

QNAP

HS-453DX

Multimedia NAS



SilentNAS QNAP

SilentNAS family w/ 0 dB & high performance

- Quad-core Intel Celeron J1900
- 2 GB DDR3L RAM (not expandable)
- 1080p HDMI output and transcoding
- 2 x 1GbE LAN ports
- 2 x SATA 3Gb/s HDD ports



HS-251+

- Quad-core Intel Celeron J4105
- 4 GB/8 GB DDR4 RAM (expandable to 8 GB)
- 4K HDMI output and transcoding
- 1 x 10GbE LAN (10G/5G/2.5G/1G) + 1 x 1GbE LAN port
- 2 x SATA 6Gb/s HDD ports + 2 x M.2 SATA 2280 6Gb/s SSD slots



HS-453DX

*The noise level will vary based on the drive used.

HS-453DX **4K**
Multimedia NAS **UHD**
HDMI 2.0

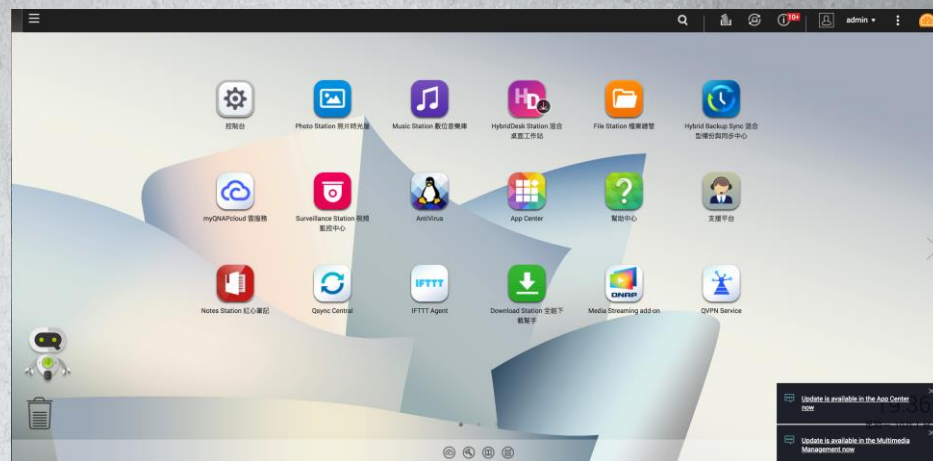


HDMI™
HIGH-DEFINITION MULTIMEDIA INTERFACE



QTS 4.4.0 w/ Linux kernel version 4.14

- Ships with QTS 4.4.0 and the newer LTS(Long Term Support) Linux kernel 4.14
- Graphics drivers
 - Gemini Lake (QNAP HS-453DX)
 - Coffee Lake (QNAP TVS-472XT, TVS-672XT, TVS-873XT)
- Major advantages of 4.14 over 4.2
 - Scalability & performance improvements for ext4



Intel 4C J4105 Gemini Lake SoC

J4105
Gemini Lake SoC

4 cores
4 threads

14nm
Power saving

1.5GHz
Base

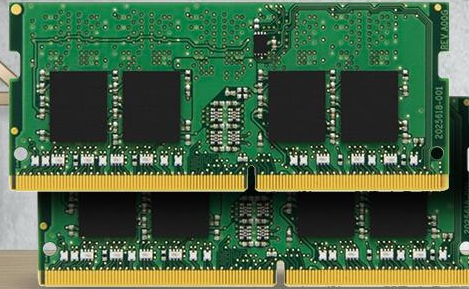
10 watt
TDP

2.5GHz
Burst

AES-NI encryption
Volume & folder support

GPU up to **750 MHz**
UHD Graphics 600

DDR4 2400 MHz SO-DIMM memory



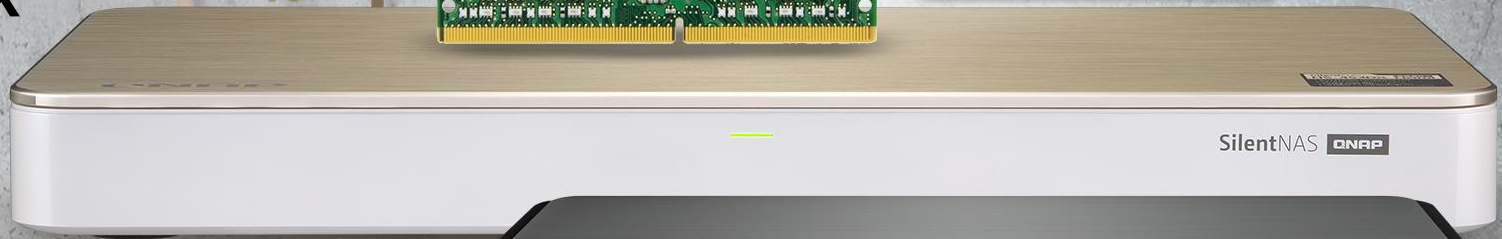
Available models:

