QNAP

# QSW-M1208 series

Entry-level 10GbE Layer 2 Web Managed Switch
for rapid network deployment

SFP+
10GbE

NBASE-T

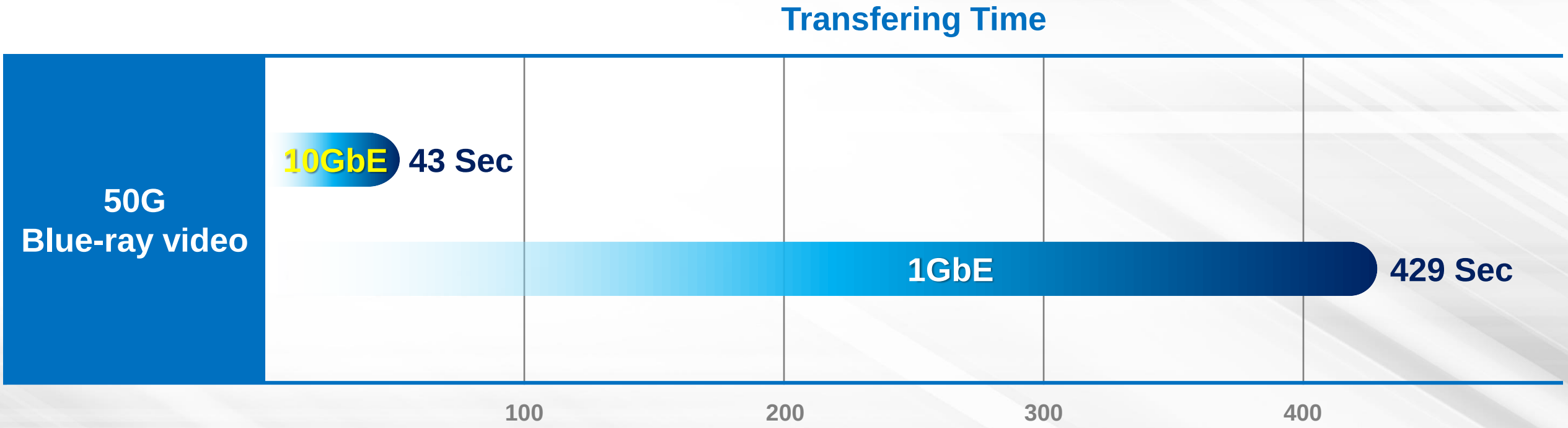
QSW-M1204-4C

QSW-M804-4C

QSW-M1208-8C

# Why do we need 10GbE?

- Network speed is everything in the audiovisual domain.
- Without network speed, high performance hardware is useless.



# QNAP 10GbE unmanaged switches are already on the market

## *QSW-1208-8C*

**Up to 12 port 10GbE**

## *QSW-804-4C*

**Up to 8 port 10GbE**

# We're making it better…

## What we can do after having 10GbE unmanaged switches?

- Only can check cable one by one when issue happen? What else?
- Whole office shut down with one single PC affected by virus?
- I like to have more then 10Gbps!

We heard what customers need!

# Hardware highlights

# QSW-M12XX series HW spec

| | QSW-M1208-8C | QSW-M1204-4C | QSW-M804-4C |
|---|---|---|---|
| | | | |
| Number of Port | 12 | 12 | 8 |
| 10GbE SFP+ | 4 | 8 | 4 |
| 10GbE SFP+/RJ45 combo | 8 | 4 | 4 |
| Switching capecity | 240 Gbps | 240 Gbps | 160 Gbps |

# Device Mylar

**QSW-M1208-8C**

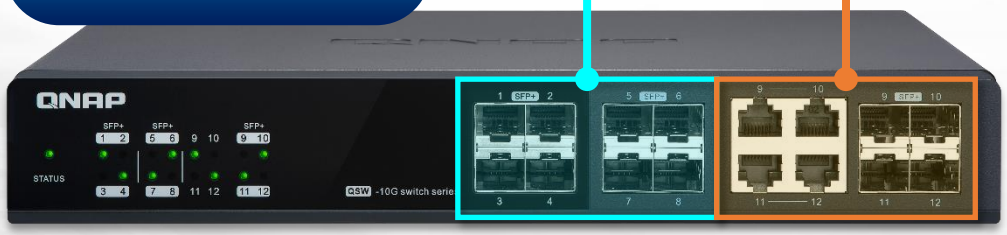
4 * SFP+ port

8 * SFP+/RJ45 Combo port

**QSW-M1204-4C**

8* SFP+ port

4* SFP+/RJ45 Combo port




**QSW-M804-4C**

4*SFP+ port

4*SFP+/RJ45 Combo port

# Intuitive identification of LED indicators

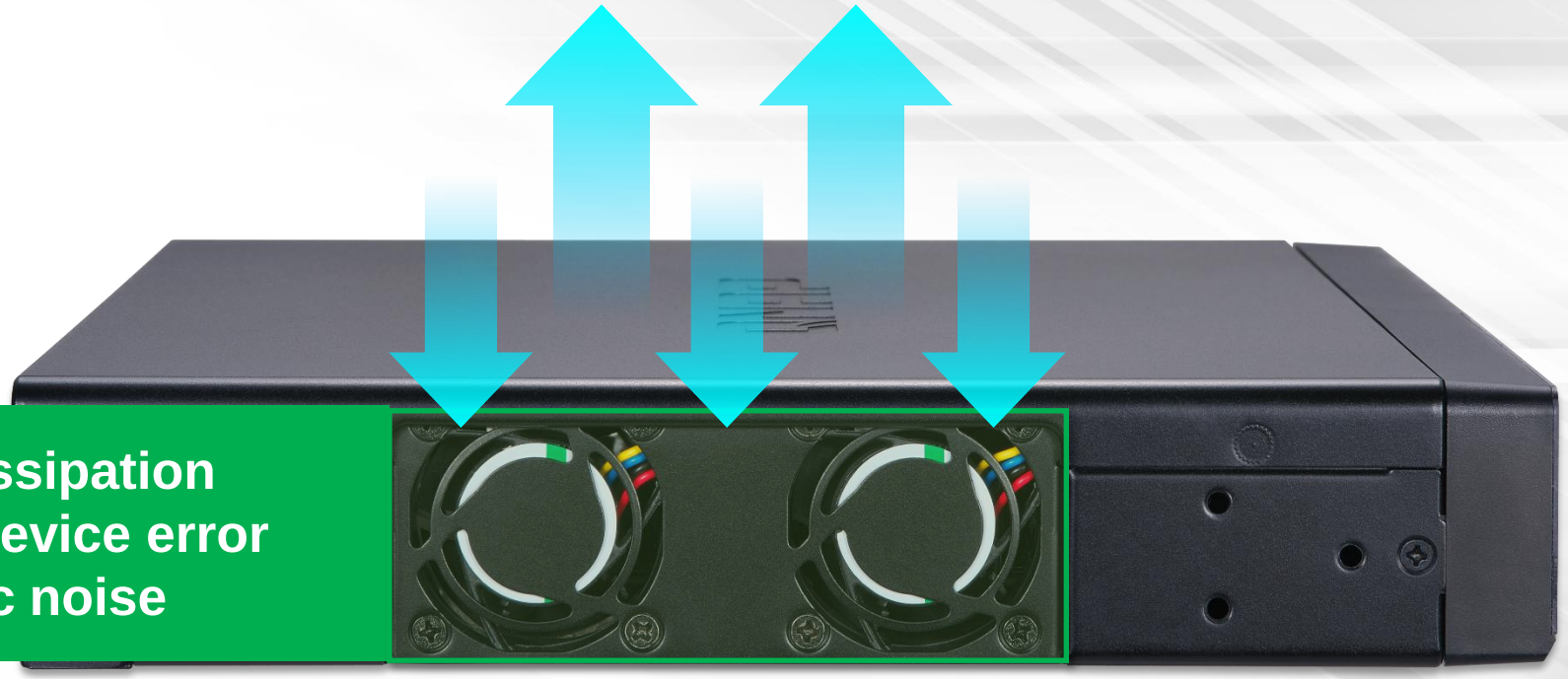
### Status indicator

- Green：System is ready for use.
- Oragne：System warning, e.g. high temperature or fan error.

