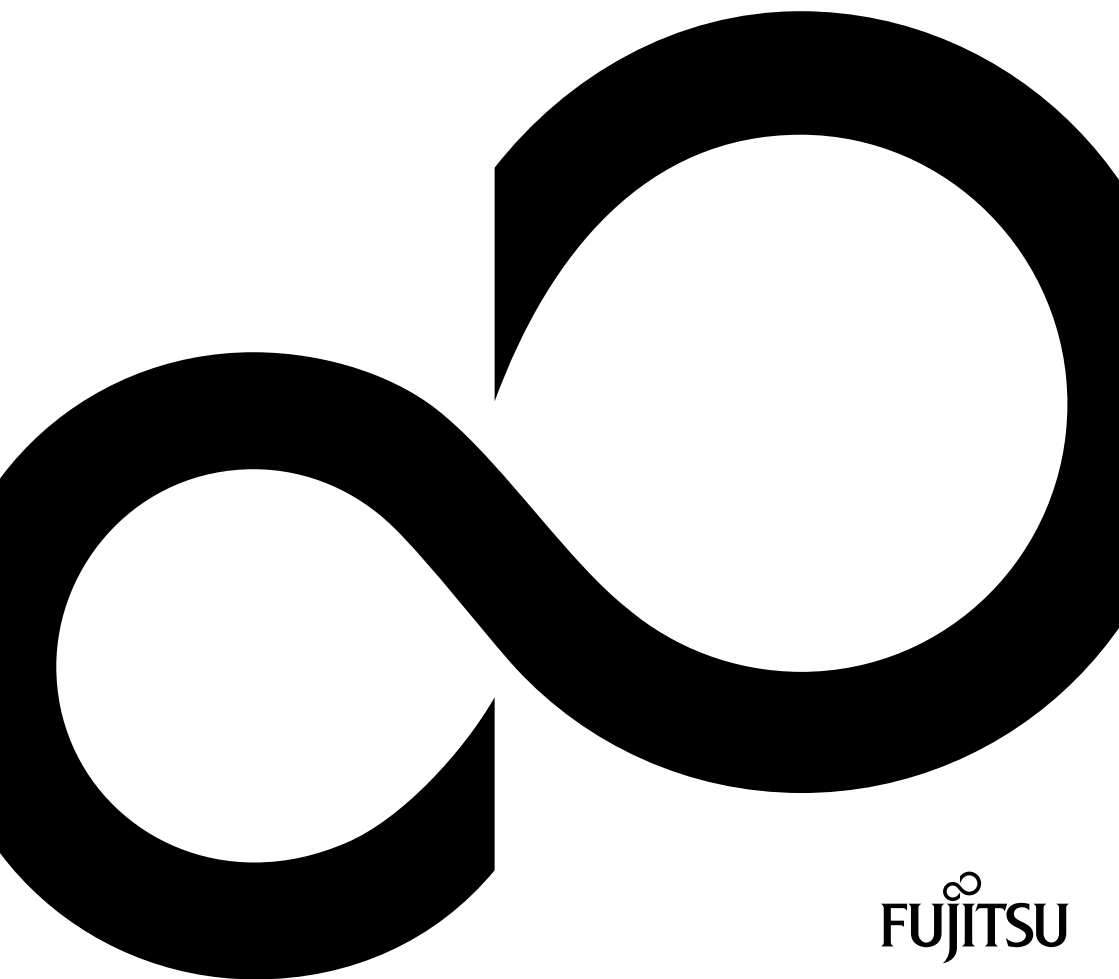


CELVIN® NAS



Congratulations on your purchase of an innovative product from Fujitsu.

Latest information about our products, tips, updates etc. can be found on the Internet at:
<http://www.fujitsu.com/fts/>

For driver updates, please go to: *<http://support.ts.fujitsu.com/download>*

Should you have any technical questions, please contact:

- our Hotline/Service Desk (*<http://support.ts.fujitsu.com/contact/servicedesk>*)
- your sales partner
- your sales office

We hope you enjoy working with your new Fujitsu system!



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CELVIN® NAS

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Your CELVIN® NAS...

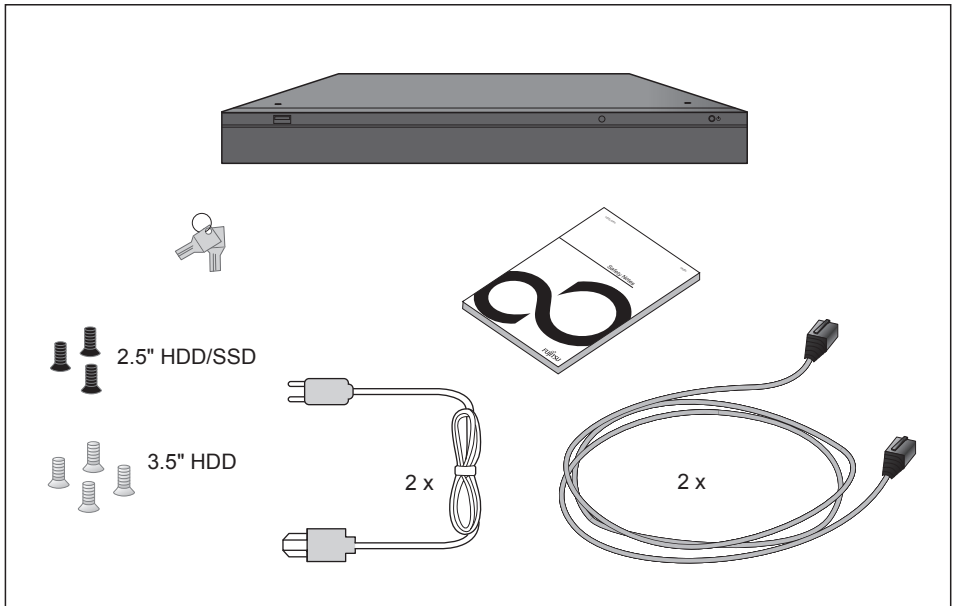
Thank you for purchasing a CELVIN® NAS! These operating instructions provide detailed information on the use of this product. Please read the instructions carefully to enjoy the full benefit of the powerful functions offered by the CELVIN® NAS!



The CELVIN® NAS is hereinafter also referred to in short form as NAS or QR806 (Model with 4 hard discs) or QR1006 (Model with 8 hard discs).










Back up your system regularly to avoid any potential data loss. Fujitsu Technology Solutions will not accept responsibility for the loss of or the recovery of any data in any form.



See www.celvin.com for more information.

Notational conventions

	Pay particular attention to text marked with this symbol. Failure to observe these warnings could pose a risk to health, damage the device or lead to loss of data. The warranty will be invalidated if the device becomes defective through failure to observe these warnings.
	Indicates important information for the proper use of the device.
 	Indicates instructions displayed on the device. Failure to observe them will endanger your health or lead to physical damage.
	Indicates an activity that must be performed
<i>This font</i>	indicates <ul style="list-style-type: none"> terms and texts used in a software interface, e.g.: <i>Click on Save</i> names of programs or files, e.g. <i>Windows</i> or <i>setup.exe</i>.
"This font"	indicates <ul style="list-style-type: none"> cross-references to another section, e.g. "Safety information" Names of CDs, DVDs and titles or designations for other materials, e.g.: "Quick Start Guide" or "Safety/Regulations" manual
	indicates a key on the keyboard, e.g: 

Safety notes



To avoid fires, the CELVIN® NAS QR806/QR1006 may only be operated using the original power supply unit from Delta Electronics, Inc. DPS-250AB-81 A.



Incorrect replacement of the battery may lead to a risk of explosion. Only replace the battery with the battery type recommended by the manufacturer or an equivalent type. Dispose of used batteries in accordance with the manufacturer's instructions.

Do not, under any circumstances, touch the fan located inside the system; this could cause serious injuries.

- Your NAS can operate normally in temperatures of 0 to 40°C and with a relative humidity of 20 to 85%. Please make sure that its operating environment is well ventilated.
- The power cord and devices connected to the NAS must be connected to a suitable power source (90 to 264 V, 100W)
- Do not place the NAS in direct sunlight or near chemicals. Make sure that the temperature and humidity of the environment are within the permitted ranges.

- Unplug the power cord and separate all connected cables before cleaning the device. Wipe the device with a dry towel. Do not use a chemical cleaning agent or aerosol to clean your NAS.
- Do not place any objects on top of the NAS for the server's normal operation and to avoid overheating.
- When installing a hard disk in the NAS, use the flat head screws in the product package to fit the hard disk in the NAS.
- Do not place the NAS near any liquid.
- Do not place the NAS on any uneven surface to avoid falling off and damage.
- Make sure the voltage is correct in the location where the NAS is installed. If you are uncertain, contact the distributor or the local power supply company for information.
- Do not place any objects on the power cord.
- Never try to repair your NAS yourself. Improper disassembly of the product may expose users to electric shock or other risks. For any enquiries, please contact the distributor.
- The NAS models with an installation frame may only be installed in a server room and serviced by authorised server managers or IT administrators. The server room must be kept locked; only authorised employees may have access to the server room using a key or keycard.
- Transport all the devices individually and only in their original packaging or in other suitable packaging which protects them from knocks and jolts. Do not unpack them until they have reached the place where they are to be set up.
- Ask other people to help you carry the device.
- Never lift or carry the device using the handles on the front panel
- When setting up and operating the device, follow the instructions for the environmental conditions in the "Technical Data" section.
- ON/OFF switches do not disconnect the device from the mains voltage.
- To completely disconnect the device from the mains voltage, you must remove the mains plug from the mains socket.

CE marking



CE marking for devices without wireless component supplied at launch from 20 July 2007

The version of this device delivered to customers complies with the requirements of the EC Directives 2014/30/EC "Electromagnetic Compatibility", 2014/35/EC "Low Voltage Directive" and 2011/65/EU "Restriction of Hazardous Substances (RoHS) Directive".

Radio interference

This is a Class A device. This device may cause radio interference in residential areas. In such cases, the operator can be required to take appropriate measures.

FCC Compliance Statement

If the device complies with the FCC regulations, the FCC sign can be found on the type rating plate.

FCC Class A Compliance Statement

FCC Class A Compliance Statement

The following statement applies to the products covered in this manual, unless otherwise specified herein. The statement for other products will appear in the accompanying documentation.

NOTE:

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC rules and meets all requirements of the Canadian Interference-Causing Equipment Standard ICES-003 for digital apparatus. 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 strict accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between equipment and the 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/TV technician for help.
- Fujitsu Technology Solutions GmbH is not responsible for any radio or television interference caused by unauthorized modifications of this equipment or the substitution or attachment of connecting cables and equipment other than those specified by Fujitsu Technology Solutions GmbH. The correction of interferences caused by such unauthorized modification, substitution or attachment will be the responsibility of the user.

The use of shielded I/O cables is required when connecting this equipment to any and all optional peripheral or host devices. Failure to do so may violate FCC and ICES rules.

WARNING:

This is a Class A device. This equipment may cause interference in a residential installation. In this case the user is encouraged to perform appropriate measures to correct the interference.

Hardware overview

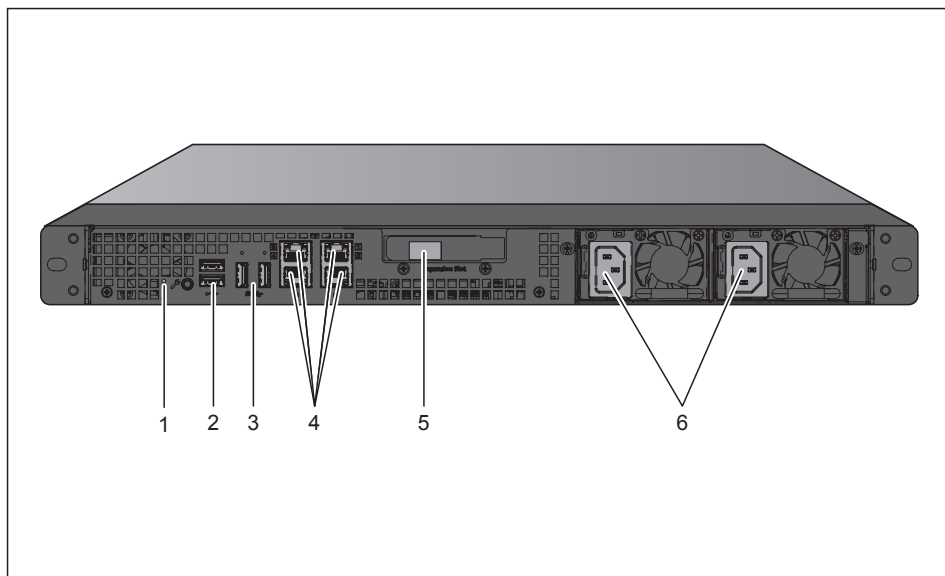
CELVIN® NAS QR806

Front



- 1 = USB 2.0
- 2 = Copy button
- 3 = LED indicators
- 4 = On/Off switch

Rear



- 1 = Reset button for password and network settings
- 2 = 2 x USB 2.0
- 3 = 2 x USB 3.0
- 4 = 4 x Gigabit LAN
- 5 = 10GbE SFP+
- 6 = Power connections

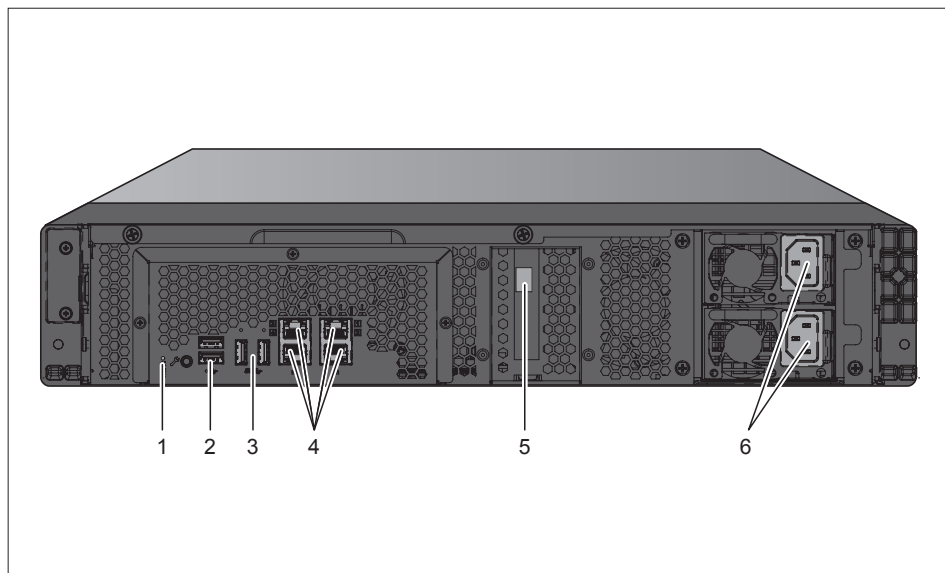
CELVIN® NAS QR1006

Front



- 1 = On/Off switch
- 2 = LED indicators: Status, LAN, HDD 1-8

Rear



- 1 = Reset button for password and network settings
- 2 = 2 x USB 2.0
- 3 = 2 x USB 3.0
- 4 = 4 x Gigabit LAN
- 5 = 10GbE SFP+
- 6 = Power connections

Installing the NAS

For information on hard disk installation and initial operation, please refer to the "Quick Start Guide".

To install the NAS, proceed as follows:

- ▶ Switch on the NAS.
- ▶ Connect the NAS to the same network as your PC.



To make sure that the NAS works correctly, pay attention to LEDs and alarm buzzer sounds during installation.

See "Check system status" for more information.

List of recommended hard disks

This product will work with 2,5/3,5 inch SATA hard disks from major hard disk manufacturers. A list of compatible drives can be found at <http://support.ts.fujitsu.com>.



Fujitsu Technology Solutions will accept no liability whatsoever for any product defects/faulty operation, and/or any time and costs associated with data loss/data recovery, insofar as the cause can be attributed to misuse or improper installation of hard disks, regardless of the circumstances or for whatever reason.



Please note that when installing a hard disk (new or used) which has not previously been installed on the NAS, the hard disk will first be formatted and sub-divided automatically, and all disk data will be lost.

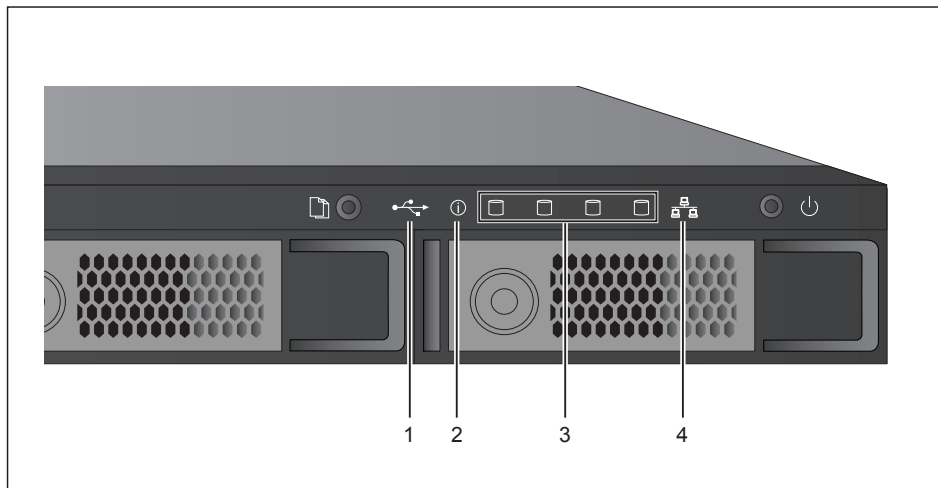
System ventilation

Please ensure when setting up the device that sufficient ventilation will be available at all times. The air inlet of the product must not be covered, as otherwise it is not possible to guarantee that the system will receive sufficient ventilation, which may lead to the product being damaged.

