

QNAP

Speed is Power

QSwitch

QSW-1208-8C & QSW-804-4C

10Gbps Unmanaged Switch



QSwitch 10G Switch



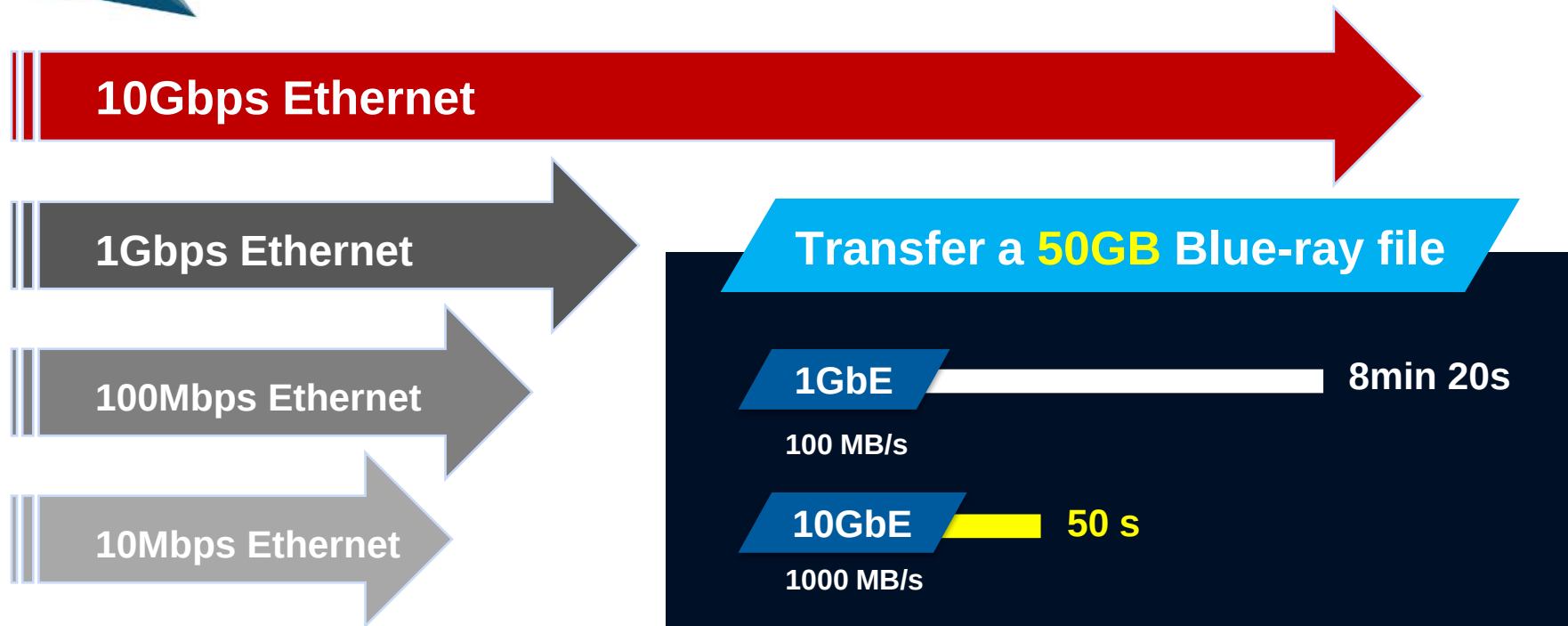
Marketing Trend of 10G Network

QSwitch Introduction

QSwitch Insight

QSwitch Use Cases

Trend of 10G Network



10 Gigabit Ethernet = 10GE, 10GbE, 10 GigE, or 10GE

10Gbps Products for Business/Home



10G Wireless AP

Netgear NIGHTHAWK® X10
802.11ac R9000

With SFP+ module



10G SFP+

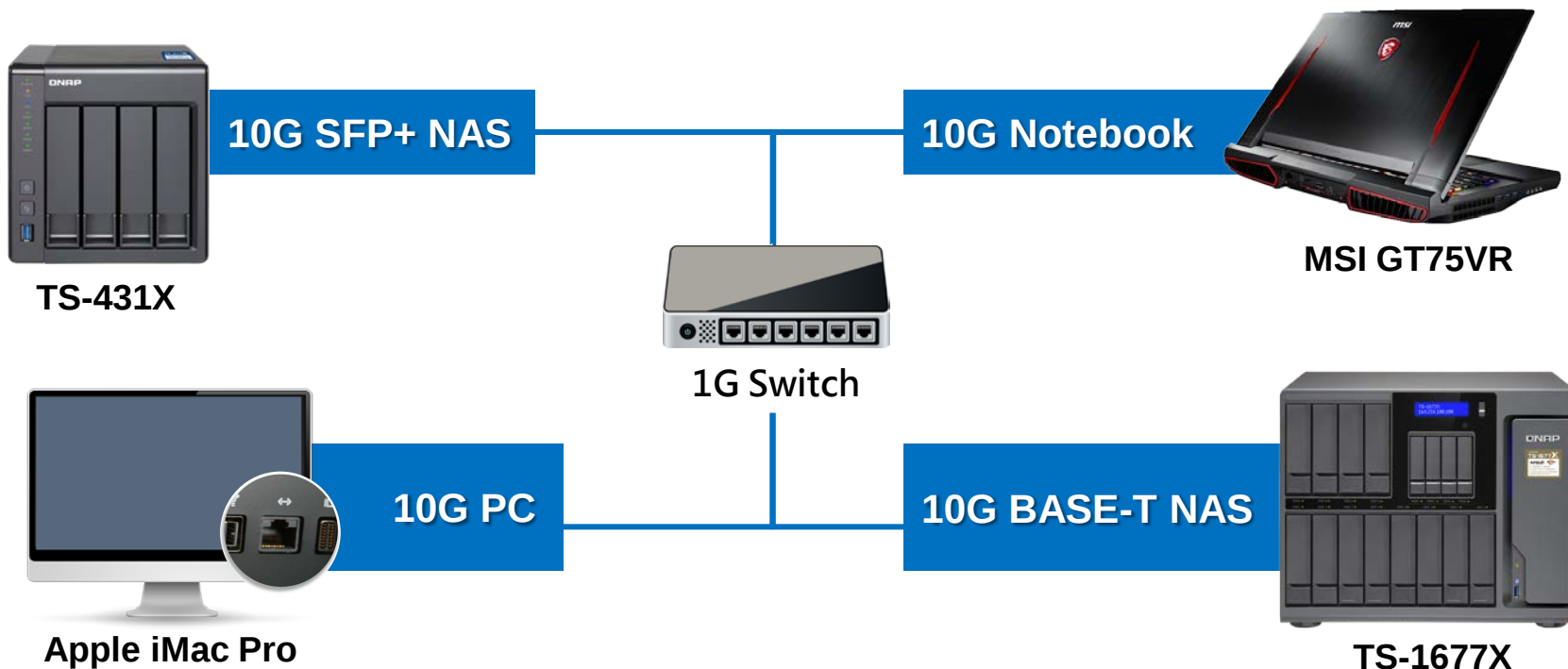


10G Expansion Card

QNAP QXG-10G1T Single Port
Expansion Card



Barriers of 10G



QNAP

Grand Debut of QSwitch

QSW-1208-8C



