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

intel ATOM | vmware READY | Microsoft Hyper-v | CITRIX XenServer | veeam READY Repository

- 2 x M.2 PCIe slots
- 2 x 2.5GbE RJ45
- 3 x PCIe Gen 3 slots
- Maximum 128GB memory
- Optional NIC: 25 GbE / 10 GbE

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

SSD

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

PCIe

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

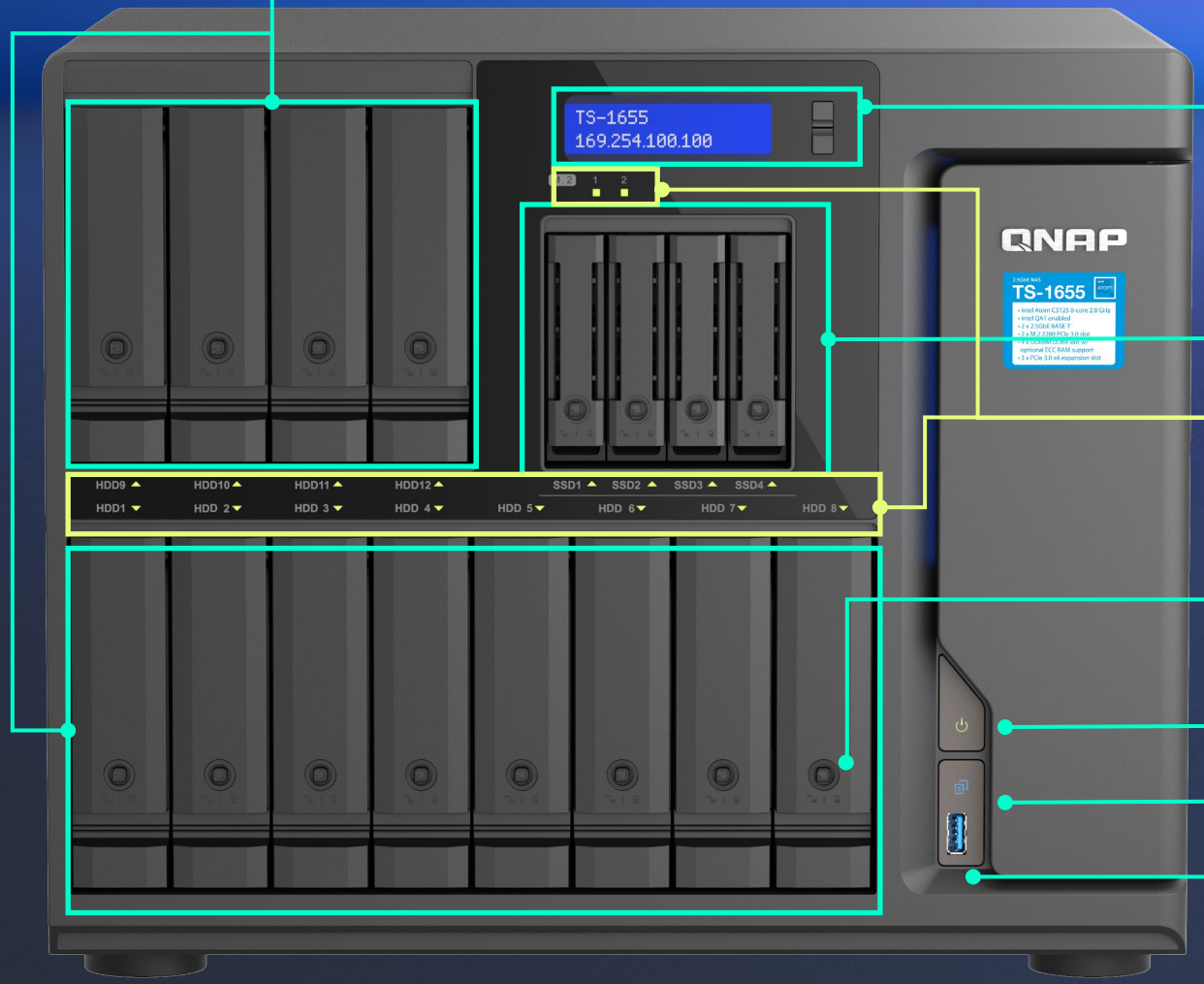
QTS or switch to QuTS hero operating system for optimal data integrity and reliability

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



12 x SATA 6Gbps 3.5”/2.5” HDD/SSD bays

LCM system indicator
(Displays the NAS name, IP address and other information, and easily operate the NAS shutdown or restart)

4 x SATA 6Gbps 2.5” SSD bays
(Can be used with Qtier* or SSD Cache to increase NAS efficiency)
*Qtier™ is not supported by QuTS hero NAS O.S.

