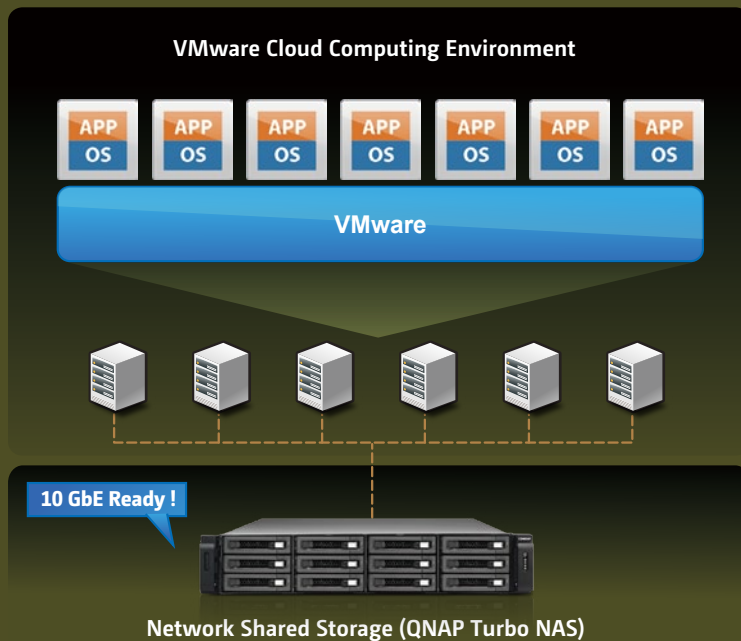


Server Virtualization with QNAP® Turbo NAS and VMware®

QNAP® offers superior performance and affordable VMware® Ready™ network storage solutions



Virtualization increases efficiency of IT management and availability of IT applications and resources. The QNAP Turbo NAS (Network Attached Storage) is the high performance and reliable storage designed to provide an affordable and easy-to-manage solution with iSCSI service for virtualized and clustered environment and reduce the total cost of ownership (TCO).

With the Turbo NAS, users can:

- Leverage all the benefits from VMware solutions
- Deploy the virtualization environment with flexibility
- Improve work continuity

Leverage the benefits from VMware virtualization technology

The VMware Ready certified products from QNAP enable fast integration and deployment into VMware environment and are able to operate reliably with advanced features such as DRS (Distributed Resource Scheduler), VMotion, Storage VMotion, VMware High Availability, Data Recovery, Fault Tolerance, and so on. The features help the customers create highly scalable, manageable, and agile virtual infrastructure.

Deploy the virtualization environment with flexibility

The QNAP Turbo NAS can be utilized as an NFS or an iSCSI datastore in the VMware environment. It allows file sharing across Windows, Mac, Linux, and UNIX platforms at the same time. The iSCSI thin-provisioning feature offers great flexibility in storage capacity planning and allocation when creating iSCSI LUNs from the beginning. Moreover, the LUNs can be mapped to, unmapped from, and switched among different iSCSI targets.

Improve work continuity with high availability QNAP shared storage

The QNAP Turbo NAS protects the virtual machines with RAID 1, 5, 6, 10 with hot spare and RAID recovery. The multiple Gigabit LAN design provides load balancing and failover to sustain any single point of failure, keeping the connection alive between the guest OSES running on the VMware hosts and the Turbo NAS.

Application Scenario

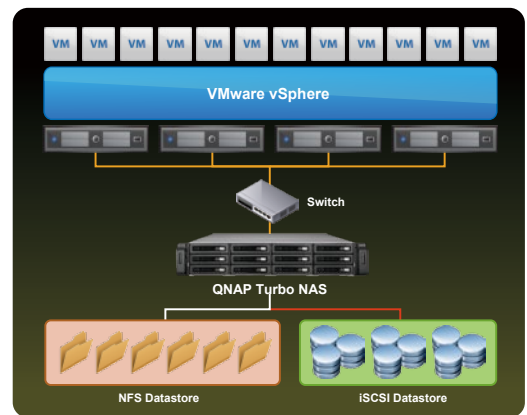
- Primary Datastore for VMware vSphere
- Shared Storage for Virtualized Testing Environment
- Backup Storage for Existing Virtualization Environment

