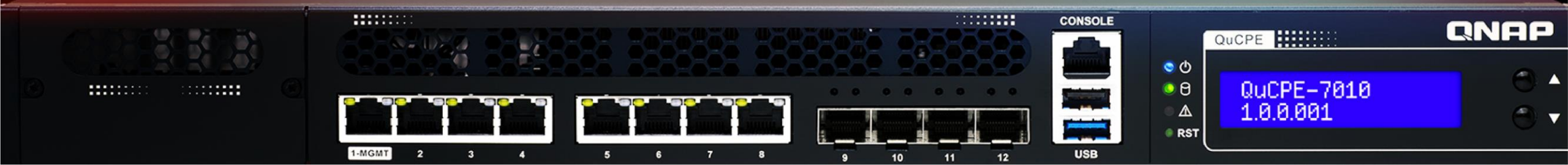
QNAP

QuCPE 7010

SD-WAN / VNF / Intel® Xeon® D

10G Network Virtualization Equipment



SD-WAN / VNF
Intel Xeon-D / 10G
10G Network Virtualization Equipment

- QNE - next generation OS
- SD-WAN for Enterprises
- Agile operation with virtualized services
- Robust and fast 10Gbps
- SD-Branch surveillances
- High availability
- Service optimization

QuCPE
7010

QNE – QNAP next-generation operating system

Next generation OS

QNE (QNAP Network Equipment OS)

- Inherit the experiences for Enterprise storage OS
- The foundation for QNAP next generation products

