QNAP

Turbo**NAS** Business Series

- NAS, iSCSI, IP-SAN Storage Solution
- Rich Business Applications
- VMware® Ready™, Citrix® Ready™, Hyper-V™ Compatible
- Secure Data Storage, Sharing, and Backup

CITRIX ready™   vmware READY   Windows Server 2008 R2 Hyper-V   intel CORE inside   intel Xeon inside   intel Atom inside

Overview

Modern businesses face the challenge of dramatic growth of digital data. Deploying a reliable, affordable and expandable storage center to securely store, share, and back up business digital assets has become an important task for the IT administrators.

QNAP Turbo NAS provides an efficient and flexible network attached storage solution with iSCSI services, cross-platform data sharing, and rich business applications. With VMware® Ready™ and Citrix® Ready™ verifications, and proven compatibility with Microsoft® Hyper-V™ environment, the Turbo NAS is an ideal shared storage solution in the virtualized and clustered environment.

Rich Business Applications

The Turbo NAS supports file sharing across Windows®, Mac®, Linux, and UNIX platforms. It can be used as a file server, FTP server, printer server, and web server. Windows AD (Active Directory) support and advanced features such as WebDAV, Shared Folder Aggregation, IPv6 and IPv4 dual-stack, Wake on LAN, scheduled power on/off, hard drive S.M.A.R.T., comprehensive log systems, and policy-based unauthorized IP blocking are all included.

Well-rounded Backup Solutions

The Turbo NAS offers the IT administrator flexible server backup solutions, including encrypted remote replication, Real-time Remote Replication (RTRR), and cloud-based storage backup. Windows users and Mac users can use QNAP QBack utility and Time Machine respectively to back up data to the Turbo NAS. Furthermore, the Turbo NAS also supports third party backup software such as Veeam® Backup & Replication and Acronis® True Image.

Affordable and Flexible Virtualization Solution

The Turbo NAS is VMware® Ready for vSphere 4.0 (ESX 4.0 and above), Citrix® Ready for XenServer 6.0, and compatible with Windows 2008 Failover Cluster. The Turbo NAS can be utilized as the network shared storage of VMware, Citrix virtualization environments and Windows clustered servers. Comparing with traditional SAN (Storage Area Network), the Turbo NAS is a competitive alternative with much lower setup and maintenance costs in an IP SAN.

Class-leading QNAP Turbo NAS

Highly Regarded Worldwide

QNAP is ranked as the #1 Asian supplier of stand-alone NAS products in the sub-$5,000 price band in terms of vendor revenue, according to Gartner research report 2010. This reflects QNAP's ongoing commitment to developing and marketing high quality network storage products which meet and exceed our customers' expectations.

#1 Asian Supplier

#3 in Global NAS Market

#4 in European NAS Market

2008   2009   2010
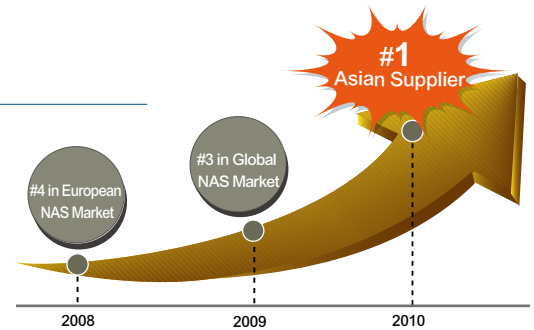
Abundant Business Features

The Turbo NAS supports a multiuse of server business applications.

File Server
The Turbo NAS provides seamless file sharing cross Windows, Mac, Linux, and UNIX platforms. It also supports WebDAV for easy access to shared folders via HTTP/HTTPS protocol remotely.

Backup Server
The Turbo NAS offers a centralized backup center for Mac users using Time Machine and Windows users using QNAP QBack utility.

Encrypted Remote Replication
The data on the Turbo NAS can be backed up to or from another Turbo NAS or rsync server over the network securely.

FTP Server
The IT administrator can establish an FTP server with the Turbo NAS and share files conveniently with colleagues or customers.

Web Server
The IT administrator can host multiple websites on the Turbo NAS with the built in web server and virtual host feature.

Print Server
The Turbo NAS offers printer sharing over the network and remote printing over the Internet via IPP (Internet Printing Protocol). Print job management, and Bonjour printing for Mac OS X are also supported.

Surveillance Station
The IT administrator can use the Turbo NAS to manage connected IP cameras and set up a video surveillance system with comprehensive monitoring, recording, and playback features.

Syslog Server
By collecting and storing the logs of other network devices on the Turbo NAS with QNAP's Syslog server support, the IT administrator can easily monitor the status of these devices, and further troubleshoot when necessary.

TFTP Server
The TFTP server simplifies network configuration management for firmware upgrades, deployment or backup of configurations from various network devices such as routers and switches.

Centralized Storage and File Sharing

Cross-platform Sharing
The Turbo NAS supports SMB/CIFS, AFP, and NFS protocols for file sharing across Windows, Mac, Linux/UNIX networks. User accounts and shared folders can be created via the user-friendly web-based interface without IT expertise. The integrated antivirus solution for the Turbo NAS ensures business continuity by offering detection against the latest viruses, malware, worms, and Trojan horses.

