

QNAP



Use your Turbo NAS as a PC

2-Bay / 4-Bay Turbo NAS

TS-251+ / 451+

High-performance Quad-Core NAS with scalability, graphics, and video transcoding

- Centralize your file storage, sharing and backup with 200MB/s+ performance
- Snapshot function for multiple recovery points and incremental replication for disaster recovery
- Operate multiple virtual machines as well as download containerized apps
- Play videos with multi-channel audio pass-through via HDMI or transcode videos on-the-fly or offline



◀ Snapshot data back-up

Qsirch Full-text, real-time search engine ▶



Quad-core Intel® Celeron® 2.0GHz Processor (burst up to 2.42GHz)

◀ Remote Control Included!



TS-251+



TS-451+



HDMI
HIGH-DEFINITION MULTIMEDIA INTERFACE



File storage, sharing, and increased multimedia usage are driving demand for affordable, flexible NAS solutions that can meet ever-growing capacity and management needs. The TS-251+/451+ quad-core 2.0GHz (upgradable to 2.42GHz) is a perfect match for SOHO, home theater enthusiasts, and audiophiles looking to maximize their audiovisual experience. The TS-251+/451+ are designed to provide superior performance and expansion capabilities enabling you to grow cost effectively while reducing operational overhead. The QNAP operating system, QTS 4.2, is equipped with a variety of intelligent and easy to use applications. QTS is simply designed to meet all your needs for storage, synchronization, management, backup, multimedia, remote access, and surveillance. QTS 4.2 is the ideal platform from which to build your private cloud. Use the TS-251+/451+ with a screen, keyboard, and mouse connections to transform your virtual machines into physical computers. The TS-251+/451+ is a cost-efficient, flexible, and reliable high performance NAS with a huge range of cross platform support.

Connect the TS-251+/451+ to an HDTV or A/V receiver via HDMI and use the HybridDesk Station (HD Station) with the free QNAP remote control to enjoy rich multimedia content for the best audiovisual experience. Use the bundled QNAP remote control for watching movies, listening to music, or enjoying a slideshow of treasured photos. Just grab the remote control and enjoy the best in QNAP NAS convenience. Every family member can enjoy entertainment on demand, and from different locations. Centrally manage and stream photos, music, and videos from the TS-251+/451+ to different rooms from a single device using Bluetooth®, USB devices, HDMI, DLNA®, Apple TV™ and Chromecast™. The TS-251+/451+ supports Roku® and Amazon Fire® TV™, and Google TV™ in addition to fully supporting Plex media server for the ultimate in flexibility. Search for, install, remove, and update apps through the App Center to extend the functionality of your QNAP NAS.

The QTS App Center provides a wide range of install-on-demand apps for you to enjoy. The available applications include media servers for family entertainment, cloud backup and synchronization tools, helpful communication platforms, and many many more. The TS-251+/451+ are completely flexible, perfect companions for SOHO users as a file manager, backup manager, download manager, permissions manager, and multimedia center.

Table of Contents

- 01 Overview
- 02 Intel — Exceptional quality and outstanding ROI
- 03 QTS 4.2 — Experience a simple and perfect design
- 04 Qsirch — A smarter, faster way to search
- 06 Virtualization Station — Install several VMs on your NAS
- 07 QNAP QvPC — Use your TS-251+/451+ as a PC
- 08 Container Station — The new era of virtualization and cloud computing
- 09 Comprehensive Backup/Synchronization — Hybrid cloud for a consolidated backup solution
- 10 File Station — Integrated with cloud services
- 11 Data Security — Secure your data with QNAP protection mechanisms
- 12 Local Snapshot and Remote Snapshot Replica — Block-based snapshot technology
- 16 Qsync Central Station — Centrally manage and sync your files and devices via your PC
- 17 Surveillance Station — Build a professional surveillance system
- 18 HybridDesk Station — Enjoy videos on TV via HDMI with bundled remote control
- 20 QNAP Mobile App — Conveniently access your QNAP NAS with mobile devices
- 21 App Center — Customize your QNAP NAS for endless possibilities
- 22 Computer Utilities — Boost your productivity and convenience
- 24 Hardware Specifications & Accessories
- 25 Software Specifications





Exceptional quality and outstanding ROI

High performance Quad-core processor for demanding workloads



QTS 4.2

Experience a simple and perfect design

Quad-core 64-bit Intel® Celeron® CPU for exceptional performance

The TS-251+/451+ is powered by a 64-bit Intel® Celeron® quad-core 2.0GHz processor and has 2GB/8GB energy-efficient DDR3L RAM (upgradable to 8GB) and dual Gigabit LAN ports, delivering up to 225 MB/s read & write speeds with port trunking mode. The TS-251+/451+ can also automatically increase the processor's clock rate from 2.0GHz to 2.42GHz when needed for CPU-intensive tasks.

AES 256-bit volume & folder encryption

The TS-251+/451+ supports AES 256-bit volume & folder encryption with transfer speeds of up to 204 MB/s (TS-451+), boosting system performance & security while ensuring the safety of sensitive personal data stored in the TS-251+/451+.

Multitasking, multi-window, multi-desktop, and multi-display modes

The new QTS operating system dramatically improves your efficiency with multitasking, multi-window, multi-desktop, and multi-display modes enabling you to begin new tasks without waiting for the previous one to end. Minimize running apps to the task bar and switch between them in a similar fashion to a traditional PC environment. The multi-desktop design of QTS enables drag-and-drop shortcut icons from the Control Panel or Main Menu to the desired desktop to suit your preferences. Drag and drop a desktop icon on top of another to group them together to create a more efficient and personalized desktop.

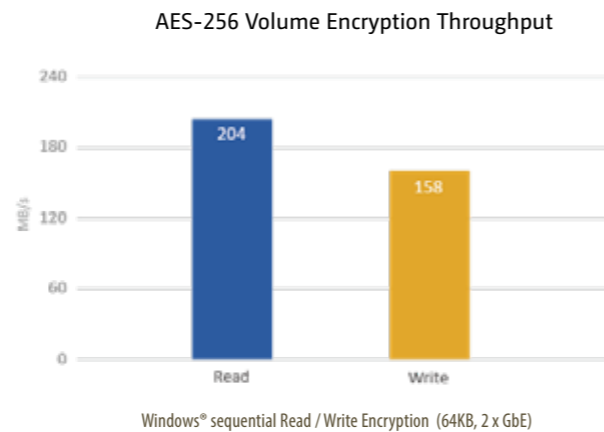
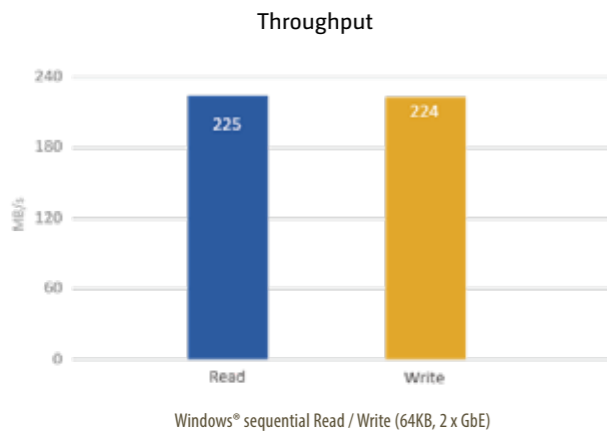


Smart dashboard

Click on the upper-right corner of the desktop to get an immediate system status summary display. Open the smart dashboard to obtain a quick view of important information including system health, disk information and health, resource monitoring, storage space, scheduled tasks, device information, and firmware information. Drag and drop dashboard functions to the desktop to keep them readily available for ongoing monitoring. In the event of a critical failure (hard disk corruption, etc.) the smart dashboard will flash and prompt a system administrator and suggest immediate action to recover or prevent the loss of data.

Recycle Bin

The Recycle Bin enables recovery of files that have been accidentally deleted. Right-click on the Recycle Bin on the desktop to empty it or open it to see the full range of functions available.



Test Environment: NAS: OS: QTS 4.2.0
RAID type: RAID 5; 4 x Seagate 1TB HDD (ST1000NM0033);
direct connection between a NAS and PC
Client PCs:
Intel® Core™ i7-4790 3.60GHz CPU; DDR3-1600 16GB; Seagate 500GB ST500DM002; Intel Gigabit CT (MTU 1500); Windows® 7 Professional 64bit SP1
IOMeter configuration: Continuously read from/write to a single 8GB file for 4 minutes. Block size: 64KB for SMB2.0 (Throughput)
The results are from QNAP Labs. Figures may vary by environment.

Enjoy videos on TV with bundled remote control

The TS-251+/451+ is very simple and intuitive to use. You can use the dedicated QNAP remote control to directly control and play multimedia on your TS-251+/451+.





Qsirch
A smarter, faster way to search

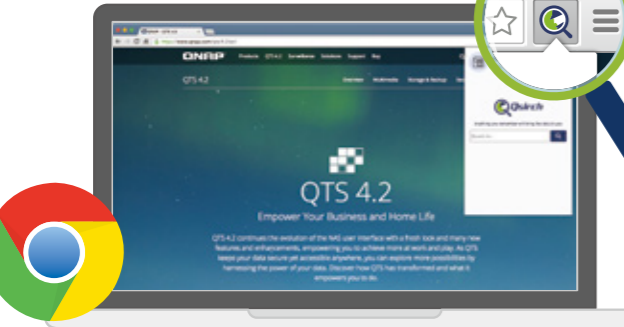
Search for everything on your QNAP NAS

Qsirch 2.0 is equipped with QNAP exclusive technology TF-IDF (Term frequency - Inverse document frequency), Real-Time search engine and real-time suggestions so that you can sort through files faster and more precisely. In addition, Qsirch supports full-text search with more than six thousand different file types and dynamic results display to enhance productivity greatly.



Content Preview

Thumbnail previews for photo, videos, and PDFs makes searching and browsing through voluminous data a lot faster, while the Gmail preview function enables you to preview emails and your Gmail backup files easily and quickly.



Qsirch browser add-on for Google Chrome

Qsirch browser add-on for Google Chrome

Install the Qsirch add-on to enable Qsirch from your web browser. Simply click on the Qsirch icon on the right of the address bar to search Google and your QNAP NAS simultaneously. Your Qsirch and Google search results will appear side-by-side for space-saving, time-saving convenient comparison.

Advanced indexing technology

Indexing runs as a background task, enabling you to oversee the indexing progress and current status. This feature can also be used to exclude files from indexing.

