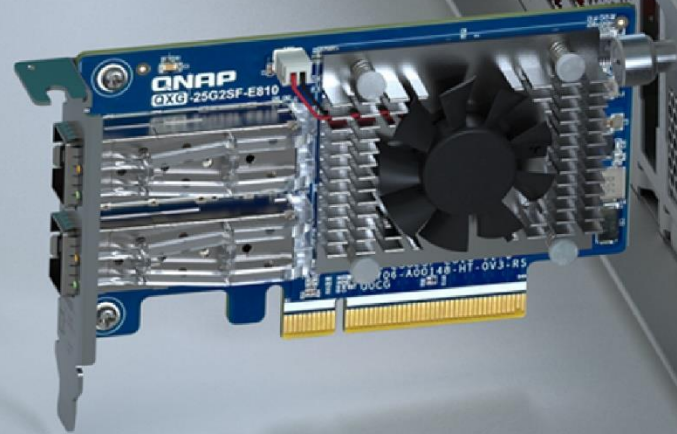




QXG-25G2SF-E810

25GbE Network Expansion Card
Upgrade to enterprise-level
networks with 25GbE



Compatible with NAS and PC

SSD prices are dropping and becoming the mainstream choice in the market

As HDD shipments continue to decline, SSDs are becoming the mainstream storage choice.

According to Storage Newsletter, HDD shipments in the second quarter of 2022 totaled 45 million units, a significant drop from the 2010 peak of 651 million units. Compared to the same period in 2021, shipments are down 26.9% to 29.7%. Shipments of 3.5-inch HDDs (including external HDDs) in the consumer market fell by more than 30%, and even worse than the 3.5-inch HDD consumer market, shipments of 2.5-inch HDDs fell by about 40%. In addition to the weak overall demand for HDDs, the decline in HDD shipments was also due to a large proportion of the impact of the development of solid state drives (SSDs). According to the statistics, the price of NAND Flash TLC and QLC chips have dropped by 8%~13% in Q2 2022 and will drop by another 5%~10% in Q3 2022, making SSDs affordable for both consumers and enterprises, and leading more users to look at next-generation storage options. Looking ahead, the market has moved significantly toward SSDs as a storage option.

Quoted from: Internet News

Vendor	HDDs in million	Q/Q change	Y/Y change	Market share
Seagate	19.80 – 20.60	-13.8 – -10.4%	-29.7% – -26.9%	44.7%-44.3%
Toshiba	8.00 – 8.60	-20.2% – -14.3%	-42.8% – -38.5%	18.1% – 18.5%
WDC	16.50 – 17.30	-16.5% – -12.4%	-34.6% – -31.4%	37.2% – 37.2%
TOTAL	44.30-46.50	-16.0% – -11.9%	-34.2% – -31.0%	

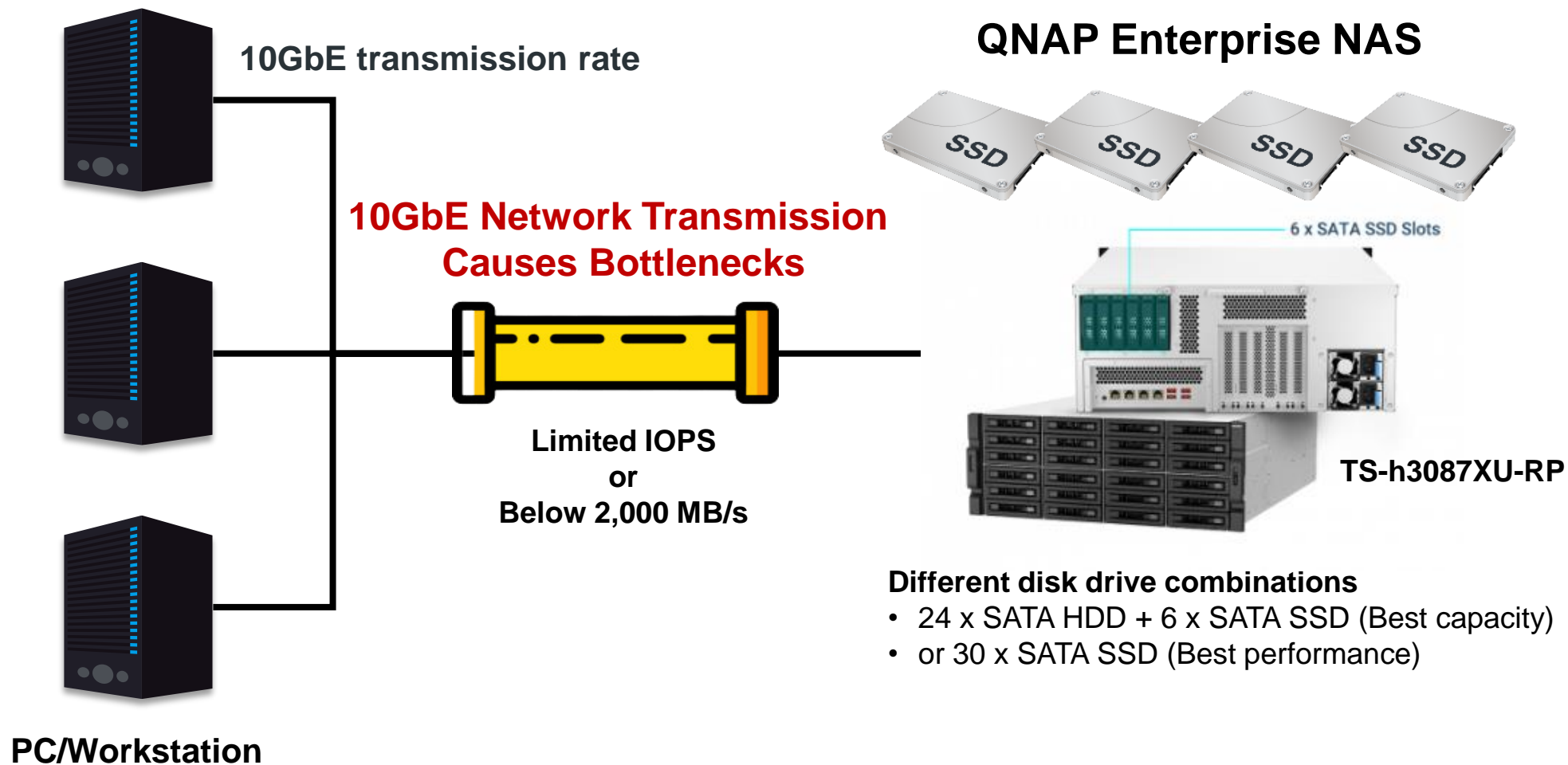
*Preliminary data – values may change.

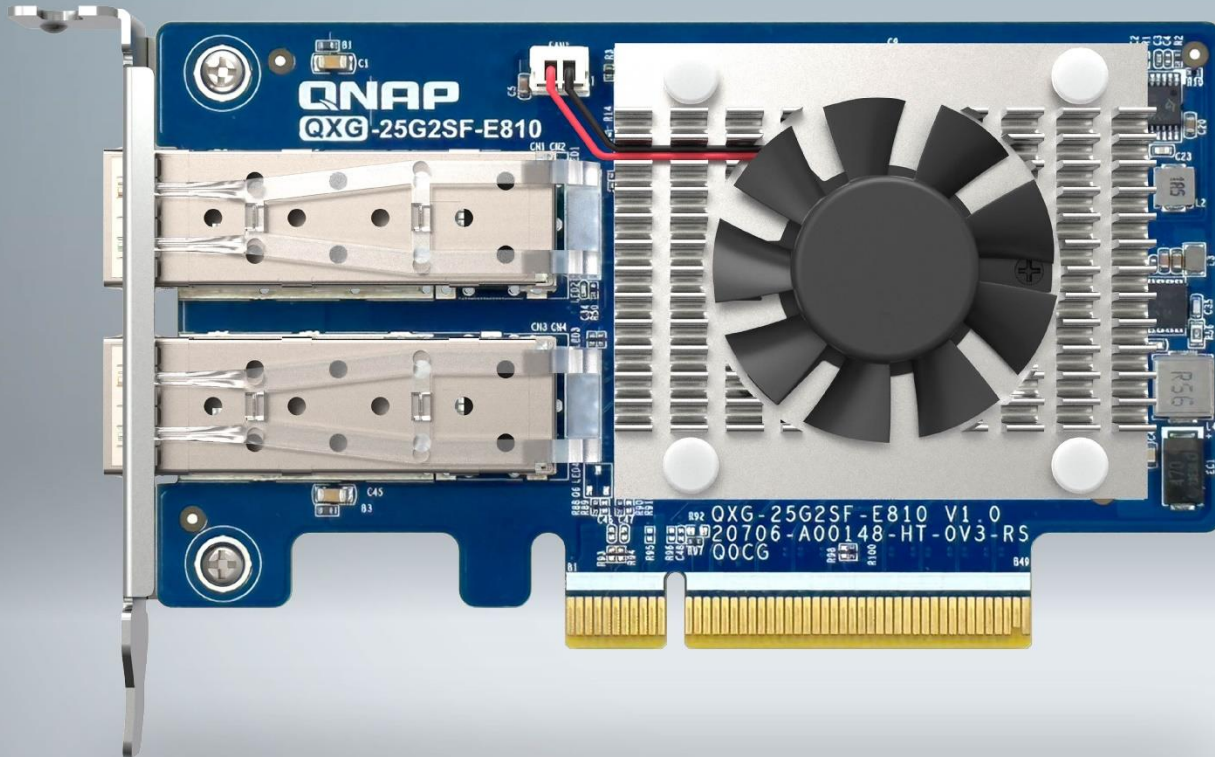
Image Source : [Storage Newsletter](#)

Reference News

[Overstocked Supply Chain to Drive NAND Flash Price Declines of 8-13% in 3Q22 - EE Times Asia \(eetasia.com\)](#)
[HDD Shipments Plummet 33% YoY on Weakening Demand | Tom's Hardware \(tomshardware.com\)](#)

