QNAP

Enterprise-Class
TES-x85U Series
Composable NAS supporting two operating systems

40GbE Ready | **SAS Storage Expansion** | **DDR4 up to 128GB RAM** | **2.5" 3.5" SAS 12Gb/s** | **ECC RAM support**

TES-1885U

Built-in SFP+ 10GbE network port

intel XEON inside™

Intel® Xeon® Processor D

TES-3085SU **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 Station
  - Video surveillance
- VJBOD (Virtual JBOD)
- Supports VMware®, Citrix®, Microsoft Hyper-V™ and Windows Server 2012
- App Center offers unlimited application expandability

QTS : Designed with flexible virtualized deploymen

With the application expandability of QTS operating system, the enterprise-class TES-
also accommodates different storage classes in one system. It is the optimal enterpris

QES : built upon the best enterprise-class data bac

With QES operating system in combination of FreeBSD and ZFS, the TES-x85U feature
promised performance and near-unlimited snapshots . It fulfills high-performance and
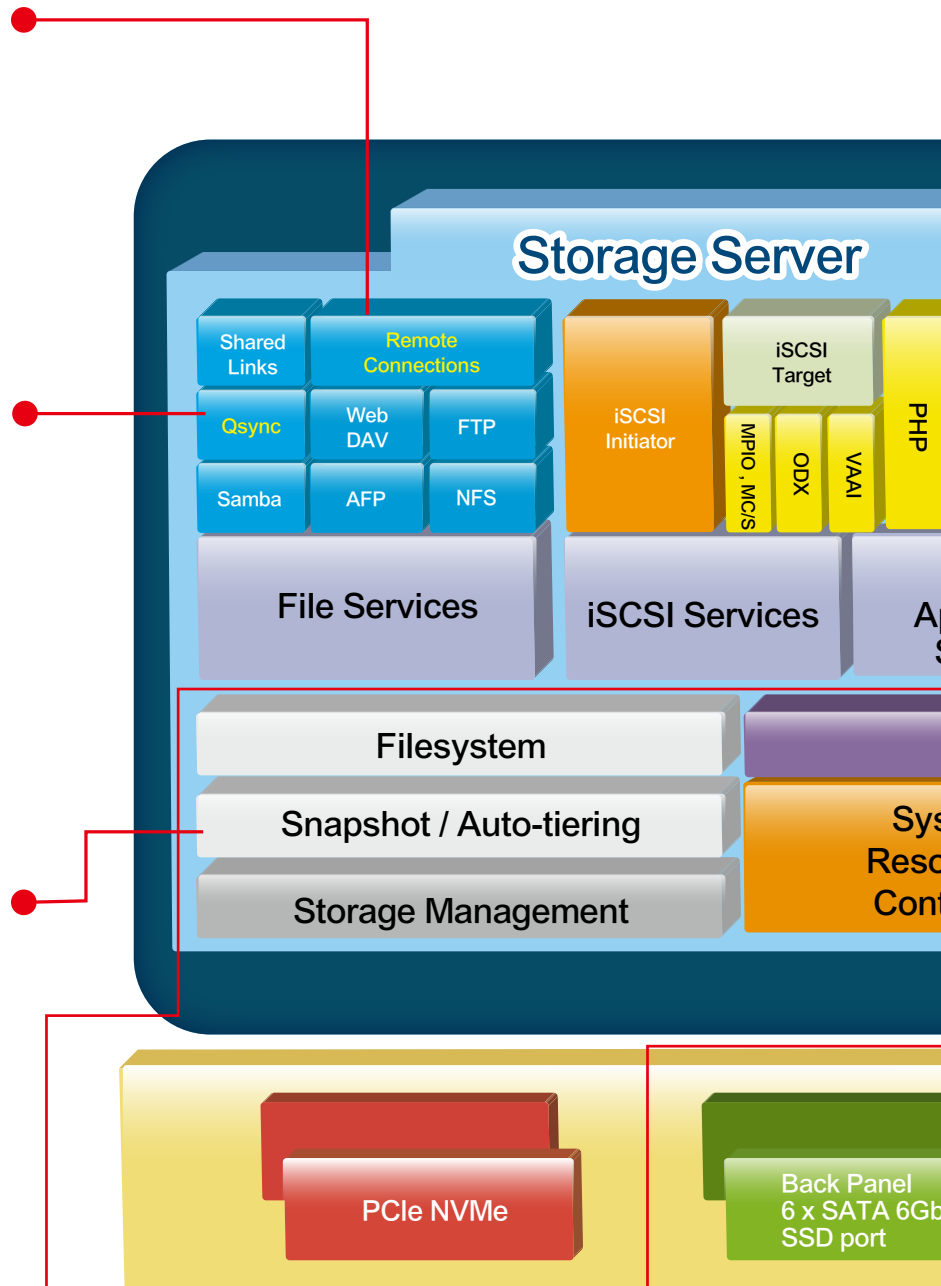
Remote Connections

