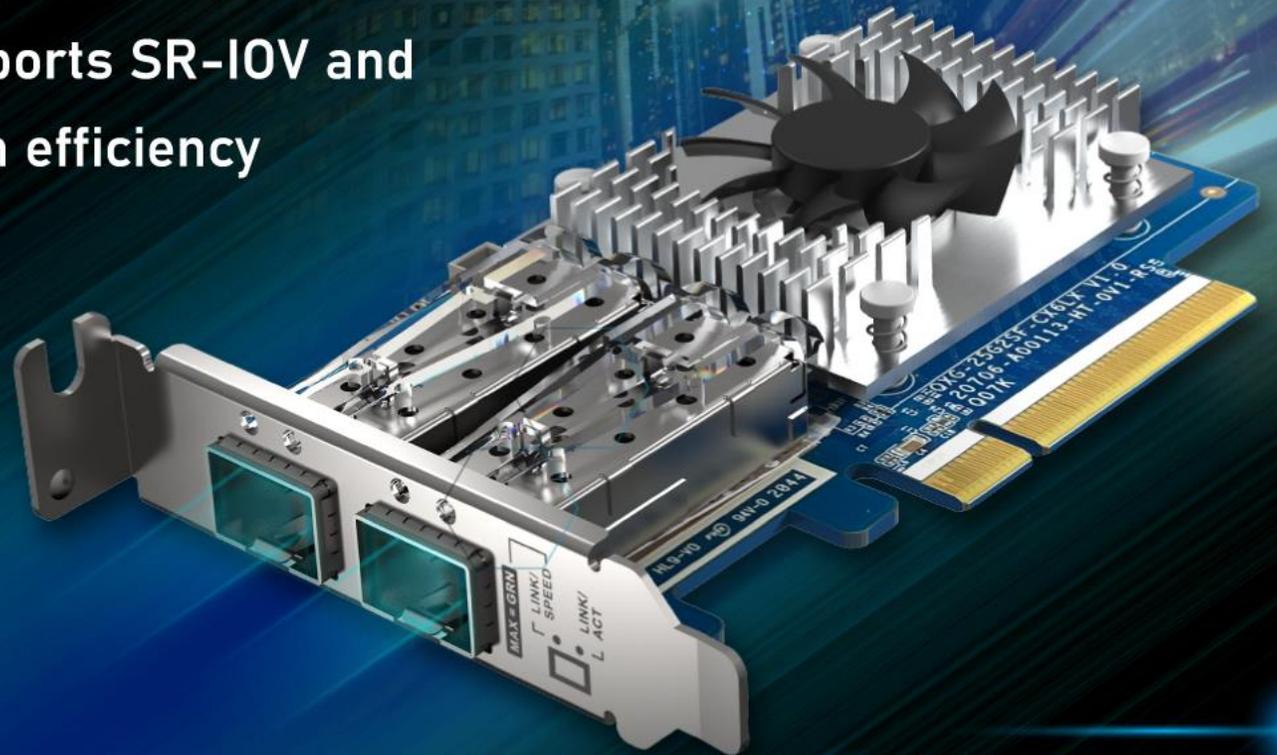


QNAP

QXG-25G2SF-CX6

25GbE network expansion card supports SR-IOV and RoCE to boost network and virtualization efficiency

