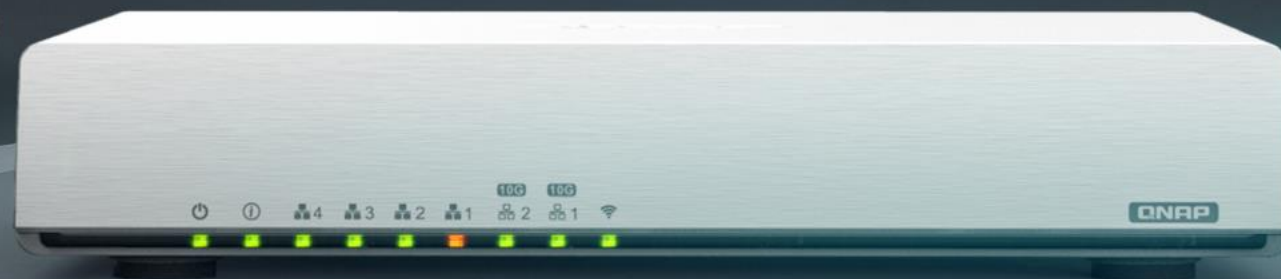


QNAP

QHora-301W

Wi-Fi 6 dual-port 10GbE SD-WAN router

The first step toward next-generation networking



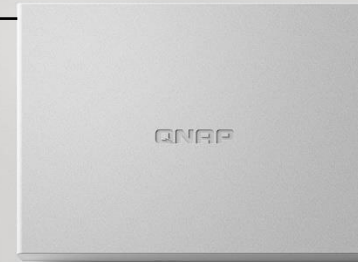
QuWAN

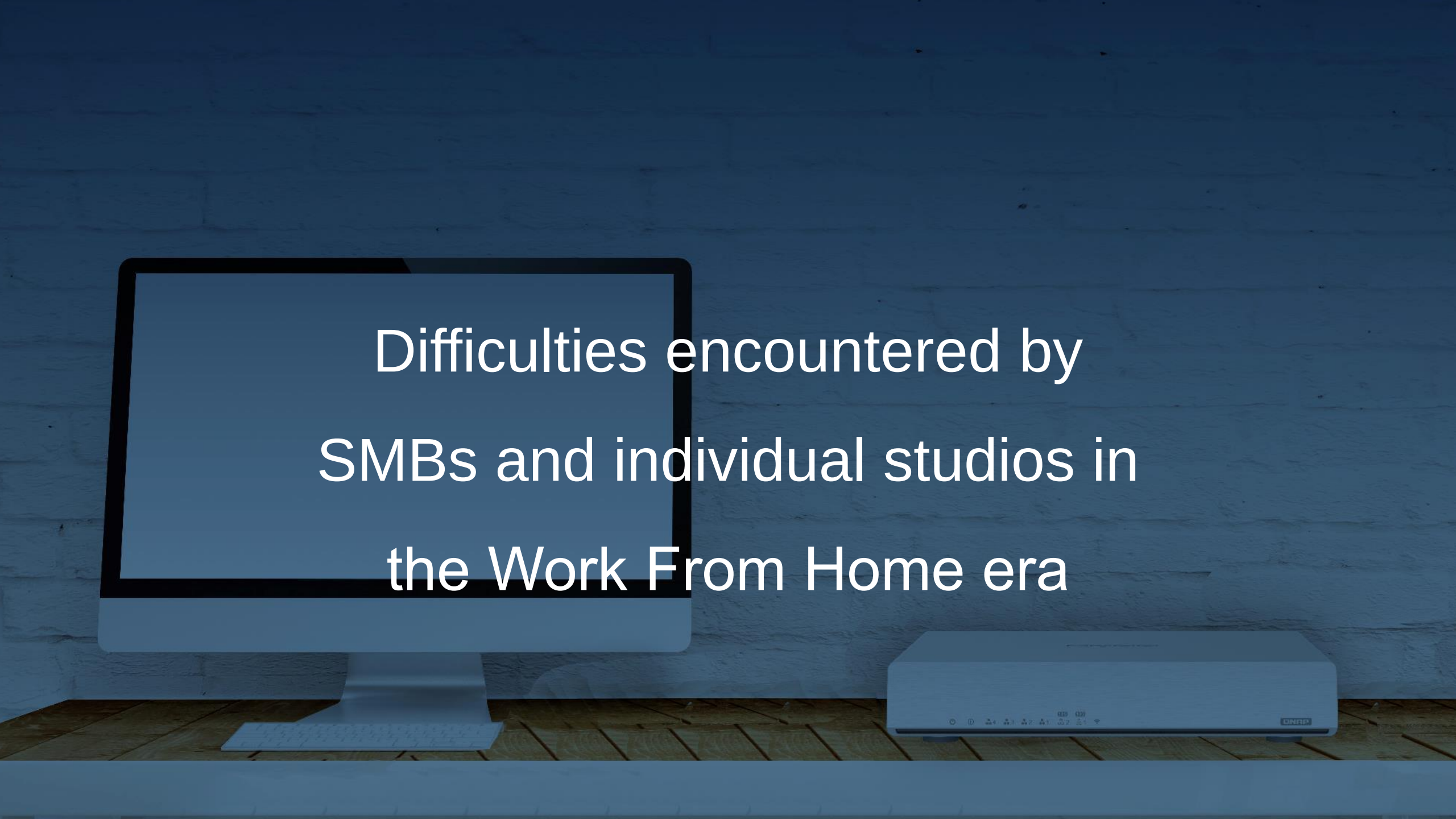
Subscription-

Free

Agenda

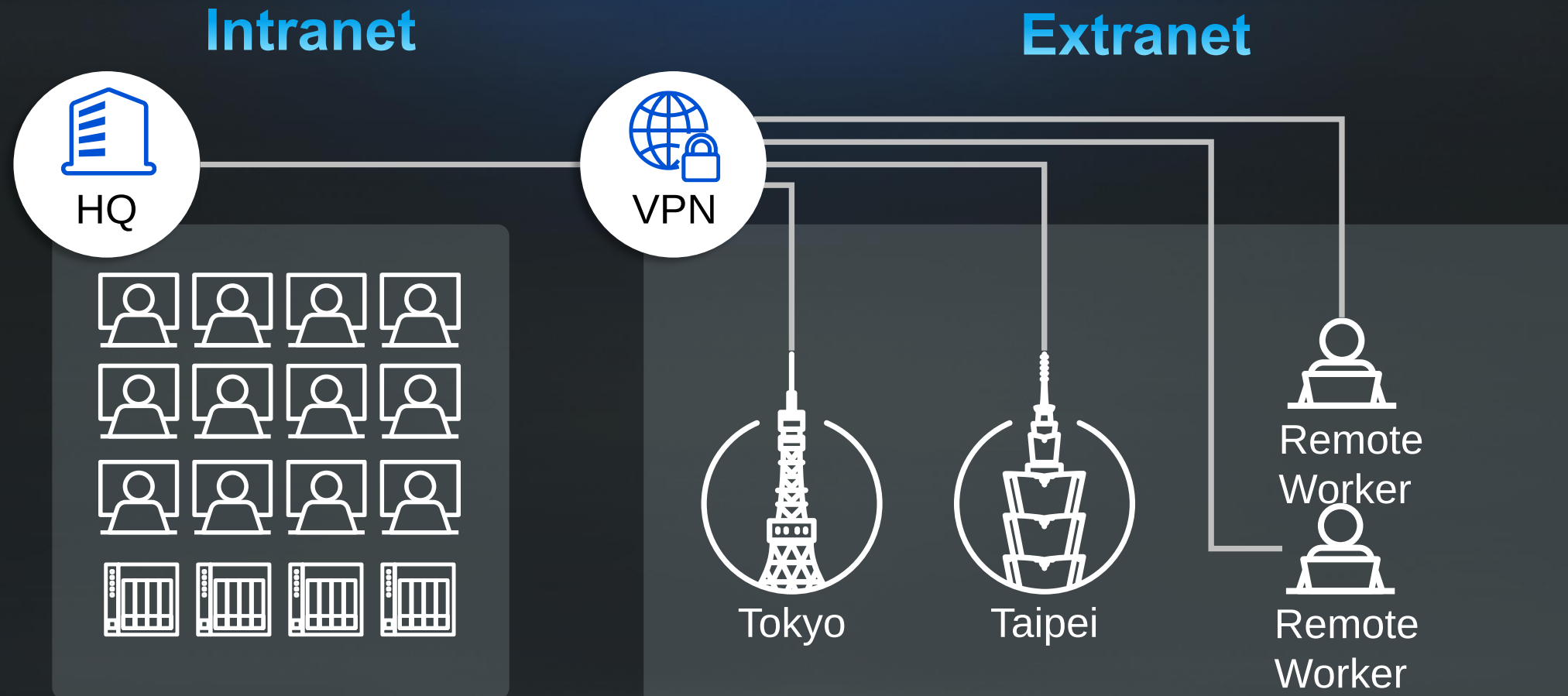
- Difficulties encountered by SMBs and individual studios in the Work From Home era
- The market exclusive functions brought by QHora-301W fulfills your needs
- Hardware advantages
- Dual-port 10GbE meets all your application scenarios
- High speed Wi-Fi 6 routing
- The powerful QuRouter OS
- Enable subscription-free QNAP SD-WAN on QHora-301W



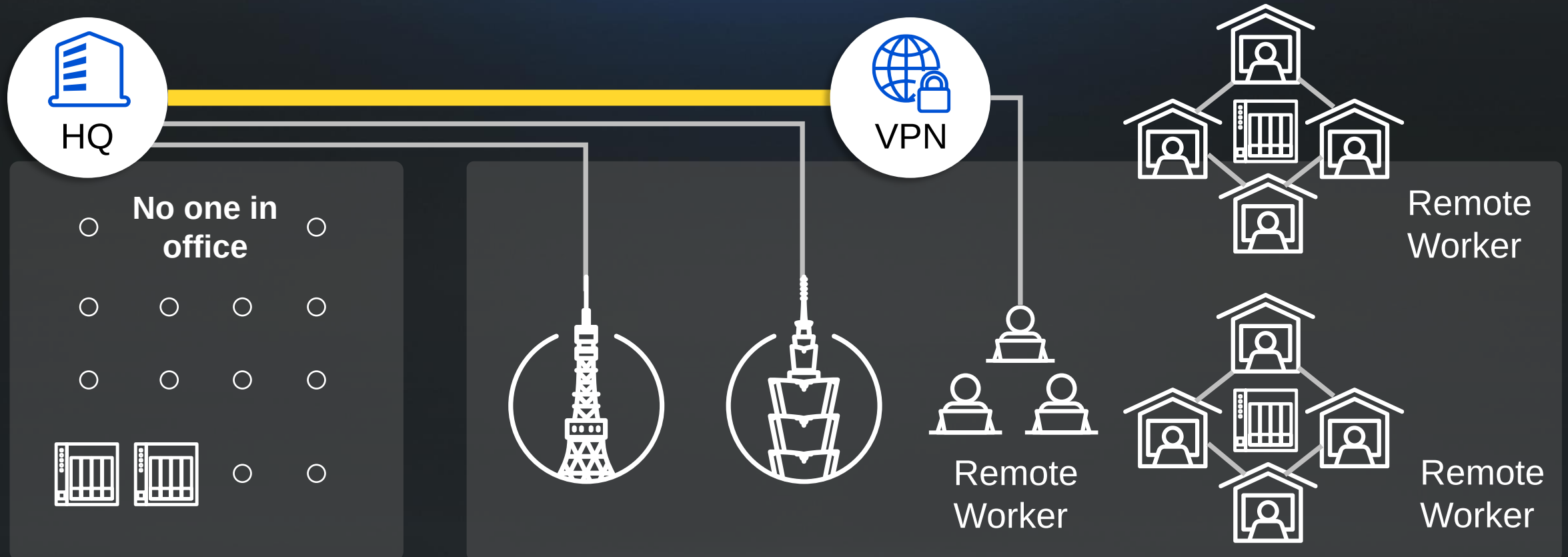
The background image shows a minimalist workspace. On the left, a large computer monitor with a black bezel sits on a wooden desk. To its right is a small, white, rectangular electronic device, possibly a DVR or a power supply unit, also on the desk. The background is a light-colored brick wall. The entire scene is dimly lit, with a blueish tint.

Difficulties encountered by SMBs and individual studios in the Work From Home era

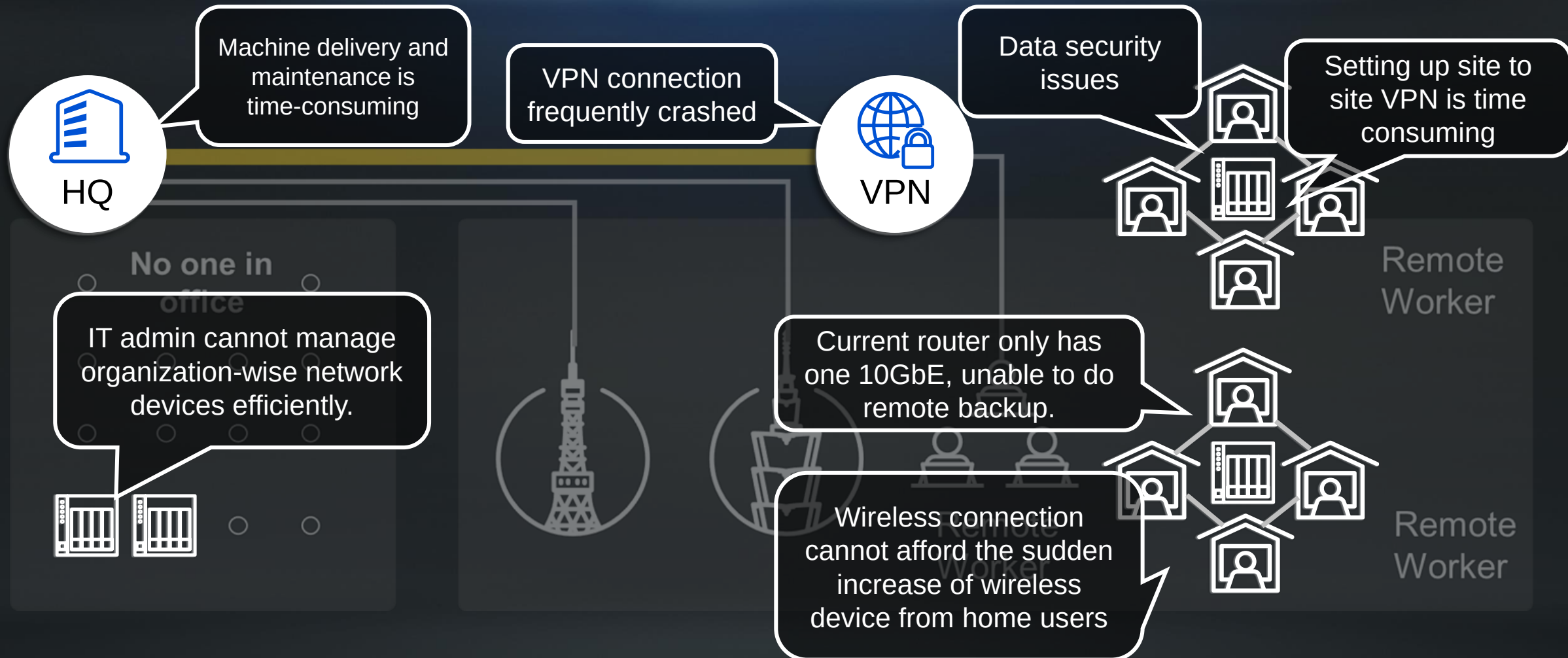
Site-to-site VPN were only used by a few branches and remote officers



During the pandemic, number of remote workers dramatically increased due to working from home



Distributed remote working style creates many issues



Existing Wi-Fi routers cannot handle the sudden increase in network equipment and transmission demand

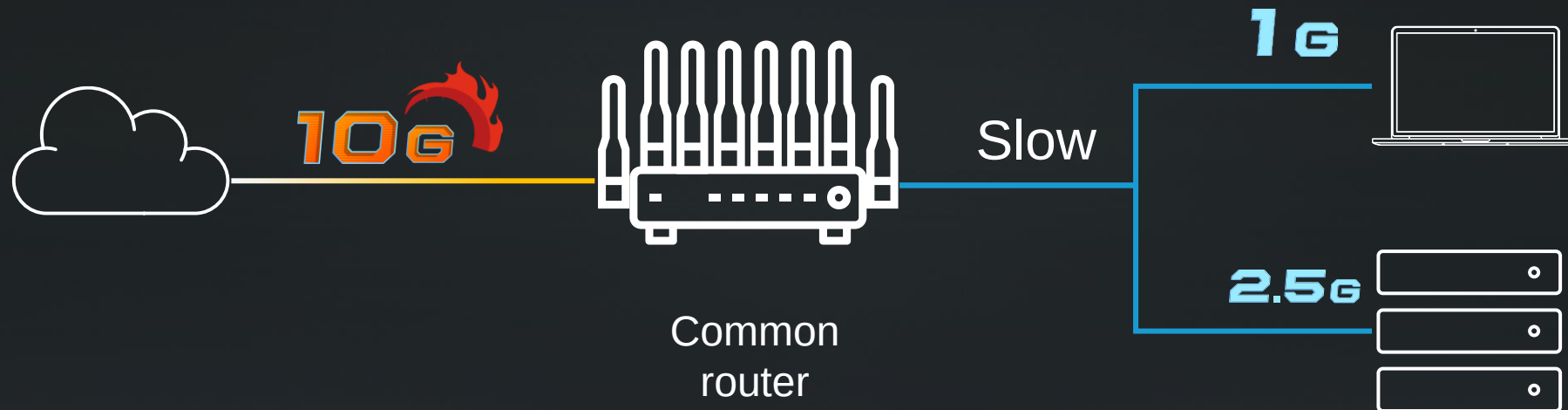
- Multiple devices can only take turns to connect to the network. This condition causes network congestion.
- The transmission speed of existing routers is slow, and data cannot be backed up efficiently through wireless network.
- Affect family members' experience of watching movies or play games.