Check system status

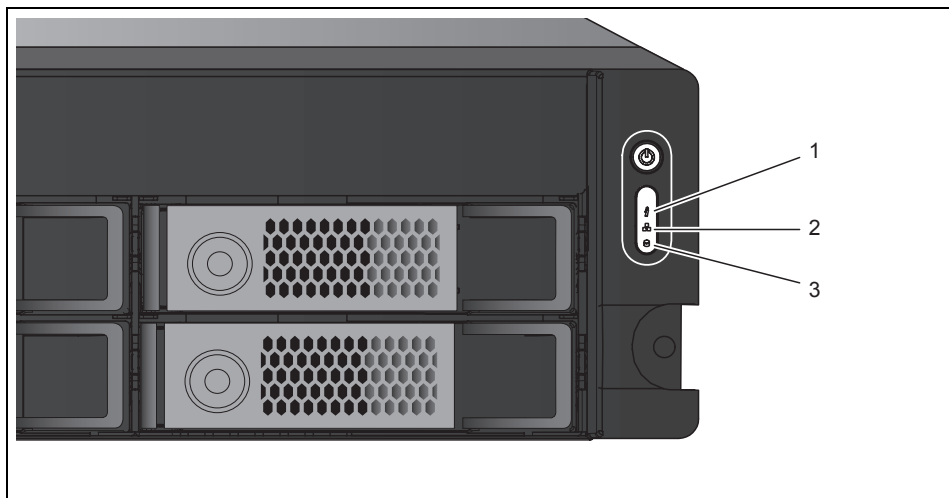
The NAS is fitted with LED indicators to show the system status and other information. When you switch on the NAS, check the following items to make sure that the system is working normally. Please note that the information provided by the LEDs described below is only valid if the hard disks have been correctly installed and the NAS is connected to the network and the power supply.

QR806



- 1 = USB
- 2 = System status
- 3 = HDD (hard disk drives) 1 - 4
- 4 = LAN network

QR1006



- 1 = System status
- 2 = LAN network
- 3 = HDD (hard disk drives) 1 - 8

LED Display & System Status Overview

LED	Colour	LED-Status	Description
System Status	Red / Green	Flashes green and red alternately every 0.5 sec	<ul style="list-style-type: none"> The hard disk drive on the NAS is being formatted. The NAS is being initialized. The system firmware is being updated. RAID rebuilding is in process. Online RAID capacity expansion is in process. Online RAID level migration is in process.
		Red	<ul style="list-style-type: none"> The hard disk drive is invalid. The disk volume has reached its full capacity. The disk volume is going to be full. The system fan is out of function. An error occurs when accessing (read/write) the disk data. A bad sector is detected on the hard disk drive. The NAS is in degraded read-only mode (2 member hard drives fail in a RAID 5 or RAID 6 configuration, the disk data can still be read). (Hardware self-test error).
		Flashes red every 0.5 sec	The NAS is in degraded mode (one member hard drive fails in RAID 1, RAID 5 or RAID 6 configuration).
		Flashes green every 0.5 sec	<ul style="list-style-type: none"> The NAS is starting up. The NAS is not configured. The hard disk drive is not formatted.
		Green	The NAS is ready.
		Off	All the hard disk drives on the NAS are in standby mode.
LAN	Orange	Orange	The NAS is connected to the network.
		Flashes orange	The NAS is being accessed from the network.
HDD	Red / Green	Flashes red	The disk data is being accessed and a read/write error occurs during the process.
		Red	A hard drive read/write error occurs.
		Flashes green	The disk data is being accessed.
		Green	The hard drive can be accessed.

LED Display & System Status Overview

LED	Colour	LED-Status	Description
USB	Blue	Flashes blue every 0.5 sec	<ul style="list-style-type: none"> A USB device (connected to front USB port) is being detected. A USB device (connected to front USB port) is being removed from the NAS. The USB device (connected to the front USB port) is being accessed. The data is being copied to or from the external USB or eSATA device.
		Blue	A front USB device is detected (after the device is mounted).
		Off	<ul style="list-style-type: none"> No USB device is detected. The NAS has finished copying the data to or from the USB device connected to the front USB port of the NAS.

Alarm Buzzer

The alarm buzzer can be disabled in *Control Panel - Hardware*.



The beep, which sounds when booting the device, cannot be deactivated.

Beep sound	No. of Times	Description
Short beep (0.5 sec)	1	<ul style="list-style-type: none"> The NAS is starting up. The NAS is being shut down (software shutdown). The user presses the reset button to reset the NAS. The system firmware has been updated.
Short beep (0.5 sec)	3	An attempt is being made to copy NAS data to an external storage device connected to the front USB port, but the data cannot be copied.
Short beep (0.5 sec) Long beep (1.5 sec)	3, every 5 min.	The system fan is out of function.

Beep sound	No. of Times	Description
Long beep (1.5 sec)	2	<ul style="list-style-type: none">• The disk volume is going to be full.• The disk volume has reached its full capacity.• The hard disk drives on the NAS are in degraded mode.• The user starts hard drive rebuilding.
	1	<ul style="list-style-type: none">• The NAS is turned off by force shutdown (hardware shutdown).• The NAS has been turned on and is ready.

Configuring the software settings

- ▶ Visit the website www.fujitsu.com/fts/downloads.
- ▶ Select your NAS model.
- ▶ Select *Downloads* and then *Applications* .

This will display the available programs.

- ▶ Download *Fujitsu Finder* or *Qfinder* and start the installation.
- ▶ Follow the on-screen instructions to install *Fujitsu Finder* or *Qfinder*. *Fujitsu Finder* or *Qfinder* will then run automatically.



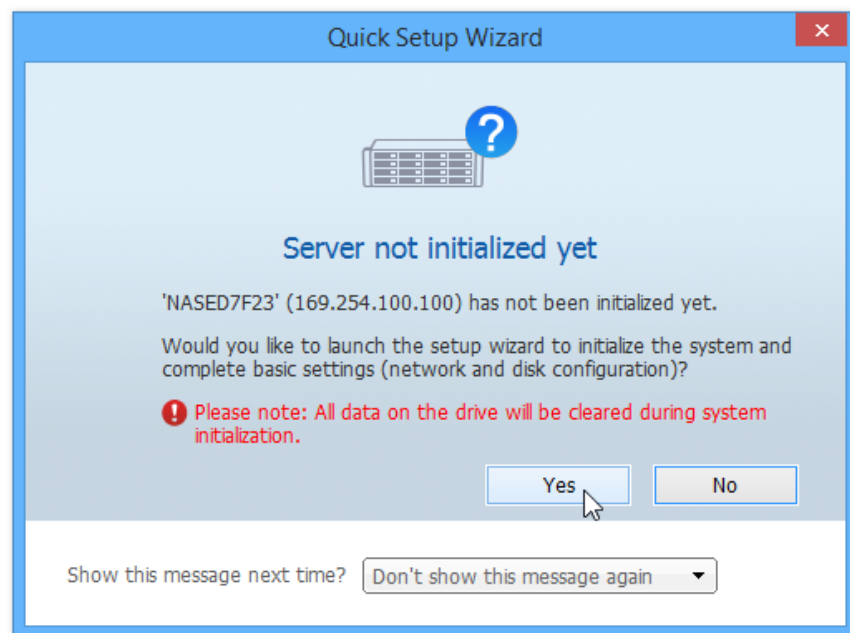
All the functions carried out by *Fujitsu Finder* can be carried out in the same way by *Qfinder* . In the following text, these functions are therefore only described for the *Fujitsu Finder*.

If you are using Windows 7/8/10, the following window will be displayed:



- ▶ Set a checkmark against *Private networks, such as my home or work network*.
- ▶ Click on *Allow access*.

Fujitsu Finder detects the NAS on the network and if necessary asks whether Quick Setup should be run.



- ▶ Click on *Yes* to continue.



If the NAS could not be found, please click on *Refresh* to retry.
Check that you have installed a hard disk in the NAS.



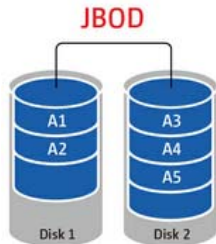
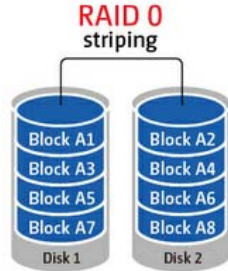
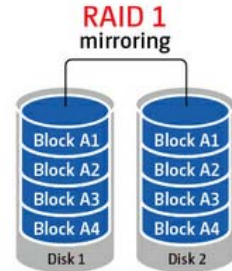
Note that during NAS set up, the installed hard disk will be formatted and all the data on it will be lost.

- ▶ Follow the instructions for initial configuration.

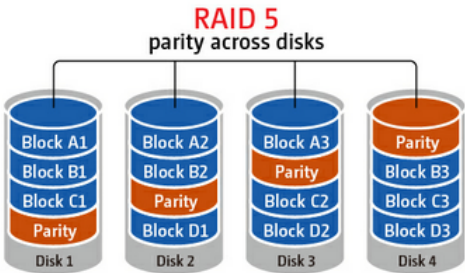


The configuration process may take up to twenty minutes if the hard disk used has a capacity larger than 1 TB.

► Select the desired drive configuration for the NAS:

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

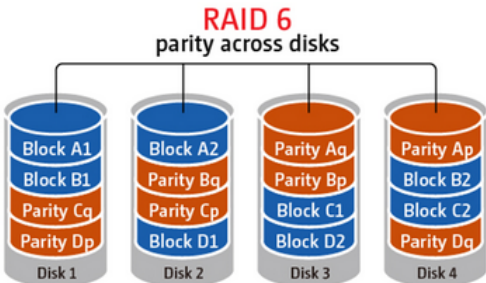
RAID 5 Disk Volume



The data are striped across all the hard drives in a RAID 5 array. The parity information is distributed and stored across each hard drive. If a member hard drive fails, the array enters degraded mode. After installing a new hard drive to replace the failed one, the data can be rebuilt from other member drives that contain the parity information.

To create a RAID 5 disk volume, a minimum of 3 hard drives are required. The storage capacity of a RAID 5 array is equal to $(N-1)$ (size of smallest hard drive). N is the number of hard drives in the array.

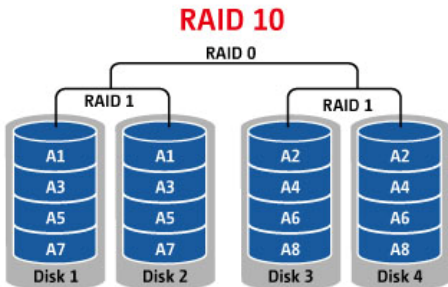
RAID 6 Disk Volume



The data are striped across all the hard drives in a RAID 6 array. RAID 6 differs from RAID 5 that a second set of parity information is stored across the member drives in the array. It tolerates failure of two hard drives.

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

RAID 10 Disk Volume



RAID 10 combines four or more disks in a way that protects data against loss of non-adjacent disks. It provides security by mirroring all data on a secondary set of disks while using striping across each set of disks to speed up data transfers.

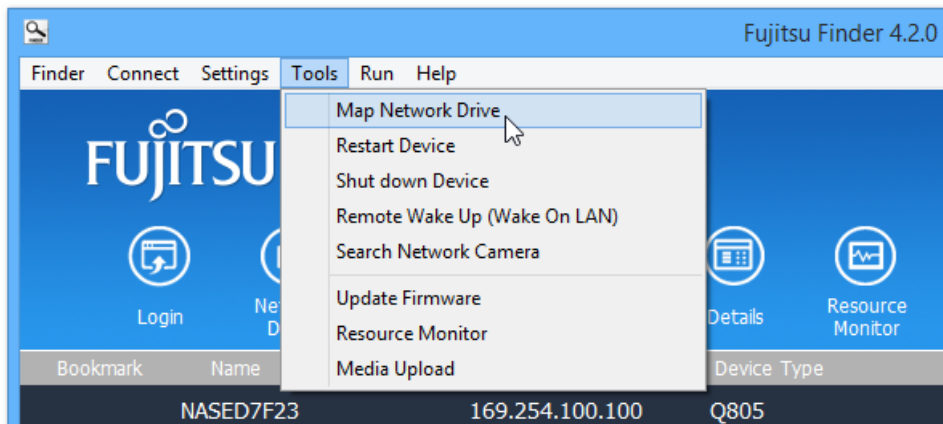
RAID 10 requires an even number of hard drives (minimum 4 hard drives). The storage capacity of RAID 10 disk volume is equal to (size of the smallest capacity disk in the array) $N/2$. N is the number of hard drives in the volume.

RAID 10 tolerates failure of only two disks from two different sets of disks.

► Click on *Next* and then on *Start Installation*.

Connecting a network drive

- ▶ Start *Fujitsu Finder*.



- ▶ Open the menu *Tools - Map Network Drive*.

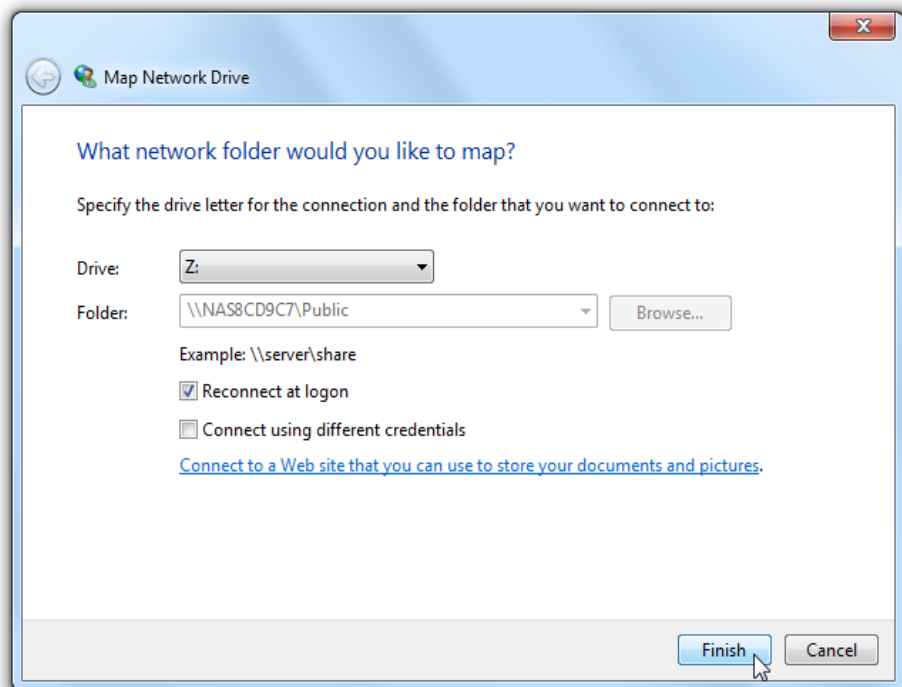
The NAS offers several standard network shares.

- ▶ Select the network share that should be mapped as a network drive and click on *Network Share*.

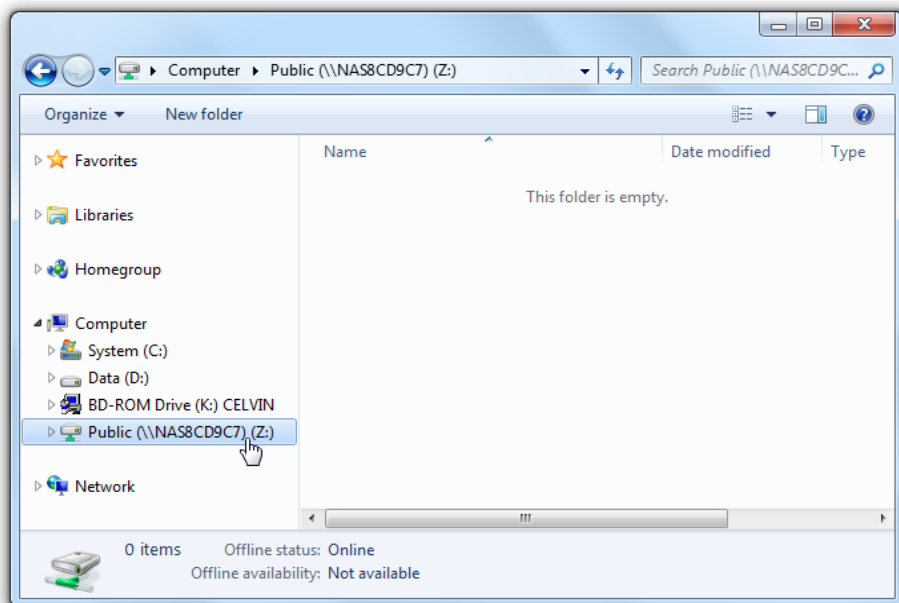


Download, Multimedia, USB and Web are standard network shares for using *Download Station, Multimedia Station, external USB storage devices* (automatic copy function), or *Web Server*. *Recordings* is the standard network share for using the *Surveillance Station*.

- ▶ Enter the default user name and password.
 - Standard user name: *admin*
 - Default password: *admin*



- Select the drive letter to be used for the connection and click on *Finish*.



- Once a connection has been successfully established, the network share will become available for use as a local data carrier in Windows Explorer.

