QNAP

TVS-675

QTS and QuTS hero dual O.S.: ZhaoXin KaiXian 8-core 2.5GHz NAS with 2.5GbE、GPU、HDMI、M.2 NVMe/SATA SSD slots and dual PCIe slots for network/storage expansion

兆芯 x86 8 core GPU PCIe 2.5GbE HDMI

QTS / QuTS hero

TVS-675 the 8-core SMB NAS with 4K graphics

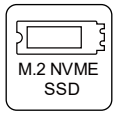
QTS / QuTS hero

Dual Opreation Systems

Pre-installed QTS, optional entrprise ZFS QuTS hero

Zhaoxin Kaixian U6580 8C / 8T 2.5GHz SoC

8-core/8-thread x86 processor, built in graphic processor



2 x M.2 PCIe NVMe/SATA SSD slots

Dual M.2 2280 NVMe/SATA SSD to boost performance

2 x 2.5GbE RJ45 (1Gb/100Mb ethernet support)

Dual 2.5GbE LAN ports w/ link aggregation

2 x PCIe 3.0 x4 Slots

Dual PCIe 3.0 x4 slots for network, storage, or M.2 SSD expansion

TVS-675

QTS / QuTS hero dual operating systems for powerful and secure NAS applications services

The QTS operating system is preloaded by default. Businesses can switch to ZFS-based QuTS hero operating system with greater reliability based on the needs of different applications at any time.

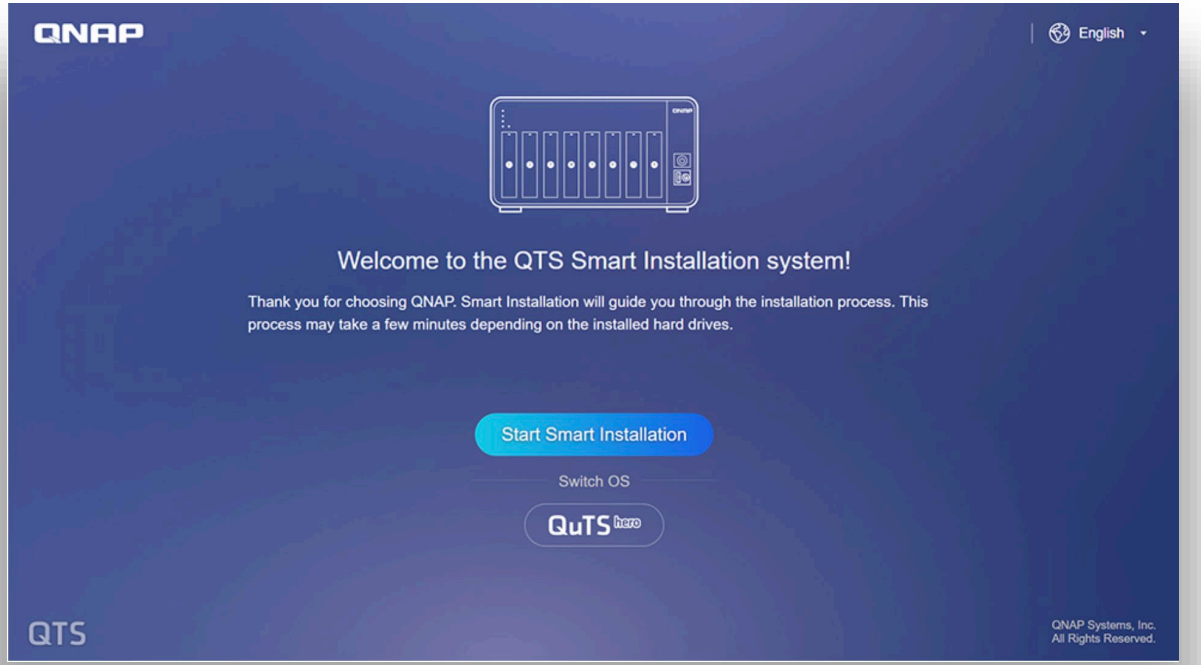
Attention：

1. Since QTS and QuTS hero use different file systems, users must not insert the old hard disks between different operating systems to avoid data loss.

2. When using QuTS hero, we recommend to use SSD as your system drives to gain better performance.

a. Hot swap drives by installing 2.5” SATA SSD in two 3.5” drive bays

b. M.2 NVMe SSD slots on motherboard do not supprt hot-swapping



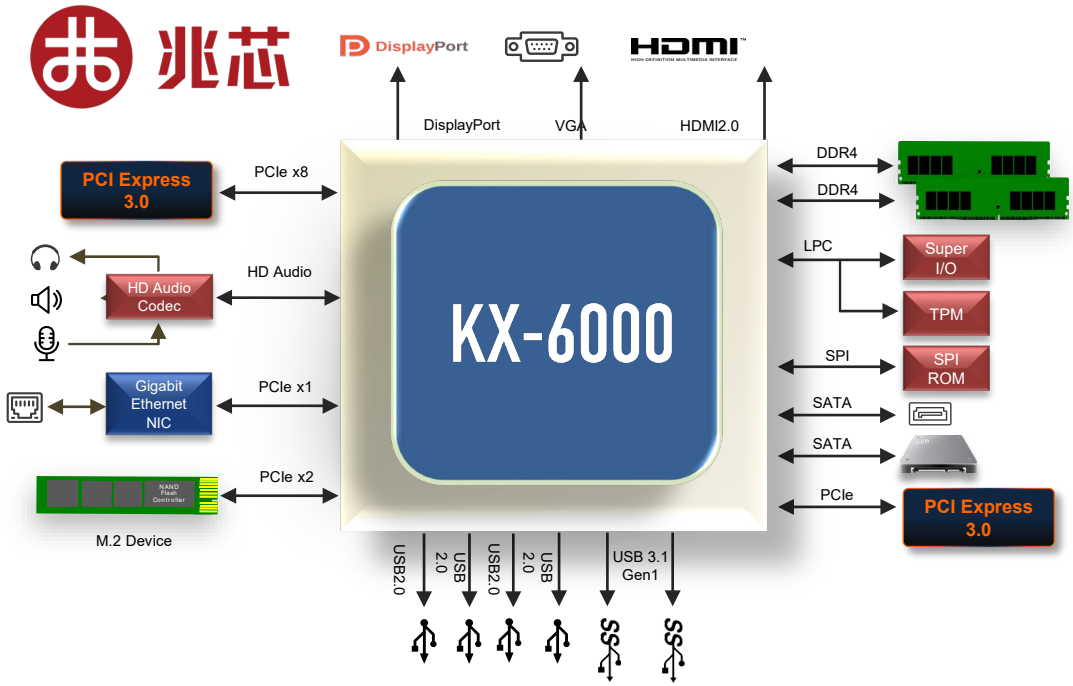
TVS-675 NAS with 8-core 2.5GHz CPU, 8MB L2 cache, GPU with 4K transcoding and video output via HDMI 2.0

	TVS-675
CPU model	KX-U6580
# of core	**8**
# of thread	**8**
Base frequency	**2.5 GHz**
Burst frequency	---
L2 cache	**8MB**
VT-x / IO virtualization	Supported
Memory	DDR4
GPU	C960 chipset: **HDMI 2.0@4k**
CPU architecture	**X86**

TVS-675

Made in Taiwan

Advanced 8-core 2.5GHz SoC with integrated 4K video graphics and multiple I/O lanes



- The Zhaoxin 8C/8T KX-U6580 has lower latency while running multi-task application.
- Multi-core graphic processing unit to provide 4K video transcoding and HDMI output with HDMI 2.0.
- 8-core CPU suited for multiple virtual machines (VM) with the VT-x and IO virtualization support

"made using (Taiwan) TSMC's 16 nm technology" - AnandTech

Reference: https://www.anandtech.com/show/13388/zhaoxin-shows-x86-compatible-kaixian-kx6000

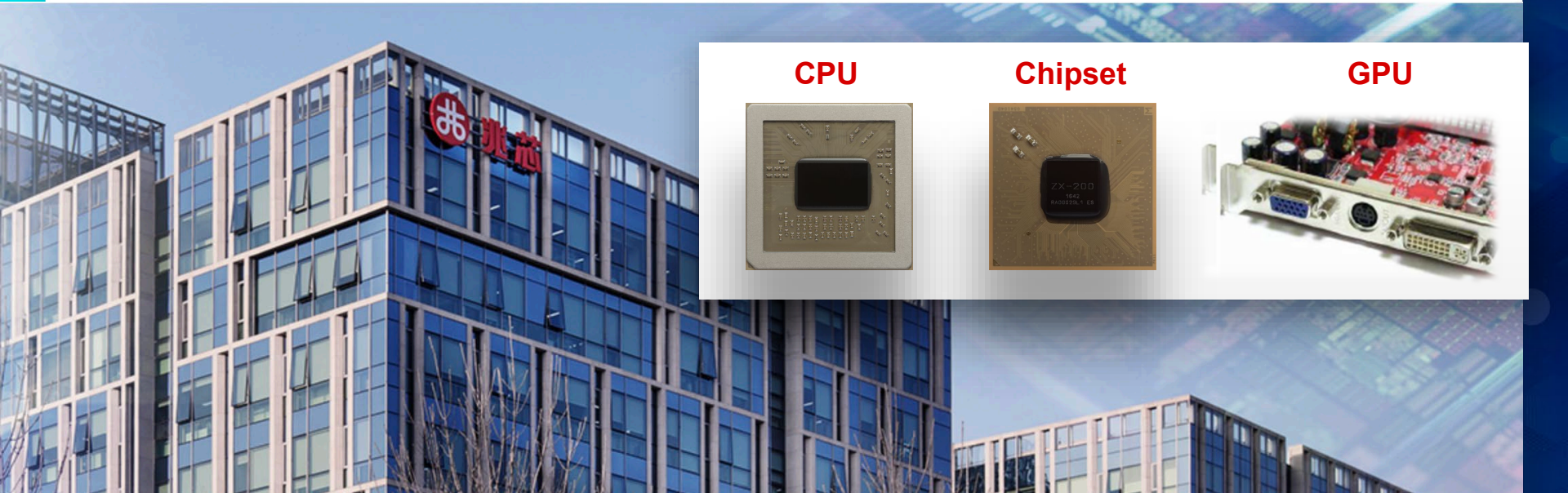
Background and core technology of Zhaoxin CPU

Zhaoxin Inc.

Founded in 2013, based on technologies from VIA

3 key technology

Zhaoxin has core CPU and chipset (South-bridge) technology, also integrated graphics chipset.



CPU

Chipset

GPU

Trusted by the PC industry leaders. Many business-oriented desktops and laptops based on Zhaoxin solutions.