Web File Manager
The Turbo NAS provides Web File Manager for users to access and manage their data anywhere with a web browser. Intelligent data search, batch files upload and download, file extraction, encrypted data transfer, and access control allow users to access and share their data securely and conveniently.

Shared Folder Aggregation
Access the shared folders of other servers on Microsoft Networking through the "portal folder" on the Turbo NAS. This saves the time and effort to log on different servers one by one.

ISO CD/DVD Archiving and Sharing
The Turbo NAS supports mounting ISO images of CD and DVD discs as network shares for data archiving, storage, and sharing. This feature saves the space for storing the physical discs, reduces the risk of data loss caused by disc wearing and tearing, and enhances the efficiency of data sharing on business network.
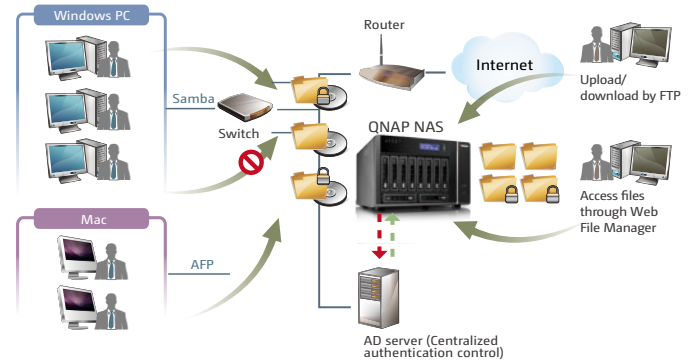
Comprehensive Access Control

User Authority Management
Create multiple users and specify their password, quota, and user groups by simply uploading the batch files in TXT or Excel CSV format to the NAS.

Shared Folder Access Control
Create and manage shared folders, users, and user groups, and define the folder access rights on the Turbo NAS on the web-based interface without IT expertise required.

Advanced Folder Permissions
Advanced folder permissions allow users to configure folder/subfolder access to the Turbo NAS. With this feature enabled, users can manage the folder permissions from Microsoft Windows or the web-based management interface of the Turbo NAS easily.

Windows Active Directory (AD) and LDAP Directory Service
The Windows AD and LDAP directory service features enable the IT administrator to retrieve user accounts from Windows AD or LDAP-based directory server to the Turbo NAS, reducing time and effort in account setup.
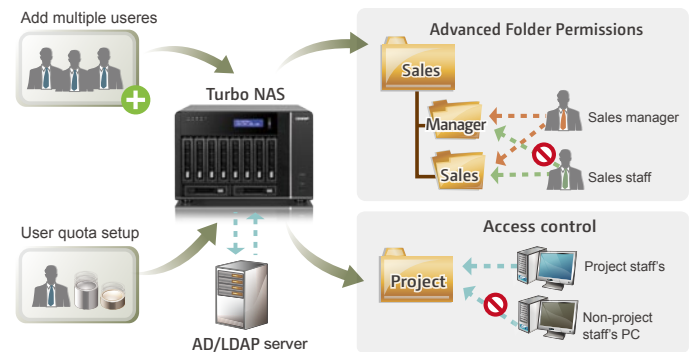
Well-rounded Backup Solution

Backup Windows PC with QBack
QNAP's backup utility QBack helps users back up files from Windows PC to one or multiple QNAP Turbo NAS servers. Users can set up real-time data synchronization or scheduled backup from multiple PCs.

Apple Time Machine Support
Back up the data from Mac to the Turbo NAS, restore the system, or retrieve files from a specific backup timestamp via Time Machine when needed.

Third-party Backup Software Support
The Turbo NAS is compatible with popular third-party backup software, such as Veeam Backup & Replication and Acronis® True Image.

Remote Backup
- Real-time Remote Replication (RTRR) provides real-time or scheduled data replication between the local Turbo NAS and a remote Turbo NAS, an FTP server, or an external drive.
- Rsync backup is supported.

iSCSI LUN Backup and Restore
The Turbo NAS iSCSI LUN backup/restore allows the IT administrator to use the LUN snapshot to back up contents in the LUN to various storage destinations, including Windows shared folders via SMB/CIFS, Linux shared folders via NFS, or local shared folders on the Turbo NAS.

One-touch-copy Backup*
Back up the Turbo NAS to an external storage device or vice versa by hitting the one-touch-copy button on the front cover.

Cloud Storage Backup
Turbo NAS supports backing up data to Amazon S3, ElephantDrive, and Symform.
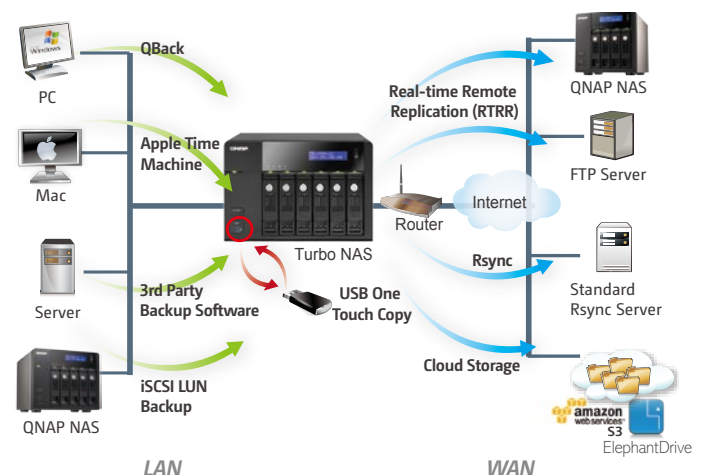
Comprehensive Security Features

Policy-based Unauthorized IP Blocking
The IT administrator can allow, deny or auto block specified IP address or network domain that attempt to connect to the Turbo NAS via SSH, Telnet, HTTP(S), FTP, Samba, or AFP.