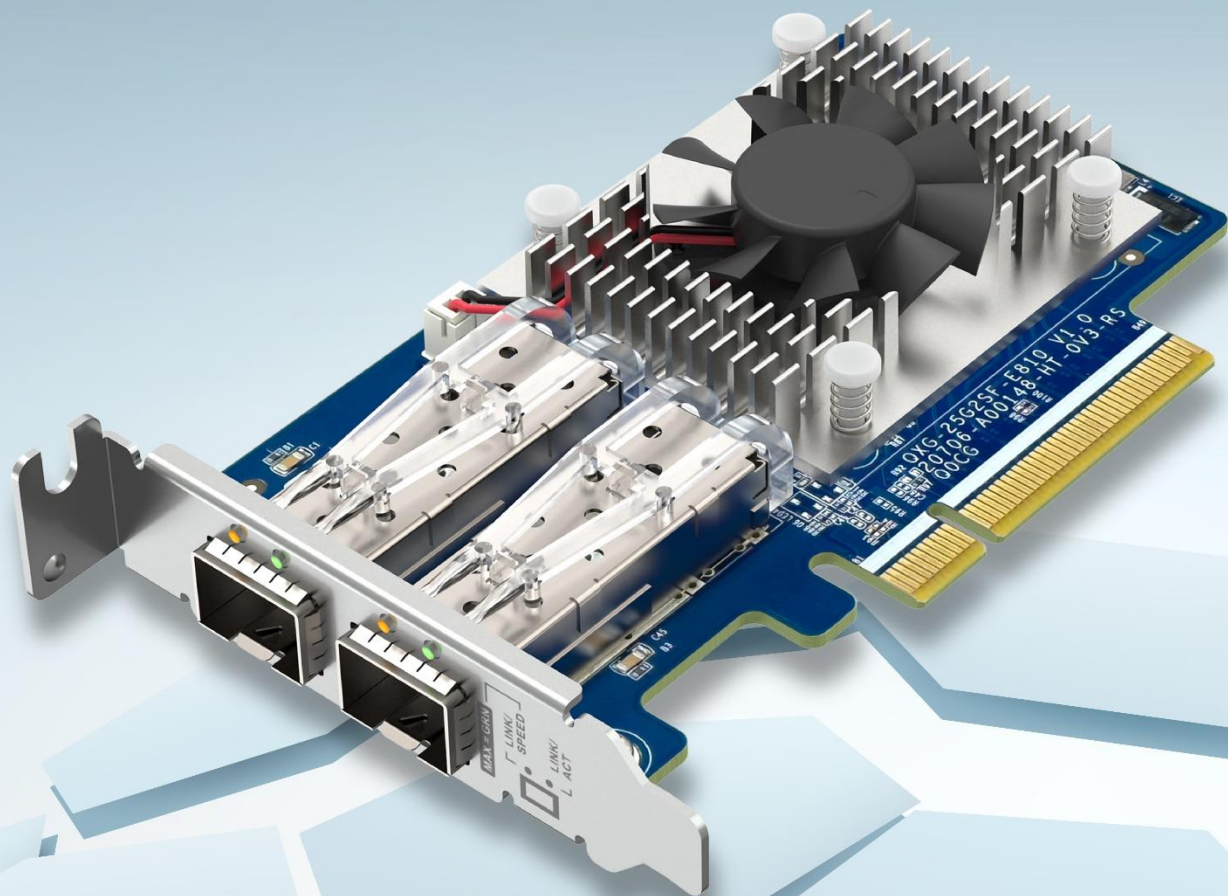
10GbE is no longer able to fully utilize SSD high-speed storage performance





Agenda

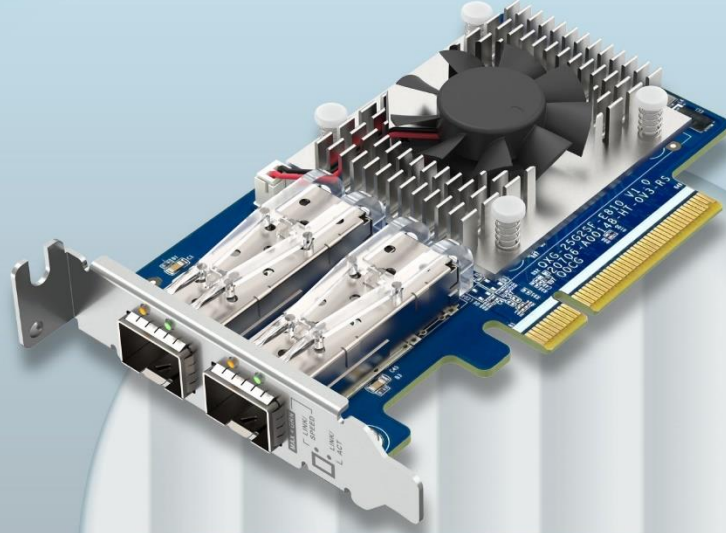
- Product Specification
- QXG-25G2SF-E810 Performance Test
- Build 25GbE Network Environment



Product Specification

New 25GbE High Speed Network Interface Card

QXG-25G2SF-E810



QXG-25G2SF-E810

Dual-Port 25GbE SFP28 Half-High NIC

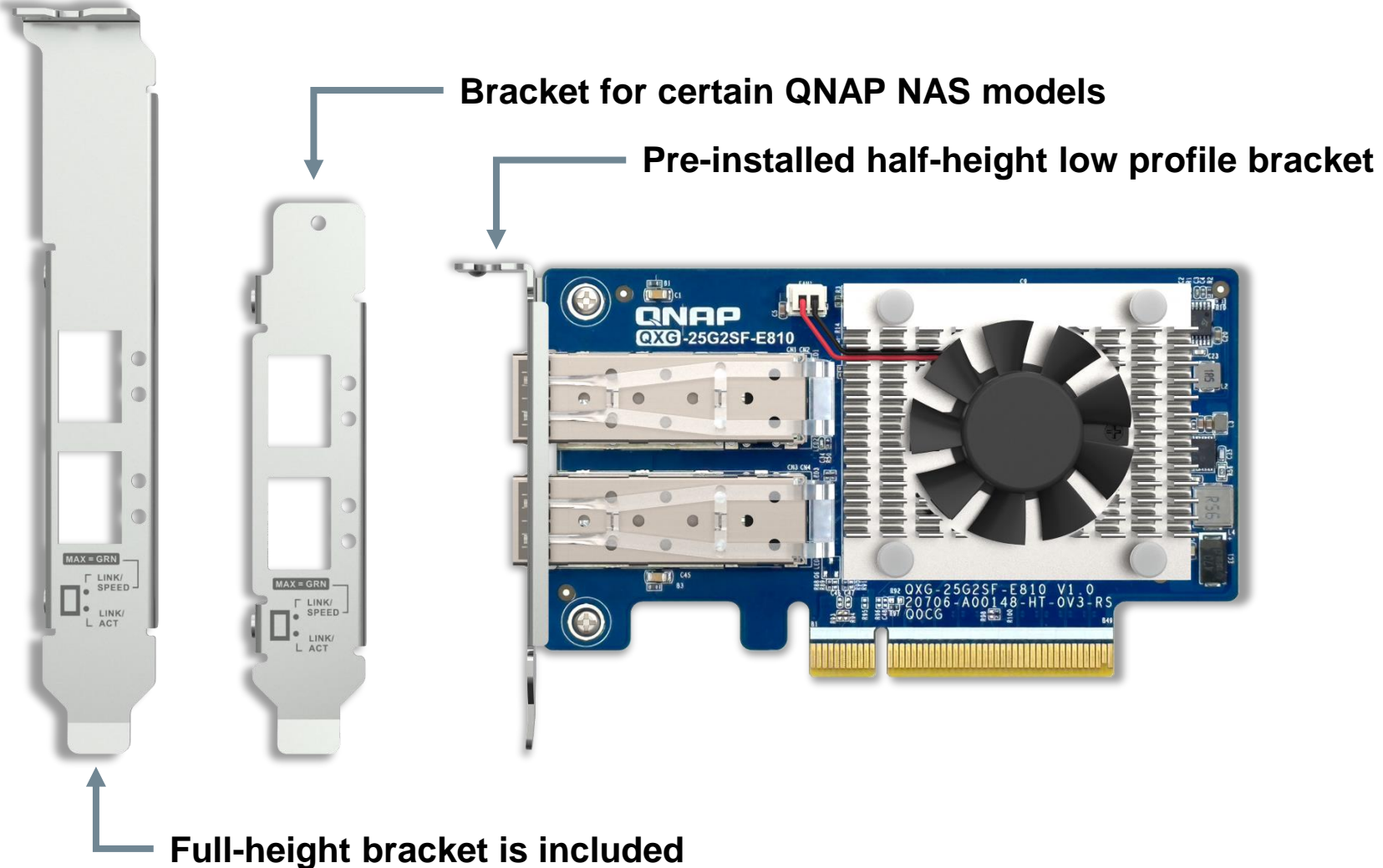
- 2 x SFP28 ports
- Support 25GbE / 10 GbE dual Speed
- Support PCIe Gen 4, and compatible with PCIe Gen 3

Optional accessory available:
25GbE SFP28 DAC Cable



Intel® E810-XXVAM2 Network Chip

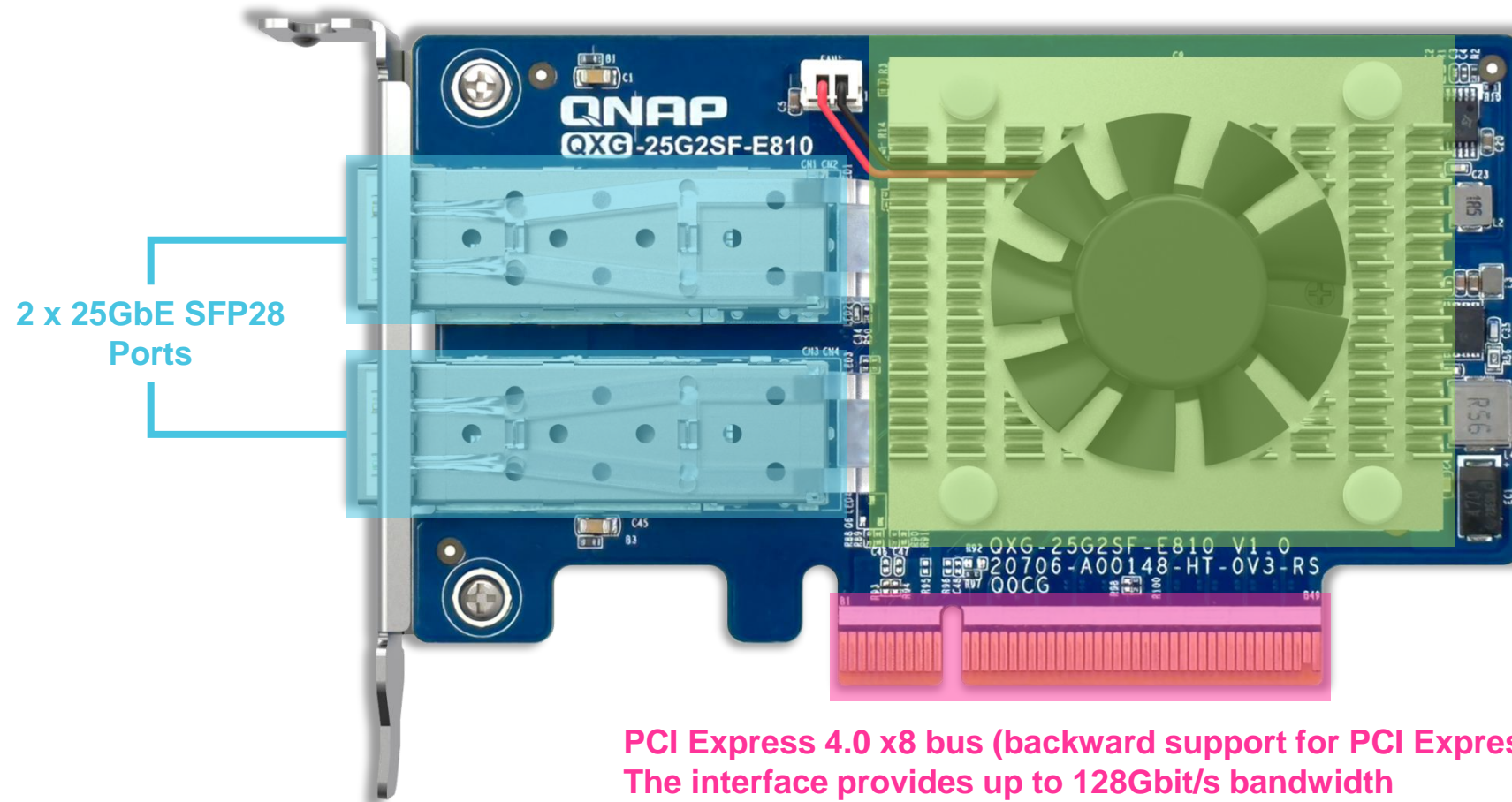
QXG-25G2SF-E810 with various brackets for installation in any kind of NAS and PC/server chassis



Performance-oriented QXG-25G2SF-E810 25GbE Network Interface Card

Heatsink cooling module: Maximum contact area with the cooling fan, achieving the optimal heat dissipation.

