:TS-119.QNAPAlex

Authentication

User Name:

Password:

CRC/Checksum (optional)

Data Digest

Header Digest

Step 1 of 3

NEXT **CANCEL**

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 the virtual disk as EXT3, EXT4, FAT 32, NTFS, or HFS+. By selecting 'Format virtual disk now', the data on the LUN will be removed.

Add Virtual Disk

Configure Virtual Disk

Virtual Disk Name:

LUN List: File System: ext3

Note: Make sure only this NAS can connect to the selected LUN.

Format virtual disk now

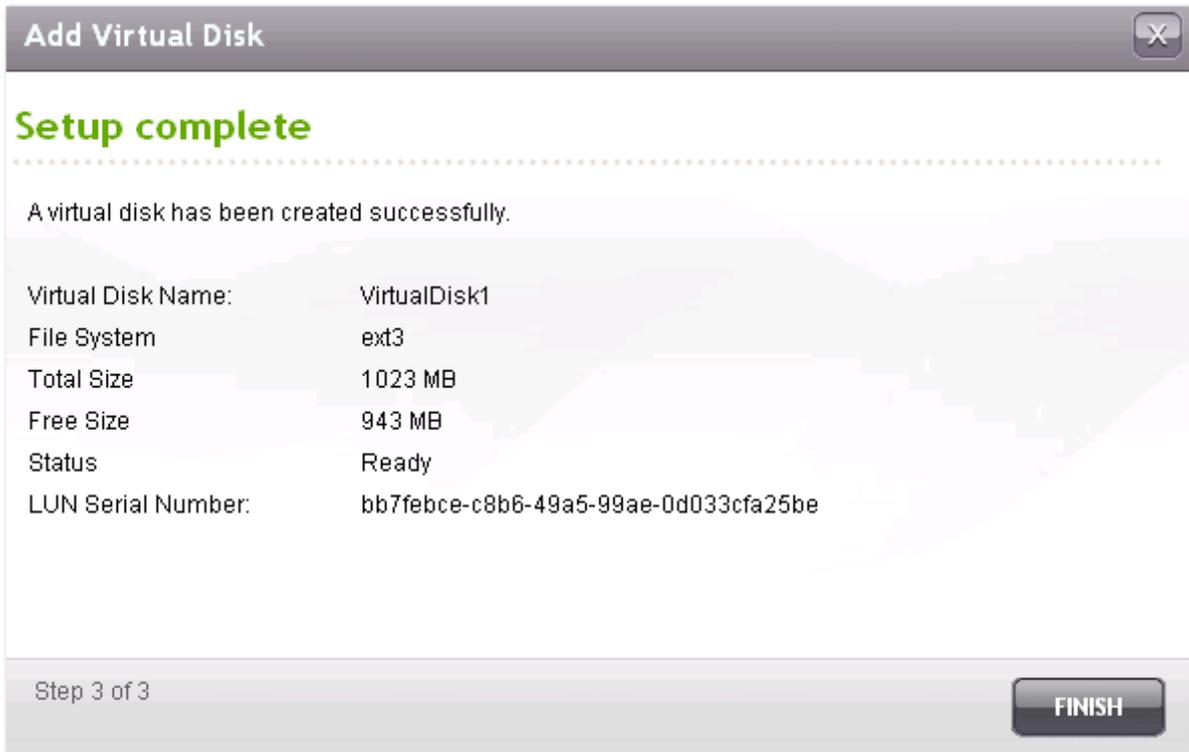
File System:

Warning: All the disk data will be removed!

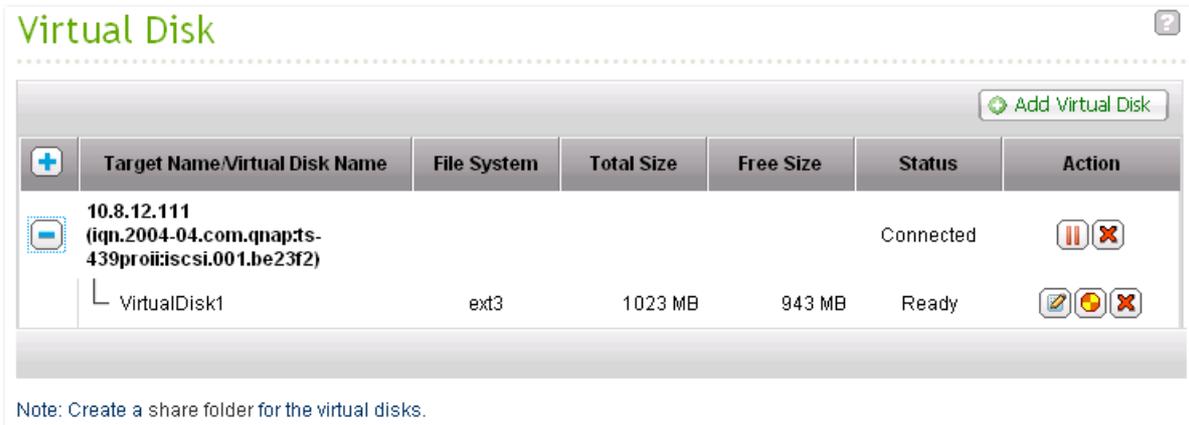
Step 2 of 3

BACK **NEXT** **CANCEL**

Click 'FINISH' to exit the wizard.



The storage capacity of your NAS has been expanded by the virtual disk. You can go to 'Access Right Management' > 'Share Folders' to create new share folders on the virtual disk.



Icon	Description
 (Edit)	To edit a virtual disk name or the authentication information of an iSCSI target.
 (Connect)	To connect to an iSCSI target.
 (Disconnect)	To disconnect an iSCSI target.
 (Format)	To format a virtual disk as EXT3, EXT 4, FAT 32, NTFS, or HFS+ file system.
 (Delete)	To delete a virtual disk or an iSCSI target.

5. Access Right Management

The files on the NAS can be shared among multiple users. For easier management and better control of users' access right, you have to organize the users, user groups, and their access right control.

Users [153](#)

User Groups [163](#)

Share Folders [169](#)

Quota [198](#)

5.1 Users

The NAS has created the following users by default:

- admin
By default, the administrator 'admin' has access right to the system administration and 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 the server by FTP, you can use this name to login.

The number of users you can create on the NAS varies according to the NAS models. See the table below for more details:

Maximum number of users	NAS models
1,024	TS-110, TS-210
2,048	TS-119, TS-219, TS-219P, TS-410, TS-119P+, TS-219P+, TS-112, TS-212
4,096	TS-419P, TS-410U, TS-419U, TS-239 Pro, TS-239 Pro II, TS-259 Pro, SS-439 Pro, TS-439 Pro, TS-439 Pro II, TS-439U-SP/RP, TS-459 Pro, TS-459U-SP/RP, TS-509 Pro, TS-559 Pro, TS-639 Pro, TS-659 Pro, SS-839 Pro, TS-859 Pro, TS-809 Pro, TS-809U-RP, TS-859U-RP, TS-259 Pro+, TS-459 Pro+, TS-559 Pro+, TS-659 Pro+, TS-419P+, TS-412

The following information is required to create a new user:

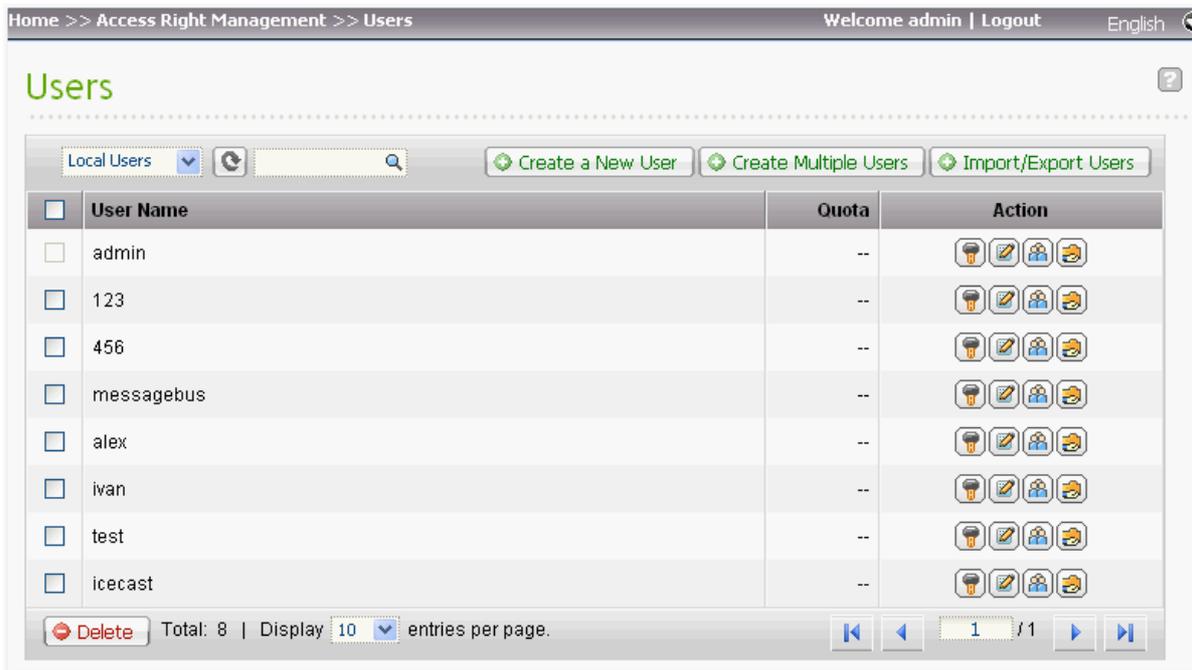
- User name

The user name must not exceed 32 characters. It is case-insensitive and supports double-byte characters, such as Chinese, Japanese, and Korean. The invalid characters are listed below:

" / \ [] : ; | = , + * ? < > ` ` `

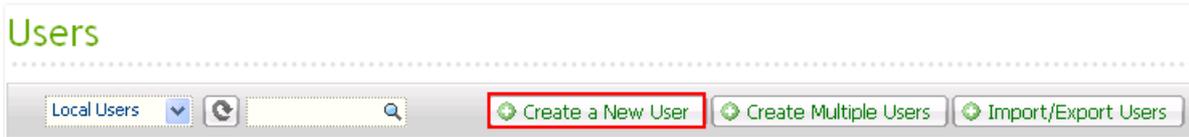
- Password

The password is case-sensitive and supports maximum 16 characters. It is recommended to use a password of at least 6 characters.

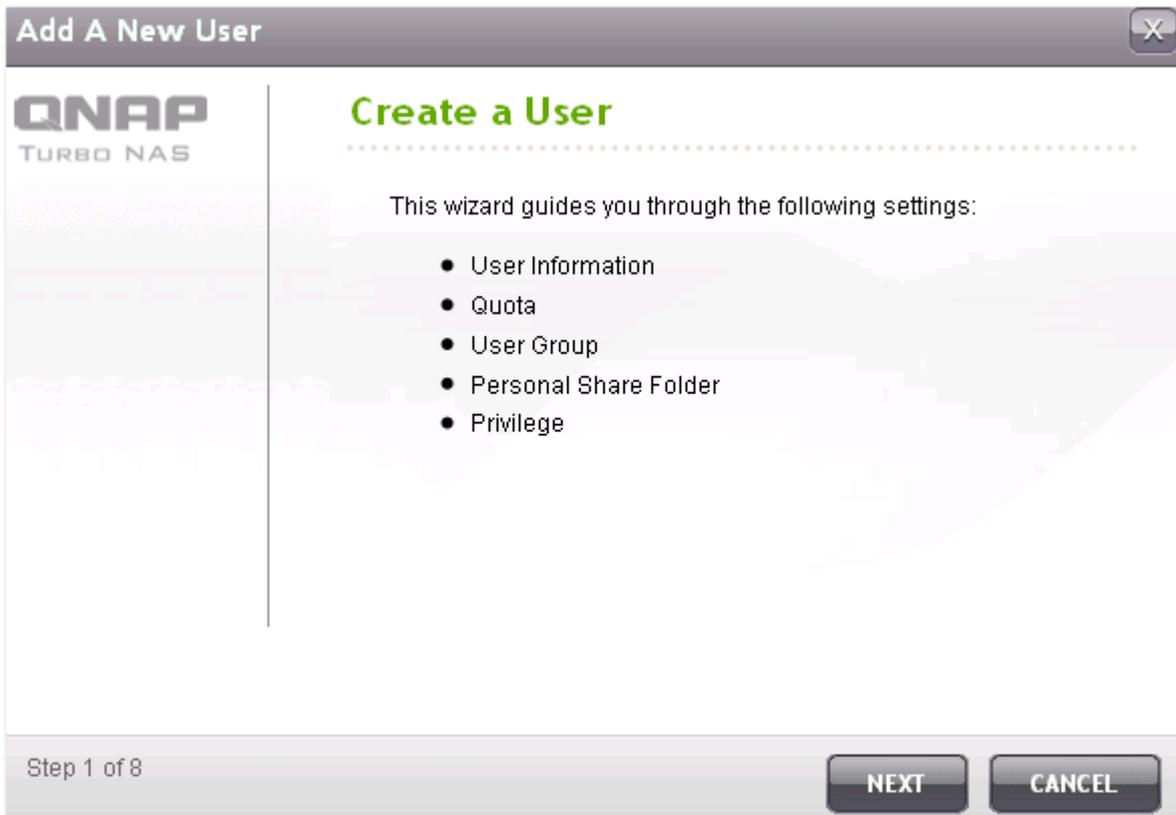


Create a User

To create a user on the NAS, click 'Create a New User'.

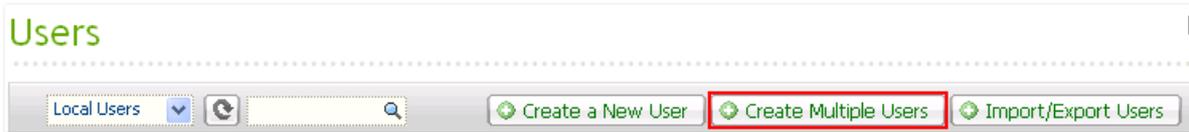


Follow the instructions of the wizard to complete the details.



Create Multiple Users

To create multiple users on the NAS, click 'Create Multiple Users'.



Click 'Next'.



Enter the name prefix, e.g. test. Enter the start number for the user name, e.g. 0001 and the number of users to be created, e.g. 10. The NAS creates ten users named test0001, test0002, test0003... test0010. The password entered here is the same for all new users.

Multiple Users Creation Wizard

QNAP
TURBO NAS

Account Login Info

User Name Prefix : test

User Name Start No : 0001

Number of Users : 10

Password : ●●●●

Verify Password : ●●●●

Note: For increased security, password should be at least 6 characters.

Step 2 of 5

BACK NEXT CANCEL

Select to create a private network share for each user or not. The network share will be named after the user name. If a network share of the same name has already existed, the NAS will not create the folder.

Multiple Users Creation Wizard

QNAP
TURBO NAS

Create Private Network Share

Do you want to create a private network share for each user?

YES

NO

Note: If you select **No**, will direct the completion of the wizard, you can later modify permissions management.

Step 3 of 5

BACK NEXT CANCEL

Specify the folder settings.



You can view the new users you have created in the last step. Click 'Finish' to exit the wizard.



Check that the users have been created.

Home >> Access Right Management >> Users Welcome admin | Logout English

Users

Local Users

<input type="checkbox"/>	User Name	Quota	Action
<input type="checkbox"/>	admin	--	
<input type="checkbox"/>	messagebus	--	
<input type="checkbox"/>	alex	--	
<input type="checkbox"/>	ivan	--	
<input type="checkbox"/>	test	--	
<input type="checkbox"/>	icecast	--	
<input type="checkbox"/>	test0001	--	
<input type="checkbox"/>	test0002	--	
<input type="checkbox"/>	test0003	--	
<input type="checkbox"/>	test0004	--	
<input type="checkbox"/>	test0005	--	
<input type="checkbox"/>	test0006	--	
<input type="checkbox"/>	test0007	--	
<input type="checkbox"/>	test0008	--	
<input type="checkbox"/>	test0009	--	
<input type="checkbox"/>	test0010	--	

Total: 16 | Display 20 entries per page. 1 / 1

Check that the network shares have been created for the users.

Home >> Access Right Management >> Share Folders Welcome admin | Logout English

Share Folders ?

SHARE FOLDERS | ISO SHARE FOLDERS | FOLDER AGGREGATION | ADVANCED OPTIONS

Shares

<input type="checkbox"/>	Folder Name	Size	Folders	Files	Hidden	Action
<input type="checkbox"/>	test0001	4 KB	0	0	No	
<input type="checkbox"/>	test0002	4 KB	0	0	No	
<input type="checkbox"/>	test0003	4 KB	0	0	No	
<input type="checkbox"/>	test0004	4 KB	0	0	No	
<input type="checkbox"/>	test0005	4 KB	0	0	No	
<input type="checkbox"/>	test0006	4 KB	0	0	No	
<input type="checkbox"/>	test0007	4 KB	0	0	No	
<input type="checkbox"/>	test0008	4 KB	0	0	No	
<input type="checkbox"/>	test0009	4 KB	0	0	No	
<input type="checkbox"/>	test0010	4 KB	0	0	No	

Total: 20 | Display entries per page. << < 2 / 2 > >>

Import/Export Users

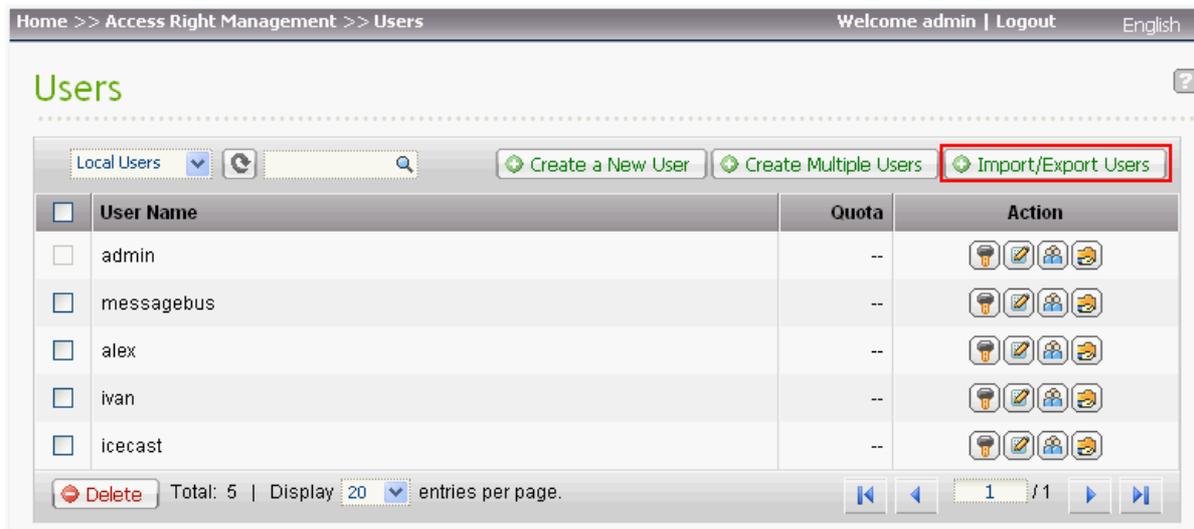
You can import users to or export users from the NAS with this function.

Note: The password rules (if applicable) will not be applied when importing the user list.

Export users

Follow the steps below to export users from the NAS:

1. Click 'Import/Export Users'.



2. Select the option 'Export user and user group settings'.
3. Click 'NEXT' to download and save the account setting file (*.bin). The file can be imported to another NAS for account setup.

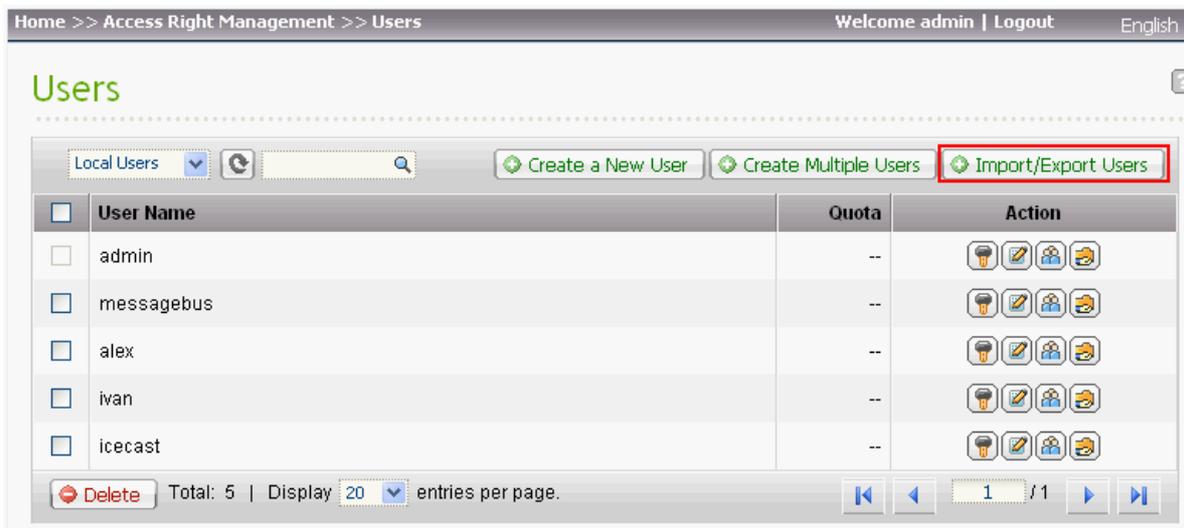


Note that the quota settings can be exported only when the quota function is enabled in 'Access Right Management' > 'Quota'.

Import users

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

1. Click 'Import/Export Users'.



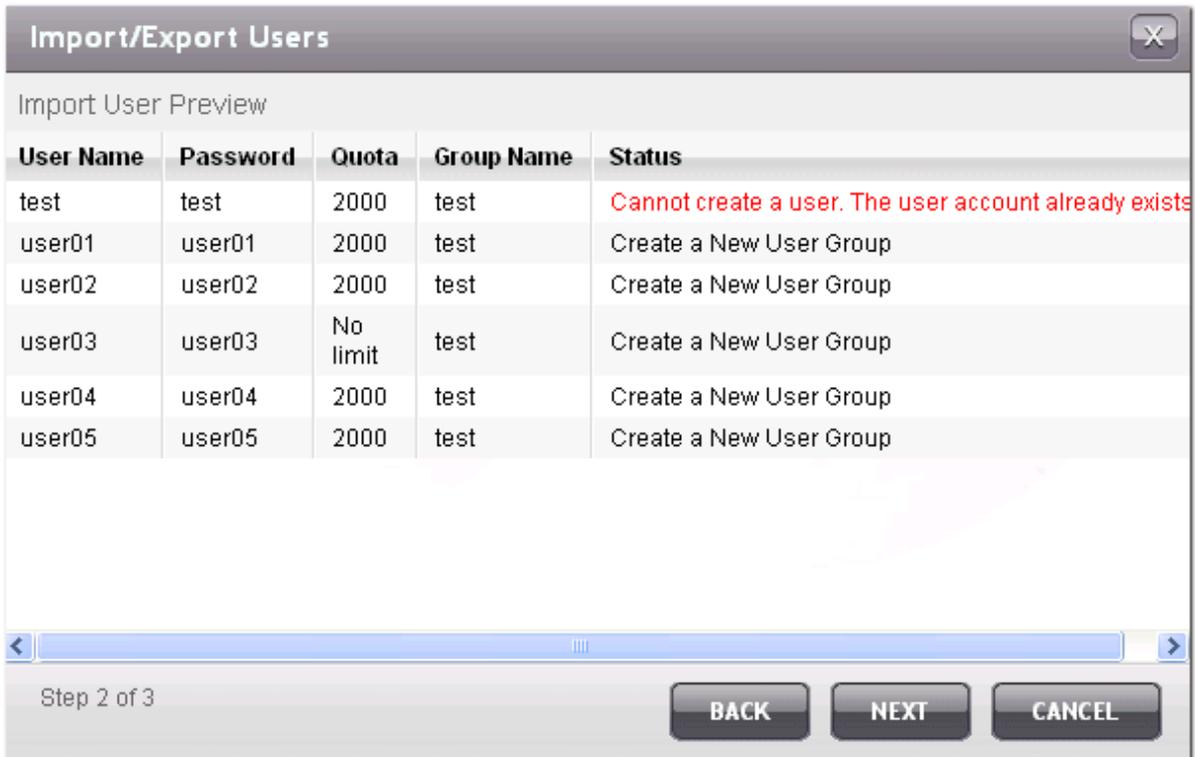
2. Select 'Import user and user group settings'. Select the option 'Overwrite duplicate users' to overwrite existing users on the NAS.



3. Click 'Browse' and select the file (*.txt, *.csv, *.bin) which contains the users information. Click

'NEXT' to import the users.

4. A list of imported users will be displayed. Any users with abnormal status, highlighted in red, will be skipped. Note that this step will not be shown if you import users by a BIN file.



The screenshot shows a window titled "Import/Export Users" with a close button in the top right corner. Below the title bar is the text "Import User Preview". A table with five columns is displayed: "User Name", "Password", "Quota", "Group Name", and "Status". The first row, for user "test", has a red status message: "Cannot create a user. The user account already exists". The other rows show users "user01" through "user05" with various quotas and the status "Create a New User Group". Below the table is a scrollbar and the text "Step 2 of 3". At the bottom right are three buttons: "BACK", "NEXT", and "CANCEL".

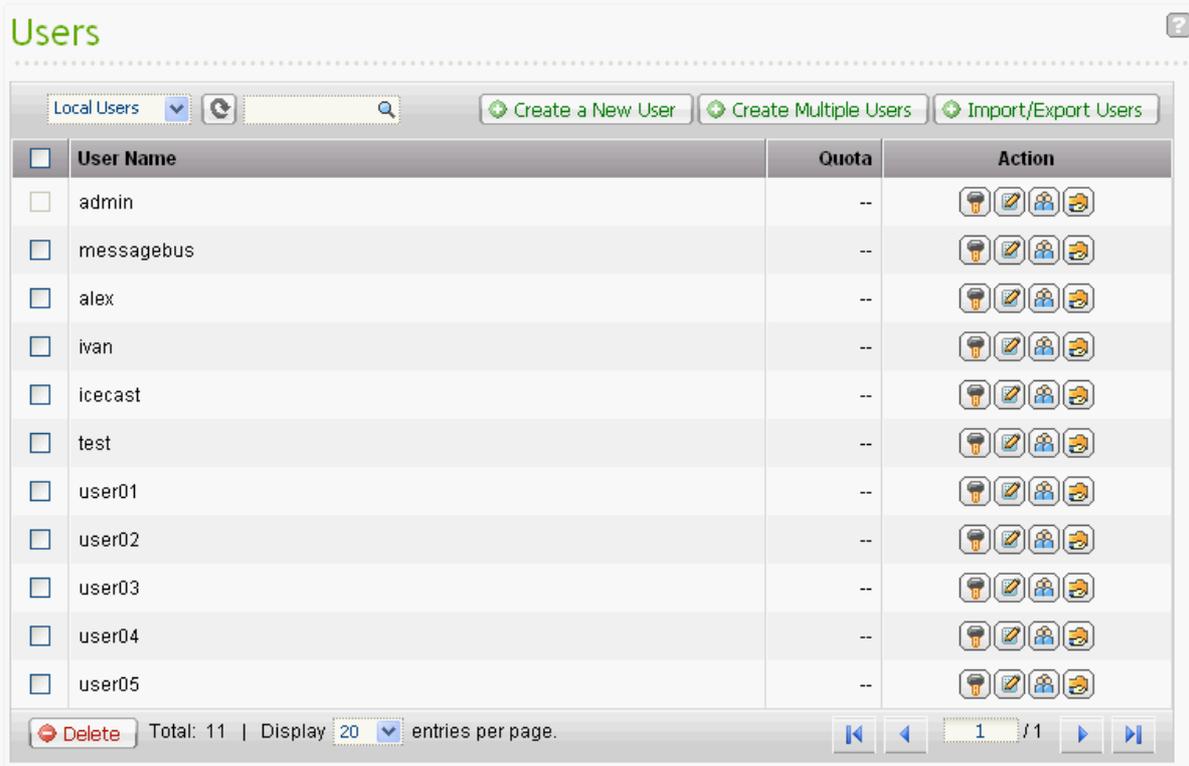
User Name	Password	Quota	Group Name	Status
test	test	2000	test	Cannot create a user. The user account already exists
user01	user01	2000	test	Create a New User Group
user02	user02	2000	test	Create a New User Group
user03	user03	No limit	test	Create a New User Group
user04	user04	2000	test	Create a New User Group
user05	user05	2000	test	Create a New User Group

5. Click 'NEXT' to create the user accounts.

6. Click 'Finish' after the users have been created.



7. The imported user accounts will be shown.

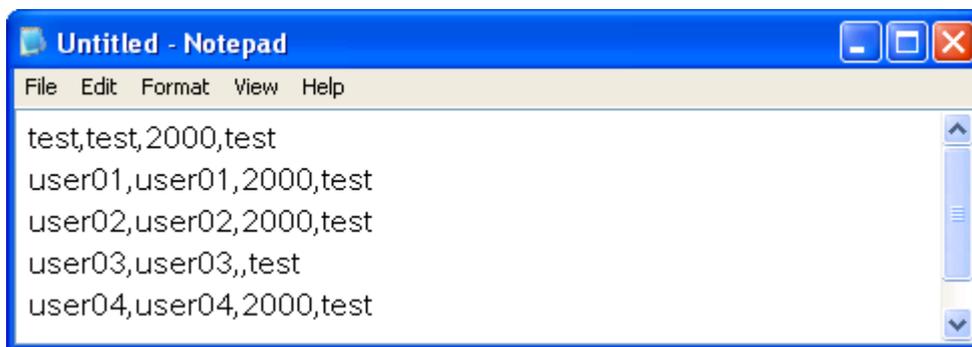


The NAS supports importing user accounts from TXT, CSV or BIN files. To create a list of user accounts with these file types, follow the steps below.

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 in UTF-8 encoding if it contains double-byte characters.

An example is shown as below. 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 the file in CSV format.
4. Open the CSV file with Notepad and save it in UTF-8 encoding if it contains double-byte characters.

An example is shown as below:

	A	B	C	D
1	test	test	2000	test
2	user01	user01	2000	test
3	user02	user02	2000	test
4	user03	user03		test
5	user04	user04	2000	test
6	user05	user05	2000	test

BIN (Exported from the NAS)

The BIN file is exported from a QNAP NAS. It contains information including user name, password, quota, and user group. The quota setting can be exported only when the quota function is enabled in 'Access Right Management' > 'Quota'.

5.2 User Groups

A user group is a collection of users with the same access right to the files or folders. The NAS has created the following user groups by default:

- administrators
All the members in this group have the administration right of the NAS. You cannot delete this group.
- everyone
All the registered users belong to everyone group. You cannot delete this group.

The number of user groups you can create on the NAS varies according to the NAS models. See the table below for more details:

Maximum number of user groups	NAS models
128	TS-110, TS-210
256	TS-119, TS-219, TS-219P, TS-410, TS-119P+, TS-219P+, TS-112, TS-212
512	TS-419P, TS-410U, TS-419U, TS-239 Pro, TS-239 Pro II, TS-259 Pro, SS-439 Pro, TS-439 Pro, TS-439 Pro II, TS-439U-SP/RP, TS-459 Pro, TS-459U-SP/RP, TS-509 Pro, TS-559 Pro, TS-639 Pro, TS-659 Pro, SS-839 Pro, TS-859 Pro, TS-809 Pro, TS-809U-RP, TS-859U-RP, TS-259 Pro+, TS-459 Pro+, TS-559 Pro+, TS-659 Pro+, TS-419P+, TS-412

A group name must not exceed 256 characters. It is case-insensitive and supports double-byte characters, such as Chinese, Japanese, and Korean, except the following ones:

"/ \ [] : ; | = , + * ? < > ` ` `

5.3 Share Folders

Share Folders

You can create different network share folders for various types of files, and assign different access rights to the users or user groups.

The number of share folders you can create on the NAS varies according to the NAS models. See the table below for more details:

Maximum number of share folders	NAS models
256	TS-110, TS-119, TS-210, TS-219, TS-219P, TS-410, TS-119P+, TS-219P+, TS-112, TS-212
512	TS-419P, TS-410U, TS-419U, TS-239 Pro, TS-239 Pro II, TS-259 Pro, SS-439 Pro, TS-439 Pro, TS-439 Pro II, TS-439U-SP/RP, TS-459 Pro, TS-459U-SP/RP, TS-509 Pro, TS-559 Pro, TS-639 Pro, TS-659 Pro, SS-839 Pro, TS-859 Pro, TS-809 Pro, TS-809U-RP, TS-859U-RP, TS-259 Pro+, TS-459 Pro+, TS-559 Pro+, TS-659 Pro+, TS-419P+, TS-412

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

The screenshot displays the 'Share Folders' management page. At the top, there are navigation tabs: 'SHARE FOLDERS' (selected), 'ISO SHARE FOLDERS', 'FOLDER AGGREGATION', and 'ADVANCED OPTIONS'. Below the tabs is a search bar and two buttons: 'New Share Folder' and 'Restore Default Network Shares'. The main content is a table with the following data:

<input type="checkbox"/>	Folder Name	Size	Folders	Files	Hidden	Action
<input type="checkbox"/>	Dept	80 KB	17	2	No	[Edit] [Share] [NFS] [SMB] [Recycle]
<input type="checkbox"/>	Download	400.2 MB	7	8	No	[Edit] [Share] [NFS] [SMB] [Recycle]
<input type="checkbox"/>	Multimedia	12.84 GB	65	575	No	[Edit] [Share] [NFS] [SMB] [Recycle]
<input type="checkbox"/>	Network Recycle Bin 1	120.13 MB	22	27	No	[Edit] [Share] [NFS] [SMB] [Recycle]
<input type="checkbox"/>	Public	26.55 GB	319	1650	No	[Edit] [Share] [NFS] [SMB] [Recycle]
<input type="checkbox"/>	Recordings	88 KB	19	2	No	[Edit] [Share] [NFS] [SMB] [Recycle]
<input type="checkbox"/>	Usb	28 KB	4	2	No	[Edit] [Share] [NFS] [SMB] [Recycle]
<input type="checkbox"/>	Web	236.48 MB	263	2108	No	[Edit] [Share] [NFS] [SMB] [Recycle]
<input checked="" type="checkbox"/>	aaa	4 KB	0	0	No	[Edit] [Share] [NFS] [SMB] [Recycle]
<input checked="" type="checkbox"/>	ivan	4.7 MB	0	1	No	[Edit] [Share] [NFS] [SMB] [Recycle]

At the bottom of the table, there is a 'Delete' button, a summary 'Total: 12 | Display 10 entries per page.', and pagination controls showing '1 / 2'.

To create a share folder, click 'New Share Folder'.

<input type="checkbox"/>	Folder Name	Size	Folders	Files	Hidden	Action
<input type="checkbox"/>	Download	29.58 MB	28	33	No	
<input type="checkbox"/>	Multimedia	19.87 GB	346	3994	No	
<input type="checkbox"/>	Network Recycle Bin 1	13.45 KB	4	2	No	
<input type="checkbox"/>	Public	5.49 GB	1446	16459	No	
<input type="checkbox"/>	Recordings	25.45 KB	19	2	No	
<input type="checkbox"/>	Usb	13.45 KB	4	2	No	
<input type="checkbox"/>	Web	21.06 MB	86	1076	No	
<input checked="" type="checkbox"/>	root	170.08 GB	2973	64813	No	

Total: 8 | Display 10 entries per page. 1 / 1

Click 'Next'.

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Create a Share Folder

This wizard guides you through the following settings:

- Share Folder Settings
- Privilege

To continue, click **Next**. To exit, click **Cancel**.

Step 1 of 7

NEXT **CANCEL**

Enter the share folder settings.

- Folder name: Enter the share folder name. The share folder name does not support " / \ [] : ; | = , + * ? < > ` ' .
- Hide Folder: Select to hide the folder or not in Microsoft Networking. When a folder is hidden, you have to enter the complete directory \\NAS_IP\folder_name to access the folder.
- 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. For networks that require multiple users concurrently accessing the same file such as a database, oplocks should be disabled.
- Path: Specify the path of the folder or select to let the NAS specify the path automatically.
- Description: Enter an optional description of the folder.

Create A Share Folder

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Share Folder Settings

Folder Name: test ✓

Disk Volume: Mirroring Disk Volume: Drive 1 2 ▼

Hide Folder: Yes No ⓘ

Lock file (oplocks): Yes No

Path: Specify path automatically
 Enter path manually

Description:

Step 2 of 7

BACK **NEXT** **CANCEL**

Select the way you want to specify the access right to the folder and specify the guest access right.

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Privilege

You can select one of the following methods to configure the user access right to the network share folder:

- Full access (Grant full access right for everyone)
- By User
- By User Group
- Only the system administrator (admin) has full access. General users have **Read Only** access.

Guest Access Right:

- Deny Access
- Read only
- Read/Write

Step 3 of 7

BACK NEXT CANCEL

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.

Create A Share Folder

Access Control (By User)

Total: 7

User Name	Read only	Read/Write	Deny Access
admin	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
test	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
user01	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
user02	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
user03	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
user04	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
user05	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Step 4 of 7

BACK NEXT CANCEL

Confirm the settings and click 'Next'.

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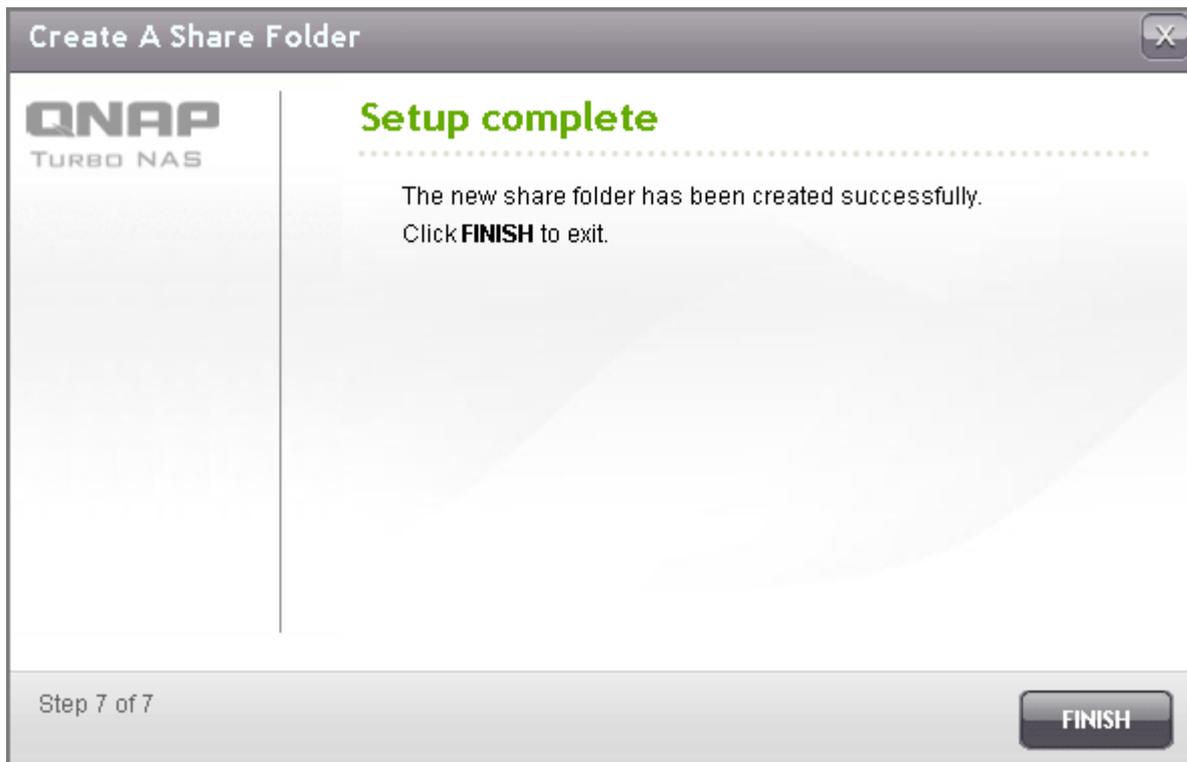
Confirm Settings

Folder Name: test
Hide Folder: No
Lock file (oplocks): Yes
Path: Mirroring Disk Volume: Drive 1 2 /test
Description: ---
Access right: By User
Access User/User Group: admin, test, user02, user03, user04, user05 ...

Step 6 of 7

BACK NEXT CANCEL

Click 'Finish' to complete the setup.



To delete a share folder, select the folder checkbox and click 'Delete'. You can select the option 'Also delete the data in these folder(s)' to delete the folder and the files in it. If you select not to delete the folder data, the data will be retained in the NAS. You can create a folder of the same name again to access the data.

Share Folders

SHARE FOLDERS | ISO SHARE FOLDERS | FOLDER AGGREGATION | ADVANCED OPTIONS

Shares

Share	Size	Files	Hidden	Action
<input type="checkbox"/>		2	No	NFS
<input type="checkbox"/>		8	No	NFS
<input type="checkbox"/>		75	No	NFS
<input type="checkbox"/>		27	No	NFS
<input type="checkbox"/> Public	26.55 GB	319	1650	No NFS
<input type="checkbox"/> Recordings	88 KB	19	2	No NFS
<input type="checkbox"/> Usb	28 KB	4	2	No NFS
<input type="checkbox"/> Web	236.48 MB	263	2108	No NFS
<input checked="" type="checkbox"/> aaa	4 KB	0	0	No NFS
<input type="checkbox"/> ivan	4.7 MB	0	1	No NFS

All the selected share folder(s) will be removed. Are you sure?

Also delete the data in these folder(s).

Total: 12 | Display 10 entries per page. 1 / 2

Icon	Description
 (Folder property)	To edit the folder property. Specify to hide or shown the folder, enable or disable oplocks, folder path, comment, and enable or disable write-only access on FTP connection.
 (Folder permissions)	Edit folder permissions and subfolders permissions.
 (NFS access control)	Specify NFS access right to the network share. An asterisk (*) means all connections.
 (WebDAV access control)	Specify WebDAV access right to the folder.
 (Microsoft Networking host access control)	Enter the host names or IP addresses which are allowed to connect to the folder via Microsoft Networking. Note that a user still needs a correct login name and password to access the folder via Microsoft Networking.
 (Refresh)	Refresh the folder details.

Folder Permissions

You can configure folder permissions and subfolder permissions on the NAS. To edit basic folder permissions, locate a folder name in 'Access Right Management' > 'Share Folders' and click .

Share Folders

SHARE FOLDERS
ISO SHARE FOLDERS
FOLDER AGGREGATION
ADVANCED OPTIONS

Shares
 New Share Folder
 Restore Default Network Shares

<input type="checkbox"/>	Folder Name	Size	Folders	Files	Hidden	Action
<input type="checkbox"/>	Dept	64 KB	13	2	No	     
<input type="checkbox"/>	Download	400.23 MB	9	14	No	     
<input type="checkbox"/>	Multimedia	12.84 GB	65	576	No	     
<input type="checkbox"/>	Network Recycle Bin 1	28 KB	4	2	No	     
<input type="checkbox"/>	Public	30.1 GB	318	1668	No	     
<input type="checkbox"/>	Recordings	88 KB	19	2	No	     
<input type="checkbox"/>	Usb	28 KB	4	2	No	     
<input type="checkbox"/>	Web	237.31 MB	269	2164	No	     
<input checked="" type="checkbox"/>	ivan	4.7 MB	0	1	No	     
<input checked="" type="checkbox"/>	root	28 KB	4	2	No	     

 Delete
Total: 20 | Display entries per page.


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 the guest access right at the bottom of the panel.

Share Folders

SHARE FOLDERS | ISO SHARE FOLDERS | FOLDER AGGREGATION | ADVANCED OPTIONS

Folder Name:	Permission:	Read only	Read/Write	Deny Access
Dept	everyone	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	admin	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

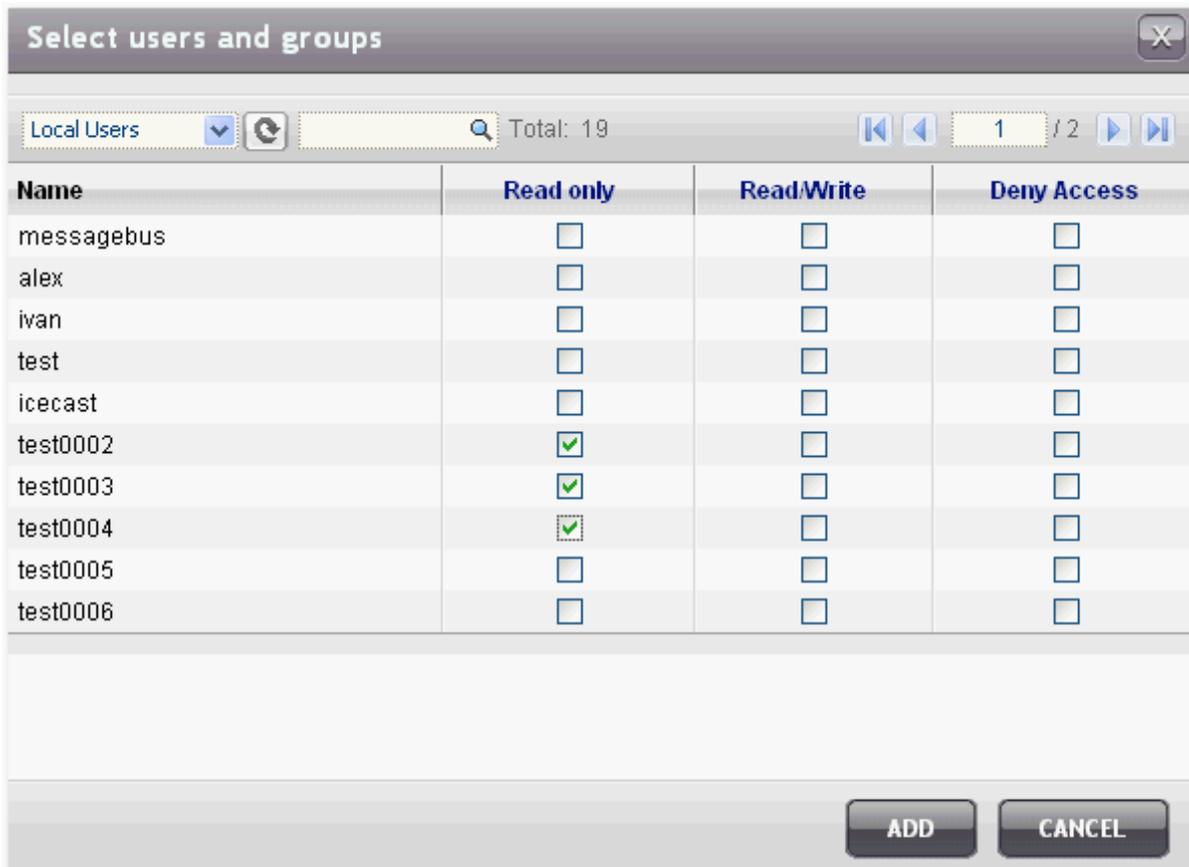
[+](#) Add [-](#) Remove

Guest Access Right: **Deny access** ▼

For detailed instructions, please [click here](#)

APPLY

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.

Share Folders

SHARE FOLDERS | ISO SHARE FOLDERS | FOLDER AGGREGATION | ADVANCED OPTIONS

Folder Name:	Permission:	Read only	ReadWrite	Deny Access
Dept	everyone	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	admin	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	test0002	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	test0003	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	test0004	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

+ Add - Remove

Guest Access Right: Deny access

For detailed instructions, please [click here](#)

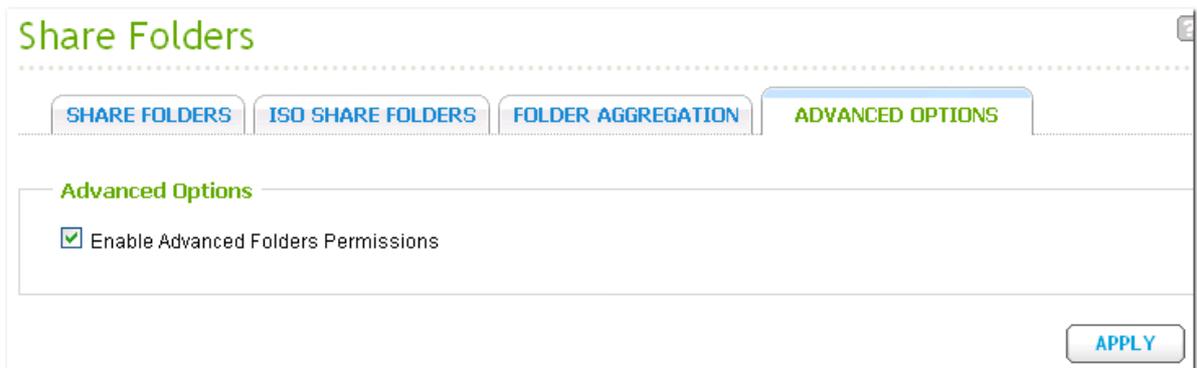
APPLY

Subfolder Permissions

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

To configure subfolder permissions, go to 'Access Right Management' > 'Share Folders' > 'Advanced Options' tab. Select 'Enable Advanced Folder Permissions' and click 'APPLY'.

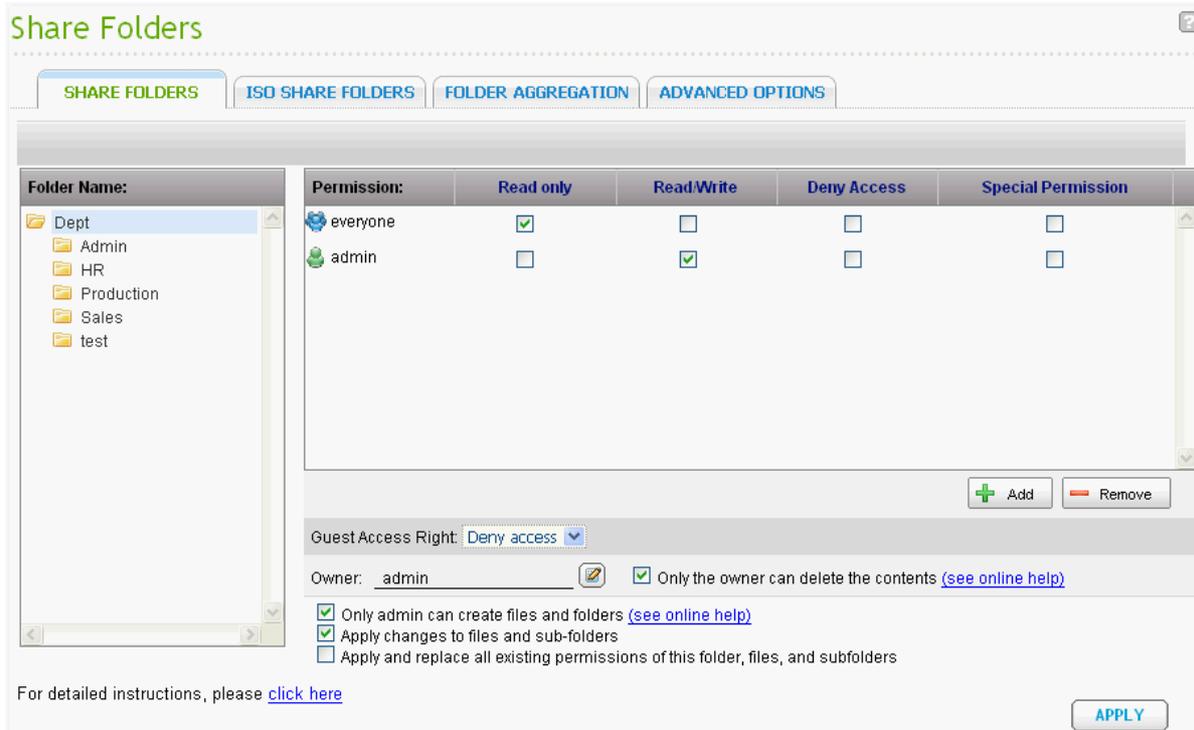
Note: You can create maximum 230 permission entries for each folder when Advanced Folder Permission is enabled.



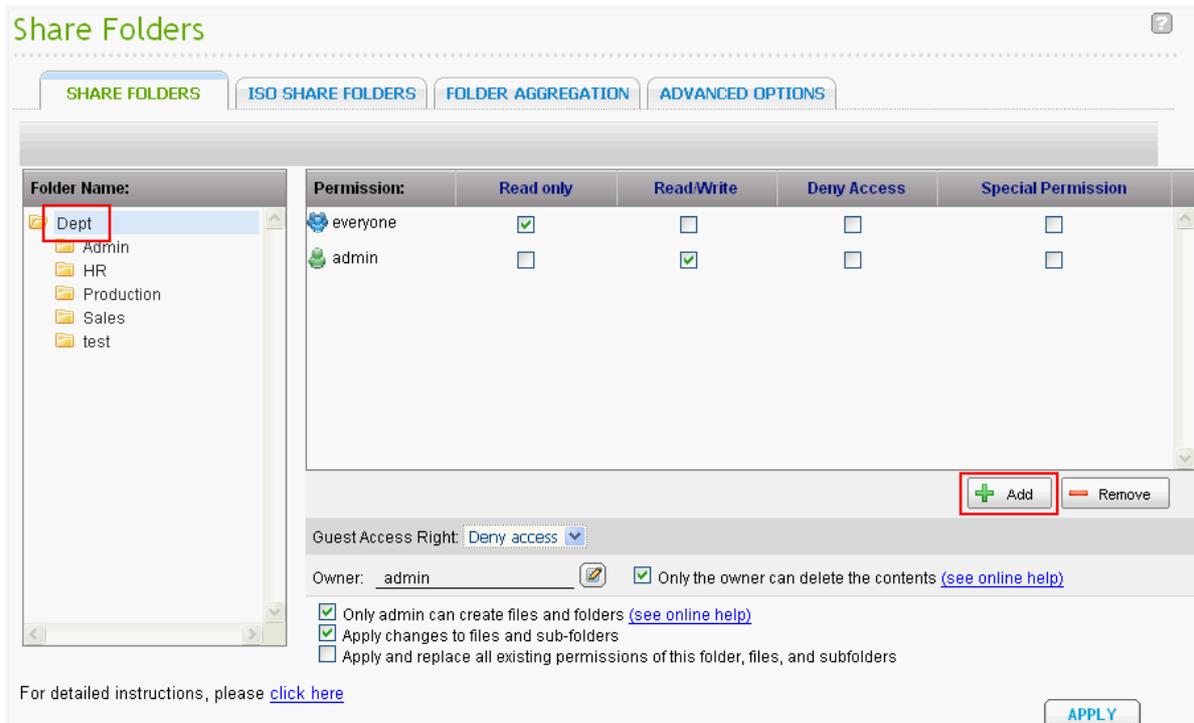
Go to 'Access Right Management' > 'Share Folders' > 'Share Folders' tab. Select a root folder, for example Dept, and click .



The 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 the first-level subfolders to view the second-level subfolders.



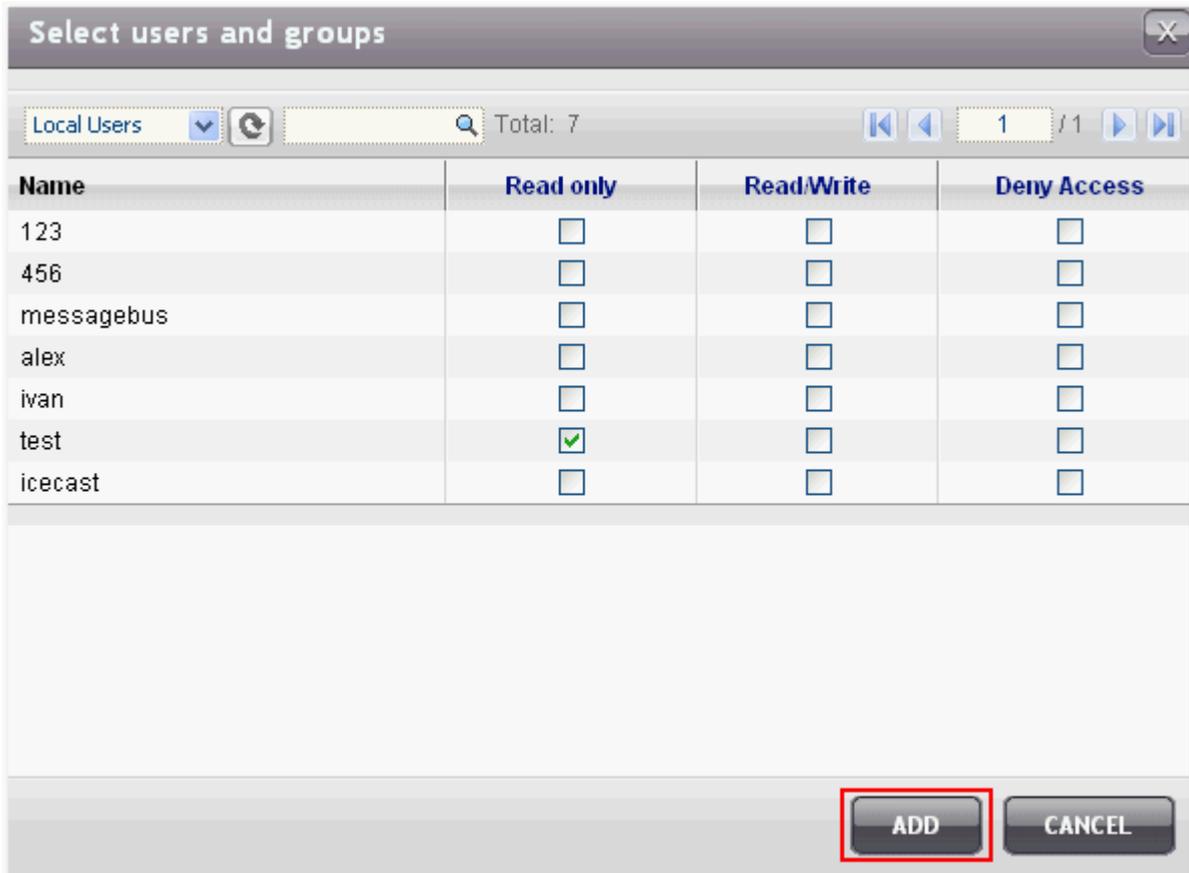
Select the root folder (Dept). Click '+ Add' to specify read only, read/write, or deny access for the users and user groups.



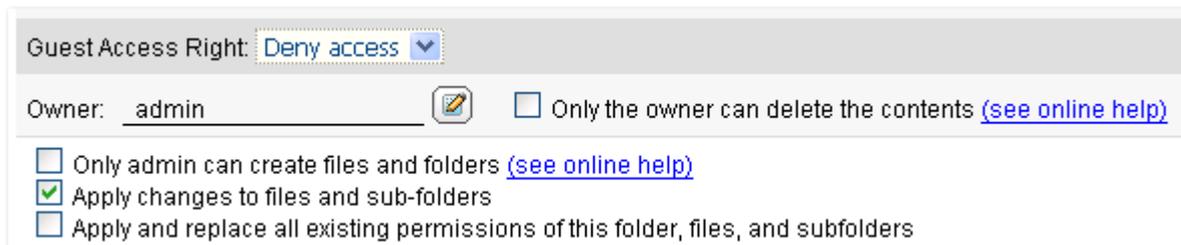
Note:

- 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).

Click 'ADD' when you have finished the settings.

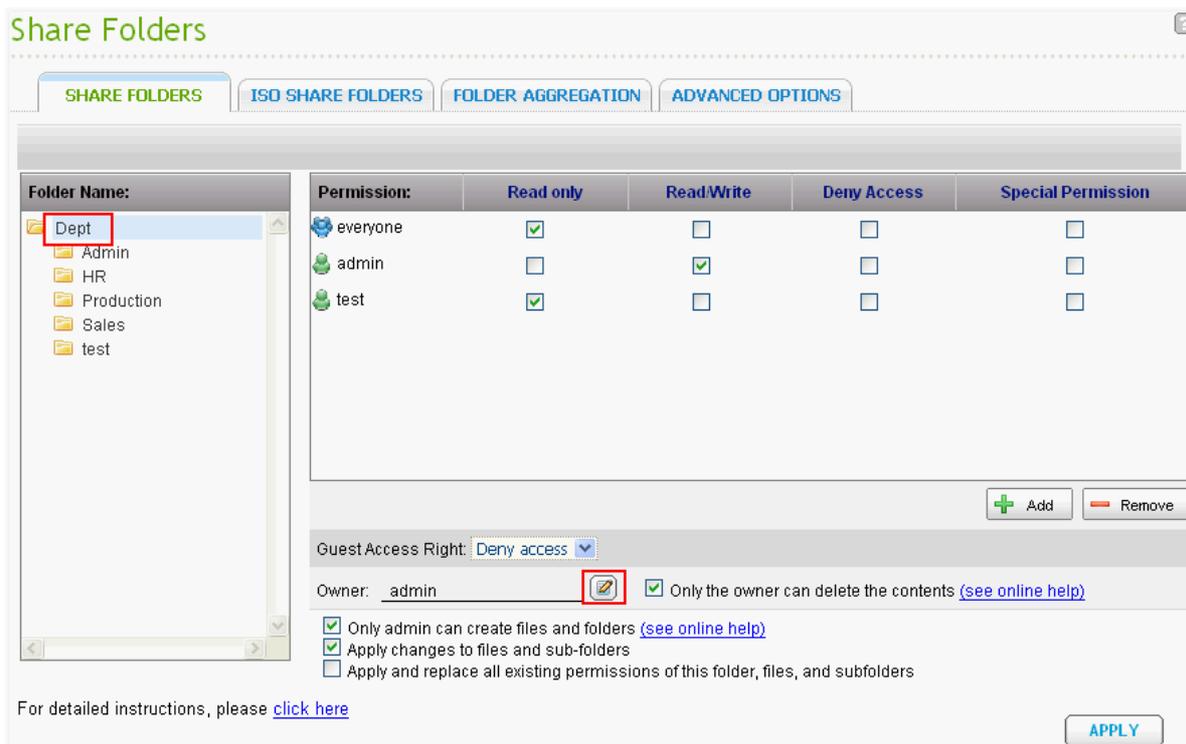


Specify other permissions settings below the folder permissions panel.



- 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. To change the

folder owner, click .

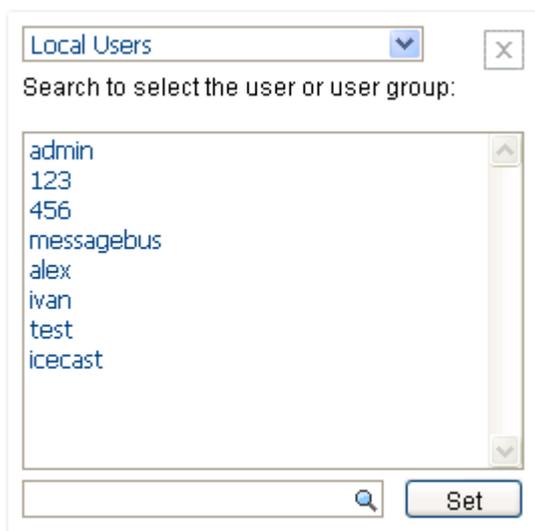


Permission:	Read only	Read/Write	Deny Access	Special Permission
everyone	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
admin	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
test	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Owner: admin  Only the owner can delete the contents ([see online help](#))

Only admin can create files and folders ([see online help](#))
 Apply changes to files and sub-folders
 Apply and replace all existing permissions of this folder, files, and subfolders

Select a user from the list or search a user name. Then click 'Set'.



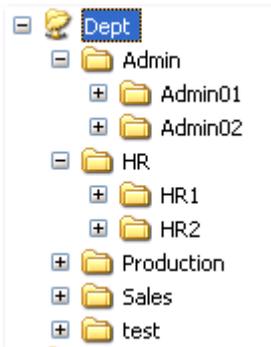
Local Users

Search to select the user or user group:

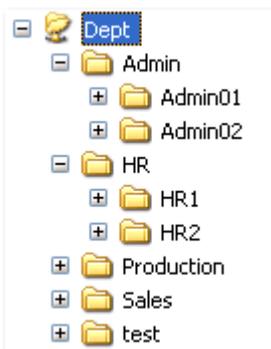
- admin
- 123
- 456
- messagebus
- alex
- ivan
- test
- icecast

Set

- Only the owner can delete the contents
When you apply this option to a folder, e.g. 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 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 be used for administrative and backup tasks only.

After changing the permissions, click 'APPLY' and then 'YES' to confirm.

Share Folders

SHARE FOLDERS | ISO SHARE FOLDERS | FOLDER AGGREGATION | ADVANCED OPTIONS

Folder Name:	Write	Deny Access	Special Permission
Dept	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Admin	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
HR	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Production	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sales	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
test	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Applying the permissions to files and sub-folders may take some time depending on the number of files and folders to be processed.
Do you want to apply the permissions now?

YES NO

+ Add - Remove

Guest Access Right: Deny access

Owner: admin Only the owner can delete the contents ([see online help](#))

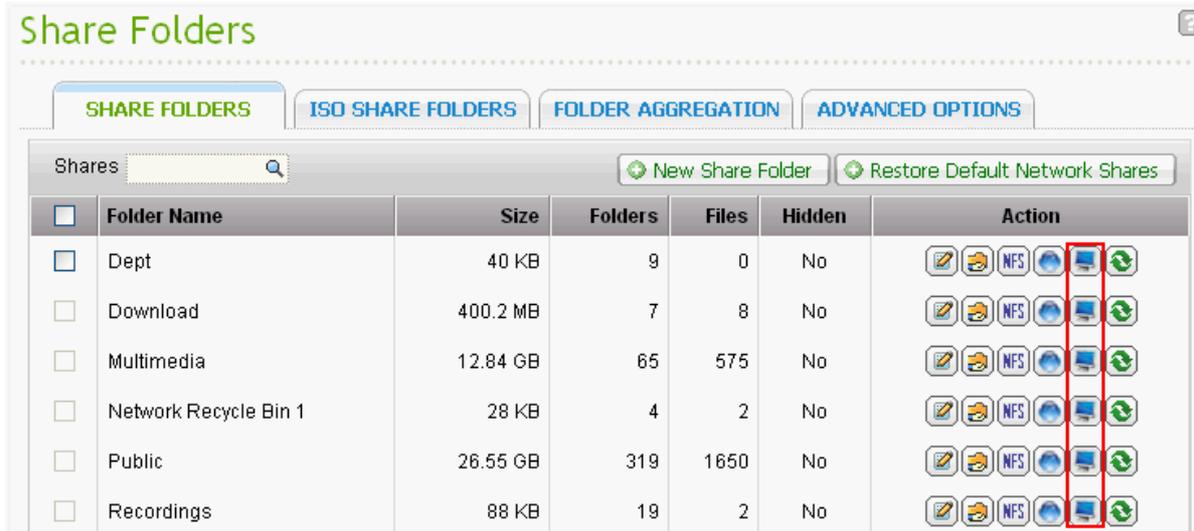
Only admin can create files and folders ([see online help](#))
 Apply changes to files and sub-folders
 Apply and replace all existing permissions of this folder, files, and subfolders

For detailed instructions, please [click here](#)

APPLY

Microsoft Networking Host Access Control

The NAS folders can be accessed via Samba connection (Windows) by default. You can specify the IP addresses and hosts which are allowed to access the NAS via Microsoft Networking. Click  to edit the host access control of a folder.

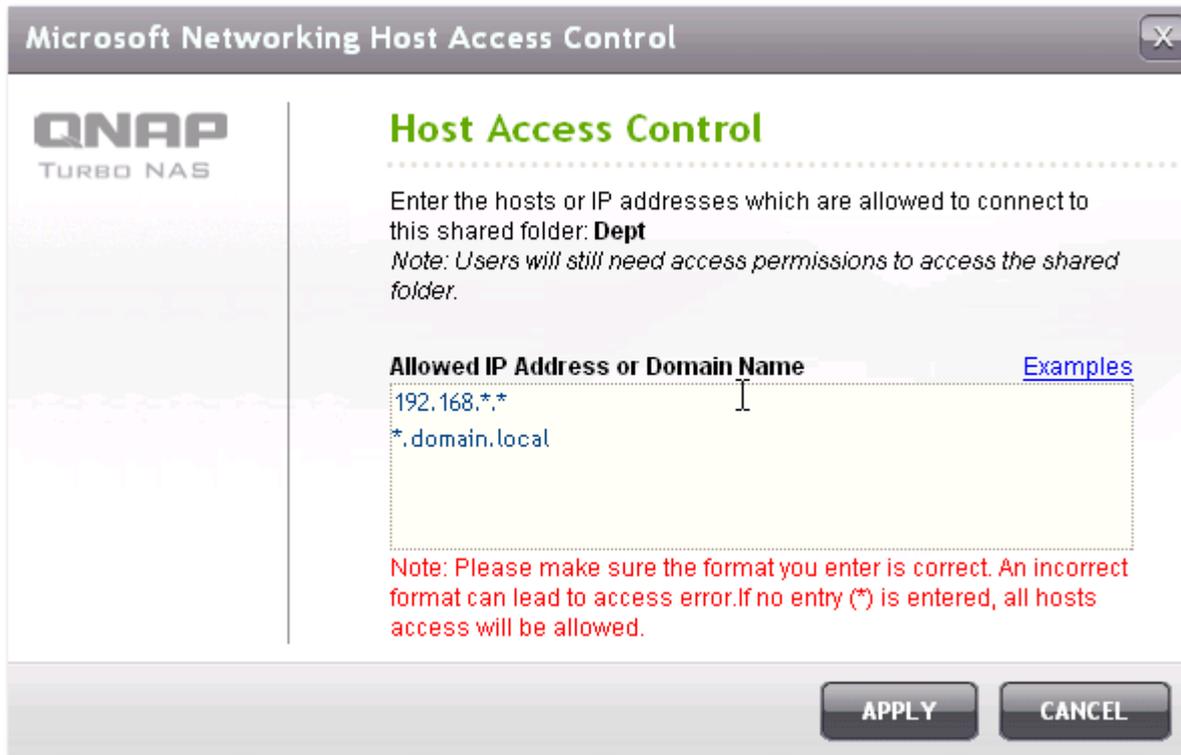


The screenshot shows the 'Share Folders' management interface. It features a search bar and two buttons: 'New Share Folder' and 'Restore Default Network Shares'. Below is a table with the following data:

<input type="checkbox"/>	Folder Name	Size	Folders	Files	Hidden	Action
<input type="checkbox"/>	Dept	40 KB	9	0	No	NFS
<input type="checkbox"/>	Download	400.2 MB	7	8	No	NFS
<input type="checkbox"/>	Multimedia	12.84 GB	65	575	No	NFS
<input type="checkbox"/>	Network Recycle Bin 1	28 KB	4	2	No	NFS
<input type="checkbox"/>	Public	26.55 GB	319	1650	No	NFS
<input type="checkbox"/>	Recordings	88 KB	19	2	No	NFS

A wizard will be shown. Enter the allowed IP addresses and host names. For example:

IP address	192.168.12.12 192.168.*.*
Host name	dnsname.domain.local *.domain.local



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
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
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.

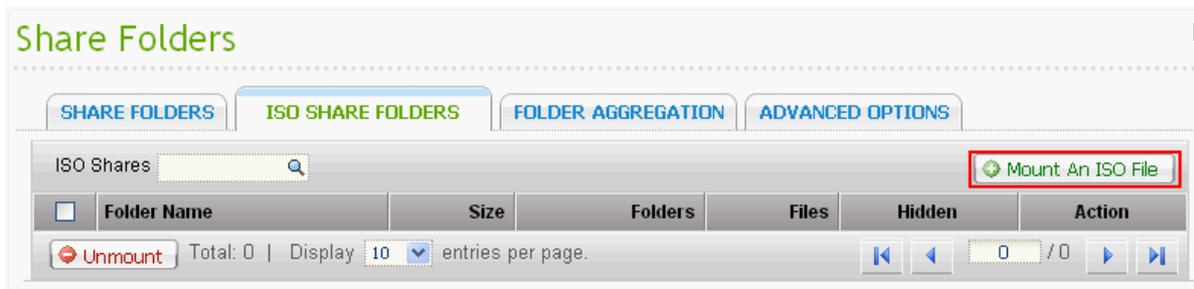
ISO Share Folders

You can mount the ISO image files on the NAS as ISO share folders and access the contents without disc burning. The NAS supports mounting up to 256 ISO share folders.

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

Follow the steps below to mount an ISO file on the NAS by the web interface.

1. Login the NAS as an administrator. Go to 'Share Folders' > 'ISO SHARE FOLDERS'. Click 'Mount An ISO File'.



2. Select an ISO image file on the NAS. Click 'Next'.



3. The image file will be mounted as a share folder of the NAS. Enter the folder name.

Create An ISO Share Folder X

QNAP
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ISO Share Folder Settings

Folder Name:

Hide Folder: Yes No i

Description:

Step 2 of 7

4. Specify the access rights of the NAS users or user groups to the share folder. You can also select 'Deny Access' or 'Read only' for the guest access right. Click 'Next'.

Create An ISO Share Folder X

QNAP
TURBO NAS

Privilege

You can select one of the following methods to configure the user access right to the network share folder:

- Grant read-only access right for administrators only
- By User
- By User Group

Guest Access Right:

- Deny Access Read only

Step 3 of 7

5. Confirm the settings and click 'Next'.

QNAP
TURBO NAS

Confirm Settings

Folder Name: NAS
Hide Folder: No
Path: /NAS
Description: ---
Access right: Grant read-only access right for administrators only
Access User/User Group:

Step 6 of 7

BACK NEXT CANCEL

6. Click 'Finish'.

QNAP
TURBO NAS

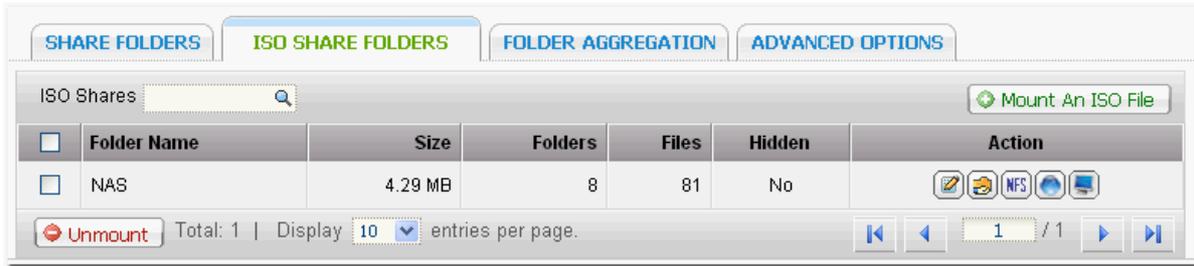
Setup complete

The new share folder has been created successfully.
Click **FINISH** to exit.

Step 7 of 7

FINISH

7. After mounting the image file, you can specify the access rights of the users over different network protocols such as SMB, AFP, NFS, and WebDAV by clicking the icons in the 'Action' column.



The NAS supports mounting ISO image files by Web File Manager, see here²⁵⁴ for more information.

Folder Aggregation

You can aggregate the share folders on Microsoft network as a portal folder on the NAS and let the NAS users access the share folders through your NAS. Up to 10 share folders can be linked to a portal folder.

Note: This function is supported only in Microsoft networking service.

To use this function, follow the steps below.

1. Enable folder aggregation.

The screenshot shows the 'Share Folders' configuration page with the 'Folder Aggregation' tab selected. The 'Enable Folder Aggregation' checkbox is checked. Below it, there is explanatory text: 'Enable this function will allow you to aggregate all shared folders in local network into a "portal folder" in your NAS.' and 'Folder Aggregation is for Microsoft Network / Samba Service ONLY.' An 'APPLY' button is located at the bottom right of the configuration section. Below this, the 'Folder Aggregation List' section contains two buttons: 'Create A Portal Folder' and 'Import/ Export Folder Tree'. A table below these buttons has a header with 'Portal Folder Name' and 'Action' columns. A 'Delete' button is visible under the 'Action' column.

2. Click 'Create A Portal Folder'.

This is a close-up screenshot of the 'Folder Aggregation List' section. The 'Create A Portal Folder' button is highlighted with a red rectangular box. The table below it has a header with 'Portal Folder Name' and 'Action' columns. A 'Delete' button is visible under the 'Action' column.

3. Enter the portal folder name. Select to hide the folder or not, and enter an optional comment for the portal folder.

Create A Portal Folder



Create A Portal Folder

Folder Name: ✓

Hide Folder: Yes No ⓘ

Comment:

Step 1 of 1

APPLY **CANCEL**

- Click  (Link Configuration) and enter the remote folder settings. Make sure the share folders are open for public access.

Note: If there is permission control on the share folders, you need to join the NAS and the remote servers to the same AD domain.

Folder Aggregation List

<input type="checkbox"/>	Portal Folder Name	Action
<input type="checkbox"/>	Shares	 

Remote Folder Link X

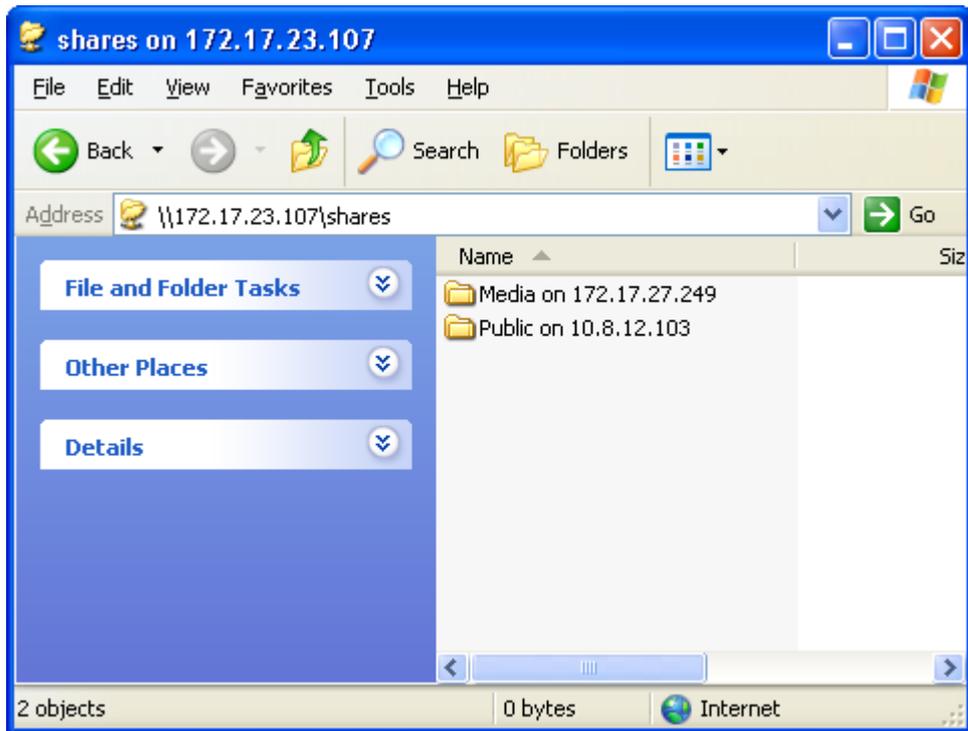
Remote Folder Link

Portal Folder Name: Shares

Link	Name	Host Name	Remote Share Folder
1	Public on 10.8.12.103	10.8.12.103	Public
2	dia on 172.17.27.249	172.17.27.249	Media
3			
4			
5			
6			
7			
8			
9			
10			

Step 1 of 1

5. Upon successful connection, you can connect to the remote folders through the NAS.



5.4 Quota

To allocate the disk volume efficiently, you can specify the quota that can be used by each user. When this function is enabled and a user has reached the disk quota, the user cannot upload any data to the server anymore. 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

Quota

Enable quota for all users

Quota size on the disk: MB

Note: Individual user quota size can be changed in [Users · Quota Settings \[Users \]](#)

[APPLY](#)

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.

Local Users

Mirroring Disk Volume: Drive 1 2

Users	Quota Size	Used Size	Status
admin	--	167 MB	No size limitation
test	1.95 GB	0 MB	Available 1.95 GB
user01	1.95 GB	0 MB	Available 1.95 GB
user02	1.95 GB	0 MB	Available 1.95 GB
user03	1.95 GB	0 MB	Available 1.95 GB
user04	1.95 GB	0 MB	Available 1.95 GB
user05	1.95 GB	0 MB	Available 1.95 GB
guest	1.95 GB	0 MB	Available 1.95 GB

Total: 8 | Display entries per page. / 1

[GENERATE](#) [DOWNLOAD](#)

Note: 2010_05_12_Local_User_Quota_Volume1.csv is ready to be downloaded.

6. Network Services

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Web Server [224](#)

Network Service Discovery [251](#)

6.1 Microsoft Networking

Enable file service for Microsoft networking: If you are using Microsoft Windows, turn on this option so that you can access the files on the network share folders. Assign a workgroup name.

Microsoft Networking ?

MICROSOFT NETWORKING **ADVANCED OPTIONS**

Microsoft Networking

Enable file service for Microsoft networking

Standalone Server

Server Description (Optional):

Workgroup:

AD Domain Member (For detailed instructions, please [click here](#))

QUICK CONFIGURATION WIZARD Quick Configuration Wizard will help you join the NAS to an Active Directory domain.

Server Description (Optional):

Domain NetBIOS Name:

AD Server Name:

Domain:

Organization Unit (Optional):

Domain Administrator Username:

Domain Administrator Password:

APPLY

Standalone Server

Use local users for user authentication.

AD Domain Member

The NAS supports Windows AD (Active Directory) to provide quick and direct import of the user accounts to the existing AD server available on your network. This function helps you save the time and effort on creating the user accounts and passwords and lowers the IT maintenance cost by automatic configuration procedure.

- **Server Description**
Describe the NAS for the users to identify the server. To use the NAS on the Microsoft Windows OS, you must enable Microsoft Network Services.
- **Workgroup**
Specify the workgroup the NAS belongs to. The workgroup is a computer group unit on Microsoft Windows network for network sharing.
- **AD Server Name**
Enter the name of the AD server when the AD domain is selected for authentication.
- **Domain Name**
The name of Microsoft domain. When you select AD domain, you must enter the domain name, the login user name, and the password.

Join QNAP NAS to Windows Server 2003/2008 Active Directory

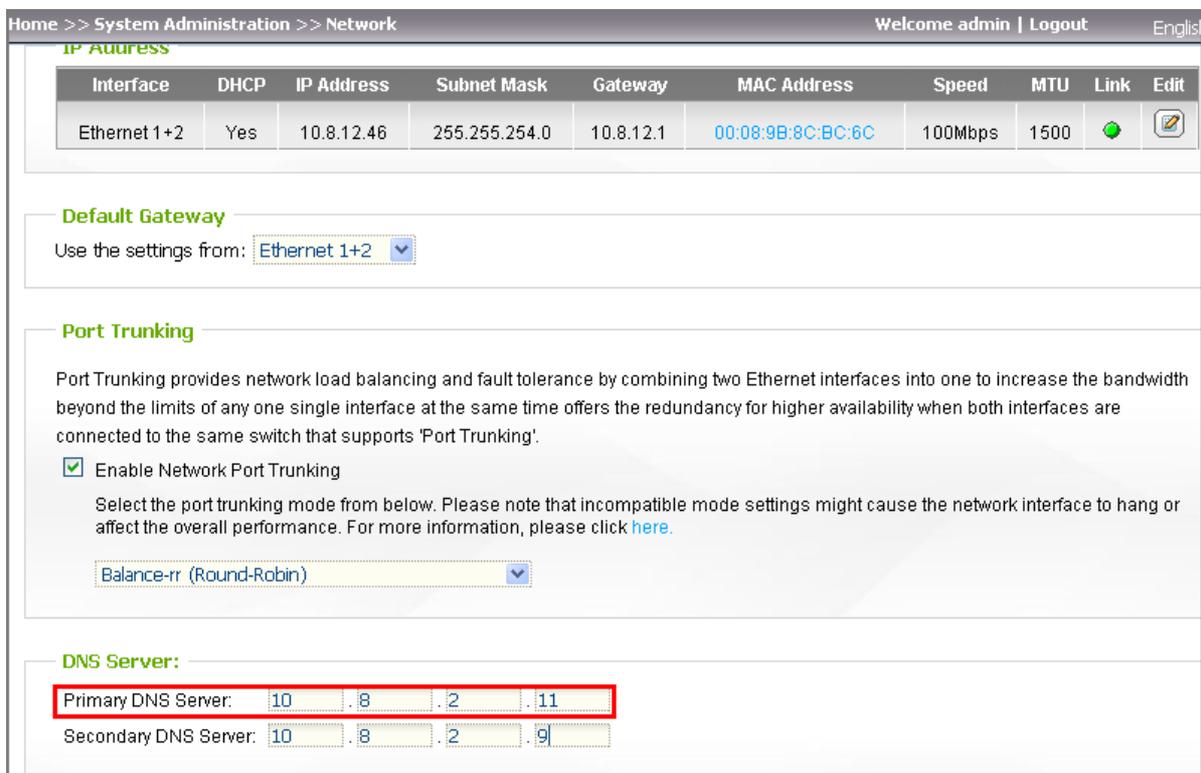
Active Directory is a Microsoft directory used in Windows environments to centrally store, share, and manage the information and resources on your network. It is a hierarchical data centre which centrally holds the information of the users, user groups, and the computers for secure access management.

The NAS supports Active Directory (AD). By joining the NAS to the Active Directory, all the user accounts of the AD server will be imported to the NAS automatically. The AD users can use the same set of user name and password to login the NAS

If you are using Active Directory with Windows Server 2008 R2, you must update the NAS firmware to V3.2.0 or above to join the NAS to the AD.

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

1. Login the NAS as an administrator. Go to 'System Administration' > 'General Settings' > 'Date and Time'. Set the date and time of the NAS, which must be consistent with the time of the AD server. The maximum time difference allowed is 5 minutes.
2. Go to 'System Administration' > '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.



The screenshot shows the 'Network' configuration page in the QNAP web interface. The breadcrumb trail is 'Home >> System Administration >> Network'. The user is logged in as 'admin' and the language is set to 'English'. The page title is 'IP ADDRESS'. A table lists network interfaces with columns for Interface, DHCP, IP Address, Subnet Mask, Gateway, MAC Address, Speed, MTU, Link, and Edit. The 'Ethernet 1+2' interface is shown with DHCP enabled, IP address 10.8.12.46, Subnet Mask 255.255.254.0, Gateway 10.8.12.1, and MAC address 00:08:9B:8C:BC:6C. Below the table, the 'Default Gateway' is set to 'Ethernet 1+2'. The 'Port Trunking' section is expanded, showing 'Enable Network Port Trunking' checked and 'Balance-rr (Round-Robin)' selected. The 'DNS Server' section is also expanded, with the 'Primary DNS Server' field containing the IP address 10.8.2.11, which is highlighted with a red box. The 'Secondary DNS Server' field contains the IP address 10.8.2.9.

Interface	DHCP	IP Address	Subnet Mask	Gateway	MAC Address	Speed	MTU	Link	Edit
Ethernet 1+2	Yes	10.8.12.46	255.255.254.0	10.8.12.1	00:08:9B:8C:BC:6C	100Mbps	1500		

Default Gateway
Use the settings from: Ethernet 1+2

Port Trunking
Port Trunking provides network load balancing and fault tolerance by combining two Ethernet interfaces into one to increase the bandwidth beyond the limits of any one single interface at the same time offers the redundancy for higher availability when both interfaces are connected to the same switch that supports 'Port Trunking'.
 Enable Network Port Trunking
Select the port trunking mode from below. Please note that incompatible mode settings might cause the network interface to hang or affect the overall performance. For more information, please click [here](#).
Balance-rr (Round-Robin)

DNS Server:
Primary DNS Server: 10 . 8 . 2 . 11
Secondary DNS Server: 10 . 8 . 2 . 9

3. Go to 'Network Services' > 'Microsoft Networking'. Enable AD Domain Member, and enter the AD domain information.

Microsoft Networking

MICROSOFT NETWORKING **ADVANCED OPTIONS**

Microsoft Networking

Enable file service for Microsoft networking

Standalone Server

Server Description (Optional):

Workgroup:

AD Domain Member (For detailed instructions, please [click here](#))

QUICK CONFIGURATION WIZARD Quick Configuration Wizard will help you join the NAS to an Active Directory domain.

Server Description (Optional):

Domain NetBIOS Name:

AD Server Name:

Domain:

Organization Unit (Optional):

Domain Administrator Username:

Domain Administrator Password:

APPLY

Note:

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

Join QNAP NAS to Active Directory (AD) by Quick Configuration Wizard

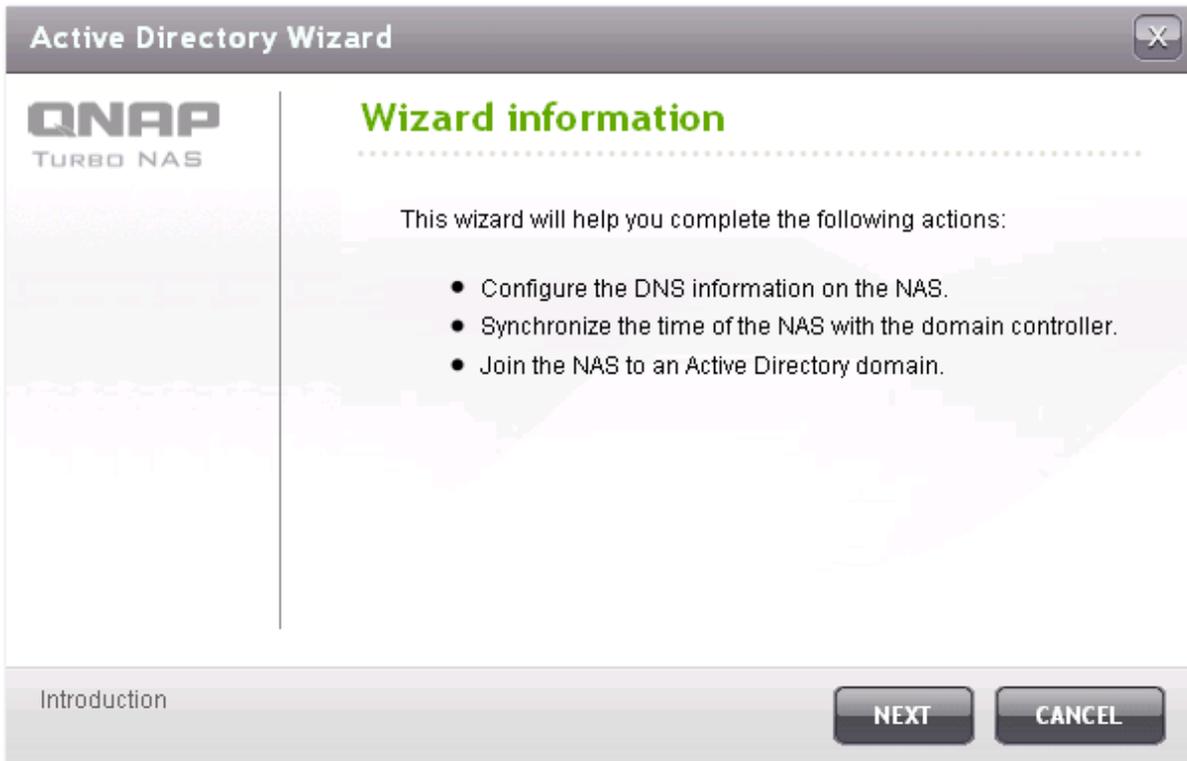
The NAS provides Quick Configuration Wizard for you to join the NAS to an AD domain. Select 'AD Domain Member' and click 'QUICK CONFIGURATION WIZARD'.

The screenshot shows the 'Microsoft Networking' configuration page on a QNAP NAS. The page has a breadcrumb trail: 'Home >> Network Services >> Microsoft Networking'. The user is logged in as 'admin' and the language is set to 'English'. There are two tabs: 'MICROSOFT NETWORKING' (selected) and 'ADVANCED OPTIONS'. Under 'Microsoft Networking', there are two options: 'Enable file service for Microsoft networking' (checked) and 'AD Domain Member (For detailed instructions, please [click here](#))'. The 'AD Domain Member' option is selected. Below this, there is a 'QUICK CONFIGURATION WIZARD' button, which is highlighted with a red box. To the right of this button is the text: 'Quick Configuration Wizard will help you join the NAS to an Active Directory domain.' Below this text are several input fields: 'Server Description (Optional):', 'Domain NetBIOS Name:', 'AD Server Name:' (with 'AD' entered), 'Domain:', 'Organization Unit (Optional):', 'Domain Administrator Username:', and 'Domain Administrator Password:'. At the bottom right of the page is an 'APPLY' button.

