QNAP

TS-451DeU

Short-depth 1U NAS

Intel dual-core NAS

Featuring dual M.2 SATA SSD slots and two 2.5GbE ports

J4025

2.0 GHz, max 2.9 GHz

intel CELERON inside

OVERVIEW

- The beginning of the 2.5GbE wave: the affordable TS-451DeU with extensive hardware features
- TS-451DeU for high performance backup and business applications
- Parts upgrade and performance demo

TS-451DeU

Short-depth 1U NAS

Time to upgrade the old Gigabit network to match the rising Wi-Fi 6 (802.11ax)

With the release of Wi-Fi 6 (802.11ax) routers, and their 160MHz large bandwidth throughput and higher wireless performance, it is inevitable to upgrade the Gigabit wired speed to 2.5GbE or higher in businesses!

QNAP 10G switches supporting 2.5GbE

QSW-308-1C

QSW-1208-8C

QSW-804-4C

Keep existing wiring for 2.5GbE

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

Affordable and fast storage for start-ups

Dual-core J4025

2.0 GHz base

2.9 GHz burst

Intel UHD Graphics 600 integrated

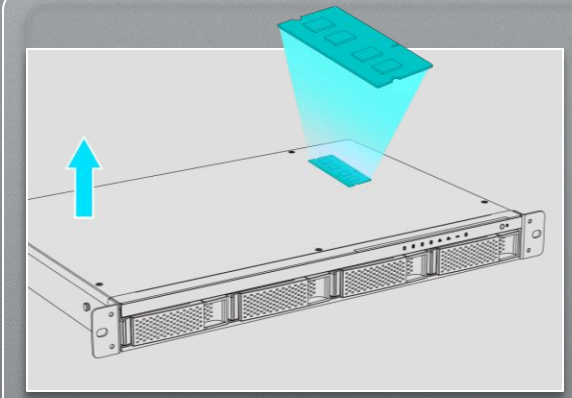
250 MHz base

750 MHz burst

TS-451DeU

Short-depth 1U NAS

Upgrade to max. 8GB memory



*** Requiring removing some screws on the top cover**

2 x DDR4 SO-DIMM
Dual-channel, max 8 GB total

TS-451DeU-2G

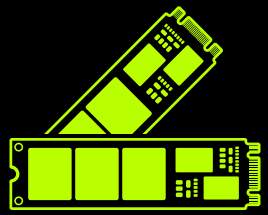
2GB RAM (1 x 2GB)

Ordering information :