### Standalone network indicator LED

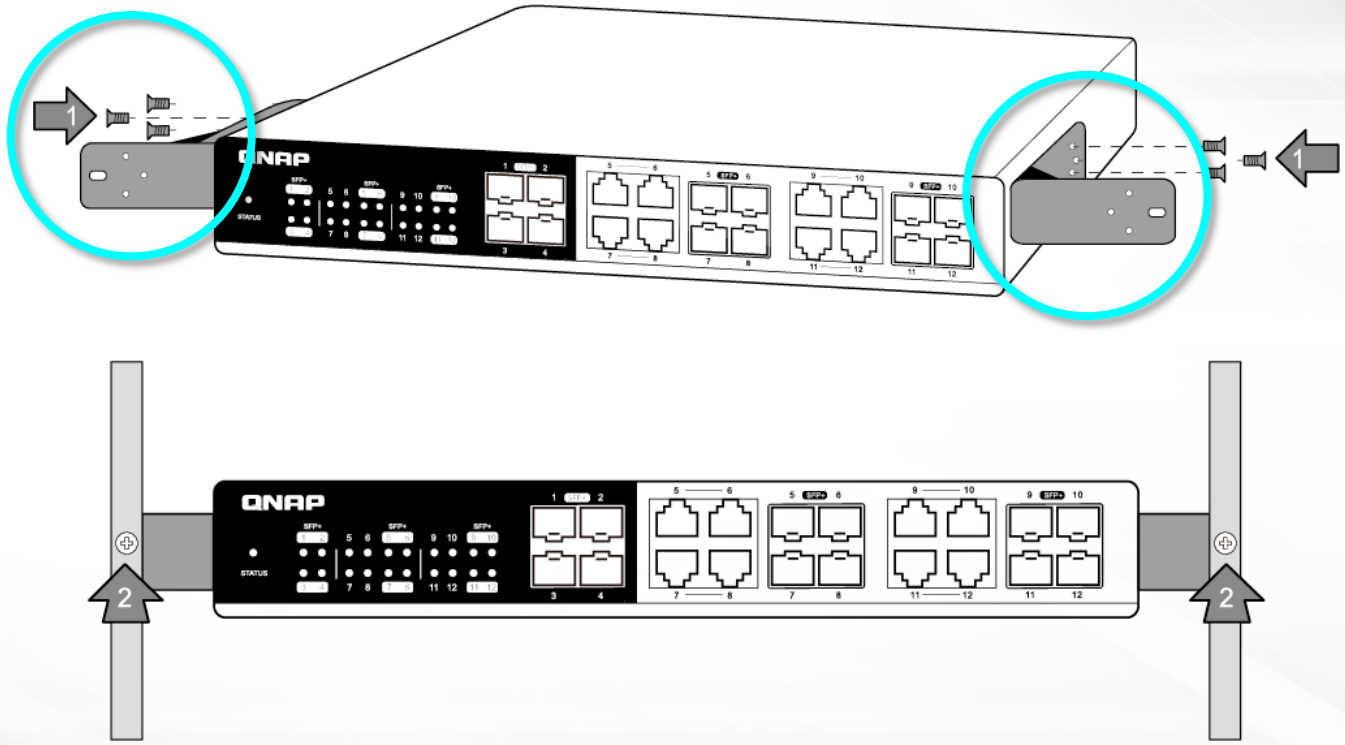
- Green：Link is up and operates at 10 Gbps.
- Amber：Link is up and operates at 1 Gbps.

# Dual fans



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

# Rackmount brackets



# Flexible network speed

- Fully support 10GbE SFP+ or SFP+/ NBASE-T, compatible with fiber and copper.
- 5GbE device can connect directly without pain.

# QSwitch Production Insight

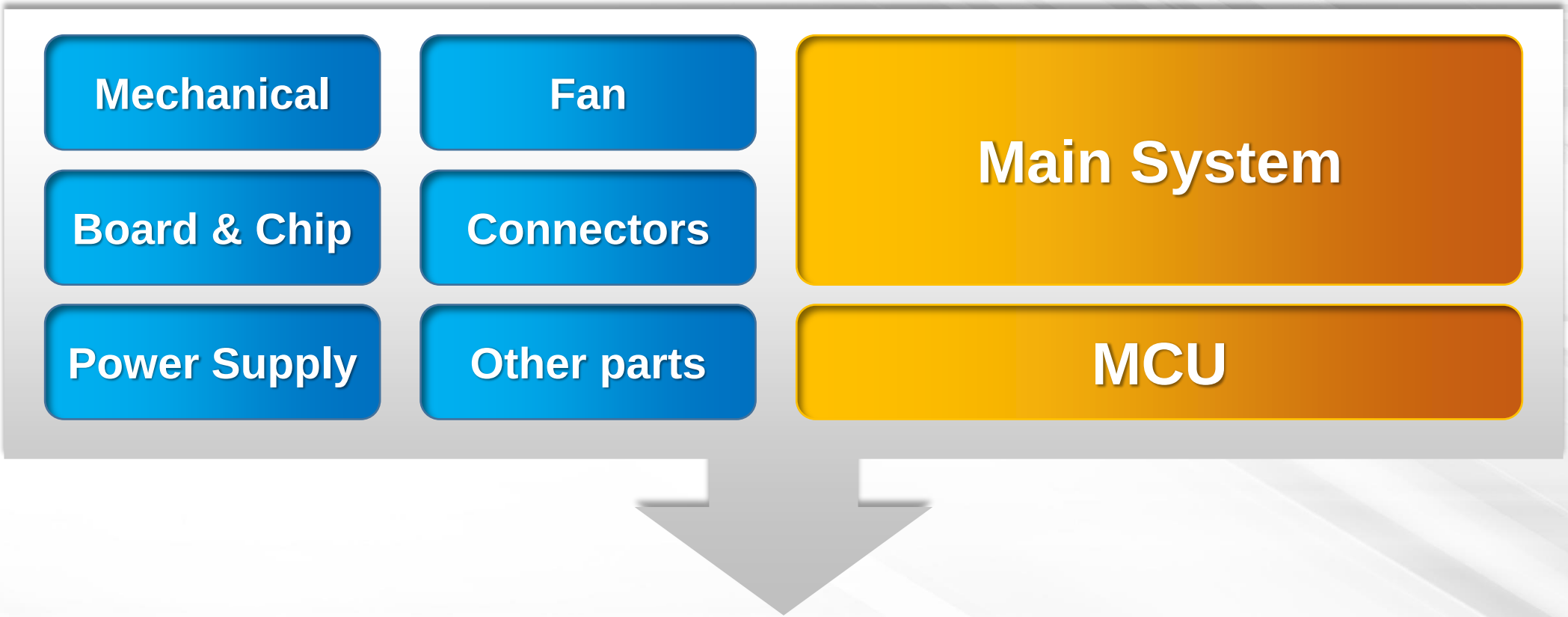
# Three Stages of Production

1 **Hardware & Software Development**

2 **Verification**

3 **Production**

# Hardware & Software Development




**Design Verification**

# Design Verification

1 **Reliability Test**

2 **Functionality / Performance Test**

3 **Interoperability Test**

# Reliability Test

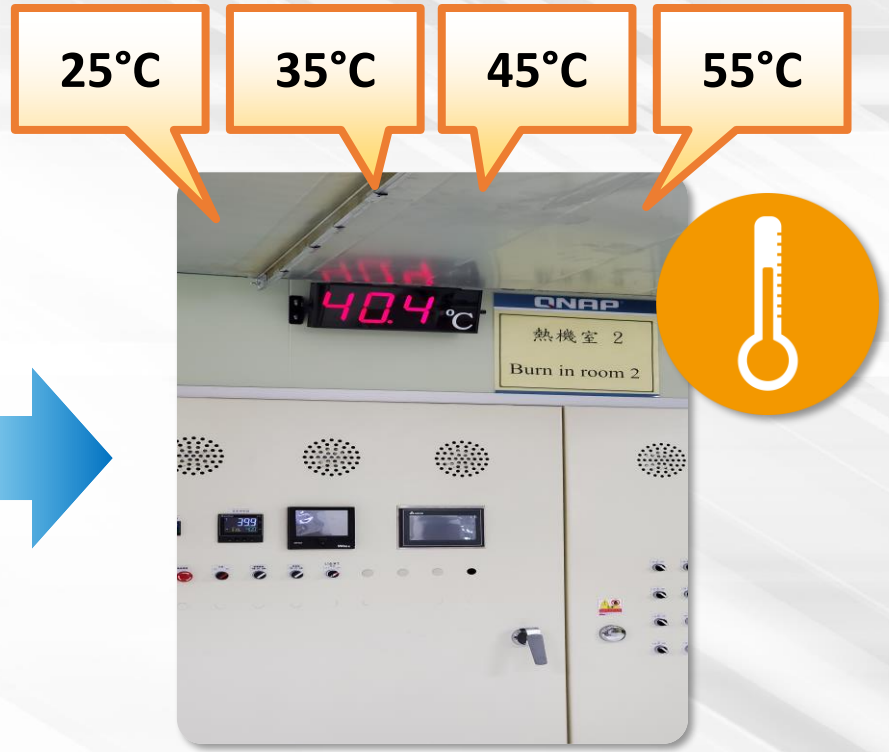
- Burn-in test: Up to 20 devices burn-in test for more than 1 month.
- Hardware verification: Vibration test and shock test.
- AC power on/off test: Up to 1000 times.
- Acoustic noise test: Test the acoustic noise for different fan speeds.
- Thermal measurement: Set the temperature to 0°C, 25°C, 35°C, 45°C and 55°C.