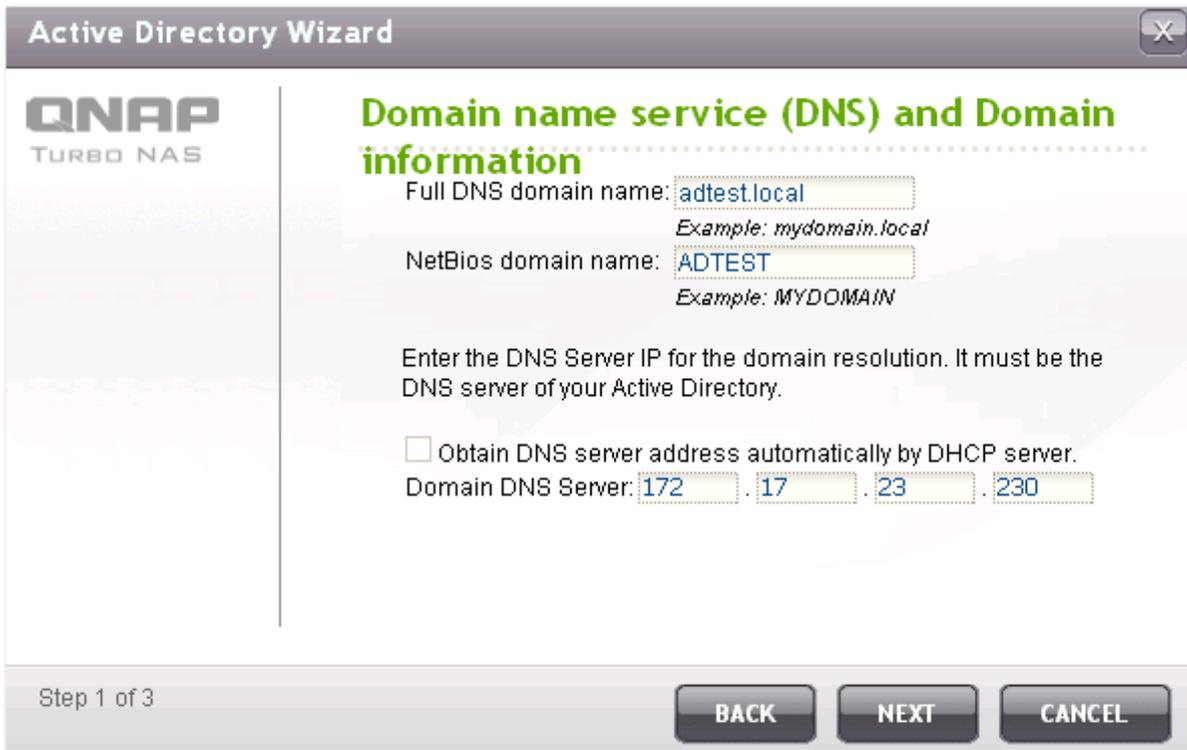
The NAS helps you:

- Configure the DNS information on the NAS.
- Synchronize the time of the NAS with a domain controller.
- Join the NAS to an AD domain.

Click 'NEXT' to continue.



Enter the domain name of the domain name service (DNS). The NetBIOS name will be generated automatically when you type 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'.

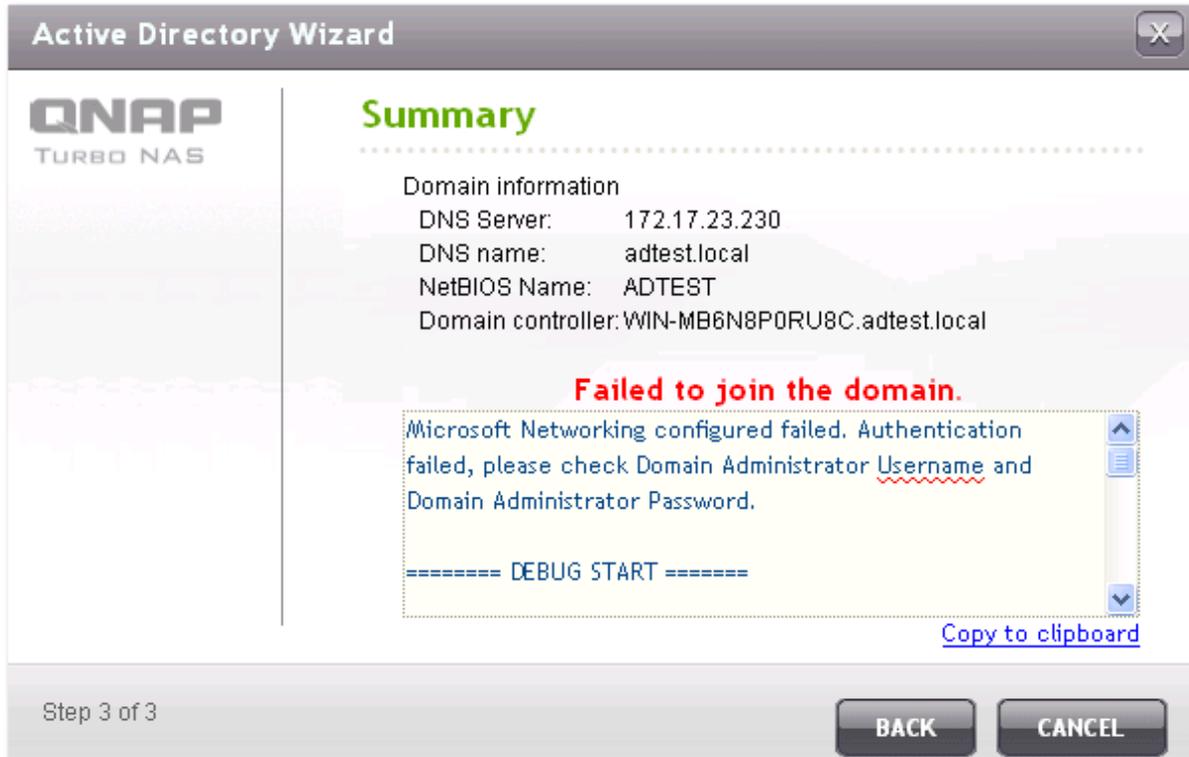


Select a domain controller from the drop-down menu. The domain controller is responsible for time synchronization between the NAS and the domain server and user authentication. Enter the domain

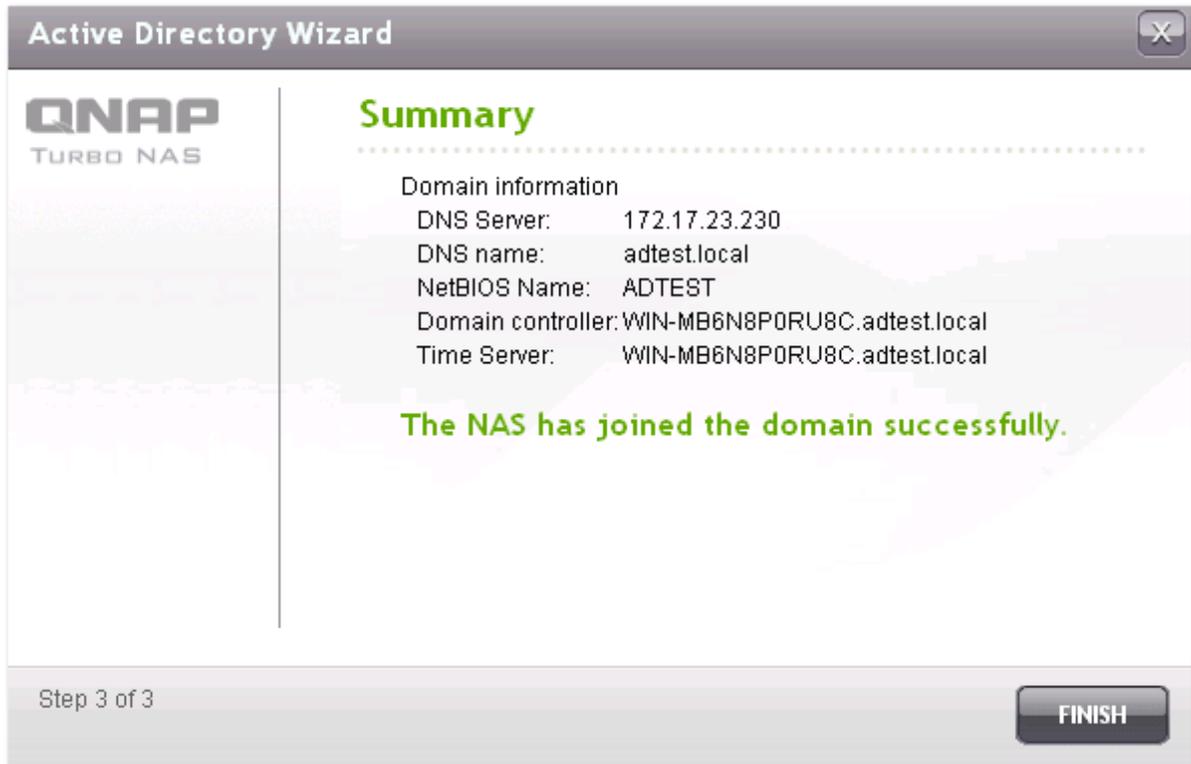
administrator name and password. Click 'JOIN'.



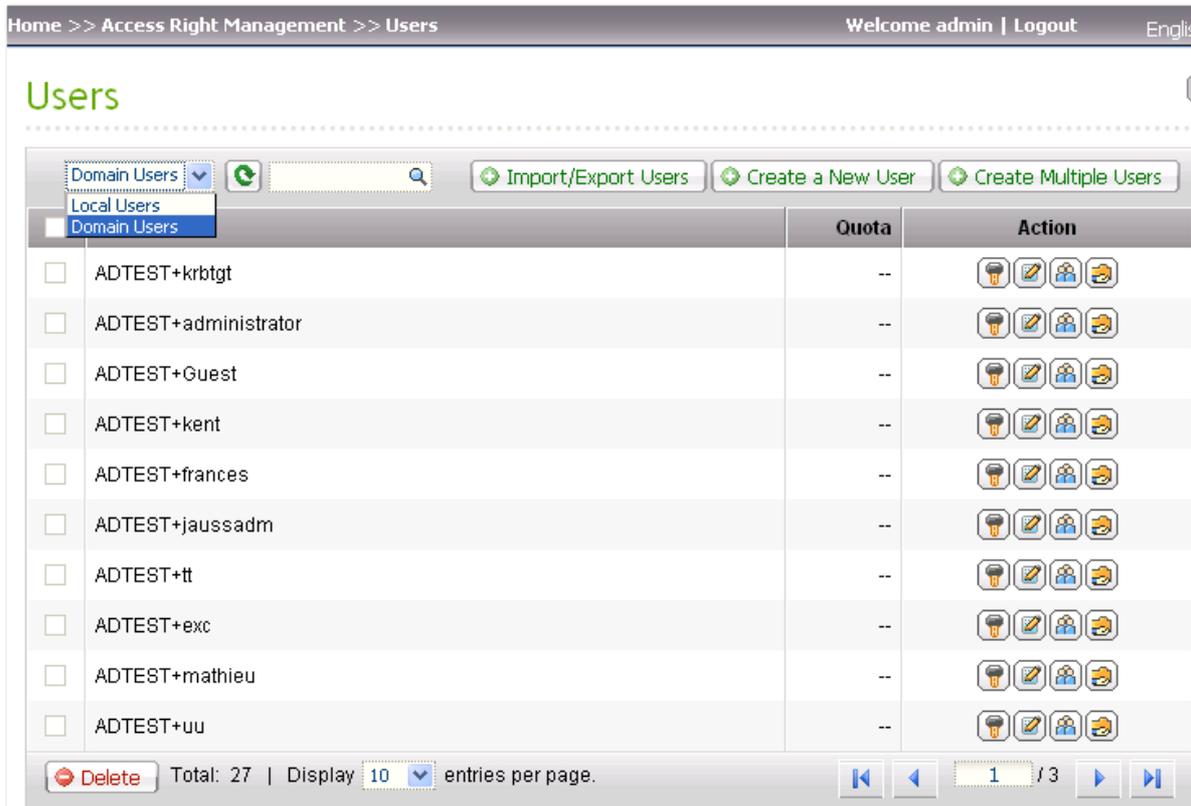
If you failed to join the NAS to the domain, you could copy the error logs or go back to modify the settings.



Upon successful login to the domain server, the NAS has joined to the domain. Click 'FINISH' to exit the wizard.

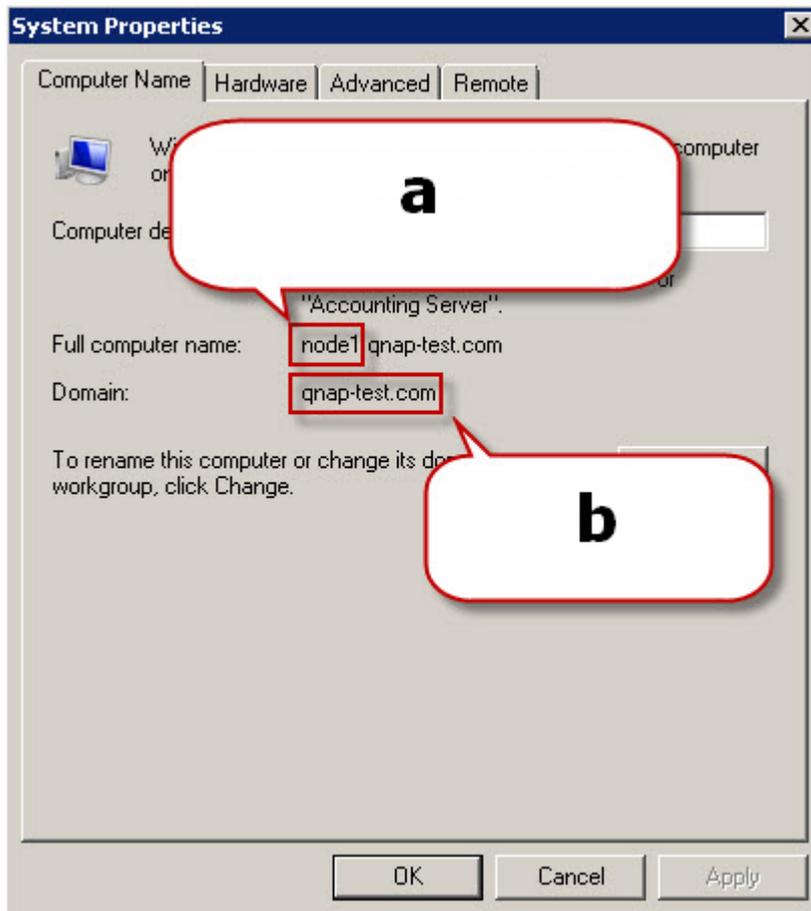


You can go to 'Access Right Management' > 'Users' or 'User Groups' to load the domain users or user groups to the NAS.



Windows 2003

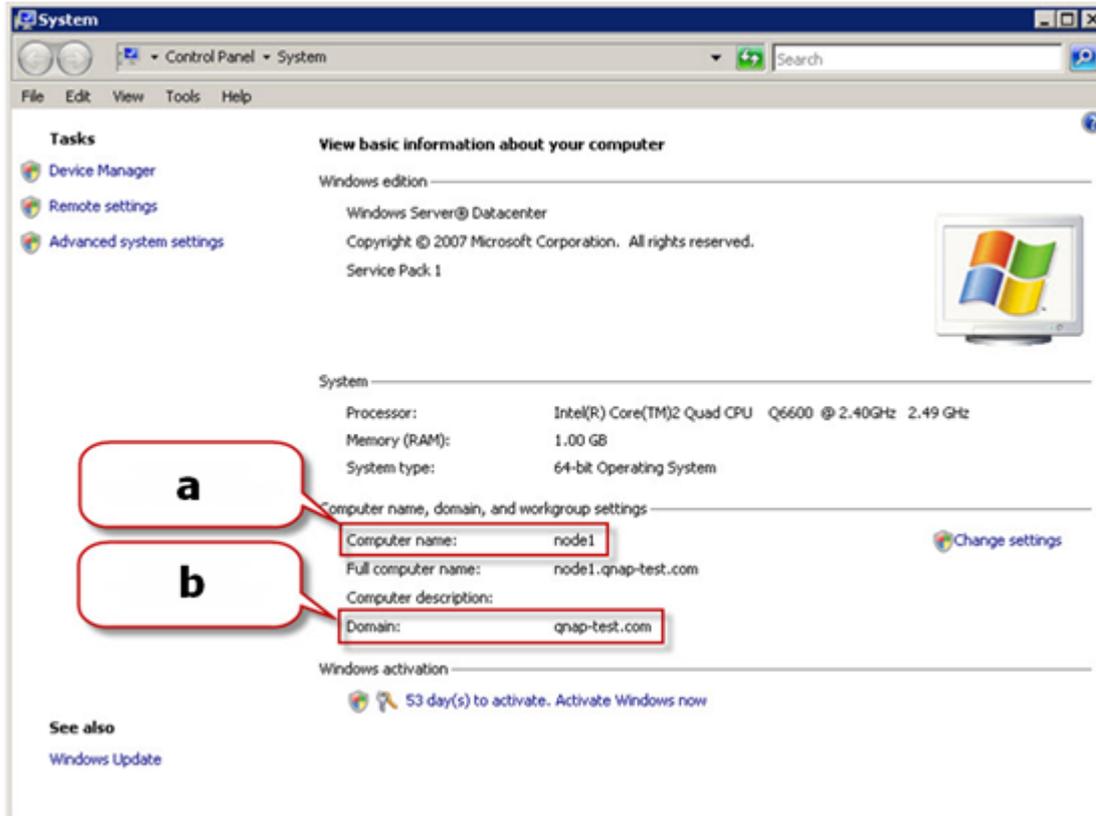
You may check the AD server name and AD domain name in 'System Properties'.



- a. In Windows 2003 servers, the AD server name is 'node1' NOT 'node1.qnap-test.com'.
- b. The domain name remains the same.

Windows Server 2008

You may check the AD server name and domain name in 'Control Panel' > 'System'.



- a. This is your AD server name.
- b. This is your domain name.

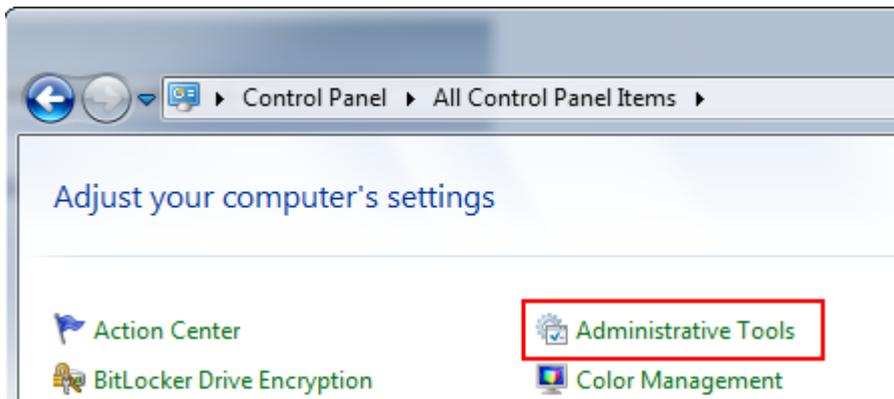
Note:

- After joining the NAS to the Active Directory, the local NAS users who have access right to the AD server should use 'NASname\username' to login; the AD users should use their own user names to login the AD server.
- The local NAS users and the AD users (with username as domain name + username) are allowed to login the NAS (firmware version 3.2.0 or above) via AFP, FTP, Web File Manager, and WebDAV. However, if the firmware version of the NAS is earlier than 3.2.0, only the local NAS users are allowed to login the NAS by Web File Manager and WebDAV.
- For TS-109/209/409/509 series NAS, if the AD domain is based on Windows 2008 Server, the NAS firmware must be updated to version 2.1.2 or above.

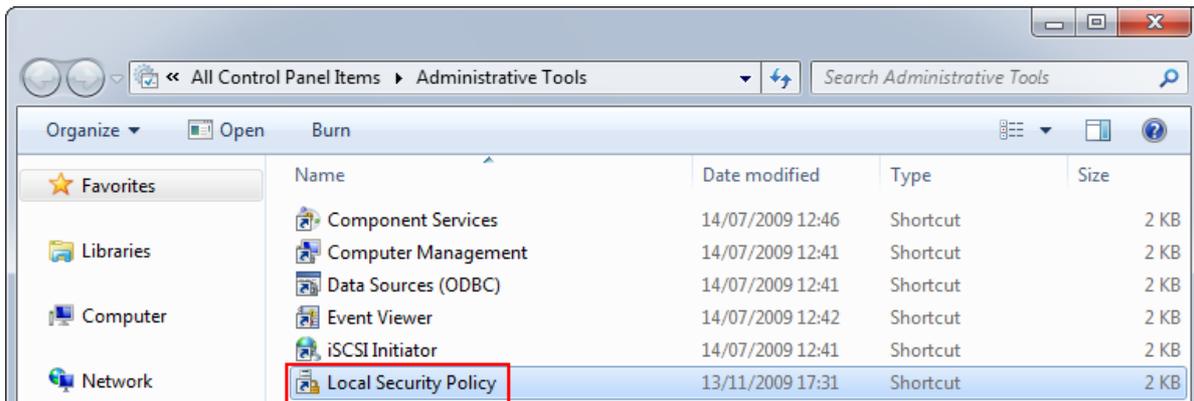
Windows 7

If you are using a Windows 7 PC which 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.

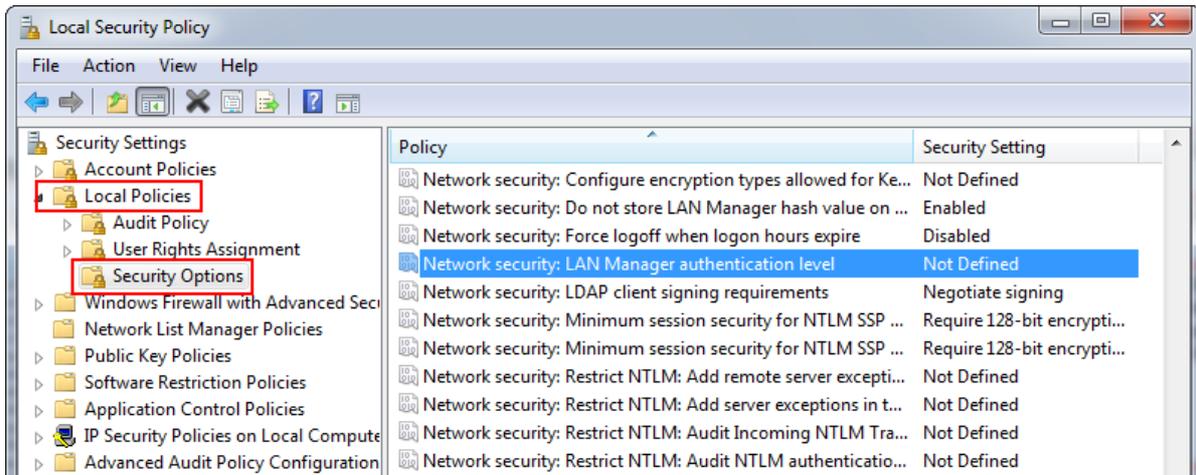
- a. Go to 'Control Panel' > 'Administrative Tools'.



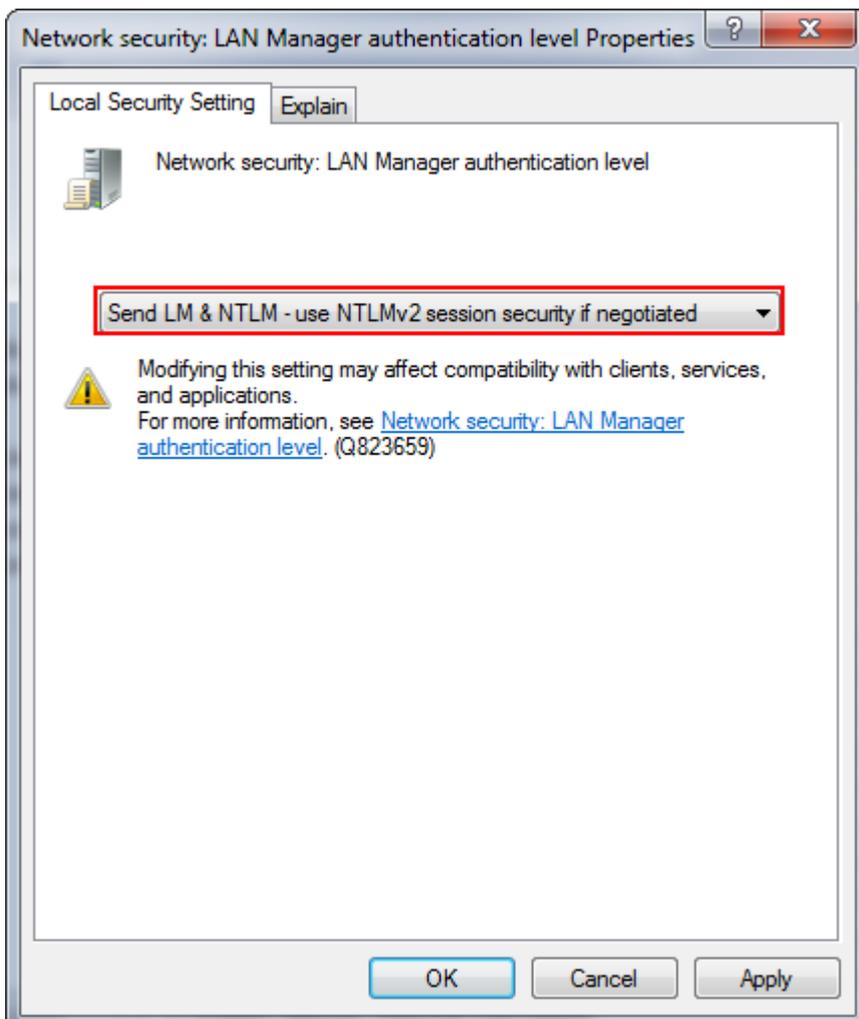
- b. Click 'Local Security Policy'.



- c. Go to 'Local Policies' > 'Security Options'. Select 'Network security: LAN Manager authentication level'.



- d. Select the 'Local Security Setting' tab, and select 'Send LM & NTLM – use NTLMv2 session security if negotiated' from the list. Then click 'OK'.



Verify the settings

To verify that the NAS has been joined to the Active Directory successfully, go to 'Access Right Management' > '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 next to 'Domain Users' drop-down menu in 'Access Right Management' > 'Users' or 'Domain Groups' drop-down menu in 'Access Right Management' > 'User Groups'. This will reload the user 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.



Advanced Options

The screenshot shows the 'Microsoft Networking' configuration window with the 'ADVANCED OPTIONS' tab selected. The 'Advanced Options' section contains the following settings:

- Enable WINS server
- Use the specified WINS server
- WINS server IP address: . . .
- Local Master Browser
- Allow only NTLMv2 authentication.
- Name Resolve Priority: ▼
- Login style: DOMAIN\USERNAME instead of DOMAIN+USERNAME for FTP, AFP, & Web File Manager
- Automatically register in DNS
- Enable trusted domains

An 'APPLY' button is located in the bottom right corner of the window.

WINS server

If the local network has a WINS server installed, specify the IP address. The NAS will automatically register its name and IP address with WINS service. If you have a WINS server on your network and want to use this server, enter the WINS server IP. Do not turn on this option if you are not sure 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 connecting to the Network Neighborhood/My Network Places too long, it may be caused by 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 turn on this option if you are not sure about the settings.

Allow only NTLMv2 authentication

NTLMv2 stands for NT LAN Manager version 2. When this option is turned on, login to the shared folders by Microsoft Networking will be allowed only with NTLMv2 authentication. If the option is turned off, 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 Web File Manager

In an Active Directory environment, the default login formats for the domain users are:

Windows shares: domain\username

FTP: domain+username

Web File Manager: domain+username

AFP: domain+username

When you turn on this option, the users can use the same login name format (domain\username) to connect to the NAS via AFP, FTP, and Web File Manager.

Automatically register in DNS: When this option is turned on and the NAS is joined to an Active Directory, the NAS will register itself automatically in the domain DNS server. This will create a DNS host entry for the NAS in the DNS server. If the NAS IP is changed, the NAS will automatically update the new IP in the DNS server.

Enable trusted domains: Select this option to load the users from trusted Active Directory domains and specify their access permissions to the NAS in 'Access Right Management' > 'Share Folders'. (The domain trusts are set up in Active Directory only, not on the NAS.)

6.2 Apple Networking

To connect to the NAS from Mac, enable Apple Filing Protocol. If your AppleTalk network uses extended networks and is assigned with multiple zones, assign a zone name to the NAS. If you do not want to assign a network zone, enter an asterisk (*) to use the default setting. This setting is disabled by default.



The screenshot shows a window titled "Apple Networking" with a dashed border. Inside the window, there is a sub-section titled "Apple Networking" with a horizontal line above it. Below this sub-section, there is a checked checkbox labeled "Enable Apple Filing Protocol". Underneath the checkbox, the text "Zone:" is followed by a text input field containing an asterisk (*). In the bottom right corner of the window, there is a blue button labeled "APPLY".

6.3 NFS Service

To connect to the NAS from Linux, enable NFS service.

NFS Service

NFS Service

Enable NFS Service

You can set the allowed domain name and the access authority in Share Folder Management.
[Click here to set the NFS access right of the network share.](#)

APPLY

To configure the NFS access right to the share folders on the NAS, go to 'Access Right Management' > 'Share Folders'. Click the NFS button on the 'Action' column.

Home >> Access Right Management >> Share Folders Welcome admin | Logout English

Share Folders

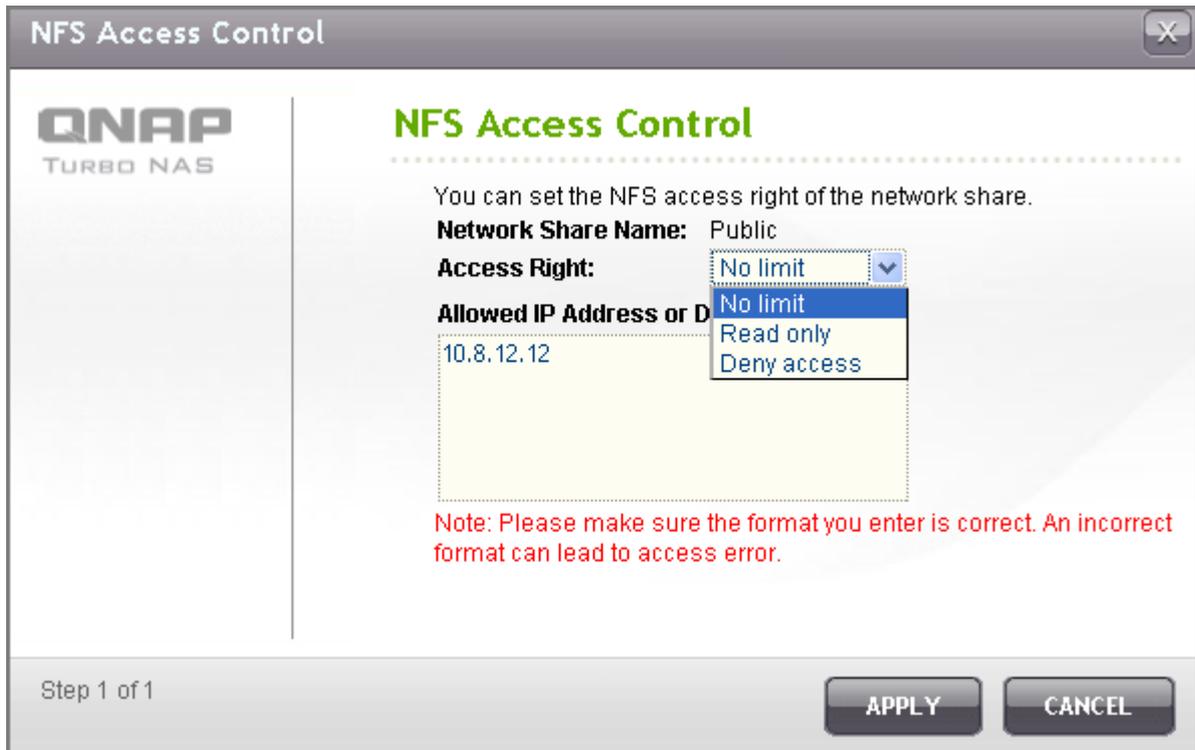
SHARE FOLDERS | ISO SHARE FOLDERS | FOLDER AGGREGATION | ADVANCED OPTIONS

Shares New Share Folder Restore Default Network Shares

<input type="checkbox"/>	Folder Name	Size	Folders	Files	Hidden	Action
<input type="checkbox"/>	Dept	80 KB	17	2	No	  NFS   
<input type="checkbox"/>	Download	400.2 MB	7	8	No	  NFS   
<input type="checkbox"/>	Multimedia	12.84 GB	65	575	No	  NFS   
<input type="checkbox"/>	Network Recycle Bin 1	120.13 MB	22	27	No	  NFS   
<input type="checkbox"/>	Public	26.55 GB	319	1650	No	  NFS   

Specify the access right to the network share. If you select 'No limit' or 'Read only', you can specify the IP address or domains that are allowed to connect to the share folder by NFS.

- No limit: Allow users to create, read, write, and delete files or folders in the network share and any subdirectories.
- Read only: Allow users to read files in the network share and any subdirectories but they are not allowed to write, create, or delete any files.
- Deny access: Deny all access to the network share.



Connect to the NAS by NFS

On Linux, run the following command:

```
mount -t nfs <NAS IP>:/<Network Share Name> <Directory to Mount>
```

For example, if the IP address of your NAS is 192.168.0.1 and you want to link the network share folder 'public' under the /mnt/pub directory, use the following command:

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

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

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

6.4 FTP Service

When you turn on 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.

FTP Service

General

Enable FTP Service

Protocol Type: FTP (standard) FTP with SSL/TLS (Explicit)

Port Number:

Unicode Support: Yes No

Enable Anonymous: Yes No

Note: If your FTP client does not support Unicode, please select "No" for Unicode Support and select a supported filename encoding from [\[Filename Encoding\]](#) under [\[General Settings\]](#) so that the folders and files on FTP can be properly shown.

Connection

Maximum Number of all FTP connections:

Maximum Number of Connections For a Single Account:

Enable FTP transfer limitation

Maximum upload rate (KB/s): KB/s

Maximum download rate (KB/s): KB/s

Advanced

Passive FTP Port Range: Use the default port range (55536 - 56559) Define port range: -

Respond with external IP address for passive FTP connection request

External IP address:

To use the FTP service of the NAS, enable this function. Open an IE browser and enter ftp://NAS IP. Enter the user name 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.

Unicode Support

Turn on or off the Unicode support. The default setting is No. If your FTP client does not support Unicode, you are recommended to turn off this option and select the language you specify in 'General Settings' > 'Language' so that the file and folder names can be correctly shown. If your FTP client supports Unicode, enable Unicode support for both your client and the NAS.

Anonymous Login

You can turn on this option to allow anonymous access to the NAS by FTP. The users can connect to the files and folders which are open for public access. If this option is turned off, the users must enter an authorized user name and password to connect to the server.

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.

FTP Transfer Limitation

Specify the maximum number of FTP connections, maximum connections of a single user account and the maximum upload/download rates of a single connection.

Respond with external IP address for passive FTP connection request

When 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, enable this function. When this option is turned on, the NAS replies the IP address you specify or automatically detects the external IP address so that the remote computer is able to connect to the FTP server.

6.5 Telnet/SSH

You can turn on this option to connect to the NAS by Telnet or SSH encrypted connection (only the 'admin' account can login remotely). You can use Telnet or SSH connection clients, for example, putty for connection. Make sure you have opened the ports you specified on your router or firewall.

To use SFTP (known as SSH File Transfer Protocol or Secure File Transfer Protocol), make sure you have turned on the option 'Allow SSH connection'.

Telnet / SSH

Telnet / SSH

After enabling this option, you can access this server via Telnet or SSH connection. (Only the account admin can login remotely.)

Allow Telnet connection
Port Number:

Allow SSH connection
Port Number:

Enable SFTP

[APPLY](#)

6.6 SNMP Settings

You can enable SNMP (Simple Network Management Protocol) service on the NAS and enter the trap address of the SNMP management stations (SNMP manager), for example, PC with SNMP software installed. When an event, warning, or error occurs on the NAS, the NAS (SNMP agent) reports the real-time alert to the SNMP management stations.

The fields are described as below:

Field	Description
SNMP Trap Level	Select the information to be sent to the SNMP management stations.
Trap Address	The IP address of the SNMP manager. You can specify maximum 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. You can specify the authentication and privacy settings if available.

SNMP Settings

SNMP

After enabling this service, the NAS will be able to report information via SNMP to the managing systems.

Enable SNMP Service

Port Number:

SNMP Trap Level: Information Warning Error

Trap Address 1:

Trap Address 2:

Trap Address 3:

SNMP Version: ▼

Community:

APPLY

SNMP MIB

To install the MIB to your managing systems, click **[Download]**.

DOWNLOAD

6.7 Web Server

The NAS enables you to upload the web pages and manage your own website easily by Web Server. It also supports Joomla!, PHP and MySQL/SQLite for you to establish an interactive website.

Home >> Network Services >> Web Server Welcome admin | Logout English

Web Server

WEB SERVER | VIRTUAL HOST

Web Server

After enabling this function, you can upload the webpage files to "Web" network share to publish your website.

- Enable Web Server ⓘ
 - Port Number:
 - register_globals: On Off
- Enable Secure Connection (SSL)
 - Port Number:
- Enable WebDAV
- Show service link on the login page

After enabling this service, click the following link to enter to Web Server.

<http://10.8.12.111:80/>
<https://10.8.12.111:8081/>

APPLY

php.ini Maintenance

- php.ini Maintenance

The file **php.ini** is the system configuration file of Web Server. After enabling this function, you can edit, upload or restore this file. It is recommended to use the system default setting.

To use Web Server, follow the steps below.

1. Enable the service and enter the port number. The default number is 80.
2. Configure other settings:
 - **Configure register_globals**
Select to enable or disable register_globals. The setting is disabled by default. When the web program prompts you to enable php register_globals, enable this option. However, for system security concern, it is recommended to turn this option off.
 - **php.ini Maintenance**
Select the option 'php.ini Maintenance' and choose to upload, edit or restore php.ini.

Note: To use PHP mail(), go to 'System Administration' > 'Notification' > 'Configure SMTP Server' and configure the SMTP server settings.

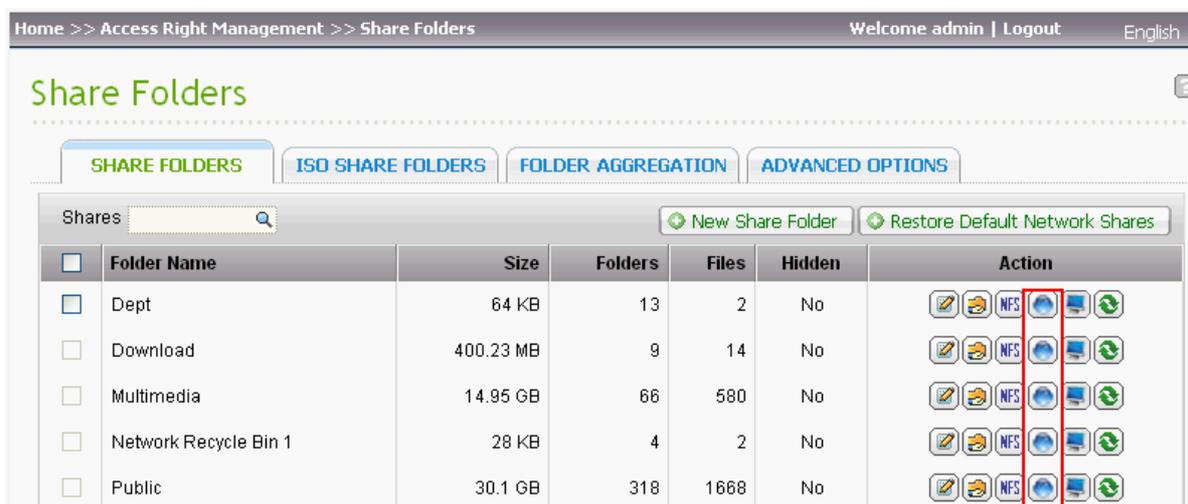
- **Secure Connection (SSL)**
Enter the port number for SSL connection.
3. Upload the HTML files to the share folder (Qweb/Web) on the NAS. The file index.html, index.htm or index.php will be the home path of your web page.
 4. You can access the web page you upload by entering http://NAS IP/ in the web browser. Note that when Web Server is enabled, you have to enter http://NAS IP:8080 in your web browser to access the login page of the NAS.

WebDAV

WebDAV (Web-based Distributed Authoring and Versioning) is a set of extensions to the HTTP(S) protocol that allows the users to edit and manage the files collaboratively on the remote World Wide Web servers. After turning on this function, you can map the share folders of your NAS as the network drives of a remote PC over the Internet. To edit the access right settings, go to 'Access Right Management' > 'Share Folders' page.

To map a share folder on the NAS as a network drive of your PC, turn on WebDAV and follow the steps below.

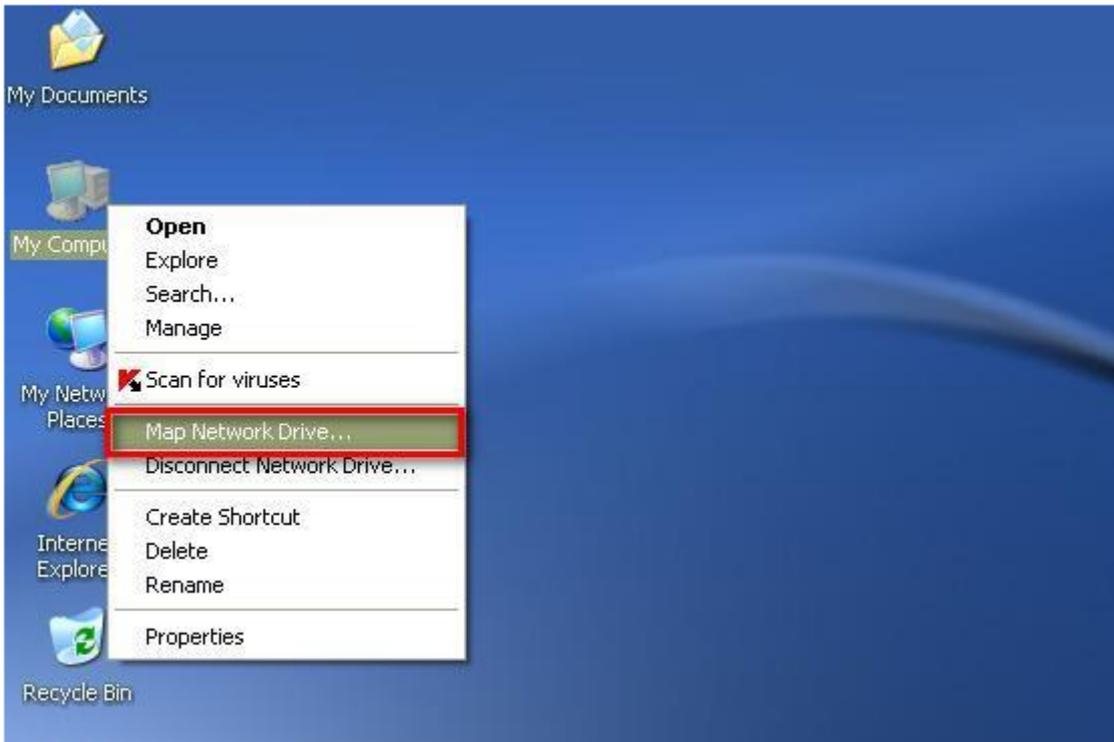
Go to 'Access Right Management' > Share Folders' > 'Share Folder'. Click the 'WebDAV Access Control' button  in the 'Action' column, and set the WebDAV access right of the users to the share folders.



Next, mount the network share folders of the NAS as the network shares on your operating systems by WebDAV.

Windows XP:

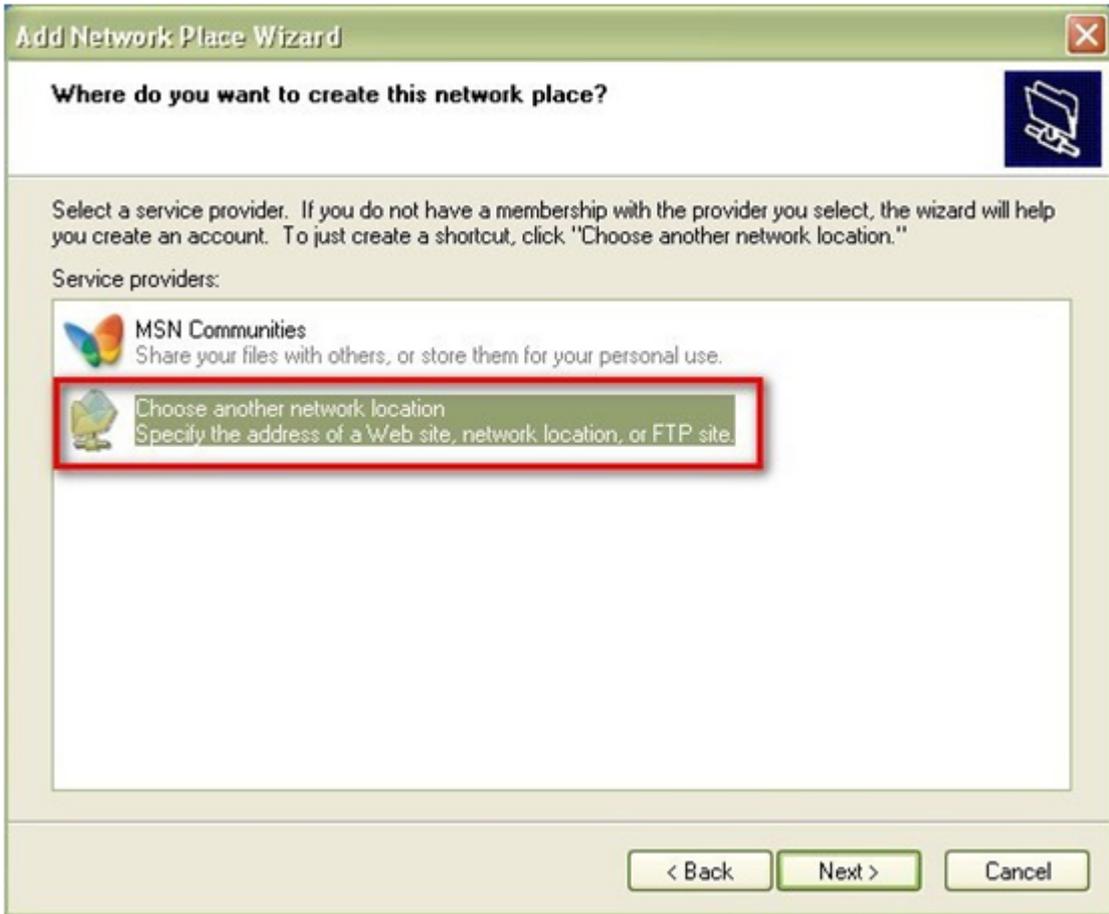
1. Right click 'My Computer' and select 'Map Network Drive...'



2. Click 'Sign up for online storage or connect to a network server'.

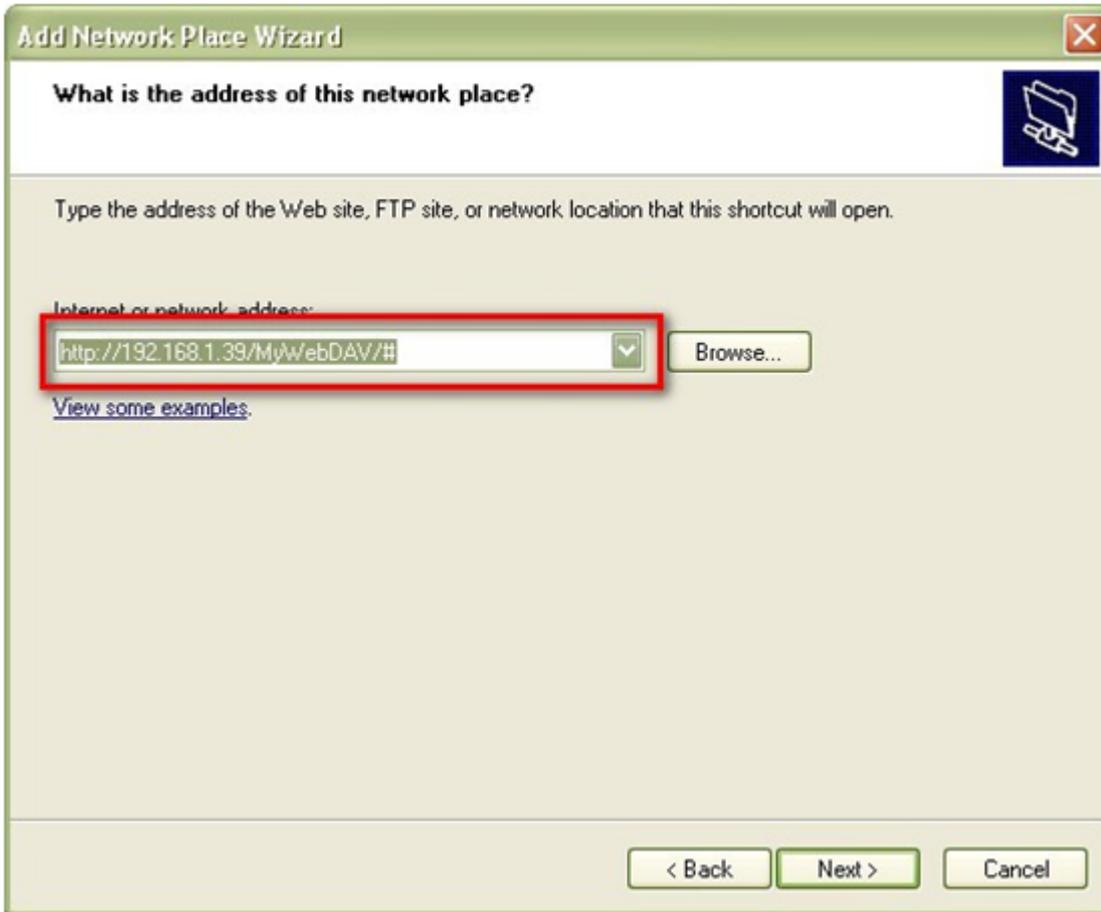


3. Select 'Choose another network location'.



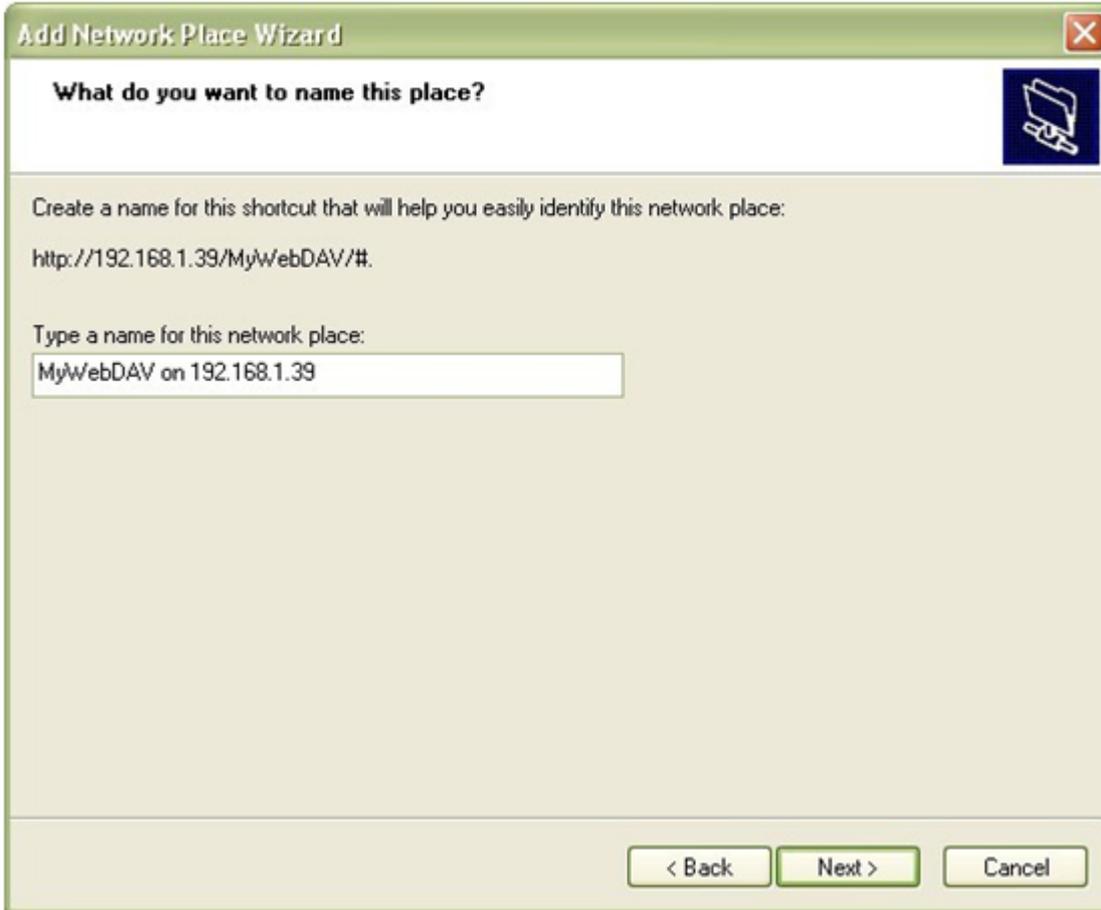
4. Enter the URL of your NAS with the share folder name. Note that you should put a '#' key at the end of the URL. Click 'Next'.

Format: `http://NAS_IP_or_HOST_NAME/SHARE_FOLDER_NAME/#`

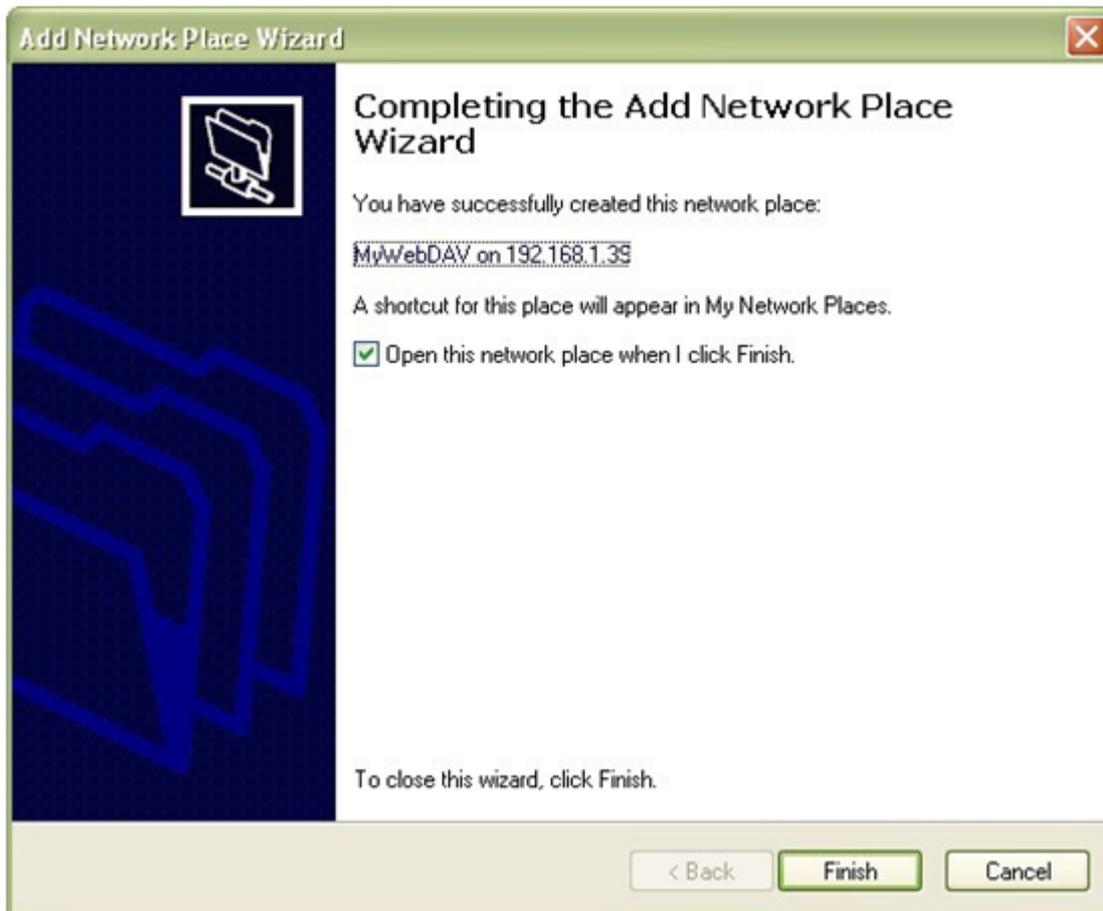


5. Enter the user name and password which has the WebDAV access right to connect to the share folder.

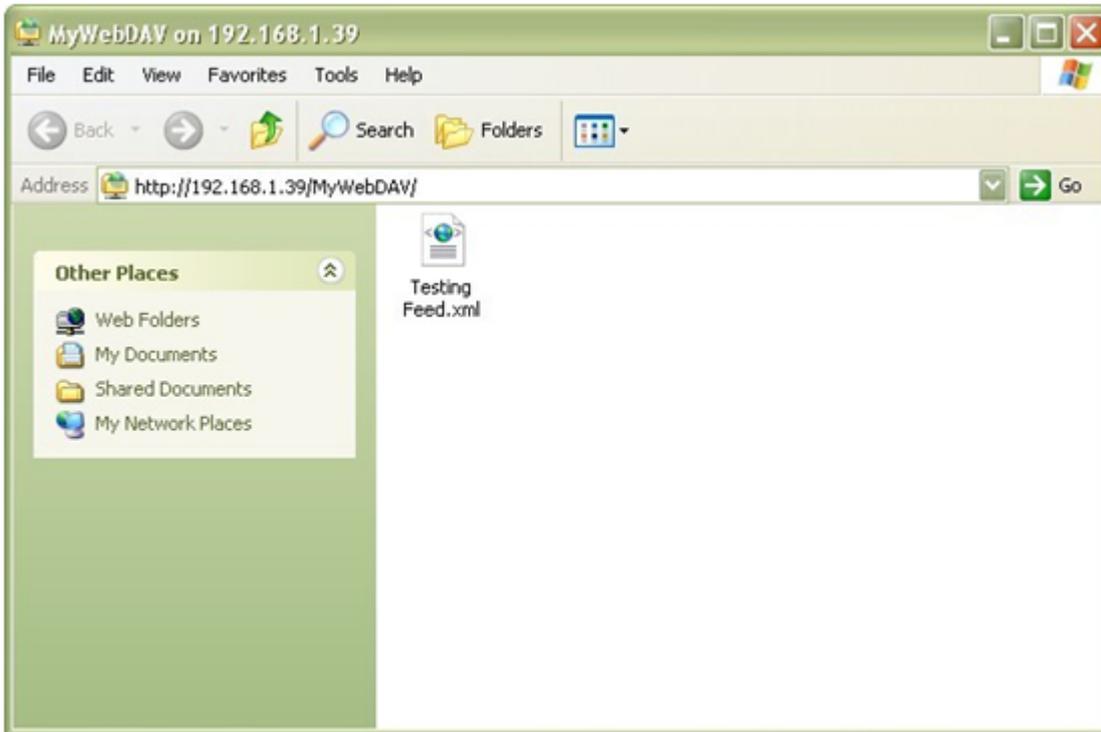
6. Type a name for this network place.



7. The network place has been created and is ready to be used.



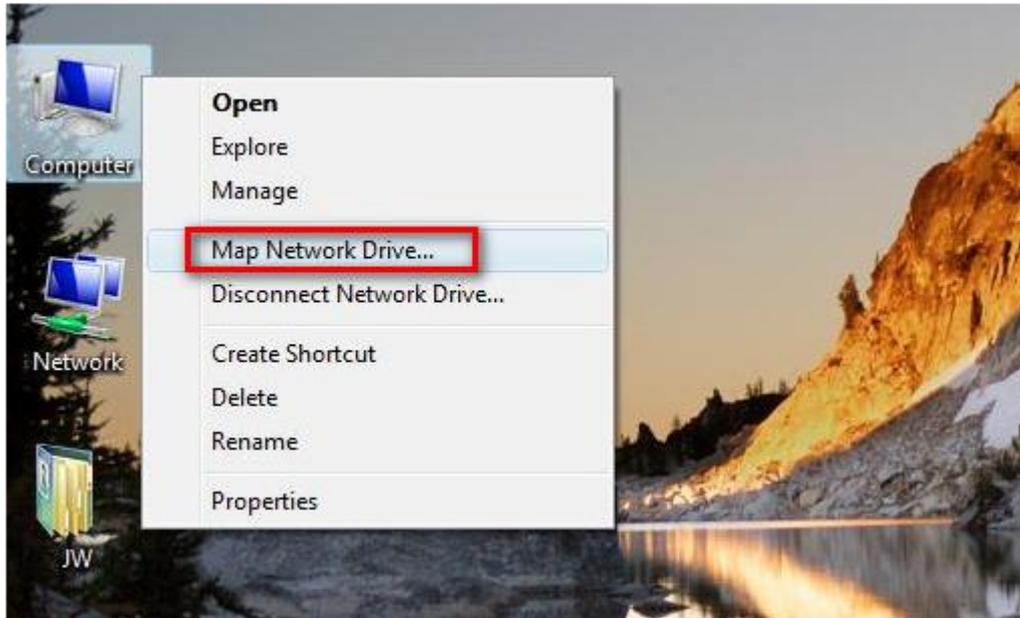
8. Now you can connect to this share folder anytime through WebDAV. A shortcut has also been created in 'My Network Places'.



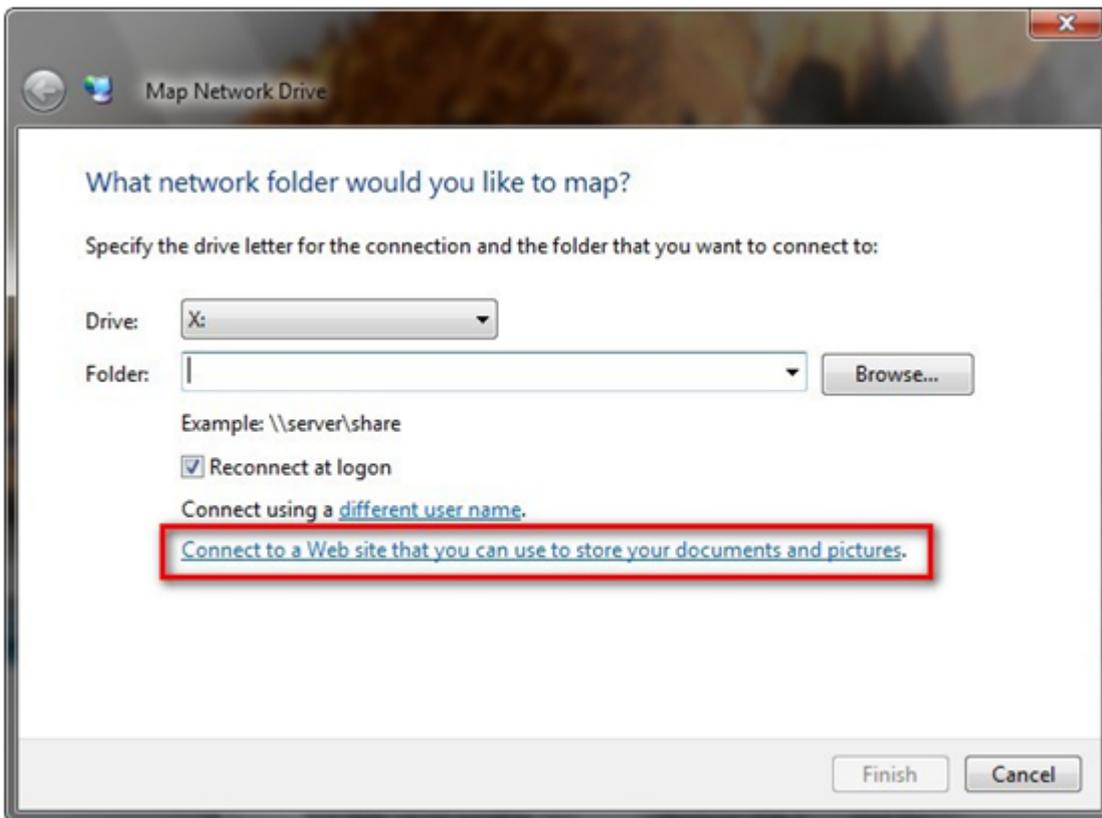
Windows Vista

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

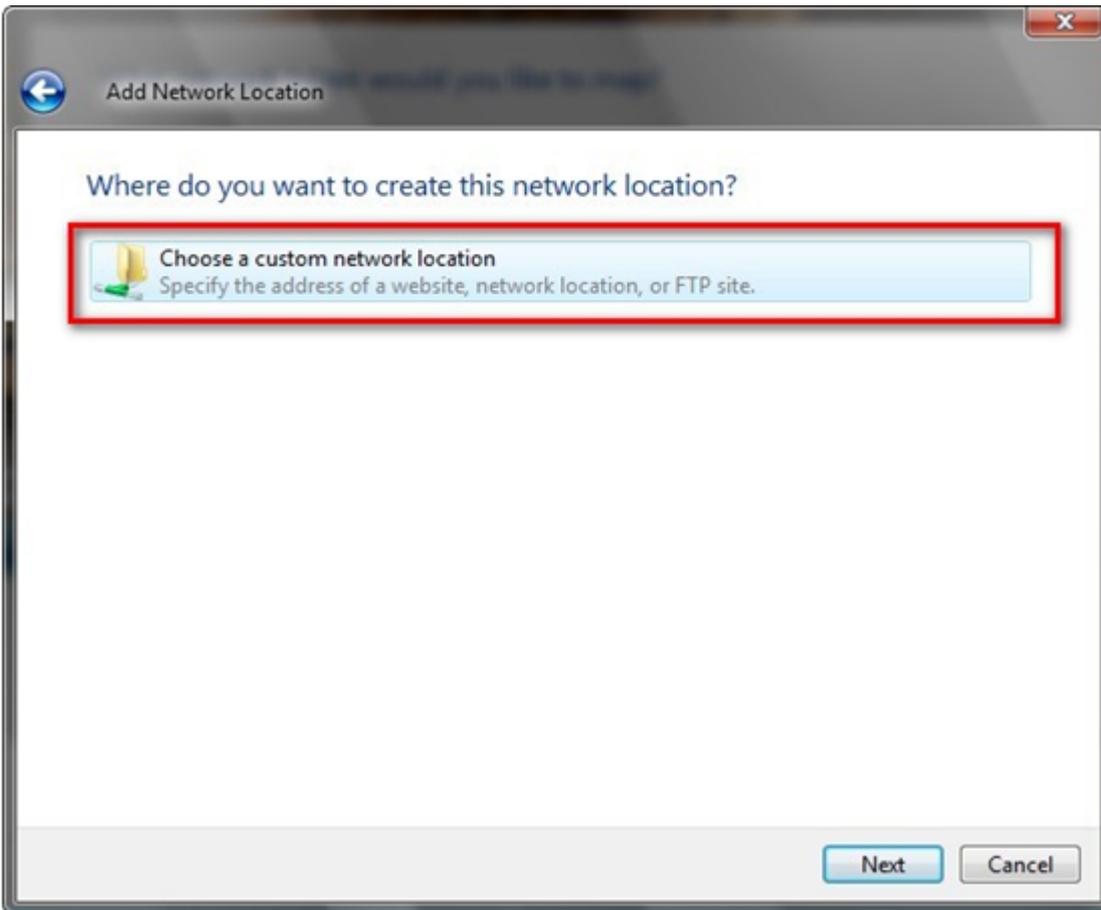
1. Right click 'Computer' and select 'Map Network Drive...'



2. Click 'Connect to a Web site that you can use to store your documents and pictures'.

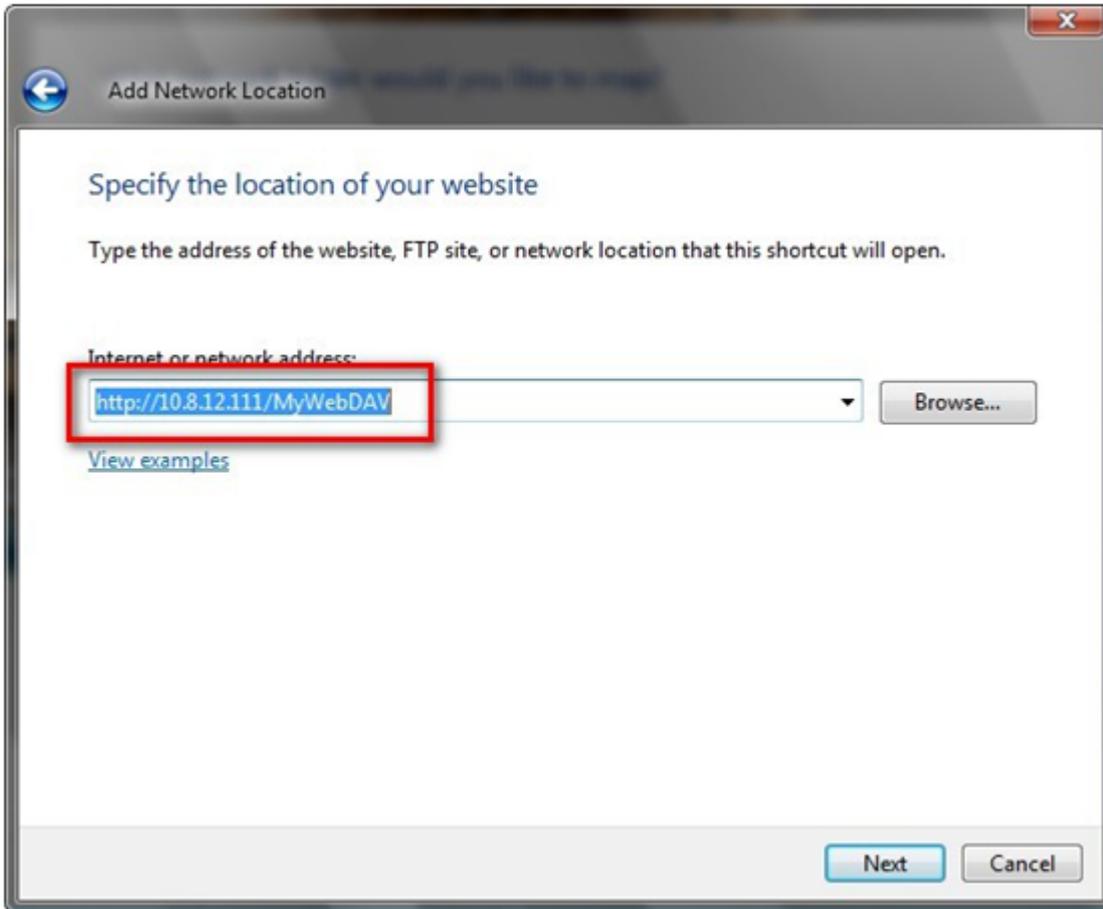


3. Select 'Choose a custom network location'.



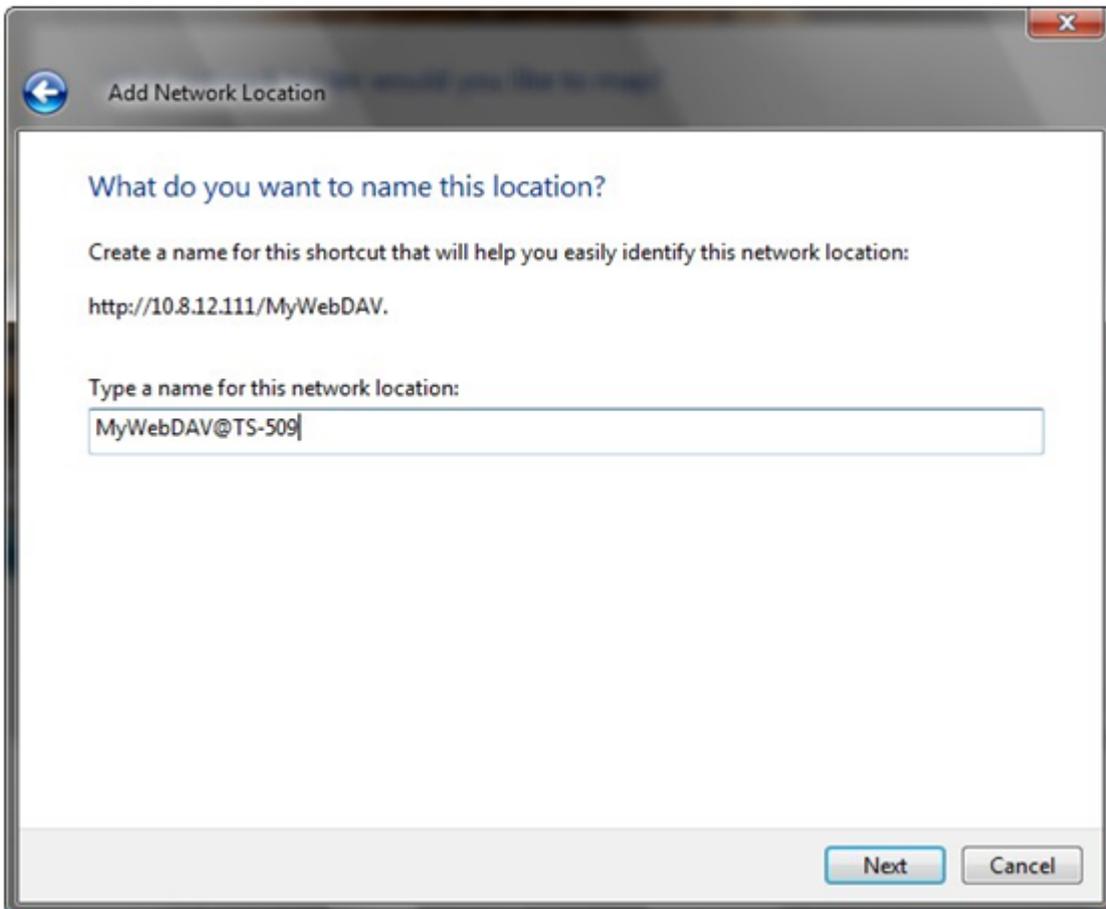
4. Enter the URL of your NAS with the share folder name.

Format: `http://NAS_IP_or_HOST_NAME/SHARE_FOLDER_NAME`

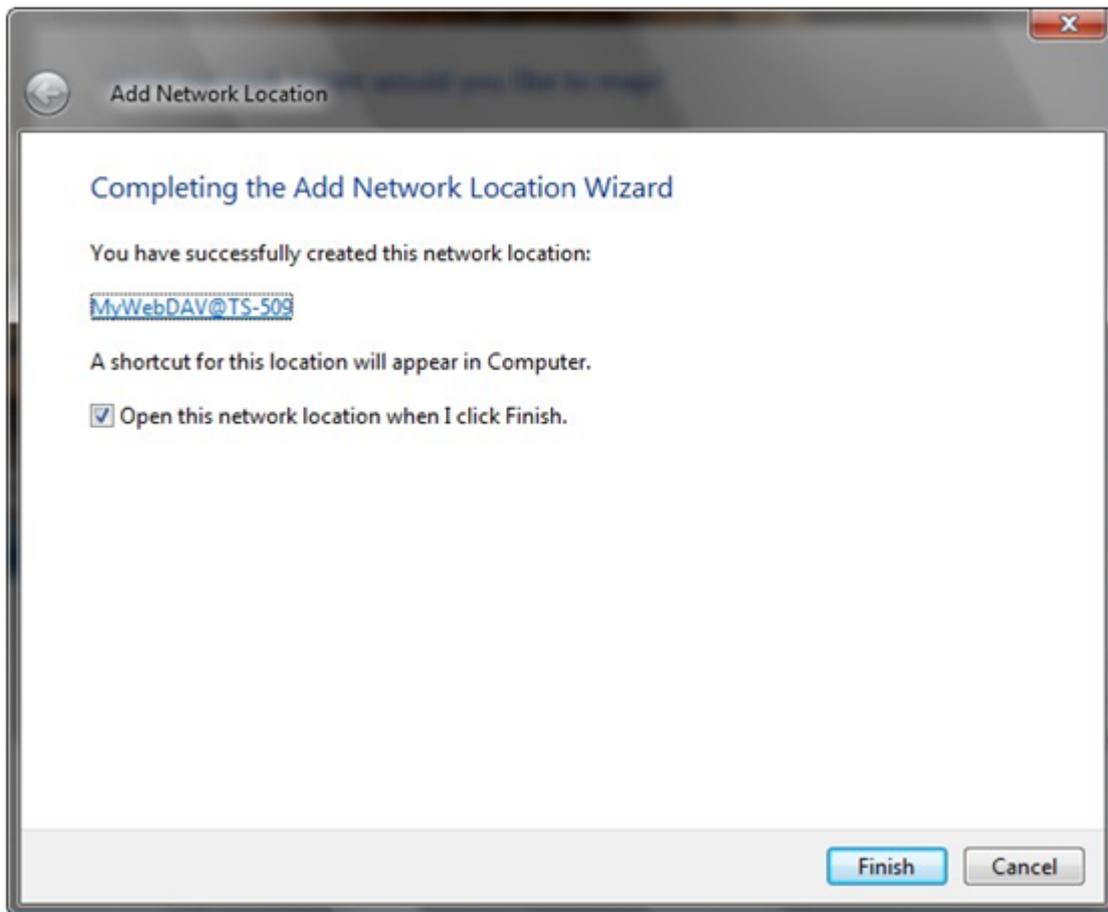


5. Enter the user name and password which has the WebDAV access right to connect to this share folder.

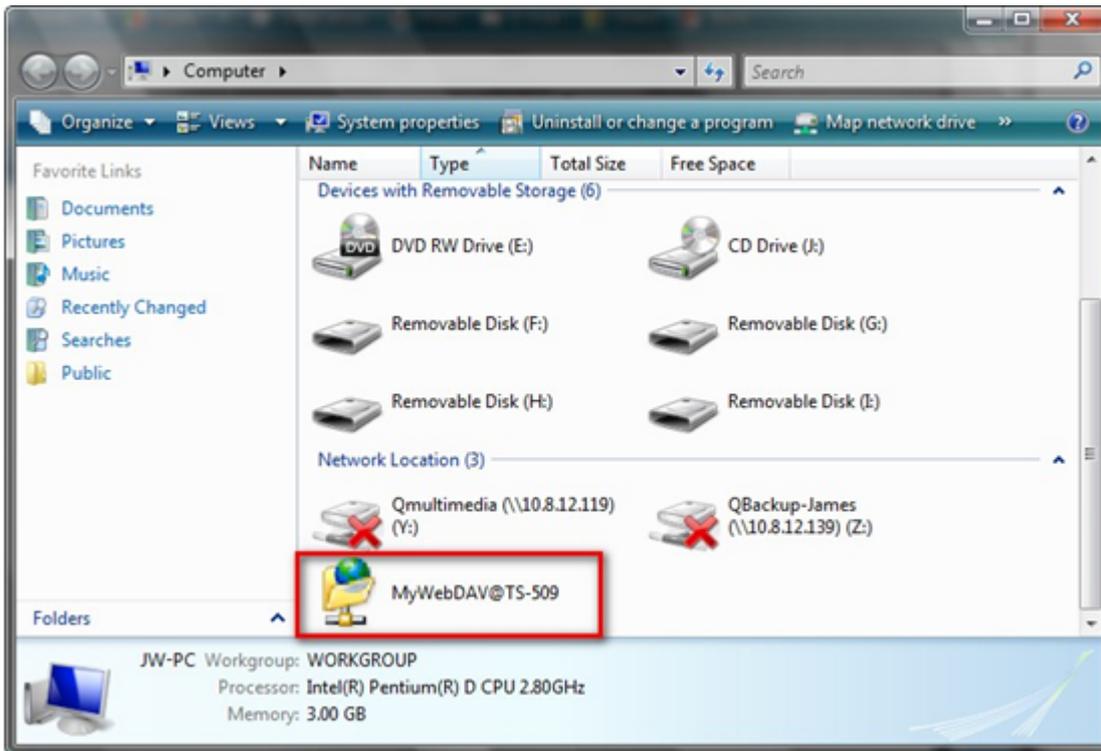
6. Type a name for this network location.



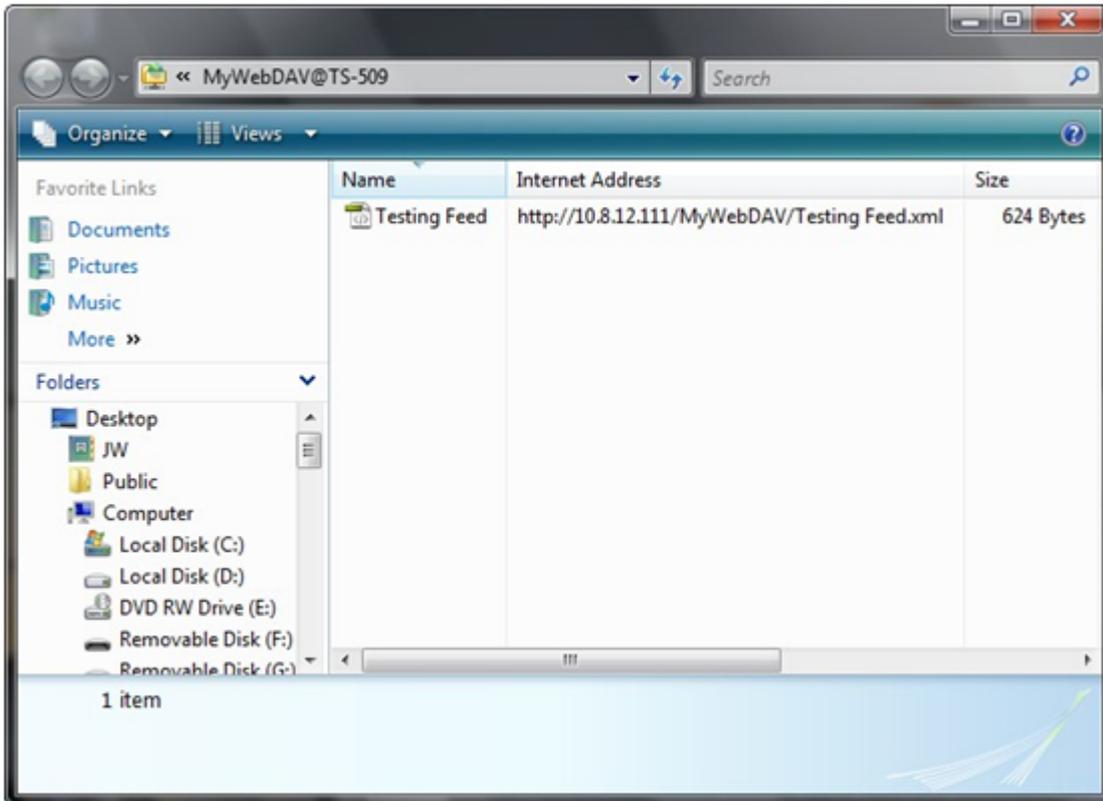
7. The Web folder has been successfully created.



8. You can locate the web folder in the 'Network Location' section in 'Computer'.



9. You can connect to the share folder through this link via HTTP/WebDAV.



Mac OS X

Follow the steps below 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 share folder.

Format: `http://NAS_IP_or_HOST_NAME/SHARE_FOLDER_NAME`



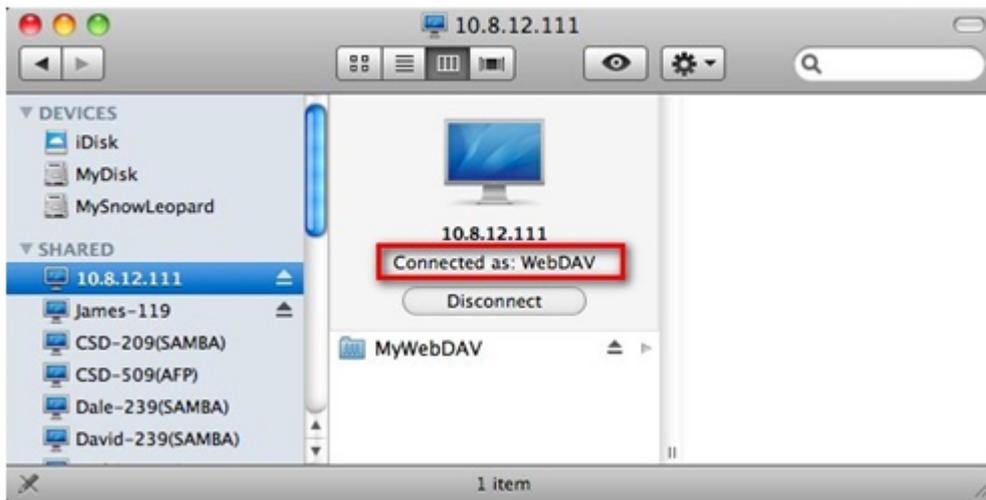
2. Enter the user name and password which has the WebDAV access right to connect to this share folder.



3. You can connect to the share 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.



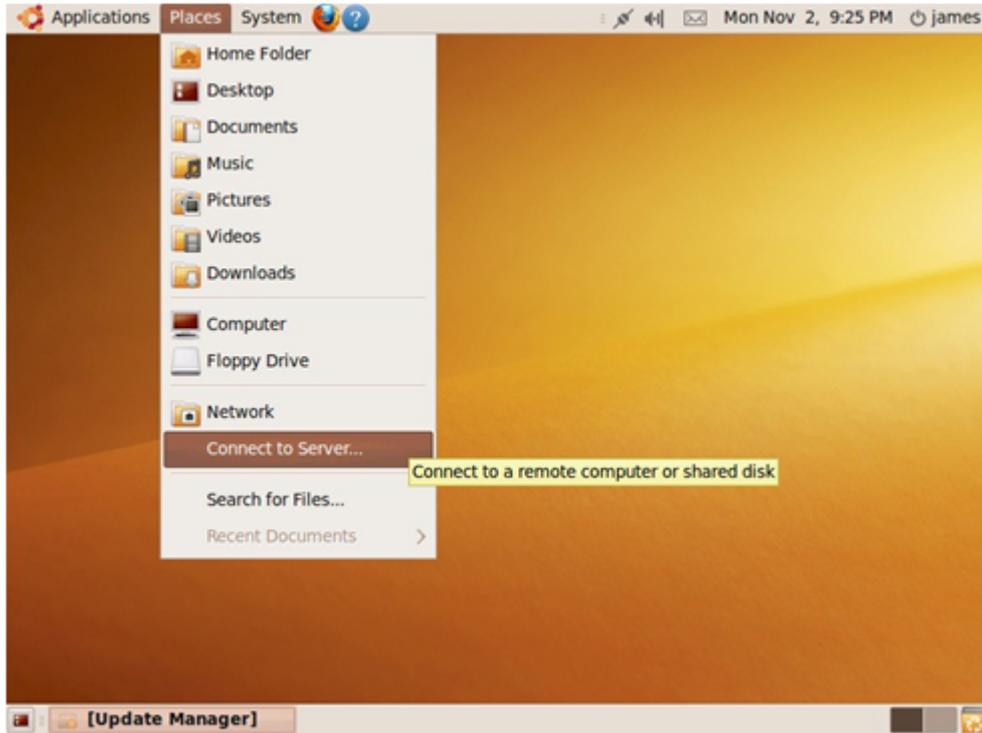
Note that the instructions above are based on Mac OS X 10.6, and can be applied to 10.4 or later.

Ubuntu

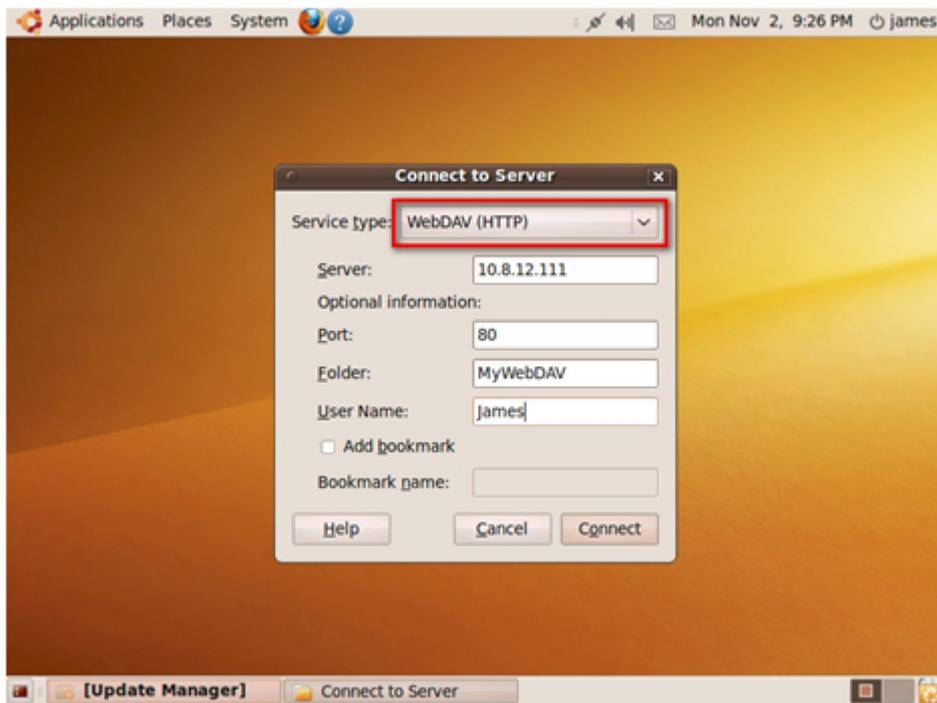
Follow the steps below to connect to your NAS via WebDAV on Ubuntu.

Client Operating System: Ubuntu 9.10 Desktop

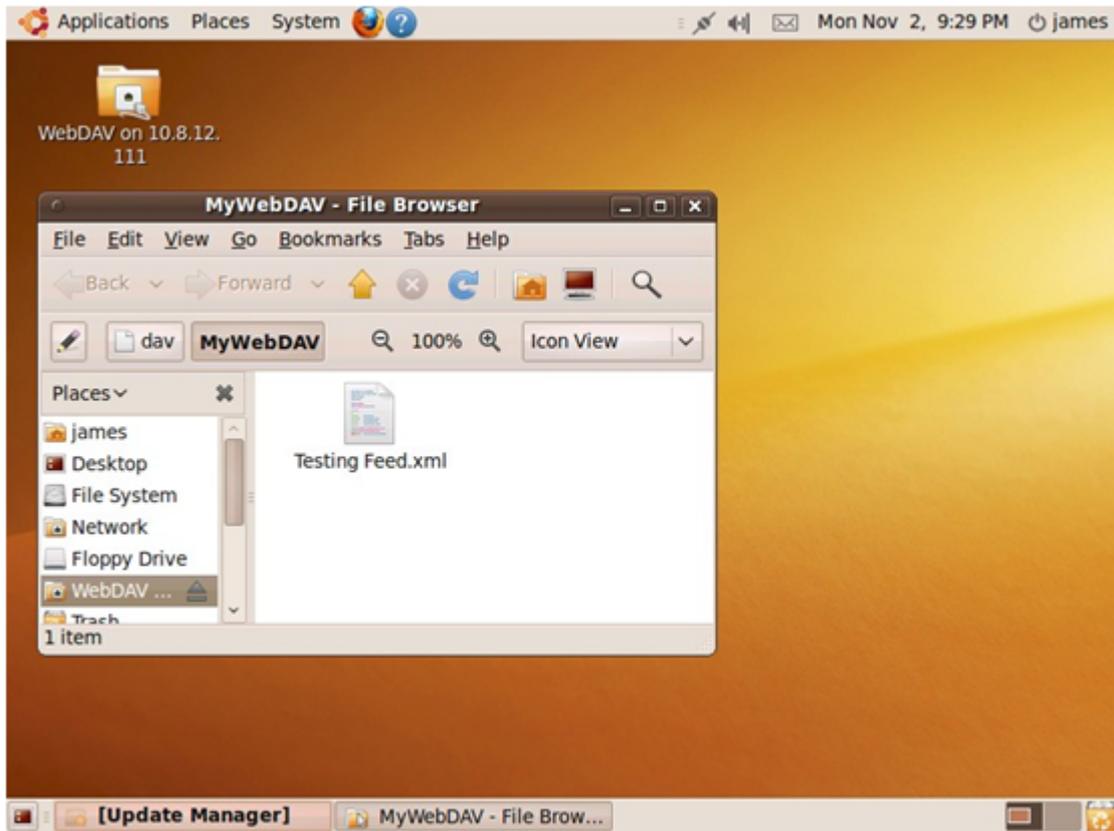
1. Open 'Places' > 'Connect to Server...'



2. Select 'WebDAV (HTTP)' or 'Secure WebDAV (HTTPS)' for the Service type according to your NAS settings and enter your host information. Enter the user name and password which has the WebDAV access right to connect to this share folder. Click 'Connect' to initialize the connection.



3. This WebDAV connection has been established successfully, a linked folder will be created on the desktop automatically.



MySQL Management

You may install phpMyAdmin software and save the program files in the 'Web' share folder of the NAS. You can change the folder name and connect to the database by entering the URL in the browser.

Note: The default user name of MySQL is 'root'. The password is 'admin'. Please change your root password immediately after logging in to the phpMyAdmin management interface.

SQLite Management

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

- (1) Unpack your downloaded file SQLiteManager-*.tar.gz.
- (2) Upload the unpacked folder SQLiteManager-* to \\NAS IP\Web\ or \\NASIP\Qweb.
- (3) Open your web browser and go to http://NAS IP/SQLiteManager-*/.

?: The symbol '*' refers to the version number of SQLiteManager.

6.7.1 Virtual Host

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

In this tutorial we will use the information provided in the table below as the 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 you start, make sure you have checked the following items:

- Web Server
Enable Web Server in 'Network Services' > 'Web Server'.
- DNS records
The host name must point to the WAN IP of your NAS and 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 may import the certificate from within the administration backend under 'System Administration' > 'Security' > 'Import SSL Secure Certificate'.