Remote backup is needed but common Wi-Fi 6 router usually only has one 10GbE port

Common router

- Only has one 10GbE
- 10GbE WAN corresponding to 2.5GbE and 1GbE LAN cannot play the high-speed internal and external network transmission speed



More work-from-home

More distributed remote workers

- More remote clients connect and exchange traffic through a single or few VPN routers in HQ.
- Increasing overload & performance bottleneck on the HQ site.
- More network stability & reliability issues resulted from the overloaded VPN router in HQ site.

Intranet



**VPN
connection
crashed**

Extranet



VPN



VPN



VPN



VPN



VPN



VPN



Server connects via VPN



Designers store files and images



PM get data



Sales use ERP



RD uses server to develop software



Purchasing dept. use ERP

Lack of effective ways to manage large number of external devices

- IT administrators cannot manage equipment usage and connection status
- Not every remote worker has the knowledge to set up and maintain the on-prem devices
- Device & network troubleshooting can be time-consuming

Intranet

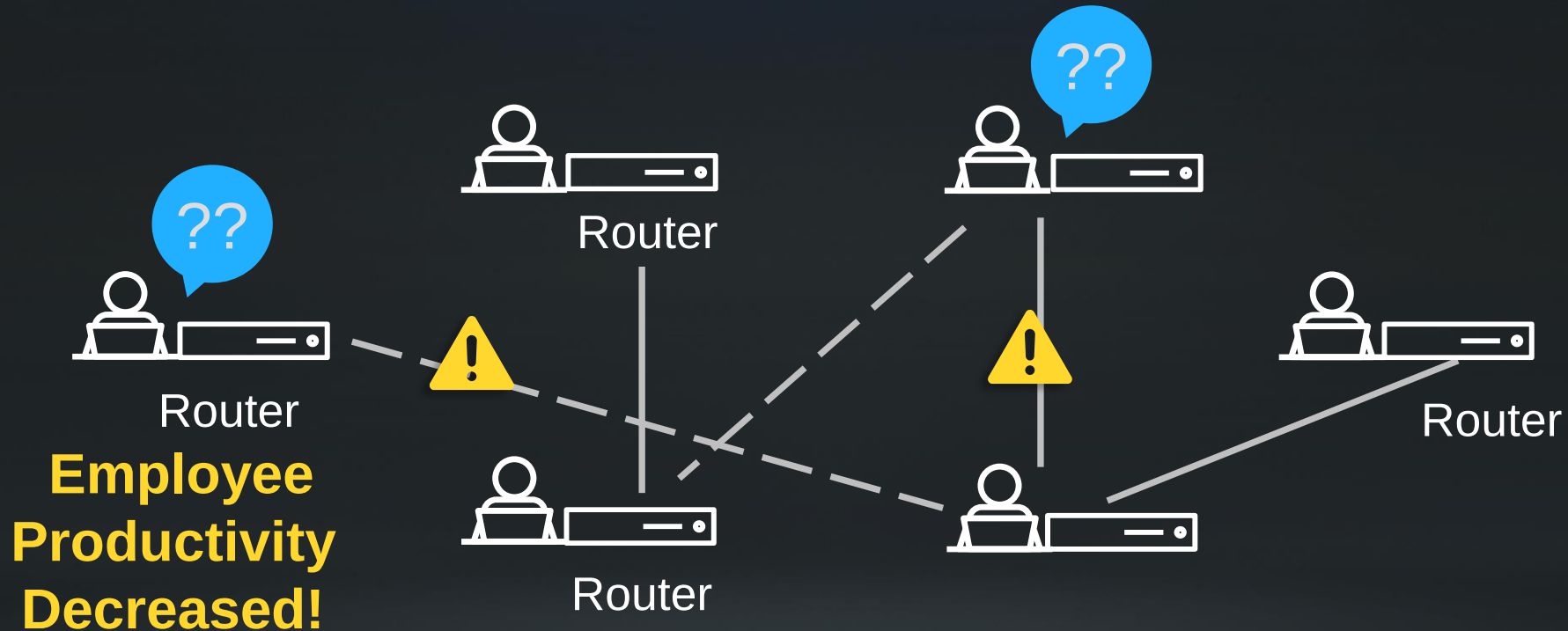
Extranet

IT Overload



Setting up site-to-site VPN is time and labor consuming

Employees who need to exchange data frequently within the group would need to create site to site VPN network by themselves. But setting up VPN is not easy, and special equipment may be required, hence, deploying a large mesh VPN solution can be very time and labor consuming.



Enterprise level VPN solution is expensive

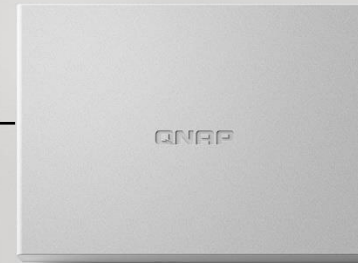
SMB start to look for VPN solutions on the market to solve these problems, but not every SMB can afford the high cost for extending or building a complete VPN solution.



QHora-301W

New Generation WiFi 6
and Dual 10GbE SD-WAN Router

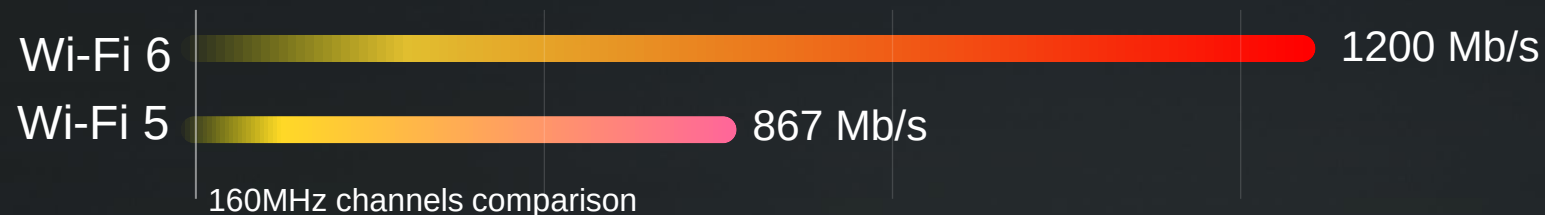
- Wireless connectivity: support WiFi 6 (802.11ax)
- Flexible network deployment: Dual 10GbE ports
- VPN deployment: built-in SD-WAN technology



New-gen Router Requires WiFi 6

High-speed connectivity

Support WiFi 6 dual-band 802.11ax (2.4GHz & 5GHz), delivering max. 3600Mb/s transfer speeds. WiFi 6 is 1.38 times faster than WiFi 5.



1.38 FASTER

WiFi 6 is the next-gen WiFi standard

In 2020, most new client devices will support WiFi 6, including computers, mobile phones and tablets.

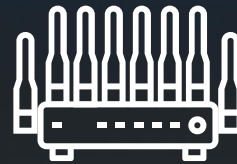


New-gen Router Requires WiFi 6

Increased 4 X network efficiency

By using OFDMA & MU-MIMO, multiple sets of devices can transmit data at the same time, thereby improving network efficiency and reducing connection delay

Traditional
OFDM



Waiting...



User 1
(Message)

Waiting...

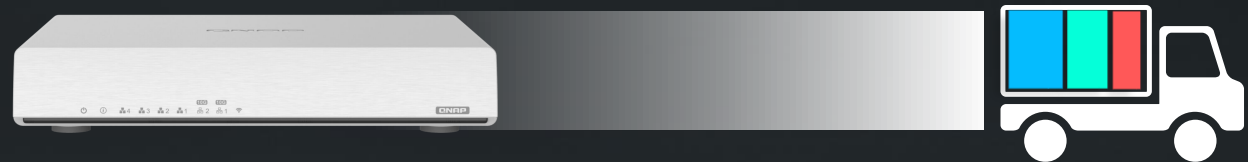


User 2
(Online
Shopping)



User 3
(Social Media)

OFDMA

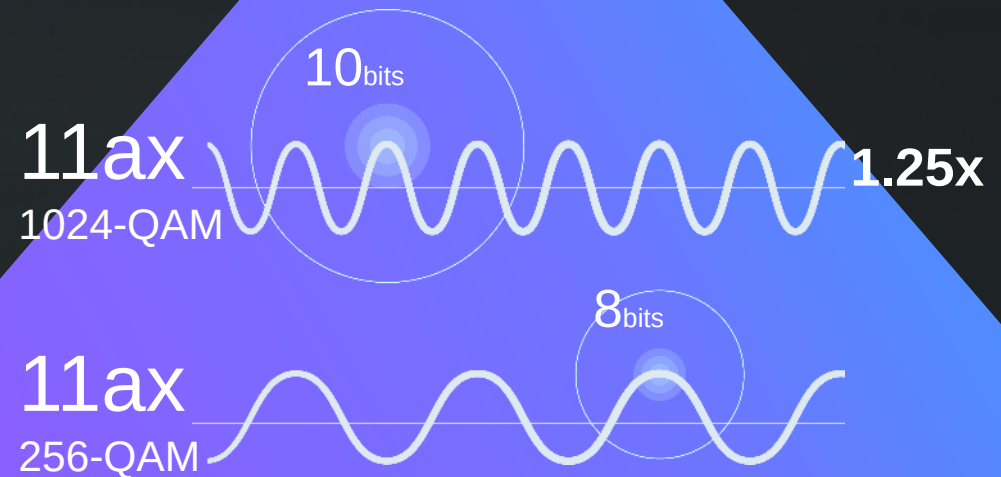


New-gen Router Requires WiFi 6

1024-QAM package more information

- By increasing the amount of data that can be carried in each packet, the speed will definitely increased.
- Compared with Wi-Fi 5 (11ac) which uses 256-QAM, 1024-QAM can increase the rate by 1.25 times.

1.25 X
Faster speed



New-gen Router Requires Dual 10GbE Port

QHora-301W provides 10GbE port

Support high-speed internal and external network transmission
Meet the needs of remote backup of large business files



New-gen Router needs to provide SD-WAN service

Built-in SD-WAN solution (QuWAN), supporting full Mesh VPN for easy multi-site VPN deployment.