Break-through design than legacy Servers

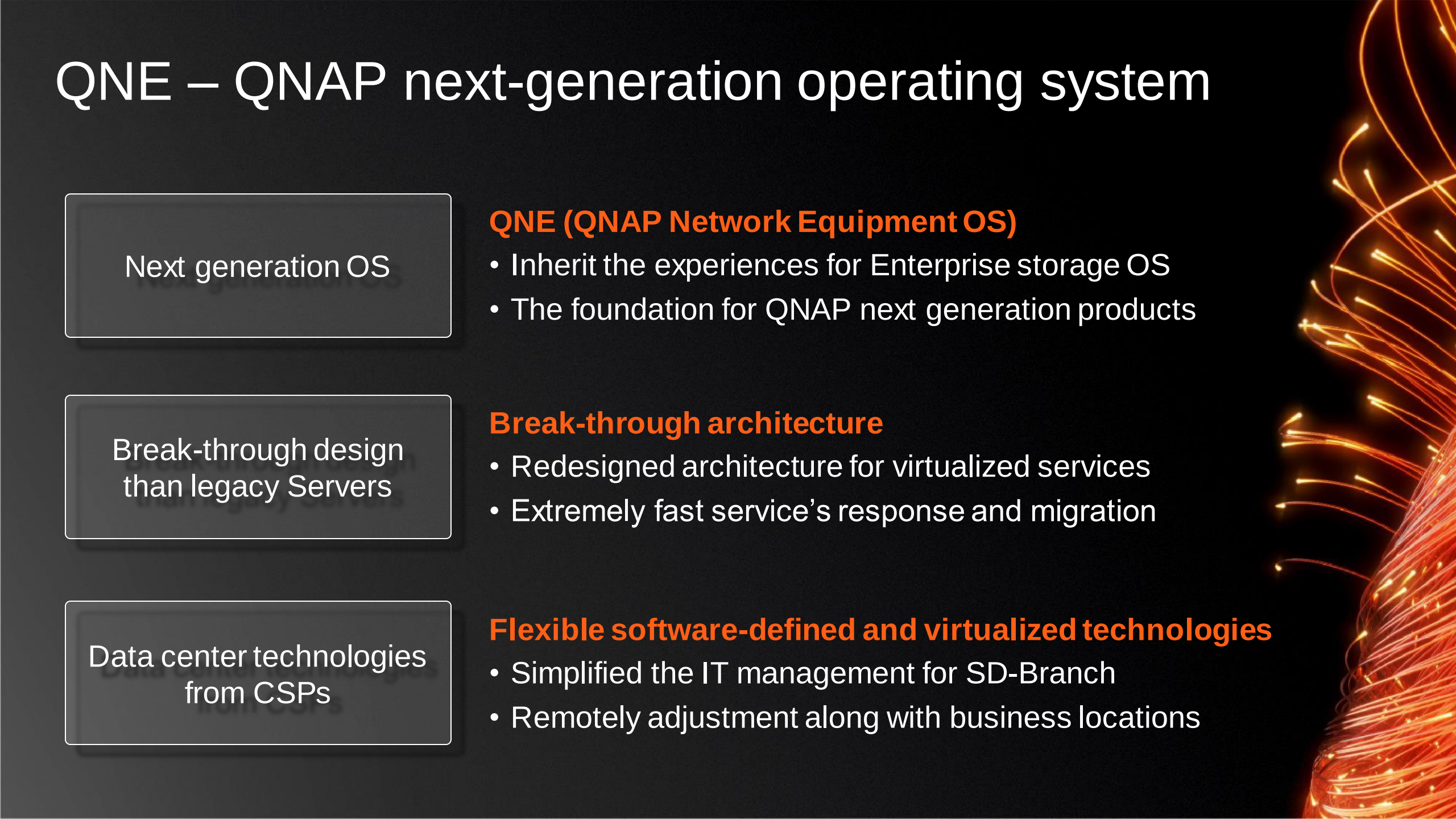
Break-through architecture

- Redesigned architecture for virtualized services
- Extremely fast service's response and migration