Follow the steps below to use virtual host.

1. Select 'Enable Virtual Host' and click 'Apply'.
2. Click 'Create New 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 turned on.
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.

Modify Virtual Host
✕



Modify Virtual Host

Host Name:

Folder Name:

Protocol : HTTP HTTPS

Port:

Step 1 of 1

APPLY
CANCEL

Web Server

WEB SERVER

VIRTUAL HOST

Virtual Host

After enabling this function, you can create multiple websites by uploading Web files to each folder.

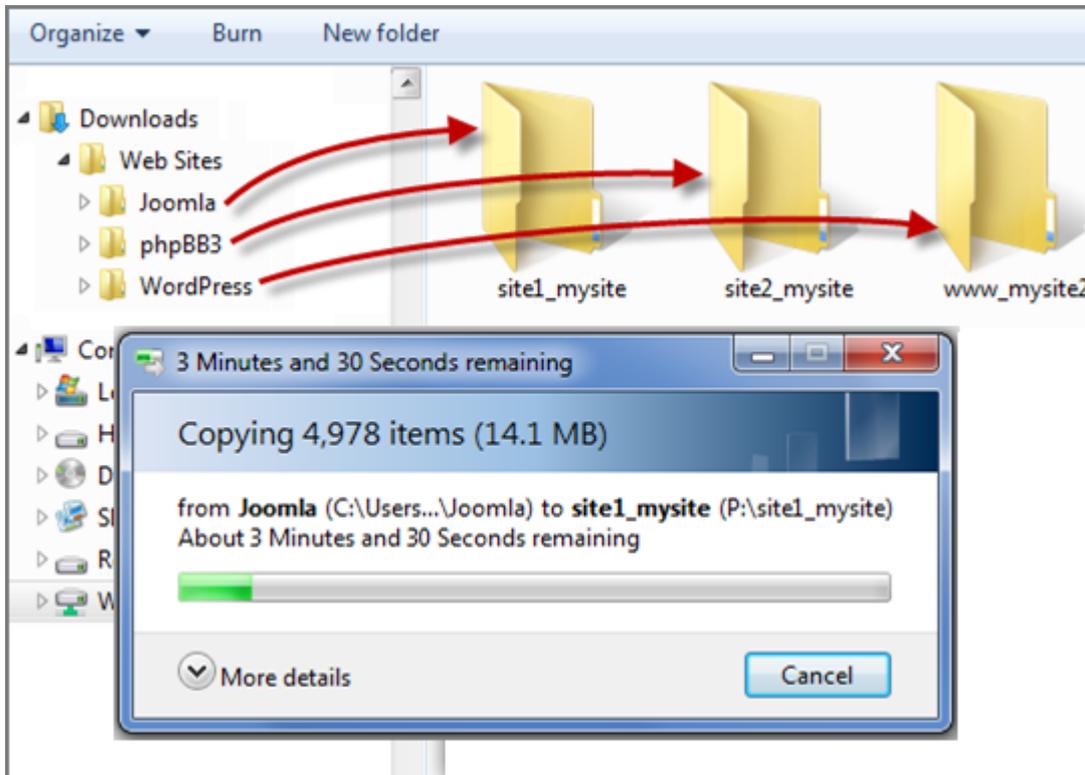
Enable Virtual Host APPLY

Create New Virtual Host

	Host Name	Folder Name	Protocol	Port	Action
<input type="checkbox"/>	site1.mysite.com	/Qweb/site1_mysite	HTTP	80	
<input type="checkbox"/>	site2_mysite.com	/Qweb/site2_mysite	HTTP	80	
<input type="checkbox"/>	www.mysite2.com	/Qweb/www_mysite2	HTTP	80	

➔ Delete

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 transfers 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>

You should see the Joomla!, phpBB3, and WordPress web pages respectively.

6.8 Network Service Discovery

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 control points on the network.

By enabling UPnP Discovery Service, the NAS can be discovered by any operating systems that support UPnP.

The screenshot shows a web interface for configuring Network Service Discovery. The breadcrumb navigation at the top reads "Home >> Network Services >> Network Service Discovery". The user is logged in as "admin" and the language is set to "English". The main heading is "Network Service Discovery". There are two tabs: "UPNP DISCOVERY SERVICE" (which is selected) and "BONJOUR". Under the "UPnP Discovery Service" tab, there is a section titled "UPnP Discovery Service" with the text: "After enabling this service, your NAS can be discovered by any operating systems that support UPnP." Below this text is a checkbox labeled "Enable UPnP Service" which is checked. An "APPLY" button is located at the bottom right of the configuration area.

Bonjour

By broadcasting the network service(s) with Bonjour, your Mac will automatically discover the network services, such as FTP, running on the NAS without the need to enter the IP addresses or configure the DNS servers.

Note: You have to activate the services on their setup pages and then turn them on in this section so that the NAS will advertise this service with Bonjour.

UPNP DISCOVERY SERVICE **BONJOUR**

Bonjour

Before broadcasting the following services through Bonjour, please DO NOT forget to enable these services first.

- Web Administration
Service Name:
- SAMBA (Server Message Block over TCP/IP)
Service Name:
- AFP (Apple File Protocol over TCP/IP)
Service Name:
- SSH
Service Name:
- FTP (File Transfer Protocol)
Service Name:
- HTTPS (Secure web server)
Service Name:
- UPNP (DLNA media server)
Service Name:
- QMobile for iPhone/iPod Touch.
Service Name:

7. Application Servers

Web File Manager [254](#)

Multimedia Station [269](#)

Download Station [324](#)

Surveillance Station [343](#)

iTunes Service [351](#)

UPnP Media Server [354](#)

MySQL Server [356](#)

QPKG Plugins [358](#)

Backup Server [360](#)

7.1 Web File Manager

To connect to the files on the NAS by a web browser, enable Web File Manager. If the NAS is connected to the Internet and uses a valid IP address, you can connect to the NAS by web browser from anywhere.

To use Web File Manager, go to 'Application Servers' > 'Web File Manager'. Enable the service.



Web File Manager

Web File Manager

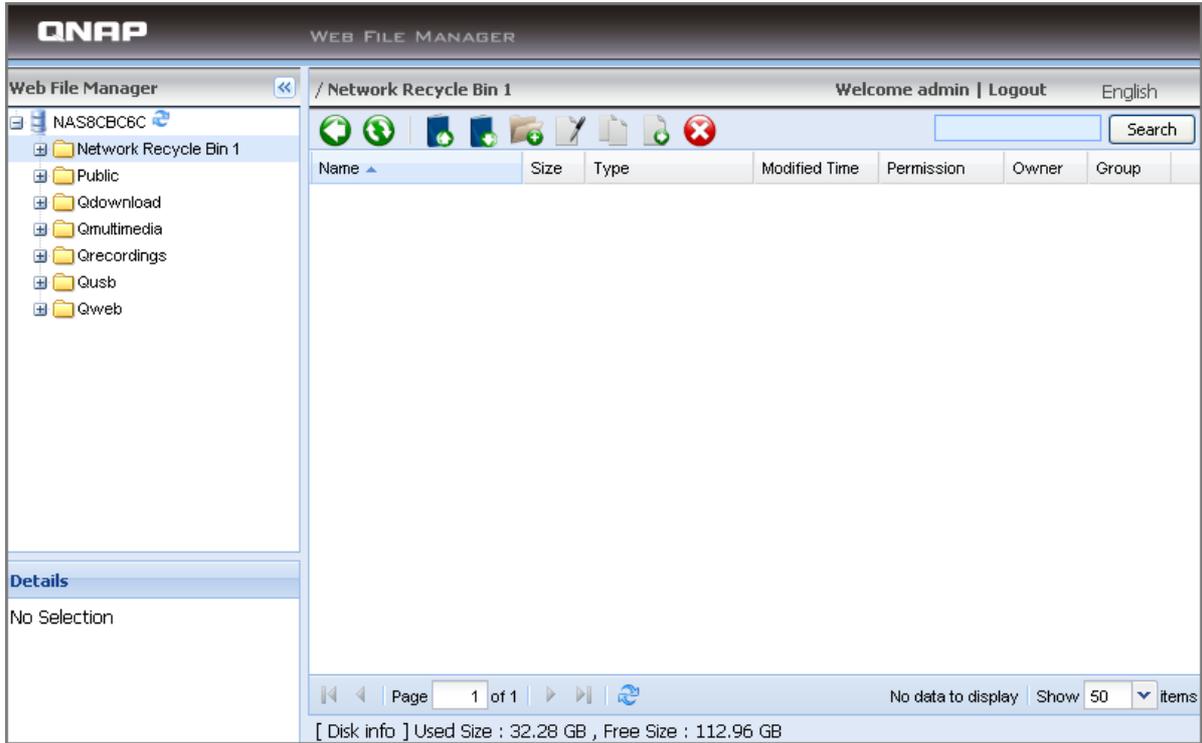
- Enable Web File Manager
- Show service link on the login page

APPLY

Click 'Web File Manager' on the top or on the login page of the NAS to connect to the Web File Manager. If you login the service from the login page of the NAS, you are required to enter the user name and password.

Note: Make sure a network share has been created before using Web File Manager.

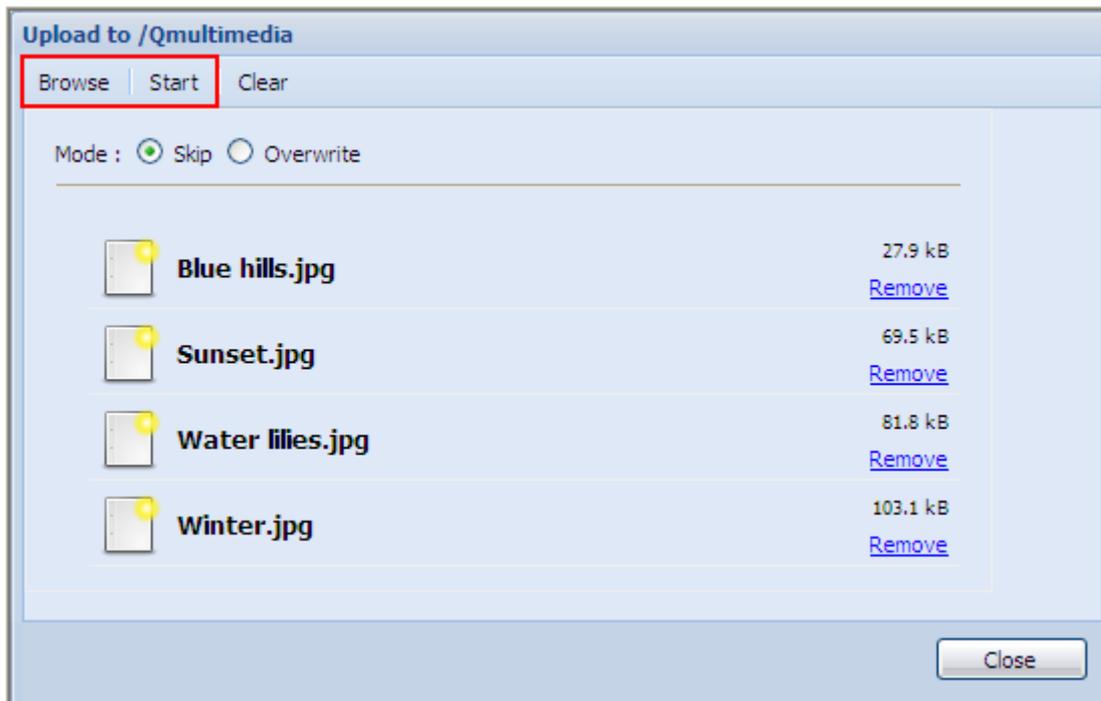
You can organize the network share folders of the NAS. With Web File Manager, you can upload, download, rename, move, copy, or delete the files and folders in the network shares.



Upload file

To use this feature, install Adobe Flash plugin for your web browser.

- i. Open the folder to upload file to. Click .
- ii. Click 'Browse' to select the file(s).
- iii. Select to skip or overwrite existing file in the folder.



- iv. Click 'Start'.

Download file

- i. Select a file or folder to download.
- ii. Right click the mouse and select 'Download' or click  to download the file.

Create folder

- i. Select a network share or folder in which you want to create a new folder.
- ii. Click  (Create Folder).
- iii. Enter the name of the new folder and click 'OK'.

Rename file or folder

- i. Select a file or folder to rename.
- ii. Click  (Rename).
- iii. Enter the new file or folder name and click 'OK'.

Copy files or folders

- i. Select the files or folders to copy.
- ii. Click  (Copy).
- iii. Select the destination folder.
- iv. Select to skip or overwrite the existing file in the destination folder. Click 'OK'.

Move files or folders

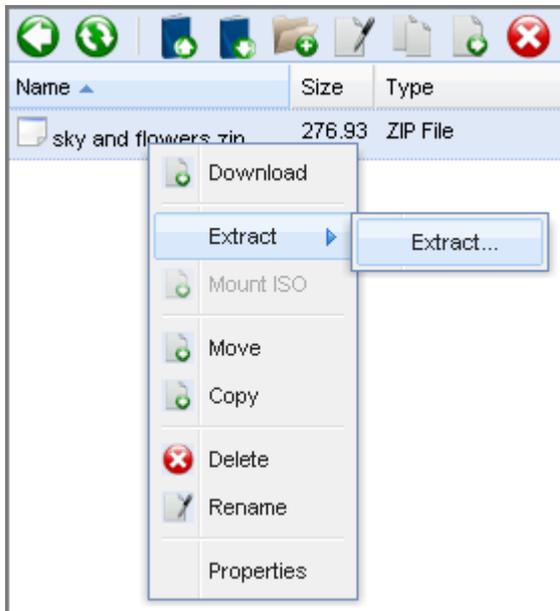
- i. Select the files or folders to move.
- ii. Click  (Move).
- iii. Select the destination folder.
- iv. Select to skip or overwrite the existing file in the destination folder. Click 'OK'.

Delete file or folder

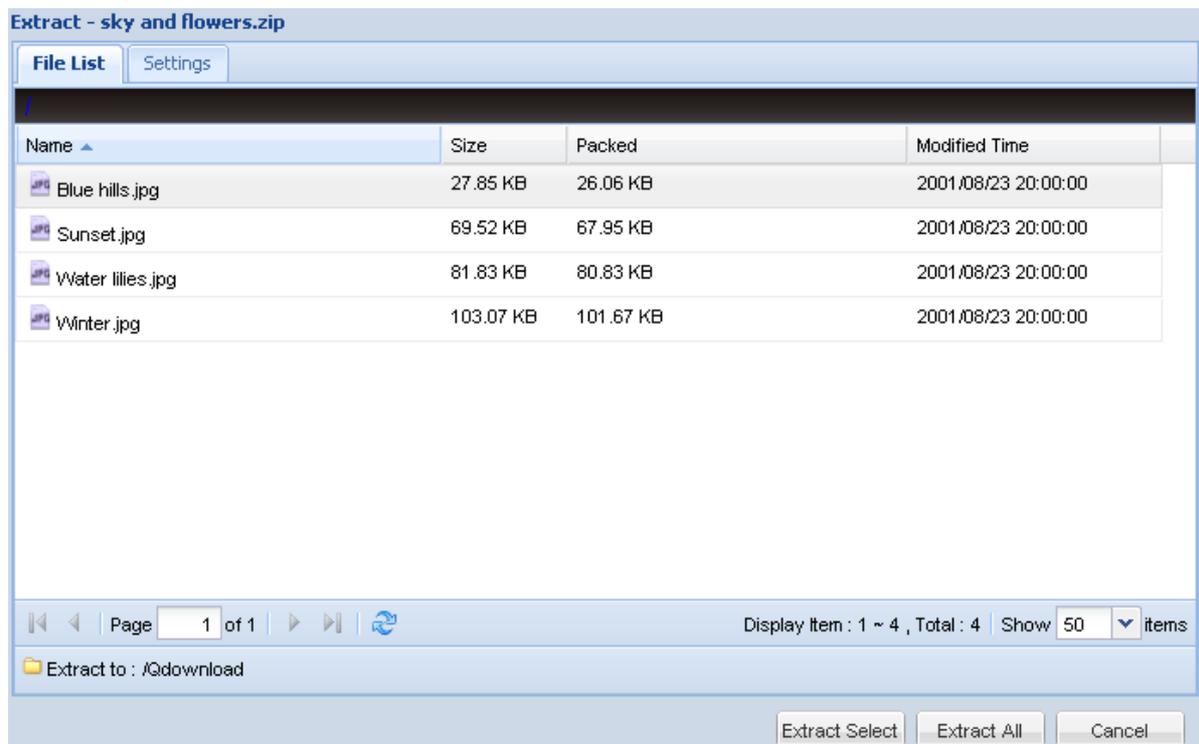
- i. Select a file or folder to delete.
- ii. Click  (Delete) on the toolbar.
- iii. Confirm to delete the file or folder.

Extract files

i. To extract a zipped file on the NAS, right click the zipped file and select 'Extract'.



ii. Select the files to extract and configure the extraction settings.



Files/Folders Search

Web File Manager supports smart search of files, sub-folders, and folders on the NAS. You can search a file or folder by all or part of the file or folder name, or by the file extension, for example, AVI, MP3.

The screenshot shows the QNAP Web File Manager interface. The search bar at the top right contains the text '22' and a 'Search' button. The main content area displays a table of search results for the directory '/Qmultimedia/video'.

Name	Size	Type	Modified Time	Permission	Owner	Group
22		Folder	2010/05/17 19:04:46	777 (rwxrwxrwx)	admin	administrators
2010-05-05 22-00-07~22-01-09.avi	1.96 MB	AVI File	2010/05/17 15:27:12	644 (rw-r--r--)	httpdusr	everyone
2010-05-05 22-00-07~22-01-09.AVI	1.96 MB	AVI File	2010/05/05 22:01:09	666 (rw-rw-rw-)	admin	administrators
2010-05-05 22-01-09~22-02-10.avi	2 MB	AVI File	2010/05/05 22:02:11	666 (rw-rw-rw-)	admin	administrators
2010-05-05 22-02-10~22-03-11.avi	2 MB	AVI File	2010/05/05 22:03:12	666 (rw-rw-rw-)	admin	administrators
2010-05-05 22-03-11~22-04-00.avi	1.56 MB	AVI File	2010/05/05 22:04:01	666 (rw-rw-rw-)	admin	administrators
2010-05-05 22-04-00~22-05-02.avi	1.92 MB	AVI File	2010/05/05 22:05:02	666 (rw-rw-rw-)	admin	administrators
2010-05-05 22-05-02~22-06-03.avi	1.94 MB	AVI File	2010/05/05 22:06:03	666 (rw-rw-rw-)	admin	administrators
2010-05-05 22-06-03~22-07-05.avi	1.9 MB	AVI File	2010/05/05 22:07:05	666 (rw-rw-rw-)	admin	administrators
2010-05-05 22-07-05~22-08-06.avi	1.93 MB	AVI File	2010/05/05 22:08:07	666 (rw-rw-rw-)	admin	administrators
2010-05-05 22-08-06~22-09-07.avi	1.89 MB	AVI File	2010/05/05 22:09:08	666 (rw-rw-rw-)	admin	administrators
2010-05-05 22-09-07~22-10-08.avi	1.86 MB	AVI File	2010/05/05 22:10:09	666 (rw-rw-rw-)	admin	administrators
2010-05-05 22-10-08~22-11-11.avi	1.9 MB	AVI File	2010/05/05 22:11:11	666 (rw-rw-rw-)	admin	administrators
2010-05-05 22-11-11~22-12-00.avi	1.49 MB	AVI File	2010/05/05 22:12:00	666 (rw-rw-rw-)	admin	administrators
2010-05-05 22-12-00~22-13-01.avi	1.88 MB	AVI File	2010/05/05 22:13:02	666 (rw-rw-rw-)	admin	administrators

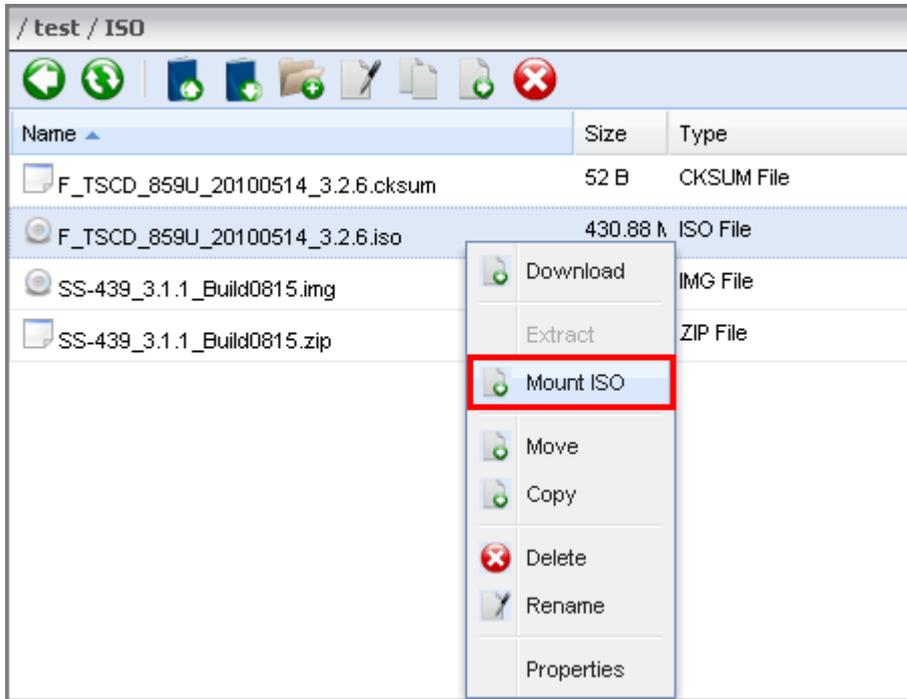
Page 1 of 2 | Display Item: 1 - 50, Total: 62 | Show 50 items

[Disk info] Used Size : 22.95 GB , Free Size : 122.28 GB

Mount ISO Shares

To mount an ISO file on the NAS as a share folder, follow the steps below.

Locate the ISO file on the NAS. Right click the file and select 'Mount ISO'.



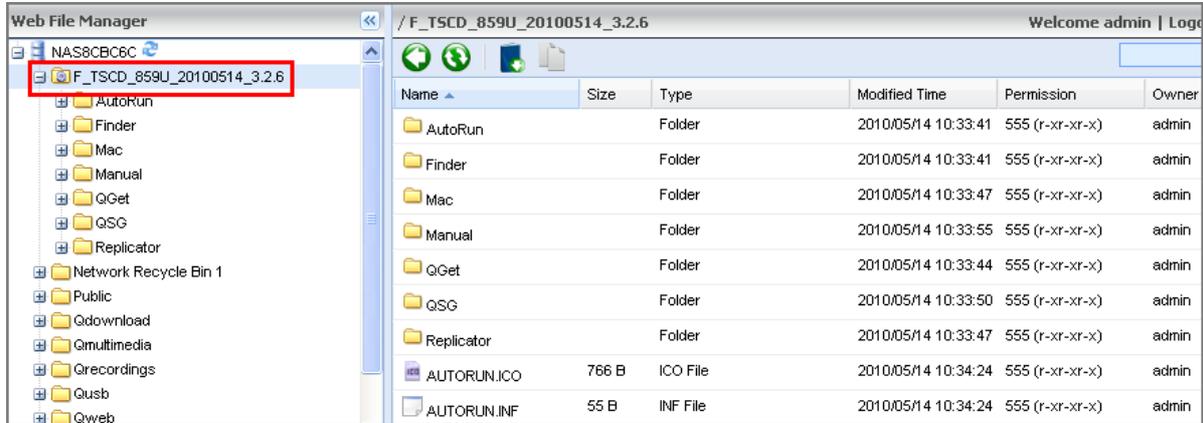
Enter the share folder name and click 'OK'.



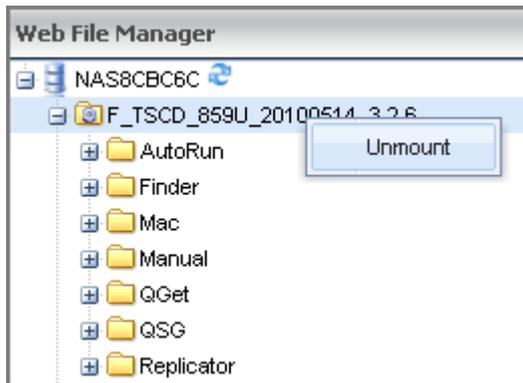
Click 'OK' to confirm.



The ISO share folder will appear on the share folder list. You can access the contents of the ISO image file. You can login the NAS web interface with an administrator account and specify the access rights of the users in 'Access Right Management' > 'Share Folders' > 'ISO Share Folders'.

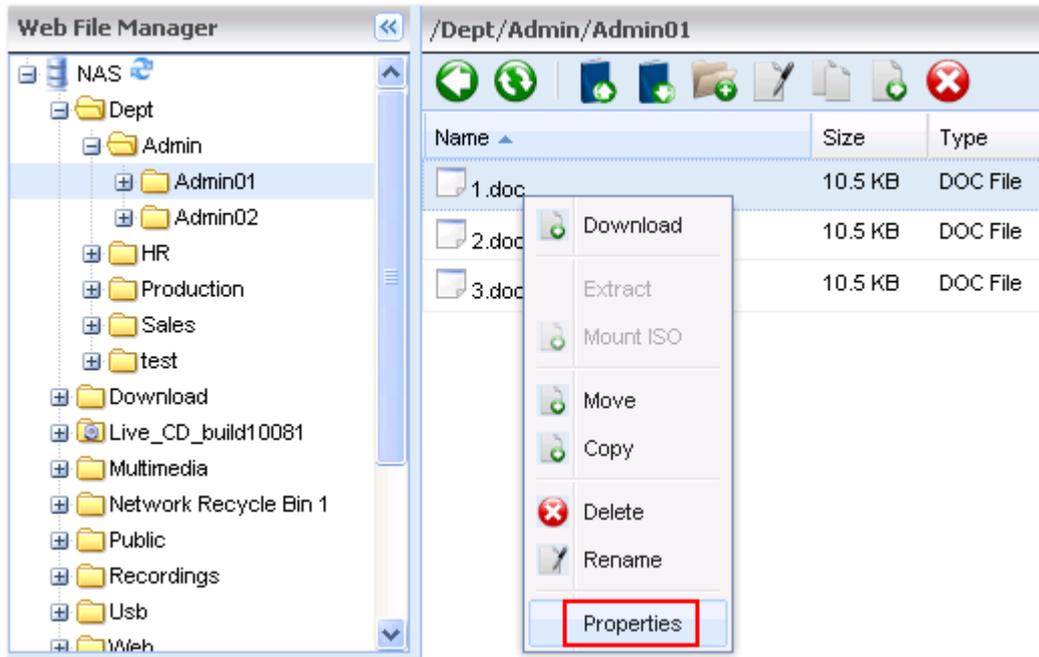


To unmount the share folder, right click the folder name and select 'Unmount'. Click 'Yes' to confirm and then click 'OK' to unmount.



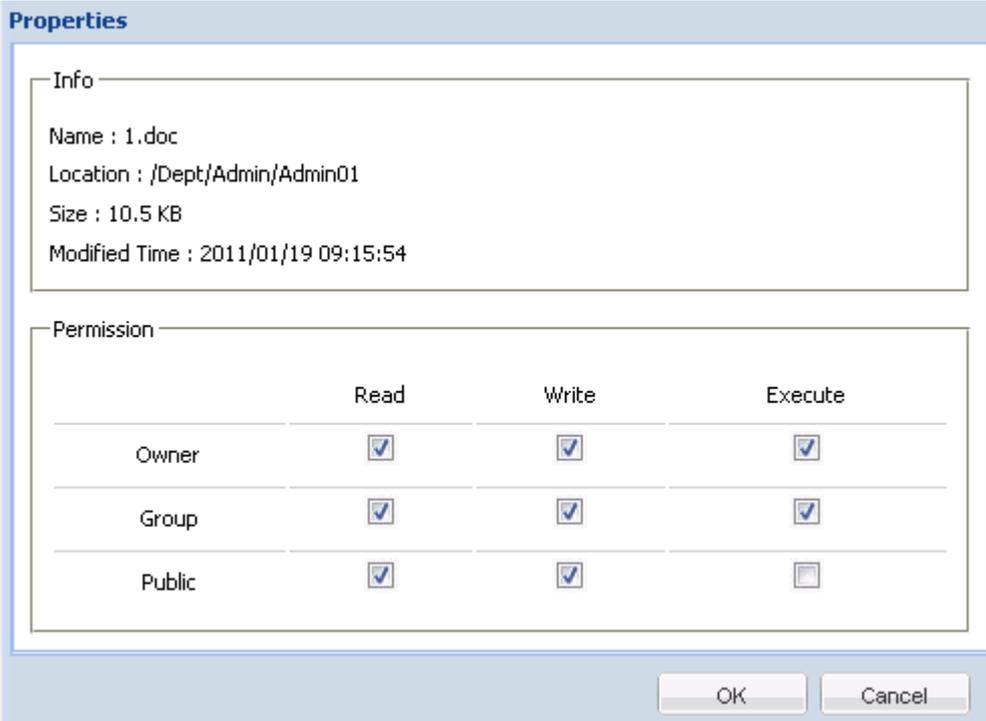
File/Folder Level Permissions

You can set file or folder level permissions on the NAS by Web File Manager. Right click a file or folder and select 'Properties'.

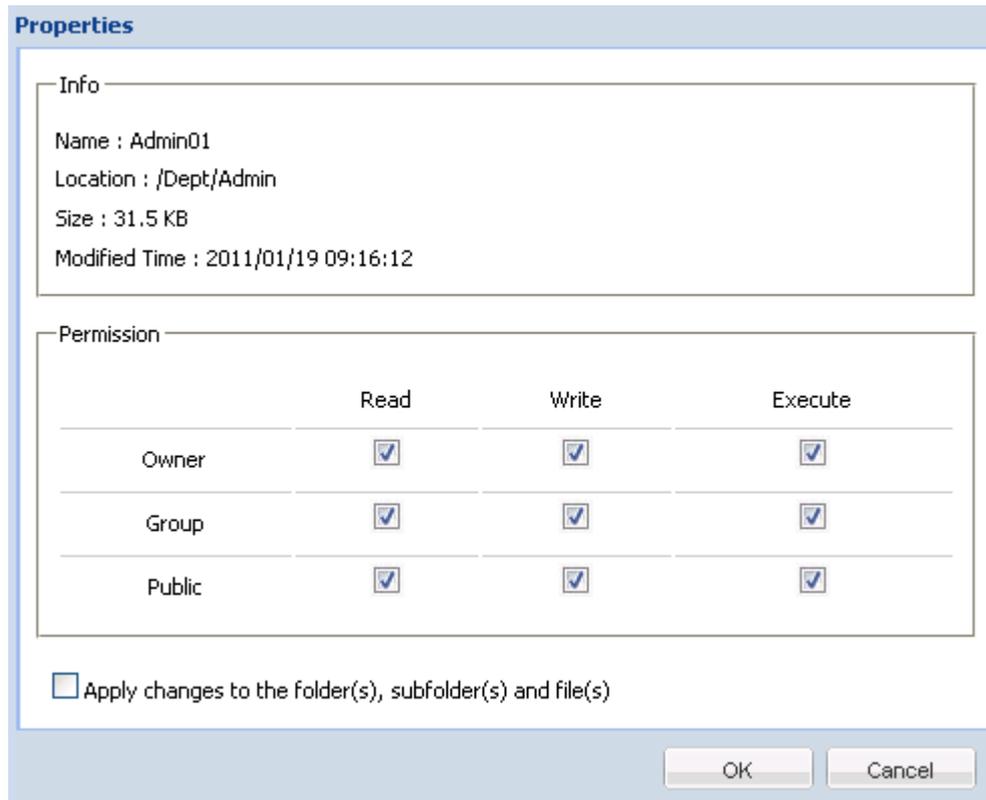


If the 'Advanced Folder Permissions' option is disabled in 'Access Right Management' > 'Share Folder' > 'Advanced Options', the following settings will be shown. Define the Read, Write, and Execute access rights for Owner, Group, and Public.

- Owner: Owner of file or folder.
- Group: Group owner of the file or folder.
- Public: Any other (local or domain member) users who are not the owner or a member of the group owner.

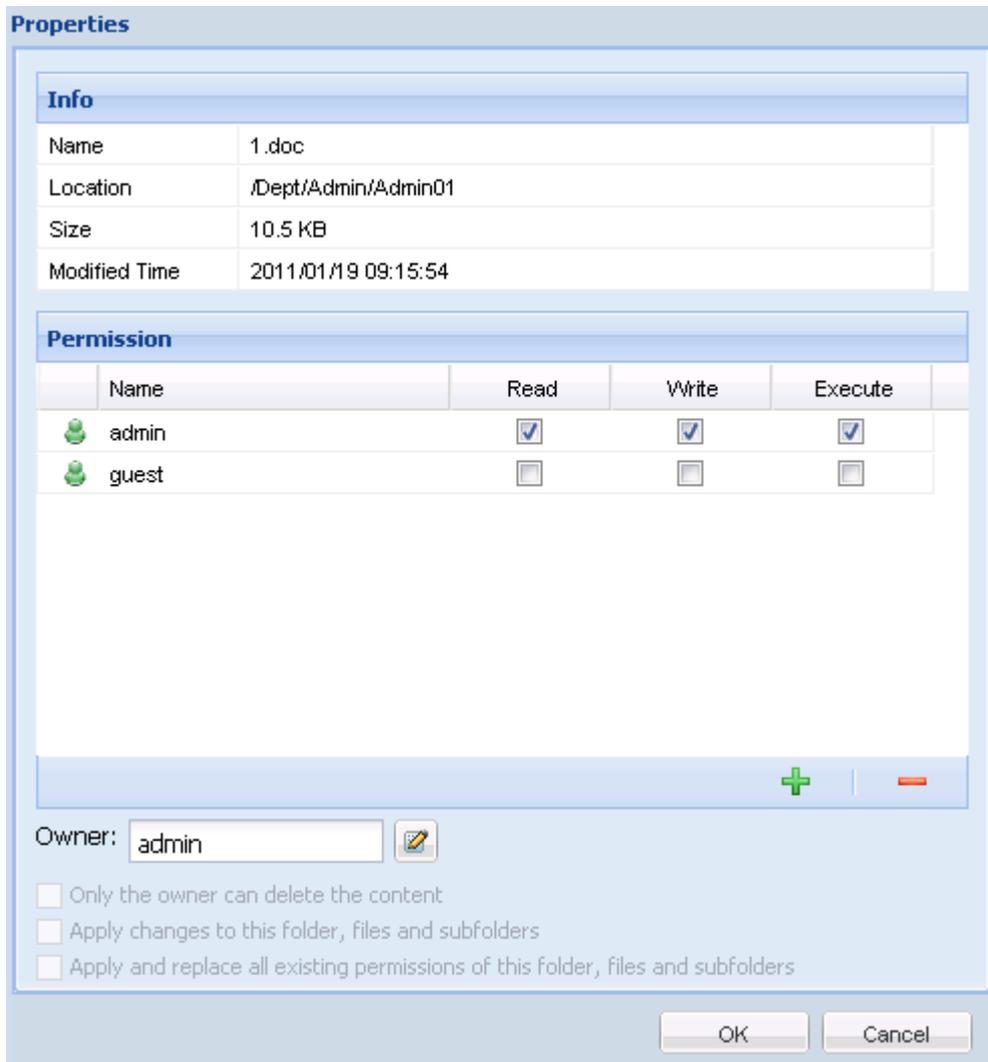


If a folder is selected, you can choose 'Apply changes to folder(s), subfolder(s) and file(s)' to apply the settings to all the files and subfolders within the selected folder. Click 'OK' to confirm.



If the 'Advanced Folder Permissions' option is enabled in 'Access Right Management' > 'Share Folder' > 'Advanced Options', you will be able to specify the file and folder permissions by users and user groups.

Click .



The image shows a 'Properties' dialog box for a file named '1.doc'. It is divided into two main sections: 'Info' and 'Permission'.

Info Section:

Name	1.doc
Location	./Dept/Admin/Admin01
Size	10.5 KB
Modified Time	2011/01/19 09:15:54

Permission Section:

Name	Read	Write	Execute
admin	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
guest	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Below the permission table, there is a green plus icon and a red minus icon. At the bottom of the dialog, the 'Owner' is set to 'admin' with an edit icon. There are three unchecked checkboxes:

- Only the owner can delete the content
- Apply changes to this folder, files and subfolders
- Apply and replace all existing permissions of this folder, files and subfolders

At the very bottom, there are 'OK' and 'Cancel' buttons.

Select the users and user groups and specify the Read, Write, Execute rights. Click 'Add'.

Select users and groups

Local Users

<input type="checkbox"/> Name	Read	Write	Execute
<input checked="" type="checkbox"/> test	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Alex	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/> test1	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/> test2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> test1234	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> jauss	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> testsss	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Page 1 / 1

Display Item : 1 ~ 7 , Total : 7

To remove the permissions on the list, select the user(s) or user group(s) and click .

Properties

Info

Name	1.doc
Location	/Dept/Admin/Admin01
Size	10.5 KB
Modified Time	2011/01/19 09:15:54

Permission

Name	Read	Write	Execute
 admin	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
 guest	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
 test	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
 test1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
 test2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

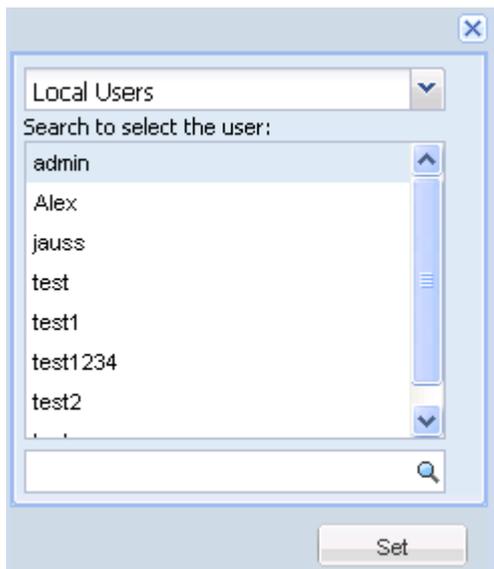
 

Owner: 

Only the owner can delete the content
 Apply changes to this folder, files and subfolders
 Apply and replace all existing permissions of this folder, files and subfolders

OK Cancel

You can also define the file and folder owner by clicking . Select a user from the list or search a user name. Then click "Set".



The following options are available for folder permission settings. You are recommended to configure folder permissions and subfolder permissions in 'Access Right Management' > 'Share Folders'¹⁶⁹.

- Only the owner can delete the contents: When you apply this option to a folder, the first-level subfolders and files can be deleted only by their owner.
- 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.

Properties

Info

Name	Admin01
Location	./Dept/Admin
Size	31.5 KB
Modified Time	2011/01/19 09:16:12

Permission

Name	Read	Write	Execute
admin	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
guest	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Owner:

Only the owner can delete the content
 Apply changes to this folder, files and subfolders
 Apply and replace all existing permissions of this folder, files and subfolders

OK Cancel

7.2 Multimedia Station

Multimedia Station is a web-based application which lets you play your photos, music, and videos on the NAS by a web browser. You can also share the multimedia files with your friends and publish photos to popular social networking sites such as Facebook, Plurk, Twitter, Blogger, and so on.

To use Multimedia Station, follow the steps below.

1. Go to 'Network Services' > 'Web Server'. Turn on the web server feature. To allow access to Multimedia Station by HTTPS, turn on the option 'Enable Secure Connection (SSL)'.
2. Go to 'Application Servers' > 'Multimedia Station'. Enable the service. Next, go to the web page of Multimedia Station by http://NAS_IP:80/MSV2/ or https://NAS_IP:8081/MSV2/ (secure connection). The port number may be different according to your own settings.

Multimedia Station

Multimedia Station

Enable Multimedia Station

Show service link on the login page

After enabling this service, you may click one of the following links to enter Multimedia Station.

<http://10.8.12.46:80/MSV2/>

<https://10.8.12.46:8081/MSV2/>

Rescan media library

Daily start time: :

Reset admin password

Password :

Verify Password :

3. The first time you connect to Multimedia Station, enter a new password for the 'admin' account. Then click 'Submit'. If you have created user accounts for the previous version of Multimedia Station, you may select 'Keep existing user accounts' to reserve the user accounts. Note that the user accounts (including admin) of Multimedia Station are different from the system user accounts on the NAS. For security concern, you are highly suggested to set a different password for admin. The password must be 1 to 16 characters long. It can only contain A-Z, a-z, 0-9, -, !, @, #, \$, %, _.

Welcome

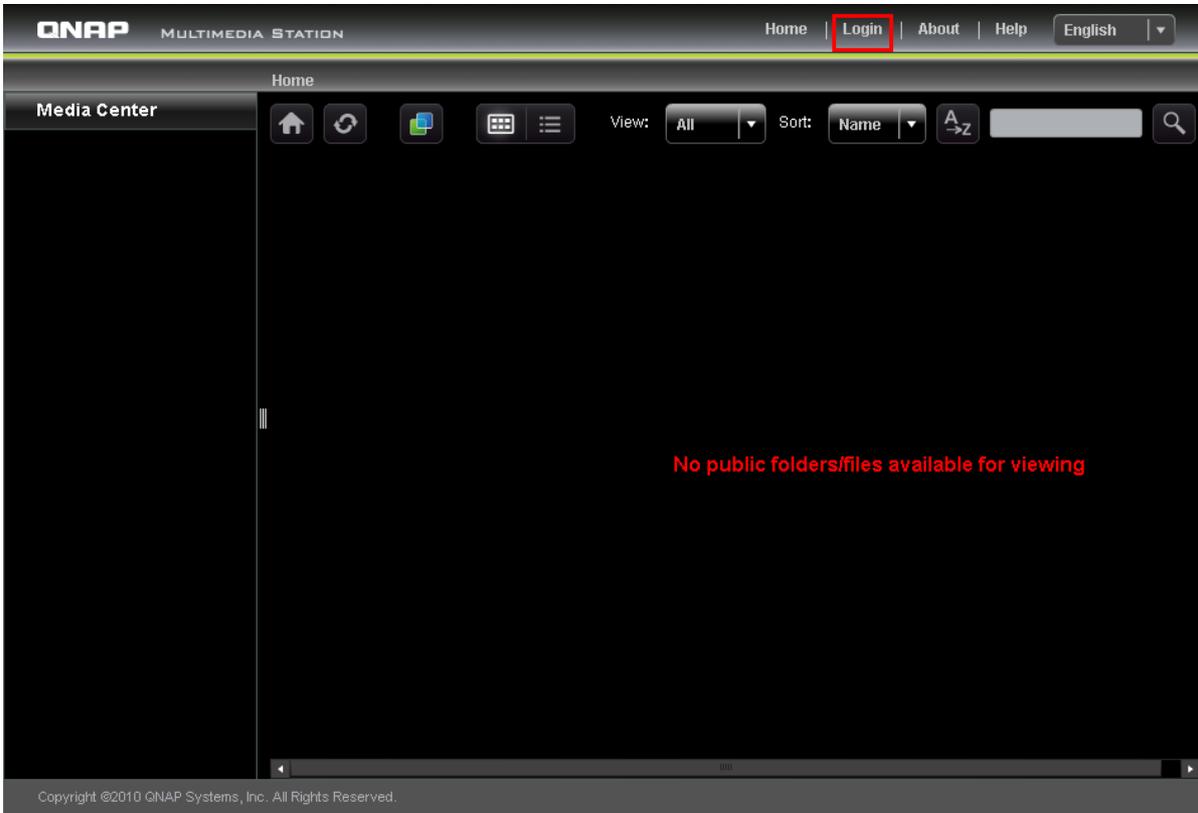
Welcome to Multimedia Station v2. Please enter the new password for the "admin" account and select the option "Keep existing user accounts" to reserve the user accounts and the access right settings of the previous version of Multimedia Station.

Note that the user accounts (including "admin") of Multimedia Station are different from the system user accounts. For security concern, it is suggested to set a different password for "admin".

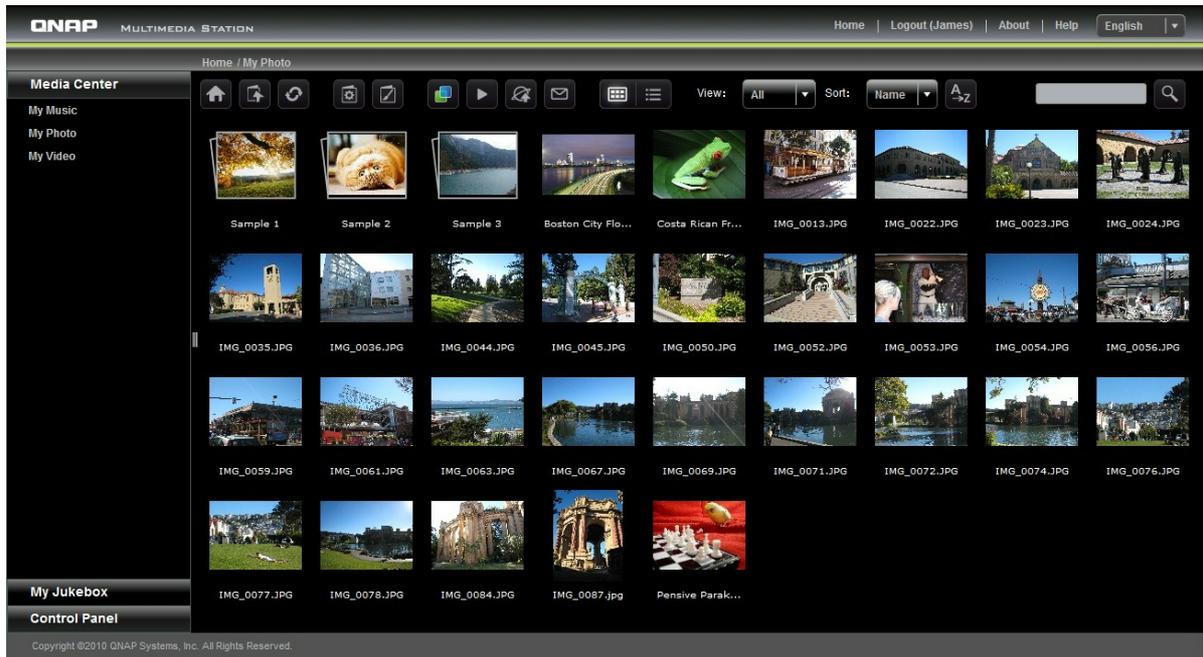
New password :

Verify password :

4. When the page of Multimedia Station is shown, click 'Login'. Enter the user name with access right to this service and the password. If you login as the administrator (admin), you can create new users and configure other advanced settings.



Multimedia Station consists of Media Center, My Jukebox, and Control Panel.

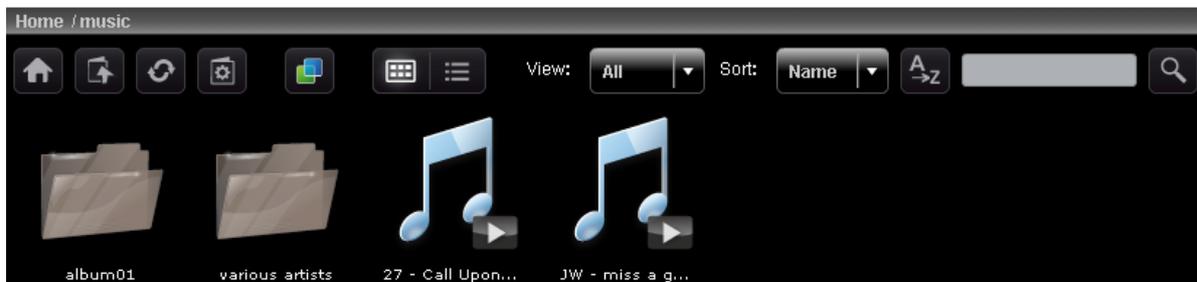


Media Center

The folders and multimedia files of the default network share (Qmultimedia/Multimedia) of Multimedia Station are shown in Media Center. You can view or play the multimedia contents (images, videos, and audio files) on the NAS on the web browser over LAN or WAN.

Supported file format

Type	File format
Audio	MP3
Image	JPG/JPEG, GIF, PNG (Animation will not be shown for animated GIF files)
Video	Playback: FLV, MPEG-4 Video (H.264 + AAC) Transcode: AVI, MP4, M4V, MPG, MPEG, RM, RMVB, WMV (Files will be converted into FLV)



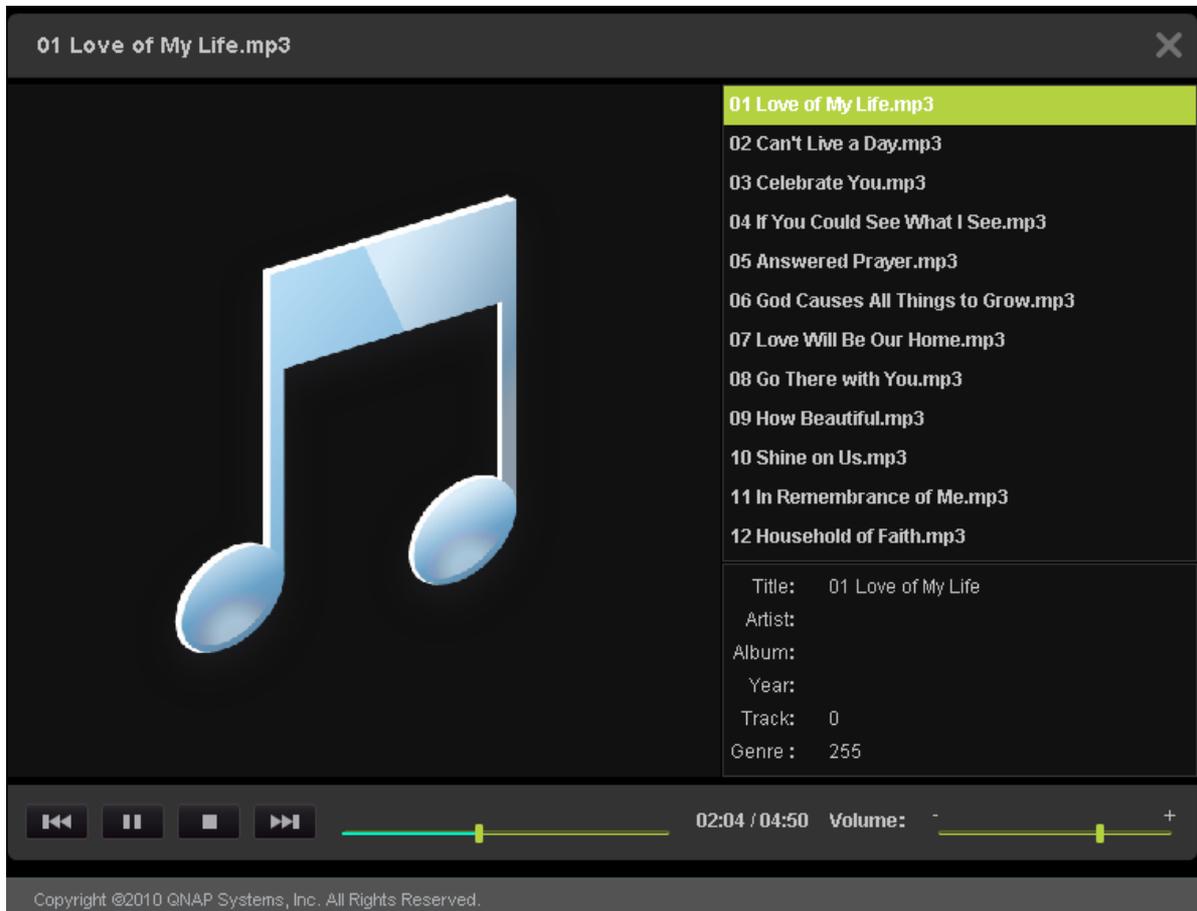
	<p>Home</p> <p>Return to the home directory of Multimedia Station</p>
	<p>Parent Directory</p> <p>Return to the parent directory</p>
	<p>Refresh</p> <p>Refresh current directory</p>
	<p>Manage Album*</p> <p>You can: 1. Create new album under the current directory and 2. Add new files to this album by copying or uploading files to this directory.</p>
	<p>Set Album Cover*</p> <p>You can set up the album cover for each album/directory by specifying one photo in this album/directory.</p>
	<p>Cooliris</p> <p>Browse your photos in 3-dimensional way with Cooliris. You need to install the Cooliris plug-in for your browser first.</p>
	<p>Slide Show</p> <p>Start slide show. You can set up the photo frame, background music, and animation in the slide show mode.</p>
	<p>Publish*</p> <p>Publish the chosen photos (max. 5 photos) to popular social networking sites. It now supports: Twitter, Facebook, MySpace, Plurk, Windows Live, and Blogger. Note that the album must be set to public (Control Panel > Set Folder Public) before it can be published, and Multimedia Station must be accessible from the Internet. It is suggested to set up the DDNS for the NAS before using this feature.</p>
	<p>E-mail*</p> <p>Send photos (max. 5 photos) to friends by e-mails. Note that you have to set up the SMTP server in the NAS administration console before using this feature.</p>
	<p>Thumbnails</p> <p>You can browse the files in thumbnail view. This is the default view in Multimedia Station.</p>
	<p>Details</p> <p>You can browse the files in detailed view. It supports the following functions: Open, Rename, Delete, Download, and Full Image View.</p>

	<p>Sort</p> <p>You can choose to sort files alphabetically in ascending or descending order.</p>
	<p>Search</p> <p>You can search files by this function. Note that it only supports search within the current directory.</p>

*Options that can be operated by administrators only.

Play music

The NAS supports playing music files on the web browser. Simply click a file (MP3) on the web page, the NAS will start playing it. If you click a music file in a folder, all other supported music files in the folder will also be shown in the playlist and played. Click 'X' to exit the playback page.



The screenshot displays a music player interface with a dark theme. At the top left, the title "01 Love of My Life.mp3" is shown next to a close button (X). The main area is split into two sections: a large blue 3D musical note icon on the left and a playlist on the right. The playlist lists 12 tracks, with the first track, "01 Love of My Life.mp3", highlighted in green. Below the playlist, the following metadata is displayed:

Title:	01 Love of My Life
Artist:	
Album:	
Year:	
Track:	0
Genre :	255

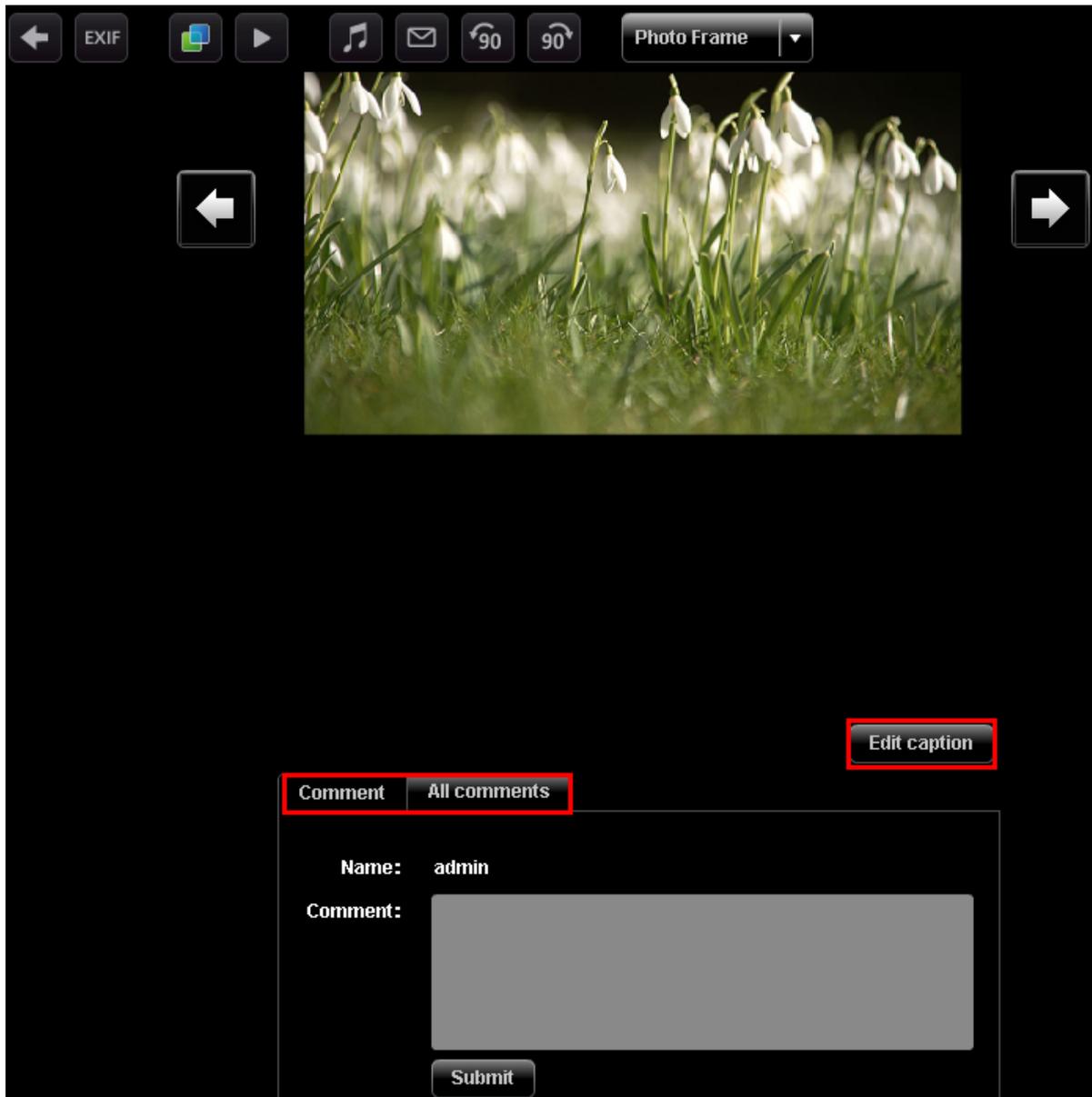
At the bottom, there is a playback control bar with buttons for previous, play/pause, stop, and next. A progress bar shows the current time as 02:04 out of a total duration of 04:50. To the right of the progress bar is a volume control slider with minus and plus signs.

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View image files

When viewing an image file, you can click 'EXIF' to view the detailed information such as file name, size, date, and aperture. To add a caption for the file, click 'Edit caption' and enter the description. The description must not exceed 512 characters.

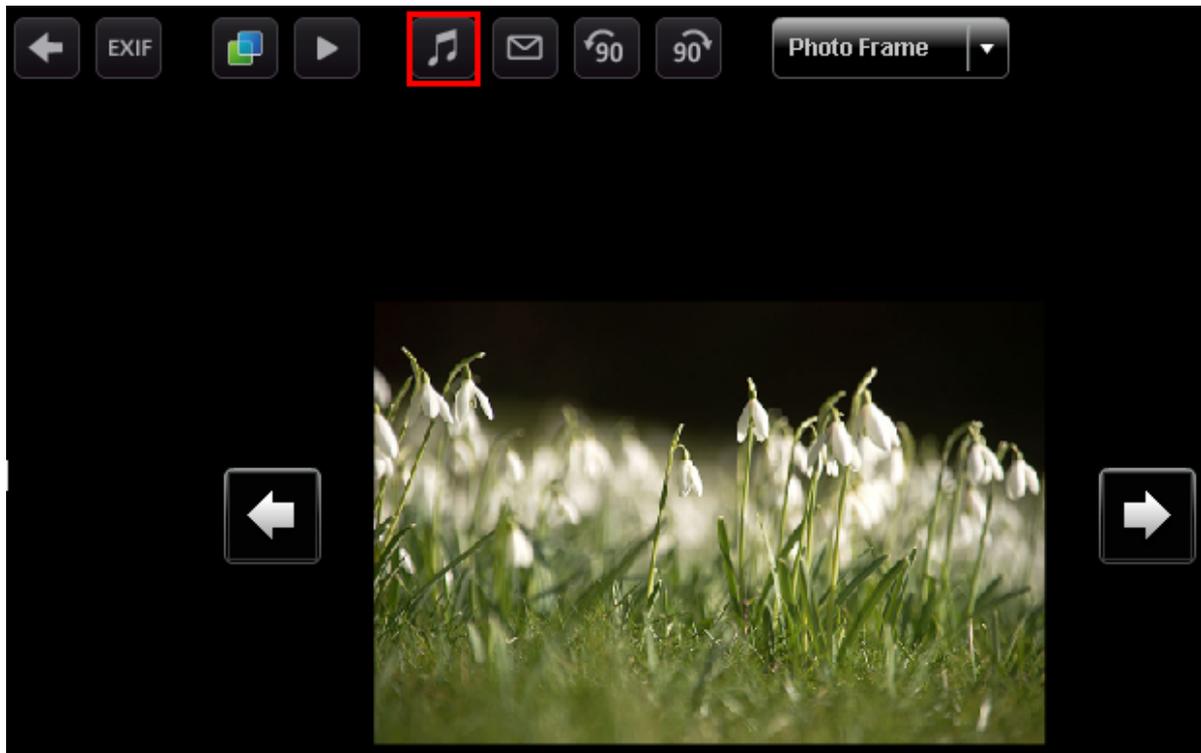
You can also submit your comments on the image file and view the comments from other users on 'All comments'. Each comment cannot exceed 128 characters.



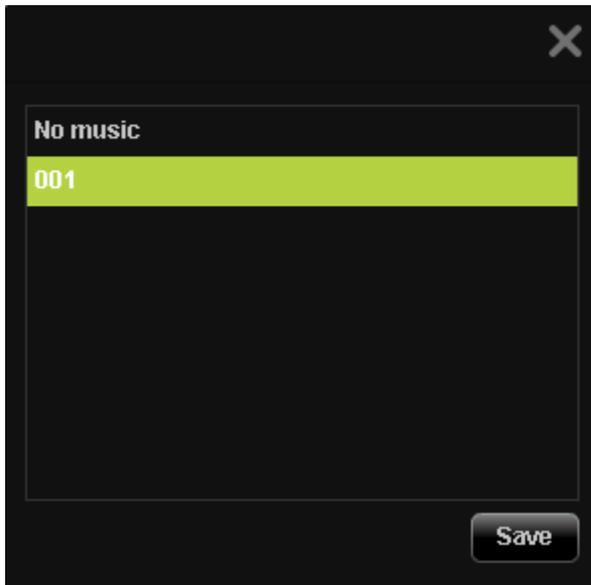
Set background music

To set the background music of an image file or a folder of image files, make sure you have created a playlist in 'Control Panel' > 'Playlist Editor' (to be introduced later) in Multimedia Station.

Open an image file in Media Center and click .



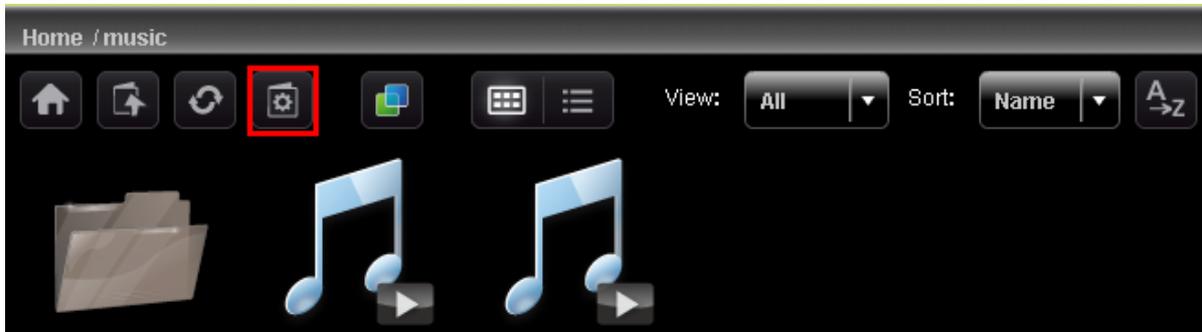
Select the playlist and click 'Save'. To remove the background music, you can select 'No music'.



Create album

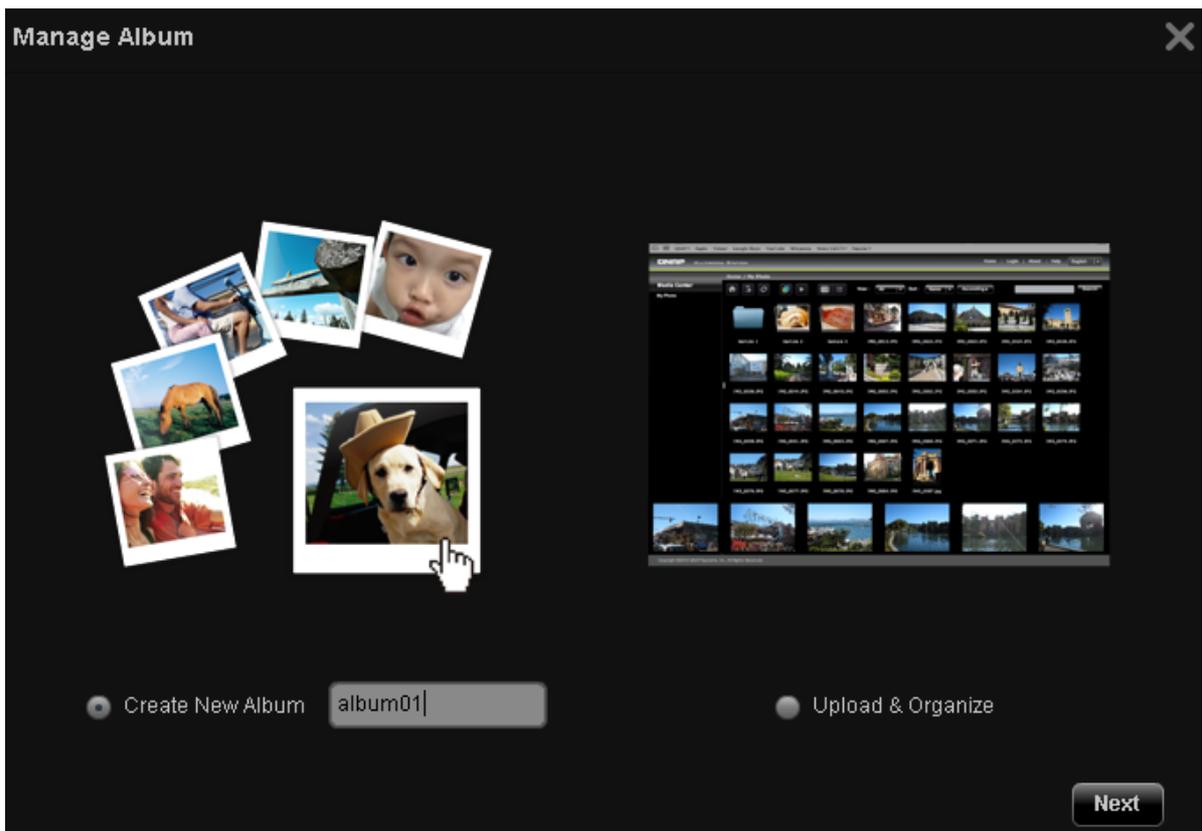
To create an album (folder) by the web-based interface on Multimedia Station, locate the directory in

Media Center. Click  (Create Album).

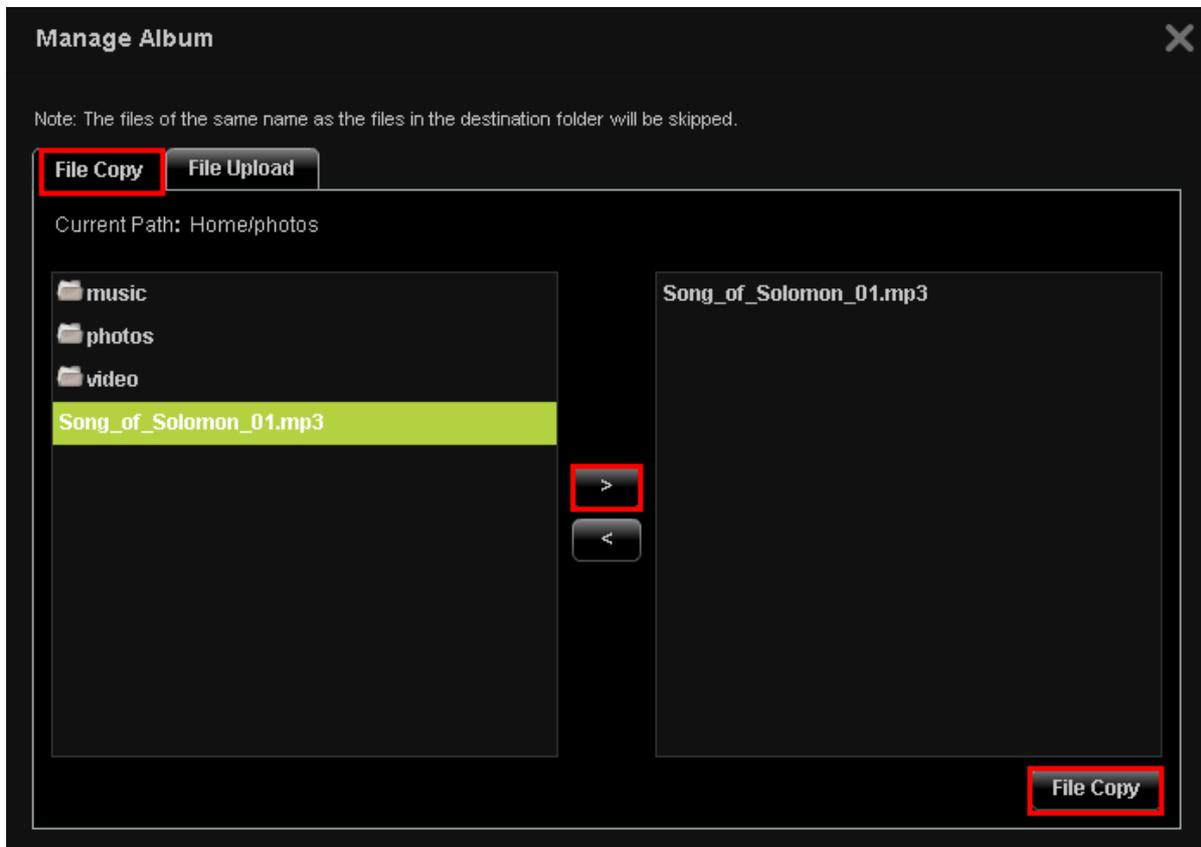


Select 'Create New Album' and enter the album name. Click 'Next'.

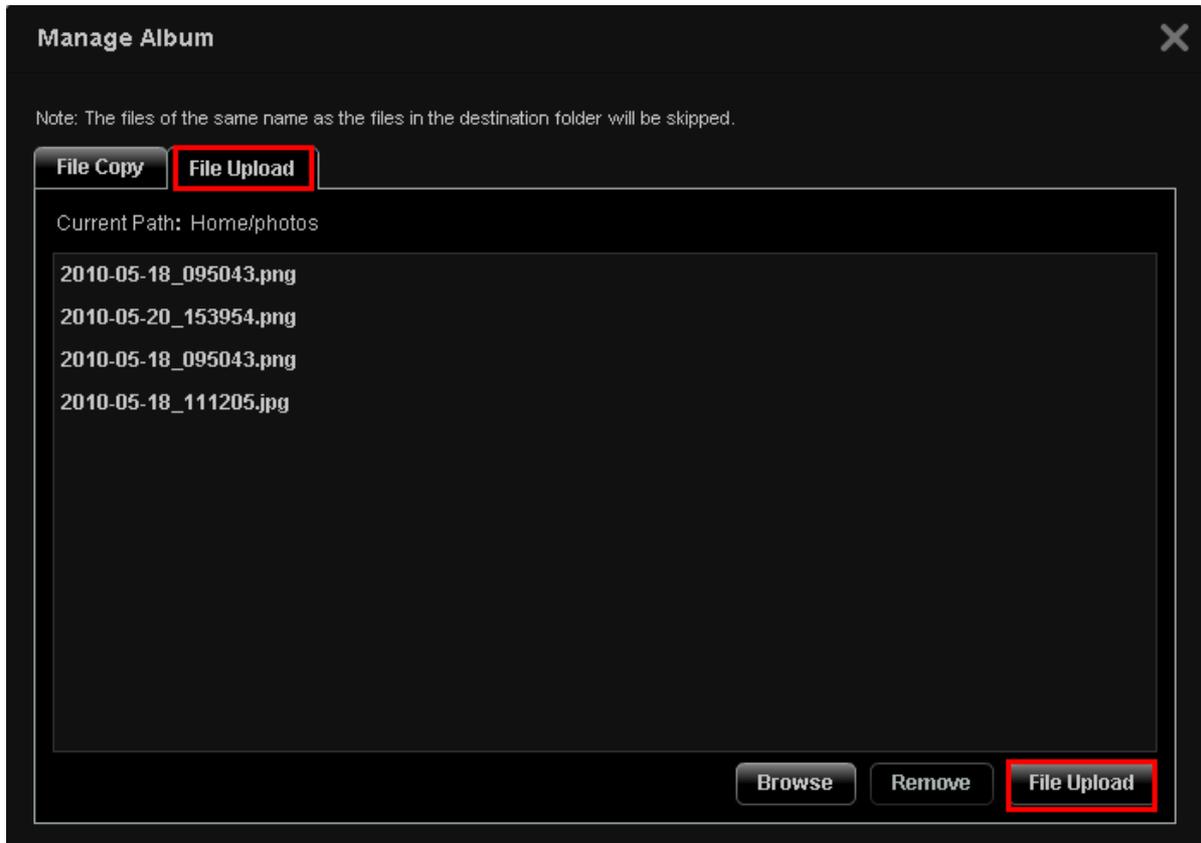
The album name must be 1 to 64 characters long, and cannot contain | \ : ? " < > *



To copy the files from other location in Media center to the album, select 'File Copy', choose the files to copy and click >. Then click 'File Copy' to start copying the files.



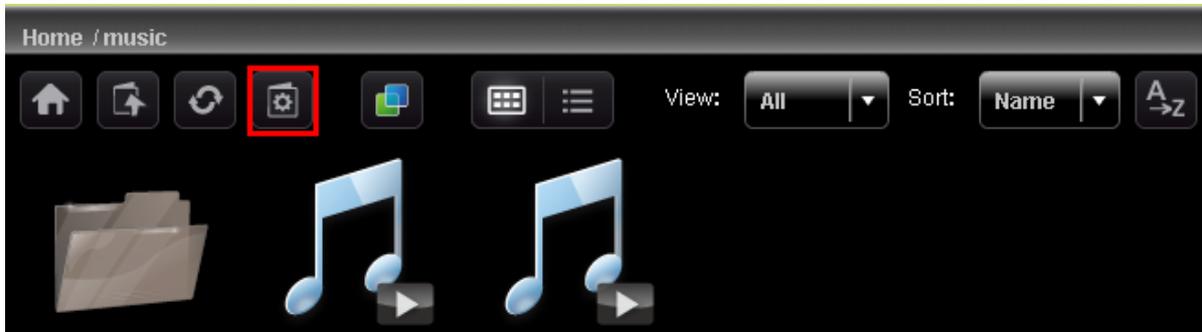
To upload files to the album, click 'Browse' to select the files and click 'File Upload'.



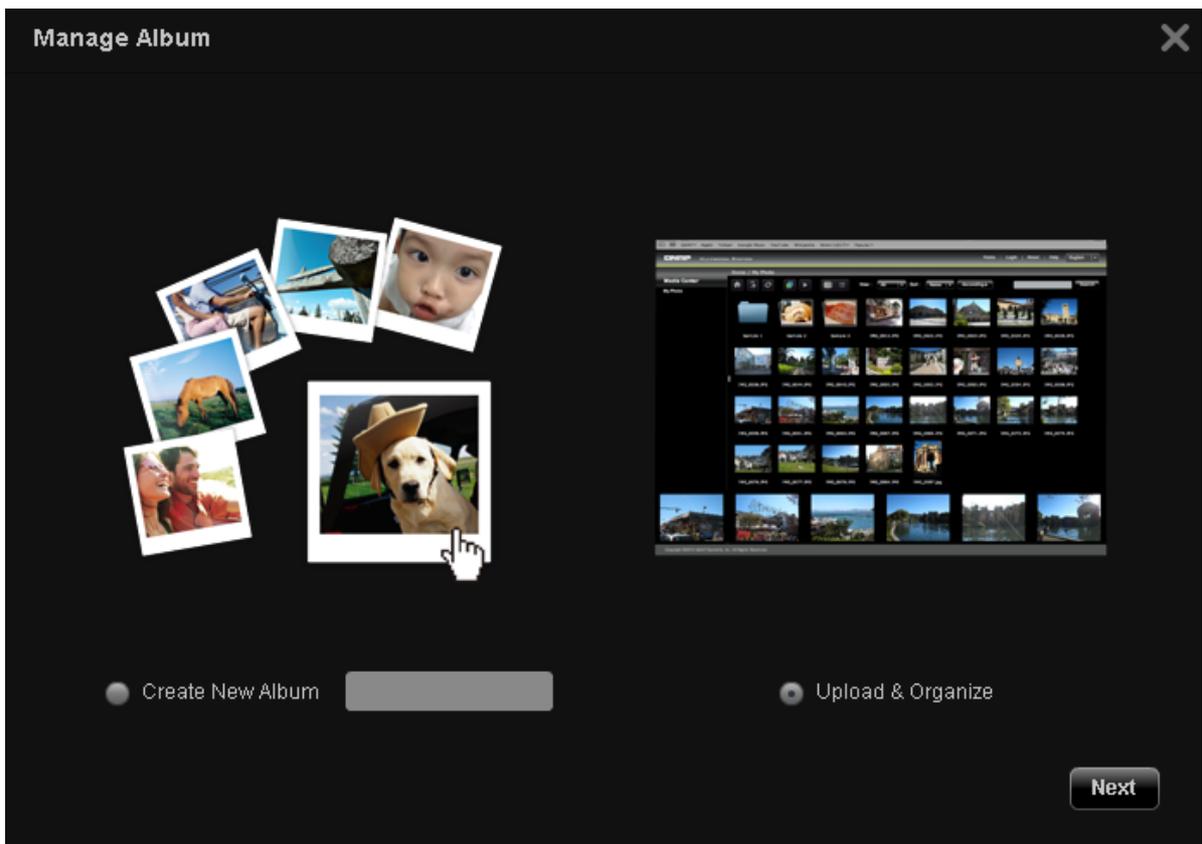
Manage album

To manage an album (folder) by the web-based interface on Multimedia Station, locate the directory in

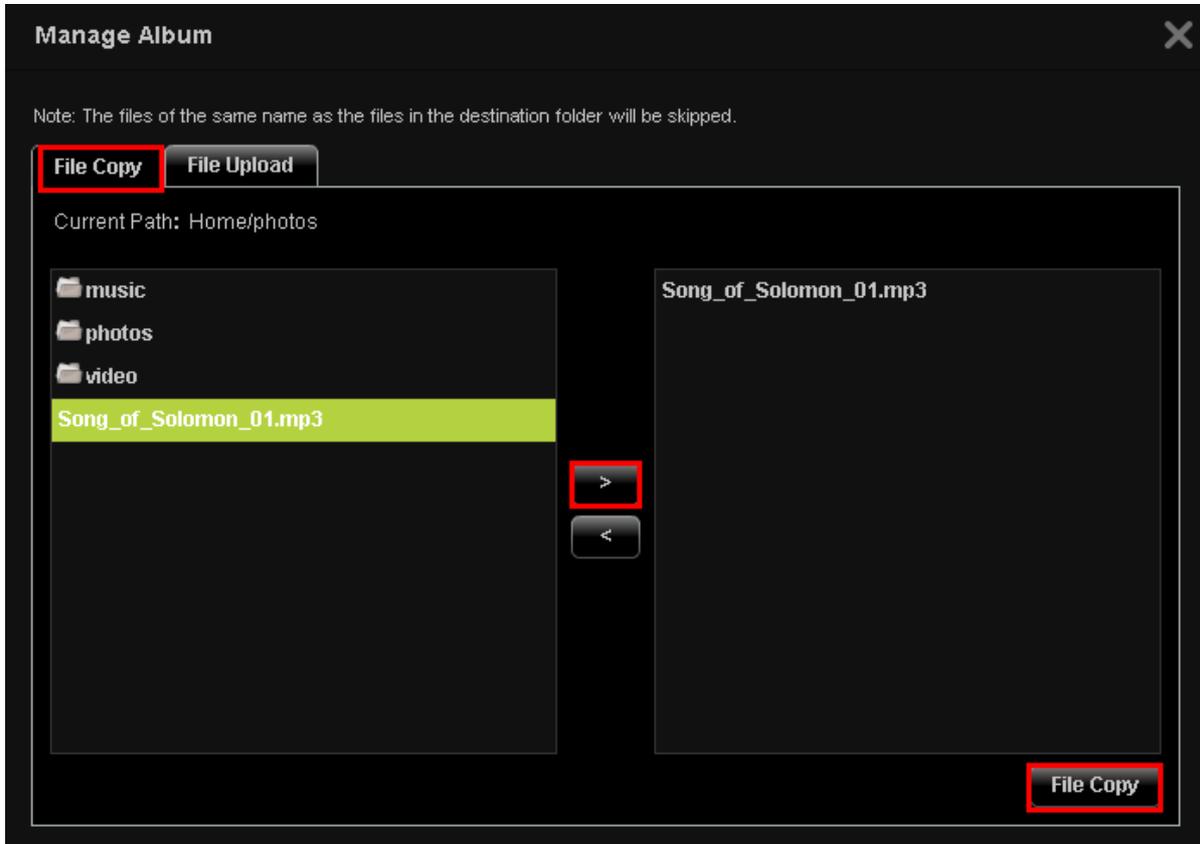
Media Center. Click  (Create Album).



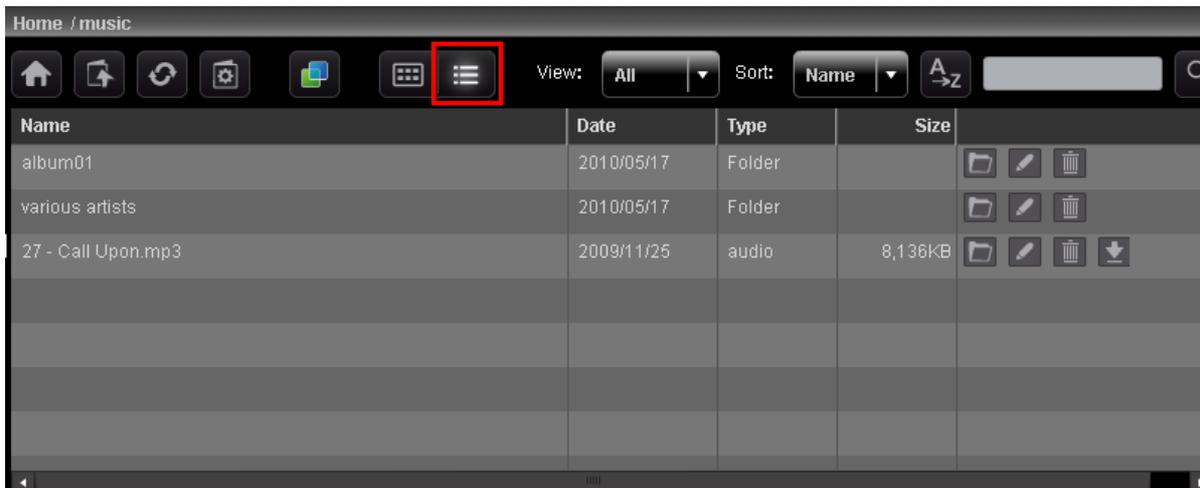
Select 'Upload & Organize' and click 'Next'.



To copy the files from other location in Media center to the album, select 'File Copy', choose the files to copy and click >. Then click 'File Copy' to start copying the files. To upload files to the album, click 'Browse' to select the files and click 'File Upload'.

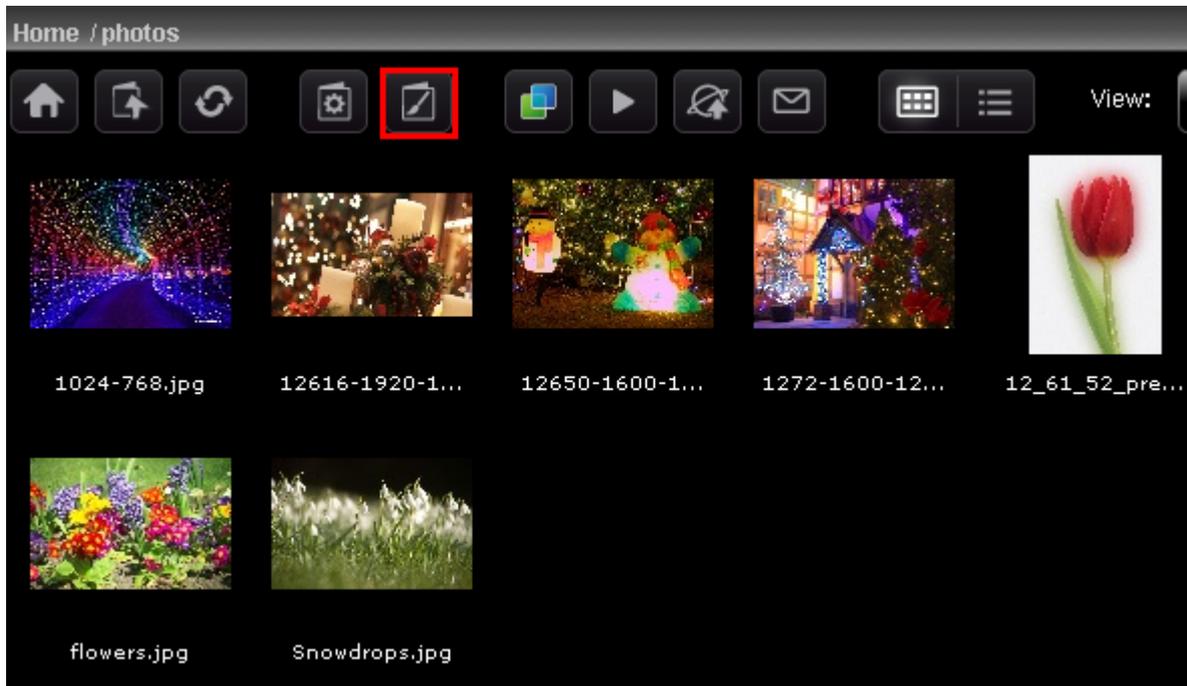


You can click  to browse the multimedia contents in details and click the icons to open, rename, delete, or download the files or folders.

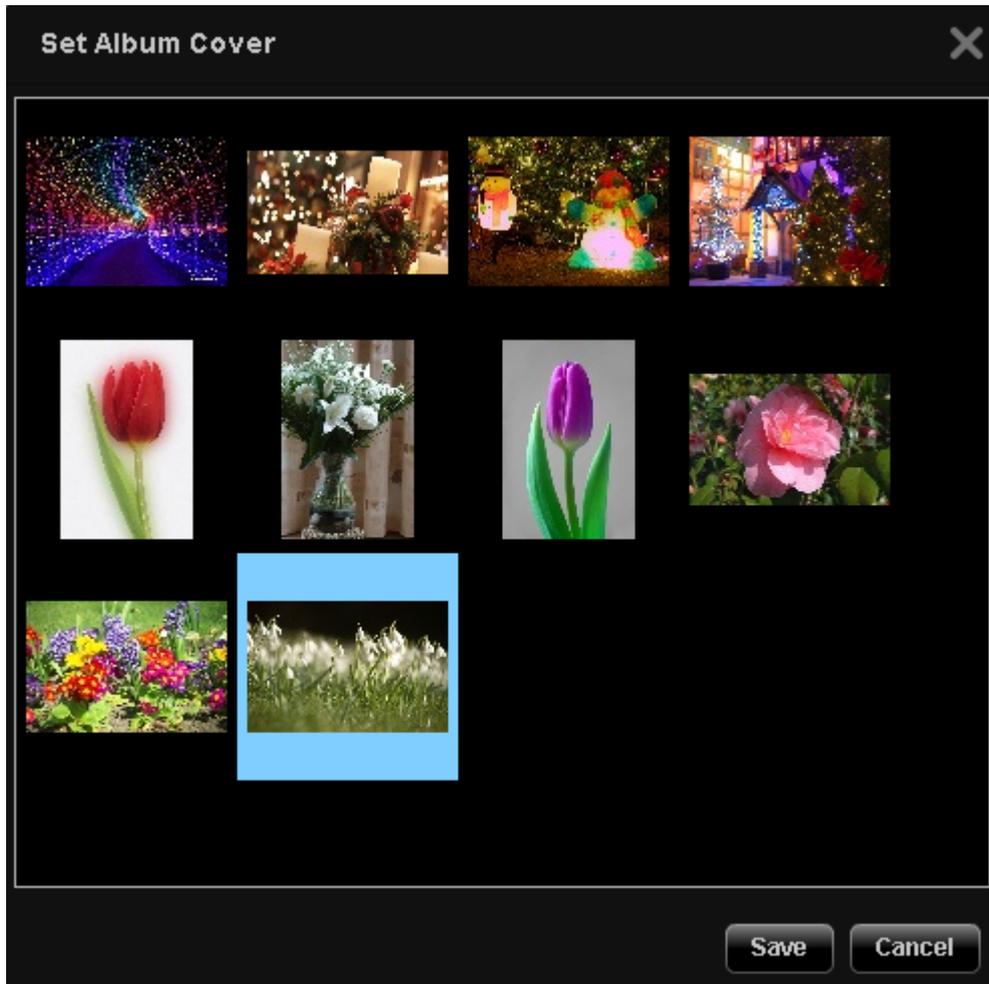


Set album cover

To set an image file as the album cover, click .



Select the image file and click 'Save'.

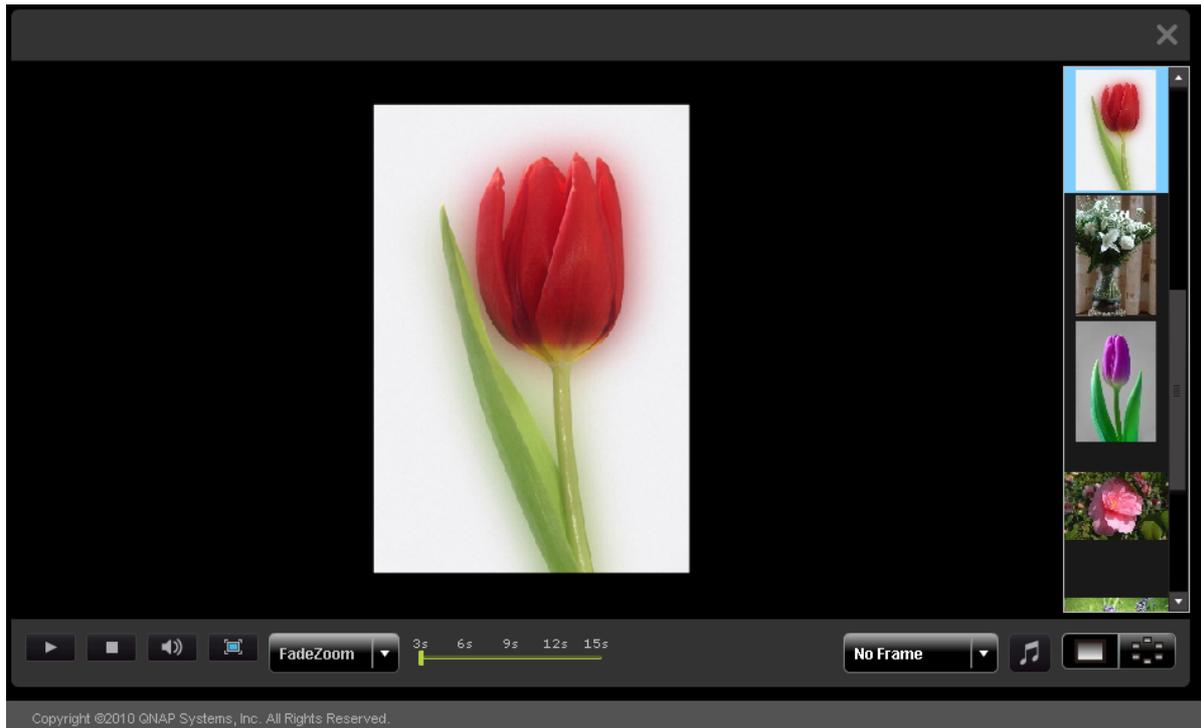


Slide Show



Click  to view multiple image files in slide show. Select the playback speed (3s/6s/9s/15s) and the slide show effect (for full screen display) from the drop-down menu. You can also select the photo

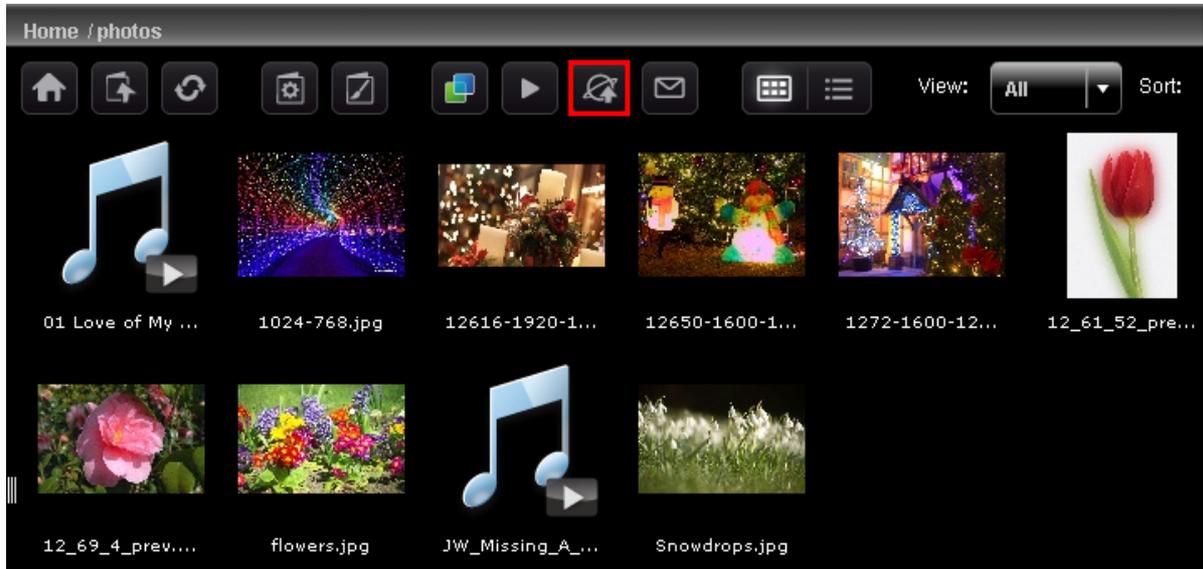
frame for displaying the image file. To view the image files in 3-dimensional (3D) display, click .



