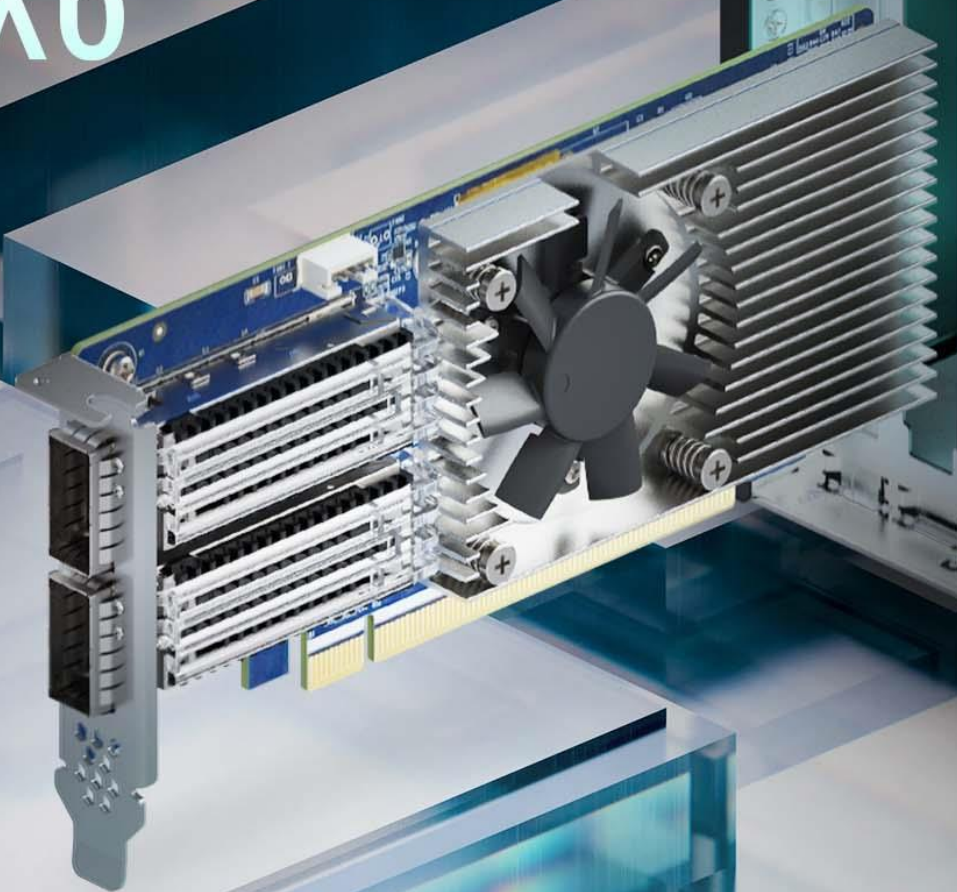QNAP®

QXG-100G2SF-CX6

Dual-port 100GbE network expansion card provides up to 200GbE total throughput to boost network efficiency
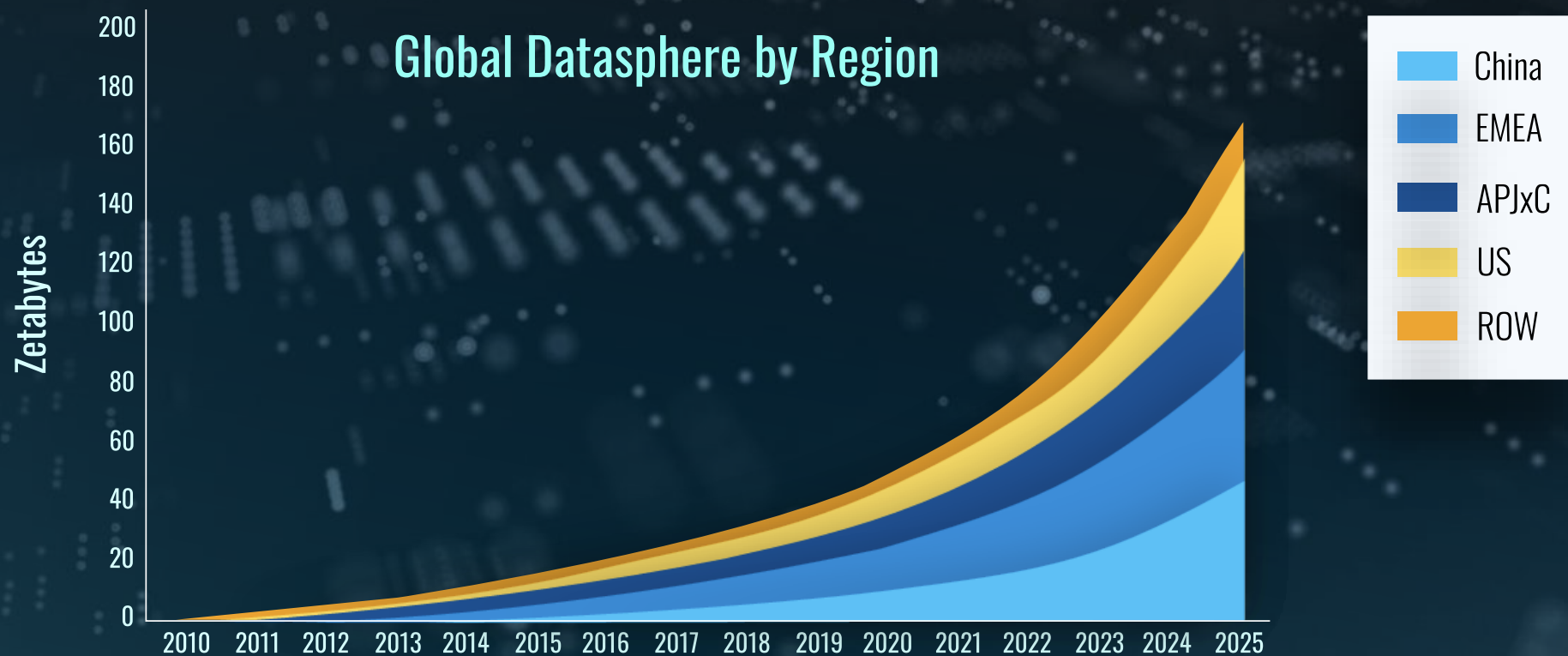

100GbE QSFP28 x2

NVIDIA®

4.0 PCIe

Smart NIC

SR-IOV

The amount of data is growing rapidly, you need fast and secure network transmission

IDC estimates that by 2025, the total amount of new data generated in the world will reach 175ZB. Secure, advanced and fast network transmission will be your must-have environment to accelerate and protect the cloud and data center workload.