Subscription-Free

No need to purchase other devices for multi-site VPN



Flexible Deployment

- Auto VPN tunneling
- Support network optimization to ensure connection quality



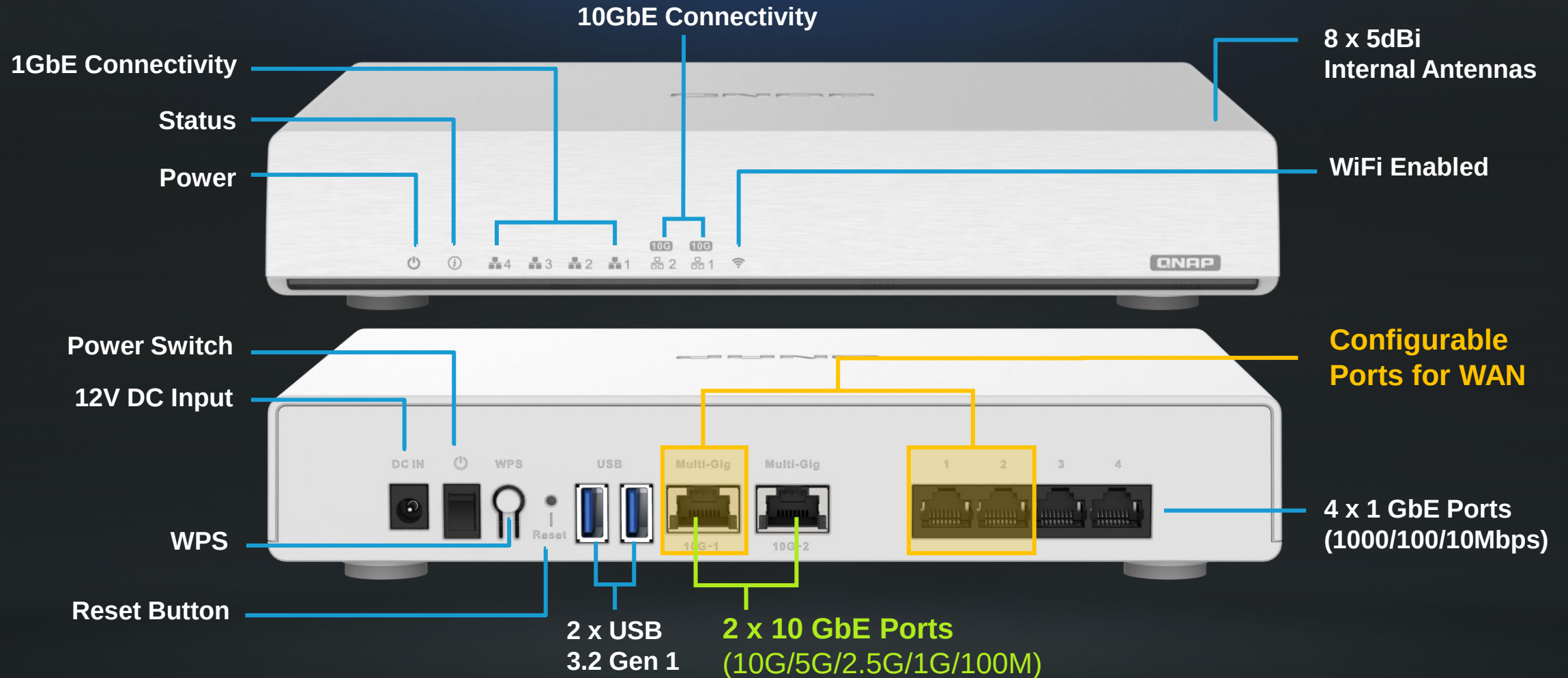
Center Managed

QuWAN Orchestrator

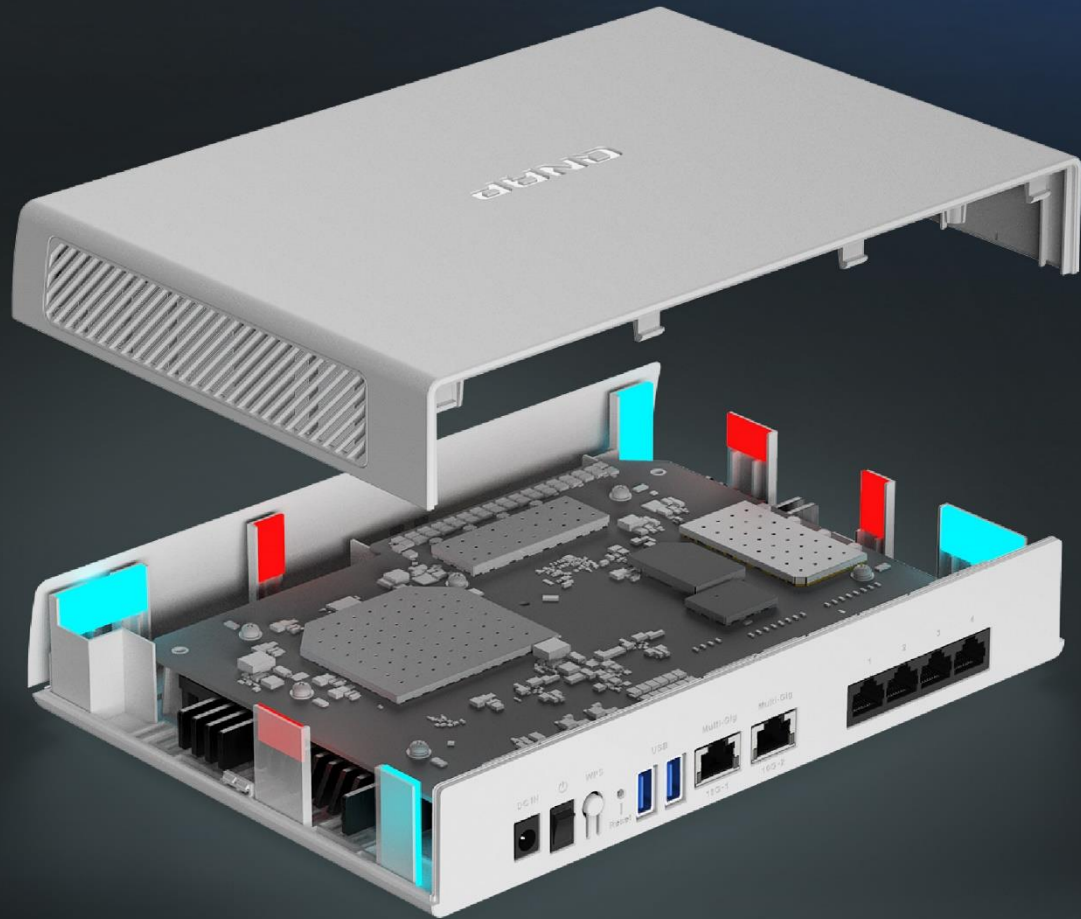
QHora-301W Hardware Advantages



Hardware Appearance



Eight Internal Antennas



- Professionally tuned
- Powerful Performance

2.4 GHz
Antennas (5dBi) x 4

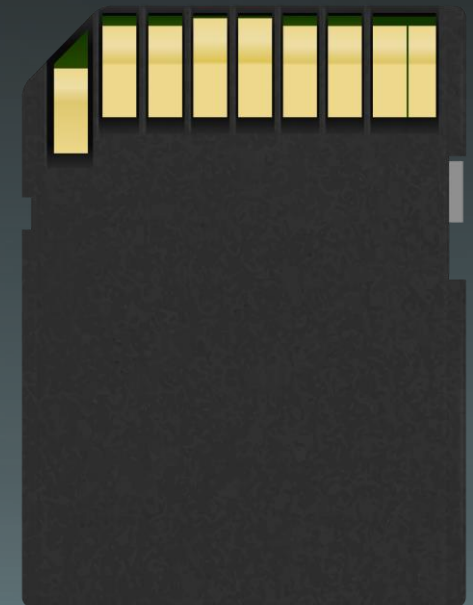
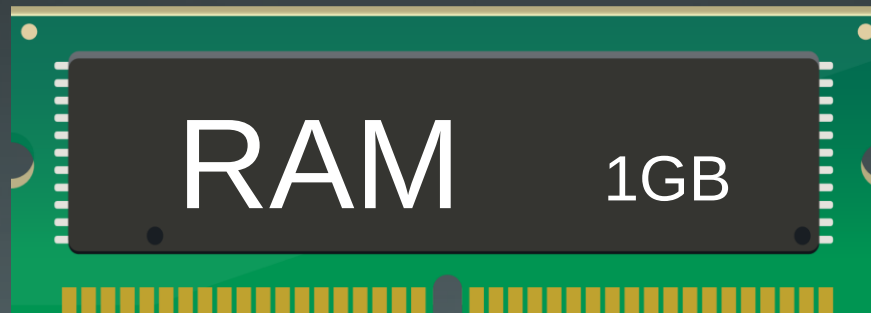
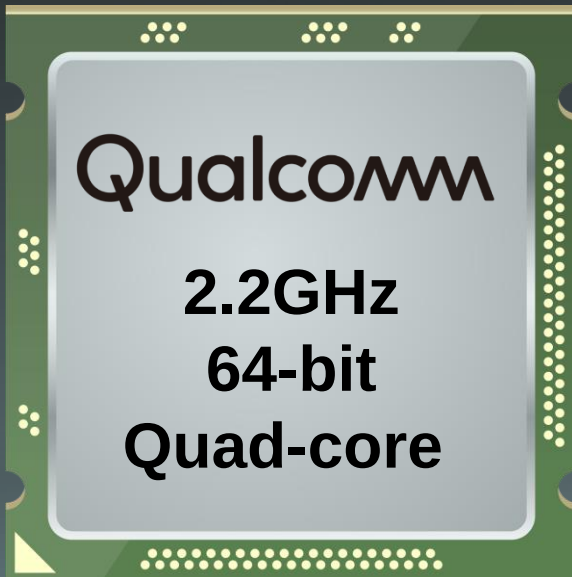
5 GHz
Antennas (5dBi) x 4

8

Antennas (5dBi)

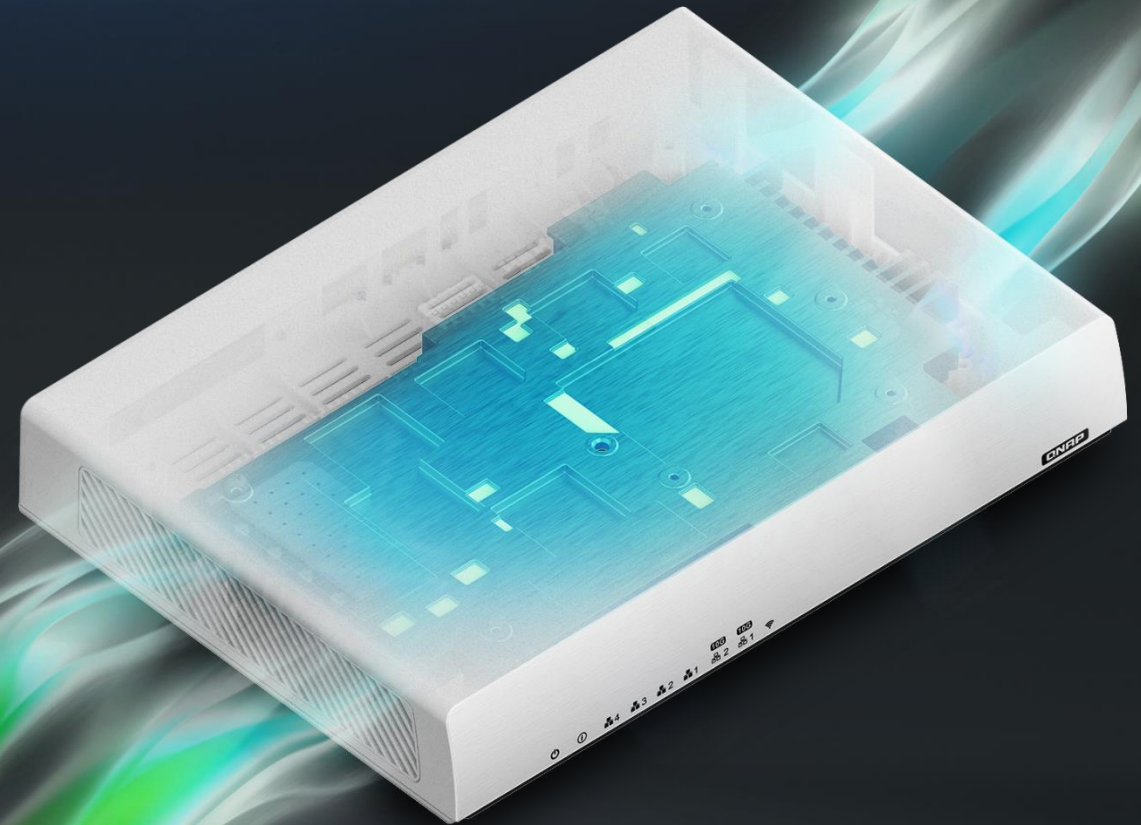
Powerful Performance

- Powered by Hawkeye v2 IPQ8072A quad-core 2.2GHz 64-bit processor
- Can quickly handle 10G throughput network transmission
- 1GB system memory. QHora-301W can reliably support more concurrent users
- 4GB eMMC Flash Storage
- Provide multiple functions on Qhora-301W. ex, QVPN, SD-WAN



Fanless Design: Quiet Operation x Maintain Performance

- Fanless with unique ventilated construction allows QHora-301W to maintain its throughput efficiency within 0-40°C operating temperature.
- Quiet operation makes QHora-301W the perfect home routing solution for worldwide use.

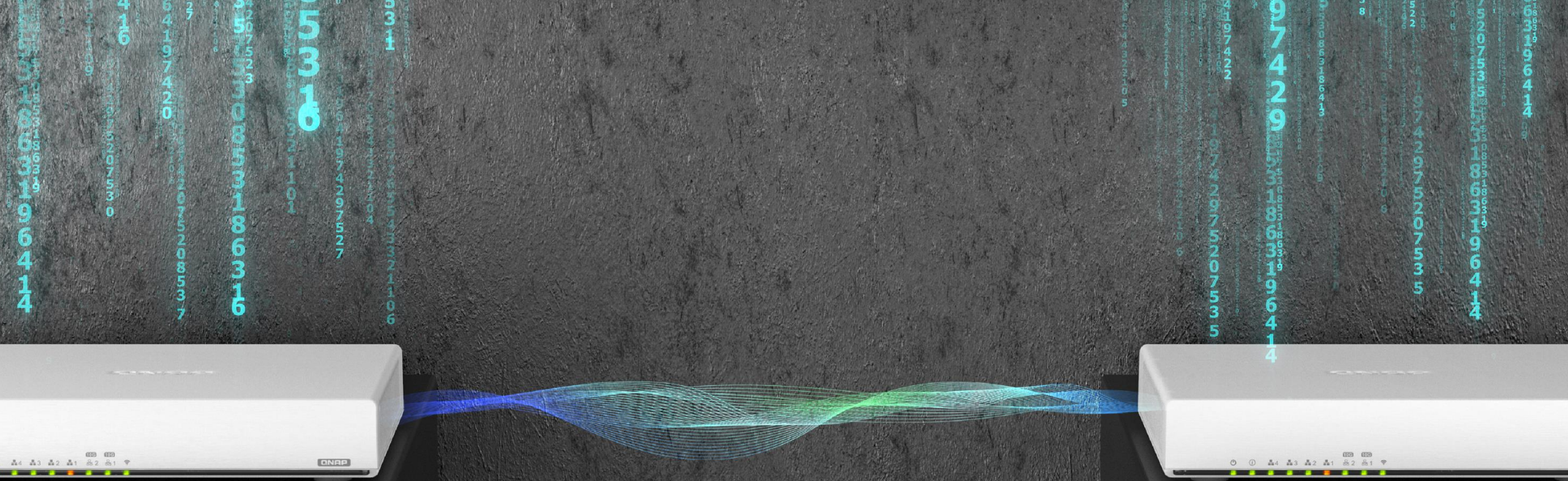


Hardware Specifications

Function	QHora-301W
Network Interface (RJ45)	• 4 x RJ-45 GbE ports (WAN/LAN configurable) • 2 x RJ-45 10GbE ports (10G/5G/2.5G/1G/100Mbps, WAN/LAN configurable)
Antenna	8 Internal 5dBi Antennas
Processor	Qualcomm IPQ8072A Hawkeye 2 Quad-core 2.2 GHz 64-bit CPU
Memory	1GB RAM
Flash Storage	4GB eMMC
Wireless	• Dual-band AX3700 5G (2475Mbps): 4x4 (80MHz), 2x2 (160MHz) 2.4G (1182Mbps): 4x4 (40MHz) • WPS button
Mounting Support	VESA 75 x 75 mm (Optional third-party mounting kits are available for wall-mount, table mount and pole mount).
Fanless Design	Maintain consistent system performance within 0-40C operating temperature
SD-WAN Max VPN Tunneling	30

QHora-301W Unboxing



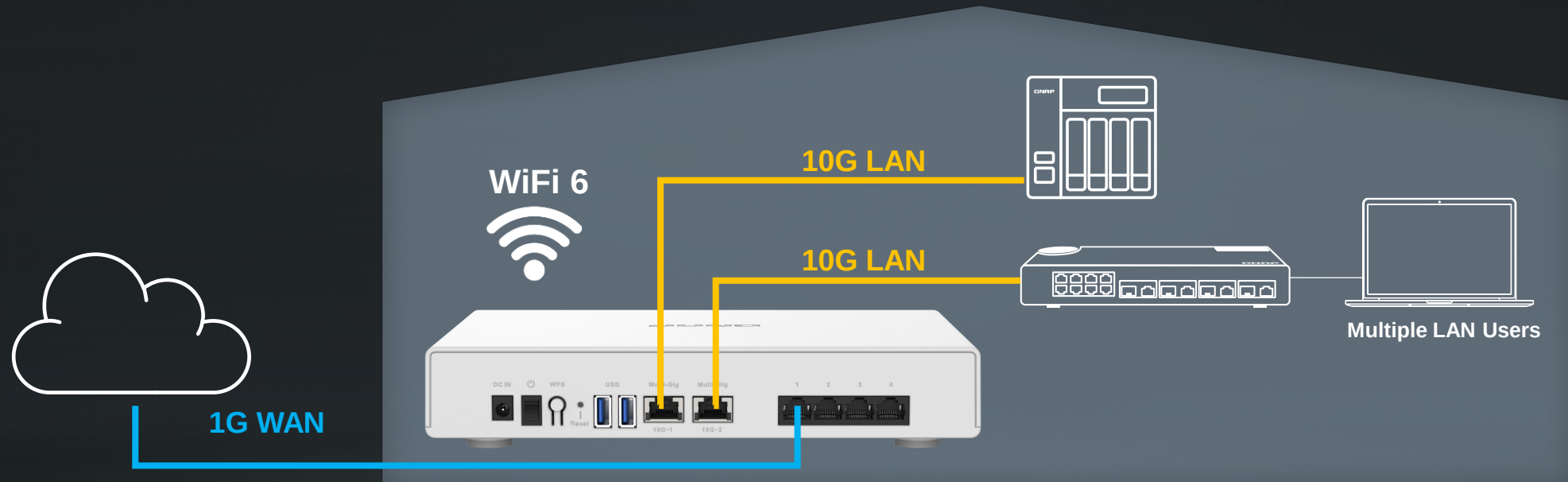


Dual 10GbE ports meets all
your application scenarios

Scenario One: 2 x 10GbE LAN Connections

Configuration: Two 10GbE LAN, One 1GbE WAN

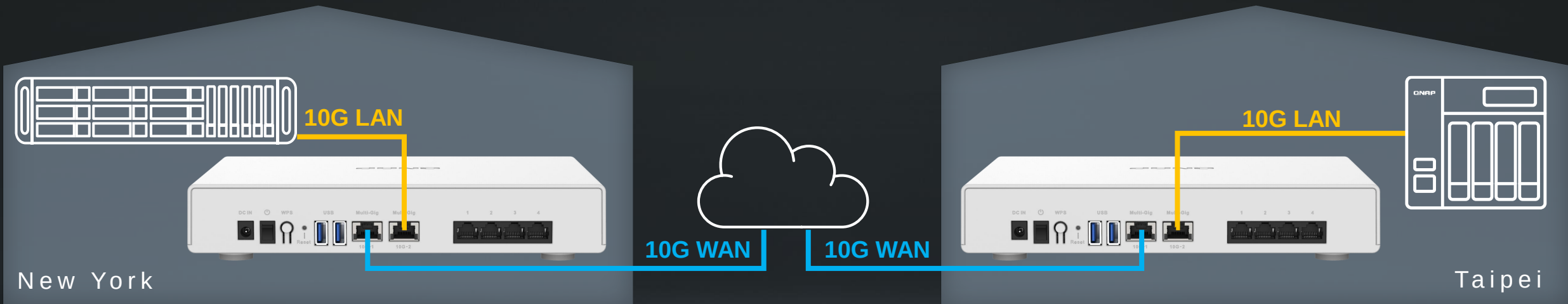
- Build a high-speed 10GbE Intranet by connecting 2 x 10GbE ports to 10GbE devices in LAN environment.
- Benefits: accelerate file access and sharing within LAN.



Scenario Two: 1 x 10GbE WAN & 1 x 10GbE LAN Connections

Configuration: One 10GbE WAN, One 10GbE LAN

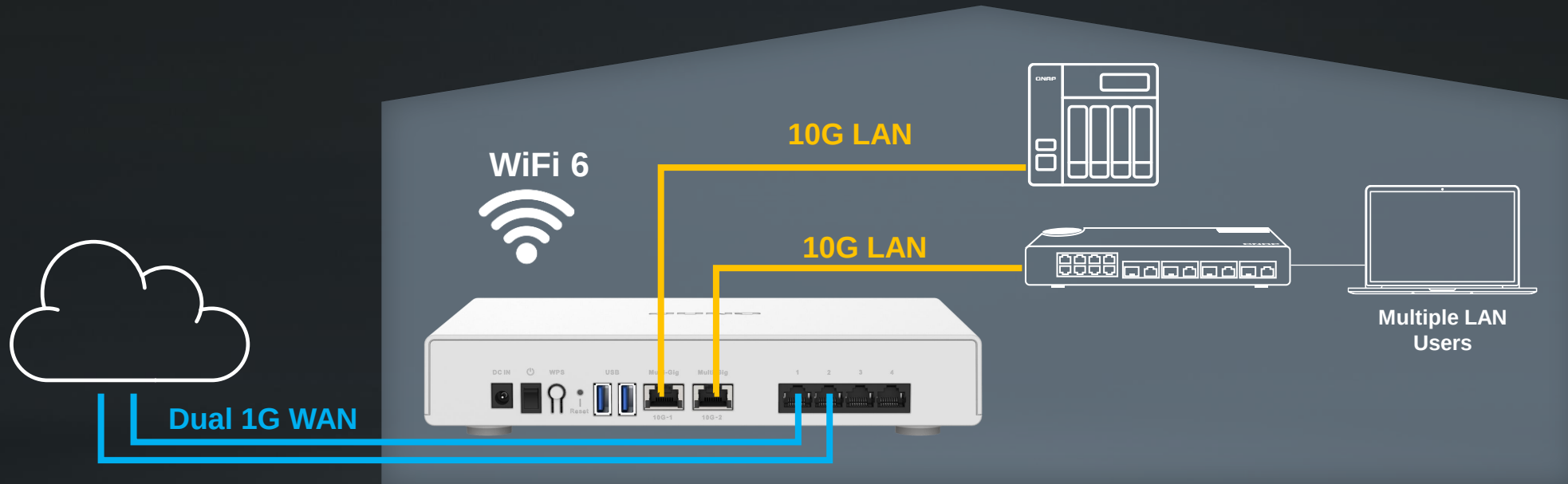
- High-speed inter-office VPN network with 10GbE Internet and 10GbE Intranet connectivity.
- Benefits: streamlined cross-site file backup, synchronization and sharing.