ASUS D349SD desktop
Zhaoxin KX-5000 series CPU

Datasheet

HP 268 Pro G1 MT

Maximize your investment with a powerful CPU from China

Lenovo CF4620 laptop
Zhaoxin KX-6000 series CPU

Lenovo M630 desktop
Zhaoxin KX-6000 series CPU

Lenovo S620 desktop
Zhaoxin KX-5000 series CPU

TVS-675 Front view

Lockable drive Trays
(2 keys are included)

LED:
Status、Network、
HDD、M.2 SSD

6 x 3.5"/2.5”
SATA 6Gb/s
HDD/SSD slots

TVS-675

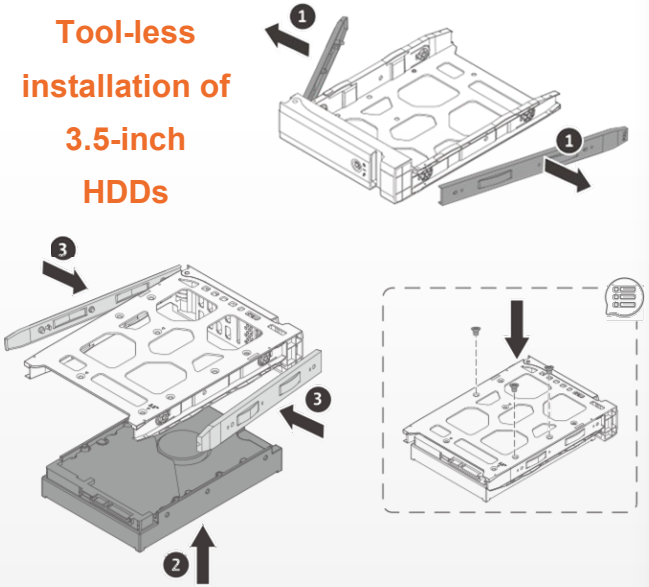
Power button

USB 3.2 Gen 2 Type-A 10Gbps port and copy button

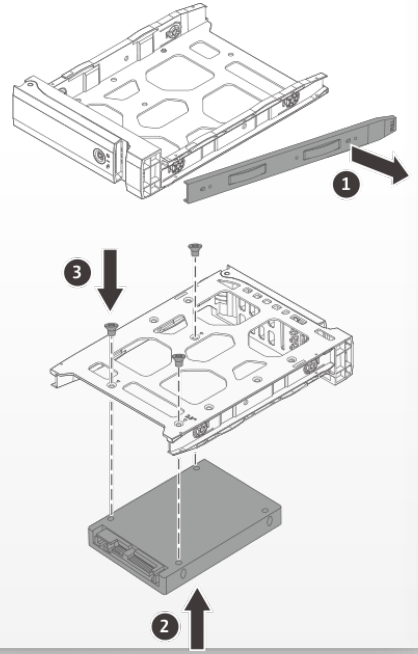
Easy installation of disks and lockable trays

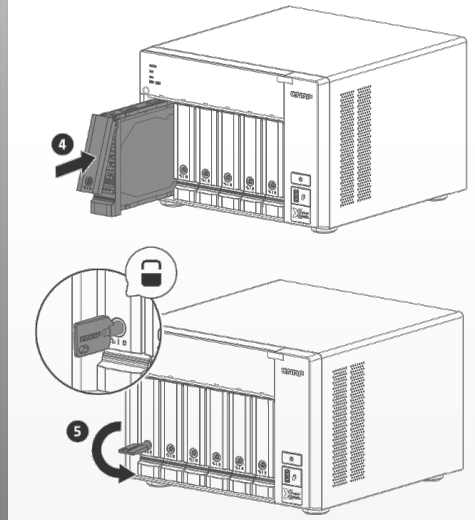
3.5-inch HDD

Tool-less installation of 3.5-inch HDDs



2.5-inch SSD / HDD





TVS-675 Rear view

2 x PCIe Gen3 x4 Full-height slots

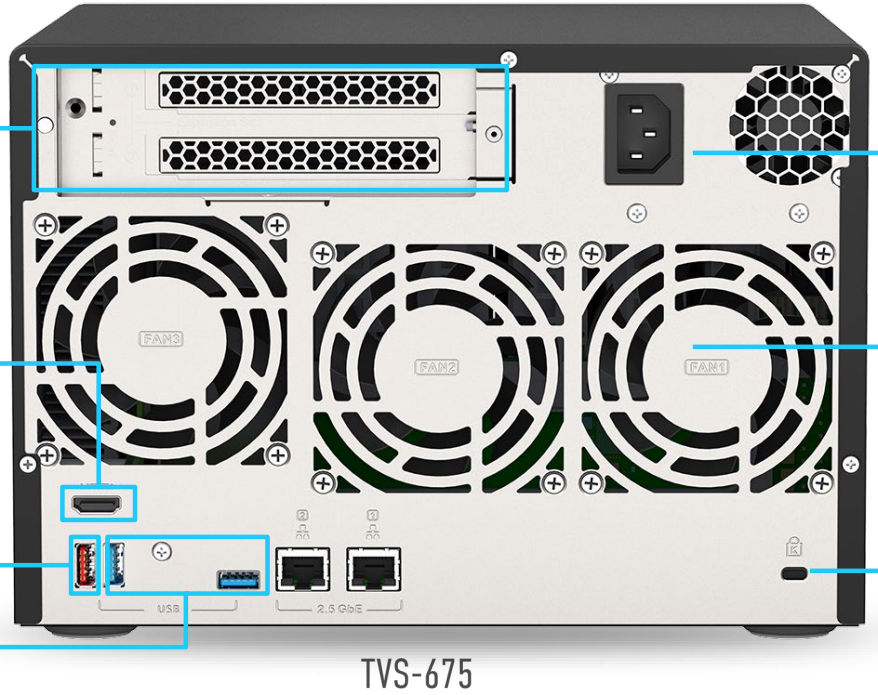
(10GbE/5GbE/2.5GbE、QM2 SSD、Fibre channel、SATA、SAS PCIe cards)

1 x HDMI 2.0 port

Support HDMI 2.0@4k

1 x USB 3.2 Gen2 10Gbps Type-A port

2 x USB 3.2 Gen1 5Gbps Type-C port



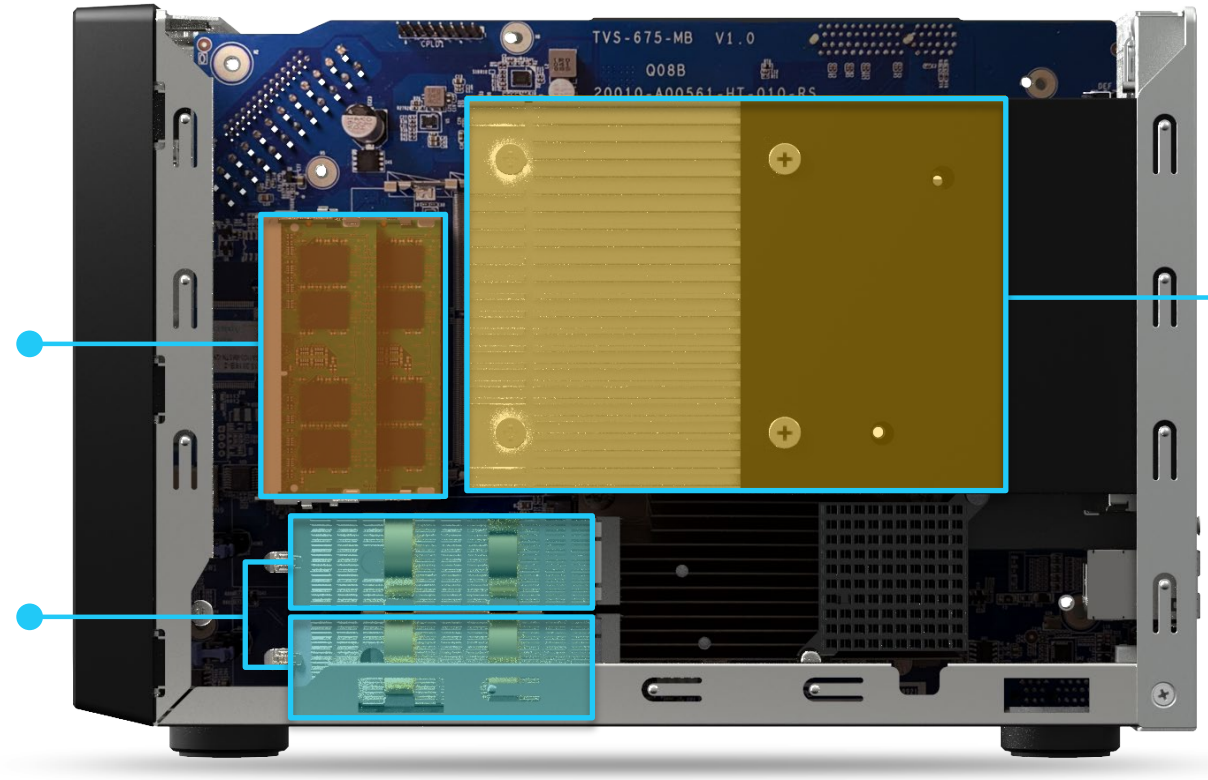
TVS-675

250W 100-240VAC PSU

Fan:
6CM CPU fan +
2 x 9CM system & disk fan

Kensington K-lock

TVS-675 Side view for RAM and M.2 SSD upgrades



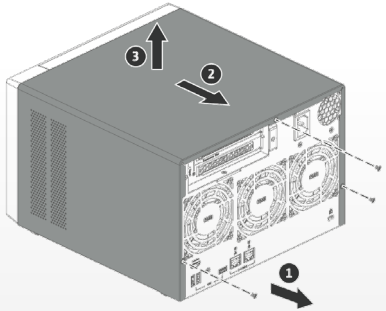
2 x M.2 NVMe PCIe / SATA SSD slots supporting SSD cache or Qtier auto tiering

2 M.2 2280 NVMe PCIe Gen3 /SATA NVMe SSD for SSD cache or Qtier auto tiering performance enhancement.

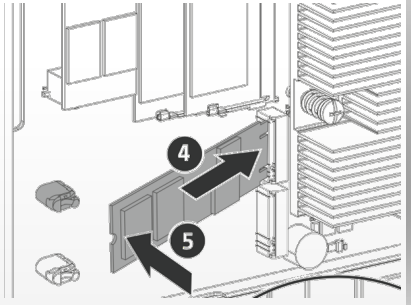
- **Improve random data access speeds with an SSD cache**
  SSD caches accelerate IOPS performance and reduce latency for storage volumes. They are perfect for IOPS-demanding applications (including databases and virtualization) and can significantly improve overall workflows.
- **Maximize the value of SSDs with Qtier Technology**
  Qtier™ Technology empowers the NAS with auto tiering that helps continuously optimize storage efficiency by automatically moving data between M.2 SSDs, 2.5-inch SSDs, and high-capacity HDDs based on the data's access frequency. Qtier™ 2.0 features IO-awareness that empowers SSD-tiered storage with a cache-like reserved space to handle burst I/O in real time, greatly maximizing the advantages of SSDs.

Note: Qtier is only supported in the QTS OS, not in the QuTS hero OS.

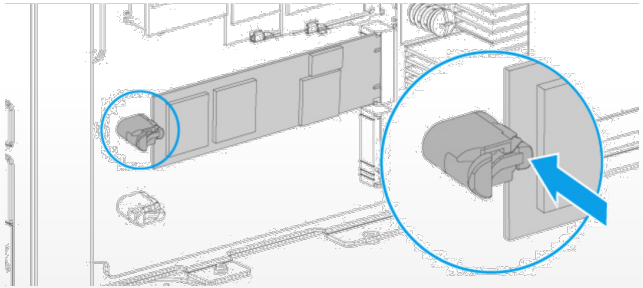
1. Remove screws and cover



2. Install M.2 SSD



3. Tool-less M.2 SSD installation

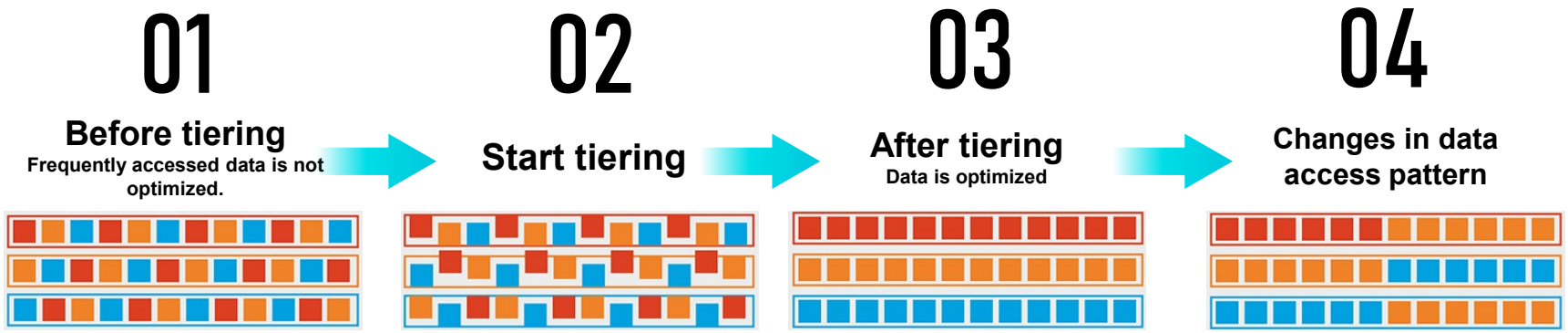


M.2 NVMe/SATA SSD and Qtier auto-tiering for speed and capacity

Qtier engine

- Hot data
- Warm data
- Cold data

- Automatically moves data between different tiers
- SSD tier capacity is not limited by RAM size