HDD/SSD/M.2 SSD LED indicators

Keylock trays with 2 keys included

Power button & power LED

USB One Touch Copy button

USB 3.2 Gen 1 port

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

3 x PCIe Gen3 x4 slots

- 2 x Half-height
- 1 x Full-height

3 x 9cm Smart Fan

2 x 2.5 Gigabit Ethernet ports, compatible with 1GbE/100MbE

2 x USB-A 3.2 Gen 1 ports

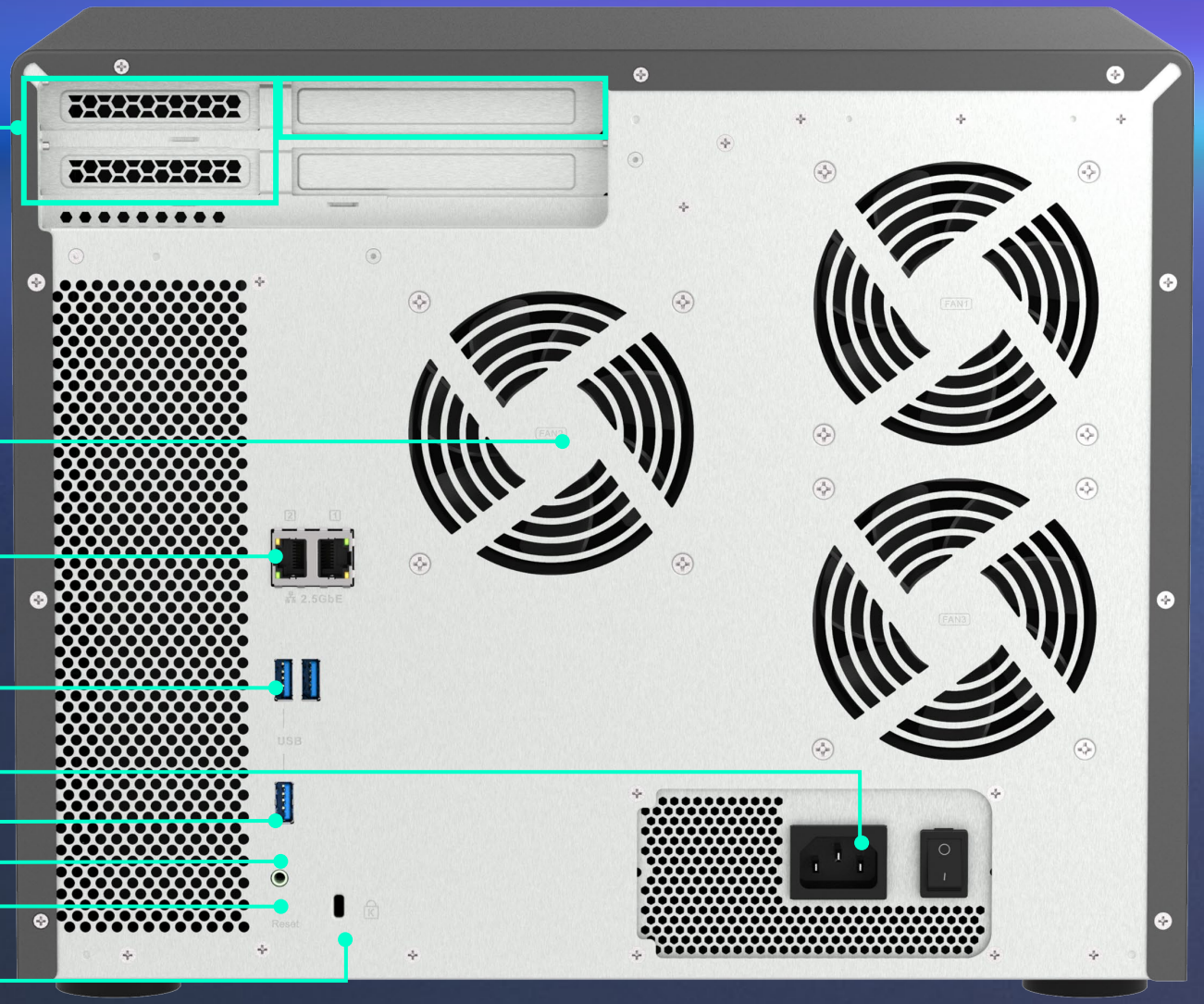
Internal power supply

USB-A 3.2 Gen1 port

3.5mm COM port

Reset

Kensington Lock



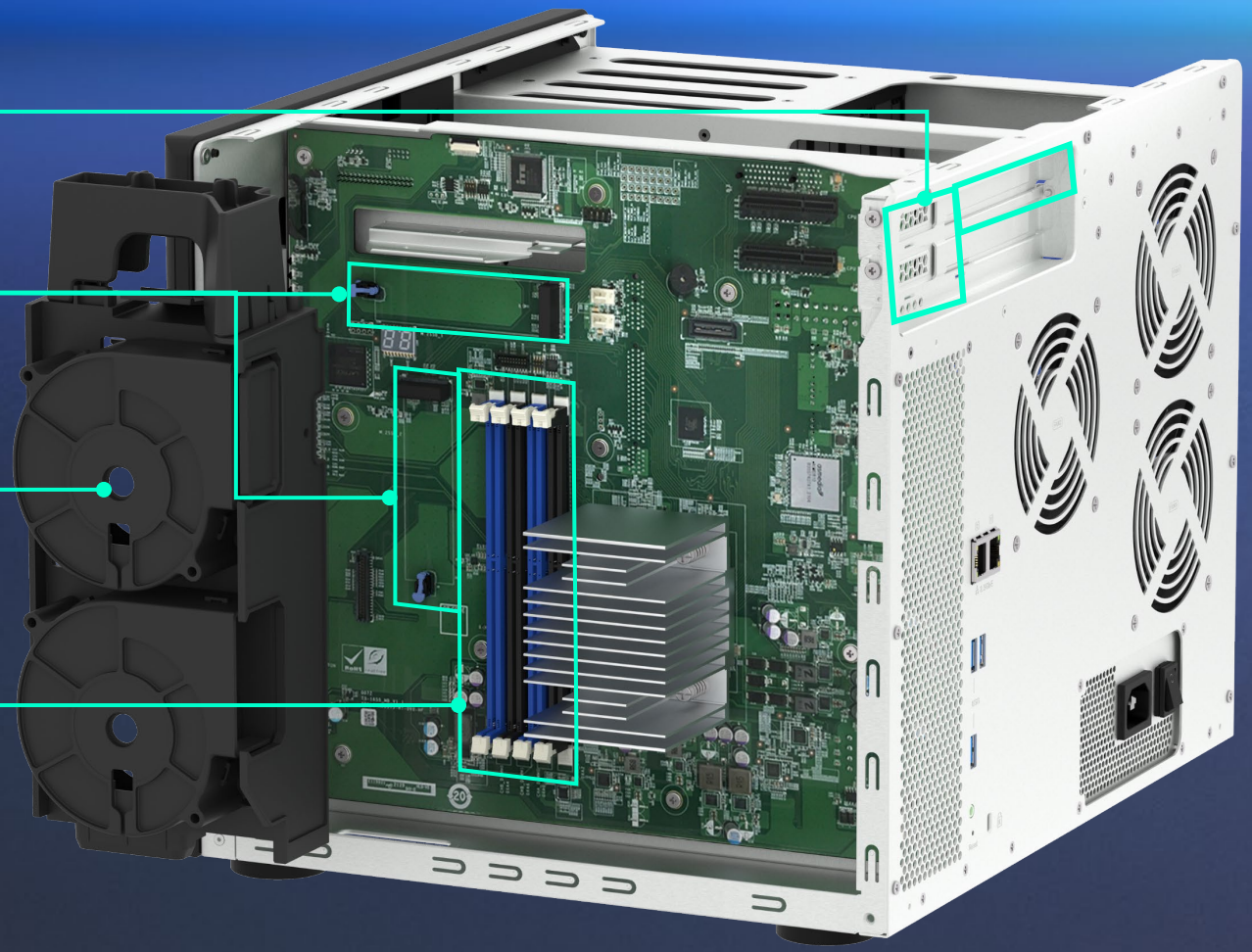
High-performing TS-1655 supports up to 128GB RAM with dual M.2 PCIe SSD slots & 3 x PCIe slots

