Virtualization Station
Outline

• Introduction
• Virtualization Platform - Hypervisor
• High-level NAS
• Functions
• Applications
• Supported NAS models
Introduction
What is Virtualization Station?

- Allows users to create and operate virtual machines (VMs) in the QNAP Turbo NAS
Introduction

• Benefits of using Virtualization Station
  • Supports various Operating Systems to install on VMs
  • Applications installed on VMs can expand the compatibility of the NAS
  • Aggregates IT infrastructure (NAS + Servers > VMs in NAS)
  • Reduced time and cost to build up VMs compared to physical machines
  • More efficiency to deploy, operate and manage systems by using VMs
Introduction

Traditional NAS can only support virtualization solutions. With Virtualization Station, the NAS itself has a built-in hypervisor.

**Traditional NAS**

Virtualization support: VMware® ESXi™, Citrix® XenServer™, Microsoft® Hyper-V™

**NAS built-in Virtualization Station**

Can Install advanced applications and services in the NAS directly.
Virtualization Platform – Hypervisor
Hypervisor (1/2)

Two major types of virtualization platform

- **Type1**: Installed directly on the host (Bare metal)
  VMware ESXi, Citrix XenServer, Microsoft Hyper-V

- **Type2**: Installed on the operating system (Hosted)
  Oracle VM VirtualBox, QNAP Virtualization Station
Hypervisor (2/2)

- QNAP Virtualization Station is a hosted hypervisor installed on the QTS 4.1 NAS operating system.

<table>
<thead>
<tr>
<th>Hypervisor (Bare-metal)</th>
<th>Hypervisor (Hosted)</th>
</tr>
</thead>
<tbody>
<tr>
<td>VMware ESXi</td>
<td>Oracle VirtualBox</td>
</tr>
<tr>
<td>Critrix XenServer</td>
<td>QNAP Virtualization Station</td>
</tr>
<tr>
<td>Microsoft Hyper-V</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Suitable hardware</th>
<th>Mostly server-class (Dual processor)</th>
<th>Personal workstations, PC (Single Processor)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hardware compatibility support</td>
<td>Moderate</td>
<td>High</td>
</tr>
<tr>
<td>Performance for VM hardware</td>
<td>High</td>
<td>Moderate</td>
</tr>
<tr>
<td>Support for VM remote replication or other solutions, e.g. HA, Fault-tolerance</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Expansion of applications</td>
<td>Many</td>
<td>Few</td>
</tr>
</tbody>
</table>
High-level NAS
Integrated Virtualization Station

- Improving Productivity
- Direct access to data
- Save Bandwidth
- Enhancing Security
Improving Productivity

• Run multiple applications on different operating systems (Windows, Linux, UNIX) at the same time.

NAS
• File Station
• Backup Station
• Music Station

Virtualization Station

RAID / Storage Pool

RAID Group
Direct access to data & execute applications via VMs

- Specific file formats cannot be opened on the Turbo NAS, but the Virtualization Station makes it possible.
- Administrators can install Windows, Linux, and UNIX on the VMs to run any application.
Direct access to data & execute applications via VMs

- In normal cloud storage circumstances, not every file can be downloaded and read
Save Bandwidth

**Local**
Access NAS to download file
Waiting for downloading

**VM**
Login NAS
Directly open in VM

Download file from NAS
Enhancing Security

- Data is always kept on the Turbo NAS, and users do not have to download it to their PC.

If the data is downloaded, it may have high risk!
Moreover...

- Turbo NAS provides data protection with QNAP RAID technology
- Turbo NAS provides anti-virus and a firewall to secure data
- Turbo NAS provides notifications for system alerts via Email or SMS.
- VMs can mount disk storage or file folders via iSCSI or Samba to connect with the Turbo NAS.
Functions
Overview & Dashboard

- A list of all VMs, CPU specification, CPU & Memory usage
Fast virtual machine creation

- Provides several default templates for quickly creating a virtual machine (e.g. number of Cores, size of Memory)
Virtual Machine Import / Export

- Supports various VM formats, e.g. .ovf, .ova
- Supports VM importing & exporting to/from NAS or computers

Compatible with VMware & VirtualBox
VM Snapshot

- Snapshot for RAM of VM and ISO of volumes
- Records the VM system status at a point of time
- Quickly roll back to snapshots to ensure constant system operation

