QNAP

TVS-x73e Series

Dual PCIe Gen3 expansion slots & dual M.2 SATA SSD slots
For high expandability and versatile applications

4K

AMD EMBEDDED SOLUTIONS R SERIES A

AMD RADEON GRAPHICS



TVS-473e



TVS-673e



TVS-873e

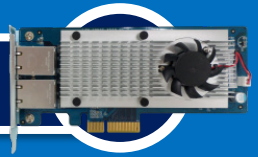
QNAP

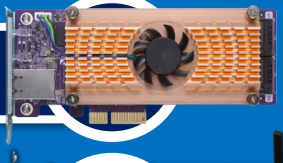
Versatile for most business environments

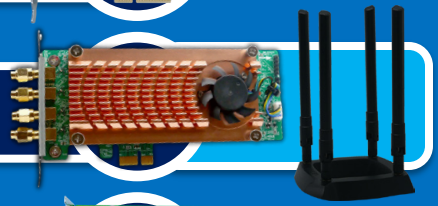
TVS-x73e supports dual **PCIe Gen3 x4** slots for **two expansion cards**

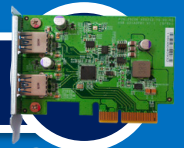


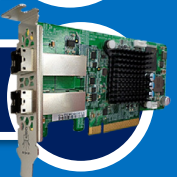
- 10Gb/1Gb NIC card
- QM2 M.2/10Gb card
- QW-AC2600 wireless card
- USB 3.1 card (10Gb)
- SAS card (12Gb)