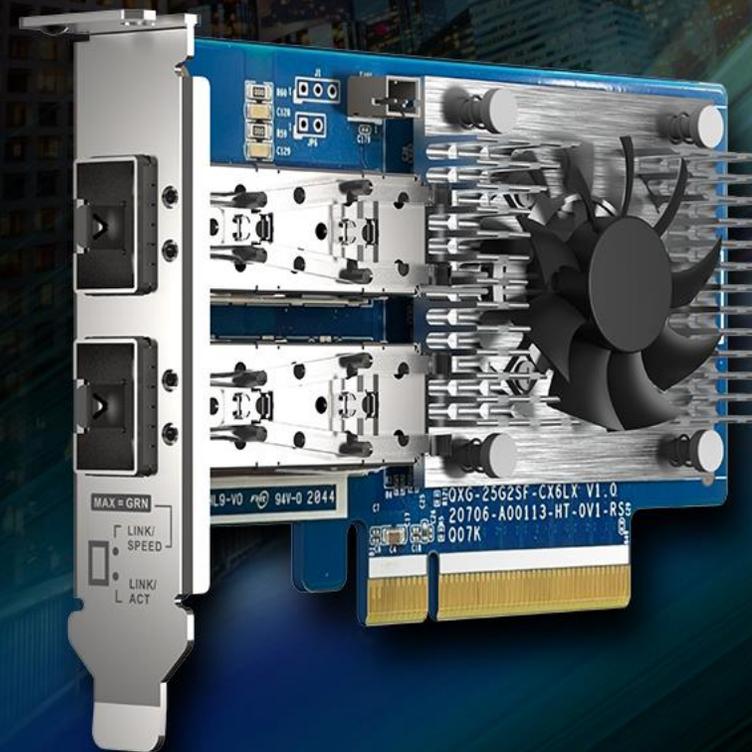


**01. QNAP high-speed NIC products,
lead to next generation of faster ethernet**

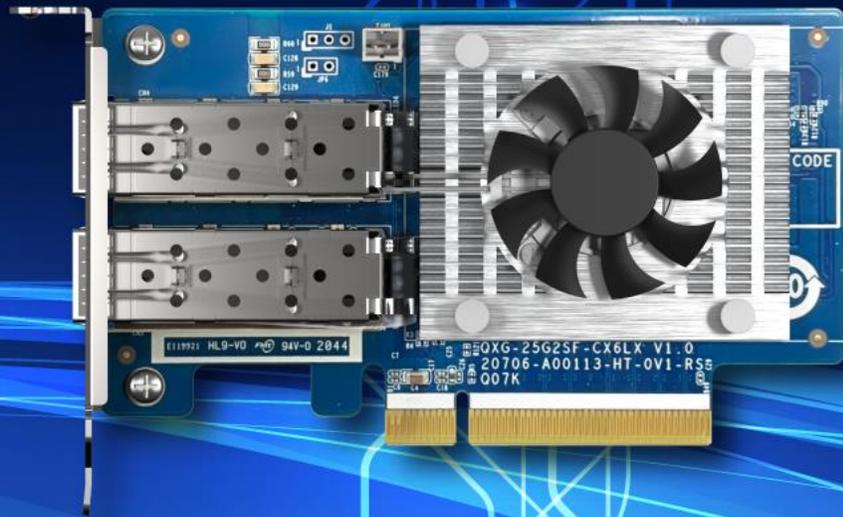
02. Specification & Features

03. QTS / QuTS hero support FEC configuration

04. Build up 25GbE environment



**QNAP high-speed NIC products,
lead to next generation
of faster ethernet**



QNAP

Fast growing market and performance of SSD



SAMSUNG PM9A3 U.2 SSD

Read 6,800MB/s, Write 4,000MB/s

More and more NVMe SSDs are launched.
Speed of Internet should be also increased as the bandwidth of SSD doubles!



QNAP All-Flash Array

TS-h2490FU / TS-h3088XU-RP



SAMSUNG 980 PRO

Read 6,200MB/s, Write 4,900MB/s

All-flash array provides hundreds of thousands of IOPS, but do you get your I/O devices up to speed?

SSD generation comes! PCIe 4.0 doubles the bandwidth

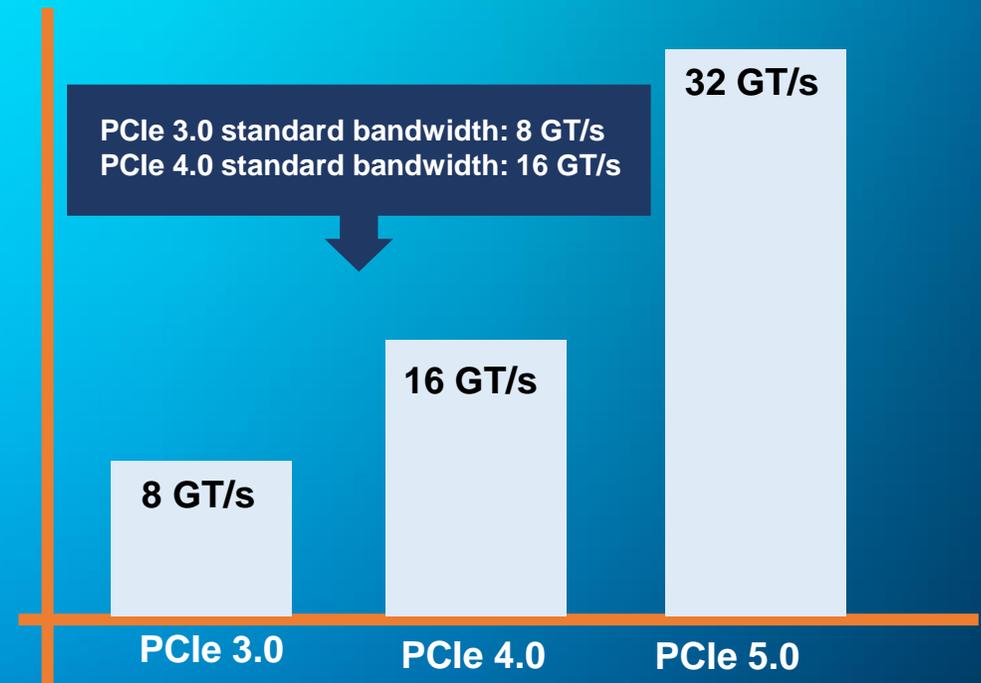
2020 Global Shipments of SSDs Surpassed HDDs for **First Time!**

Solid-state drive shipments surpassed those of traditional hard drives by a significant margin in 2020 but spinning media retained the crown in terms of overall capacity served. As pricing continues to plummet and capacity increases, we can expect to see the ratio become even more skewed.