QSW-804-4C



QSW-1208-8C / QSW-804-4C



Plug-n-Play to upgrade network speeds.

12

Ports

Up to 12x 10Gbps ports

8

Ports

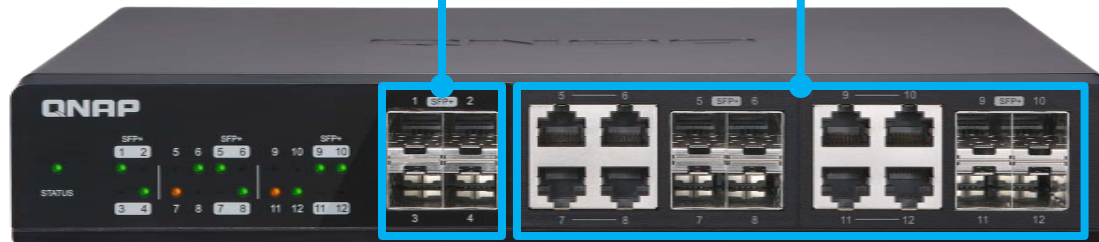
Up to 8x 10Gbps ports



QSW-1208-8C unmanaged switch

4x SFP+ ports

8x SFP+ & RJ45 combo ports



QSW-804-4C unmanaged switch



4x SFP+ ports

4x SFP+ & RJ45 combo ports



Intuitive identification of LED indicators

Status indicator

Green: System is ready for use.

Amber: System warning, e.g. high temperature or fan error.

Standalone network indicator LED

Green: Link is up and operates at 10 Gbps.

Amber: Link is up and operates at 1 Gbps.



