QNAP

# TS-i410X

**10GbE Industrial Wide-Temperature SATA SSD NAS**

Equipped with 4-core Intel Atom® x6425E processor
Supports 4 x 2.5-inch SATA SSD, 2 x 10 GbE, 1 x HDMI
Rugged and high performance, suitable for semi-outdoor or in-vehicle applications

intel ATOM | ULTRA HD 4K 2K | HDMI | MIL-STD 810H | 2.5" SSD | 10GbE | DC 9-36V

**Operating temperature**

**-40°C~70°C**

# TS-i410X SSD NAS Features

## Supports 4-bay 2.5-inch SATA SSD

Supports four 2.5-inch SATA SSD bays with industrial wide-temperature SSDs to operate in a harsh environment.

## Wide operating temperature(-40˚C ~ 70˚C)

Suitable for use in low and high temperature environments

## Wide input voltage (DC 9-36V)

Wide input voltage can be used with various industrial power supplies

## Dual 10 GbE ports

High-speed 10GbE network bandwidth for faster data transfer experience

## Military-grade vibration test

Compliance with MIL-STD-810H vibration test

## 4K HDMI

Provides one port HDMI output for video output

# TS-i410X can be used for vehicle surveillance system

## Expansion of Vehicle surveillance storage space is important.

According to the World Health Organization report on 2021/6/21, road traffic accidents cost most countries 3% of the gross domestic product. About 1.3 million people lose a life each year due to traffic accidents, and 200 to 50 million people are injured or Disabled. Therefore, the driving recorder and the vehicle surveillance system are critical devices. For example, to store the video data of multiple vehicle network cameras on traffic or tourist buses, the storage space of most vehicle VNVR systems is insufficient. The TS-i410X NAS can be installed in an automotive environment with four 2.5-inch SATA slots for high-capacity SSDs, effectively extending the time of surveillance video storage.

Link: https://www.who.int/news-room/fact-sheets/detail/road-traffic-injuries

# Typical in-vehicle surveillance system connections

USB HID

120VAC

120VAC

12VDC

**Inverter**
24VDC to 120VAC

**Vehicle UPS**
120VAC to 120VAC
Supports USB HID

**Adapter**
120VAC to 12VDC

**TS-i410X**

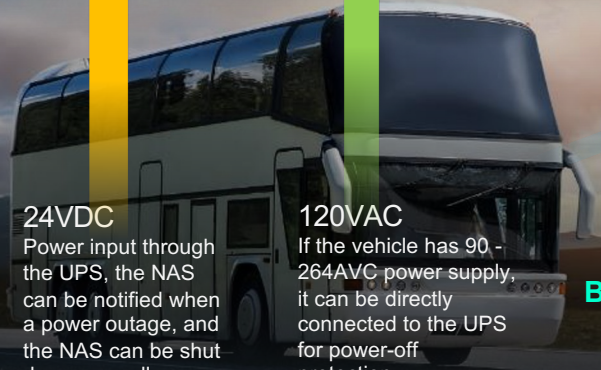
RJ45 cable

24VDC
Directly supply power to the NAS
(When the car is turned off, the NAS will be shutdown)

RJ45 cable

**Vehicle POE IP CAM**

**Industrial POE Switch**



**Bus / Vehicle**

24VDC
Power input through the UPS, the NAS can be notified when a power outage, and the NAS can be shut down normally.

120VAC
If the vehicle has 90 - 264AVC power supply, it can be directly connected to the UPS for power-off protection.

# NAS with excellent anti-vibration (MIL-STD-810H testing)

MIL-STD 810H

## Military-grade anti-vibration

Suitable for smart factories and in-vehicle applications

## 4-bay fanless & rugged data storage in outdoor field

The TS-i410X 4-bay NAS is compliant with the 2019 latest version of the US military vibration standard (MIL-STD-810H METHOD 514.8 ANNEX C) operation and transportation testing, ensuring that it can work in harsh surroundings without any service interruption.

# One of a kind, against cold and heat, NAS w/ wide operating temperatures

## NAS design reaching a higher level

QNAP's new TS-i410X breaks the established impression that traditional NAS only can be installed in an office or data center with air conditioning. In addition to backup your data, it is also against the cold and hot temperatures, so using TS-i410X NAS in the outdoor environment is perfect. This ultimate design has finally arrived.

-40°C ~ 70°C

The TS-i410X supports four 2.5-inch SATA SSDs, which can be installed in an environment of -40°C to 70°C by using wide temperature SSDs.

# Why choose the 2.5-inch SATA SSD drive for NAS?

## 2.5-inch SATA SSD advantages

Compared with M.2 NVMe PCIe SSD, 2.5-inch SATA SSD has more space for placing flash chips, thus higher data storage capacity. In addition, it has better heat dissipation performance and does not require additional heat sinks.  The 2.5-inch SATA SSDs provide a balanced choice between high capacity and performance.

## SSD (Solid state drives) is reliable and fast

The traditional HDD which rotates the disk plates to read/write the data is not suitable in any place with vibration. HDD can also be easily damaged due to movement and collision. 2.5-inch SATA SSD stores data in flash chip without disk head and therefore it is better against shock & vibration. The performance of SSD is also much faster than HDD.

The TS-i410X supports four 2.5-inch SATA SSDs, which can be installed in an environment of -40°C to 70°C by using wide temperature SSDs.

# Recommended with Exascend industrial wide temperature 2.5-inch SATA SSD

## Exascend industrial-grade 2.5-inch SATA SSD that passed the TS-i410X compatibility test

Exascend is a professional SSD storage solution company. Its SI3 industrial-grade 2.5-inch SATA-III industrial-grade wide-temperature SSD designed with the Marvell controller can operate in -40˚C ~ 70˚C with TS-i410X NAS.

## Exascend SI3

Industrial 2.5-inch SATA SSD
Optional capacity (240GB~3.84TB)

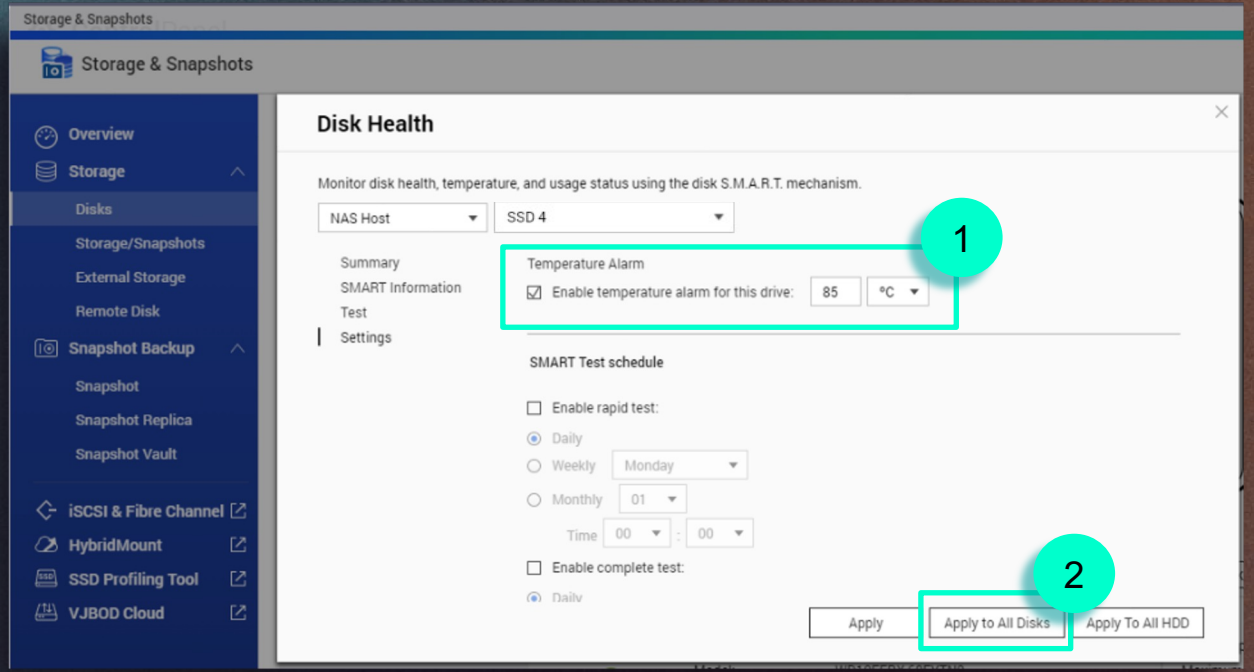
Link: https://exascend.com/

TS-i410X provides four 2.5" SATA slots

# Adjust QTS SSD temperature warning settings for wide-temperature SSDs

## Enable temperature alarm and ser it to be 85°C if you use wide temperature SSDs

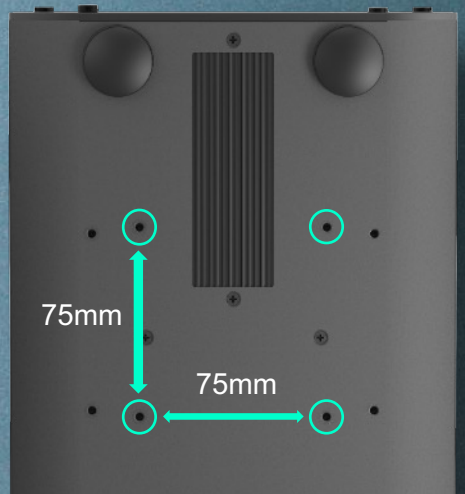
When using industrial wide temperature SSDs, users need to adjust the disk warning setting to 85°C (The default temperature is 70°C for SSDs) in QTS to match the upper limit of operating temperature from SSDs.



