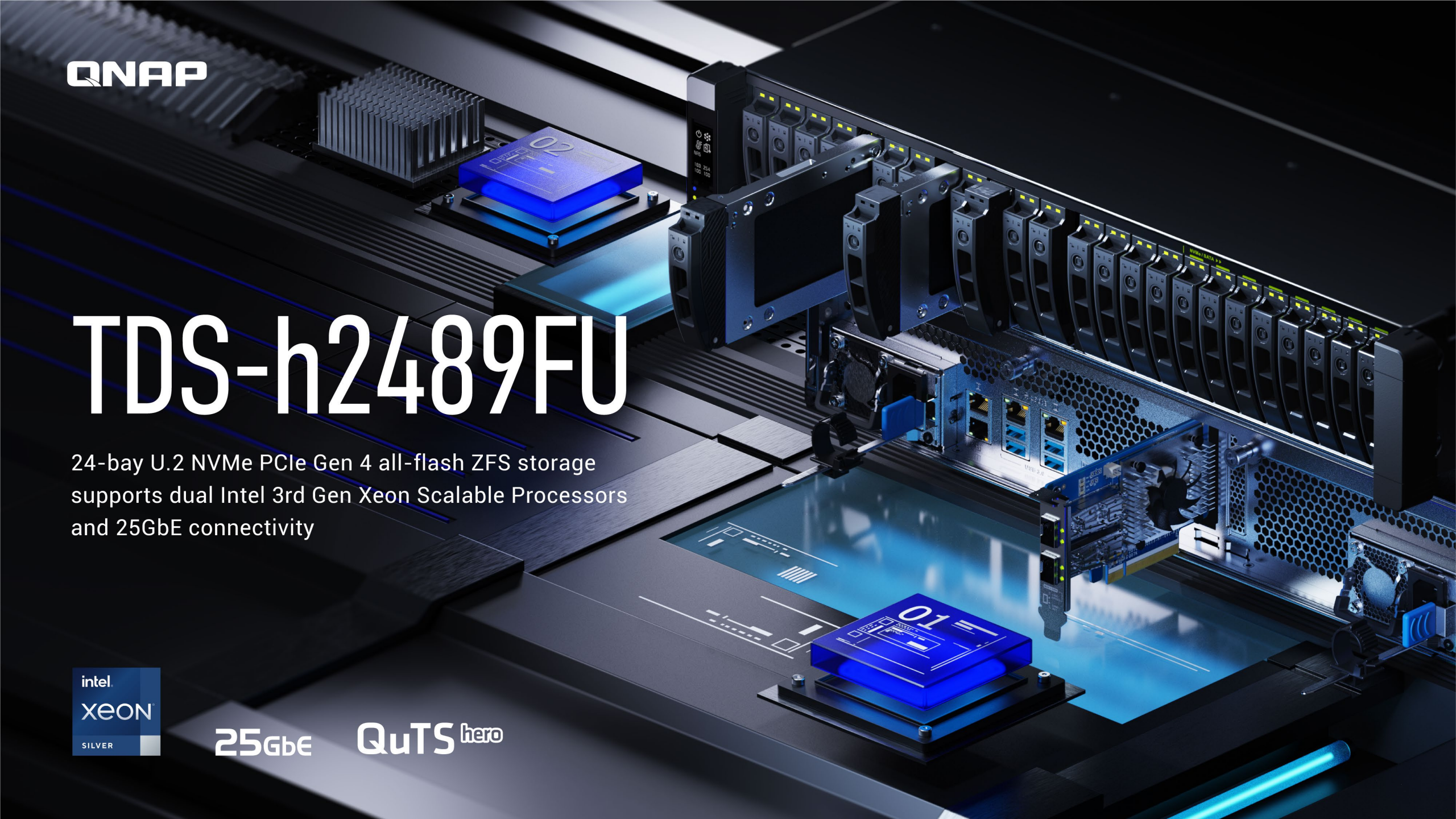
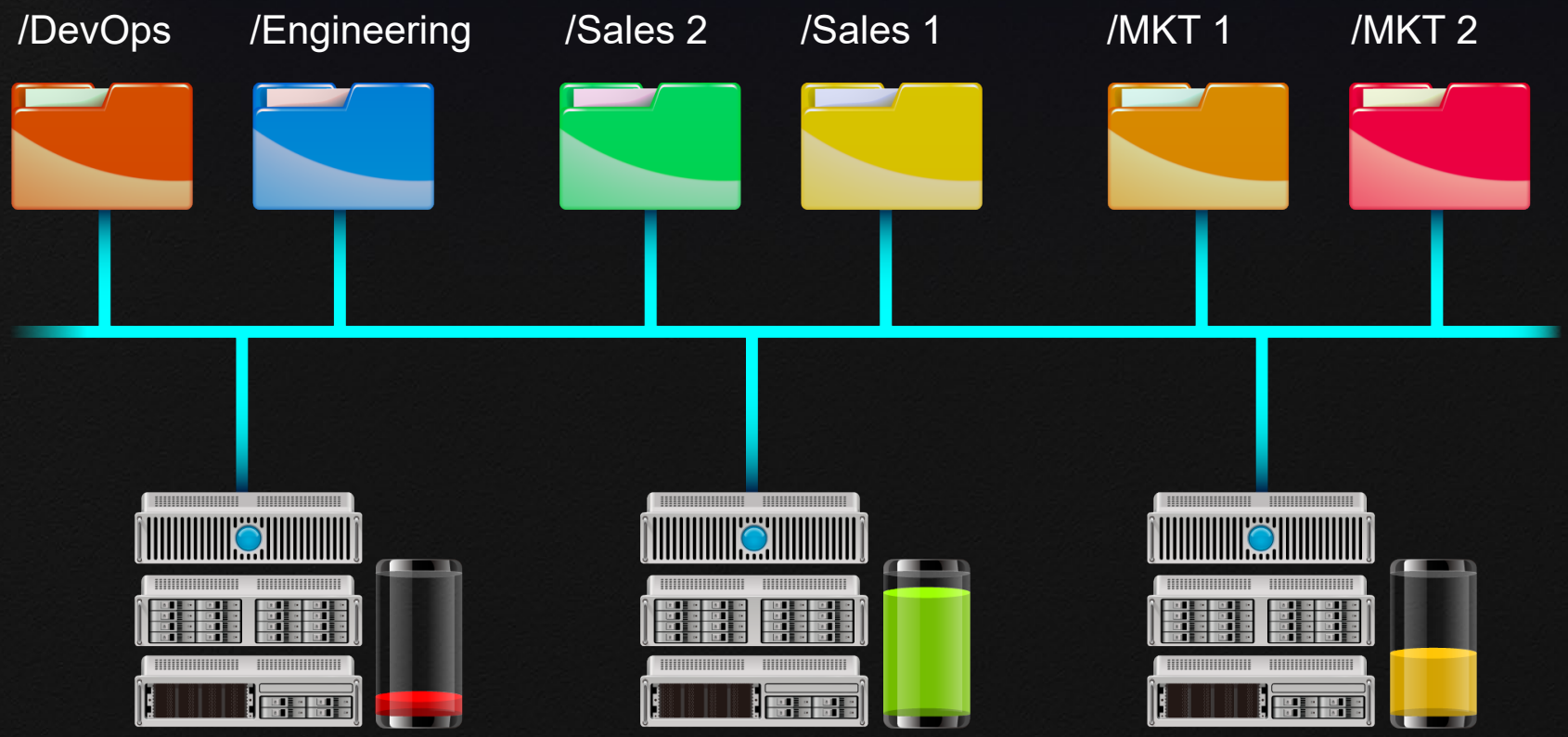

QNAP
TDS-h2489FU
24-bay U.2 NVMe PCIe Gen 4 all-flash ZFS storage
supports dual Intel 3rd Gen Xeon Scalable Processors
and 25GbE connectivity
intel
XEON
SILVER
25GbE
QuTS hero

# Data growth leads to disruptive expansion in enterprise.

Where did that file go?



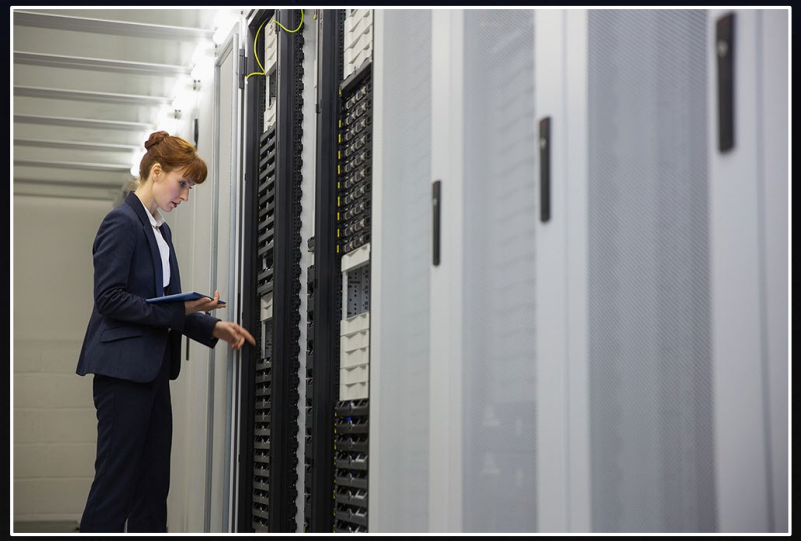

**Uneven loading & capacity consumption**

- Manually split shares between filers
- Copy files to new servers
- Redirect apps & users to new locations

# How to tackle throughput- and IOPS-demanding applications with ease?

## Virtualization

Eliminates storage bottlenecks for unstructured data and I/O intensive workloads; ideal for server virtualization and virtual desktop infrastructure (VDI).



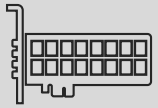
## Data Centers

Delivers ultra-low latency and high IOPS performance, providing response times within microseconds for data centers that host significant business-critical systems and data.

## Media & Entertainment

Satisfies smooth 4K/8K media streaming and post-production, empowering multimedia workflows with faster data transfer, access, and backup for boosted efficiency.

# Must use SSD to get the highest performance. How to choose SSDs?

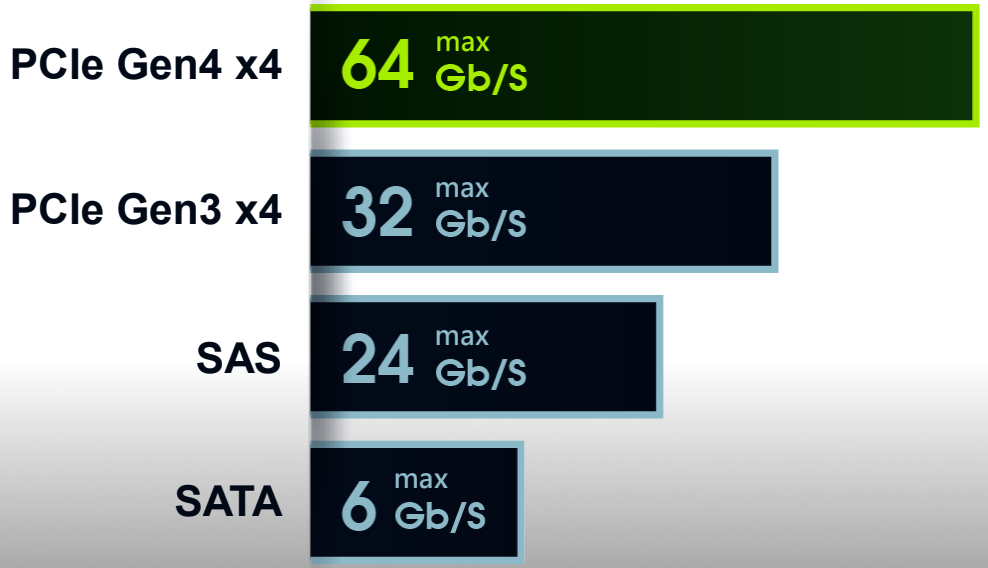
| | Formfactor | Interface | Major dimension |
|---|---|---|---|
| | 2.5 inch (hot swappable) | SATA | • Height 7~9.5 mm |
| | | SAS | • Height 15 mm |
| | | NVMe (U.2/U.3) | • Height 7 mm<br>• Height 15 mm |
| | M.2 | SATA | • 2230 (22 x 30 mm)<br>• 2280 (22 x 80 mm)<br>• 22110 (22 x 110 mm) |
| | | NVMe | |
|  | PCIe card (AIC) | NVMe | • Full height / half height<br>• Full length / half length |

Each SSD model has different sequential / random read/write performance, TBW, and DWPD life expectancy. Choose wisely depends on your applications.

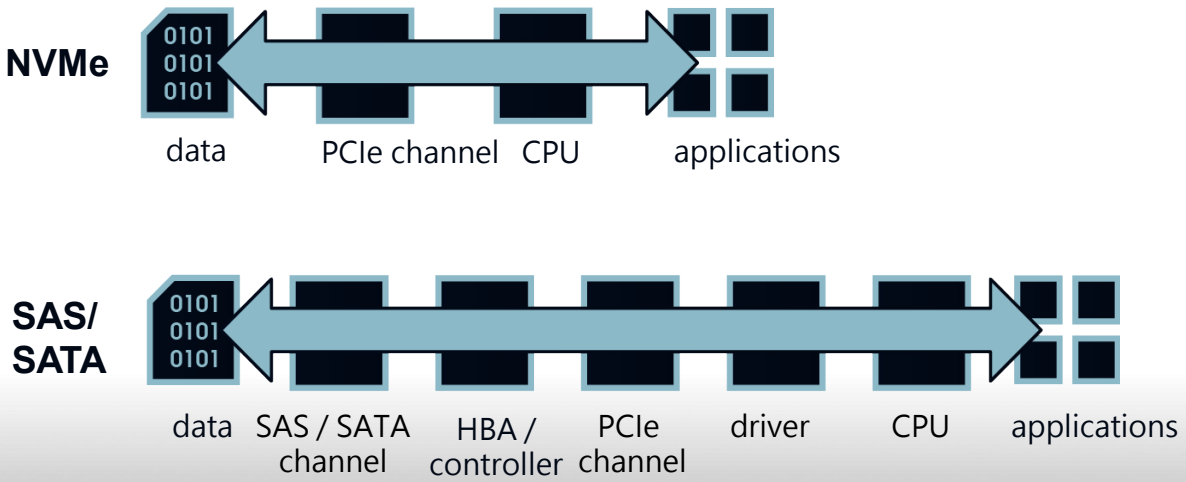
Source: http://Samsung.com

# Why the future mainstream SSD market will be PCIe NVMe SSD and not be SAS or SATA SSD?

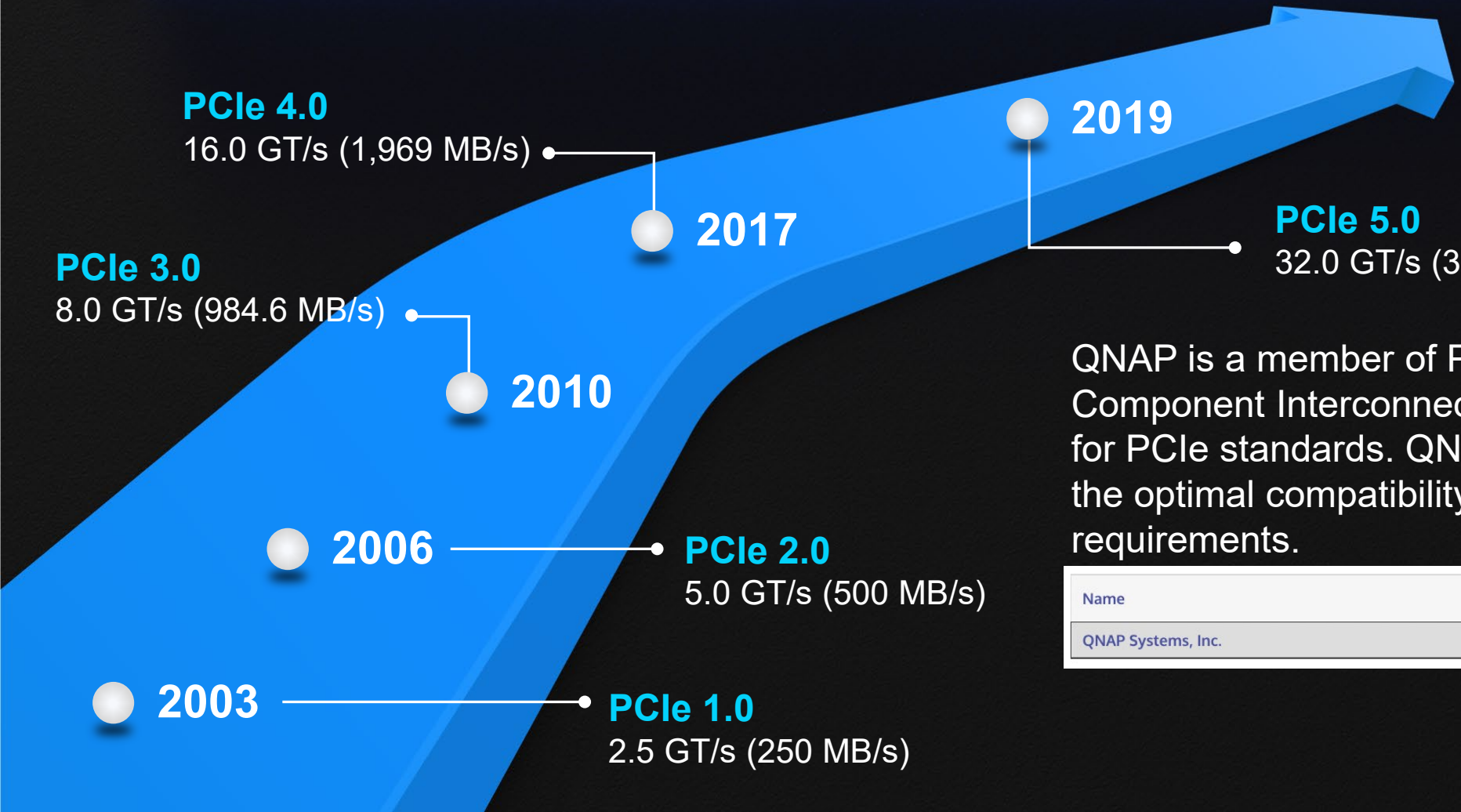
## Maximum bandwidth 64 Gb/s (8GB/s)




## Low latency, Super short data path



# 800+ members in PCI-SIG community for PCIe standards since 1992 establishment




QNAP is a member of PCI-SIG (Peripheral Component Interconnect Special Interest Group) for PCIe standards. QNAP follows the specs for the optimal compatibility and performance requirements.

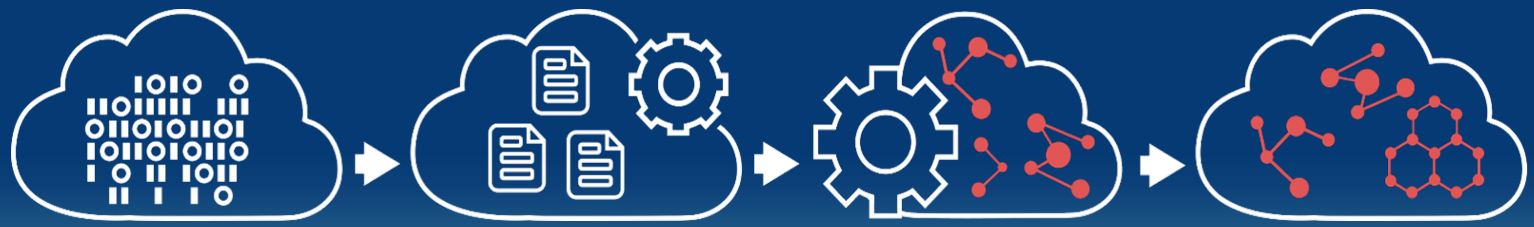
| Name | Vendor ID |
|---|---|
| QNAP Systems, Inc. | 7082 (1BAA Hex) |

Source https://pcisig.com/specifications

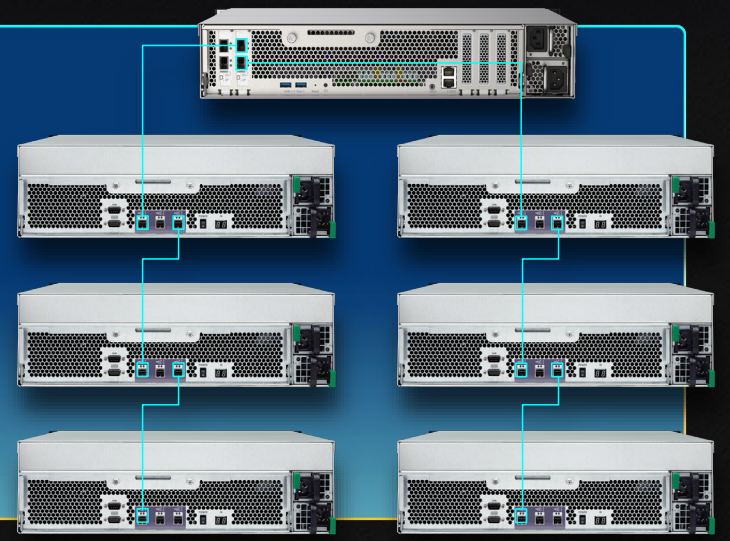
# How to find the best data carrier of big data analysis / edge computing / AI inference?