Publish image files

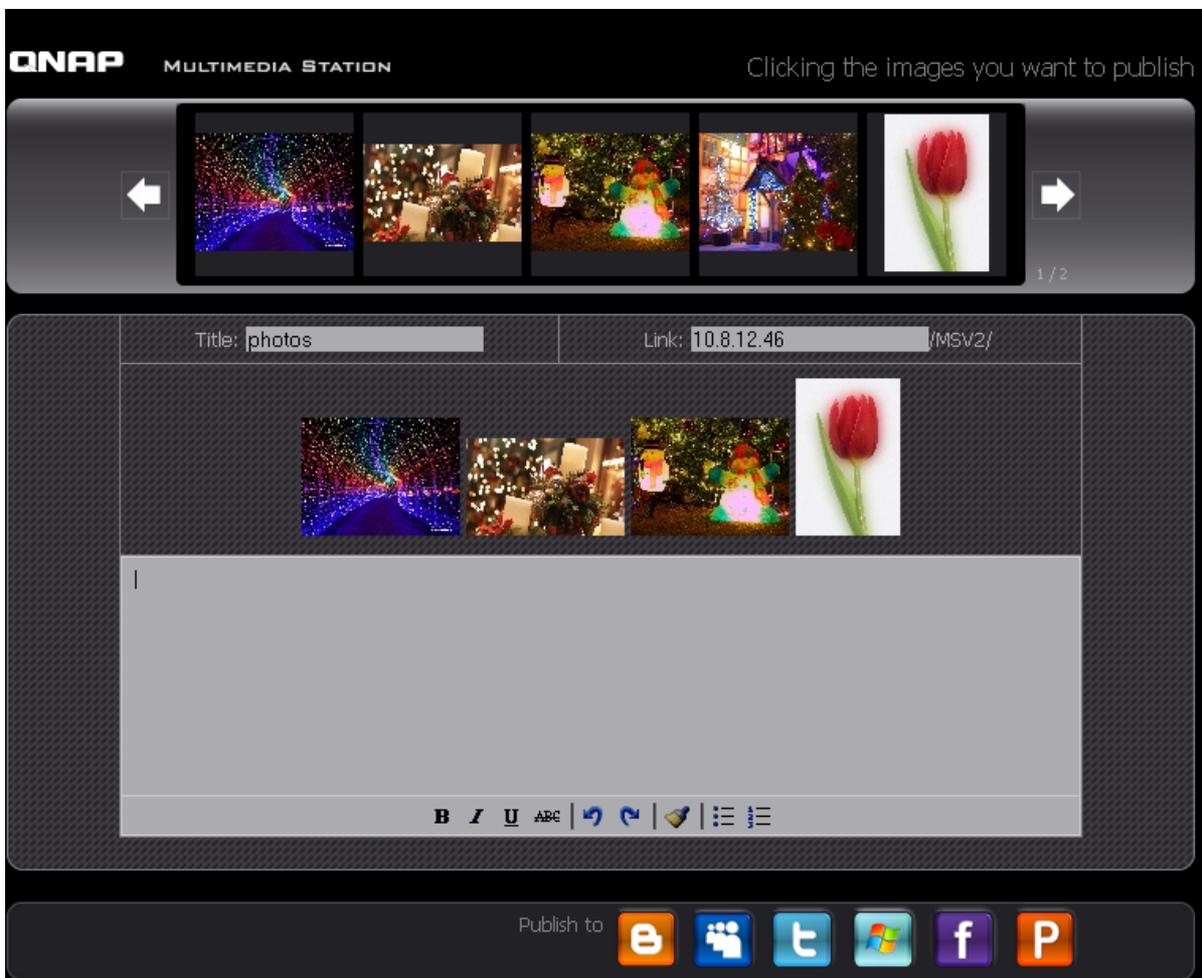
You can publish the image files on Multimedia Station to social networking sites such as Facebook and

Twitter. Click .



Select the image files to publish. You can publish maximum 5 photos at a time. Enter the title and description. Then select the website to publish the files to and enter the login information of the website. Note that the album must be set to public (Control Panel > Set Folder Public) before it can be published, and Multimedia Station must be accessible from the Internet. It is suggested to set up the DDNS for the NAS before using this feature.

Field	Limitation
Title	Maximum number of characters: 256
Link (the IP address or host name of the NAS)	Support alphanumeric characters, dot (.), and slash (/) only Maximum number of characters: 256
Description	Maximum number of characters: 1024



Email image files

To email the image files, make sure SMTP server settings have been correctly configured on the NAS.

Click .

Enter the information and click 'Send'.

Field	Limitation
Subject	Maximum number of characters: 128
My Name	The name only supports alphabets (A-Z and a-z), numbers (0-9), dash (-), and underscore (_)
My Email	Maximum number of characters: 128
Friend's Name	Maximum number of characters: 128
Friend's Email	Maximum number of characters: 128
Message	Maximum number of characters: 1024

QNAP MULTIMEDIA STATION
Clicking the images you want to publish











1 / 2

Selected Images

Subject:

My Name:

My Email:

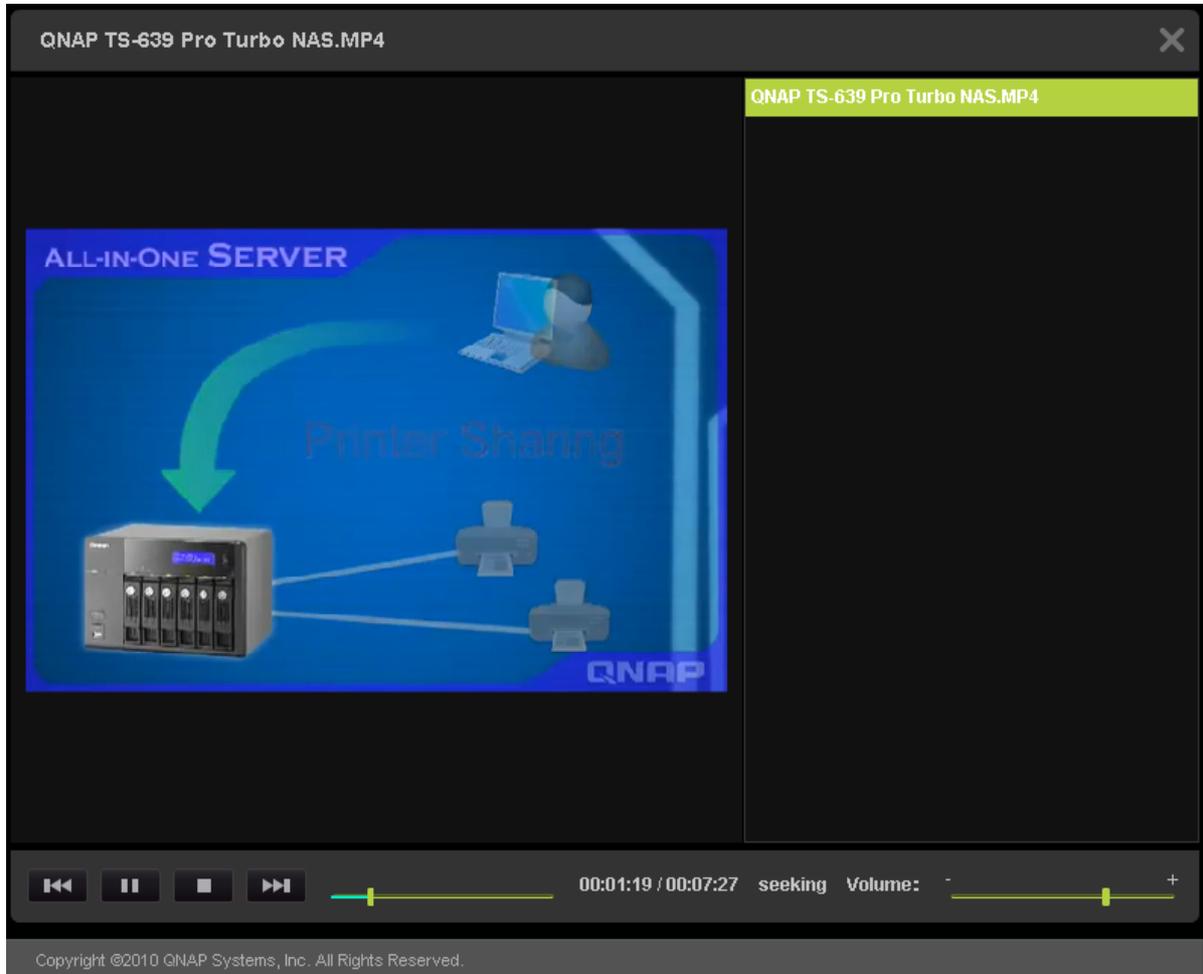
Friend's Name:

Friend's Email:

Message:

Play video

The NAS supports playing video files on the web browser. Simply click a video file on the web page, the NAS will start playing it. If you click a video file in a folder, all other supported video files in the folder will also be shown in the playlist and played. Click 'X' to exit the playback page.

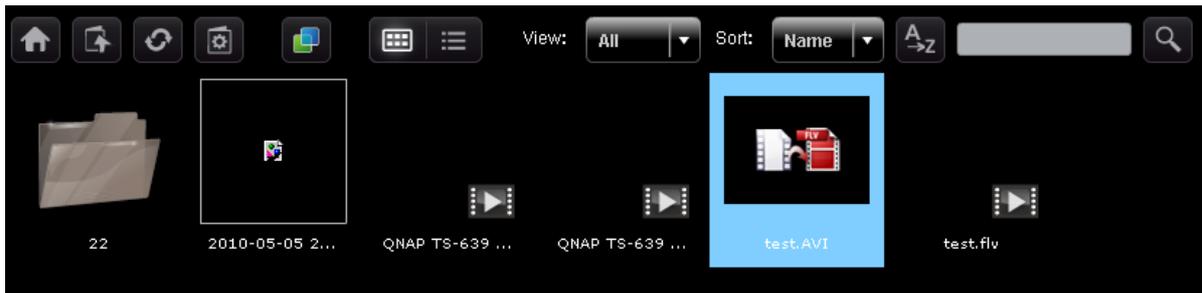


Transcode video

If the video files are in AVI, M4V, MPG/MPEG, RM/RMVB, WMV formats, you need to transcode the file in order to play it on Multimedia Station properly. A video file which can be transcoded is shown with an icon like below in thumbnail view.



Click the icon and confirm to perform video transcoding. Wait patiently when transcoding is in process.



The video will be converted into FLV format. You can then play it on your web browser. Only administrators are allowed to transcode a video.

QNAP does not guarantee all video formats or codecs are supported. You are highly recommended to convert the video files into the formats that Multimedia Station supports before uploading the files to the NAS.

Name	Date	Type	Size	
22	2010/05/17	Folder		
2010-05-05 22-00-07~22-01-09.avi	2010/05/17	video	2,010KB	
QNAP TS-639 Pro Turbo NAS.MP4	2010/05/13	video	27,849KB	
QNAP TS-639 Pro Turbo NAS_2.MP4	2010/05/17	video	27,852KB	
test.AVI	2010/05/17	video	129,870KB	
test.flv	2010/05/17	video	40,477KB	

My Jukebox

You can create playlists of music files and play them in My Jukebox. The album art and its information will be read from the ID3 tag automatically if applicable.

To create or edit your own playlist for My Jukebox, go to 'Control Panel' > 'Playlist Editor'. Note that only the administrators can edit the playlists. The playlists in My Jukebox will be shared with all the users of Multimedia Station.

Enter the user information. The user name only supports alphabets (A-Z and a-z), numbers (0-9), dash (-), and underscore (_). The user name cannot exceed 32 characters.

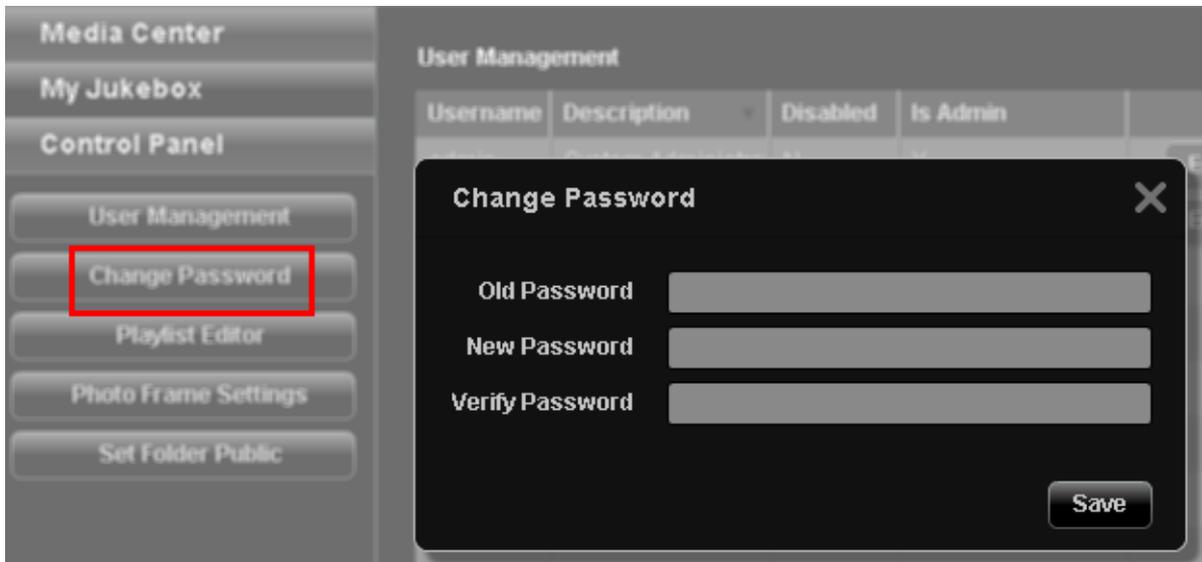
Specify whether or not the user is an administrator and the folders that the user can or cannot access. Click 'Save'. Note that the password must be 1 to 16 characters long. It can only contain A-Z, a-z, 0-9, -, !, @, #, \$, %, _, .

The users are shown on the list. You can edit the user information, delete the user, or change the login password. Note that the default account 'admin' cannot be deleted.

User Management						
Username	Description	Disabled	Is Admin			
admin	System Administra	N	Y	Edit User		
test		N	N	Edit User	Delete User	Change Password

Change Password

You can change the administrator password in this section. The password must be 1 to 16 characters long. The password can only contain A-Z, a-z, 0-9, -, !, @, #, \$, %, _.



Playlist Editor

To create a playlist, enter Playlist Editor. Select an existing playlist from the drop down menu or click 'Add' to create a playlist.

Next, select the music files from the left column (folders on Multimedia Station) and click > to add the files to the playlist. Click 'Save' and then 'Close'.

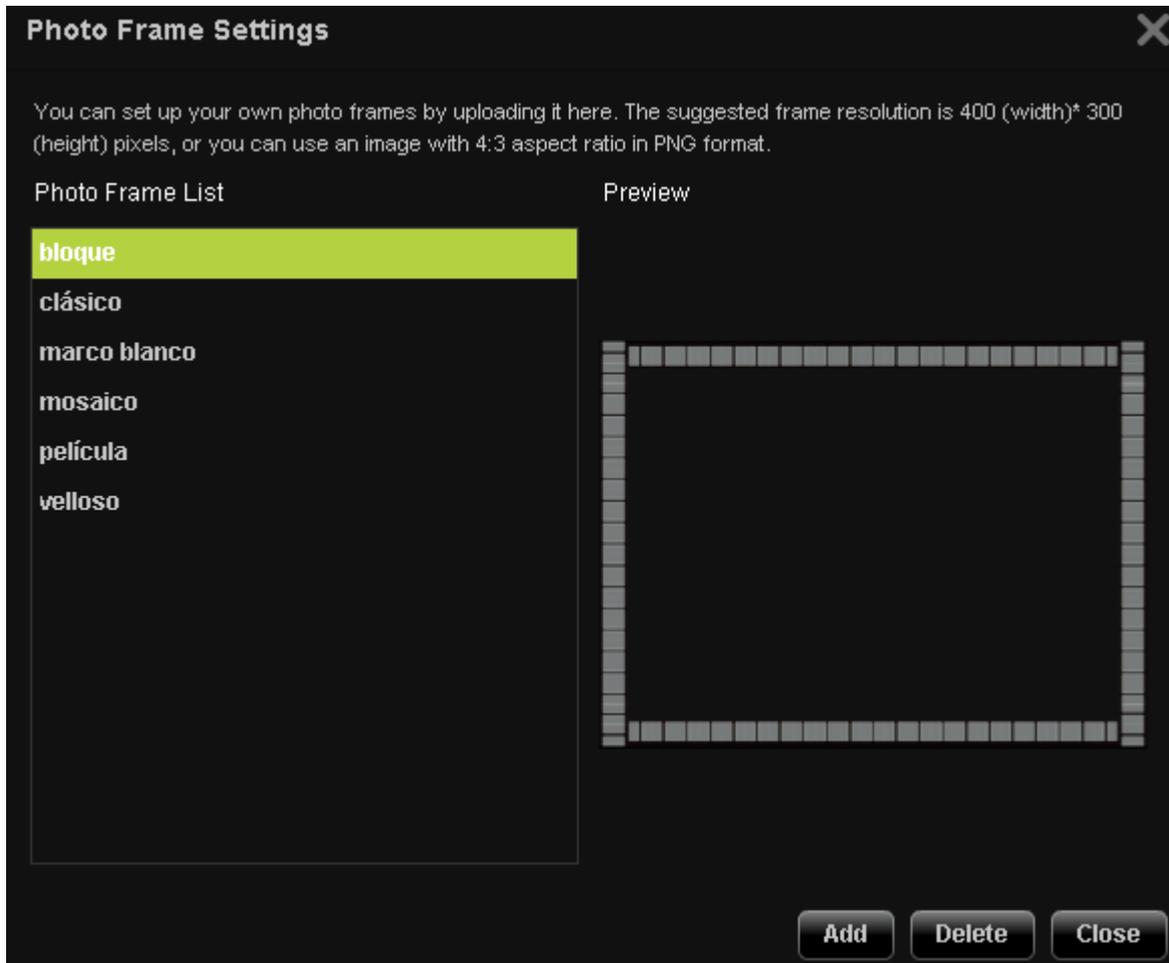
After creating the playlist, you can play it in My Jukebox.

Maximum number of characters in a playlist	24
Maximum number of songs in a playlist	512
Maximum number of playlists	128

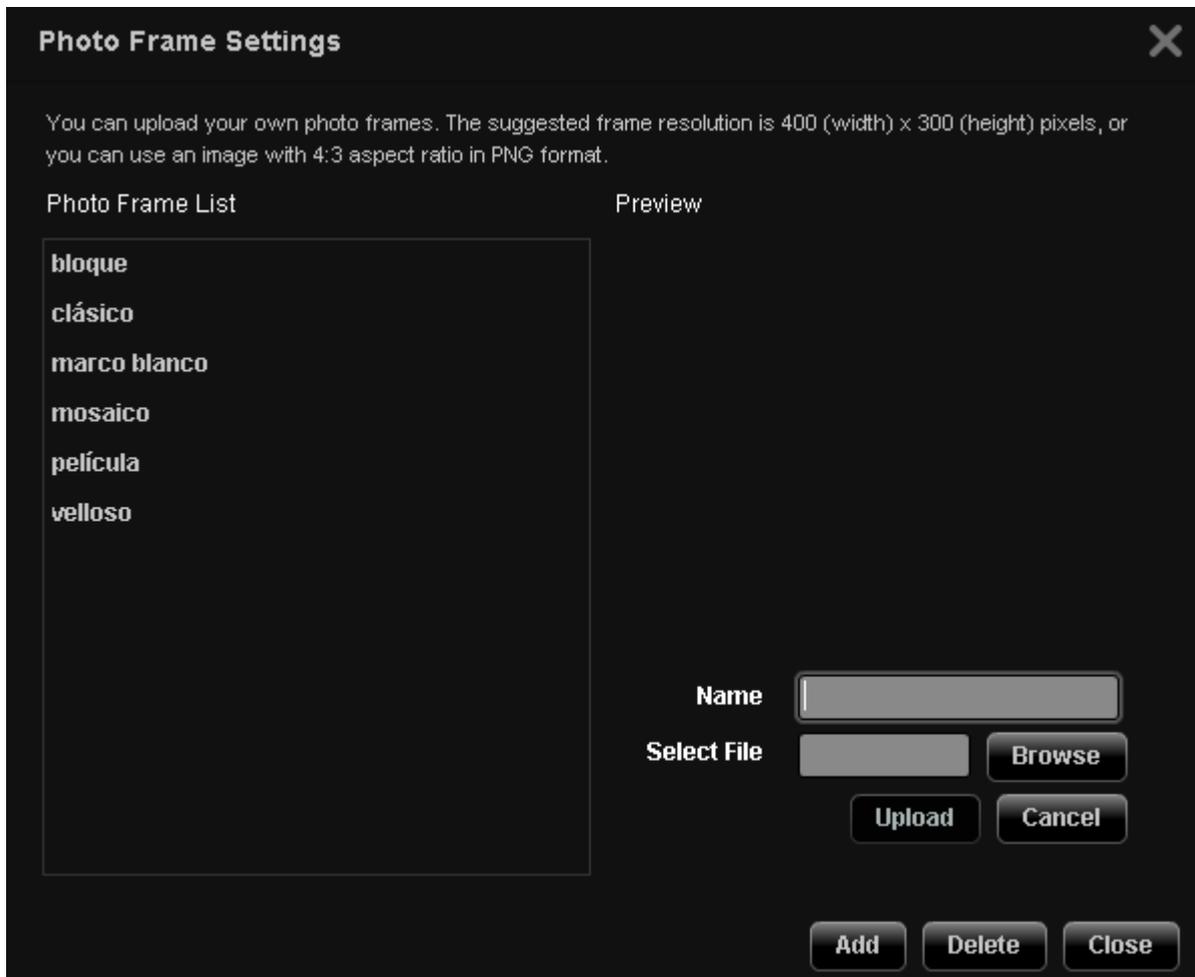


Photo Frame Settings

You can upload your photo frames for viewing the image files. The suggested resolution is 400 (width) x 300 (height) pixels, or you can use an image with 4:3 aspect ratio. The supported format is PNG. To add a photo frame, click 'Add' and upload the file.

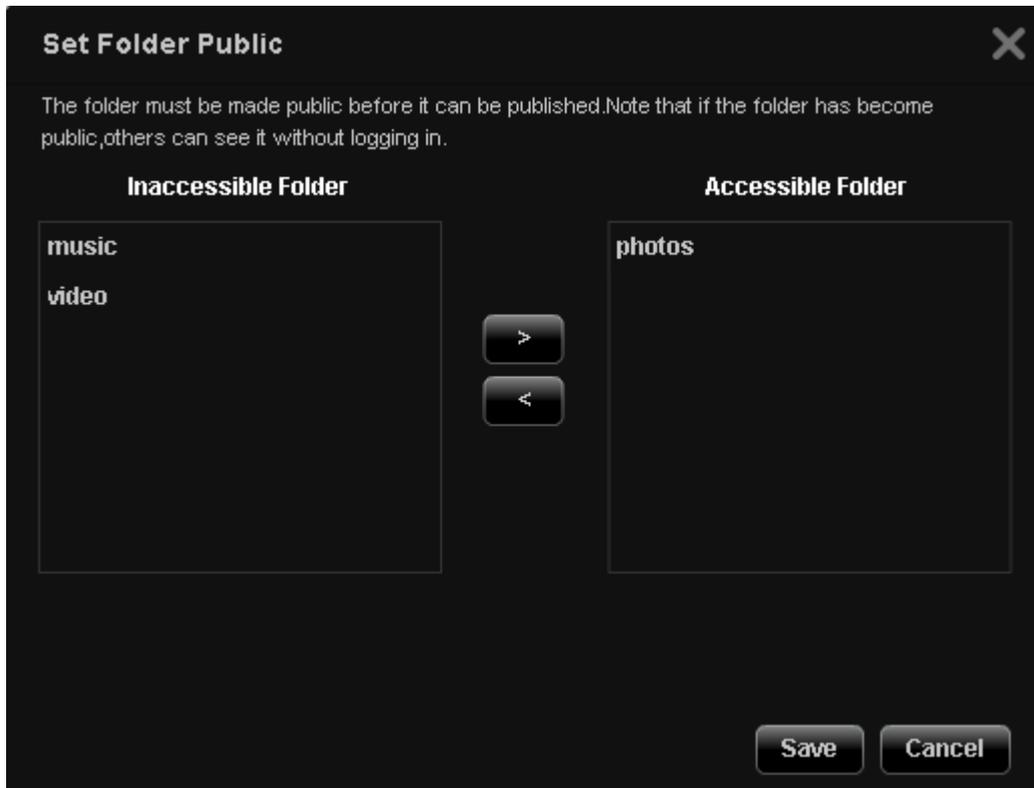


The name of a photo frame must be 1 to 16 characters long. The maximum number of photo frames Multimedia Station supports is 64 (including the system default photo frames). Note that the system default photo frames cannot be deleted.



Set Folder Public

To publish the image files to the Web, you have to make the folder public. Select the folder to allow public access and click >. Then click 'Save'. Note that the public folders will be seen and accessed by anyone without logging in Multimedia Station.



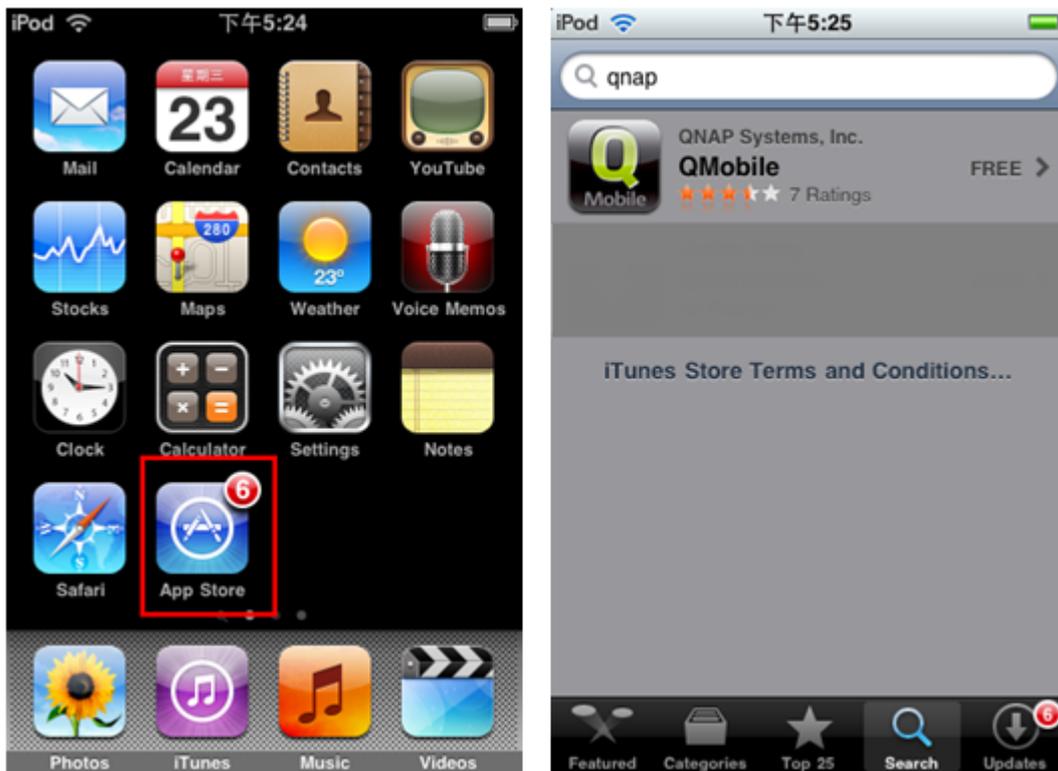
7.2.1 QMobile

QMobile is an application for you to use your handheld devices, such as iPhone, iPod Touch, iPad, and Android phones, to stream music, digital pictures, and videos from your QNAP NAS servers and play the files directly on your devices from anywhere. As long as you have Internet access, you may access all the contents on the NAS remotely.

Note: QMobile is applicable to QNAP Turbo NAS running firmware version 3.3.0 or later. Make sure you have enabled Multimedia Station and Web Server, and configured the shared contents to allow QMobile to access the multimedia files on the QNAP NAS. (The user accounts created on the NAS and Multimedia Station are independent of one another. Please access Multimedia Station with an authorized user account.)

Install QMobile

Download QMobile from App Store (iPhone) or Android Market (Android phones).



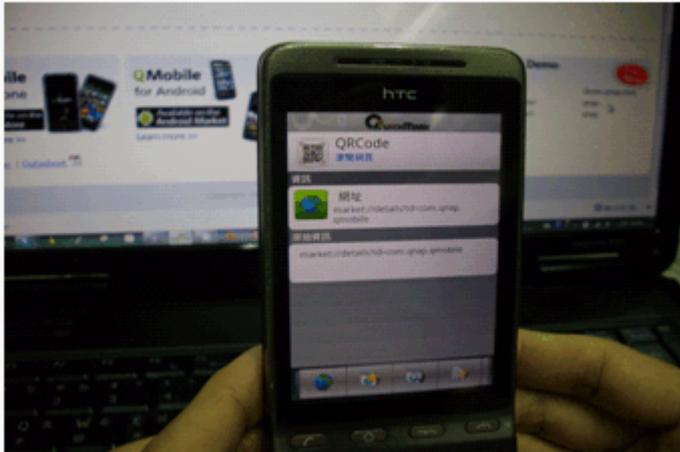
Android phone users may also get the download link of QMobile by taking a picture of the QR-code from the website below:

1. <http://www.qnap.com/QMobile/Default.aspx?lang=eng>
2. <http://www.doubletwist.com/apps/android/qmobile/-6558955796410604679/>

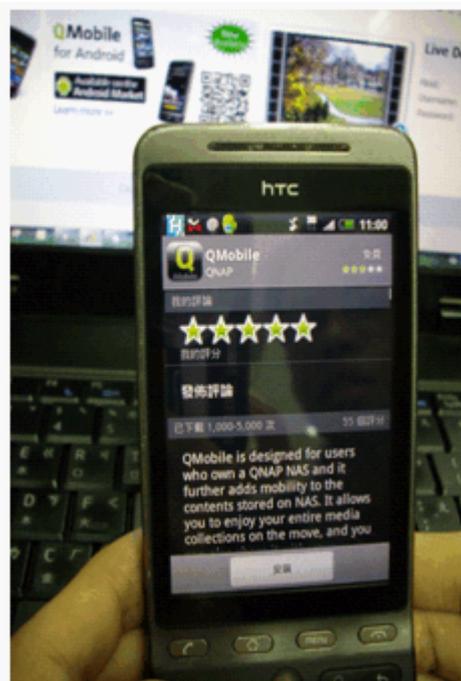
Take a picture of the QR-code.



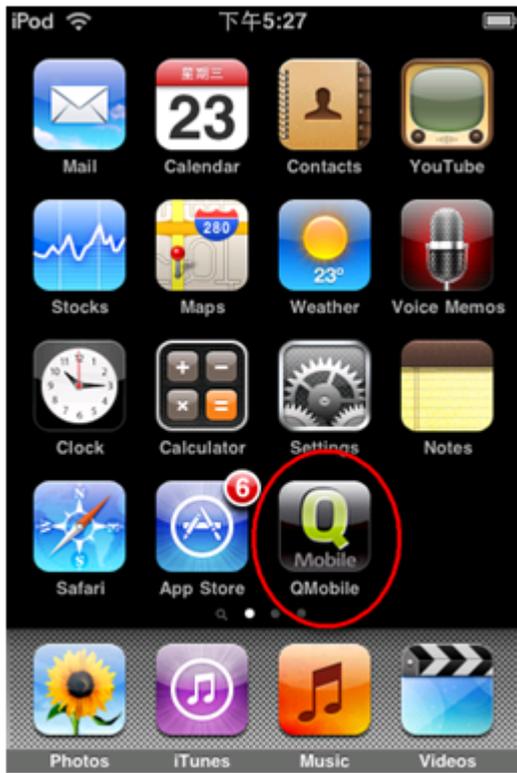
Get the download link automatically from the QR-code.



Download QMobile to your Android phone.



After installation, QMobile will be shown on the screen.



Configure the NAS settings on your handheld devices

Launch QMobile App and add a QNAP NAS. You can add the NAS to QMobile by 'Automatic Discovery' or 'Add Server Manually'.



Automatic Discovery



Note:

1. For iPhone users

This feature is only available after you have enabled "QMobile for iPhone/iPod Touch" on the NAS under "Network Services" > "Network Service Discovery" > "Bonjour".

Home >> Network Services >> Network Service Discovery Welcome admin | Logout English

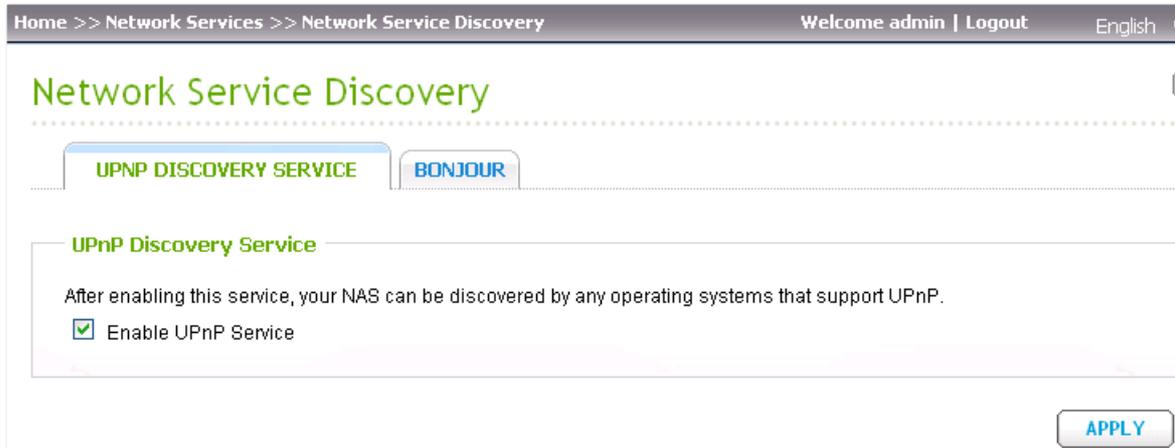
Bonjour

Before broadcasting the following services through Bonjour, please DO NOT forget to enable these services first.

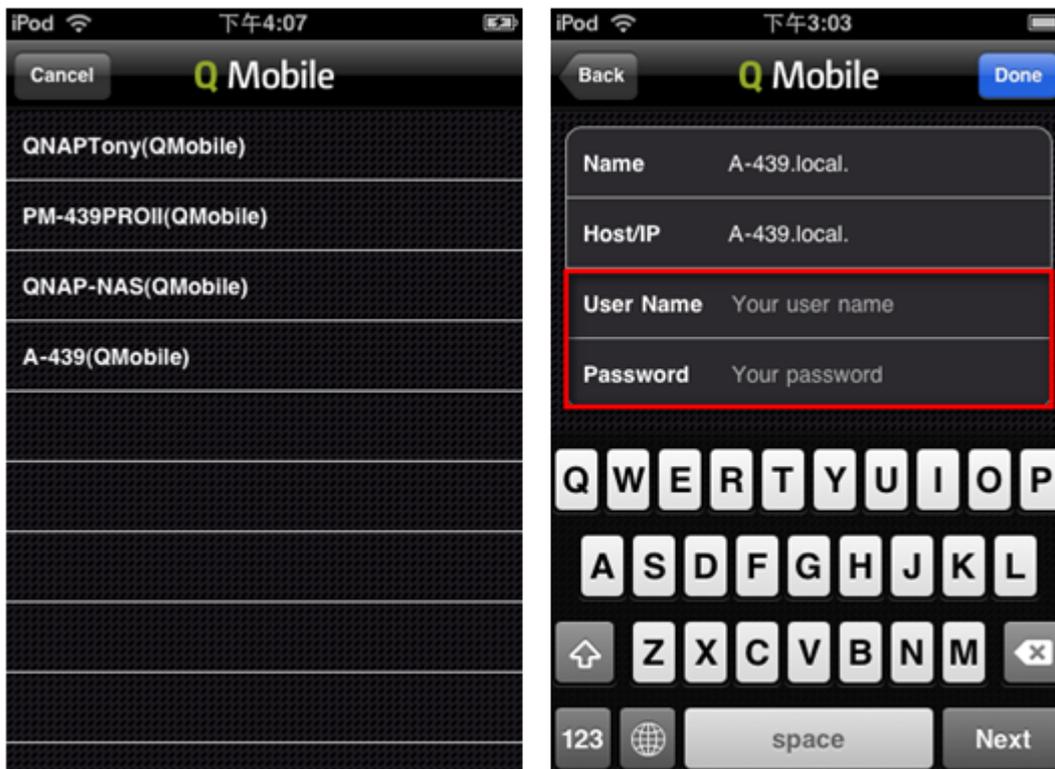
- Web Administration
Service Name:
- SAMBA (Server Message Block over TCP/IP)
Service Name:
- AFP (Apple File Protocol over TCP/IP)
Service Name:
- SSH
Service Name:
- FTP (File Transfer Protocol)
Service Name:
- HTTPS (Secure web server)
Service Name:
- UPNP (DLNA media server)
Service Name:
- QMobile for iPhone/iPod Touch.
Service Name:

2. For Android devices

This feature is only available after you have enabled "Enable UPnP Service" on the NAS under "Network Services" > "Network Service Discovery" > "UPnP Discovery Service".



QMobile will find all the NAS servers which have enabled Bonjour/UPnP on the local network. Select the NAS and login with your user name and password.



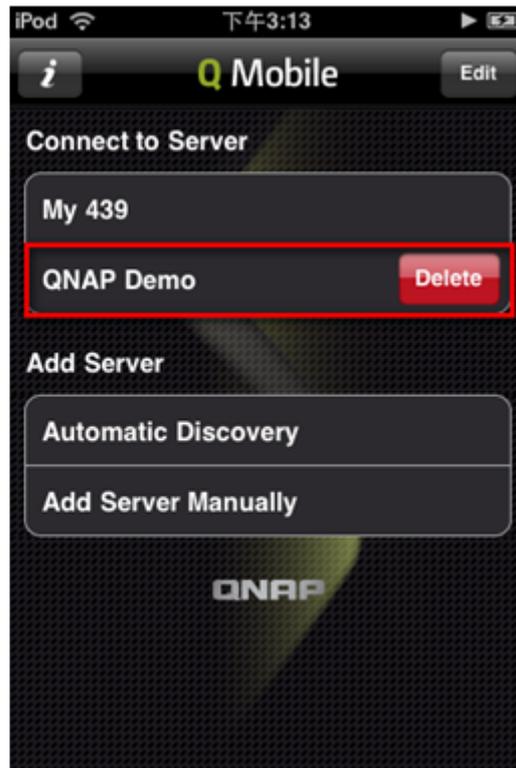
Add Server Manually



Enter the name, host/IP, user name and password of the NAS.



Select the NAS you wish to connect. To delete a NAS from QMobile, swipe the NAS name and tap "Delete".



Use QMobile to manage your media center on the NAS

1. Media Center

You may view and play the multimedia files saved on Multimedia Station of your NAS.

Note: QMobile can only play the file formats supported by your handheld devices.

Connect to the NAS and tap the Media Center icon.



You can browse the multimedia files under "Qmultimedia/Multimedia" default share folder or you may choose the specific photo, music or video files by tapping the corresponding icon at the bottom.

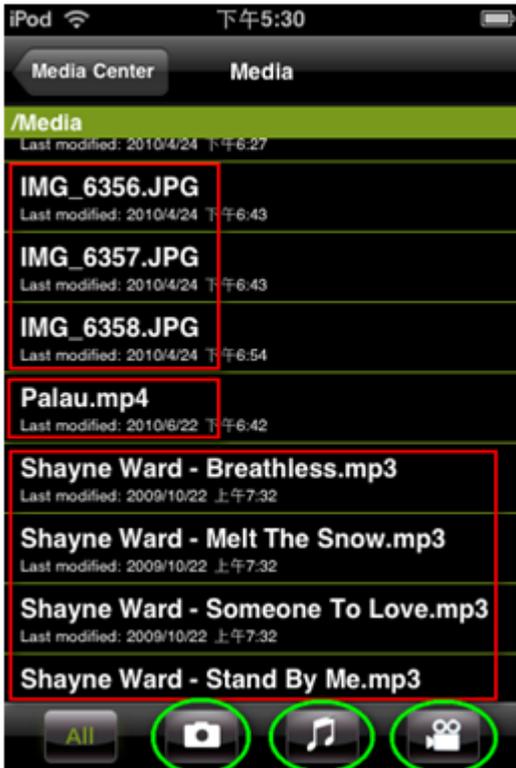
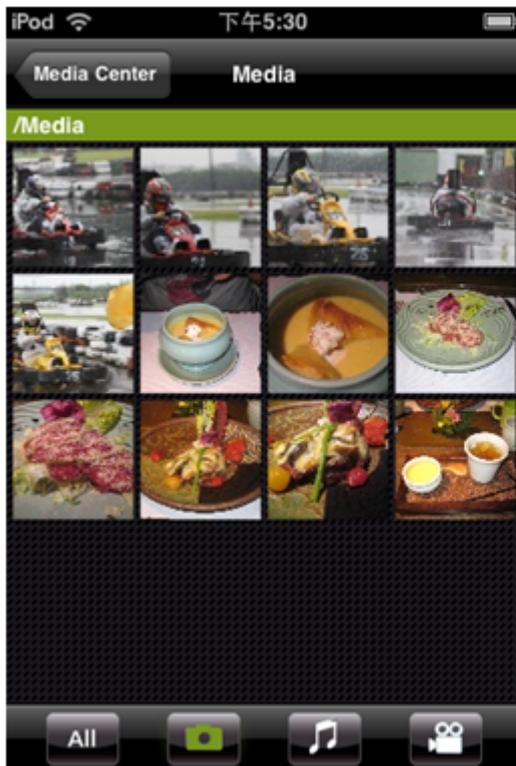
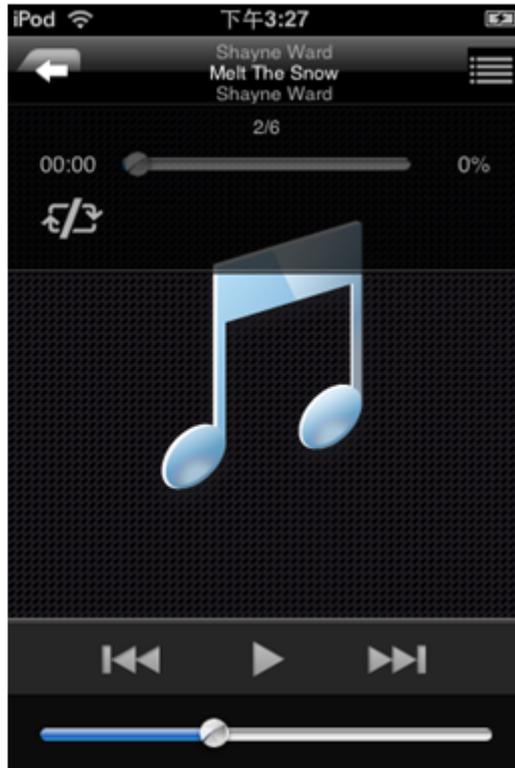
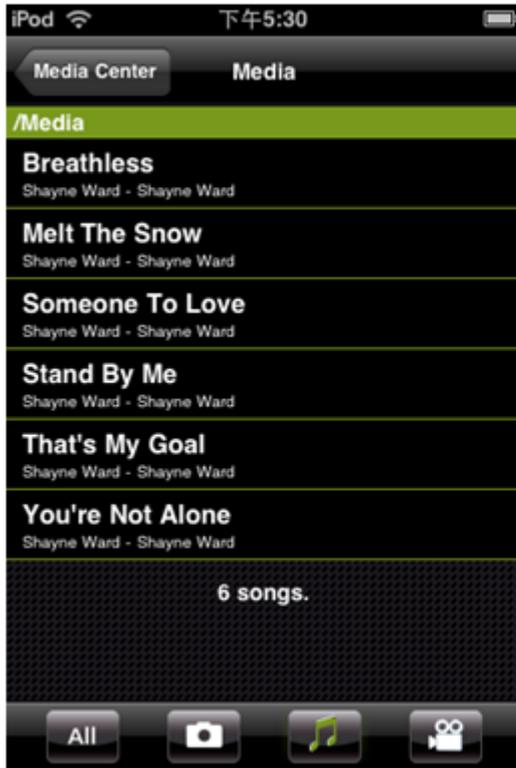


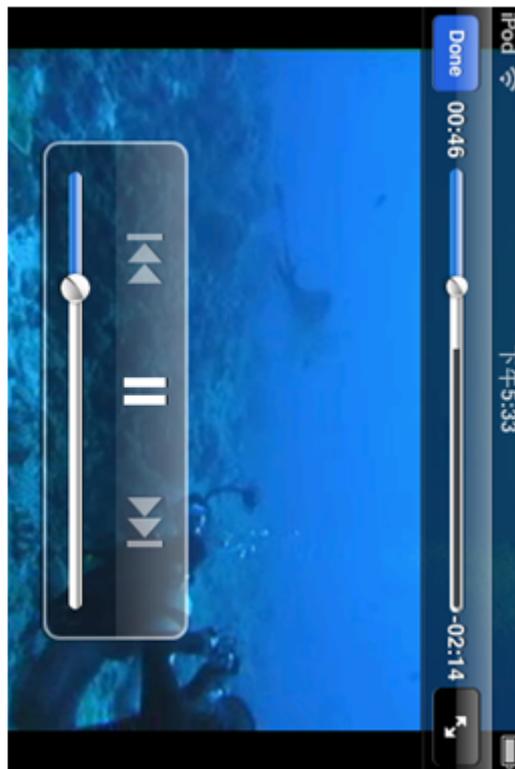
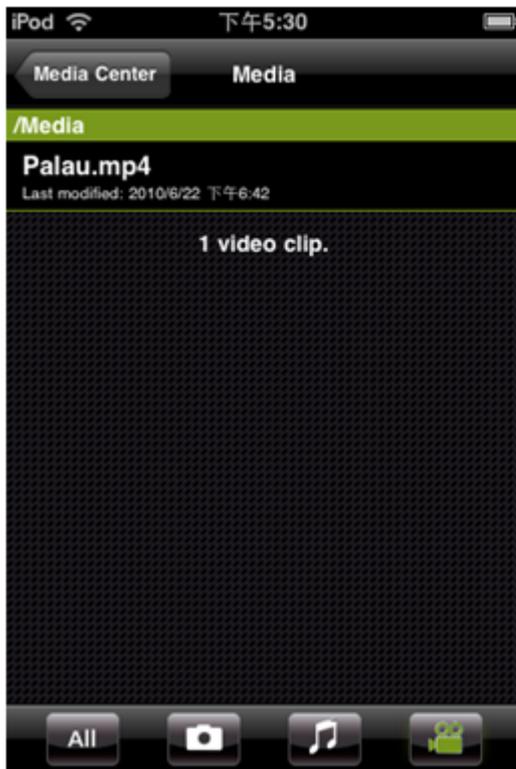
Photo view



Music view



Video view



2. Upload Photos to NAS

You may upload photos on your handheld devices to the NAS directly through QMobile. Select the file

source by tapping  and select the file destination of the NAS by tapping .

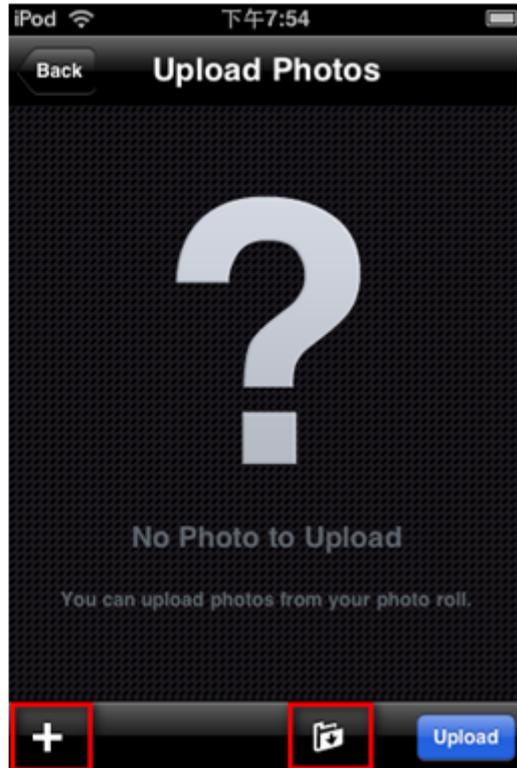
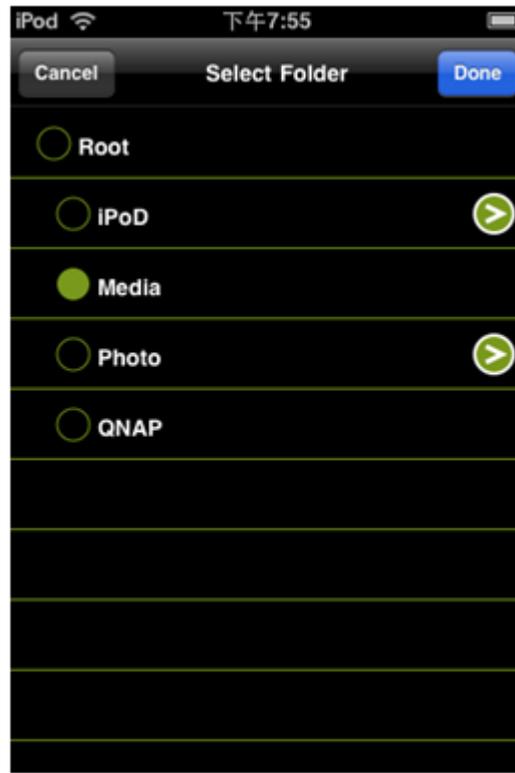


Photo Source: Choose the photos from your handheld devices.

Photo destination: Choose the root folder ("Qmultimedia/Multimedia" folder of NAS) or the sub-folder to save the photos.

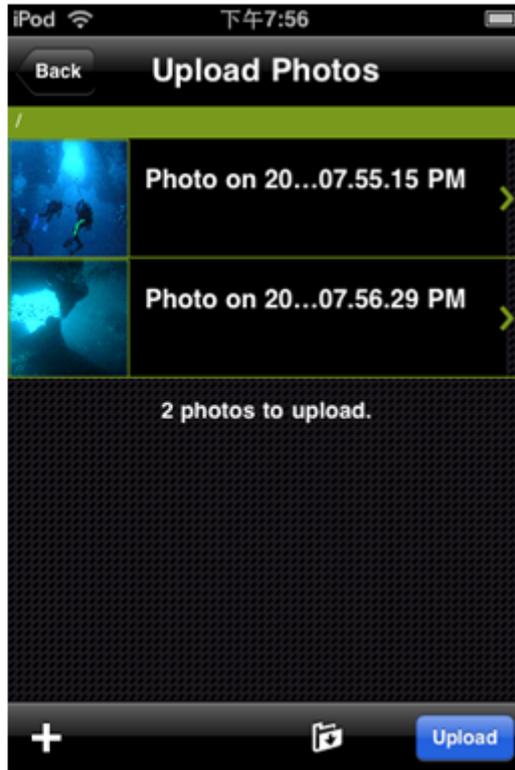
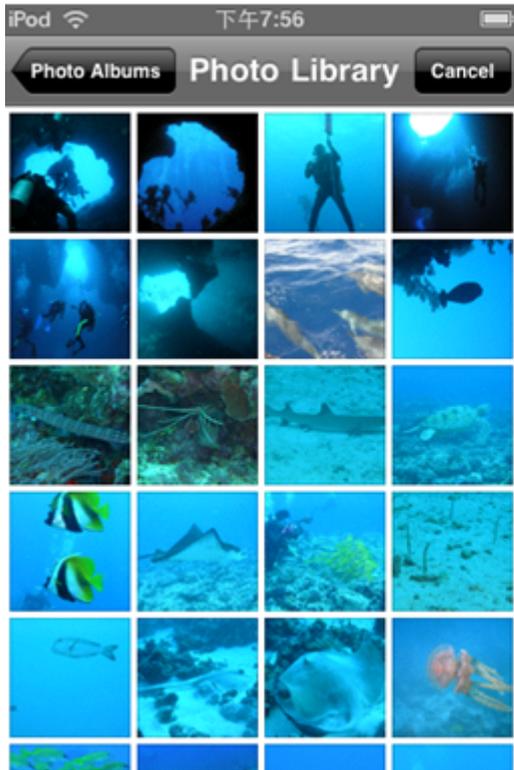


(Photo source)



(Photo destination)

Select the photos and tap the "Upload" icon to upload the photos to the NAS.

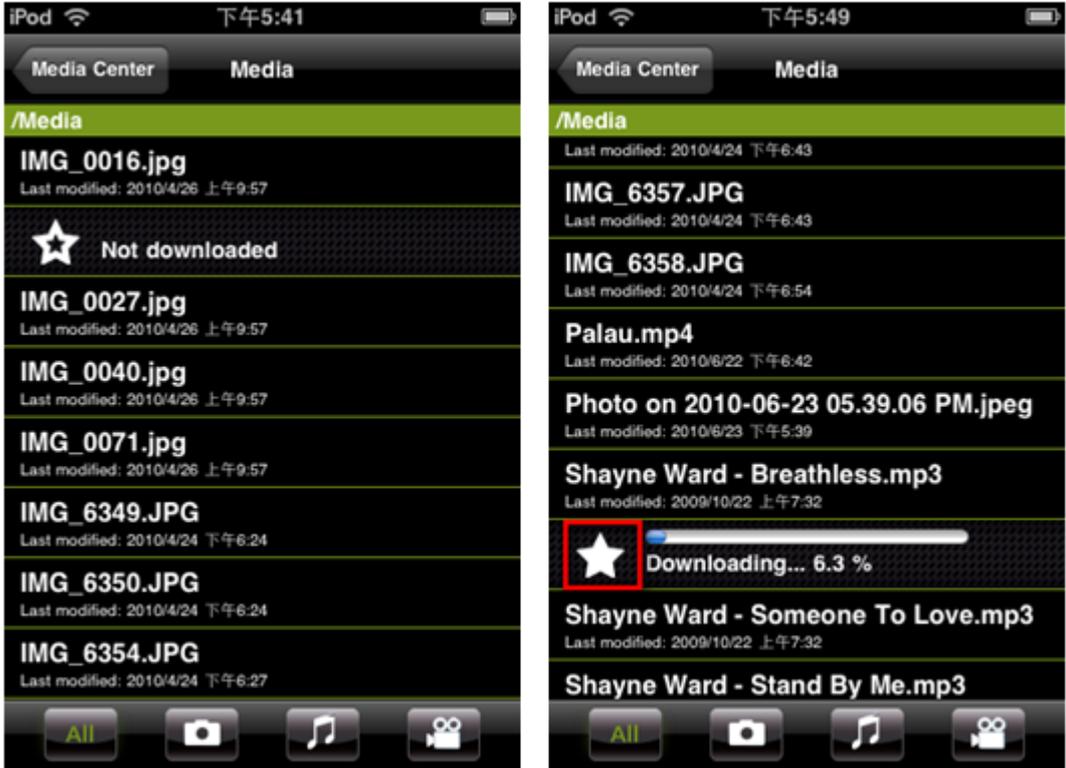


3. My Favorites

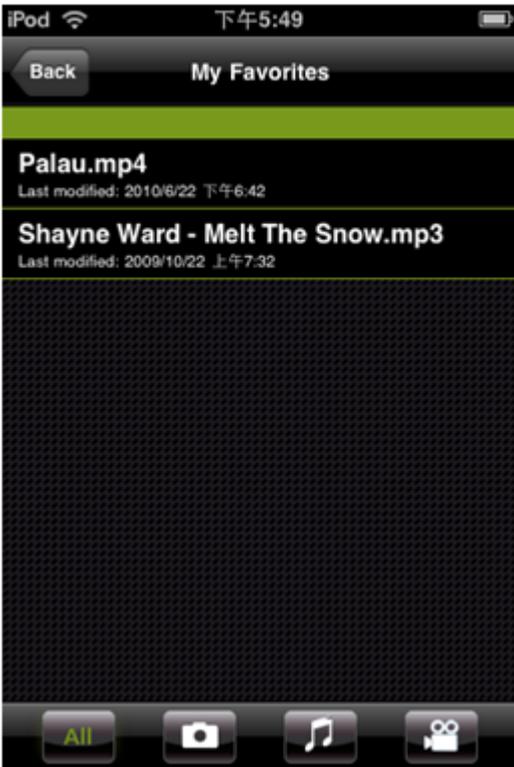
You may download the multimedia files from the NAS to your handheld devices under "My Favorites" and play them offline.



From Media Center, swipe the file and tap the star sign to start to download it.
(Files that have never been downloaded will be shown as "Not downloaded".)



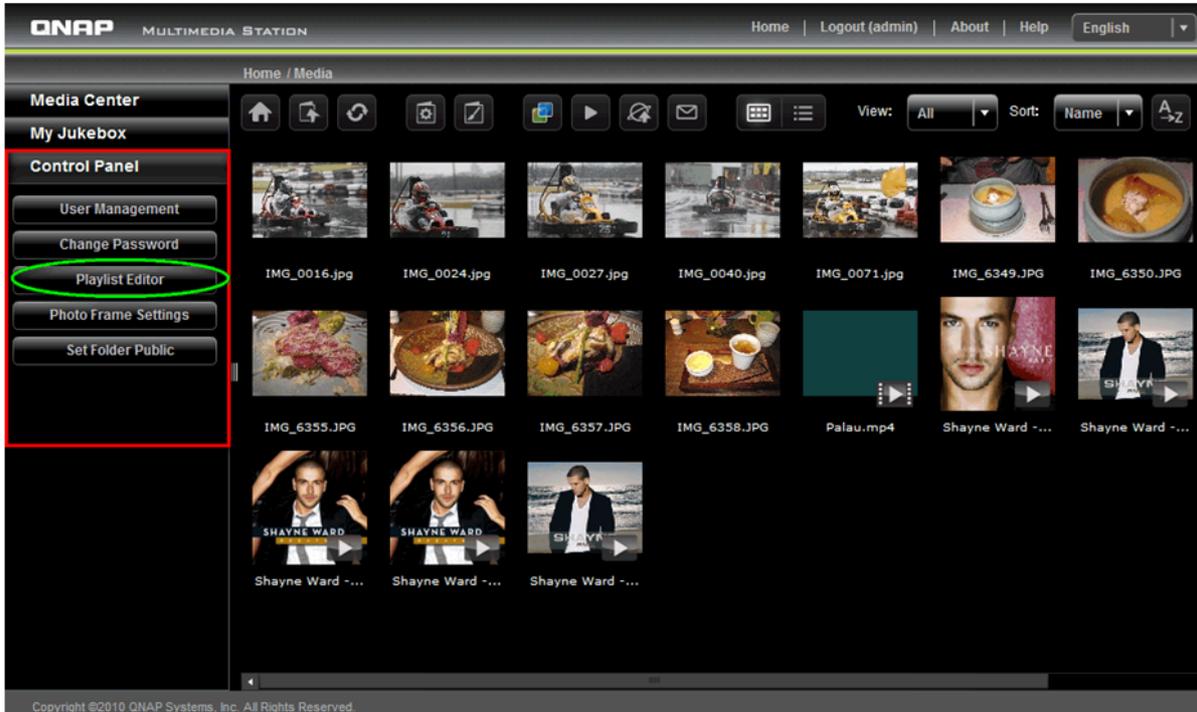
Downloaded files will be shown in "My Favorites". QMobile will check if the source of the downloaded files have been updated or deleted from the NAS upon every new connection to the NAS. You can select to synchronize the changes with the NAS.



4. My Jukebox

You may view, stream and play the playlists configured on Multimedia Station.

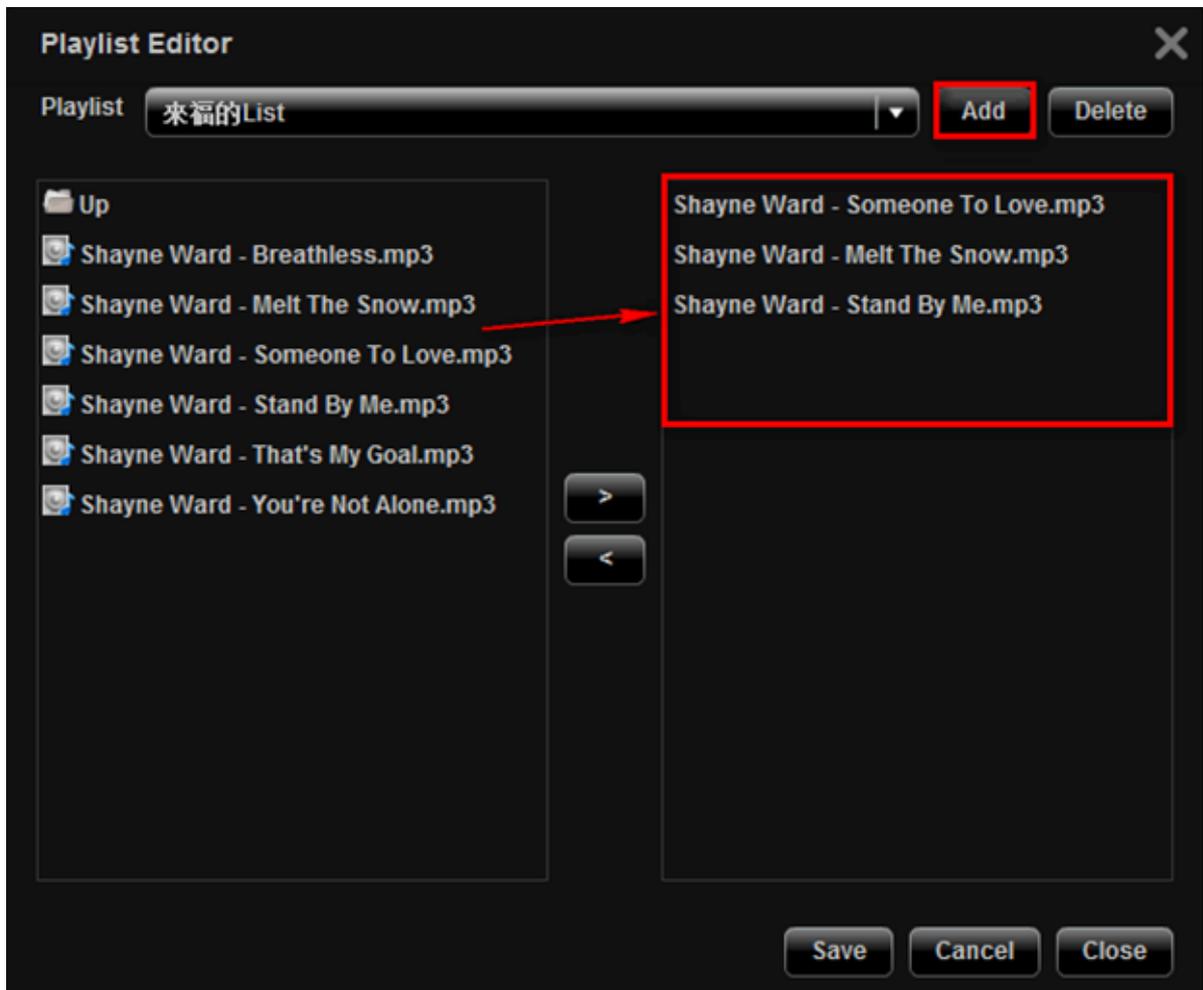
Login Multimedia Station as an administrator. Select 'Control Panel' > 'Playlist Editor'.



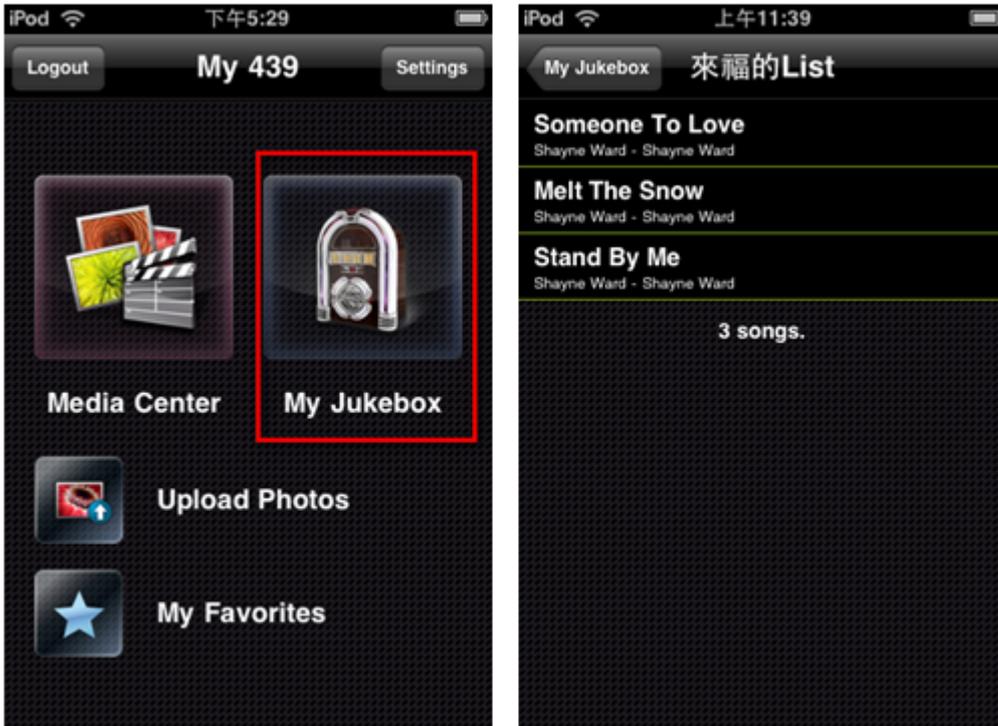
Click 'Add' to create a Playlist. Enter the playlist name and click 'Save'.



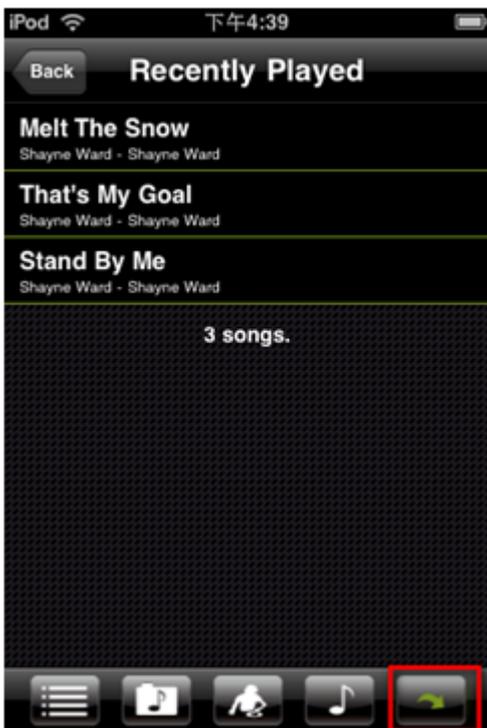
Select the playlist from the drop-down menu and then choose the music files to add to the playlist and click '>'. Click 'Save' to save the playlist.



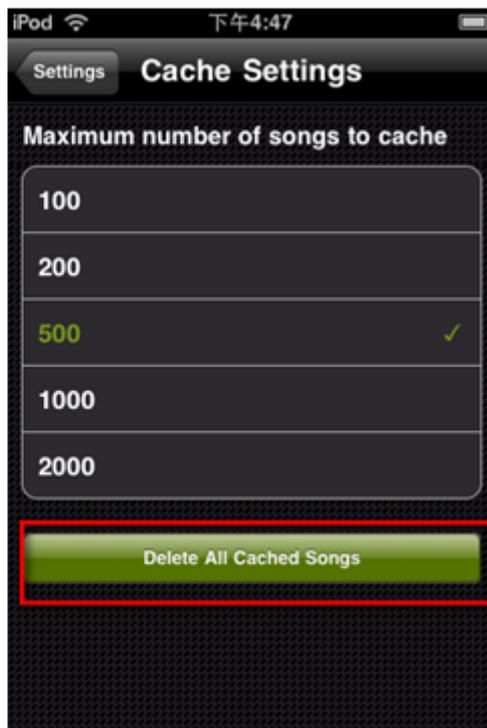
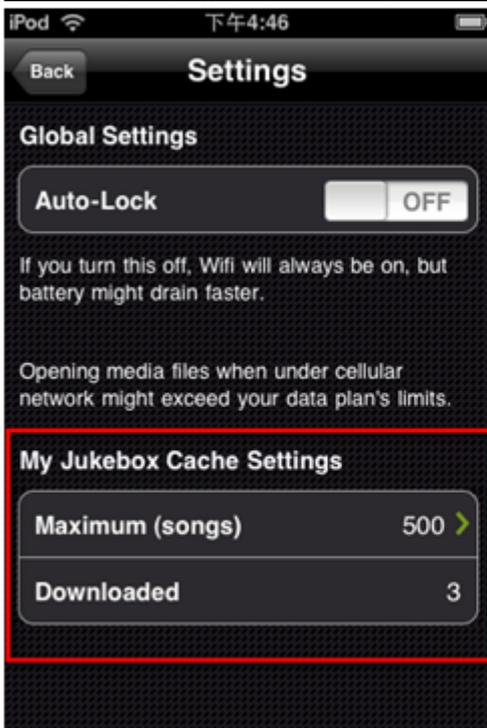
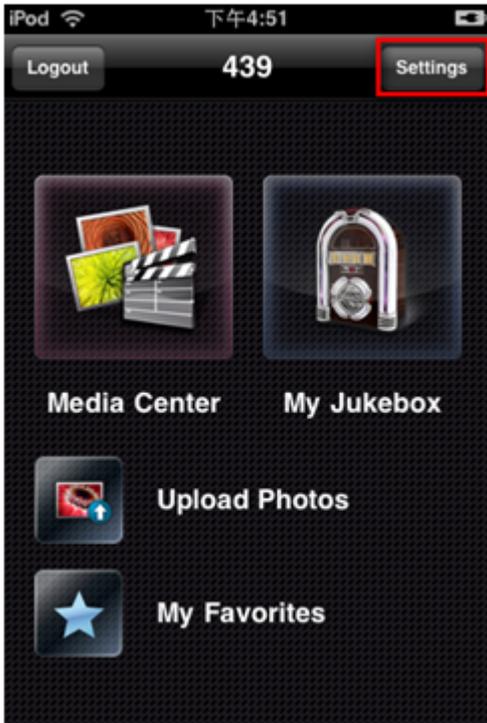
You can play the playlists created on the NAS by "My Jukebox" on your handheld devices.



Once the audio file has been streamed completely, it will be saved in the cache in 'Recently Played'.



You can edit the cache settings under 'Settings'.



7.3 Download Station

The NAS supports BitTorrent, HTTP, FTP, and RapidShare download. You can add download task to the NAS and let the server finish downloading independent of PC.



Important: Please be warned against illegal downloading of copyrighted materials. The Download Station functionality is provided for downloading authorized files only. Downloading or distribution of unauthorized materials may result in severe civil and criminal penalty. Users are subject to the restrictions of the copyright laws and should accept all the consequences.

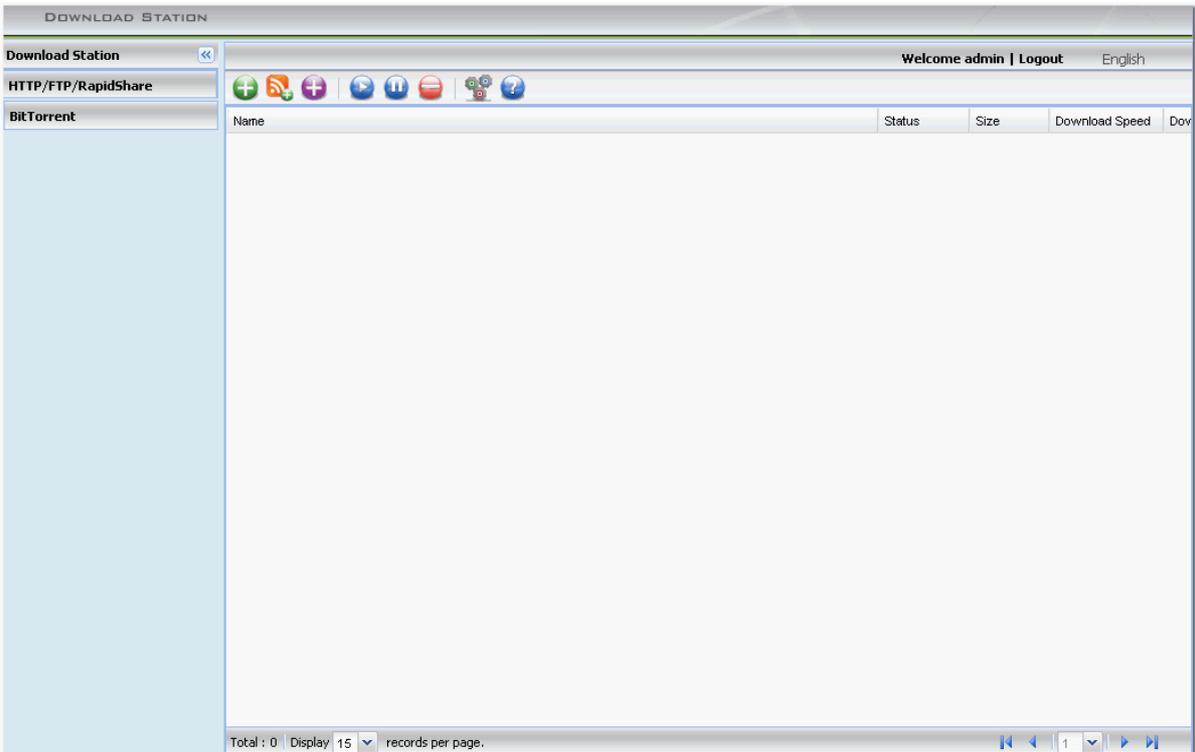
Note:

- By updating the NAS firmware from version 3.3.x or below to version 3.4.0 or above, Download Station will be upgraded from v1 to v2. All the tasks in Run, Pause, and Finish lists will be stopped and cleared. The downloaded files will remain.
- Download Station v2 is only compatible with QGet 2.0 or later.

1. Go to 'Application Servers > 'Download Station'. Enable the service.

The screenshot shows a web interface for configuring the Download Station. The breadcrumb navigation at the top reads 'Home >> Application Servers >> Download Station'. The user is logged in as 'admin' and can click 'Logout'. The language is set to 'English'. The main heading is 'Download Station'. Below it, there are two checked checkboxes: 'Enable Download Station' and 'Show service link on the login page'. An 'APPLY' button is located at the bottom right of the configuration area.

2. Click 'Download Station' on the top or on the login page of the NAS to connect to the Download Station. If you login the service from the login page of the NAS, you are required to enter the user name and password.

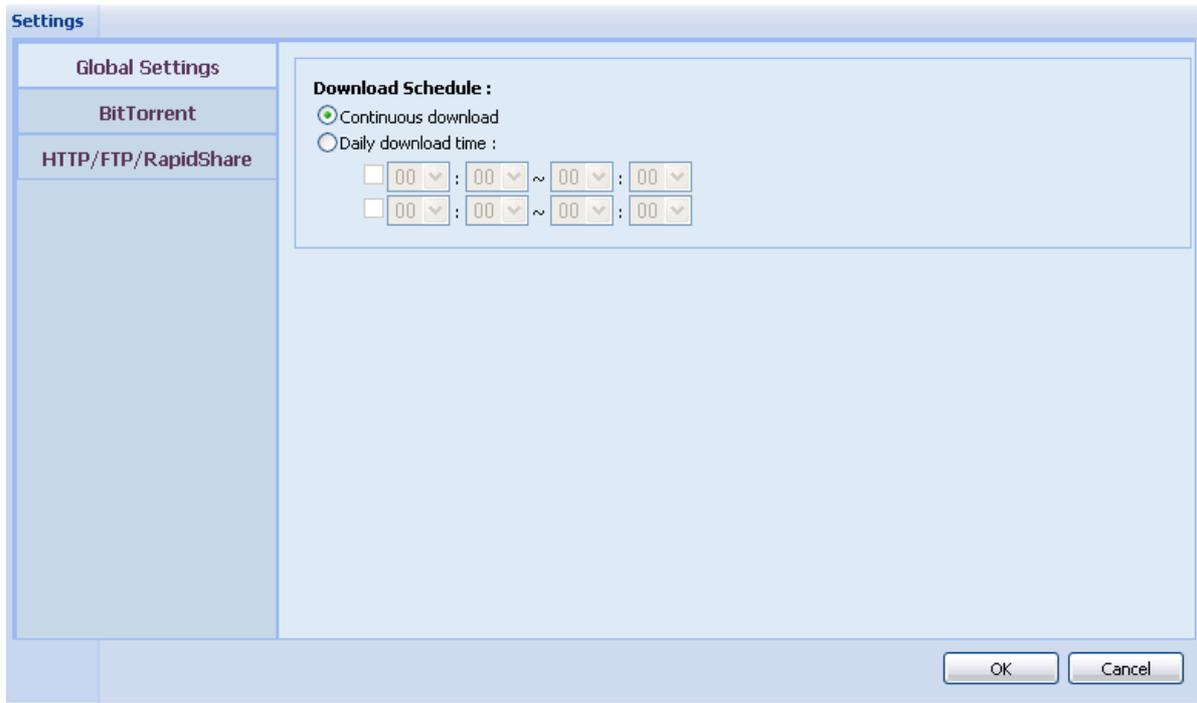


Before you start to download files, click  to configure the download settings.



Global Settings

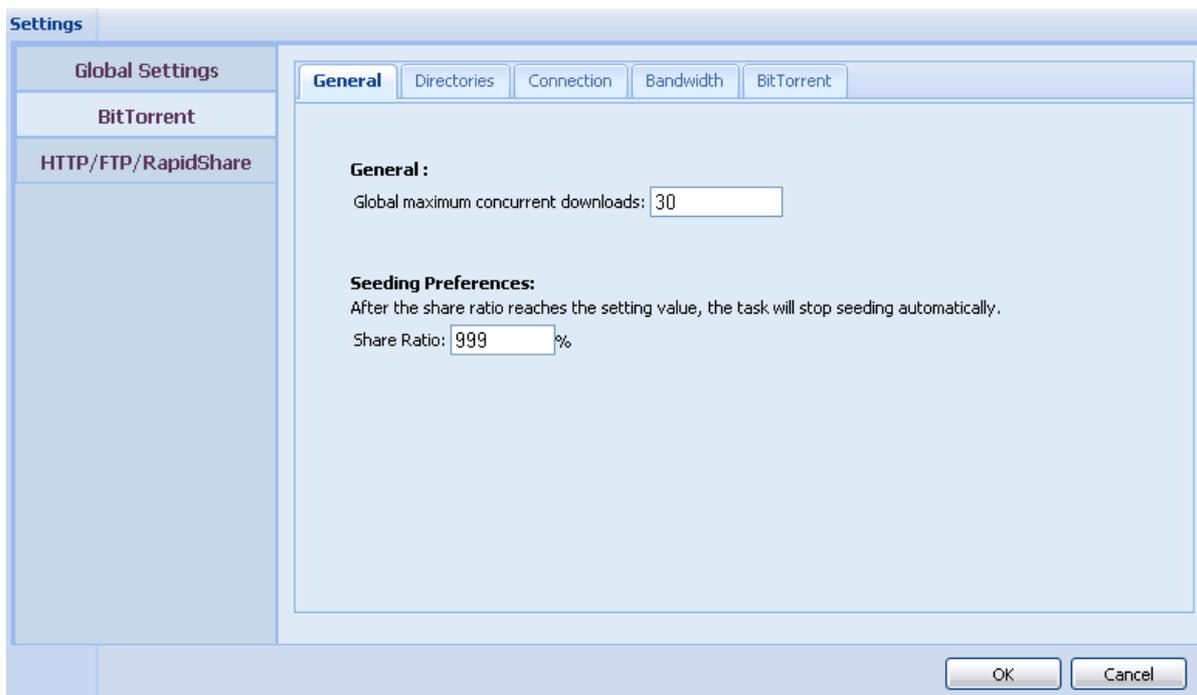
Select continuous download or specify the download schedule for the task.



BitTorrent Settings

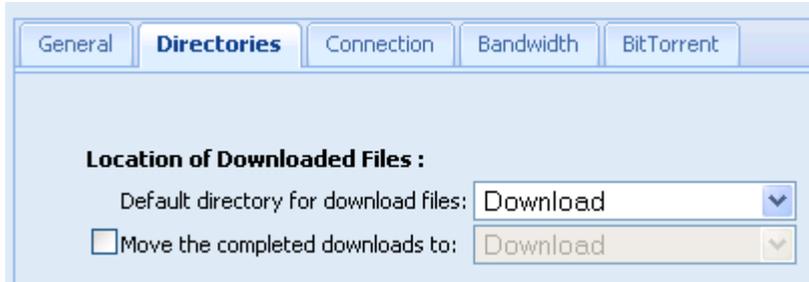
1. General:

Specify the maximum number of concurrent BT downloads allowed for the NAS and the share ratio. The NAS supports maximum 30 BT downloads. The share ratio is calculated by dividing the amount of uploaded data by the amount of downloaded data. When the ratio has reached its limit, uploading will stop automatically.



2. Directories

Select the default folder for saving the downloaded files. You can also specify a folder to which the completed downloaded files will be moved to.



General **Directories** Connection Bandwidth BitTorrent

Location of Downloaded Files :

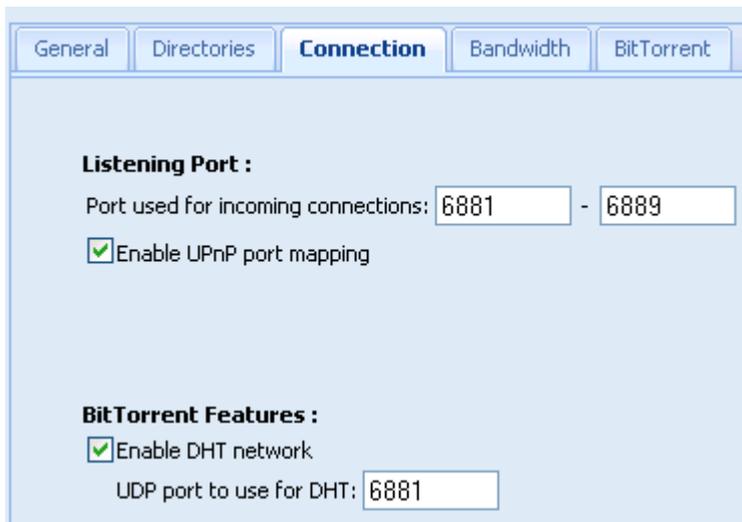
Default directory for download files: Download

Move the completed downloads to: Download

3. Connection

Specify the ports for BitTorrent download. The default port numbers are 6881-6889. Select UPnP port mapping to enable automatically port mapping on 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.



General Directories **Connection** Bandwidth BitTorrent

Listening Port :

Port used for incoming connections: 6881 - 6889

Enable UPnP port mapping

BitTorrent Features :

Enable DHT network

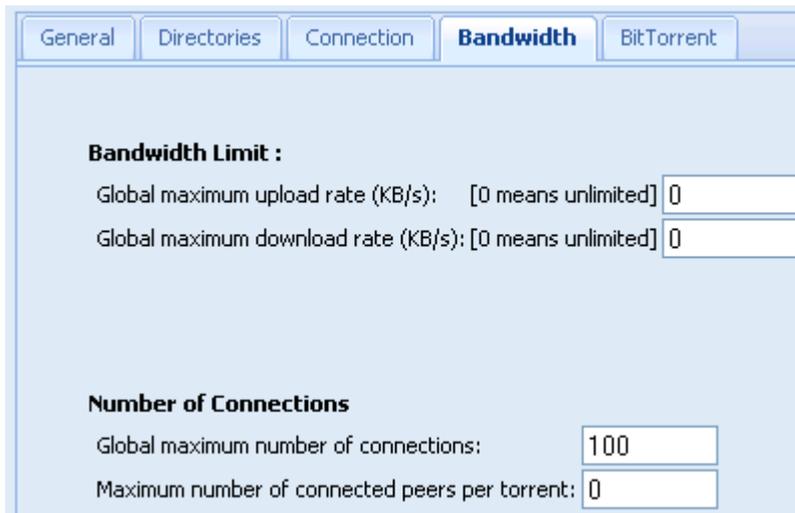
UDP port to use for DHT: 6881

4. Bandwidth

Specify the maximum upload and download rate for all BitTorrent download tasks. 0 means no limit.

Global maximum number of connections: This refers to the maximum number of allowed connections to the torrent.

Maximum number of connected peers per torrent: This refers to the maximum number of allowed peers to connect to a torrent.



5. BitTorrent

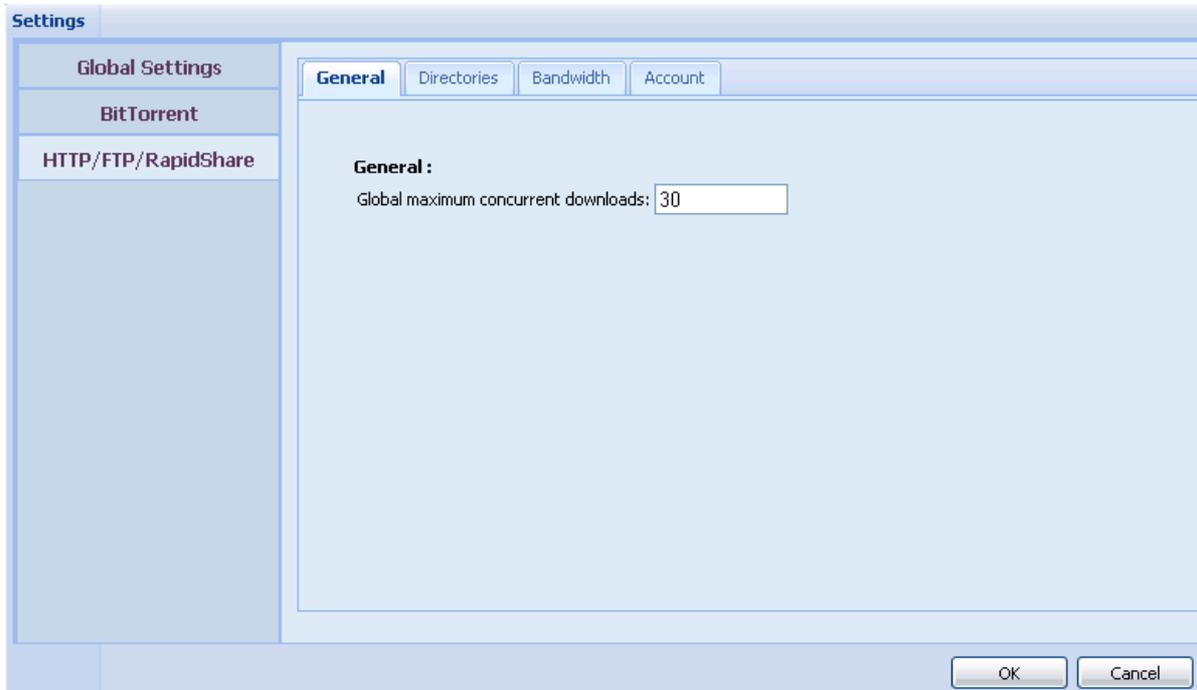
Protocol encryption: Enable this option for encrypted data transfer.



HTTP, FTP, RapidShare Settings

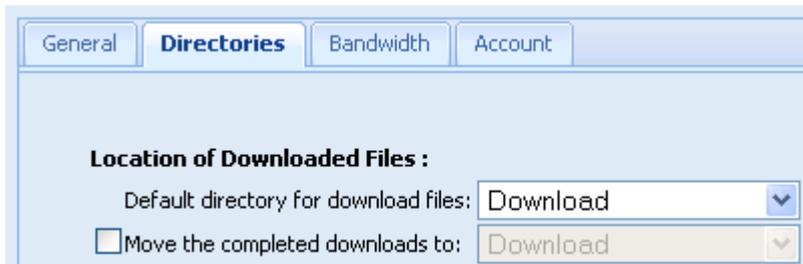
1. General:

Specify the maximum number of concurrent HTTP, FTP, and RapidShare downloads allowed for the NAS. The NAS supports maximum 30 HTTP, FTP, and RapidShare downloads. Click 'OK' to save the changes.



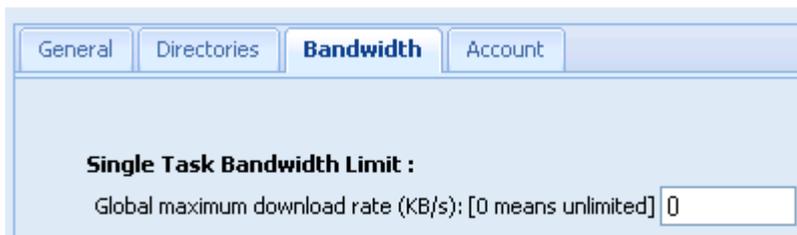
2. Directories

Select the default folder for saving the downloaded files. You can also specify a folder to which the completed downloaded files will be moved to. Click 'OK' to save the changes.



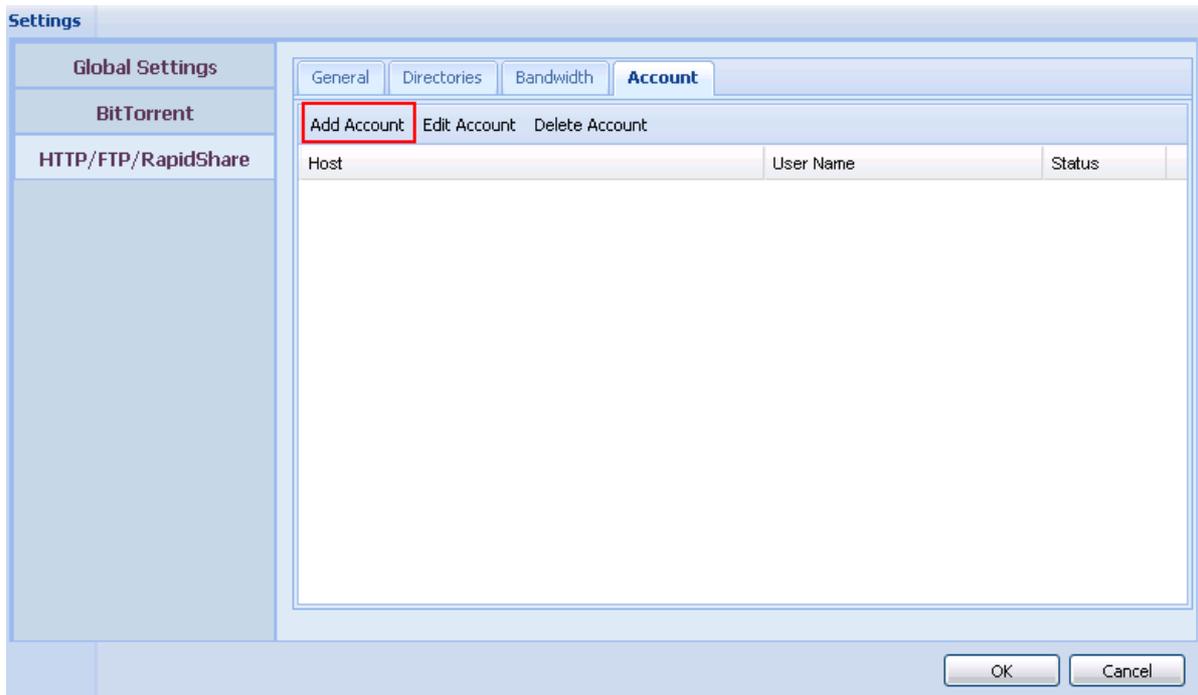
3. Bandwidth

Specify the maximum download rate of a single HTTP, FTP, or RapidShare download. 0 means no limit. Click 'OK' to save the changes.



4. Account

You can save the login information of maximum 64 HTTP, FTP, and RapidShare accounts. To add login information, click 'Add Account'.



The default host is rapidshare.com. To enter the login information for an HTTP or FTP server, select 'Input manually'.



Enter the host name or IP, user name and password. To allow the login information to appear for account selection when configuring HTTP, FTP, or RapidShare download, select 'Enabled' from the drop-down menu. Click 'Save' to confirm or 'Back' to cancel.

