Virtualization Station

Brings an Efficient Virtualization Environment
– 4 essential aspects

Core values of Virtualization

Logically dividing the physical computer resource (CPU, memory, storage and network) into several units.

Efficiency

- VM deployment
- Disaster recovery

Flexibility

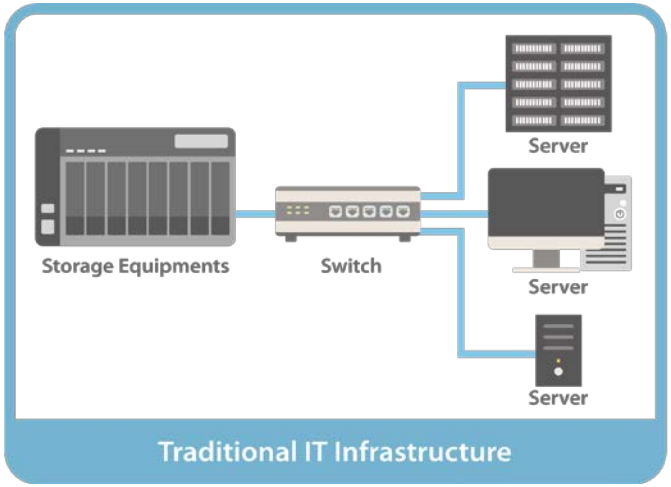
- Compute
- Storage
- Networking

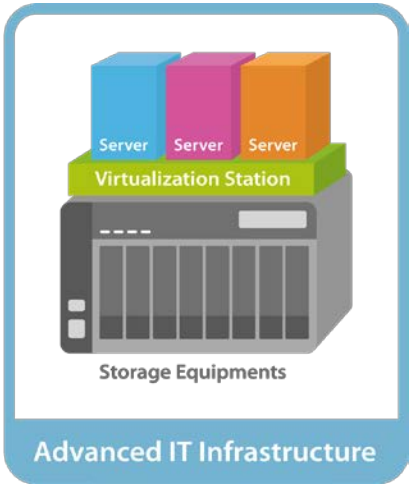
Running VM on the NAS ?

IT infra-integration by virtualizing servers

NAS (storage) + VM (computing)

= converged-appliance





NAS VM used for

- Server deployment
- 24/7 software
- Temporary systems
- I/O intensive access

BIG THiNK

4 essential aspects

Environment settings

- Networking modes
- Non-stop VM backup
- Snapshot reverted online

GPU support

- OpenGL & Direct X required
- Compatible with AMD & NVIDIA cards

VM console operation

- Web – toolbar
- HDMI output – QVM
- Other remote utilities

VM Performance

- I/O transmission
- Number of concurrently running VM

Environment, suitable for VM running apps

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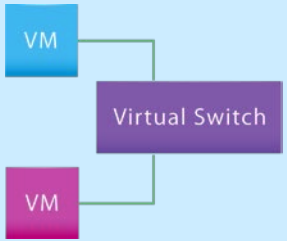
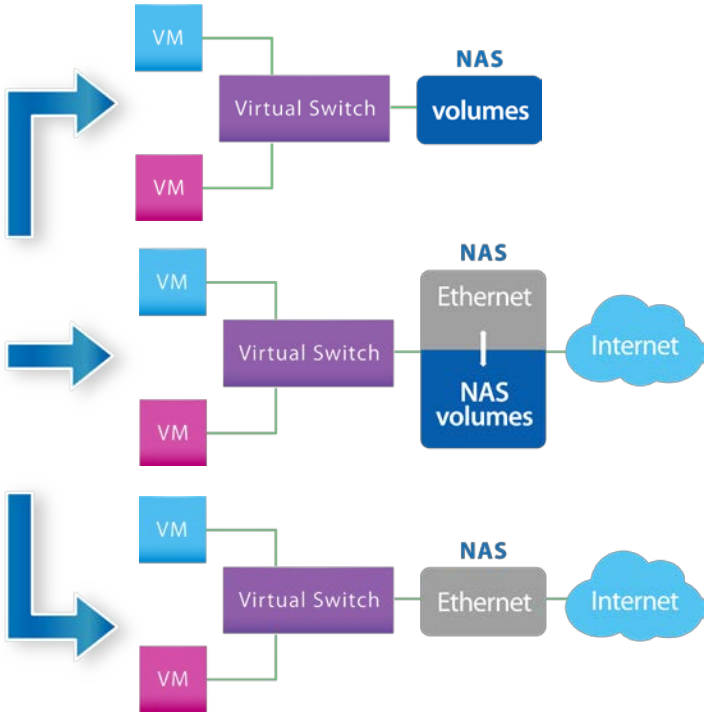
Custom virtual switch

Provides different networking modes.