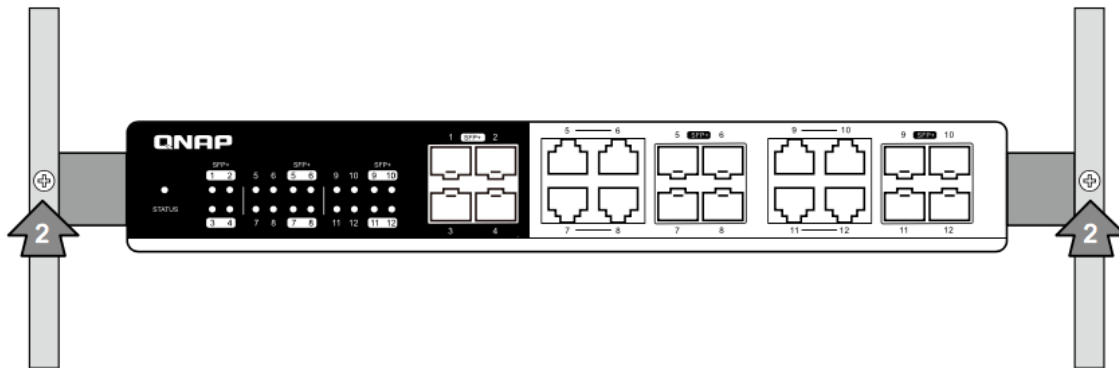
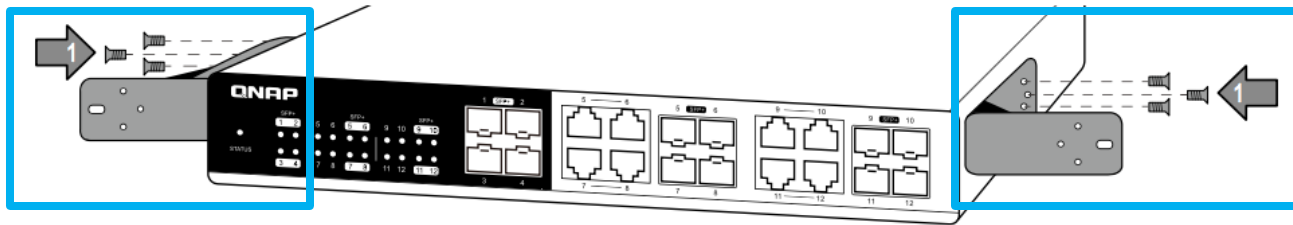
Dual fans



- Improve heat dissipation
- Deduce single device error
- Deduce acoustic noise



Rackmount brackets



QSW-1208-8C vs. QSW-804-4C

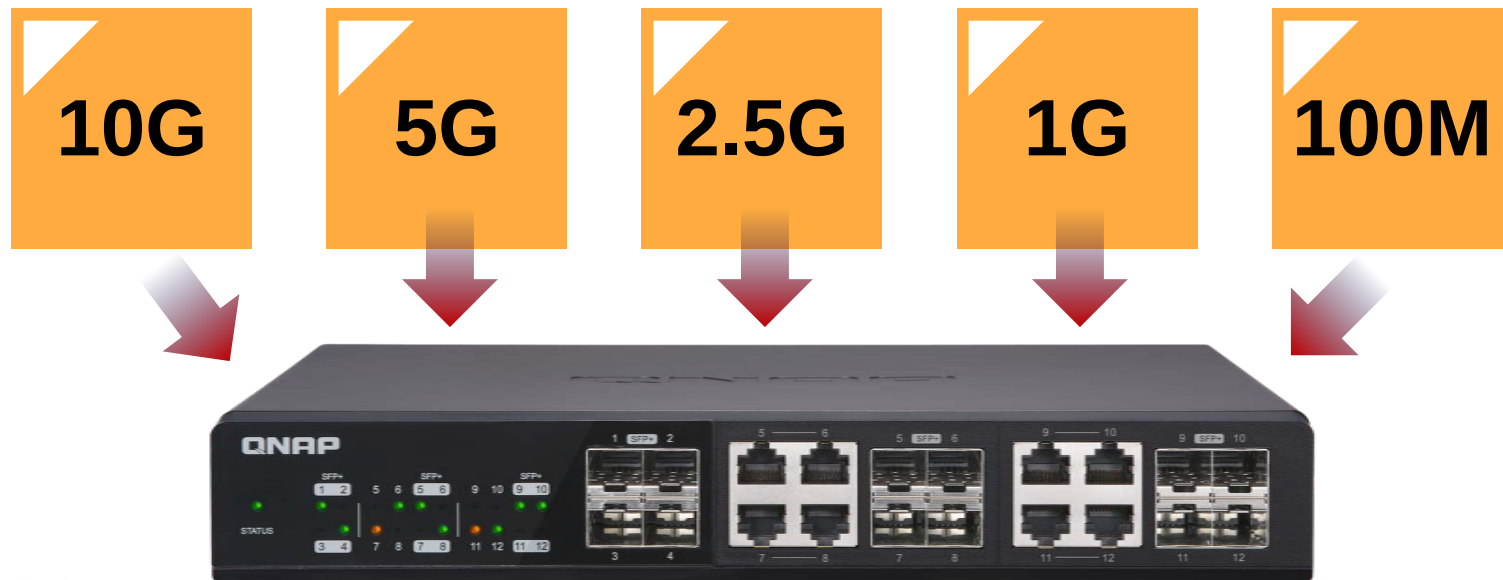


	QSW-1208-8C	QSW-804-4C
10G SFP+	4	4
10G SFP+ + RJ45 Combo	8	4
Switching capacity	240 Gbps	160 Gbps
Jumbo frame support	Up to 9K package size	

Multi-Giga Port



Automatically adapts to the required speed and supports 5 networking speeds.



