

# QNAP

Perfect Combination between Hardware and Software

# TVS-x82T



Use your Turbo vNAS as a PC

## 6/8/12-bay Thunderbolt NAS Series

DAS, NAS and iSCSI SAN Integrated Combo Solution



- 1 6th generation Intel Core i3/i5/i7 multi-core processor provides up to 20% higher performance
- 2 8GB (up to 32GB) DDR4 2133MHz RAM
- 3 Thunderbolt™ 2 port for 20Gbps ultra-high transmission speeds
- 4 40GbE and 10GbE network interfaces for high-speed file sharing
- 5 M.2 SATA 6Gb/s and SSD slots with support for PCIe NVMe SSD



TVS-682T



**2 Dual Network Technologies**  
Thunderbolt™ 2 / Ethernet network

**3 Mode Consolidated Storage System**  
DAS / NAS / iSCSI SAN

**4 Use Cases**  
Highly expandable (vNAS+JBOD+JBOD)  
Highly applicable (Mac+vNAS+JBOD)  
High-speed sharing (Mac x2+vNAS)  
Flexible traffic distribution (Mac+vNAS+vNAS+Mac)



- ◆ M.2 SATA 6Gb/s and SSD slots
- ◆ 24/7 acceleration with Qtier and SSD cache technology
- ◆ Instantly find files and documents using Qsirch
- ◆ Flexible and comprehensive storage expansion solution
  - Daisy-chain QNAP Thunderbolt™ 2 with TX-500P / TX-800P
  - Supports high-speed USB 3.1 10Gbps external storage
- ◆ Virtual JBOD
- ◆ Play and transcode 4K 60 FPS videos, provides the perfect storage solution for online video editing
- ◆ Optimized fan controls for absolute silence



# TVS-1282T

## Thunderbolt NAS

### Hyperconverged infrastructure for next-generation performance and protection

#### Three PCIe expansion slots\*

- ▶ PCIe Gen. 3 high-speed connection
- ▶ Support for 10/40 GbE adapters, PCIe NVMe SSD, external graphics cards, and USB 3.1 expansion cards

\* Two of the three PCIe slots are pre-installed with Thunderbolt™ and 10GbE adapters

#### Four Gigabit Ethernet ports

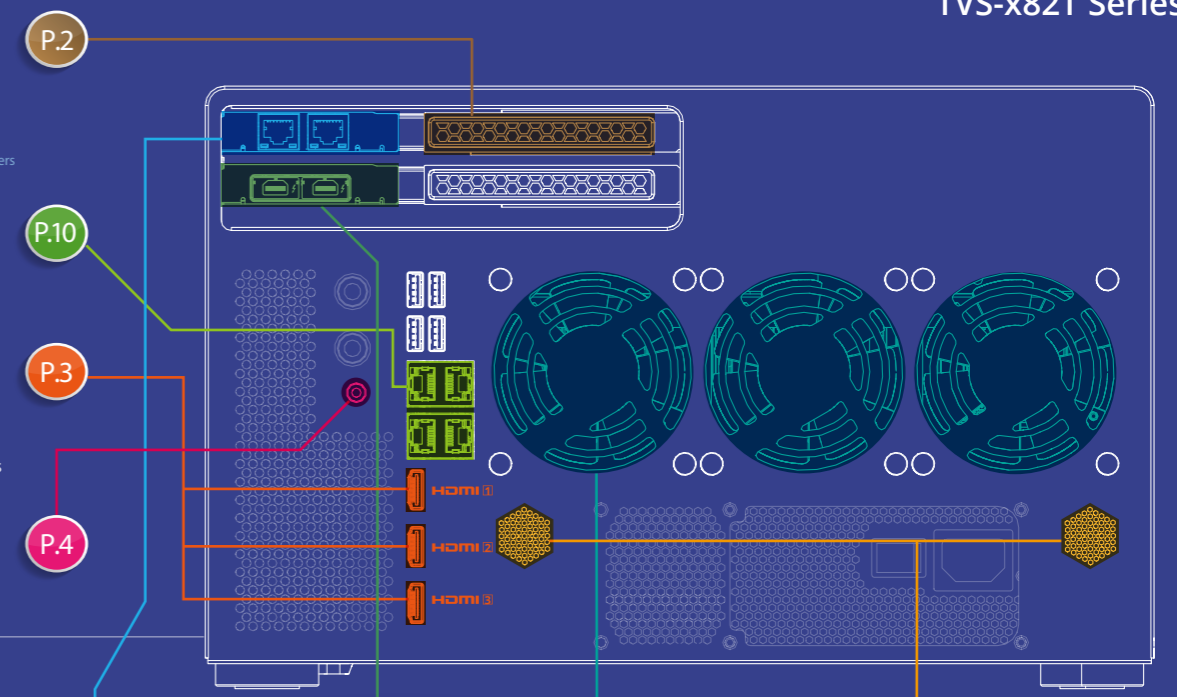
Ideal for service binding, port trunking and MPIO configurations

#### Three HDMI ports

- ▶ Offers one HDMI 2.0 port and two HDMI 1.4b ports
- ▶ HDMI 2.0 fully supports stunning 4K (60 FPS) videos
- ▶ Dual HDMI output with duplicated and extended desktop options

#### 3.5mm audio jack

Connects to a speaker or a headphone for audio output



Rear View

#### P.2 Smart fans for quiet operation

Separately detect the CPU and HDD temperatures to dynamically control fan speed.

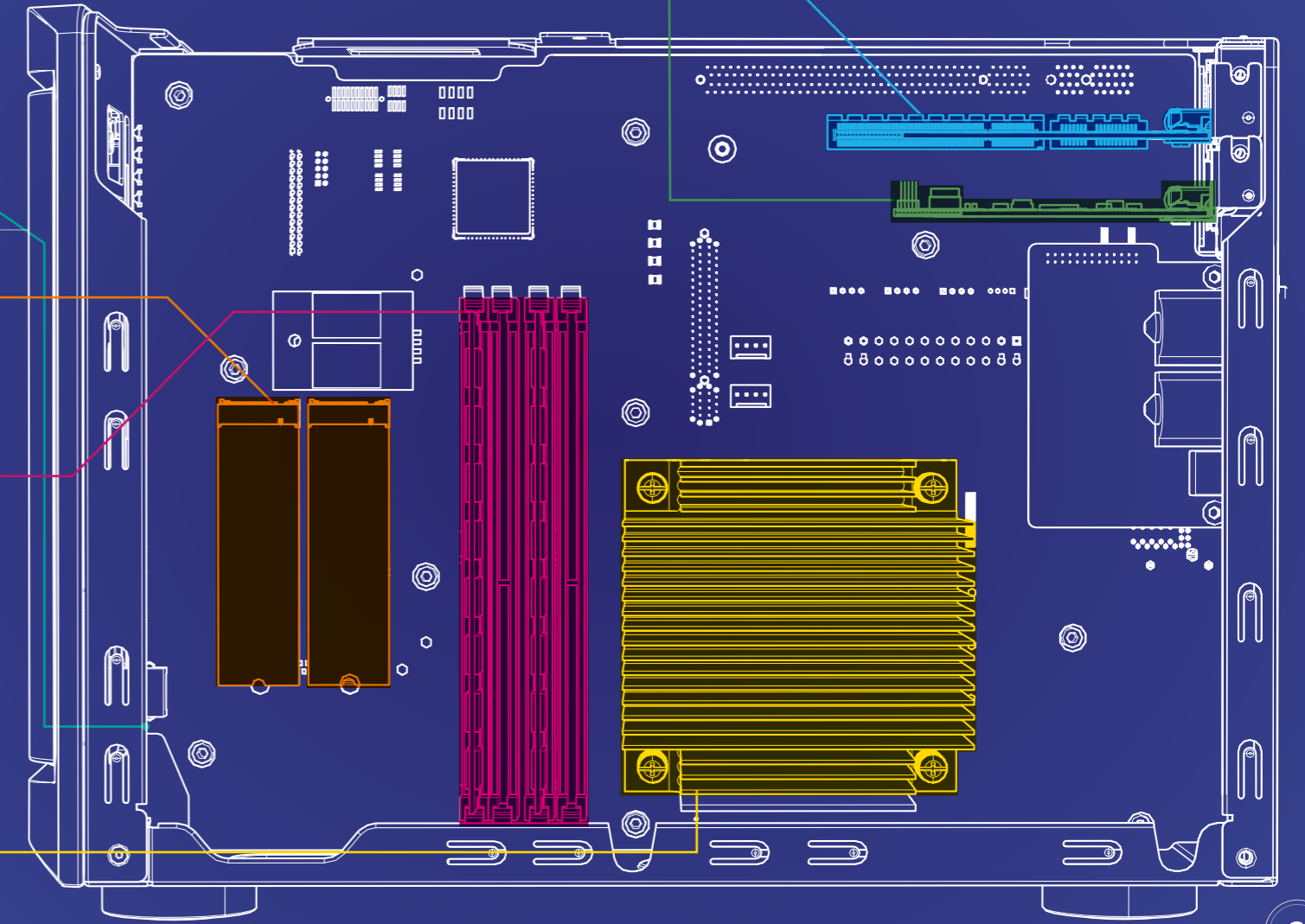
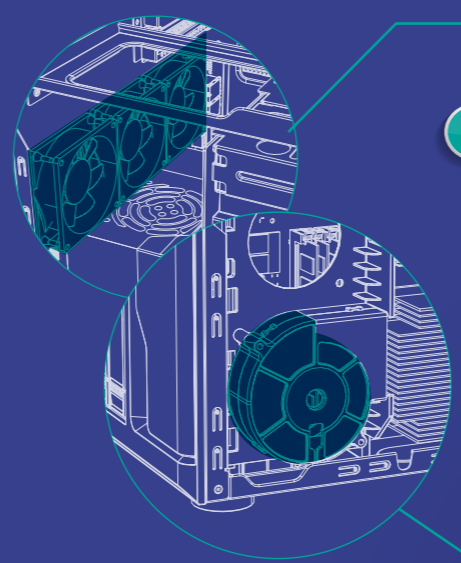
#### P.10 Built-in dual 10GBASE-T network port