Host

- Internal high-speed network between NAS and VM

Bridged

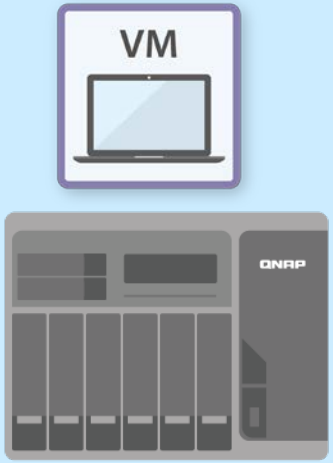
- Internal high-speed
- Connects Ethernet interface

External-only

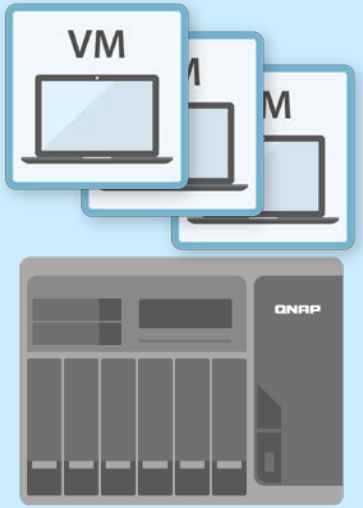
- Dedicated bandwidth for VM

Non-stop VM backup, non-stop applications

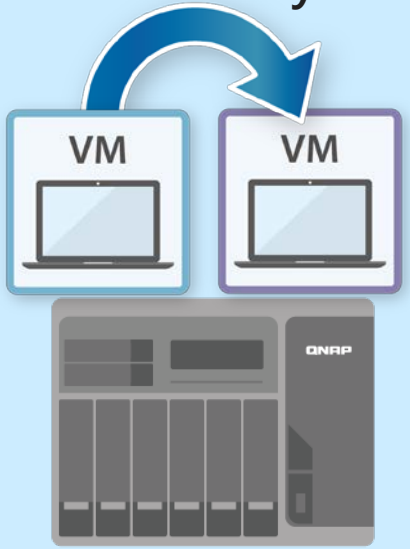
Scheduling VM backup w/o powering off



Keeping multiple VM backups



Remote site recovery



Environment settings comparison

Virtualization Station

VS

Virtual Machine Manager

GPU – accelerated computing

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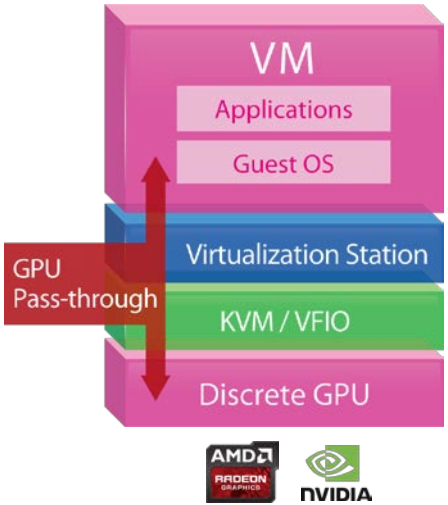
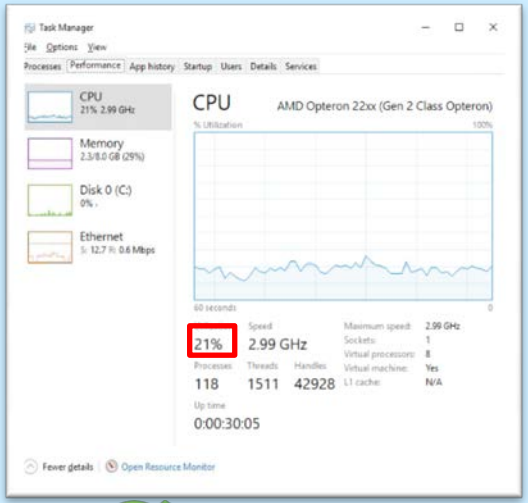
GPU – manipulating image processing

