QNAP

4-bay NAS

TS-451D2

HDMI

2 x GbE

intel CELERON inside

Featuring an Intel Celeron J4025 dual-core CPU and 2x GbE ports as a storage for smart home

Need for a large storage space for increasing amount of video and work files

Able to store many types of files

Important files on tablet and phone

Lossless storage of photos and videos for the best memories

Secure and reliable RAID data protection and anti-virus / anti-hacker

4-bay TS-451D2 with up to 64TB capacity

	Min. # of Disks	4 x 16TB disk capacity	Speed	Data redundancy/protection when disk fails
JBOD	1	64 TB (combined)	★★	Partial (accessible if on undamaged disks)
RAID 0	2	64TB (combined)	★★★★★	none
RAID 1	2	2 x 16TB (smallest capacity), Supports dual RAID 1 volumes	★	Allows 1 disk failure
RAID 5	3	48TB [smallest capacity x (n-1)]	★★★★	Allows 1 disk failure
RAID 6	4	32TB [smallest capacity x (n-2)]	★★★	Allows 2 disks failure
RAID 10	4	32TB [smallest capacity x (n/2)]	★★★★	Allows 2 disks failure (Each of the RAID 1 group allows 1 disk failure)

Intel Celeron J4025 dual-core 2.0GHz SoC

Power-efficient x86 Multimedia NAS

Dual-core J4025

Code name:

Gemini Lake Refresh

2.0GHz
Base

2.9GHz
Burst

NAS models:

TS-451D2-2G
2 GB RAM (1 x 2 GB)

TS-451D2-4G
4 GB RAM (1 x 4 GB)

4-bay TS-451D2 front view

LED indicators:
Status, LAN, USB

Disk LED indicators:
Disk 1~4

Power button

Copy button

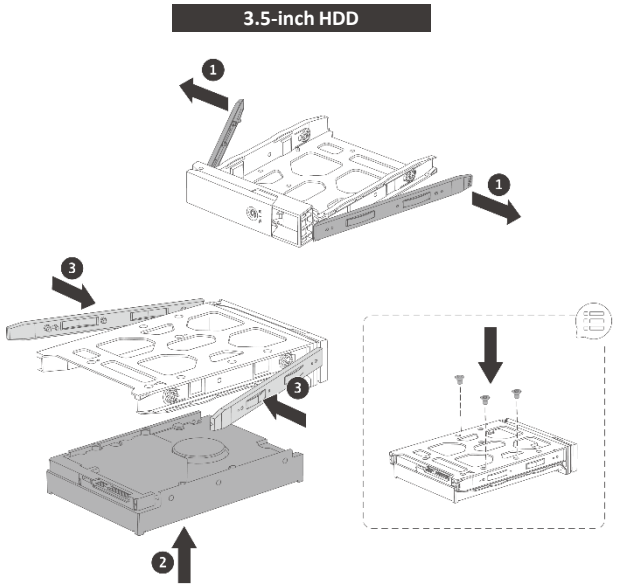
USB 3.2 Gen 1 port

4 x 3.5”/ 2.5”
SATA 6Gb/s
HDD/SSD bay

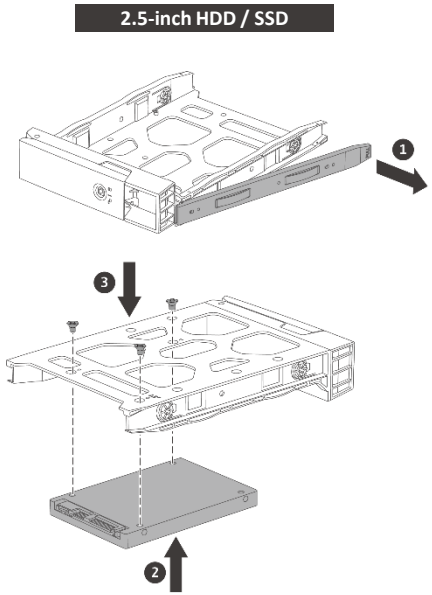
Includes 2 keys for locking the trays

Intuitive HDD and SSD installations

01

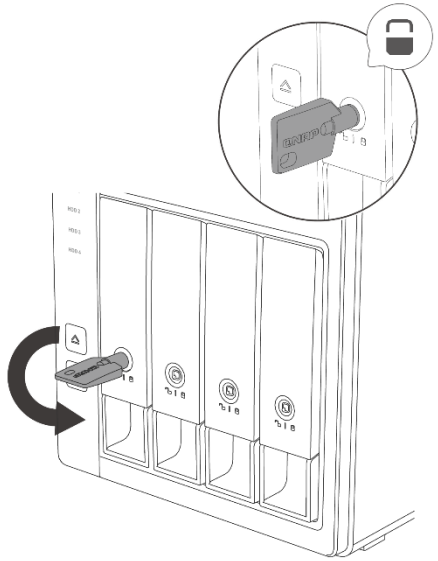


3.5-inch HDD: tool-less installation



2.5-inch HDD/SSD: use a screwdriver

02



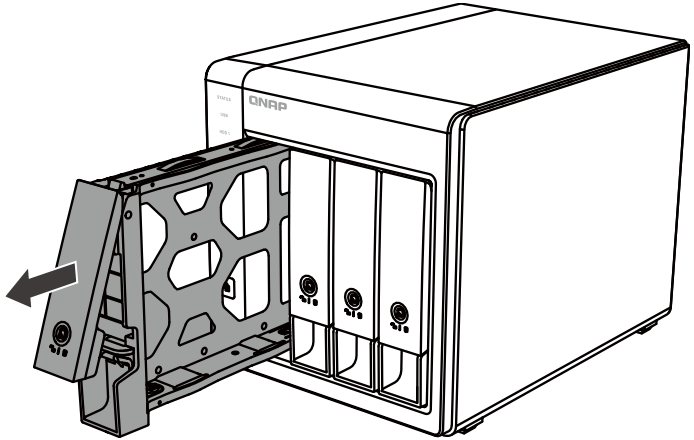
Effortless RAM Upgrade to 8GB

Dual-channel memory

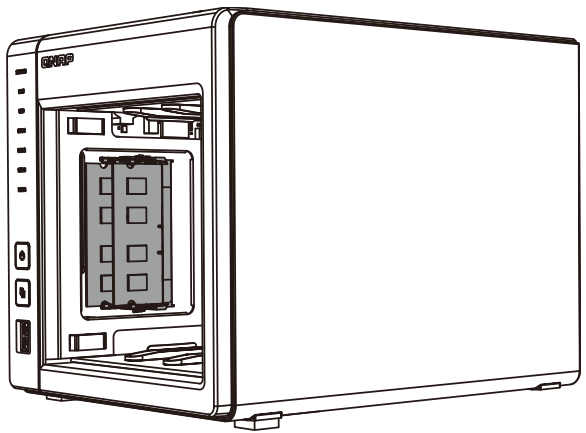
2 x DDR4 SO-DIMM slots,
total 8 GB (2 x 4 GB)

- ✓ Optional 2GB and 4GB memory upgrade modules

1



2



4-bay TS-451D2 rear view

1 x 12cm smart fan

Kensington security slot

Reset button

1 x 4K HDMI v2.0 60Hz

2 x RJ45 GbE ports

3 x USB 3.2 Gen 1 ports

DC 12V power input

Use QNAP NAS to build your personal cloud

Due to COVID-19, people continue to work from home. NAS allows you to access and share the data anytime and anywhere with an Internet connection. NAS can even connect to the public cloud or your company's private cloud and lets you access the data with a computer, iOS, or Android app.