# Supports an optional VESA 75 wall-mount bracket for diversified setup

## VESA 75 wall-mount bracket

Contrary to the conventional desktop setup, the QNAP TS-i410X NAS can be mounted in a factory environment using a commercially available standard VESA 75 wall-mount bracket.



# For use in the semi-outdoor environment to monitor valuable assets

## Deploy the NAS in more areas

The semi-outdoor environment usually introduces significant temperature differences and is not device friendly. Therefore, the TS-i410X NAS, equipped with a rugged chassis and wide temperature design, together with QVR Elite surveillance monitoring software and 3rd-party IP cameras, are especially suitable. As a result, there is no need to worry about the unexplained loss of valuable assets such as greenhouse cultivation, livestock farming, aquaculture, and other production environments.

# Which RAID mode to use in a 4-bay NAS for data protection?

RAID (Redundant Array of Independent Disks) is a technology that uses more than two disks to form a fault-tolerant protection mechanism, which can protect data when a certain number of disks are damaged. When protection is the priority using four disks to create an array in TS-i410X, we recommend RAID 6. If you think performance is the priority, we recommend RAID 10.

| | Single | JBOD | RAID 0 | RAID 1 | RAID 5 | RAID 6 | RAID 10 |
|---|---|---|---|---|---|---|---|
| Minimum number of disks | 1 | 1 | 2 | 2 | 3 | 4 | 4 |
| Allow number of disks fault | 0 | 0 | 0 | N-1 | 1 | 2 | Each group of RAID 0 allow one |
| Capacity equals several disks | 1 | N | N | 1 | N-1 | N-2 | N/2 |
| Protection | N/A | | | High | Mid and lower | Upper Mid | Upper Mid |
| Performance | Single | | High | Single | Mid | Mid and lower | Upper Mid |

# Quad-core Intel Atom X series, up to 3.0 GHz

## Wide operating temperature range, long-term supply until at least 2029

When small and medium-sized businesses are are buying data storage equipment, they need flexible and long-term implementation according to the demand of the project stage. When the initial budget is relatively limited, the NAS is purchased for the creation of related applications. However, when they want to deploy or expand, they often found out that the originally purchased NAS model was discontinued because the CPU was end of life (EOL). Therefore, they need to re-evaluate a new NAS model. The TS-i410X uses the Intel Atom x6425E CPU with long-term availability until at least 2029, solving customers' long-standing problems.

**Operating Temp**
-40°C to 85°C

**x6425E**
Elkhart Lake

**4-core**
4-thread

**TDP**
12W

**3.0GHz**
Burst

**AES-NI encryption**
Volume & folder support

# QNAP industrial 10 GbE fanless network switch

## QNAP Industrial-grade QSW-IM1200-8C (managed)

8 x 10G/5G/2.5G RJ45 Multi-Gig
4 x SFP+

Operating temperature -30°C-65°C

## QNAP Industrial-grade 10GbE Managed Switch

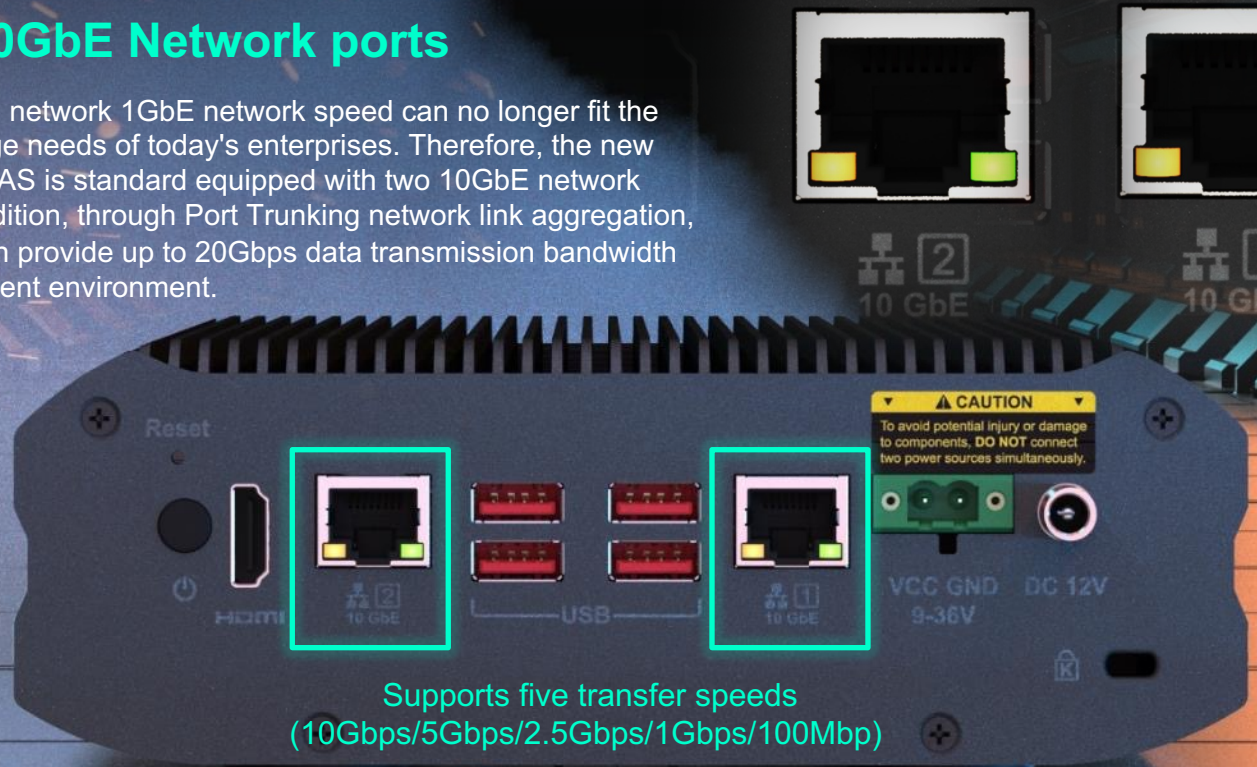
Under noise sensitivity and severe ambient temperature, the TS-i410X NAS with the QSW-IM1200-8C industrial-grade managed switch are perfect partners by QNAP design. Moreover, through the 10GbE network configuration, you can enjoy high-speed data transmission.

TS-i410X Operating temperature -40°C-70°C

# Dual 10GbE Network ports are enterprise network standard

## Dual 10GbE Network ports

The general network 1GbE network speed can no longer fit the basic storage needs of today's enterprises. Therefore, the new TS-i410X NAS is standard equipped with two 10GbE network ports. In addition, through Port Trunking network link aggregation, the NAS can provide up to 20Gbps data transmission bandwidth in a multi-client environment.