HS-453DX-8G: 2 x 4GB

HS-453DX-4G: 2 x 2GB

HS-453DX

2 x SO-DIMM
DDR4-2400
Dual-channel



HS-251+
DDR3L-1333



HS-453DX 4K
Multimedia NAS UHD
HDMI 2.0

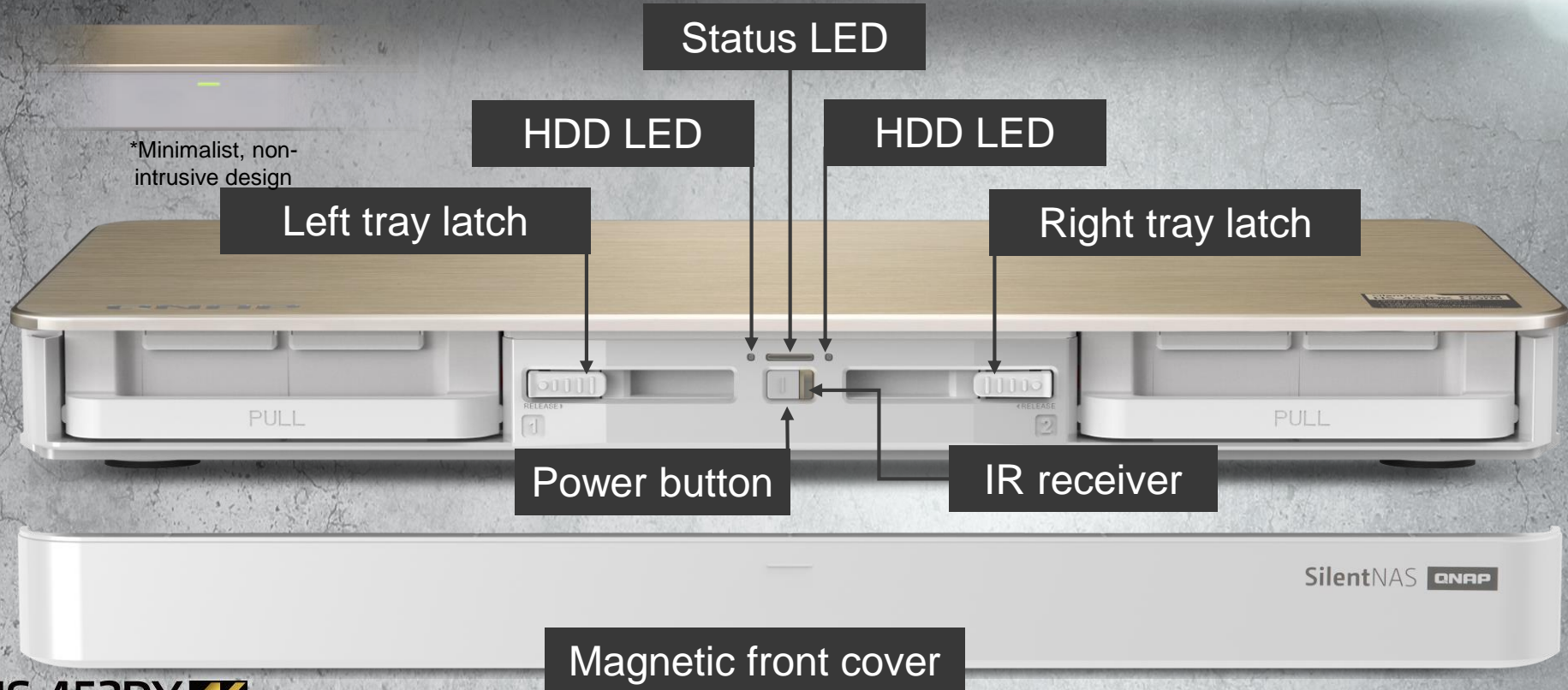
HDMI 4K 60fps fluid motions



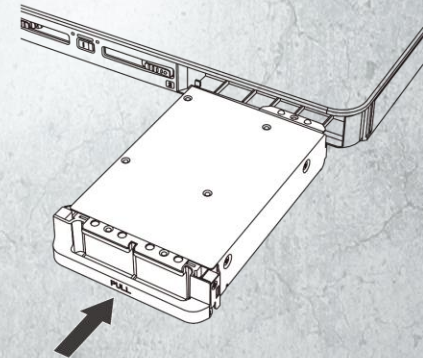
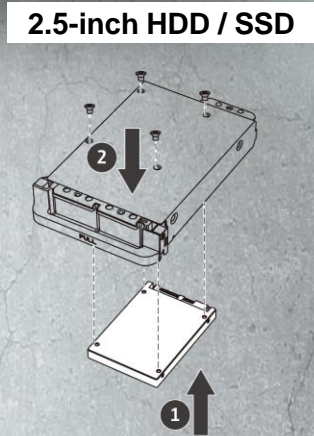
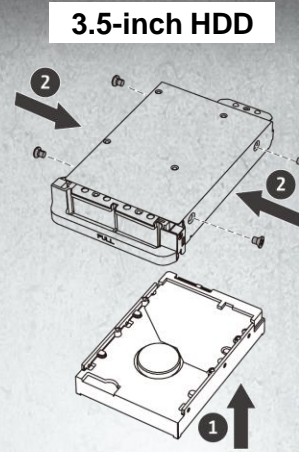
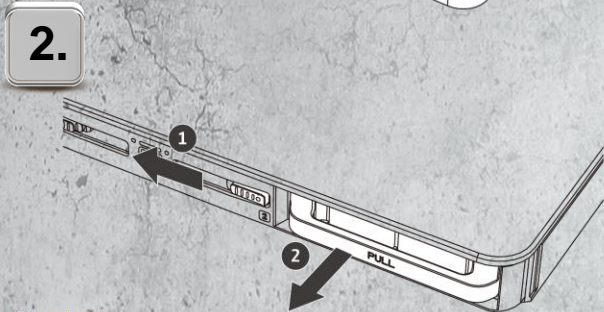
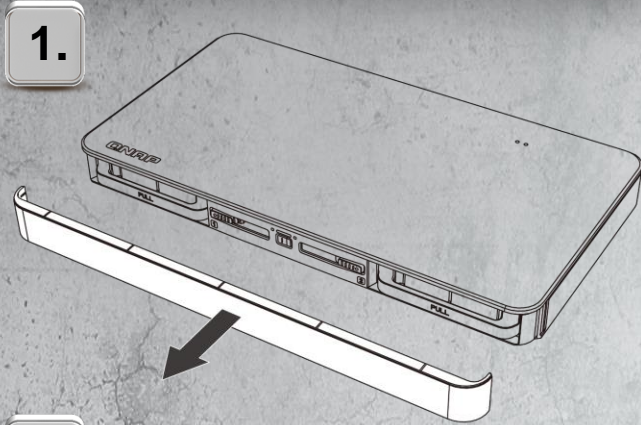
Dual HDMI ports for optimal quality



NAS front view and configurations

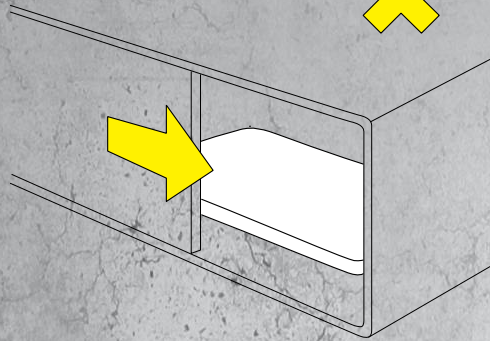


Hot-swappable 3.5"/2.5" HDD/SSD

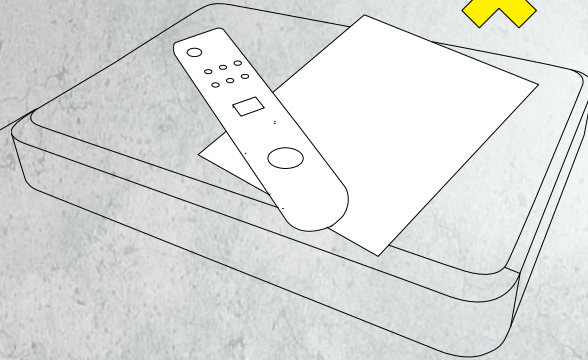


Reduce the heat in a hot environment

Keep it ventilated



No object on top



Pick 5400/5900 RPM drives



The best match 24x7 NAS HDDs



Quiet
Lower power
Lower temp



How to pick the right drives



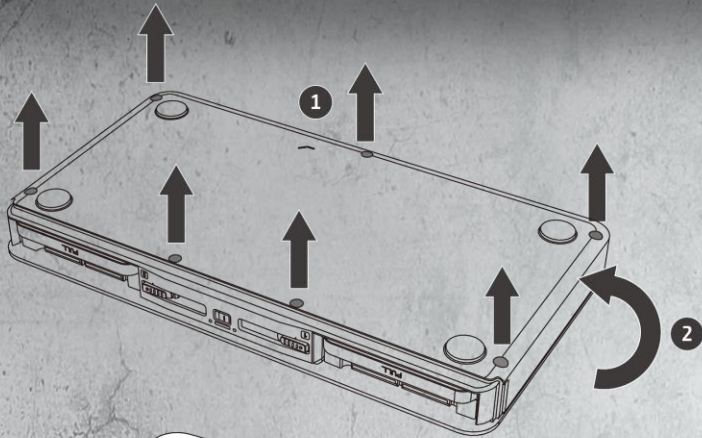
Specifications	4TB
Standard Model Numbers	ST4000VN008
Interface	SATA 6Gb/s
Features and Performance	
Drive Bay Supported	1-8 Bays
Multi-User Technology	180TB/year
Rotational Vibration (RV) Sensor	Yes
Dual-Plane Balance	Yes
Error Recovery Control	Yes
Max. Sustained Transfer Rate OD (MB/s)	180MB/s
Spindle Speed (RPM)	5900
Cache (MB)	64



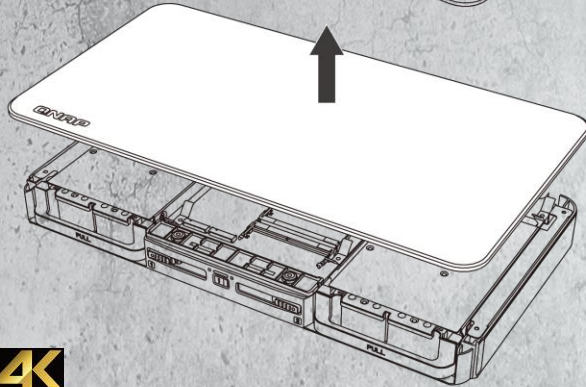
Specifications	4TB
Model Number	WD40EFRX
Interface	SATA 6Gb/s
Formatted Capacity	4 TB
Form Factor	3.5"
Advanced Format (AF)	Yes
Native command queuing	Yes
RoHS compliant	Yes
Performance	
Interface transfer rate (max)	6 Gb/s
Interface speed	
Internal transfer rate	
Cache (MB)	64
Performance Class	5400 PRM Class

Easy to install M.2 SATA SSDs

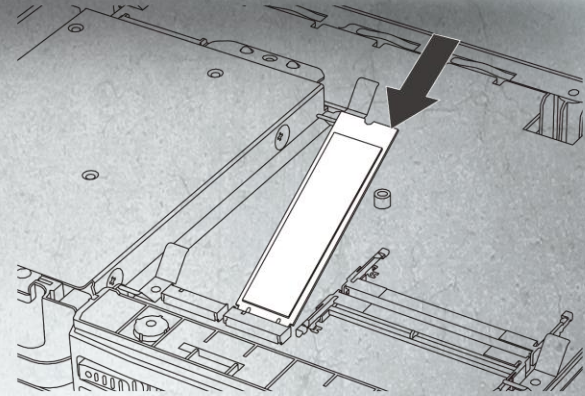
1.