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

SR-IOV

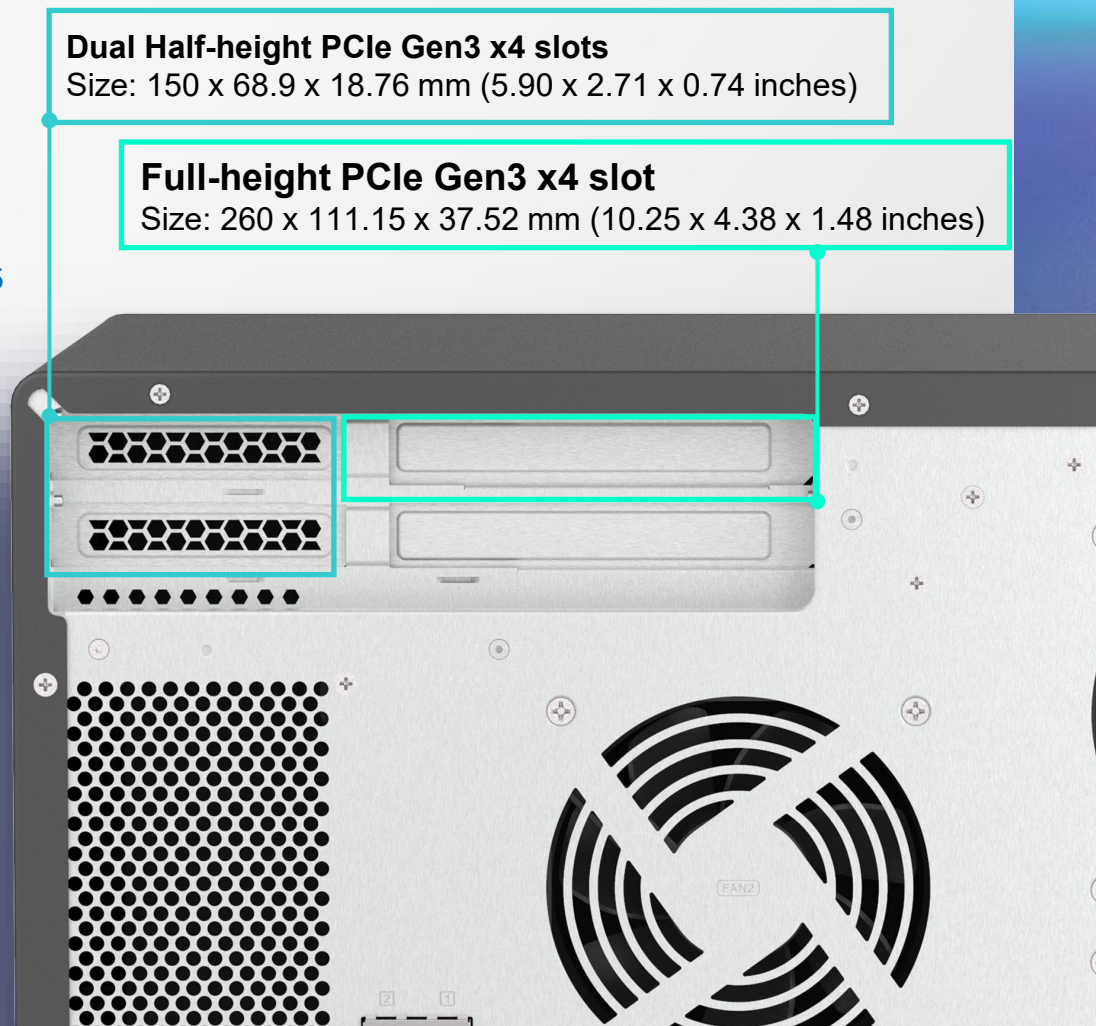
SR-IOV Network I/O Virtualization

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

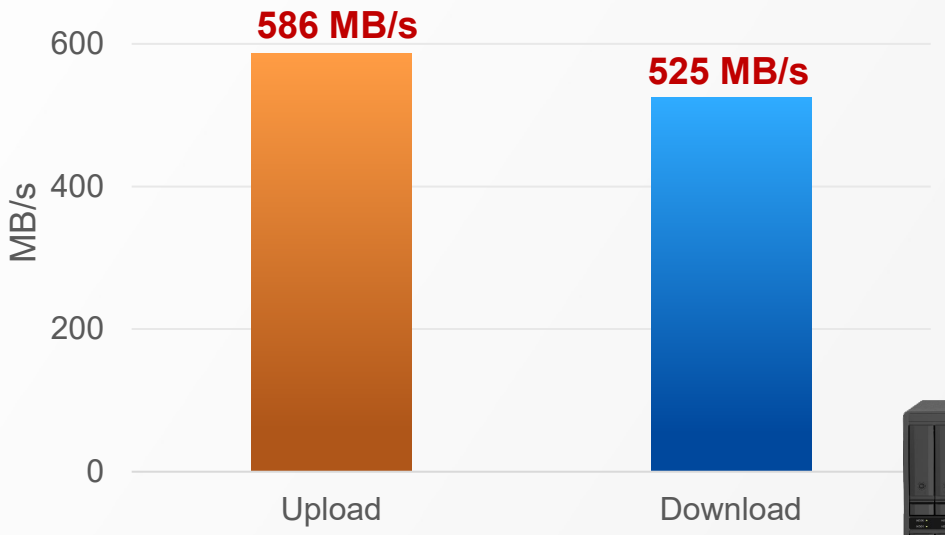
Intel® QAT hardware acceleration

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



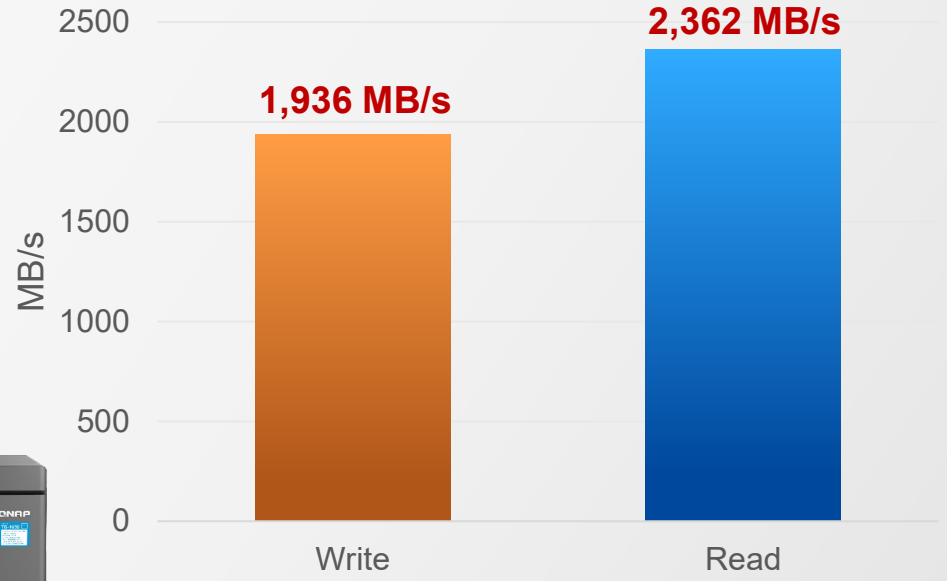
Dual 2.5 GbE ports bring essential performance out of the box. Class-leading 10GbE champion is here.

2 x 2.5GbE Windows File Transfer



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

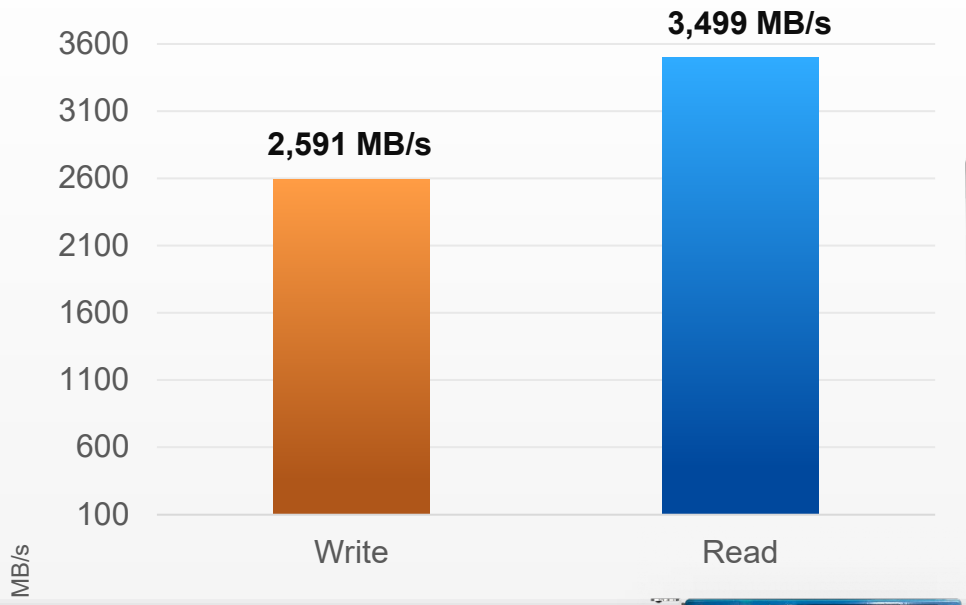
2 x 10GbE SMB Sequential Throughput (1MB)



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

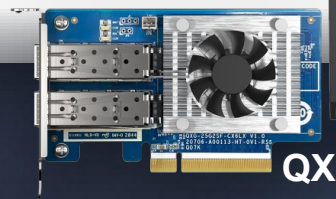
2 x 25GbE SMB Sequential Throughput (1MB)



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



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

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

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

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

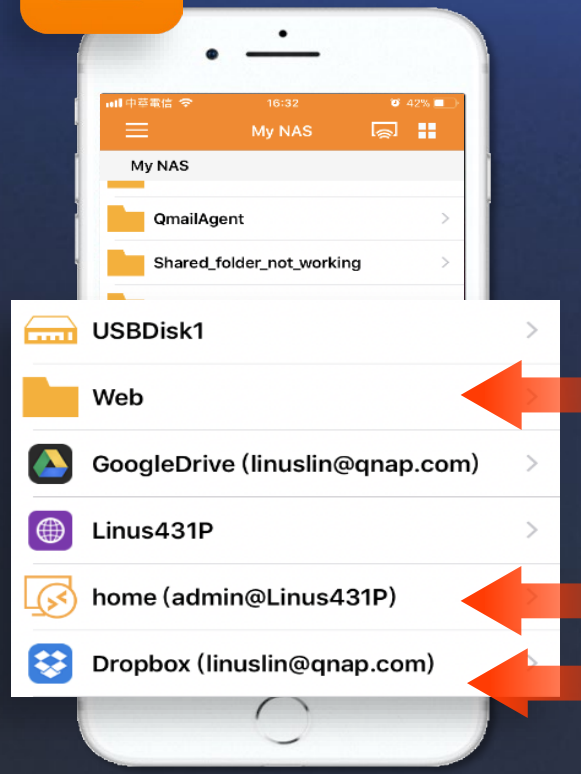
Certified for virtualization

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.

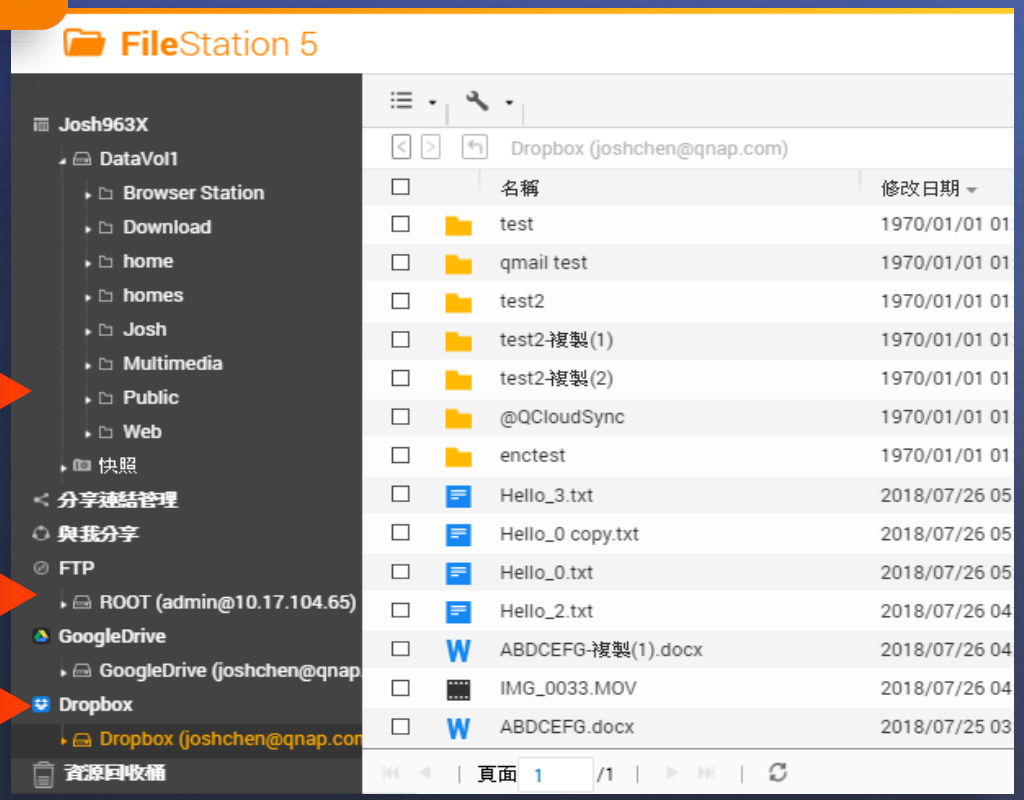
Qfile



Local NAS

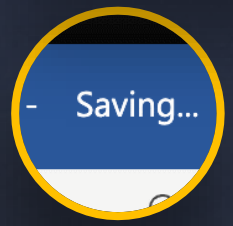
Remote NAS Cloud Storage

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	•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

