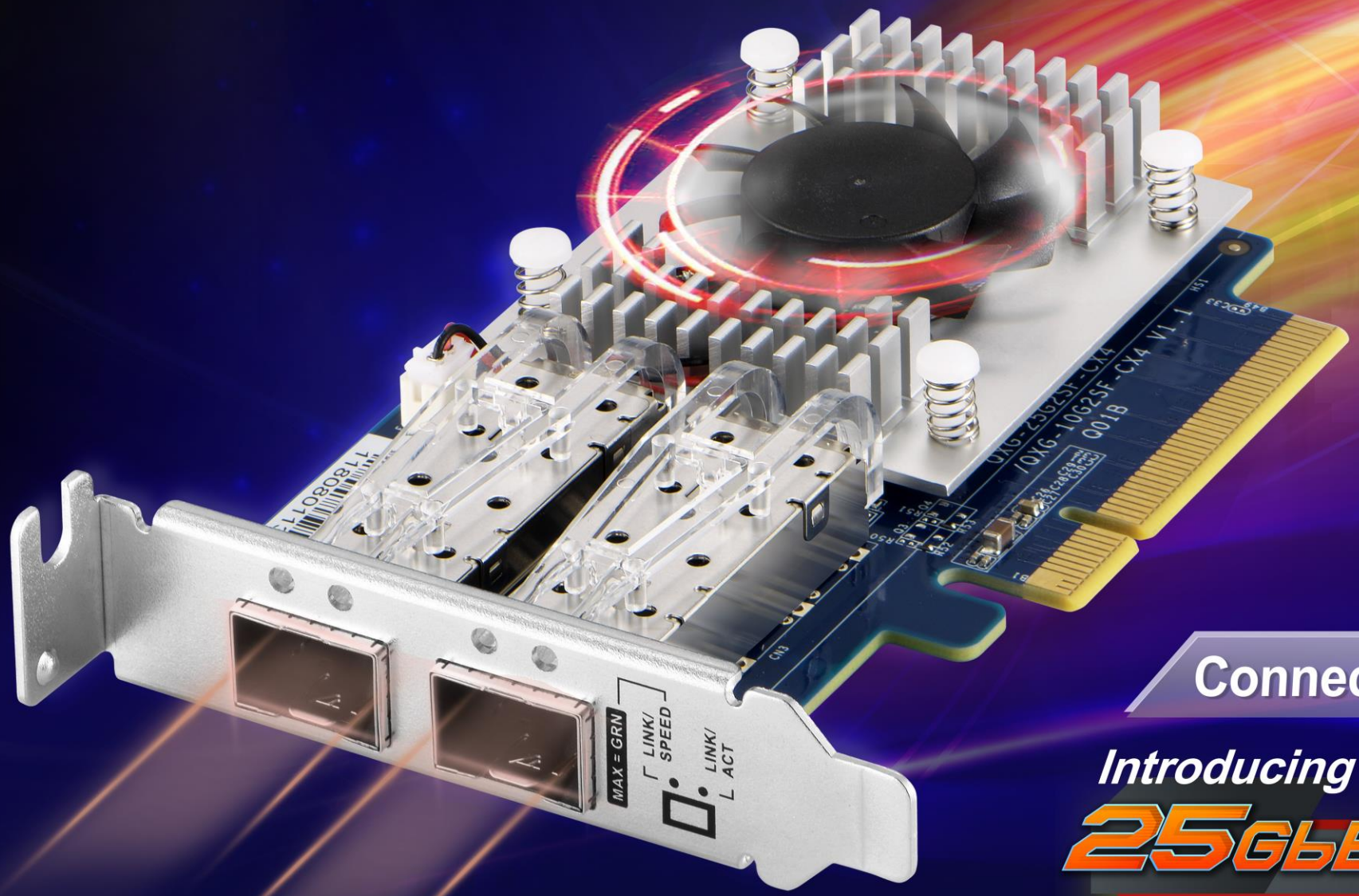
QNAP



Mellanox TECHNOLOGIES

Mellanox TECHNOLOGIES ConnectX-4 Lx

ConnectX-4 Lx

Introducing the QXG-25G2SF-CX4

25GbE Network Expansion Card

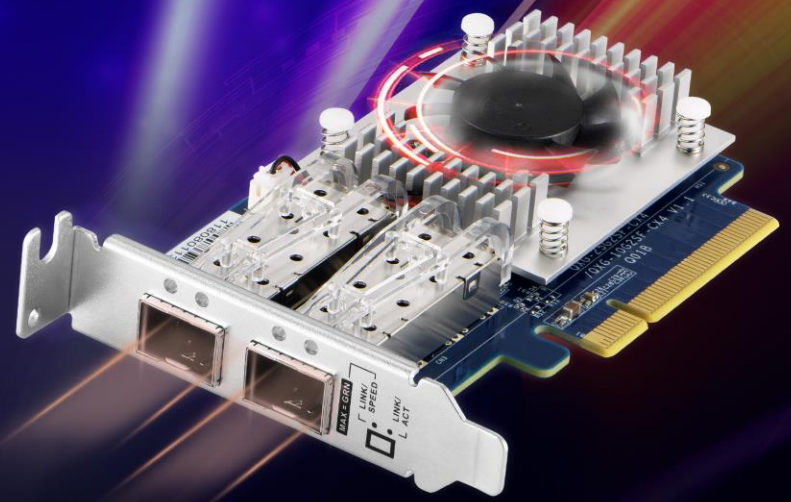
NEW

QNAP

01 QNAP 25GbE PCIe Expansion Card

02 Mellanox SN2010 25GbE/100GbE Management Switch

03 QNAP NAS X 25GbE card X 25GbE/100GbE switch



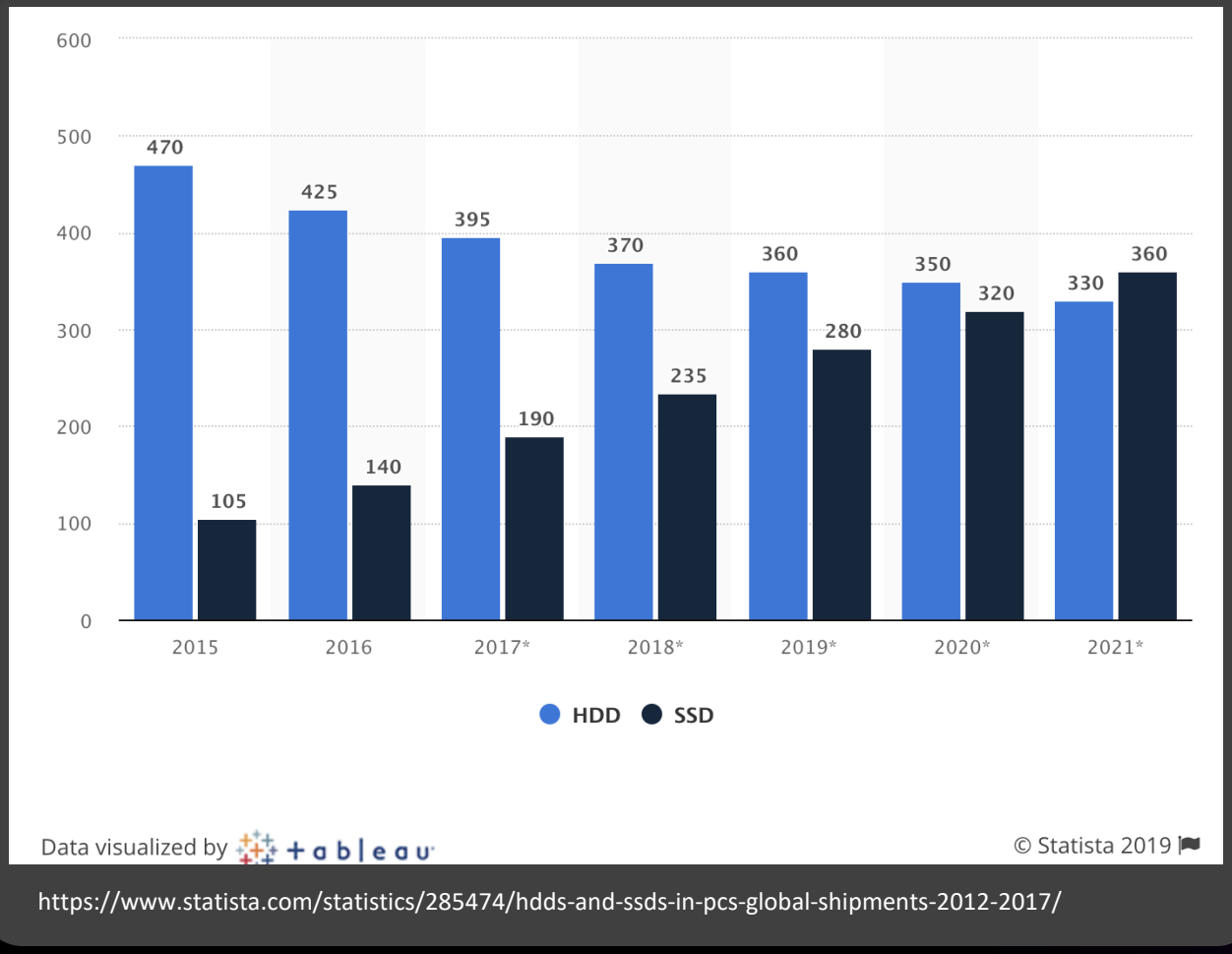
QNAP

01

Over 10GbE: QNAP 25GbE PCIe expansion card

Fast Growing market and technology of SSD

Shipments of hard and solid state disk (HDD/SSD) drives worldwide from 2015 to 2021 (in millions)



https://www.statista.com/statistics/285474/hdds-and-ssds-in-pcs-global-shipments-2012-2017/

