

6 / 8 / 12-bay NAS

# TS-x77 series

Cutting-edge AMD Ryzen NAS with up to 8 cores/16 threads at 3.7 GHz  
Supports up to 64GB RAM for unparalleled virtualization applications



8 cores / 16 threads  
Up to 3.7 GHz  
Ryzen™ 7 1700



6 cores / 12 threads  
Up to 3.6 GHz  
Ryzen™ 5 1600

Supports AMD Radeon and NVIDIA graphics cards for greater processing power and GPU pass-through to virtual machines



- Two M.2 SATA 6 Gb/s SSD slots to empower caching and auto-tiered storage
- More power for virtualization and container applications, centralized storage, backup, sharing, snapshots and disaster recovery. Supports storage expansion
- Supports up to 80 IP cameras to provide a professional surveillance solution

3x PCIe slots for expanding NAS functionality. Supports 10GbE/40GbE NICs, PCIe NVMe SSDs, graphics cards, USB 3:1 expansion cards, and wireless LAN cards



TS-1277



TS-877



TS-677



# TS-1277

Powerful multi-core processing for incredible performance  
Empower various application needs with a wide range of expansion ports

## 3x PCIe slots

- ▶ 1 x PCIe 3.0 x8, 1 x PCIe 3.0 x4
- ▶ Install a 10GbE/40GbE network card or USB 3.1 expansion card.

## 4x 1GbE ports

Configure Service Binding, Port

## 5x USB 3.0 Type-A

Connect to external storage, printer

## 2x 3.5 mm microphone

Supports dynamic microphones

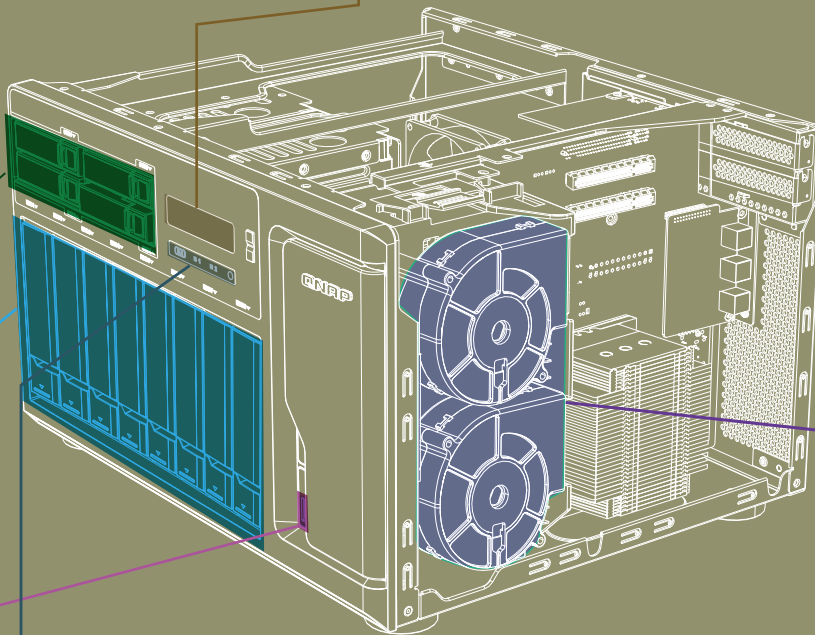
## USB 3.1 Type-A

Up to 10 Gb/s performance and 2.0 devices without needing an adapter

## LCD screen

The monochrome backlit LCD panel displays system status and other information.

Note: The TS-677 does not feature an LCD screen.



## M.2 SSD status LED

Displays access status.

## USB One Touch Backup

Plug in a USB storage device to the front-panel USB port and press the "Copy" button to back up or restore data to/from the USB storage.