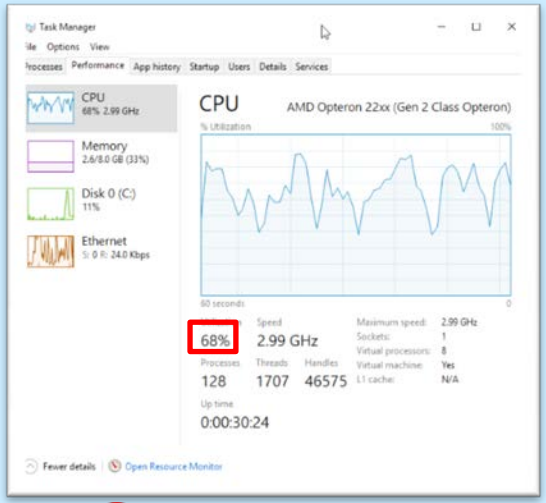
Supports OpenGL & DirectX



Discrete GPU accelerates image processing and computer graphics, offloading CPU utilization



GPU connected



GPU disconnected

Tested in QNAP Labs. Figures may vary by environment.
NAS：TS-1277 Ryzen 1700
QTS 4.3.4, Seagate ST4000VN0001
nVIDIA GeForce GTX 1060 6GB

Live Demo

Virtualization Station

NAS: TVS-882-i5-16GB

Firmware: QTS 4.3.3.0299

Guest OS: Windows 10 64-bit

MSI GeForce® GTX 1060 6GT OCV1

GPU: NVIDIA® GeForce® GTX 1060

Core Clocks: 1759 MHz/ 1544 MHz

Memory: 6 GB GDDR5 (192-bit)

Access VM console

Environment settings

- Networking modes
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VM Performance

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- Number of concurrently running VM

