QNAP

Enterprise-Class

TES-x85U Series

Convertible NAS supporting two operating systems

PLATFORM9 openstack

The best all-flash storage for application acceleration

QES Enterprise-class

- ZFS (Zetabyte File System)
- Data Self-healing
- Supports up to 65,536 snapshots for every shared folder and LUN
- Block-level Deduplication
- Inline Data Compression
- QNAP SnapSync (Remote snapshot replication)
- VMware Site Recovery Manager (Remote disaster recovery)

or

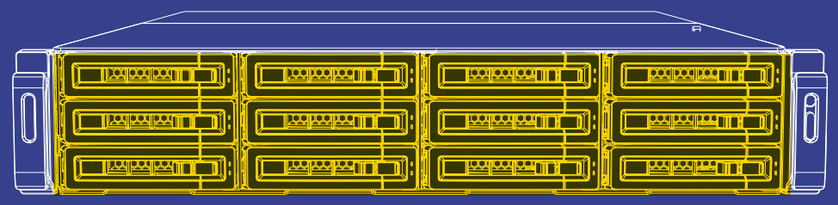
QTS Storage & Applications

- Qtier and SSD cache technologies accelerate data read/write
- One NAS provides a multitude of applications
  - Web, database and print servers
  - Virtualization and Container Stations
  - Video surveillance
- VJBOD (Virtual JBOD)
- Supports VMware®, Citrix®, Microsoft Hyper-V™ and Windows Server 2012
- App Center offers near-unlimited application potential

TES-x85U

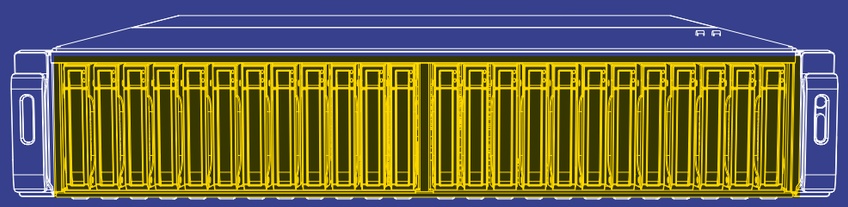
Hardware Architecture

TES-1885U

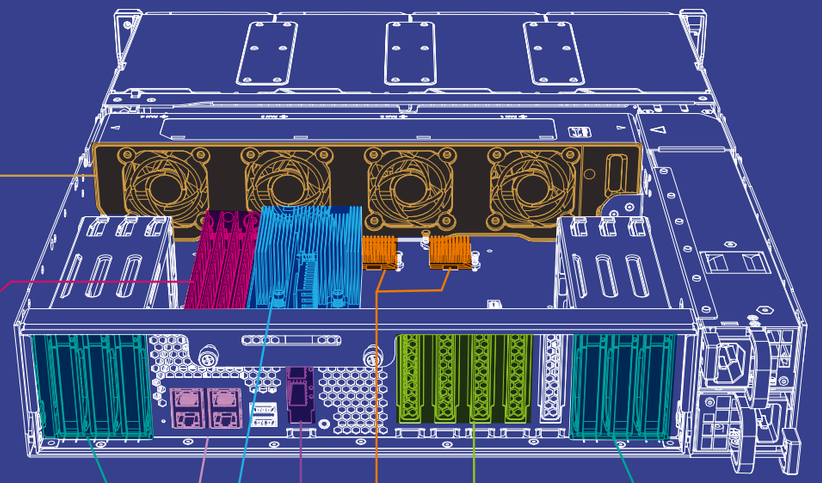


- 3.5"/2.5" 12Gb/s SAS drive bays
- Supports 12Gb/s SAS and 6Gb/s SATA and SSD drives
- Flexible selection of storage media for the most economical storage solution

TES-3085U



- 2.5" 12Gb/s SAS drive bays
- 2U rack-mount server chassis supports up to 24 drives
- Ultra-fast all-flash storage solution



Four built-in 1GbE ports

Two built-in SFP+ 10GbE ports

Intel Xeon Processor D Family

The latest 14 nm and low-power Intel Xeon Processor D family supports DDR 4 memory and PCIe 3.0