#### P.5 Two Thunderbolt™ connectors

Industry-leading converged storage with Thunderbolt™ DAS/NAS/iSCSI connectivity

#### P.4 Two built-in speakers

- ▶ For direct audio output
- ▶ Provides verbal system warnings



#### Two built-in M.2 slots\*

- ▶ Supports SATA 6Gb/s M.2 SSDs with 2242, 2260, 2280, and 22110 form factors
- ▶ Allows for the best flexibility in tiered storage configuration and enables cache acceleration

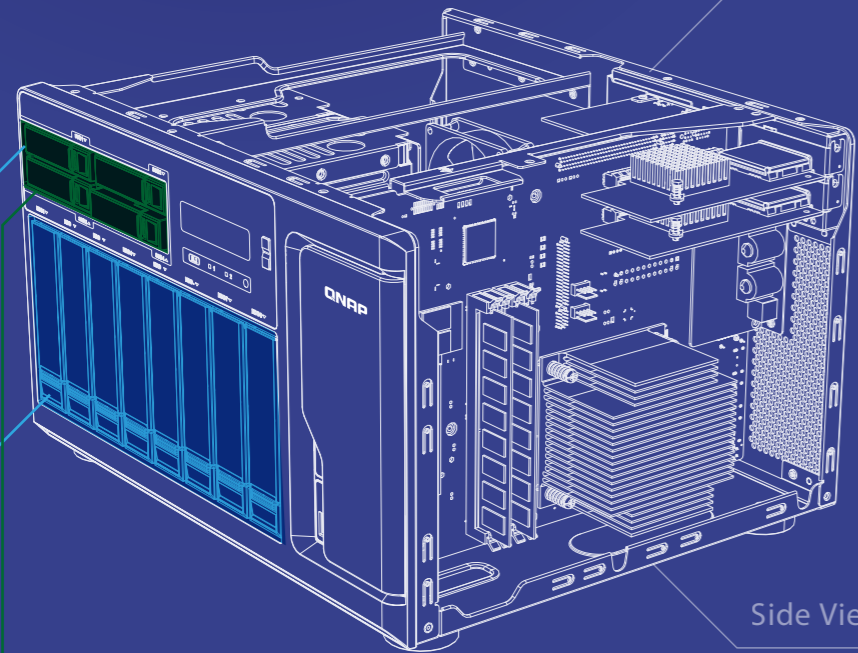
\* M.2 SSD is optional

#### DDR4 2133 MHz memory

Supports four DDR4 memory modules with a maximum of 32GB in total

#### 6<sup>th</sup> Generation Intel® Core™ Processor

Featuring the latest 14nm manufacturing technology with faster buses to support DDR4, PCIe Gen. 3, and DMI 3.0 for incredible performance and extremely efficient data transmission.

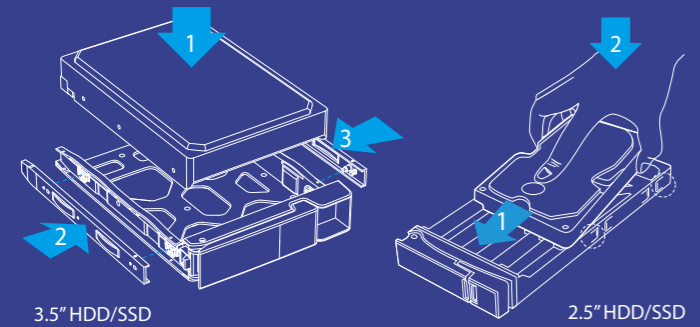


Side View

#### P.9 Four built-in SSD 2.5" slots

Offers flexible configuration in tiered storage and enables cache acceleration

#### P.2 Tool-less HDD tray and installation



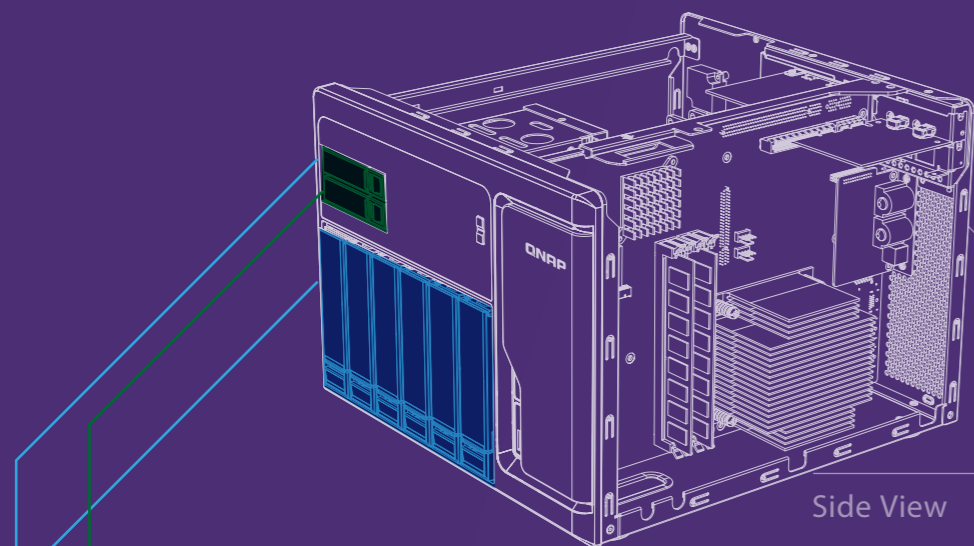
3.5" HDD/SSD

2.5" HDD/SSD

# TVS-882T Thunderbolt NAS

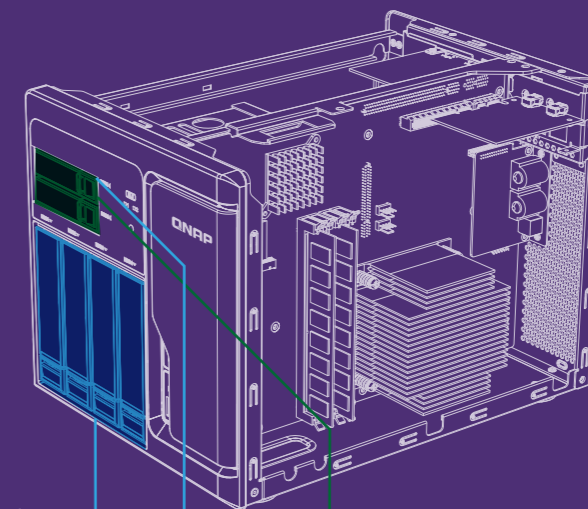
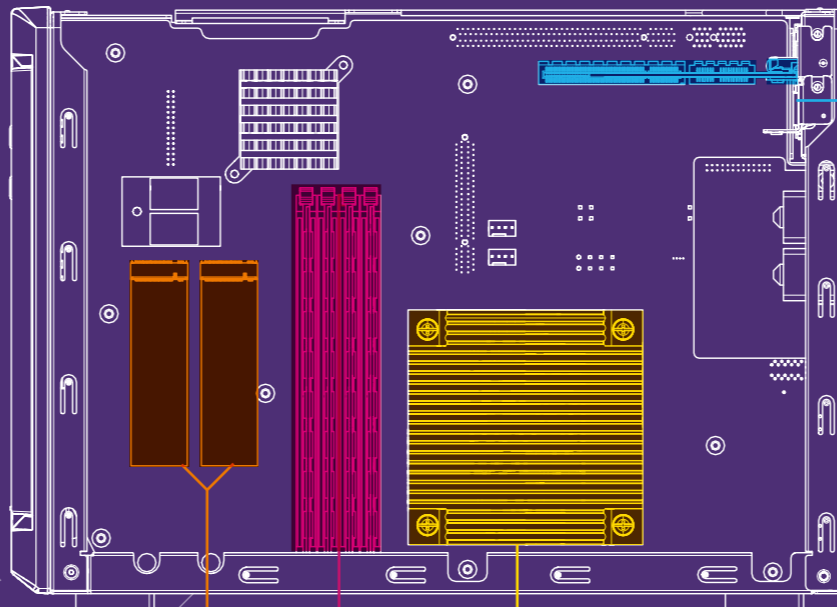
# TVS-682T Thunderbolt NAS