Perfect Match with QNAP NAS



Internal 10G series

SFP+

TES-x85U series, TDS-16489U · TVS-x80U series, TS-x73U series, TS-x63U series, TS-1635, TS-932X, TS-x31X, TS-x31XU

RJ45 (BASE-T)

TS-1685, TS-1677X, TVS-x82T series, TVS-x71T series, TVS-863+

Extendable 10G series

SFP+ / RJ45 (BASE-T)

TVS-x82 series, TS-x77 series, TVS-x71U-RP series, TVS-x71 series, TVS-x73 series, TVS-x73e series, TS-x73 series, TS-563, TS-x53BU series, TS-x53B series, TS-x53Be series



QNAP 10G Expansion Card

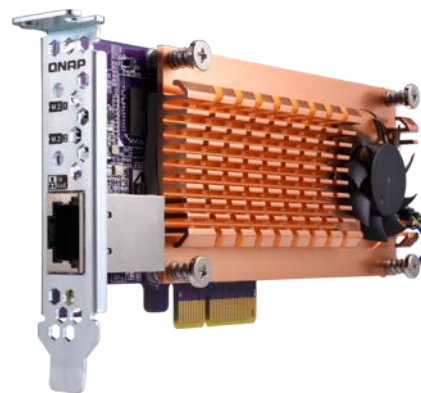


10 GbE Network Card



- QXG-10G1T
- LAN-10G2T-X550
- LAN-10G1TA
- LAN-10G1SR
- LAN-10G2SF-MLX

QM2: M.2 SSD/10GbE PCIe Expansion Card



- QM2-2S10G1T
- QM2-2P10G1T

SFP+ ports for various compatible devices

10 GbE SFP+ NAS Series



TES-x85U Series, TDS-16489U, TVS-x80U Series, TS-x73U Series, TS-x63U Series, TS-1635, TS-932X, TS-x31X Series, TS-x31XU Series

10 GbE SFP+ Network Card



LAN-10G2SF-MLX

Dual-port 10 GbE network expansion card
Adapter: Mellanox Connect-3 Pro EN
Connector: SFP+
PCIe and Lanes: PCIe Gen3 x 8