6 x 2.5" SATA SSD drive bays

Ideal for caching, high-speed storage pools, or as QES system disks

SAS 12Gb/s controller

SAS 12Gb/s and SSD drives provide high-speed and reliable storage for enterprise applications

4 x PCIe 3.0 slots

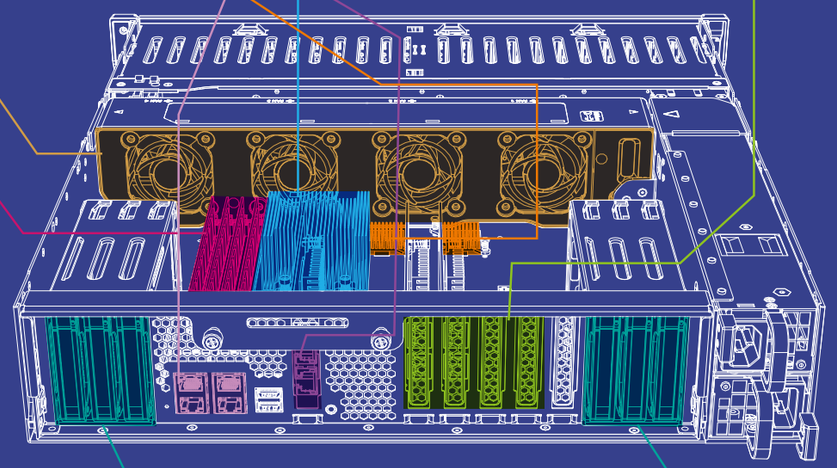
- 3 x PCIe Gen.3 and 1 x PCIe Gen.2 expansion slots
- Supports 10Gb/40Gb Ethernet adapters and PCIe NVMe SSD

Hot-swappable fan modules

- 4 hot-plug fan modules (6 cm)
- Easy and quick replacement

DDR4 2133 MHz

- 4 DDR4 RAM expandable to 128GB
- Supports UDIMM and ECC RDIMM



TES-x85U

Software Architecture

QTS：Designed for flexible virtualization deployment, application expandability and storage optimization

With the application expandability of the QTS operating system, the enterprise-class TES-x85U not only facilitates networked and shared storage in virtualization environments, but also accommodates different storage classes in one system. It is the optimal enterprise solution for hierarchical and tiered storage.

QES：Built upon the best enterprise-class data backup and storage technologies

Qsync Central Station 2.0 supports file synchronization between multiple devices. Access synchronized files using a mobile device, PC or web browser. When your device is offline, you can edit (or view) the files in the local Qsync folder. When the Internet connection is restored, the system will continue synchronizing data. With personalized synchronization settings, you can choose to permanently retain the files on the QNAP NAS. This helps to conserve the storage space of your local device. Use the powerful features of Qsync Central Station 2.0 to collaborate with colleagues, or share files with friends.

