QNAP

TS-253E / TS-453E

Intel® J6412 Quad-Core Long-Term Availability NAS for Business and Professional Users

Provides dual-port 2.5 GbE, 4K HDMI dual-screen output, and dual M.2 PCIe SSD expansion slots

intel. CELERON

4K HDMI

2.5GbE

M.2 SSD

8GB RAM

QTS QuTS hero

TS-253E

TS-453E

Post-epidemic accelerates enterprise transformation, sustainability and maintenance will be the key

「 **This is a year for global corporate information leaders to plan for the future .** 」 John-David Lovelock , Vice President of Research at Gartner Inc said.

Affected by the epidemic in recent years, work modes have become more diverse and flexible, and many companies have also begun to think about how to make IT assets more flexible and to overcome time and location constraints for flexible configuration.
TS-253E / TS-453E can be supplied stably until 2029, providing SMB with flexible deployment according to staged needs.

Source：Commercial Times (https://reurl.cc/M0EO2K)

TS-253E

TS-453E

SSD prices are expected to fall, affordably improve storage performance now

SSD has become popular. It is time to upgrade now !

The cost per GB of storage for SSDs continues to decline, and the storage capacity continues to grow. In addition, SSD provides better storage performance compared to traditional hard drives.

Type	3Q22F
Enterprise SSD	Expected to be flat
Client SSD	decline 3~8%
3D NAND Wafers (TLC & QLC)	decline 5~10%
Total NAND Flash	decline 0~5%

Source：TrendForce, 2022.06

TS-253E / TS-453E NAS Main Features

Long-term availability NAS

Stable long-term availability until 2029

Dual 2.5 GbE ports

Sufficient 2.5 GbE network bandwidth for smooth data transfer experience

Dual M.2 PCIe SSD expansion slots

Optimum configuration of SSD and HDD

Dual 4K HDMI ports

Provide dual-port screen output for monitoring or A/V needs

8 GB RAM on board

Sufficient memory makes NAS applications more flexible

Quad - core processor

Intel Celeron J6412 4-core burst 2.6 GHz processor, supports various applications of NAS

# Powered by an Intel Celeron J6412 high-efficiency quad-core processor

**Intel J6412 quad-core processor, burst frequency up to 2.6GHz, and support AES-NI encryption**

Processor Graphics

Intel® UHD Graphics for 10th Gen Intel® Processors, support 4K output

CPU Specifications	
Total Cores	4
Total Threads	4
Burst Frequency	2.60GHz
Processor Base Frequency	2.00GHz

intel® CELERON®

GPU
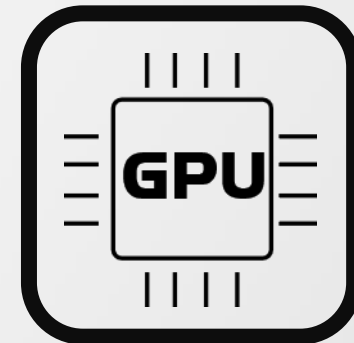
Outperforms competing products in the same class with a built-in 8 GB on board memory

8 GB
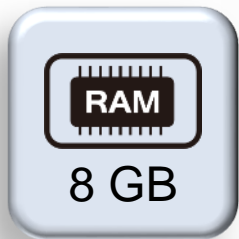
TS-253E / TS-453E with integrated large 8GB memory

Compared to comparable NAS that generally use lower-capacity memory to save cost, TS-253E / TS-453E are designed with 8 GB large-capacity memory, which can make the overall NAS run more smoothly.

QVR Elite

Includes 2 Free Channels

Snapshots

Supports up to 1024

Runs more apps through App Center

QNAP

Dual 2.5 GbE high-speed network ports

Dual 2.5 GbE ports *
Provide up to 5Gbps data transfer capability through Port Trunking network aggregation.

*Also compatible with 1GbE & 100MbE

High-speed transmission with CAT 5e

	CAT 5e	CAT 6	CAT 6A
100M	✓	✓	✓
1G	✓	✓	✓
2.5G	✓	✓	✓
5G	✓	✓	✓
10G	X	✓(55m)	✓
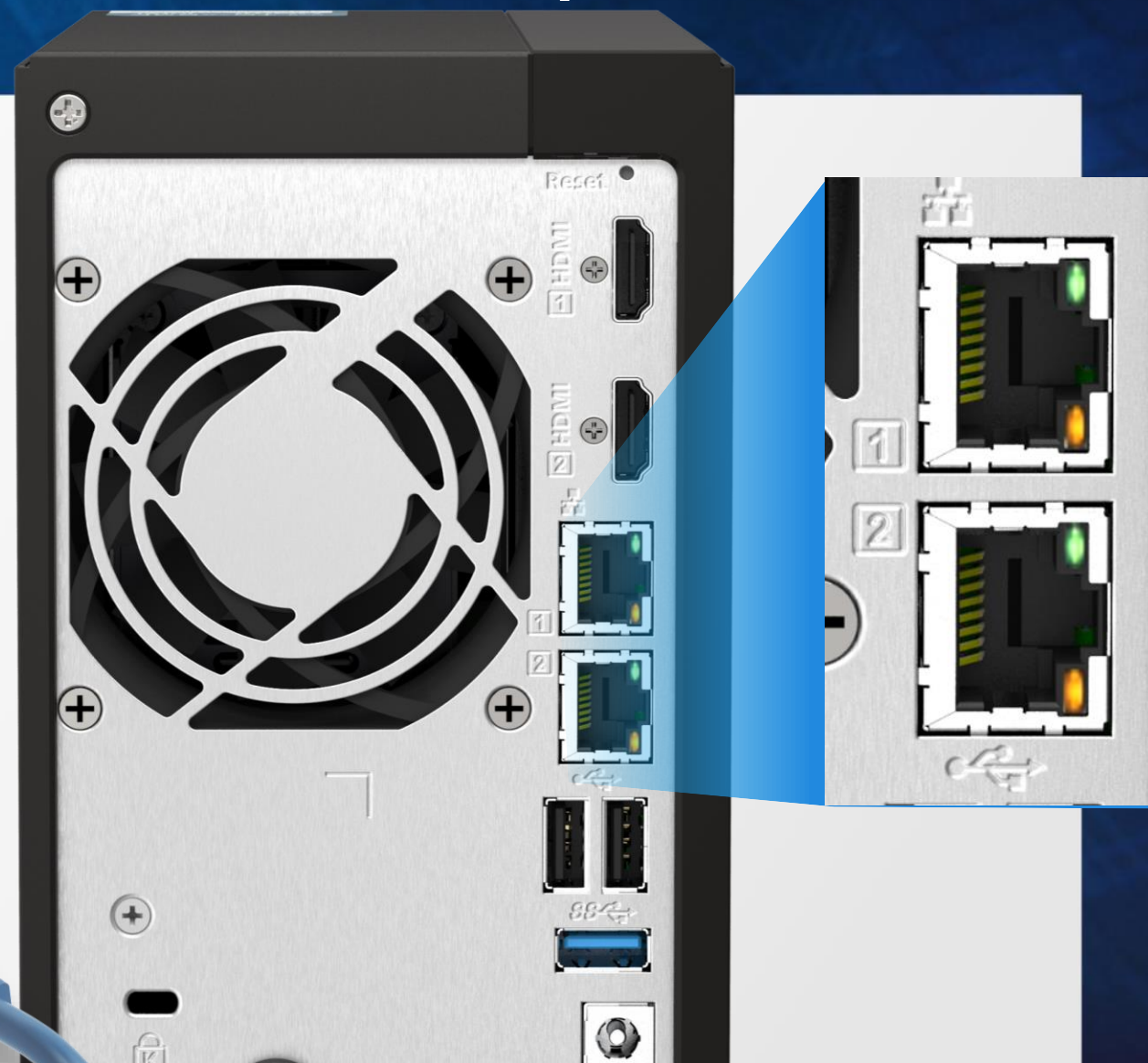
TS-253E / TS-453E front view

TS-253E

TS-453E

- LED indicators with adjustable brightness : Status, LAN, USB Copy Drive

- 4 x SATA 6Gb/s 3.5"/2.5" HDD/SSD

- 2 x SATA 6Gb/s 3.5"/2.5" HDD/SSD

- LED indicators for M.2 SSD

- Power button

- USB Copy button

- USB 3.2 Gen 2 port

- Tray with lock kit
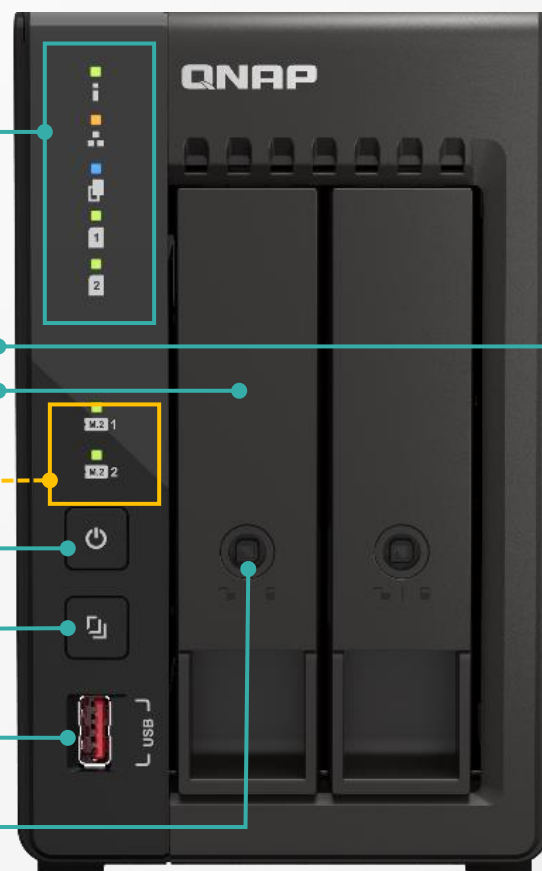
Installing 2.5" / 3.5" SATA HDD or SSD