QSwitch Production Insight

QSW-1208-8C

QSW-804-4C



Three Stages of Production



1

Hardware & Software Development

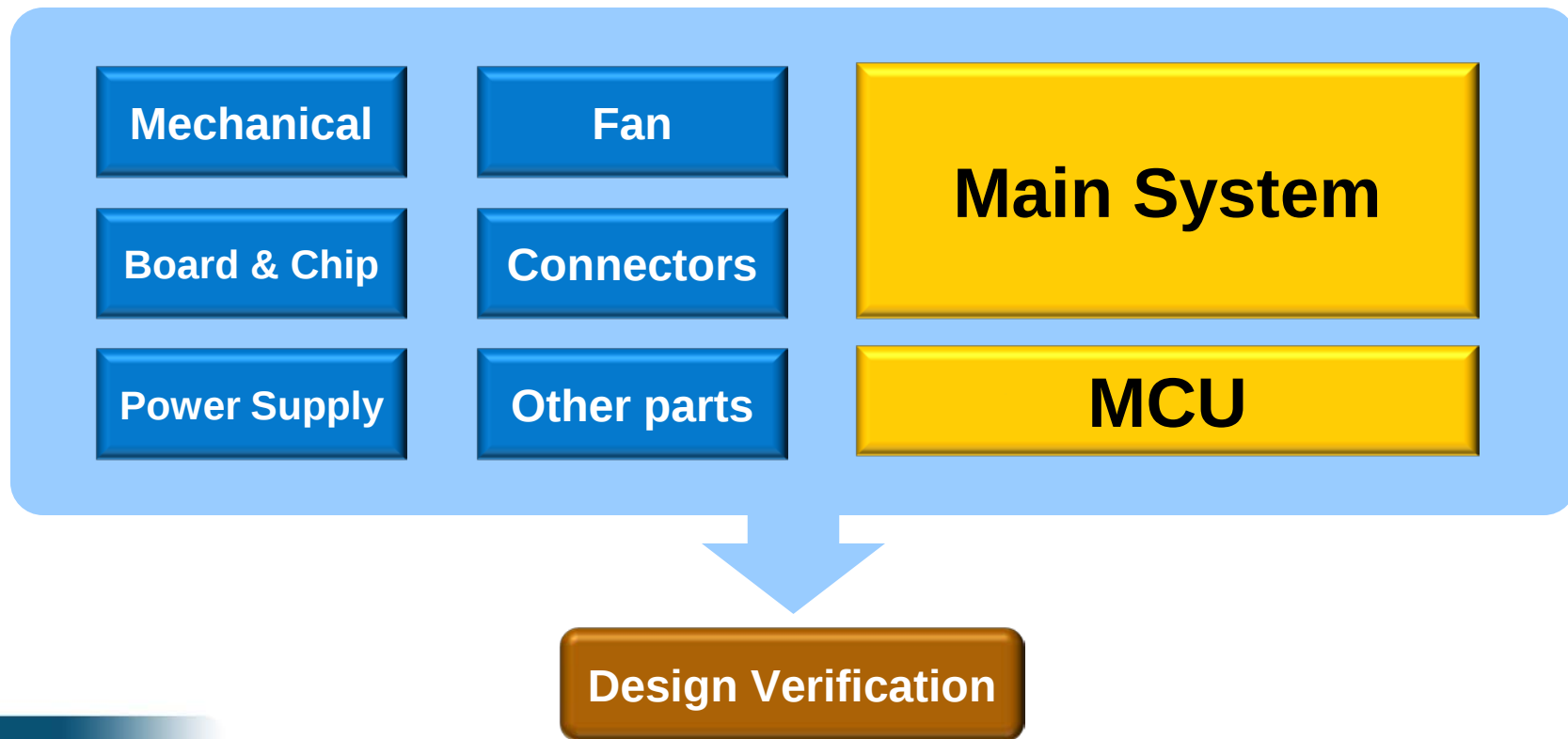
2

Verification

3

Production

Hardware & Software Development



Design Verification



1

Reliability Test

2

Functionality / Performance Test

3

Interoperability Test

Reliability Test



Burn-in test: Up to 20 devices burn-in test for more than 1 month.

AC power on/off test: Up to 1000 times.

Hardware verification: Vibration test and shock test.

Acoustic noise test: Test the acoustic noise for different fan speeds.

Thermal measurement: Set the temperature to 0°C, 25°C, 35°C, 45°C and 55°C.

Thermal Measurement

Network performance test by
different temperature environments
Pass criteria: 0 frame drop.

25°C

35°C

45°C

55°C



Network Test Equipment



Environmental Chamber

Hardware Verification



Vibration test: Use the random vibration mode to determine the device.

Shock test: Ensure that material can withstand the relatively infrequent, non-repetitive shocks or transient vibration encountered in handling, transportation and service environments.



Other Verifications



- **Power test / Signal integrity test**
- **Operating temperature and humidity test**
- **Dropping test**
- **AC four corner test / DC four corner test**
- **Transportation test**
- **More verification test...**

Functionality / Performance Test



1

Network functionality measurement

2

Real production test

3

Simulation test

Network Test Equipments

2 high-performance test solutions



XENA



Nustreams-2000i

Benchmarking of QSwitch

Benchmarking Methodology :

- RFC 2544 measures the performance characteristics of a network interconnecting devices, such as throughput, frame loss, latency, back-to-back or burst, and so on.
- RFC 2889 LAN switch benchmarking methodology: Test for forwarding rate, congestion control, address learning and packet filtering capabilities.
- Long-term stressful test: Full loading the QSwitch under 45°C environment for over 1 month to test the Switch reliability.



Field Trial



QNAP IT Lab



QNAP Cloud Lab



Simulation Test



Video editing and data backup/archiving test in QNAP video lab :

- TS-831X (SFP+ x 2)
- TVS-1282 + LAN-10G2T-X550 (10G RJ45 x 2)
- TES-3085U (SFP+ x 2)
- HP Z640 workstation (10G RJ45 x 2)
- MAC Pro (10G RJ45 x 2)
- Final Cut Pro
- Adobe Premiere