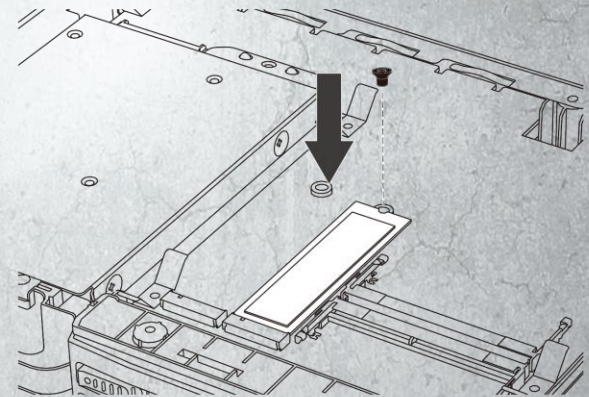
2.



3.



4.

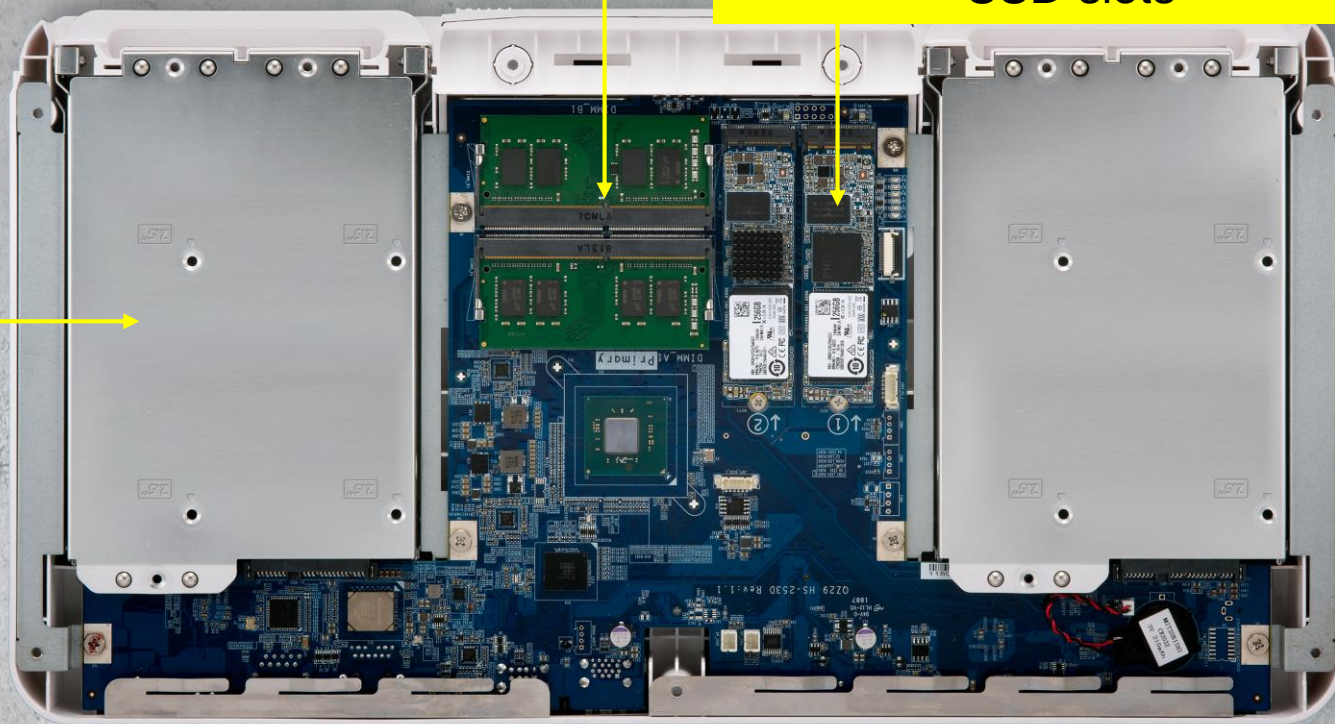


Dual HDDs & dual M.2 SATA SSDs

2 x DDR4-2400 SODIMM slot (max 2 x 4 GB)

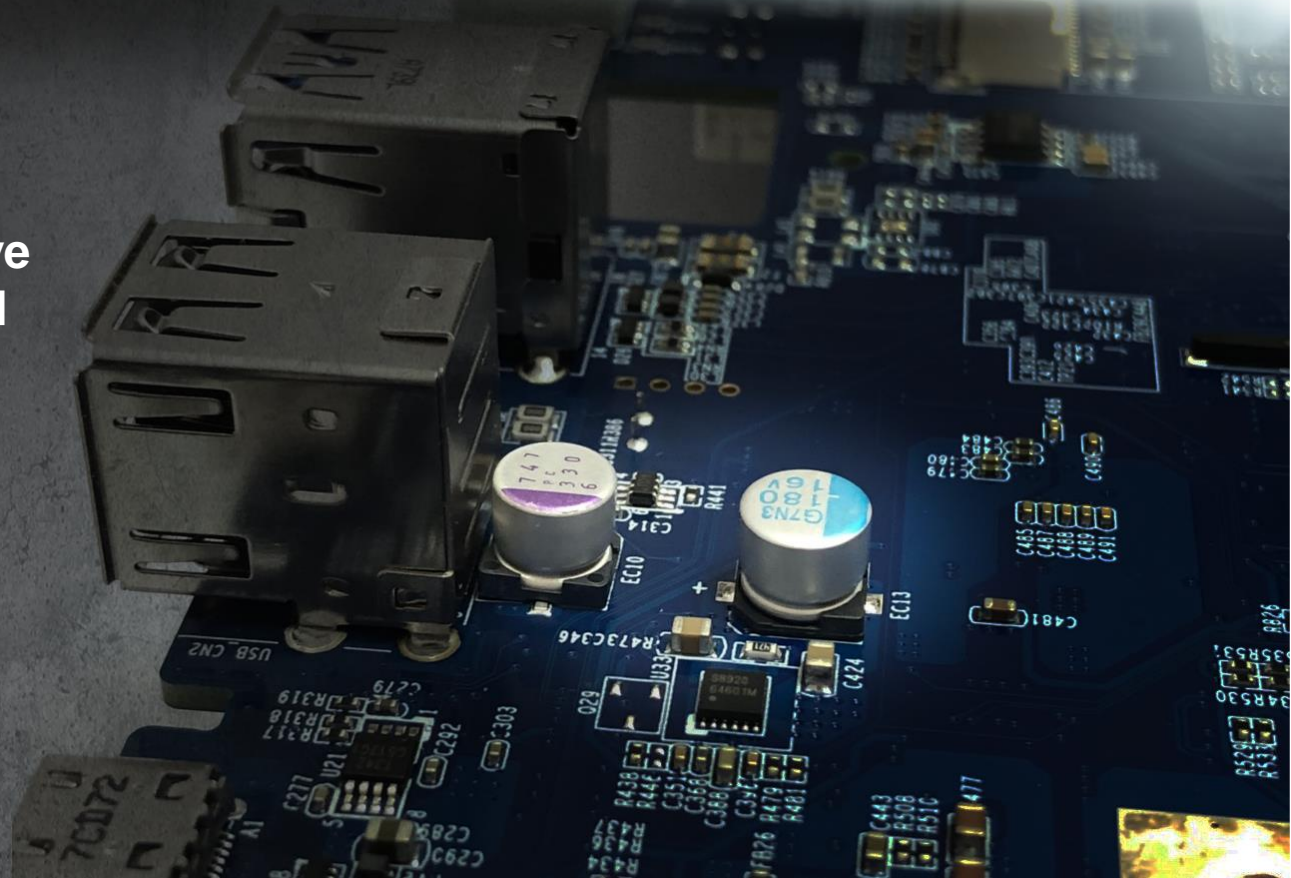
2 x M.2 SATA 2280 6Gb/s
SSD slots

2 x 3.5"/2.5"
HDD/SSD ports



All solid capacitors for longevity!