Cloud Storage Gateway

Cloud Storage Mount

Cloud Backup

1| Upload
- Mapped Drive
- Direct Connect

2| Edit
- Mapped Drive

3| Backup
- USB Drive
- QNAP NAS
- Cloud

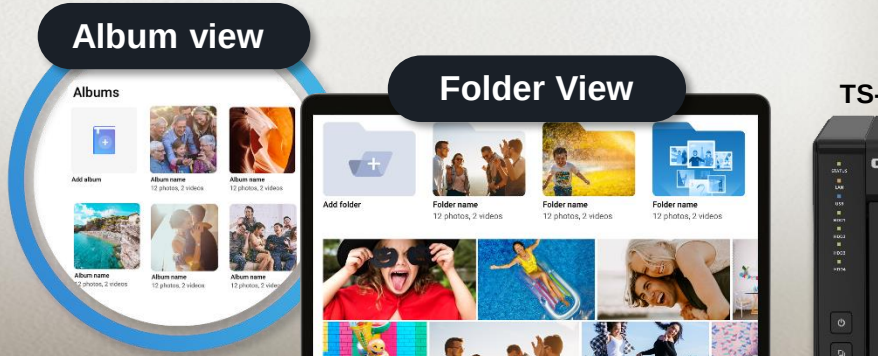
4| Share
- Friends
- Family
- Workgroup
- Clients

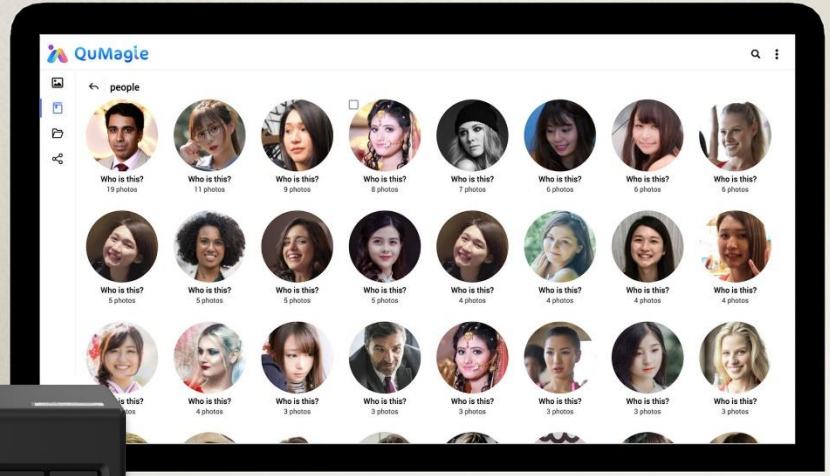
QuMagie smart albums and accelerated AI classification

Organize photos with similar faces using facial recognition

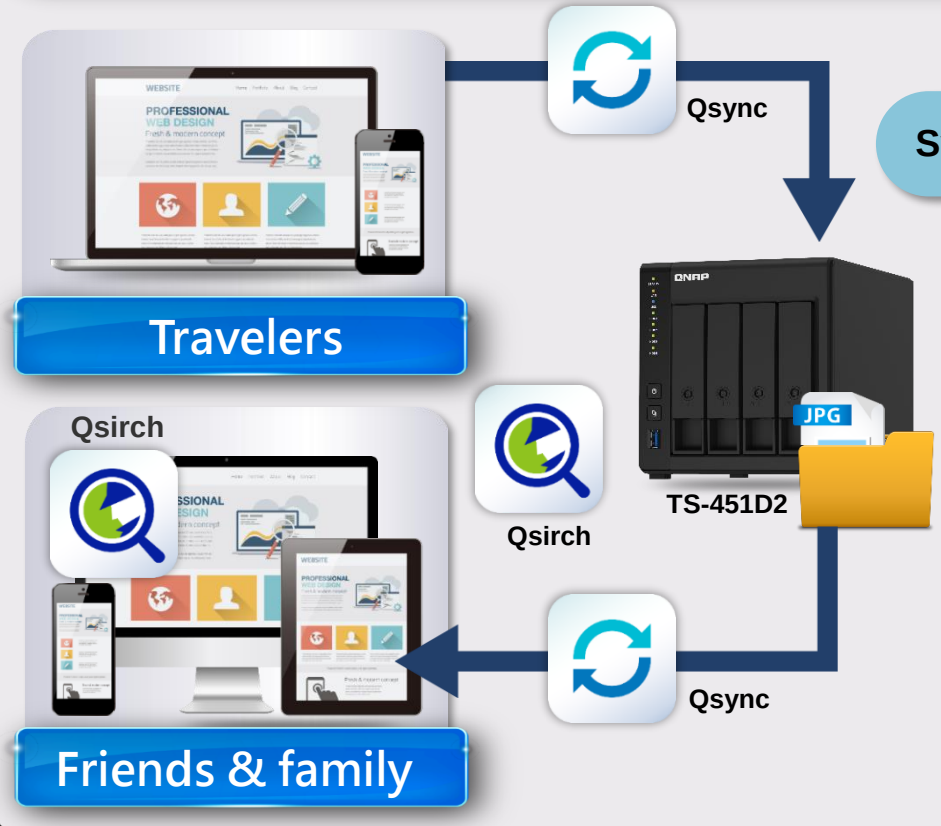
Classify photos into 400 different themes using Subject Detection:

People, tags, dates, events, etc.





Use Qsync to organize and share daily photos



Synchronize data with NAS and devices in real-time

- Travel photos and videos sync to NAS via Qsync
- Use Qfiling to archive files
- Cross-platform device synchronization (Editing photos and videos, writing a travel blog, displaying high-resolution photo movies on the PC platform)
- Use Qsirch to search for photos and videos
- Share with other friends

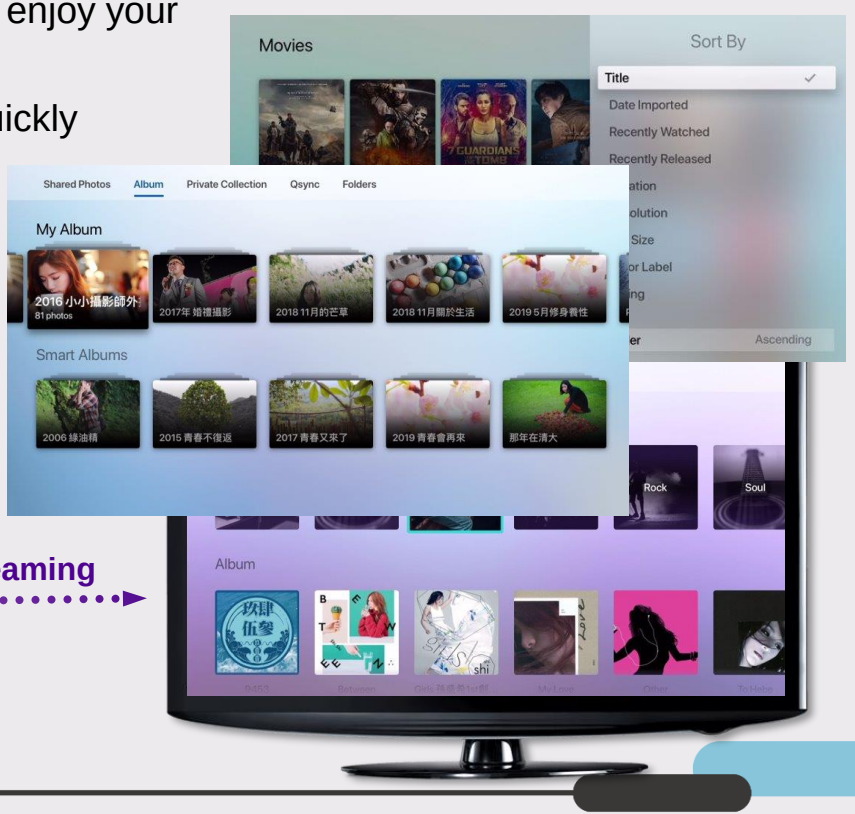
Stream files to Apple TV, Fire TV, Android TV, Roku

- Use the remote control of your media player to navigate
- Categorization and multiple sorting methods to enjoy your media content
- Filters and keyword searches to locate a file quickly