200TB is not enough

Only PB-level shared folder is enough to store the huge data matrix




Deep Learning



Connect multiple JBOD to reach peta-bytes of storage capacity

# The all-flash U.2 NVMe NAS with dual Intel Xeon processors, 25GbE, and optional 100GbE

## TDS-h2489FU 32 & 16 cores dual CPU 25GbE NAS

- 24 x 2.5” U.2 NVMe PCIe Gen4 SSD bays

  + 2 x M.2 2280 PCIe / SATA SSD combo slots
- Dual Xeon processors up to 32 and 16 cores:

  2 x Intel Xeon Scalable Silver 4314 16-core / 4309Y 8-core
- 32 DDR4 RDIMM memory slots, up to 1TB total
- 2 x 25GbE and 2 x 2.5GbE, with an additional PCIe Gen4 slot for 100GbE NIC, Fibre Channel, or SAS HBA

vmware READY · Microsoft Hyper-v · CITRIX XenServer · VEEAM READY Repository

- ZFS file system for data security
- 65,536 snapshots for data protection
- Data reduction technology
  - ✓ Increase storage efficiency and maximize ROI
  - ✓ De-duplication, inline compression, data compaction
- Unified Storage: iSCSi/ FC/ NFS/ CIFS/ FTP / S3
- Container Station and Virtualization Station for virtualized applications

# Dual server-grade 3rd gen Intel Xeon Silver scalable processors for the best efficiency

- 2 x Intel® Xeon® Silver 4314
  16 cores 32 threads, up to 3.4 GHz
- 2 x Intel® Xeon® Silver 4309Y
  8 cores 16 threads, up to 3.6 GHz

**Ice Lake SP**
CPU code name

**8 CH ECC**
RDIMM

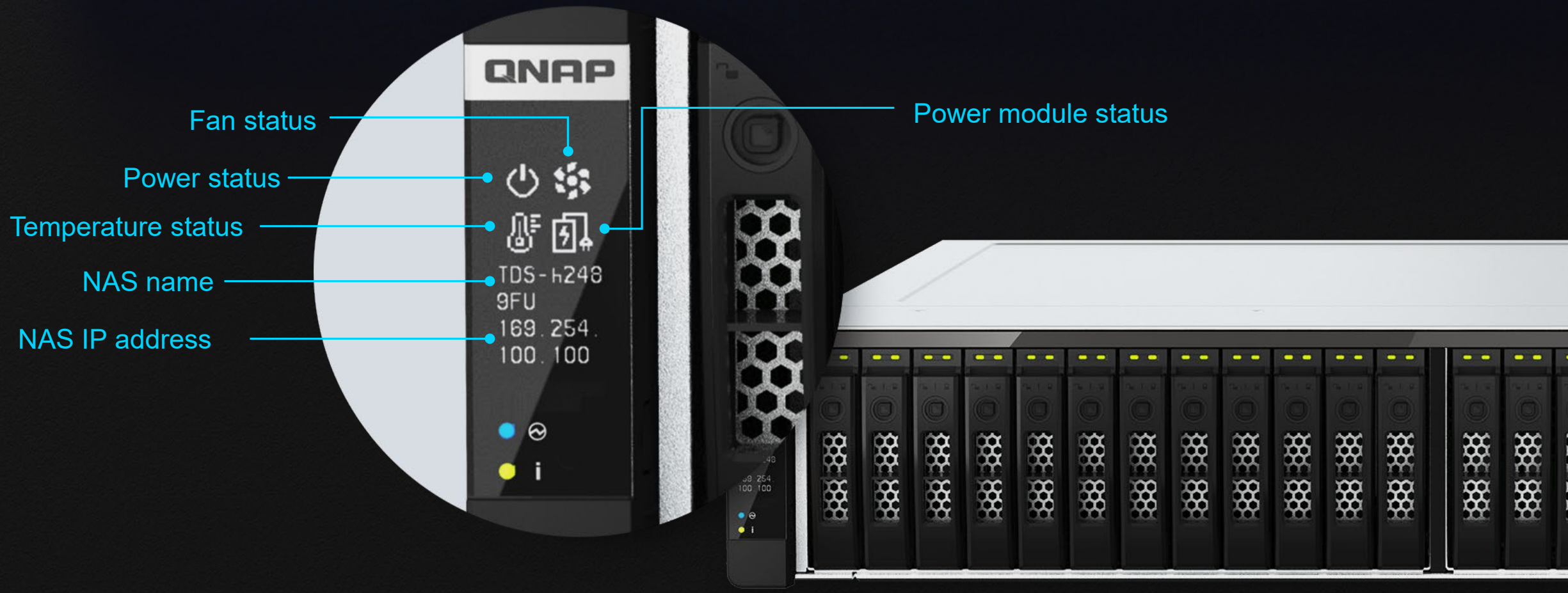
**10nm**
Lithography

**PCIe 4.0**
Ultra speed

The latest and newest!

# TDS-h2489FU front view

# Advanced OLED display for system status



# Ordering information and optional rail kit

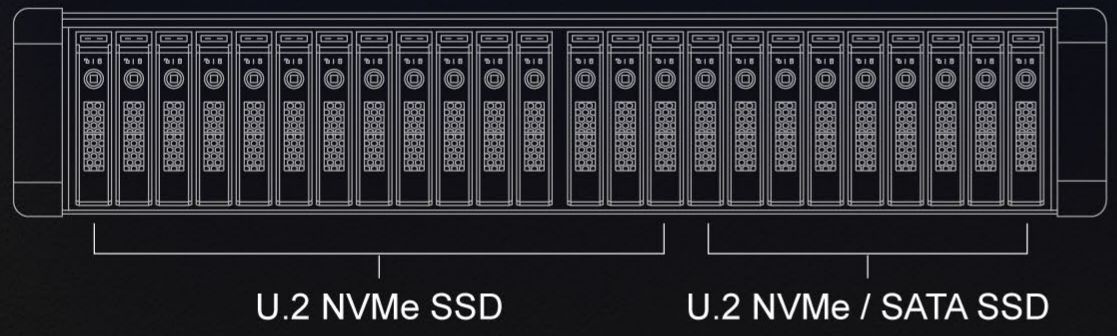
## Ordering information

- TDS-h2489FU-4309Y-64G (8 x 8GB RDIMM)
- TDS-h2489FU-4314-128G (8 x 16GB RDIMM)
- TDS-h2489FU-4314-256G (8 x 32GB RDIMM)
- TDS-h2489FU-4314-512G (16 x 32GB RDIMM), by request
- TDS-h2489FU-4314-1TB (32 x 32GB RDIMM), by request

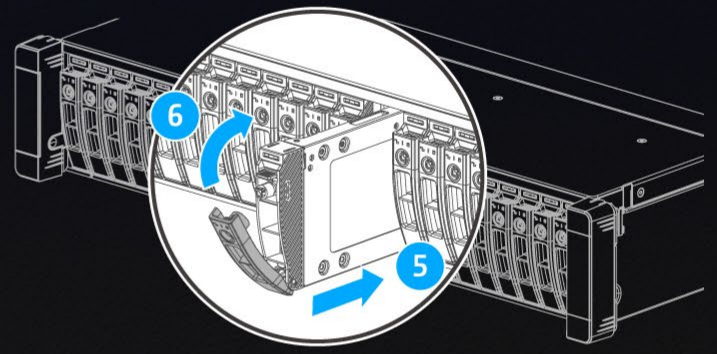
## Optional rail kit

- RAIL-E03

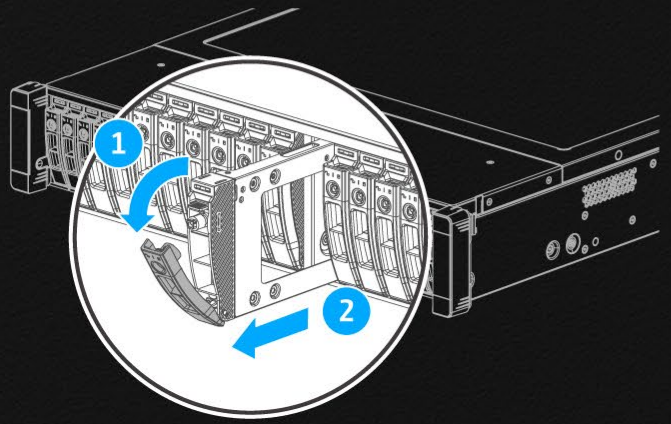
# 24 hot-swappable SSD trays and easy 2.5-inch SSD installation



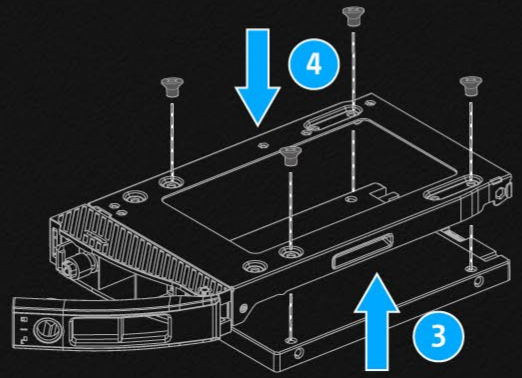

3. Insert the tray



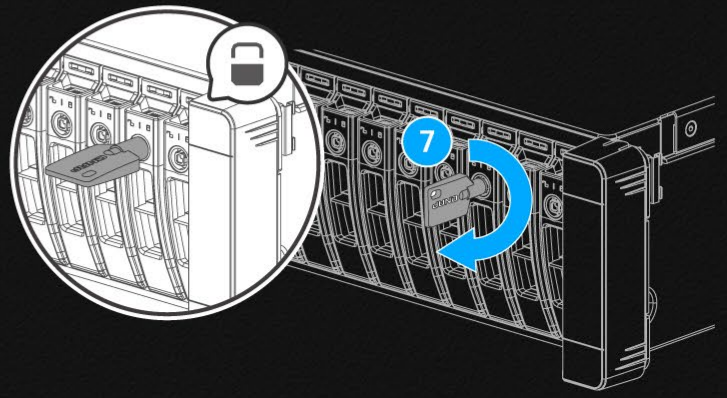

1. Remove the tray




2. Fasten the screws

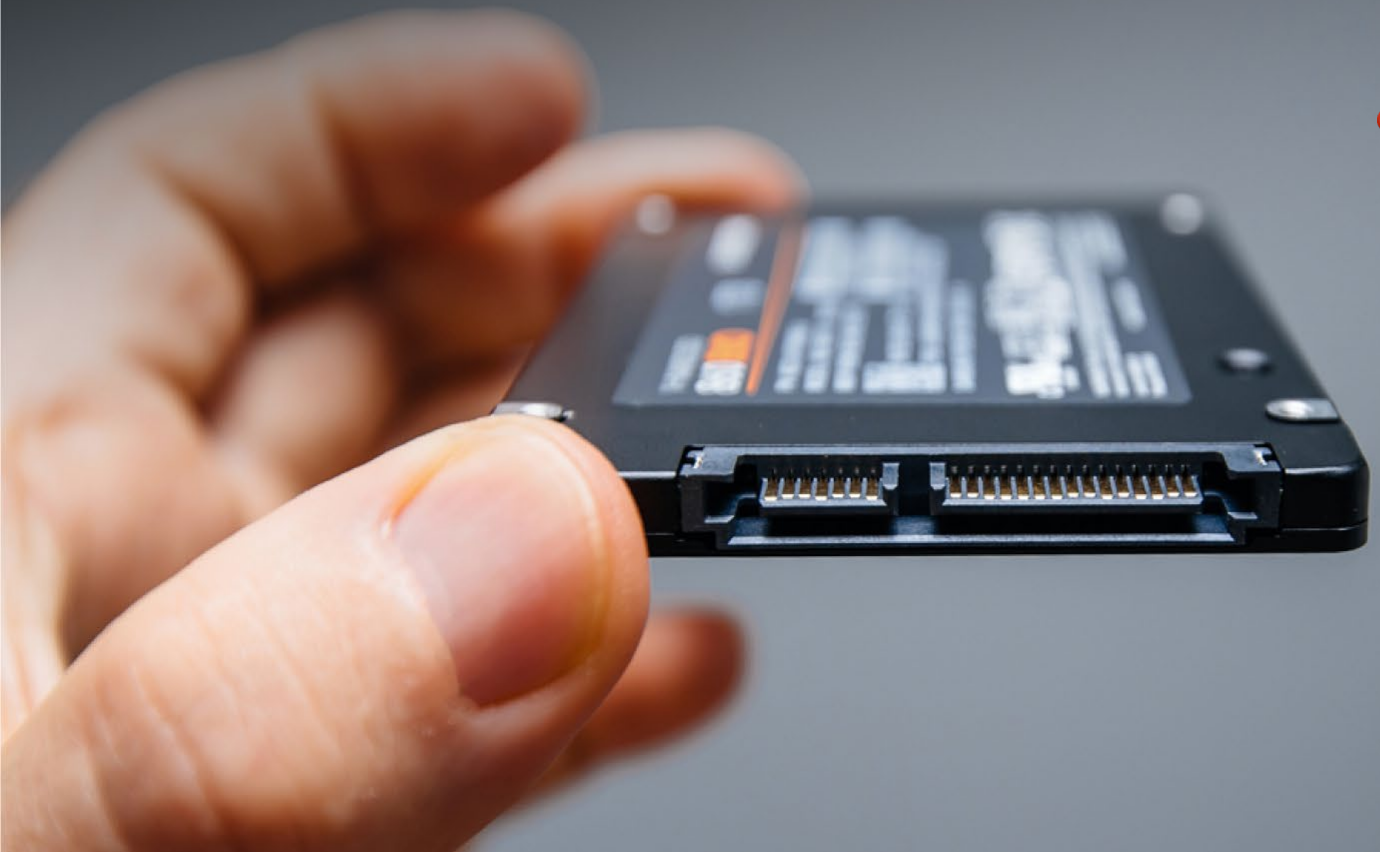



4. Lock the tray with a key (optional step)



# What if U.2 NVMe SSDs are not available in your country or if the cost is over your IT budget?

## 24 x U.2 NVMe SSD in the All flash NAS TDS-h2489FU

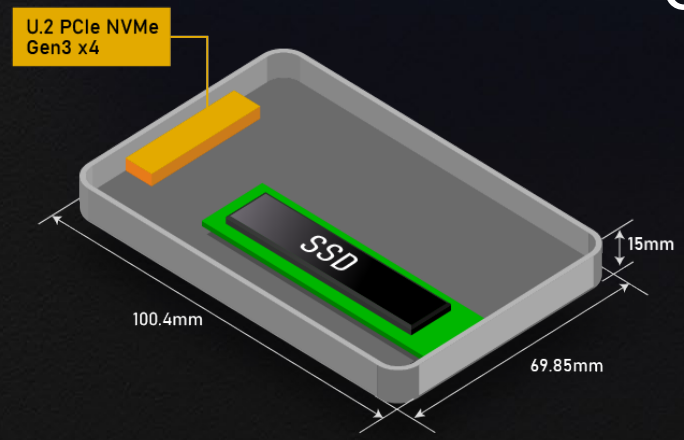


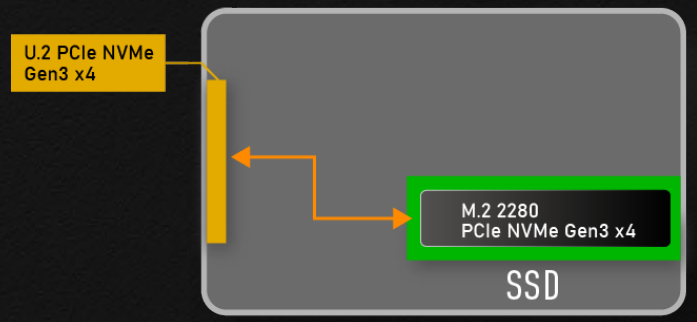
Not available for sale or long lead time?

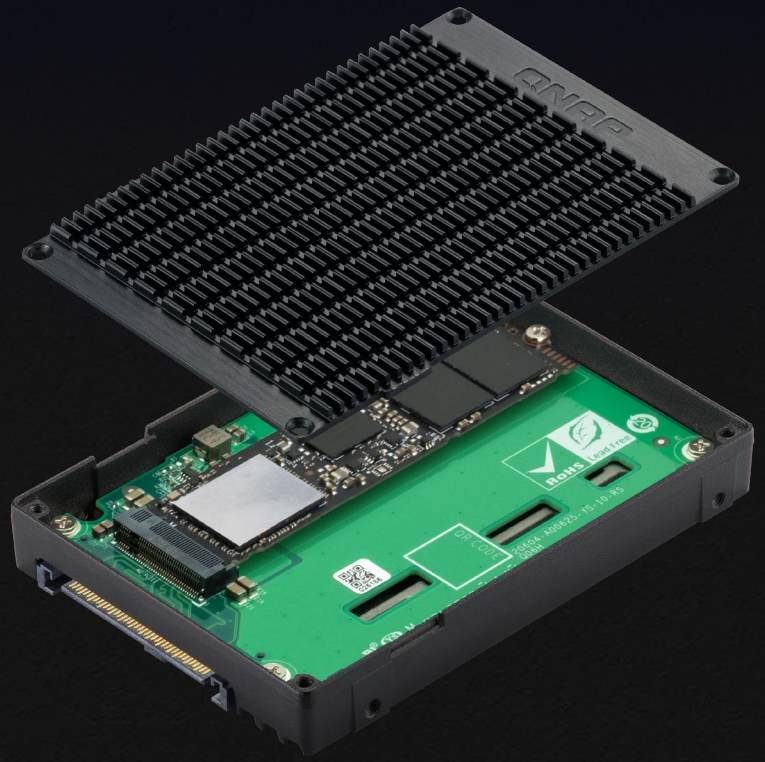
Too expensive and over your IT budget?

# Economically use M.2 NVMe SSDs with QNAP QDA-UMP4 U.2 to M.2 SSD adapter

Order P/N: QDA-UMP4

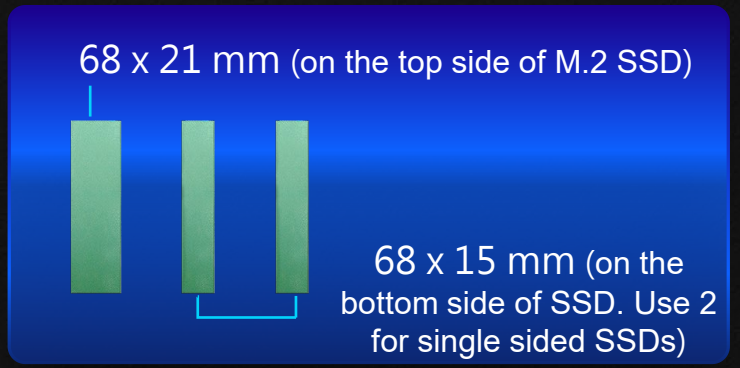


## U.2 NVMe to M.2 NVMe PCIe adapter, supporting PCIe 4.0/3.0

- Use readily available and more affordable M.2 NVMe PCIe Gen4/Gen3 SSDs
- Excellent heat-conductive metal design with thermal pads so that M.2 SSDs do not overheat. Keep the optimal performance and prolong the life.