Web browsers & HDMI output

Remote access

Web browsers or remote connection utilities

Plugging in keyboard, mouse and monitor

Q vPC Technology

Local HDMI output

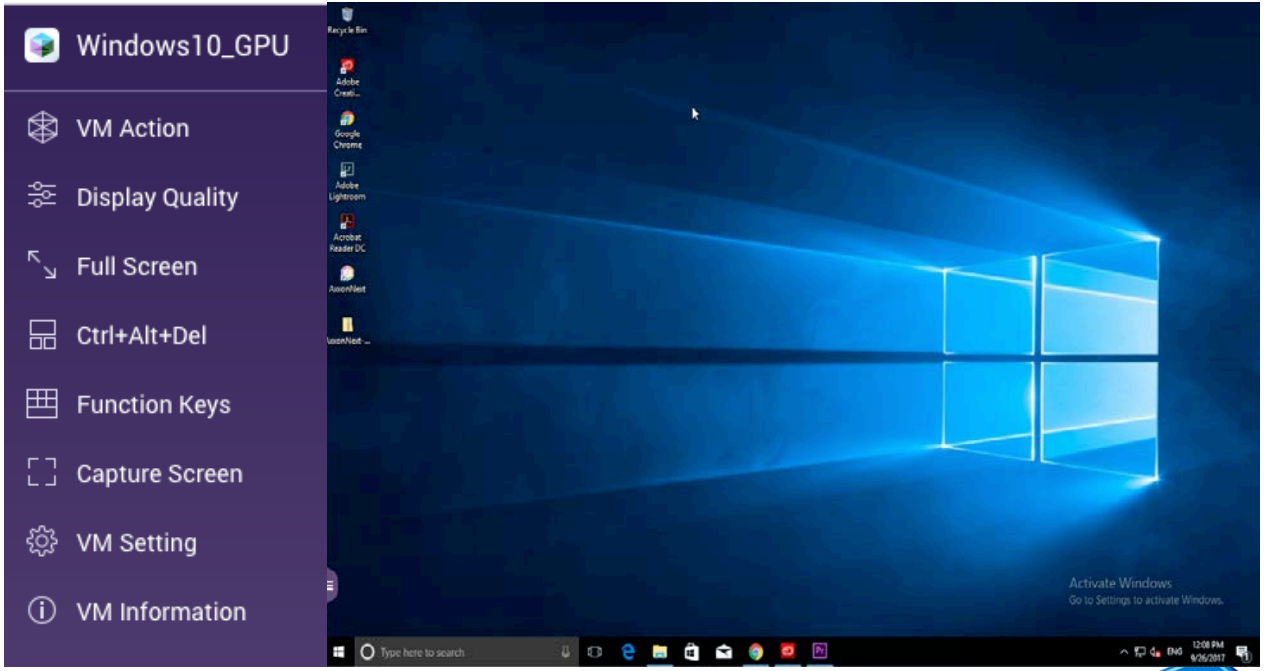
Web toolbar

VM Action

Function Keys

VM Settings

Display



Access VM console comparison

Virtualization Station

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VM Performance required

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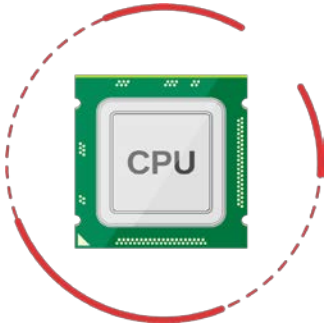
VM Performance

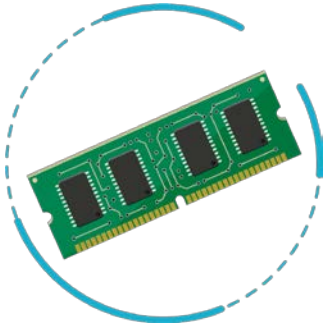
- I/O transmission
- Number of concurrently running VM

Assessment criteria



CPU

- Single/Multiple cores
- VM cores allocation
- Software transcoding

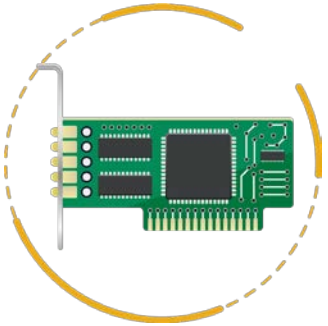


Memory

- Read/Write
- Latency

Disk I/O

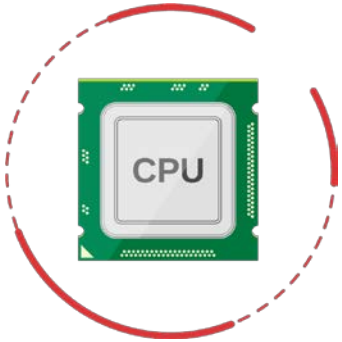
- Read/Write
- Zero-filling



Network I/O

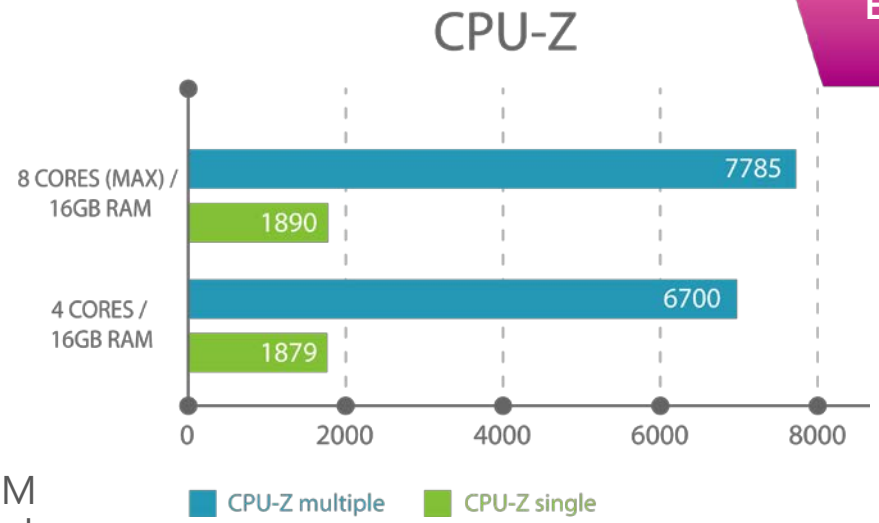
- Samba, iSCSI
- VM-to-VM
- VM-to-NAS
- NAS-to-VM

