

QNAP

TS-1655

Powered by Intel Atom® C5125 8-core 2.8GHz processor, support up to 128GB memory, large-capacity hybrid storage architecture suitable for small and medium-sized enterprises backup and monitoring applications



Microsoft
Hyper-V

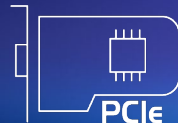
CITRIX
XenServer



2 x M.2
PCIe slots



2 x 2.5GbE
RJ45



3 x PCIe Gen 3
slots



Maximum
128GB memory

25 GbE
10 GbE

Optional
NIC

Hybrid HDD + SSD architecture, powered by Intel 8-core CPU, 2.5GbE, and PCIe to provide performance and 25GbE expandability



8
Core

Intel 8-core 2.8GHz CPU

Intel Atom® C5125 2.8GHz 8-core processor w/ AES-NI encryption acceleration for powerful performance

2.5GbE

Dual 2.5 GbE RJ45 ports

Sufficient 2.5 GbE network bandwidth provides smooth data transmission experience

M.2 SSD

Dual M.2 PCIe SSD slots

Two PCIe Gen3 x2 M.2 2280 slots for optimal configuration of NVMe SSD caching or Qtier™ drives auto tiering



Hybrid HDD + SSD storage

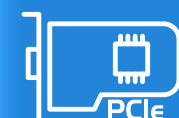
12 x 3.5"/2.5" SATA HDD + 4 x 2.5" SATA SSD provide a hybrid NAS with higher capacity and performance

128 GB



Maximum 128 GB Memory

Pre-installed 8 GB Non-ECC RAM, with 4 x DDR4 UDIMM slots for up to 128 GB total, and optional ECC memory support



3 x PCIe Gen3 x4 slots

A variety of expansion options including 10G/25GbE network, QM2 M.2 SSD, Fibre Channel (FC) and other expansion cards

QTS or switch to QuTS hero operating system for optimal data integrity and reliability

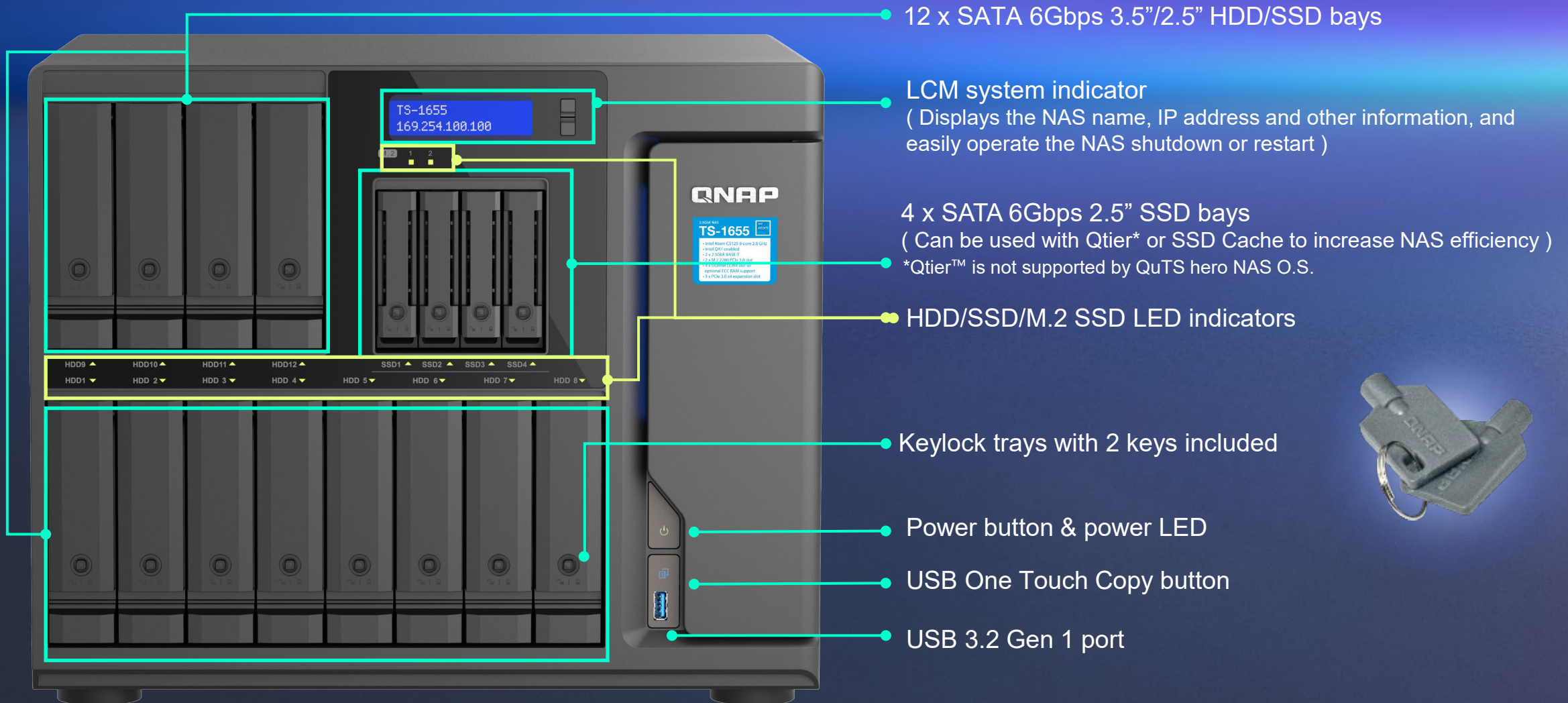
TS-1655 is shipped with the QTS operating system, which has powerful data transmission performance and more efficient memory usage, and enjoys the Qtier automatic tiered storage function. You can also change to the QuTS hero operating system according to your needs

	QuTS hero	QTS
Filesystem	ZFS	Ext4
SSD cache	Read Cache	Read/Write Cache Read Cache Write Cache
Inline Compression	Yes (LZ4 compression, ideal for RAW files and document files)	No
Inline Deduplication	Yes (At least 16 GB RAM required)	No
HBS with QuDedup for Remote Backup	Yes	Yes
Power Failure Protection (Software)	ZIL Copy-on-Write	No
Permission Management	Rich ACL (14 types)	POSIX ACLs (3 types) + certain special permissions
Capacity Expansion	Upgrade RAID capacity Change higher capacity disk drives Attach expansion enclosures/JBODs	Add a disk drive to a RAID group Upgrade RAID capacity Change higher capacity disk drives Attach expansion enclosures/JBODs

TS-1655 Hardware & Performance

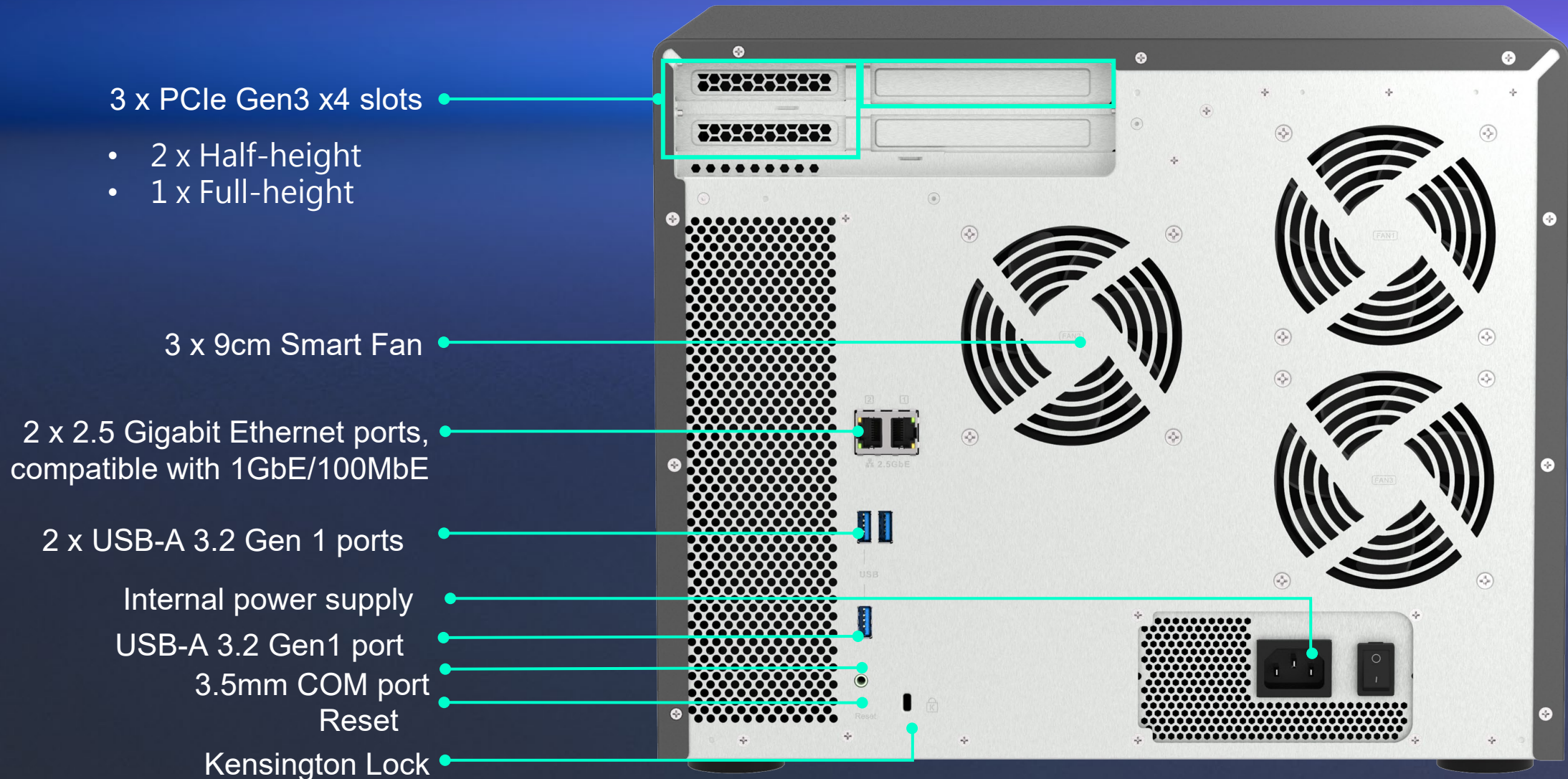


8-core TS-1655 front view with 12 x 3.5-inch SATA HDD/SSD + 4 x 2.5-inch SATA SSD bays