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 easy, for instance you can move or copy files from host to remote devices or vise versa. Remote connections fully support connection to multiple cloud services (Google Drive™, Dropbox™, Microsoft OneDrive®, Amazon Cloud Drive™, Yandex.Disk™) and Internet protocols (Microsoft Network, FTP and WebDAV).

Qsync Central Station 2.0

Qsync Central Station 2.0 supports file synchronization between multiple devices. It enables you to view synchronized files via smart phones, tablets, computers and web browsers. When your computer is offline, edit the files offline or view the files on the local Qsync folder, and as soon computer is back online, Qsynch will resume the data synchronization. Delete files from your mobile device, and instead leave them on your NAS to save the storage space of your local device. Use the powerful features of Qsync Central Station 2.0 to collaborate with your colleagues, or share music with your friends.

Qtier™

Automated tiered storage management system. Qtier automatically moves the data accessed most extensively to high speed storage devices and the data accessed less frequently to large capacity disk drives. During the migration, administrators can see the information of data volume yet to be processed and already processed, or to suspend the processing when the need of external I/O bandwidth arises. Also, priority settings can be adjusted to mitigate the conflict between the bandwidth require-ments of external I/O and internal tiering.

Storage Server

Shared Links
Remote Connections
Qsync
Web DAV
FTP
Samba
AFP
NFS

File Services

iSCSI Initiator
iSCSI Target
MPIO , MC/S
ODX
VAAI
PHP

iSCSI Services

A
S

Filesystem

Snapshot / Auto-tiering

Storage Management

Sys
Reso
Con

PCIe NVMe

Back Panel
6 x SATA 6Gb
SSD port

Container Station

Container Station incorporating Docker® streamlines application deployment and migration on virtualized and distributed environments. The LXC (the lightweight Linux Container) enables deployment of high -performance lightweight virtualized Linux® environments on your NAS.

Windows Serve

Running Windows ser
on virtual machines va
Station in QTS provide
demonstrating greater
with a storage device