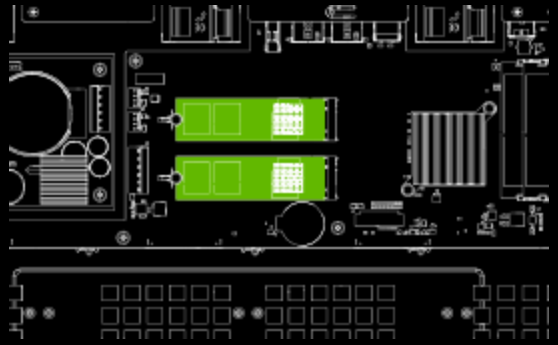
4GB: RAM-4GDR4A0-SO-2400

2GB: RAM-2GDR4T0-SO-2400

1U rackmount NAS for Qtier & SSD Cache



2 x M.2 2280
SATA 6Gb/s
SSD ports



LED indicators:
Disks, M.2 SSDs, Network, Expansion, Status

1 – 2 – 3 – 4 HDD

1 – 2 M.2 SSD

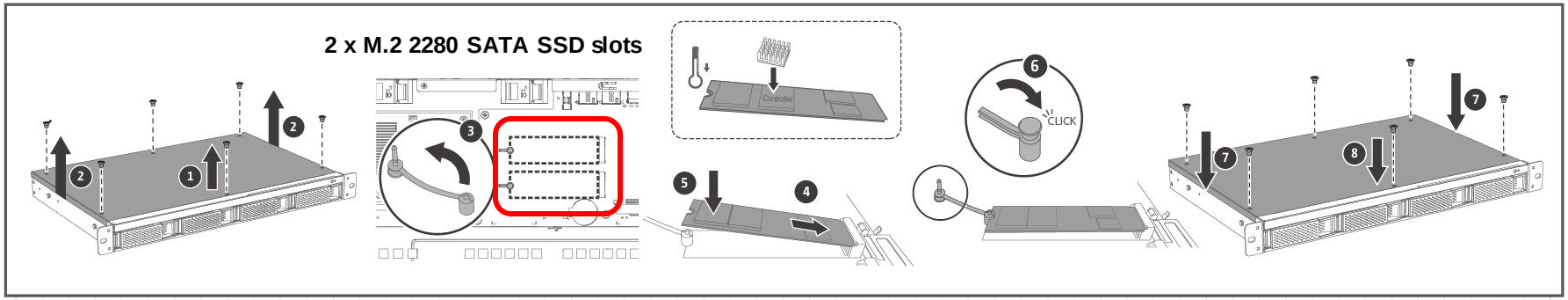
U

i

Power button

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

Dual M.2 2280 SATA SSD slots for performance enhancement

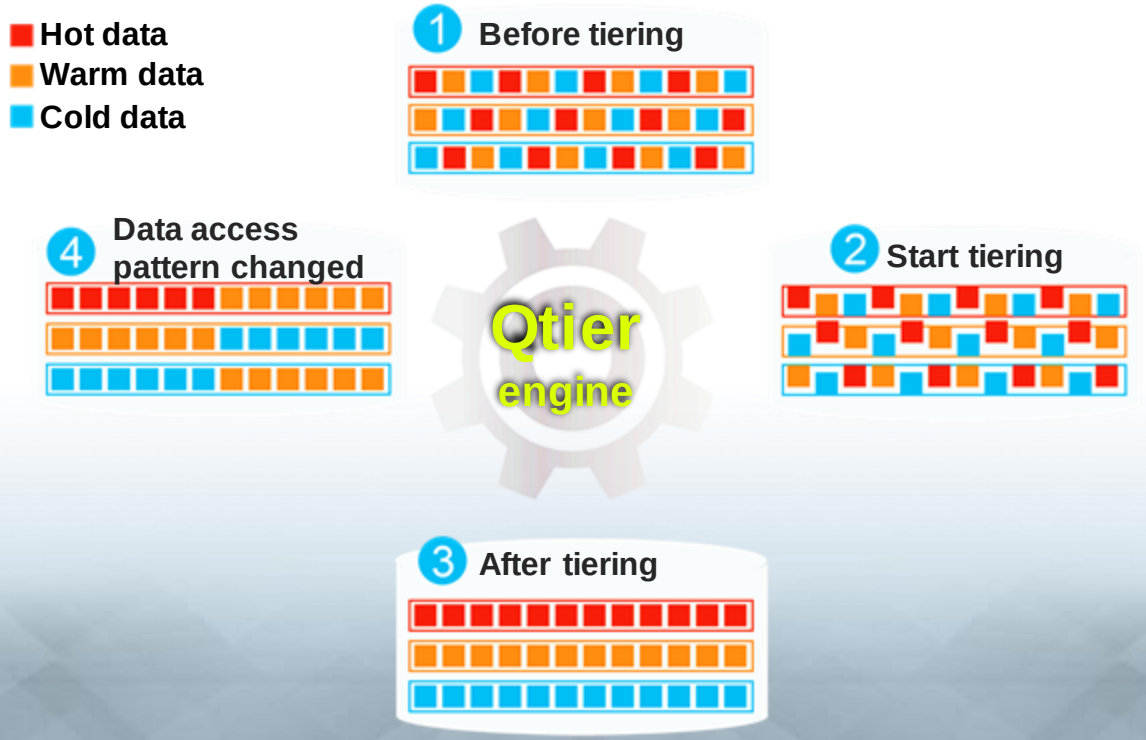


Choice 1: SSD cache
Improves random access performance

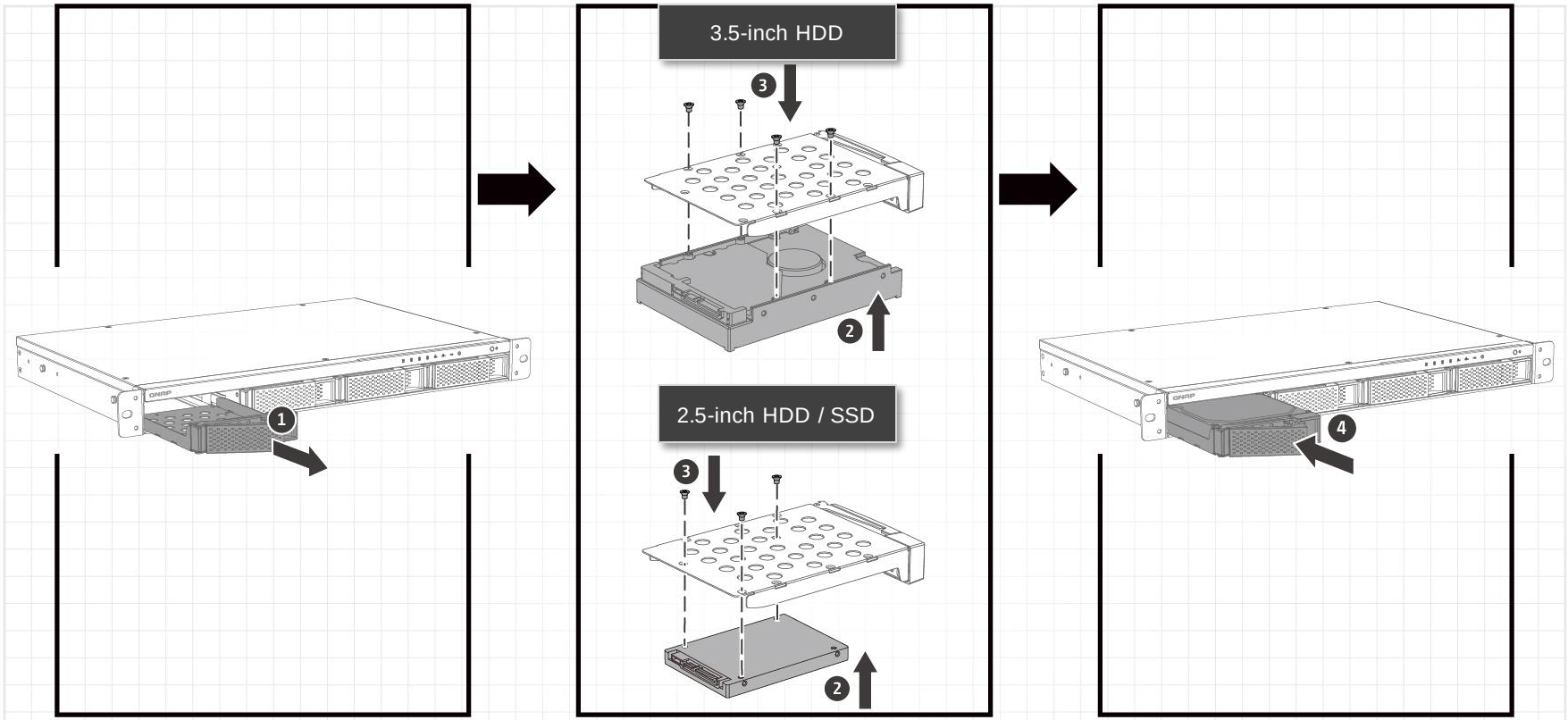
Choice 2: Qtier
Performance and capacity benefits