Connecting to the NAS

Using the public folder (public network share)

The NAS public folder can be accessed in the following ways:

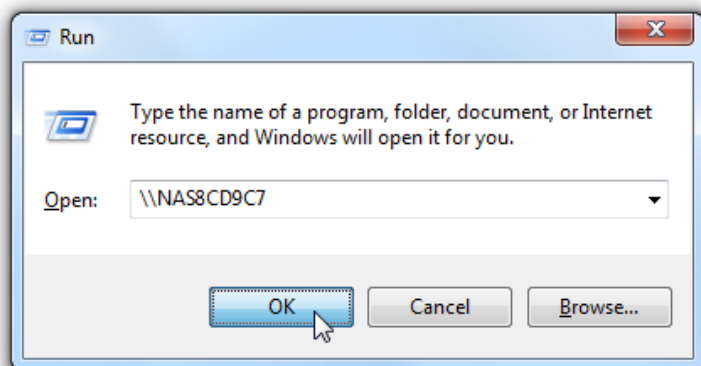
- ▶ Open Network Neighborhood and locate the NAS workgroup.
- ▶ If the server cannot be found, then please search the whole network for the NAS.
- ▶ Double click the name of the NAS to establish a connection.

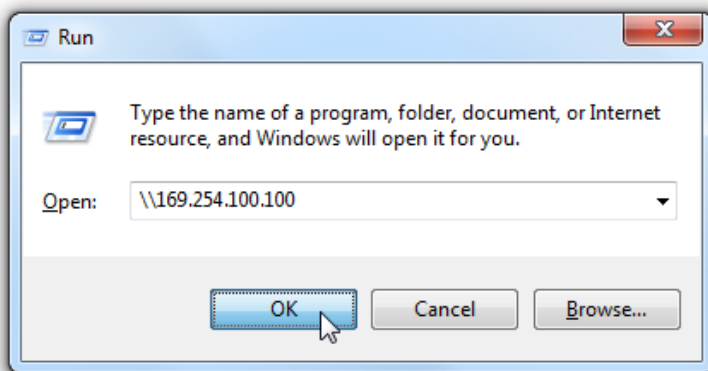
Alternatively:

- ▶ Click on *Start - Run* or keep the Windows key on your keyboard pressed and press the **R** key.
- ▶ Enter `\\[NAS name]` or `\\[NAS IP]` to access the shared folders on the NAS.



The placeholders *[NAS name]* and *[NAS IP]* represent the name or IP address of your NAS. You can use the *Fujitsu Finder* to obtain this information.





- ▶ Please enter your user name and password.
 - Default user name: admin
 - Default password: admin

Files can be uploaded to the network shares.

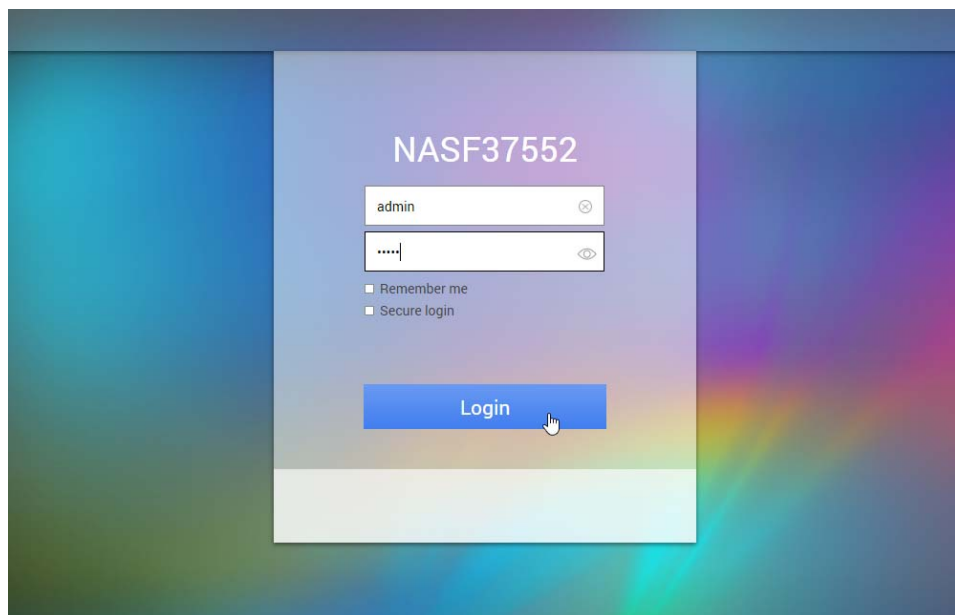
Administering the NAS via a Web browser under Windows

The NAS Web administration page can be accessed by the following methods:

- ▶ Find the NAS via the Connect *Fujitsu Finder* and click on *Connect*.
- ▶ Open a web browser and enter *http://[NAS IP]:8080*.



The default NAS IP is 169.254.100.100:8080. If the NAS has been configured to use DHCP, then the *Fujitsu Finder* can be used to check the IP address of the NAS. Make sure that the NAS is connected to the same subnet as the computer that is running *Fujitsu Finder*. If it is not possible to search for the IP address of the NAS, please try connecting the NAS directly to the computer and restarting the *Fujitsu Finder*.



- ▶ Enter the user name and password to log in.
 - Default user name: admin
 - Default password: admin

The NAS supports encrypted SSL login. This allows the server to be configured and managed over an encrypted data link.

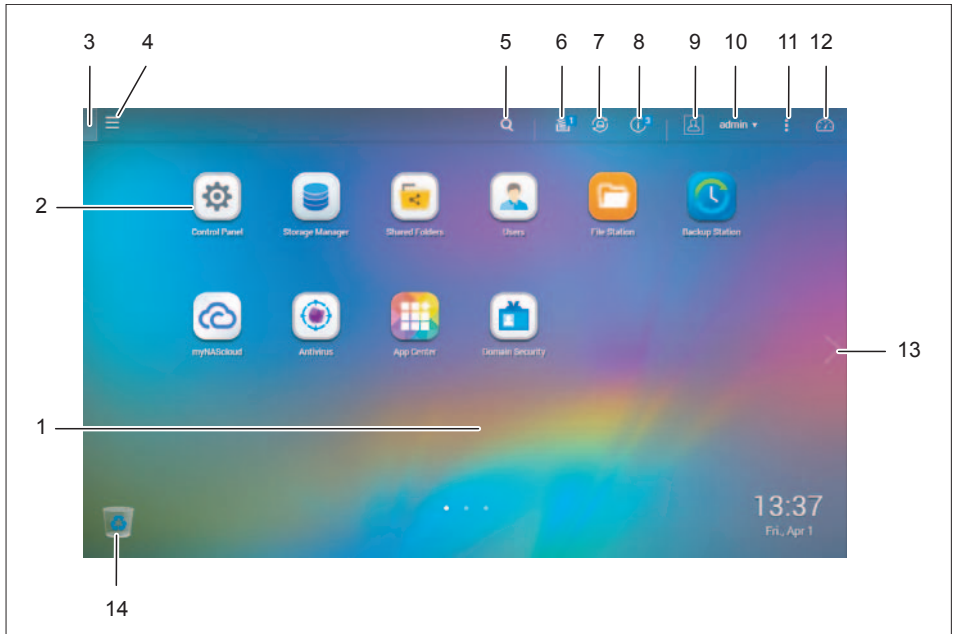
- ▶ To use this function, check the *Secure Login* option on the administration page before logging in to the server.



If the NAS is situated behind a NAT gateway and it is necessary to allow access to the NAS using secure login over the Internet, then Port 443 must be open on the NAT and mapped to the LAN IP of the NAS.

Administration user interface

After completing the initial set-up for the NAS and logging in, the Administration user interface appears.



1 = Desktop area with various applications

2 = System control

3 = Show desktop

4 = Main menu

5 = Search

6 = Background tasks

7 = External devices

8 = Notifications and warnings

9 = Personal settings

10 = Restart, shutdown, logoff

11 = Help, language, desktop features

12 = Control centre

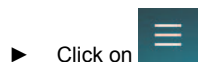
13 = Next desktop

14 = Recycle bin

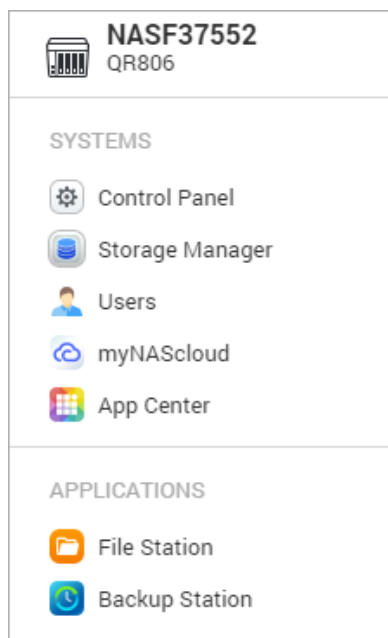


To display the administration user interface, a screen resolution of at least 1024 x 768 is recommended.

Opening the main menu



The main menu will appear.



The main menu consists of three parts:

Applications

The sub-items enable access to NAS extensions that are provided and maintained by QNAP Systems, Inc.

System settings

The sub-items enable access to the NAS main function settings.

Third-party provider applications

The annexe contains a list of applications that have been created and submitted by independent developers and approved by QNAP Systems, Inc. These applications can be installed via the App Center.

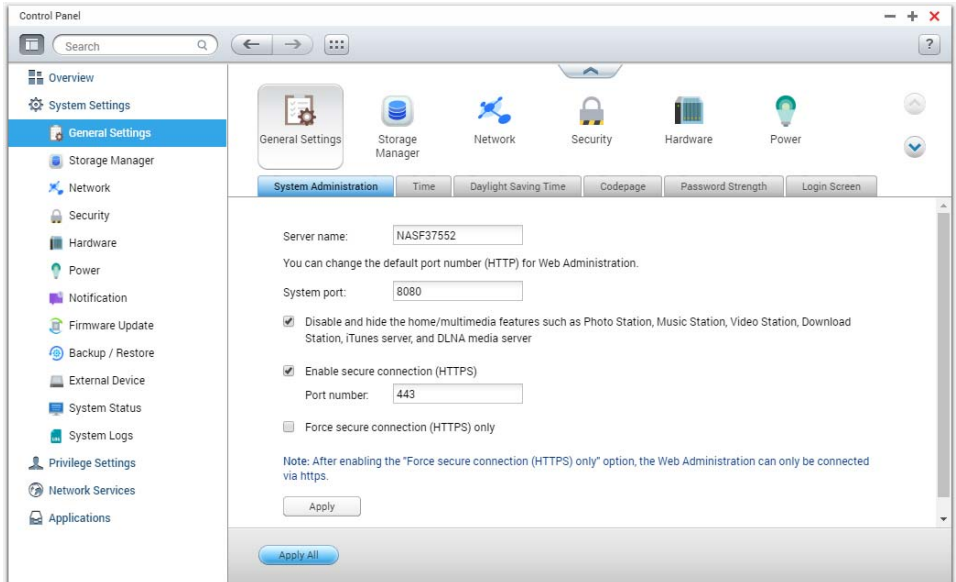


Please understand that Fujitsu cannot be held liable for the content, functionality and security of these applications in any way. In the event of problems with these applications, please contact the relevant developer directly.





Control Panel / Opening applications

- Click on Control Panel or one of the applications.

A new window opens inside the desktop area.



When you open a third-party provider application, a new browser window will open instead of a window inside the desktop area

- Click on the Help button  in the top right corner of the window for more information on the relevant menu or application.
- Click  to minimise a window. You can maximise the window again later using the task bar.
- Click  to maximise a window.
- Click  to close a window.

Accessing the NAS from Linux

In addition to operating systems from Microsoft, the NAS also supports Linux systems using the NFS service.

- ▶ In Linux, run the following command: `mount -t nfs <NAS IP address> :/<Network Share Name> <Directory to Mount>`
- ▶ For example, if the IP address of the NAS is 169.254.100.100 and the link to the network share folder "public" should be created in the /mnt/pub directory, use the following command:
`mount -t nfs 169.254.100.100 :/public /mnt/pub`



The above command can only be executed when logged in as "root".

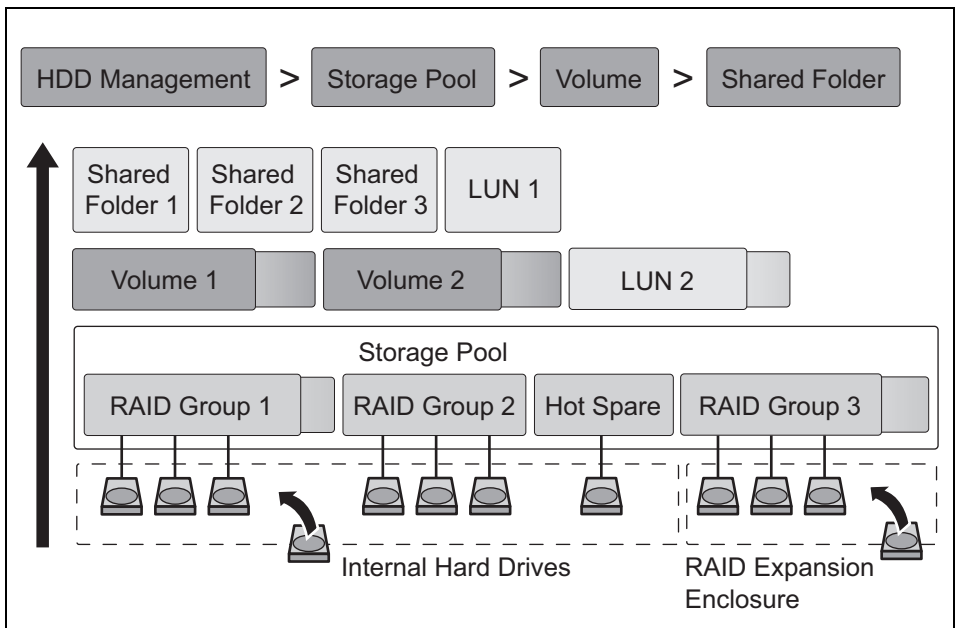
- ▶ Log in with the user name specified previously. The network share folder can be accessed via the mounted directory.

Memory management

Use flexible volume management

The NAS has flexible volume management to better manage your memory capacity. The memory pool (or storage pool) combines drives in a larger memory space. The memory pool supports multiple RAID groups (RAID: redundant array of independent backup disks). This system provides 'redundant' or duplicated data backup and reduces the risk of data loss. With thin provisioning, memory space can be used more efficiently. Users can dynamically add or expand capacity as required, in order to use the memory for the intended applications.

Architecture of the flexible volume management

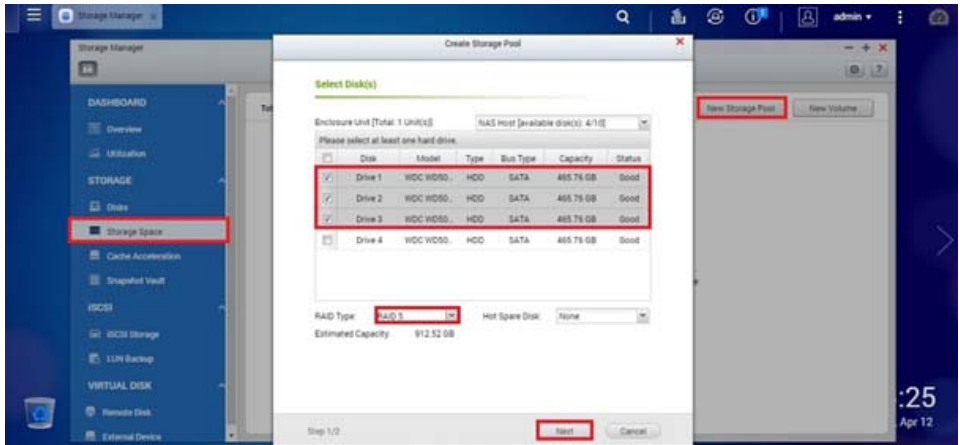


Create a new memory pool (or storage pool)

- ▶ Select *Memory manager* > *Memory space*, and to open the memory creation window, click on *Create* > *New storage pool*.
- ▶ Select the drives which you want to add to the new storage pool and a suitable type of RAID for backups.
- ▶ Click on *Next*.



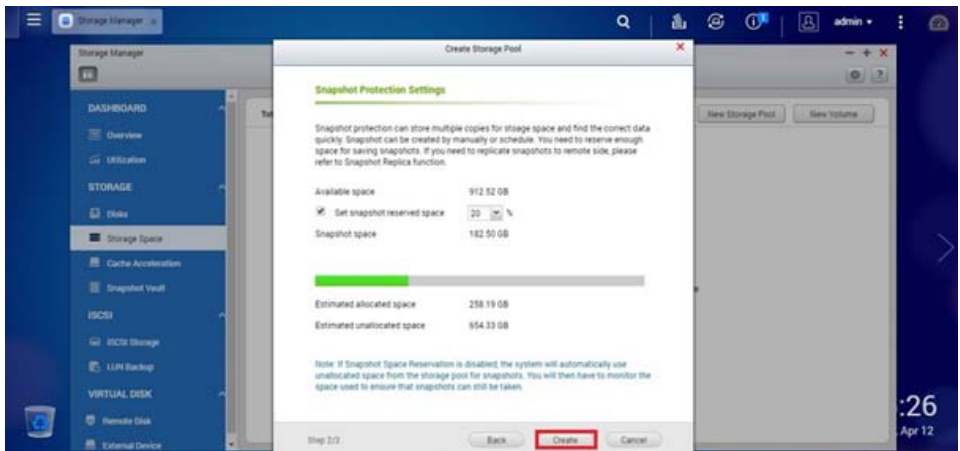
Note that all the data on the selected drives will be deleted.