nt, application expandability and storage optimization
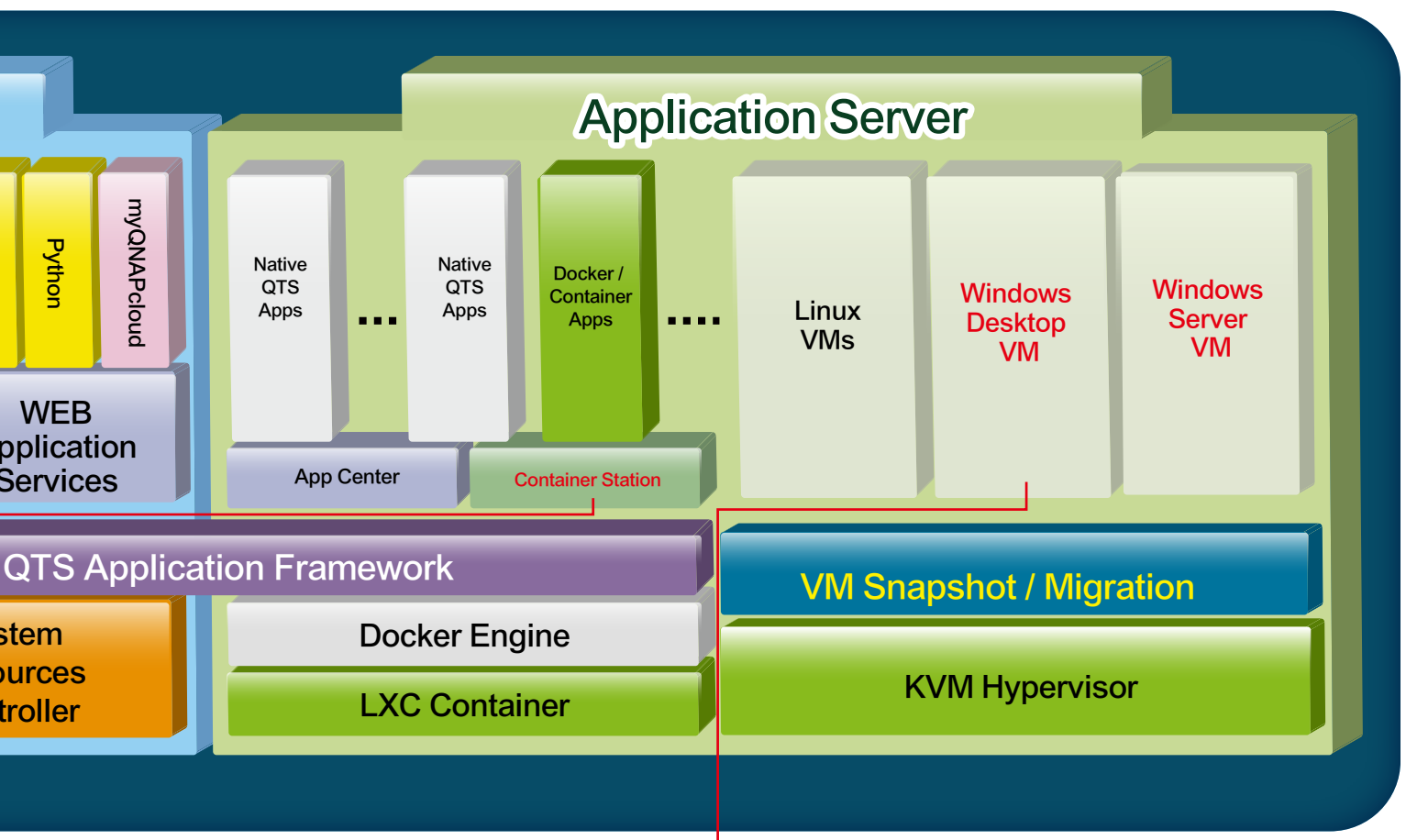
x85U not only facilitates networked and shared storage in a virtualized environment, but
e solution for hierarchical and tiered storage.

ckup and storage technologies

es data deduplication, inline data compression, data self-healing, and provides uncom-
reliable backup requirements of enterprise storage.

QTS Storage & Applications   **or**

Application Server

| Python | myQNAPcloud | | Native QTS Apps | Native QTS Apps | Docker / Container Apps | | Linux VMs | Windows Desktop VM | Windows Server VM |

WEB
pplication
Services

App Center

Container Station

QTS Application Framework

VM Snapshot / Migration

stem
ources
troller

Docker Engine

LXC Container

KVM Hypervisor

Front Panel
SAS 12Gb/s HDDs

SAS Expansion Unit
(Up to 2PB)

DDR4 Memory
(Up to 128GB)