Scenario Three: Multi-WAN with SD-WAN & 2 x 10GbE LAN Connections

Configuration: Multi-WAN with SD-WAN enabled; Two 10GbE LAN

- WAN optimization with WAN aggregation, WAN failover & load balancing, and flexible static routing to increase data transfer efficiency across WANs
- Auto mesh VPN for easy multi-site VPN network deployment
- Benefits: Secure cross-site VPN network with optimized WAN connections





Wi-Fi 6

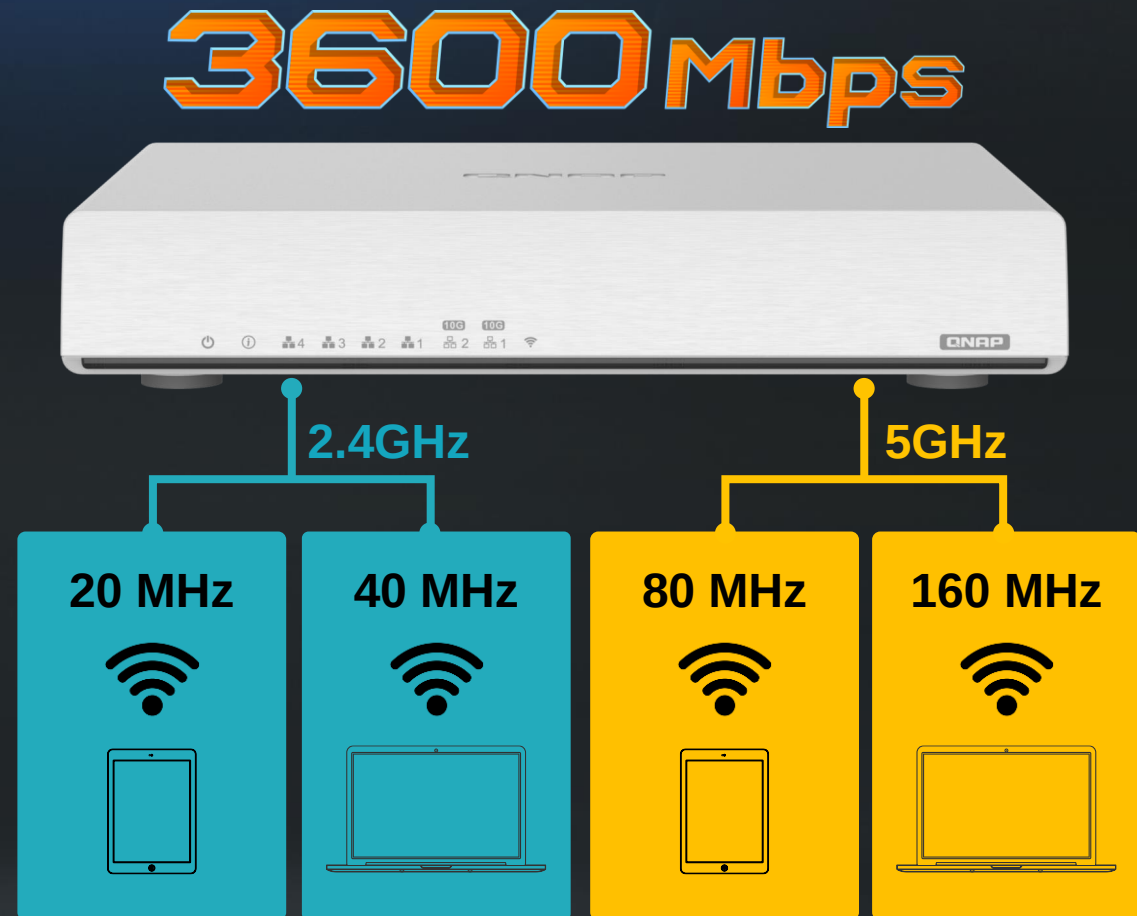
High speed wireless
transmission

High-performance Wireless Network

WiFi 6 – Huge Gains in Multi-user Access Efficiency

- 802.11ax dual-band (2.4GHz & 5GHz)
- Up to 160MHz channel bandwidth with maximum 3600 Mb/s total throughput
- MU-MIMO allowing for more concurrent WiFi clients
- OFDMA technology and eight antennas increase WiFi signal coverage
- Perfect solution for smart IoT home

***160MHz channel will be supported in 2020/Q4



Enterprise-grade Feature: Virtual Access Point

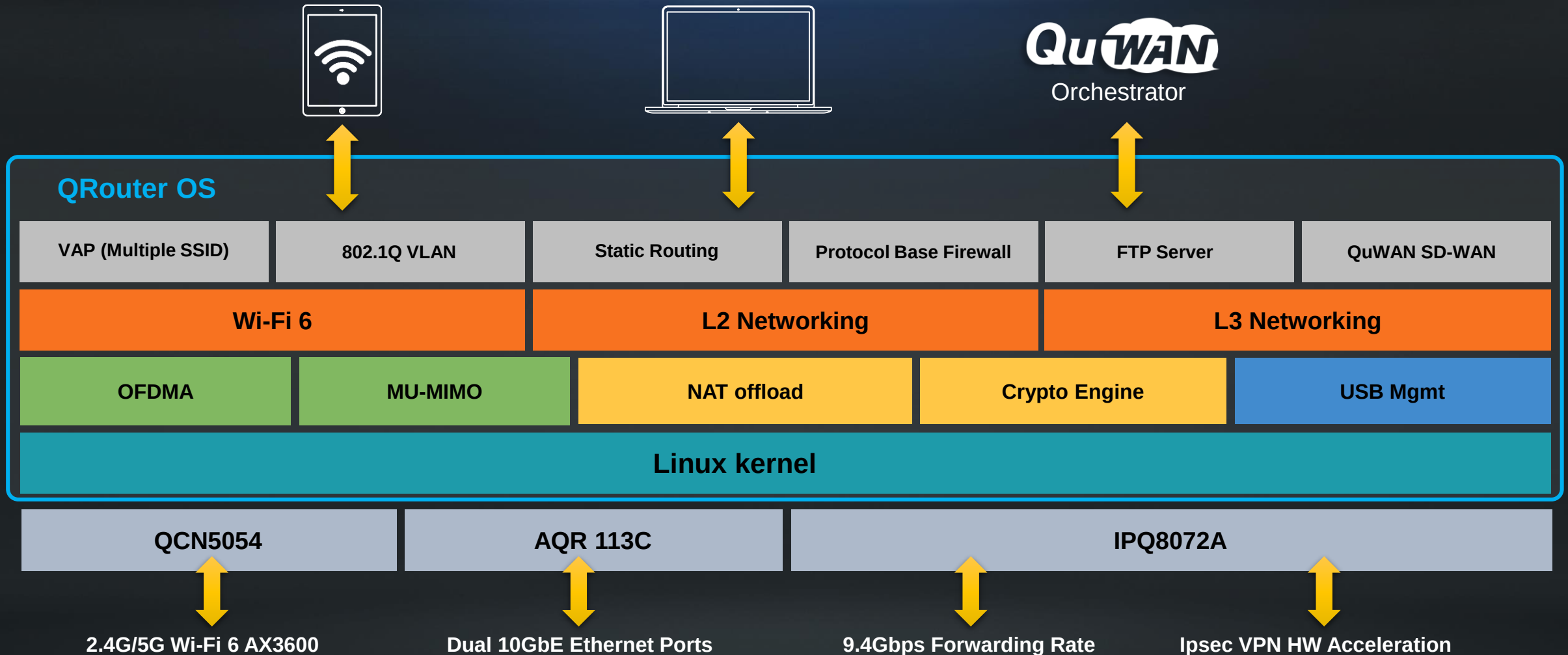
- QHora-301W supports VAP (Virtual AP) function, allowing for running up to 6 virtual APs. Each VAP has its own SSID & access right profiles and customized routes/policy to WAN Internet.
- By connecting to a wireless SSID, different group of users (or device clients) will be bridged to a different VLAN, such as office-intranet, home & guest network.



The Powerful QuRouter OS



QuRouter Architecture



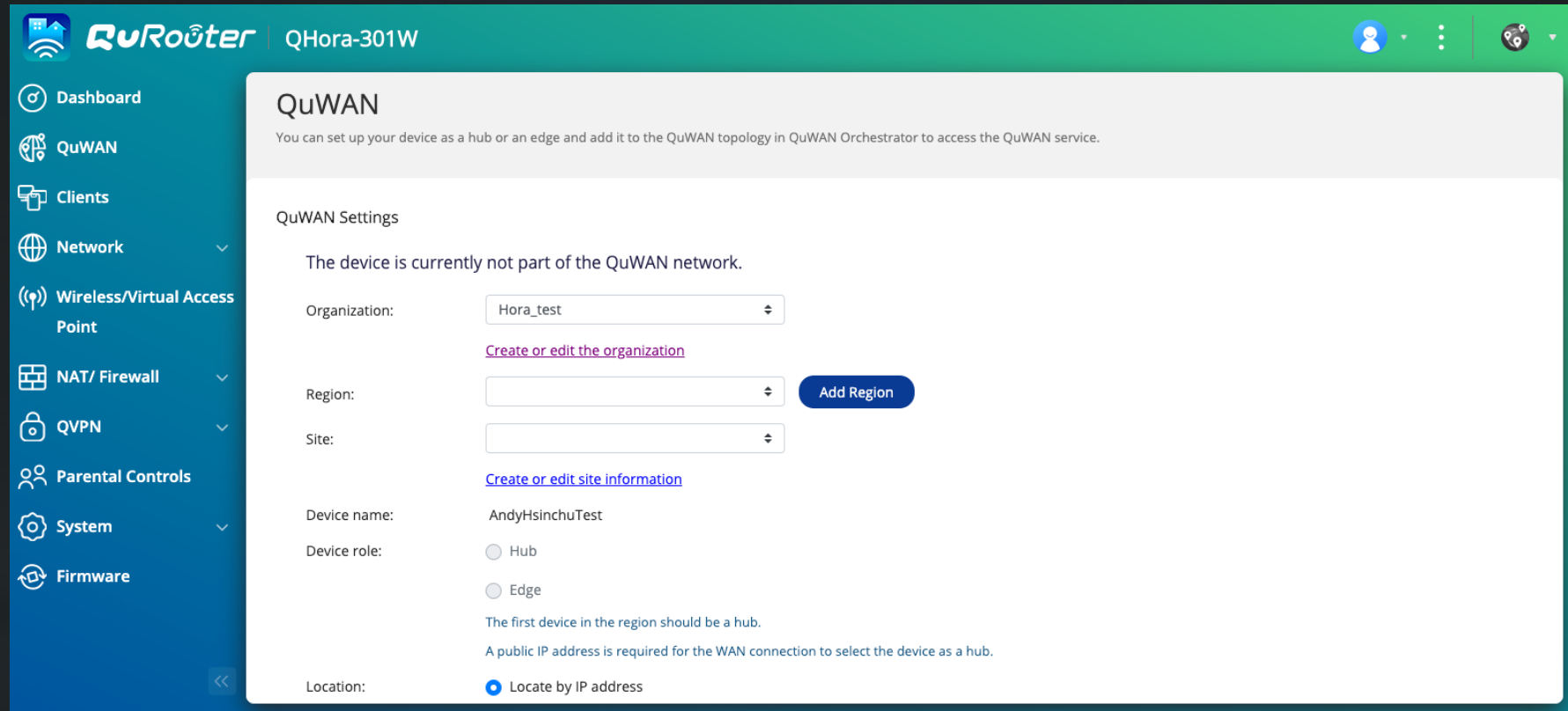
The Powerful QuRouter OS

Fullfills all the functions you need just like other common router

Features		QuRouter OS	Common Router
Dashboard & Status	Device and system status WAN Status WiFi/Guest WiFi Status Connected devices info	v	v
Advanced Network Settings	Selectable WAN (1G & 10G)	v	v
VLAN Setting	802.3Q VLAN (Support for wire and wireless interface)	v	v
Routing	IPv4 Static Routing	v	v
Flirewall	Protocol based firewall	v	v
NAT	IPv4 NAT Port Forwarding	v	v
Access Control	Parental control. Website and schedule control.	v	v
Wireless Settings	2.5G/5G configurable SSID Up to 6 VAP (Multiple SSID) Guest WiFi 802.3Q VLAN supported	v	v
AP Mode	Set router to bridge mode for extending wireless coverage	v	v

QuRouter OS has a friendly graphical router management

- A user-friendly graphical web management interface helps users quickly grasp the network connection status.
- Not only can you effectively manage the wired and wireless networked devices in the internal and external networks, but also perform advanced function settings such as firewall, VPN, security, and QuWAN network.



Use Qfinder Pro to find QHora-301W

It doesn't matter if you forget the network settings. You can find your QHora-301W IP location in seconds through QNAP Qfinder Pro. The MAC information and firmware version are clear at a glance. You can also directly update QuRouter OS to the latest version through Qfinder Pro



QNAP Qfinder Pro 6.9.2

Qfinder Pro Connect Settings Tools Run Help

QNAP

Login

Network Drives

Media Upload

Configuration

Details

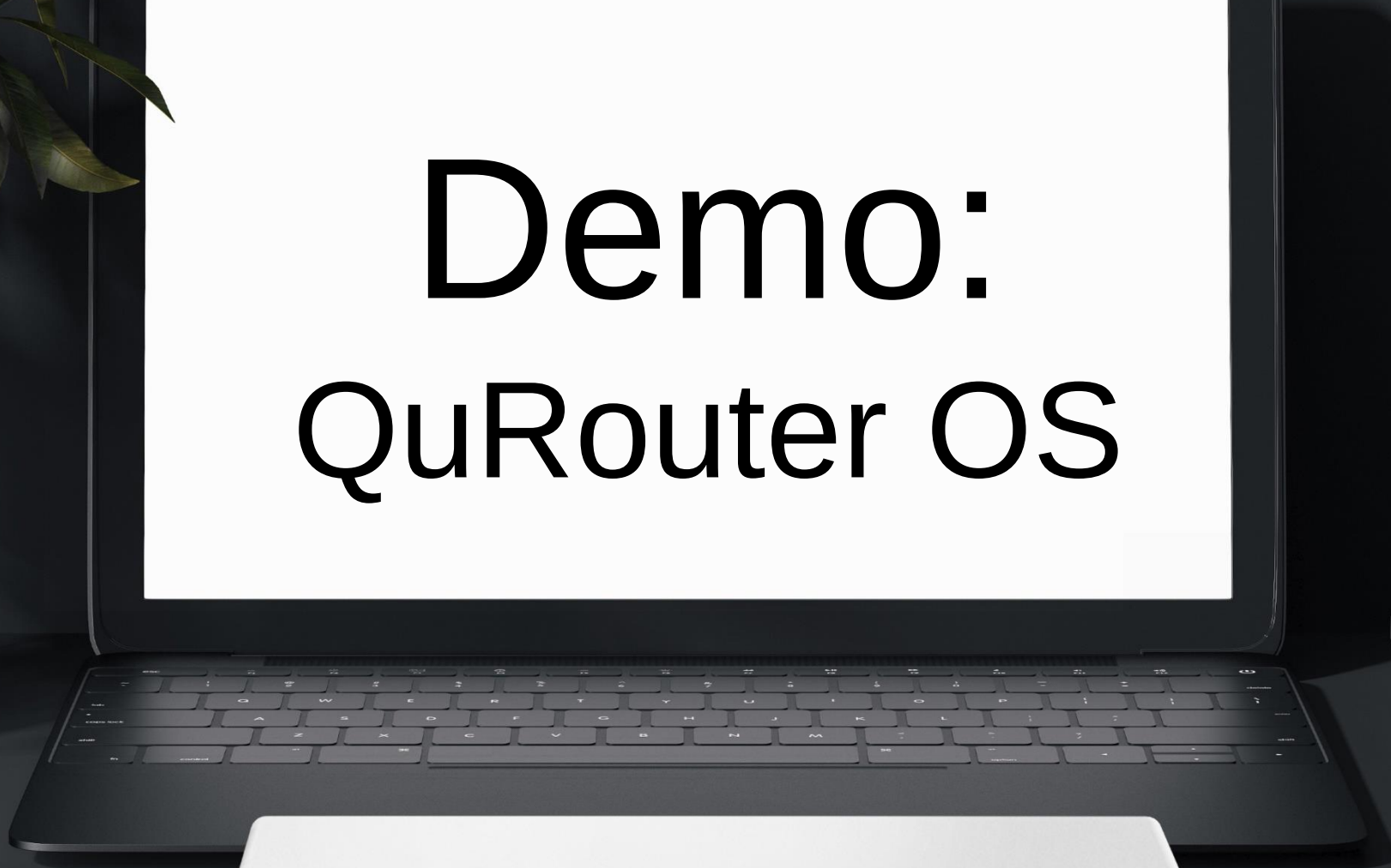
Resource Monitor

Locate This Device

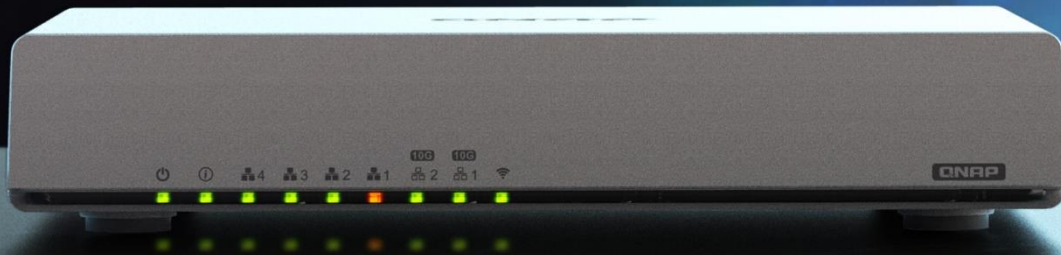
Bookmark the device

Bookmark	Name	IP Address	Type	myQNAPcloud	Device Name	Category	Device Type	Version	MAC Address	Status
☆	JudyQHora03	10.0.5.1	--	--		Router	QHora-301W	1.0.1.0001	24-5E-BE-44-74-AE	
☆	JudyQHora03	10.0.5.1	--	--		Router	QHora-301W	1.0.1.0001	24-5E-BE-44-74-AE	
☆	NAS350D0A	10.5.10.2	Judy453DX	NAS	HS-453DX	4.4.3.1381	24-5E-BE-35-0D-0A			SMTP