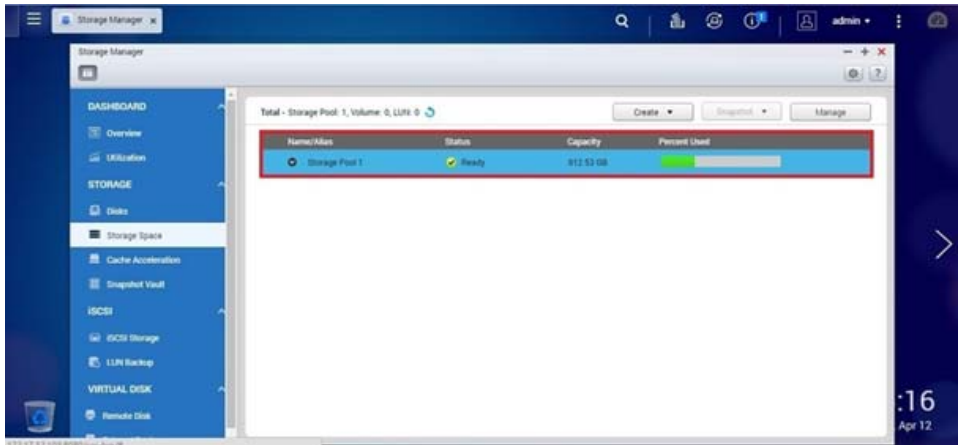
- Specify the reserved memory space for snapshot protection (the default value is 20%) and click on *Create*.



Note that if "snapshot memory allocation" is deactivated, the system will automatically use unallocated storage space from the storage pool for snapshots. In this case, you must monitor the used memory space, in order to ensure that sufficient memory space is available for new snapshots.



The new storage pool is now created.



Expanding storage pool capacity online

There are two options for expanding storage pool capacity:

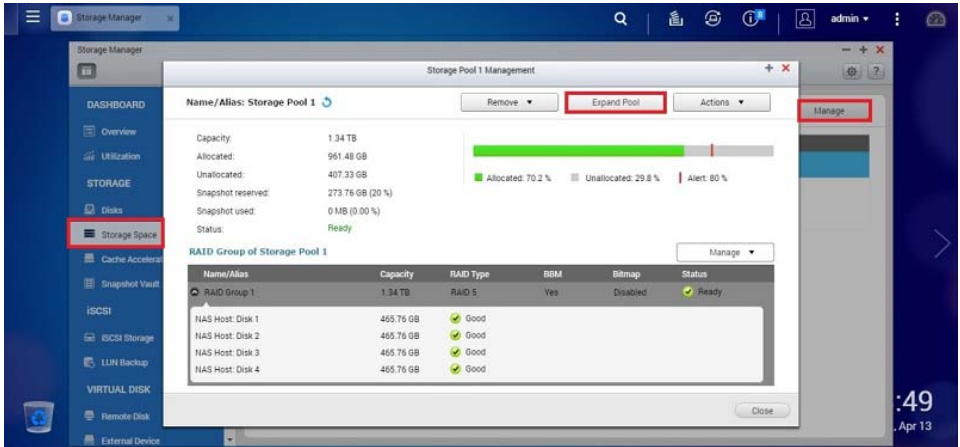
- Creating a new RAID group for backups
- Adding drives to an existing RAID group



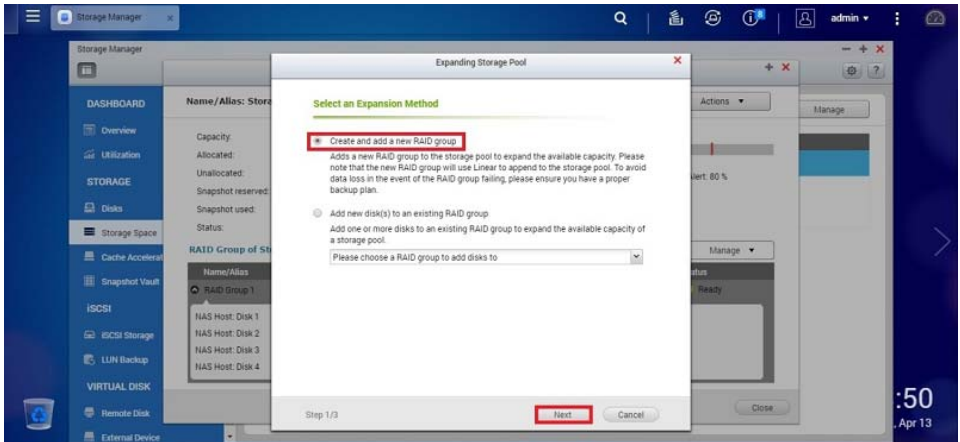
Note that all the data on the selected drives will be deleted.

Creating a new RAID group

- ▶ Select *Memory manager > Memory space*, click on *Manage* and then to open the assistant for the storage pool expansion, click on *Expand pool*.



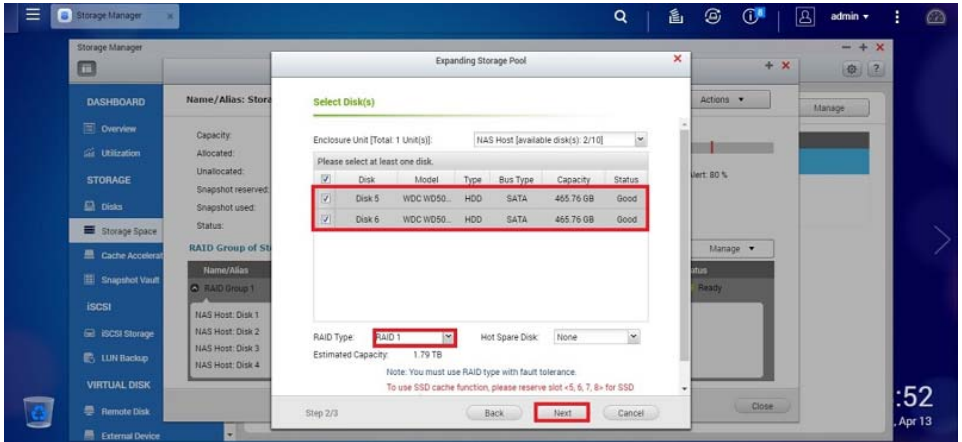
- ▶ Select *Create and add a new RAID group*.
- ▶ Click on *Next*.



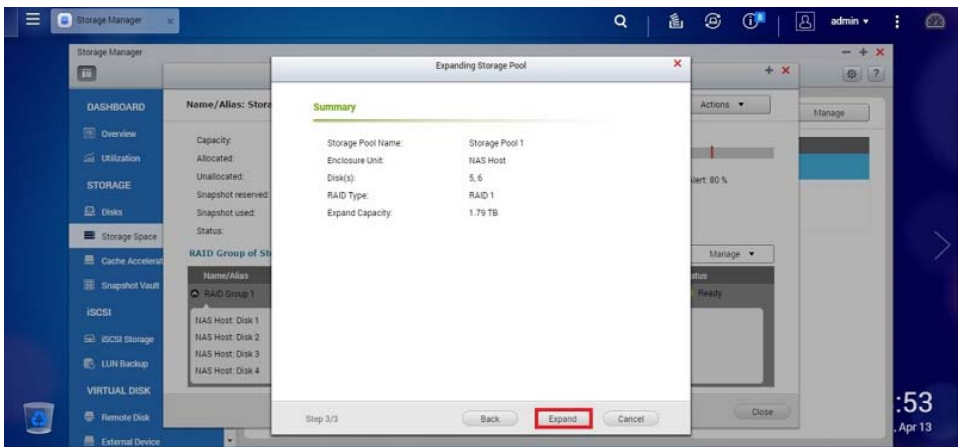
- ▶ Select the drives which you want to add to the RAID group and a suitable type of RAID. Click on *Next*.



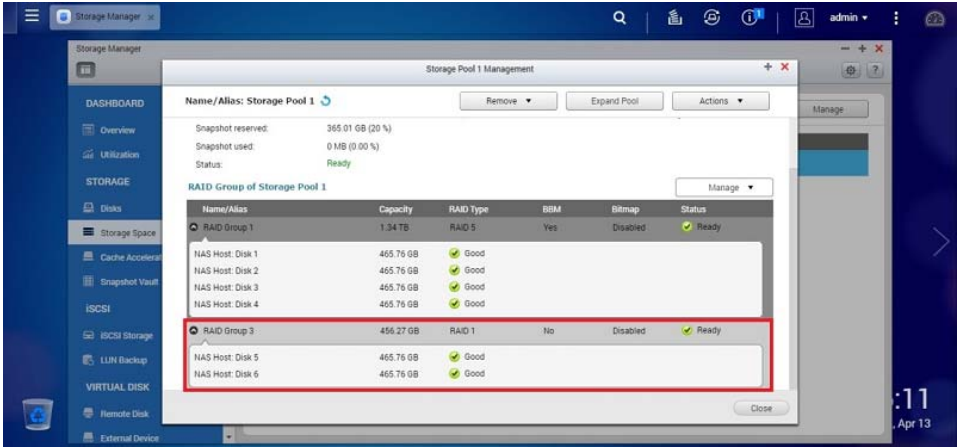
Note that all the data on the selected drives will be deleted.



- Confirm your settings on the overview page, and to finish click on *Expand*.



The capacity of the storage pool will now be expanded.

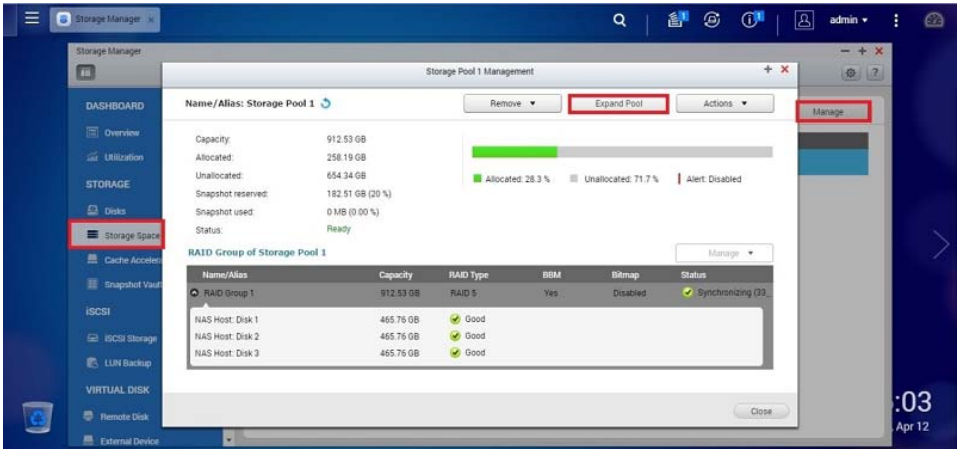


Adding drives to an existing RAID group

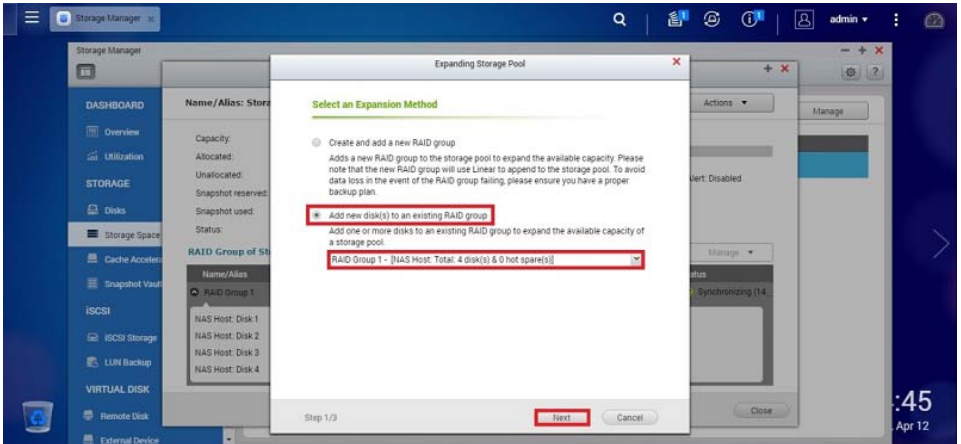


Note that RAID 0, RAID 10, single drive and JBOD ("just a bunch of disks") are not supported in a storage pool expansion.

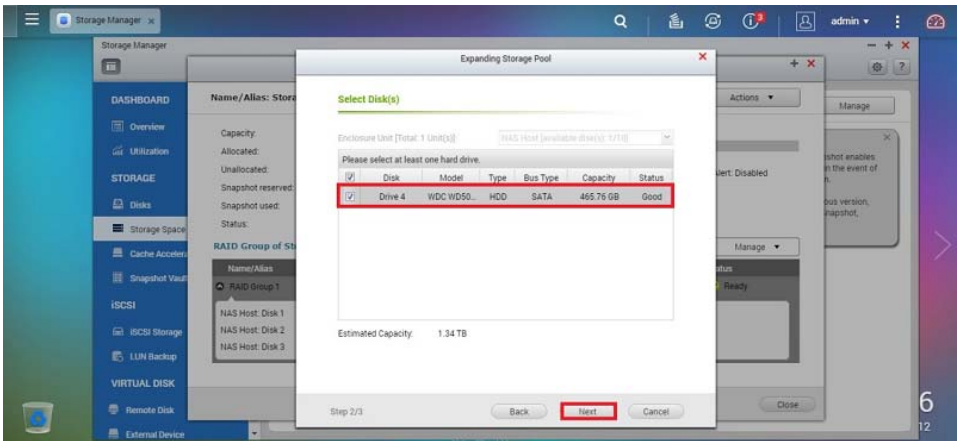
- ▶ Select *Memory manager* > *Memory space*, click on *Manage* and then to open the assistant for the storage pool expansion, click on *Expand pool*.



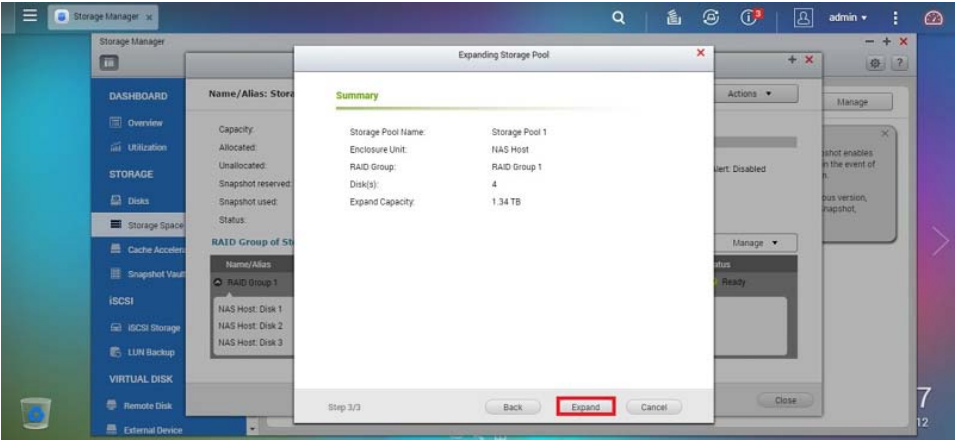
- Select *Add new data carrier(s) to an existing RAID group*, select an existing RAID group from the drop-down list and then click on *Next*.



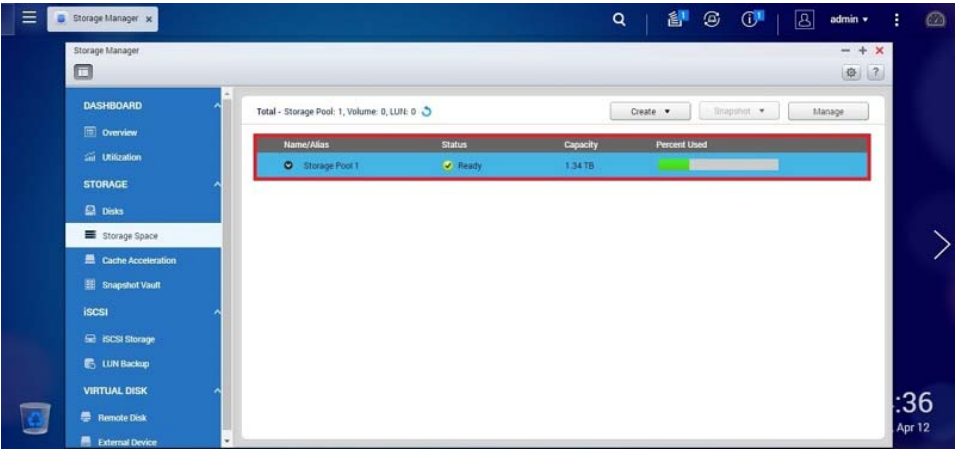
- Select a drive to be added to the RAID group, and click on *Next*.



- Confirm your settings on the overview page, and to finish click on *Expand*.

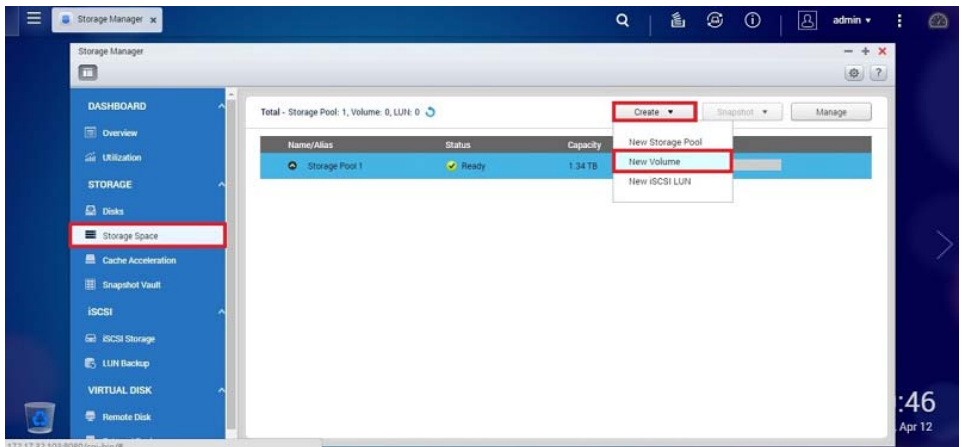


The capacity of the storage pool will now be expanded.