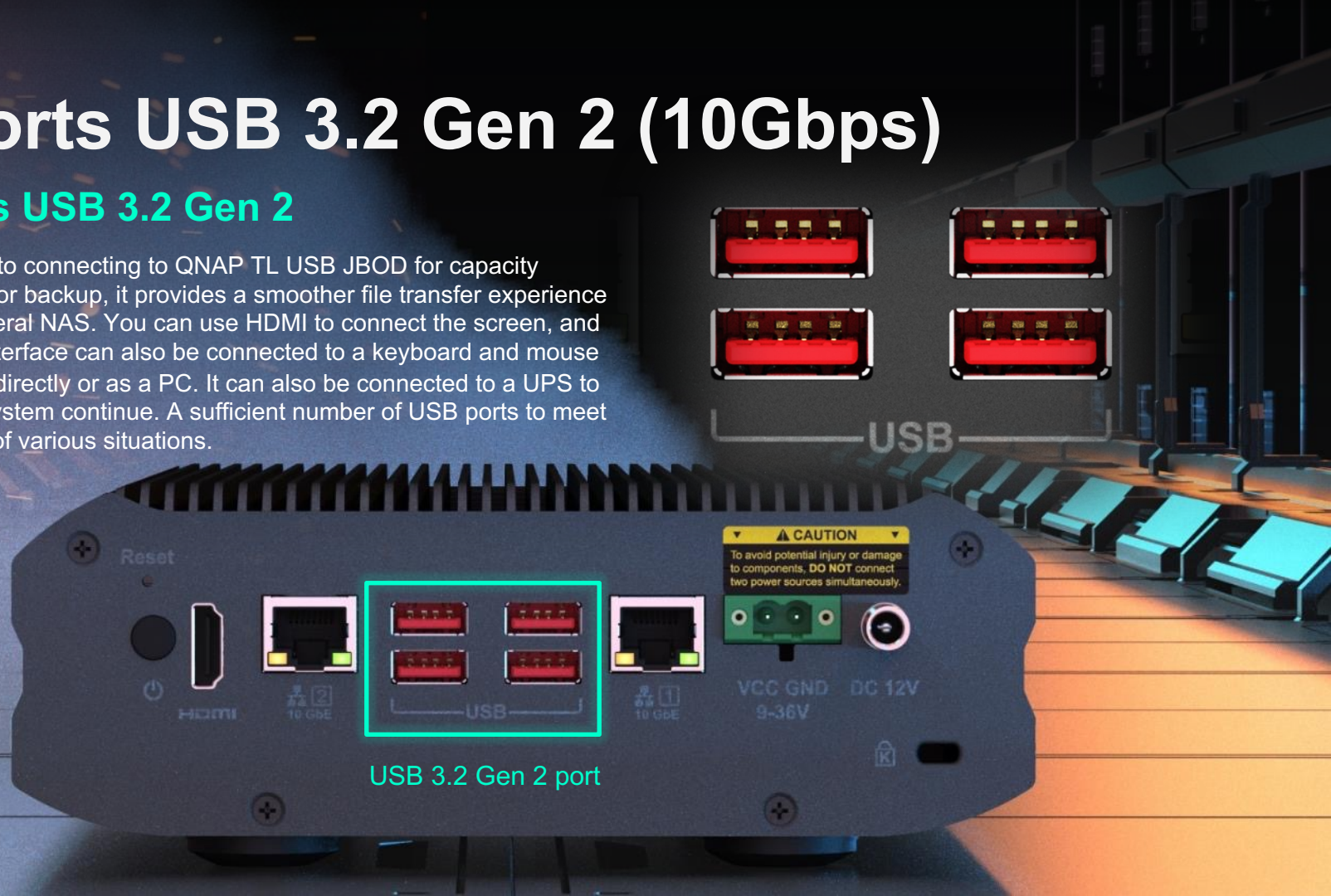



Supports five transfer speeds
(10Gbps/5Gbps/2.5Gbps/1Gbps/100Mbp)

# 4 ports USB 3.2 Gen 2 (10Gbps)

## 4 ports USB 3.2 Gen 2

In addition to connecting to QNAP TL USB JBOD for capacity expansion or backup, it provides a smoother file transfer experience than a general NAS. You can use HDMI to connect the screen, and the USB interface can also be connected to a keyboard and mouse to operate directly or as a PC. It can also be connected to a UPS to keep the system continue. A sufficient number of USB ports to meet the needs of various situations.




USB 3.2 Gen 2 port

# DC 9~36V wide voltage input or adapter DC 12V input

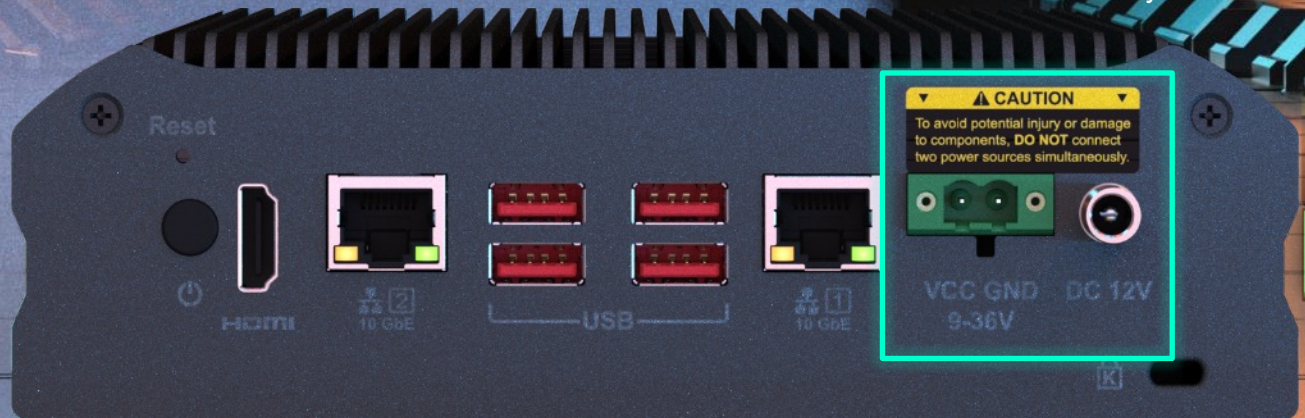
## DC 12V adapter is the standard configuration

The TS-i410X is shipped with a DC 12V adapter, which can directly connect to the power supply. In addition, its anti-dropping design can avoid the risk of NAS service interruption.

## Choose to connect with Euroblock as the power source

## with wide voltage (DC 9-36V input)

It supports DC 9-36V wide voltage input, suitable for connecting industrial power supplies in various fields. The standard DC 12V adapter input is another option. Customers can choose according to different situations. It should be noted that only one of the two input can be used and cannot be connected simultaneously to avoid unpredictable risks.



# Support HDMI 4K screen output

## HDMI monitor output with 4K resolution

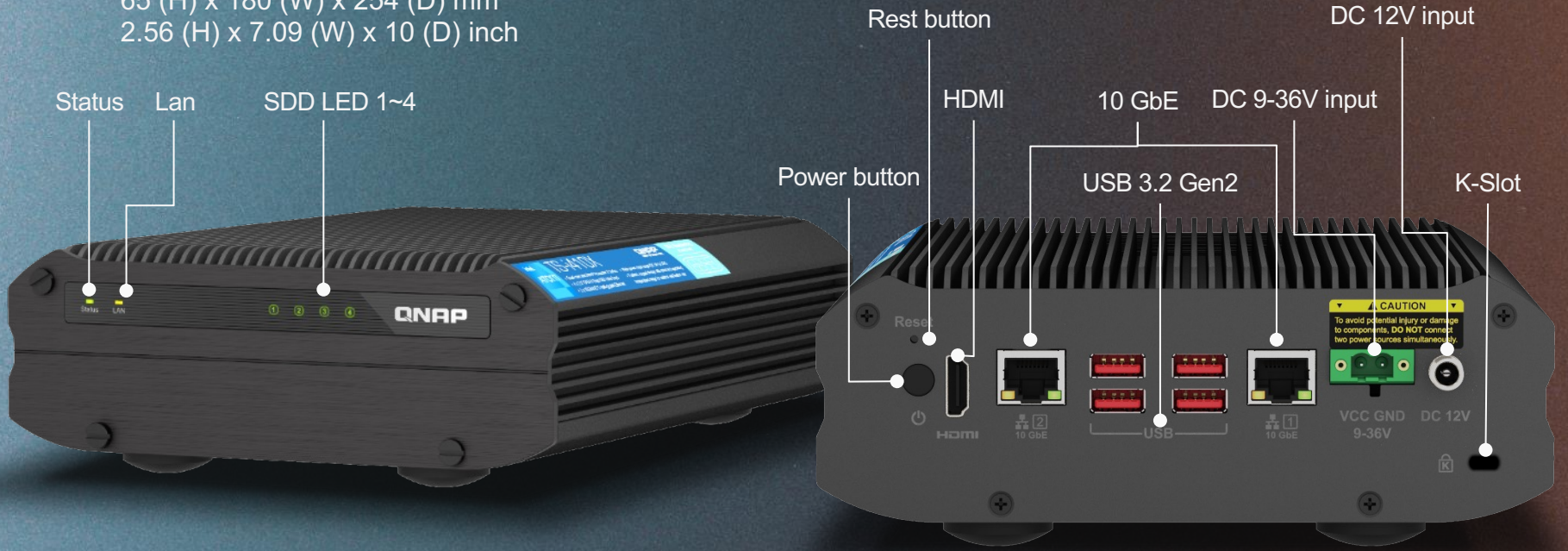
The HDMI connects to the screen as a monitor. When USB connects to a keyboard and mouse simultaneously, it can use as a PC, and the HybridDesk Station can install to turn it into a home theater.