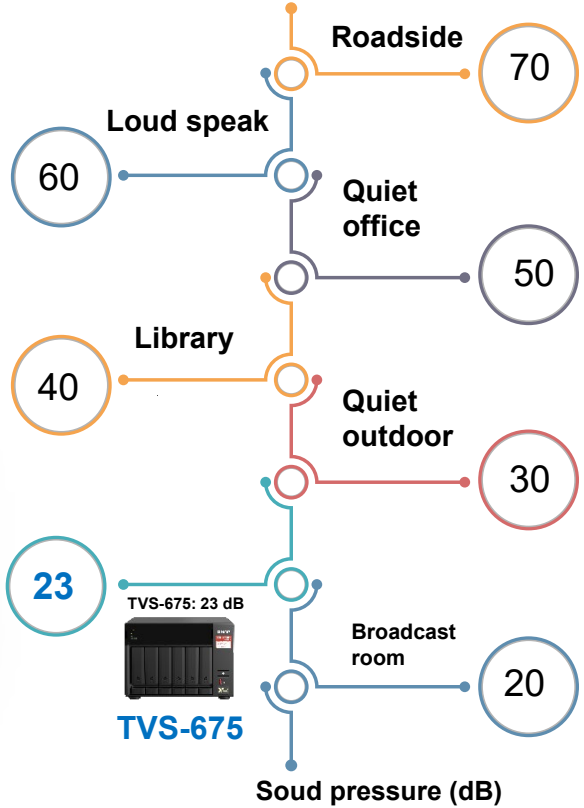
Note: Qtier is only supported in the QTS OS, not in the QuTS hero OS.

Compartmentalized smart cooling

Enhanced design over the previous generation to separately detects the CPU and hard drive temperatures for dynamically adjusting separate fan speeds for an quieter operations in the office.

CPU side

HDD side



Noise Test：Sound pressure is measured at the front bystander position with low fan speed.

Large 8GB DDR4 memory, ready for any app, and upgradeable to max 64GB RAM

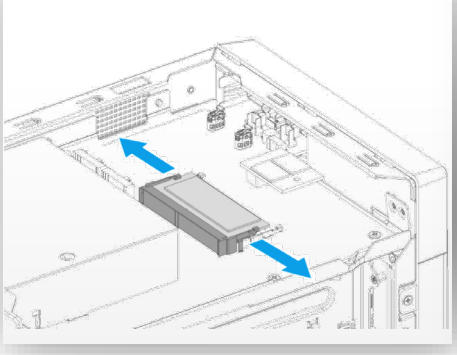
NAS Model Number:

TVS-675-8G

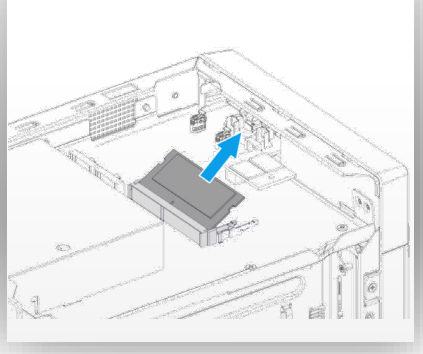
8 GB RAM (1 x 8 GB)

- 2 x DDR4 SO-DIMM RAM slots for a max of 64 GB (2 x 32 GB), dual-channel support
- QNAP 8/16/32 GB RAM modules for easy upgrade and better multi-app or multi-user usage.

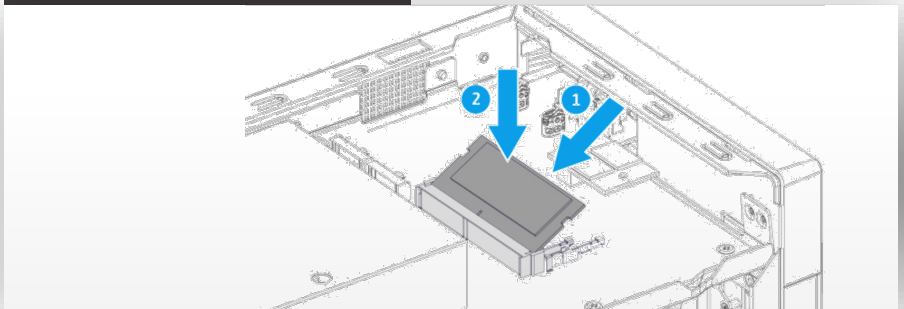
1. Remove the cover



2. Remove the old RAM (optional)



3. Install the new RAM



2 x 2.5 GbE LAN ports supporting link aggregation for maximum 5Gbps combined bandwidth

2.5GbE-supported motherboards, Wi-Fi 6 AP, switches, and LAN cards are now becoming popular

2.5GbE benefits

2.5X the speed

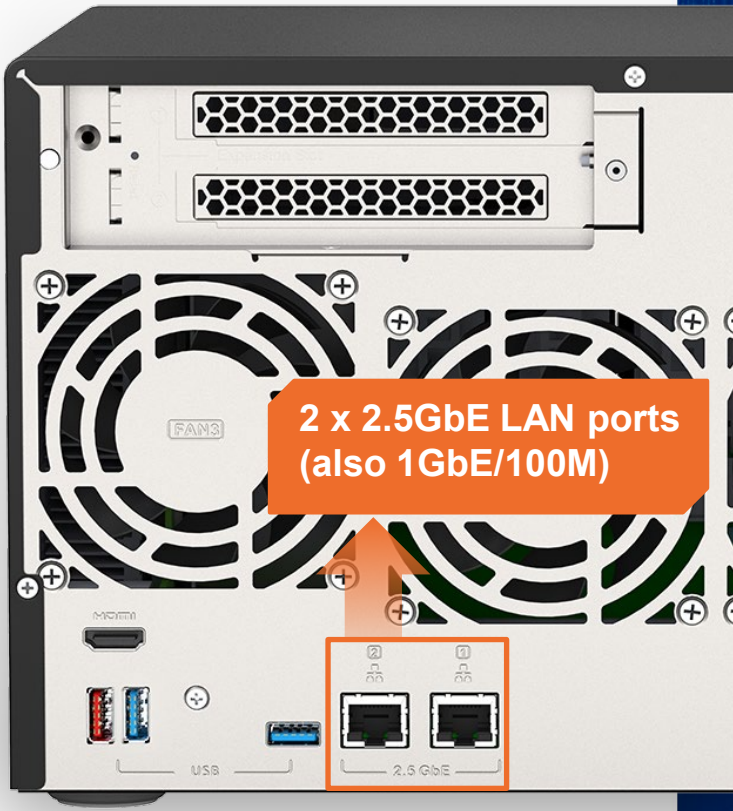
2.5GbE

1GbE to 2.5GbE

Huge leap in performance

Same cable

Use the same Cat.5e/ Cat.6 / Cat. 6A LAN cables



Powerful integrated graphics processing unit to support 4K video transcoding and HDMI output

KX-6580 with C-960 graphic chipset, provide high performance transcoding and original 4k video output ability.

Built in C-960 graphics

Support 4K video

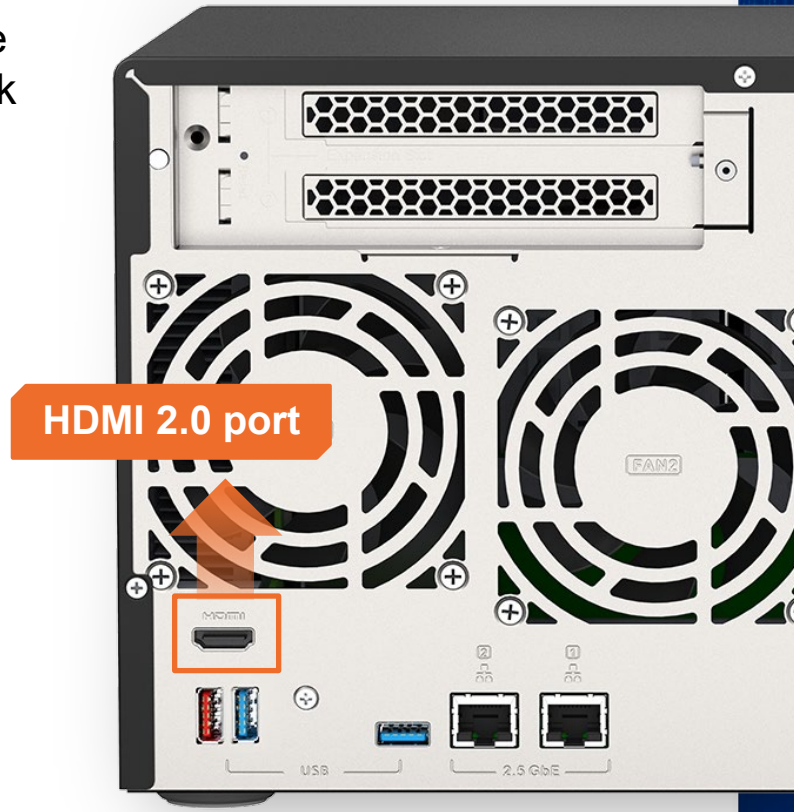
4K

4k video output

Hardware transcoding

h.264/265

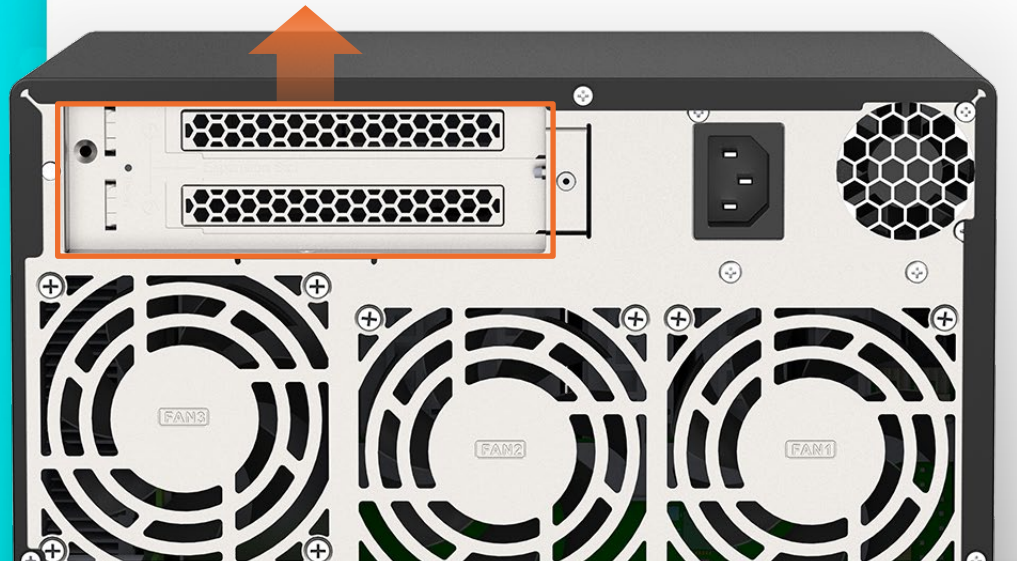
Support h.264/265 Hardware transcoding



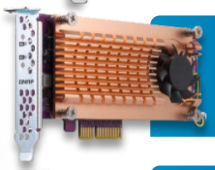
2 x PCIe slots for network, storage, and more

2 x PCIe Gen3 x4 expansion slots for various QNAP PCIe cards for more value-added applications.