(TVS-882T and TVS-682T)



Side View

Rear View

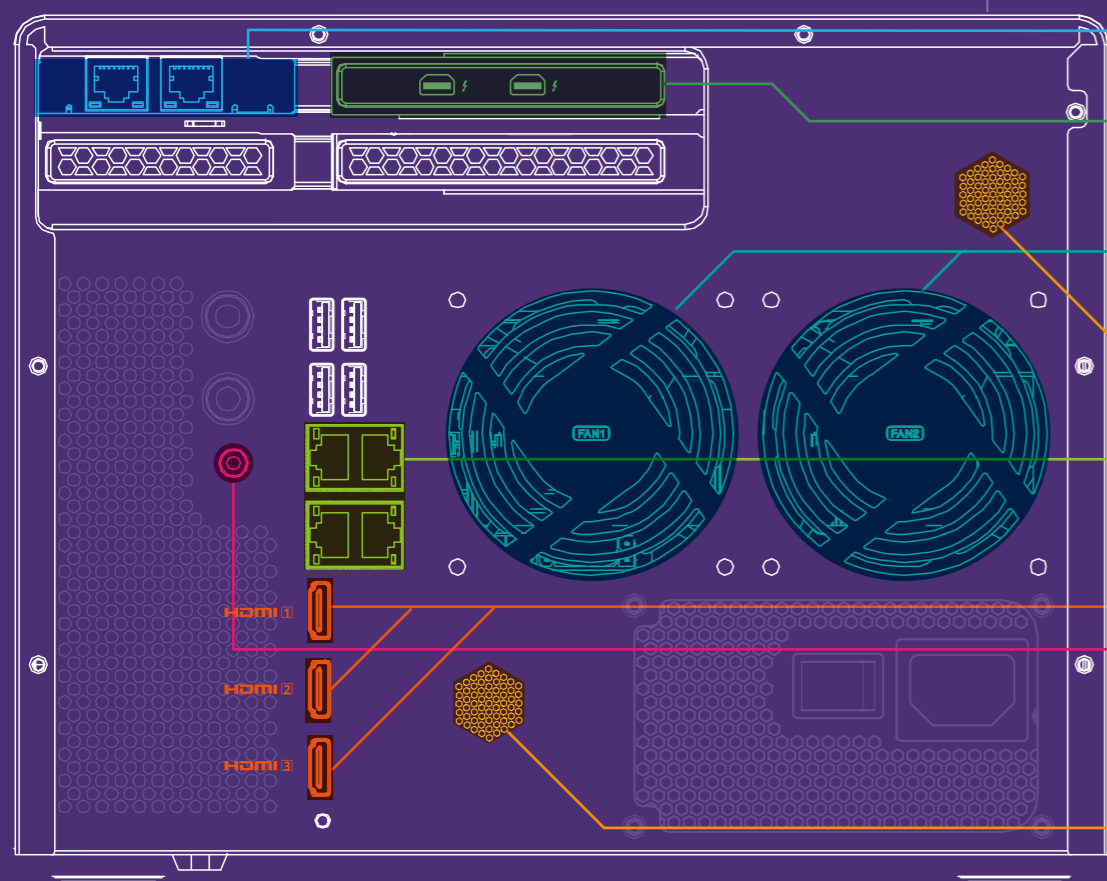


背视图

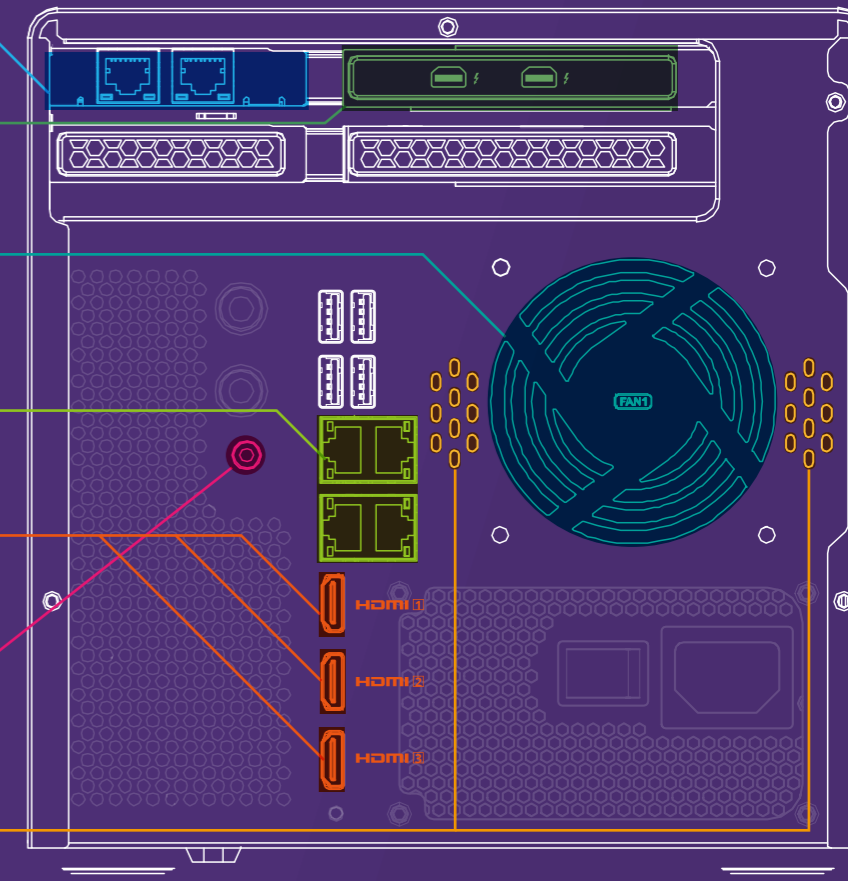
- P.9** Built-in two SSD 2.5" slots  
Offers flexible configuration in tiered storage and enables cache acceleration
- P.2** Tool-less HDD tray and installation

- P.1** Built-in two M.2 slots\*  
\* M.2 SSD is optional  
  - ▶ Supports SATA 6Gb/s M.2 SSDs with 2242, 2260, 2280, and 22110 form factors
  - ▶ Allows for the best flexibility in tiered storage configuration and enables cache acceleration
- P.1** DDR4 2133 MHz memory  
Supports 4 DDR4 memory modules with a maximum of 32GB in total
- P.1** 6th Gen. Intel® Core™ Processor  
Featuring the latest 14nm manufacturing technology with faster buses to support DDR4, PCIe Gen. 3, and DMI 3.0 for incredible performance and extremely efficient data transmission

- P.9** Built-in two SSD 2.5" slots  
Offers flexible configuration in tiered storage and enables cache acceleration
- P.2** Tool-less HDD tray and installation



- P.10** Built-in dual 10GBASE-T network port
- P.5** Two Thunderbolt™ connectors  
Industry-leading converged storage with Thunderbolt™ DAS/NAS/iSCSI connectivity
- P.2** Smart fans for quiet operation  
Separately detect the CPU and HDD temperatures to dynamically control fan speed  
(TVS-882T has 2 system fans whereas TVS-682T has 1 system fan)
- P.10** Four Gigabit Ethernet ports  
Ideal for service binding, port trunking, and MPIO configurations
- P.3** Three HDMI ports  
  - ▶ Offers one HDMI 2.0 port and two HDMI 1.4b ports
  - ▶ HDMI 2.0 fully supports stunning 4K (60 FPS) videos
  - ▶ Dual HDMI output with duplicated and extended desktop options
- P.4** 3.5mm audio jack  
Connects to a speaker or a headphone for audio output
- P.4** Two built-in speakers  
  - ▶ For direct audio output
  - ▶ Provides verbal system warnings

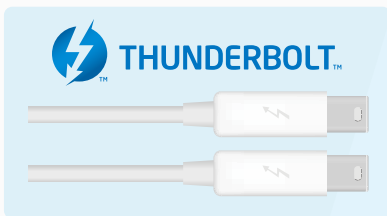




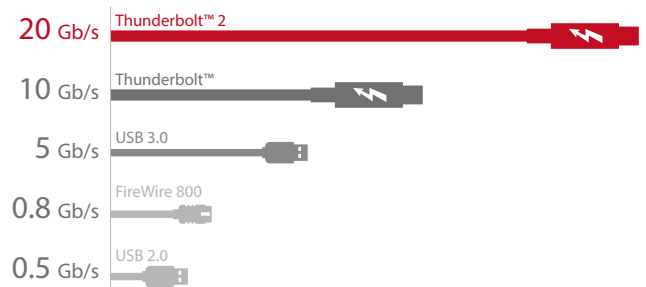
# Thunderbolt™ 2 DAS, NAS, iSCSI SAN Triple Solution

## Thunderbolt™ 2 Revolution

Thunderbolt™ 2 is the latest high-bandwidth connection technology from Intel. With an amazing 20Gbps transmission rate, Thunderbolt™ 2 delivers more than twice the data transfer bandwidth of the first generation Thunderbolt™ and is four times faster than USB 3.