Ordering SKU: TS-1655-8G

TS-1655 rear view with 3 x PCIe slots, 2 x 2.5GbE, and 3 x USB-A ports for great expandability



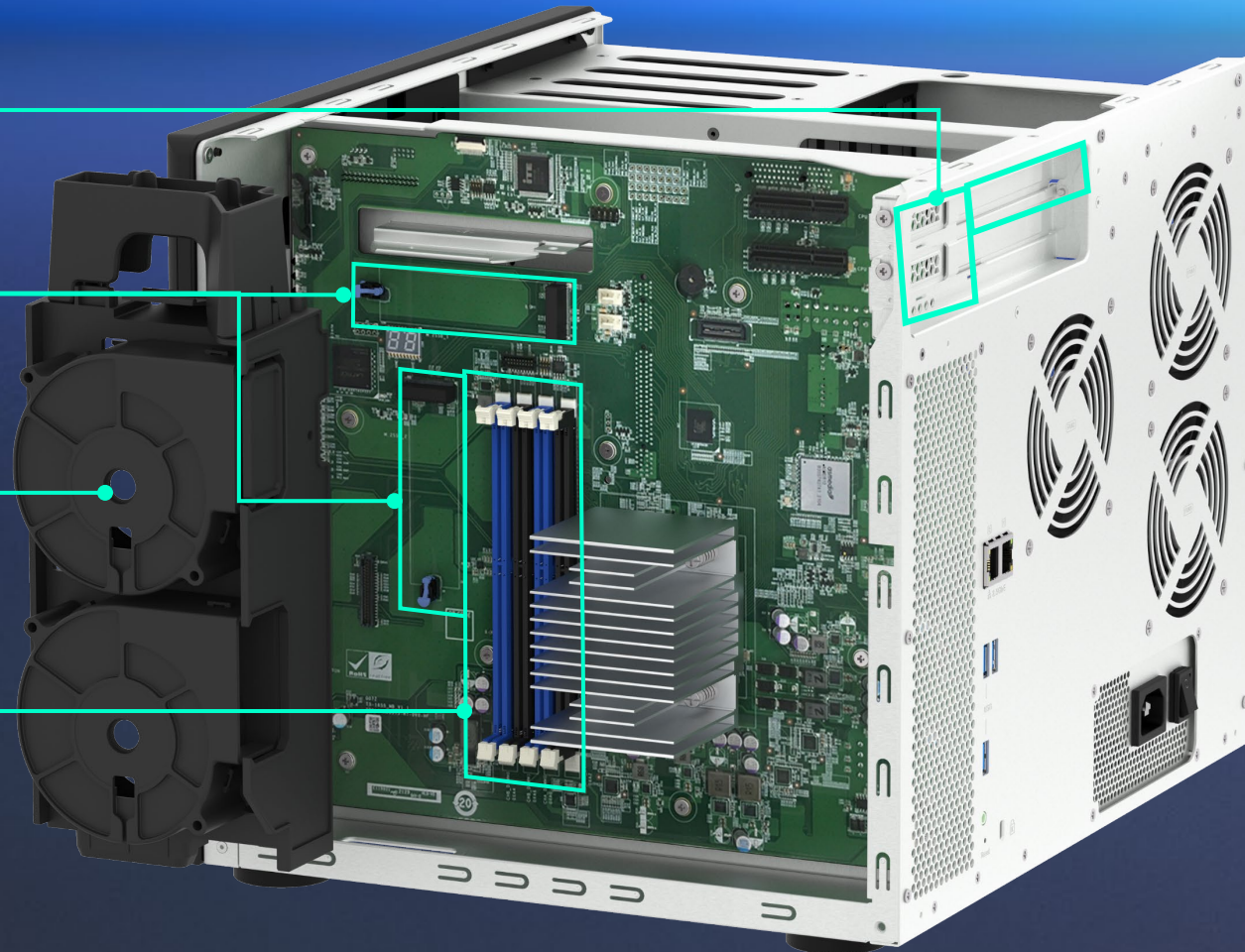
High-performing TS-1655 supports up to 128GB RAM with dual M.2 PCIe SSD slots & 3 x PCIe slots

3 x PCIe Gen3 x4 slots

2 x M.2 2280 slots
(PCIe Gen3 x2)

2 x internal cool &
quiet smart fans

4 x UDIMM memory slots, up to
128GB total and optional ECC
memory support
(1 x 8GB non-ECC RAM module is pre-
installed in the TS-1655-8G ordering
SKU. ECC and non-ECC RAM modules
cannot be installed together. Refer to
the product page for compatible RAM
modules.)



Advanced features including an optional graphics card and Intel® QAT & SR-IOV to increase efficiency

GPU

Higher-end GPU cards for display/transcoding

Provides an additional graphics card installation. PSU with 1 x 8-pin and 1 x 8-pin (6-pin + 2-pin) graphics card power cables.

Maximum supported card size:

260 x 111.15 x 37.52 mm (10.25 x 4.38 x 1.48 inches)

Compatibility : <https://www.qnap.com/go/compatibility/?model=716&category=25>

Dual Half-height PCIe Gen3 x4 slots

Size: 150 x 68.9 x 18.76 mm (5.90 x 2.71 x 0.74 inches)

Full-height PCIe Gen3 x4 slot

Size: 260 x 111.15 x 37.52 mm (10.25 x 4.38 x 1.48 inches)

SR-IOV

SR-IOV Network I/O Virtualization

Install a compatible PCIe 10GbE or 25GbE network card that supports SR-IOV technology, and directly allocate the bandwidth resources of the physical network card to the virtual machine in QNAP Virtualization Station.

QAT

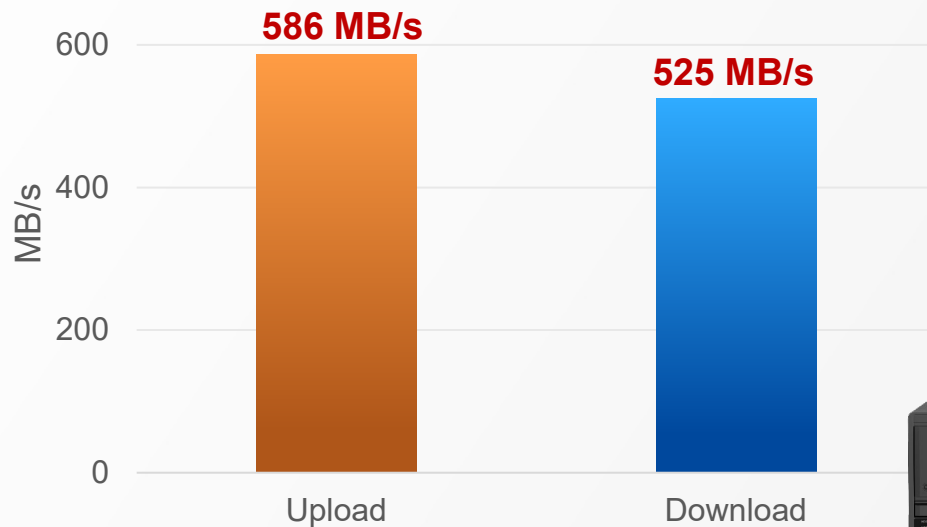
Intel® QAT hardware acceleration

Integrates the state-of-the-art Intel® QuickAssist hardware acceleration engine hardware (Intel® QAT), which accelerates data compression / decompression, and can greatly improve the performance of encryption and decryption transmission operations

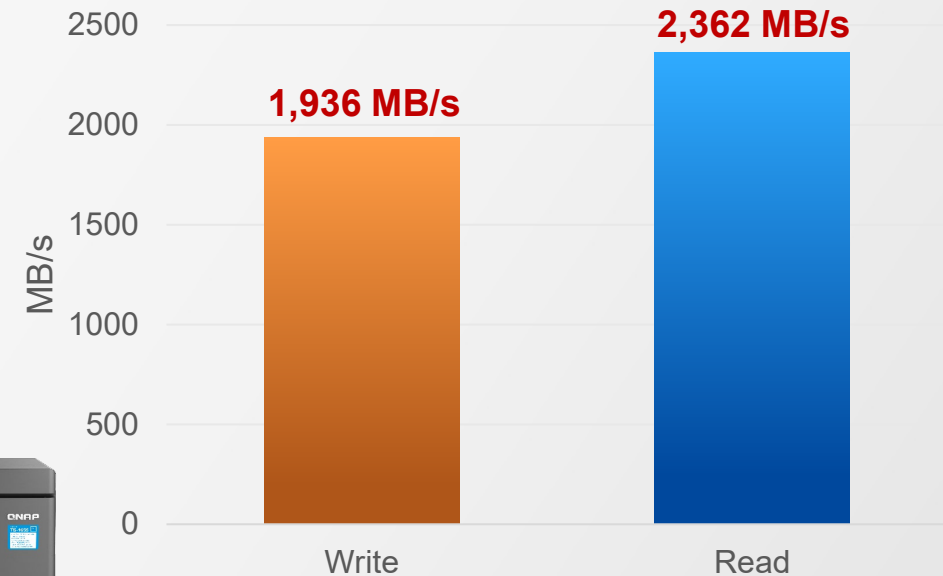


Dual 2.5 GbE ports bring essential performance out of the box. Class-leading 10GbE champion is here.