SAMSUNG 860 EVO

Read: 550MB/s · Write: 520MB/s

SAMSUNG 970 EVO

Read: 3,500MB/s · Write: 2,300MB/s

QNAP

10GbE is not enough for Multi users

10GbE throughput

10GbE throughput

10GbE throughput

PC/work station

bottleneck

10GbE Card

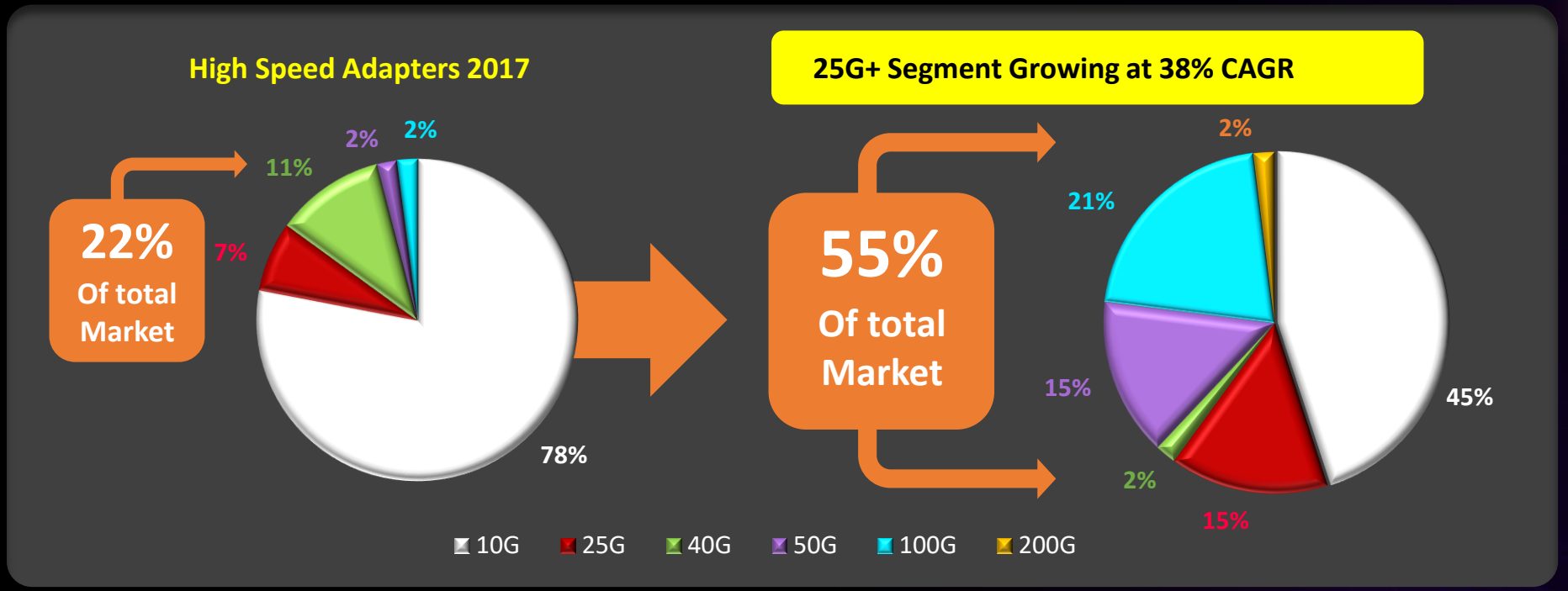
(1) NVMe SSD or (2) Enterprise SATA SSD (SLC/MLC)

SSD cache

Qtier

25GbE+ networking card market

- 25GbE above market is estimatted to grow up from 22%(2017) to be doubled to 55%(after 2018)
- For future cloud applications, Big data, High speed storage, Virtualization technologies and A.I.



Source: Mellanox

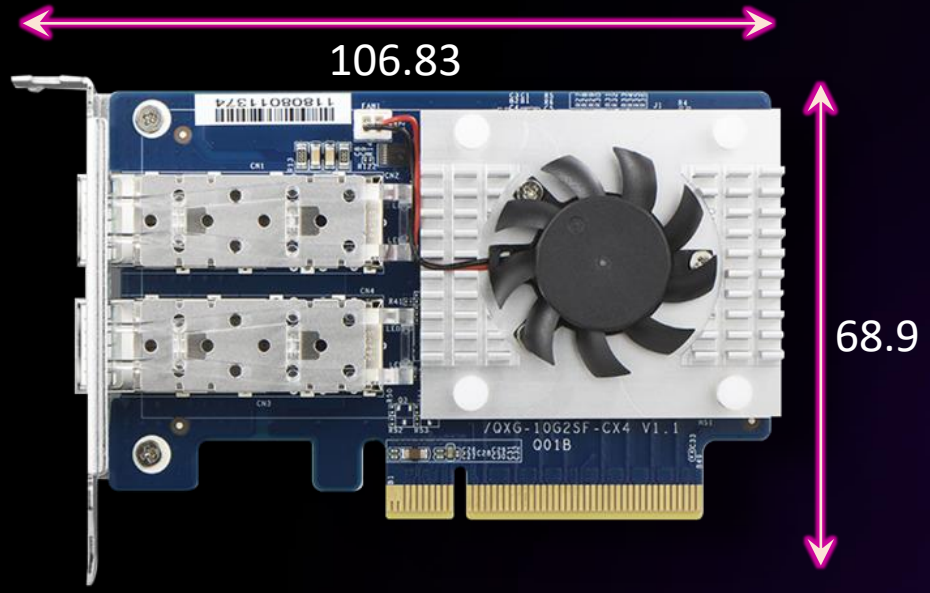
QNAP 10GbE/25GbE High speed card

QXG-10G2SF-CX4
Dual port 10GbE SFP+ Half-height card

- 2 x SFP+ connectors
- Supports 10GbE Transmission

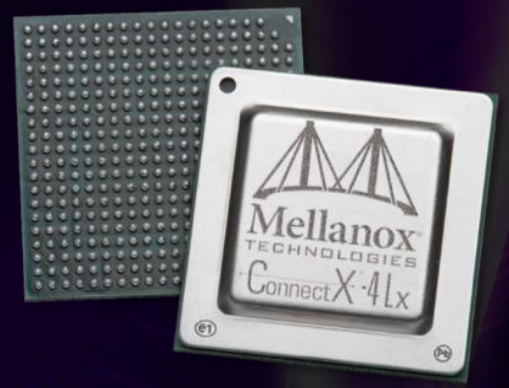
QXG-25G2SF-CX4
Dual port 25GbE SFP28 half-height card

- 2 x SFP28 connectors
- Supports 25/10GbE Transmission

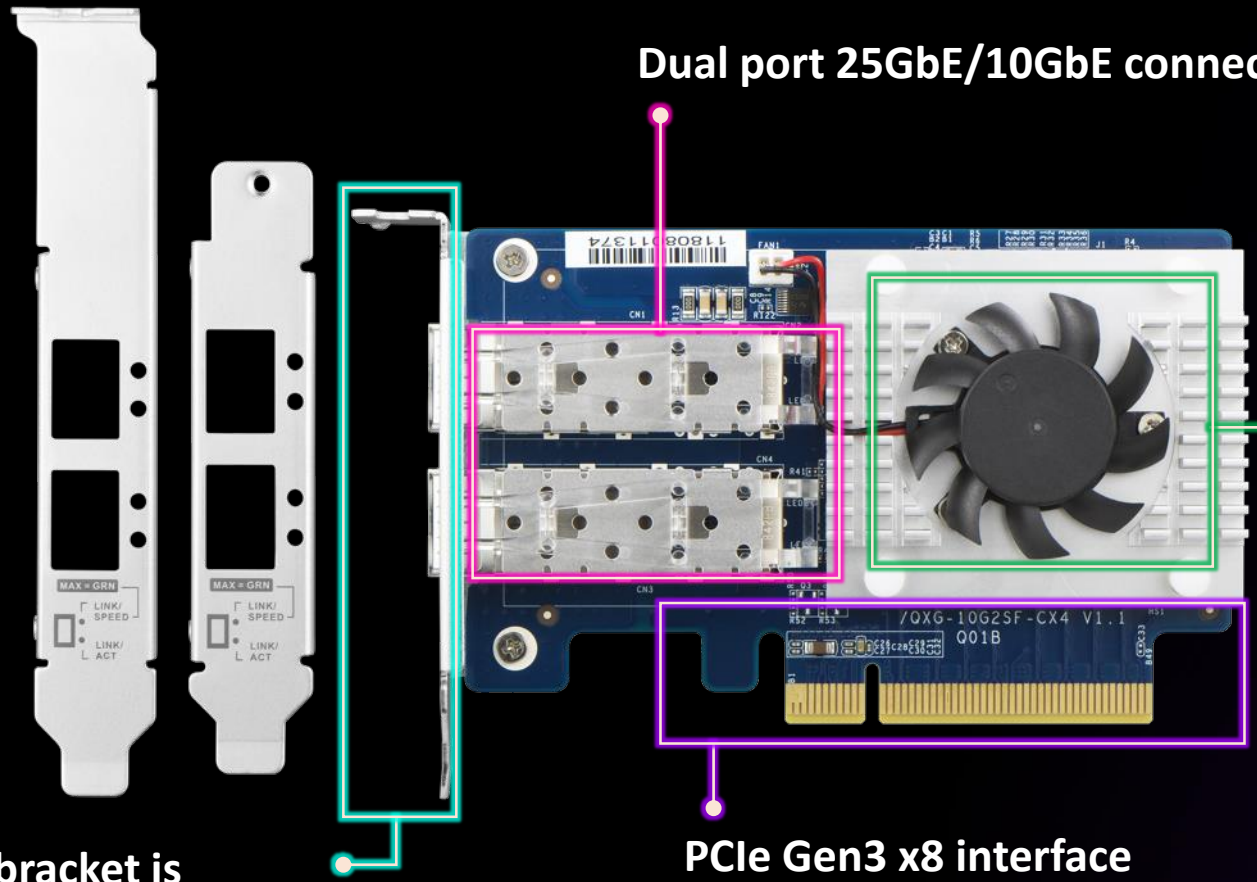


Mellanox
ConnectX®-4 Lx networking chip

- Supports iSER/RoCE



Hardware specification



Dual port 25GbE/10GbE connectors

Cooling heatsink and fan

Low profile bracket is installed when ship
Full height and QNAP flat bracket is bundled

