

TurboNAS Business Series

Superior Performance NAS with iSCSI for Business

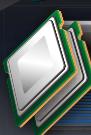


- 2/ 4/ 5/ 6/ 8-bay, hot-swappable
- Leading iSCSI storage for server clustering and virtualized environments
- Built-in iSCSI initiator for stackable capacity expansion
- All-in-one powerful business-class server features
- Dual Gigabit LAN: Failover, load balancing and multiple IP setting
- Single disk, JBOD, RAID 0/ 1/ 5/ 5+hot spare/ 6/ 6+hot spare
- Online RAID capacity expansion
- Online RAID level migration
- AES 256-bit volume-based data encryption
- Complete backup solution including cloud-based and Apple Time Machine backup
- Touch-N-Go PC-less installation



Environment
Friendly

2.5" & 3.5" HDD
dual support



Dual-Core CPU
1 GB RAM Memory

Business Series Models

- **TS-x59 Pro+:** Dual core Intel Atom Processor D525 1.8GHz/1GB RAM
- **TS-x39 Pro II+:** Single core Intel Atom Processor D425 1.8GHz/1GB RAM



Overview

Modern business faces the challenge of dramatic growth of digital data, including documents, emails, applications, and so on. To deploy the IT environment with a reliable, affordable and expandable storage center to securely store, share, and back up the digital assets has become an important task for the server managers of the SMB and entry-level enterprise nowadays.

The new Turbo NAS is the powerful network attached storage (NAS) server, which is designed to provide an affordable and easy-to-management solution with iSCSI service for virtualized and clustered environment. The Turbo NAS also offers versatile business applications to maximize the efficiency of the data center in the business environment.

The Most Affordable and Flexible Virtualization Solution

The Turbo NAS is certified as compatible with VMware® vSphere4 (ESX/ ESXi

4.0 and above) and Citrix XenServer virtualization platform. The NAS can be utilized as the networked shared storage of VMware and Citrix virtualization environments and Windows cluster 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.

The Feature-rich and Integrated Applications for Business

The NAS supports file sharing across Windows, Mac, Linux, and UNIX platforms. Versatile business applications such as file server, FTP server, printer server, web server, and Windows AD support are provided. The dominant features, such as WebDAV, Share Folder Aggregation (also known as DFS), IPv6 and IPv4 dual-stack, Wake on LAN, scheduled power on/ off, HDD S.M.A.R.T, comprehensive log systems, and policy-based unauthorized IP blocking are also available.

New iSCSI for Virtualization Deployments

The Turbo NAS provides flexible and secure storage server deployment with the following enhanced iSCSI features:

NAS + iSCSI storage solution:

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

Flexible multiple LUNs management:

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

Secure IP SAN environment deployment:

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

Designed for virtualized and clustered environments:

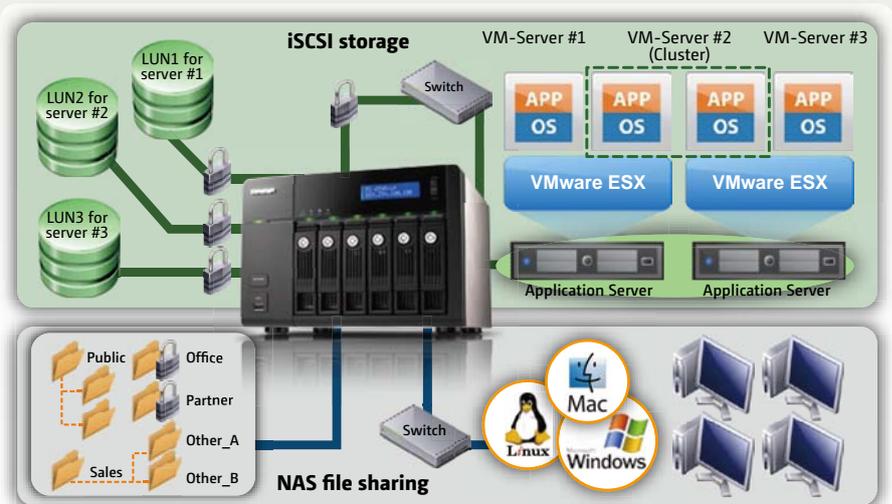
Comparing with the high cost Fibre Channel SAN, the Turbo NAS is an affordable system that can be deployed as a storage center for virtualized and clustered server environments, such as VMware and Microsoft Windows Failover Cluster.