# Thermal Measurement

**Network performance test by different temperature environments.**

**Pass criteria:  0 frame drop.**

Thermal test equiptment and device




Thermal monitor

# 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.**

# Functionality / Performance Test

1 Network functionality measurement

2 Real production test

3 Simulation test

# Network Test Equipements

***3 high-performance test solutions***

***Nustreams-2000i***

***Spirent***

***XENA***

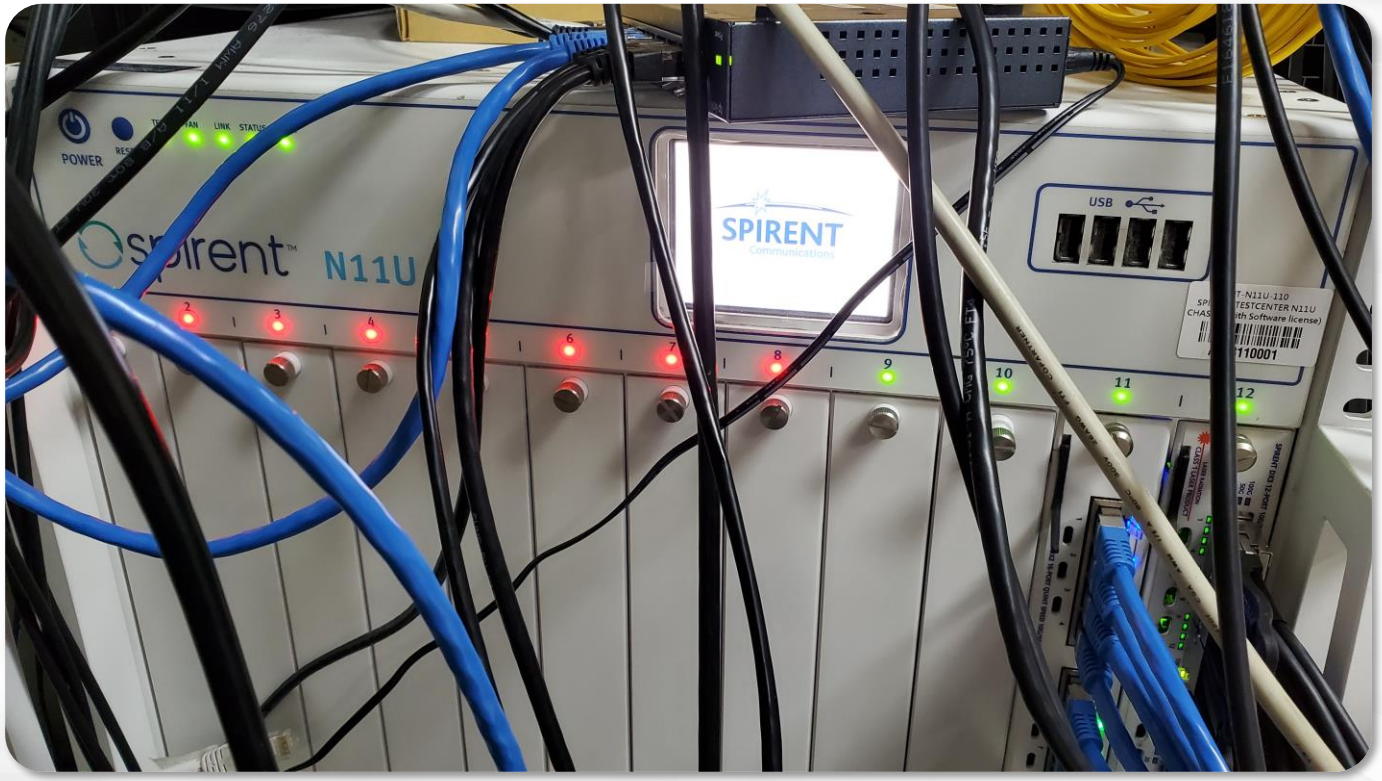
# Benchmarking of QSwitch

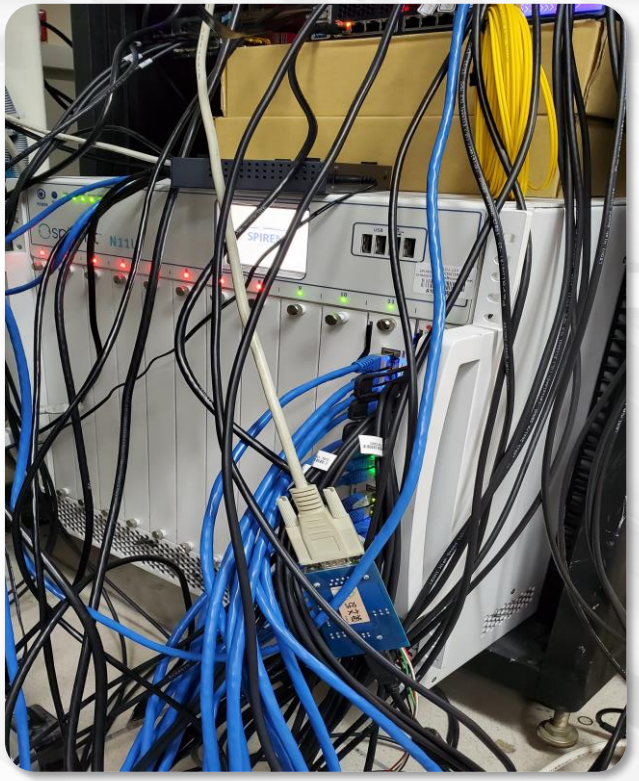
***Benchmarking Methodology：***

- **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.**

# Function verification - Simulator testing

**Using Spirent simulated real traffic, verified device availability.**



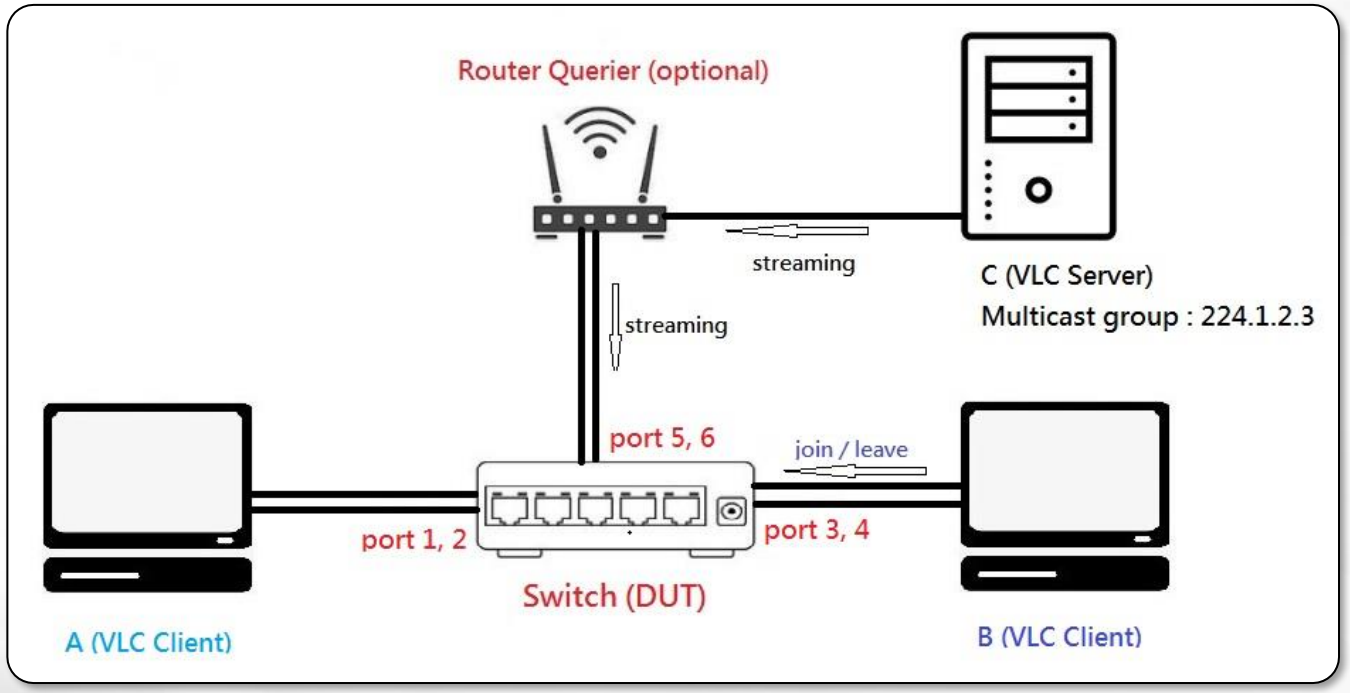
# User Scenario verification- QNAP server room deployed