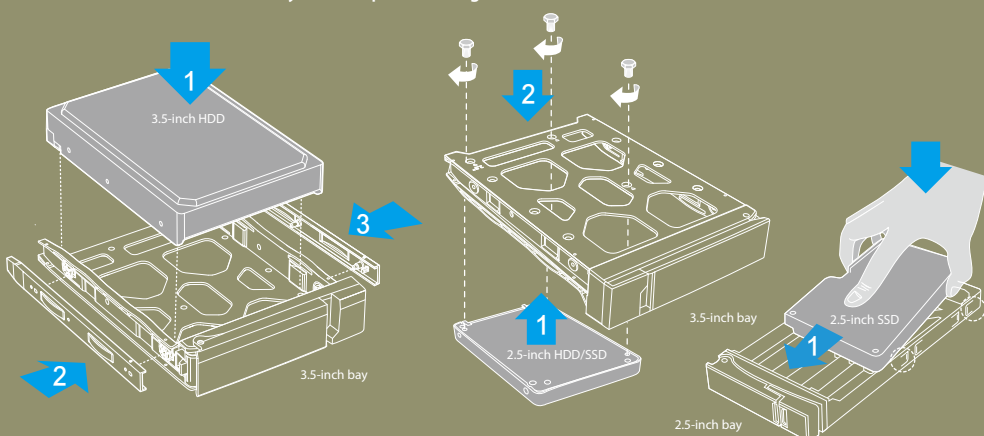
## 4 x 2.5-inch bays dedicated for SSDs

Install SSDs for caching and Qtier Technology.

Note: The TS-677 and TS-877 provide two 2.5-inch bays for SSD usage.

## Convenient drive installation

Both the dedicated SSD bays and hard drive bays feature a tool-less installation process for easily installing and maintaining drives. Hard drive bays feature protection against accidental removal.



## 2x M.2 SATA 6 Gb/s SSD ports\*

- ▶ Supports the following form factors: 22110, 2280, 2260, 2242
- ▶ Configure SSD caching and Qtier Technology.

\* M.2 SSD sold separately.

## Up to 64GB DDR4-2400 UDIMM

Supports four DDR4 UDIMM memory slots. Default configuration: 8GB / 16GB / 64GB RAM.

## AMD Ryzen™ with 6/8-core processors

Powered by the AMD "Zen" core architecture. Ryzen 7 1700 with 8-cores and 16-threads at 3.0 GHz (Turbo Core up to 3.7 GHz) and Ryzen 5 1600 with 6-cores and 12-threads at 3.2 GHz (Turbo Core up to 3.6 GHz).

1 x PCIe 2.0 x4  
network card, PCIe NVMe SSD, graphics card,

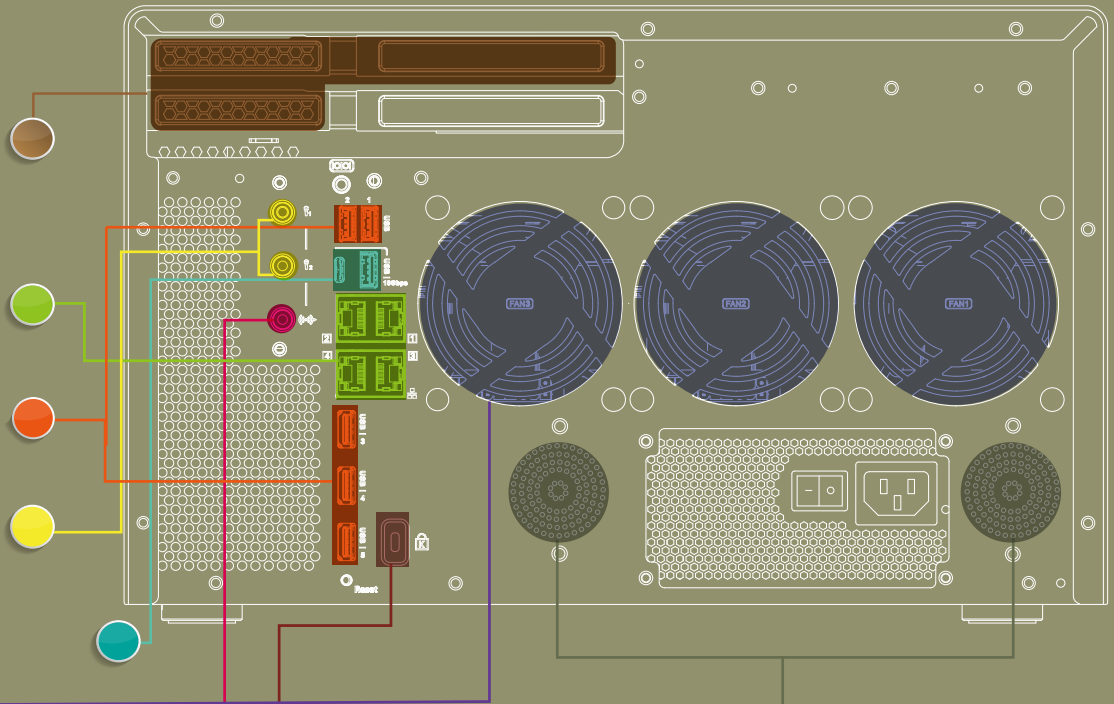
Trunking and MPIO settings.

e-A ports  
printers, UPS, and more.