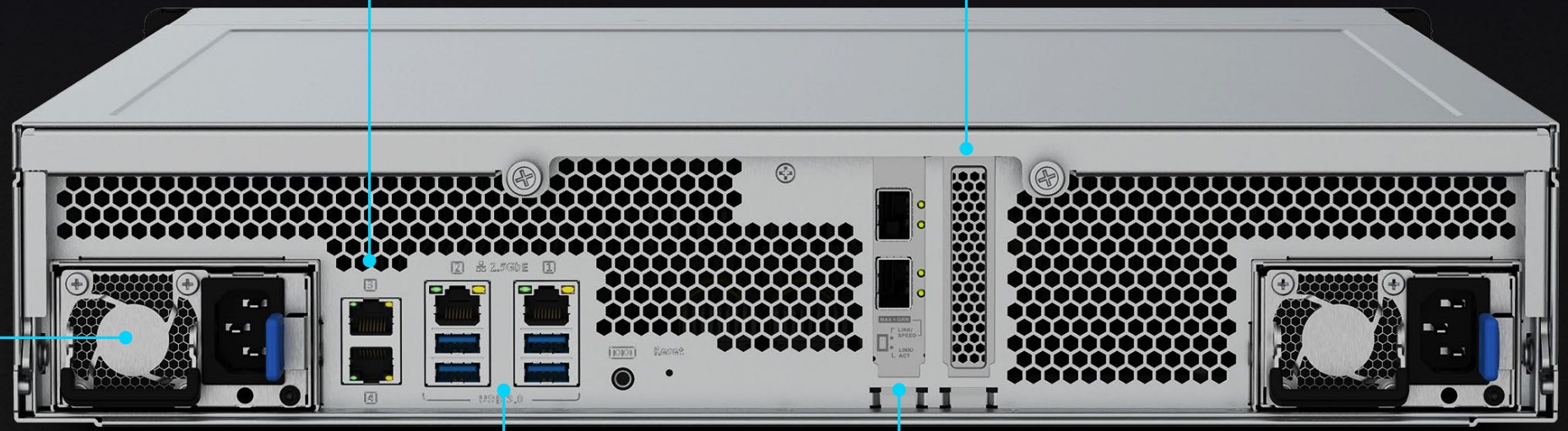
# TDS-h2489FU rear view

4 x 2.5GbE
(2.5G/1G/100M)

PCIe slot 1: 1 x PCIe Gen4 x16 slot
(x8 if slot 2 is occupied)

## 2 x PCIe Gen4 slots

- Slot 1 provides the width of PCIe Gen4 x16 when Slot 2 is not in use, and provides the width of PCIe Gen4 x8 when Slot 2 is in use.

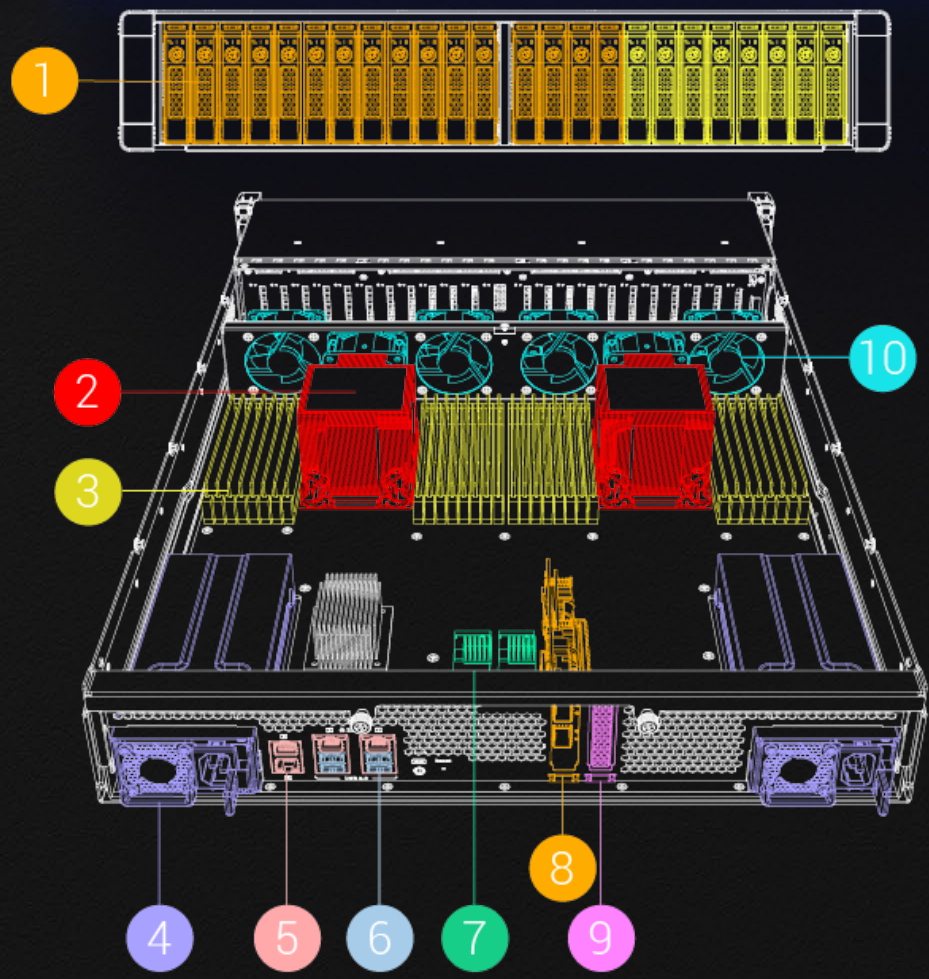


2 x 1200W
redundant
power
supplies

4 x USB 3.2 Gen1
Type-A

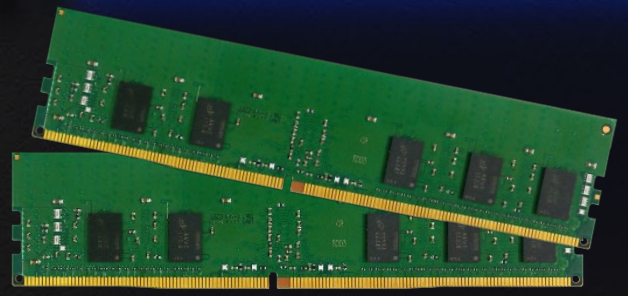
PCIe Slot 2: 2 x 25GbE SFP28
(pre-installed 2-port 25GbE NIC)

# Powerful all-flash NVMe NAS specs to meet your business digital transformation requirements

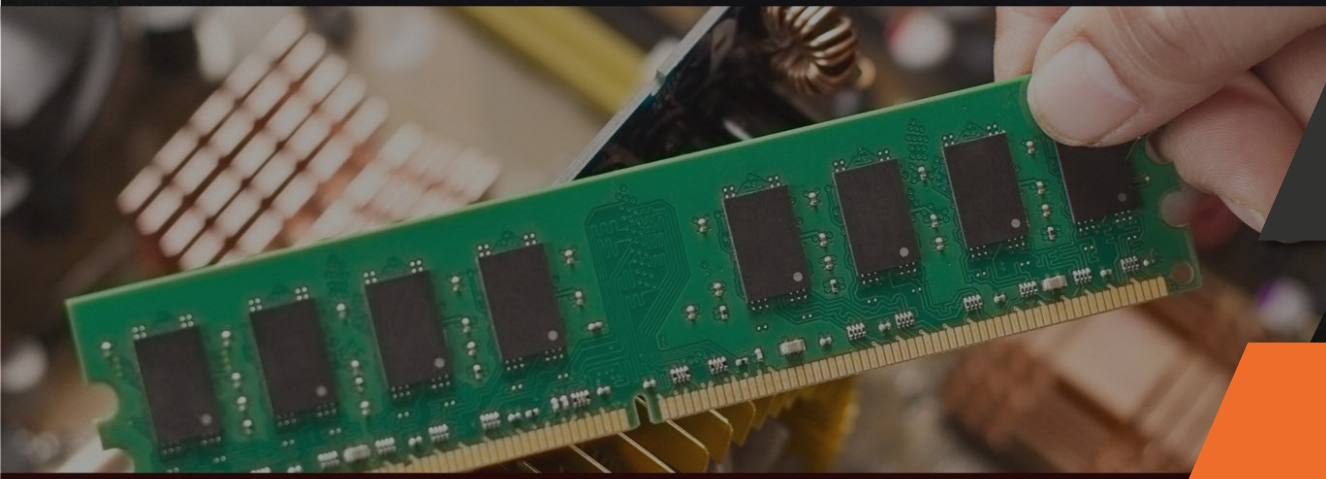



1. 24 x U.2 NVMe SSD bays (bay 17~24 also supports SATA 6Gb/s)
2. 2 x Intel® Xeon® Silver 4300 processors, up to 32 cores
3. 8 channel 32 x DDR4 RDIMM slots, up to 1TB
4. 2 x 1200W redundant PSU
5. 4 x 2.5GbE RJ45 ports
6. 4 x USB-A 3.2 Gen 1 ports
7. 2 x M.2 2280 PCIe Gen3 (x4 + x2) / SATA 6Gbps ports
8. 2 x 25GbE SFP28 ports (2-port 25GbE NIC)
9. 2 x PCIe Gen 4 slots (pre-installed 25GbE NIC)
10. System fan module

# 32 DDR4 ECC RDIMM RAM slots, 8-channel high-speed memory, up to 1TB RAM total



**ECC** Error correction & Optimal stability

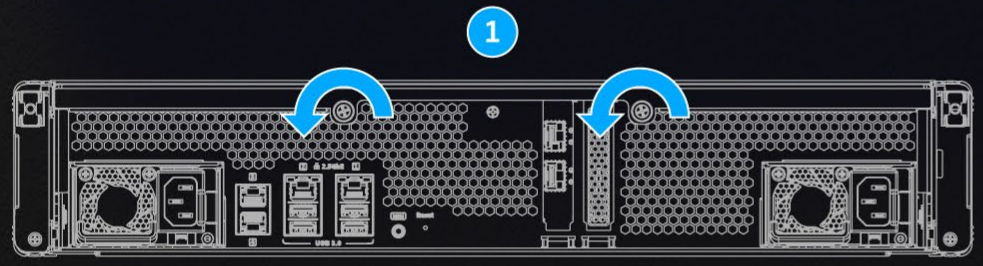


TDS-h2489FU supports
ECC Registered memory for automatic error detection and correction.

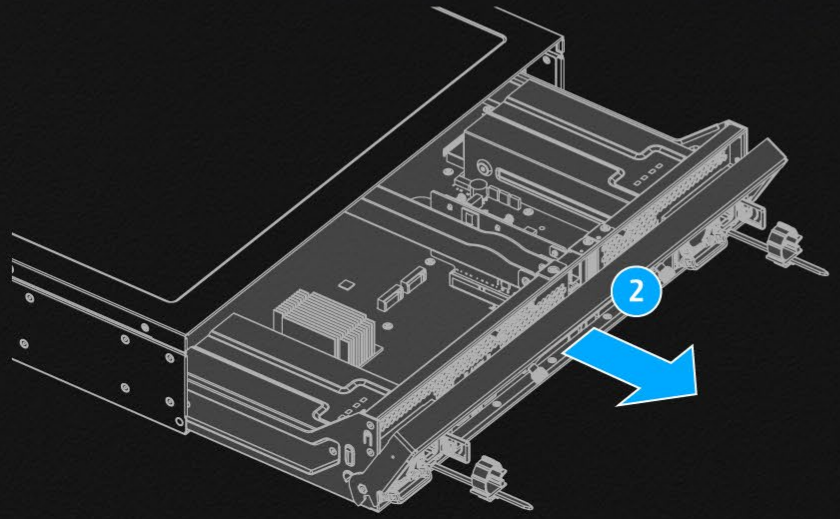
NAS tested with **1TB RAM!**

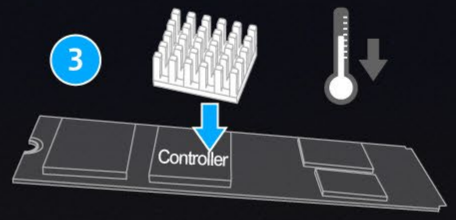
# Easy maintenance design for quick M.2 2280 PCIe NVMe / SATA SSD or RAM upgrade

1. Loosen the screws



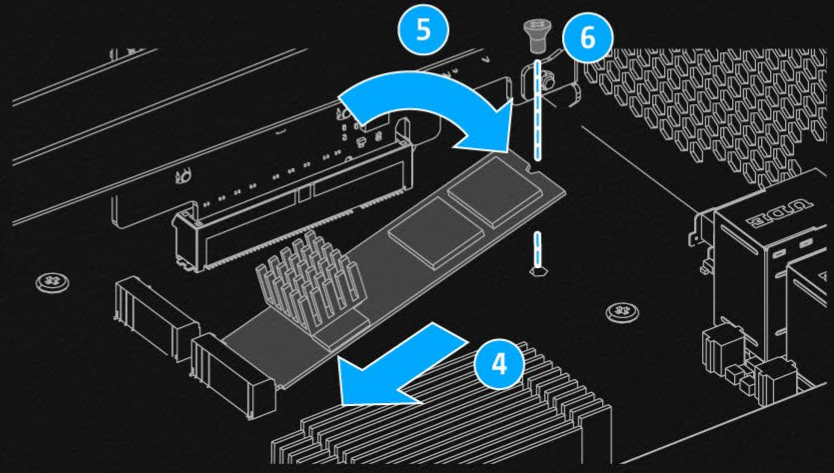

2. Pull out the system module




3. Optional M.2 SSD heatsink for purchase (8 pcs P/N: HS-M2SSD-01)

4~6. Install the SSD & fasten the screws



# QNAP All Flash NAS

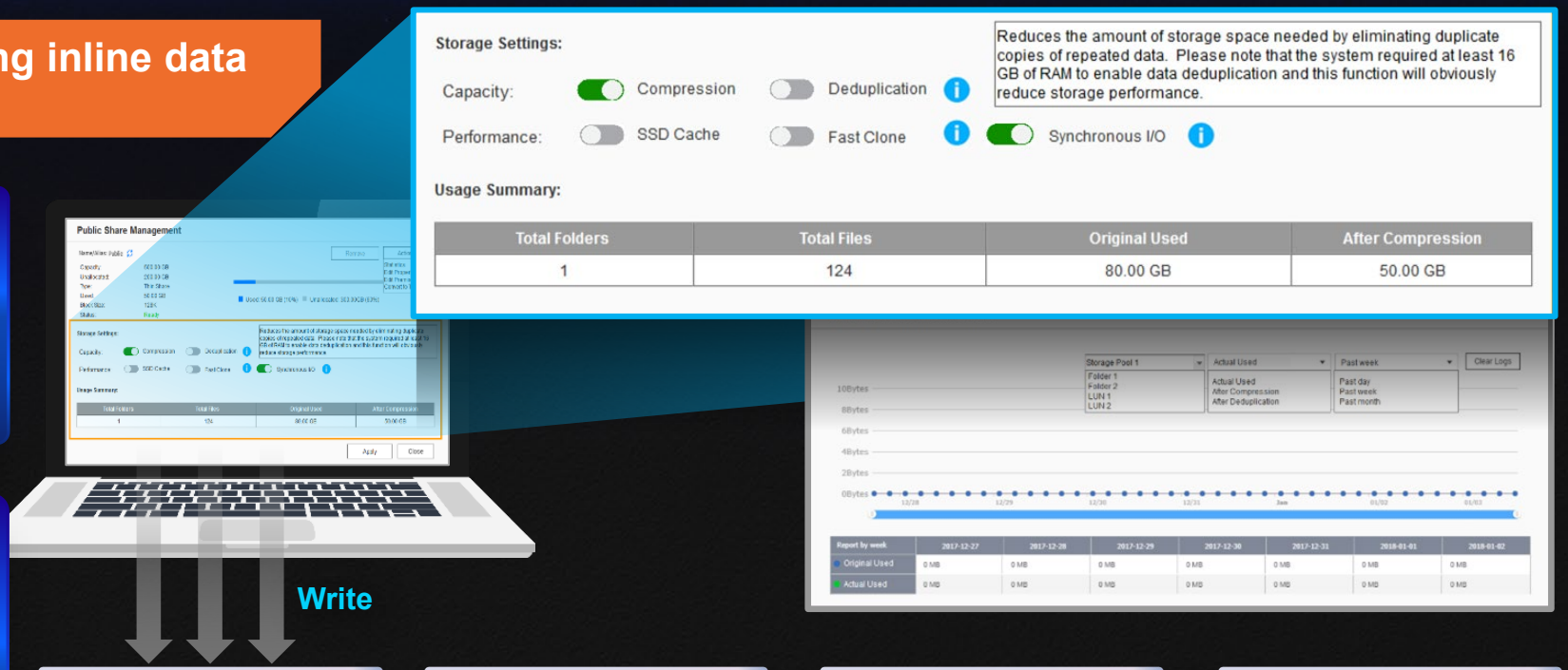
Fast and furious with expandability

# TDS-h2489FU with powerful data reduction to extend SSD endurance

**Only available when during inline data process before writing**

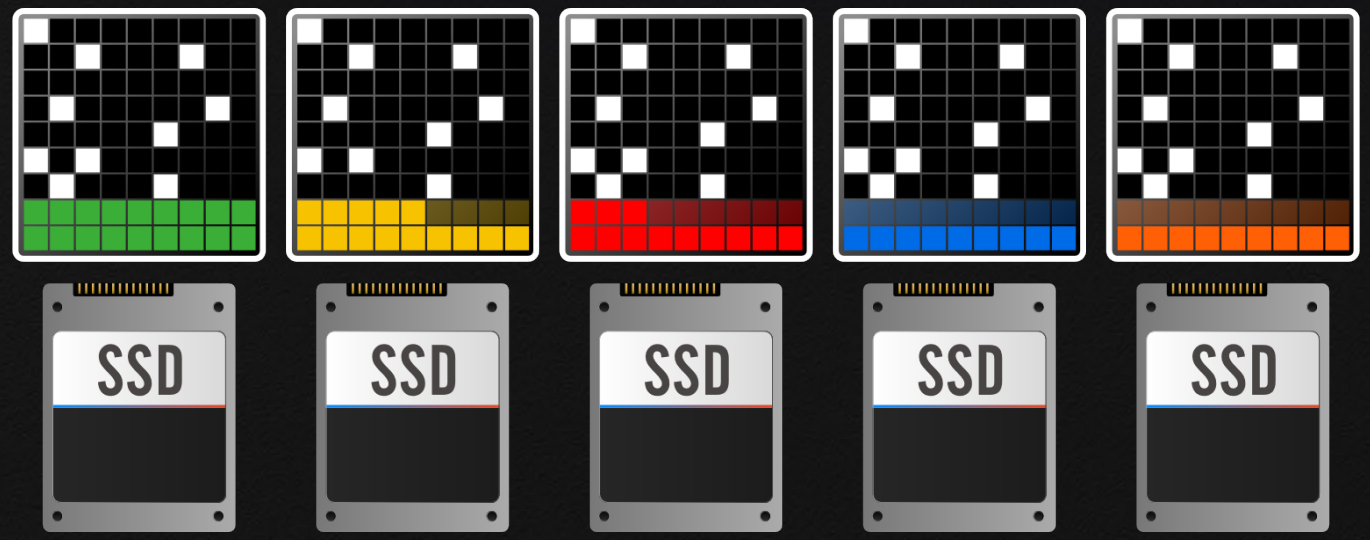
ZFS file system with inline deduplications and compresstion feature

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.