2 x 2.5GbE Windows File Transfer



2 x 10GbE SMB Sequential Throughput (1MB)

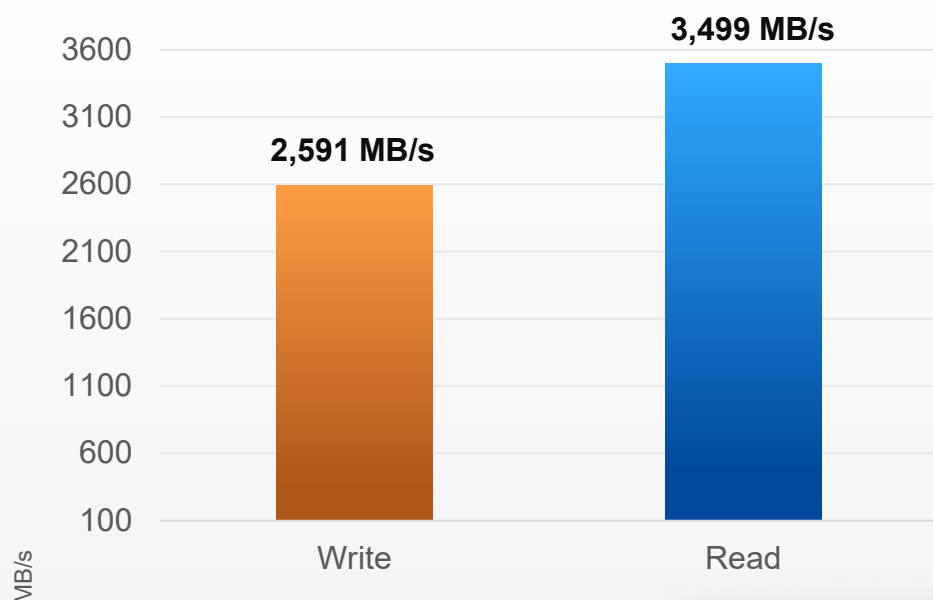


Test environment:
NAS: TS-1655 with QXG-10G2TB
OS : QTS 5.0.0
Volume type: RAID 5; 16 x Samsung 860 EVO 1TB
Client PC: Windows Server 2016, Intel i7-6700 3.4GHz, 64GB RAM, QNAP LAN-10G2T-X550 NIC
IOmeter : RAM*4, 30-sec ramp up time, 3-min seq. run time, 1 worker, 32-outstanding

Note: An optional QNAP QXG-10G2TB 2-port 10GBASE-T NIC is installed on TS-1655 NAS.

Max out its performance potential with 25GbE NIC, up to 3,499 MB/s for your future business growth

2 x 25GbE SMB Sequential Throughput (1MB)



Test environment :
NAS: TS-1655 with QXG-25G2SF-CX6
OS : QTS 5.0.1
Volume type: RAID 5; 16 x Samsung 860 EVO 1TB
Client PC: Windows Server 2019, AMD EPYC 7302P 3.0GHz, 128GB RAM, QNAP QXG-25G2SF-CX4 NIC
Iometer : RAM*4, 30-sec ramp up time, 3-min seq. run time, 1 worker, 32-outstanding

TS-1655 NAS with Intel Atom® C5125 8-core CPU provides excellent performance when compared with other 12-bay HDD NAS with AMD V1500B CPU!

	Intel Atom C5125	AMD Ryzen Embedded V1500B Quad-core @ 2.20GHz
CPU Mark	8631	5417
(% diff. to max in group)	(0.0%)	(-37.2%)

<https://www.cpubenchmark.net/compare/5091vs4624/Intel-Atom-C5125-vs-AMD-Ryzen-Embedded-V1500B-Quad-core>

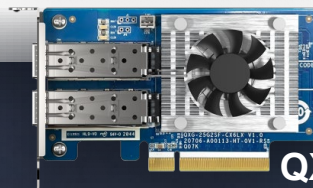
Compared with the QNAP TS-1635AX ARM 4-core 1.6 GHz, TS-1655 SMB sequential throughput performance is twice faster!

Write ↗
2.24X

Read ↗
2.12X



QXG-25G2SF-CX6 2-port 25GbE NIC



High- performance, Large-capacity File backup & Surveillance Server



Certified for enterprises & virtualization, large-capacity 8-core NAS for data storage & surveillance

Intel® 8-Core 2.8 GHz CPU

High performance processor suitable for virtual machines and multitasking



Virtualization station



Container station

12 x SATA HDD + 4 x SATA SSD Large hybrid storage

Suitable for multi-device file backup and as a surveillance host



QVR Pro



Qsync



HBS3



HDD+SSD



Certified for virtualization

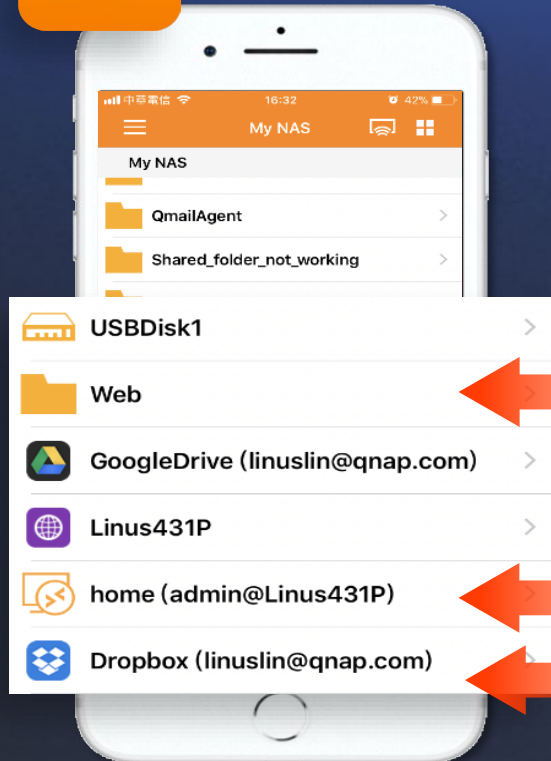
Microsoft Hyper-V / Citrix ready /
VMware ready / Veeam ready

File Station is the ultimate and user-friendly web & iOS/Android-based file explorer

File Station is a file management tool in QTS that enables QNAP NAS users to intuitively access shared folder content through web browsers.



Qfile

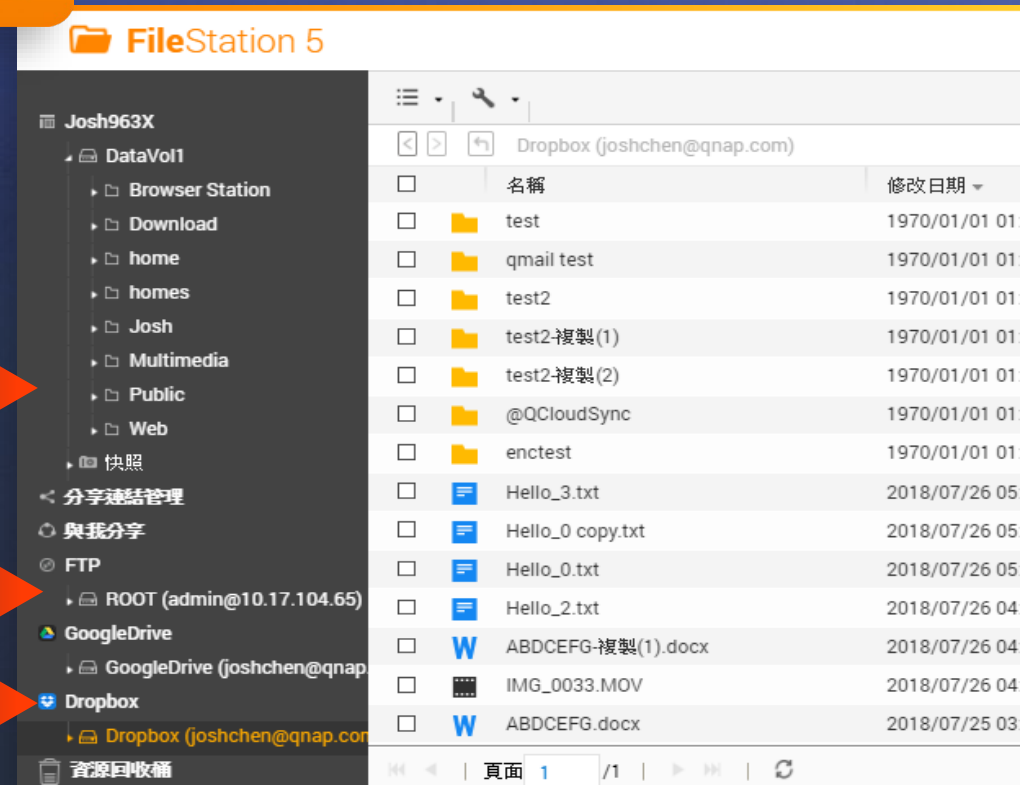


Local
NAS

Remote
NAS
Cloud
Storage



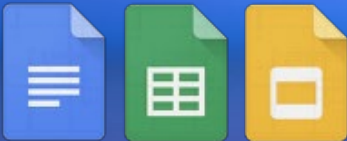
File Station



File Station is compatible with popular office apps and even productive online multi-user collaboration



Edit with Office Online

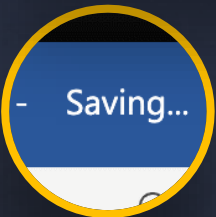


View in Google Docs



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	<ul style="list-style-type: none">•File collaboration•Auto save to NAS in real time	<ul style="list-style-type: none">•Document preview•Convert to Google docs for editing & saving in your Google Drive	<ul style="list-style-type: none">•Document preview•Convert to Google docs for editing & saving in your Google Drive



