QNAP Turbo NAS Software Manual

Firmware V3.3.0

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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

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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.

2 Regulatory Notice

FCC STATEMENT

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.

CE NOTICE

Class B only.

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3 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.

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4 Safety Information and Precautions

1. The NAS can operate normally in the temperature of 0ºC–40ºC 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 (HDD) in the NAS when installing the HDD 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.

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5 Install the NAS

For the information of hardware installation, see the 'Quick Installation Guide' in the product package.

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5.1 Hard Disk Drive Compatibility List

This product works with 2.5-inch/ 3.5-inch SATA hard disk drives (HDD) from major HDD brands. For the HDD compatibility list, please visit here.

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 HDD (new or used) which has never been installed on the NAS before, the HDD will be formatted and partitioned automatically and all the disk data will be cleared.

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5.2 Check System Status

LED Display & System Status Overview

LED	Colour	LED Status	Description
USB	**Blue**	Flashes blue every 0.5 sec	1) A USB device (connected to front USB port) is being detected 2) A USB device (connected to front USB port) is being removed from the NAS 3) The USB device (connected to the front USB port) is being accessed 4) The data is being copied to or from the external USB or eSATA device
		Blue	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
System Status	**Red** / **Green**	Flashes green and red alternately every 0.5 sec	1) The HDD 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	1) The HDD is invalid 2) The disk volume has reached its full capacity

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LED	Colour	LED Status	Description
			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 HDD 7) The NAS is in degraded read-only mode (2 member HDD 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 HDD fails in RAID 1, RAID 5 or RAID 6 configuration)
		Flashes green every 0.5 sec	1) The NAS is starting up 2) The NAS is not configured 3) The HDD is not formatted
		Green	The NAS is ready
		Off	All the HDD on the NAS are in standby mode
HDD	**Red/ Green**	Flashes red	The disk data is being accessed and a read/ write error occurs during the process
		Red	A HDD read/ write error occurs
		Flashes green	The disk data is being accessed
		Green	The HDD can be accessed
LAN	**Orange**	Orange	The NAS is connected to the network
		Flashes orange	The NAS is being accessed from the network

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

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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 HDD on the NAS are in degraded mode 4) The user starts HDD rebuilding
	1	1) The NAS is turned off by force shutdown (hardware shutdown) 2) The NAS has been turned on and is ready

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5.3 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 (HDD) on the new NAS following its original HDD 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.

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

Source NAS	**Destination NAS**		
	TS-x10/ TS-x19	TS-x39/ 509/ 809 SS-x39	TS-x59
TS-x10/ TS-x19	Yes*	Yes*	Yes
TS-x39/ 509/ 809 SS-x39	Yes*	Yes*	Yes
TS-x59	Yes*	Yes*	Yes

*Firmware update required.

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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 HDD.
2. Remove the HDD from the old trays and install them to the HDD trays of the new NAS.
3. Plug the HDD to the destination NAS (new model). Make sure the HDD 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.

If you decide not to perform system migration, initialize the NAS according to the instructions of the QIG.

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 QPKGs need to be resintalled (e.g. XDove)

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6 Connect to the NAS

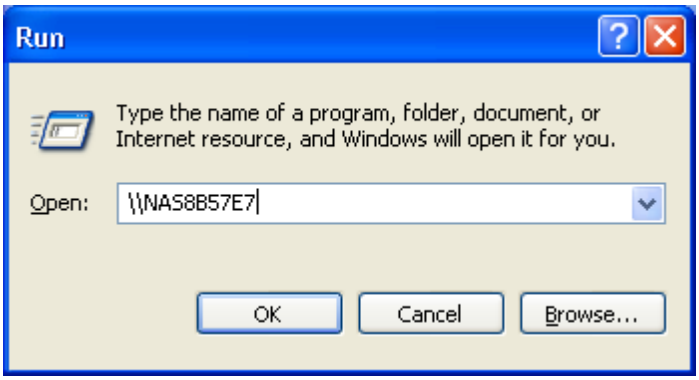
Use the Network Share 15

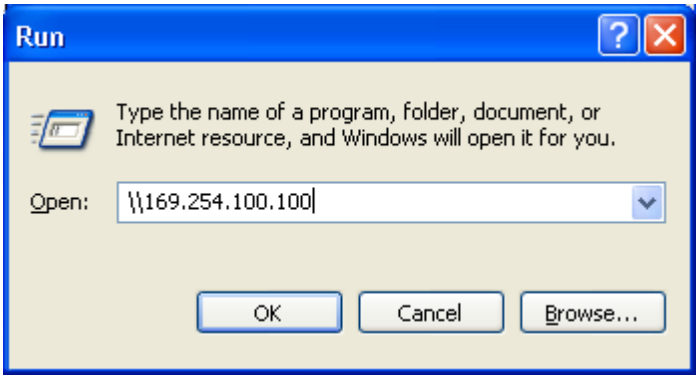
Manage the NAS 17

6.1 Use the 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





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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.

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6.2 Manage the NAS

Connect to the NAS by web browser on Windows or Mac

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.

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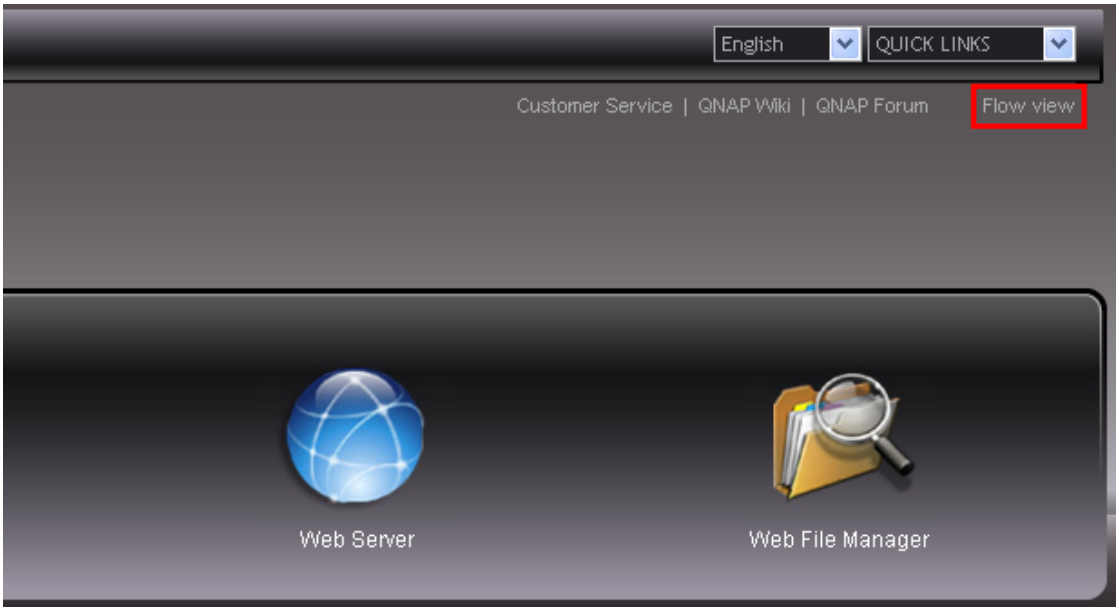
3. You can select to browse the NAS UI with Standard view or Flow view.

Standard view



Flow view

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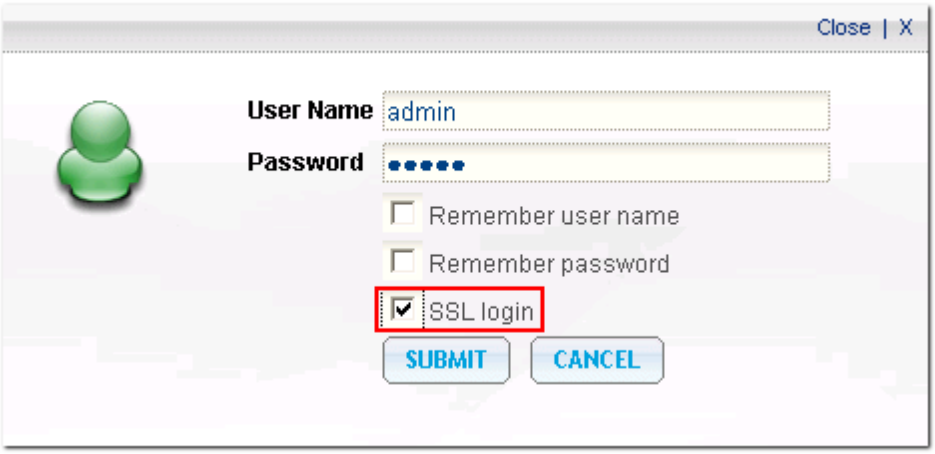
4. To configure the NAS, click 'ADMINISTRATION'. Enter the administrator name and password.

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.



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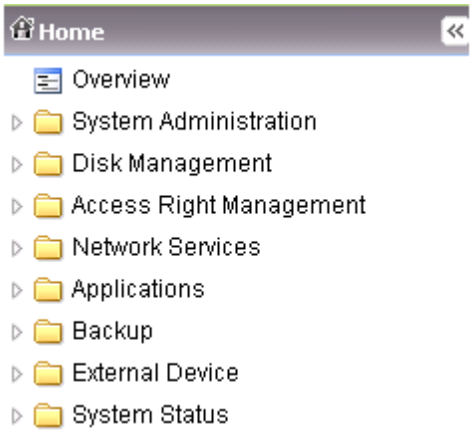
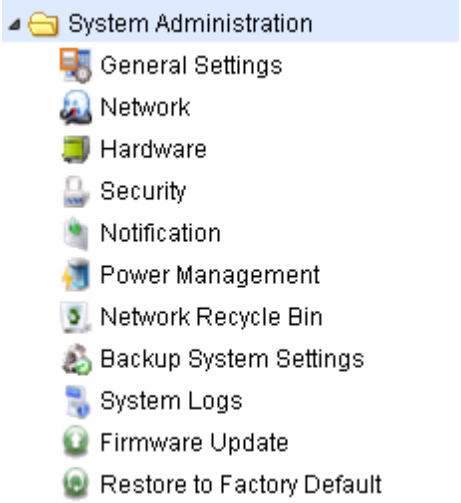
7 Server Administration

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.



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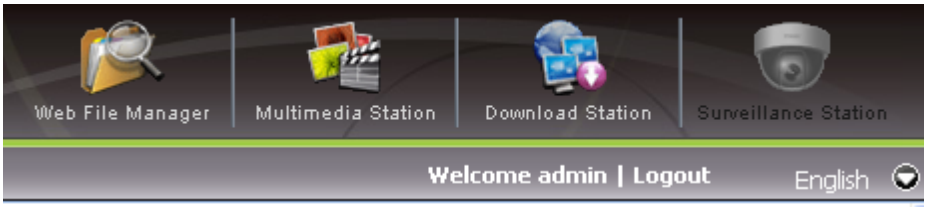
To use the services such as Web File Manager, Download Station, Multimedia Station, and Surveillance Station, choose the services from the drop-down menu or click the icons on the login page.

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



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7.1 System Administration

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

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Network 27
Hardware 38
Security 41
Notification 44
Power Management 47
Network Recycle Bin 49
Backup/ Restore Settings 50
System Logs 51
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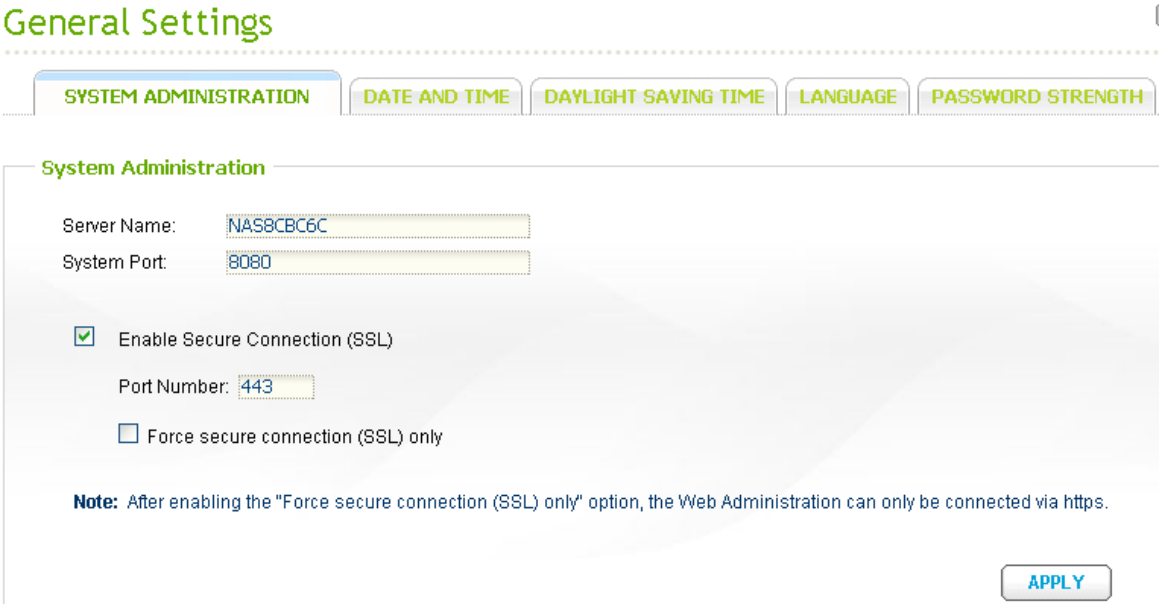
7.1.1 General Settings

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.



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.

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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.

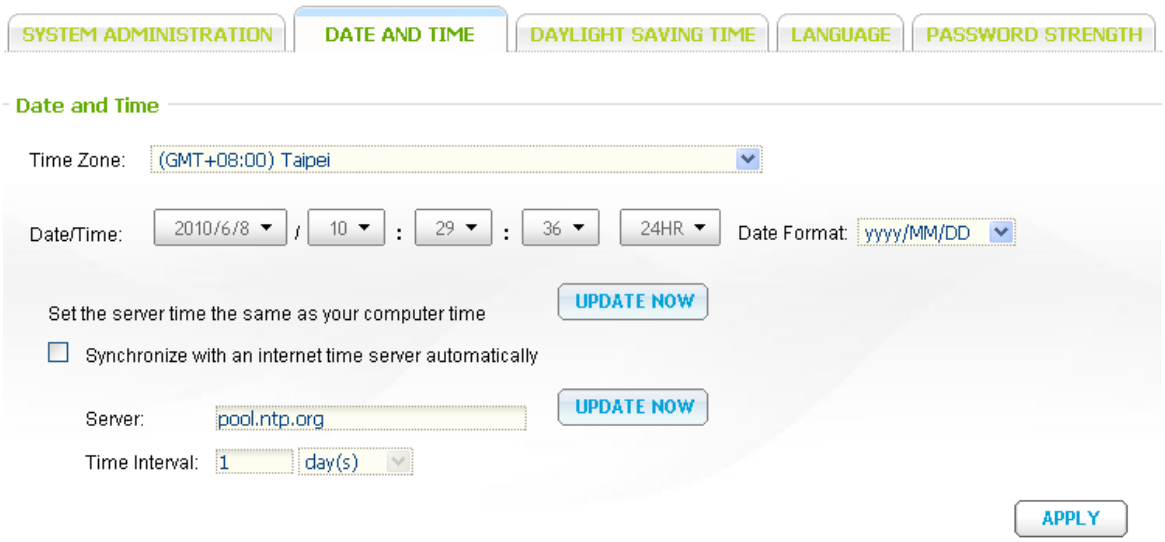
Set the server time the same as your computer time

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.



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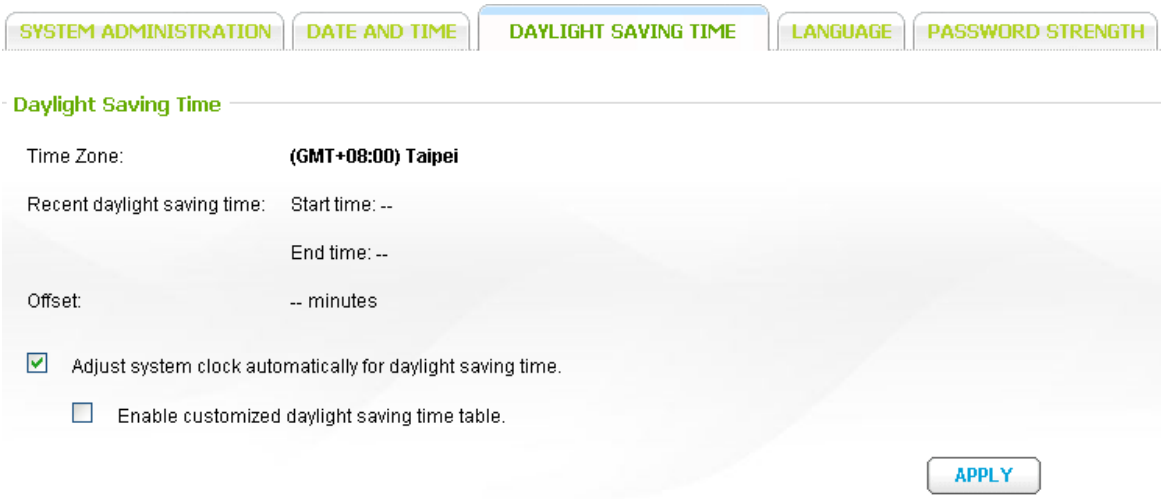
Daylight Saving Time

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.



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.

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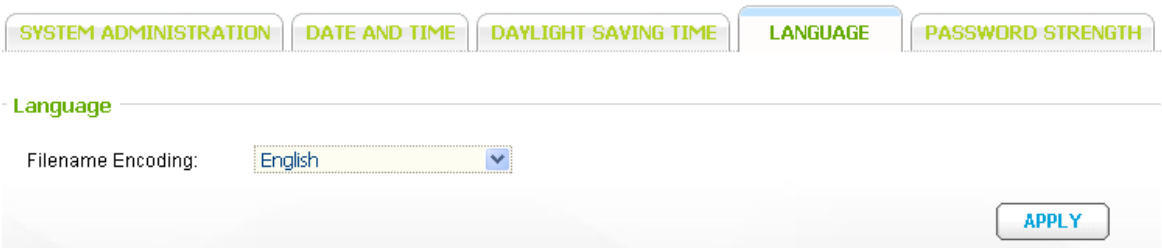
Language

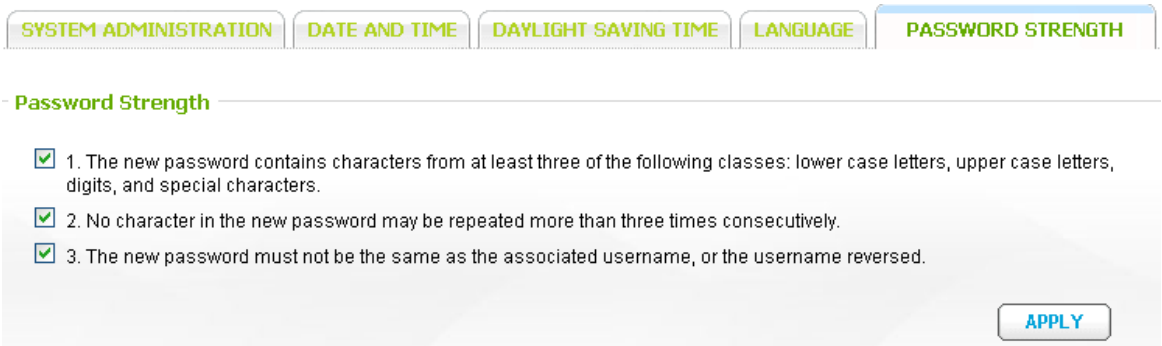
Select the language the NAS uses to display the files and directories.

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.



Password Strength

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



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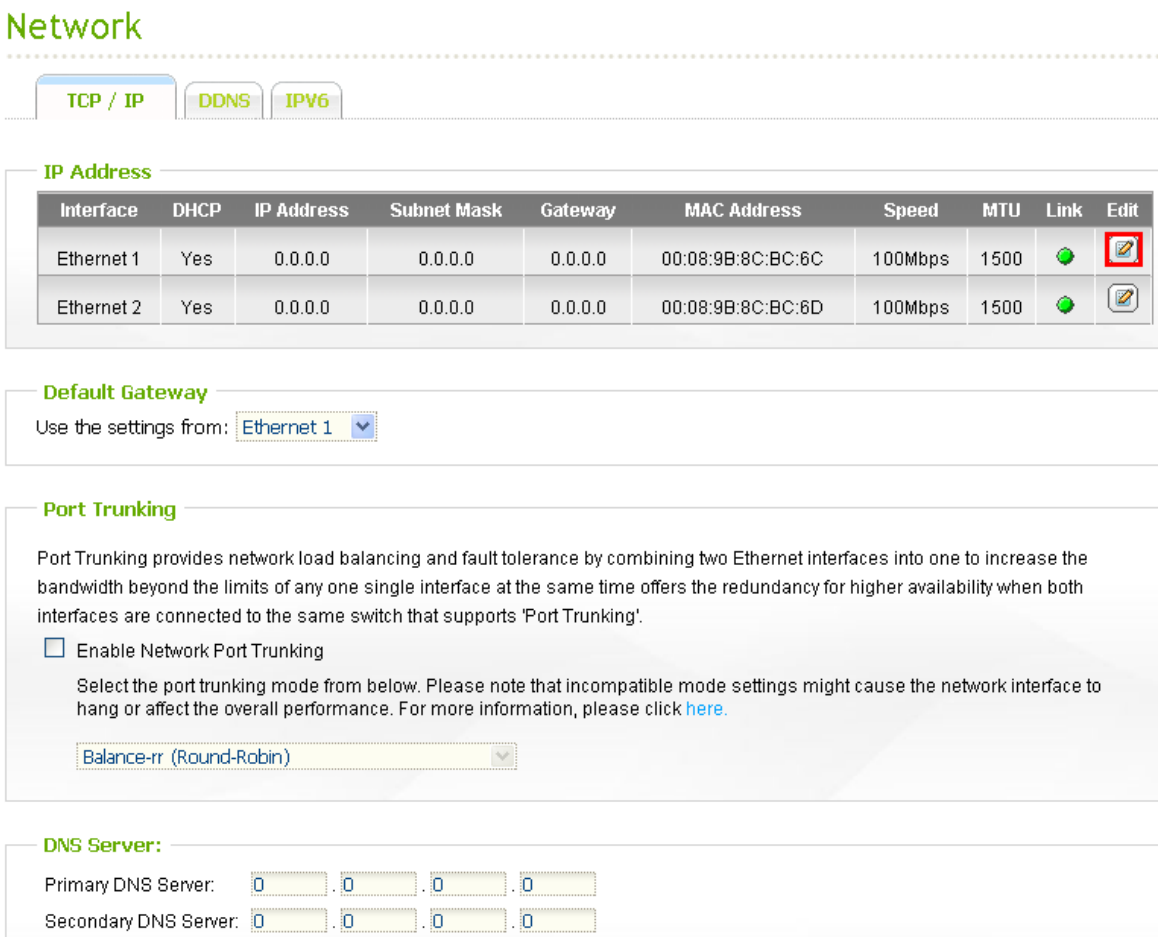
7.1.2 Network

TCP/IP

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, and TS-219P provide one Giga LAN port only therefore do not support dual LAN configuration or port trunking.



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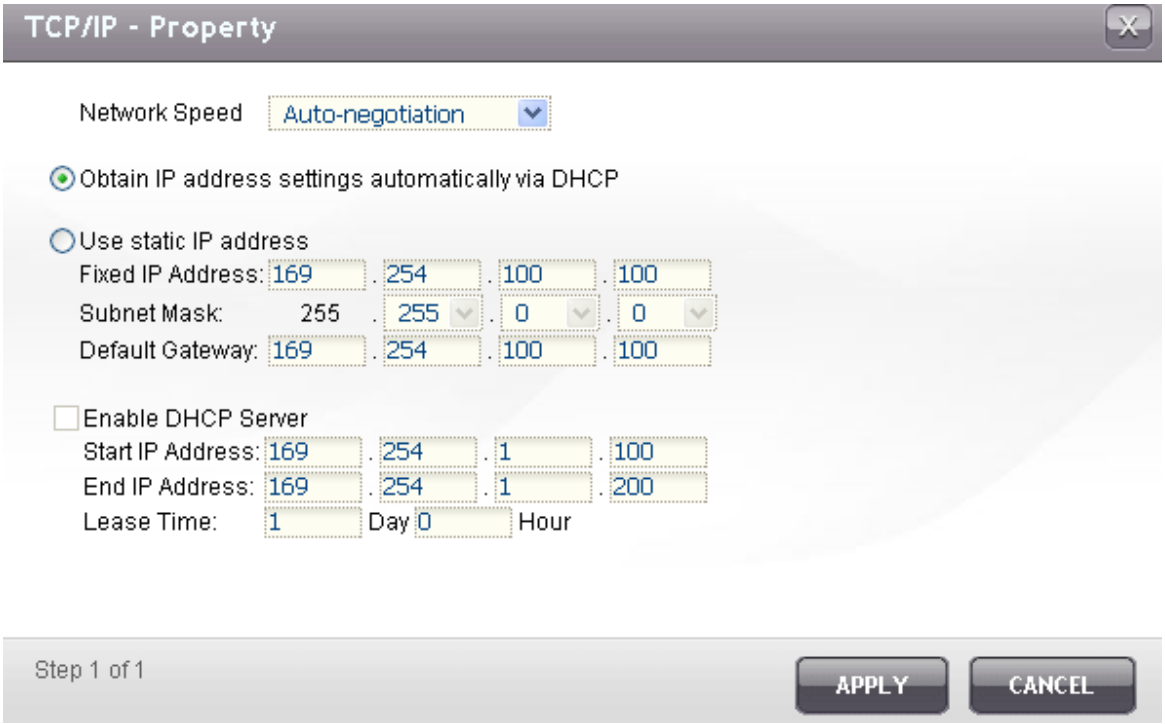

On the TCP/IP Property page, configure the following settings:

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.

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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.

Default Gateway

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

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Port Trunking

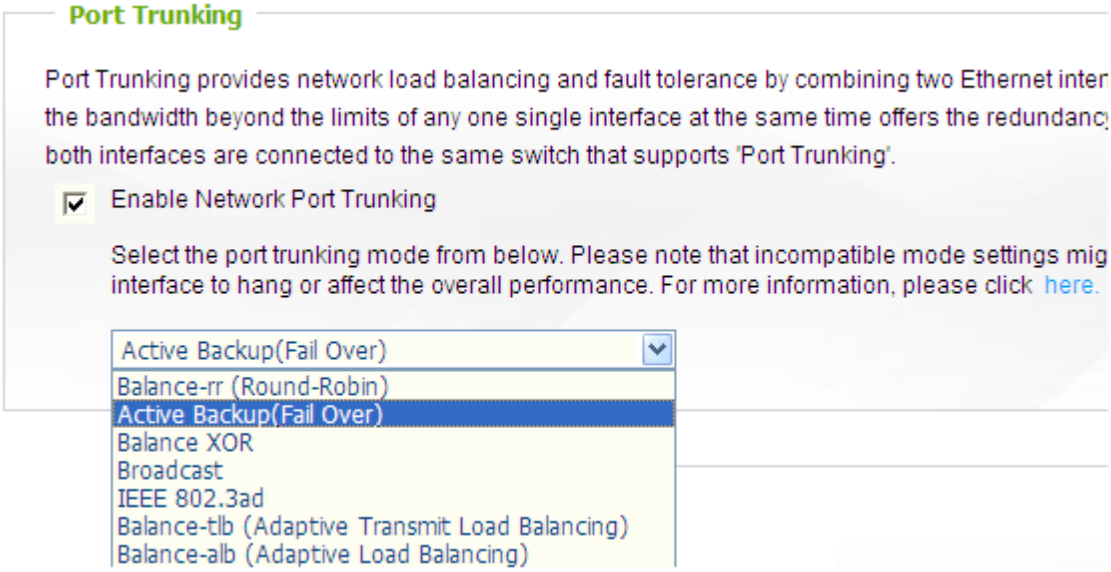
Applicable to NAS models with two LAN ports only. This feature is not supported by TS-110, TS-119, TS-210, TS-219, and TS-219P.

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).



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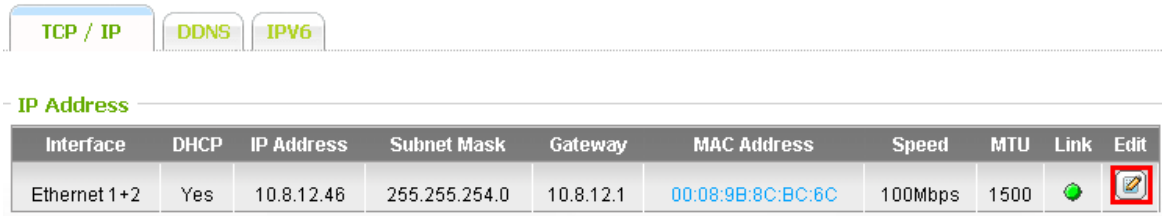
3. Click 'Apply'.

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



5. 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.

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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	General switches

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	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.	
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

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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'.

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.

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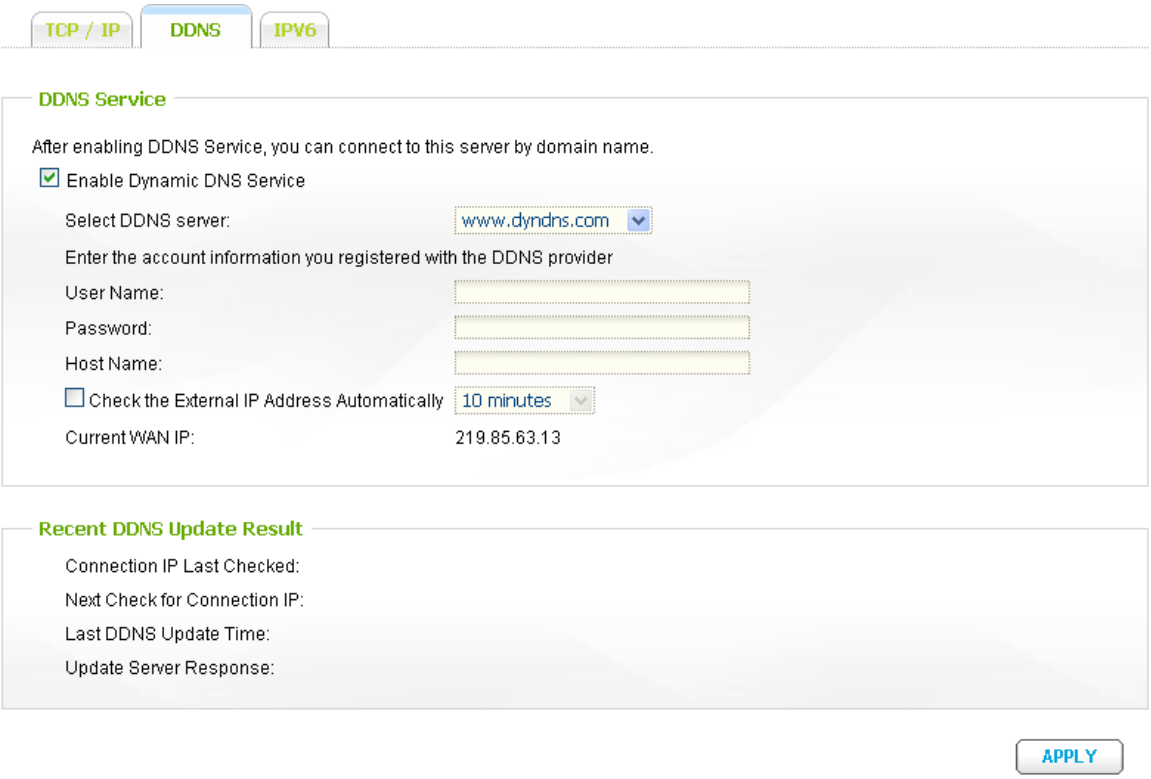
DDNS

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 here 334.



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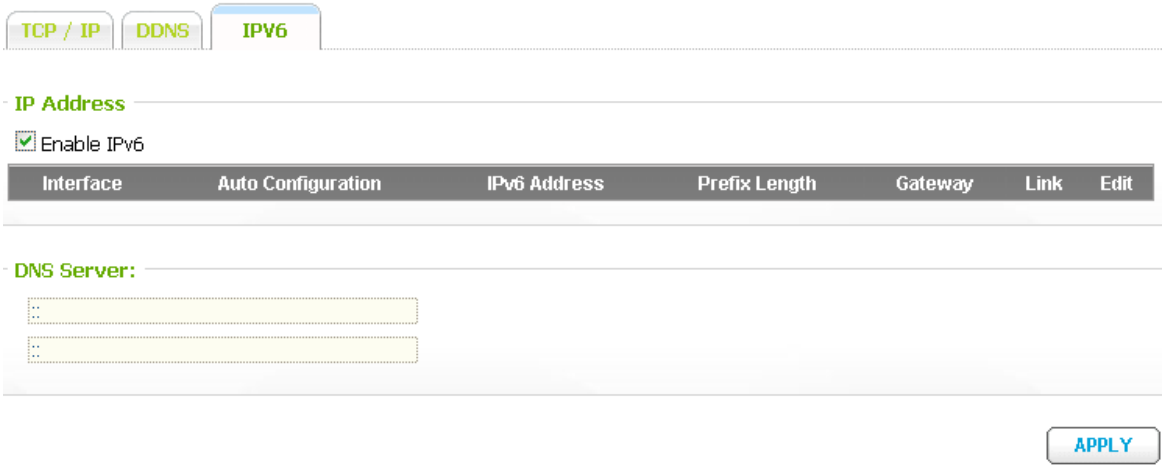
IPv6

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)



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.

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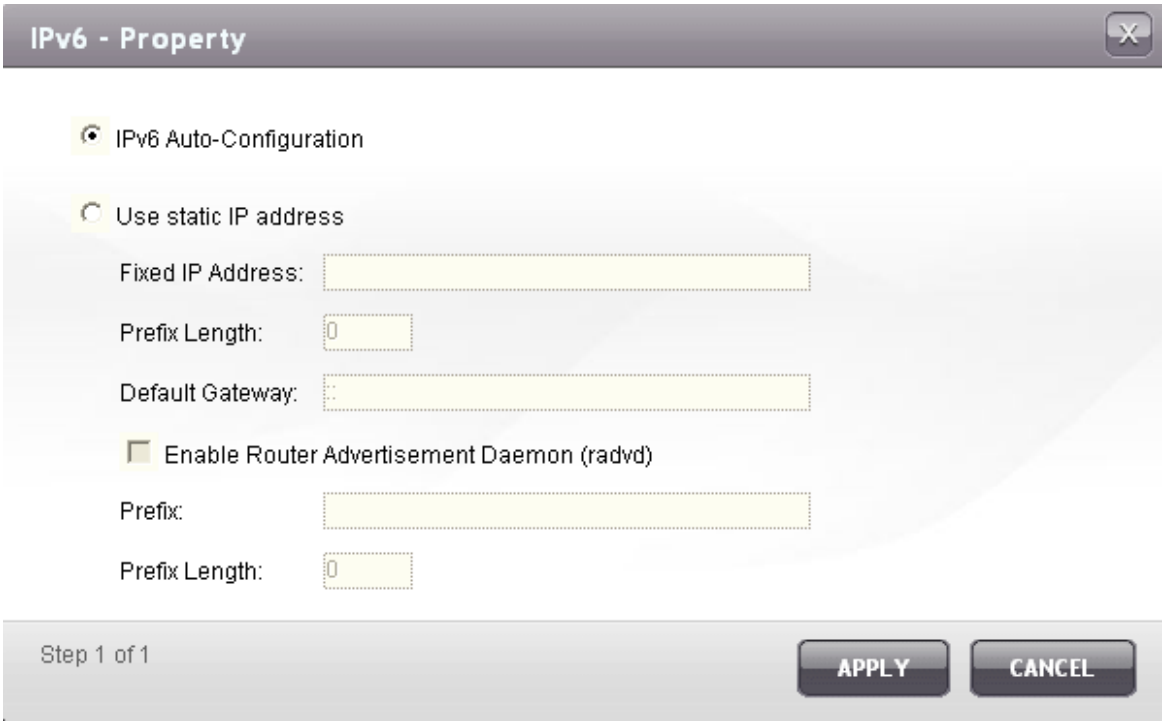

IPv6 Auto Configuration

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 '::'.

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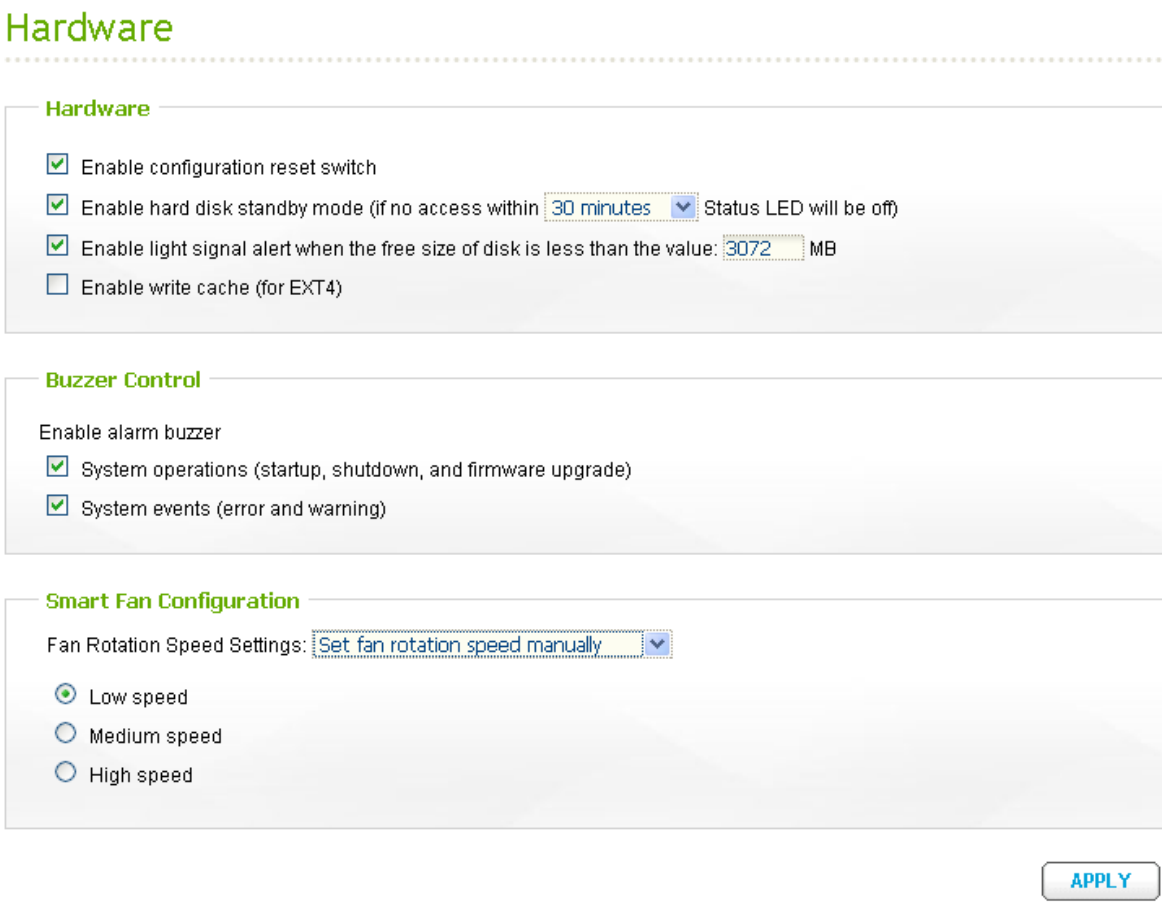
7.1.3 Hardware

You can set the hardware functions of the NAS.



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 HDD 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

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HDD 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.

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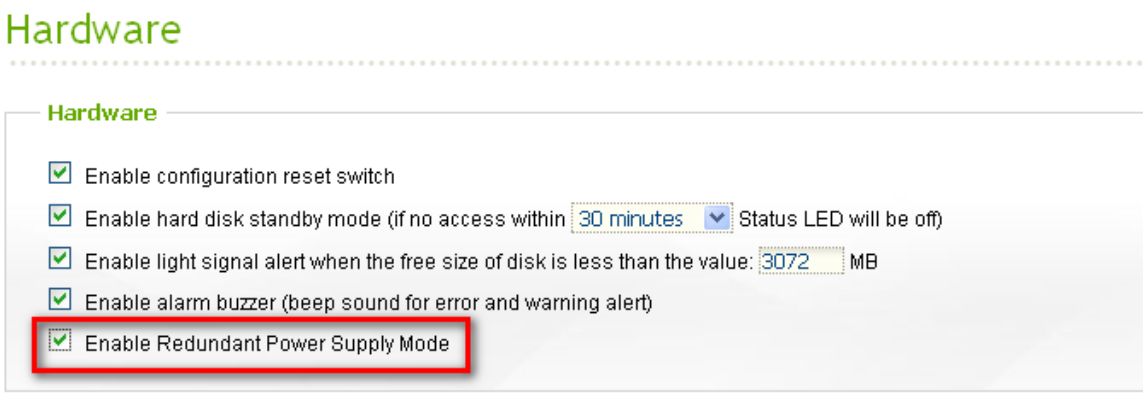
Enable warning alert for redundant power supply on the web-based interface:

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.



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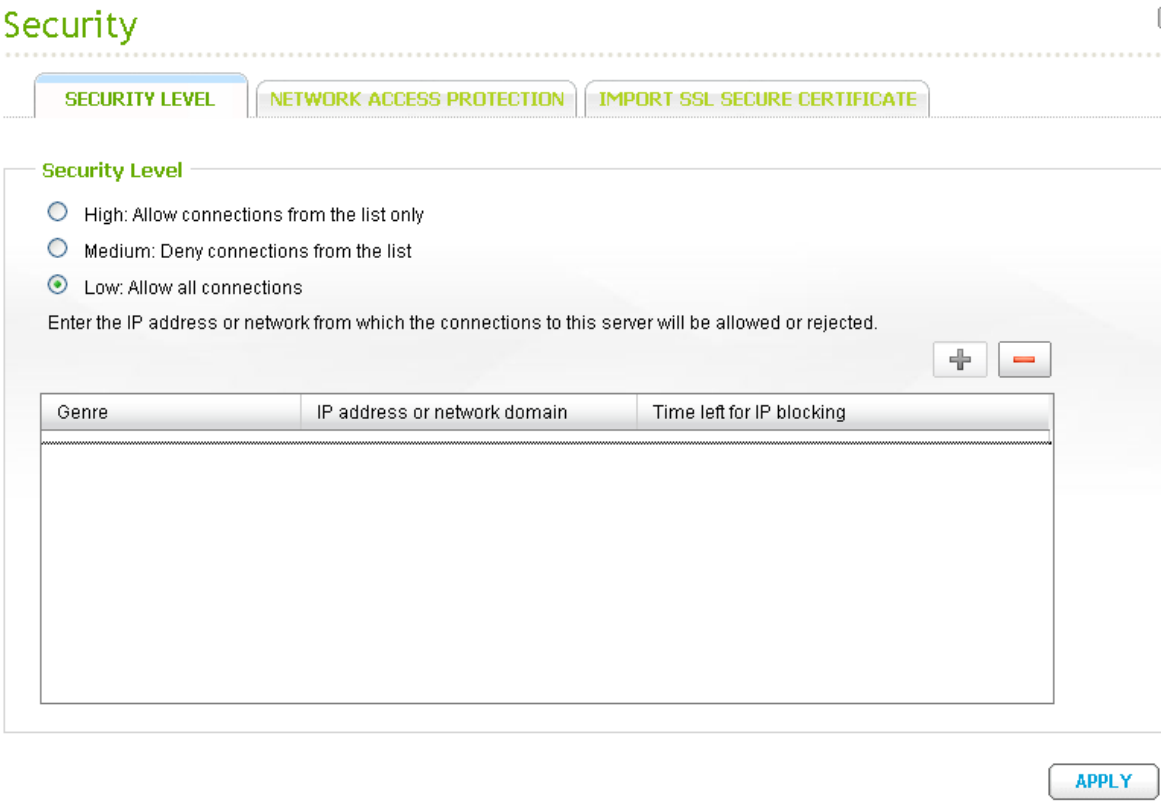
7.1.4 Security

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.



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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.

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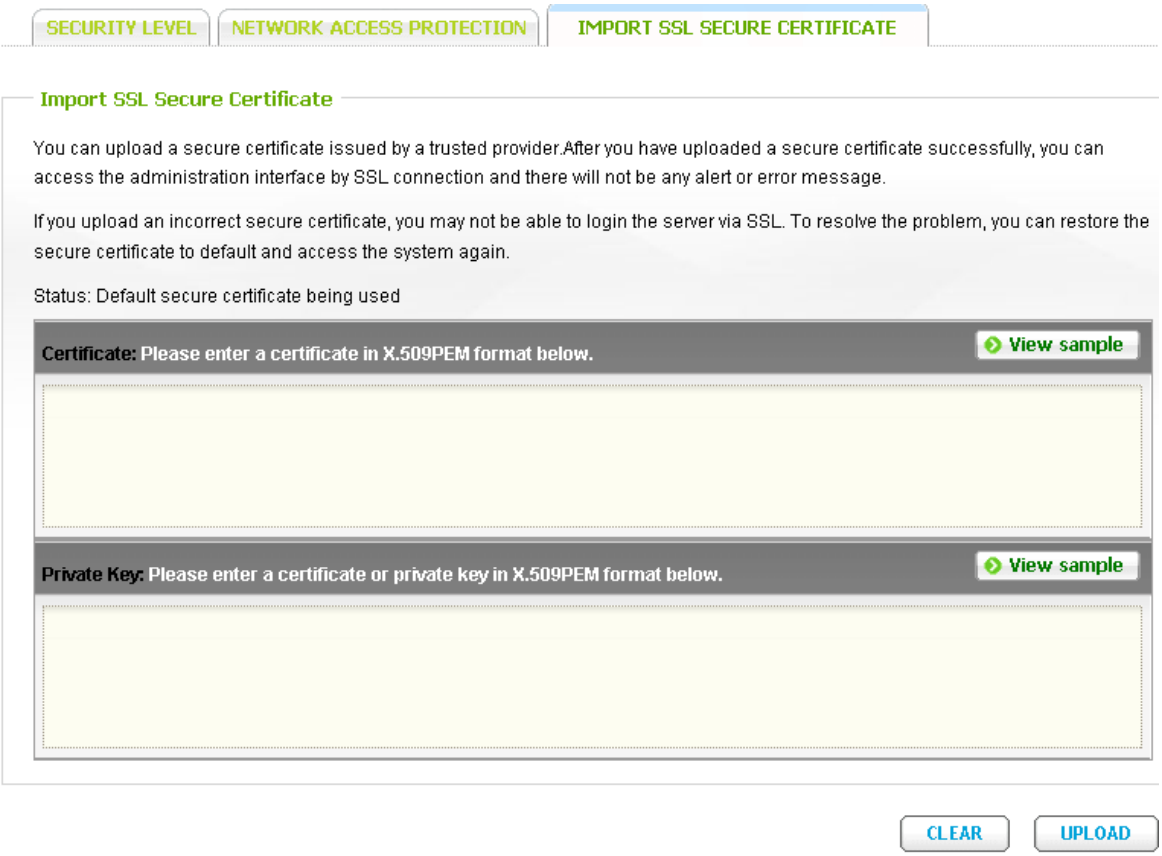
Import SSL Secure Certificate

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.



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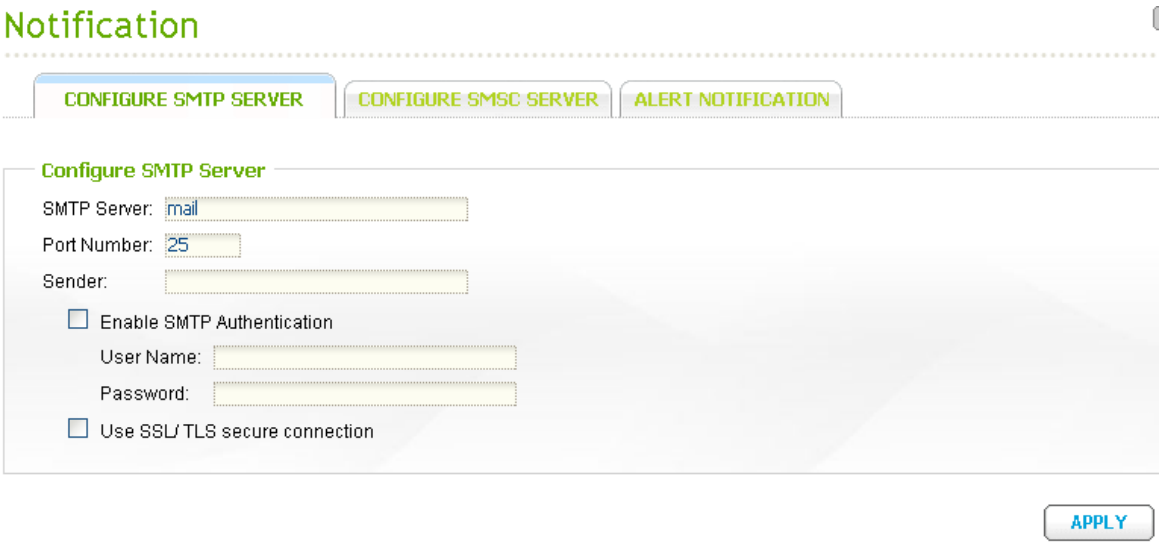
7.1.5 Notification

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.



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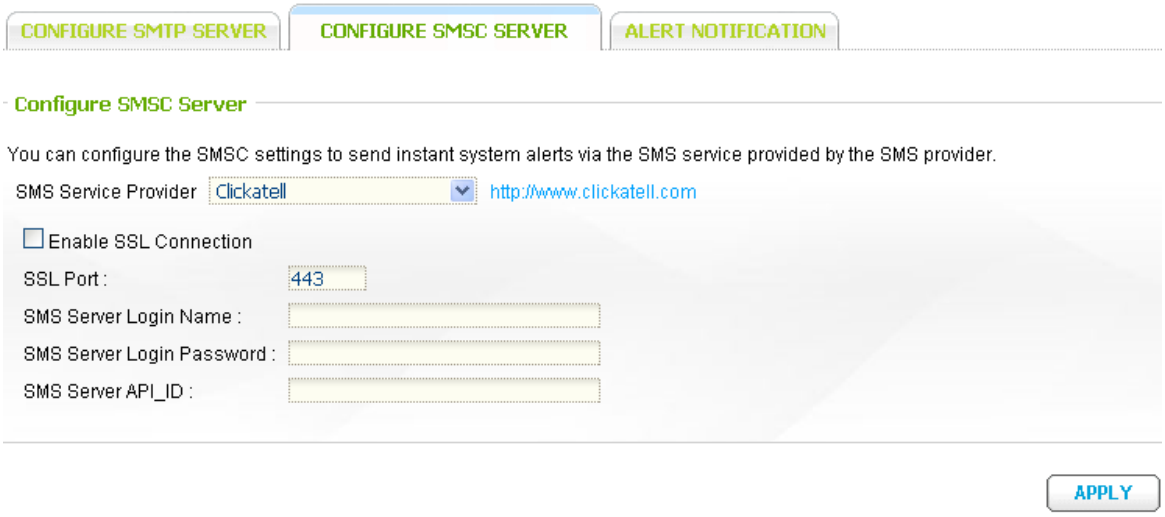
Configure SMS Server

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.



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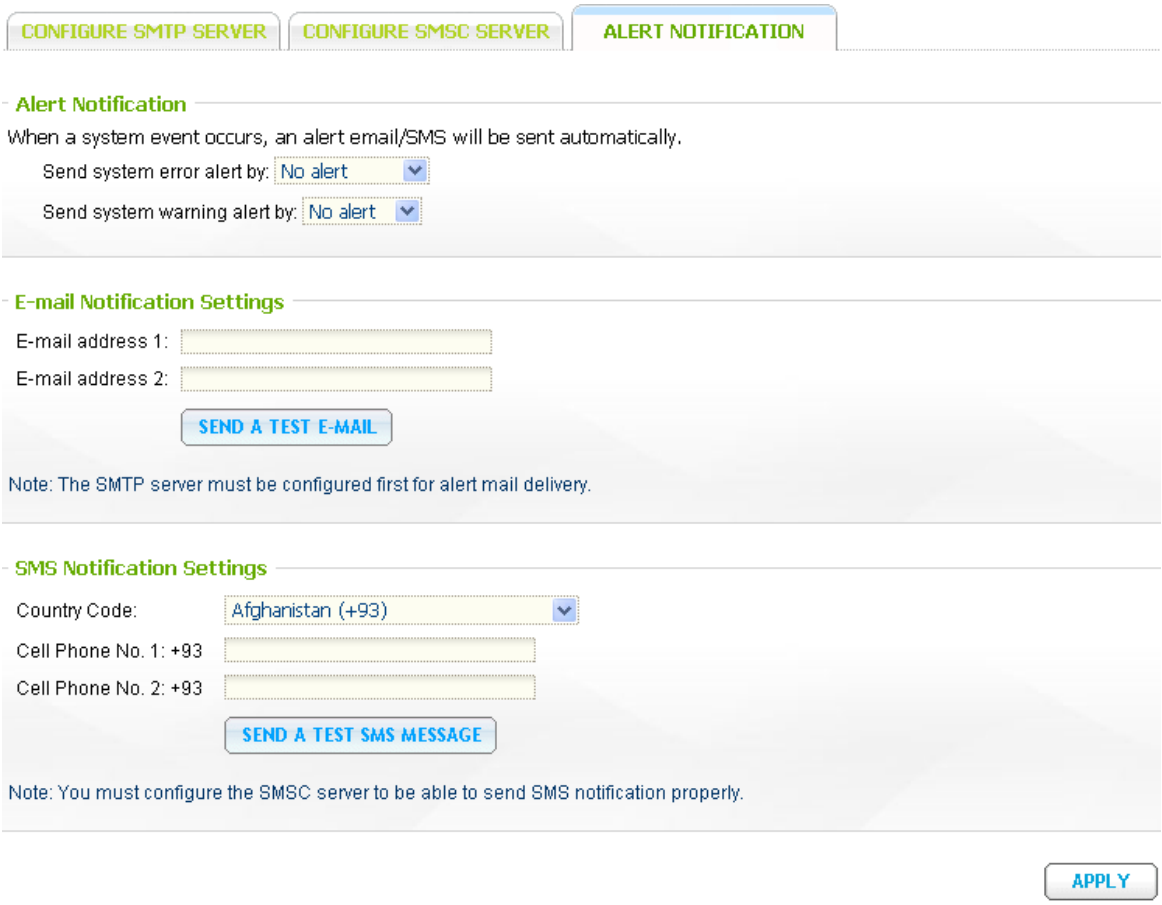
Alert Notification

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 here 342.



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7.1.6 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, and TS-419U.

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.

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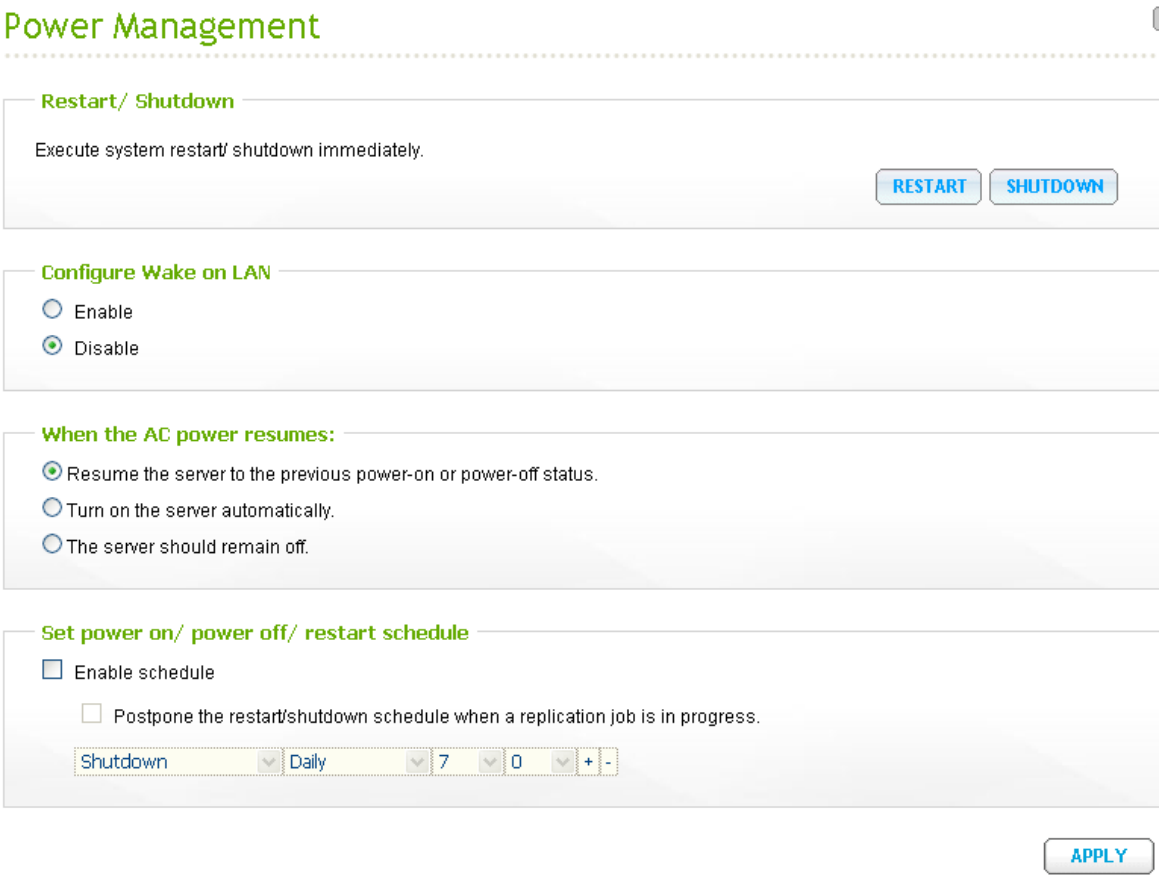
Power on/ power off/ restart schedule

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.



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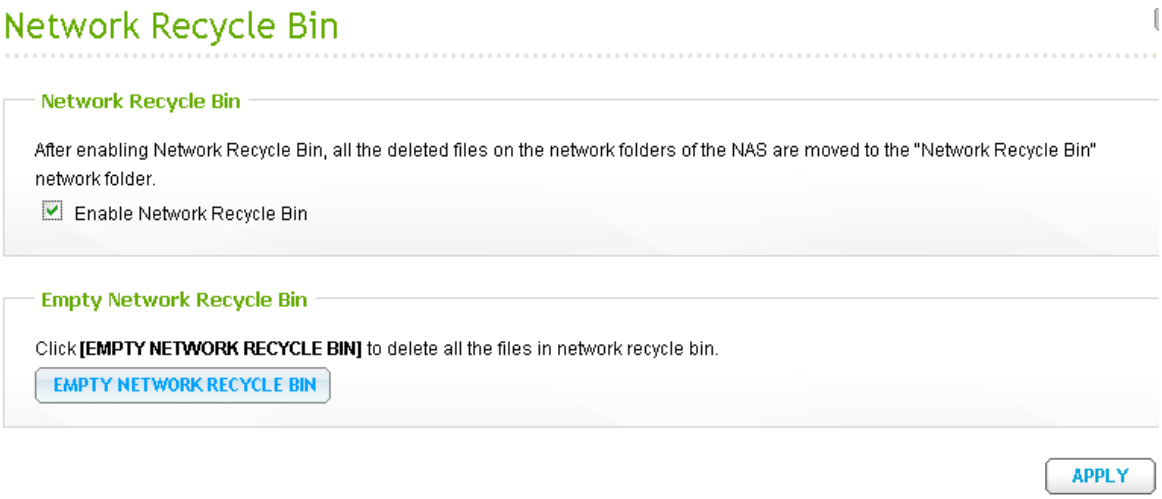
7.1.7 Network Recycle Bin

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'.



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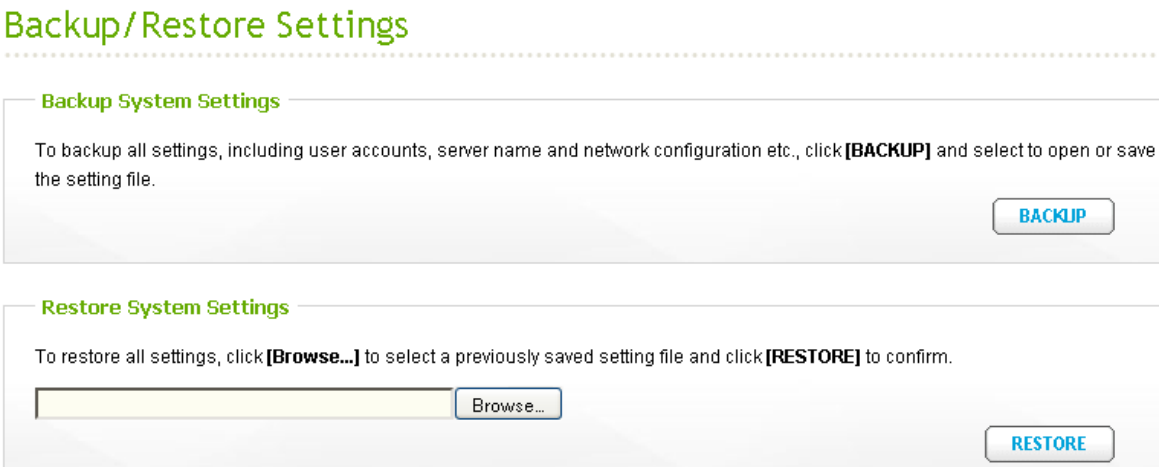
7.1.8 Backup/ Restore Settings

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'.



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7.1.9 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.

System Logs

SYSTEM EVENT LOGS | SYSTEM CONNECTION LOGS | ON-LINE USERS | SYSLOG

All events | Clear | Save

Type	Date	Time	Users	Source IP	Computer name	Content
	2010-05-12	12:28:10	admin	10.8.12.44	---	[Security] Network access protection enabled.
	2010-05-12	12:20:58	admin	10.8.12.44	---	[TCP/IP] DHCP server disabled.
	2010-05-12	12:20:57	admin	10.8.12.44	---	[TCP/IP] Changed configuration of network interfaces from [STANDALONE] to [balance-rr]
	2010-05-12	12:20:57	admin	10.8.12.44	---	[Port Trunking] Enabled.
	2010-05-12	12:20:28	System	127.0.0.1	localhost	Stop process upnpd.
	2010-05-12	12:19:58	System	127.0.0.1	localhost	Stop process upnpd.
	2010-05-12	12:19:27	System	127.0.0.1	localhost	Stop process upnpd.
	2010-05-12	12:18:35	admin	10.8.12.44	---	[TCP/IP] DHCP server disabled.
	2010-05-12	12:18:35	admin	10.8.12.44	---	[TCP/IP] Changed configuration of network interfaces from [active-backup] to [STANDALONE]
	2010-05-12	12:18:35	admin	10.8.12.44	---	[Port Trunking] Disabled.

There are 10000 events. Displays 10 records per page. 1 / 1000

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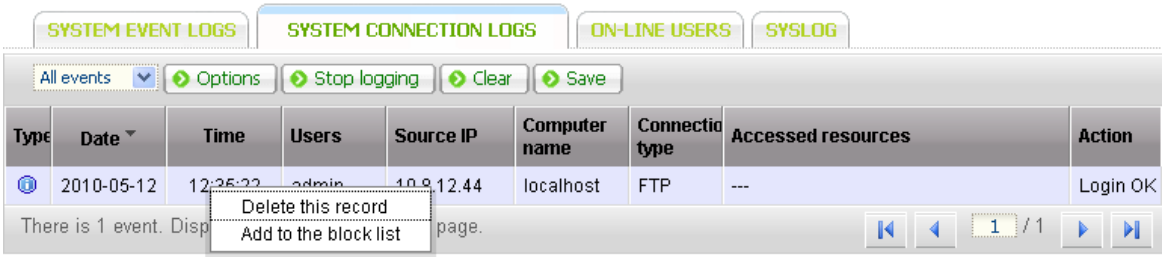
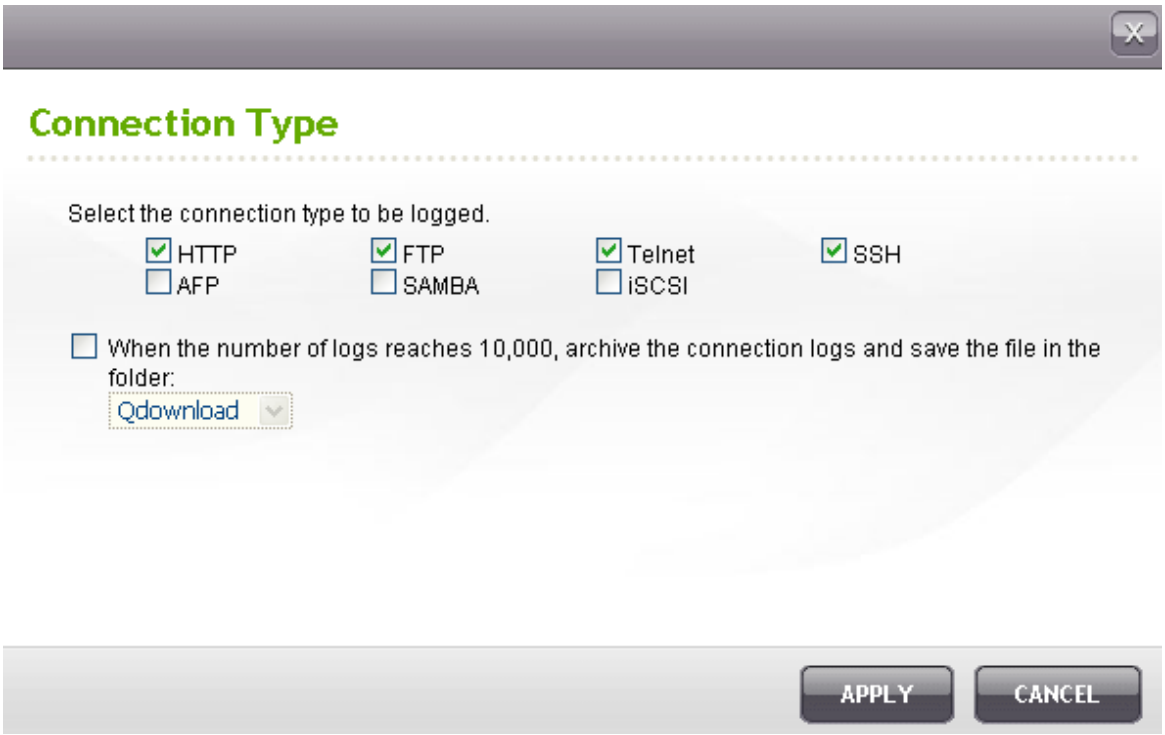
System Connection Logs

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.



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.



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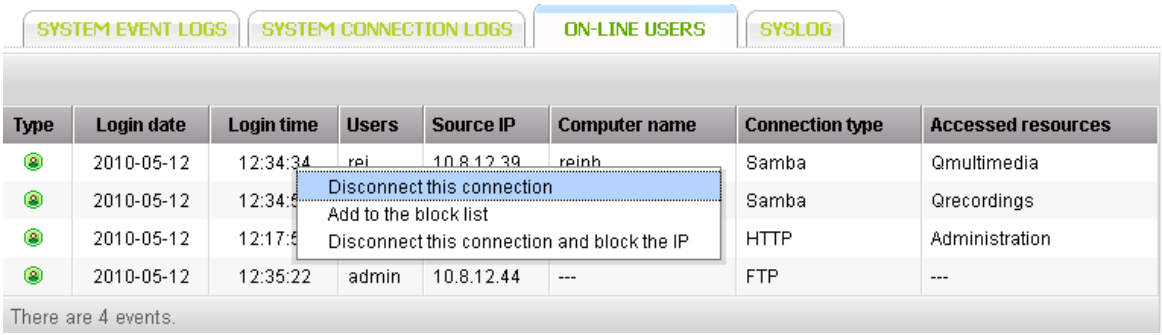
On-line Users

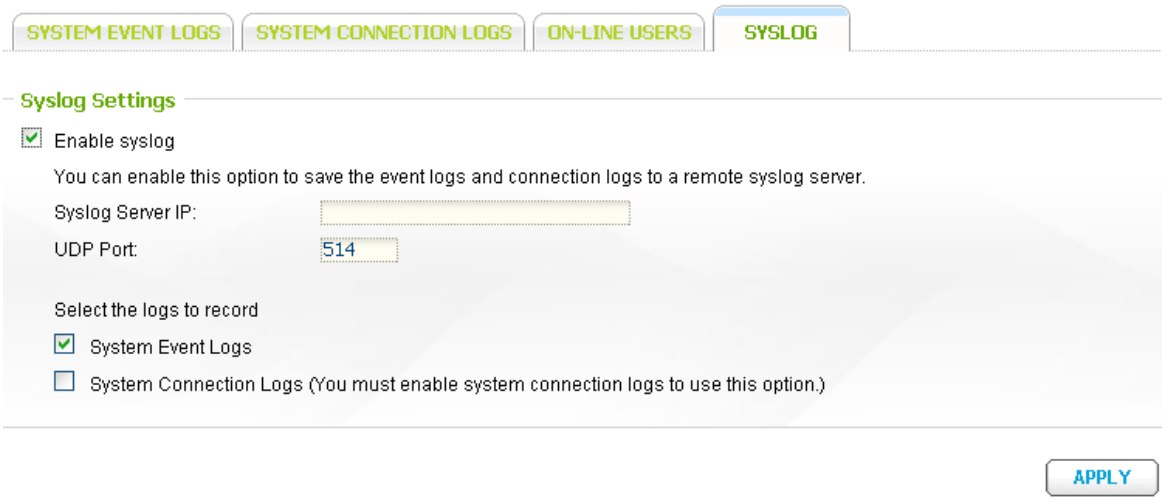
The information of the on-line users connecting to the NAS by networking services is shown on this page.

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



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.



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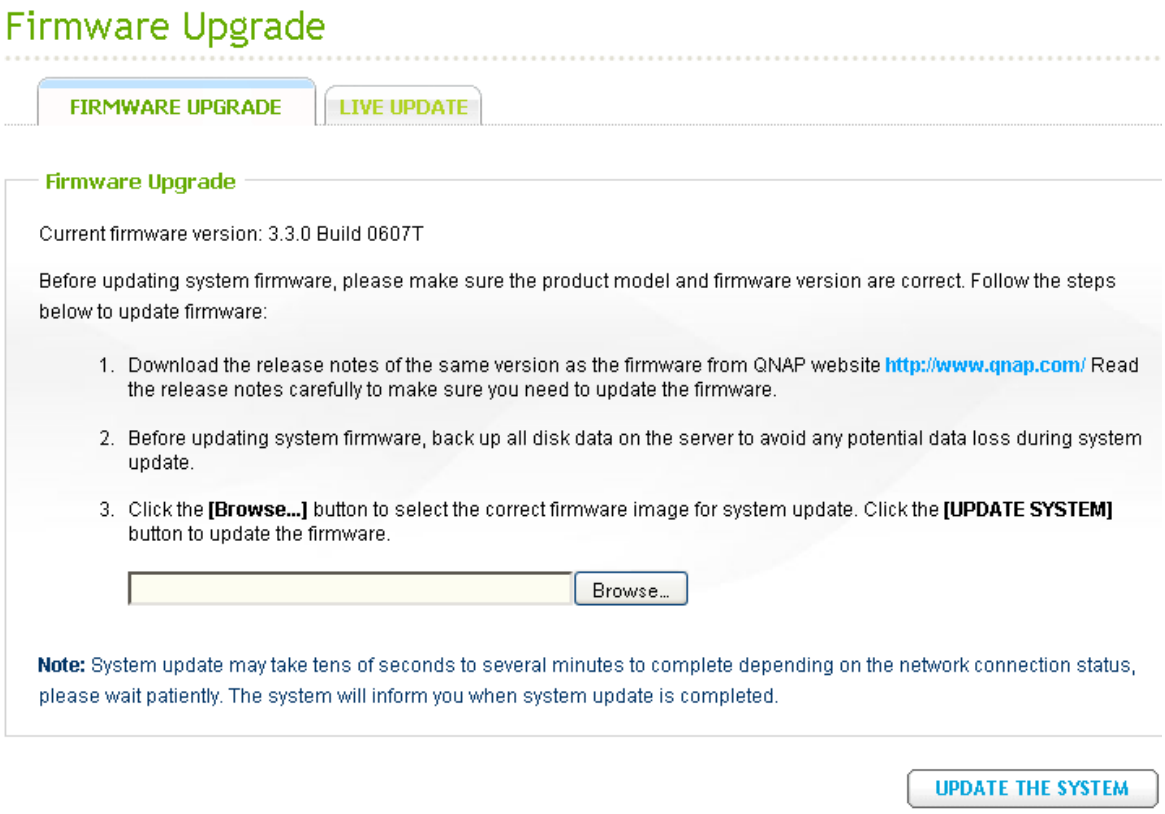
7.1.10 Firmware Update

Update Firmware by Web Administration Page



> **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

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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.

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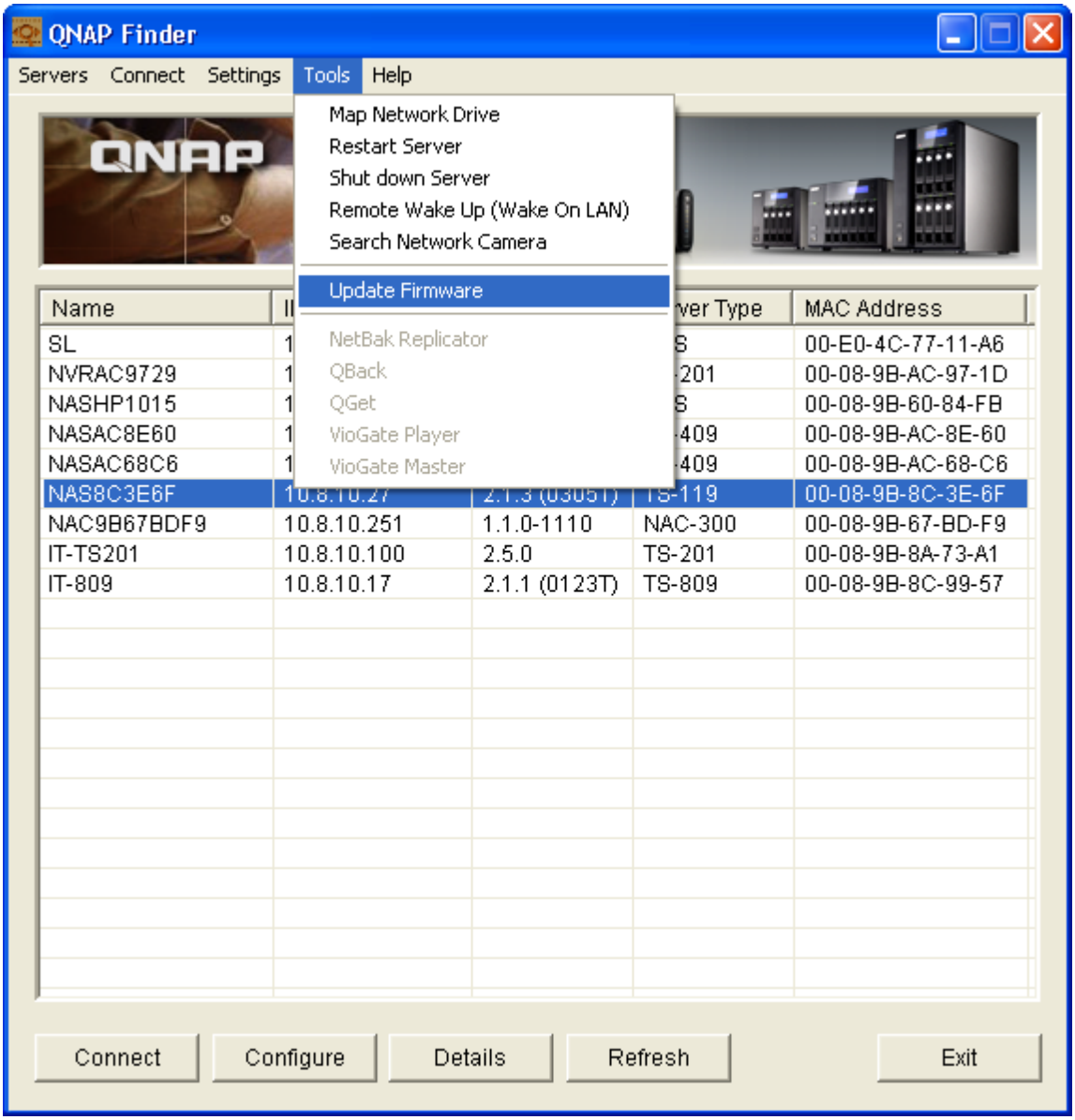
Update Firmware by Finder

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



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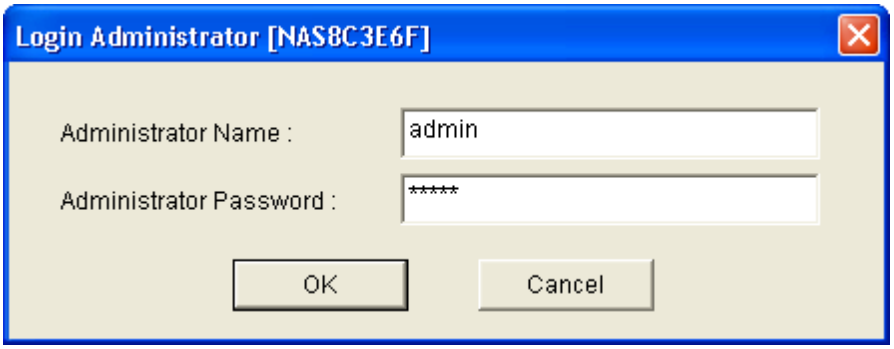
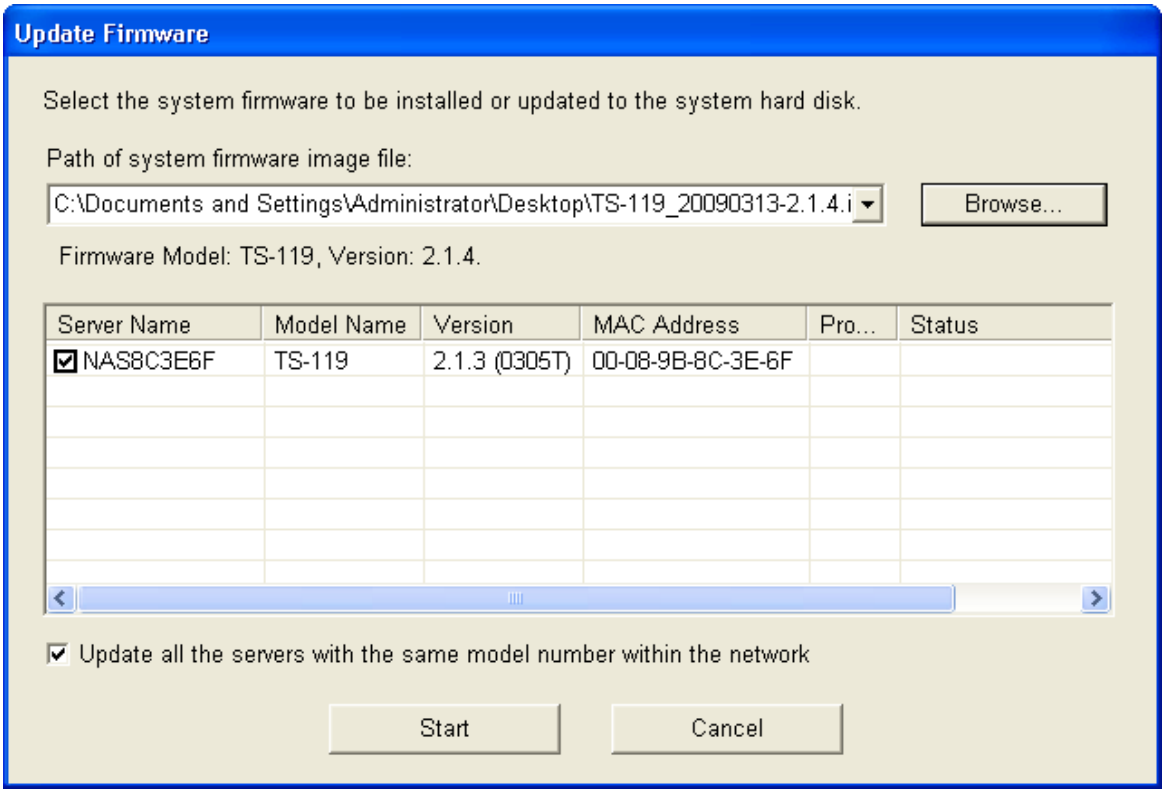
Login the NAS as a user with administrator access right.



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



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.

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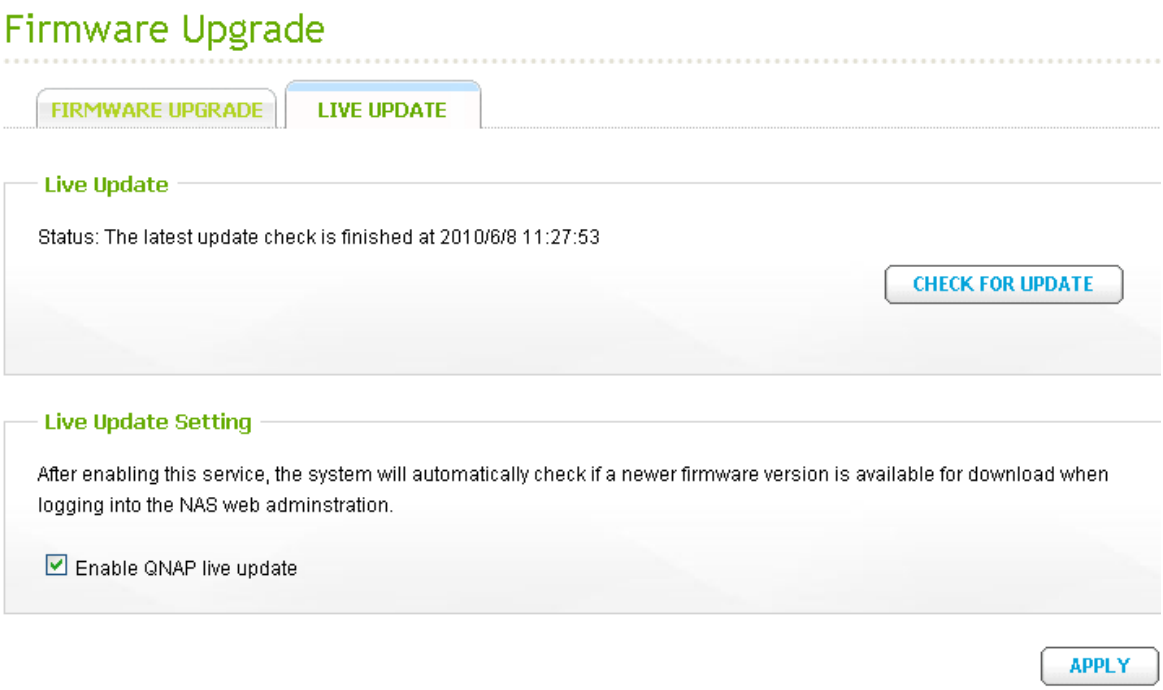
Live Update

Select 'Enable QNAP 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.



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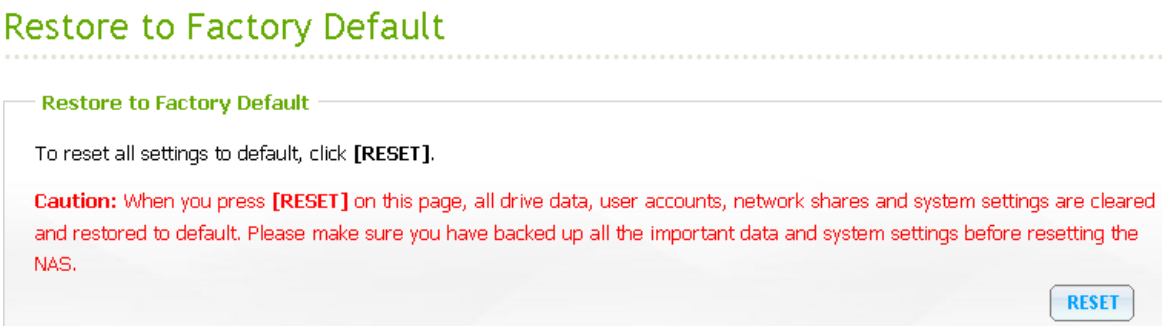
7.1.11 Restore to Factory Default

To reset all the settings to default, click 'RESET'.

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.



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7.2 Disk Management

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Encrypted File System 70
iSCSI 71
Virtual Disk 108

7.2.1 Volume Management

This page shows the model, size, and current status of the HDD on the NAS. You can format and check the HDD, and scan bad blocks on the HDD. When the HDD has 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.

*TS-259/ TS-459/ TS-659/ TS-859 series only.

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

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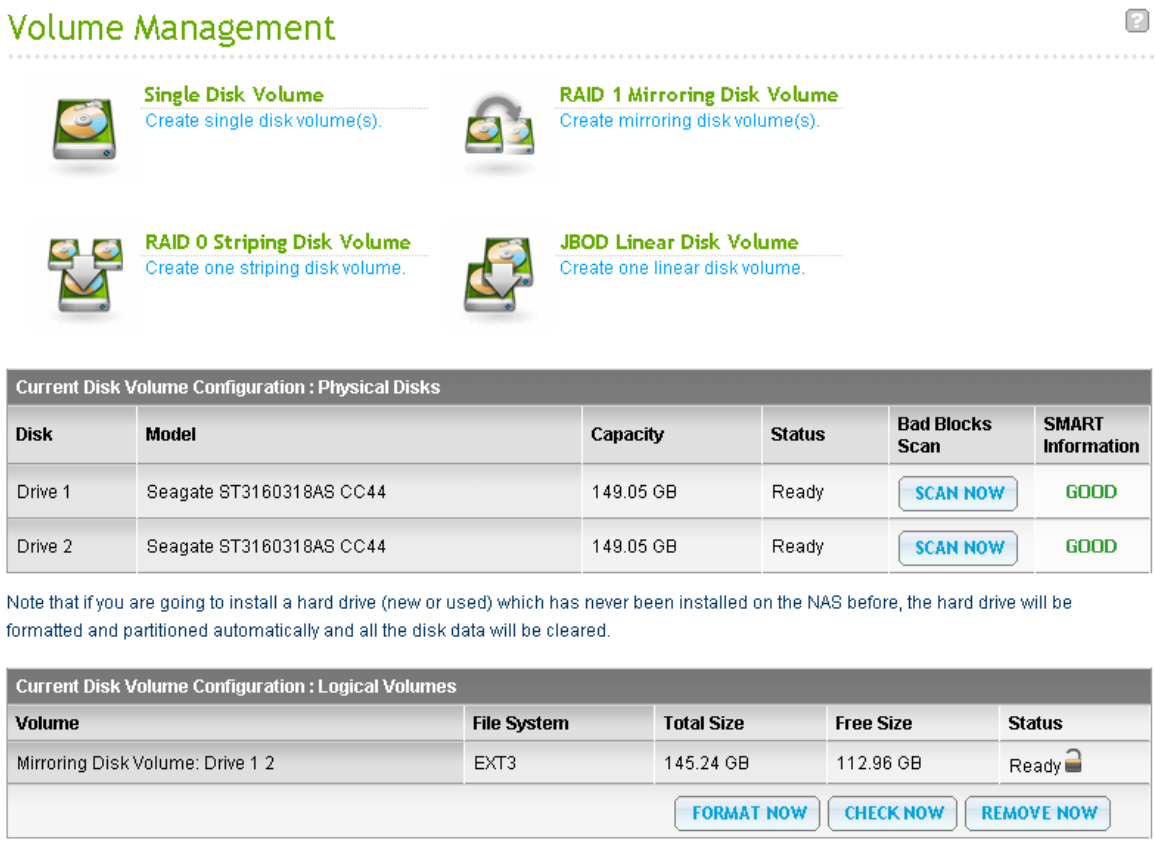

Disk Configuration	Applied NAS Models
Single disk volume	All models
RAID 1, JBOD (just a bunch of disks)	2-bay models or above
RAID 5, RAID 6, RAID 5+hot spare	4-bay models or above
RAID 6+hot spare	5-bay models or above

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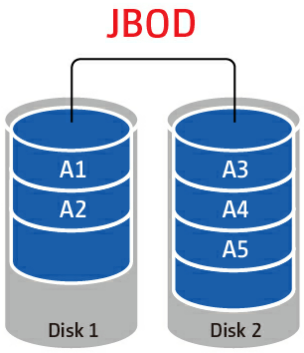
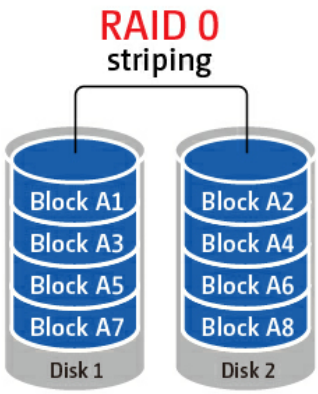
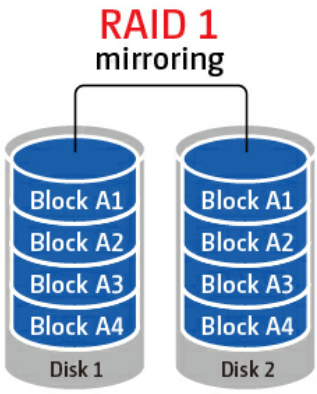
Single Disk Volume Each HDD is used as a standalone disk. If a HDD is damaged, all the data will be lost.	
JBOD (Just a bunch of disks) JBOD is a collection of HDD that does not offer any RAID protection. The data are written to the physical disks sequentially. The total storage capacity equals to the sum of the capacity of all member HDD.	
RAID 0 Striping Disk Volume RAID 0 (striping disk) combines 2 or more HDD into one larger volume. The data is written to the HDD without any parity information and no redundancy is offered. The disk capacity equals the number of HDD in the array times the size of the smallest HDD.	
RAID 1 Mirroring Disk Volume RAID 1 duplicates the data between two HDD to provide disk mirroring. To create a RAID 1 array, a minimum of 2 HDD are required.	

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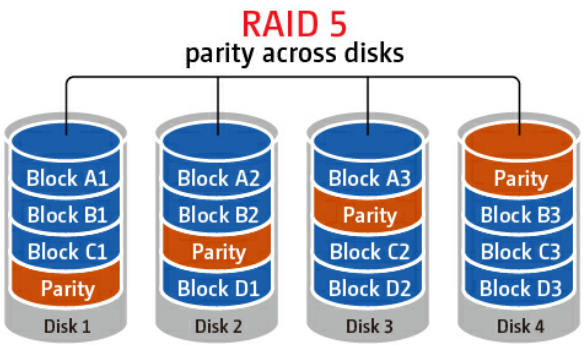
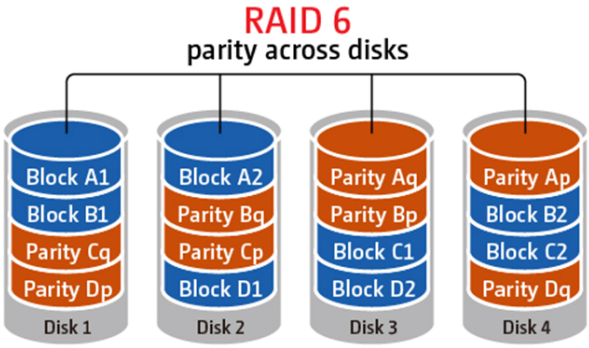
RAID 5 Disk Volume The data are striped across all the HDD in a RAID 5 array. The parity information is distributed and stored across each HDD. If a member HDD fails, the array enters degraded mode. After installing a new HDD to replace the failed one, the data can be rebuilt from other member drives that contain the parity information. To create a RAID 5 disk volume, a minimum of 3 HDD are required. The storage capacity of a RAID 5 array equals (N-1). N is the total number of HDD members in the array.	
RAID 6 Disk Volume The data are striped across all the HDD 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 drives HDD. To create a RAID 6 disk volume, a minimum of 4 hard disks are required. The storage capacity of a RAID 6 array equals (N-2). N is the total number of HDD members in the array.	

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7.2.2 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 RAID capacity expansion (RAID 1/ 5/ 6), RAID level migration (single disk/ RAID 1/ RAID 5), or configure the spare HDD (RAID 5/ 6) with the data retained.
Bitmap improves the time for RAID rebuilding after an unexpected error, or removing or re-adding a member HDD of the RAID configuration. If an array has a bitmap, the member HDD can be removed and re-added and only blocks changes since the removal (as recorded in the bitmap) will be re-synchronized.

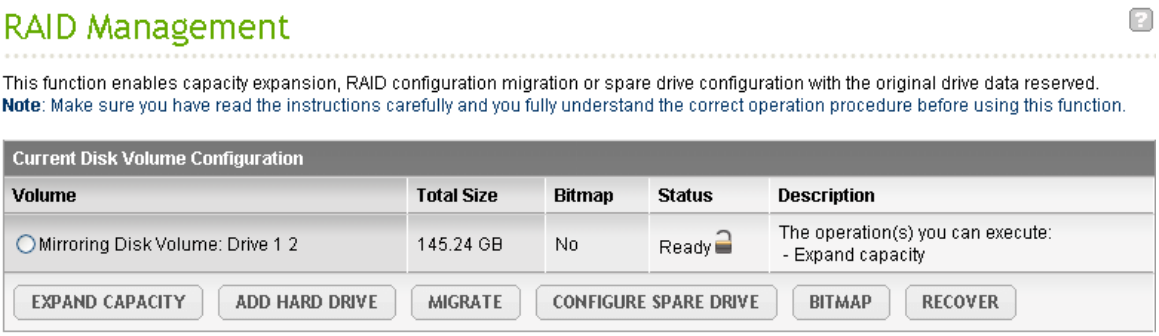
Note: Bitmap support is only available for RAID 1, 5, and 6.

RAID Recovery: When the NAS is configured as RAID 5 (or RAID 6) and 2 (or 3) HDD are uplugged from the server accidentally, you can plug in the same HDD 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 HDD members are disconnected, you can 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.

For more information about online RAID capacity expansion and online RAID level migration, see here 351.



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	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 & HDD replacement)	N/A	N-1, bad blocks found in the surviving HDD of the array.	N/A	N-2, bad blocks found in the surviving HDD of the array.
RAID Recovery (RAID Status: Not Active)	N/A	If re-plugging in all original HDD to the NAS and they can be spun up, identified, accessed, and the HDD superblock is not damaged.	N/A	If re- plugging in all original HDD to the NAS and they can be spun up, identified, accessed, and the HDD superblock is not damaged).
RAID Crash	N-2	N-2 failed HDD and any of the remaining HDD cannot be spun up/ identified/ accessed.	N-3	N-3 and any of the remaining HDD cannot be spun up/ identified/ accessed.

N = Number of hard disk drives (HDD) in the array

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The NAS supports the following actions according to the number of HDD and disk configurations supported. Please refer to the following table for the details.