Qtier (Auto-Tiering) combines performance & capacity

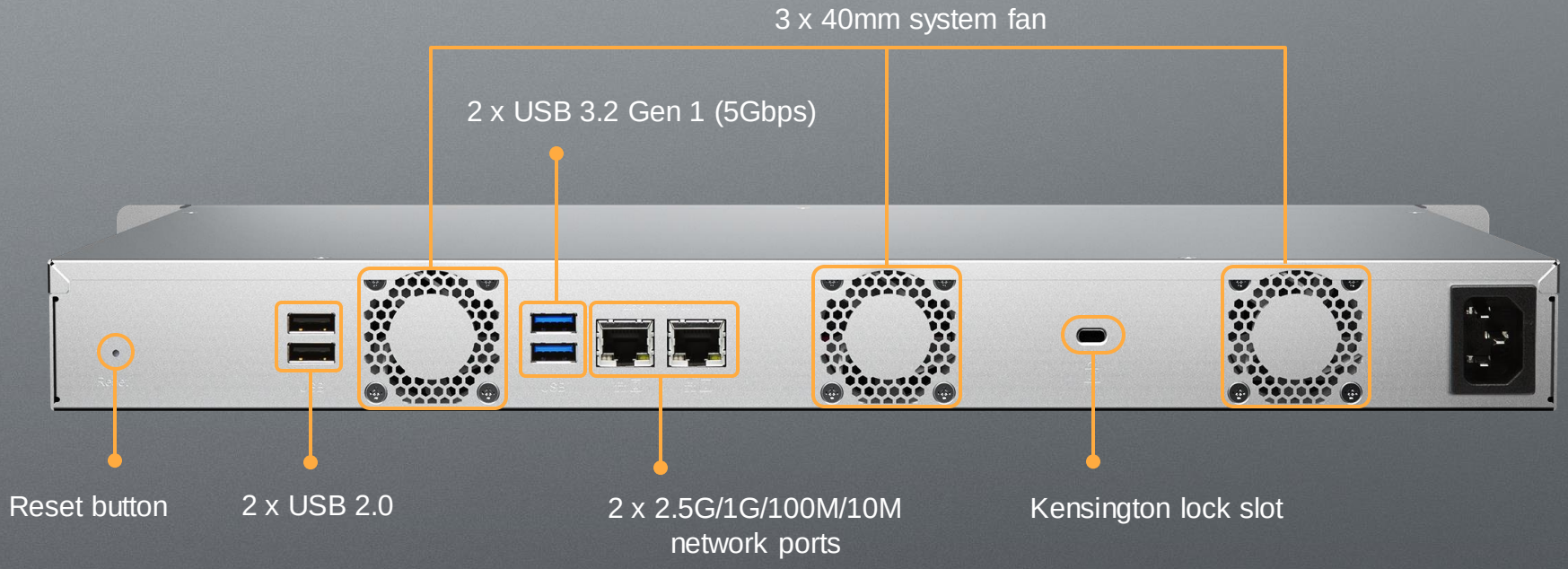
- QNAP NAS allows the combination of SSD and HDD RAID into the same pool and migrate data automatically based on accessing pattern.
- Provide higher capacity as SSDs can be used to store data



Easy to install HDD/SSD with hot-swappable design



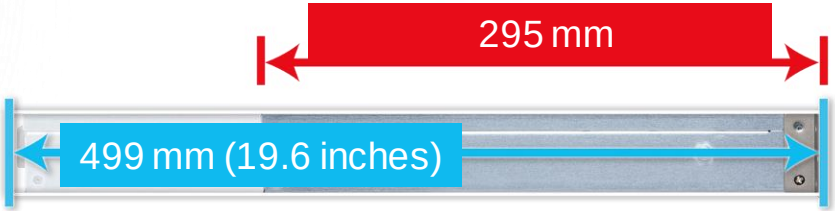
Multiple USB ports for disks, UPS and other peripherals



Flexibly deployable short-depth chassis TS-451DeU

Compatible with standard ANSI/EIA-RS-310-D 19-inch rack
With optional RAIL-B02 Rail Kits

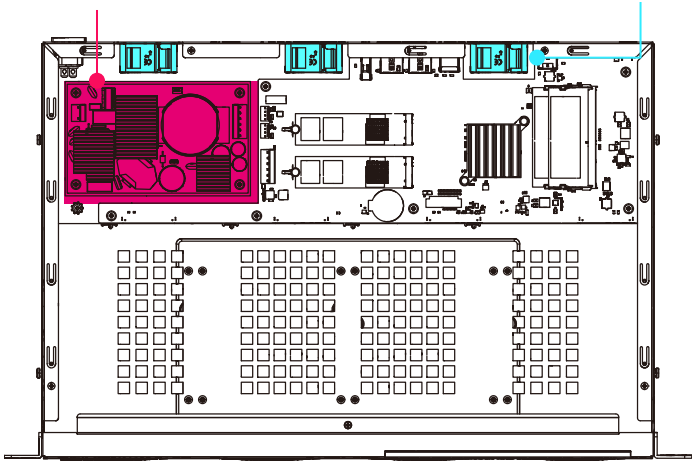
12-inch depth,
40% less than traditional chassis