2.5" SSD
screws

3.5" SATA HDD
tools

Lock kit for Tray safty
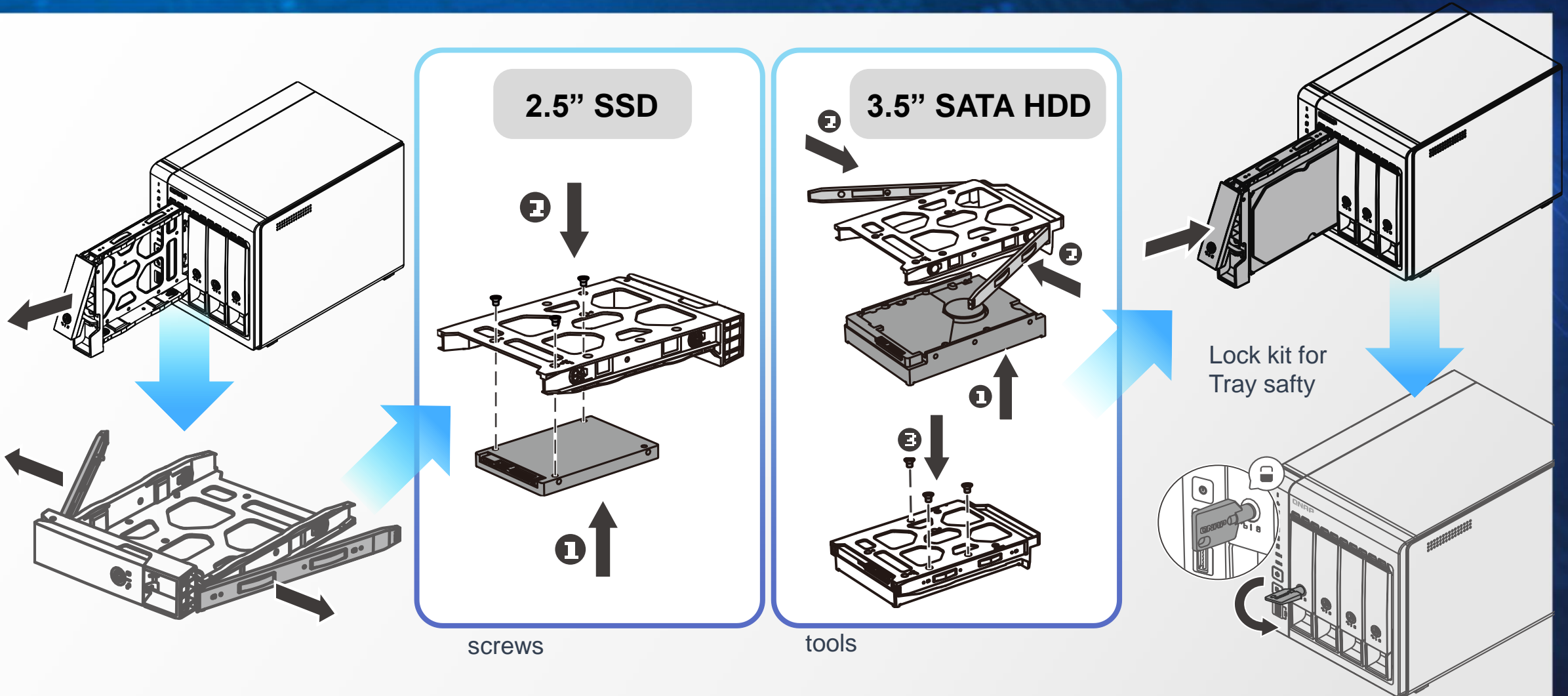
Attain greater NAS performance by installing M.2 2280 NVMe PCIe SSDs (sold separately)

Dual M.2 2280 PCIe Gen3 x2 slots support NVMe SSD

providing SSD cache, and Qtier automatic tiered storage, so that SSD and HDD storage space can achieve the best configuration at any time.

M.2 NVMe SSD cache for improved performance at a lower cost

- Especially useful for RAID 5/6 and applications dealing with small files or concurrent user access.

- TS-253E / TS-453E on board 8 GB RAM can provide up to 16TB SSD cache volume

Improves I/O latency   For IOPS-demanding apps

Global SSD cache   Can share a single SSD volume/RAID with all volumes/iSCSI LUNs for a read-only or read-write cache.

Read-only Cache   **Read-write cache**

— Read
— Write

■ Application
■ HDD space
■ SSD space
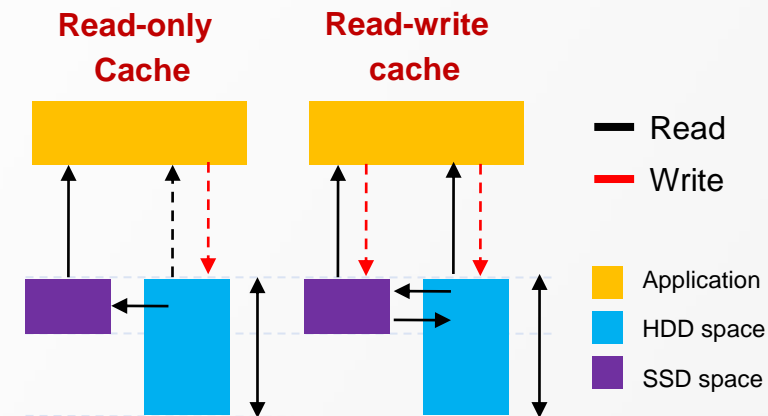
Total capacity = HDD capacity

Storage & Snapshots

Storage & Snapshots   Qtier ▾   VJBOD

Cache Acceleration   Create   Remove   Add SSD   Set Caching Storage

Overview
    Storage
    Snapshot
Storage
    Disks/VJBOD
    Storage/Snapshot
    Cache Acceleration
    External Storage
Snapshot Backup
    Snapshot Replica
    Snapshot Vault
iSCSI
    iSCSI Storage
    Remote Disk
    LUN Backup

ON

Usage

Allocated: 0 %   Free: 100 %

Service: Enabled
Capacity: 108.64 GB
Cache Type: Read-Write
Cache RAID: RAID 1
Read Hit Rate: 0 %
Write Hit Rate: 97 %
Cache Flushing: --
Status: Ready

Hit Rate History

100%
75%
50%
25%
0%
10 (mins)   9   8   7   6   5   4   3   2   1   0

● Write ● Read

Name/Alias	Capacity	Status
DataVol1	245.44 GB	Ready
DataVol2	688.37 GB	Ready
DataVol3	688.37 GB	Ready
DataVol4	693.84 GB	Ready
DataVol5	688.37 GB	Ready
DataVol6	325.27 GB	Ready

Qtier™: drives auto-tiering constantly optimize data across storage tiers
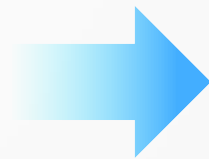
Qtier Engine

- ■ Hot data
- ■ Warm data
- ■ Cold data
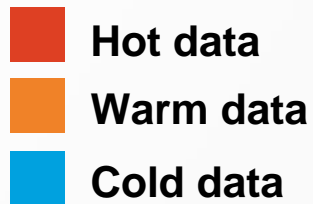
- Automatically moves hot data to high-performance drives and cold data to lower-cost, higher-capacity drives.

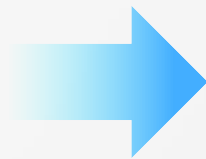- Unlike SSD cache, the SSD capacity in Qtier can be used to store data.

01

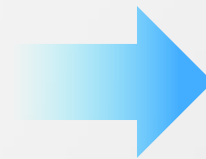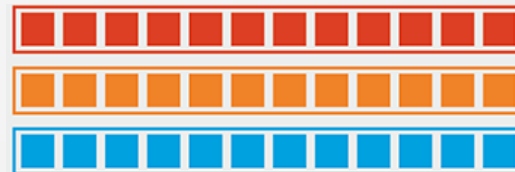**Before tiering**
Frequently accessed data is not optimized

02

Start data tiering
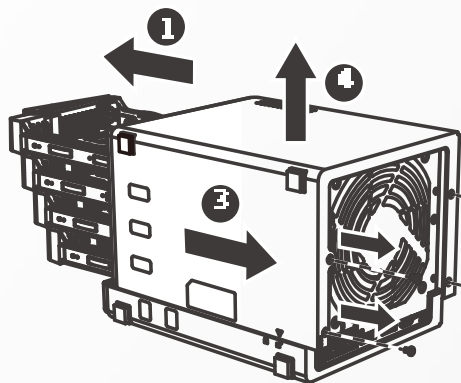
03

After tiering
Data is optimized

04

Changes in data access pattern

Installing M.2 2280 NVMe PCIe SSD

Step 1
Unscrew and take off casing

Step 2
Install M.2 SSD at 45 degree angle
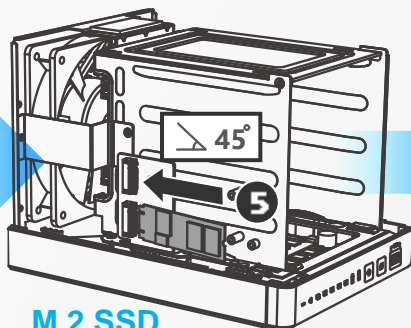
Step 3
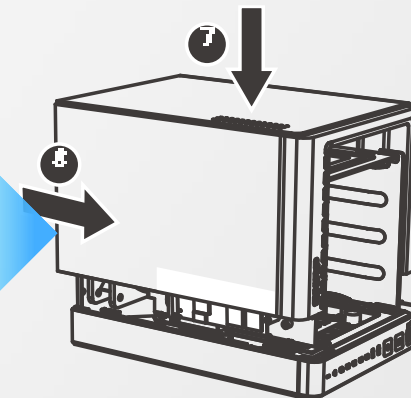Screw M.2 SSD on the slot
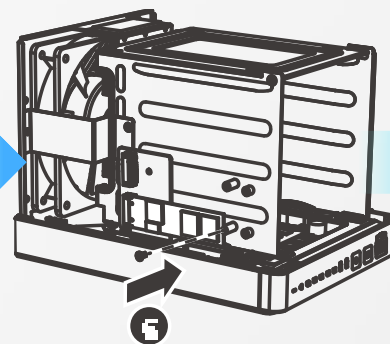
Step 4
Put back the casing
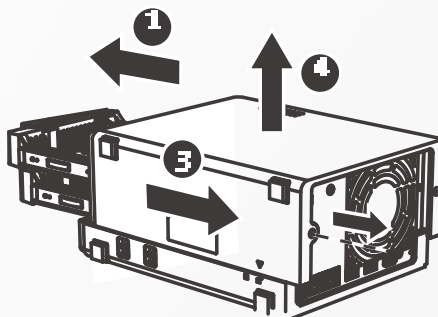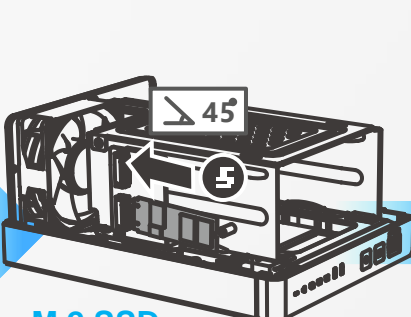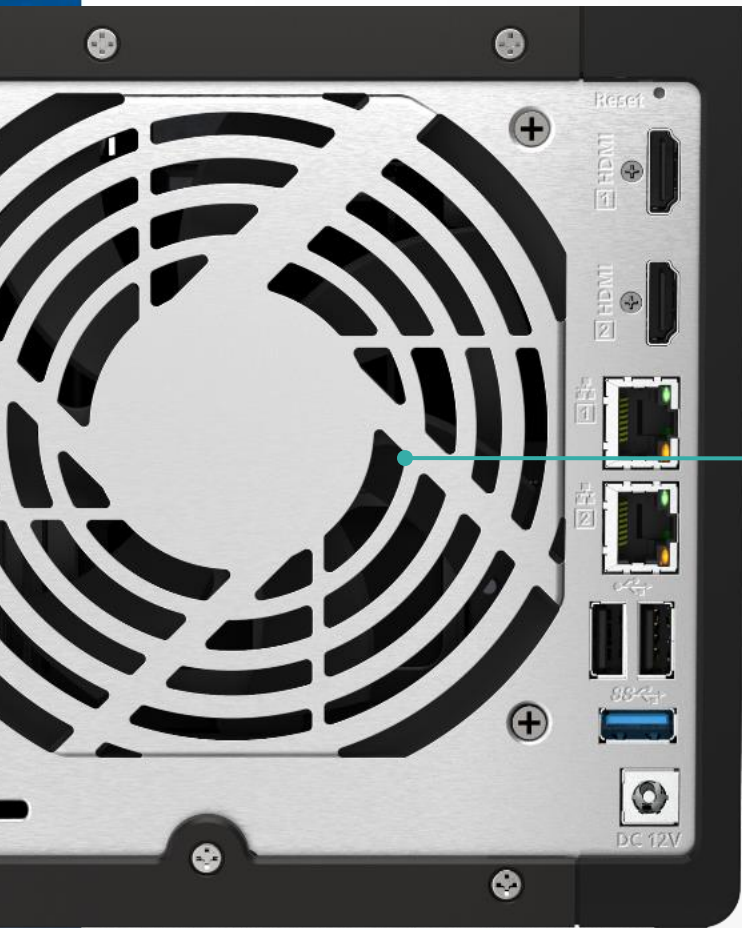
TS-453E