## High-performance I/O throughput



## Thunderbolt™ 2 Expansion Enclosure

The QNAP TX-500P/TX-800P expansion enclosures are cost effective expansion alternatives designed to augment your existing general storage with minimal setup required. The TX-500P/TX-800P offers hassle-free storage expansion suitable for home/small office uses. The TVS-x82T can connect up to six TX-800P and TX-500P with a daisy-chain configuration. The Thunderbolt 2 expansion enclosure is ideal for data backup, digital media collection, and video surveillance archives.

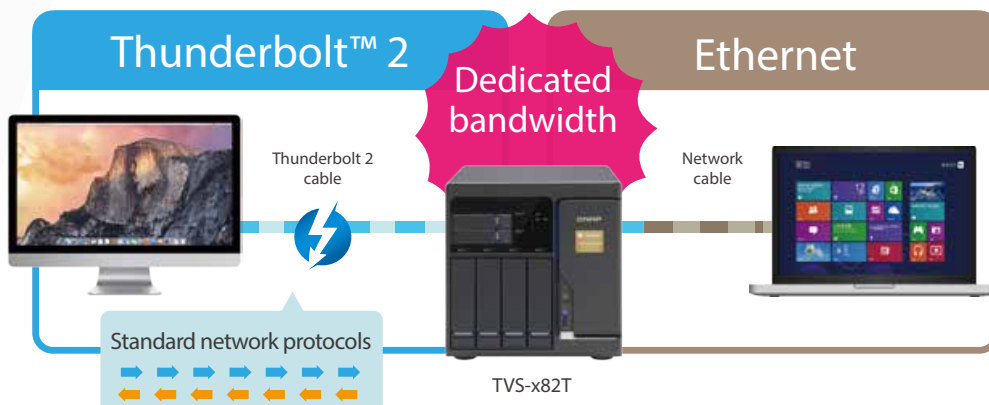
## QNAP Thunderbolt™ 2 Solutions

### The world's most powerful Thunderbolt™ 2 vNAS

The QNAP TVS-x82T is the successor to TVS-871T (QNAP's first Thunderbolt™ 2 NAS) and offers a comprehensive DAS/NAS/iSCSI SAN multi-mode storage solution in a diminutive form factor. The TVS-x82T not only features Thunderbolt™ 2 technology but also has dual 10GbE ports built-in giving you incredible flexibility to deliver incredible performance. The TVS-x82T is a perfect match for Thunderbolt- equipped Mac users and Windows PC users with very demanding 4K workflows, file storage, and backup needs.

## 2 Network Technologies

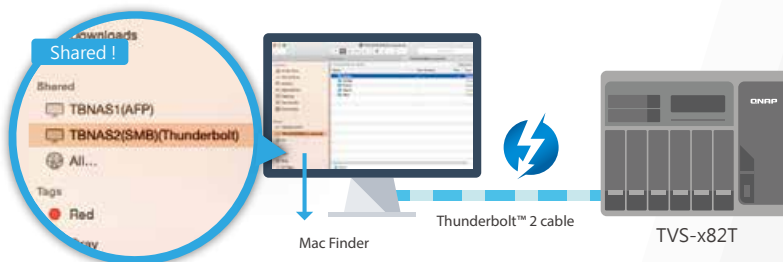
The Thunderbolt™ 2 protocol uses industry-standard networking technologies, meaning the high-speed transmission over your Thunderbolt™ 2 cable is able to run all network services (such as file sharing, FTP and other services). The TVS-x82T can also simultaneously run general Ethernet services in addition to the Thunderbolt™ 2 network, completely independently and with no bandwidth interference.



# 3 Storage technologies

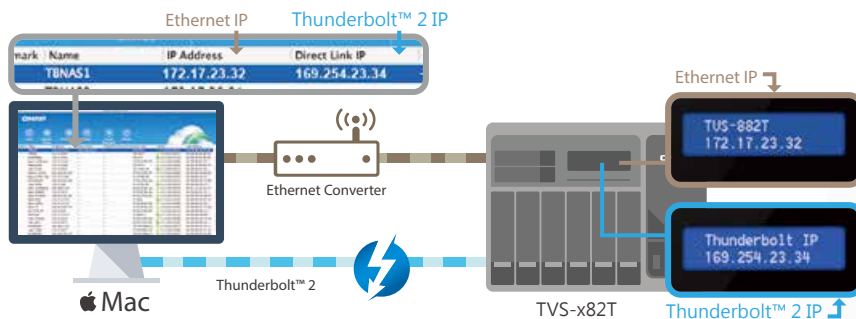
## 1 Direct-attached storage (DAS)

Plug & Play without IP settings  
Direct-attached NAS to PC or Mac  
Super-high speed access to your shared folders with Thunderbolt 2 connectivity.



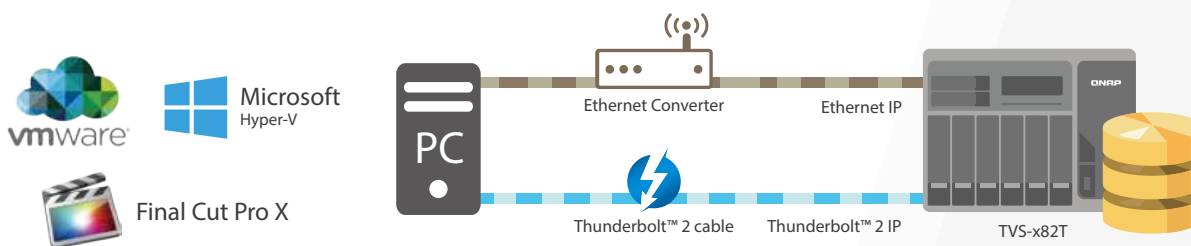
## 2 Network-attached storage (vNAS)

Enjoy cross-platform access for high-speed backup and Ultra HD entertainment storage.



## 3 iSCSI SAN

Native support for iSCSI-SAN connections for building high-speed storage networks



## Why QNAP Thunderbolt™ 2 vNAS?

Use the Thunderbolt™ 2 cable to connect your MacBook Pro, MacBook Air, iMac Retina 5K, or your Thunderbolt Display directly to your vNAS



		TVS-x82T	Other Thunderbolt™ JBOD
DAS	Access data with a directly attached Thunderbolt™ cable	File-based DAS	Block-based DAS
	2 Macs or PCs can connect to a TVS-x82T and share data	YES	No
	Mac/Windows/Linux cross-platform sharing	YES	No
NAS	Real time collaboration	YES	No
	Mac/Windows/Linux cross-platform sharing	YES	No
	Web, database, LDAP, VPN	YES	No
	Multimedia services	YES	No
iSCSI SAN	High speed block-based remote storage	YES	No

# 4 Key application scenarios

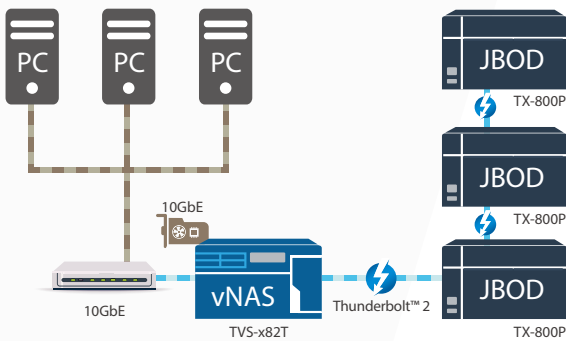
## 1 Highly expandable (vNAS+JBOD+JBOD)

### Application scenario

Daisy-chain multiple TX-500P/TX-800P expansion units (up to 6 units with an addition of 30/48 HDD drives) to expand the capacity of TVS-x82T with the built-in Thunderbolt™ 2 ports. Then, utilize TVS-x82T's built-in 10GbE network connectivity for multi-device file sharing over a 10GbE network.

### Advantages

- ▶ High bandwidth 10GbE networking
- ▶ Huge capacity Thunderbolt 2 JBOD expansion



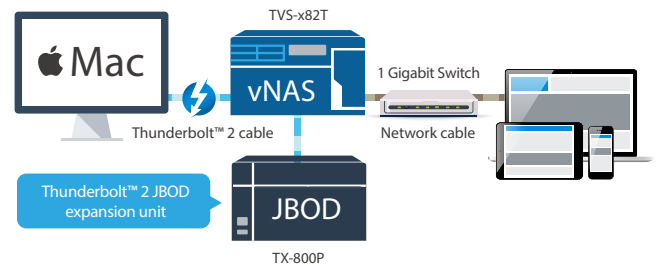
## 2 Highly versatile (Mac+vNAS+JBOD)

### Application scenario

Attach one Mac workstation to the TVS-x82T via Thunderbolt™ 2 port for online video editing with 20 gigabit bandwidth, while the other Thunderbolt™ 2 port can be used for storage expansion by connecting up to six Thunderbolt™ expansion enclosures (TX-800P/TX-500P) for a maximum of 448 TB in total storage capacity.