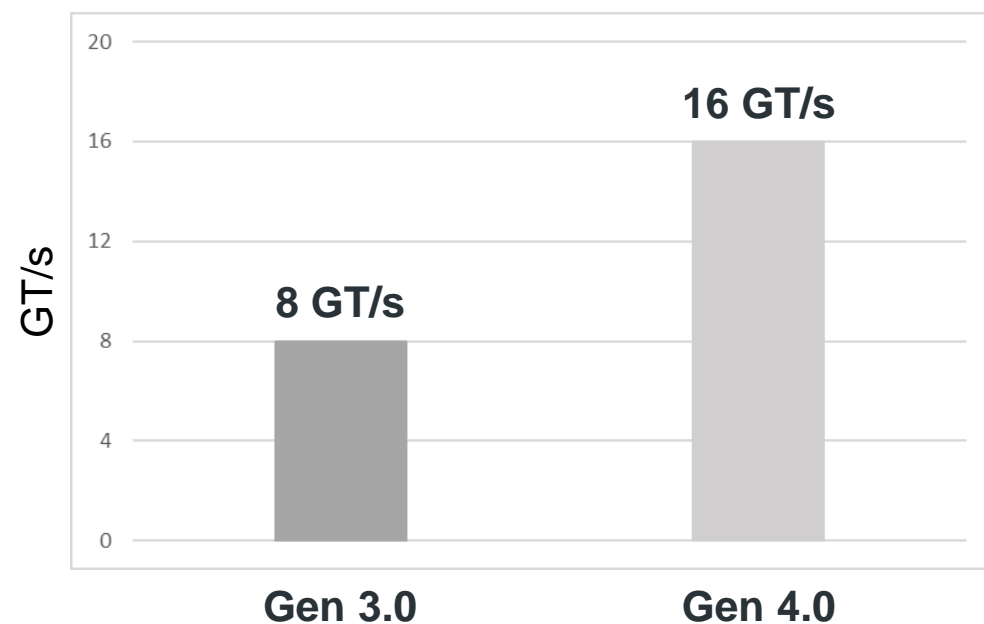
Fan: Outperforms competing 25GbE NIC with heat-reducing fan to keep the platform cool and maintains high performance.



Using PCI Express Gen4 High Speed Data Bus

More flexibility, more bandwidth, the best answer for data-intensive work

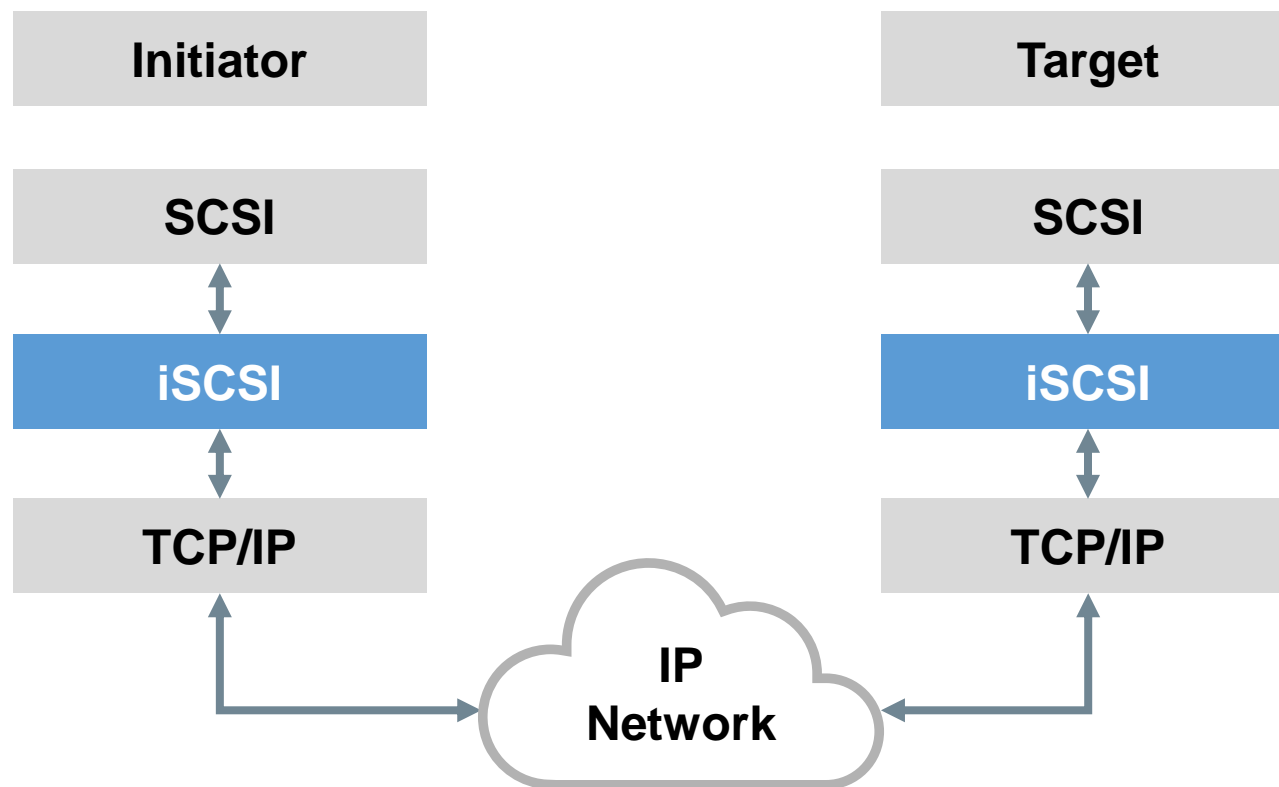
- PCIe Gen4 has **twice** the bandwidth of PCIe Gen3, up to 16 GT/s, and only requires Gen4 x 4 to utilize the full potential of the QXG-25G2SF-E810 dual-port 25GbE x 2 for a total of 50GbE.
- Major PCIe interfaces are gradually moving from Gen3 to Gen4, and although Gen4 is backward compatible with Gen3, it is especially important to equip a complete set of devices with Gen4 interfaces to fully utilize the high bandwidth of Gen4 as the amount of data being transferred is increasing by leaps and bounds.



PCI
EXPRESS®

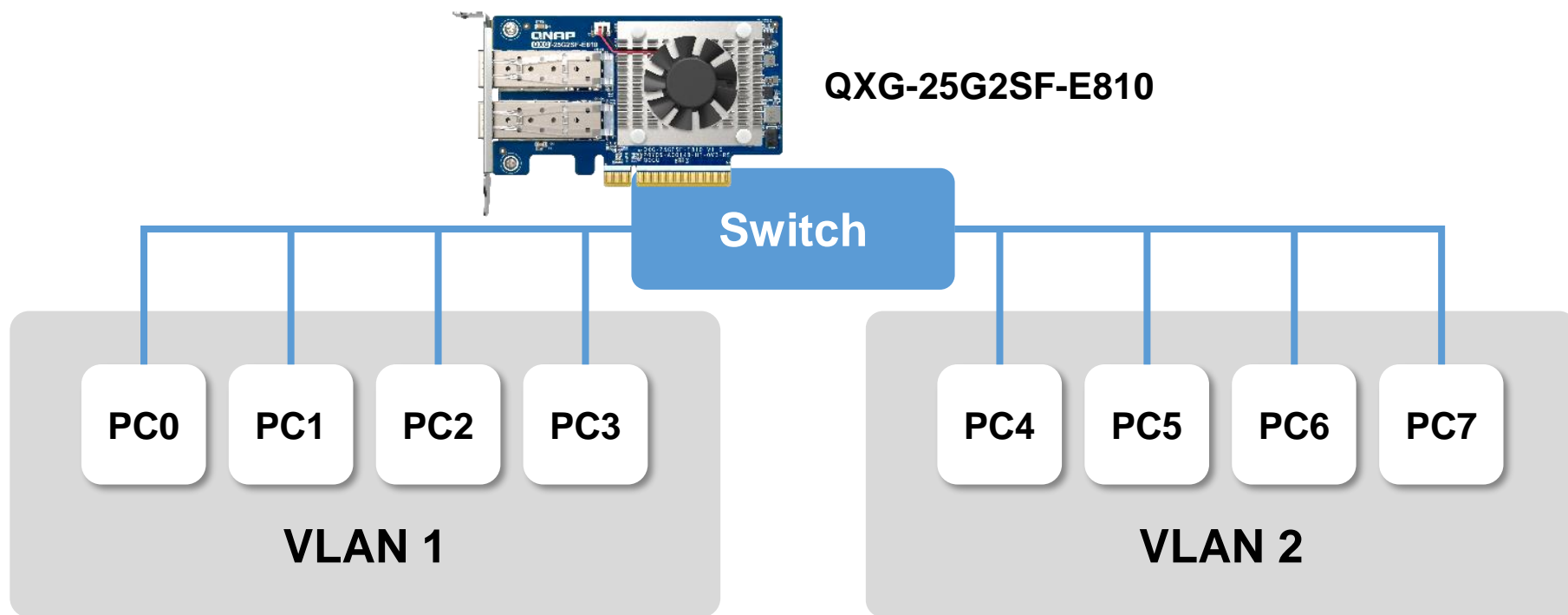
iSCSI Support for Fast Storage Connection

QXG-25G2SF-E810 supports iSCSI, which simplifies storage management while realizing high-speed access to enhance operational efficiency, and through the network, it realizes remote storage to achieve unlimited storage access, and in the virtualization environment, it can achieve seamless integration of virtual machines and storage devices, giving you an efficient and flexible storage solution.



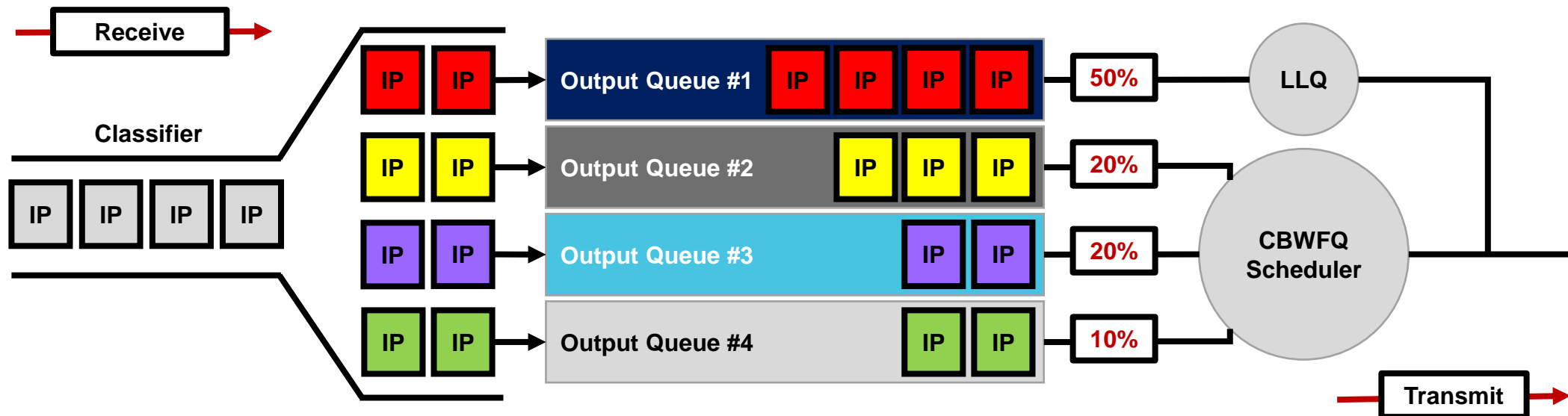
Flexible VLAN Support

QXG-25G2SF-E810 supports VLAN to help you create virtual network zones to separate your network into different areas for more secure and organized connections. It allows you to meet your different needs in a more organized and efficient way in complex network environments in different usage contexts.