M.2 SSD

TS-253E

M.2 SSD
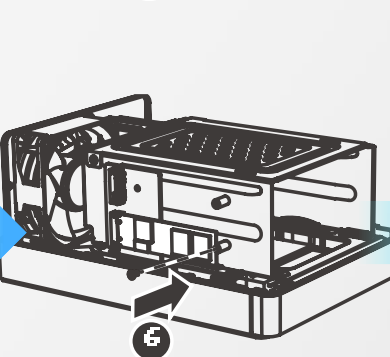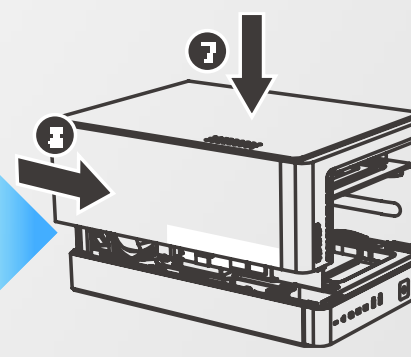
TS-253E / TS-453E rear view

TS-453E

TS-253E

7CM
Smart fan

12CM
Smart fan

K-Lock

2 x HDMI 1.4b

2 x 2.5 Gigabit Ethernet
port

2 x USB 2.0 port

USB 3.2 Gen 2 port

12V DC power input

Add more storage with QNAP USB JBOD & RAID storage expansion units

TR-002

2-bay
Desktop SATA 6Gb/s JBOD
Support hardware RAID

TR-004

4-bay
Desktop SATA 6Gb/s JBOD
Support hardware RAID

TL-D800C

8-bay
Desktop USB 3.2 Gen 2 JBOD

TR-004U

4-bay
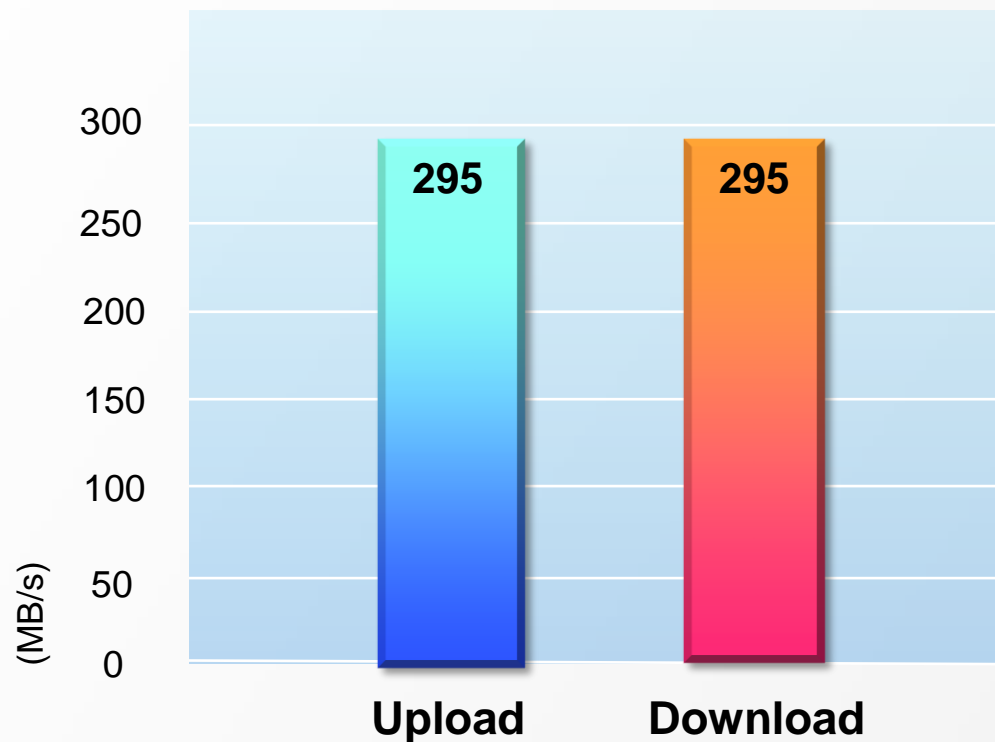Rackmount USB 3.2 Gen 1 JBOD
Support hardware RAID

TL-R1200C-RP

12-bay
Rackmount USB 3.2 Gen 2 JBOD
Support dual power backup
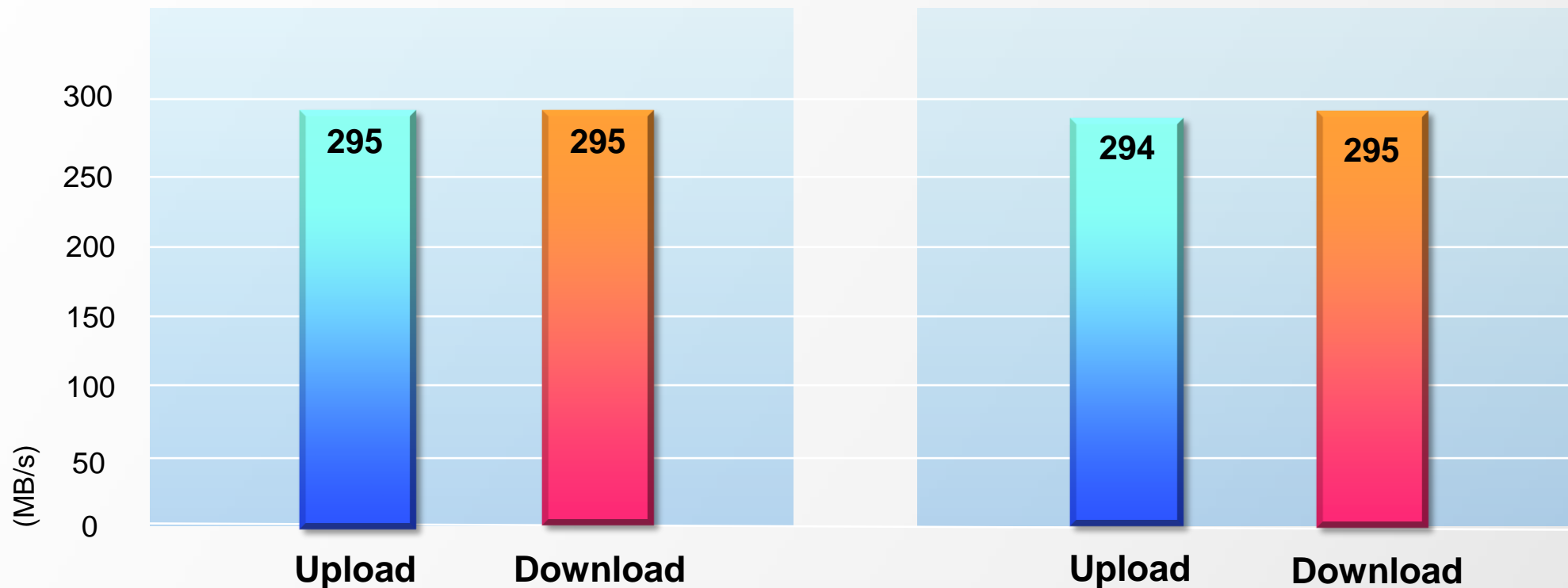
Maximum of JBOD / RAID expansion enclosures

TR-002	2
TR-004	2
TR-004U	2
TL-D800C	1
TL-R1200C-RP	1

1 x 2.5GbE for 10GB file transfer with excellent performance
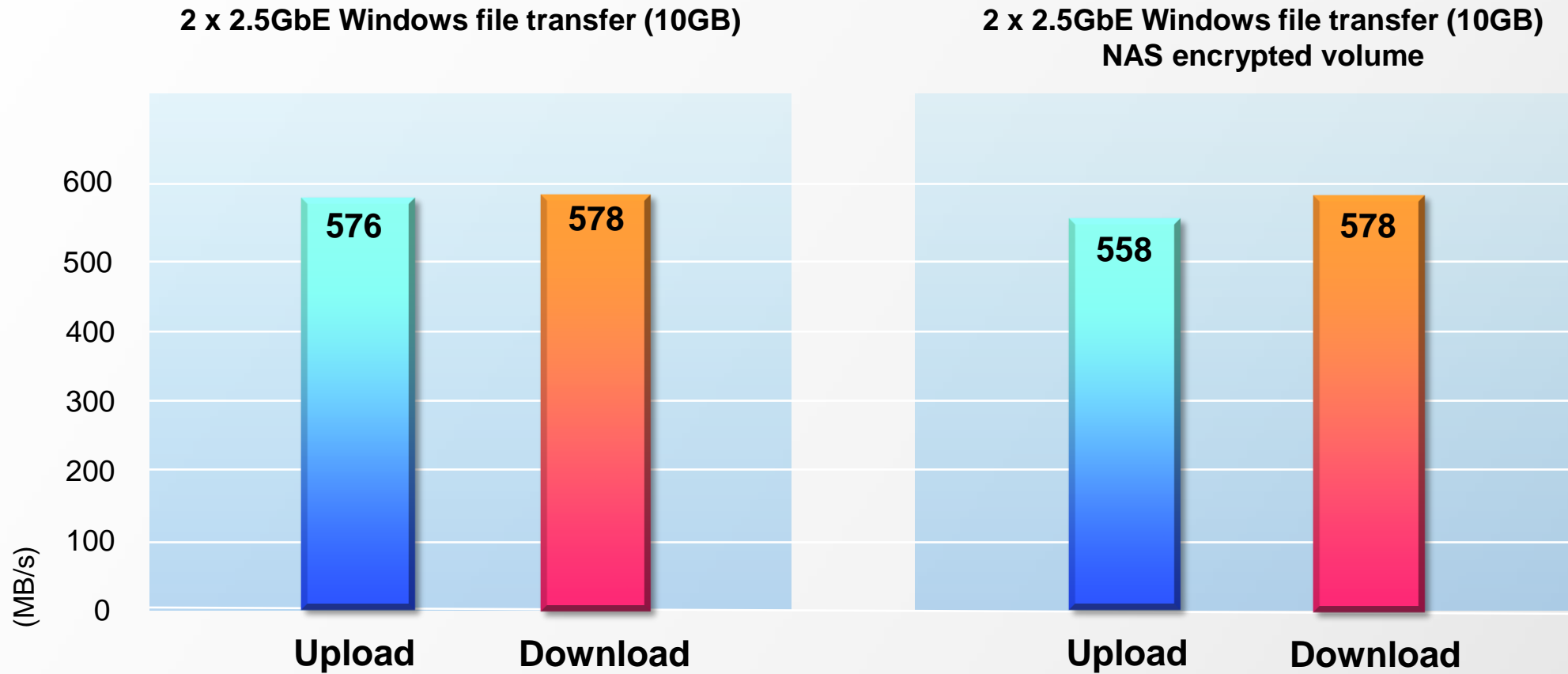
1 x 2.5GbE Windows file transfer (10GB)

1 x 2.5GbE Windows file transfer (10GB) NAS encrypted volume

Left chart (1 x 2.5GbE Windows file transfer (10GB)):
- Upload: 295 MB/s
- Download: 295 MB/s

Right chart (1 x 2.5GbE Windows file transfer (10GB) NAS encrypted volume):
- Upload: 294 MB/s
- Download: 295 MB/s

Y-axis: (MB/s) — 0, 50, 100, 150, 200, 250, 300

Environment:
NAS | TS-453E, QTS 5.0, 4 x Samsung 860 Pro 512GB, RAID 5, thick volume
PC | Windows Server 2016 Standard, Intel Core i7-6700 3.4 GHz, 64GB RAM

Tested in QNAP Labs. Figures may vary by environment.