Interoperability test

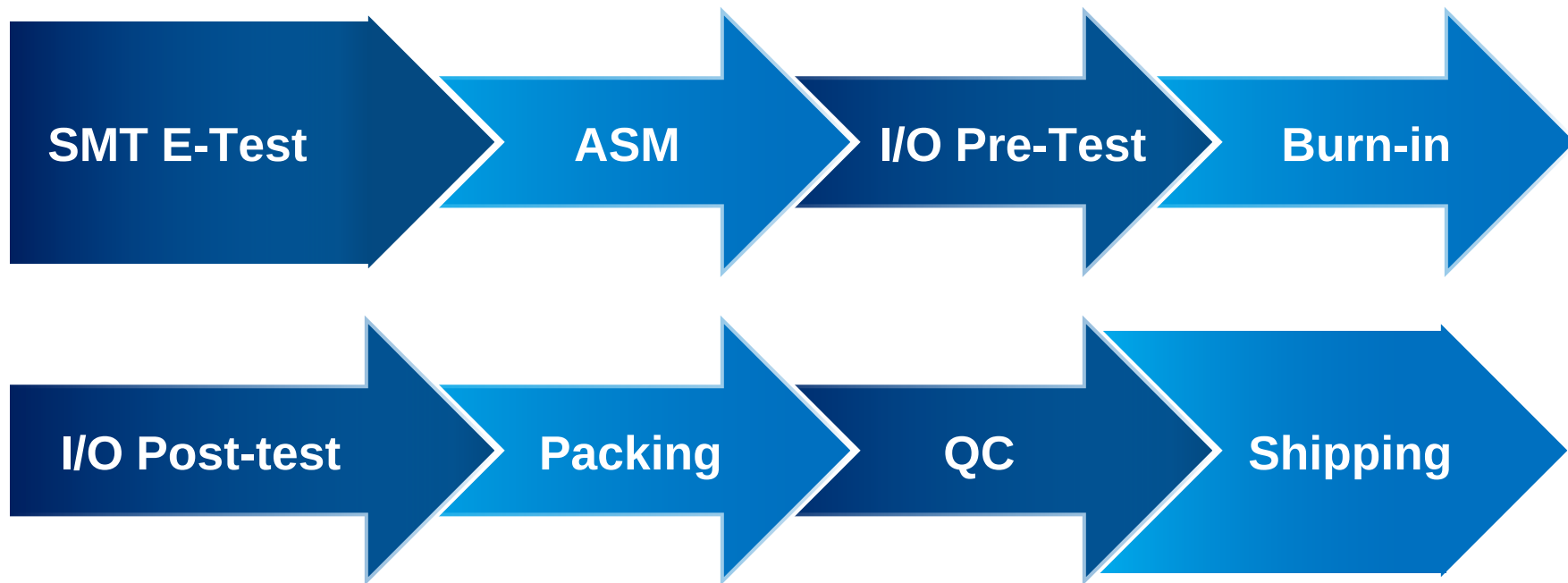


International certificate: FCC, CE, BSMI, CCC.



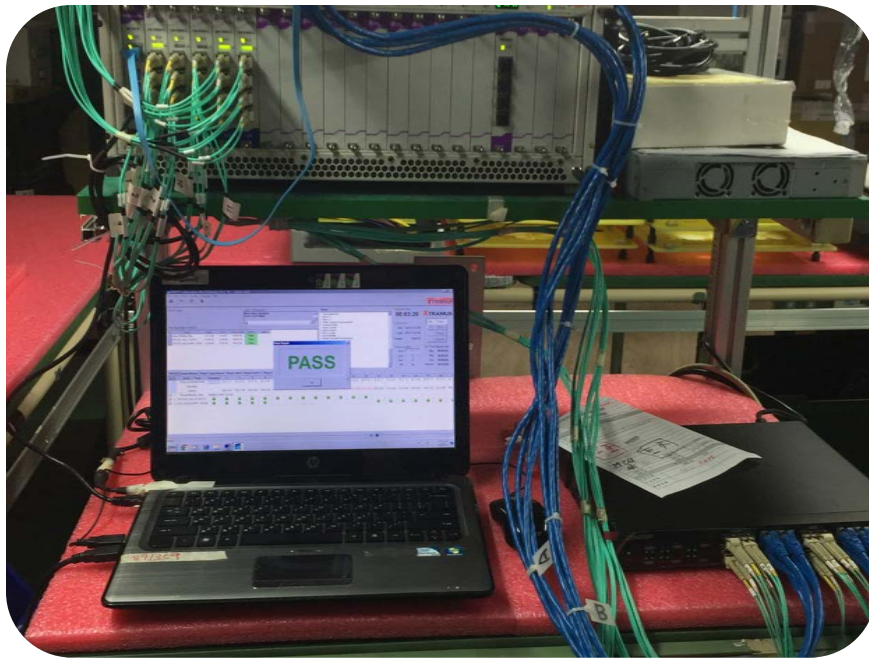
Compatibility: Tests between QNAP NAS and 10G network adapters and mainstream fiber transceiver modules.