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 2008. You can set up Microsoft Failover Cluster environment and use Cluster Shared Volume for Hyper-V. This allows you to execute virtual machine live migration between Hyper-V hosts.

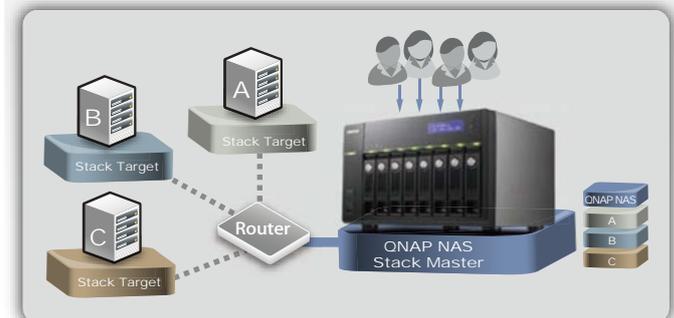
Advanced MPIO and MC/S Supported

With the support of MPIO (Multipath Input Output) and MC/S (Multiple Connections per Session) on the Turbo NAS, you can connect to the QNAP iSCSI targets using 2 or more network interfaces from your server with failover and load balancing. Furthermore, you can achieve better data transmission performance with MC/S setting.



Virtual Disk Expansion

The unique "Virtual Disk Drive" adds flexibility to expand the capacity of NAS. By using the built-in iSCSI initiator, the NAS can connect to other iSCSI targets on the network and turn them into virtual disks, which become multiple single volumes on the NAS. Up to 8 virtual disks can be stacked. The NAS serves as the storage stack chaining master. The user only needs to connect to this single entry (QNAP NAS) and is able to reach and use all the iSCSI LUN on the network.



MPIO	MC/S
<ul style="list-style-type: none"> ✓ Supported by many applications ✓ Failover ✓ Load Balancing 	<ul style="list-style-type: none"> ✓ Enhanced Performance ✓ Failover ✓ Load Balancing

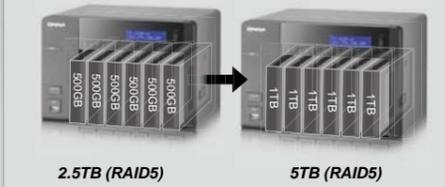
Advanced RAID Management with Hot-swap Design

The Turbo NAS offers RAID 0, 1, 5, 5+hot spare, 6, 6+hot spare*, single disk, and JBOD disk configurations. It also supports hot-swap design 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 the larger hard drives. All the data will be kept and seamlessly moved to the newly installed hard drives without turning off the server.

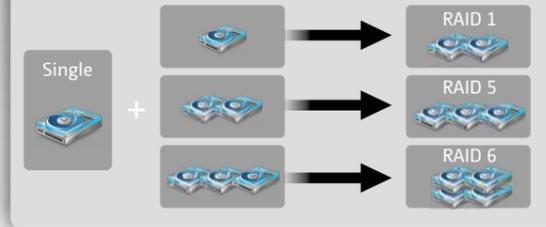
Online RAID Capacity Expansion



Online RAID Level Migration:

You can upgrade the disk configuration to higher RAID level with the data retained without turning off the server.

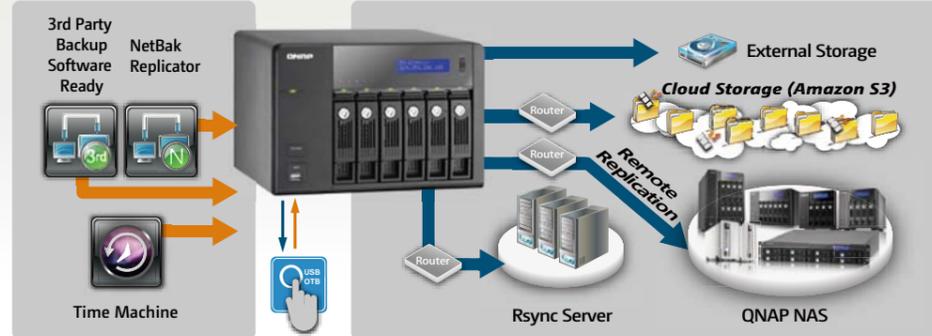
Online RAID Level Migration



* The RAID configurations available vary according to the product models and the number of hard disk drives installed.

Complete Backup Solution

The NAS offers complete backup solution for data protection, including cloud-based storage backup (Amazon S3), Apple Time Machine support, encrypted remote replication, third party software backup, one-touch-copy backup and QNAP exclusive Windows-based utility NetBak Replicator. The users can choose different backup modes for redundant data backup.