Indexing	
Public/test/11-87921.eml	262 of 566 - 46%
241 file were indexed	
Share folder	File(s)
✓ Download	14
✓ Multimedia	6
🔄 Public	529
Recordings	3
Web	4

Share directly from your search results

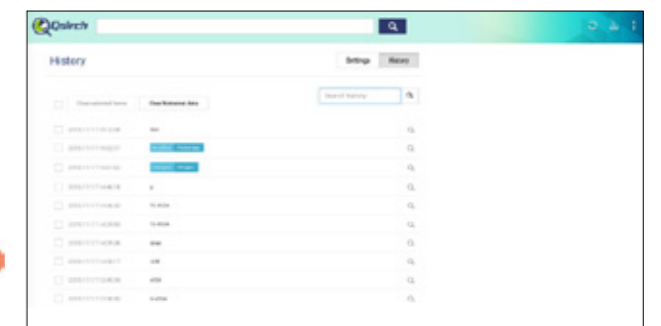
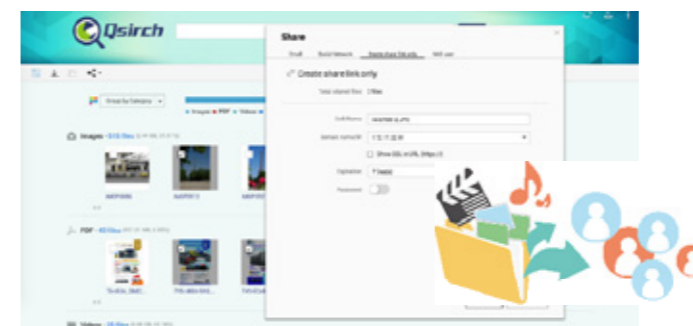
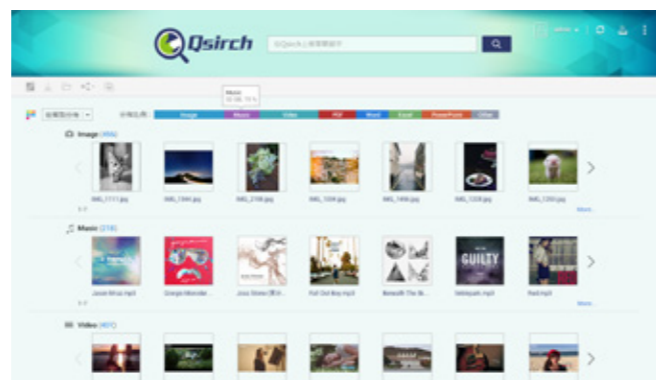
Use the direct sharing function in Qsirch 2.1 to share from your search results instantly.

Saved searches for even faster results

Records of every search are kept, and users can even search through these records and store frequently-used search criteria.

Presentation by file types

Search results can be filtered and presented by types including photos, music, videos, and documents. This visualization enables you to locate your desired results faster. In addition to sorting by file type, results can be organized based on criteria such as modified dates, file sizes, etc.



💡 To get the best performance of Qsirch it is highly recommended to upgrade the RAM to 4GB+

💡 QTS 4.2.0 or later versions is required for Qsirch 2.1 and the sharing function of Qsirch is only available on QTS 4.2.1.



Virtualization Station

Install several VMs on your NAS

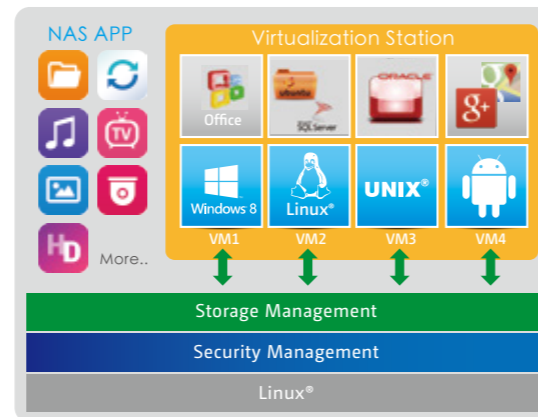


QNAP QvPC

Use your TS-251+/451+ as a PC

Centralized virtualization management enhancing IT efficiency

Virtualization Station allows you to host virtual machines (VM) on the TS-251+/451+, and access them via a web browser or VNC. Virtualization Station supports multiple operating systems, fast VM creation, VM backup & restoration, VM import/export, snapshot, and Device Management for centrally managing VM. Virtualization Station uses SDN (Software-defined Networks) and allows the TS-251+/451+ and VMs to share the same LAN port. No longer constrained by physical network performance, high-speed Virtual Switches greatly increases data transfer between VMs as well as between VMs and NAS through the internal interface. You can also download VMs on demand from online VM markets and import them to the TS-251+/451+ without any complex procedures.



The highlights of QNAP's exclusive QvPC Technology

HD Station 3.0 is a monitor-based user interface based on QNAP's exclusive QvPC Technology. Simply plug in a keyboard, mouse, and an HDMI® monitor to a Turbo NAS and you can start the installation process and access data without connecting to a PC, tablet, or smartphone.

💡 HD Station also supports touch panels to control the system directly through a screen.



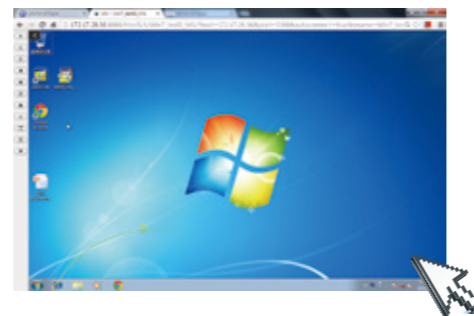
Operate different OS platforms on browsers

You can use the web-based user interface of QTS to run Virtualization Station with extreme flexibility and convenience. Besides computers, you can also use tablet devices to operate multiple virtual machines of various operating systems such as Windows, Linux, and UNIX run on the Virtualization Station.



Operate VMs as Remote Desktops

Enjoy the convenience of operating Windows®, Linux®, UNIX®, and Android™ based VMs as remote desktops.



Save bandwidth & time

Downloading a large amount of data to a local PC can take a long time and use up network bandwidth. When accessing data on the QNAP NAS through virtual machines on the Virtualization Station, you can enjoy secure data transmission and save bandwidth & time as the data is not transmitted via physical network cables.



User-based permissions settings

The Virtualization Station administrator can create users and set granular permissions for each Virtual Machine (VM), helping to efficiently manage and allocate VM resources for users with different needs.



💡 User-based permissions include: Console permissions: Control and View-only VM controls: Snapshot and Advanced



Run Windows, Linux and Android virtual machines on a HDTV

Leveraging virtualization technology, QNAP QVM Desk supports local display for a virtual machine and turns the Turbo NAS into a PC when connected to an HDMI® monitor, keyboard, and mouse. Any files on the Turbo NAS can be opened using virtual machines running Windows®, Linux®, UNIX®, and Android™ through QVM Desk. You can also instantly switch between different virtual machines to meet different computing needs, similar to using multiple PCs at the same time.

QNAP QVM Desk turns a Turbo NAS into an office PC

After purchasing a NAS, users usually install firmware from an installation disc and search for the NAS on their network, or log in to the NAS manufacturer's website to complete the installation process. For users without relevant networking knowledge, this installation process may be difficult. TS-251+/451+ is an ideal solution for storing data. With QvPC Technology users only need to plug in an HDMI® monitor, keyboard, mouse and follow on-screen instructions to complete their NAS installation. Even users without any network knowledge can easily set up and install a Turbo NAS.



Conventional installation: You need a disc or to log in to a website to complete the installation, and it can be complicated for general users.



Streamlined installation: simply plug in a monitor, keyboard and mouse and follow the on-screen instructions to complete the installation.

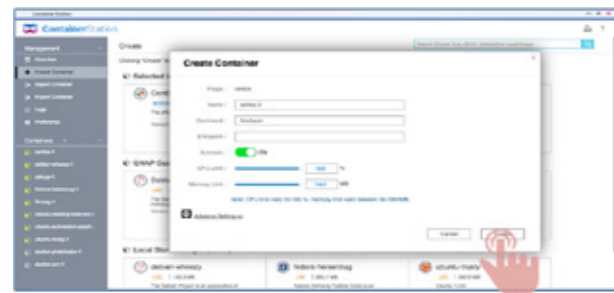


Container Station

The new era of virtualization and cloud computing

LXC and Docker® Containers inclusive

The TS-251+/451+ also features the game-changing container technology for server virtualization. QNAP Container Station exclusively integrates LXC and Docker® lightweight virtualization technologies, allowing you to operate multiple isolated Linux® systems on the TS-251+/451+ as well as download apps from the built-in Docker Hub Registry®. Container Station also supports the Online Document app*, which allows you to directly view, edit and store files of various types anytime on your NAS, including Office documents, images and text files.



Lightweight virtualization — LXC

LXC is now available in Container Station. It features the most common operating systems including Ubuntu®, Debian®, and Fedora® built-in. Users can add desired applications after downloading.



Docker and the Docker logo are trademarks or registered trademarks of Docker, Inc. in the United States and/or other countries. Docker, Inc. and other parties may also have trademark rights in other terms used herein. Linux® is the registered trademark of Linus Torvalds in the U.S. and other countries.

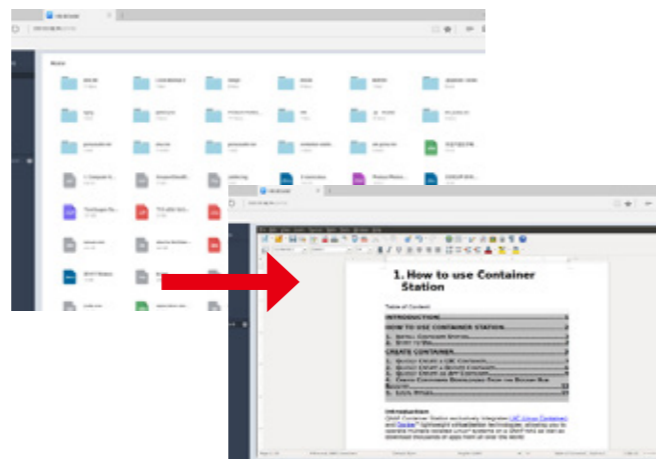
Export/import software containers

You can export software containers along with data contained in it to a given shared folder. You can also import software containers from PC or shared folders. Employs this function to back up as well as transfer your containers at ease.



Online document preview and editing

QTS is built on the security first principal and helps you to minimize the risk of data breaches with multiple protection mechanisms. Eliminate the process of uploading and downloading sensitive documents over the Internet with the Online editing function in Container Station. Container Station Online Document function enables direct preview, edit, and save (Office documents, photos, and text files) to the NAS from anywhere.