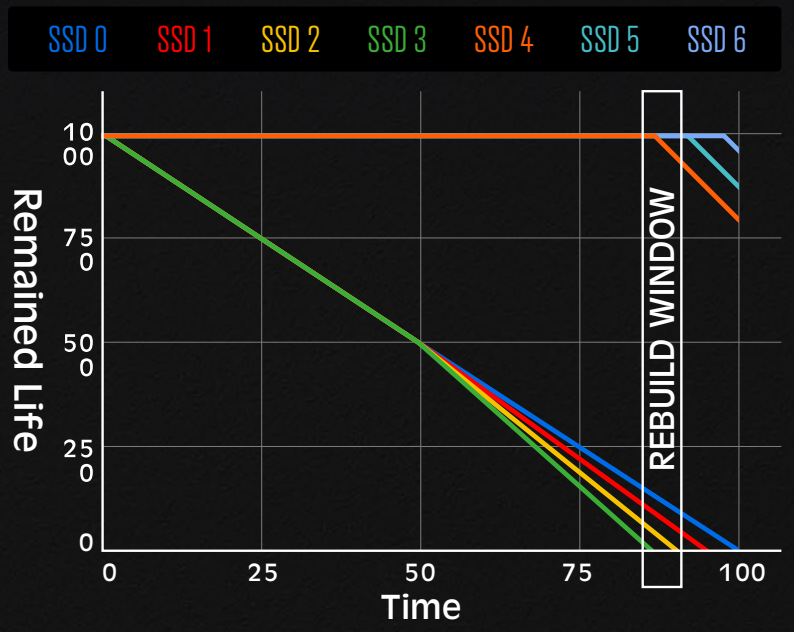
# Patented QSAL technology: preventing multiple SSD malfunctioning at the same time

QSAL
Dynamic
Distribution



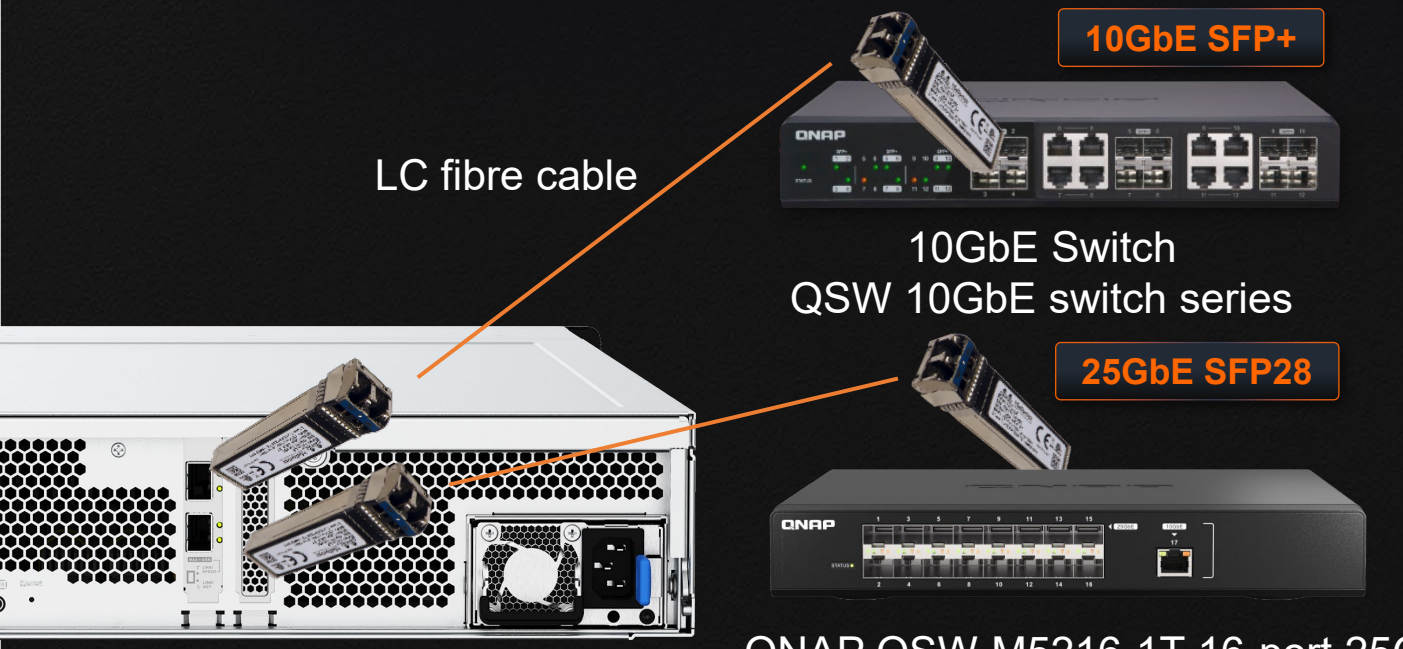

For SSD RAID 5 / 6 / 50 / 60 / TP(Triple Parity).

Note: QSAL can be activated at any time and is compatible with SSD Parity RAID that has not been configured before. It is recommended to enable QSAL before the SSD lifespan reaches 50% to prevent the risk of damage to the SSD RAID due to insufficient rebuild time.



# Support 25GbE/10GbE/1GbE transceivers for various network environments

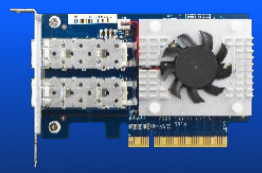
- Built-in 2 x 25GbE ports for SFP28 transceivers
- Backward compatible with 10GbE and 1GbE networks with compatible SFP+/SFP transceivers
- Auto-negotiation for auto speed detection



# Abundant high-speed network cards with plug and use support

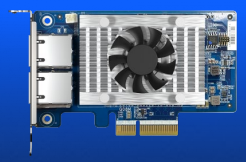
## 10GbE NIC

2 x SFP+



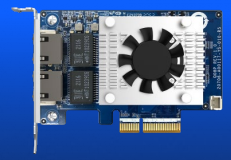
QXG-10G2SF-CX4

2 x RJ45



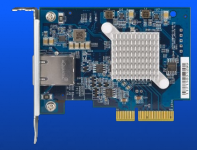
LAN-10G2T-X710

2 x RJ45



QXG-10G2TB

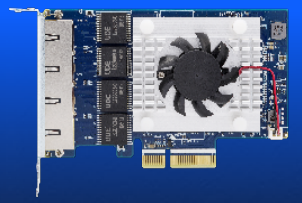
1 x RJ45



QXG-10G1T

## 5GbE NIC

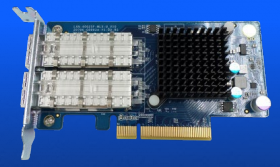
1/2/4 x RJ45



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

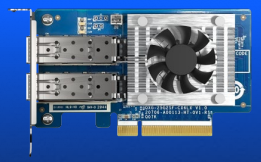
## 40/25GbE NIC

2 x QSFP+ 40Gb/s



LAN-40G2SF-MLX

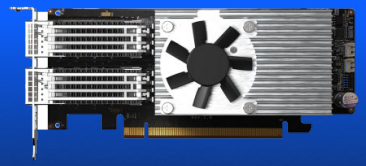
2 x SFP28 25Gb/s



QXG-25G2SF-CX6

## 100GbE NIC

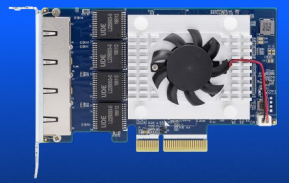
2 x QSFP28



QXG-100G2SF-E810

## 2.5GbE NIC

1/2/4 x RJ45



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

# PCIe Gen4 slots for 100GbE Ethernet

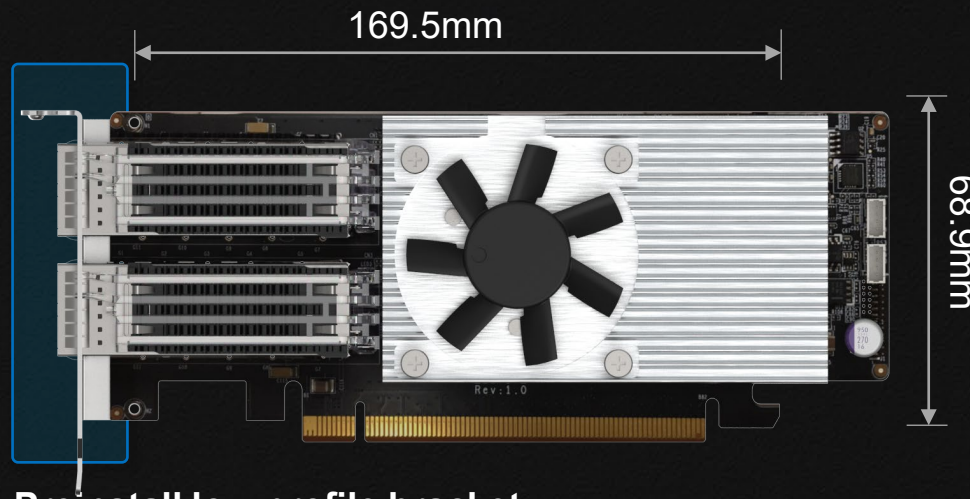
- Install the QNAP **QXG-100G2SF-E810** network card with a 100GbE switch for 100GbE network adaptation and future proof your storage investment.
- Support port-configuration mode to connect to 4 x 25GbE port.
- Connect your 100GbE server to **4 x 25GbE or 8 x 10GbE** end devices with native port-configure mode

Mellanox 25 / 100 GbE Switch (SN2010)

**Full-height bracket include inside package**

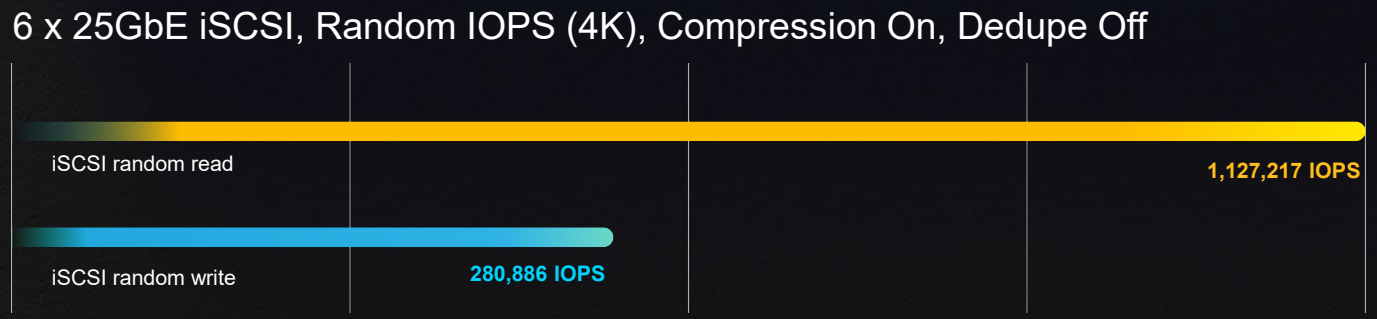
**CAB-DAC15M-Q28B4**

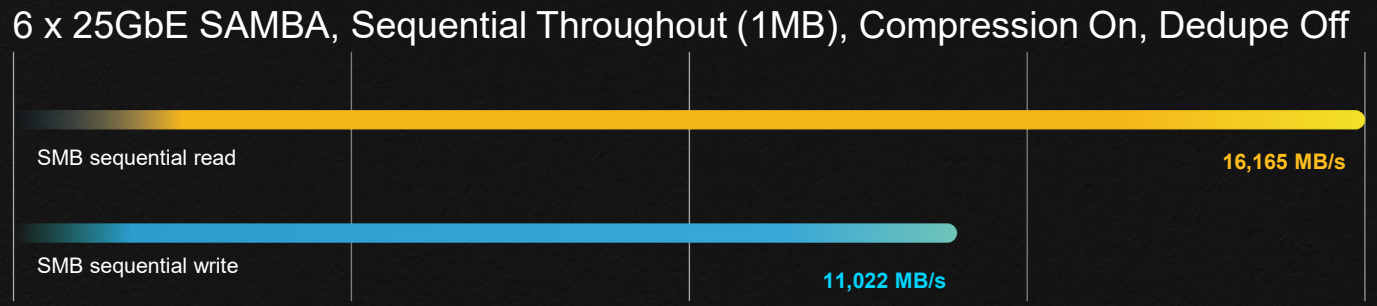
**CAB-DAC15M-Q28**



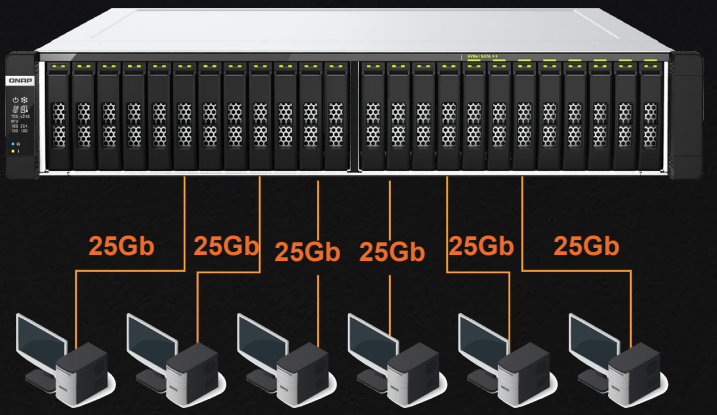

**Preinstall low profile bracket**

# Performance of 32-core TDS-h2489FU-4314-128G with 6 x 25GbE clients




- **Up to 1.1 million iSCSI random read IOPS!**
- **16,165MB/s SMB seq. read and 11,022 MB/s SMB seq. write!**




6 x 25GbE clients concurrent access

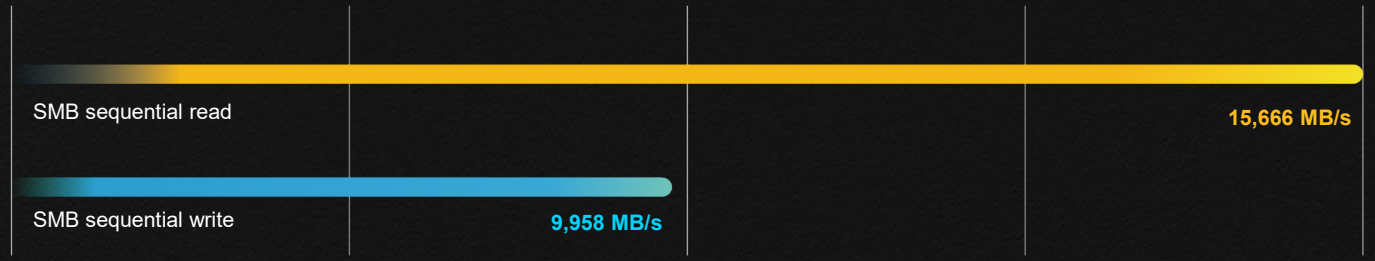
Tested in QNAP Labs. Figures may vary by environment.

Test Environment:
NAS: TDS-h2489FU-4314-128G with QuTS hero 5.0.0
Volume type: Samsung PM9A3 960G Gen4 U.2 NVMe SSD x24 (RAID 50); Intel QXG-100G2SF-E810; QXG-25G2SF-CX4
Client PC:
6* Client PC simultaneously read and write 16GB file (= 96GB totally)
Intel Core™ i7-7700 4.20GHz CPU, 32GB DDR4 RAM, QXG-25G2SF-CX4, Windows® Server 2016, and Intel Core™ i3-8100 3.60GHz CPU, 4GB DDR4 RAM, QXG-25G2SF-CX4, Windows® Server 2016

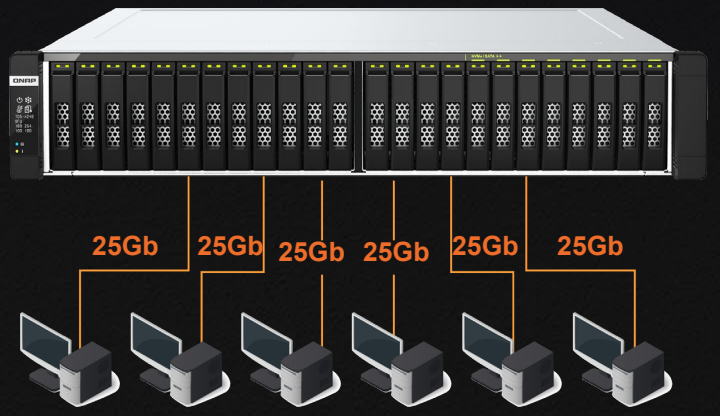
# Performance of 16-core TDS-h2489FU-4309Y-64G with 6 x 25GbE clients

6 x 25GbE iSCSI, Random IOPS (4K), Compression On, Dedupe Off

6 x 25GbE SAMBA, Sequential Throughout (1MB), Compression On, Dedupe Off




- **Up to 745,479 iSCSI random read IOPS!**
- **15,666 MB/s SMB seq. read and 9,958 MB/s SMB seq. write!**

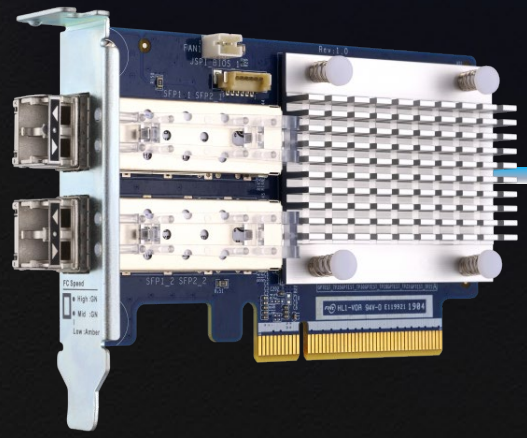



6 x 25GbE clients concurrent access

Tested in QNAP Labs. Figures may vary by environment.

Test Environment:
NAS: TDS-h2489FU-4309Y-64G with QuTS hero 5.0.0
Volume type: Samsung PM9A3 960G Gen4 U.2 NVMe SSD x24 (RAID 50); Intel QXG-100G2SF-E810; QXG-25G2SF-CX4
Client PC:
6* Client PC simultaneously read and write 16GB file (= 96GB totally)
Intel Core™ i7-7700 4.20GHz CPU, 32GB DDR4 RAM, QXG-25G2SF-CX4, Windows® Server 2016, and Intel Core™ i3-8100 3.60GHz CPU, 4GB DDR4 RAM, QXG-25G2SF-CX4, Windows® Server 2016

# Fibre Channel SAN
# 32Gb & 16Gb storage solution



QXP-32G2FC

2-port 32Gbps FC card

QXP-16G2FC

2-port 16Gbps FC card

Designed for NAS, high-performance and efficient QNAP FC expansion cards*

* Installation on Windows/Linux hosts is not supported

## Includes optical FC transceivers. Additional ones available for purchase:

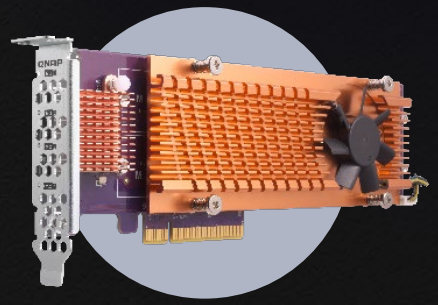
- TRX-32GFCSFP-SR
  32Gb/16Gb/8Gb
- TRX-16GFCSFP-SR
  16Gb/8Gb/4Gb

Note: cables are not included.

# Expand M.2 NVMe SSD slots with QM2

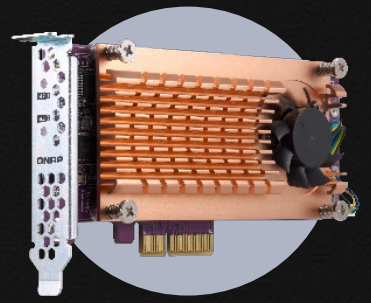
QM2 helps you to expand more M.2 NVMe SSD slots via PCIe

**Keep your original storage aarchitecture**



## QM2-4P-384 (Gen 3 x8)

**4 x M.2 2280 PCIe Gen 3 x4 NVMe SSD slots**



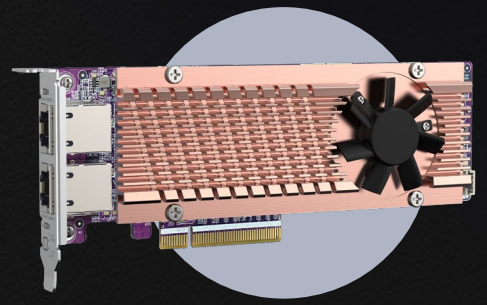
## QM2-2P-384 (Gen 3 x8 )

**2 x M.2 22110/2280 PCIe Gen 3 x4 NVMe SSD slots**

# Expand 10GbE and M.2 SSD slots with QM2

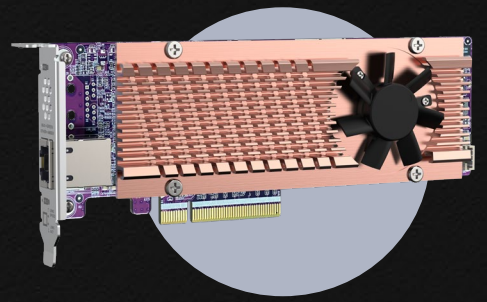
Expand both Ethernet and M.2 NVMe SSD slots with  new PCIe 4.0 QM2 series

**PCIe 4.0** high speed expansion



## QM2-2P410G2T (Gen 4 x8 )

**4 x M.2 2280 PCIe Gen 4 x4 NVMe SSD slots**
**+ 2 x 10GbE RJ45 ports**



## QM2-2P410G1T (Gen 4 x8 )

**2 x M.2 2280 PCIe Gen 4 x4 NVMe SSD slots**
**+ 1 x 10GbE RJ45 port**

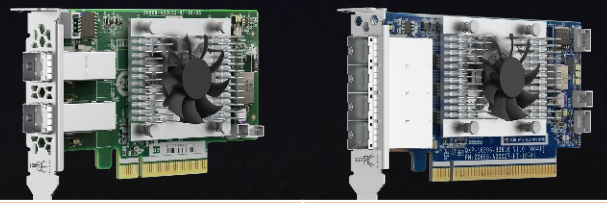
# Reach PB storage capacity with QNAP SAS 12Gb/s 12-bay & 16-bay JBOD units

TL-R1620Sep-RP TL-R1620Sep-RP

NAS supports up to **16** QNAP SAS JBOD enclosures

- 12-bay TL-R1220Sep-RP or 16-bay TL-R1620Sep-RP
- Each NAS with **hundreds of HDDs**，**1~3PB** raw HDD capacity
- SAS JBOD can expand NAS existing storage pools

## SAS HBA (optional purchase)



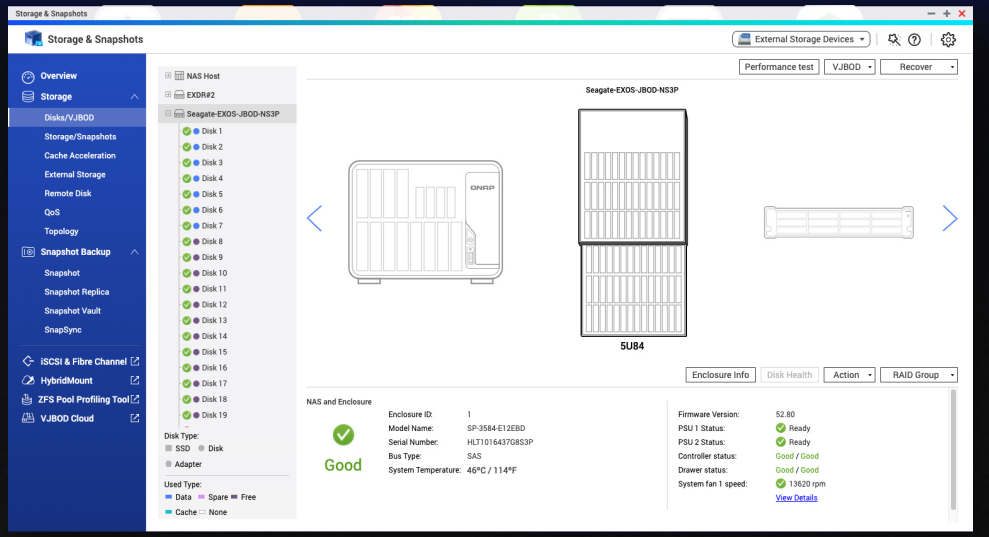
| | QXP-820S-B3408 | QXP-1620S-B3616W |
|---|---|---|
| SAS IC | Broadcom SAS3408 | Broadcom SAS3616W |
| PCIe bus | PCIe3 x8 | PCIe3 x16 |
| IOPS | 1.2X | 1.8X |
| Bandwidth | 6,850 MBs | 13,700 MBs |
| Ports | External 8 ports | External 16 ports |
| Connectors | 2 x SFF8644 | 4 x SFF8644 |

*The above data is for reference only based on IC vendor's data sheets.
Actual performance could be different due to host, expansion unit or drives.