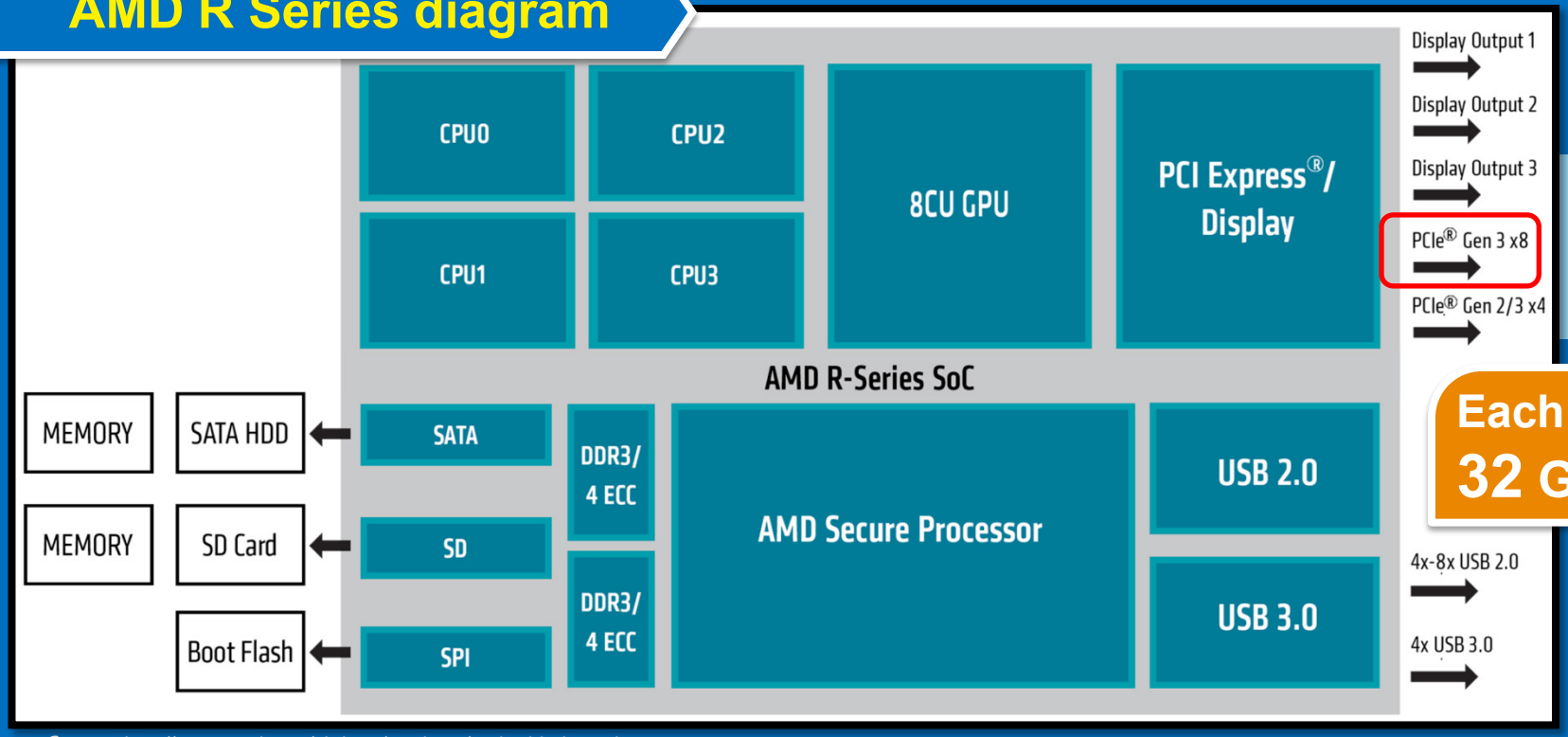






Gen 3 x4 ensuring 10G network bandwidth

AMD R Series diagram



TVS-x73e
Breaks into two Gen3 x4 PCIe slots

Each slot max 32 Gb/s

Source: http://www.amd.com/zh-hant/products/embedded-r-series-soc

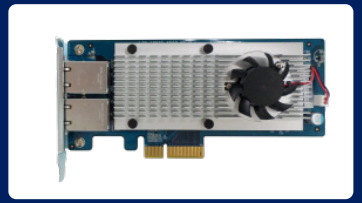
QNAP

Unleash performance with NIC cards

10GbE/1GbE network card



LAN-10G2SF-MLX



LAN-10G2T-X550



LAN-10G1SR

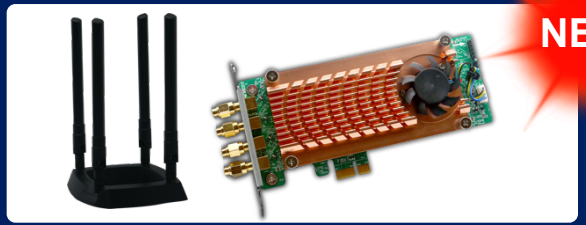


LAN-10G1TA



LAN-1G2T-I210

Wireless network card



NEW

QW-AC2600



TP-Link

TL-WDN4800 N900
TL-WDN3800 N600
TL-WN881ND N300
TL-WN781ND N150

Turn TVS-x73e into a wireless access point

Install WirelessAP Station and devices can connect to NAS wirelessly

Setup isolated wireless connections for max bandwidth (IoT/VM/Container)

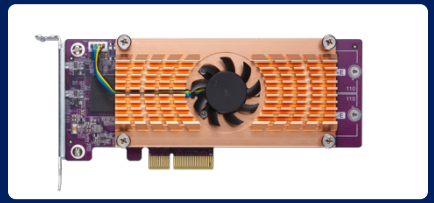
Powerful x86 performance; add more wireless cards to increase bandwidth

QW-AC2600 wireless card
4 x 4 MIMO AC2600
Dual Band Dual Concurrent

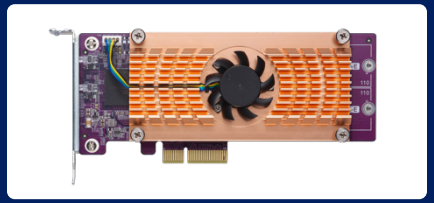


QM2 card and productivity tools

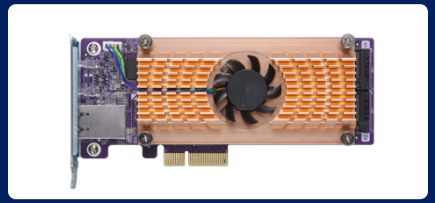
QM2 M.2 SSD / 10GbE card



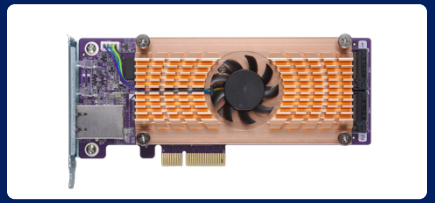
QM2-2S



QM2-2P

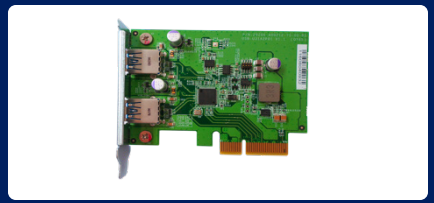


QM2-2S10G1T



QM2-2P10G1T

USB 3.1 card



USB-U31A2P01

SAS 12Gb card



SAS-12G2E

5 year+ long term support processors

TVS-x73e series





TS-x73U series





TS-x63U series





* TS-x73U & TS-x63U do not support GPU & HDMI output.