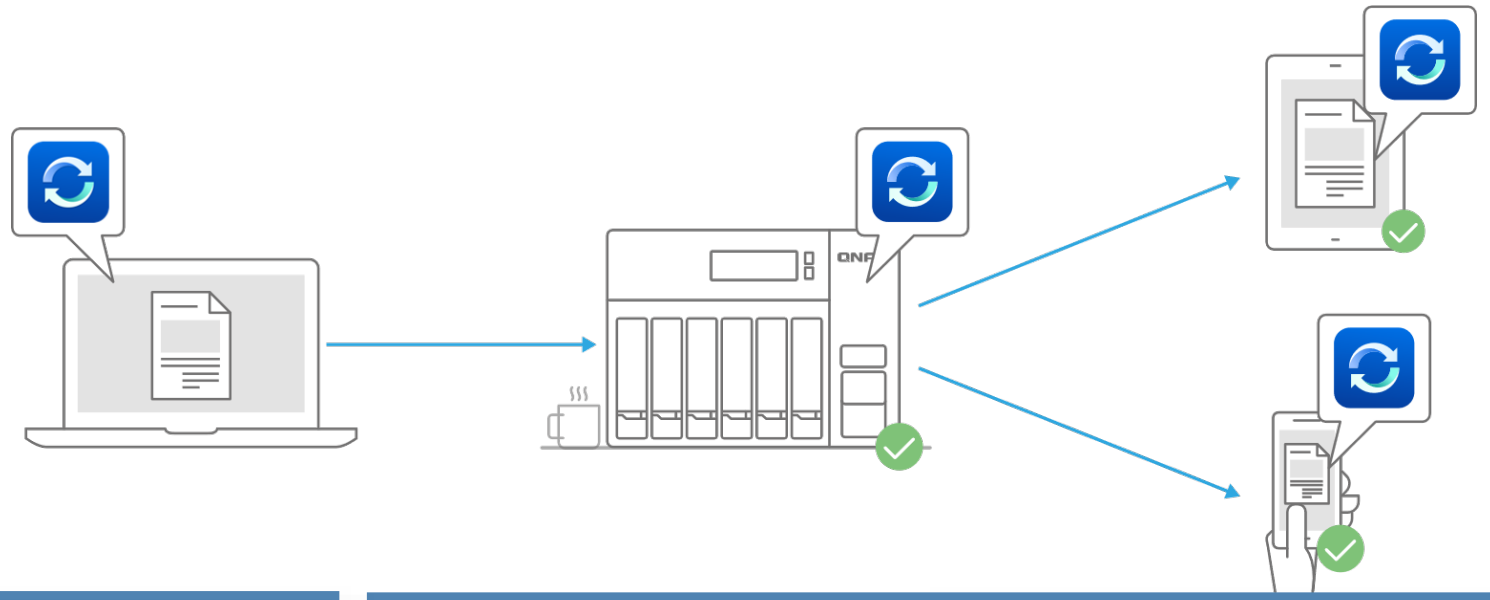


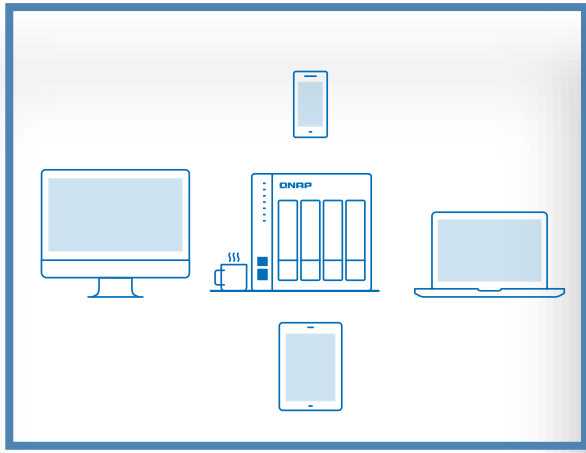
Save to NAS in real time

Multi-user online editing

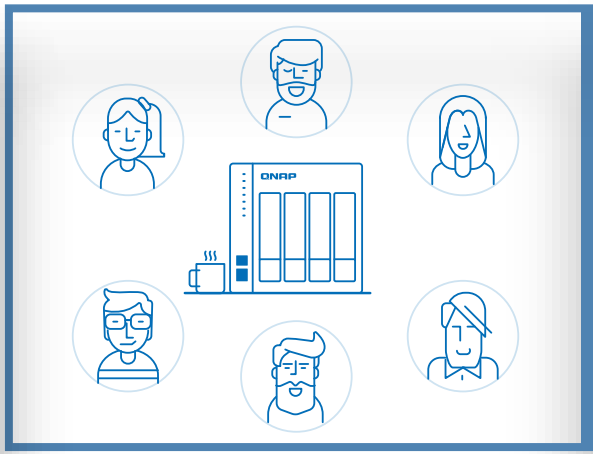
Qsync 5.0 – Cross-device file sync for individuals and teams

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

RPO : daily / scheduled

HBS 3 (Hybrid Backup Sync 3) :

File level, multi-version management: RTRR, Rsync, FTP, WebDAV, and CIFS/SMB protocols.

RPO : hourly / daily / yearly

Snapshot :

File level, multi-version management.

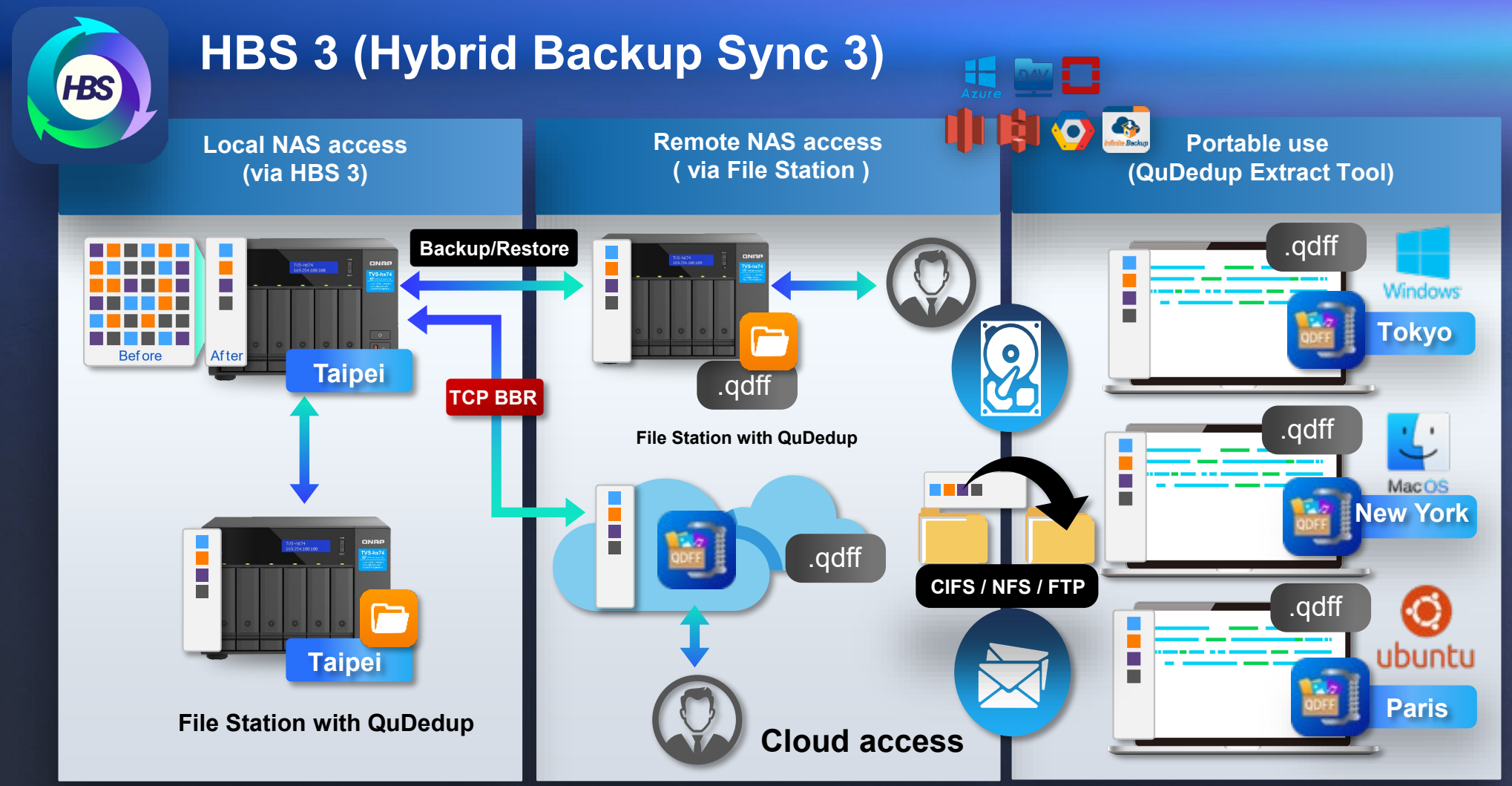
Lightweight snapshot w/o performance impact.