Original Disk Configuration * No. of HDD	No. of New HDD	Action	New Disk Configuration * No. of HDD
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 1 * 2	1	Online RAID capacity expansion	RAID 1 * 2
RAID 5 * 3	1	Online RAID capacity expansion	RAID 5 * 3

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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
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
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

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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 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

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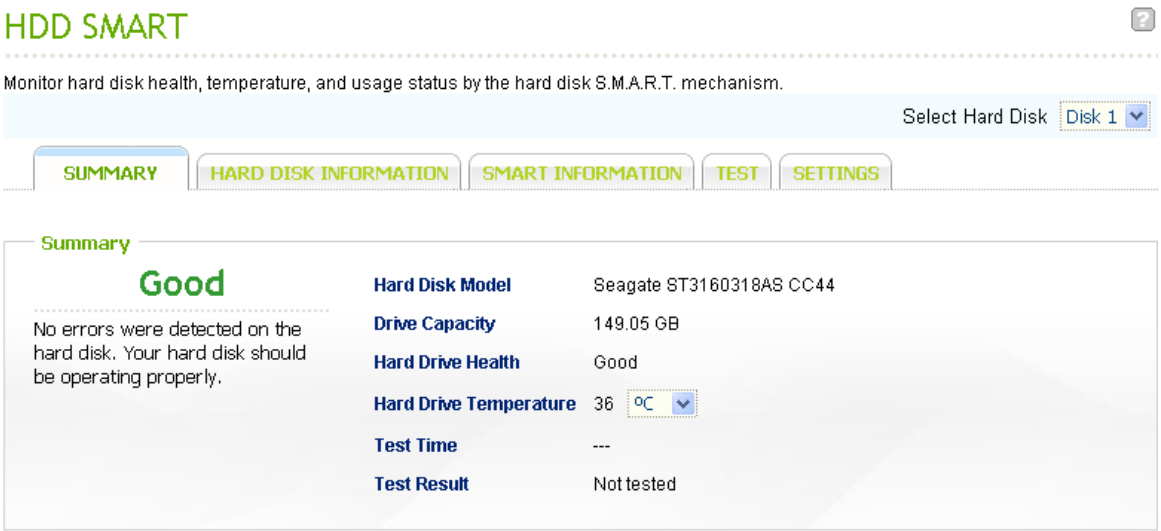
7.2.3 HDD SMART

You can monitor the 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.



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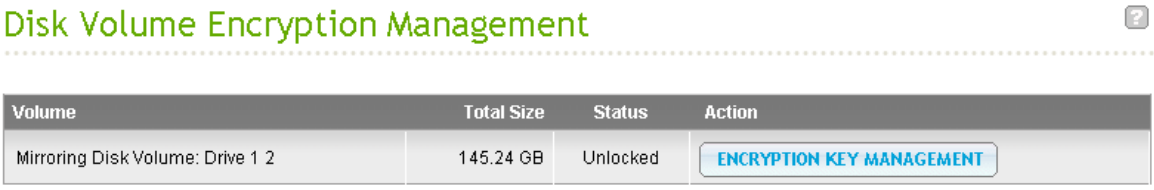
7.2.4 Encrypted File System

This feature is not supported by TS-110, TS-119, TS-210, TS-219, TS-219P, TS-410, TS-419P, TS-410U, and TS-419U.

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.



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7.2.5 iSCSI

The NAS supports built-in iSCSI service for server clustering and virtualized environments.

iSCSI Target Management

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.

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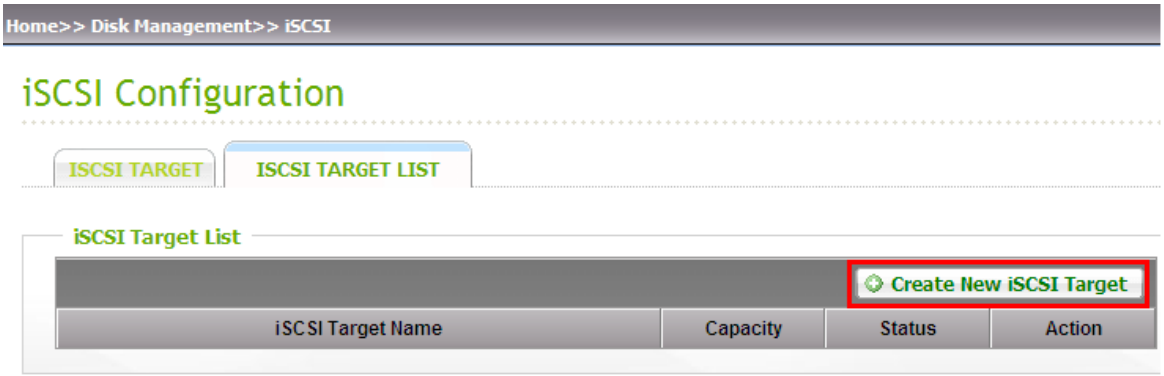
The description below applies to non Intel-based NAS or Intel-based NAS models running firmware prior to version 3.2.0 only.

Non Intel-based NAS refers to TS-110, TS-119, TS-210, TS-219, TS-219P, TS-410, TS-419P, TS-410U, TS-419U. 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-639 Pro, TS-659 Pro, SS-839 Pro, TS-859 Pro, TS-809 Pro, and TS-809U-RP.

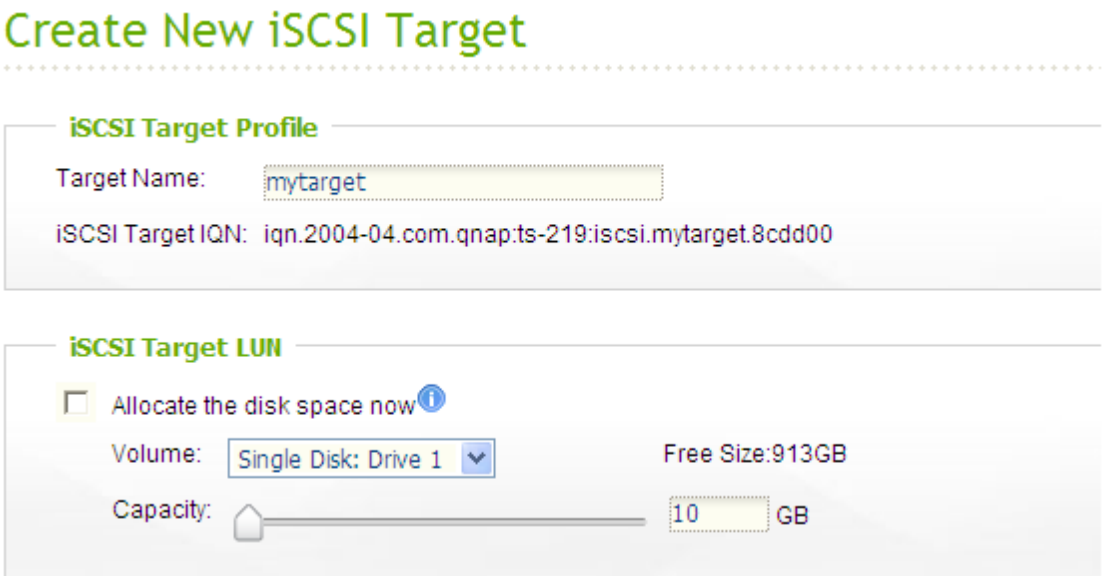
Follow the steps below to create iSCSI targets and LUN on the NAS.

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.



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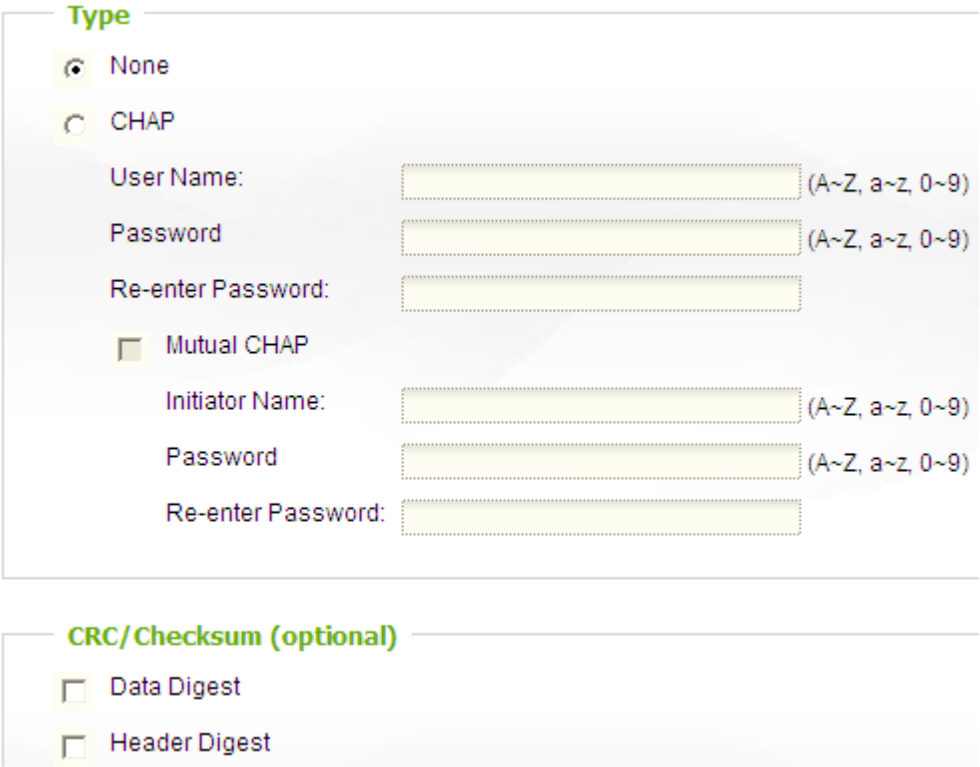
Enter the CHAP authentication settings (optional) if your NAS is located on a public or untrusted network. If you enter the user name and password settings under 'CHAP' only, only the iSCSI target authenticates the initiator. In other words, the initiators have to enter the user name password to connect 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	• The only valid characters are 0-9, a-z, A-Z • Maximum length: 256 characters	• The only valid characters are 0-9, a-z, A-Z • Maximum length: 12-16 characters
Mutual CHAP	• The only valid characters are 0-9, a-z, A-Z, : (colon), . (dot), and - (dash) • Maximum length: 12-16 characters	• The only valid characters are 0-9, a-z, A-Z, : (colon), . (dot), and - (dash) • Maximum length: 12-16 characters



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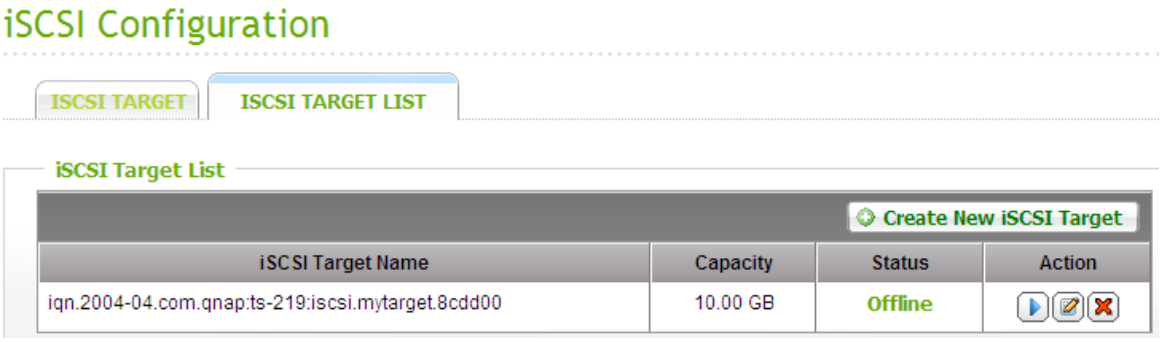
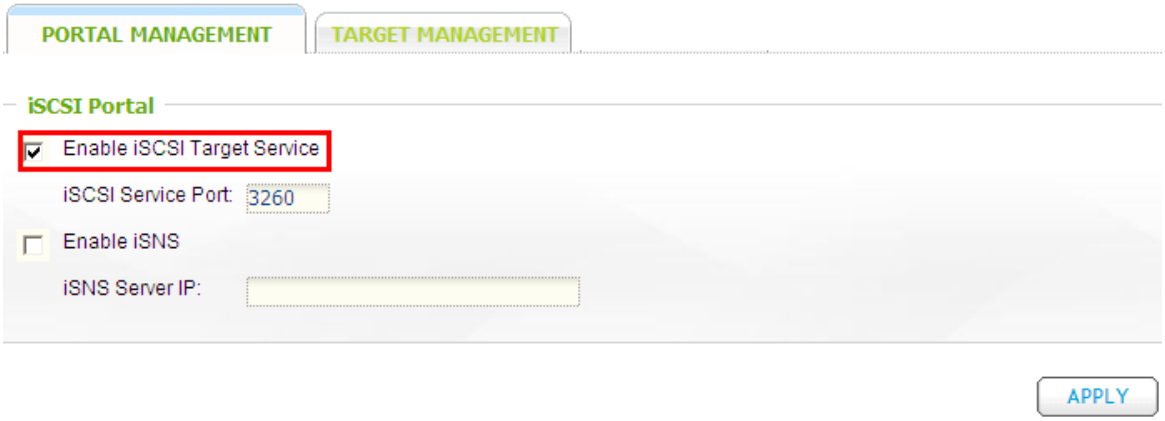
Upon successful creation the iSCSI target will be shown on the iSCSI Target List.



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



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iSCSI Quick Configuration Wizard

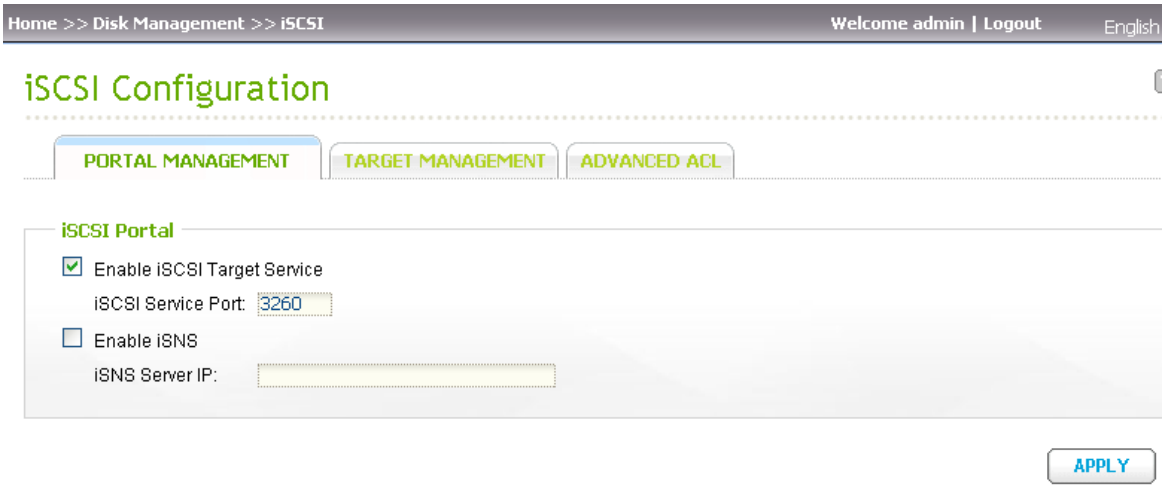
The description below applies to Intel-based NAS models running firmware version 3.2.0 or later only.

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-639 Pro, TS-659 Pro, SS-839 Pro, TS-859 Pro, TS-809 Pro, and TS-809U-RP.

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.



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'.

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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'.

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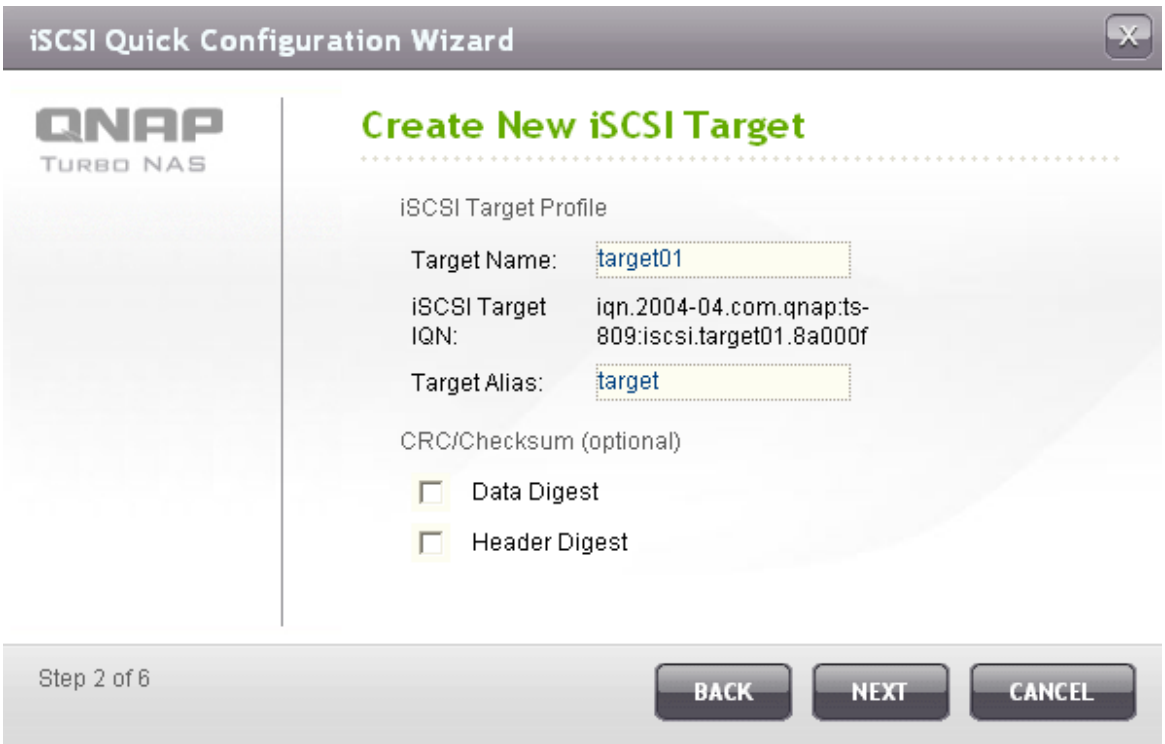
5. Enter the target name and target alias. You may check the options 'Data Digest' and/or 'Header Digest' (optional). These are the parameters that the iSCSI initiator will be verified when it attempts to connect to the iSCSI target.



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

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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'.

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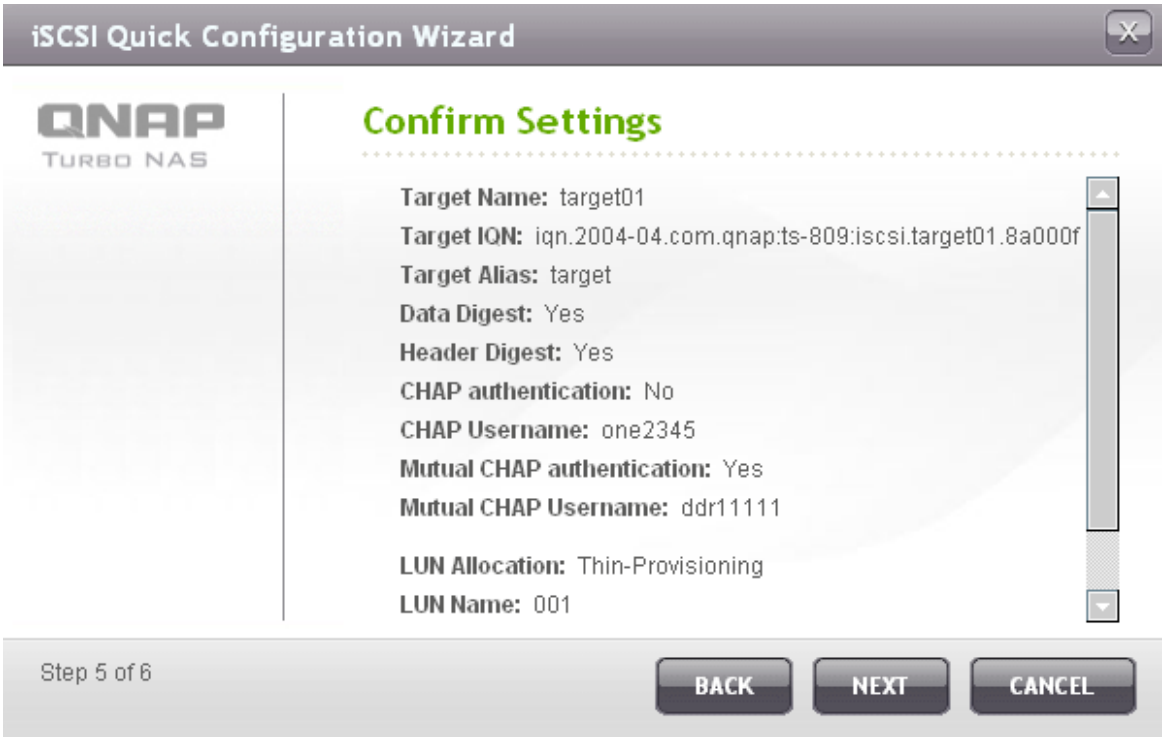
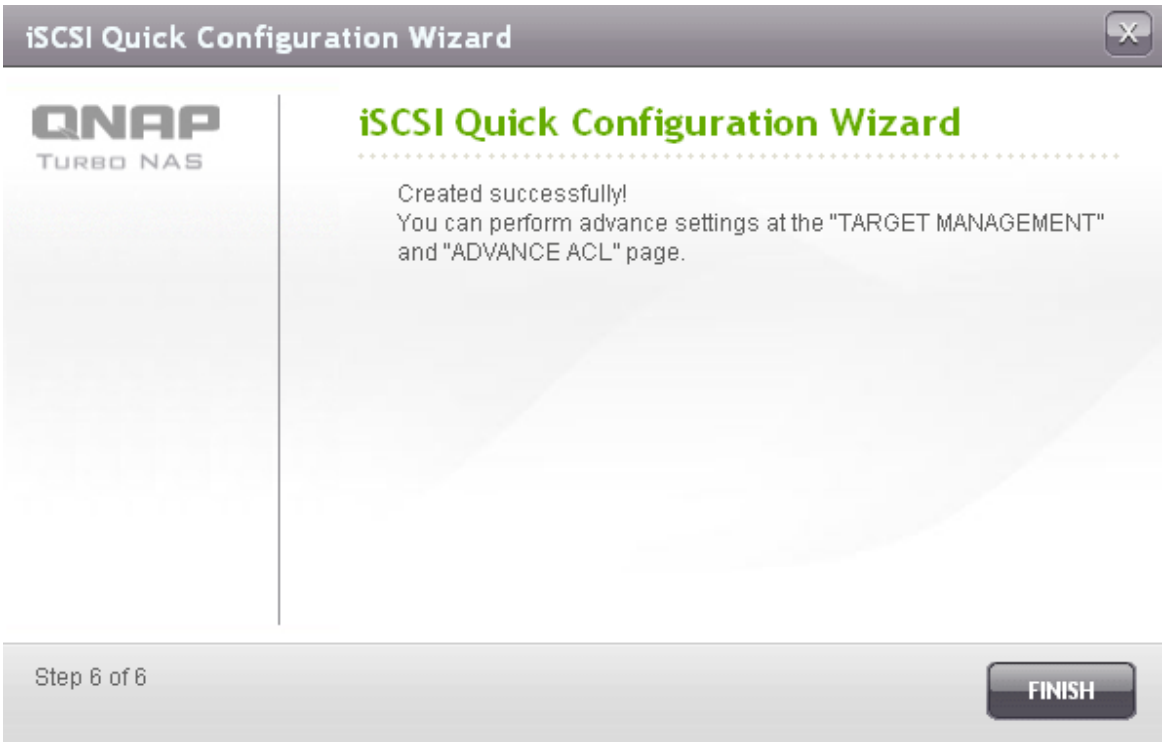
8. Confirm the settings and click 'Next'.



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



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

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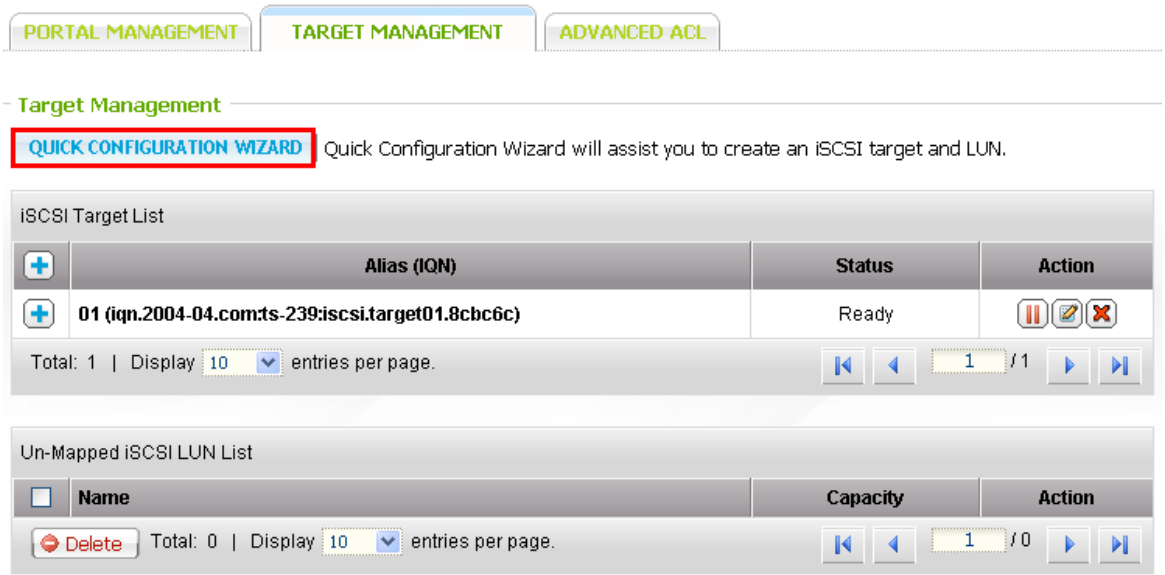
Create more LUN for a target (Intel-based NAS models running firmware version 3.2.0 or later only)

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'.



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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'.

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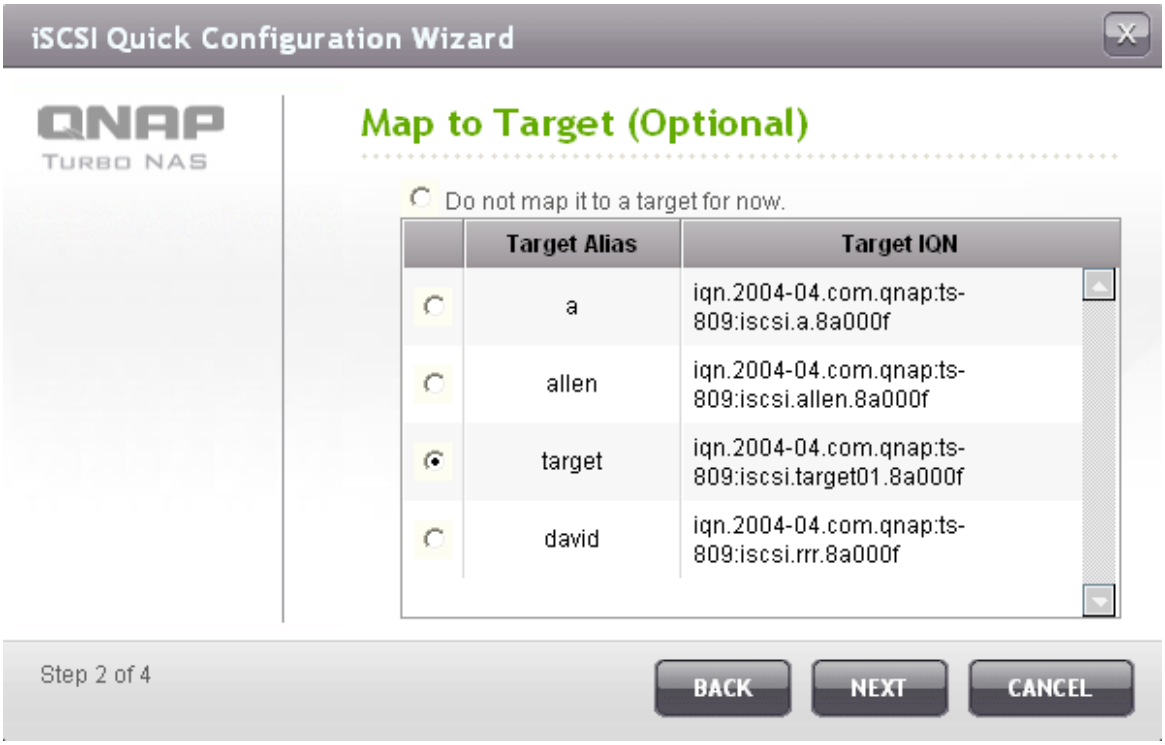
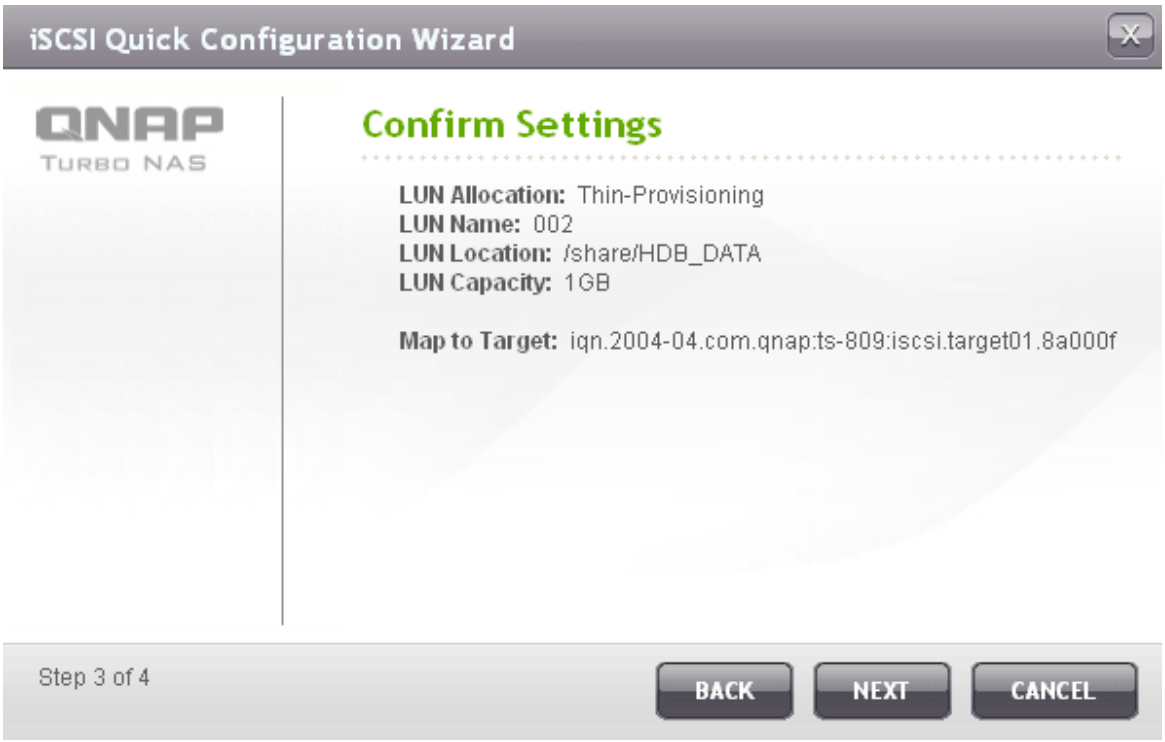
4. Select the target to map the LUN to. You can also select not to map the LUN for now.



5. Confirm the settings and click 'Next'.



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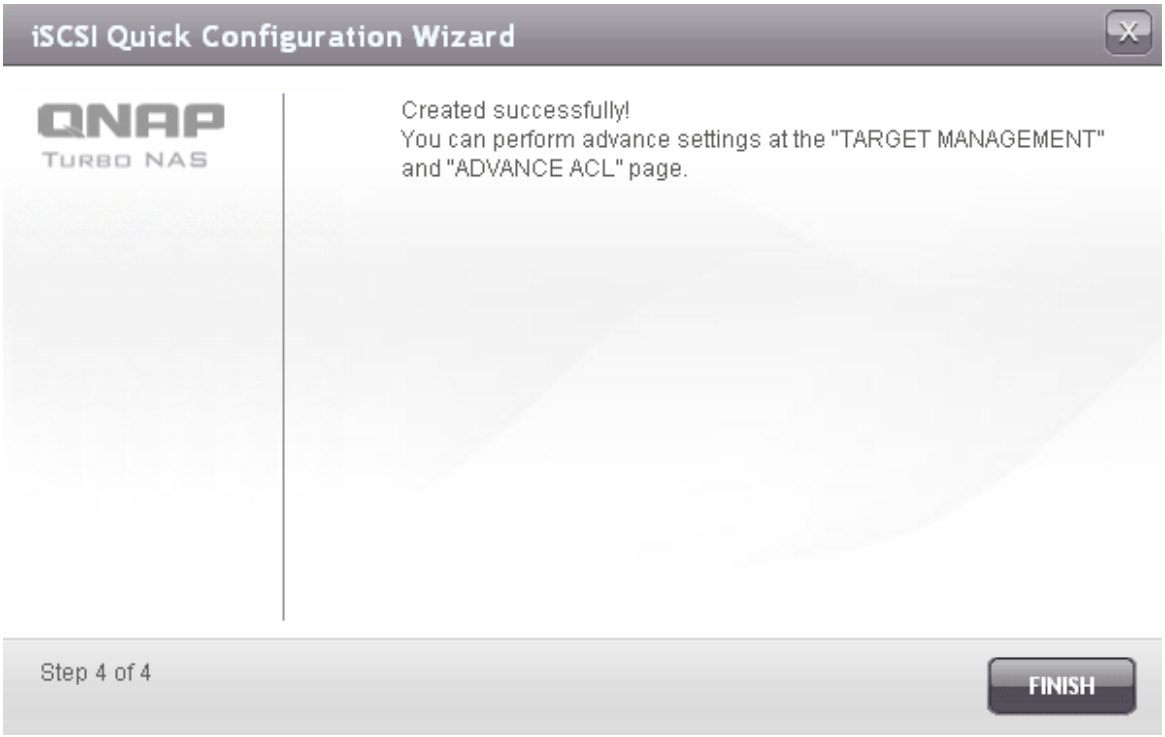
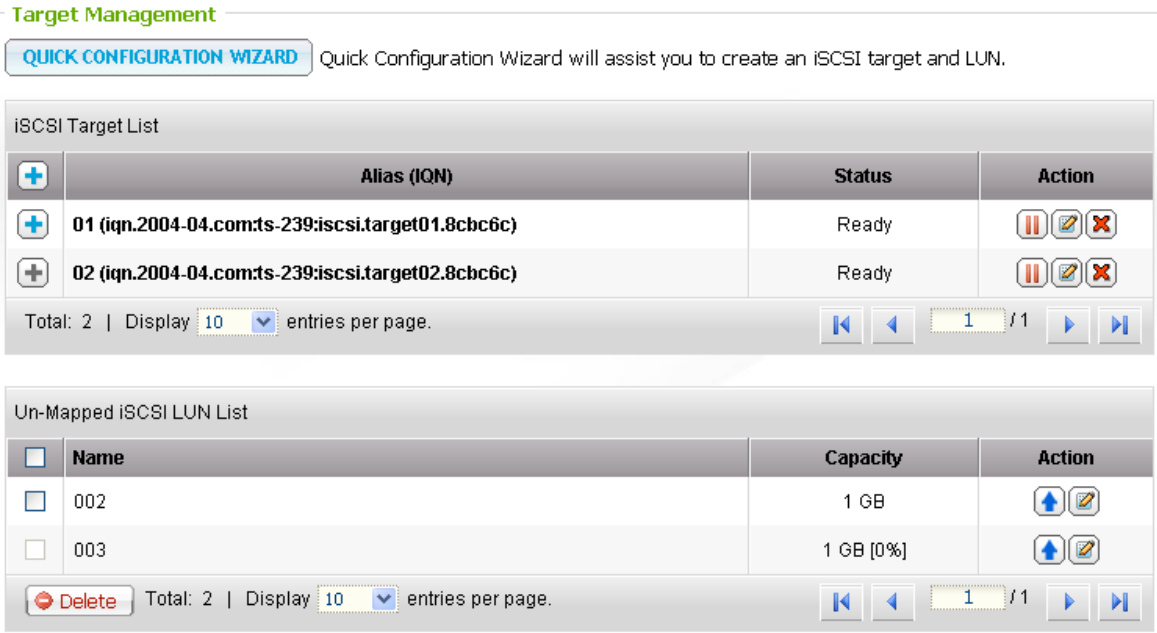
6. When the LUN has been created, click 'Finish' to exit the wizard.



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.



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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.

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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.

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Switch the mapping of LUN (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).

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.

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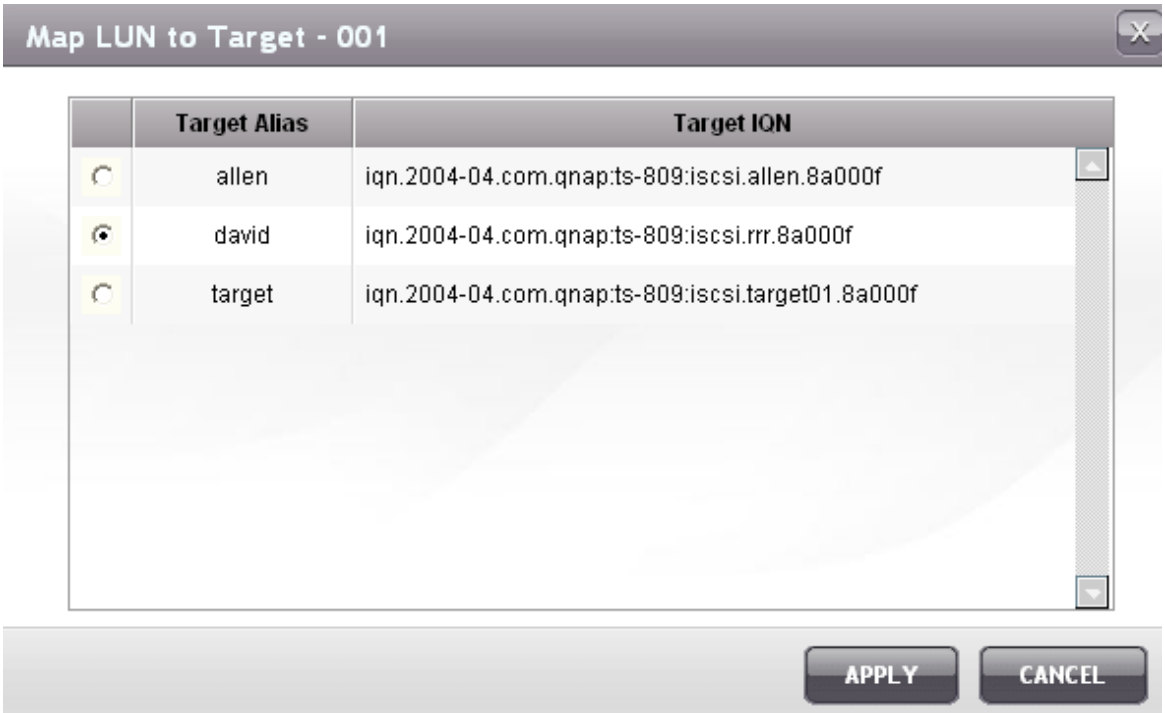
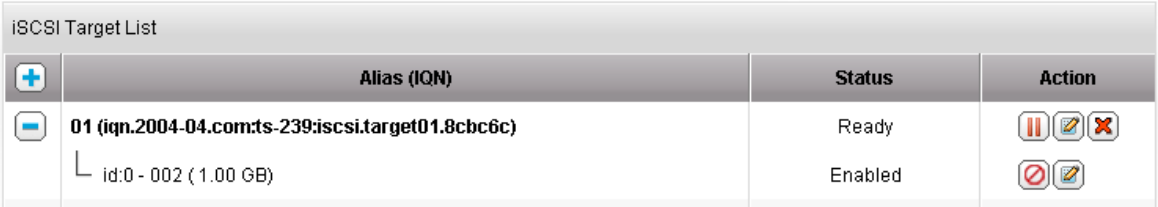
3. Select the target to map the LUN to and click 'Apply'.



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.

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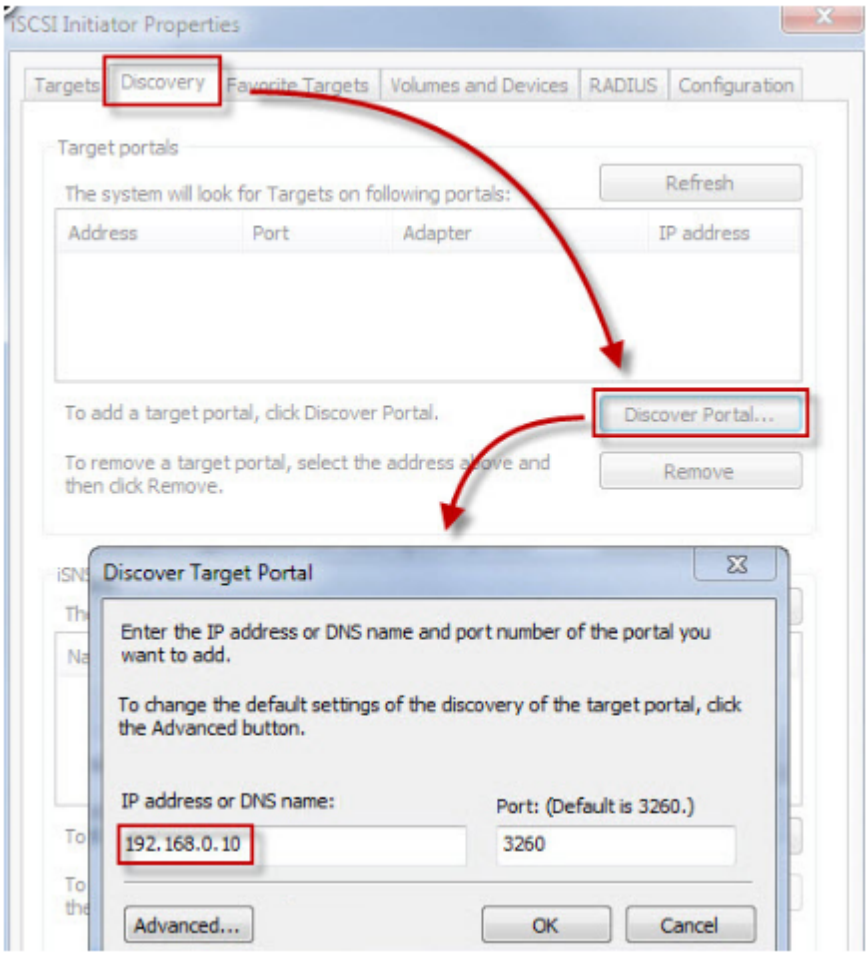
Connect to the iSCSI targets by Microsoft iSCSI initiator on Windows

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.



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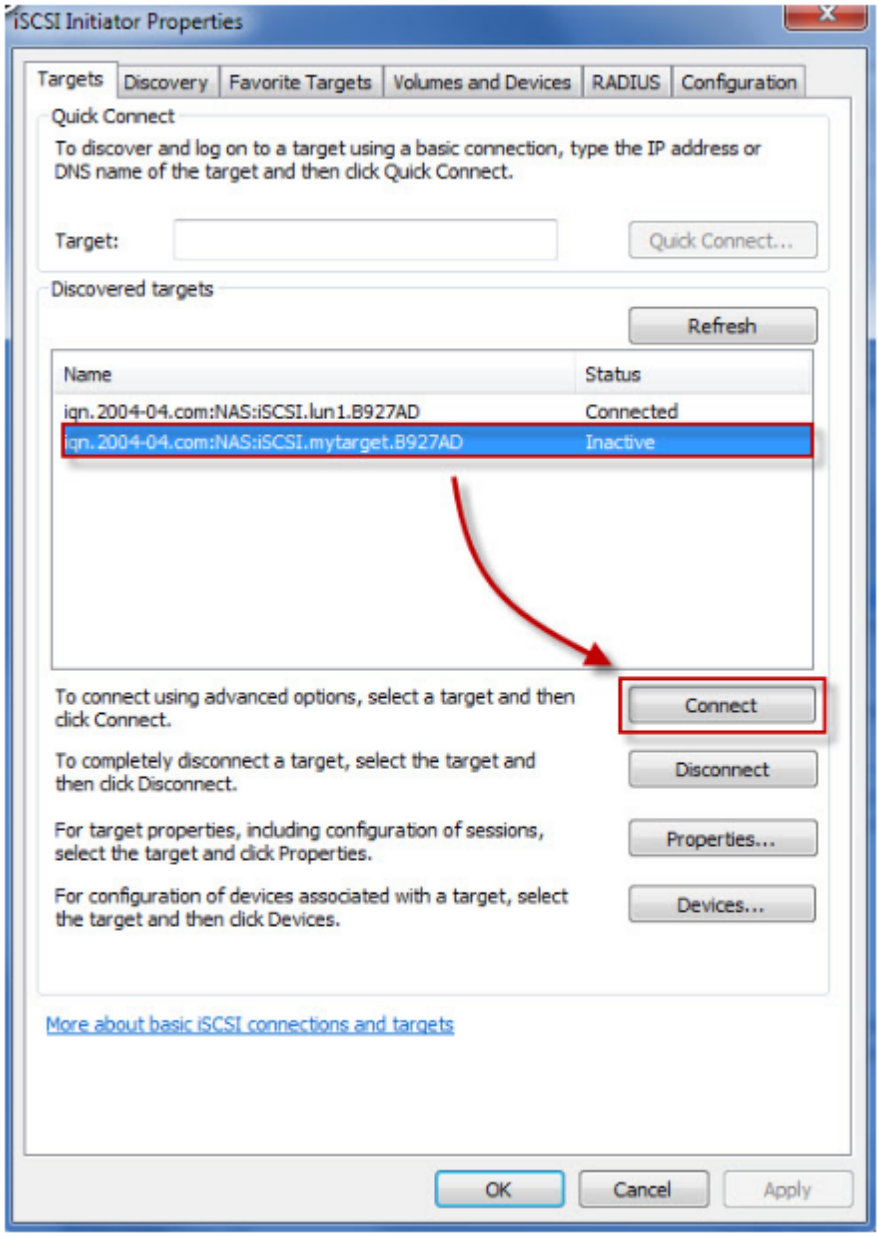
The available iSCSI targets and their status will then be shown under the 'Targets' tab. Select the target you wish to connect then click 'Connect'.



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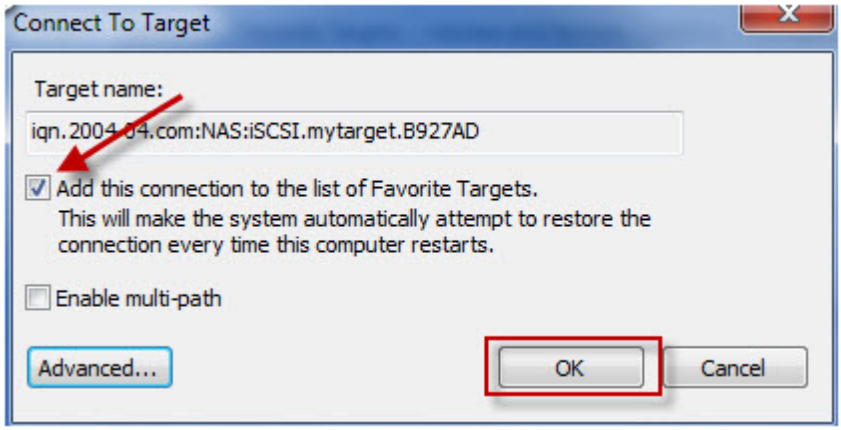
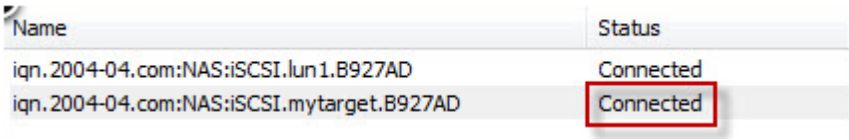
You may click 'Advanced' to specify the logon information if you have configured the authentication otherwise simply click 'OK' to continue.



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

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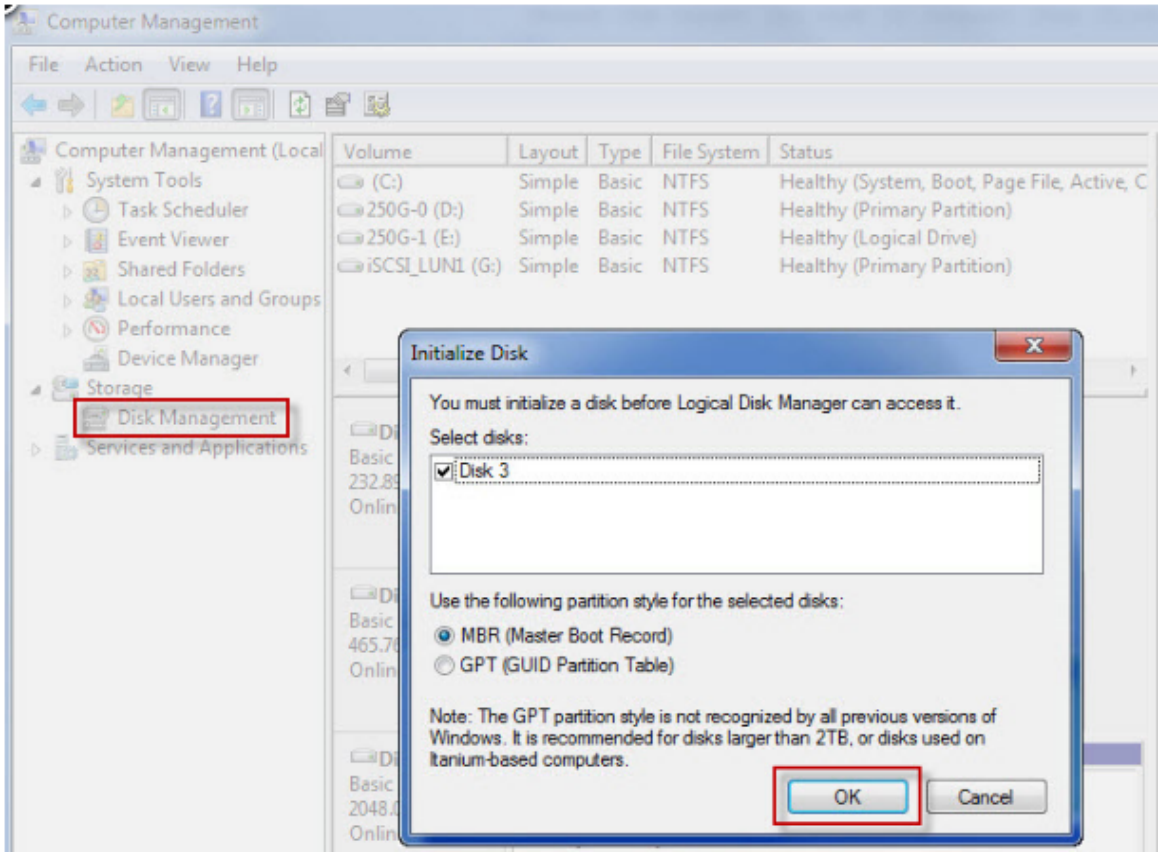
After the target has been connected Windows will detect its presence and treat it as if there was a new hard disk drive has been added which needs to be initialized and formatted before we can use it. Right-click 'My Computer' > 'Manage' to open the 'Computer Management' window then go to 'Disk Management' 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.



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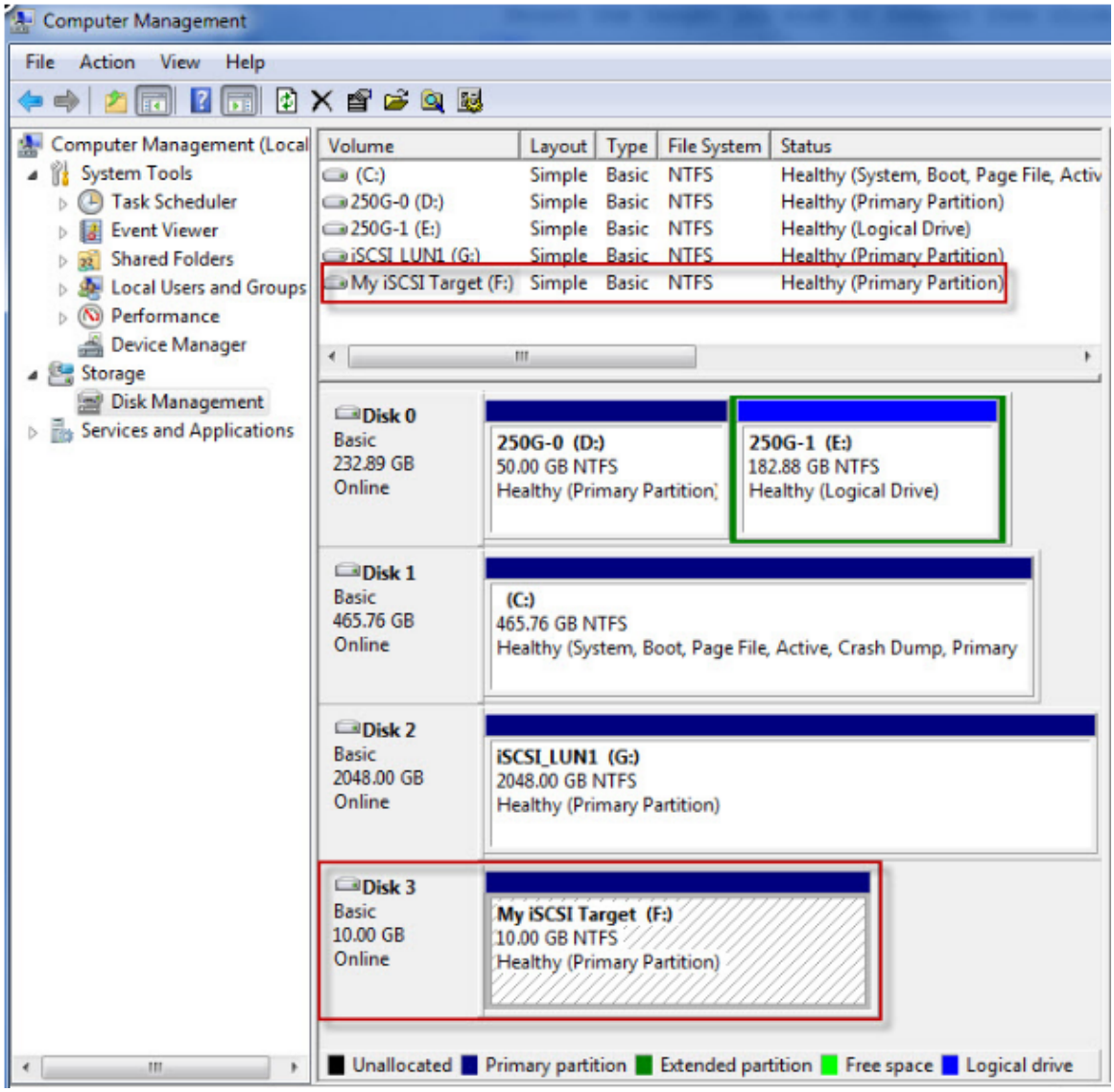
After disk initialization and formatting, the new drive is attached to your PC. You can now use this iSCSI target as a regular disk partition.



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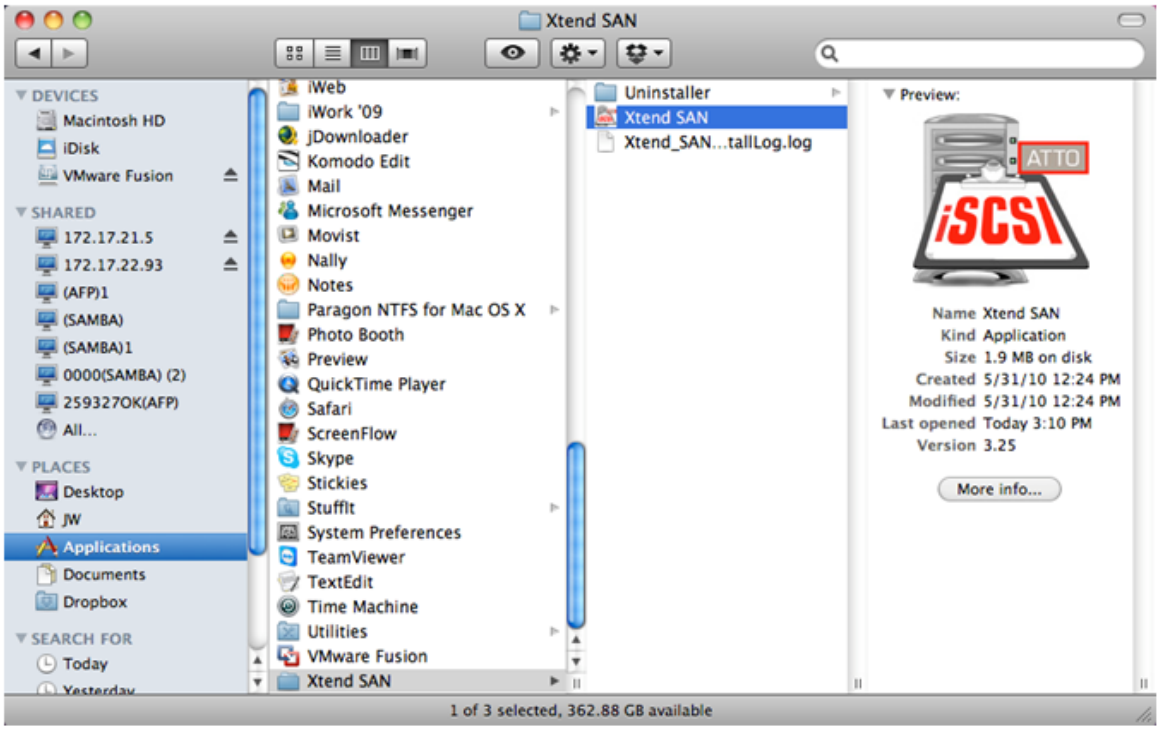
Connect to the iSCSI targets by Xtend SAN iSCSI Initiator on Mac OS

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'.



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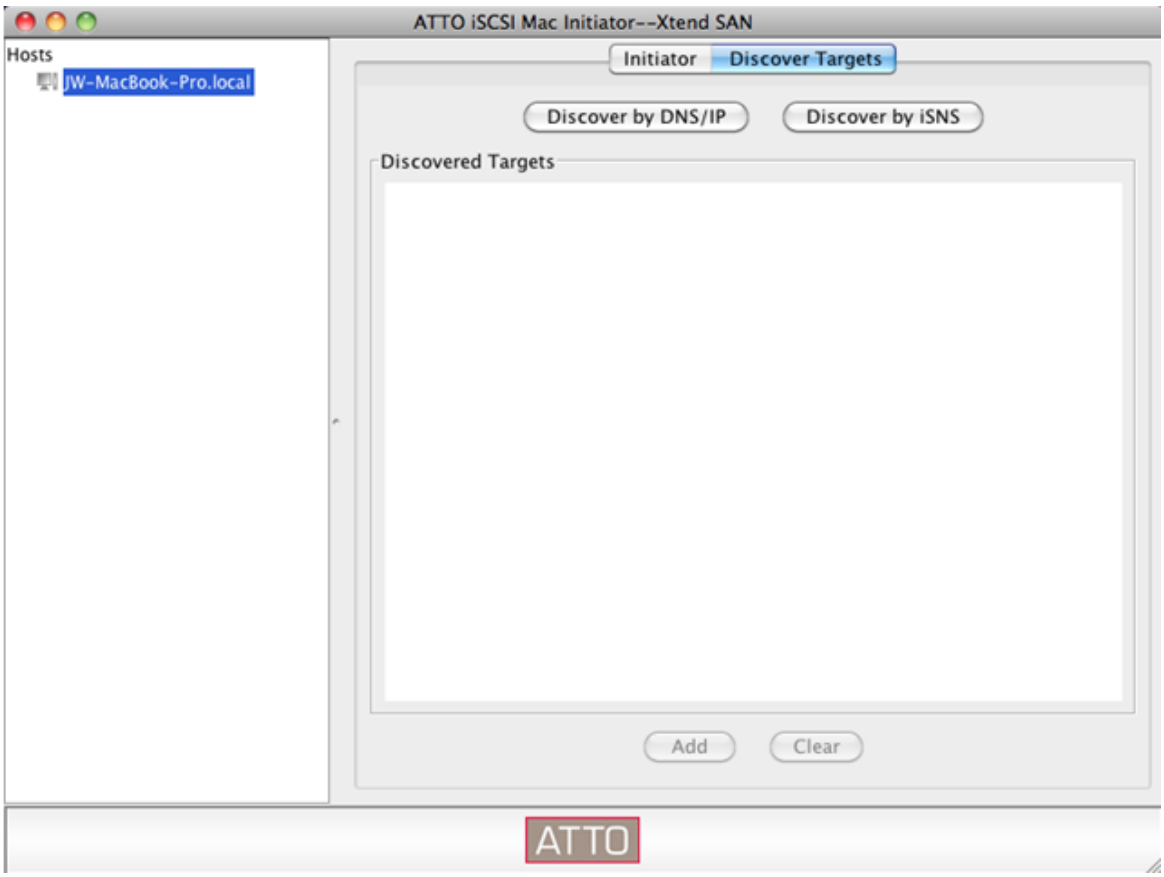
Click the 'Discover Targets' tab, you can either choose 'Discover by DNS/IP' or 'Discover by iSNS' according to the network topology. In this example, we will use the IP address to discover the iSCSI targets.



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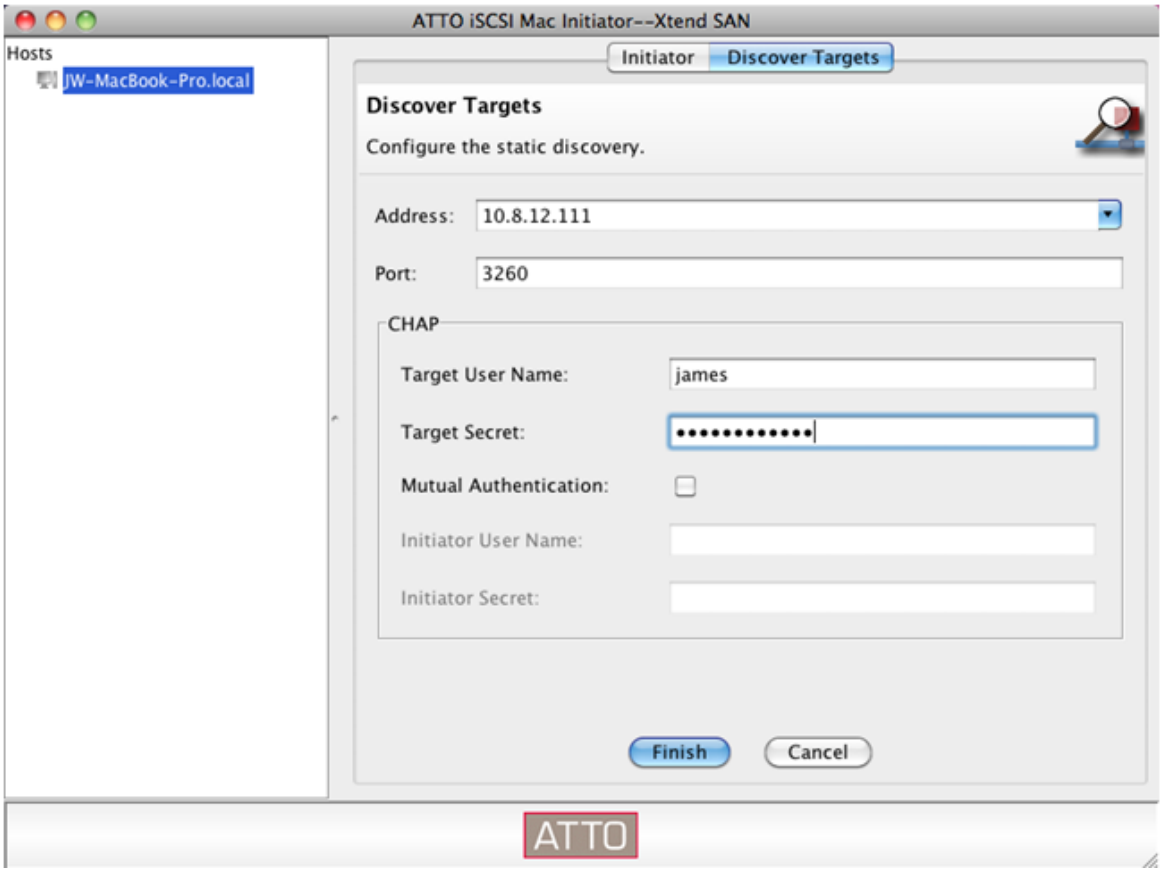
Follow the screen instructions and enter the server address, iSCSI target port number (default: 3260), and CHAP information (if applicable). Click 'Finish' to retrieve the target list after all the data have been entered correctly.



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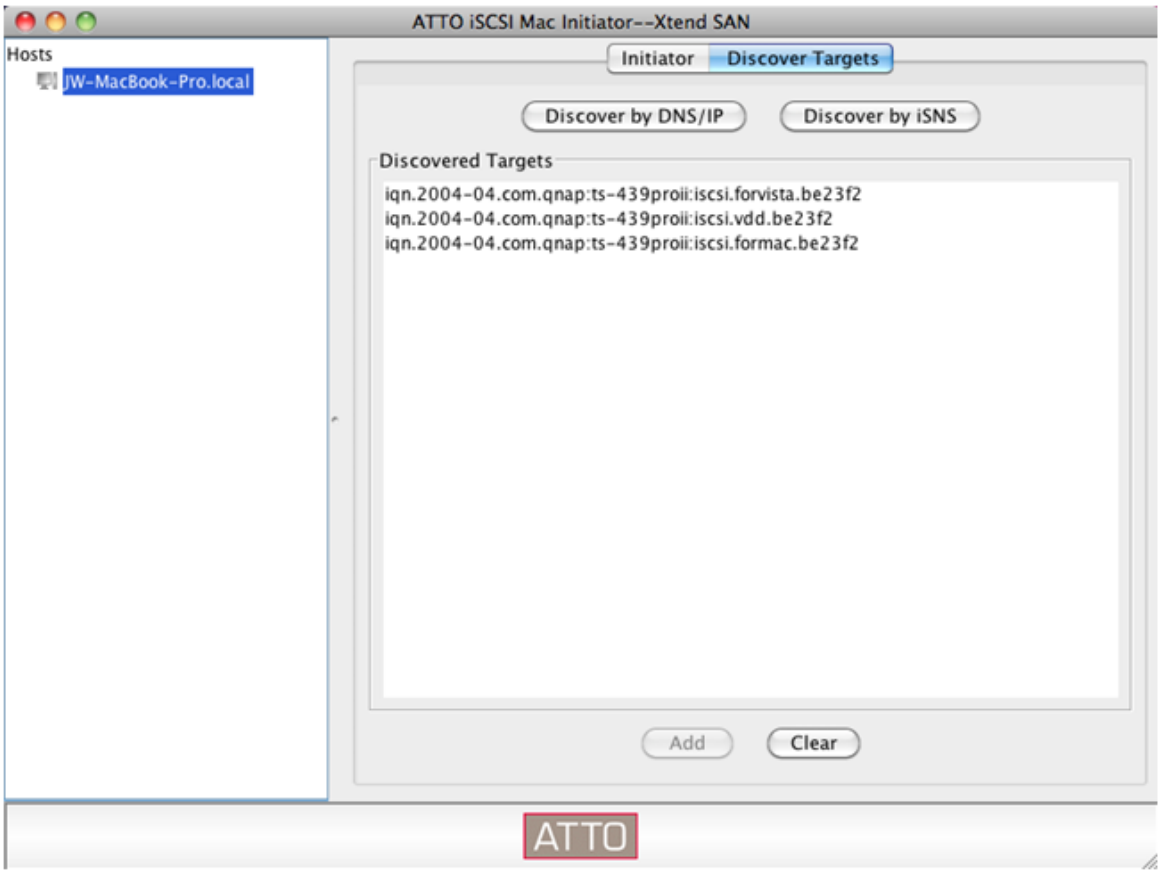
All the available iSCSI targets on the NAS will be shown. Select the target you would like to connect and click 'Add'.



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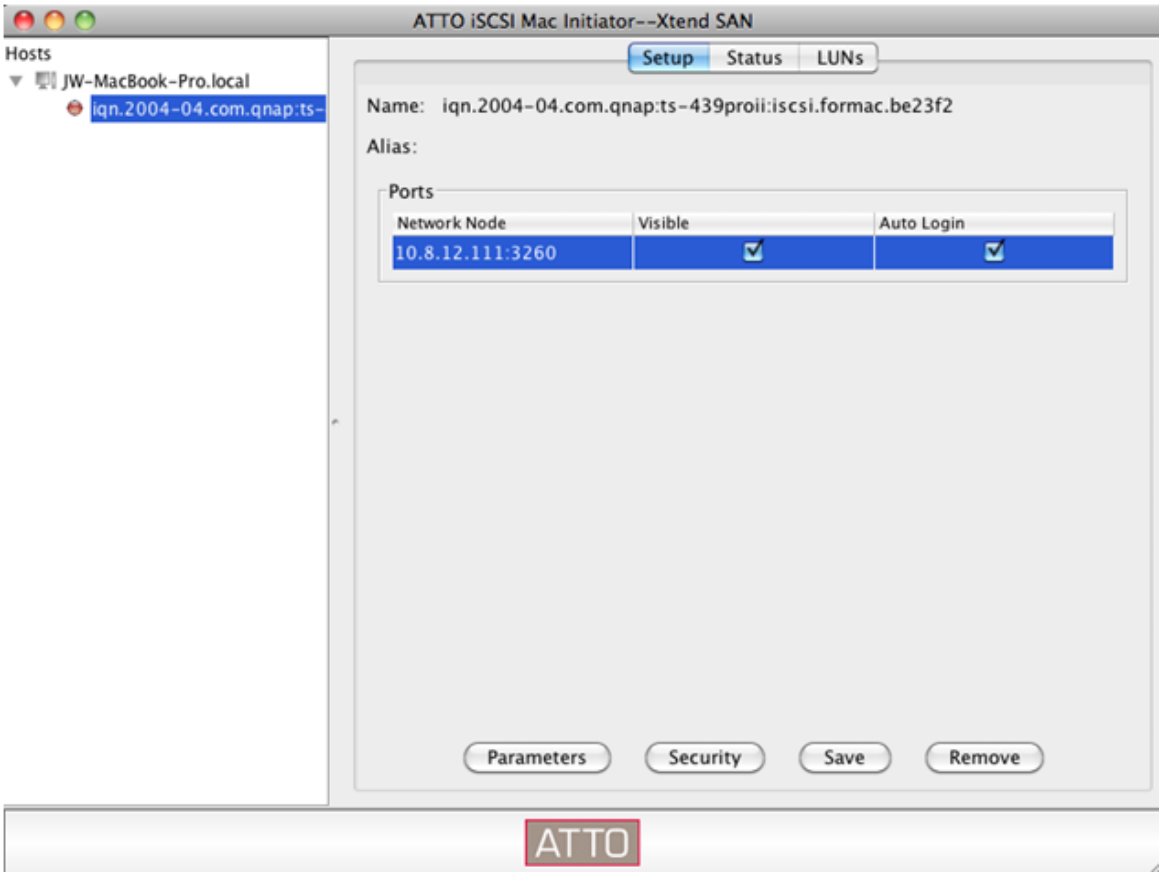
You can configure the connection properties of the selected iSCSI target in the 'Setup' tab.



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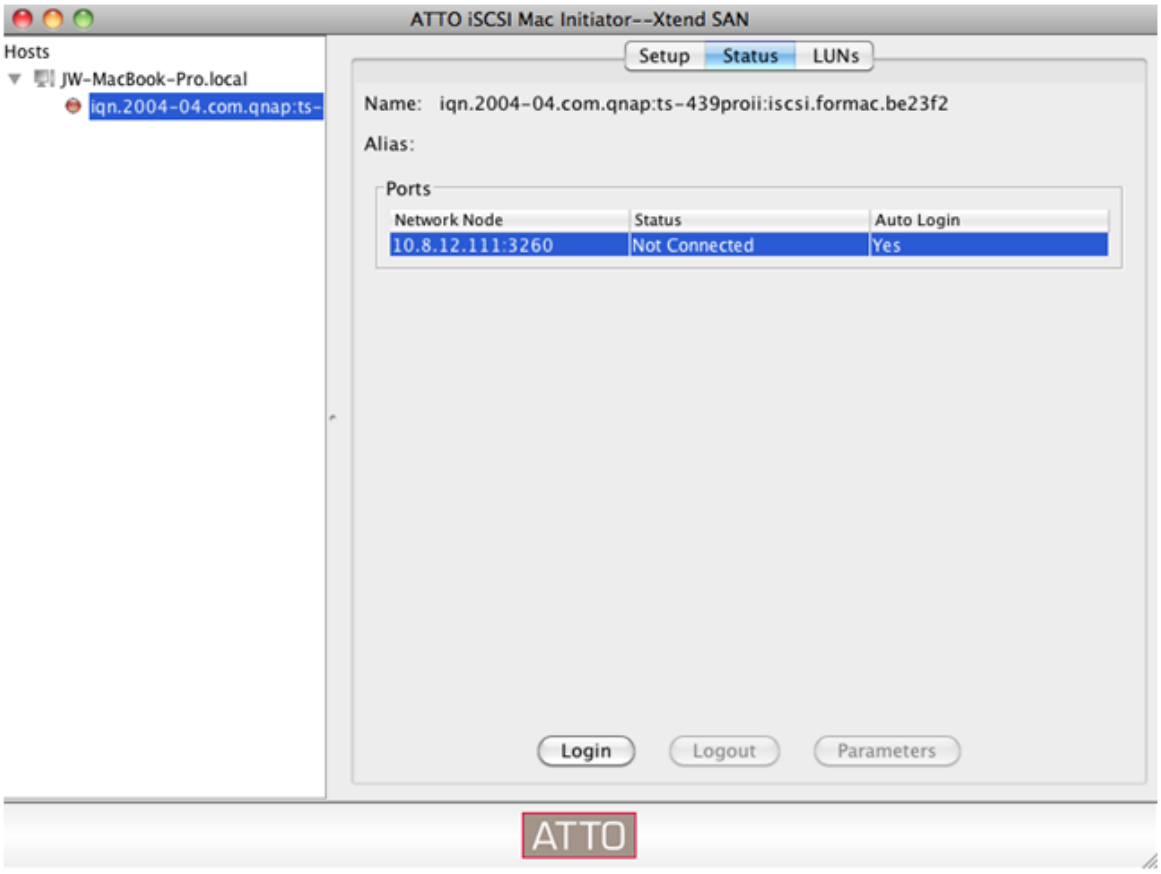
Click the 'Status' tab, select the target to connect. Then click 'Login' to proceed.



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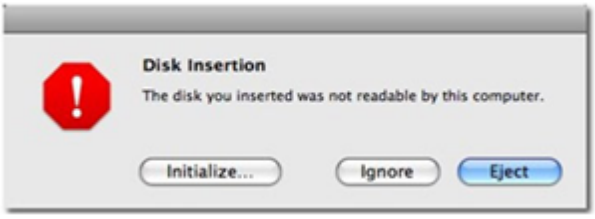
The first time you logon to the iSCSI target, a popup message will be shown to remind you the disk is not initialized. Click 'Initialize…' to format the disk. You can also open the 'Disk Utilities' application to do the initialization.



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

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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]