Hardware Infrastructure

er Virtual Machines
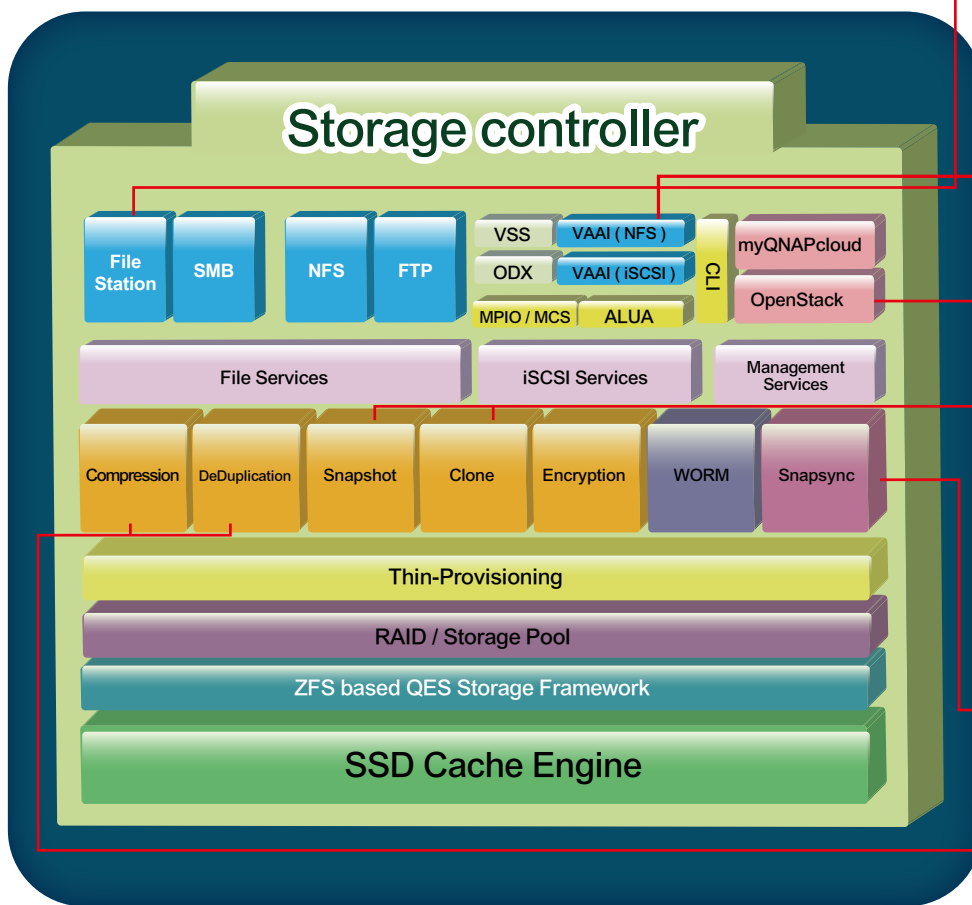
vices (such as Active Directory and Exchange Server)
astly reduces costs on all fronts. The Virtualization
es a stable environment and efficient storage,
r advantages of using TES-x85U than a normal server
for running the aforementioned services.

TES-x85U
Software Architecture

QES Enterprise-class Storage

Storage controller

File Station | SMB | NFS | FTP

VSS | VAAI (NFS)
ODX | VAAI (iSCSI)
MPIO / MCS | ALUA
CLI

myQNAPcloud
OpenStack

File Services | iSCSI Services | Management Services

Compression | DeDuplication | Snapshot | Clone | Encryption | WORM | Snapsync

Thin-Provisioning

RAID / Storage Pool

ZFS based QES Storage Framework

SSD Cache Engine

40G/10G/1G Ethernet

PCIe Expansion

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

Supports OpenStack iSCSI Cinder driver and perfectly couples with HPE Helion to build a agile and reliable private cloud.

Remote synchronization

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

Better efficiency with high-capacity storage

Block-level deduplication, real-time data compression, and thin-provisioned volumes with space reclamation help realized the most cost-effective remote virtual desktop platform and mission-critical data warehousing.
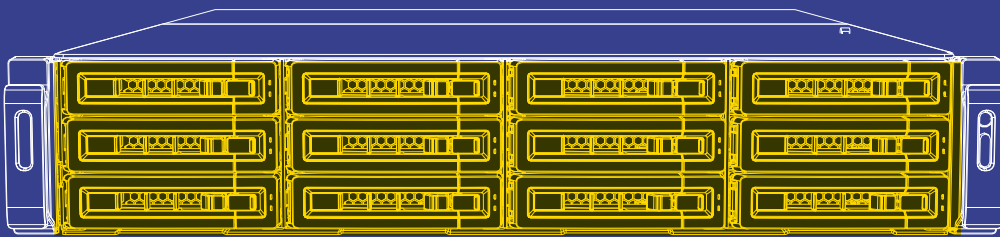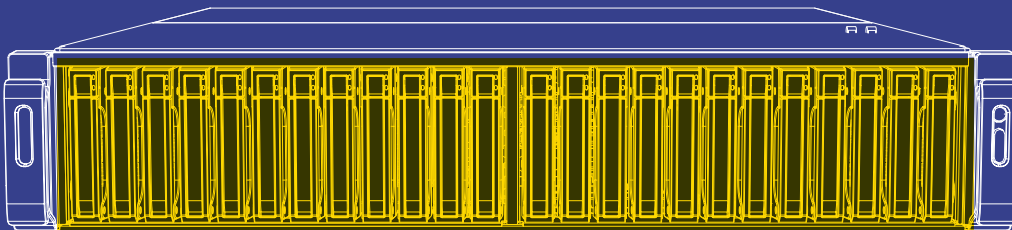
TES-x85U
Hardware Architecture