Case:
Before you download from unknown sources or install potentially risky applications, you can utilize the Snapshot function to record the system status of a VM. If the VM gets infected by a virus or suffers from random system crashes, it can be reverted to a previous snapshot.
Individual network bandwidth for each VM

- Configure specific VMs with dedicated Ethernet resources
- Monitor bandwidth usage for each Ethernet resource
Remote desktop operations (1/2)

- Shared remote administration user interface
- Use HTML5-compatible web browsers on mobile devices to remotely manage VMs on the NAS
- Web-based Thin Client does not consume hardware resources
Remote desktop operations (2/2)

- Supports Function Key Combinations
- Supports HTML5 auto-fit
HDMI output - QVM

- Output the Virtual Machine (VM) console using an HDMI monitor

Please note: you have to enable the HD Station in the “Application” of QTS before using QVM.
Account Management (1/2)

- Administrator can assign VMs to users and set different permissions for them.
- Prevents other users from accidently powering-off VMs and resulting in interrupting application services.
- Only assigned users can operate allocated VMs, securing personal data and working application services.
Account Management (2/2)

User-based permissions:

- Console permission
  - Control
  - View-only
- Controls for VM
  - Power
  - Snapshot
  - Advanced
USB Pass Through

- QNAP Virtualization Station supports connecting USB devices to VMs.
VM Auto-start

- Once the Turbo NAS restarts, VMs can be automatically started by setting up a schedule.
Adjust VM HDD space

- It is flexible to allocate more HDD space for VMs
- Thin provisioning: uses the NAS storage pool more efficiently
Case 1

- IIS Web server
  - Provides a high-speed connection & large storage capacity for web servers
  - Operate existing ASP/ASPX web pages & databases on a Virtual Machine with a supported operating system
Case 2

- ERP/EIP/CRM system
  - High performance computing with Intel® Quad-Core Xeon™ E3-1246 v3 3.5 GHz Processor
  - SSD Cache acceleration
  - Highly reliable data protection with QNAP RAID technology
  - Backup data directly to the QNAP Turbo NAS
Case 3

- Microsoft Exchange server
  - Large storage capacity for storing a vast amount of emails
  - Data backup & storage capacity expansion
  - Enter archived emails and browse instantly without downloading
Case 4

- Windows Active Directory Server
  - Manage servers on the virtual machine easily and efficiently
Download more VMs from online Store

- Build your enterprise-package of information systems easily & quickly
- Import to Virtualization Station and instantly use applications on VMs
- Compatible with VMware & VirtualBox virtual machines
- Online store:
  - Bitnami App store: [https://bitnami.com/stacks](https://bitnami.com/stacks)
  - VMware Marketplace: [https://solutionexchange.vmware.com/store/category_groups/19](https://solutionexchange.vmware.com/store/category_groups/19)
  - TurnKey Apps: [http://www.turnkeylinux.org/all](http://www.turnkeylinux.org/all)
Available NAS models
Available NAS models for Virtualization Station

**Level**

**High-end level**
- TS-EC880U
- TS-EC1280U
- TS-EC1680U
- TS-EC2480U
- SS-EC1279U-SAS
- SS-EC1879U-SAS
- SS-EC2479U-SAS
- TS-EC1279U
- TS-EC1679U

**Medium level**
- TVS-EC880
- TS-EC880 Pro
- TS-EC1080/TVS-EC1080+
- TS-EC1080 Pro
- TVS-471
- TVS-670-16G
- TS-870-16G
- TVS-871
- TVS-863/TVS-863+
- TVS-871U
- TS-1271U
- TS-1679U
- TS-879U
- TS-1279U
- TS-1679U

**Entry level**
- TS-251 Pro
- TS-451 Pro
- TS-651 Pro
- TS-851 Pro
- TS-253 Pro
- TS-453 Pro
- TS-653 Pro
- TS-853 Pro
- TS-853S Pro
Appendix

• System requirements:
  • QNAP QTS 4.1 or newer
  • At least 4GB Memory
    (Minimum requirement for TS-x51/TS-x53/TS-x53S Pro/HS-251-2G/IS-400 Pro is 2 GB memory)

• Where to download:
  • App Center: “QTS Essentials” category
THANK YOU