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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
```

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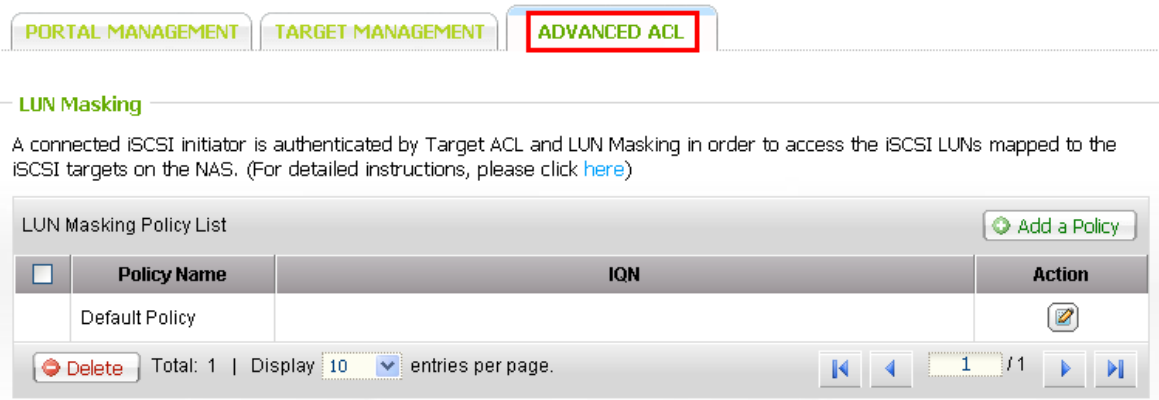
ADVANCED ACL

The description below applies to Intel-based NAS models running firmware version 3.2.0 or later 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-639 Pro, TS-659 Pro, SS-839 Pro, TS-859 Pro, TS-809 Pro, and TS-809U-RP.

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'.



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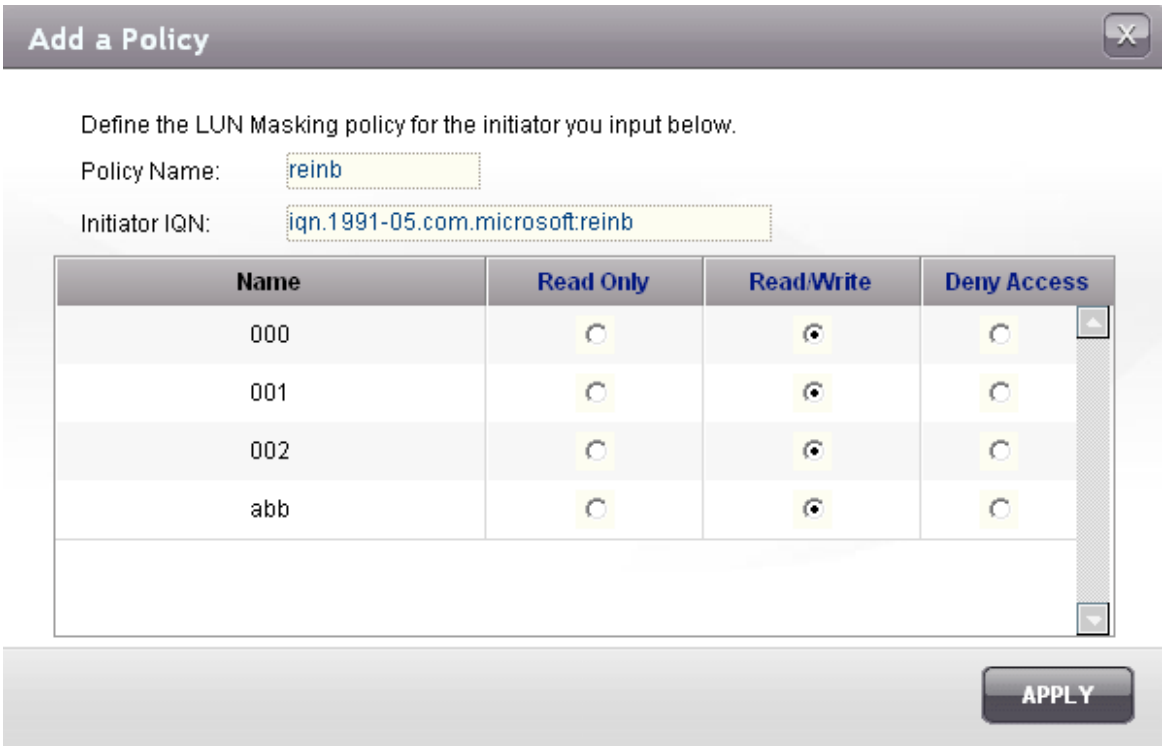
Enter the policy name, the initiator IQN, and assign the access right for each LUN created on the NAS.

- 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.



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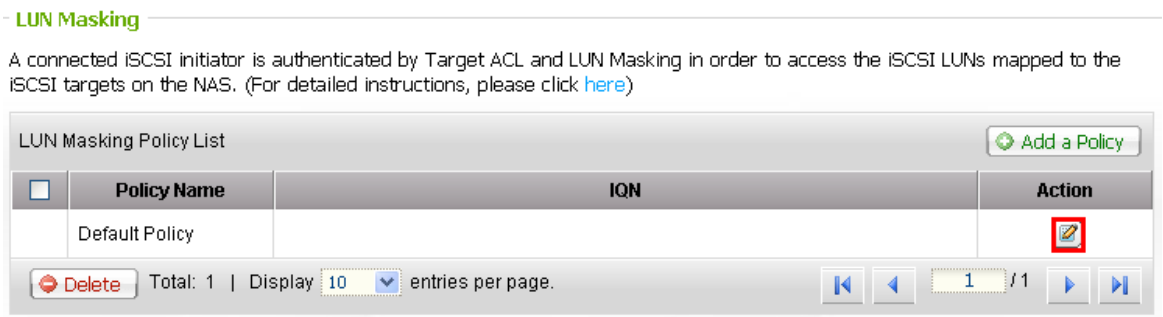
If no LUN masking policy is specified for a connected iSCSI initiator, the default policy will be applied. The system default policy allows read and write access from all the connected iSCSI initiators. You can click (Edit) on the LUN masking list to edit the default policy.

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



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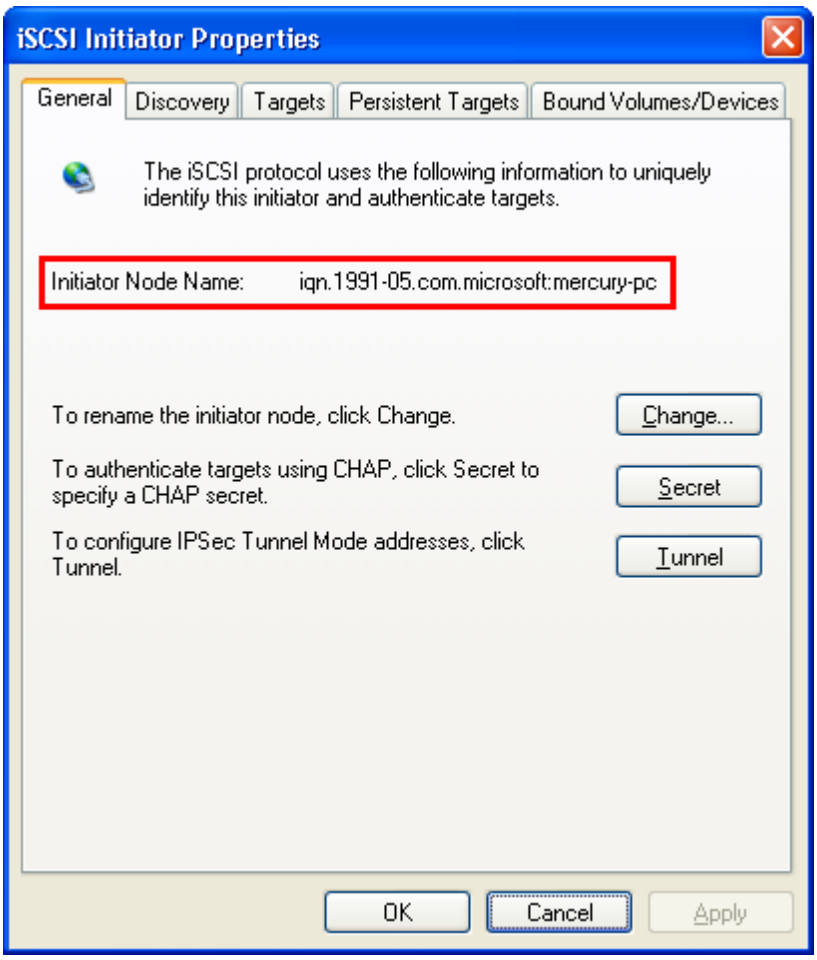
Hint: How do I find the initiator IQN?

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



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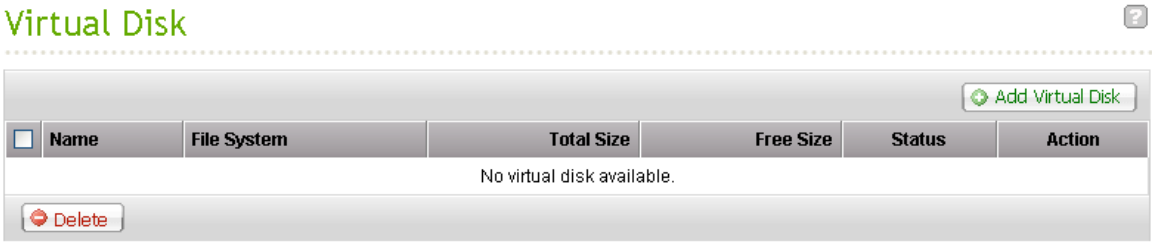
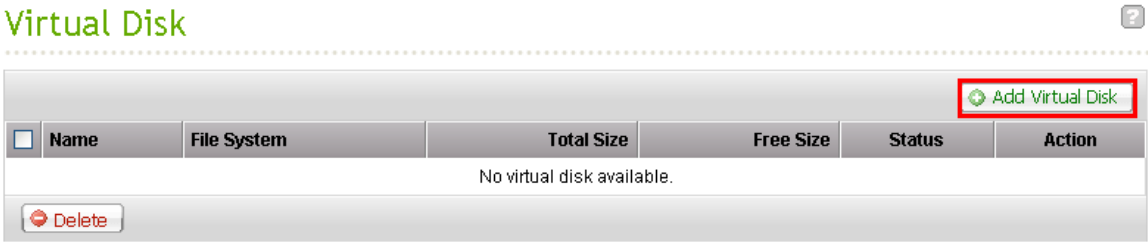
7.2.6 Virtual Disk

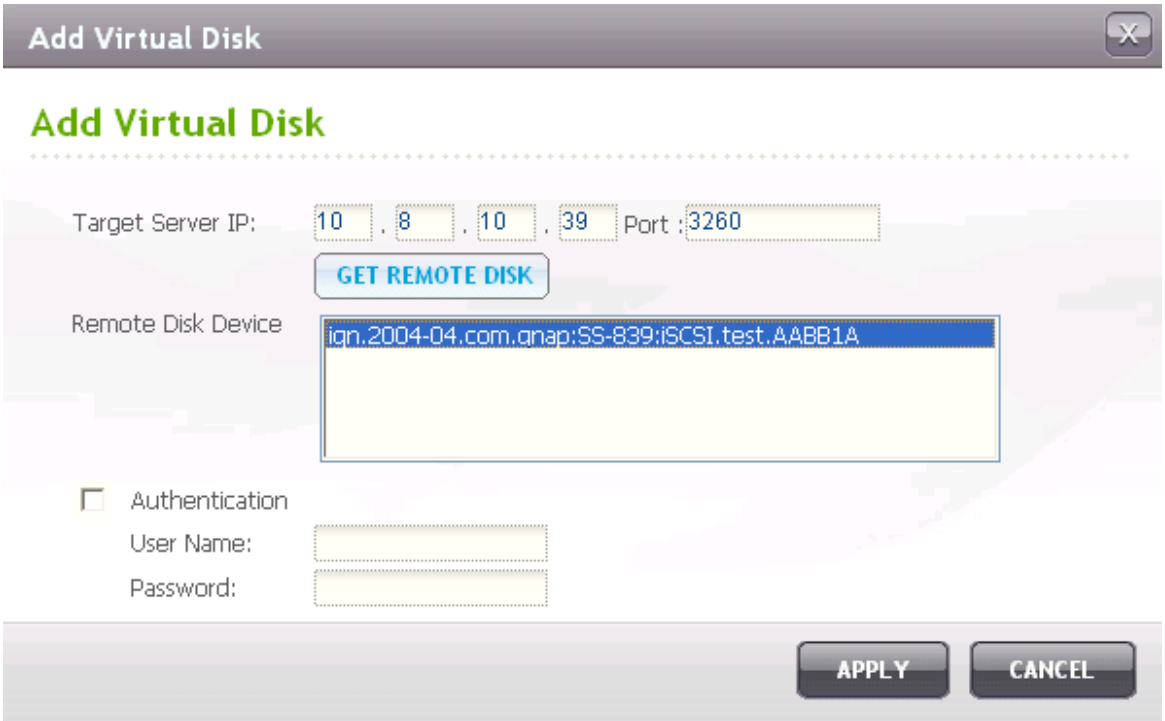
You can use this function to add the iSCSI targets of other QNAP NAS or storage servers to the NAS as the virtual disks for storage capacity expansion. The NAS supports maximum 8 virtual disks.



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'. If authentication is required, enter the user name and the password. Then, click 'Apply'.



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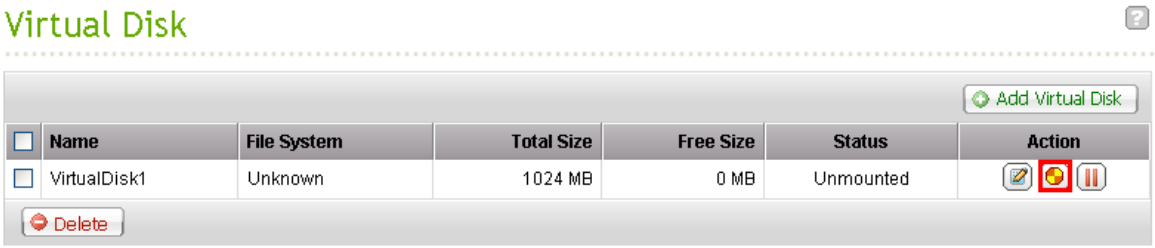
Click to format the virtual disk.



When the status of the virtual disk is 'Ready', you can start to use the virtual disk as a disk volume of the NAS.

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7.3 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 110
User Groups 115
Share Folders 116
Quota 133

7.3.1 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
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-639 Pro, TS-659 Pro, SS-839 Pro, TS-859 Pro, TS-809 Pro, TS-809U-RP

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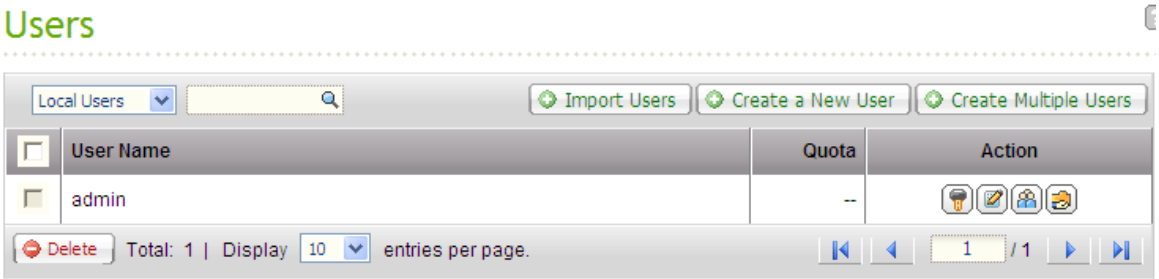
The following information is required to create a new user:

- 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.



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Import User

You can import multiple user accounts to the NAS with this feature. To import multiple users, follow the steps below:

1. Click 'Import Users'.

2. Select the option 'Overwrite duplicate users' if you want to replace the existing users.

3. Select the file of users and click 'Next'.

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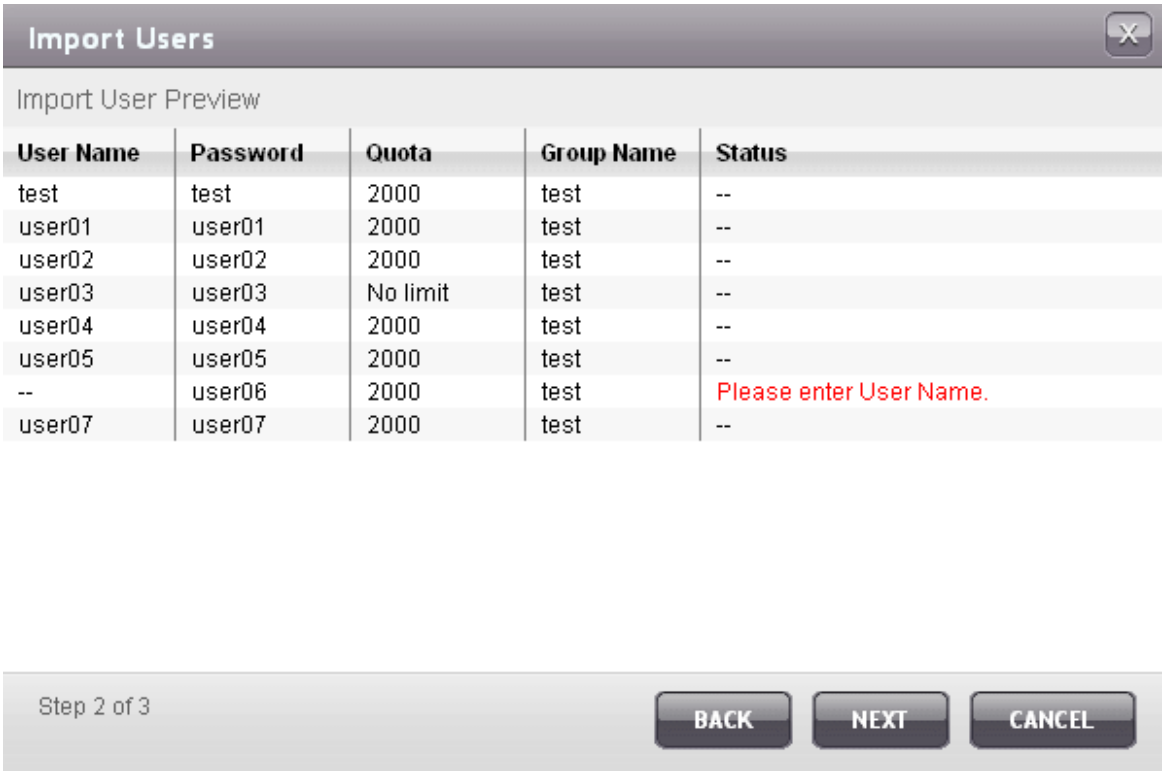
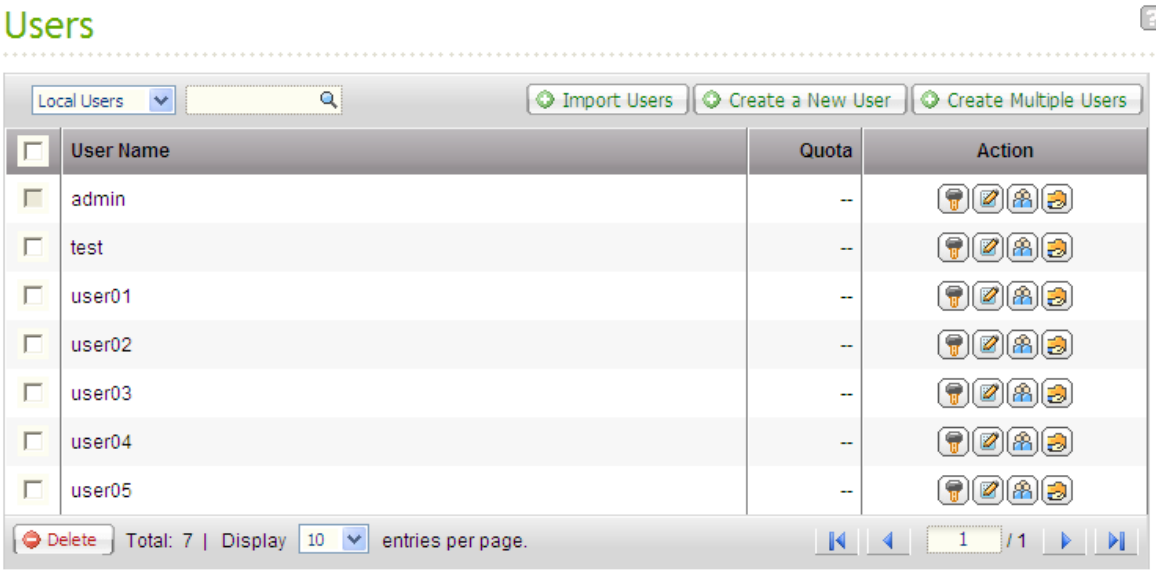
4. A list of imported users will be shown. Abnormal or incorrect entries will be skipped. Click 'Next'.



User Name	Password	Quota	Group Name	Status
test	test	2000	test	--
user01	user01	2000	test	--
user02	user02	2000	test	--
user03	user03	No limit	test	--
user04	user04	2000	test	--
user05	user05	2000	test	--
--	user06	2000	test	Please enter User Name.
user07	user07	2000	test	--

5. The imported user accounts will be shown.



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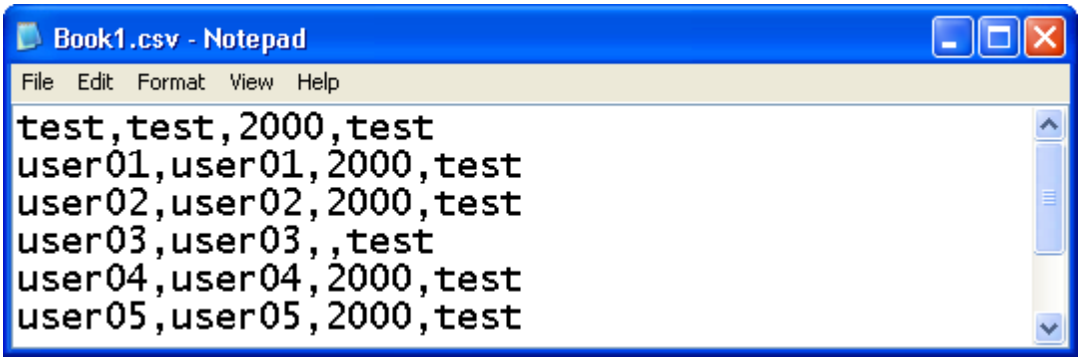
The NAS supports importing user accounts from txt or csv files. To create a list of user accounts with these file types, follow the steps below.

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

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7.3.2 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
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-639 Pro, TS-659 Pro, SS-839 Pro, TS-859 Pro, TS-809 Pro, TS-809U-RP

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

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7.3.3 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
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-639 Pro, TS-659 Pro, SS-839 Pro, TS-859 Pro, TS-809 Pro, TS-809U-RP

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).

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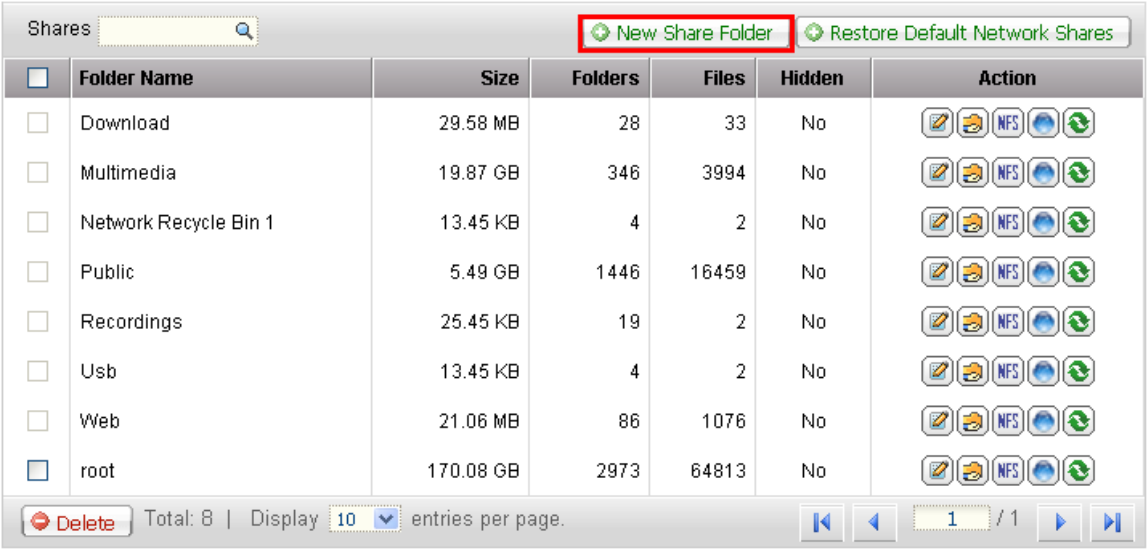
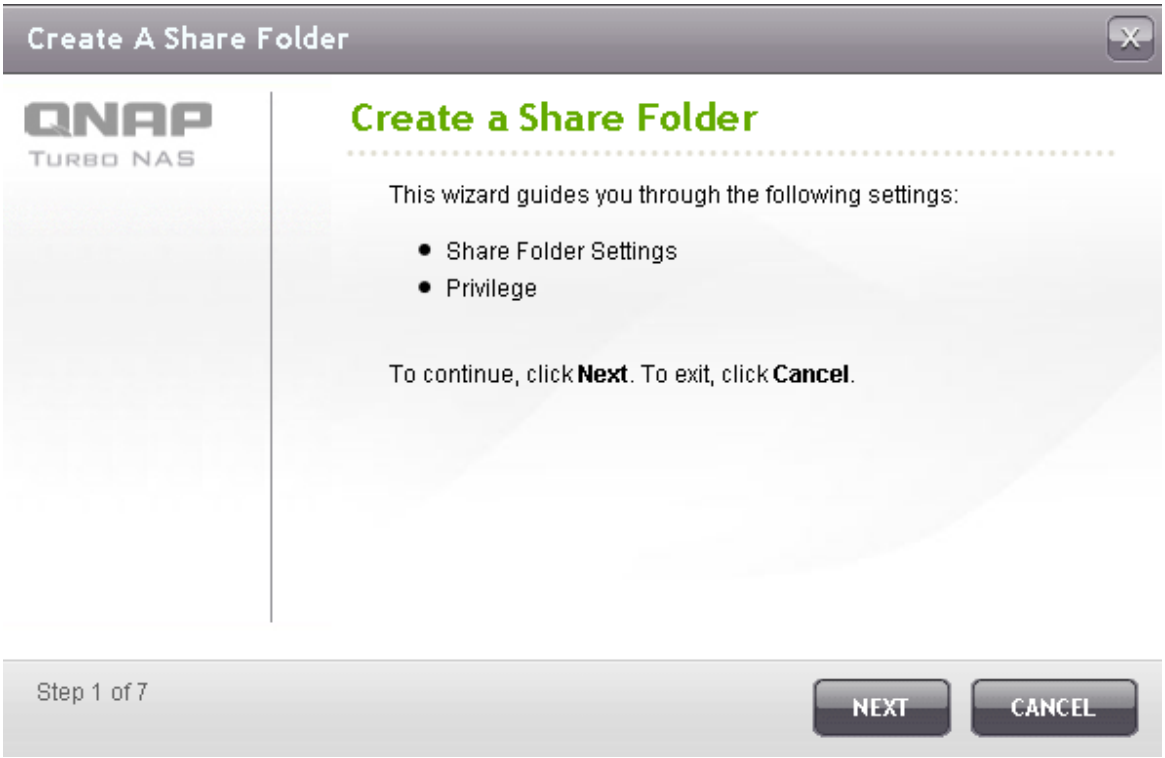
To create a share folder, click 'New Share Folder'.



Click 'Next'.



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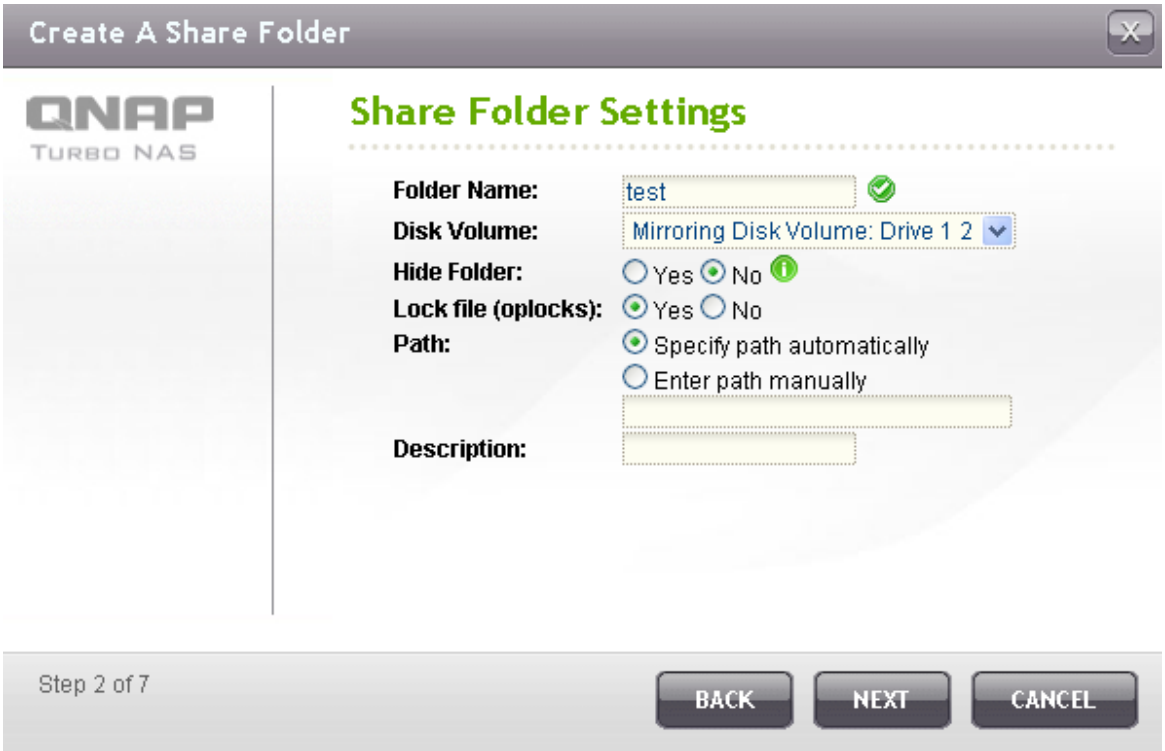
Enter the share folder settings.

- 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.



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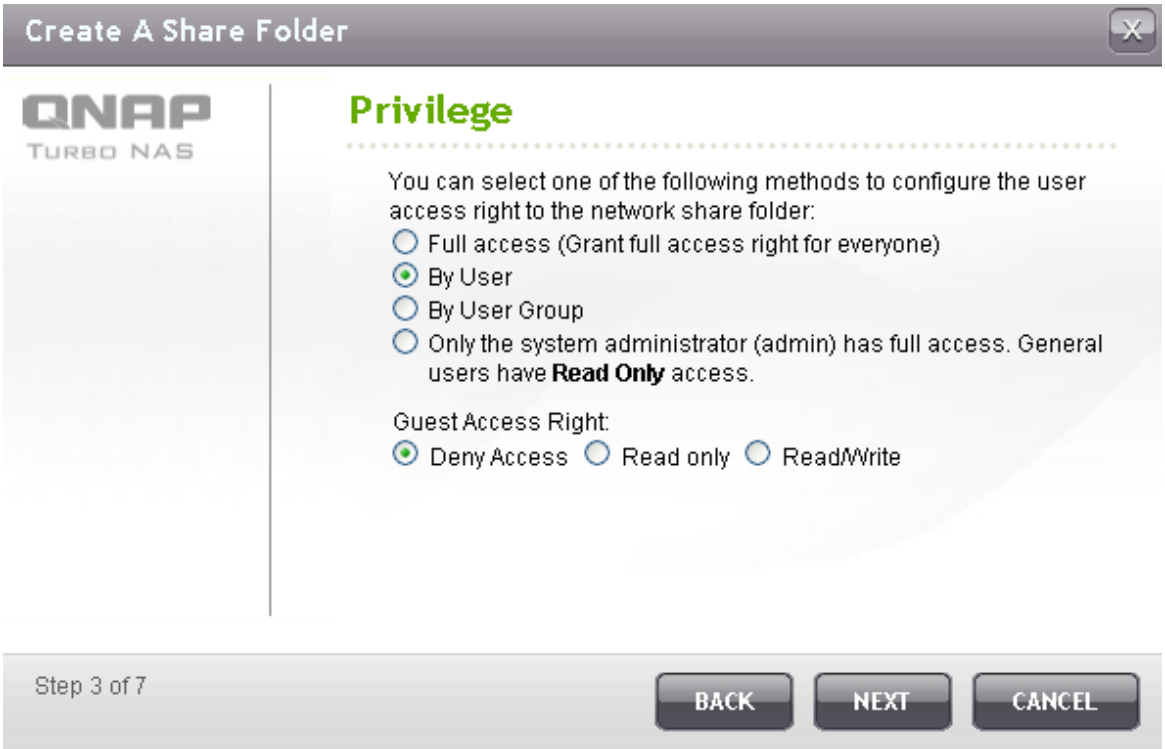
Select the way you want to specify the access right to the folder and specify the guest access right.



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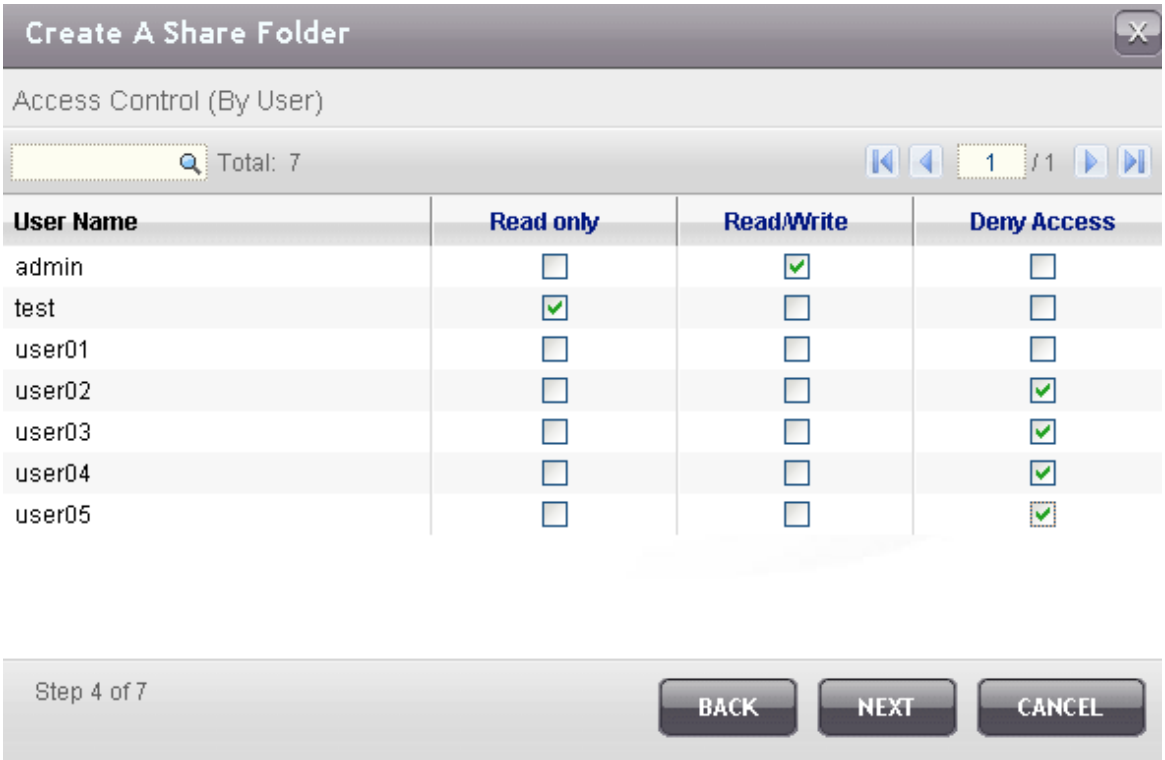
If you select to specify the access right by user or user group, you can select to grant read only, read/write, or deny access to the users or user groups.



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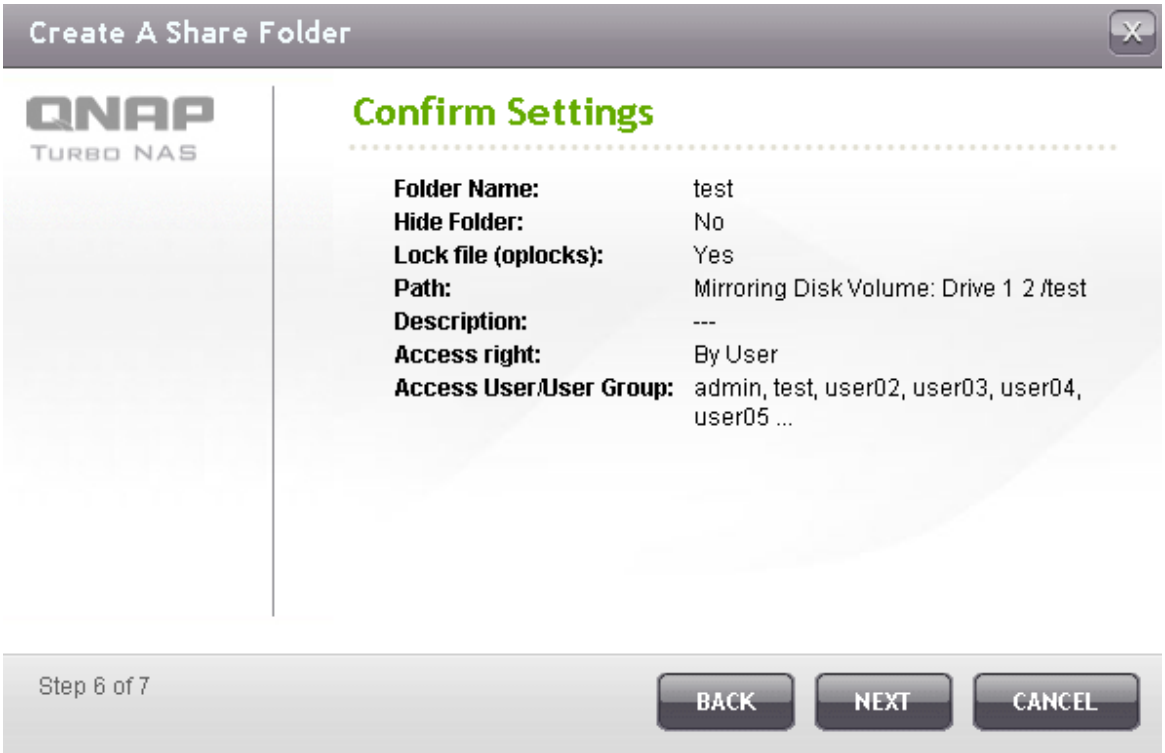
Confirm the settings and click 'Next'.



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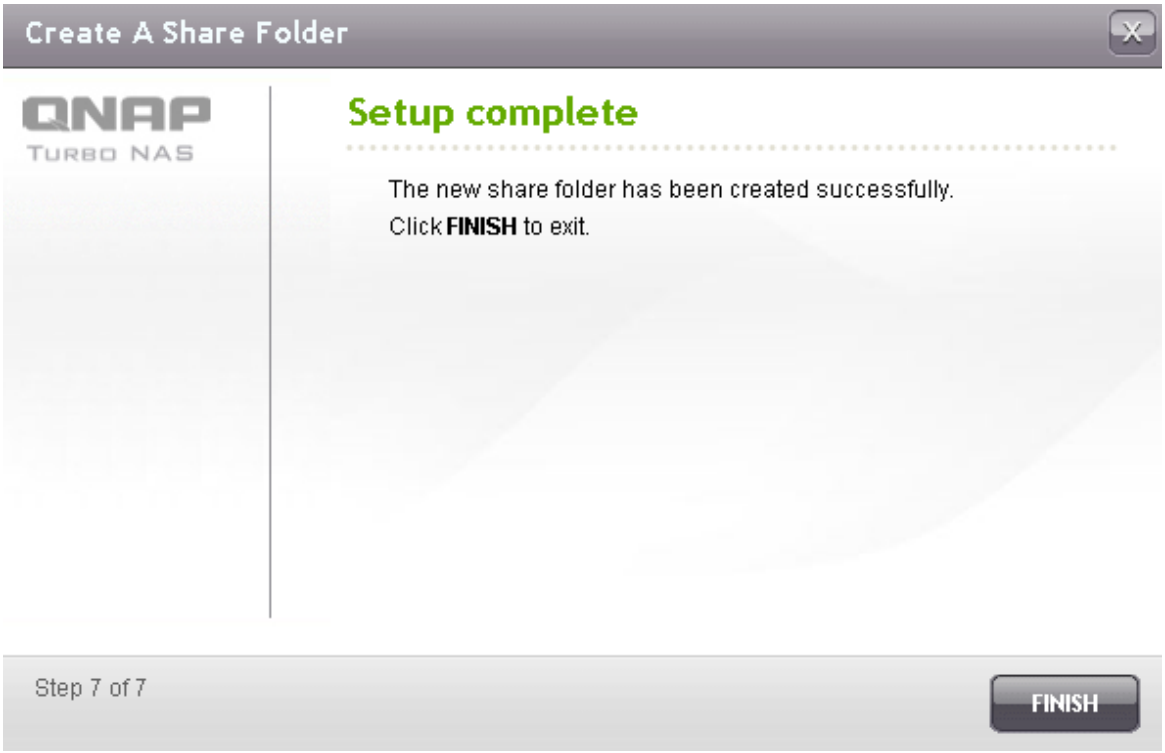
Click 'Finish' to complete the setup.



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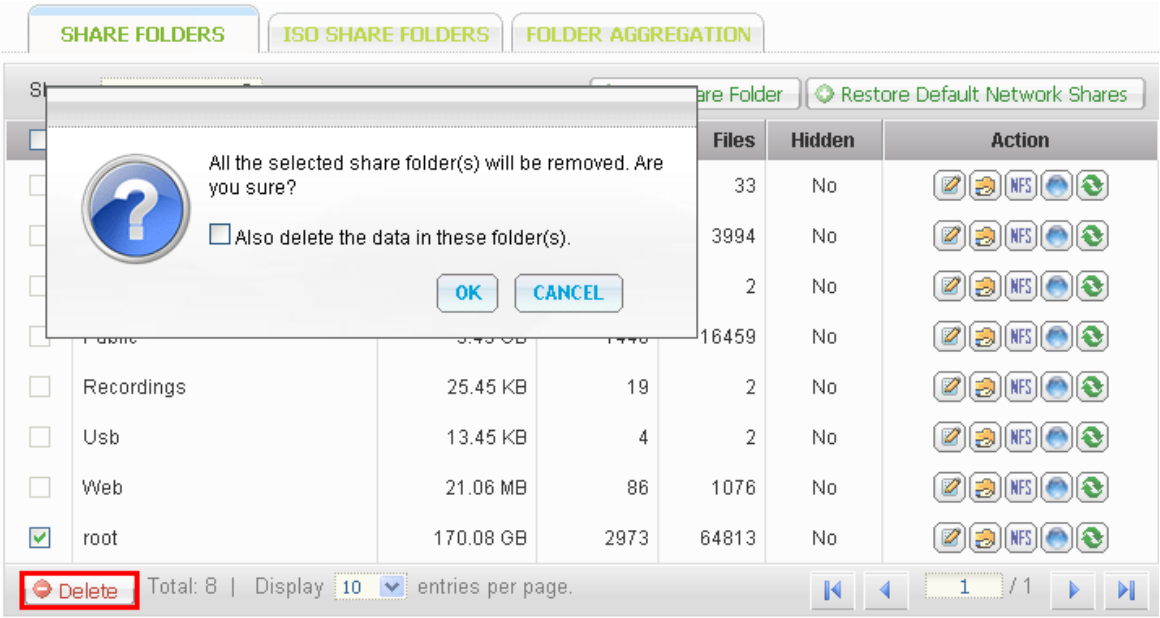
To delete a share folder, select the folder checkbox and click 'Delete'. You can select the option 'Also delete the data in these folder(s)' to delete the folder and the files in it. If you select not to delete the folder data, the data will be retained in the NAS. You can create a folder of the same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



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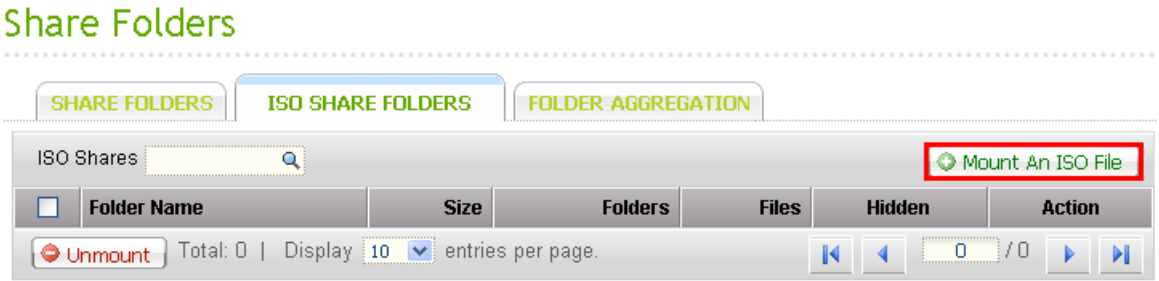
ISO Share Folders

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.

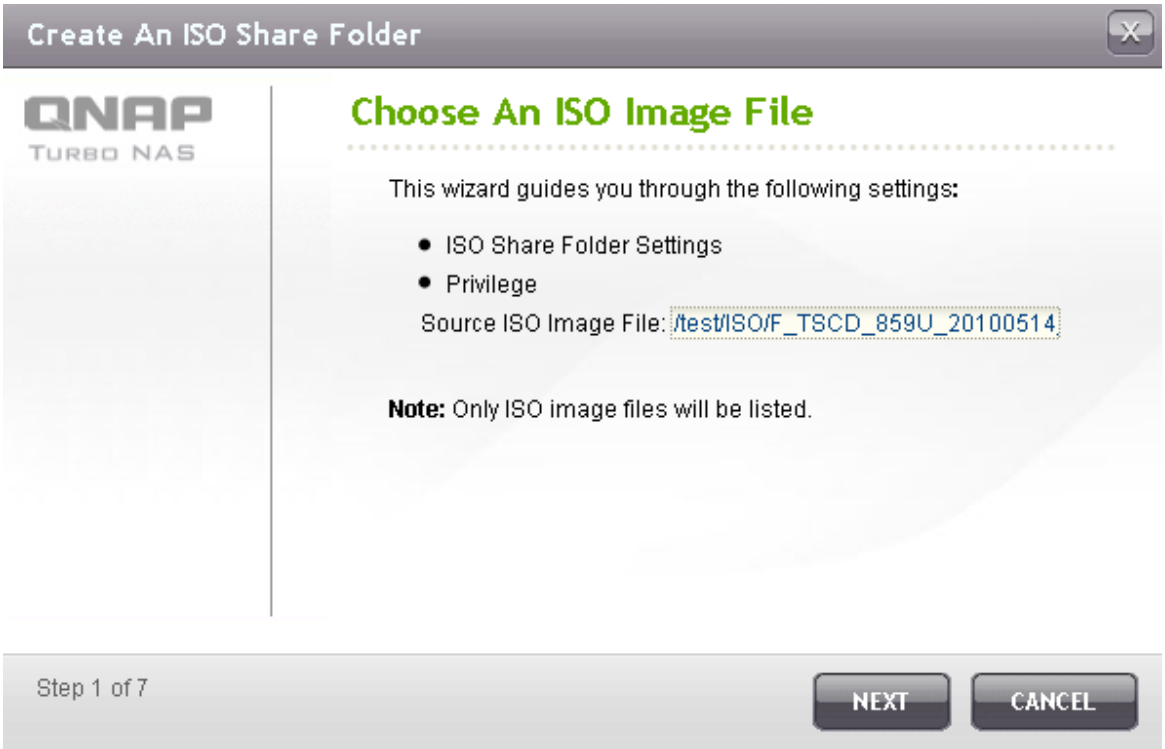
*TS-110, TS-119, TS-210, TS-219, TS-219P, and TS-410 support maximum 256 network share folders only. Therefore, the maximum number of ISO image files supported by these models is less than 256.

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'.



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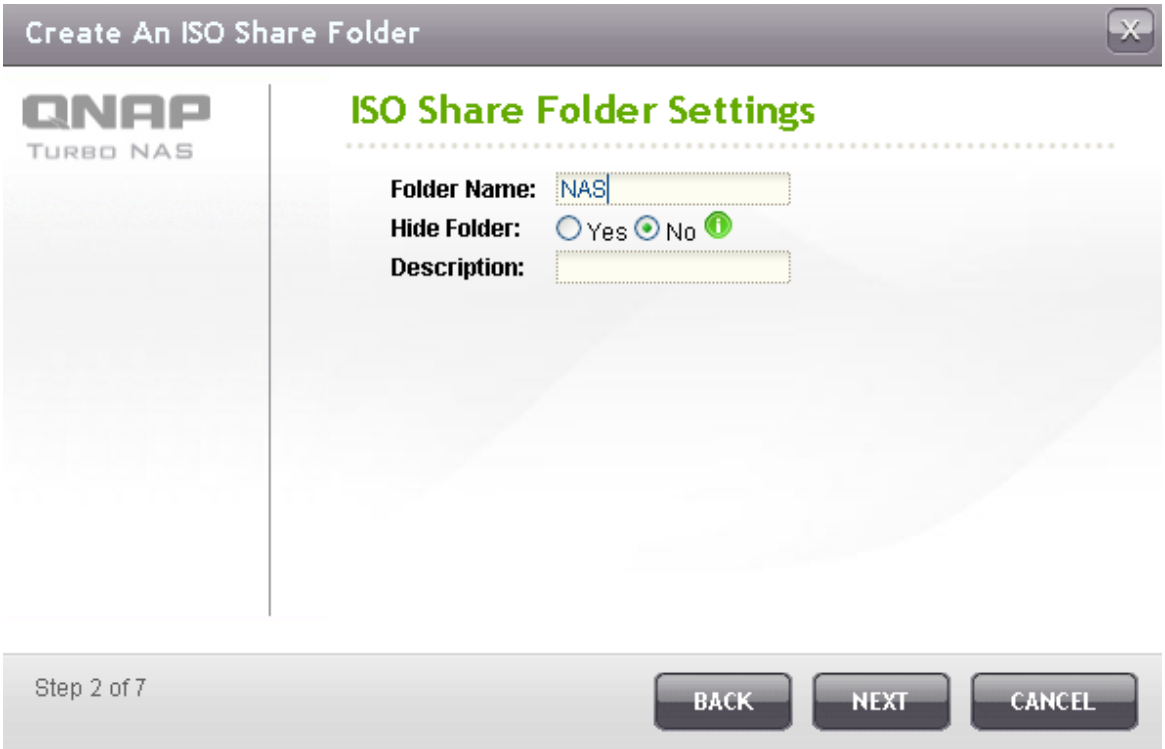
3. The image file will be mounted as a share folder of the NAS. Enter the folder name.



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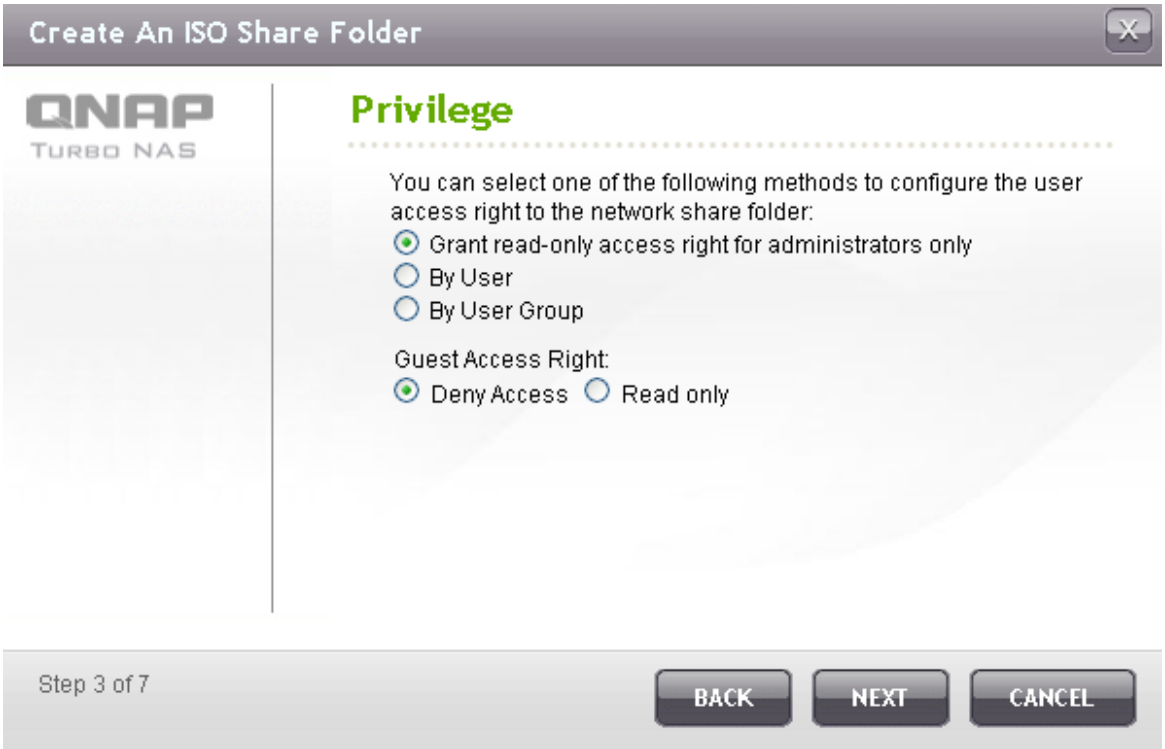
4. Specify the access rights of the NAS users or user groups to the share folder. You can also select 'Deny Access' or 'Read only' for the guest access right. Click 'Next'.



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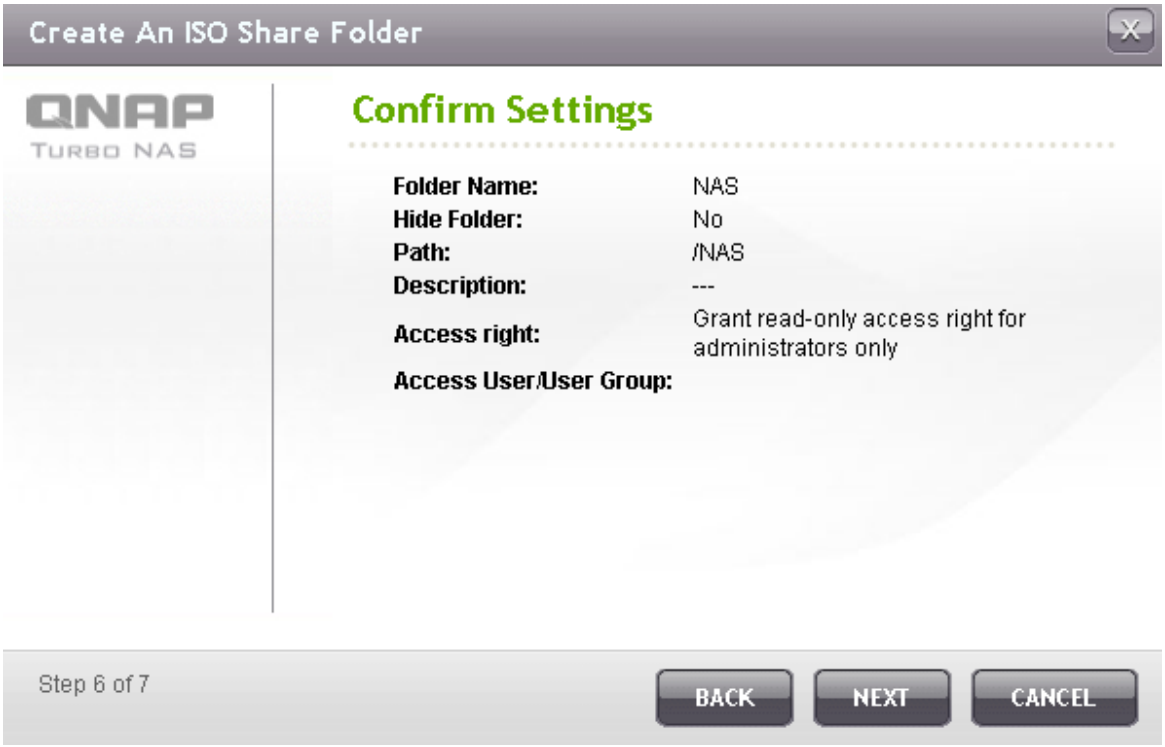
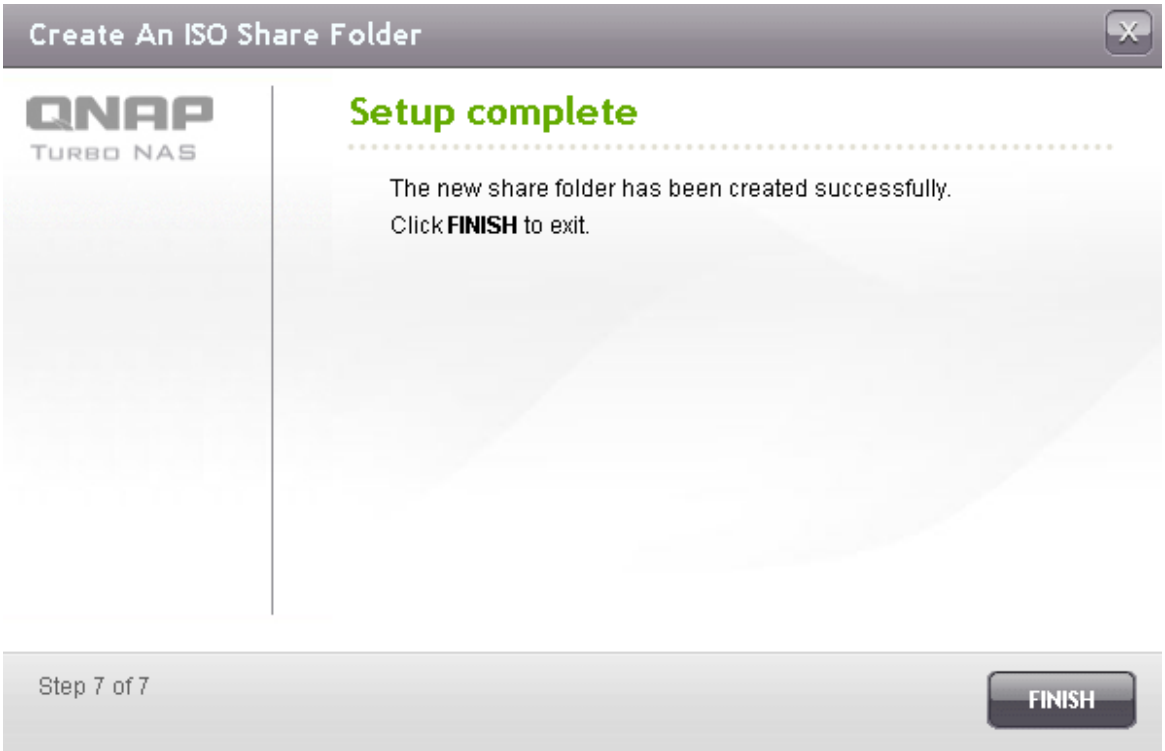
5. Confirm the settings and click 'Next'.



6. Click 'Finish'.



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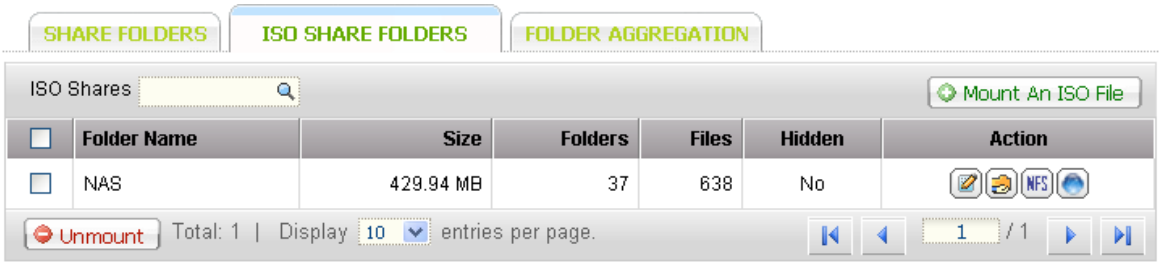
7. After mounting the image file, you can specify the access rights of the users over different network protocols such as SMB, AFP, NFS, and WebDAV by clicking the icons in the 'Action' column.



The NAS supports mounting ISO image files by Web File Manager, see here 176 for more information.

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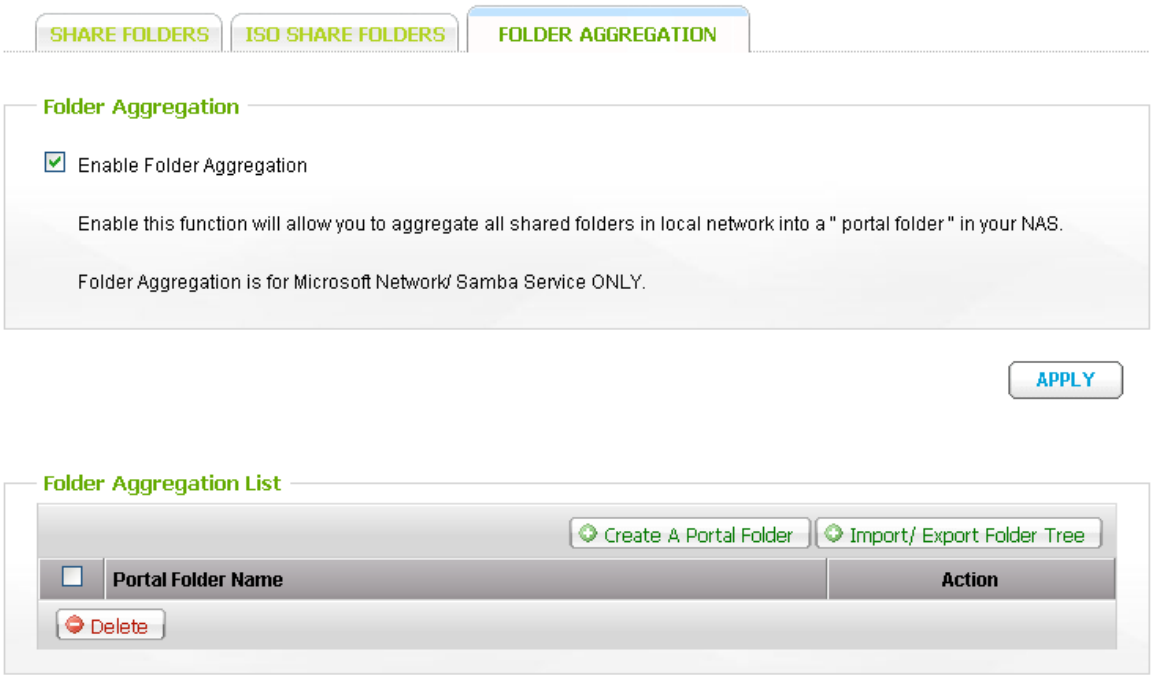
Folder Aggregation

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.

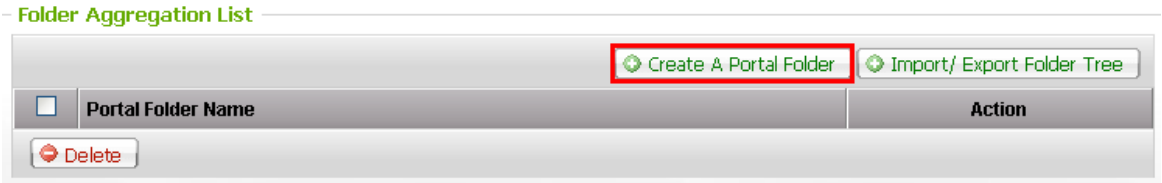
Note: This function is supported only in Microsoft networking service.

To use this function, follow the steps below.

1. Enable folder aggregation.



2. Click 'Create A Portal Folder'.



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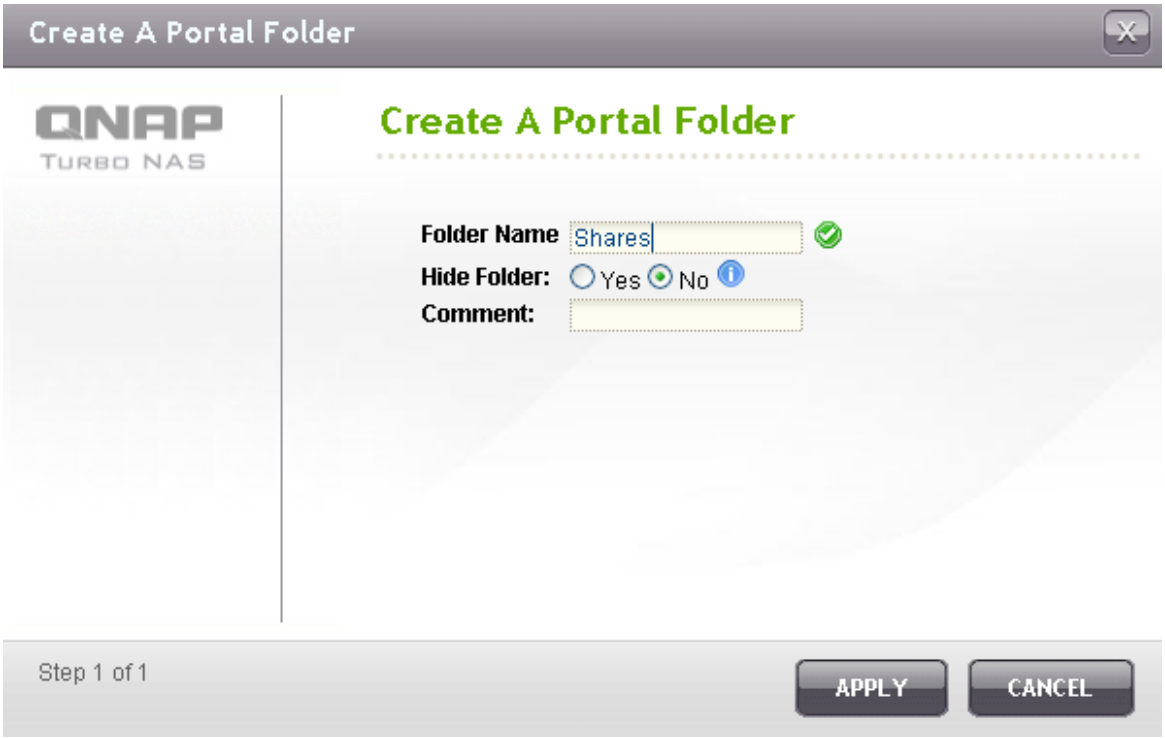
3. Enter the portal folder name. Select to hide the folder or not, and enter an optional comment for the portal folder.



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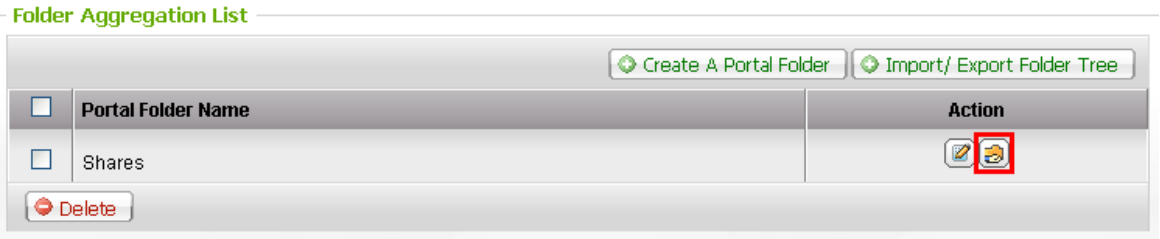
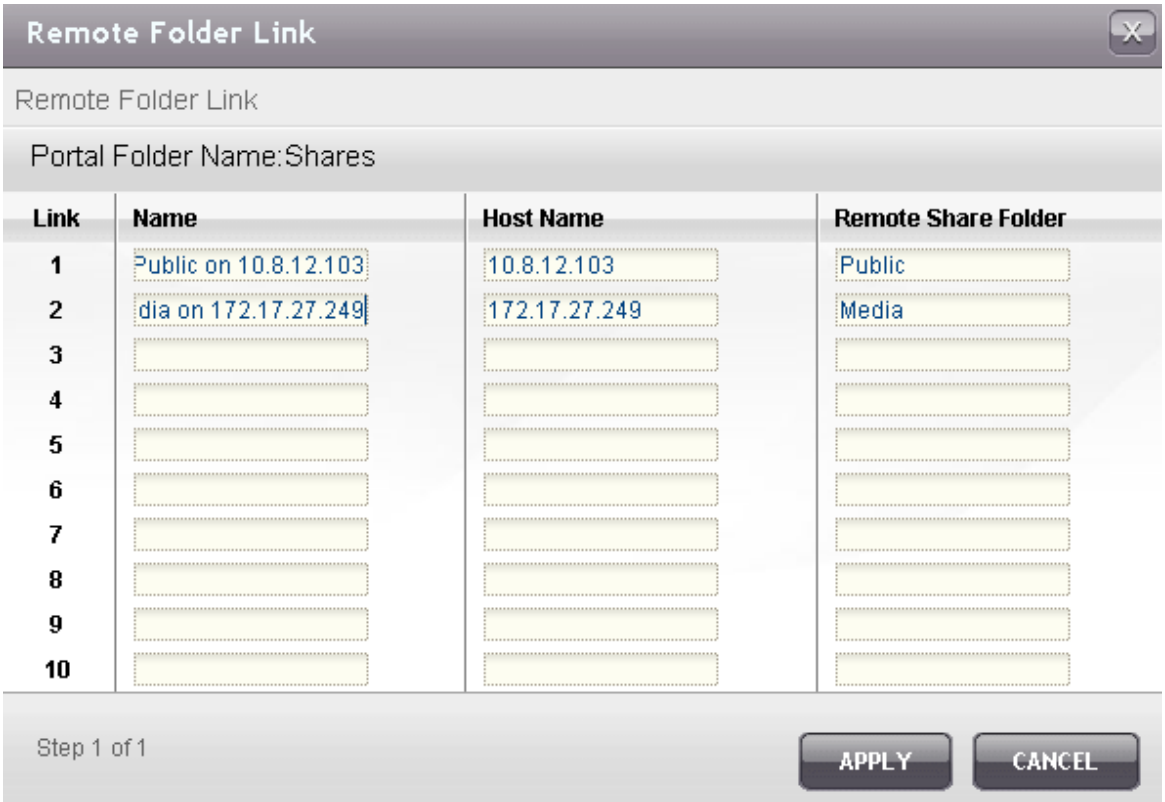
4. Click (Link Configuration) and enter the remote folder settings. Make sure the share folders are open for public access.

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.





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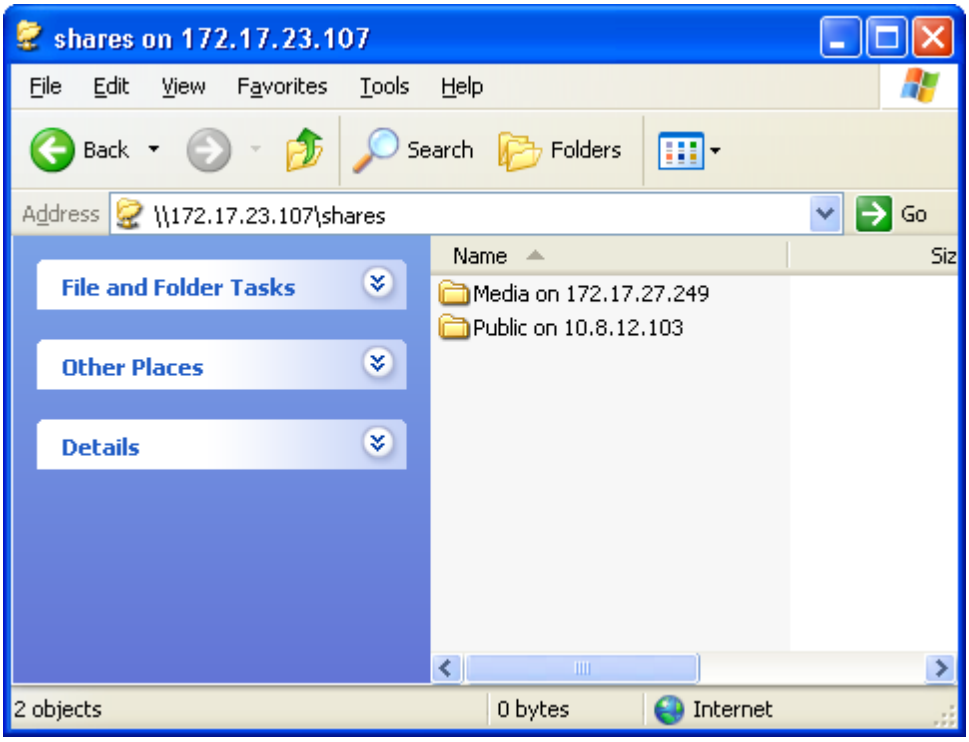
5. Upon successful connection, you can connect to the remote folders through the NAS.



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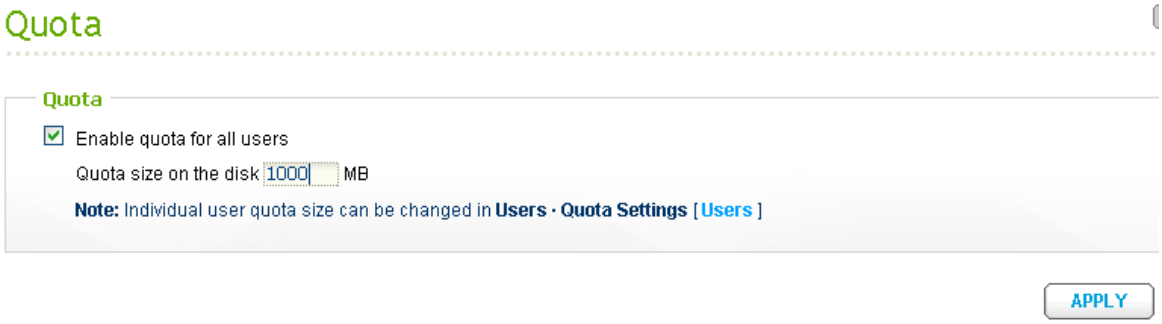
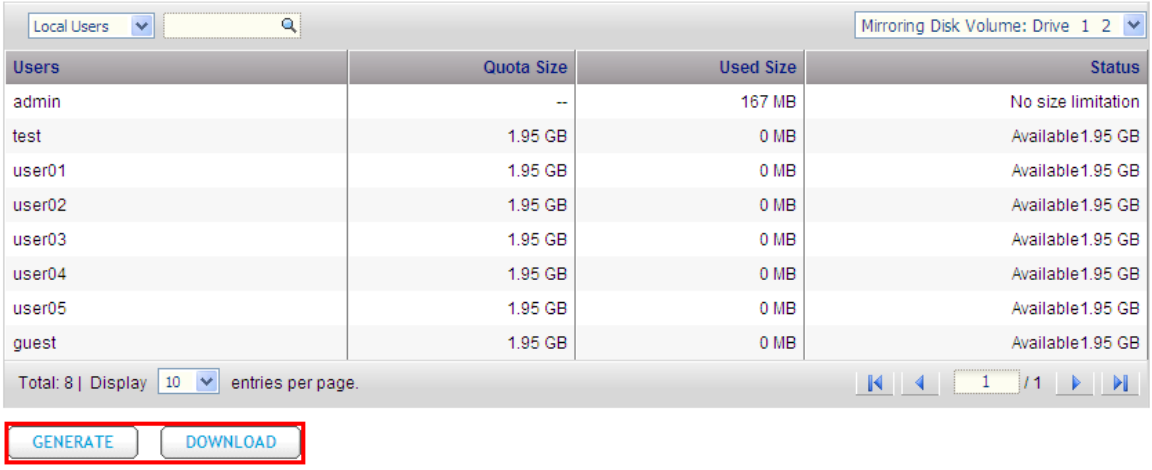
7.3.4 Quota

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



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.



Users	Quota Size	Used Size	Status
admin	--	167 MB	No size limitation
test	1.95 GB	0 MB	Available1.95 GB
user01	1.95 GB	0 MB	Available1.95 GB
user02	1.95 GB	0 MB	Available1.95 GB
user03	1.95 GB	0 MB	Available1.95 GB
user04	1.95 GB	0 MB	Available1.95 GB
user05	1.95 GB	0 MB	Available1.95 GB
guest	1.95 GB	0 MB	Available1.95 GB

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7.4 Network Services

Microsoft Networking 135
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NFS Service 140
FTP Service 143
Telnet/ SSH 145
SNMP Settings 146
Web Server 148
Network Service Discovery 173

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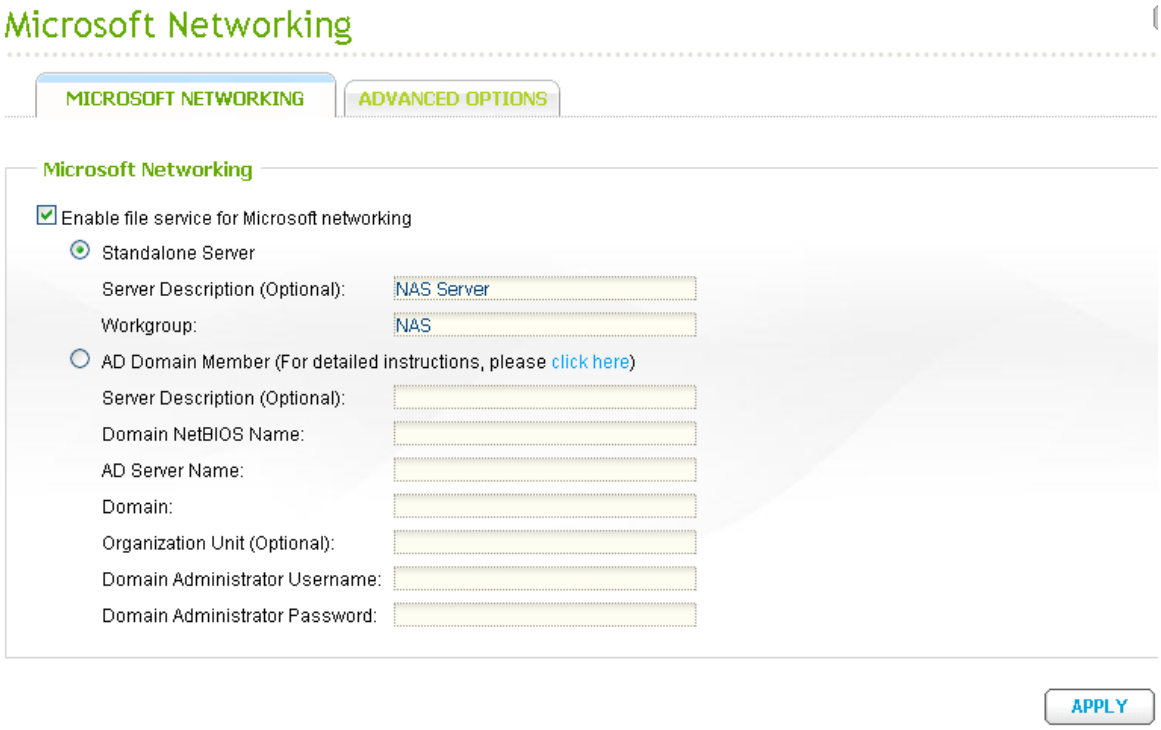
7.4.1 Microsoft Networking

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.



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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.

For the information of joining the NAS to Active Directory, see here 309.

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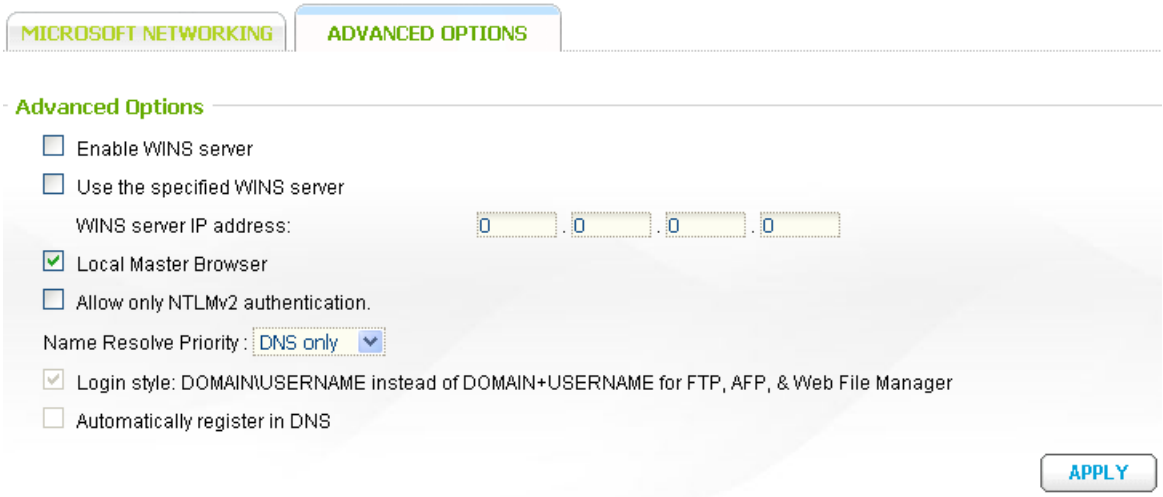
Advanced Options



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.

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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.

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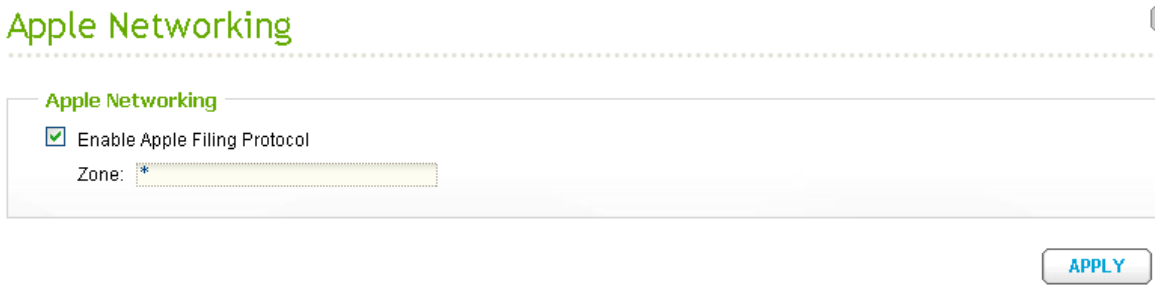
7.4.2 Apple Networking

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.



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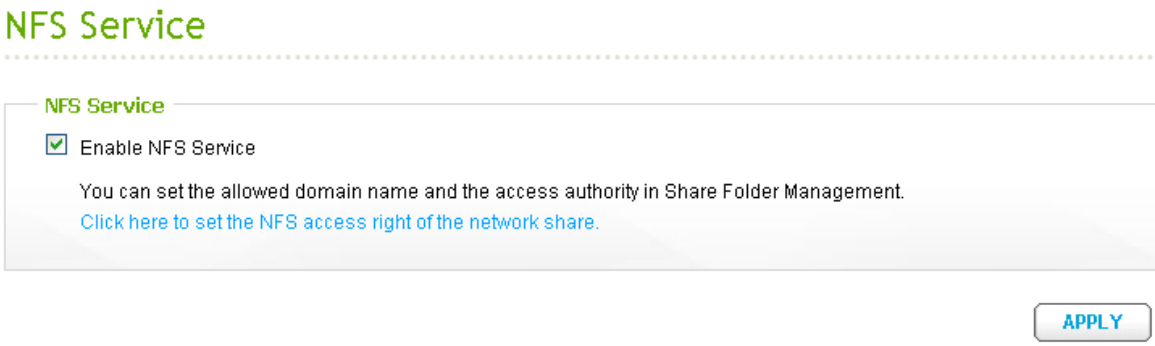
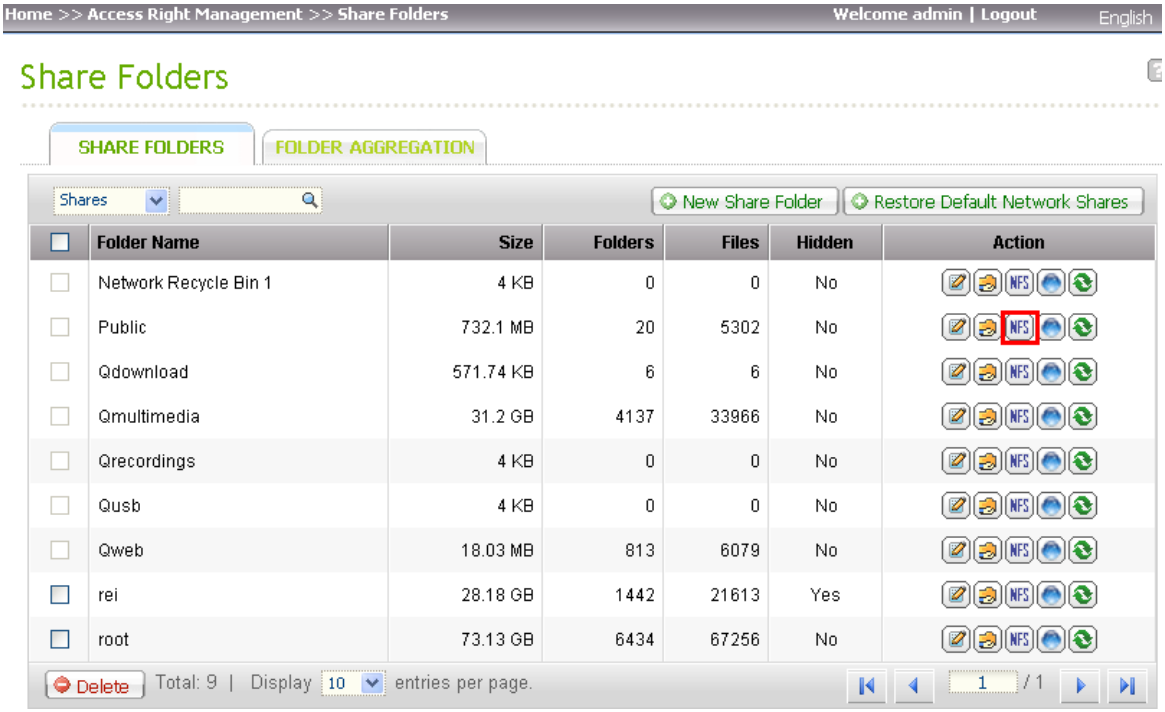
7.4.3 NFS Service

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



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.



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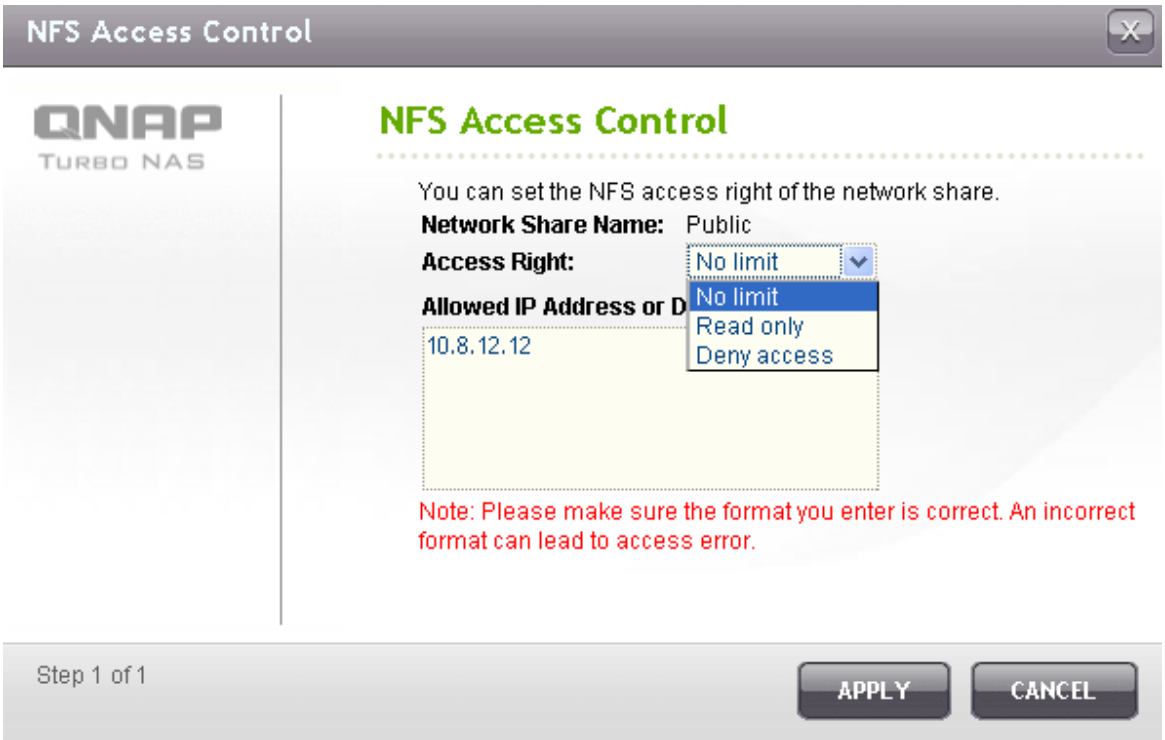
Specify the access right to the network share. If you select 'No limit' or 'Read only', you can specify the IP address or domains that are allowed to connect to the share folder by NFS.

- 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.



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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.

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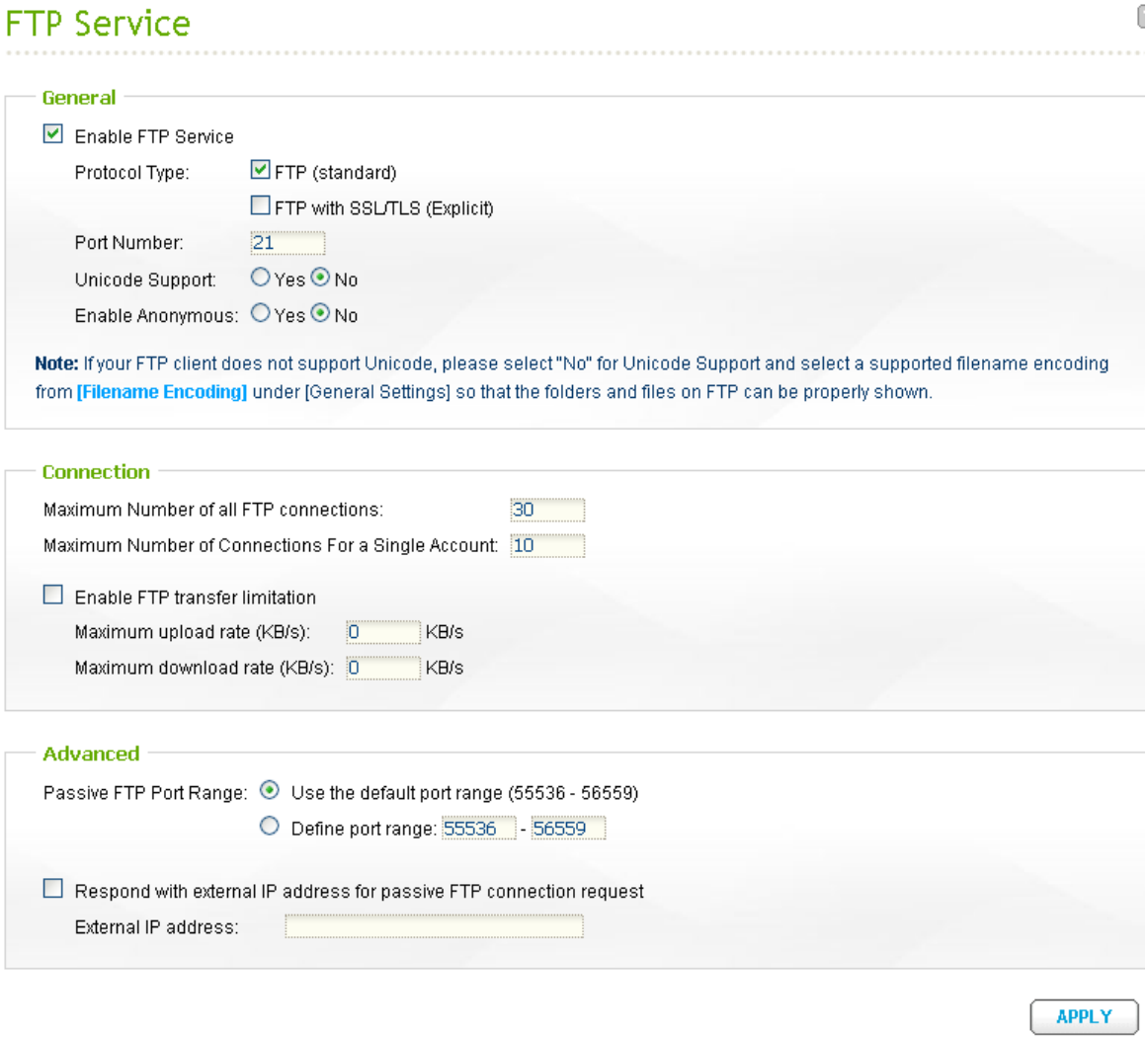
7.4.4 FTP Service

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.



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.

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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.

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7.4.5 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'.

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7.4.6 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.

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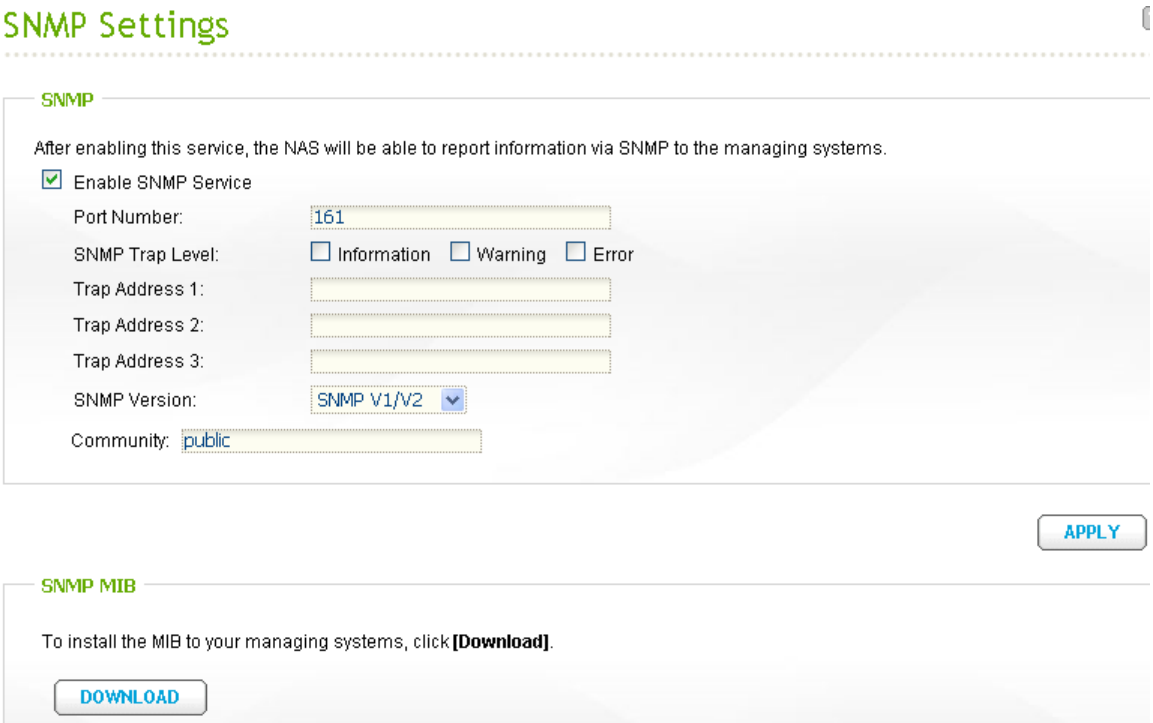

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7.4.7 Web Server

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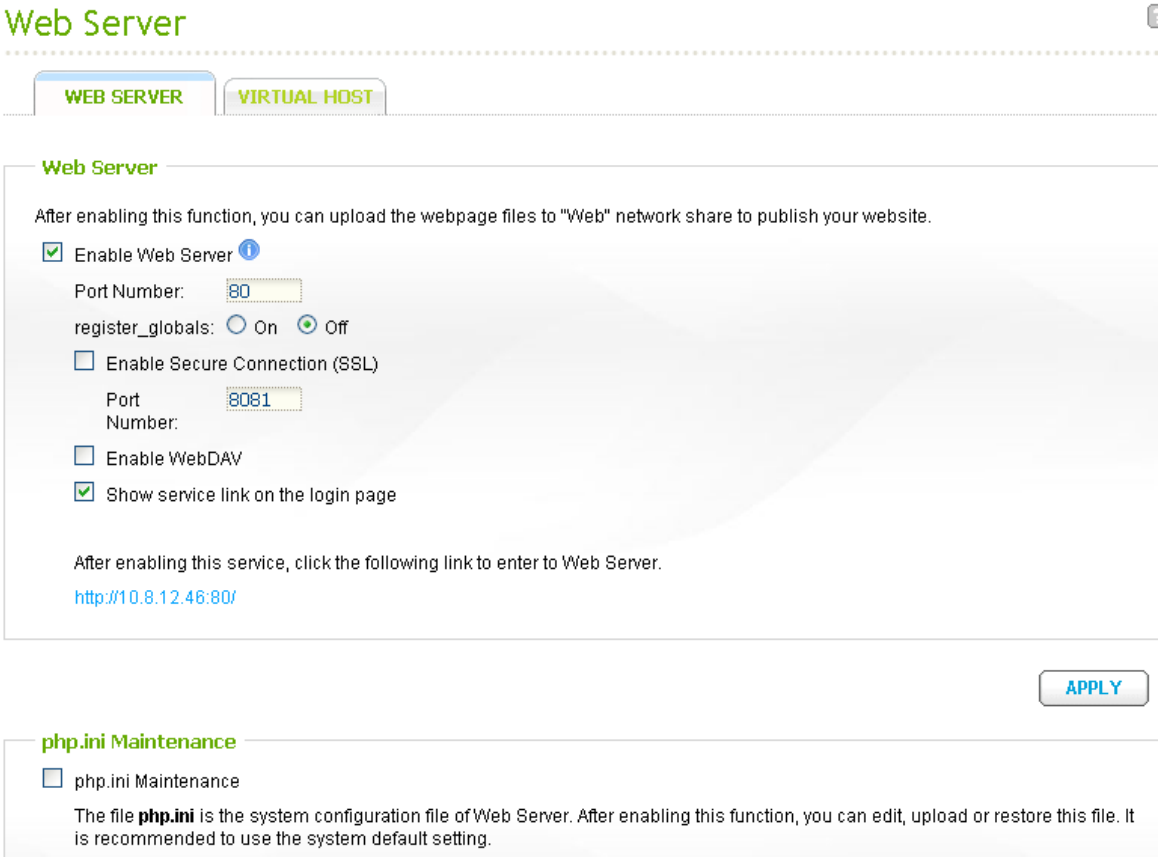
7.4.7.1 Web Server

Web Server

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



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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.

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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.

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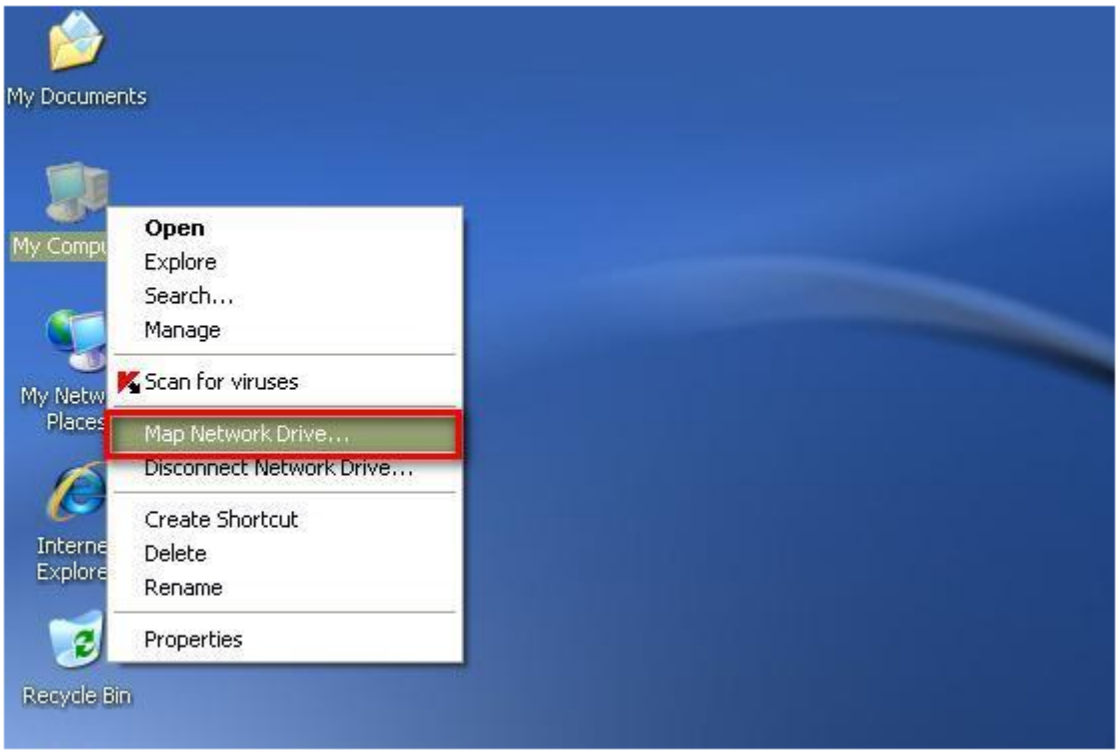
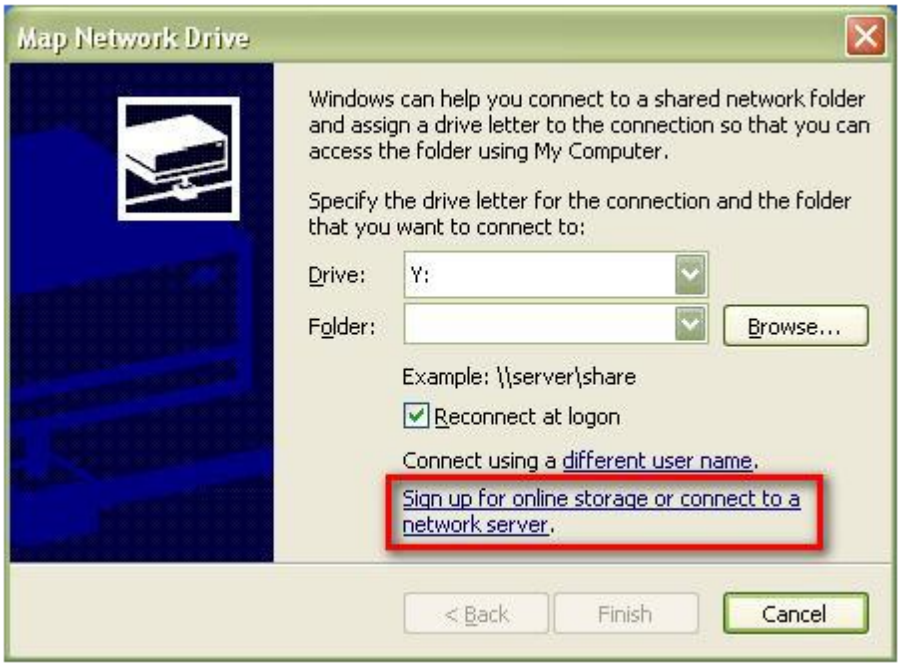
Windows XP:

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



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



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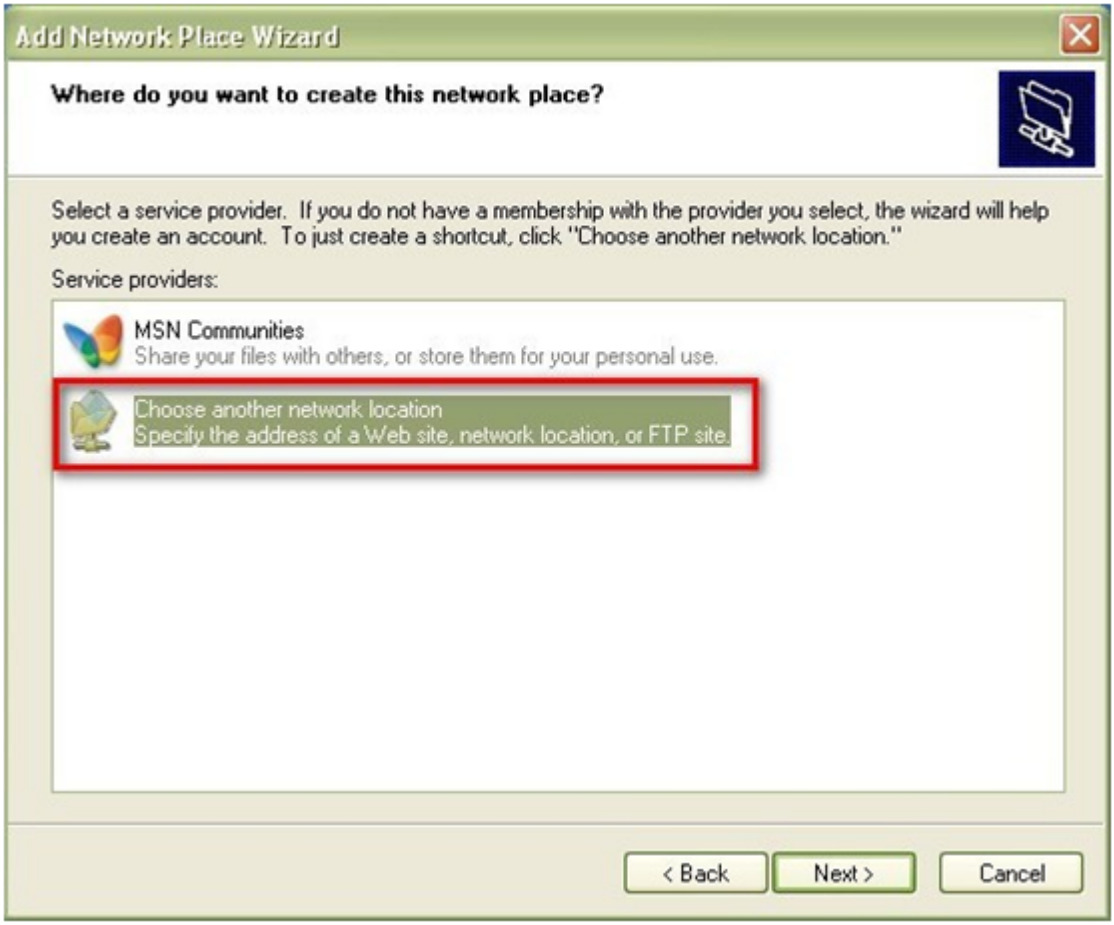
3. Select 'Choose another network location'.



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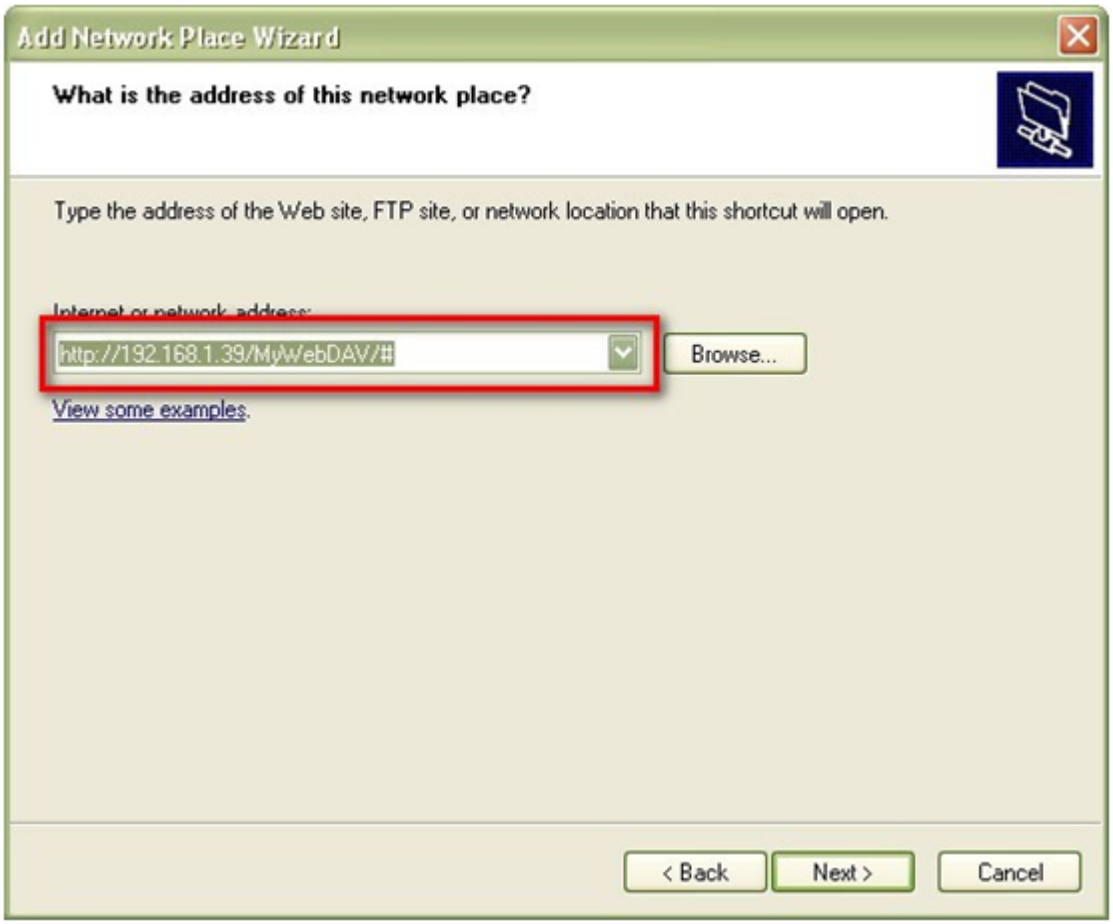
4. Enter the URL of your NAS with the share folder name. Note that you should put a '#' key at the end of the URL. Click 'Next'.

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.

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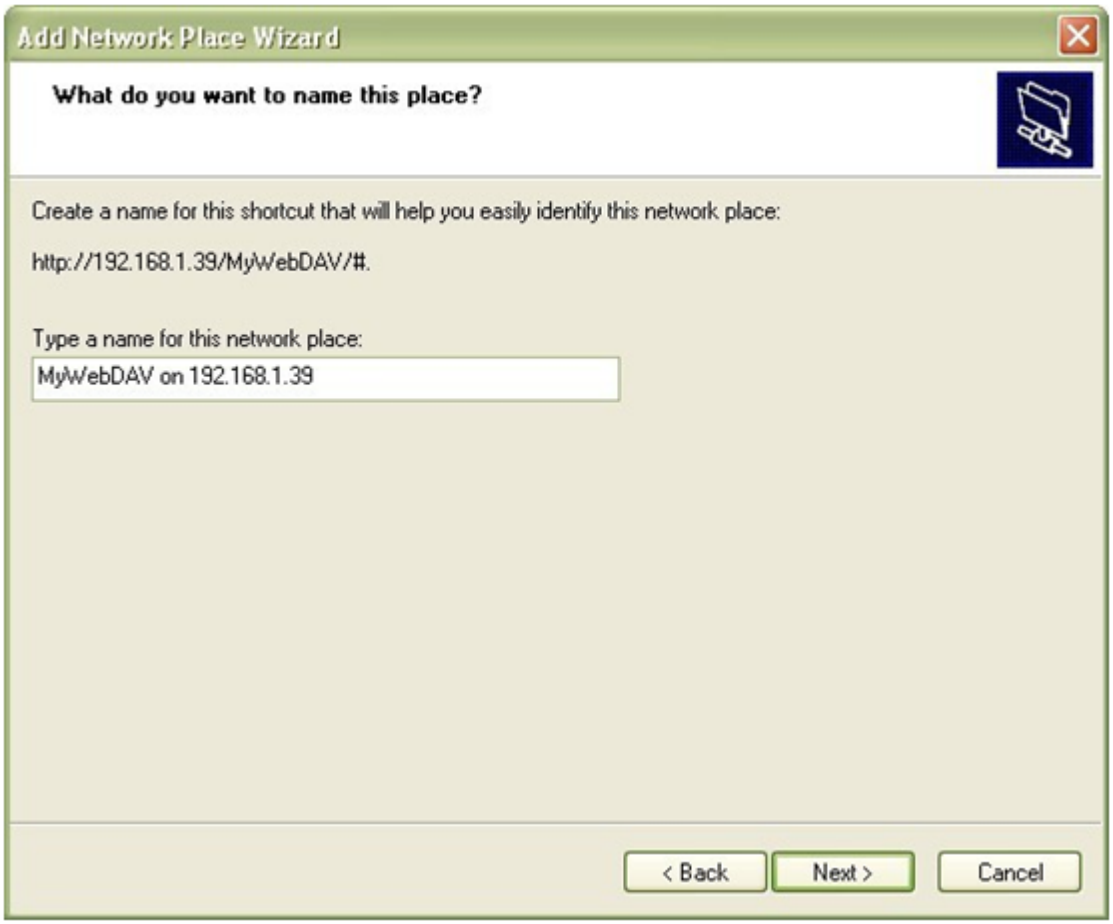
6. Type a name for this network place.



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

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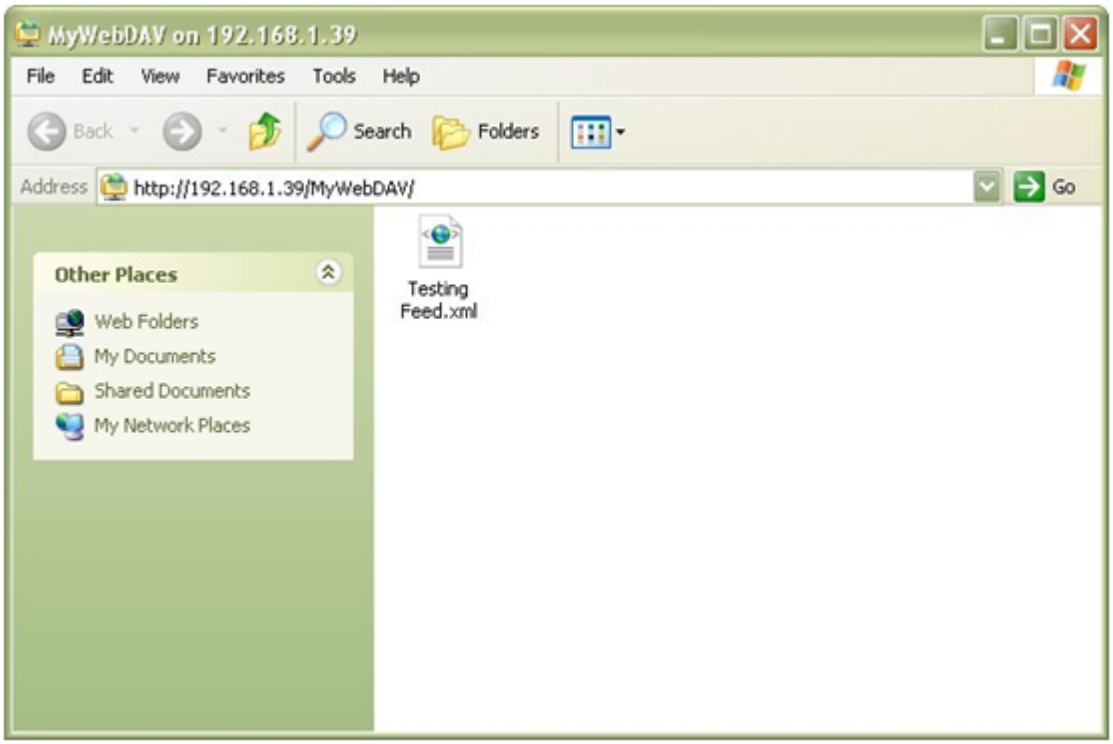
8. Now you can connect to this share folder anytime through WebDAV. A shortcut has also been created in 'My Network Places'.



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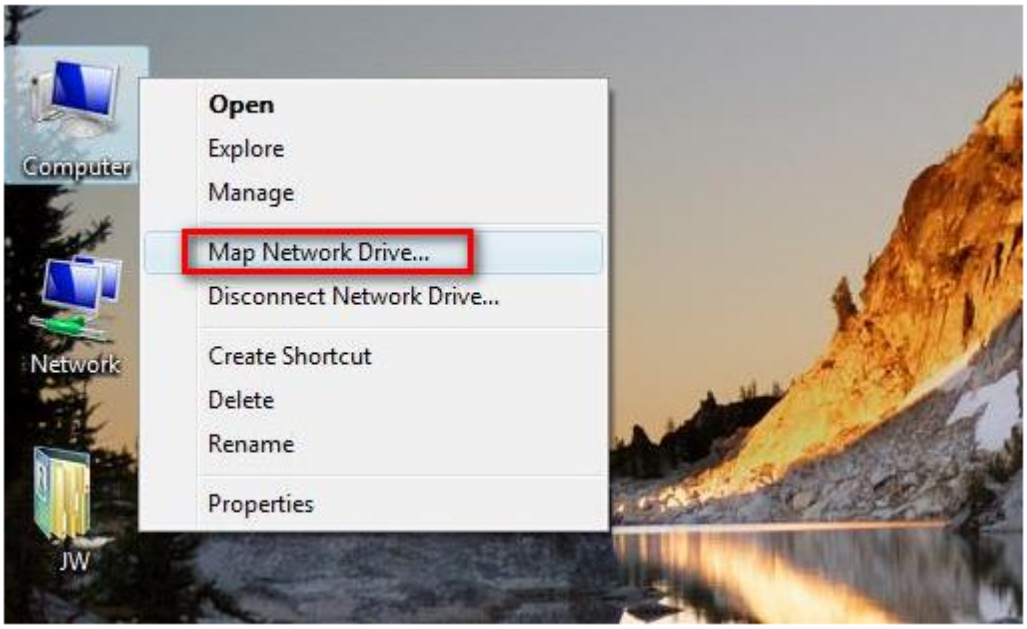
Windows Vista

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…'



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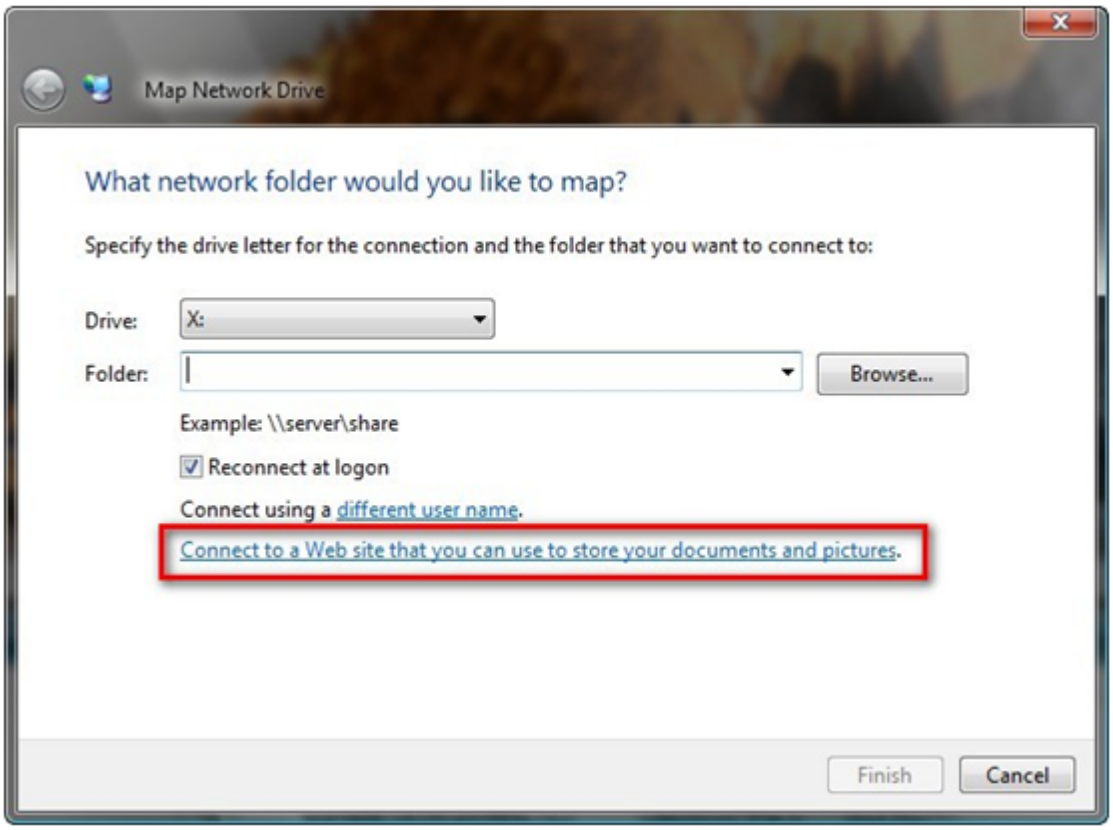
2. Click 'Connect to a Web site that you can use to store your documents and pictures'.



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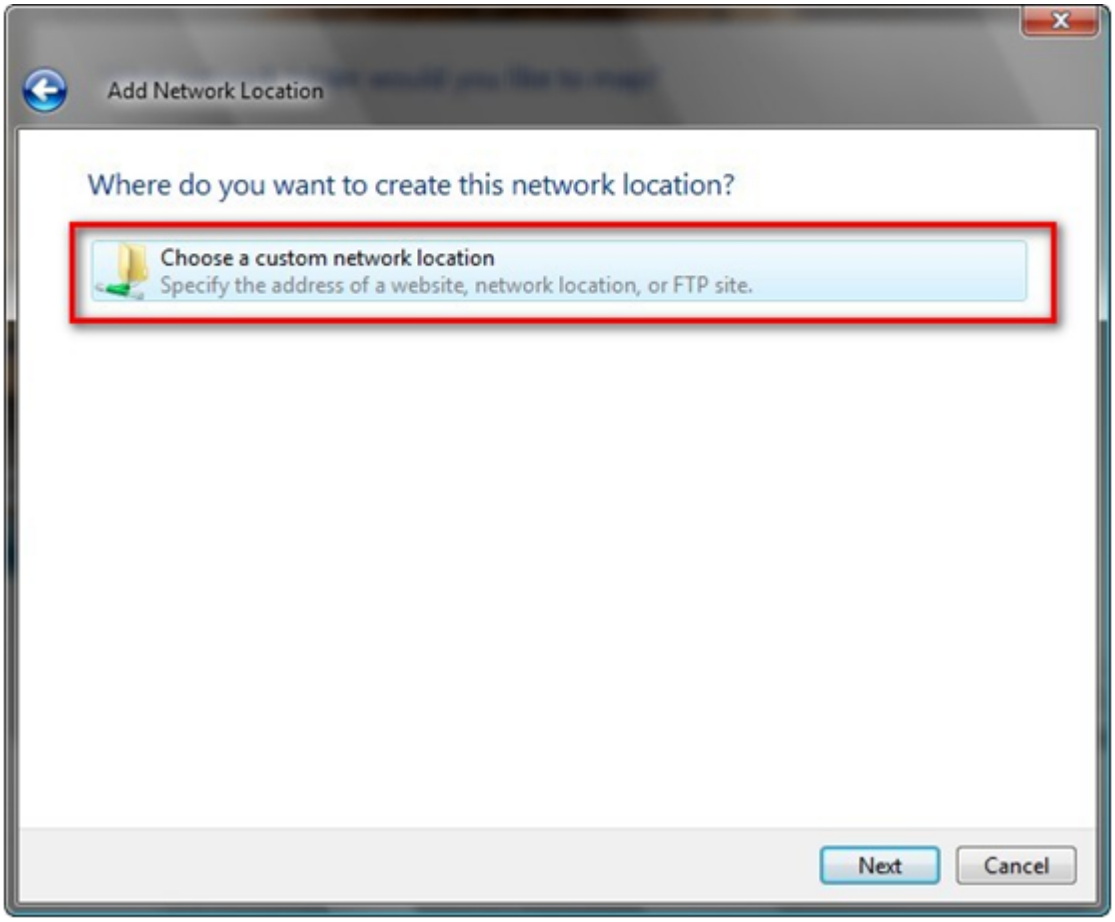
3. Select 'Choose a custom network location'.



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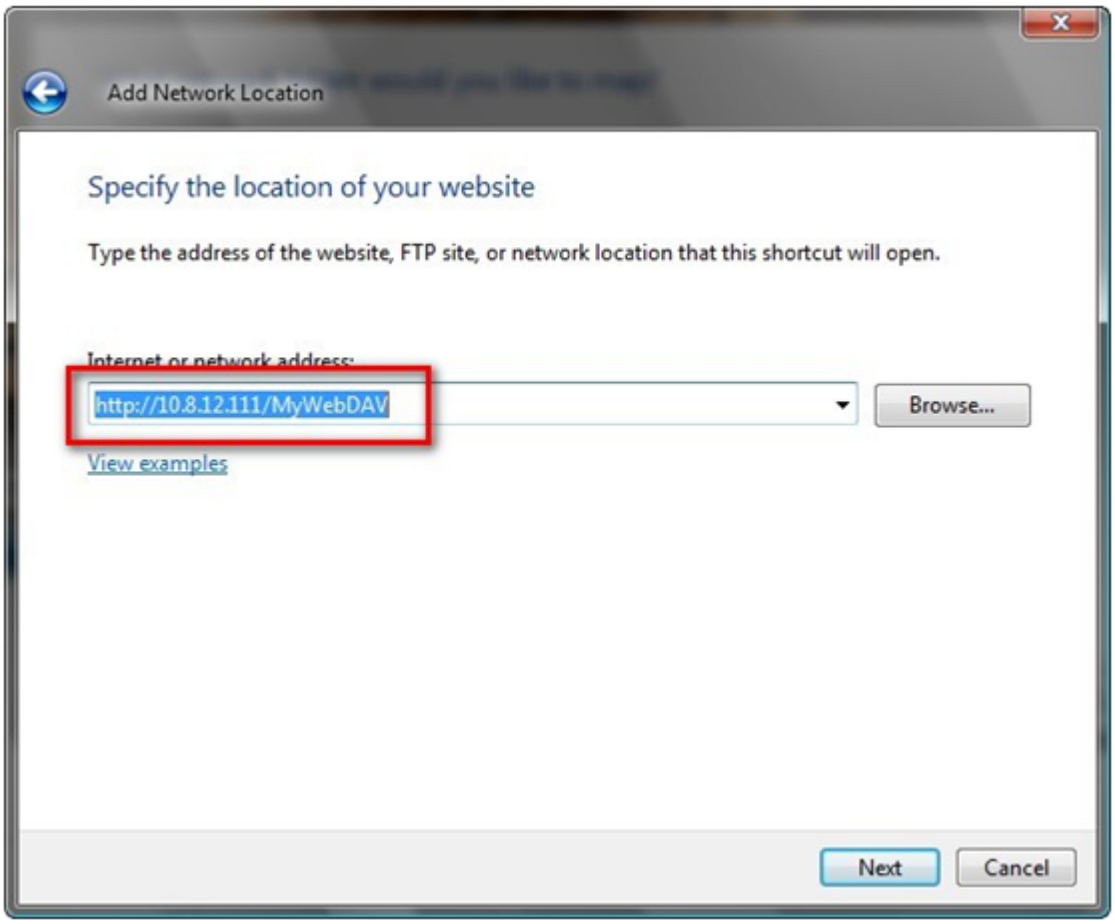
4. Enter the URL of your NAS with the share folder name.

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.

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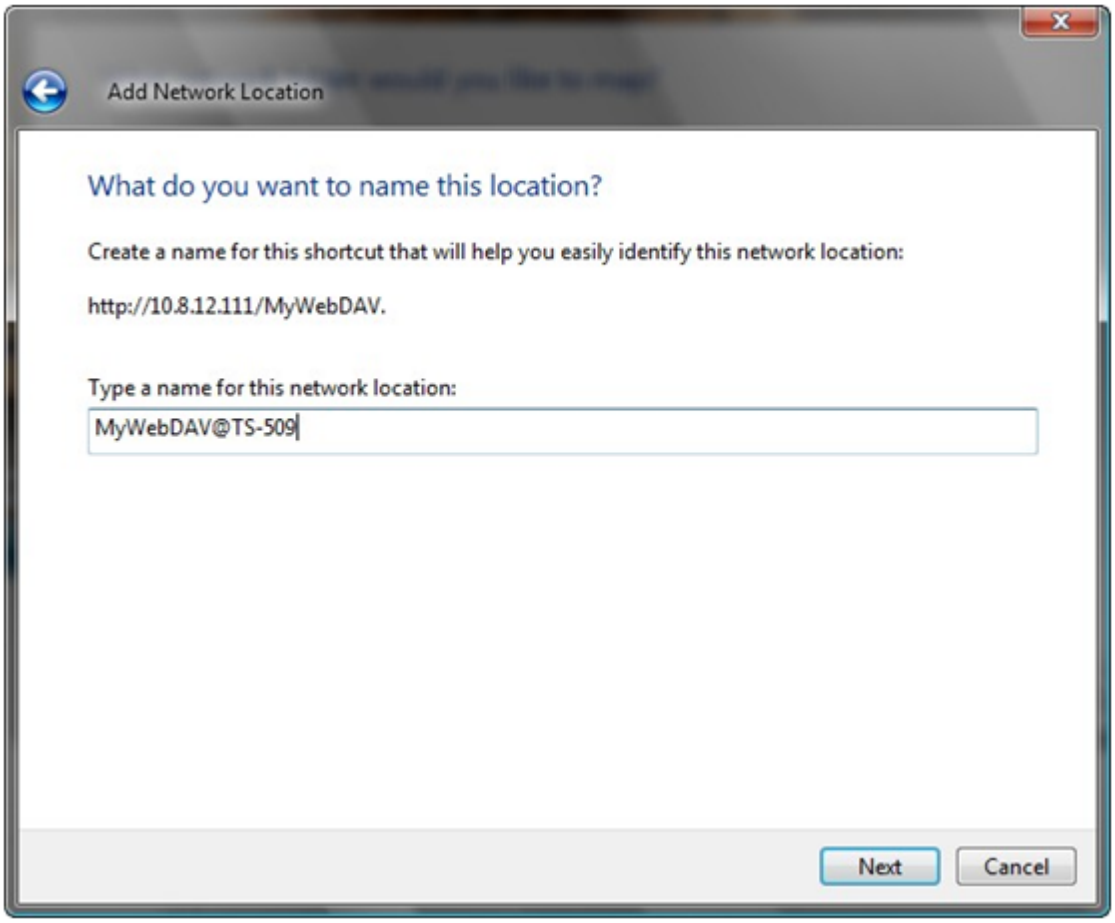
6. Type a name for this network location.



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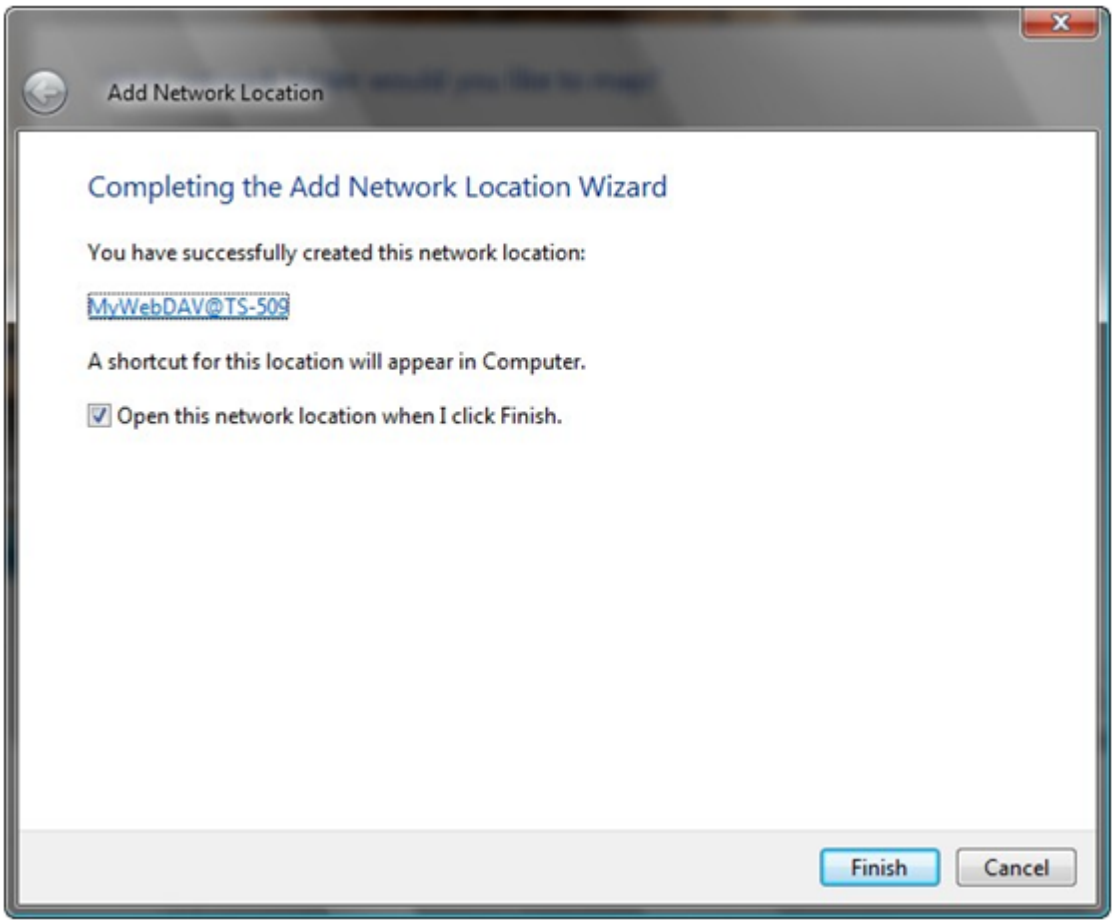
7. The Web folder has been successfully created.



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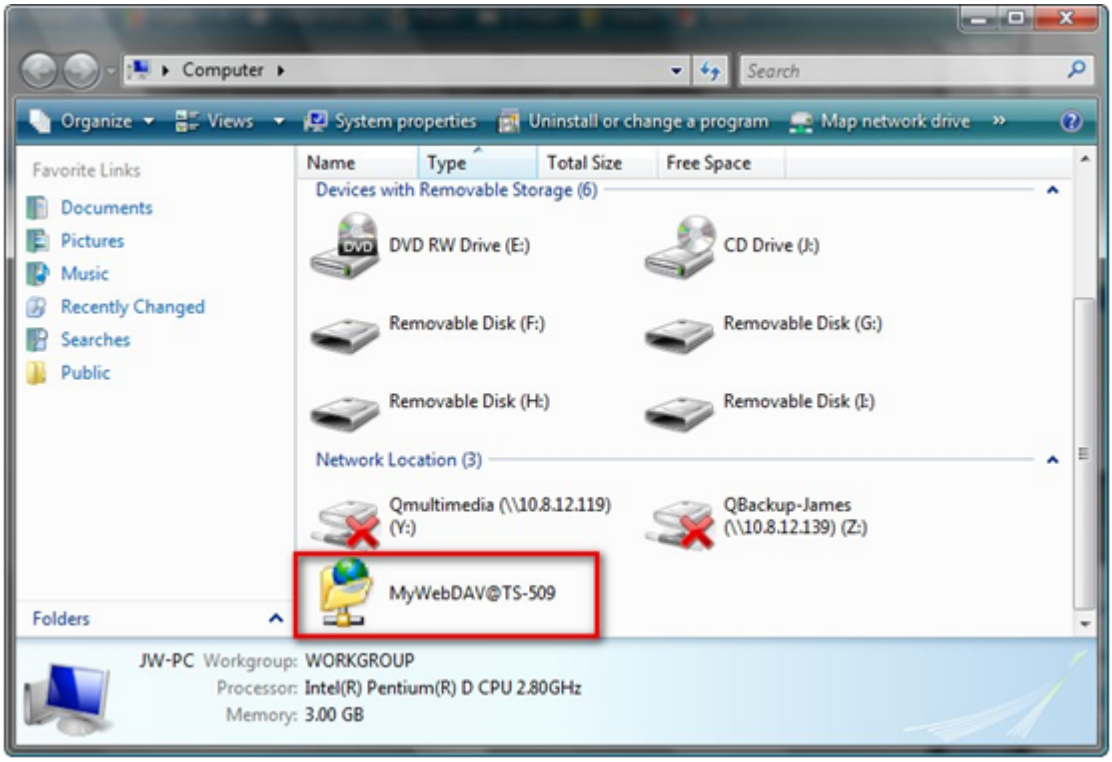
8. You can locate the web folder in the 'Network Location' section in 'Computer'.



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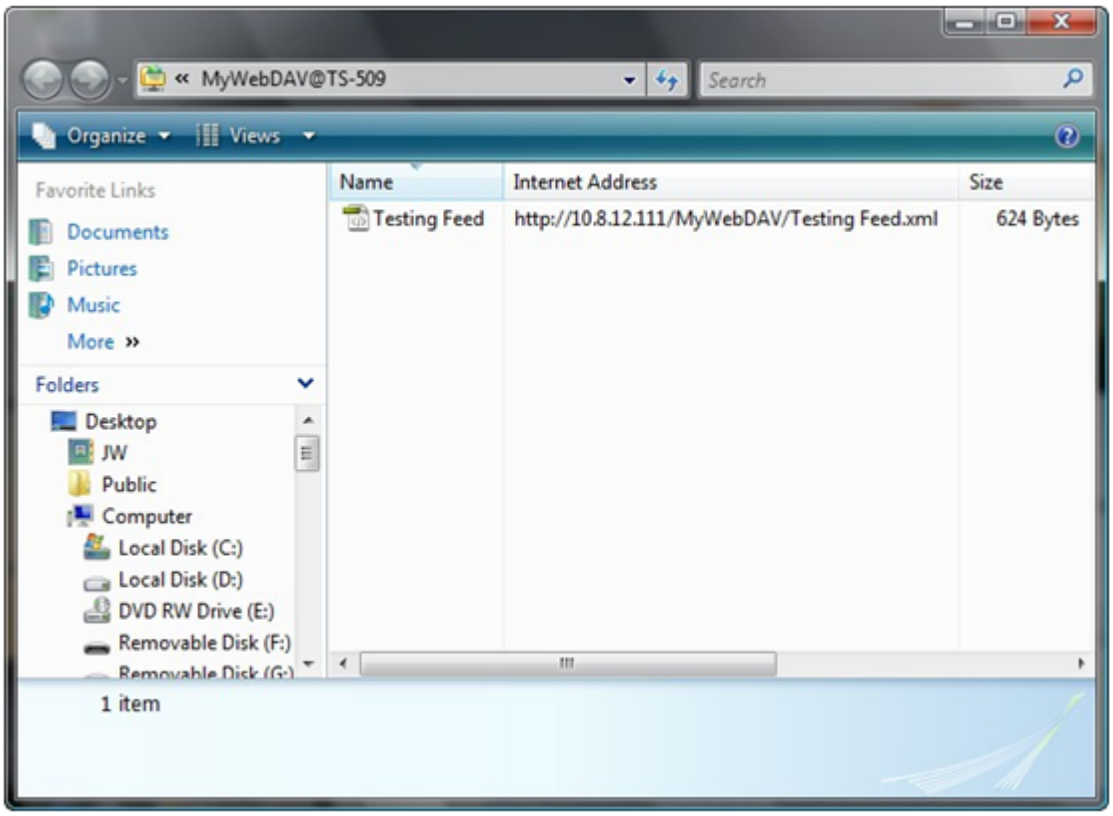
9. You can connect to the share folder though this link via HTTP/WebDAV.



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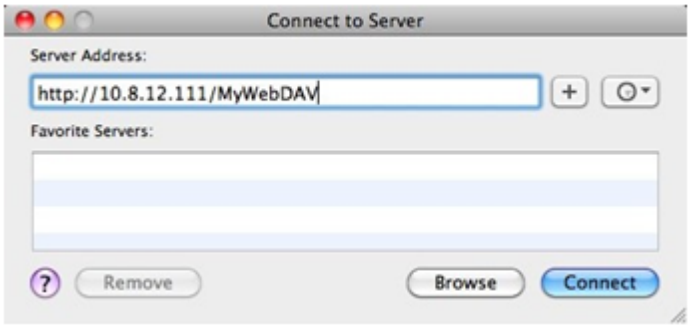
Mac OS X

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.

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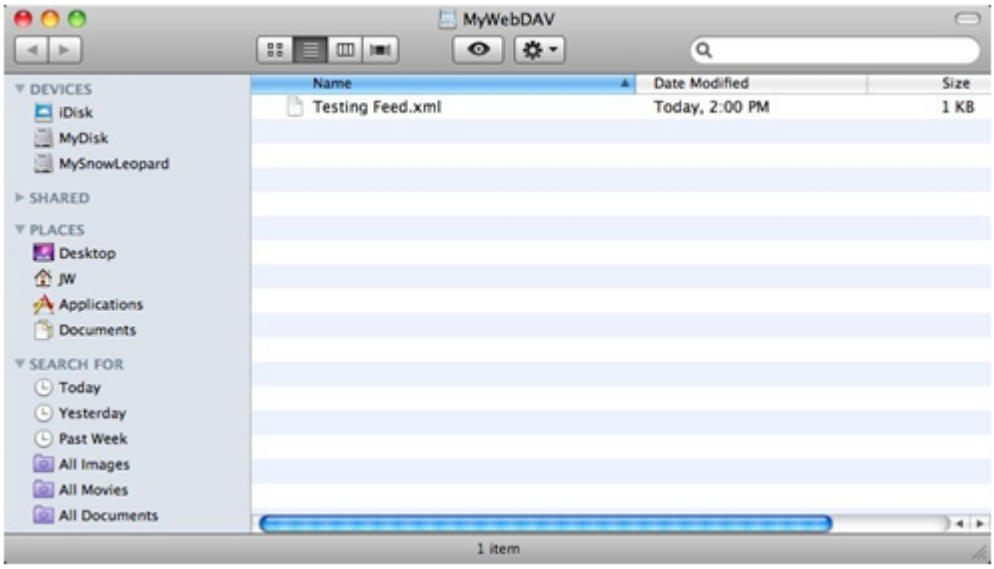
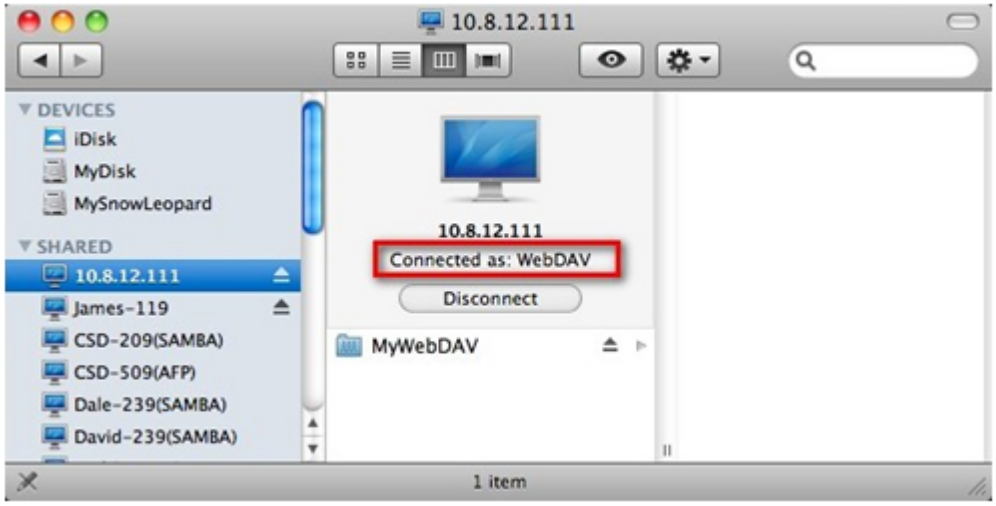
3. You can connect to the share folder through this link via HTTP/WebDAV.



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.

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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…'

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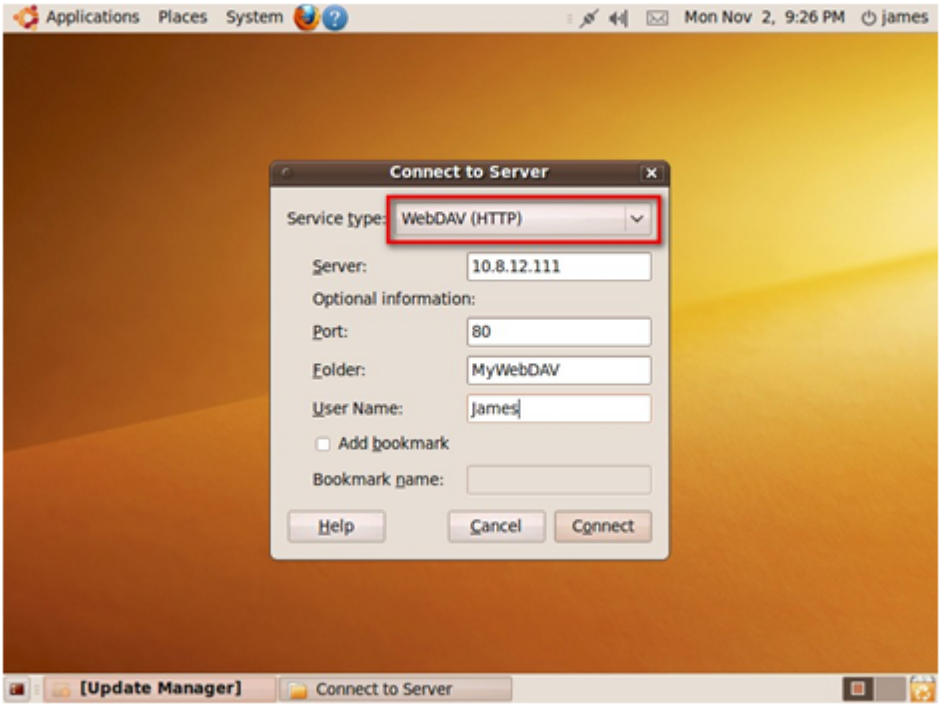
2. Select 'WebDAV (HTTP)' or 'Secure WebDAV (HTTPS)' for the Service type according to your NAS settings and enter your host information. Enter the user name and password which has the WebDAV access right to connect to this share folder. Click 'Connect' to initialize the connection.



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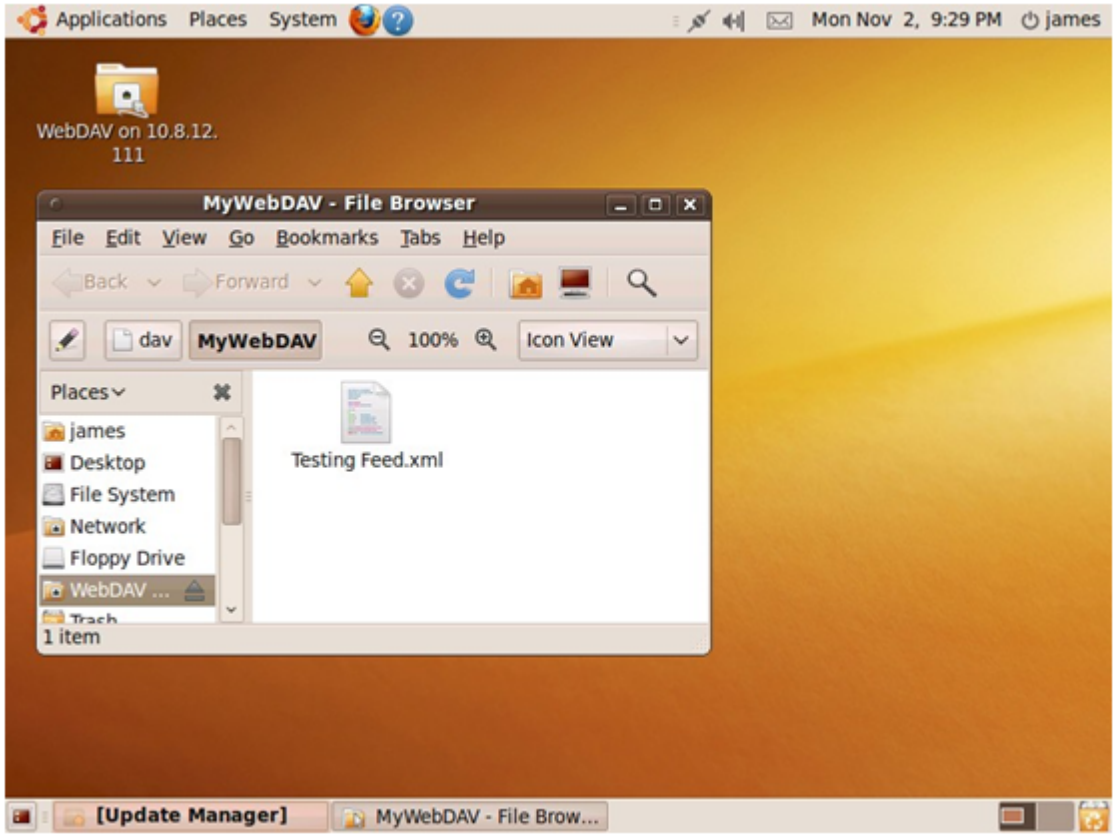
3. This WebDAV connection has been established successfully, a linked folder will be created on the desktop automatically.



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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.

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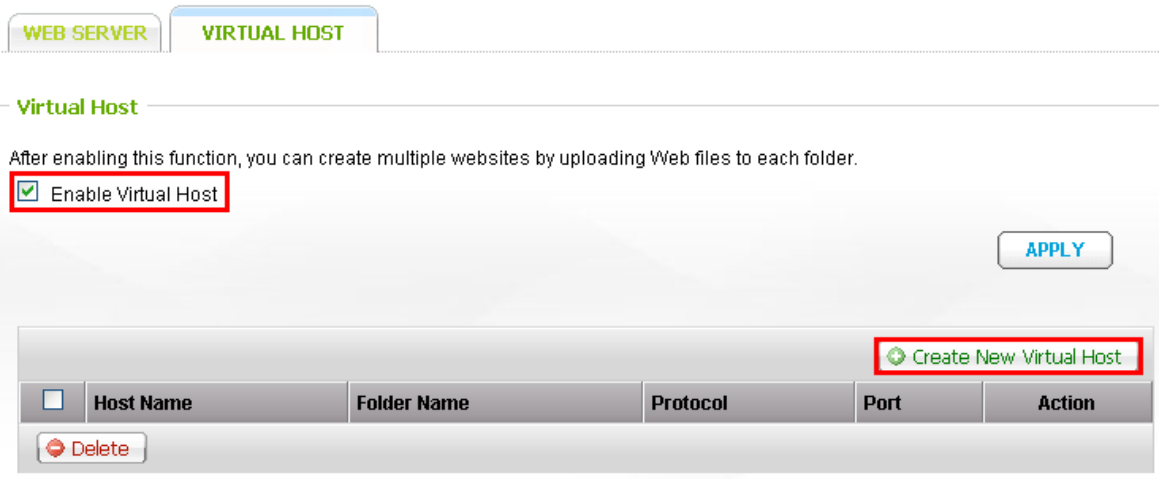
7.4.7.2 Virtual Host

You can host multiple websites (maximum 32) on the NAS with this feature.

Before you use virtual host, make sure you have enabled Web Server on the NAS. 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'.

* Make sure you have created a dedicated folder under Web or Qweb in 'Access Right Management' > 'Share Folders' for your web files.

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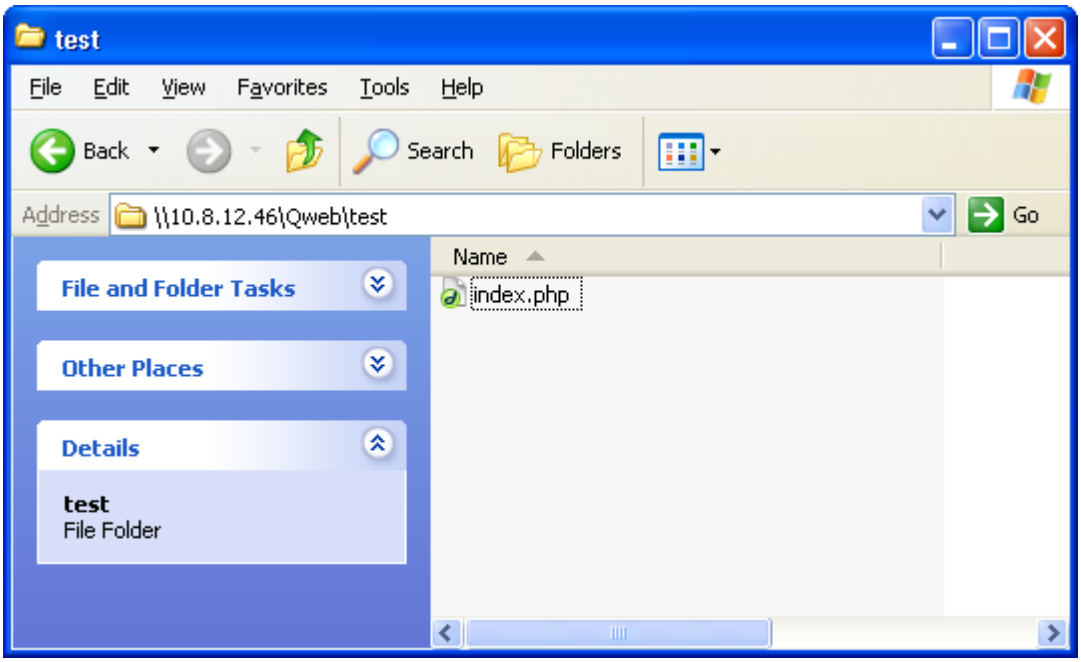
After creating the virtual host, you can upload the web files to the specified folder to publish your website on the NAS. After that, you can connect to the web page by http://NAS_IP:port_number or https://NAS_IP:port_number according to your settings.



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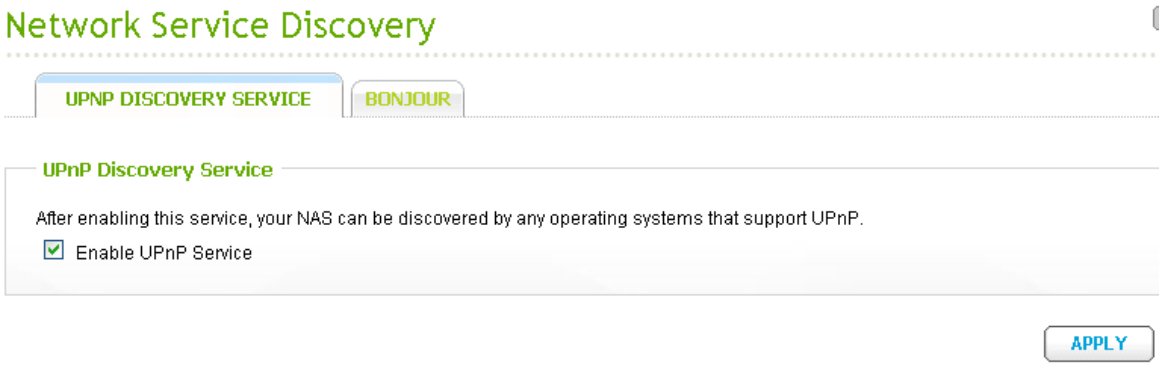
7.4.8 Network Service Discovery

UPnP Discovery Service

When a 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.



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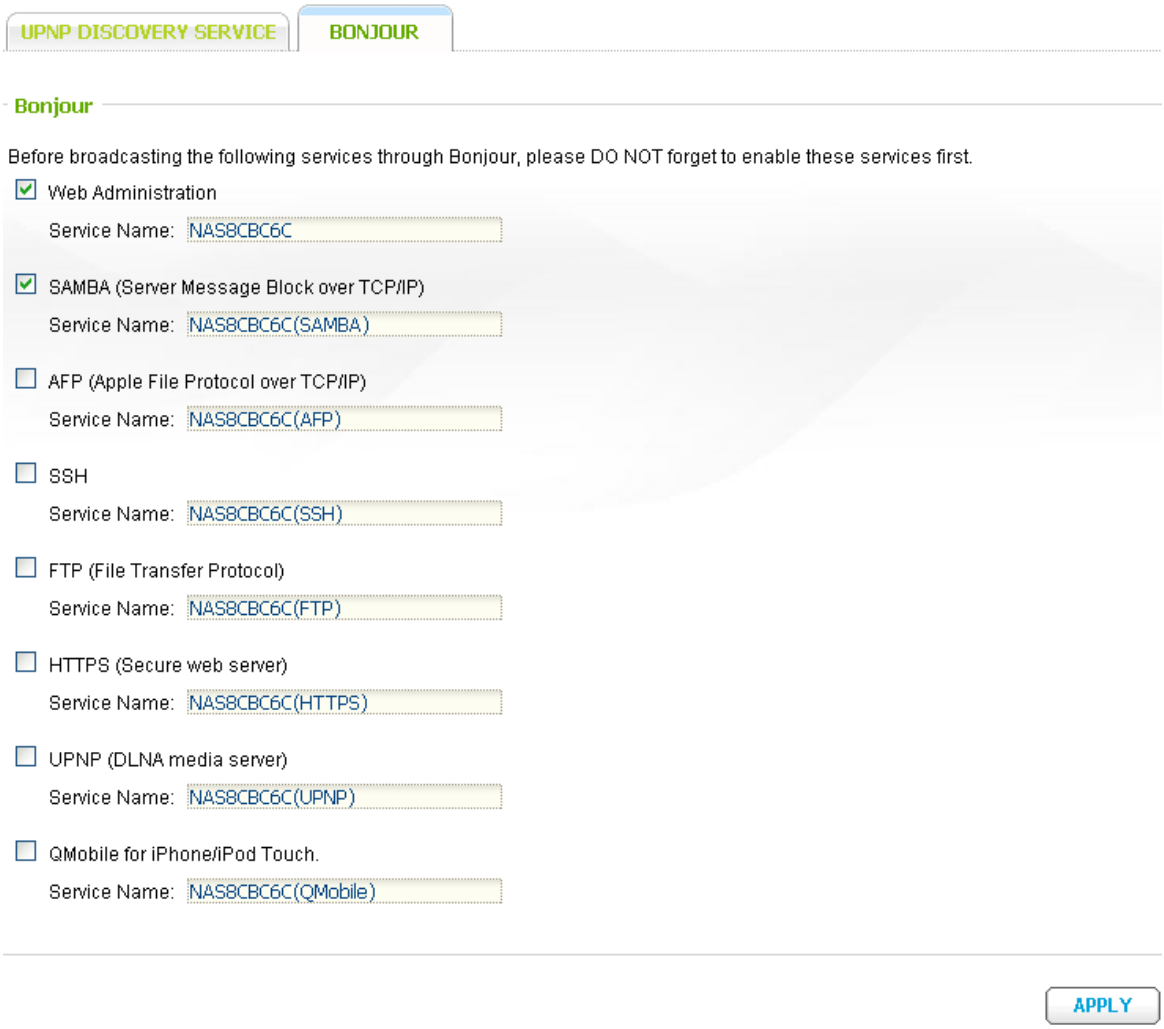
Bonjour

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.



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7.5 Applications

Web File Manager 176
Multimedia Station 184
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Surveillance Station 228
iTunes Service 236
UPnP Media Server 239
MySQL Server 241
QPKG Plugins 243

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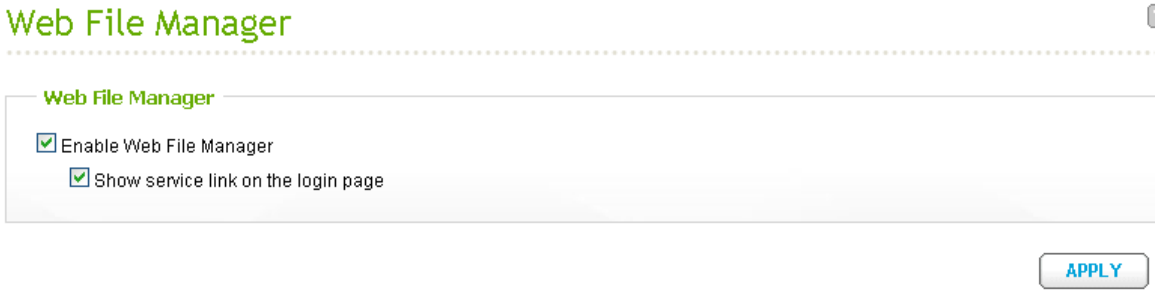
7.5.1 Web File Manager

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 'Applications' > 'Web File Manager'. Enable the service.



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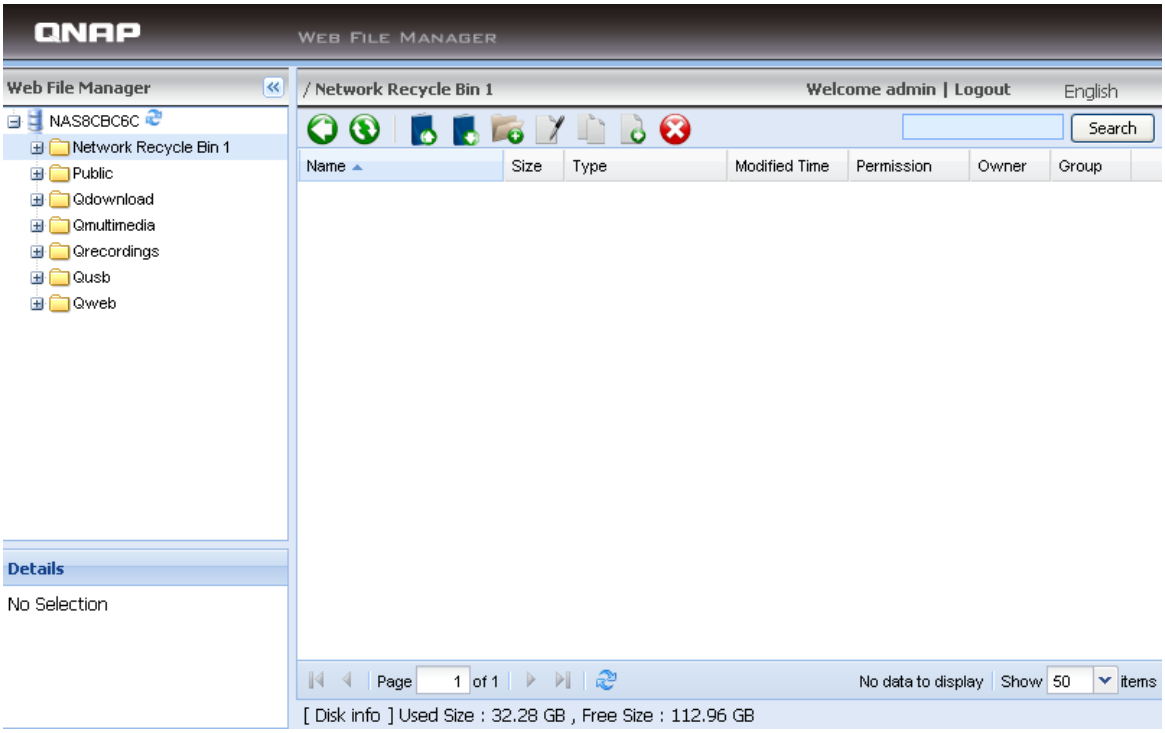
Click 'Web File Manager' on the top or on the login page of the NAS to connect to the Web File Manager. If you login the service from the login page of the NAS, you are required to enter the user name and password.

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.



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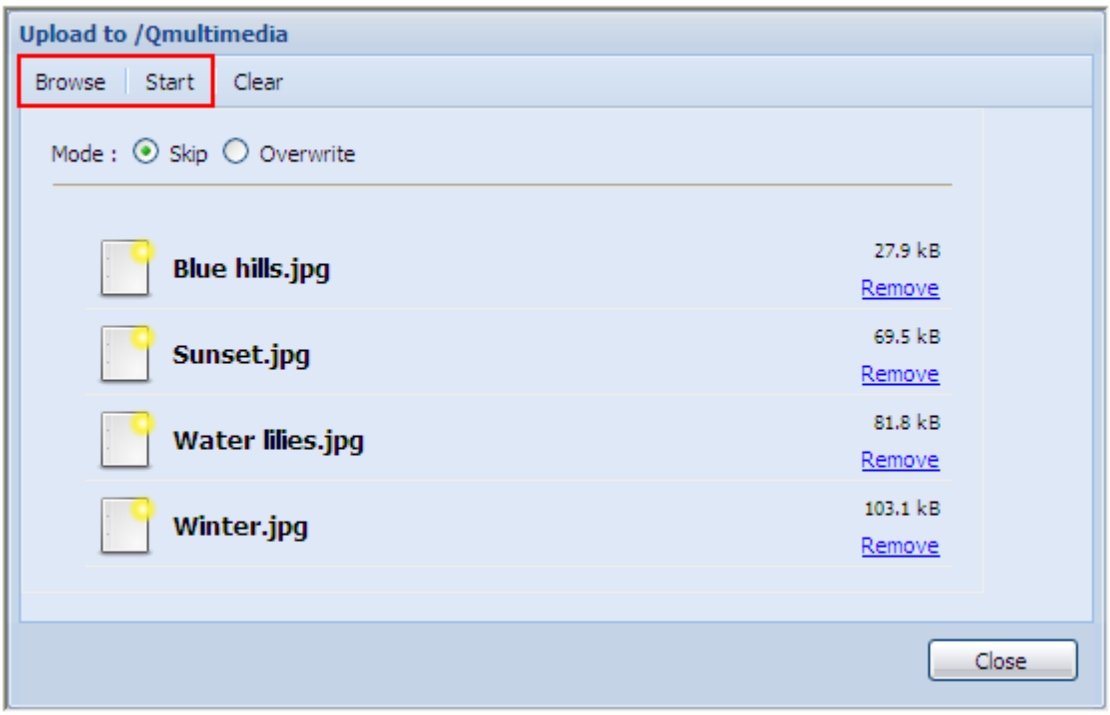
Upload file

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'.

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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.

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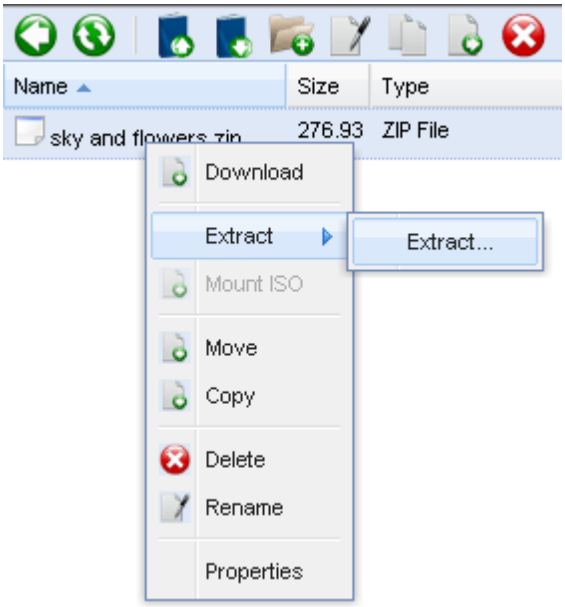
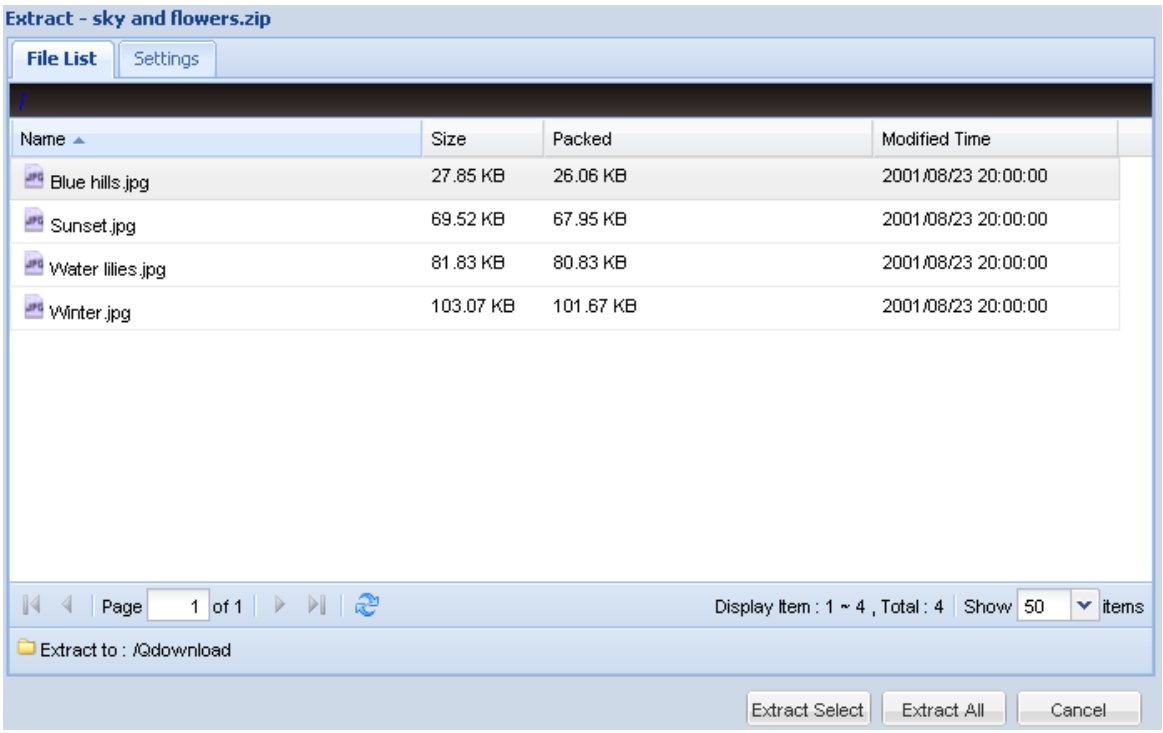
Extract files

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.



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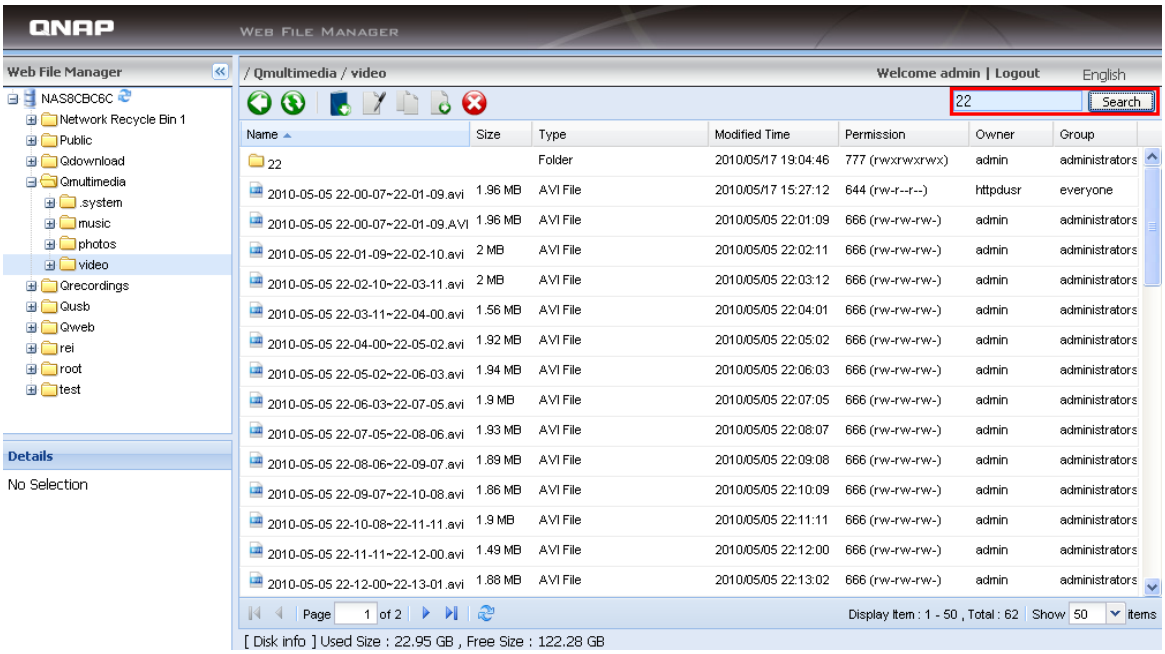
Files/ Folders Search

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.



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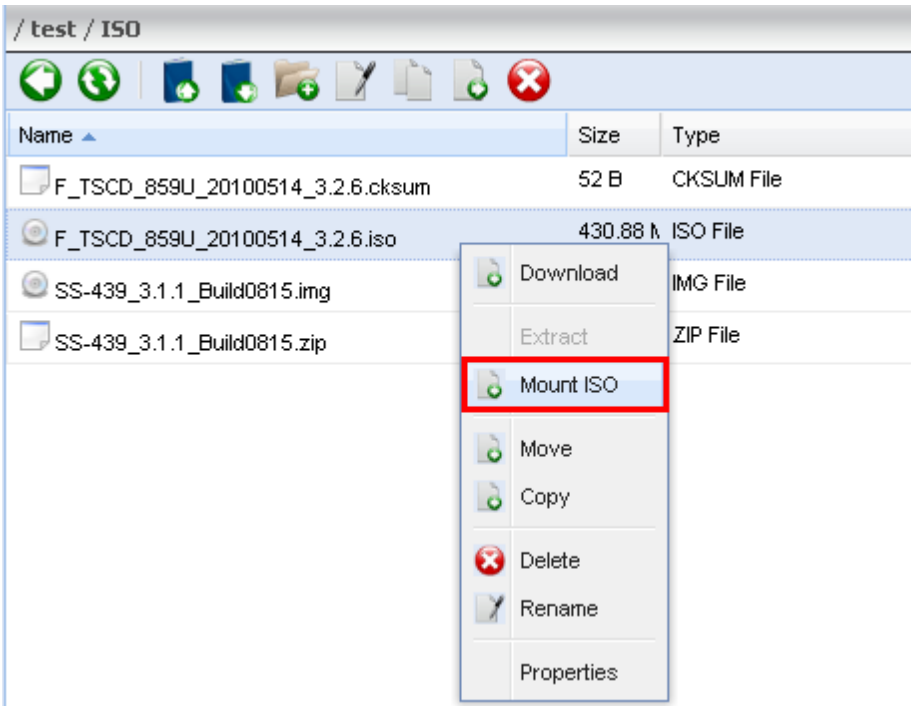
Mount ISO Shares

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.

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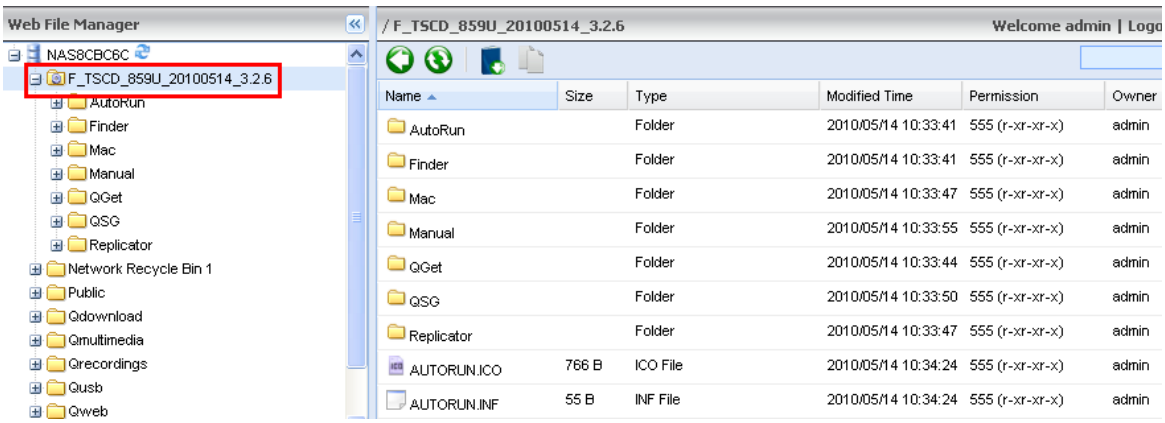
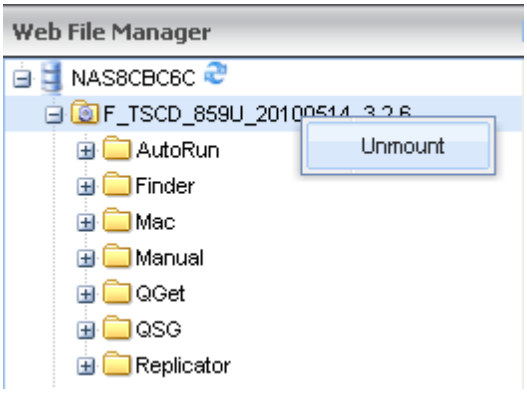
The ISO share folder will appear on the share folder list. You can access the contents of the ISO image file. You can login the NAS web interface with an administrator account and specify the access rights of the users in 'Access Right Management' > 'ISO Share Folders'.



To unmount the share folder, right click the folder name and select 'Unmount'. Then click 'OK'.



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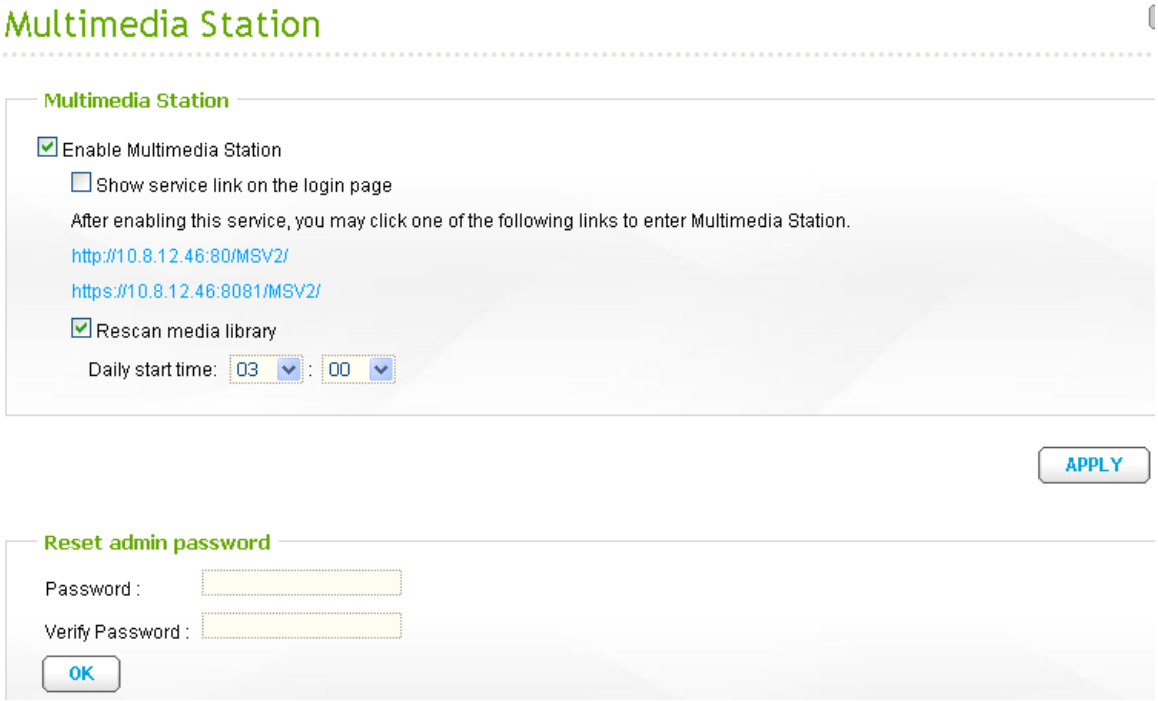
7.5.2 Multimedia Station

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 'Applications' > '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.



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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, -, !, @, #, $, %, _.

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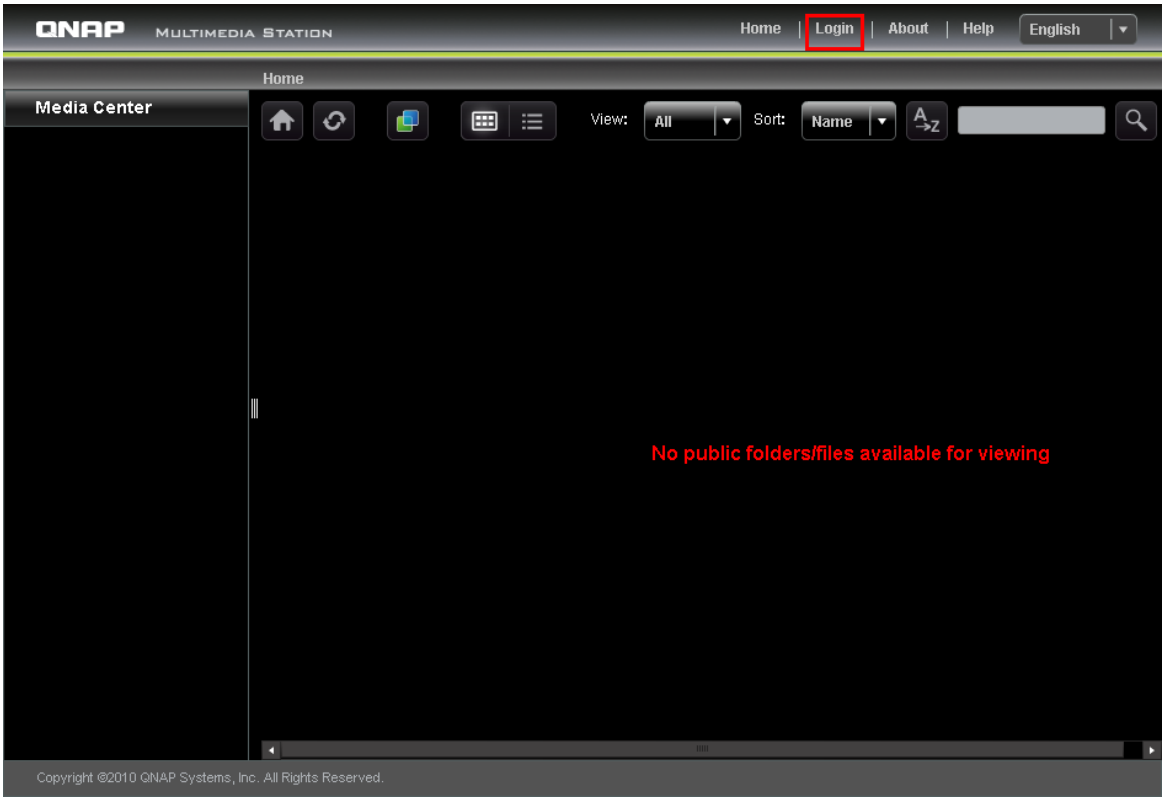
4. When the page of Multimedia Station is shown, click 'Login'. Enter the user name with access right to this service and the password. If you login as the administrator (admin), you can create new users and configure other advanced settings.



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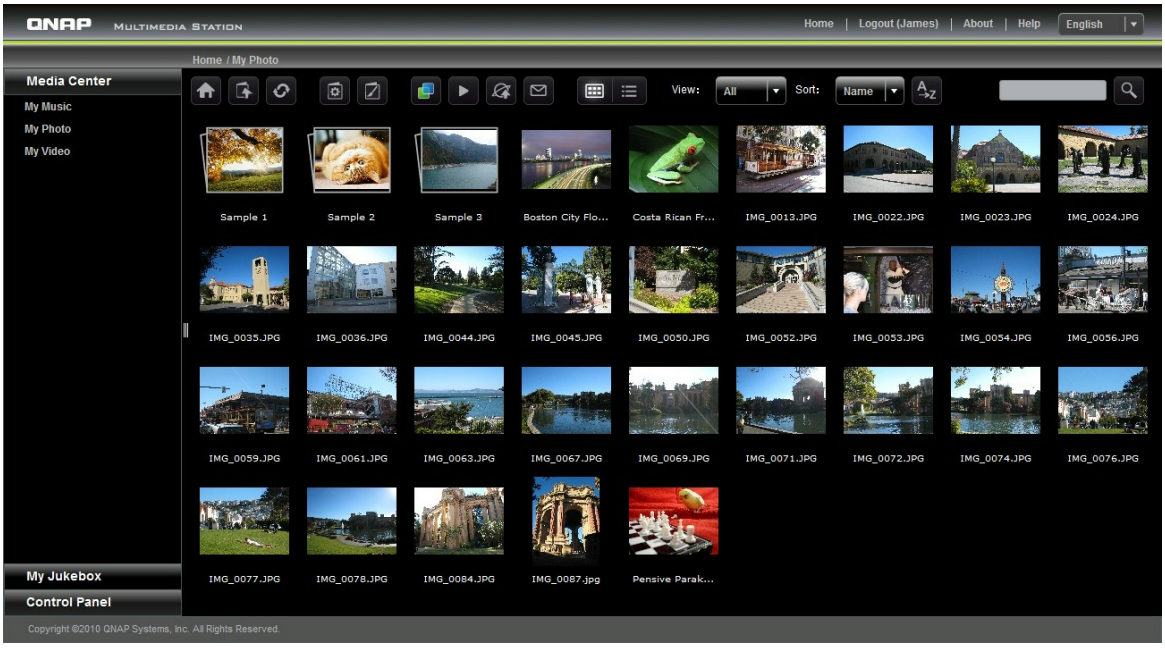
Multimedia Station consists of Media Center, My Jukebox, and Control Panel.



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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)

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	Home Return to the home directory of Multimedia Station
	Parent Directory Return to the parent directory
	Refresh Refresh current directory
	Manage Album* 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.
	Set Album Cover* You can set up the album cover for each album/ directory by specifying one photo in this album/ directory.
	Cooliris Browse your photos in 3-dimensional way with Cooliris. You need to install the Cooliris plug-in for your browser first.
	Slide Show Start slide show. You can set up the photo frame, background music, and animation in the slide show mode.
	Publish* 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.
	E-mail* 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.
	Thumbnails You can browse the files in thumbnail view. This is the default view in Multimedia Station.

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	Details You can browse the files in detailed view. It supports the following functions: Open, Rename, Delete, Download, and Full Image View.
	Sort You can choose to sort files alphabetically in ascending or descending order.
	Search You can search files by this function. Note that it only supports search within the current directory.

*Options that can be operated by administrators only.

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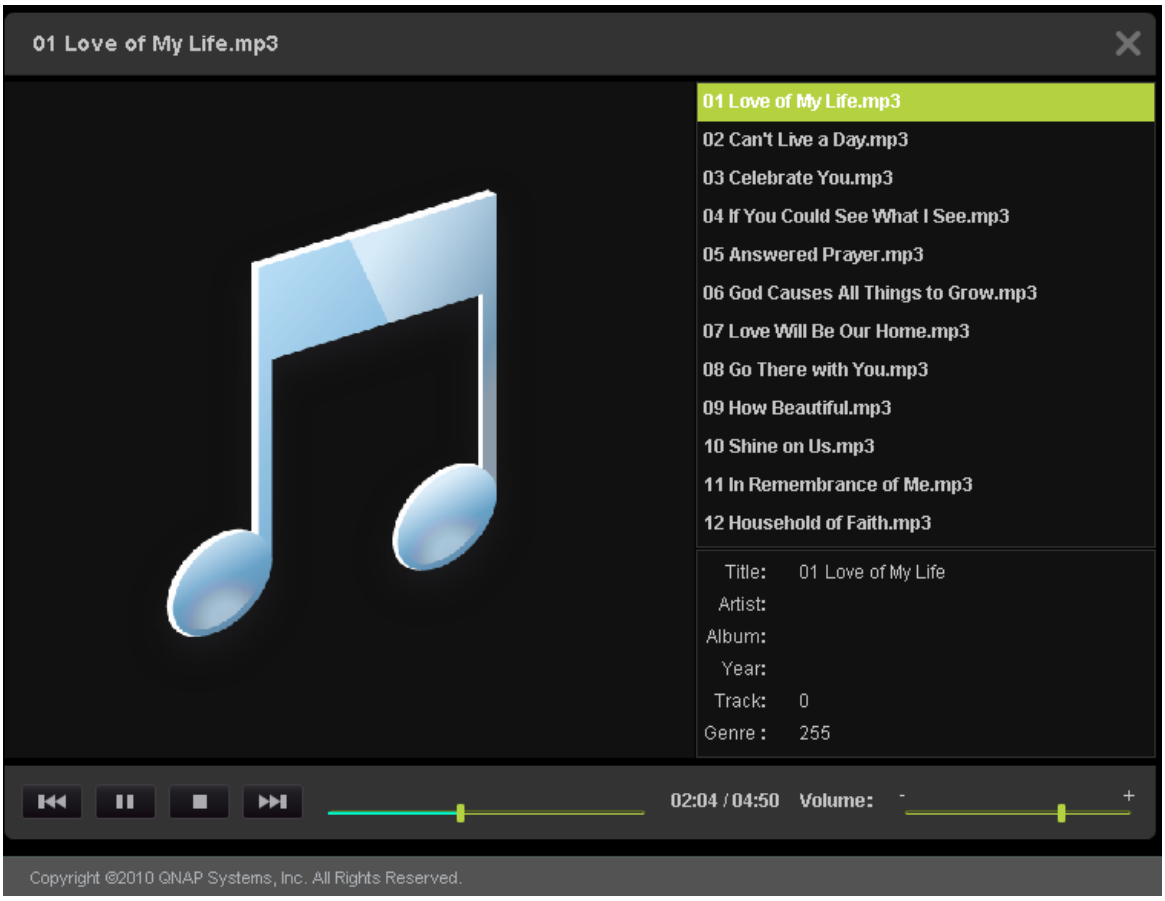
Play music

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.



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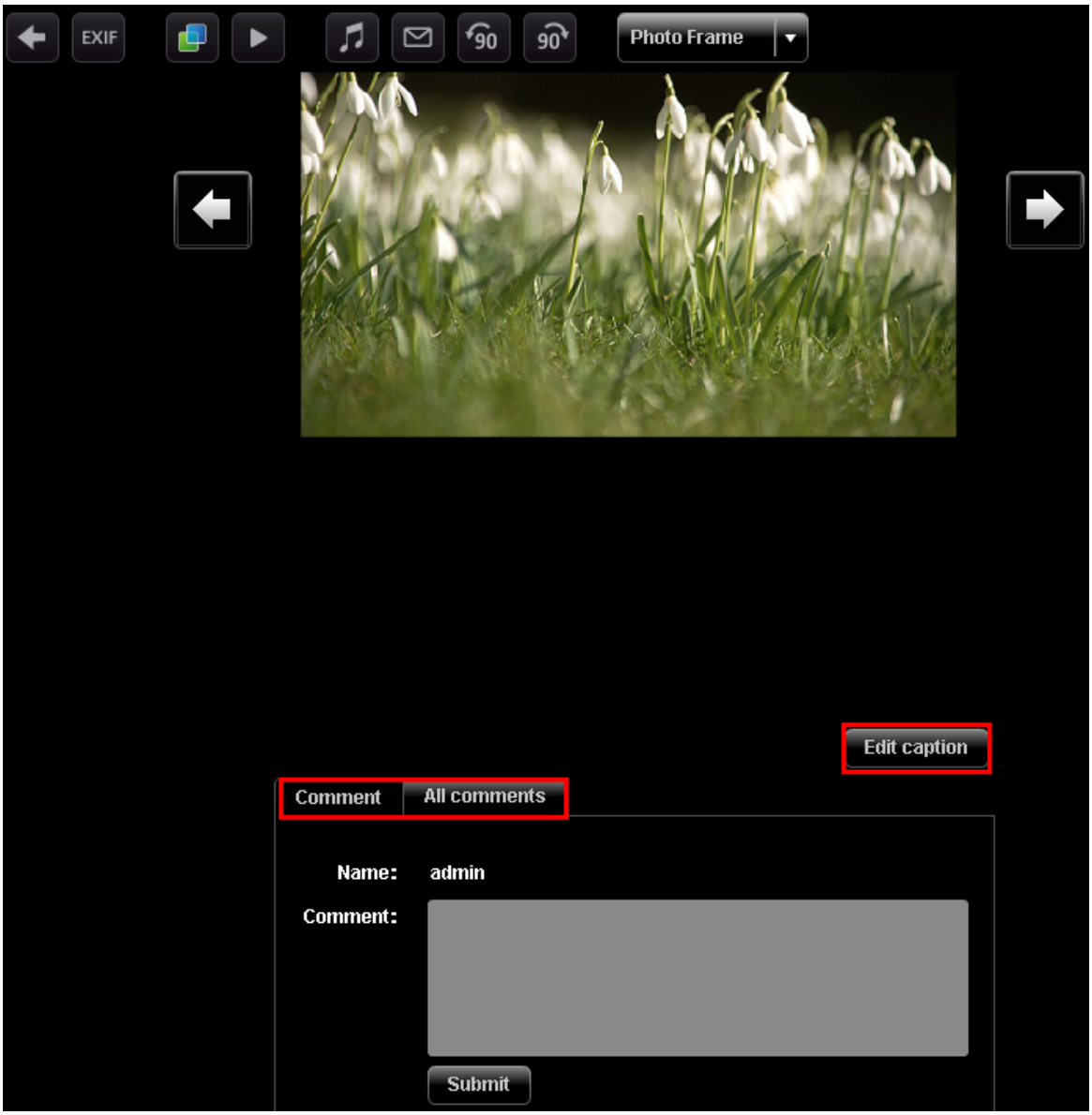
View image files

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.



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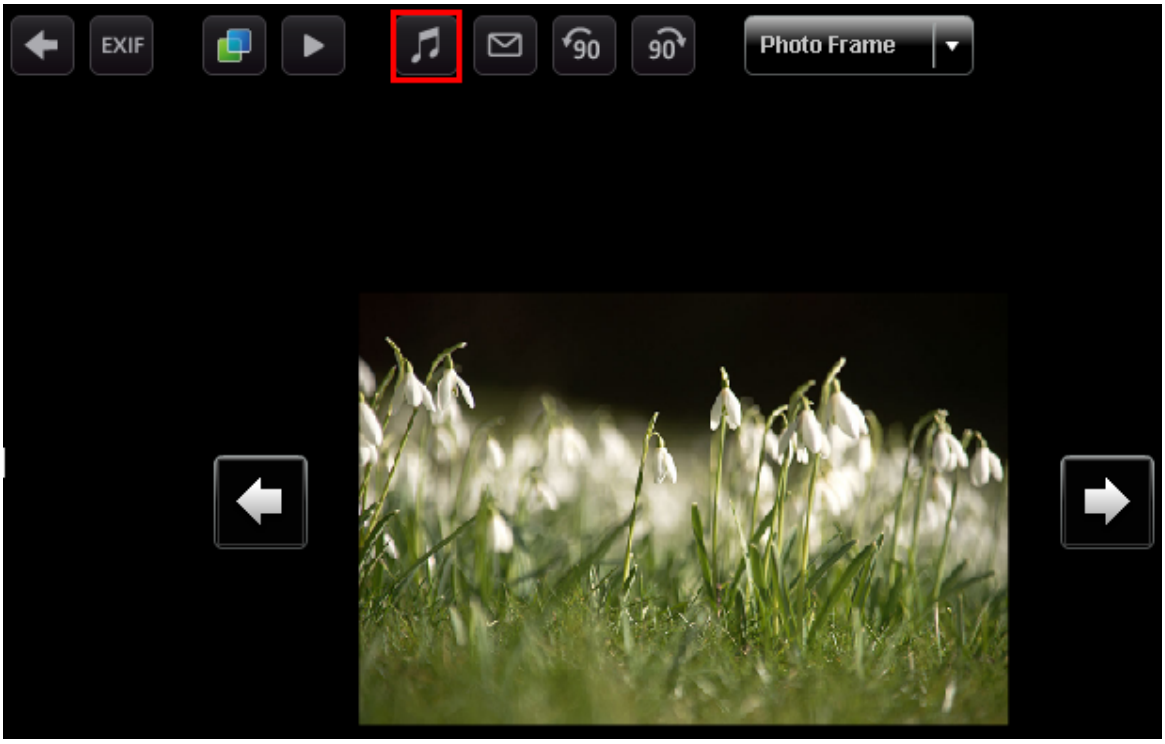
Set background music

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'.

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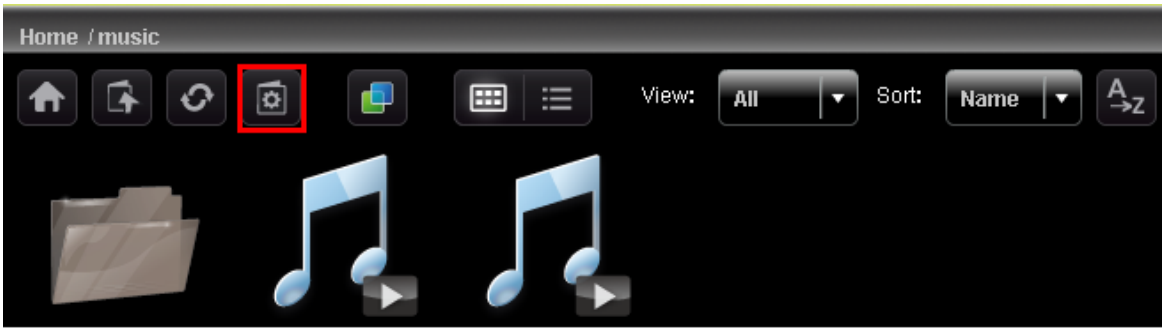
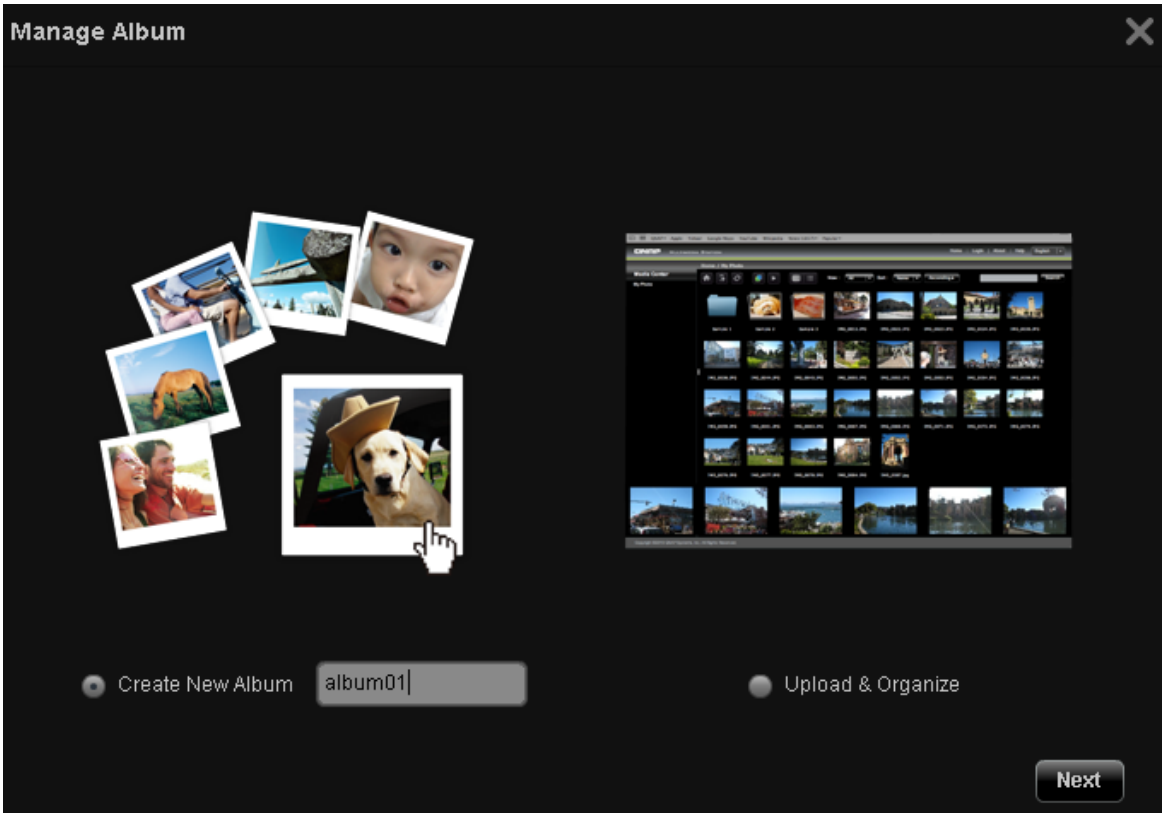
Create album

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 | \ : ? " < > *



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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.

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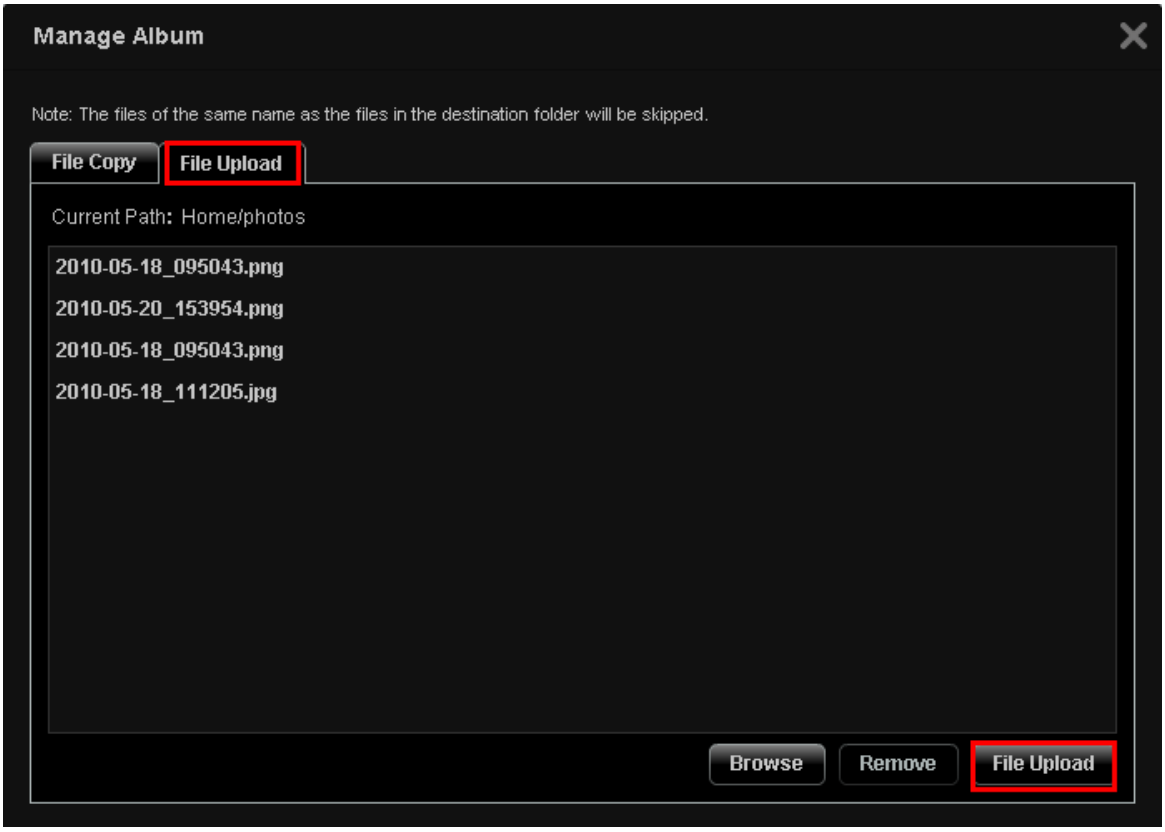
To upload files to the album, click 'Browse' to select the files and click 'File Upload'.



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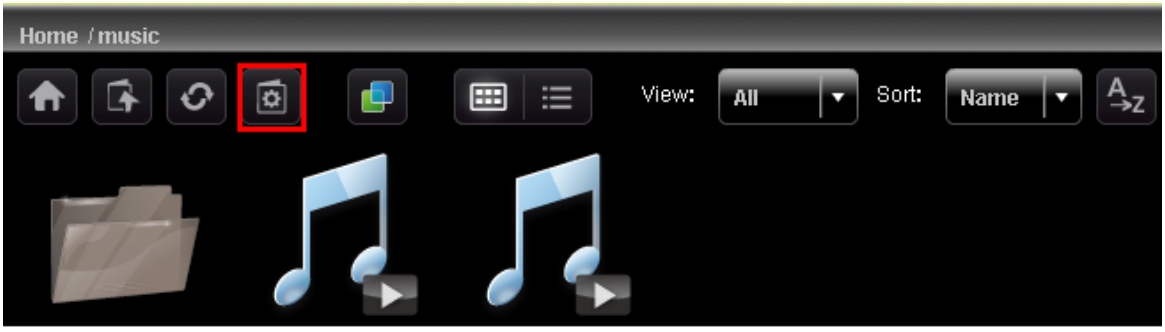
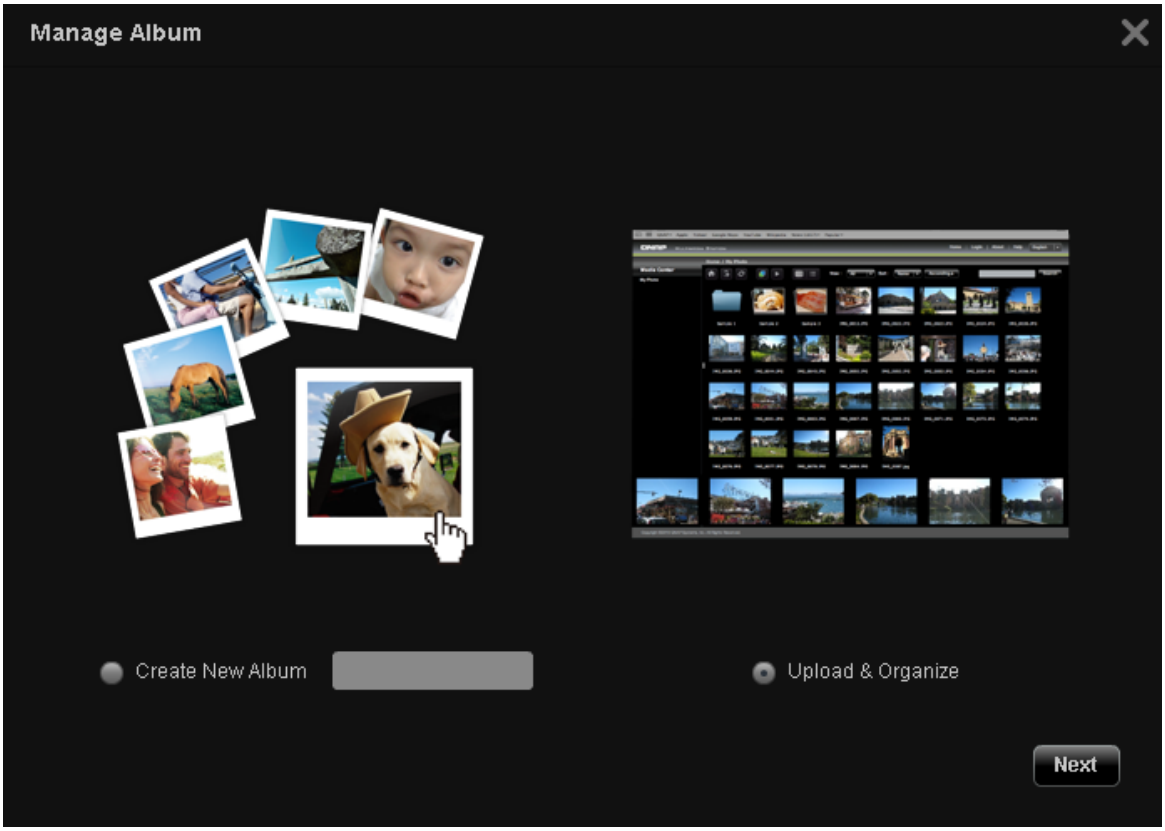
Manage album

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'.



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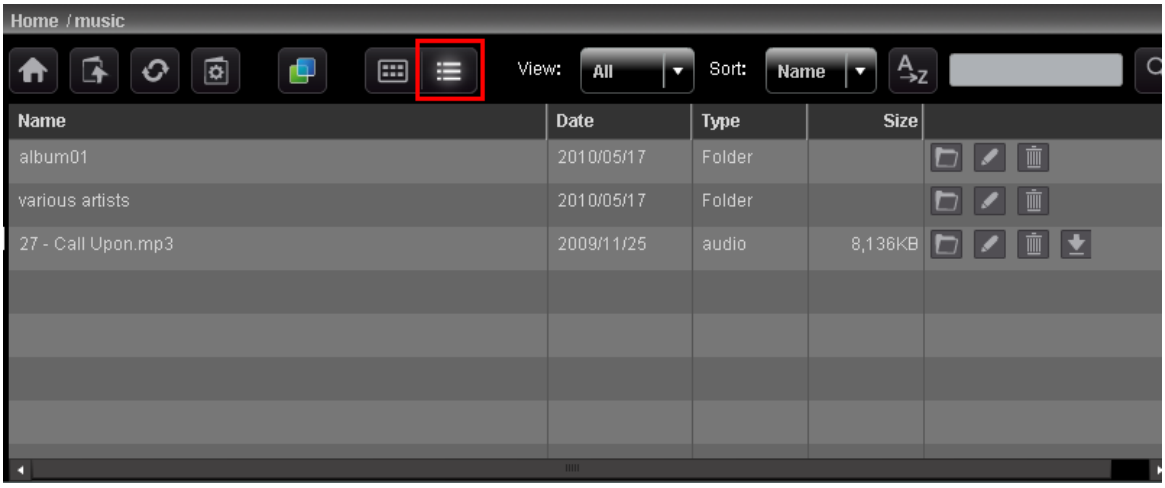
To copy the files from other location in Media center to the album, select 'File Copy', choose the files to copy and click >. Then click 'File Copy' to start copying the files. To upload files to the album, click 'Browse' to select the files and click 'File Upload'.

You can click to browse the multimedia contents in details and click the icons to open, rename, delete, or download the files or folders.



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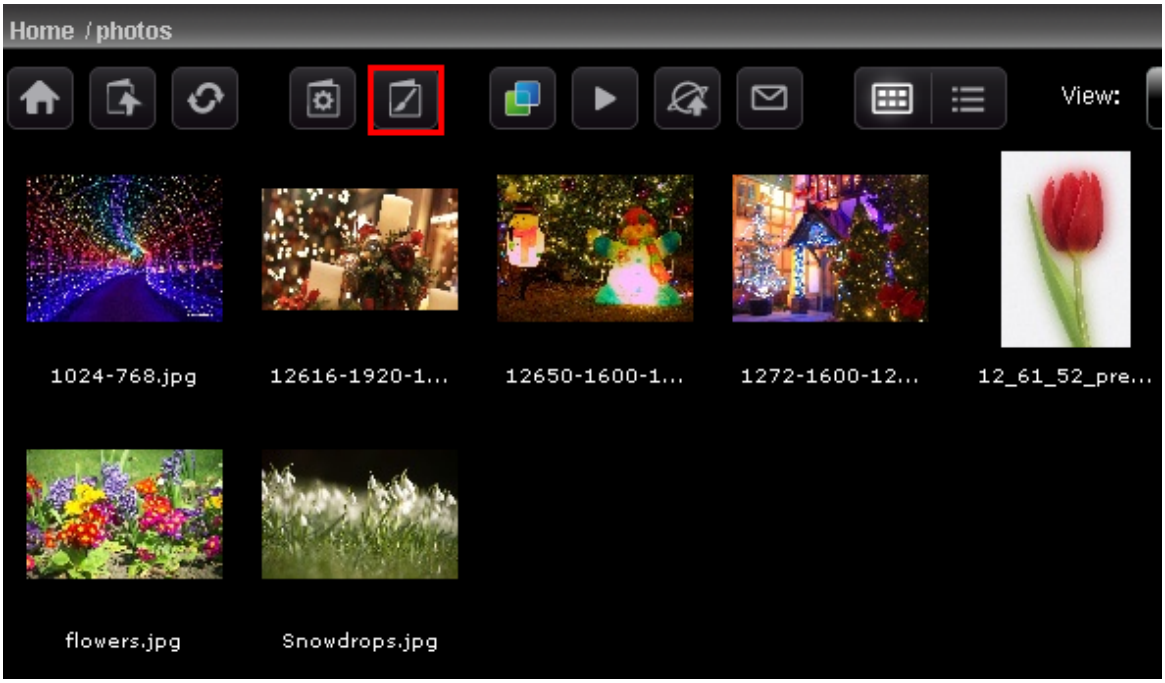
Set album cover

To set an image file as the album cover, click .



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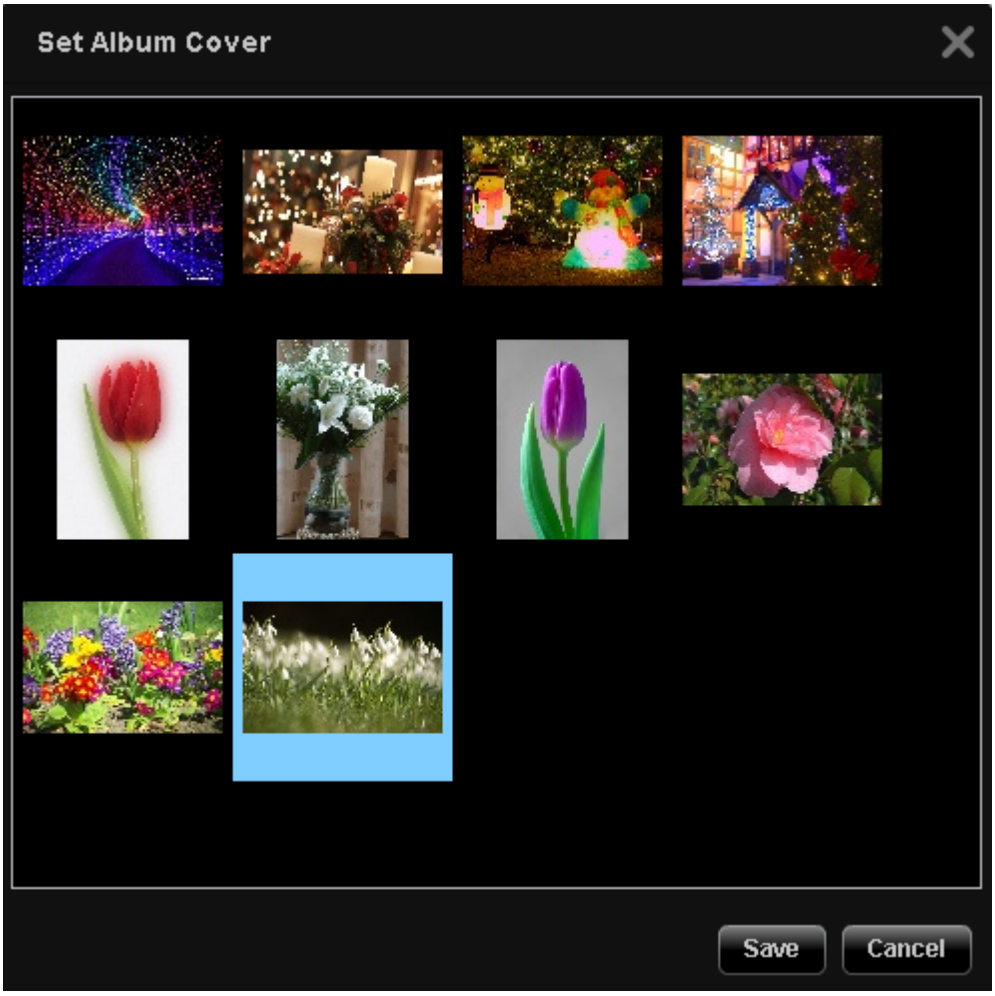
Select the image file and click 'Save'.



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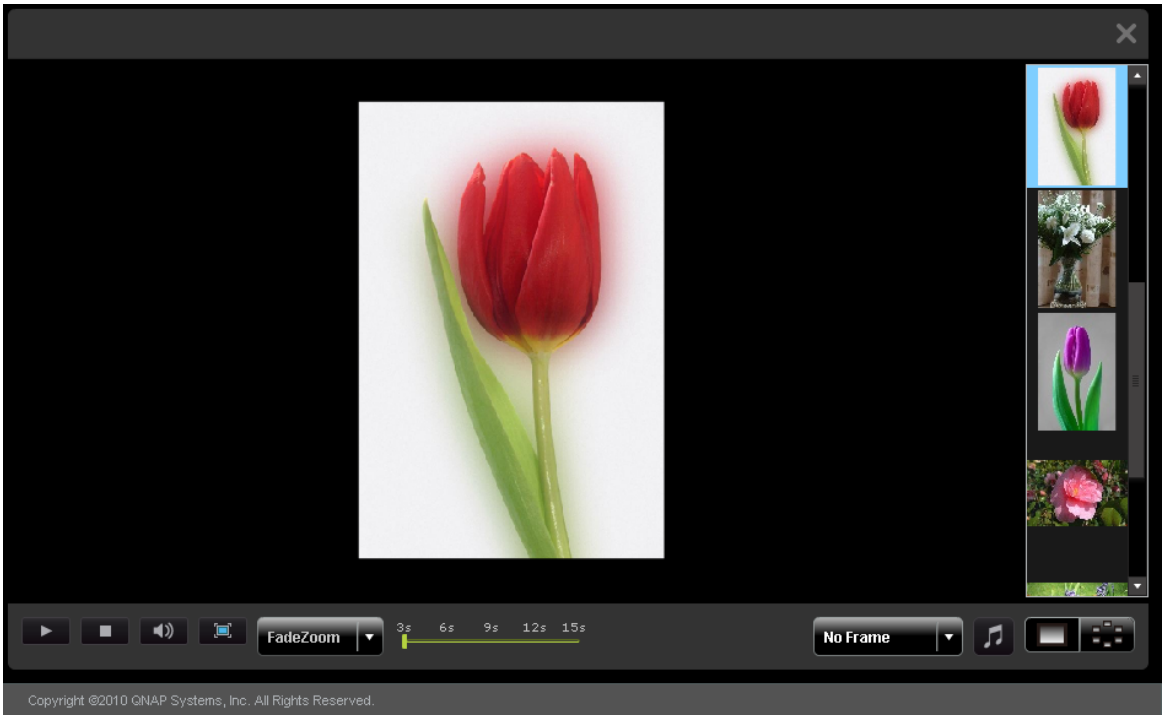
Slide Show

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 .



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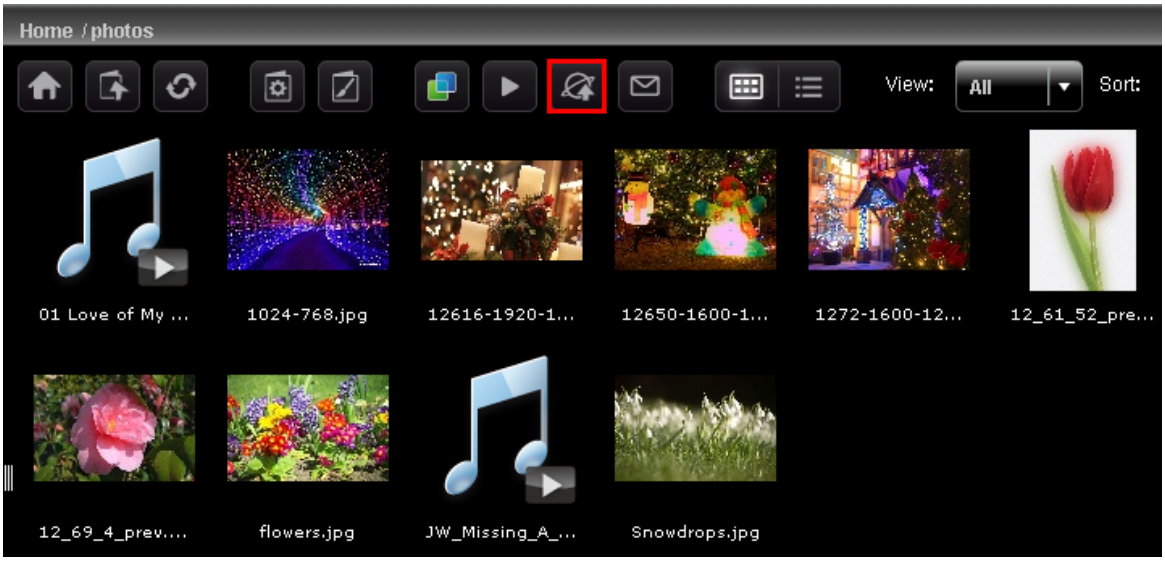
Publish image files

You can publish the image files on Multimedia Station to social networking sites such as Facebook and Twitter. Click .



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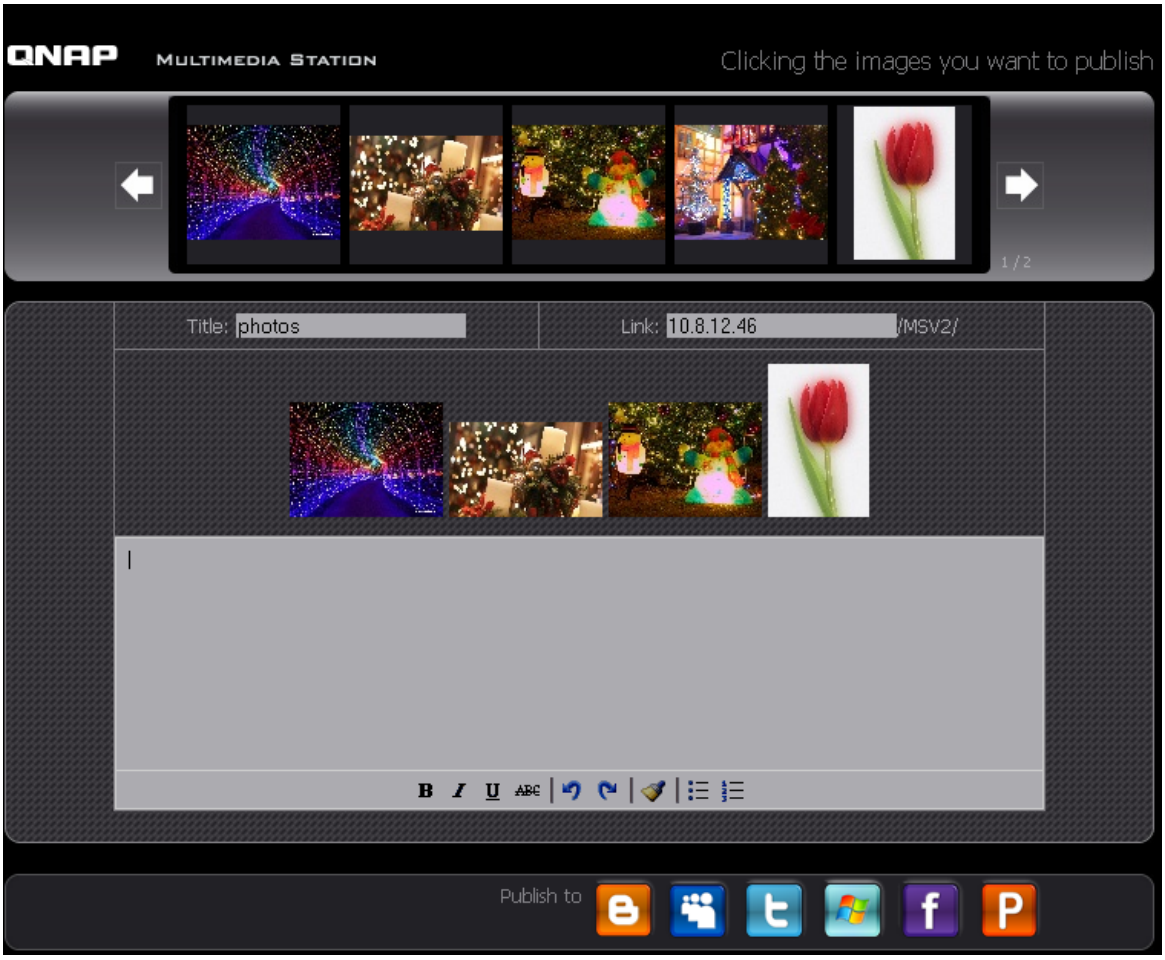
Select the image files to publish. You can publish maximum 5 photos at a time. Enter the title and description. Then select the website to publish the files to and enter the login information of the website. Note that the album must be set to public (Control Panel > Set Folder Public) before it can be 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



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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

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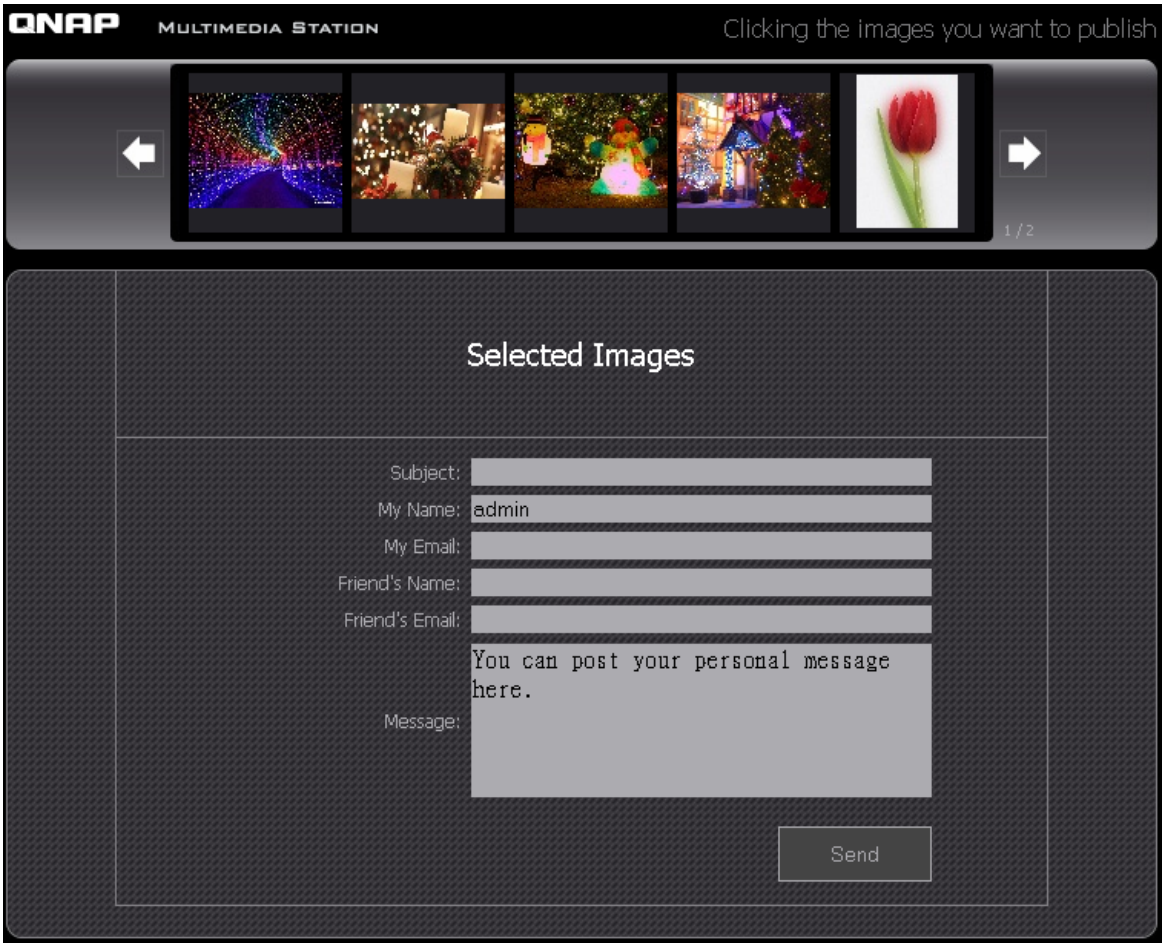

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Play video