2 x 2.5GbE for 10GB file transfer with the best performance in dual-client transfer

2 x 2.5GbE Windows file transfer (10GB)

2 x 2.5GbE Windows file transfer (10GB) NAS encrypted volume

Left chart values (MB/s): Upload 576, Download 578

Right chart values (MB/s): Upload 558, Download 578

Environment:
NAS | TS-453E, QTS 5.0, 4 x Samsung 860 Pro 512GB, RAID 5, thick volume
PC | Windows Server 2016 Standard, Intel Core i7-6700 3.4 GHz, 64GB RAM

Tested in QNAP Labs. Figures may vary by environment.

TS-253E / TS-453E
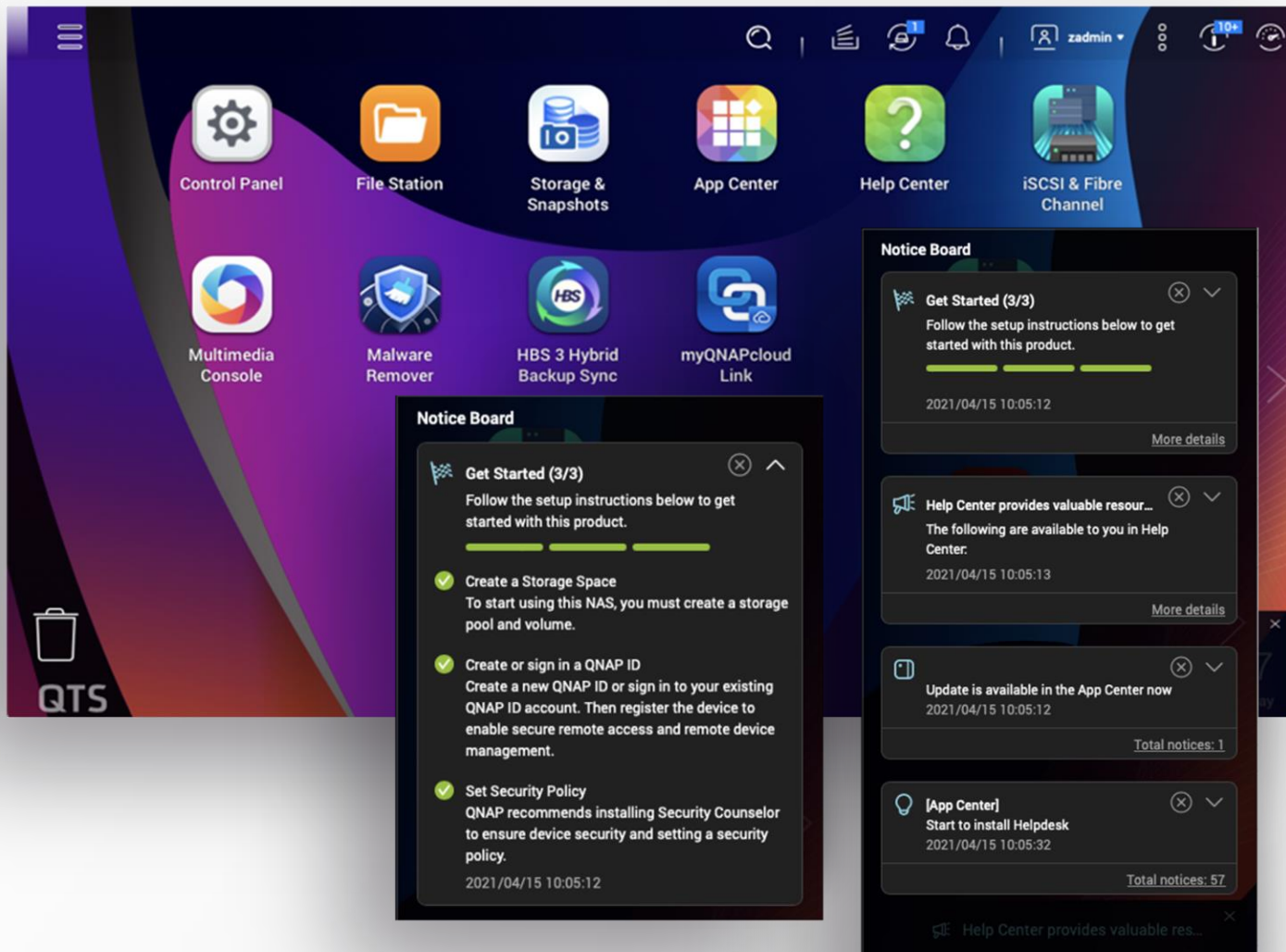
Live Demo

QNAP

TS-253E / TS-453E

Software
Introduction

Equipped with the latest QTS 5.0 NAS operating system

- New Linux Kernel 5.10 improved security

- Smooth and reactive user interface

- Increased NVMe SSD cache performance

- Supports WireGuard VPN

Choose between QTS and ZFS based QuTS hero

TS-253E/TS-453E are 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 adds support for WORM (Write Once, Read Many) and other features.

|	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
WORM (Write Once, Read Many)	Yes	No
Data Security	Better (Self-Healing & Copy-on-Write)	Standard
Recommendation SSD Configuration for Video Editing Applications	Use SSD Pools Note: Set the block size 128K when creating Folders/LUNs	Editing (from original/RAW files): Use SSD Pools Post production: Enable Read/Write cache Note: Set the block size to 32K or 64K when creating Volumes, and choose "All I/O" for cache mode.

WORM (Write Once Read Many times)

WORM is used to avoid modification of saved data. Once this feature is enabled, data in shared folders can only be read and cannot be deleted or modified to ensure data integrity.

Enterprise Mode
remove the shared folder through QuTS hero UI or SSH commands (QCLI).

Compliance Mode
Have to take the Storage Pool offline and remove the Pool if want to destroy data.
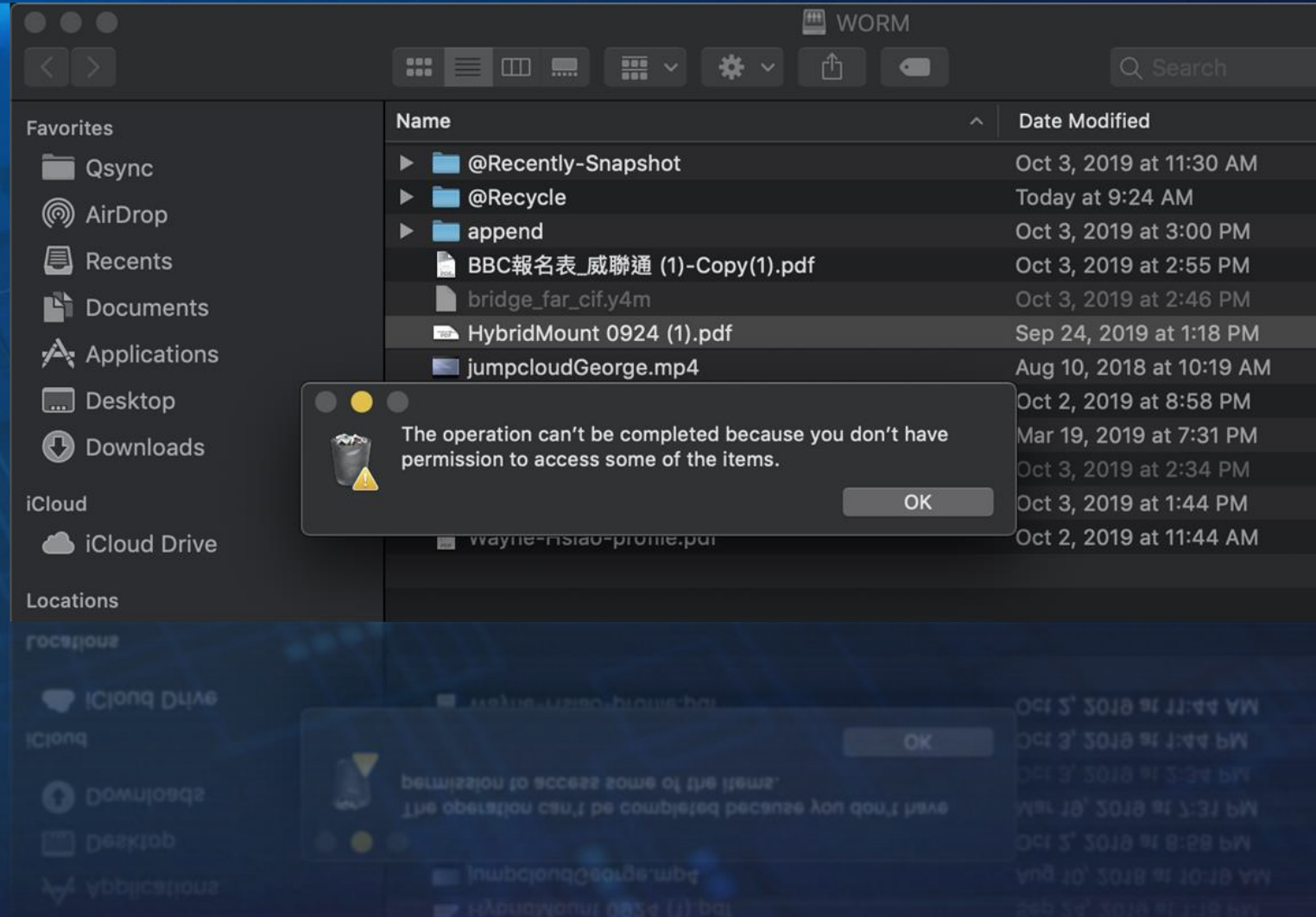
Windows Search Protocol (WSP) support for NAS shared folders

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.

*QTS 5.0.1 provided

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.

