QNAP

QGD-1602P

10GbE Smart Edge PoE Switch

A powerful SD-WAN/QuWAN platform with networking upgrade

PoE | LAYER 2 | 2.5/5 GbE | SFP+ 10GbE | PCIe | intel ATOM inside | MICROCHIP

Intel® QuickAssist Technology

Overview

- New member of Guardian Smart Edge PoE Switch series
- Voice from customers on the existing QNAP Guardian switch
- Performance upgrade on QGD-1602P
- Features & Advantages
  - ✓ 20GbE internal bandwidth capacity
  - ✓ PoE Features
  - ✓ Virtualization
  - ✓ QuWAN SD-WAN solution
- Flexible deployment topology

Power Sourcing Equipment (PSE) product evolution

1ST Generation

Unmanaged PoE switch

2ND Generation

L2/ L3 Managed PoE Switch

3rd Generation Guardian Smart Edge PoE Switch

QGD-1602P

- 10GbE SFP+
- Intel Atom® C3558/C3758
- Intel QAT
- Virtual machine with QTS
- Hybrid cloud storage
- IEEE 802.3bt Ready
- SD-WAN (QuWAN)

Intel® QuickAssist Technology

QGD-1600P

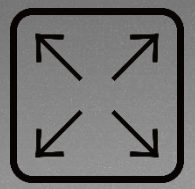
- Intel Celeron® J4125
- Equipped with QTS
- Virtual machine
- Hybrid cloud storage
- IEEE 802.3bt Ready

Voice from customers on the existing QNAP Guardian switch

QGD-1602P

We need more Ethernet bandwidth for my LAN applications

- 2.5GbE NAS/Computers are now common.
- Many Wi-Fi router/AP now support 2.5GbE.

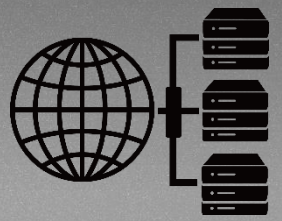


Is it possible to increase internal bandwidth between QTS host and switch?

- Internal bandwidth capacity is 2GbE on previous model for multiple virtual machines to access the switch via internal interface.

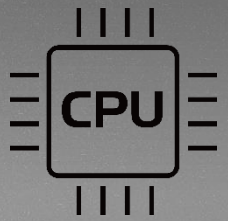
Why is there only one host port?

- Only one host port available for QTS on different networking topology deployment.



Can we have more CPU speed/cores for virtualization?

- 4-core Intel Celeron® CPU is only option on previous model.



QGD-1600P vs QGD-1602P

QGD-1600P

Intel® Celeron® J4115
4-core 1.8 GHz processor

14 x 1GbE RJ45 Ethernet ports
2 x 1GbE RJ45/SFP Combo ports

1 x 1GbE RJ45 host port

4 x 802.3bt PoE ports up to 60W
12 x 802.3af/at PoE ports

2GbE Internal bandwidth capacity

Max. 8GB memory

NEW QGD-1602P

Intel® Atom® C3558/C3758 4-core/
8-core 2.2 GHz processor

8 x 1G/2.5GbE RJ45 Ethernet ports
8 x 1GbE RJ45 Ethernet ports
2 x 10GbE SFP+ ports

2 x 1G/2.5G/5GbE host ports
2 x 1GbE host ports

4 x 802.3bt **PoE ports up to 90W**
12 x 802.3af/at PoE ports

20GbE Internal bandwidth capacity

Max. 64GB memory

QGD-1602P

Performance upgrade!

Improved features

QNAP

QGD-1602P

Guardian's hardware advantages

QGD-1602P hardware architecture

System power button (Rear)

Power Supply

System Power

PoE Power Max:
C3558:380W / C3758:220W

Host power controller

System power controller

2 x 2.5" SSD/HDD

CPU
Intel Atom C3558/C3758 4/8-core

RAM
8GB RAM
(up to 64GB)

M.2 SSD
2 x M.2 NVMe

2 x PCIe Gen 3

2 x Internal 10GbE

USB 3.0
x 2

Host Interface

4 x RJ45

2 x 1GbE

2 x 5GbE

Switch

2 x 10GbE SFP+

Microchip VSC7448

PoE Controller

16 x RJ45

8 x 1GbE

8 x 2.5GbE

Improved features

Host power button

20GbE internal bandwidth capacity

QGD-1602P

Host

Intel® Atom®
C3558/C3758
4/**8-core**

Internal
10GbE

Internal
10GbE

Virtual machine

Switch

Internal
10GbE

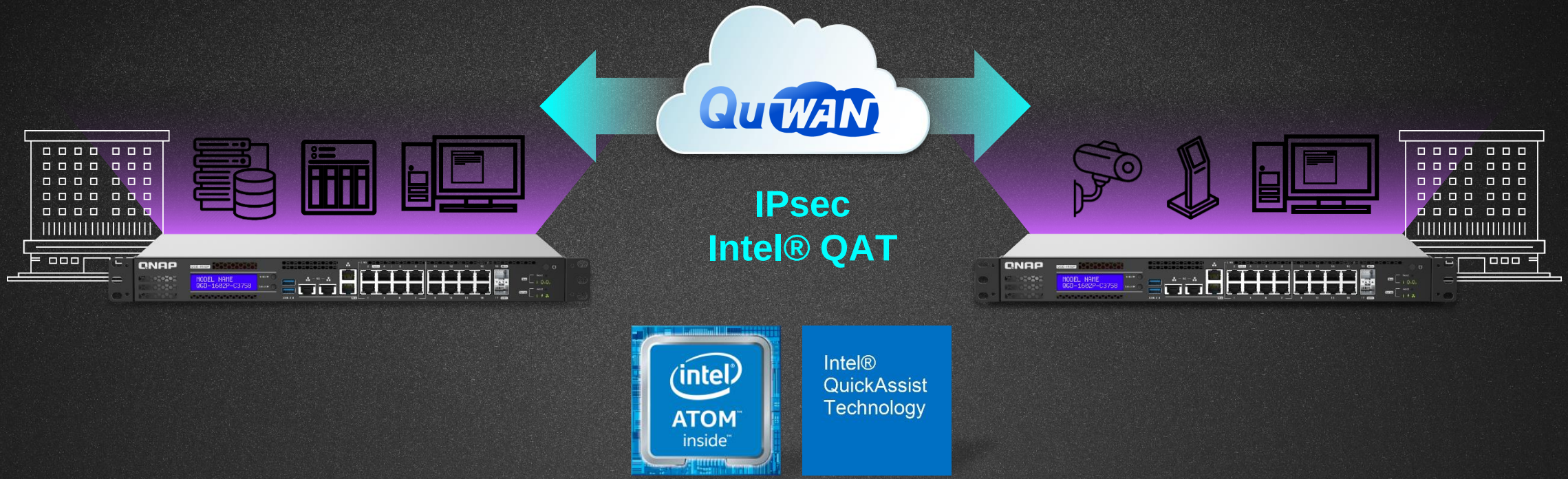
Internal
10GbE

Microchip
VSC7448

Intel® QAT on QGD-1602P

QGD-1602P

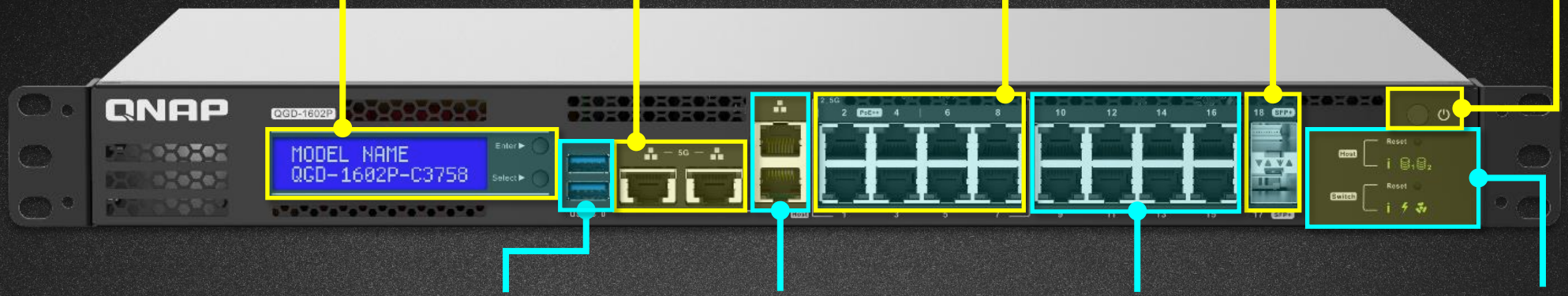
The QGD-1602P supports Intel® QuickAssist Technology (Intel® QAT). It offer up to 20 Gbps cryptography and compression, offload security and compression algorithms for better performance on VPN traffic via IPsec.