Global Datasphere by Region

Zetabytes

Legend: China, EMEA, APJxC, US, ROW

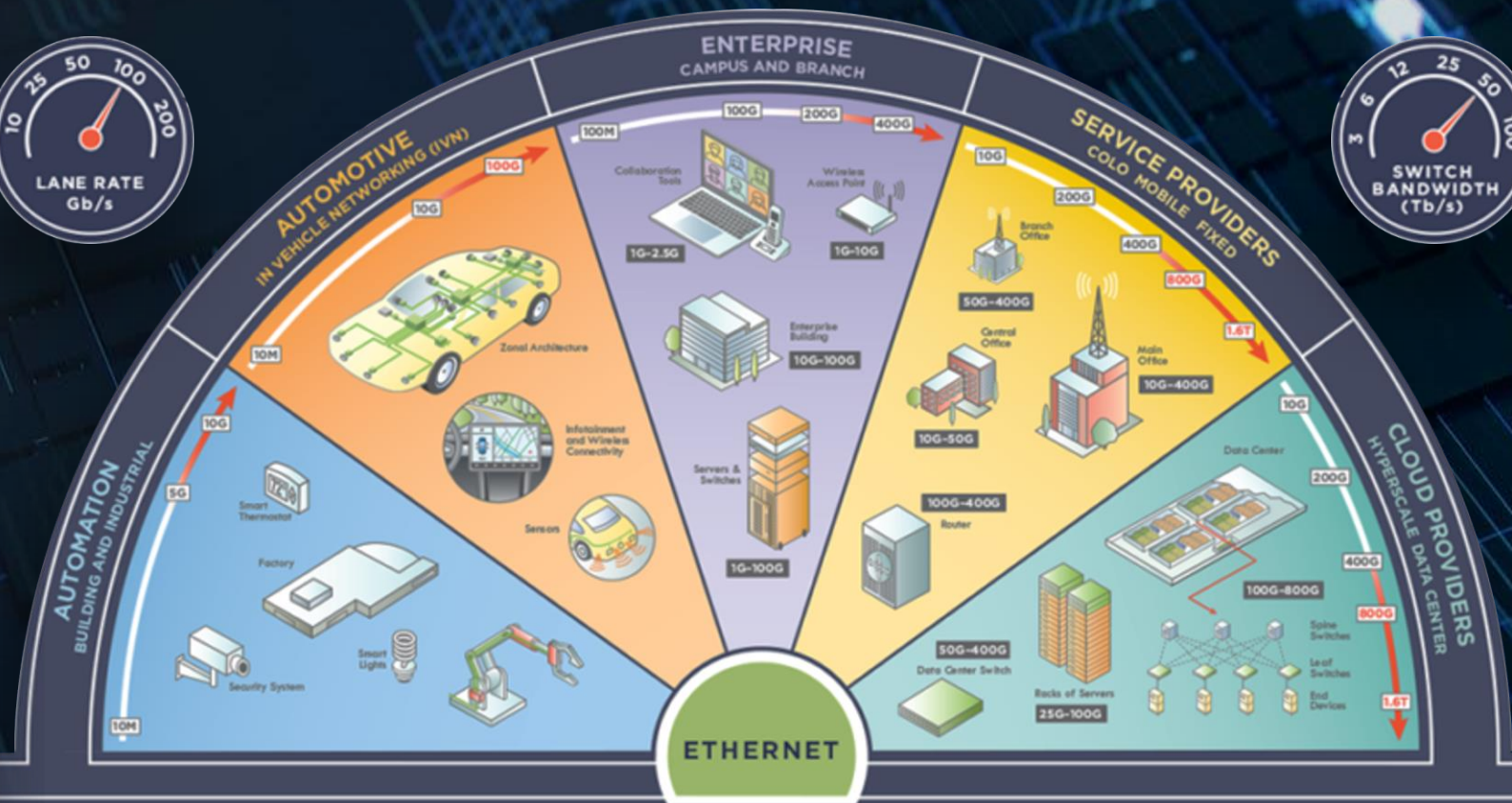Source：IDC's Data Age 2025 study, sponsored by Seagate

High-speed Internet has become indispensable for enterprise users

According to the data of the Ethernet Alliance in 2022, with the continuous advancement of technology, the network speed demand of enterprise users has reached as high as 200Gbps.

Source :
Ethernet Alliance © 2022

200GbE networking capability, Hardened virtualization and encryption acceleration

NVIDIA
Mellanox ConnectX-6 Dx

200GbE
Total bandwidth

RoCE
V1/V2 supported

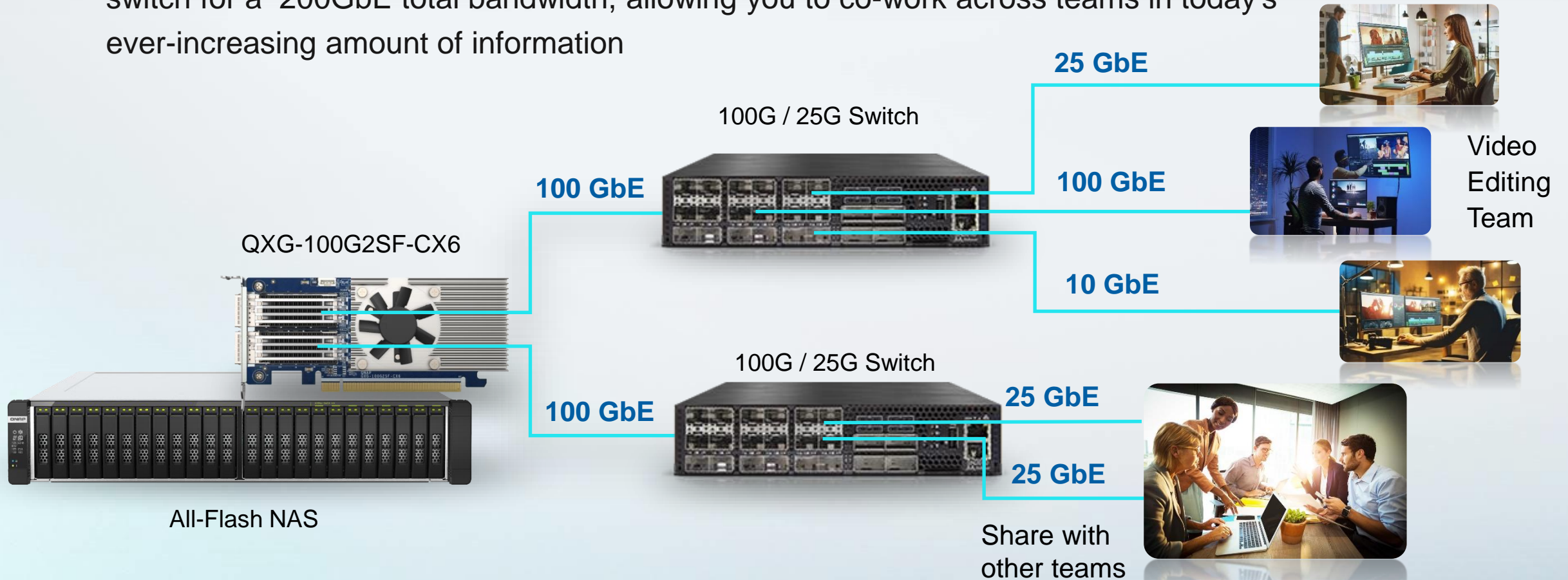## X16 PCIe
Gen4 and Gen3

Dual port
100GbE QSFP28

SR-IOV

# Through the QXG-100G2SF-CX6 , we can enjoy 200GbE total bandwidth, under 4K/8K video editing requirement

Connect the two 100GbE ports on the QXG-100G2SF-CX6 to a 100GbE or faster network switch for a 200GbE total bandwidth, allowing you to co-work across teams in today's ever-increasing amount of information

QXG-100G2SF-CX6

All-Flash NAS

100G / 25G Switch

100G / 25G Switch

100 GbE

100 GbE

25 GbE

100 GbE

10 GbE

25 GbE

25 GbE

Video Editing Team

Share with other teams

Direct 100GbE network transmission, Allows two workstations to work independently and efficiently

Directly connect the two 100GbE network ports on the QXG-100G2SF-CX6 to workstations

- Allowing different workstations to operate independently in a high-speed network environment and enjoy efficient transmission and storage services