Microphone input jacks

USB-A and Type-C ports

compatible with USB 3.0 and USB  
adapter.



### Compartmentalized smart cooling

The system monitors individual compartments (hard drive and processor) of the NAS and automatically adjusts fan speeds for these compartments as needed.

### Kensington security slot

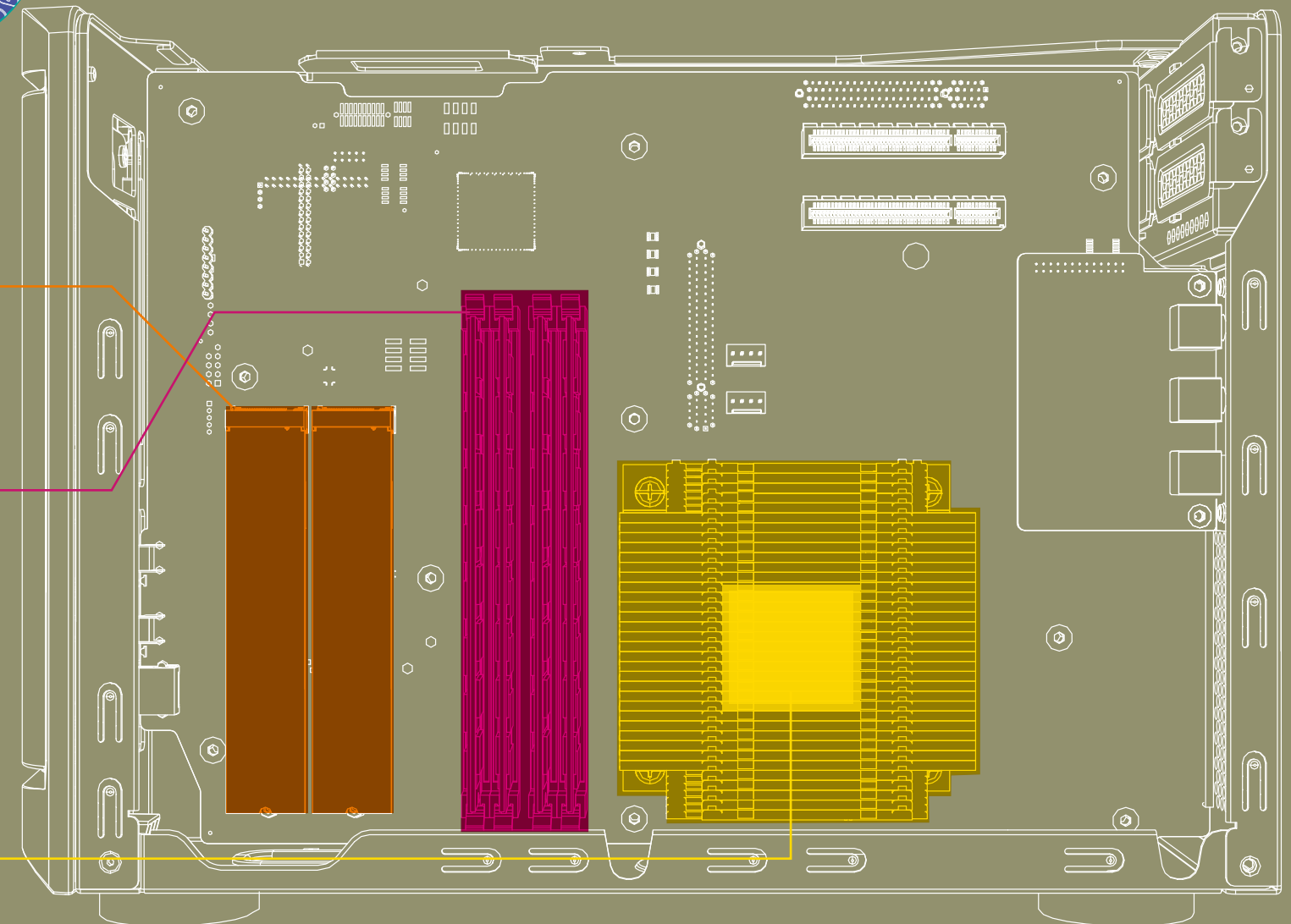
Prevent theft of the NAS.