## QNAP IT server room

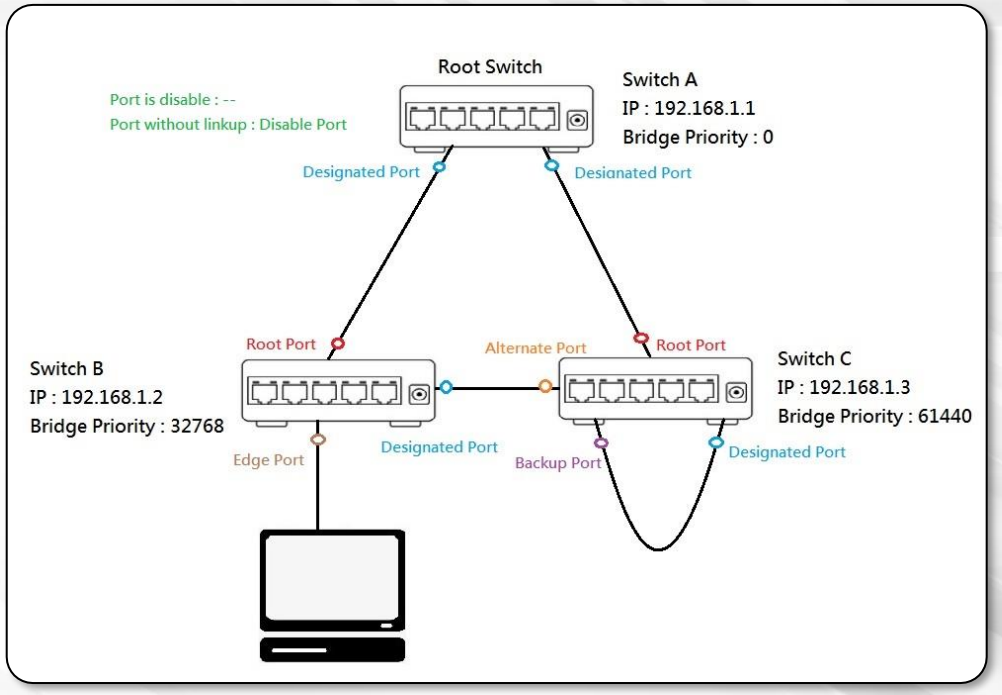
## QNAP Hsinchu main server room

# Protocol verification-QNAP internal testing

## IGMP field trial topology – Cowork with QNAP NAS




## RSTP field trial topology



# Interoperability test

- **International certificate: FCC, CE, BSMI, CCC etc.**
- **Compatibility: Tests between QNAP NAS and 10G network adapters and mainstream fiber transceiver modules.**

# Manufacturing Process

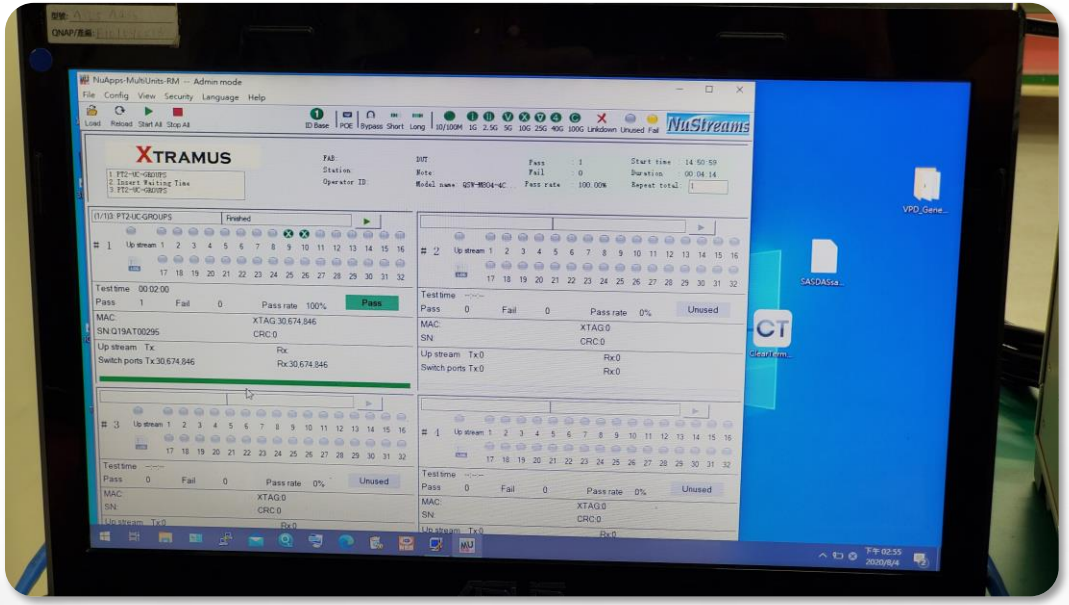
SMT E-Test → ASM → I/O Pre-Test → Burn-in