Japan-quality conductive polymer aluminum solid capacitors and over-current protection for high reliability and longevity.



USB Type-C & Type-A hyper connectivity



1 x USB 3.0 Type-C

2 x USB 3.0 Type-A



2 x USB 2.0 Type-A



Live Demo

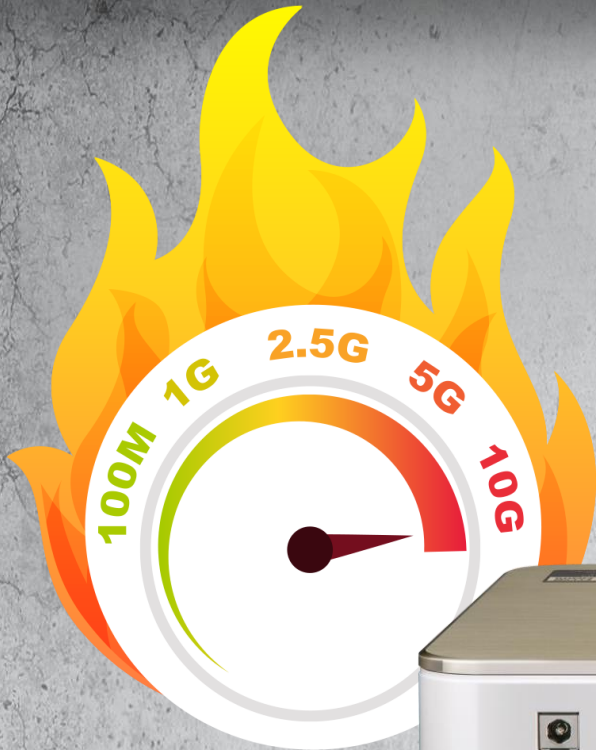
- Upgrade memory
- Install M.2 SATA SSD

10G/5G/2.5G/1G LAN speeds

Save cost with **NBASE-T** standard

Your existing wiring infrastructure may already support > **1Gbps!**

	CAT 5e	CAT 6	CAT 6A & CAT 7
1G	✓	✓	✓
2.5G	✓	✓	✓
5G	✓	✓	✓
10G	X	Max 55 meters	✓



Based on Aquantia's AQC107 10GbE NIC

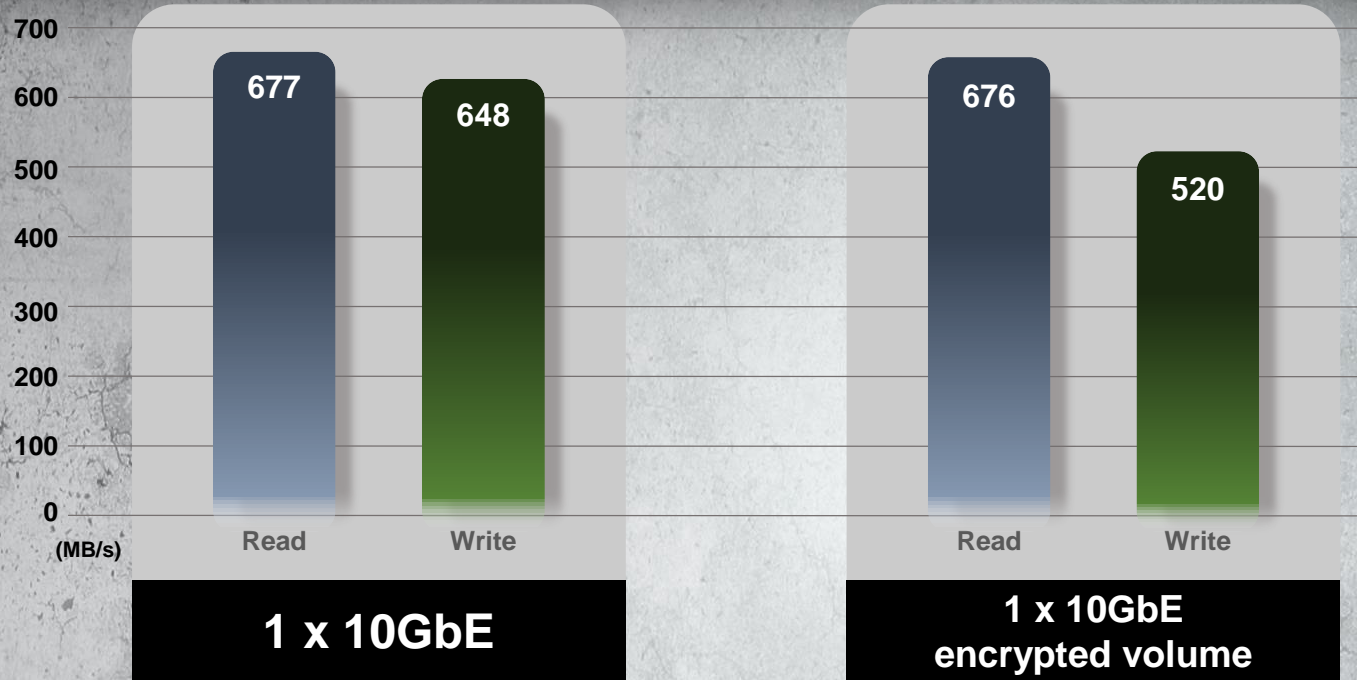
Aquantia Investors



Multi-Gig IC Better compatibility



10GbE performance

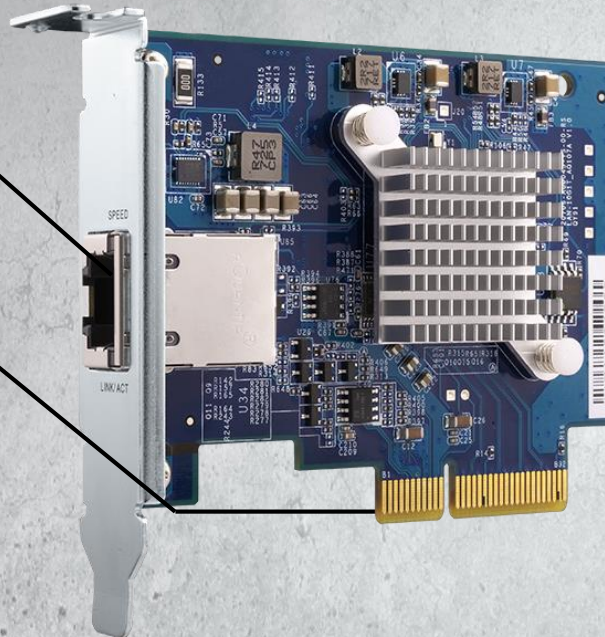


Install a 10GbE adapter to PC

QNAP QXG-10G1T 1-port 10G network adapter

10G/5G/2.5G/1G/100M

PCIe **Gen 3 x4**
interface



- Windows® 10, 8.1, 8, 7 (32/64 bit)