### Speakers

Direct audio output and vocal system alerts.

### 3.5 mm Line Out audio output jack

Connect the NAS to speakers.

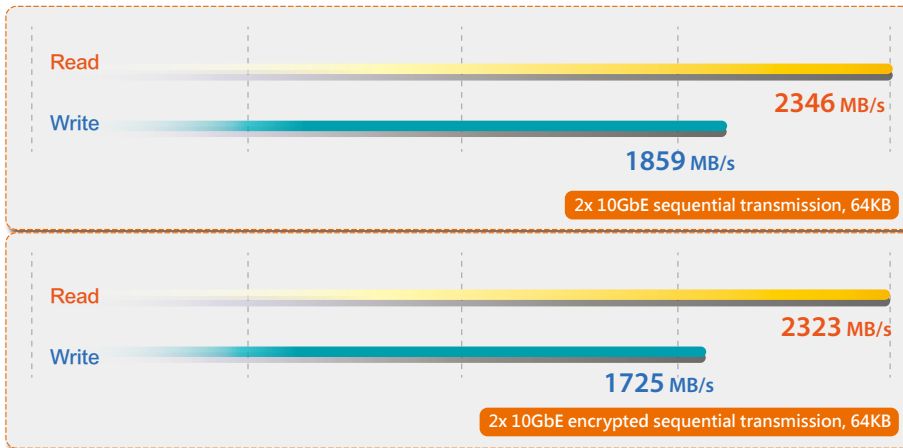




# AMD Ryzen™ processor with up to 8-cores/16-threads and 64 GB RAM

The TS-x77 series features models powered by high-performance AMD Ryzen™ 7 1700 (8-cores/16-threads) and Ryzen™ 5 1600 (6-cores/12-threads) processors that support AES-NI encrypted acceleration and up to 64GB DDR4 RAM. With its powerful processor and ample memory support, the TS-x77 series is capable of running up to 16 virtual machines simultaneously\*. The TS-x77 represents the best choice for demanding business applications such as VDI, testing, development, private cloud and virtualization.

### 2x 10GbE ports (TS-1277-1700-16G)



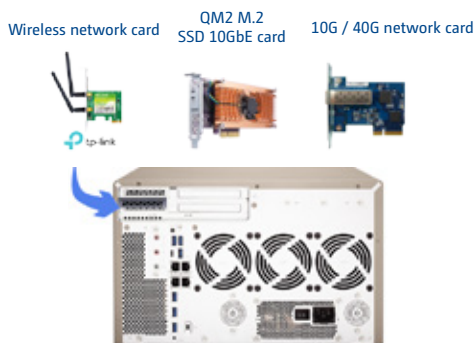
Tested in QNAP Labs. Performance may vary depending on usage environment.

**2x 10GbE transmission test environment:**  
 NAS : TS-1277-1700-16G  
 OS : QTS 4.3.4  
 Disk Group: RAID 5;  
 12 x Intel SSDSC2BB240G4 SSD  
 Client PC: Windows 10, Intel Core i7-6700 3.4 GHz,  
 32GB RAM, QNAP LAN-10G2SF-MLX network  
 card, IOMeter continuous transmission for three  
 minutes

**\* Login VSI test environment:**  
 Hard Drive Configuration: 8 HDD in RAID 6  
 Hard Drives:  
 Seagate ST4000VN000-2AH166 (SATA)  
 Virtual machine configuration:  
 1. Guest OS: Windows 10 64 bit  
 2. Cores: 2  
 3. Memory: 2GB  
 4. HDD: 250G (virtio, cache mode: writeback)  
 5. Network: virtIO

### PCIe slots to extend NAS functionality

The TS-x77 features three PCIe slots (1 x PCIe 3.0 x8, 1 x PCIe 3.0 x4, 1 x PCIe 2.0 x4). Various PCIe cards can be installed to extend NAS functionality, including 10GbE/40GbE NIC, graphics cards, QM2 cards, wireless LAN cards, and more. The innovative QM2 card provides additional M.2 SSD slots and 10GbE connectivity (features may differ by card version) to boost the SSD caching abilities and connectivity of the TS-x77. With a wireless LAN card and the WirelessAP Station app, the TS-x77 is converted into a convenient wireless base station. The NAS can even bridge its wired network resources using the wireless LAN card.