Comprehensive Backup/Synchronization

Hybrid cloud for a consolidated backup solution

Backup from computer to NAS - PC backup

Windows® users can install the free QNAP NetBak Replicator utility to back up files from Windows® PC - entire disk drives, documents, pictures, music, videos, fonts, emails, and more - to one or multiple Turbo NAS units. With simple clicks, you can set up real-time backup, scheduled backup and auto-backup. You can set power off after the backup is finished to save energy; file filtering to exclude files not to back up; and email notification when backup is completed. Mac users can use Time Machine to back up files in Mac.



3rd party backup software

QTS is compatible with various renowned backup software such as Acronis® True Image and Symantec® Backup Exec. Users that have adopted such backup software can immediately back up data from other sources to the Turbo NAS.

Local Backup

Use the One-Touch-Backup button on the front panel of the NAS to quickly backup data to or from external USB devices or disks.



Cloud Backup

Protecting against potentially disastrous data loss is of paramount importance for all businesses regardless of size. TS-251+/451+ is a comprehensive backup and recovery solution to back up not only files for all devices on the LAN, but also for remote-site NAS units and servers. Furthermore, QNAP Turbo NAS fully supports backup from the Turbo NAS to online cloud storage services (e.g. Amazon® S3, Amazon® Glacier, Microsoft® Azure, Google® Cloud Storage, IBM® SoftLayer, HP® Cloud, Rackspace®, and ElephantDrive®). The QTS powerful and comprehensive Backup Station makes backup and recovery simpler for all business's disaster recovery plan.



Disaster recovery solutions bring peace of mind

The TS-251+/451+ offers various data recovery options. RTRR (Real-Time Remote Replication) supports real time and scheduled data backup to remote QNAP NAS or FTP servers and synchronizes files to remote folders from local folders with better backup efficiency. You can enjoy backup versioning to preserve a certain amount of versions, with options of simple versioning to schedule how many versions should be retained and for how long, or smart versioning with a rotation scheme that automatically replaces earlier backup versions. The TS-251+/451+ also supports rsync protocol to back up data to remote servers on a scheduled basis.





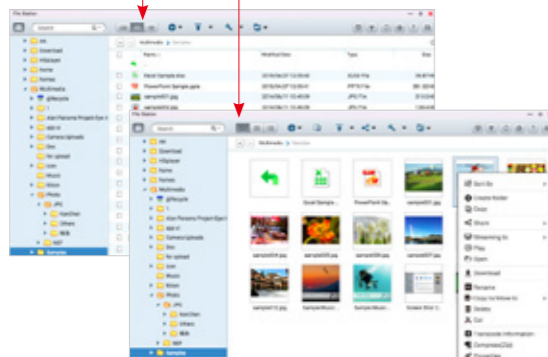
File Station

Integrated with cloud services

File Station

With File Station, you can easily carry out common tasks like renaming, copying, moving, compressing or extracting multiple files. Users can upload files from a local PC/Mac to File Station by drag-and-drop. In addition, instant thumbnail preview can display thumbnails of photos, album covers, and videos to aid in organizing multimedia files.

Three browsing modes are available: icons, list, and detailed list.



Folders in tree structure:

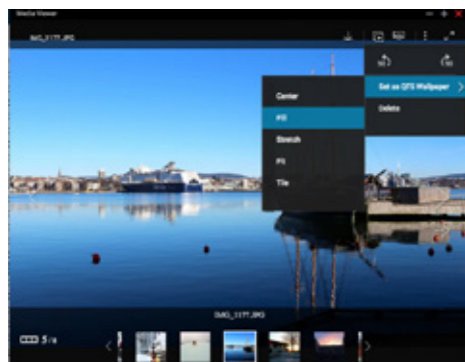
Presents data in an easy-to-read, familiar, and convenient format.

Remote connection:

View remote connections here

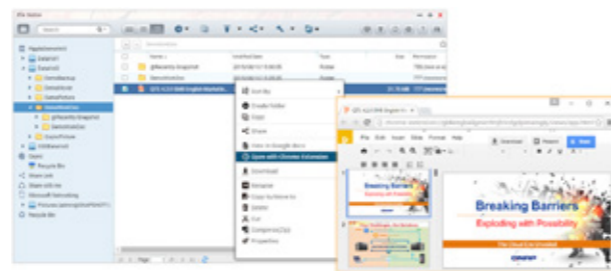
Multimedia streaming

File Station supports photos browsing and music playing. In addition, background transcoding enables you to convert video into different resolutions and formats suitable for multiple devices and multiple networks.



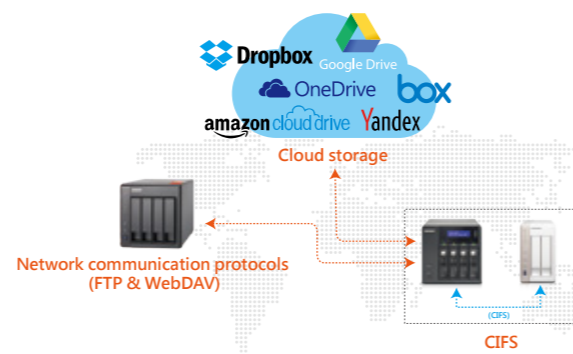
Preview for Microsoft Office® files

Preview Microsoft Office® files offline with a Chrome™ browser extension (Chrome™ browser only and with the Office Editing for Docs, Sheets & Slides Chrome extension installed from Chrome™ Web Store) in the File Station. Support for file types: .doc, .docx, .xls, .xlsx, .ppt, and .pptx. Also supports the online preview of Microsoft Office® files with Office Online and Google Docs™ in the File Station.



Remote connection and several cloud services

File Station supports three remote device network protocols CIFS, FTP, and WebDAV. File Station also supports many popular cloud services including Google Drive, Dropbox, Microsoft, OneDrive, Box, Amazon Cloud Drive, and Yandex Disk. File sharing could not be easier!



Install "Connect to Cloud Drive" from the App Center before connecting to cloud services.



Data Security

Secure your data with QNAP protection mechanisms

Network environment protection

Connection management (black/white list) Allow or deny specific IP addresses or subnets to connect to the NAS. This increases connection safety by creating lists of allowed and blocked IP addresses.



Account security and system notifications

The Two-Step Verification* requires users to log in to the QNAP NAS with both their passwords and a 6-digit one-time password (OTP) generated by an authenticator app. In addition to email and SMS, you can get messages sent to your mobile devices in the event of a system failure or other warning*.

Requires installing Qmanager on your mobile device or one of the following authenticator apps on your mobile device: Google Authenticator (Android, iOS, BlackBerry) or Authenticator (Windows Phone).



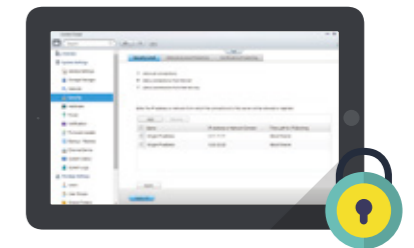
Protection by transmission encryption

Advanced AES encryption ensures the security of shared folders, A VPN offers a convenient solution for NAS users to build end-to-end encrypted tunnels to your QNAP NAS.



Data encryption

QTS offers volume encryption to protect the data stored on the NAS. The system will ask for the encryption key when mounting the encrypted volume and the data is inaccessible without it, it also provides external hard drive encryption and Anti-Virus protection.



QNAP Snapshot Technology

QNAP's whole volume/ LUN Snapshot offered in Storage Manager employs Copy-on-Write technology to record file state. If system failures occur, you can immediately revert the system to a specific state earlier in time.



Snapshot requires a minimum of 4GB RAM. Support up to 32 snapshots for whole system

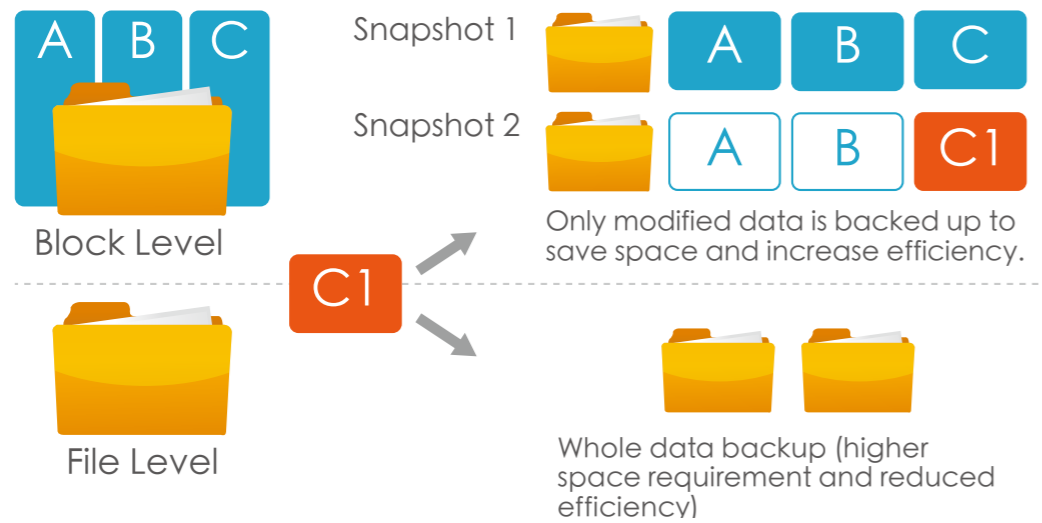


Local Snapshot and Remote Snapshot Replica

Block-based snapshot technology

Snapshot advantages

QNAP uses block-based snapshot technology to support up to 32 snapshots for each volume or LUN, up to 256 snapshots. Schedule snapshots hourly, daily, weekly, monthly, or yearly to assist in saving space and reserve snapshots for future use. Additionally, Snapshot Agent ensures data integrity on locked or open files while taking snapshots.



	Snapshot Replica	RTRR	Rsync	NAS to NAS
*Data backup scope	Volume/LUN	Shared Folder	Shared Folder	Shared Folder
Transmission mode	Block-based	File-Level File-based	File-Level block-based	File-Level block-based
Backup scheme	Transmit only modified blocks	Transmit new files	Transmit new files but only with modified blocks	
Backup schedule	Scheduled	Immediate/Scheduled	Scheduled	Scheduled
Encryption	Support	Support	Support	Support
Compression	Support	Support	Support	Support
Memory requirement	At least 4GB RAM	Unlimited	Unlimited	Unlimited
Remote system	QNAP NAS	QNAP NAS	Rsync Server	QNAP NAS
Application scenario	<ul style="list-style-type: none"> A large number of files with various file sizes Large files with frequent modifications such as virtual machine images or backup images. 	<ul style="list-style-type: none"> Real-time file replication File synchronization Fast transmission on local network 	<ul style="list-style-type: none"> Transmits large files with minor modifications Transmit to a remote site over the Internet 	

Snapshot requires a minimum of 4GB RAM.