RPO : real-time

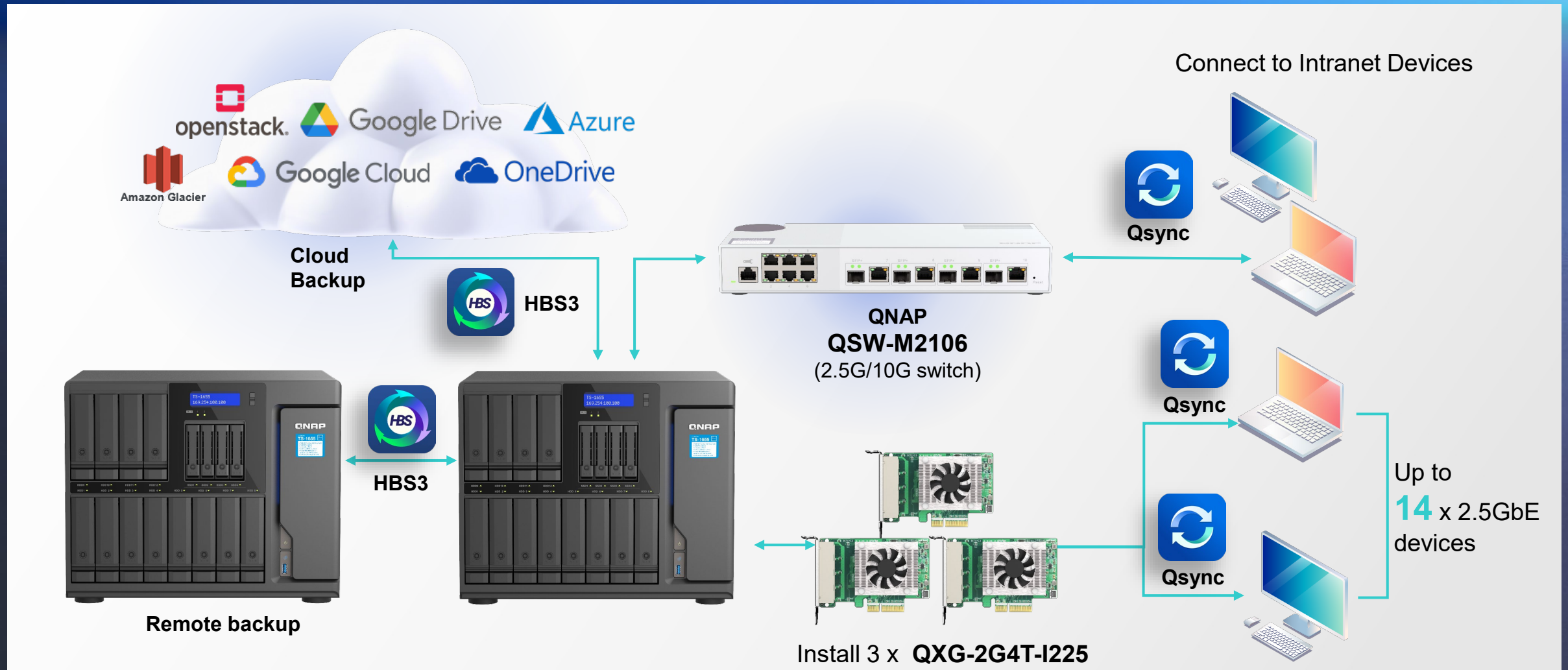
Snapsync :

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

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

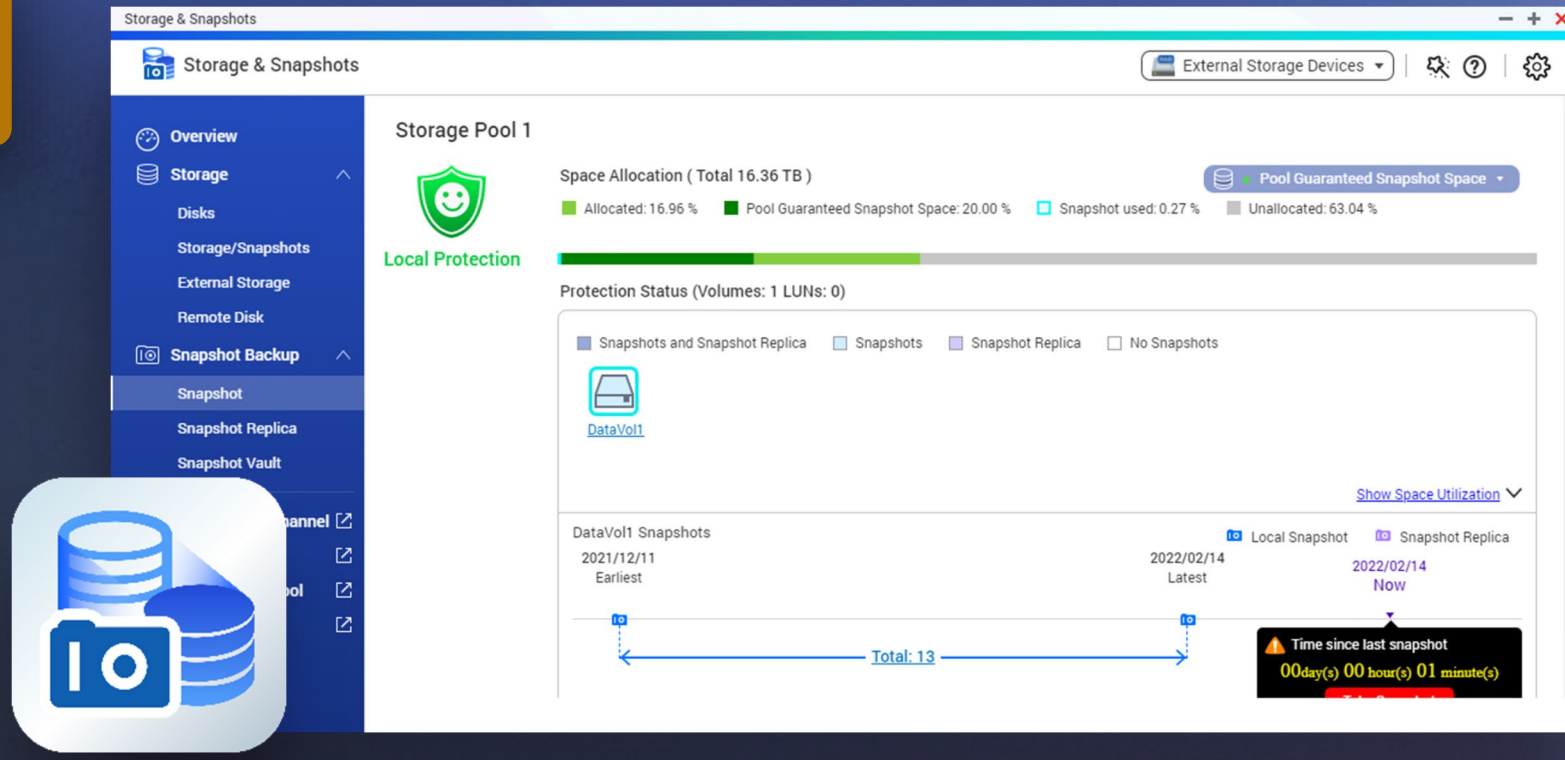
Regularly update, and use Malware Remover