Manufacturing Process



I/O Test

**All the ports on the QSwitch are checked by the test gig.
0% of packet loss is accepted!**



Burn-in Test



72-hour burn-in test under 40°C



Test for all RJ45 ports



Test for all SFP+ ports

Packing and Quality Control



Dedicated packing and quality check.



QSwitch Use Case

QSW-1208-8C



QSW-804-4C



10G Home/SOHO Applications



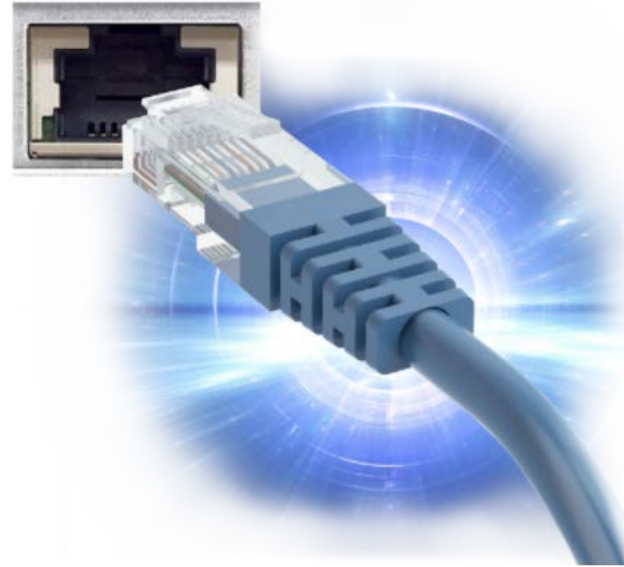
Multi-Gigabit Support

5G/2.5G BASE-T Support!

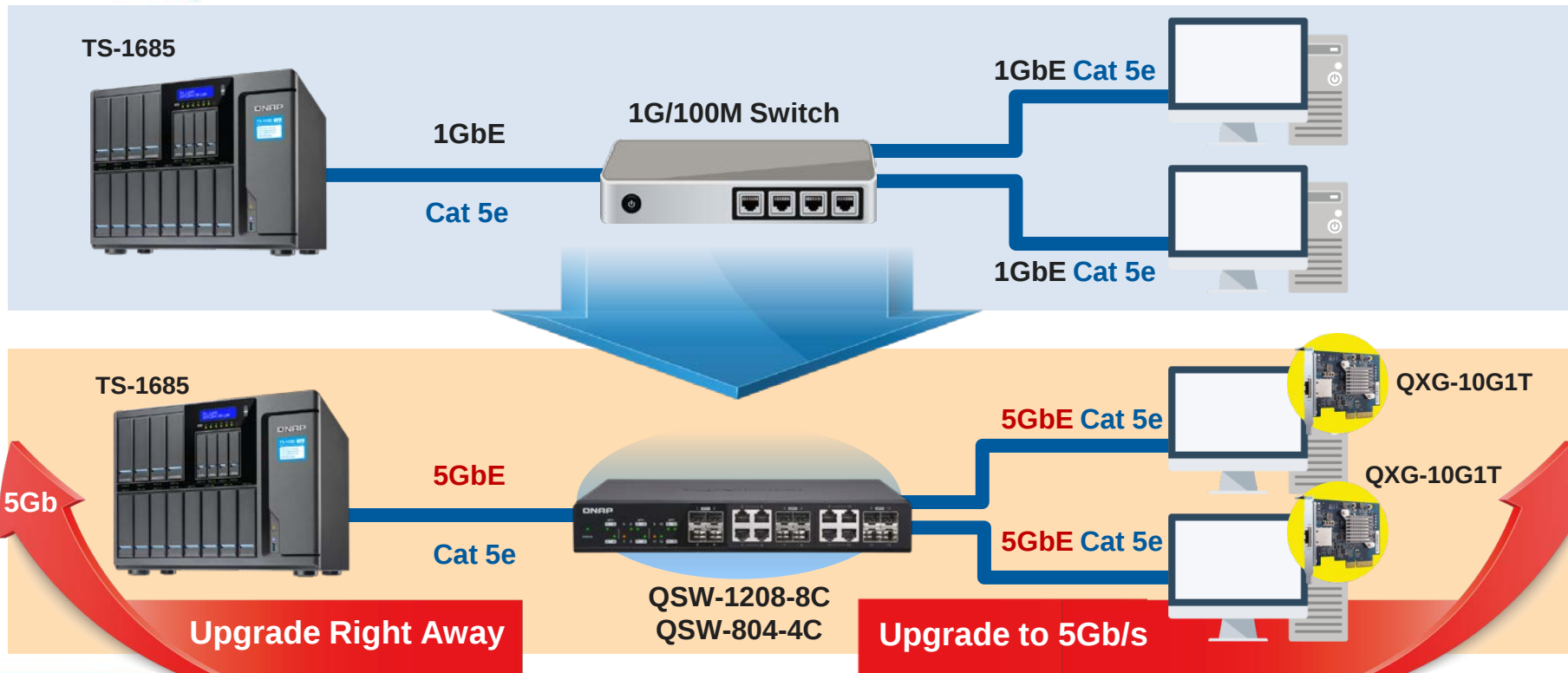
Upgrade to 5Gb/s network with existing cables.