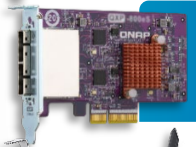
2 x PCIe Gen3 x4



QXG 10GbE/5GbE/2.5GbE Network Interface Card



QM2 M.2 SSD expansion card



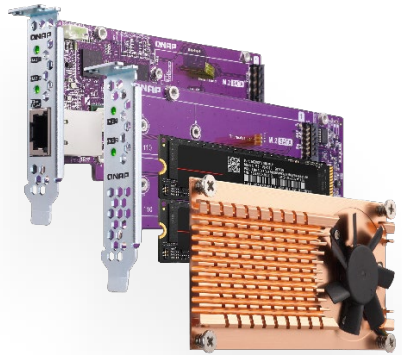
QXP SAS、SATA、USB expansion card

QXP Wi-Fi 6 and FC expansion card

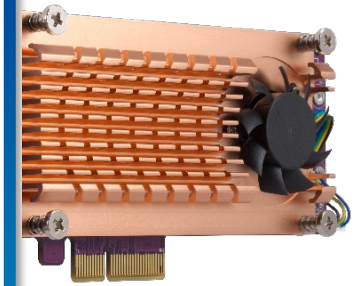
QWA-AC2600 Wi-Fi AP card
Wi-Fi 5 2.4GHz/5GHz wireless AP

QM2 cards add support for SSD caching and 10GbE connectivity

- QM2 M.2 SSD PCIe cards allow adding 2 or 4 M.2 NVMe / SATA SSDs to TS-x73A. Enable SSD caching or create RAID 5 group with the two on-board M.2 NVMe SSDs using Qtier.
- Maximize the storage capacity and performance without occupying any 3.5” drive bays. Some QM2 models even combine M.2 SSD and 10GBASE-T connectivity into one solution.

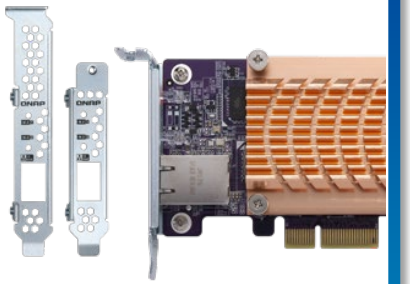


Active cooling module



Thermal sensors allow real-time temperature monitoring and adjust fan rotation speed

Compatible with standard PCIe slots



Low-profile PCIe card including full-height bracket

QM2 Series - Add more M.2 SSD slots to TVS-675

2 x M.2 SSD + 10GbE or 2.5GbE

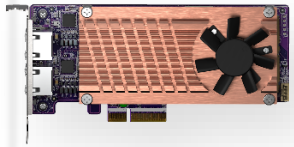
QM2-2S10G1TA

Bandwidth: PCIe Gen2 x4
2 x M.2 SATA 6Gbps
+ 1 x 10GBASE-T

QM2-2P10G1TA

Bandwidth: PCIe Gen2 x4
2 x M.2 PCIe Gen2 x2
+ 1 x 10GBASE-T

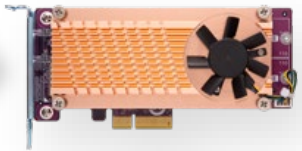
NEW



QM2-2P2G2T

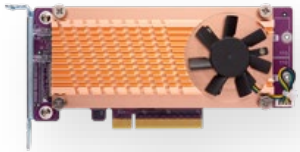
Bandwidth: PCIe Gen3 x4
2 x M.2 PCIe Gen3 x2
+ 2 x 2.5GbE

2 x M.2 SSD



QM2-2P-344

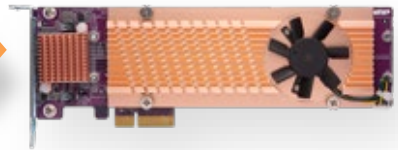
Bandwidth: PCIe Gen3 x4
2 x M.2 PCIe Gen3 x4



QM2-2P-384

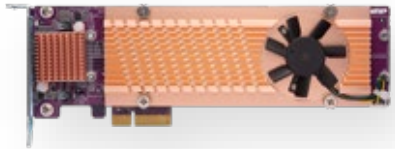
Bandwidth: PCIe Gen3 x8
2 x M.2 PCIe Gen3 x4

4 x M.2 SSD



QM2-4P-342

Bandwidth: PCIe Gen3 x8
2 x M.2 PCIe Gen3 x4



QM2-4P-384

Bandwidth: PCIe Gen3 x8
4 x M.2 PCIe Gen3 x4

Budget-friendly unmanaged switches for multi-user environment

Fanless & metal housing

QSW-1105-5T (Unmanaged)

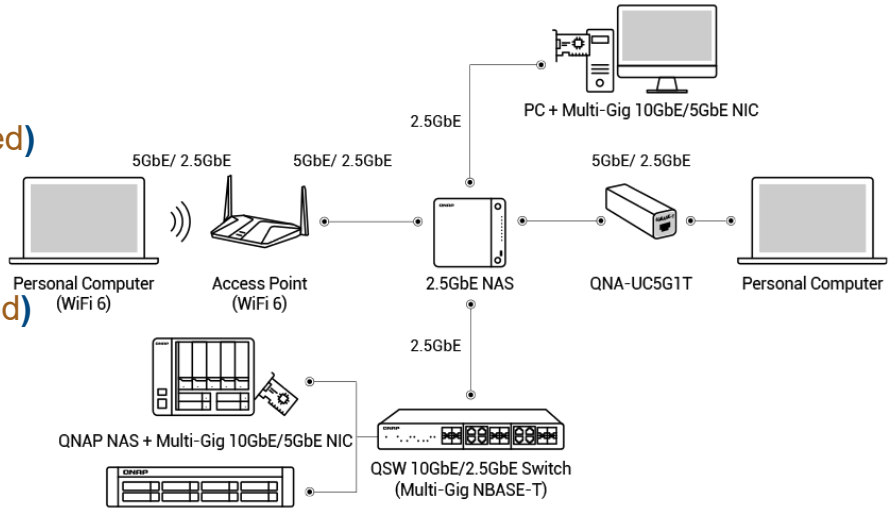
5 x 2.5GbE Multi-Gig RJ45

QSW-2104-2S (Unmanaged)

2 x 10GbE SFP+ / 4 x 2.5GbE Multi-Gig RJ45

QSW-2104-2T (Unmanaged)

2 x 10GbE RJ45 / 4 x 2.5GbE Multi-Gig RJ45



QSW-1208-8C (Unmanaged)

8 x 10GbE Multi-Gig RJ45 / SFP+ combo
4 x 10GbE SFP+

QSW-308-1C (Unmanaged)

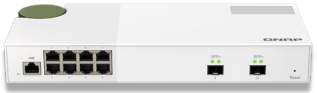
1 x 10GbE Multi-Gig RJ45 / SFP+ combo
2 x 10GbE SFP+
8 x 1GbE RJ45

Layer-2 managed switches for multi-user environment and efficient deployment

QSW-M1208-8C (Managed)
8 x 10GbE Multi-Gig RJ45 / SFP+ combo
4 x 10GbE SFP+

QSW-M804-4C (Managed)
4 x 10GbE Multi-Gig RJ45 / SFP+ combo
4 x 10GbE SFP+

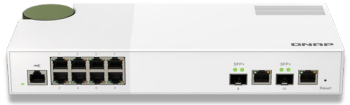
QSW-M408-2C (Managed)
2 x 10GbE Multi-Gig RJ45 / SFP+ combo
2 x 10GbE SFP+
8 x 1GbE RJ45



QSW-M2108-2S (Managed)
2 x 10GbE SFP+
8 x 2.5GbE RJ45

QSW-M1204-4C (Managed)
4 x 10GbE Multi-Gig RJ45 / SFP+ combo
8 x 10GbE SFP+

QSW-M408-4C (Managed)
4 x 10GbE Multi-Gig RJ45 / SFP+ combo
8 x 1GbE RJ45

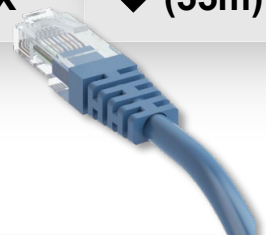


QSW-M2108-2C (Managed)
2x 10GbE Multi-Gig RJ45 / SFP+ combo
8 x 2.5GbE RJ45

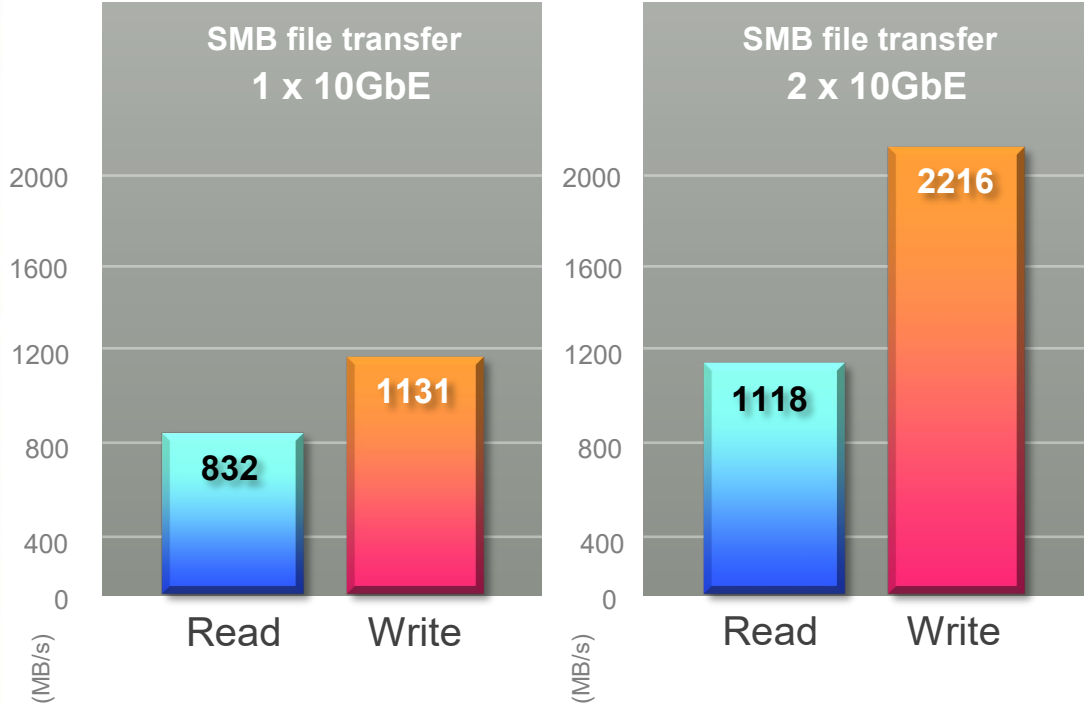
QSW-M2108R-2C (Managed)
2x 10GbE Multi-Gig RJ45 / SFP+ combo
8 x 2.5GbE RJ45

Keep existing wiring for 2.5GbE

	CAT 5e	CAT 6	CAT 6A
100M	✔	✔	✔
1G	✔	✔	✔
2.5G	✔	✔	✔
5G	✔	✔	✔
10G	X	✔ (55m)	✔

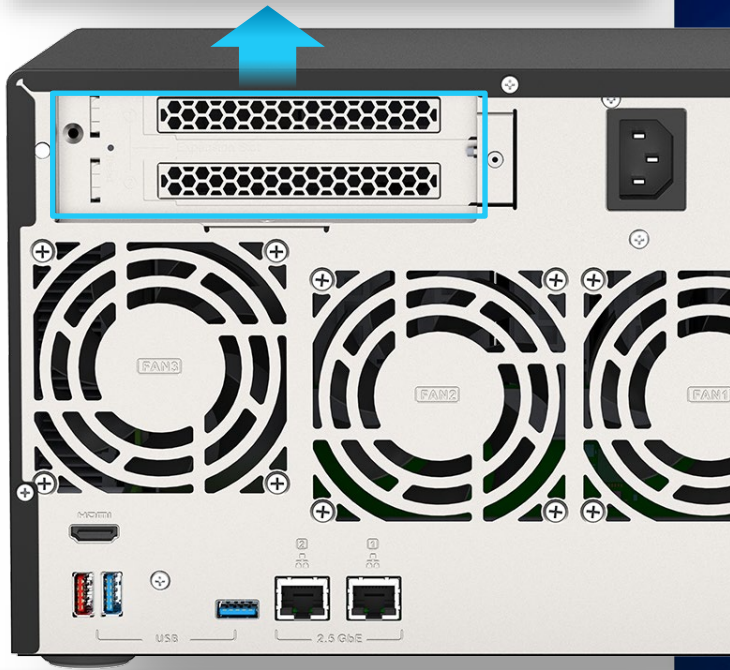


Optional 10GbE NIC for fast performance



Test Environment:
NAS | TVS-675-8G, QTS 4.5.1, 8 x Samsung 850 Pro 512GB SSD, RAID 5, , LAN-10G2SR-MLX
Client PC | Windows 10 Pro, Intel Core i7-6700 3.4 GHz, 64GB RAM, LAN-10G2SR-MLX.