Qmedia

TS-451D2

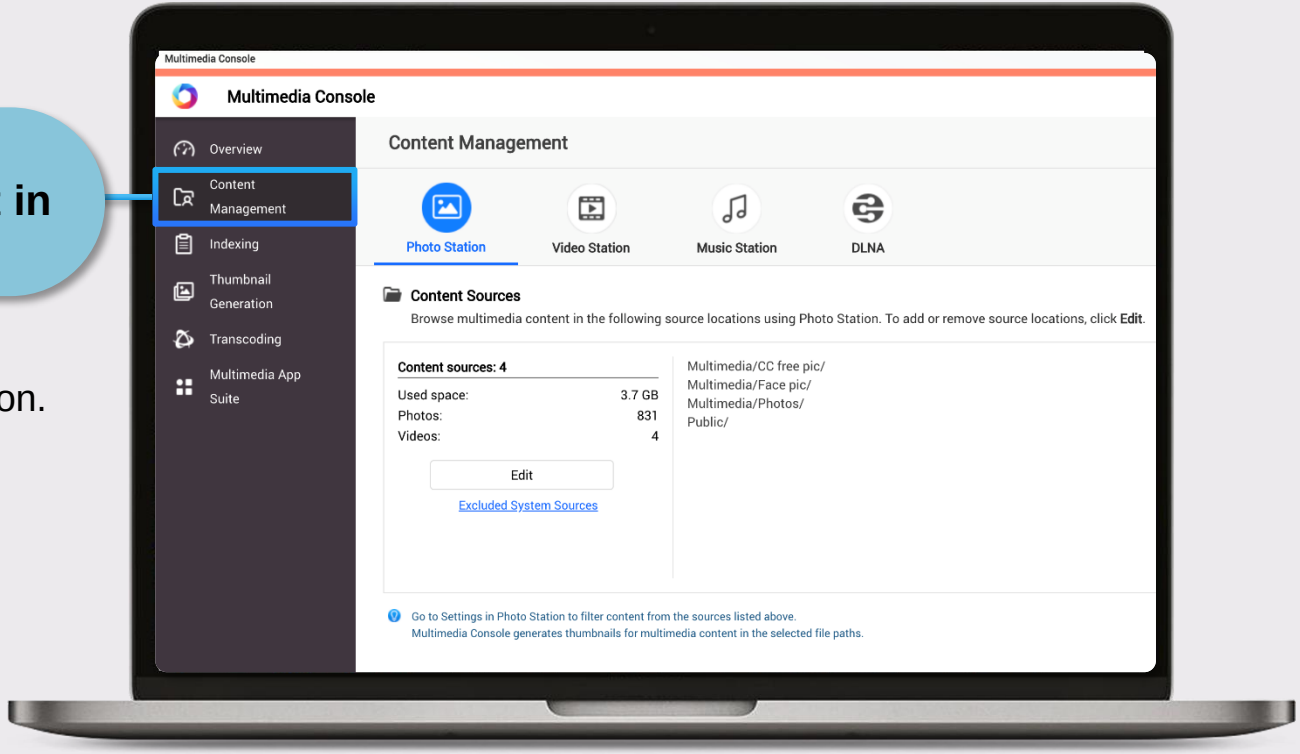
Airplay, DLNA, network streaming



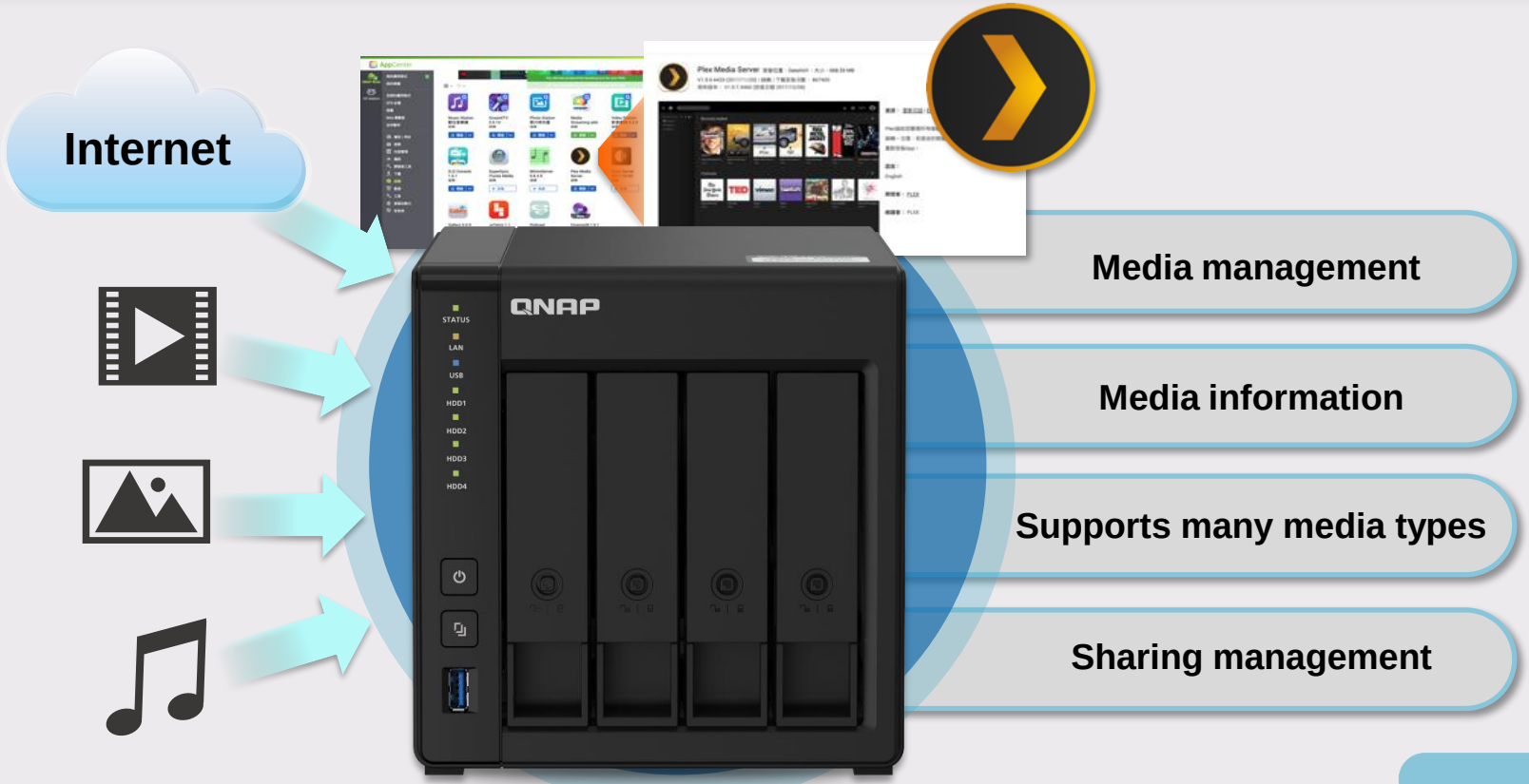
Set content sources for all multimedia applications

Go to Content Management in Multimedia Console

Assign folders as content sources for each application.