AMD Embedded R Series

TVS-x73e
2 x PCIe slots, best for 4K multimedia, advanced computing and high workload

TS-x73U
2 x 10GbE SFP+ ports, business-ready

AMD Embedded G Series

TS-x63U
Versatile and energy efficient
1 x 10GbE SFP+ port

QNAP

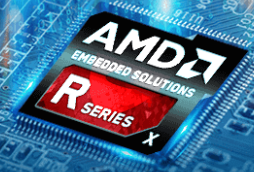
AMD R Series flagship embedded SoC

Model Number	OPN	cTDP Range	Radeon™ Branding	# x86 Cores	L2 Cache (Mbytes)	CPU Clock GHz (15W Base)	CPU Clock GHz (Max)	# GPU Compute Units	GPU Clock MHz (Max)	Max DDR3 Rate	Max DDR4 Rate	Operating Temp Range Tj °C
RX-421BD	RE421BAAY43KA	12-35W	R7	4	2	2.1	3.4	8	800	2133	2400	0°C to 90°C
RX-418GD	RE418GAAY43KA	12-35W	R6	4	2	1.8	3.2	6	800			
RX-216GD	RE216GAAY23KA	12-15W	R5	2	1	1.6	3.0	4	8			
RX-421ND	RE421NAAY43KA	12-35W	-	4	2	2.1	3.4	-				
RX-216TD	RE216TAAY23KA	12-15W	-	2	1	1.6	3.0	-	-			
RX-416GD	RE416GATY43KA	15W	R6	4	2	1.6	2.4	6	720			

AMD RADEON GRAPHICS

AMD RX-421BD

Accelerated Processing Unit (CPU + GPU)



Source: http://www.amd.com/zh-hant/products/embedded-r-series-soc

PassMark PerformanceTest™

	Intel Core i5-6200U @ 2.30GHz	AMD Embedded R-Series RX-421BD
Price	Search Online	Search Online
Socket Type	FCBGA1356	BGA (FP4)
CPU Class	Laptop	Laptop
Clockspeed	2.3 GHz	2.1 GHz
Turbo Speed	Up to 2.8 GHz	Up to 3.4 GHz
# of Physical Cores	2 (2 logical cores per physical)	4
Max TDP	15W	35W
First Seen on Chart	Q2 2015	Q4 2015
# of Samples	2655	8
Single Thread Rating	1498	1591
CPU Mark	**4006**	**4857**

Intel 6th gen Skylake U

Win



Source: https://www.cpubenchmark.net/compare.php?cmp[]=2556&cmp[]=2655

Geekbench 4 CPU multi-core test

Intel Core i7-3540M 3.0 GHz (2 cores)	6128
Intel Core i7-4558U 2.8 GHz (2 cores)	6113
Intel Core i5-4278U 2.6 GHz (2 cores)	6103
AMD Embedded RX-421BD 1.7 GHz (4 cores)	6083
AMD A10-6800B 4.1 GHz (4 cores)	6072
Intel Core i5-4310M 2.7 GHz (2 cores)	6053
AMD A10-7870K 3.9 GHz (2 cores)	6040
Intel Atom C2750 2.4 GHz (8 cores)	6038
Intel Core i7-940XM 2.1 GHz (4 cores)	6032
Intel Core i7-920XM 2.0 GHz (4 cores)	6029
AMD A10-9700 3.5 GHz (4 cores)	6028
Intel Core i3-3245 3.4 GHz (2 cores)	6002

Other NAS with Intel® Pentium® D1508 dual-core processor

Multi-Core Score

5099

Source: https://browser.geekbench.com/processor-benchmarks

TVS-x73e front view

LEDs: status, LAN, USB, M.2 SSD1, M.2 SSD2, HDDs

IR receiver
(supports RM-IR004 remote control)