Creating a new volume

- Select *Memory manager > Memory space > Create* and then to open the assistant for creating a new volume, click on *New volume*.

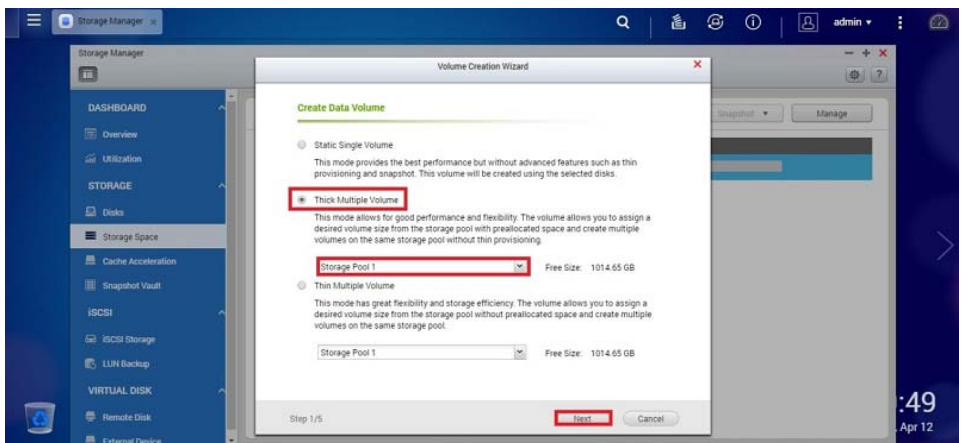


There are 3 options available:

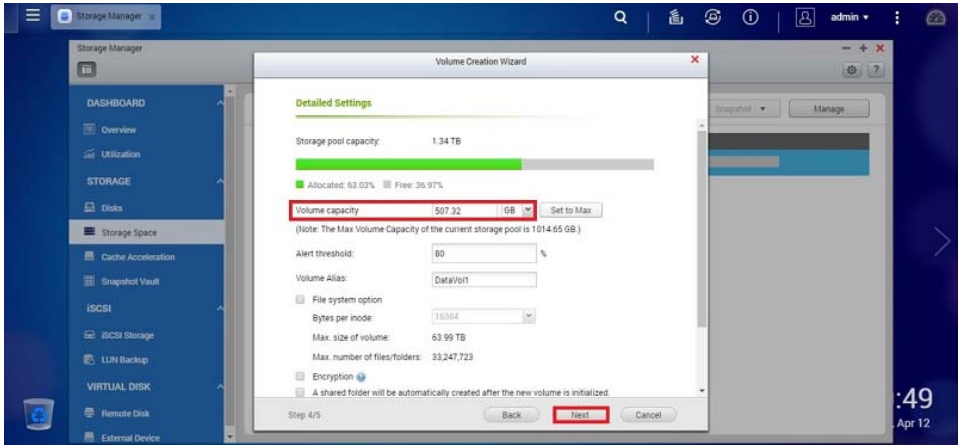
- Static single volume (best performance)
- Thick multi-volume (good performance and flexibility)
- Thin multi-volume (excellent flexibility and storage efficiency)

The procedure to be followed here is described below, using the example of a "Thick multi-volume":

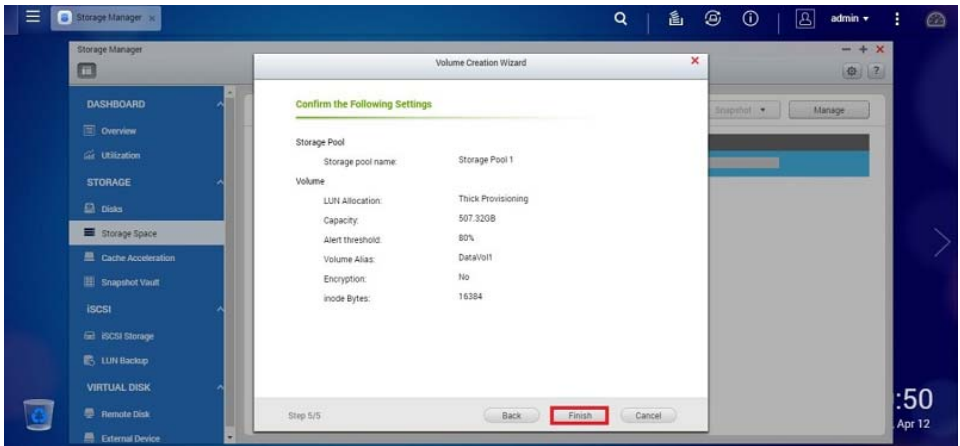
- Select the name of the storage pool and then click on *Next*.



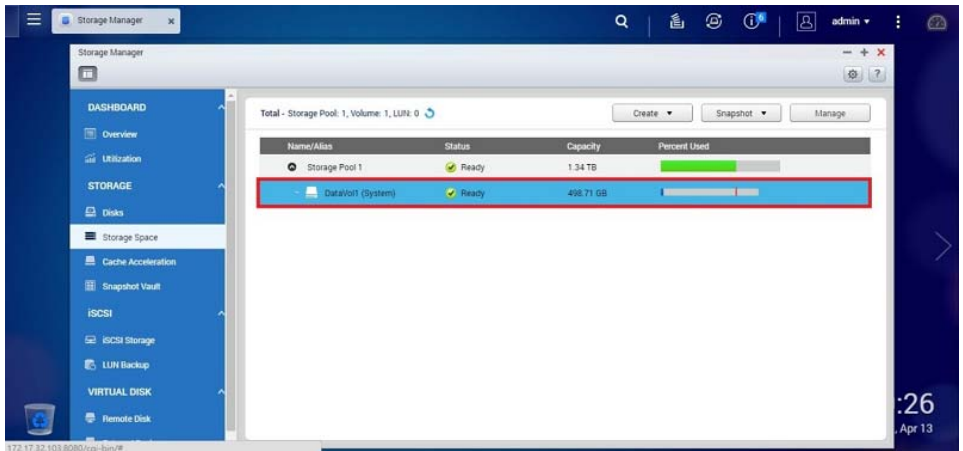
- Specify the volume capacity and the remaining options and then click on *Next*.



- Confirm your settings on the overview page, and then click on *Finish*.

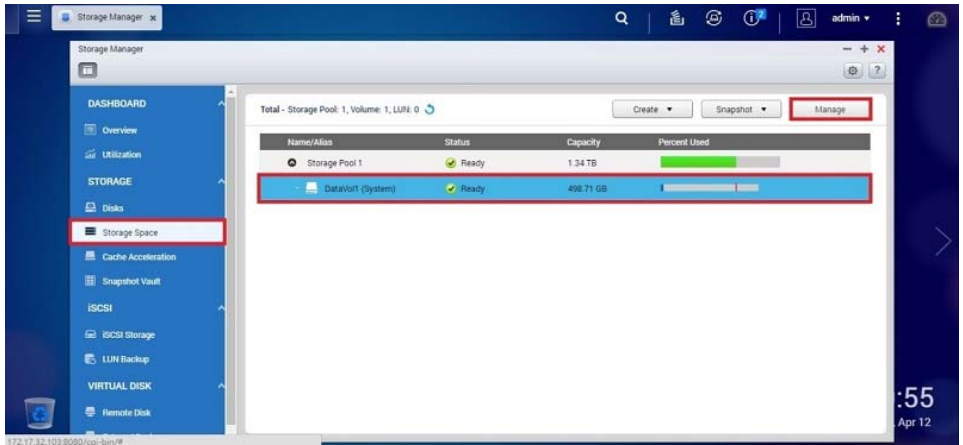


A new volume will now be created.

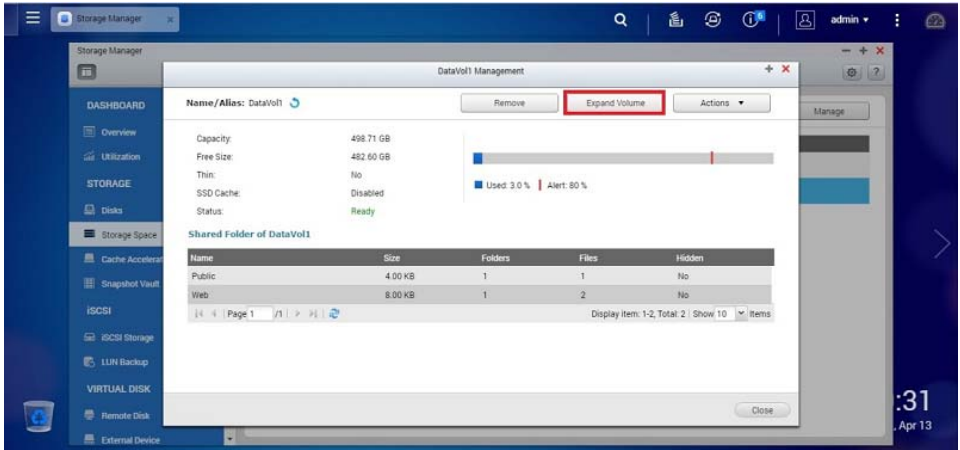


Expanding volume capacity online

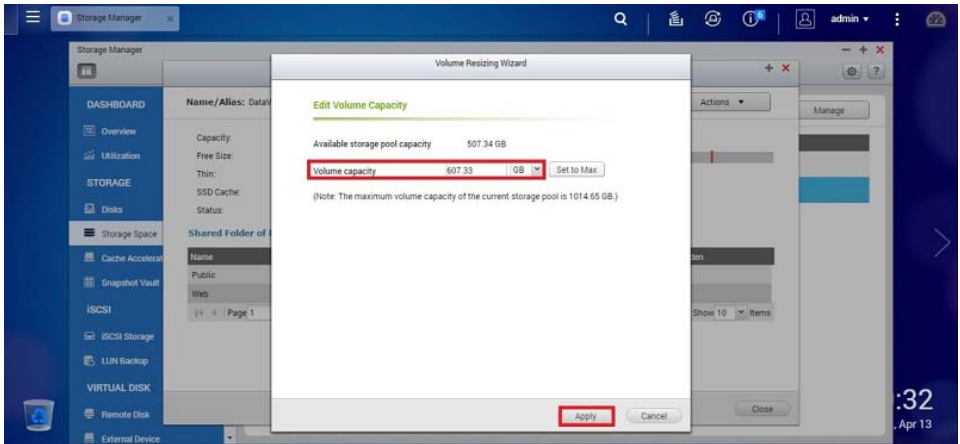
- Select *Memory manager* > *Memory space*, select a volume and click on *Manage*.



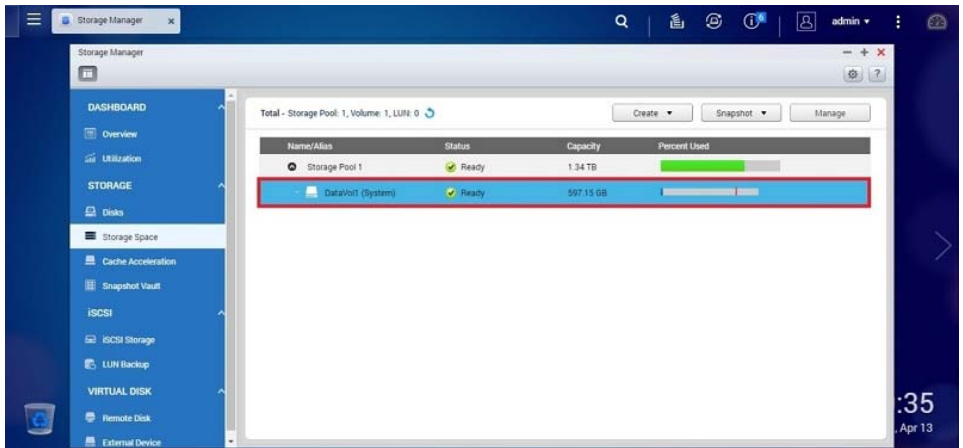
- To open the assistant for changing the volume size, click on *Expand volume*.



- Specify the new capacity and click on *Apply*.

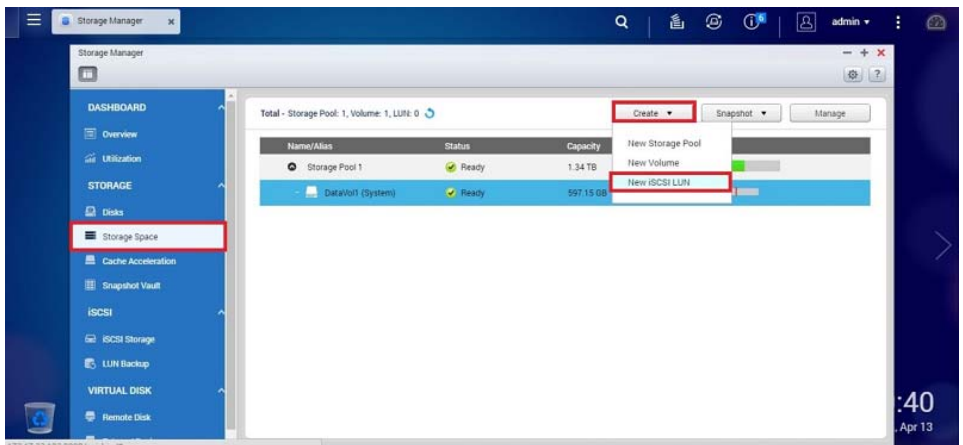


The capacity of the volume will now be expanded.



Creating a new block-based iSCSI-LUN (Internet small computer systems interface - logical unit number disk drive)

- ▶ Select *Memory manager > Memory space*, and click on *Create*.
- ▶ To open the "iSCSI quick configuration assistant", click on *New iSCSI-LUN*.



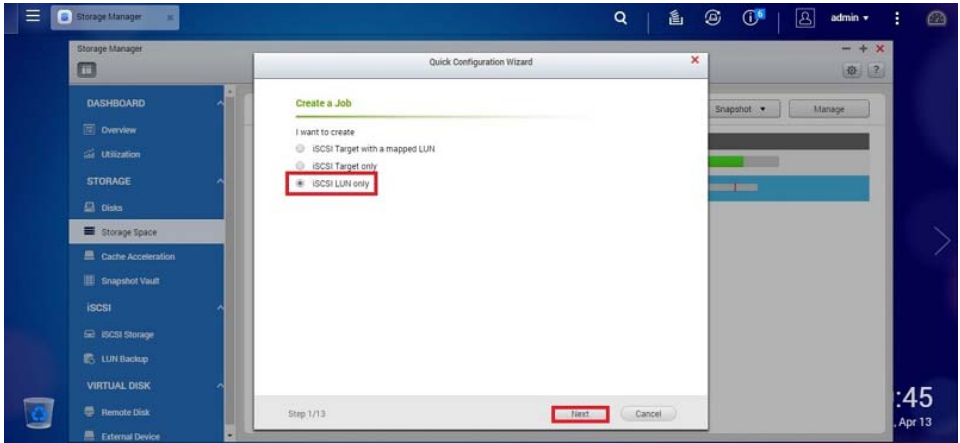
- ▶ Select "Only iSCSI-LUN" and then click on *Next*.



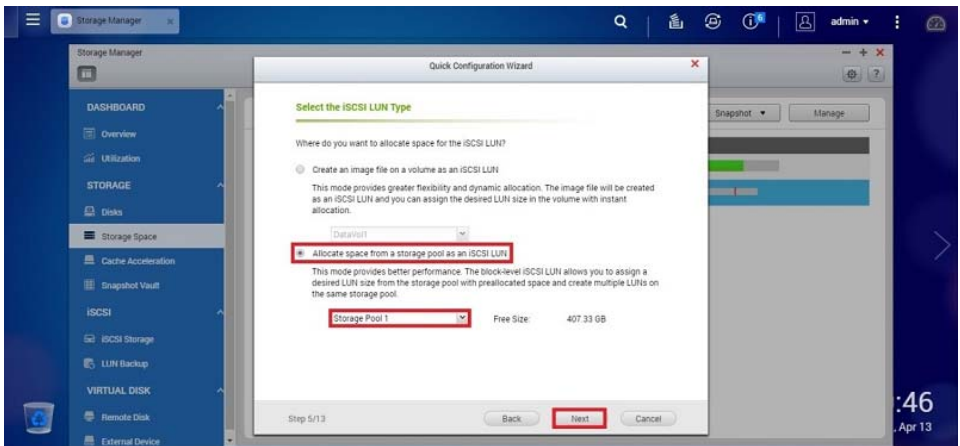
In order for the LUN to be integrated by an iSCSI initiator, it must be assigned to an iSCSI target.

If no iSCSI target has been created before, you can do this now with the option *Only one iSCSI target*.

