

TS-412U Turbo NAS

The QNAP TS-412U Turbo NAS is a 4-drive 1U rack-mounted network attached storage (NAS) server optimized for small and medium business who are looking an affordable yet high performance network storage solution. The TS-412U is easily installed in the server room and configured for up to 12TB (using 3TB hard drive) of online storage. The TS-412U is an ideal solution for centralized data backup, cross-platform file sharing, website hosting, and much more. Moreover, the TS-412U offers exceptionally low power consumption, maximum system reliability & expandability, and numerous business-critical applications.

The TS-412U incorporates an embedded Marvell 1.2GHz CPU and 256MB DDRII memory, delivering high speed throughput. The TS-412U works with 2.5-inch or 3.5-inch SATA hard drives mounted in hot-swappable drive carriers and includes two Gigabit LAN ports for multi-IP settings and port trunking (7 bonding modes). The TS-412U is also is equipped with 4 USB ports and 2 eSATA ports for storage expansion or external data backup.

The TS-412U supports RAID 0, 1, 5, 6,10, 5+hot spare, single and JBOD disk configurations. The unique online RAID capacity expansion and online RAID level migration allow the users to expand the storage capacity of the RAID configuration and upgrade the RAID level without turning off the server respectively. The RAID recovery feature secures the server data against accidental removal of the hard drives.

In addition, the TS-412U supports NAS and iSCSI applications to provide a low-cost, highly flexible and efficient IP SAN solution for SMB users. iSCSI targets can be created on the NAS for storage expansion of the PC or other servers and backup destination of the database servers and mail servers, etc. The TS-412U can be used to connect to other iSCSI devices on the network and add them as virtual disk drives (VDD) to expand the storage capacity of the NAS.

The TS-412U supports abundant powerful applications which can be accessed across Windows, Mac, Linux, and UNIX. Also, numerous management tools, such as Windows Active Directory (AD), real-time system monitoring, detailed event logs, Simple Network Management Protocol (SNMP), instant SMS alert, Wake on LAN, and scheduled power on/off management are provided for the users to manage the NAS efficiently.

Advanced RAID Management with Hot-swap Design

Turbo NAS offers RAID 0, 1, 5, 6, 10, 5 + hot spare, single, 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 disk volume of the NAS can be expanded by replacing the

hard drives with larger ones. All the data will be kept and seamlessly moved to the newly installed hard drives. There is no need to turn off the server during the process.

Online RAID Level Migration

You can upgrade the disk volume of the NAS to higher RAID level with the data retained. There is no need to turn off the server during the process.

Virtual Disk Drive (VDD)

The NAS supports flexible storage expansion by stacking other iSCSI targets on the network via its built-in iSCSI initiator. The connected iSCSI targets are turned into "virtual disk drives" of the NAS to provide more storage capacity.

Built-in iSCSI/IP-SAN Target Service

The TS-412U is both a NAS and an iSCSI target server, ideal for cost-efficient IP-SAN setup. You can make use of the built-in iSCSI target service to add up to 256 iSCSI devices. Different iSCSI Target LUNs (Logical Unit Number) can be defined as storage expansion or backup destination of the existing application servers, such as database servers and mail servers.

Furthermore, the "Virtual Space Allocation" (Thin Provisioning) feature is provided which allows you to flexibly allocate the capacity of iSCSI LUN (Logical Unit Number). When the physical storage capacity of the volume is going to be full, you can easily expand the storage capacity by online RAID capacity expansion or adjust/ remove the current unused volume space.

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

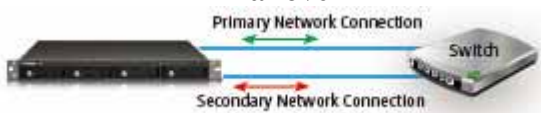


- **Cloud Storage Backup**
The Turbo NAS supports Amazon S3 and ElephantDrive online backup and storage services. You can perform scheduled and real-time backup and access your data easily on the Internet.
- **Windows Client Backup Software - NetBak Replicator**
QNAP NetBak Replicator is a utility provided for you to back up the files and folders from Windows PCs to Turbo NAS and restore the data. This software supports instant data backup and recovery, file filter, scheduled backup, and more.
- **Third-party Backup Software**
The NAS is compatible with popular third-party backup software, for example, Acronis True Image, CA BrightStor ARCserve Backup, EMC Retrospect, and Symantec Backup Exec.
- **Remote Replication by Rsync**
The data stored on the NAS can be remotely backed up to another QNAP Turbo NAS or to Rsync servers by Rsync over the network.
- **Apple Time Machine Backup and Management**
Mac users can back up data from MacBooks to the NAS via Time Machine. This feature largely saves the storage space of your MacBooks. You can also specify the storage space dedicated to Time Machine backup on the NAS and manage the backup data easily via the web-based administration interface.