Demo: QuRouter OS

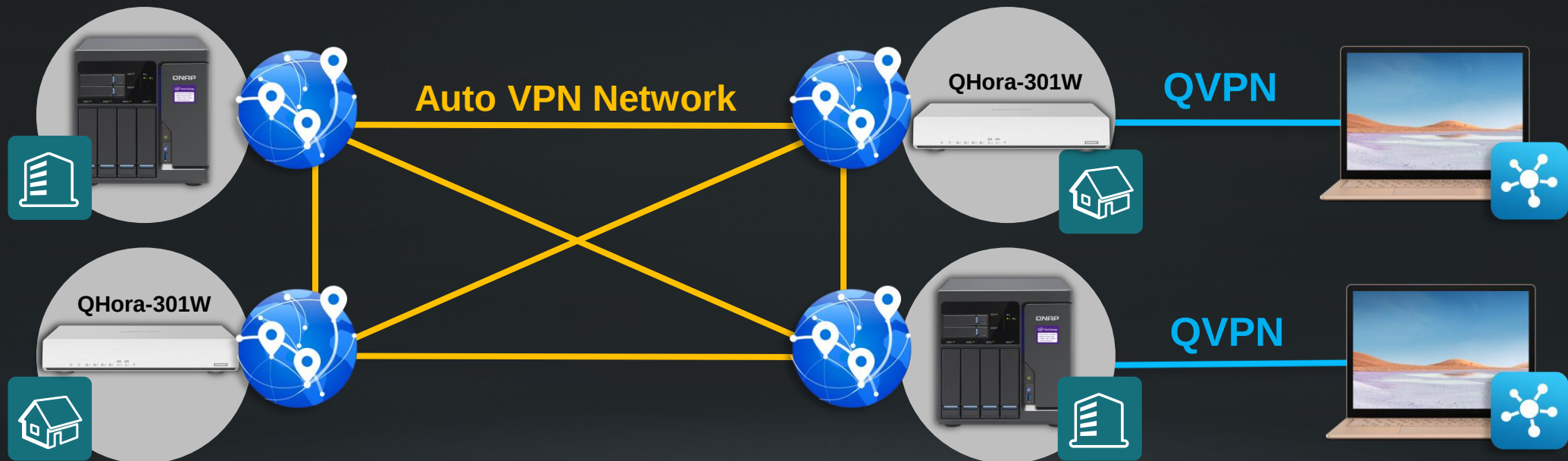


QHora-301W is More Than Just a Powerful Router



QuWAN is a complete SD-WAN solution

QNAP QuWAN is a complete SD-WAN solution that provides enterprise IT managers with a simple, fast, secure and efficient network connection structure. You can easily and quickly build a multi-site VPN network and centrally manage it from a cloud platform.

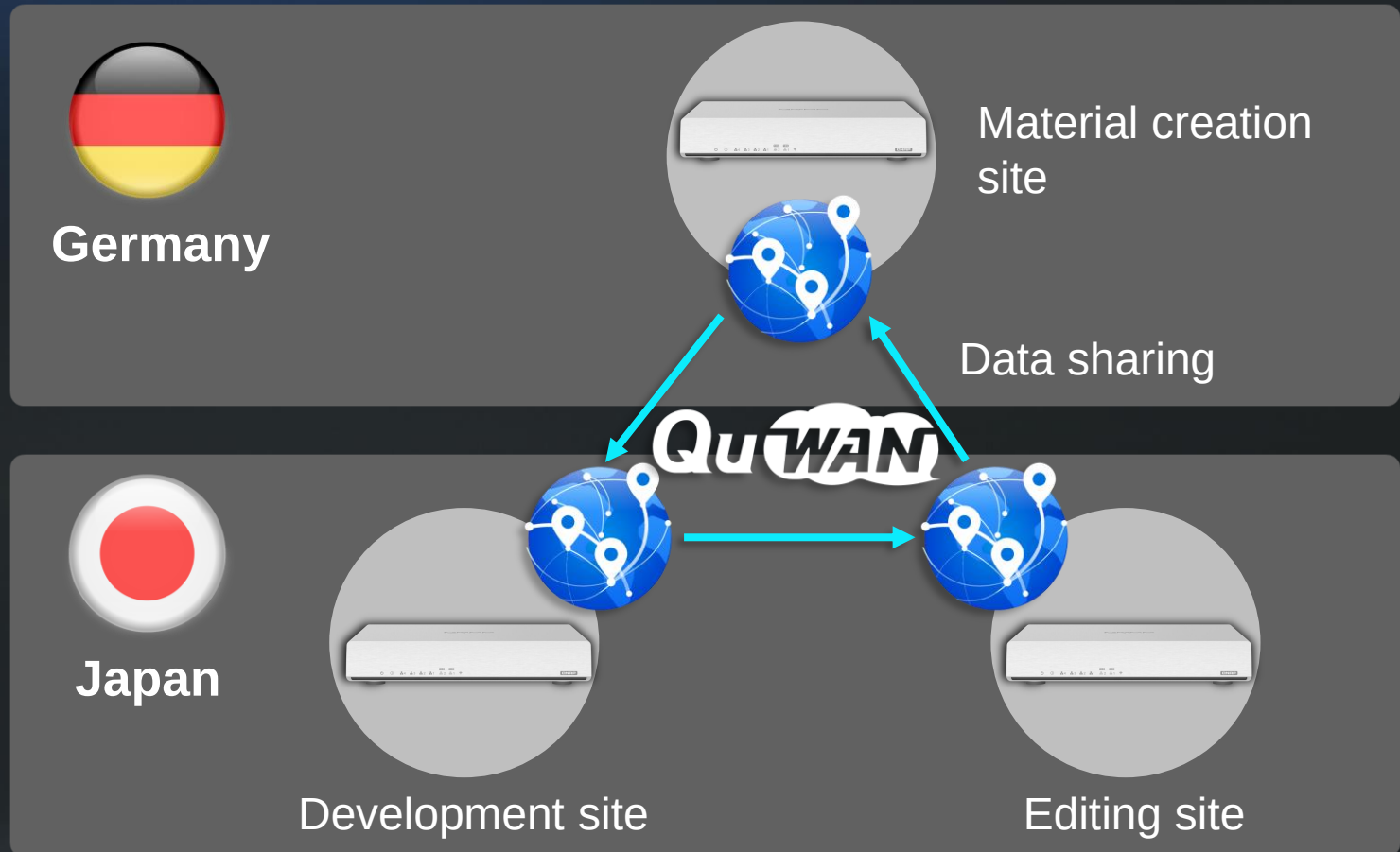


Efficiently build multi-site VPN

Secure business data

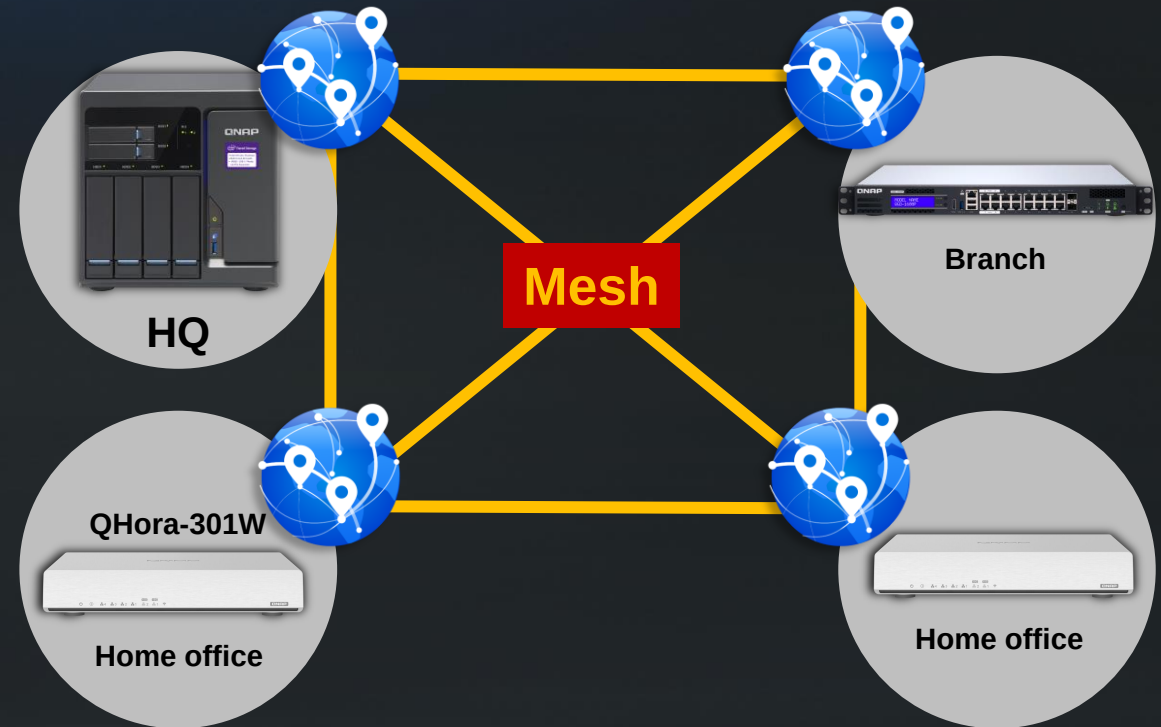
As long as QHora-301W is connected to QuWAN Orchestrator, a private network can be established in the same organization

*** Maximum VPN tunnel scale: 30



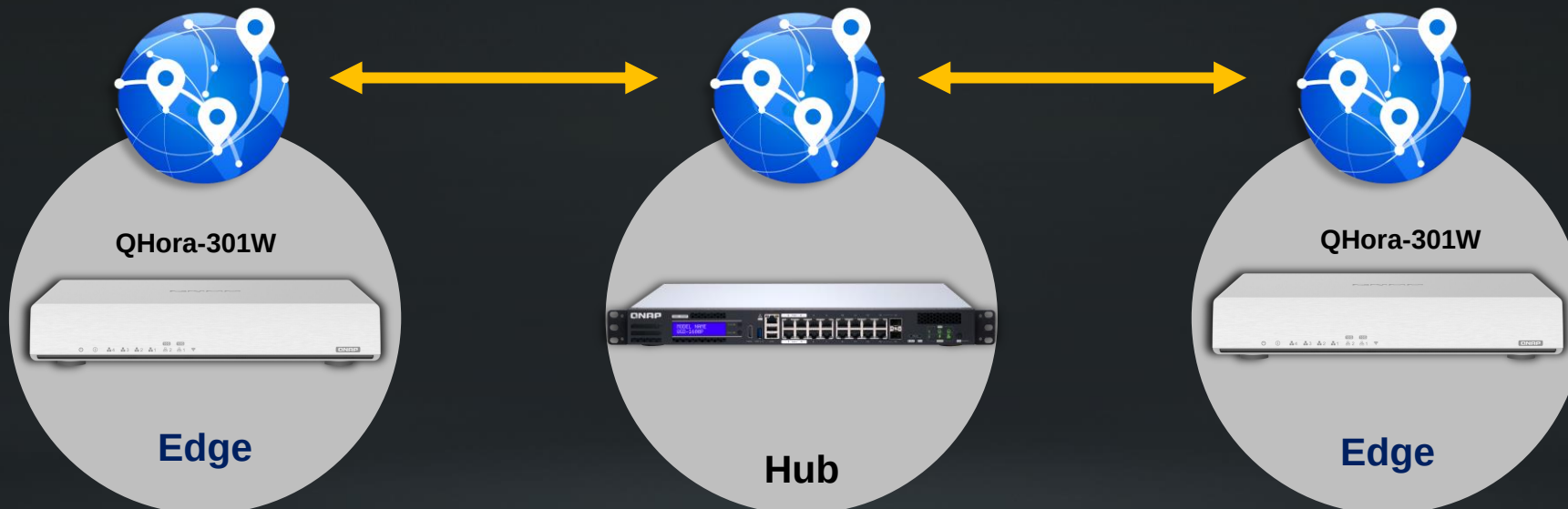
Flexible VPN Topology: Mesh VPN

- Mesh VPN topology is suitable for a network architecture that requires fast and multiple route network.
- Mesh VPN can be formed by multiple hubs automatically
- Public IP is required for being hub



Flexible VPN Topology: Hub & Spoke

- Hub & Spoke topology is suitable for a network architecture that requires fast deployment, extension and backup route.
- All data transmission between edges will go through a hub
- If your device uses private IP, it can connect to network topology as Edge



Network Topology Case

Topology



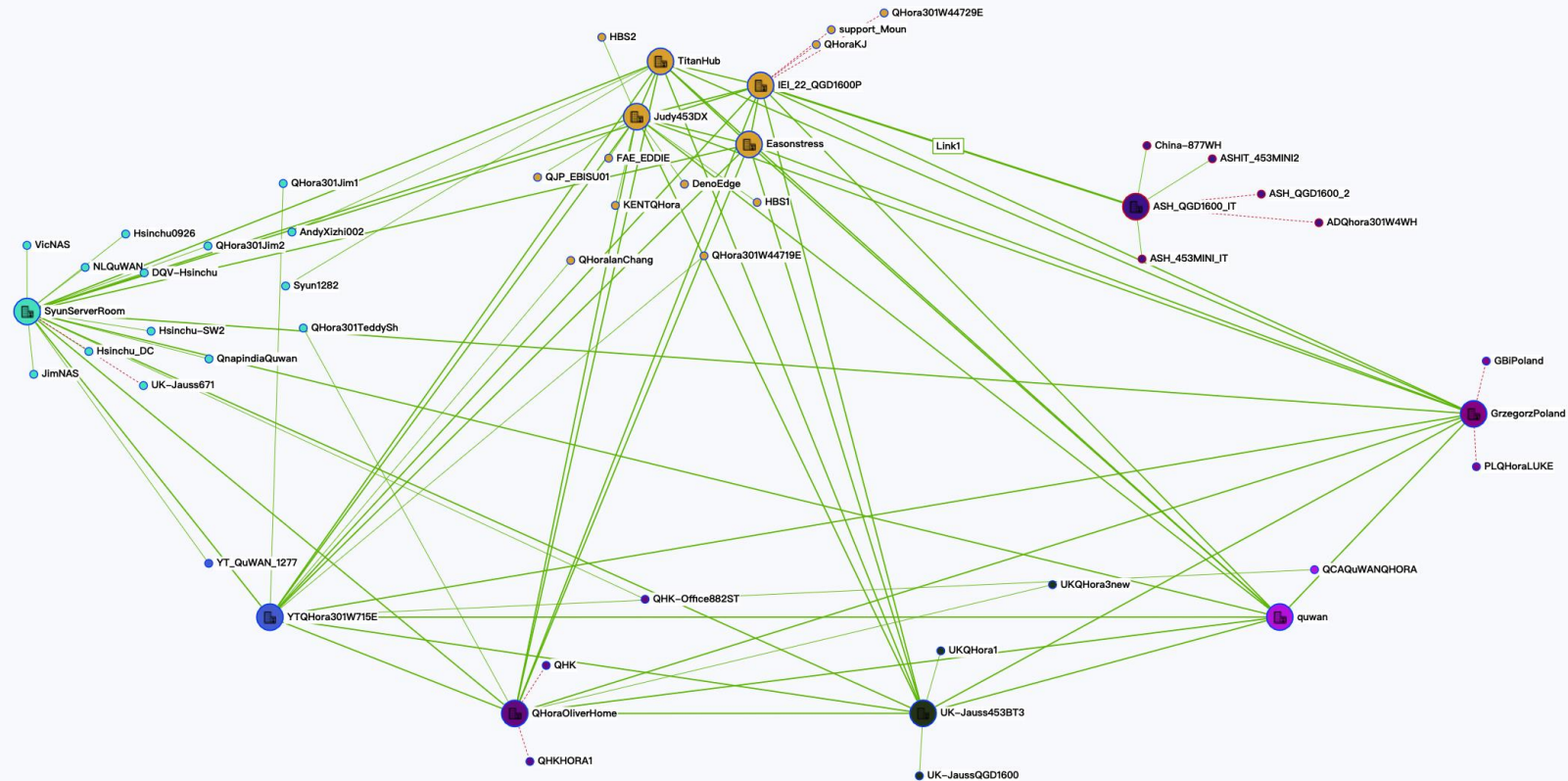
Hub



Edge

Domain: ○ Global ○ China

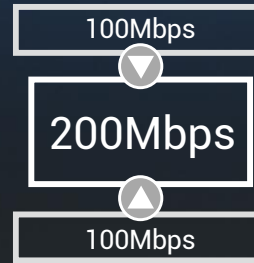
VPN status: — Connected — Partially connected — Disconnected