QGD-1602P hardware features

QGD-1602P

Front



LCM

2 x 1G/2.5G/5GbE Multi-Gigabit host ports

8 x 2.5GbE Multi-Gigabit switch ports

2 x 10GbE SFP+ ports

Host Power button

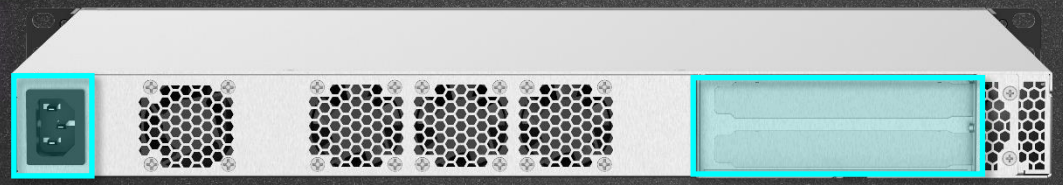
USB 3.0

2 x 1GbE host ports

8 x 1GbE switch ports

Separated Host/Switch system indicator and reset button

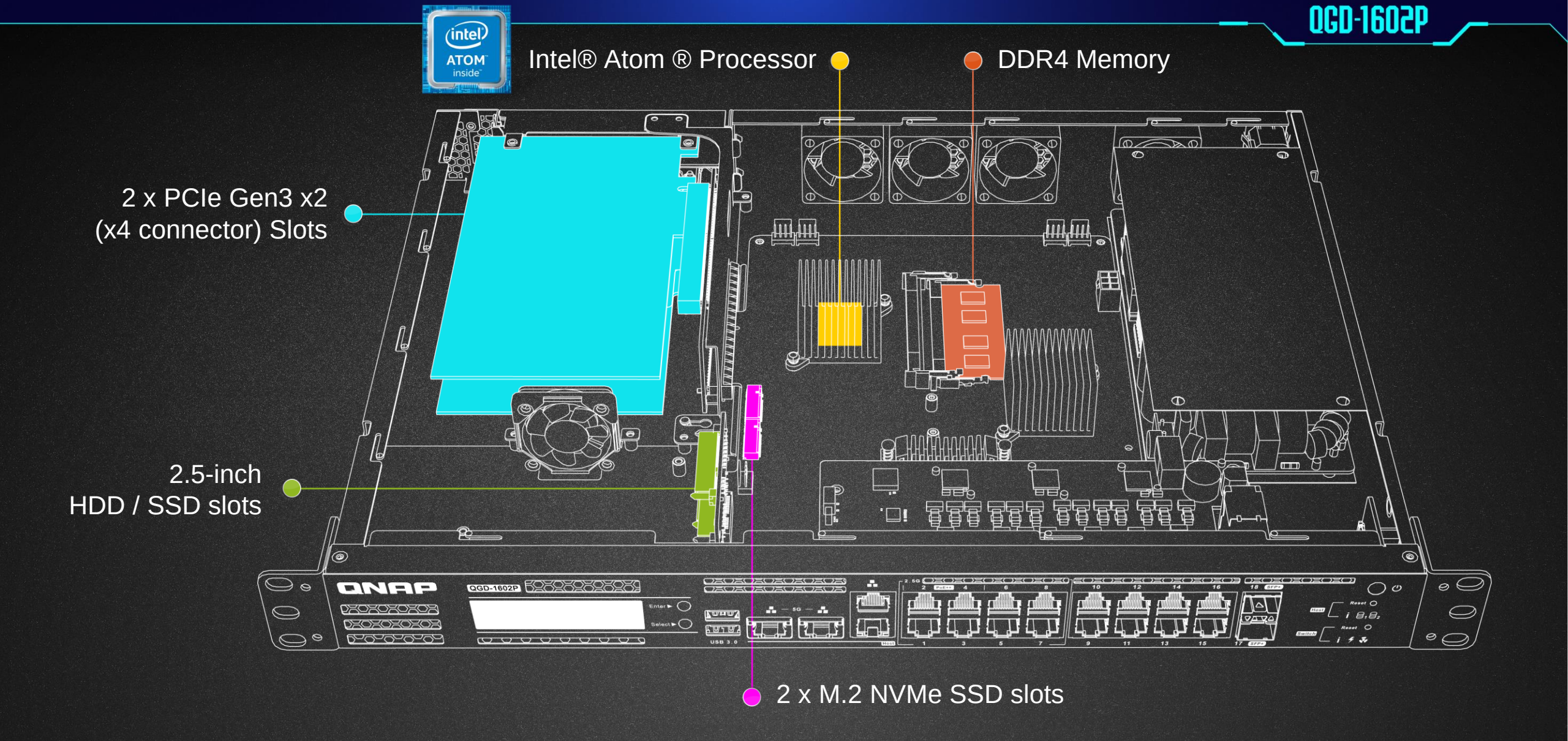
Back



System power

PCIe Gen3 slot x 2

QGD-1602P Internal View



QNAP

QGD-1602P

PoE Features

Guardian Smart Edge PoE Switch
PoE Advantages

QGD-1602P

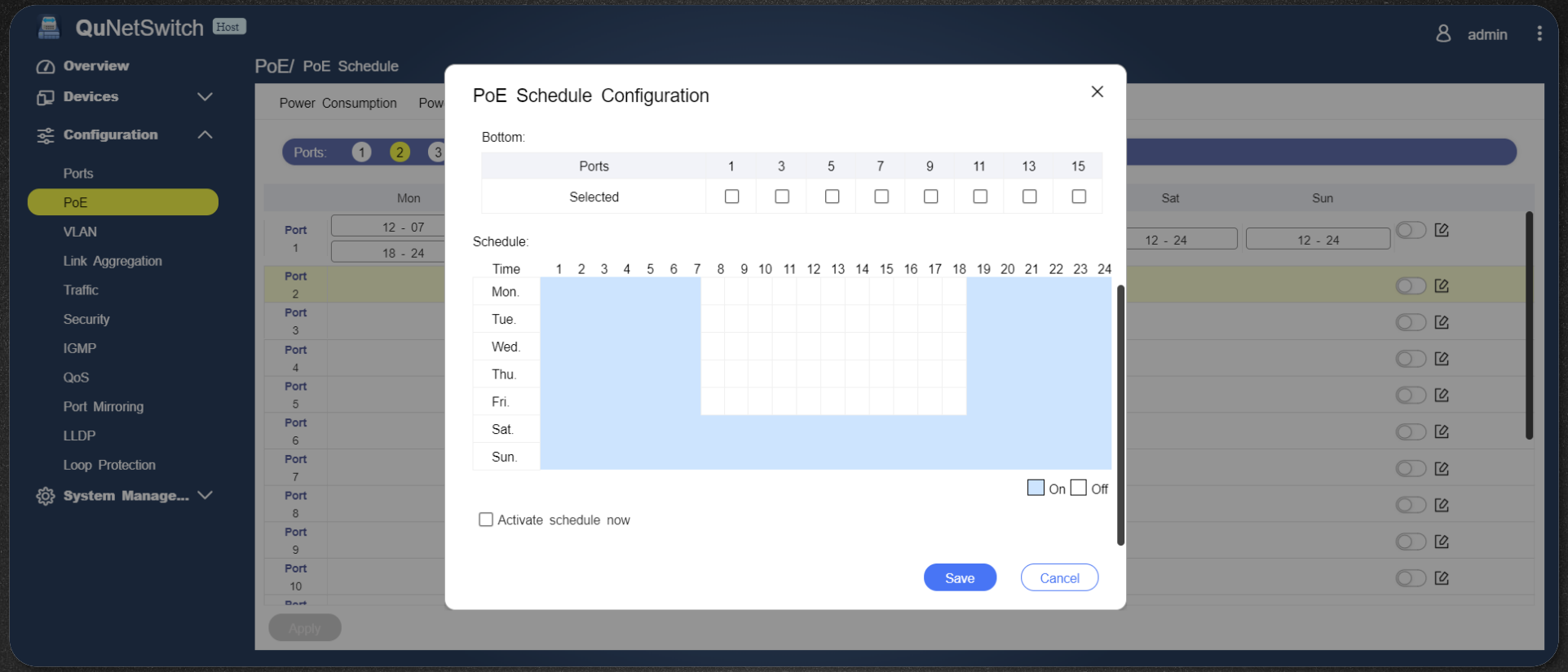
1. Supports the new generation of IEEE 802.3bt power supply standard
2. PoE scheduling
3. High total power supply rating design
   380 watts PoE power supply budget at max
4. Support 4 Port **90 watt** (PoE++)
   12 Port 30 watt (PoE+)
5. Camera device remote restart
6. Power supply priority configuration
7. Remote intelligent monitoring and management interface

■ Improved features

Support PoE power scheduling management

QGD-1602P

With PoE scheduling function, it can supply power only on the specified working day and time to save energy and electricity, and to save extra power cost for you!