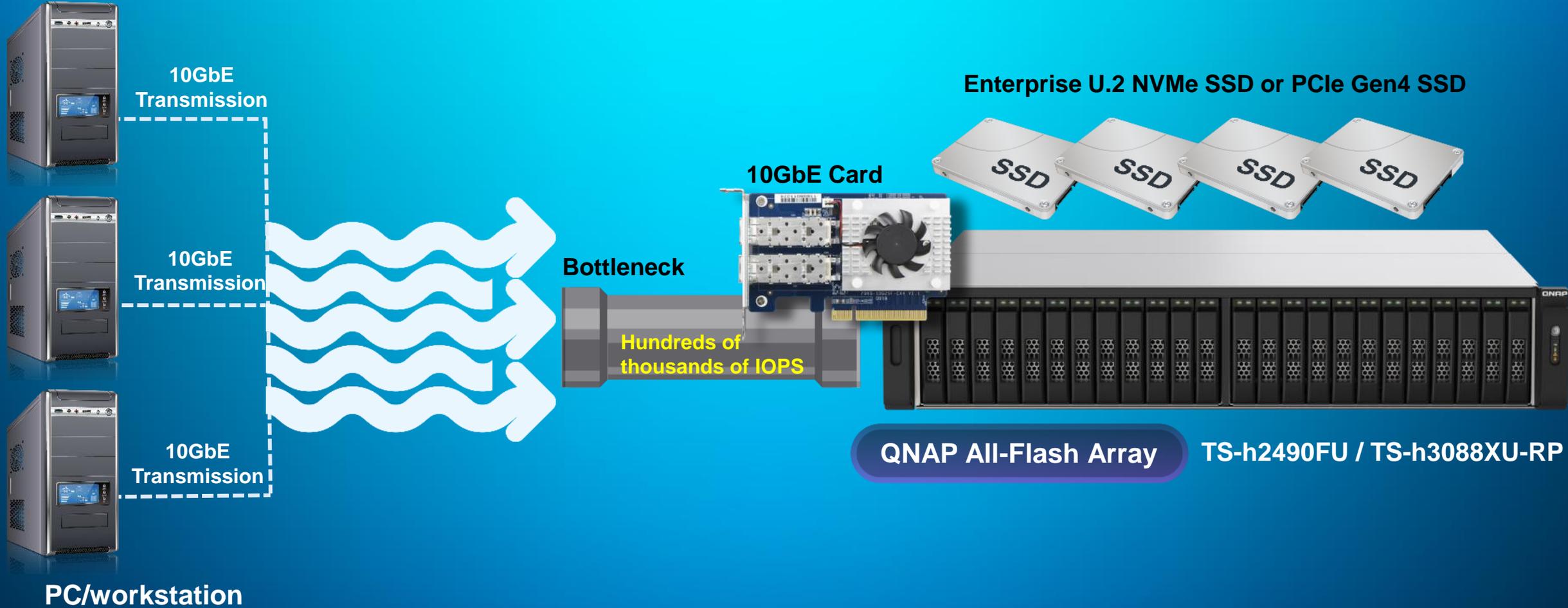
According to data storage research and consulting firm TrendFocus (per Storage Newsletter), manufacturers shipped 333.12 million **solid-state drives** in 2020 – an **increase of 20.8 percent year-over-year**. Hard drive shipments, meanwhile, were down 18 percent annually to 259.81 million units.

Source: [techspot](#)