Environmentally friendly design

100W open frame, noise-reduced, fanless PSU

Three 40mm quiet system fans



Power consumption

In operation	HDD sleep
28.02W	13.18 W
33.72W*	21.3W*

*(1U server reference)

Noise level

21.6 dB(A)
37.7 dB (A)*

*(1U server reference)

- Power consumption is measured when fully loaded with 1TB NAS drives
- Noise level test environment:
  Refer to ISO 7779 ; Maximum HDD loaded ; Bystander Position ; Average data from 1 meter in front of operating NAS.(Using TS-453BU as reference of 1U single-PSU rackmount server)

Don’t let the switch slow down your entire network

10G SFP+ NAS

TS-832XU-RP

2.5GBASE-T NAS

TS-451DeU

1GbE switch (limited to max 1Gbps!)

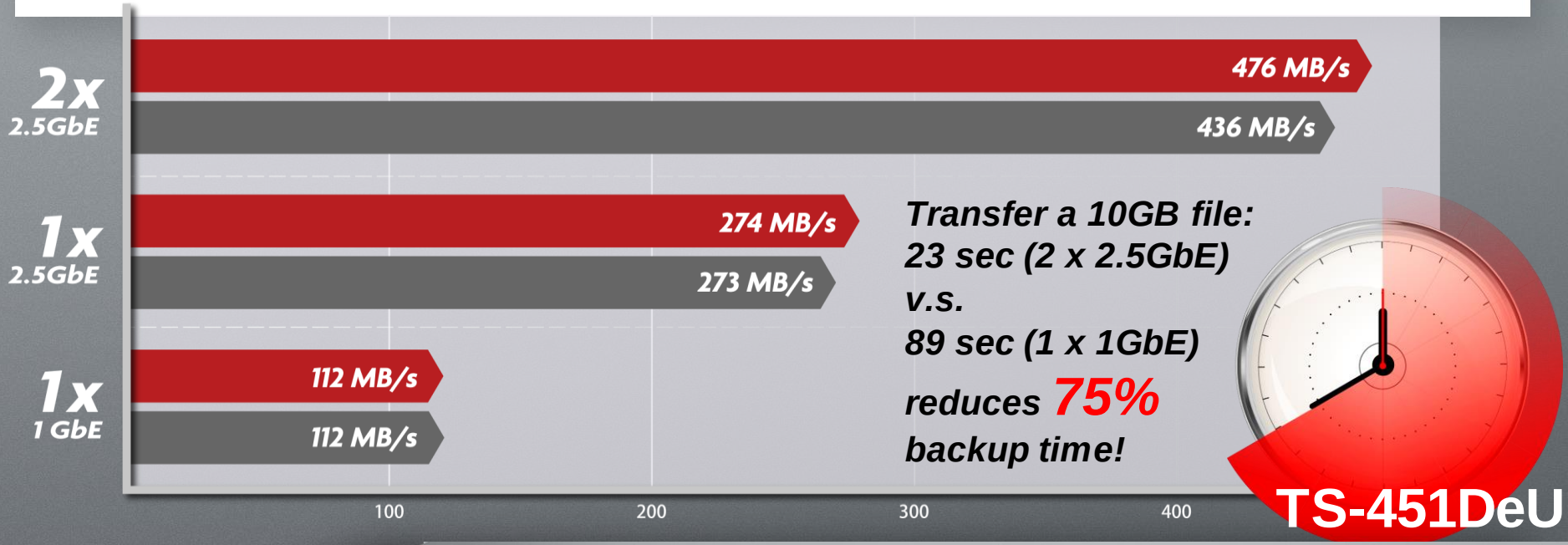
10GBASE-T computer/ server

Apple iMac Pro

10GBASE-T NAS

TVS-872XT

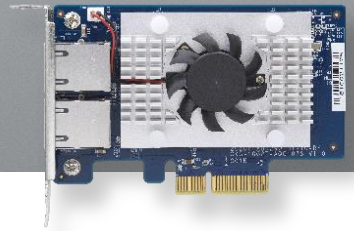
Rule #1: Get a fast NAS with 2.5GbE+



Tested in QNAP Labs. Figures may vary by environment.
NAS: TS-451DeU-2G
OS: QTS 4.4.2, MTU-9000
Disks: Qtier, RAID 5: 4 x Seagate 1TB ES.3 HDD + RAID 1: 2 x Samsung 1TB M.2 860 EVO SSD
Client PC: Intel® Core TM i7-6700 3.40GHz CPU; 32GB RAM; Intel X550 NIC, MTU-9000; Windows® 10 Pro
Iometer SMB sequential throughput: 3 minutes / 2 workers / 64 outstanding / 30 sec ramp up time