Automatic QoS for Performance & Efficiency

QXG-25G2SF-E810 supports On-chip QoS for dynamic resource allocation, priority scheduling, bandwidth control, traffic management and dynamic workload adjustment. On-chip QoS allows you to improve system performance and efficiency in a variety of application scenarios, ensure mission-critical execution and optimize resource allocation to meet the needs of different applications.



Forward Error Correction (FEC) Ensures Data Accuracy

QXG-25G2SF-E810 supports Forward Error Correction (FEC), which is designed to minimize the Bit Error Rate (BER) and ensure data accuracy by allowing the receiver to quickly recover from packet errors caused by signal degradation that can occur at high network speeds and over long distances. There are three FEC modes in total, allowing you to flexibly plan your network environment with suitable cables and switches.

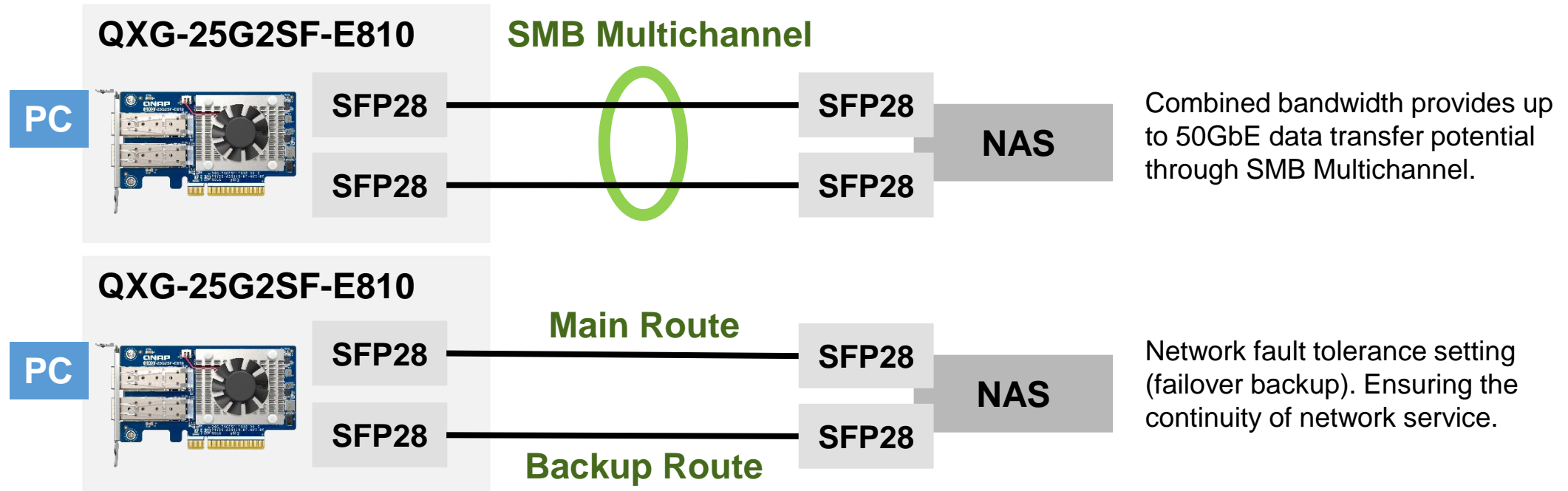
Mode	Latency	Distance
NO FEC	Lowest	Shortest
BASE-R FEC (Firecode)	~ 80ns	Middle
RS-FEC (Reed Solomon)	~ 260ns	Longest

Notes:

- In QTS 4.5.3 / QuTS hero 4.5.2 or later, you can set the FEC mode according to your network environment in the network card setup page.
- Windows / Linux requires a separate driver.
- The transmitter must be set in the same mode as the receiver
- If the QXG-25G2SF-E810 does not connect to the switch, please check whether the latest version of the switch's firmware supports FEC, and if the switch does not support FEC, please disable the FEC function of the NIC through the NAS or computer operating system.

Multiply Bandwidth, Maximize Performance: Experience a Performance Leap with SMB Multichannel

Since QTS 5.1.0 / QuTS hero h5.1.0, QNAP NAS fully supports SMB multichannel. The network fault tolerance makes the system operation more stable. Even if one network connection fails, the NAS still maintains the file transmission with the remaining number of connections to minimize the risk of interruption; when the network recovers, the total transmission bandwidth is immediately restored. With SMB Multi-Channel enabled, the system automatically explores all network ports on the NAS and automatically aggregates them, resulting in a large bandwidth stack that is ideal for 8K/16K multimedia and large file transfers.



SMB Multichannel System Requirements and Notes :

- NAS and Client devices support SMB 3.0, QTS 5.1.0 or above, QuTS hero h5.1.0 or above, Windows 8.1 or above, Windows Server 2012 or above, macOS Big Sur 11.3.1 or above.
- SMB Multi-Channel can only combine network ports of the same speed on a single device, e.g., 25GbE + 25GbE.
- The same number of network ports must be used between the two devices.
- If the two devices use different speed network ports, the performance of the two devices depends on the slower speed, e.g., if the NAS uses two ports of 10GbE and the PC device uses two ports of 2.5GbE, the SMB multichannel transmission speed between the two devices is only 5 Gbps.
- Actual SMB multichannel transfer performance varies depending on the hardware configuration (e.g., CPU, memory, hard disk, switch, etc.) and performance of the NAS and client devices.
- RSS, RDMA, and NIC Teaming are not supported in the latest version of SMB Multichannel.

Flexible Development of 25GbE in NAS, PC, Servers



Windows
Server

Windows Server 2022

Windows 10/11



ubuntu

Ubuntu 20.04 LTS

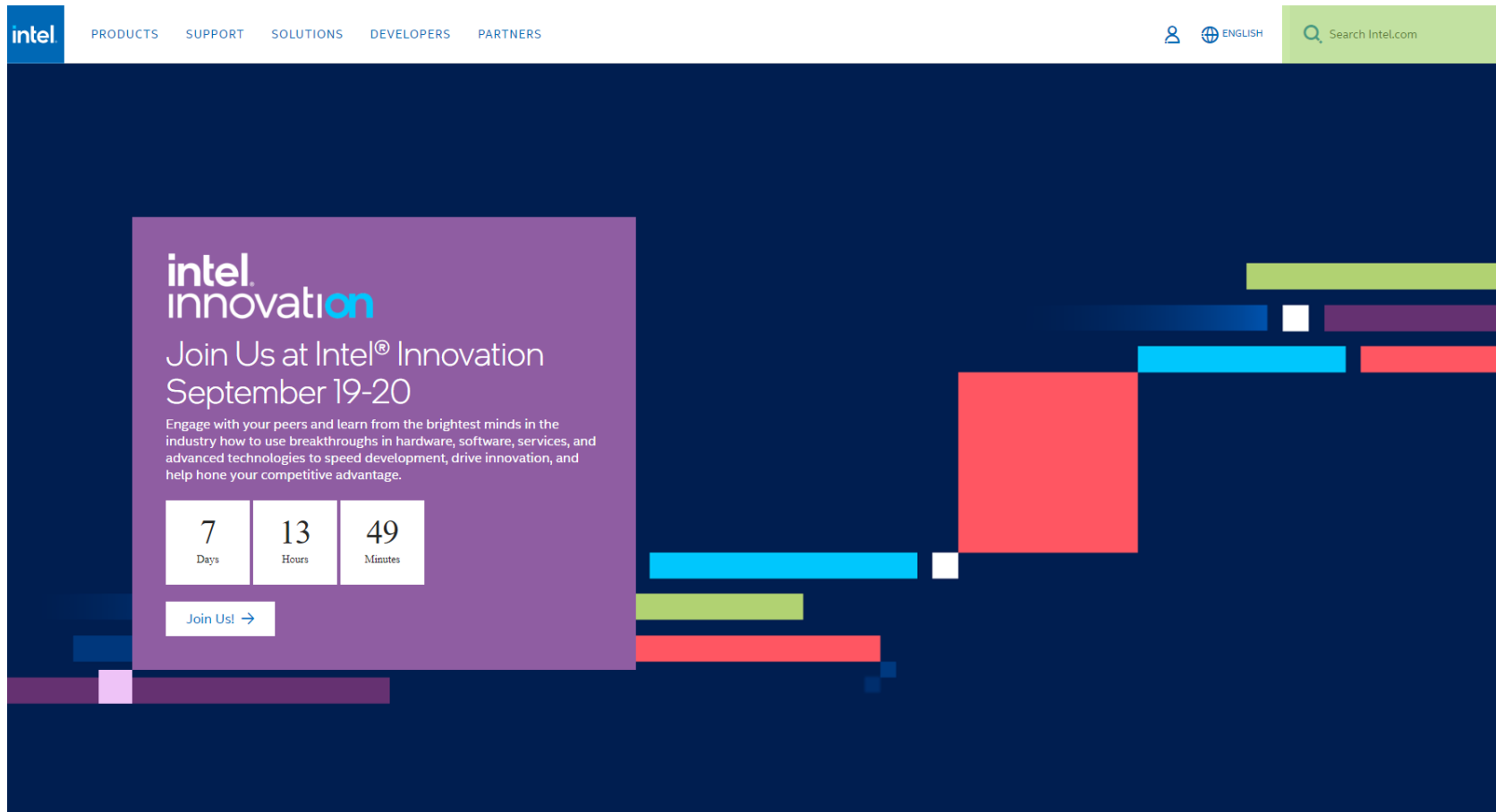
QTS

QTS
QTS 5.0.1
or a later updated version



QuTS hero
QuTS hero 5.0.1
or a later updated version

Intel Official Website Driver Download Step 1



Step 1: Go to Intel's official website. Click Search Intel.com in the upper right corner and type in E810-XXVAM2.