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.

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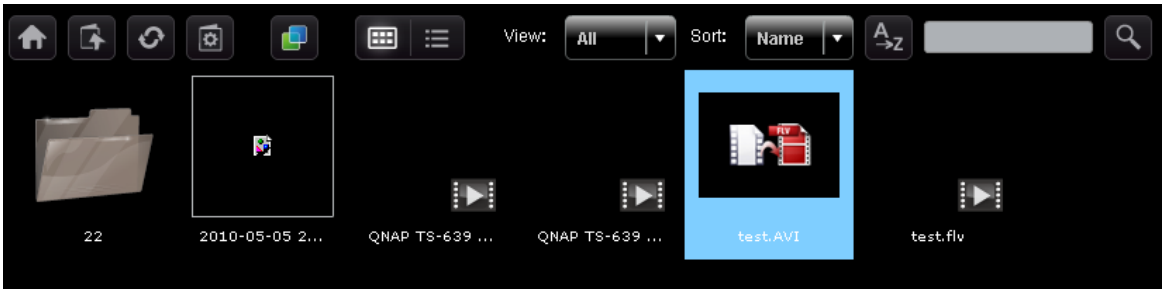
Transcode video

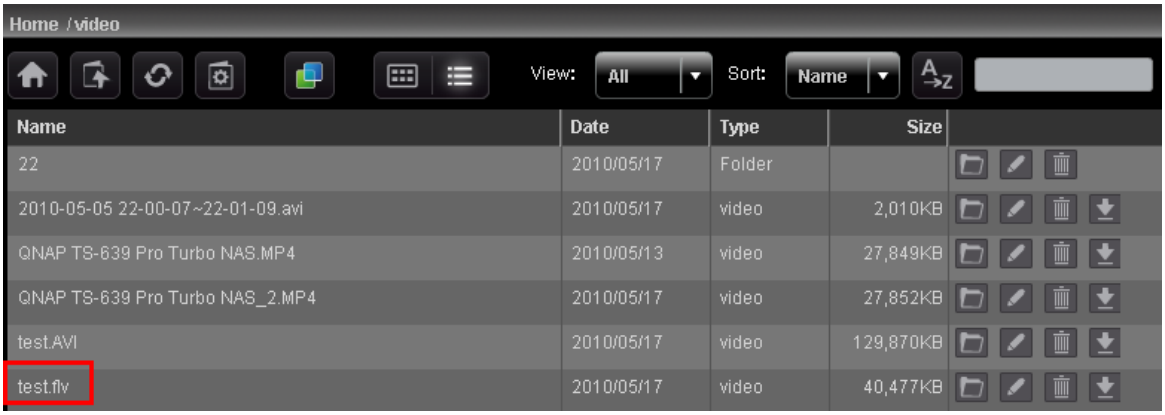
If the video files are in AVI, M4V, MPG/MPEG, RM/RMVB, WMV formats, you need to transcode the file in order to play it on Multimedia Station properly. A video file which can be transcoded is shown with an icon like below in thumbnail view.

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.



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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.

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Control Panel

User Management

You can create multiple user accounts on Multimedia Station. Note that the user accounts created here are different from the system accounts you create on NAS (Access Right Management > Users). Click 'Add User' to create a user. The maximum number of users Multimedia Station supports is 128, including 'admin'.

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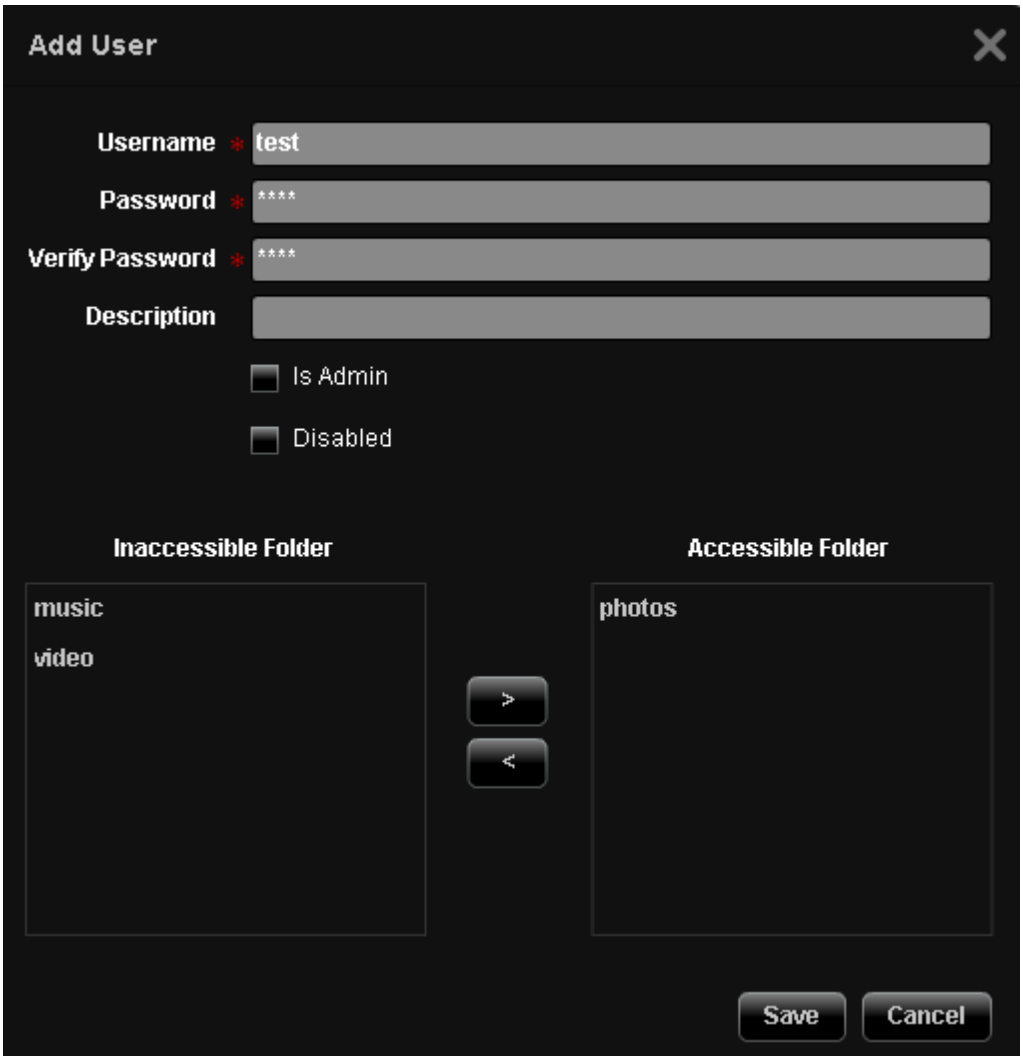
Enter the user information. The user name only supports alphabets (A-Z and a-z), numbers (0-9), dash (-), and underscore (_). The user name cannot exceed 32 characters.

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.

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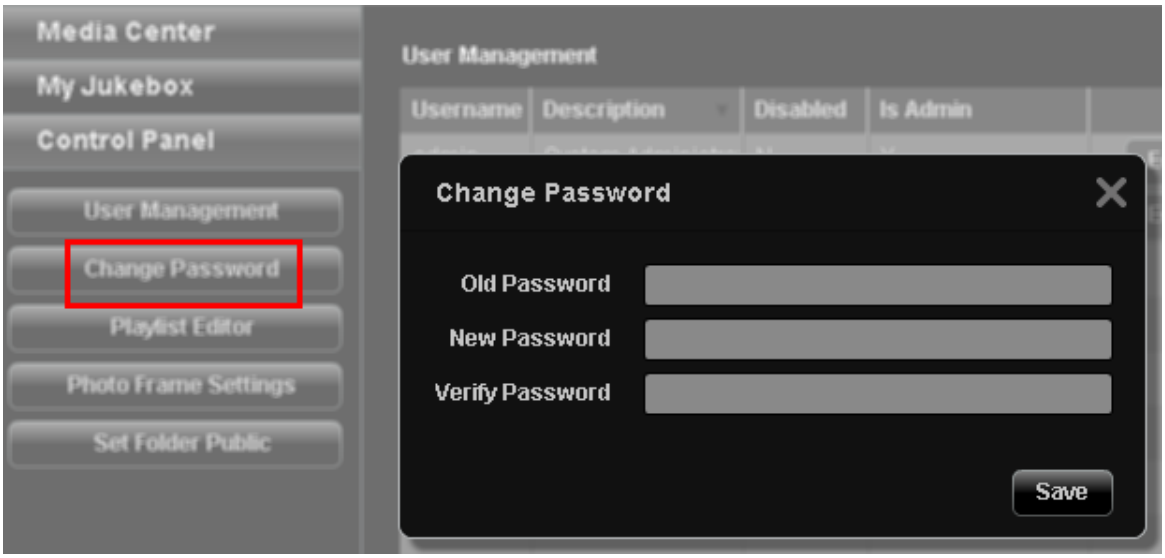
Change Password

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, -, !, @, #, $, %, _.



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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

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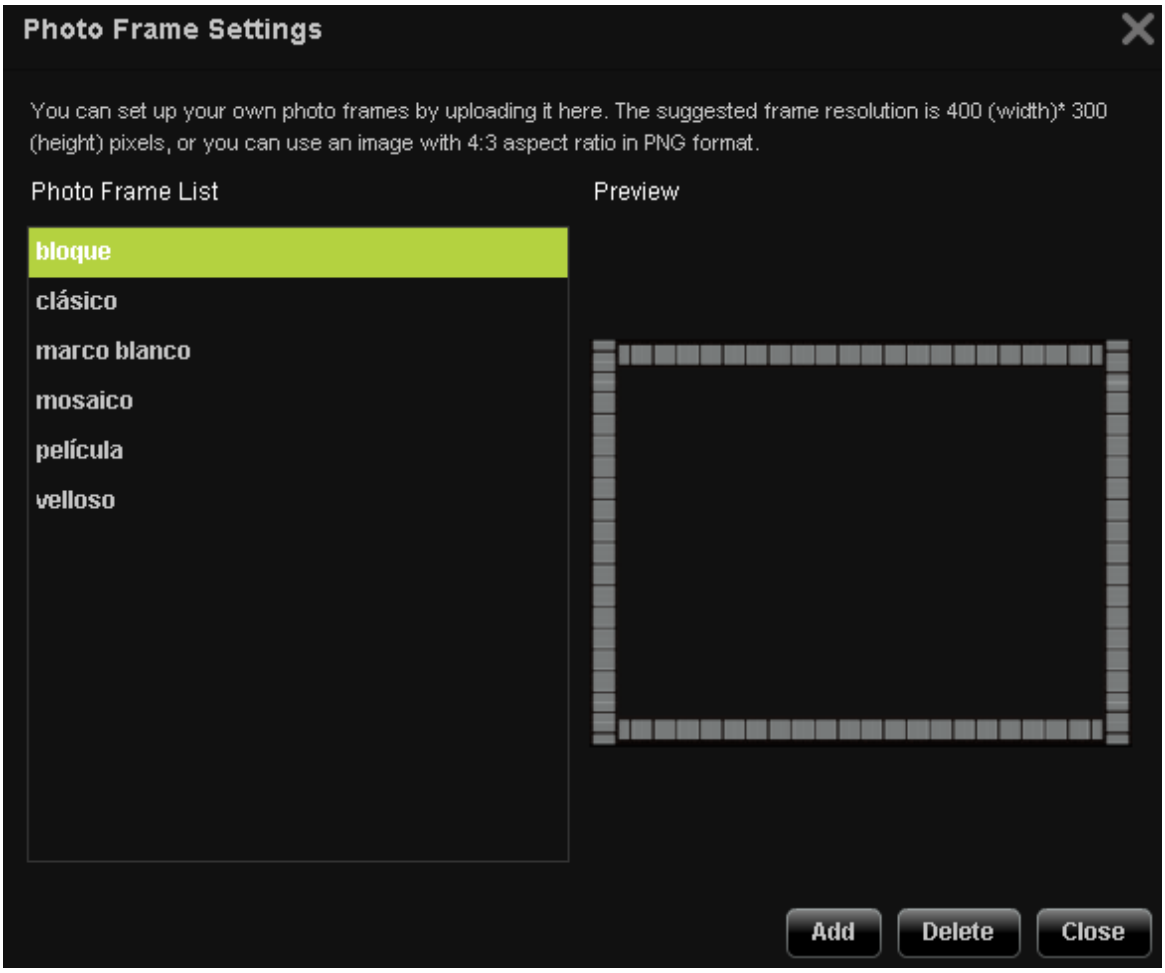
Photo Frame Settings

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.



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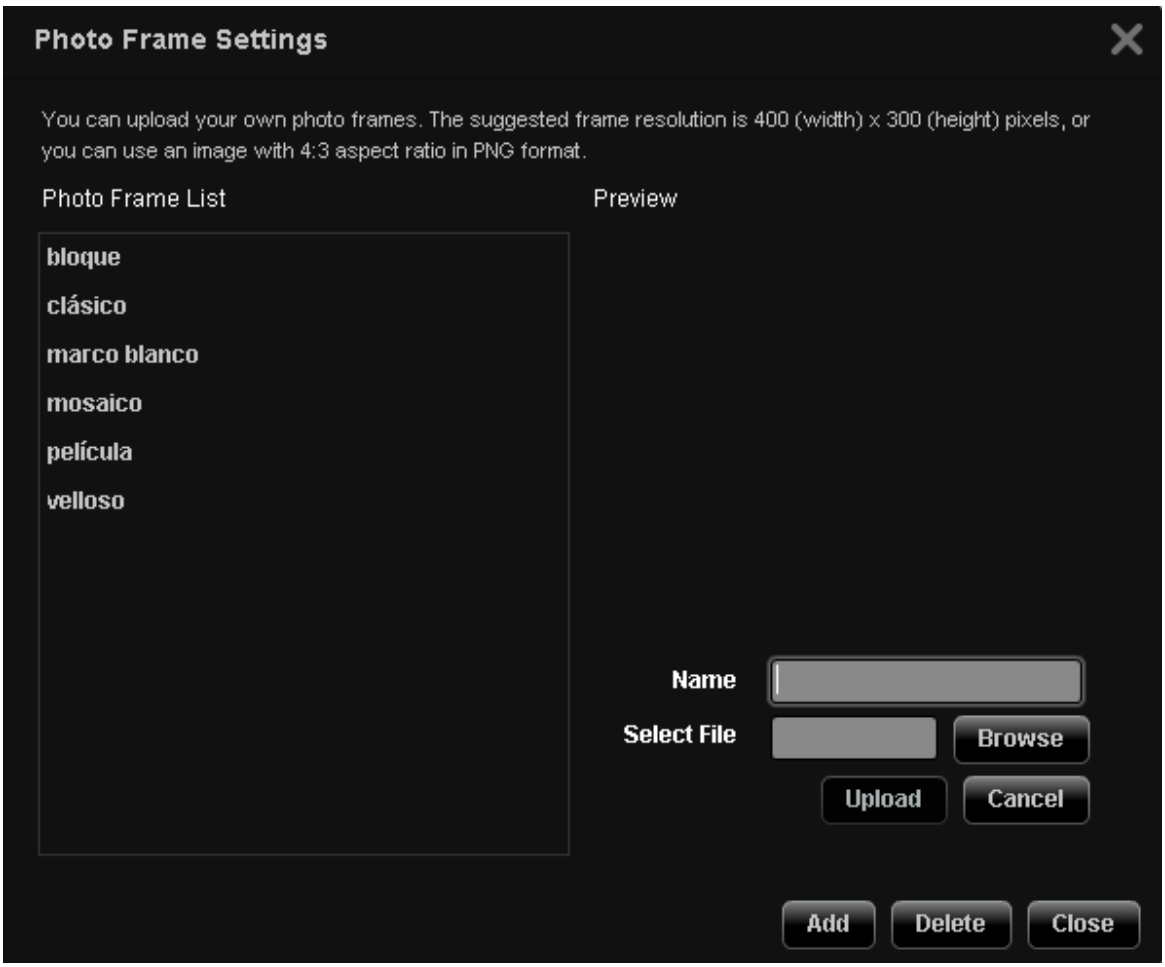
The name of a photo frame must be 1 to 16 characters long. The maximum number of photo frames Multimedia Station supports is 64 (including the system default photo frames). Note that the system default photo frames cannot be deleted.



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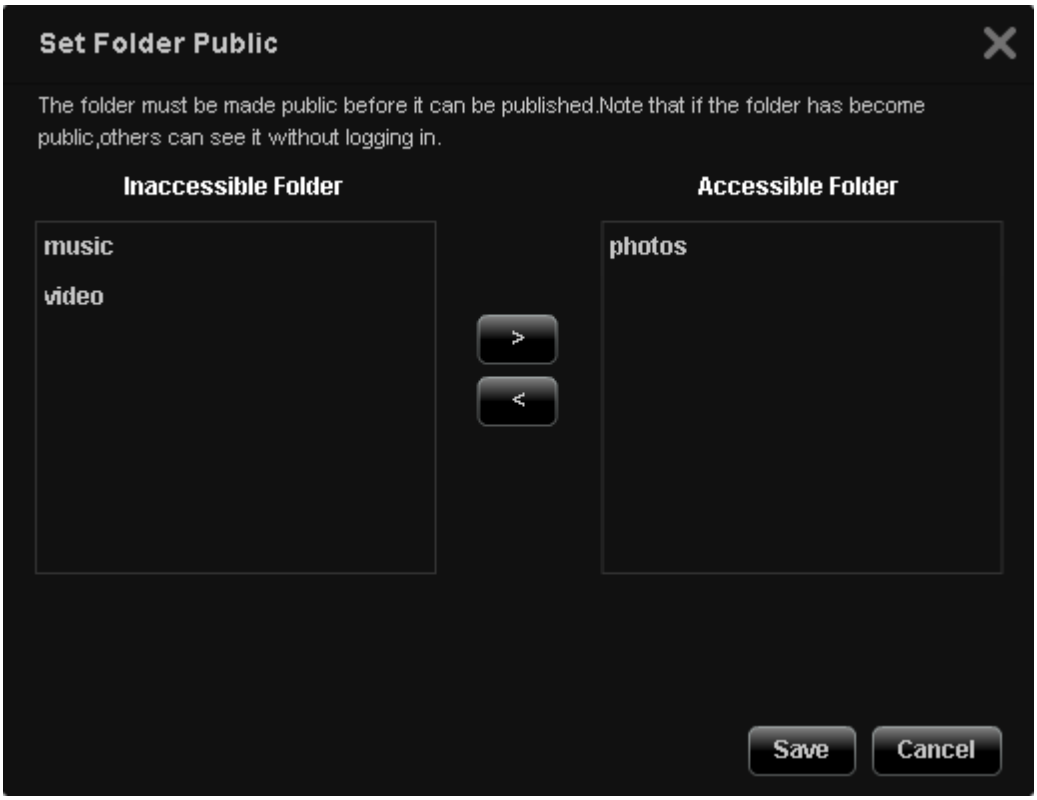
Set Folder Public

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.



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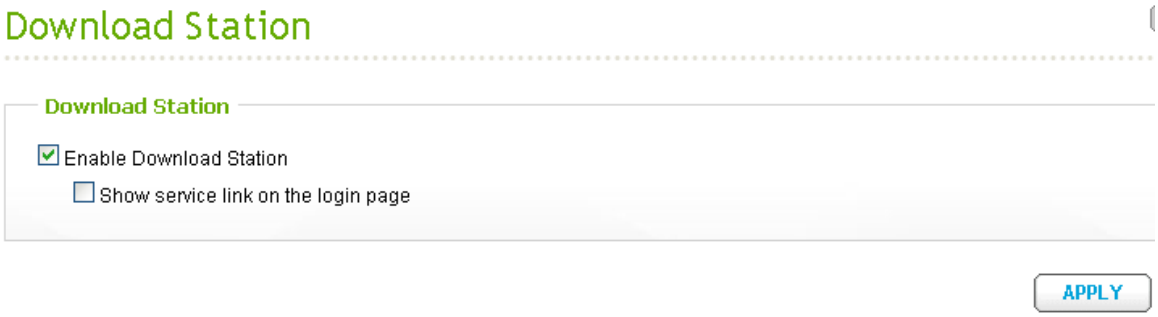
7.5.3 Download Station

The NAS supports BT, HTTP, and FTP 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.

1. Go to 'Applications' > 'Download Station'. Enable the service.



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.

3. Select 'Add new BT task' or 'Add new FTP/HTTP task'.

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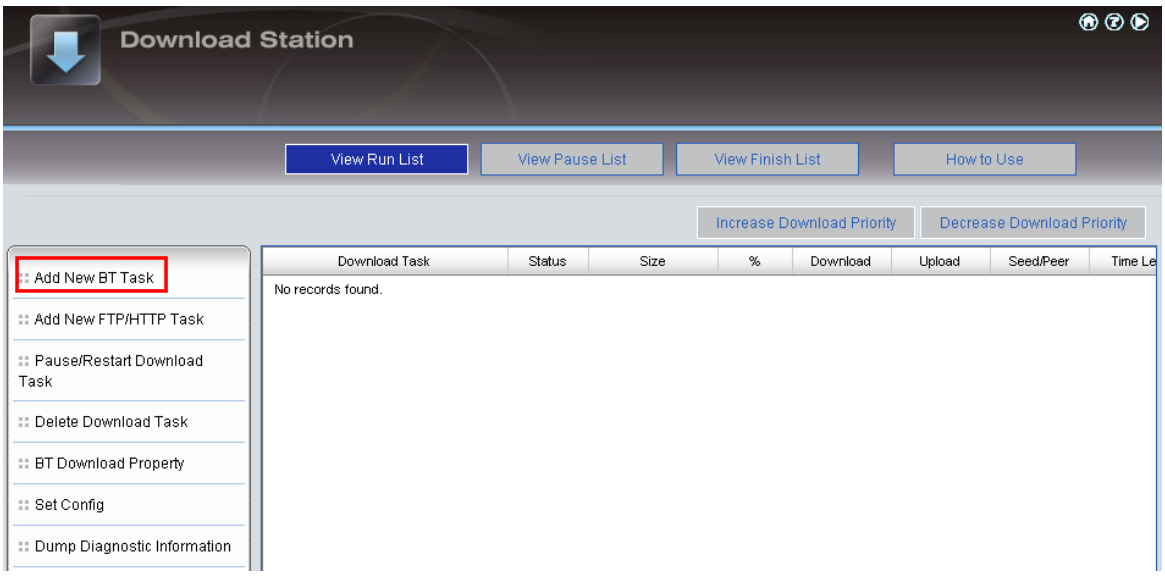
Add a new BT task

Click 'Add new BT task' on the left and upload a torrent file. You can download the legal torrent files from the Internet. There are websites that provide legally shared torrents, for example www.legaltorrents.com. Please download the torrent files to your local disk and then upload them to the NAS.



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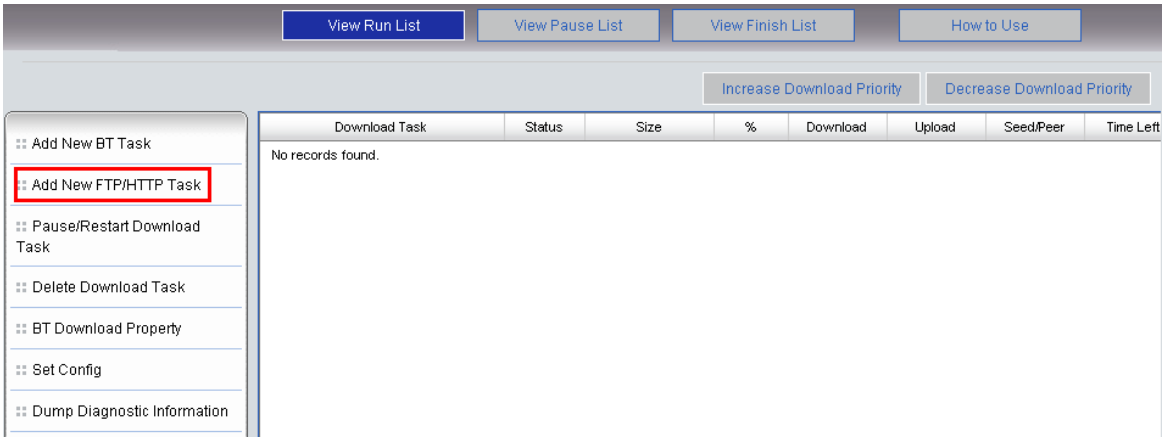
Add a new FTP/HTTP task

To run an FTP download task, click 'Add new FTP/HTTP task'. Enter the FTP URL of the download task and select the share folder to save the files. Enter the user name and password to login the FTP server (if necessary). Then click 'OK' to start downloading.
To run an HTTP download task, click 'Add new FTP/HTTP task'. Enter the HTTP URL of the download task and select the share folder to save the files. Then click 'OK' to start downloading.



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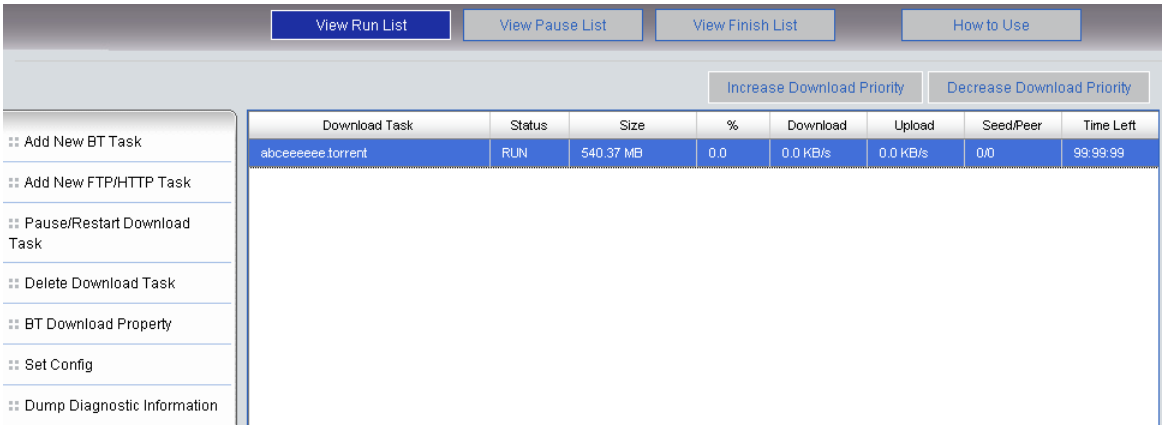
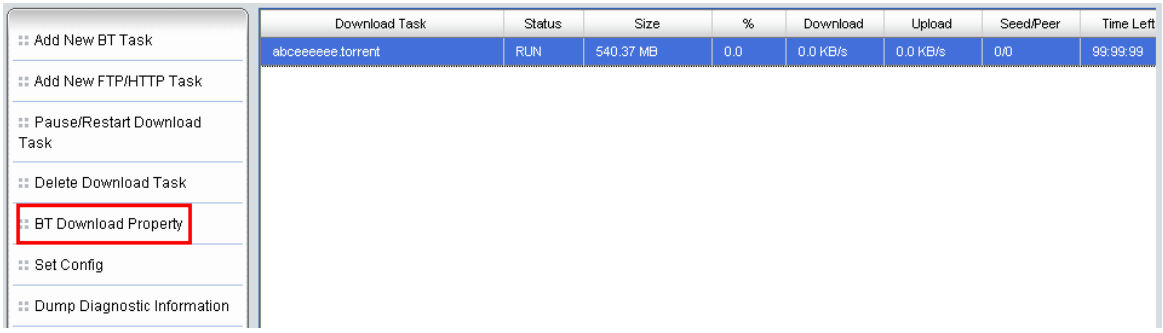
4. After uploading a download task, the task will appear on the 'View Run List'.



5. You can select a download task and click 'BT download property' to enable or disable the DHT public network and configure the sharing time after the download completes.



Note: If the sharing time (larger than 0 hr) is set for a download task, the download task will be moved to the 'Finish List' after the download completes and the sharing time ends.

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6. Click 'Set Config' and enter the number of the maximum tasks you want to download at the same time (Default number: 3).
   Enter the maximum download rate (default value is 0, which means unlimited).
   Enter the maximum upload rate (default value is 0, which means unlimited).
   Enter the port range for Download Station (default range is 6881-6999).
   Check UPnP NAT port forwarding to enable automatically port forwarding on UPnP supported gateway (default is not checked).

Protocol Encryption

Some Internet Service Providers (ISP) block or throttle BitTorrent connections for the high bandwidth it generates. By turning on 'Protocol Encryption' your connections will not be distinguished by these ISPs as BitTorrent connections therefore are unable to block or throttle them and causing slow connections or even no connections. However some ISPs are starting to be able to identify these connections even if they were encrypted so users are suggested to check the Bad ISPs list on AzureusWiki and to consider switching to an ISP that does not perform BitTorrent traffic throttling or blocking.

You can set the download schedule in 'Download time settings'. Select 'Continuous download' to download the files continuously. To specify the download schedule, select 'Daily download time' and enter the start and end time. If the end time value is smaller than the start time, the end time will be treated as the time on the next day.

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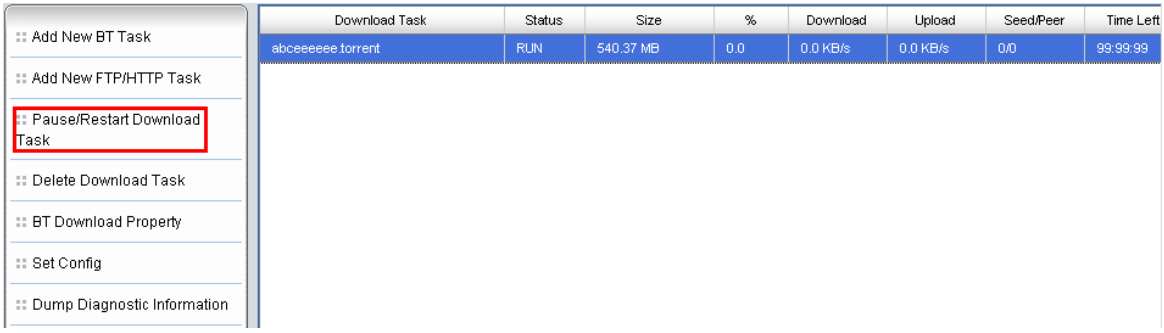
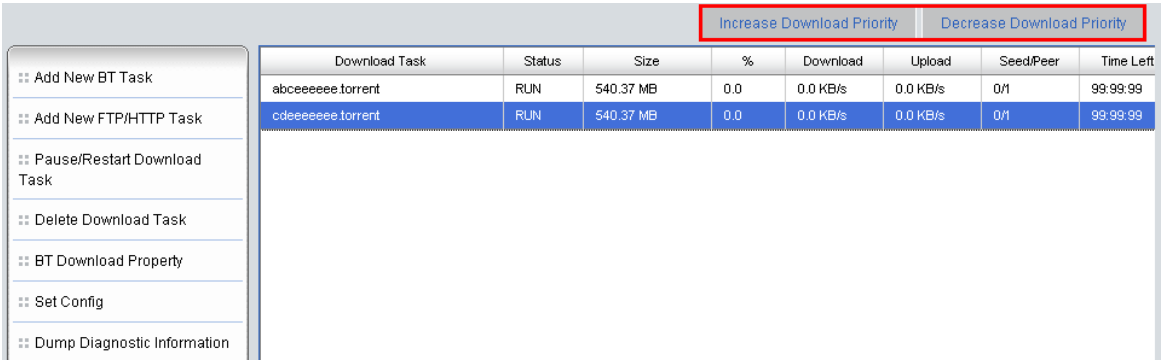
7. To stop a running download task, select the task in View Run list and click 'Pause/ Restart download task'. You can view tasks that are paused or finished in View Pause List and View Finish List respectively. To restart a paused task, select the task in View Pause List and click 'Pause/ Restart download task'.



8. You can also increase or decrease the task priority by clicking 'Increase download priority' and 'Decrease download priority' when there are multiple download tasks.



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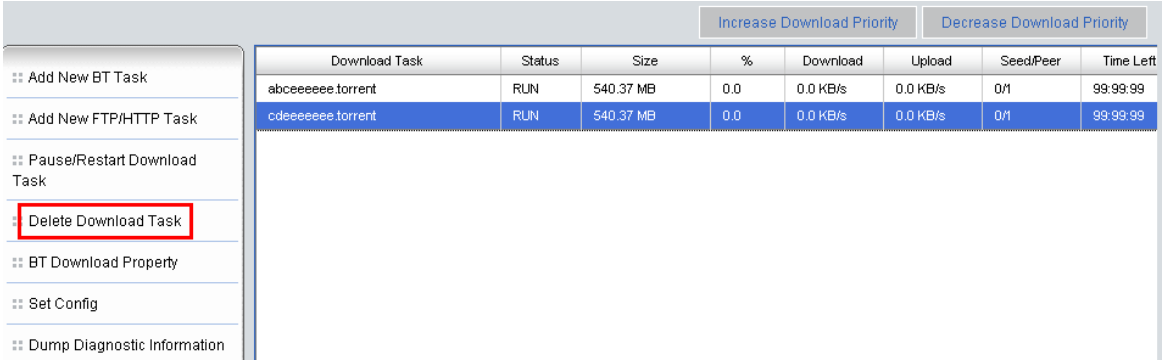
9. To delete a running, paused, or finished task, select the task and click 'Delete download task'. You can select to remove the download task only and retain the downloaded files, or remove the task and downloaded files.



10. To logout Download Station, click on the top right hand corner.

11. To connect to the folders you have downloaded, go to the share folder Qdownload/ Download of the NAS.

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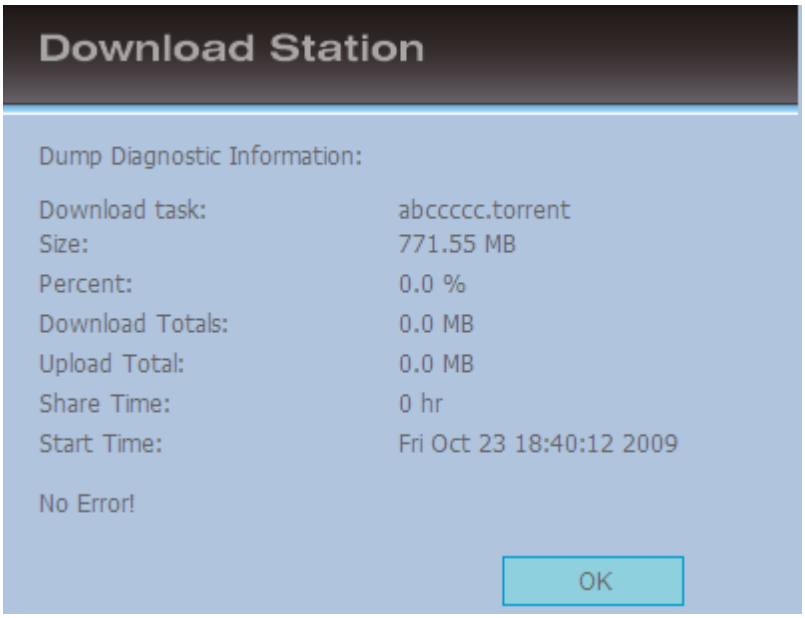
Dump Diagnostic Information

To view the diagnostic details of a download task, select a task on the list and click 'Dump Diagnostic Information'.



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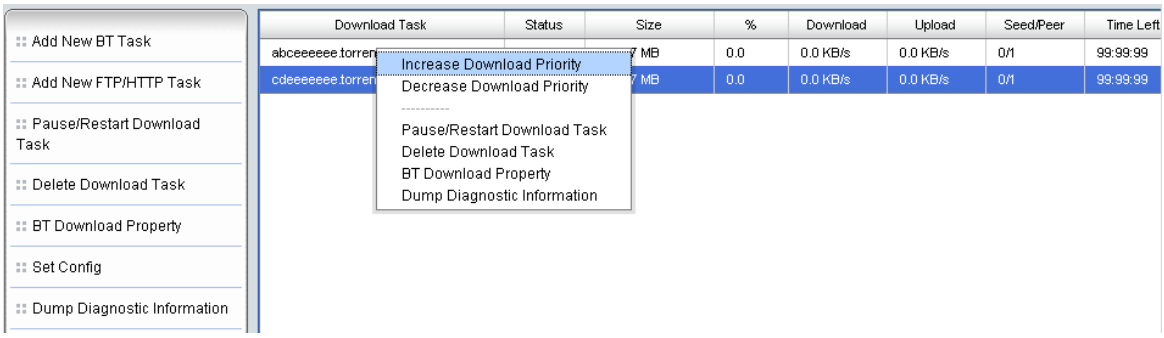
You can right click the download task to configure the download settings.



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.

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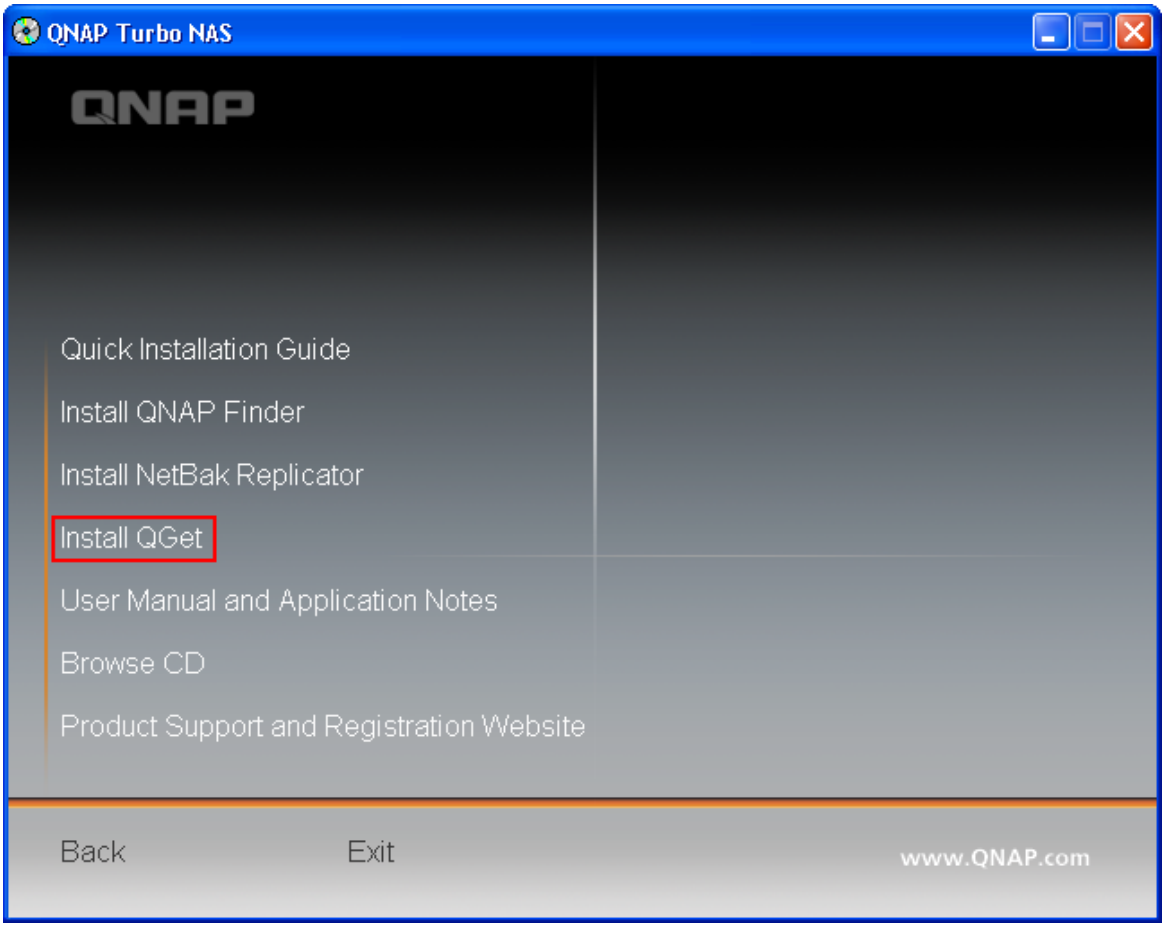
Use Download Software QGet

QGet is a powerful management utility for maintaining the BT, HTTP and FTP download tasks of multiple NAS servers via LAN or WAN. By using QGet, you no longer need to login the Download Station web interface of multiple servers and manage the settings one by one. Simply install QGet on any computer running Windows 2000/ XP/ Vista/ Windows 7 or Mac, you can manage the download tasks of all your NAS servers.

1. Install QGet from the product CD-ROM disc.



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2. Follow the instructions to install QGet.

3. Run QGet from the installed location.

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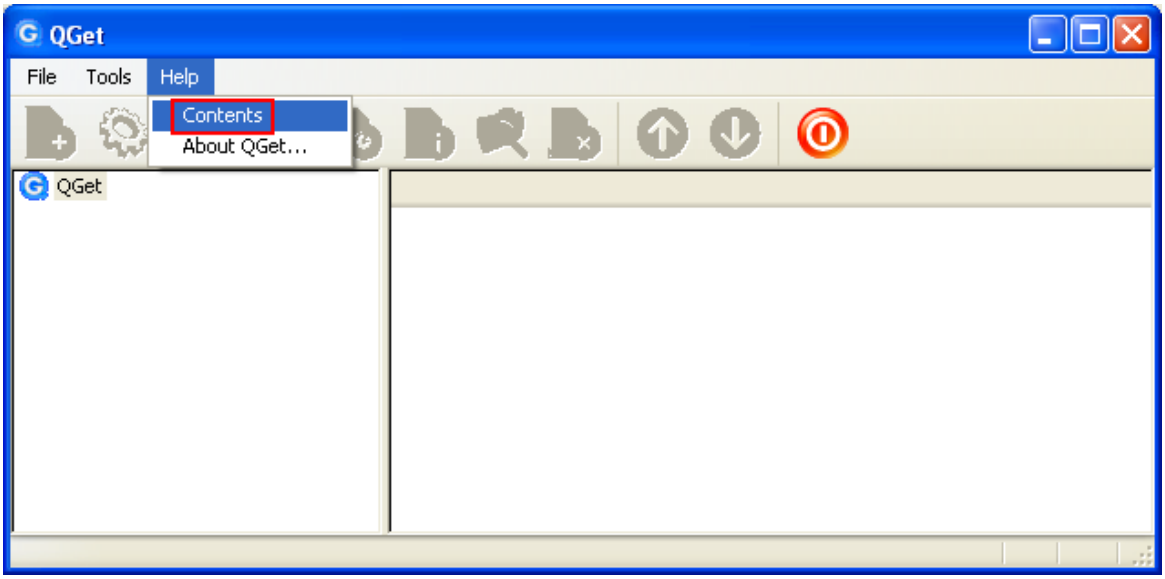
4. For the details of using QGet, see the online help.



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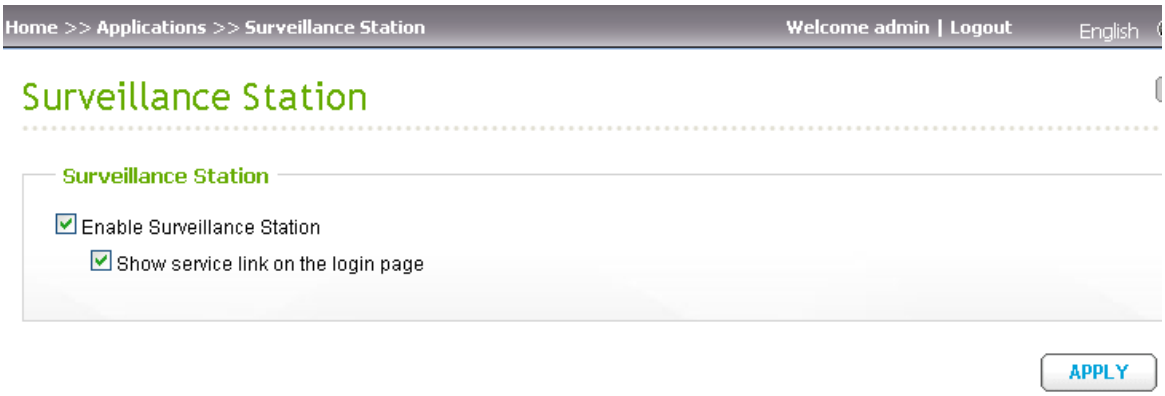
7.5.4 Surveillance Station

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
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-639 Pro, TS-659 Pro, SS-839 Pro, TS-859 Pro, TS-809 Pro, TS-809U-RP

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.



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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)

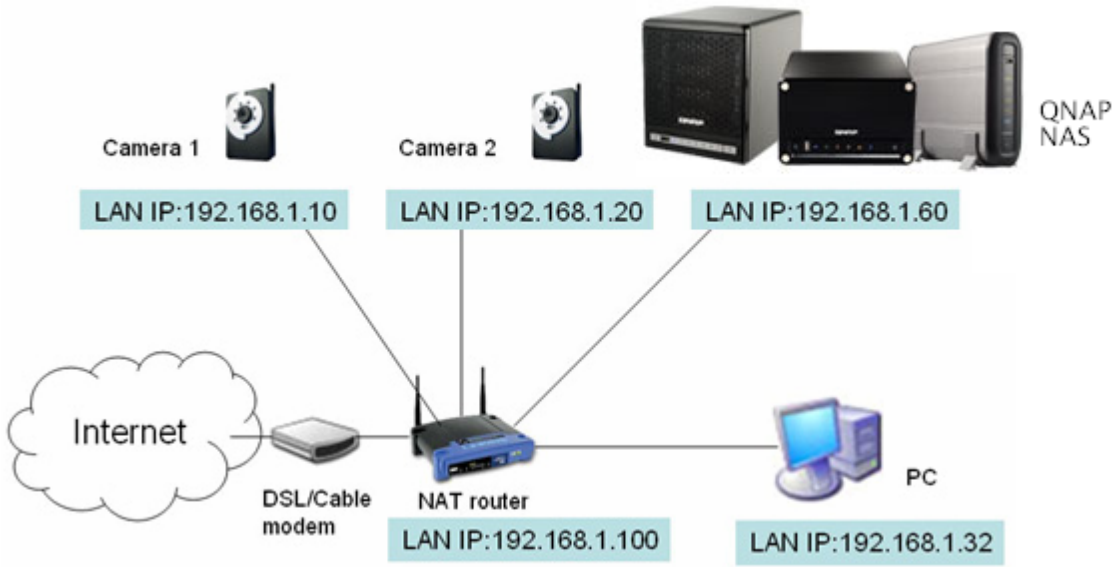
Plan your home network topology

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)



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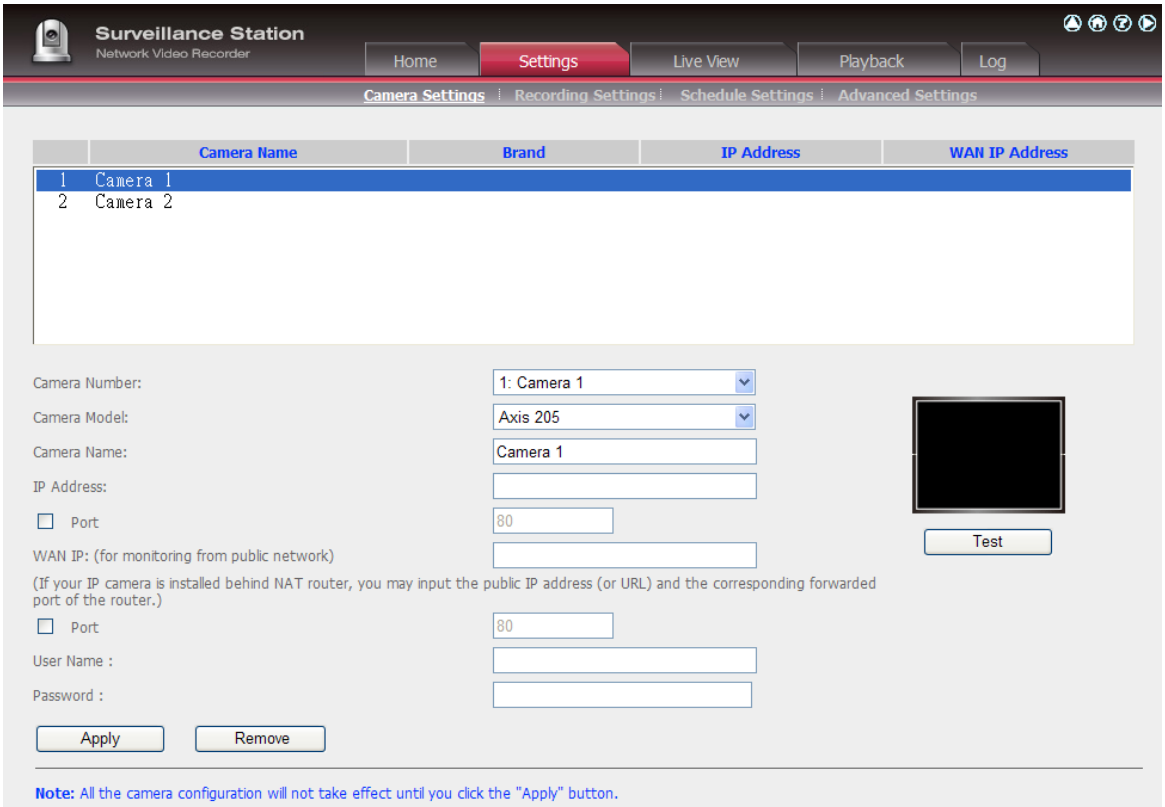
Set up the IP cameras

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.



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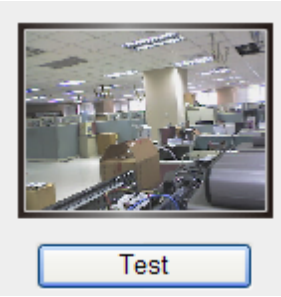
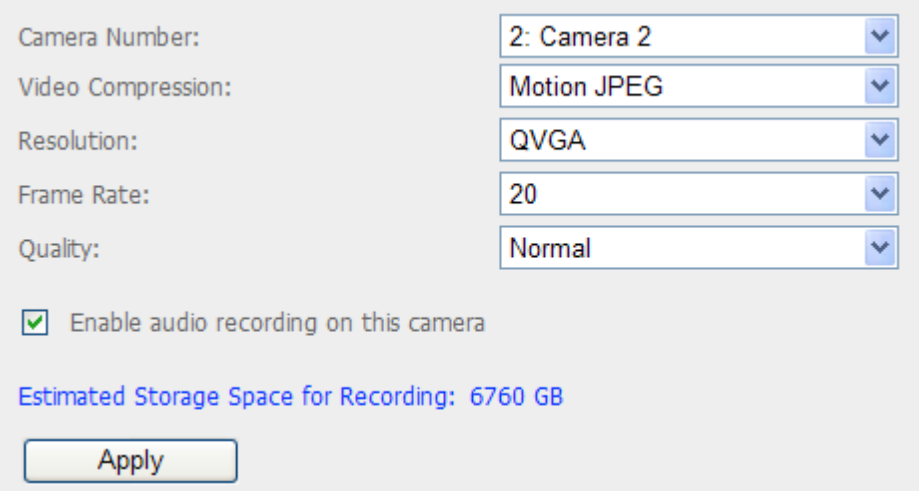
Click 'Test' on the right to ensure the connection to the IP camera is successful.



If your IP camera supports audio recording, you may enable the option on the 'Recording Settings' page. Click 'Apply' to save the changes.



Configure the settings of IP camera 2 following the above steps.

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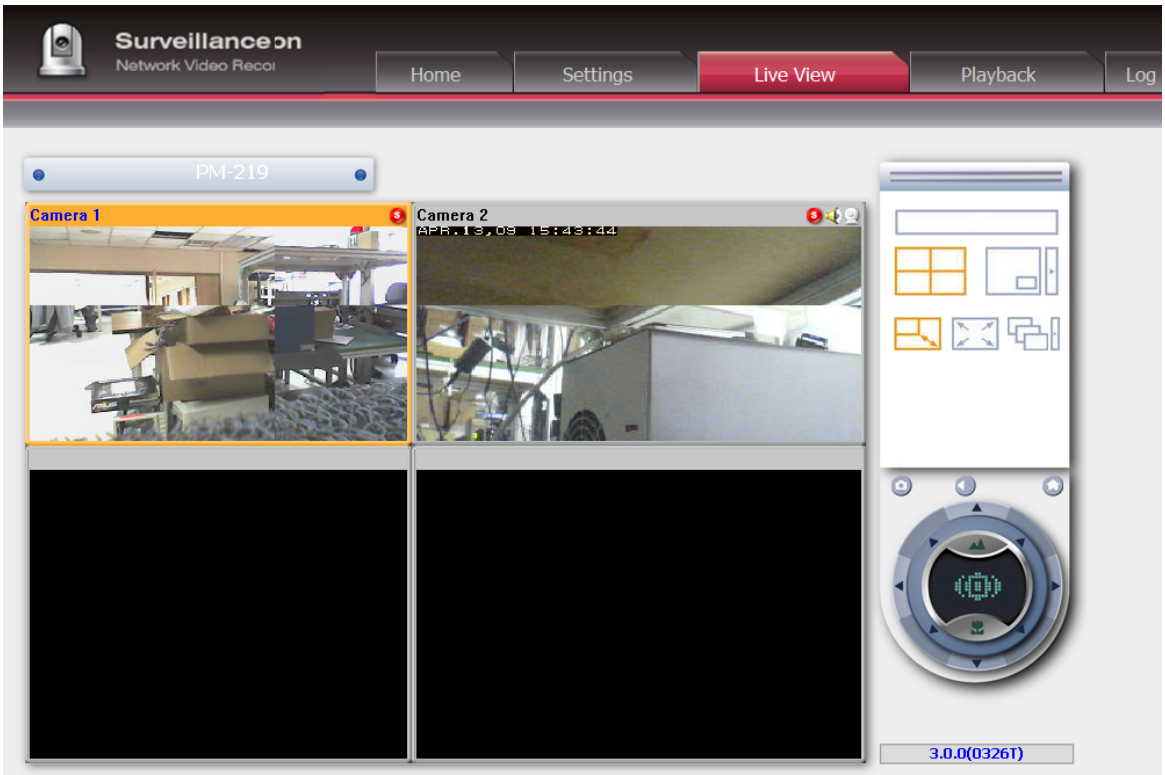
After you have added the network cameras to the NAS, go to the 'Live View' page. The first time you connect to this page by the IE browser, you have to install the ActiveX control in order to view the images of IP camera 1 and IP camera 2. You can start to use the monitoring and recording functions of the Surveillance Station.

To use other functions such as motion detection recording, scheduled recording, and video playback, see the online help.



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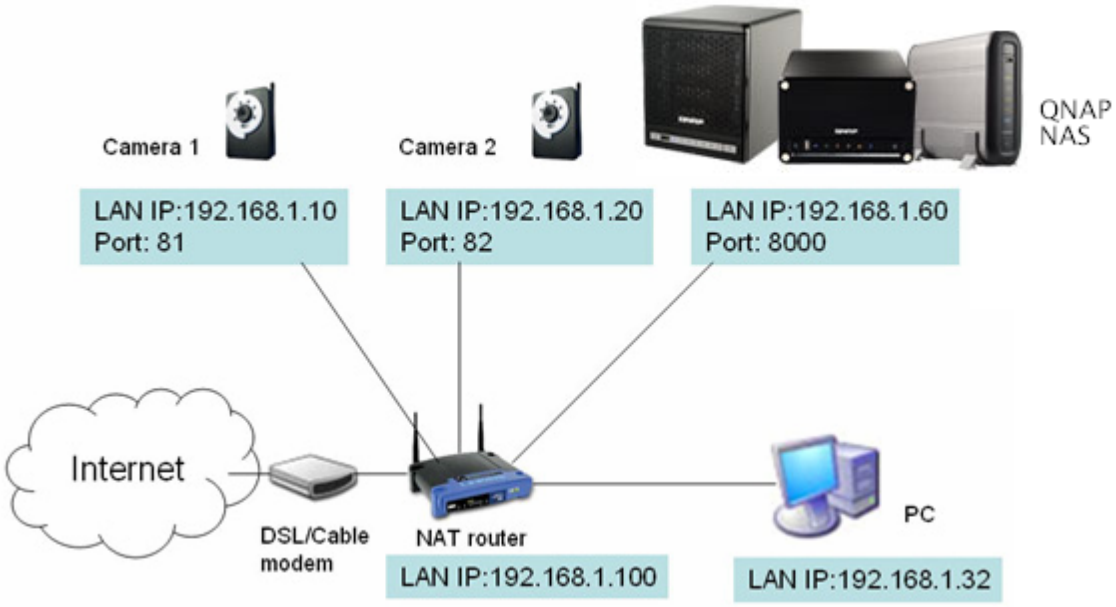
Configure your NAT router (for remote monitoring over the Internet)

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.

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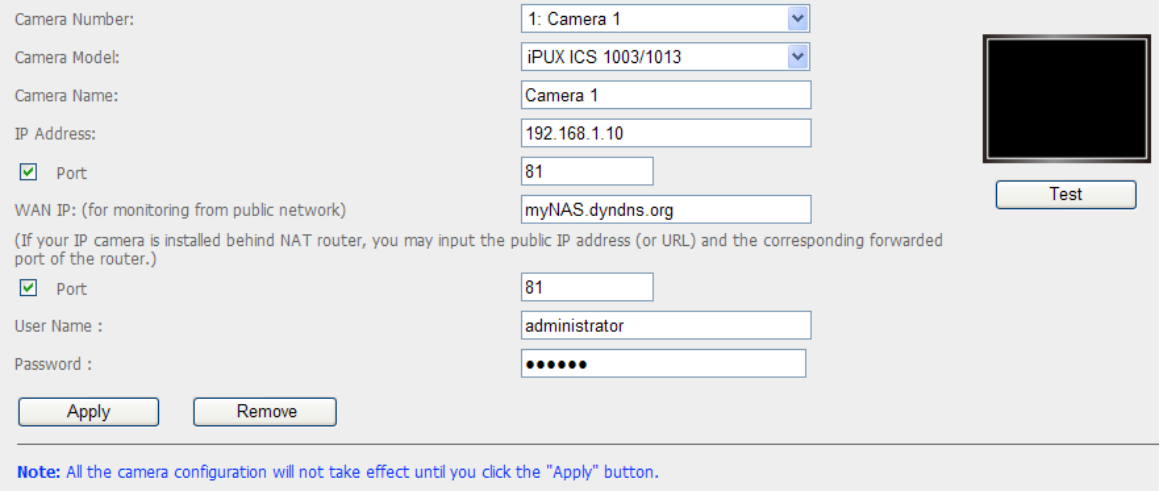

Go to the configuration page of your router and configure the port forwarding as below:

- 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 you 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.

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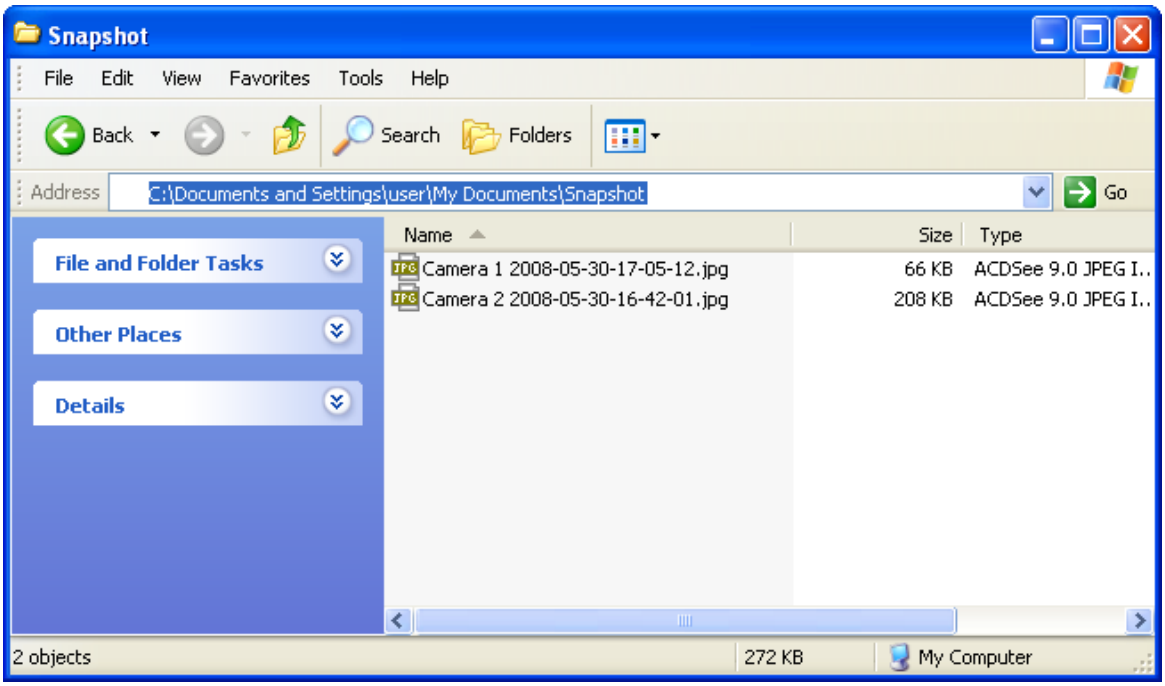
Connect to the snapshots and video recordings of Surveillance Station

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'.

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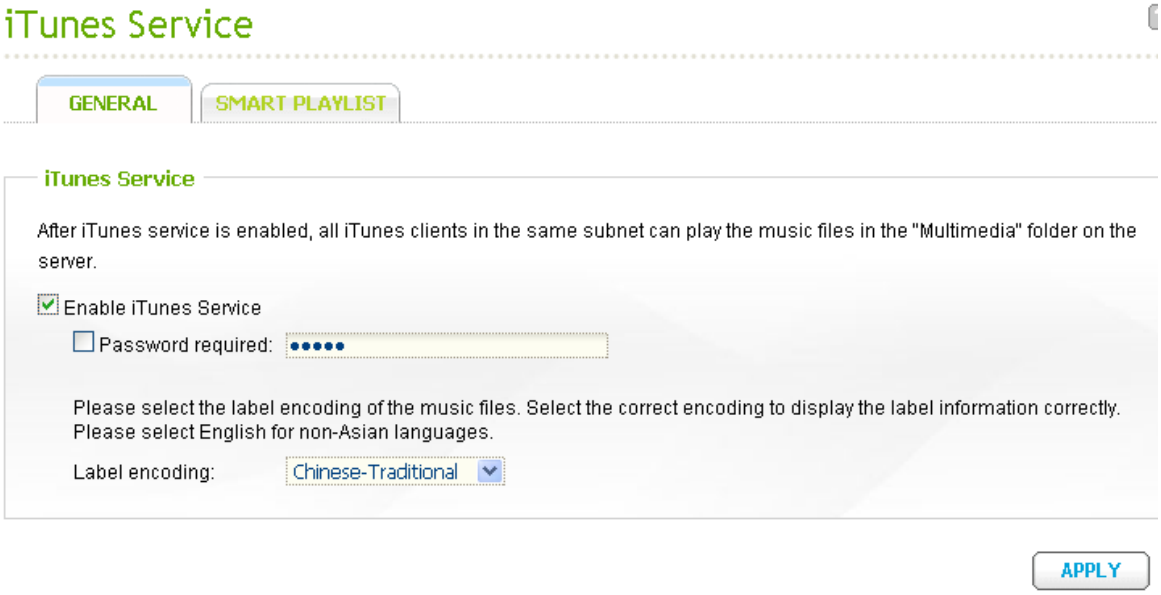
7.5.5 iTunes Service

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.



Password required: To allow the users to connect to the data only by entering the correct password, select this option and enter the password.

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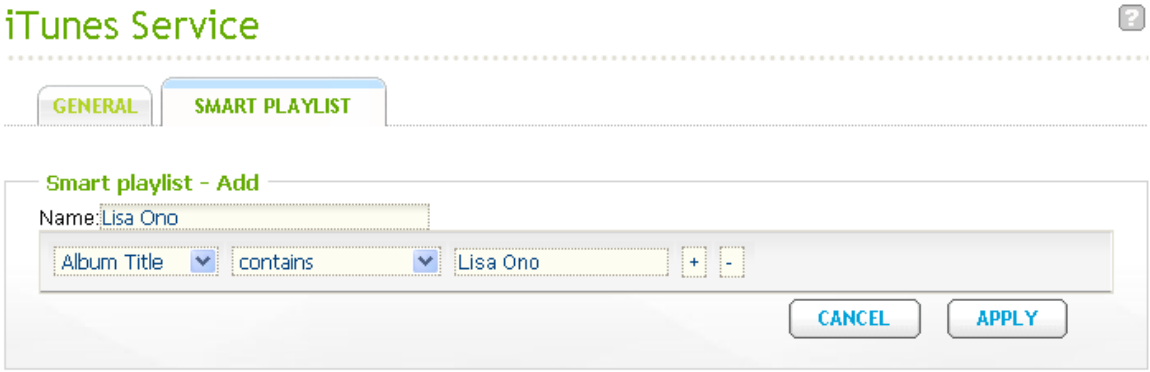
Smart Playlist

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.

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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/.

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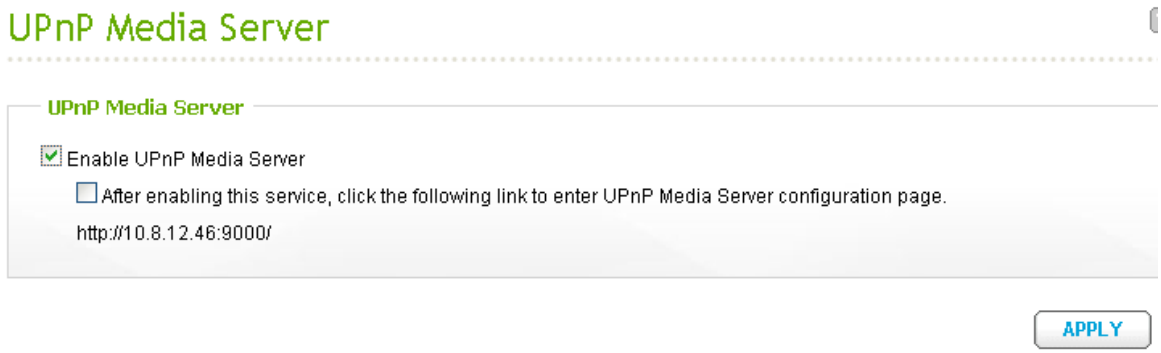
7.5.6 UPnP Media Server

The NAS is built-in with TwonkyMedia, DLNA compatible UPnP media server. Enable this function and the NAS will share particular music, photos, or video files to the DLNA network. You can use DLNA compatible digital media players to play the multimedia files on the NAS on your TV or acoustic sound system.

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.



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 365.

About UPnP and DLNA

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.

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The Digital Living Network Alliance (DLNA) is an alliance of a number of consumer electronics, mobile and personal computer manufacturers. Its aim is to establish a home network in which the electronic devices from all companies are compatible with each other under an open standard. The alliance also tries to promote the idea of digital home by establishing DLNA certification standard. All DLNA certified products connected to the home network can be connected to seamlessly to enable the consumers to enjoy the digital life conveniently.