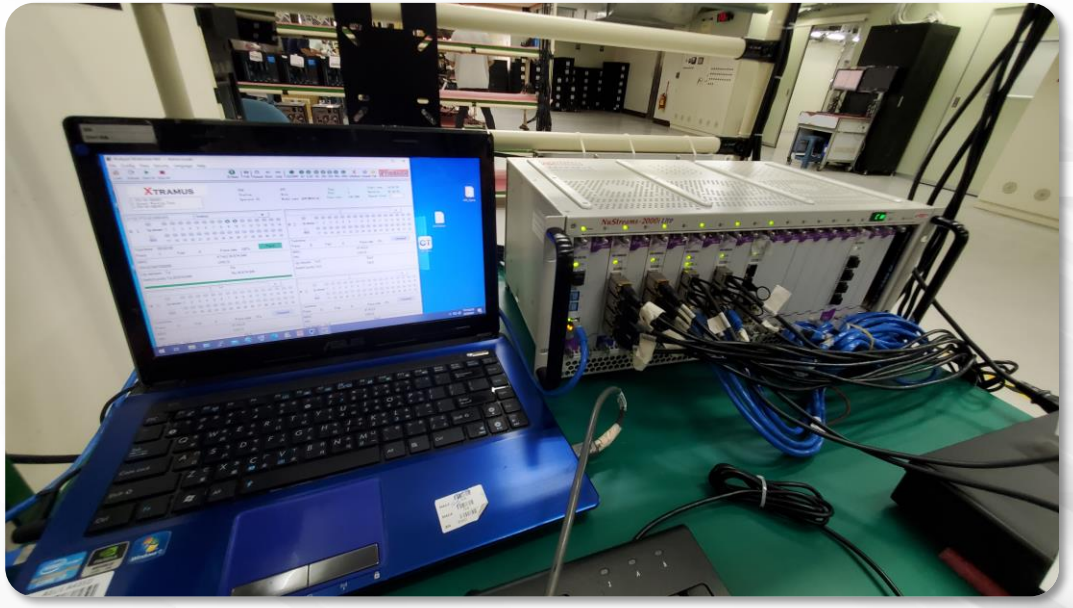
I/O Post-test → Packing → QC → Shipping

# I/O Test

**All the ports on the QSwitch are checked by the test gig.**

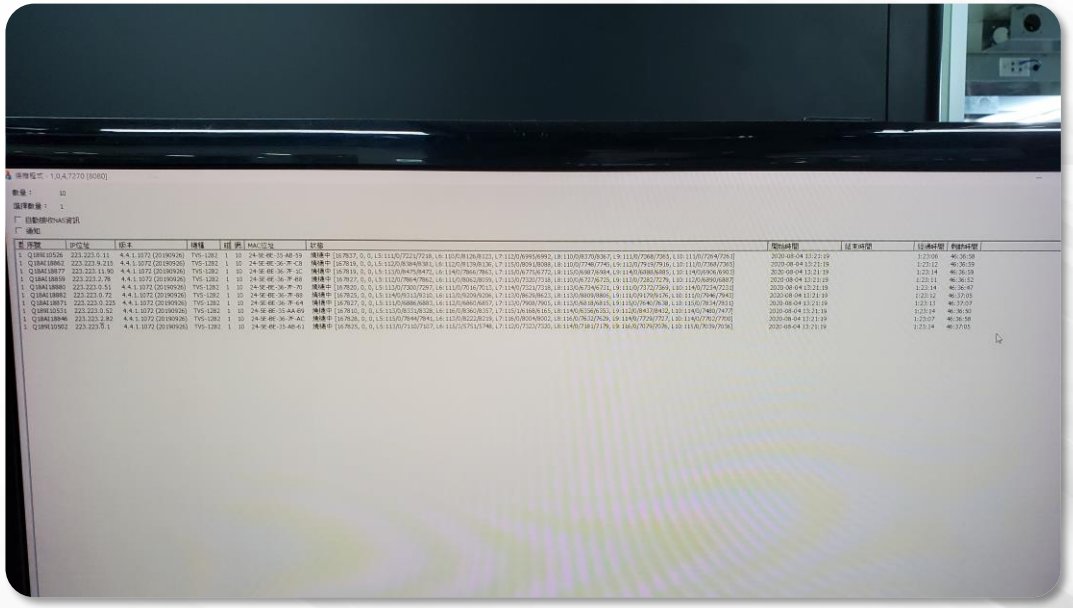
***0% of packet loss is accepted!***



# Burn-in Test

***48-hour burn-in test***



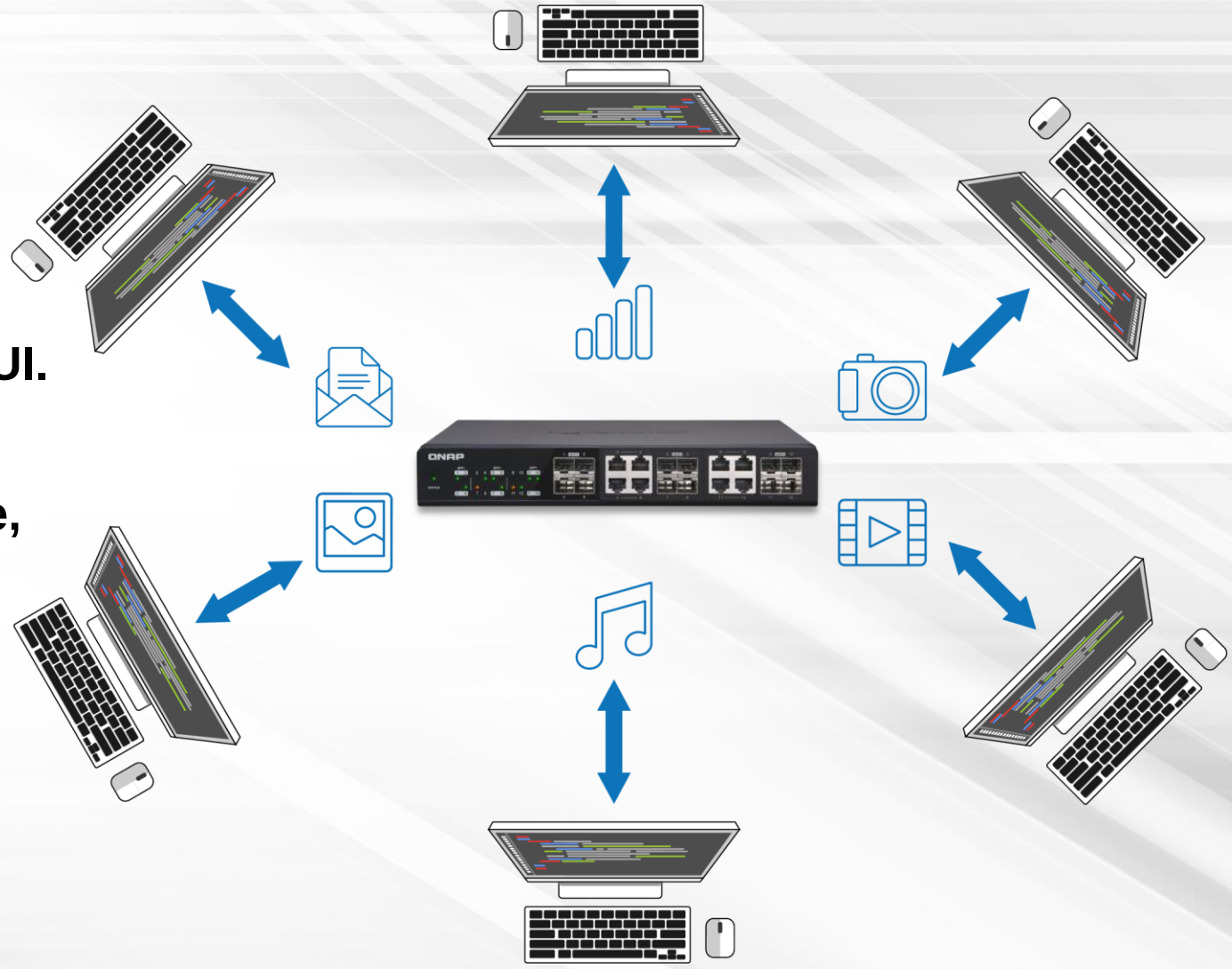
# Packing and Quality Control

***Dedicated packing and quality check***

# Software highlights

# Management switch give user more information

- More information can be checked on GUI.
- Don't need check cable one by one.
- Cowork with 3rd party monitor software, more easy for management.

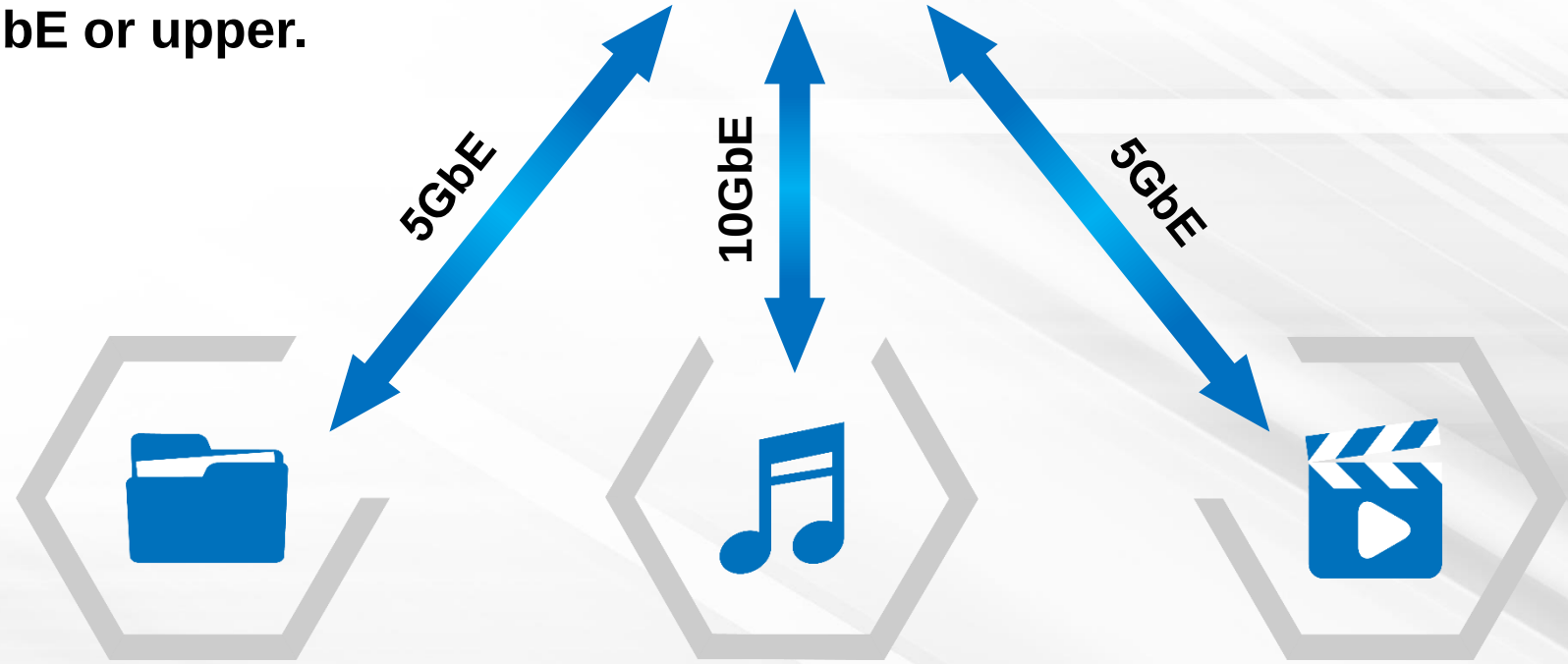


# Management switch manage network more easy and detailed

- Divide network by using VLAN, avoid security issue explore.
- Give different priority for different purpose.
- Integrate VLAN and firewall, to have more complete security and flow management.

# 10GbE is not enough for NAS transfer

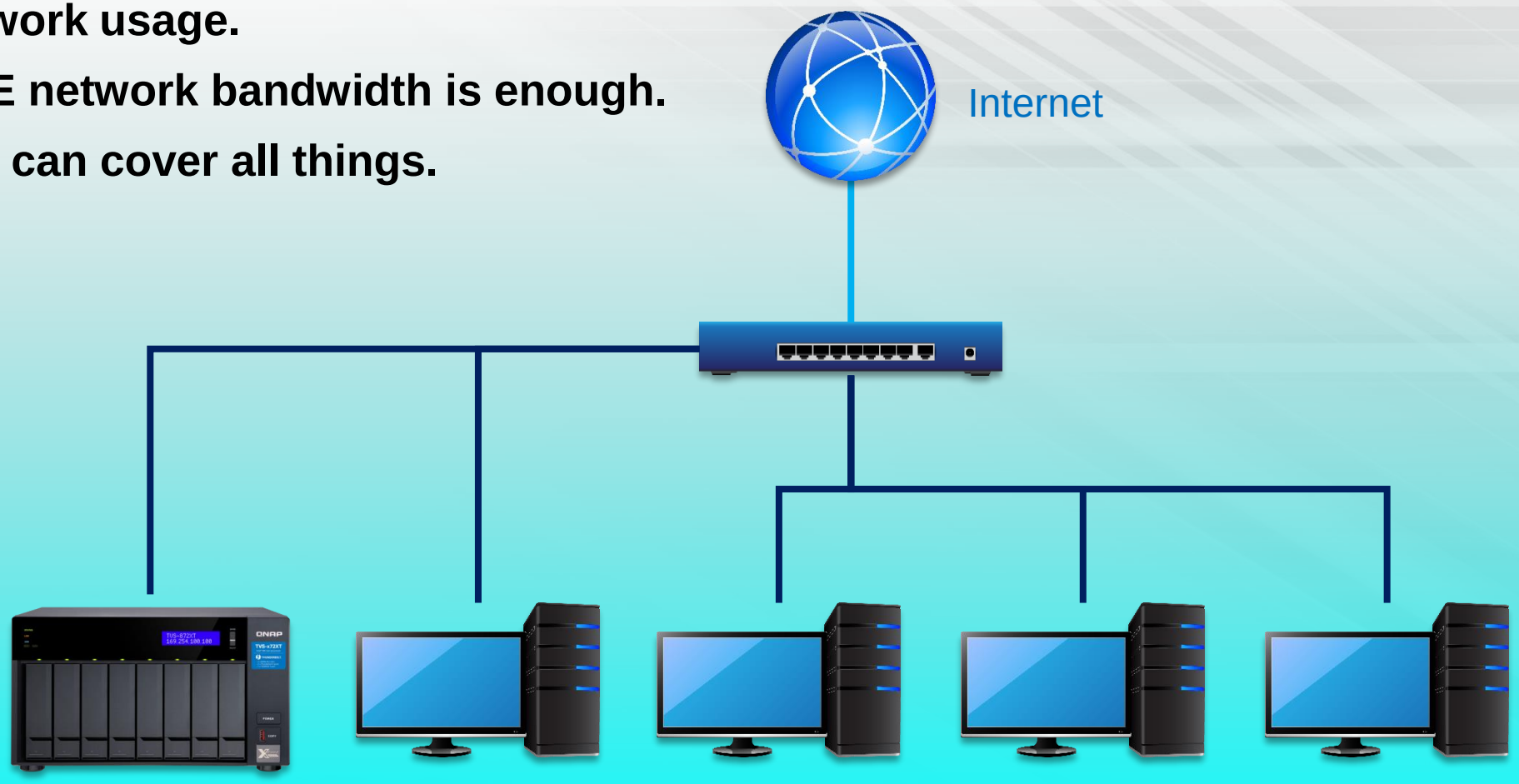
- AV files getting larger, even 10GbE is not enough.
- Need higher speed like 20GbE or upper.