- **One-touch-copy Backup**

You can configure the one-touch-copy button on the front of the NAS to copy the data from the NAS to an external storage device or vice versa. The NAS supports EXT3/EXT4; NTFS and HFS+ file systems for high speed data transfer and enhanced compatibility between the NAS and Windows PC or Mac OS X.

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).

Scenario	Benefits to your company
<p>Failover</p> 	<p>Provides continuous services when one network port fails.</p>
<p>Load Balancing</p> 	<ul style="list-style-type: none"> ▪ Aggregates bandwidth to boost the file transfer speed. ▪ Data traffic is evenly distributed to balance network loading.
<p>Multi-IP Setting</p> 	<p>Allows sharing among different workgroups in two different subnets.</p>

Wireless LAN *New!*

QNAP NAS supports USB wireless dongles for flexible and secure deployment in wireless network environment. You can securely connect the NAS to a wireless network with a compatible b/g/n USB Wi-Fi adapter.

Superior Performance and Energy-saving Design

The NAS delivers superior performance and high reliability for critical business applications. It is optimized to achieve low noise and low power consumption for environment protection.

SAMBA/FTP Access

- Client PC: Intel Core 2 Quad 2.50GHz CPU, 4GB DDR2/800 RAM, Intel Dual Port Server 82571 Networking Controller, Windows 7 Enterprise 32bit
- Testing Method: Connect the TS-412U and PC to switch, upload/ download 3GB file, FTP program: FileZilla 3.3.4

Efficient Power Management

Hard Disk Standby

You can configure the hard disks to enter standby mode if there is no disk access within the specified period.

Scheduled Power on/off

You can create schedules to automatically turn on, turn off, or restart the NAS. Up to 15 schedules can be set.

Network UPS








This feature allows multiple Turbo NAS servers on the same physical network to be protected by a single UPS via receiving UPS notification about abnormal power supply.

Automatic Power on after Power Recovery

You can configure the NAS to turn on automatically after the system resumes from a power loss.

Abundant Business Features

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

-  **FTP Server:**
You can set up Turbo NAS as an FTP server and share the files conveniently with your friends or customers.
-  **Encrypted Remote Replication:**
The data on the Turbo NAS can be backed up to or 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.
-  **Printer Server:** *New!*
The Turbo NAS supports maximum 3 USB printers for network (LAN/WAN) printing.
-  **Backup Server:**
The Turbo NAS offers the most complete backup solution with Apple Time Machine support, remote replication to an Rsync server, Windows client backup software NetBak Replicator, and third party backup software support, and so on.
-  **Web Server:**
You can host multiple websites on Turbo NAS with the built-in web server and virtual host feature.
-  **Surveillance Station:**
You can connect to multiple IP cameras via Turbo NAS and set up a video surveillance system with comprehensive monitoring, recording, and playback features.
-  **IPv6:**
The Turbo NAS supports IPv6 (Internet Protocol Version 6) which makes your

NAS a dual-stack IP host running IPv4 and IPv6 at the same time.

Practical System and Authority Control Management Tools

Smart Fan

The fan rotation speed is automatically adjusted according to the server's temperature. You can also define the system temperatures to trigger high speed or low speed rotation of the fan. By manually setting the fan rotation speed, the fan will rotate at the defined speed continuously.

Instant SMS/Email Alert

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

SNMP (Simple Network Management Protocol)

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

SSL Secure Certificate

You can upload a secure certificate and an RSA private key in X.509PEM format issued by a trusted provider to allow the users to access the NAS by secure SSL login.

Import/ Export User *New!*

The user accounts can be imported and exported in batch (BIN file) between different QNAP NAS servers.

Syslog Settings

All the system event logs and connection logs can be saved to a remote syslog server.

Network Recycle Bin

The files deleted from the network shares of the NAS will be moved to a particular recycle bin folder. You can restore your data anytime in case of unintended file deletion.

Comprehensive Event Log System

The logs of connections to the NAS via samba, FTP, AFP, HTTP, HTTPS, Telnet, and SSH, and networking services accessed by online users are all recorded.

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

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

Detailed System Information

You can view the system status, such as CPU usage, total memory, free memory, packets received, packets sent, error packets, system up time, CPU temperature, system temperature, hard disk drive temperature, and system fan speed.

Windows Active Directory (AD)

You can import the user accounts* from a Windows AD domain to the NAS to let the domain

users access the domain and the NAS with the same login settings. The NAS also supports setup of large amount of users and user groups.

*200,000 domain users and user groups can be imported according to QNAP's lab test.