# QNAP NAS x Seagate JBOD partnership for massive storage capacity in agile business transformation

QNAP TDS-h2489FU
NAS

Seagate JBOD




## Huge Capacity

Tackle the massive storage requirements of 4K/8K multimedia, big data storage, critical backups, and more.

## High Density

Seagate Exos E 5U84, the 5U rackmount enclosure, can house 84 drives for storing up to 1.1 PB.

## Management

QNAP ***Storage*** & ***Snapshots*** Manager simplifies NAS and JBOD management, effectively minimizing IT operational workloads.

- **QNAP NAS supports Seagate Exos E SAS JBOD units and 100+ drives to provide petabytes (PBs) of raw capacity.**

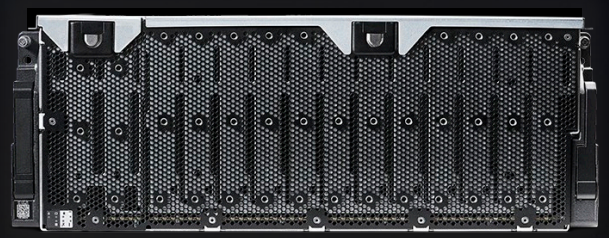
Note:
1. Optional purchase of SAS HBA is required for the NAS.
2. Seagate's JBODs can only be used as an individual storage pool or volume. Its storage pool/volume cannot be combined into the connected NAS. NAS applications cannot be installed on Seagate's JBODs.

SEAGATE

# Scale up NAS capacity with optimized cost by using Seagate Exos E JBOD enclosures

## Exos E 2U12

- Max 216 TB
- 12 x 18 TB 3.5” SAS HDD



## Exos E 4U106

- Max 1.9 PB
- 106 x 18 TB 3.5” SAS HDD

## Exos E 2U24

- Max 57.6 TB
- 24 x 2.4 TB 2.5” SAS SSD

## Exos E 5U84

- Max 1.5 PB
- 84 x 18 TB 3.5” SAS HDD

Note:
New JBOD models and the maximum connected numbers will be tested and added throughout 2022 H1. Refer to the latest compatibility table before purchase.
https://www.qnap.com/en/compatibility-expansion?model=tds-h2489fu

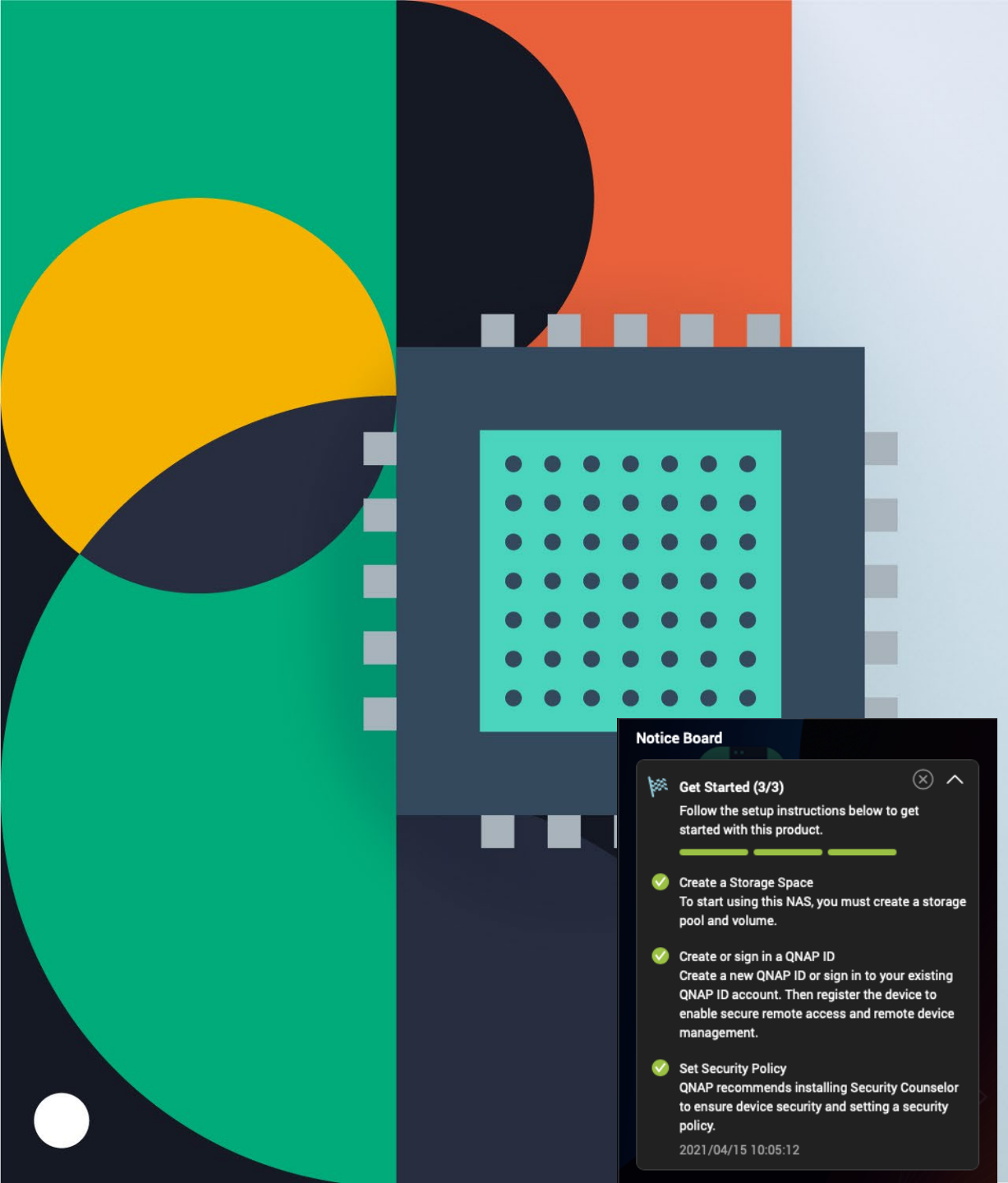
02
NAS
192.254
100.100
NVMe / SATA
01
LIVE
DEMO

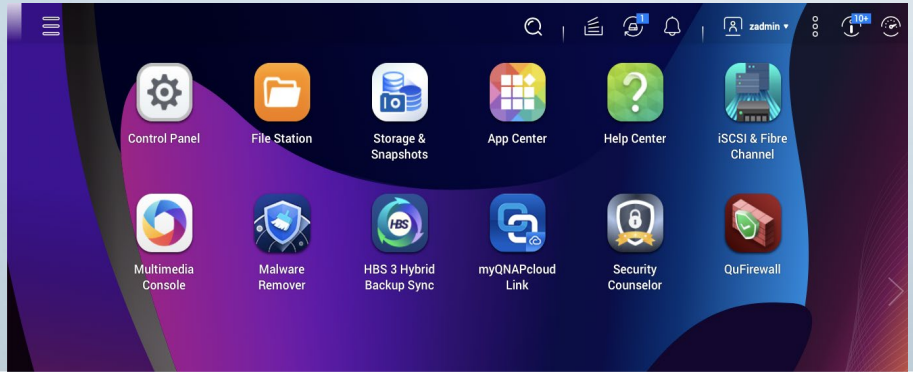
# Kernel 5.10 LTS

ZFS-based QuTS hero ensures performance, security, and data integrity

# Fast, smooth, and easy-to-use!

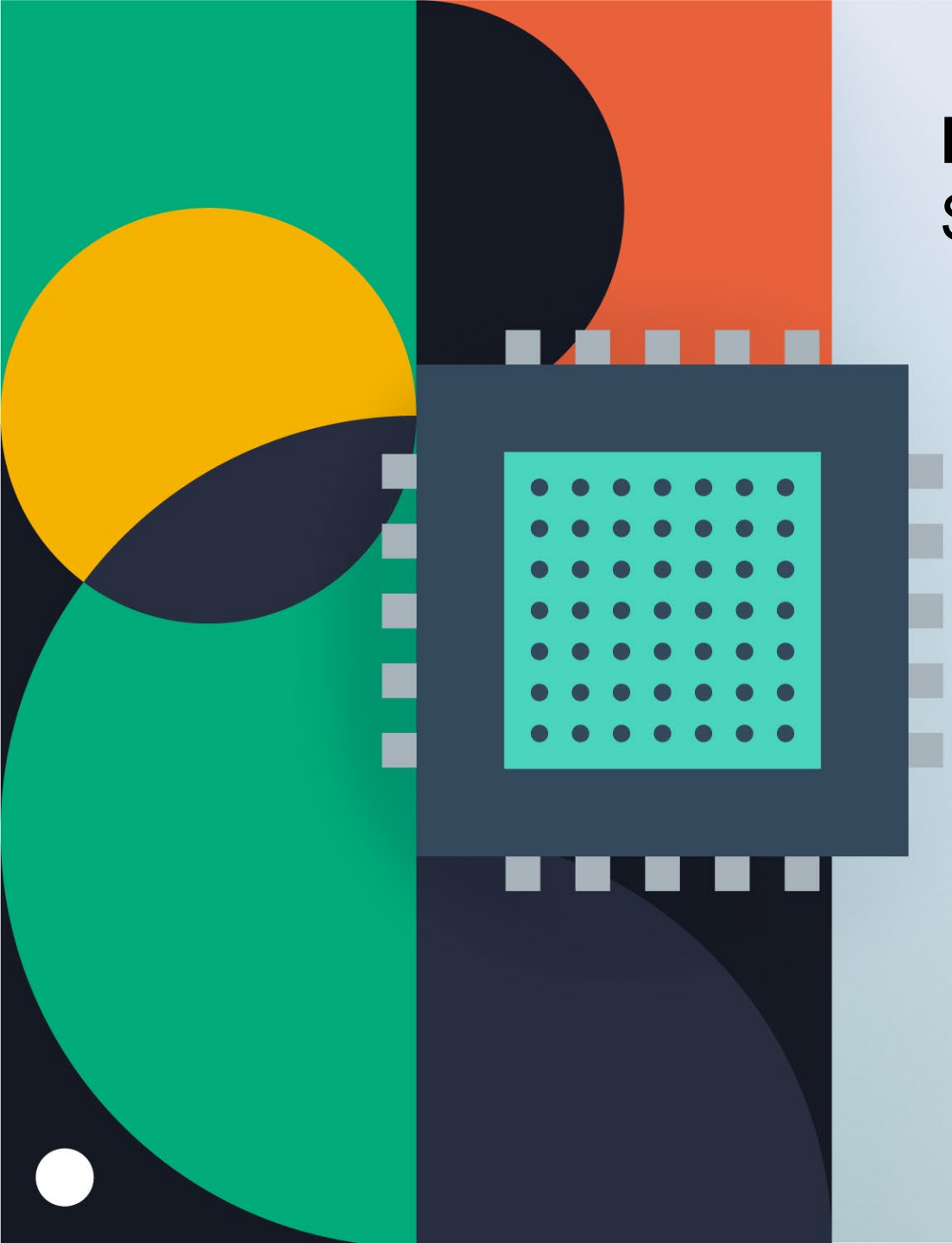
Whether clicking buttons, switching between apps, expanding/collapsing windows – every action is much smoother. The search bar in the main menu also assists in quickly finding desired apps.



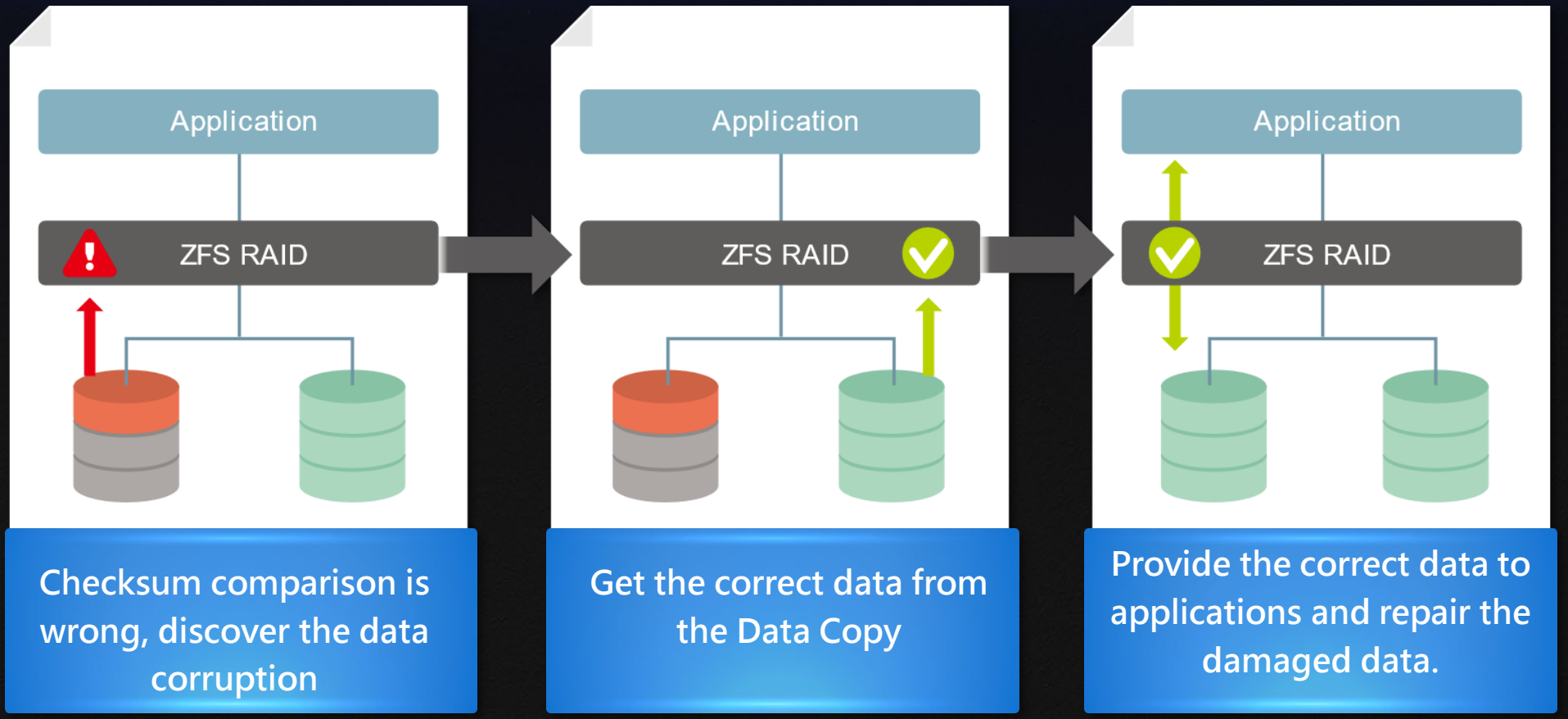
# Big Data Storage

## Security and performance are priority



- Supports TLS 1.3 to improve security and performance.
- You can also use SSH keys for authentication to secure access to your NAS, preventing password breaches or similar potential attacks.
- The new kernel improves PCIe performance, which enhances NVMe SSD performance and utilization.

# Silent data corruption & self-healing with QuTS hero NAS O.S.




Checksum comparison is wrong, discover the data corruption

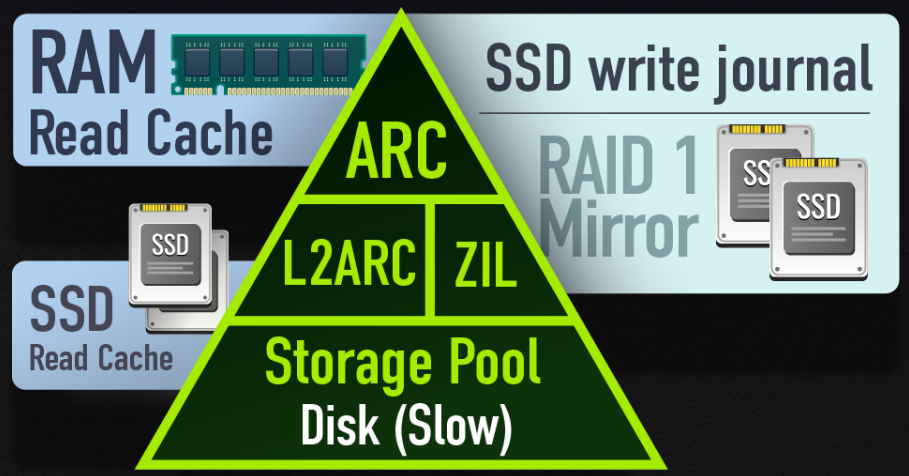
Get the correct data from the Data Copy

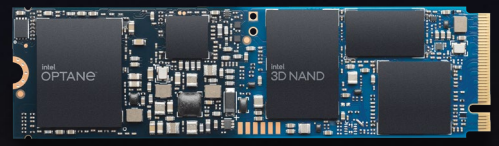
Provide the correct data to applications and repair the damaged data.

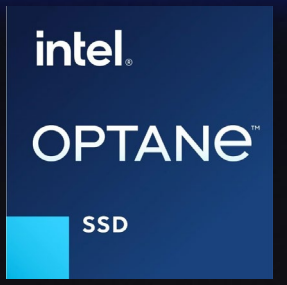
Avoid silent data corruption that occurred on the running system.

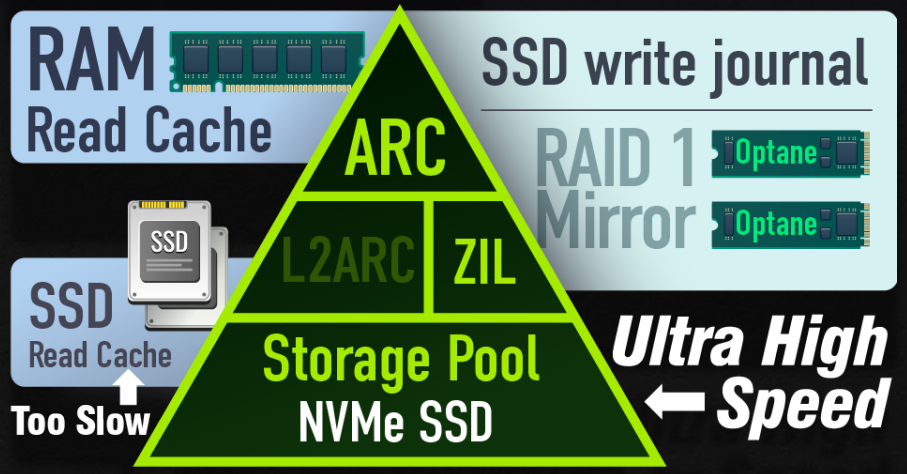
# Dedicated ZIL - SLOG

Read cache is not needed in AFA because it can slow down the pool performance. However, the ZIL for data protection is still need. Therefore, the smaller capacity and high endurance Intel Optane SSDs are the perfect candidate.