### Advantages

- ▶ The best price-performance ratio of all high-speed storage solutions for Mac users
- ▶ Super-fast transmission, cross-platform file sharing
- ▶ Enormous expansion capability with Thunderbolt 2 JBOD



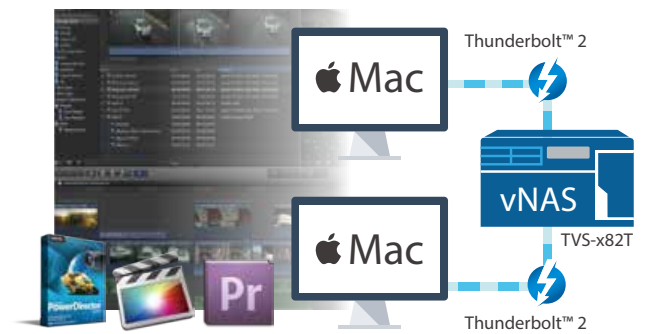
## 3 High-speed sharing (Mac\*2+vNAS)

### Application scenario

When using two workstations to work together to speed up a project, you can connect each workstation separately to the Thunderbolt™ 2 ports on the TVS-x82T. Both workstations can enjoy 20Gb/s high speed for simultaneous video editing.

### Advantages

- ▶ High-speed transmission between Two Macs or PCs and a Turbo vNAS



\* Supports all major video editing software including Final Cut Pro X, Adobe Premiere Pro, PowerDirector, etc.

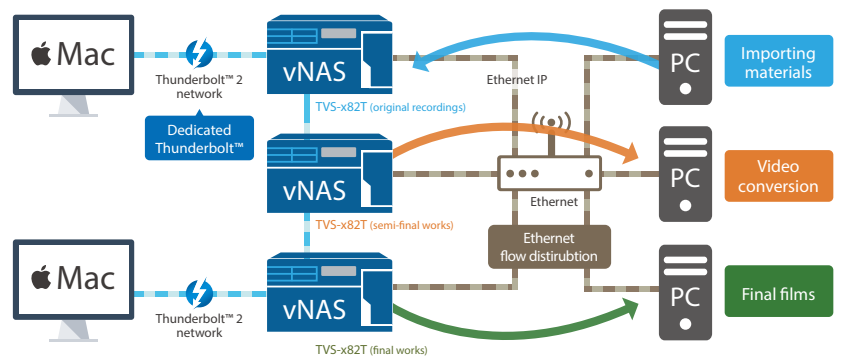
## 4 Flexible traffic distribution (Mac+vNAS+vNAS+Mac)

### Application scenario

Large-scale video editing often requires multiple servers to increase productivity with different workflow stages, such as capturing, editing, production, post-production, and dubbing. In this situation it can be helpful to daisy chain additional 6 units of TVS-x82T to the original TVS-x82T and arrange each NAS for serving dedicated workflow stages, while the other Thunderbolt™ 2 port of the original TVS-x82T can be connected to the workstation for smoothly accessing large-sized video files.

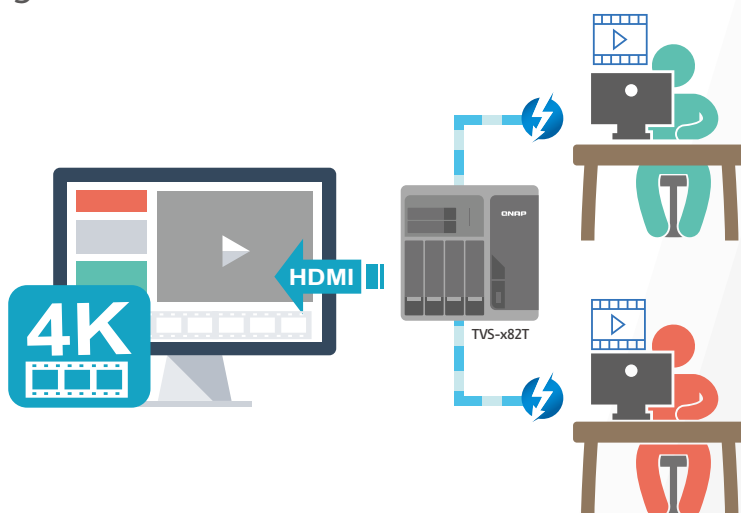
### Advantages

- ▶ High-speed and dedicated network bandwidth between two Macs and a vNAS
- ▶ TVS-x82T flexible expansion capability (up to six TVS-x82T devices)



## Realizing super-high-speed video editing with TVS-x82T

The QNAP TVS-x82T is the world's first Thunderbolt™ 2 NAS designed to help the professional media and entertainment industry meet the massive data demands of fully digital workflows. High performance and broad compatibility help deliver time and cost savings, from image acquisition through post production. The TVS-x82T delivers powerful and stable throughput for real-time non-linear video editing, and also allows multi-track video editing with the lowest latency. By supporting two Thunderbolt™ 2 ports, 2 Thunderbolt™-compatible devices can connect to the TVS-x82T to simultaneously process real-time video editing. Furthermore, a 4K monitor can connect to the TVS-x82T via HDMI to directly play 4K videos for instant preview of the final work. With 20 Gbps, bi-directional for data & display, the ability to daisy-chain multiple devices, and incredibly low latency, the QNAP TVS-x82T is an ideal complement for media editing professionals.



### Final Cut Pro X

Final Cut Pro X is the mainstream video editing app for Mac. To enhance the user experience of mac users, we introduce Qfinder for Mac. With Qfinder for Mac, editors can easily import videos on the connected TVS-x82T to Mac workstations and process real-time 4K media editing. Use Qfinder to guide you through the process of mounting shared folders using NFS (Network File System).

Additionally, you can create an iSCSI LUN with a target on the TVS-x82T and mount the target on a Mac for storage. Please install iSCSI Initiator (ATTO Xtend SAN iSCSI Initiator or SNS globalSAN® iSCSI Initiator) to connect to the iSCSI target.

### Adobe Premiere Pro

Premiere Pro is the industry standard for professional video editing for both Windows and Mac computers with an advanced video production toolset for transcoding, editing visual effects, audio, and color correction. Professional video editors can perform real-time 4K content editing with the TVS-x82T using either the SMB or NFS protocol.

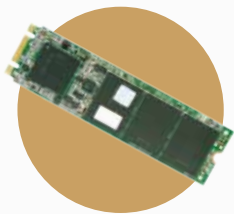


# Perfect Storage Trio: Tiered Storage, Application-Based Partitioning and Network Traffic Distribution

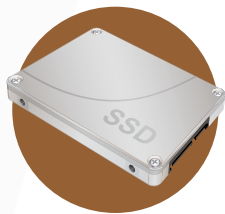
High-performance hardware, well-designed application functionalities and thoroughly-planned usage scenarios are three distinctive cornerstones for achieving optimum performance. QNAP now introduces the key system performance optimization trio: tiered storage, application-based partitioning and network traffic distribution that are especially combined for the TVS-x82T series, facilitating optimized storage deployment based on different usage scenarios.

## Tiered Storage

Storage media directly determines the highest possible write speeds, but high-speed storage media are always the expensive option. As data used in modern business becomes increasingly diverse, deploying a reliable, high-performance, top-quality, large-capacity and cost-effective storage solution can be a formidable challenge facing enterprises. Therefore, a tiered storage system (tiering based on the system performance and capacity) can more efficiently process data of different types, largely boosting overall operational efficiency for enterprises. The TVS-x82 series supports three storage methods (M.2 SATA 6Gb/s, 2.5" SSD and SATA HDD) and also supports ultra-high speed PCIe NVMe SSD.



M.2



SSD



SATA HDD



PCIe NVMe SSD

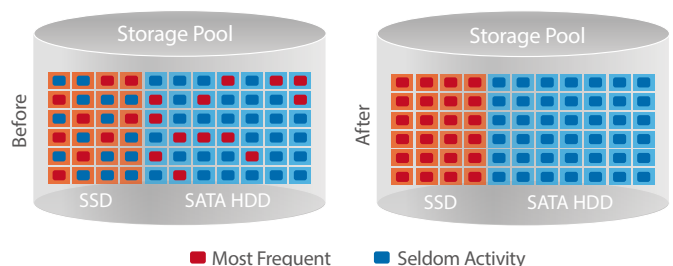
## Tiered Storage

	Tier 0 Storage	Tier 1 Storage	Tier 2 Storage
Device Used	PCIe NVMe SSD	M.2 SATA 6Gb/s and SSD	SATA HDD
Needs	Low latency and high performance but with lower capacity	Performance, capacities and availability	Lower performance, larger capacity, cheaper
Usage Scenarios	Online transaction processing (OLTP) database, online analytical processing (OLAP)	Online database server, ERP database	Email server, snapshots, online archiving, large amounts of data
Data Usage Examples	Records and logs, paging file metadata or index file, replication of VM and VDI connections, merging of I/O and performance	Operating files, emails, networks, database tables, audio, video, VM and VDI, hosts	Main directory, data acquisition, disk-to-disk (D2D) backup/restore
Data Status	Operating data	Mainly operating data	Mixed with operating and idle data
Measurement Standard	Focuses on high IOPS and low latency, low capacity needs; high cost	Focuses on IOPS, bandwidth, reliability and low capacity needs	Focuses on capacity and reliability; cost is relatively low for high-density capacities.