Tool-less installation of 3.5” HDDs or screw-secured 2.5” HDDs/SSDs



LCD with Enter & Select buttons for status display and operations

Power button

USB 3.1 gen 1 port & one-touch copy button

USB QuickAccess



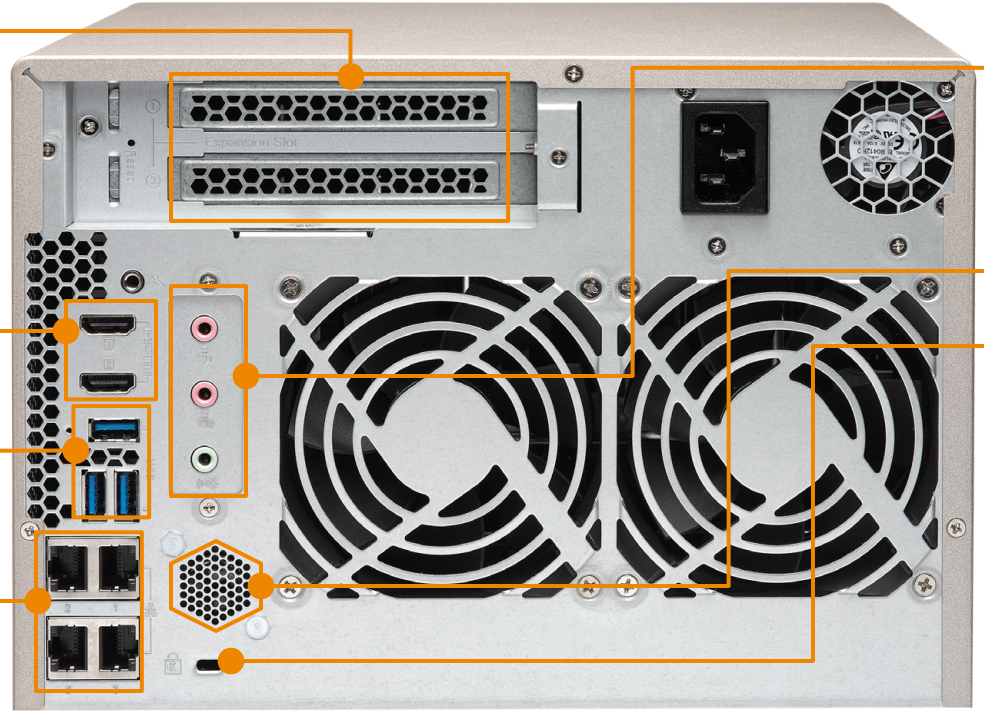
TVS-x73e rear view

2 x PCIe Gen 3 x4 slots
473e supports half-height cards
673e & 873e supports full-height cards

2 x 4K HDMI v1.4b

3 x USB 3.1 (Gen1)

4 x Gigabit LAN



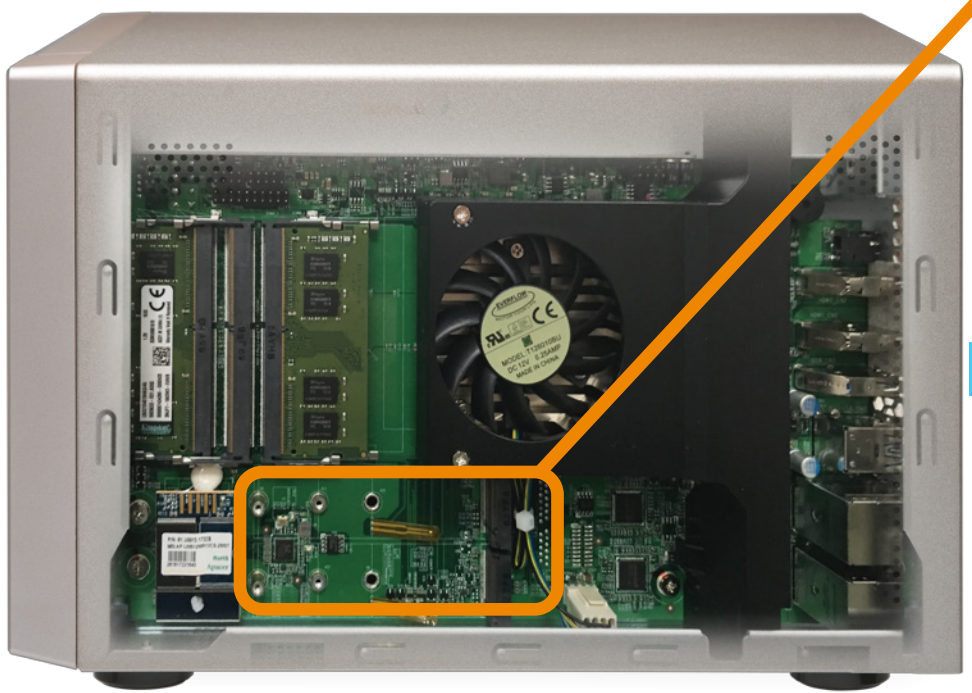
2 x 3.5mm Dynamic microphone input & 1 x 3.5mm Line Out