Enjoy the content with Plex Media Server

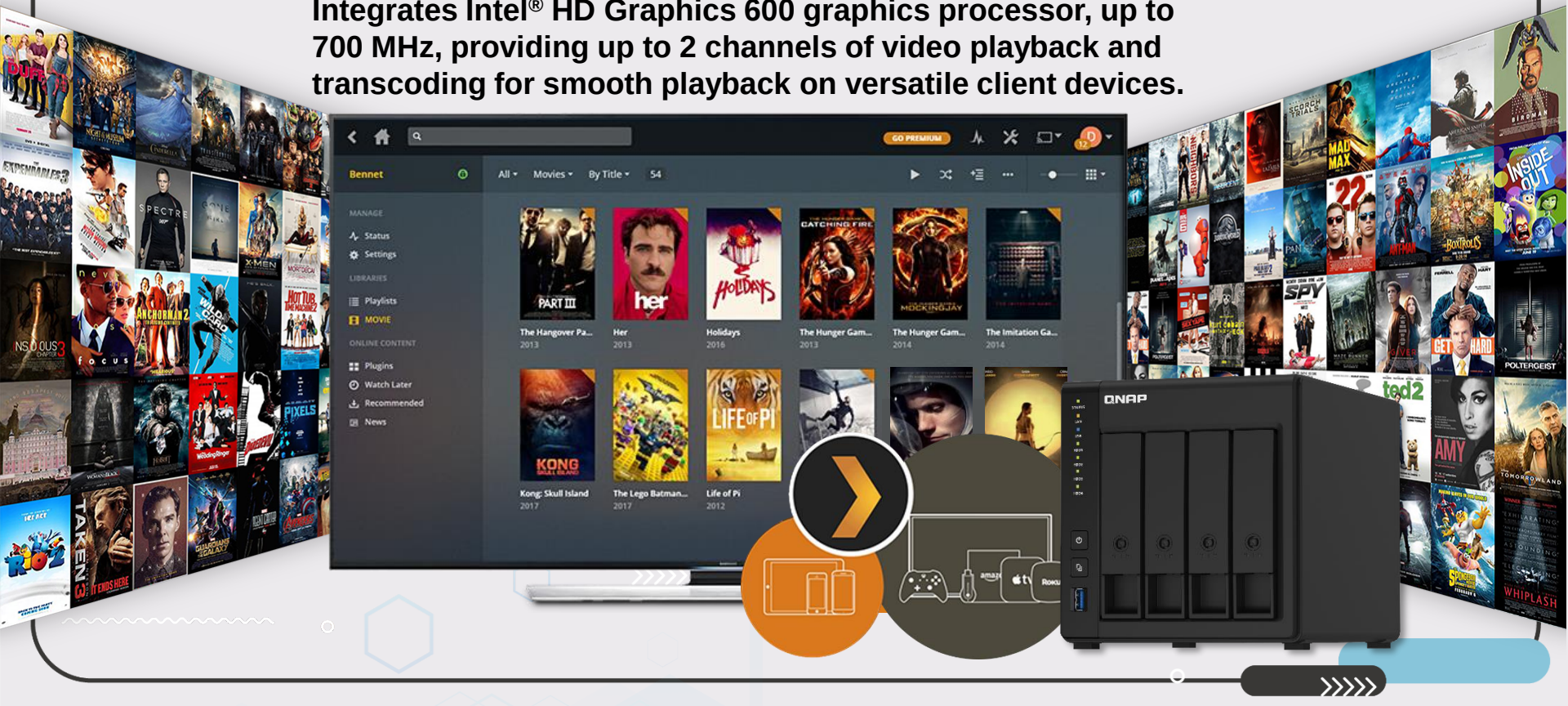


Full multimedia experience over competitors

- 4K HDMI v2.0 60Hz output
- Up to 2-ch 4K real-time transcoding
- Use Cinema28 for multi-room streaming
- Supports USB Keyboard and mouse

Up to 4K video real-time transcoding

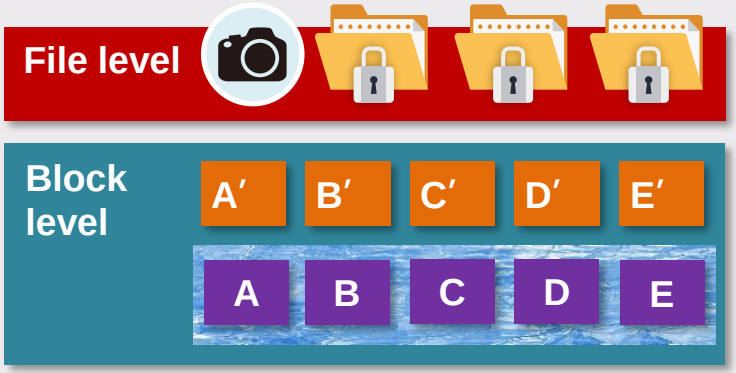
Integrates Intel® HD Graphics 600 graphics processor, up to 700 MHz, providing up to 2 channels of video playback and transcoding for smooth playback on versatile client devices.



QNAP snapshot features for file recovery

1. Fully supports all storage configurations at the storage pool level.
2. Easily take, manage and restore snapshots.
3. Using the mature Ext4 file system for “out of volume” snapshots

RAM Size	NAS SKU	Maximum Total Snapshot Numbers	Maximum Snapshot Numbers per Volume/LUN
2GB	TS-451D2-2G	64	32
4GB and more	TS-451D2-4G	1024	256

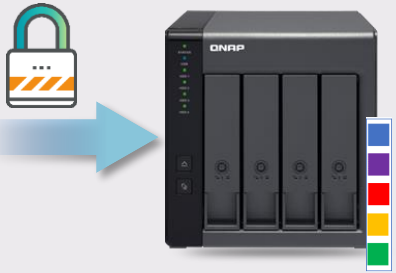


macOS Time Machine backup for multiple users

Use HBS 3 (Hybrid Backup Sync 3) to backup the data from mac to NAS via Time Machine. And then backup the NAS data to an external enclosure.