*QTS 5.0.1 provided
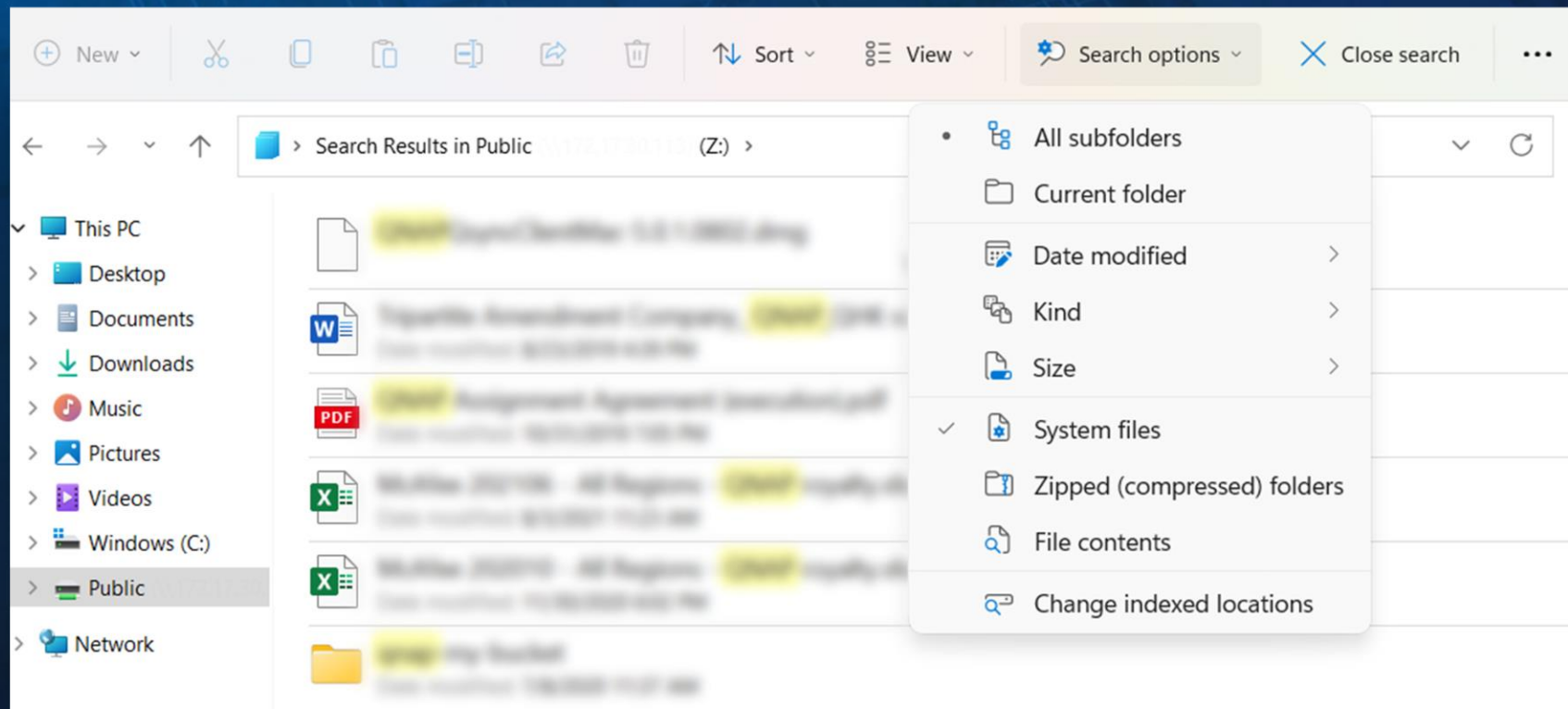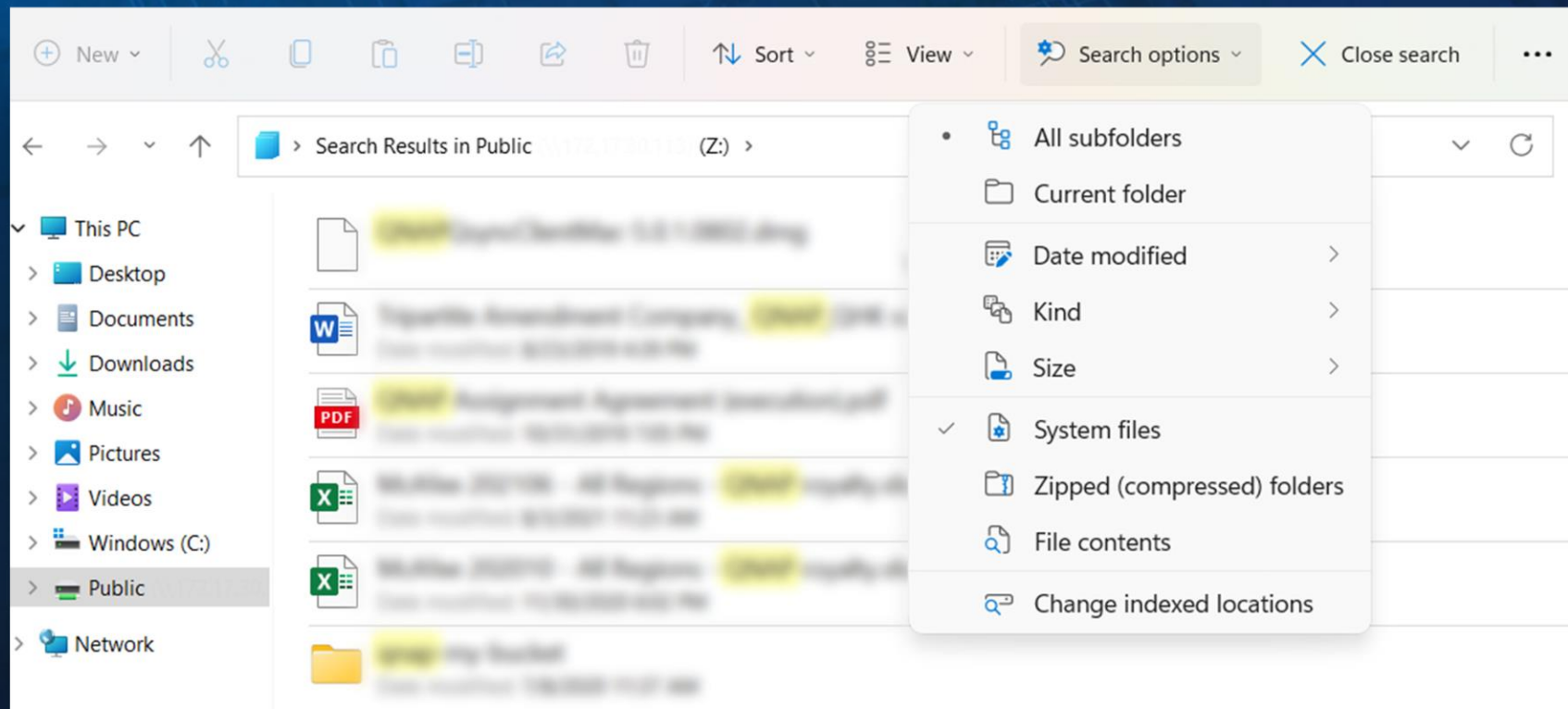
TS-253E / TS-453E natively supports exFAT

From QTS version 5.0, exFAT is natively supported free of charge on TS-253E / TS-453E . exFAT is a file system optimized for flash storage (such as SD cards and USB devices) and helps accelerate large media file transfer.

File System	exFAT	NTFS	FAT32
Maximum File Size	16EB	16TB	4GB
Typical Usage	Next-generation USB drives and SD cards (such as SDXC) that require higher capacities and faster speeds	The file system used by Windows	The standard file system used by normal USB drives

Faster image identification with integrated Intel® OpenVINO™ AI engine

QuMagie

Organize photos with similar faces using facial recognition
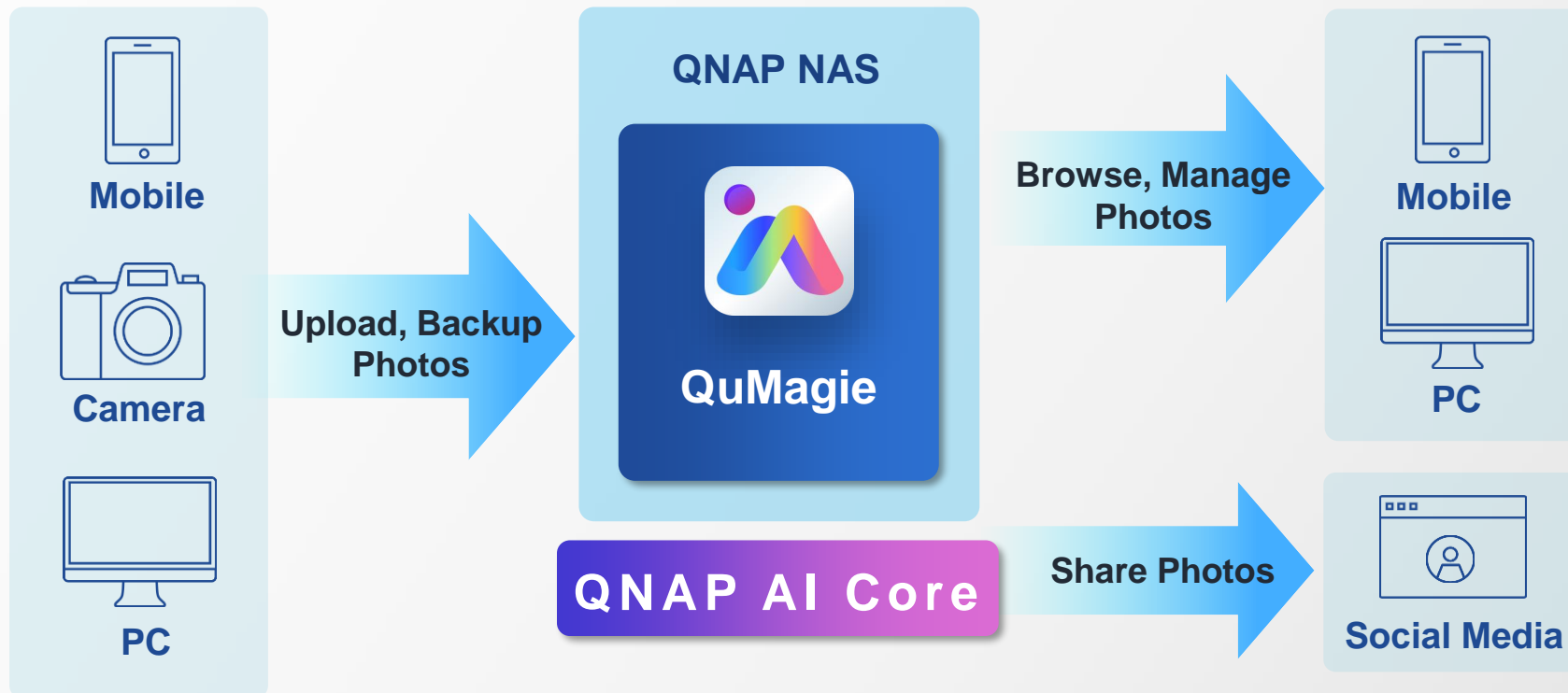
DA Drive Analyzer , predict drive failure and minimize downtime

1 free disk prediction per NAS

Paid subscription for additional disks for added protection

Predict Drive Failure and Minimize Downtime

DA Drive Analyzer integrates ULINK cloud artificial intelligence technology, which can notify you before disk failure, helping you prevent data loss or downtime loss caused by unwarranted disk damage.