# License-free backup solutions to provide the most 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 & Replica:**
File level, multi-version management.
Lightweight snapshot w/o performance impact.

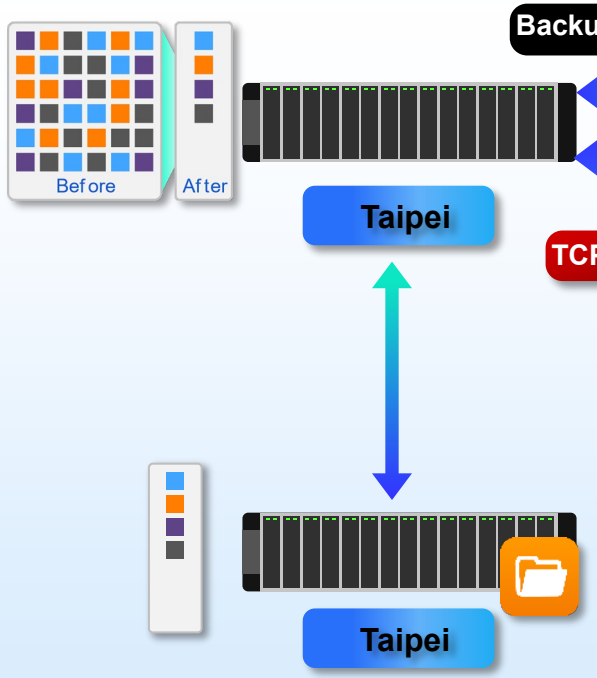
RPO : real-time

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

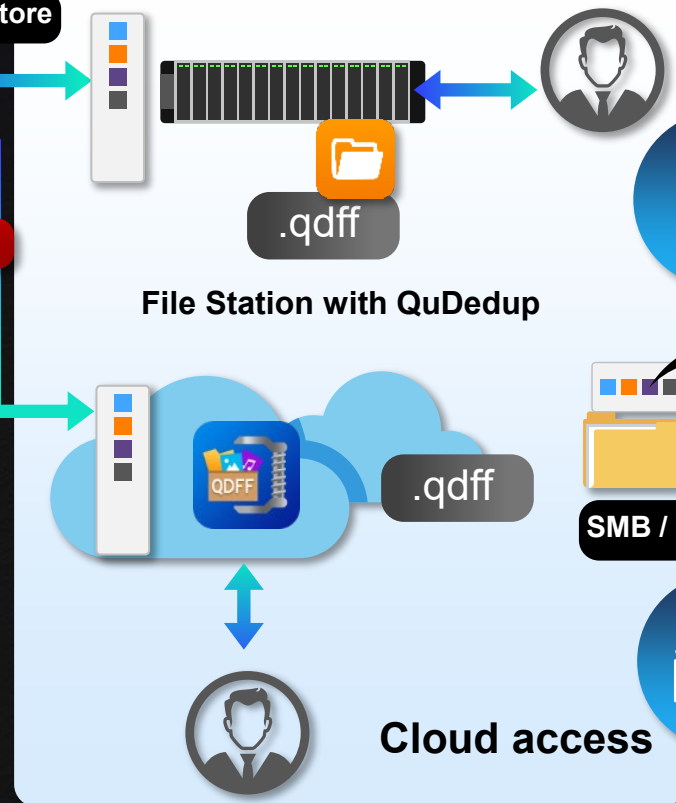
# Easy to use HBS 3.0 app fulfilling backup 3-2-1 practice with deduplication

HBS 3 (Hybrid Backup Sync 3)

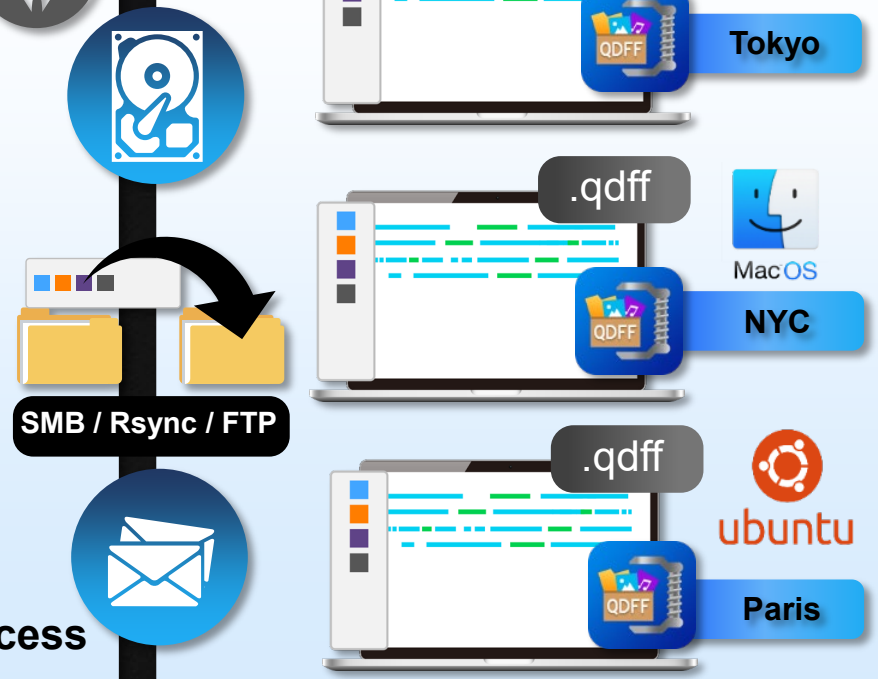
## Local NAS access (via HBS 3)




## Remote NAS access ( via File Station )

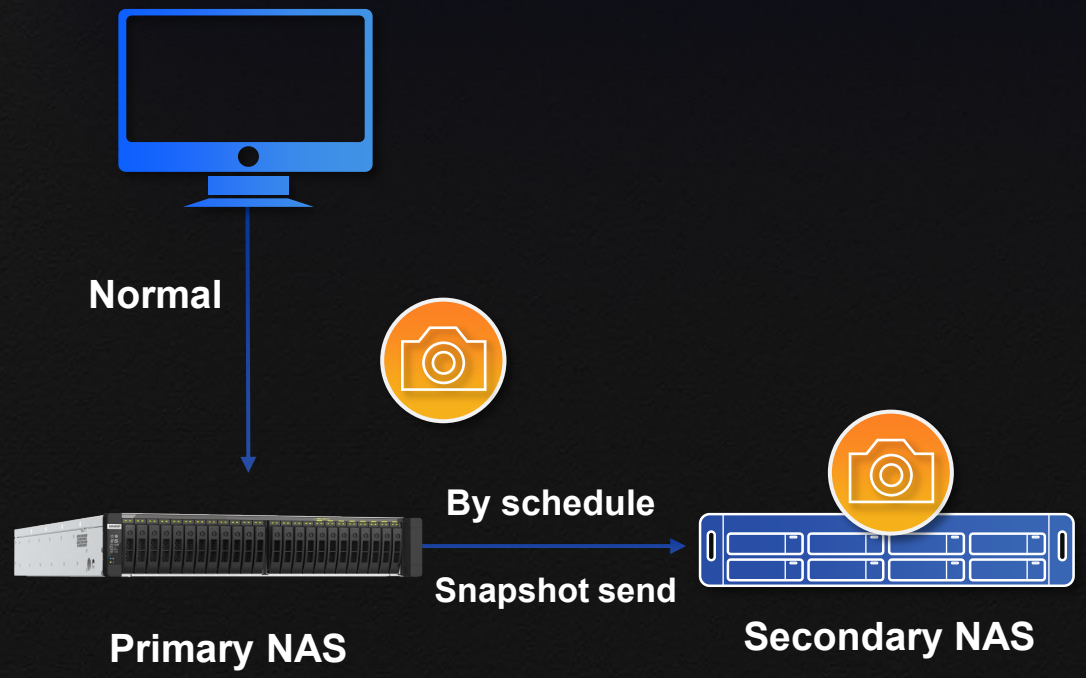



## Portable use (QuDedup Extract Tool)

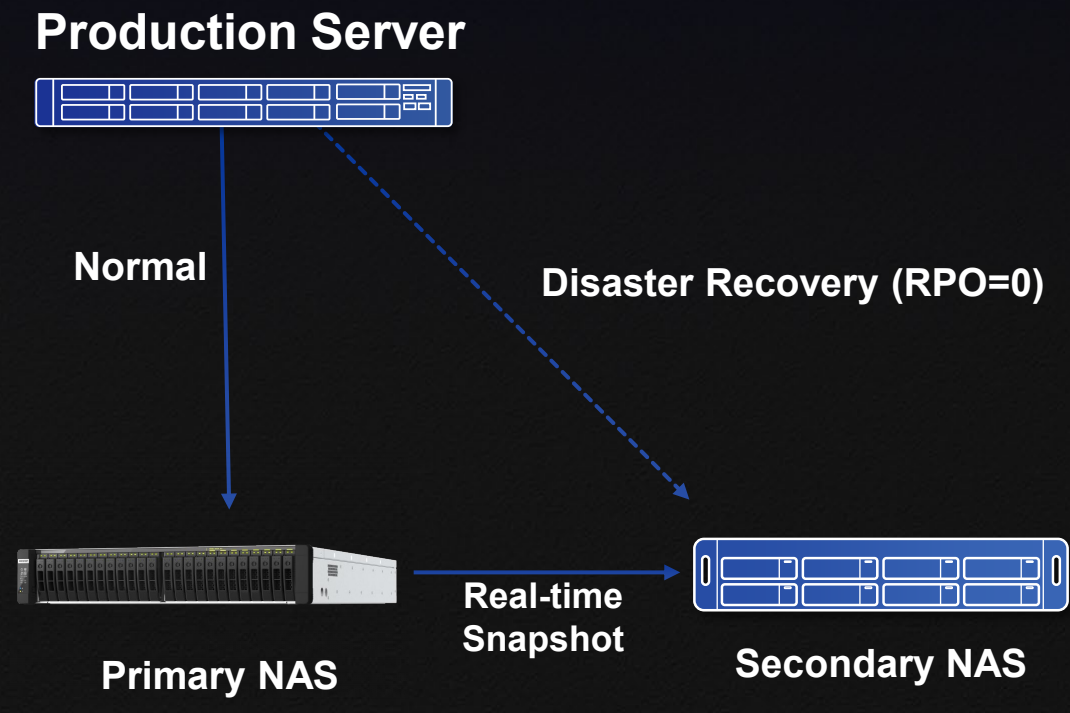


# Real-time SnapSync ensures minimal RPO with real-time disaster recovery

## Schedule SnapSync: 5min~60min

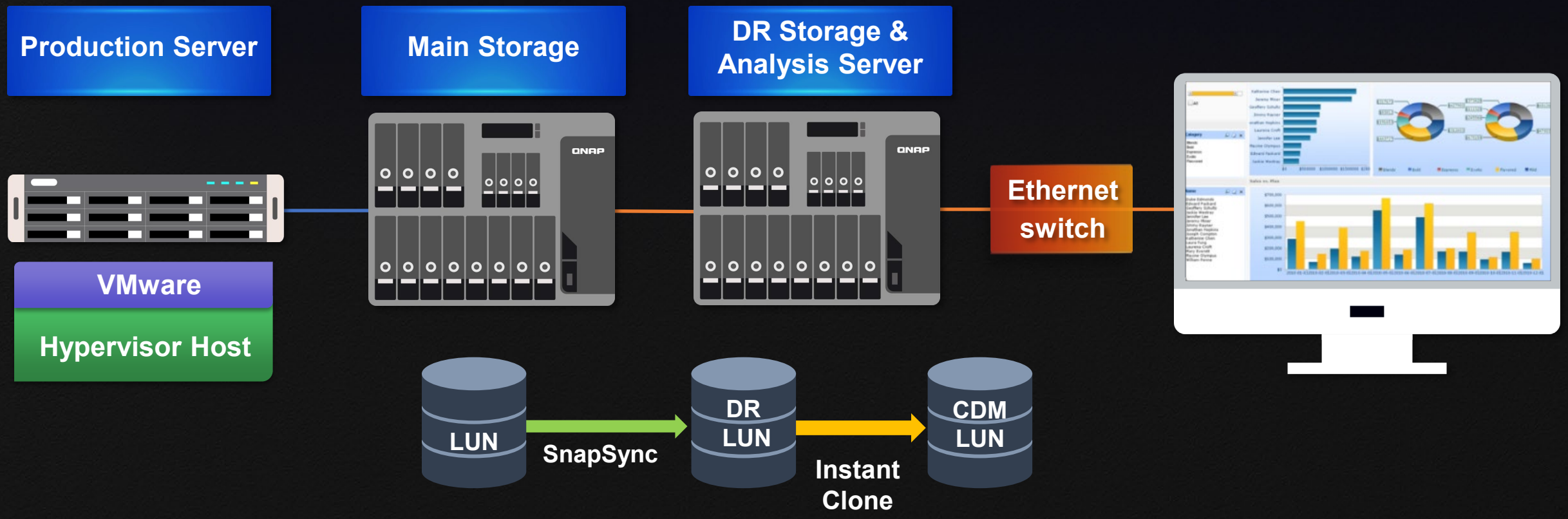



## Realtime SnapSync: RPO=0



# SnapSync + Instant Clone

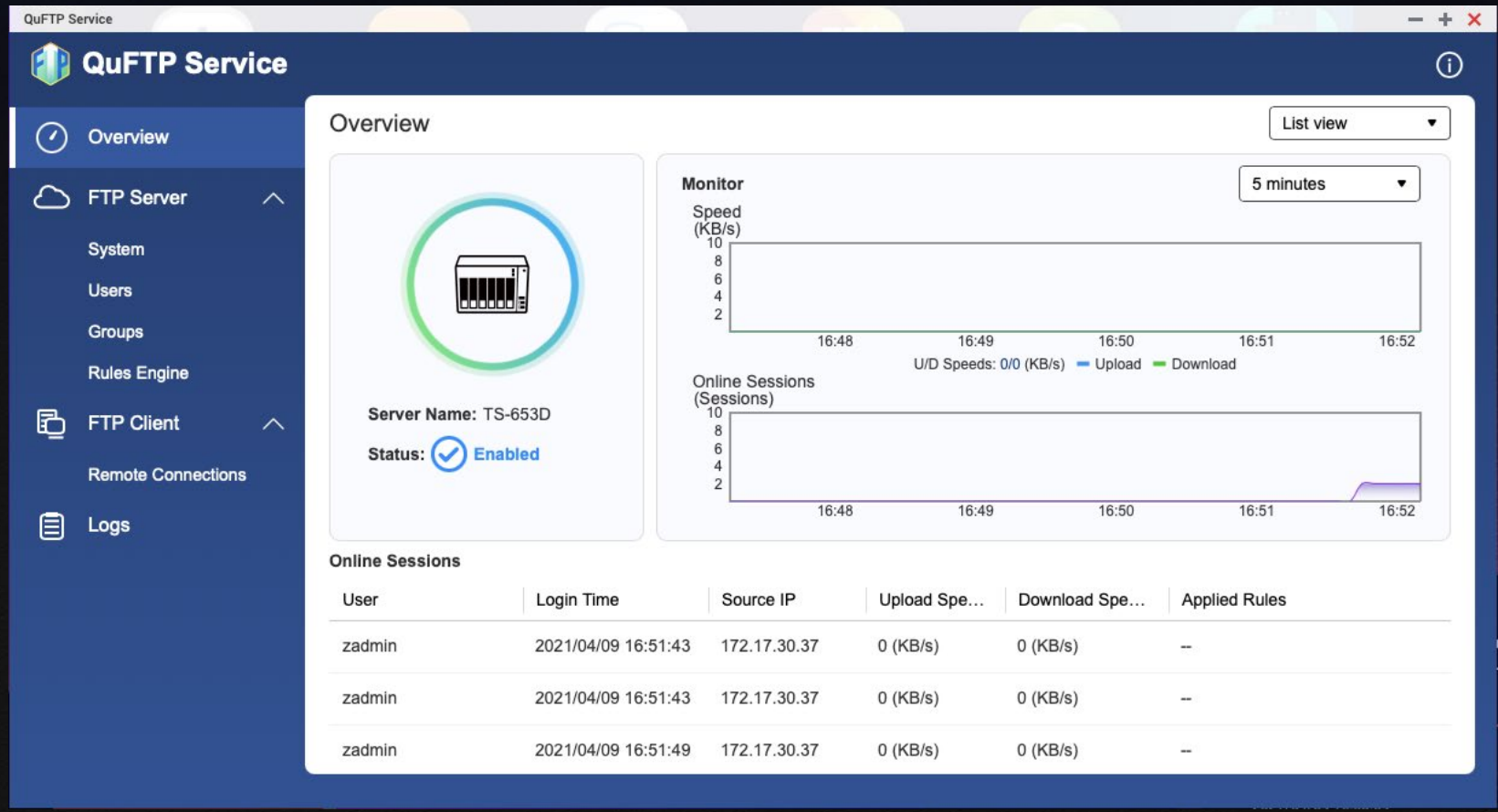
## Economical & efficient CDM (Copy Data Management) solution



# QNAP QuFTP: set up a secure FTP server for file sharing and exchange

QuFTP Service consolidates all FTP related activities into a single App. With its user-friendly interface and detailed permissions settings, QuFTP Service leverages FTP's efficiency with high security and easy management.

- Folder-level permissions
- QoS (Quality of Service) settings
- Instant event notifications
- Access time restrictions
- Limit access to only the FTP root folder
- Watermark for images & videos
- Detailed logs
- Remotely connect to other NAS



# QVPN Service with WireGuard: easier VPN tunnels for remote workers

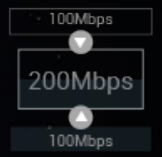
- WireGuard is an open-source VPN protocol that uses User Datagram Protocol (UDP) for network communication. The protocol uses several cryptography tools to implement secure VPN tunneling.
- The built-in WireGuard® provides faster and stable VPN connections. With a user-friendly interface, non-IT professional remote workers can easily set up VPN tunnels to access office-based QNAP devices with simplified connection methods.

# QuWAN

## SD-WAN Solution for Resilient IT Infrastructure

QNAP's QuWAN SD-WAN solution features Auto Mesh VPN, IPsec encryption, cloud-centric management and QVPN Service for multi-site network. Compatible with a wide range of QNAP products and Hypervisor Platforms such as VMware ESXi, QuWAN enables SMBs to efficiently build a dependable network at a cost-effective price, and to facilitate digital transformation, multi-site expansion and remote working.