- Also saves the cost of network switches

QXG-100G2SF-CX6

100 GbE

100 GbE
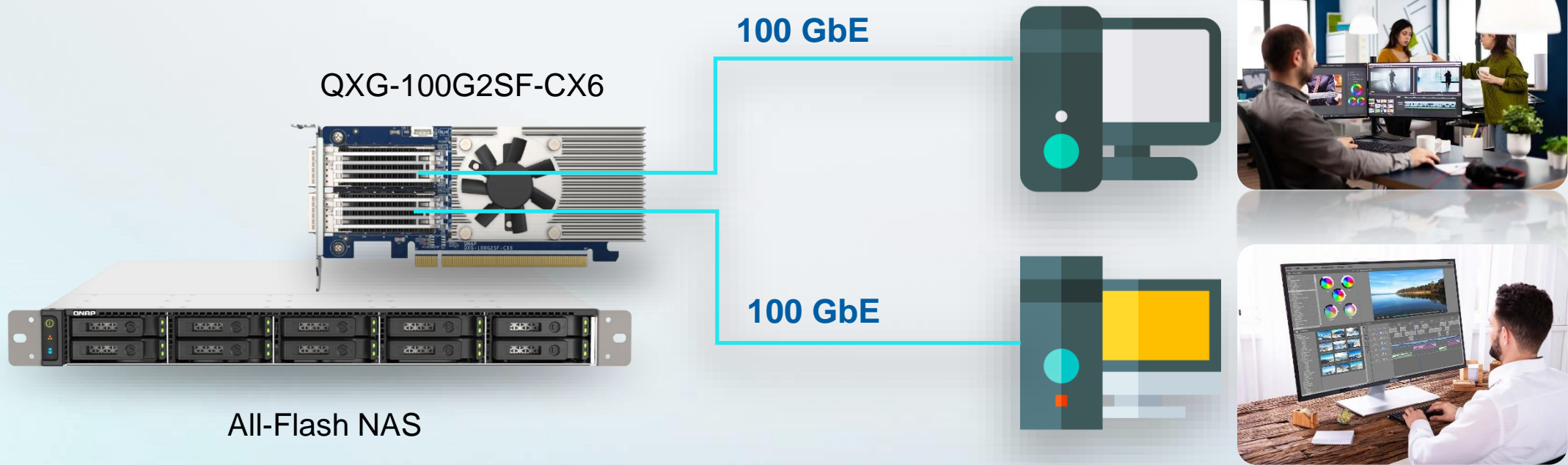
All-Flash NAS

Supports QNAP All-Flash Array Series
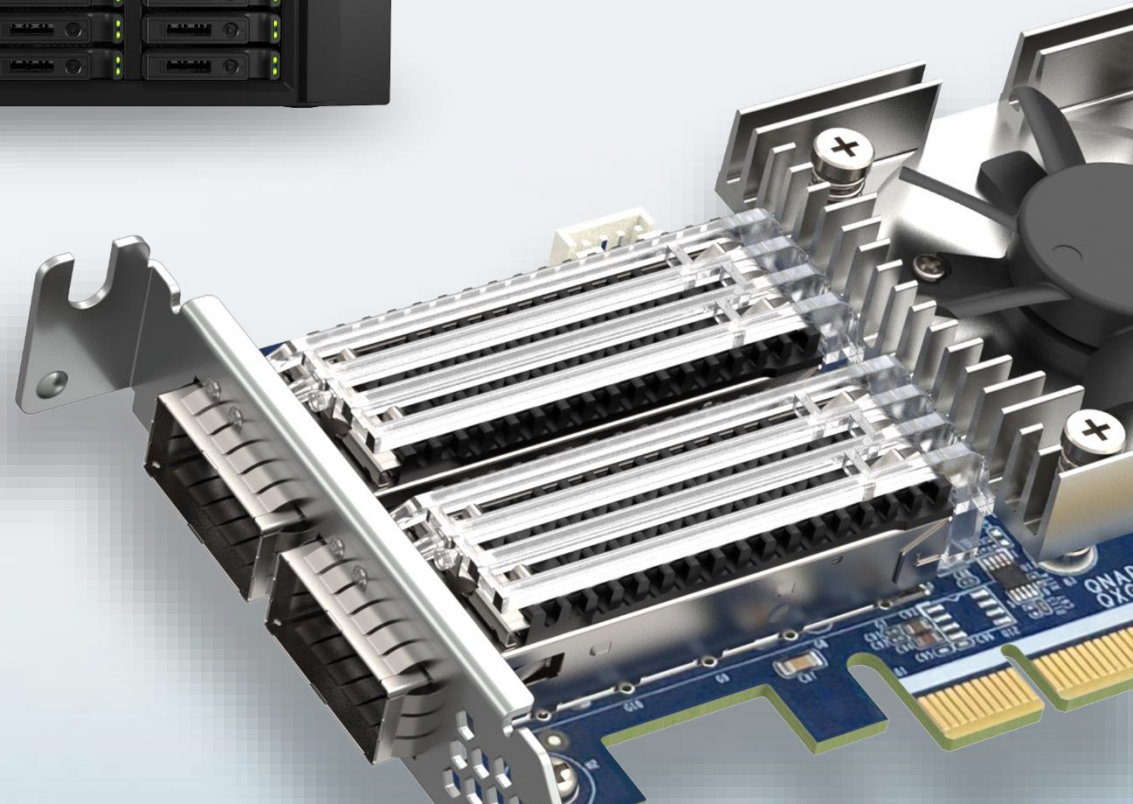

TS-h2490FU

TS-h1290FX

TS-h1090FU

TDS-h2489FU

TS-h1090FU NAS SKUs
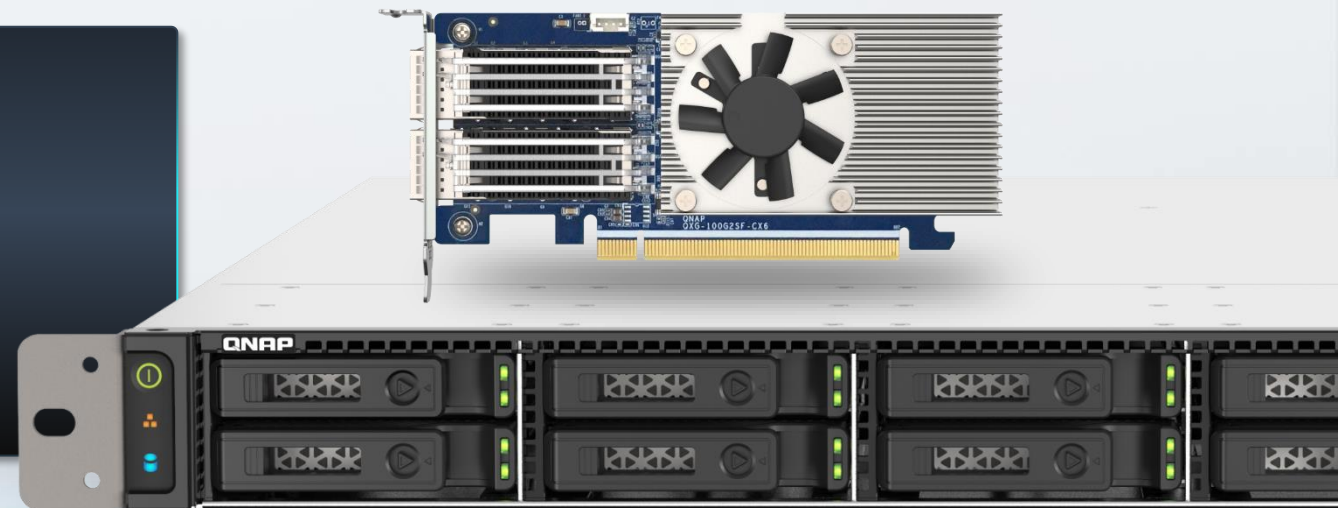
TS-h1090FU-7232P-64G

- AMD EPYC 8 C / 16 T, 3.1 GHz (Max. 3.2GHz)

- 64 GB DDR4 RDIMM ECC Memory (8 x 8GB)

- 2 x SFP28 25GbE ports +2 x 2.5 GbE ports

TS-h1090FU-7302P-256G (By Request)

- AMD EPYC 16 C / 32 T, 3.0 GHz (Max. 3.3GHz)

- 256 GB DDR4 RDIMM ECC Memor (8 x 32GB)

- 2 x SFP28 25GbE ports +2 x 2.5 GbE ports

TS-h1090FU-7302P-128G

- AMD EPYC 16 C/ 32 T, 3.0 GHz (Max. 3.3GHz)

- 128 GB DDR4 RDIMM ECC Memory (8 x 16GB)

- 2 x SFP28 25GbE ports +2 x 2.5 GbE ports

TS-h2490FU NAS SKUs

TS-h2490FU-7232P-64G

- AMD EPYC 8 C/16 T, 3.1 GHz (Max. 3.2GHz)
- 64GB DDR4 RDIMM ECC Memory (8 x 8GB)
- 2 x SFP28 25GbE ports (25GbE/10GbE/1GbE)

TS-h2490FU-7302P-256G (By Request)

- AMD EPYC 16 C/32 T, 3.0 GHz (Max. 3.3GHz)
- 256GB DDR4 RDIMM ECC Memory (8 x 32GB)
- 2 x SFP28 25GbE ports (25GbE/10GbE/1GbE)

TS-h2490FU-7302P-128G

- AMD EPYC 16 C/32 T, 3.0 GHz (Max. 3.3GHz)
- 128GB DDR4 RDIMM ECC Memory (8 x 16GB)
- 4 x SFP28 25GbE ports (25GbE/10GbE/1GbE)
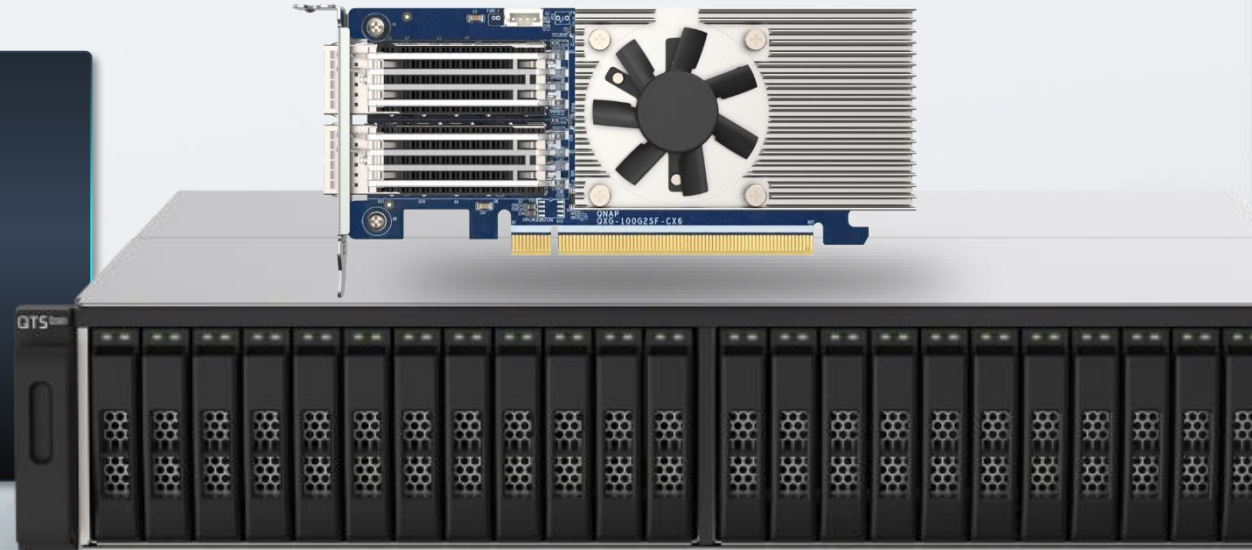
TDS-h2489FU NAS SKUs