QuWAN's Features and Benefits



Auto Mesh VPN



WAN Optimization



Cloud Management



Cost Optimization



Intuitive Web Management



Networking Security

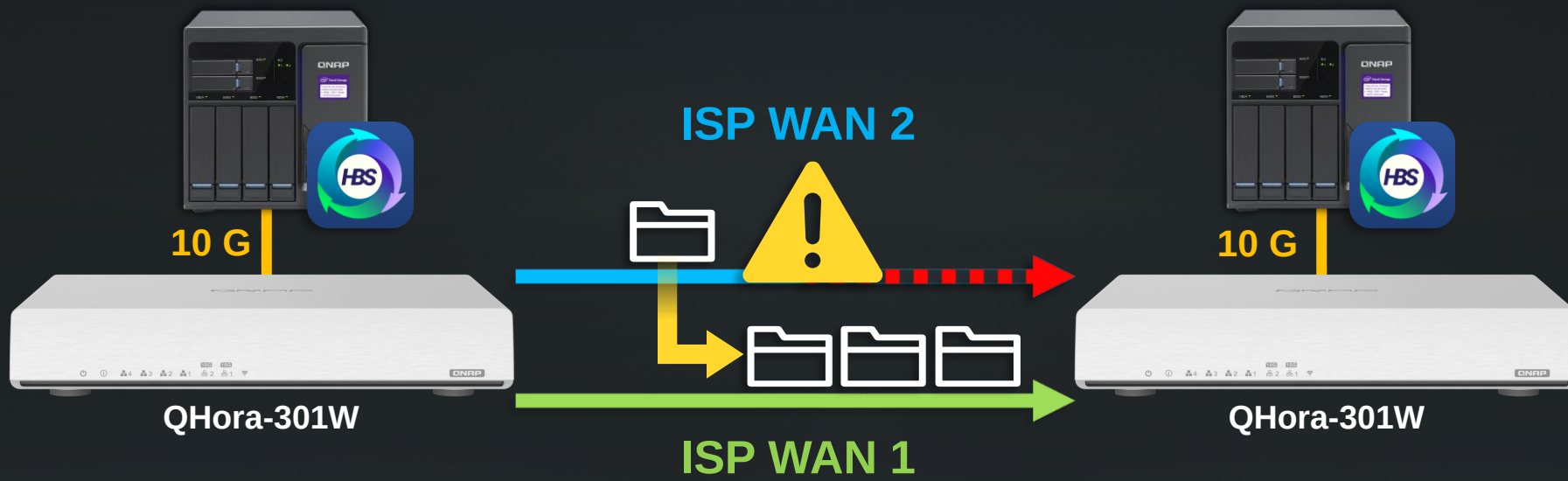
WAN aggregation to improve data transmission rate

WAN aggregation is effective in achieving a faster data transmission for remote backup and remotely mounted file system



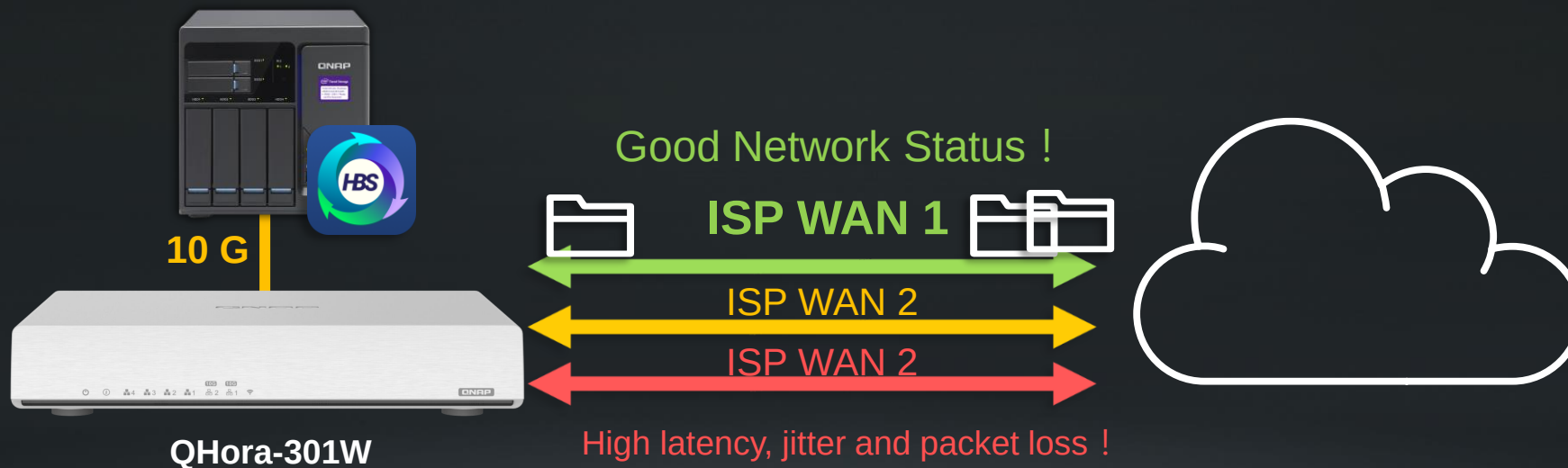
WAN Failover

- Multi-site connection can form a backup system automatically that allow uninterrupted collaborative operations.
- The central management platform sends warnings and notifications in real time



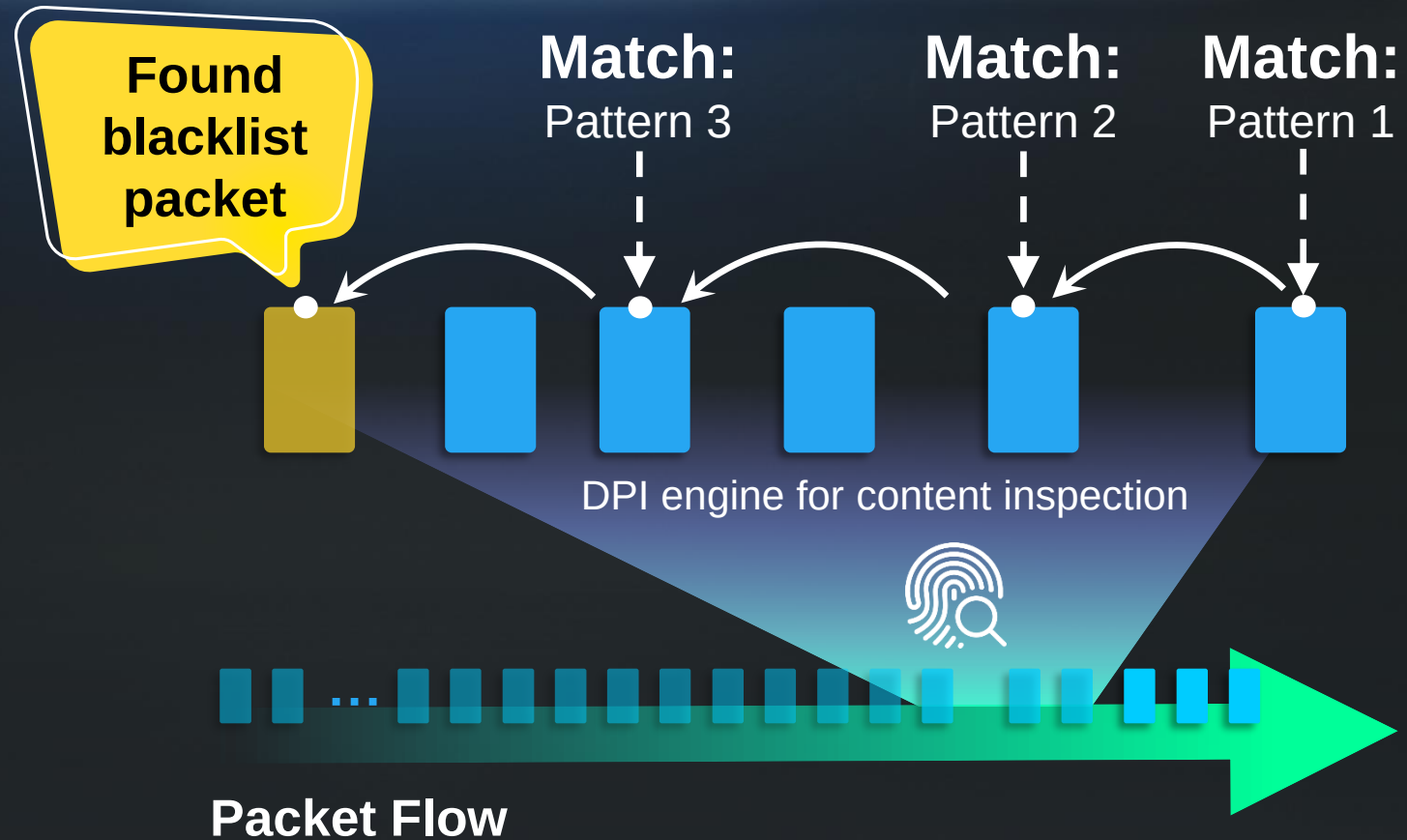
WAN Load Balancing

- Using Multipath TCP (MPTCP) technology to automatically detect current network jitter, delay, and packet loss conditions, so that each packet takes the best network path to the destination, so as to achieve intelligent routing and uninterrupted connection for transmission
- Maintain long-term and efficient transmission by distributing traffic through multiple WANs



Deep Packet Inspection

- Through using deep packet inspection technology, it can identify and control network services based on the characteristics of the application layer to achieve L7 firewall and intelligent QoS functions.
- Blacklist specific applications to protect corporate network security.



** QoS and L7 Firewall is supported on 2021/Q1

Intelligent QoS and L7 Firewall

- Through the settings of different Service Classes, a certain percentage of the network bandwidth is reserved for important applications to keep important meetings online. For example: Streaming / VoIP
- Create L7 firewall based on distinguishing application characteristics

QoS

50% VoIP

30% ERP

20% File transfer



QHora-301W

QHora-301W

You Tube

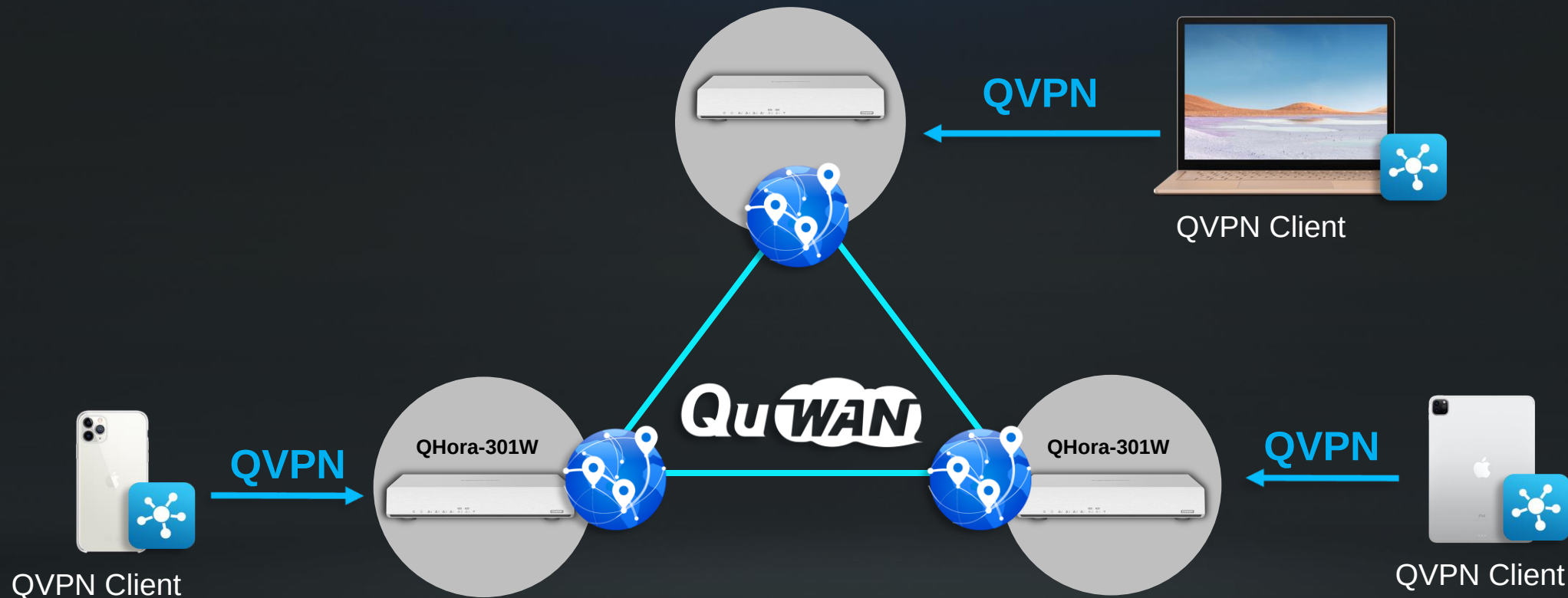


QHora-301W

** QoS and L7 Firewall will be supported on 2021/Q1

Connect Multiple Devices to SD-WAN Network with QVPN

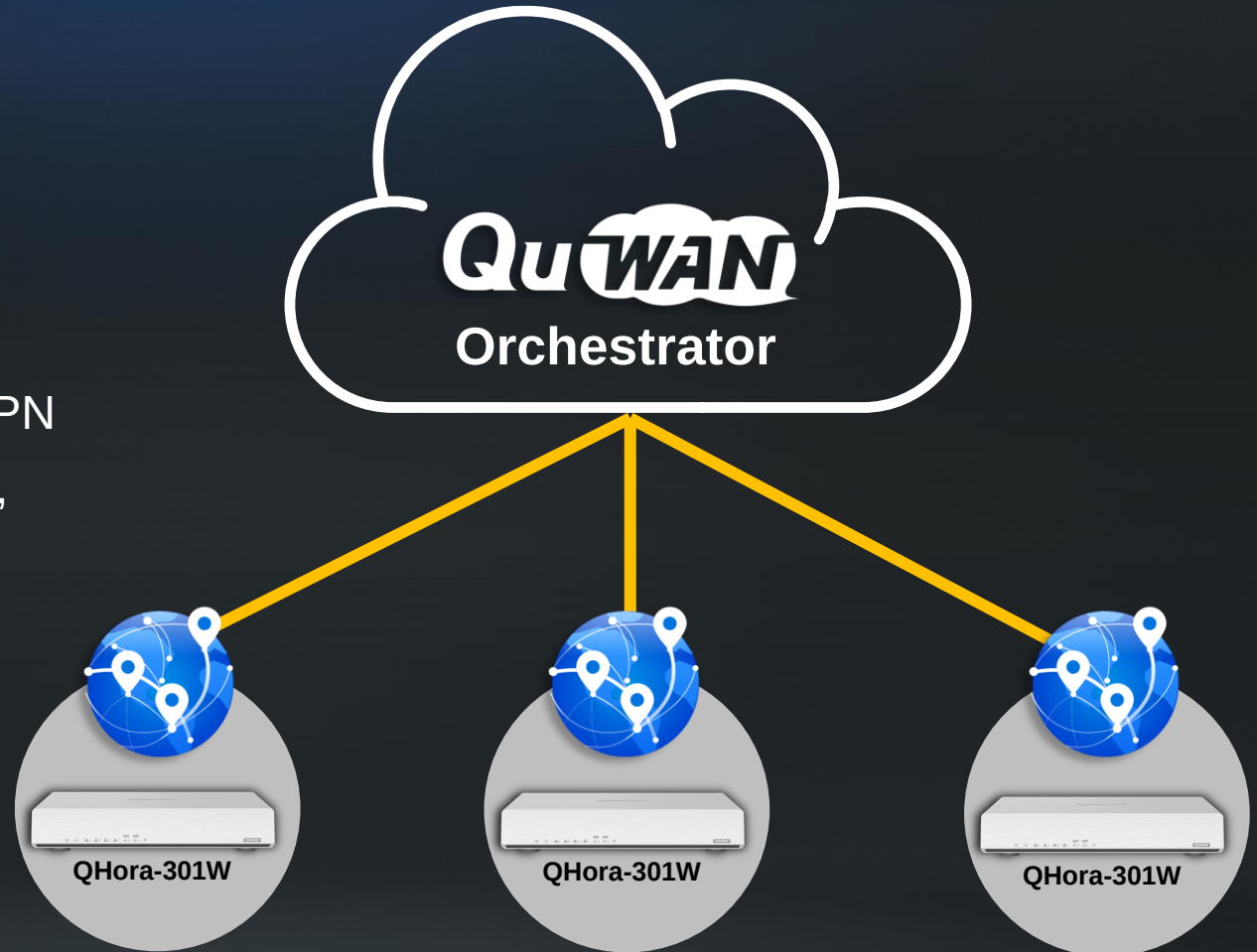
QVPN is QNAP's VPN solution with a pair of server and client. Multiple devices such as PC, mobile phone and tablet can join and access to SD-WAN network for a more secure and reliable data transmission.