TES-1885U

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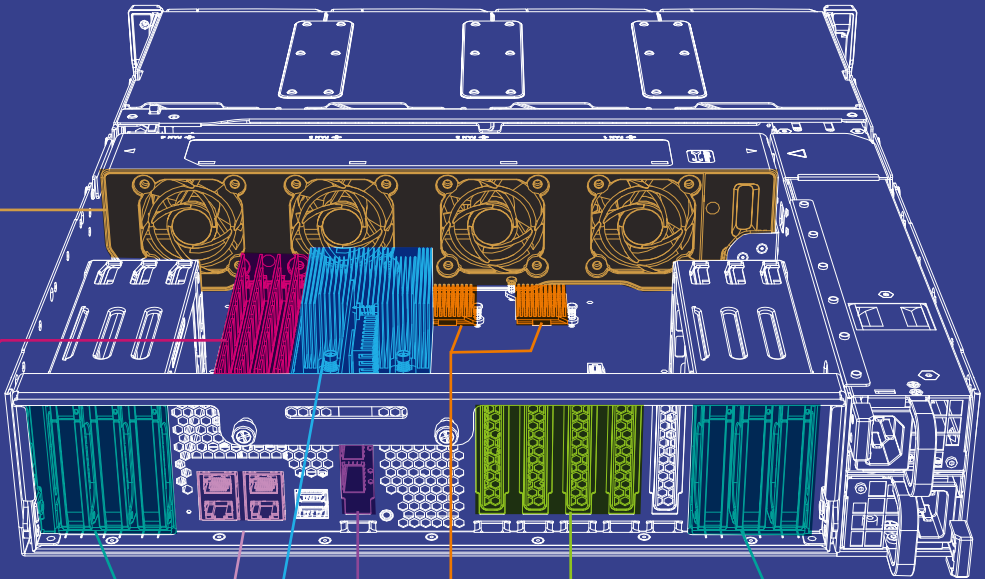- Flexible selection of storage media for most economical storage space

TES-3085SU

- 2.5" 12Gb/s SAS drive bays
- 2U rack-mount server chassis supports up to 24 drives
- Super high speed All-Flash storage solution