General Directories Bandwidth **Account**

Add a New Account:

Host: Input manually

Name:

Password:

Enabled: ▾

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'. Click 'OK' to save the changes to General, Directories, and Bandwidth.

Settings

Global Settings

BitTorrent

HTTP/FTP/RapidShare

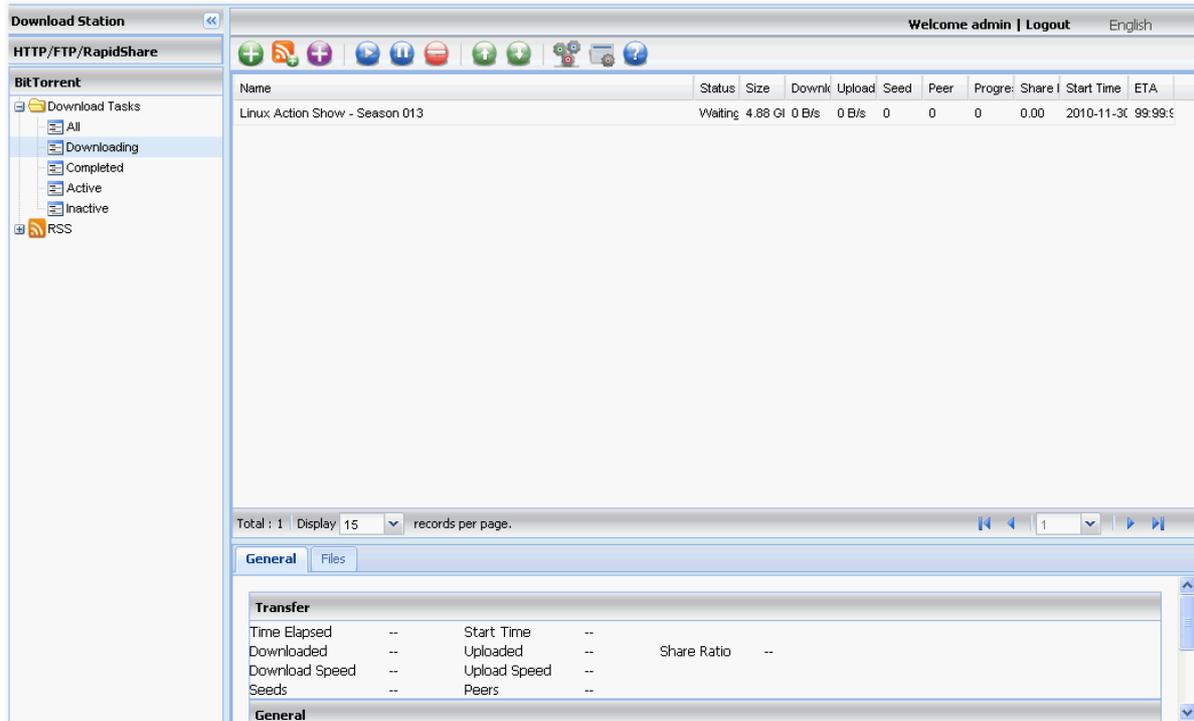
General Directories Bandwidth **Account**

Add Account Edit Account Delete Account

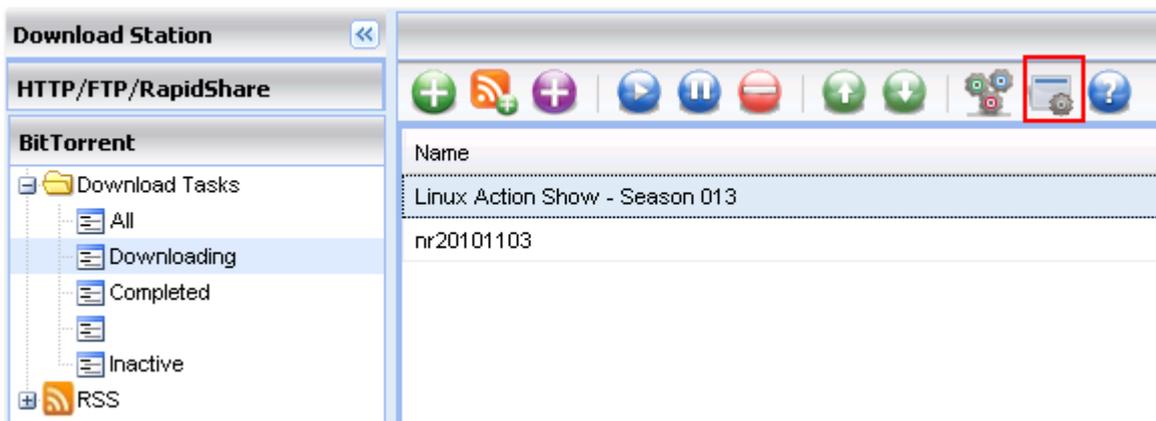
Host	User Name	Status
10.8.13.133	test	Enabled
rapidshare.com	1	Enabled

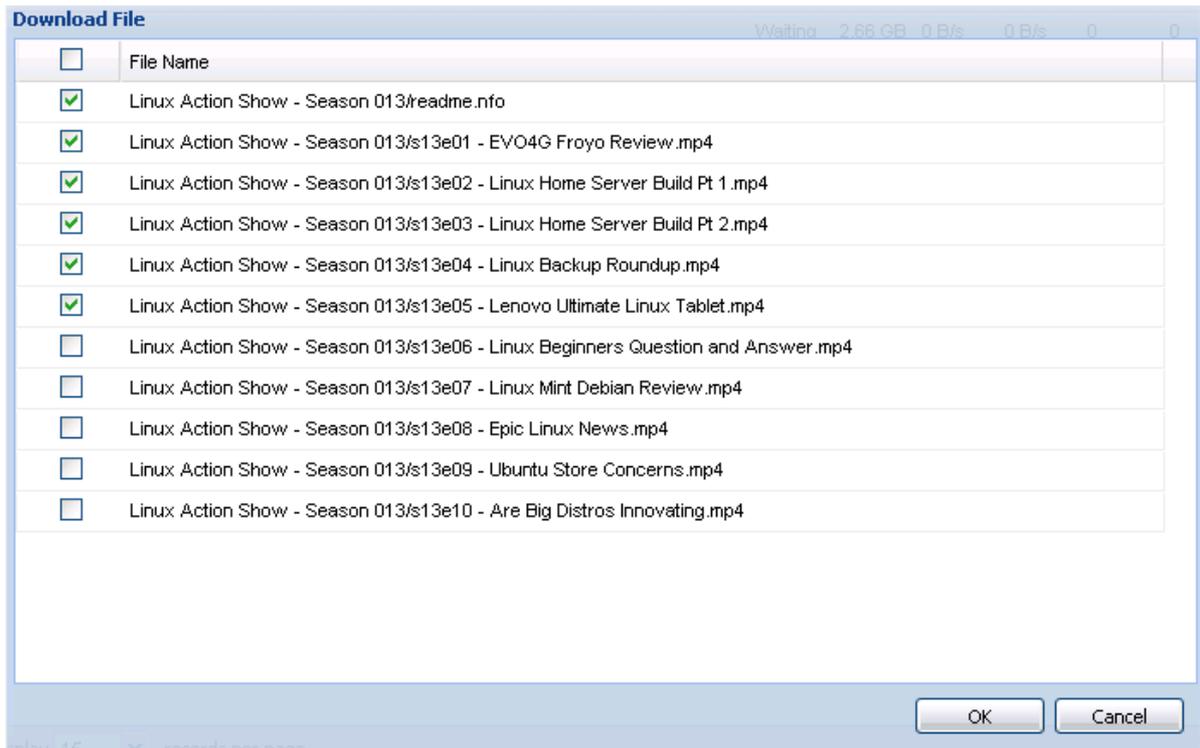
BitTorrent Download

To download a file by BitTorrent, click . Browse and select a torrent file and click 'OK'. The download task will be shown under 'BitTorrent' > 'Download Tasks' > 'All' or 'Downloading'. You can view the details and the download status of the task.

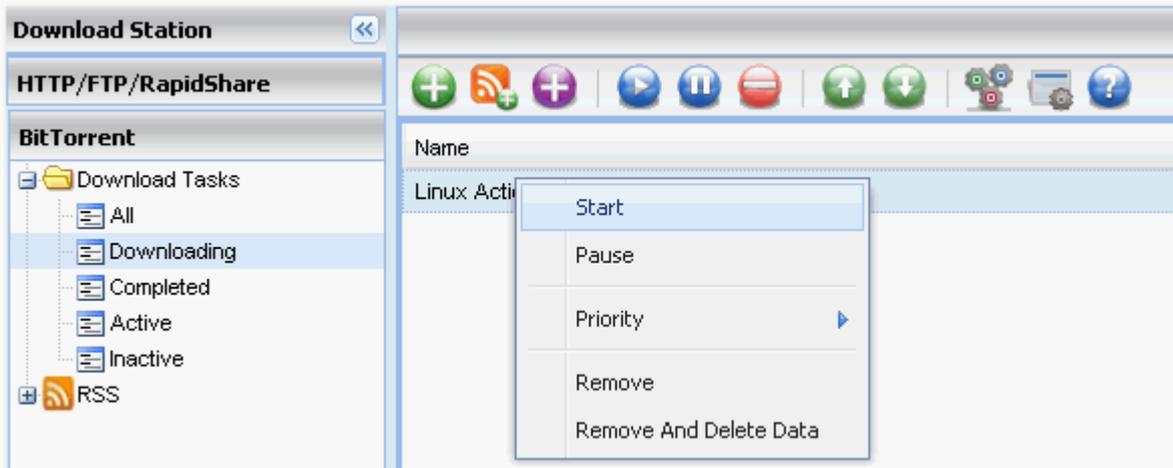


You can select particular files to download from a torrent file. Select a download task on the list. Click  and select the files to download.





You can view the download tasks and right click a task to start, pause, prioritize, or remove a task. To remove a download task and all its downloaded data, select 'Remove and Delete Data'.

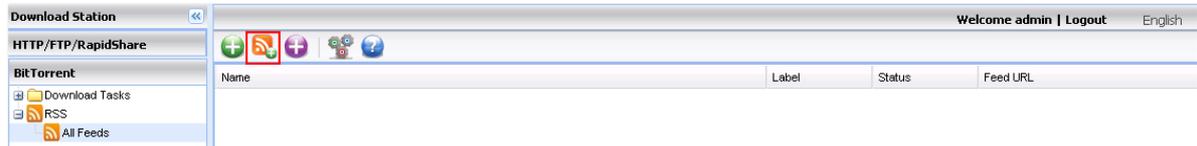


RSS Feed

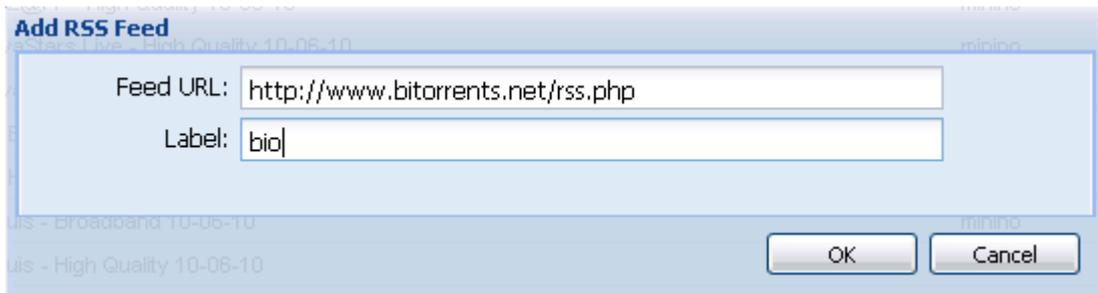
You can subscribe to RSS feeds by Download Station and download the torrent files in the feeds. Click



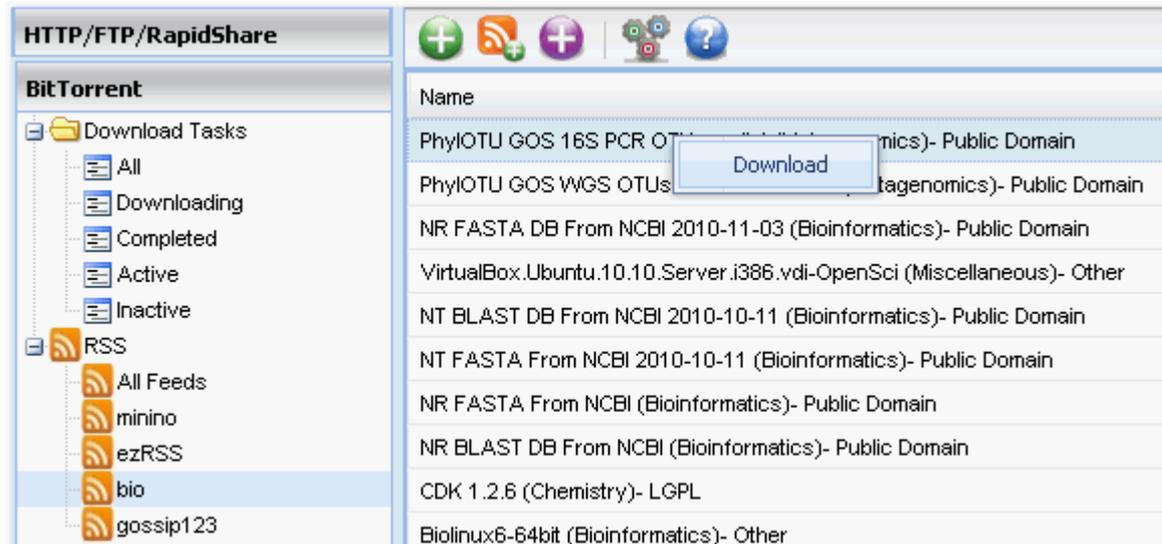
to add an RSS feed.



Enter the URL and the label.



You can view the RSS feeds by expanding 'BitTorrent' > 'RSS' on the left panel of Download Station. To download a torrent file from an RSS feed, right click the feed and select 'Download'.

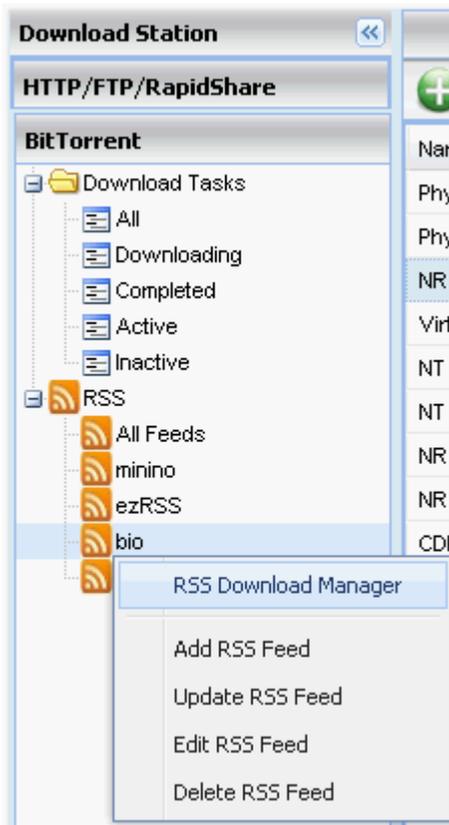


The NAS will start to download the file automatically. You can view the download status in BitTorrent download.



To manage the RSS feeds subscription, right click an RSS feed label. You can open RSS Download

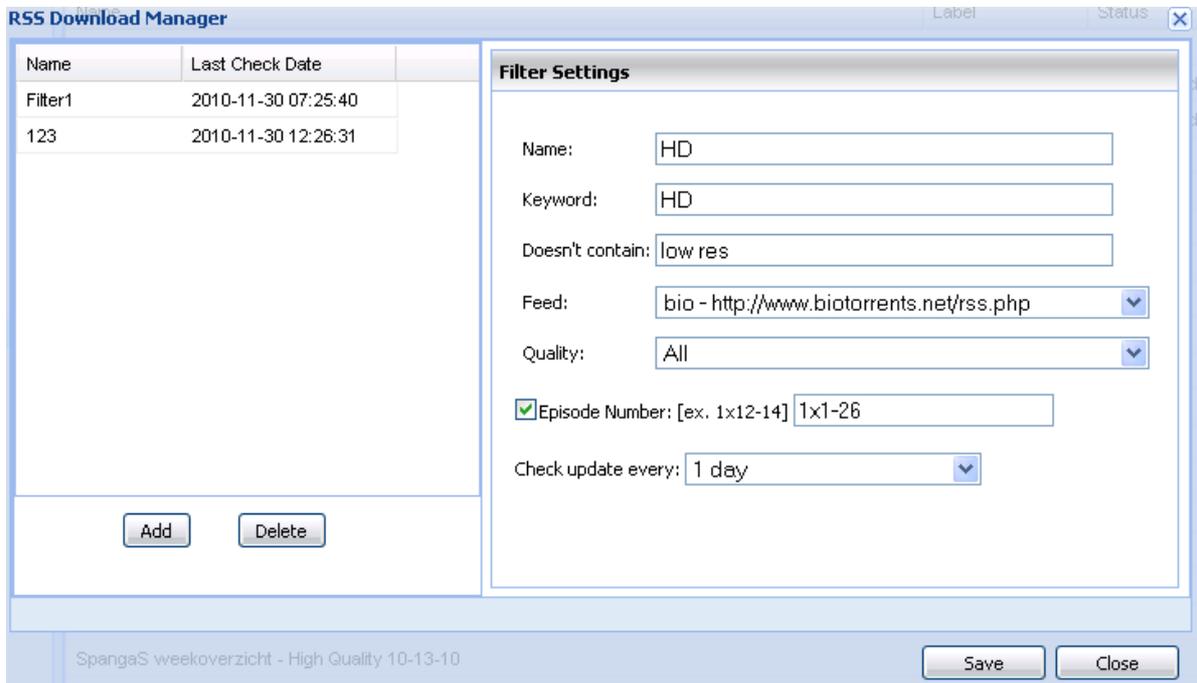
Manager, add, update, edit, or delete an RSS feed.



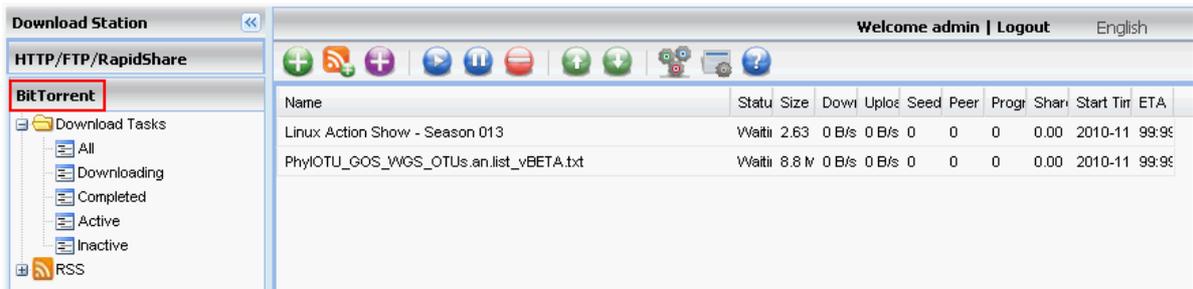
RSS Download Manager

You can use RSS Download Manager to create and manage filters to download particular torrent files for BitTorrent Download.

1. To add a filter, click 'Add'.
2. Enter the filter name and specify the keyword to include and exclude.
3. Select the RSS feed to apply the filter settings.
4. 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).
5. Episode number: Select this option to specify particular episodes or a serial of episodes of a drama work. For example, to download episodes 1-26 of season 1 of a TV program, enter 1x1-26. To download only episode 1 of season 1, enter 1x1.
6. Select the time interval for automatic update of the RSS feeds. The NAS will update the RSS feeds and check if any new contents that match the filters are available.
7. Click 'Save' to save the filter or 'Close' to cancel or exit.
8. To delete a filter, select the filter from the list and click 'Delete'.



You can view the status of all BT download tasks by clicking 'BitTorrent' on the left column.



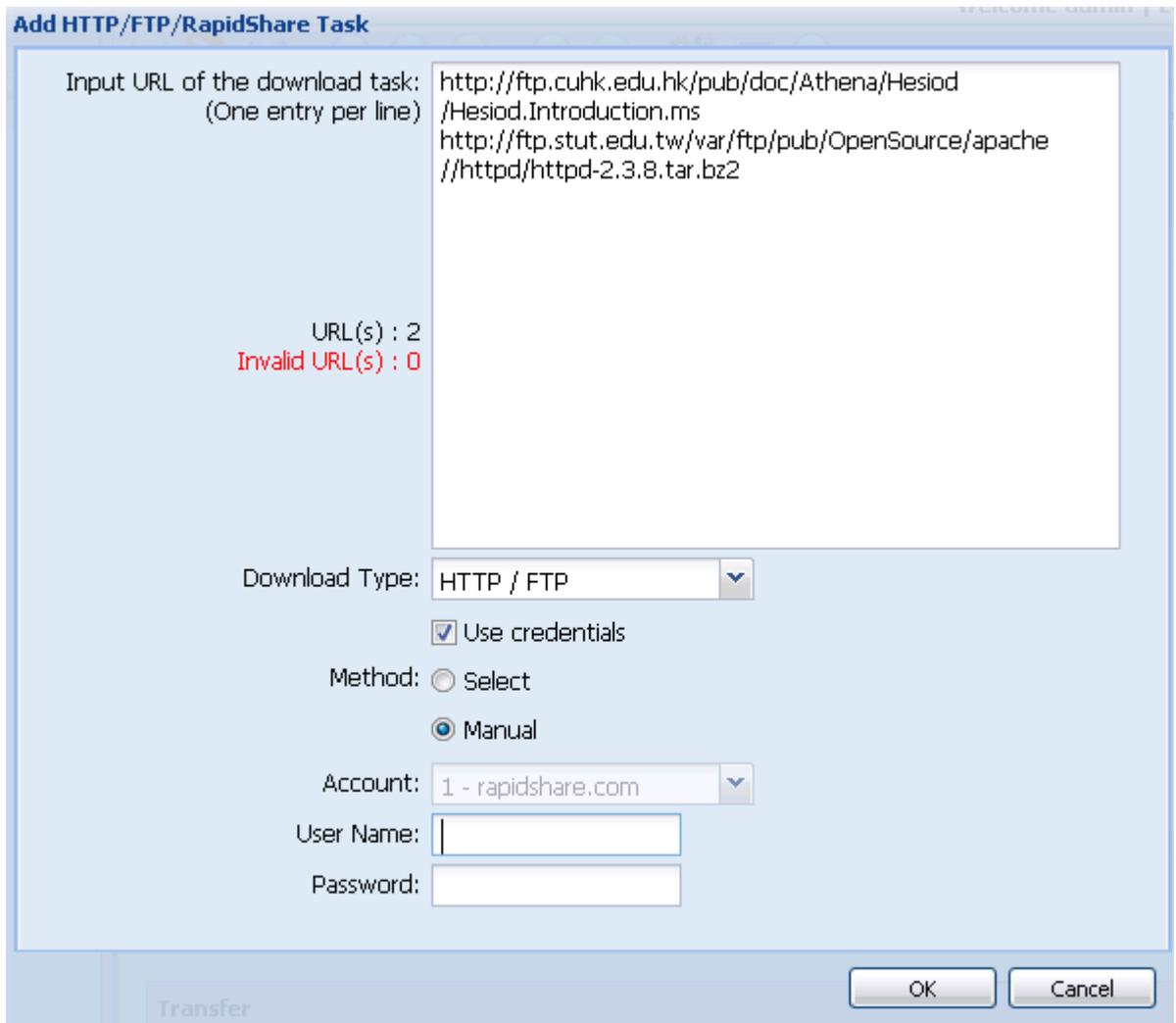
HTTP, FTP, RapidShare Download

To add an HTTP, FTP, or RapidShare download task, click .



Enter the URL of the download task (one entry per line). Then select the download type: HTTP/FTP or RapidShare. If a user name and password is required to access the file, select 'Use credentials' and select a pre-configured account (Settings > HTTP/FTP/RapidShare > Account) or enter a user name and password. Then click 'OK'. The NAS will download the files automatically.

Note: You can only enter maximum 30 entries at one time.

A screenshot of the 'Add HTTP/FTP/RapidShare Task' dialog box. The dialog has a title bar and a main content area. The main content area contains a text input field with the following text:
Input URL of the download task:
(One entry per line)
http://ftp.cuhk.edu.hk/pub/doc/Athena/Hesiod
/Hesiod.Introduction.ms
http://ftp.stut.edu.tw/var/ftp/pub/OpenSource/apache
//httpd/httpd-2.3.8.tar.bz2
Below the text input field, there are two lines of text:
URL(s) : 2
Invalid URL(s) : 0
Below this, there is a 'Download Type' dropdown menu set to 'HTTP / FTP'. There is a checked checkbox for 'Use credentials'. Below that, there are two radio buttons for 'Method': 'Select' and 'Manual', with 'Manual' selected. Below the radio buttons, there is an 'Account' dropdown menu set to '1 - rapidshare.com'. Below the account dropdown, there are two text input fields for 'User Name' and 'Password'. At the bottom right of the dialog, there are 'OK' and 'Cancel' buttons. At the bottom left, there is a 'Transfer' button.

You can view the status of all HTTP, FTP, or RapidShare download tasks by clicking 'HTTP/FTP/RapidShare' on the left column.

Name	Status	Size
http://ftp.cuhk.edu.hk/pub/doc/Athena/Hesiod/Hesiod.Introduction.ms	Finished	26.3
http://ftp.stut.edu.tw/var/ftp/pub/OpenSource/apache/httpd/httpd-2.3.8.tar.bz2	Waiting	0 B

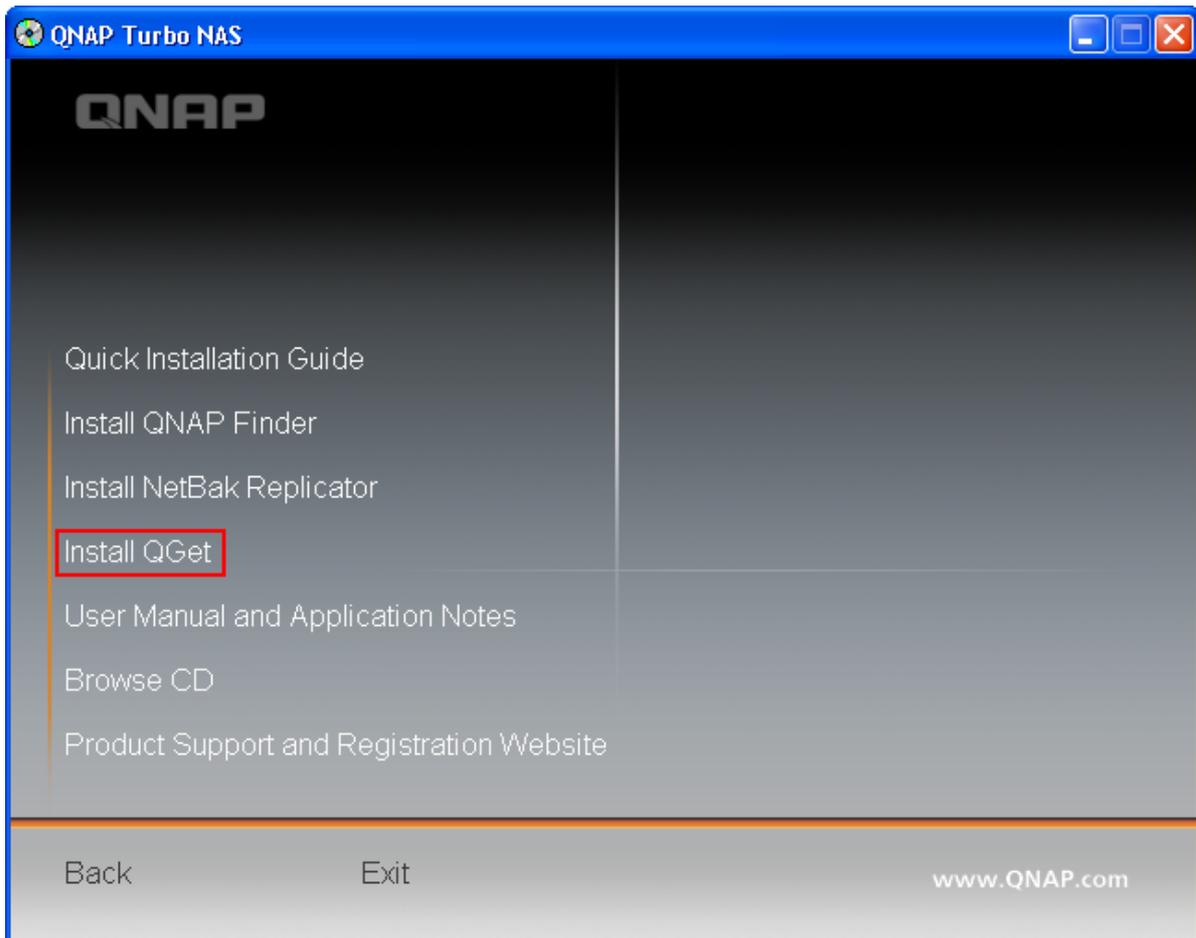
The common reasons for slow BT download rate or download error are as below:

1. The torrent file has expired, the peers have stopped sharing this file, or there is error in the file.
2. The NAS has configured to use fixed IP but DNS server is not configured, or DNS server fails.
3. Set the maximum number of simultaneous downloads as 3-5 for the best download rate.
4. The NAS is located behind NAT router. The port settings have led to slow BT download rate or no response. You may try the following means to solve the problem:
 - a. Open the BitTorrent port range on NAT router manually. Forward these ports to the LAN IP of the NAS.
 - b. The new 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.

Use Download Software QGet

QGet is a utility to manage the download tasks on multiple NAS servers over LAN or the Internet. You can install the software on multiple PCs or Macs; no license is required. QGet is compatible with Download Station v1 and v2.

1. Install QGet from the product CD-ROM disc.

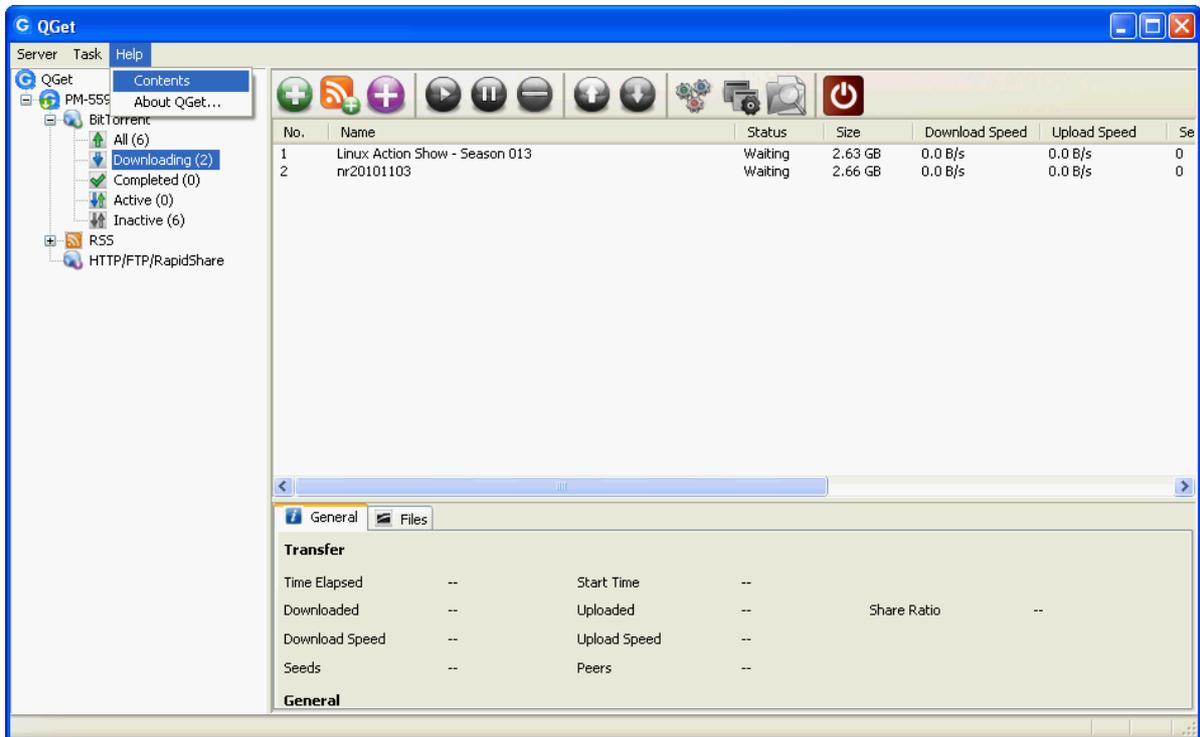


2. Follow the instructions to install QGet.



3. Run QGet from the installed location.

4. You can use QGet to manage the download tasks on multiple NAS servers as if you were using the web-based Download Station. For the introduction and button description of QGet, see the online help in 'Help' > 'Contents'.



Note: Download Station v2 is only compatible with QGet 2.0 or later.

7.4 Surveillance Station

You monitor and record the live video of maximum 2-4 IP cameras available on the network (LAN or WAN) with Surveillance Station.

Maximum number of IP cameras	NAS models
2	TS-110, TS-119, TS-210, TS-219, TS-219P, TS-239 Pro, TS-239 Pro II, TS-259 Pro, TS-259 Pro+, TS-119P+, TS-219P+, TS-112, TS-212
4	TS-410, TS-419P, TS-410U, TS-419U, SS-439 Pro, TS-439 Pro, TS-439 Pro II, TS-439U-SP/RP, TS-459 Pro, TS-459U-SP/RP, TS-509 Pro, TS-559 Pro, TS-639 Pro, TS-659 Pro, SS-839 Pro, TS-859 Pro, TS-809 Pro, TS-809U-RP, TS-859U-RP, TS-459 Pro+, TS-559 Pro+, TS-659 Pro+, TS-419P+, TS-412

Note: To use this feature on TS-x39/509/809 series, please update the system firmware with the image file enclosed in the product CD or download the latest system firmware.

Home >> Applications >> Surveillance Station Welcome admin | Logout English

Surveillance Station

Surveillance Station

Enable Surveillance Station

Show service link on the login page

[APPLY](#)

Click 'Surveillance Station' on the top or on the login page of the NAS to connect to Surveillance Station. If you login the service from the login page of the NAS, you are required to enter the user name and password.

Note: The Surveillance Station is only supported on IE browser 6.0 or later.

To set up your network surveillance system by the NAS, follow the steps below:

1. Plan your home network topology
2. Set up the IP cameras
3. Configure the camera settings on the NAS
4. Configure your NAT router (for remote monitoring over the Internet)

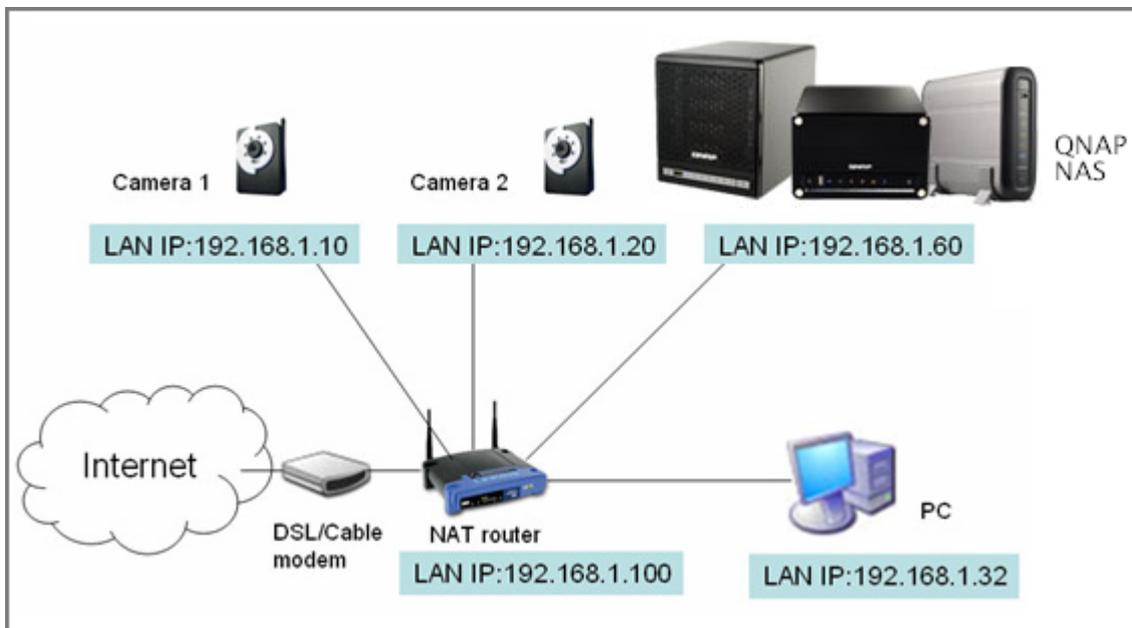
Plan your home network topology

Write down your plan of the home network before setting up the surveillance system. Consider the following when doing so:

- i. The IP address of the NAS
- ii. The IP address of the IP cameras

Your computer, the NAS, and the IP cameras should be connected to the same router on the LAN. Assign fixed IP addresses to the NAS and the IP cameras. For example,

- The LAN IP of the home router: 192.168.1.100
- Camera 1 IP: 192.168.1.10 (fixed IP)
- Camera 2 IP: 192.168.1.20 (fixed IP)
- NAS IP: 192.168.1.60 (fixed IP)



Set up the IP cameras

In this example, two IP cameras will be installed. Connect the IP cameras to your home network. Then set the IP address of the cameras so that they are in the same LAN as the computer. Login the configuration page of the Camera 1 by IE browser. Enter the IP address of the first IP camera as 192.168.1.10. The default gateway should be set as the LAN IP of the router (192.168.1.100 in this example). Then configure the IP address of the second IP camera as 192.168.1.20.

Some IP cameras provide a utility for IP configuration. You may refer to the user manual of the cameras for further details.

* Please refer to <http://www.qnap.com/> for the supported network camera list.

Configure the camera settings on the NAS

Login the Surveillance Station by the IE browser to configure the IP cameras. Go to 'Settings' > 'Camera Settings'. Enter the IP camera information, for example, name, model, and IP address.

The screenshot shows the 'Surveillance Station' interface with the 'Settings' tab selected. Under 'Camera Settings', there is a table listing two cameras:

	Camera Name	Brand	IP Address	WAN IP Address
1	Camera 1			
2	Camera 2			

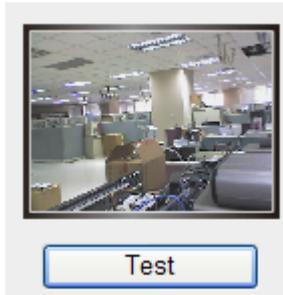
Below the table, the configuration for 'Camera 1' is shown:

- Camera Number: 1: Camera 1 (dropdown)
- Camera Model: Axis 205 (dropdown)
- Camera Name: Camera 1 (text input)
- IP Address: (empty text input)
- Port: 80 (text input)
- WAN IP: (for monitoring from public network) (empty text input)
- (If your IP camera is installed behind NAT router, you may input the public IP address (or URL) and the corresponding forwarded port of the router.)
- Port: 80 (text input)
- User Name: (empty text input)
- Password: (empty text input)

Buttons: 'Apply' and 'Remove'.

Note: All the camera configuration will not take effect until you click the "Apply" button.

Click 'Test' on the right to ensure the connection to the IP camera is successful.



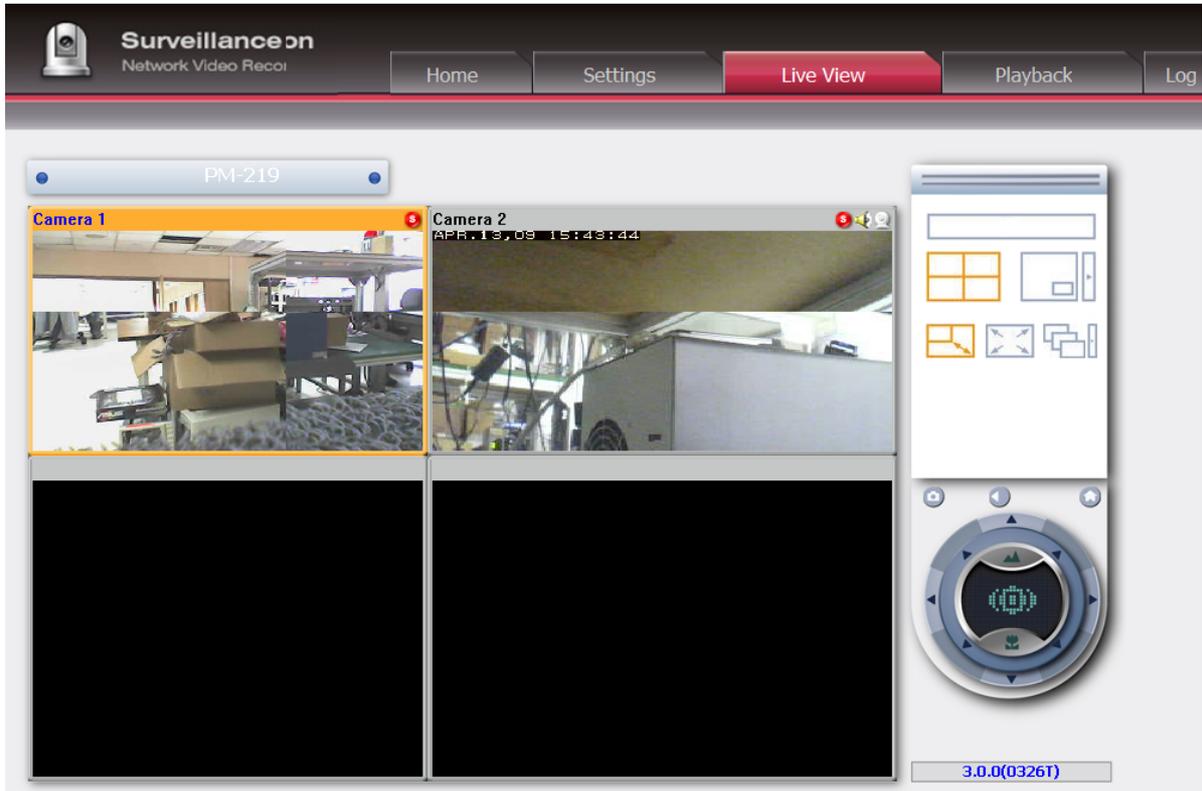
If your IP camera supports audio recording, you may enable the option on the 'Recording Settings' page. Click 'Apply' to save the changes.

Camera Number:	2: Camera 2
Video Compression:	Motion JPEG
Resolution:	QVGA
Frame Rate:	20
Quality:	Normal
<input checked="" type="checkbox"/> Enable audio recording on this camera	
Estimated Storage Space for Recording: 6760 GB	
<input type="button" value="Apply"/>	

Configure the settings of IP camera 2 following the above steps.

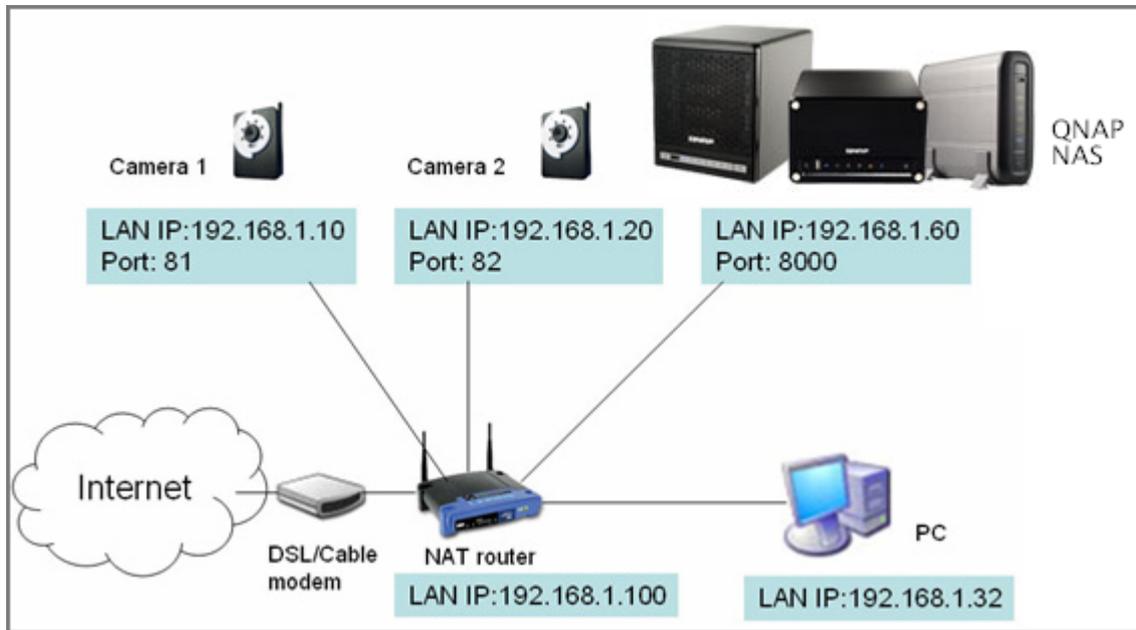
After you have added the network cameras to the NAS, go to the 'Live View' page. The first time you connect to this page by the IE browser, you have to install the ActiveX control in order to view the images of IP camera 1 and IP camera 2. You can start to use the monitoring and recording functions of the Surveillance Station.

To use other functions such as motion detection recording, scheduled recording, and video playback, see the online help.



Configure your NAT router (for remote monitoring over the Internet)

To view the monitoring video and connect to the NAS remotely, you need to change the network settings by forwarding different ports to the corresponding LAN IP on your NAT router.



Change the port settings of the NAS and the IP cameras

The default HTTP port of NAS is 8080. In this example, the port is changed to 8000. Therefore, you have to connect to the NAS via `http://NAS IP:8000` after applying the settings.

Then login the network settings page of the IP cameras. Change the HTTP port of IP camera 1 from 80 to 81. Then change the port of IP camera 2 from 80 to 82.

Next, login the Surveillance Station. Go to 'Settings' > 'Camera Settings'. Enter the port numbers of IP camera 1 and IP camera 2 as 192.168.1.10 port 81 and 192.168.1.20 port 82 respectively. Enter the login name and the password for both IP cameras.

Besides, enter the WAN IP address (or your domain address on the public network, for example, MyNAS.dyndns.org) and the port on the WAN for the connection from the Internet. After finishing the settings, click 'Test' to verify the connection.

Camera Number:	1: Camera 1	
Camera Model:	iPUX ICS 1003/1013	
Camera Name:	Camera 1	
IP Address:	192.168.1.10	
<input checked="" type="checkbox"/> Port	81	
WAN IP: (for monitoring from public network)	myNAS.dyndns.org	
<small>(If your IP camera is installed behind NAT router, you may input the public IP address (or URL) and the corresponding forwarded port of the router.)</small>		
<input checked="" type="checkbox"/> Port	81	
User Name :	administrator	
Password :	•••••	
<input type="button" value="Apply"/> <input type="button" value="Remove"/>		
Note: All the camera configuration will not take effect until you click the "Apply" button.		

Go to the configuration page of your router and configure the port forwarding as below:

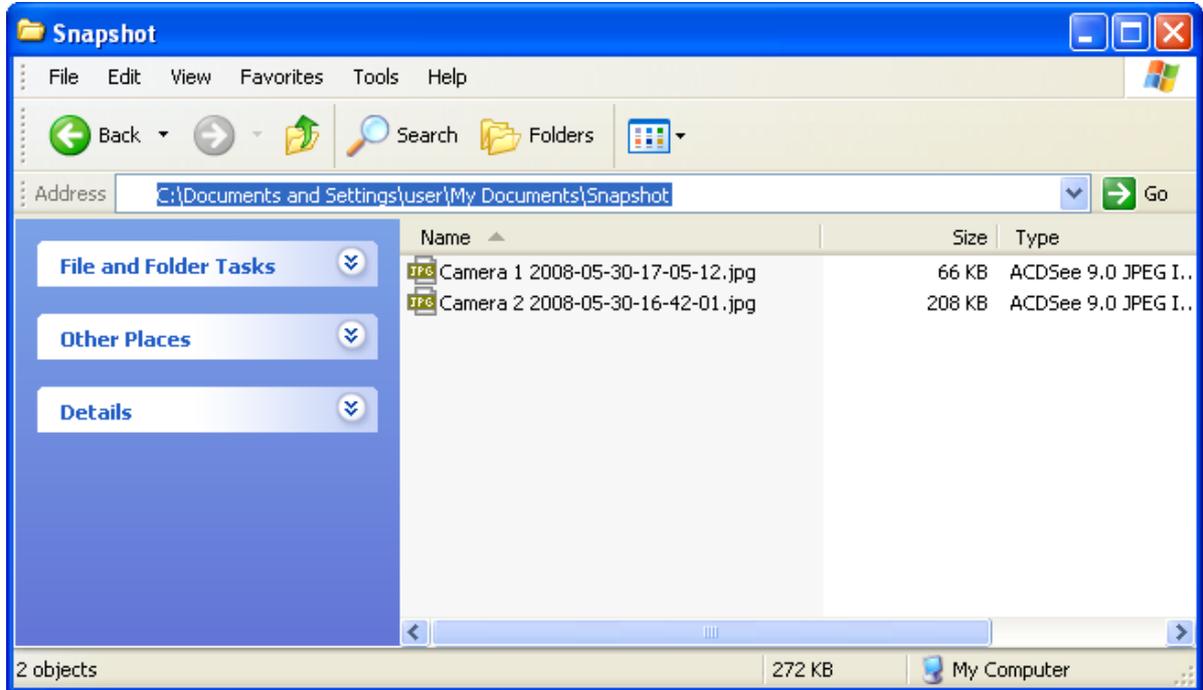
- Forward port 8000 to the LAN IP of the NAS: 192.168.1.60
- Forward port 81 to the LAN IP of IP camera 1: 192.168.1.10
- Forward port 82 to the LAN IP of IP camera 2: 192.168.1.20

Note: When you change the port settings, make sure remote access is allowed. For example, if your office network blocks the port 8000, you will not be able to connect to your NAS from the office.

After you have configured the port forwarding and the router settings, you can start to use the Surveillance Station for remote monitoring over the Internet.

Connect to the snapshots and video recordings of Surveillance Station

All the snapshots are saved in 'My Documents' > 'Snapshot' (Windows XP) in your computer. If you are using Windows 7 or Vista, the default directory is 'Documents' > 'Snapshot'.



The video recordings will be saved in \\NASIP\Qrecordings or \\NASIP\Recordings. The general recordings are saved in the folder 'record_nvr' and the alarm recordings are saved in the folder 'record_nvr_alarm'.

7.5 iTunes Service

General

The MP3 files on the Qmultimedia/Multimedia folder of the NAS can be shared to iTunes by this service. All the computers with iTunes installed on LAN are able to find, browse, and play the shared music files on the NAS.

To use the iTunes service, make sure you have installed the iTunes program on your computer. Enable this service. Then upload the music files to the Qmultimedia/Multimedia folder of the NAS.

Home >> Application Servers >> iTunes Server Welcome admin | Logout English

iTunes Server

GENERAL **SMART PLAYLIST**

iTunes Server

After enabling iTunes server, all the iTunes clients on the same subnet can play the music files in "Multimedia" folder on the server.

Enable iTunes Server

Password required:

Please select the label encoding of the music files. Select the correct encoding to display the label information correctly. Please select English for non-Asian languages.

Label encoding:

APPLY

Password required: To allow the users to connect to the data only by entering the correct password, select this option and enter the password.

Smart Playlist

Click 'Smart Playlist' to enter the smart playlist page. You can define the playlist rules to categorize the songs into different playlists. If there is no song that matches the rules on the playlist, the iTunes client will not show the playlist. For detailed operation, refer to the online help.



Locate the service in iTunes

Connect your PC and Turbo NAS to the same LAN and start iTunes on your PC. You should see an entry (your NAS name generally) shown under 'SHARED' on the left panel of iTunes interface. Click the NAS name and it will bring up a list of all the music files stored under Qmultimedia (or Multimedia) share folder and they are ready for playing right away.



Click the triangle icon next to the NAS name. The smart playlists defined earlier will be shown. The songs are categorized accordingly. You can start to use iTunes to play the music on your NAS.



Note: You can download the latest iTunes software from official Apple website <http://www.apple.com/>

7.6 UPnP Media Server

To use UPnP Media Server, enable this function and click the following link (<http://NAS IP:9000/>) to enter the configuration page of the UPnP Media Server.



UPnP Media Server

UPnP Media Server

Enable UPnP Media Server

After enabling this service, click the following link to enter UPnP Media Server configuration page.

<http://10.8.12.46:9000/>

APPLY

Click the link <http://NAS IP:9000/>. Go to 'TwonkyMedia Settings' > 'Basic Setup' to configure the basic server settings.

The contents on the Qmultimedia or Multimedia folder of the NAS will be shared to the digital media players by default. You can go to 'Basic Setup' > 'Sharing' > 'Content Locations' to change the share folder or add more share folders.

After configuring the settings, you can upload MP3, photos, or video files to the specified share folders on the NAS.

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

For the information of setting up the UPnP media server of the NAS for media playing, see here [495](#).

About UPnP

Universal Plug and Play (UPnP) is a set of computer network protocols promulgated by the UPnP Forum. The purpose of UPnP is to allow the devices to connect seamlessly and to simplify the implementation of the networks at home and in the corporate environment. UPnP achieves this by defining and publishing UPnP device control protocols built upon open, Internet-based communication standards.

The term UPnP is gleaned from Plug-and-play, a technology for dynamically attaching devices to a computer directly.

7.7 MySQL Server

Note: To use this feature on the TS-x39/509/809 series, 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/>.

You can enable MySQL Server as the website database.

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. When you disable this option, your MySQL server will only be configured as local database server for the web server of the NAS.

After enabling remote connection, assign a port for the remote connection service of MySQL server. The default port is 3306.

After the first-time installation of the NAS, a folder phpMyAdmin 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.

Note:

- Do not delete the phpMyAdmin folder. You can rename this 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 remains unchanged.

Database Maintenance

- Reset root password: Execute this function to reset the password of MySQL root as 'admin'.
- Re-initialize database: Execute this function to delete all the data on MySQL database.

For the information of hosting a phpBB forum on the NAS, see here⁵⁰⁴.

MySQL Server

MySQL Server

You can enable MySQL server as the website database.

Enable MySQL Server
Enable this option to allow remote connection of MySQL server.

Enable TCP/IP Networking
Port Number:

Note: You can install the phpMyAdmin package to manage your MySQL server. To install the phpMyAdmin, please click [here](#).

Database Maintenance

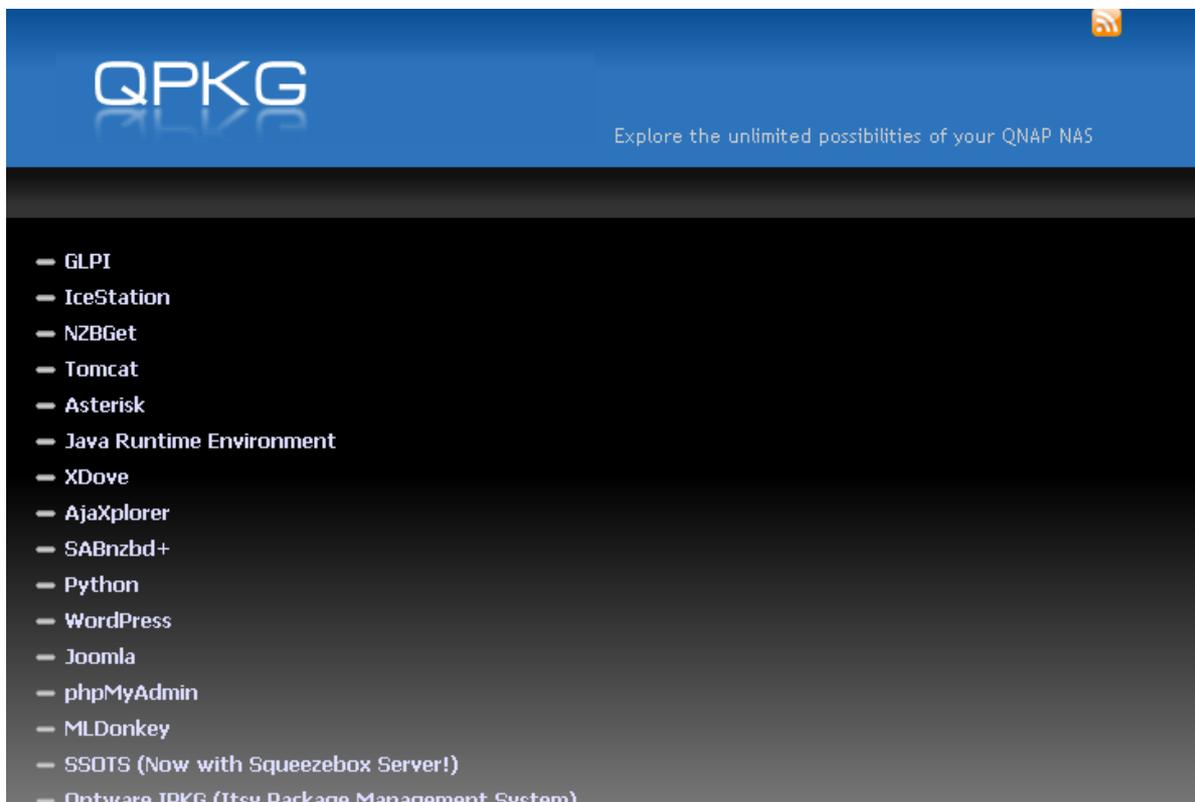
You can reset the database password or re-initialize the database.

7.8 QPKG Plugins

You can install the QPKG packages to add more functions to the NAS. Click 'GET QPKG'.



Before you install the packages, make sure the files are correct, read the instructions carefully, and back up all the important data on the NAS. Download the package you want to install on the NAS to your computer.



Before installing the QPKG package, unzip the downloaded file. To install the QPKG, browse to select the correct QPKG file and click 'INSTALL'.



After uploading the QPKG packages, the details are shown. Click the link to connect to the web page of the installed package and start to configure the settings. To remove the package from the NAS, click 'REMOVE'.



7.9 Backup Server

Rsync Server

You can enable Rsync server to configure the NAS as a backup server to allow data backup from a remote Rsync server or NAS server. The default port number for remote replication via Rsync is 873.

- 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).

You can set up a user name and password to allow only authenticated access from an Rsync server to back up data to the NAS.

The screenshot shows a web browser window with the following elements:

- Header: Home >> Application Servers >> Backup Server | Welcome admin | Logout | English
- Section Title: Backup Server Configuration
- Navigation: Two tabs, 'RSYNC SERVER' (active) and 'RTRR SERVER'.
- Section: Rsync Server Settings
- Text: By using this function, you can back up the data on the local server to a remote server of the same NAS series, and also allow backup from remote server to the local server.
- Form Fields:
 - Port Number: 873
 - Enable backup from a remote server to the local host
 - Allow remote Rsync server to back up data to NAS
 - User Name: rsync
 - Password: [masked]
- Button: APPLY

RTRR Server

To allow real-time or schedule data replication from a remote server to the local NAS, select 'Enable Real-time Remote Replication Server'. You can specify the port number for remote replication. The default port number is 8899. To allow only 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.

Note: This feature is available for Intel-based NAS models only. Intel-based NAS refers to TS-239 Pro, TS-239 Pro II, TS-259 Pro, SS-439 Pro, TS-439 Pro, TS-439 Pro II, TS-439U-SP/RP, TS-459 Pro, TS-459U-SP/RP, TS-509 Pro, TS-559 Pro, TS-639 Pro, TS-659 Pro, SS-839 Pro, TS-859 Pro, TS-809 Pro, TS-809U-RP, TS-859U-RP, TS-259 Pro+, TS-459 Pro+, TS-559 Pro+, TS-659 Pro+.

Backup Server Configuration

RSYNC SERVER | **RTRR SERVER**

RTRR Server Settings

Real-time Remote Replication (RTRR) Server allows you to perform one-way synchronization from the local NAS to a remote server, or other way round.

Enable Real-time Remote Replication Server

Port Number:

Password

Password:

Verify Password:

Network Access Protection

Allow all connections

Allow connections from the list only

	Genre	IP address or network domain	Access right	Action
<input type="checkbox"/>				<input type="button" value="Delete"/>

Note: If the list is empty, all connections to the server will be allowed.

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 the IP addresses or host names, select 'Allow connections from the list only' and click 'Add'.

Network Access Protection

Allow all connections
 Allow connections from the list only

<input type="checkbox"/>	Genre	IP address or network domain	Access right	Action
<input type="button" value="Delete"/>				

Note: If the list is empty, all connections to the server will be allowed.

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 the files on the local NAS. Click 'FINISH' to exit.

Add IP Address



Enter the IP addresses that are allowed to connect to the server.

IP Address Format:

Single IP address
 Specify IP addresses of certain network by setting IP address and netmask

IP Address:

IP:

Subnet Mask: 255.

Access right:

Step 1 of 1

After saving the access rule, click 'APPLY' and the NAS will restart to apply the settings.

Network Access Protection

- Allow all connections
- Allow connections from the list only

<input type="checkbox"/>	Genre	IP address or network domain	Access right	Action
<input type="checkbox"/>	LAN2	10.8.0.0/8	Read/Write	

Note: If the list is empty, all connections to the server will be allowed.

Note: The settings have been changed. Please click "Apply" to restart the server.

8. Backup

Remote Replication [364](#)

Cloud Backup [386](#)

Time Machine [390](#)

External Drive [395](#)

USB One Touch Copy [396](#)

8.1 Remote Replication

Rsync Replication

You can replicate the NAS data to a remote NAS or Rsync server by Rsync remote replication. If the backup destination is a NAS, you must first go to 'Application Servers' > 'Backup Server' > 'Rsync Server' and enable the remote NAS as an Rsync backup server.

To create a replication job, click 'Create New Replication Job'.

Home >> Backup >> Remote Replication Welcome admin | Logout Eng

Remote Replication

RSYNC **RTRR**

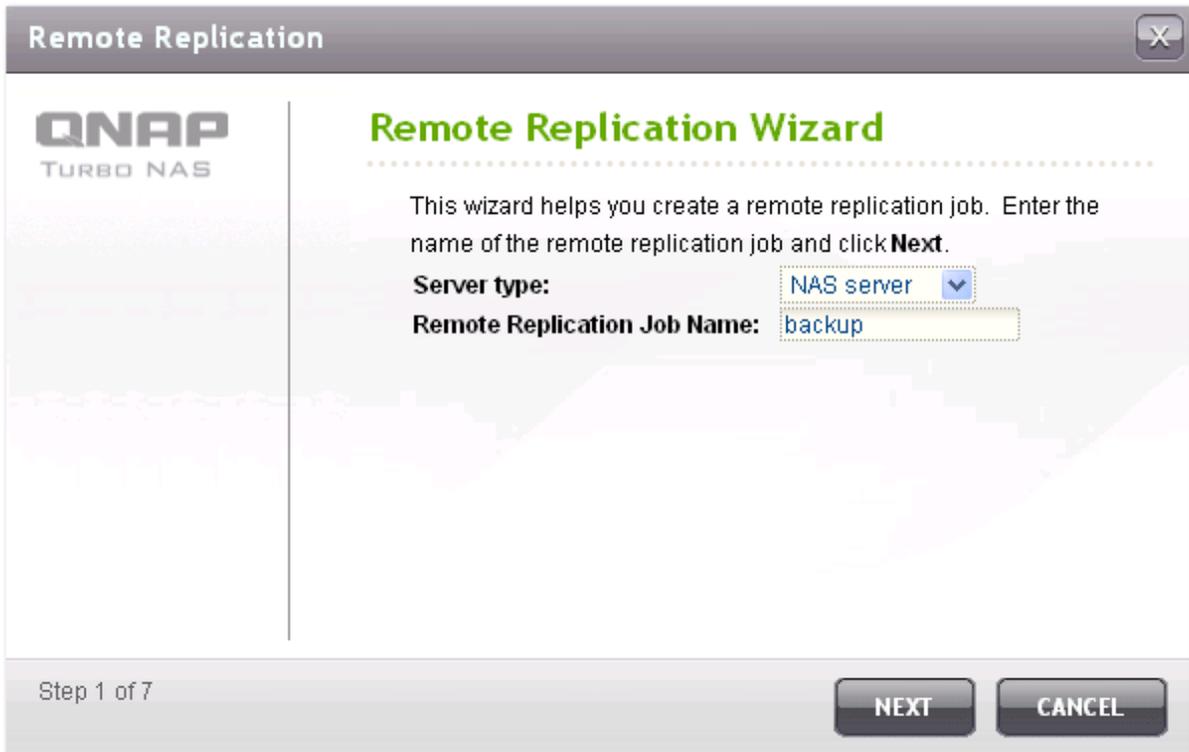
Current Jobs

Rsync Replication allows you to replicate the files of a local folder to a folder of a remote server. You must enable [Rsync](#) server on the remote server in order to use this function.

[Options](#) [Create New Replication Job](#)

<input type="checkbox"/>	Job Name	Schedule	Status	Action
<input type="checkbox"/>				Delete

Specify the server type, NAS or Rsync server, of the remote server. Enter a job name. Click 'NEXT'.



Enter the IP address, port number, user name and password to login the remote server. The default port number is 873. Note that the login user name must have read/write access to the remote server and sufficient quota limit on the server. Click 'TEST' to verify the connection. Then click 'NEXT'.



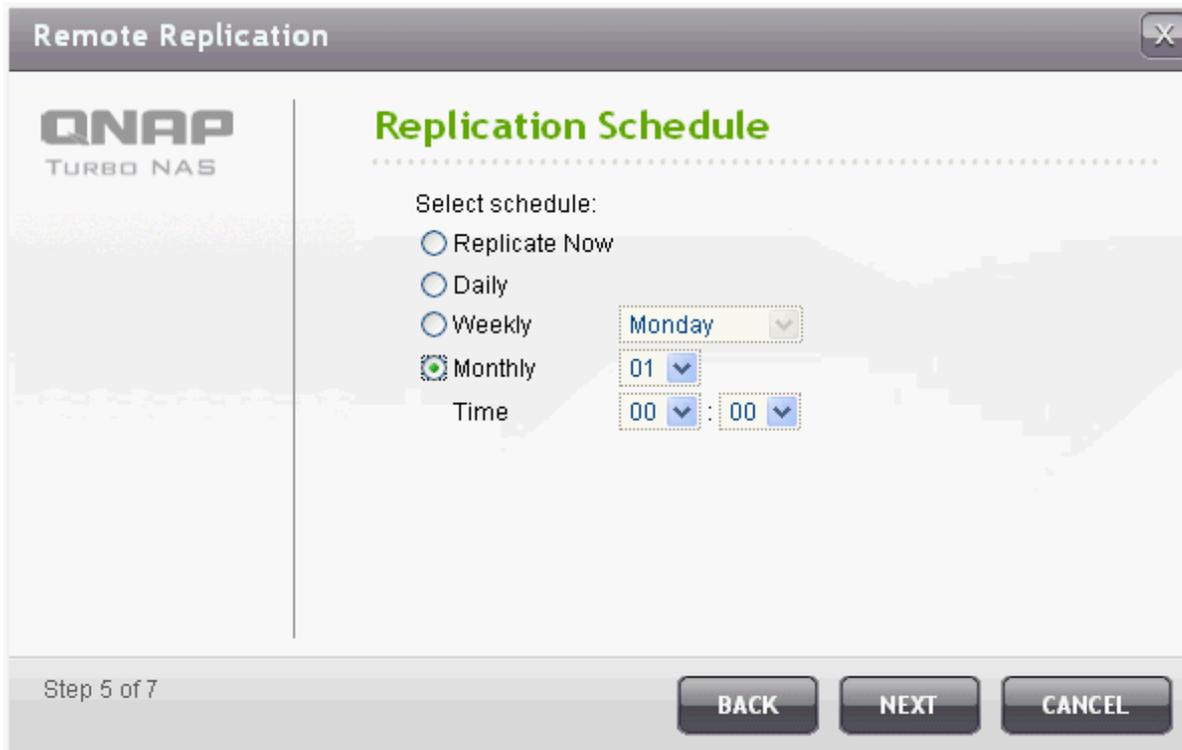
Specify the destination folder, where the data will be replicated to.

The screenshot shows a window titled "Remote Replication" with a close button (X) in the top right corner. On the left side, there is a logo for "QNAP TURBO NAS". The main area is titled "Remote Destination" in green text, followed by a dotted line separator. Below this, there is a text input field for "Destination Path" containing the text "/Public". Underneath the input field, there is a note "(e.g. /ShareFolder/Directory)". Below that, there is a label "Remain Capacity:" followed by the value "0 Mb". At the bottom of the window, there is a status bar that says "Step 3 of 7" on the left and three buttons labeled "BACK", "NEXT", and "CANCEL" on the right.

Specify the local folder, where the data will be replicated from.

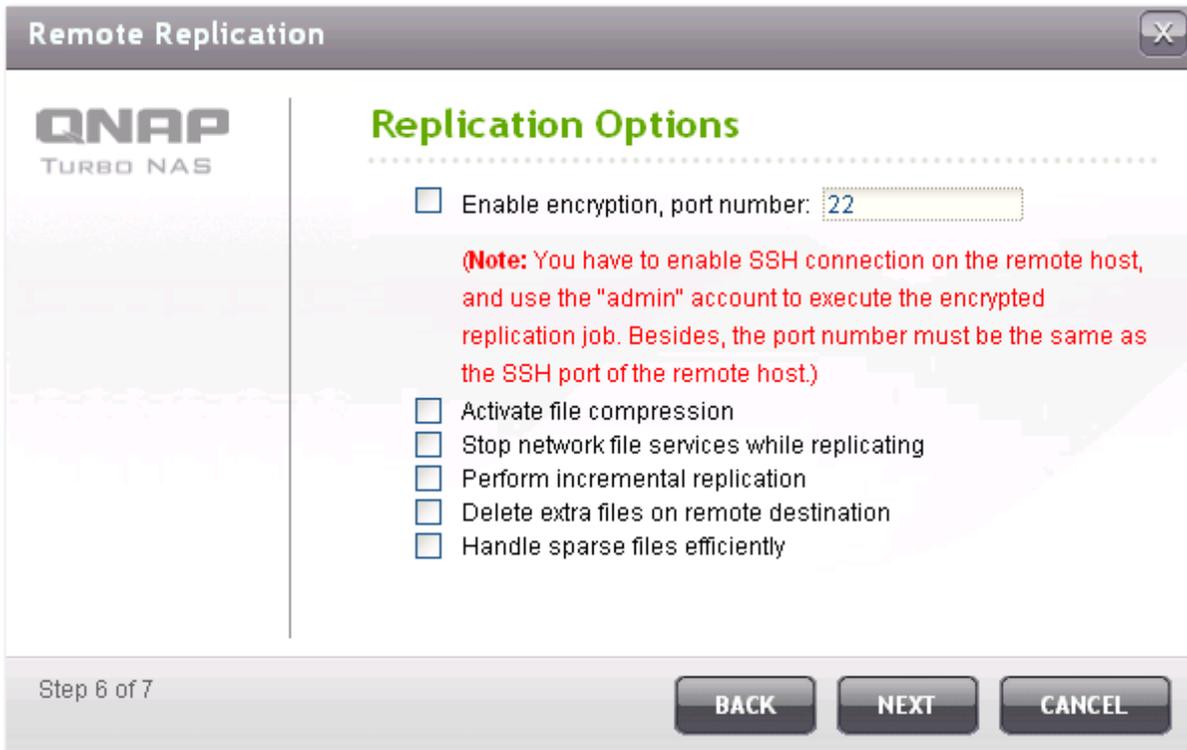
The screenshot shows a window titled "Remote Replication" with a close button (X) in the top right corner. On the left side, there is a logo for "QNAP TURBO NAS". The main area is titled "Local Source" in green text, followed by a dotted line separator. Below this, there is a text input field for "Local Path" containing the text "/Dept". Underneath the input field, there is a note "(e.g. /ShareFolder/Directory)". At the bottom of the window, there is a status bar that says "Step 4 of 7" on the left and three buttons labeled "BACK", "NEXT", and "CANCEL" on the right.

Select to replicate the data immediately or specify the backup schedule.

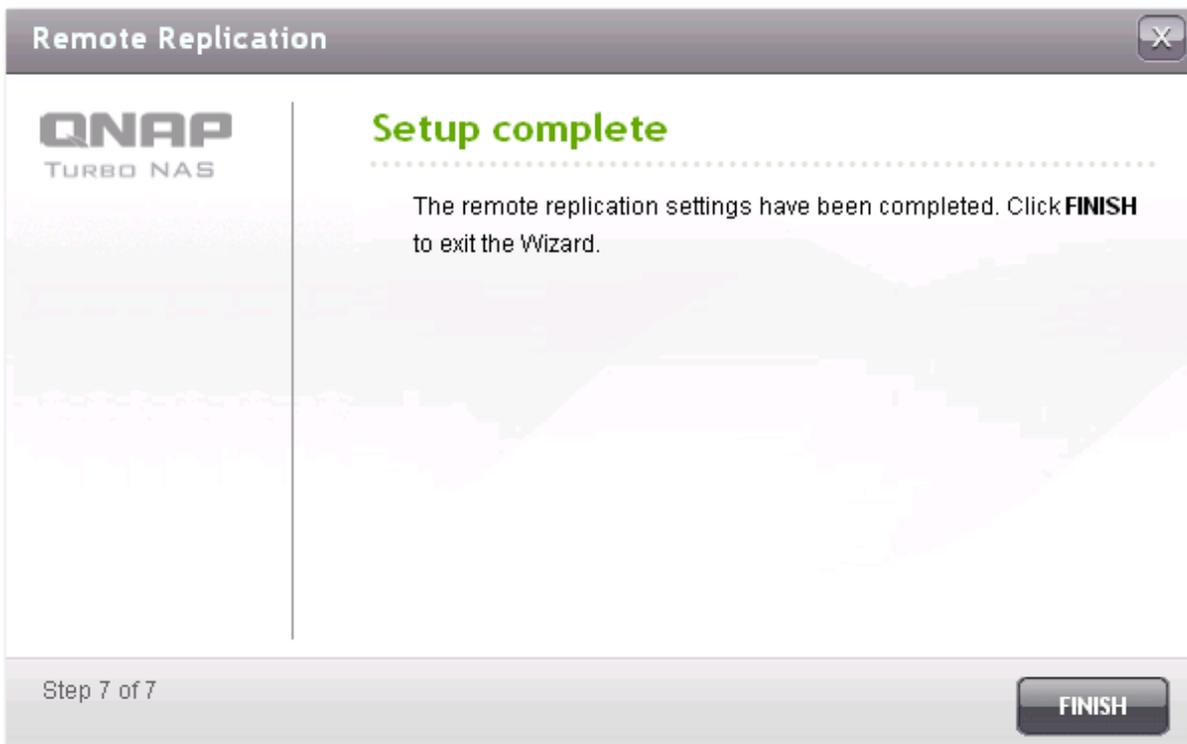


Specify other options for the remote replication job.

- Enable encryption: Select this option to execute encrypted remote replication. Note that you must turn on 'Allow SSH connection' in 'Network Services > Telnet/SSH' and specify the same port number for SSH and encrypted remote replication.
- Activate file compression: Turn on this option to allow file compression during the data transfer process. This option is recommended for low bandwidth environment or remote replication over WAN.
- Stop network file services while replicating: Stop all connections to the NAS via Samba (SMB), AFP, and FTP when remote replication is in process.
- Perform incremental replication: When this option is turned on, after the first-time replication, the NAS will only back up the files that have been changed since the last backup. The files of the same name, size, and modified time will not be copied again. You are recommended to turn on this option for the replication job which will be executed for more than once in order to shorten the backup time.
- Delete extra files on remote destination: Select the 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. Turn on this option may reduce the time required for remote replication.



Click 'FINISH'. The job will be executed 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.



RSYNC **RTRR**

Current Jobs

Rsync Replication allows you to replicate the files of a local folder to a folder of a remote server. You must enable [Rsync](#) server on the remote server in order to use this function.

[Options](#) [Create New Replication Job](#)

<input type="checkbox"/>	Job Name	Schedule	Status	Action
<input type="checkbox"/>	backup	00:00 - Monthly: 1	Ready	    

[Delete](#)

Icon	Description
	Start a replication job immediately.
	Stop a running replication job.
	View Rsync logs (replication results).
	Edit a replication job.
	Disable replication schedule.
	Enable replication schedule.

To configure the timeout and retry settings of the replications jobs, click 'Options'.

[Options](#) [Create New Replication Job](#)

<input type="checkbox"/>	Job Name	Schedule	Status	Action
<input type="checkbox"/>	backup	00:00 - Monthly: 1	Ready	    

[Delete](#)

- 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 should it fail.
- 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 time.



Advanced Settings

You can configure the following settings for the Remote Replication jobs. It is recommended to use the default values.

Timeout (second):

Number of retries:

Retry Intervals (second):

Step 1 of 1

APPLY

CANCEL

RTRR Replication

Note: This feature is available for Intel-based NAS models only.

Intel-based NAS refers to TS-239 Pro, TS-239 Pro II, TS-259 Pro, SS-439 Pro, TS-439 Pro, TS-439 Pro II, TS-439U-SP/RP, TS-459 Pro, TS-459U-SP/RP, TS-509 Pro, TS-559 Pro, TS-639 Pro, TS-659 Pro, SS-839 Pro, TS-859 Pro, TS-809 Pro, TS-809U-RP, TS-859U-RP, TS-259 Pro+, TS-459 Pro+, TS-559 Pro+, TS-659 Pro+.

Real-time Remote Replication (RTRR) provides real-time or scheduled data replication between the local NAS and a remote NAS, an FTP server, or an external drive, or replication between two local share folders. In real-time mode, the source folder will be monitored and any files that are new, changed, and renamed will be replicated to the target folder immediately. In scheduled mode, the source folder will be replicated to the target folder according to the pre-defined schedule.

If the backup destination is a NAS, you must first enable RTRR server ('Application Servers' > 'Backup Server' > 'RTRR Server') or FTP service ('Network Services' > 'FTP Service') on the remote NAS.

The NAS supports maximum 64 replication jobs. Each job supports maximum 5 folder pairs. To create a real-time or scheduled remote replication, click 'Create New Replication Job'.

The screenshot shows the RTRR Replication interface. At the top, there are two tabs: 'RSYNC' and 'RTRR'. Below the tabs, there is a section titled 'Current Jobs' with a description: 'RTRR (Real-time Remote Replication) allows one-way data replication between two servers/locations (including FTP server) in real time or according to the specified schedule. You must enable RTRR or FTP server on the remote server in order to use this function.' Below the description, there is a table with columns: 'Target Host/Job Name', 'Status', and 'Action'. A '+ Options' button is located to the left of the table, and a 'Create New Replication Job' button is located to the right of the table, highlighted with a red box.

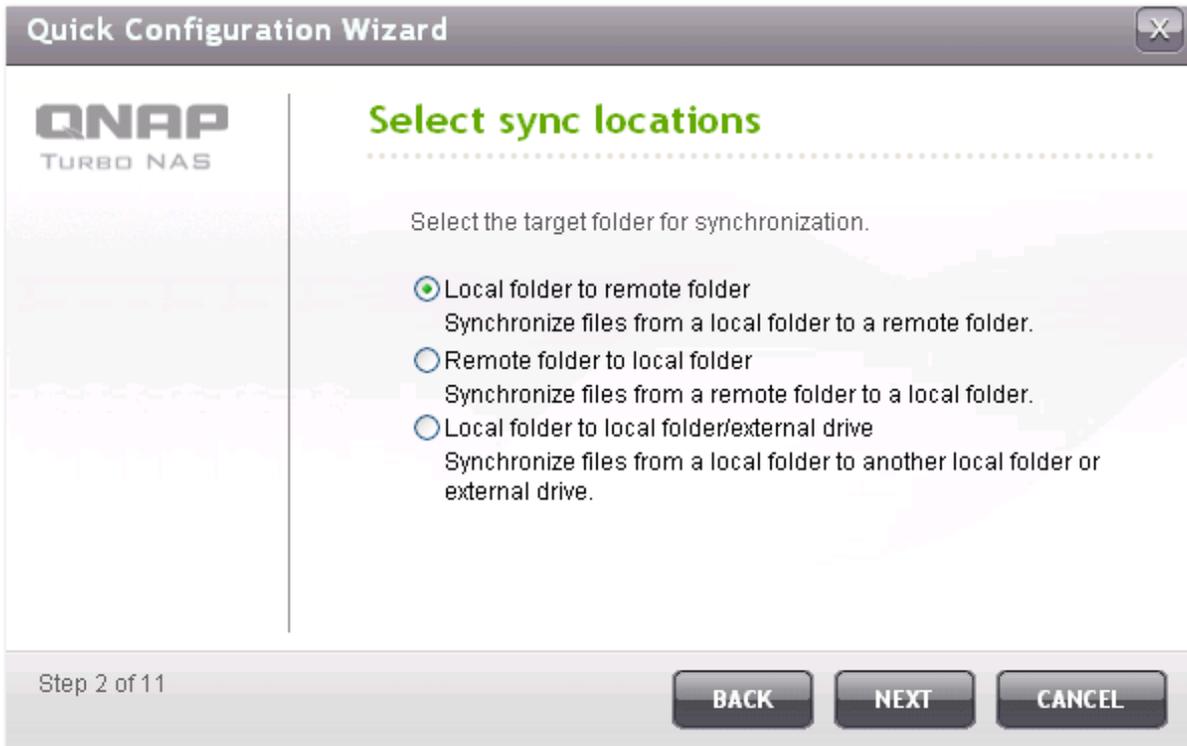
When the wizard shows up, click 'NEXT'.



Select the sync locations. Make sure the destination device has been formatted and share folders have been created. The NAS supports:

- 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

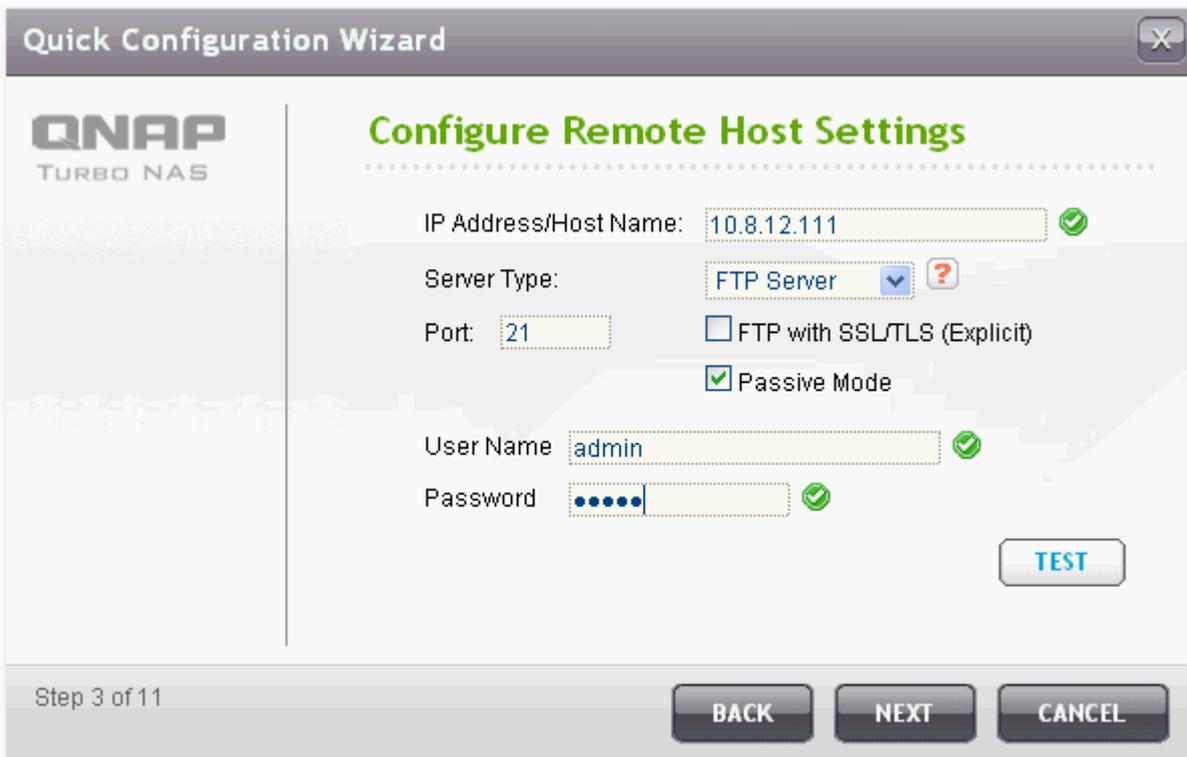
Click 'NEXT'.



Enter the IP address or host name. Select the server type (FTP server or NAS server with RTRR service enabled).

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 user name 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'.

The screenshot shows the 'Configure Remote Host Settings' step of the QNAP Quick Configuration Wizard. The interface includes the QNAP logo and the following configuration fields:

- IP Address/Host Name: 10.8.12.111 (with a green checkmark icon)
- Server Type: RTRR Service (dropdown menu with a red question mark icon)
- Port: 8899
- Enable Secure Connection (SSL):
- Password: [Redacted] (with a green checkmark icon)

A 'TEST' button is located to the right of the password field. At the bottom of the wizard, it indicates 'Step 3 of 11' and provides 'BACK', 'NEXT', and 'CANCEL' navigation options.

Select the folder pair for data synchronization.

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.



Select 'Add More Folder Pairs' to add more folder pairs for backup.

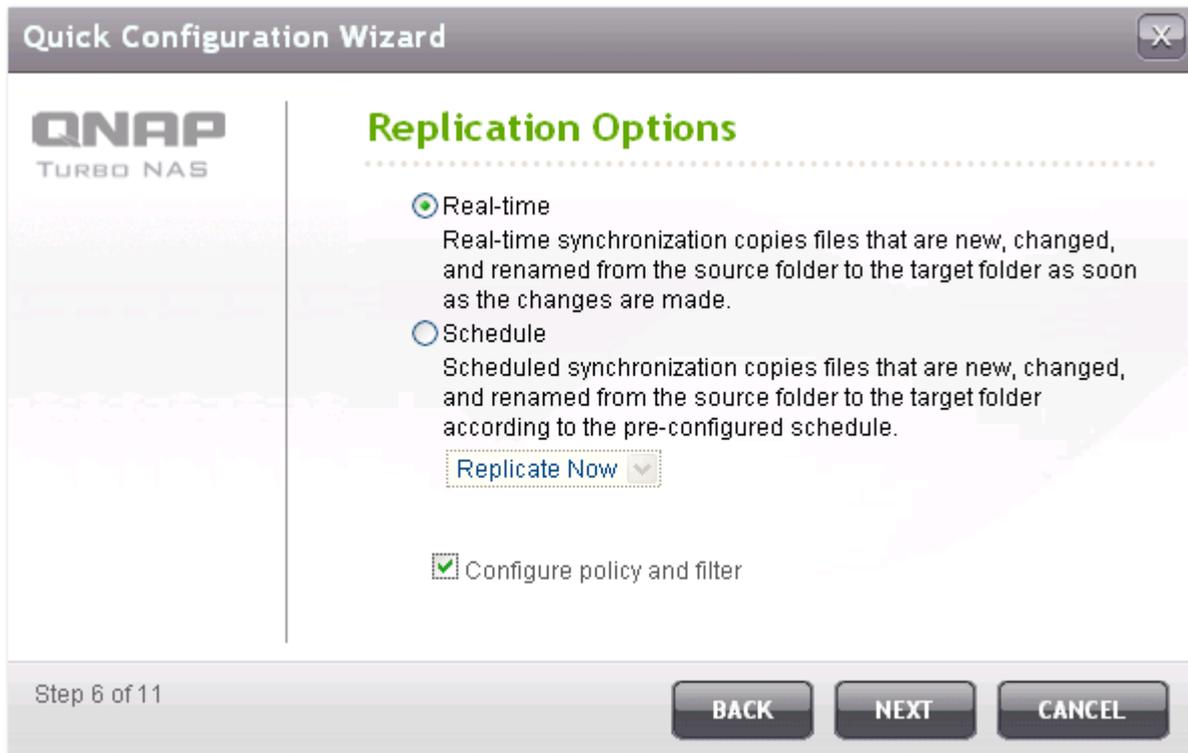
Each sync job supports maximum 5 folder pairs. Select the folder pairs and click 'ADD'. Click 'NEXT'.



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:

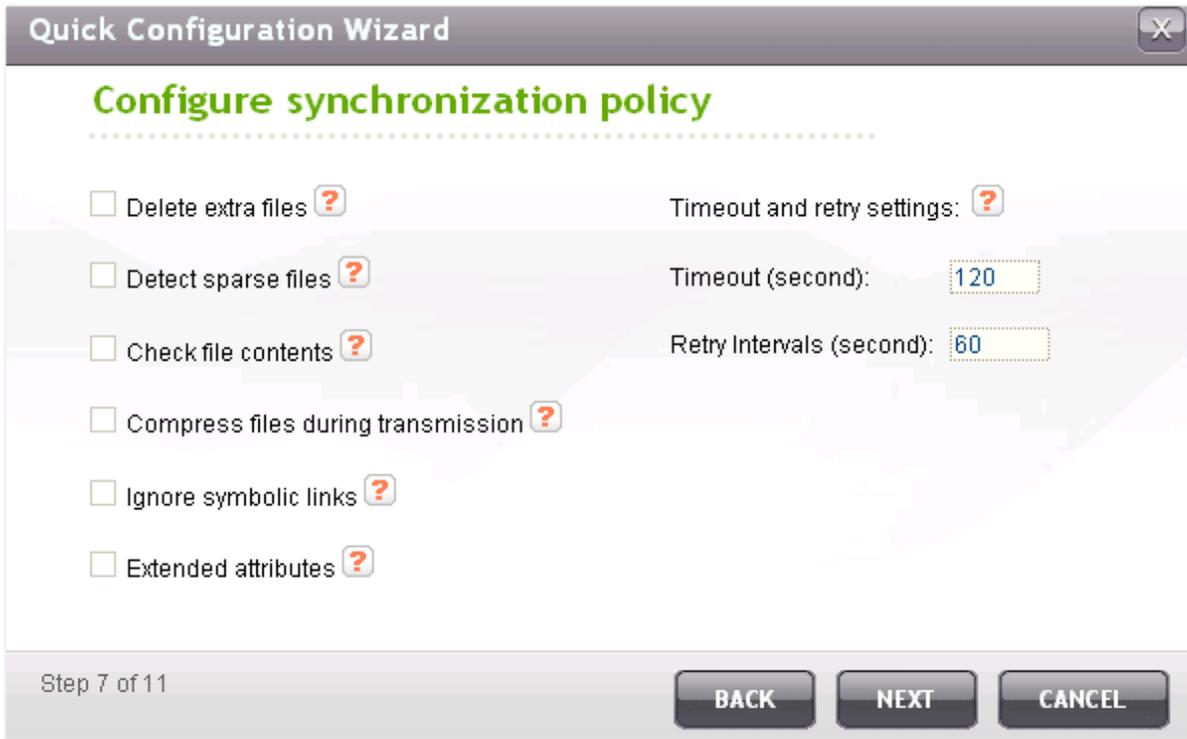
- Replicate Now: Replicate data immediately.
- Periodically: Enter the time interval in hour and minute that the backup should be executed. The minimum time interval is 5 minutes.
- Hourly: Specify the minute when an hourly backup should be executed, e.g. enter 01 to execute backup each first minute of every hour, 1:01, 2:01, 3:01...
- Daily: Specify the time when a daily backup should be executed, e.g. 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.



To configure synchronization policy, select 'Configure policy and filter' and click 'NEXT'.

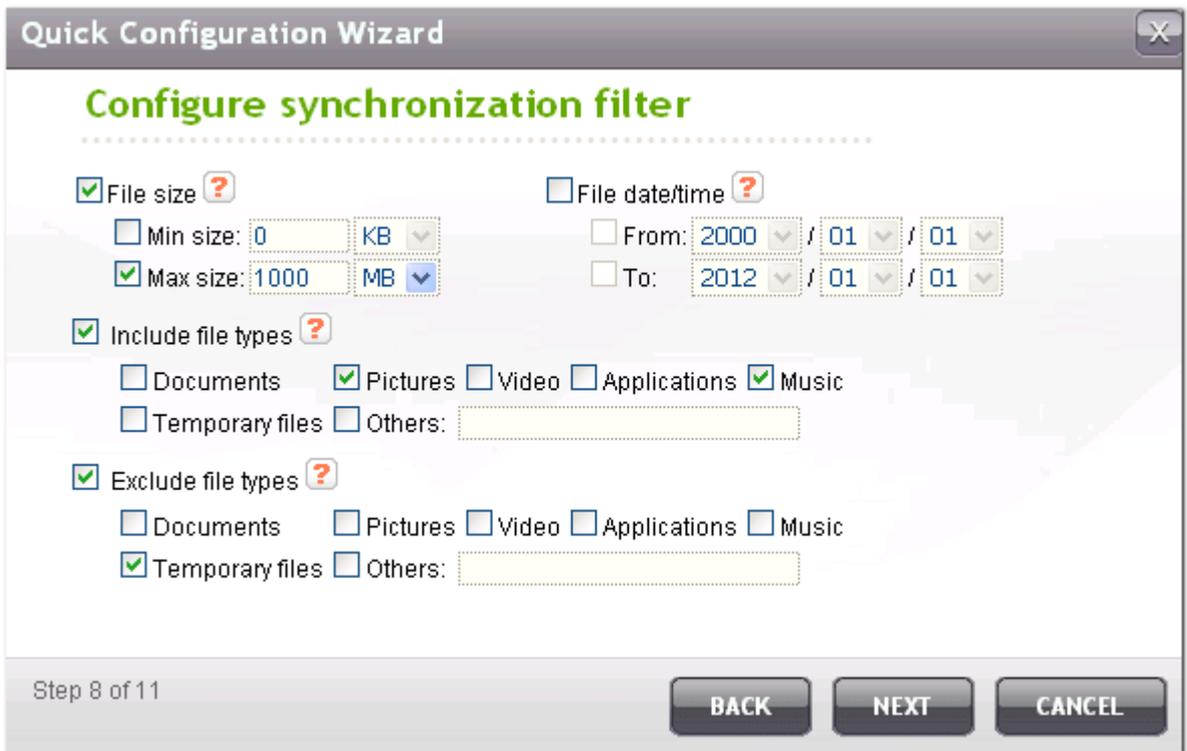
Select whether or not to enable the following options:

- 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 sync operations. Note that more CPU resources will be consumed.
- 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 sync operation fails.