# TS-i410X supports four SATA SSD slots

Four 2.5" SSD slots are visible after removing the front cover

# TS-i410X I/O and dimension

65 (H) x 180 (W) x 254 (D) mm
2.56 (H) x 7.09 (W) x 10 (D) inch



# Specifications

| | TS-i410X |
|---|---|
| CPU | Intel® Atom® x6425E 4 core processor, up to 3.0 GHz |
| Memory | 8GB (not expandable) |
| Drive bay | 4 x 2.5” SATA SSD |
| Drive interface | SATA 6Gb/s |
| 10GbE | 2 |
| USB | 4 x USB 3.2 Gen2 Type-A |
| Form factor | Desktop |
| LED indicators | Status, LAN, SSD 1-4 |
| Button | Power, Rest |
| Dimension (HxWxD) | 65 (H) x 180 (W) x 254 (D) mm<br>2.56 (H) x 7.09 (W) x 10 (D) inch |
| Power Input 1 (Adapter) | DC 12V, 96W |
| Power Input 2 (Euroblock) | DC 9-36V |
| Fanless | v |
| Anti-vibration standard | MIL-STD-810H |
| Operating Temperature | -40°C ~ 70°C |

# Optional storage expansion unit that supports USB JBOD & RAID

**TR-002**
2-bay
Desktop SATA 6Gb/s JBOD
Supports hardware RAID

**TR-004**
4-bay
Desktop SATA 6Gb/s JBOD
Supports hardware RAID

**TR-004U**
4-bay
Rackmount USB 3.2 Gen 1 JBOD
Supports hardware RAID

**TL-R1200C-RP**
12-bay
Rackmount USB 3.2 Gen 2 JBOD
Redundant power supply

**TL-D800C**
8-bay
Desktop USB 3.2 Gen 2 JBOD

**TS-i410X supports the maximum number of JBODs**

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

# Optional network switch

**QSW-1108-8T** (unmanaged)

8 x 2.5G
RJ45 Multi-Gig

Fanless and
Metal Chassis

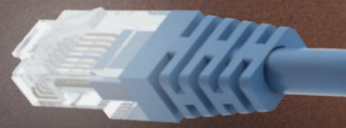
**QSW-1208-8C** (unmanaged)
8 x 10G/5G/2.5G
RJ45 Multi-Gig

**QSW-308-1C** (unmanaged)
1 x 10G/5G/2.5G
RJ45 Multi-Gig

**QSW-M408-4C** (managed)
4 x 10G/5G/2.5G
RJ45 Multi-Gig

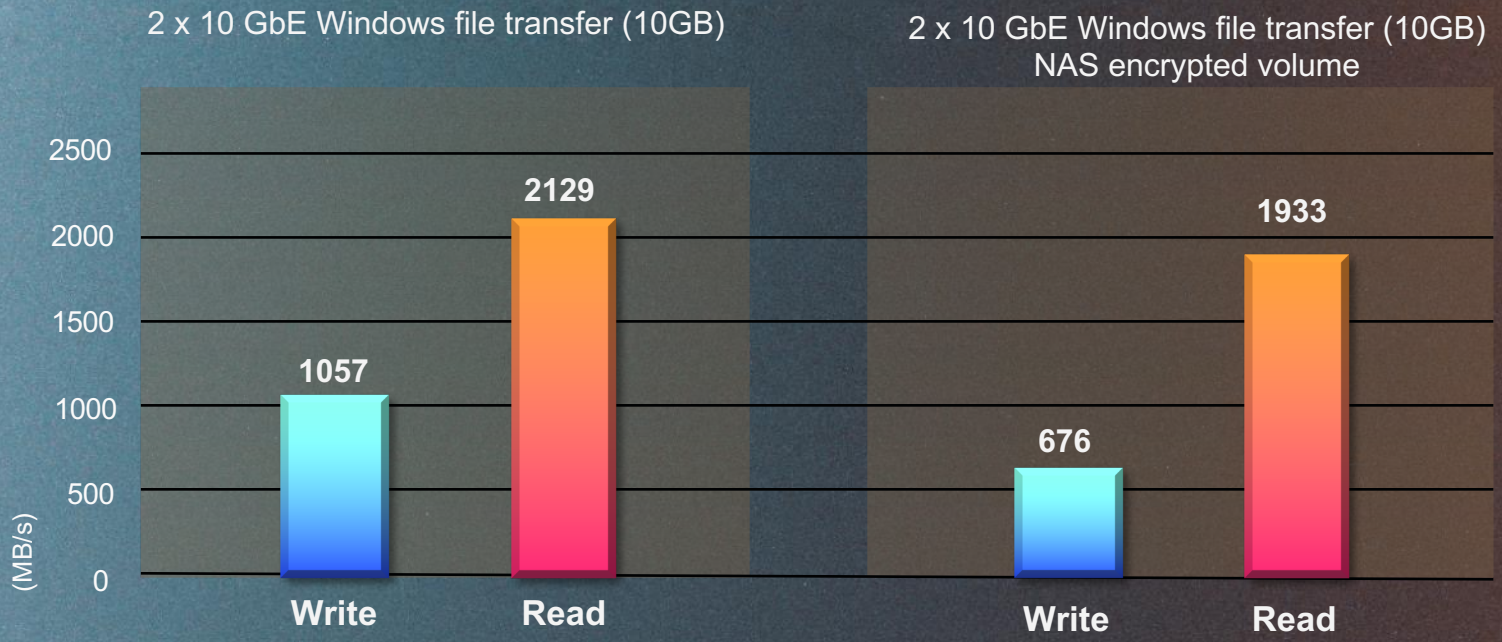
**QSW-M2108R-2C** (managed)
2 x 10G/5G/2.5G
RJ45 Multi-Gig

**No need to replace existing wiring upgrade to 5 GbE**



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

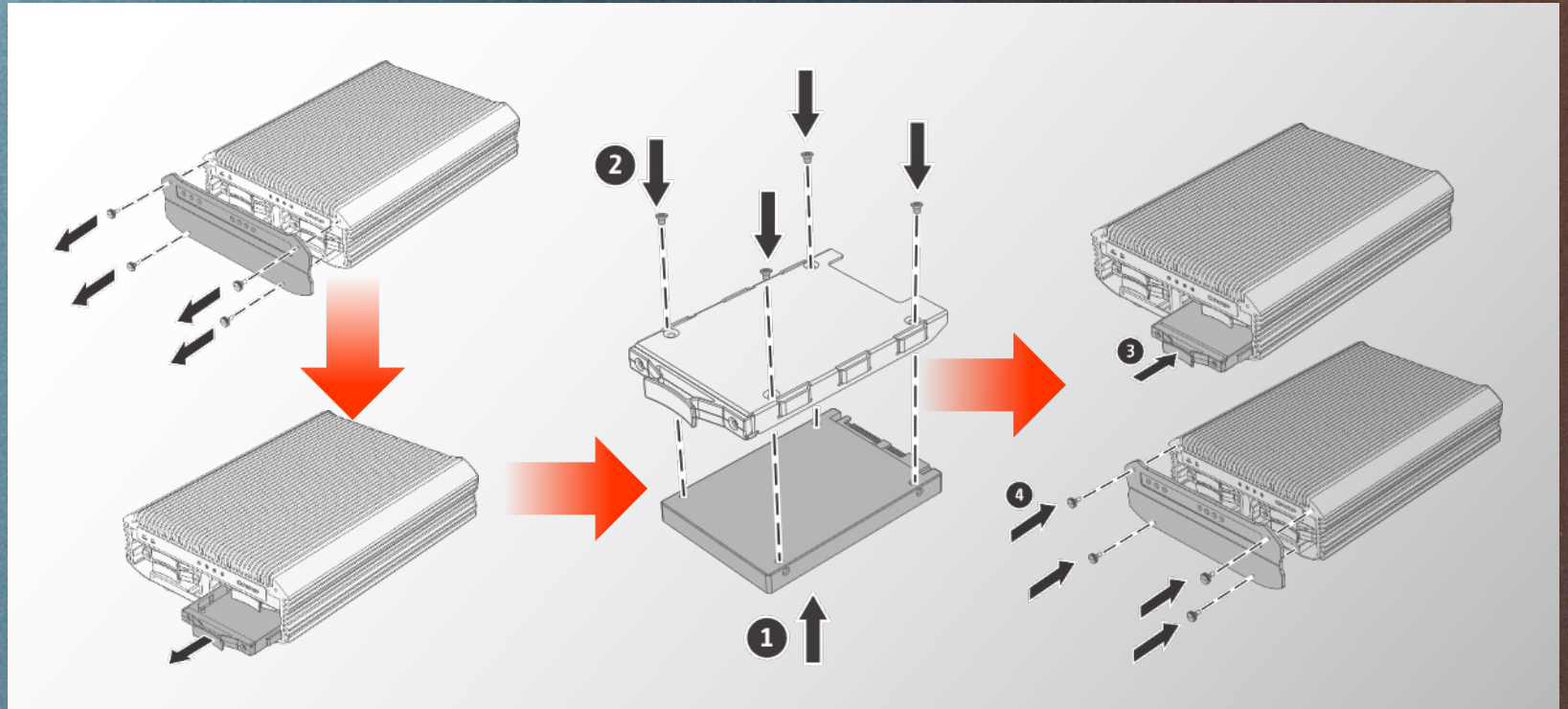
# 2 x 10 GbE for 10GB file transfer performance