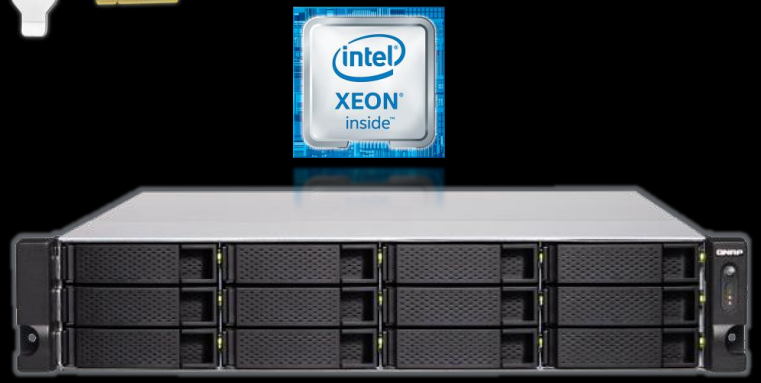
PCIe Gen3 x8 interface
Provides maximum 64Gbit/sec bandwidth

25GbE SFP28 DAC cable

10GbE SFP+ DAC cable

QNAP

Go with QNAP high end NAS to experience high speed throughput

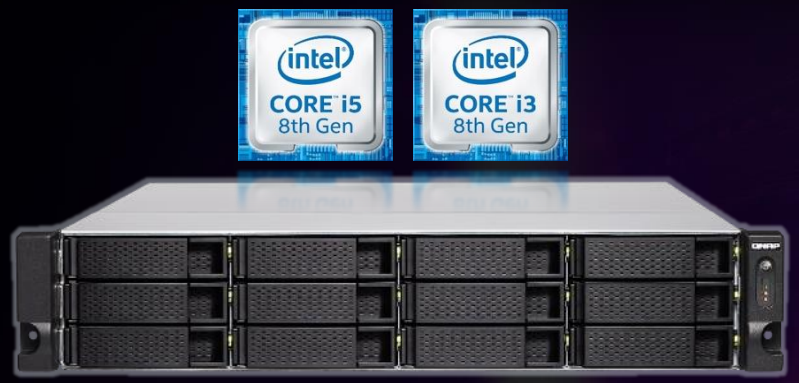


TS-x83XU

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

TS-x77XU

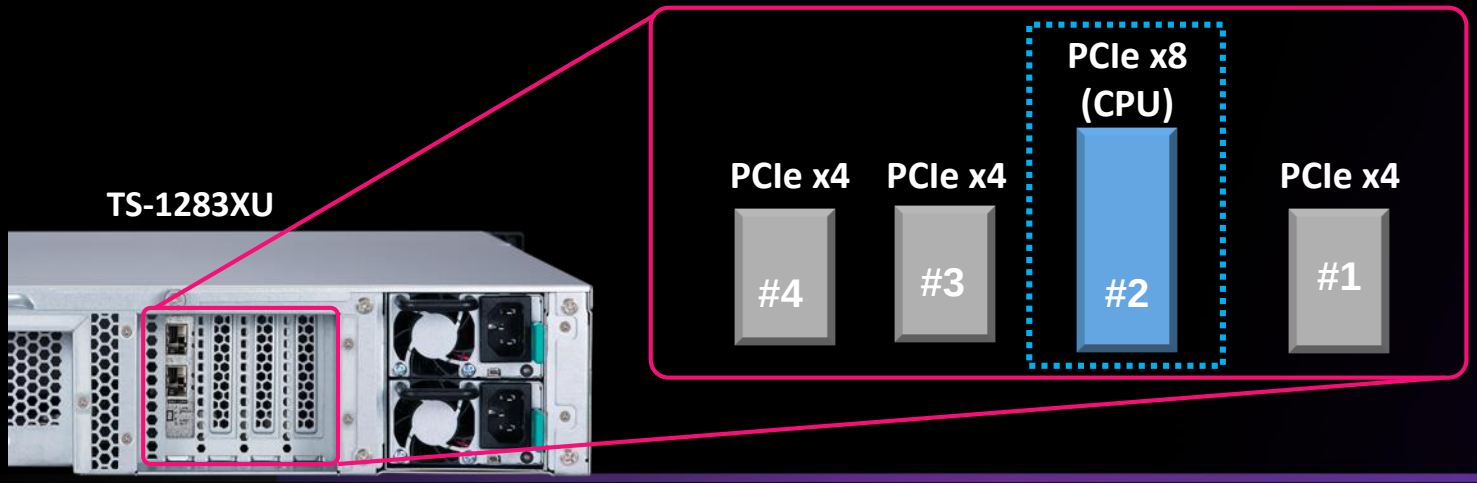
1U: Gen3 x16 (CPU)
2U & 3U : Slot 2 and 4 with Gen3 x8 (CPU)
4U: slot 2 and 3 with Gen3 x8 (CPU)



TVS-x72XU

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

TS-1283XU



*The PCIe bandwidth will drop to Gen3 x4 when another card is installed on next slot

Supporting QNAP models

QXG-10G2SF-CX4

QNAP X86 models which attaches at least one PCIe Gen2 x2 above PCIe slot
(Suggest to install on models with **Gen3 x4**)

TS-x73

TVS-x73e

QXG-25G2SF-CX4

QNAP X86 models which attaches at least one PCIe Gen3 x4 above PCIe slot
(Suggest to install on models with **Gen3 x8**)

TS-x83XU
TVS-x72XU
TS-x77XU

TVS-x82

TS-x77

Supporting O.S.

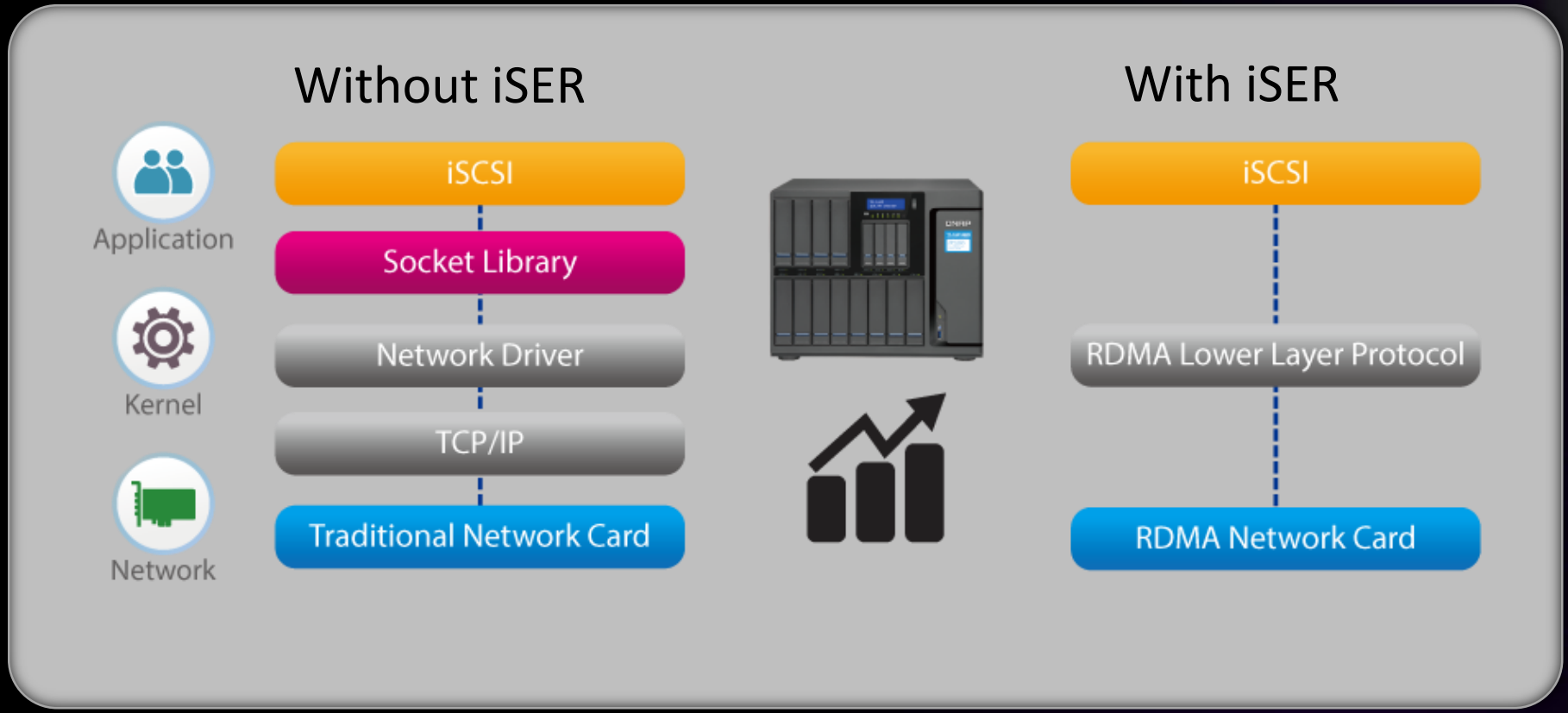
- QTS 4.3.6 and latter
- Window/Linux: Driver is required to install on your PC/workstation

*Please check the compatibility list

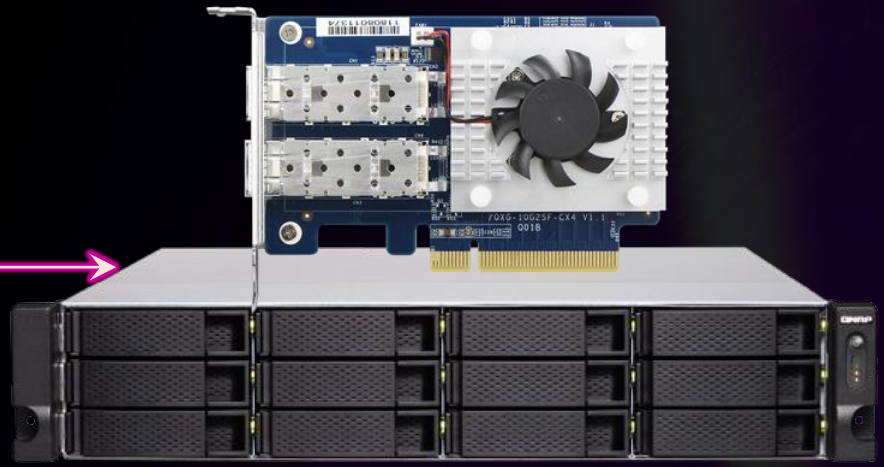
Offload tasks from CPU with iSER

25GbE X iSER Broadcast is coming soon!