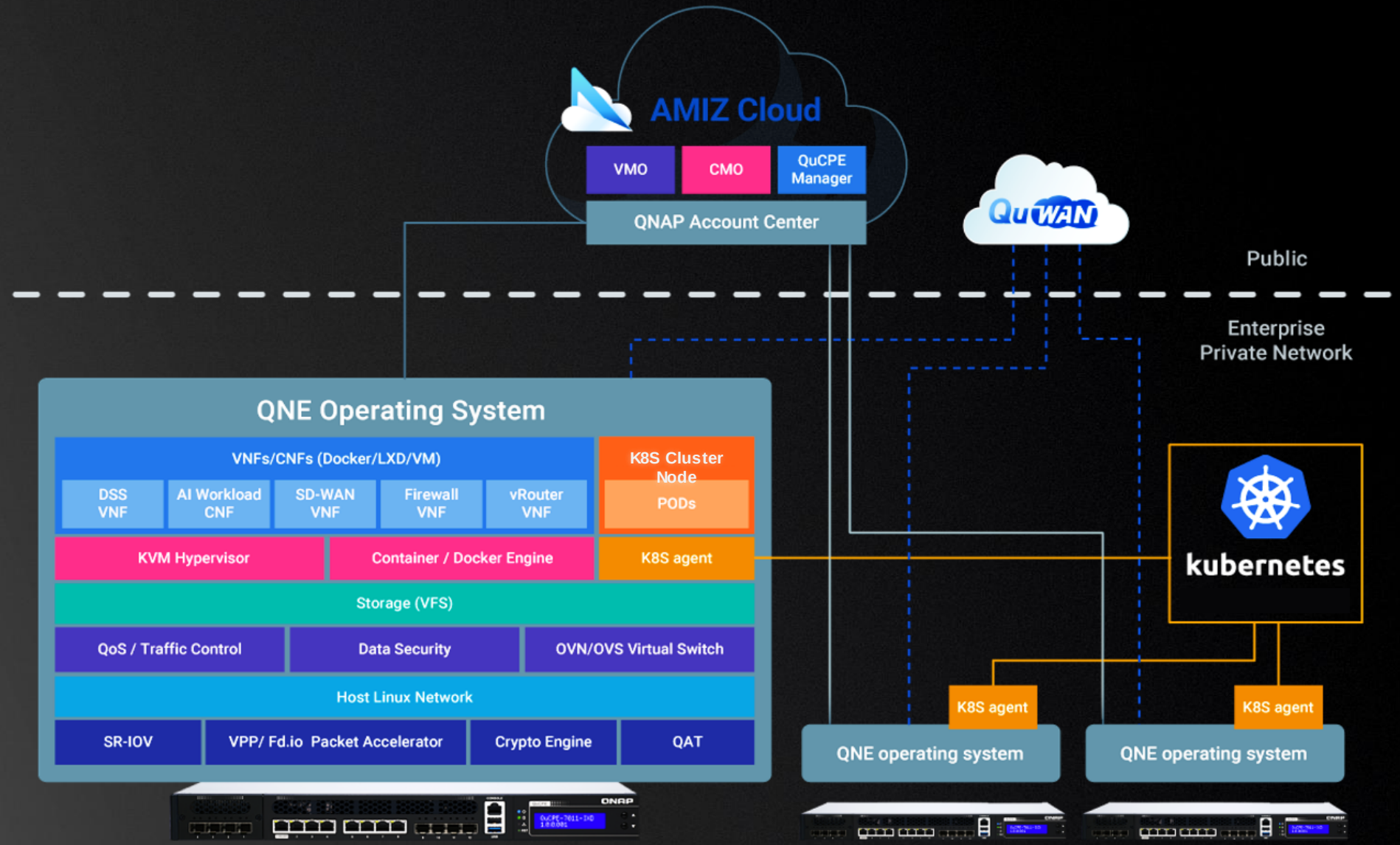
Data center technologies from CSPs

Flexible software-defined and virtualized technologies

- Simplified the IT management for SD-Branch
- Remotely adjustment along with business locations



Integrated service architecture



*K8S agent: Estimated release by Q2-2021

QuCPE

Powerful Xeon® D

and 10G platform

QuCPE hardware specifications

QuCPE-7010 series

	QuCPE-7010-D2123IT-8G	QuCPE-7010-D2146NT-32G	QuCPE-7010-D2166NT-64G
CPU	**Intel Xeon D-2123IT** 4C/8T data center processors	**Intel Xeon D-2146NT** 8C/16T data center processors	**Intel Xeon D-2166NT** 12C/24T data center processors
DRAM	**8GB** DDR4 (4GB x 2) ECC	**32GB** DDR4 (8GB x 4) ECC	**64GB** DDR4 (16GB x 4) ECC
Network	8 x 1GbE & 4 x **10GbE SFP+**	8 x 1GbE & 4 x **10GbE SFP+**	8 x 1GbE & 4 x **10GbE SFP+**
Expansion	1x module for 4x10GbE/2x25GbE	1x module for 4x10GbE/2x25GbE	1x module for 4x10GbE/2x25GbE
Disk slots	2 x 2.5” SATA slots	2 x 2.5” SATA slots	2 x 2.5” SATA slots
PCIe slots	1 x PCIe Gen3 x 8 (FH/HL)	1 x PCIe Gen3 x 8 (FH/HL)	1 x PCIe Gen3 x 8 (FH/HL)