You can specify the file size, file types to include/exclude, and file date/time to filter data synchronization.

- File size: Specify the minimum and maximum size of the files to be replicated.
- 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.



Enter a job name. Click 'NEXT'.

Quick Configuration Wizard

QNAP
TURBO NAS

Enter a sync job name

Job Name: ✓

Specify a name for the sync job. It is a required field and cannot be empty.

Step 9 of 11

BACK **NEXT** **CANCEL**

Confirm the settings and click 'NEXT'.

Quick Configuration Wizard

QNAP
TURBO NAS

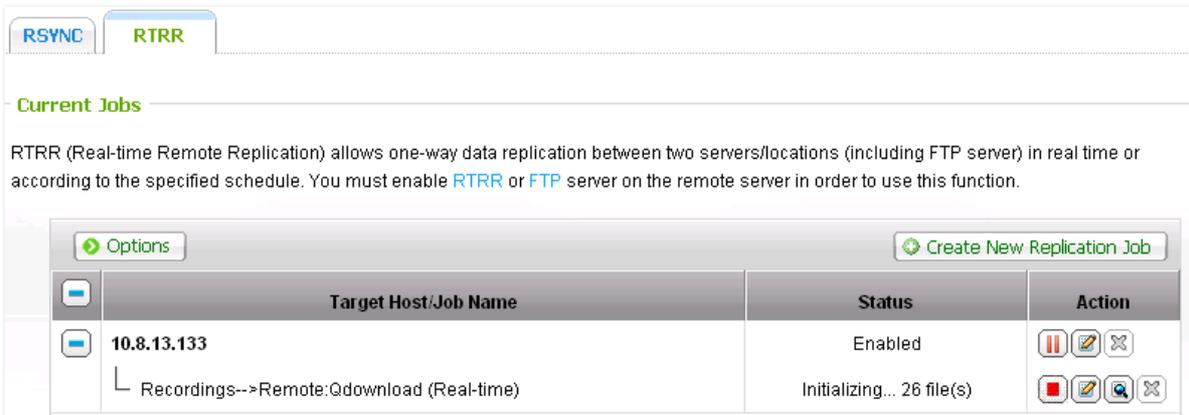
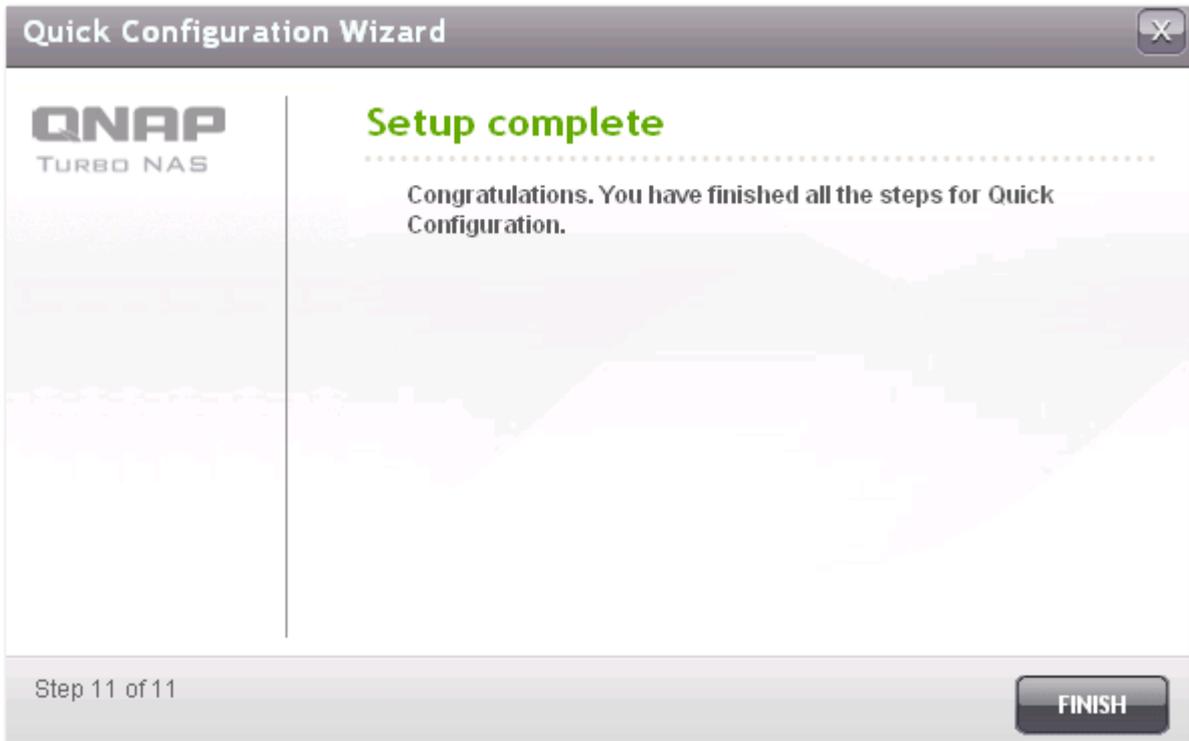
Confirm Settings

Job Name:	Recordings-->Remote:Qdownload
Folder Pair Number:	2
Folder Pairs 1:	[/Recordings] --> [/Qdownload]
Folder Pairs 2:	[/Download] --> [/Qdownload]
Server Type:	Local folder to remote folder
Server Type:	FTP Server
Host Name:	10.8.13.133:21
User Name	test
Schedule Type	Real-time
Policy:	Timeout (second): 120 Number of retries: 3 Retry Intervals (second): 60
File size:	--- ~ 1000 mb Pictures

Step 10 of 11

BACK **NEXT** **CANCEL**

Click 'FINISH' to exit the wizard.



Icon	Description
	<ul style="list-style-type: none"> • Enable connection to a remote server. • Start a replication job.
	<p>Stop connection to a remote server or external drive.</p>
	<p>Stop a replication job.</p>
	<p>View job status and logs; download logs.</p>
	<ul style="list-style-type: none"> • Edit the connection settings of a remote server. • Edit the settings of a replication job.
	<ul style="list-style-type: none"> • Delete connection settings to a remote server. • Delete a replication job. <p>This button is available only after a replication job is stopped or the connection to the remote server is stopped.</p>

To edit the replication job properties, click 'Options'.

	Target Host/Job Name	Status	Action
	10.8.13.133	Enabled	

Under 'Event Logs' you can select to enable 'Download Detailed Logs' and specify the maximum file size of the log file. You can also select to send an email alert when synchronization fails or completes. Note that the SMTP server settings must be properly set up on the NAS ('System Administration' > 'Notification').

Customize job property

EVENT LOGS | POLICY | FILTER

Download Detailed Logs
Maximum Log Size (MB): MB (Max 1GB)
Enable this option to include more information in the log file. You can also specify the maximum file size.

Send an alert email in the following condition(s):
 Synchronization failed
 Synchronization has completed.
Enable this option to allow the system to send an alert email to the system administrator when a synchronization job fails or completes.

Note: The SMTP server must be configured first for alert mail delivery. [Click this to configure the SMTP server](#)

APPLY CANCEL

Specify the replication policy in 'Policy' and filter settings in 'Filter'. These will become the default settings for all RTRR replication jobs.

Customize job property [X]

EVENT LOGS **POLICY** **FILTER**

Delete extra files ?

Detect sparse files ?

Check file contents ?

Compress files during transmission ?

Ignore symbolic links ?

Extended attributes ?

Timeout and retry settings: ?

Timeout (second): 120

Number of retries: 3

Retry Intervals (second): 60

APPLY **CANCEL**

Download replication job logs:

To view the status and logs of a replication job, click .

Options		Create New Replication Job	
	Target Host/Job Name	Status	Action
	10.8.13.133	Disable	  
	└ Recordings-->Remote:Qrecordings (Schedule: Weekly Monday 00:00)	Failed (Check the log for detail)	   

You can view the details of a replication job.

Job Status and Logs

JOB STATUS | **JOB LOGS**

Job Name: Recordings-->Remote:Qrecordings

Schedule Type: Schedule: Weekly Monday 00:00

Folder Pairs: 1

Total File(s): -----

Total Folder(s): -----

Total File Size: -----

Average Transmit Speed: 0 KB

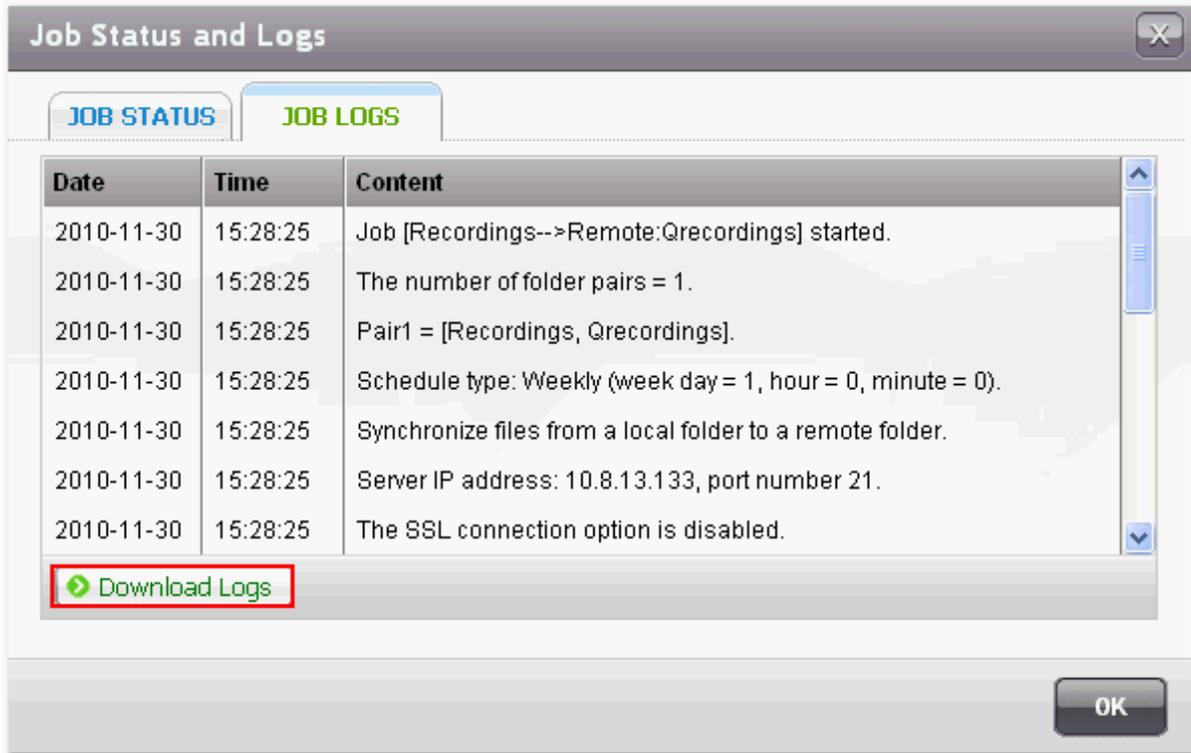
Elapsed Time: 00:00:00

Time Left: 00:00:00

Status: Failed

OK

You can view the job logs or download the logs by clicking 'Download Logs'. The log file can be opened by Microsoft Excel or other text editor software. Note that this button is only available after you have enabled 'Download Detailed Logs' in 'Options' > 'Event Logs' and executed the replication job once.



How to create a remote replication job for an entire disk volume?

To back up an entire disk volume by remote replication, create a new share folder (for example, root) as the root directory which contains all the share folders in the same volume, and specify the path to '/'. Then create a remote replication job to copy this share folder (root). All the share folders and sub-folders will be replicated.

Share Folder Property ✕

Share Folder Property

Network Share Name: root

Disk Volume: Mirroring Disk Volume: Drive 1 2 ▾

Hide Network Drive: Yes No ⓘ

Lock file (oplocks): Yes No

Path: /

Comment (optional):

Enable write-only access on FTP connection ⓘ

Step 1 of 1

APPLY **CANCEL**

8.2 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 services interface that can be used to store and retrieve the data from anywhere on the web. With Amazon S3, you can upload the data from your NAS to Amazon S3 or download the data from Amazon S3 to your NAS.

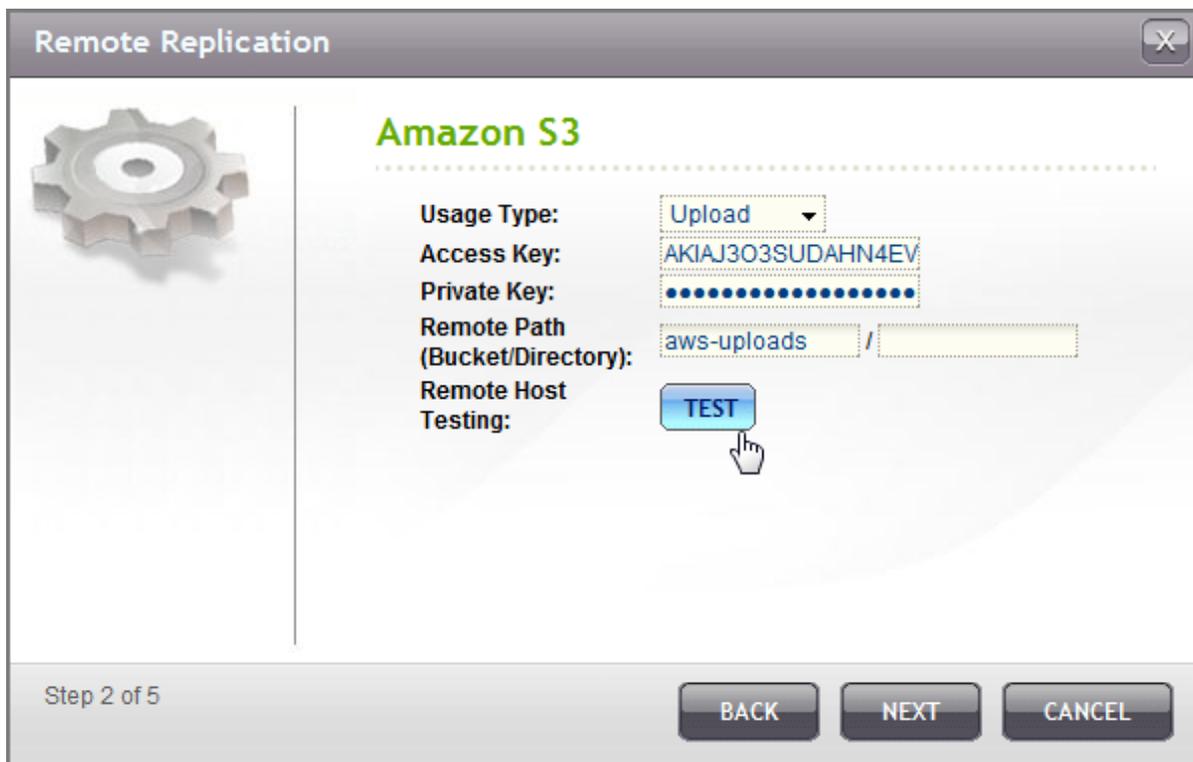
Note that you need to register an AWS account from <http://aws.amazon.com/> and pay for the service. After signing up for an account, you need to create at least one bucket (root folder) on Amazon S3 by an Amazon S3 application. We recommend the Mozilla Firefox add-on 'S3Fox' for beginners.

The screenshot shows a web interface for 'Cloud Backup'. At the top, there is a navigation bar with 'Home >> Backup >> Cloud Backup' on the left and 'Welcome admin | Logout' and 'English' on the right. Below the navigation bar, the title 'Cloud Backup' is displayed in green. There are two tabs: 'AMAZON S3' (selected) and 'ELEPHANTDRIVE'. Under the 'AMAZON S3' tab, there is a section titled 'Amazon S3' with the text: 'This function allows you to upload the data from the NAS to Amazon S3, or vice versa.' Below this is a note: 'Note: Please synchronize the system time with an Internet time server before using this function. To configure the system date and time, please click [here](#).' At the bottom, there is a section titled 'Current Jobs' with a 'Create New Replication Job' button. Below the button is a table with the following headers: 'Job Name', 'Usage Type', 'Schedule', 'Status', and 'Action'.

Job Name	Usage Type	Schedule	Status	Action
----------	------------	----------	--------	--------

After setting up the Amazon S3 account, follow the steps below to back up the data to or retrieve the data from Amazon S3 using the NAS.

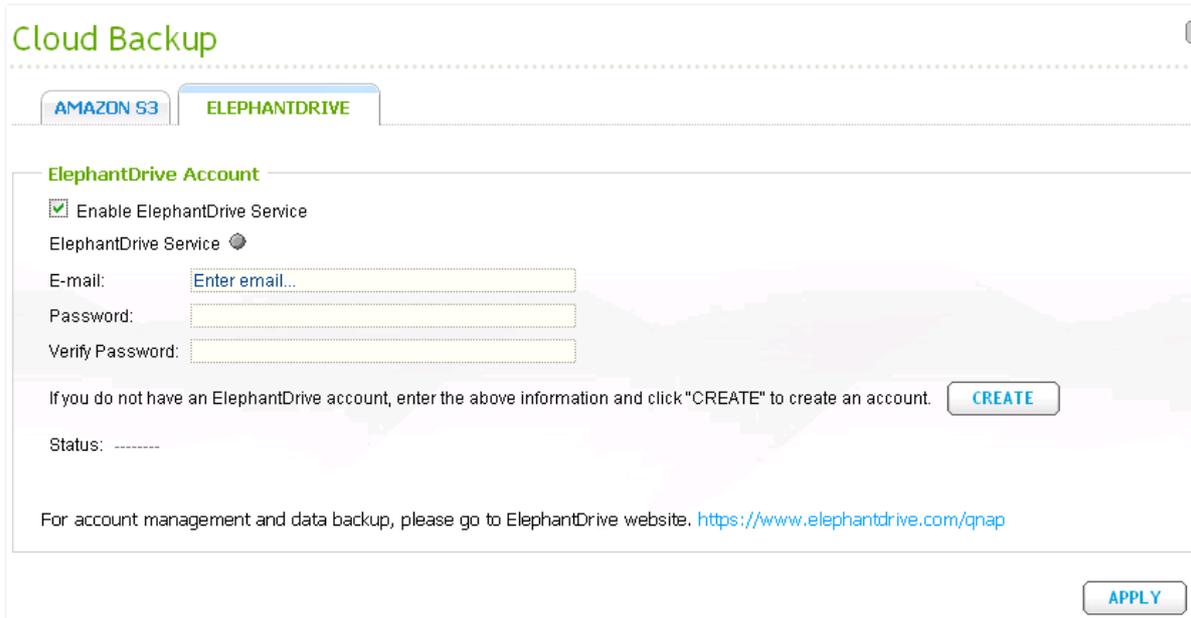
1. Click 'Create New Replicating Job'.
2. Enter the remote replication job name.
3. Select the usage type: 'Upload' or 'Download' and enter other settings. A bucket is the root directory on Amazon S3. You can test the connection to the remote host testing by clicking 'TEST'. Other settings are optional.



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.

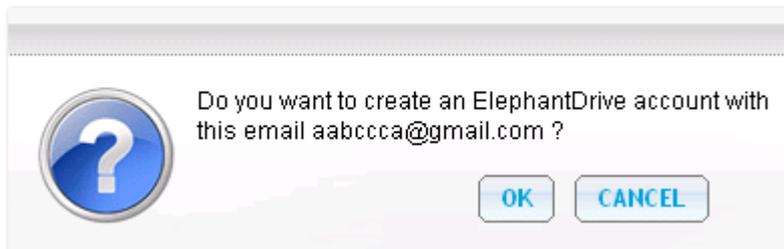
ElephantDrive

To use ElephantDrive Service, select 'Enable ElephantDrive Service'. Enter your email and password for the ElephantDrive service. If you do not have an account, enter the information and click 'Create'.



The screenshot shows a 'Cloud Backup' configuration window with two tabs: 'AMAZON S3' and 'ELEPHANTDRIVE'. The 'ELEPHANTDRIVE' tab is active. Under the heading 'ElephantDrive Account', there is a checked checkbox for 'Enable ElephantDrive Service'. Below it, the text 'ElephantDrive Service' is followed by a small globe icon. There are three input fields: 'E-mail:' with a placeholder 'Enter email...', 'Password:', and 'Verify Password:'. A 'CREATE' button is located to the right of the text: 'If you do not have an ElephantDrive account, enter the above information and click "CREATE" to create an account.' Below this is a 'Status:' field with a dashed line. At the bottom of the window, there is an 'APPLY' button and a link: 'For account management and data backup, please go to ElephantDrive website. <https://www.elephantdrive.com/qnap>'.

Click 'OK' to confirm.



After creating an account, click 'APPLY'. The NAS will help you login the ElephantDrive service.

After you have logged in ElephantDrive service on the NAS, you can go to ElephantDrive website (<http://www.elephantdrive.com/qnap>) and manage the backup.

AMAZON S3 **ELEPHANTDRIVE**

ElephantDrive Account

Enable ElephantDrive Service

ElephantDrive Service 

E-mail:

Password:

Verify Password:

If you do not have an ElephantDrive account, enter the above information and click "CREATE" to create an account.

Status: Logged in

For account management and data backup, please go to ElephantDrive website. <https://www.elephantdrive.com/qnap>

Login your ElephantDrive account. You can manage the backup and restore jobs on the website.

 Already have an account? [Login](#) English (US) 

Access Your Files **Backup / Restore** **Reports** **My Account**

 [Help](#)

Already have an account? Login

Email:

Password:

[Forgot Password?](#)

 **VERIFIED & SECURED**
VERIFYS SECURITY
ABOUT SSL CERTIFICATES

8.3 Time Machine

You can enable Time Machine support to use the NAS as a backup destination of multiple Mac by the Time Machine feature on OS X.

Home >> Backup >> Time Machine Welcome admin | Logout English

Time Machine

TIME MACHINE SUPPORT **MANAGE BACKUP**

Time Machine support

After enabling the Time Machine function , you can use the NAS as one of the Mac OS X Time Machine backup destinations.

Enable Time Machine support

Display Name: TMBBackup

User Name: TimeMachine

Password: [masked]

Volume: RAID 5 Disk Volume: Drive 1 2 3 Free Size: 272GB

Capacity: 0 GB (0 means unlimited)

Note: When using the Time Machine function, AFP service will be enabled automatically. Note that all the Time Machine users share the same network share for this function.

APPLY

To use this function, follow the steps below.

Configure the settings on the NAS:

1. Enable Time Machine support.

Time Machine support

After enabling the Time Machine function , you can use the NAS as one of the Mac OS X Time Machine backup destinations.

Enable Time Machine support

Display Name: TMBBackup

User Name: TimeMachine

Password:

Volume: RAID 5 Disk Volume: Drive 1 2 3 Free Size:272GB

Capacity: GB (0 means unlimited)

Note: When using the Time Machine function, AFP service will be enabled automatically. Note that all the Time Machine users share the same network share for this function.

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. To specify a larger capacity, please enter 0 (unlimited).
5. Click 'Apply' to save the settings.

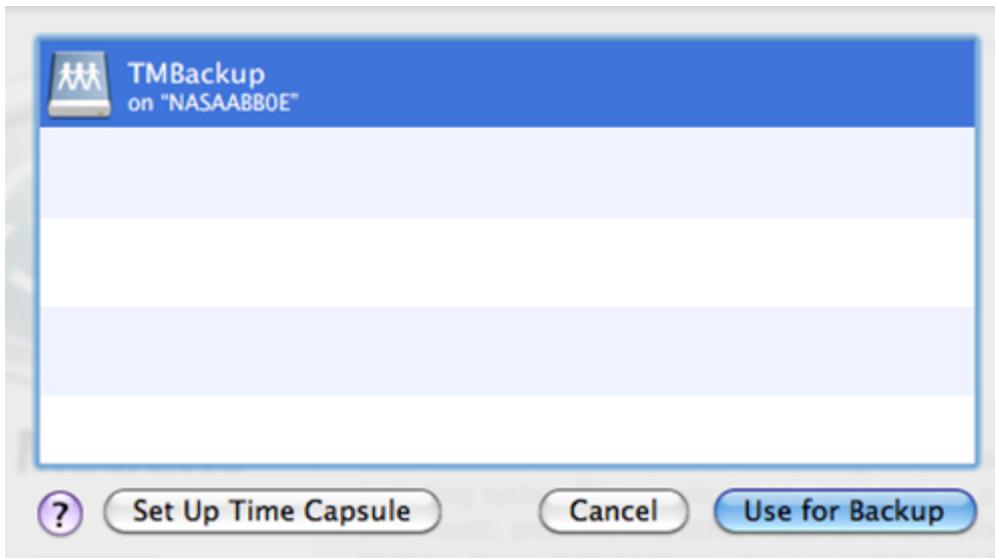
All the Time Machine users share the same network share for this function.

Configure the backup settings on Mac:

1. Open Time Machine on your Mac and click 'Select Backup Disk'.



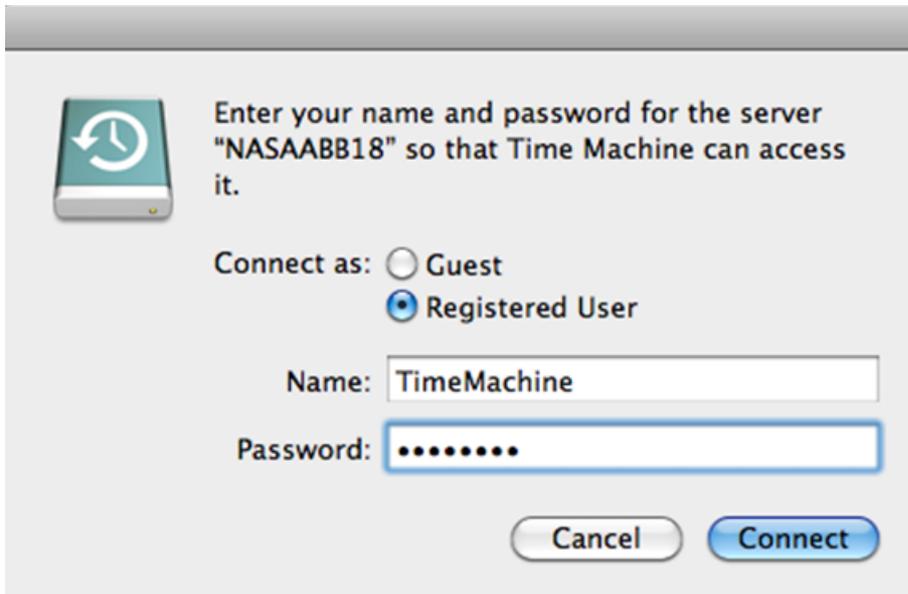
2. Select the TMBBackup on your NAS from the list and click 'Use for Backup'.



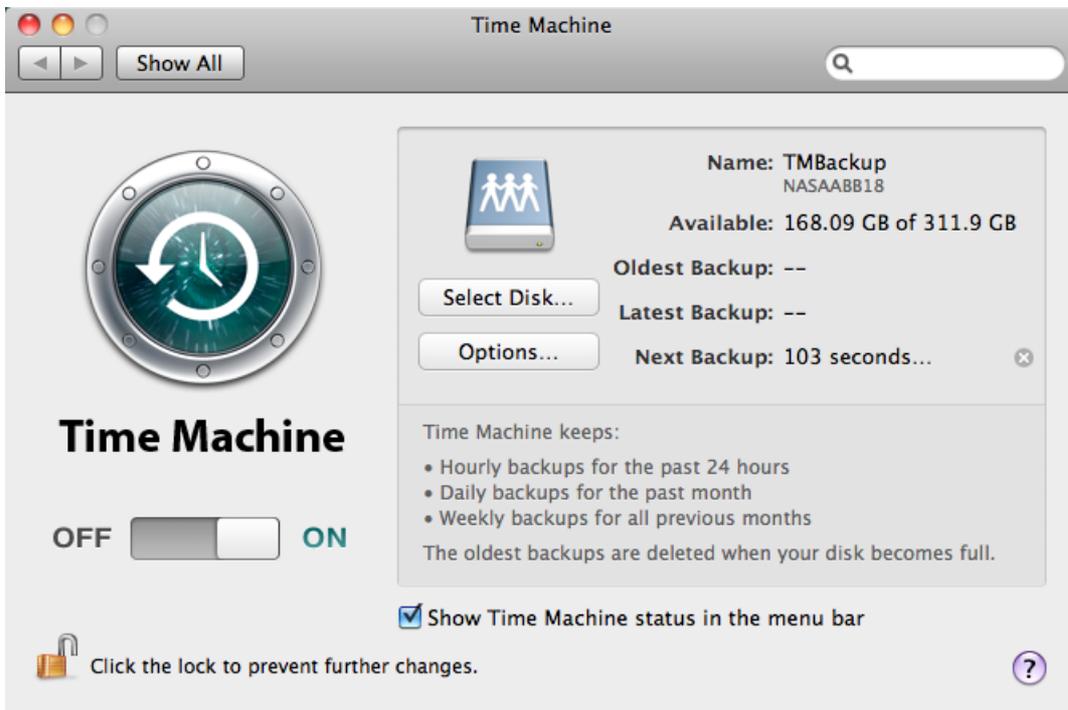
3. Enter the user name and password to login the QNAP NAS. Then click 'Connect'.

Registered user name: TimeMachine

Password: The password you have configured on the NAS. It is empty by default.



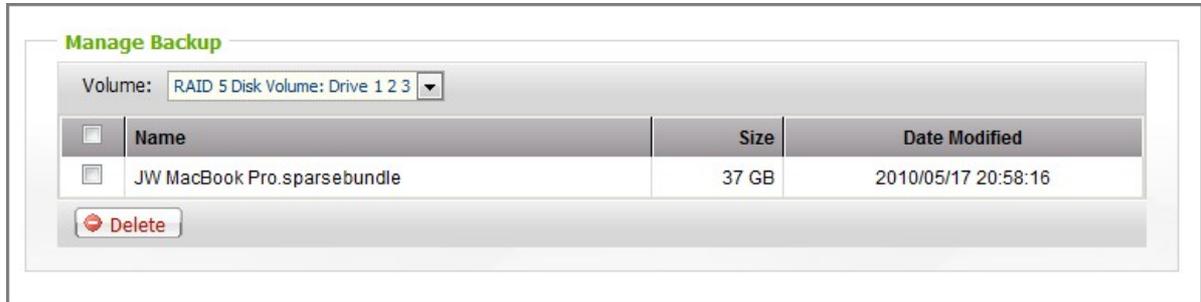
4. Upon successful connection, the Time Machine is switched 'ON'. The available space for backup is shown and the backup will start in 120 seconds.



The first time backup may take more time according to the data size on Mac. To recover the data to the Mac OS, see the tutorial on <http://www.apple.com/>.

Manage Backup

You can manage the existing backup on this page.



The screenshot shows a web interface titled "Manage Backup". At the top, there is a "Volume:" label followed by a dropdown menu showing "RAID 5 Disk Volume: Drive 1 2 3". Below this is a table with three columns: "Name", "Size", and "Date Modified". The table contains one row with the following data:

<input type="checkbox"/>	Name	Size	Date Modified
<input type="checkbox"/>	JW MacBook Pro.sparsebundle	37 GB	2010/05/17 20:58:16

Below the table, there is a "Delete" button with a red trash icon.

Volume: 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.

8.4 External Drive

You can back up the local drive data to an external storage device. Select to execute instant, automatic, or scheduled backup, and configure the settings.

- Backup Now: To back up the data to the external storage device immediately.
- Schedule Backup: To back up the data by schedule. You can select the weekday and time to execute the backup.
- Auto-backup: To execute the backup automatically once the storage device is connected to the NAS.

Copy Options:

You can select 'Copy' to copy the files from the NAS to the external device. Select 'Synchronize' to synchronize the data between the NAS and the external storage device. Any differentiated files on the external device will be deleted.

Note: During data copy or synchronization, identical files on both sides will not be copied. If there are files in the same name but different in size or modified dates on the NAS and the external device, the files on the external device will be overwritten.

External Drive

Back up to an external storage device

Back up the local disk data to an external storage device. You can select instant, automatic, or schedule backup.

Available shares

- Network Recycle Bin 1
- Qdownload
- Qmultimedia
- Qrecordings
- Qusb
- Qweb
- rei

Shares to back up

- Public

→

←

Back up to an External Storage Device: The drive is ready.
Free Size/Total Size: **1899 MB / 1900 MB**

Backup Method: Execute backup immediately.

Copy options: **WARNING! Files are copied from the source to the destination. Extra files on the destination will be deleted, files of the same names will be overwritten by the source. Source data will remain unchanged.**

Current Backup Status: No backup operations.

Last Backup Time:

Last Backup Result:

8.5 USB One Touch Copy

This feature is not supported by TS-809U-RP.

You can configure the behaviour of the USB one touch copy button on this page. The following three functions are available:

Options	Description
Copy from the front USB storage to a directory of the internal hard drives of the NAS	<ol style="list-style-type: none">1. 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.2. Copy: Back up data to the destination share folder. If the same file exists, the destination file will be overwritten.3. Synchronize: Back up data to the destination share folder and clear the redundant files. If the same file exists, the destination file will be overwritten.
Copy to the front USB storage from a directory of the internal hard drives of the NAS	<ol style="list-style-type: none">1. Copy: Back up data to the destination share folder. If the same file exists, the destination file will be overwritten.2. Synchronize: Back up data to the destination share folder and clear the redundant files. If the same file exists, the destination file will be overwritten.
Disable the one touch copy button	Select this option to disable the copy button.

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... and so on. If the source storage device contains only one partition, the backup folder will be named as YYYYMMDD only.

USB One Touch Copy

USB One Touch Copy

Configure the function of the USB one touch copy button.

- Copy from the front USB storage device to the directory of the internal disk.
- Copy to the front USB storage device from the directory of the internal disk.
Backup method: **WARNING! Files are copied from the source to the destination. Extra files on the destination will be deleted, files of the same names will be overwritten by the source. Source data will remain unchanged.**
- Disable one touch copy button

Note: The USB LED blinks when data backup to an external device is in process. The USB one touch copy button will be disabled temporarily. If you press the button during the data transfer process, the server will beep thrice to alert you the button is disabled. Please wait for the backup to finish and the USB LED to stop flashing, and then use the USB one touch copy button again.

APPLY

Data copy by front USB port

The NAS supports instant data copy backup from the external USB device to the NAS or the other way round by the front one touch copy button. To use this function, follow the steps below:

1. Make sure a hard drive is installed and formatted on the NAS. The default network share Qusb/Usb has been created.
2. Turn on the NAS.
3. Configure the behaviour of the Copy button on 'Backup' > 'USB one touch copy' page.
4. Connect the USB device, for example, digital camera or flash, to the front USB port of the NAS.
5. Press the Copy button once. The data will be copied according to your settings on the NAS.

Note: Incremental backup is used for this feature. After the first time data backup, the NAS only copies the changed files since the last backup.



Caution: Files are copied from the source to the destination. Extra files on the destination will be deleted; files of the same names will be overwritten by the source. Source data will remain unchanged.

9. External Device

External Storage Device³⁹⁹

USB Printer⁴⁰⁶

UPS Settings⁴³²

9.1 External Storage Device

The NAS supports USB disks and thumb drives for extended storage. Connect the USB device to the USB port of the NAS, when the device is successfully detected, the details are shown on this page.

It may take tens of seconds for the NAS server to detect the external USB device successfully. Please wait patiently.

You can format the external drive as FAT32, NTFS, EXT3, or HFS+ (Mac only). Select the option from the drop-down menu next to 'Format As' and click 'FORMAT NOW'. All the data will be cleared.

External Storage Device

External Storage Device

USBDisk1	Manufacturer:	USB2.0
	Model:	Flash Disk
	Device Type:	USB 2.0
	Total / Free size:	1.86 GB / 1.85 GB
	File System:	FAT
	Status:	Ready
	Format As:	HFS+ <input type="button" value="FORMAT NOW"/>
	Eject:	<input type="button" value="REMOVE DISK PARTITION"/>
		<input type="button" value="REMOVE DEVICE"/>

To remove the hardware device, please click [Remove device]. When the system does not show the device anymore, you can remove it safely.

Note: Do NOT unplug the device when it is in use to protect the device.

9.2 USB Printer

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

To share a USB printer by NAS, connect the printer to a USB port of the NAS. The printer will be detected automatically and the printer's information will be shown.

The screenshot shows the 'USB Printer' configuration page in a web browser. The breadcrumb trail is 'Home >> External Device >> USB Printer'. The user is logged in as 'admin' and the language is set to 'English'. The page title is 'USB Printer'. There are two tabs: 'PRINTER' (selected) and 'OPTIONS'. Under the 'PRINTER' tab, there is a list of USB printers with 'NASPR3' selected. To the right of the list, there are several configuration options: 'Stop printer sharing and clear print spool' (unchecked), 'Manufacturer: Hewlett-Packard', 'Model: HP LaserJet 2200', 'Status: Ready', 'Clean up spool space of printer:' with a 'CLEAN NOW' button, and 'Bonjour printer support' (checked) with a 'Service Name: NASPR3' input field. An 'APPLY' button is at the bottom right. At the bottom of the page, there is a 'Users:' search field and a 'Clear' button. Below that is a table header with columns: 'Users', 'Source IP', 'File name', 'Status', and 'Action'.

Note:

- Please connect a USB printer to the NAS after the software configuration is completed.
- The NAS does not support multifunction printer.
- The file name display on the printer job table is only available for printer jobs sent via IPP (Internet Printing Protocol) connection.
- For the information of the supported USB printer models, please visit <http://www.qnap.com/>

Stop printer sharing and clear print spool

Select this option to temporarily disable the selected printer for print sharing. All the data in the printer spool will also be cleared.

Clean up spool space of printer

Click 'Clean Now' to clean up the data saved in the printer spool.

Bonjour printer support

Select this option to broadcast printing service to Mac users via Bonjour. Enter a service name, which allows the printer to be found by Bonjour. The name can only contain 'a-z', 'A-Z', '0-9', dot (.), comma (,) and dash (-).

You can configure other printer options in the 'Options' tab.

The screenshot shows the 'USB Printer' configuration interface. At the top, there are two tabs: 'PRINTER' and 'OPTIONS', with 'OPTIONS' selected. Below the tabs, the 'Options' section is visible. It includes a text input field for 'Maximum number of jobs per printer' with the value '1000'. Below that is a text input field for 'Enter the IP addresses or domain names which are allowed or denied to use the printer service.' with an information icon. Underneath is an 'Access Right' dropdown menu currently set to 'No limit'. A large text area for entering IP addresses or domain names is present, with an asterisk (*) in the top left corner. At the bottom right of the form is an 'APPLY' button.

Maximum printer jobs per printer

Specify the maximum number of printer jobs for a printer. A printer supports maximum 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 to use the printing service of the NAS, select 'Allow printing' or 'Deny printing' and enter the IP address(es) or domain name(s). 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 configured via IPP and Bonjour, but not Samba.

This is a close-up of the 'Access Right' dropdown menu from the previous screenshot. The dropdown is open, showing three options: 'No limit', 'Allow printing', and 'Deny printing'. The 'Allow printing' option is currently selected and highlighted in blue. The rest of the form, including the text input field and the 'APPLY' button, is partially visible in the background.

Pause, resume, or delete printer jobs

You can pause or cancel ongoing or pending jobs, resume paused jobs, or delete completed or pending jobs.

Users	Source IP	File name	Status	Action
admin	10.8.12.43	--	completed (30/Nov/2010:15:58:12)	

Total: 1 | Display entries per page. 1 / 1

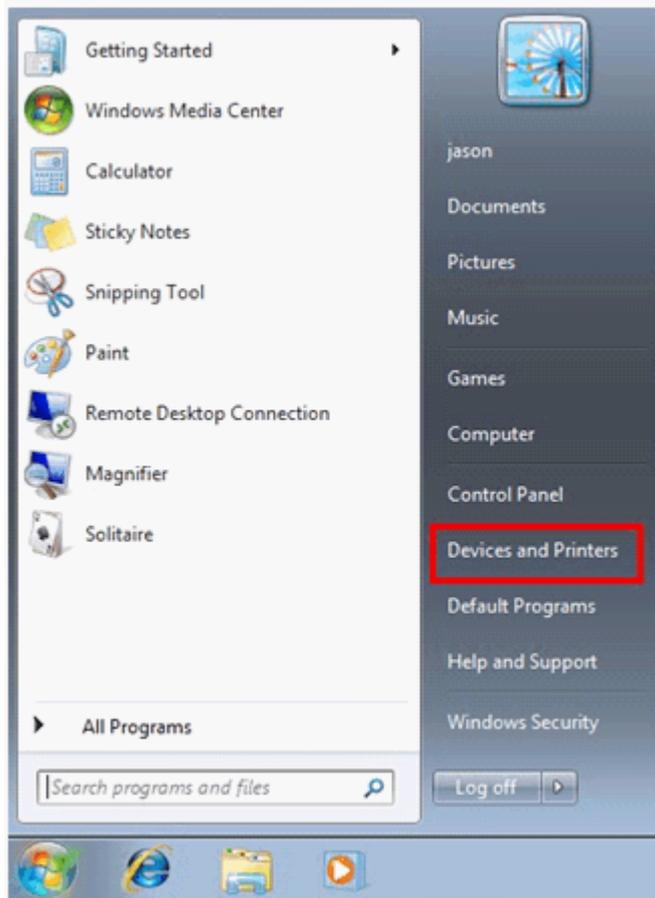
Note: Do NOT restart the NAS or update the system firmware when printing is in process or there are queued jobs. Otherwise all the queued jobs will be cancelled and removed.

9.2.1 Windows 7, Vista Users

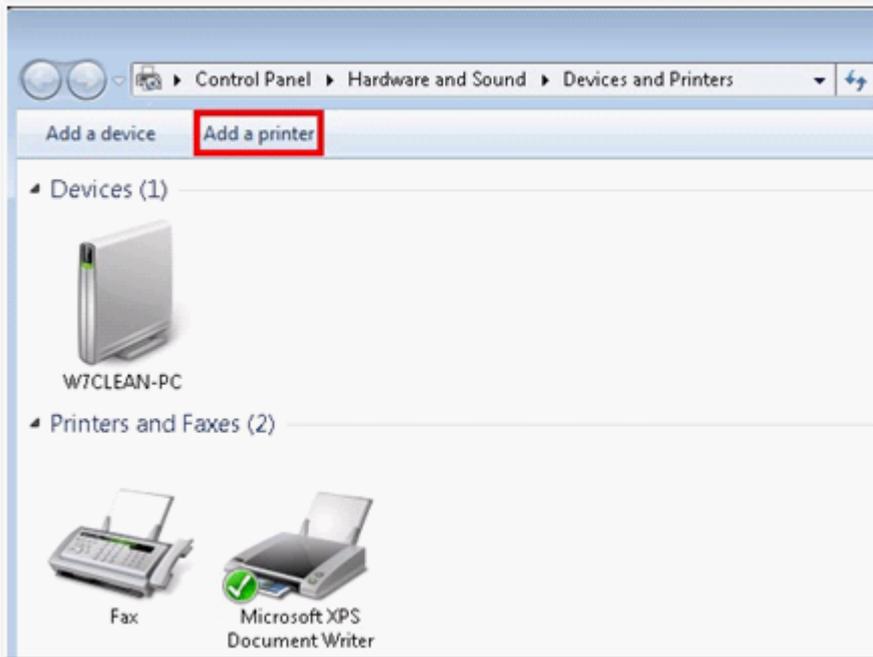
The following description applies to Windows 7.

Follow the steps below to set up your printer connection.

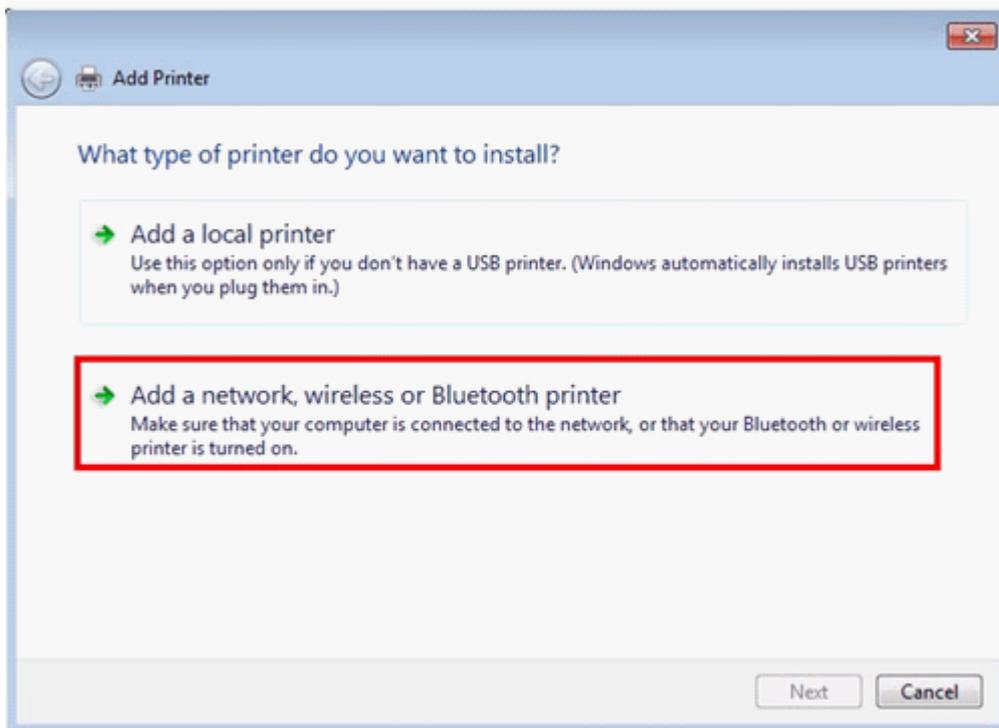
1. Go to Devices and Printers.



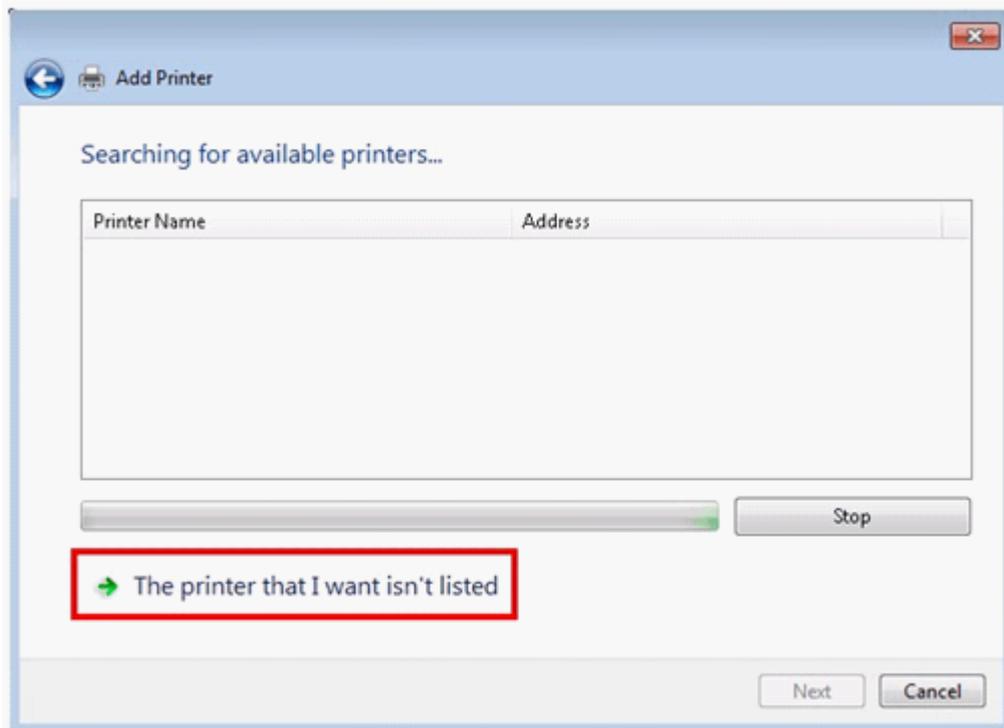
2. Click 'Add a printer'.



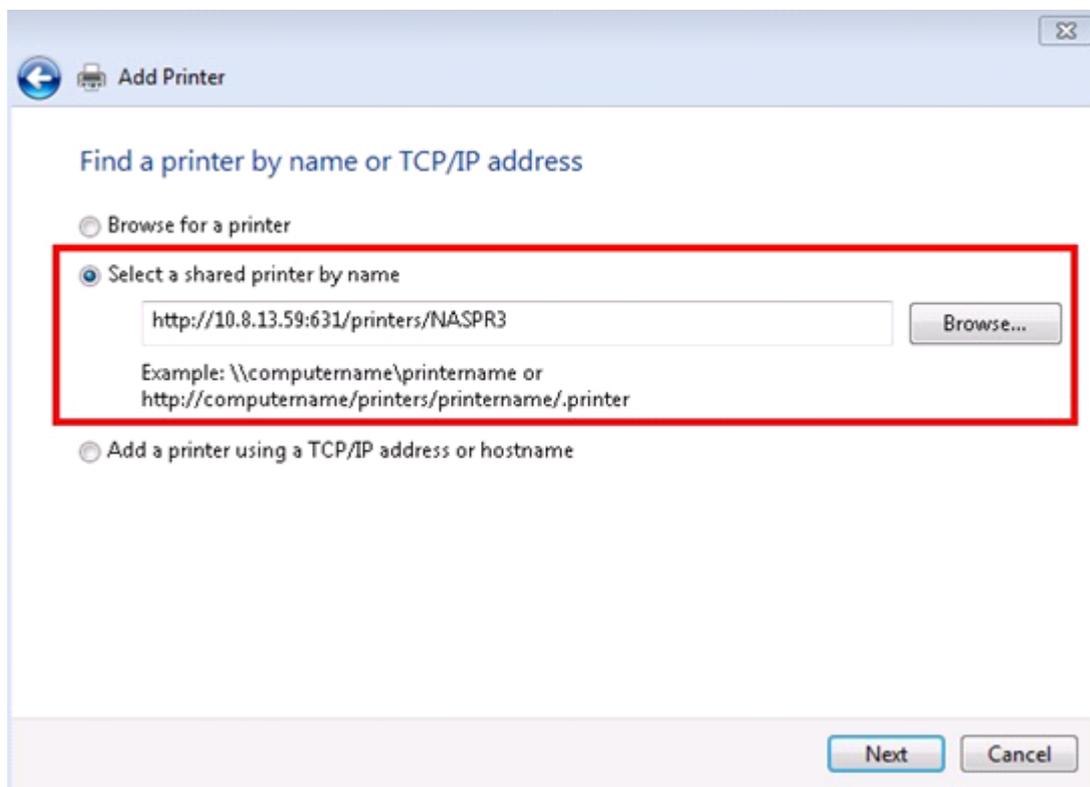
3. In the Add printer wizard, click 'Add a network, wireless or Bluetooth printer'.



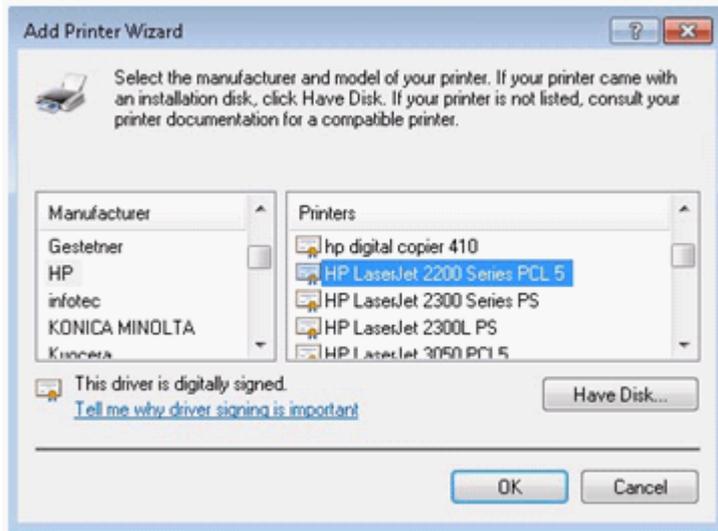
4. While Windows is searching for available network printers, click 'The printer that I want isn't listed'.



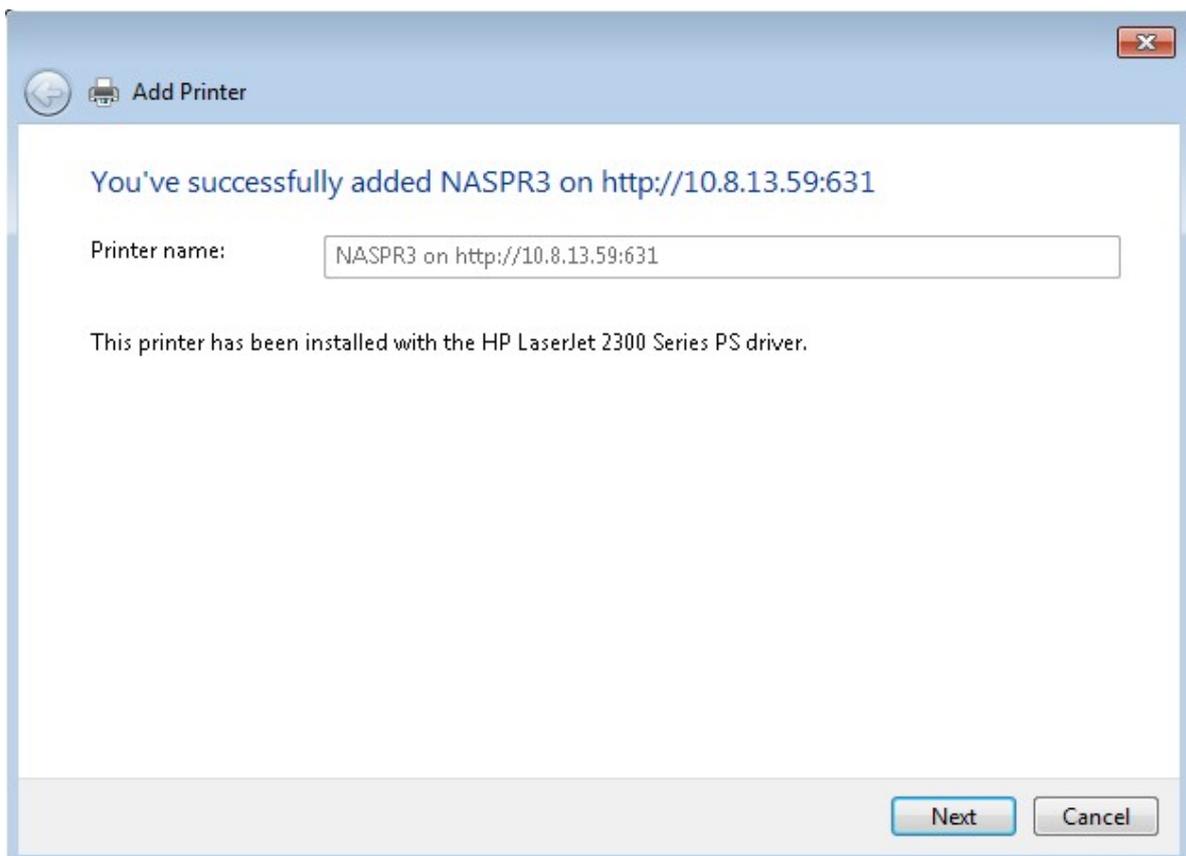
5. Click 'Select a shared printer by name', and then enter the address of the network printer. The address is in the following format – `http://NAS_IP:631/printers/ServernamePR`, where the NAS_IP can also be a domain name address if you want to print remotely. For example, `http://10.8.13.59:631/printers/NASPR3`



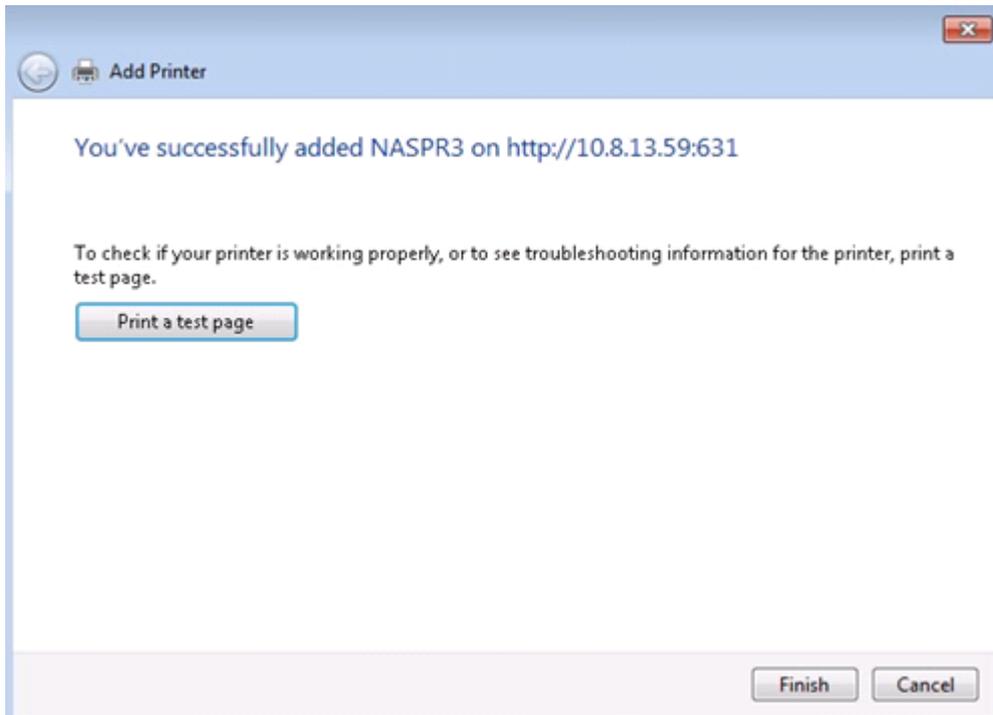
- The wizard will prompt you for the correct printer driver. You may also download the latest printer driver from the manufacturer's website if it is not built-into Windows operating system.



- After installing the correct printer driver, the wizard shows the address and driver of the new network printer.



8. You may also set the network printer as the default printer or print a test page. Click 'Finish' to exit the wizard.

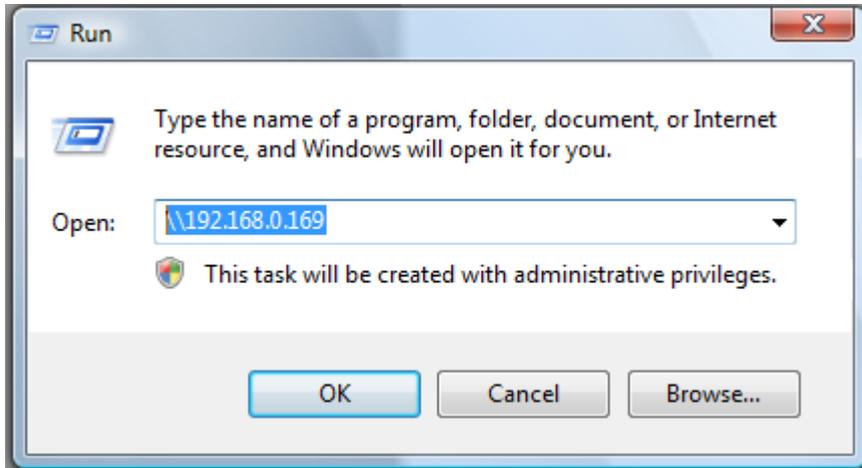


9. The new network printer is now available for printing.

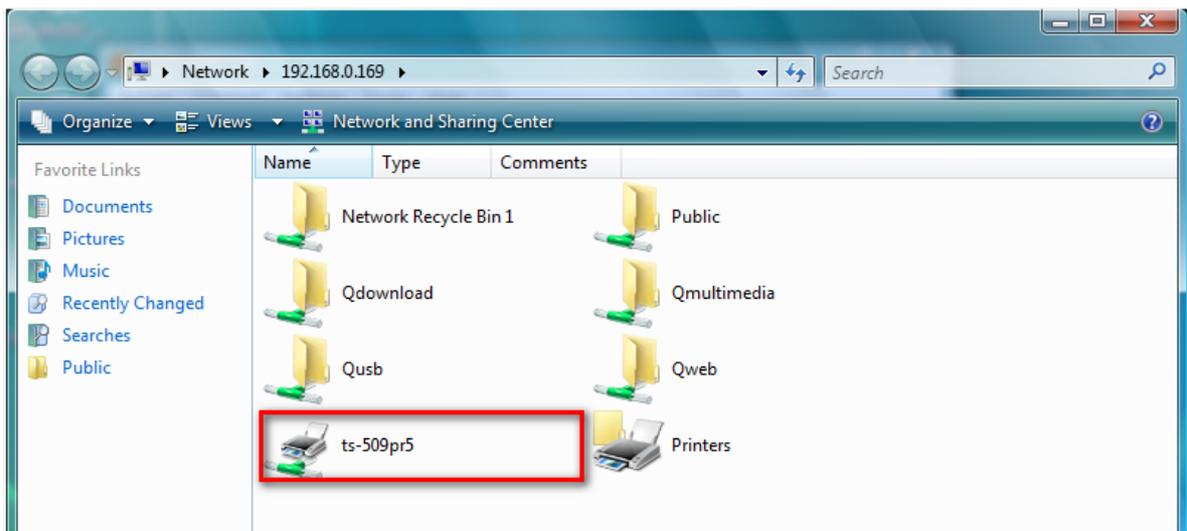
The following description applies to Windows 7 and Vista OS.

Follow the steps below to set up your printer connection.

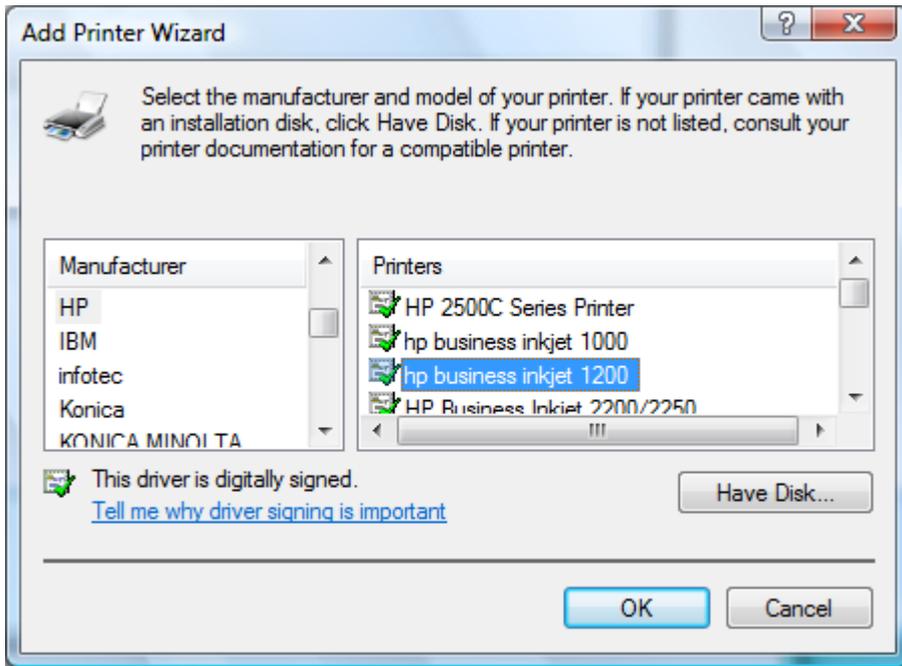
1. On the Run menu, enter \\NAS IP.



2. Find the network printer icon and double click it.



3. Install the correct printer driver.



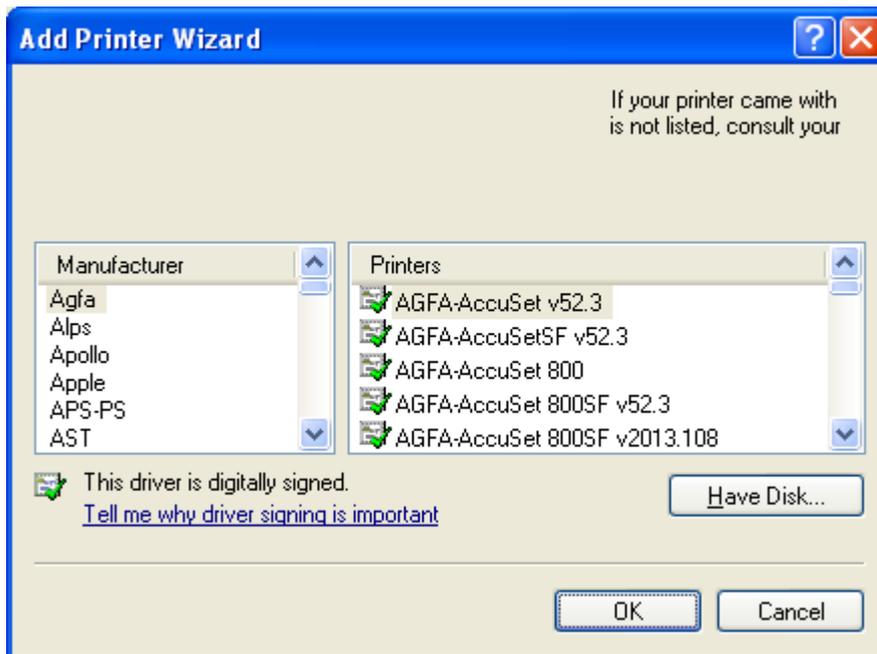
4. When finished, print a test page to verify the printer is ready to use.

9.2.2 Windows XP Users

Follow the steps below to set up your printer connection.

Method 1

1. Enter \\NAS IP in Windows Explorer.
2. A printer icon is shown as a network share on the server. Double click the icon.
3. Install the printer driver.



4. When finished, you can start to use the network printer service of the NAS.

Method 2

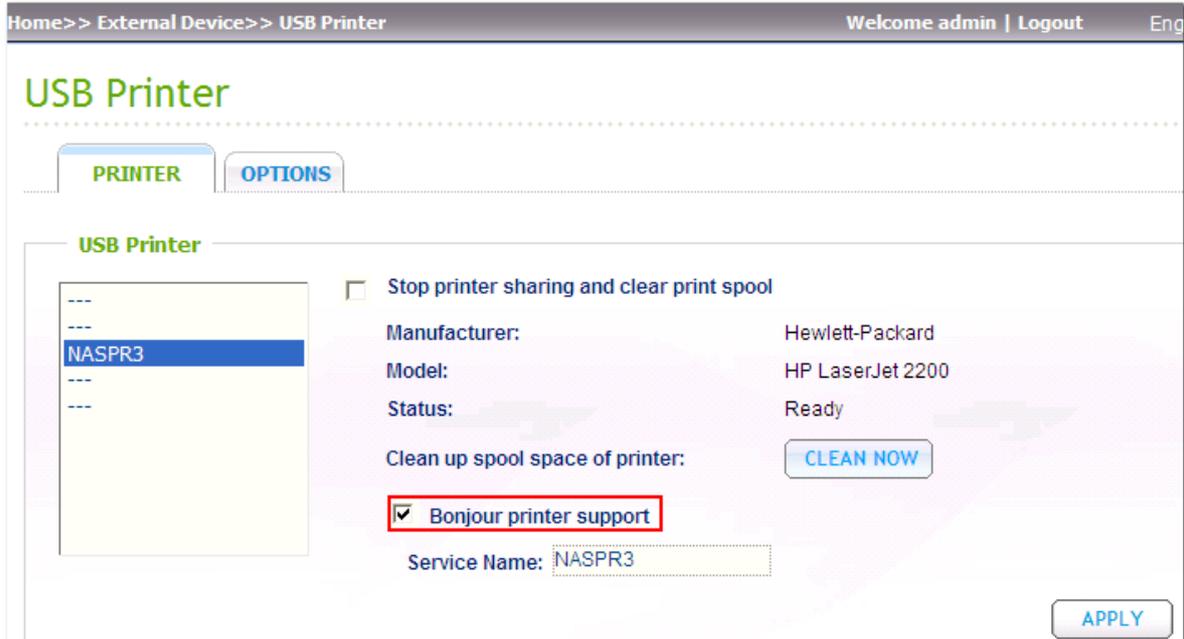
The following configuration method has been verified on Windows XP only:

1. Open 'Printers and Faxes'.
2. Delete the existing network printer (if any).
3. Right click the blank area in the Printers and Faxes window. Select 'Server Properties'.
4. Click the 'Ports' tab and delete the ports configured for the previous network printer (if any).
5. Restart your PC.
6. Open Printers and Faxes.
7. Click 'Add a printer' and click 'Next'.
8. Select 'Local printer attached to this computer'. Click 'Next'.
9. Click 'Create a new port' and select 'Local Port' from the drop-down menu. Click 'Next'.
10. Enter the port name. The format is \\NAS IP\NAS namepr, for example, NAS IP= 192.168.1.1, NAS name= myNAS, the link is \\192.168.1.1\myNASpr.
11. Install the printer driver.
12. Print a test page.

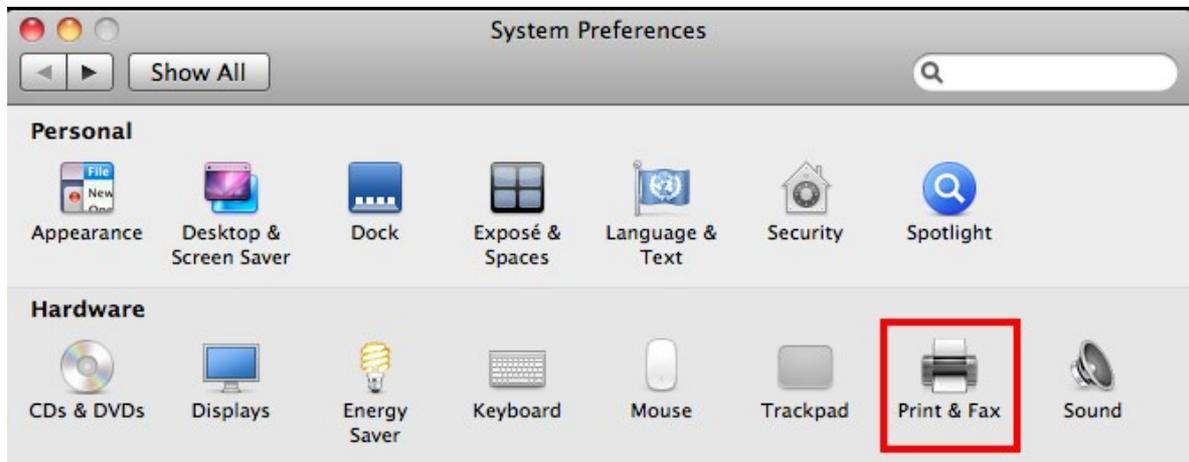
9.2.3 Mac OS 10.6

If you are using Mac OS 10.6, follow the steps below to configure the printer function of the NAS.

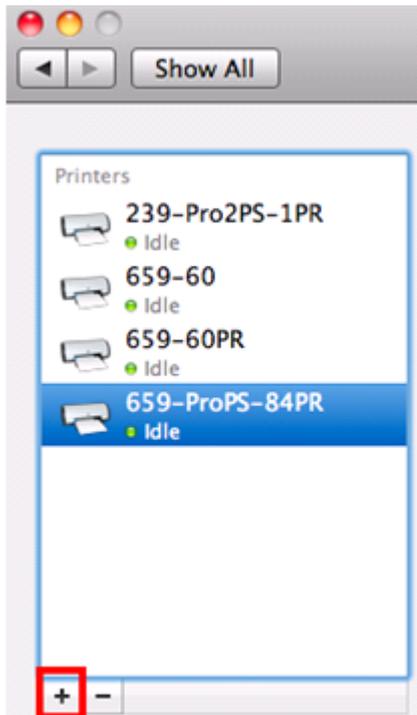
1. First make sure the Bonjour printer support is enabled on the NAS in 'External Device' > 'USB Printer'. You may change the Service Name to better represent the printer.



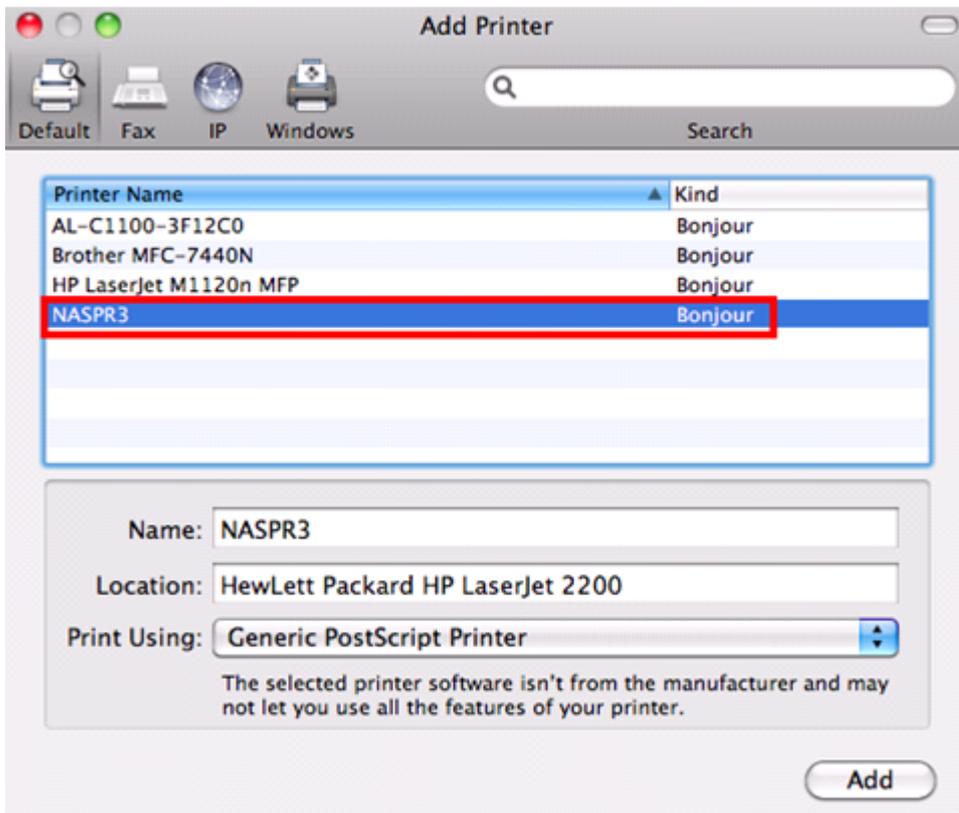
2. On your Mac, go to 'System Preferences', and then click 'Print & Fax'.



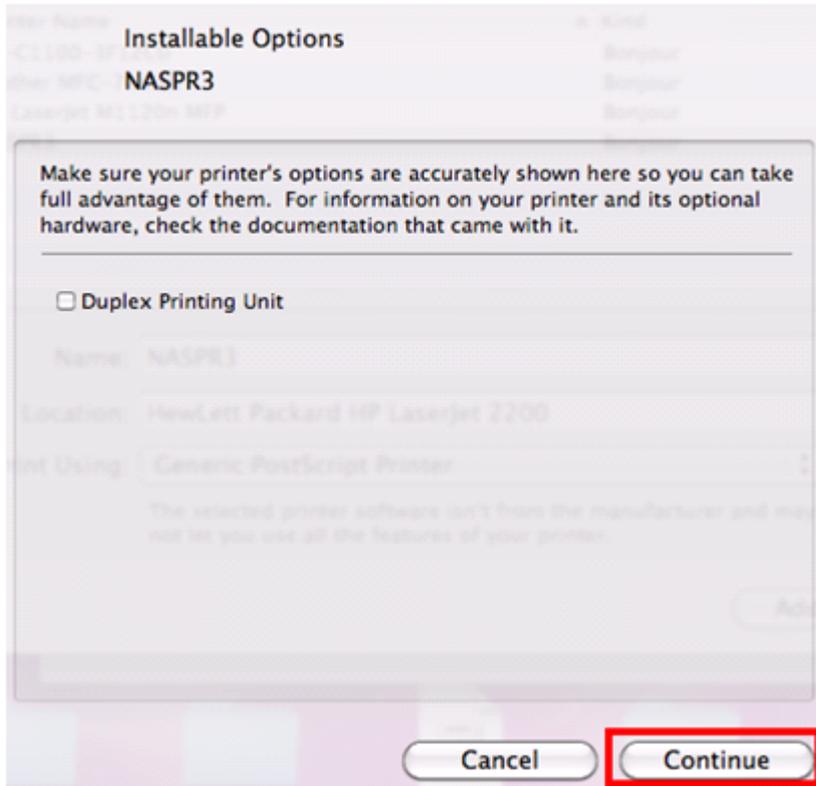
3. In the Print & Fax window, click + to add a printer.



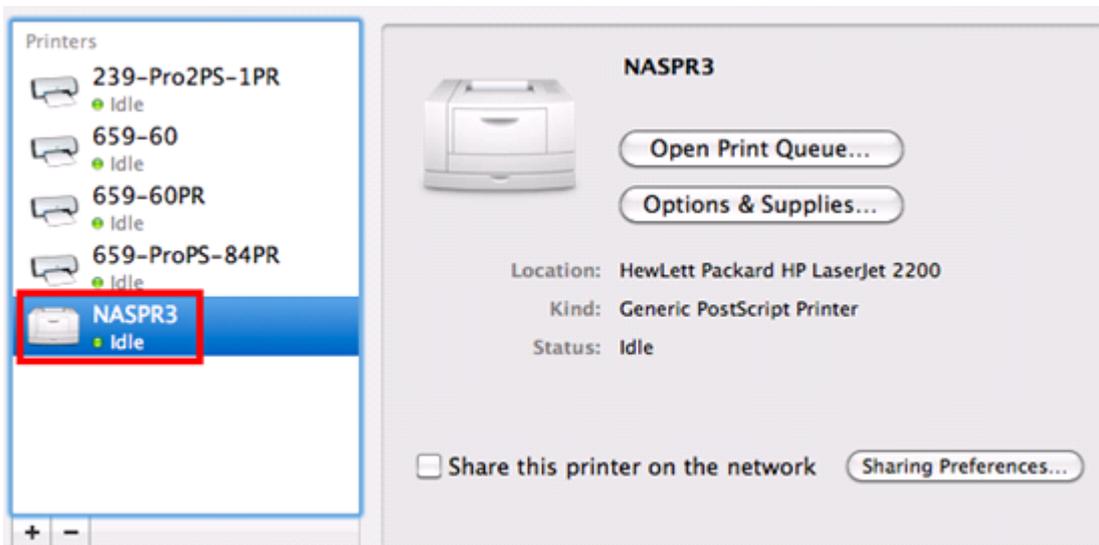
4. The USB network printer will be listed via Bonjour. Select the default printer driver or you may download and install the latest one from the printer manufacturer's website. Click 'Add' to add this printer.



5. Additional options may be available for your printer. Click 'Continue'.



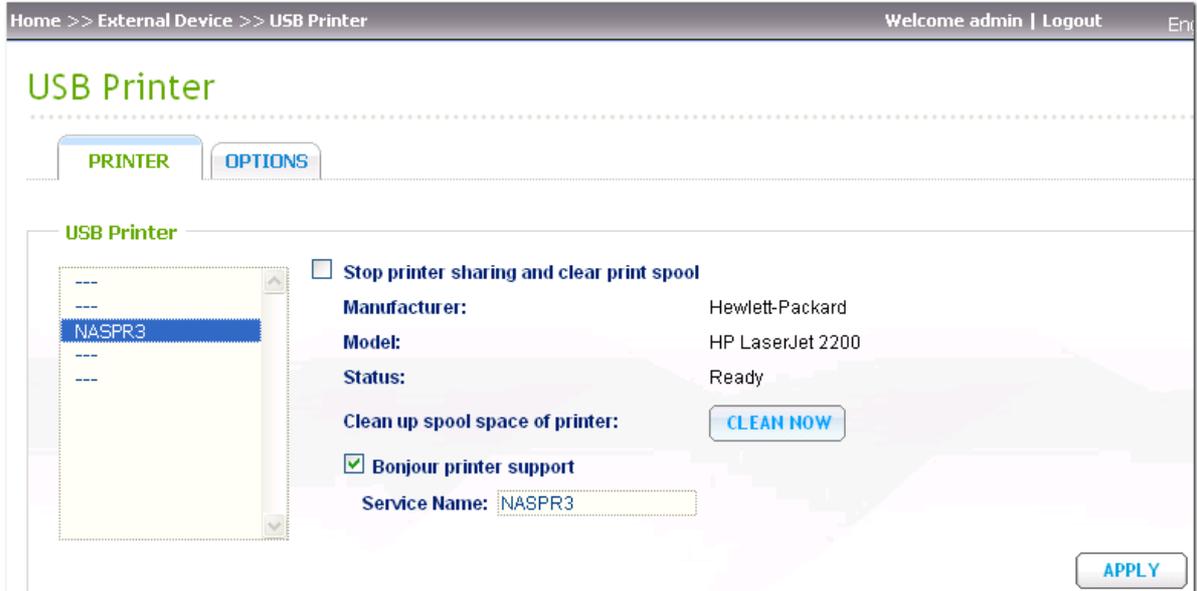
6. The new network printer is now available for printing.



9.2.4 Mac OS 10.5

If you are using Mac OS X 10.5, follow the steps below to configure the printer function of the NAS.

1. Make sure your printer is connected to the NAS and the printer information is displayed correctly on the 'USB Printer' page.



2. Go to 'Network Services' > 'Microsoft Networking'. Enter a workgroup name for the NAS. You will need this information later.

Home >> Network Services >> Microsoft Networking Welcome admin | Logout English

Microsoft Networking

MICROSOFT NETWORKING **ADVANCED OPTIONS**

Microsoft Networking

Enable file service for Microsoft networking

Standalone Server

Server Description (Optional):

Workgroup:

AD Domain Member (For detailed instructions, please [click here](#))

QUICK CONFIGURATION WIZARD Quick Configuration Wizard will help you join the NAS to an Active Directory domain.

Server Description (Optional):

Domain NetBIOS Name:

AD Server Name:

Domain:

Organization Unit (Optional):

Domain Administrator Username:

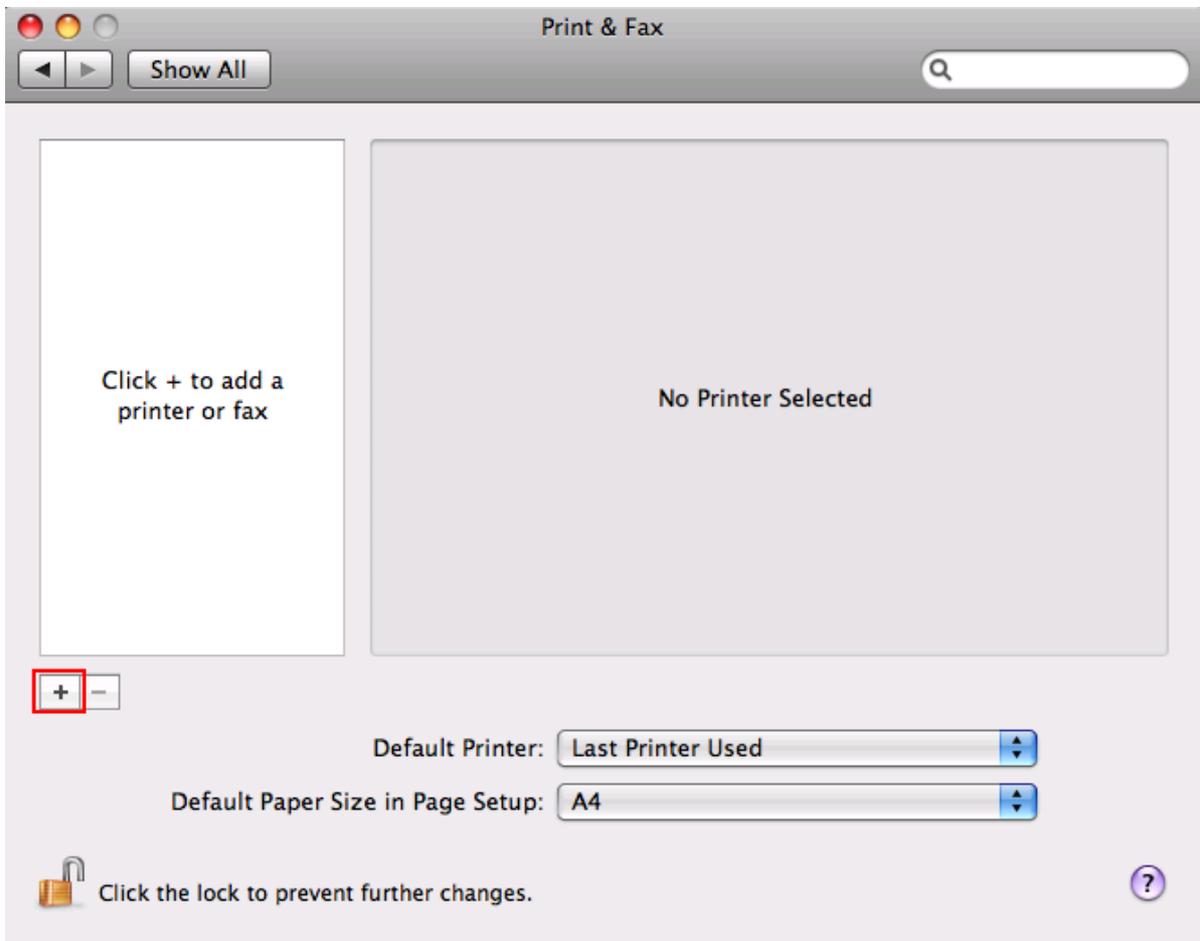
Domain Administrator Password:

APPLY

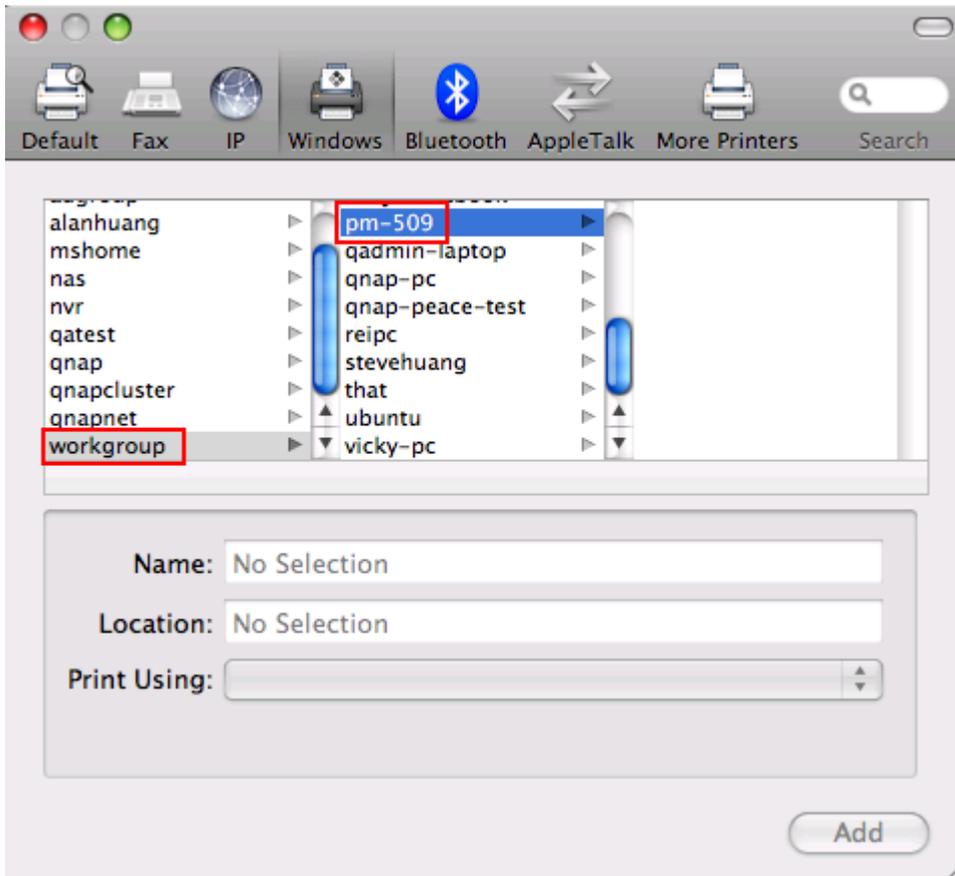
3. Go to 'Print & Fax' on your Mac.



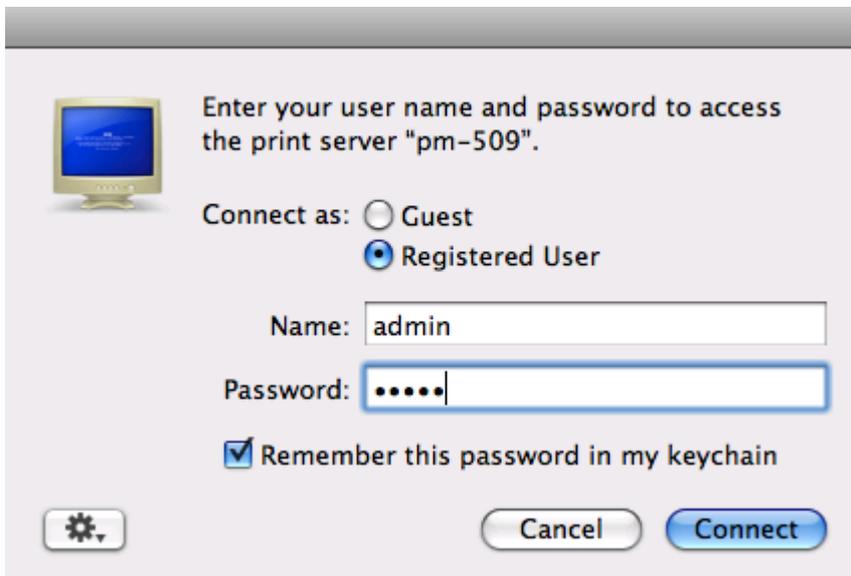
4. Click + to add a printer.



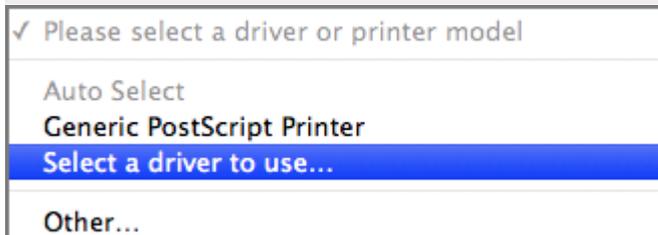
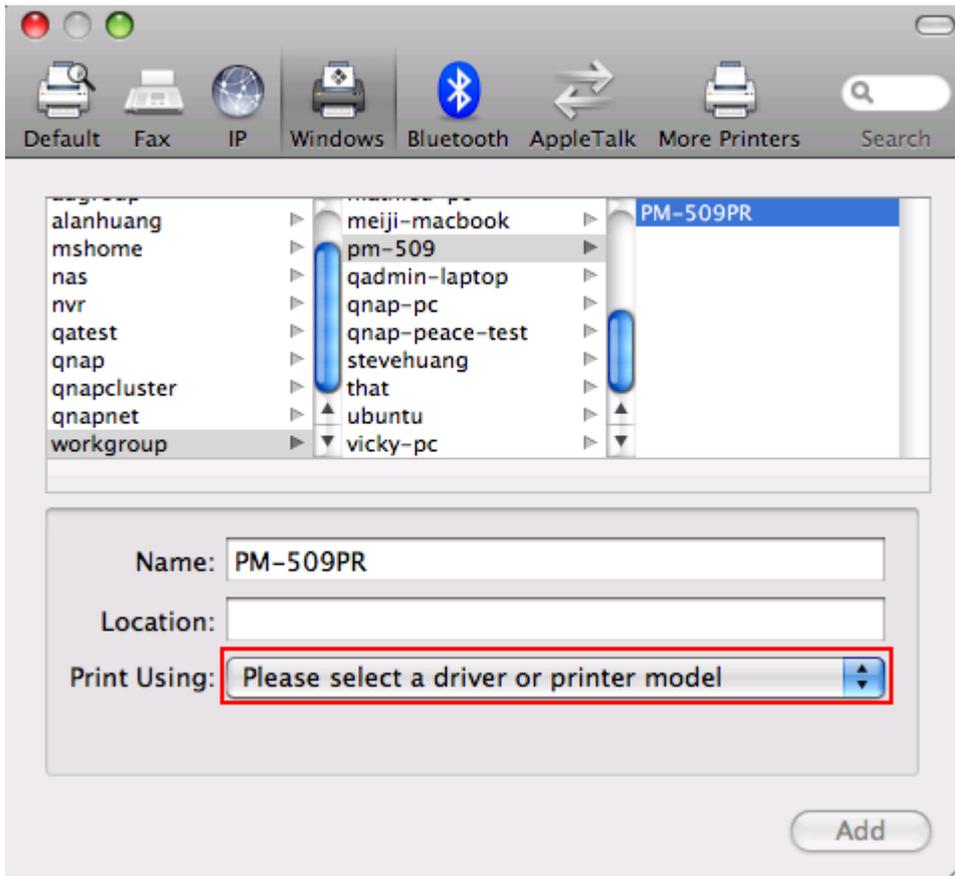
5. Select the NAS workgroup and find the printer name.