# Past

# Studio office

- Simple network usage.
- Fully 10GbE network bandwidth is enough.
- Single NAS can cover all things.



# File size getting larger

**To have high quality of video & documents, file sizes can be bigger.**

## Galaxy S20 video file size comparison

### 30s sample video

- Full HD 1080p@30fps (H.264) - 52.2MB
- 4K UHD@30fps (H.264) - 138.68MB
- 8K UHD@24fps (H.265)- 302.87MB

Moreover, increasing both the framerate and video duration yielded the following results:

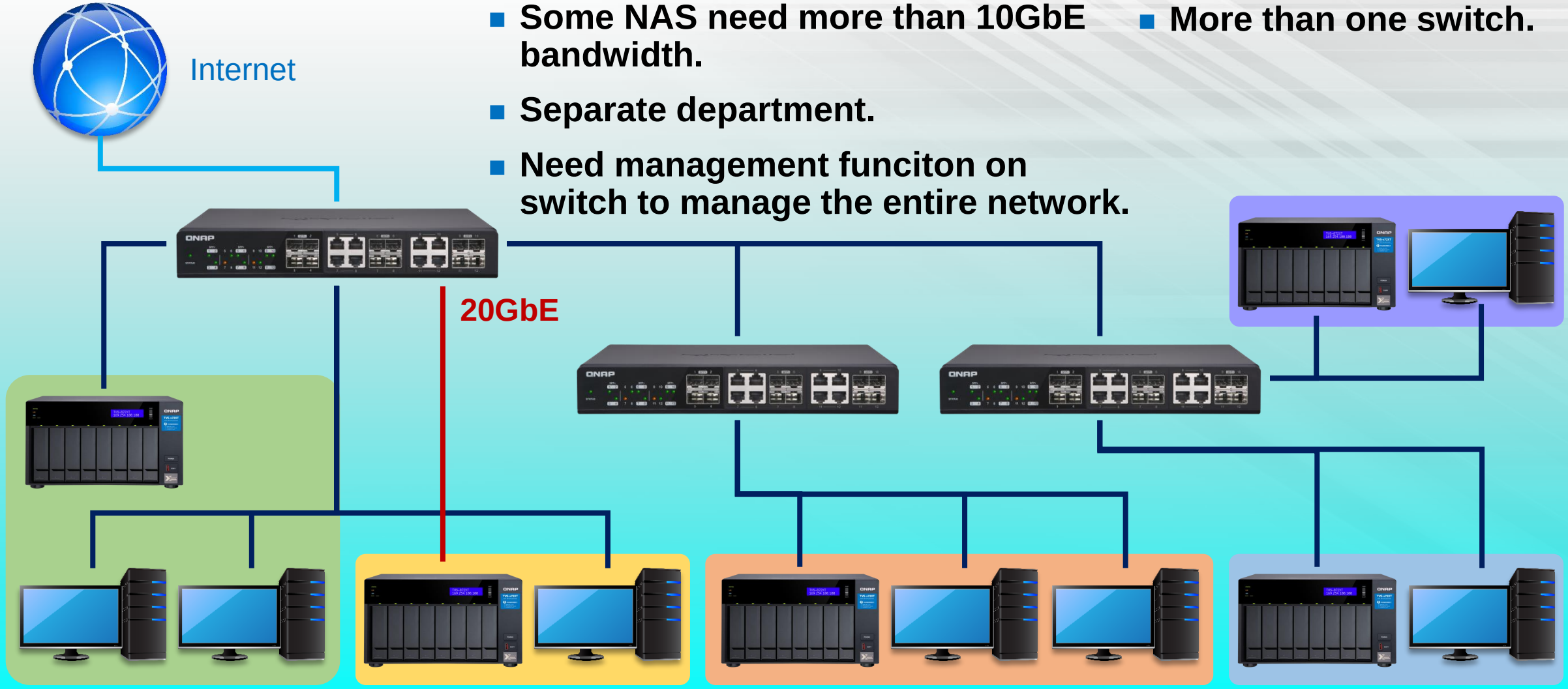
### 1m30s sample video

- Full HD 1080p@60fps (H.264) - 232.06MB
- 4K UHD@60fps (H.264) - 752.25MB
- 8K UHD@24fps (H.265) - 885.92MB

# Now

# Studio office

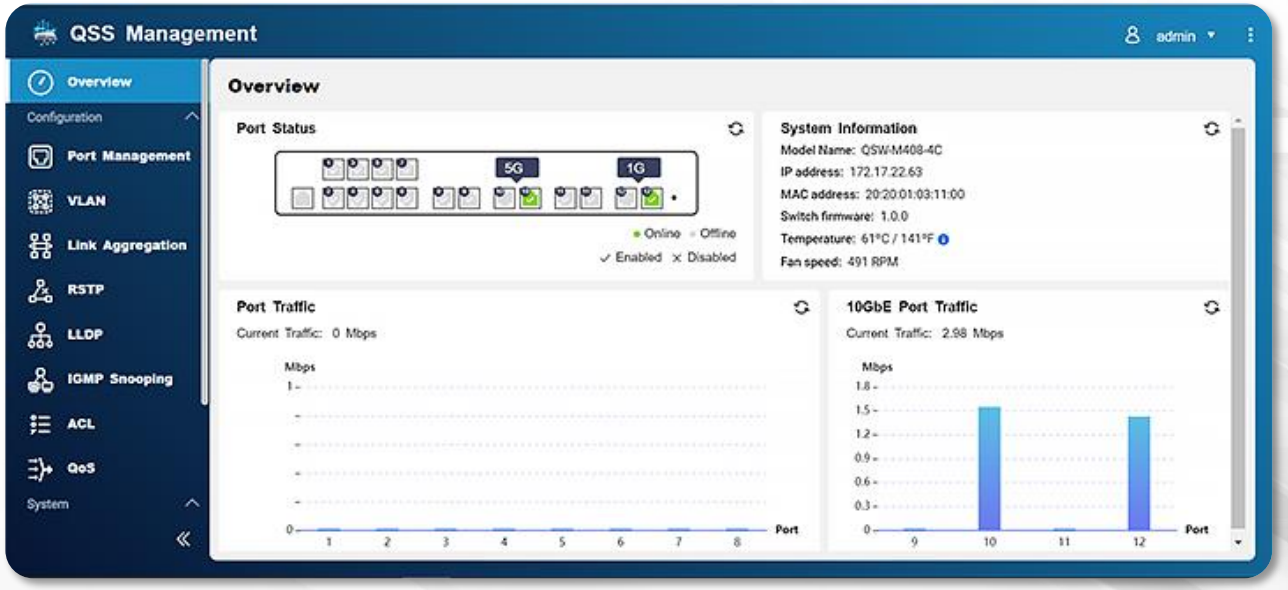
- Some NAS need more than 10GbE bandwidth.
- Separate department.
- Need management funciton on switch to manage the entire network.
- More than one switch.