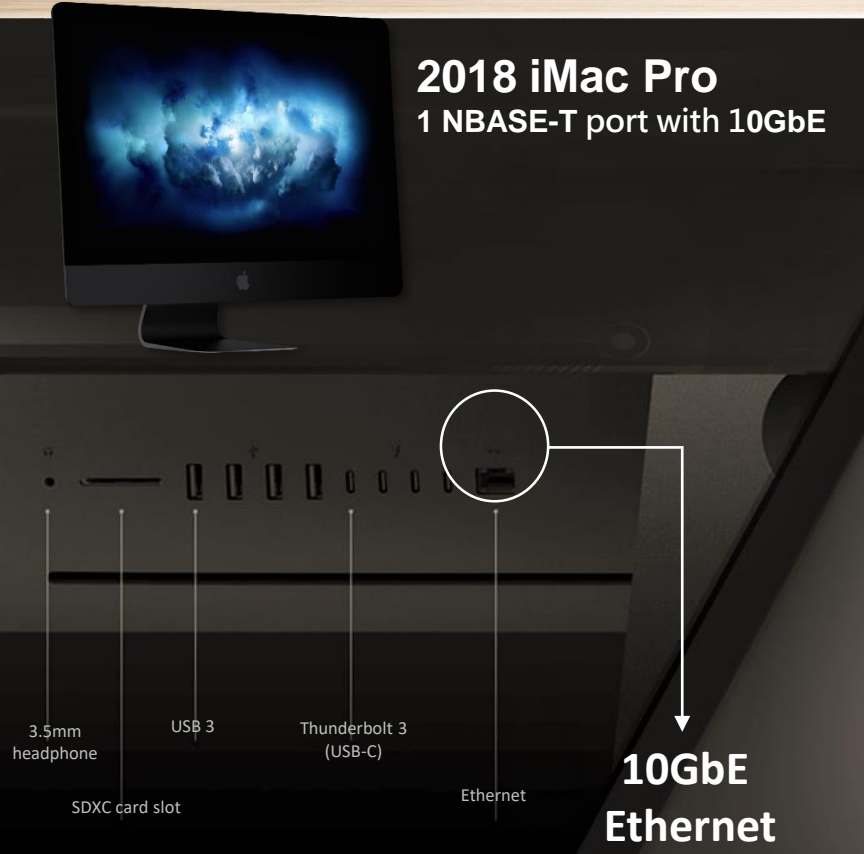
- Linux 3.2, 3.10, 3.12, 4.2, 及 4.4



Mac users connect to 10GbE

2018 iMac Pro
1 NBASE-T port with 10GbE

Mac with Thunderbolt 3 can connect to 10GbE with the QNAP QNA-T310G1T Thunderbolt 3 to 10GBASE-T adapter



**10GbE
Ethernet**



Specs

Controller : AQC107S-B1-C + AQX-N3F10-DRE-U3C
Interfaces : 1 x Thunderbolt 3, 1 x 10GbE 10GBASE-T 埠
(10G/5G/2.5G/1G)*
LAN cable : CAT 6a/ CAT 7

*Mac with macOS 10.13.3 (or newer) is required.

Accessories- 10GbE Network Switch

12

Ports

**Up to 12 x
10GbE ports****QSW-1208-8C**

12-port 10GbE switch
4 x SFP+ port
8 x RJ45/ SFP+ combo ports

8

Ports

**Up to 8 x
10GbE ports****QSW-804-4C**

8-port 10GbE switch
4 x SFP+ port
4 x RJ45/ SFP+ combo ports

Live Demo

- 10GbE performance & Qtier

HybridDesk Station for various A/V needs



Mouse & Keyboard

USB

HDMI

Network

Audio

Qremote App

Various HybridDesk Station apps

System Mgmt.

- QTS
- File Station HD

Surveillance

- Surveillance Station
- QVR Pro Client

Comm. & Social

- Skype
- Facebook

Multimedia

- HD Player
- OceanKTV
- YouTube
- Clementine
- Plex Home Theater
- Spotify
- TuneIn Radio

Multimedia Mgmt.

- Photo Station HD
- Video Station HD
- Music Station HD

Browser & Productivity

- Chrome
- Firefox
- LibreOffice



Customize actions of buttons with QButton



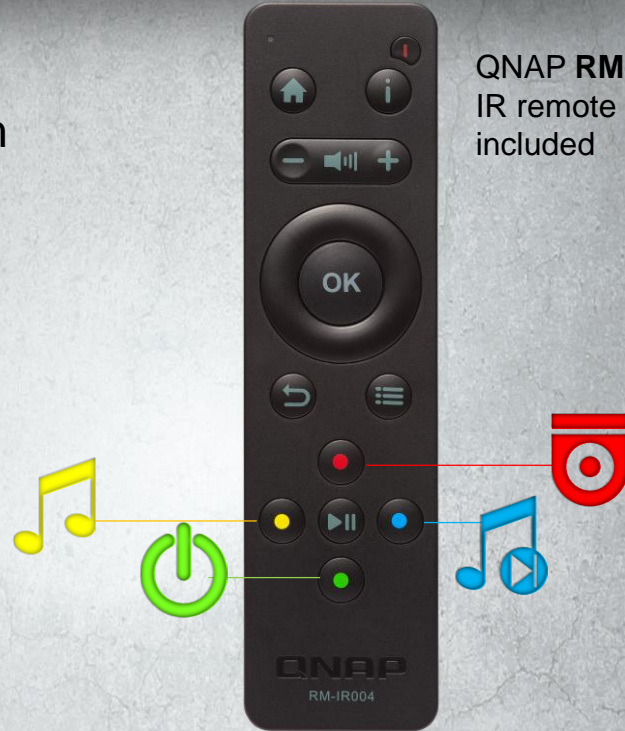
Play your favorite music playlist with a single button or set other buttons to play the previous or next song



View pre-selected channels on Surveillance Station for quick surveillance monitoring



Set a button to restart or power off your NAS for greater convenience



QNAP RM-IR004
IR remote control
included

Linux Station turns NAS into a Ubuntu PC



1

HDMI output from NAS to a monitor



Multi-version Ubuntu

- Ubuntu 14.04
- Ubuntu 16.04
- Ubuntu Kylin (Chinese)



2

Connect a USB keyboard and a mouse to the NAS to begin the Ubuntu operation

Linux Station + Kodi to play everything



Use Kodi to play contents on NAS

- Install 'n use



KODI



Video HD

- Install Kodi plug-in Video HD
- Support the same Video Station functions such as

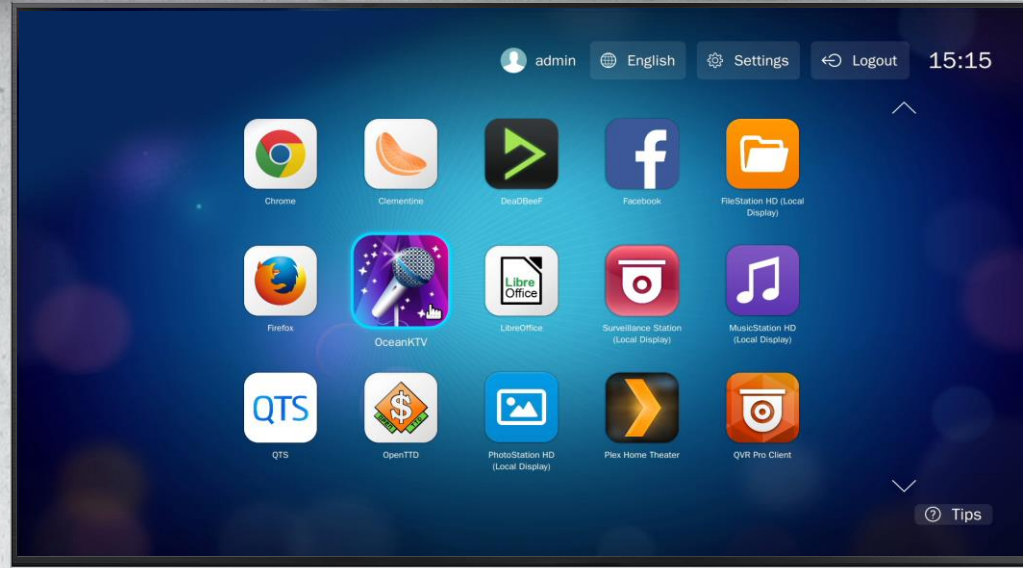
progress, categorization, subtitle



OceanKTV for the home karaoke



Dual dynamic
microphone inputs



HDMI

Management & playback in OceanKTV

Web



Song library

TV



Singing & YouTube playlist

Mobile



iOS/Android
remote control

3 ways to play a song

Streaming & accelerated transcoding

- 4K H.264 decoding & encoding for real-time or offline 4K video transcoding on various client players for smooth playback and support more clients
- HDMI output for 4K Ultra HD (3840 x 2160, 60FPS) content
- Stream content through DLNA, AirPlay, Chromecast and Plex

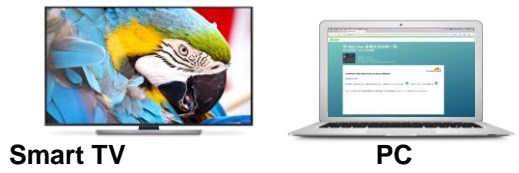


Use PLEX to stream media collections

Stream



Stream



Stream



Cinema28 for the whole home streaming

Cinema28 allows for single-interface management of all your media files and can stream files to every connected device throughout your home.