Mac Time Machine

TS-451D2

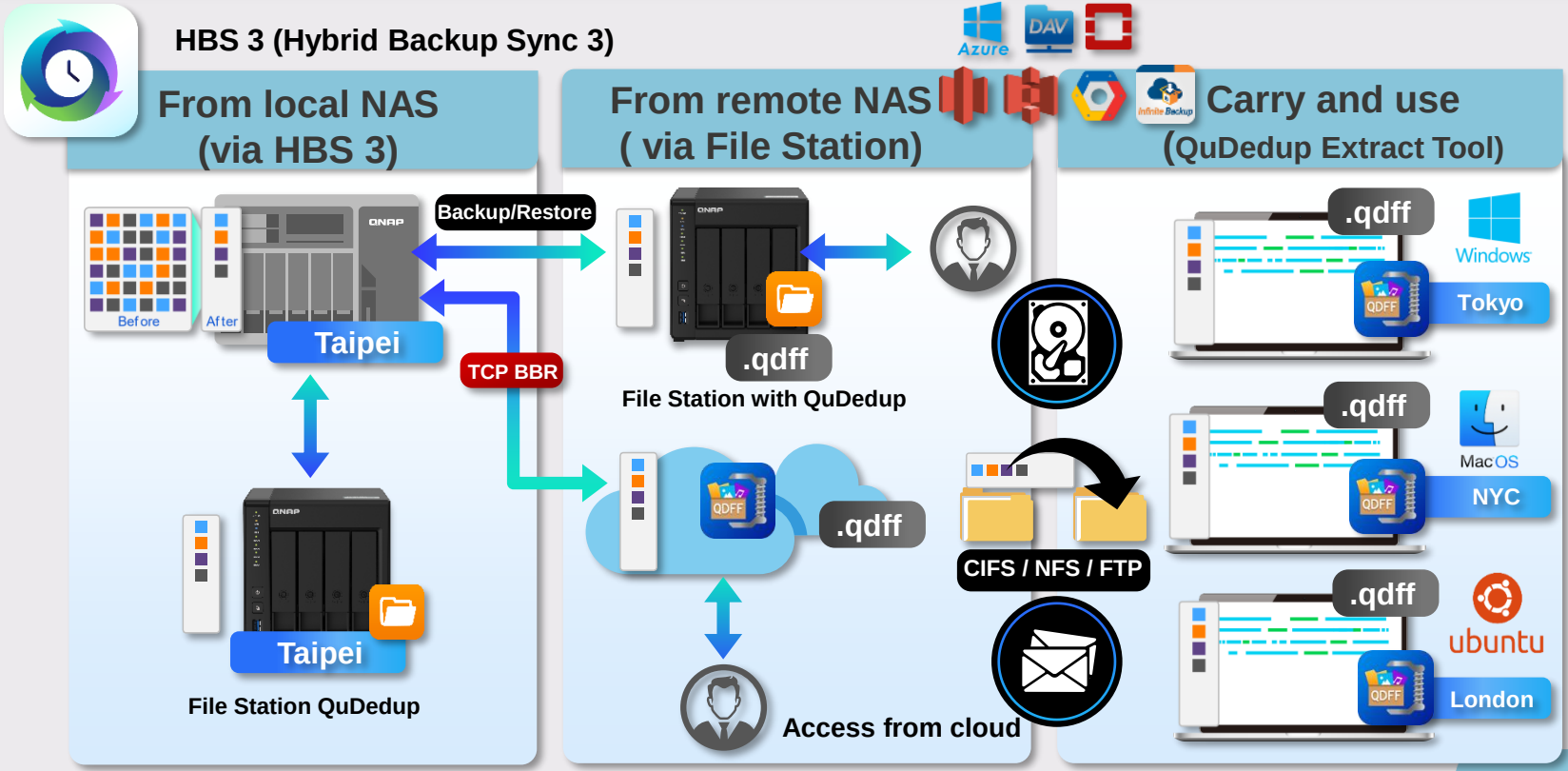


TR-004

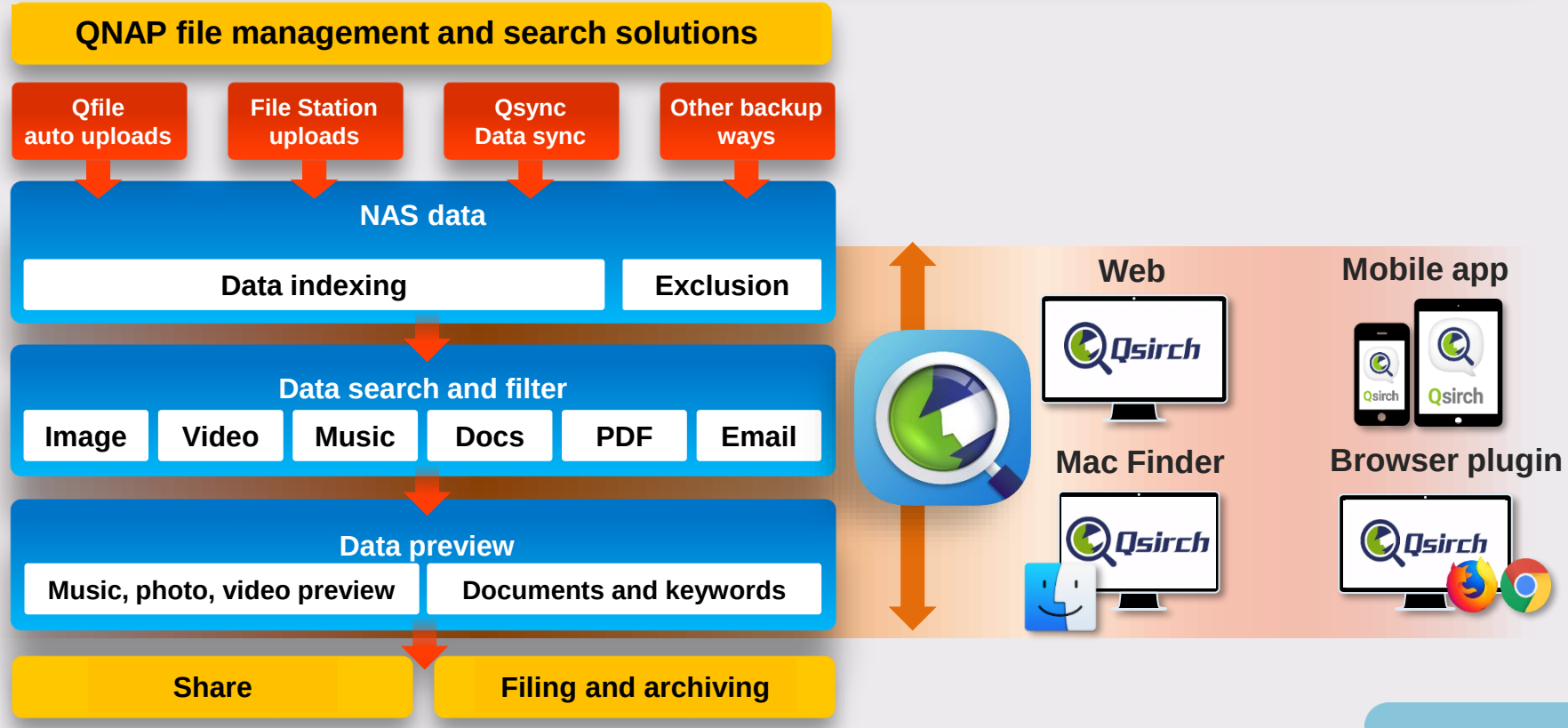
Create the backup job:

1. Select Time Machine Backup as the source
2. Select TR-004 as the destination
3. - Setup the schedule
   - Enable QuDedup