### Optimum storage performance with SSD caching and automatic storage tiering

The TS-x77 provides dedicated drive bays for 2.5-inch SSDs and also supports two M.2 SATA 6Gb/s SSDs (sold separately). SSD caching can significantly improve overall system performance, and is recommended for IOPS-demanding applications such as virtualization. Qtier™ provides automatic storage tiering - moving frequently-accessed "hot" data to fast (SSD) tiers, and infrequently-accessed "cold" data to higher-capacity hard drive tiers. The latest version of Qtier™ also provides a cache-like reserved space to handle burst I/O in real time. This guarantees performance by avoiding the inability to accelerate IOPS-intensive applications when there is insufficient space on the SSD tier.



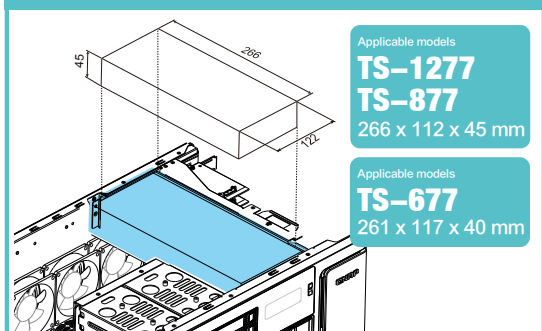
Note: M.2 SSD sold separately. M.2 SSD performance may be affected by high temperatures. It is recommended to install a heatsink on M.2 SSD to assist in cooling.



## Up to 550w power supply to support modern graphics cards

Modern graphics cards provide exceptional computational performance for driving demanding tasks. With PCIe slots and a 550w power supply, the TS-x77 series provides users with the ability to install a graphics card into their NAS to empower demanding applications and to provide GPU pass-through to virtual machines. Installing a graphics card provides a boost to various applications, including video processing and virtualized environments.

### Available space for graphics card



**Notes:**

1. Check the power requirements, physical size, and compatibility of graphics cards before purchase.
2. Only NVIDIA graphics cards support QTS applications. GPU pass-through to virtual machines is supported by both AMD and NVIDIA graphics cards.
3. Only one application can use graphics card resources at one time.

## Achieve more with QTS - the smart NAS operating system

QTS provides a wide range of apps and stations to meet every need - from business and enterprise users to home entertainment. Users can easily manage their storage resources and benefit from the diverse applications and possibilities provided by QTS. A new addition to QTS is Qboost - a lightweight NAS optimization tool that assists in keeping your NAS running smoothly by cleaning up junk files and by reclaiming memory. The app-driven QTS is served by an App Center that provides users with the ability to easily extend NAS functionality by downloading new apps on-demand.



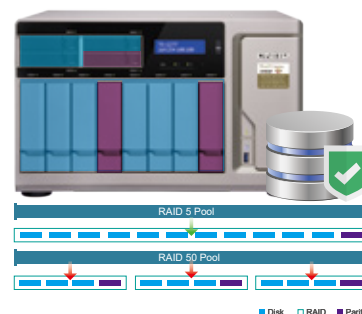
## Improved backup strategy

QNAP provides reliable backup and disaster recovery solutions to help organizations organize their data backup tasks in an efficient and cost-effective manner. Data on Windows® computers can be backed up using the free QNAP NetBak Replicator utility, and Mac® users can enjoy full Time Machine® support. Hybrid Backup Sync is a single-app solution for data backup, recovery and synchronization functions (via RTRR, rsync, FTP, CIFS/SMB protocols). Data can easily be backed up or synchronized between different QNAP NAS, remote servers, and cloud platforms. Popular third-party virtualization backup solutions are also supported. The TS-x77 series supports block-based snapshots and can take up to 256 versions of a single Volume / LUN and up to 1,024 versions of a whole NAS. Snapshots provide fast recovery of data and provide users with a dependable method to mitigate the threat posed by ransomware.