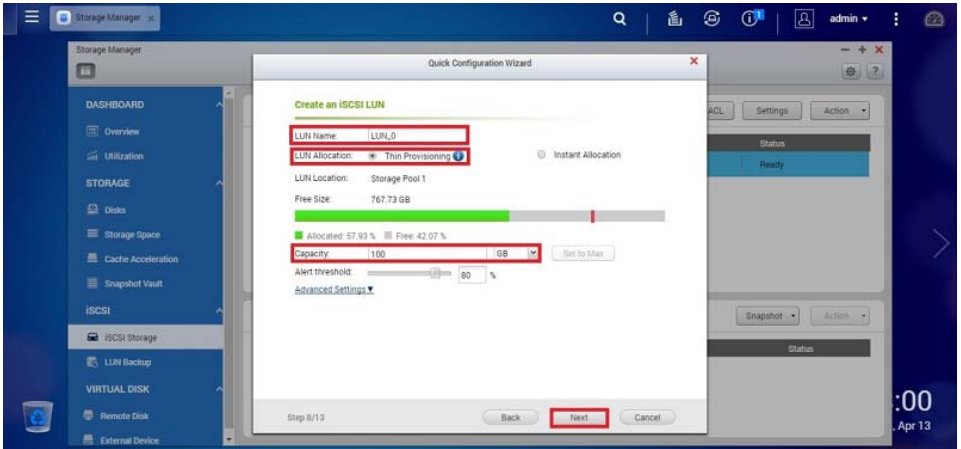
You can also select the option *iSCSI target with an allocated LUN* to combine the two individual steps required in a single operation.



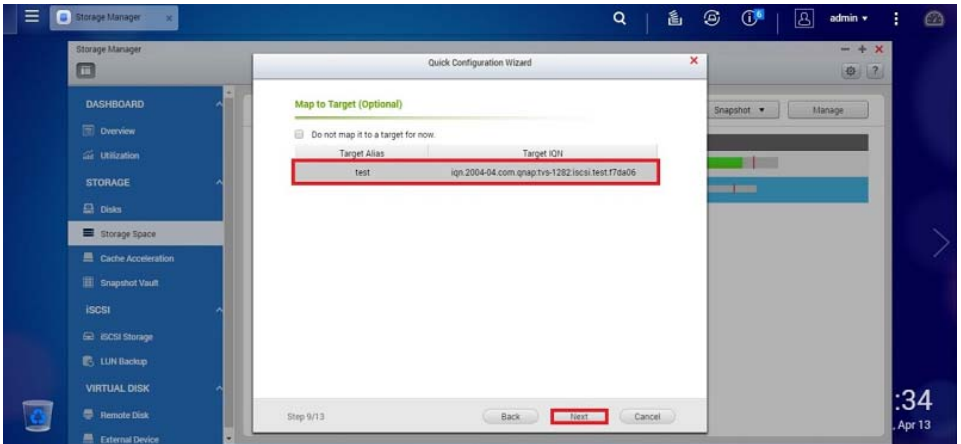
- ▶ Select *Allocate memory from a storage pool as an iSCSI-LUN* and select the storage pool. Click on *Next*.



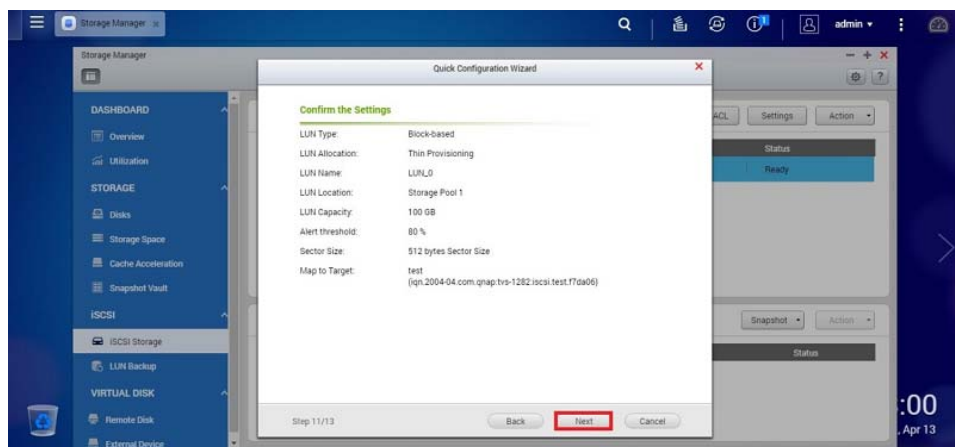
- Enter a LUN name, select *Thin Provisioning* and specify the capacity. Click on *Next*.



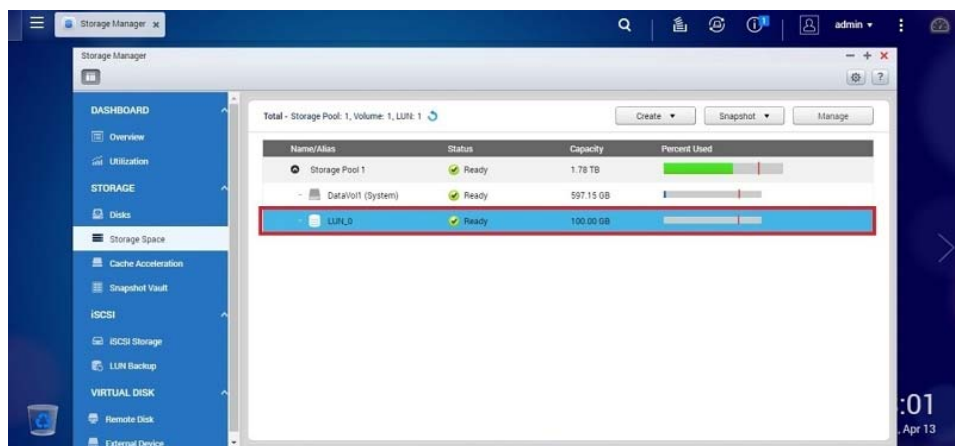
- Select an iSCSI target for mapping (imaging) and then click on *Next*.



- Confirm your settings on the overview page, and to finish click on *Next*.

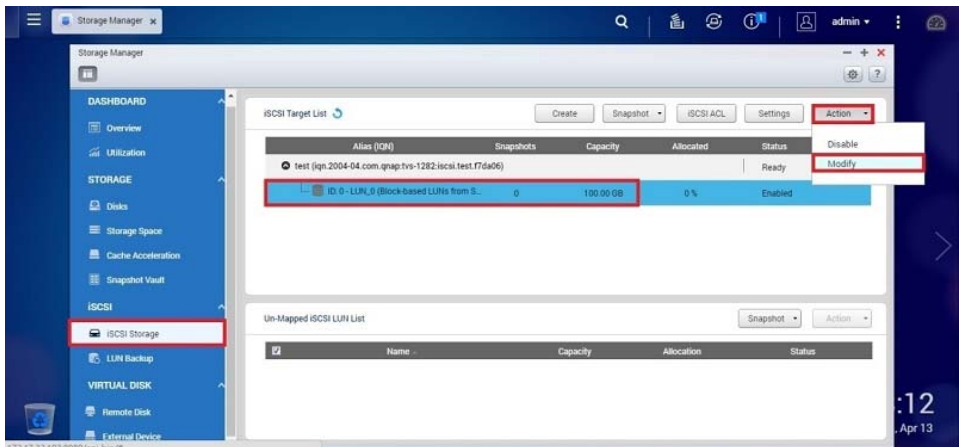


A block-based iSCSI-LUN will now be created.

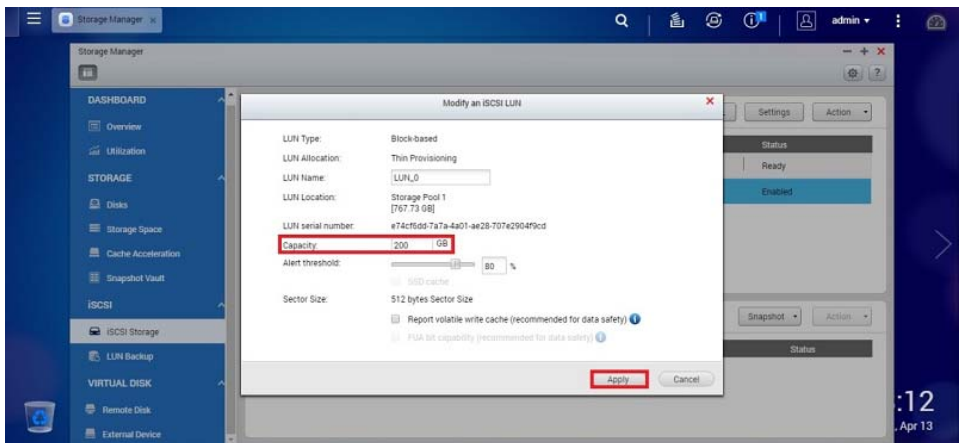


Expanding iSCSI-LUN capacity online

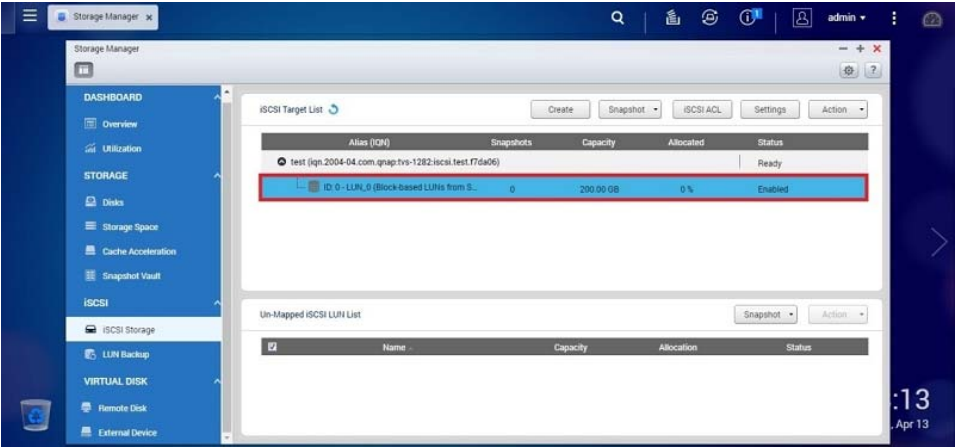
- Select *Memory manager > iSCSI memory*, select an iSCSI-LUN and to open the iSCSI-LUN configuration page click on *Action > Modify*.



- Enter the new capacity and to finish click on *Apply*.



The capacity of the volume will now be expanded.



Copying data using the front USB port

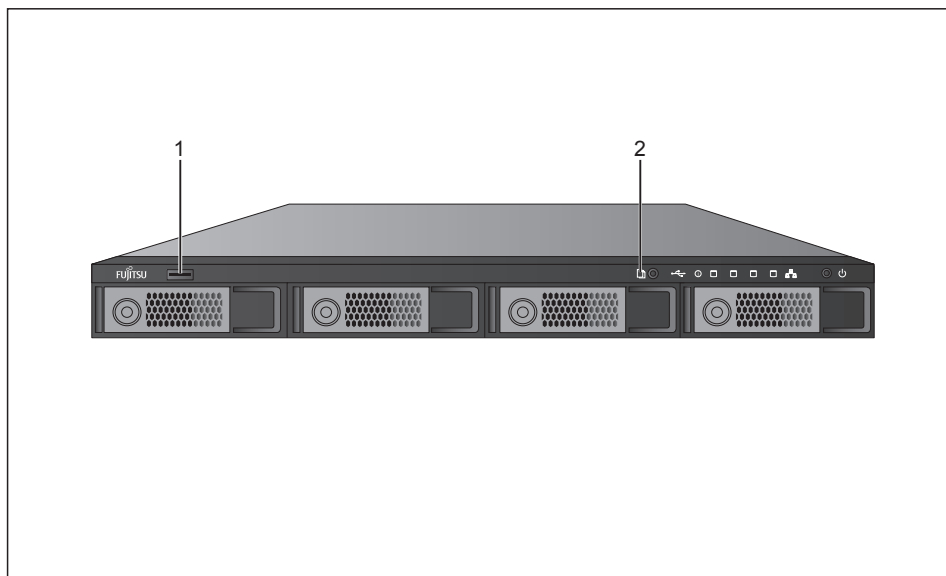


This function is only available on QR806.

Data can be copied directly from an external drive to the NAS or vice versa by pressing the one-touch copy button on the front of the device. To use this function, follow the steps below:

- ▶ Make sure a hard disk has been installed and formatted in the NAS. This will create the USB standard network share.
- ▶ Switch on the NAS.
- ▶ Configure the function of the one-touch copy button on the page *Backup - USB One Touch Copy*.
- ▶ Connect the USB drive (e.g. digital camera or flash drive) to the front USB port on the NAS.
- ▶ Press the one-touch copy button. Data will be copied to the NAS according to the previously defined settings.

QR806



1 = USB 2.0

2 = One-touch copy button



This function performs an incremental backup. After the first time data backup, the NAS only copies the files that have changed since the last backup.



If there are several partitions on the source storage device, a new folder for each partition is created on the target device as a backup folder. The backup folder is named after the backup date and partition number, YYYYMMDD-1 at partition 1, YYYYMMDD-2 at partition 2, etc. If the source storage device only contains one partition, the backup folder is simply named YYYYMMDD.



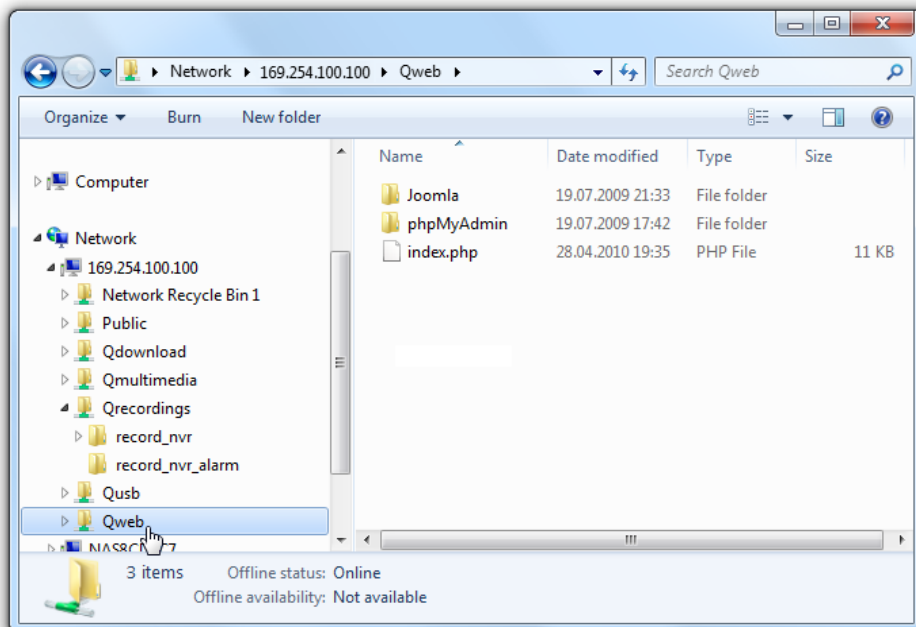
Files are copied from the source to the target. Extra files at the target are deleted; files with the same name are overwritten by the source. The source data remains unchanged.

Web Server

The NAS can be used to upload web pages, with the Web Server function providing a convenient way to manage a website. Interactive websites using Joomla!, PHP, and SQLite are also supported.

- ▶ Activate the Web Server function and enter the port number in *Control Panel – Applications - Web Server*.
- ▶ Web pages can be uploaded to the web folder using the following methods:
 - Using Samba: Open a web browser and enter `\\[NAS IP]\Web` or `\\[NAS Name]\Web`. Log in to the folder and upload the web pages.
 - By FTP: Log in to the FTP service and upload the web pages to the folder.
 - Using Web File Manager: Log in to the Web File Manager and upload the web pages to the folder.

The file `index.html`, `index.htm`, or `index.php` will be the home page of the website.



- ▶ Click the `http://[NAS IP]/` link on the Web Server page to access the web pages that were uploaded. Note that when Web Server is enabled, it is necessary to type `http://[NAS IP:8080]` into the web browser to access the login page for the NAS.

MySQL administration

As a MySQL administration tool, it is recommended that you install the phpMyAdmin plugin from the App Center. When the firmware is updated in future, phpMyAdmin will not be re-installed and none of the data in the database will be overwritten or changed.

The phpMyAdmin program files are created in the Qweb share folders. It is possible to change the folder names and to access the database by entering the URL in the browser. The link on the Web management interface will not change however.



The default user name for MySQL is "root". The password is "admin". Please change the root password immediately after logging in through the phpMyAdmin administration interface.

SQLite administration

The SQLiteManager is a multilingual, web-based tool for the administration of SQLite databases. You can download it at <http://www.sqlitemanager.org/>.

Please follow the steps below or refer to the INSTALL file in the SQLiteManager-*.tar.gz download to install SQLiteManager.

- ▶ Extract the SQLiteManager-*.tar.gz download file.
- ▶ Upload the extracted SQLiteManager-* folder to `\\[NAS IP]\Web\`.
- ▶ Open a web browser and go to [http://\[NAS IP\]/SQLiteManager-*1](http://[NAS IP]/SQLiteManager-*1).

The "*" symbol refers to the version number of SQLiteManager.

FTP server

The NAS supports the FTP service. To use the FTP service, enable this function in *Network Services* and follow the steps below:

- ▶ Open Internet Explorer and enter *ftp://[NAS IP]* or *ftp://[NAS Name]*.



It is essential that secure passwords are used when using the FTP server. A secure password contains numbers, letters and special characters.

Using the synchronisation software Qsync

Getting started

Qsync is a cloud-based file synchronisation service enabled by CELVIN NAS. If you add files to your local *Qsync* folder, these files are available on your CELVIN NAS and all devices connected with it.

Requirements for the use of Qsync

- ▶ Ensure that the network service *Qsync* is activated on your NAS.
- ▶ Create NAS user accounts.
- ▶ Install the *Qsync* utility on your computer.
- ▶ Install *CELVIN NAS Explorer* on your mobile device.
- ▶ Log on on the NAS from your computer or mobile device (*Qsync* Clients).

Create a user account on the NAS

- ▶ To create a user account for *Qsync* users, proceed as follows:

As a NAS administrator:

- ▶ Create a user account in the administration area of the NAS under *Control Panel - Privileges - User - Create user account*.