Step 2

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

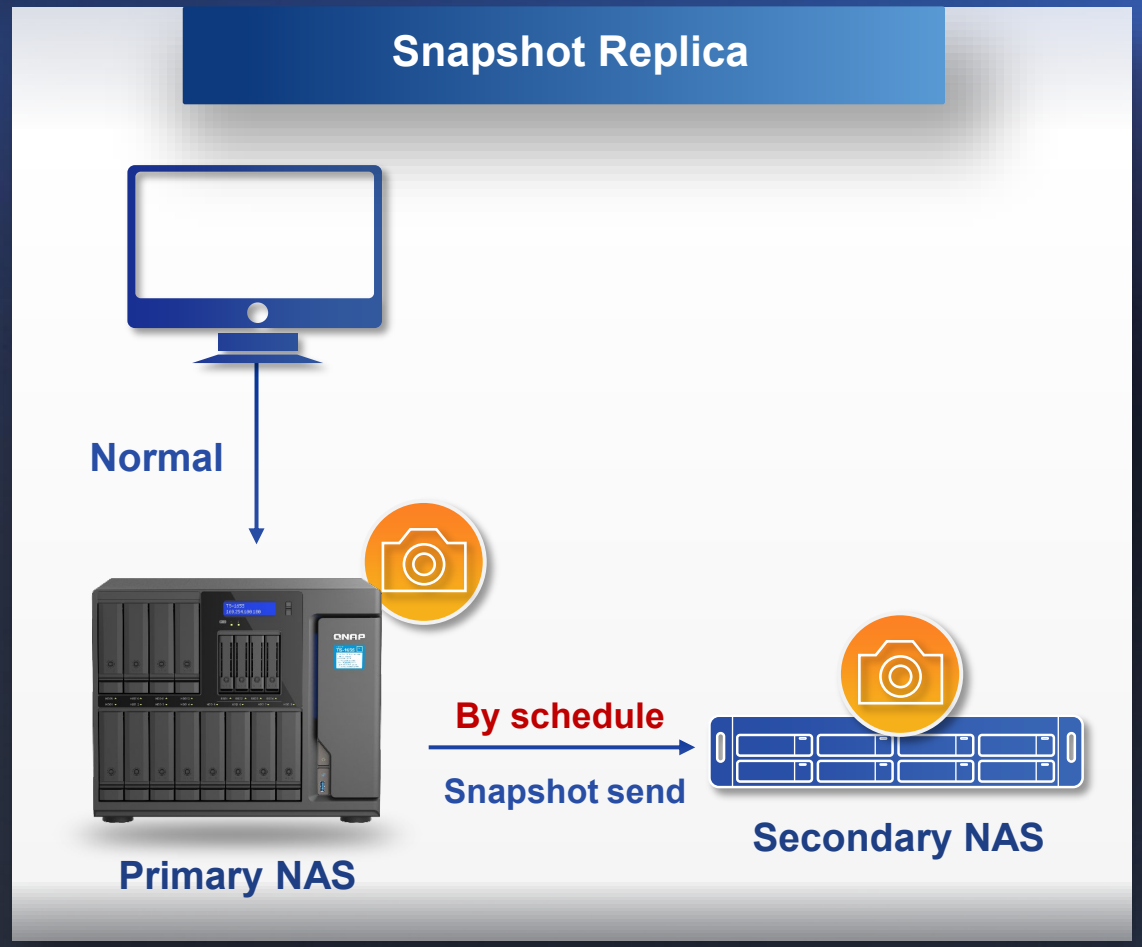
Step 3

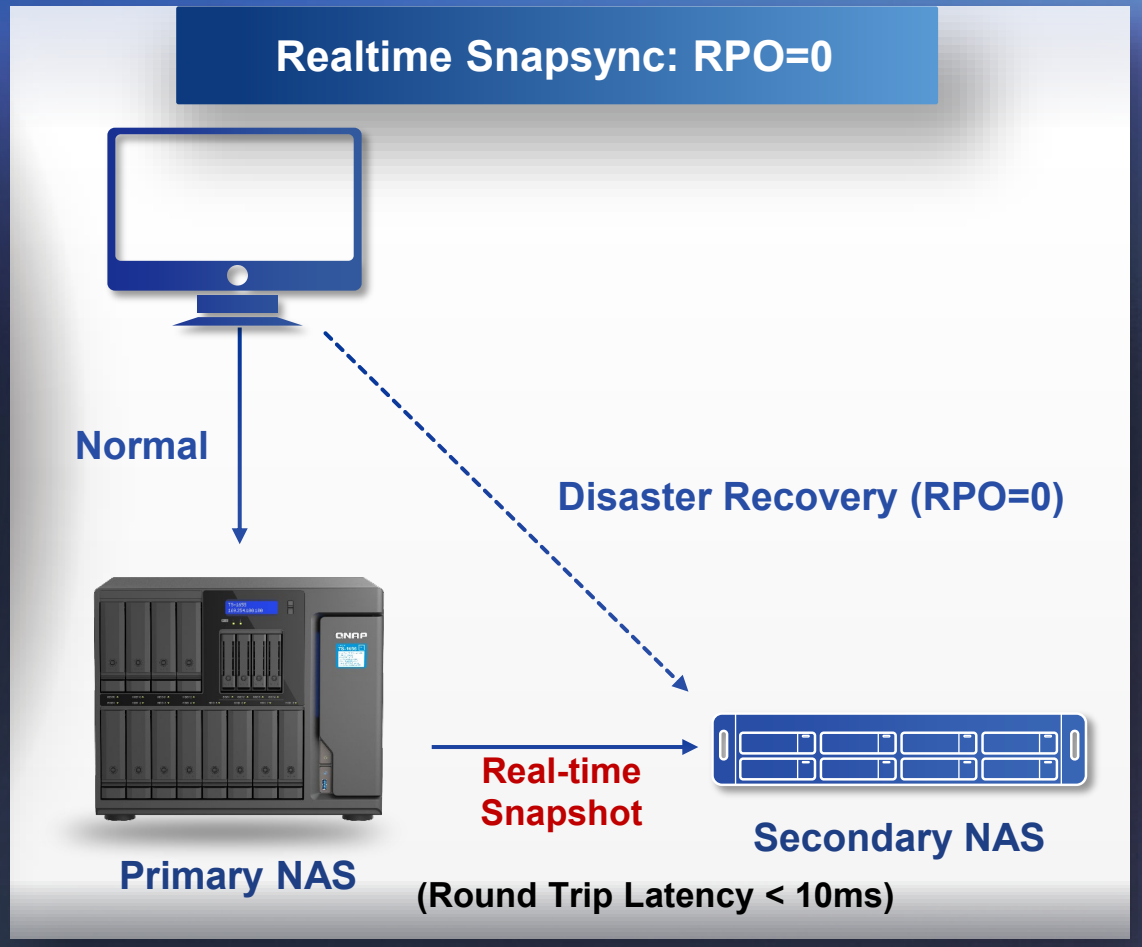
Back up snapshots to another QNAP NAS



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

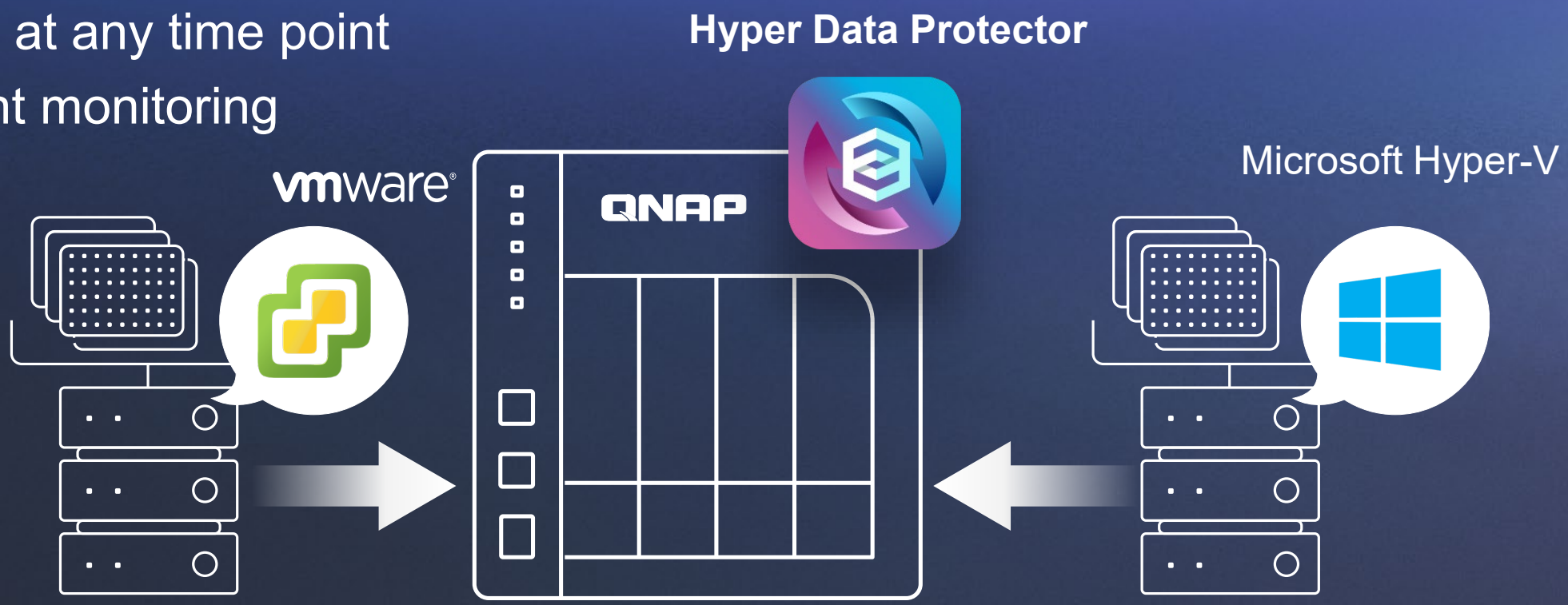
Back up data from the local NAS to another QNAP NAS using block-level replication in real time.





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

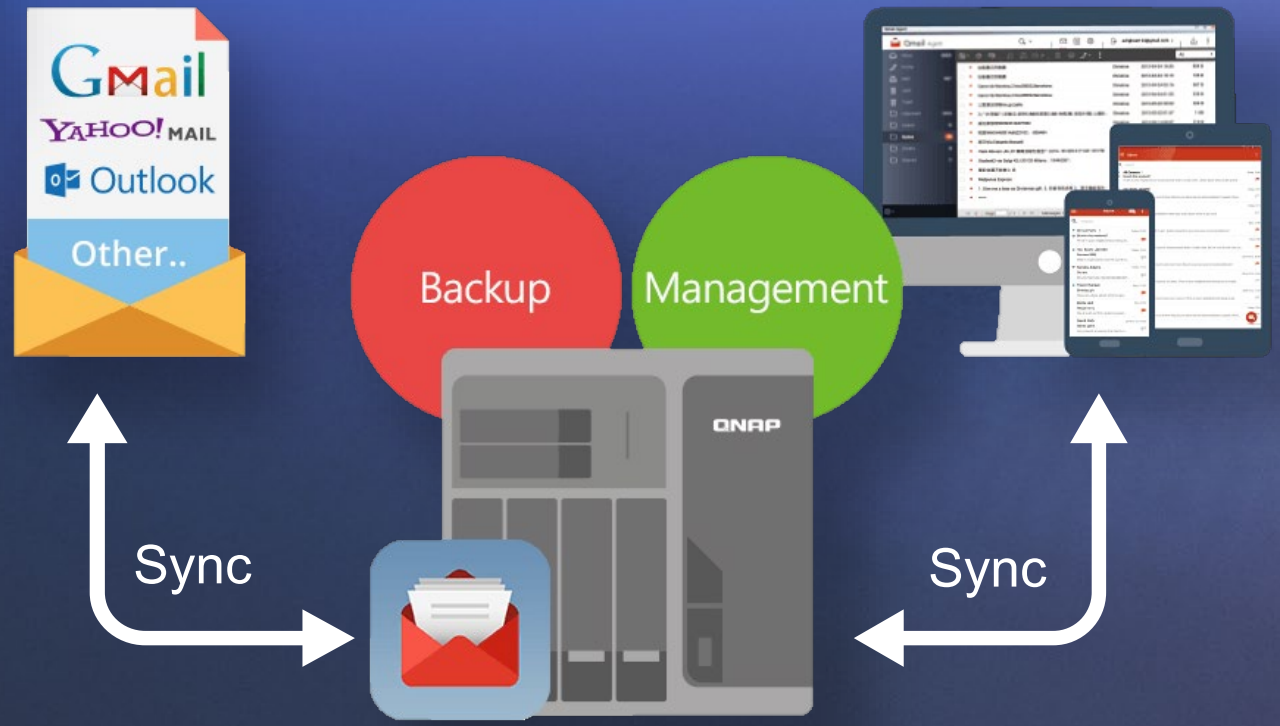
Calendar
Backup all your events and attachments in Outlook Calendar