2 x PCIe Gen3 x4 slots for 10GBASE-T & 10GbE SFP+ cards



Network accessories - NIC

10GbE NIC

2 x RJ45

QXG-10G2T-107

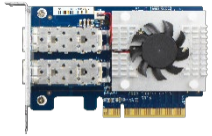
1 x RJ45

QXG-10G1T

2 x RJ45

LAN-10G2T-X710

2 x SFP+



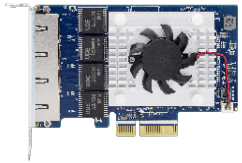
QXG-10G2SF-CX4

2 x RJ45

LAN-10G2T-X550

5GbE NIC

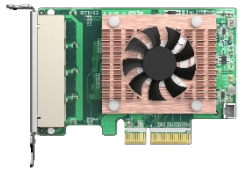
1/2/4 x RJ45



QXG-5G1T-111C
QXG-5G2T-111C
QXG-5G4T-111C

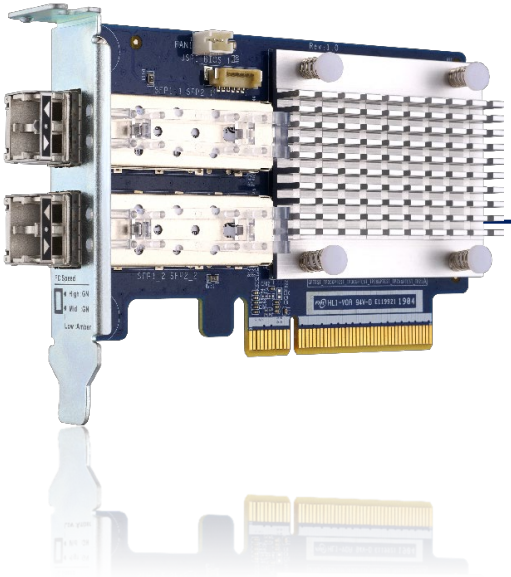
2.5GbE NIC

1/2/4 x RJ45



QXG-2G1T-I225
QXG-2G2T-I225
QXG-2G4T-I225

QNAP 16Gb/s Fibre Channel card for FC SAN



QXP-16G2FC

Dual-port 16Gbps
FC card with 16Gb FC
transceivers

Manage Fibre Channel connection using **iSCSI & Fibre Channel** app

16Gb FC transceiver (spare parts)

TRX-16GFCSFP-SR
16Gb/8Gb/4Gb

QNAP QXP-W6-AX200 Wi-Fi 6 card connects NAS wirelessly to a Wi-Fi 6 AX network

QNAP TVS-675 NAS

+

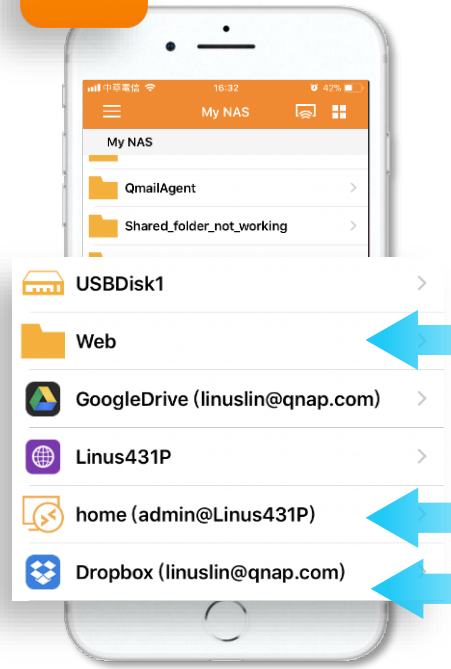
Install the QXP-W6-AX200
PCIe Wi-Fi 6 card

QNAP QHora-301W
Wi-Fi 6 10GbE SD-WAN router

Live
Demo
STATUS
LAN
USB
QNAP
TVS-675

Connect to Dropbox, OneDrive, Google Drive and more

Qfile

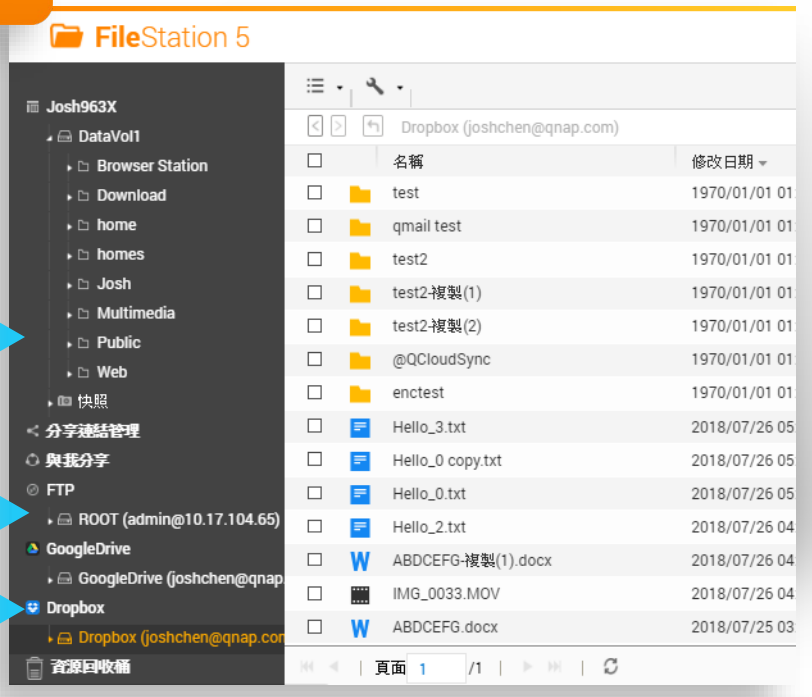


Local NAS

Remote NAS

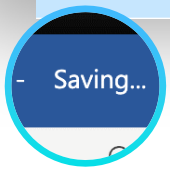
Cloud Storage

File Station

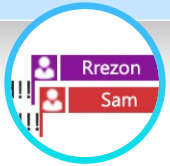


Easily make NAS your team collaboration portal with File Station

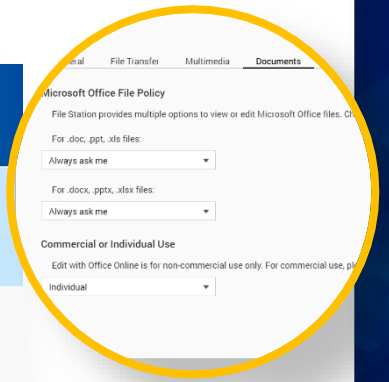
	Edit with Office Online	View in Google Docs	Open with Google Chrome Extension
Requirement	CloudLink needs to be enabled	CloudLink needs to be enabled	Use Chrome with extension “Office Editing for Docs, Sheets & Slides” to open
Supported formats	.docx, .pptx, .xlsx	.doc, .ppt, .xls .docx, .pptx, .xlsx	.doc, .ppt, .xls .docx, .pptx, .xlsx
Capabilities	•File collaboration •Auto save to NAS in real time	•Document preview •Convert to Google docs for editing & saving in your Google Drive	•Document preview •Convert to Google docs for editing & saving in your Google Drive



Save to NAS in real time

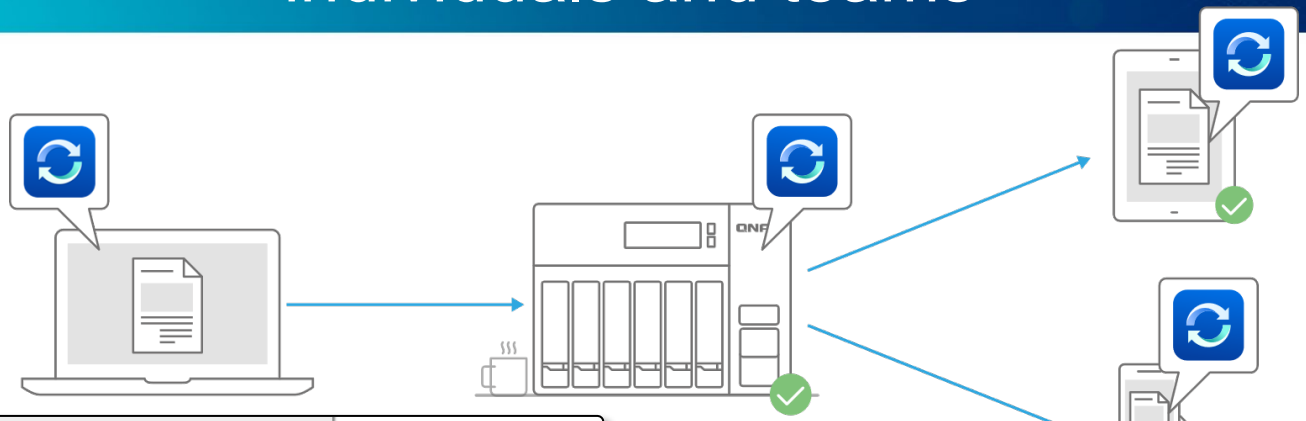


Multi-user online editing

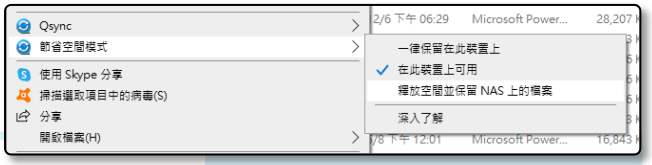


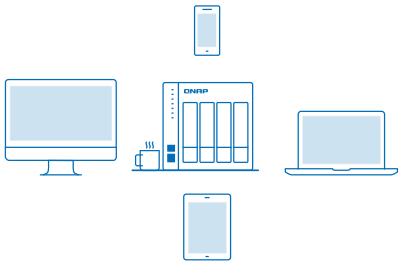
Select the default open action based on your preference in Settings > Documents.

Qsync 5.0 – Cross-device file sync for individuals and teams

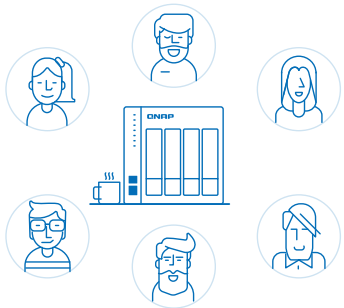


Windows & macOS Space-Saving Mode!