Environment:
NAS | TS-i410X, QTS 5.0, 4 x Samsung 850 Pro 512GB, RAID 5, thick volume
PC | windows server 2016 standard, Intel Core i7-6700 3.4 GHz, 64GB RAM

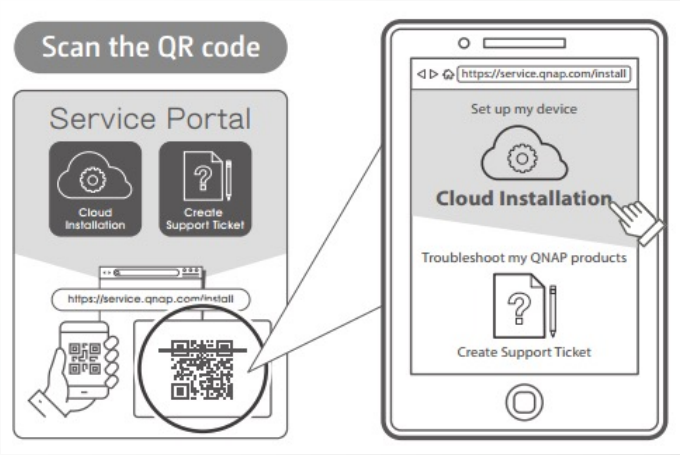
Tested in QNAP Labs. Figures may vary by environment.

# 2.5" SATA SSD installation



# NAS quick installation

1 Scan the QR Code with your mobile phone to install




2 Download the Qfinder Pro program on your computer and install

# Build-in QTS 5.0 NAS multifunctional operating system

### Supports WireGuard VPN

Safe and convenient connection

### Upgraded Linux Kernel 5

Strengthen security to protect data assets

### Improve overall NAS performance

Make NAS related applications more agile

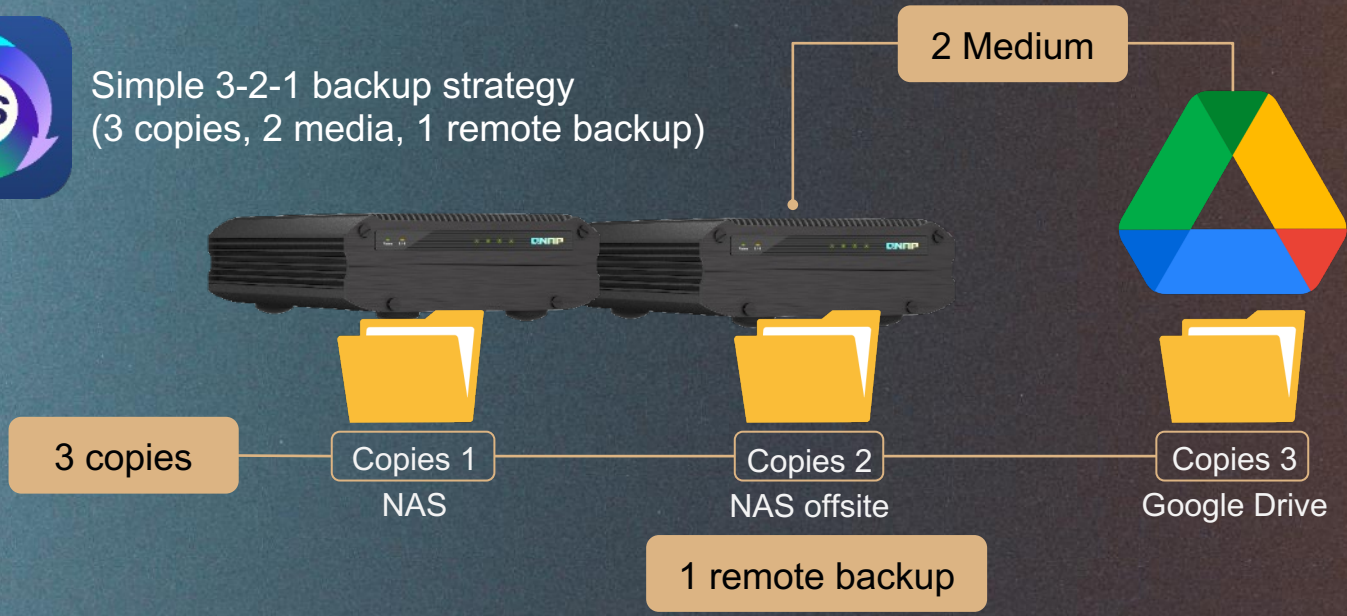
### Brand new UI

Simple, aesthetic, and smooth experience

# license-free HBS 3 (Hybrid Backup Sync 3)

## Three steps to the best data backup strategy

Simple 3-2-1 backup strategy
(3 copies, 2 media, 1 remote backup)

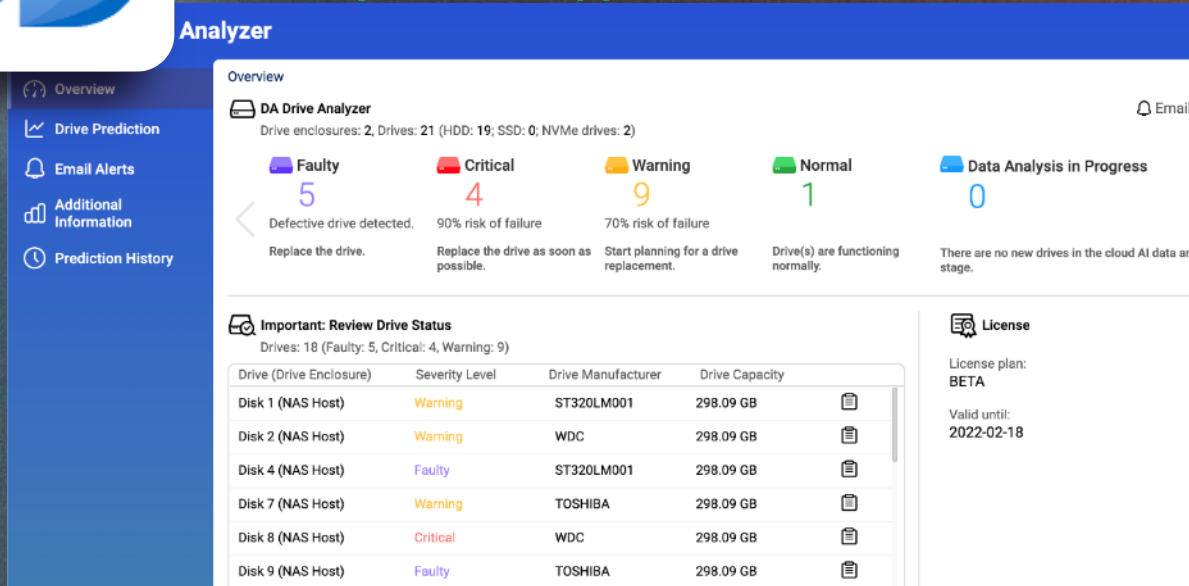


# DA Drive Analyzer for disk failure prediction

## Disk health analysis and failure prediction

DA Drive Analyzer integrates ULINK AI prediction technology which can warn you before disk failure and help you protect valuable data.