Support remote login management interface

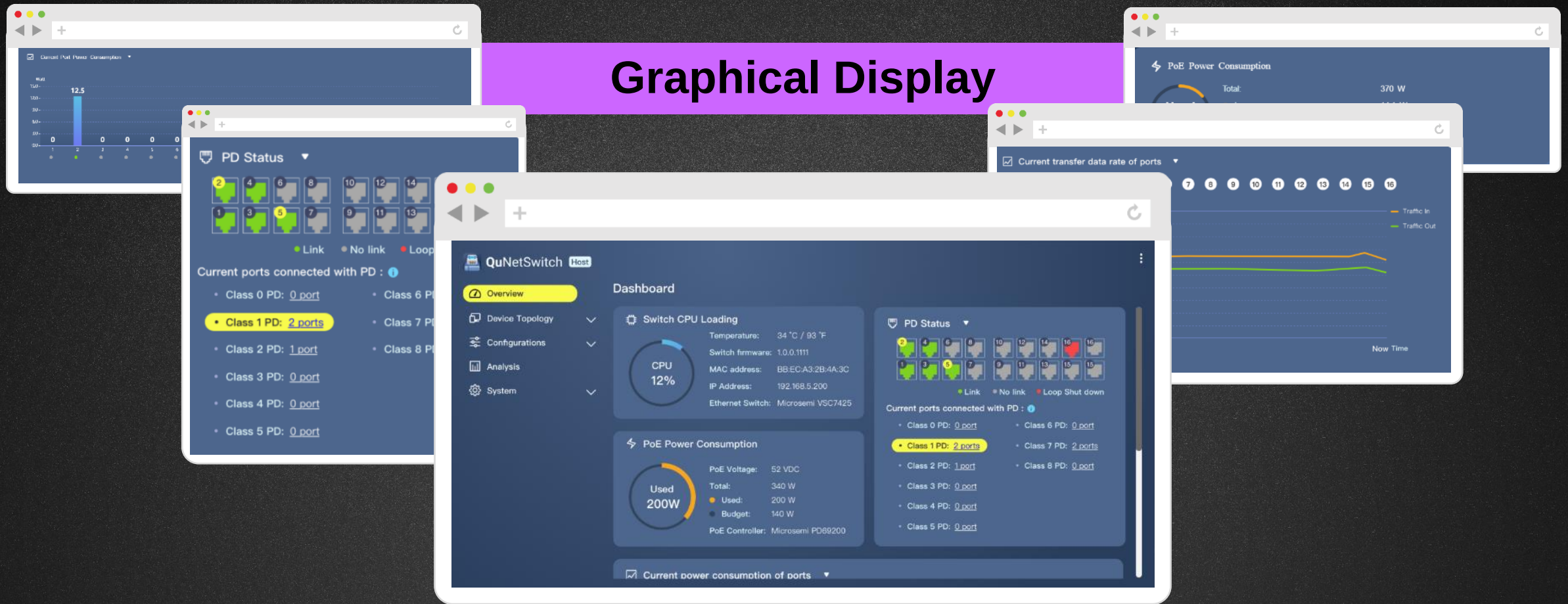
QGD-1602P

Guardian supports the PoE remote management interface, allowing you to remotely log in and manage your PoE devices wherever you are, for real-time monitoring of your devices' power usage.

Rich dashboard for data display

QGD-1602P

Guardian provides rich graphical PoE data information, including real-time power consumption status, available wattage information, and various PoE operation status, so that enterprises can effectively grasp the power usage status of the equipment.



QNAP

QGD-1602P

L2 Network Management

QuNetSwitch's friendly and intuitive graphical management interface

QGD-1602P

Guardian provides an intuitive and friendly web management interface that allows users to easily perform device monitoring, configuration, firmware updates, and advanced network management functions.

Complete Layer 2 network management function

QGD-1602P

IGMP Snooping

Optimizing multicast performance helps in-line media streaming, VoIP and other bandwidth-intensive applications that are sensitive to time delays.

VLAN

Enhance network security by isolating traffic within the enterprise based on requirements such as administrators, general users, employees, or visitors.

Link Aggregation (LACP)

Combine two physical lines to form a high-speed virtual data transmission path, increasing transmission speed and enhancing network connection reliability.

Quality of Service

Different network usage priorities can be configured according to the port or VLAN group to ensure the quality of service and optimize network transmission efficiency.

Complete Layer 2 network management function

OGD-1602P

Access-Control List (ACL)

The device supports access control mechanisms, so you can set multiple access rules & specify specific protocols, IP addresses, subnet masks, and port access conditions.

Loop detection and protection

When the network generates a loop, the network that generates the loop will be closed, effectively avoiding network interruption.

Port Mirroring

Allows network administrators to capture data (packets) for specific ports to monitor the network or troubleshoot.

Jumbo frame

The device supports the Jumbo Frame huge packet setting, which helps improve overall data transmission efficiency.

QNAP

QGD-1602P

Virtualization and SD-WAN solution

Run virtual machines and containers: multiple applications in a box

QGD-1602P

Virtualization Station and Container Station lead a full range of hybrid virtual application solutions. For your versatile needs, you can rely on QNAP's complete virtualization application support. Choosing the right deployment strategy for your virtualization needs can be easy!