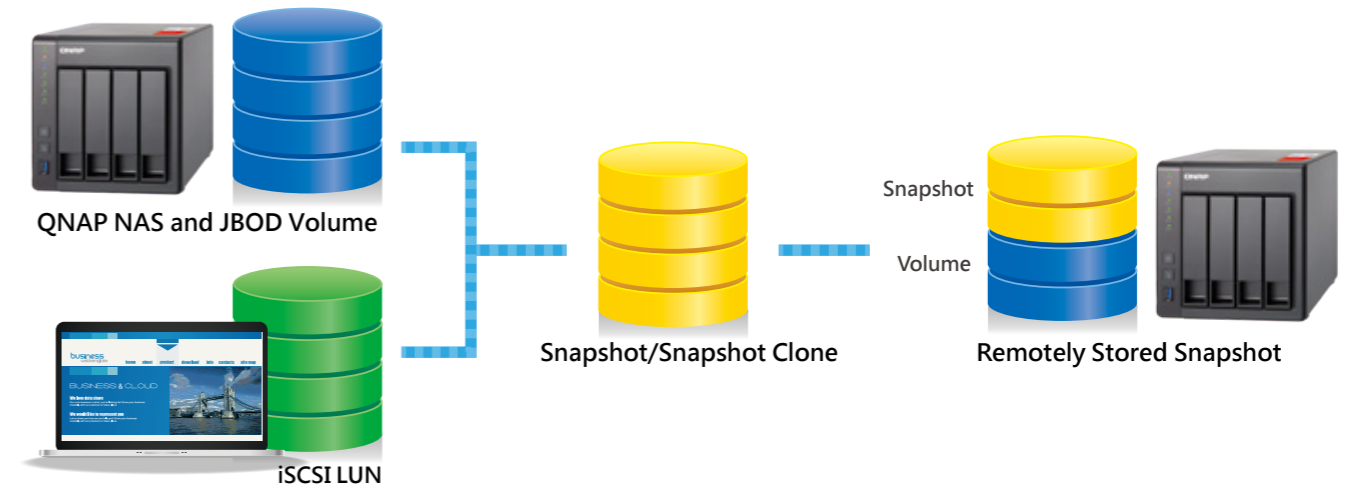
Local Snapshot to provide continuous data protection

File-level recovery

The low-impact, small-sized, and user recoverable snapshots offer more benefits of storage administration compared to traditional file copies, which are often stored as a single large data file. For instance, you can choose to recover a file in a folder or the entire folder instantly with a few clicks.

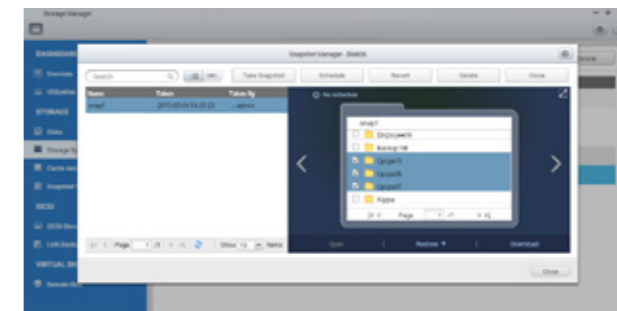
High Flexibility

Snapshots can be used with iSCSI LUNs and Volumes in QNAP NAS and expansion units to achieve full protection. On the other hand, Snapshot Replica allows you to transfer your snapshot to a remote QNAP NAS for backup.



Intuitive and user-friendly interface

The QNAP Snapshot provides tools in Storage Manager to help you find specific files to recover. You can easily view files and folders in a snapshot and browse through different snapshots displayed in chronological order. In addition, file recovery just takes a few clicks, increasing operational efficiency.

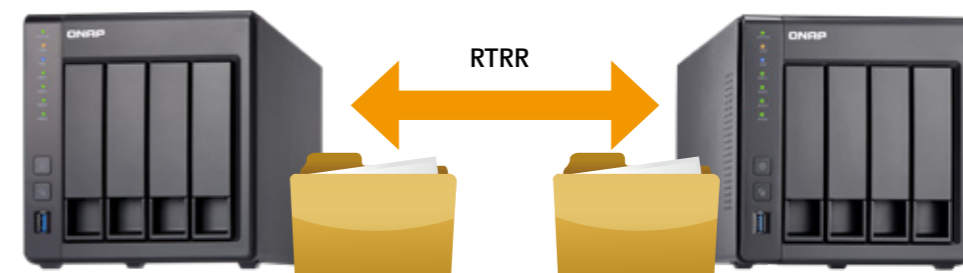


Snapshot Clone

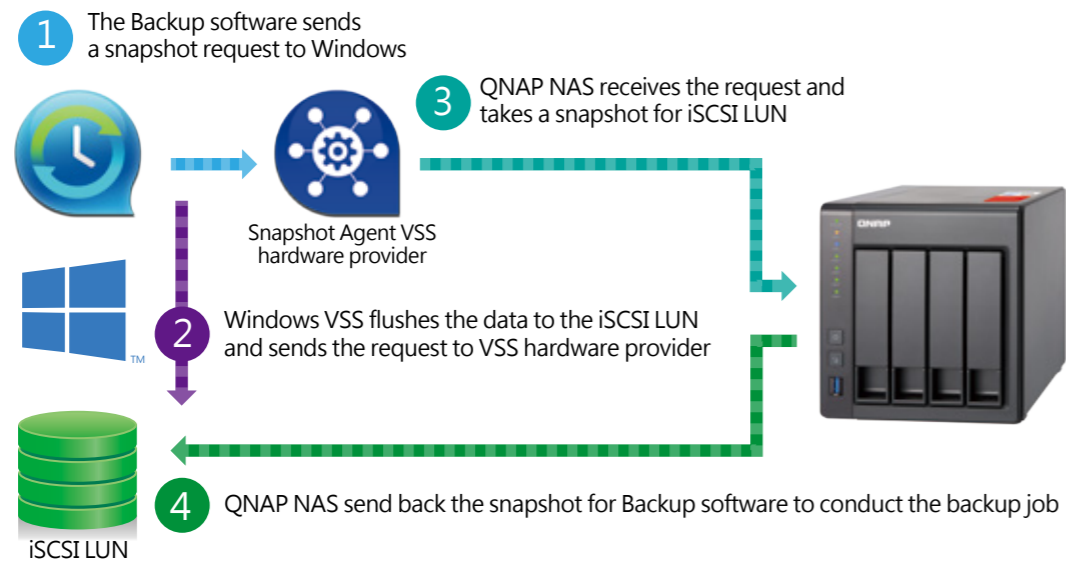
Clone a snapshot as a volume or LUN for quick file access, eliminating long restore times and reserving sizeable space for storing backups.

Rsync/RTRR integration

The Rsync/RTRR functions in Backup Station automatically detect whether the system supports Snapshots. The RTRR/Rsync functions take snapshots of the volume before starting replication and then back up snapshots to a remote server. This greatly enhances data integrity.

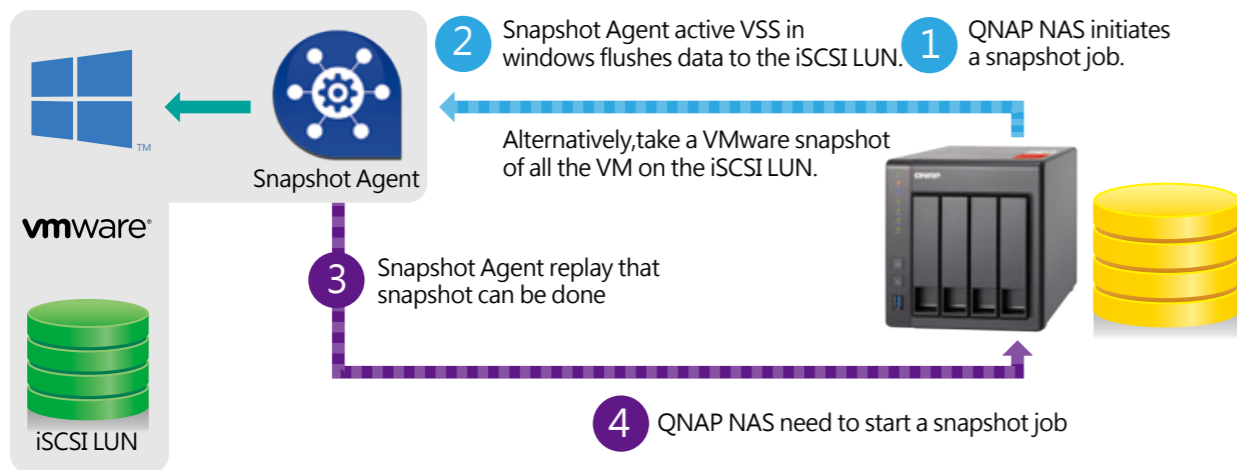


VSS Hardware Provider Work Flow



The system may temporarily halt operations while flushing data to the iSCSI LUN.

Snapshot Agent Work Flow

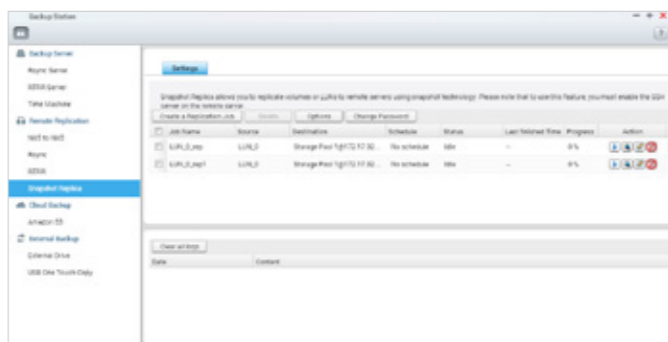


The system may temporarily halt operations while flushing data to the iSCSI LUN.

Remote Snapshot Replica prevent data loss

Snapshot Replica

Remote Snapshot Replica enables you to replicate Volumes/LUNs between different remote servers using snapshot technology, reducing both storage and bandwidth usage. Take a snapshot immediately or schedule snapshots to be taken at regular intervals as required. This method is widely considered to be the most fundamental of strategies for data backup.



Snapshot Vault

Snapshot Vault is the backup center for storing and managing every snapshot created remotely from another QNAP NAS. It is also capable of cloning a snapshot (with specified files in a snapshot) as a local volume for data access.