Every NAS user account is automatically a *Qsync* user account.

As a NAS user:

- ▶ Contact your system administrator so that they can create an account for you.

Install Qsync utility

The *Qsync* utility synchronises all selected data on your computers and mobile devices.

Installation on computers:

- ▶ Install the *Qsync* utility with the product CD.

Or

- ▶ Download the *Qsync* utility from the Fujitsu website at <http://www.fujitsu.com/fts/download>

Installation on iOS mobile devices:



- ▶ Search for "CELVIN NAS Explorer" in the App Store.
- ▶ Install the app.

On Android devices:



- ▶ Search for "CELVIN NAS Explorer" in Google Play.
- ▶ Install the app.

Log on at NAS

- ▶ Enter User ID and password after installing the utility.
- ▶ Click on *Search* within the LAN environment to localise the NAS.

Or

- ▶ Please enter an IP address or a name.

Example of an IP address: 10.8.1.20 or 192.168.1.100

The selected NAS is set as the *Qsync* server.



If the NAS ports have been changed, append the port number to the IP address.
Otherwise enter only one IP address (standard port number: 8080).

Start using Qsync

- ▶ To open the local *Qsync* folder, double click on the *Qsync* shortcut on the desktop.



- ▶ Click on the *Qsync* symbol in the task bar to show the menu.



- ▶ Copy or drag your files into the local *Qsync* folder.

The files are copied to your other devices which you use *Qsync* with. This means that you no longer have to copy files between your computer and external devices. Furthermore, the size of files as email attachments is no longer problematic.

Synchronisation

Qsync automatically synchronises your files. Files on your computers or mobile devices are synchronised with each other, along with the *Qsync* folder files on the NAS.

On the computer:

- ▶ Drag and drop the files directly onto the local *Qsync* folder.

On mobile devices (*CELVIN NAS Explorer*):

- ▶ Copy and drag files into the *Qsync* folder.

On NAS (web-based file explorer):

- ▶ Copy and drag the files via *File Station*.



In the case of the web-based file explorer it is also possible to drag and drop files into the *Qsync* folder.

Qsync can transfer files with a size of maximum 50 GB in a LAN (Local Area Network).

Qsync does not support access via SAMBA, FTP or AFP. Access files via *File Station* or *Qsync*.

The app *CELVIN NAS Explorer* is only able to synchronise the file list and does not download the files onto a mobile device. If you need the files, you must download them.

Offline editing

You can search through and edit your files offline. As soon as your device is online, *Qsync* automatically synchronises the files edited offline.



If a file edited offline has been edited from another device or by another user in the meantime, an additional conflict file is created during synchronisation.

File sharing via download links

By sending file download links, you can share files in the *Qsync* folder with people who haven't installed *Qsync*.

On the computer:

- ▶ Right click on the file you would like to share.
- ▶ Click on *Qsync - share link*.
- ▶ Click on *Send* if you would like to send the link via email or copy the link.
- ▶ Click on *Settings*, to set further options for the link such as expiry date, password or the creation of an SSL link.

On the NAS:

- ▶ Right click on the file you would like to share.
- ▶ Select *Share*.
- ▶ Click on *Send* if you would like to send the link via email or copy the link.
- ▶ Click on *Settings*, to set further options for the link such as expiry date, password or the creation of an SSL link.

On mobile devices:

- ▶ Click on the symbol in the right, upper page.
- ▶ Select *Share Download Link*.
- ▶ Select *Send via Email* if you would like to send the link via email.
- ▶ Select *Send via Text Message* you would like to send the link via text message.
- ▶ Select *Only Create Link* if you only want to create a link.
- ▶ Set further options for the link such as expiry date, password or the creation of an SSL link.

The file recipients can click on the link or add it to a web browser in order to download the file.

Share folder with a group

Folders can be shared with a group of users. If a member of the group shares files in the folder, other members can receive the files.

To share files with a group, proceed as follows:

Requirements:

- Every group member must have a NAS user account.
 - The *Qsync* utility must be installed on all of the group members' devices.
-
- ▶ Right click on the folder you would like to share.
 - ▶ Select *Share this folder as team folder*.
 - ▶ Select users from the list *local users* or *domain users*.

All group members receive an invitation to file sharing. Once they have accepted, group members can access the folder.



The folder only becomes a team folder after the invitations have been accepted.
Team folder users cannot share their access further.

Synchronisation manager

- ▶ Click on the *Qsync* symbol in the task bar in order to display the administration feature.

With the administration feature you can:

- Add files
- Control the synchronisation process
- View information on synchronisation and sharing
- Set preferences

Add files and view the synchronisation result on the NAS

- ▶ To add files, open the *Qsync* folder.
- ▶ To view the files via web browser, open *File station* (web-based file explorer).
- ▶ Search the files in the *Qsync* folder on the NAS.

Control synchronisation process

- ▶ To stop or continue synchronisation, click on the corresponding button.
- ▶ To rescan with *Qsync* and refresh the synchronisation list, click on *Synchronise with NAS now*.

Information on synchronisation and sharing

The following lists provide you with information on synchronisation and sharing:

- *Sharing & file update centre*:
 - *Sharing centre*: List of shared folders and files
 - *File update centre*: List of file and folder update log files
- *Recently modified files*:
 - List of recently modified files

Manage or track Qsync status via web browser

- To manage or track the status via web browser, log on on the NAS via a web browser.
- Click on the *Qsync* symbol in the main menu of the administration area.

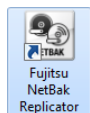
Function	Information	Options
<i>Overview</i>	List of total number of online users	Offers links to install the <i>Qsync</i> utility and <i>File Station</i>
		De/activation of the <i>Qsync</i> utility (only for administrators)
<i>Users</i>	List with online user information	Manage <i>Qsync</i> users (only administrators)
<i>Devices</i>	List of statuses of connected devices	Allow or end device connection
	Computer name of the computer logged onto	
	Name of the device as a Qfile-Android or Qfile iPhone	
	When dragging or copying files: Name of the device as a <i>Qsync-File Station</i>	
<i>Event Logs</i>	List of user details	—
<i>Team folder</i>	List of team folder status Including shared folders and folders shared by other users	—
<i>Share file</i>	List via the status of sharing links	—

NetBak Replicator

NetBak Replicator is a powerful data backup program (Windows only). Selected files and folders from the local PC can be backed up in user-defined share folders on the NAS. Data is transferred via LAN or WLAN.

Installing NetBak Replicator

- ▶ Select *Install NetBak Replicator* from the menu on the NAS CD.
- ▶ Follow the on screen instructions to install the application.
- ▶ A shortcut icon will appear on the desktop upon successful completion of the installation process. Double click on this icon to launch NetBak Replicator.



Using NetBak Replicator

- ▶ Before using NetBak Replicator, please login to the NAS administration page and go to *Access Right Management - Share Folders* to create a share folder for backup purposes. Make sure the share folder is available for access by all users, or that you log in to the share folder with an authorized account or as administrator.



- ▶ Launch NetBak Replicator.
- ▶ For details on how to use the software, press **F1**.

Surveillance station

The *Surveillance Station Pro* offers real time video surveillance and recording of IP cameras on the local network or internet.

- ▶ The app can be downloaded via the "App Center" of the administration area. For this purpose, make sure that the NAS is connected to the internet.
- ▶ Activate the function under *Control Panel - Apps - Station Manager*.

You can find a list of compatible IP cameras at <http://www.fujitsu.com/fts/support/manuals>.

Prepare IP camera

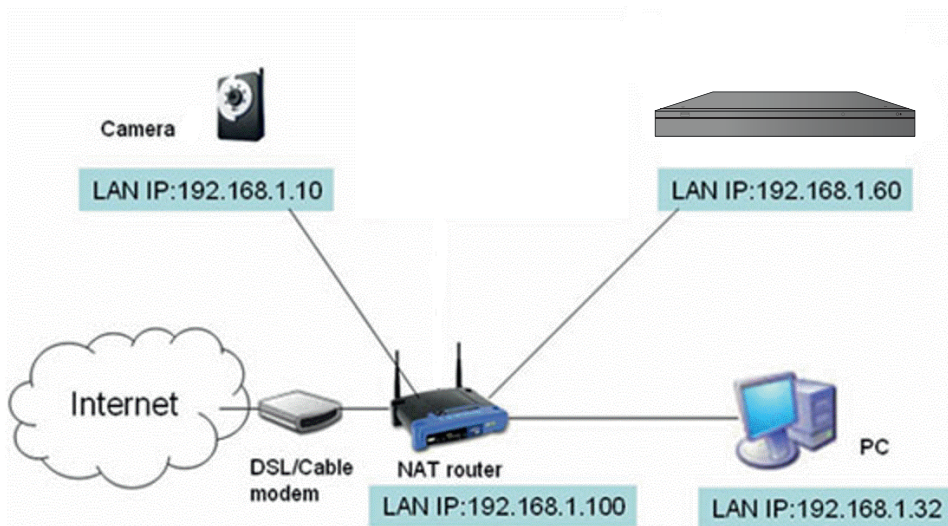
- ▶ Create a plan of your home or office network before starting the surveillance system set-up.
- ▶ Check the following information:
 - The IP address of the NAS
 - The IP address of the camera
 - The IP address of the computer
 - The IP address of the router

Requirements:

- The NAS, the camera, your computer and the router are correctly connected to each other.
- Their IPs are on the same subnet.
- The IP camera is switched on and correctly set up.



Follow the descriptions in your IP camera manual for correct set-up.



In this example, the following installation is used:

- NAS IP: 192.168.1.60
- Camera IP: 192.168.1.10*
- Computer IP: 192.168.1.32
- Router IP: 192.168.1.100

- ▶ You can find out the IP address of your camera with Fujitsu Finder. Fujitsu Finder can be installed from the product CD which is enclosed with your NAS. A description of this is contained in the instructions.
- ▶ To find out the IP address of your camera open the menu *Tools - Search for network camera*.



Some IP cameras provide a special program for IP configuration. Further information can be found in the operating instructions of the camera.

Prepare USB webcam (optional)

If you want to use a USB webcam instead of an IP camera, you will need a camera with UVC (UVC Video Class) drivers.

Compatible webcams are listed at the following link:

- Linux UVC Webcam List: <http://www.ideasonboard.org/uvc>



The source mentioned above is for reference purposes only. Fujitsu cannot provide a guarantee for complete compatibility.

- ▶ Connect the USB webcam to the NAS USB port.
If the webcam is supported, it will be listed in an entry of the *system log undersystem settings-system logs*.
- ▶ Install the app *QUSBCam* so that the USB webcam can be used with the NAS.
- ▶ For this, open the *Recommended* category in the App Center.
- ▶ Search for *QUSBCam*
- ▶ Click *Download*.

QUSBCam is installed.

- ▶ To configure settings click on *Open*.
- ▶ Log in with the user *admin* and the corresponding password (admin).

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A maximum of two USB webcams can be used at the same time per NAS

Set up Surveillance Station

- ▶ To configure the IP cameras log on to Surveillance Station Pro via a web browser.
- ▶ Go to *Camera Settings - Camera Configuration*.
- ▶ Enter the IP camera information, e.g. name, model and IP address.
- ▶ If you are using a USB webcam, enter the following values:

Field	Values
Camera brand	<i>Generic model</i>
Camera model	<i>Generic JPEG</i>
HTTP URL	<i>/video0.cgi</i>
IP address	<i>localhost</i>
Port	<i>8168</i>
User name	<i>root (random entry)</i>
Password	<i>----- (random entry)</i>

- ▶ To check whether the IP address or USB webcam can be successfully connected, click on *Test*.
- ▶ If your IP camera supports audio recordings, you can switch on the option at *recorder settings*.
- ▶ Click “*Apply*” to save the changes.
- ▶ Configure the settings of Camera 2 following the above steps.
- ▶ After you have added the network cameras to the NAS, click on *Monitor*.
- ▶ If you are accessing this page for the first time with a web browser, you must install additional plug-ins to display the image.

You can now use the Surveillance Station monitoring and recording functions.

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Further information e.g. on motion detection recording, schedule recording and video playback can be found in the software's online help.

Use further cameras

A maximum of two cameras (IP cameras and/or webcams) can be set up per NAS in its delivered condition.

If you want to use further cameras you can add further camera channels. QNAP® Systems, Inc provides this service.

The licences for every further channel can be obtained from the QNAP® License Store at <http://www.license.qnap.com>



Fujitsu does not have any influence on the content of the QNAP® License Store. For this reason, the processes described in the following are only exemplary and may have since changed. By purchasing licenses via the QNAP® License Store you enter into an exclusive contractual relationship with QNAP® Systems, Inc.

Fujitsu does not assume any liability for the availability or quality of the licenses.

- ▶ Visit the QNAP® License Store.
- ▶ To create a new account or log in with an existing account, click on Account.



Two passwords are set at registration. The first one is for unpacking the license, the second is for logging into your account.

- ▶ After your account has been created, you will receive an email to confirm your account with.
- ▶ To activate your account, click on the link in the email.

After activating and logging onto the account:

- ▶ Click on Turbo NAS under *License Purchase* or *Categories*
- ▶ Select the number of licenses.



The licenses for NAS models TS-x31 are compatible with the CELVIN® NAS Surveillance Station.

- ▶ Click on *Checkout* and follow the further instructions on the website.
- ▶ If you click on *Continue* you are directed to PayPal®.

You can either pay via an existing PayPal® account or via direct debit or credit card.

- ▶ After selecting the payment type you are redirected back to the QNAP License Store.
- ▶ Click *Pay to confirm the payment*.

You will receive an Email with a compressed archive.

- ▶ To access the content of this archive you will need the password previously set to decompress it.
- ▶ Copy the Product Authorisation Key (PAK) from the text file.
- ▶ In the app, navigate to the field *PAK - License Manager - Install License*.
- ▶ Add the PAK to the field
- ▶ Make sure that the NAS is connected to the internet.



As soon as the camera licence is activated, you can set up the other cameras as described under "Set up Surveillance Station".



As soon as you have activated the PAK with your NAS, the PAK is connected with the hardware identification (UDI) of your NAS. You can then no longer use the same PAK for a different NAS.



If you have any problems related to the camera licenses or PAK, please contact QNAP® License Store Support: <https://license.qnap.com/ContactUs.html>

Firmware update



When updating the firmware, the mains power and network connection must not be disturbed. Do not switch the NAS off during a firmware update under any circumstances.



If the system is running properly, then there is no 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 the firmware:

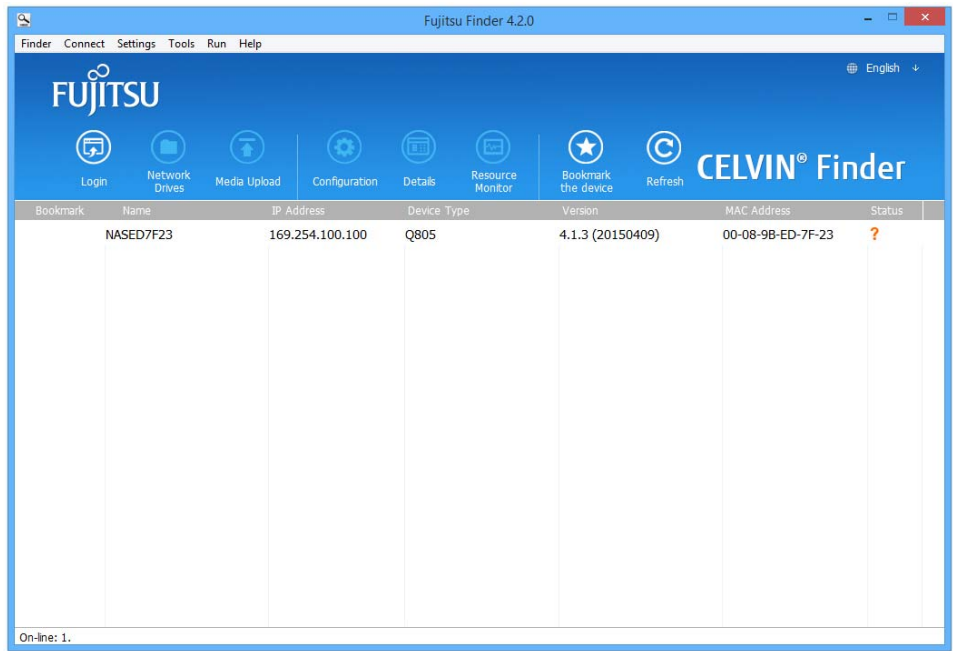
- ▶ Please visit <http://www.fujitsu.com/fts/support> and read the release notes for the new firmware version to check if it is necessary to update the firmware.
- ▶ Before updating the system firmware, back up all data stored on the hard disk to avoid any data being lost during the system update.
- ▶ Open the Administrator screen and select *Control Panel – Update Firmware – Update Firmware*.
- ▶ Click *Browse...* to select the new firmware image for the system update.
- ▶ Select the corresponding IMG file and then click on *Update system* to update the firmware.




The system update may take anywhere from a number of seconds to several minutes to complete, depending on the network connection status. Please be patient. The system will display a message when the system update is completed.

Updating the system firmware using Fujitsu Finder

The system firmware can be updated using *Fujitsu Finder*. Choose the NAS model and select *Update Firmware* from the Tools menu.



- ▶ Log on as an administrator.
- ▶ Browse to select the correct firmware for the NAS.
- ▶ Click *Start* to update the system.