- 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



25GbE Performance Demo-AJA



TS-x83XU

PC:
Intel (R) Core(TM) i7-6700 3.40GHz.
Windows 10, 64GB RAM, QXG-25G2SF-CX4 on board,
Samsung SSD 960 PRO 1TB NVMe

NAS:
1283XU. Intel(R) Xeon(R) E-2124 CPU @ 3.30GHz.
QTS 4.3.6.0805, 4GB RAM, QXG-25G2SF-CX4 on board,
Samsung SSD850 Pro 512GB*12 (RAID 0)

25GbE High speed throughput-File drag and drop

Speed : 962 MB/s

Speed : 0.98 GB/s

Speed : 940 MB/s

2.9GB/s

Recommended PC/ Workstation spec

- Intel x86 i5/i7(or same level) above
- Minimum Basic clock rate :3.3 GHz
- NVMe SSD

Recommended Server spec

- QNAP Intel X72 / AMD x77 above
- 12 x enterprise SATA SSD, RAID5 or RAID10

QNAP

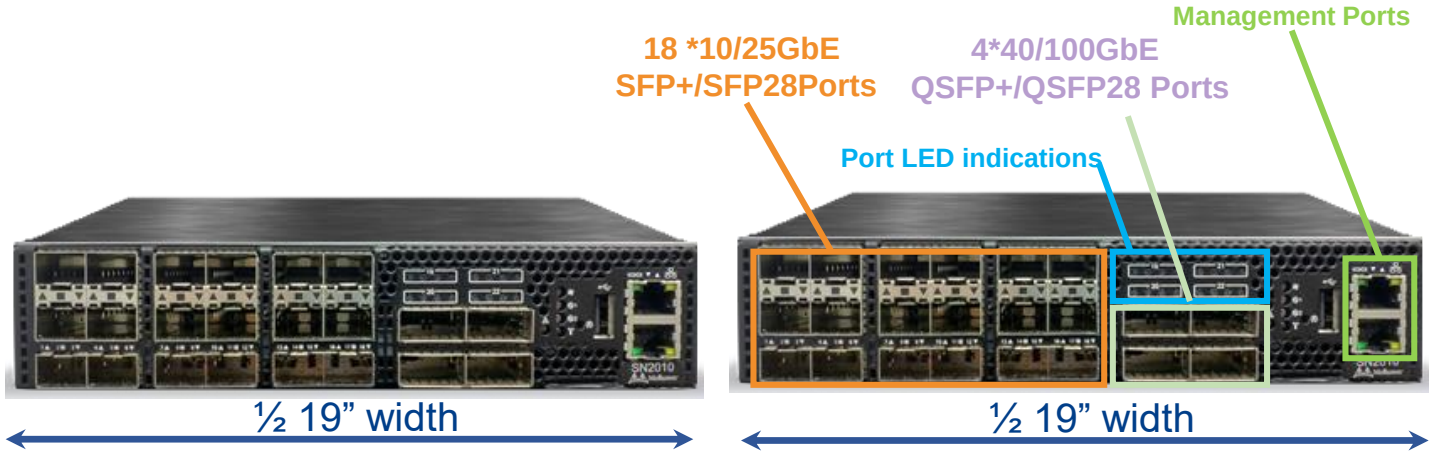
02

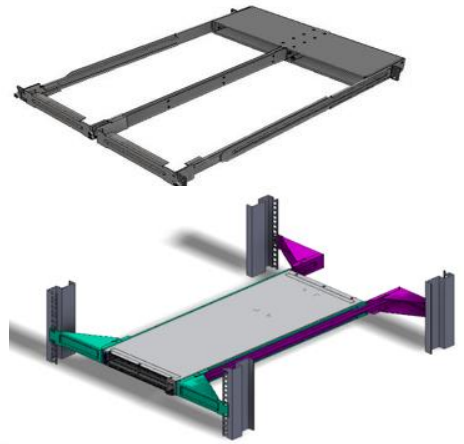
Mellanox SN2010 25GbE/100GbE Management Switch

Spectrum the Best ESF Switch – SN2010

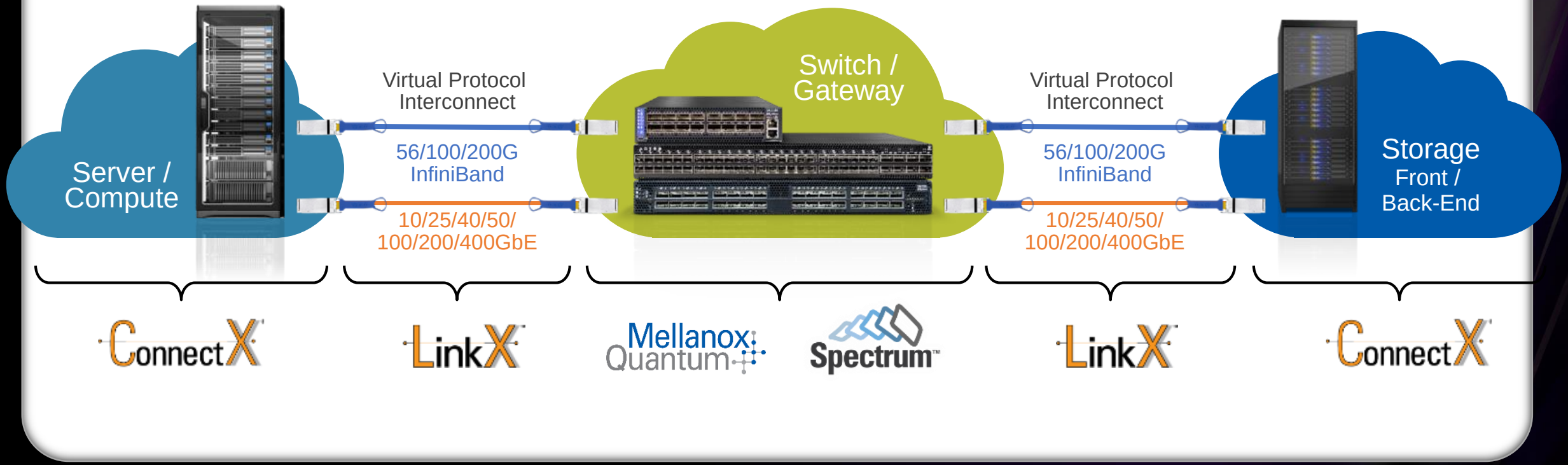
Ethernet Storage Fabric needs dedicated ESF switches

- Physical
  - 18 x SFP+/SFP28 ports
  - 4 x QSFP/QSFP28 ports
  - ½ 19’’ width, 1RU height
  - 57W typical power consumption (ATIS)
  - Weight: 4.5Kg
  - Power supply redundancy
  - Management port
  - Rail kit for 2 x SN2010 in 1RU, 19’’
  - x86 Quad core Atom CPU
  - 8GB RAM, 16GB SSD
- Performance
  - 2.52Bpps -> Zero Packet Loss
  - 300ns latency
- Network OS
  - Mellanox Onyx
  - Cumulus Linux
  - ONIE Version for coming Oss



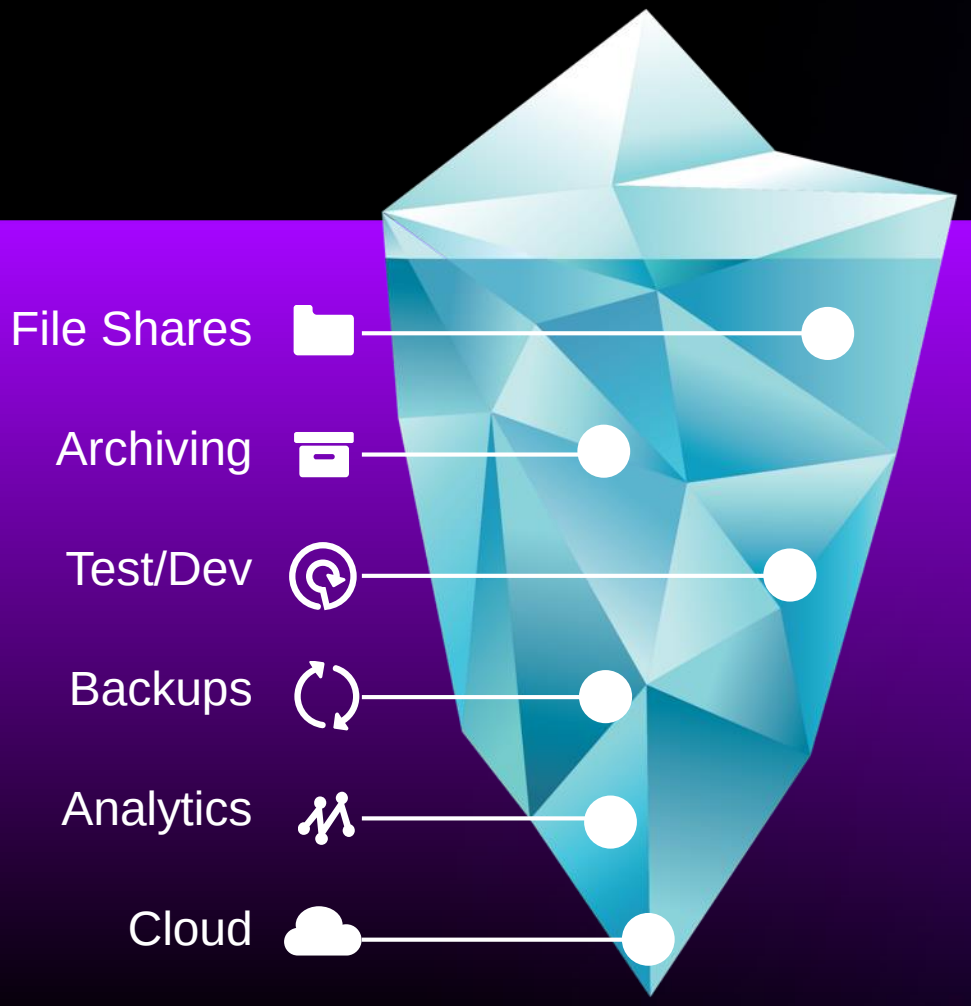


Leading Supplier of End-to-End Interconnect Solutions



Today's Storage Landscape

STORAGE ICEBERG



PRIMARY STORAGE

- Traditional SAN
- 20% of capacity

SECONDARY STORAGE

- 80% of capacity
- Rapid growth
- Diverse data types
- Scale-out, Ethernet-based
- Tiered storage