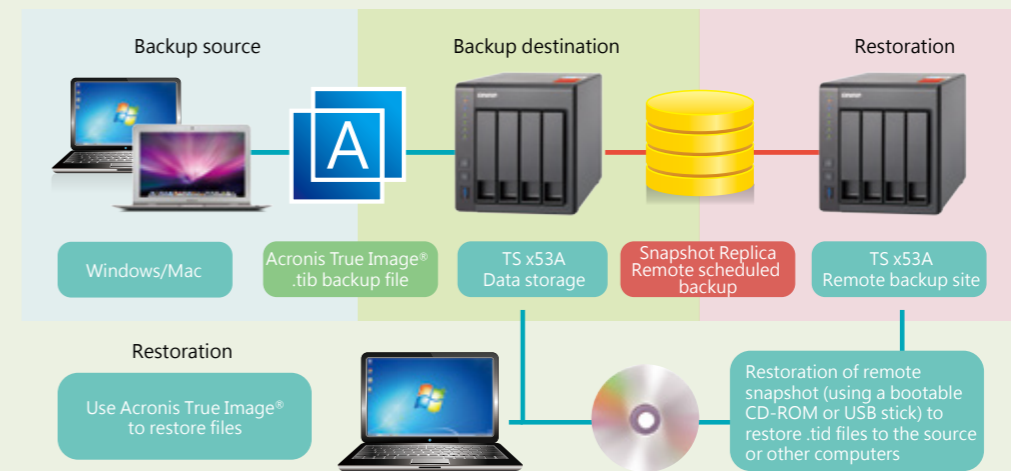
Replication Settings

To minimize the risk of data breach, Snapshot Replica provides the option of file encryption. It also provides file compression and transfer rate adjustment to lower bandwidth consumption.

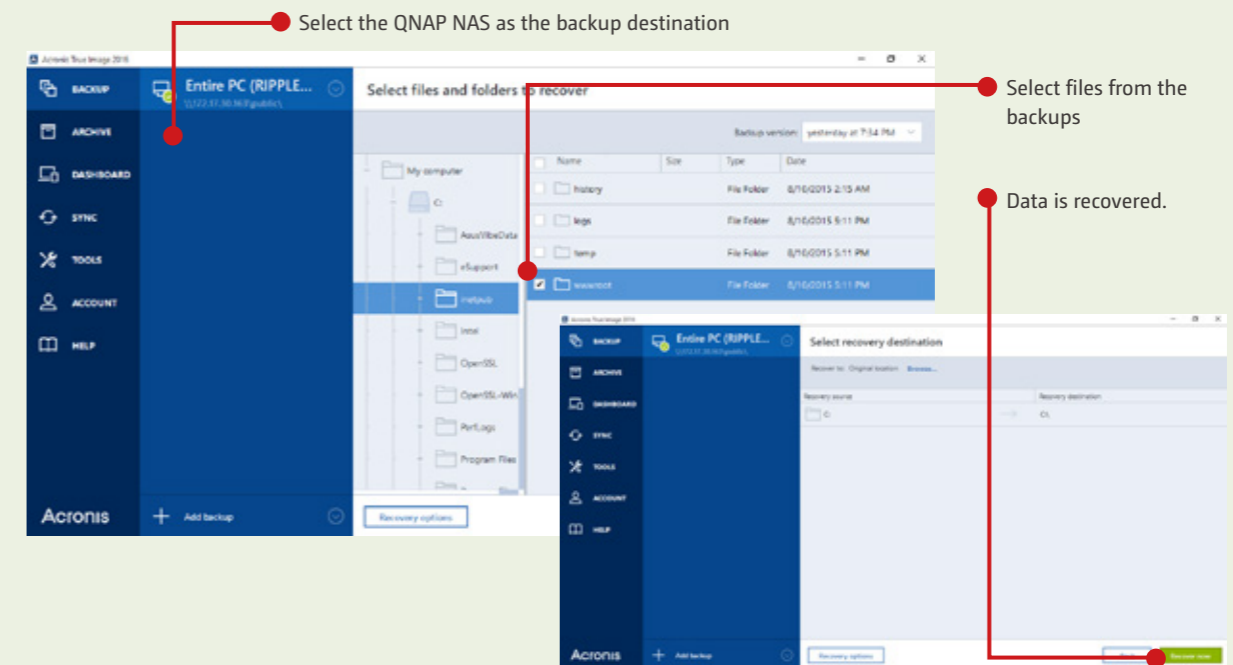
Managing snapshots remotely from another NAS

Use the Clone function to clone (or mount) a snapshot from the Snapshot Vault as a volume or iSCSI LUN on a QNAP NAS. Directly access these files through File Station or Backup Station. Use an iSCSI initiator to connect to a cloned iSCSI LUN from another computer.

QNAP NAS backup with Acronis True Image®



As a proven remote backup/restore solution for small and medium businesses, QNAP NAS with Acronis True Image® makes it possible to save storage and bandwidth consumption for backup and restoration with QNAP's Snapshot Replica (block-level replication) and scheduled backup.



The powerful tools provided by Acronis True Image® enable you to recover specific user files, or to recover an entire system. This ensures all the data on your QNAP NAS is protected while providing flexible approaches to data recovery and reducing total cost of ownership. For more information on Acronis True Image®, please visit <http://www.acronis.com/en-us/personal/computer-backup/?t=ab>.

Acronis True Image® and other names of Acronis True Image® Products are proprietary marks or registered trademarks of Acronis®, Inc.



Qsync Central Station

Centrally manage and sync your files and devices via your PC



Surveillance Station

Build a professional surveillance system

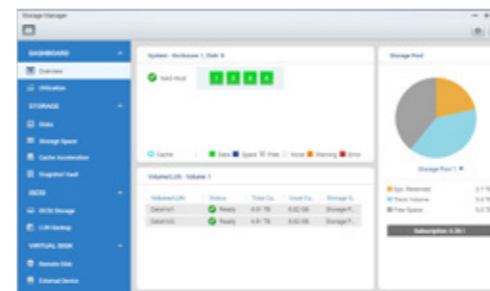
Synchronization as a better file management and collaboration approach

Qsync Central Station supports file synchronization between multiple devices, and you can utilize a smart phone, tablet, computer or webpage to browse through synchronized files. When your computer is offline, you can edit the files offline or view the files on the local Qsync folder, and as soon as the network resumes, online, Qsync will resume the data synchronization. You can also choose to keep the files stored on your QNAP NAS un-deleted to save the storage space of your local device.



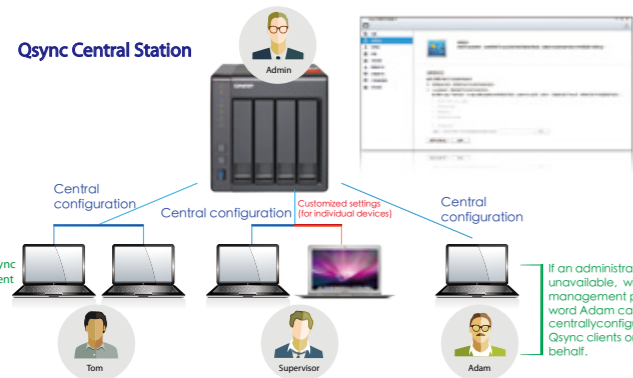
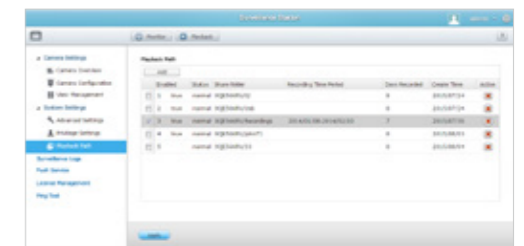
Set Dedicated Storage Pools for NVR

Using Storage Manager, it is possible to set dedicated storage pools for Surveillance Station to isolate disk arrays to ensure that NAS and NVR operations are separate.



Set alert and notifications

When cameras detect motion or alerts are triggered, Surveillance Station will automatically send notifications to up to 5 email addresses.

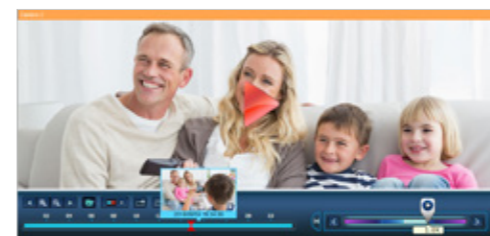


Enhance management efficiency by monitoring equipment settings

The administrator can create default settings on Qsync Central Station 2.0 and also apply them to Qsync clients, which helps to not only save time and effort setting up individual clients, but also allows administrators to monitor user settings, thereby strengthening enterprise-wide IT management and file filtering control and avoiding the risk of deleting files on a QNAP NAS by mistake due to synchronization. Also, by using permission settings, administrators can flexibly adjust individual user's equipment settings, where it not only retains the above advantages, but further enhances the flexibility and convenience of the centralized management approach.

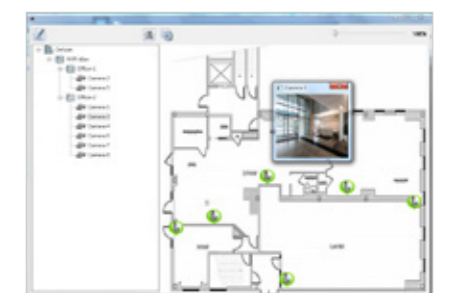
Playback speed control with the shuttle bar

With the speed-control shuttle bar, users are able to fast forward and rewind playback by dragging the bar to find the desired capture quickly.



Digital floor plan for camera locations

Uploading a floor plan to Surveillance Station enables users to map out where cameras are located. Based on alarm settings, the camera icons will then alert users to assist in decision making for appropriate action to be taken.



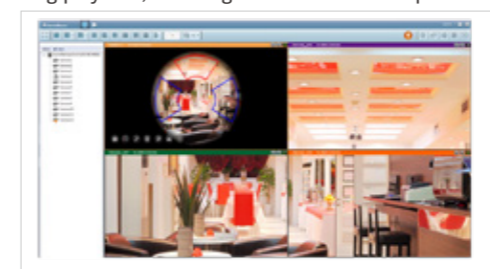
Remotely delete shared folders to prevent data leaks

In the event where a computer/device is stolen or lost, the Qsync folder can be remotely erased* to ensure that sensitive or confidential data is not accessed by unauthorized users or leaked. Once the computer/device is recovered, Qsync can easily restore the data that was deleted, ensuring the perfect balance between security and convenience.