TDS-h2489FU-4309Y-64G

- 2 x Intel Xeon Silver 4309Y **8C/16T**, **2.8 GHz** (Max. 3.6GHz)
- **64GB** DDR4 RDIMM ECC Memory (8 x 8GB)
- **2** x SFP28 25GbE ports + 4 x 2.5 GbE ports

TDS-h2489FU-4314-256G

- 2 x Intel Xeon Silver 4314 16C/32T, 2.4 GHz (Max. 3.4GHz)
- **256GB** DDR4 RDIMM ECC Memory (8 x 32GB)
- **2 x SFP28 25GbE ports + 4 x 2.5 GbE ports**

TDS-h2489FU-4314-128G

- 2 x Intel Xeon Silver 4314 **16C/32T**, **2.4 GHz** (Max. 3.4GHz)
- **128GB** DDR4 RDIMM ECC Memory (8 x 16GB)
- **2** x SFP28 25GbE ports + 4 x 2.5 GbE ports

TDS-h2489FU-4314-512G (By Request)
### TDS-h2489FU-4314-1TB (By Request)

QuTS hero operating system

Kernel 5.10 LTS

The QuTS hero operating system is based on the ZFS file system. It can provide the data integrity, safety, and efficiency required for all flash storage.

User friendly interface

QuTS hero combines the app-based QTS with a 128-bit ZFS file system to provide flexible storage management, comprehensive data protection and optimized performance to meet the needs of business-critical applications.
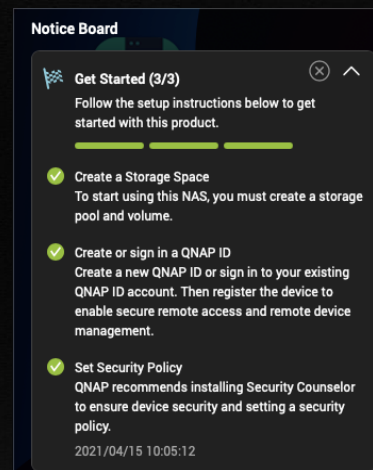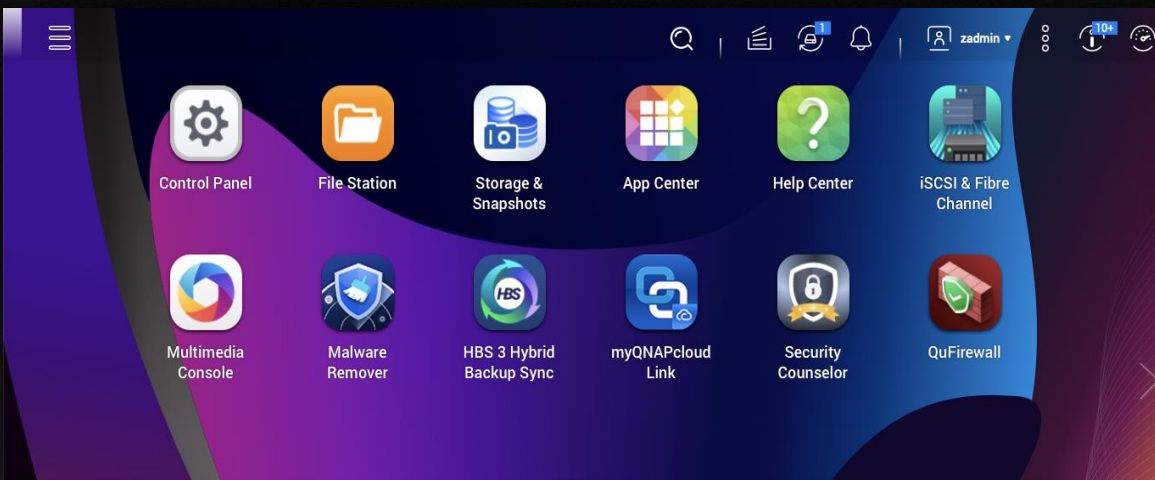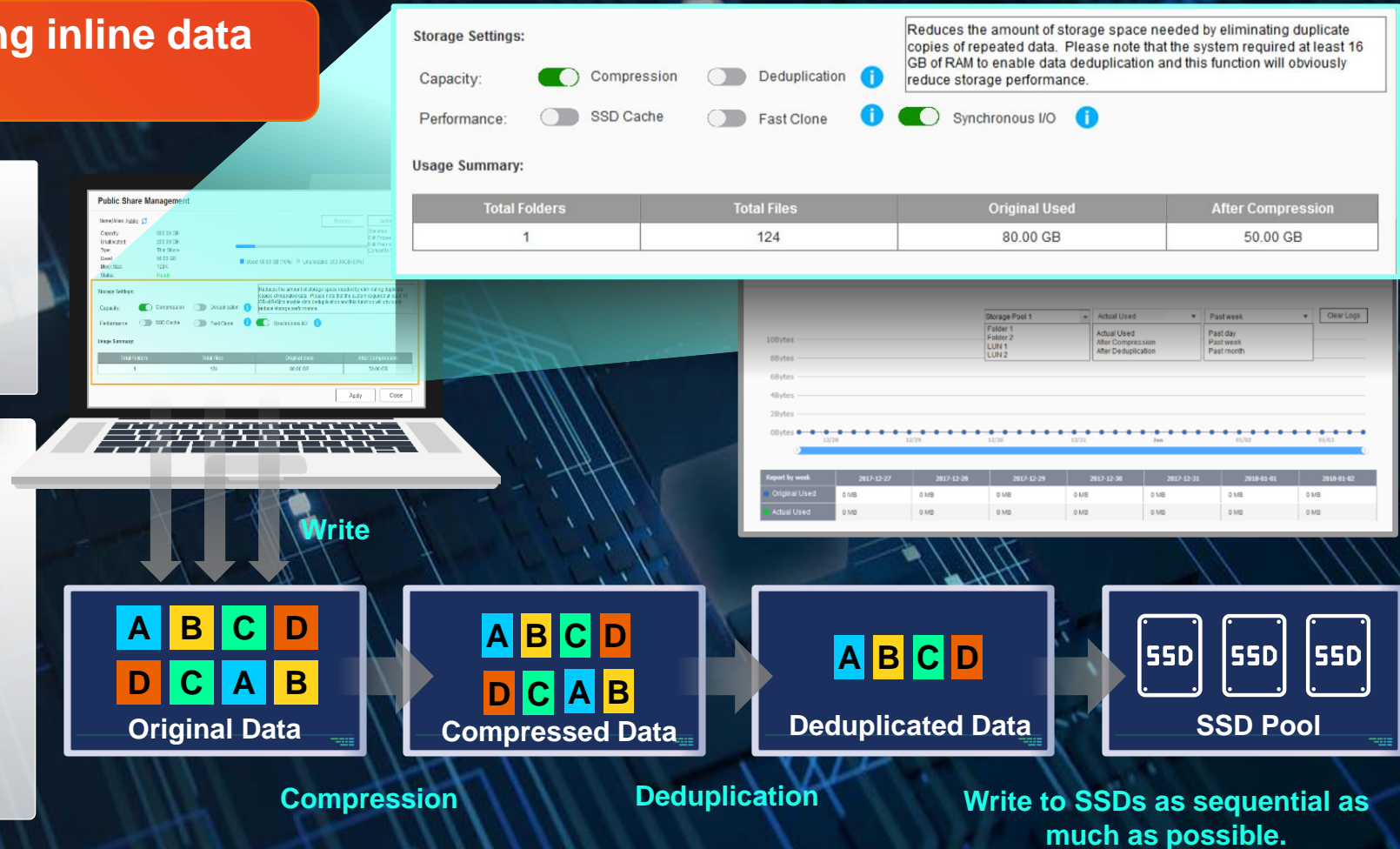
NAS & QuTS hero O.S. support powerful data reduction technologies to extend SSD endurance

Only available when during inline data process before writing

ZFS file system with inline deduplications and compresstion feature

It's the best choice to pair with the all-flash and SSD storage because it reduces the data size and pattern that need to be written to the SSD directly.