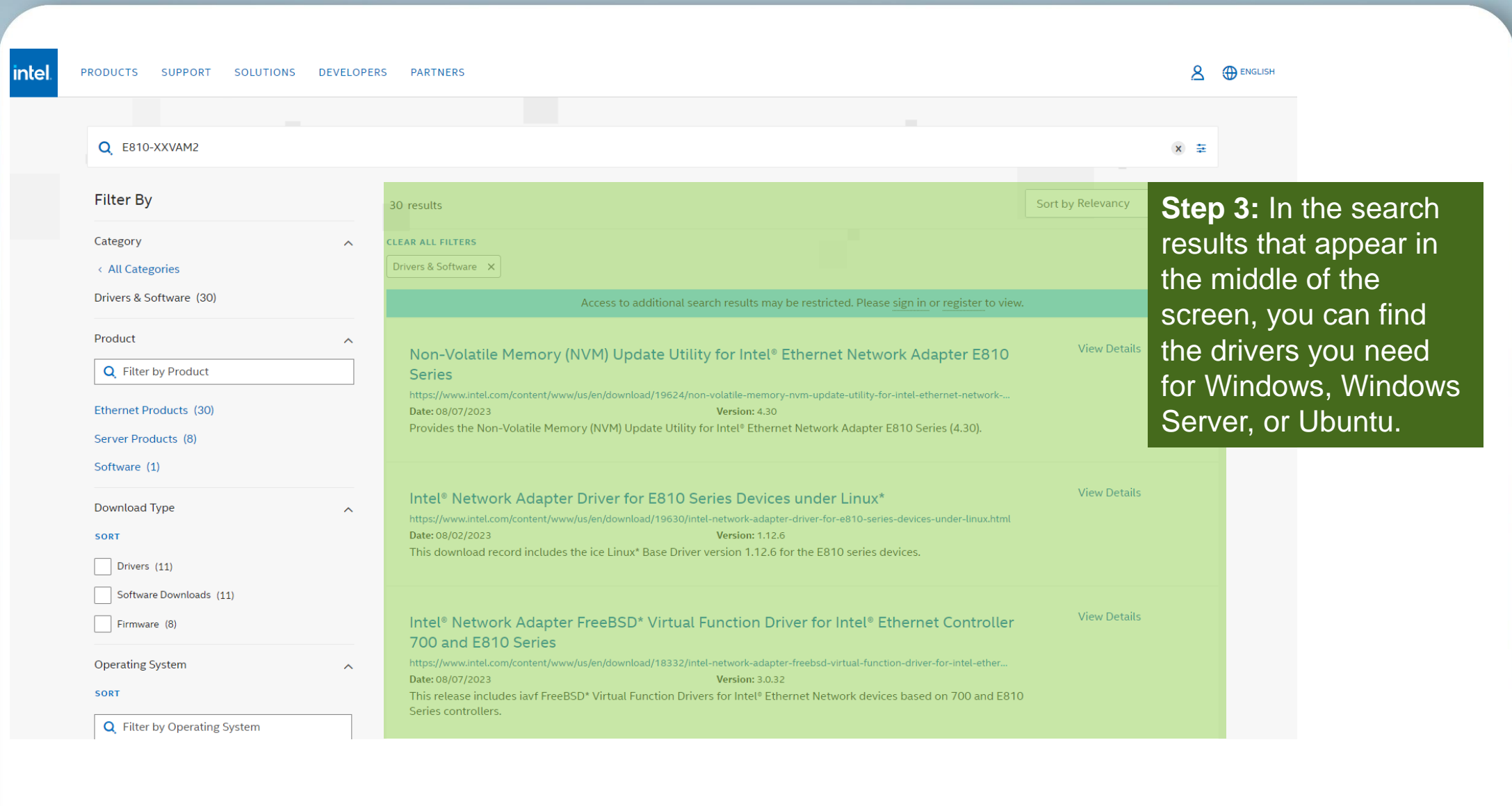
Intel Official Website Driver Download Step 2

Step 2: Click on "Drivers & Software" on the left when you see the search results.

The screenshot shows the Intel website search results for the query "E810-XXVAM2". On the left, a "Filter By" sidebar lists categories: "Category", "Product Information (2)", "Support (2)", "Drivers & Software (30)" (highlighted in green), "Documentation & Resources (36)", and "Communities (1)". The main content area shows "75 results" and a "Sort by Relevancy" dropdown. A blue banner states: "Access to additional search results may be restricted. Please [sign in](#) or [register](#) to view." The search results list includes:

- Intel® Ethernet Controller E810-XXVAM2**
Intel® Products / Intel® Ethernet Products / Intel® Ethernet 800 Controllers / Intel® Ethernet Controller E810 / Intel® Ethernet Controller E810-XXVAM2
Intel® Ethernet Controller E810-XXVAM2 - Ordering and trade compliance information inclusive of change notifications, material declarations, ordering codes and trade compliance information.
- Intel® Ethernet Controller E810-XXVAM2**
Intel® Products / Intel® Ethernet Products / Intel® Ethernet 800 Controllers / Intel® Ethernet Controller E810 / Intel® Ethernet Controller E810-XXVAM2
Intel® Ethernet Controller E810-XXVAM2 quick reference with specifications, features, and technologies.
- Non-Volatile Memory (NVM) Update Utility for Intel® Ethernet Network Adapter E810 Series** [View Details](#)
<https://www.intel.com/content/www/us/en/download/19624/non-volatile-memory-nvm-update-utility-for-intel-ethernet-network-...>
Date: 08/07/2023 Version: 4.30
Provides the Non-Volatile Memory (NVM) Update Utility for Intel® Ethernet Network Adapter E810 Series (4.30).
- Intel® Ethernet Controller E810 Specification Update** [Download](#)
Last Updated: 08/11/2023 File: PDF (677.15 KB) Content Type: Specification Updates
Content ID: 616943 Version: 3.3
NEX Cloud Networking Group (NCNG) - Specification Update for E810 Device. This document is an update to a published specification, the Intel® Ethernet Controller E810 Datasheet. It is intended for use by system manufacturers and software developers.

Intel Official Website Driver Download Step 3




The screenshot shows the Intel website's search results for the query "E810-XXVAM2". The interface includes a navigation bar with links to PRODUCTS, SUPPORT, SOLUTIONS, DEVELOPERS, and PARTNERS. A search bar at the top left contains the query "E810-XXVAM2". On the left side, there are filter sections for "Filter By", "Category", "Product", "Download Type", and "Operating System". The main content area displays 30 results, with a "Sort by Relevancy" button. A message states: "Access to additional search results may be restricted. Please [sign in](#) or [register](#) to view." The results list includes:

- Non-Volatile Memory (NVM) Update Utility for Intel® Ethernet Network Adapter E810 Series**
https://www.intel.com/content/www/us/en/download/19624/non-volatile-memory-nvm-update-utility-for-intel-ethernet-network-...
Date: 08/07/2023 Version: 4.30
Provides the Non-Volatile Memory (NVM) Update Utility for Intel® Ethernet Network Adapter E810 Series (4.30). [View Details](#)
- Intel® Network Adapter Driver for E810 Series Devices under Linux***
https://www.intel.com/content/www/us/en/download/19630/intel-network-adapter-driver-for-e810-series-devices-under-linux.html
Date: 08/02/2023 Version: 1.12.6
This download record includes the ice Linux* Base Driver version 1.12.6 for the E810 series devices. [View Details](#)
- Intel® Network Adapter FreeBSD* Virtual Function Driver for Intel® Ethernet Controller 700 and E810 Series**
https://www.intel.com/content/www/us/en/download/18332/intel-network-adapter-freebsd-virtual-function-driver-for-intel-ether...
Date: 08/07/2023 Version: 3.0.32
This release includes iavf FreeBSD* Virtual Function Drivers for Intel® Ethernet Network devices based on 700 and E810 Series controllers. [View Details](#)



Step 3: In the search results that appear in the middle of the screen, you can find the drivers you need for Windows, Windows Server, or Ubuntu.


Windows 10/11 Driver Download

Windows 10/11 Driver Download



PRODUCTS SUPPORT SOLUTIONS DEVELOPERS PARTNERS

 ENGLISH

 Search Intel.com

Drivers & Software

Administrative Tools for Intel® Network Adapters

ID	Date	Version
2593	8/7/2023	28.2 (Latest) ▾

Introduction

This download record installs version 28.2 of the administrative tools for Intel® Network Adapters.

Available Downloads

Download
PROADMIN.zip

OS Independent, Microsoft Windows*
Size: 6.4 MB
SHA1: 9C4F547232620AA5F0B643C39A33C84888300013

Download
PROADMIN.tar.gz

OS Independent, Linux*
Size: 5 MB
SHA1: CE2F0D4D5A49FB7DACA05F0A042736EA893275CA

Documentation

[Release Notes \(Release_Notes_28.2.pdf\)](#)
[README Text Files \(readme_28.2.txt\)](#)

Download and install Windows driver package.

Detailed Description

Overview

This download record installs version 28.2 of the administrative tools for Intel® Network Adapters.

What's new

Windows Server 2022 Driver Download

Windows Server 2022 Driver Download

 [PRODUCTS](#) [SUPPORT](#) [SOLUTIONS](#) [DEVELOPERS](#) [PARTNERS](#)

  [ENGLISH](#)



Drivers & Software

Intel® Network Adapter Driver for Windows Server 2022*

ID	Date	Version
706171	8/7/2023	28.2 (Latest) ▾

Introduction

This download record installs version 28.2 of the Intel® Network Adapter using Windows Server 2022*

Documentation

[Release Notes](#) (Release_Notes_28.2.pdf)
[README Text Files](#) (readme_28.2.txt)

Available Downloads

Download Wired_driver_28.2_x64.zip	Windows Server 2022 family* Size: 37.8 MB SHA1: 78994AB1F54586F8ACFA81C8E242A64C0682121F
Download Wired_PROSet_28.2_x64.zip	Windows Server 2022 family* Size: 33 MB SHA1: A1DA9E6C5B3DFB34C03548B678A06B6B66B1314C

Step 1: Install the driver package firstly.

Step 2: install the Intel® PROSet package secondly.

Detailed Description

Overview

The Microsoft Windows* download package has been split into a driver package and an Intel® PROSet package. The driver package must be installed prior to installing the Intel® PROSet package.