Backup data with deduplication in HBS 3

Hybrid Backup Sync 3

Keep 3 copies, on 2 types of storage, and store 1 copy off-site to ensure your data safety.

From local NAS (via HBS 3)

Backup/Restore

Taipei

TCP BBR

File station with QuDedup (soon)

Taipei

File station with QuDedup (soon)

From remote NAS (via File Station)

.qdff

File station with QuDedup (soon)

.qdff

QDFF

Access from Cloud

CIFS / NFS / FTP

Carry and Use (QuDedup Extract Tool)

.qdff — Windows — Tokyo

.qdff — MacOS — New York

.qdff — ubuntu — Beijing

Snapshots help you fight with ransomware threats, security threats and human errors

TS-253E / TS-453E supports Snapshot, like taking a photo - within seconds the complete status of your NAS system and data is recorded.
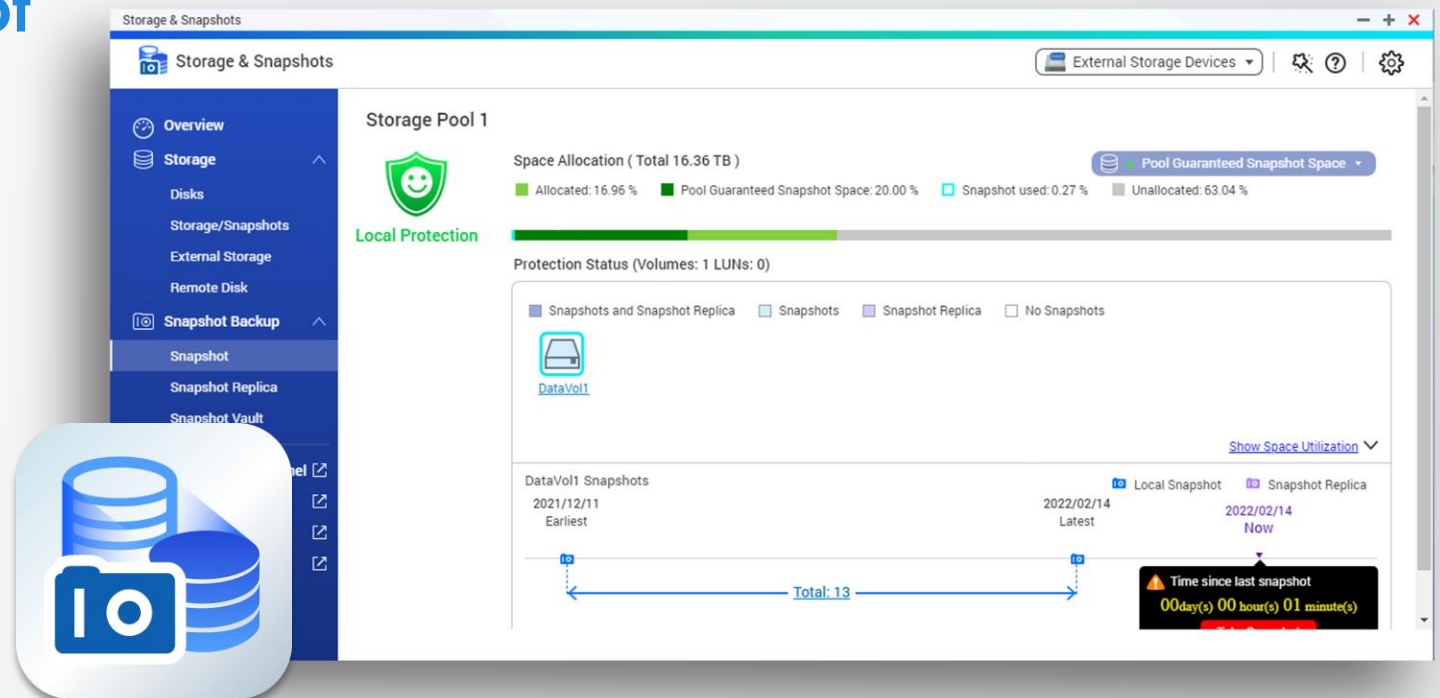
Mitigate the growing threat of ransomware

Step 1

Regularly update, and use Malware Remover

Step 2

Routinely back up to your NAS, and create multi-version snapshots
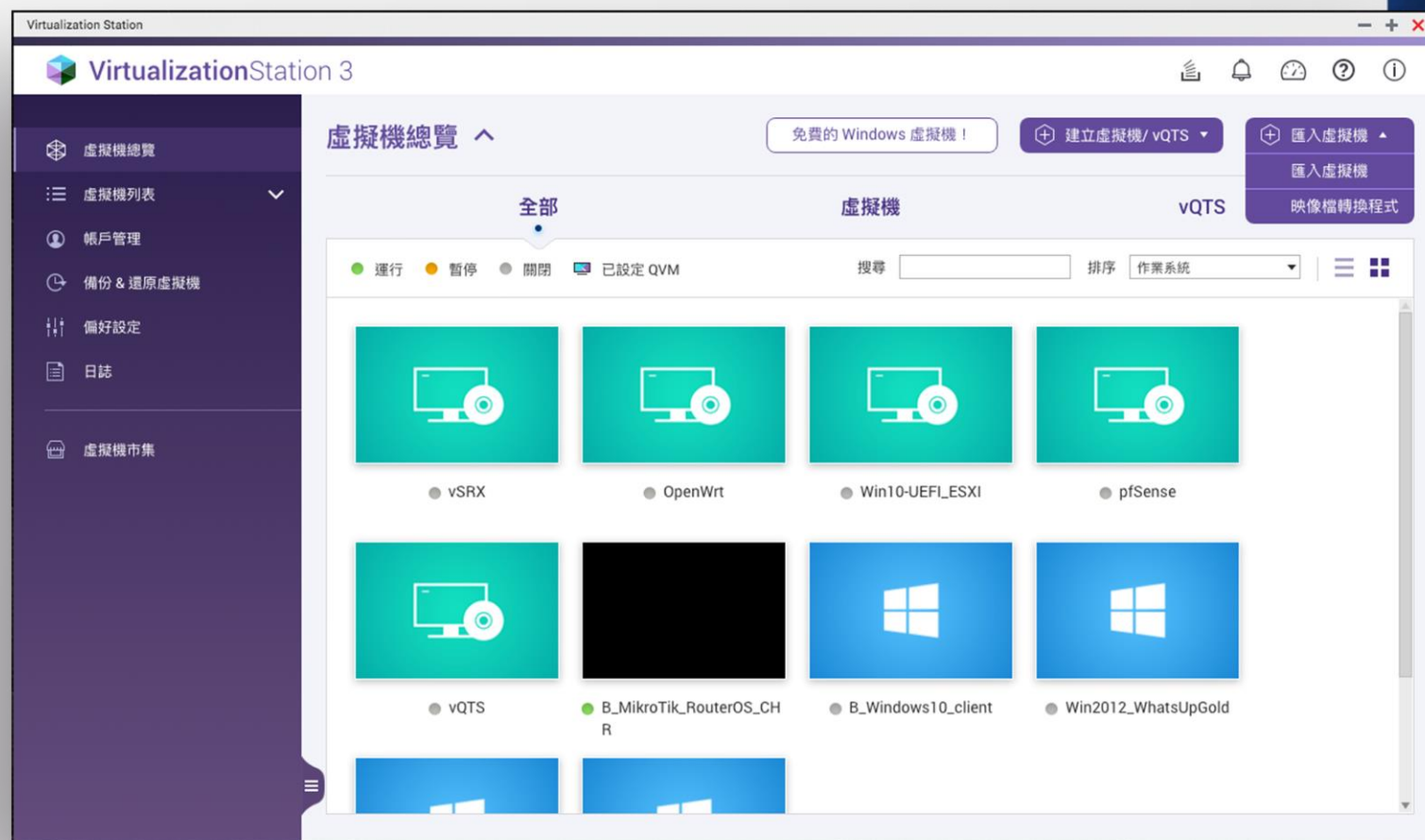
Step 3