PCIe Gen4 doubles the speed of Gen3

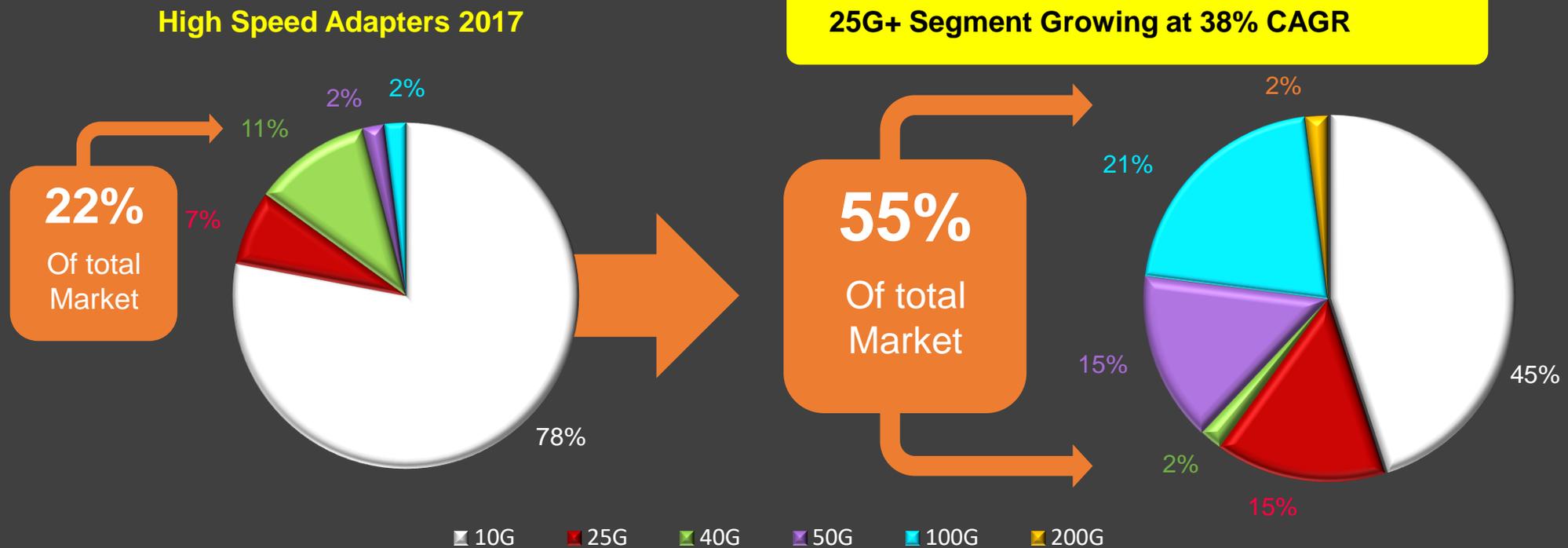


Bottleneck for 10GbE high-speed transmission among multiple users

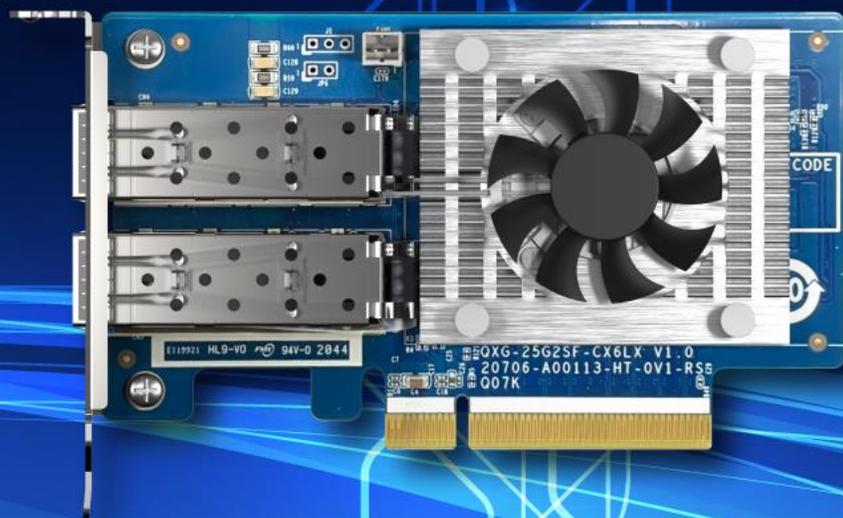


Strength of 25GbE – easily upgrade to 50/100GbE

Lower bandwidth than 40GbE, but more easily upgrade to 50/100GbE



Source : Mellanox

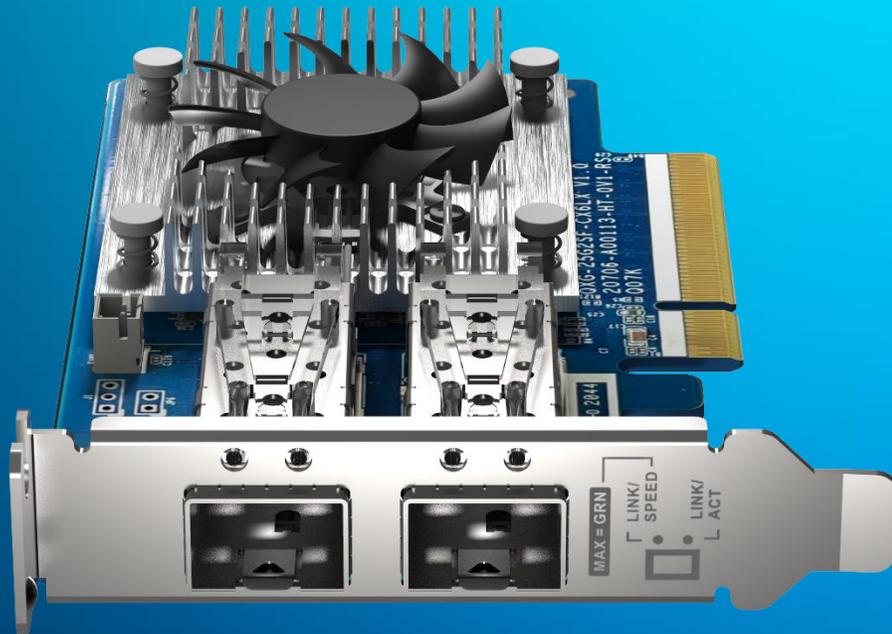


Specification & Features

Brand new QNAP 25GbE NIC – QXG-25G2SF-CX6

QXG-25G2SF-CX6 Dual-port 25GbE SFP28 NIC

- 2 x SFP28 connectors
- Support 2-speed 25GbE / 10GbE

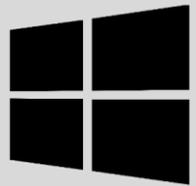


Mellanox ConnectX®-6 Lx Controller

- Support iSER / RoCE offloads



Support multiple OS to deploy your 25GbE environment



Windows
Server

[Download Windows Driver](#)



Red Hat

[Download Linux Driver](#)