Enable QuWAN to manage QHora-301W through the cloud platform

QuWAN Orchestrator

Go to quwan.qnap.com and log in with QID to view the QHora-301W device, network and VPN connection status, organization-wise topology, connection method. You can also perform remote debugging through the cloud platform



A centrally managed platform solves the management issues of multiple devices

01 Intuitive graphical user interface

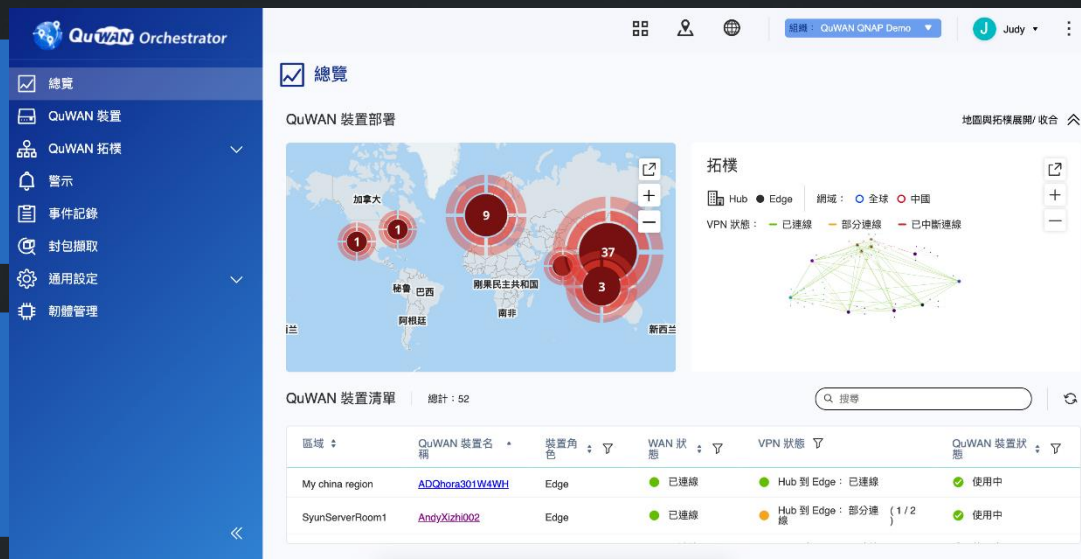


**Instant
Notification
IT Admin**

04 Simultaneously execute various parameter settings

02 Geological location of each device

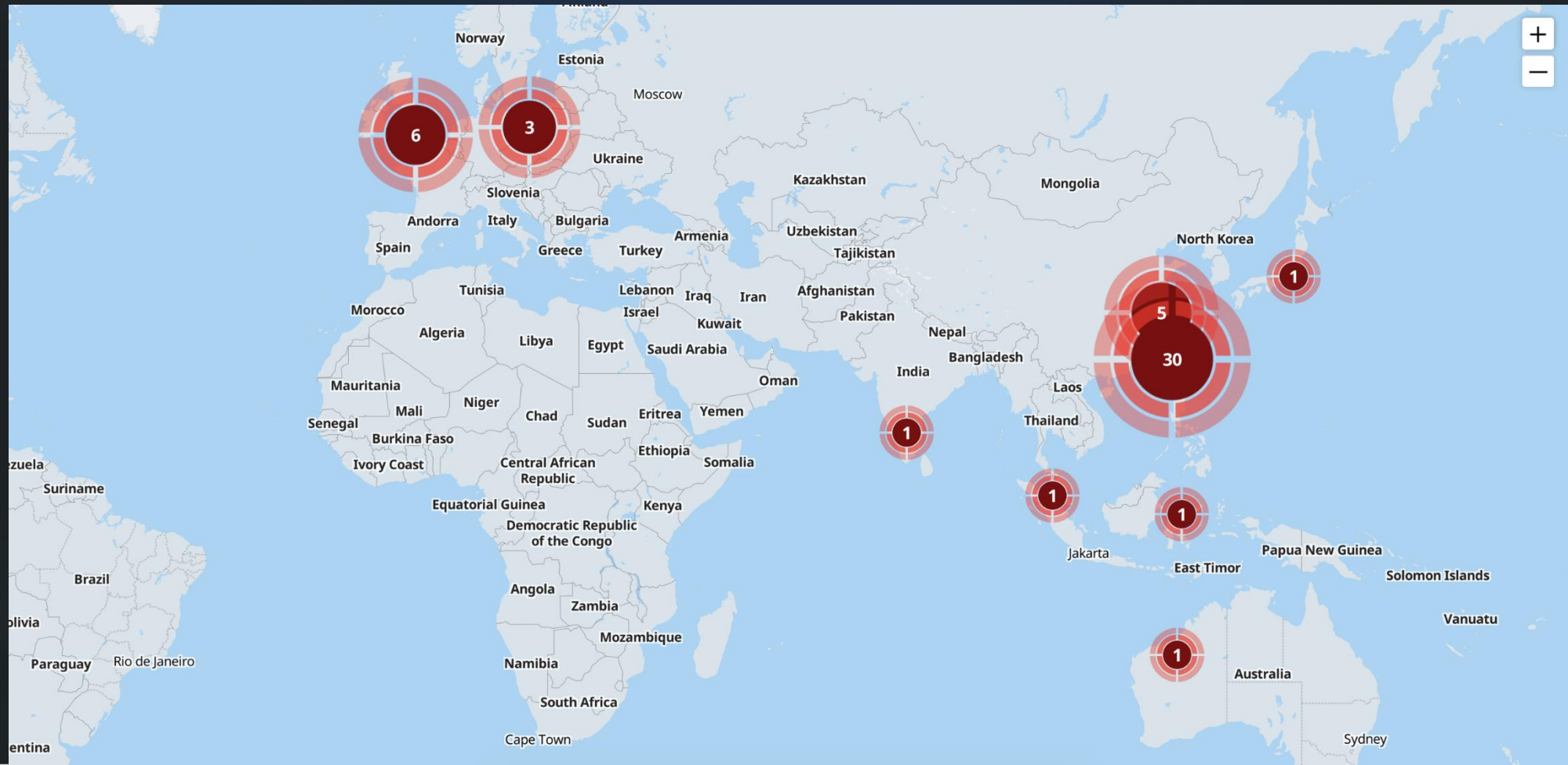
03 Overview connection status of all devices



05 Set once and apply to all. Save time to set device one by one.

06 Remote troubleshooting (e.g. packet capture)

Geological location of each device



Device and Network Status



Overview

QuWAN Device

QuWAN Topology

- Topology Settings
- Interdomain Link Settings
- IP/ IP Subnet Summary

Alert

Event Log

Packet Capture

Common Configuration

Firmware Management

Overview

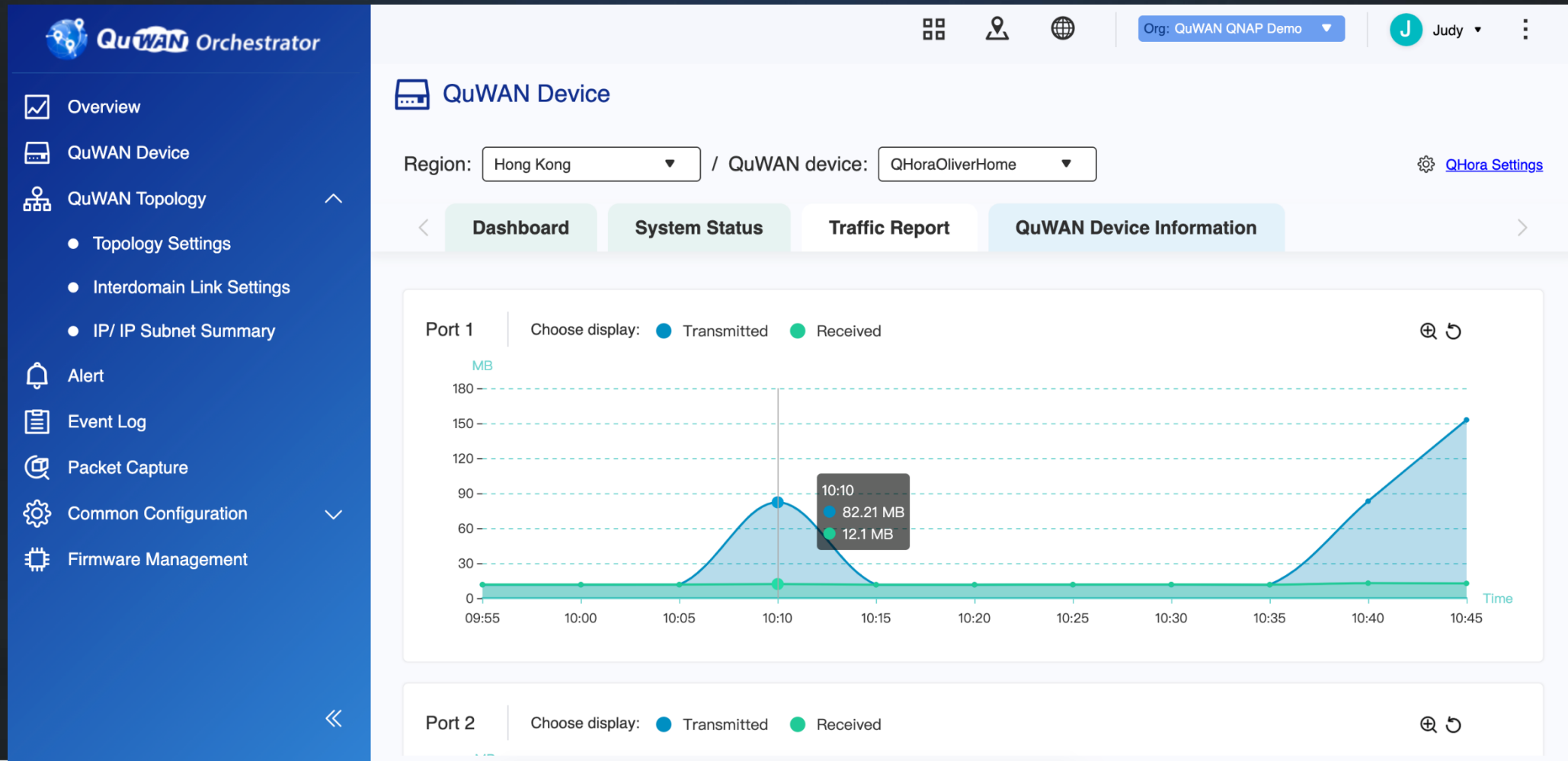
QuWAN Device Deployment

QuWAN Device List Total: 51

Map and Topology Expand/ Collapse

Region	QuWAN Device Name	Device Role	WAN status	VPN status	QuWAN Device Status
My china region	ADQhora301W4WH	Edge	Disconnected	Hub-to-edge: Disconnected	Failed to upgrade
SyunServerRoom1	AndyXizhi002	Edge	Connected	Hub-to-edge: Connected	Active
My china region	ASH_453MINI_IT	Edge	Connected	Hub-to-edge: Connected	Active
My china region	ASH_QGD1600_2	Edge	Disconnected	Hub-to-edge: Disconnected	Offline
My china region	ASH_QGD1600_IT	Hub	Connected	Hub-to-hub: There are no hubs to connect Hub-to-edge: Partially connected (3 / 5)	Active
My china region	ASHIT_453MINI2	Edge	Connected	Hub-to-edge: Connected	Active
My china region	China-877WH	Edge	Connected	Hub-to-edge: Connected	Active
My global region	DenoEdge	Edge	Connected	Hub-to-edge: Connected	Active
SyunServerRoom1	DQV-Hsinchu	Edge	Connected	Hub-to-edge: Connected	Active

QHora-301W Traffic Report



Organizational IP Segment Allocation



>>



Org: QuWAN QNAP Demo

J Judy

 QuWAN Topology / IP/ IP Subnet Summary

Topology

 Hub  Edge

Domain:  Global  China

IP/ IP Subnet Summary Table

IP

Static Route

Region	QuWAN Device Port/ VLAN ID	Port Definition	IP	Description
Hong Kong	QHK / Port 1	WAN	10.26.43.10 / 16	-
Hong Kong	QHK / Port 8	LAN	192.168.200.1 / 24	-
Hong Kong	QHK-Office882ST / Port 1	WAN	10.26.42.202 / 16	-
Hong Kong	QHK-Office882ST / Port 8	LAN	192.168.26.1 / 24	-
Hong Kong	QHKHORA1 / Port 1	WAN	10.26.42.18 / 16	-
Hong Kong	QHKHORA1 / VLAN 4094	LAN	192.168.101.1 / 24	-
Hong Kong	QHKHORA1 / VLAN 1000	LAN	192.168.104.1 / 24	-
Hong Kong	QHKHORA1 / VLAN 2	LAN	192.168.100.1 / 24	-

Remote Packet Capture Tool

Packet Capture

Request PCAP bundle

Delete selected

Selected: 0

☐	Request Status	QuWAN Device	Reason for Generation	User	Generated Date	Cleanup Date	Action
☐	Ready to download	IEI_22_QGD1600P	moun	vicli@qnap.com	2020/09/08 12:06:53	2020/11/07	
☐	Ready to download	IEI_22_QGD1600P	-	jimhsiao@qnap.com	2020/09/04 17:04:42	2020/11/03	
☐	Ready to download	Judy453DX	-	jimhsiao@qnap.com	2020/08/27 19:00:12	2020/10/26	
☐	Ready to download	SyunServerRoom	-	jimhsiao@qnap.com	2020/08/26 18:14:40	2020/10/25	
☐	Ready to download	TitanHub	-	jimhsiao@qnap.com	2020/08/26 18:08:47	2020/10/25	
☐	Ready to download	YT_QuWAN_1277	-	jimhsiao@qnap.com	2020/08/24 14:57:38	2020/10/23	
☐	Ready to download	NLQuWAN	ika debug	ika@siao@qnap.com	2020/08/20 09:48:14	2020/10/19	
☐	Ready to download	UK-Jauss453BT3	debuglan	jauss@qnap.com	2020/08/19 18:57:10	2020/10/18	
☐	Ready to download	UK-Jauss453BT3	debugwan	jauss@qnap.com	2020/08/19 18:56:56	2020/10/18	
☐	Ready to download	UK-Jauss453BT3	debug	jauss@qnap.com	2020/08/11 21:58:52	2020/10/10	

QuWAN Network Topology

Organization

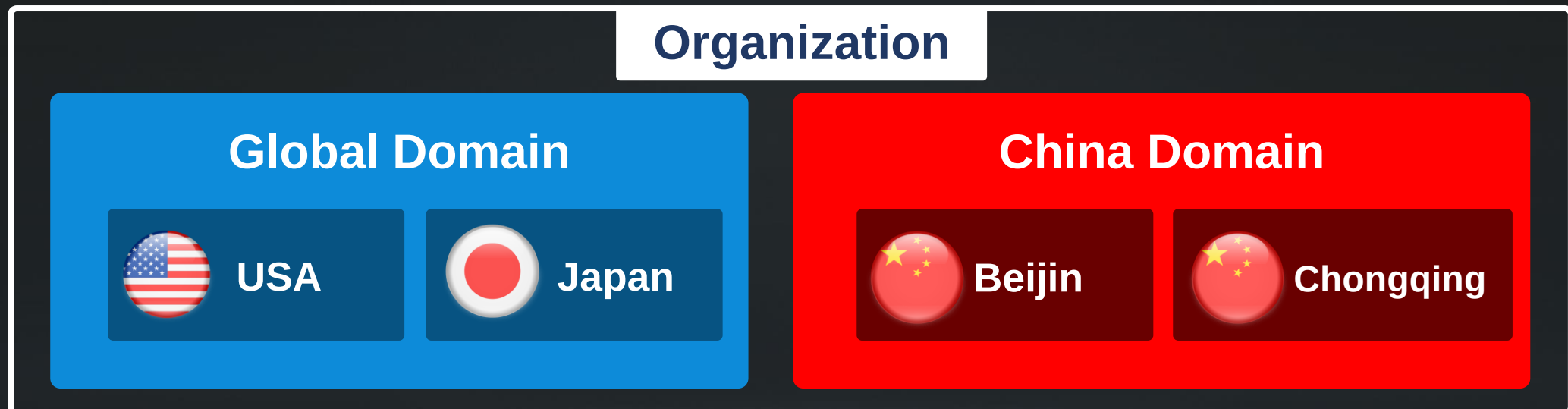
One company can be an organization

Domain

QuWAN network is divided into two main domain: Global and China

Region

Multiple regions can be created inside a domain.