Back up snapshots to another QNAP NAS

Virtualization Station for running VMs

Virtualization Station

With Virtualization Station, you can create multiple virtual machines to run various operating systems such as Windows, Linux, UNIX and Android on TS-253E / TS-453E.
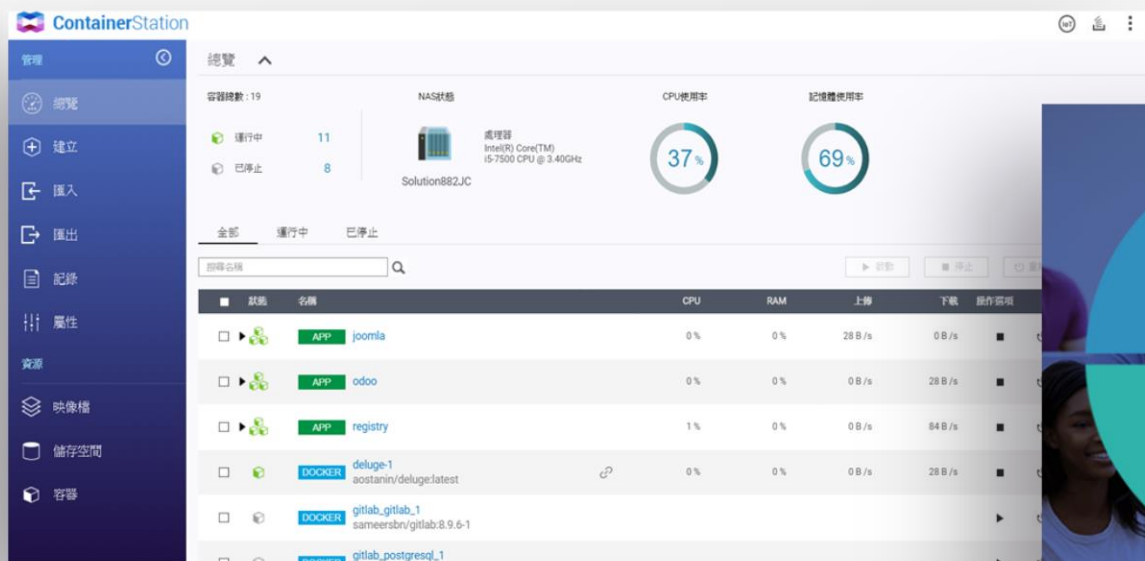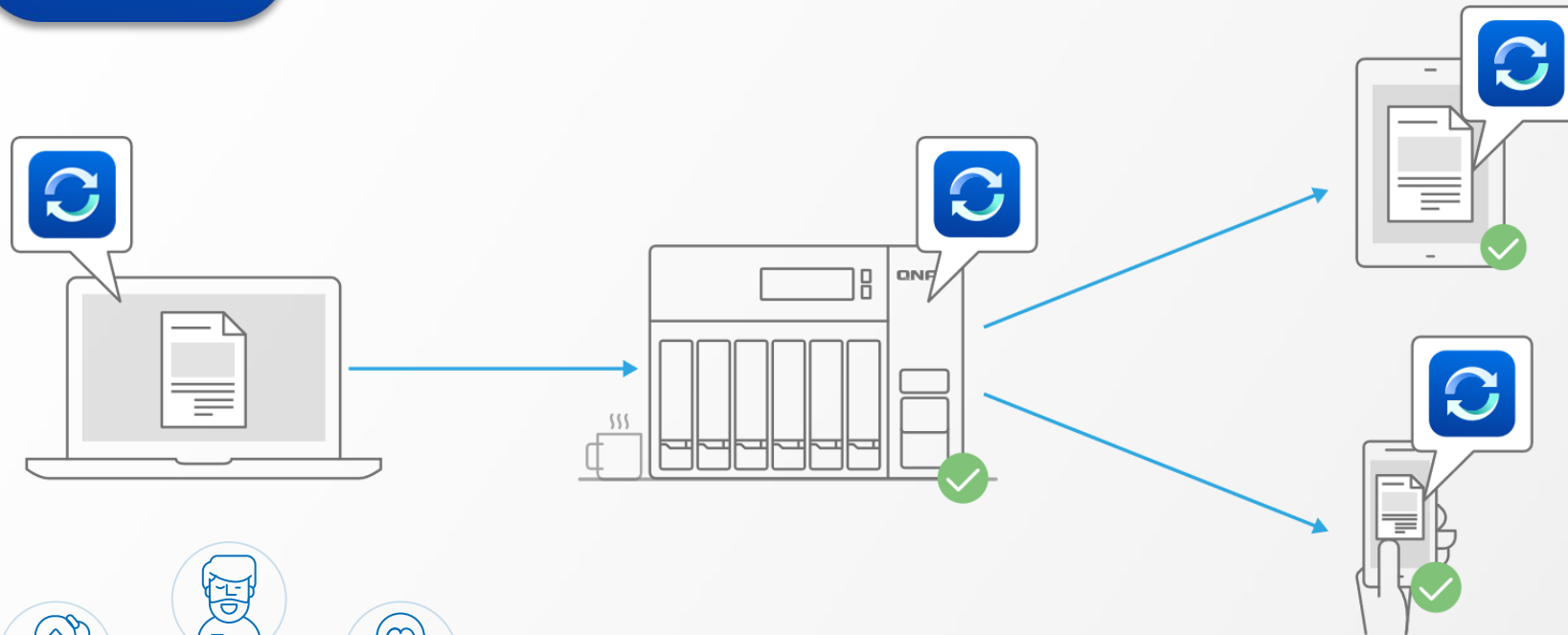
Container Station for containerized apps

Container Station

Exclusively integrates LXD and Docker®, Kata lightweight virtualization technologies, allowing you to operate multiple isolated Linux® systems on a QNAP NAS as well as download apps from the built-in Docker® Hub/LXD Image Server Registry.
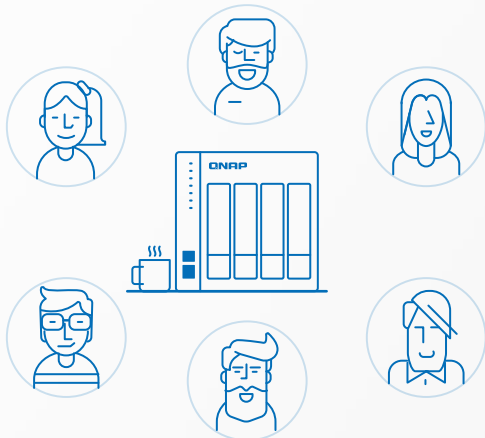
Qsync , cross-device file sync for individuals and teams

When there are different devices such as laptops and mobile phones, as long as the files are modified on a single device, the modified files will be automatically synchronized to other devices.

When team members collaborate and communicate, files can be automatically pushed to the binding devices of all members, making the workflow faster and collaboration smoother.

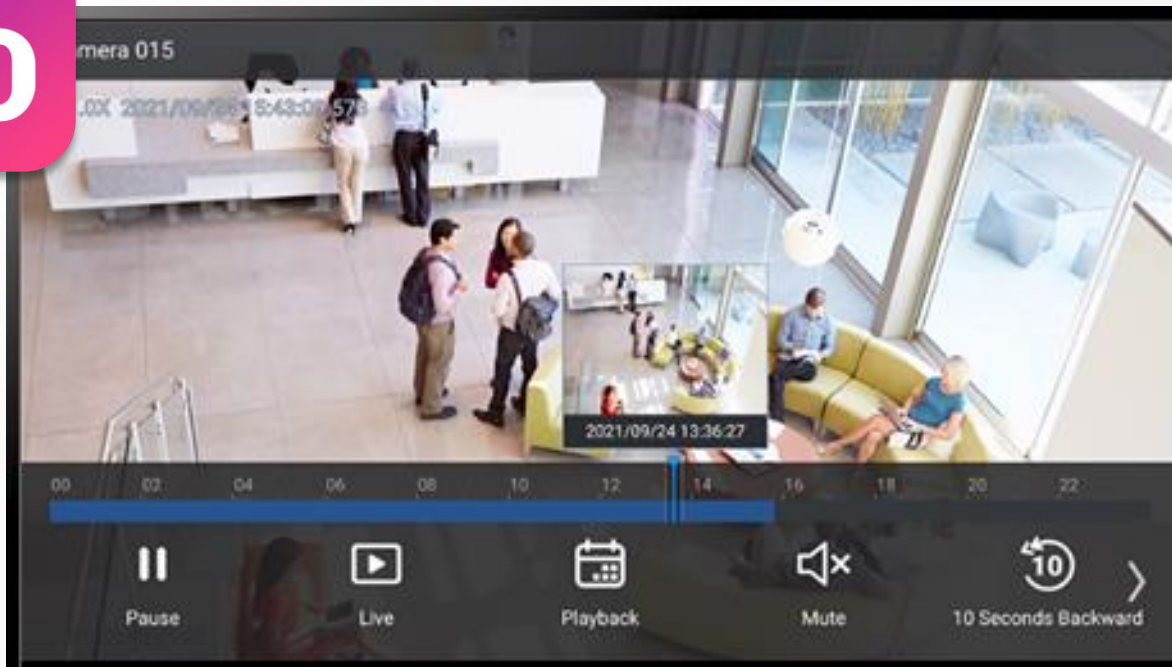# The NAS provides a productive office file management flow with useful apps

File Station → **OCR Converter** → **Qsirch** → **Qfiling**

Store and backup → **File Digitization** → **Search** → **Archive**

TS-253E / TS-453E
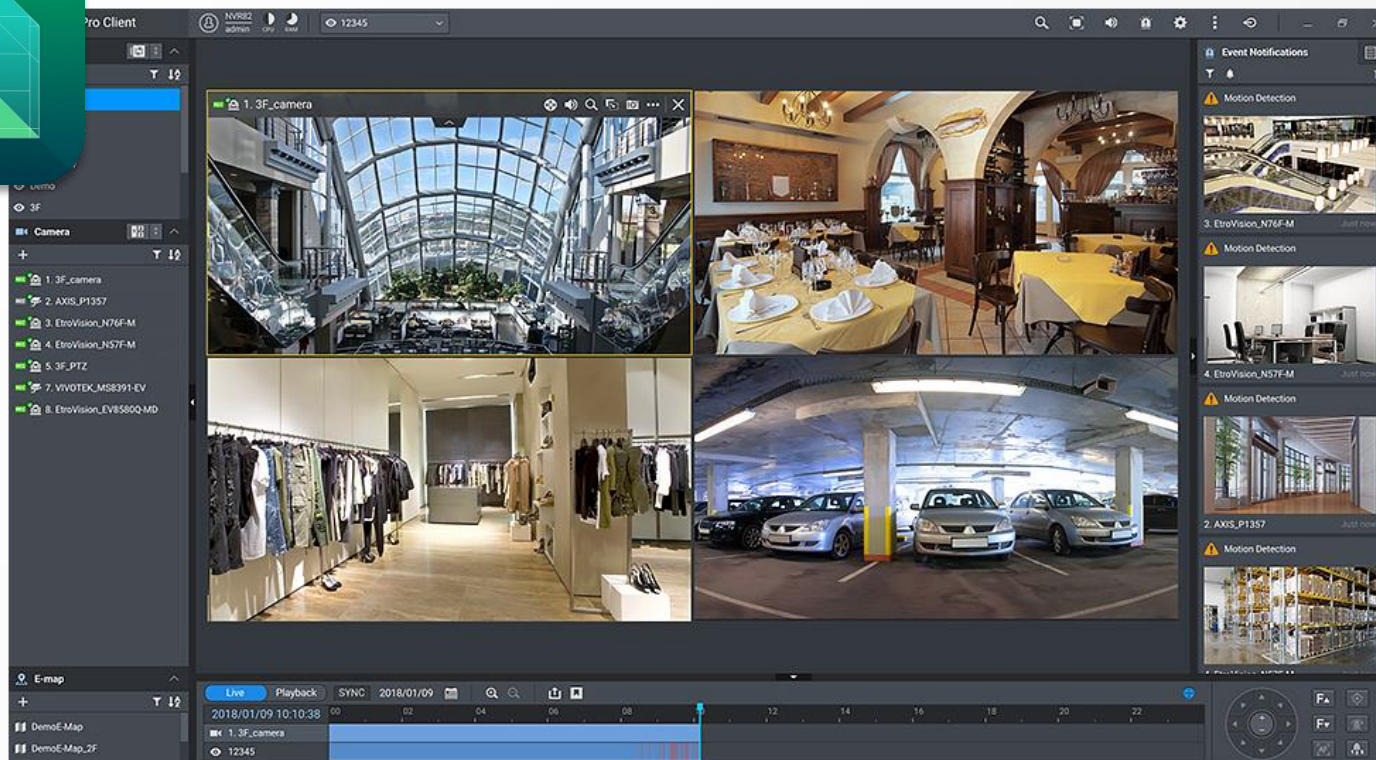# support dual HDMI 4K output

Dual HDMI 4K output

Directly connect the dual-screen output, you can extend and mirror the screen, use it as a large-screen monitor, or install the HybridDesk Station to turn it into a theater.

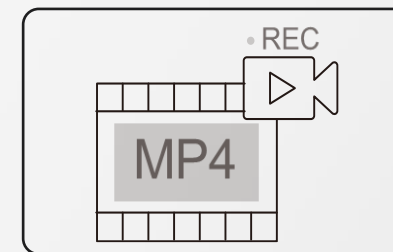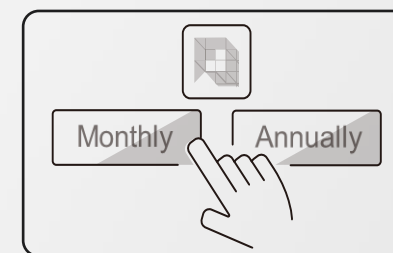# HybridDesk Station for various A/V needs

HDMI

USB

Network

Qremote App

Mouse & Keyboard

QVR Elite 24 x7 smart surveillance system

Record using the MP4 Format

Flexible Subscription

Expandable Capacity

2 channels are included for free

(expandable)

QVR Elite with powerful IP surveillance camera management and support

More than **180** brands

GeoVision
VIVOTEK BUILT WITH RELIABILITY
Panasonic
AXIS COMMUNICATIONS
MOBOTIX
Canon
HIKVISION
alhua TECHNOLOGY
Honeywell
Brickcom

More than **6700** models

ONVIF Profile support

ONVIF® | S

Record into QVR Elite by using the RTSP/RTMP link with no integration needed. Multiple video sources are supported - not just IP cameras.