HDMI
(Audio)



Line Out



USB DAC



Bluetooth



HDMI
(HD Player)



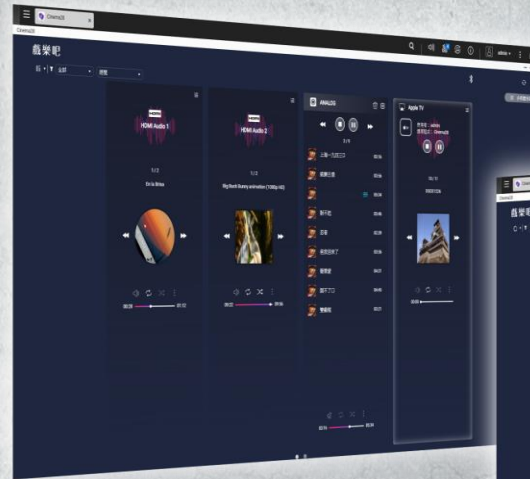
Chromecast



DLNA



AirPlay



Enjoy Roon without a PC



Two M.2 SATA SSD slots
for higher performance



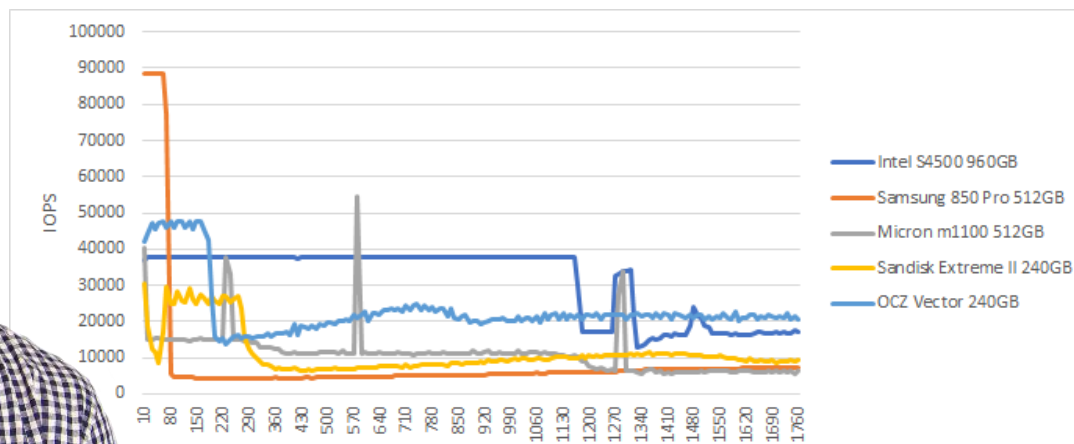
Different SSD has Different Performance

- In QNAP Lab, engineer use FIO to test different SSD, and all SSD have showed consisted write performance degrade.
- Different SSD's controller and Garbage Collection's Algorithm will effect the long term performance

How can storage vendors help to ensure SSD has expected performance?

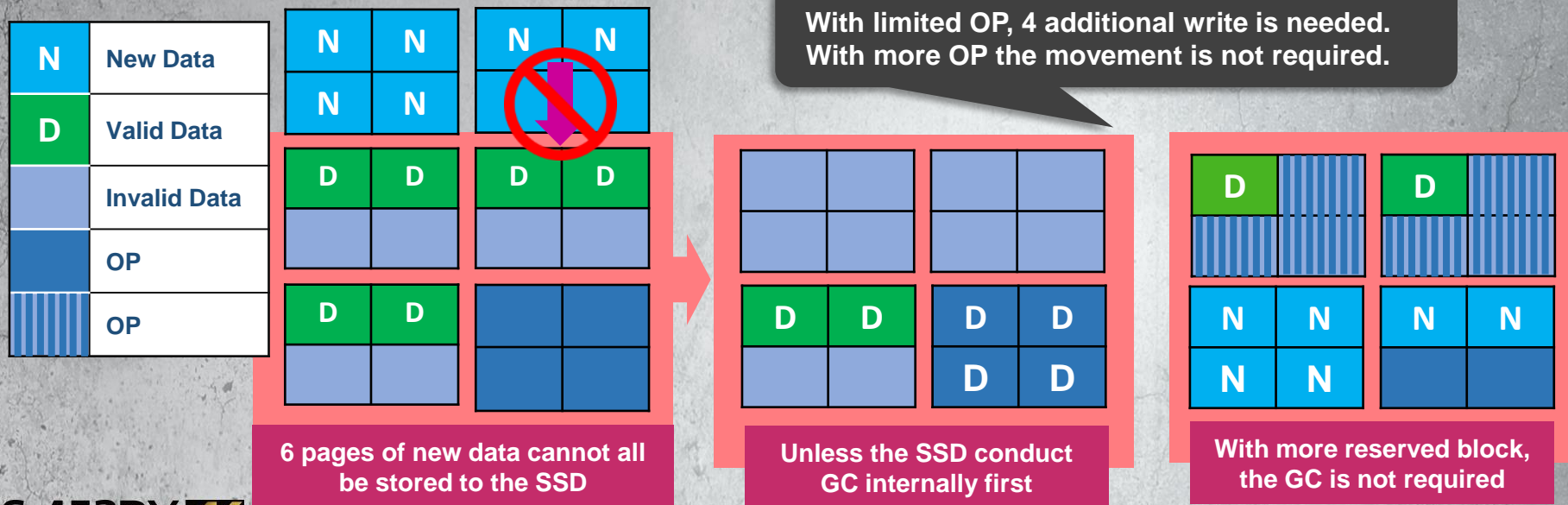


Different SSD in QNAP NAS's FIO consisted performance (IOpattern: RW-4K):



What is SSD Over-Provisioning

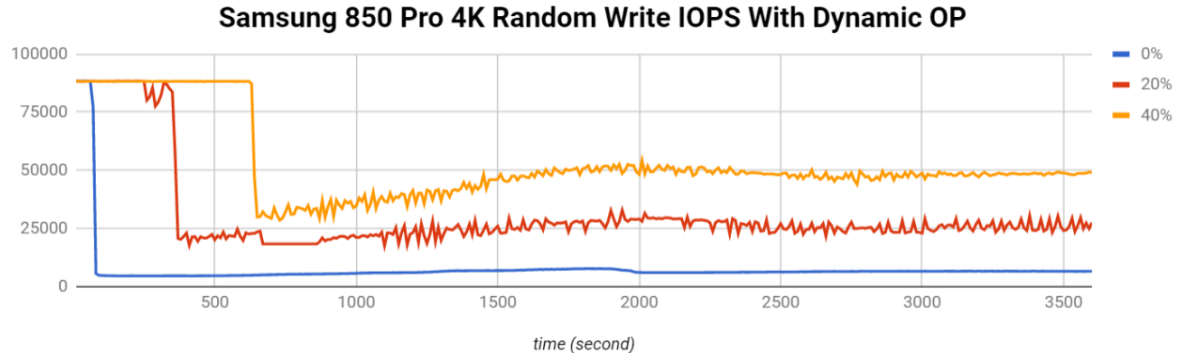
- SSD Over-provisioning reserves space in the SSD to decrease write amplification & increase consistent performance and endurance.
- Reason: to avoid Garbage Collection in any giving point of time



The Advantage of Software-defined SSD Extra Over-Provisioning

- With QTS, users can assign more OP to the SSD RAID.
- At QNAP Lab, the effect of over-provisioning can not only be observed on single consumer-level Samsung 850 Pro to gain the performance same as data center SSD, but also be seen on SSDs as a RAID.