QNAP Qdewarp

Fisheye lenses are ideal for wide-angle scenes. With de-warping technology, users are able view detailed images without distortion. Qdewarp is compatible with every fisheye camera that QNAP supports, and enables users to de-warp images at any time point in a recording. Qdewarp supports real-time monitoring and recording playback, ensuring there are no blind spots.



For NAS models with an HDMI port and memory larger than 4GB, QvPC Surveillance Station (Local Display) can display monitored camera feeds on Smart TVs.

camera licenses free : 2 up to : 40



The data will still be retained on the QNAP NAS.



HybridDesk Station

Enjoy videos on TV via HDMI with bundled remote control



Multilingual input and improved multitasking

HD Station 3.1 supports multi-lingual input, enabling you to search from a web browser in your native language. Additionally, HD Station 3.1 now supports multitasking with a desktop PC-like taskbar enabling you to switch between different applications.

A wealth of apps

In addition QNAP's native applications, we support a number of common multimedia players (Kodi, HD Player, Plex Home Theater®, DeaDBeeF, Clementine®, JRiver®), browser (Chrome, Firefox), and other multimedia streaming platforms (YouTube®, Spotify®, TuneIn Radio®) to provide you with home cinema entertainment.

Qremote easy to get started

Qremote is QNAP's exclusive remote control enabling you to control your HD Station from your mobile devices. Qremote offers four modes: application shortcuts, simple remote control, touch screen, or keyboard mode to enter text. Use your smart phone or other mobile device to download the Qremote App from the App Store or Google Play® Store.



A receiver with HDMI support is required. The quality of video and music delivery can vary according to hardware and network environments.

JRiver Media Center

Powerful media management and lossless audio playback in HD Station 3.1. JRiver Media Center is a jukebox style multimedia player capable of managing several large media libraries within the same domain. JRiver® Media Center supports a variety of multimedia streaming formats and multi-room streaming, and is capable of indexing album covers for a variety of metadata to provide efficient multimedia management. Additionally, JRiver® Media Center also supports a number of professional music processing features such as an equalizer, rhythm, pitch, and sampling rate to further meet the needs of video enthusiasts and significantly enhance your QNAP NAS multimedia streaming experience. For more information, please refer <http://www.jriver.com/>

Real-time & offline video transcoding

Real time, adaptive, on-the-fly transcoding

The TS-251+/451+ delivers superior real-time Full HD video transcoding to convert your videos to formats that can be smoothly played on PCs, mobile devices and Smart TVs. It allows for multiple devices to simultaneously view different videos stored on the TS-251+/451+ with on-the-fly hardware accelerated transcoding, saving your time in converting videos to different formats for different devices.

Automatic background transcoding

With the benefits of offline transcoding, if you can only connect to an Internet connection with limited/restricted bandwidth, you can still enjoy smooth videos via File Station, Video Station, or the Qfile app by selecting a pre-rendered lower-resolution video, saving system resources of the TS-251+/451+ for other applications. The TS-251+/451+ also allows you to set a dedicated folder for automatic video transcoding.

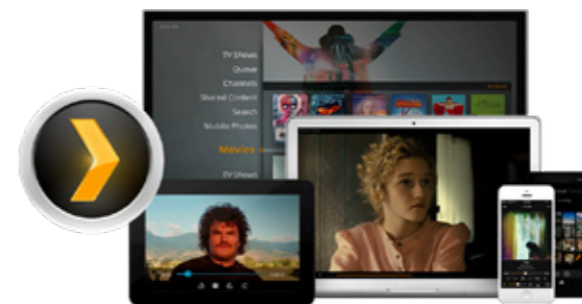


Plex Media Server



Plex Media Server

Video streaming is made easy with Plex Media Server. Use Plex Media Server to enjoy easy management and instant playback of all your media on your NAS wherever you are. Configure Plex Media Server to index and transcode content in any directory on your NAS to reduce bandwidth and increase playback device compatibility. Plex Media Server can be downloaded and installed from the App Center.



Plex Home Theater

Plex Media Theater can directly display your media via an HDMI output or via a stream to Plex mobile app clients, either on the same machine, the same local area network, or over the Internet.



QNAP Mobile App

Conveniently access your QNAP NAS with mobile devices

The TS-251+/451+ is your private cloud storage that virtually enlarges the capacity of your smart mobile devices. Qfile allows you to access, upload, download, manage, and share stored files easily as if you are carrying tons of files in your pocket. If Qfile is installed on an iOS® device, users can also browse videos & photos stored on the TS-251+/451+ and play on a TV via Apple® TV. Qmanager lets you monitor & manage the TS-251+/451+ remotely and efficiently without turning on your PC. You can take and share digital notes with Qnotes, and enjoy and share music, photos and videos on the TS-251+/451+ anywhere and anytime with Qmusic, Qphoto and Qvideo apps.



Qfile

Remotely upload/download, share, manage, and stream files from your QNAP NAS and synchronize files between the NAS and your mobile device.



Qmanager

Monitor your system information, check backup tasks and system events and manage backup jobs.



Qphoto

Browse, share, or download your photo collection using a timeline view, thumbnails, detailed list and folders.



Qmusic

Stream your music collection on your QNAP NAS by song, artist, album or folder.



Qvideo

Download, stream, share videos to other people from the NAS.



Qnotes

Jot down and share your ideas wherever you are.



Vmobile

Remotely access Surveillance Station and its playback function and manage IP cameras.



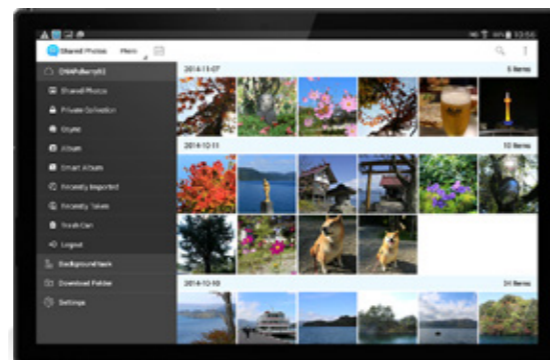
Vcam

Record to your QNAP NAS from your mobile device anywhere you go without professional IP cameras.



Qget

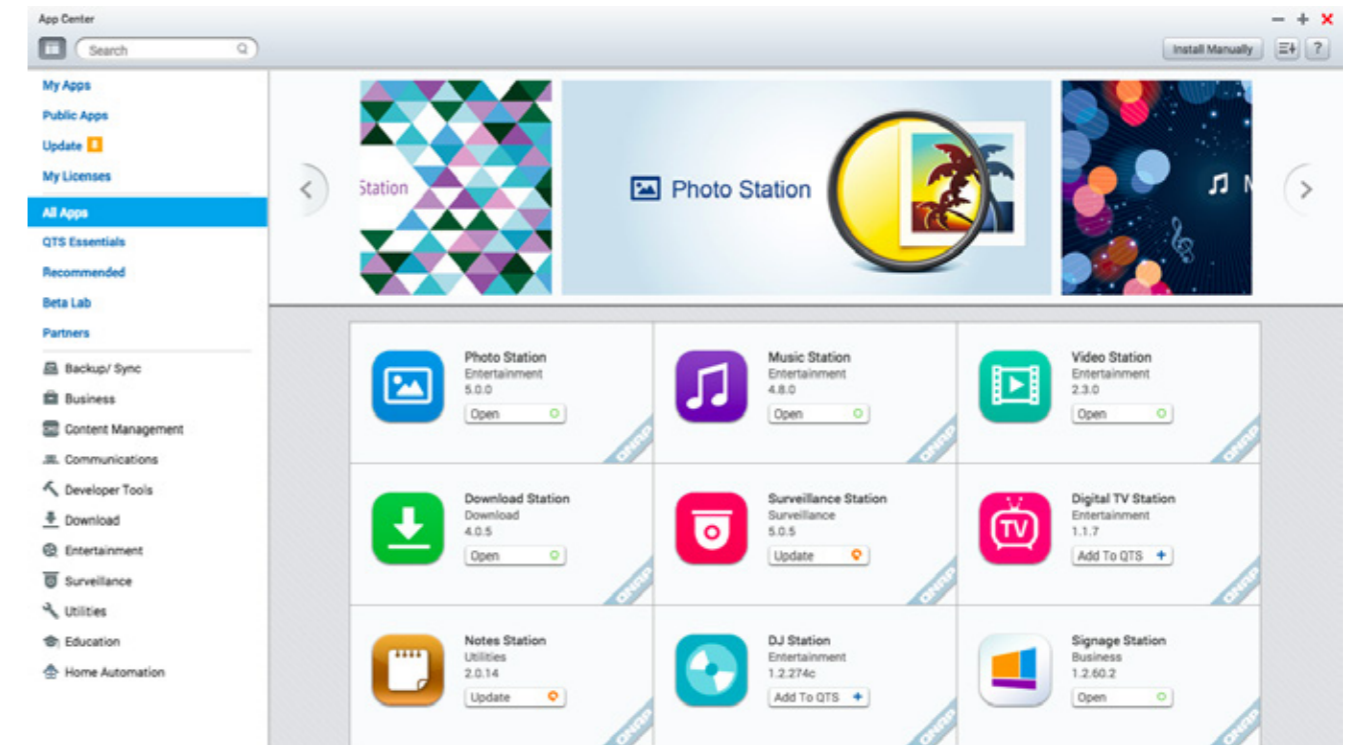
Directly upload torrent files by searching the Internet Qget to create or manage download tasks in Qget.



App Center

Customize your QNAP NAS for endless possibilities

The TS-251+/451+ has a built-in App Center that provides various install-on-demand apps developed by QNAP and third-party developers, including tools for backup/sync, business, content management, communications, download, entertainment, and much more. It is also a centralized location for managing & updating installed apps. In addition, QNAP's development platform embraces the open-source spirit to enable developers to create their own apps, adding potentially limitless potential for the TS-251+/451+.



Powerful and rich-in-content

Search for, install, remove, and update apps through the App Center to extend the functionality of your QNAP NAS. The QTS App Center provides a wide range of install-on-demand apps for you to deploy. The available applications include business applications, cloud backup and synchronization tools, home entertainment, surveillance, and many more.

1-click Install on demand

Find what you need and install it immediately with just one click. Search by category, by keyword, or try a suggested app from the live scrolling QNAP recommended app ticker.

Upgrade reminder

When your installed apps have an update, an upgrade reminder will show on the QTS desktop to help keep your NAS applications up-to-date.

- 1 Click "Volume Info" to view the information about the volume on which the app is installed.
- 2 Create and display an app shortcut on the login screen, enabling users to access the app directly from the login screen.