Remote Connections

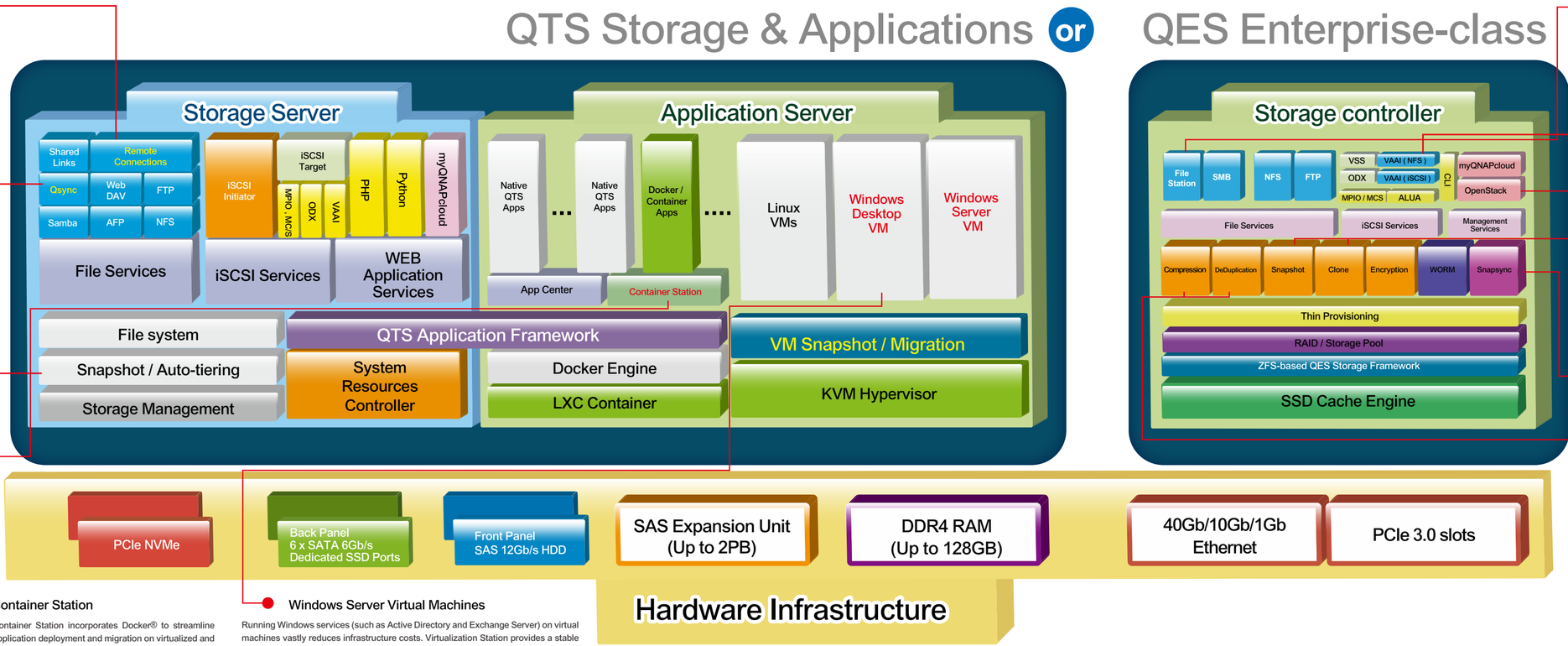
With remote connections, you can manage files on all network-attached devices including host, external devices, cloud services and remote facilities from a single window. Accessing files on remote devices becomes extremely easy. For instance, you can move or copy files from the host to remote devices or vise versa. Remote connections fully support connection to multiple cloud services (including Google Drive™, Dropbox™, Microsoft OneDrive®, Amazon Cloud Drive™, Yandex.Disk™) and Internet protocols (such as Microsoft Network, FTP and WebDAV).

Qsync Central Station 2.0

Qsync Central Station 2.0 supports file synchronization between multiple devices. Access synchronized files using a mobile device, PC or web browser.When your device is offline, you can edit (or view) the files in the local Qsync folder. When the Internet connection is restored, the system will continue synchronizing data.With personalized synchronization settings, you can choose to permanently retain the files on the QNAP NAS.This helps to conserve the storage space of your local device. Use the powerful features of Qsync Central Station 2.0 to collaborate with colleagues, or share files with friends.

Qtier™

Qtier™ is an automated storage tier management system. Qtier automatically moves frequently-accessed data to high-speed storage devices and lesser-accessed data to high-capacity disk drives. During data migration, administrators can see the information of data volumes yet to be processed and those already processed, and if needed they can suspend the migration based on external I/O bandwidth needs. Priority settings can also be adjusted to mitigate the conflict between the bandwidth requirements of external I/O and internal tiering.



Container Station

Container Station incorporates Docker® to streamline application deployment and migration on virtualized and distributed environments. The LXC (Linux Containers) enables deploy high -performance lightweight virtualized Linux® environments on your NAS.

Windows Server Virtual Machines

Running Windows services (such as Active Directory and Exchange Server) on virtual machines vastly reduces infrastructure costs. Virtualization Station provides a stable environment and efficient storage, demonstrating the greater advantages of using TES-x85U over normal servers with a storage device for running the aforementioned servicesSupports OpenStack iSCSI Cinder driver and perfectly couples with HPE Helion to build a agile and reliable private cloud.