The Storage World is Changing

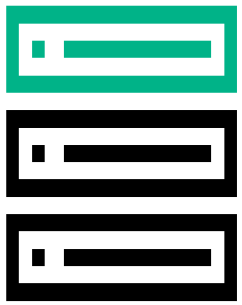
Changes	Effects
Flash, Faster servers	**Faster networking;** 10/25/40/50/100GbE
Social/Mobile/Video	**Huge data growth;** more file and object content
Hyperconverged	**Distributed "Server-SAN"** on Ethernet
Cloud	**Virtualization**, software-defined, price pressure
Big Data	**File and distributed** storage
Distributed applications	**More** east-west traffic

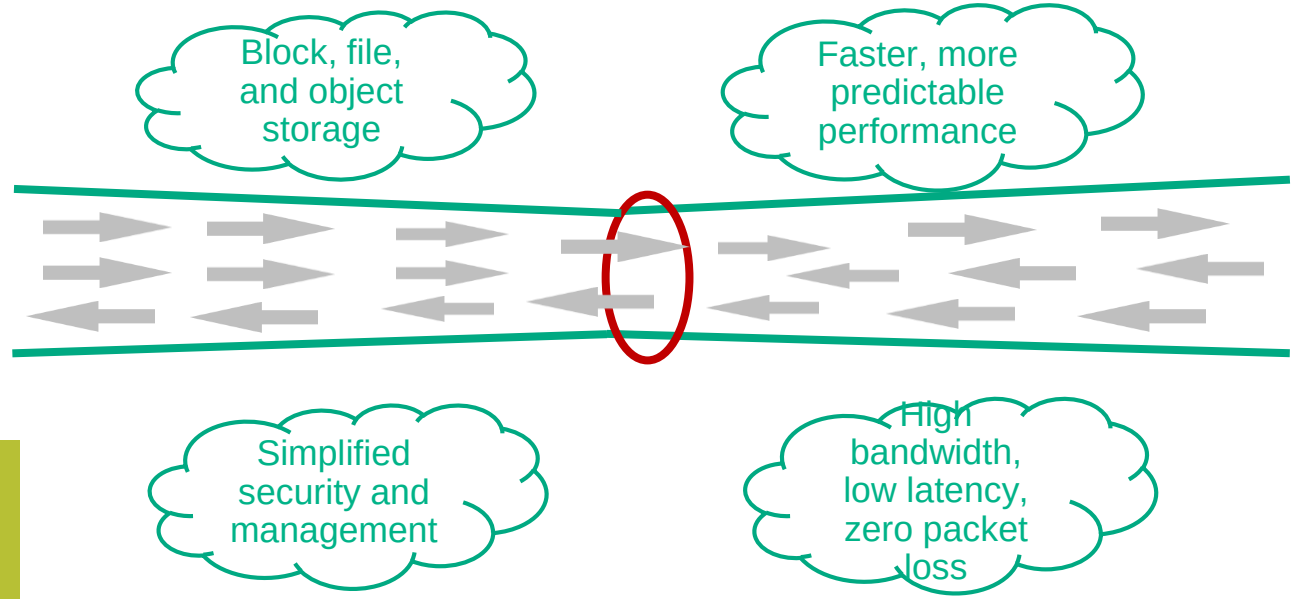
Bottom Line: More Ethernet Storage Traffic

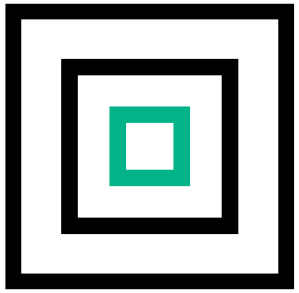
ESF Re-defining the Modern Data Centers

Predictable Performance, Deterministic & Secure Fabrics

Servers	Fabrics	Storage







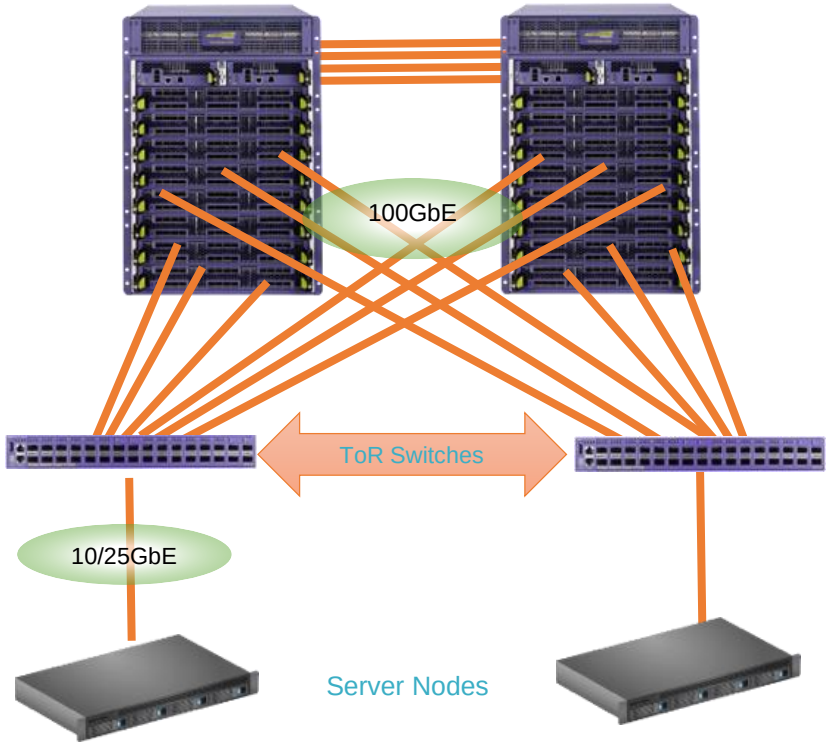
- **Higher processing capability**
- **High-density virtualization**