Ubuntu Driver Download

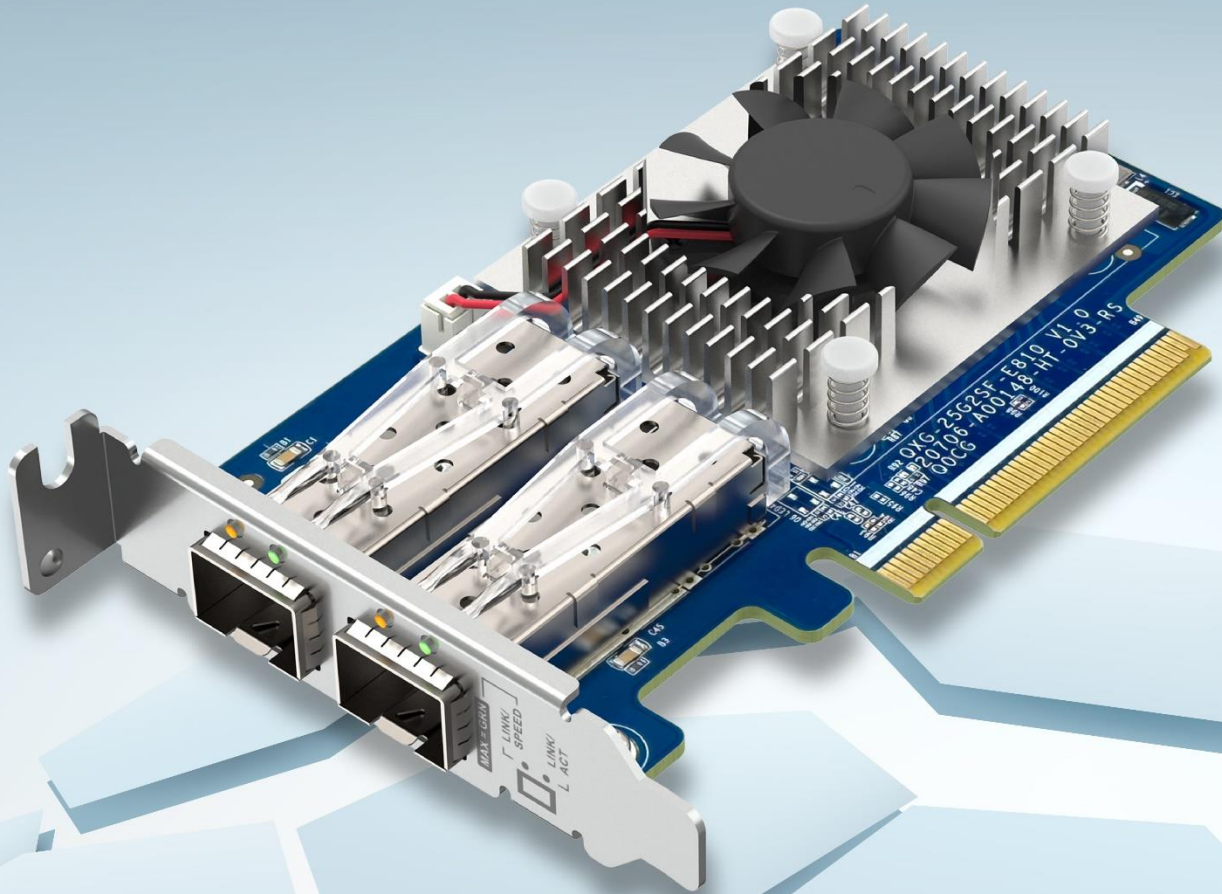
Ubuntu Driver Download

Available Downloads

Download intel-public-key-ice-ko.zip	Linux* Size: 1 KB SHA1: 8FDFE87DDEAF96C12FC3D24017364FF17699E856
Download RHEL_8.8_ice_1.12.6_RPM.zip	Linux* Size: 1.8 MB SHA1: 062B602EA0FA4CA067CD534466A7F69D0FA355E8
Download RHEL_9.1_ice_1.12.6_RPM.zip	Linux* Size: 1.8 MB SHA1: D1F1C5CA029E091BA6F75395A71AB27F09A62AC4
Download ice-1.12.6.tar.gz	Linux* Size: 1.2 MB SHA1: 814C8B8AF2CD6D1DCFA6AFDFD1432FCC216B7861
Download RHEL_8.7_ice_1.12.6_RPM.zip	Linux* Size: 1.8 MB SHA1: 5238ED98202A05FFF82BB76AD8E98F896404FA62
Download RHEL_9.2_ice_1.12.6_RPM.zip	Linux* Size: 1.8 MB SHA1: D13D3700DAFB1A77BC6695D0105BF5305C1F4BCB
Download SLES_15.4_ice_1.12.6_RPM.zip	Linux* Size: 3 MB

Click to download the driver package.

QXG-25G2SF-E810 is backed by a 3-year product warranty



QXG-25G2SF-E810 comes with a free 3-year product warranty.

More information: [QNAP Warranty Service](https://www.qnap.com/service/product-warranty/go/)

QNAP-Warranty Service Official Website
<https://www.qnap.com/service/product-warranty/go/>

QXG-25G2SF-E810 NAS Compatibility Check

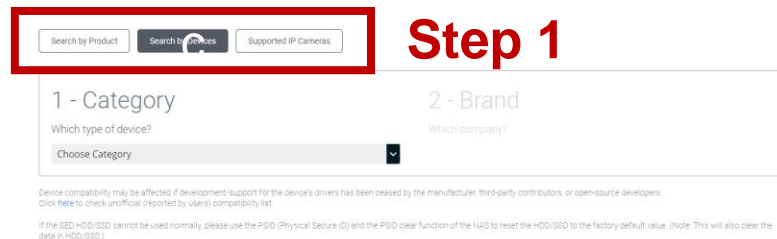
Compatibility List

QNAP regularly tests hard drives and other devices for compatibility with our products. Please check below for details on compatible and recommended devices.

QNAP's commitment to verifying compatibility

Step 1: Go to [Compatibility List - QNAP](https://www.qnap.com/go/compatibility/) and select search by devices.

QNAP-Compatibility List Official Website
<https://www.qnap.com/go/compatibility/>



Step 1

Search by Product Search by **Devices** Supported IP Cameras

1 - Category Which type of device?
Choose Category

2 - Brand Which company?

Device compatibility may be affected if development/support for the device's drivers has been ceased by the manufacturer, third-party contributors, or open-source developers. Click [here](#) to check unofficial (reported by users) compatibility list.

If the SED HDD/SSD cannot be used normally, please use the PSD (Physical Secure ID) and the PSD clear function of the NAS to reset the HDD/SSD to the factory default value. (Note: This will also clear the data in HDD/SSD.)

Compatibility List

QNAP regularly tests hard drives and other devices for compatibility with our products. Please check below for details on compatible and recommended devices.

QNAP's commitment to verifying compatibility



Choose Category

- 3.5 HDD
- 2.5 HDD
- SSD
- M.2 SSD
- U.2 SSD
- External Storage Device
- Digital Media / Music Player
- 3rd party Software
- UPnP Router
- UPS
- USB Printer
- Expansion Card**
- USB Wi-Fi
- Raw Image File Format
- 3G/4G Dongle
- SD Card
- USB Bluetooth Adapters
- USB Speakers / Sound Card
- USB Webcam

Choose Category

2 - Brand Which company?

Device compatibility may be affected if development/support for the device's drivers has been ceased by the manufacturer, third-party contributors, or open-source developers. Click [here](#) to check unofficial (reported by users) compatibility list.

If the SED HDD/SSD cannot be used normally, please use the PSD (Physical Secure ID) and the PSD clear function of the NAS to reset the HDD/SSD to the factory default value. (Note: This will also clear the data in HDD/SSD.)

Step 2: In 1 - Category, select the type of device you want to query. **Expansion Card** will be used as a sample category for the following demonstration.

QXG-25G2SF-E810 Product Compatibility Check

Compatibility List

QNAP regularly tests hard drives and other devices for compatibility with our products. Please check below for details on compatible and recommended devices.

QNAP's commitment to verifying compatibility

Search by Product

Search by Devices

Supported IP Cameras

1 - Category

Which type of device?

Expansion Card

Recommended Models

There are no recommended models.

Search by Product

Search by Devices

Supported IP Cameras

1 - Category

Which type of device?

Expansion Card

2 - Brand

Which company?

QNAP

Recommended Models

QNAP - QXG-10G2SF-X710

QNAP - QXG-10G2T

QNAP - QXG-25G2SF-E810

QNAP - QM2-2P-384A

QNAP - QM2-2P-344A

QNAP - QXG-10G2SF-CX6

QNAP - QXP-1600eS-A1164

QNAP - QM2-2P410G2T

QNAP - QM2-2P410G1T

Step 3: In 2 – brand, Choose the brand you want to inquire about. We will use QNAP as a sample brand for the following demonstration.

Step 3



Step 4: Below the recommended models you can see all the expansion cards available from QNAP.