Virtualization Station

OpenWrt Wireless Freedom

MikroTik RouterOS

pfsense

ZABBIX

Container Station

Guardian All-in-one VM solution

QGD-1602P

Traditional NAS + Switch

RouterOS | VM | VM

Virtualization Station

Virtual Switch | Virtual Switch

NIC | NIC

WAN | LAN

Internet | LAN Networking Devices

Guardian solution

RouterOS | VM | VM

Guardian vSwitch Mode

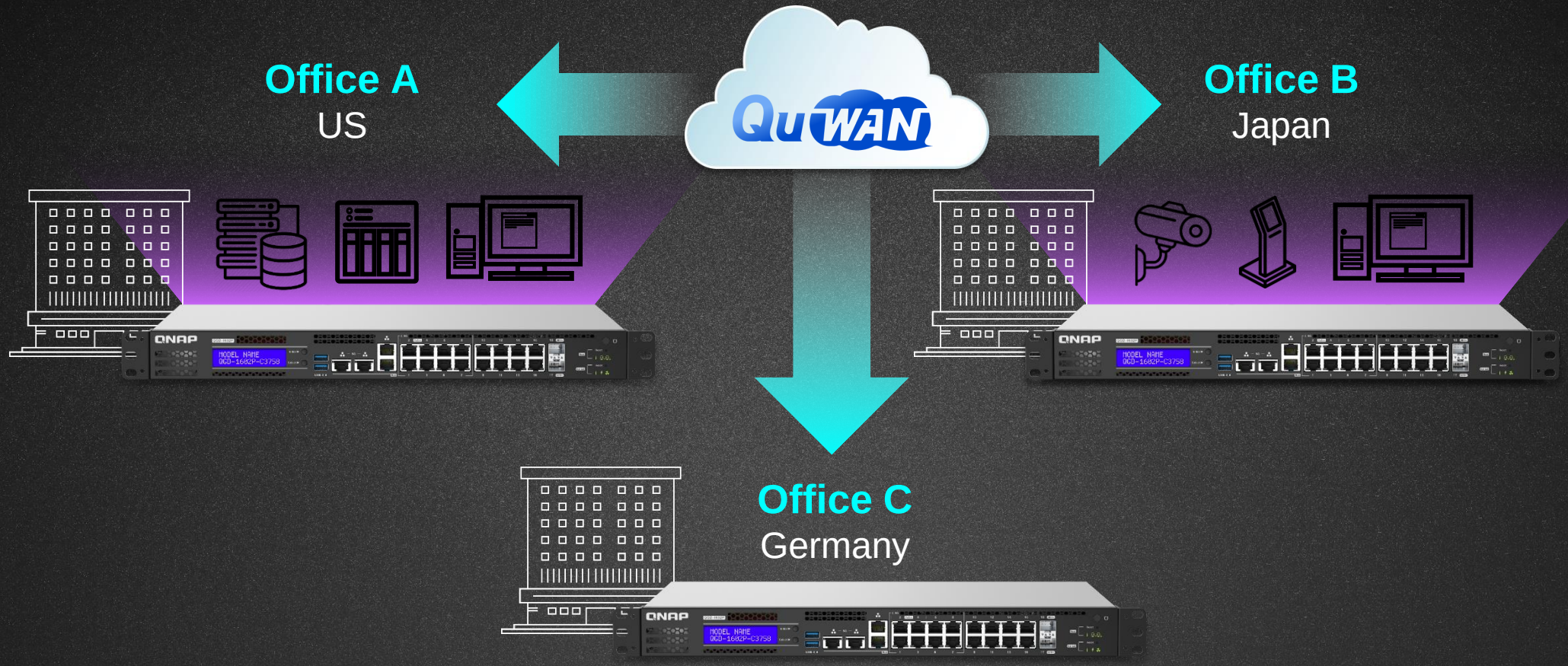
Internet | LAN Networking Devices

QuWAN - SD-WAN solution on Guardian

QGD-1602P

QGD-1602P supports the installation of QNAP SD-WAN solution – QuWAN.

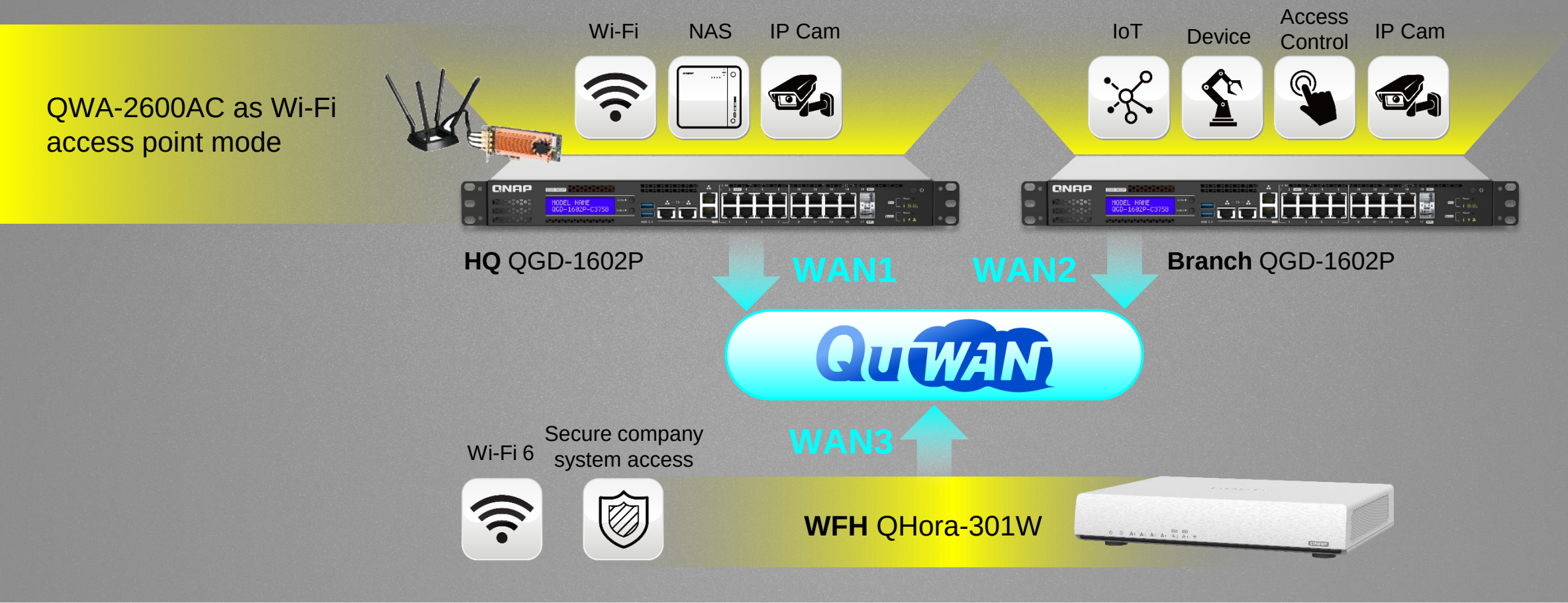
QuWAN allow SMB branch offices, restaurants & chain stores to set up SD-WAN easily.



Guardian x QWA-AC2600 SD-WAN solution

QGD-1602P

- Establish SD-WAN via QuWAN between each office.
- Share the wireless network to the device with the QWA-2600AC wireless network card.