Convenient Authority Control Management

Windows Active Directory (AD):

The Windows AD feature enables you to retrieve the user accounts from the Windows AD server to the NAS to reduce the time and effort for account setup. The users can use the same set of login name and password to access the NAS.

Share Folder Aggregation:

You can easily access the share folders of other servers on Microsoft Networking through the "portal folder" on the Turbo NAS. This saves your time and effort to login different servers one by one.



ISO File Archiving and Sharing



Turbo NAS supports mounting ISO images of CD and DVD discs as network shares for data archiving, storage, and sharing.

- Mount up to 256 ISO image files.
- Easily browse and share disc image files over LAN/WAN multiple network protocols such as SMB, AFP, NFS, FTP, and WebDav.

Abundant Business Features

The Turbo NAS provides diversified server applications in the business environment.

FTP Server:

You can establish your own FTP server by the Turbo NAS and share the files conveniently with your colleagues or customers.

Encrypted Remote Replication:

The data on the Turbo NAS can be backed up to or received from other Turbo NAS or Rsync servers over the network.

File Server:

The Turbo NAS allows file sharing across Windows, Mac, Linux, and UNIX platforms. It also supports WebDAV for you to access the share folders via HTTP/HTTPS protocol remotely.

Backup Server:

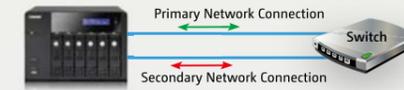
The Turbo NAS offers you the most complete backup solution with Apple Time Machine support, remote replication to an Rsync server, Windows client backup software NetBak Replicator, third party backup software support, and so on.

Benefits of Dual LAN Deployment

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).

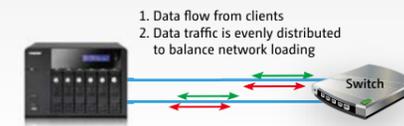
Failover:

The LAN ports can be configured as failover which allows the Turbo NAS server to sustain the failure of one network port to provide continuous services.



Load Balancing:

The dual LAN ports can also be configured as load balancing mode for bandwidth aggregation to boost the file transfer speed. (It works with managed Ethernet switch with 802.3ad configured.)



Multi-IP Setting:

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



Practical System Management Tools

The Turbo NAS provides a number of powerful features for you to manage the server more efficiently at lower cost.



Instant SMS & Email Alert:

You can configure the SMTP server and SMSC server settings on the NAS to receive instant system warning or error messages by email and/or SMS.



SNMP (Simple Network Management Protocol):

You can collect the information, warning or error of the Turbo NAS and send to maximum 3 SNMP servers for centralized management and real-time monitoring.



Schedule Power on/ off:

The most flexible power management feature is provided on the Turbo NAS for IT administrators to manage the NAS server's up time according to the working hours.



Wake on LAN:

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



S.M.A.R.T. & Advanced HDD Health Scanning (HHS)

S.M.A.R.T. (Self-Monitoring Analysis and Reporting Technology) helps you to monitor the HDD status. Moreover, the Turbo NAS is embedded with HHS (HDD Health Scan) which supports disk checking and bad blocks scanning.

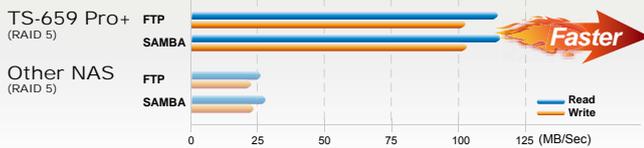
Comprehensive Event Logs



Detailed logs of file-level data access to the Turbo NAS via SAMBA, iSCSI, FTP, AFP, HTTP, HTTPS, Telnet, and SSH, and networking services accessed by online users are all recorded.



Superior System Performance



* FTP/SAMBA Testing Environment: Intel Core2 Quad CPU Q8300 2.50GHz/ 4GB DDRII RAM, WD640AAKS 640GB, Windows 7 Enterprise 32 Bits, Intel PRO 1000 PT Dual Port Server Adapter 82571
 * FTP/ SAMBA Testing Method: Connect the TS-659 Pro+ and PC to switch, upload/download 5GB File without Jumbo Frame, FTP Tool: FileZilla

NEW

Multimedia Station



This is a web-based application which lets you play your photos, music, and videos on the NAS by a web browser. You can also share the multimedia files with your friends and publish photos to popular social networking sites such as Facebook, Plurk, Twitter, Blogger, and so on.