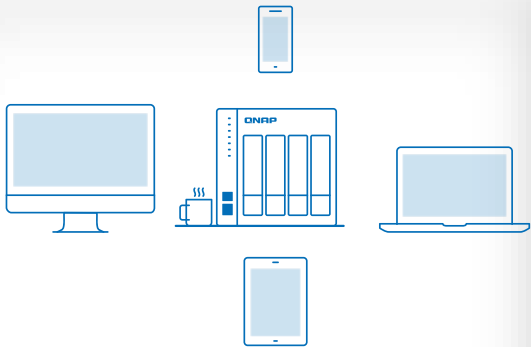
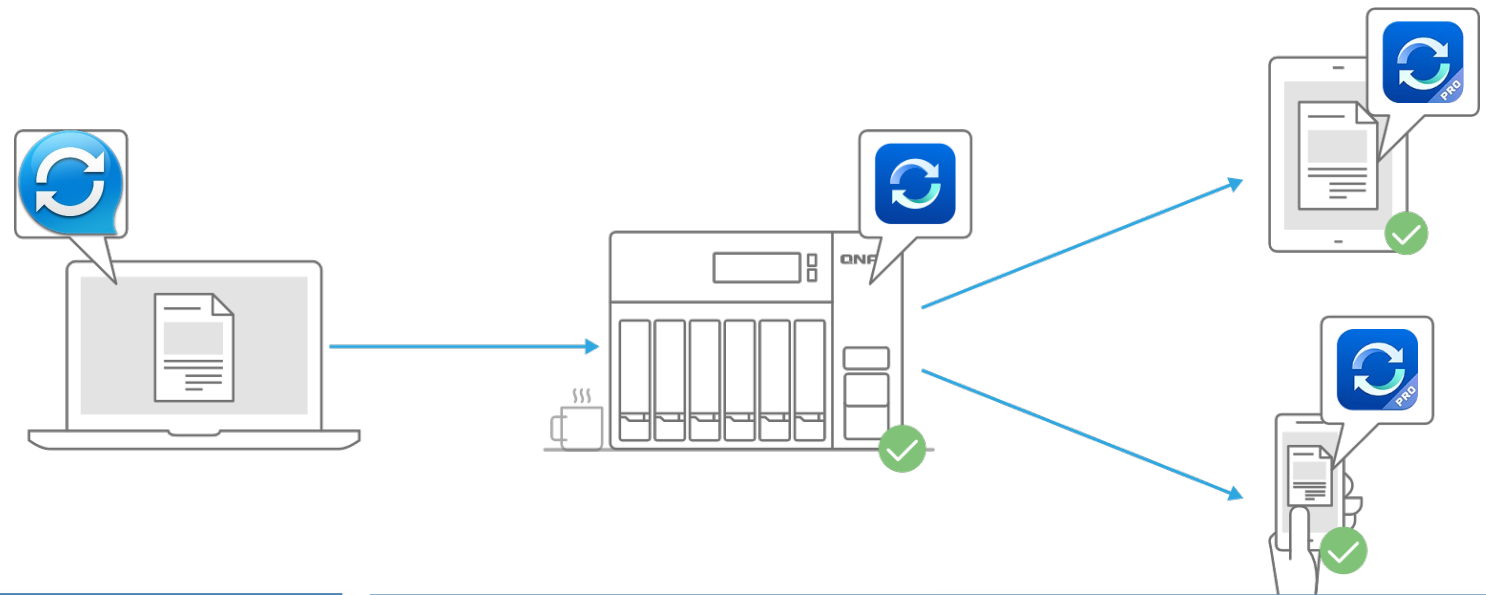
Save to NAS in real time



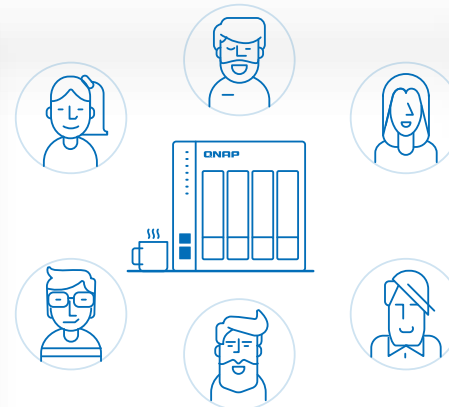
Multi-user online editing

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

Qsync enables efficient file synchronization between a QNAP NAS and linked devices such as computers, laptops, and mobile devices. With Qsync, you can easily access data across all your devices and share it among your team members.

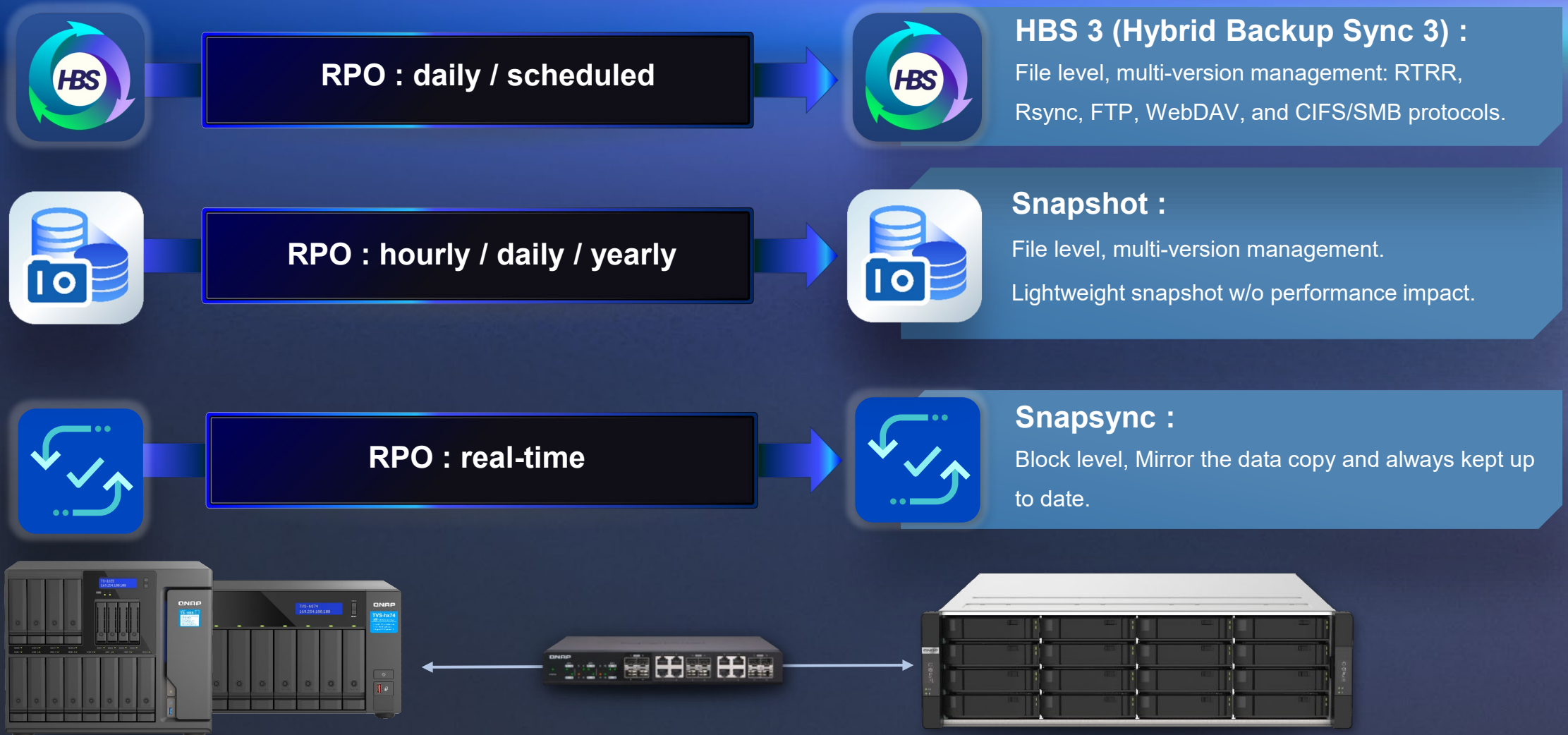


If you own many devices, any file changed on one device will be automatically synchronized with the others.