Guardian x QuWAN x pfSense solution

QGD-1602P

QuWAN

Virtual Switch

Ethernet Port 1

QuWAN WAN

Virtual Switch

Ethernet Port 2

QuWAN LAN

pfSense VM

pfSense WAN

Virtual Switch

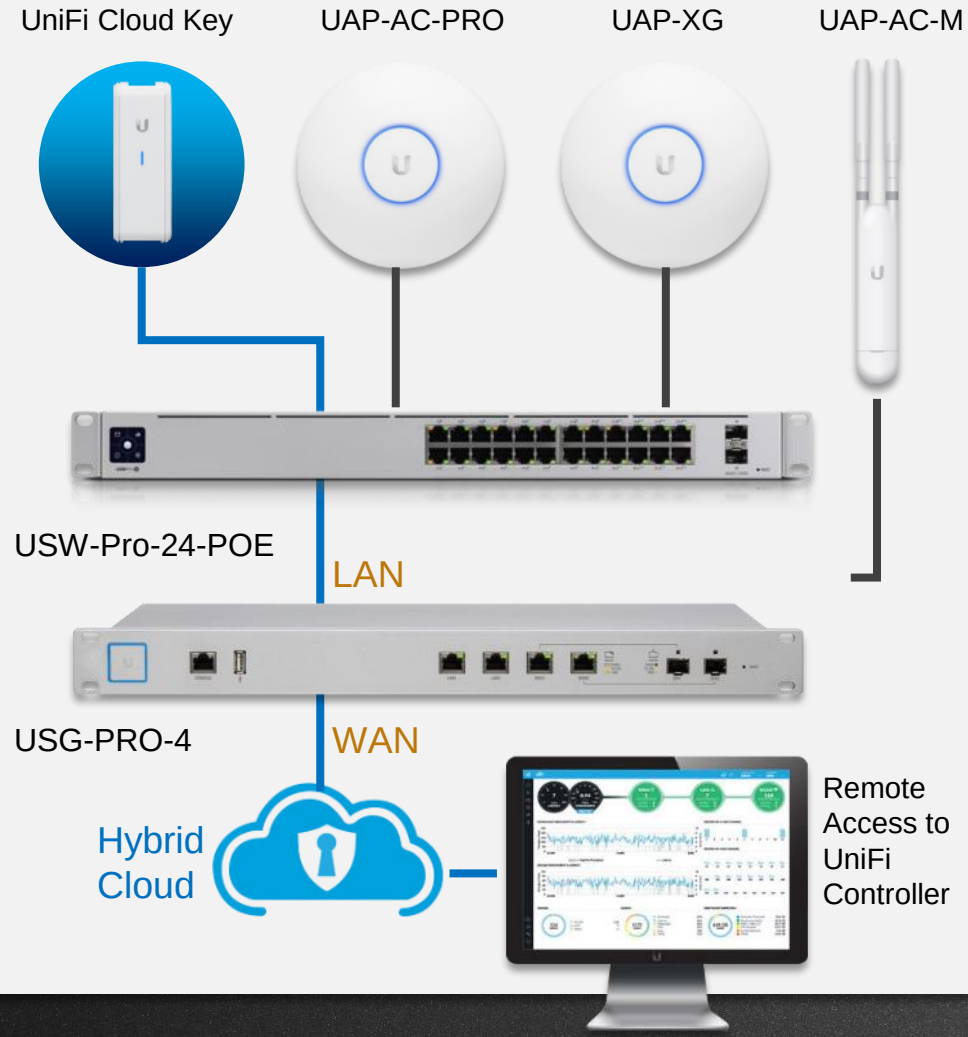
Ethernet Port 3

pfSense LAN

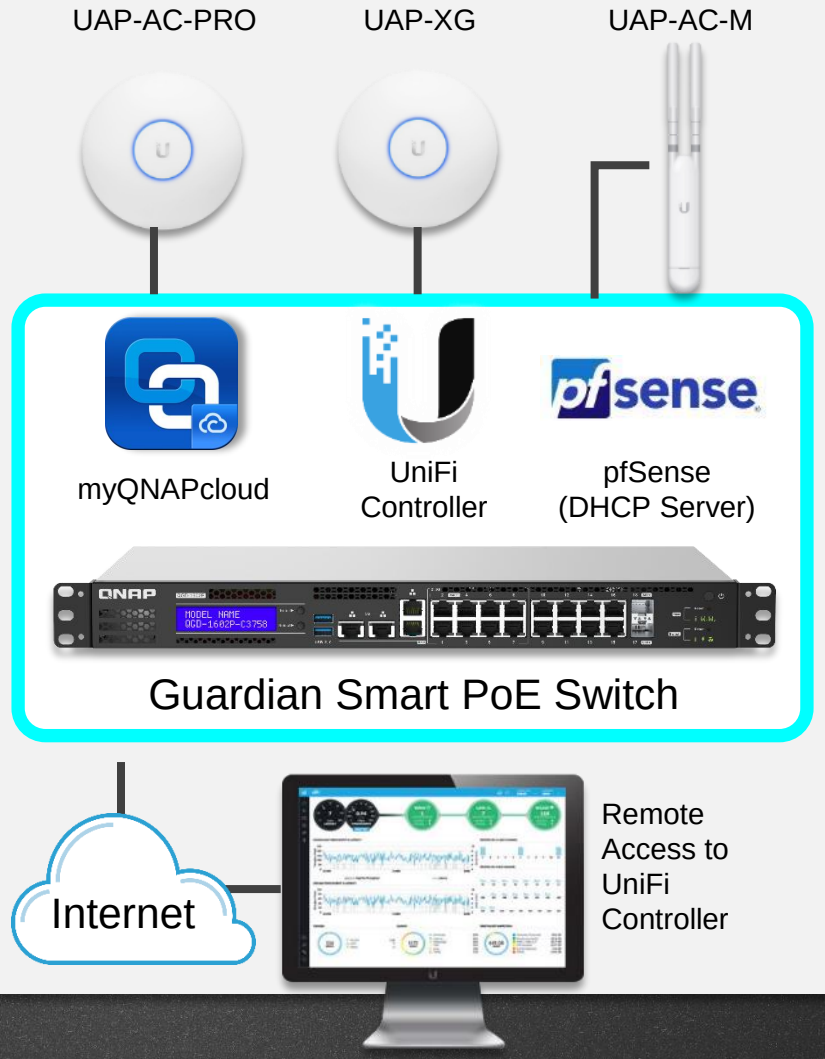
QGD-1602P

Guardian Wireless AP Integrated Solution

Traditional Deployment



Guardian solution



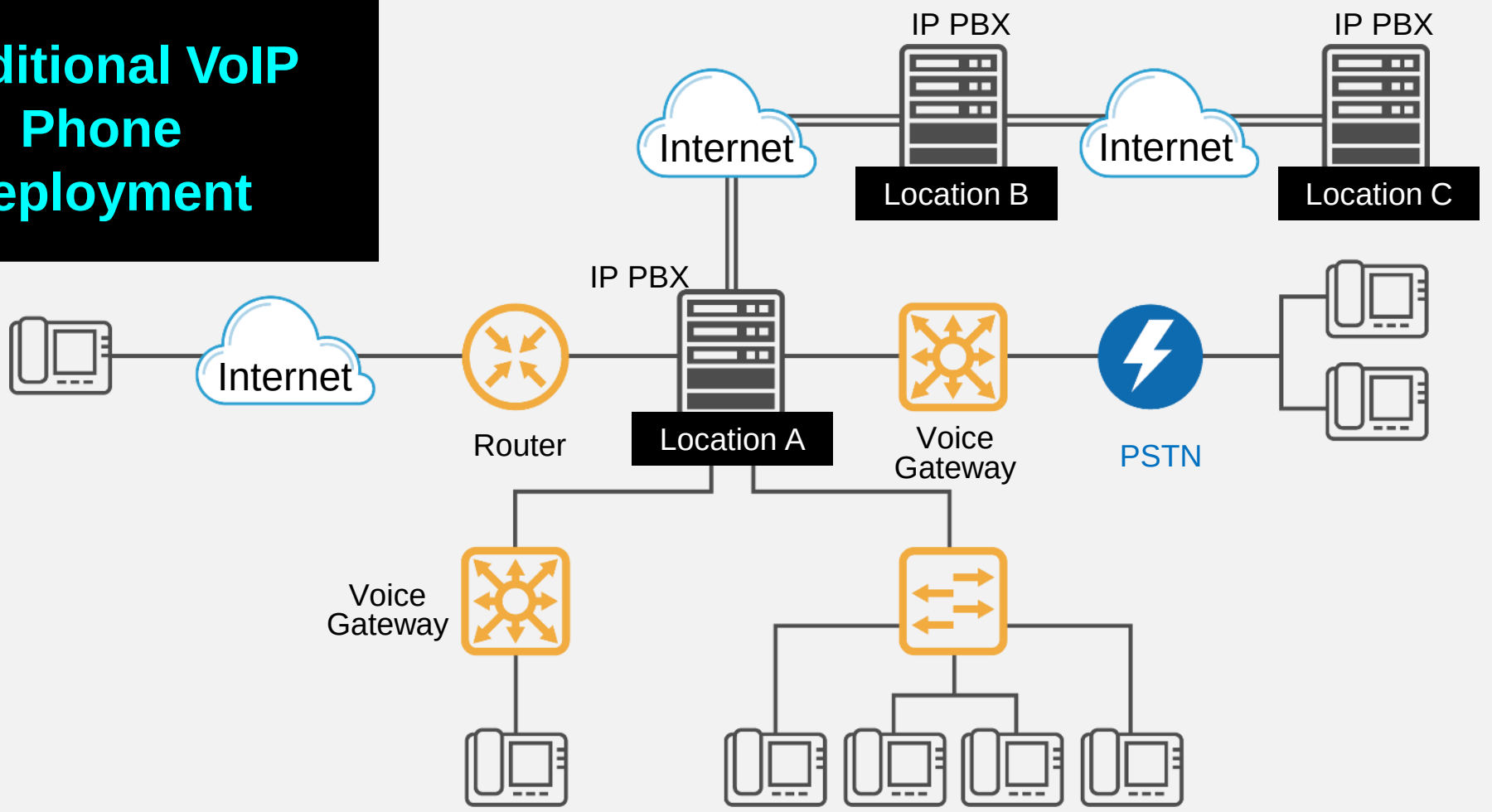
Advantages

1. One machine covers all features, saving a lot of space
2. Highly expandable capabilities to meet future growth needs
3. Integrated solution