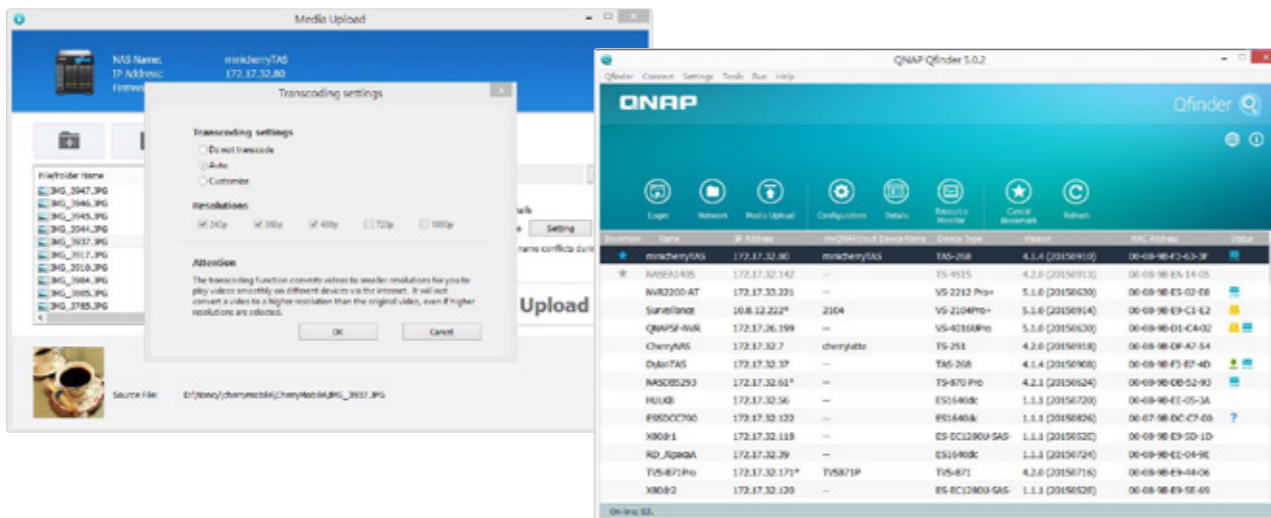
Computer Utilities

Boost your productivity and convenience

Qfinder Pro

Qfinder Pro helps you find and access a QNAP NAS in the LAN and can be used to generate thumbnails for media files in advance of file upload, accelerating media file processing and saving NAS resources.

Available for Windows®, OS X®, Linux®, and the Google Chrome™ Browser.

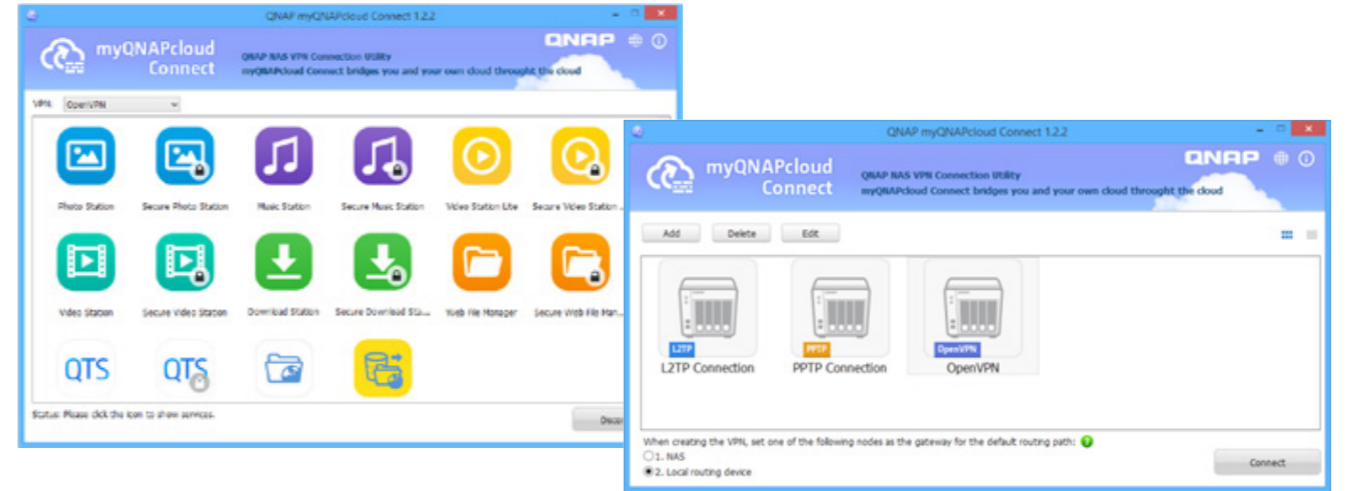


Qfinder for Google Chrome™ is for Chromebooks™ & Google Chrome™ only. If you're finding it difficult to connect your NAS to a Chromebook™, Qfinder for Google Chrome™ allows you to quickly find and connect to a QNAP NAS over LAN. Just download Qfinder from the Chrome™ Web Store and enjoy easy access to your QNAP NAS.

myQNAPcloud Connect

myQNAPcloud Connect is a VPN application designed for all Windows users and supports all VPN options to connect to a QNAP NAS (including L2TP/IPsec, PPTP and OpenVPN). By installing and setting up myQNAPcloud Connect, you will be able to connect to the QNAP NAS and easily manage files with drag-and drop actions.

Available for Windows®



Qsync

Qsync is a useful tool to synchronize files across multiple computers and supports Windows and Mac. It creates a specific "Qsync folder" in your devices that you can simply drop files in, and synchronizes the files to all your devices linked to the QNAP NAS.



Qsnap

Qsnap is a handy utility assisting you to quickly capture screenshots on your PC, and easily edit, save, and share, enabling quick note-taking or productive communication in your work and leisure.

Available for Windows®



NetBak Replicator

The QNAP NetBak Replicator is free for anyone with a QNAP NAS and helps you easily back up files from Windows® PC - entire disk drives, documents, pictures, music, videos, fonts, emails, and more - to your QNAP NAS

Available for Windows®

Hardware specification



Model	TS-251+-2G	TS-251+-8G	TS-451+-2G	TS-451+-8G
CPU	Intel® Celeron® Quad-core 2.0GHz (up to 2.42GHz)			
Floating Point Unit	✓			
Hardware-Accelerated Transcoding	✓			
GPU	Intel® HD Graphics			
System memory	2GB (2 x 1GB)	8GB (2 x 4GB)	2GB (2 x 1 GB)	8GB (2 x 4GB)
Memory expandable up to	8GB NOTE : To install on both DIMM slots, the same type of memory same size, speed, and manufacturer should be used for each slot			
Total memory slots	2			
Flash Memory	512MB (DOM)			
Max. number of HDDs/SSDs	2		4	
Compatible Drive Type	3.5" or 2.5" SATA 6Gb/s, 3Gb/s HDD or SSD, hot swappable			
LAN Port	2 Gigabit RJ-45 Ethernet ports, supporting port trunking			
USB	2 x USB 3.0 (Front: 1, Rear: 1) & 2 x USB 2.0 (Rear)			
LED Indicators	Power/Status, LAN, USB, HDD			
Buttons	Power, USB One-Touch-Backup, Reset			
IR	Yes (RM-IR002 & MCE)			
HDMI	1			
Alarm Buzzer	System warning			
Form Factor	Tower			
Dimensions	168.5 x 102 x 225 mm / 6.63 x 4.02 x 8.86 inch (HxWxD)		177 x 180 x 235 mm / 6.97 x 7.09 x 9.25 inch	
Weight (Net / Gross)	1.28 kg (2.82 lbs) / 2.32 kg (5.11 lbs)		3 kg (6.61 lbs) / 4.3 kg (9.48 lbs)	
Power Consumption (W)	HDD standby:10.56W / In operation (typical): 18.09W		HDD standby:15.78W / In operation (typical): 33.88W	
Operating Temperature	0 - 40 °C			
relative humidity	5~95% RH non-condensing, wet bulb: 27°C			
Power Supply	External Power Adapter, 60W, 100-240V		External Power Adapter, 90W, 100-240V	
Fan	1 x quiet cooling fan (7cm,12V DC)		1 x quiet cooling fan (12cm,12V DC)	
Windows® sequential Read / Write (64KB, 2 x GbE)	223 / 225		225 / 224	
Windows® sequential Read / Write Encryption (64KB, 2 x GbE)	205 / 178		204 / 158	

Accessories

	Category	Order No.	Description
Expansion units		UX-500P	QNAP 5-bay Expansion unit 185.2 (H) x 210.6 (W) x 235.4 (D) mm 7.29 (H) x 8.29 (W) x 9.27 (D) inch, 5.1 kg / 11.24 lbs
		UX-800P	QNAP 8-bay Expansion unit 185.2 (H) x 298.2 (W) x 235.4 (D) mm 7.29 (H) x 11.74 (W) x 9.27 (D) inch, 7.3 kg / 16.08 lbs
RAM		RAM-2GDR3L-SO-1600	2GB DDR3 RAM, 1600 MHz, SO-DIMM
		RAM-4GDR3L-SO-1600	4GB DDR3 RAM, 1600 MHz, SO-DIMM
		RAM-8GDR3L-SO-1600	8GB DDR3 RAM, 1600 MHz, SO-DIMM
Remote control		RM-IR002	QNAP IR-002 remote control (included)

Designs and specifications are subject to change without notice.

Software specification

Operating System

- QTS 4.2 (embedded Linux)

Supported Client OS

- Windows 7 (32/64-bit), Windows 8 (32/64-bit), Windows Server 2003/2008 R2/2012/2012R2
- Apple Mac OS X
- Linux & UNIX

Supported Browsers

- Microsoft Internet Explorer 10+
- Mozilla Firefox 8+
- Apple Safari 4+
- Google Chrome

Multilingual Support

- Chinese (Traditional & Simplified), Czech, Danish, Dutch, English, Finnish, French, German, Greek, Hungarian, Italian, Japanese, Korean, Norwegian, Polish, Portuguese (Brazil), Romanian, Russian, Spanish, Swedish, Thai, Turkish

File System

- Internal Hard Drive: EXT4
- External Hard Drive: EXT3, EXT4, NTFS, FAT32, HFS+

Networking

- TCP/IP (IPv4 & IPv6): Dual Stack
- Dual Gigabit NICs with jumbo frame (failover, multi-IP settings, port trunking/NIC teaming)
- Service binding based on network interfaces
- Proxy server (Squid Proxy Server via App Center)
- Proxy client
- DHCP client, DHCP server
- Protocols: CIFS/SMB, AFP (v3.3), NFS(v3), FTP, FTPS, SFTP, TFTP, HTTP(S), Telnet, SSH, iSCSI, SNMP, SMTP, and SMTPS
- UPnP & Bonjour Discovery
- USB Wi-Fi Adapter Support

* Not all services supports IPv6.