Key Features

- VMware Ready™ Certified
- Supports Both NFS and iSCSI Deployment
- Supports VMware Cluster and Windows Server 2008 Failover Cluster
- 10 Gigabit Ready
- Multiple Gigabit LAN Ports for Continuous Services and Performance Gain
- Segment-leading iSCSI Features
- Secure Data Protection
- High Ease-of-Use
- Online LUN Expansion
- Online LUN Snapshot & Backup

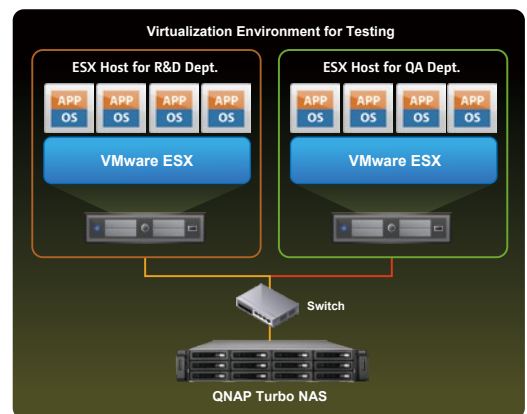
Primary Datastore for VMware vSphere

The QNAP Turbo NAS accelerates the setup of a virtualization infrastructure. Users can deploy the Turbo NAS as an NFS datastore or an iSCSI datastore for the VMware environment.



Shared Storage for Virtualized Testing Environment

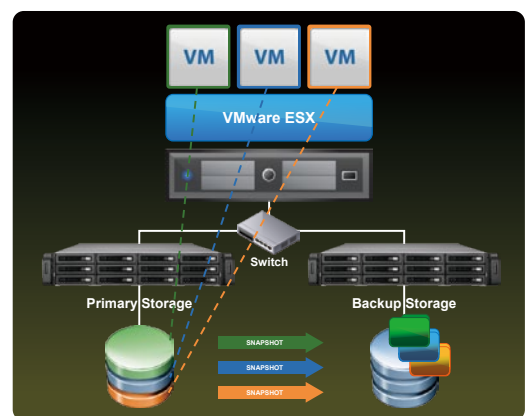
In the software development process, R&D and QA teams often require different environments and operating systems (Windows, Mac, Linux) to run a wide variety of applications. To reduce the costs for server setup and increase the work efficiency, virtualization environment is established. The Turbo NAS is the perfect shared datastore among different OS in such VMware infrastructure.



Backup Storage for Existing Virtualization Environment

If a VMware ESX with a primary storage has already been deployed, an additional storage for data backup, archiving, or extended storage may be needed. The Turbo NAS can be seamlessly integrated to the ESX environment. You can select from 2 to 12-bay Turbo NAS models (tower or rackmount) with up to 36TB storage capacity according to the storage requirements.

The QNAP NAS supports VMware Data Recovery to back up the virtual machines from the primary datastore to the NAS. It also works well with third-party backup software such as Veeam to protect the virtualization environment from primary datastore failure.

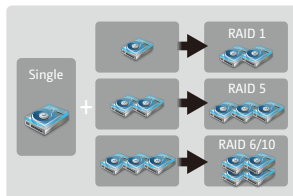


Advanced RAID Management to Protect Virtual Machines

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

Online RAID Level Migration

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



Online RAID Capacity Expansion

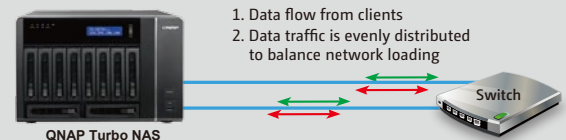
The storage capacity of a RAID array can be expanded by hard drives replacement. All the data will be kept and seamlessly moved to the newly installed hard disk drives without turning off the server.



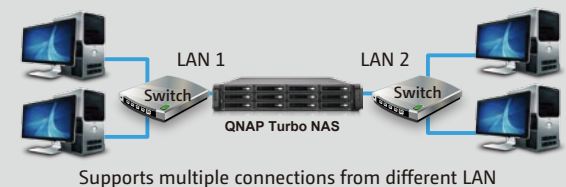
10 GbE Ready and 4 Gigabit LAN for Continuous Services and Performance Gain

The TS-x79 Series Turbo NAS is 10 GbE ready and supports 4 Gigabit LAN ports with 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). These modes enable continuous services and increase the bandwidth between VMware vSphere and QNAP storage repositories.