ubuntu®

Ubuntu 18.04 and later



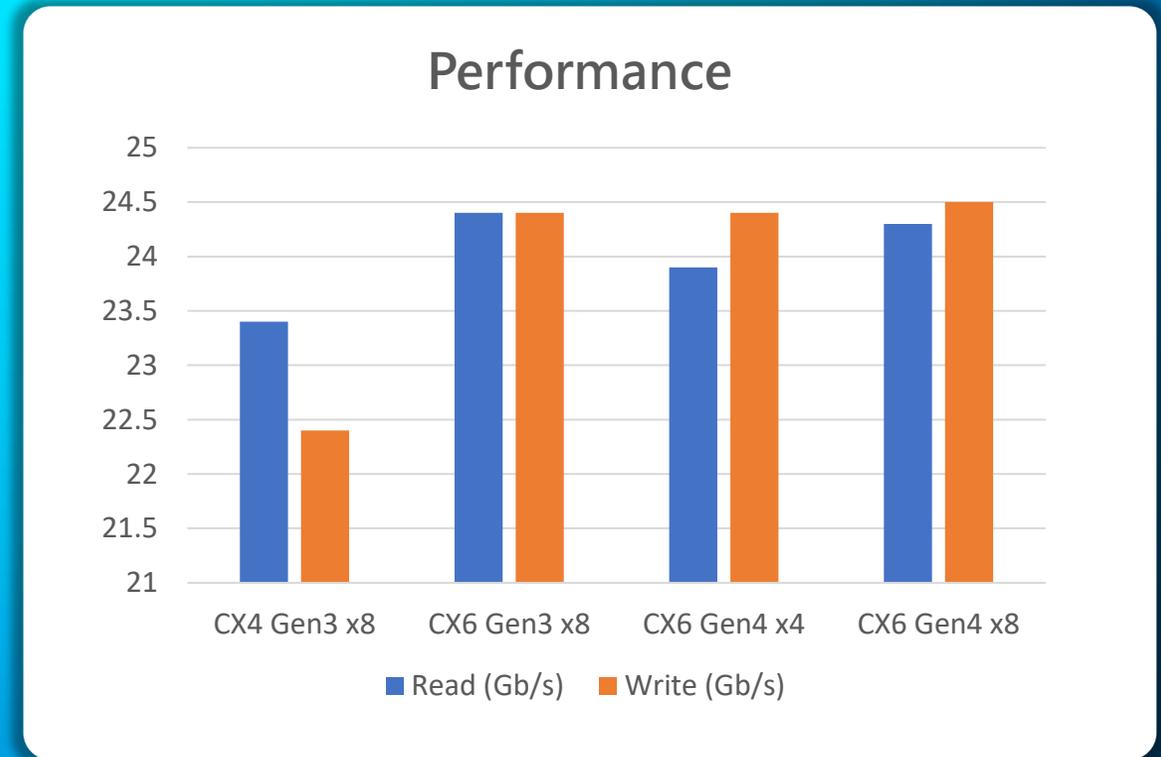
QTS 4.5.2 and later



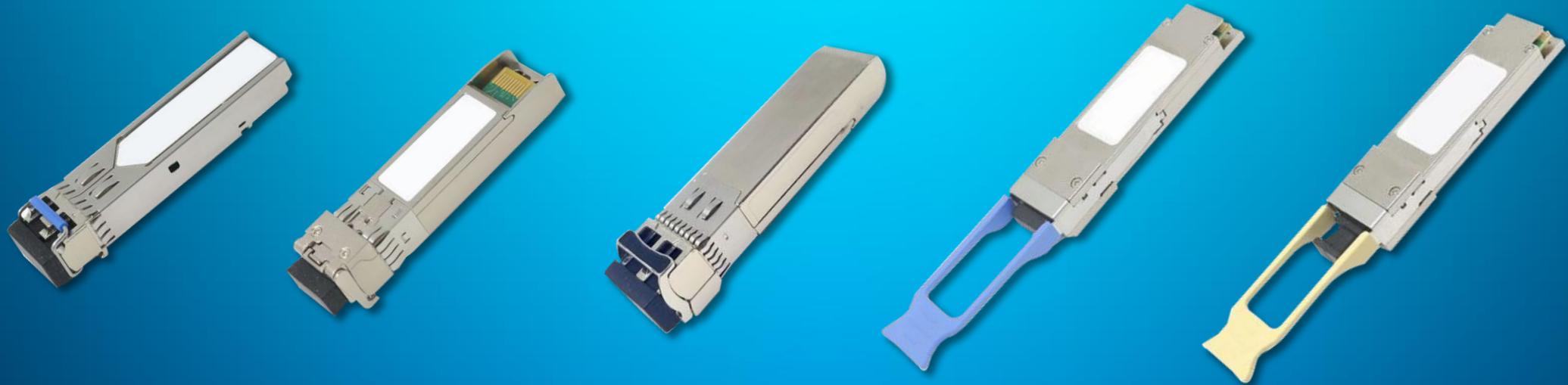
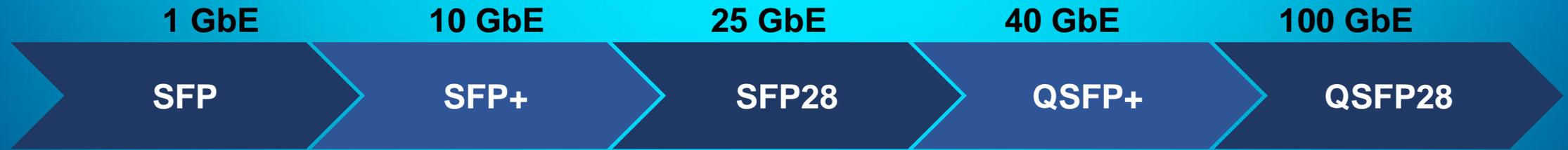
QuTS hero 4.5.2 and later

QXG-25F2SF-CX6 v.s QXG-25G2SF-CX4

	QXG-25G2SF-CX4	QXG-25G2SF-CX6
PCIe express	Gen3 x8	Gen4 x8
Message Rate	70Mpps	75Mpps
PTP (1588)	N/A	Supported
Secure boot	N/A	Supported
VirtIO acceleration	N/A	Yes
RoCE v1/v2	Supported	Supported
RDMA	Supported	Supported
SR-IOV	Supported	Supported



Connector's form-factor from 1GbE to 100GbE



Experience the fastest performance with PCIe 4.0 NAS

QuTS hero edition

AMD
EPYC



TS-h2490FU

TS-h2490FU-7302P-128G

- AMD EPYC **16core/32thread, 3.0 GHz** (Max. 3.3GHz)
- **128GB** DDR4 RDIMM ECC memory (8 x 16GB)
- **4** x SFP28 25GbE ethernet ports (25GbE/10GbE/1GbE)

TS-h2490FU-7232P-64G

- AMD EPYC **8coew/16thread, 3.1 GHz** (Max. 3.2GHz)
- **64GB** DDR4 RDIMM ECC memory (8 x 8GB)
- **2** x SFP28 25GbE ethernet ports (25GbE/10GbE/1GbE)

*Slot 4 and Slot 5 are preinstalled with 25GbE network adapters. Please reserve these slots for the 25GbE adapters for the best performance.

**Slot 2 provides the width of PCIe Gen4 x8 when Slot 3 is not in use, and provides the width of PCIe Gen4 x4 when Slot 3 is in use.

***Slot 5 provides the width of PCIe Gen4 x16 when Slot 4 is not in use, and provides the width of PCIe Gen4 x8 when Slot 4 is in use.