CPU Test



CPU

- Cinebench
- CPU-Z
- Wprime 32M/ 1024M
- x.265 FHD Benchmark

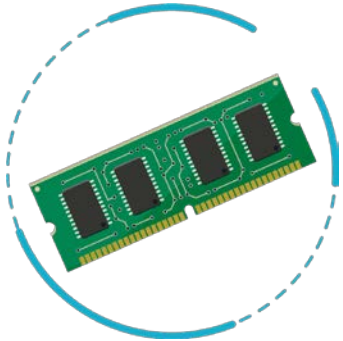


Encoded 2500 frames:
188.95 s / 13.23 fps

Tested in QNAP Labs. Figures may vary by environment.
NAS：TVS-1282-i7
QTS 4.3.3, RAID 0 w/ 8 x WD Blue 500GB SSD

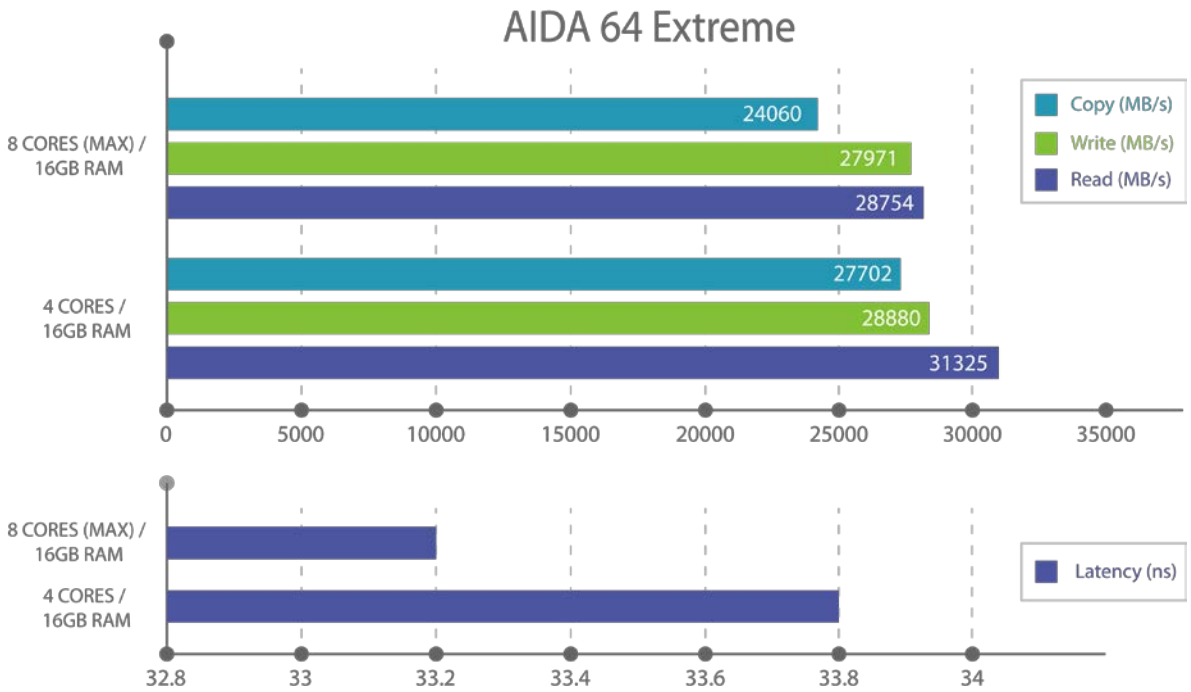
BIG THiNK

Memory Test



Memory