Speaker

Kensington security slot

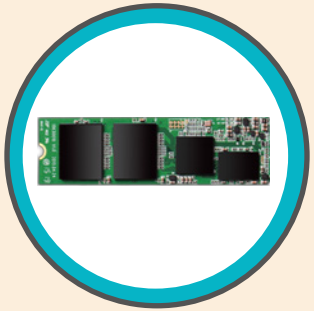


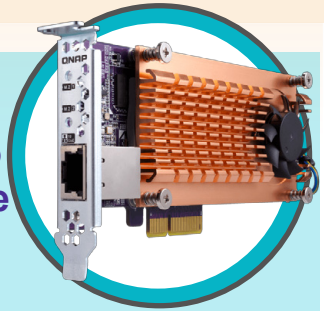
QM2 card enhances SSD cache & 10GbE



2 x M.2 2280 /2260 SATA 6Gb/s SSD slots

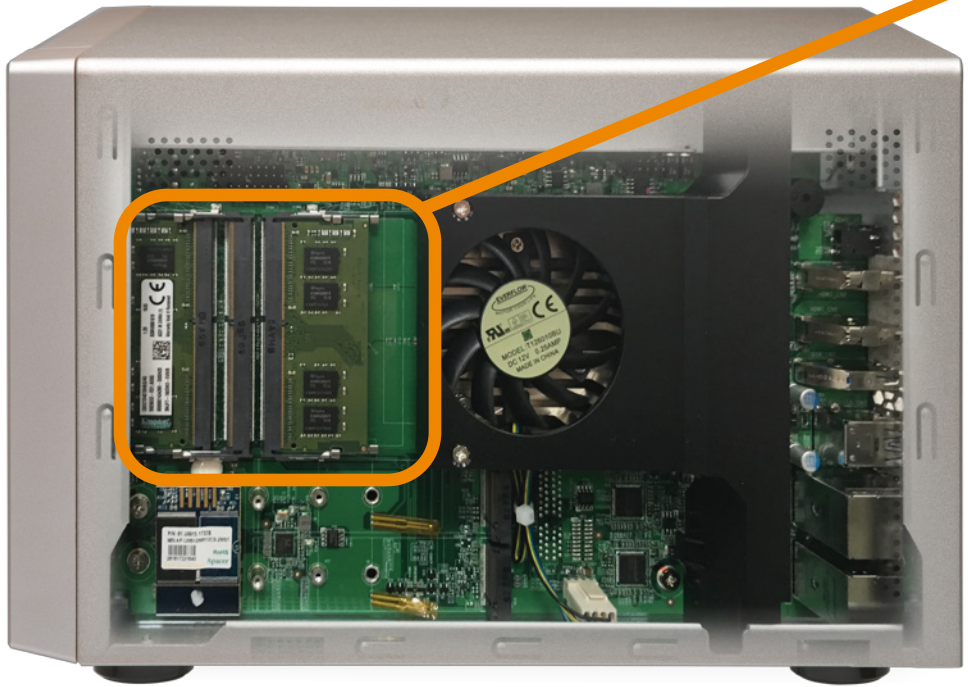
- SSD cache or storage space
- Qtier auto tiering
- Independent thermal sensors





QM2 card provides 2 x M.2 SSD, combined with the two M.2 SATA SSD slots on x73e to form a **RAID 5** pool/volume for better protection and performance.