Security

- Network access protection with auto-blocking: SSH, Telnet, HTTP(S), FTP, CIFS/SMB, AFP
- CIFS host access control for shared folders
- FIPS 140-2 validated AES 256-bit volume-based and shared folder data encryption*
- AES 256-bit external drive encryption*
- Instantaneous SSL certificates
- Instant alert via E-mail, SMS, beep, and

Storage Management

- QNAP flexible Volume/LUN with thin provisioning and space reclaim
- RAID 0/1/5/6/10, + hot spare
- Supports storage pools
- Online volume expansion & storage pool expansion
- Online RAID capacity expansion and online RAID level migration
- SMART data migration
- Storage expansion via max 2 QNAP UX-500P/UX-800P expansion units
- JBOD enclosure roaming
- SSD read-only/read-write cache
- Bad block scan, recovery, and hard drive S.M.A.R.T.
- RAID recovery
- Bitmap support

Power Management

- Wake on LAN
- Internal hard drive standby mode
- Scheduled power on/off
- Automatic power on after power recovery
- USB and network UPS support with SNMP management
- System sleep mode (S3)

Access Right Management

- Batch user creation
- Import/Export users
- User quota management
- Local user access control for CIFS, AFP, FTP, and WebDAV
- Application access control for Photo Station, Music Station, Video Station, and File Station
- Subfolder permissions support for CIFS/SMB, AFP, FTP, and File Station

Domain Authentication Integration

- Microsoft Active Directory (AD) & Domain Controller support
- LDAP server, LDAP client
- Domain users login via CIFS/SMB, AFP, FTP, and File Station

myQNAPcloud Service

- Private cloud storage and sharing
- Free host name registration (DDNS)
- Supports myQNAPcloud SSL certificates (DDNS)
- Auto router configuration (via UPnP) - Web-based file manager with HTTPS 2048-bit encryption
- CloudLink for remote access without any complicated router setup

- myQNAPcloud connect for easy VPN connection (Windows VPN utility)

Qsync

- Syncs files across multiple devices with SSL support
- Selective synchronization for only syncing specific folders
- Use team folders as a file center for greater team collaboration (maximum sync tasks:32)
- Shares files by links via e-mail
- Policy settings for conflicting files and file type filter support
- Version control: up to 64 versions.
- Incremental synchronization for HDD space

Web Administration

- Movable icons and personalized desktop
- Smart toolbar and dashboard for neat system status display
- Smart fan control
- Dynamic DNS (DDNS)
- SNMP (v2 & v3)
- Resource monitor
- Network recycle bin for file deletion via CIFS/SMB, AFP, and File Station - Automatic Cleanup
- File Type Filter
- Comprehensive logs (events & connection) - Syslog client/server
- System settings backup and restore
- Restore to factory default
- Mobile app: Qmanager for remote system monitoring & management

File Server

- File sharing across Windows, Mac, and Linux/UNIX
- Windows ACL
- Advanced folder permissions for CIFS/SMB, AFP, FTP
- Shared folder aggregation (CIFS/SMB)

FTP Server

- FTP over SSL/TLS (Explicit)
- FTP support
- Passive ftp port range control

File Station

- Supports mounting a Cloud Drive (such as Google Drive, Dropbox, Microsoft OneDrive, Amazon Cloud Drive, Yandex Disk and Box).
- Supports mounting remote shared folders through FTP, WebDAV or Microsoft networking (SMB/CIFS)
- Supports opening documents via Office Online, Google Docs or Chrome Extension (Edit Office files in Google Docs, Sheets, and Slides)
- Supports ISO Mounting (Up to 256 ISO Files)
- Supports thumbnail display of multimedia files
- Supports sharing download links and upload links
- Supports sharing to other NAS users
- Drag-n-drop Files via Chrome and Firefox Browsers
- Photo, music, and video preview and playback
- File Compression (ZIP or 7z)
- 1. Creation of and sending download links for sharing public files with expiration date and password protection
- 2. Supports displaying subtitles (*.SRT, UTF-8 format)
 1. Video seeking support for video playback during on-the-fly transcoding
 2. Supports slideshow playback in media viewer
- Mobile App: Qfile for file browsing and management

Backup Station

- Remote replication server (over rsync) - Real-time remote replication (RTRR) to another QNAP NAS or FTP server
- Works as both RTRR server & client with bandwidth control
- Real-time & scheduled backup
- Backup versioning for RTRR
- Snapshot support for RTRR/Rsync
- Encryption, compression, file filter, and transfer rate limitation
- Encrypted replication between QNAP NAS servers
- Desktop backup with QNAP NetBak Replicator for Windows
- Apple Time Machine backup support
- Data backup to multiple external storage devices
- Third party backup software support: Veeam backup & replication, Acronis True Image, Arcserve backup, emc retrospect, Symantec Backup Exec, etc.

Cloud Backup Station

- Amazon S3
- Amazon Glacier
- WebDAV-based cloud storage
- Microsoft Azure
- OpenStack

Container Station

- Supports LXC and Docker
- Supports CPU/Memory management
- Download applications from the built-in Docker Hub Registry
- Supports one-click installation, container export/import & console mode
- Supports mounting NAS shared folders and data-only containers
- Supports auto port forwarding
- Supports auto-start containers
- Supports downloading Docker certificates

Print Server

- Max number of printers: 3
- Supports Internet Printing Protocol - Print job display and management - IP-based and domain name-based privilege control

iTunes Server

- Audio and video sharing for Windows & Mac iTunes

AirPlay & Chromecast

- Streams videos, photos and music from NAS to Apple TV or Chromecast via File Station, Music Station, Photo Station, Video Station or mobile app (QRle, Qmusic, Qphoto or Qvideo). Note: The Media Streaming add-on app must be installed from the QTS App Center.

HD (HybridDesk) Station 3.1

- Playback videos, music, photos on TV with Kodi via HDMI
- Watch various online contents
- Web browsers (Chrome, Firefox)
- Supports international keyboards, input and mouse
- Supports QNAP Qremote app and the official Kodi remote app
- Supports user login permissions
- A variety of applications are available including Skype, Plex Home Theater, and more
- Up to 7.1 channel audio passthrough is supported
- Note:
 - The playback and quality of some video files may be affected by the system's CPU and GPU decoding abilities.

Transcode Management

- Transcode video files to 240p, 360p, 480p, 720p and 1080p resolution
- Automatic video transcoding for watched folders
- Hardware accelerated transcoding support
- Embed subtitles into videos for background transcoding

Virtualization Station

- Supports Virtual Machine (VM) creation to run operating systems such as Windows, Linux, Unix and Android
- Supports VM import and export
- Supports VM cloning
- Supports VM snapshots
- Supports VM backup and restore
- Support three different networking modes: Isolated, External-only and Bridged
- VM console can be displayed via HDMI output - QVM
- HTML5-based shared remote console

Storage Plug & Connect

- Creating and mapping shared folders by QNAP Windows Qfinder
- Creation of and connection to iSCSI target/LUN

iSCSI (IP SAN)

- iSCSI target with multi-LUNs per target (Up to 256 targets/LUNs combined)
- Supports LUN mapping & masking
- Online LUN capacity expansion
- iSCSI LUN backup, one-time snapshot, and restoration
- iSCSI connection and management by QNAP Windows Qfinder
- Virtual disk drive (via iSCSI initiator)
- Stack chaining master
- Max No. of virtual disk drives: 8

Surveillance Station

- Supports over 3,000 IP cameras
- Includes 2 free camera licenses, up to 40 camera channels via additional license purchase
- Instant playback to check recent events
- Online editing to edit cameras during live view
- Visual aid by e-map
- Playback and speed control using the shuttle bar
- Video preview on playback timeline - Intelligent video analytics (IVA) for advanced video searching
- Surveillance client for Mac
- Mobile surveillance app: Vmobile (iOS and Android)
- Mobile recording app: Vcam (iOS and Android)

VPN Server

- Secure remote access: PPTP&L2TP/IPsec&OpenVPN VPN services
- Max number of clients: 30

VPN Client

- Supported VPN protocols: PPTP & OpenVPN services
- PPTP Authentication: PAP, CHAP, MS-CHAP, MS-CHAPv2
- PPTP Encryption: None, AES 40/128 bit, AES 256 bit
- OpenVPN Encryption: None, AES 40/128 bit, AES 256 bit
- Transmission package monitor - OpenVPN port control
- OpenVPN link compression

DLNA Server

- Supports DLNA/UPnP TVs and players such as PlayStation 4 and Xbox 360/One
- Supported audio formats:
 - Support CUE indexing file for APE, FLAC audio format.
 - Video and Audio On-the-fly Transcoding

*DRM-protected content is not supported.

Q'center (NAS CMS)

- Multiple NAS monitoring
- Utilization history reports
- Unified configuration management
- Visual display reports
- Monitor NAS behind NAT router with Q'center Assistant
- Virtual appliances supported for Hyper-V and VMware

App Center

- Official and community software add-ons such as Photo Station, Music Station, Video Station, Download Station, Signage Station and Notes Station, etc.

Designs and specifications are subject to change without notice.

TS-251+ / 451+

Snapshot data back-up, Virtualization applications & HDMI playback and transcoding



Quad-core Intel® Celeron®
2.0GHz Processor (burst up to 2.42GHz)

QNAP SYSTEMS, INC.

TEL : +886-2-2641-2000 FAX: +886-2-2641-0555 Email: qnap-sales@qnap.com
Address : 3F, No.22, Zhongxing Rd., Xizhi Dist., New Taipei City, 221, Taiwan

QNAP may make changes to specification and product descriptions at any time, without notice.
Copyright © 2019 QNAP Systems, Inc. All rights reserved.
QNAP® and other names of QNAP Products are proprietary marks or registered trademarks of QNAP Systems, Inc.
Other products and company names mentioned herein are trademarks of their respective holders.

Netherlands (Warehouse Services)

Email: nlsales@qnap.com
TEL: +31(0)107600830

China

Email: cnsales@qnap.com
TEL: +86-400-028-0079

Thailand

Email: thsales@qnap.com
TEL: +66-2-5415988

Japan

Email: jpsales@qnap.com
FAX: 03-5901-9736

US

Email: usasales@qnap.com
TEL: +1-909-595-2782

India

Email: indiasales@qnap.com

Germany

Email: desales@qnap.com

France

Email: frsales@qnap.com



P/N: 51000-023995-RS
201903 (EN) B