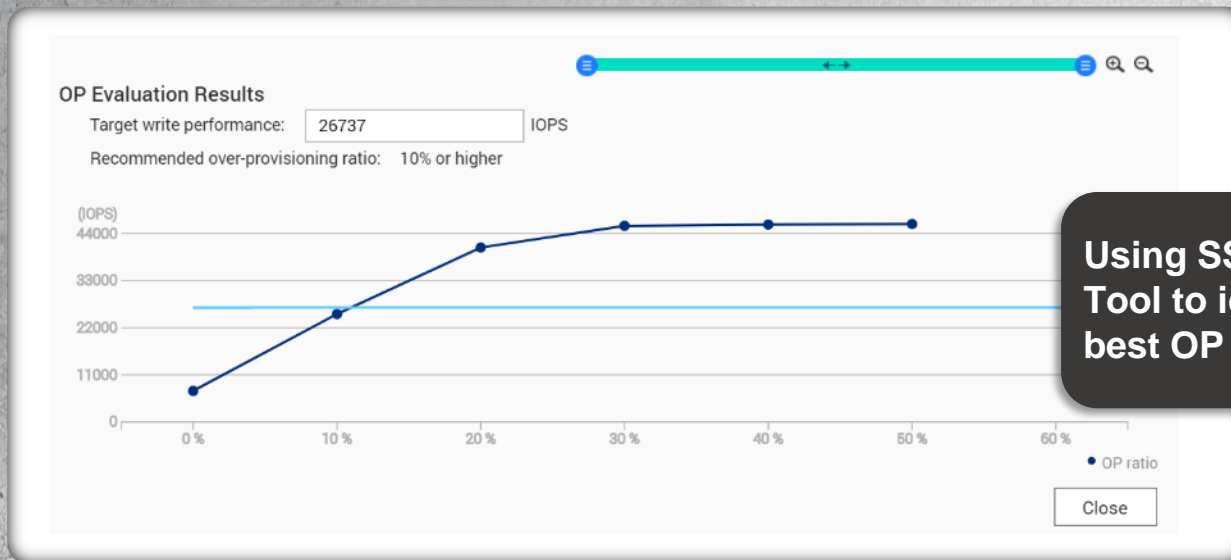
Above: Samsung 850 Pro as Single Disk
Below: Micron M1100 as RAID 1
FIO configuration: runtime=1800
ioengine=libaio direct=1 rw=randwrite
bs=4k numjobs=1 iodepth=32



Take Intel S4500 as an example, The continuous random write is 30,000

Choosing SSD is hard, choosing QNAP is simple

SSD consisted performance can only be observed after long time of usage
QNAP has provided the unique SSD Profiling Tool to help user measure the performance difference with different over-provisioning amount.
Not just IT manager, home user can also evaluate the capability of SSD.



Using SSD Profiling Tool to identify the best OP amount.

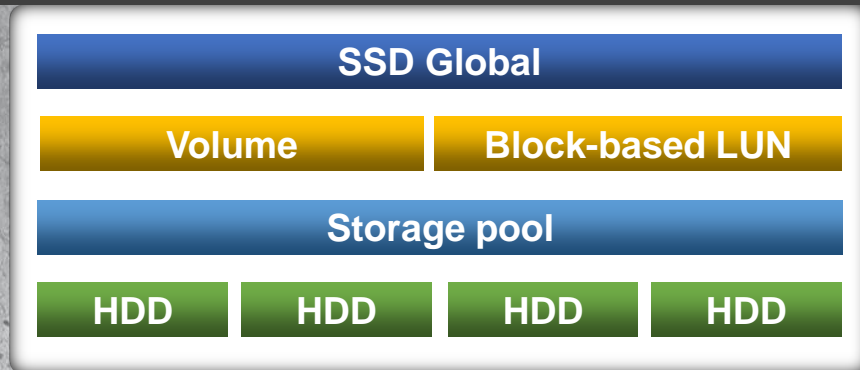


QNAP SSD Global Cache and Qtier

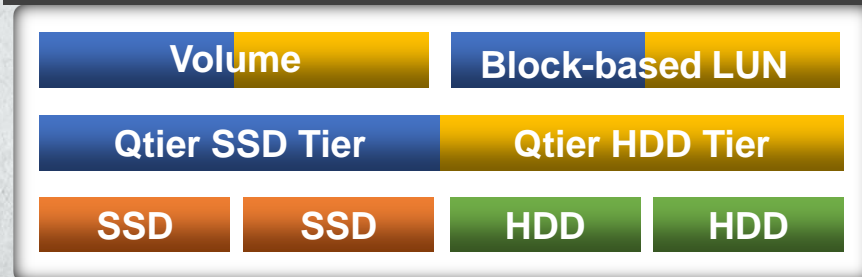
Two options for users to utilize SSD on HS-453DX with M.2 SSD slots

- For real-time performance boost, deploy SSD Global Cache or All flash storage
- For continued data tiring between hot and cold data, deploy the Hybrid Storage Qtier™ Auto Tiering

SSD Cache lets all data enter cache and read hot data from the storage in real time



Qtier utilizes SSD space and let data block be reallocated based on hot or cold in the storage



QNAP Global SSD Cache

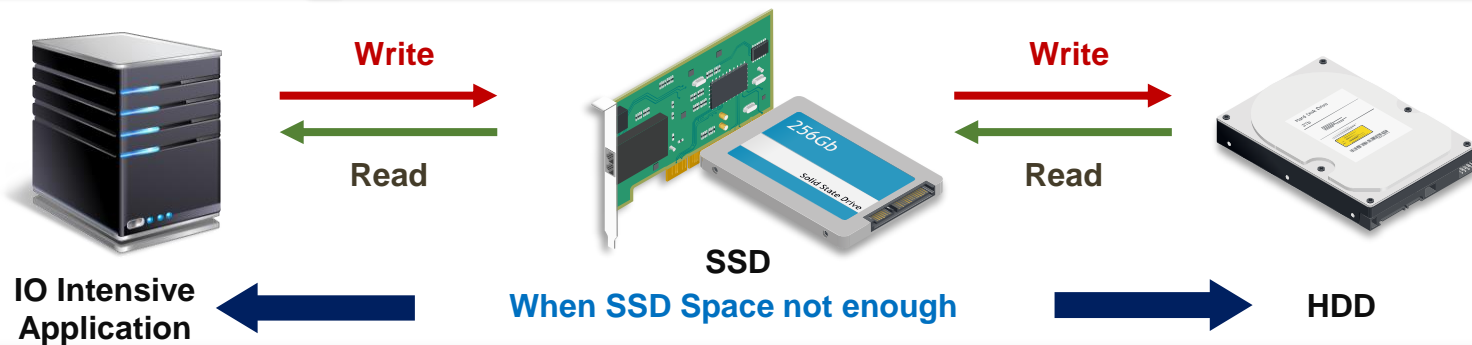
On HS-453DX, SSD global cache is for all volumes and LUNs:

Read-Only → Copy frequently used data to SSD

Read-Write → Not only copy data, new data can also be temporarily stored in SSD

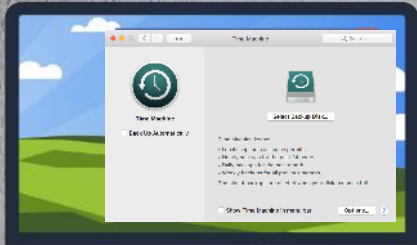
Write-Only → Only new data will be written into the cache

How Read-write Cache work: Data from clients and storage will both be cached



Backup or sync data at your choice

macOS



- Time Machine
- Qsync



Windows



- NetBak Replicator
- Qsync



Protection against ransomware!