File Station with visualized interface

Files are managed through the easy-to-use QES interface.

Minimal backup settings

Build a QNAP Snap Agent and VSS Hardware Provider environment on a single server. All applications, including VSS Service, Requestor, Provider and QNAP Snap Agent, can be deployed with VSS-aware applications on a single QNAP ES NAS.

Integrated OpenStack cloud solution

SnapSync ensures business continuity and consistency with its remote backup and disaster recovery features.

Remote synchronization

Files are managed through the easy-to-use QES interface.

Better efficiency with high-capacity storage

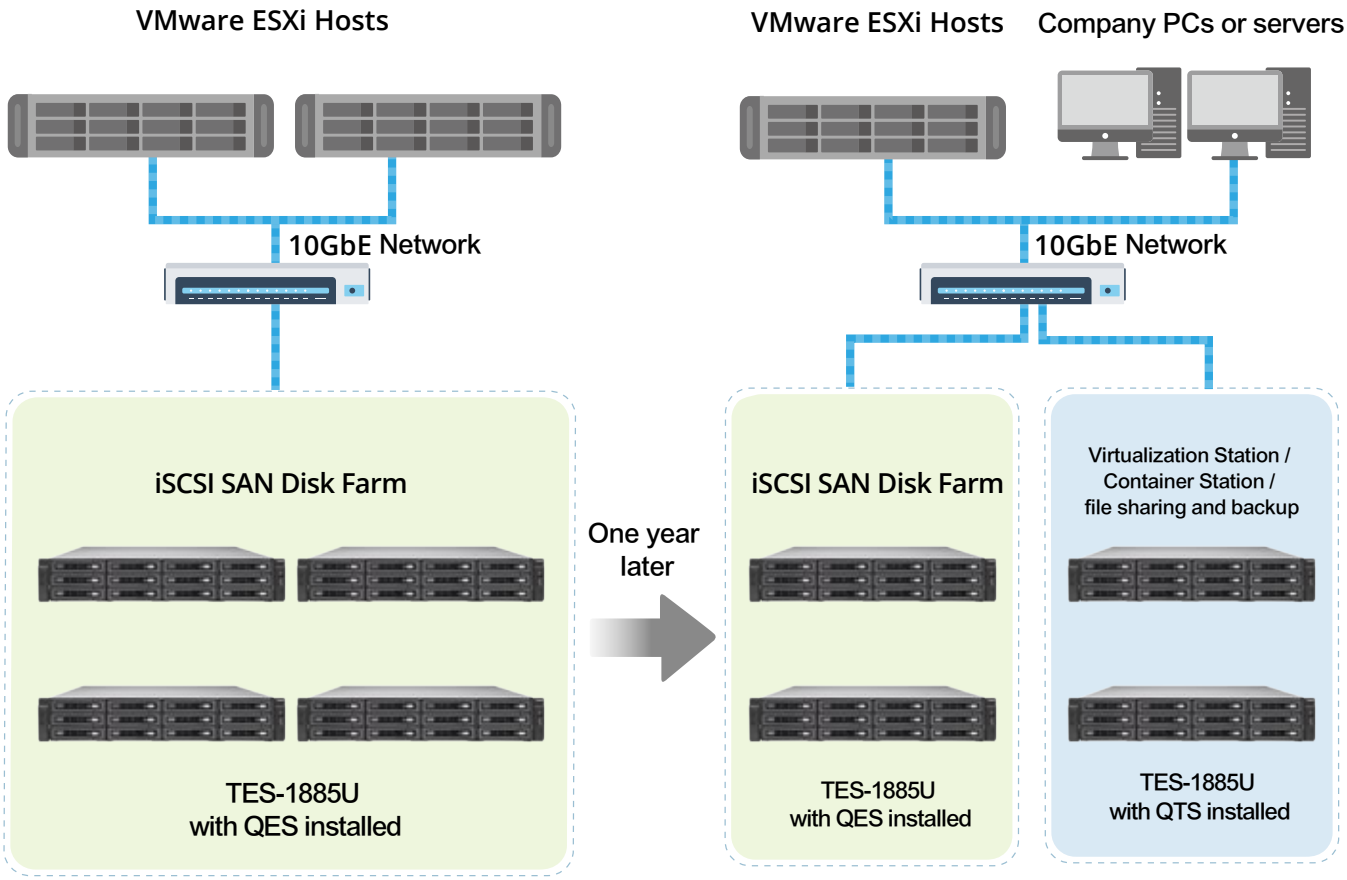
Block-level deduplication, real-time data compression, and thin-provisioned volumes with space reclamation help build the most cost-effective remote virtual desktop platform and mission-critical data warehousing.