Storage Settings:

Capacity: ● Compression ○ Deduplication ⓘ   Reduces the amount of storage space needed by eliminating duplicate copies of repeated data. Please note that the system required at least 16 GB of RAM to enable data deduplication and this function will obviously reduce storage performance.

Performance: ○ SSD Cache ○ Fast Clone ⓘ ● Synchronous I/O ⓘ

Usage Summary:

Total Folders	Total Files	Original Used	After Compression
1	124	80.00 GB	50.00 GB

Write

Original Data

Compressed Data

Deduplicated Data

SSD Pool

Compression

Deduplication

Write to SSDs as sequential as much as possible.

SnapSync

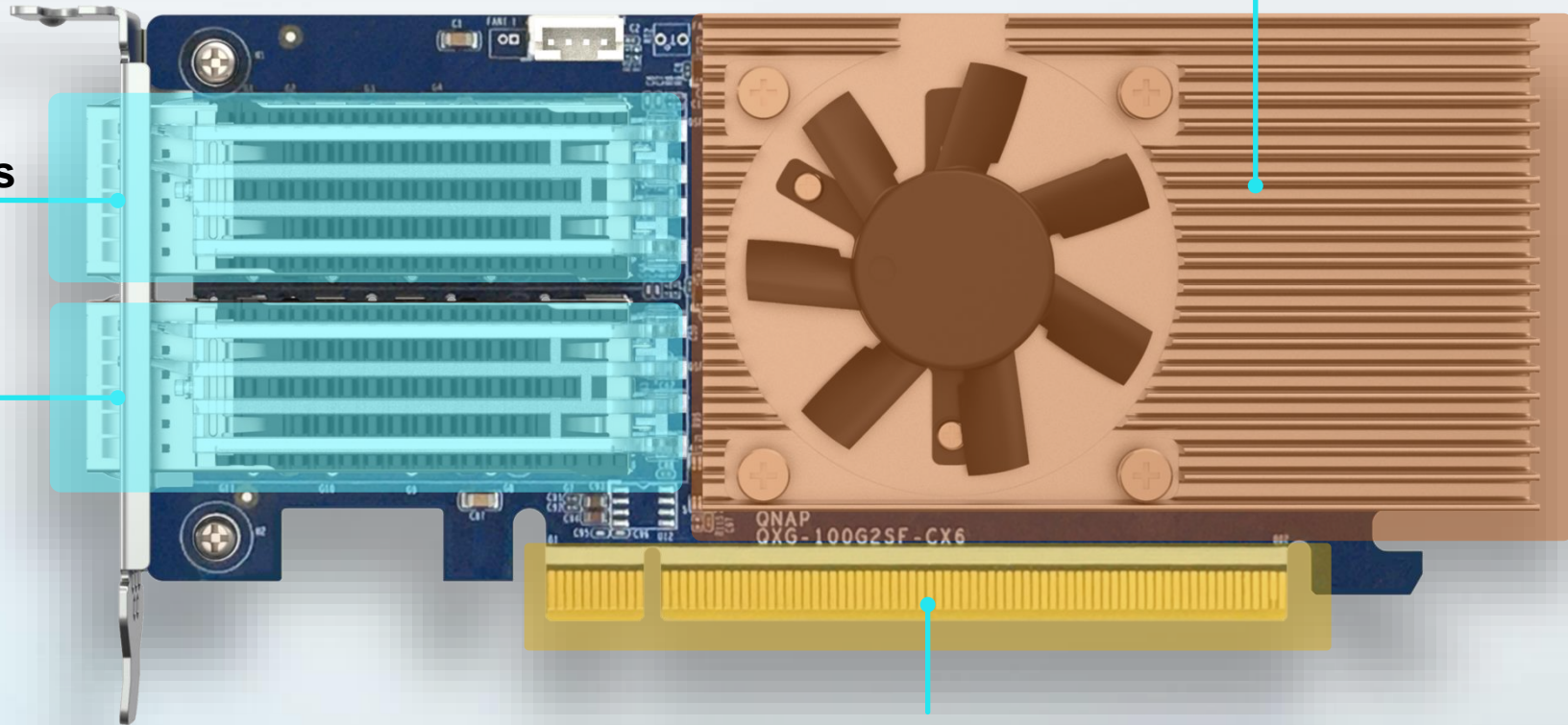The most cost-effective backup, data protection, and disaster recovery solution
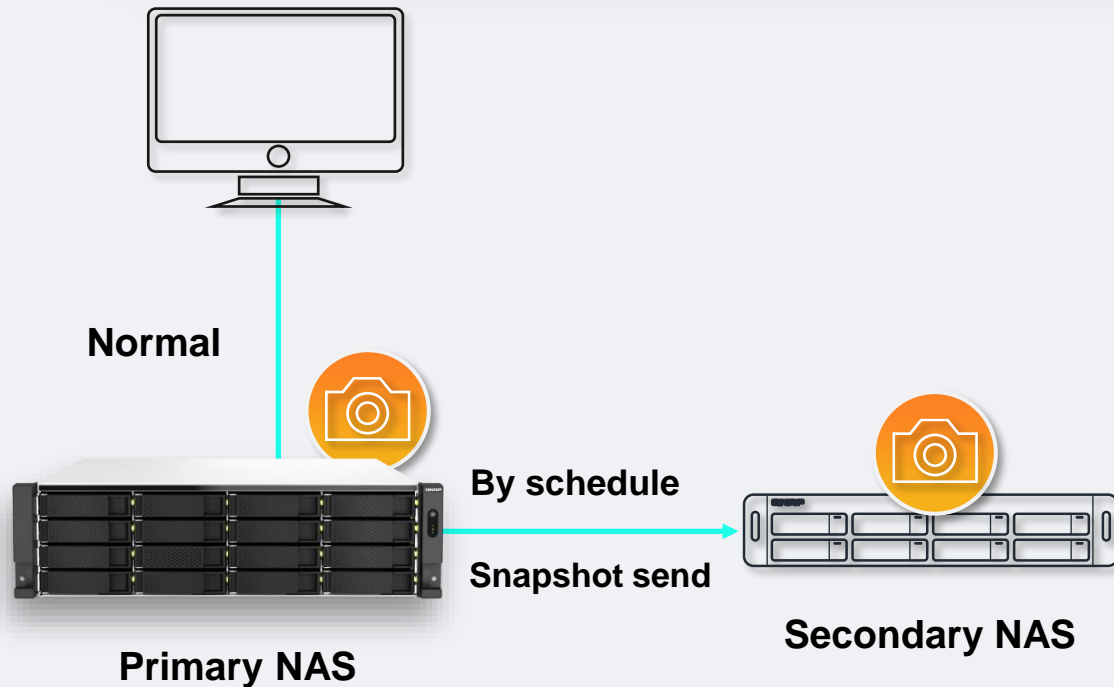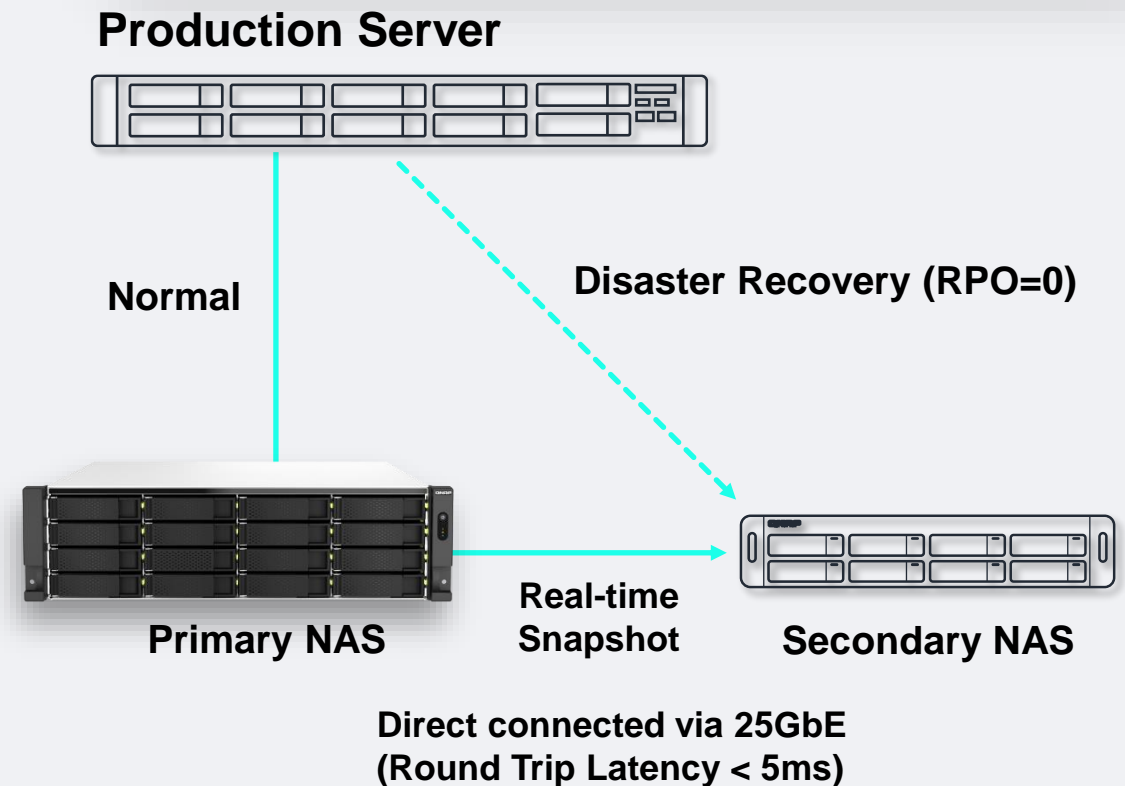
QXG-100G2SF-CX6 view