Rule #2-1: Upgrade the computers and servers with a PCIe NIC

Support 10G/5G/2.5G/1G/100M Multi-Gig



QXG-10G1T

- Marvell AQC107
- 1 x 10GbE NBASE-T
- PCIe Gen3 x8
- Low Profile

QXG-10G2T-107

- Marvell AQC107S
- 2 x 10GbE NBASE-T
- PCIe Gen3 x8
- Low Profile

10GbE

Support 5G/2.5G/1G/100M Multi-Gig

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

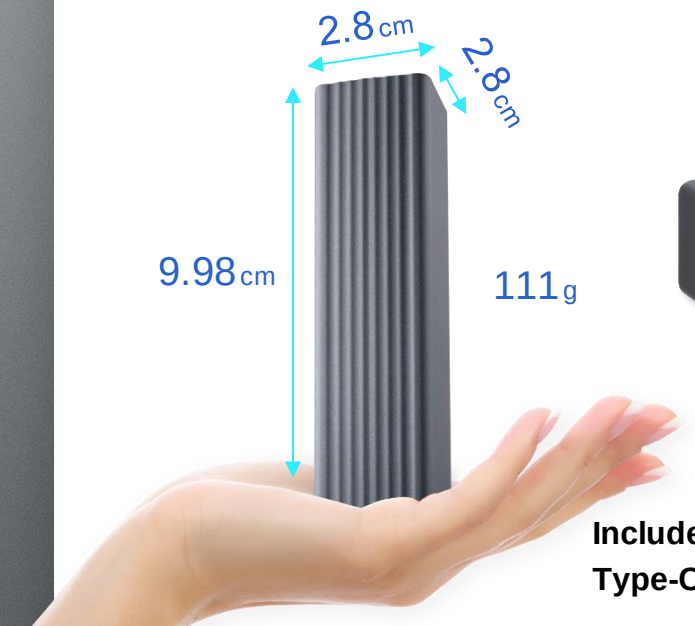
- Marvell AQC111C
- 1/2/4 x 5GbE NBASE-T
- PCIe Gen2 x1, Gen3 x2, Gen3 x4
- Low Profile

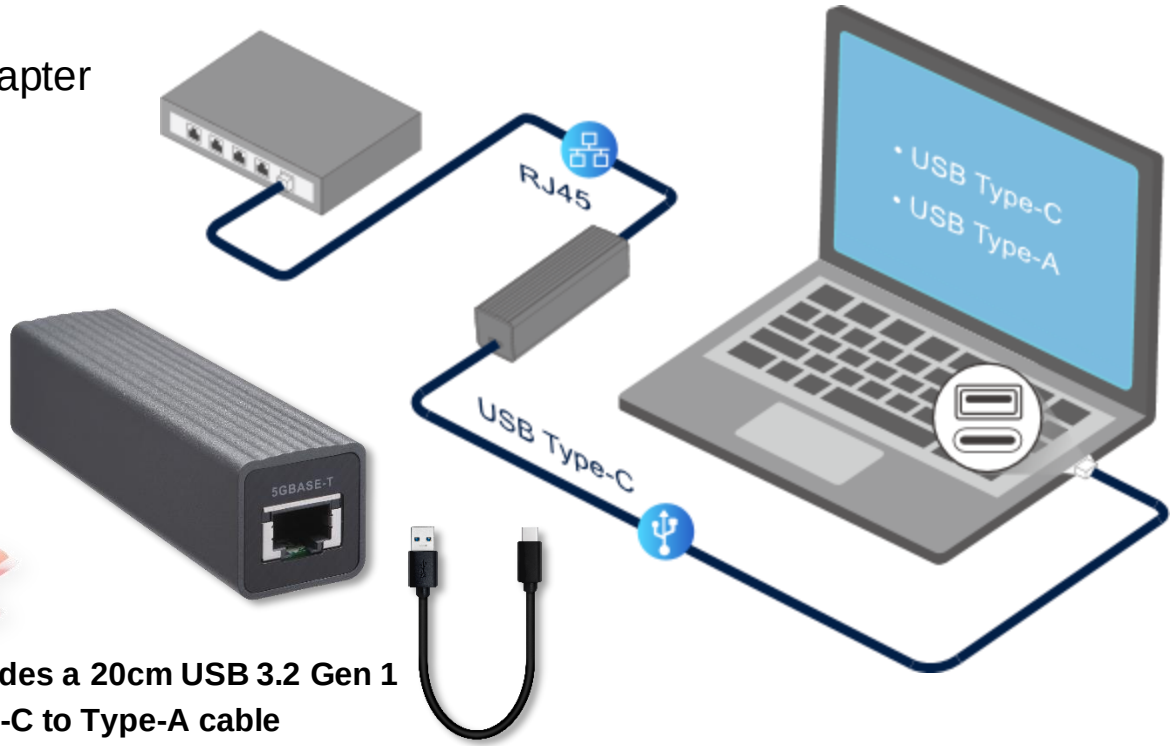
5GbE

Rule #2-2: Upgrade computer network speed with a USB 3.2 Gen 1 adapter

QNAP **QNA-UC5G1T:**

USB 3.2 Gen 1 Type-C to
5G/2.5G/1G/100M network adapter





Includes a 20cm USB 3.2 Gen 1 Type-C to Type-A cable

Rule #3: Future-proof your network by upgrading to a Multi-Gig switch

	QSW-308-1C	QSW-1208-8C	QSW-804-4C
RJ45 1G	8	-	-
RJ45 10G/5G/2.5G/1G/100M	1 (Combo port)	8 (Combo port)	4 (Combo port)
SFP+ 10G	3	12	8
Dimensions	290 x 50 x 42.5 mm (11.4 x 2.0 x 16.7 in)	285 x 43 x 233 mm (11.2x 1.7 x 9.2 in)	
Net Weight:	820g	2150g	2100g
Power	AC adapter, 36W, 100 - 240V	AC adapter, 50W, 100 - 240V	AC adapter, 41W, 100 - 240V
Operating temperature	0˚C to 40˚C (32˚F to 104˚F)	0˚C to 40˚C (32˚F to 104˚F)	
Fan	Fan less design	2 x 4cm fan (12V DC)	
Management Type	Unmanaged switch	Unmanaged switch	

Use 2.5GbE to reduce backup & recovery time

- The Remote Snapshot Vault Recovering is based on the Ethernet service.
- Using 1GbE network, recovering large data still takes hours.
- Pair the Snapshot Replica Solution with 2.5GbE interfaces to increase both the backup and recovery speed!