Remote Login
The Turbo NAS supports remote login via SSH (secure shell) or Telnet connection.

SSL Security (HTTPS)
The Turbo NAS supports HTTPS connection. The IT administrator can upload a secure certificate and RSA private key in X.509PEM format issued by a trusted provider to allow access to the Turbo NAS via secure SSL login.

Secure FTP
The Turbo NAS offers secure data transfer with SSL/TLS (explicit) encryption. Passive FTP port range setup is supported

Encrypted Remote Replication via rsync
The data on the Turbo NAS can be backed up to or from another Turbo NAS or rsync server over the network securely.

Shared Folder Management
The IT administrator can select to hide or show selected shared folders of the Turbo NAS on Windows network.

Service Binding
QNAP's service binding feature provides an ideal solution for the IT administrator to allow or block specific services from predefined network interfaces.

Antivirus
The integrated antivirus solution for the Turbo NAS ensures business continuity by offering detection against the latest viruses, malware, worms, and Trojans.

RADIUS Server
The RADIUS server centralizes and consolidates user authentication by maintaining a list of user accounts that are authorized for remote network access through dial-up equipment, Wi-Fi access point, or VPN connections.

Reliable System

FIPS 140-2 Certified AES 256-bit Volume-based Data Encryption
The disk volume with FIPS 140-2 certified AES 256-bit encryption can only be accessed with an authorized encryption password or key. This prevents the sensitive government or businesses data on the Turbo NAS from unauthorized access and breach even if the hard disk drives or the entire system were stolen.
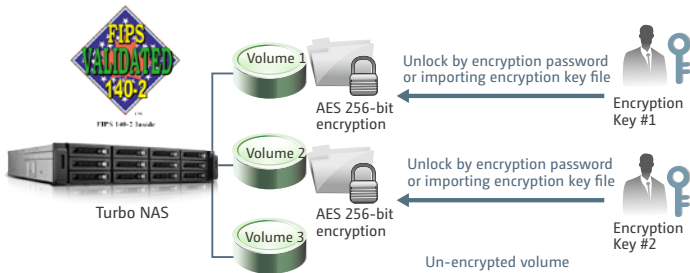
* The data encryption functions may not be available in accordance to the legislative restrictions of some countries. Please contact QNAP sales representatives for further information.

External Drive Encryption
An external drive attached to the Turbo NAS means easy removal. The important data on the drive needs a solution to protect the data against theft. The Turbo NAS now supports encrypting contents in the external drive.

Multiple LAN Deployment
The LAN ports of the Turbo NAS can be configured in failover mode which allows the Turbo NAS to sustain the failure of one network port providing continuity services.

Redundant Power Supply*
The Turbo NAS is equipped with two power supply units, each capable of supplying the power for the entire Turbo NAS independently. If one of the units fails, the other one will take over to supply the power to ensure continuous operation of the Turbo NAS. The failed power supply unit can be replaced without turning off the server.

DOM Architecture and Fail-safe Dual OS
Two operating systems are built on the DOM of Turbo NAS for system booting alternatively upon every system startup. When one fails, the other one will be used to boot up the Turbo NAS, and the failed OS is recoverable from the other healthy OS.

Advanced RAID Management with Hot-swap Design

The Turbo NAS offers RAID 0, 1, 5, 10, 5+hot spare, 6, 6+hot spare, 10, 10+spare, single, and JBOD disk configurations. It also supports hot-swap design so that a failed member drive of a RAID configuration (RAID 1 or above only) can be replaced by hot swapping without turning off the server.

Online RAID Capacity Expansion
The storage capacity of a RAID configuration can be expanded by replacing larger hard drives. All the data will be kept and seamlessly moved to the newly installed hard drives without turning off the server.

Online RAID Level Migration
Upgrade the disk configuration to a higher RAID level with the data retained without turning off the server.

Enhanced read-only Protection
A degraded RAID volume with bad blocks will normally cause read/write error and the RAID volume might crash when it reaches the number of allowed failed hard disks. The Turbo NAS allows the volume with one or more hard disk failure to enter the read-only protection mode in case the bad block error happens on the second failed disk of RAID 5 or third failed disk of RAID 6, allowing the IT administrator to rescue critical data.