## Qtier + Cache = 24/7 Acceleration

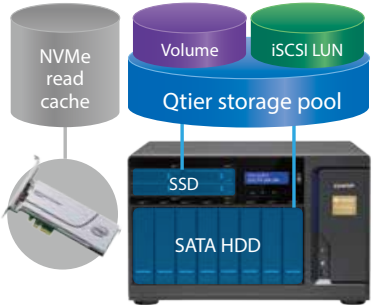
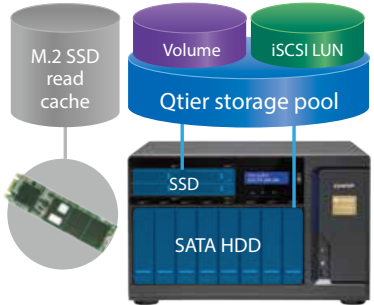
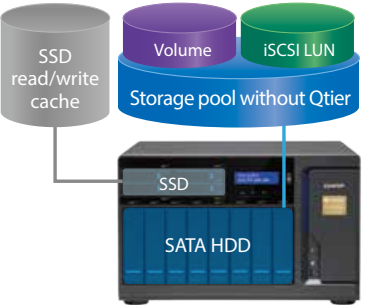
Qtier™ empowers automated-tiering storage solutions that can automatically move frequently-accessed "hot" data to high-performance storage tiers and infrequently-accessed "cold" data to lower-cost, higher-capacity drives according to schedules, allowing businesses to enjoy exceptional application performance and lower TCO of storage at the same time.

SSD cache technology can move hot data to the SSD tier in real time based on data access frequency. Leveraging Qtier and SSD technologies, the TVS-x82T series NAS can ensure 24/7 acceleration for performance optimization.



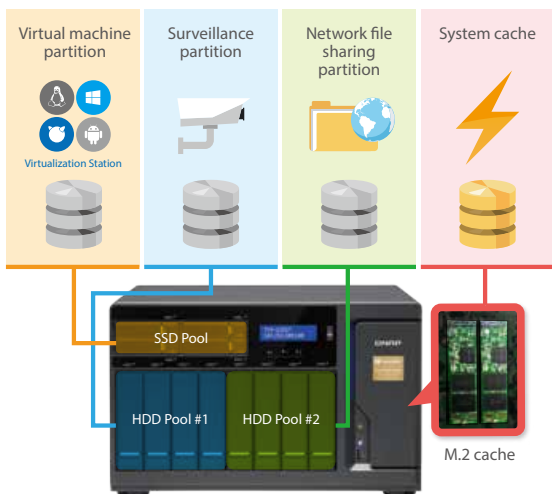


### Comprehensive storage combination

<p><b>A</b> Use PCIe NVMe as the read cache and SSD+SATA HDD as the storage pool for Qtier</p>	<p><b>B</b> Use M.2 as the read cache and SSD+SATA HDD as the storage pool for Qtier</p>	<p><b>C</b> Use SSD as the read/write cache and SATA HDD for general purpose storage pool</p>
		
<p>Application scenario: Ultra-high speed 24/7 accelerated performance with medium amount of data variation, coupled with instantaneous large number of connections; typical example: news website database.</p>	<p>Application scenario: affordable 24/7 accelerated performance.</p>	<p>Application scenario: simultaneous accelerated read and write performance and ideal for large data volumes and huge changes in content that require a fast response to hot data movement; typical example: video editing.</p>

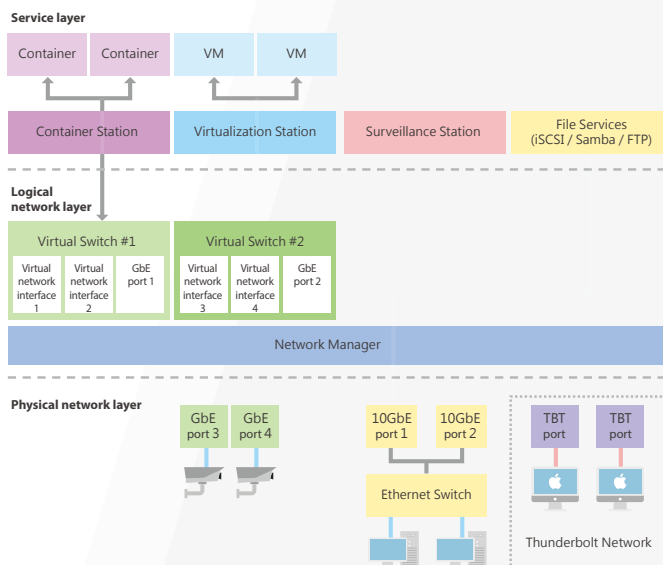
### Application-based Partitioning

QTS provides diverse applications and each application has different performance requirements. For example, to ensure the integrity of recordings, Surveillance Station requires higher-priority access to storage media, while normal transmission speeds are sufficient for file sharing. However, when multiple applications are running on the same storage media, the required throughput level cannot be guaranteed as the storage media is busy handling I/O requests from all of them. The TVS-x82T series supports three different types of storage media: M.2, SSD and SATA hard drives and they can be configured as independent partitions for different applications, ensuring the throughput level for each application.



### Network Traffic Distribution

Network bandwidth essentially dictates the I/O performance for all NAS services. If every application and service uses the same network interface, the required bandwidth cannot be guaranteed for important applications and applications that consume large bandwidth will probably use most of the available bandwidth. For example, if the surveillance system, virtual machine, and file sharing service all use the same network interface, the surveillance system is likely to drop frames. Therefore, network traffic distribution becomes extremely important. With four 1GbE NIC and two 10GbE NICs, the TVS-x82T series allows applications to use dedicated interfaces to meet network traffic distribution requirements. Network interfaces can also be easily managed with the Network & Virtual Switch app.



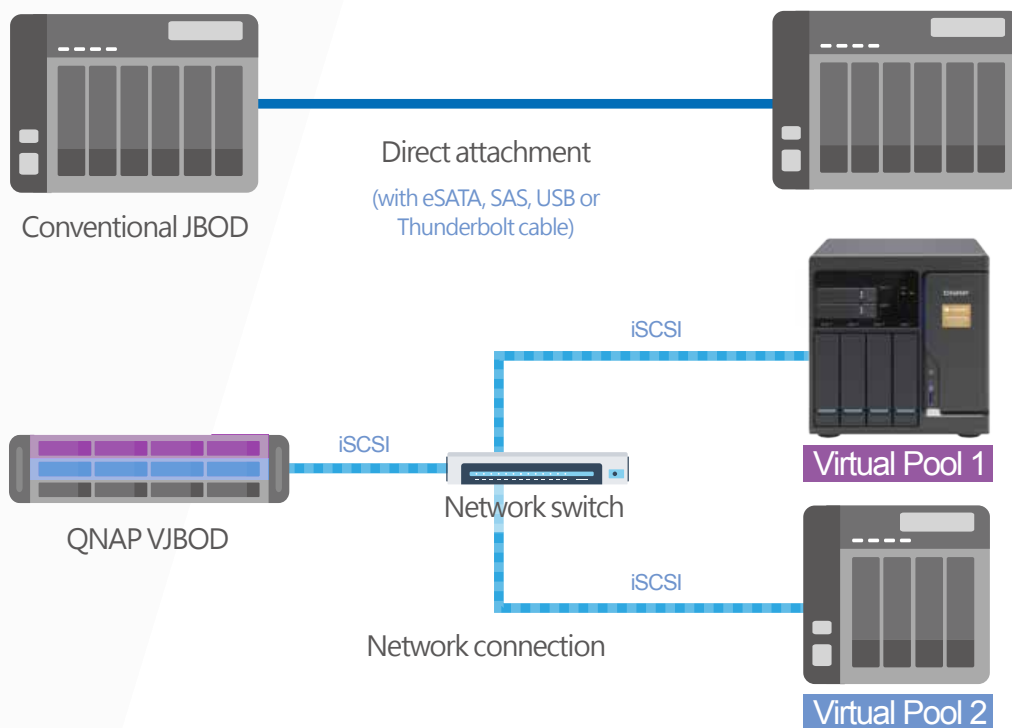
# Virtual JBOD

## Achieve the best capacity utilization among multiple QNAP NAS units

When I have multiple QNAP NAS units, or when I need to expand capacity on demand, how do I achieve the best utilization of NAS storage? Use QNAP VJBOD (Virtual JBOD) to utilize storage resources of other QNAP NAS. VJBOD enables you to create virtual storage pools and volumes on your local NAS. This will enable you to achieve the highest storage utilization of the multiple QNAP NAS in your environment.

## On-demand, instant storage capacity allocation

VJBOD is the QNAP implementation of software-defined storage and brings several benefits and practicalities to small and medium-sized business storage architecture. Software-defined storage enables a high degree flexibility and expand-on-demand capability. Use QNAP Virtual JBOD (VJBOD) to instantly allocate the storage space from another QNAP NAS as an iSCSI LUN. Use the iSCSI LUN to create storage pools, take snapshots, make a clone from snapshots or index multimedia files into the media library on the local NAS.