QuWAN Network Topology

Site

Usually One office or a smaller area within a region is called site.

Device

Each site can have one QuWAN router enabled.

Organization

Global Domain



USA

Site

Device

Site

Device

Site

Device

Site

Device



Japan

Site

Device

Site

Device

China Domain



Beijing

Site

Device

Site

Device



Chongqing

Site

Device

Site

Device

Site

Device

Site

Device

QuWAN Network Topology

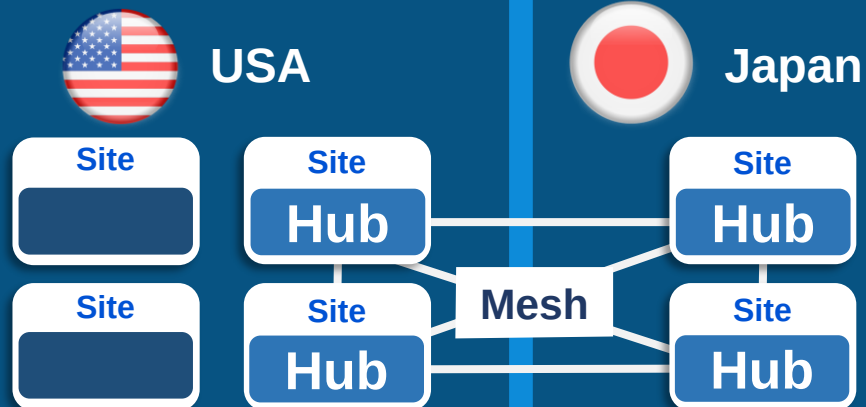
Hub & Edge

Hub

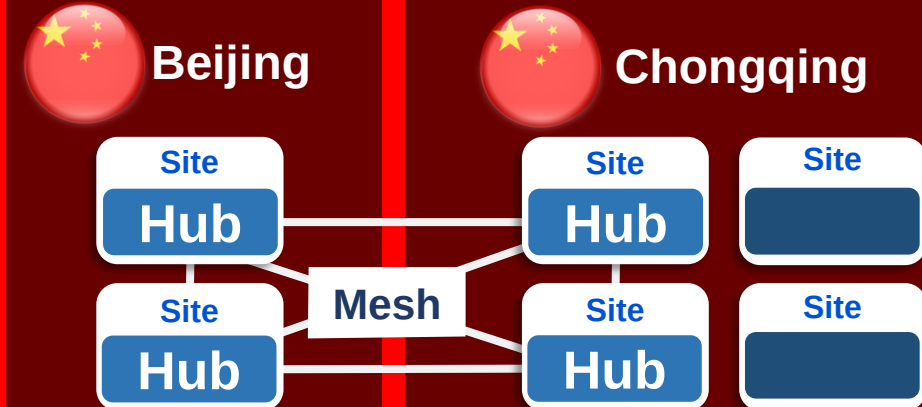
- All Hubs under the same domain automatically form **Mesh VPN** connections.
- Public IP is required for a device to be Hub.
- First device deployed in a region needs to be a Hub. This Hub will serve as the primary Hub.

Organization

Global Domain



China Domain



QuWAN Network Topology

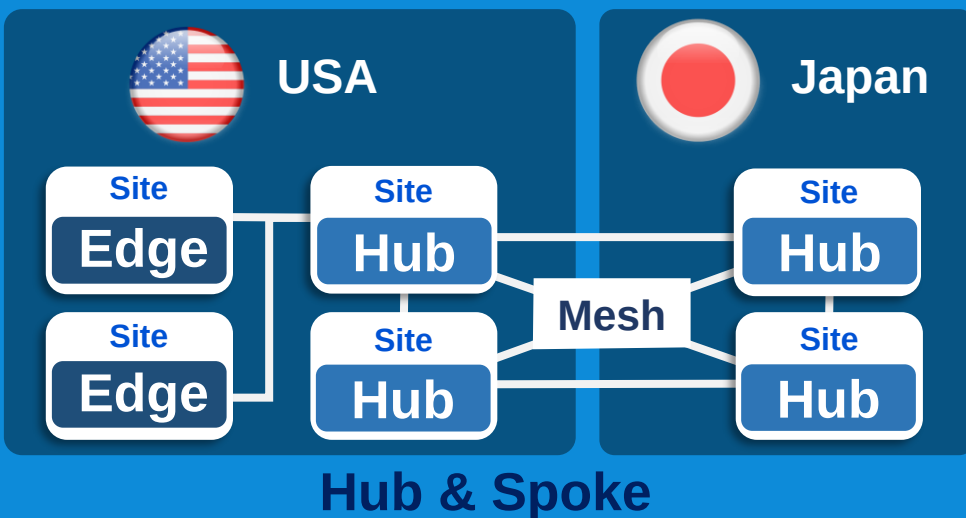
Hub & Edge

Edge

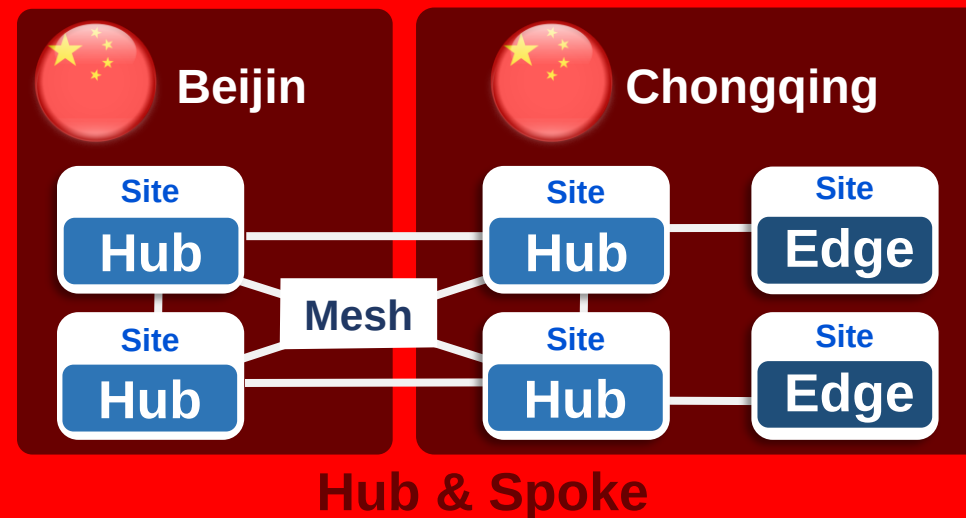
- A device can connect to QuWAN network as an Edge using private IP.
- An Edge needs to connect to a Hub under **Hub & Spoke** network structure.
- Edge automatically connects to the primary Hub.
- All data will be transferred through Hub.

Organization

Global Domain



China Domain



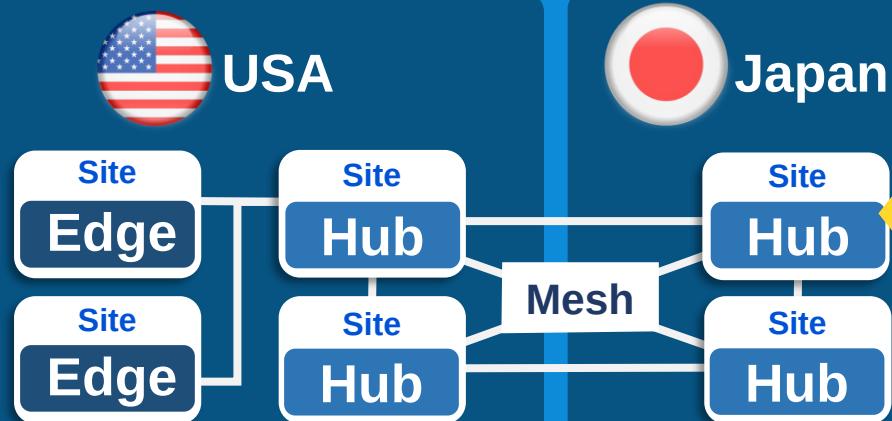
QuWAN Network Topology

Inter-Domain Link

- To comply to China network regulation, user needs to apply for Inter-Domain Link by his or herself for the two domain to have VPN connection.
- Inter-domain Link can only be set on hub.

Organization

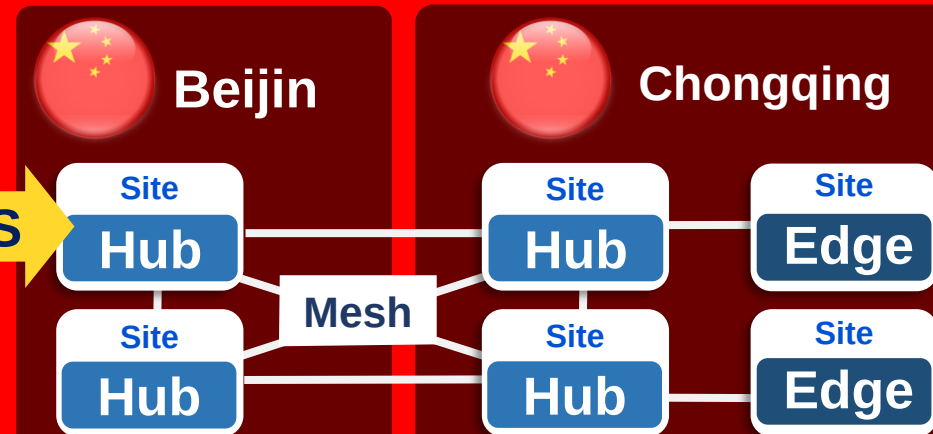
Global Domain



Hub & Spoke

MPLS

China Domain



Hub & Spoke

QuWAN Inter-Domain Link

Set the applied MPLS to QuWAN Inter-Domain Link to establish a cross china and global domain private network between the two QuWAN Hubs

** Inter-Domain Link is supported on 2021/Q1

QuWAN Topology / Interdomain Link Settings

● Interdomain Link 1. ASH_QGD1600_IT (My china region) - IEI_22_QGD1600P (My global region)

ASH_QGD1600_IT: 21.44 Kbps 26.92 Kbps | Latency: 45.82 ms | Jitter: 0.86 ms | Packet loss: 0 %

ASH_QGD1600_IT



IEI_22_QGD1600P

Region: *

Hub: *

Port: *

IP ☐ Obtain all settings automatically via DHCP

☒ Static IP address

Fixed IP address: *

Subnet Mask: *

Region: *

Hub: *

Port: *

IP ☐ Obtain all settings automatically via DHCP

☒ Static IP address

Fixed IP address: *

Subnet Mask: *

Enable QuWAN on QHora-301W

Just select the organization, region and connection role, and your QHora-301W can build VPN tunnel with other QuWAN devices within the same organization

***If your QHora-301W is a LAN device of another router, make sure to allow destination UDP Port 500, 4500, 5555, 7788

The screenshot displays the QuRouter web interface for a QHora-301W device. The left sidebar contains navigation links: Dashboard, QuWAN, Clients, Network, Wireless/Virtual Access Point, NAT/ Firewall, QVPN, Parental Controls, System, and Firmware. The main content area is titled 'QuWAN' and includes a description: 'You can set up your device as a hub or an edge and add it to the QuWAN topology in QuWAN Orchestrator to access the QuWAN service.'

QuWAN Settings

The device is part of the QuWAN network. [Leave the Organization and QuWAN](#)

QuWAN Orchestrator connection status: Connected

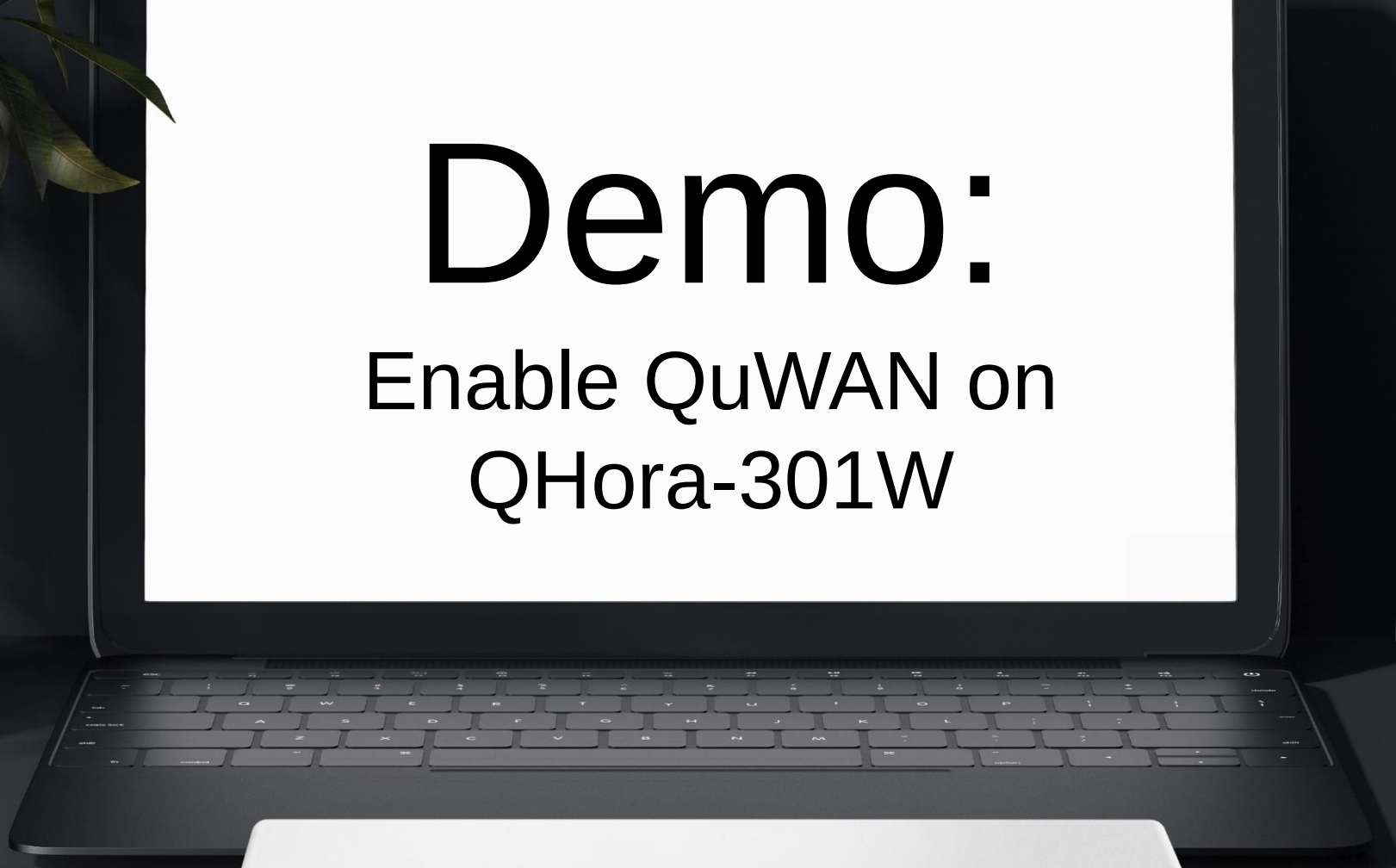
QuWAN VPN status: Hub-to-edge: Connected
The router is connected to hub "SynServerRoom".

Organization:	QuWAN
Region:	SyunServerRoom1
Site:	My Site
Device name:	JudyQHora05
QuWAN device ID:	3c56f09b-2eb6-4a9a-b2b3-4a1ded1b15be
Device role:	☐ Hub ☒ Edge

A public IP address is required for the WAN connection to select the device as a hub.

Demo:

Enable QuWAN on
QHora-301W



QNAP

QHora-301W

New Generation Wi-Fi 6 Dual-Port 10GbE SD-WAN Router

is Your Best Choice!

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