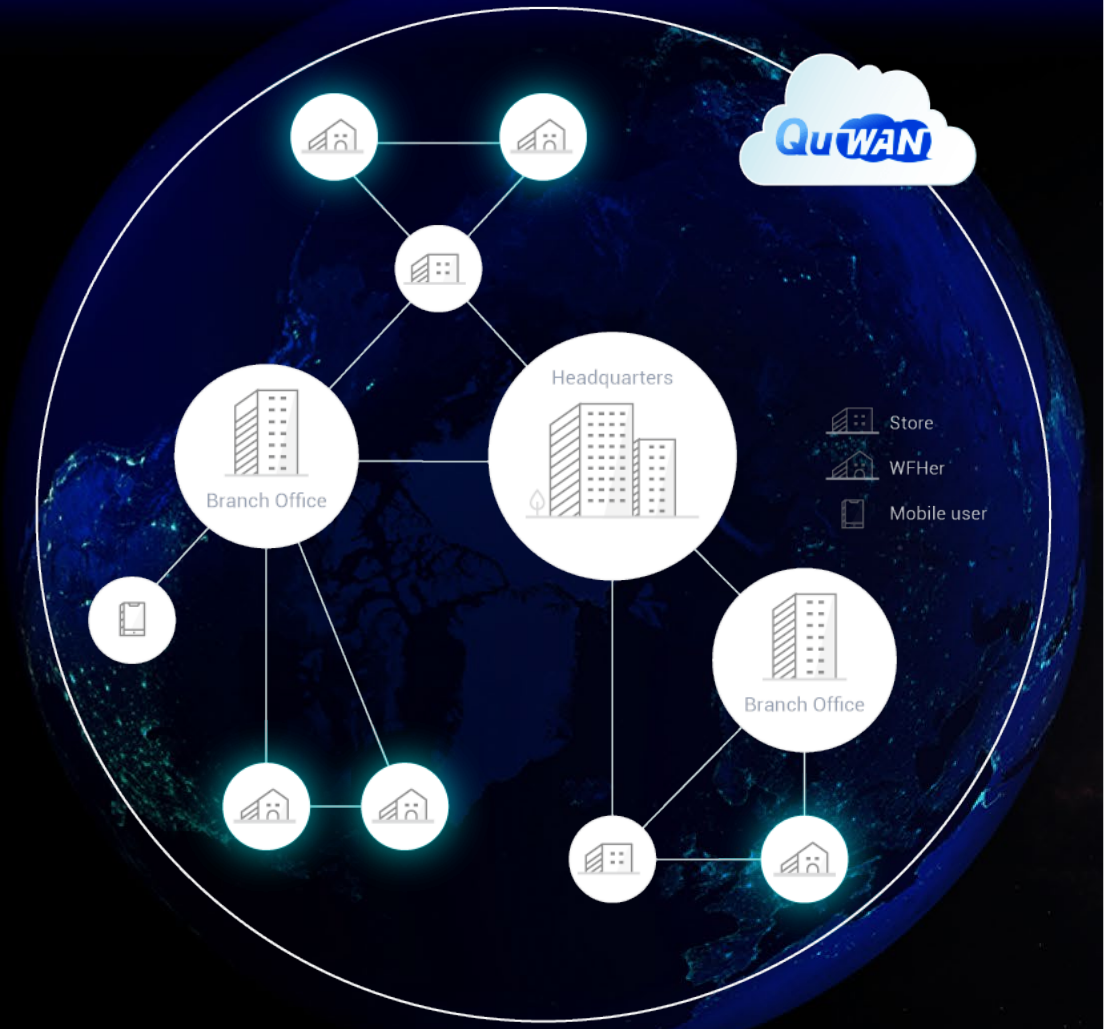
**Automated VPN Deployment**




**Smart Bandwidth Prioritization**

**Centralized Cloud Management**

**Secure Network Protection**



# Hyper Data Protector is a license-free VMware® and Hyper-V backup appliance

With only one QNAP NAS required and with no license fees to pay, you can backup unlimited VMware® and Hyper-V environments. Hyper Data Protector provides you with a cost-effective and reliable disaster recovery plan, ensuring 24/7 operation of your services.

Win10 / Server2016/ Server2019

COMING SOON

Easy VM backup with multi-version retention

# QuObjects is perfect for object storage development & testing, and backing up cold data from the cloud

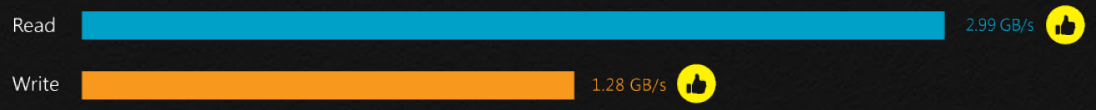
## Object example

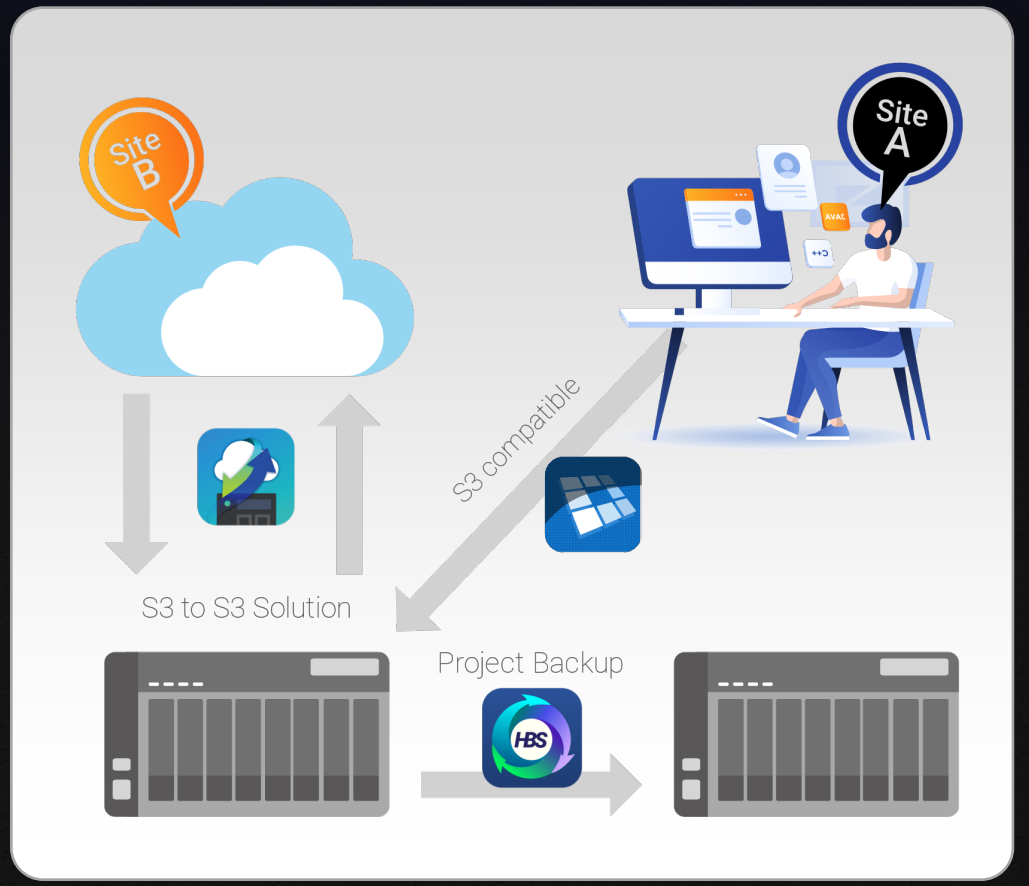
https://alvin1.s3.ap-east-1.amazonaws.com/test1/292557.jpg

**bucket** **cloud provider** **folder** **file name**

Cloud Object Storage

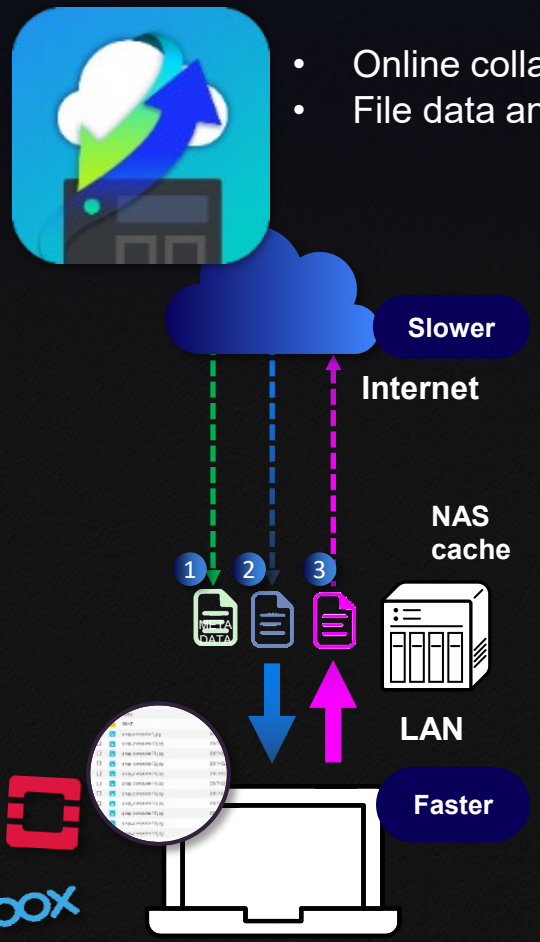
QNAP NAS Object Storage



# HybridMount provides two modes for file-based cloud storage gateway

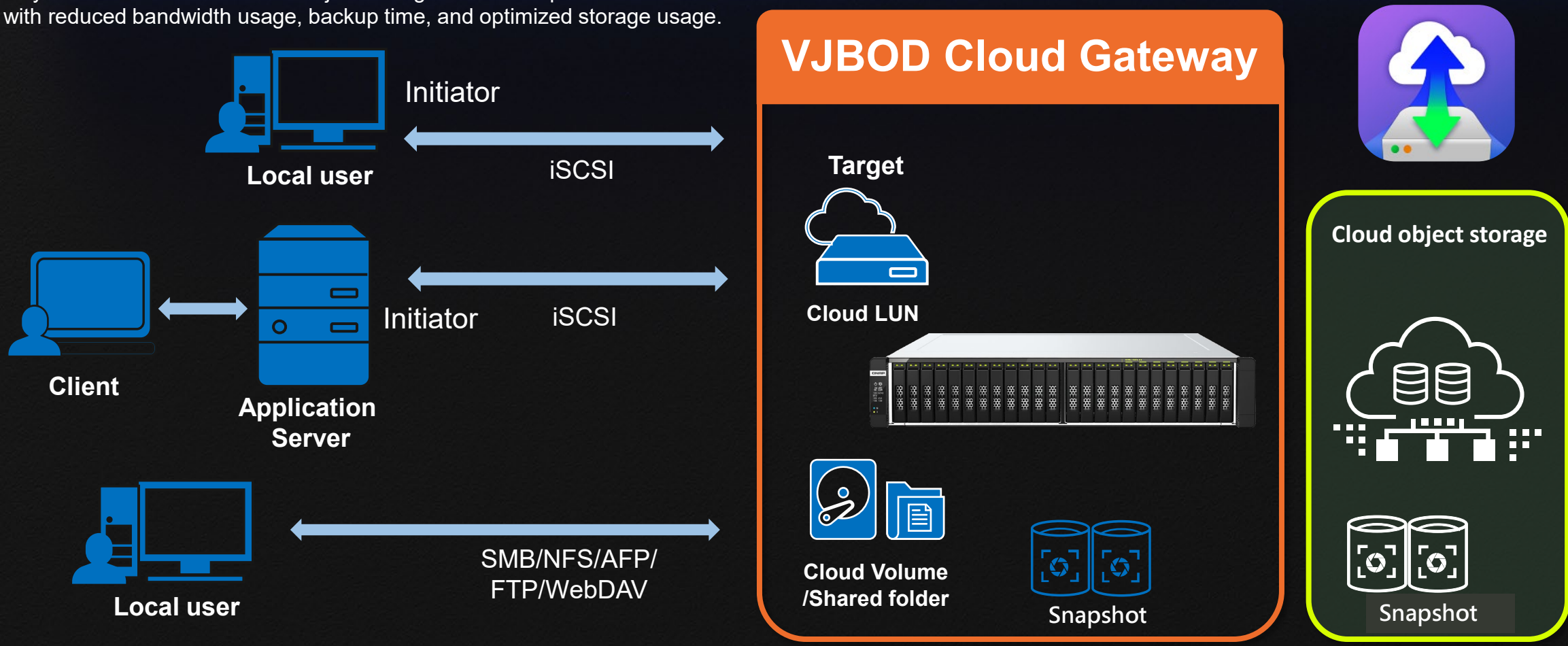
| | Network Drive Mount | File Cloud Gateway |
|---|---|---|
| **Setup Method** | Mount cloud drives | Select “File Cloud Gateway” mode and create a dedicated cache space |
| **Connections** | No limit | 2 free and perpetual connections. Purchase license for more connections |
| **Access Performance** | 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

# Back up business data to the cloud. Flexible, economical, and safe with VJBOD Cloud

Connect your QNAP NAS with cloud object storage and back up business data to the cloud with reduced bandwidth usage, backup time, and optimized storage usage.



# Boxafe

## Google™ Workspace and Microsoft 365® total backup solution

With Boxafe, you do not need to worry about data loss. You can backup files, emails, calendars and contacts from Google™ Workspace and Microsoft 365® into the QNAP NAS.

### 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

**SharePoint & OneDrive**
Backup your SharePoint and OneDrive files including OneNote

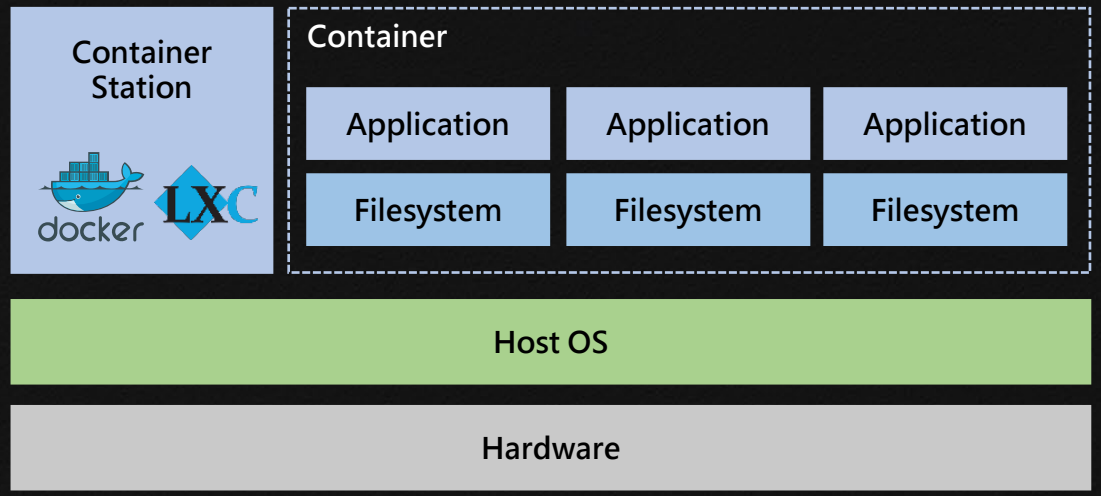
# All-in-one solution for hosting virtual machines and containers

## Virtualization Station

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

## Container Station

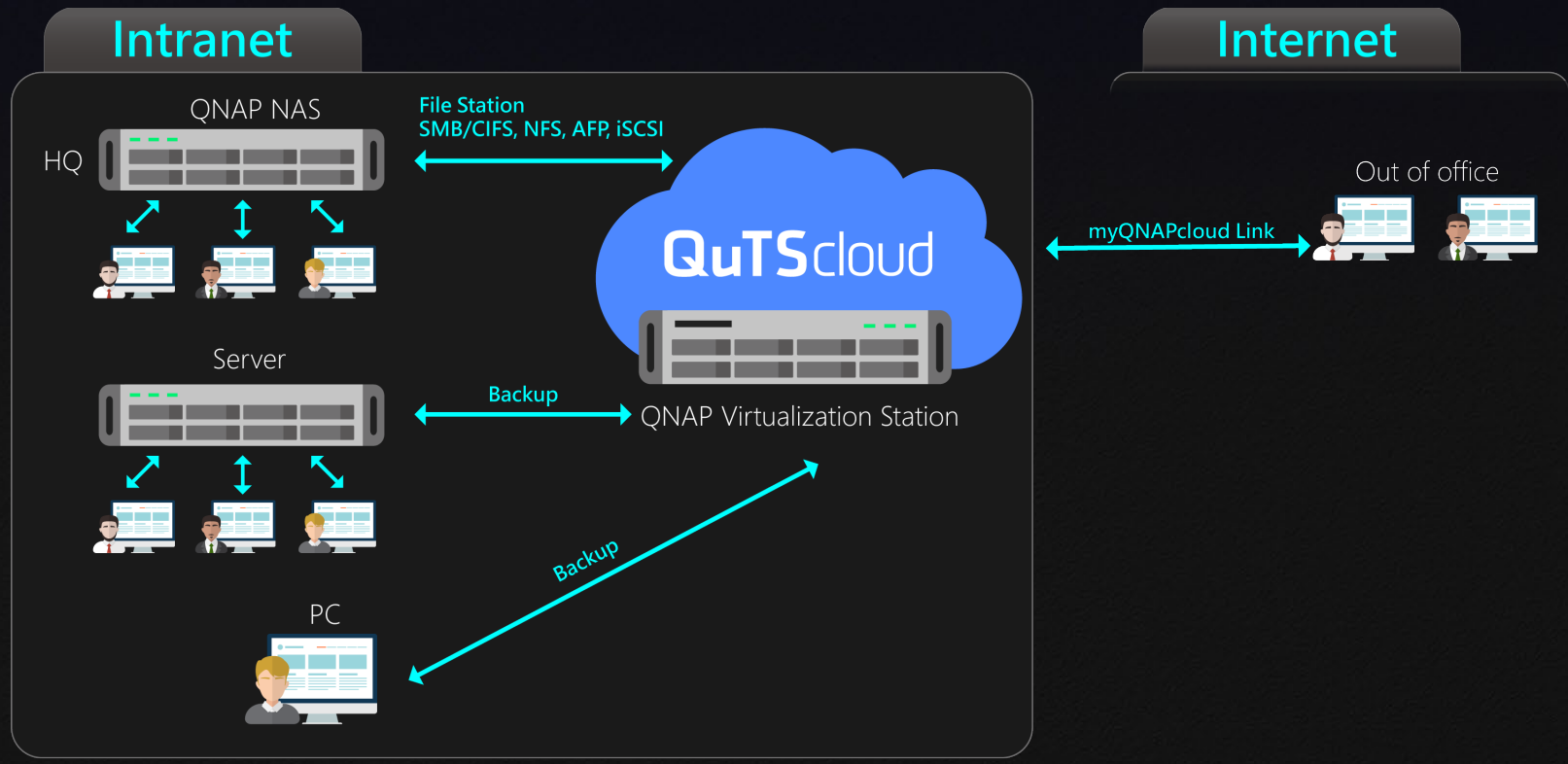
Experience LXD and Docker® lightweight virtualization technologies, download apps from the Docker Hub Registry®, import/export containers, and create abundant microservices.