NEW

QMobile for iPhone and Android



QNAP offers a free multimedia application QMobile to allow users of iPhone and Android phones to carry all the multimedia files on the NAS in their pocket. The users can stream videos, watch and upload digital pictures, play music that are stored on the NAS over the network and share their music playlists with other iPhone or Android phones users.

Secure Measures for Data Storage and Access

Policy-based Unauthorized IP Blocking:

The server manager can allow, deny or auto block specified IP address or network domain which attempts to connect to the Turbo NAS via SSH/ Telnet/ HTTP(S)/ FTP/ samba/ AFP.

Remote Login:

The Turbo NAS supports remote login by SSH (secure shell) or Telnet connection.

SSL Security (HTTPS):

The Turbo NAS can be accessed and configured by the web browser securely. The administrator can also upload a secure certificate and RSA private key in X.509PEM format issued by a trusted provider for the users to access the Turbo NAS by secure SSL login.

Secure FTP:

The data can be transmitted with SSL/TLS (explicit) encryption. Passive FTP port range setup is also supported.

Encrypted Remote Replication by Rsync:

The data on the Turbo NAS can be backed up to or from another Turbo NAS or Rsync server over the network securely.

Share Folder Management:

For the security of Windows network environment, server managers can hide or show network share folders.

User Authority Management:

The Turbo NAS allows the server manager to create multiple user ID and password, and define the authority and quota for each user.

AES 256-bit Volume-based Data Encryption

The disk volume with AES 256-bit encryption can only be accessed by an authorized encryption password or key. This prevents the NAS data from unauthorized access and data breach even if the hard drives were stolen.*

* Data encryption functions may not available in accordance to the legislative restrictions of some countries.

DOM Architecture and Fail-safe Dual OS

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

Turbo NAS Business Series

		TS-259 Pro+/TS-239 Pro II+	TS-459 Pro+/TS-439 Pro II+	TS-559 Pro+	TS-659 Pro+	TS-859 Pro+
Hardware	CPU	Intel® Atom™ D525 1.8 GHz Processor Intel® Atom™ D425 1.8 GHz Processor	Intel® Atom™ D525 1.8 GHz Processor Intel® Atom™ D425 1.8 GHz Processor	Intel® Atom™ D525 1.8 GHz Processor	Intel® Atom™ D525 1.8 GHz Processor	Intel® Atom™ D525 1.8 GHz Processor
	RAM	1GB RAM	1GB RAM	1GB RAM	1GB RAM	1GB RAM
	USB 2.0	5	5	5	5	5
	eSATA	2	2	2	2	2
	Dimensions	● 150(H) x 102(W) x 216(D) mm ● 5.91(H) x 4.02(W) x 8.5(D) inch	● 177(H) x 180(W) x 235(D) mm ● 6.97(H) x 7.09(W) x 9.25(D) inch	● 185(H) x 210.6(W) x 235.4(D) mm ● 7.28(H) x 8.29(W) x 9.27(D) inch	● 175(H) x 257(W) x 235(D) mm ● 6.89(H) x 10.12(W) x 9.25(D) inch	● 185.2(H) x 298.2(W) x 235.4(D) mm ● 7.29(H) x 11.74(W) x 9.27(D) inch
	Weights	● 1.74kg/ 3.84 lb (Net) ● 2.92kg/ 6.44 lb (Gross)	● 3.65kg/ 8.04 lb (Net) ● 4.65kg/ 10.24 lb (Gross)	● 5.1kg/ 11.24 lb(Net) ● 6.5kg/ 14.33 lb(Gross)	● 5.2kg/ 11.46 lb(Net) ● 6.5kg/ 14.33 lb(Gross)	● 7.3kg/ 16.08 lb(Net) ● 8.6kg/ 18.94 lb(Gross)
	Power	● AC Input Power Voltage: 100V-240V ● Power Frequency: 50Hz-60Hz ● External Power Adaptor	● AC Input Power Voltage: 100V-240V ● Power Frequency: 50Hz-60Hz ● Internal Power Supply: 250W	● AC Input Power Voltage: 100V-240V ● Power Frequency: 50Hz-60Hz ● Internal Power Supply: 250W	● AC Input Power Voltage: 100V-240V ● Power Frequency: 50Hz-60Hz ● Internal Power Supply: 250W	● AC Input Power Voltage: 100V-240V ● Power Frequency: 50Hz-60Hz ● Internal Power Supply: 350W
	Fan	Smart Fan: 1 (7cm, 12V DC)	Smart Fan: 1 (9cm, 12V DC)	Smart FAN: 1 (12cm, 12V DC)	Smart FAN: 2 (9cm, 12V DC)	Smart FAN: 2 (12cm, 12V DC)
Software	Disk Management	Single Disk, JBOD, RAID 0/1	Single Disk, JBOD, RAID 0/1/5/6/5 + hot spare	Single Disk, JBOD, RAID 0/1/5/6/5 + hot spare /6 + hot spare	Single Disk, JBOD, RAID 0/1/5/6/5 + hot spare /6 + hot spare	Single Disk, JBOD, RAID 0/1/5/6/5 + hot spare /6 + hot spare
	Access Right Management	Max. User Accounts: 2048 Max. Groups: 256 Max. Share Folders: 256	Max. User Accounts: 4096 Max. Groups: 512 Max. Share Folders: 512	Max. User Accounts: 4096 Max. Groups: 512 Max. Share Folders: 512	Max. User Accounts: 4096 Max. Groups: 512 Max. Share Folders: 512	Max. User Accounts: 4096 Max. Groups: 512 Max. Share Folders: 512
	Support IP Cameras	2	4	4	4	4