With the networked and virtual expansion units, online capacity expansion with all available space among multiple QNAP NAS is made possible in lieu of attaching a physical expansion unit. This also helps maximizing the utilization of storage resources.

## Remotely expand storage capacity

Enable the native iSCSI service and storage pool creation to allocate the capacity on it as Virtual JBOD. For example, a TVS-882T daisy-chained with six TX-800P expansion units can have approximately 432TB raw storage capacity in total (calculated using 8TB HDDs). Further, the capacity can be easily expanded up to 1PB using QNAP VJBOD.



\* The support for iSCSI service and storage pool is required for the remote QNAP NAS. The maximum number of NAS for VJBOD configuration is 8

\*\* QNAP VJBOD is only supported on the following models:

X89, X82, X80, X79, X71, X70, X63, X53, IS-400. QTS firmware 422 or later is required.

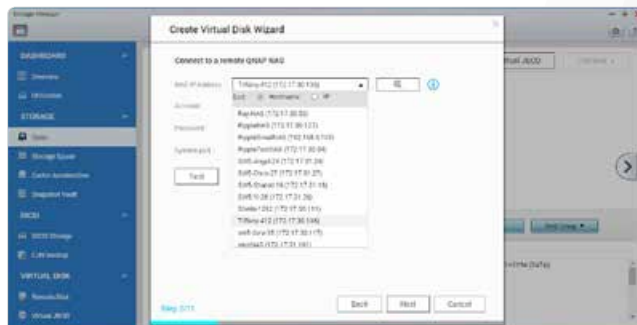
## Intuitive and easy-to-use interface

It does not take complicated commands or procedures to set up Virtual JBOD. First you need two connected QNAP NAS. Then click "Virtual JBOD" in the Storage Manager in QTS. Then follow the "Create Virtual Disk" wizard to search for the remote NAS, check the available capacity, and add the space as a virtual disk on your local drive. Then you can freely utilize and manage this virtual disk in Storage Manager, including checking the status and network location of this virtual disk\*. This saves time from having to log in to a remote NAS.

\* The Qcenter app offers convenient tools for you to monitor the status of remote NAS.



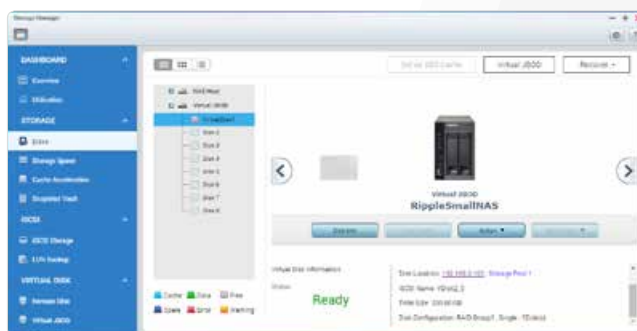
Step 1: Click "Virtual JBOD" in Storage Manger.



Step 2: Search for the remote NAS.



Step 3: Check the available space and create a virtual disk.



Step 4: The storage space is added as a virtual disk on your local drive.

## Building high-performance VJBOD storage with super-high-speed 40GbE networking

VJBOD offers greater flexibility with online capacity expansion over traditional JBOD expansion. Build a high-performance VJBOD SAN with high-speed 40GbE networking based on the highly converged integration of hardware and software technologies from QNAP. For data centers that demand high transmission, full support for 10GbE or 40GbE network adapters and switches drive data transmission performance to be close to that of local disk. Furthermore, you can receive extra performance benefits by deploying Windows Offloaded Data Transfer (ODX) in Windows Server 2012 (or Windows Server 2012 R2, Windows Server 2012, Windows 81, Windows 8) to directly transfer data between virtual disks within or between compatible JBOD expansion units, bypassing the host computer.

\* The NAS apps do not support Offloaded Data Transfer (ODX).

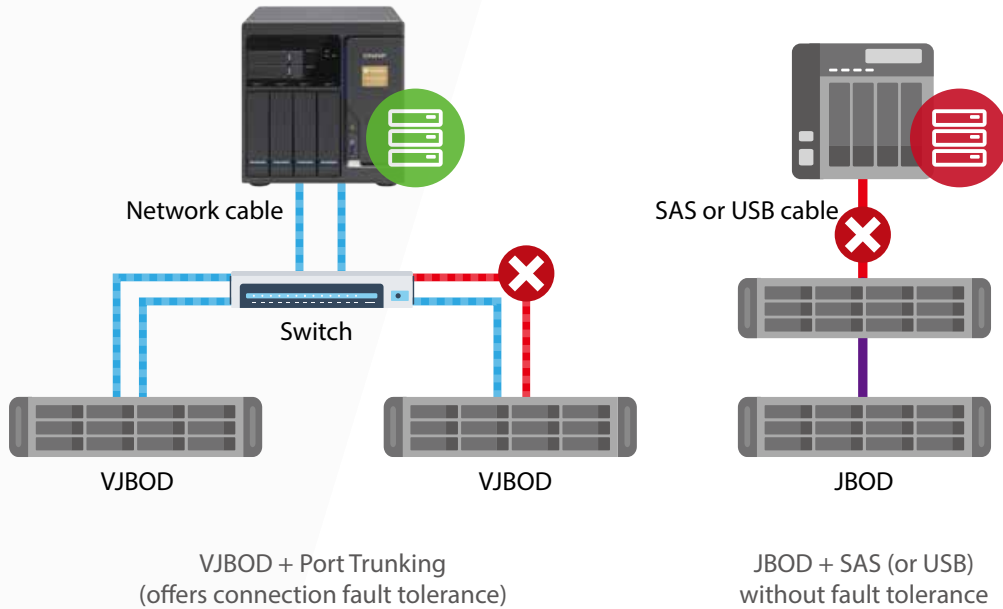
	VJBOD	JBOD
Connection Interface	Ethernet (1GbE, 10GbE, or 40GbE)	USB 3.0, SAS 6G/12G
Max. Number of Connected Devices	8 virtual disks (multiple disks can be added from the same remote NAS)	Depends on the NAS model (1~8 expansion units)
Connection Method	Network	Single connection or daisy-chained
Connection Redundancy	Supports port trunking	Not supported
Application Scenario	Multiple QNAP NAS units offering the flexibility in storage utilization while maintaining the highest availability	It can be used to expand local storage pools on a single QNAP NAS unit.

\* VJBOD cannot be used to expand local storage pools.



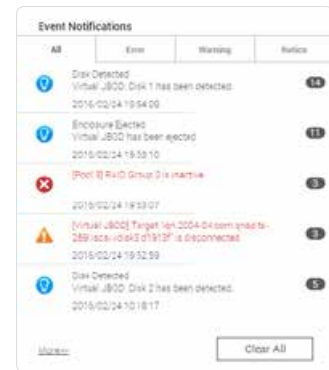
## Redundant network architecture to increase reliability of VJBOD

Online capacity expansion over the network does not cause an associated instability of storage space utilization. QNAP NAS equipped with two or more Ethernet ports supports port trunking (link aggregation with multiple LAN ports). Compared with single-LAN transmission, port trunking increases the bandwidth of your NAS and provides fail-safe traffic to maintain network connectivity in the case of a connection failure. Furthermore, with port trunking, network traffic will automatically achieve load balancing for each connected device.



## Automatic VJBOD storage recovery after auto-reconnection

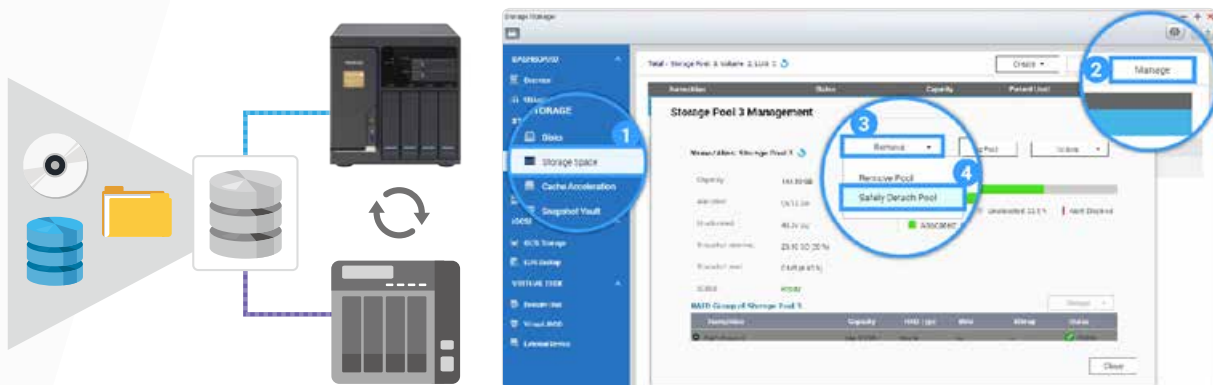
In addition to Missing mode protection of locally attached JBOD expansions, VJBOD employs an advanced mechanism for disconnection prevention. If the remote NAS experiences a power outage, disconnection, or change in IP address, you will get warnings via event notifications in QTS. Further, the NAS will automatically try to reconnect and recover the VJBOD storage without user intervention.