## RAID 50/60 Support

The more disks added to a RAID 5/6, the higher the risk of data loss if additional disks fail during recovery. RAID 50/60 provides extra protection and performance, and is fully recommended for NAS with more than 6 drive bays.



## Block-level iSCSI LUN for optimum virtualized storage

The TS-x77 series supports iSCSI block-level LUN configuration and provides a more stable and lower-interference environment than archival-level LUN configurations. VMware®, Citrix®, Microsoft® Hyper-V®, and Windows Server® 2012 R2 are also supported to provide high performance, high stability and high economic efficiency to meet the storage requirements of virtualized environments. The TS-x77 series supports VMware VAAI and Microsoft ODX to offload ESXi and Hyper-V virtual host workloads respectively to improve system efficiency. It also supports the QNAP vSphere Client plug-in and QNAP SMI-S provider to improve management efficiency of virtualized applications.



## iSER (iSCSI Over RDMA)

The TS-x77 series supports iSER (iSCSI Over RDMA) with compatible 10GbE / 40GbE SFP + network cards to dramatically improve performance and provide better access to large business applications or virtual desktops created through virtualization.



Note: Both VMware ESXi and QNAP NAS require a dedicated NIC that supports iSER (such as QNAP LAN-10G2SF-MLX and LAN-40F2SF-MLX NICs).

## Consolidate your IT infrastructure with virtual machines and containers

QNAP is leading the way for integrated virtualization solutions on NAS. With Virtualization Station and Container Station, users can easily pick the right deployment strategy for their virtualization needs.



Virtualization Station lets users host and manage multiple Windows®, Linux®, UNIX®, and Android™ virtual machine directly on the NAS. Organizations can take advantage of multiple virtual machines on the NAS to run different server applications.

Container Station integrates two lightweight virtualization technologies: LXC and Docker®. You can download thousands of apps from Docker Hub®, import/export software containers, set up access rights, and enjoy the many benefits of containerization with easy installation and management.

## Centralized device management

QRM+ is designed for IT staff to detect, monitor, and manage all networked Windows®, Linux® and IPMI devices from a single platform. QRM+ automatically creates network topology diagrams to enable visual business intelligence.



## Centrally monitor and manage multiple QNAP NAS

Q'center allows you to centrally manage multiple QNAP NAS across different locations, including firmware management, and settings configuration.





## Productivity enhancement tools

Qsirch is a full-text search engine that helps to quickly find files stored on a QNAP NAS. Qsirch provides thumbnail previews, summaries, keyword annotations, and can also search through emails that are saved on the NAS. Qfiling automates file organization on the NAS, helping to sort out files and removing the need to do so manually. QmailAgent and Qcontactz centralize the backup and management of emails and contact information. Emails and contacts can be easily accessed from any device, imported/exported, and searched through by using Qsirch.




## File sharing and synchronization

The TS-x77 Series supports various protocols including SMB / CIFS, AFP and NFS for file sharing between different operating systems such as Windows®, Mac® and Linux® / UNIX®. With Qsync, any file uploaded to the NAS can be accessed from other authorized devices. You can synchronize the sharing of folders with the creation of team-specific project folders for smooth team collaboration. A wide range of USB devices (including mobile devices and optical disc drives) can also be accessed and have their files saved to the NAS using File Station. Remote NAS and cloud storage can also be mounted to the NAS for greater convenience.



## Professional surveillance solution

The TS-x77 Series provides smart video surveillance apps to manage and monitor IP cameras to protect home and workplace environments. The Vmobile companion app allows users to monitor their IP cameras from anywhere, and the Vcam mobile app allows users to record videos from their device straight to the NAS. The new QVR Pro (Beta) integrates a professional QVR system into QTS and allows users to manage dedicated video storage space on their NAS while taking advantage of NAS storage expansion and QTS storage management.