Operating System

Embedded Linux

Protocols

CIFS/ SMB, AFP (3.2), NFS(v3), FTP, HTTP, HTTPS, Telnet, SSH, iSCSI, SNMP, SMTP, SMC

Platforms

- Microsoft Windows 2000, XP, Vista (32/ 64-bit), Windows 7 (32/ 64-bit), Server 2003/ 2008
- Apple Mac OS X
- Linux & UNIX

File System

- Internal: EXT3, EXT4
- External: EXT3, EXT4, NTFS, FAT32, HFS+

Networking

- TCP/IP IPv4 & IPv6 Dual Stack
- Dual Gigabit Ethernet with Jumbo Frame
- Port Trunking/ NIC Teaming (Modes: Balance-rr, Active Backup, Balance XOR, Broadcast, IEEE 802.3ad/ Link Aggregation, Balance-tld, and Balance-ltd)
- Load Balancing, Failover, Multi-IP Settings
- DHCP Client, DHCP Server
- UPnP & Bonjour Discovery

Security

- AES 256-bit Volume-based Data Encryption *
- IP Filter
- Network Access Protection with Auto-blocking
- HTTPS Connection
- FTP with SSL/ TLS (Explicit)
- Encrypted Remote Replication (Rsync over SSH)
- Importable SSL Certificate
- E-mail and SMS Alerts

Disk Management

- Single Disk, JBOD, RAID 0 / 1 / 5 / 5+Hot Spare / 6 / 6+Hot Spare **
- Online RAID Capacity Expansion
- Online RAID Level Migration
- HDD S.M.A.R.T.
- Bad Block Scan
- RAID Recovery
- Bitmap
- ISO Mounting: 256 Max (via Web File Manager)

iSCSI

- iSCSI Target
 - Multi-LUNs per Target
 - Up to 256 LUNs
 - LUN Mapping & LUN Masking
 - SPC-3 Persistent Reservation
 - MPIO & MC/ S
- Virtual Disk Drive (via iSCSI Initiator)
 - Stack Chaining Master
 - Virtual Disk Drives: 8 Max

Server Virtualization & Clustering

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

Power Management

- Wake on LAN
- Scheduled Power on/off (15 Settings Max)
- Automatic Power on after Power Recovery
- Network UPS with SNMP Management
- Internal HDD Standby Mode

Access Right Management

- User Accounts Management
- Groups Management
- Shares Management
- Batch User Creation
- Import User List
- User Quota Management
- Supports Active Directory Authentication
 - Domain Users Login via CIFS/ SMB, AFP, FTP, and Web File Manager
 - NTLMv2 Authentication

Administration

- AJAX-based User Interface
- HTTP/ HTTPS Connections
- Email & SMS Alerts
- Smart Fan Control
- Dynamic DNS (DDNS)
- SNMP Traps (v2 & v3)
- UPS Support with SNMP & USB
- Resource Monitor
- Network Recycle Bin for File Deletion via CIFS/ SMB and AFP
- Comprehensive Logs (Event & Connection)
- Real-time Online User List
- Syslog Client
- Firmware Live Update
- System Settings Backup and Restore
- Restore to Factory Default
- LCD Quick Installation (Touch-N-Go) ***