Scheduled or
real-time
backup/sync

Enterprise-grade snapshot protection

Snapshot #
per NAS

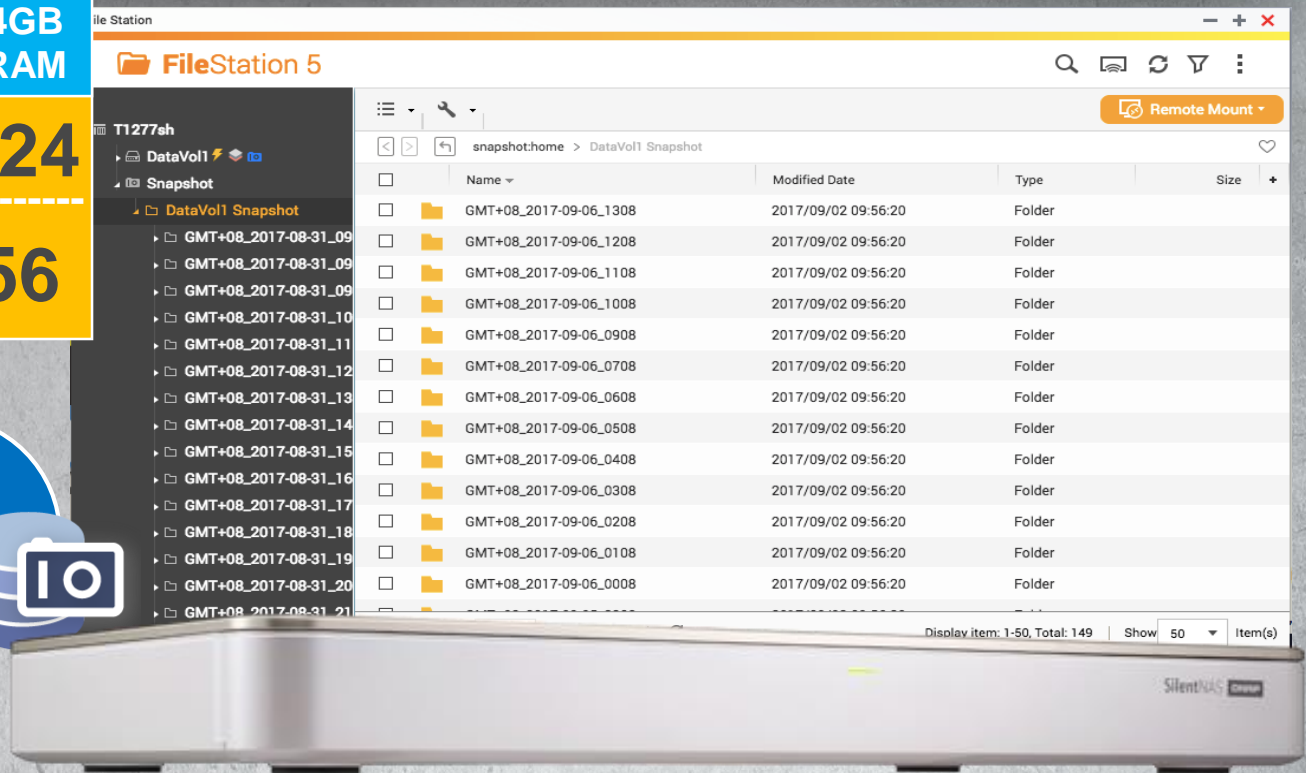
Snapshot #
Volume / LUN

≥ 4GB
RAM

1024

256

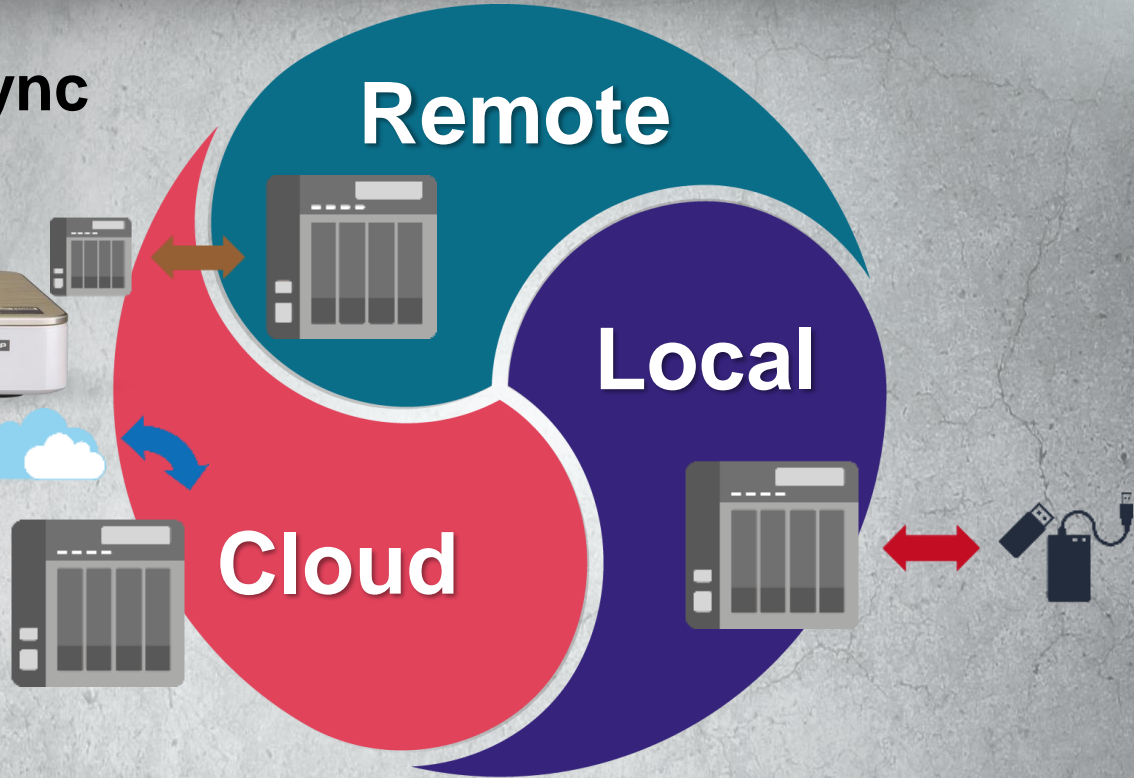
Less space
Less risk!



Backup the NAS data



Hybrid Backup Sync



Notification Center: stay informed at all times

The screenshot displays the QNAP Notification Center interface. On the left, a navigation menu includes: Overview, Notification Queue and History, Service Account and Device Pairing, System Notification Rules, and Global Notification Settings. The main content area is titled "Event Notification" and contains a "Create Rule" button. A modal window titled "Edit Rule for Event Notifications" is open, showing the "Notification Criteria" tab. The "Severity Level" section has checkboxes for Information, Warning, and Error, all of which are checked. The "Keyword Filter" is set to "All messages". Below this, there is a checkbox for "Time range" with a time selection field set to 00:00 to 23:59. The "Paired Devices" section at the bottom shows a table with one device listed.

Name	Model	OS Version	App Version	Action
admin (1)				
admin_Windows_Firefox	Windows	firefox 61	QTS Browser Notification 4.3.5	

QVR Pro 24/7 surveillance solution

QNAP



6,000+ IP cameras

8 ch free recording channels

128 ch max channels (license)

QUSBCam2 webcam recording

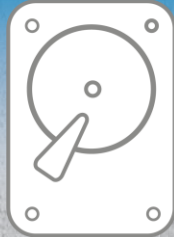
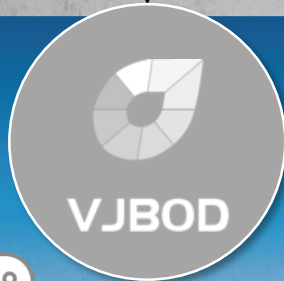


Expand storage via VJBOD



iSCSI ↓ 10GbE / 1GbE mount

Max 8 remote NAS



VJBOD

Use other NAS capacity
to expand own capacity
via network connection



The QNAP SilentNAS lineup

	HS-453DX	HS-251+
Processor	Intel Celeron J4105 quad-core 1.5GHz, burst to 2.5GHz (Gemini Lake)	Intel Celeron J1900 quad-core 2.0GHz, burst to 2.42GHz (Baytrail)
Graphics	UHD Graphics 600	HD Graphics
Encryption acceleration	Yes (AES-NI)	---
Memory	Max 8GB DDR4-2400 (2 x 4GB SODIMM)	2GB DDR3L-1333 (non-expandable)
HDD/SSD	2 x 3.5"/2.5" SATA 6Gb/s	2 x 3.5"/2.5" SATA 3Gb/s
M.2 SATA SSD	2 x M.2 2280 SATA 6Gb/s SSD	---
10GbE network	1 (10G/5G/2.5G/1G/100M)	---
HDMI	4K (1 x HDMI 2.0 + 1 x HDMI v1.4b)	1080P (1 x HDMI v1.4a)
Speaker	Yes	---
USB Type-C	Yes (USB 3.0)	---



QNAP

HS-453DX

10GbE SilentNAS

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