RAID Recovery
If more than two disks on a RAID 5 volume or more than three disks on a RAID 6 disk volume are unplugged, the RAID volume will crash. With QNAP's exclusive RAID recovery technology, when more than the allowed disks are removed from a RAID volume, the IT administrator can still recover the RAID volume.
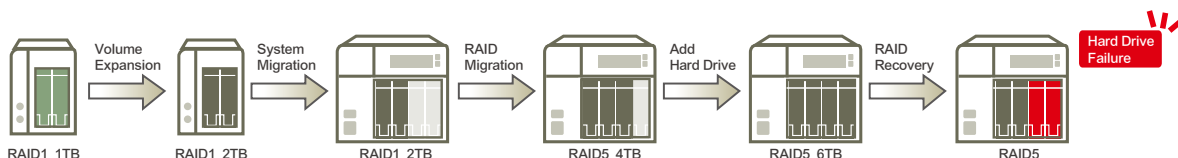
iSCSI and Virtualization Deployment

NAS + iSCSI Combo Solution
The Turbo NAS can serve as a NAS for file sharing and iSCSI storage concurrently.

Flexible Management
The Turbo NAS supports multiple LUNs (Logical Unit Numbers) and iSCSI targets. LUNs can be flexibly mapped to, unmapped from, and switched among different iSCSI targets.

Secure Deployment
Designed with CHAP authentication and LUN masking, the advanced ACL (Access Control List) offers the capability to block unauthorized access from the initiators.

Designed for Virtualized and Clustered Environments
Compared with a high cost Fibre Channel SAN, the Turbo NAS is an affordable system that can be deployed as a storage center for virtualized and clustered server environments, such as VMware and Microsoft Windows Failover Cluster.

SPC-3 Persistent Reservation Supported
The built-in iSCSI service supports enterprise-level features such as SPC-3 persistent reservation for clustering in VMware and Windows Server 2008. The IT administrator can set up Microsoft Failover Cluster environment, use Cluster Shared Volume for Hyper-V, and execute virtual machine live migration between Hyper-V hosts.

Advanced MPIO and MC/S Supported
With the support of MPIO (Multipath Input Output) and MC/S (Multiple Connections per Session) on the Turbo NAS, users can connect to the iSCSI targets on the Turbo NAS using two or more network interfaces from their server with failover and load balancing. Furthermore, with MC/S settings better data transmission performance is achieved.
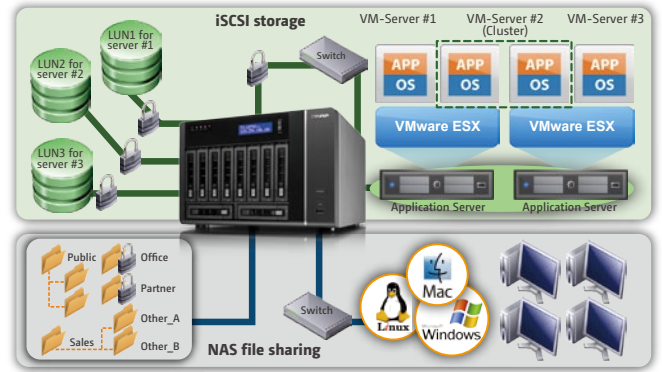
iSCSI LUN Snapshot/Backup
Server virtualization reduces IT expenditure yet provides flexible server management. Adopting a proper data protection and disaster recovery for virtual machines has become vastly important. The Turbo NAS has taken iSCSI LUN backup/restore to a whole new level with snapshot technology. The IT administrator can use the LUN snapshot to back up contents in the LUN to various storage destinations, including Windows shared folders via SMB/CIFS, Linux shared folders via NFS, or local shared folders on the Turbo NAS.

Virtual Disk Drive (VDD)

The unique "Virtual Disk Drive" adds flexibility to expand the capacity of the Turbo NAS. By using the built-in iSCSI initiator, the Turbo NAS can connect to other iSCSI targets on the network and turn them into virtual disks, which become multiple single volumes on the Turbo NAS. Up to 8 virtual disks can be stacked.

System Management Tools

Instant SMS, Email and Windows Live Messenger Alert
Configure the SMTP server, SMS server, and Windows Live Messenger account settings on the Turbo NAS in order to receive instant system warning or error messages via email, SMS, and Instant Messages.

S.M.A.R.T. & Advanced Hard Drive Health Scan (HHS)
Self-Monitoring Analysis and Reporting Technology (S.M.A.R.T.) helps the IT administrator monitor hard disk status. Moreover, the Turbo NAS supports Hard Drive Health Scan (HHS) for disk checking and bad blocks scanning.

Comprehensive Event Logs
Detailed logs of file-level access to the Turbo NAS via Samba, iSCSI, FTP, HTTP, HTTPS, Telnet, and SSH, and networking services accessed by online users can all be recorded.

Touch-N-Go PC-less Installation*
Use the front panel LCD display to complete the first time installation in a few simple steps without a PC.

Scheduled Power on/off
Create schedules to automatically turn on, turn off, or restart the Turbo NAS. Up to 15 schedules can be set.

Wake on LAN
Enable this option to power on the Turbo NAS remotely by Wake on LAN. Wake on LAN helps the administrator manage the NAS conveniently.

SNMP (Simple Network Management Protocol)
Collect the information, warning, or errors of the Turbo NAS and send warnings to up to 3 SNMP servers for centralized management and real-time monitoring.

Port Trunking and 10 GbE Network Support

The Turbo NAS supports multiple bonding modes: Balance-rr (Round-Robin), Active Backup, Balance XOR, Broadcast, IEEE 802.3ad, Balance-tlb (Adaptive Transmit Load Balancing), and Balance-alb (Adaptive Load Balancing).