One NAS architecture for two OS modes

QES is an operating system designed for enterprise-class storage while QTS is designed for SMB. QES was developed for the enterprise-class ES series NAS with ZFS and dual controllers that provides the optimal data security and system reliability needed by enterprises. With data self-healing, unlimited snapshots, data deduplication and inline data compression, it helps enterprises to build the most reliable storage system.

QTS integrates the features of an application server and storage, providing Qtier and SSD read/write cache technologies to help IT professionals build the most cost-efficient and performance-optimized storage environment. QTS also provides a wide variety of applications such as video surveillance, web server, multimedia file conversion, printer server, and built-in virtualization to provide small businesses with complete IT functionality from a single NAS.

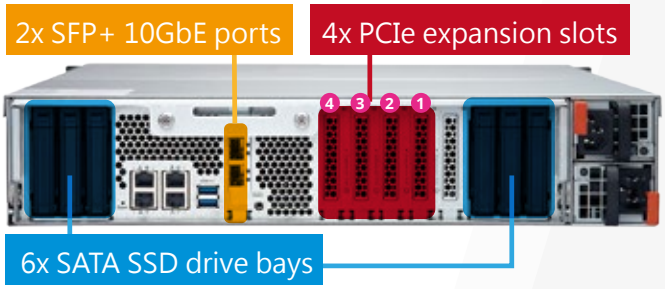
With TES-x85U, users can choose to install either the QNAP Enterprise System (QES) or QNAP Turbo NAS System (QTS) operating systems based on their application needs. With this dual-mode flexibility, enterprises are able to deploy different operating systems on multiple TES-x85U series NAS to fulfill different application needs at different times. For example, to build a virtualized storage environment with VMware, companies may first install QES on a TES-x85U. If the demand for virtual machines should decline, the TES-x85U could be switched to run the QTS operating system to provide internal file sharing and data backup services. With its built-in Virtualization Station application, it can even be used as an replacement for a VMware host.



Switching between operating systems requires reinitializing the disks. Ensure that all data is backed up before switching operating systems.

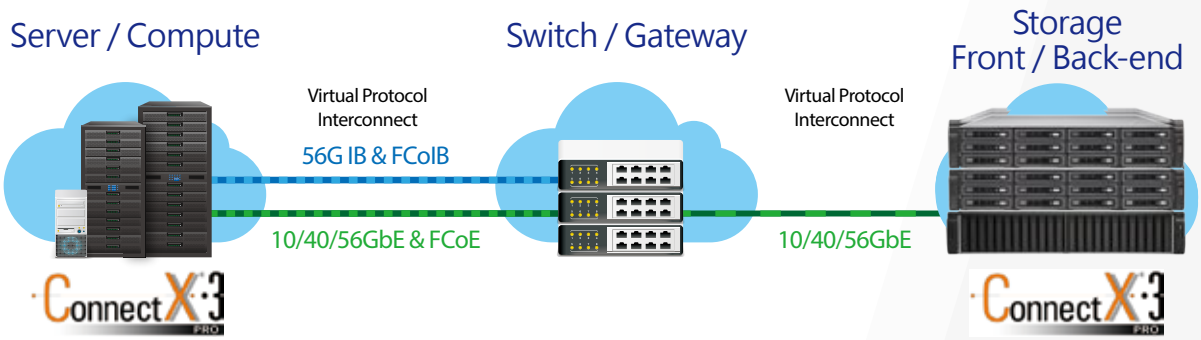
TES-x85U provides 10GbE network ports with two built-in SFP+ interfaces, which can be changed to a dual port 10GBase-T interface with the purchase of optional accessories. Four built-in PCIe 3.0 expansion slots provide great expandability options for 10GbE/40GbE network adapters, USB 3.1 and 12Gb/s SAS expansion cards, PCIe NVMe SSD - or even a graphics card.