A high-performance, active cooling module

2 x QSFP28 connectors

PCI Express 4.0 x16

(backwards compatible with PCI Express 3.0)

SFP, SFP+, SFP28, QSFP28 Transceivers and Optional Accessory CAB-DAC15M-QSFP28

| 1 GbE	10 GbE	25 GbE	40 GbE	100 GbE
SFP	SFP+	SFP28	QSFP+	QSFP28

The QXG-100G2SF-CX6 network expansion card can be used with high-speed network switches, and can be directly connected to 100GbE ports through two CAB-DAC15M-QSFP28 to create up to 200GbE network bandwidth

CAB-DAC15M-QSFP28

QXG-100G2SF-CX6 low-profile design for general chassis including full-height/low-profile brackets

Pre-installed low-profile bracket

Full-height bracket included

158.8mm

68.9mm

QNAP
QXG-100G2SF-CX6
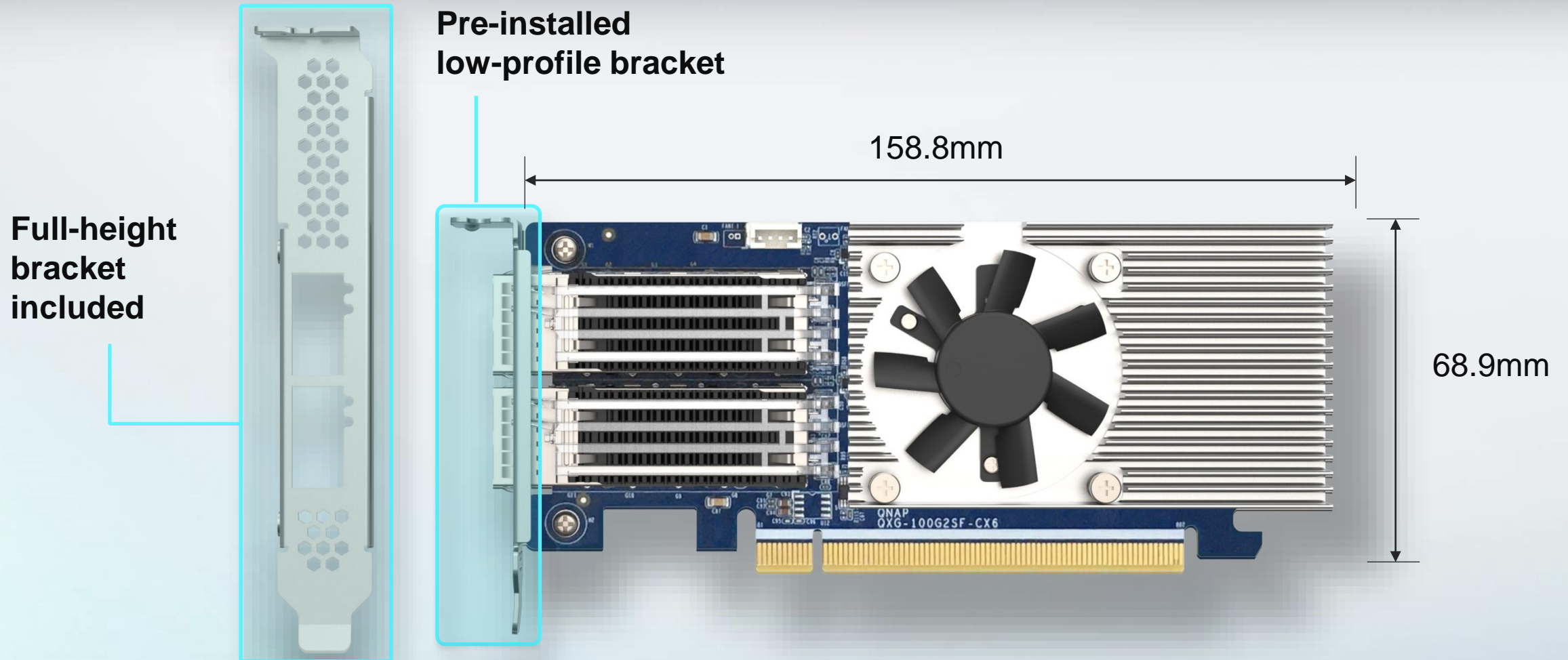
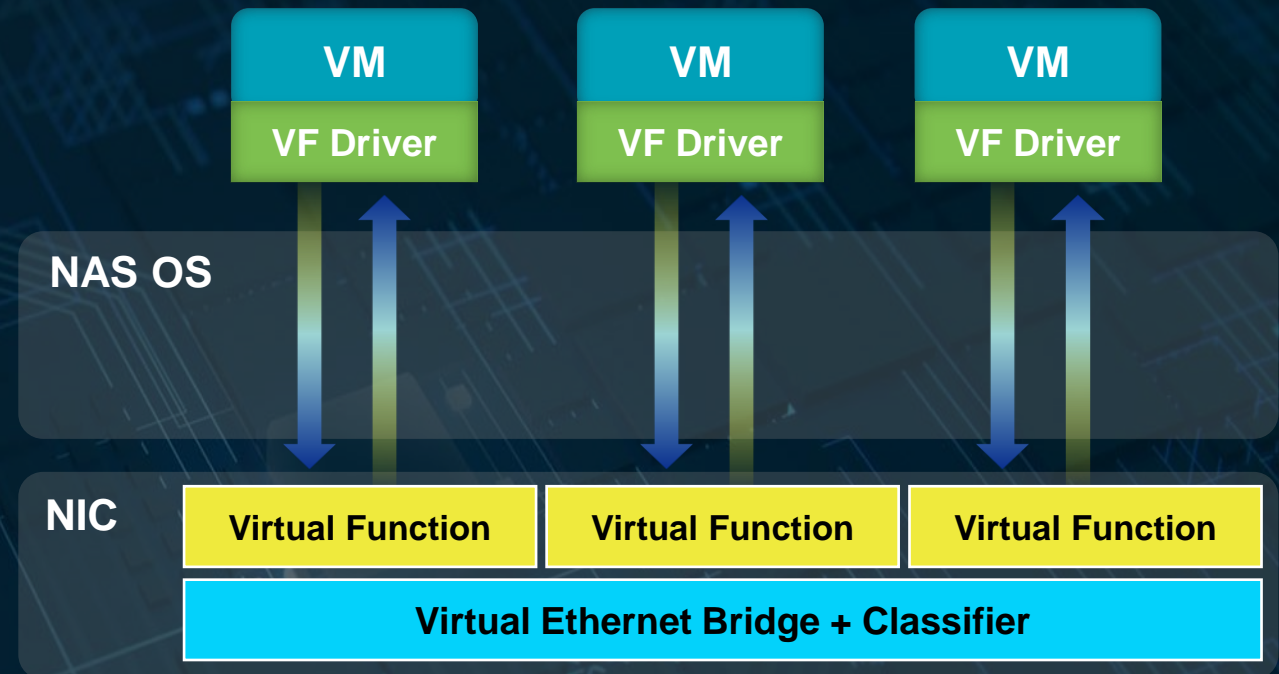# Supports SR-IOV for Improved Network Efficiency

Smart NIC SR-IOV (Single Root I/O Virtualization)

By installing an SR-IOV compatible PCIe SmartNIC, you can allocate bandwidth resources from a physical network card directly to VMs. With traffic bypassing the Hypervisor vSwitch, it helps enhance I/O throughout and network efficiency, ensuring reliable VM applications and reduced CPU overheads.