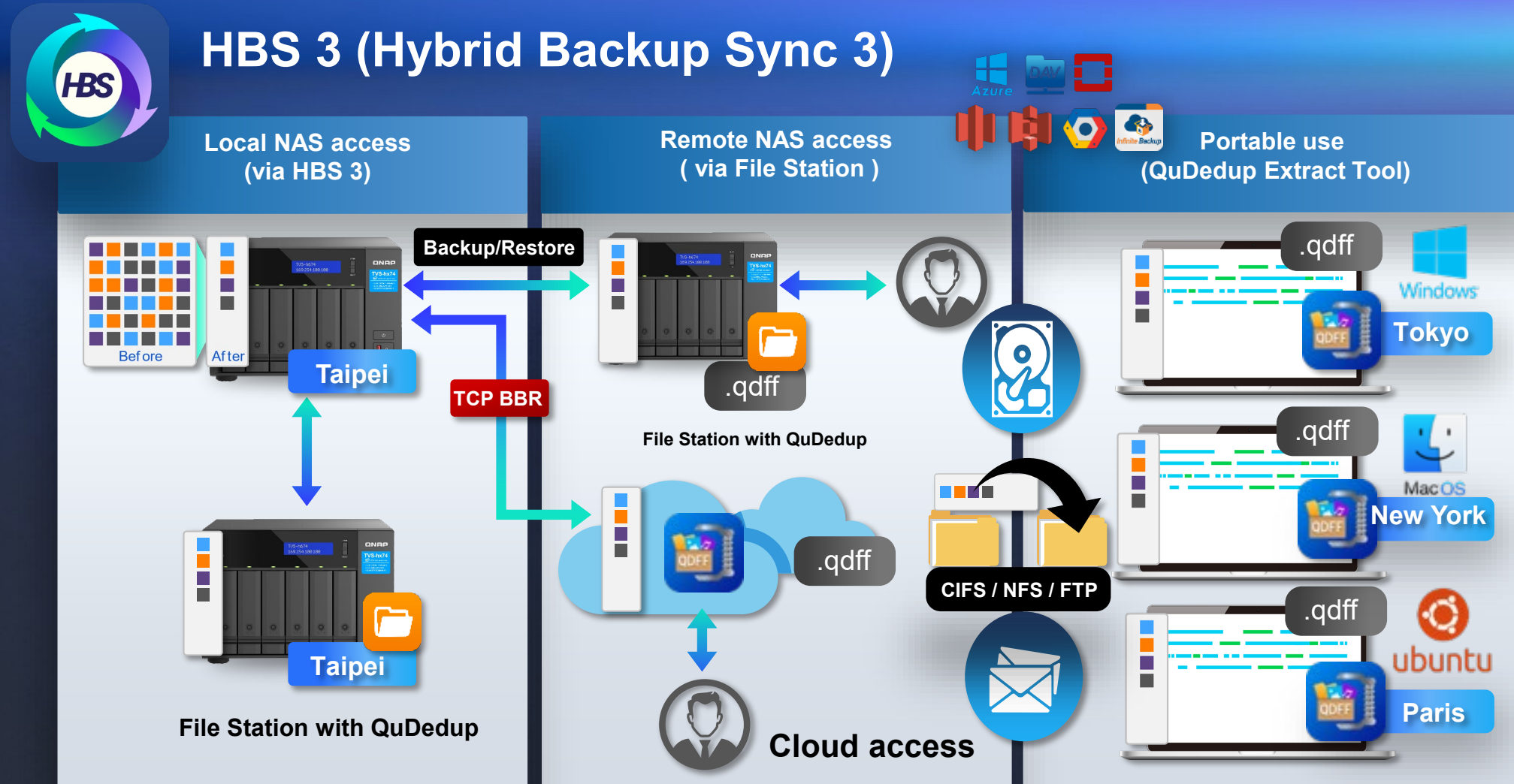


For team works, any file changed will be automatically distributed to your teams' devices, accelerating and streamlining your workflows.

License-free scheduled & real-time backup solutions to provide complete data backup protection



Easy to use HBS 3.0 app fulfilling backup 3-2-1 practice with deduplication



Up to 14 clients direct 2.5GbE LAN connection with optional NICs. Multi-device backup from near & far



Snapshot fights against ransomware or accidents.

Protect and restore your data. Easy, and fast!

TS-1655 supports Snapshot, which is like taking a photo - within seconds the complete status of your NAS data is recorded. **Maximum snapshots #s for QTS: 1,024, QuTS hero: 65,536**

Mitigate the growing threat of ransomware

Step 1

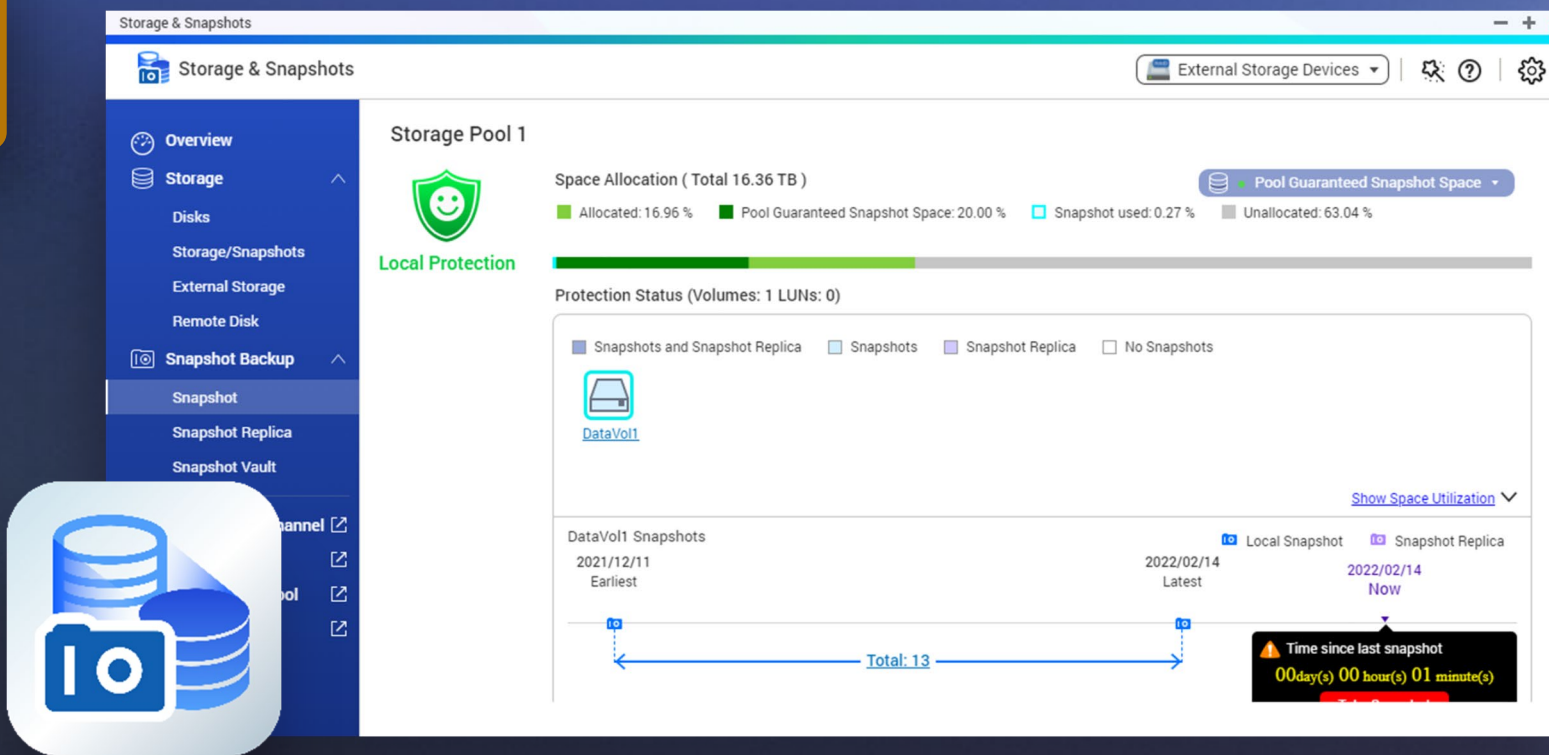
Regularly update, and use Malware Remover