**QUSBCam2**  
  
 Use a USB webcam as a surveillance camera

**3,000+ compatible IP cameras**  
**8 free camera channel licenses**  
 Supports **80** camera channels



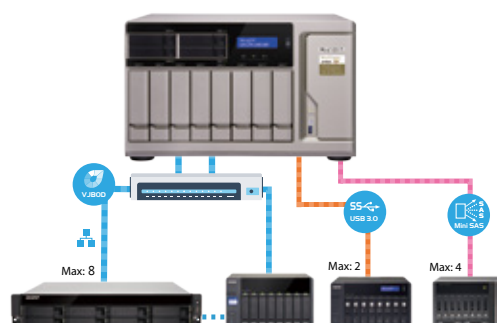
## 4K live streaming on a private cloud

The new DJ2 Live private live streaming platform supports 4K live broadcasts from a QNAP NAS. As all the videos are saved to the NAS, they can be easily rebroadcast at any time. Live broadcasts can also be shared with popular video platforms including YouTube™ and Facebook® to attract greater audiences.



## Low-cost, flexible storage expansion

QNAP provides multiple storage expansion methods to scale up the storage capacity of the TS-x77 series. Up to two UX-800P or UX-500P expansion enclosures or 4 REXP-1000 Pro expansion enclosures can be connected to TS-x77 series models to expand their capacity. VJBOD (Virtual JBOD) technology can also be used to allocate the unused storage capacity of a QNAP NAS to another QNAP NAS.



## Hardware Specifications

	TS-1277	TS-877	TS-677
Ordering SKU	<b>TS-1277-1700-64G:</b> AMD Ryzen™ 7 1700, 64GB memory  <b>TS-1277-1700-16G:</b> AMD Ryzen™ 7 1700, 16GB memory  <b>TS-1277-1600-8G:</b> AMD Ryzen™ 5 1600, 8GB memory	<b>TS-877-1700-16G:</b> AMD Ryzen™ 7 1700, 16GB memory  <b>TS-877-1600-8G:</b> AMD Ryzen™ 5 1600, 8GB memory	<b>TS-677-1600-8G:</b> AMD Ryzen™ 5 1600, 8GB memory
CPU	AMD Ryzen™ 7 1700 eight cores / 16 threads 3.0 GHz processor (Turbo Core 3.7 GHz) AMD Ryzen™ 5 1600 six cores / 12 threads 3.2 GHz processor (Turbo Core 3.6 GHz)		
Encryption engine	AES-NI		
System Memory	64GB DDR4 (4 x 16GB), 16GB DDR4 (2 x 8GB), 8GB DDR4 (2 x 4GB)		
Expand up to Memory	64GB (4 x 16GB)		
Total memory slots	4 x UDIMM DDR4		
Flash Memory	512MB DOM		
Supported storage	4 x 2.5-inch SATA 6Gb/s SSD + 8 x 2.5-inch / 3.5-inch SATA 6Gb/s HDD or SSD	2 x 2.5-inch SATA 6Gb/s SSD + 6 x 2.5-inch / 3.5-inch SATA 6Gb/s HDD or SSD	2 x 2.5-inch SATA 6Gb/s SSD + 4 x 2.5-inch / 3.5-inch SATA 6Gb/s HDD or SSD
M.2 SSD port	2 x M.2 2242/2260/2280/22110 SATA 6Gb/s SSD slots		
40 Gigabit network ports	Expandable with PCIe cards		
10 Gigabit network ports	Expandable with PCIe cards		
Gigabit LAN Ports	4 x Gigabit RJ45 LAN ports		
HDMI output	Expandable with PCIe cards		
PCIe expansion slot	1 x PCIe 3.0 x8, 1 x PCIe 3.0 x4, 1 x PCIe 2.0 x4		
USB	2 x USB 3.1 Gen 10 Gbps Type-C + Type-A 6 x USB 3.0 Type-A		
Audio	2 x 3.5 mm Dynamic Microphone Jack, 1 x 3.5 mm line-out jack, 2 x speaker Note: Speakers and line-out jack cannot be used at the same time		
LED Indicators	Status/Power, LAN, USB, M.2 SSD, 2.5-inch SSD, 3.5-inch HDD		
Button	Power, backup, reset		
Other interfaces	3.5mm service port, Kensington security lock		
Model	Desktop model		
Dimensions (Height x Width x Depth)	234.6 x 369.9 x 319.8 mm	231.9 x 292.8 x 319.8 mm	231.9 x 224.9 x 319.8 mm
Weight	Net weight (NAS): 11.55 kg	Net weight (NAS): 9.05 kg	Net weight (NAS): 7.7 kg
Operating temperature and Relative Humidity	0 ~ 40°C ( 32°F ~ 104°F ), non-condensing, wet bulb temperature: 27°C		
Power	550W, 100-240V AC, 50/60 Hz	450W, 100-240V AC, 50/60 Hz	250W, 100-240V AC, 50/60 Hz
Cooling	Hard disk area: 3 x 8 cm Processor area: 2 x 9 cm	Hard disk area: 2 x 8 cm Processor area: 2 x 9 cm	Hard disk area: 1 x 8 cm Processor area: 2 x 9 cm