Failover & Load Balancing



Multi-IP Settings



Segment-leading iSCSI Features

iSCSI LUN Snapshot & Backup:

The Turbo NAS supports point-in-time LUN snapshot to ensure data consistency between the backup contents and the original copy. Users can also back up the iSCSI LUN to and restore the copies from various storage destinations, including Windows shared folders via SMB/CIFS, Linux shared folders via NFS, or simply local shared folders on the NAS.

Online LUN Expansion & Multiple LUNs per Target:

Expand LUNs (Logical Unit Number) on the Turbo NAS without losing the data! Flexibly map to, unmap from and switch among different iSCSI targets for easy management of the storage; LUN can be expanded online.

CHAP and LUN Masking:

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

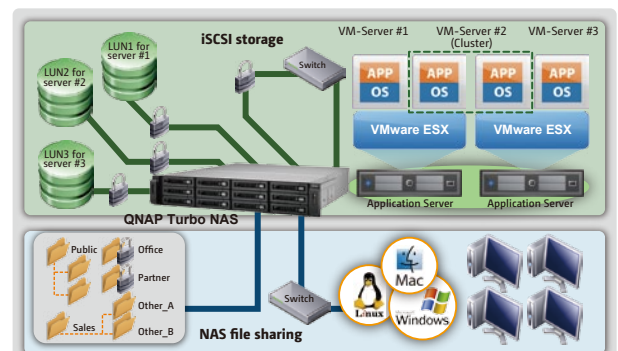
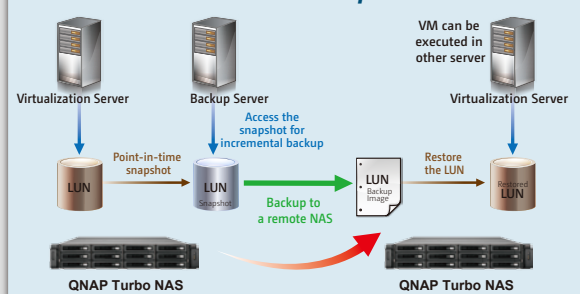
SPC-3 Persistent Reservation Supported:

The built-in iSCSI service supports enterprise-level features such as SPC-3 persistent reservation for clustering in VMware and Windows 2008.

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 QNAP iSCSI targets using two or more network interfaces from server with failover and load balancing. Furthermore, transmission is achieved maximizing performance.

LUN Backup



Ease of Management

Comprehensive Event Log System and Instant Notification

Detailed logs of file-level data access to the NAS via Samba, iSCSI, FTP, AFP, HTTP, HTTPS, Telnet, and SSH; and networking services accessed by online users are all recorded. Moreover, users can configure the SMTP server, SMSC server, and instant messaging settings on the NAS in order to receive instant system warning or error messages by email, SMS, and Windows Live Messenger.



AJAX-based Management Interface

The Turbo NAS provides an AJAX-based management interface that allows convenient system configuration by a web browser. Less technical-savvy users can easily configure the advanced features with simple wizards. The NAS supports Microsoft Internet Explorer, Safari (version 3 & 4), Firefox (version 3 & 4), and Google Chrome.

QNAP® VMware® Ready™ Storage Products

Tower Models



TS-259 Pro+
TS-239 Pro II+



TS-459 Pro II
TS-459 Pro+
TS-439 Pro II+



TS-559 Pro II
TS-559 Pro+



TS-659 Pro II
TS-659 Pro+



TS-859 Pro+



TS-879 Pro



TS-1079 Pro

Rackmount Models



TS-459U-SP+



TS-459U-RP+



TS-859U-RP+



TS-EC879U-RP
TS-879U-RP



TS-EC1279U-RP
TS-1279U-RP

For more information on the QNAP Turbo NAS, please visit: <http://www.qnap.com>

For more information on QNAP virtualization storage solutions, please visit: <http://www.qnap.com/virtualization.asp>

QNAP Systems, Inc.

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

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