Step 2

Routinely back up to your NAS, and create multi-version snapshots

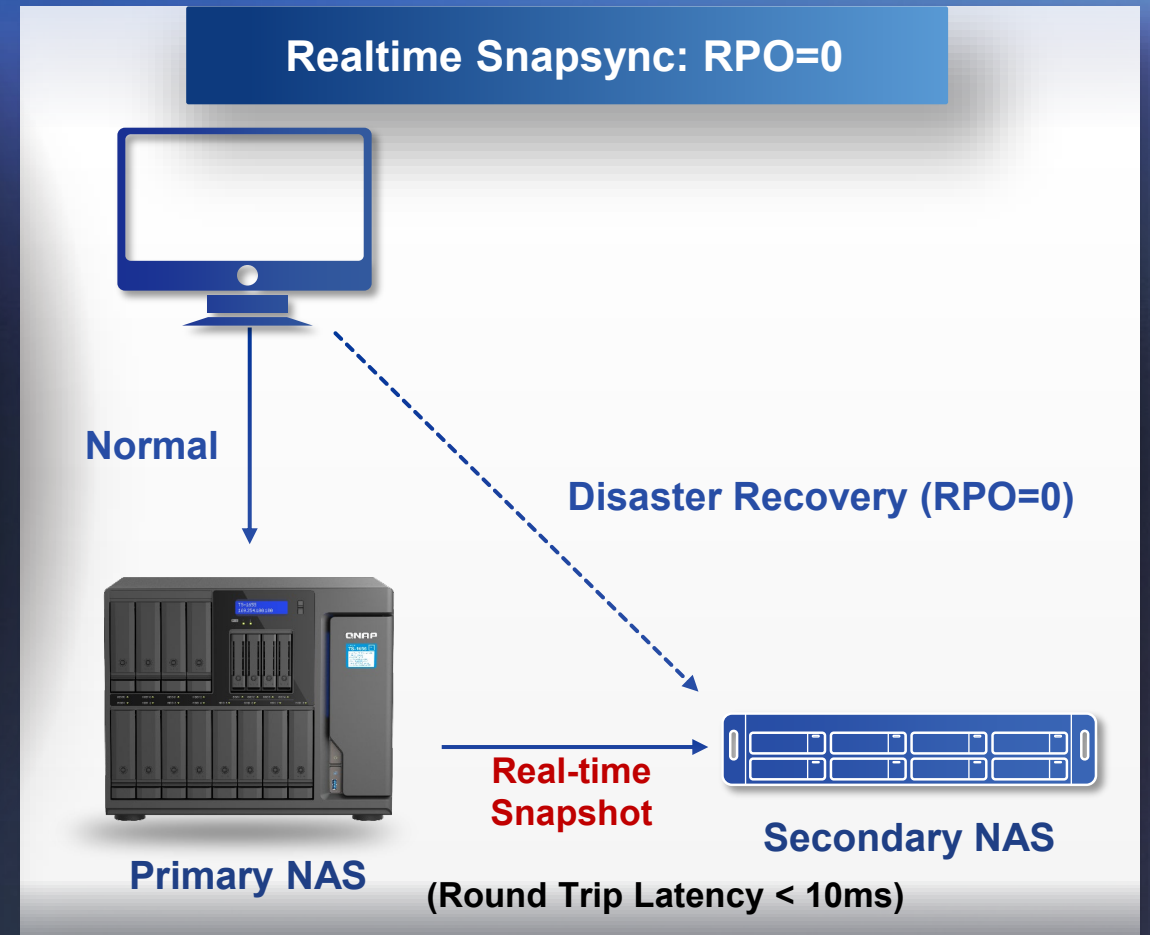
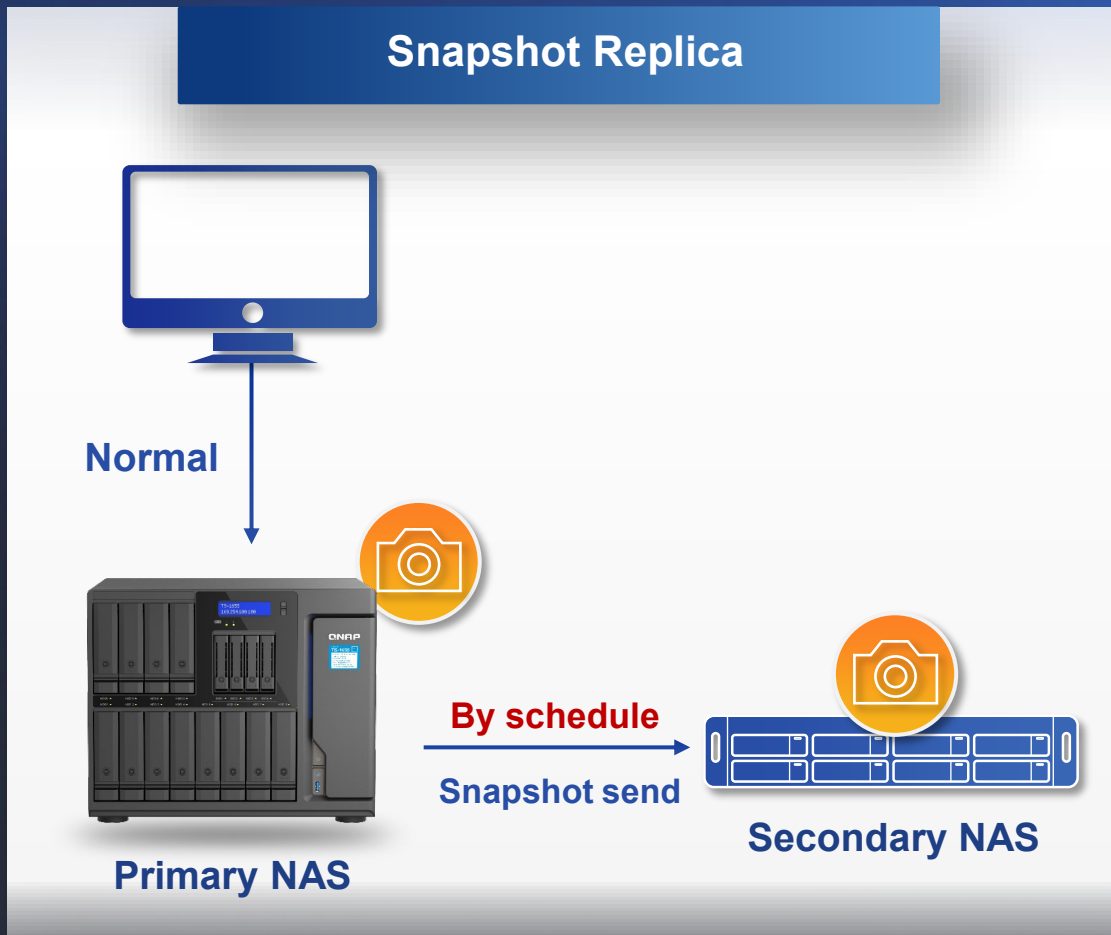
Step 3

Back up snapshots to another QNAP NAS



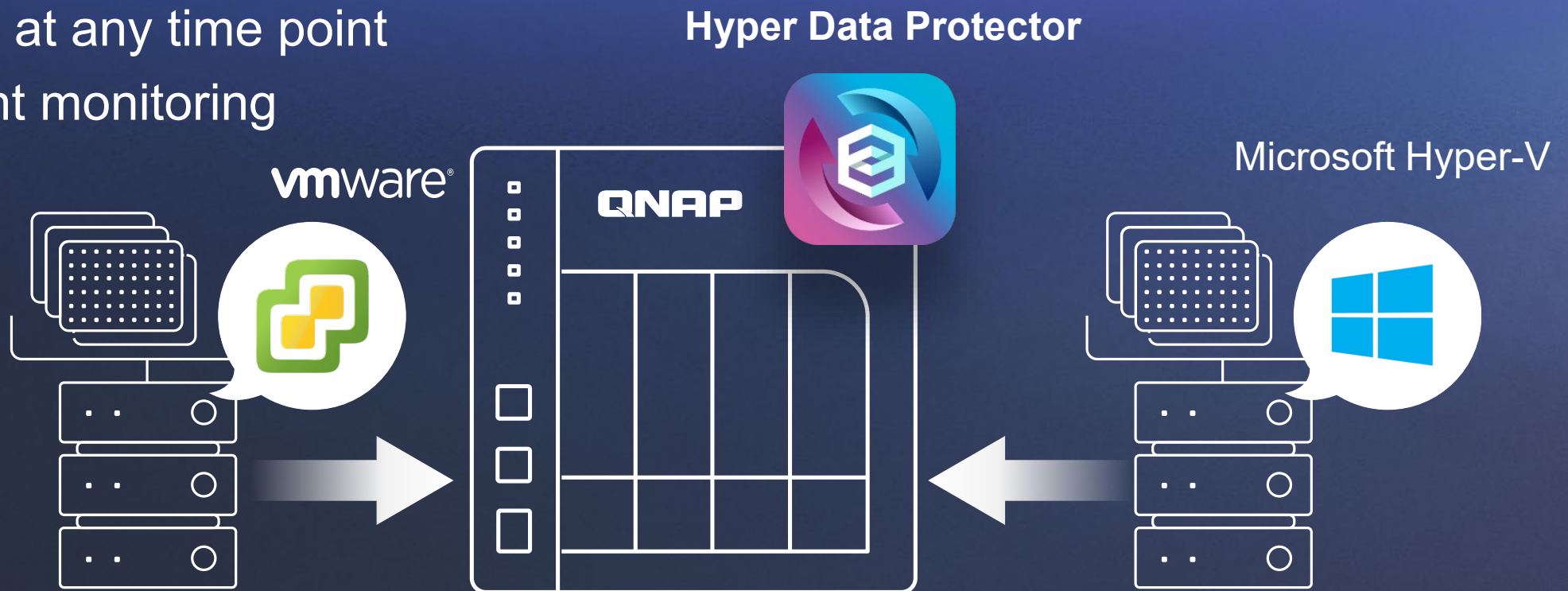
Real-time SnapSync ensures minimal RPO with real-time disaster recovery

Back up data from the local NAS to another QNAP NAS using block-level replication in real time.



Hyper Data Protector is an all-in-one license-free 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



Protect Enterprise SaaS data with Boxafe backup / recovery 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



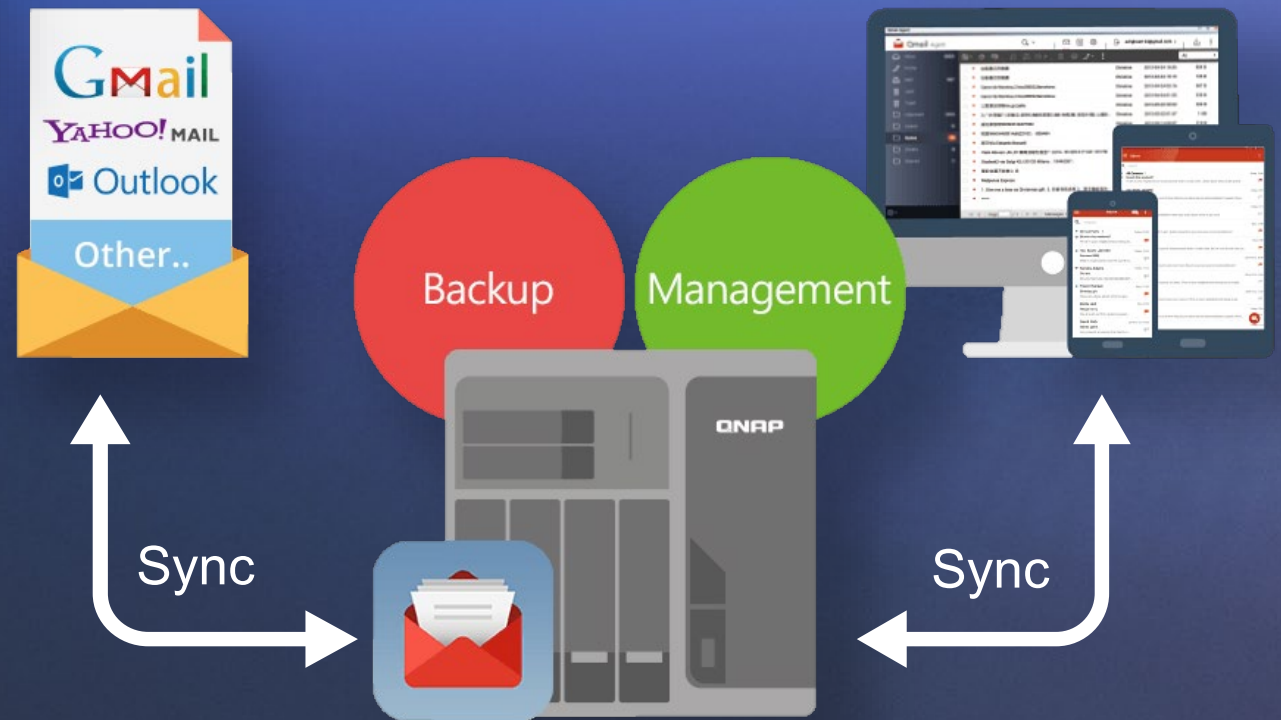
OneDrive

Backup all your files in OneDrive and support SharePoint

Easily backup/recover emails and efficiently manage multiple email accounts with QmailAgent

Best Email Retention Solution

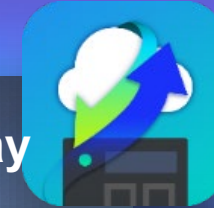
- Collectively manage and back up your personal and business emails.
- Easily auto back up all your emails and attachments.
- Quickly search and gain access to specific messages.
- Back up emails for disaster recovery.
- Encryption service protects backed up private emails.