- **Move to All-flash**
- **Faster protocols – NVMe-oF**

Data Center modernization requires a faster, lossless Ethernet Storage Fabric

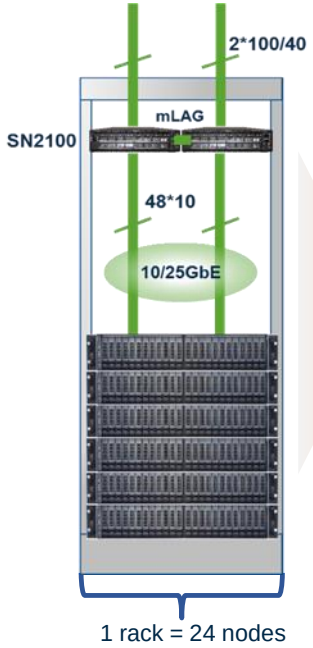
From Chassis to Leaf/Spine

Same Cable/Optic/Port Count
Superior Price & Performance



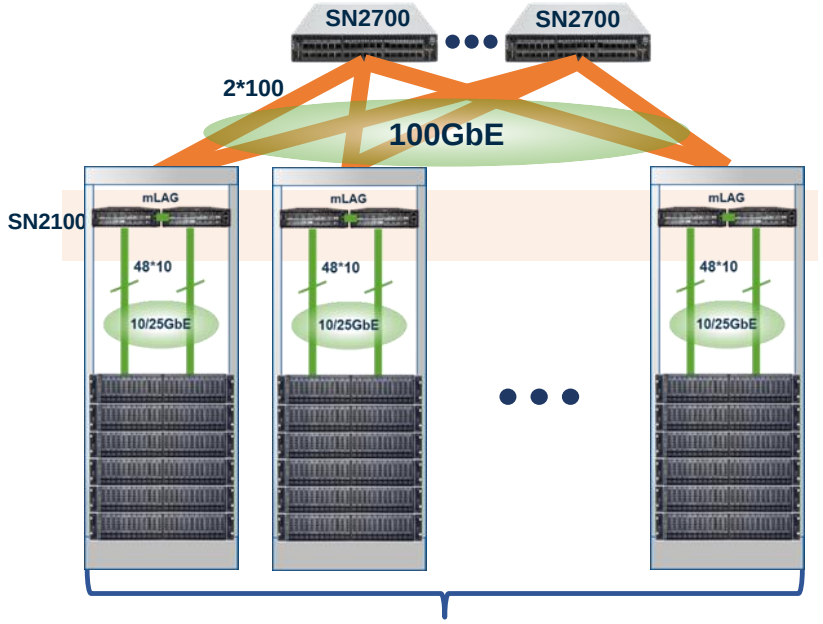
Scale Up Network

Full Rack



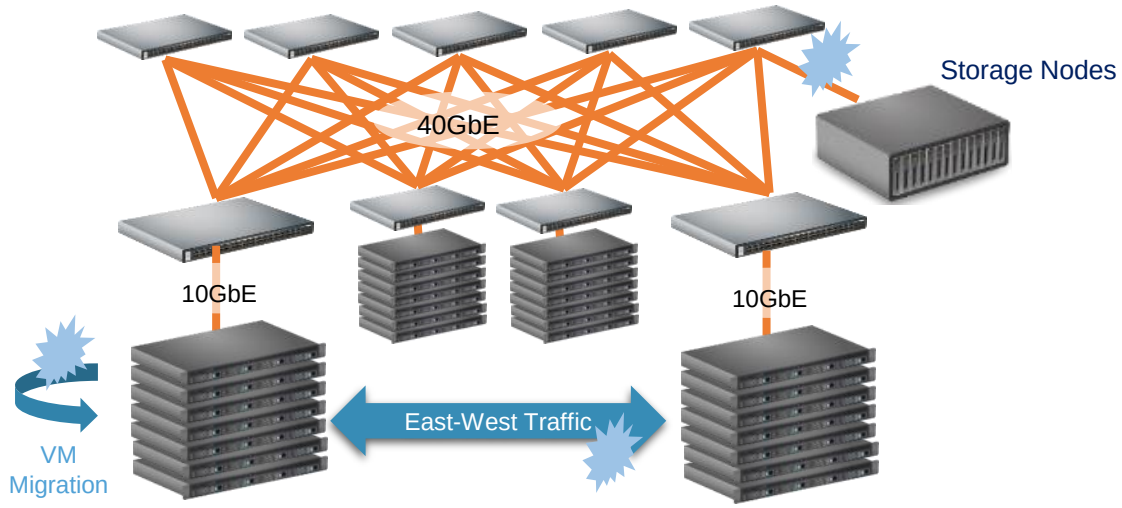
1 rack = 24 nodes

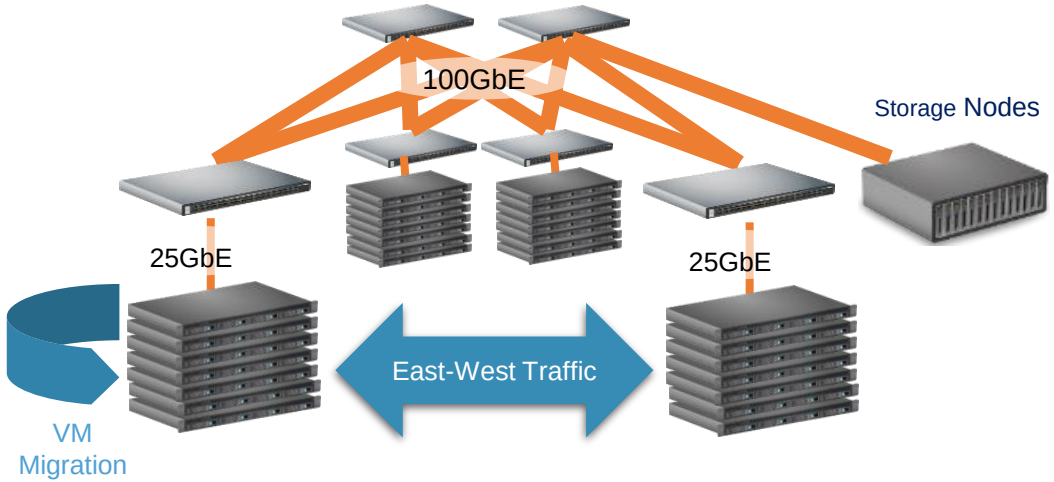
Multiple Racks



Leaf /Spine
Scale Out Network

Why Cloud Data centers move to 25GbE?





10/40GbE Challenges

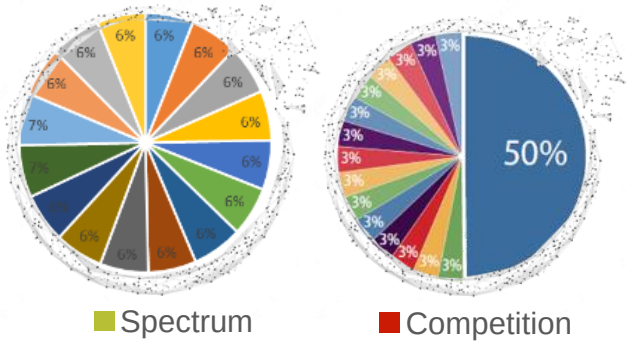
- Cloud Data Center need larger pipes
  - Access to Storage
  - Increase of East-West Traffic
  - VM (Virtual Machine) migration is data intensive

25/100GbE Value

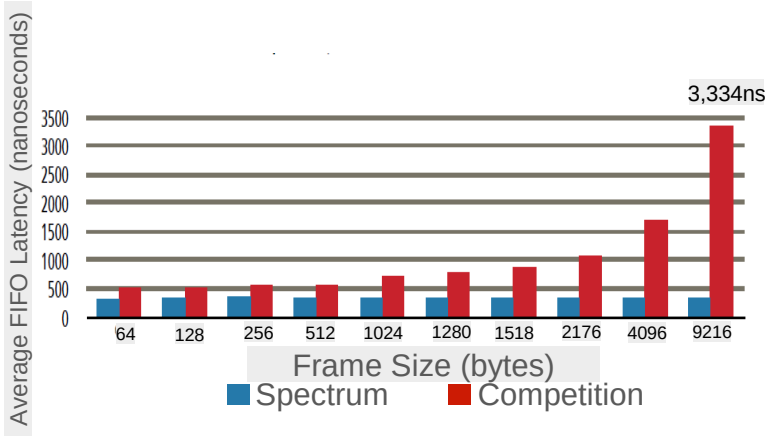
- Delivers 2.5 MORE
  - 2.5X higher throughput
  - 2.5X the bandwidth for 1.25X the price
- For 2.5X lower CAPEX
  - Fewer optics/cables
  - Fewer spine switches
- Future proof
- Similar Cost / Power