Load Balancing
TThe LAN ports of the Turbo NAS can be configured in load balancing mode for bandwidth aggregation to boost file transfer speeds. It works with managed Ethernet switch with 802.3ad configured.

Failover
The LAN ports of the Turbo NAS can be configured in failover mode which allows the Turbo NAS to sustain the failure of one network port and provide continuous services.

Multi-IP Settings
The Turbo NAS can be deployed with multiple different IP settings for sharing among different workgroups in two different subnets.

10 Gigabit Ethernet Network Ready
The TS-x79 Series Turbo NAS has an optional 10 GbE network card which can be added to fulfill demanding applications that require high bandwidth.

Throughput

TS-EC1279U-RP (RAID 5)
1,574
1,738

Other Brand 1 GbE NAS (RAID 5)
90
80

Read
Write
(MB/Sec)
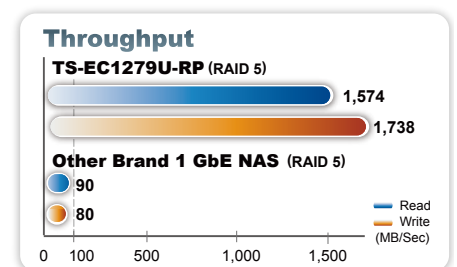
© Testing Environment: Intel Xeon E5620 / 12GB DDR3 RAM, Intel M25 SSD, Windows 7 Enterprise 64 Bits, Intel X520-SR2 Server Adapter.

Turbo NAS Business Series - Tower

Model	TS-1079 Pro	TS-879 Pro	TS-859 Pro+	TS-659 ProII	TS-659 Pro+
CPU	Intel® Core™ i3-2120 3.3GHz Dual Core	Intel® Core™ i3-2120 3.3GHz Dual Core	Intel® Atom™ D525 1.8GHz Dual Core	Intel® Atom™ D525 1.8GHz Dual Core	Intel® Atom™ D525 1.8GHz Dual Core
Memory	2GB DDR3	2GB DDR3	1GB DDR3	1GB DDR3	1GB DDR3
Extra RAM Slot (Memory Expansion)	--	--	--	Yes (Up to 3GB)	--
Max. Number of Hard Drives Supported[1]	10 x SATA(III)	8 x SATA(III)	8 x SATA(II)	6 x SATA(III)	6 x SATA(II)
Hard Drive Type Supported	2.5"/3.5"	2.5"/3.5"	2.5"/3.5"	2.5"/3.5"	2.5"/3.5"
Maximum Raw Capacity	30TB	24TB	24TB	18TB	18TB
Hot Swappable	Yes	Yes	Yes	Yes	Yes
USB 2.0	Back: 4	Back: 4	Front: 1 ; Back: 4	Back: 4	Front: 1 ; Back: 4
USB 3.0	Front: 1 ; Back: 1	Front: 1 ; Back: 1	--	Front: 1 ; Back: 1	--
eSATA	2	2	2	2	2
10/100/1000 Gigabit LAN Port	2[3]	2[3]	2	2	2
Wake on LAN	Yes	Yes	Yes	Yes	Yes
Dimensions (HxWxD mm)	217.5 x 327 x 321.2	217.5 x 327 x 321.2	185 x 298.2 x 235.5	185 x 260 x 235.5	185 x 260 x 235.5
Weight (Net/Gross Weight Kg)	9.84/15.43	8.39/13.98	7.3/8.6	5.2/6.5	5.2/6.5
RAID Supported	Single Disk, JBOD, RAID 0/1/ 5/ 6/ 10, RAID 5/6 +Hot Spare, Global Hot Spare Drive				
Power	350W	350W	350W	250W	250W
Fan	2 (12cm)	2 (12cm)	2 (12cm)	2 (9cm)	2 (9cm)
Power Consumption (Sleep Mode/In Operation)[2]	40W/121W	39W/101W	28W/67W	22W/43W	22W/43W
Throughput (Read/Write MB/sec)[2]	1,520/1,104[5]	1,532/953[5]	106.8/101.2	116.1/103.4	116.1/103.4
Max. User Accounts	4096	4096	4096	4096	4096
Max. Groups	512	512	512	512	512
Max. Shared Folders	512	512	512	512	512
Max. Concurrent Connections	256	256	256	256	256
Max. Number of IP Camera Supported	4	4	4	4	4
LCD Quick Configuration	Yes	Yes	Yes	Yes	Yes