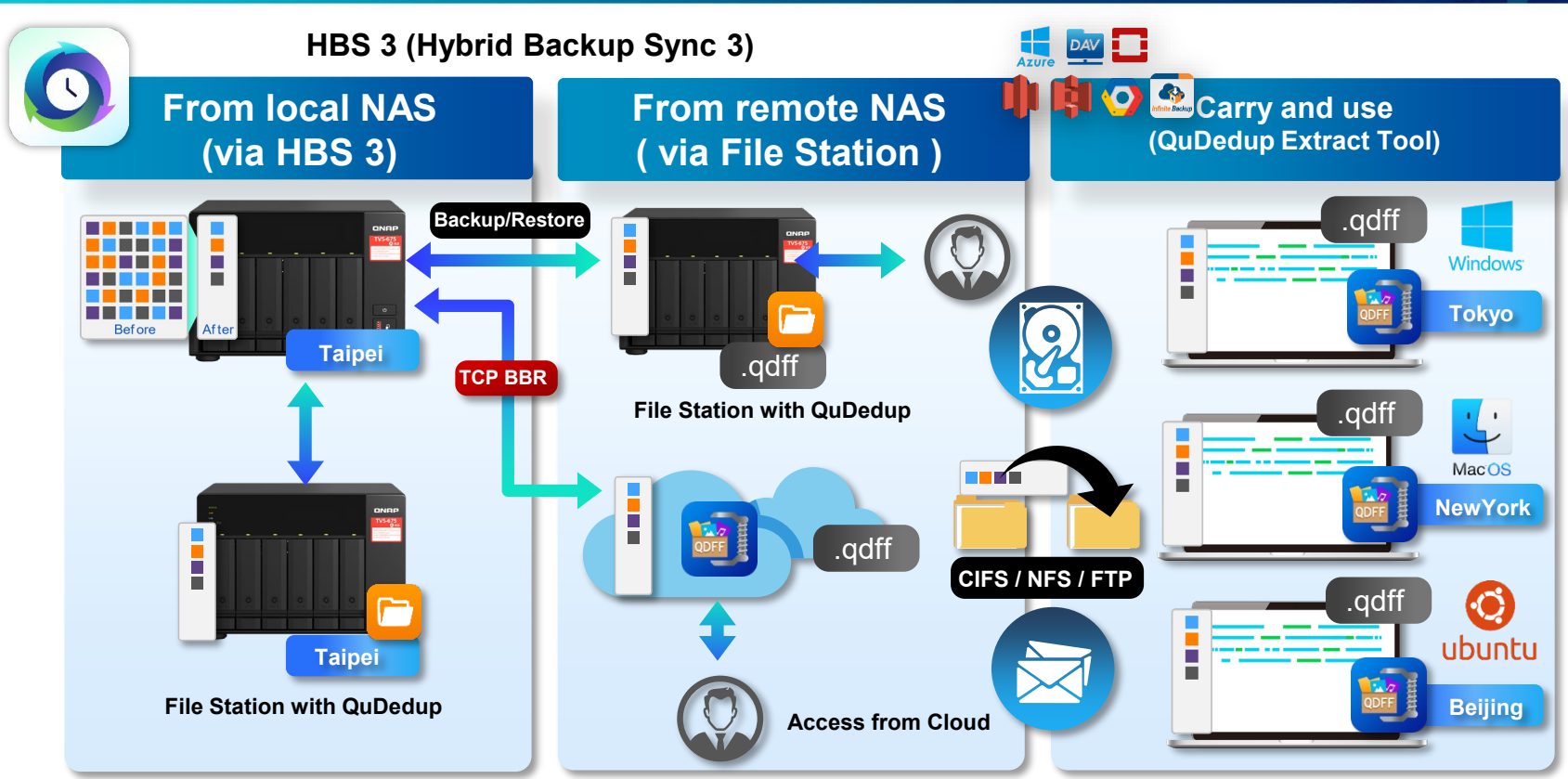


If you own many devices, any file changed on one device will be automatically synchronized with the others.



For team works, any file changed will be automatically distributed to your teams' devices, accelerating and streamlining your workflows.

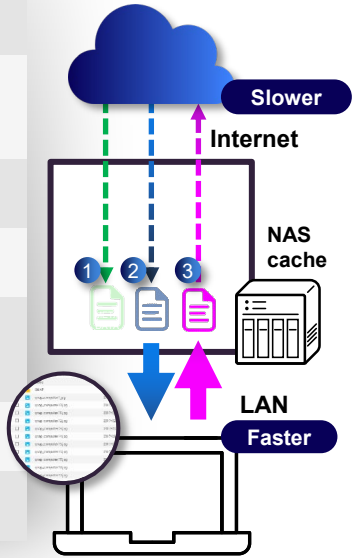
Complete backup with 3-2-1 HBS 3



HybridMount provides two modes for file-based cloud storage gateway

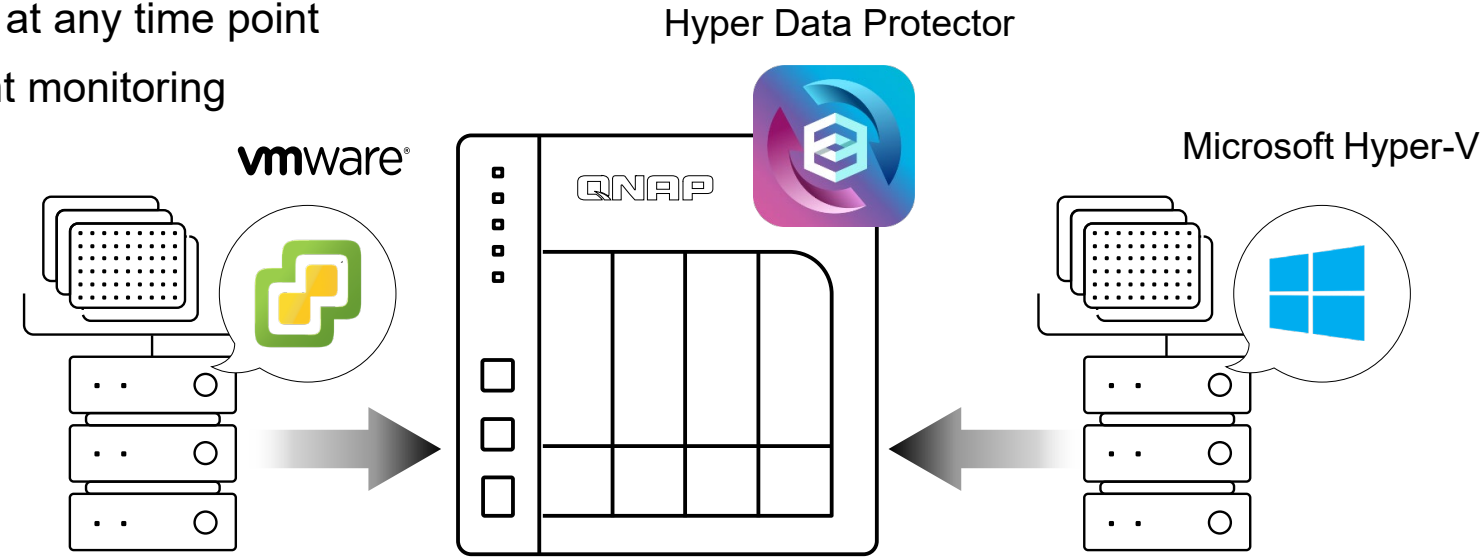
	Network Drive Mount	File Cloud Gateway
Setup Method	Mount cloud drives and file servers	Select “File Cloud Gateway” mode and create a dedicated cache space
Connections	No limit	2 free and perpetual connections. Purchase license for more connections
Access Performance	Depends on network speed	High performance thanks to caching
Access in File Station	Supported	Supported
Access through SMB / NFS / AFP	Not 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



Hyper Data Protector : All-in-one active backup solution for virtual machines

- Supports VMware and Microsoft Hyper-V
- Unlimited VM backups and license-free
- Active backup solution
- Restore at any time point
- Constant monitoring



Boxafe: Comprehensive Backup Solution for Google Workspace and Microsoft 365

- **Keep important data in your hands**
- **Move older data out of the cloud to reduce cost**

Google™ Workspace

Gmail
Backup all your emails and attachments in Gmail

Google Drive
Backup all your file versions in Google Drive and supports My Drive and Shared Drive

Contacts
Backup all your contacts in Google Contacts

Calendar
Backup all your events and attachments in Google Calendar

Microsoft 365®

Outlook
Backup all your emails and attachments in Outlook

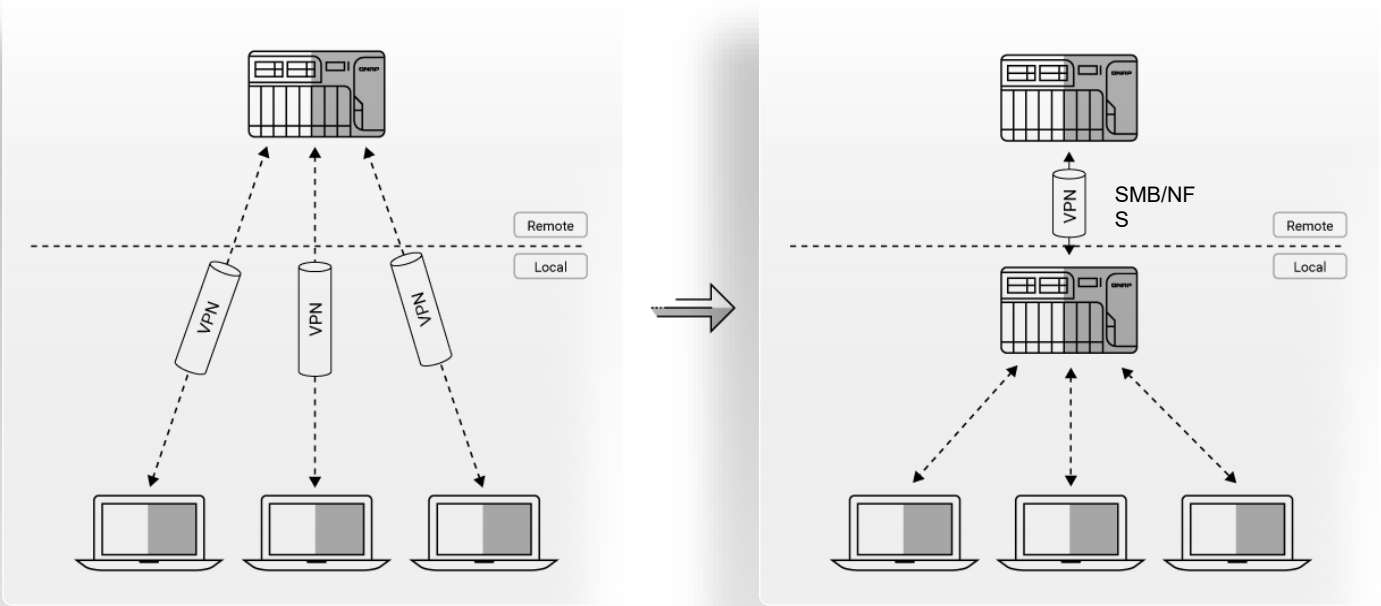
Contacts (People)
Backup all your contacts in Outlook People

Calendar
Backup all your events and attachments in Outlook Calendar

OneDrive
Backup all your files in OneDrive and support SharePoint

HybridMount - Cascade share the access permission to remote devices

The remote data mounted by SMB/NFS can be shared with other devices with folder permission to achieve a cascade share architecture.