**Each NAS can support one disk prediction for free, and you can also have a paid subscription to support all disks.**



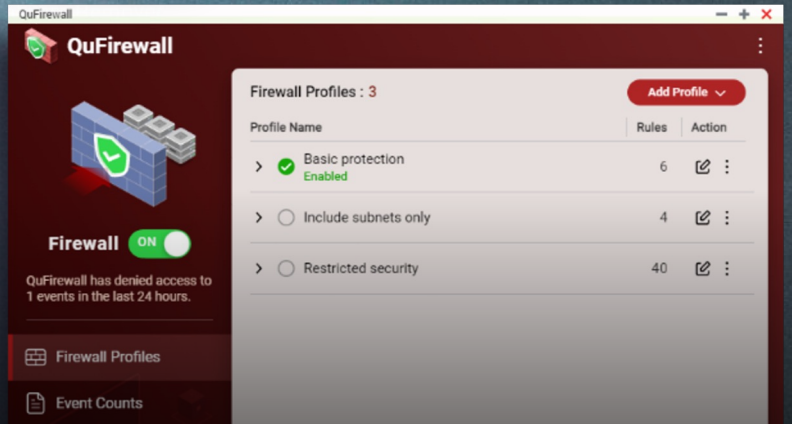
# Data security: safeguard your NAS data

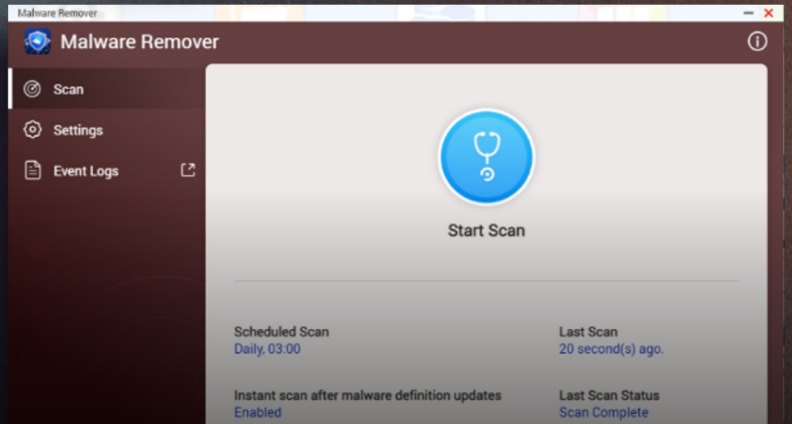
## QuFirewall

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

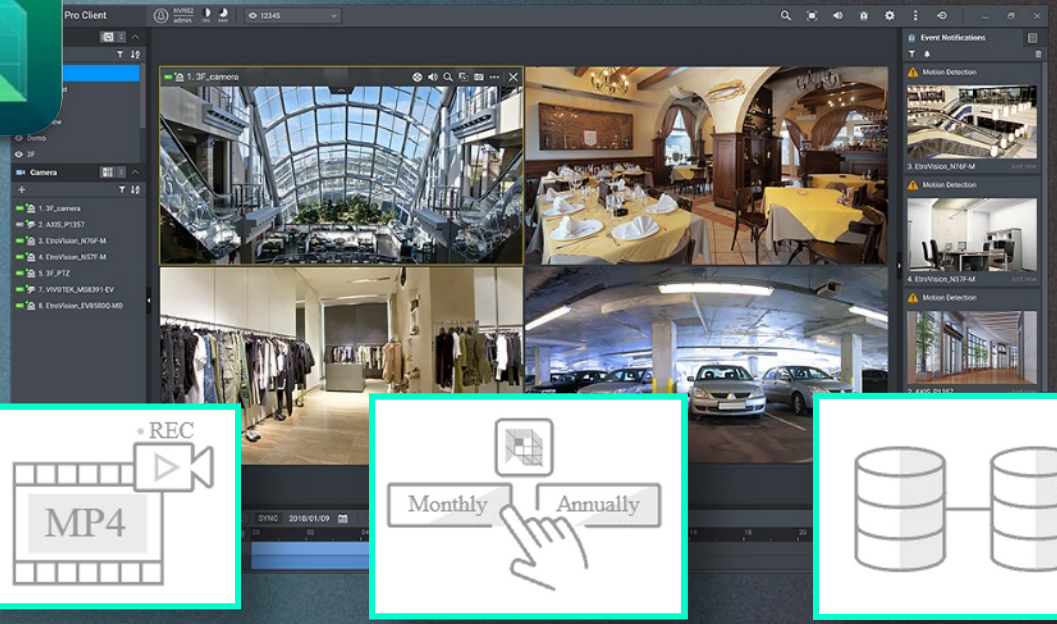
## Malware Remover

Regularly scan your NAS check for and download the latest malware definitions. Then, when attacked, the infected files can be excluded in real-time, helping to improve the level of NAS data security.

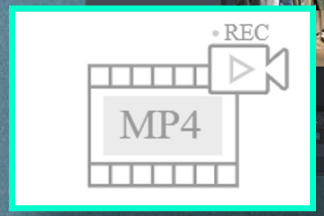


# QVR Elite - Surveillance System



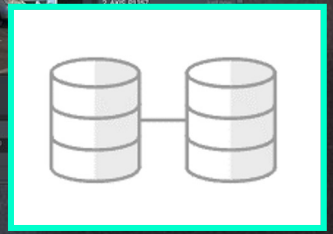

Base embedded channels
(Flexible expansion)




MP4 Recording Format




Flexible Subscription



Expandable Capacity

# Compatible with a huge amount of camera models

## Over 180 Brands

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

## Over 6,700 Models

## ONVIF Profile Supported

ONVIF® | S

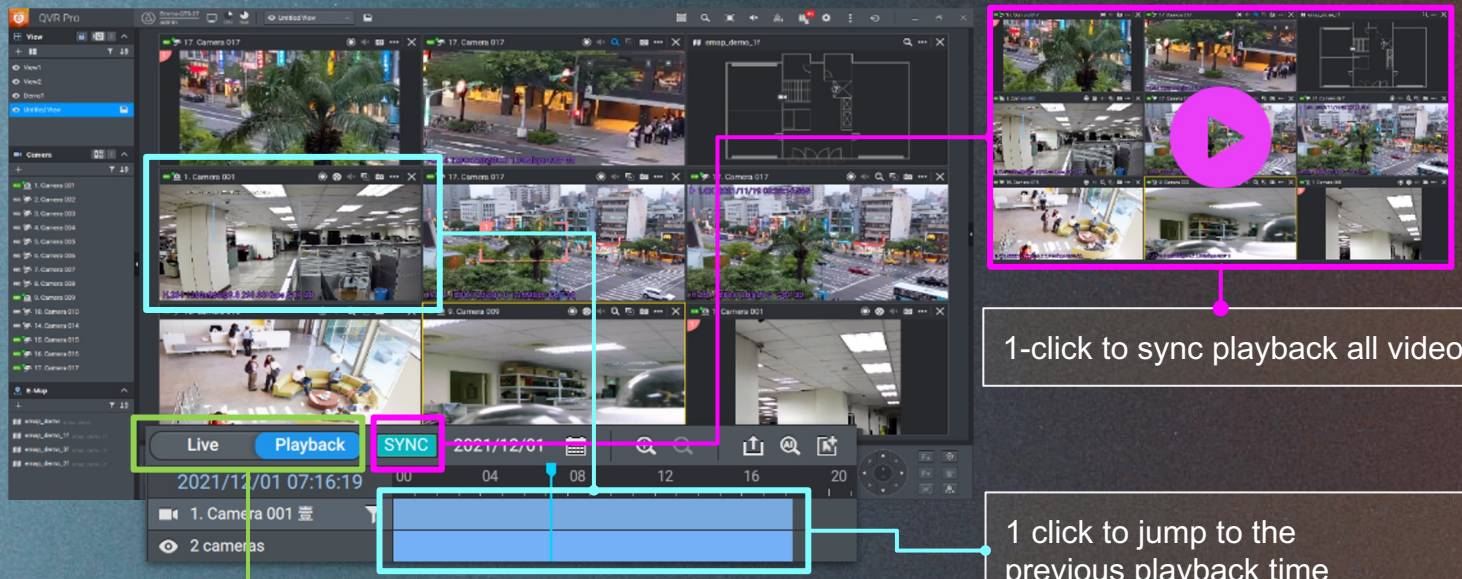
**RTSP Stream Input / Output**

**RTMP Stream Input**

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

# Unified interface for live view & playback, anywhere with a PC 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

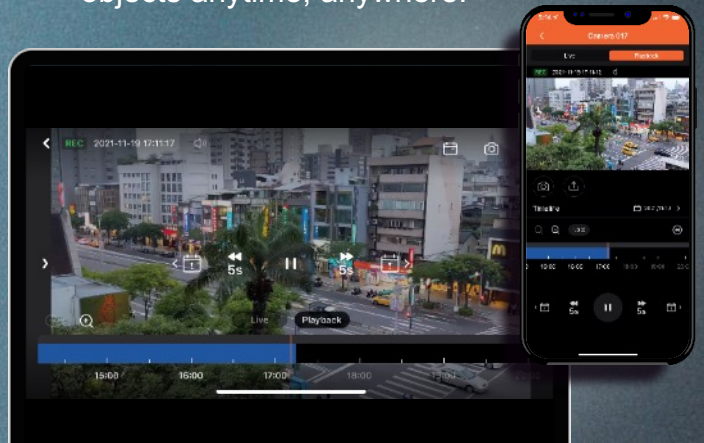
1 click to switch between Live & Playback