Large 64GB DDR4 RAM for huge projects



4 x DDR4 SODIMM
Memory slots, max
4 x 16GB

4GB RAM (2 x 2GB)	8GB RAM (2 x 4GB)
TVS-473e-4G	TVS-473e-8G
TVS-673e-4G	TVS-673e-8G
TVS-873e-4G	TVS-873e-8G

USB QuickAccess for direct USB connection

Direct connection between PC/MAC & NAS

- 1st time setup
- Data transfer



Radeon™ R7 brings solid graphics power



Playback quality may vary due to factors including playback software, file formats, system usage, and available bandwidth.

QTS & virtualization increases productivity

All-new QTS 4.3.4 Storage & Snapshot Manager, and multimedia management



Supports Windows/Linux VMs & containers

Virtualization Station

Container Station

24/7 surveillance center

Surveillance Station 5.1
Free: 4
Max: 72 (optional license purchase)

NEW

QVR Pro Beta
Up to 124 free channels during the beta period

QUSBCam2
Up to 1080p USB webcam recording



* Refer to QNAP website for QVR Pro channel information when it becomes official.

TVS-x73e Live Demo

Upgrade memory & Install M.2 SATA 6Gb/s SSD

1. Remove the top cover
2. Upgrade the components

Install QM2 & 10 GbE PCIe expansion cards

1. Remove the top cover
2. Move aside the power supply unit
3. Install the PCIe cards

Why 2 PCIe slots are better than 1

- **QNAP 6-bay TVS-673e**

Dual PCIe slots, can support QM2 M.2 SSD & 10GbE cards. Not to mention the onboard 2 x M.2 SATA SSD slots



- **Synology 6-bay DS3018xs**

One PCIe slot have to give up M.2 SSD or 10GbE



Test #1: iSCSI 10GbE Performance

- **QNAP TVS-673e**
  HDD: 6 x 2.5” SSDs, QTS: 4.3.4.0427
  PCIe #1: 2-port 10GbE SFP+ card
  (LAN-10G2SF-MLX)