Model	TS-559 Pro II	TS-559 Pro+	TS-459 Pro II	TS-459 Pro+	TS-439 Pro II+	TS-259 Pro+	TS-239 Pro II+
CPU	Intel® Atom™ D525 1.8GHz Dual Core	Intel® Atom™ D525 1.8GHz Dual Core	Intel® Atom™ D525 1.8GHz Dual Core	Intel® Atom™ D525 1.8GHz Dual Core	Intel® Atom™ D425 1.8GHz	Intel® Atom™ D525 1.8GHz Dual Core	Intel® Atom™ D425 1.8GHz
Memory	1GB DDR3	1GB DDR3	1GB DDR3	1GB DDR3	1GB DDR3	1GB DDR3	1GB DDR3
Extra RAM Slot (Memory Expansion)	Yes (Up to 3GB)	--	Yes (Up to 3GB)	--	--	--	--
Max. Number of Hard Drives Supported[1]	5 x SATA(III)	5 x SATA(II)	4 x SATA(III)	4 x SATA(II)	4 x SATA(II)	2 x SATA(II)	2 x SATA(II)
Hard Drive Type Supported	2.5"/3.5"	2.5"/3.5"	2.5"/3.5"	2.5"/3.5"	2.5"/3.5"	2.5"/3.5"	2.5"/3.5"
Maximum Raw Capacity	15TB	15TB	12TB	12TB	12TB	6TB	6TB
Hot Swappable	Yes	Yes	Yes	Yes	Yes	Yes	Yes
USB 2.0	Back: 4	Front: 1 ; Back: 4	Back: 4	Front: 1 ; Back: 4	Front: 1 ; Back: 4	Front: 1 ; Back: 4	Front: 1 ; Back: 4
USB 3.0	Front: 1 ; Back: 1	--	Front : 1 ; Back: 1	--	--	--	--
eSATA	2	2	2	2	2	2	2
10/100/1000 Gigabit LAN Port	2	2	2	2	2	2	2
Wake on LAN	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Dimensions (HxWxD mm)	185 x 210.6 x 235.5	185 x 210.6 x 235.5	177 x 180x 235	177 x 180 x 235	177 x 180 x 235	150 x 102 x 216	150 x 102 x 216
Weight (Net/Gross Weight Kg)	5.1/6.5	5.1/6.5	3.65/4.65	3.65/4.65	3.65/4.65	1.74/2.92	1.74/2.92
RAID Supported	Single Disk, JBOD, RAID 0/ 1/ 5/ 6/ 10, RAID 5 + Hot Spare, Global Hot Spare Drive					Single Disk, JBOD, RAID 0/1	
Power	250W	250W	250W	250W	250W	84W	84W
Fan	1 (12cm)	1 (12cm)	1 (9cm)	1 (9cm)	1 (9cm)	1 (7cm)	1 (7cm)
Power Consumption (Sleep Mode/In Operation)[2]	21W/38W	21W/38W	23W/34W	23W/34W	23W/33W	16W/24W	16W/23W
Throughput (Read/Write MB/sec)[2]	116.1/104.3	116.1/104.3	115.4/107	115.4/107	115.1/88.3	115.1/105.7	114.7/100.8
Max. User Accounts	4096	4096	4096	4096	4096	2048	2048
Max. Groups	512	512	512	512	512	256	256
Max. Shared Folders	512	512	512	512	512	256	256
Max. Concurrent Connections	256	256	256	256	256	256	256
Max. Number of IP Camera Supported	4	4	4	4	4	2	2
LCD Quick Configuration	Yes	Yes	Yes	Yes	Yes	--	--

(1) The standard system is shipped without hard drives. Visit www.qnap.com for compatible hard drives.
(2) The actual result may vary on different network environments.
(3) Two additional Gigabit LAN ports or two 10 GbE LAN ports can be added (optional).
(4) The existing dual-port Gigabit LAN card can be upgraded to an optional dual-port 10 GbE LAN card.
(5) The statistics are obtained in 10 GbE network environments with Trunking LAN port configurations.

Turbo NAS Business Series - Rack Mount

Model	TS-EC1279U-RP	TS-1279U-RP	TS-EC879U-RP	TS-879U-RP
CPU	Intel® Xeon® E3-1225 3.1GHz Quad Core	Intel® Core™ i3-2120 3.3GHz Dual Core	Intel® Xeon® E3-1225 3.1GHz Quad Core	Intel® Core™ i3-2120 3.3GHz Dual Core
Memory	4GB DDR3 ECC	2GB DDR3	4GBGB DDR3 ECC	2GB DDR3
Extra RAM Slot (Memory Expansion)	Yes (Up to 8GB)	Yes (Up to 4GB)	Yes (Up to 8GB)	Yes (Up to 4GB)
Max. Number of Hard Drives Supported[1]	12 x SATA(III)	12 x SATA(III)	8 x SATA(III)	8 x SATA(III)
Hard Drive Type Supported	2.5"/3.5"	2.5"/3.5"	2.5"/3.5"	2.5"/3.5"
Maximum Raw Capacity	36TB	36TB	24TB	24TB
Hot Swappable	Yes	Yes	Yes	Yes
USB 2.0	Back: 4	Back: 4	Back: 4	Back: 4
USB 3.0	Back: 2	Back: 2	Back: 2	Back: 2
eSATA	2	2	2	2
10/100/1000 Gigabit LAN Port	4[4]	2[3]	4[4]	2[3]
Wake on LAN	Yes	Yes	Yes	Yes
Dimensions (HxWxD mm)	88 x 439 x 520	88 x 439 x 520	88 x 439 x 520	88 x 439 x 520
Weight (Net/Gross Weight Kg)	15.88/22.92	15.88/22.92	12.52/20.76	12.52/20.76
RAID Supported	Single Disk, JBOD, RAID 0/1/ 5/ 6/ 10, RAID 5/6 + Hot Spare, Global Hot Spare Drive			
Power	600W Redundant Power Supply	600W Redundant Power Supply	300W Redundant Power Supply	300W Redundant Power Supply
Fan	3 (6cm)	3 (6cm)	3 (6cm)	3 (6cm)
Power Consumption (Sleep Mode/In Operation)[2]	68W/167W	68W/165W	68W/132W	68W/130W
Throughput (Read/Write MB/sec)[2]	1,574/1,738[5]	1,518/1,401[5]	1,660/1,624[5]	1,565/1,207[5]
Max. User Accounts	4096	4096	4096	4096
Max. Groups	512	512	512	512
Max. Shared Folders	512	512	512	512
Max. Concurrent Connections	256	256	256	256
Max. Number of IP Camera Supported	4	4	4	4
LCD Quick Configuration	--	--	Yes	Yes