Using QNAP 10GbE Switch to replace old 1GbE for reducing RTO dramatically.

Backup

TS-451DeU

QSW-1208-8C

TS-1232XU-RP

Disaster recovery

Qsync for teamwork and productivity improvements

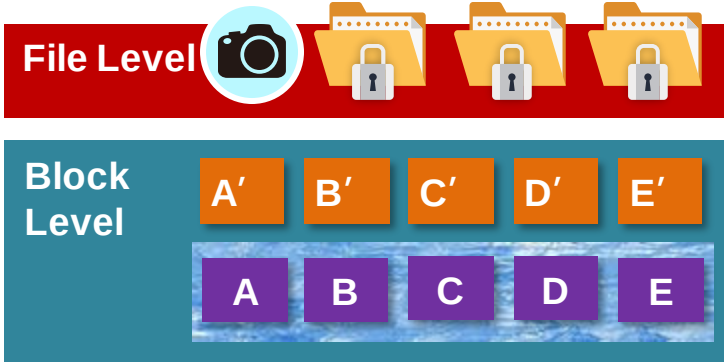
- Windows/Mac/Linux Qsync synchronization utilities
- Use Qsync mobile app to access the data anytime, anywhere
- Central Management Mode & User Customization Mode
- Version control with up to 64 versions for data recovery
- Administrators can erase the data on remote devices when a linked device is stolen

Up to 1024 snapshots for file recovery

1. Fully supports all storage configurations at the storage pool level.
2. Easily take, manage and restore snapshots.
3. Using the ext4 file system for "out of volume" snapshots

RAM Size	Maximum Total Snapshot Number	Maximum Snapshot Number per Volume/LUN
2GB	64	32
4GB and more	1024	256

- Ransomware cannot overwrite snapshots which are stored out of volume.