Step 4

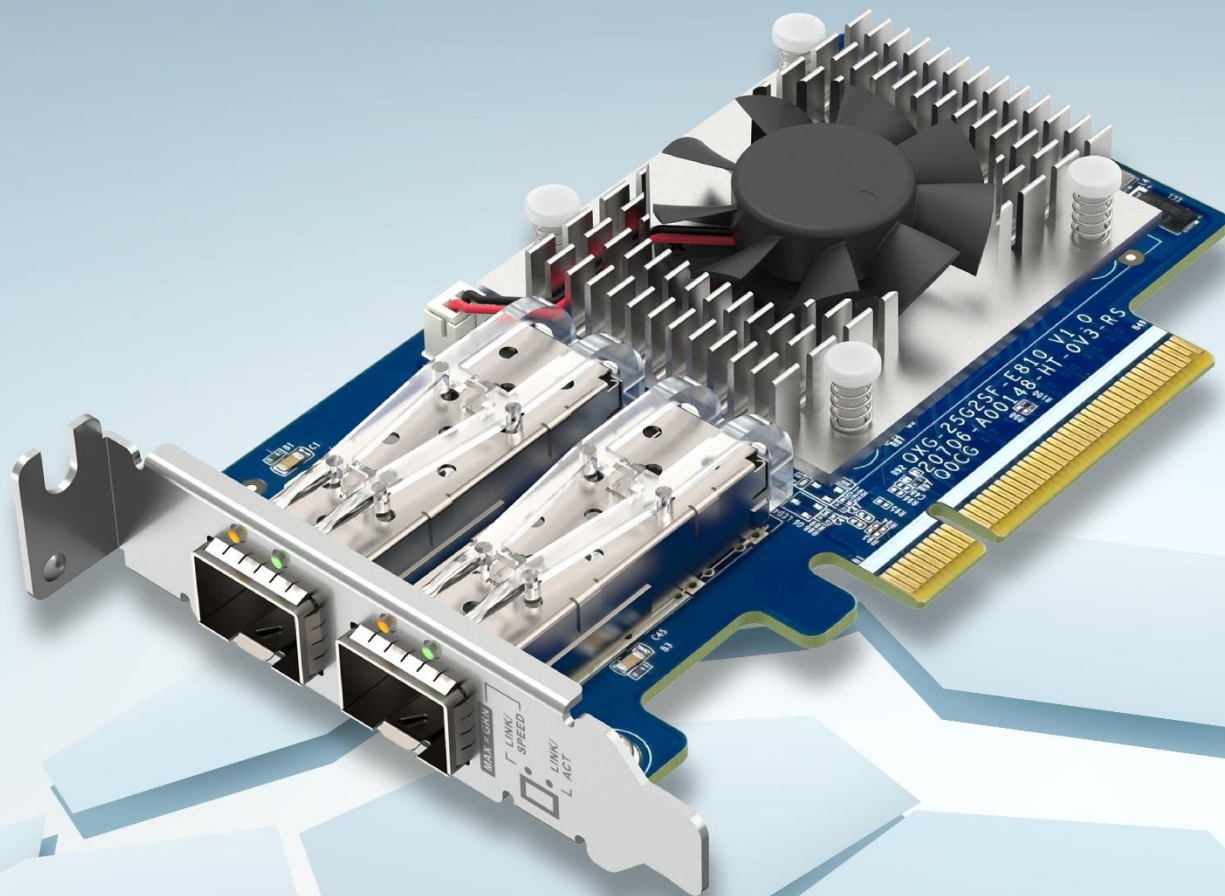


QXG-25G2SF-E810 Product Compatibility Check

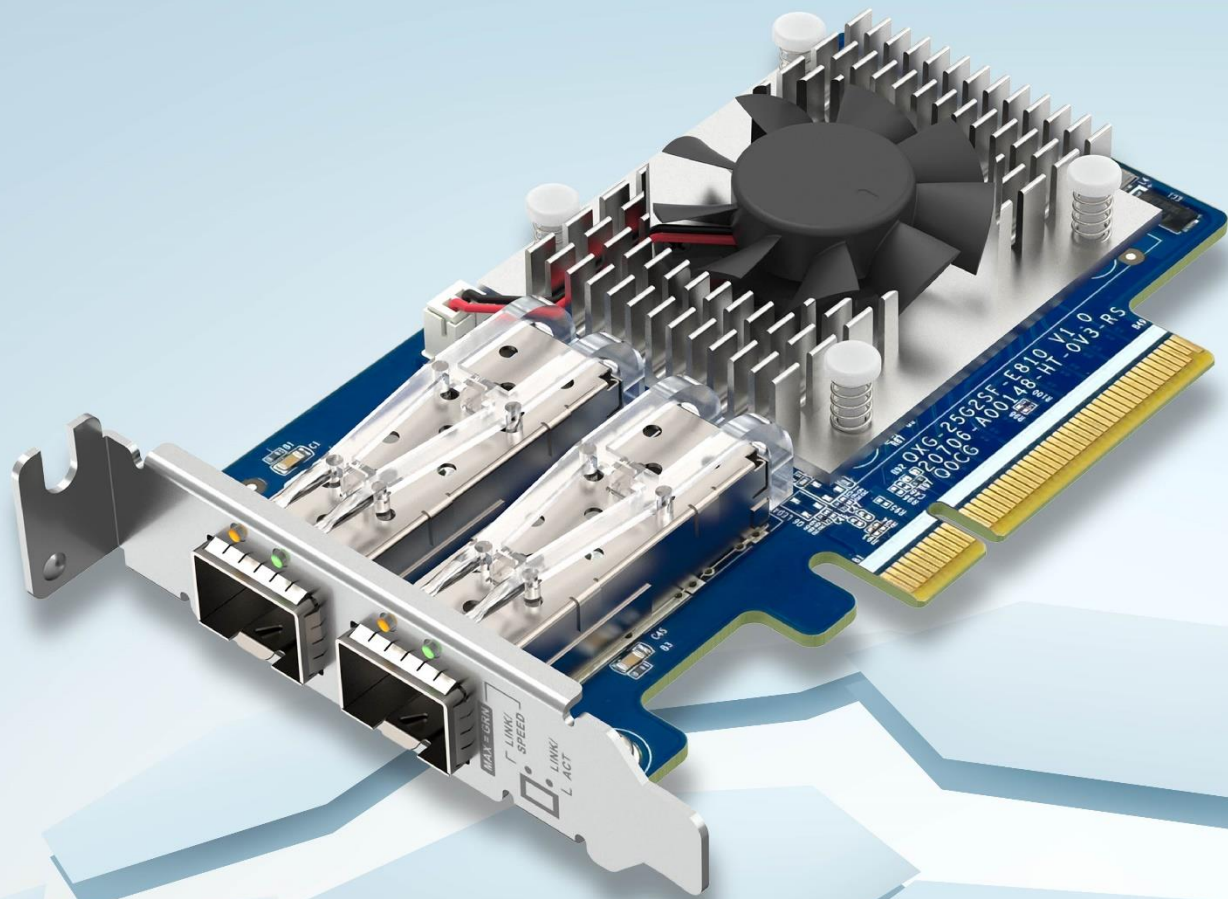
Step 5

QNAP - QXG-25G2SF-E810		
Brand	Model	Specification
QNAP	QXG-25G2SF-E810	Dual-port (SFP28) 25GbE network expansion card; low-profile formfactor; PCIe Gen4 x8
[4 Bays]		
TVS-472XT, TVS-h474		
[6 Bays]		
TS-677, TS-h686, TVS-672N, TVS-672X, TVS-672XT		
[8 Bays]		
TS-855eU, TS-855eU-RP, TS-855X, TS-873AeU, TS-873AeU-RP, TS-877, TS-883XU, TS-883XU-RP, TS-h886, TVS-872N, TVS-872X, TVS-872XT		
[9 Bays]		
TS-977XU, TS-977XU-RP, TS-983XU, TS-983XU-RP, TS-h977XU-RP, TS-h987XU-RP		
[10 Bays]		
TNS-h1083X, TS-h1090FU		
[12 Bays]		
TS-1277, TS-1283XU-RP, TS-h1283XU-RP, TS-h1290FX, TVS-h1288X		
[16 Bays]		
TS-1655, TS-1677X, TS-1683XU-RP, TS-h1683XU-RP, TVS-h1688X		
[18 Bays]		
TS-1886XU-RP, TS-h1886XU-RP, TS-h1886XU-RP R2, TS-h1887XU-RP		
[22 Bays]		
TS-h2287XU-RP		
[24 Bays]		
TDS-h2489FU, TS-2483XU-RP, TS-h2483XU-RP, TS-h2490FU		
[28 Bays]		
TS-2888X		
[30 Bays]		
TS-h3087XU-RP, TS-h3088XU-RP		

Step 5: Click on any of the recommended models. Take QXG-25G2SF-E810 as a sample case, you can see the brand, model, specification, and compatible QNAP products.



QXG-25G2SF-E810 Performance Test

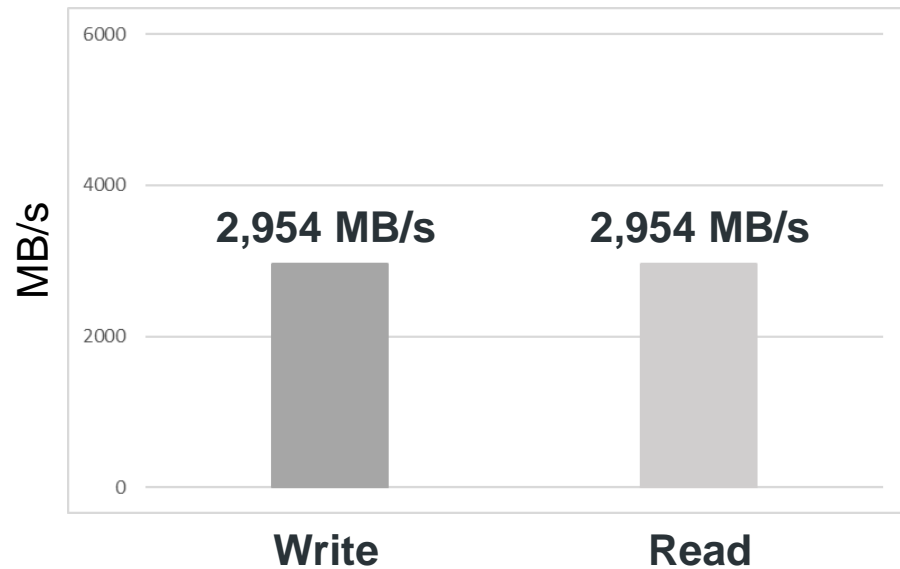


LIVE DEMO

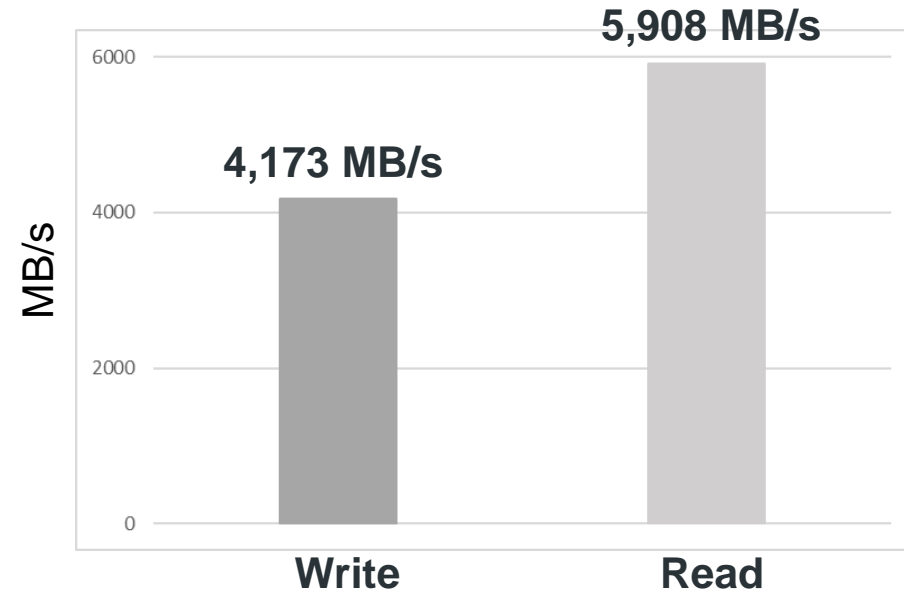
File Write and File Read

High-speed experience from QXG-25G2SF-E810 with Sequential Throughput

**1 x 25GbE SMB
Sequential Transmission (1MB)**



**2 x 25GbE SMB
Sequential Transmission (1MB)**

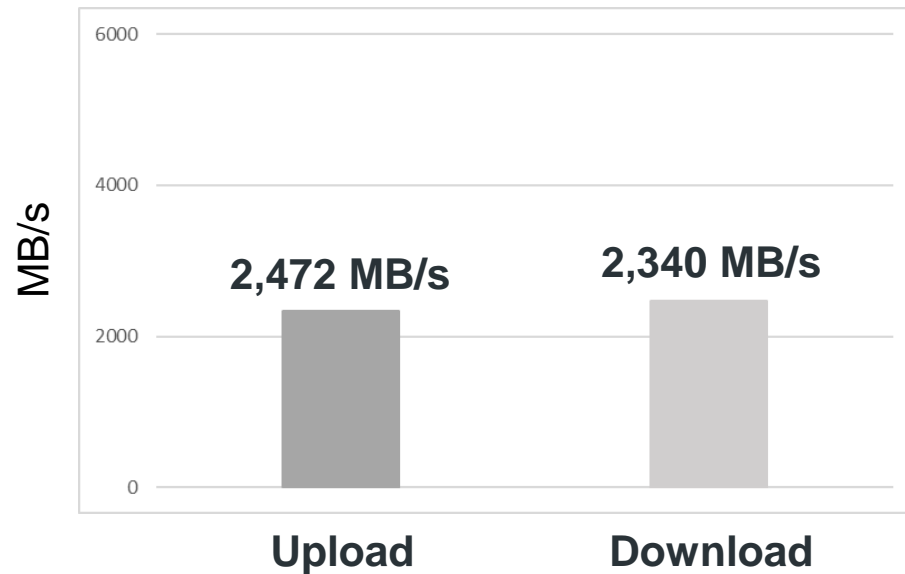


Test Environment

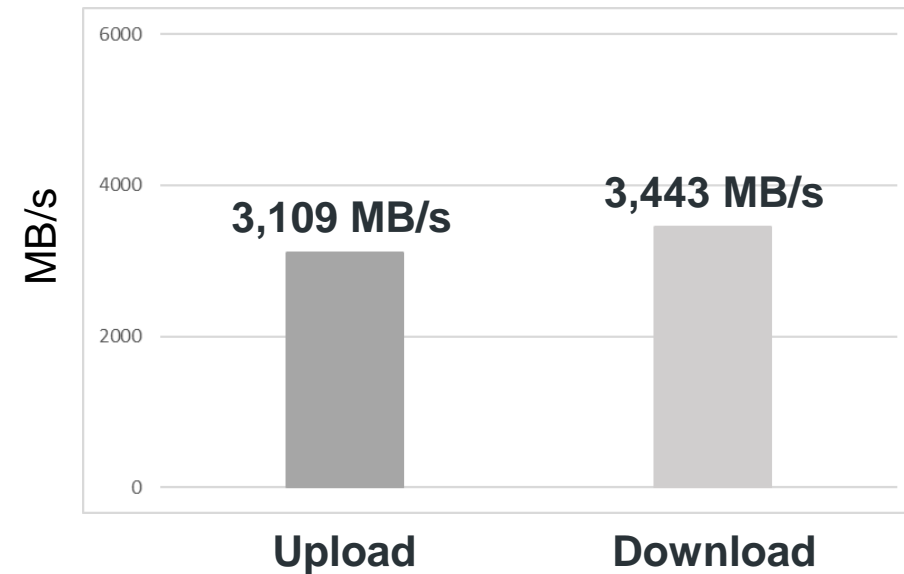
- NAS: TVS-h874T
- CPU: 12th Gen Intel(R) Core(TM) i7-12700, 2480 MHz (10C, 20T)
- Volume type: Raid 5, Samsung 870 EVO 1TB x8
- Client PC: Windows Server 2019, AMD EPYC 7232P 3.0Ghz (1290FX), 64GB RAM
- Iometer: RAM*4, 30-sec ramp up time, 3-min seq run time, 16 worker, 4-outstanding