Backup data with deduplication

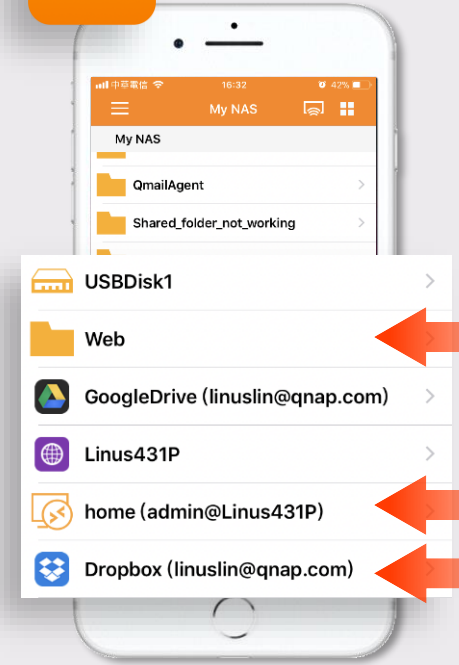


Qsirch 5.0 for NAS advanced file search & management



Connect to Dropbox, OneDrive, Google Drive and more

Qfile

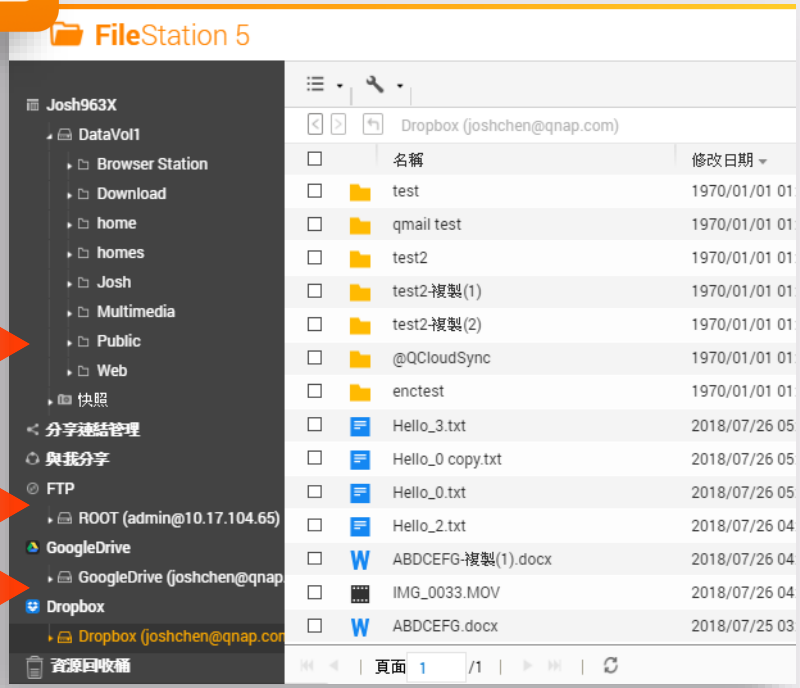


Local NAS

Remote NAS

Cloud Storage

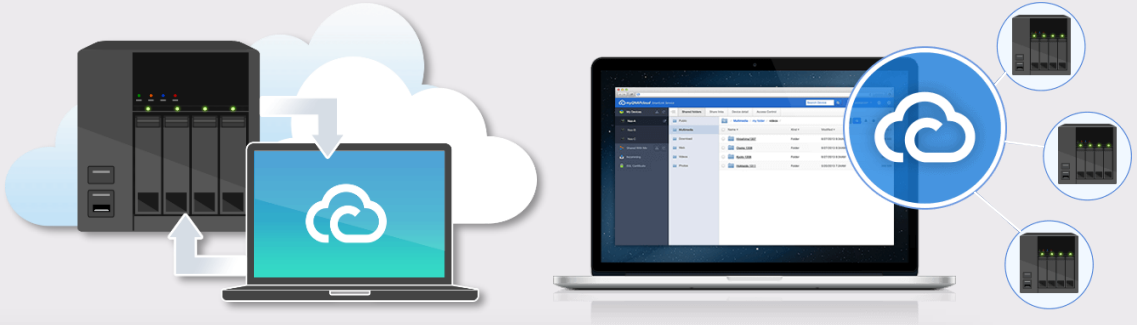
File Station

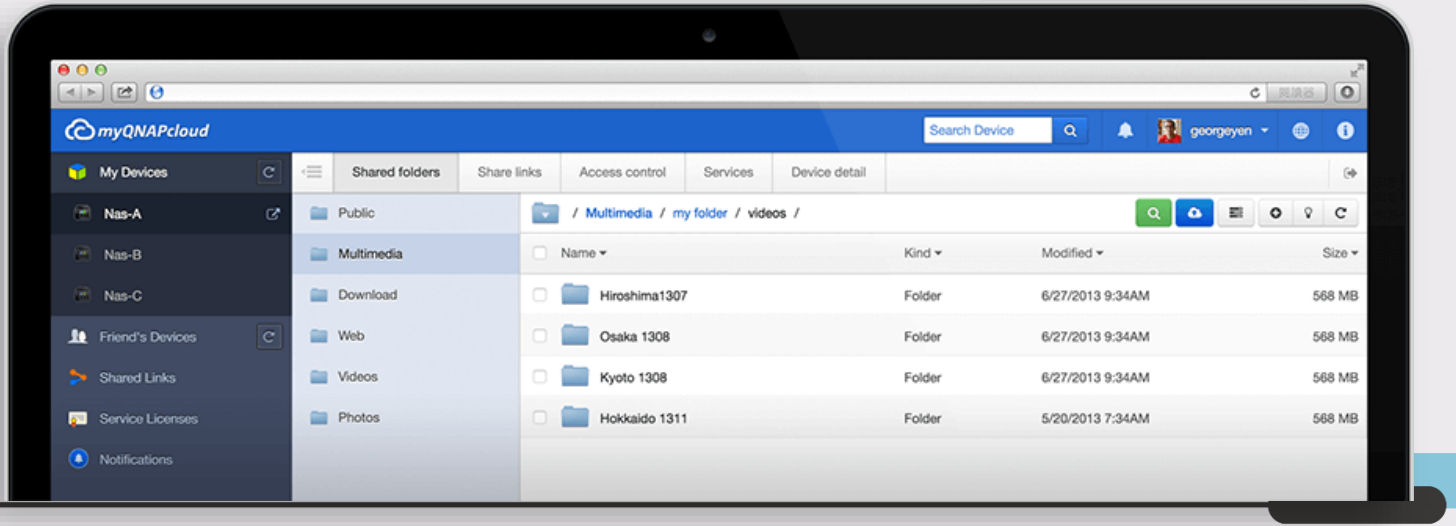


Connect to home or office NAS with myQNAPcloud and QNAP ID (QID)

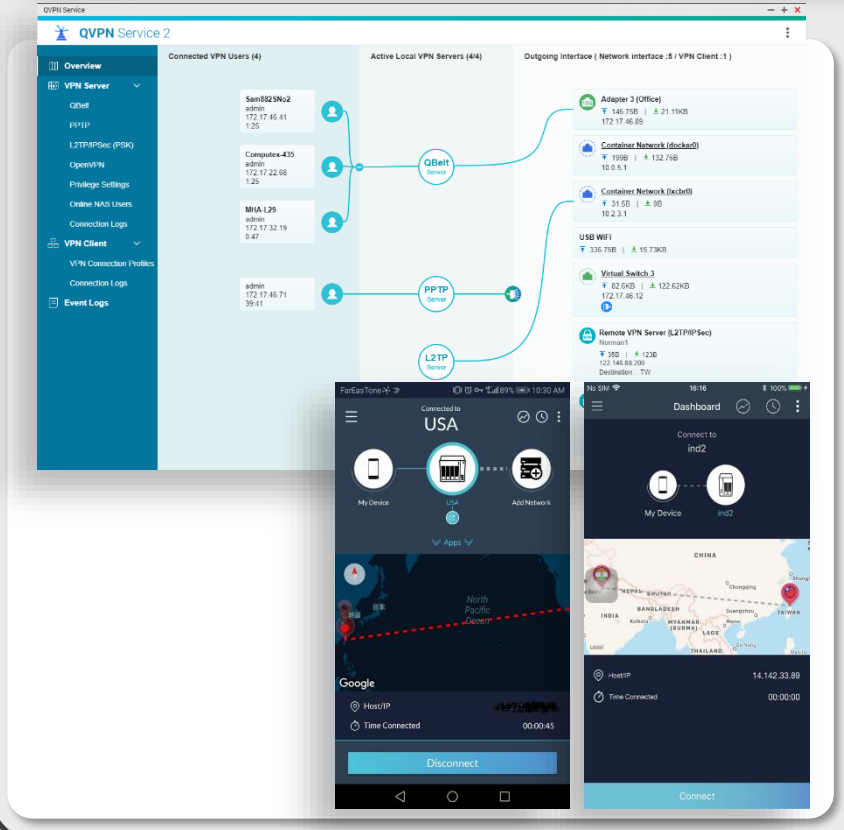
Anytime / Anywhere

Register and login with Email or phone number



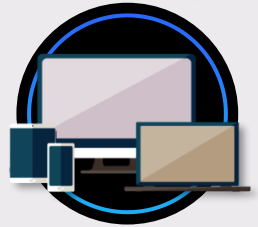


QNAP QVPN and QBelt protocol for anywhere access



Secure Encrypted Connection:
DTLS + SSL +
AES-256 encryption

New VPN protocol:
Decreases the chance of being detected



Works on desktop & mobile devices:
Windows, macOS, Android, iOS

Always get in touch with Notification Center

Centralized setting

One interface to integrate all notification settings and operations

Support multiple notification methods

Meet your various notification scenarios

Highly flexible rule setting

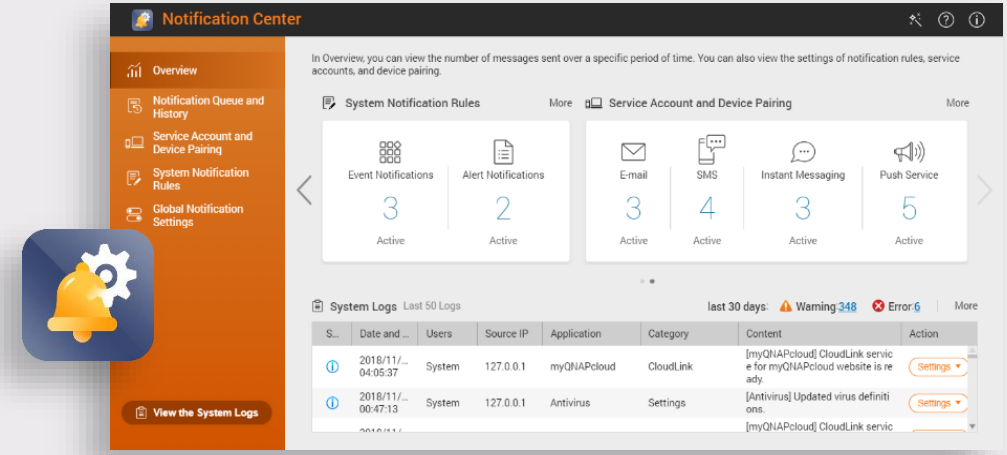
Easily filter important messages you want to receive

Multi-language support

Support 23 language & composed by professionals

Double insurance

Notification history and test function ensure you don't miss one message



QVR Pro surveillance center with IP cams

4GB or more RAM required

- 5,000+ compatible IP cameras
- 8 free recording channels
- 30 expandable channels w/ licenses
- USB webcam support (UVC cams)

For 2GB RAM model:

- **Surveillance Station 5.1**
  - 2 free recording channels
  - 32 expandable channels w/ licenses