Inside the QuCPE

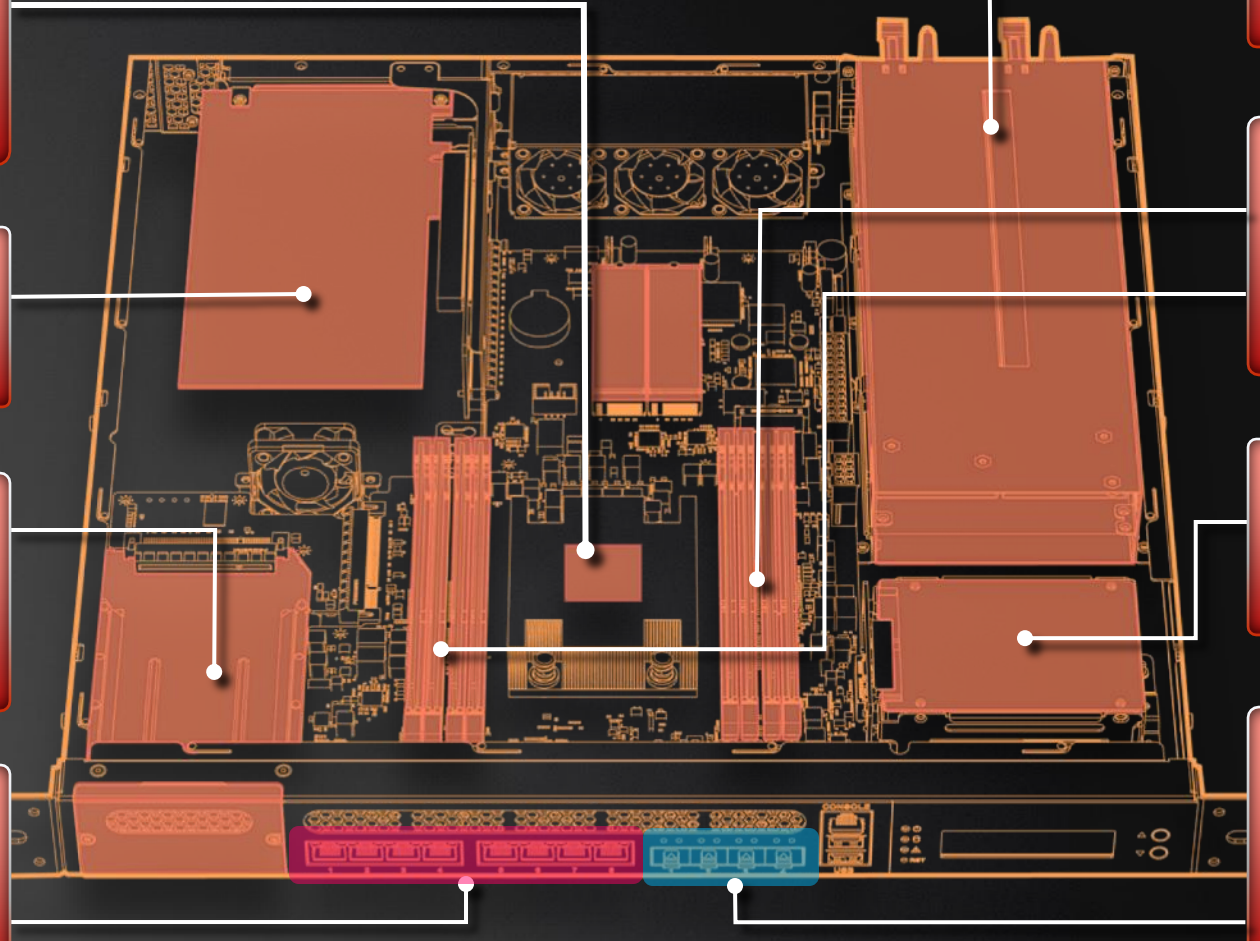
Intel® Xeon® D

Xeon D-2123IT
Xeon D-2146NT
Xeon D-2166NT

1 x PCIE Gen3 x 8 FH/HL

1 x Network module Expansion for 10GbE / 25GbE

8 x 1GbE RJ45 ports



Dual 300W Power (Main/Backup)

8 x DDR4 Slots, up to 128GB (U-DIMM) & 256GB (R-DIMM)

2 x 2.5” slots Support SATA 6Gbps

4 x 10GbE SFP+ Fiber (SR-IOV supported)

High speed expansion with Network module

PuIM-10G4SF-MLX

PuIM-10G4SF-XL710

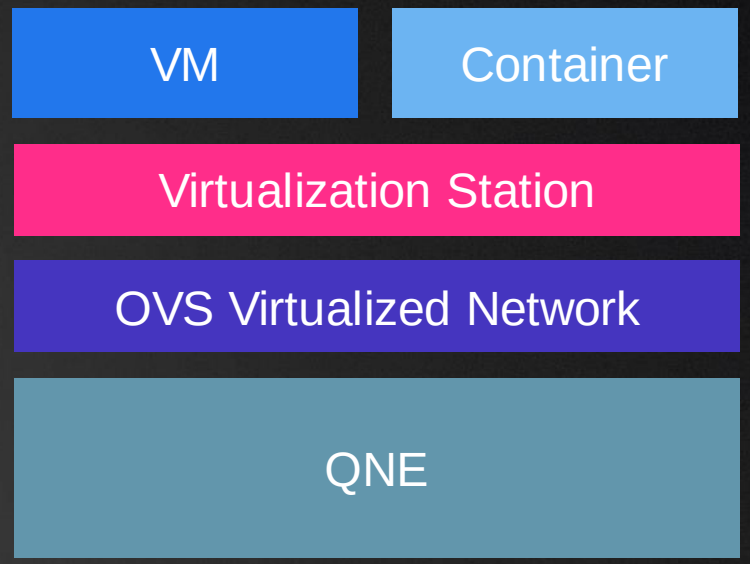
PuIM-25G2SF-MLX

	PuIM-10G4SF-XL710	PuIM-10G4SF-MLX	PuIM-25G2SF-MLX
Speed	10 GbE	10 GbE	25 GbE
Ports	4	4	2
Interface	SFP+	SFP+	SFP28
Processor	Intel XL710	Nvidia Mellanox ConnectX-4	Nvidia Mellanox ConnectX-4
Bus	PCIe 3.0 x8	PCIe 3.0 x8	PCIe 3.0 x8