Guardian brings IP Phone integrated solution

QGD-1602P

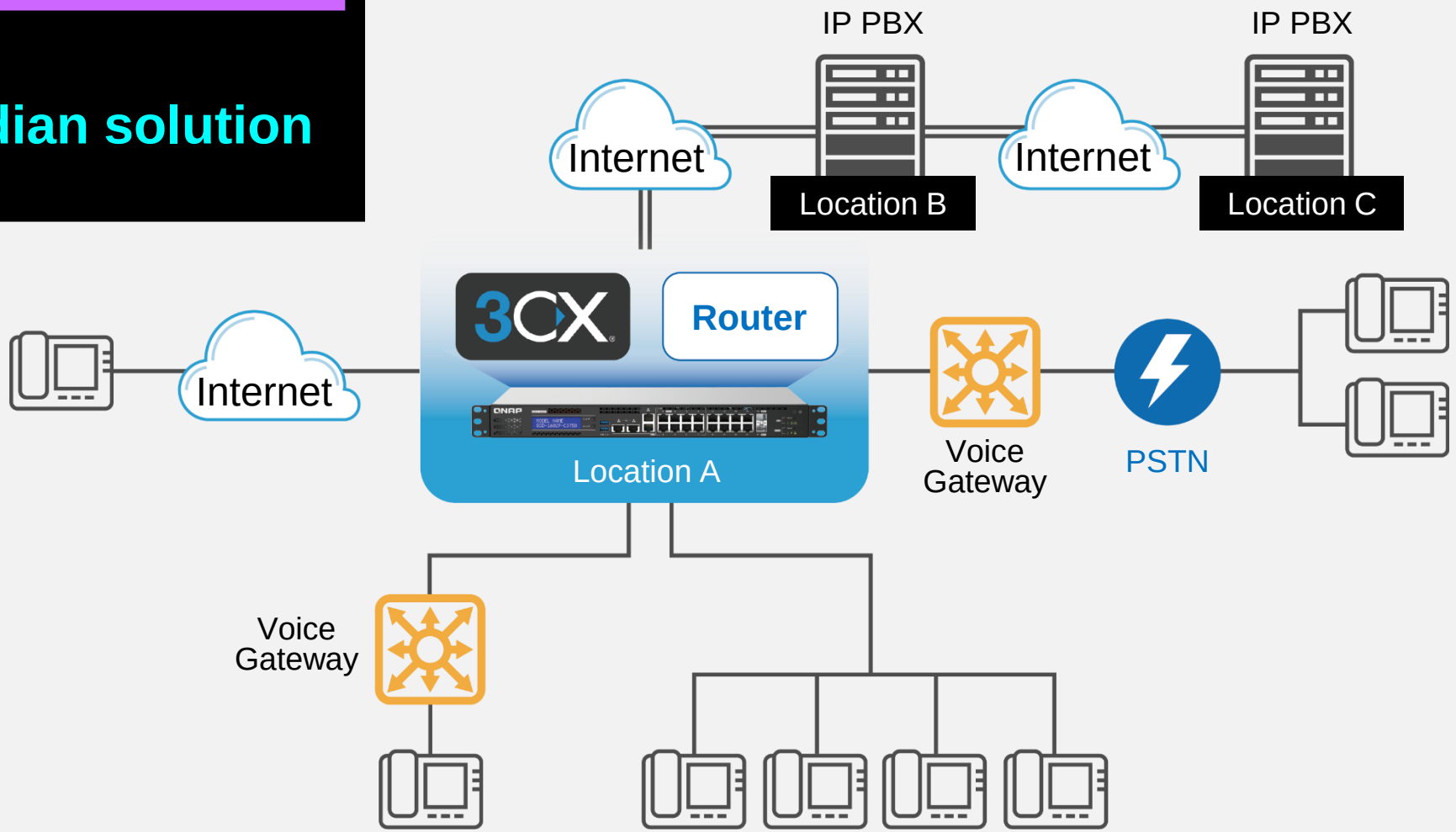
Traditional VoIP Phone Deployment



Guardian brings IP Phone integrated solution

QGD-1602P

Guardian solution



QNAP

QGD-1602P

Flexible networking topology for deployment

Flexible Guardian choice for VM deployment

QGD-1602P

Model	CPU cores	Memory	Recommended VM deployment
QGD-1600P	4	8GB max	2
QGD-1602P-C3558	4	64GB max	4
QGD-1602P-C3758	8	64GB max	6

Guardian solution for Restaurant and Retail Store

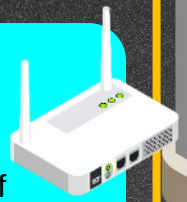
PoE

4K PTZ Surveillance
Powering multiple cameras and integrating QVR Pro solution

Electronic menu
Provide power and networking capabilities

Point of Sales
Consumption behavior analysis and data storage

WiFi 5/6 PoE Access point
PoE powered and supports installation of AP Controller software



Digital Signage
Provide power and content management

2.5GbE NAS for Data storage/backup
Save customer data, work documents, letter materials

QuWAN
To create SD-WAN network with headquarters and other stores

■ Improved features

Flexible networking topology for deployment

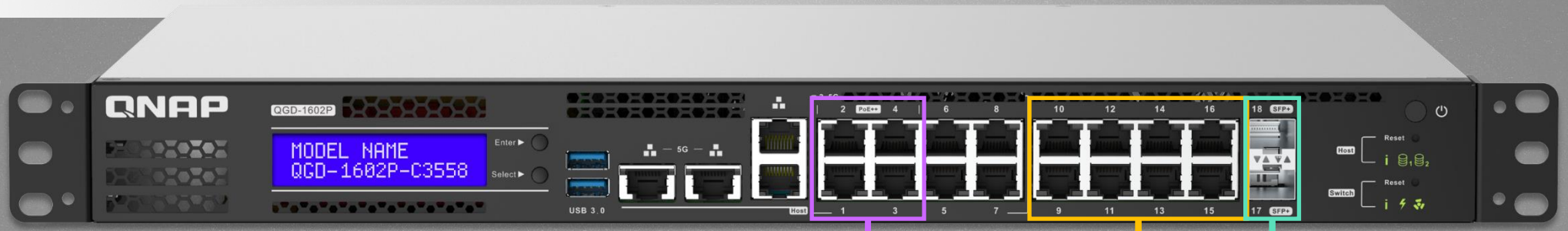
QGD-1602P

Virtual Machine

QuWAN

QVR Pro

10GbE 2 x 10GbE internal



4 x 2.5GbE PoE (802.3bt)

4K PTZ Surveillance Camera

POS

Electronic menu

8 x 1GbE PoE (802.3at)

Internet

Wi-Fi 6 QHora-301W at AP mode

2 x 10GbE SFP+ ports

Customer's laptop/phones

Flexible networking topology for deployment

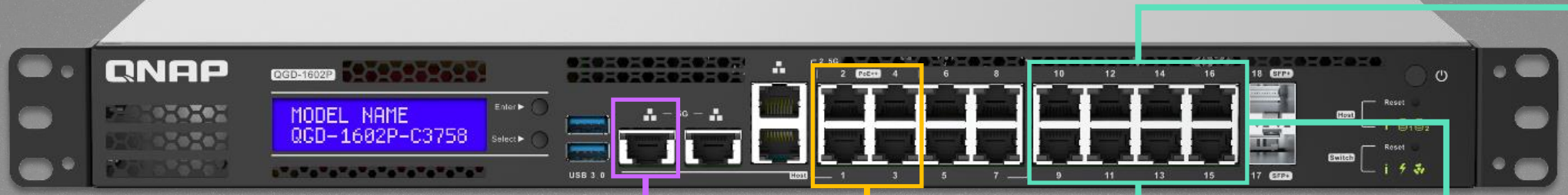
QGD-1602P

Virtual Machine

QuWAN

QVR Pro

10GbE 2 x 10GbE internal



5GbE Host port

Internet

4 x 2.5GbE PoE (802.3bt)

PoE

PoE 4x4 Wi-Fi access point

Customer's laptop/phones

PoE Surveillance Camera

POS

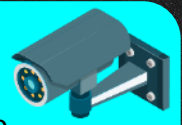
Electronic menu

8 x 1GbE PoE (802.3at)

Guardian solution for SMB and workstation

PoE

4K PTZ Surveillance
Powering multiple cameras and integrating QVR Pro solution



Wi-Fi 5/6 PoE AP
PoE powered and supports installation of AP Controller software

2.5/5/10GbE Network device
Provide Network management and Internet access requirements for devices

Firewall
Protect corporate internal network from external intrusions and internal network attacks

Wake on Lan
allows a computer/ NAS to be turned on or awakened by a network message

QuWAN
To create SD-WAN with headquarters and other stores

■ Improved features

Flexible networking topology for deployment

QGD-1602P

Virtual Machine | QuWAN | QVR Pro | FreePBX | VLAN | 10GbE 2 x 10GbE internal

VLAN1

VLAN2

2 x USB 3.0

TR-004U
RAID expansion

PC with 2.5GbE

QHora-301W (AP mode)

8 x 2.5GbE ports

8 x 1GbE PoE (802.3at)

Surveillance Camera

VoIP phone

Printer

QSW-M408
10GbE L2 switch

Internet

VLAN2

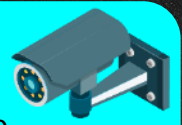
VLAN1

2 x 10GbE SFP+ ports

Guardian solution for SMB and workstation

PoE

4K PTZ Surveillance
Powering multiple cameras and integrating QVR Pro solution



Wi-Fi 5/6 PoE AP
PoE powered and supports installation of AP Controller software

2.5/5/10GbE Network device
Provide Network management and Internet access requirements for devices

Transparent Firewall via pfSense
Protect internal network via transparent firewall without making any IP address changes on other devices.