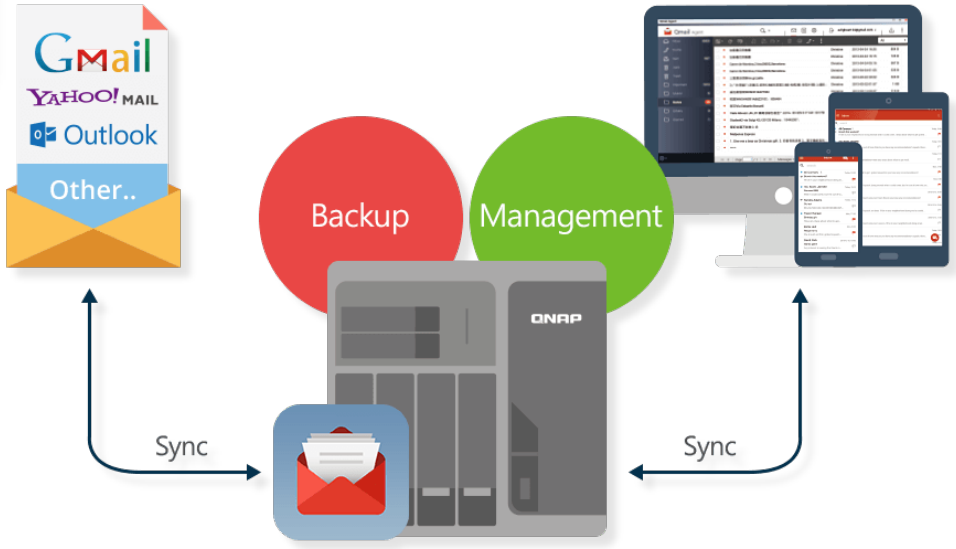


- To avoid local users accessing the remote data by VPN and to reduce the security concern and risk of VPN.
- No longer need to manage user accounts in the remote server. The local admin retains full control over assigning different permissions to local users.

QmailAgent – email backup solution

Best Email Retention Solution

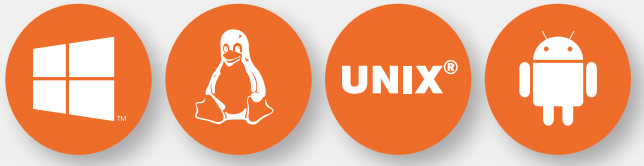
- Collectively manage and back up your personal and business emails.
- Easily auto back up all your emails and attachments.
- Quickly search and gain access to specific messages.
- Back up emails for disaster recovery.
- Encryption service protects backed up private emails.



All-in-one 8-core server with max 64GB RAM to host virtual machines and containers

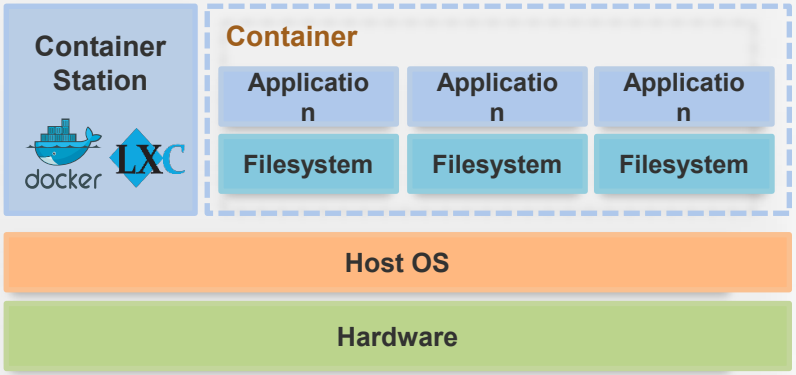
Virtualization Station

Supports to run the Virtual machine such as Windows, Linux® , UNIX® and Android.



Container Station

QNAP's Container Station exclusively integrates LXC and Docker lightweight virtualization technologies, allowing you to download apps from the built-in Docker Hub Registry.



Establish and run dual systems - Ubuntu & QuTS hero

Ubuntu Linux Station

- Run QuTS hero and Ubuntu dual system, dual system application to enjoy.
- One-click installation of multiple versions Ubunutu: 16.04 / 18.04 / 20.04
- Ubuntu Software Center enjoy a variety of application downloads
- Remotely access the Ubuntu Linux desktop through a browser /
- Install a PCIe graphic card to add an HDMI output screen, and use a USB keyboard and mouse with it.

Smart and automatic file management

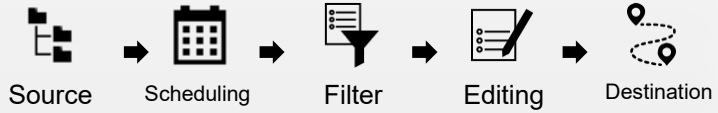
Qsirch 5

A powerful, Google™-like search tool

- Search image, music, video, document, and email by keyword and filters.
- 5 advanced image search: search by face, text in image, things, color and map.
- Supports Qfiling to perform archival tasks based on your search criteria.

Qfiling 3

Automatically filing and archiving



- 2 type of task: filing task, recycling task
- 3 type of scheduling rule: one-time, scheduling, real-time
- 9 editing module: AI face blur, encryption and decryption, video transcoding and so on

Notification Center - diversity of active notification

Centralized setting

One interface to integrate all notification settings and operations

Multiple notification methods

Meet your various notification scenarios

Highly flexible rule setting

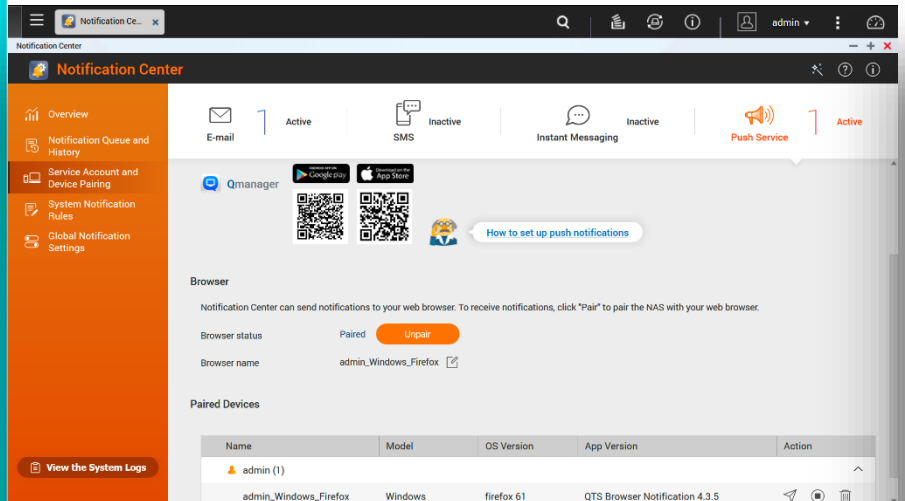
Easily filter important messages

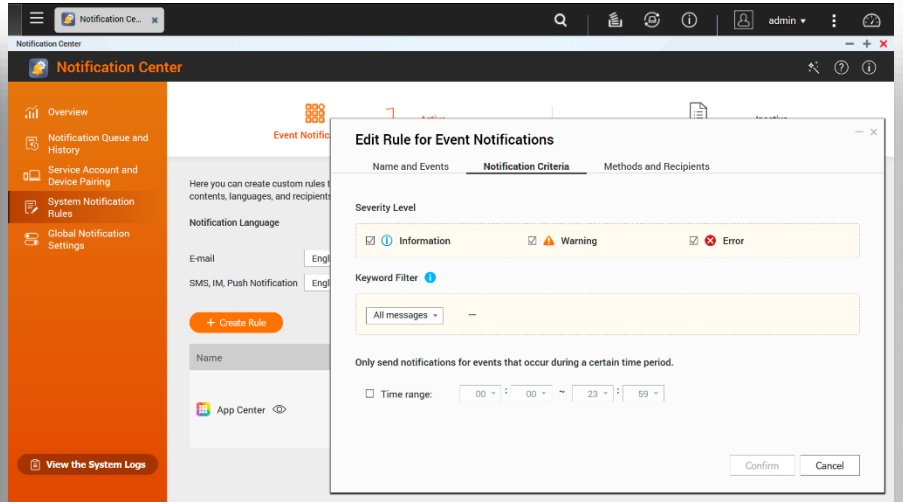
Multi-language support

Support 23 language & composed by professionals

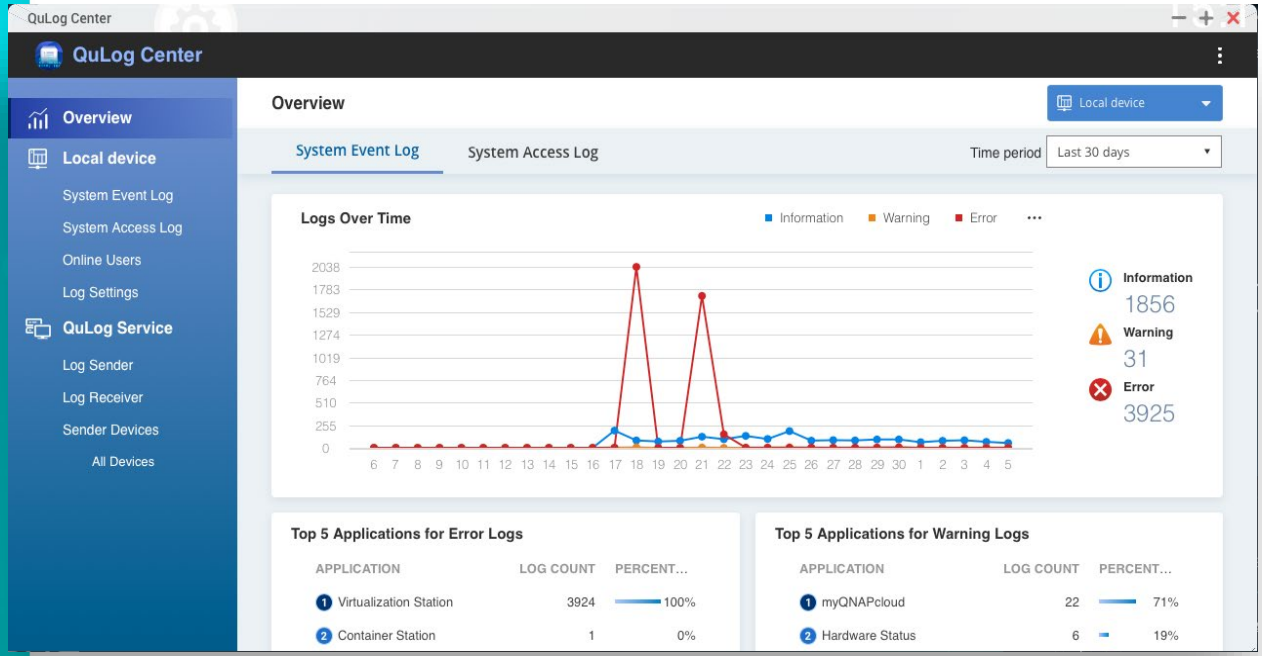
Double insurance

Notification history and test function



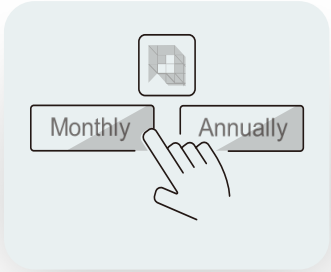


QuLog Center proactively analyze and monitor connections



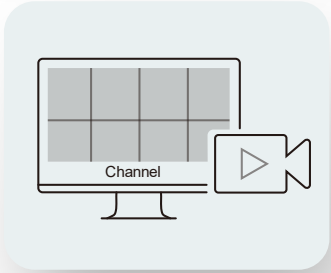
- **Proactive analysis**
  - List the top 5 Applications for Error/Warning Logs
  - System access statistics such as connection types and logged in IP
- **Quick filtering**
  - Categorize by APP name or date
  - Customize labels/styles/flags for advanced search
- **Real-time monitoring**
  - View the online members and their connection types
- **Unified management**
  - Consolidate detailed local and remote NAS record files
  - Set the size of the space for the record
  - Send NAS log files to a standard Syslog server
  - Notify specified notifications by Notification Center

Brand new surveillance app QVR Elite



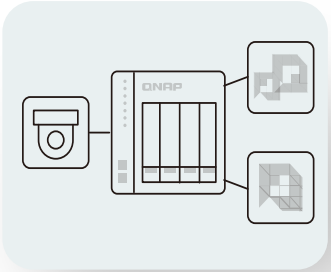
Channel License Type Unlimited

QVR Elite is subscription-based, with monthly, yearly, and 3-year subscription plans. You can build a robust surveillance system with a low-cost monthly price of US $1.99 per channel. You can alter the subscription based on your needs to reach higher cost efficiency.