Model	TS-859U-RP+	TS-459U-RP+	TS-459U-SP+	TS-419U+	TS-412U
CPU	Intel®Atom™ D525 1.8GHz Dual Core	Intel® Atom™ D525 1.8GHz Dual Core	Intel® Atom™ D525 1.8GHz Dual Core	Marvell 6282 1.6GHz	Marvell 6281 1.2GHz
Memory	1GB DDR3	1GB DDR3	1GB DDR3	512MB DDR3	512MB DDR2
Extra RAM Slot (Memory Expansion)	--	--	--	--	--
Max. Number of Hard Drives Supported[1]	8 x SATA(II)	4 x SATA(II)	4 x SATA(II)	4 x SATA(II)	4 x SATA(II)
Hard Drive Type Supported	2.5"/3.5"	2.5"/3.5"	2.5"/3.5"	2.5"/3.5"	2.5"/3.5"
Maximum Raw Capacity	24TB	12TB	12TB	12TB	12TB
Hot Swappable	Yes	Yes	Yes	Yes	Yes
USB 2.0	Back: 4	Front: 1 ; Back: 4	Front: 1 ; Back: 4	Front: 1 ; Back: 3	Front: 1 ; Back:3
USB 3.0	--	--	--	--	--
eSATA	2	2	2	2	2
10/100/1000 Gigabit LAN Port	2	2	2	2	2
Wake on LAN	Yes	Yes	Yes	Yes	Yes
Dimensions (HxWxD mm)	88 x 482.6 x 531.5	44 x 439 x 499	44 x 439 x 499	44 x 439 x 483	44 x 439 x 483
Weight (Net/Gross Weight Kg)	12.15/14.87	7.63/9.55	7.63/9.55	6.7/9.5	6.7/9.5
RAID Supported	Single Disk, JBOD, RAID 0/ 1/ 5/ 6/ 10, RAID 5 + Hot Spare, Global Hot Spare Drive				
Power	300W Redundant Power Supply	150W Redundant Power Supply	150W (Optional Redundant Power Supply)	250W	250W
Fan	3 (8cm)	3 (4cm)	3 (4cm)	2 (4cm)	2 (4cm)
Power Consumption (Sleep Mode/In Operation)[2]	40W/73W	40W/62W	40W/62W	15W/29W	15W/29W
Throughput (Read/Write MB/sec)[2]	116.1/106.8	115.4/107	115.4/107	101.7/43.5	91.4/33.4
Max. User Accounts	4096	4096	4096	4096	4096
Max. Groups	512	512	512	512	512
Max. Shared Folders	512	512	512	512	512
Max. Concurrent Connections	256	256	256	256	256
Max. Number of IP Camera Supported	4	4	4	4	4
LCD Quick Configuration	Yes	--	--	--	--

Software Specifications

Operating System
QNAP NAS Firmware 3.5

Supported Operating Systems
- Microsoft Windows XP, Vista (32/64-bit), Windows 7 (32/64-bit), Server2003/2008 R2
- Apple Mac OS X
- Linux & UNIX

File System
- Internal Hard Drive: EXT3, EXT4
- External Hard Drive: EXT3, EXT4, NTFS, FAT32, HFS+

Networking
- TCP/IP (IPv4 & IPv6: Dual Stack)
- Dual Gigabit NICs with Jumbo Frame
  - Failover
  - Multi-IP Settings
  - Port Trunking/NIC Teaming (Modes: Balance-rr, Active Backup, Balance XOR, Broadcast, IEEE 802.3ad/Link Aggregation, Balance-tlb and Balance-alb)
- Service Binding based on Network Interfaces
- Virtual LAN (VLAN)*
- DHCP Client, DHCP Server
- UPnP & Bonjour Discovery
- USB Wi-Fi Adapter Support**

Protocols
- CIFS/SMB, AFP, NFS(v3), FTP, FTPES, TFTP, HTTP, HTTPS, Telnet, SSH, iSCSI, SNMP, SMTP, and SMSC

Security
- IP Filter & Policy-based Automatic IP Blocking
- Network Access Protection with Auto-blocking
- Encrypted Access: HTTPS, FTP with SSL/TLS (Explicit), SSH/SFTP (admin only), Encrypted Remote Replication(rsync over SSH)
- CIFS Host Access Control for Shared Folders
- Antivirus Protection
- FIPS 140-2 Certified AES 256-bit Volume-based Data Encryption
- AES 256-bit External Drive Encryption*
- Importable SSL Certificate
- Instant Alert via E-mail, SMS, Instant Messaging, and LCD
- RADIUS Server