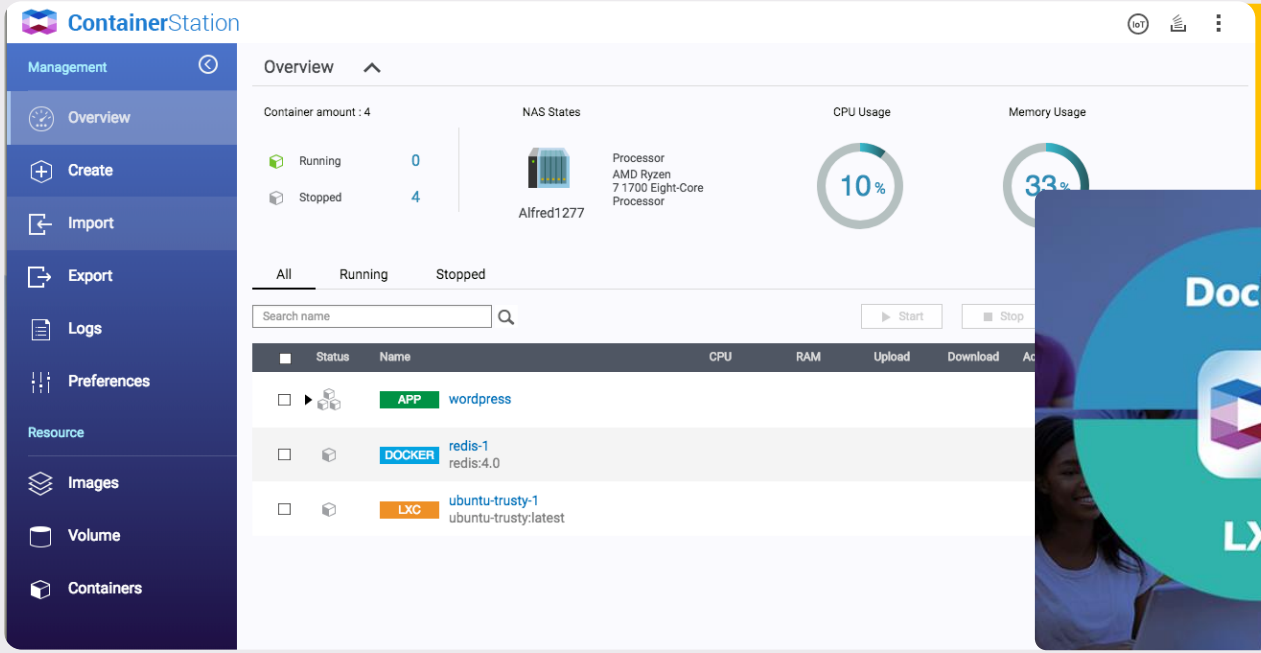
Container Station for running multiple apps

AI, IoT, Commonly-used Container Recommendation

- One-click installation wizard helps you quickly setup
- Supports Docker Compose YAML format to create applications

Easily import/export containers

- Imports images or containers from PC or NAS
- Exports images or containers to NAS as backup



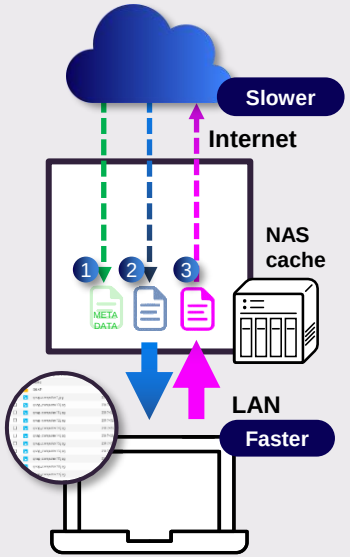
Docker® Hub marketplace

Easy to download apps

HybridMount provides two modes for file-based cloud storage gateway

	Network drive mount	File Cloud Gateway
Setup Method	Mount cloud drives and file servers	Select “File Cloud Gateway” mode and create a dedicated cache space
Connections	No limit	2 free and perpetual connections. Purchase license for more connections
Access Performance	Depends on network speed	High performance thanks to caching
Access in File Station	Supported	Supported
Access through SMB / NFS / AFP	Partially supported	Supported
Sync with the cloud	Sync only when browsing	Sync constantly for quick access
Integration with QTS Apps	Not supported	Supported

- Online collaboration
- File data analysis



Use Virtual JBOD to expand NAS capacity

Max. 8 VJBOD connections

TS-451D2

VJBOD

1GbE
iSCSI VJBOD

TS-832XU

TS-832X

Economical and flexible QNAP expansion enclosures for multi-platform usage

QNAP TR and TL external storage enclosures have many advantages for NAS capacity expansion.

Bigger capacity

- 2, 4, 8-bay choices
- NAS may support up to 2 enclosures

USB connectivity

- The most popular interface

Better compatibility: NAS or PC/server

- Expand NAS or server storage capacity or data migration between different hosts
- QNAP External RAID Manager and JBOD Manager for monitoring the JBOD status

USB interface

TR-002

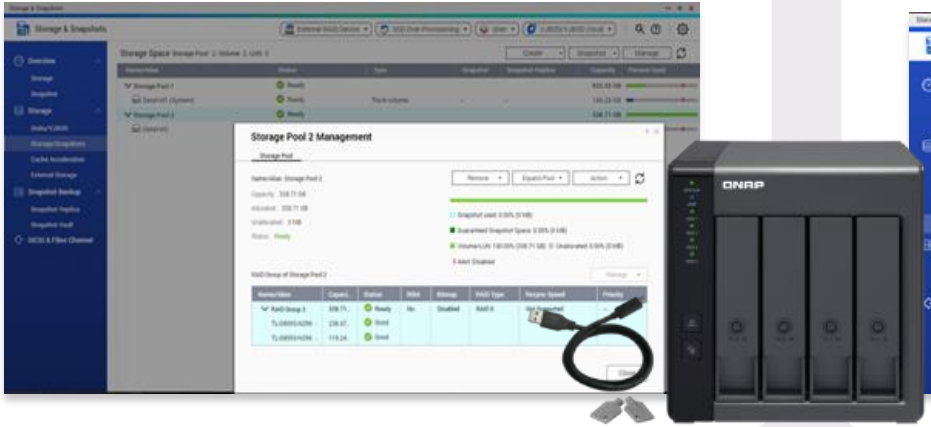
TR-004

TL-D800C

One enclosure for two different uses: internal expansion or external disk mode

RAID & Storage Pool

All disks of TR & TL expansion units would be identified by Storage & Snapshot manager, then configure as a RAID of storage pool.



External Disk Mode

Each disk acts as a single disk; it will show 8 independent disks with TL JBOD, or as a single disk or individual disks with TR RAID. This mode is also for cross-platform compatibility between OSes.

- TL & TR units cannot be configured as a RAID group with those internal disks from NAS.
- TR units can only support RAID 0/1/5/10 and JBOD modes.

Extend warranty to 5 years to protect your assets

Standard 2-year warranty + optional 3-year extended warranty = 5 years of warranty

https: //www.qnap.com/service/product-warranty/

P/N: EXTW-GREEN-3Y

- ✓ **Go to the warranty site**
- ✓ **Register the NAS**
- ✓ **Purchase the coverage**