# QSW-M1208 series brings powerful network for studio production

- **Fully SFP+ or SFP+/ NBASE-T, flexible with 10GbE network.**
- **Link aggregation (LACP) bring you to more then 20GbE network speed.**
- **Easy web management design.**

**10GbE + 10GbE = 20GbE**

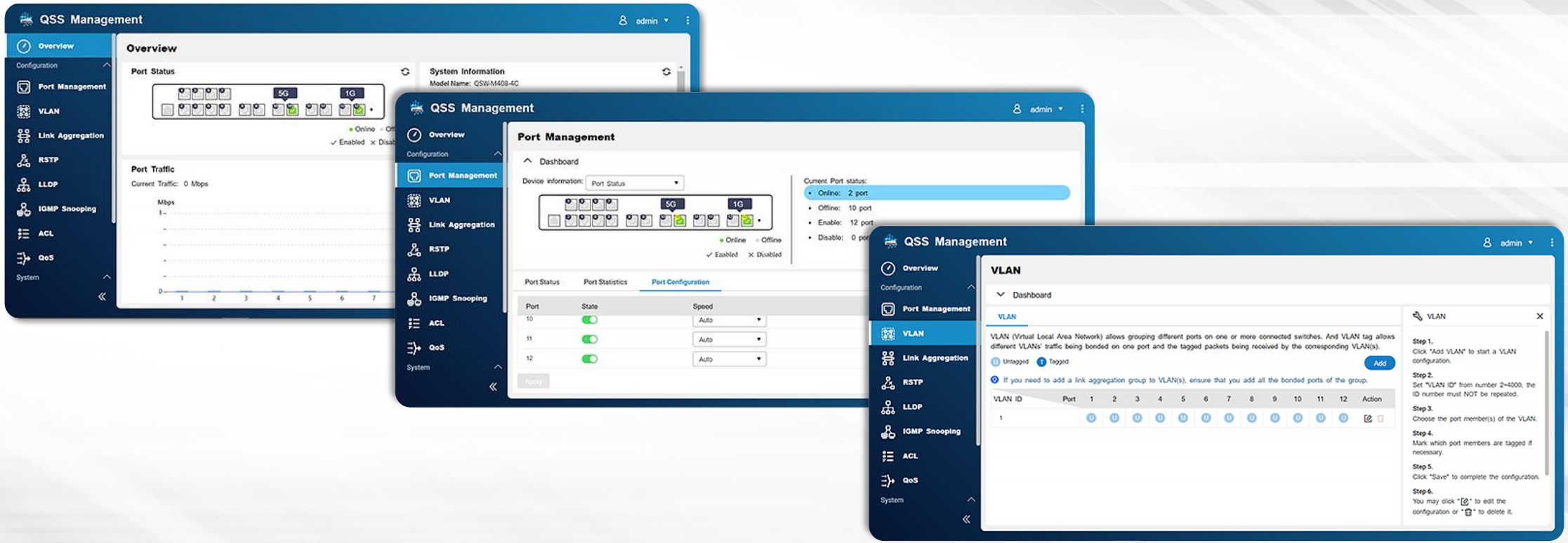


# Rich management functions

- VLAN
- Link Aggregation Group (LAG)
- Rapid Spanning Tree Protocol (RSTP)
- Link Layer Discovery Protocol (LLDP)
- IGMP snooping
- Access Control Lists (ACL)
- Quality of Service (QoS)
- Simple Network Time Protocol (SNTP)

# Easy to use GUI design

- **Rich functions and easy to use.**
- **Straightforward web design lets user realize the setup logic quickly.**



# Raise network speed with multiple network cable

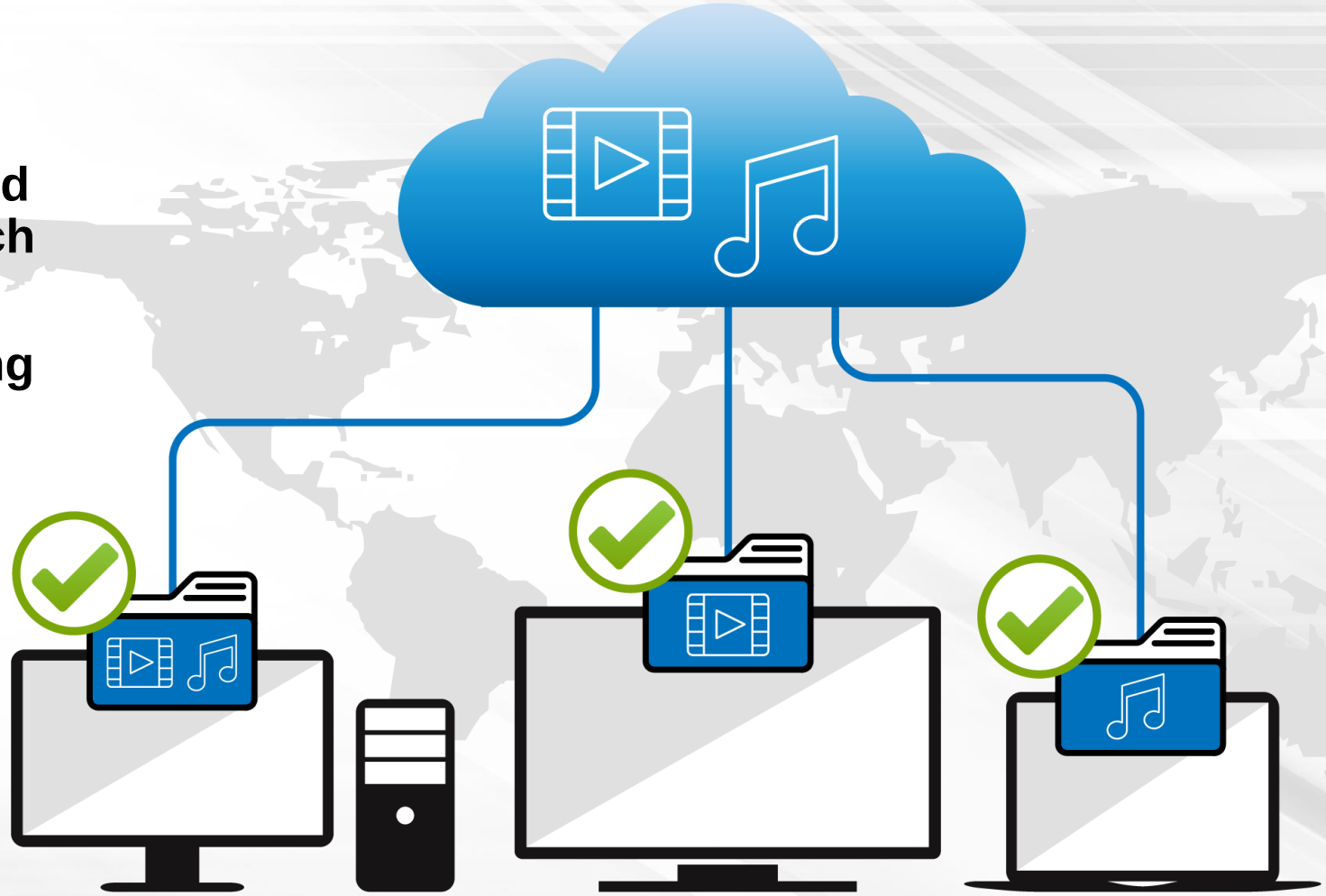
- **Link Aggregation (LAG) can aggregate multiple network cable into a single logical network.**
- **Quick and direct to have a network more than 10GbE.**

# Split office network into different area

- Virtual network (VLAN) can split office network.
- Easy to manage, can set up routing to connect different networks.
- Separate employee and guest network.

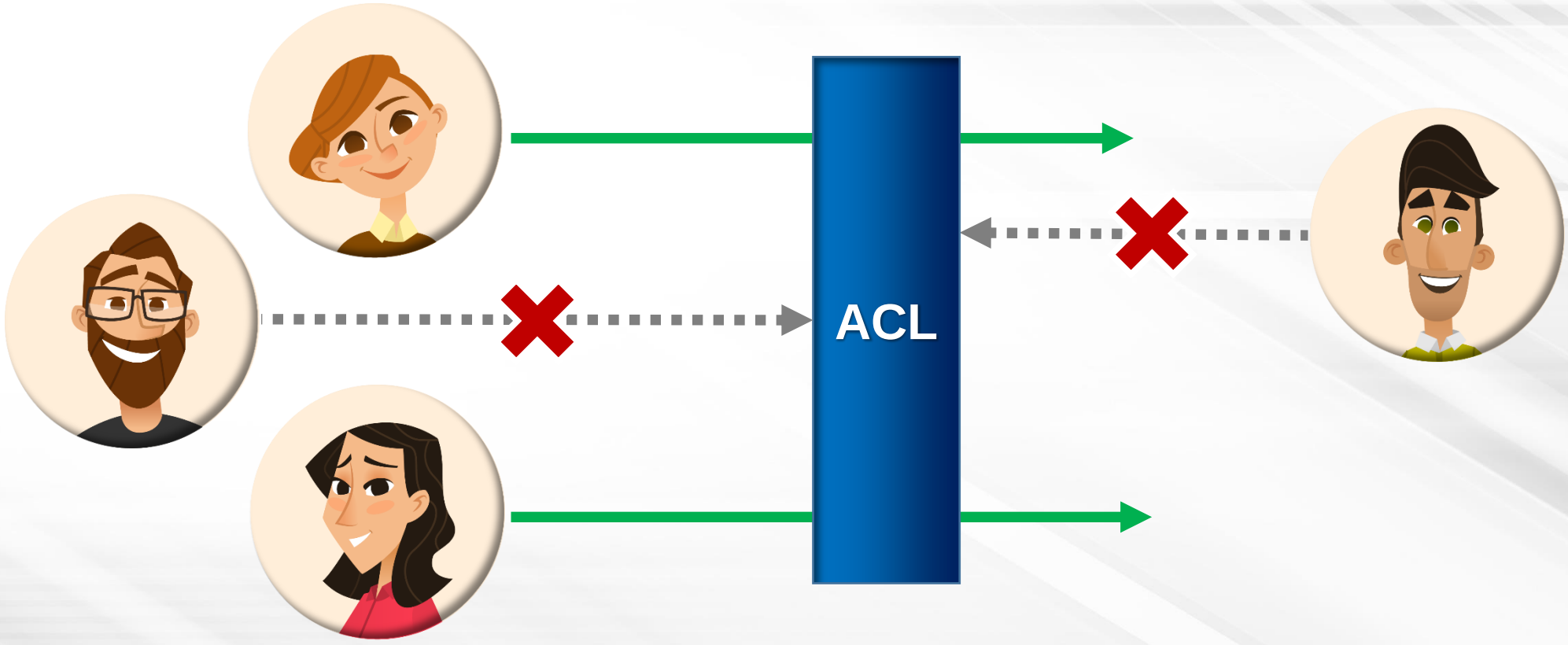
# Deliver streaming to dedicate device specificly

- IGMP snooping can record streaming request for each end point device.
- Avoid packet lost or wrong stream broadcast.