# Surveillance Client for mobile and home environment

## QVR Pro Client

Mobile device recording and playback

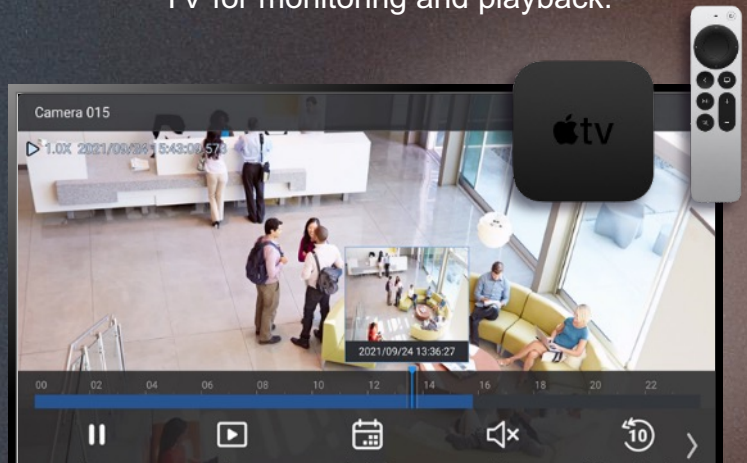
Mobile device recording and playback protect important people, things, and objects anytime, anywhere.



## QVR Viewer

Apple TV Monitoring App

The new Apple TV monitoring application is a convenient APP installed on Apple TV for monitoring and playback.



# Qsirch full-text search tool for browsers

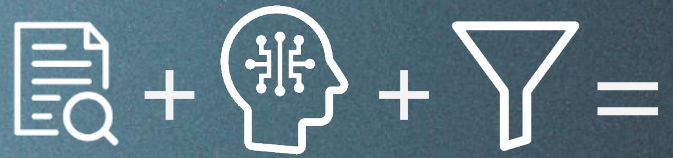
## NAS Edition

Search massive data in the NAS.

## PC Edition

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

Qsirch is a fast, full-text search engine that enables you to find files based on filename, content, and metadata. Qsirch's search functions are also available using a companion mobile app, browser extension, and Mac® Finder.



Full-text search + AI search + Multiple filters = **Find everything**

# Qfiling auto archive and filing

Qfiling automates your file organization. All you need to do is categorize your files, set a schedule, and Qfiling will do the rest. It's easy, smart, and efficient!

## Flexible

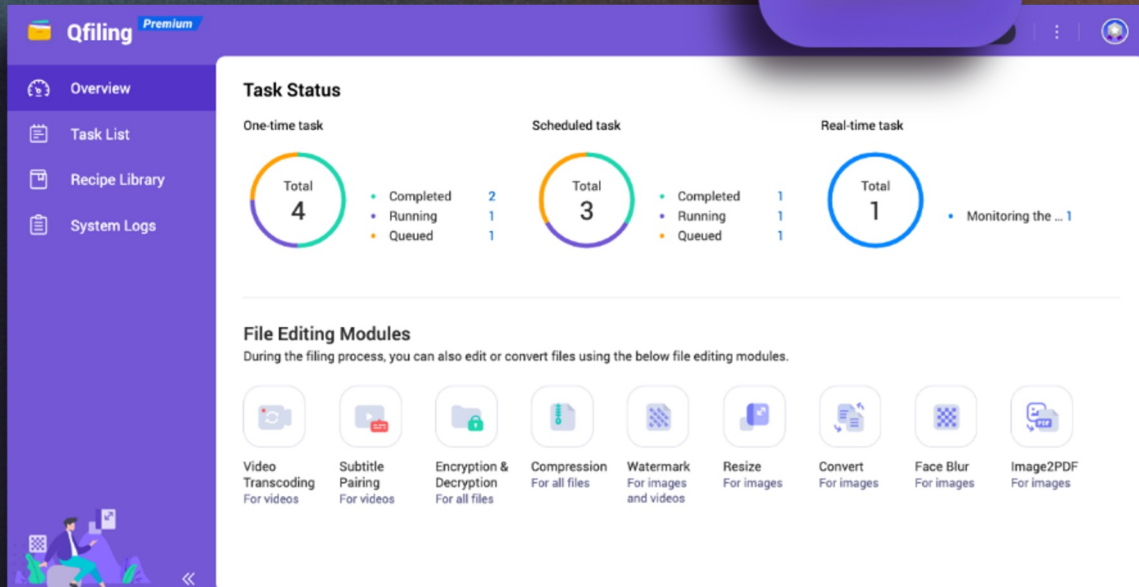
Customize the filing and batch editing rules.

## Efficient

Scheduling for auto filing.

## Total Control

With system logs, filing status is easily accessible.



# Virtualization Station

## Virtualization Station

Virtualization Station allows you to create virtual machines on your Turbo NAS to install Windows, Linux®, UNIX®, Android, QuTScloud, and other operating systems.

## With the monitor and virtual machine, NAS can convert to a PC

You can connect a monitor, keyboard, and mouse using QvPC technology through the virtual machine desktop, just like a PC.

Note: GPU passthrough feature required VM.QTS 5.0.1 and later

# Container Station

QNAP NAS is the only NAS brand that supports LXD and Docker®, Kata Virtual Tri-Core, providing you the best choice for a complete lightweight virtualization solution. You can run an entire Linux® virtual machine on your QNAP NAS and download thousands of applications worldwide from the Docker® Hub/LXD image server online collection.

### At-a-glance dashboard

The dashboard provides a clear overview including the NAS CPU/memory and individual container resource usage.

### Flexible user interface

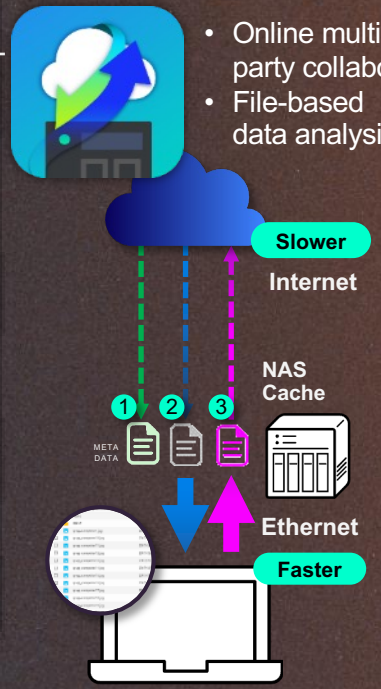
You can enjoy flexible management using either a command line interface or a convenient web interface.

### Permission settings

You can set user permissions to access shared folders on the NAS, other containers' data or NAS devices.