Hot-swappable fan modules

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

DDR 4 at th of 2133 MH

· 4 DDR4 RAM u
· UDIMM and EC

Four built-in Gigabit Ethernet ports

Intel Xeon multi-core processor D family

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

SAS 12Gb/s controller

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

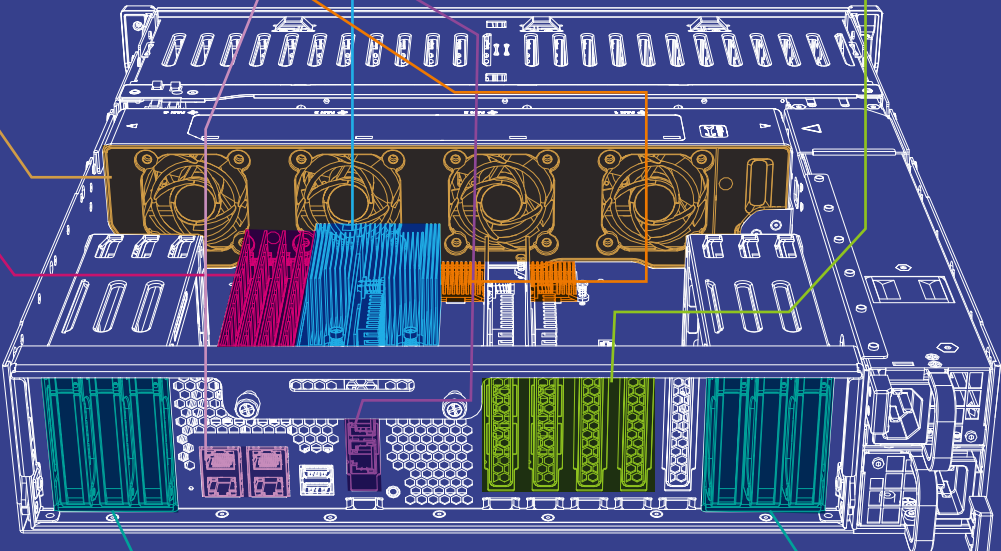**2 built-in SFP+ 10GbE ports**

6 x 2.5" SATA SSD drive bays

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

3 x PCIe 3.0 slots

Supports 10Gb/40Gb Ethernet adapters and PCIe NVMe SSD

e speed
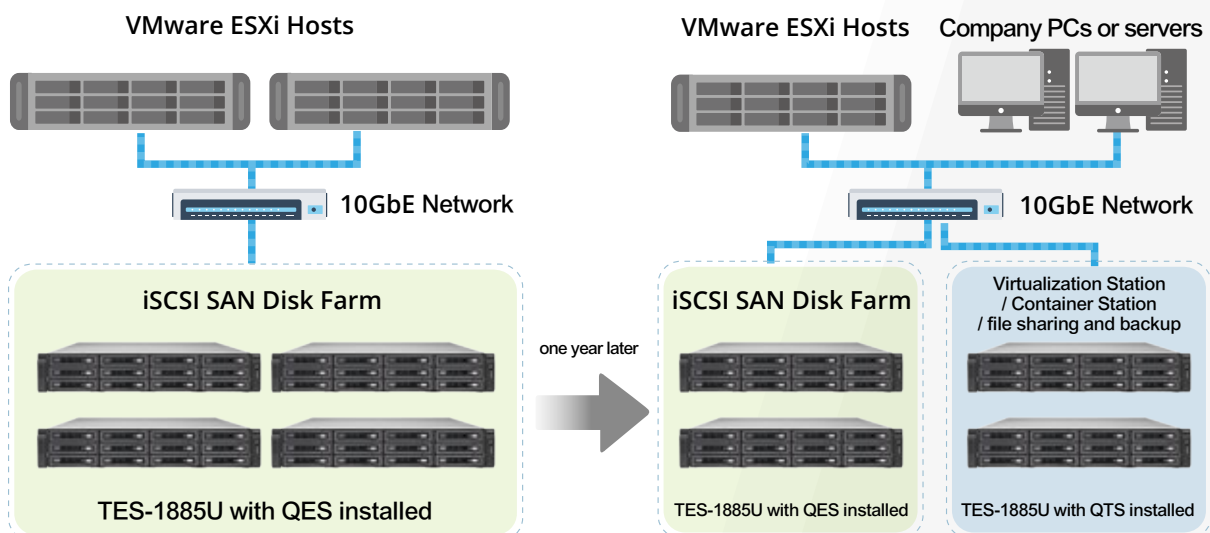**Iz**

up to 128GB
CC RDIMM

One NAS architect for two OS modes

QES is an operating system designed for enterprise-class storage while QTS is the one designed for SMB. QES is especially developed for the enterprise-class ES series storage products with dual controllers on which ZFS (Zettabyte File System) can be operated to obtain optimal data security and system reliability as the highest priority for enterprises. With Data Self-Healing, Data Deduplication and Online Data Compression, it helps enterprises 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 to 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, built-in Virtualization Station and print server, so all SMB requirements can be fulfilled with just one single NAS.

	QES	QTS
CIFS/FTP/NFS/iSCSI	Yes	Yes
Snapshot	Yes	Yes
SnapSync	Yes	No
Data de-duplication	Yes	No
Online data compression	Yes	No
SSD read cache	No	Yes
SSD read/write cache	Read cache only	Yes
Qtier (Auto tiering)	No	Yes
Application Service (Virtualization station, web server, multimedia service...etc.)	No	Yes
App center	No	Yes
Recommended application scenarios	1. Reliable storage equipment for critical missions。 2. Backup server for QNAP ES dual controller models。	1. Use Qtier and SSD to build most cost-efficient high speed storage. 2. Use Virtualization Station and Container Station to run VMware. 3. Use a wide variety of applications to deliver services like web server, VPN service and Database.