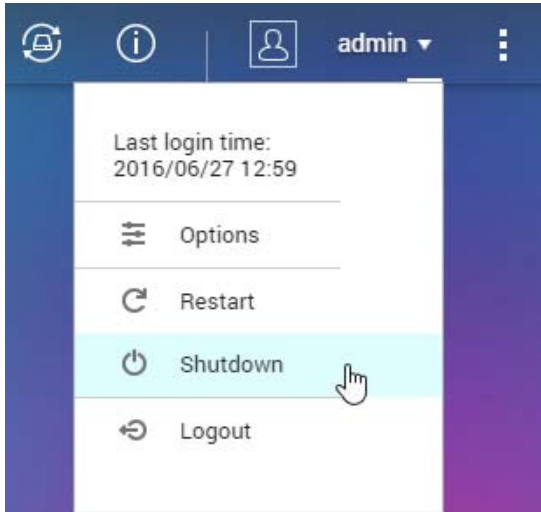


Fujitsu Finder can be used to update all servers of the same model on the same local network. Please note that this process requires administrator access to all the servers to be updated.

NAS maintenance

Shutting down/rebooting the server

Follow the steps below to shut down or reboot the server:



- ▶ Log into the NAS.
- ▶ Click on the user name you used to log in (e.g. "admin") in the upper right section of the screen.
- ▶ Click *Restart* to reboot the server.
- ▶ Select *Shutdown* to switch off the device.

You can force the shutdown if the server will not shut down in the normal way.



Forcing a shutdown may damage the file system and lead to data loss.

- ▶ To force a shutdown of the server, press and hold down the ON/OFF button for at least 10 seconds. The server will beep once and then shut down immediately.

The *Fujitsu Finder* can be used to restart or shut down the server (admin access required).

Resetting the administrator password and network settings

To reset the administrator password and NAS network settings, proceed as follows:

- ▶ Press and hold the Reset button on the NAS for 3 seconds. A beep will be heard. This will reset the following settings to their defaults:
 - System administration password: admin
 - TCP/IP configuration: Obtain IP address settings automatically via DHCP
 - TCP/IP configuration: Disable Jumbo Frame
 - TCP/IP configuration: If port trunking is enabled (dual LAN models only), the port trunking mode will be reset to "Active Backup (Failover)".
 - System Port: 8080 (system service port)
 - Security Level: Low (Allow all connections)
 - LCD panel password: (blank)
 - VLAN will be disabled

Advanced system reset (10 sec)

- ▶ Press and hold the Reset button for 10 seconds.

Two beeps sound (after the third and tenth seconds). The NAS will reset all the system settings to default as it does by web-based system reset in *Control Panel - System Settings - Backup / Restore - Restore to Factory Default* except all the data are reserved. The settings such as the users, user groups, and the network share folders previously created will be cleared. To retrieve the old data after the advanced system reset, create the same network share folders on the NAS and the data will be accessible again.

- ▶ Log in to the NAS with the default user name and password:
 - Default user name: **admin**
 - Password: **admin**



The *Enable configuration reset switch* option must be enabled in *Control Panel - System Settings - Hardware* in order to allow the system to be reset to defaults using the reset button.

Failure or malfunction of a hard disk

Please proceed as follows if a hard disk malfunctions or fails:

- ▶ Make a note of all unexpected behaviour and/or error messages to assist the technician.
- ▶ Stop using the NAS for any purpose and switch it off.
- ▶ Contact technical support.



The NAS must be repaired by a trained technician. Never try to repair the NAS yourself.

Power failure or abnormal shutdown

Following a power failure or improper shutdown of the NAS, when the system is restarted it should normally restore to the same state it was in before the shutdown or power failure. If the system does not function properly after the restart, please carry out the following steps:

- ▶ If the system configuration is lost due to the shut down or power failure, then reconfigure the system manually.
- ▶ In the event of abnormal operation of the system, or if error messages are displayed, contact customer services for technical support.

Abnormal system software behaviour

If the system software does not operate correctly, the NAS will automatically restart to restore normal operation. If the system restarts continuously, it may fail to resume normal operation. Please contact technical support immediately in such cases.

System temperature protection

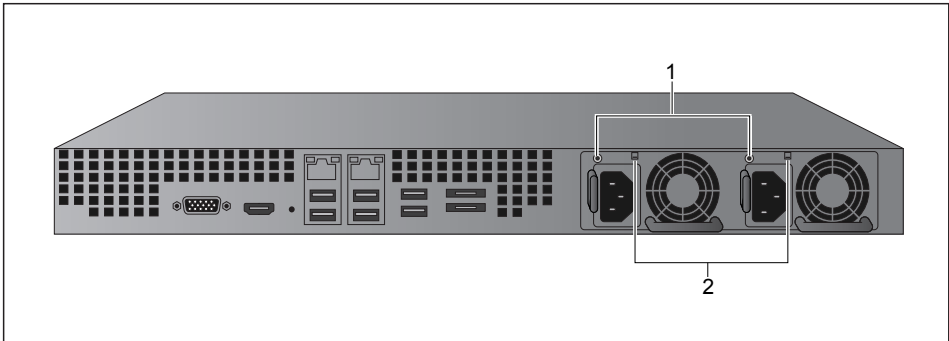
When the system temperature exceeds 70 °C (158 °F), the system will shut down automatically to protect the hardware.

Changing the power supply unit

The CELVIN® NAS server QR806 has two power supply units which are independent of each other ('redundant'). If one of the power supply units is faulty, the NAS can continue to be operated without interruptions with the operational power supply unit.

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The images below show the CELVIN® NAS QR806.



- 3 = Power-on indicator (LED)
- 4 = Button for muting

Operating indicators

LED	POWER SUPPLY STATUS
OFF	No alternating current at the power supply units, alternating current present / only 5V stand-by is present (power supply off)
YELLOW	Failure of the power supply for the main output
GREEN	Output ON and OK

Button for muting the operating alarm

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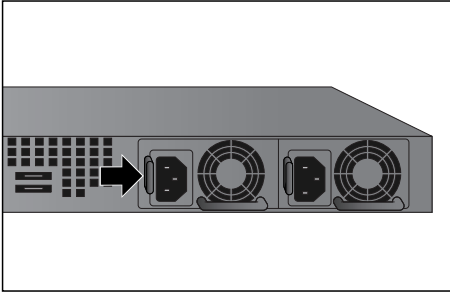
If a fault in the power supply unit is recognised, the system will emit audible signals to warn the administrator. You can use this button (2) to deactivate the alarm.



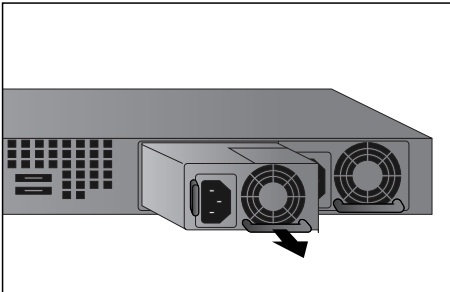
The following instructions must only be carried out by authorised and trained personnel.

To replace a defective power supply unit, proceed as follows:

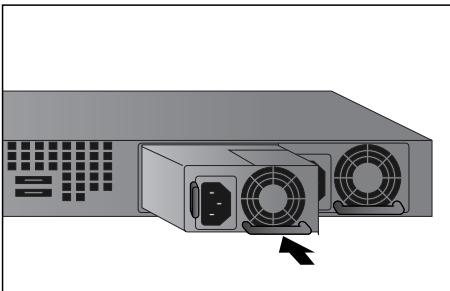
- Switch the NAS off.



- Press the green lever in the direction of the arrow and hold it in that position.



- Remove the defective power supply unit in the direction of the arrow.



- Guide the new power supply unit into the device until you hear it slot into place.

- Switch on the NAS.



The NAS can support the replacement of the redundant power supply unit while the system is running. However, to reduce the danger of an electric shock, we strongly recommend that you switch off the NAS before replacing the power supply unit.

Activating the alarm of the redundant power supply

You can activate an alarm of the redundant power supply on the web-based interface.



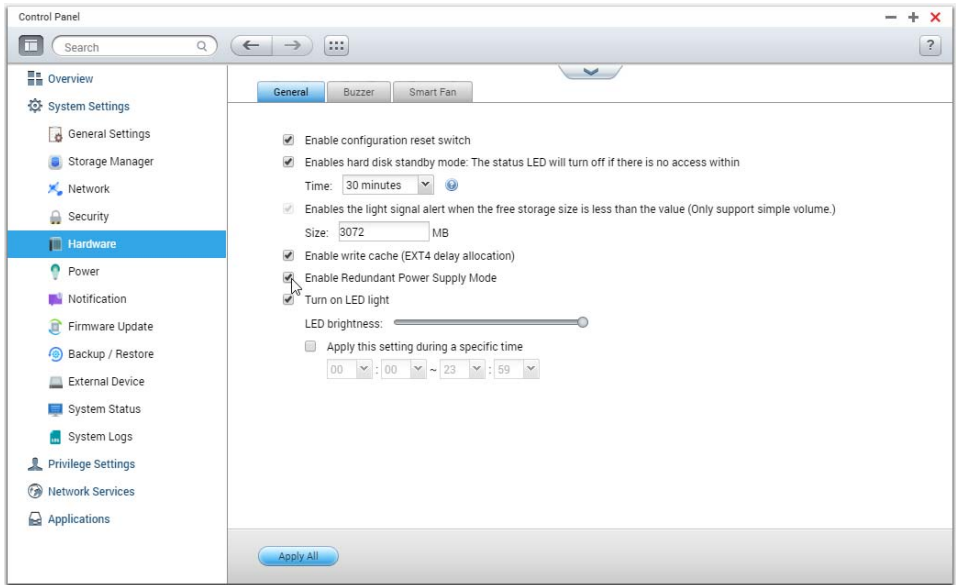
This function is deactivated as the default setting.

If only one power supply unit is installed in the NAS, we recommend that you do not activate this option

If two power supply units are installed in the NAS and both are connected with the mains connections, both power supply units will provide the NAS with power.

► Activate the redundant power supply mode under *System administration - Hardware*.

The NAS will emit an audible signal.



If one of the power supply units is disconnected or fails, the NAS will save the error messages under *System Logs*.



To avoid the danger of an electric shock, do not touch the inside of the electrical connections at the rear (risk of electrocution!).

Troubleshooting RAID operation errors

If the RAID configuration for the NAS is incorrect or error messages are displayed, please try the following solutions:



It is essential to back up all important data on the NAS first to mitigate any potential data loss.

Check the following to determine if the RAID rebuild has failed:

- LED: The Status LED on the NAS is flashing red.
- The *Control Panel - System Settings - Storage Manager* page is displaying the hard disk configuration status as *In degraded mode*.

► Establish which hard disk(s) caused the RAID rebuild failure:

- Go to the *Control Panel - System Settings - System Logs* page and search for the following error messages in order to establish which hard disk(s) caused the error.

Error occurred while accessing Drive **X**

Drive **X** has been removed



X refers to the number of the hard disk port.

Fault elimination

The drive rebuild will start when a new hard disk (e.g. HDD 1) is connected. If the drive configuration fails again due to a read/write error from the hard disk during the rebuild process, then please check which hard disk caused the error and then follow the steps below to rectify the problem.

Scenario 1: The error was caused by the last drive to be connected.

If the last drive to be connected (e.g. HDD 1) caused the rebuild error, then please disconnect HDD 1 and connect another new drive to start RAID rebuilding.

Scenario 2: The error was caused by an existing drive (e.g. HDD 2) in the RAID configuration.

If the RAID configuration is RAID 1, then carry out one of the following steps:

- Back up the data on the drive to another storage device. Once this is done, repeat the installation and setup of the NAS.
- Format the last drive to be connected (e.g. HDD 1) as a single drive. Next, back up the data on the NAS to this drive (HDD 1) using Web File Manager. Remove the faulty drive (e.g. HDD 2). Install a new drive in the NAS to replace the faulty drive. Finally, run the RAID 1 migration.



When connecting or removing a hard disk, please adhere strictly to the following rules to avoid causing a system operation fault or loss of data.

Only one drive at one time may be connected to or disconnected from the NAS.

After connecting or disconnecting a hard disk, wait for about ten seconds or longer until two beeps are heard. The next hard disk can then be connected/disconnected.

Hot-swap Hard Drives



Fujitsu Technology Solutions 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.

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



To prevent the risk of electric shock, switch the NAS off before replacing the hard disks.

The NAS supports hot-swapping the hard drives when 1 member drive crashes in RAID 1, 1-2 member drives crash in RAID 5 or RAID 6.

To replace a hard disk while the NAS is in operation, proceed as follows:



Prepare a new hard drive to replace the failed one.

The capacity of the new hard drive should be the same as or larger than the failed hard drive.

- ▶ Login the NAS.
- ▶ Check the disk volume configuration in *Storage Manager*.
- ▶ The drive is in *degraded mode*.
- ▶ Unplug the failed drive from the NAS.
- ▶ Wait until the server emits two beeps.
- ▶ Remove the failed drive from the drive tray.
- ▶ Install the new hard drive on the drive tray.
- ▶ Insert the slide-in module into the NAS.
- ▶ The server should beep 1.5 seconds twice.
- ▶ Check the volume status on the web administration page.

The drive now automatically runs the restore.

RAID Recovery

The CELVIN NAS supports exclusive RAID recovery technology to recover a failed RAID disk volume from unintentional disconnection or removal of the hard drives from the system. Using the RAID recovery, users can recover an inactive RAID 1, RAID 5, or RAID 6 volume to *degraded mode*, or an inactive RAID 0 and JBOD configuration to normal.

Disk volume	Supports RAID recovery	Maximum number of disk removal allowed
Single	No	-
JBOD	Yes	1 or more
RAID 0	Yes	1 or more
RAID 1	Yes	1 or 2
RAID 5	Yes	2 or more
RAID 6	Yes	3 or more
RAID 10	No	-

If the volume status is not active, users can install the same hard drives back to the same slots of the NAS.

- ▶ Select *Storage Manager - RAID Management - Recover*.
- ▶ Wait for about 60 seconds for the process to complete.

After the restore is completed, you can access your data again.



After recovering a RAID 1, RAID 5, or RAID 6 disk volume from *not active* to *degraded mode* by the RAID recovery, users can read or write the volume normally.

The volume status will be recovered to normal after synchronization.

If the disconnected drive member is damaged, the RAID recovery function will not work.

	CELVIN RAID 5	CELVIN RAID 6
Degraded mode	N-1	N-1 & N-2
Read only protection (for immediate data backup & hard drive replacement)	N-1, bad blocks found in the surviving drives of the array.	N-2, bad blocks found in the surviving drives of the array.
RAID recovery (RAID status: Not active)	If re-inserting all the original hard disk drives to the NAS and they can be spun up, identified, accessed, and the hard drive superblock is not damaged.	If re-inserting all the original hard disk drives to the NAS and they can be spun up, identified, accessed, and the hard drive superblock is not damaged).
RAID crash	N-2 failed hard drive and any of the remaining hard drives cannot be spun up or identified or accessed.	N-3 and any of the remaining hard drives cannot be spun up or identified or accessed.

N = Number of hard disk drives in the array

Technical data

	QR806	QR1006
CPU	64-Bit Quad-Core AMD® G-Series 2.0GHz	
RAM	4GB DDR3L	
Flash memory	512 MB (USB DOM Disk On Module)	
Hard disk	Up to 4 x SATA 6G hard disks (these can be replaced when in operation)	Up to 8 x SATA 6G hard disks (these can be replaced when in operation)
Network	4 x Gigabit RJ-45 network connection 1 x SFP+ transceiver 10GbE Gigabit Ethernet	
LEDs	Status, LAN, USB, HDD (hard disk drives) 1-4	Status, LAN, HDD (hard disk drives) 1-8
Buttons	ON button, configuration reset switch, copy button	ON button, configuration reset switch
USB	3 x USB2.0 connections (front: 1, rear: 2)	2 x USB2.0 connections (rear)
	2 x USB3.0 connections (rear)	2 x USB3.0 connections (rear)
	Supports USB printer, USB/eSATA storage and control of an uninterrupted power supply via USB.	
Dimensions	44 x 439 x 499 mm (H x W x D)	89 x 482 x 534 mm (H x W x D)
Weight	7.63 kg (net), 11.60 kg (gross)	11.02 kg (net), 19.26 kg (gross)
Form factor	1U	2U
Operating temperature	0-40°C	
Humidity	20-85%	
Power supply	Input: 110-240 V AC~, 50-60 Hz, 5 A Output: Redundant 250 W	
Fans	2 x 40 mm, 12V DC	2 x 70 mm, 12V DC
Accessories	Accessories box 2 x mains cables 2 x Ethernet cables Quick Start Guide Safety instructions 2 x hard disk keys 12 x screws for 2.5" hard disks 16 x screws for 3.5" hard disks 2 x handles 2 x assembly kits	Accessories box 2 x mains cables 2 x Ethernet cables Quick Start Guide Safety instructions 2 x hard disk keys 24 x screws for 2.5" hard disks 32 x screws for 3.5" hard disks

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Version 3, 29 June 2007

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Some devices are designed to deny users access to install or run modified versions of the software inside them, although the manufacturer can do so. This is fundamentally incompatible with the aim of protecting users' freedom to change the software. The systematic pattern of such abuse occurs in the area of products for individuals to use, which is precisely where it is most unacceptable.

Therefore, we have designed this version of the GPL to prohibit the practice for those products. If such problems arise substantially in other domains, we stand ready to extend this provision to those domains in future versions of the GPL, as needed to protect the freedom of users.

Finally, every program is threatened constantly by software patents. States should not allow patents to restrict development and use of software on general-purpose computers, but in those that do, we wish to avoid the special danger that patents applied to a free program could make it effectively proprietary. To prevent this, the GPL assures that patents cannot be used to render the program non-free.

The precise terms and conditions for copying, distribution and modification follow.

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1. Source Code.

The "source code" for a work means the preferred form of the work for making modifications to it.

"Object code" means any non-source form of a work.

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