# HybridMount smoothly mount two kinds of cloud space

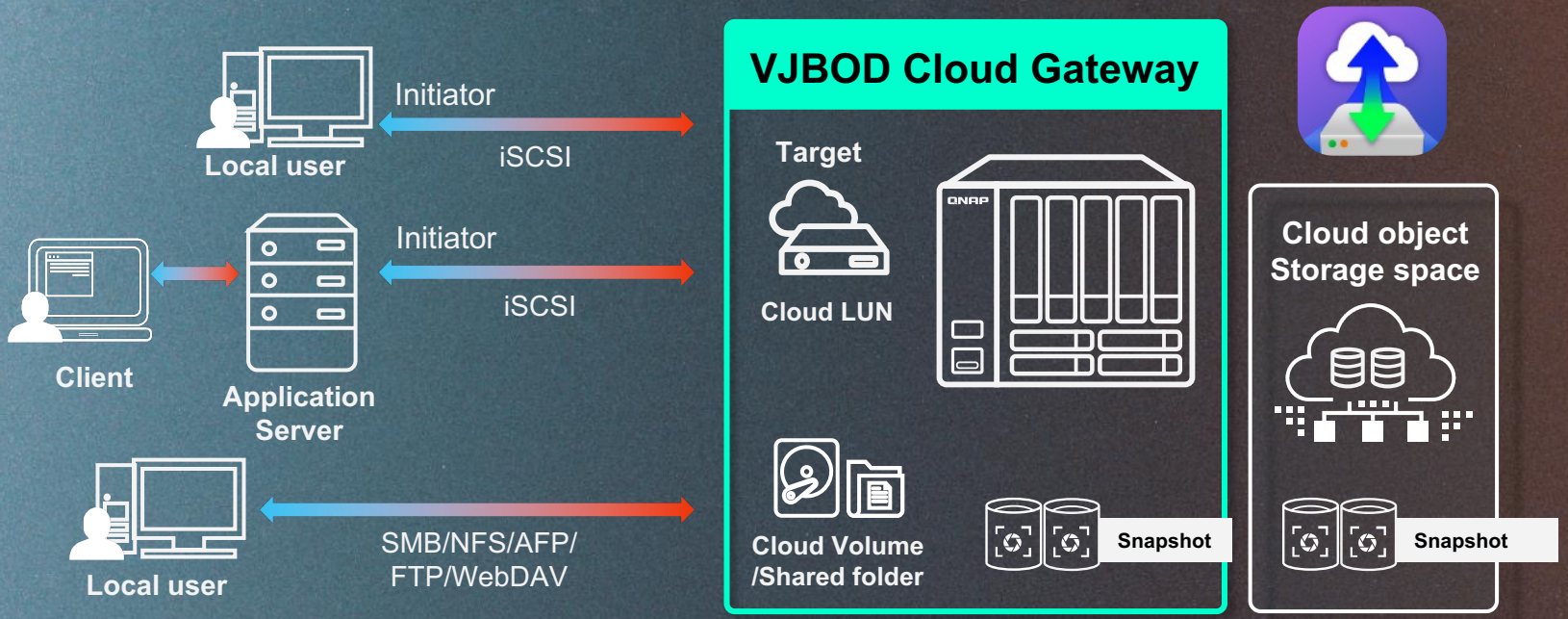
| | Network Drive Mount | Cloud Storage Gateway |
|---|---|---|
| **Setting** | Create File Station Cloud Mode | Select file-based cloud gateway and configure cache |
| **Mount** | Unlimited cloud services | 2 free gateway licenses, additional licenses can be purchased on demand |
| **Access experience** | Access speed depends on internet speed | Cache mechanism reduces read and write time |
| **Access from File Station** | support | support |
| **Access via SMB / NFS / AFP** | not support | support |
| **synchronization** | Resync with cloud every time | Regular sync for quick browsing |
| **QTS Apps file management** | not support | support |




- Online multi-party collaboration
- File-based data analysis

OneDrive Yandex HUAWEI HKT box

# VJBOD Cloud: Cloud gateway which backs up business data to the cloud flexible, economical, and safe

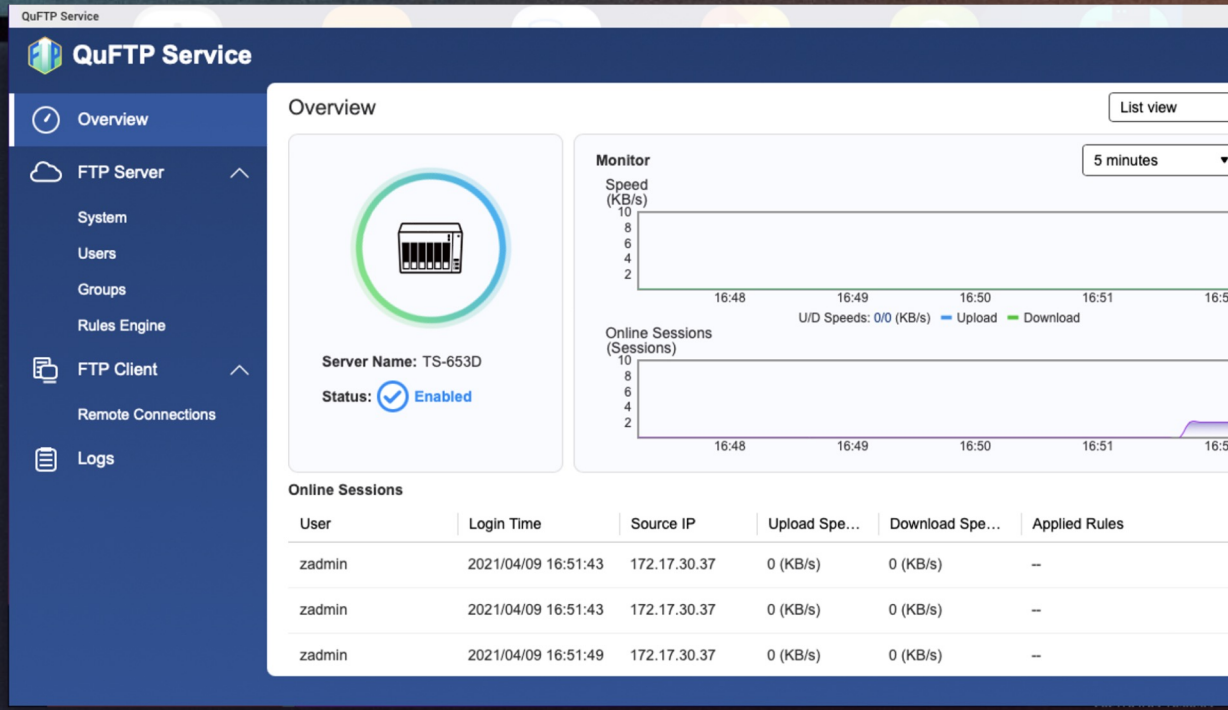


# Lighter, faster VPN service for personal use

- The new QVPN supports WireGuard VPN, which is lighter, easier to set up, supports multiple user platforms, and greatly improves the speed. It is an essential tool for personal users and works from home.
- The Kernel layer processes the VPN encrypt packet directly, and the transmission speed is faster.
- Login with key only. (No general account management)

# QuFTP remote file FTP access service

- Can be updated independently
- Supports FTP server
- Supports TLS settings
- Supports QoS settings
- Support specification setting
- Supports FTP client



# Turn the NAS into a local computer

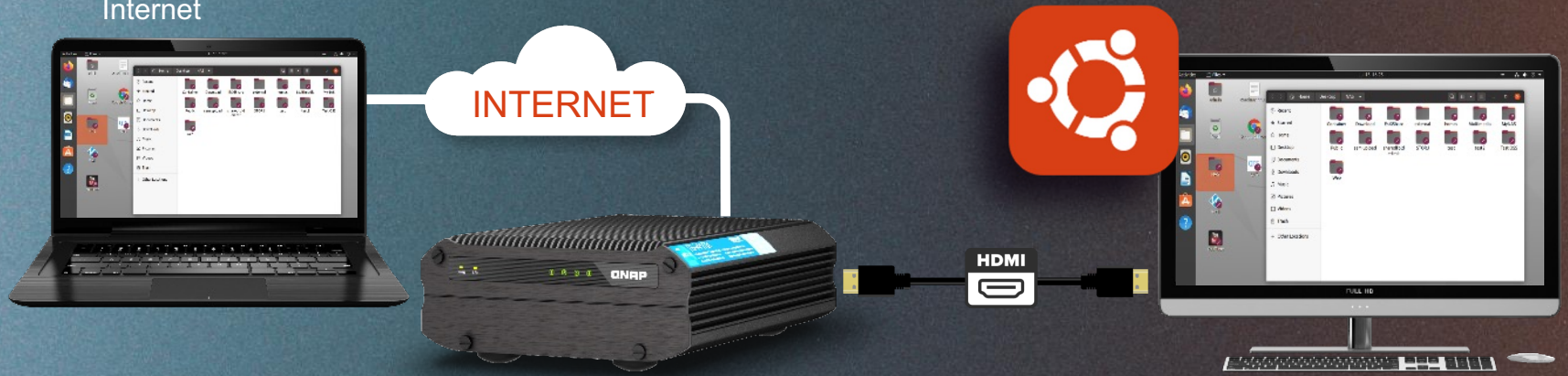
**through Ubuntu Linux Station, or connect at any time through the remote**

## Remotely connect to Ubuntu Linux Station anytime

Using a remote connection, you can connect to the Ubuntu operating system at any time through the Internet

## Ubuntu Linux Station turns a NAS into a computer

Connect a keyboard, mouse and HDMI monitor to your NAS and instantly turn it into an Ubuntu computer



# TS-i410X SATA SSD NAS

Unique mobile data storage
Efficient network transmission support

QNAP

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