With TES-x85U, users can choose to install QNAP Enterprise System (QES) or QNAP Turbo NAS System (QTS) operating systems based on their application needs. With the bi-modal flexibility, enterprises are able to deploy different operating systems flexibly on multiple TES-x85U series NAS devices to fulfill different application needs at different times. For instance, in order to build a virtualized storage environment with VMware, companies may install QES on TES-x85U initially. Then, one year later when the demand of virtual machines declines, TES-x85U can be switched to run QTS operating system to provide internal file sharing, data backup services and even used as an replacement of VMware host with its built-in Virtualization Station application.

VMware ESXi Hosts

10GbE Network

iSCSI SAN Disk Farm

TES-1885U with QES installed

one year later

VMware ESXi Hosts   Company PCs or servers

10GbE Network

iSCSI SAN Disk Farm

Virtualization Station / Container Station / file sharing and backup

TES-1885U with QES installed   TES-1885U with QTS installed

Switching between operating systems requires reinitializing the disks; As such, data needs to be backed up in advance.

Hardware Specifications

TES-x85U series has the 18-bay TES-1885U model and 30-bay TES-3085SU model, equipped with Intel's latest Xeon D family processor especially designed for enterprise-class servers. The Intel® Xeon® D processor family is the first product line that implements a low power SoC design with the processing cores and feature set of the Xeon processors. It provides 4 to 15 cores, up to 128GB DDR4 ECC RDIMM memory support, and two built-in 10GbE network ports but only requires 20-65W TDP, satisfying both high performance and low power consumption requirements.

TES-1885U and TES-3085SU are equipped with D-1531 6-core and D-1548 8-core processors respectively. Different combinations of processor and memory are available upon customers' performance and power requirements.
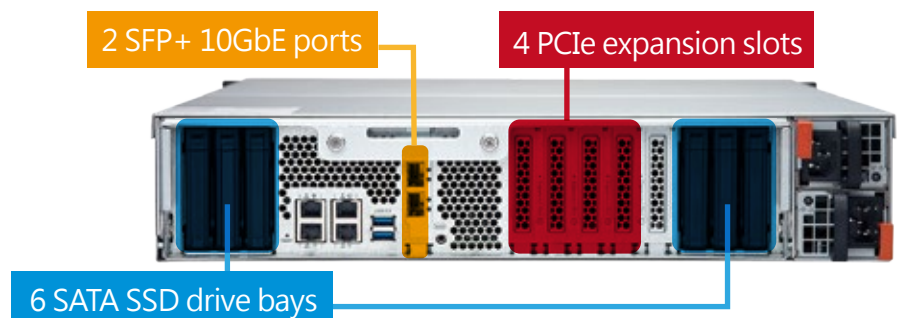
CPU Model	Processor Base Frequency	Max Turbo Frequency	CPU Cores	TDP	Note
Xeon® Processor D-1521	2.4 GHz	2.7 GHz	4	45W	OEM/ODM SKU
Xeon® Processor D-1531	2.2 GHz	2.7 GHz	6	45W	Installed on TES-1885U
Xeon® Processor D-1548	2.0 GHz	2.6 GHz	8	45W	Installed on TES-3085SU
Xeon® Processor D-1567	2.1 GHz	2.7 GHz	12	65W	OEM/ODM SKU
Xeon® Processor D-1571	1.3 GHz	2.1 GHz	16	45W	OEM/ODM SKU

SSD delivers incomparable performance of random I/O. TES-x85U series provides six 6Gb/s SATA connectors for SSD, which can be utilized for QES system drive, SSD cache drive or high-speed storage in Qtier storage pool.

1. Maximum memory capacity is subject to the type of memory used. Install up to 128GB RDIMM, or 64GB UDIMM.
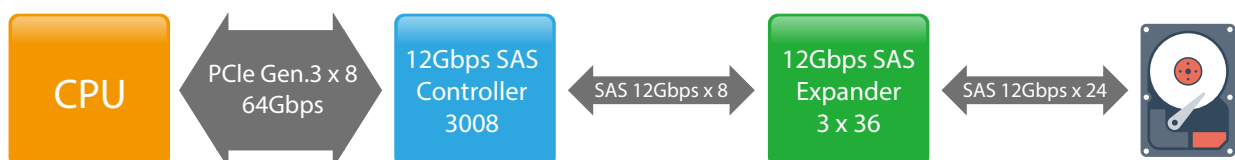2. Customization requires MOQ (Minimum Order Quantity), please contact our sales team for more information.