Note: Use only QNAP memory modules to maintain system performance and stability. If the NAS unit has multiple memory modules, use the QNAP module with the same specifications.

\* Design and specifications are subject to change without notice.

## Software Specifications

Supported disk group types	RAID 0/1/5/6/10/50/60 + spare, single, JBOD
Storage & Snapshots Manager	Flexible disk area and LUN configuration. Storage pool online RAID capacity expansion and configuration migration
Supported client systems	Windows 7, Windows 8, Windows 10, Windows Server 2003/2008 R2/2012/2012R2, Apple Mac OS 10.6+, Linux & UNIX
Internal file system	EXT4
Supported external file systems	EXT4, EXT3, NTFS, HFS +, FAT32, exFAT * A license (sold separately) is required to access exFAT devices.
Supported protocols	CIFS/SMB, AFP (v3.3), NFS(v3), FTP, FTPS, SFTP, TFTP, HTTP(S), Telnet, SSH, iSCSI, SNMP, SMTP, and SMC
File sharing	Maximum number of users: 4096; Maximum number of user groups: 512; Maximum shared folder: 512; maximum number of simultaneous connections: 1500
Video surveillance	Surveillance Station includes 8 free camera channel licenses. You can purchase additional licenses as needed (up to 80 camera channels) from <a href="http://license.qnap.com">http://license.qnap.com</a>
Other Features	File Station, Photo Station, Music Station, Video Station, Download Station, Qsync, Notes Station, HD Station, FTP Server, Printer Server, VPN Server / Client, Qtier, Anti-Virus, Qsirch, Qcontact, QmailAgent, Qfiling, iSER, Qtier, Virtualization Station, Container Station, Hybrid Backup Sync, DJ2 Live, QVR Pro, Qcenter, Browser Station, QIoT Suite Lite and QNAP mobile applications
Multimedia streaming	DLNA Server, Airplay, Chromecast, iTunes Server
Video playback and conversion	NVIDIA® graphics cards are supported for extra performance
Remote access	myQNAPcloud

## Optional Accessories

Type	Ordering SKU	Description
Expansion Card	LAN-40G2SF-MLX	Dual-port 40GbE QSFP+ NIC
	LAN-10G2SF-MLX	Dual-port 10GbE SFP+ NIC
	LAN-10G2T-X550	Dual-port 10GbE 10GBASE-T NIC
	LAN-10G1TA	Single-port 10GbE 10GBASE-T NIC
	LAN-10G1SR	Single-port 10GbE SFP+ NIC
	LAN-1G2T-I210	Dual-port 1GbE RJ45 NIC
	USB-U31A2P01	Dual-port USB 3.1 Type-A Gen2 10Gbps Expansion Card
	SAS-12G2E	Dual-port SAS 12Gb/s expansion card
Cable	CAB-DAC15M-SFPP-A02	1.5 m SFP + Direct attach network cable
	CAB-DAC30M-SFPP-DEC01	3.0 m SFP + Direct attach network cable
	CAB-DAC50M-SFPP-DEC01	5.0 m SFP + Direct attach network cable
	CAB-SAS05M-8644	0.5 m mini SAS cable
	CAB-SAS10M-8644	1.0 m mini SAS cable
Expansion Unit	REXP-1000 Pro	10-bay storage expansion unit. Supports 3.5-inch SAS and SATA hard drives (with SAS-12G2E expansion card and mini SAS cable)
	UX-800P	8-bay storage expansion unit. Supports 3.5-inch SATA hard drives
	UX-500P	5-bay storage expansion unit. Supports 3.5-inch SATA hard drives
Remote Control	RM-IR004	Infrared Remote Control (to be used with graphics card)

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