1. SR-IOV is supported by specific QNAP NAS models and should work with SR-IOV compatible adapters. 。
https://www.qnap.com/en/software/virtualization-station
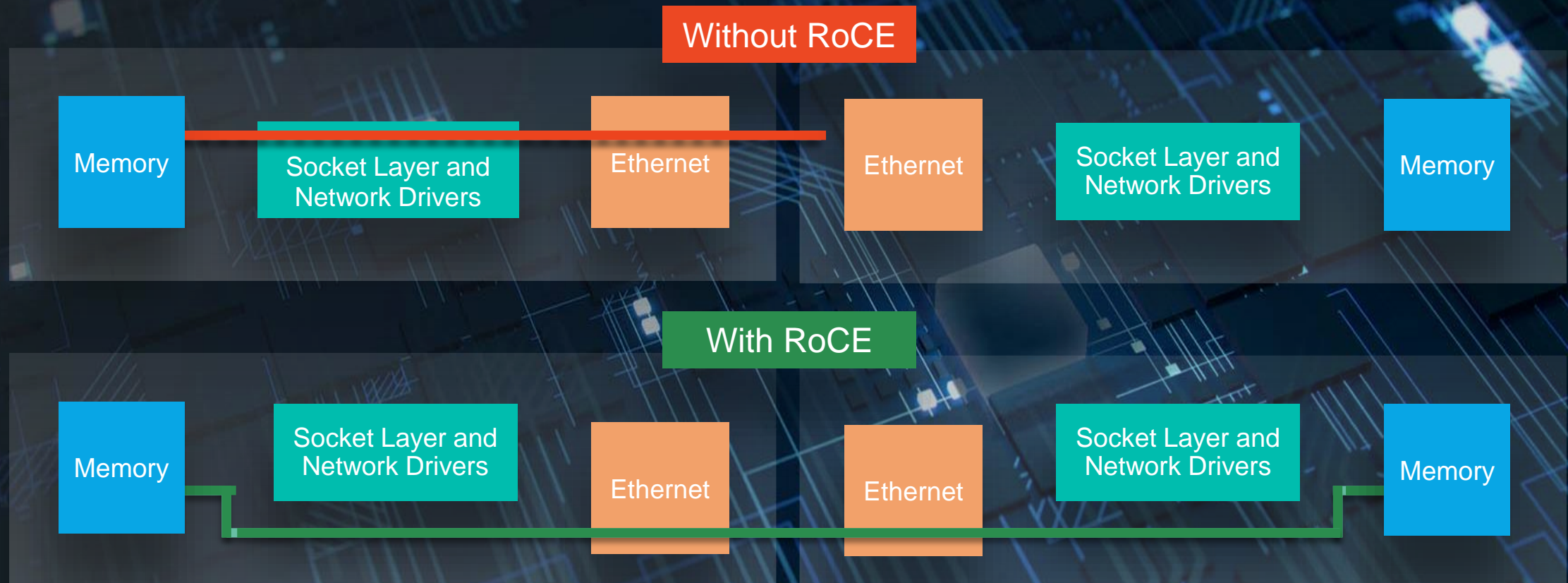2. Both the NAS that installs the QXG-100G2SF-CX6 and the receiving-end devices must support RoCE. If the receiving devices do not support RoCE, it will use TCP/IP.

VM	VM	VM
VF Driver	VF Driver	VF Driver

NAS OS

NIC

Virtual Function	Virtual Function	Virtual Function

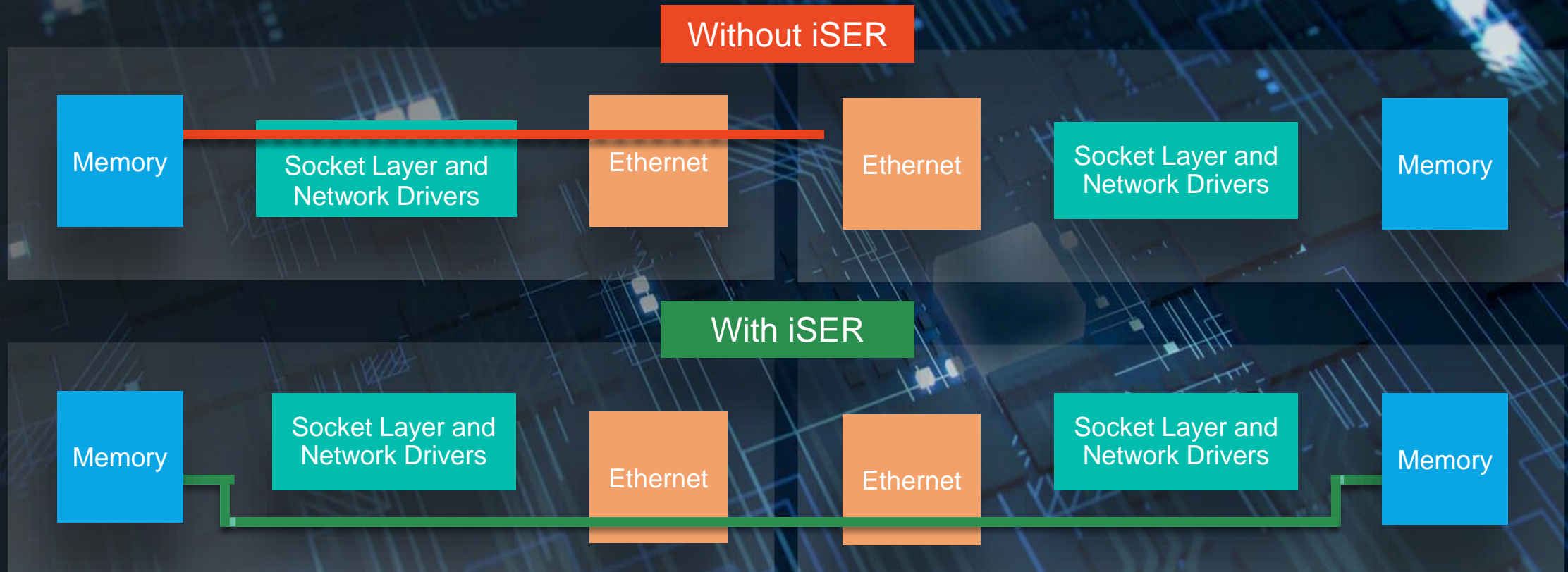**Virtual Ethernet Bridge + Classifier**

Supports RoCE for Reduced Latency and Enhanced Performance for VM Environments

The QXG-100G2SF-CX6 supports RoCE, which can access a network directly in RAM to effectively reduce latency and enhance performance and efficiency for VMware® virtualization environments.