TES-x85U provides 10 GbE network ports with built-in SFP+ interface which can be changed to dual port 10GBase-T interface with the purchase of available options. Great expandability with four built-in PCIe 3.0 expansion slots for 10GbE/40GbE network card, USB 3.1 and 12Gb/s SAS expansion boards, and even high-end graphic card and PCIe NVMe SSD.

PCIe slot number	PCIe specification	Note
Slot 1	PCIe Gen.3 x8	Slot 4 provides the width of PCIe 3.0 x8 when slot 3 is not in use. Slot 4 then provides the width of PCIe 3.0 x4 only when an expansion board is installed in slot 3.
Slot 2	PCIe Gen. 2 x4	
Slot 3	PCIe Gen. 3 x4	
Slot 4	PCIe Gen. 3 x4 或 PCIe Gen. 3 x8	

2 SFP+ 10GbE ports

4 PCIe expansion slots

6 SATA SSD drive bays

12Gb/s SAS interface

The stability and reliability of SAS protocols have always been the main attraction to enterprises when choosing storage devices. TES-x85U provides 12Gb/s SAS controller. PCIe 3.0 x8 provides a bandwidth of up to 64Gb/s. Every hard drive connecting to the controller delivers dedicated bandwidth and command set. That's why the TES series with 12Gb/s SAS protocol are able to provide faster data transmission and fully utilize the capacity of storage system.

CPU — PCIe Gen.3 x 8 64Gbps — 12Gbps SAS Controller 3008 — SAS 12Gbps x 8 — 12Gbps SAS Expander 3 x 36 — SAS 12Gbps x 24

Hardware Specifications

NAS Model	TES-1885U	TES-3085SU
Ordering SKU	TES-1885U-D1531-32G TES-1885U-D1531-64G TES-1885U-D1531-16GR TES-1885U-D1531-32GR	TES-3085SU-D1548-32G TES-3085SU-D1548-64G TES-3085SU-D1548-16GR TES-3085SU-D1548-32GR
CPU	Intel® Xeon® Processor D-1531, 6 core 2.2 GHz	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-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)	Total DIMM slots : 4 Maximum memory : DDR4 128GB (32GB RDIMM x 4) Memory pre-installed : TES-3085SU-D1548-32G 32 GB non-ECC RAM (16GB UDIMM X 2) TES-3085SU-D1548-64G 64 GB non-ECC RAM (16GB UDIMM X 4) TES-3085SU-D1548-16GR 16 GB ECC RAM (8GB RDIMM X 2) TES-3085SU-D1548-32GR 32 GB ECC RAM (8GB 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 / 30.82lb
Operation temperate	0-40˚C	
Relative Humidity	5~95% non-condensing, wet bulb：27˚C.	
Power supply	Redundant power : input 90~264VAC：450W x 2	
PCIe Expansion Slot	3 (hard drive zone 1 x PCIe 3.0 x 8 ; CPU zone 2 x PCIe 3.0 x 4)	
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

QES _or_ QTS

QES
Enterprise-class
operating system

QTS
Application and storage
operating system

Composable NAS with a Choice of Two Operating Systems

QES - specifically designed for enterprise storage
ZFS file system, data auto-recovery, inline data
deduplication, online data compression,
Snapshot and SnapSync

QTS - application and storage all-in-one operating system
Qtier auto-tiering, SSD read/write cache, Virtualization
Station, Container Station, web server, VPN server
and App Center.

QNAP Systems, Inc.

TEL : +886-2-2641-2000   FAX : +886-2-2641-0555   Email: qnapsales@qnap.com
Address：3F, No.22, Zhongxing Rd., Xizhi Dist., New Taipei City, 221, Taiwan

Netherlands (Warehouse Services)
Email：nlsales@qnap.com
TEL：+31(0)107600830

Germany
Email：desales@qnap.com
TEL：+49-89-381562991

China
Email：cnsales@qnap.com.cn
TEL：+86-400-628-0079

India
Email：indiasales@qnap.com

US
Email：usasales@qnap.com
TEL：+1-909-595-2782

Thailand
Email：thsales@qnap.com
TEL：+66-2-5415988

201606(EN) A