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7.5.7 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.

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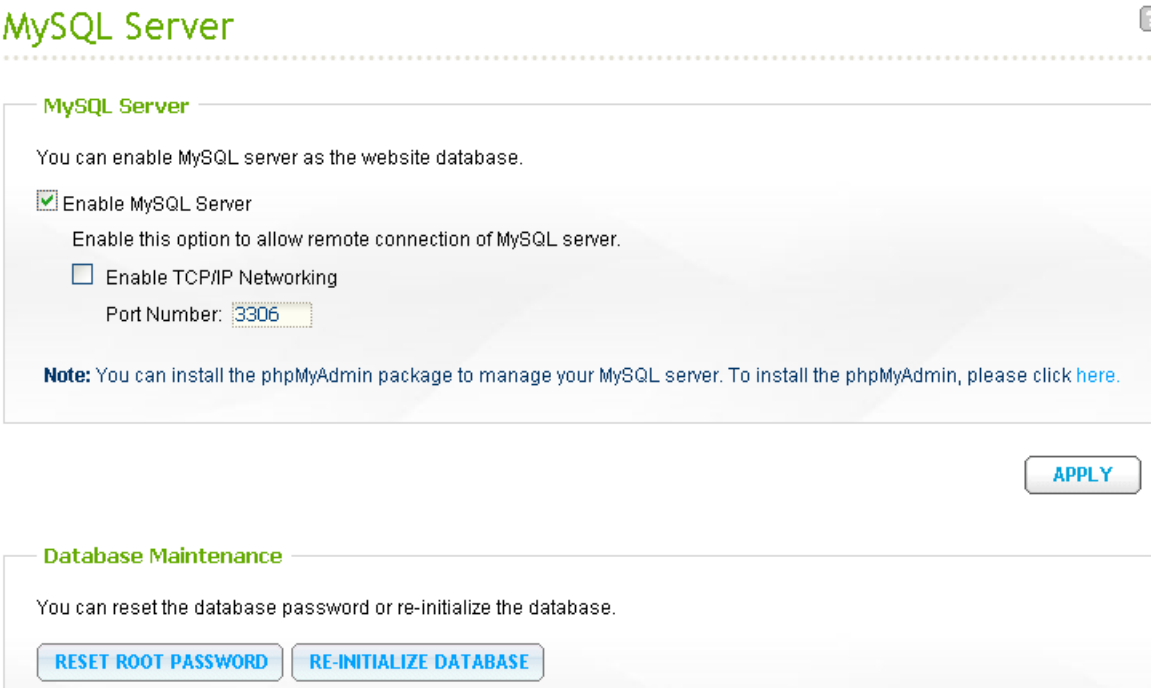
Database Maintenance

- 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 here 374.



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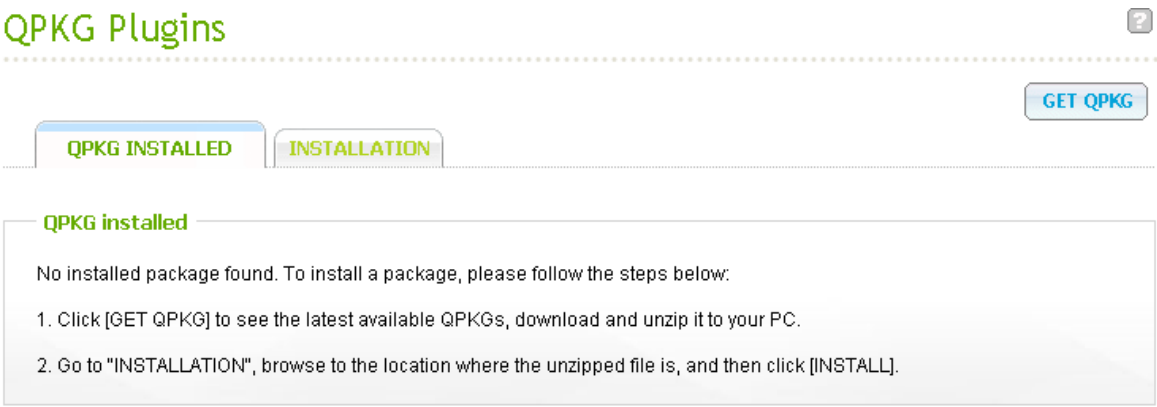
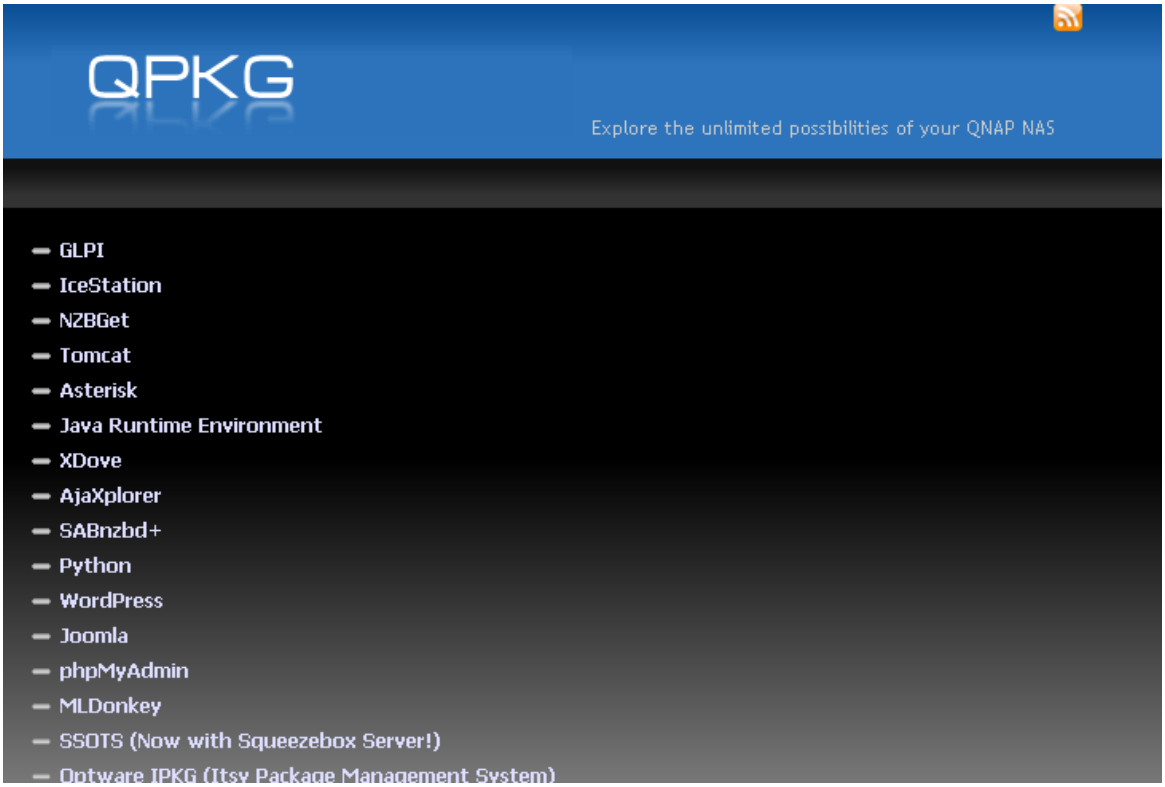
7.5.8 QPKG Plugins

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.



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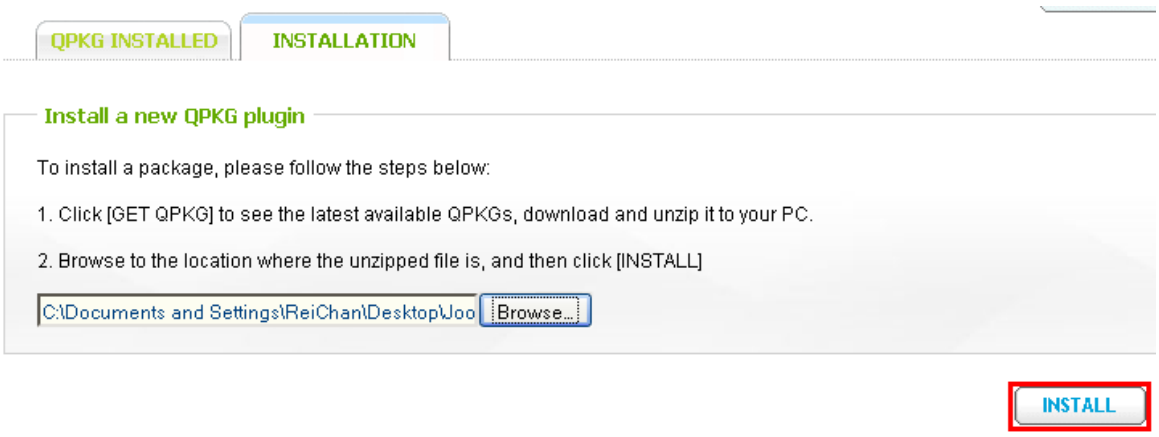
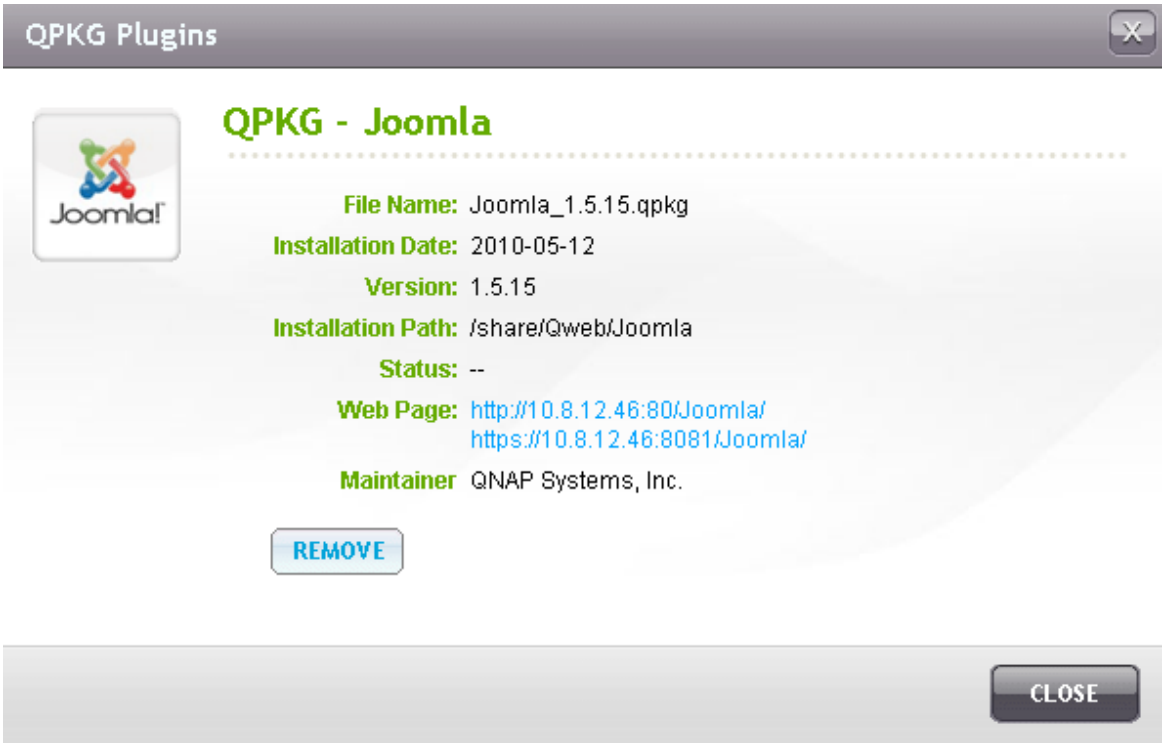
Before installing the QPKG package, unzip the downloaded file. To install the QPKG, browse to select the correct QPKG file and click 'INSTALL'.



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'.



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7.6 Backup

External Drive 245
USB One Touch Copy 247
Remote Replication 250
Time Machine 261

7.6.1 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.

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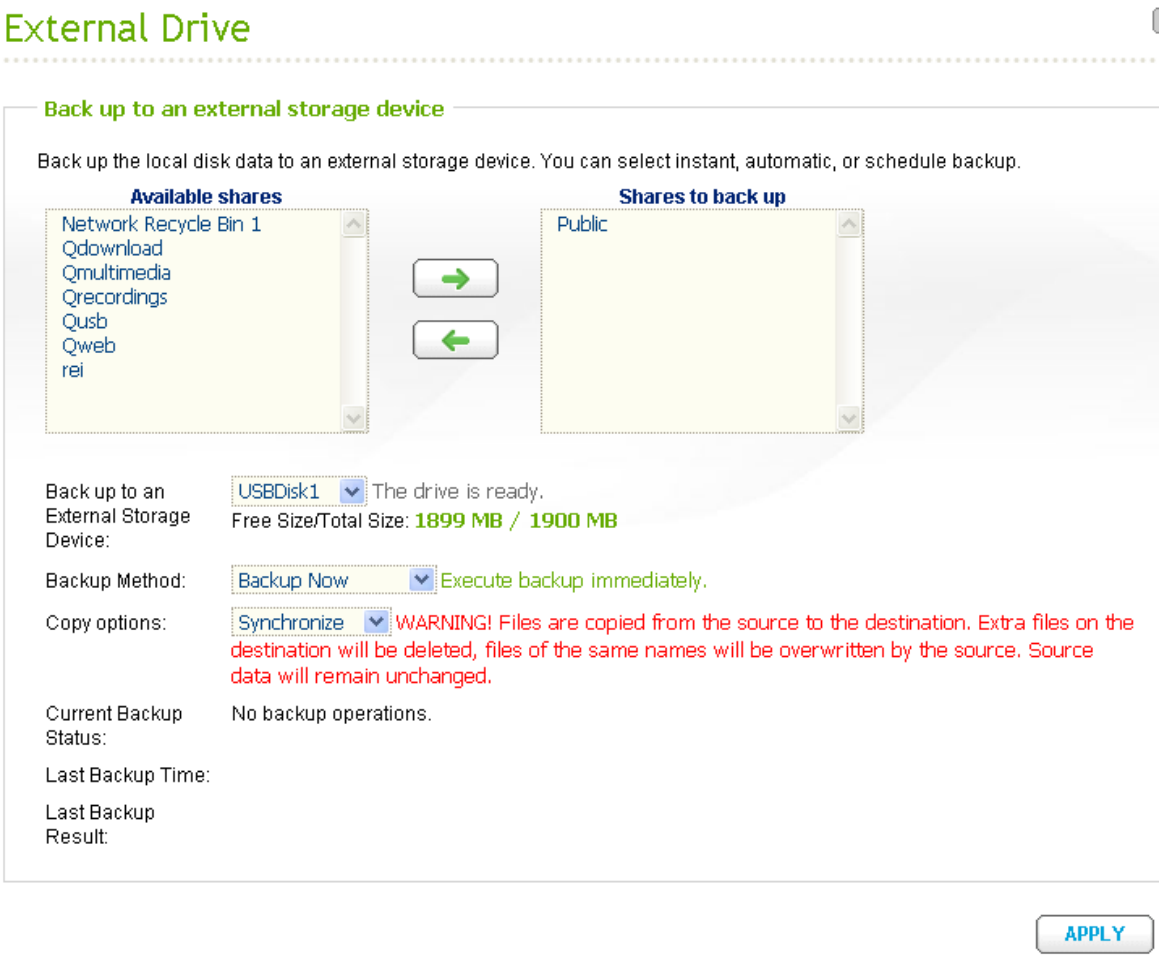

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7.6.2 USB One Touch Copy

This feature is not supported by TS-809U-RP.

You can configure the bahaviour 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 HDD of the NAS	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 HDD of the NAS	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.

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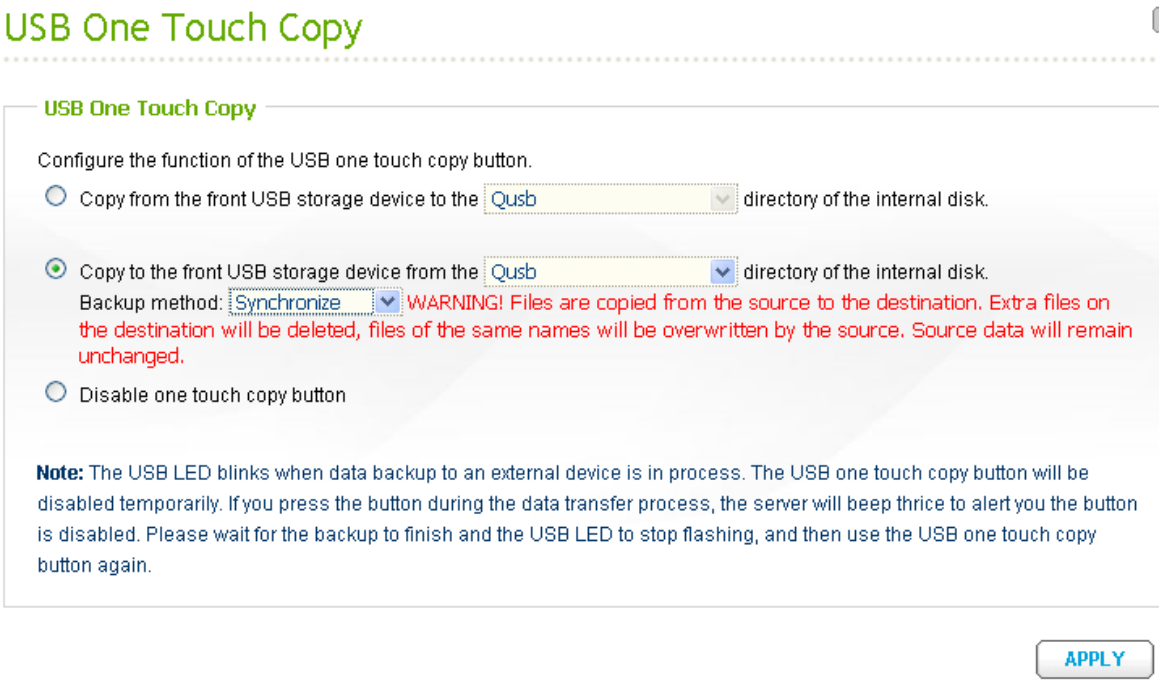
Note: If there are multiple partitions on the source storage device, a new folder will be created for each partition on the destination as the backup folder. The backup folder will be named with the backup date and the partition number, *YYYYMMDD*-1 for partition 1, *YYYYMMDD*-2 for partition 2... and so on. If the source storage device contains only one partition, the backup folder will be named as *YYYYMMDD* only.



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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 HDD 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.

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7.6.3 Remote Replication

Remote Replication

You can use this option to back up the folders and sub-folders on the NAS to another QNAP NAS or Rsync server over LAN or the Internet.

The maximum number of remote replication jobs supported is 64. Make sure a network share has been created before adding a remote replication task.

- Port Number: Specify a port number for remote replication. The default port number is 873.

> **Note:** If this server connects to the Internet through a router, make sure the specified port for remote replication is opened on the router.

- Enable backup from a remote server to the local host: Select this option to allow the remote server to back up data to the local host via remote replication.

- Allow remote Rsync server to back up data to NAS: Enable this option to allow a remote Rsync server to back up the data to the NAS by remote replication.

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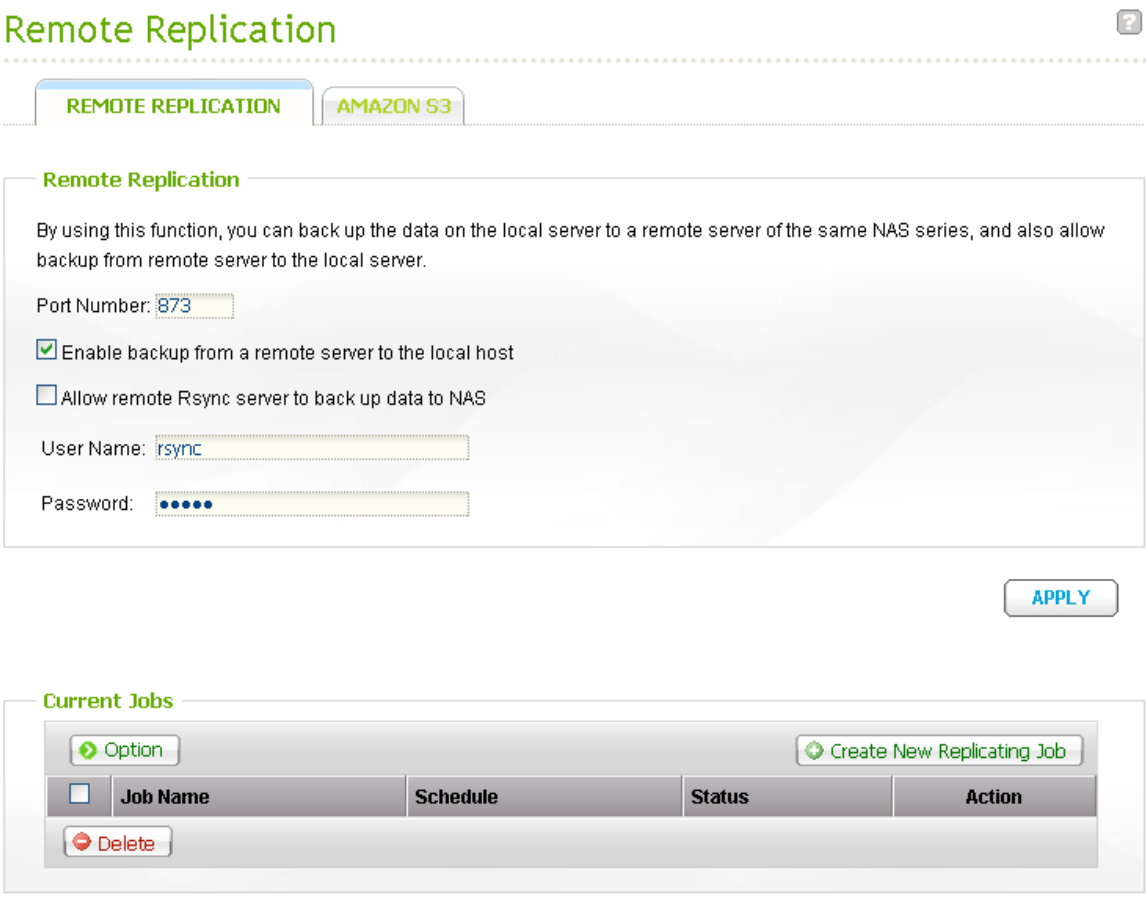

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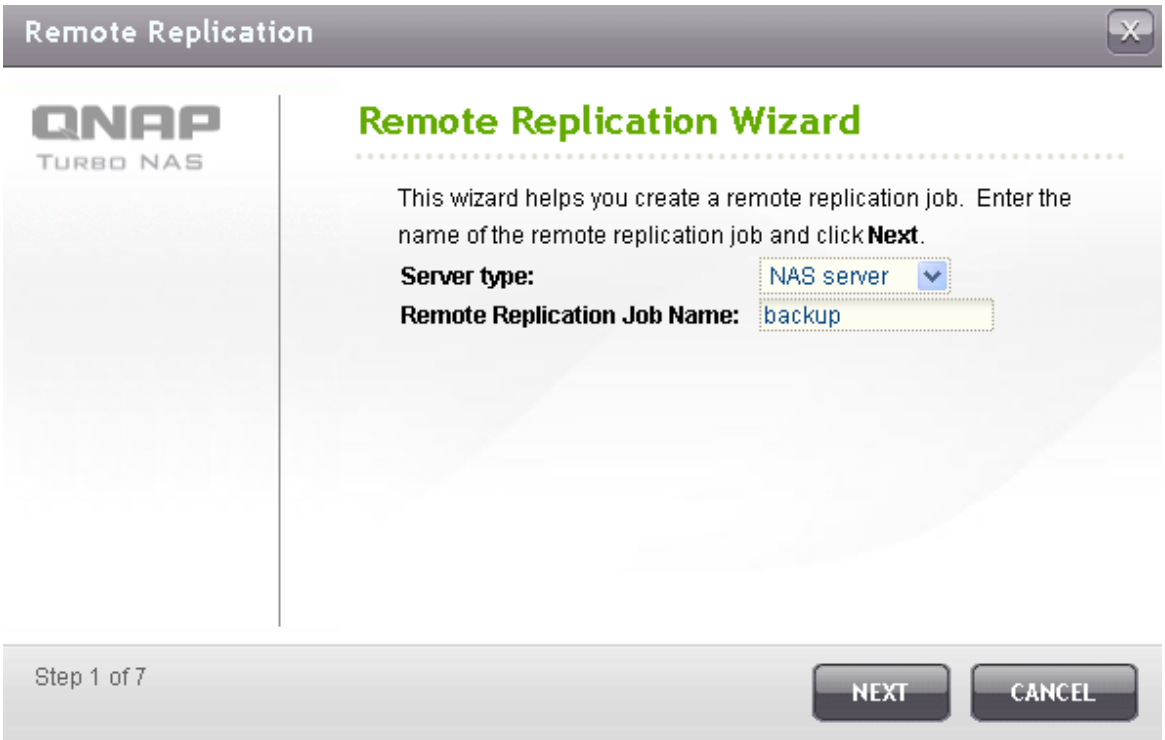
Follow the steps below to create a remote replication job for backup from the NAS to another QNAP NAS.

1. Click 'Create New Replicating Job' to create a new task.

2. Select the server type and enter the job name.



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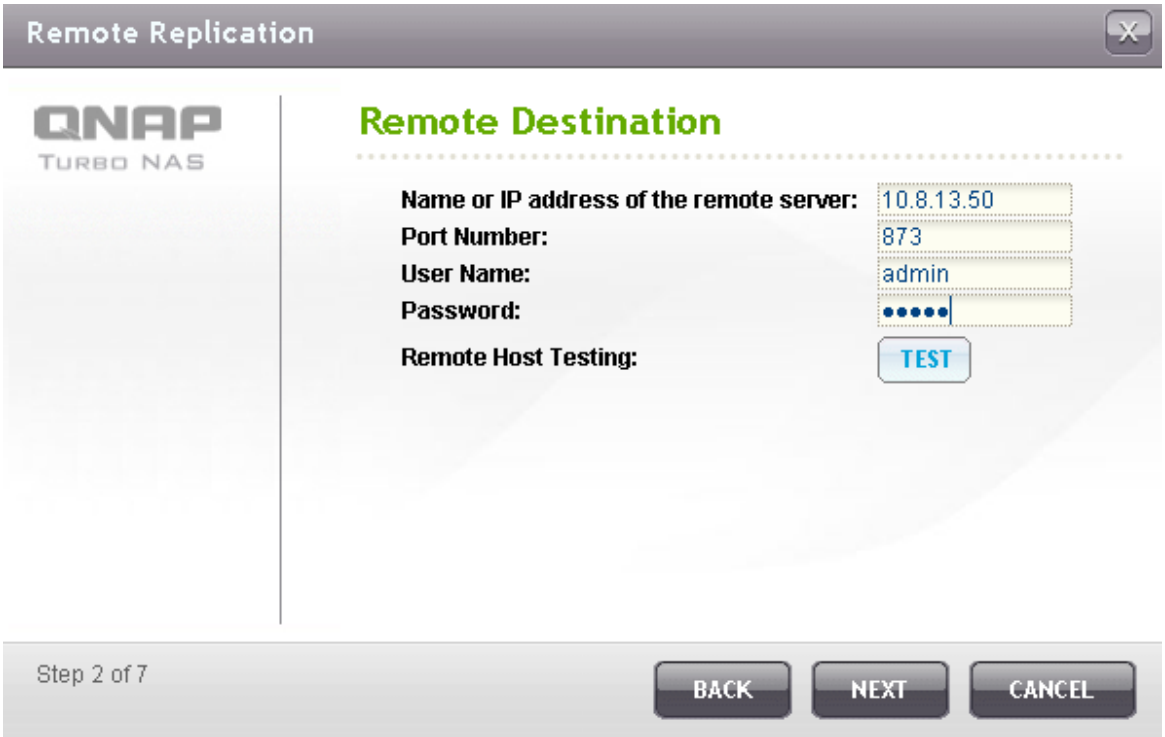
3. Enter the IP address or domain name (if any) of the remote server, the port number of the remote server, the user name and password with write access to the remote server. Click 'Test' to check if the connection is successful or not.

Note:

- To use remote replication, enable Microsoft Networking service, make sure the destination network share and directory have been created, and the user name and password are valid to login the destination folder.
- The share folder name (network share or directory) is case-sensitive.



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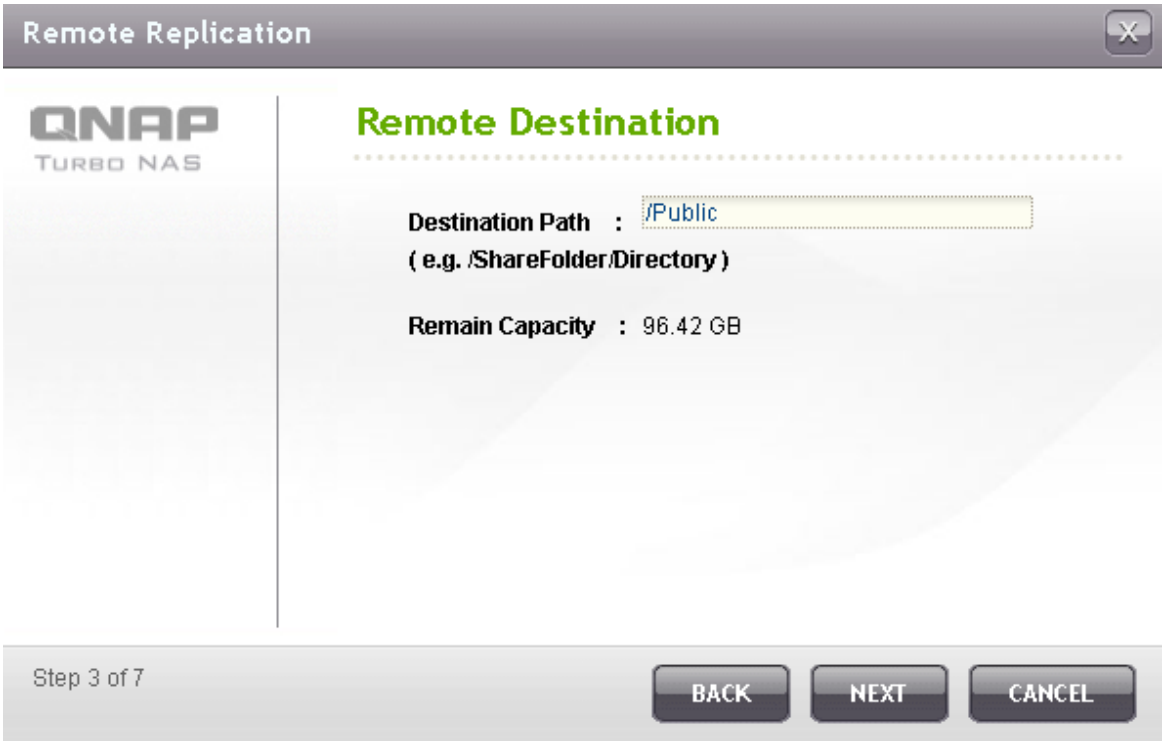
4. Enter the destination path. The share folder name (network share or directory) is case-sensitive.



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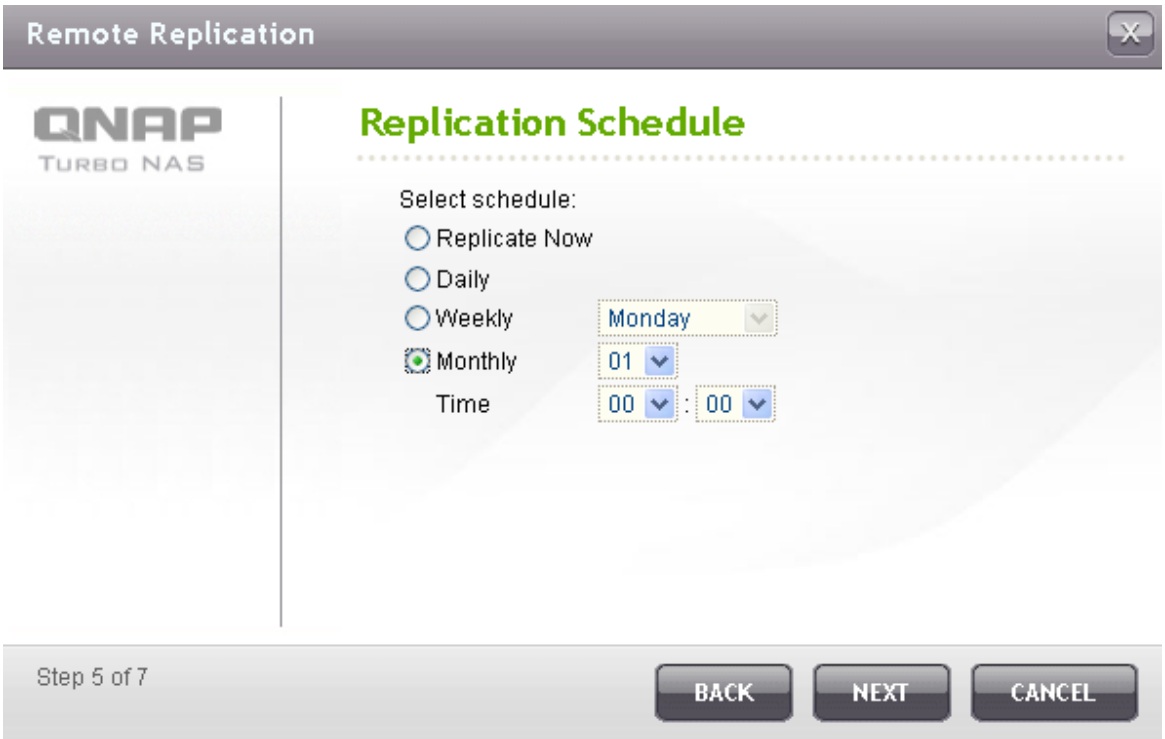
5. Enter the source path. You can select to back up the whole network share and a folder in the share.

6. Define the replication schedule.



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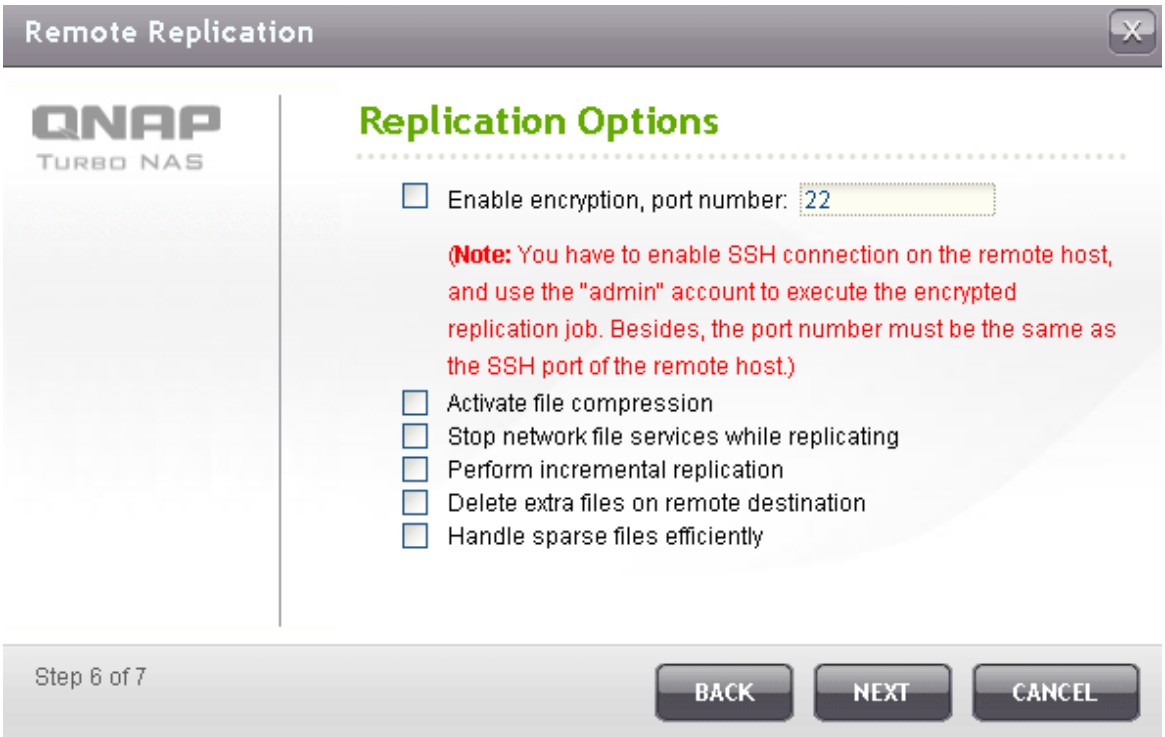
7. Set other options for the remote replication job.
   - Enable encryption: Select this option to execute encrypted remote replication. Note that you must turn on 'Allow SSH connection' in 'Network Services > 'Telnet/ SSH' and specify the same port number for SSH and encrypted remote replication.
   - 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.



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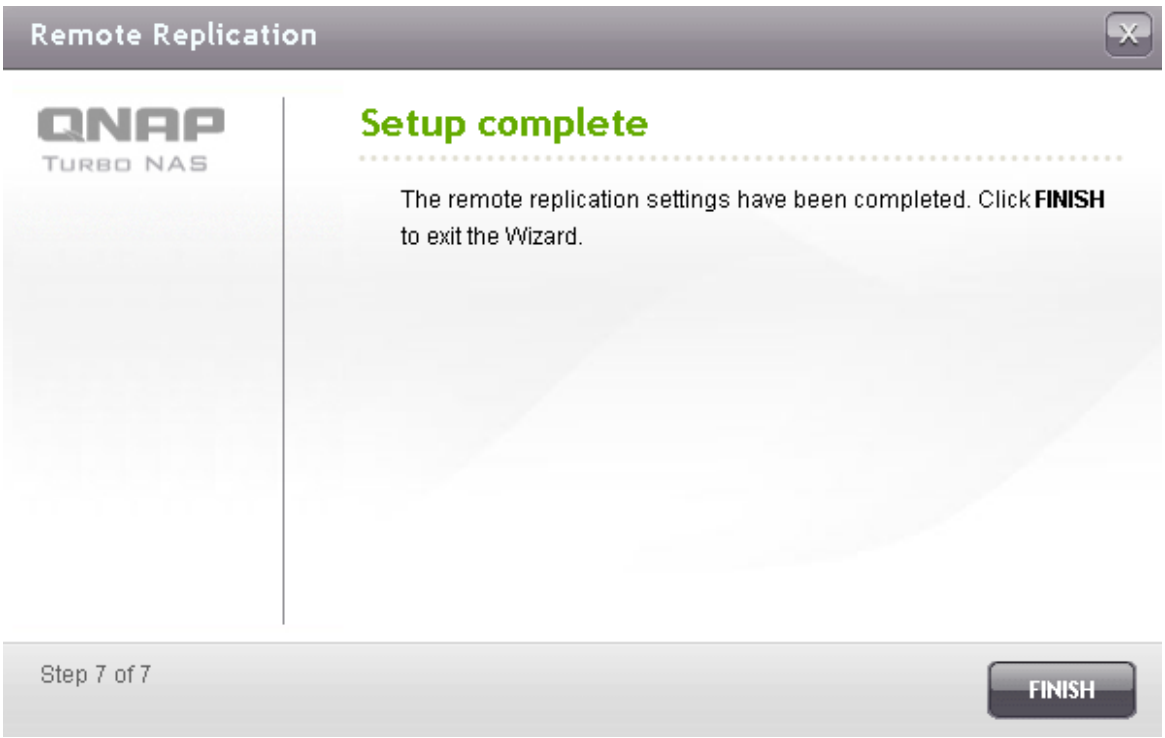
8. Then click 'Finish'. The job will be executed according to your schedule. Note that the job is recursive. Do not turn off the local NAS and the remote server when remote replication is running.



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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.

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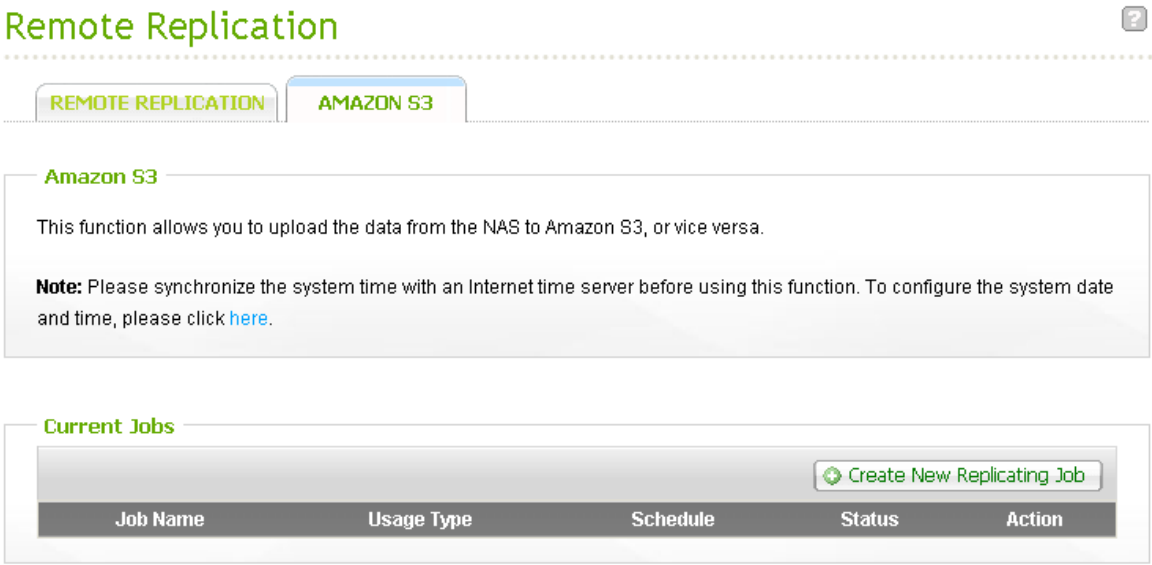
Amazon S3

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.



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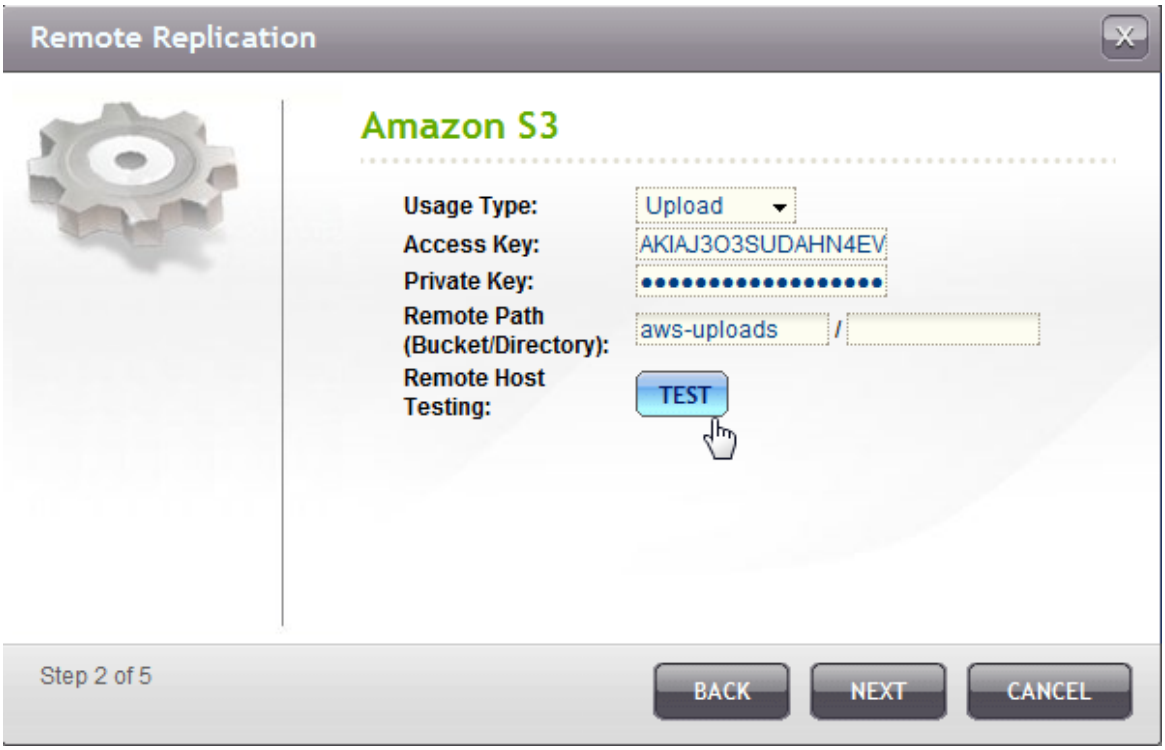
After setting up the Amazon S3 account, follow the steps below to back up the data to or retrieve the data from Amazon S3 using the NAS.

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.

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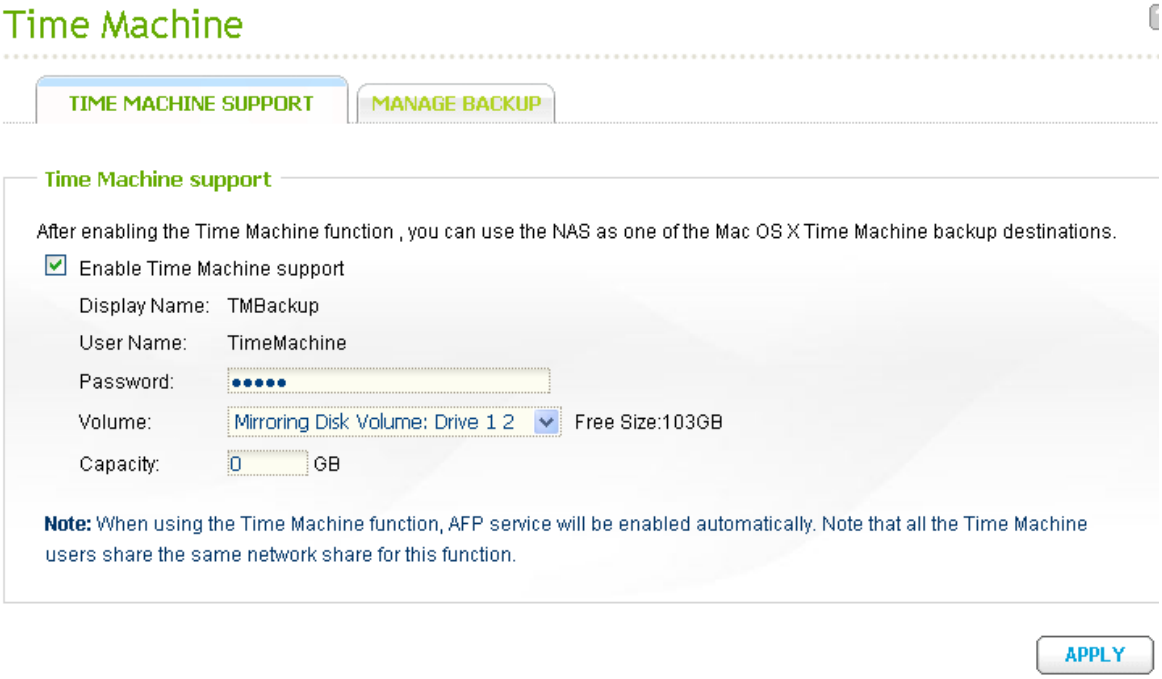
7.6.4 Time Machine

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.



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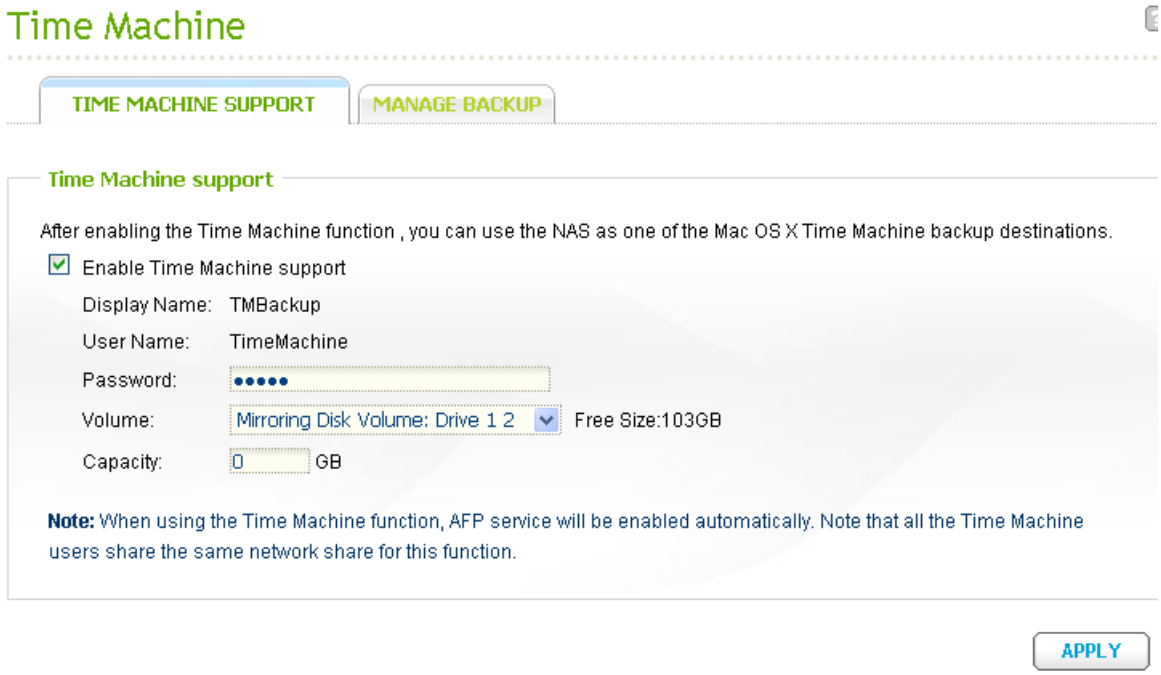
To use this function, follow the steps below.

Configure the settings on the NAS:

1. Enable Time Machine support.



2. Enter the Time Machine password. The password is empty by default.
3. Select a volume on the NAS as the backup destination.
4. Enter the storage capacity that Time Machine backup is allowed to use.
5. Click 'Apply' to save the settings.

All the Time Machine users share the same network share for this function.

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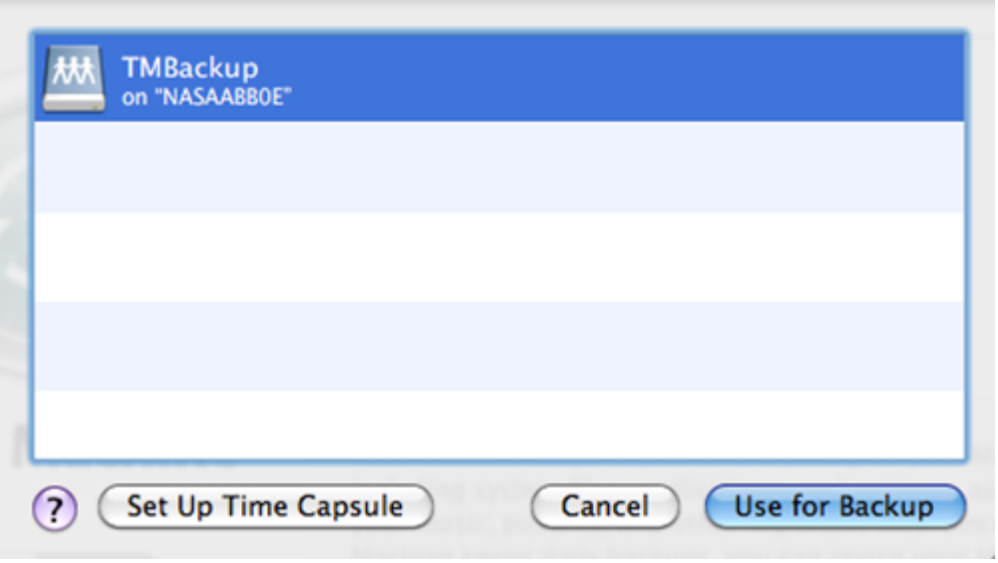
Configure the backup settings on Mac:

1. Open Time Machine on your Mac and click 'Select Backup Disk'.

2. Select the TMBackup on your NAS from the list and click 'Use for Backup'.



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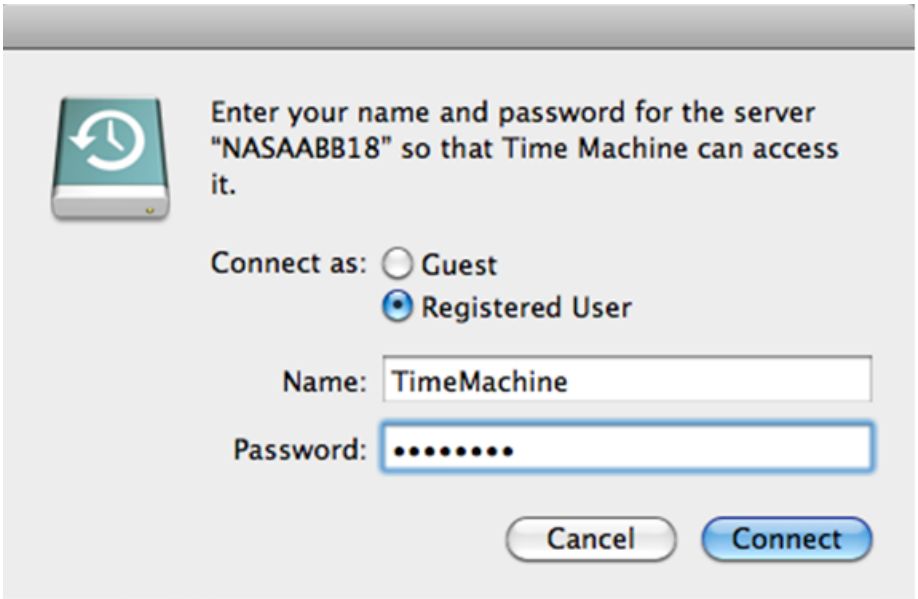
3. Enter the user name and password to login the QNAP NAS. Then click 'Connect'.

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/.

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Manage Backup

You can manage the existing backup on this page.

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.

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7.7 External Device

External Storage Device 266
USB Printer 267
UPS Settings 283

7.7.1 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 HGS+ (Mac only). Select the option from the drop-down menu next to 'Format As' and click 'FORMAT NOW'. All the data will be cleared.

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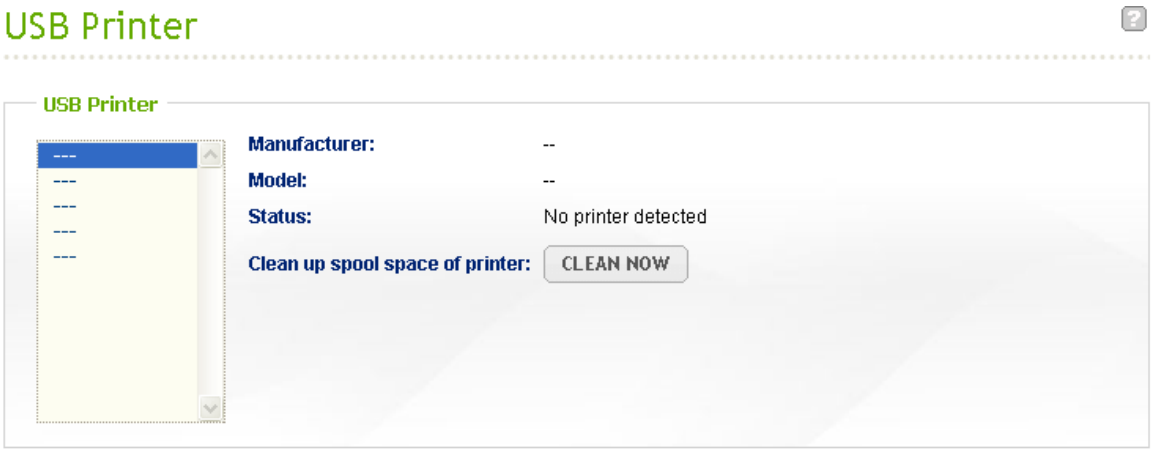
7.7.2 USB Printer

To provide printer sharing function for the network users, you can simply connect a USB printer to the USB port of the NAS. The NAS detects the printer automatically. Up to 3 printers are supported.



Note:

- Please connect a USB printer to the NAS after the software configuration is completed.
- The NAS does not support multifunction printer.
- For the information of the supported USB printer models, please visit http://www.qnap.com/

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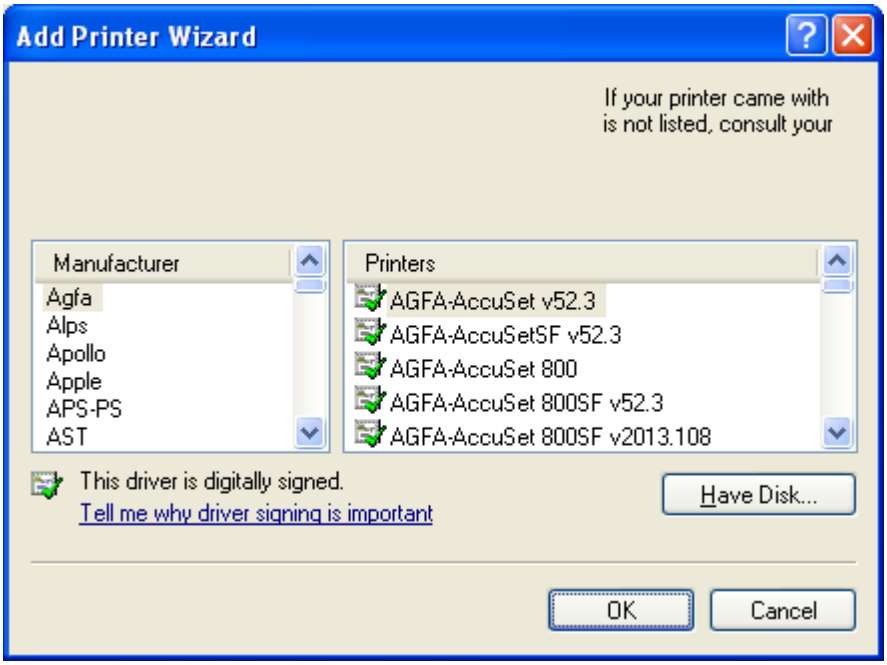
7.7.2.1 Windows XP Users

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.

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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.

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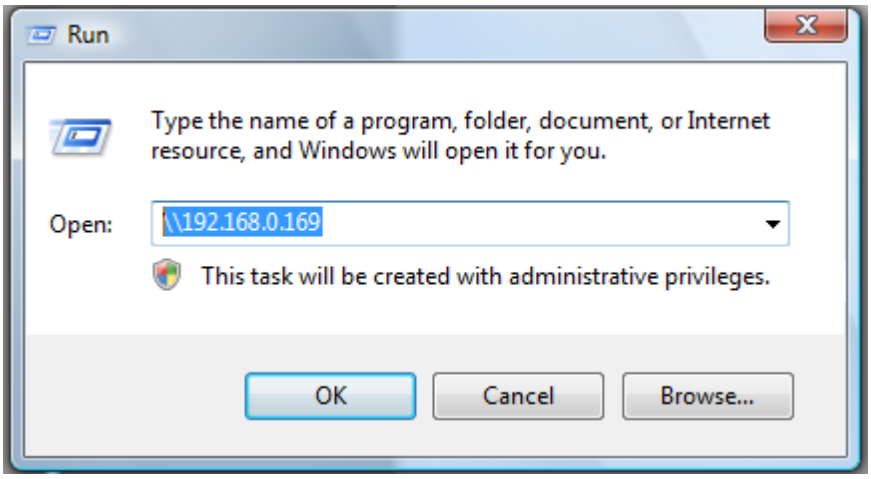
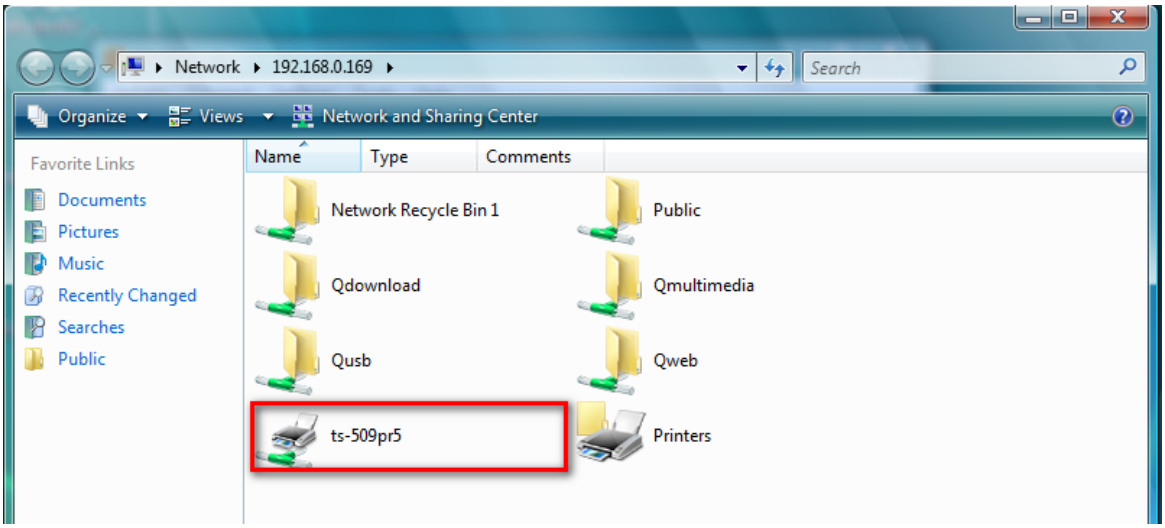
7.7.2.2 Windows Vista/ Windows 7 Users

1. On the Run menu, enter \\NAS IP.



2. Find the network printer icon and double click it.



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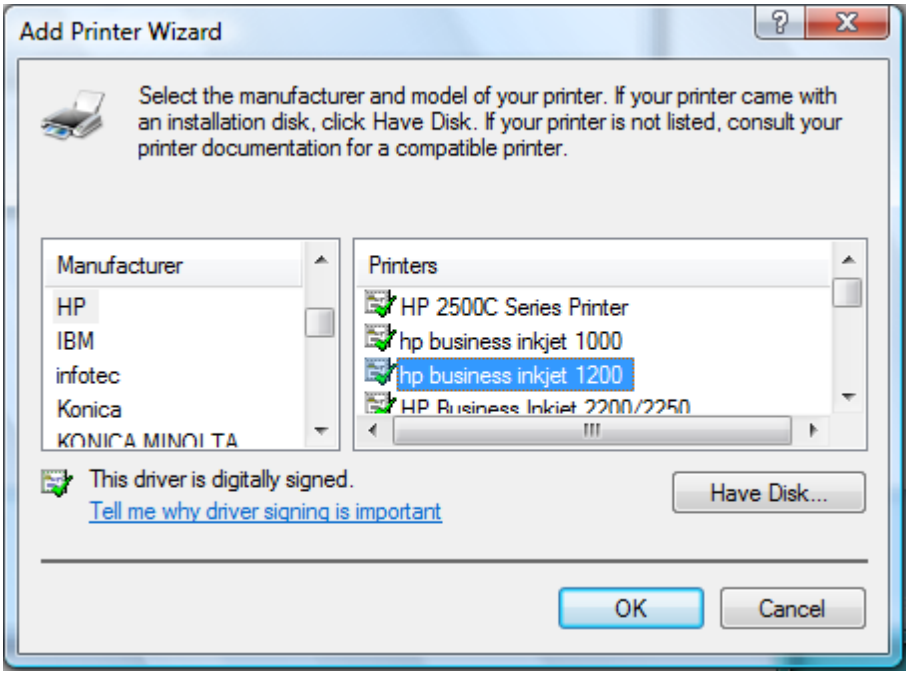
3. Install the correct printer driver.



4. When finished, print a test page to verify the printer is ready to use.

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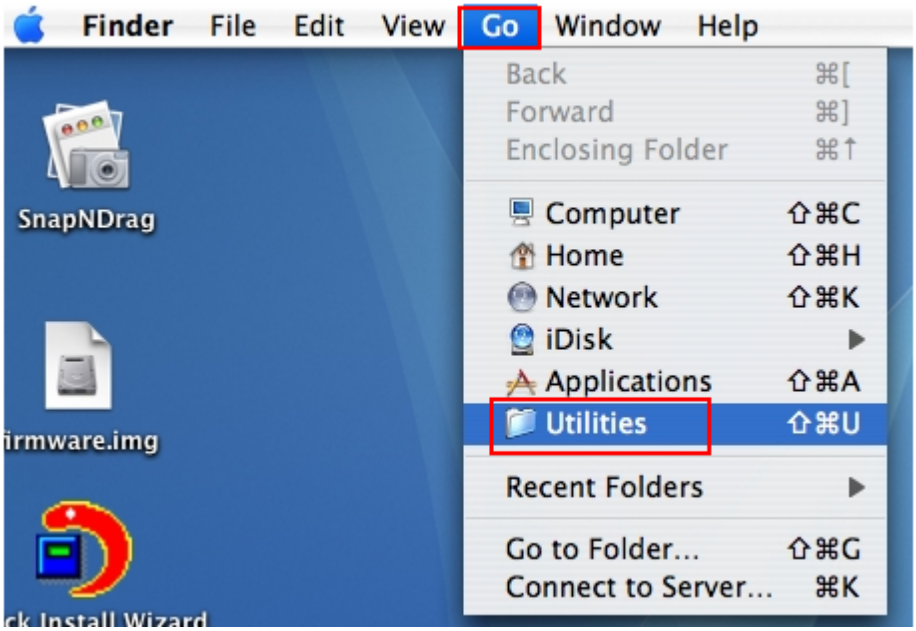
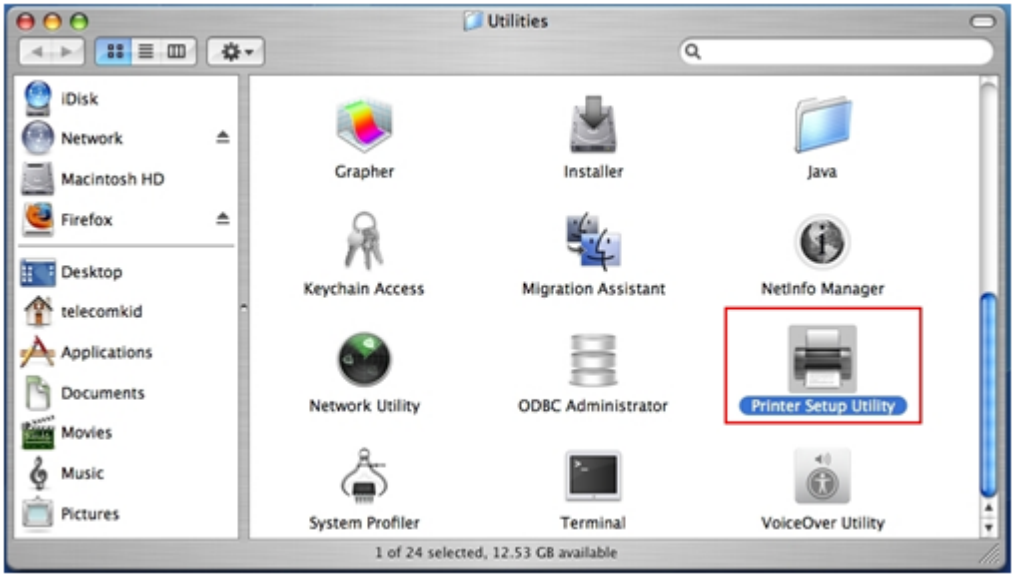
7.7.2.3 Mac OS X 10.4

1. On the toolbar, click 'Go/ Utilities'.



2. Click 'Printer Setup Utility'.



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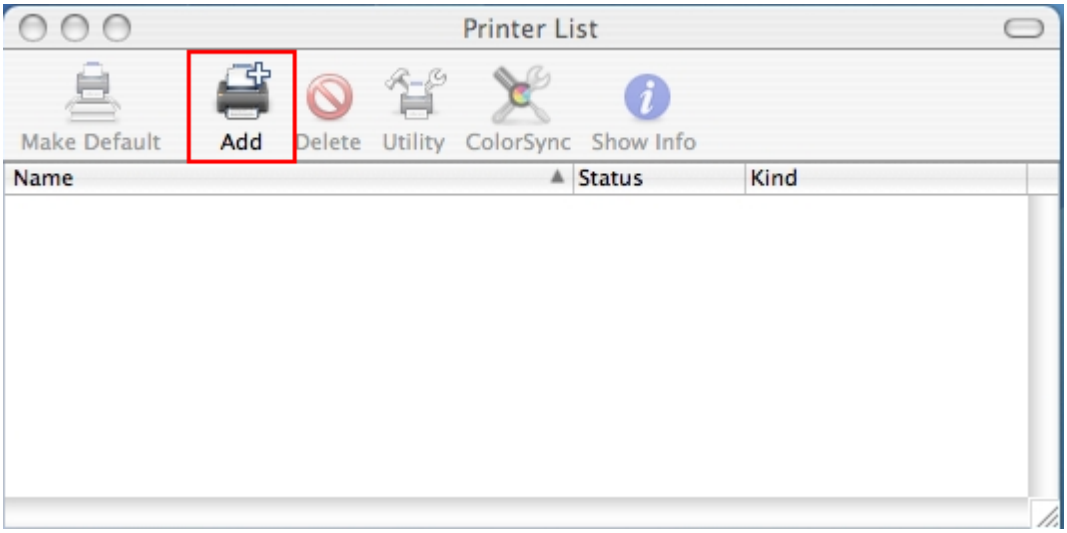
3. Click 'Add'.



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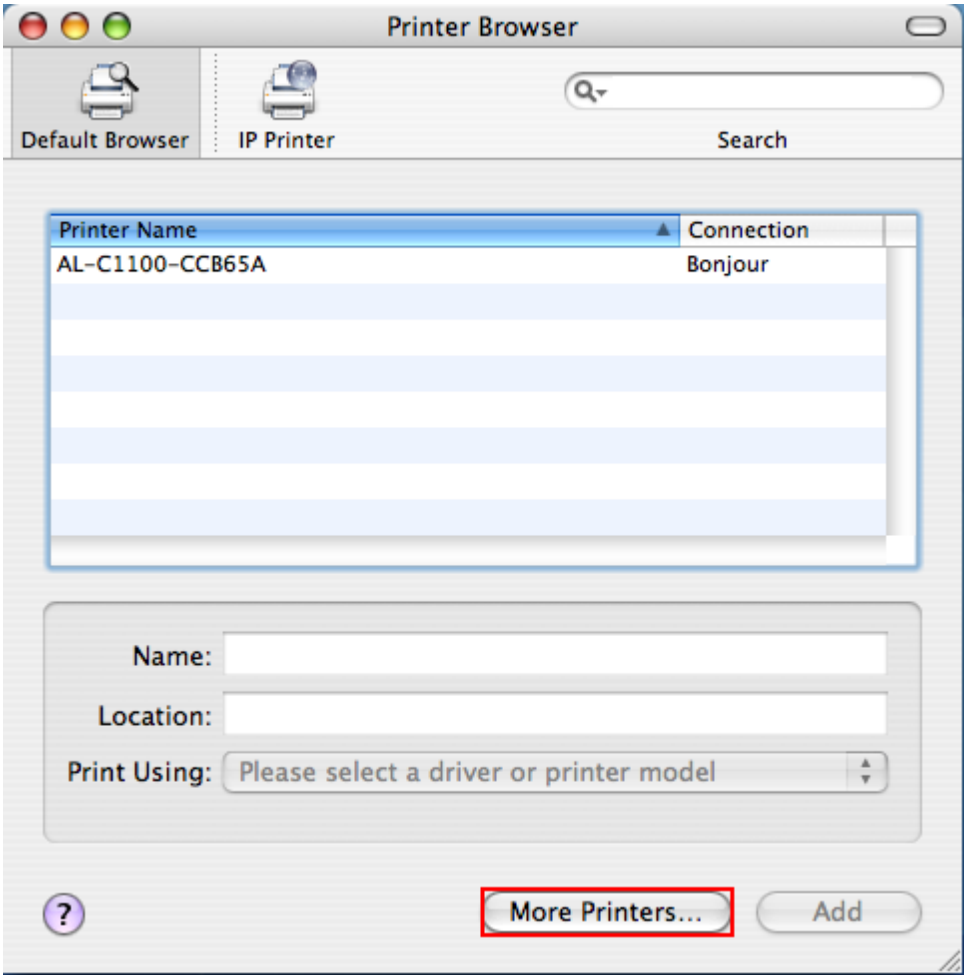
4. Press and hold the 'alt' key

on the keyboard and click 'More Printers' concurrently.



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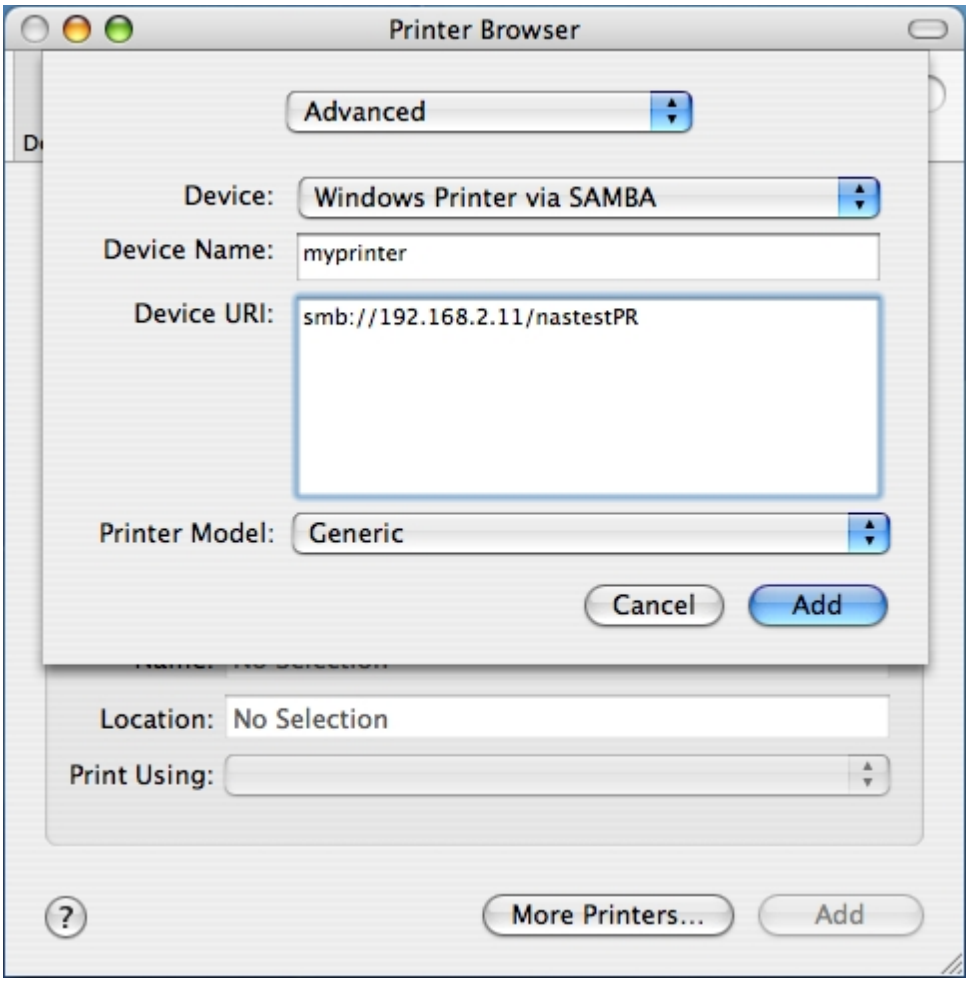
5. In the pop up window:
   a. Select 'Advanced'*.
   b. Select 'Windows Printer with SAMBA'.
   c. Enter the printer name.
   d. Enter the printer URI, the format is smb://NAS IP/printer name. The printer name is found on the 'Device Configuration' > 'USB Printer page'.
   e. Select 'Generic' for Printer 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.

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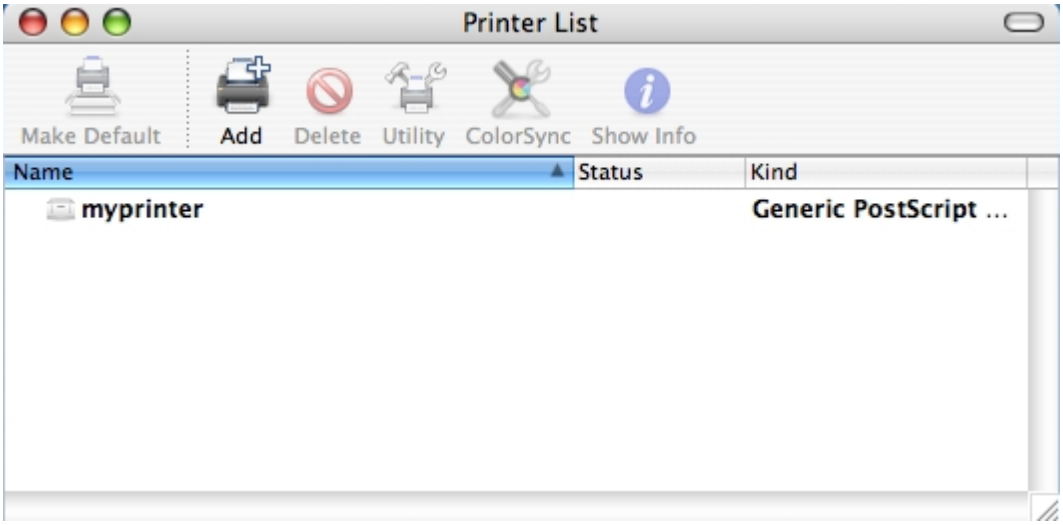
6. The printer appears on the printer list. It is ready to use.



Note: The network printer service of the NAS supports Postscript printer on Mac OS only.

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7.7.2.4 Mac OS X 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.

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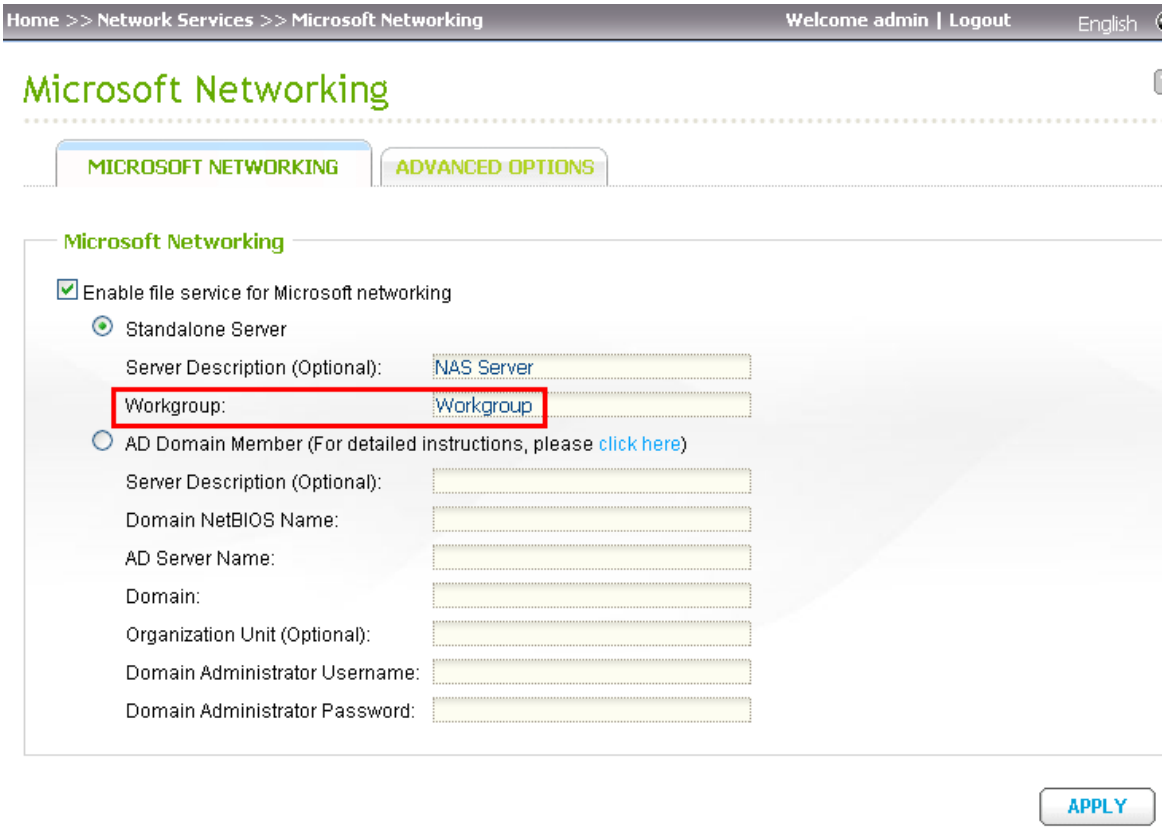
2. Go to 'Network Services' > 'Microsoft Networking'. Enter a workgroup name for the NAS. You will need this information later.



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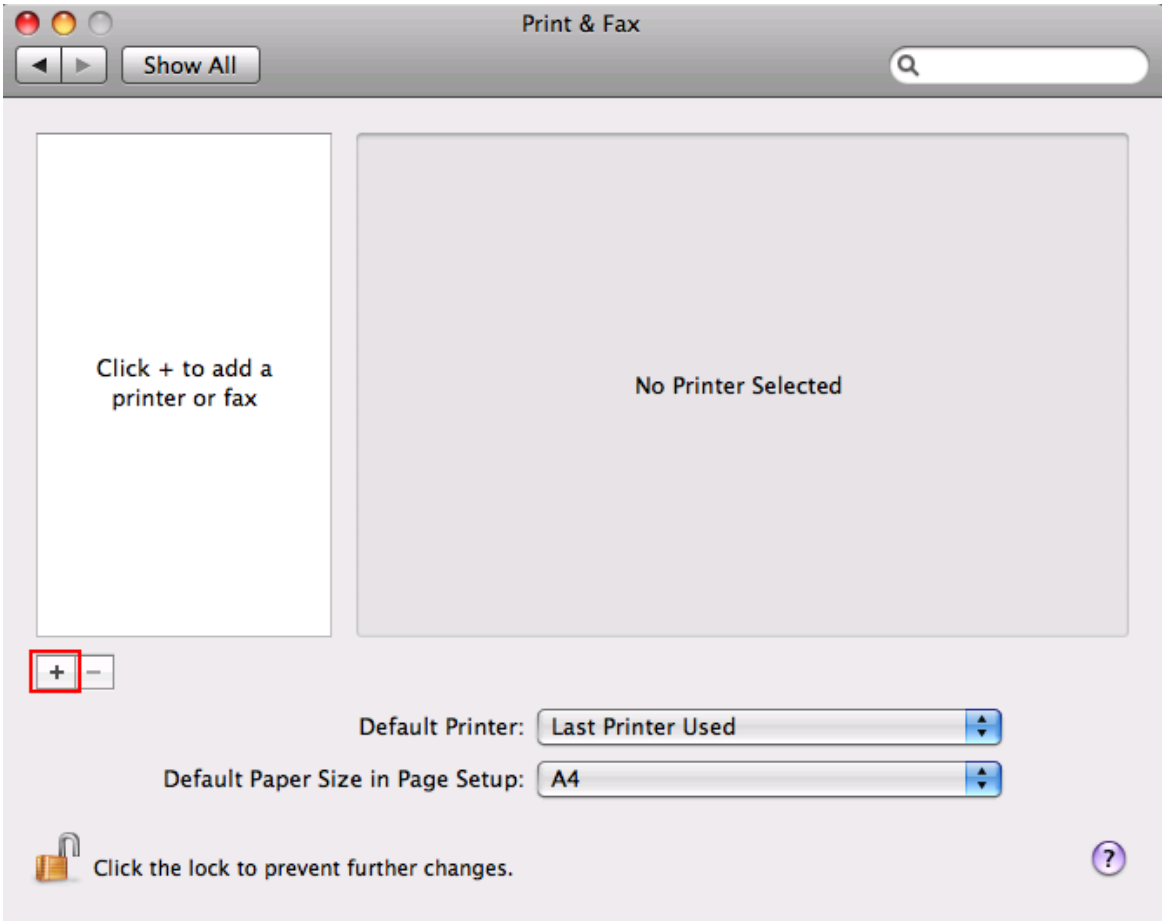
3. Go to 'Print & Fax' on your Mac.

4. Click + to add a printer.



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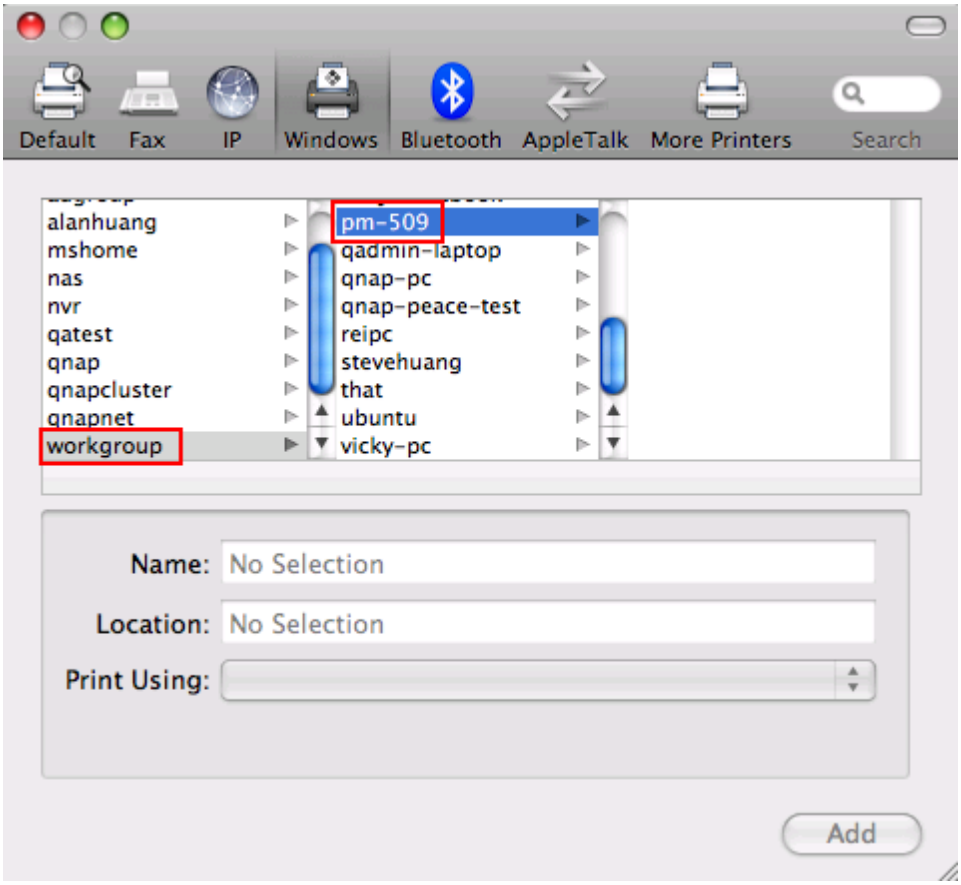
5. Select the NAS workgroup and find the printer name.



6. Enter the user name and password to login the printer server on the NAS.

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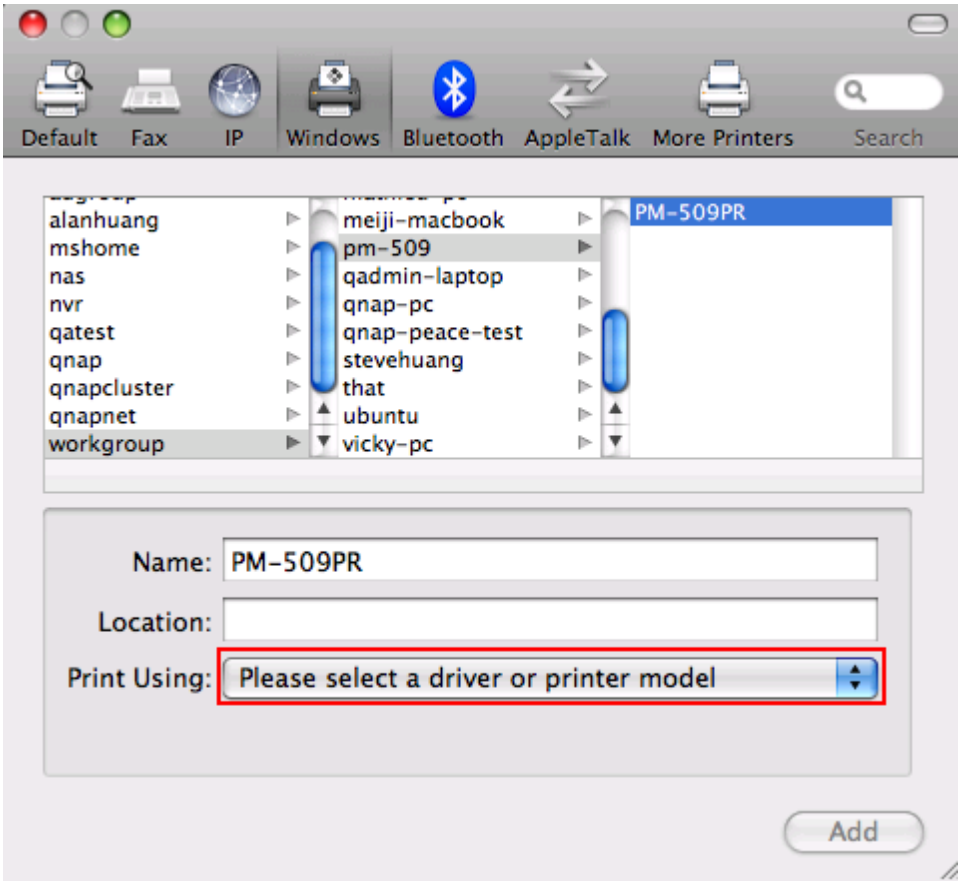
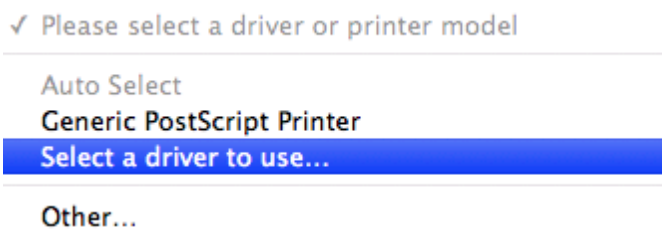
7. Select the printer driver.





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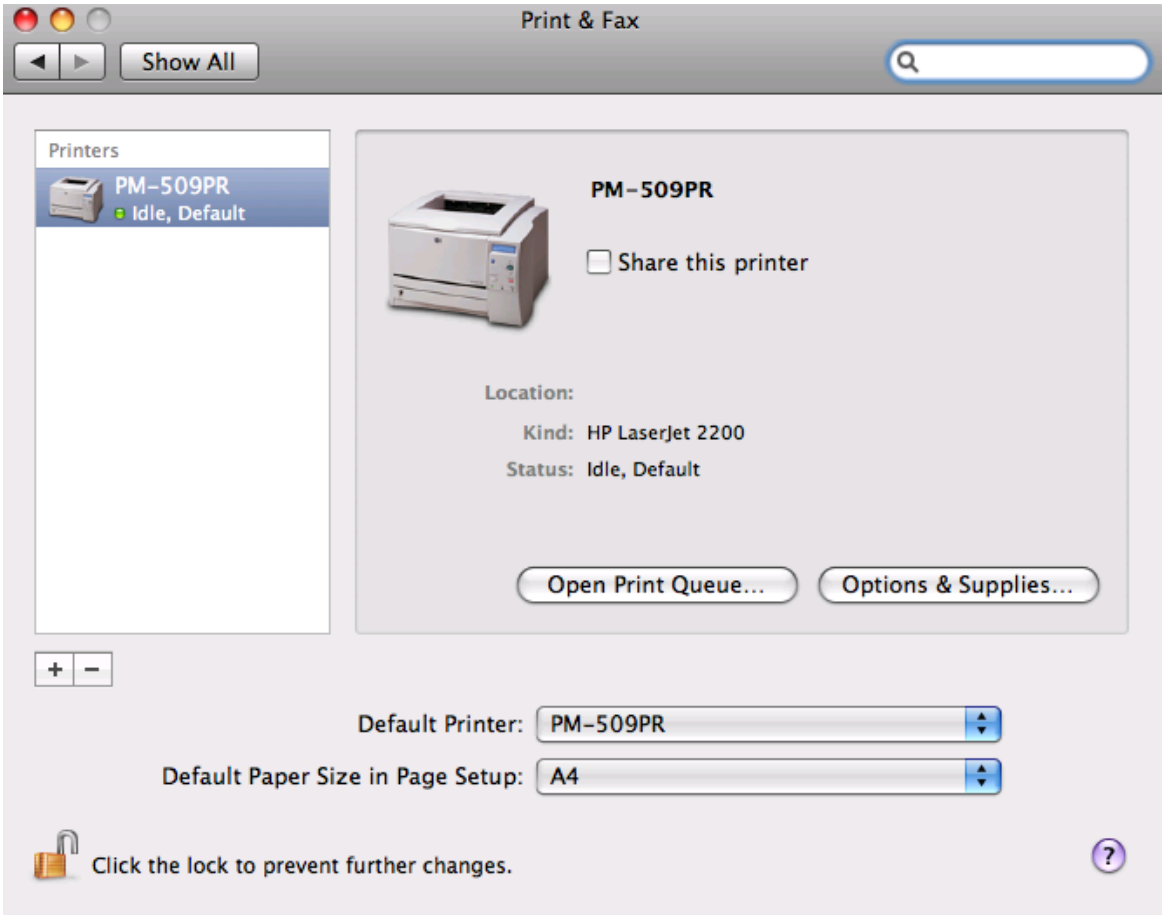
8. After installing the printer driver correctly, you can start to use the printer.



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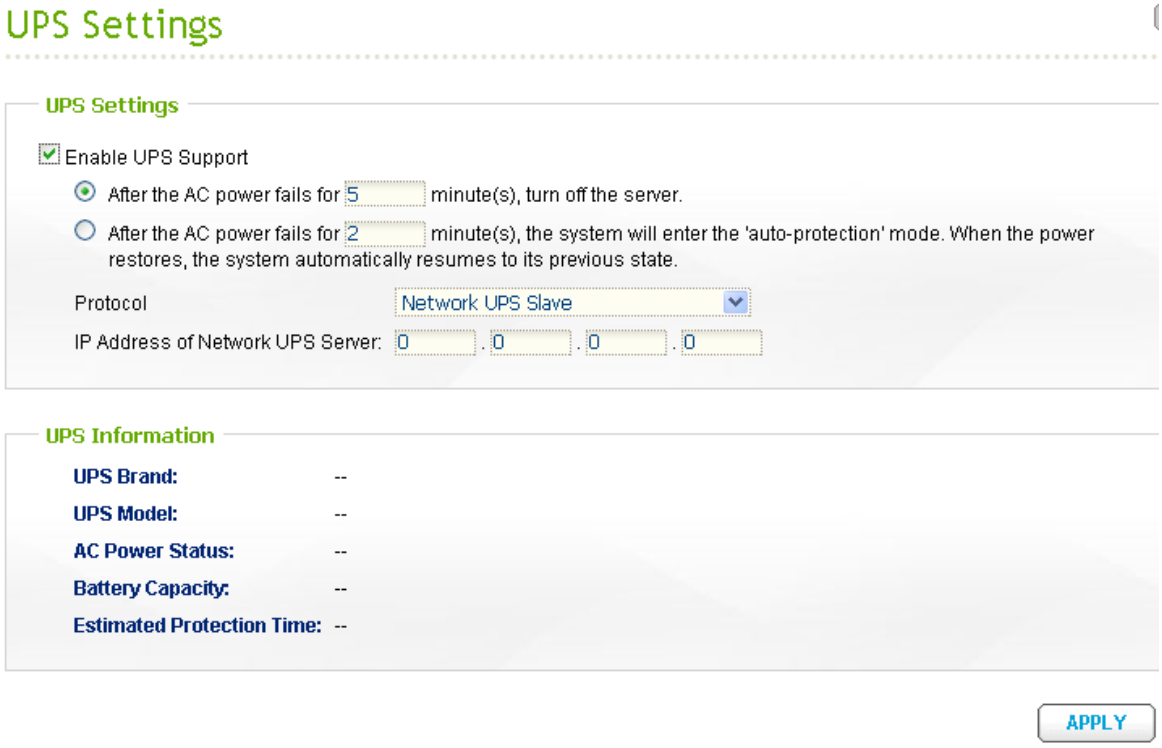
7.7.3 UPS Settings

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.



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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.

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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.

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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).

*This feature is not supported by TS-110, TS-119, TS-210, TS-219, TS-219P, TS-410, TS-419P, TS-410U, and TS-419U.

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'.

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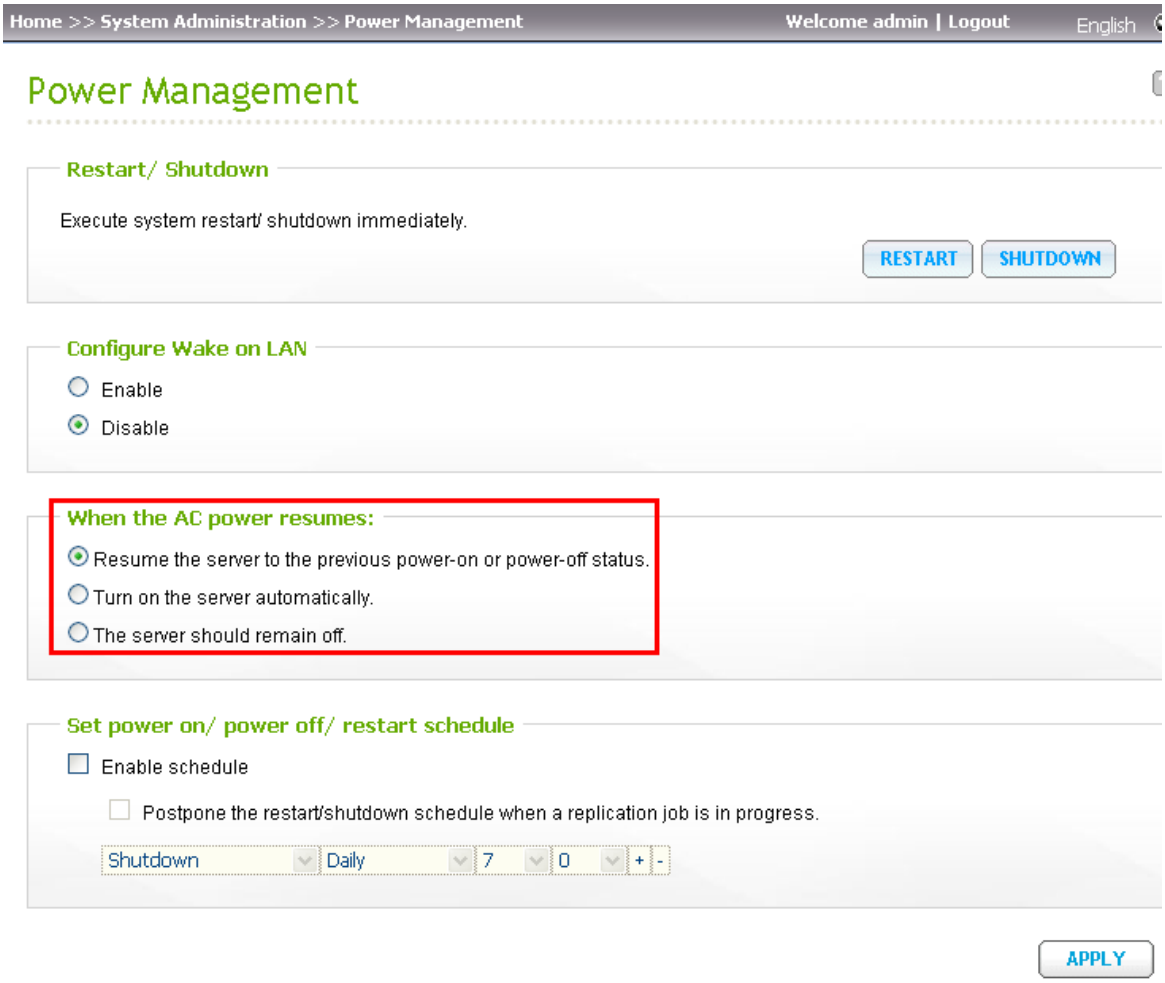

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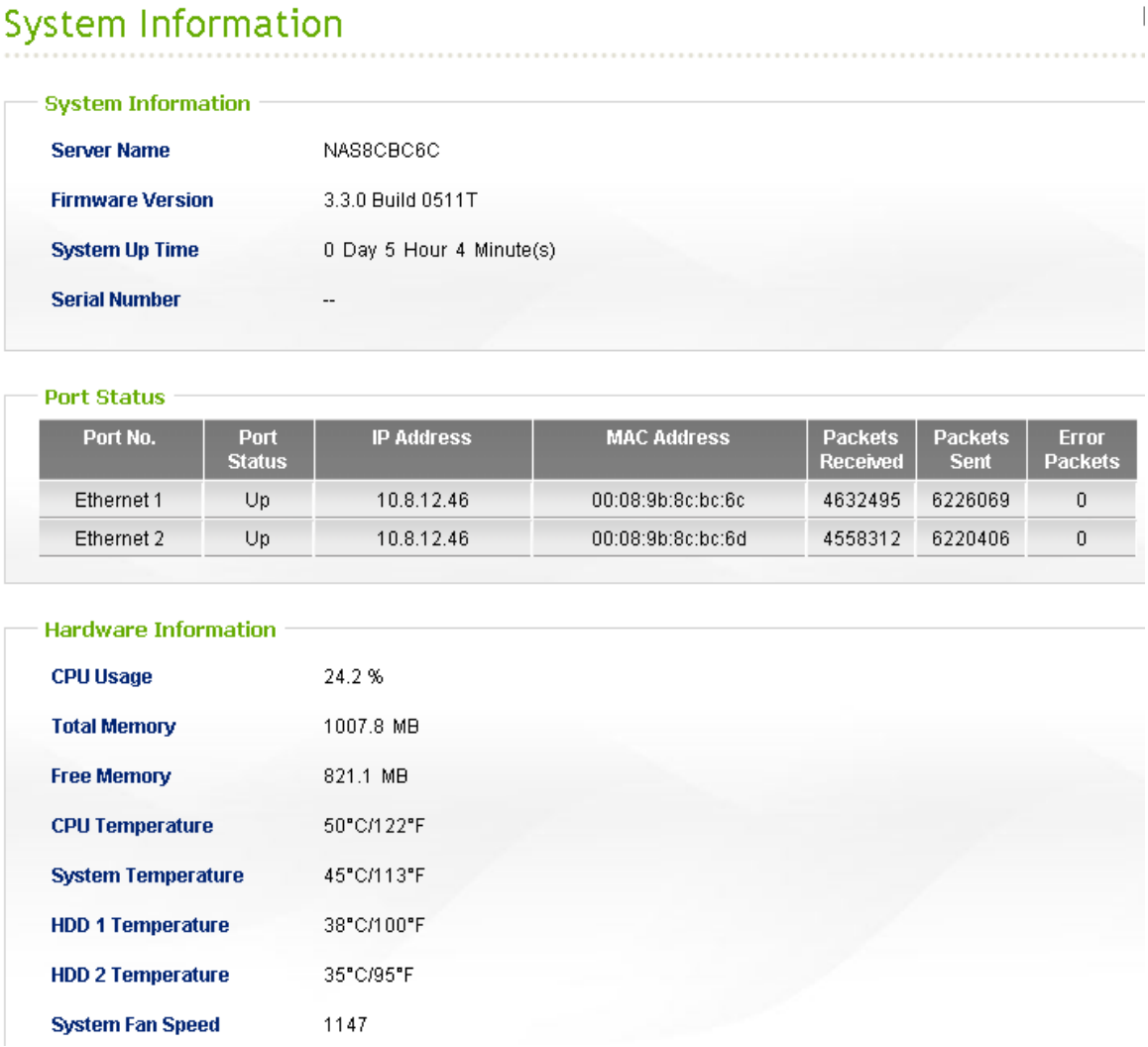
7.8 System Status

System Information 288
System Service 289
Resource Monitor 290

7.8.1 System Information