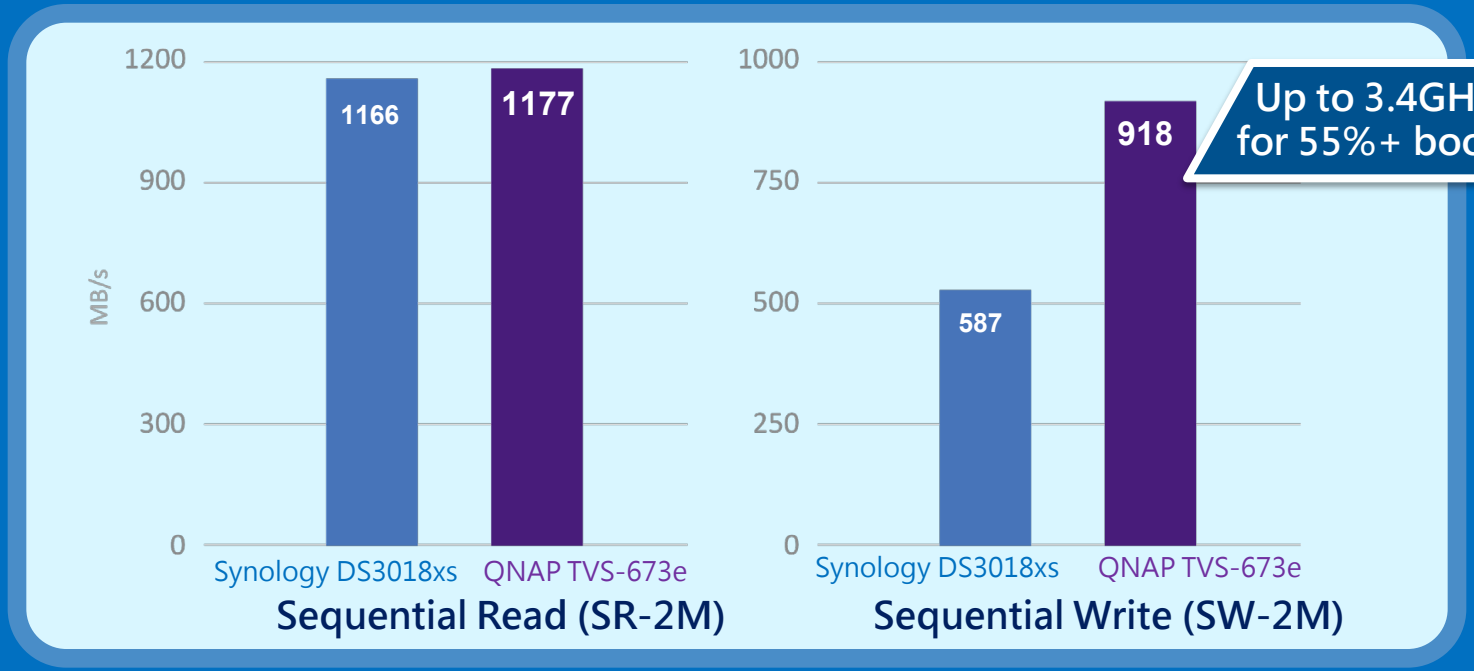


- **Synology DS3018xs**
  HDD: 6 x 2.5” SSDs, DSM 6.1.4-15127
  PCIe: 2-port 10GbE SFP+ card
  (E10G17-F2)



Test #1: iSCSI 10GbE Performance

IOmeter iSCSI Performance



Test in the QNAP lab.
Environment: NAS with 6 x Intel SSDSC2BB240G4 RAID 5, 8GB RAM

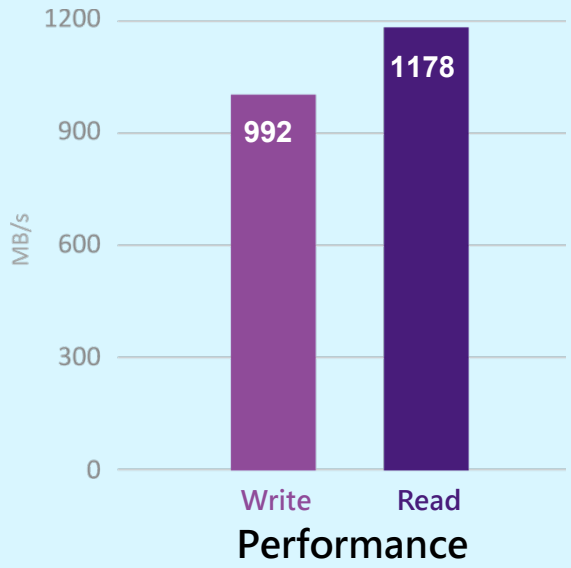
Client: Intel Core i7-4700 3.4GHz, RAM cache, Windows 10
IOmeter: Max Disk Size: 67108864, 20-workers, 1-outstanding, 30-sec ramp up time, 3-minute run time.

Test #2: Qtier Accelerating 10GbE

- **QNAP TVS-673e**
  - ✓ HDD: 3 x 1TB SATA HDDs, RAID 5
  - ✓ M.2 SATA SSD port: Install 2 x 256GB M.2 SATA SSDs
  - ✓ PCIe #1: 2-port M.2 SATA SSD card (QM2-2S)
    Install 2 x 256GB M.2 SATA SSDs
  - ✓ PCIe #2: 2-port 10GbE SFP+ card (LAN-10G2SF-MLX)
  - ✓ 4 x M.2 SSDs for Qtier RAID 5 tier



With SATA HDDs, M.2 SSDs and Qtier for the best performance



360° Panorama Photos & Videos



Trend of 360 ° panoramic photo and video

- Record surrounding scenes
- Easily take 360-degree photos
- Wide-angel group picture
- More surreal views