High-speed experience from QXG-25G2SF-E810 with Windows File Explorer

1 x 25GbE Windows
File Drag & Drop

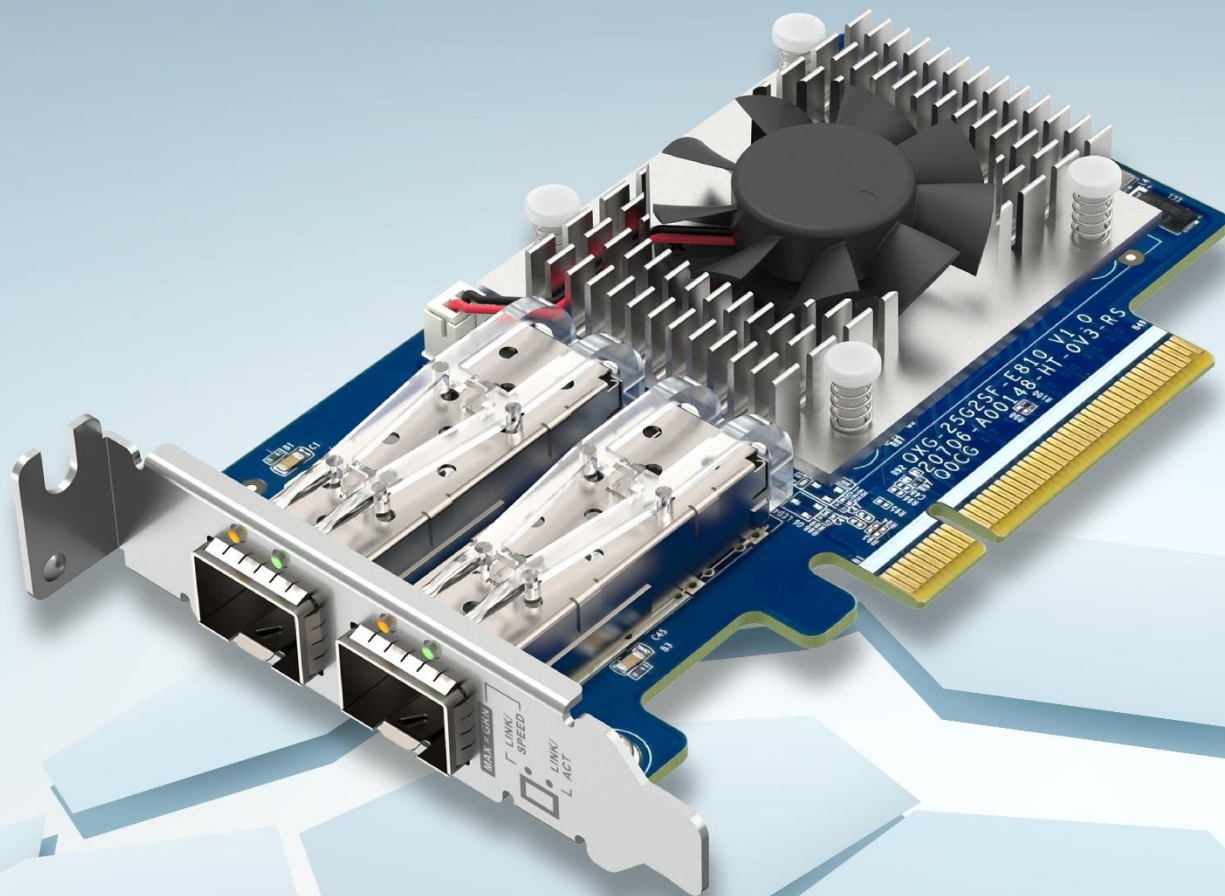


2 x 25GbE Windows
File Drag & Drop (2 clients)



Test Environment

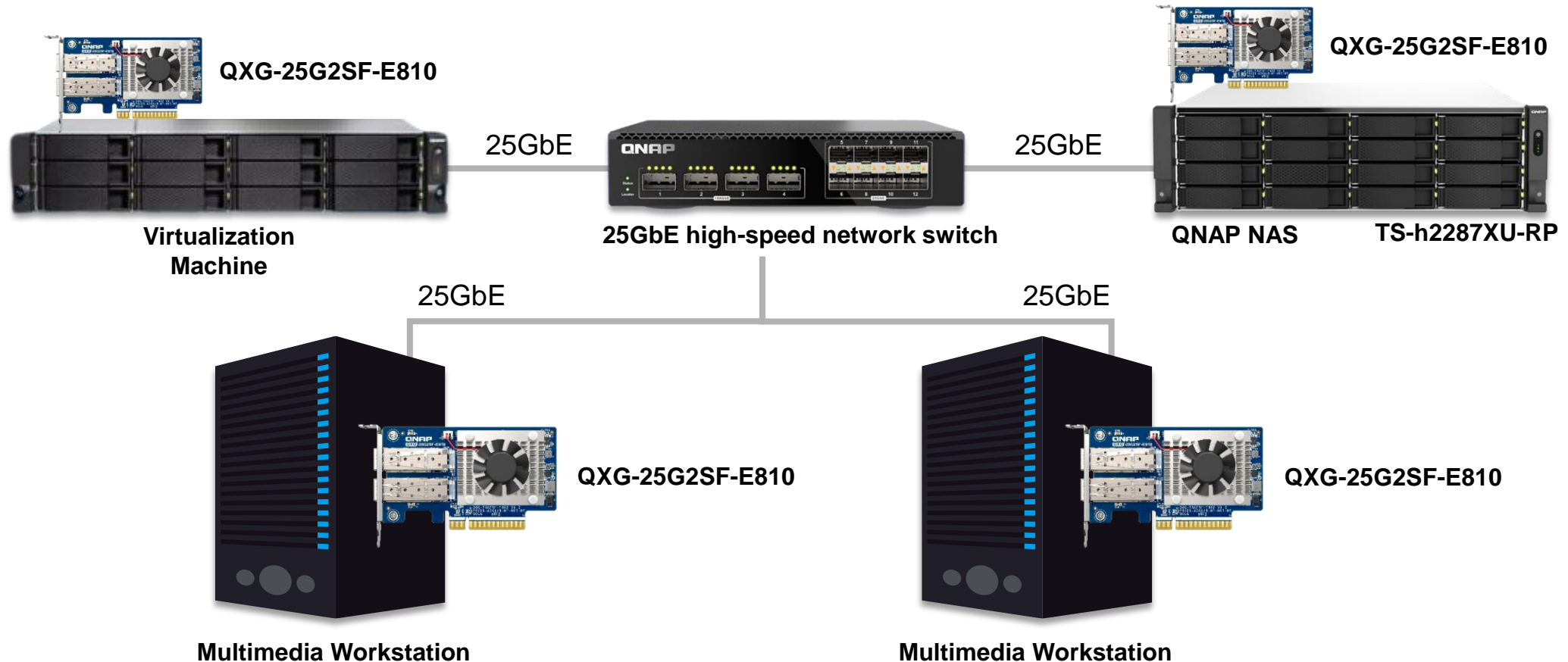
- NAS: TVS-h874T
- CPU: 12th Gen Intel(R) Core(TM) i7-12700, 2480 MHz (10C, 20T)
- Volume type: Raid 5, Samsung 870 EVO 1TB x8
- Client PC: Windows Server 2019, AMD EPYC 7232P 3.0Ghz (1290FX), 64GB RAM



**Build 25GbE
Network
Environment**

Highly efficient 25GbE network environment with QNAP NAS and 25GbE network switches

An affordable combination for a smooth, secure and scalable high-speed network environment.



Multiple Scalable 25GbE Network QNAP NAS

- Wide range of enterprise and high-end SMB NAS options



ES2486dc



TDS-h2489FU



TS-h2490FU



TVS-h1688X



TS-h1290FX



TS-h3087XU-RP



TS-h2287XU-RP



TVS-h1288X



TS-h2483XU-RP



TS-h1683XU-RP



TS-2483XU-RP



TS-h886



TS-h2477XU-RP



TS-h1677XU-RP



TS-h1277XU-RP



TS-855eU-RP

More QNAP NAS models with QXG-25G2SF-E810 support are available!

Coming Soon: QNAP 100GbE Network Switch (QSW-M7308R) with 4-Port 100GbE and 8-Port 25GbE



QXG-25G2SF-E810



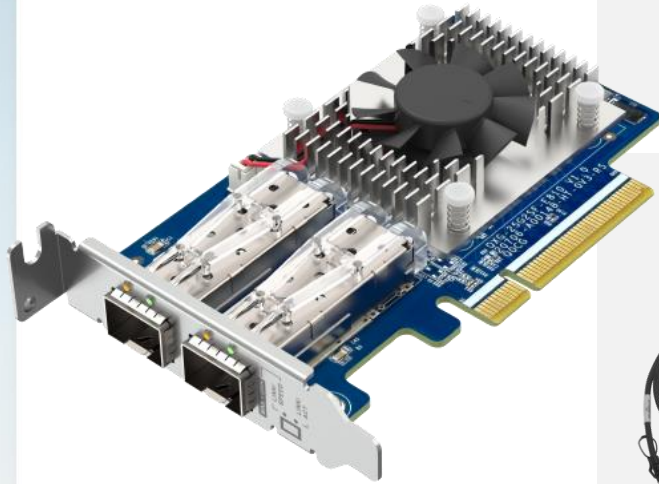
Available
in October,
2023

High-speed 100GbE managed switch

QSW-M7308R-4X

- 4x 100GbE QSFP28 network ports (100G/10G/1G)
- 8x 25GbE SFP28 network ports (25G/5G/2.5G/1G/100M)
- Total bandwidth up to 1200Gbps
- Record up to 32000 different MAC addresses and their corresponding interface information
- Equipped with L2 network management function
- Supports Forward Error Correction for seamless connection with QXG-25G2SF-E810
- Compliant with IEEE802.3az Energy Efficient Ethernet standard

QNAP offers a complete line of 10GbE/25GbE accessories



QXG-25G2SF-E810



25GbE SFP28 DAC

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



10GbE SFP+ DAC

- CAB-DAC15M-SFPP
- CAB-DAC30M-SFPP
- CAB-DAC50M-SFPP



25GbE SR Transceiver

- TRX-25GSFP28-SR



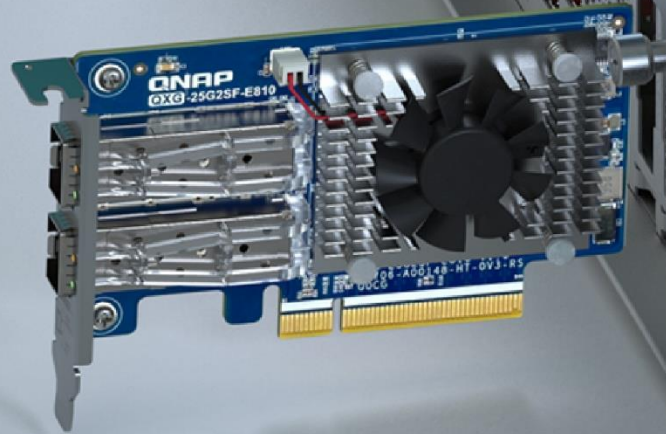
10GbE SR Transceiver

- TRX-10GITSFPP-SR



QXG-25G2SF-E810

QNAP is your best choice



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