- AIDA 64 Extreme



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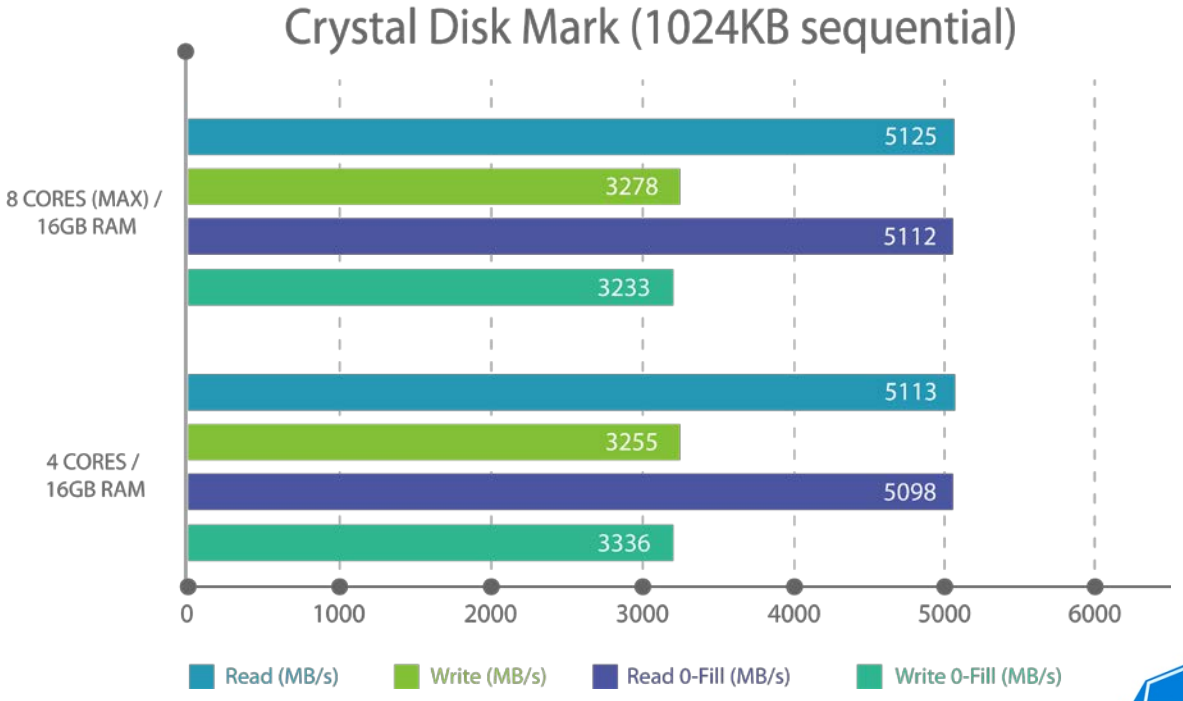
QTS 4.3.3, RAID 0 w/ 8 x WD Blue 500GB SSD

Disk I/O Test

Disk I/O

- Crystal Disk Mark



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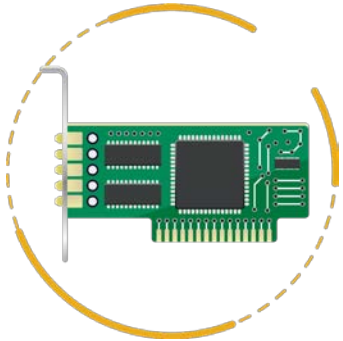
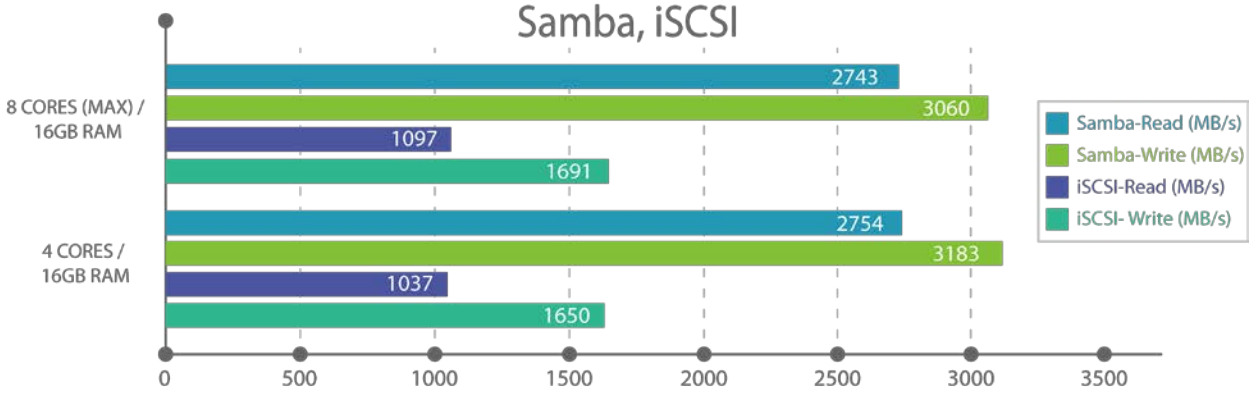
Network I/O Test