Multi-WAN via RouterOS
Load Balancing or Failover

■ Improved features

Flexible networking topology for deployment

QGD-1602P

Virtual Machine | MikroTik RouterOS | pfSense | FreePBX | VLAN | 10GbE 2 x 10GbE internal

VLAN1

VLAN2

2 x PCIe Gen 3

16-bay TL-D1600S

802.3at/bt PoE wireless AP

8 x 2.5GbE PoE (802.3bt/at)

8 x 1GbE PoE (802.3at)

Surveillance Camera

VoIP phone

Printer

Internet

Internet

WAN2

WAN1

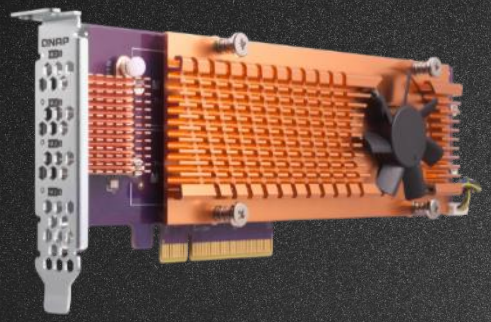
2 x 10GbE SFP+ ports

Extend Guardian functionality with the PCIe slot

QGD-1602P

The Guardian QGD-1602P features two PCIe Gen 3 expansion slots, and you can flexibly configure a variety of QNAP PCIe expansion cards as needed.

QM2



SSD
- QM2-2S-220A
- QM2-2P-244A
- QM2-2P-344
- QM2-2P-384

SSD+NIC
- QM2-2S10G1TA
- QM2-2P10G1TA

QWA-AC2600

QWA-AC2600

USB 3.1 Gen 2 (10Gbps)

USB-U31A2P01

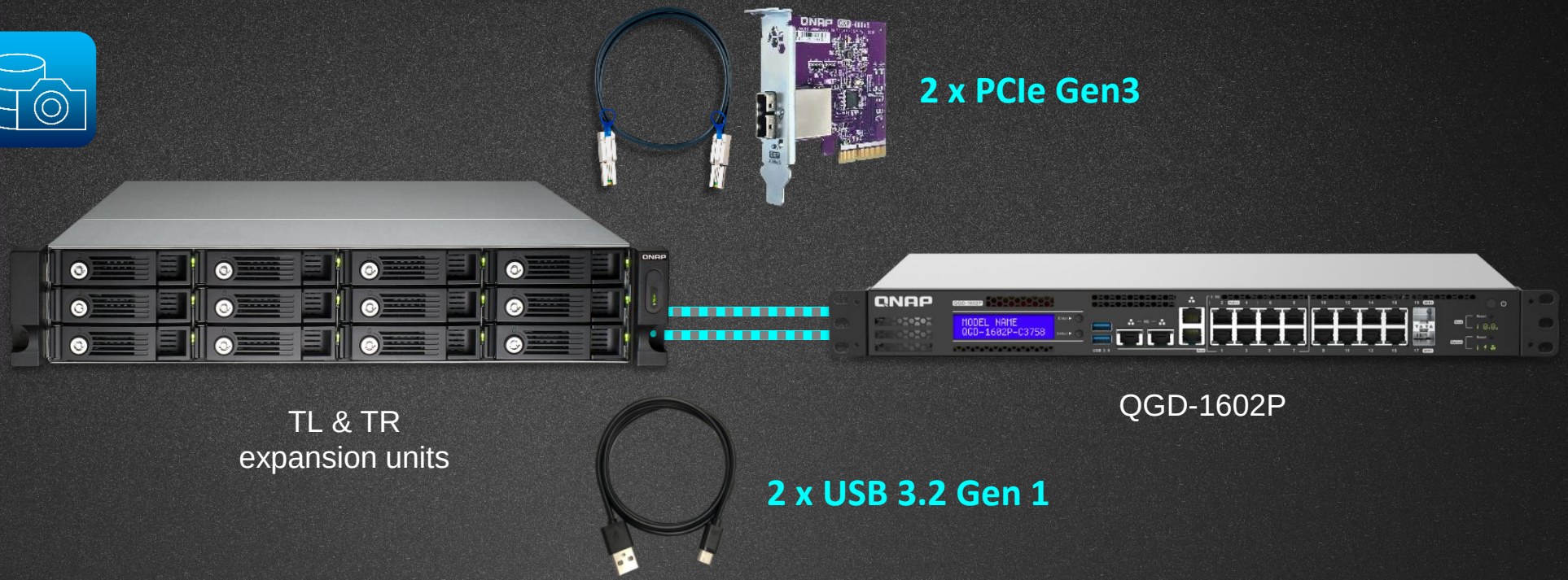
QNAP TR & TL expansion units for storage expansion or as a backup destination

QGD-1602P

QNAP TL JBOD and TR RAID expansion units can expand the QGD-1602P storage capacity. They supports either the configurations of the storage pool, or the snapshots storage from volume and LUN.

Be the Snapshot Vault

Be the Storage Expansion



Easy expansion of storage space via USB

QGD-1602P

- USB 3.2 Gen 2 10Gbps JBOD
- Software RAID
- QNAP JBOD Manager utility for Windows / Mac/ Ubuntu

8-bay TL-D800C

12-bay TL-R1200C-RP

- USB 3.2 Gen1 5 Gbps / Gen2 10G bps RAID
- Hardware RAID 0/1/5/10, configurable via a dip switch or via software
- QNAP External RAID Manager utility for Windows / Mac/ Ubuntu