Mount cloud storage and file servers with HybridMount for greater storage & faster access

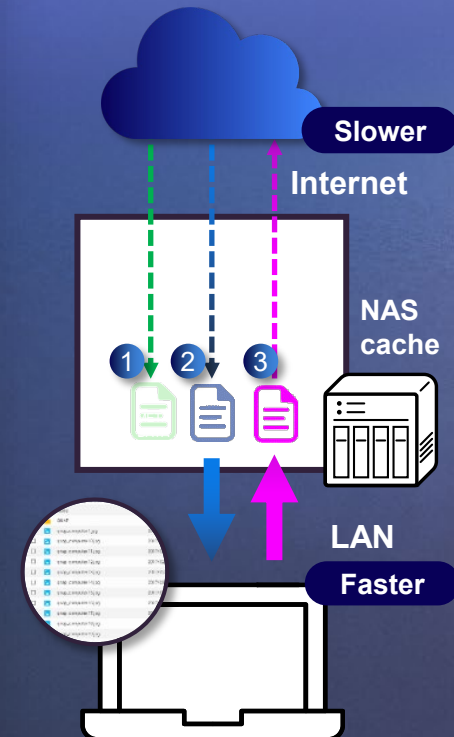
Network Drive Mount

File Cloud Gateway



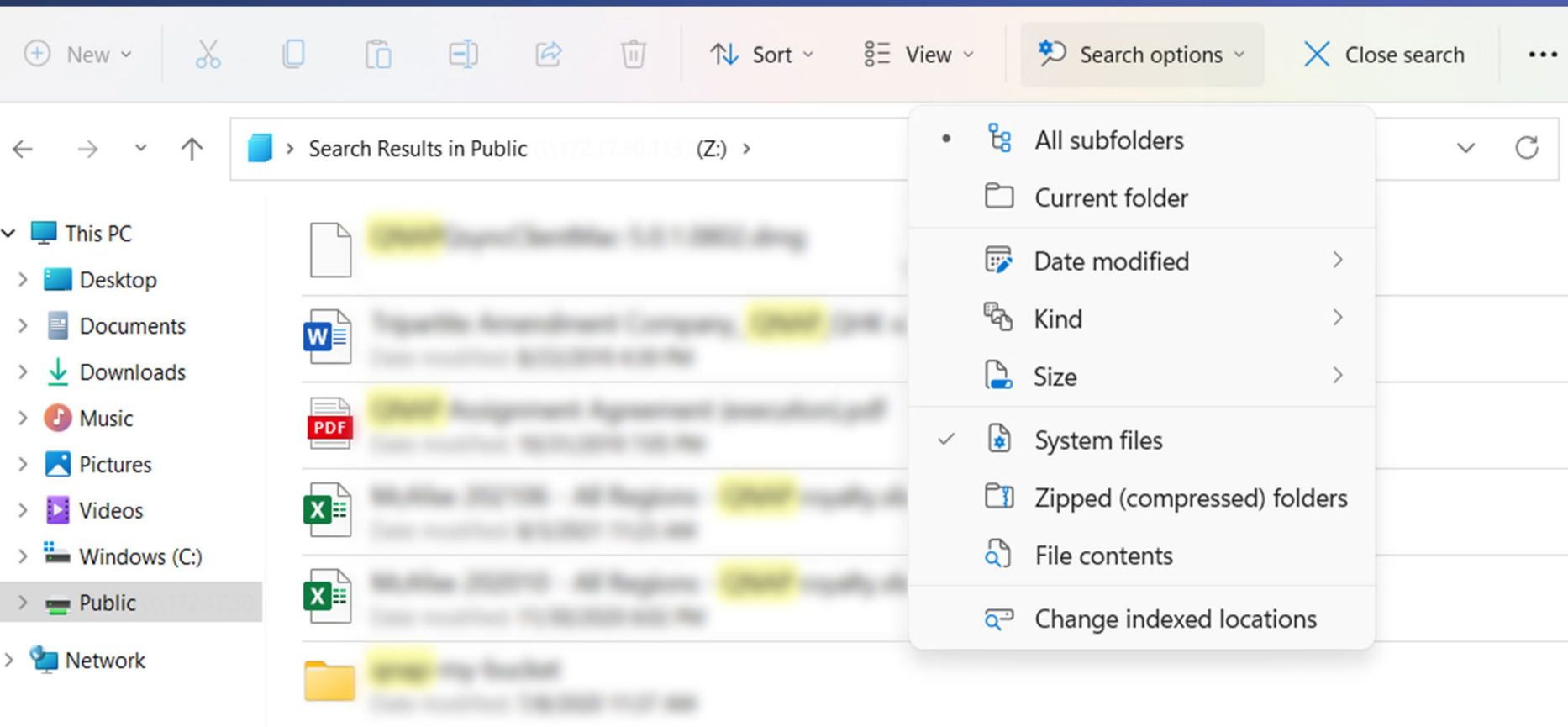
- Online collaboration
- File data analysis

Setup Method	Mount cloud drives	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



Convenient file search with Windows® Search Protocol (WSP) support for NAS shared folders

Windows® 10/ Windows Server® 2016 (or later) users can easily search NAS shared folders via Windows® when an SMB drive is mounted to the NAS. Advanced file search by time, file type, or size is supported for greater convenience.



For an optimized full-text search experience, we recommend **Qsirch PC Edition** !

The most powerful search engine that integrate with NAS and PC local search

All-in-one solution for hosting virtual machines and containerized apps



Virtualization Station

Virtualization Station allows you to create virtual machines (VM) on Turbo NAS, supporting Windows®、Linux® operating systems.



Container Station

Experience LXD and Docker® lightweight virtualization technologies, download apps from the Docker Hub Registry®, import/export containers, and create abundant microservices.

Container Station



Container

Application

Application

Application

Filesystem

Filesystem

Filesystem

Host OS

Hardware

Build a comprehensive surveillance system with a TS-1655, QVR Pro/Elite, and IP cameras



QVR Pro

- 6,000+ Compatible cameras
- 8 embedded monitoring channels
- expand up to 100 channels by purchasing QVR Pro licenses*
- View USB camera images through QUSBCam2

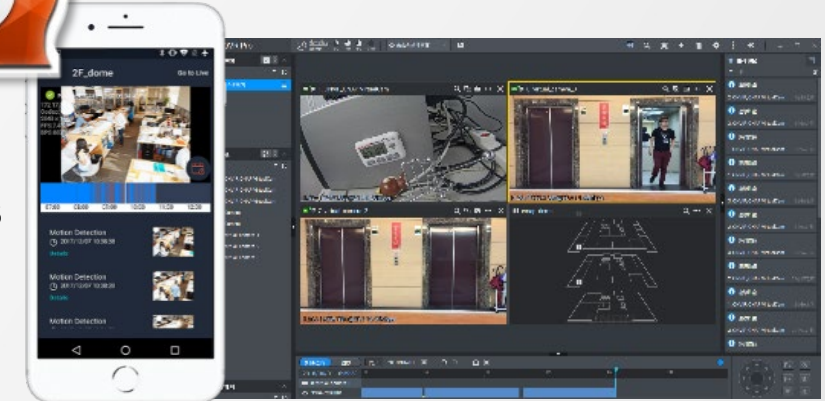


QVR Elite

The flexible subscription QVR Elite can be expanded to a maximum of 120 channels by purchasing licenses*