Network I/O

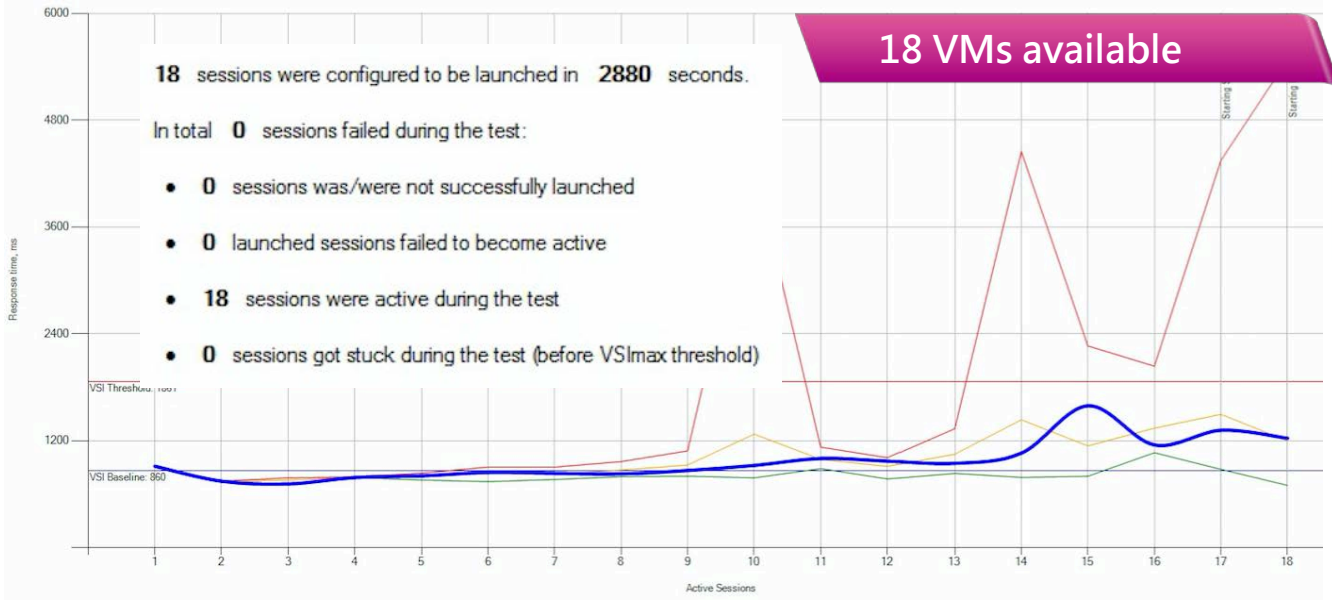
- Crystal Disk Mark
- Iperf



Tested in QNAP Labs. Figures may vary by environment.
NAS：TVS-1282-i7
QTS 4.3.3, RAID 0 w/ 8 x WD Blue 500GB SSD
Iperf: -w 100M -t 60 -i 10

of Concurrently running VM

LOGINVSI Based on VDI (virtual desktop infrastructure) methodology



Target VM:

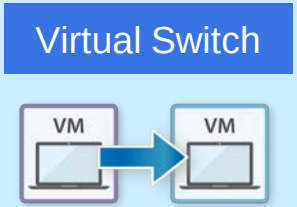
- Windows 10 64bits
- Knowledge Worker
- 2 vcores
- 2 GB RAM

Tested in QNAP Labs. Figures may vary by environment.
NAS：TVS-1282-i7
QTS 4.3.3, RAID 6 w/ 8 x Seagate ST4000VN000-2AH166 HDD

Recap

- **Essential** considerations for virtualization environment

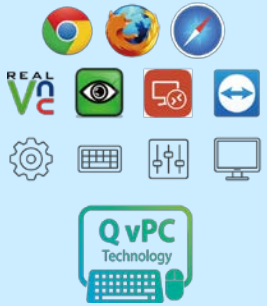
Performance



Non-stop VM backup

Environment

GPU



Operation

A suitable NAS for virtualization

	QNAP	S vendor
Environment – networking modes	Multiple Like	Single
Environment – non-stop VM backup, snapshot	Local/Remote backup, online snapshot reverted	Snapshot for VM replication, offline snapshot reverted
GPU – DirectX, OpenGL	Yes Like	None
VM console – access operation	Local HDMI output, multi-functional web toolbar Like	Simple toolbar
VM performance – capable NAS	Many (SOHO to Enterprise-level) Like	Fewer (Mainly SOHO and SMB)


QNAP
Thank you