Disk Management
- ingle Disk, JBOD, RAID 0, 1, 10, 5, 6, 10+Hot Spare, 5+Hot Spare, 6+Hot Spare*
- Online RAID Capacity Expansion & Online RAID Level Migration
- Bad Block Scan & HDD S.M.A.R.T.
- RAID Recovery
- Bitmap Support
- Supports ISO Mounting

(via Web File Manager)

iSCSI (IP SAN)
- iSCSI Target
  - Multi-LUNs per Target
  - Up to 256 Targets/LUNs
  - Supports LUN Mapping & Masking
  - Online LUN Capacity Expansion
  - Supports SPC-3 Persistent Reservation
  - Supports MPIO & MC/S
- Virtual Disk Drive (via iSCSI Initiator)
  - Stack Chaining Master
  - Max No. of Virtual Disk Drives: 8
  - iSCSI LUN Backup, One-time Snapshot, and Restore

Server Virtualization & Clustering*
- Supports VMware vSphere (ESX/ESXi 4.x)
- Supports Citrix XenServer (6.0)
- Supports Windows Server 2008 Hyper-V & Failover Clustering

Power Management
- Wake on LAN
- Scheduled Power on/off (Max. 15 Settings)
- Automatic Power on after Power Recovery

Access Right Management
- User Accounts Management
- Groups Management
- Network Shares Management
- Batch Creating Users
- Import/Export Users
- User Quota Management
- Subfolder Permissions Support

Domain Authentication
- Microsoft Active Directory
- LDAP Directory Sesvice
- Domain Users Login via CIFS/SMB, AFP, FTP and Web File Manager

Web Administration
- AJAX-based User Interface
- HTTP/HTTPS Connections
- Alert Notification (Email & SMS)
- Smart Fan Control
- DDNS & MyCloudNAS Remote Access
- SNMP (v2 & v3)
- UPS Support with SNMP Management (USB)
- Supports Network UPS
- Resource Monitor
- Network Recycle Bin for CIFS/SMB and AFP
- Comprehensive Logs (Events & Connection)
- Real-time Online User List
- Syslog Client
- Firmware Update with Live Update Notification
- Back up and Restore System Settings
- Restore to Factory Default

Multilingual Support
- Chinese (Traditional & Simplified), Czech, Danish, Dutch, English, Finnish, French, German, Italian, Japanese, Korean, Norwegian, Polish, Russian, Spanish, Swedish, Turkish

Supported Web Browsers
- Internet Explorer 7 onward
- Firefox 3 onward
- Safari 3 onward
- Google Chrome 3 onward

File Server
- Protocols: CIFS/SMB (Plus DFS Support), AFP, NFS, FTP, FTPS, HTTP/HTTPS (Web File Manager), WebDAV
- Platforms: Windows, Mac OS, Linux/UNIX
- Web File Manager:
  - File Management by Web Browser
  - Smart File & Folder Search

FTP Server
- FTP over SSL/TLS (Explicit)
- Concurrent Connections: Max 256
- Passive FTP Port Range Control
- FTP Bandwidth & Connection Control
- Supports FXP & Unicode

Backup Solution
- Real-time Remote Replication (RTRR)
  - Work as Both RTRR Server & Client
  - Supports Real-time & Scheduled Backup
  - Supports Encryption, Compression, and File Filter
- Apple Time Machine Support with Backup Management
- QNAP QBack Backup Software (Windows Client)
- Backup to Cloud Storage (Amazon S3, ElephantDrive, and Symform)
- Backup to External Storage Devices
- USB One Touch Backup (Import/Export)*
- Block-level Remote Replication:
  - Work as Both Rsync Server & Client
  - Encrypted Replication to/from QNAP NAS Servers
- Third Party Backup Software Support: Veeam Backup & Replication, Acronis True Image, CA BrightStor, ARCserve Backup, EMC Retrospect, Symantec Backup Exec, LaCie SilverKeeper...and more

Web Server
- HTTP/HTTPS Connections
- Built-in MySQL Server
- Web-based Management via phpMyAdmin (QPKG)
- Virtual Hosts: Max 32

Applications
- Web File Manager
- Surveillance Station
- Multimedia Station *
- Download Station *
- Apache Web Server
- MySQL Server
- Syslog Server
- RADIUS Server
- TFTP Server with PXE Booting

Print Server
- Network Printer Sharing (LAN or WAN)
- Printers: Max 3 (USB)

Mobile App
- QMobile for iPhone, iPad, iPod touch, Android devices
- Third Party UPnP Media Player

QPKG
- Web Applications
  - Joomla!
  - phpMyAdmin
  - WordPress
  - AjaXplorer
  - vtigerCRM
  - GLPI
  - Magento
- P2P Applications
  - MLDonkey (eMule)
  - SABnzbd+
  - NZBGet
  - Transmission
- Server Applications
  - SqueezeBox Server
  - Tomcat
  - Asterisk
  - XDove (Mail Server)
  - OpenLDAP
  - eyeOS
- Media Server
  - PS3 Media Server
  - IceStation
- Misc.
  - Optware IPKG
  - Python
  - Java Runtime Environment
  - Mono
  - iStat
···and more