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

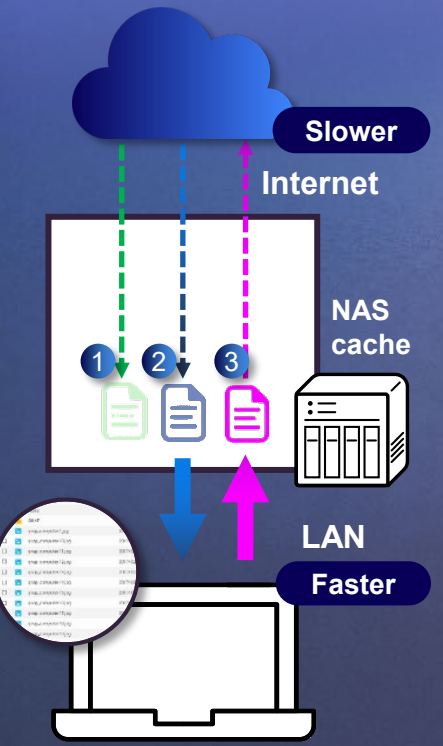
- Collectively manage and back up your personal and business emails.
- Easily auto back up all your emails and attachments.
- Quickly search and gain access to specific messages.
- Back up emails for disaster recovery.
- Encryption service protects backed up private emails.



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

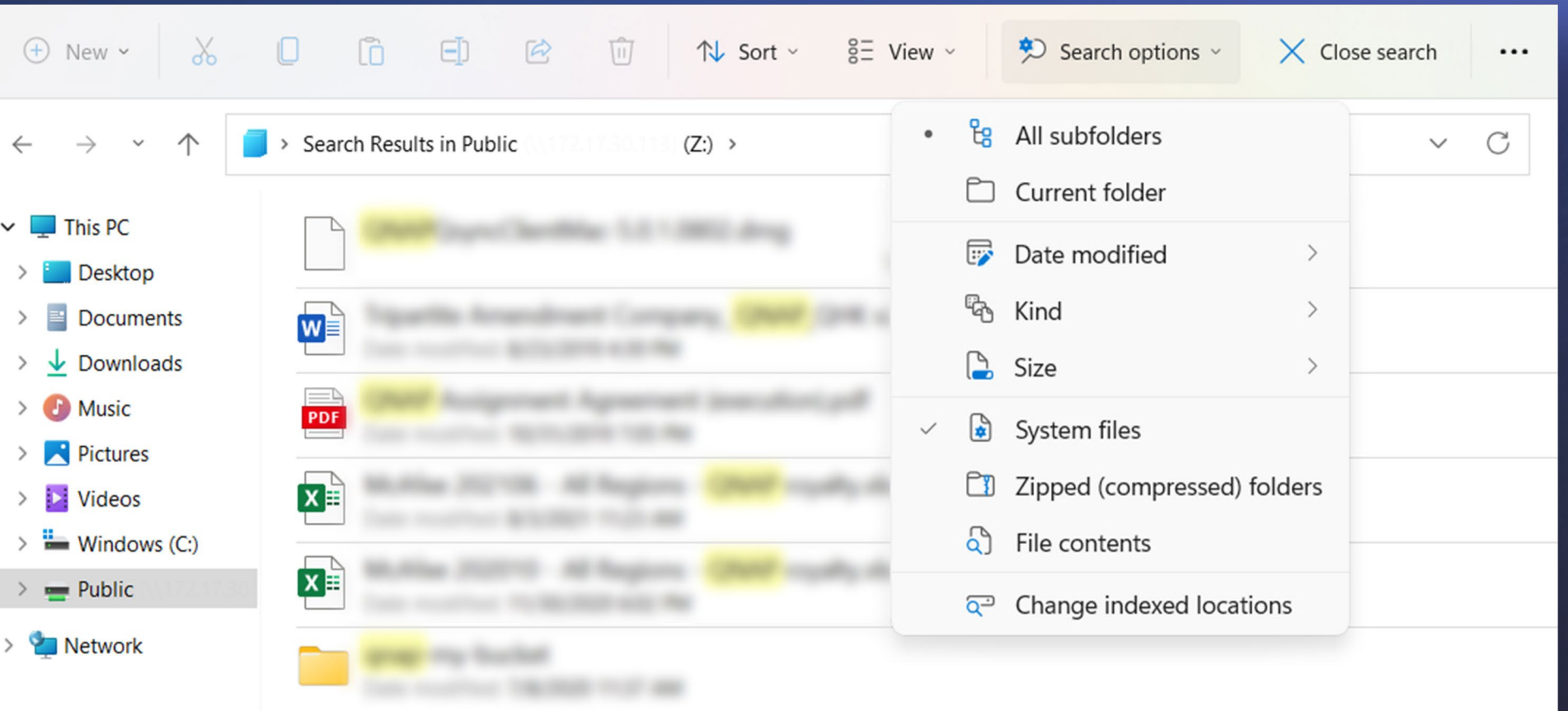
	Network Drive Mount	File Cloud Gateway
Setup Method	Mount cloud drives	Select "File Cloud Gateway" mode and create a dedicated cache space
Connections	No limit	2 free and perpetual connections. Purchase license for more connections
Access Performance	Depends on network speed	High performance thanks to 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

- Online collaboration
- File data analysis



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

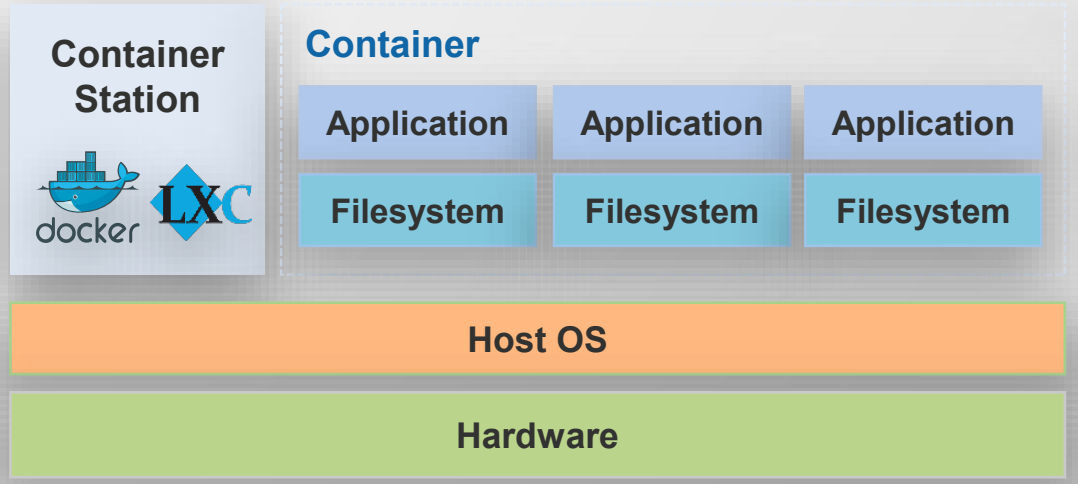
All-in-one solution for hosting virtual machines and containerized apps

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.