# A virtual NAS solution suited for Enterprises and Workgroups

**QuTScloud is a virtual appliance based on QNAP's QTS Operating system, can be quickly launched on QNAP Virtualization Station.**

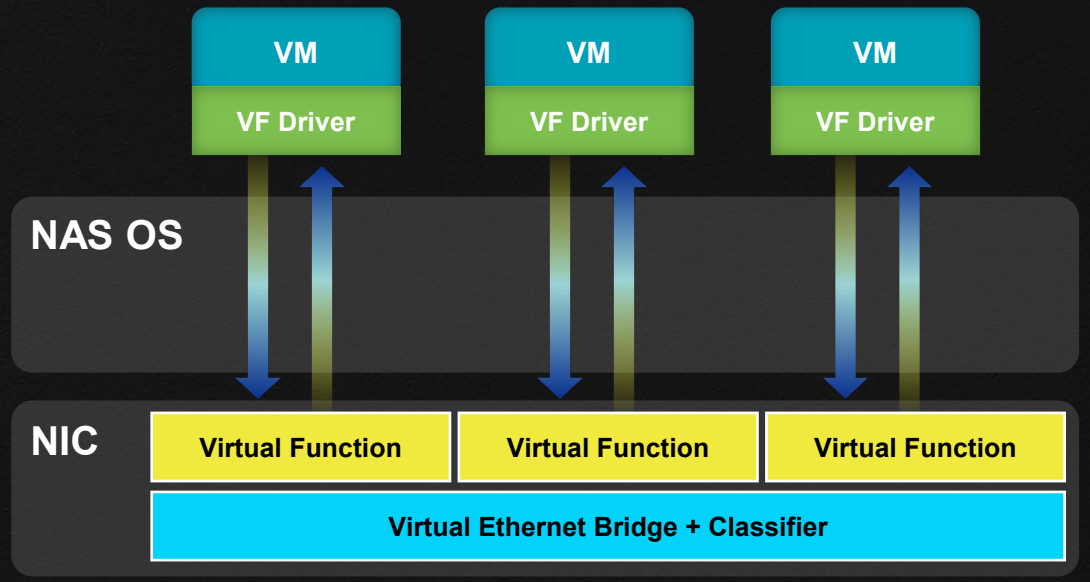
**Organizations can increase their budget flexibility by using existing virtual environments, saving hardware space and additional maintenance efforts, and by leveraging the application advantages of the app-ware QuTScloud operating system.**

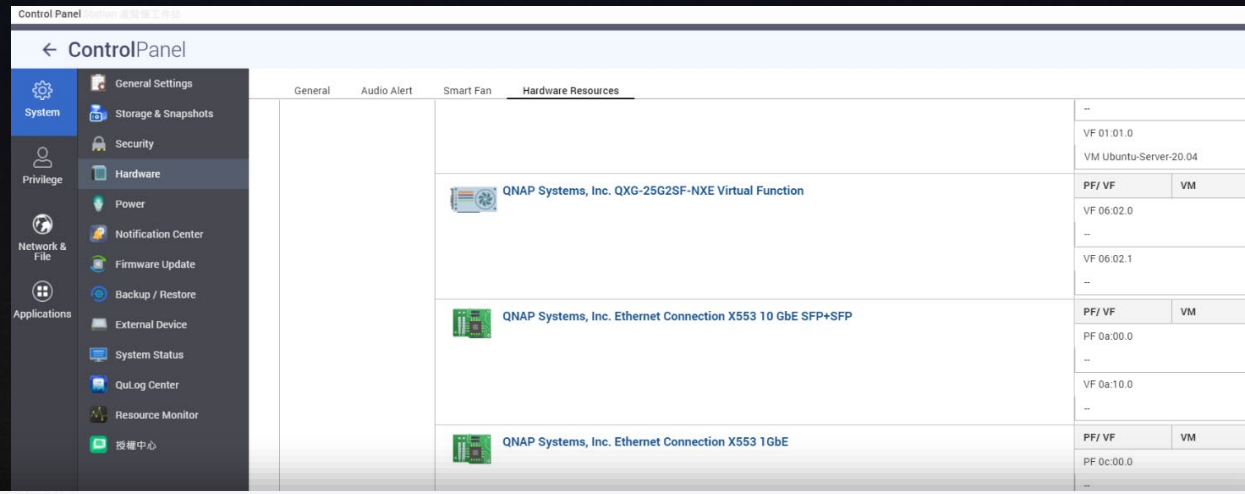


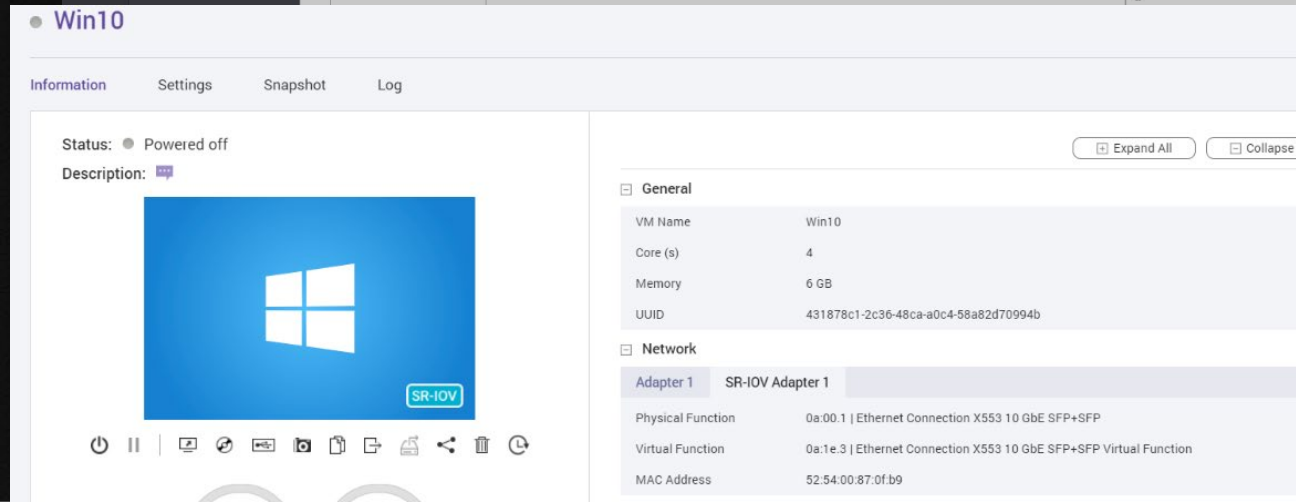
# SR-IOV improves the network performance of virtual machines by 20% with HW acceleration

**SR-IOV** (Single-Root Input/Output Virtualization) let the services on your virtual machine enjoy the physical network speed.

- If you need real-time service needs, such as ticket booking service, cash flow service, audio-visual service, you can directly enjoy the speed of the hardware network card, reducing network delay.
- Reduce the usage of the host's CPU.
- Increase network efficiency by at least 20%



# Build a comprehensive surveillance system with a QNAP NAS, QVR Elite, and IP cameras

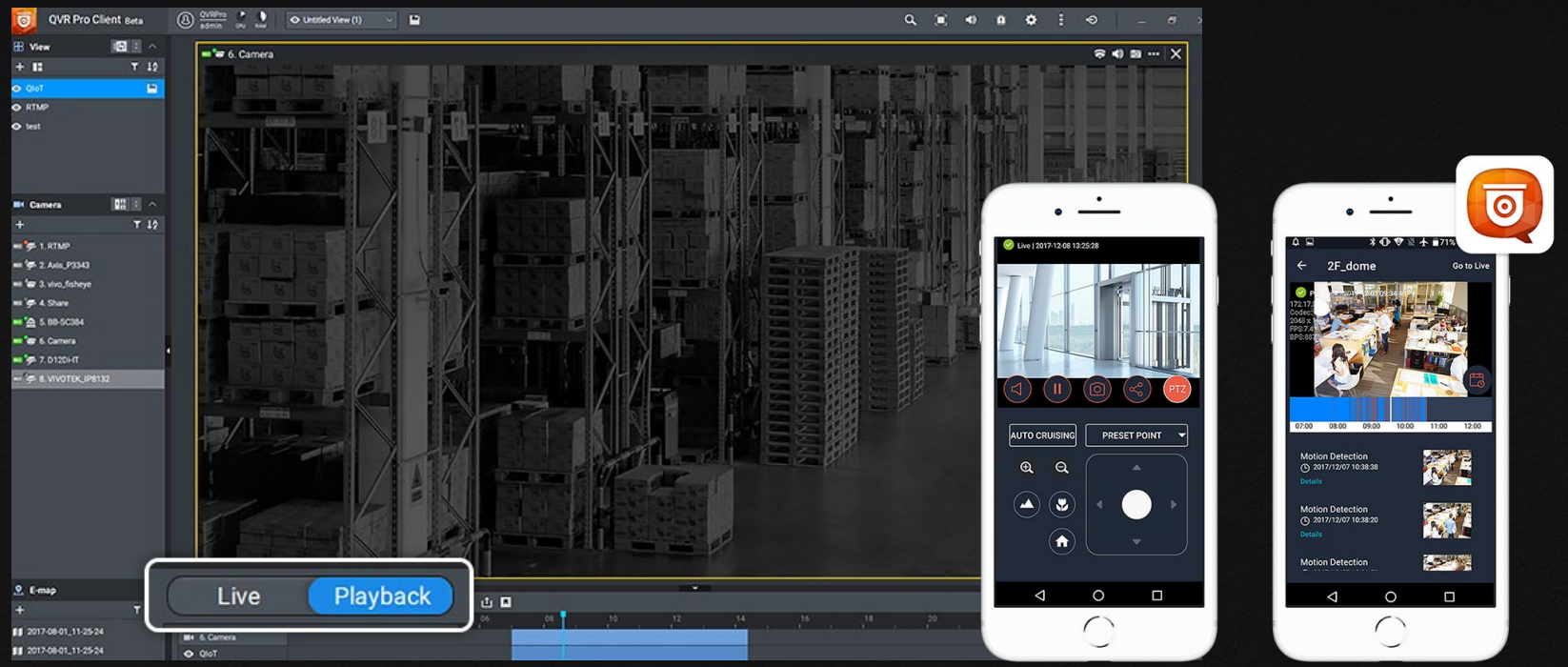
NAP QVR Elite is a subscription-based smart surveillance solution, allowing you to easily build a surveillance system with lower TCO (subscriptions starting from only US $1.99 per month) and higher scalability. It also integrates multiple QNAP AI-based video analytics solutions to build smart facial recognition for retail and door access systems with QNAP NAS.

Real-time Monitoring

Expandable Capacity

Value-added AI Applications

- Windows / macOS/ iOS / Android QVR Pro client

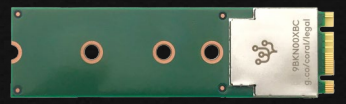


# Support Coral Edge M.2 PCIe and USB TPU for AI enhanced image recognition

- Official certification by Google to support Coral M.2 & USB TPU devices
- Up to 4 TPU devices per NAS

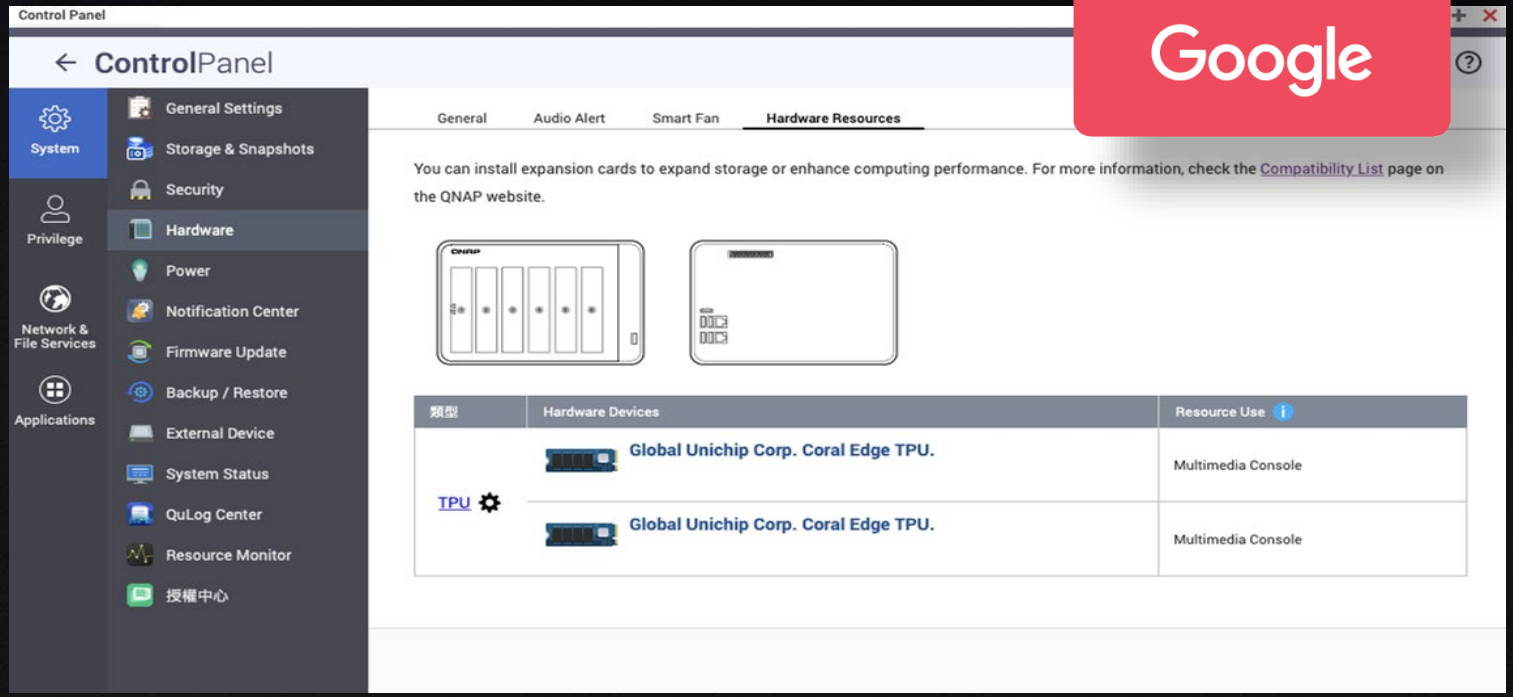
https://coral.ai/products/

Works with Coral



With Coral intelligence

Google



Works with Coral

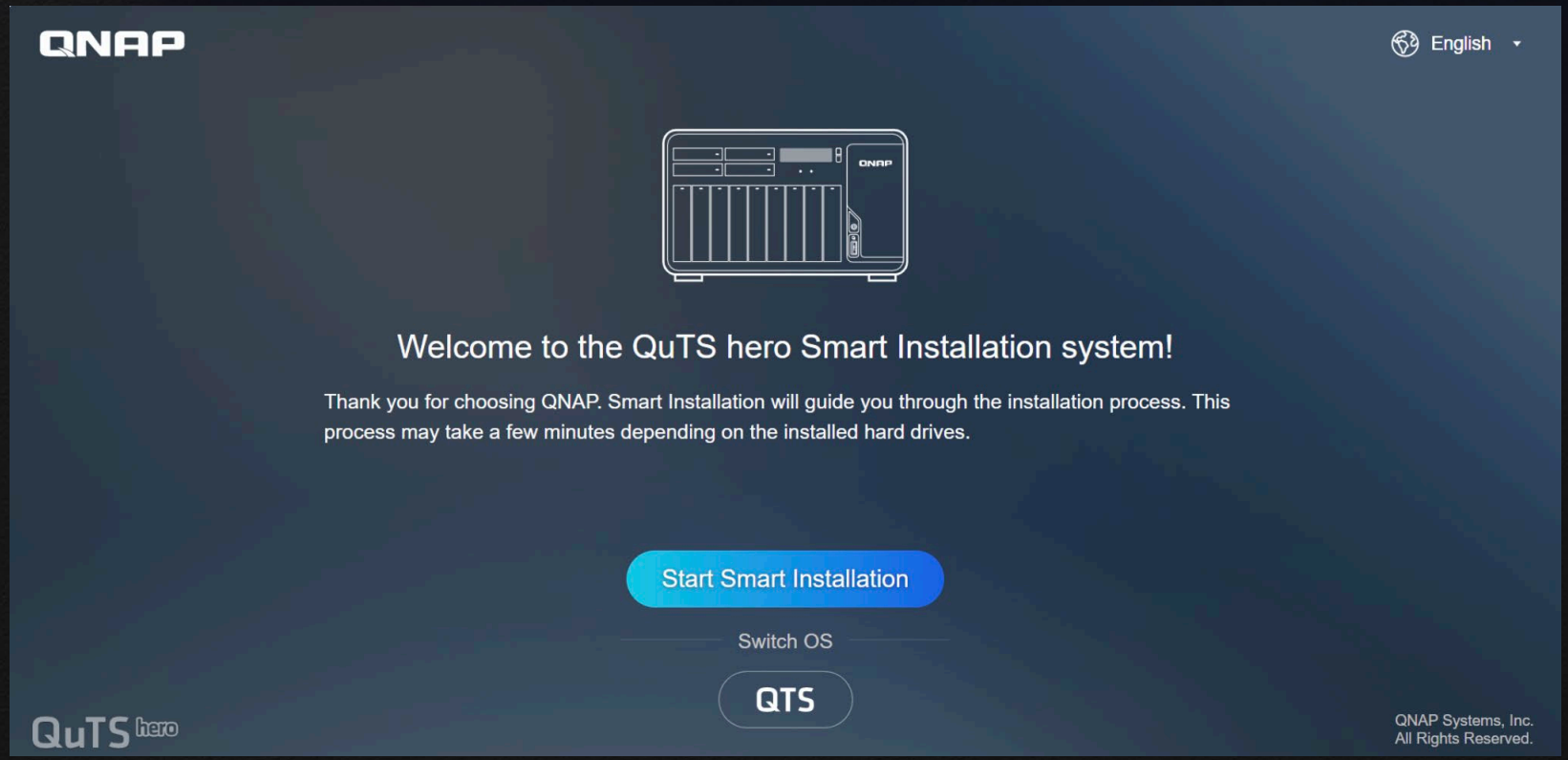
# QVR Face Insight

## Smart Facial Recognition Solution

A facial recognition solution for small offices and residential communities that enables instant and accurate facial recognition with live AI-powered video analytics that is even capable of recognizing masked people.

- Real-Time Facial Recognition and Analytics
- Mask detection and facial recognition in one solution
- Build A Smart Facial Recognition System with One NAS
- Identity Authentication Made Easy with Profile Database
- Enhance your face recognition speed with an Edge TPU
- Empowered surveillance feeds with QVR Pro integration

# Switch operating systems for higher everyday performance

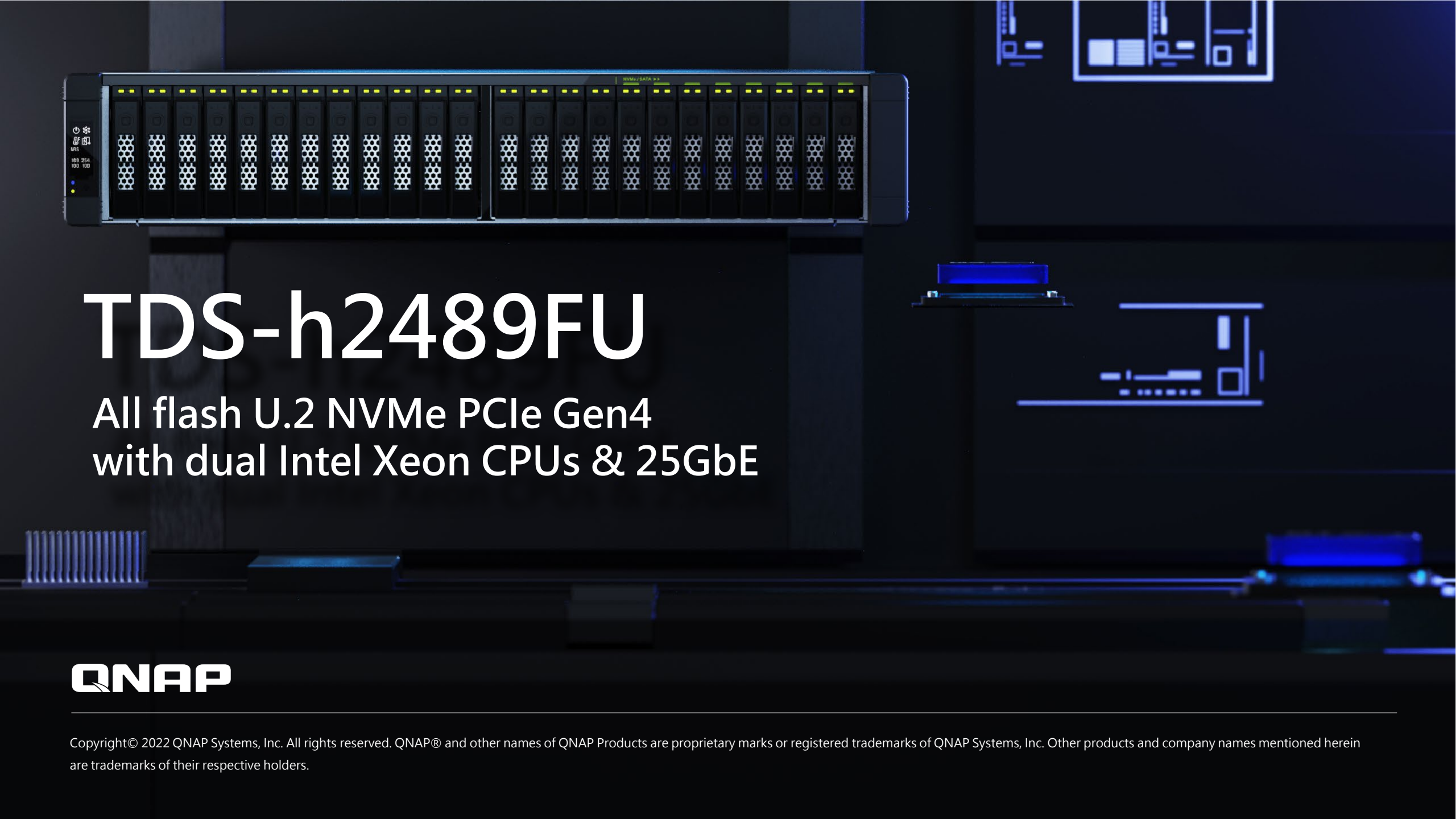



The TDS-h2489FU also supports QTS - QNAP's standard NAS operating system – that provides greater everyday performance, efficient memory utilization, and the advantage of Qtier auto-tiering. You can also migrate drives from your current QTS-based NAS to the TDS-h2489FU.

Note:
•QTS and QuTS hero use different file systems. You must remove all the drives from the TDS-h2489FU before switching from QuTS hero to QTS.

# 5-year hardware warranty and technical support as standard

The TDS-h2489FU is backed by a 5-year warranty at no extra cost. This premier warranty demonstrates QNAP's dedication to your essential business needs for continuous operations and non-interrupted services.



# TDS-h2489FU

## All flash U.2 NVMe PCIe Gen4 with dual Intel Xeon CPUs & 25GbE

QNAP

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