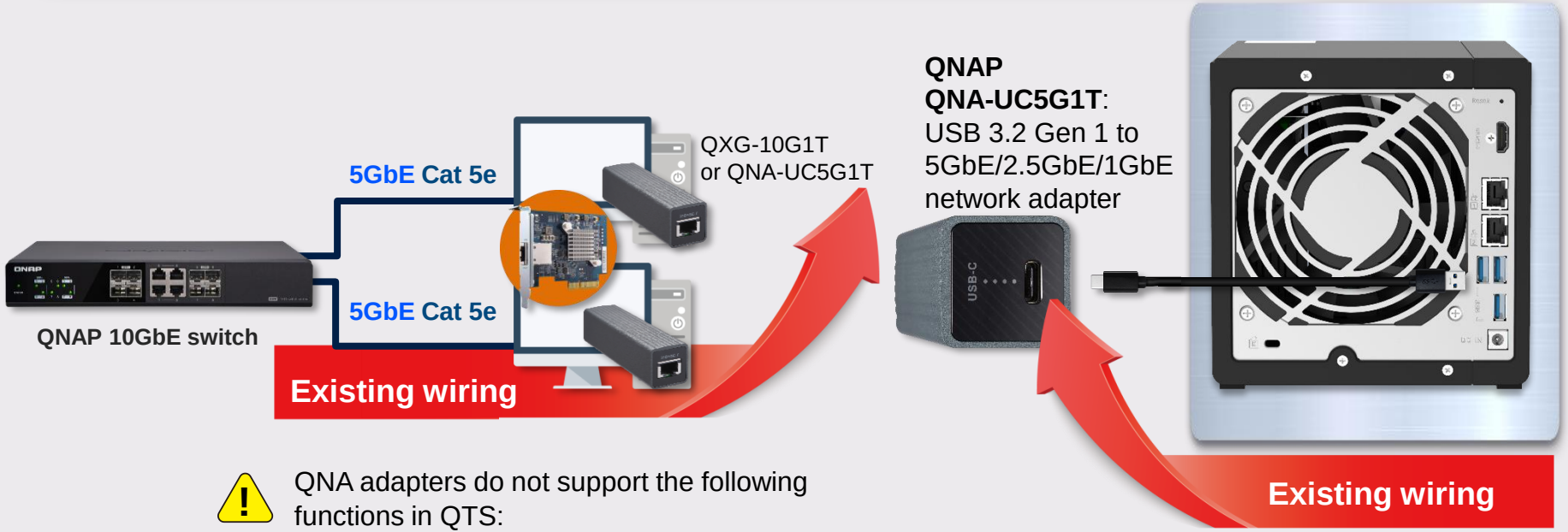
2-year Standard Warranty

- 2-year standard warranty service that comes in effect at the time of purchase.
- Free repair and part replacement for products under normal use during warranty period. (Spare parts and consumables are excluded)

Optional 3-year Extended Warranty

- Extending your warranty with this paid service, available within 90 days of the initial unit purchase.
- Offers identical service to standard warranty.

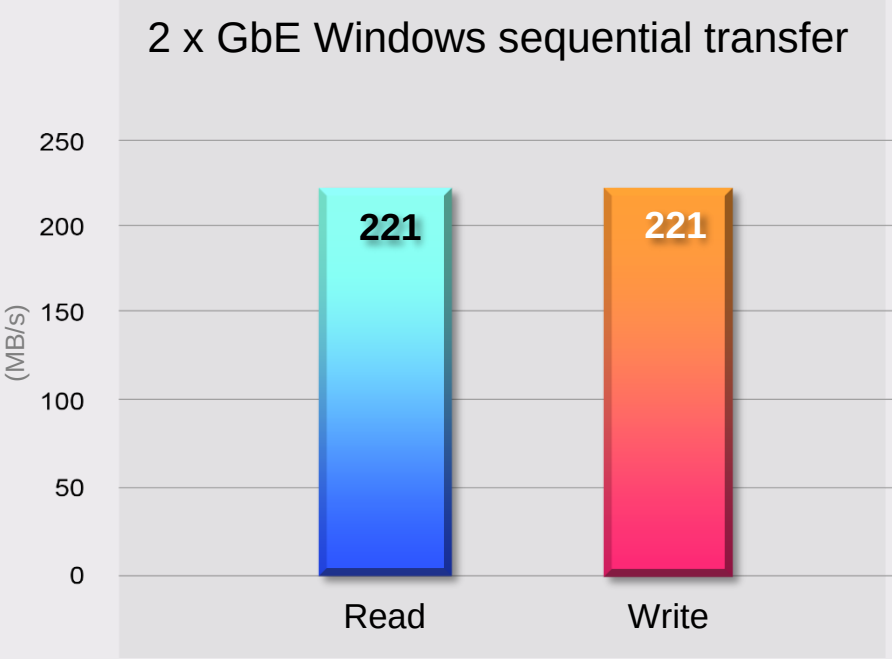
USB to 5GbE/2.5GbE adapter with QNAP QNA-UC5G1T

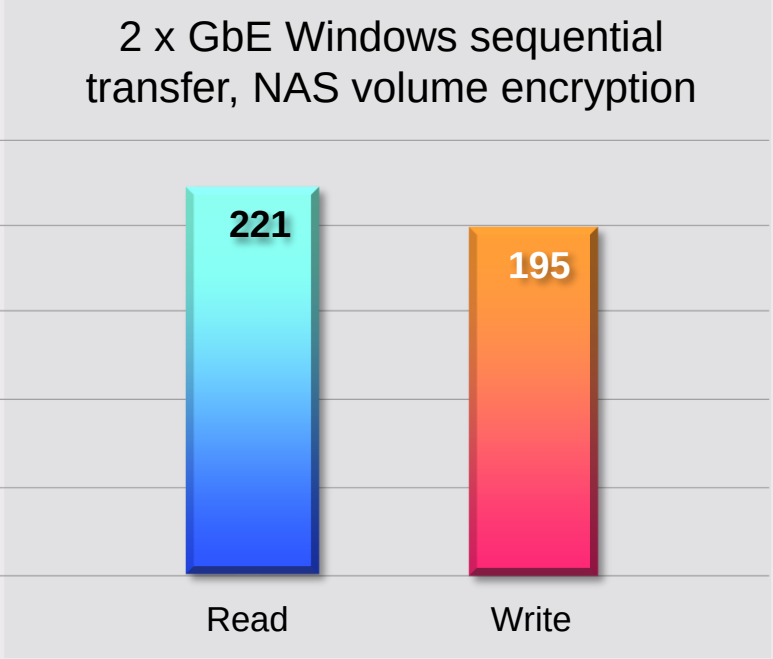


QNA adapters do not support the following functions in QTS:

- Port trunking (LACP)
- DHCP server
- RADVD server
- Static route

4 x HDDs, RAID 5, 2 x GbE performance data





Tested in QNAP Labs. Figures may vary by environment.
Test environment:
NAS: TS-451D2-4G, QTS 4.4.2, 4 x Seagate ST1000NM0033 1TB HDDs, RAID 5, thick volume

Client PC: Windows 10 Pro, Intel Core i7-6700 3.4 GHz, 32GB RAM ◦
IOmeter: RAM*4, 30-sec ramp up time, 3-min seq. run time, 2 workers, 64-outstanding ◦

QNAP

A complete lineup for building up your home cloud

NAS models	TS-451D2 NEW PRODUCT	TS-251D	TS-253D/453D/653D	TS-251+/451+	TS-231P3/431P3
Processor	Intel Celeron J4025 2-core 2.0 GHz, up to 2.9 GHz		Intel Celeron J4125 4-core 2.0 GHz, up to 2.7 GHz	Intel Celeron J1900 4-core 2.0 GHz, up to 2.42 GHz	Annapurna Labs AL314 4-core 1.7 GHz
Memory	DDR4, max. 8 GB			DDR3L, max. 8 GB	DDR3, max. 8 GB
PCIe slot	---	PCIe 2.0 x4	• 253D: PCIe 2.0 x4 • 453D/653D: PCIe 2.0 x2	---	---
1GbE port	2	1	---	2	1
2.5GbE port	With a USB adapter	With a PCIe or USB adapter	2	With a USB adapter	1
5GbE port	With a USB adapter	With a PCIe or USB adapter	With a PCIe or USB adapter	With a PCIe or USB adapter	With a USB adapter
10GbE port	---	With a PCIe adapter	With a PCIe adapter	---	---
USB port	4 x 3.2 Gen 1	2 x 3.2 Gen 1 + 3 x 2.0	2 x 3.2 Gen 1 + 3 x 2.0	2 x 3.2 Gen 1 + 2 x 2.0	3 x 3.2 Gen 1
SSD cache	Yes	Yes	Yes	Yes	Yes
HDMI output	4K 60Hz	4K 60Hz	4K 60Hz	1080P 30Hz	---

QNAP

TS-451D2

Impressive, yet affordable!

Home cloud. Done.

4-Bay NAS

2 x GbE

Copyright © 2020 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.