## Instant migration of VJBOD without physical plug and unplug

Typically, to migrate an expansion unit, you would need to manually plug and unplug the device and transport it to the destination. However, with the VJBOD that can be connected using iSCSI and safely detached as a storage pool in Storage Manager, virtual disks that have been detached from your NAS can be used again on other NAS. Thus, the data and application on the virtual disks can be accessed on other NAS and shared among different QNAP NAS devices.

\*For virtual disks that have been connected via iSCSI targets to be used in Virtual JBOD, they should be excluded from other iSCSI initiator connections.



# Hardware Specifications



NAS Model	TVS-682T	TVS-882T	TVS-1282T	
Ordering SKU	TVS-682T-i3-8G	TVS-882T-i5-16G	TVS-1282T-i5-16G	TVS-1282T-i7-32G
CPU	Dual-core Intel® Core™ i3-6100 3.7 GHz processor	Quad-core Intel® Core™ i5-6500 3.6 GHz processor	Quad-core Intel® Core™ i5-6500 3.6 GHz processor	Quad-core Intel® Core™ i7-6700 3.4 GHz processor
Memory	Total DIMM slots: 4 System memory: 8 GB DDR4 RAM Memory modules pre-installed: 4 GB x2 Maximum memory: 32 GB (8 GB x4) Note: The pre-installed memory modules need to be replaced when expanding the memory to over 24 GB.	Total DIMM slots: 4 System memory: 16 GB DDR4 RAM Memory modules pre-installed: 8 GB x2 Maximum memory: 32 GB (8 GB x4)	Total DIMM slots: 4 System memory: 16 GB DDR4 ECC RAM Memory modules pre-installed: 8 GB x2 Maximum memory: 32 GB (8 GB x4)	Total DIMM slots: 4 System memory: 32 GB DDR4 RAM Memory modules pre-installed: 8 GB x4
Flash Memory	512MB DOM			
M.2 Slot	2 x M.2 2242/2260/2280/221100 SATA 6Gb/s SSD Note: The M.2 SSD is not included in the product package.			
Drive Tray	2 x 2.5" SSD 4 x 2.5"/3.5" hard drive or SSD	2 x 2.5" SSD 6 x 2.5"/3.5" hard drive or SSD	4 x 2.5" SSD 8 x 2.5"/3.5" hard drive or SSD	4 x 2.5" SSD 8 x 2.5"/3.5" hard drive or SSD
Drive Interface	SATA 6Gbps/3Gbps			
Thunderbolt 2 Ports	2 x Thunderbolt™ 2 high-speed port			
USB	Front: 1 x USB 3.0 port / Back: 4 x USB 3.0 port			
Ethernet	2 x 10 GbE port, 4 x GbE port			
Video Output	3 (HDMI 1.4b x2, HDMI 2.0 x1)			
Audio Input	2 x 6.3mm microphone jack			
Audio Output	1 x built-in speaker, 1 x 3.5mm Line-out jack Note: Only one of the above audio output ports can work at a time. If a speaker is connected, the sound will output through the speaker.			
LED Indicators	System status, 2.5" SSD, M.2 SSD, 3.5" HDD/SSD			
Buttons	Power, USB One-touch-copy backup, Reset			
System warning	Buzzer			
Form Factor	Tower			
Dimensions	231.9 x 224.9 x 319.8 mm	231.9 x 292.8 x 319.8 mm	234.6 x 369.9 x 319.8 mm	234.6 x 369.9 x 319.8 mm
Weight	Net (NAS only): 7.7 kg/16.96 lb Gross (with the package and accessories): 9.5 kg/ 20.94 lb	Net (NAS only): 9.05 kg/19.95 lb Gross (with the package and accessories): 10.85 kg/ 23.92 lb	Net (NAS only): 11.55kg/25.46 lb Gross (with the package and accessories): 13.65 kg/ 30.09 lb	Net (NAS only): 11.55kg/25.46 lb Gross (with the package and accessories): 13.65 kg/ 30.09 lb
Sound Level (dB)	Sound pressure (LpAm) (bystander position): 20.5 dB (with 4 x Seagate ST2000VN000-1HJ164 HDDs installed)	Sound pressure (LpAm) (bystander position): 21.8 dB (with 8 x Seagate ST2000VN000-1HJ164 HDDs installed)	Sound pressure (LpAm) (bystander position): 21.6 dB (with 12 x Seagate ST2000VN000-1HJ164 HDDs installed)	Sound pressure (LpAm) (bystander position): 21.6 dB (with 12 x Seagate ST2000VN000-1HJ164 HDDs installed)
Temperature	0-40°C			
Relative Humidity	5~95% non-condensing, wet bulb: 27°C			
Power Supply	Input: 100-240V~, 3-1.5A, 60-50Hz, Output: 250W			
PCIe Expansion Slot	2 (1* PCIe Gen3 x16; 1* PCIe Gen3 x4) Note: Both PCIe slots are occupied by a Thunderbolt™ 2 card and a 10GbE adapter.		3 (1* PCIe Gen3 x8; 2* PCIe Gen3 x4) Note: 2 PCIe slots are occupied by a Thunderbolt™ 2 card and a 10GbE adapter.	
Fan	System: 1 x 8 cm quiet cooling fan CPU: 1 x 9cm fan	System: 2 x 8 cm quiet cooling fan CPU: 1 x 9cm fan	System: 3 x 8 cm quiet cooling fan CPU: 1 x 9cm fan	System: 3 x 8 cm quiet cooling fan CPU: 1 x 9cm fan

\* All specifications are subject to change without notice.

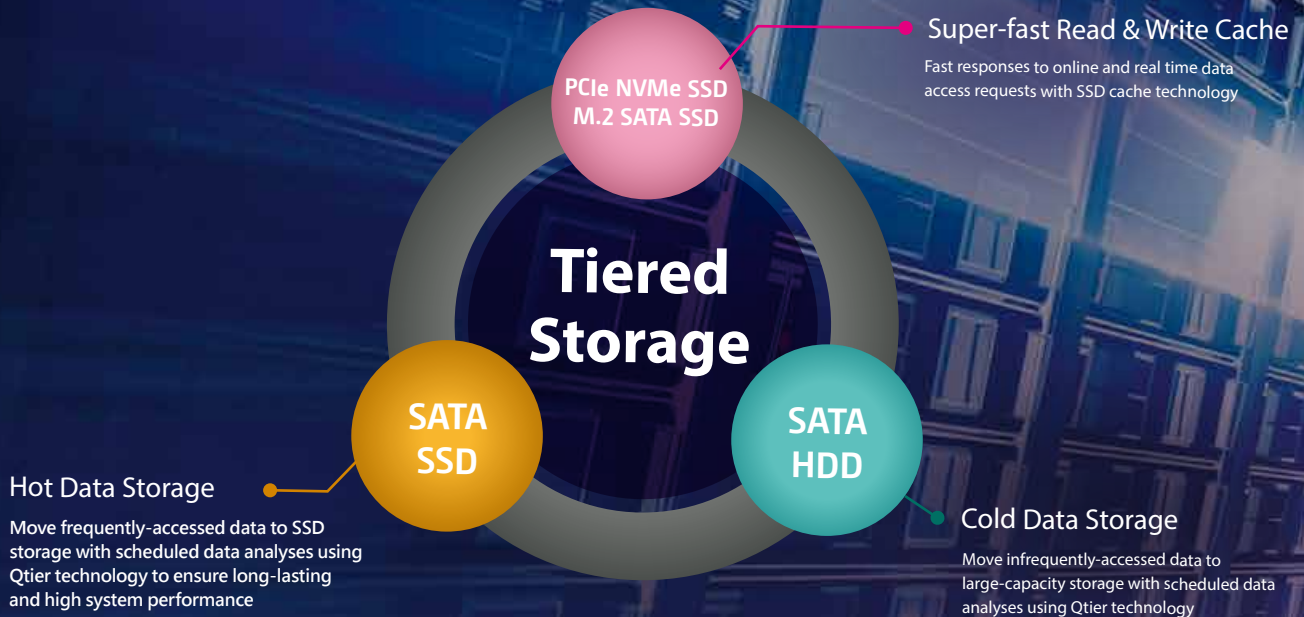
For more information, please go to [www.qnap.com](http://www.qnap.com)

# TVS-x82T

Perfect Combination between  
Hardware and Software

6/8/12-bay Thunderbolt NAS Series

24/7 Acceleration Made Possible  
With QNAP Qtier™ and SSD Cache Technologies



- 1 6<sup>th</sup> generation Intel Core i3/i5/i7 multi-core processor provides up to 20% higher performance
- 2 8GB (up to 32GB) DDR4 2133MHz RAM
- 3 Thunderbolt™ 2 port for 20Gbps ultra-high transmission speeds
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- 5 M.2 SATA 6GB/s and SSD slots with support for PCIe NVMe SSD

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