Multilingual Support

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

Browser Support

- Internet Explorer 7 & 8 or Later
- Firefox 3 or Later
- Safari 3 & 4 or Later
- Google Chrome

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: 256 Max
- Passive FTP Port Range Control
- FTP Bandwidth & Connection Control
- Supports FXP & Unicode

Backup Server

- Apple Time Machine Support with Backup Management
- QNAP NetBak Replicator Backup Software (Windows Client)
- Backup to Cloud Storage (Amazon S3)
- 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: Acronis True Image, CA BrightStor, ARCserve Backup, EMC Retrospect, Symantec Backup Exec, LaCie SilverKeeper

Web Server

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

Media Server

Multimedia Station

- Photo Viewing, Audio & Video Playback
- Image Slideshow and Rotation
- Automatic & Scheduled Thumbnail Generation for Easy Browsing
- Display Photo Details from EXIF: Date, Exposure Time, Aperture, etc.
- Display Audio Details from ID3 Tag: Album Cover, Title, Artist, Album, etc.
- Access Authority Management
- Multimedia (Video & Audio) Streaming
- Cooliris 3D Wall Display
- Web Publishing (Facebook, MySpace, MSN Live, Twitter, Plurk, and Blogger)
- E-mail Publishing
- Supported Formats:
 - Photo: JPG/ JPEG, GIF, PNG
 - Audio: MP3
 - Video:
 - Playback: FLV, MPEG-4 Video (H.264 + AAC)
 - Transcode: AVI, M4V, MPG/MPEG, RM/RMVB, WMV

iTunes Server

- Audio and Video Sharing
- Smart Playlist for iTunes Client (Windows & Mac)

Mobile App

- QMobile for iPhone
 - Compatible with iPhone, iPod Touch and iPad
 - iPhone OS 3.0 or Later Required
- QMobile for Android
 - Compatible with Android OS 1.5, 1.6 and 2.1

UPnP Media Server

- Built-in TwonkyMedia Server
- Real-time & Background Photo Transcoding
- UPnP Media Player
 - Game Consoles: PlayStation 3, PSP and Xbox 360
 - Digital Media Adapter/ Player
- Supported Formats:
 - Photo: JPG, JPE, JPEG, TIFF, TIF, GIF, PNG, BMP
 - Audio: MP3, MP4, M4A, M4B, 3GP, APL, AC3, M1V, M4V, MOV, AAC, AMR, AWB, WAV, PCM, LPCM, MP1, MP2, AIF, AIFF, AIFC, SND, WMA, OGG, FLAC
 - Video: WMV, ASF, VDR, AVI, XVID, DIVX, FLV, MPG, MPE, MTS, MT2S, M2T, MPEG, SPTS, M2P, M2V, MP2T, MP2P, MPG2, DVR-MS, VOB

Download Station

- PC-less BitTorrent/ FTP/ HTTP Download (500 Tasks Max)
- BitTorrent Download
 - TCP/ UDP Tracker Protocol
 - Scheduled Download
 - Configurable Port Range
 - Bandwidth Control
 - UPnP NAT Port Forwarding
- HTTP/ FTP Download
 - Configurable File Saving Directory
 - Bulk Download with Wildcard Setting
 - RapidShare Download
- QNAP Download Management Software: QGet
 - For Windows & Mac OS
 - Remote Download Tasks Management of Multiple NAS over LAN or WAN

Printer Server

- Network Printer Sharing (USB)
- Printers: 3 Max

Surveillance Station

- Supports IP Cameras: 4 Max (Optional Purchase)
- Network Surveillance: Remote Monitoring, Video Recording, and Playback

QPKG

- **Web Applications**
 - Joomla!
 - phpMyAdmin
 - WordPress
 - AjaXplorer
 - VtigerCRM
 - eyeOS
 - Magento
 - GPLI
- **P2P Applications**
 - MLDonkey (eMule)
 - SABnzbd+
- **Server Applications**
 - Tomcat
 - Mono
 - Asterisk
 - XDove (Mail Server)
 - OpenLDAP
- **Media Server**
 - Squeezebox Server
 - IceStation
 - Tivo Streaming Server
- **Misc.**
 - Optware IPKG
 - Python
 - Java Runtime Environment
 - iStat
 - ...and More

* The data encryption functions may not available in accordance to the legislative restrictions of some countries.
** The RAID configurations available vary according to the product models and the number of hard disk drives installed.
*** The Touch-N-Go function is not available for 2-bay models.