# Easy access control

- Access Control List (ACL) can control access specifically.
- To avoid security issue.

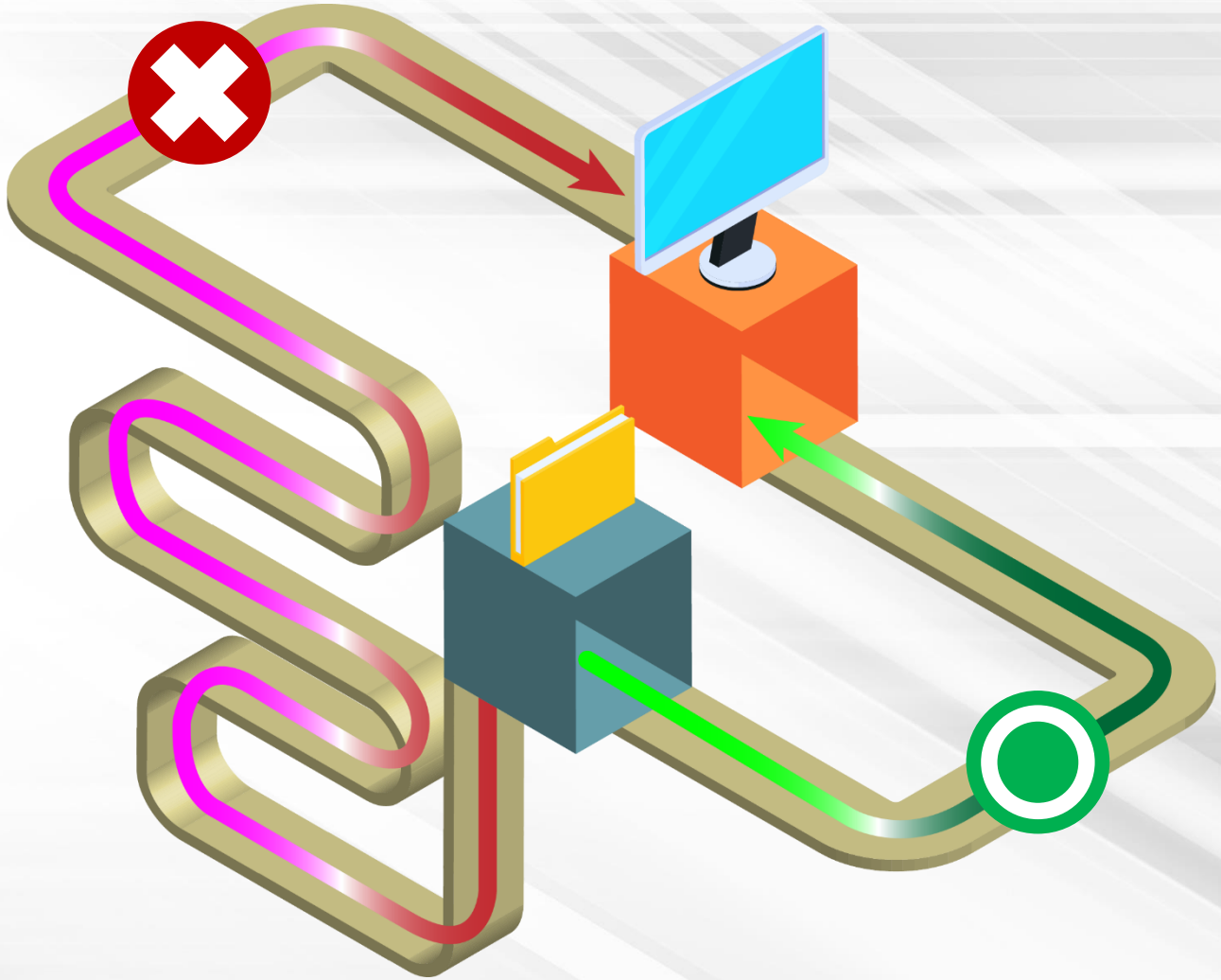


# Firmware version live check

- One-click update.
- Firmware version auto detect.
- Manual update

# Always looking for best routing

- Rapid Spanning Tree Protocol (RSTP) live check best networking route.
- Always using most effective route for data transfer.



# QSW-M1208 have more

**Ethernet flow control (IEEE 802.3x) managing packet transfer, avoid packet lost.**

**Link Layer Discovery Protocol (LLDP), easy to know which devices are conneted.**

**Energy-Efficient Ethernet (IEEE 802.3az) and fan speed control, managing power consumption.**

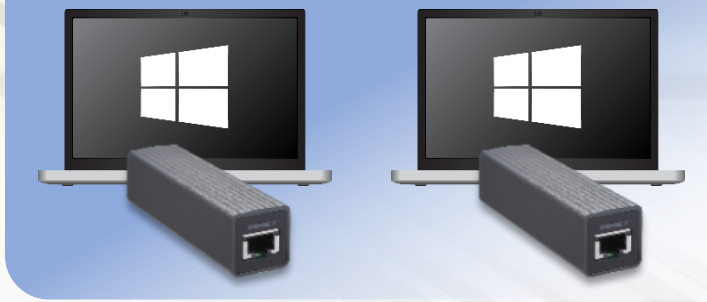
# Perfectly integrated with QNAP 10GbE products

# 12 port 10GbE combo port give flexiable deployed

Embedded or extension 10G/5G/2.5G NAS

PC upgrade 2.5G/5G/10G

Laptop upgrade 5G



Base-T/SFP+

Base-T

Base-T

High speed network connect to NAS/Server

SFP+

Base-T

MacBook upgrade 10G

# Tablet NAS with embedded 2.5/5/10GbE

## With 10GbE BASE-T

TVS-x72XT Family

TS-x83PX Family

## With 10GbE SFP+

TS-431X3

10GbE+2.5GbE

TS-431KX

## With 5GbE BASE-T

TVS-x72N Family

## With 2.5GbE BASE-T

TS-hx86 Family

TS-x31P3 Family

TS-x53D Family

# Rack mount network NAS with embedded 2.5/5/10GbE

## With 10GbE BASE-T & SFP+

QuTS hero edition TS-h1283XU-RP

TS-h1283XU-RP

QuTS hero edition TS-h1277XU-RP

TS-h977XU-RP
TS-h1277XU-RP

GM-1002/1002

TVS-x72XU

## With 2.5GbE BASE-T

TS-451DeU

TS-x73AU

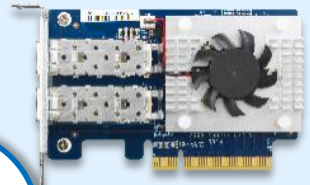
TS-x53DU

TS-x32PXU
+ 2x 10GbE SFP+

# Network extention ：
# rich PCIe network extension card

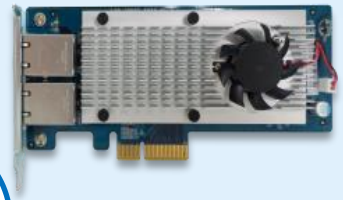
## 10GbE series

### QXG-10G2SF-CX4



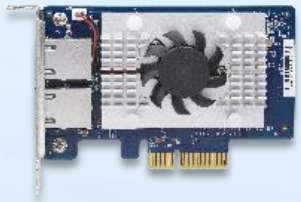
2 x SFP+

### LAN-10G2T-X550



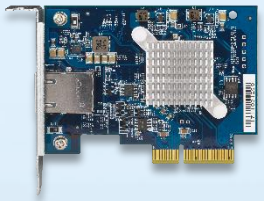
2 x RJ45

### QXG-10G2T-107



2 x RJ45

### QXG-10G1T



2 x RJ45

## 5GbE series

### QXG-5G Family

1 x RJ45

2 x RJ45

4 x RJ45

## 2.5GbE series

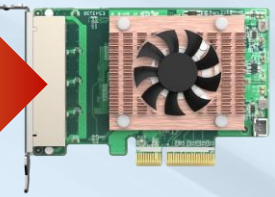
### QXG-5G Family

1 x RJ45

Coming soon

2 x RJ45

Coming soon



4 x RJ45

# Network extention：hand carry adaptor

## QNA-UC5G1T

### USB 3.2 Gen 1

- **RJ45 NBASE-T**
- **4 speed: 5G/2.5G/1G/100M**

USB Plug and play upgrade your PC/Laptop to 10GbE high speed network

https://www.qnap.com/en/product/qna-uc5g1t

## QNA-T310G1T

### Thunderbolt 3

- **10GbE NBASE-T port**
- **5 speed: 10G/5G/2.5G/1G/100M**

USB Plug and play upgrade your PC/Laptop to 10GbE high speed network, through Thunderbolt

https://www.qnap.com/en/product/qna-tb-10gbe

QNAP

# QSW-M1208 series

## Your Best Choice!

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SFP+
10GbE

NBASE-T