Shared 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.

Host Access Control *New!*

The host-based permission control of QNAP NAS prevents unauthorized hosts (computers, servers) to access to the NAS folders via Microsoft Networking. You can specify the allowed access by host name, IP address or network.

Advanced Folder Permission *New!*

Advanced folder permissions allow you to configure access control to folders and subfolders of QNAP NAS. With this feature enabled, you can manage folder permissions from Microsoft Windows or the web-based management interface of the NAS without complicated procedure.

Web File Manager

Turbo NAS provides a web-based management interface Web File Manager for you to access and manage the server data anytime, anywhere by a web browser. Web File Manager supports intelligent data search, batch files upload and download, file extraction, and so on. With the support for encrypted data transfer and access control management on the NAS, you can access and share the data by Web File Manager securely.

ISO CD/DVD Archiving and Sharing

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 performance of data sharing on a business network.

MyCloudNAS Service *New!*

MyCloudNAS is a service which allows you to connect to your NAS remotely from anywhere. The easy-to-use wizard helps you assign a unique name to your NAS without going through the complicated process of registering DDNS service. Various NAS services can be easily published and accessed on the Internet.

Download Station & QGet *New!*

QNAP NAS features Download Station for high-speed BitTorrent, HTTP (including RapidShare support), and FTP download without PC. RSS download (broadcatching) is also supported for automatic BitTorrent download. QGet is a powerful utility which can be installed on any Windows or Mac computers to manage the download tasks of multiple Turbo NAS servers remotely (LAN/WAN).

Software Expansion and Website Management

Software Expansion via [QPKG](#)

The QPKG feature enables the users to maximize the usage of Turbo NAS by installing additional software packages developed by the users and community worldwide.

Hardware Spec.

CPU	Marvell 6281 1.2GHz
DRAM	256MB DDRII RAM
Flash Memory	16MB
Hard Disk Drive	4 x 3.5" or 2.5" SATA I/II hard disk drive (HDD) NOTE: <ol style="list-style-type: none">1. The system is shipped without hard disk drives.2. For the hard disk drive compatibility list, please visit http://www.qnap.com/pro_compatibility.asp
Hard Disk Tray	4 x hot-swappable and lockable tray
LAN Port	2 x Gigabit RJ-45 Ethernet port
LED Indicators	USB, Status, HDD 1, HDD 2, HDD 3, HDD 4, LAN
USB	4 x USB 2.0 port (Front: 1; Back: 3) Supports USB printer, disk, pen drive, USB hub, and USB UPS, etc.
eSATA	2 x eSATA port (Back)
Buttons	System: Power button, USB one-touch-backup button, reset button
Alarm Buzzer	System warning
Form Factor	Rackmount
Dimensions	44(H) x 439(W) x 483(D) mm 1.73(H) x 16.97(W) x 19.02(D) inch
Weight	Net weight: 6.7 Kg (14.77 lb) Gross weight: 9.5 Kg (20.94 lb)
Power Consumption (W)	Sleep mode: 15W In operation: 29W (with 4 x 500GB HDD installed)
Temperature	0-40°C/ 32-104°F
Relative Humidity	0-95% R.H.
Power Supply	Input: 100-240V AC, 50/60Hz, Output: 250W
Fan	3 x quiet cooling fan (4 cm, 12V DC)



Software Spec.

Operating System

- Embedded Linux

Supported Operating System

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

Supported Web Browsers

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

Multilingual Support

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

File System

- Internal HDD: EXT3, EXT4
- External HDD: EXT3, EXT4, NTFS,

Power Management

- Scheduled Power on/off (Max 15 settings)
- Automatic Power on after Power Recovery

Access Right Management

- Max User Accounts: 4,096
- Max Groups: 512
- Max. Share Folder: 512
- Batch Creating Users
- Import/ Export User
- User Quota Management
- Subfolder Permissions Support

Windows AD Support

- Domain Users Login via CIFS/SMB, AFP, FTP and Web File Manager
- Supports NTLMv2 Authentication

Web Administration

- AJAX-based User Interface
- HTTP/HTTPS Connections
- Alert Notification (Email & SMS)
- Smart Fan Control
- DDNS & MyCloudNAS Remote Access

FAT32, HFS+

Networking

- TCP/IP (IPv4 & IPv6: Dual Stack)
- Dual Gigabit NICs with Jumbo Frame
- Multi-IP Setting, Port Trunking/ NIC Teaming (Modes: Balance-rr, Active Backup, Balance XOR, Broadcast, IEEE 802.3ad/ Link Aggregation, Balance-tlb and Balance-alb.)
- DHCP Client, DHCP Server
- Protocols: CIFS/SMB, AFP (3.1), NFS, FTP, HTTP, HTTPS, Telnet, SSH, iSCSI and SNMP.
- Network Service Discovery (UPnP, Bonjour)
- USB Wi-Fi 802.11n Adapter Support (Optional Purchase)