Without RoCE

| Memory | Socket Layer and Network Drivers | Ethernet | Ethernet | Socket Layer and Network Drivers | Memory |

With RoCE

| Memory | Socket Layer and Network Drivers | Ethernet | Ethernet | Socket Layer and Network Drivers | Memory |

Supports iSER for Improved VM Performance

The QXG-100G2SF-CX6 supports iSER, combining iSCSI and RDMA (Remote Direct Memory Access), which can bypass general network drivers, the socket layer, and to directly enter memory buffers of the server and storage. Response time is also reduced to ensure service quality of the NAS.
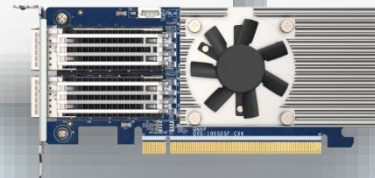
Without iSER

Memory	Socket Layer and Network Drivers	Ethernet	Ethernet	Socket Layer and Network Drivers	Memory

With iSER

Memory	Socket Layer and Network Drivers	Ethernet	Ethernet	Socket Layer and Network Drivers	Memory

QXG-100G2SF-CX6
Supports nearly 200 Gbps of total bandwidth

QXG-100G2SF-E810
1 x 100GbE iPerf Test

11,905 MB/s **11,894 MB/s**

MB/s	
14100	
12100	
10100	
8100	
6100	
4100	
2100	
100	

Read 寫入
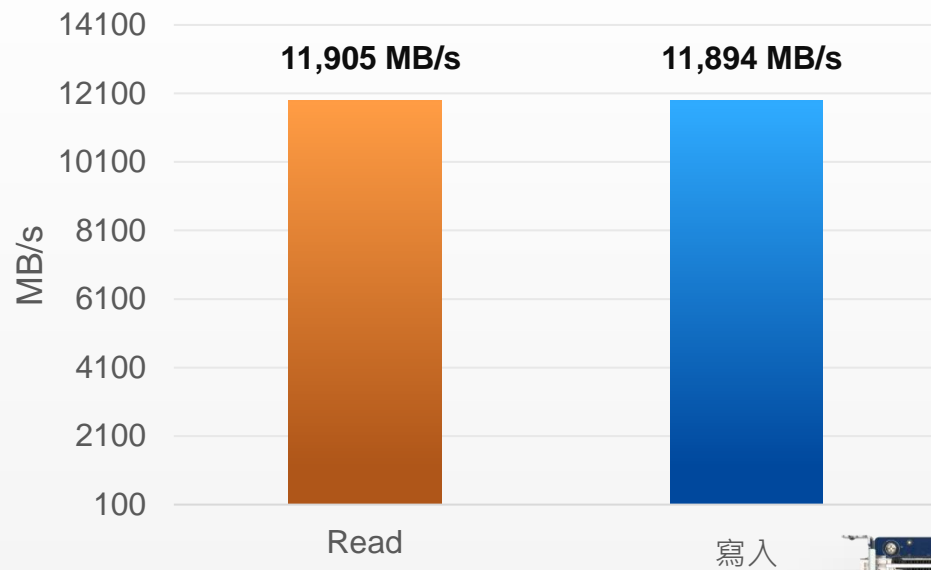
QXG-100G2SF-CX6
2 x 100GbE RDMA Performance

23,367 MB/s **23,380 MB/s**

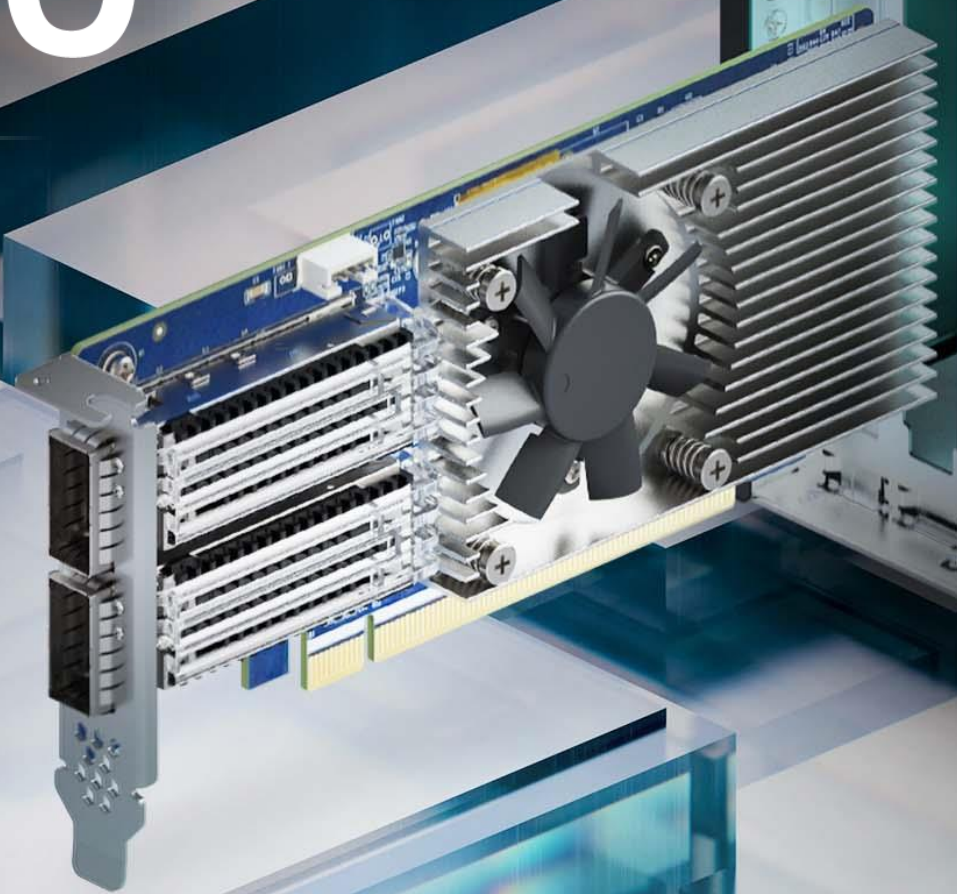| MB/s	
25100	
20100	
15100	
10100	
5100	
100	

Read Write
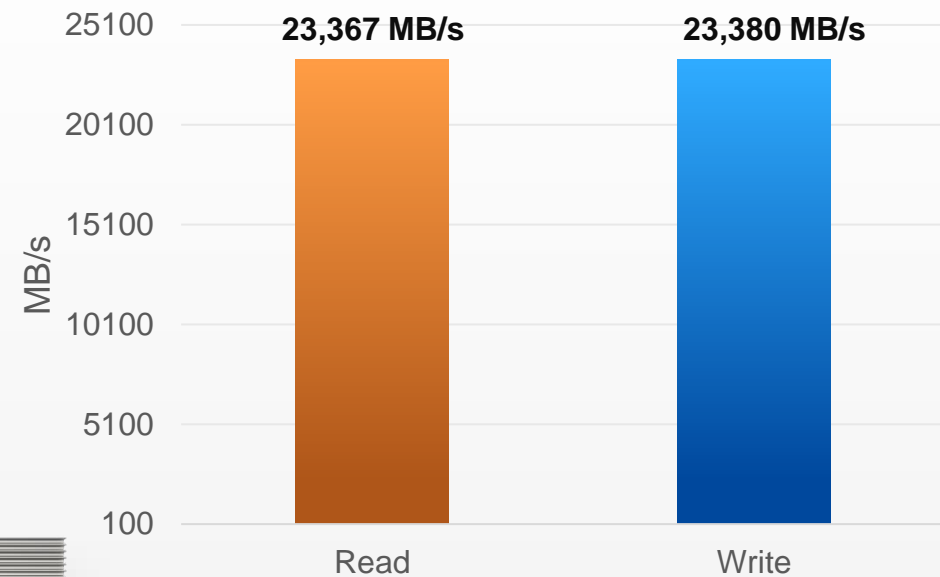
Environment :
NAS | TS-h2490FU-7232P-64GB with QXG-100G2SF-E810
Client PC | OS: Ubuntu 20.04 , CPU: Xeon Scalable ,RAM: 64GB
NIC: QXG-100G2SF-E810, MTU 9000

Environment :
NAS | 2 TDS-h2489FU Intel Xeon 4300 series connect each other
NIC: QXG-100G2SF-CX6, MTU 9000

LIVE DEMO

QXG-100G2SF-CX6

QXG-100G2SF-CX6 with greatly improved network bandwidth

	QXG-100G2SF-CX6	QXG-100G2SF-E810
Ethernet controller	Mellanox CX-6 Dx	Intel E810-CAM2
SerDes	50Gb/s(PAM4) ; 25/10Gb/s (NRZ)	50Gb/s (PAM4) ; 25Gb/s(NRZ)
Total throughput	**200G**	100G
Port speed	100Gbps	100Gbps
Connector	QSFP28	QSFP28
Port split	Not supported	4 x 25GbE or 8 x 10GbE
Port count	2 x QSFP28	
Feature	RDMA, **RoCE v1/v2**, SR-IOV(**1K VFs** & 8 PFs), iSER	iWARP/RDMA ,RoCE v2, iSER, SR-IOV (256VFs & 8PFs)
PCIe	PCIe Gen4 x16 (Compatible with Gen3 with limited bandwidth)	
Support OS (QNAP)	QTS 5.0.0 and later QuTS hero h5.0.0 and later	QTS, QuTS hero
Support OS (3rd party)	Windows Server 2016 / 2019 , Linux	Windows Server 2016 / 2019 , Linux
Warranty	2 years	2 years

QNAP®

QXG-100G2SF-CX6

is your best choice!

100GbE QSFP28 x2 | NVIDIA | 4.0 PCIe | Smart NIC | SR-IOV