PCIe slot number	PCIe specification	Notes
Slot 1	PCIe 3.0 x8	
Slot 2	PCIe 2.0 x4	
Slot 3	PCIe 3.0 x4	Slot 4 provides the bandwidth of PCIe 3.0 x8 when Slot 3 is not in use. Slot 4 then provides the bandwidth of PCIe 3.0 x4 only when an expansion board is installed in Slot 3.
Slot 4	PCIe 3.0 x4 or PCIe 3.0 x8	



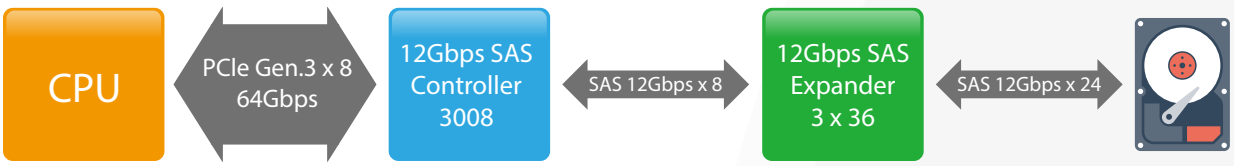
Creating a 40GbE-ready computing and storage solution

The TES-x85U supports QNAP 40GbE Ethernet adapters and Mellanox® ConnectX-3 Pro 10/40/56GbE network adapters, as well as the ConnectX-3 Pro hardware offload engine for network tunneling. PCIe Gen3 connectivity offers the highest performance and most flexible integrated solution for public and private clouds, enterprise data centers and high-performance computation. I/O connections are significantly enhanced with high-bandwidth transmission, making it easy to accommodate high data loads, as well as virtualization accelerators and other applications. Enterprises can leverage the high-speed network connectivity and flexible deployment capabilities of the 40GbE ready TES-x85U to enhance performances in key IT areas.



12Gb/s SAS interface

The stability and reliability of SAS protocols have always been an important consideration of enterprises when they choose storage devices. TES-x85U provides a 12Gb/s SAS controller for storing data through a direct connection to the processor. PCIe 3.0 x8 provides a bandwidth of up to 64Gb/s. Every hard drive connected to the controller delivers dedicated bandwidth and command sets. That's why the TES series with PCIe 3.0 and 12Gb/s SAS is able to provide faster data transmission and can utilize the full capacity of storage system.



15K SAS 12Gb HDD

Compared to the conventional 7200 rpm speeds of SATA HDD, SAS HDD have disk speeds of up to 15,000 rpm, providing much higher read/write performance of up to 300MB/s. Although SAS 12Gb HDD cannot match the IOPS performance of SSD, its cost-per-gigabyte is more favorable. Enterprise-level SAS HDD also offers up to 2 million hours MTBF, providing dependable reliability. If an HDD failure occurs, the stored datamay be recoverable, whereas if an SSD fails it can be harder (if not impossible) to recover data. With these considerations, SAS HDD remains the best choice for an enterprise to build a stable, efficient, and affordable storage medium.