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

Upgrade to a surveillance video wall solution or use dual apps with dual HDMI output

Assign many IP CAMs in video wall mode in different HDMI monitors

We can move the QVR monitoring output to another screen and operate other APPs on the original screen

Through Mirror output, the same picture can also be output to different screens

With Mirror output, the same picture can be output to monitors in different places for monitoring
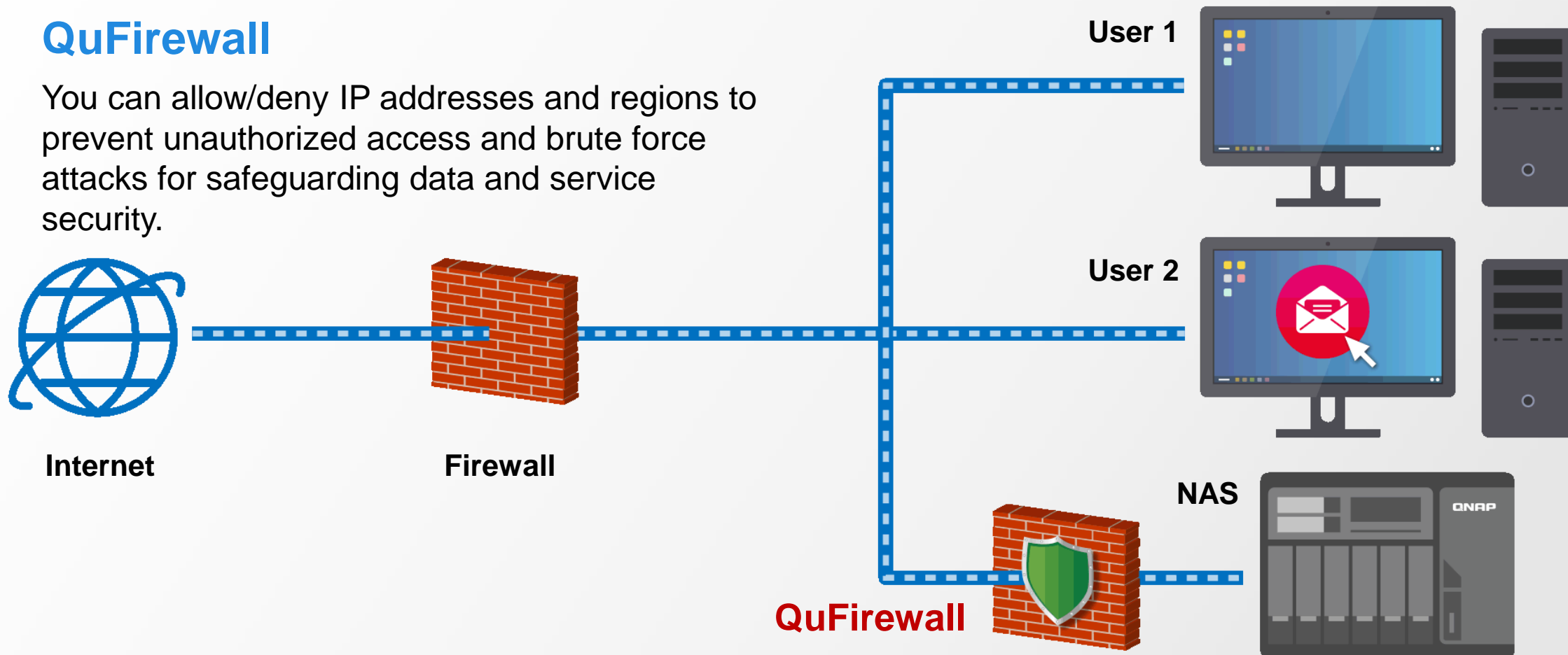
Built-in firewall for QNAP appliances

QuFirewall

You can allow/deny IP addresses and regions to prevent unauthorized access and brute force attacks for safeguarding data and service security.
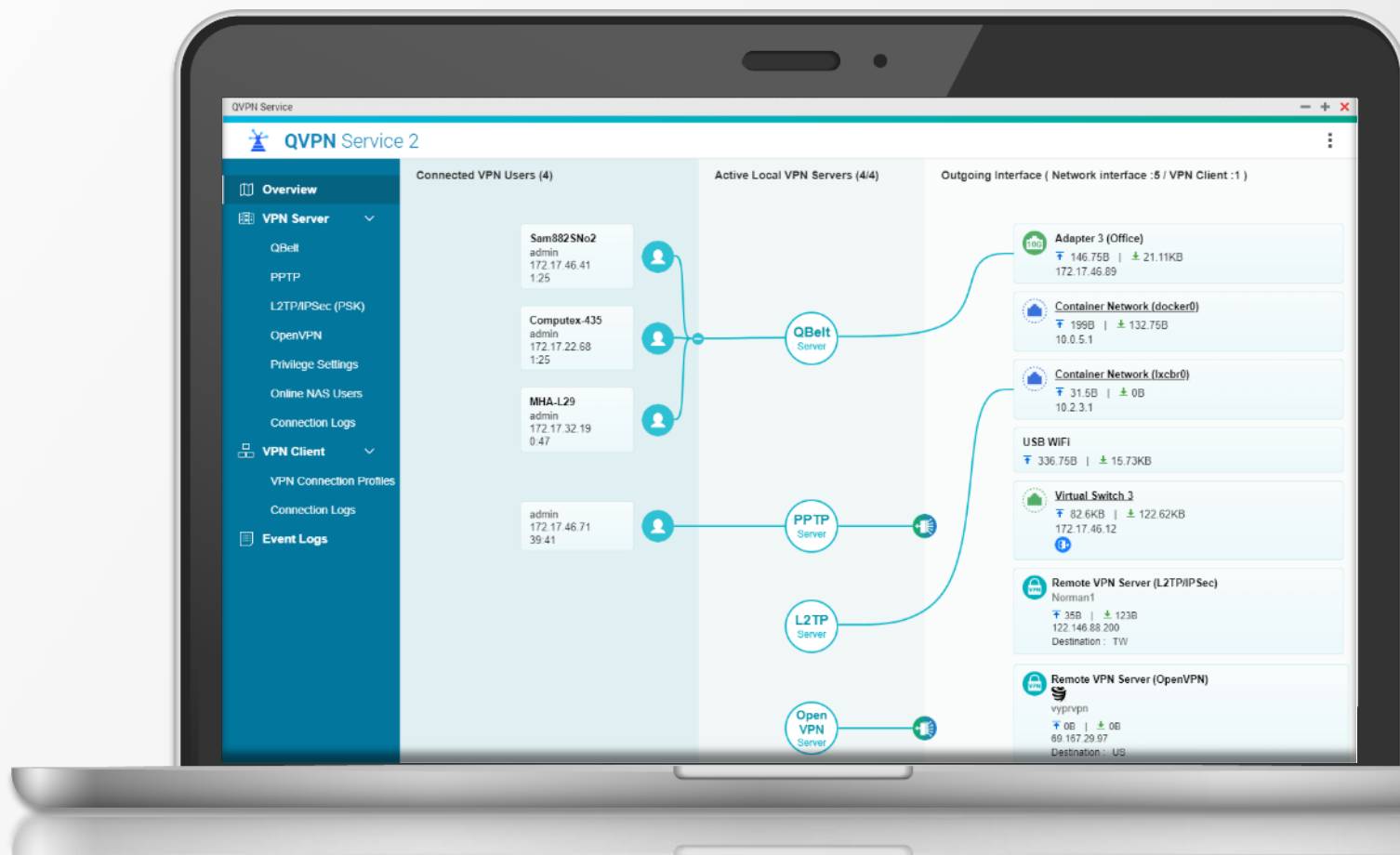
Internet

Firewall

User 1

User 2

QuFirewall

NAS

Secure communication for peace of mind

QVPN

- In addition to establishing a VPN client connection to a remote server, QVPN can also be used as a VPN server.

- Supports WireGuard® to provide faster and more stable VPN connections, and to easily set up VPN

QuFTP remote file FTP access service

- Updated independent
- Support FTP server
- Support FTP client
- Support TLS setting
- Support QoS setting

The new TS-253E / TS-453E with greatly improved performance

	TS-251+	⭐ TS-253E	TS-451+	⭐ TS-453E
SKU	TS-251+-2G TS-251+-8G	TS-253E-8G	TS-451+-2G TS-451+-8G	TS-453E-8G
CPU	Intel® Celeron® J1900 4-core/4-thread processor, burst up to 2.42 GHz	Intel® Celeron® J6412 4-core/4-thread processor, burst up to 2.6 GHz	Intel® Celeron® J1900 4-core/4-thread processor, burst up to 2.42 GHz	Intel® Celeron® J6412 4-core/4-thread processor, burst up to 2.6 GHz
O.S.	QTS	QTS	QTS	QTS
Memory	Max 8 GB DDR3L (2 x 4 GB)	8 GB DDR4 onboard not expandable	Max 8 GB DDR3L (2 x 4 GB)	8 GB DDR4 onboard not expandable
LAN	Gigabit Ethernet Port (RJ45) x 2	2 x 2.5 Gigabit Ethernet Port (2.5G/1G/100M)	Gigabit Ethernet Port (RJ45) x 2	2 x 2.5 Gigabit Ethernet Port (2.5G/1G/100M)
M.2	-	2 x M.2 2280 PCIe Gen 3 x2	-	2 x M.2 2280 PCIe Gen 3 x2
I/O	• USB 2.0 x 2 • 2 x USB 3.2 Gen 1 • HDMI x 1(Max 1080p)	• USB 2.0 x 2 • 2 x USB 3.2 Gen 2 • HDMI x 2 (up to 3840 x 2160 @ 30Hz)	• USB 2.0 x 2 • 2 x USB 3.2 Gen 1 • HDMI x 1 (Max 1080p)	• USB 2.0 x 2 • 2 x USB 3.2 Gen 2 • HDMI x 2 (up to 3840 x 2160 @ 30Hz)

Shipped with 3-year standard warranty, optional 2 additional years of coverage

TS-253E / TS-453E

Backed by a 3-year warranty at no additional cost.

Extend hardware warranty up to 5 years

You can also purchase a warranty extension that extends your warranty coverage up to 5 years: **LW-NAS-PEACH-2Y**.

TS-253E

TS-453E

TS-253E / TS-453E

Intel® J6412 Quad-Core Long-Term Availability NAS for Business and Professional Users

Provides dual-port 2.5 GbE, 4K HDMI dual-screen output, and dual M.2 PCIe SSD expansion slots

QNAP

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TS-253E   TS-453E