Mac Time Machine backup

Mac Time Machine

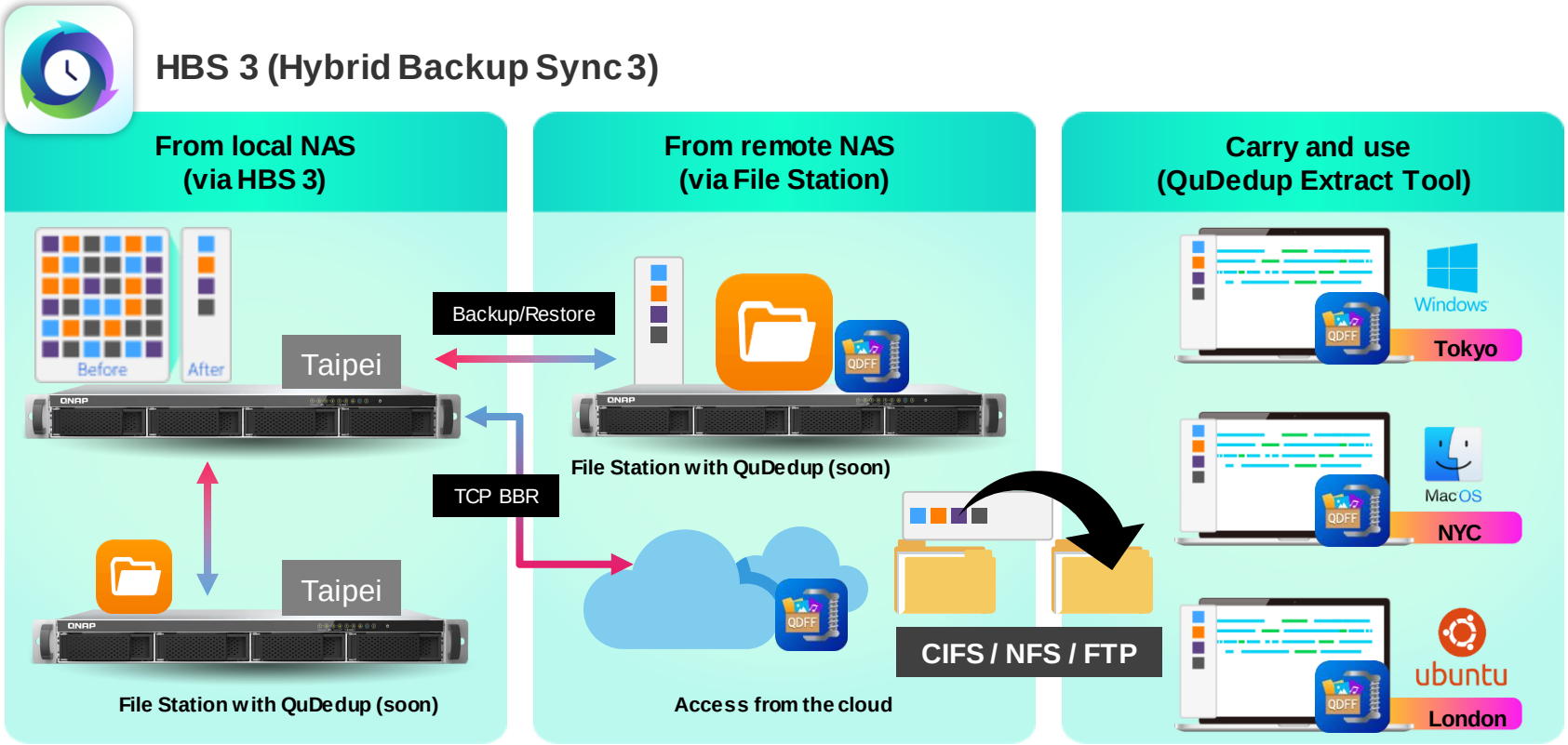
TS-451DeU

TR-004U

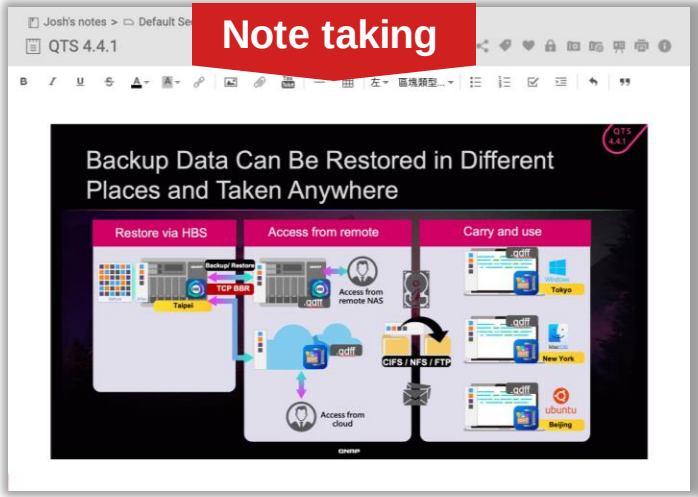
Create the NAS backup job

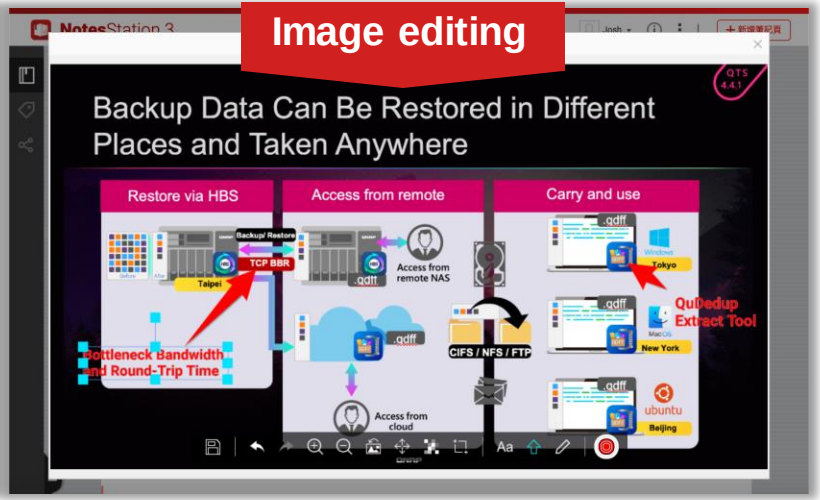
1. Select Time Machine Backup as the source
2. Select TR-004U as the destination
3. - Set up the schedule
   - Enable QuDedup

Backup data with deduplication



Enhance efficiency with online collaboration

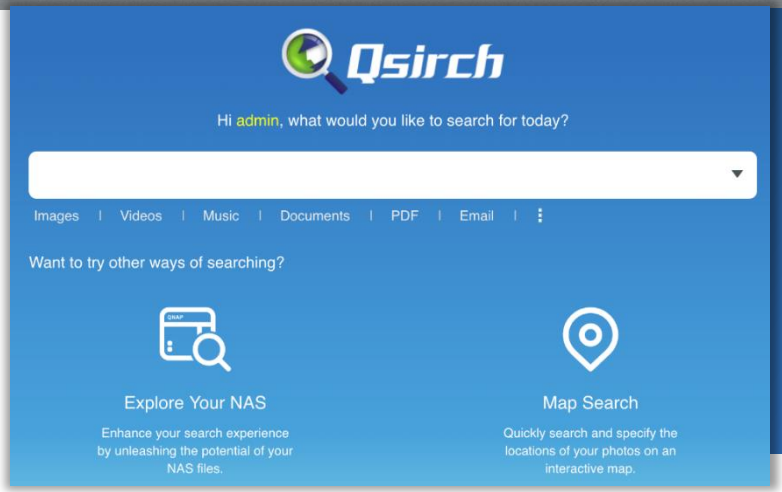




Notes Station 3

Link
Image
Table
Rotate/ Flip
Pixilation
Cut
Chrome extension
Attachment
YouTube
Checklist
Text
Shapes
Draw tool
Mobile app

Qsirch 4.0 makes it easy to search files



- Search within NAS and on the Internet
- Large file preview window
- Advanced search for complex keyword search
- 35+ powerful filter conditions
- Easy steps from previewing to sharing

QNAP VPN and QBelt VPN protocol

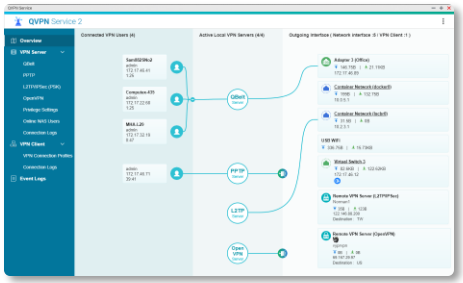
Secure Encrypted Connection:

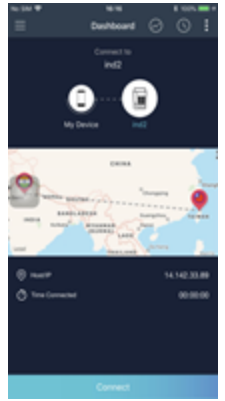
DTLS + SSL + AES-256 encryption

New QBelt protocol:

Decreases the chance of being detected

Works on many desktop and mobile devices





QVR Pro surveillance solution

For NAS with 4GB RAM or more

- 5,000+ compatible IP cameras
- 8 free camera channels
- 30 channels max. (optional license)
- QUSBCam2 for webcam recording

For NAS with 2GB RAM

Surveillance Station 5.1

- 2 free channels
- 32 channels max. (optional license)

Rackmount NAS for multimedia streaming

- Use Cinema28 for multi-room streaming
- Use Plex server to stream or transcode media files
- Use Qmedia app on Apple TV/Fire TV/Roku/Android TV
- QuMagie AI smart albums for object/face classification
- Integrated GPU for max 2-ch 4K video transcoding

Use Virtual JBOD to expand NAS capacity

Max 8 VJBOD connections

2.5GbE
iSCSI VJBOD
connections

TS-1263XU-RP

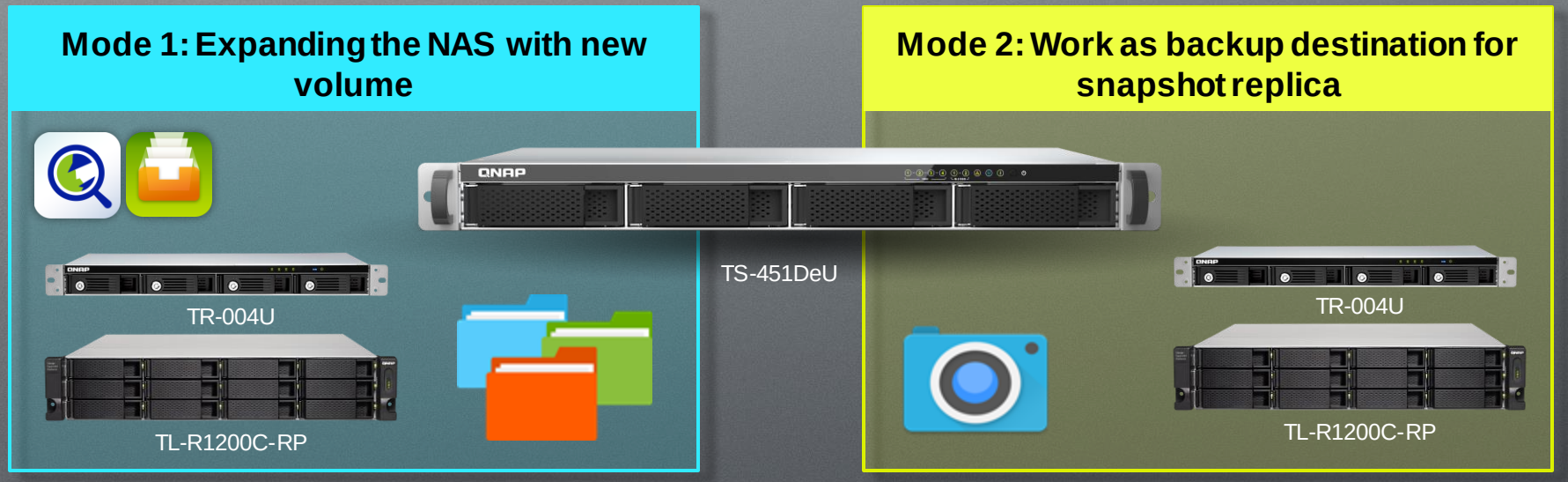
TS-451DeU

QSW-1208-8C

TVS-672N

QNAP TR USB RAID & TL USB JBOD support 2 modes on NAS

- TS-451DeU supports maximum two QNAP TR RAID enclosures or one TL-R1200C-RP USB JBOD enclosure.
- Internal mode with storage pool support or external mode with cross-platform compatibility with Windows/Mac computers.



- Upgrade RAM & M.2 SATA SSD
- 2.5GbE performance test

RAM modules：

4GB: RAM-4GDR4A0-SO-2400

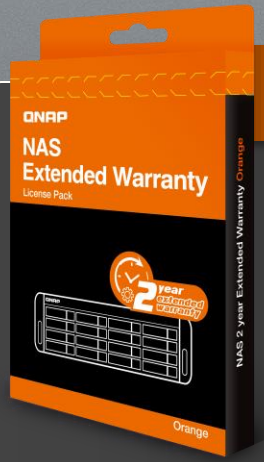
2GB: RAM-2GDR4A0-SO-2400

Live Demo

Up to 5 years of warranty option available

3-year standard warranty + 2-year extended warranty = 5 years of warranty

https://www.qnap.com/service/product-warranty/



Ordering P/N:
LIC-NAS-EXTW-ORANGE-2Y

Extended Warranty (optional)

- Extending your warranty, available within **90 days** of the initial unit purchase.
- Offers identical service to standard warranty.

Standard Warranty

- Warranty service that comes in effect at the time of purchase.
- **Free** repair and part replacement for products under normal use during warranty period. (Spare parts and consumables are excluded)

QNAP

TS-451DeU

2 x 2.5GbE, 4 x 3.5”/2.5” SATA + 2 x M.2 2280 SATA

J4025
2.0 GHz, max 2.9 GHz

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