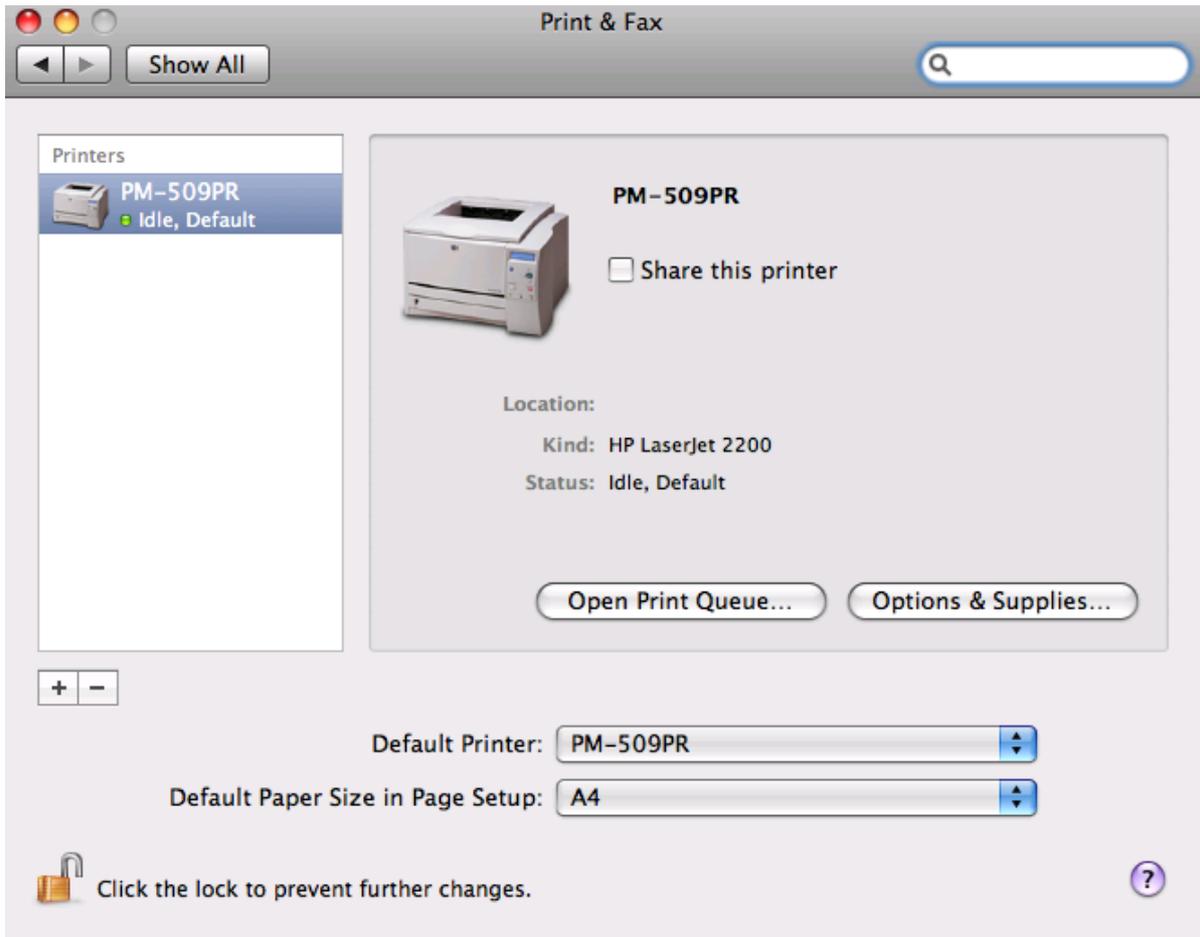
6. Enter the user name and password to login the printer server on the NAS.



7. Select the printer driver.



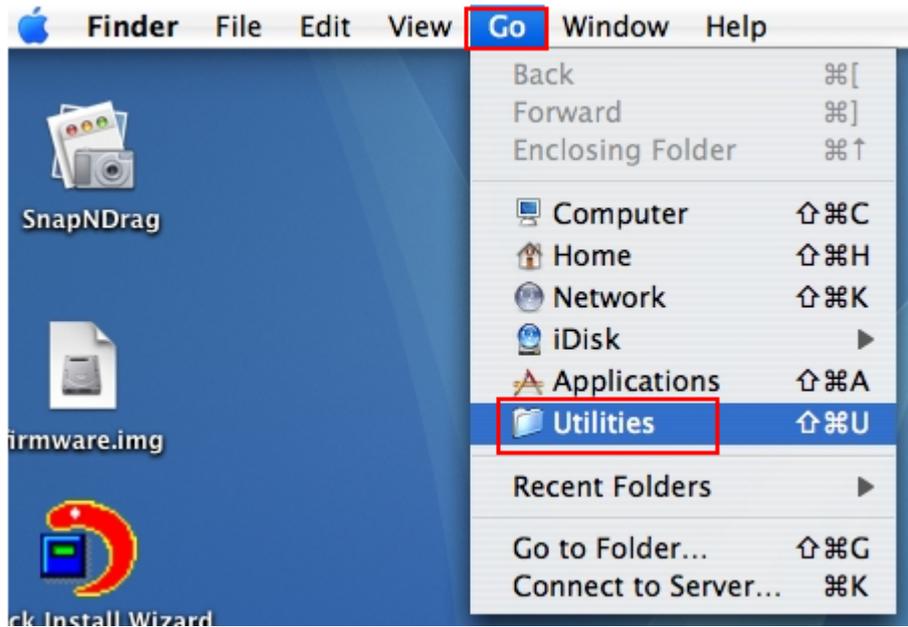
8. After installing the printer driver correctly, you can start to use the printer.



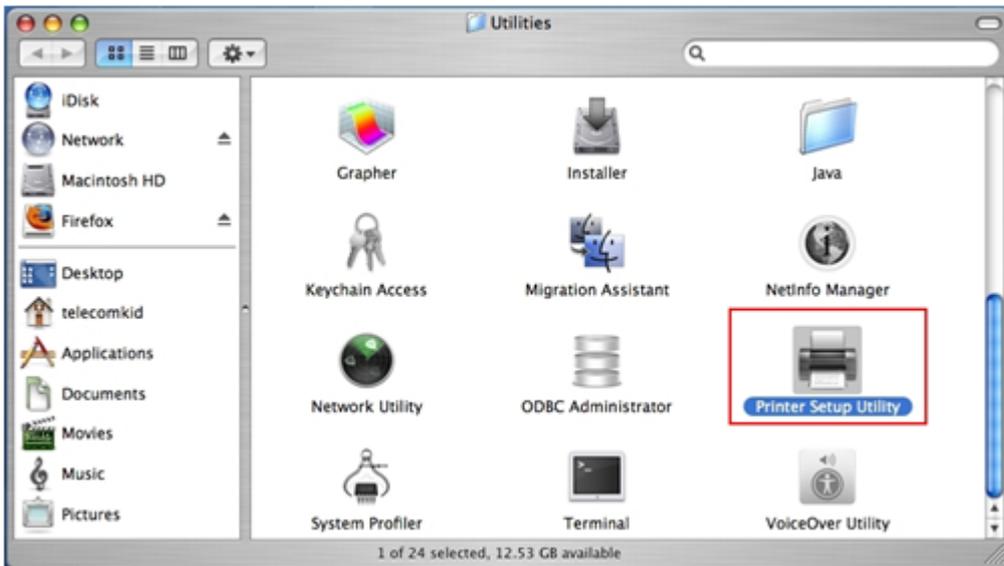
9.2.5 Mac OS 10.4

If you are using Mac OS 10.4, follow the steps below to configure the printer function of the NAS.

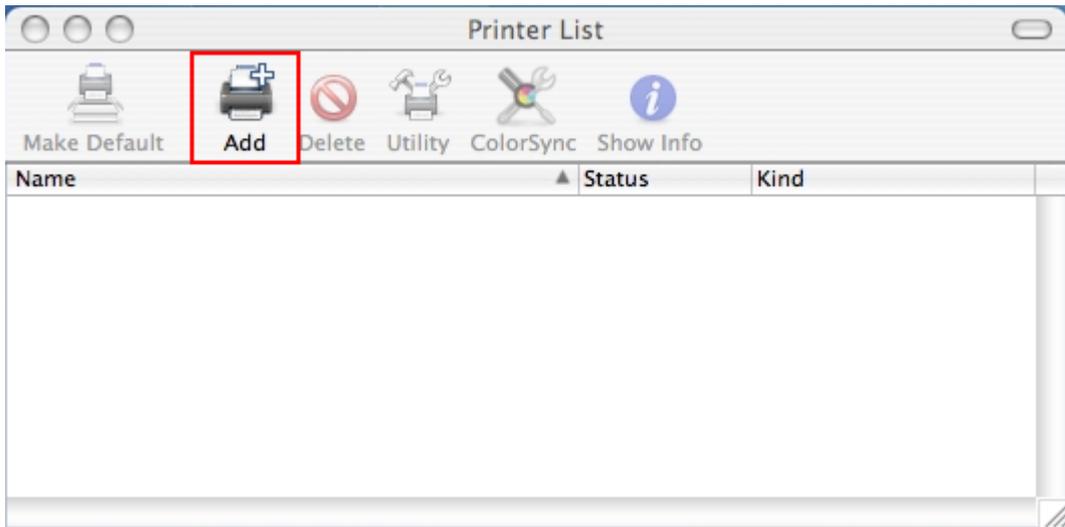
1. On the toolbar, click 'Go/Utilities'.



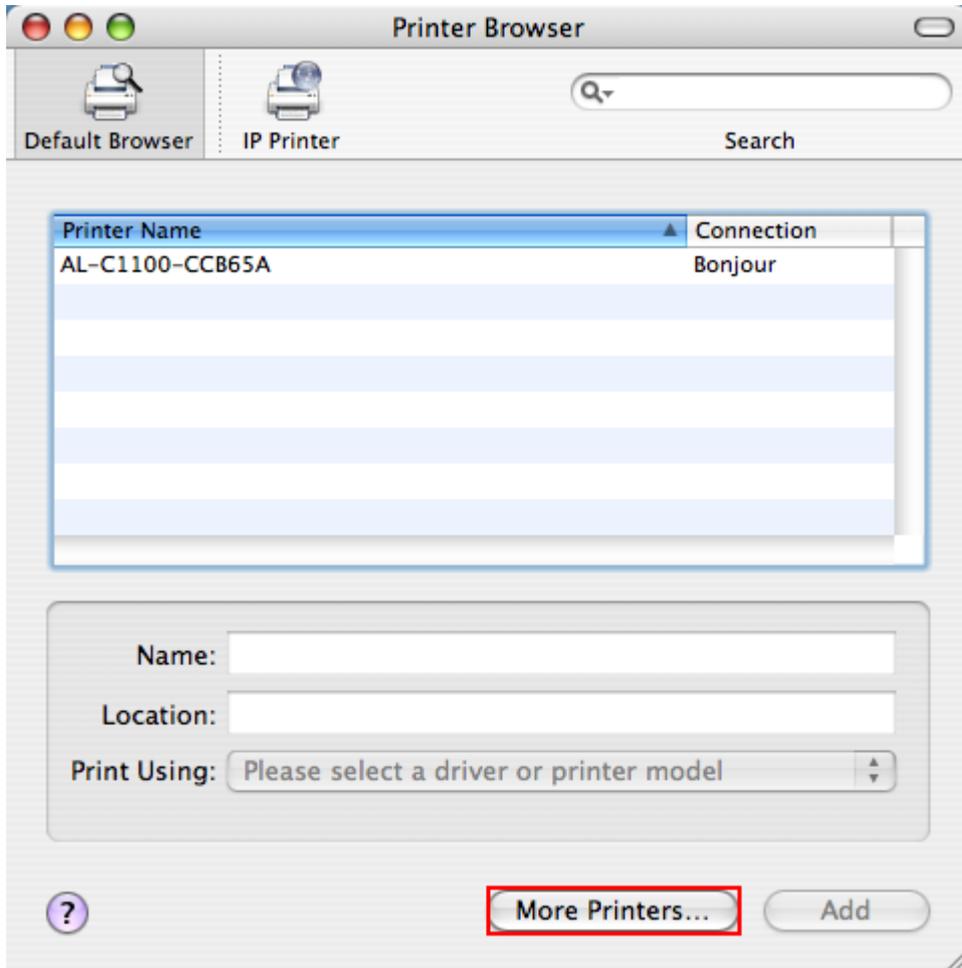
2. Click 'Printer Setup Utility'.



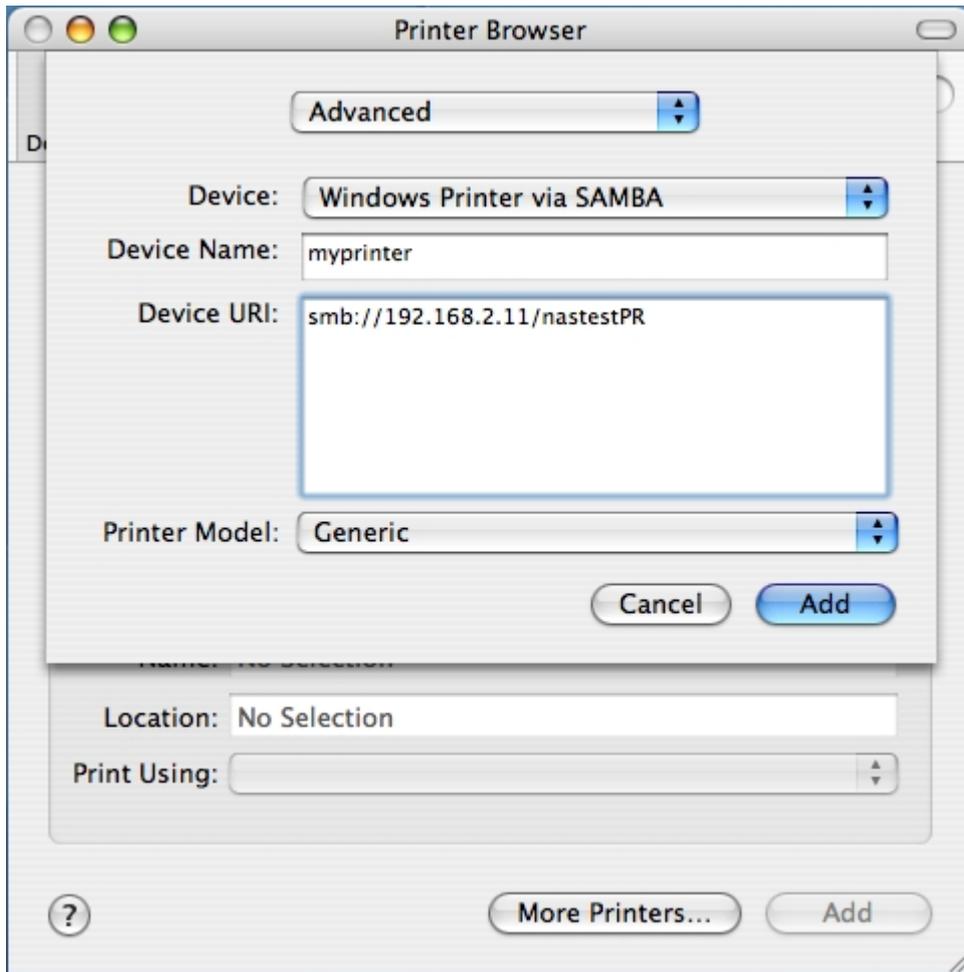
3. Click 'Add'.



4. Press and hold the 'alt' key  on the keyboard and click 'More Printers' concurrently.

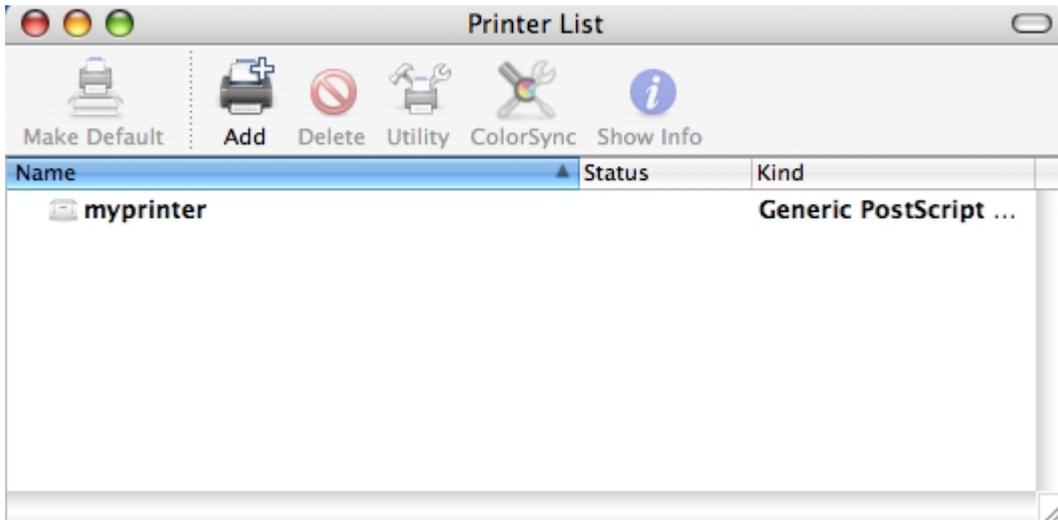


5. In the pop up window:
 - a. Select 'Advanced'*
 - b. Select 'Windows Printer with SAMBA'.
 - c. Enter the printer name.
 - d. Enter the printer URI, the format is smb://NAS IP/printer name. The printer name is found on the 'Device Configuration' > 'USB Printer page'.
 - e. Select 'Generic' for Printer Model.
 - f. Click 'Add'.



*Note that you must hold and press the 'alt' key and click 'More Printers' at the same time to view the Advanced printer settings. Otherwise, this option does not appear.

6. The printer appears on the printer list. It is ready to use.

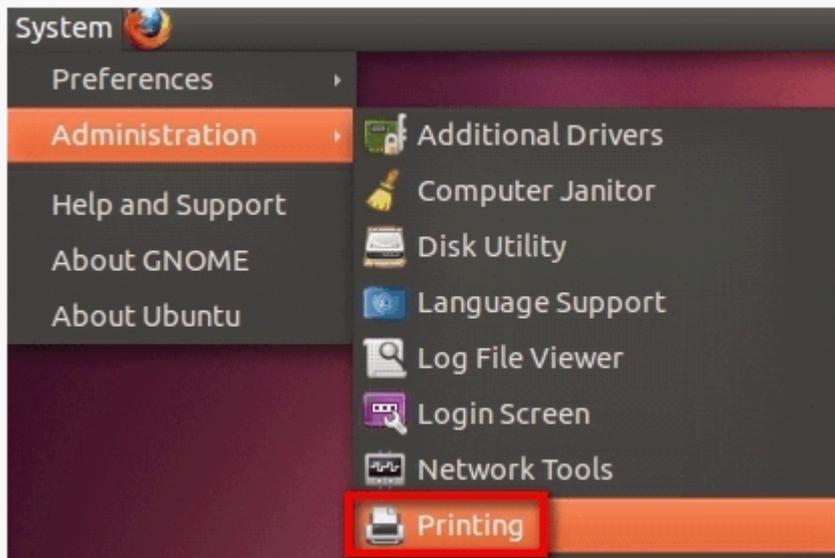


Note: The network printer service of the NAS supports Postscript printer on Mac OS only.

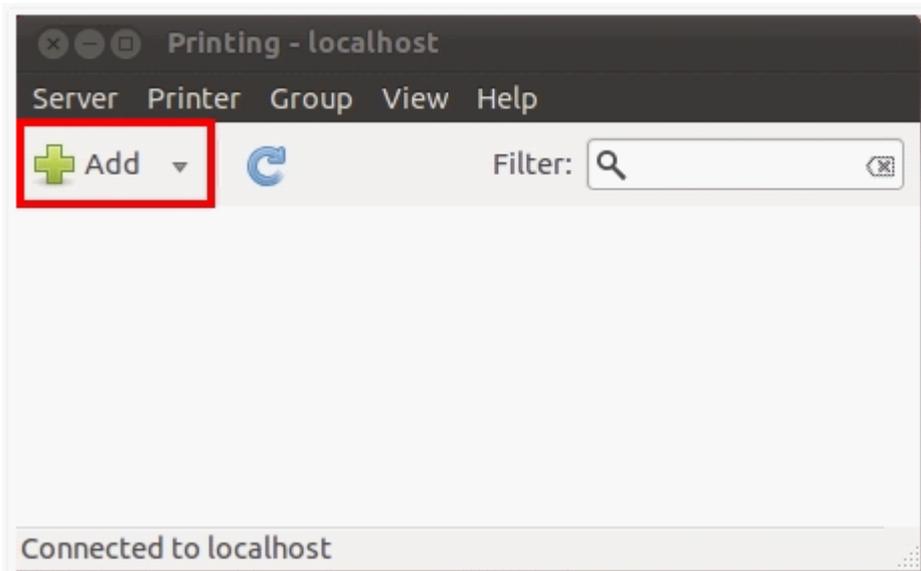
9.2.6 Linux (Ubuntu 10.10)

If you are using Linux (Ubuntu 10.10), follow the steps below to configure the printer function of the NAS.

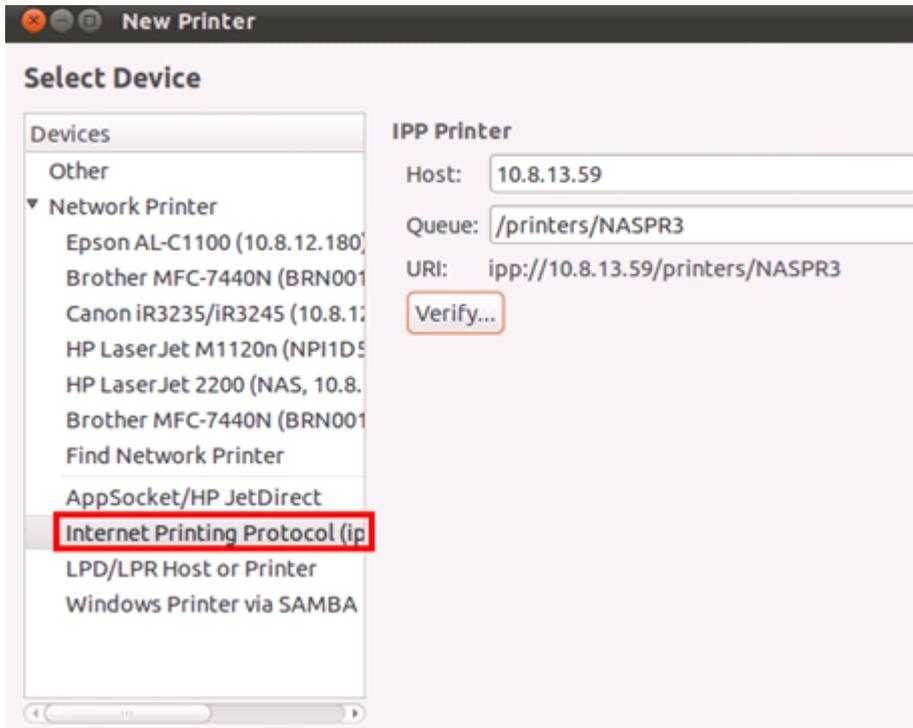
1. Click the 'System' tab, choose 'Administration'. Then select 'Printing'.



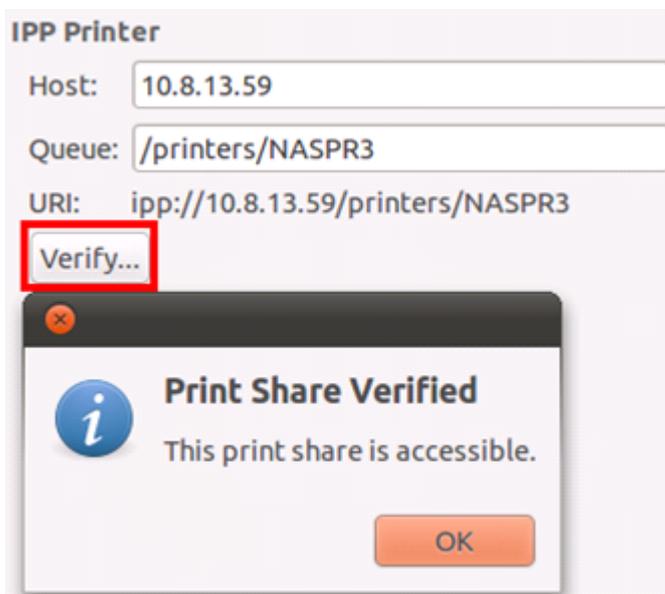
2. Click 'Add' to add a printer.



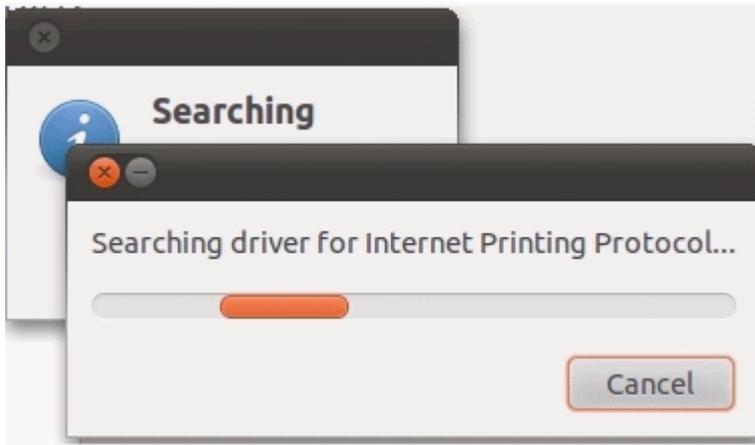
- Click 'Network Printer', and then select 'Internet Printing Protocol (ipp)'. Enter the NAS IP address in 'Host'. '/printers' is already present. Enter the printer name after 'printers/' in the field 'Queue'.



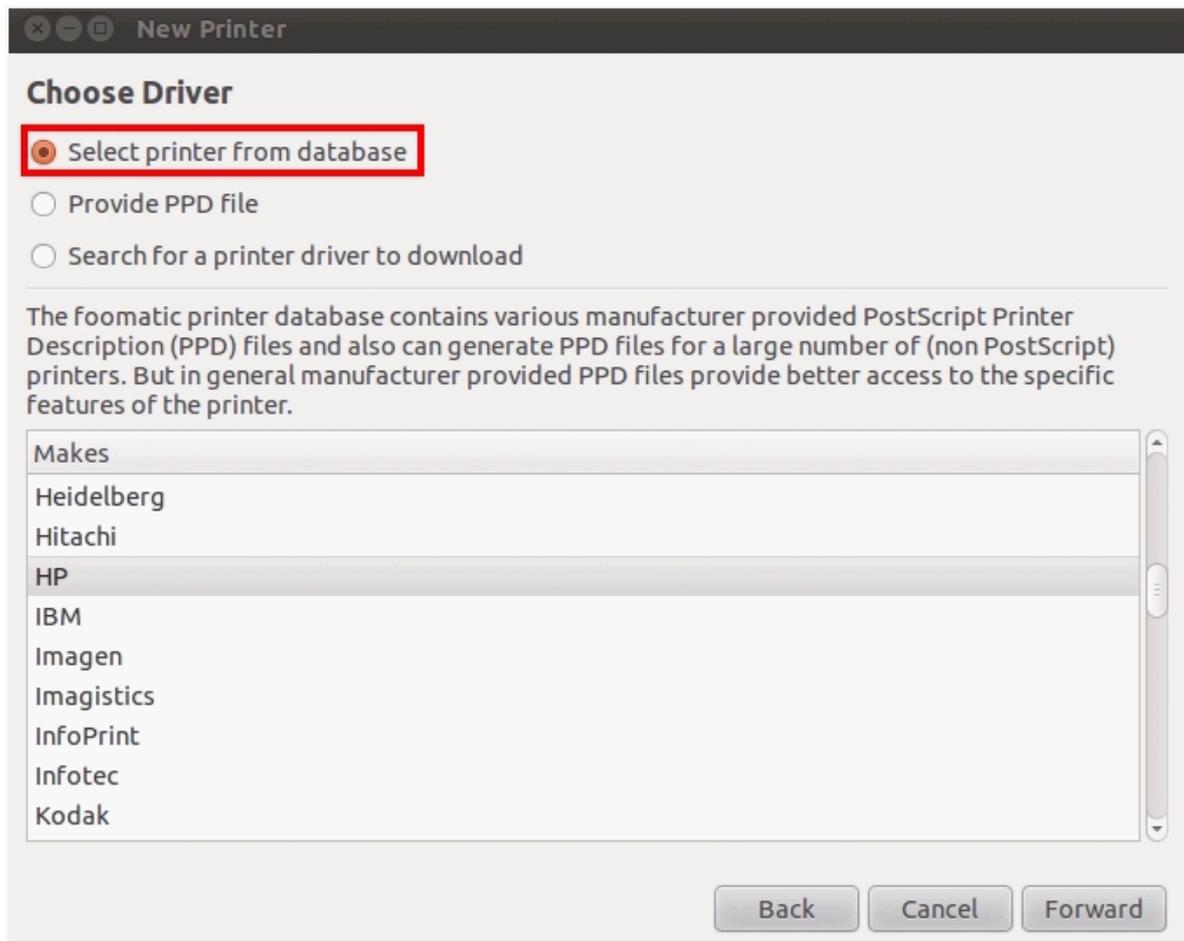
- Before you continue, you may click 'Verify' to test the printer connection.



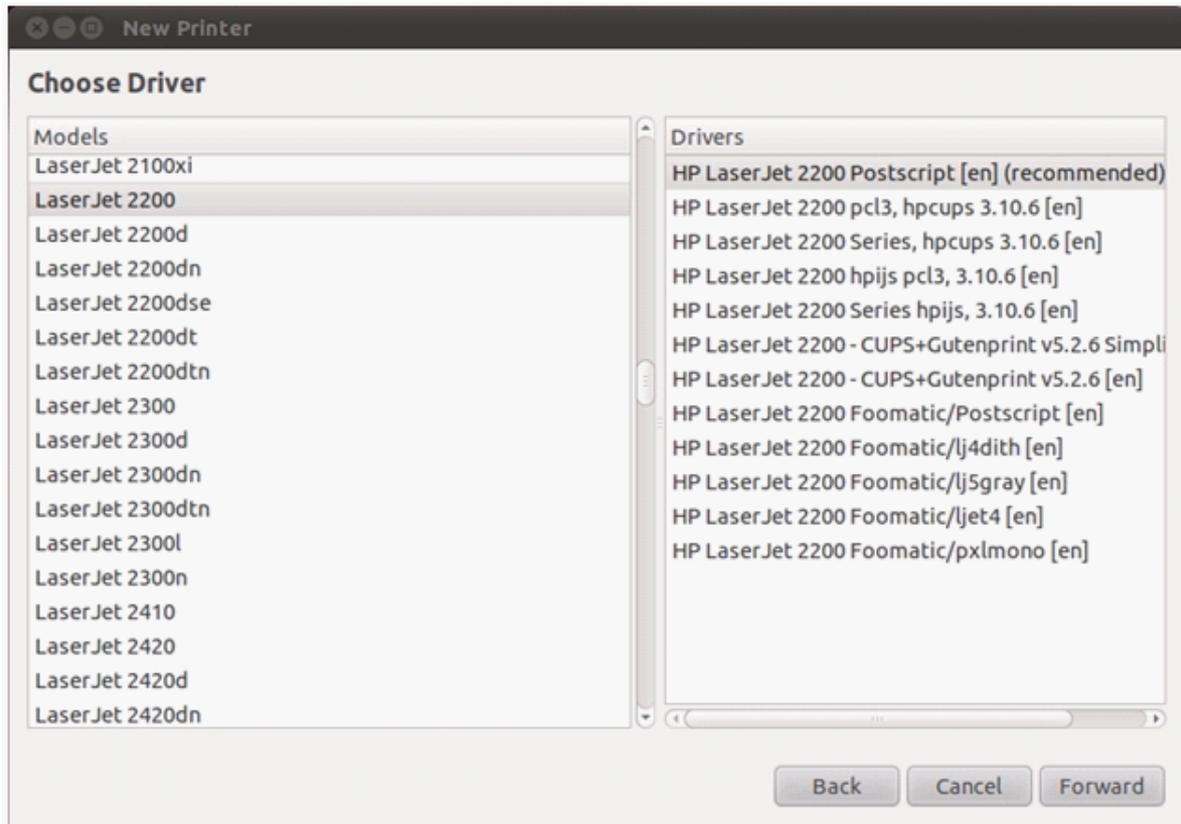
5. The operating system starts to search for the possible driver list.



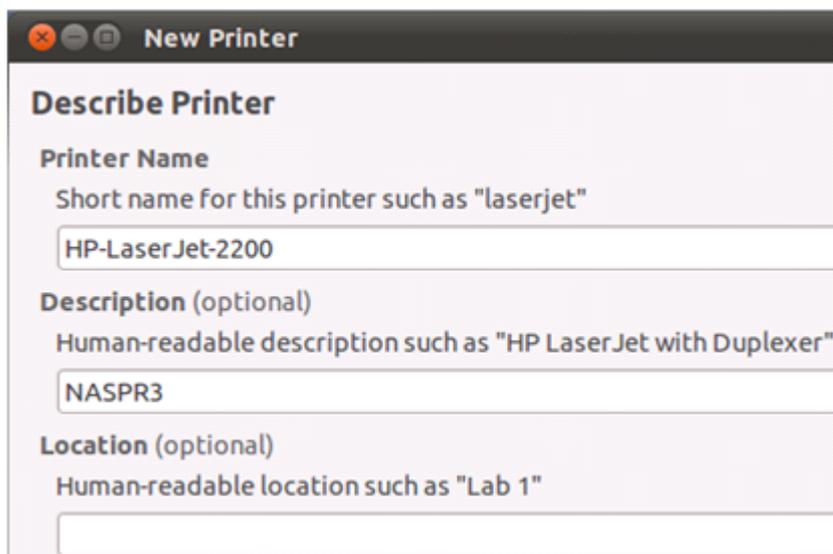
6. Select the printer driver from the built-in database, or search online.



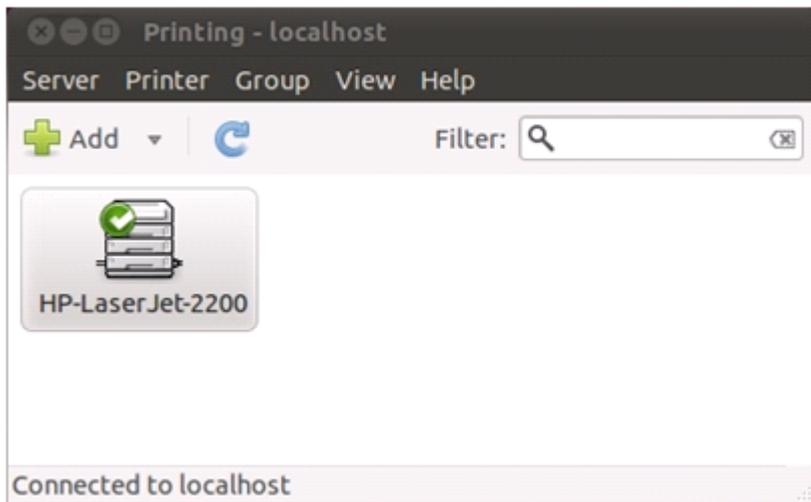
7. Choose the correct printer model and driver. Depending on the printer, some additional printer options may be available in the next step.



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.



9.3 UPS Settings

By enabling the UPS (Uninterruptible Power Supply) support, you can protect your NAS from abnormal system shutdown caused by power disruption. In the event of a power failure the NAS will shut down automatically or enter auto-protection mode by probing the power status of the connected UPS unit.

UPS Settings

UPS Settings

Enable UPS Support

After the AC power fails for minute(s), turn off the server.

After the AC power fails for minute(s), the system will enter the 'auto-protection' mode. When the power restores, the system automatically resumes to its previous state.

Protocol:

IP Address of Network UPS Server: . . .

UPS Information

UPS Brand:	--
UPS Model:	--
AC Power Status:	--
Battery Capacity:	--
Estimated Protection Time:	--

[APPLY](#)

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. Select the option 'Enable UPS Support'.
3. Choose between whether the NAS will 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.
4. Click 'Apply' 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 the option 'Enable UPS Support'.
3. Choose between whether the NAS will 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.
4. Select 'SNMP' from the 'Protocol' drop down menu.
5. Enter the IP address of the SNMP-based UPS.
6. Click 'Apply' to confirm.

Network master mode

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

1. Make sure the NAS is connected to the same physical network as the network UPS slaves.
2. Select the option 'Enable UPS Support'.
3. Choose between whether the NAS will 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.
4. Click 'Enable network UPS master'. This option appears only when your NAS is connected to the UPS by a USB cable.
5. Enter the 'IP address' of other network UPS slaves to be notified in the event of power failure.
6. Click 'Apply' 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 the steps below:

1. Make sure the NAS is connected to the same physical network as the network UPS master.
2. Select the option 'Enable UPS Support'.
3. Choose between whether the NAS will 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.
4. Select 'USB slave mode' from the 'Protocol' drop down menu.
5. Enter the IP address of the network UPS master.
6. Click 'Apply' to confirm.

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

Behaviour of the UPS feature of the NAS:

In case of power loss and power recovery, the events will be logged in the 'System Event Logs'.

During a power loss, the NAS will wait for the specified time you enter in the 'UPS Settings' before powering off or entering auto-protection mode.

If the power restores before the end of the waiting time, the NAS will remain in operation and cancel its power-off or auto-protection action.

Once the power restores:

- If the NAS is in auto-protection mode, it will resume to normal operation.
- If the NAS is powered off, it will remain off.

Difference between auto-protection mode and power-off mode

Mode	Advantage	Disadvantage
Auto-protection mode	The NAS resumes after power recovery.	If the power outage lasts until the UPS is turned off, the NAS may suffer from abnormal shutdown.
Power-off mode	The NAS will be shut down properly.	The NAS will remain off after the power recovery. Manual power on of the server is required.

If the power restores after the NAS has been shut down and before the UPS device is powered off, you may power on the NAS by Wake on LAN* (if your NAS and UPS device both support Wake on LAN and Wake on LAN is enabled on the NAS).

*Wake on LAN is not supported by TS-110, TS-119, TS-210, TS-219, TS-219P, TS-410, TS-419P, TS-410U, TS-419U, TS-112, TS-212, TS-412.

If the power restores after both the NAS and the UPS have been shut down, the NAS will react according to the settings in 'System Administration' > 'Power Management'.

Power Management

Restart/ Shutdown

Execute system restart/ shutdown immediately.

RESTART

SHUTDOWN

Configure Wake on LAN

- Enable
- Disable

When the AC power resumes:

- Resume the server to the previous power-on or power-off status.
- Turn on the server automatically.
- The server should remain off.

Set power on/ power off/ restart schedule

Enable schedule

Postpone the restart/shutdown schedule when a replication job is in progress.

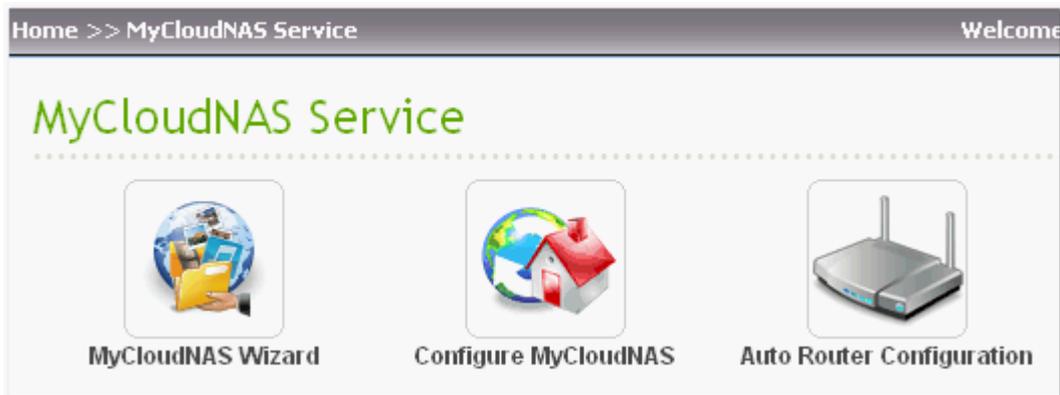
Shutdown

APPLY

10. MyCloudNAS Service

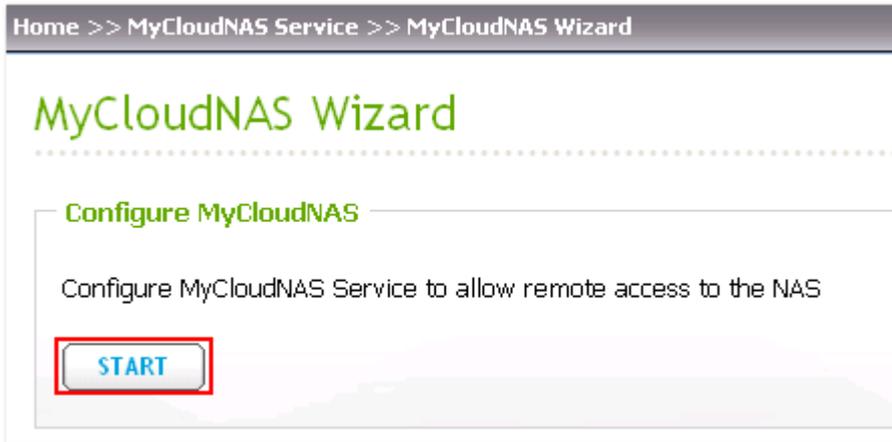
MyCloudNAS service is a function which provides host name registration, mapping of the dynamic NAS IP to a domain name, and auto port mapping of UPnP router on your local network. Use MyCloudNAS Wizard to register a unique host name for your NAS, configure automatic port forwarding on your UPnP router, and publish NAS services for remote access over the Internet.

To use MyCloudNAS service, make sure you have connected the NAS to an UPnP router and the Internet.



10.1 MyCloudNAS Wizard

The first time you use MyCloudNAS service, you are recommended to use MyCloudNAS Wizard to complete the settings. The wizard shows up automatically if you have never configured the settings before. You can also click 'Start' to use the wizard.



Follow the steps below to set up MyCloudNAS service. To use MyCloudNAS service, make sure you have connected the NAS to an UPnP router and the Internet.

Select to use Express Setup (default) or Manual Setup. Express Setup opens the ports for HTTP (8080), HTTP (80), FTP (21), FTPS (20) services automatically. To select the ports of the NAS services to open, select 'Manual Setup'. Click 'Next'.



Enter a host name (MyCloudNAS name) for your NAS and select a domain name. Click 'Check' to check the availability of the host name. Then click 'Next'.

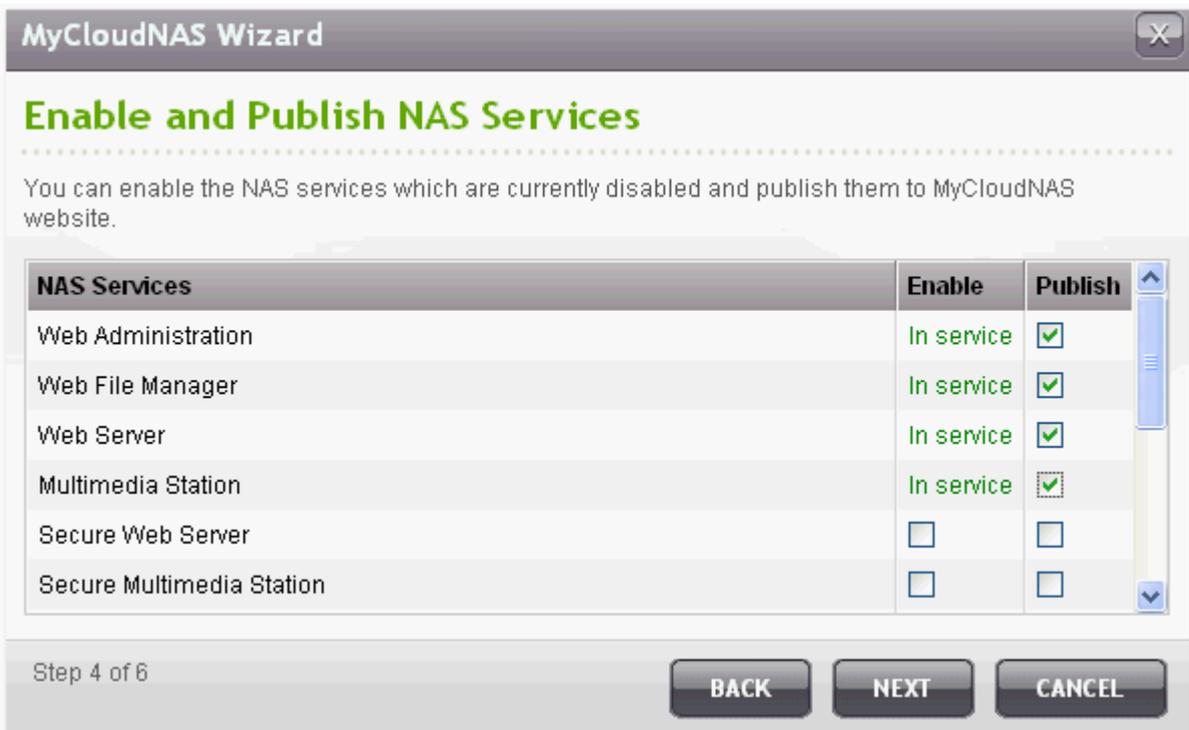
Select the ports to open on your UPnP router. Your router will be configured to open and forward the ports to the NAS services automatically. Click 'Next'.

Port Number	NAS Services
HTTP (8080)	Web administration, Web File Manager
HTTP (80)	Web Server, Multimedia Station, QMobile
FTP, FTPS (21, 20)	FTP, FTPS
SSL (443)	Secure web administration
Telnet (13131)	Telnet server
SSH (22)	SSH, SFTP server
SSL (8081)	Secure web server
Rsync (873)	Remote replication

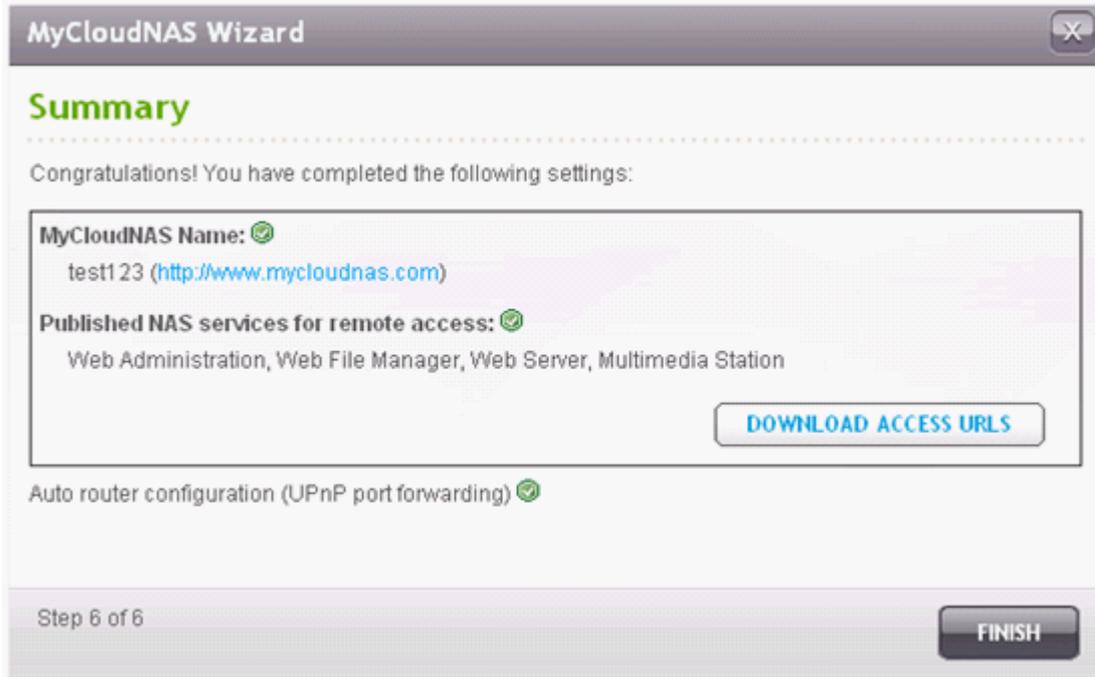


The NAS services which use the ports opened in the previous step will be shown. You can enable the services which are currently disabled and publish the web-based NAS services such as web administration, Web Server, Multimedia Server, and Web File Manager to <http://www.mycloudnas.com/>. Click 'Next'.

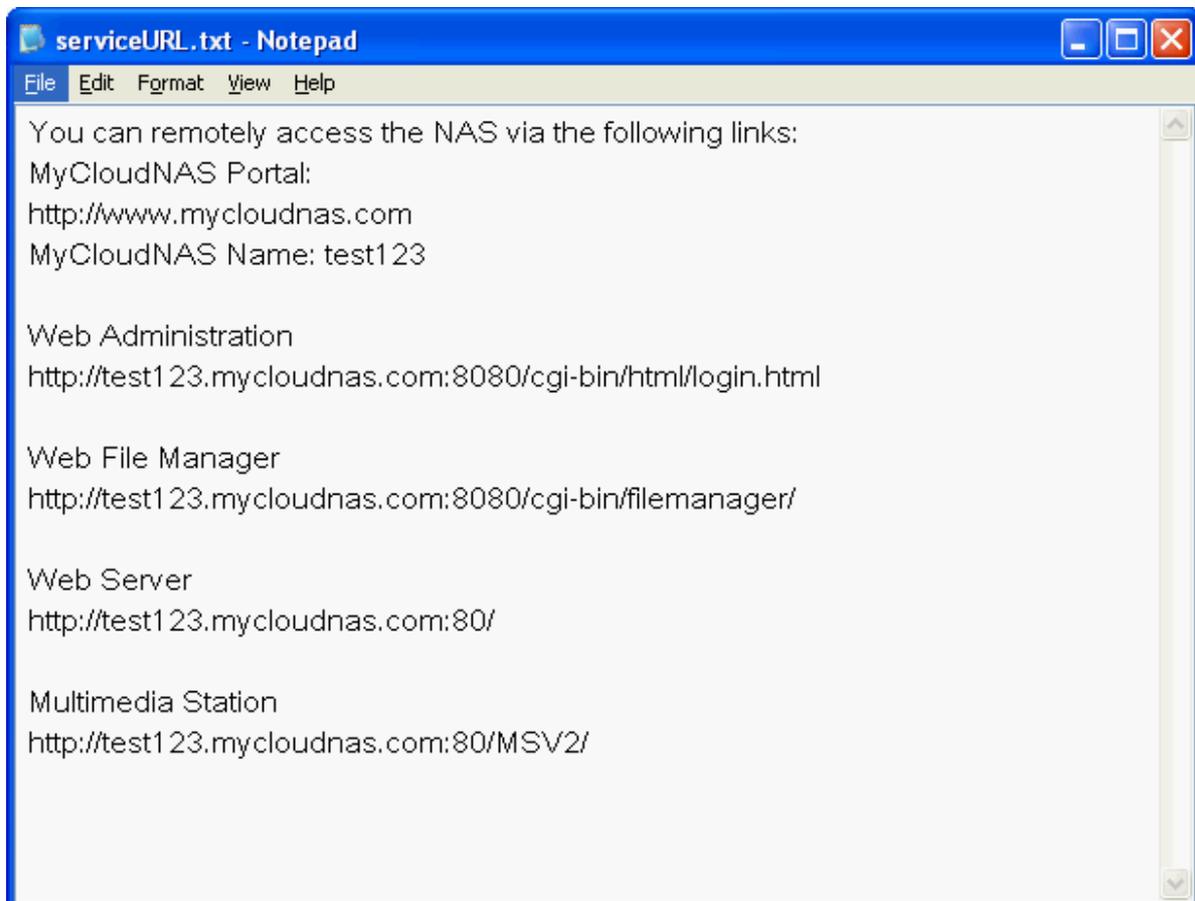
By enabling the NAS services in this step, they are opened for remote access even if they were not published. By enabling and publishing the NAS services, they are accessible from <http://www.mycloudnas.com/>.



A summary will be shown. You can access your NAS by the MyCloudNAS name and download the URLs of the published services. Click 'Finish' to exit.



Copy the URLs and access the NAS services by the web browser.



To access the NAS services via MyCloudNAS portal, go to <http://www.mycloudnas.com/>, enter your MyCloudNAS name and select the correct domain name. Click 'Go' to access the published NAS services.



Click the service icons and login the web-based NAS services.

The screenshot displays the MyCloudNAS Service interface. At the top left, the logo "MyCloudNAS Service" is shown inside a white cloud shape. Below the logo, the text "Applications and Services" is centered. There are four service icons arranged in a 2x2 grid: "Web Administration" (a blue icon with a server rack), "Multimedia Station" (a blue icon with a clapperboard and photos), "Web File Manager" (a green icon with a magnifying glass over a folder), and "Web Server" (a green icon with a globe). At the bottom of the page, there is a footer with navigation links: "| Home | Privacy Policy | Terms of Use | What's MyCloudNAS Service? |" and a copyright notice: "Copyright ©2010; MyCloudNAS.COM. All Rights Reserved. This site is best viewed in 1024 x 768 true color with IE7.0+ or Firefox 3.0+".

10.2 Configure MyCloudNAS

You can select to enable MyCloudNAS service in 'MyCloudNAS Service' > 'Configure MyCloudNAS'. You can register a host name for the NAS or change the host name anytime. Specify the time interval to check the external IP address of the NAS. The NAS will notify MyCloudNAS service automatically if the WAN IP address of the NAS has changed. To use MyCloudNAS service, make sure you have connected the NAS to an UPnP router and the Internet.

Home >> MyCloudNAS Service >> Configure MyCloudNAS Welcome admin | Logout English

Configure MyCloudNAS

CONFIGURE MYCLOUDNAS **PUBLISH SERVICES**

Configure MyCloudNAS Name

After enabling this service, you can connect to the NAS by your desired host name.

Enable MyCloudNAS Service

MyCloudNAS Name:

Check the external IP address automatically:

[Click here to launch MyCloudNAS Wizard.](#)

Recent Update Result

Current MyCloudNAS Name: http://test.mycloudnas.com
Current WAN IP: 219.85.63.13
Last Check Time: 2010/11/30 16:23:22
Next Check Time: 2010/11/30 17:23:22
Last Update Time: 2010/11/30 16:23:22
Server Response: MyCloudNAS name and WAN IP updated successfully.

Note:

- The MyCloudNAS name of each QNAP NAS is unique. One MyCloudNAS name can only be used with one NAS.
- A registered MyCloudNAS name will expire in 120 days if your NAS have not been online within the period. Once the name is expired, it will be released for new registration by other users.

In 'Configure MyCloudNAS' > 'Publish Services', the web-based NAS services are shown. You can select to publish the services on MyCloudNAS.com. Note that if you publish a NAS service which is disabled, the service will not be accessible even the corresponding is shown on MyCloudNAS.com.

Configure MyCloudNAS ?

CONFIGURE MYCLOUDNAS **PUBLISH SERVICES**

Publish Services

You can publish NAS services to MyCloudNAS website (<http://www.mycloudnas.com>).

NAS Services	Enable	Publish
Web Administration	Enabled	<input checked="" type="checkbox"/>
Web File Manager	Enabled	<input checked="" type="checkbox"/>
Web Server	Enabled	<input checked="" type="checkbox"/>
Multimedia Station	Enabled	<input checked="" type="checkbox"/>
Secure Web Administration	Enabled	<input type="checkbox"/>
Secure Web File Manager	Enabled	<input type="checkbox"/>
Secure Web Server	Enabled	<input type="checkbox"/>
Secure Multimedia Station	Enabled	<input type="checkbox"/>

APPLY

Recent Update Result

Current MyCloudNAS Name: <http://test.mycloudnas.com>
Current WAN IP: 219.85.63.13
Last Check Time: 2010/11/30 16:23:22
Next Check Time: 2010/11/30 17:23:22
Last Update Time: 2010/11/30 16:23:22
Server Response: MyCloudNAS name and WAN IP updated successfully.

10.3 Auto Router Configuration

In 'MyCloudNAS Service' > 'Auto Router Configuration', you can enable or disable UPnP port forwarding. When this option is enabled, your NAS is accessible from the Internet via the UPnP router. Click 'Rescan' to detect the router if no UPnP router is found on the local network. To view the router information, click 'view details'.

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.

Home >> MyCloudNAS Service >> Auto Router Configuration
Welcome admin | [Logout](#)
English

Auto Router Configuration

Auto Router Configuration

Enable UPnP Port Forwarding

Enable this function to allow access to your NAS from the Internet via an UPnP router.

Note: This function only works with the UPnP supported devices.

Status: Found UPnP router on the network [\(view details\)](#)

Forwarded Services

Enabled	Status	Service Name	Ports	Protocol
<input checked="" type="checkbox"/>	OK	Web Administration (includes Web File Manager, Download Station, Surveillance Station)	8080	TCP
<input checked="" type="checkbox"/>	OK	Secure Web Administration	443	TCP
<input checked="" type="checkbox"/>	OK	FTP/FTPS with SSL/TLS Server	20,21	TCP
<input checked="" type="checkbox"/>	OK	Telnet Server	13131	TCP
<input checked="" type="checkbox"/>	OK	SSH/SFTP Server	22	TCP
<input checked="" type="checkbox"/>	OK	Web Server/Multimedia Station	80	TCP
<input checked="" type="checkbox"/>	OK	Secure Web Server	8081	TCP
<input type="checkbox"/>	--	Remote Replication	873	TCP

If your UPnP router is incompatible with the NAS, click the icon  and then click 'UPnP Router Compatibility Feedback...' (<http://www.qnap.com/onlinesupport.aspx>) to contact the technical support.

Home >> MyCloudNAS Service >> Auto Router Configuration

Auto Router Configuration

Auto Router Configuration

Enable UPnP Port Forwarding

Enable this function to allow access to your NAS from the Internet via an UPnP router.

Note: This function only works with the UPnP supported devices.



Status: No UPnP router found on the network 

RESCAN



Your router does not support UPnP protocol or you have not enabled the UPnP function on the router.

[UPnP Router Compatibility Feedback...](#)

OK

Select the NAS services to be allowed for remote access. Click 'Apply to router'. The NAS will configure the port forwarding on the UPnP router automatically. You will then be able to access these NAS services from the Internet.

Forwarded Services

[APPLY TO ROUTER](#)

Enabled	Status	Service Name	Ports	Protocol
<input checked="" type="checkbox"/>	OK	Web Administration (includes Web File Manager, Download Station, Surveillance Station)	8080	TCP
<input checked="" type="checkbox"/>	OK	Secure Web Administration	443	TCP
<input checked="" type="checkbox"/>	OK	FTP/FTPS with SSL/TLS Server	20,21	TCP
<input checked="" type="checkbox"/>	OK	Telnet Server	13131	TCP
<input checked="" type="checkbox"/>	OK	SSH/SFTP Server	22	TCP
<input checked="" type="checkbox"/>	OK	Web Server/Multimedia Station	80	TCP
<input checked="" type="checkbox"/>	OK	Secure Web Server	8081	TCP
<input type="checkbox"/>	--	Remote Replication	873	TCP

Note: If your router does not support UPnP function, you need to configure port forwarding manually on your router. Please refer to the links below:

- Application note: http://www.qnap.com/pro_application.asp?ap_id=111
- FAQ: <http://www.qnap.com/faq.asp>
- UPnP router compatibility list: http://www.qnap.com/pro_compatibility.asp

11. System Status

System Information⁴⁴⁹

System Service⁴⁵⁰

Resource Monitor⁴⁵¹

11.1 System Information

You can view the system information such as CPU usage and memory on this page.

Home >> System Status >> System Information Welcome admin | Logout [English](#)

System Information

Server Name	PM-559
Firmware Version	3.4.0 Build 1214T
System Up Time	1 Day 1 Hour 0 Minute(s)
Serial Number	Q102I00826

Port Status

Port No.	Port Status	IP Address	MAC Address	Packets Received	Packets Sent	Error Packets
Ethernet 1	Up	10.8.12.111	00:08:9b:c3:c7:d6	3084118	12992146	0
Ethernet 2	Down	0.0.0.0	00:08:9b:c3:c7:d7	0	0	0

Hardware Information

CPU Usage	4.7 %
Total Memory	998.2 MB
Free Memory	624.6 MB
CPU Temperature	39°C/102°F
System Temperature	42°C/107°F
HDD 1 Temperature	43°C/109°F
HDD 2 Temperature	43°C/109°F
HDD 3 Temperature	41°C/105°F
HDD 4 Temperature	--°C/--°F
HDD 5 Temperature	--°C/--°F
System Fan Speed	841 RPM

11.2 System Service

You can view the current network settings and status of the NAS in this section.

System Service

System Service

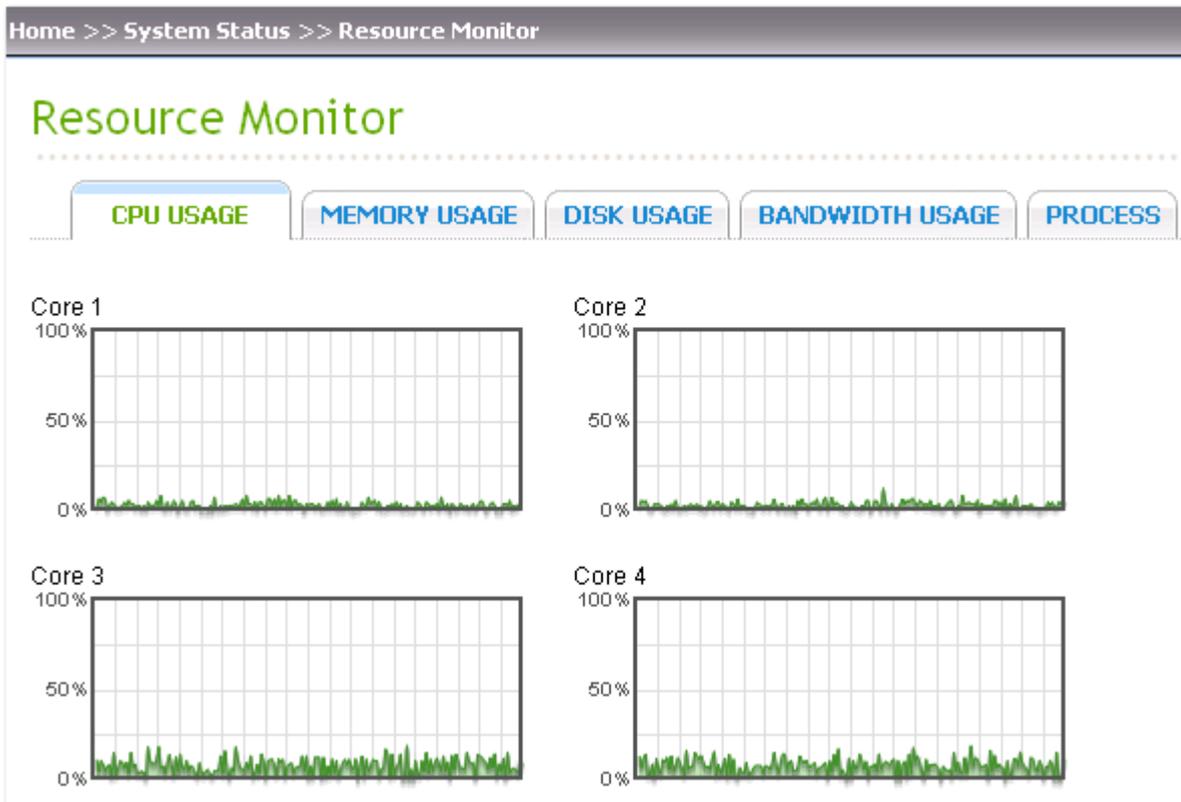
Microsoft Networking	
Enabled	<input checked="" type="checkbox"/>
Server Type	Standalone Server
Workgroup	NAS
Enable WINS server	<input type="checkbox"/>
Enable Local Master Browser	<input checked="" type="checkbox"/>
Apple Networking	
Enabled	<input type="checkbox"/>
Apple Zone Name	*
Unix/Linux NFS	
Enabled	<input type="checkbox"/>
Web File Manager	
Enabled	<input checked="" type="checkbox"/>
FTP Service	
Enabled	<input checked="" type="checkbox"/>
Port	21
Maximum Connections	30
System Port Management	
Port	8080

Multimedia Station	
Enable Multimedia Station	<input checked="" type="checkbox"/>
Enable iTunes Service	<input type="checkbox"/>
Enable UPnP Media Server	<input type="checkbox"/>
Download Station	
Enabled	<input checked="" type="checkbox"/>
Web Server	
Enabled	<input checked="" type="checkbox"/>
Port	80
register_globals	<input type="checkbox"/>
DDNS Service	
Enabled	<input type="checkbox"/>
MySQL Server	
Enabled	<input type="checkbox"/>
Enable TCP/IP Networking	<input type="checkbox"/>
Surveillance Station	
Enabled	<input type="checkbox"/>

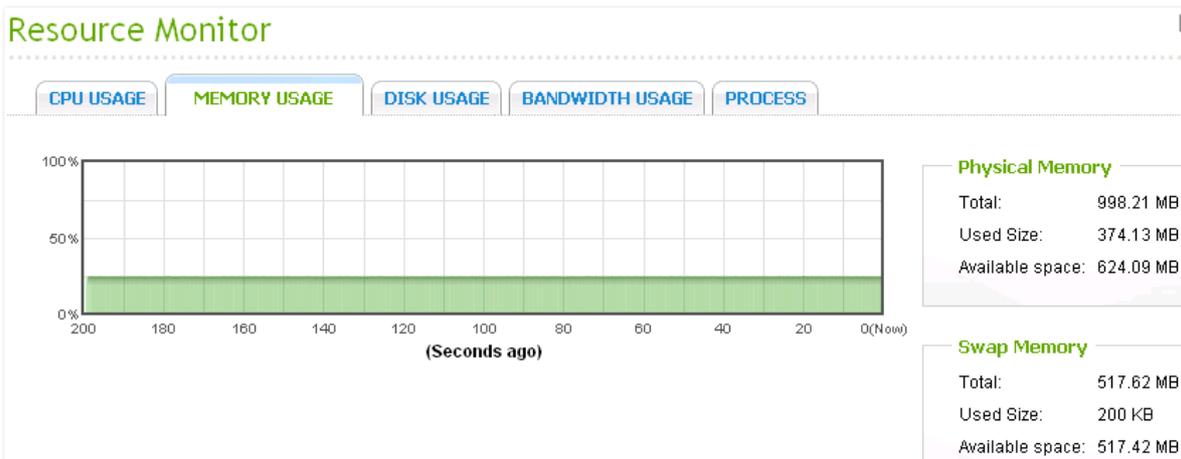
11.3 Resource Monitor

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

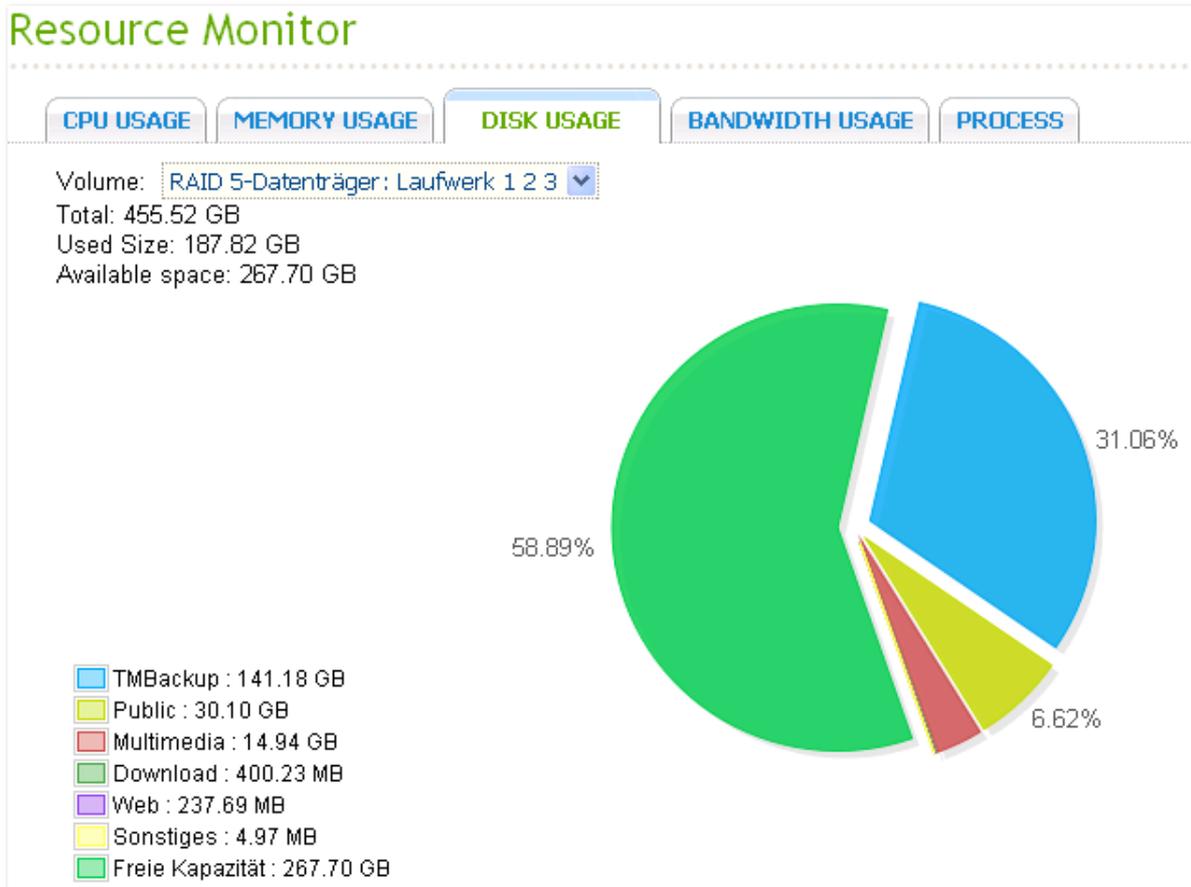
CPU Usage: This tab shows the CPU usage of the NAS.



Memory Usage: This tab shows the memory usage of the NAS by real-time dynamic graph.



Disk Usage: This tab shows the disk space usage of each disk volume and its share folders.



Bandwidth Transfer: This tab provides information about bandwidth transfer of each available LAN port of the NAS.

Resource Monitor

CPU USAGE

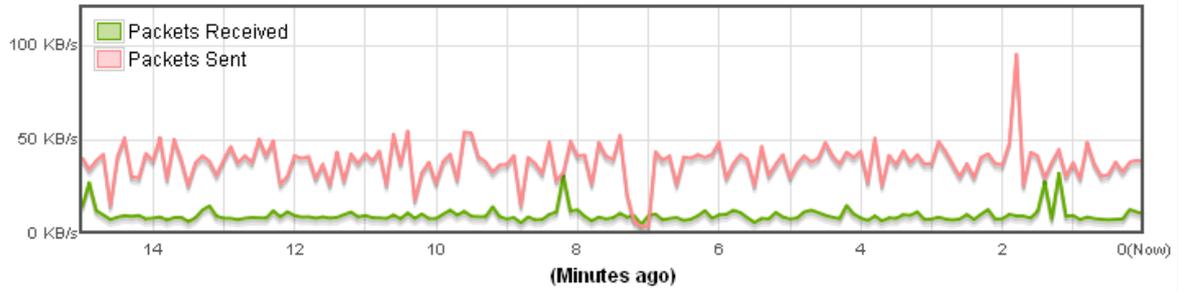
MEMORY USAGE

DISK USAGE

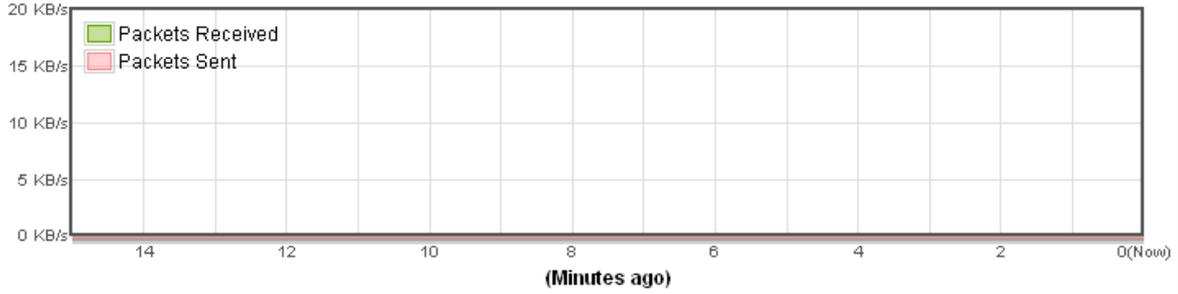
BANDWIDTH USAGE

PROCESS

Ethernet 1



Ethernet 2



Process: This tab shows information about the processes running on the NAS.

Resource Monitor

CPU USAGE MEMORY USAGE DISK USAGE BANDWIDTH USAGE **PROCESS**

Process Name	Users	PID	CPU Usage	Memory
top	admin	18260	3.8%	896 K
top	admin	18307	3.8%	884 K
thttpd	admin	2872	2.8%	1744 K
btd	admin	3259	1.9%	6868 K
md9_raid1	admin	1246	0.9%	0 K
sh	admin	7041	0.9%	1216 K
init	admin	1	0	628 K
daemon_mgr	admin	1528	0	1284 K
qVvatcodogcd: keeping alive ever	admin	1603	0	416 K
modagent	admin	1845	0	460 K
hotswap	admin	2115	0	1020 K
qsmartd	admin	2123	0	820 K
winbindd	admin	2317	0	3072 K
winbindd	admin	2318	0	3704 K
winbindd	admin	2319	0	3236 K

12. Use the LCD Panel

This feature is only provided by TS-412, TS-419P, TS-419P+, TS-439 Pro, TS-439 Pro II, TS-439 Pro II+, TS-459 Pro, TS-509 Pro, TS-559 Pro, TS-639 Pro, TS-659 Pro, SS-839 Pro, TS-859 Pro, TS-809 Pro, TS-809U-RP, TS-859U-RP, TS-459 Pro+, TS-559 Pro+, TS-659 Pro+, TS-859 Pro+, TS-859U-RP+.

You can use the LCD panel to perform disk configuration and view the system information.

When the NAS has started up, you will be able to view the server 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 the 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 the 'Select' button to choose the option, and press the 'Enter' button 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 the 'Select' button to browse more options, for example, RAID 6. Press the 'Enter' button and the following message shows. Press the 'Select' button 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 share 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 'Disk Management' > '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 web-based administration interface of the NAS with an administrator account and change the settings in 'Device Configuration' > 'Disk volume Encryption Management'.

E	n	c	r	y	p	t		V	o	l	u	m	e	?	
→	Y	e	s			N	o								

When the configuration is finished, the server name and IP address will be shown. If the NAS fails to create the disk volume, the following message will be shown.

C	r	e	a	t	i	n	g	.	.	.					
R	A	I	D	5		F	a	i	l	e	d				

*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+.

The data encryption functions may not be available in accordance to the legislative restrictions of some countries.

View system information by the LCD panel

When the LCD panel shows the server name and IP address, you may press the 'Enter' button to enter 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 the 'Select' button 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 the 'Select' button to select 'Yes'. Then press the 'Enter' button to confirm.

Reboot

Use this option to restart the NAS. Press the 'Select' button to select 'Yes'. Then press the 'Enter' button 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 may enter a password of maximum 8 numeric characters (0-9). When the cursor moves to 'OK', press the 'Enter' button. 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 system error, an error message will be shown on the LCD panel. Press the 'Enter' button to view the message. Press the 'Enter' button 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 failed
Sys. Overheat	The system overheat
HDD Overheat	The HDD overheat
CPU Overheat	The CPU overheat
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	The HDD fails
Vol1 Full	The volume is full
HDD Ejected	The HDD is ejected
Vol1 Degraded	The volume is in degraded mode
Vol1 Unmounted	The volume is unmounted
Vol1 Nonactivate	The volume is not activated

13. NetBak Replicator

NetBak Replicator is a powerful program installed in the user's system (Windows OS only) for data backup. You can back up any files or folders on the local PC to the share folders on the NAS over LAN or WAN.

Main Functions

1. Backup

- Instant Backup
Select the files and folders on the local PC and back up the files to the network share folders on the NAS immediately.
- File Filter
Select particular file types to be excluded from backup. The NAS will filter all the specified file types when backing up the data.
- Schedule
Specify a schedule for backing up the data, for example, 12:00 every day or 05:00 every Saturday.
- Monitor
When this option is enabled, the system will upload all the files or folders to the server instantly for backup when the files or folders are modified.

2. Restore

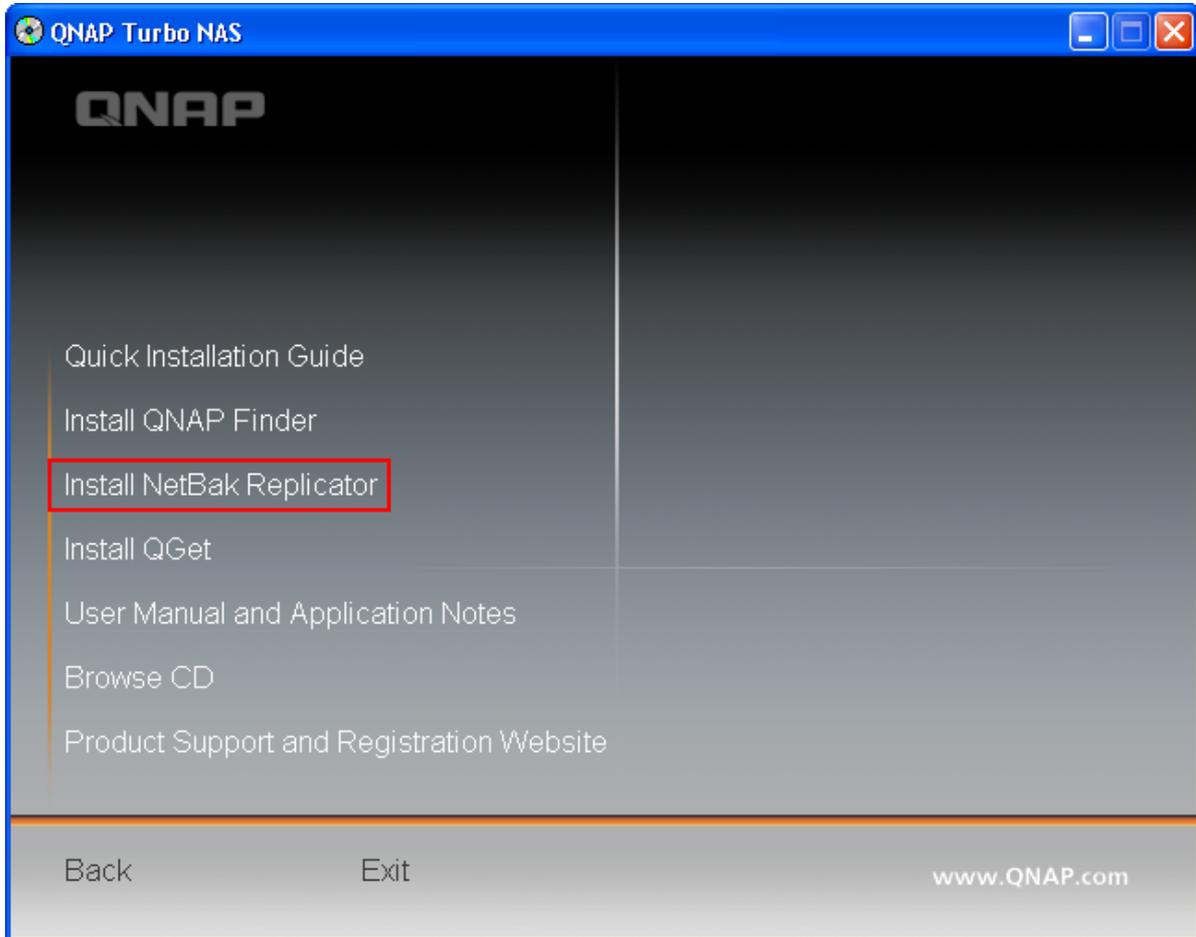
Select this option to restore the backup data to the original location of the file or to a new directory.

3. Log

Enable this option to record the events of NetBak Replicator, such as the time when NetBak Replicator starts and terminates.

Install NetBak Replicator

1. Run the NAS CD-ROM disc. Select 'Install NetBak Replicator'.



2. Follow the instructions to install NetBak Replicator.



3. Upon successful installation, a shortcut icon  will be shown on the Desktop. Double click the icon to run NetBak Replicator.

Use NetBak Replicator

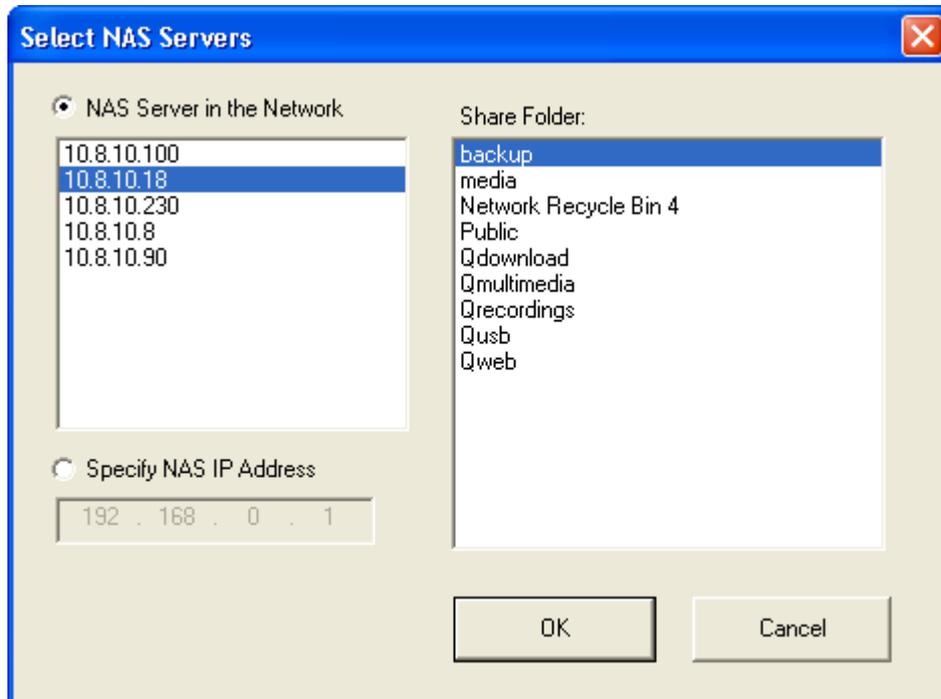
1. Before using NetBak Replicator, login the web administration page of the NAS and go to 'Access Right Management' > 'Share Folders' to create a share folder for backup. Make sure the share folder is open for everyone access or you login the share folder with an authorized account by NetBak Replicator.



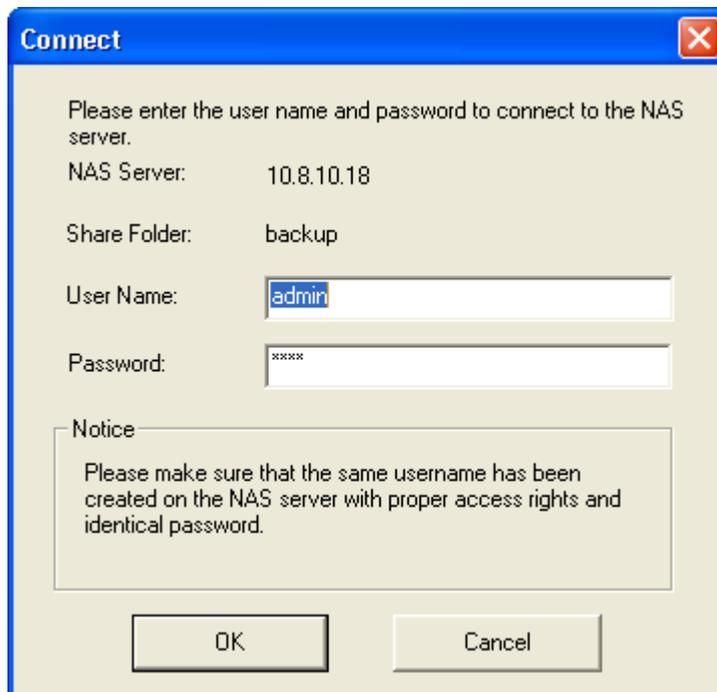
2. Run NetBak Replicator. Click . All the NAS on the local network and their share folders will be displayed.



- When the following window appears, all the NAS on the LAN will appear on the left list. Select a server and a share folder on the right. NetBak Replicator also supports backup over WAN, enter the IP address of the NAS for data backup directly and select a share folder. Then click 'OK'.



- Enter the user name and password to login the server.



5. You can start the backup procedure upon successful connection to the NAS.

Description of the buttons on NetBak Replicator

	Open Configuration: Open a previously saved configuration file of NetBak Replicator.
	Save Configuration: Save the current settings on NetBak Replicator. The file will be named as *.rpr
	Select All: Select all the options.
	Clear All: Unselect all the options.
	Select My Document: Select all the folders in My Document.
	Open NAS Backup Folder: This button allows the users to find out where the files were backed up, and check or manage the archived files manually.
	Advanced Backup: Advanced Backup allows the power users to back up a single folder with more advanced options.

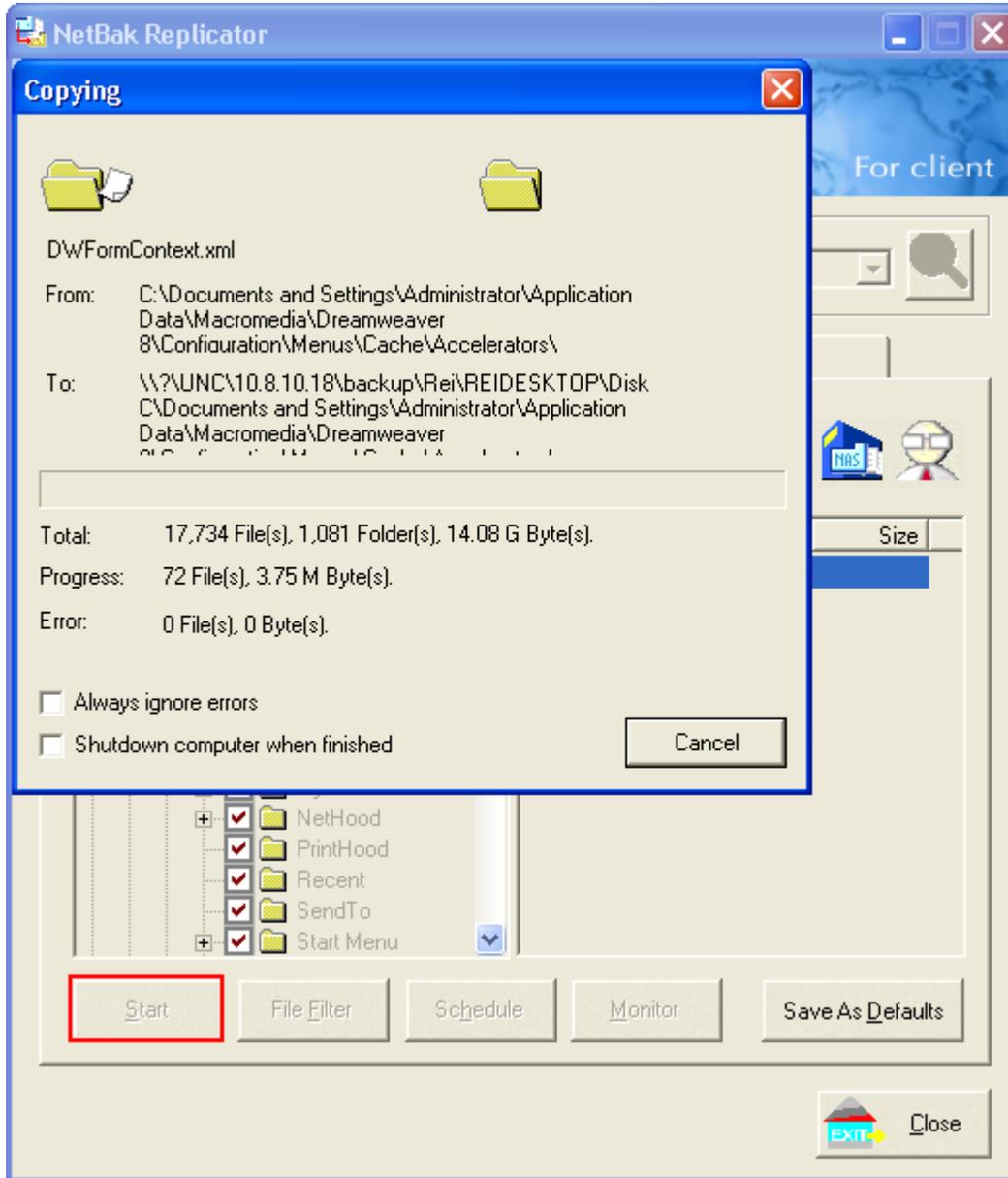
Backup

Select the files and folders for backup.



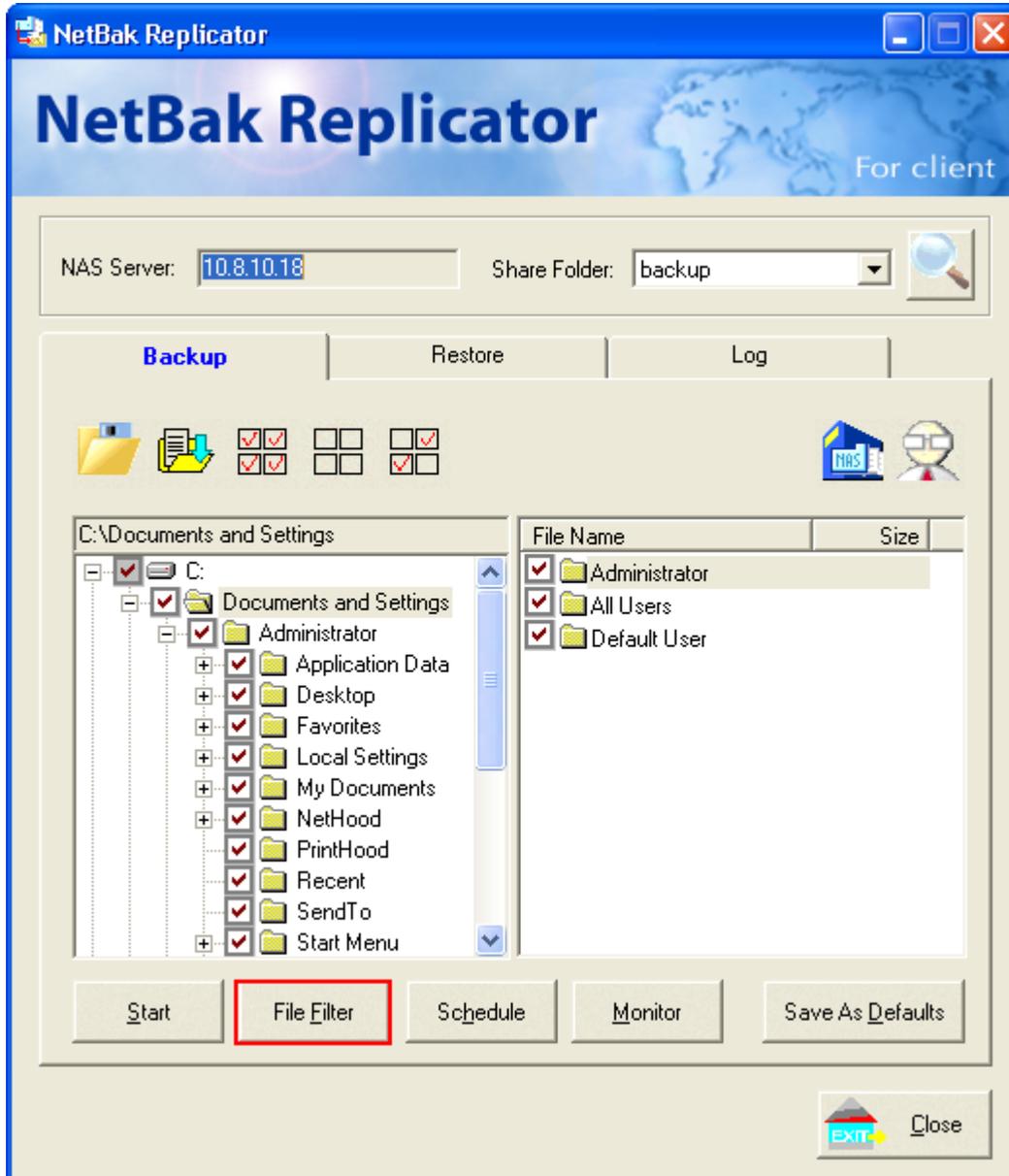
Start

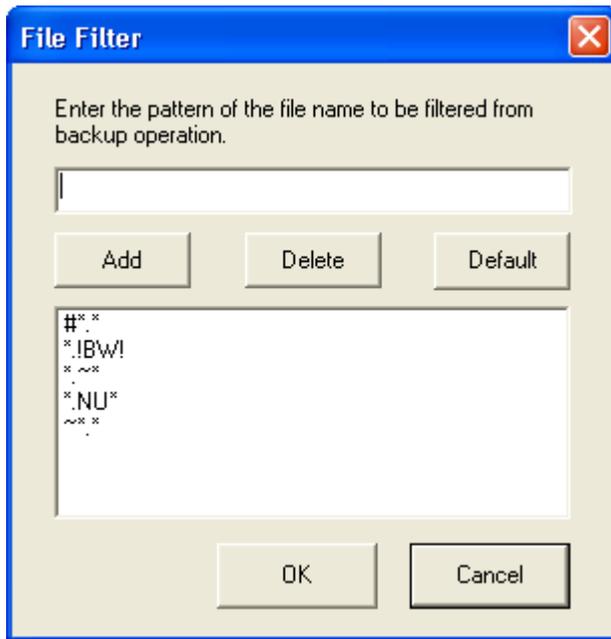
When you have selected the files for backup to the NAS, click 'Start'. The program will start to copy the files to the specified share folder on the NAS.