Panorama mode, experience a whole new world

NEW

360-degree view in panoramic mode, Keep all the good memories

Support panoramic mode in File Station, Photo Station or Video Station

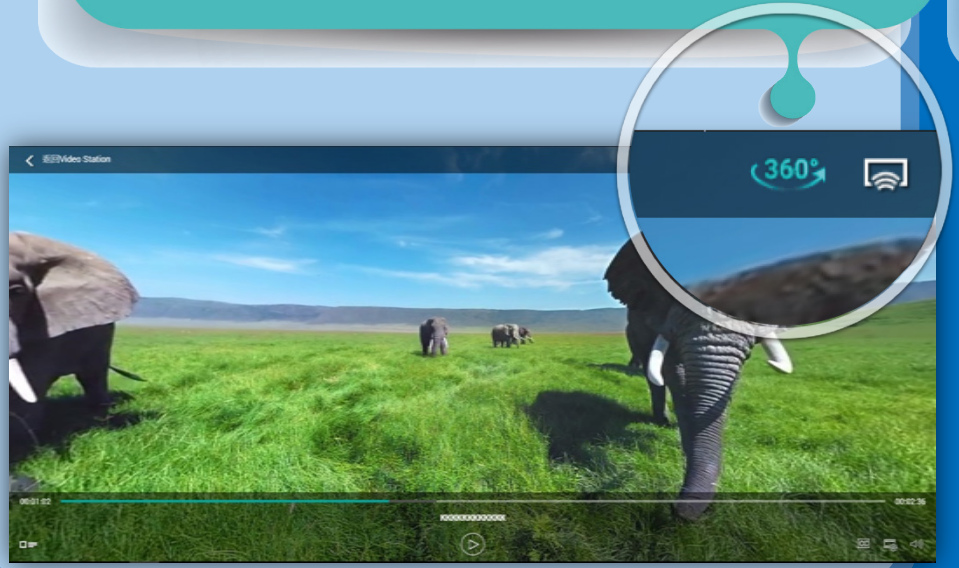




- Google Cardboard
- Google Daydream View
- Samsung Gear VR
- Xiaomi VR Play 2

360° Panorama Mode

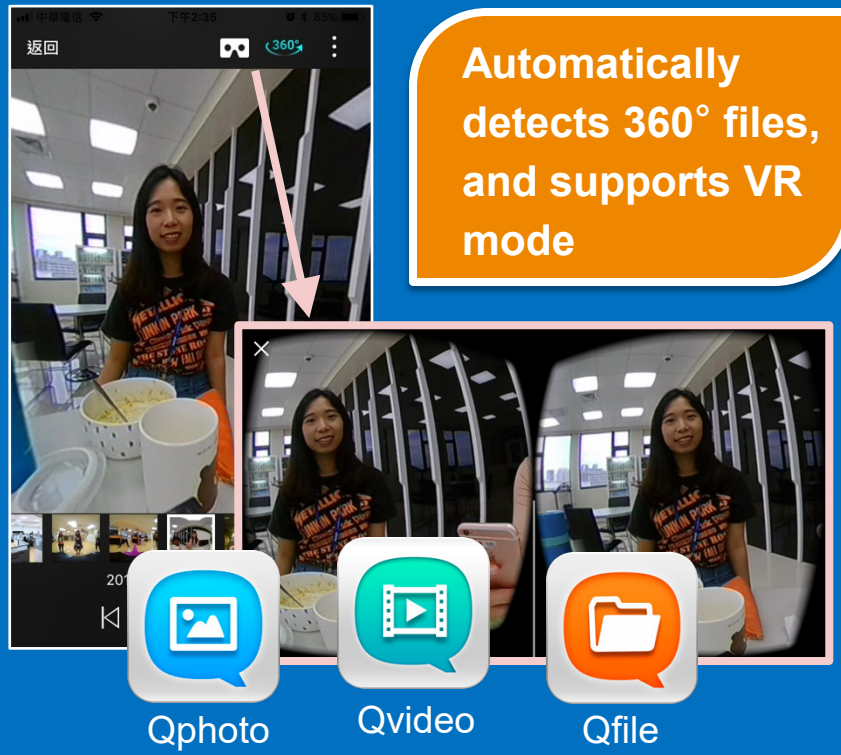
Supports manually switching to **360-degree panorama mode**



Video Station will automatically recognizes videos taken with a 360-degree camera and automatically enables panorama mode when browsing



360° Panorama mode in mobile apps





360° photo/video Demo



Expandable & more economical

	TVS-x73e	TVS-x73
Processor	AMD RX-421BD quad-core 2.1 GHz, Turbo Core to 3.4 GHz	
Memory	4GB, 8GB (Easily upgradeable to 64GB)	8GB, 16GB, 64GB
M.2 SSD Port	2 x M.2 2280/2260 SATA 6Gb/s port	
PCIe Slots	2 x PCIe 3.0 x4 (Upgrade NAS functionality at anytime)	2 x PCIe 3.0 x4 (Bundle a USB 3.1 card)
IR Remote Control	Optional	Budled
HDMI Port	2 x HDMI v1.4b 4K UHD, 30Hz	



Thank you!