2-bay TR-002

4-bay TR-004

4-bay TR-004U

High performance expansion of storage space via PCIe

QGD-1602P

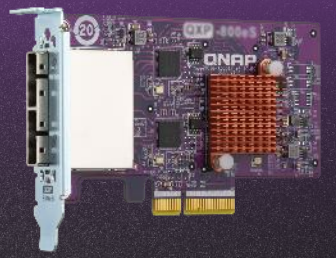
4-bay TL-D400S

1 x QXP-400eS-A1164
PCIe 4-port SATA card

1 x 1M SFF-8088 cable

4-bay TL-R400S

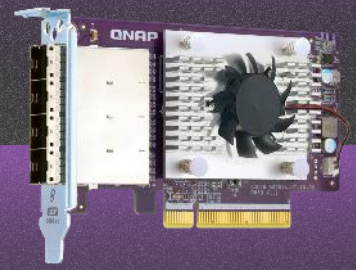
8-bay TL-D800S



1 x QXP-800eS-A1164
PCIe 8-port SATA card

2 x 1M SFF-8088 cables

16-bay TL-D1600S



1 x QXP-1600eS
PCIe 16-port SATA card

4 x 1M SFF-8088 to SFF-8644 cables

12-bay TL-R1200S-RP

3 x 1M SFF-8088 to SFF-8644 cables

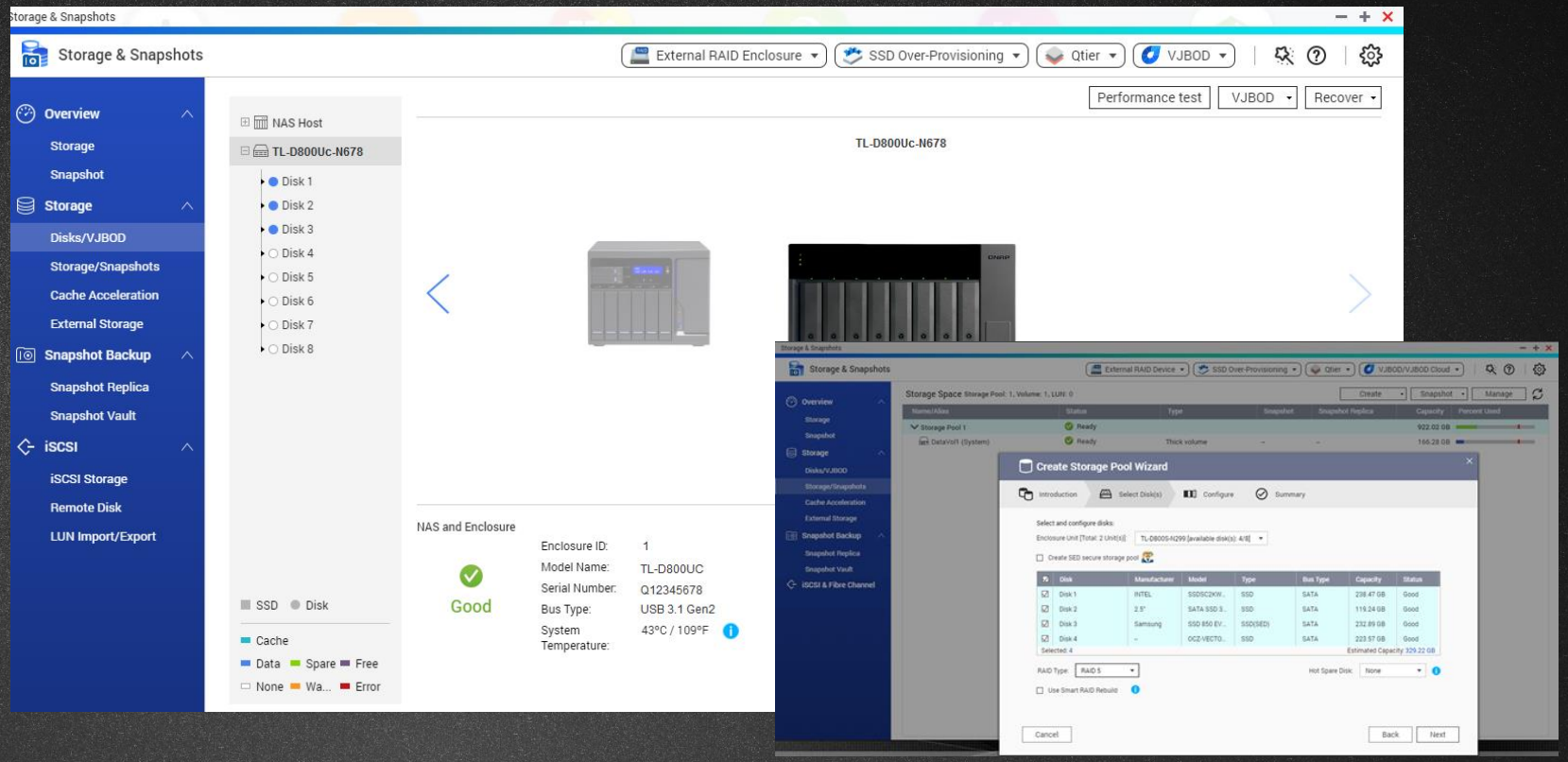
Manage expansion units with QTS

QGD-1602P

The TL JBOD and TR RAID units can be monitored and managed in the QTS storage and snapshot manager.

Enclosure & QTS Disk related features:

- Temperature warning
- S.M.A.R.T test
- Seagate Ironwolf IHM*
- Disk Scan*
- Disk Erase
- Disk performance test



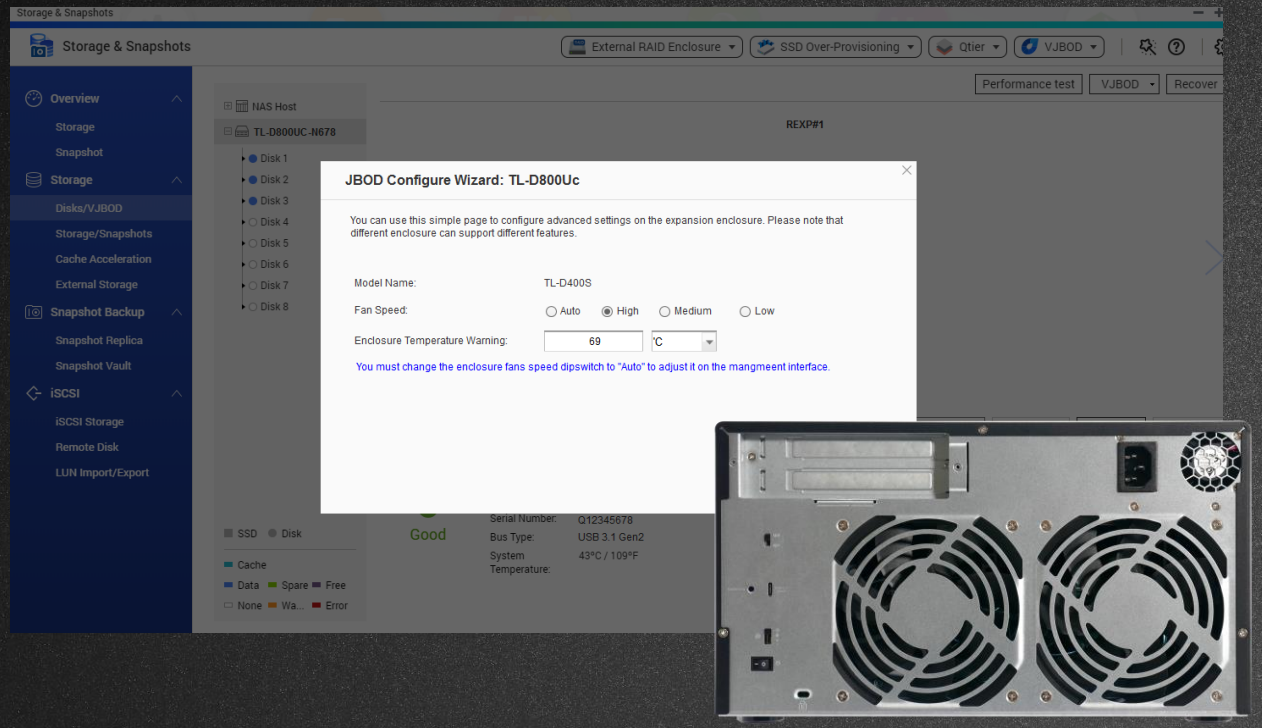
* Not supported with the TR-002, TR-004, and TR-004U.

Enclosure management fully integrated into QTS

QGD-1602P

When SSD becomes more popular, the temperature management of the enclosure is more important than before.

Monitor the FAN speed via NAS UI and configure the threshold of temperature warning.



Storage Temperature		Acceleration Factor	Max storage duration at end of drive life
(°C)	(°K)		
85	358	168	2 days
80	353	101	4 days
75	348	60	6 days
70	343	35	10 days
65	338	20	18 days
60	333	11.5	32 days
55	328	6.5	56 days
50	323	3.5	104 days
45	318	1.9	192 days
40	313	1	365 days
35	308	0.52	1.9 years
30	303	0.26	3.8 years
25	298	0.13	7.8 years
20	293	0.062	16 years
15	288	0.029	34 years
10	293	0.013	75 years

One enclosure for two different uses: internal expansion or external disk mode

QGD-1602P

RAID & Storage Pool

All disks of TR & TL expansion units would be identified by Storage & Snapshot manager, then configure as a RAID of storage pool.

External Disk mode

The storage is individual for each disk, it will show 8 independent external disks with TL JBOD or as a single disk with IR RAID unit. This mode is also for cross-platform compatibility among various O.S.

- TL & TR units cannot be configured as a RAID group with those internal disks from NAS.
- TR units can only support RAID 0/1/5/10 and JBOD modes.

QNAP storage expansion solutions summary

QGD-1602P

	TL SATA JBOD	TL USB JBOD	TR RAID
Connectivity	**PCIe (Multi-ch SATA)**	USB 3.2 Gen 2	TR-002: USB 3.2 Gen 2 TR-004: USB 3.2 Gen 1 TR-004U: USB 3.2 Gen 1
Number of bays	4: TL-D400S, TL-R400S 8: TL-D800S 12: TR-R1200S-RP 16: TL-D1600S	8: TL-D800C 12: TL-R1200C-RP	2: TR-002: 2 4: TR-004, TR-004U
Supported O.S	QNAP QTS, Windows, Linux/Ubuntu	QNAP QTS, Windows, Mac, Linux/Ubuntu	QNAP QTS, Windows, Mac, Linux/Ubuntu
Cerate QTS storage pool	Yes		
QTS operations such as disk scan	Yes	Yes	X
H/W RAID Protection	X		Yes (RAID 0/1/5/10)
RAID level migration & capacity expansion	Yes	Yes	X
Max units supported by QGD-1602P	2	1*	2*

* The combined number of connected TR and TL USB expansion units cannot exceed 2.

QNAP

QGD-1602P

Your Best Choice

PoE | LAYER 2 | 2.5/5 GbE | SFP+ 10GbE | PCIe | intel ATOM inside | MICROCHIP

Intel® QuickAssist Technology

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