Spectrum - Fair & Predictable High Performance Switch

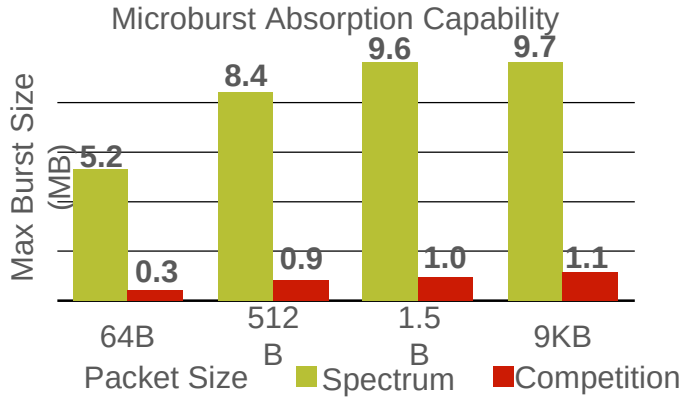
Fairness & QoS

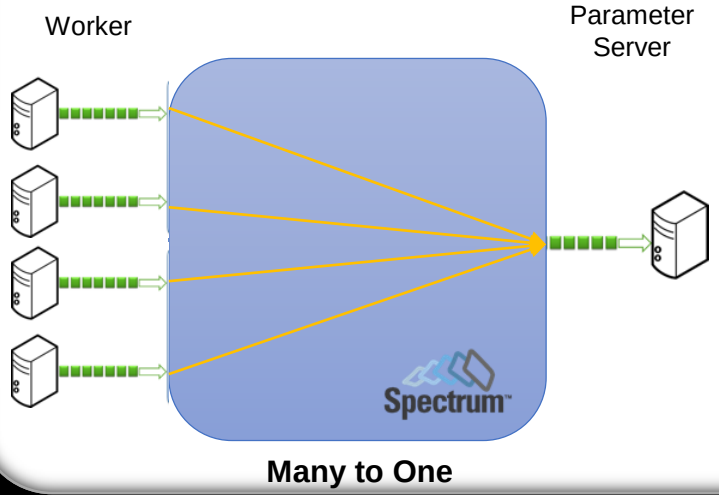


Guaranteed Low Latency

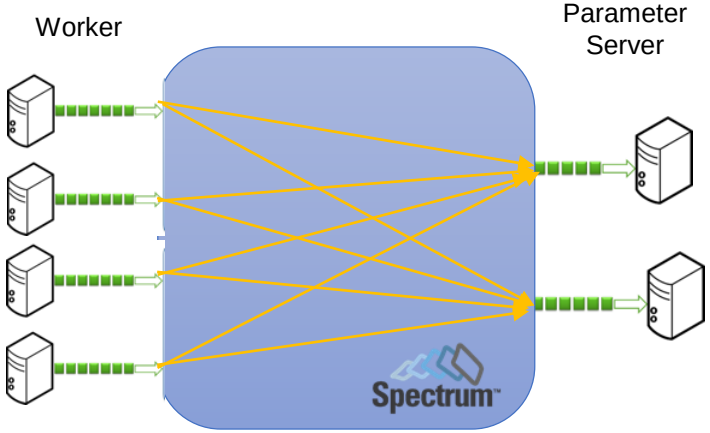


Congestion Management

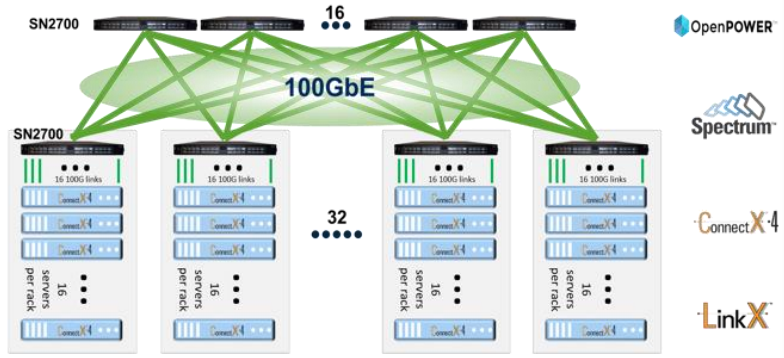




Many to One



Many to Many

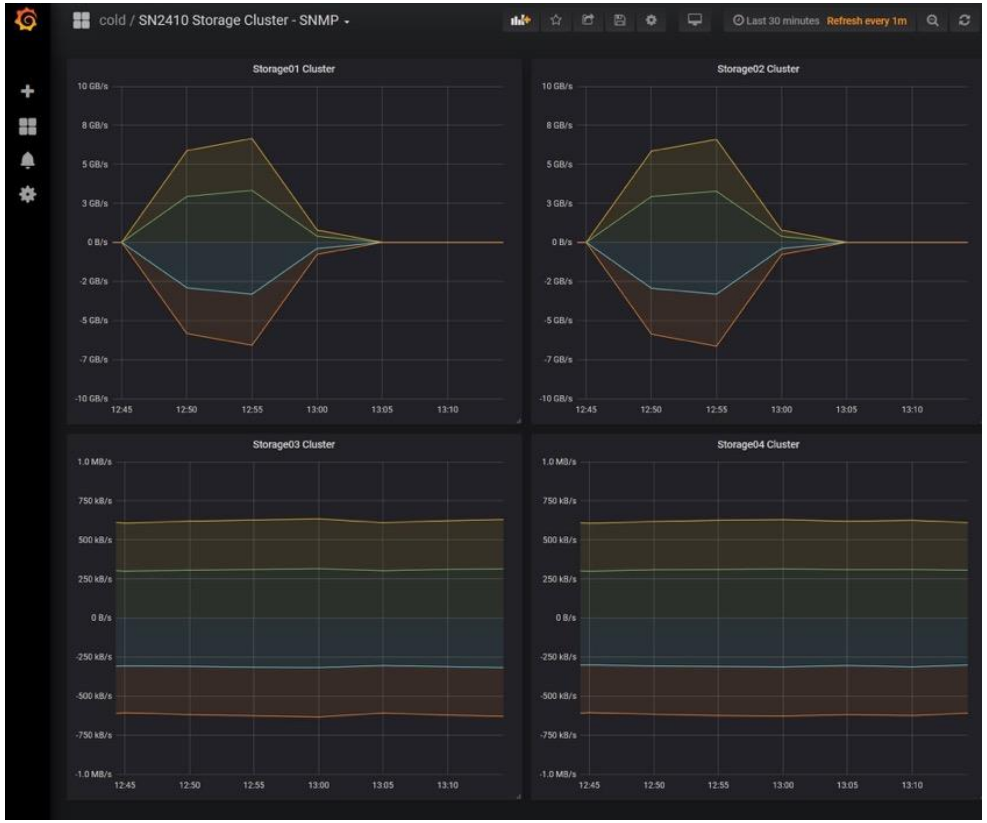


NIC + Software latency: TCP -> 6us; RDMA -> 1us
Spectrum latency @ 3 hops: < 1us
Other switch latency @ 3 hops: > 10us

Why Network Telemetry?

Before data flow

SNMP



Real time Data flow

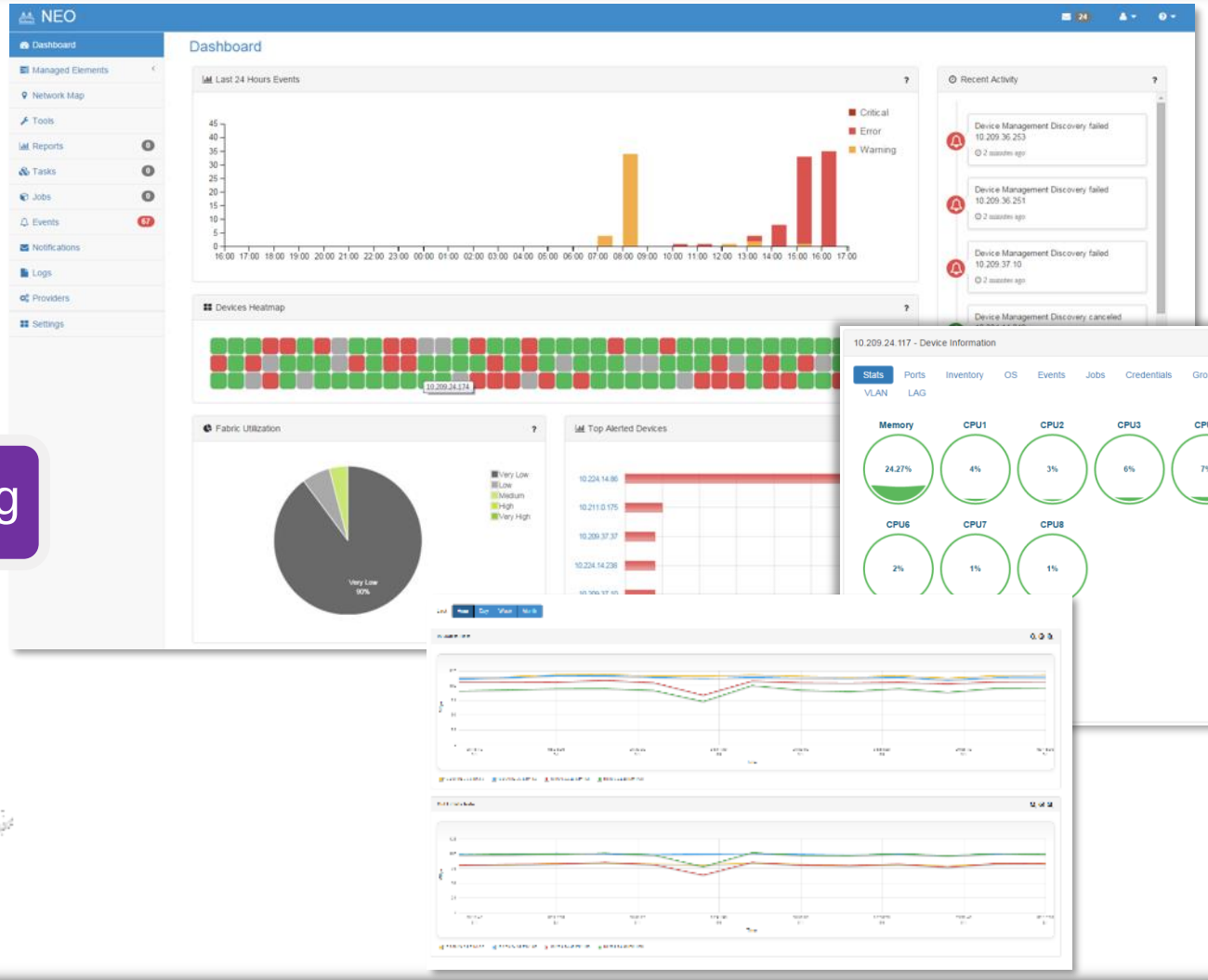
Telemetry

Mellanox NEO

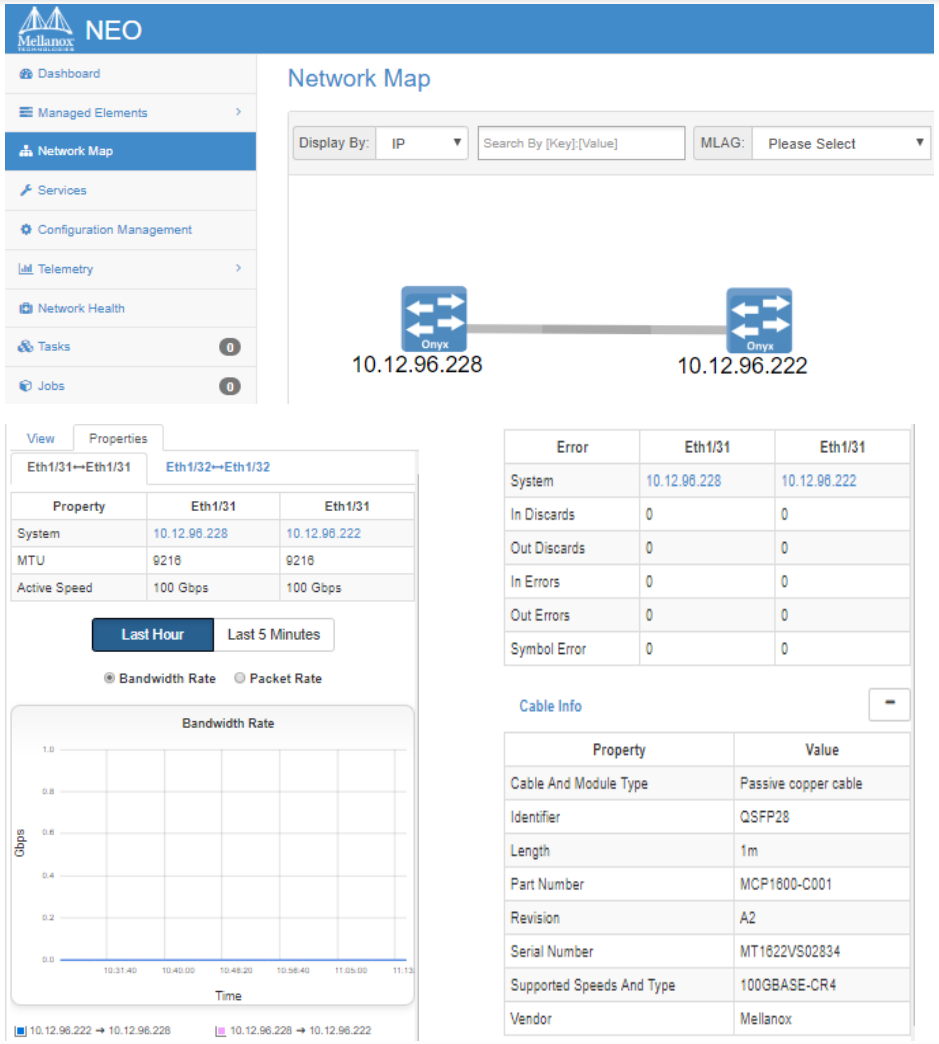
Simplified deployment

Diagnostics and troubleshooting

Stay Competitive



Mellanox NEO - at a glance



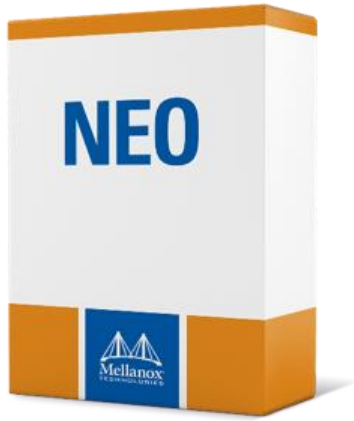
Extended NEO visibility with Mellanox cables information, including cable's serial number, part number, type, length and revision.