Upgrade you QNAP High-end NAS with PCIe 3.0 for faster ethernet experience



TS-h3088XU-RP

- Intel Xeon W **1250 /1270**
- **2** x SFP28 25GbE ethernet ports (25GbE/10GbE/1GbE)

Slot 1: PCIe Gen3 x8 or x4
Slot 2: PCIe Gen3 x4
Slot 3: PCIe Gen3 x4



TS-hx83XU

- Intel Xeon E series
- **2** x SFP+ 10GbE ethernet ports (10GbE/1GbE)

1U: Gen3 x16 (CPU)
2U & 3U : Slot 2 with Gen3 x8 (CPU)
4U: slot 4 with Gen3 x8 (CPU)



TVS-h1288X

TVS-h1688X

- Intel Xeon W **1250 /1270**
- **2** x RJ45 10GbE ethernet ports (10GbE/5GbE/2.5GbE/1GbE/100M)

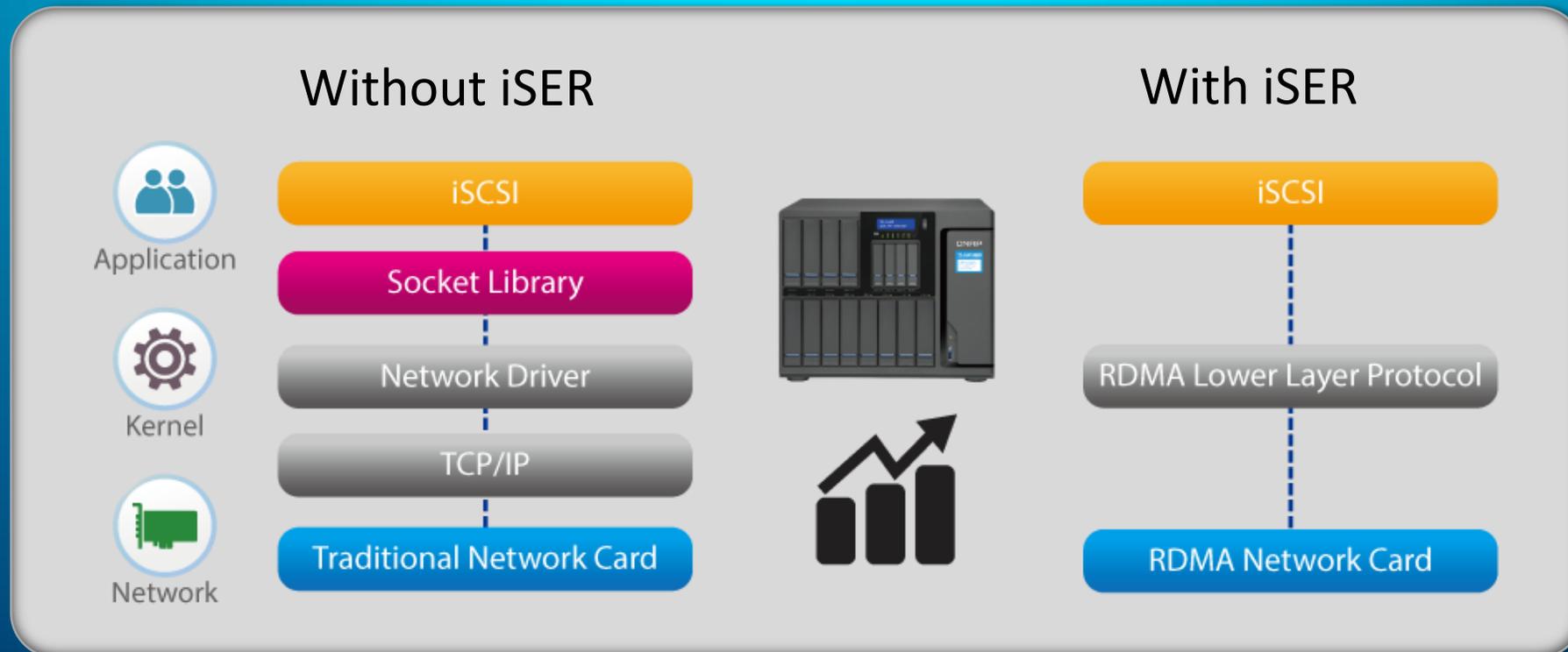
Slot 1: PCIe Gen3 x8
Slot 2: PCIe Gen3 x4
Slot 3: PCIe Gen3 x4

*Find out full compatibility list on our [website!](#)

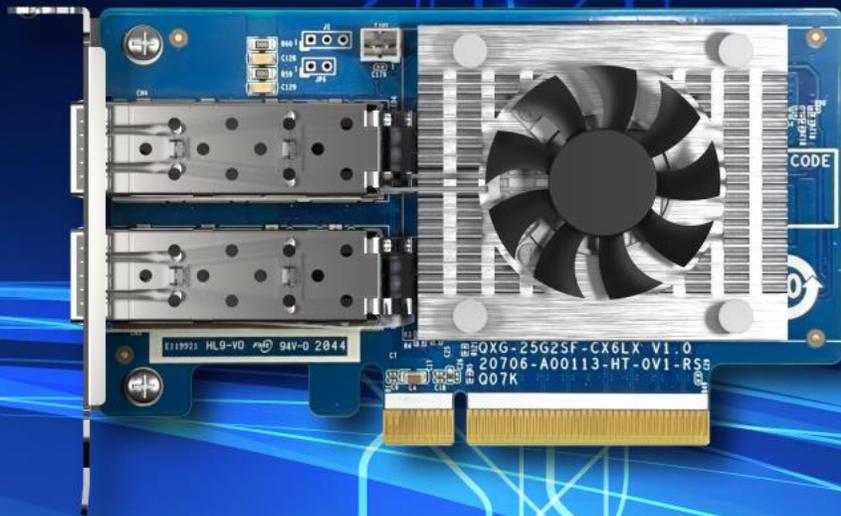
Offload tasks from CPU with iSER

*iSER will support in QTS / QuTS hero later

- iSER allows data to **bypass general network drivers, the socket layer,** and to directly enter memory buffers of the server and storage.
- Increasing performance, lower CPU loading