QVR Pro Client

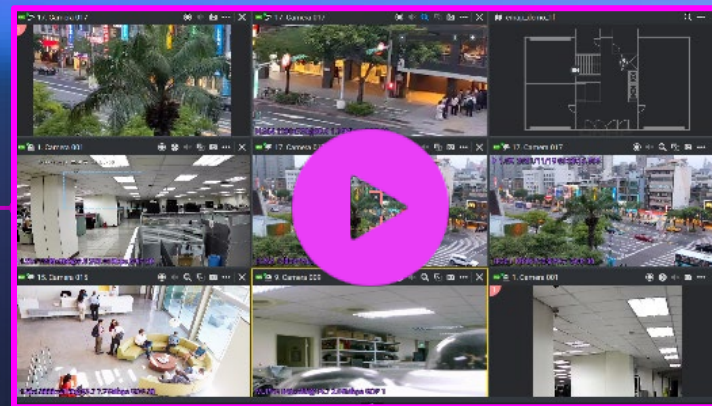
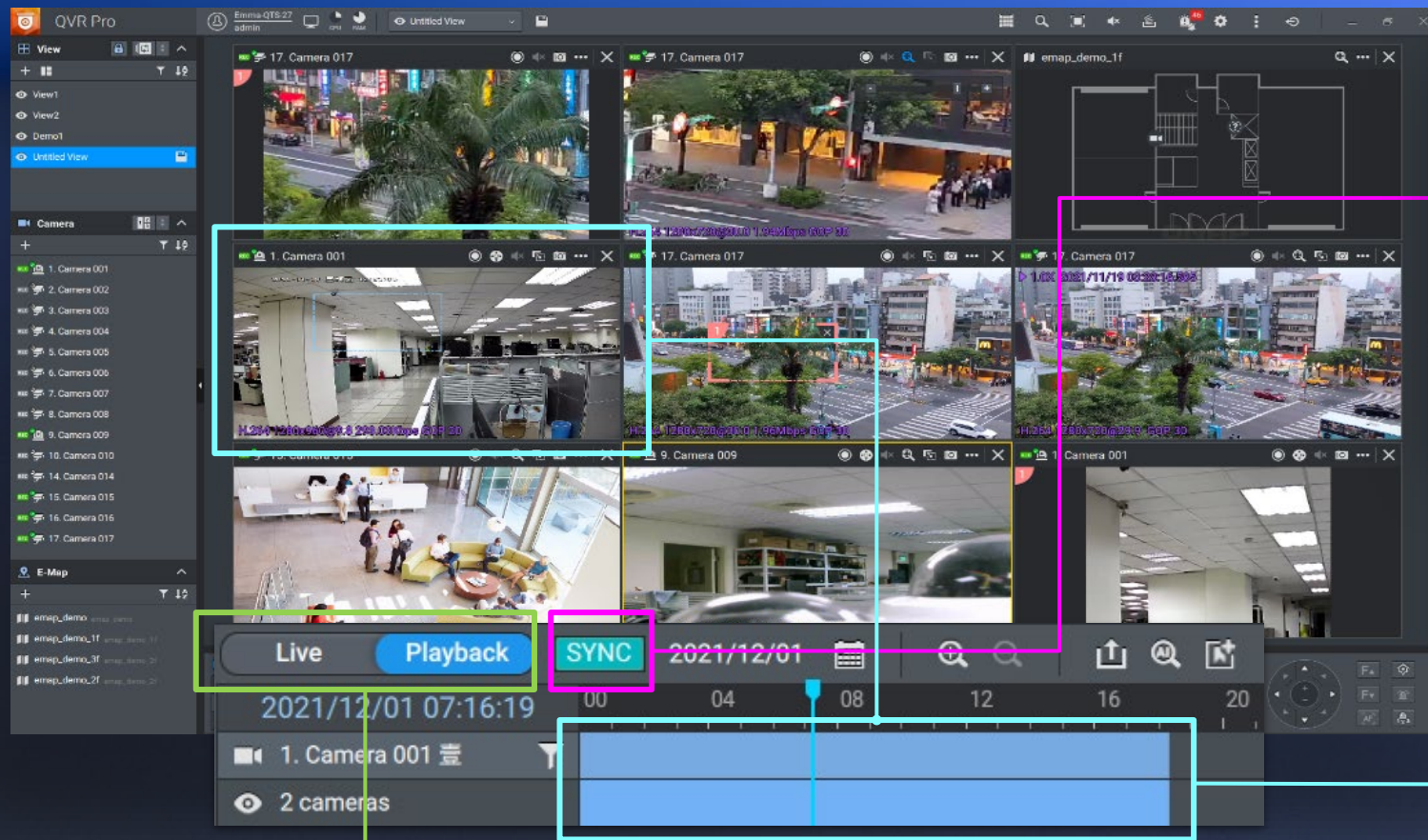


- iOS & Android mobile devices
- Support cross-platform : Windows, Mac, Ubuntu
- Use HDMI output and USB keyboard and mouse to control the NAS through installing Graphic card

* TS-1655 with 16GB memory.

Unified interface for live view & playback, anywhere with a PC/Mac QVR Pro Client or mobile device

Monitor the live view of multiple channels and playback on 1 single interface.



1-click to sync playback all video views

1 click to jump to the previous playback time

1 click to switch between Live & Playback

1-year+ of continuous surveillance recording storage with 264TB raw capacity in 1 single NAS



22TB x 12 = 264TB raw capacity



QVR Pro

8-channel included
Support up to 100ch*

* TS-1655 with 16GB memory.

8 channels, footage preserved for 365+ days

8 cameras; reserved for 365 days; 1920x1080(h.264/medium quality;30FPS); total 182TB required

Compatible with a huge amount of camera models and camera features

Over 190 Brands

 GeoVision

 **VIVOTEK**
BUILT WITH RELIABILITY

 Panasonic

 **AXIS**
COMMUNICATIONS

 MOBOTIX

 Canon

 **HIKVISION**

 **dahua**
TECHNOLOGY

 Honeywell

 **Brickcom**

over 6000 Models



ONVIF Profile Supported



**RTSP Stream
Input / Output**

**RTMP Stream
Input**



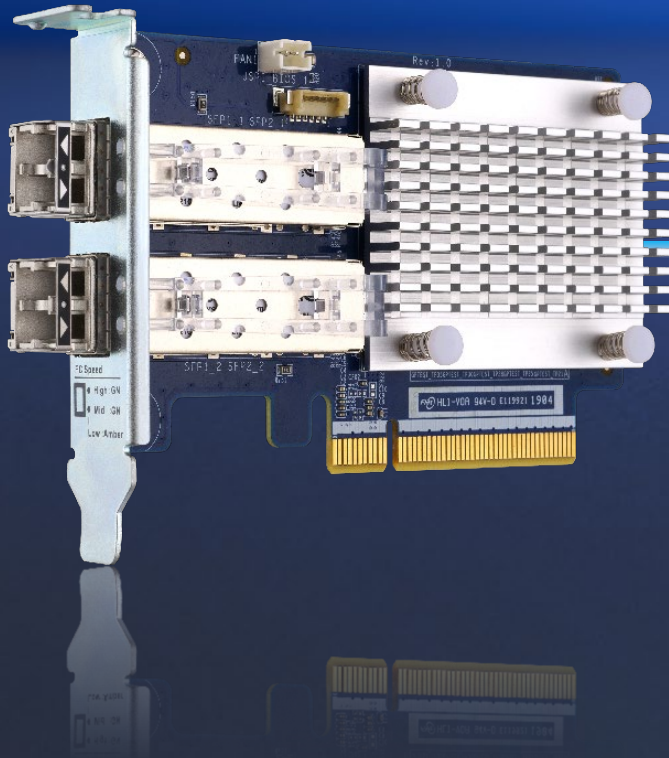
LIVE DEMO

- Back up Mac with a shared Time Machine account in HBS 3
 - Create a VM in Virtualization Station

Multiple Accessories and Storage Expansion Solutions



QNAP 16/32Gb Fibre Channel cards for a reliable, scalable and budget-friendly FC SAN storage solution



QXP-16G2FC

Dual-port 16Gbps

QXP-32G2FC

Dual-port 32Gbps

FC HBA
with 16/32Gb FC
transceivers

Manage Fibre Channel connection
using QTS/QuTS hero iSCSI &
Fibre Channel NAS application

QXG-10G2TB

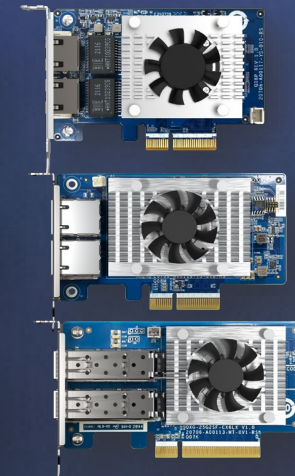
2x 10G/5G/2.5G/1G/100M

QXG-10G2T-X710

2x 10G/5G/2.5G/1G/100M

QXG-25G2SF-CX6

2x 25G SFP28



Supports up to 24 more HDDs with two JBOD units, add nearly 500TB (24 x 22TB) of storage space

USB



TR-002



TR-004



TL-D800C



TR-004U



TL-R1200C-RP

Maximum of JBOD / RAID expansion enclosures

TR-002	2
TR-004	2
TR-004U	2
TL-D800C	1
TL-R1200C-RP	1
TL-D400S	2
TL-D800S	2
TL-D1600S	2
TL-R400S	2
TL-R1200S-RP	2

PCIe



TL-D400S



TL-D800S



TL-D1600S



TL-R400S



TL-R1200S-RP

Note: These expansion units can only be used as an individual storage pool or volume on the NAS. Their storage pool or volume cannot be combined into the connected NAS. NAS applications cannot be installed on the them.

3-year standard warranty and up to 5 years with an optional extended 2-year warranty for peace of mind

The TS-1655 is covered by a 3-year free product hardware warranty. QNAP provides warranty service to help your organization continue to operate and provide uninterrupted services to your customers.

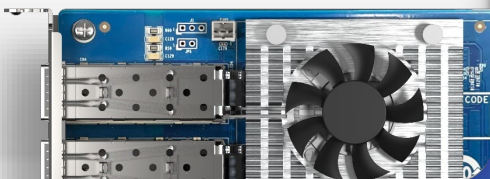
If you need a longer warranty period, you can purchase the QNAP Extended Warranty Service (extra 2-year extended warranty **EXTW-BROWN-2Y**), enjoying a maximum 5-year product warranty.

NAS ordering P/N : **TS-1655-8G**

Intel Atom® C5125 8-core 2.8 GHz CPU, 8 GB
UDIMM DDR4 (1 x 8 GB non-ECC RAM)



Support
10/25GbE
NICs



Support
multiple
JBOD



C5125 2.8 GHz

8-core
CPU

14
Direct
connection
2.5GbE

264

TB
Raw capacity

Hybrid storage



2.5"
SSD
X4



3.5"
HDD
X12

Supports both

QTS

QuTS hero
edition

intel®
Quick Assist
Technology



USB 3.2
Gen1
(5Gbps) &
One-Touch-
Copy

TS-1655



Availability at least until

2027

128GB ECC
Memory



QVR Pro
Surveillance
solution

3

PCIe Gen3 x4
slots



PCIe Gen3 x2

SR-IOV

GPU

PCIe
graphics
card
support

TS-1655

Larger capacity, more functions
The first choice for multi-device backup
and surveillance host



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