Network File Sharing

- CIFS/SMB (Plus DFS Support)
- AFP
- NFS
- FTP
- WebDAV

Backup Solution

- USB One Touch Backup (Import/Export)
- Apple Time Machine Support with Backup Management
- Block-level Remote Replication
 - Work as Both Rsync Server & Client
 - Supports Encrypted Replication between QNAP NAS Servers
- Back up to External Storage Device
- Back up to Cloud Storage (Amazon S3 & ElephantDrive)

Security

- IP Filter & Policy-based Automatic IP Blocking
- Network Access Protection with Auto-

- 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
- Backup and Restore System Settings
- Restore to Factory Default

Applications

- Web File Manager
- Multimedia Station
- Download Station
- Surveillance Station
- iTunes Server
- Apache Web Server
- MySQL Server

Mobile App

- QMobile for iPhone/ iPad/ Android
- 3rd Party UPnP Media Player

QPKG

- Web Applications
 - Joomla!
 - phpMyAdmin
 - WordPress
 - AjaXplorer
 - vtigerCRM
 - eyeOS
 - Magento
 - GLPI
- P2P Applications
 - MLDonkey (eMule)
 - SABnzbd+
 - NZBGet
- Server Applications
 - Asterisk
 - XDove (Mail Server)

- 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
- Importable SSL Certificate
- Instant Alert via E-mail, SMS
- OpenLDAP
- Media Server
 - Squeezebox Server
 - IceStation
- Misc.
 - Optware IPKG
 - Python
 - iStat

...and more

Disk Management

- Single Disk, JBOD, RAID 0 / 1 / 5 / 5+Hot Spare / 6 / 10
- Online RAID Capacity Expansion & 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 LUNs
 - Supports LUN Mapping & Masking
 - Supports SPC-3 Persistent Reservation
 - Supports MPIO & MC/S
- Virtual Disk Drive (via iSCSI Initiator)
 - Stack Chaining Master
 - Max. Virtual Disk Drives: 8

Powerful All-in-one server

File Server

- File Sharing Across Windows, Mac OS and Linux/ Unix Platforms
- Protocols: CIFS/SMB, AFP(3.1), NFS, FTP, HTTP, HTTPS
- QNAP Web File Manager
 - Supports ISO Mounting

Multimedia Station

- Supports Photo, Audio and Video
- Image Slide Show and Rotation
- Automatic & Schedule 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.

- Direct File Viewing via Google Doc

FTP Server

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

Web Server

- HTTP/ HTTPS Connections
- Supports WebDAV Connection
- Supports Virtual Host
- Importable SSL Certificate

Database Server

- Built-in MySQL Server
- Web-based Management via phpMyAdmin (QPKG)

Backup Server

- Remote Replication Server (over Rsync)
- Real-time Remote Replication Server
- Apple Time Machine Support
- QNAP Client Backup Application-NetBak Replicator
- 3rd Party Backup Software Support: Acronis True Image, CA Brightstor, ARCserve Backup, EMC Retrospect, Symantec Backup Exec, LaCie Silverkeeper

iTunes Server

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

- Access Authority Management
- Multimedia (Video & Audio) Streaming
- Supports Cooliris
- Supports Web Publishing (Facebook, MySpace, MSN Live, Twitter, Plurk, Blogger)
- Supports 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
- QNAP Exclusive iPhone & iPad App - QMobile

Download Station

- PC-less BitTorrent/ FTP/ HTTP Download (up to 500 tasks)
- BitTorrent Download
 - Supports TCP/ UDP Tracker Protocol
 - Schedule Download
 - Configurable Port Range
 - Bandwidth Control
 - UPnP NAT Port Forwarding
 - Subscribes to RSS Feeds
 - RSS Download (Broadcatching)
 - Selectable Download Files
- HTTP/ FTP Download
 - Configurable Saving Directory
 - Bulk Download with Wildcard Setting
 - RapidShare Download Support
- QNAP Download Management Software: QGet
 - For Both Windows & Mac OS
 - Manage the Download Tasks of Multiple QNAP NAS Remotely over LAN or WAN

Surveillance Station

- Supports 4 IP Cameras (Optional Purchase)

Printer Server

for Network Surveillance

- Network Printer Sharing (USB)
- Max Printers: 3
- Supports Internet Printing Protocol
- Supports Apple Bonjour Printing
- Advanced Printer Management
 - Displays and Manages the Print Jobs
 - Access Right Control (IP & Domain Names)

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