At least 5X speed up with low cost CAT 5e Ethernet cables!

	CAT 5e	CAT 6	CAT 6A & CAT 7
100M	✓	✓	✓
1G	✓	✓	✓
2.5G	✓	✓	✓
5G	✓	✓	✓
10G	X	✓(55m)	✓

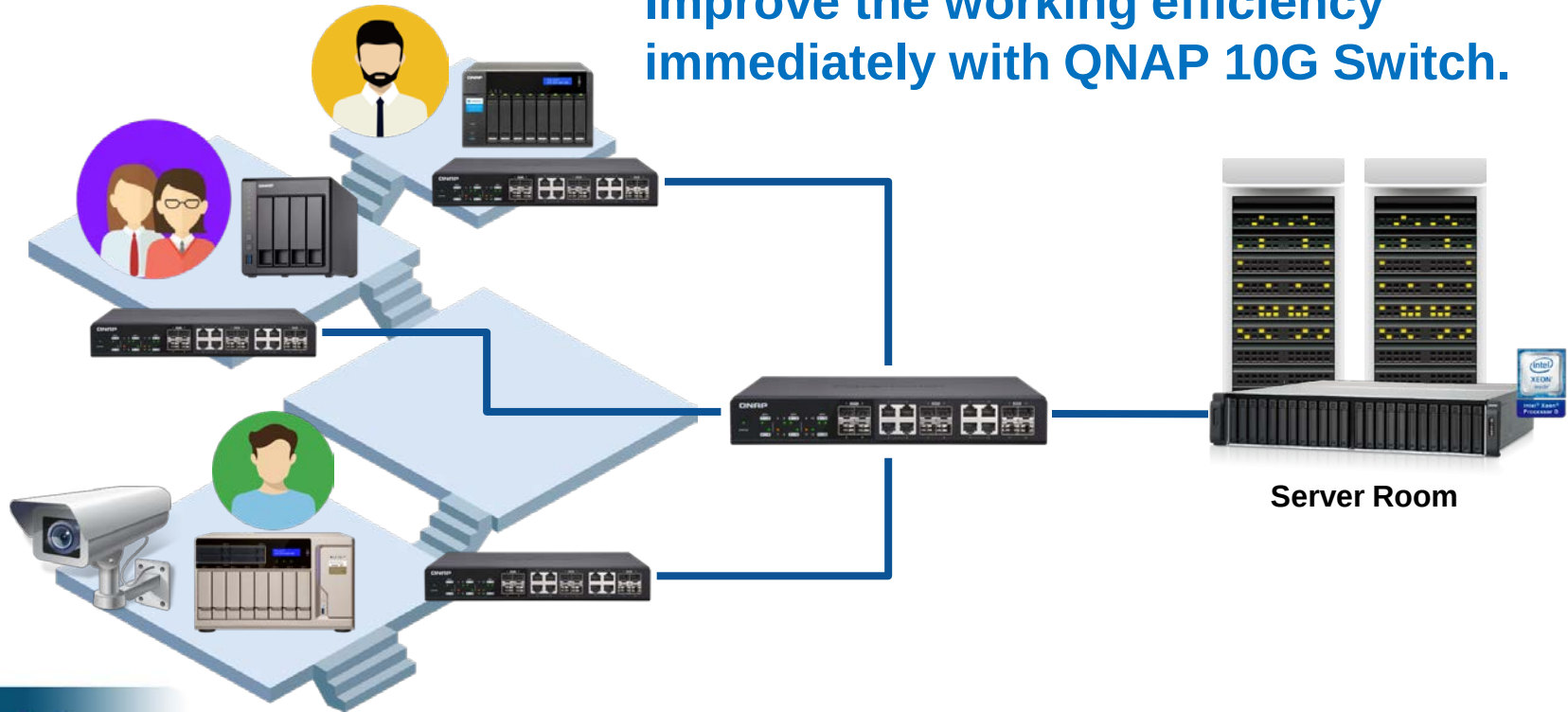


5X Speed-up Made Simple



10G Edge Switching for Enterprise/Lab.

Improve the working efficiency immediately with QNAP 10G Switch.





QSW-1208-8C / QSW-804-4C

Your Best Choices!

QSW-1208-8C



QSW-804-4C