Invisible Infrastructure with QNAP and Mellanox

Spectrum™

Mellanox Ethernet Storage Fabric

+



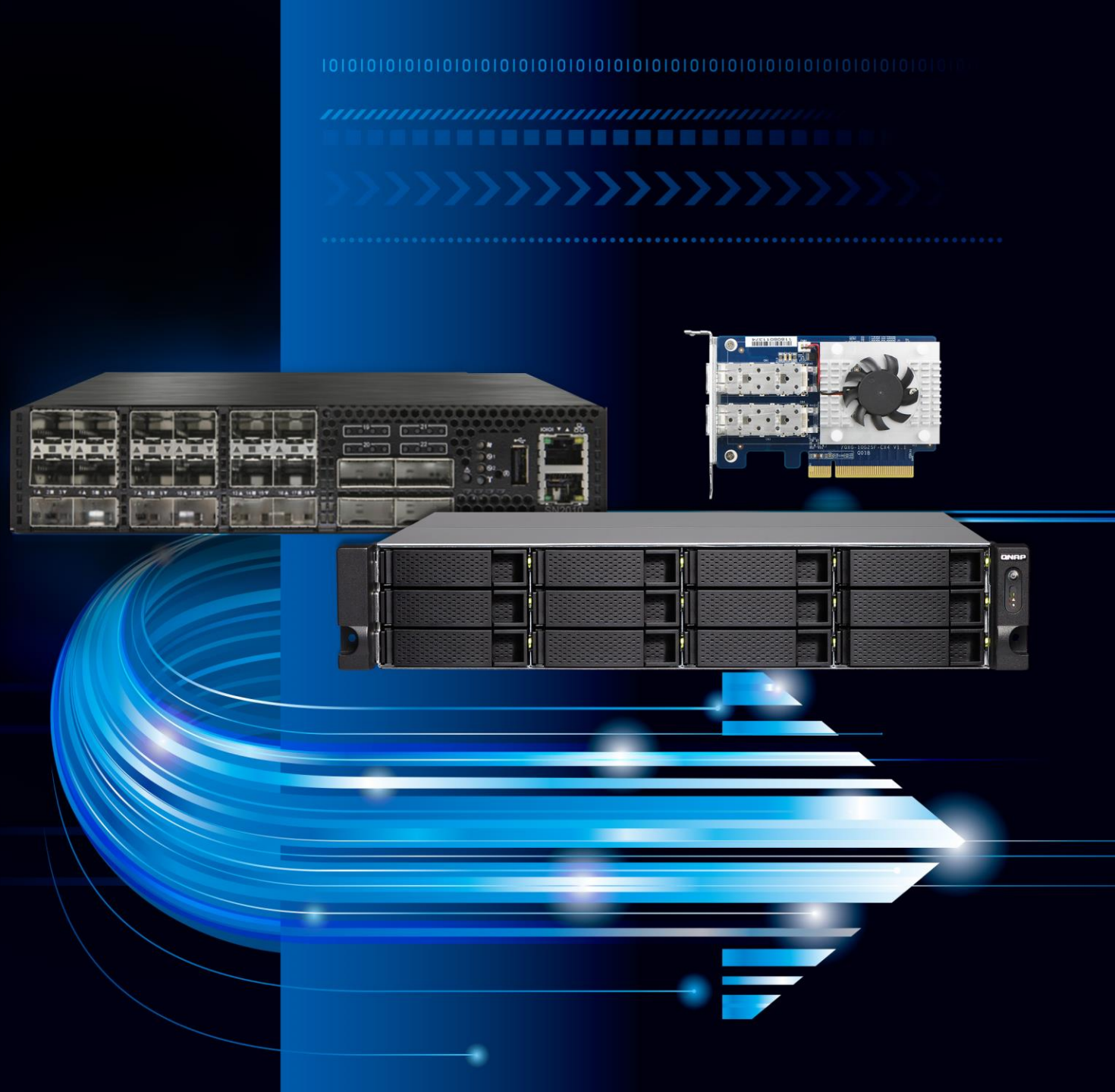
Management Software

- ✓ Zero-touch Network Provisioning
- ✓ Enhanced Network Security
- ✓ Efficient Enterprise Cloud Networking

QNAP

03

QNAP NAS X 25GbE card X 25GbE/100GbE switch



10GbE Workflow is insufficient for growing data

Supports maximum 10GbE speed

TS-932X

10GbE SFP+ NAS

10GbE Laptop

MSI GT75VR

QSW-1208-8C

Apple iMac Pro

TVS-951X

10GbE PC

10GbE BASE-TNAS

QNAP promotes the speed to 25GbE

Supports maximum 25GbE speed

QNAP × Mellanox TECHNOLOGIES

18x 10/25GbE SFP+/28 ports

4x 40/100GbE QSFP/28 ports

Reuse your QNAP 40GbE card

25/40Gbe

10/25Gbe

10/25Gbe

10/25Gbe

Virtual Machine

Media workstation

OR

White box server

Complete 10GbE/25GbE/40GbE aaccessories

QXG-10G2SF-CX4
QXG-25G2SF-CX4

10GbE SFP+ DAC

CAB-DAC15M-SFPP-DEC02
CAB-DAC30M-SFPP-DEC02
CAB-DAC50M-SFPP-DEC02

25GbE SFP28 DAC

CAB-DAC30M-SFP28-DEC01

10GbE SR Transceiver

TRX-10GSFP-SR-MLX

LAN-40G2SF-MLX

40GbE QSFP+ DAC

CAB-NIC40G30M-QSFP

QNAP’s 25GbE upgrade kit

1

QNAP
High end NAS

OR
White box server

2

QXG-25G2SF-CX4

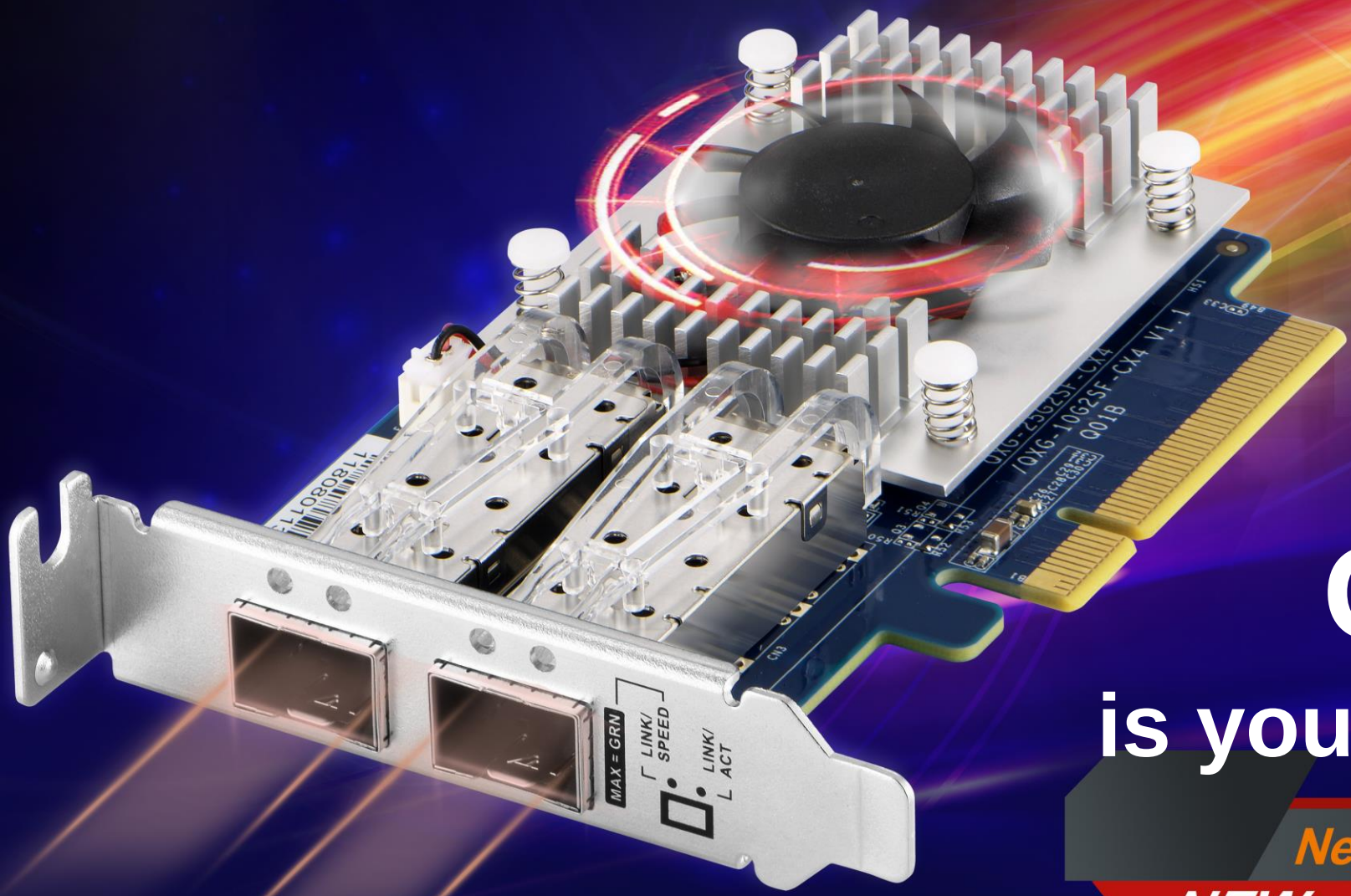
CAB-DAC30M-SFP28-DEC01

3

Mellanox SN2010
25/100 GbE switch

Instantly upgrade to 25GbE/100GbE high speed transmission

QNAP



QNAP

is your best choice!

NEW Network Expansion Card

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