QTS / QuTS hero support FEC configuration



Ensure data correction during transmission with FEC

- **FEC (Forwarded-error-Correction) controlling errors in data transmission over unreliable or noisy communication channels.**
- **FEC must configured the same mode for both switch and NIC side.**

Enable FEC (To turn on/off FEC)

Auto-negotiation

(Follow the sequence to negotiation from RS-FEC -> Base-R FEC -> Disable FEC -> 10GbE)

BASE-R FEC (Enable BASE-R FEC)

aka Firecode or Clause 74. Offers simple, low-latency (<100ns) protection against bursty errors.

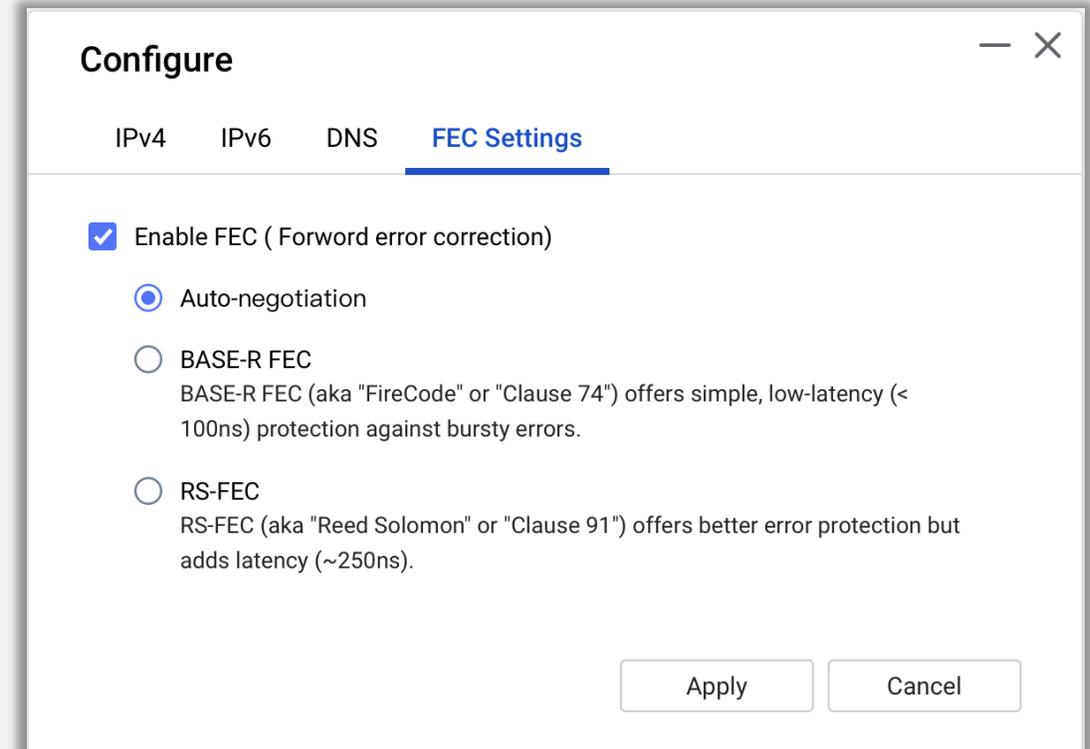
RS-FEC (Enable RS-FEC)

aka Reed Solomon or Clause 91. Offers better error protection but adds latency (~250ns)

Configure FEC option require QTS 4.5.3 / QuTS hero 4.5.2 and later

*Older QTS/QuTS hero, FEC are set as Auto-negotiation.

*Switch and NIC require the same FEC configure in order to work properly.



The screenshot shows a 'Configure' dialog box with a title bar containing a minus sign and a close button. Below the title bar are four tabs: 'IPv4', 'IPv6', 'DNS', and 'FEC Settings', with 'FEC Settings' being the active tab. The main content area contains a checked checkbox for 'Enable FEC (Forward error correction)'. Below this are three radio button options: 'Auto-negotiation', 'BASE-R FEC' (with a sub-description: 'BASE-R FEC (aka "FireCode" or "Clause 74") offers simple, low-latency (< 100ns) protection against bursty errors.'), and 'RS-FEC' (with a sub-description: 'RS-FEC (aka "Reed Solomon" or "Clause 91") offers better error protection but adds latency (~250ns).'). At the bottom right of the dialog are two buttons: 'Apply' and 'Cancel'.