Hardware Specifications

NAS Model	TES-1885U	TES-3085U
Ordering SKUs	TES-1885U-D1521-16GR TES-1885U-D1521-32GR TES-1885U-D1531-32G TES-1885U-D1531-64G TES-1885U-D1531-16GR TES-1885U-D1531-32GR TES-1885U-D1531-128GR	TES-3085U-D1521-16GR TES-3085U-D1531-32GR TES-3085U-D1548-32G TES-3085U-D1548-64G TES-3085U-D1548-16GR TES-3085U-D1548-32GR TES-3085U-D1548-128GR
CPU	TES-1885U-D1521 series: Intel® Xeon® Processor D-1521, 4 core 2.4 GHz TES-1885U-D1531 series: Intel® Xeon® Processor D-1531, 6 core 2.2 GHz	TES-3085U-D1521 series: Intel® Xeon® Processor D-1521, 4 core 2.4 GHz TES-3085U-D1531 series: Intel® Xeon® Processor D-1531, 6 core 2.2 GHz TES-3085U-D1548 series: Intel® Xeon® Processor D-1548, 8 core 2.0 GHz
Memory	Total DIMM slots: 4 Maximum memory: DDR4 128GB (32GB RDIMM x 4) Memory pre-installed: TES-1885U-D1521-16GR 16 GB ECC RAM (8GB RDIMM X 2) TES-1885U-D1521-32GR 32 GB ECC RAM (16GB RDIMM X 2) TES-1885U-D1531-32G 32 GB non-ECC RAM (16GB UDIMM X 2) TES-1885U-D1531-64G 64 GB non-ECC RAM (16GB UDIMM X 4) TES-1885U-D1531-16GR 16 GB ECC RAM (8GB RDIMM X 2) TES-1885U-D1531-32GR 32 GB ECC RAM (8GB RDIMM X 4) TES-1885U-D1531-128GR 128 GB ECC RAM (32GB RDIMM X4)	Total DIMM slots: 4 Maximum memory: DDR4 128GB (32GB RDIMM x 4) Memory pre-installed: TES-3085U-D1521-16GR 16 GB ECC RAM (8GB RDIMM X 2) TES-3085U-D1531-32GR 32 GB ECC RAM (16GB RDIMM X 2) TES-3085U-D1548-32G 32 GB non-ECC RAM (16GB UDIMM X 2) TES-3085U-D1548-64G 64 GB non-ECC RAM (16GB UDIMM X 4) TES-3085U-D1548-16GR 16 GB ECC RAM (8GB RDIMM X 2) TES-3085U-D1548-32GR 32 GB ECC RAM (8GB RDIMM X4) TES-3085U-D1548-128GR 128 GB ECC RAM (32GB RDIMM X4)
Flash Memory	4GB DOM	
Drive Tray	Front: 2.5" / 3.5" x 12 Rear: 2.5" SSD drive bay x 6	Front: 2.5 ” x 24 Rear: 2.5" SSD drive bay x 6
Hard Drive	Front: SAS 12Gb/s, SAS 6Gb/s, SATA 6Gb/s and SSD Rear : SATA 6Gb/s and SSD	
Network port	2 x SFP+ 10GbE ports, 4 x Gigabit ports	
LEDs	10 GbE network, system status, network, drive LED	
Buttons	Power button, Reset button	
Form Factor	2U rack mount	
Dimensions (Height x Width x Depth)	88 x 442.5 x 530.5 mm 3.46 x 17.42 x 20.89 inch	88.3 x 439 x 484.5 mm 3.47 x 17.28 x 19.07 inch
Weight	Net (NAS only) : 15.1 kg / 32.28 lb Gross (including package and accessories) : 21.41 kg / 47.20 lb	Net (NAS only) : 13.98 kg / 30.82 lb
Operating Temperature	0~40˚C	
Relative Humidity	5 to 95% non-condensing, wet bulb：27˚C.	
Power Supply	Redundant power : input 90 to 264VAC：450W x 2	
PCIe Expansion Slots	Quantity: 4 Slot 1: PCIe 3.0 x8 Slot 2: PCIe 2.0 x4 Slot 3: PCIe 3.0 x4 Slot 4: PCIe 3.0 x4 or PCIe 3.0 x8* Note: Slot 4 provides the bandwidth of PCIe 3.0 x8 when Slot 3 is not in use. Slot 4 then provides the bandwidth of PCIe 3.0 x4 only when an expansion board is installed in Slot 3.	
Fan	4 x 6 cm High efficiency fan	

*QNAP may change product specifications at any time. All specifications are subject to change without notice.

Flexibility and Versatility

TES-x85U Series

Convertible NAS that Supports Two Operating Systems

QES - Specially designed for enterprise storage

ZFS, data auto-recovery, inline data deduplication, online data compression, Snapshot and SnapSync.

QTS - All-in-one application and storage operating system

Qtier auto-tiering, SSD read/write cache, Virtualization Station, Container Station, web server, VPN server and App Center.

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