File Filter

Click 'File Filter' on NetBak Replicator to select file format to be skipped from backup. Then click 'OK'.

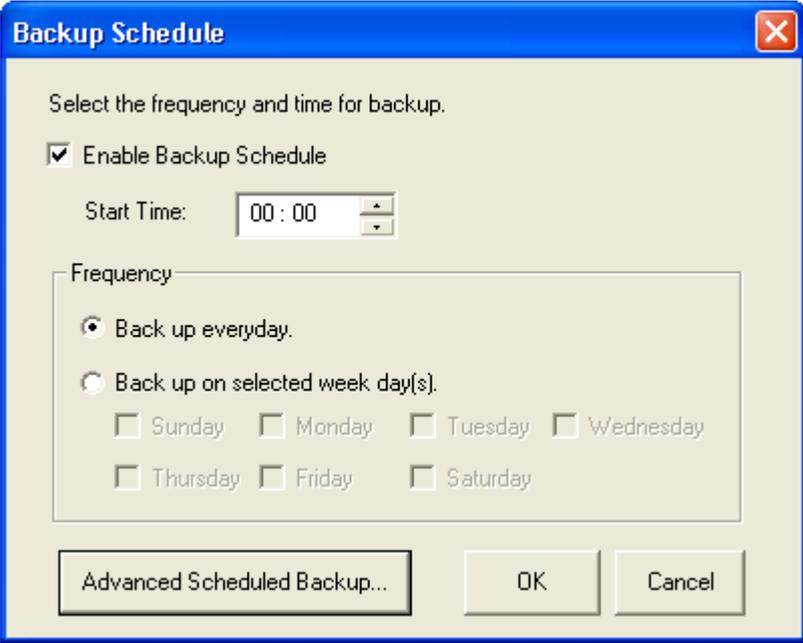




Schedule

Click 'Schedule' on the main page of NetBak Replicator. Then select the option 'Enable Backup Schedule' and select the frequency and time for backup. Click 'OK' to confirm.





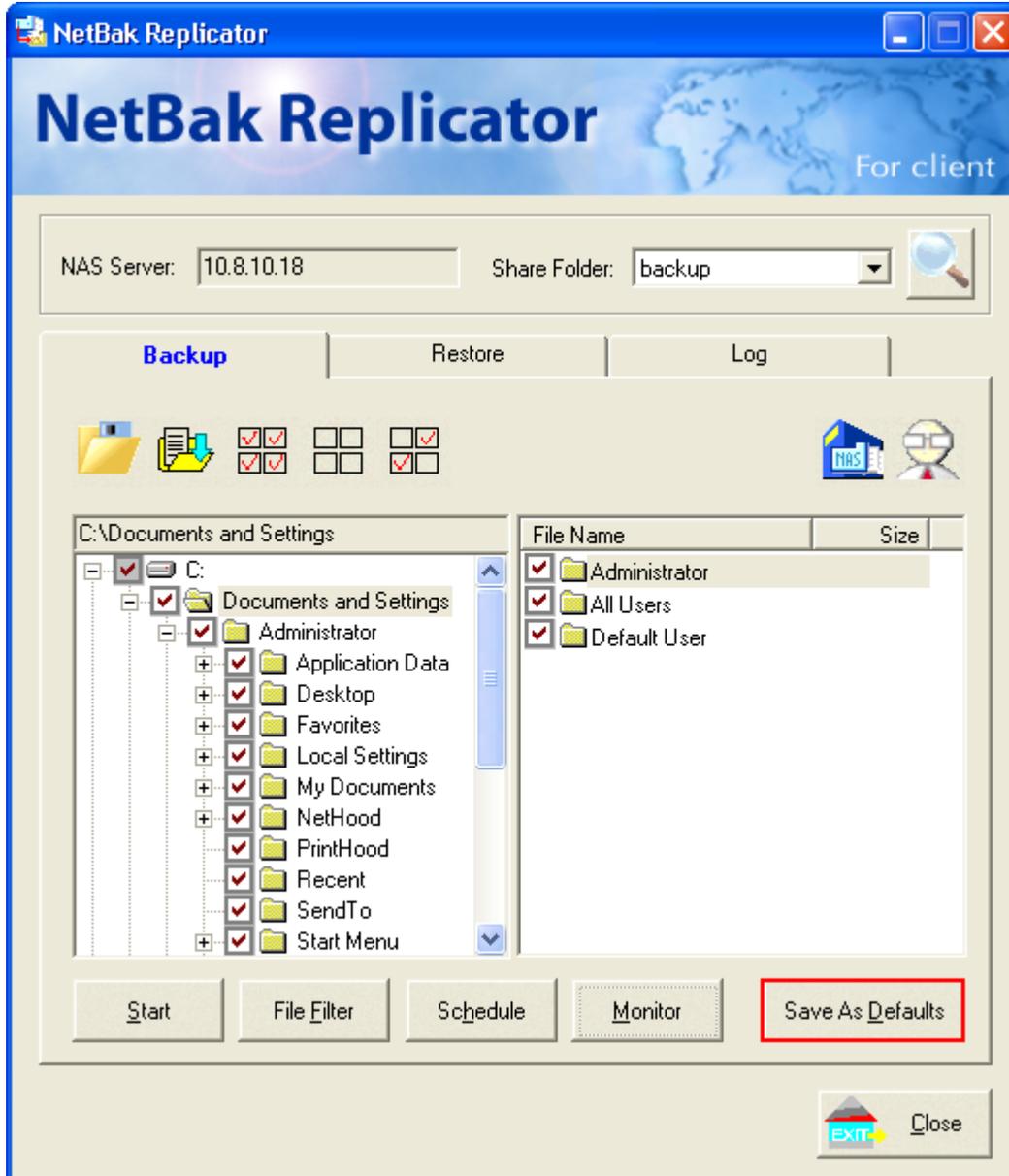
Monitor

Select a folder for monitoring. When this option is enabled, all the new and modified files on the PC will be copied to the NAS instantly. Other files will be gray and cannot be selected. Click 'Monitor' again to stop monitoring. An icon  will appear on task bar of Windows when monitoring is in process.



Initialize Configuration

Click 'Save As Defaults' to save the current settings of NetBak Replicator as the defaults. When you login again, the program will load the default settings automatically. You can also select to load the utility automatically when Windows starts.

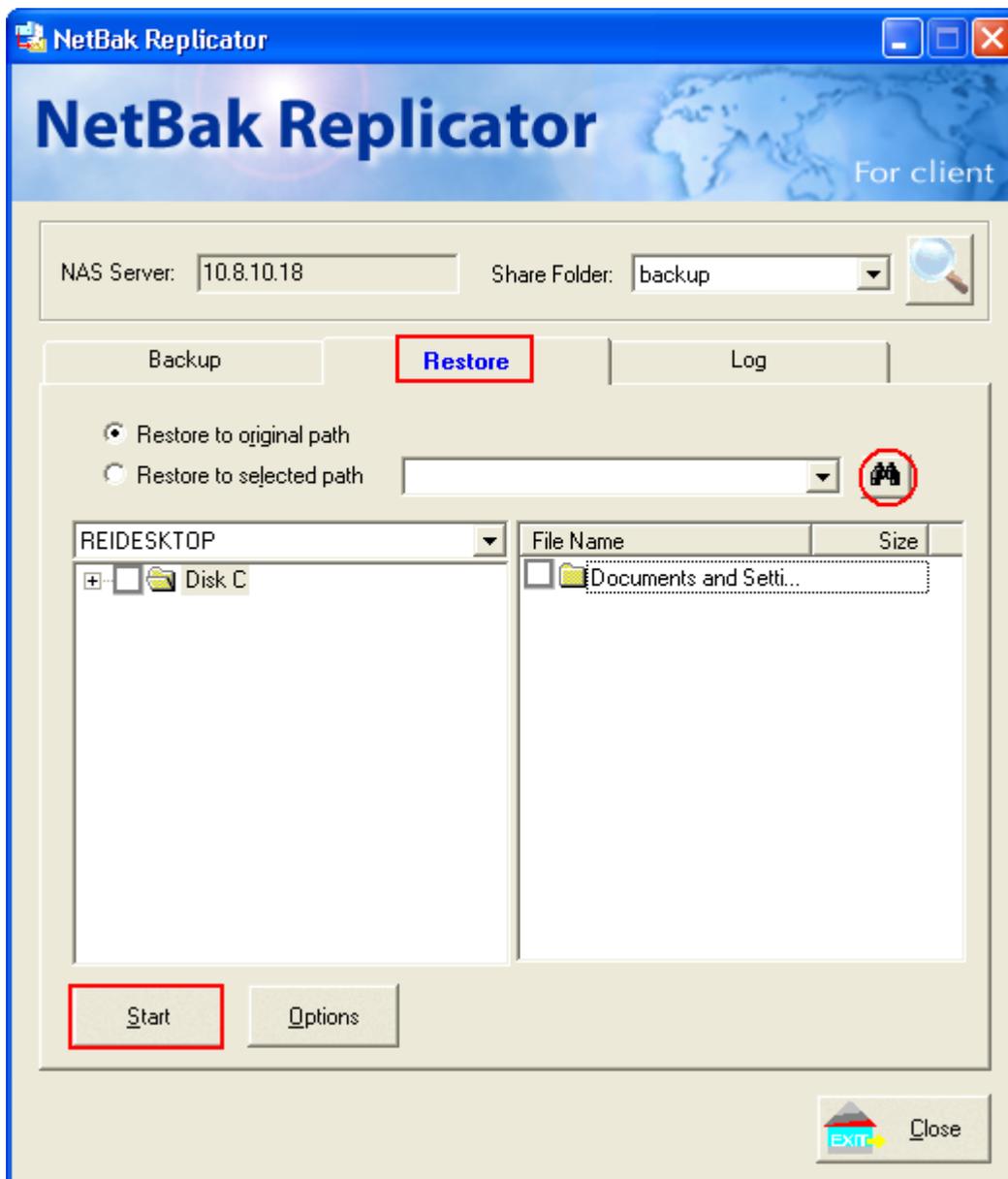


Restore

Follow the steps below to restore the files from the NAS to your PC.



- Click  to select the NAS and the share folder (the restore source).
- Click the 'Restore' tab on NetBak Replicator.
- Select to restore the data to the original path or click  to specify the restore location manually.
- Select the files and folders to restore.
- Click 'Start'.



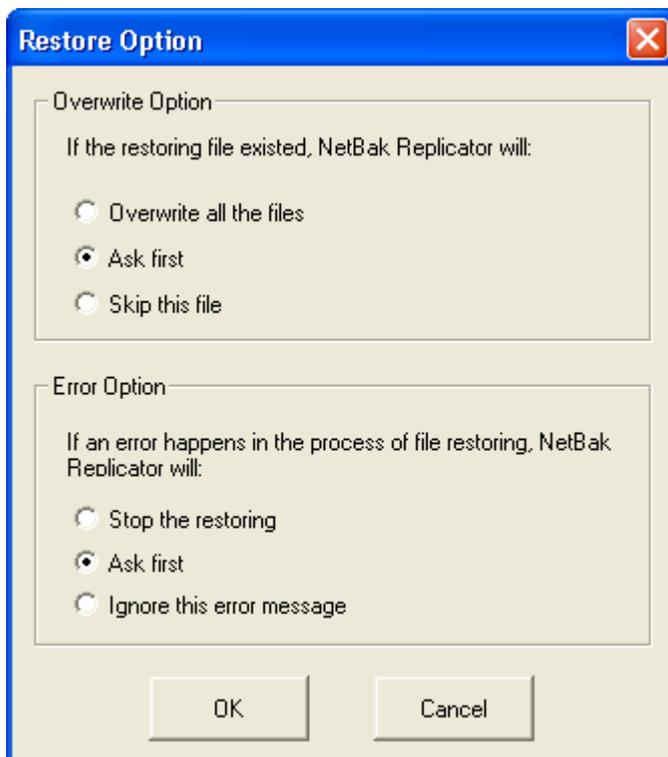
Options: Select the behaviour of NetBak Replicator if the restored file exists on the destination and when an error occurs during the process.

If the restoring file existed, NetBak Replicator will:

- Overwrite all the files
- Ask first
- Skip this file

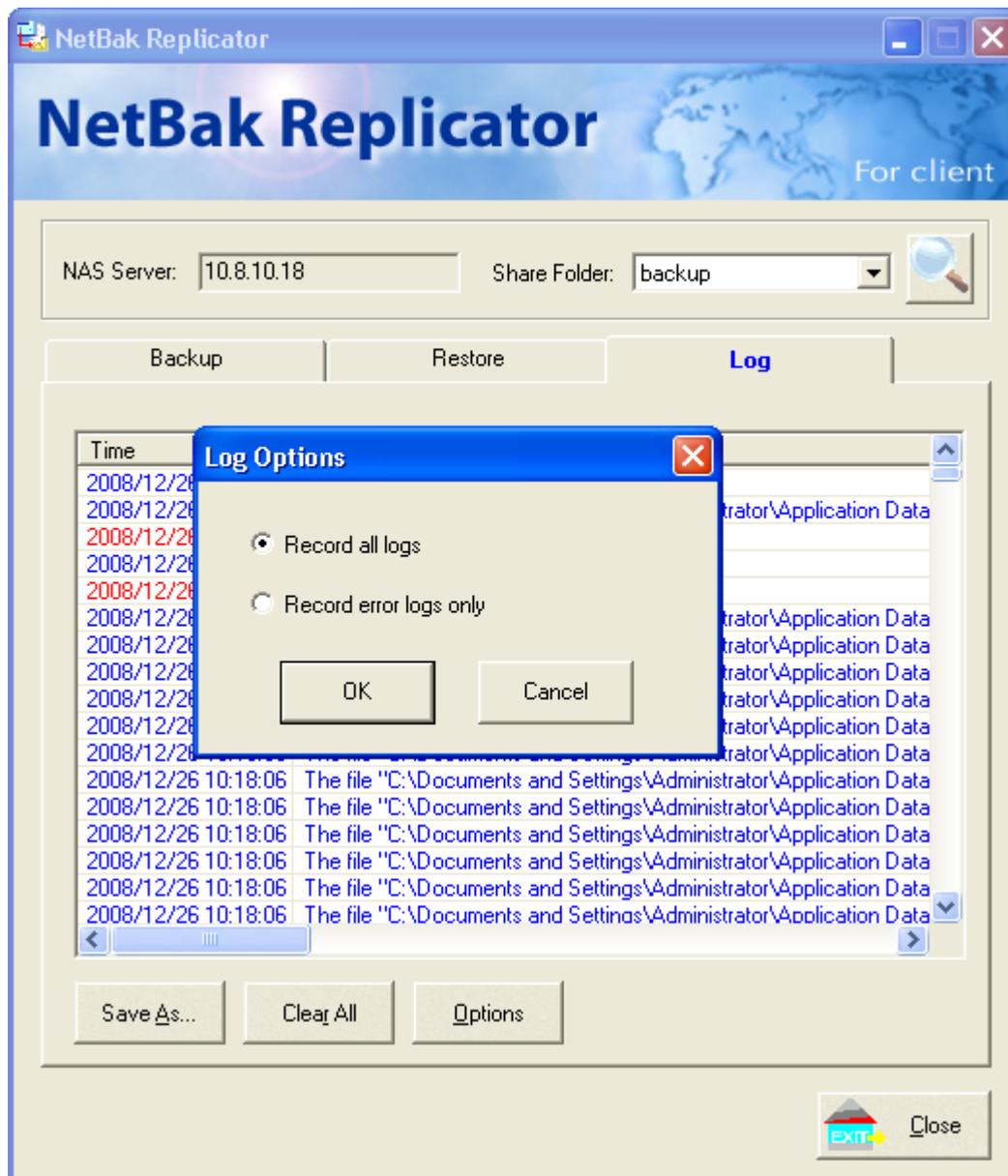
If an error happens in the process of file restoring, NetBak Replicator will:

- Stop the restoring
- Ask first
- Ignore this error message



Log

- Save As...: To save all the logs on NetBak Replicator, click this button. All the logs will be saved as a text file.
- Clear All: Click this button to clear all the logs.
- Option: Select the type of logs to be recorded 'Record all logs' or 'Record error logs only'.

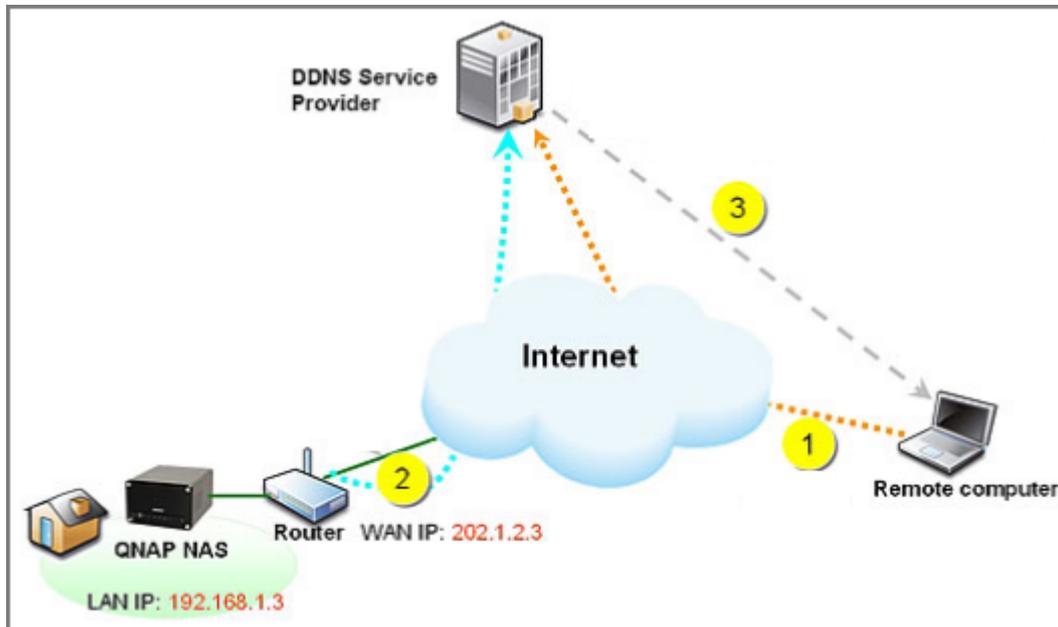


14. Connect to QNAP NAS from the Internet (DDNS Service)

Register DDNS and set port forwarding on the NAS

To connect to your NAS at home or office from the Internet, you can enter the IP address of the NAS in a web browser providing that a fixed public IP is assigned to the NAS. However, most users may have installed their NAS behind a NAT router and they are using a dynamic IP for Internet connection. It is inconvenient to memorize an IP address such as 202.193.126.45 and to inform every user of the IP address whenever a new one is assigned by the ISP. You can register a free DDNS account and set up the information on your NAS so that the users can connect to the NAS with an easy-to-remember host name that you specify.

DDNS usage scenario



1. The user connects to the NAS by the URL <http://qnapqnap.dyndns.org>.
2. The NAS detects the WAN IP has changed and the DDNS client sends the WAN IP to the DDNS service provider.
3. The DDNS service provider receives the information and assigns the new IP to the DDNS host name (qnapqnap.dyndns.org).

Register a free DDNS account

To register a DDNS account, refer to the steps below. We will be using the DDNS service provided by DynDNS (<http://www.dyndns.com/>) in this example. QNAP NAS currently supports the following 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/>

Visit <http://www.dyndns.com/> and click 'Create Account' to register an account.

The screenshot shows the DynDNS website interface. At the top, there is a login section with 'User:' and 'Pass:' input fields and a 'Login' button. Below this is a navigation bar with 'About', 'Services', 'Account', 'Support', and 'News' tabs. A 'Lost Password?' link and a 'Create Account' button (highlighted with a red box) are also visible. The main content area features a large banner with the text 'PUT SOME SPRING IN YOUR SERVER' and 'DynDNS now offers Virtual Servers', accompanied by a yellow coiled spring image and a 'Learn more...' button. To the right of the banner, there are sections for 'New to DynDNS?' (with a 'Take a tour and see what we do' link), 'DNS Services' (with a link to 'DNS for static and dynamic IP address'), and 'MailHop Services' (with a link to 'Ensure reliable email delivery'). Below these is a search bar with a 'Search' button. A news ticker at the bottom of the main content area reads 'News: Dynamic Network Services Inc. Releases MailHop 2.0'. The footer contains four columns of links: 'Resources' (What is DNS?, DNS Tools, Home Solutions, Business Solutions), 'Services' (DNS Hosting, Free Dynamic DNS, Email Relay, Domain Names), 'Support' (24/7 Premier Support, DNS Update API, Update Clients, Updater for Windows), and 'About DynDNS' (Company Facts, Technologies, DNS Inc. Jobs, Contacts). The footer also includes copyright information: '© 1999-2008 Dynamic Network Services, Inc. - Legal Notices - Contacts'.

Complete the form to create your free account.

Create Your DynDNS Account

Please complete the form to create your free DynDNS Account.

User Information	
Username:	<input type="text" value="qnopqnop"/>
Email Address:	<input type="text" value="██████@qnop.com"/> Instructions to activate your account will be sent to the email address provided.
Confirm Email Address:	<input type="text" value="██████@qnop.com"/>
Password:	<input type="password" value="●●●●"/> Your password needs to be more than 5 characters and cannot be the same as your username. Do not choose a password that is a common word, or can otherwise be easily guessed.
Confirm Password:	<input type="password" value="●●●●"/>

About You (optional)	
Providing this information will help us to better understand our customers, and tailor future offerings more accurately to your needs. Thanks for your help!	
How did you hear about us:	<input type="text" value="—"/> <input type="button" value="v"/>
Details:	<input type="text"/>

We [do not sell](#) your account information to anyone, including your email address.

After you have created an account, a confirmation mail will be sent to your email address.

Account Created

Your account, [qnopqnop](#), has been created. Directions for activating your account have been sent to your email address:

To complete registration, please follow the directions you receive within 48 hours.

You should receive the confirmation email within a few minutes. Please make certain that your spam filtering allows messages from support@dyndns.com to be delivered. If you have not received this email within an hour or so, request a [password reset](#). Following the instructions in the password reset email will also confirm your new account.

Thanks for using DynDNS!

After confirming the registration, login the DDNS service.

Login

Account Login

Username: Password:

The account summary is shown.

The screenshot shows the DynDNS user interface. At the top left is the DynDNS logo. On the top right, it says "Logged In User: qnapqnap" with links for "My Services", "My Cart", and "Log Out". A navigation bar contains "About", "Services", "Account", "Support", and "News". A left sidebar menu includes "My Account", "My Services", "Account Settings", "Billing", "My Cart", and "Search". The main content area is titled "Account Summary for qnapqnap" and is divided into three columns: "My Services", "Billing", and "Account Settings".

My Services	Billing	Account Settings
<p>View, modify, purchase, and delete your services.</p> <ul style="list-style-type: none">My ZonesAdd Zone ServicesMy HostsAdd Host ServicesSpring ServersAccount UpgradesMailHop OutboundNetwork MonitoringSSL CertificatesRecursive DNSSupportPremier SupportContact SupportDNS Service Level Agreement	<p>Update your billing information, complete a purchase, and view invoices.</p> <ul style="list-style-type: none">View Shopping CartActive ServicesOrder HistoryBilling Profile and VouchersRenew ServicesAuto Renew SettingsSync Expirations	<p>Update your email address, set preferences, and delete your account.</p> <ul style="list-style-type: none">Change Email AddressChange PasswordChange UsernameContact ManagerMailing ListsMove ServicesPreferencesClose Account

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Go to 'Services' > 'Dynamic DNS'.

The screenshot shows the DynDNS website's 'Services' page. The top navigation bar includes 'About', 'Services' (highlighted), 'Account', 'Support', and 'News'. The left sidebar contains a 'Services' menu with items like 'DNS Services', 'Domain Registration', 'SSL Certificates', 'MailHop Services', 'Network Monitoring', 'Spring Server™', 'URL Forwarding', 'Pricing', and 'My Cart'. The main content area is titled 'Services' and includes a paragraph about their services, a 'DNS Services' section with four cards for 'Dynamic DNS', 'Custom DNS', 'Recursive DNS', and 'Secondary DNS', and a search bar at the bottom left.

Click 'Get Started' to create a host.

The screenshot shows the 'Dynamic DNS' page on the DynDNS website. The 'Dynamic DNS' section is highlighted. The page contains a description of Dynamic DNS (DDNS), a list of 'Capabilities and Features', and a 'Get Started' button. A 'Screenshot' section shows a preview of the host management interface.

Dynamic DNS

Dynamic DNS (DDNS) allows you to create a hostname that points to your dynamic IP or static IP address or URL. We also provide an update mechanism which makes the hostname work with your dynamic IP address. **We continue to offer this service free** to the Internet community as we have done so for nearly 10 years.

Capabilities and Features

- Get five (5) hostnames in [88 available domains](#) for free.
- Create wildcard CNAME `*.yourhost.dyndns.org` for `yourhost.dyndns.org`.
- Forward web requests or mark host offline for maintenance or downtime.
- Configure MX records for flexible mail routing.
- Update host using [ddns update clients](#) for a wide variety of platforms.
- Modify DNS TTL values for fast propagation or reliable static IP caching.
- Deliver your DNS records to 5 DNS servers in 5 tier-1 datacenters around the globe.
- Query volume up to 648,000 queries/month

Our **free industry-leading e-mail support** is ready to help you setup your dynamic or static DNS so you can host a website, remotely connect to your machine, and run a mail server. We also offer other premium features with our [Account Upgrade](#) service.

Enter the settings to create a new host.

Tip: The 'IP Address' refers to your current WAN IP. You may check the information from <http://www.ip-lookup.net/>. In most of the cases, it is useful for you to know your public IP address when you are behind a NAT router.

Add New Hostname [Host Services](#)

Note: You currently don't have Account Upgrades in your account. You cannot use some of our Host Service features. Please consider buying Account upgrade that make this form full-functional and will add several other features. [Learn More...](#)

Hostname: <input type="text" value="qnapqnap"/> · <input type="text" value="homelinux.net"/>	<input type="text" value="homelinux.net"/>
Wildcard: <input type="checkbox"/> Yes, alias **.hostna	doesntexist.com doesntexist.org dntexist.com dntexist.net dntexist.org dvrdns.org dyn-o-saur.com dynamias.com dynamias.net dynamias.org dyndns.biz dyndns.info dyndns.org dyndns.tv dyndns.ws endofinternet.net endofinternet.org endoftheinternet.org ftpaccess.cc game-host.org
Service Type: <input checked="" type="radio"/> Host with IP address <input type="radio"/> WebHop Redirect <input type="radio"/> Offline Hostname	<input type="text" value="homelinux.net"/>
IP Address: <input type="text"/> Use auto detected IP a TTL value is 60 second	<input type="text" value="homelinux.net"/>
Mail Routing: <input type="checkbox"/> Yes, let me configur	<input type="text" value="homelinux.net"/>

A new host is created.

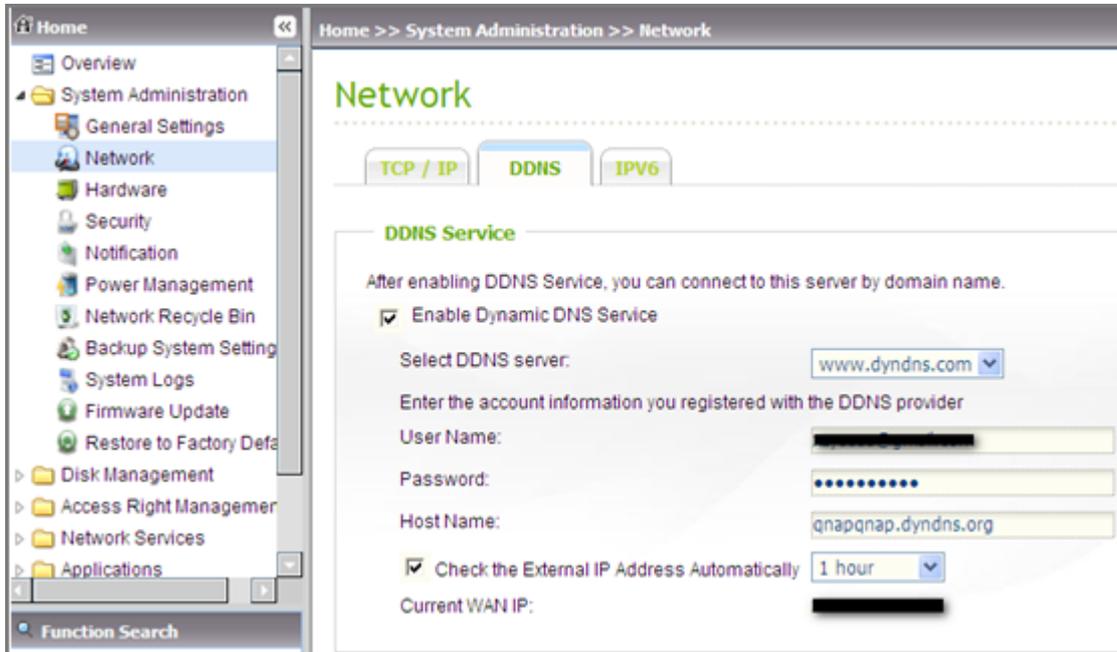
Host Services [Add New Hostname](#) - [Host Update Logs](#)

Hostname [qnapqnap.dyndns.org](#) created.

Hostname	Service	Details	Last Updated
qnapqnap.dyndns.org	Host	219.85.63.13	Sep. 05, 2008 3:53 AM

Login your QNAP NAS and go to 'System Administration' > 'Network' > 'DDNS'. Enter the DDNS settings. Schedule the NAS to update the DDNS record periodically.

Check the External IP Address Automatically: Turn on this option if your NAS is located behind a gateway. The NAS checks the external (WAN) IP automatically and if the IP address is changed, the NAS will inform the DDNS provider automatically to ensure it can be connected by the host name.



After you have finished the settings, you can connect to the NAS using the host name (qnapqnap.dyndns.org).

Port Forwarding

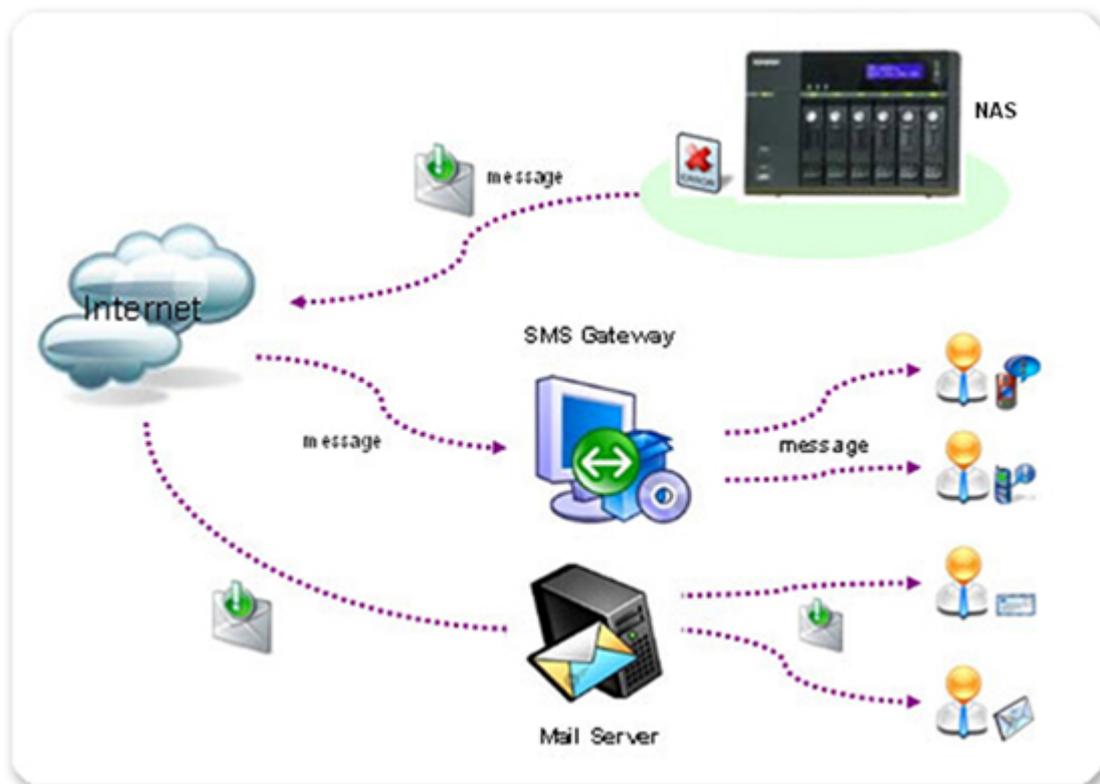
If your NAS is located behind an NAT router, you need to open the ports of some services on the NAT router and forward these ports to the fixed LAN IP of the NAS so that you can connect to the services correctly from the Internet. This function is available on most routers in the market and is often known as 'Port Forwarding', 'NAT Server', or 'Virtual Server'. For example, to connect to the administration interface of NAS series, you need to open port 8080.

Current open service ports on QNAP NAS	
NAS Services	Default Port
Web-based system management	8080 (All models, TS-101/201 with firmware v2.3.0 or later)
Web-based system management	6000 (TS-100/101/201 firmware prior to v2.1.1)
FTP	21
Passive FTP	55536–56559
Web Server	80
Download Station (BitTorrent download)	6881–6999
Remote replication (Rsync)	873
Telnet	13131
SSH	22
SSL	443
SMTP	25
Samba	445
MySQL	3306
TwonkyMedia	9000

15. Set SMS and Email Alert

QNAP NAS supports SMS and email alert to inform the users of system error or warning. SMS is the abbreviation of Short Message Service which is known for the mobile text message service. By subscribing with the SMS service providers you are able to set up QNAP NAS to send SMS to the designated mobile phones in the event of system warning or errors. This demonstration shows you how to set up both the SMS and email alert on your NAS. See below for the usage diagram.

*TS-109/209/409/409U series only support email alert.



Sign up and set up an SMS service account

Clickatell will be used in this example. Go to Clickatell website <http://www.clickatell.com/login.php>. Under 'New Customers' select 'Clickatell Central (API)'.

New Customers

If you do not already have an account, take a moment to create one. You will benefit from:

- A user-friendly administration interface
- Free registration and no license fees
- 24/7 Service & Support
- Web based account accessible from anywhere
- Multiple payment options

Product Selection:

Please Select Product ▼

- Please Select Product
- Clickatell Central (API)
- Communicator
- Messenger-Pro
- Clickatell Affiliates
- Clickatell Wholesale

Fill out your personal information then click 'Continue'. Make sure you have carefully read the Terms and Conditions of the SMS service provider and that you agree to all the terms and regulations.

Complete our simple registrations process below to test our gateway and obtain your free test credits.

* Indicates all fields that are required.

Step 1 of 4 - Select Product

Select one of the products below which you would like to register for:

Clickatell Central ? Communicator ?

Step 2 of 4 - Account Setup

Select a country specific or International account type, based on your requirements for SMS traffic delivery destinations.

International Coverage Account: ? **Local Coverage Account:** ?

INTERNATIONAL USA UK SA

* Create Username: Security Code:

* Create Password: *Enter Security Code:

Step 3 of 4 - Personal Information

*First Name: * Country:

* Last Name: * Mobile Number:

* Email Address: ← (e.g. sample@domain.com)

Personal Use Only

* Company:

Emails sent to me must be in Text format or HTML format

I would like to receive: Clickatell News, Balance Notifications, Promotions

* I accept Clickatell's [Terms and Conditions](#)

Security & Privacy

Upon successful registration you should receive an email containing the account activation link. You may now check your inbox to complete your account activation. By following the activation link you will be brought to the login screen as the image show below. Enter the password and click 'Login'.

My Account Login

Customer Login

Existing Clickatell account holders can select their product and login below. Note, username & password are CASE sensitive.

Select Product: Clickatell Central (API) ▼

Username: qnap

ClientID: CAH605

Password: ●●●●●●●●

Login

[Lost password?](#)

Next you will need to verify your mobile number by entering an activation code sent by Clickatell after you enter your mobile phone number and click 'SEND ACTIVATION CODE'.

Verify your Mobile Number

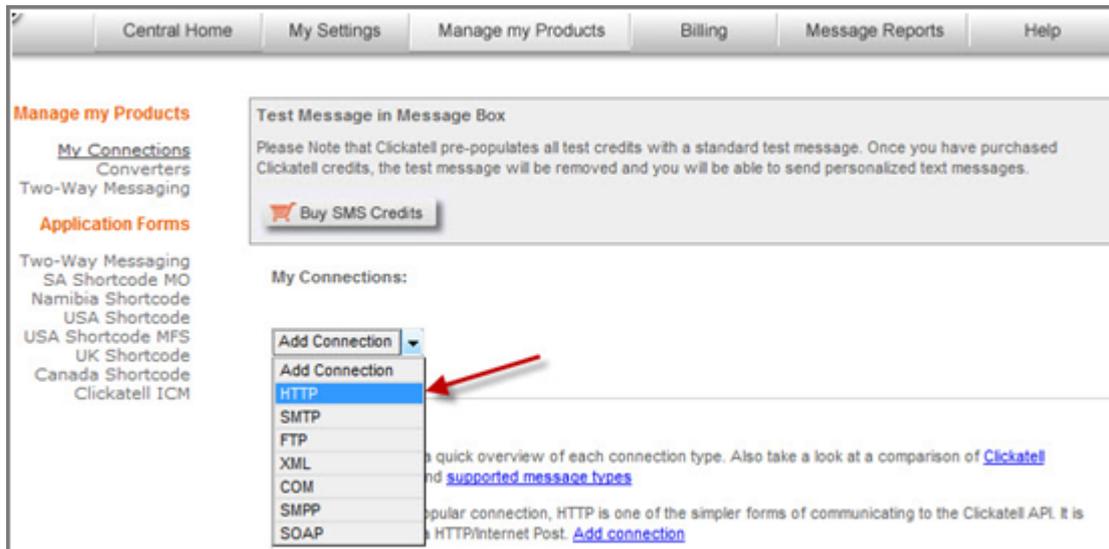
For security reasons you are required to verify your mobile number in order to make your first credit purchase and send non-test SMS messages.

Your activation code will be sent to 886987654321 **SEND ACTIVATION CODE**

If this is not your number, please retype your mobile number in the box above and click the "Send Activation Code" button.

Enter your activation code here: **VERIFY NOW**

While still logged in with Clickatell, go to 'Manage my Products' and select 'HTTP' from 'My Connections' dropdown menu.



Set up the 'HTTP API' by entering the minimum required information, the 'Name', 'Dial Prefix', and 'Callback Type' as the image shown below. Click 'Submit' once done.

The screenshot shows the 'HTTP API' configuration form. The form has a title 'HTTP API' and a description: 'This product provides an interface between your applications and the Messaging Gateway. It is a lower level connectivity option, but offers the most functionality and flexibility for the Developer and Systems Integrator. With the API you can set up alert-based SMS delivery from your server, deliver information to your mobile sales staff and keep in contact with your customers. This product is intended for machine-generated to User messaging.' Below the description is a section titled 'Add HTTP API - Bold Items Required'. The form fields are: Name (TS-639-Pro), IP Lock Down, Dial Prefix (Taiwan (886)), Callback Type (HTTP GET), Callback Url, Callback Username, and Callback Password. A 'Submit' button is at the bottom. A note states: 'NOTE: submission of this form will delete any session_id currently valid for this api_id. Any application using this session_id will have to re-authenticate.'

You should now obtain an 'API ID' that is required before using the SMS service. Write this down somewhere as we will need it for the setup in the NAS administration in the next step.

Name	Type	API ID ▾	Dialing Code
TS-639-Pro	HTTP	3176048	886 Taiwan

1 to 1 of 1

Up to this point you have completed the account registration and mobile number verifications with Clickatell and have successfully obtained an 'API ID'. You may now proceed to the next step.

Set the SMSC settings and SMS alert on the NAS

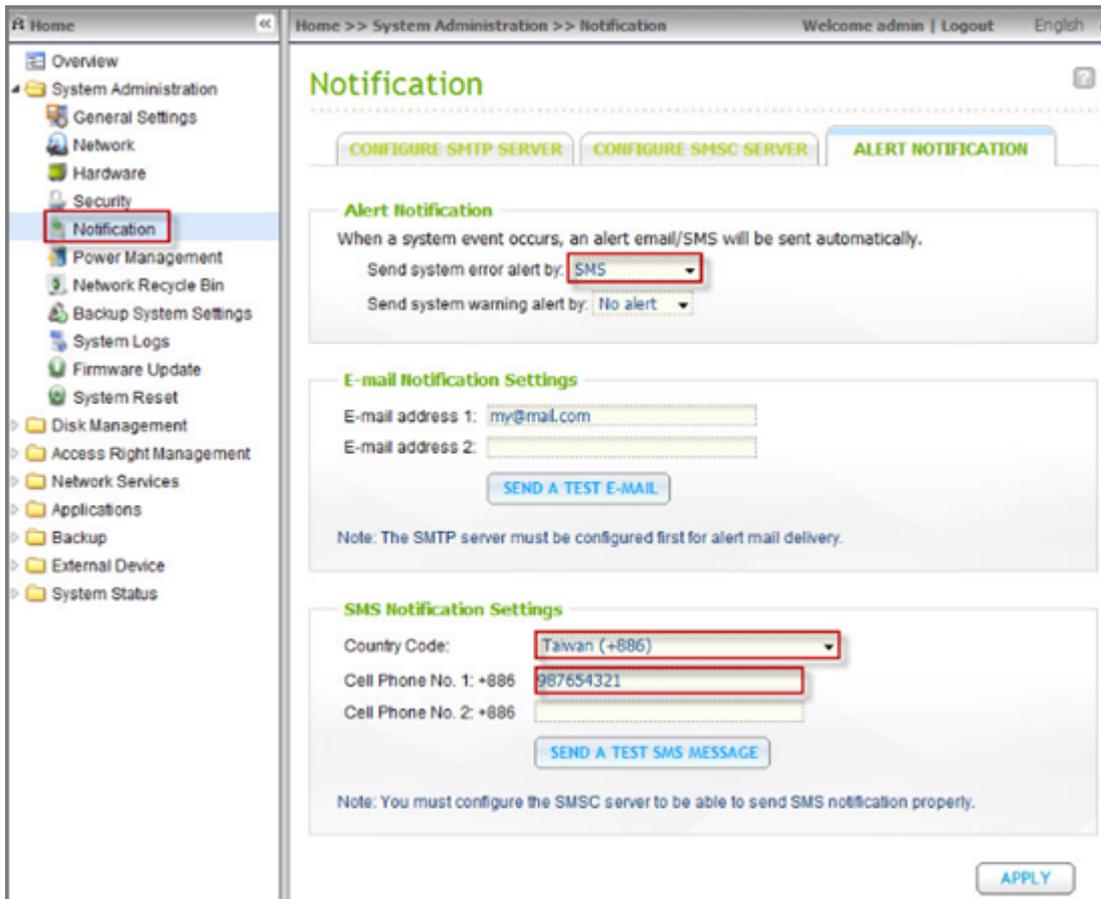
Go to 'System Administration' > 'Notification' > 'Configure SMSC server' and enter the information we got from the previous step to configure the SMSC server.

The screenshot displays the web management interface of a Network Attached Storage (NAS) device. The left sidebar contains a navigation menu with the following items: Overview, System Administration, General Settings, Network, Hardware, Security, Notification (highlighted with a red box), Power Management, Network Recycle Bin, Backup System Settings, System Logs, Firmware Update, System Reset, Disk Management, Access Right Management, Network Services, Applications, Backup, External Device, and System Status. The main content area is titled 'Notification' and features three tabs: 'CONFIGURE SMTP SERVER', 'CONFIGURE SMSC SERVER' (which is active), and 'ALERT NOTIFICATION'. Below the tabs, the 'Configure SMSC Server' section includes the following configuration options:

- SMS Service Provider: Clickatell (selected in a dropdown menu) with the URL <http://www.clickatell.com>
- Enable SSL Connection
- SSL Port: 443
- SMS Server Login Name: qnap
- SMS Server Login Password: [masked with dots]
- SMS Server API_ID: 3176048

An 'APPLY' button is located at the bottom right of the configuration area.

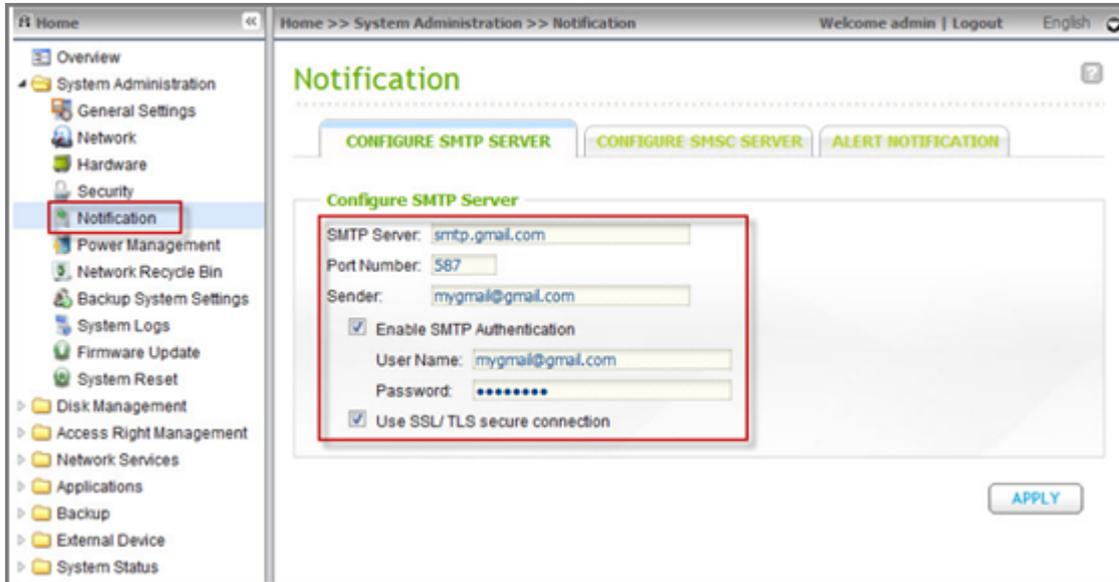
Next go to 'System Administration' > 'Notification' > 'Alert Notification' and enter your mobile number.



Congratulations! It is all set up and now you may want to test if you have configured the SMS notification properly by clicking 'SEND A TEST SMS MESSAGE'. If nothing goes wrong you should be able to receive it in less than 10 seconds.

Set the SMTP server and email alert

Go to 'System Administration' > 'Notification' > 'Configure SMTP server' and enter a valid SMTP information. We will use Gmail as the SMTP service provider in this example.

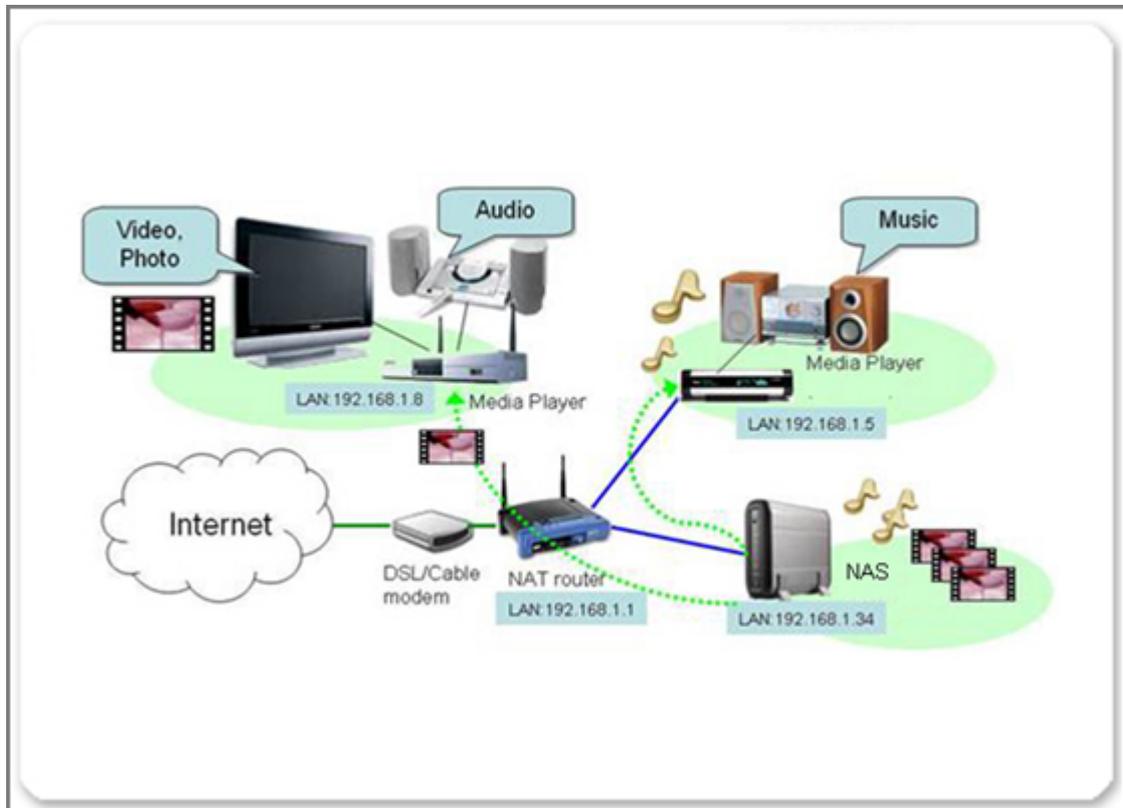


Next go to 'System Administration' > 'Notification' > 'Alert Notification' and enter your email address and specify whether you want to receive system warning alerts too besides the system error alerts. You can test if the email sending process works by clicking 'SEND A TEST E-MAIL'.

Now no matter if you are out at work or away from home you will still be notified of any NAS error and warning right away by either an SMS sent to your mobile or an email and be able to act in case of any unexpected events.

16. Set up UPnP Media Server for Media Playing

This section shows you how to set up the UPnP media server on QNAP NAS to share the multimedia files to the media player on the local network and play them in your home entertainment system.



Enable UPnP Media Server

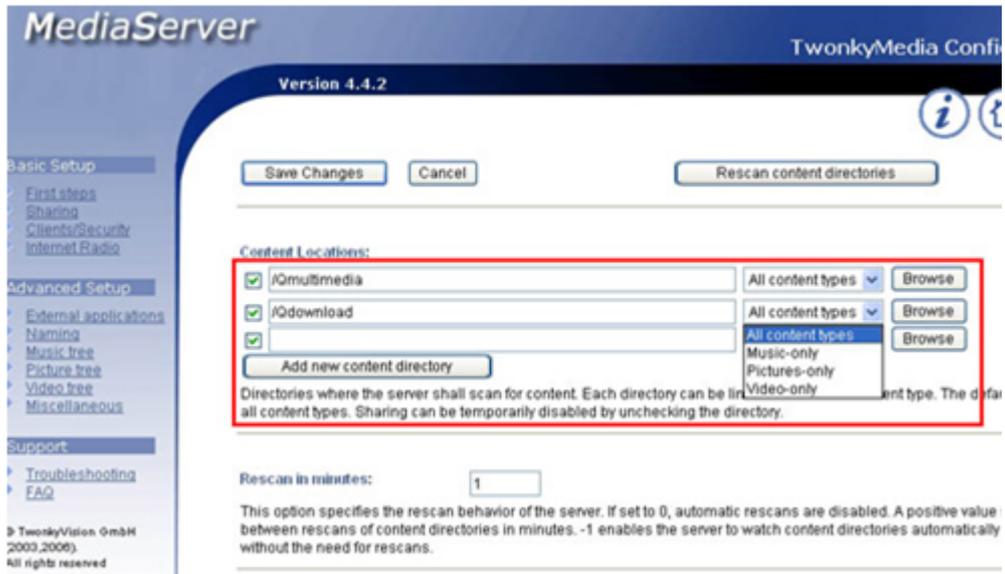
Go to 'Application Servers' > 'UPnP Media Server' and select the option 'Enabled UPnP Media Server' and click 'Apply'. The UPnP Media Server function is now ready.



Set up TwonkyMedia Server

The TwonkyMedia version shown in this example is 4.4.2. The actual version the NAS supports may vary from time to time without notice.

Point your browser to 'http://NAS IP:9000/', you will enter TwonkyMedia configuration page. You can specify the locations of the contents you would like to share in your home network under the 'Content Locations'. Simply type in the path to the contents on your QNAP NAS (default folder is Qmultimedia or Multimedia). In the example, we added an extra share /Qdownload.



For ease of browsing if you have a large amount of media contents, you can configure the navigation tree for your photos, videos, and music. You can sort your media contents on the TV easily.



When you have completed the configuration, make sure you have clicked the button 'Save Changes' to save the settings.

You can now move the MP3, images, and videos to the Qmultimedia or Multimedia folder or any custom folders you added via Windows mapped drives or FTP to the NAS for your media player.

Set up the connection of media player

About physical wiring

We use a high definition (HD) media player with QNAP NAS in this example. The media player is used to receive the streamed multimedia file sent by your UPnP media server on the NAS, then transcode these files to your TV or Hi-Fi system. Because of the limited cable length of these interfaces, normally you have to place your media player near your TV and Hi-Fi system.

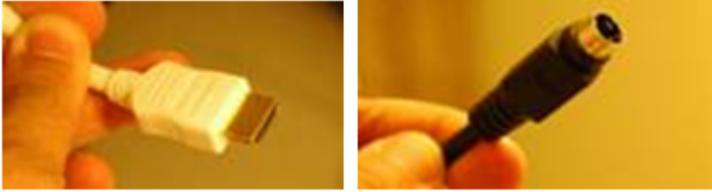


About TCP/IP settings

Connect your media player to the LAN at your home and set to acquire the IP address by DHCP. (Most of the media players are defined as DHCP client, which obtains an IP address automatically from the network.)

Connect the video and audio output of the media player to your TV

The media player may provide different video and audio interfaces, such as Composite video/audio output, S-Video for video output, S/PDIF digital audio, or HDMI interface which can carry both video and audio signals.



Example 1 (Buffalo LinkTheater)

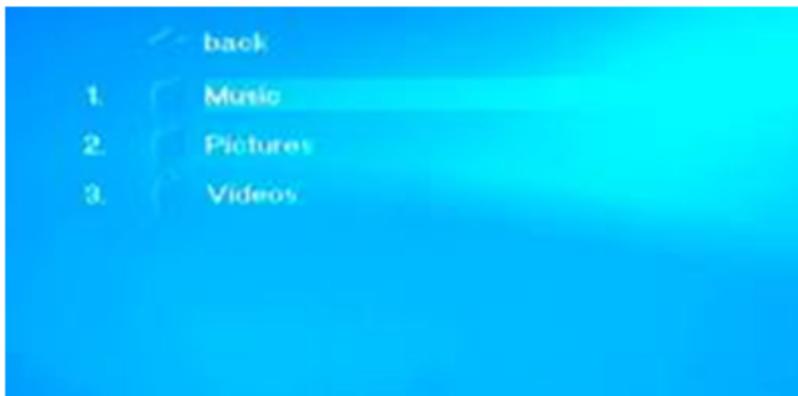
In this example, the video out and audio out cables are connected to the TV. You can also connect audio out to your stereo acoustic system.



Turn on the TV that is connected to the media player, you can select the options available by the remote control of the media player. The media player will find the NAS on the network. The NAS name will be displayed on the screen.



You will find the photos, video, and music shared by the specified folder on the NAS. You can use the remote control of the media player to select and play the files.



Example 2 (ZyXEL's DMA-1000W)

ZyXEL DMA-1000W is one of the models which are based on SigmaDesigns' platform.



If your TV provides an HDMI interface, both audio and video signals can be carried by the single cable. Simply connect your media player to your TV by an HDMI cable.



If your TV does not provide an HDMI interface, you can connect an S-Video cable to your TV for video output, and connect Composite left/right audio interface for audio output. If you look for higher quality of music playing, you can use an S/PDIF cable to connect the media player to your Hi-Fi system.



Turn on and switch your TV to the correct interface (HDMI or S-Video). Use the remote control of the media player to enter the 'Server' page, the media player detects the NAS automatically. You can now play the multimedia files or listen to the Internet radio from the NAS.



17. Host a Forum with phpBB on QNAP NAS

This section shows you how to host a forum with the popular open source forum software phpBB on QNAP NAS.

Activate the web server and MySQL database server

Login the administration page of the NAS and go to 'Network Services' > 'Web Server'. Select the option 'Enable Web server' and click 'Apply'.

The screenshot shows the 'Web Server' configuration page in the QNAP NAS administration interface. The breadcrumb trail is 'Home >> Network Services >> Web Server'. The page title is 'Web Server' and the user is logged in as 'admin'. There are two tabs: 'WEB SERVER' (active) and 'VIRTUAL HOST'. The 'Web Server' section contains the following settings:

- After enabling this function, you can upload the webpage files to "Qweb" network share to publish your website.
- Enable Web Server ⓘ
- Port Number:
- register_globals: On Off
- Enable Secure Connection (SSL)
- Port Number:
- Enable WebDAV
- Show service link on the login page

After enabling this service, click the following link to enter to Web Server.
<http://10.8.13.133/>

An 'APPLY' button is located at the bottom right of the configuration section.

The 'php.ini Maintenance' section is also visible, with the following settings:

- php.ini Maintenance

The text below this section states: 'The file **php.ini** is the system configuration file of Web Server. After enabling this function, you can edit, upload or restore this file. It is recommended to use the system default setting.'

Next go to 'Application Servers' > 'MySQL Server' and select both 'Enable MySQL Server' and 'Enable TCP/IP Networking' then click 'Apply'.

Home >> Application Servers >> MySQL Server Welcome admin | Logout English

MySQL Server

MySQL Server

You can enable MySQL server as the website database.

- Enable MySQL Server
Enable this option to allow remote connection of MySQL server.
- Enable TCP/IP Networking
Port Number:

Note: You can install the phpMyAdmin package to manage your MySQL server. To install the phpMyAdmin, please click [here](#).

Database Maintenance

You can reset the database password or re-initialize the database.

Create a database for phpBB3 in phpMyAdmin

Prior to installing phpBB3, create a new database for it and we will use phpMyAdmin to create the database so install phpMyAdmin QPKG if you do not have it running on your NAS yet. Once installed point your browser to <http://NAS-IP/phpMyAdmin/> and enter the user name and password to login (default user name and password is root/admin). You can also select your preferred language.



Once in, enter the database name 'phpbb3' in the field says 'Create new database' and choose a default encoding language you prefer (UTF-8 for best compatibility) then click 'Create'. Then, proceed to the next step.



Start the phpBB3 web-based installation

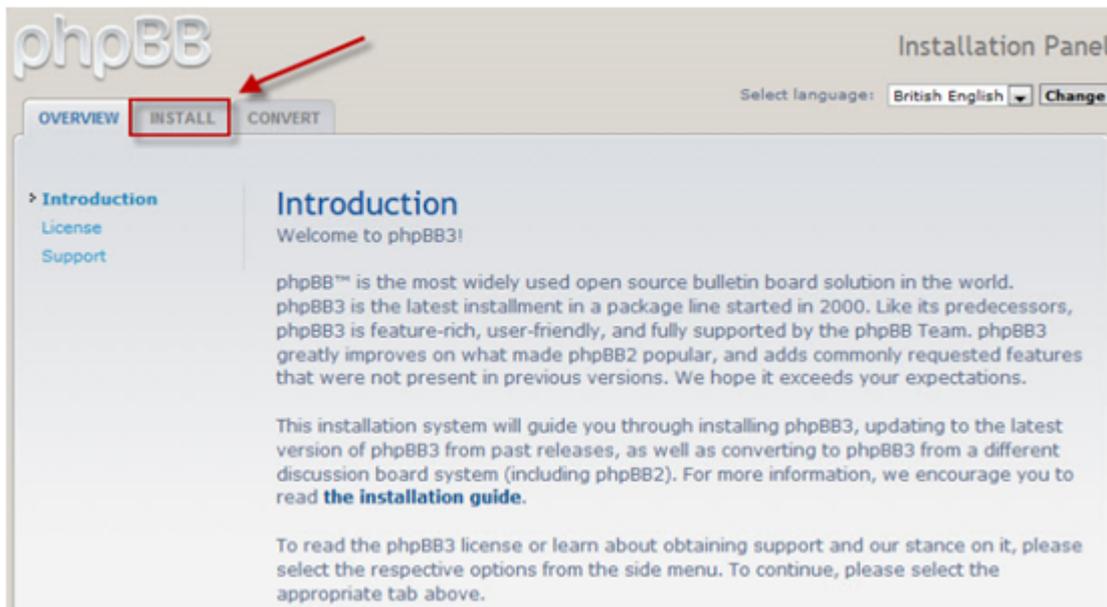
Download the phpbb3 source archive from <http://www.phpbb.com/downloads/olympus.php> and download the [Full Package] one and unzip it to your Qweb or Web share folder.

[Full Package]
Contains entire phpBB3 source and english language files.
Best suited for new installations.

 [Download phpBB 3.0.5 \(zip\)](#)
Size: 2.22 MiB
md5sum: 69c4ec3f1495e518c6b8a5dac8543ab4

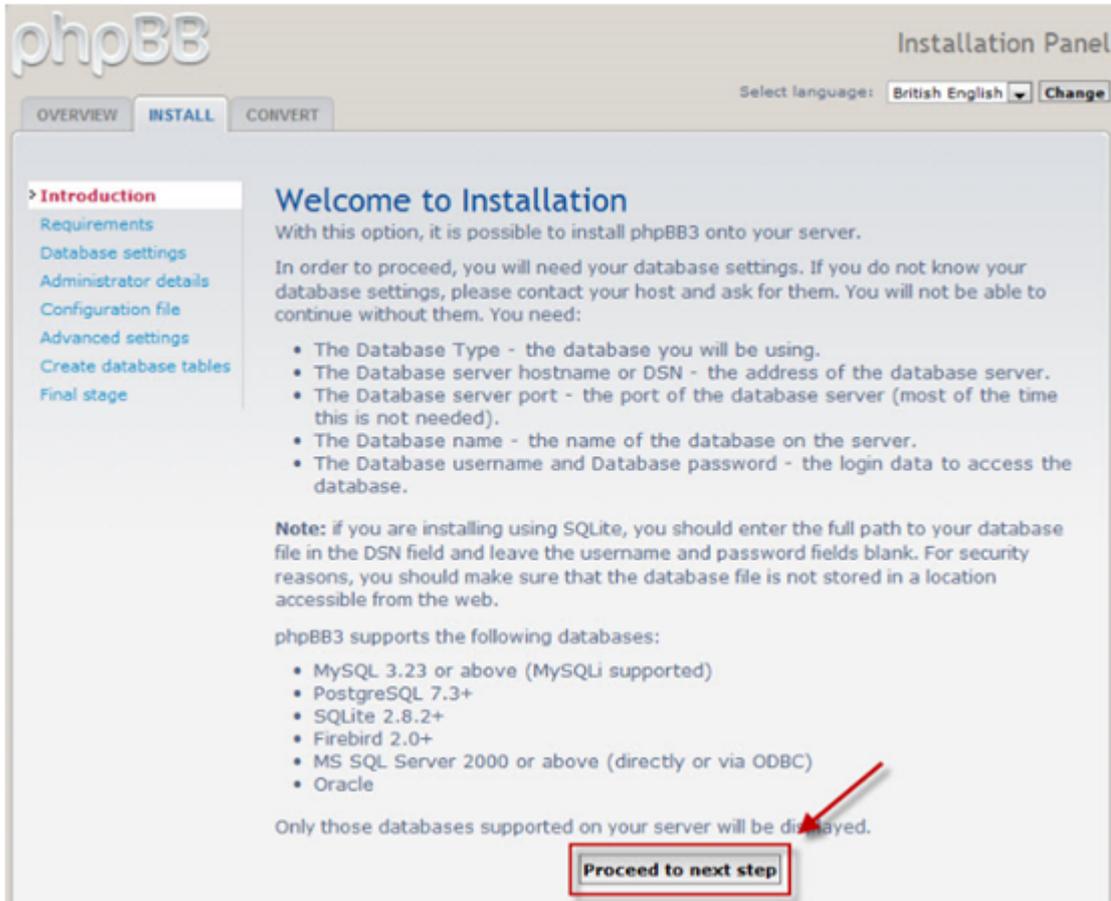
 [Download phpBB 3.0.5 \(bz2\)](#)
Size: 1.43 MiB
md5sum: 734b8f9c2390d5cc8c971cfc29da185

Point your browser to 'http://NAS-IP/phpBB3' and you should see the phpBB3 web-based installation page like below. Click 'INSTALL' tab to start.



The screenshot shows the phpBB3 Installation Panel. At the top left is the phpBB logo. On the right, it says "Installation Panel" and "Select language: British English" with a "Change" button. Below the logo are three tabs: "OVERVIEW", "INSTALL" (highlighted with a red box and a red arrow), and "CONVERT". On the left side, there is a sidebar menu with "Introduction" (expanded), "License", and "Support". The main content area has a heading "Introduction" and the text "Welcome to phpBB3!". Below this, it describes phpBB3 as the most widely used open source bulletin board solution and provides information about the installation system and where to find the license and support.

Click 'Proceed to next step'.



phpBB Installation Panel

Select language: British English Change

OVERVIEW **INSTALL** CONVERT

Introduction

- Requirements
- Database settings
- Administrator details
- Configuration file
- Advanced settings
- Create database tables
- Final stage

Welcome to Installation

With this option, it is possible to install phpBB3 onto your server.

In order to proceed, you will need your database settings. If you do not know your database settings, please contact your host and ask for them. You will not be able to continue without them. You need:

- The Database Type - the database you will be using.
- The Database server hostname or DSN - the address of the database server.
- The Database server port - the port of the database server (most of the time this is not needed).
- The Database name - the name of the database on the server.
- The Database username and Database password - the login data to access the database.

Note: if you are installing using SQLite, you should enter the full path to your database file in the DSN field and leave the username and password fields blank. For security reasons, you should make sure that the database file is not stored in a location accessible from the web.

phpBB3 supports the following databases:

- MySQL 3.23 or above (MySQLi supported)
- PostgreSQL 7.3+
- SQLite 2.8.2+
- Firebird 2.0+
- MS SQL Server 2000 or above (directly or via ODBC)
- Oracle

Only those databases supported on your server will be displayed.

Proceed to next step

The installation compatibility page will be shown. In most of the cases your current web server should be compatible with the requirements so click 'Start install' to go the next step.

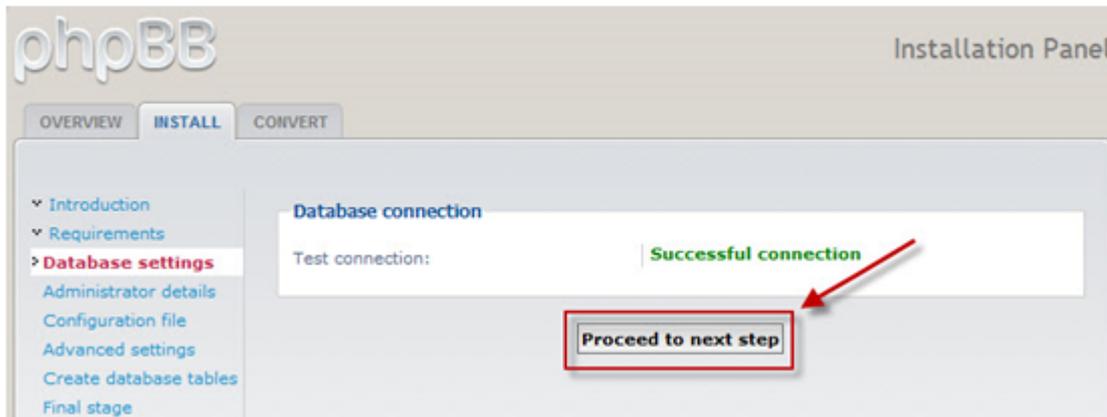
Fill up the fields with your MySQL information including the host name, database name, database username, and database password then click 'Proceed to next step' to continue.

The screenshot shows the 'phpBB Installation Panel' with the 'INSTALL' tab selected. On the left, a navigation menu includes 'Introduction', 'Requirements', 'Database settings' (highlighted), 'Administrator details', 'Configuration file', 'Advanced settings', 'Create database tables', and 'Final stage'. The main content area is titled 'Database configuration' and contains the following fields:

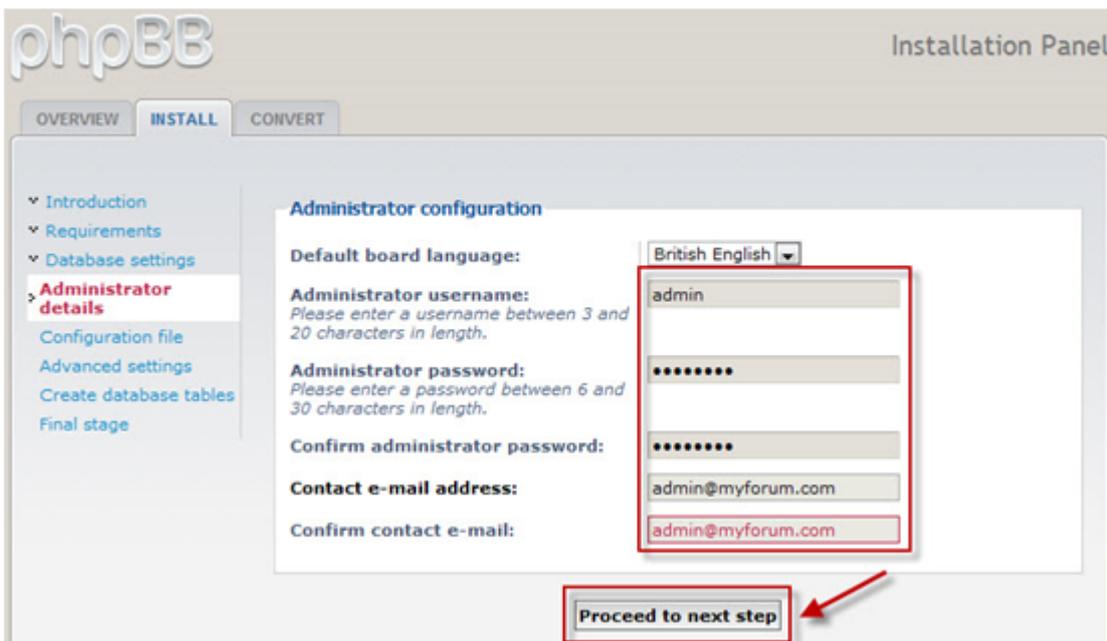
- Database type:** A dropdown menu set to 'MySQL'.
- Database server hostname or DSN:** A text input field containing '127.0.0.1'. Below it is a note: 'DSN stands for Data Source Name and is relevant only for ODBC installs.'
- Database server port:** An empty text input field. Below it is a note: 'Leave this blank unless you know the server operates on a non-standard port.'
- Database name:** A text input field containing 'phpbb3'.
- Database username:** A text input field containing 'root'.
- Database password:** A text input field with masked characters '.....'.
- Prefix for tables in database:** A text input field containing 'phpbb_'.

At the bottom of the form, a button labeled 'Proceed to next step' is highlighted with a red rectangular box, and a red arrow points to it from the right.

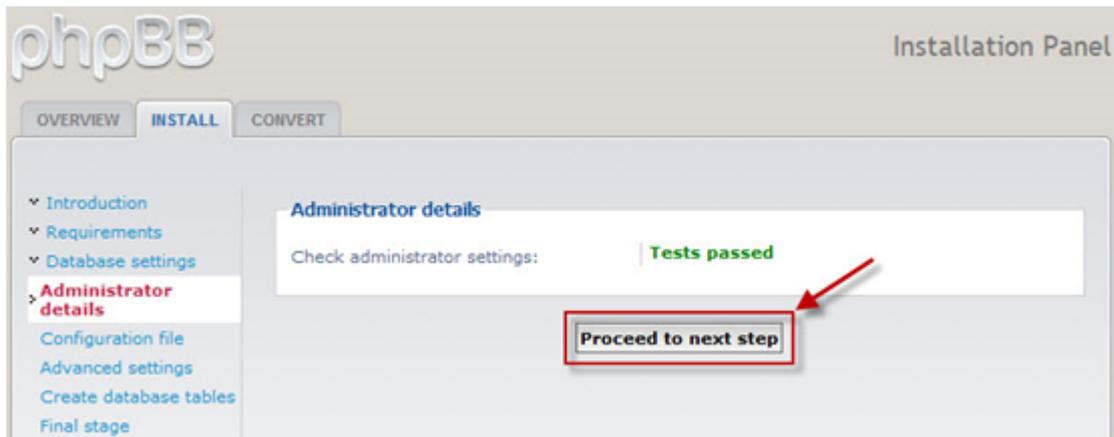
You should see 'Successful connection' if your MySQL server is running and the database 'phpbb3' we created earlier is present. Click 'Proceed to next step'.



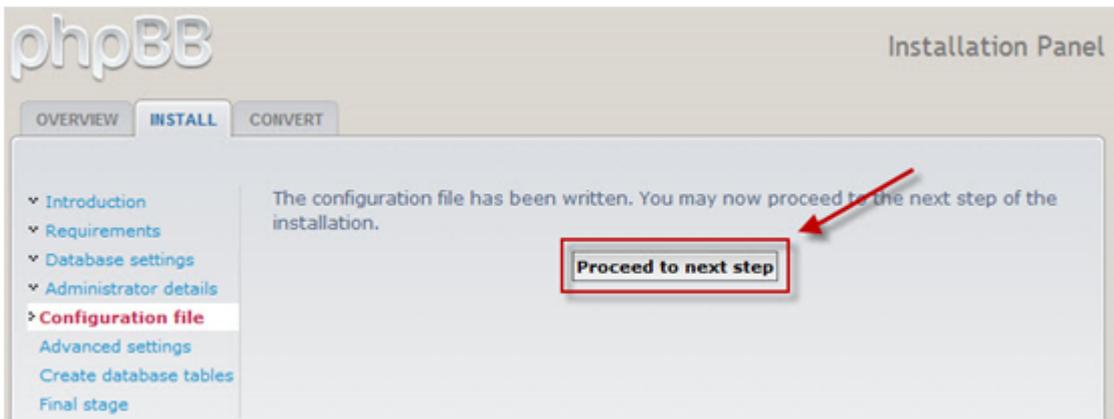
Specify the phpBB3 administrator username and password as well as a valid email address. Once done, click 'Proceed to next step'.



You should see 'Tests passed' and click 'Proceed to next step'.



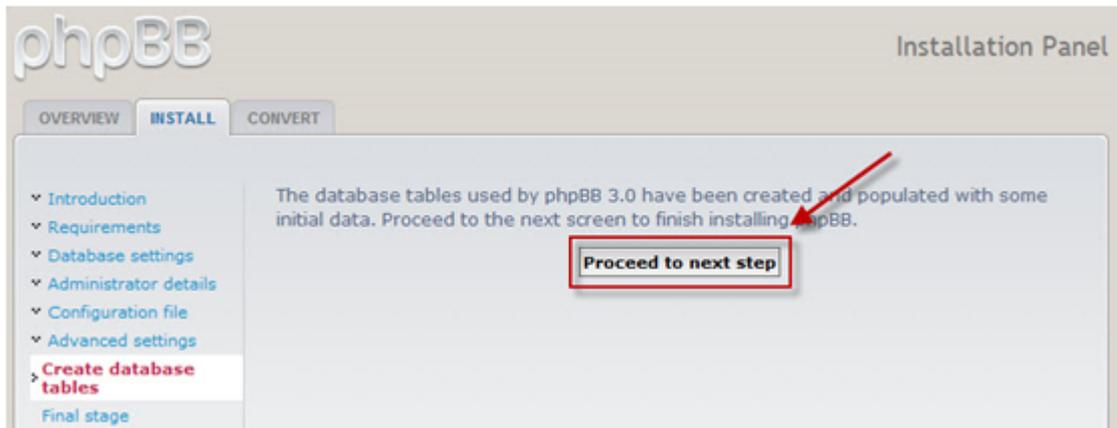
phpBB3 writes all the settings information to a configuration file (config.php) at this stage. Click 'Proceed to next step'.



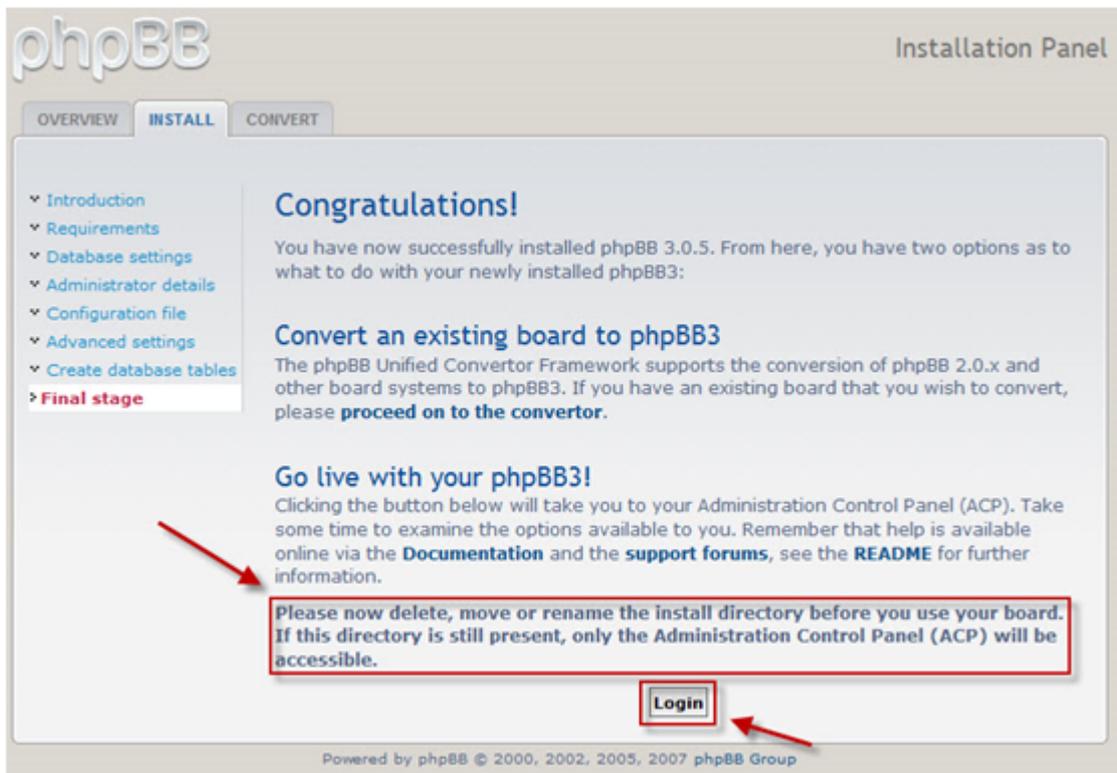
Specify advanced settings if you wish then click 'Proceed to next step'.

The screenshot shows the 'phpBB Installation Panel' with the 'INSTALL' tab selected. A sidebar on the left contains a navigation menu with 'Advanced settings' highlighted. The main content area is titled 'E-mail settings' and 'Server URL settings'. The 'E-mail settings' section includes options for enabling board-wide e-mails, using an SMTP server, and fields for the SMTP server address, authentication method (set to 'PLAIN'), username, and password. The 'Server URL settings' section includes options for cookie security and forcing server URL settings, along with fields for server protocol (set to 'http://'), domain name (set to '192.168.1.3'), server port (set to '80'), and script path (set to '/phpBB3'). A red arrow points to a 'Proceed to next step' button at the bottom of the form. The footer of the page reads 'Powered by phpBB © 2000, 2002, 2005, 2007 phpBB Group'.

phpBB3 creates all the database tables and populates some initial data at this stage. Click 'Proceed to next step'.



Now there is one more thing you need to do is that you have to delete the installation folder located under the phpBB3 folder. Once deleted you can click 'Login' to enter the administration page of phpBB3.



This is the phpBB3 Administration Control Panel where you can perform all administrative tasks.

phpBB Administration Control Panel
Admin index + Board index

GENERAL FORUMS POSTING USERS AND GROUPS PERMISSIONS STYLES MAINTENANCE SYSTEM

You are logged in as: **admin** [Logout]
[ACP Logout]

Welcome to phpBB
Thank you for choosing phpBB as your board solution. This screen will give you a quick overview of all the various statistics of your board. The links on the left hand side of this screen allow you to control every aspect of your board experience. Each page will have instructions on how to use the tools.

Board statistics

STATISTIC	VALUE	STATISTIC	VALUE
Number of posts:	1	Posts per day:	1
Number of topics:	1	Topics per day:	1
Number of users:	1	Users per day:	1
Number of attachments:	0	Attachments per day:	0.00
Board started:	Tue Jun 30, 2009 4:14 pm	Avatar directory size:	0 Bytes
Database size:	262.62 KIB	Size of posted attachments:	0 Bytes
Database server:	MySQL 5.0.67-log	GZip compression:	Off
Board version:	3.0.5	Orphan attachments:	0

Resynchronise or reset statistics

Reset most users ever online

Reset board's start date

Resynchronise statistics
Recalculates the total number of posts, topics, users and files.

Resynchronise post counts
Only existing posts will be taken into consideration. Pruned posts will not be counted.

Resynchronise dotted topics
First unmarks all topics and then correctly marks topics that have seen any activity during the past six months.

Purge the cache
Purge all cache related items, this includes any cached template files or queries.

Logged administrator actions
This gives an overview of the last five actions carried out by board administrators. A full copy of the log can be viewed from the appropriate menu item or following the link below.

[View administrator log](#)

USERNAME	USER IP	TIME	ACTION
admin	192.168.1.2	Tue Jun 30, 2009 4:14 pm	Installed phpBB 3.0.5

Inactive users
This is a list of the last 10 registered users who have inactive accounts. A full list is available from the appropriate menu item or by following the link below from where you can activate, delete or remind (by sending an e-mail) these users if you wish.

This is the front page of your freshly installed phpBB3 forum. Start sending out forum invitations to establish your online community.

phpBB yourdomain.com
creating communities A short text to describe your forum

Search... Search
Advanced search

[Board index](#) v A ^

[User Control Panel \(0 new messages\)](#) • [View your posts](#) [FAQ](#) [Members](#) [Logout \[admin \]](#)

It is currently Tue Jun 30, 2009 4:17 pm Last visit was: Tue Jun 30, 2009 4:14 pm
[[Moderator Control Panel](#)]

[View unanswered posts](#) • [View new posts](#) • [View active topics](#) [Mark forums read](#)

YOUR FIRST CATEGORY		TOPICS	POSTS	LAST POST
	Your first forum Description of your first forum.	1	1	by admin ↓ Tue Jun 30, 2009 4:14 pm

WHO IS ONLINE

In total there are **2** users online :: 1 registered, 0 hidden and 1 guest (based on users active over the past 5 minutes)
Most users ever online was **2** on Tue Jun 30, 2009 4:17 pm

Registered users: **admin**
Legend: *Administrators*, *Global moderators*

STATISTICS

Total posts **1** • Total topics **1** • Total members **1** • Our newest member **admin**

[Board index](#) [The team](#) • [Delete all board cookies](#) • All times are UTC

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[Administration Control Panel](#)

18. NAS Maintenance Settings

Restart/Shut down Server [517](#)

Reset Administrator Password and Network Settings [519](#)

System Temperature Protection [521](#)

Troubleshooting-Abnormal RAID Operation [522](#)

18.1 Restart/Shut down Server

Follow the steps below to restart or shut down the NAS.

1. Login the NAS as an administrator. Go to 'System Administration' > 'Power Management'.
2. Click 'Restart' to reboot the server or 'Shut Down' to turn off the server.

You can also press the power button for 1.5 seconds* to turn off the NAS. To force shut down the NAS, press the power button for more than 5 seconds. The server beeps once and shuts down immediately.

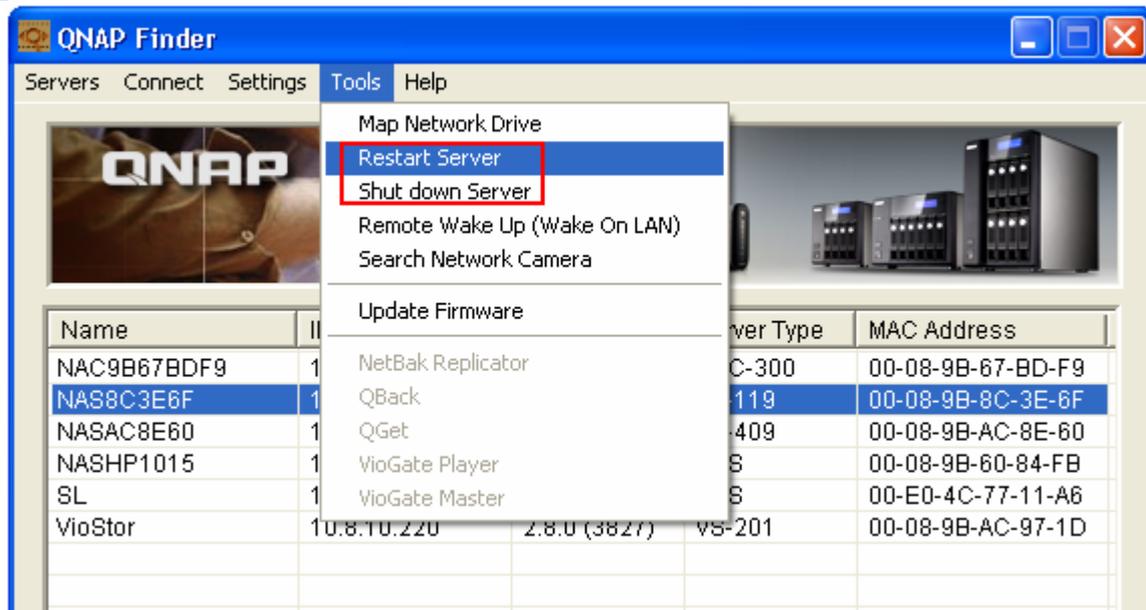
*To turn off TS-109I/II, TS-109 Pro I/II, TS-209 I/II, TS-209 Pro I/II, TS-409/TS-409 Pro/TS-409U, press the power button for 4 seconds.

The screenshot shows a web interface for 'Power Management'. The breadcrumb trail is 'Home >> System Administration >> Power Management'. The user is logged in as 'admin' and the language is set to 'English'. The main heading is 'Power Management'. There are three main sections:

- Restart/ Shutdown:** Contains the instruction 'Execute system restart/ shutdown immediately.' and two buttons: 'RESTART' and 'SHUTDOWN'.
- Configure Wake on LAN:** Contains two radio buttons: 'Enable' (unselected) and 'Disable' (selected).
- When the AC power resumes:** Contains three radio buttons: 'Resume the server to the previous power-on or power-off status.' (selected), 'Turn on the server automatically.', and 'The server should remain off.'.

At the bottom, there is a section for 'Set power on/ power off/ restart schedule' with a checkbox for 'Enable schedule' (unchecked). Below it is a checkbox for 'Postpone the restart/shutdown schedule when a replication job is in progress.' (unchecked). At the bottom right is an 'APPLY' button.

You can use the Finder to restart or shut down the server. You must have an administrator account to perform this action.



18.2 Reset Administrator Password and Network Settings

Note: To reset the NAS by the reset button, the option 'Enable configuration reset switch' in 'System Administration' > 'Hardware' must be activated.

Home >> System Administration >> Hardware Welcome admin | Logout English

Hardware

- Enable configuration reset switch
- Enable hard disk standby mode (if no access within 30 minutes Status LED will be off)
- Enable light signal alert when the free size of disk is less than the value: 3072 MB
- Enable write cache (for EXT4)

Buzzer Control

Enable alarm buzzer

- System operations (booting, firmware upgrade)
- System events (Error and warning alert)

Smart Fan Configuration

Fan Rotation Speed Settings: Set fan rotation speed manually

- Low speed
- Medium speed
- High speed

APPLY

System	Basic system reset (1 beep)	Advanced system reset (2 beeps)
All NAS models	Press the reset button for 3 sec	Press the reset button for 10 sec

Basic system reset (3 sec)

When you press the reset button for 3 seconds, a beep sound will be heard. 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: Disable Jumbo Frame
- TCP/IP configuration: If Port trunking is enabled (dual LAN models only), the port trunking mode will be reset to 'Active Backup (Failover)'.
- System port: 8080 (system service port)
- Security level: Low (Allow all connections)
- LCD panel password: (blank)*
- VLAN will be disabled

*This feature is only provided by TS-412, TS-419P, TS-419P+, TS-439 Pro, TS-439 Pro II, TS-439 Pro II+, TS-459 Pro, TS-509 Pro, TS-559 Pro, TS-639 Pro, TS-659 Pro, SS-839 Pro, TS-859 Pro, TS-809 Pro, TS-809U-RP, TS-859U-RP, TS-459 Pro+, TS-559 Pro+, TS-659 Pro+, TS-859 Pro+, TS-859U-RP+.

Advanced system reset (10 sec)

When you press the reset button for 10 seconds, you will hear two beeps at the third and the tenth seconds. The NAS will reset all the system settings to default as it does by the web-based system reset in 'Administration' > 'Restore to Factory Default' except all the data are reserved. The settings such as the users, user groups, and the network share folders you previously created will be cleared. To retrieve the old data after the advanced system reset, you may create the same network share folders on the NAS and the data will be accessible again.

18.3 System Temperature Protection

The NAS shuts down automatically for hardware protection when any of the following criteria is met:

- The system temperature exceeds 70°C (158°F)
- The CPU temperature exceeds 85°C (185°F)
- The hard drive temperature exceeds 65°C (149°F)*

* Note that when the temperature of any hard drives on the NAS exceeds 65°C (149°F), the NAS waits for the standby time (configured in 'System Administration' > 'Hardware') and another 10 minutes and will shut down automatically. For example, if you have configured the NAS to enter the standby mode after idling for 5 minutes, the NAS shuts down automatically when the temperature of any hard drives exceeds 65°C (149°F) continuously after 15 (5+10) minutes.

18.4 Troubleshooting-Abnormal RAID Operation

If the RAID configuration of your NAS is found abnormal or there are error messages, please try the following solutions:

Note: You must back up the important data on the NAS first to avoid any potential data loss.

1. Check that the RAID rebuilding has failed:
 - a. LED: The Status LED of NAS flashes in red.
 - b. On the 'Disk Management' > 'Volume Management' page, the status of the disk volume configuration is 'In degraded mode'.

2. Find out the hard drive that causes the RAID rebuilding failure.

You can go to 'System Administration' > 'System Logs' page to search for the following error message and find out which hard drive causes the error.

[Error occurred while accessing Drive X.](#)

[Drive X has been removed.](#)

X refers to the number of hard drive slot.

3. Troubleshooting

After plugging in the new hard drive (for example, HDD 1), drive rebuilding will start. If the drive configuration fails again due to read/write error of the HDD in the rebuilding process, identify which HDD causes the error and follow the steps below to solve the problems.

Situation 1: The error is caused by the newly plugged in HDD.

If the newly plugged in hard drive (for example, HDD 1) causes the rebuilding error, please unplug HDD 1 and plug in another new HDD to start RAID rebuilding.

Situation 2: The error is caused by an existing hard drive (for example, HDD 2) in the RAID configuration.

If the RAID configuration is RAID 1, you can do either one of the following:

- a. Back up the hard drive data to another storage device. Then reinstall and set up the NAS.
- b. Format the newly plugged in hard drive (for example, HDD 1) as a single drive. Then back up the data on the NAS to this drive (HDD 1) via Web File Manager. Unplug the hard drive with errors (for example, HDD 2). After that, insert a new hard drive to NAS to replace the fault drive, and execute RAID 1 migration.

When the RAID configuration is RAID 5 or 6: The RAID configuration is changed to degraded mode (read-only). It is recommended that you back up the data and run system installation and configuration again.



Caution: When plugging in or unplugging a hard drive, please strictly adhere to the following rules to avoid abnormal system operation or data damage.

- Plug in only one hard drive to NAS or unplug only one hard drive from NAS at one time.
- After plugging in or unplugging a hard drive, wait for about ten seconds or longer until you hear two beeps from the NAS. Then unplug or plug in the next hard drive.

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Version 3, 29 June 2007

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