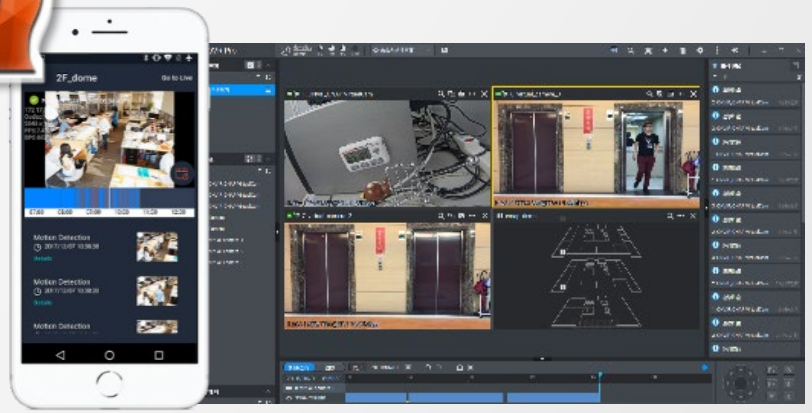


Build a comprehensive surveillance system with a TS-1655, QVR Pro/Elite, and IP cameras

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 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

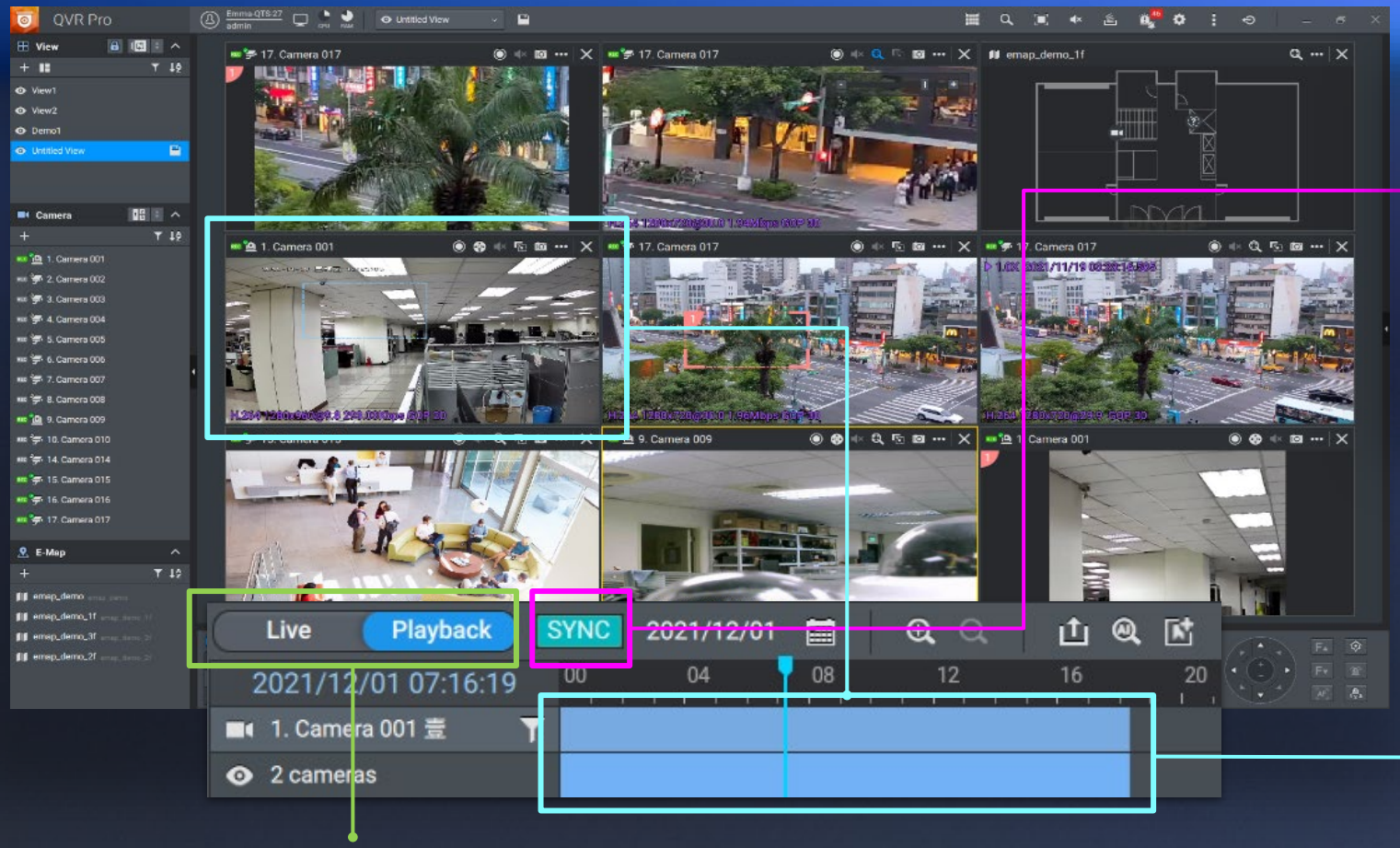
QVR Elite

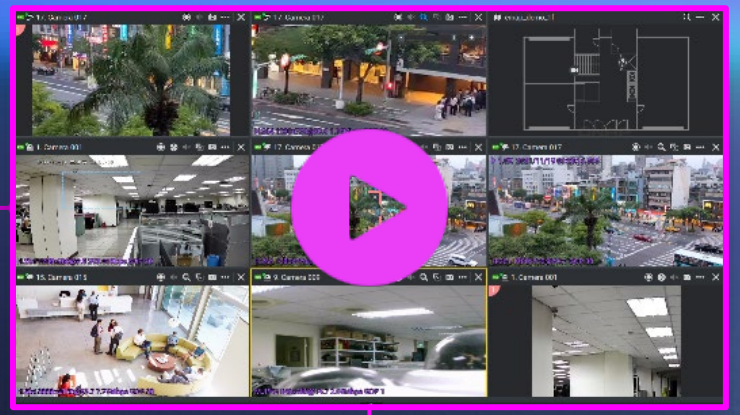
The flexible subscription QVR Elite can be expanded to a maximum of 120 channels by purchasing licenses*

* 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

365 days

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
alhua TECHNOLOGY
Honeywell
Brickcom

over 6000 Models

ONVIF Profile Supported

ONVIF® | S

RTSP Stream Input / Output

RTMP Stream Input

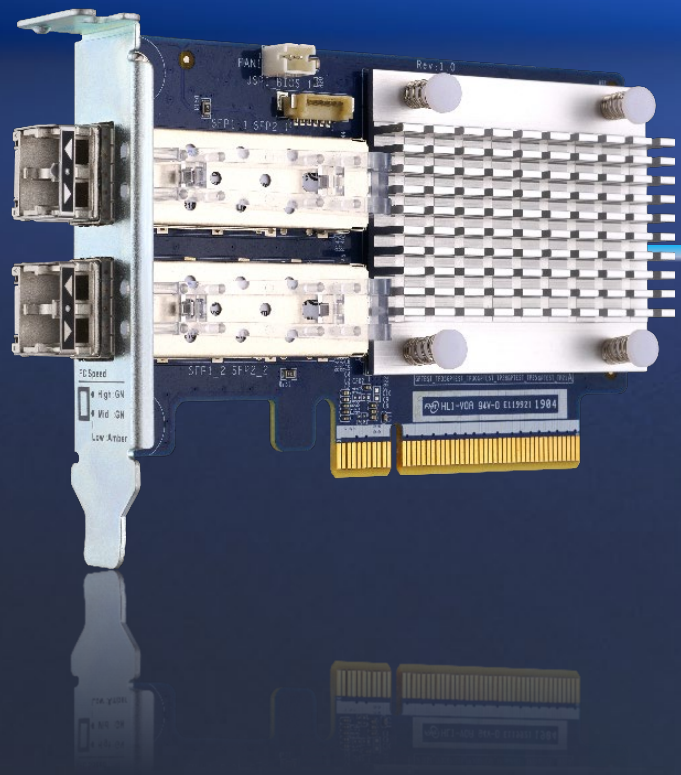
https://www.qnap.com/en/compatibility-qvr-pro

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

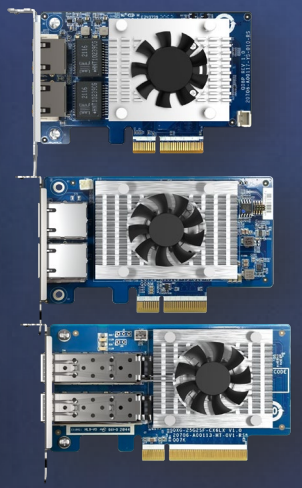
FC HBA
with 16/32Gb FC
transceivers

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

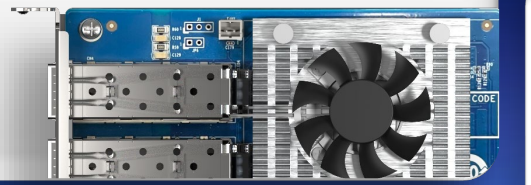
The TS-1655 is covered by a 3-year free product hardware warranty. QNAP provides warranty service to help your organization continue to operate and provide uninterrupted services to your customers.

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**

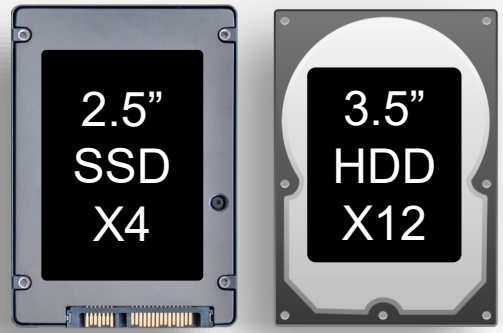
Intel Atom® C5125 8-core 2.8 GHz CPU, 8 GB UDIMM DDR4 (1 x 8 GB non-ECC RAM)

Support 10/25GbE NICs



264 TB Raw capacity

Hybrid storage



Supports both

QTS

QuTS hero edition

Support multiple JBOD

intel ATOM

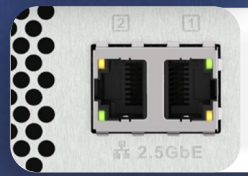
C5125 2.8 GHz 8-core CPU

14 Direct connection 2.5GbE

TS-1655

intel Quick Assist Technology

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



2.5GbE X2

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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