Support FEC configuration for all models above 25GbE

For QTS 4.5.3 / QuTS hero 4.5.2 and later, you could configure FEC mode depends on your network environment in NIC setting page



QXG-10G2SF-CX4



QXG-25G2SF-CX4



QXG-100G2SF-E810

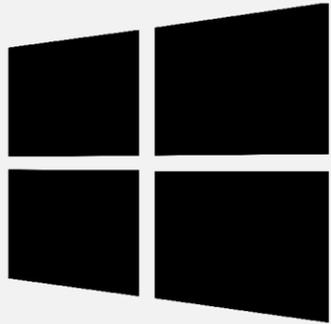


LAN-40G2SF-MLX



QXG-25G2SF-CX6

Configure FEC mode with ethtool in Windows / Linux



Show current FEC mode

```
ethtool --show-fec devname
```

configure FEC mode

Auto: `ethtool --set-fec devname encoding auto`

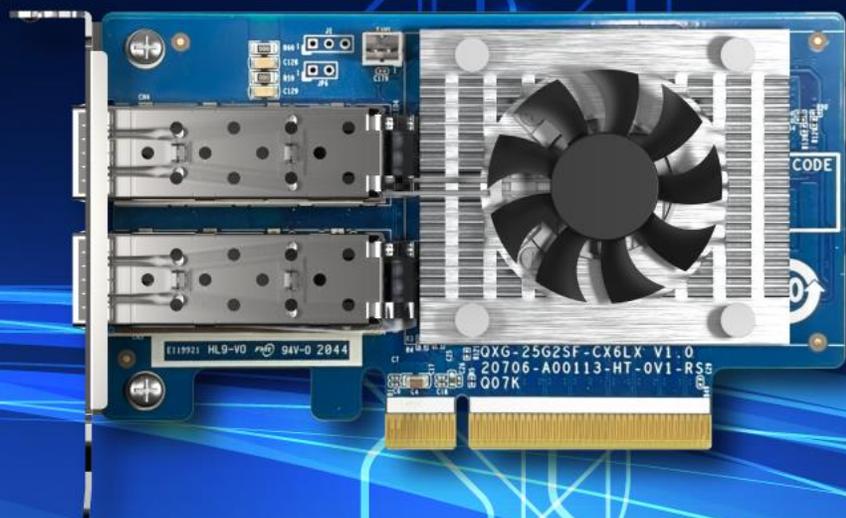
Off: `ethtool --set-fec devname encoding off`

RS-FEC: `ethtool --set-fec devname encoding rs`

BASE-R FEC: `ethtool --set-fec devname encoding baser`

* Driver for Windows / Linux are required.

- Windows: <https://www.mellanox.com/products/adapter-software/ethernet/windows/winof-2>
- Linux: https://www.mellanox.com/products/infiniband-drivers/linux/mlnx_ofed



**Build up 25GbE
environment**

QNAP makes your network environment faster!

Mellanox SN2010
25/100 GbE switch

18x 10/25GbE SFP+/28 ports

4x 40/100GbE QSFP+/28



QNAP 100GbE NIC
QXG-100G2SF-E810

25 GbE

25 GbE

25 GbE

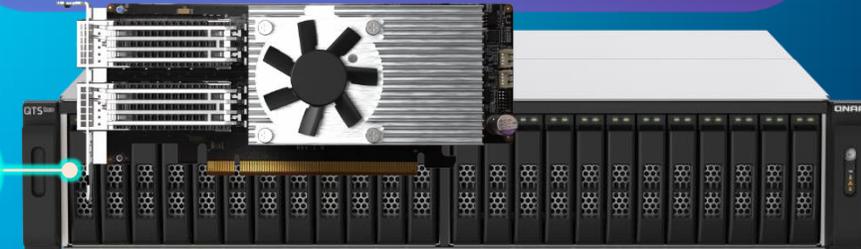
100 GbE



VM



Media Workstation



QNAP High-end NAS

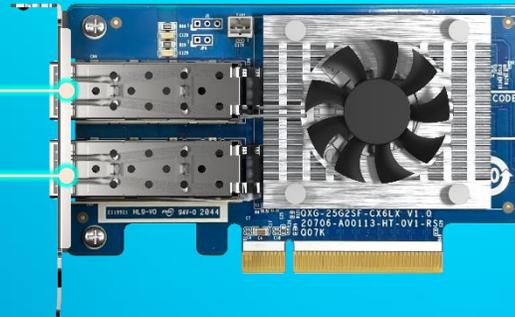
Or Server



Connect to 100GbE/50GbE environment with break-out cable



4 x SFP28 connector



Compatible 10GbE Transceiver



10GbE SR Transceiver

TRX-10GSFP-SR-MLX



QSFP28 break-out cable



Support 25GbE Transceiver



25GbE SR Transceiver

TRX-25GSFP-SR

Accessories for 10GbE / 25GbE / 100GbE

QXG-25G2SF-CX6



25GbE SFP28 DAC

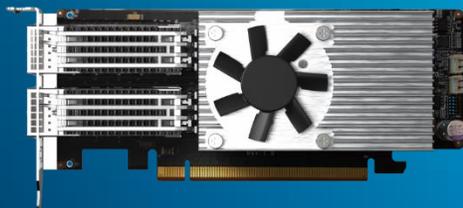
**CAB-DAC30M-SFP28
CAB-DAC15M-SFP28**



10GbE SR Transceiver

TRX-10GSFP-SR-MLX

QXG-100G2SF-E810



100GbE QSFP28 DAC

**CAB-DAC15M-QSFP28
CAB-DAC15M-QSFP28-B4**



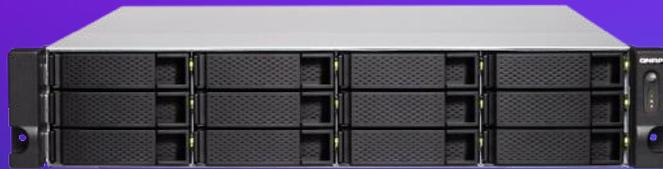
25GbE SR Transceiver

TRX-25GSFP-SR

Upgrade to 25GbE environment now!

1

QNAP
High-end NAS



OR Server



2

QXG-25G2SF-CX6



CAB-DAC30M-SFP28



3

Mellanox SN2010
25/100 GbE switch



Upgrade to 25GbE / 100GbE now!



QNAP

QXG-25G2SF-CX6

Your best choice!

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