You can view the system information such as CPU usage and memory on this page.



System Information

System Information

Server Name	NAS8CBC6C
Firmware Version	3.3.0 Build 0511T
System Up Time	0 Day 5 Hour 4 Minute(s)
Serial Number	--

Port Status

Port No.	Port Status	IP Address	MAC Address	Packets Received	Packets Sent	Error Packets
Ethernet 1	Up	10.8.12.46	00:08:9b:8c:bc:6c	4632495	6226069	0
Ethernet 2	Up	10.8.12.46	00:08:9b:8c:bc:6d	4558312	6220406	0

Hardware Information

CPU Usage	24.2 %
Total Memory	1007.8 MB
Free Memory	821.1 MB
CPU Temperature	50°C/122°F
System Temperature	45°C/113°F
HDD 1 Temperature	38°C/100°F
HDD 2 Temperature	35°C/95°F
System Fan Speed	1147

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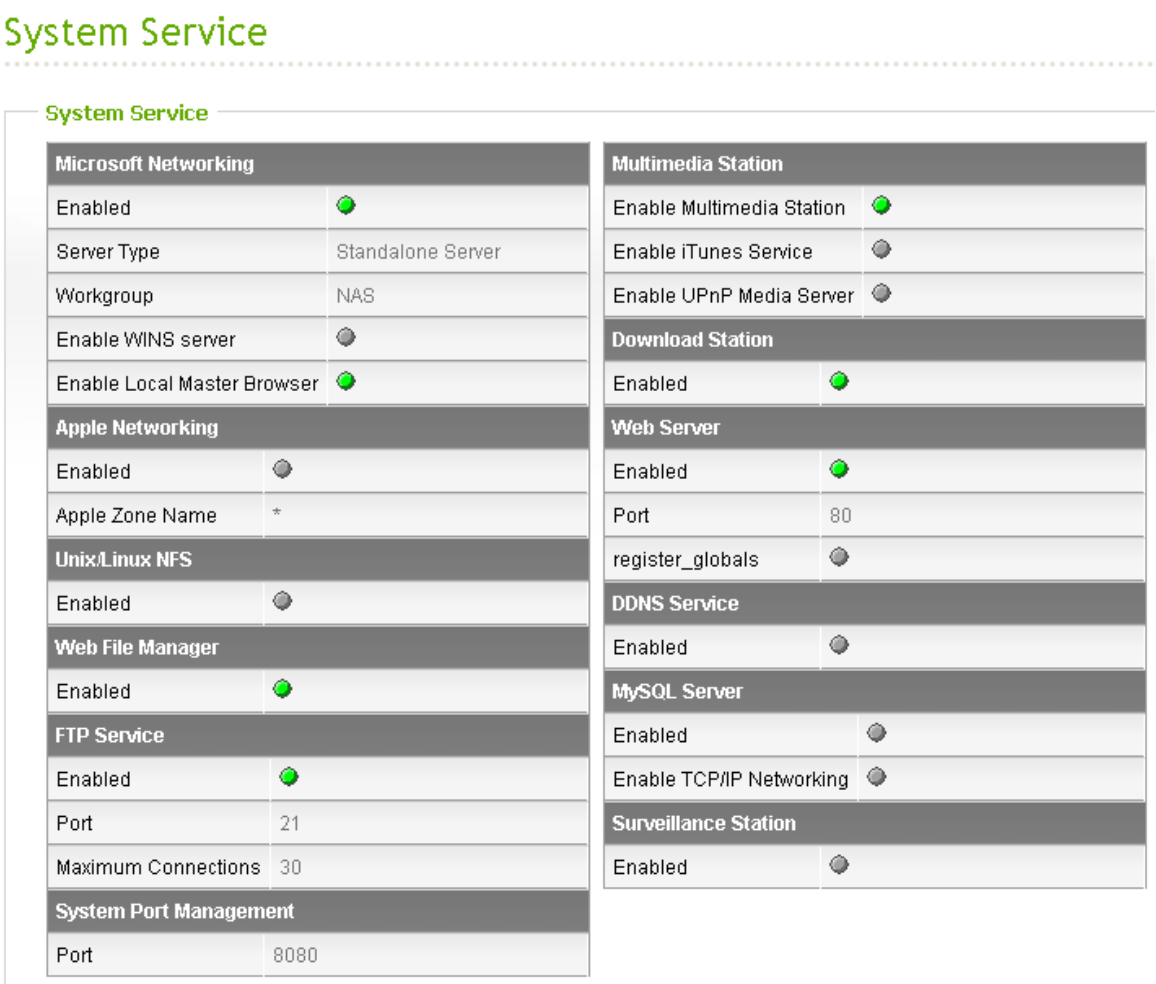
7.8.2 System Service

You can view the current network settings and status of the NAS in this section.



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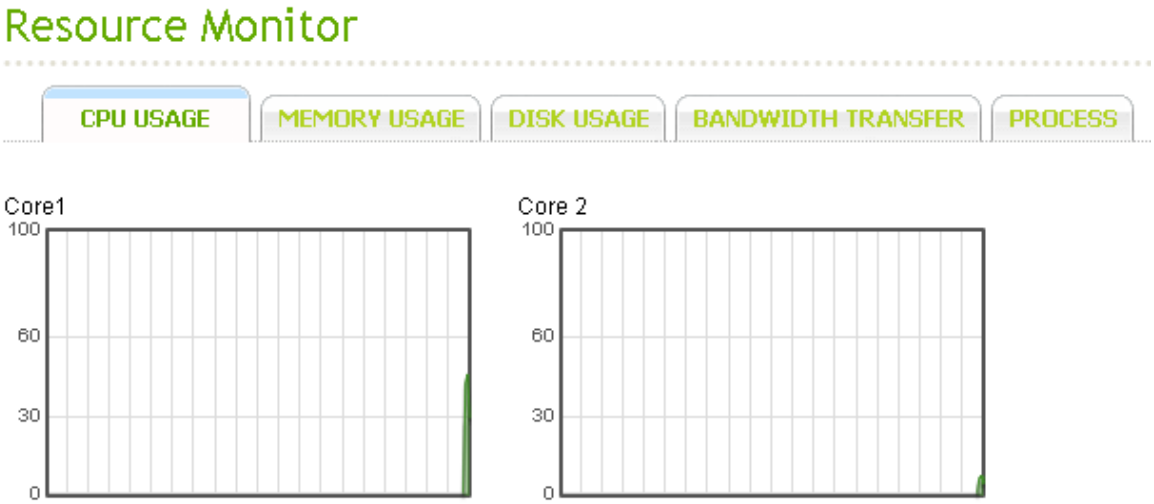
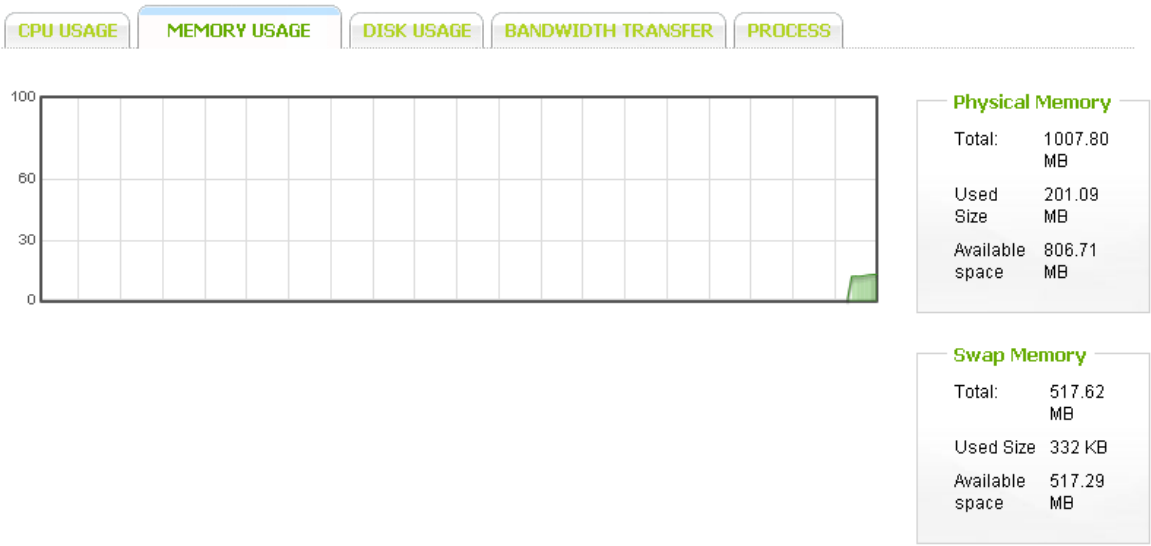
7.8.3 Resource Monitor

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.



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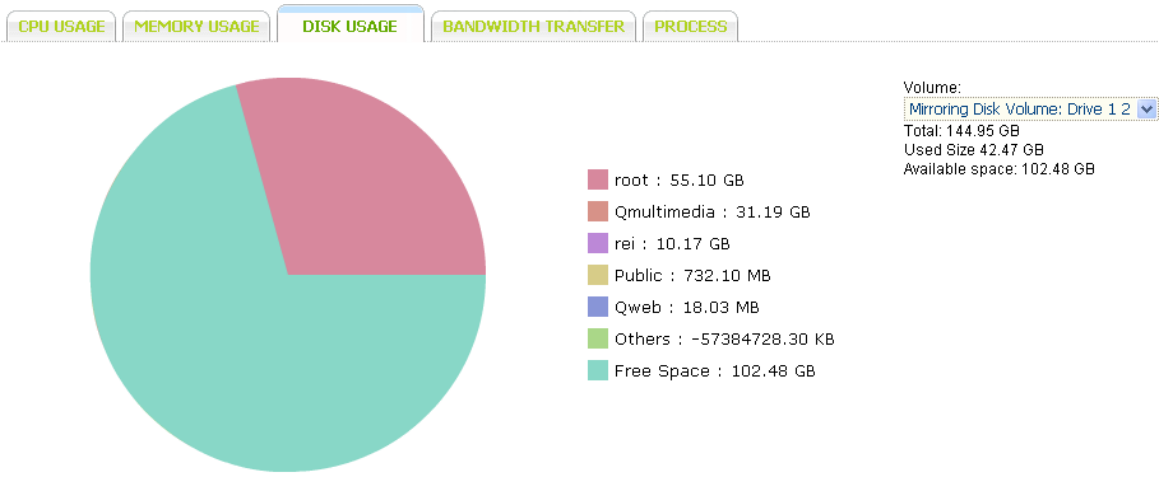
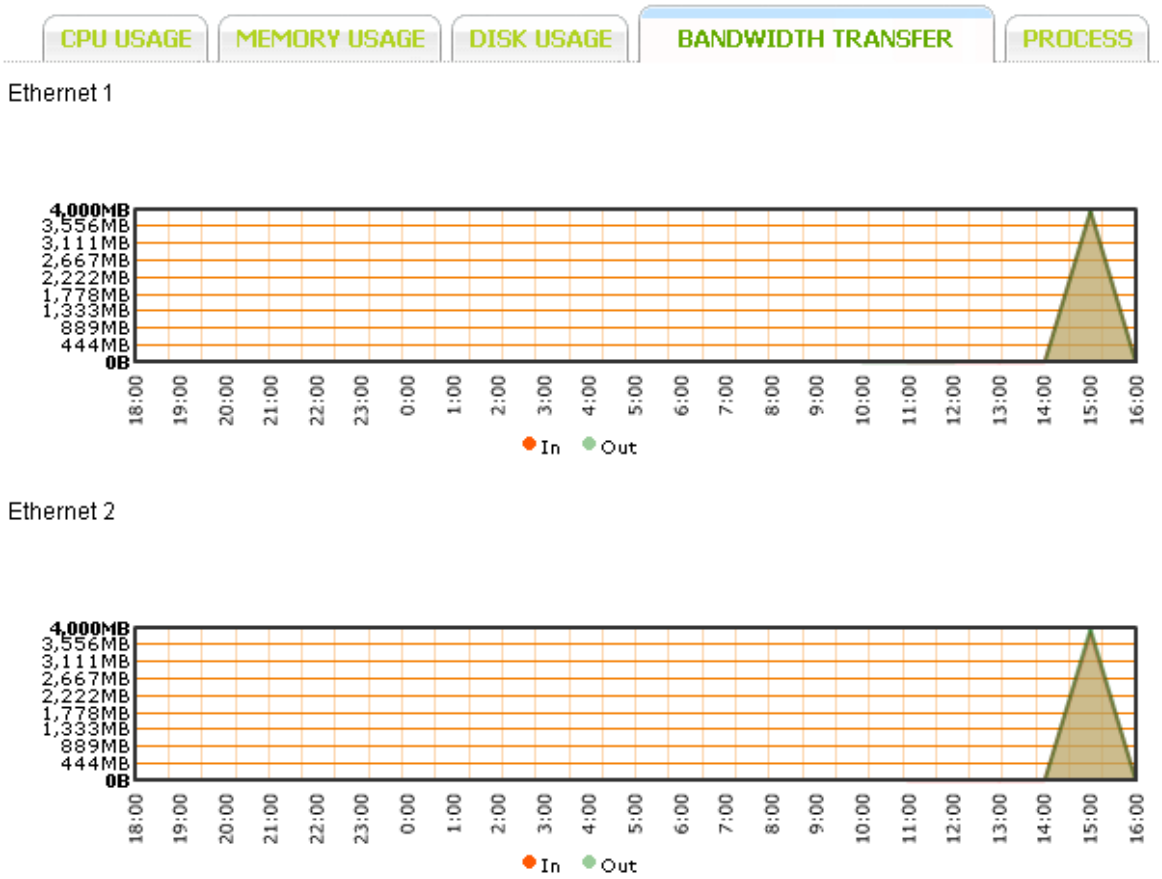
Disk Usage: This tab shows the disk space usage of each disk volume and its share folders.



Bandwidth Transfer: This tab provides information about bandwidth transfer of each available LAN port of the NAS.



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Process: This tab shows information about the processes running on the NAS.

CPU USAGE | MEMORY USAGE | DISK USAGE | BANDWIDTH TRANSFER | PROCESS

Process Name	Users	PID	CPU Usage	Memory
smbd	admin	11566	17.4%	5900 K
kcryptd	admin	2397	12.6%	0 K
top	admin	14495	2.9%	824 K
bcclient	admin	4667	0.9%	1088 K
simple_client	admin	17346	0.9%	3668 K
init	admin	1	0	464 K
daemon_mgr	admin	1404	0	776 K
hotswap	admin	1418	0	852 K
qWatcodogd: keeping alive ever	admin	1576	0	468 K
modagent	admin	1979	0	396 K
qsmartd	admin	2475	0	704 K
dhcpcd	admin	3150	0	204 K
mDNSResponderPosix	admin	3246	0	548 K
upnpd	admin	3374	0	1304 K
thttpd	admin	3537	0	1560 K

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8 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.

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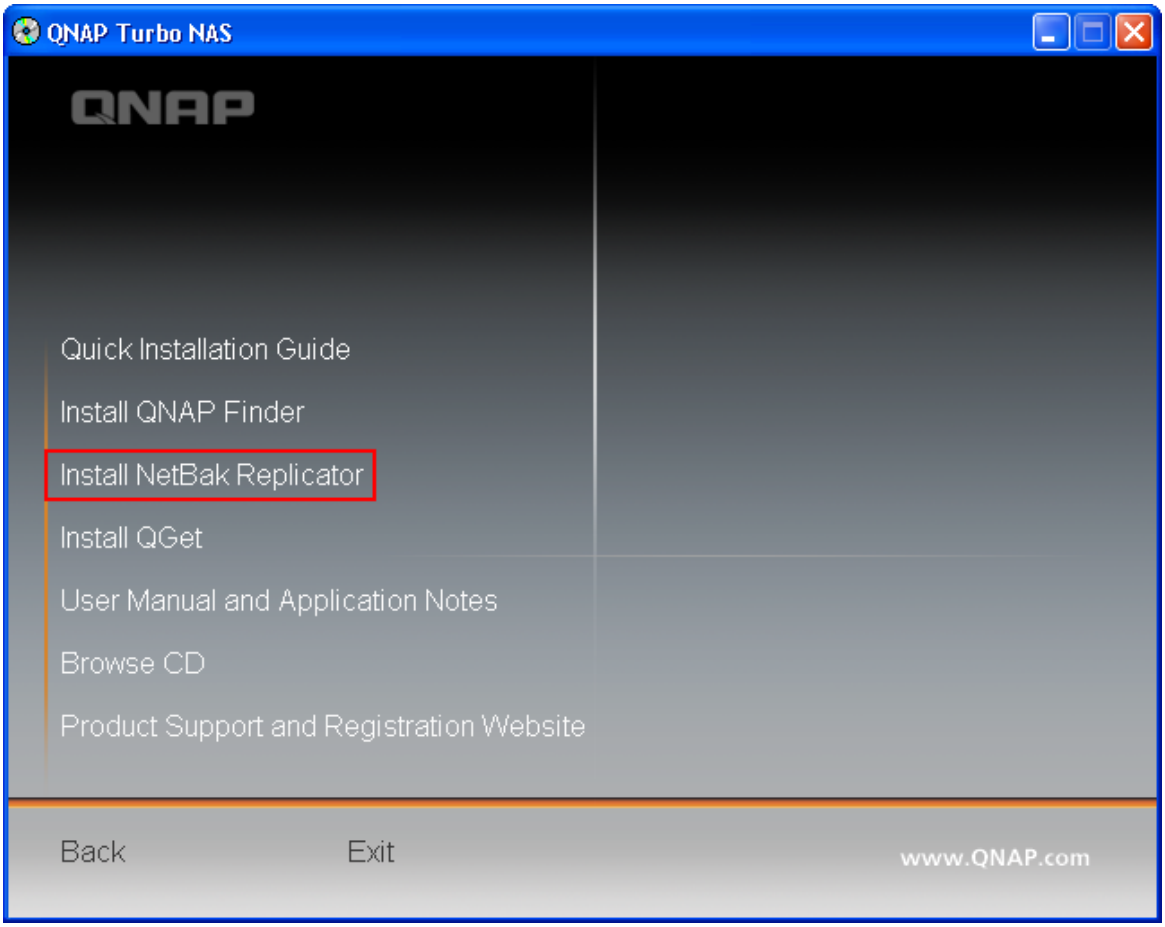
Install NetBak Replicator

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.

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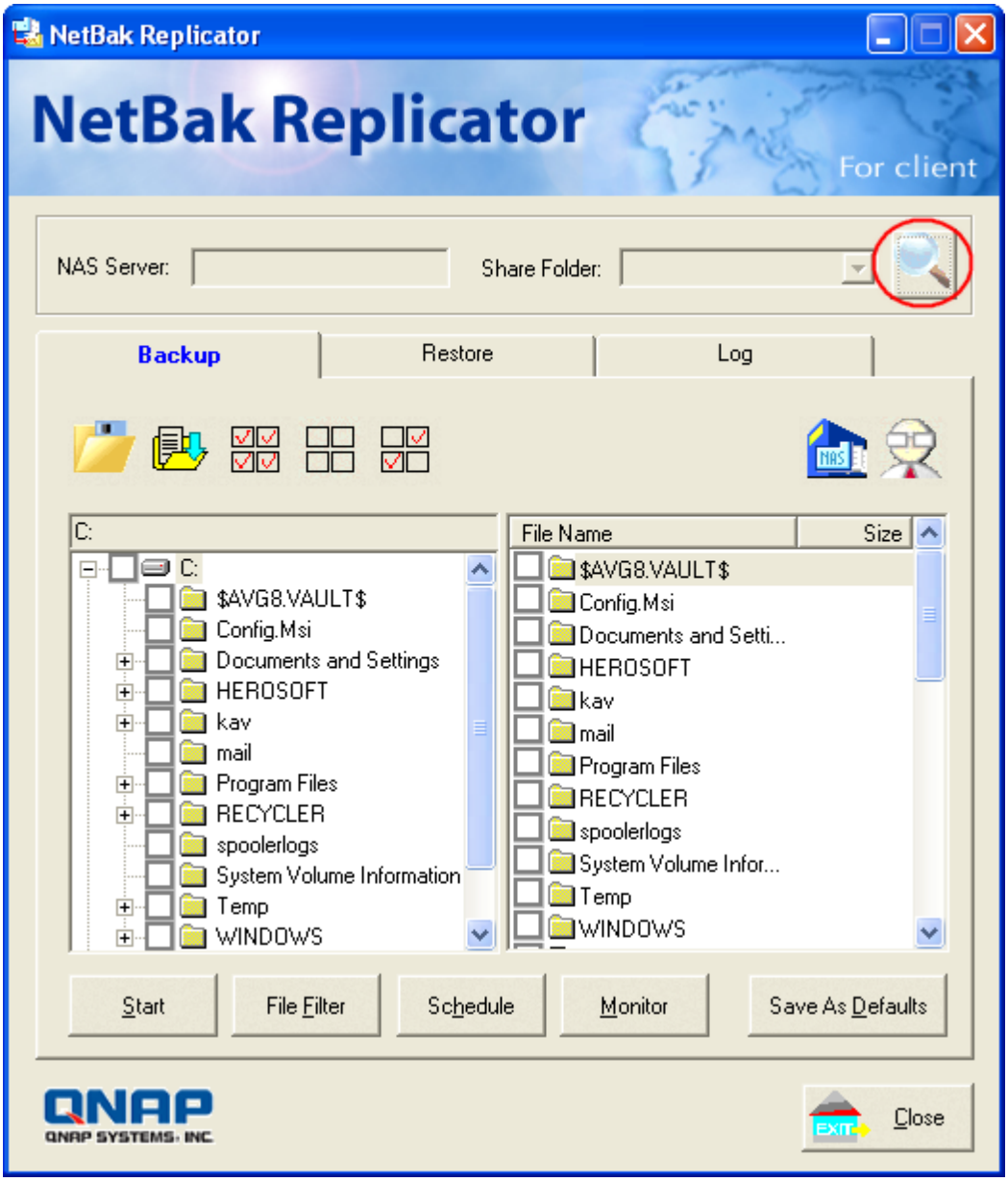
Use NetBak Replicator

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.



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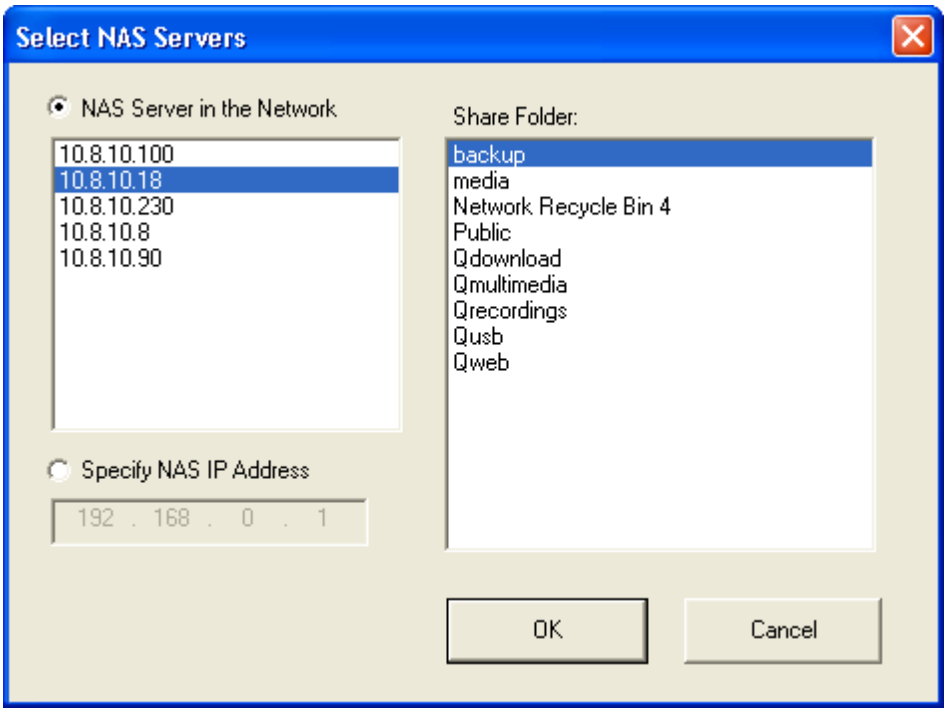
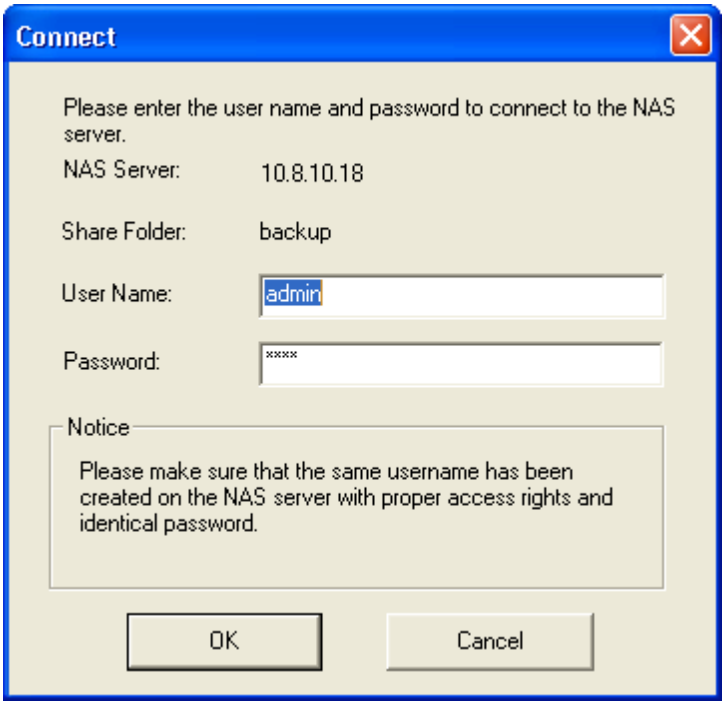
3. When the following window appears, all the NAS on the LAN will appear on the left list. Select a server and a share folder on the right. NetBak Replicator also supports backup over WAN, enter the IP address of the NAS for data backup directly and select a share folder. Then click 'OK'.



4. Enter the user name and password to login the server.



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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.

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Backup

Select the files and folders for backup.

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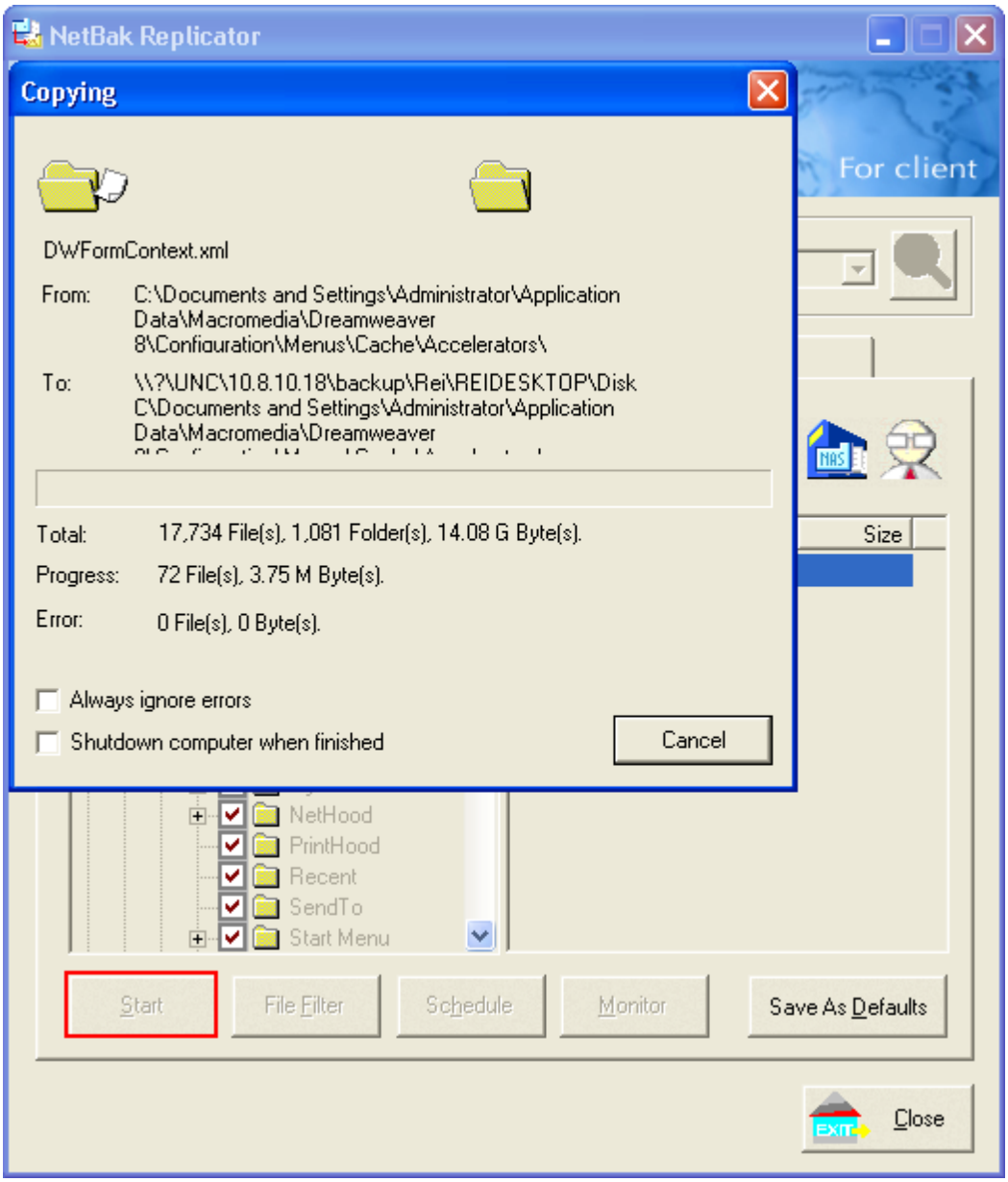
Start

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.



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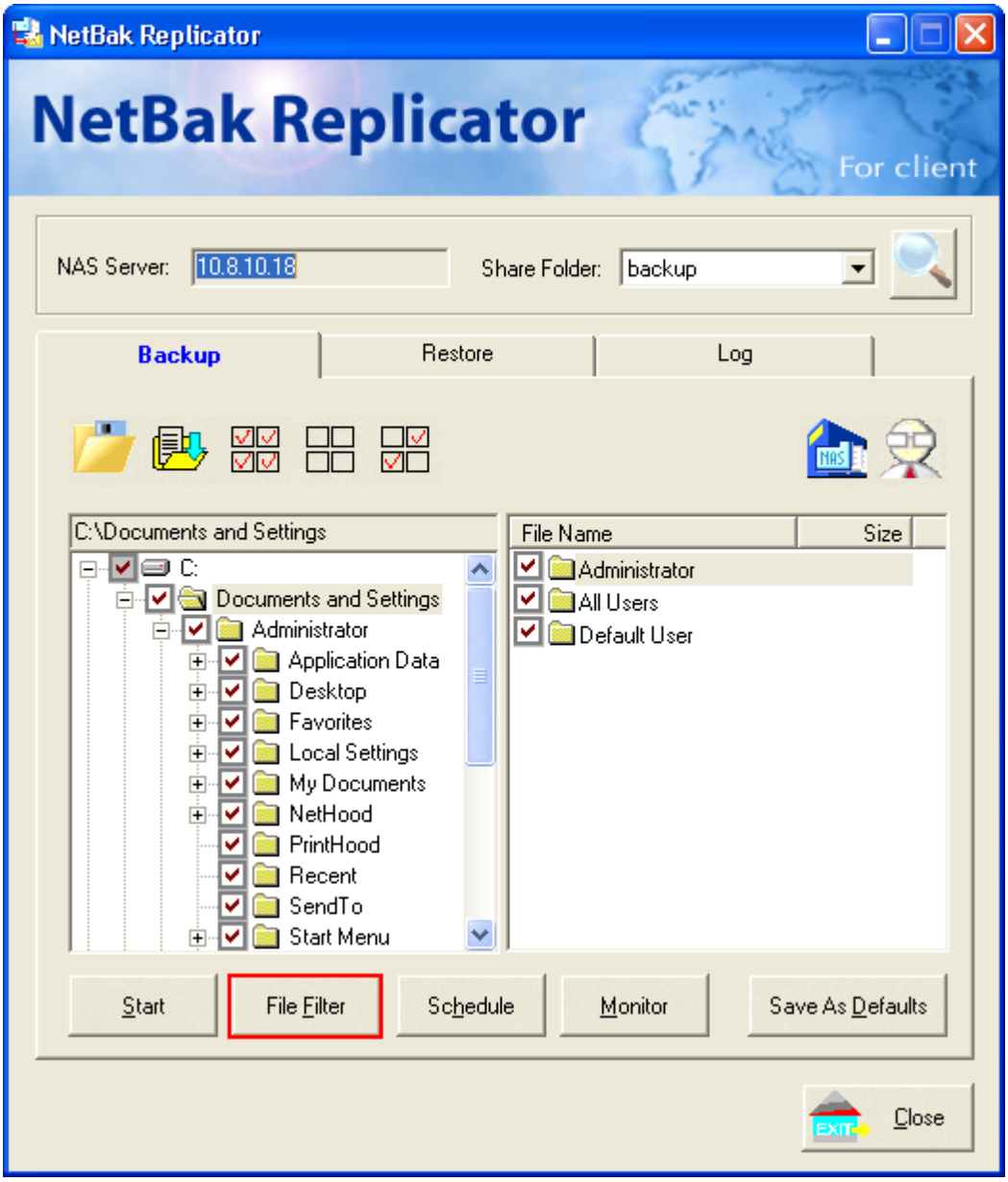
File Filter

Click 'File Filter' on NetBak Replicator to select file format to be skipped from backup. Then click 'OK'.



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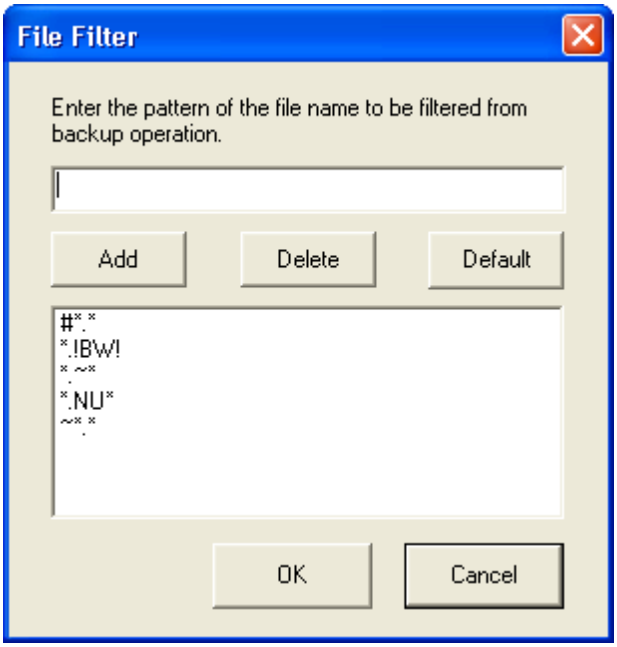

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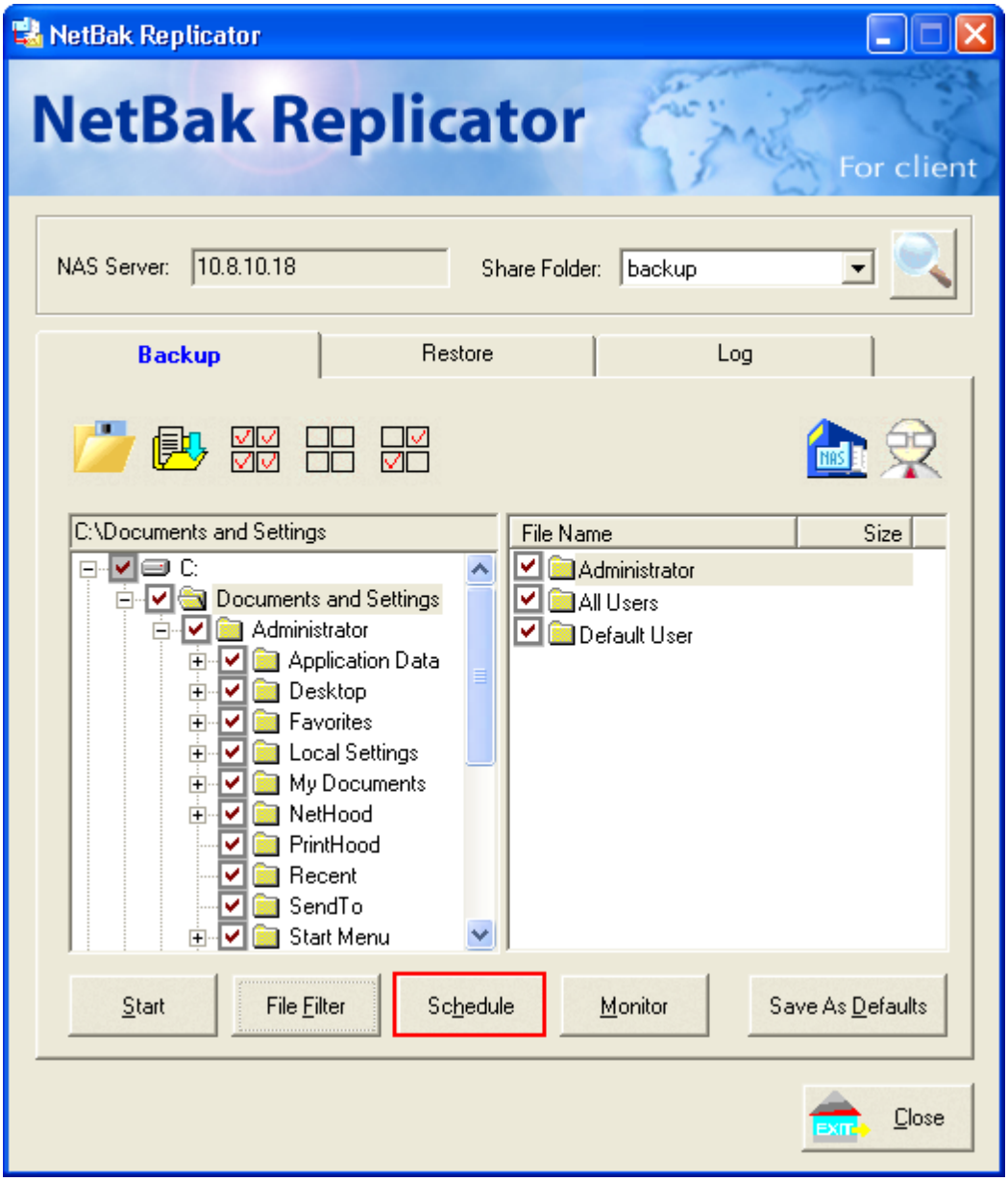
Schedule

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.



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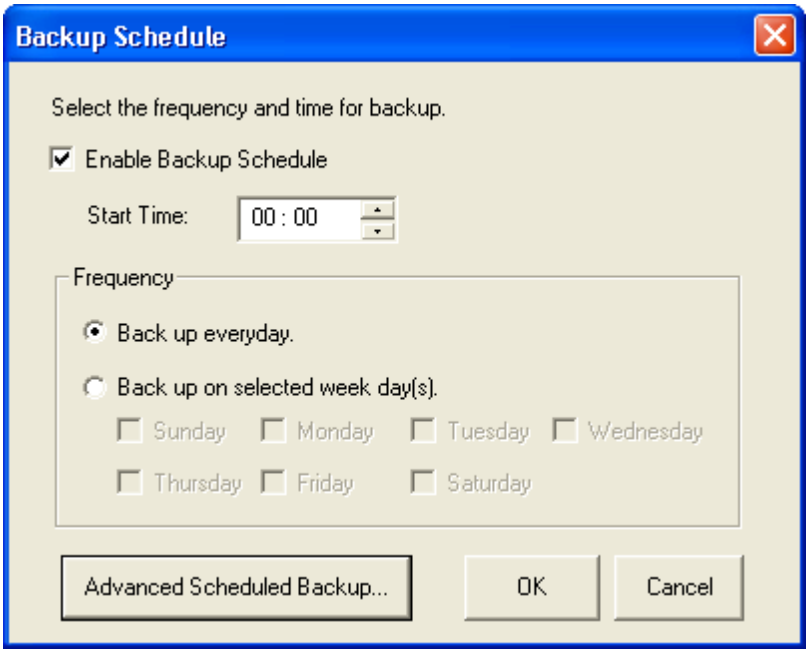

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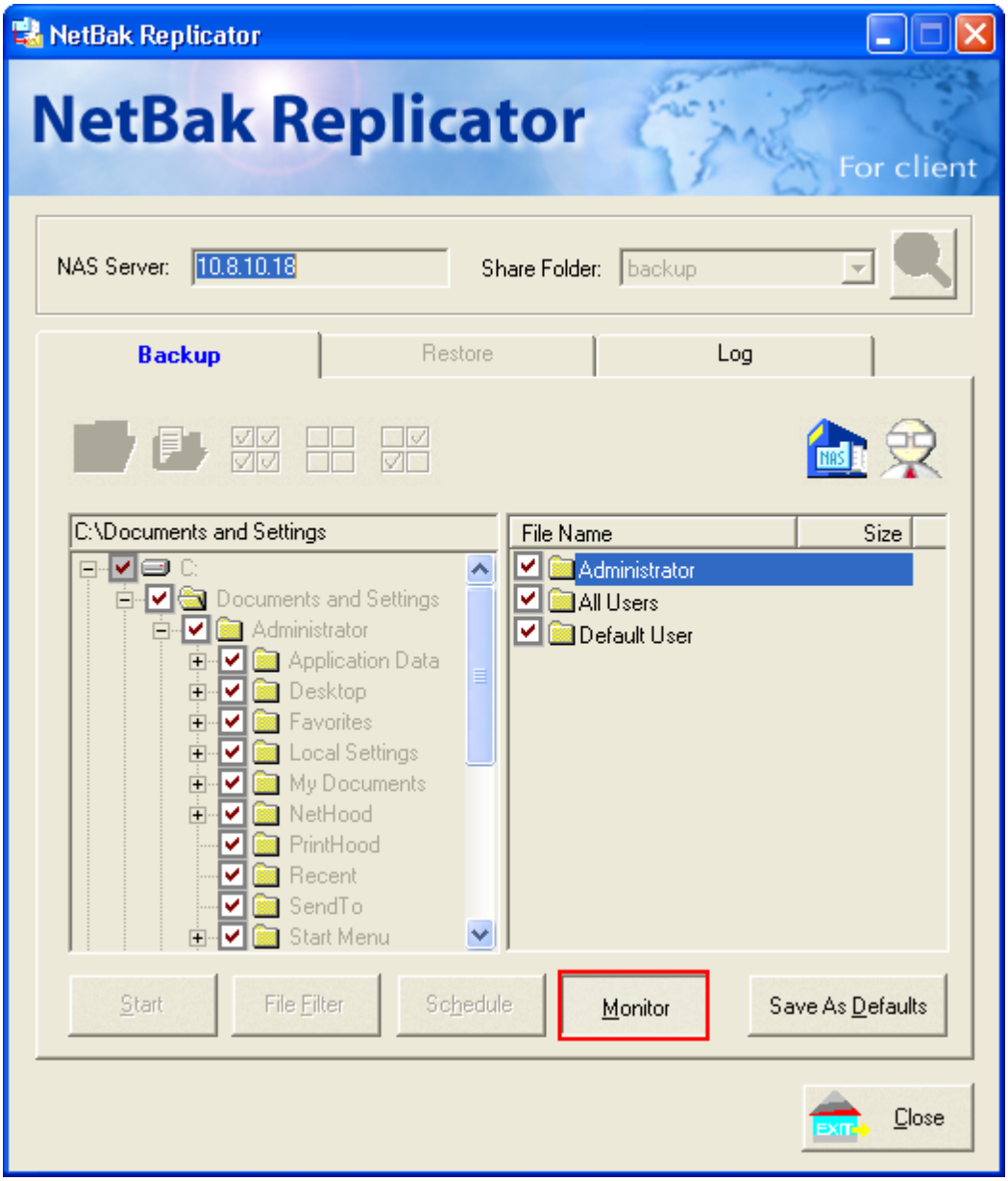
Monitor

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.



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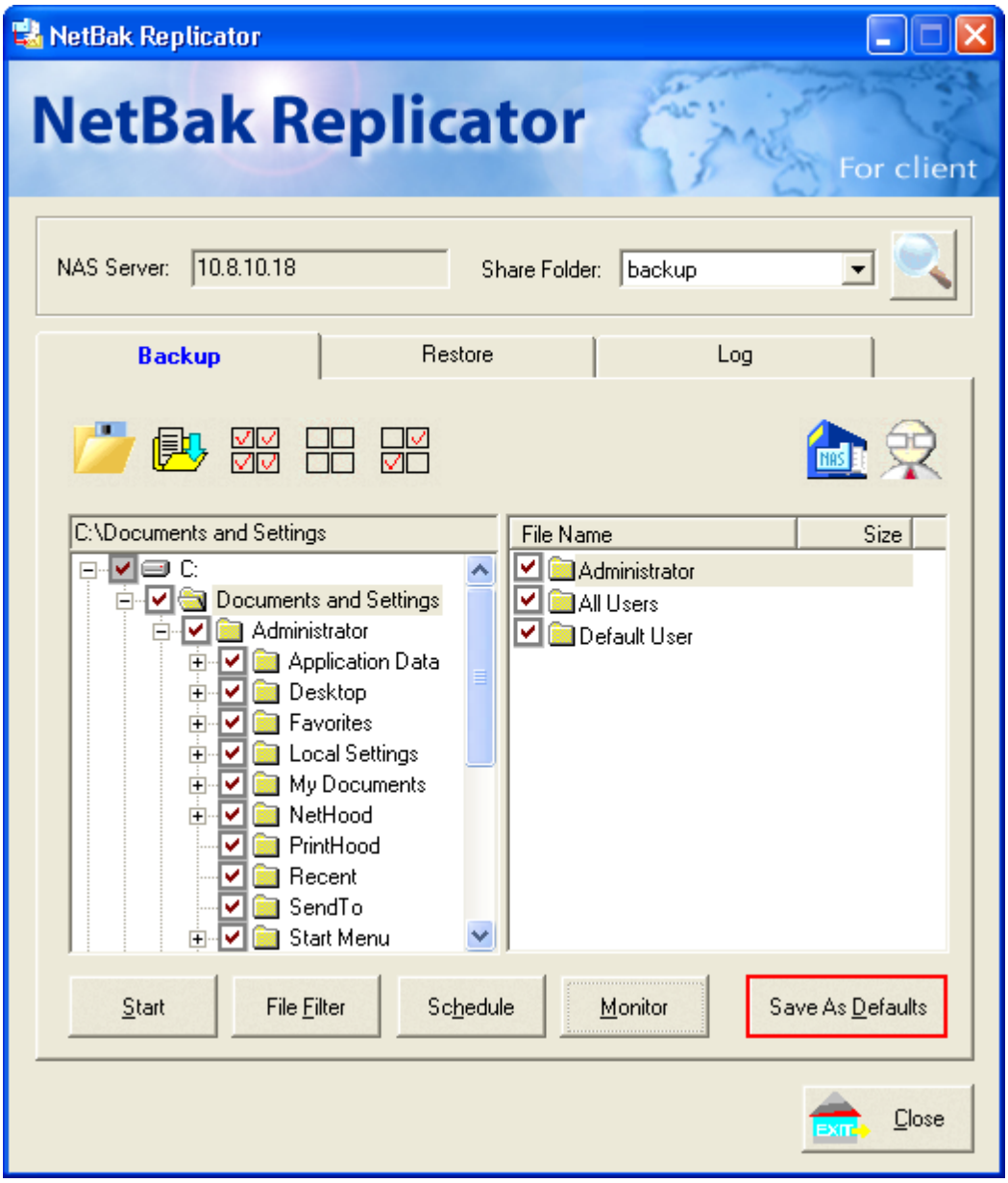
Initialize Configuration

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.



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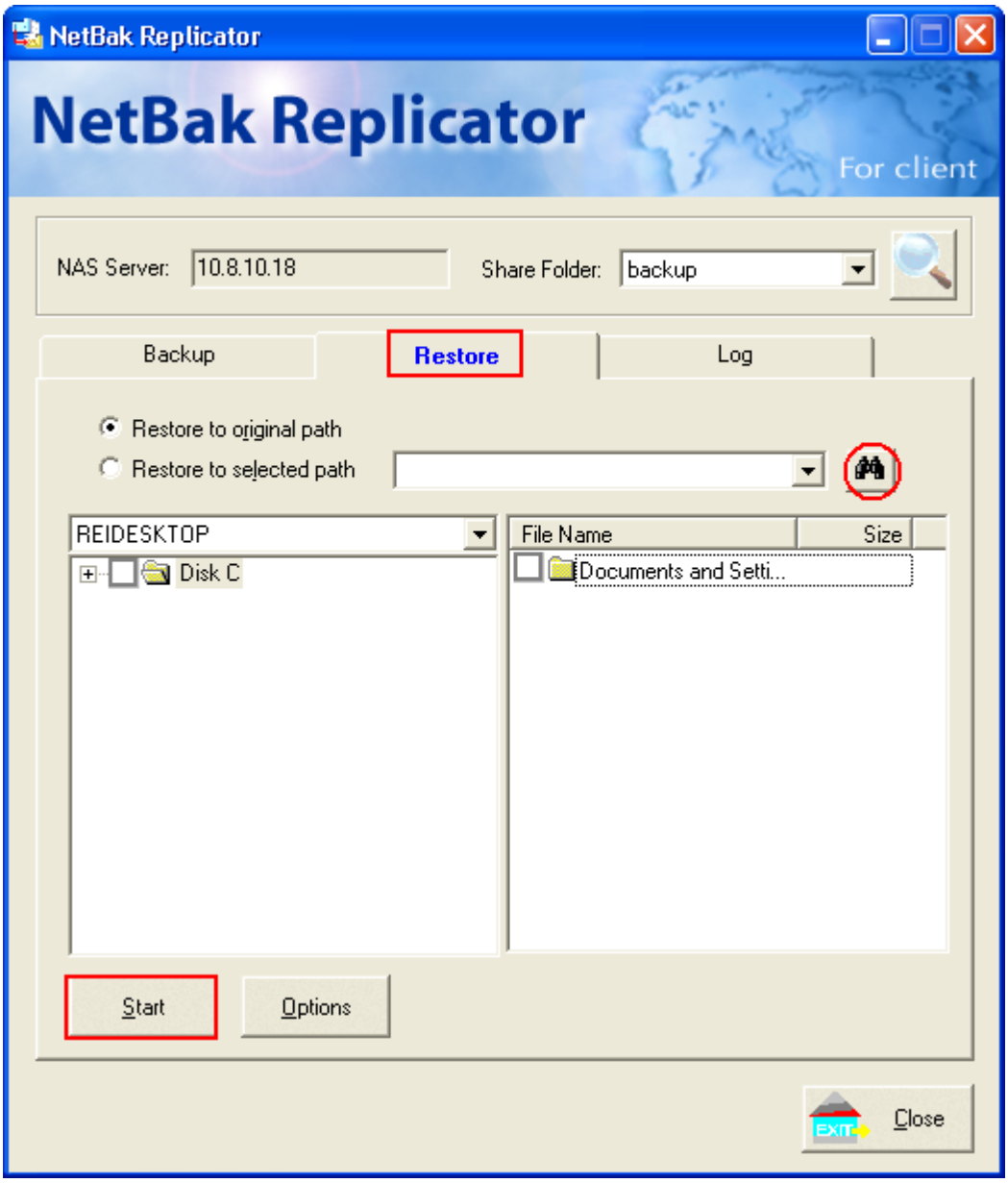
Restore

Follow the steps below to restore the files from the NAS to your PC.

a. Click to select the NAS and the share folder (the restore source).
b. Click the 'Restore' tab on NetBak Replicator.
c. Select to restore the data to the original path or click to specify the restore location manually.
d. Select the files and folders to restore.
e. Click 'Start'.



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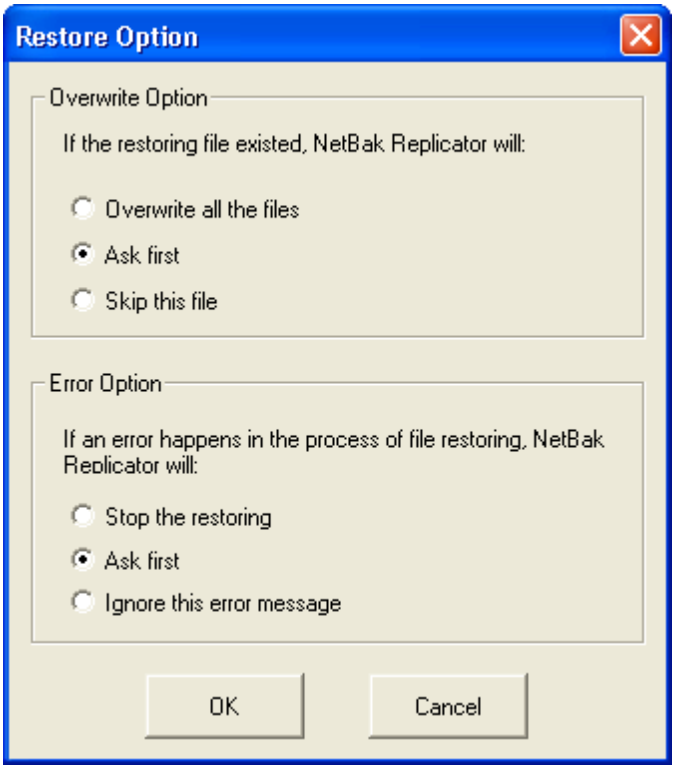
Options: Select the behaviour of NetBak Replicator if the restored file exists on the destination and when an error occurs during the process.

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



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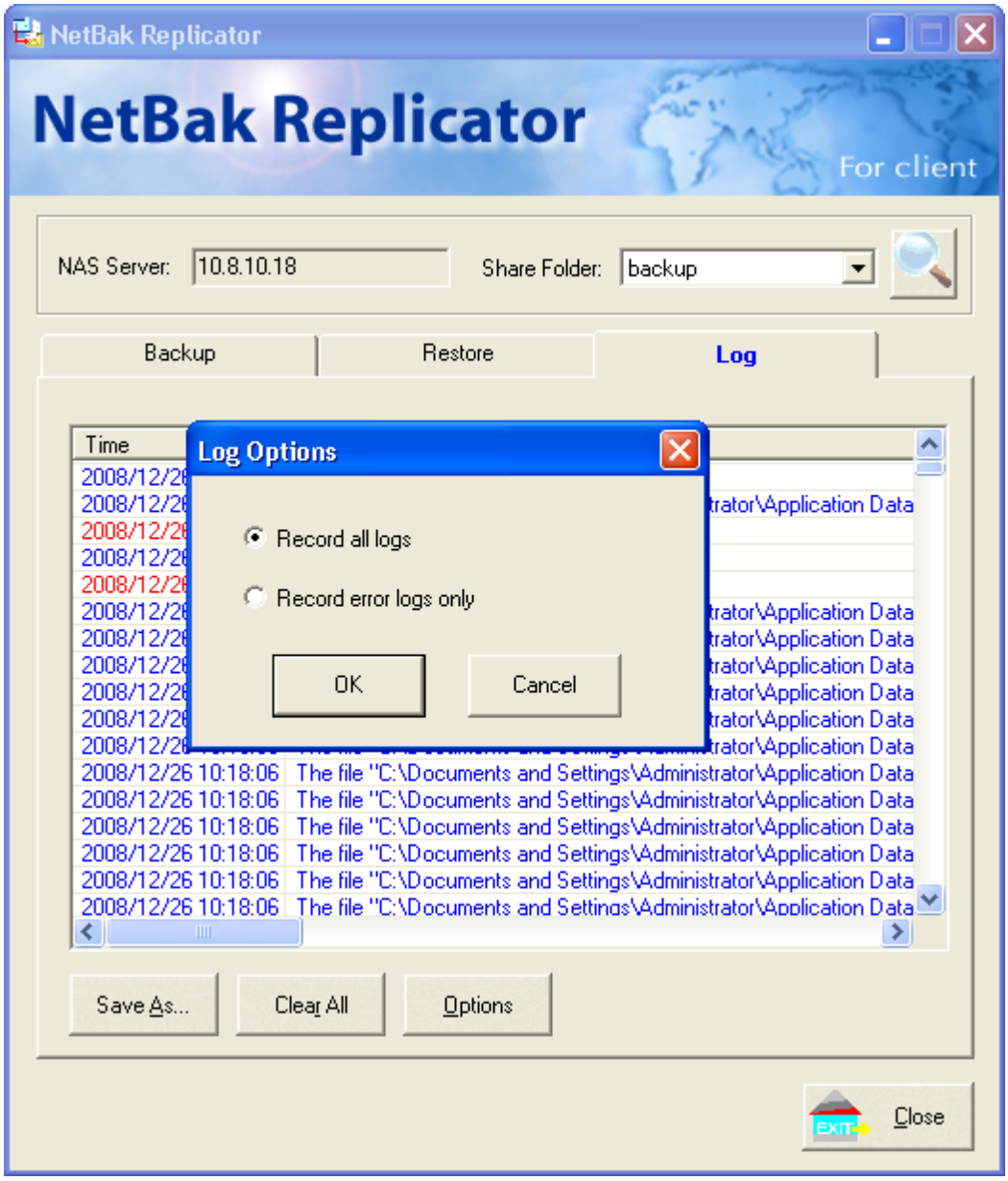
Log

a. Save As…: To save all the logs on NetBak Replicator, click this button. All the logs will be saved as a text file.

b. Clear All: Click this button to clear all the logs.

c. Option: Select the type of logs to be recorded? 'Record all logs' or 'Record error logs only'.



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9 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

Joining the QNAP NAS to Windows Server 2003/ 2008 Active Directory

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.

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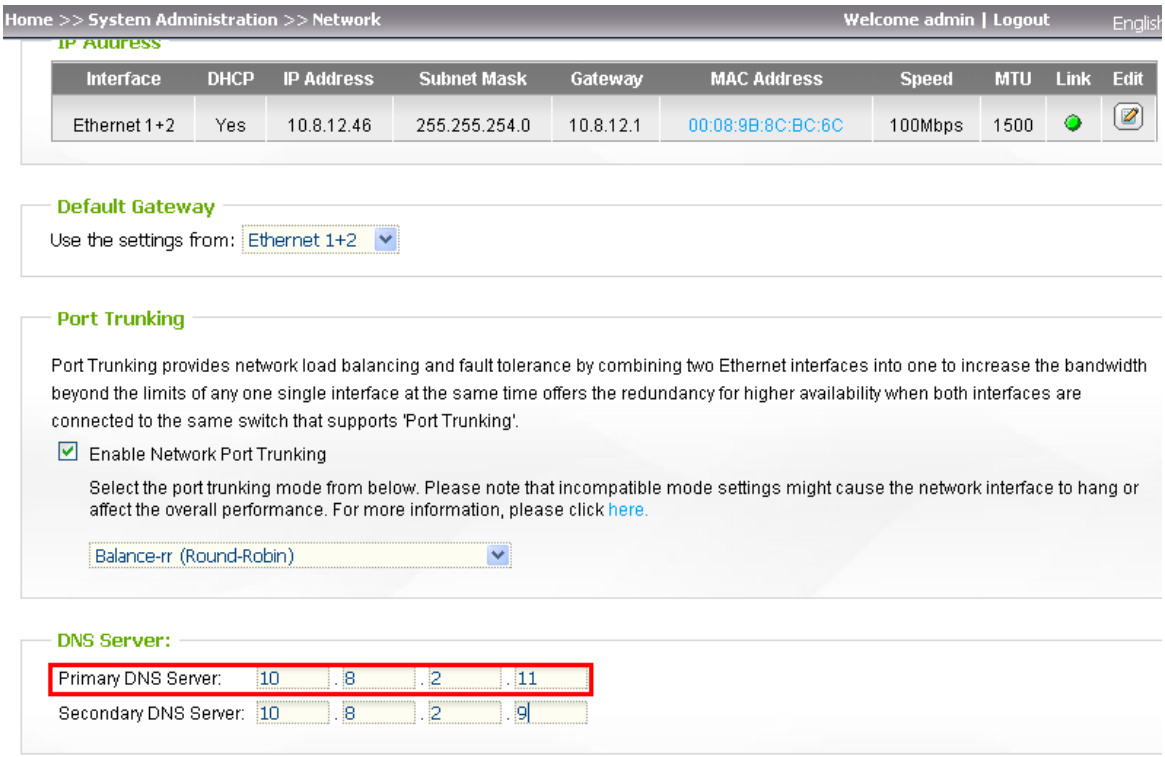
2. Go to 'System Administration' > 'Network' > 'TCP/IP'. Set the IP of the primary DNS server as the IP of the Active Directory server that contains the DNS service. It must be the IP of the DNS server that is used for your Active Directory. If you use an external DNS server, you will not be able to join the domain.



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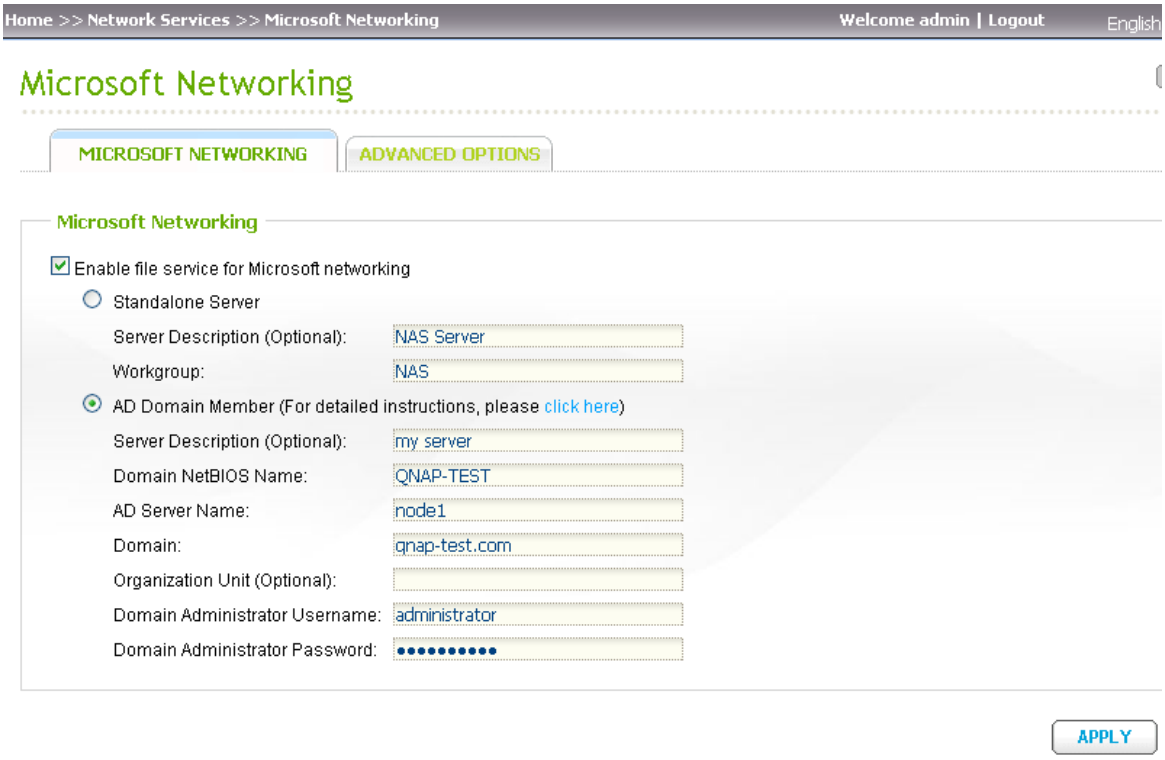
3. Go to 'Network Services' > 'Microsoft Networking'. Enable AD Domain Member, and enter the AD domain information.



Note:

- Enter a fully qualified AD domain name, for example, qnap-test.com
- The AD user entered here must have 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).

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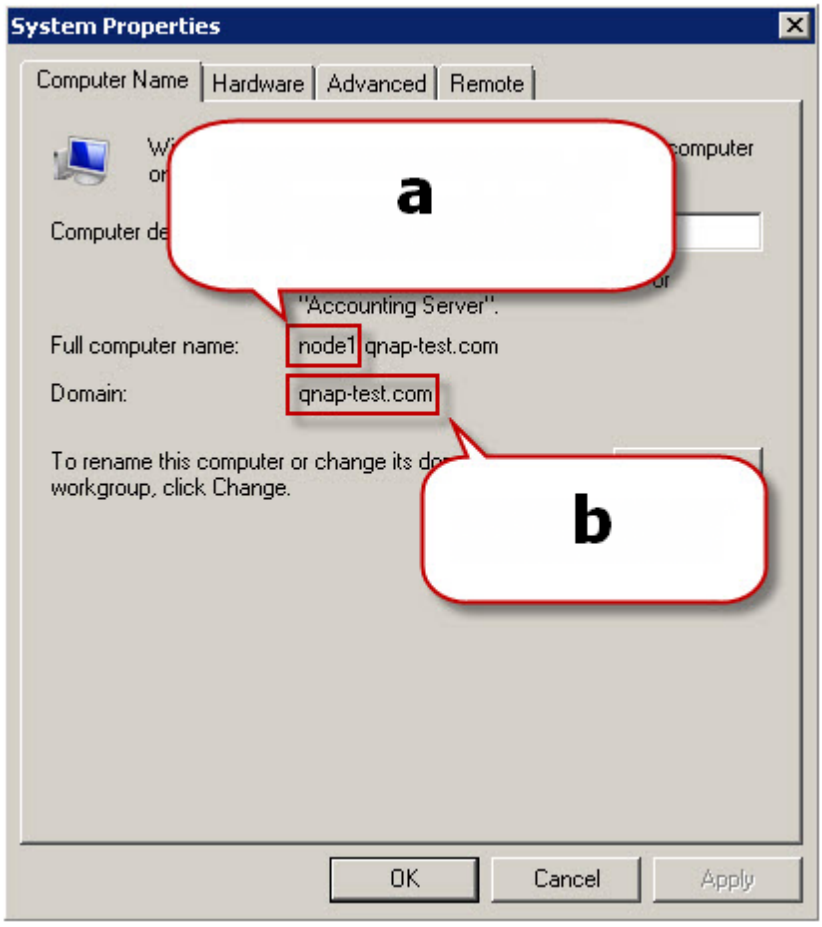
Windows 2003

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.

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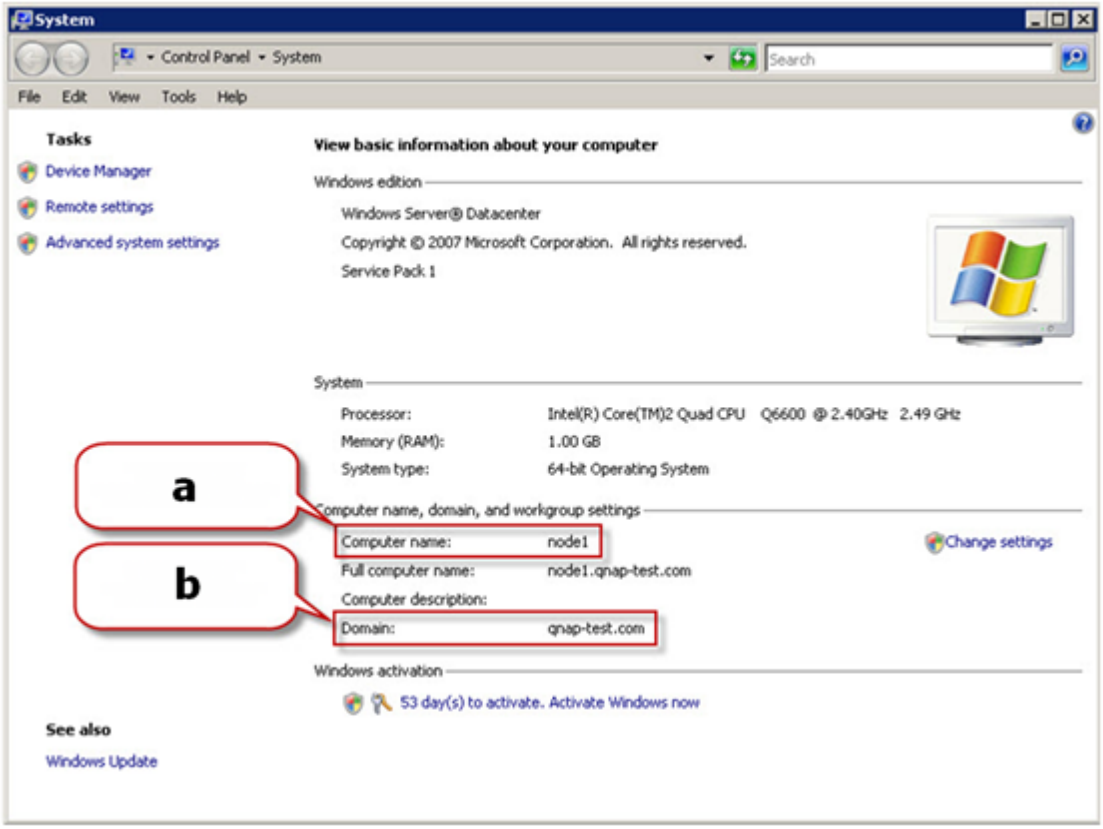
Windows Server 2008

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 and 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 later.

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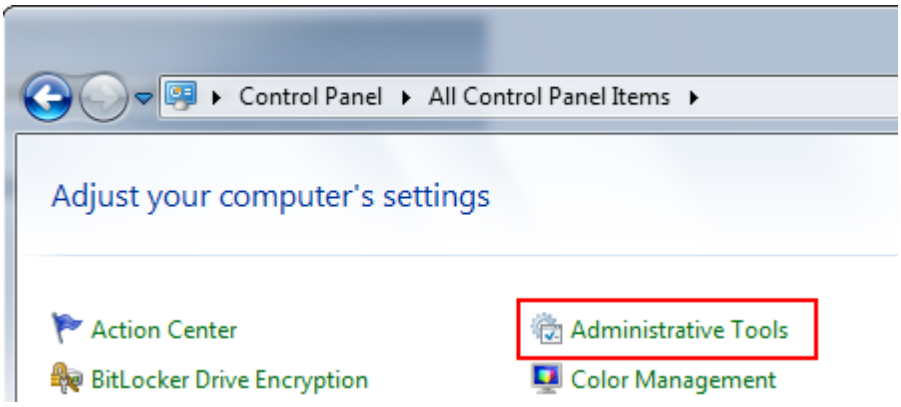
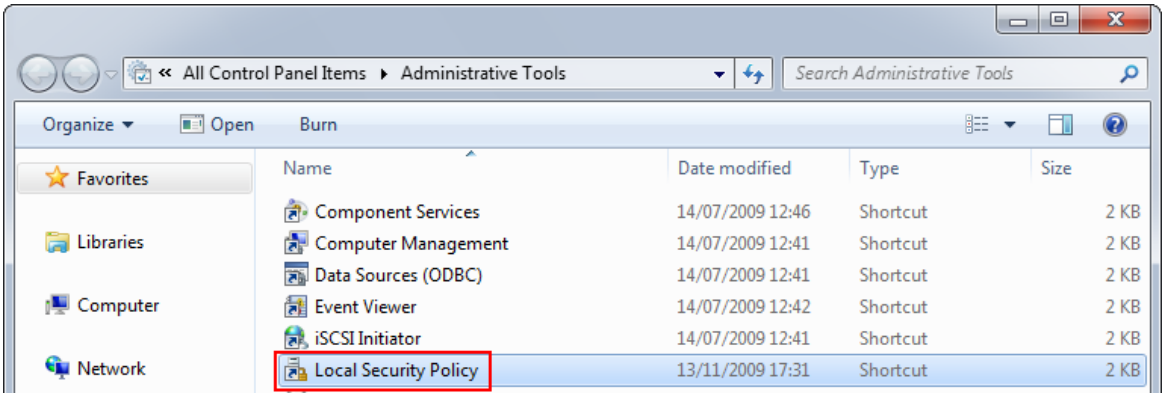
Windows 7

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'.



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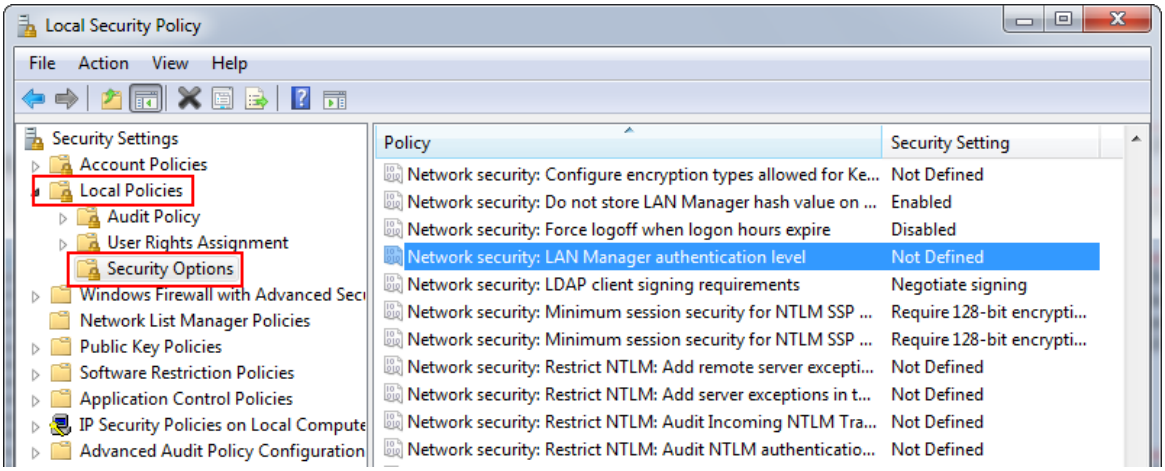
c. Go to 'Local Policies' > 'Security Options'. Select 'Network security: LAN Manager authentication level'.



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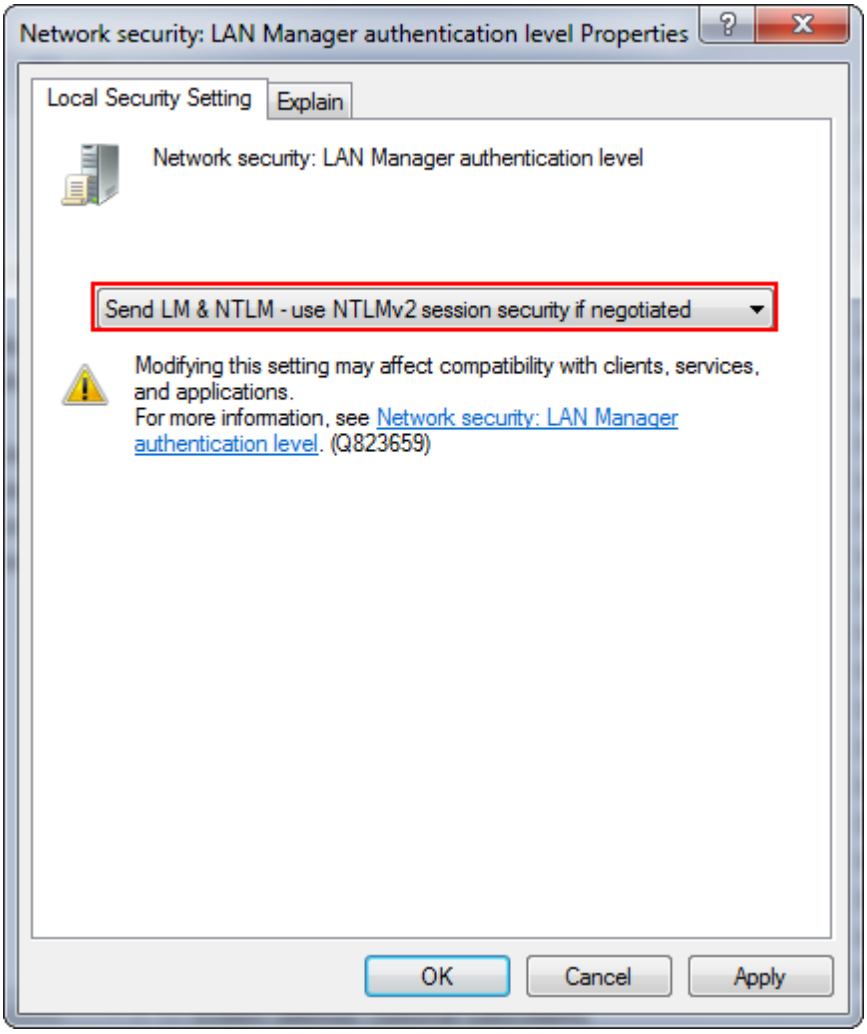
d. Select the 'Local Security Setting' tab, and select 'Send LM & NTLMv2 – use NTLMv2 session security if negotiated' from the list. Then click 'OK'.



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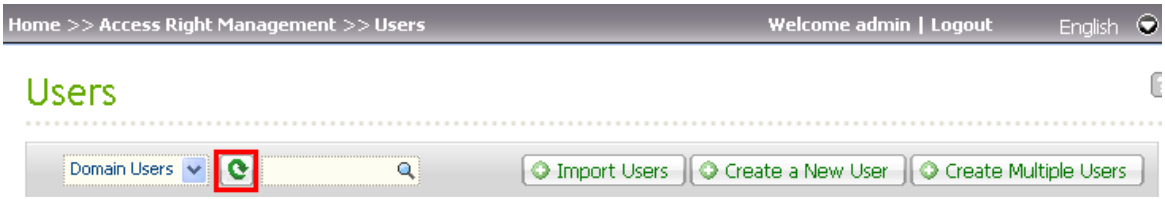
Verify the settings

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.



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10 NAS Maintenance

Restart/ Shut down Server 319
Reset Administrator Password and Network Settings 321
Disk Failure or Malfunction 323
Power Outage or Abnormal Shutdown 323
Abnormal System Software Operation 323
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Troubleshooting-Abnormal RAID Operation 325

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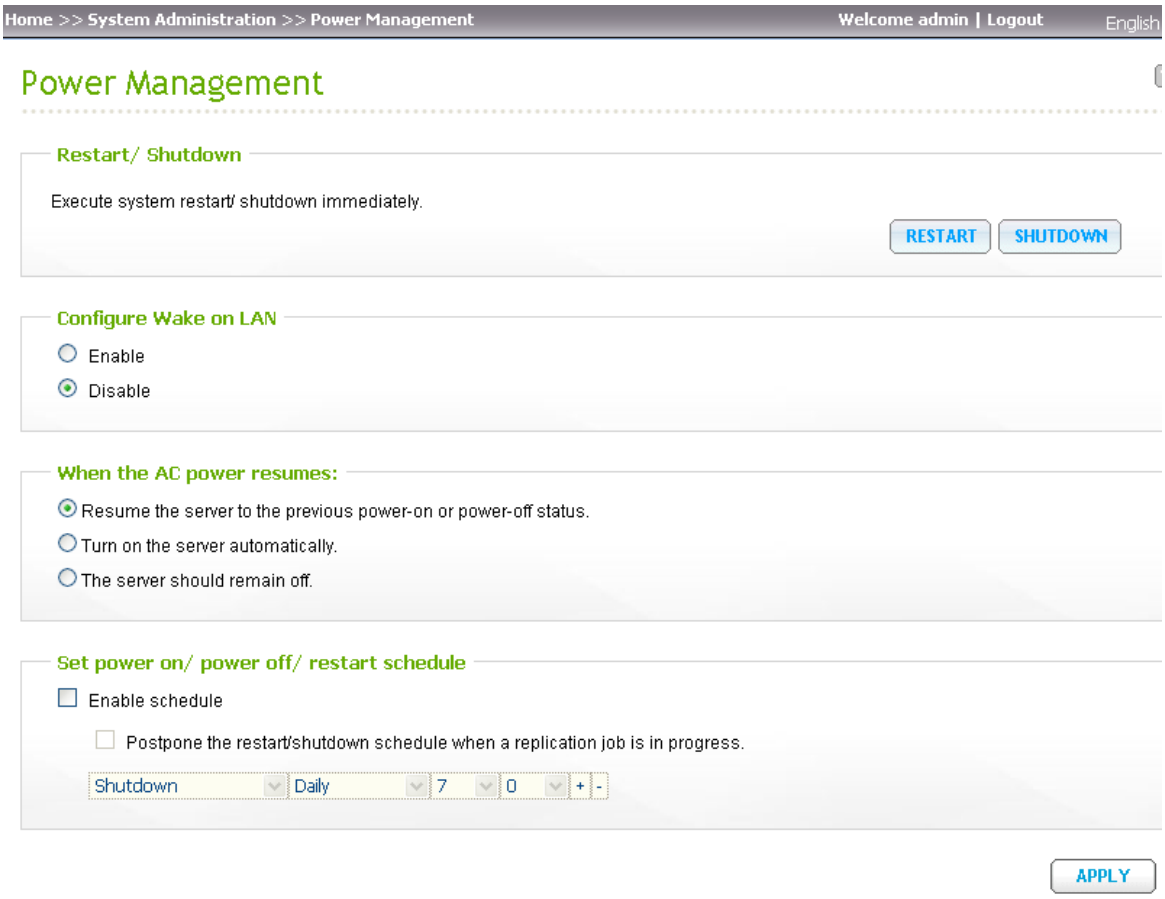
10.1 Restart/ Shut down Server

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.



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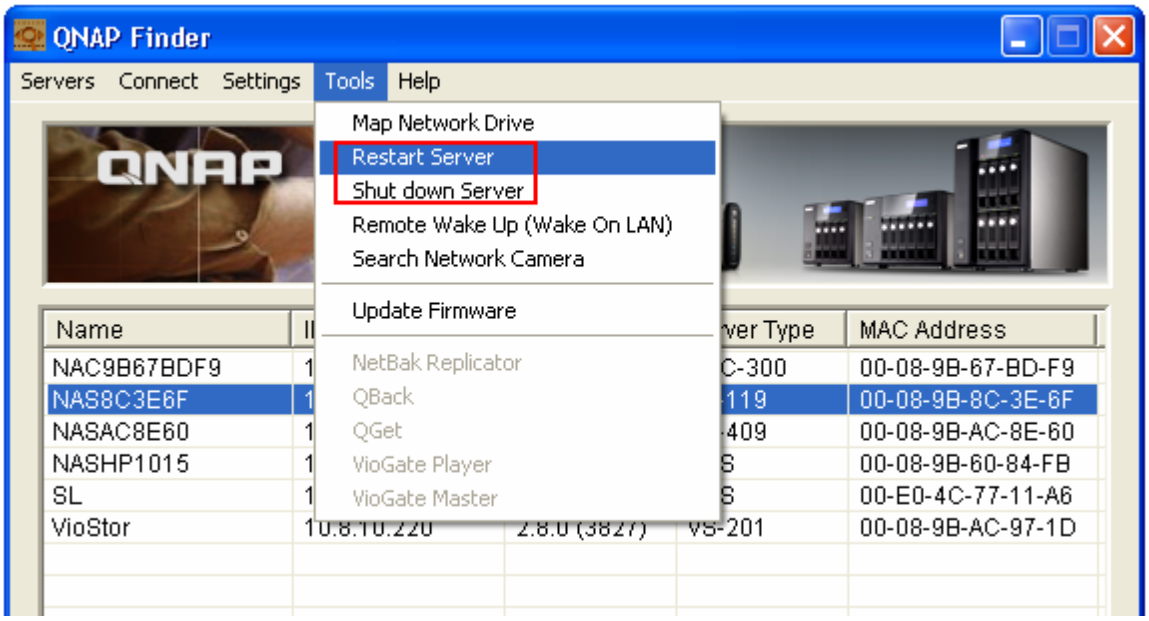
You can use the Finder to restart or shut down the server. You must have an administrator account to perform this action.



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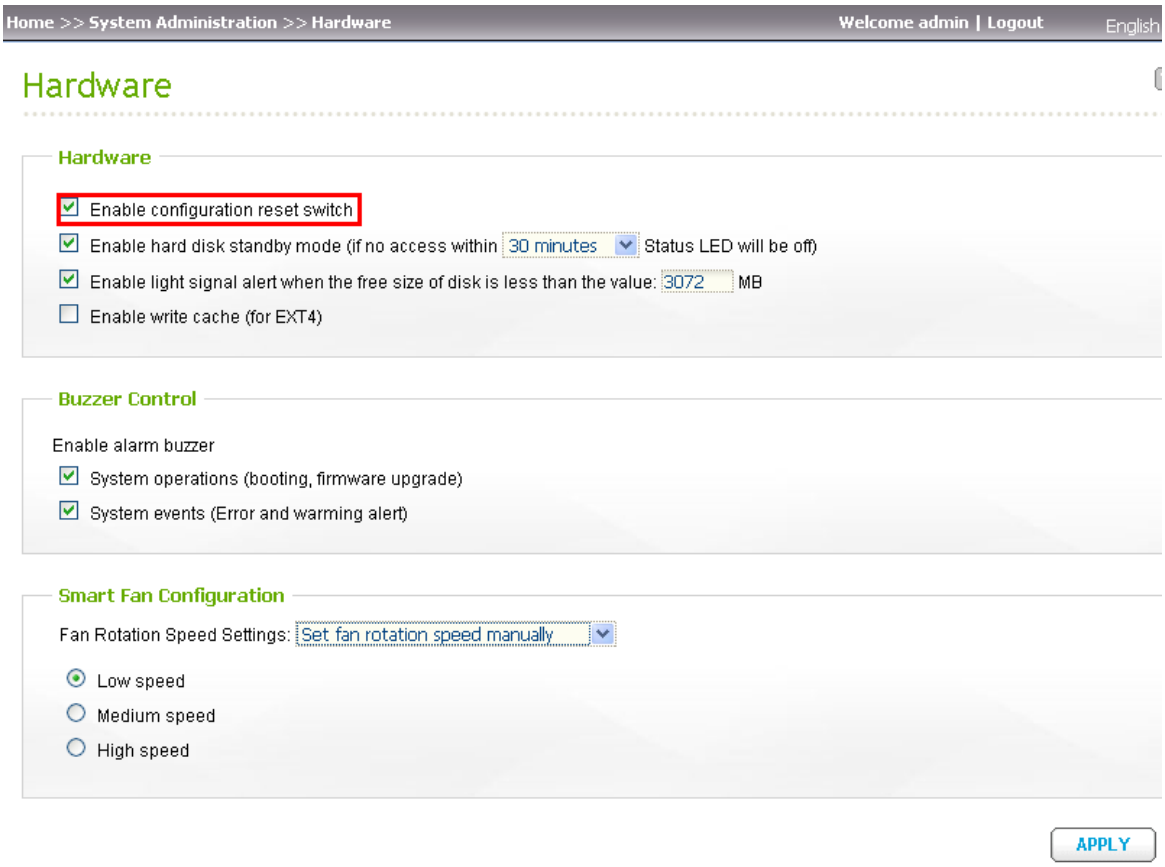
10.2 Reset Administrator Password and Network Settings

Note: To reset the NAS by the reset button, the option 'Enable configuration reset switch' in 'System Administration' > 'Hardware' must be activated.



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

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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)*

*This feature is only provided by TS-439 Pro, TS-439 Pro II, TS-459 Pro, TS-509 Pro, TS-639 Pro, TS-659 Pro, SS-839 Pro, TS-859 Pro, TS-809 Pro, and TS-809U-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.

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10.3 Disk Failure or Malfunction

When you encounter HDD malfunction or failure, do the following:

1. Record the malfunction status or error messages shown in Event Logs.
2. Stop using the failed NAS and turn off the server.
3. Contact the technical support.

Caution:
The NAS must be repaired by professional technicians, do not try to repair the server yourself.
Please back up any important files or folders to avoid potential data loss due to HDD damage.

10.4 Power Outage or Abnormal Shutdown

In case of power outage or improper shutdown of the NAS, the NAS will resume to the state before it is shut down. If the NAS does not function properly after the restart, do the following:

1. If the system configuration is lost, configure the NAS again.
2. In the NAS does not function properly and re-configuration does not work, contact the technical support.

10.5 Abnormal System Software Operation

When the system software does not operate properly, the NAS automatically restarts to resume normal operation. If you find the NAS restarts repetitively, contact the technical support immediately.

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10.6 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 HDD temperature exceeds 65°C (149°F)*

* Note that when the temperature of any HDD 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 HDD exceeds 65°C (149°F) continuously after 15 (5+10) minutes.

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10.7 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 HDD 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 HDD 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 HDD (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 HDD (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 HDD (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 HDD data to another storage device. Then reinstall and set up the NAS.
b. Format the newly plugged in HDD (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 HDD with errors (for example, HDD 2). After that, insert a new HDD to NAS to replace the fault drive, and execute RAID 1 migration.

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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 HDD, please strictly adhere to the following rules to avoid abnormal system operation or data damage.

1. Plug in only one HDD to NAS or unplug only one HDD from NAS at one time.
2. After plugging in or unplugging a HDD, wait for about ten seconds or longer until you hear two beeps from the NAS. Then unplug or plug in the next HDD.

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11 Use the LCD Panel

This feature is only provided by TS-439 Pro, TS-439 Pro II, TS-459 Pro, TS-509 Pro, TS-639 Pro, TS-659 Pro, SS-839 Pro, TS-859 Pro, TS-809 Pro, and TS-809U-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 HDD detected and the IP address. You may select to configure the HDD.

Number of HDD 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.

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For example, when you turn on the NAS with 5 HDD installed, the LCD panel shows:

```
Config.  Disks?
→RAID5
```

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.

```
Choose RAID5?
→Yes   No
```

When you execute RAID 1, RAID 5, or RAID 6 configuration, the system will initialize the HDD, 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 (vary by HDD 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 new member drive to the device, it will start to rebuild. You can check the status on the 'Volume Management' page.

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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'.

```
Encrypt Volume?
→Yes  No
```

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.

```
Creating...
RAID5 Failed
```

*This feature is not supported by TS-110, TS-119, TS-210, TS-219, TS-219P, TS-410, TS-419P, TS-410U, and TS-419U.

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

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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.**

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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 HDD.

```
Disk:1 Temp:50°C
Size: 232 GB
```

Volume

This section shows the HDD 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.

```
RAID5      750GB
Drive    1234
```

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

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System

This section shows the system temperature and the rotation speed of the system fan.

```
CPU Temp:  50°C
Sys Temp:  55°C

Sys Fan:865RPM
```

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.

```
Change Password
   Yes  →No
```

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.

```
New Password:
           OK
```

Back

Select this option to return to the main menu.

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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.

```
System Error!
Pls. Check Logs
```

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

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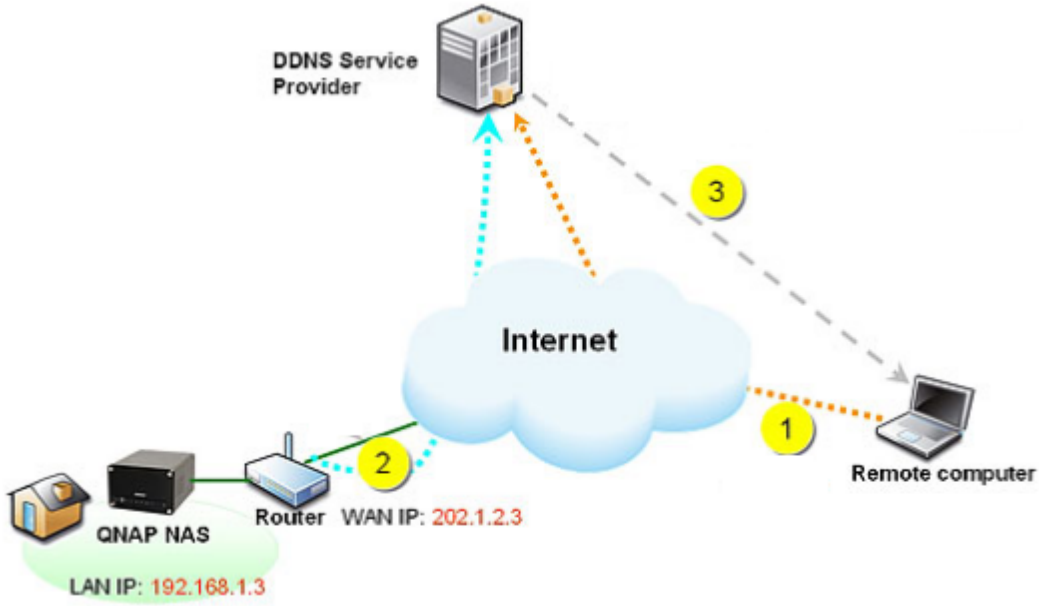
12 Connect to QNAP NAS from the Internet

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 an 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).

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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.

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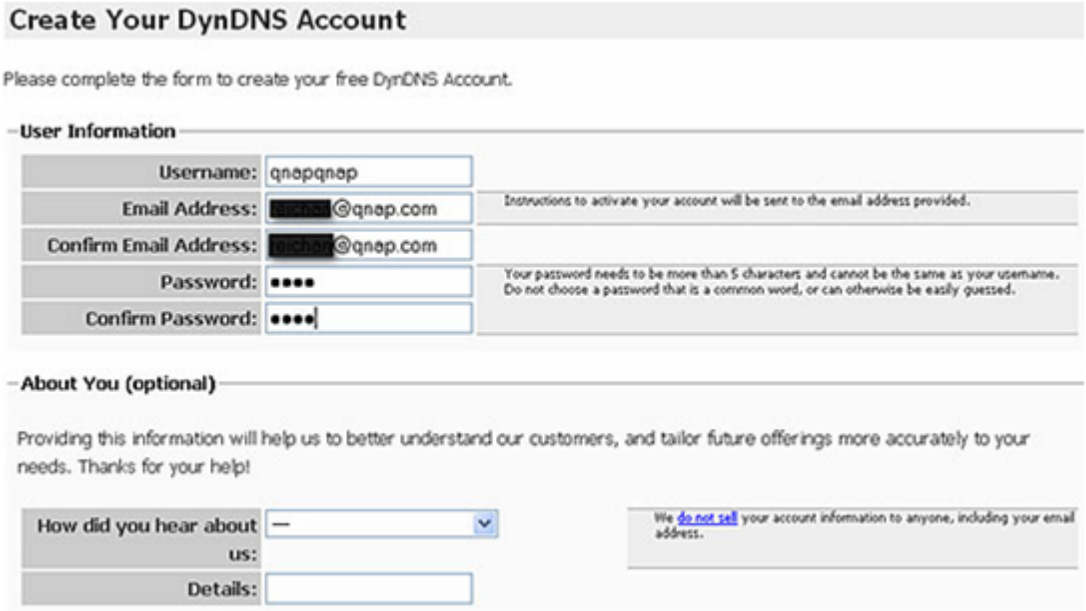
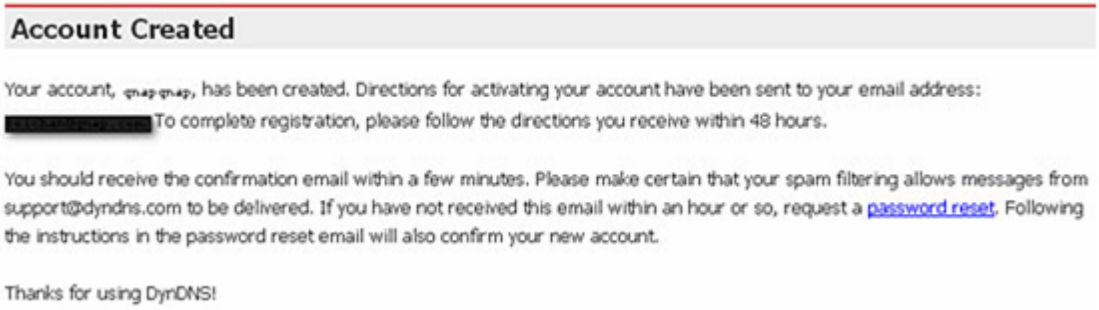
Complete the form to create your free account.



After you have created an account, a confirmation mail will be sent to your email address.



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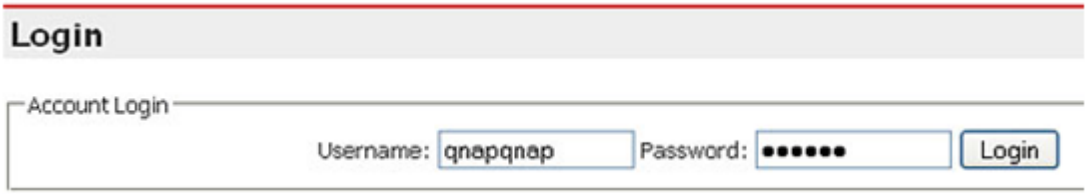
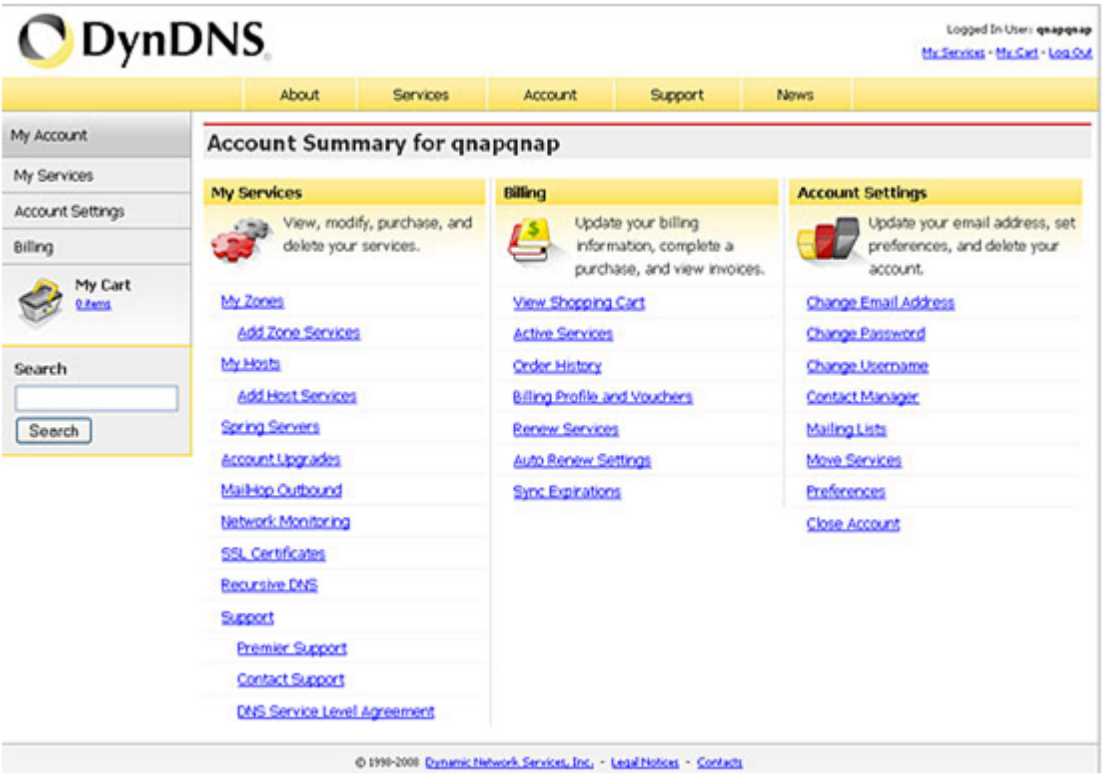
After confirming the registration, login the DDNS service.



The account summary is shown.



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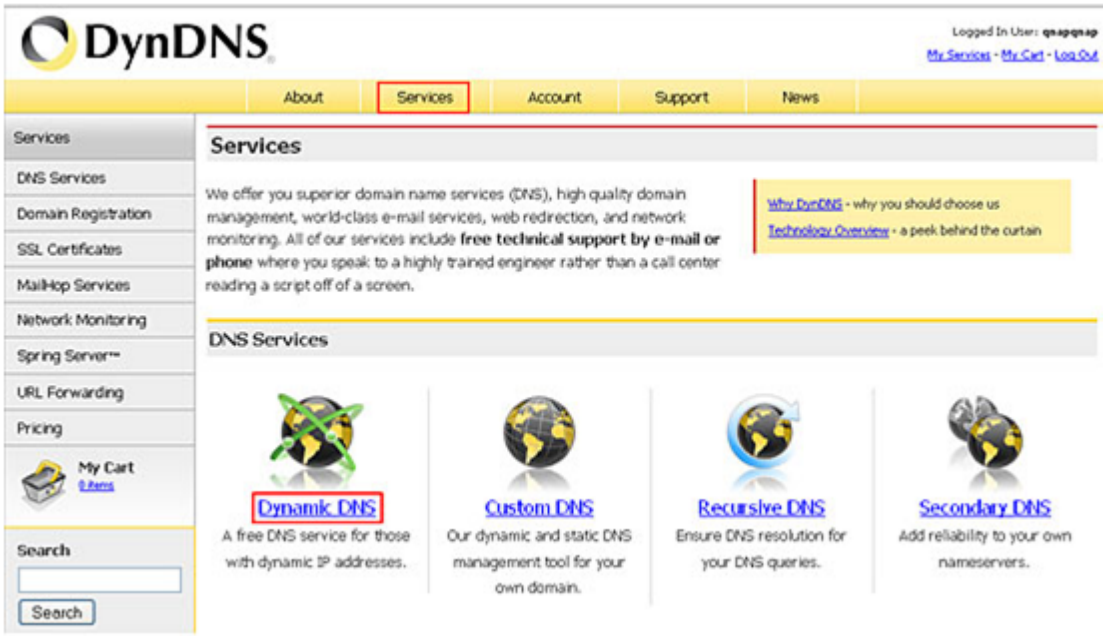
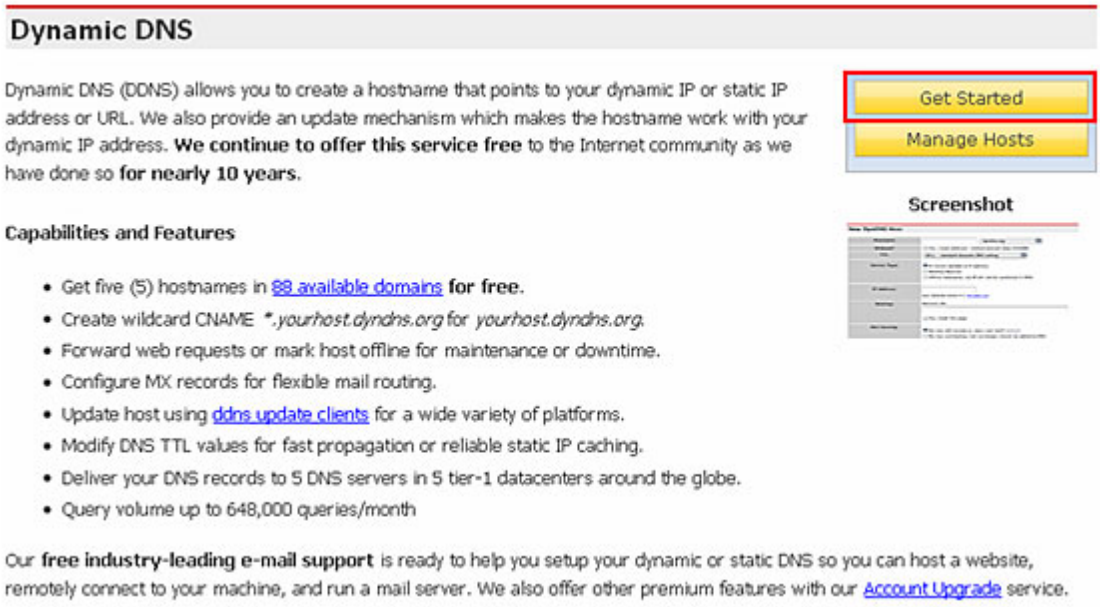
Go to 'Services' > 'Dynamic DNS'.



Click 'Get Started' to create a host.



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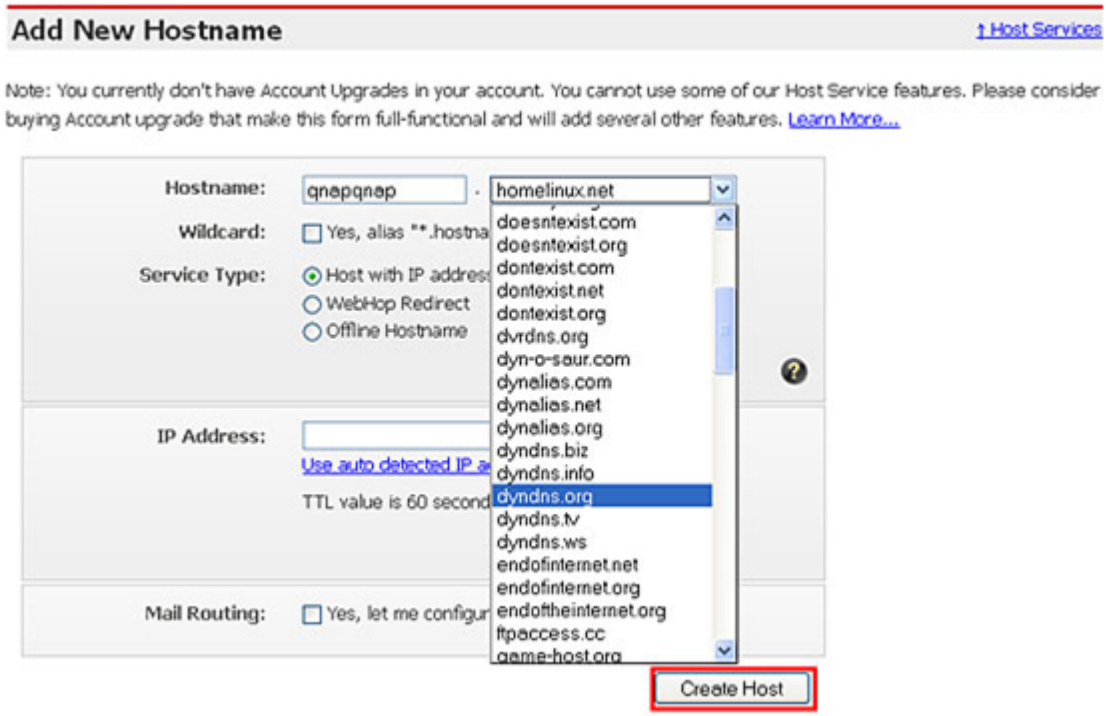
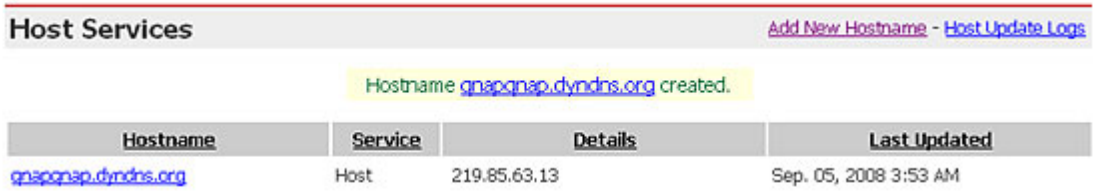
Enter the settings to create a new host.

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 an NAT router.



A new host is created.



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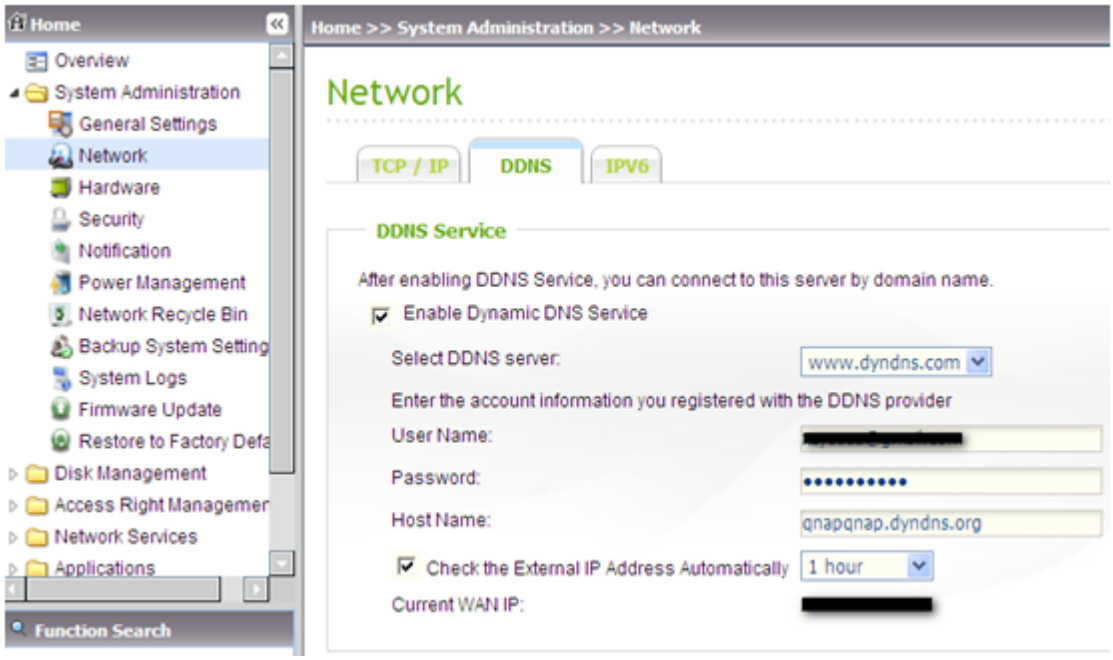
Login your QNAP NAS and go to 'System Administration' > 'Network' > 'DDNS'. Enter the DDNS settings. Schedule the NAS to update the DDNS record periodically.

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).

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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

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13 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.

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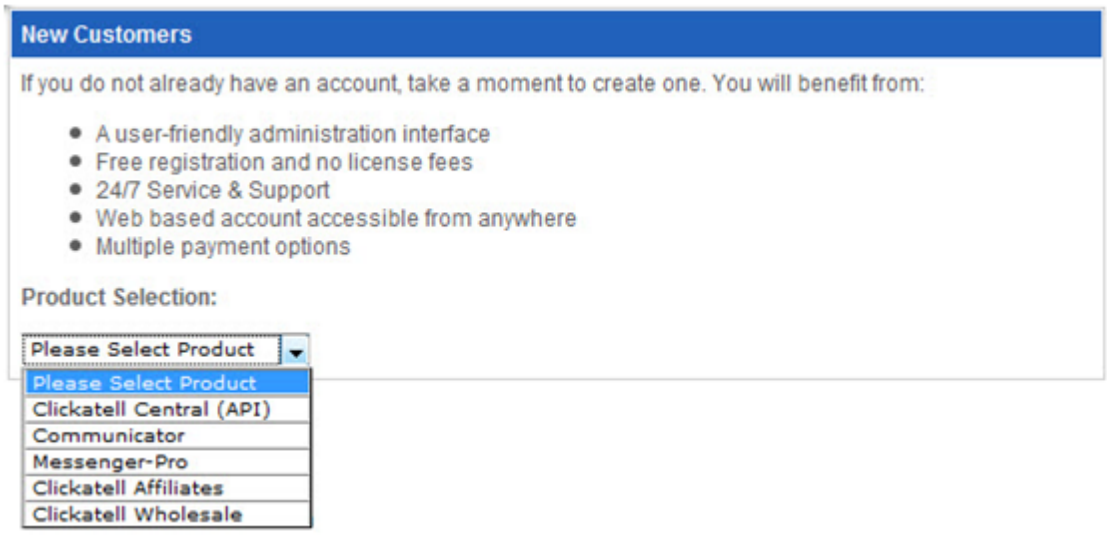
Sign up and set up an SMS service account

Clickatell will be used in this example. Go to Clickatell website http://www.clickatell.com/login.php. Under 'New Customers' select 'Clickatell Central (API)'.



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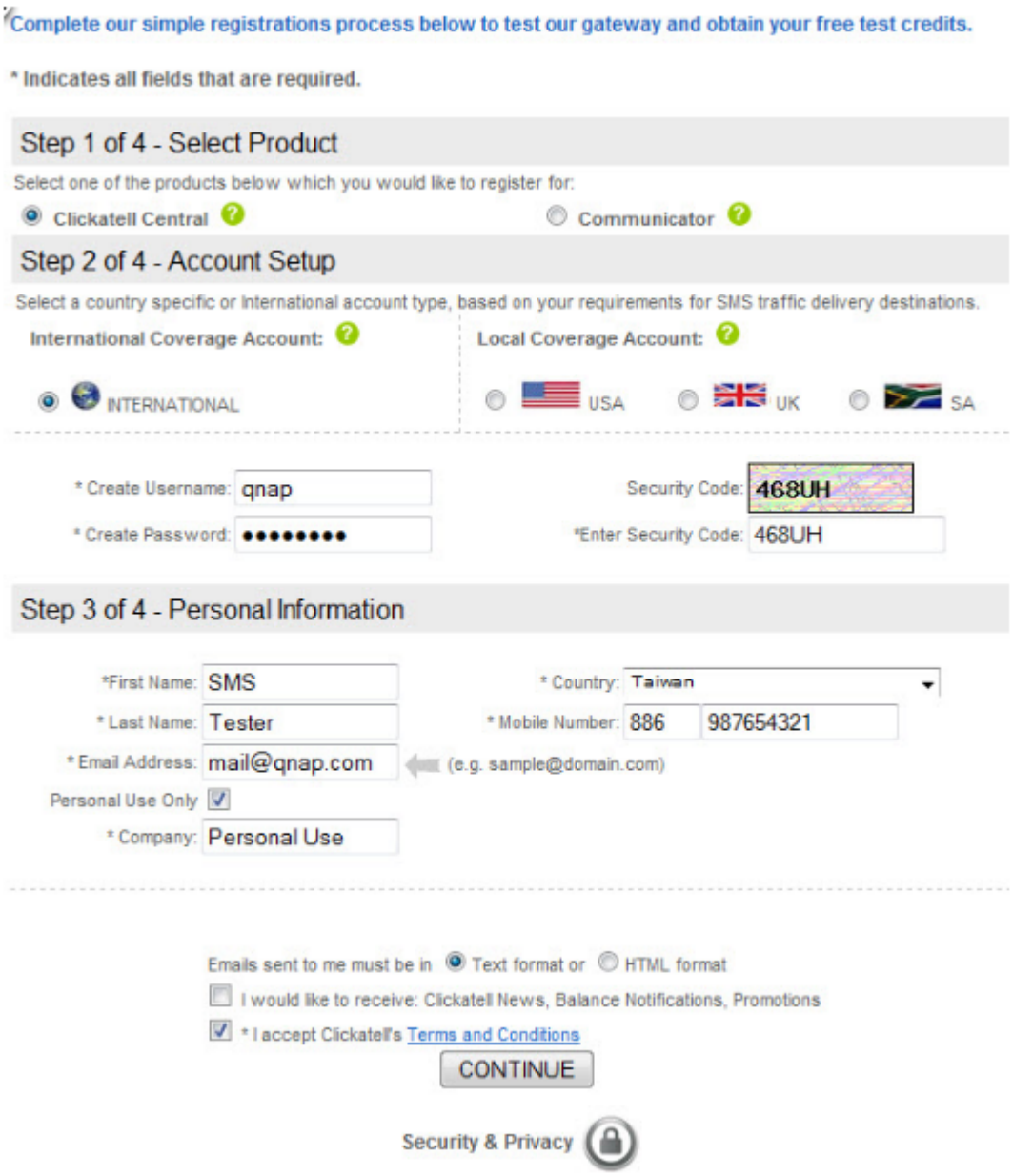
Fill out your personal information then click 'Continue'. Make sure you have carefully read the Terms and Conditions of the SMS service provider and that you agree to all the terms and regulations.



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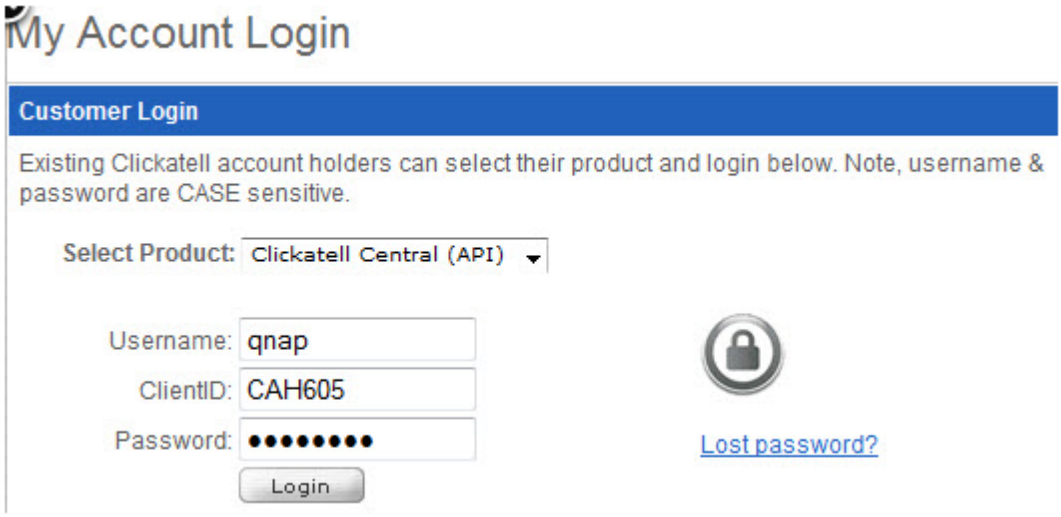
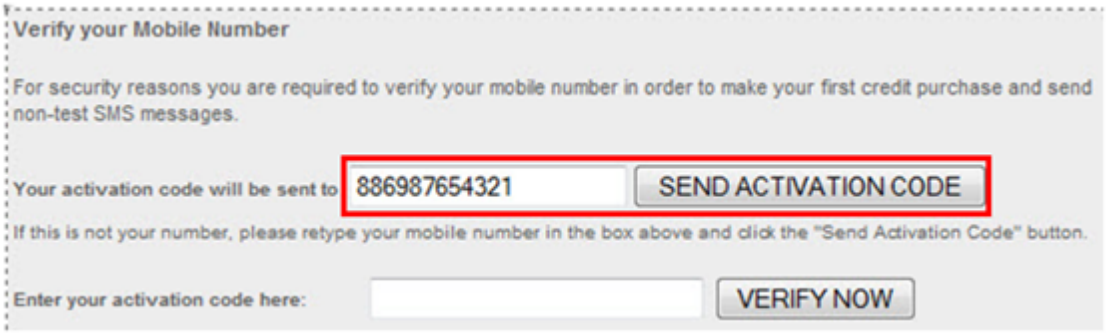
Upon successful registration you should receive an email containing the account activation link. You may now check your inbox to complete your account activation. By following the activation link you will be brought to the login screen as the image show below. Enter the password and click 'Login'.



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'.



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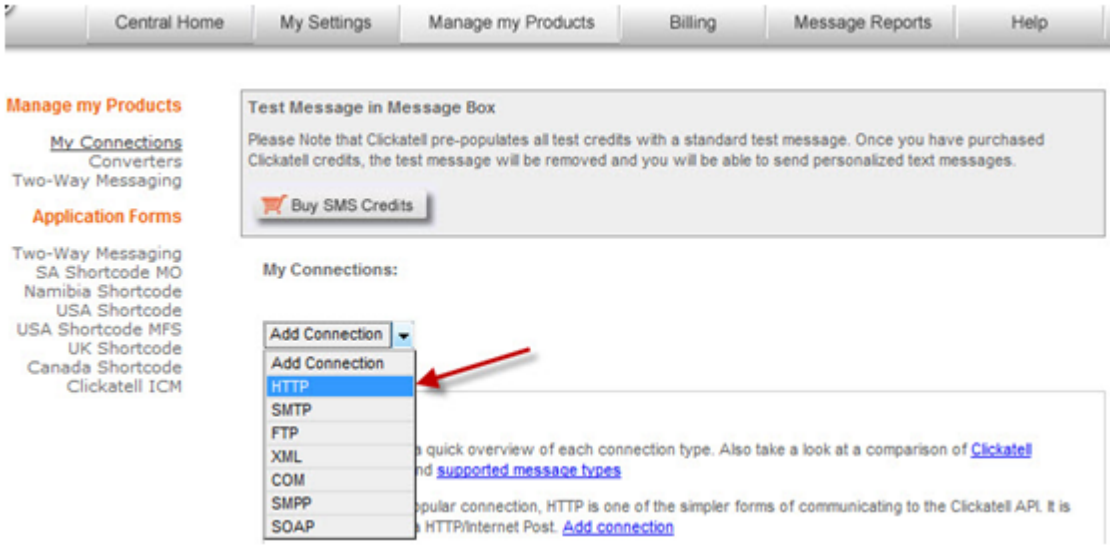
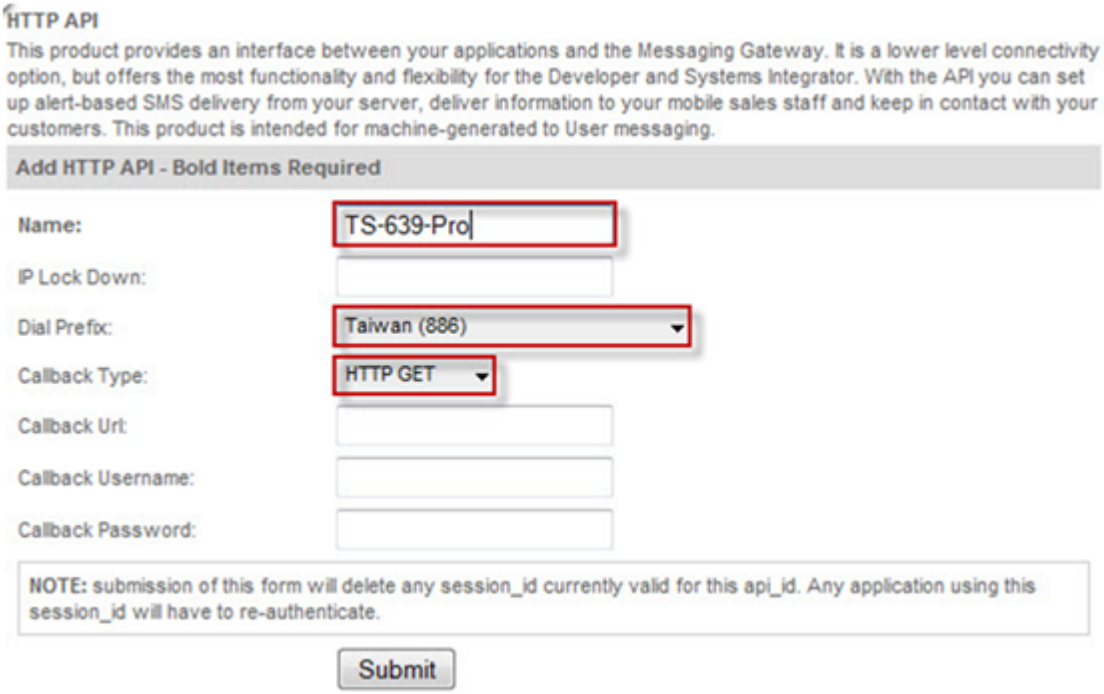
While still logged in with Clickatell, go to 'Manage my Products' and select 'HTTP from 'My Connections' dropdown menu.



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.



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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.

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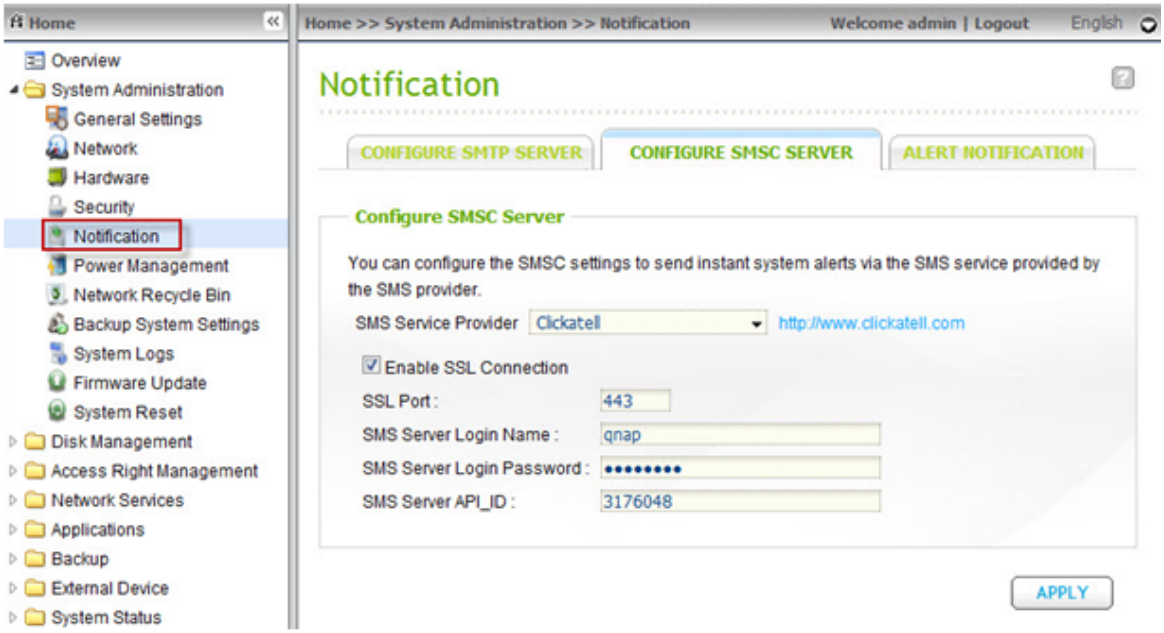
Set the SMSC settings and SMS alert on the NAS

Go to 'System Administration' > 'Notification' > 'Configure SMSC server' and enter the information we got from the previous step to configure the SMSC server.



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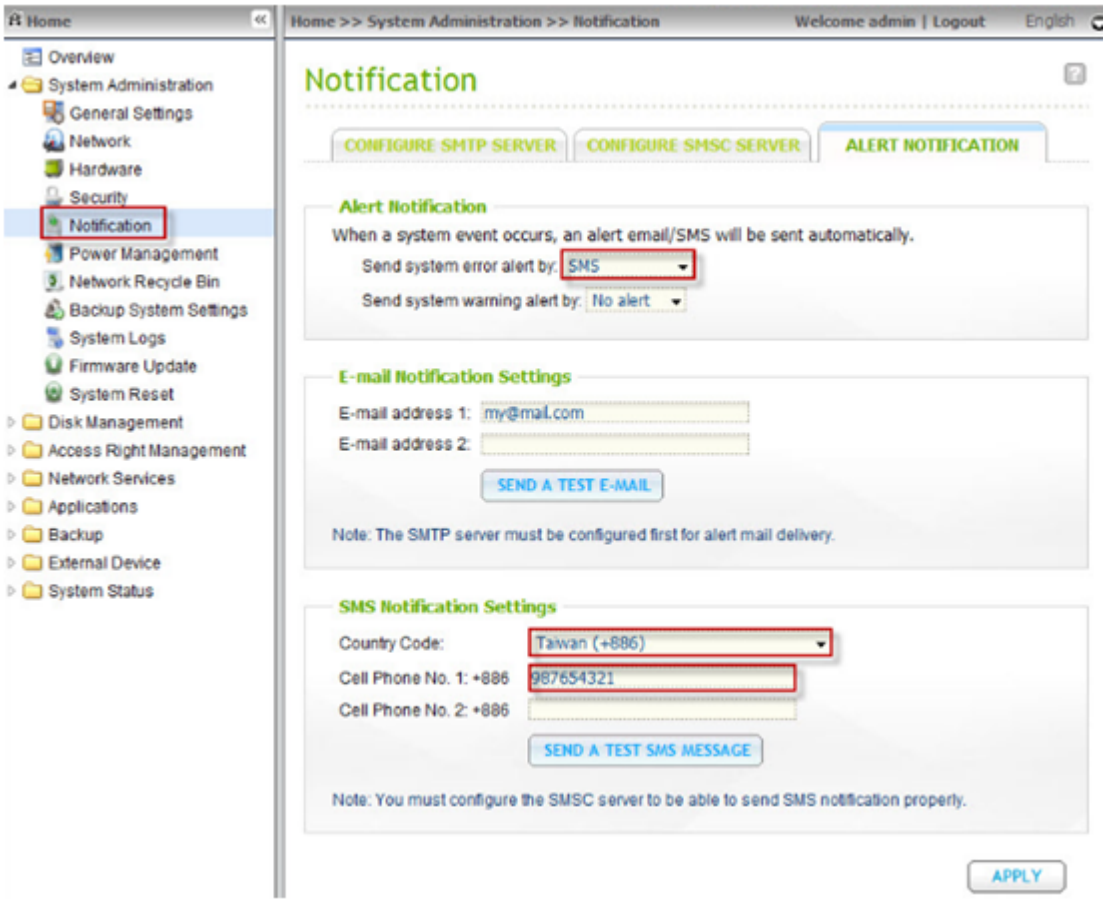
Next go to 'System Administration' > 'Notification' > 'Alert Notification' and enter your mobile number.



Congratulations! It is all set up and now you may want to test if your have configure 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.

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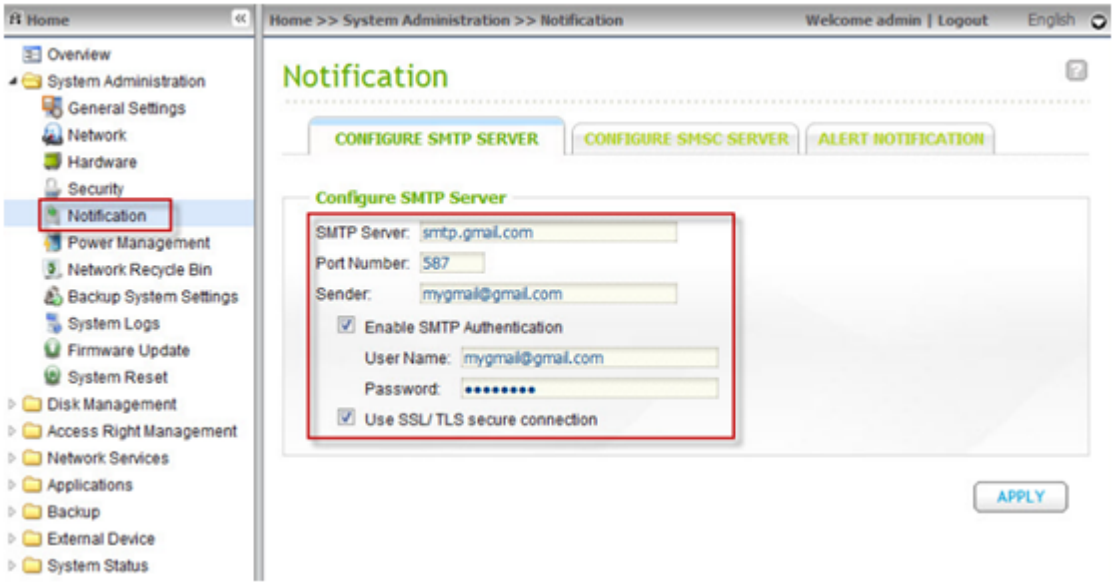
Set the SMTP server and email alert

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.

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14 Online RAID Capacity Expansion & Online RAID Level Migration

Online RAID Capacity Expansion 357
Online RAID Level Migration 357

14.1 Online RAID Capacity Expansion

Scenario

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

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.

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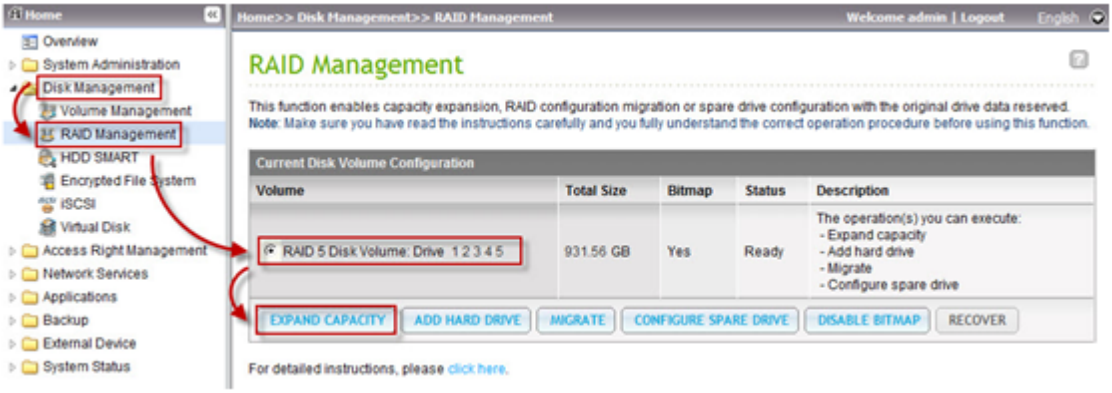
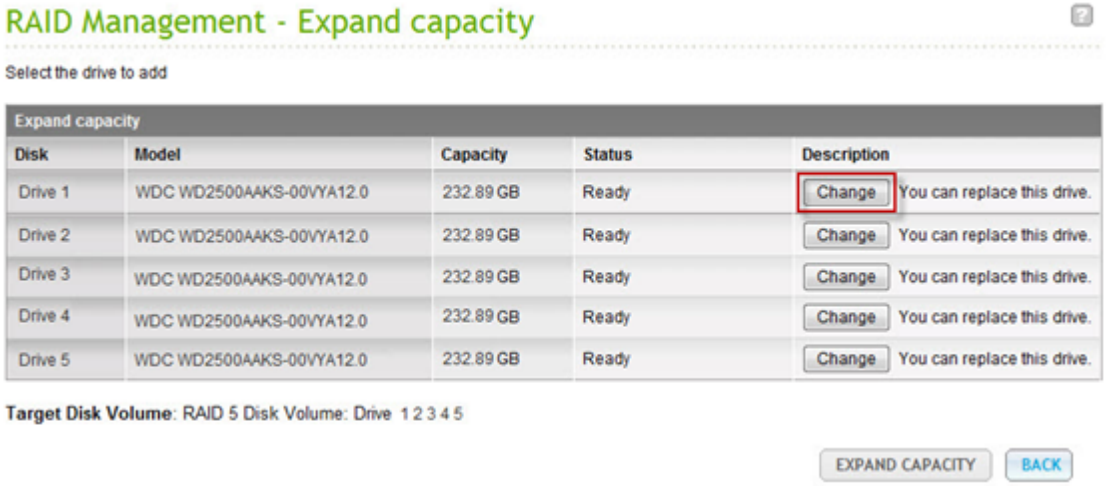
Operation procedure

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



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



Tip: After replacing the HDD, the description field shows the message 'You can replace this drive'. This means you can replace the HDD to a larger one or skip this step if the HDD 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.

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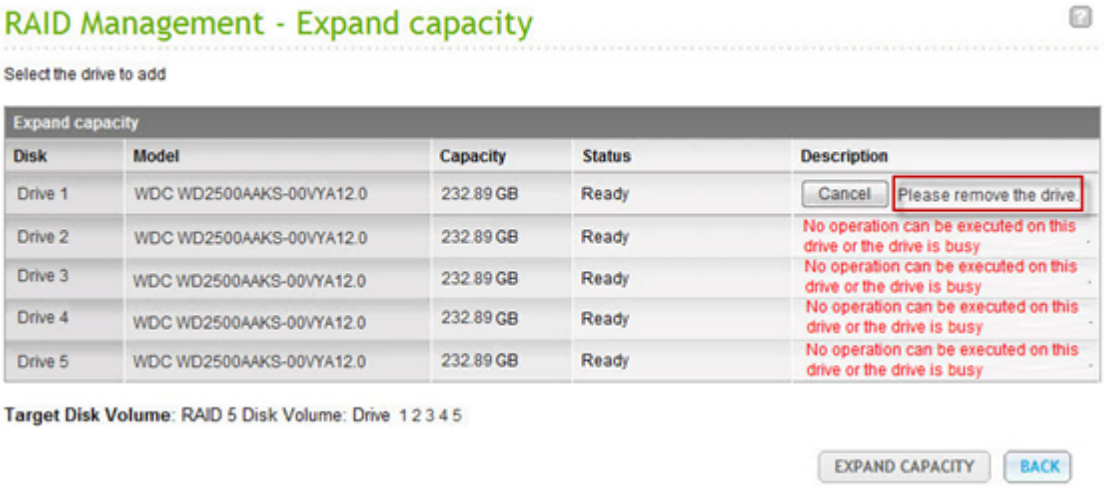
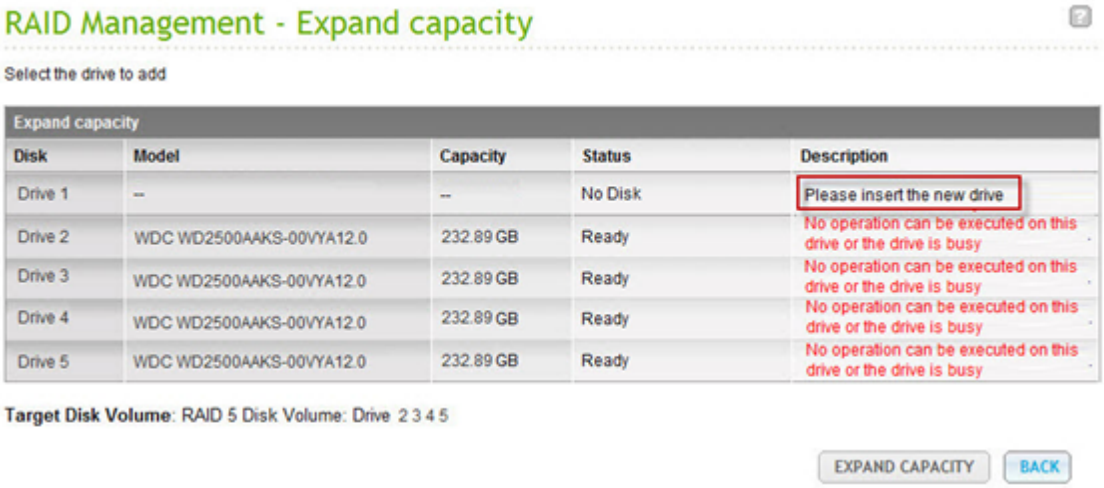
When the description displays 'Please remove this drive', remove the hard drive from the NAS. Wait for the NAS to beep twice after removing the hard drive.



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



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After plugging in the HDD, 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 HDD.

RAID Management - Expand capacity

Select the drive to add

Expand capacity

Disk	Model	Capacity	Status	Description
Drive 1	Hitachi HD5721010KLA330 GKAO	931.51 GB	Ready	Change You can replace this drive.
Drive 2	WDC WD2500AAKS-00VYA12.0	232.89 GB	Ready	Change You can replace this drive.
Drive 3	WDC WD2500AAKS-00VYA12.0	232.89 GB	Ready	Change You can replace this drive.
Drive 4	WDC WD2500AAKS-00VYA12.0	232.89 GB	Ready	Change You can replace this drive.
Drive 5	WDC WD2500AAKS-00VYA12.0	232.89 GB	Ready	Change You can replace this drive.

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

EXPAND CAPACITY BACK

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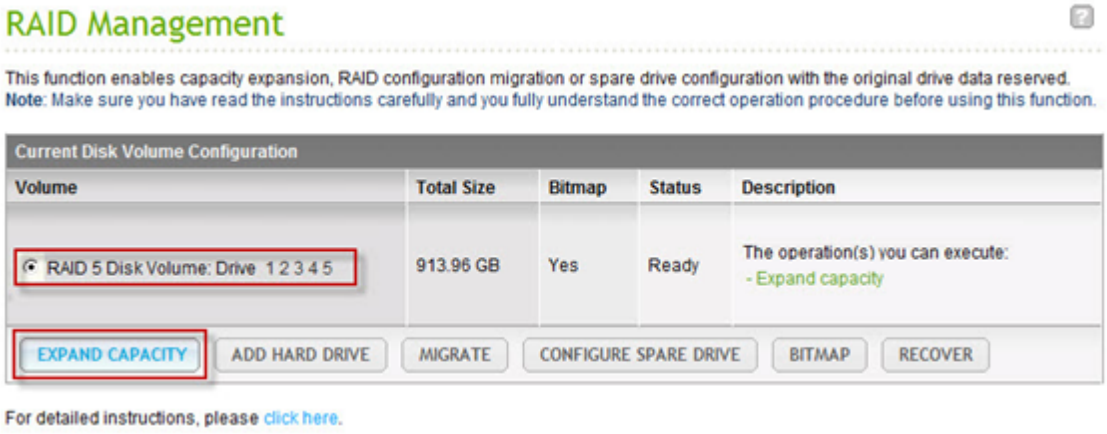
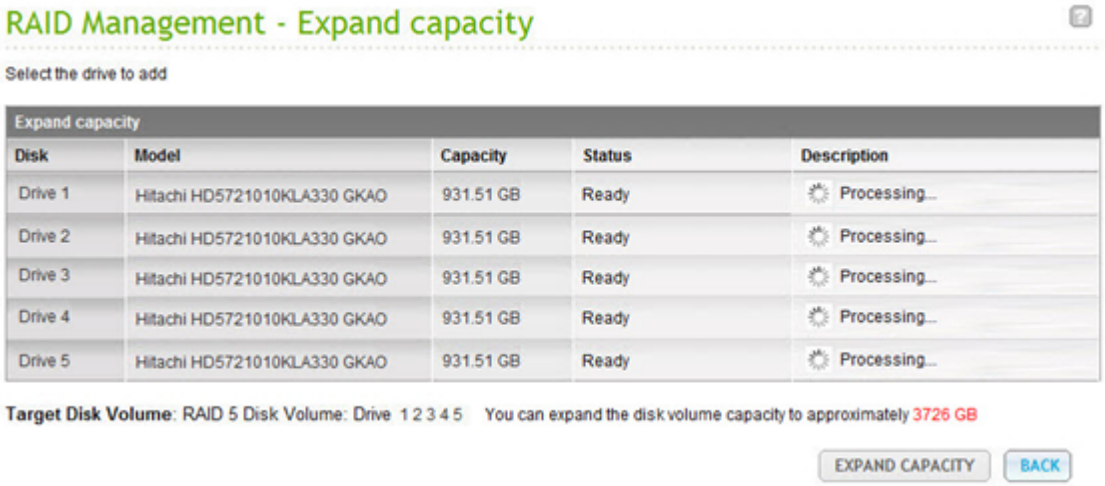
After changing the HDD and rebuilding completes, you can click 'EXPAND CAPACITY' to execute RAID expansion.



Click 'OK' to proceed.

The NAS beeps and starts to expand the capacity.



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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
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.

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14.2 Online RAID Level Migration

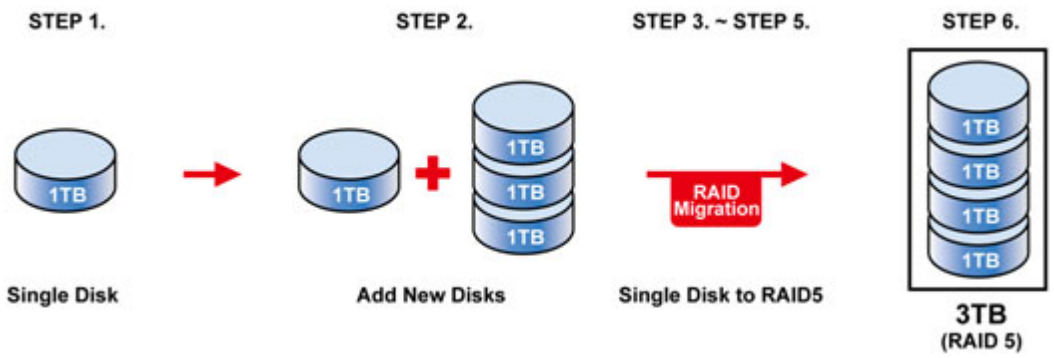
During the initial setup of TS-509 Pro, you bought a 1TB HDD and configured it as single disk. TS-509 Pro is used as a file server for data sharing among the departments.

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 HDD 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 systeom from single disk to RAID 1, RAID 5, or RAID 6
- Migrate the system from RAID 1 to RAID 5 or RAID 6
- Migrate the system from RAID 5 with 3 HDD to RAID 6



You need to:

- Prepare the HDD 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 HDD).

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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

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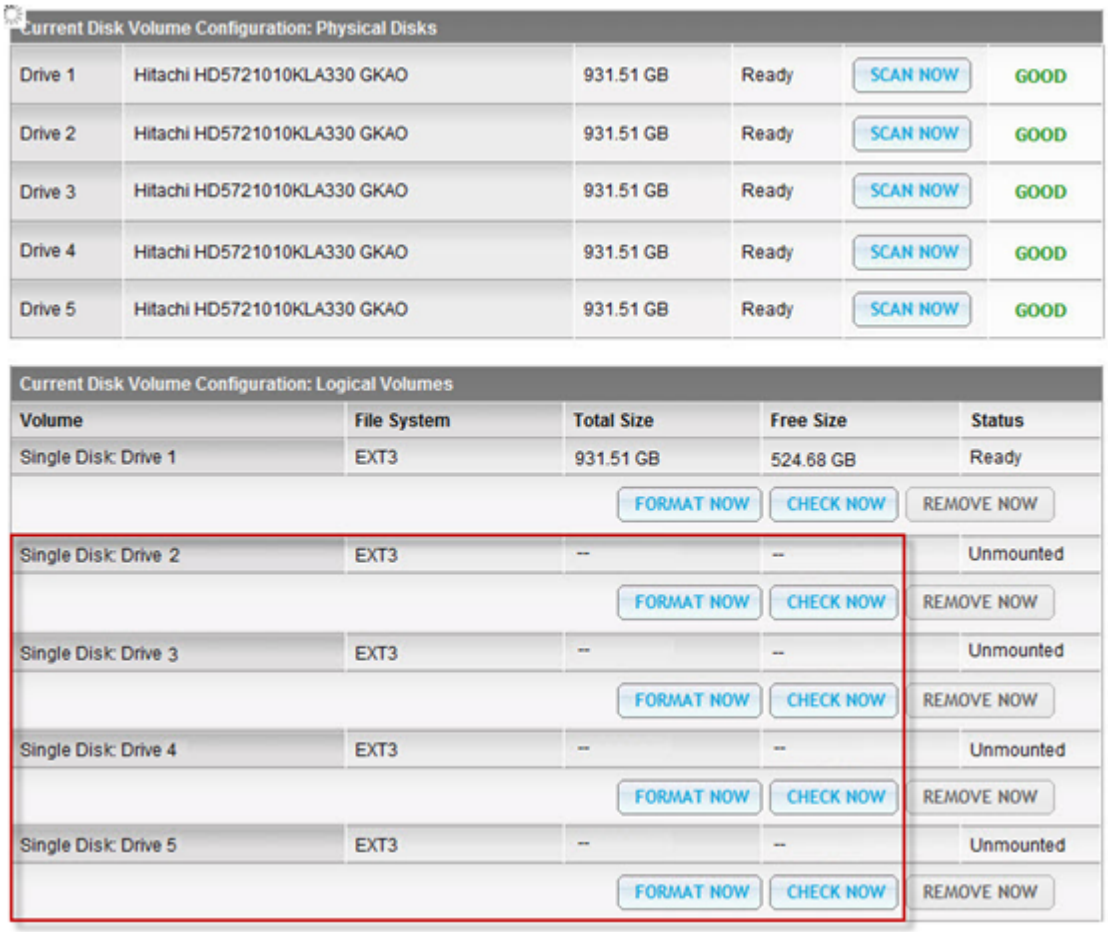
Plug in the new 1TB HDDs to drive slots 2, 3, 4 and 5 of NAS. The NAS will detect the new HDDs. The status of the new HDDs is 'Unmounted'.



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

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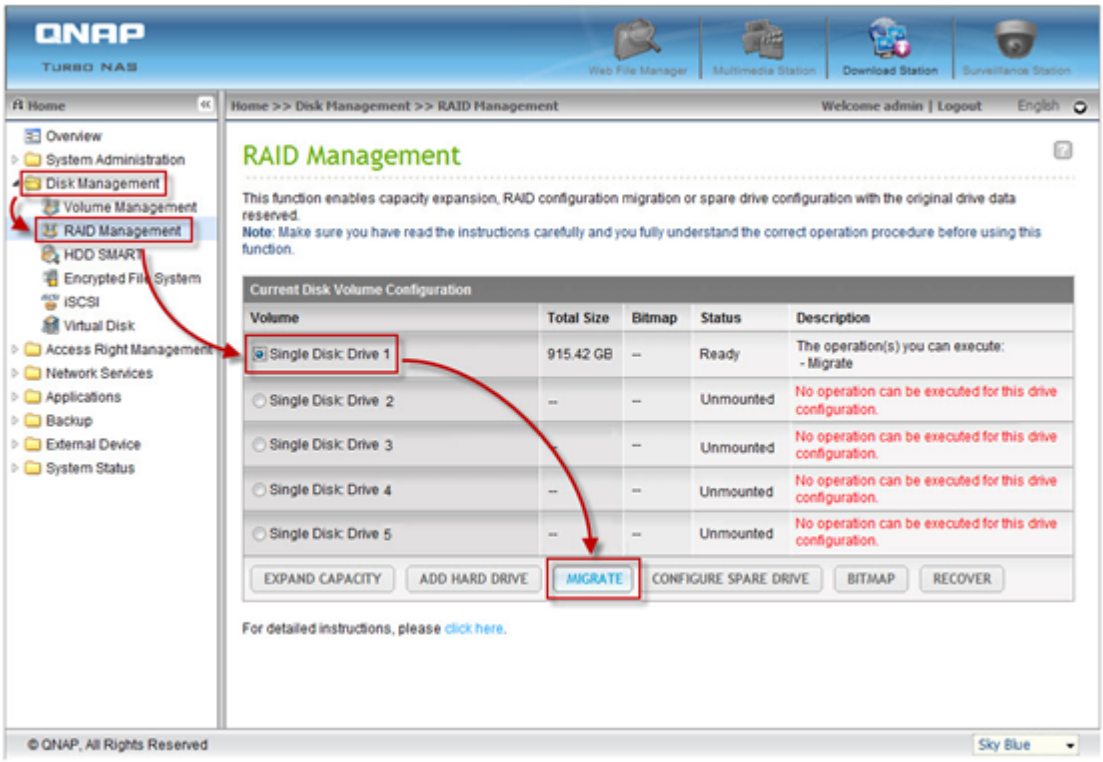
Go to 'Disk Management' > 'RAID Management', select the drive configuration for migration and click 'Migrate'.



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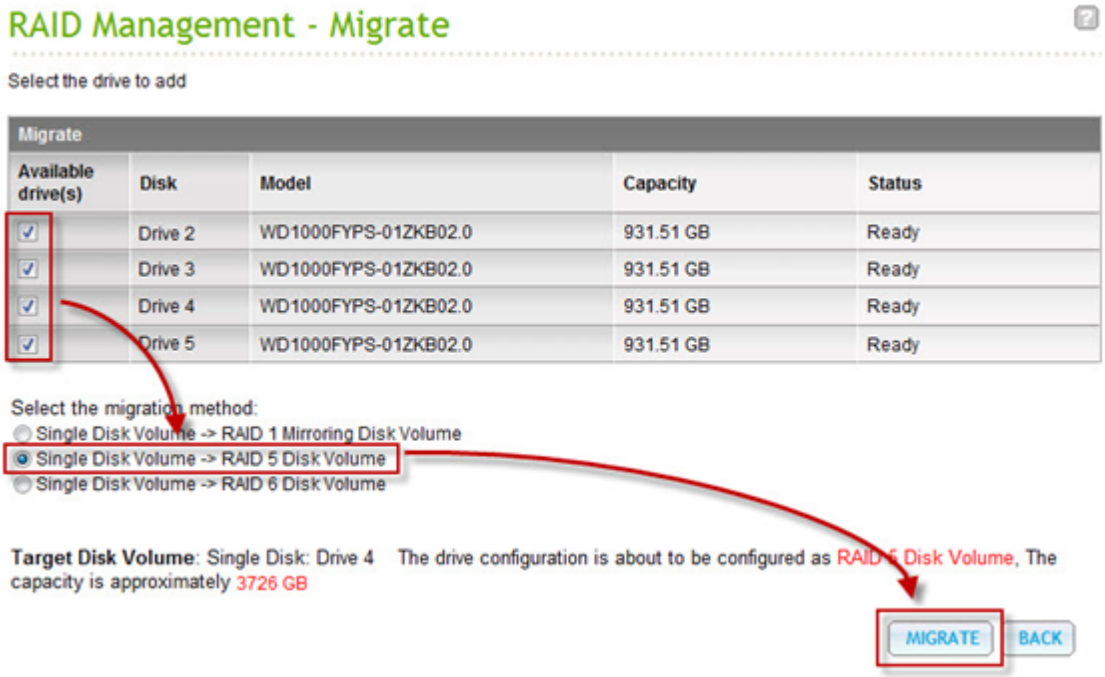
Select one or more available drives and the migration method. The drive capacity after migration is shown. Click 'Migrate'.



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

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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 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

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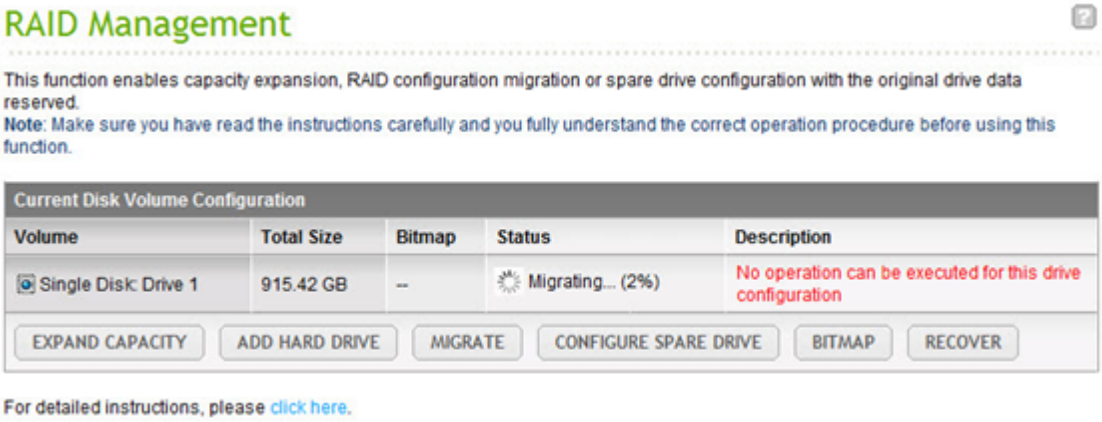
The NAS will enter 'Read only' mode when migration is in process during 11%–49% to assure the data of the RAID configuration will be consistent after RAID migration completes.

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.



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

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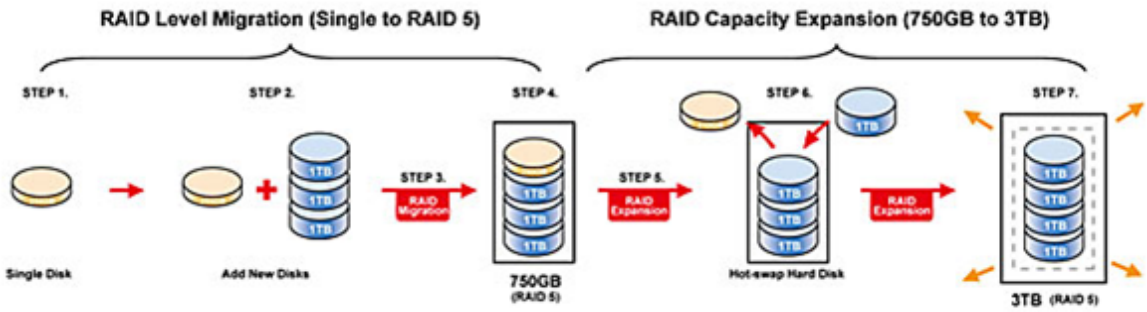
Use Online RAID Capacity Expansion and Online RAID Level Migration

Scenario

You had a tight schedule to set up the file server and FTP server. However, you had only one 250GB HDD. 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 HDD 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 HDD and three 1TB HDD, the disk usage will be 250GB*4 for RAID 5.). You can refer to the previous step for the operation procedure.

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

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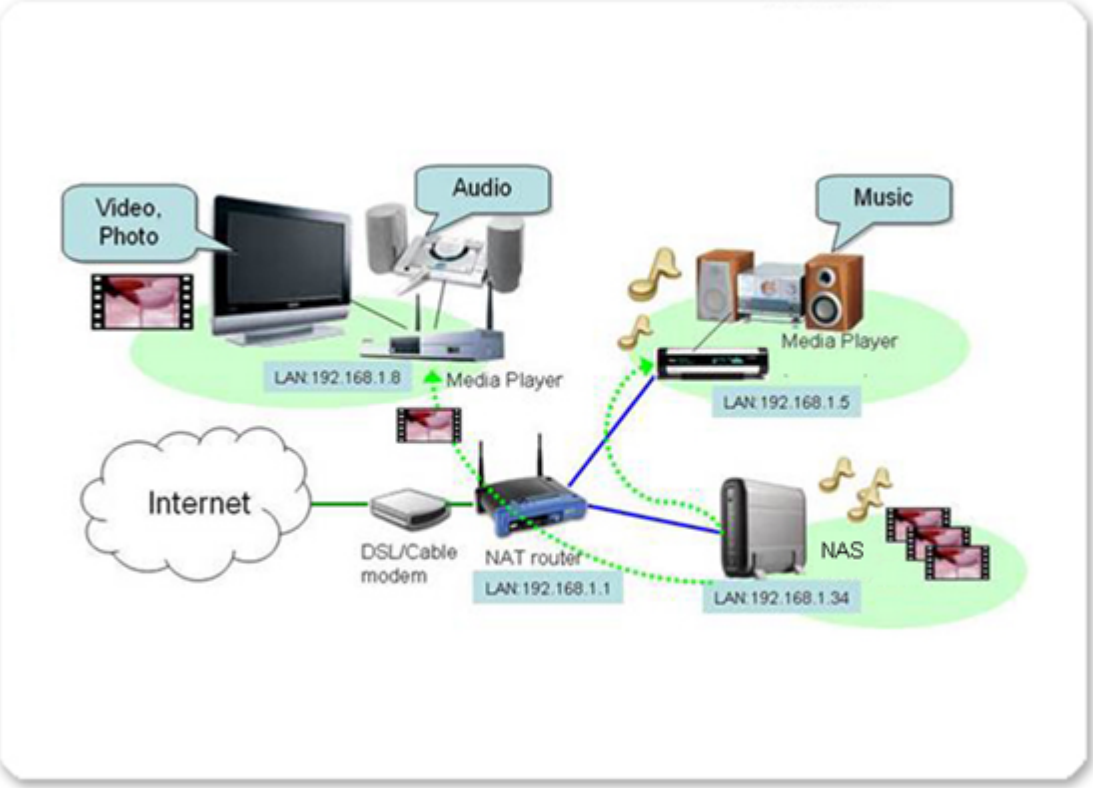
15 Set up UPnP Media Server for Media Playing

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.



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Enable UPnP Media Server

Go to 'Applications' > 'UPnP Media Server' and select the option 'Enabled UPnP Media Server' and click 'Apply'. The UPnP Media Server function is now ready.

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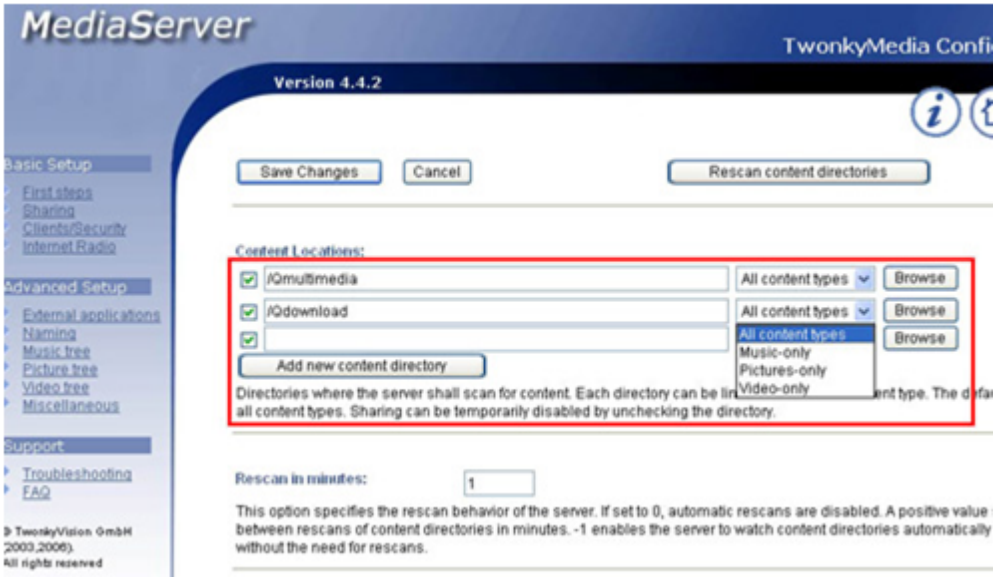
Set up TwonkyMedia Server

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.



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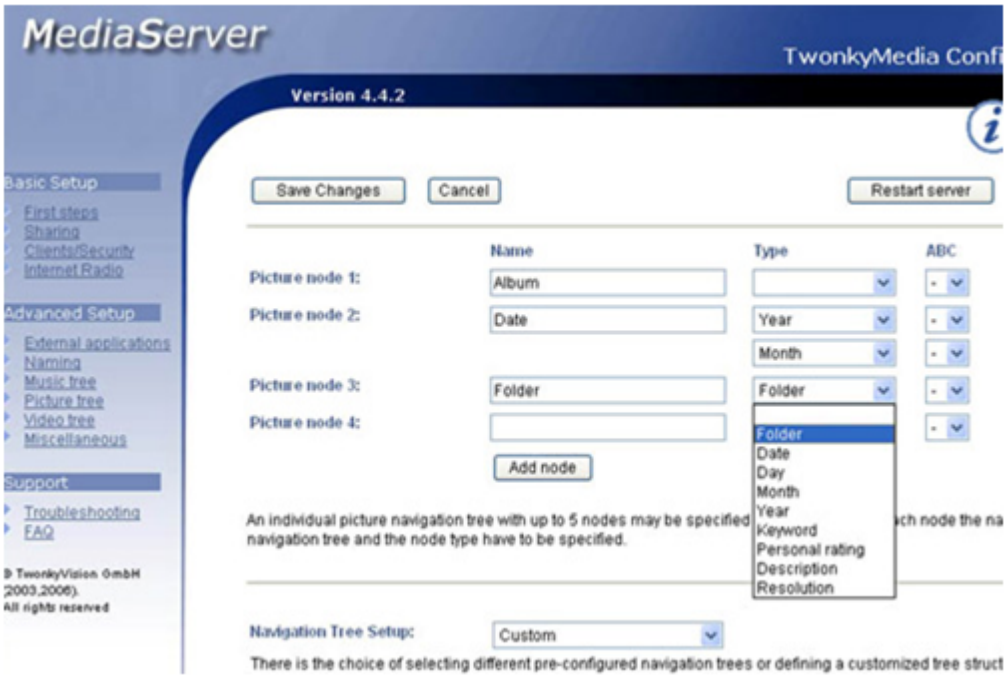
For ease of browsing if you have a large amount of media contents, you can configure the navigation tree for your photos, videos, and music. You can sort your media contents on the TV easily.



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.

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Set up the connection of media player

About physical wiring

We use a high definition (HD) media player with QNAP NAS is 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.)

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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.

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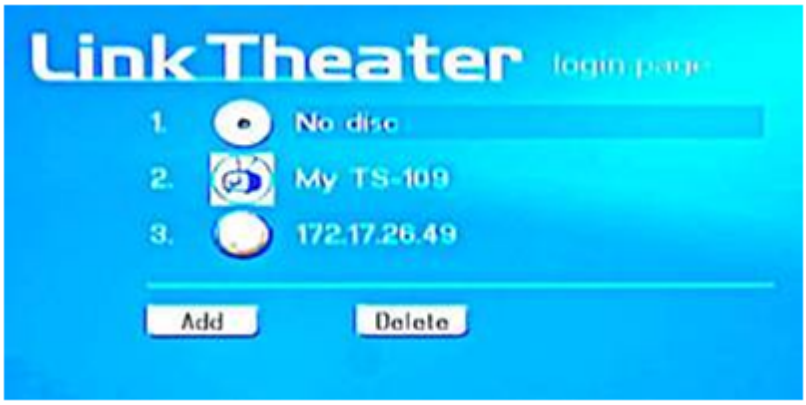
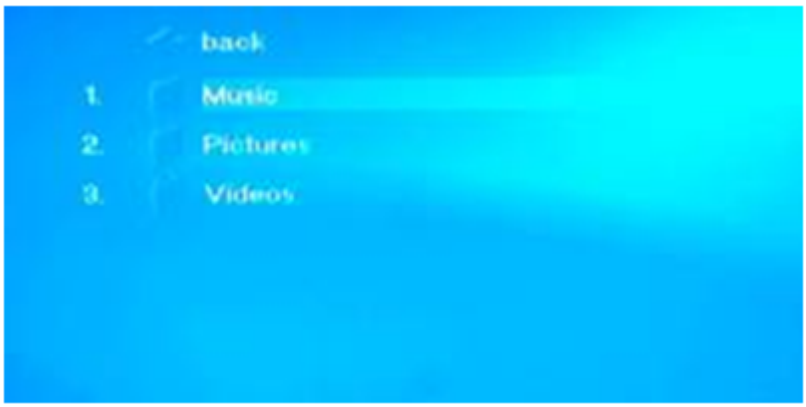
Turn on the TV that is connected to the media player, you can select the options available by the remote control of the media player. The media player will find the NAS on the network. The NAS name will be displayed on the screen.



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.



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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.

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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.

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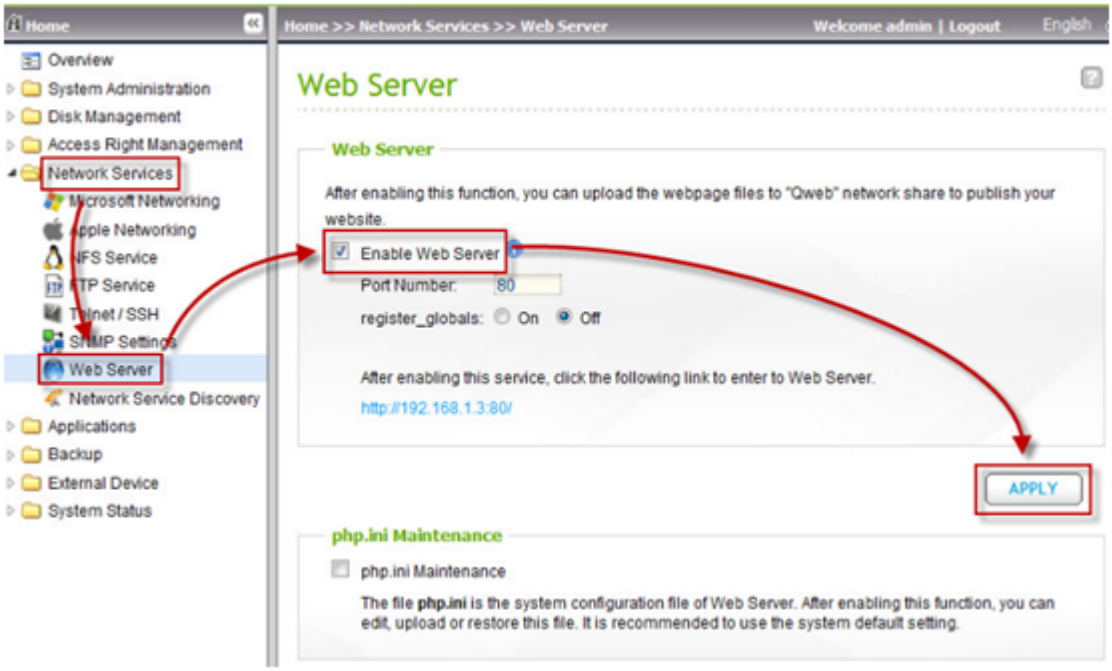
16 Host a Forum with phpBB on QNAP NAS

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'.



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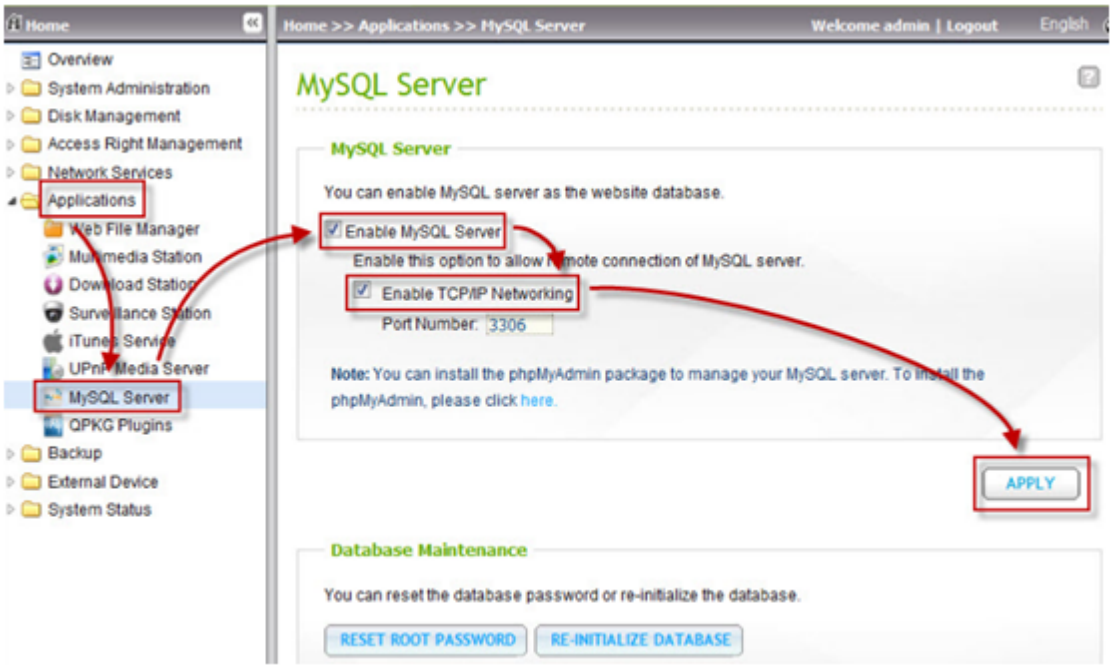
Next go to 'Applications' > 'MySQL Server' and select both 'Enable MySQL Server' and 'Enable TCP/IP Networking' then click 'Apply'.



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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.

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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.

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.

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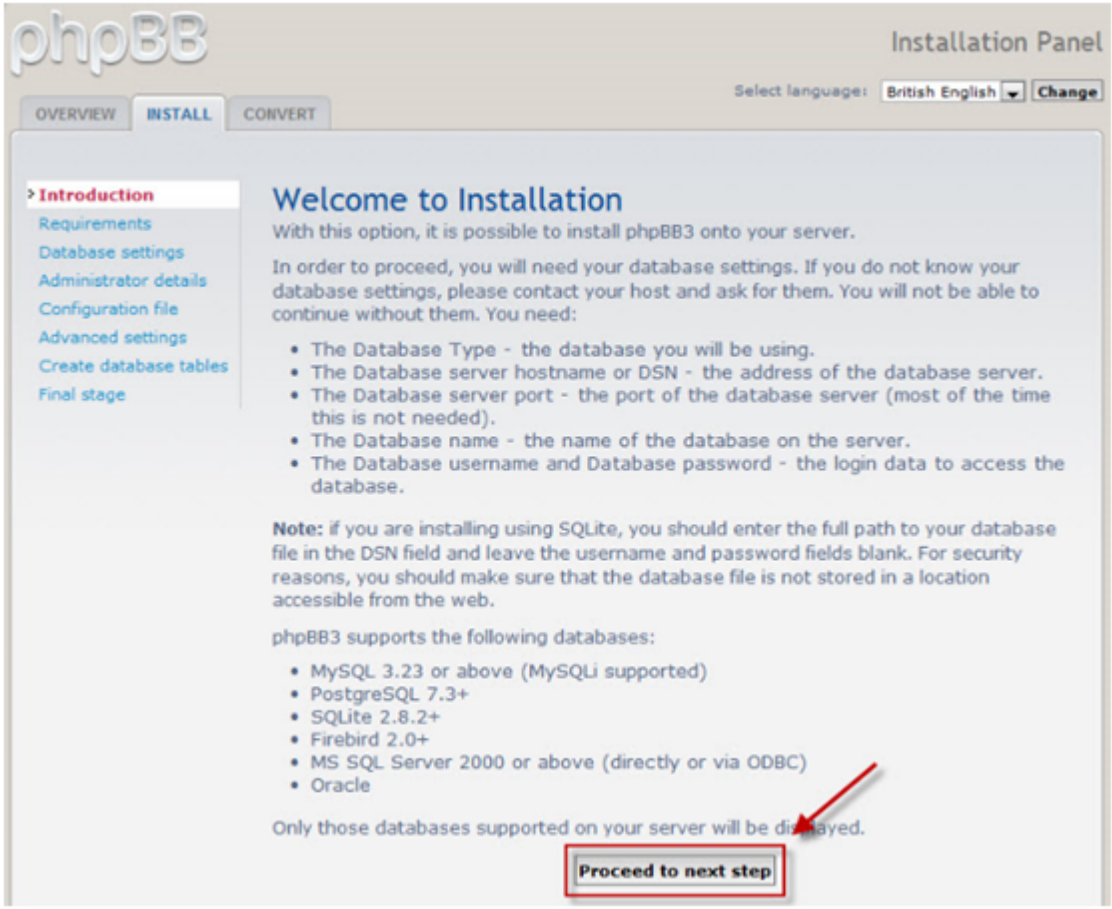
Click 'Proceed to next step'.



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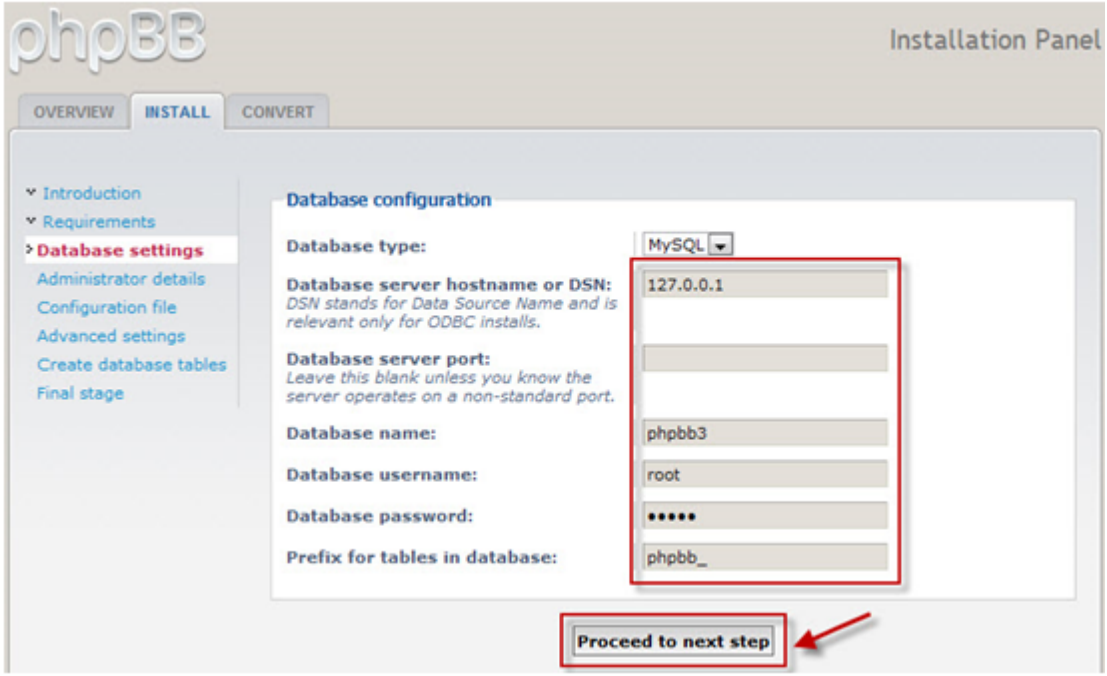
The installation compatibility page will be shown. In most of the cases your current web server should be compatible with the requirements so click 'Start install' to go the next step.

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.



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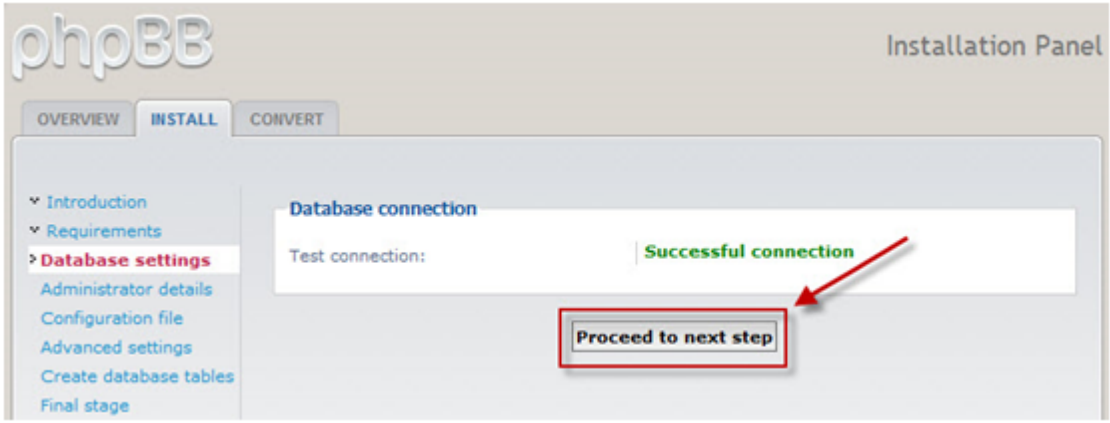
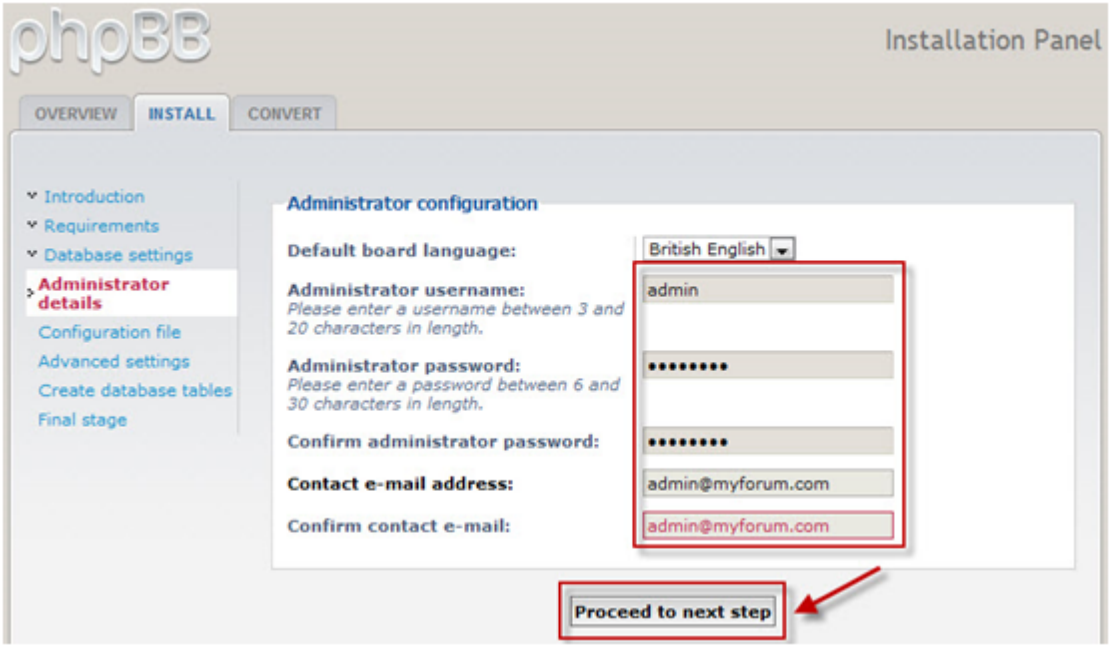
You should see 'Successful connection' if your MySQL server is running and the database 'phpbb3' we created earlier is present. Click 'Proceed to next step'.



Specify the phpBB3 administrator username and password as well as a valid email address. Once done, click 'Proceed to next step'.



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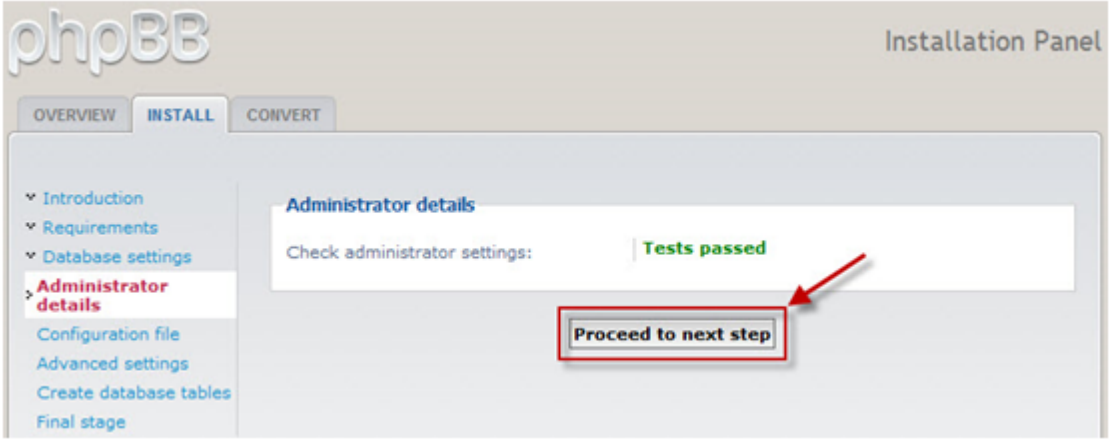
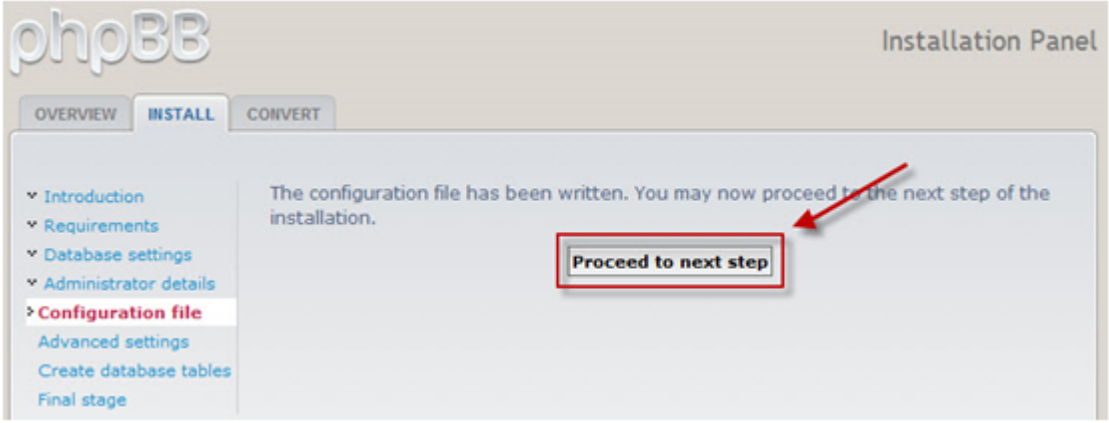
You should see 'Tests passed' and click 'Proceed to next step'.



phpBB3 writes all the settings information to a configuration file (config.php) at this stage. Click 'Proceed to next step'.



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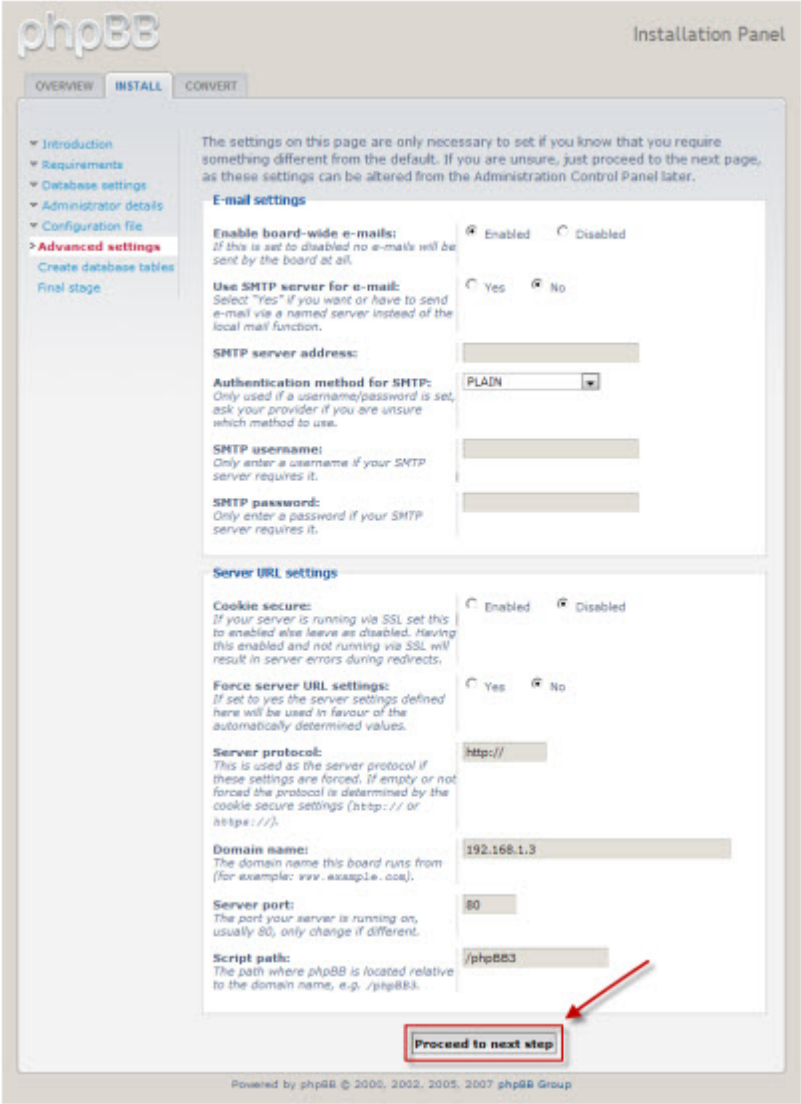
Specify advanced settings if you wish then click 'Proceed to next step'.



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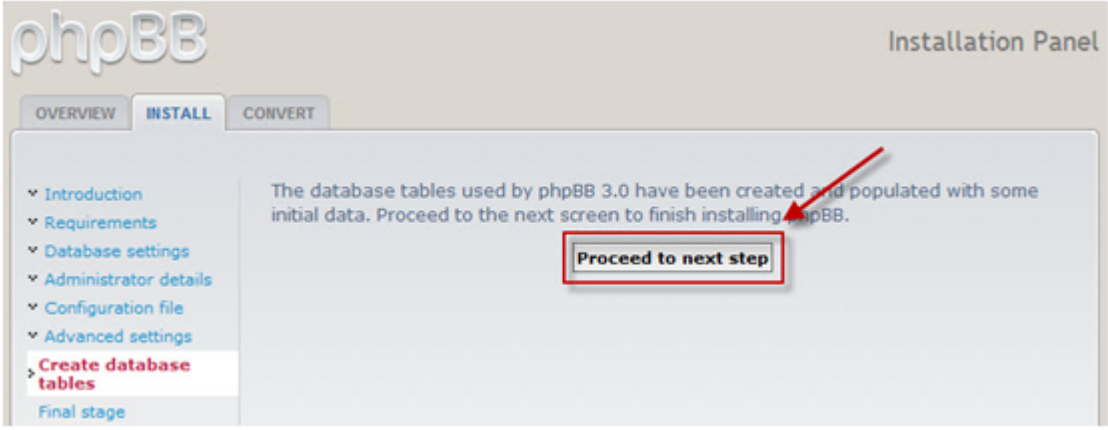
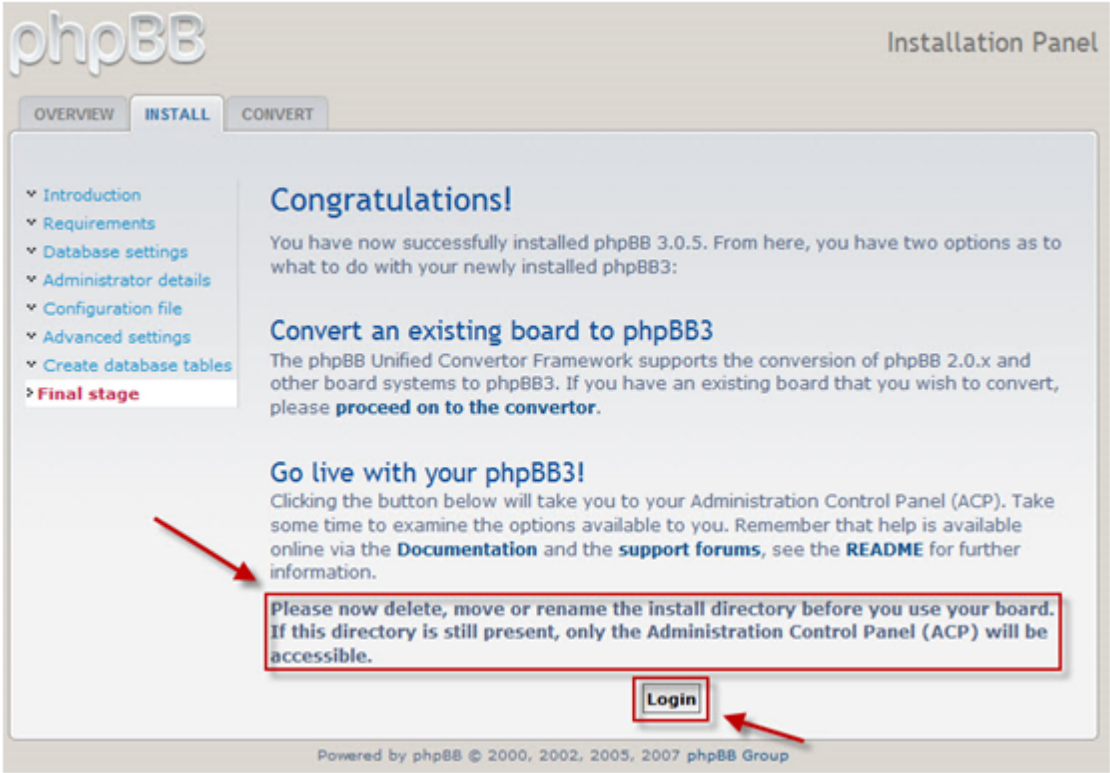
phpBB3 creates all the database tables and populates some initial data at this stage. Click 'Proceed to next step'.



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.



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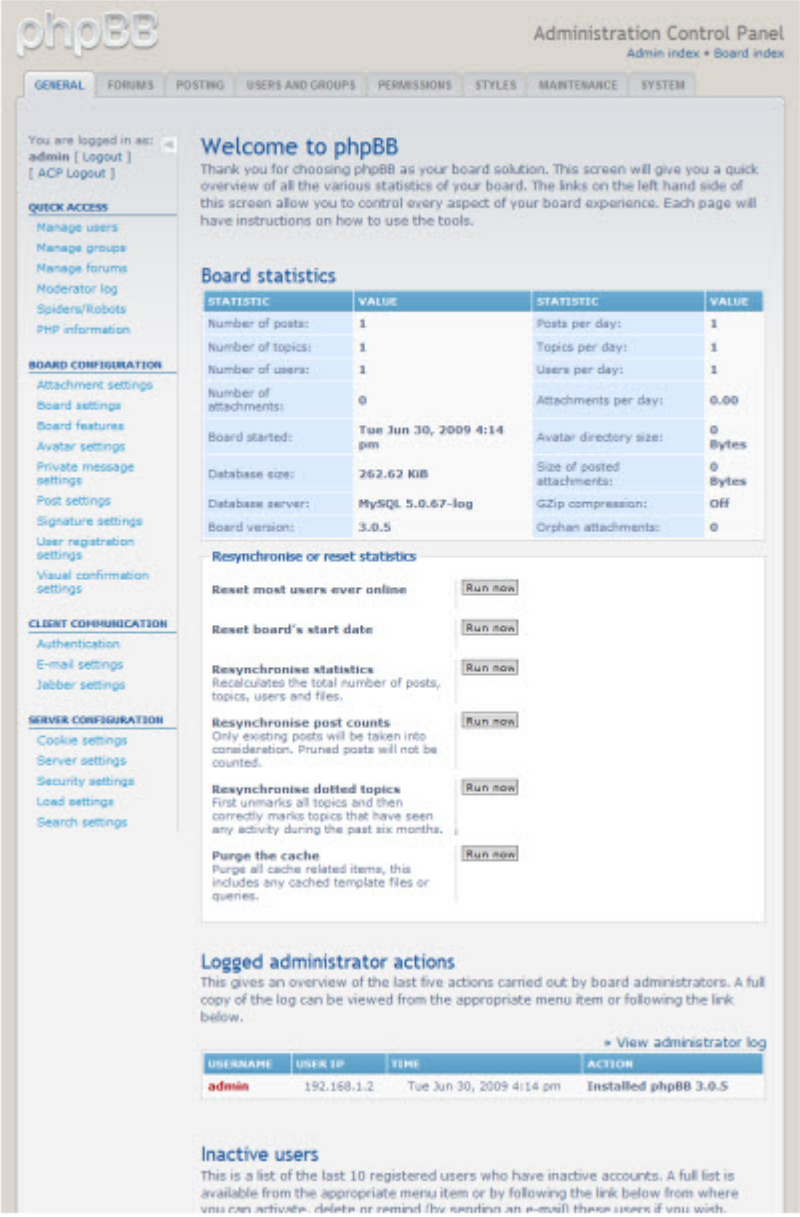
This is the phpBB3 Administration Control Panel where you can perform all administrative tasks.



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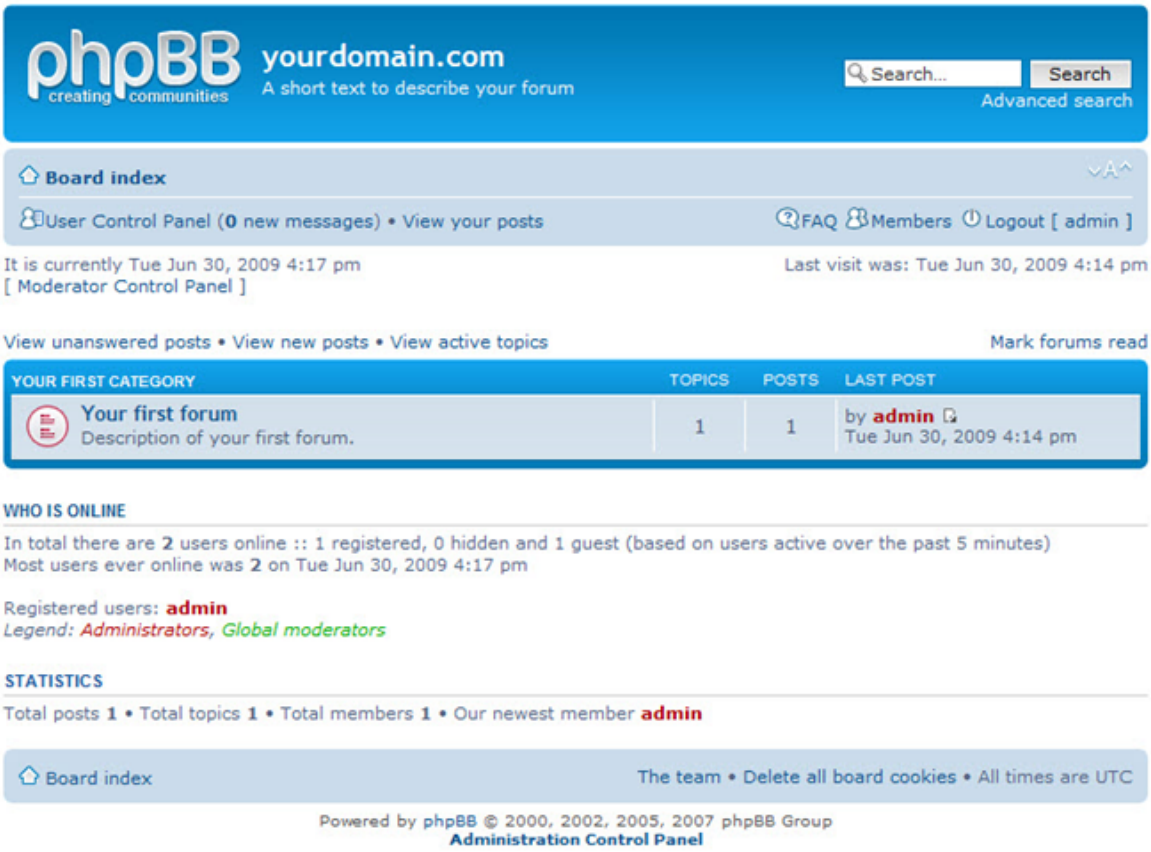
This is the front page of your freshly installed phpBB3 forum. Start sending out forum invitations to establish your online community.



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Version 3, 29 June 2007

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