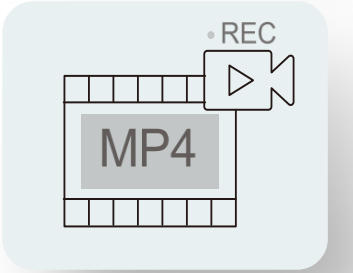
Performance Evaluation

At initial version, max recording channel is 128 channels, the next version we will increase it to 192 channels.



QVR Pro Client

- Supported by the QVR Pro Client same as QVR Pro's client
- Same features include Dynamic View Layout, Live and Playback at the same time, and e-map event display



Standard MP4 file

- Supported by both QuTS hero and QTS
- Record standard MP4 format, allowing for smooth playback on all devices

High-performance multimedia streaming platform

QuMagie AI smart photo albums and auto classification

Plex Server media **streaming**

*Transcoding will support in Aug/2021

CAYIN MediaSign Player
HEVC (H.265) video transcoding

Use Cinema28 for multi-room streaming

Enterprise-level OS

ZFS-based **QuTS hero**

Powerful data reduction – Extend the SSD endurance

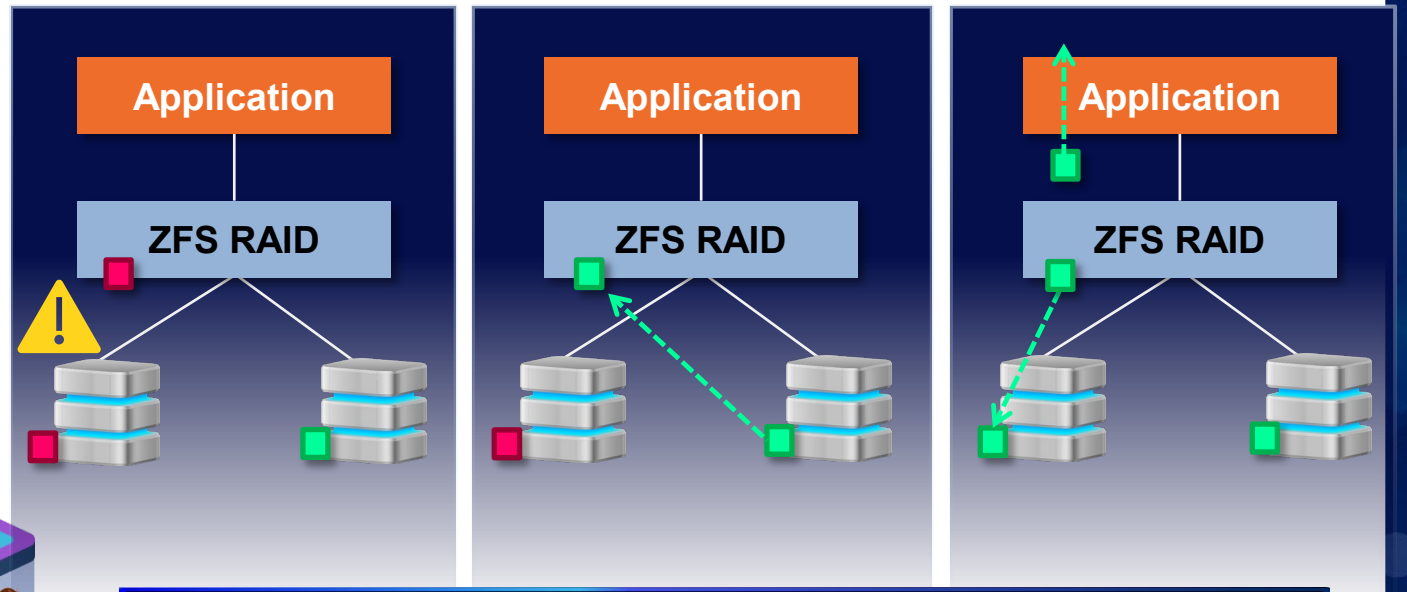
It only works with inline processing before writing

ZFS file system with inline deduplication compression feature

It's the best choice to pair with the all-flash and SSD storage because it reduces the data size and pattern that need to be written to the SSD directly.

Deduplication Min Requirement：16GB RAM

Silent data corruption & self-healing



Avoid data silent corruption that occurred on running system

Three-layer backup solution
Builds the most complete data backup protection

RPO : daily / schedule

HBS 3 :
File level, multi-version management

RPO : hourly / 24hr / 365 day

Snapshot & Replica:
File level, multi-version management.
The most lightweight snapshot without affecting storage performance.

new

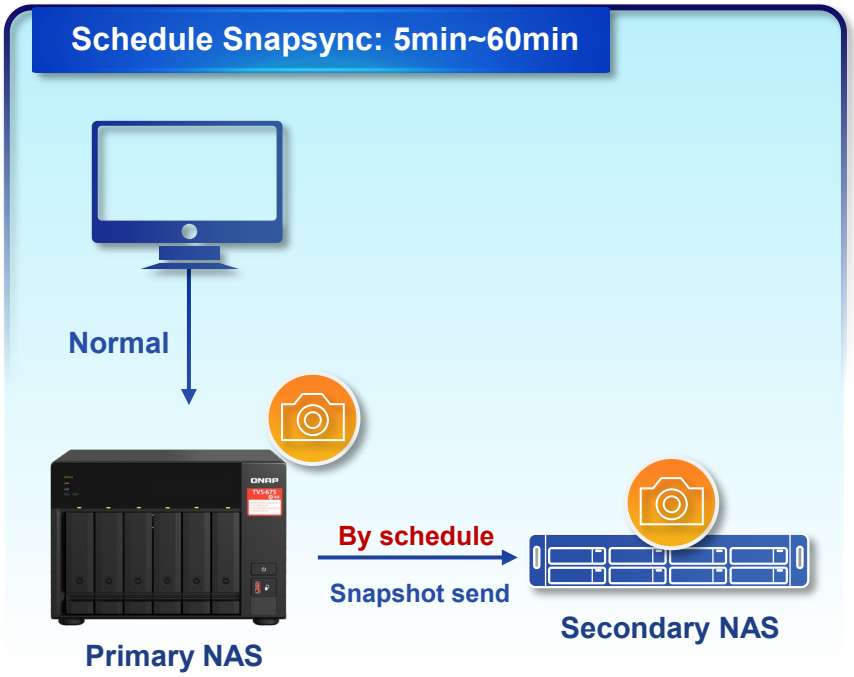
RPO : real-time

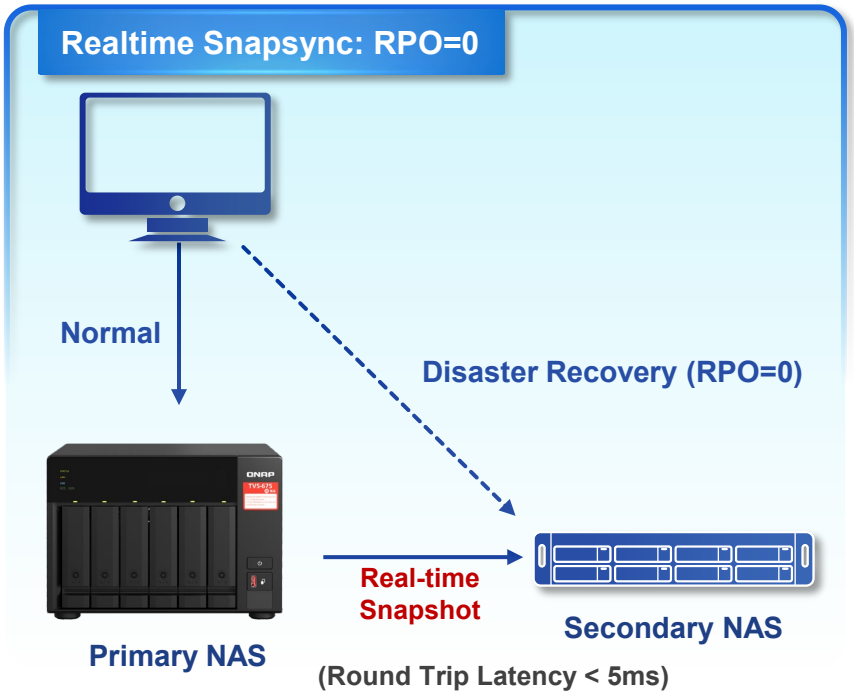
SnapSync*:
Block level, Mirror the data copy and always kept up to date.

*SnapSync will be available on QuTS hero h4.5.2

SnapSync

The most cost-effective backup, data protection and disaster recovery solution





Multiple Storage

Expansion Solutions

Storage expansion: TR-002 / TR-004 USB RAID units

- NAS with a USB port can support TR USB RAID enclosures
- Integrated USB Type-C port for plug & play, supporting USB Type-A & Type-C hosts
- NAS can connect max. 2 of TR-002/TR-004 enclosures

TR-002

USB 3.2 Gen2 10Gbps

TR-004

USB 3.2 Gen1 5Gbps

included

USB 3.2 Gen 1 or Gen 2 Type-C to Type-A cable

included

Type-C to Type-C cable

Storage expansion：TL-D800C USB JBOD unit

- NAS with a USB port can support TL USB JBOD enclosures
- USB Type-C provide speed up to USB 3.2 Gen 2 10Gb/s

TL-D800C

included

USB 3.2 Gen1 or Gen 2
Type-C to Type-A cable

included

Type-C to Type-C cable

High-speed storage expansion with PCIe to multi-channel SATA enclosures

- Install a QNAP QXP SATA HBA on NAS to access the TL expansion units via PCIe Gen3 bandwidth
- Each SFF-8088 cable provides 4 x SATA 6Gb/s = 24 Gb/s bandwidth. Connect multiple cables for up to 64 Gb/s performance

TL-D400S

TL-D800S

TL-D1600S

QXP SATA HBA and cables are included in the TL-D400S/D800S/D1600S JBOD

TL-D400S

1 x QXP-400eS-A1164
PCIe to 4 x SATA 6Gb/s

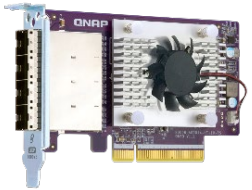
1 x 1M SFF-8088 cables

TL-D800S

1 x QXP-800eS-A116
PCIe to 8 x SATA 6Gb/s

2 x 1M SFF-8088 cables

TL-D1600S



1 x QXP-1600eS
PCIe to 16 x SATA 6Gb/s

4 x 1M SFF-8088 to SFF-8644 cables

3-year standard warranty and extend it up to 5 years via an optional purchase

Part number: **EXTW-ORANGE-2Y**

3 years of standard warranty

- 3-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 2 years of extended warranty

- Extending your warranty with this paid service, available within 270 days of the initial unit purchase.
- Offers identical service to standard warranty.

TVS-675 provides the best cost-performance ratio combing 8-core computing power and 4K graphics

TVS-675

TS-673A

TVS-673e

EOL

Processor	Zhaoxin KX-U6580	AMD V1500B	AMD RX-421BD
Cores	8	4	4
Threads	8	8	4
Base frequency	2.5 GHz	2.2 GHz	2.1 GHz
Turbo frequency	—	—	3.4 GHz
L2 cache	8MB	2MB	2MB
Max RAM	64GB	64GB	64GB
M.2 2280 SSD slots	2 x M.2 NVMe / SATA	2 x M.2 NVMe	2 x M.2 SATA
Integrated graphics	4K HDMI 2.0	—	4K HDMI v1.4b
Warranty	3 years	3 years	2 years

TVS-675

Brand new 8-core SMB dual OS NAS

ZhaoXin KaiXian KX-U6580 8C / 8T 2.5GHz

Dual 2.5GbE、M.2 NVMe/SATA SSD slots, PCIe 3.0 x4 slots

兆芯 x86 8 core GPU PCIe 2.5GbE HDMI

QTS / QuTS hero

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