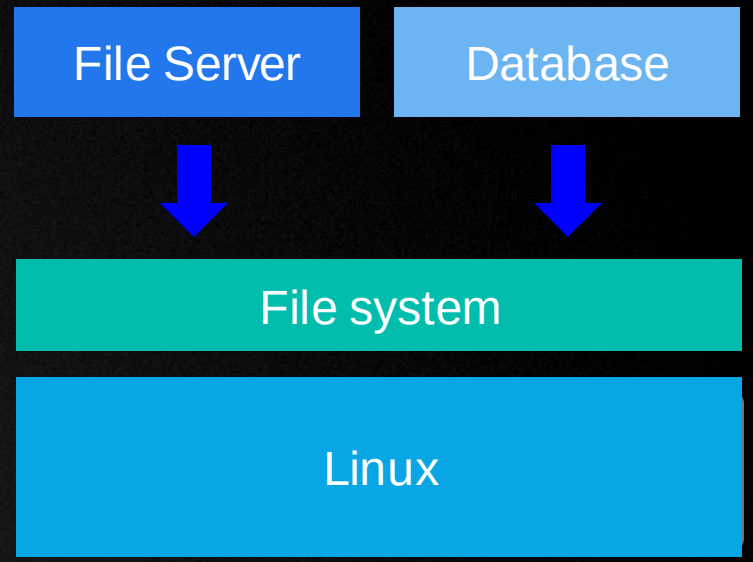
Before the introduction

QNE application volume for virtualized services

QNE differences to Server system



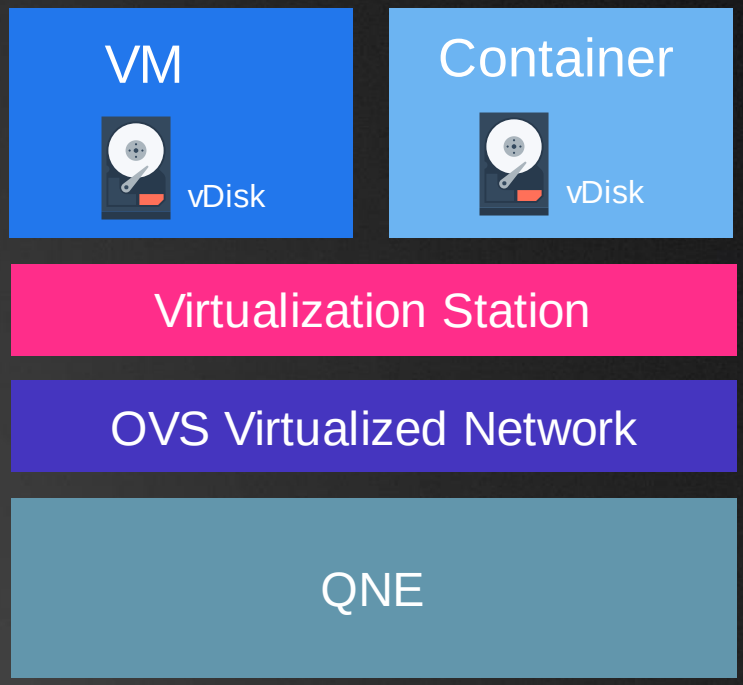
V.S.

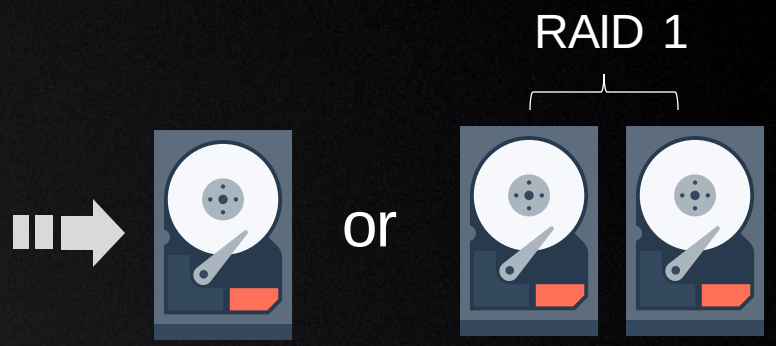


QNE
VM & Container (application) are virtualized on top of hypervisors

Linux Server
Application (e.g., Database) assign disk volume from Linux

QNE differences to server system



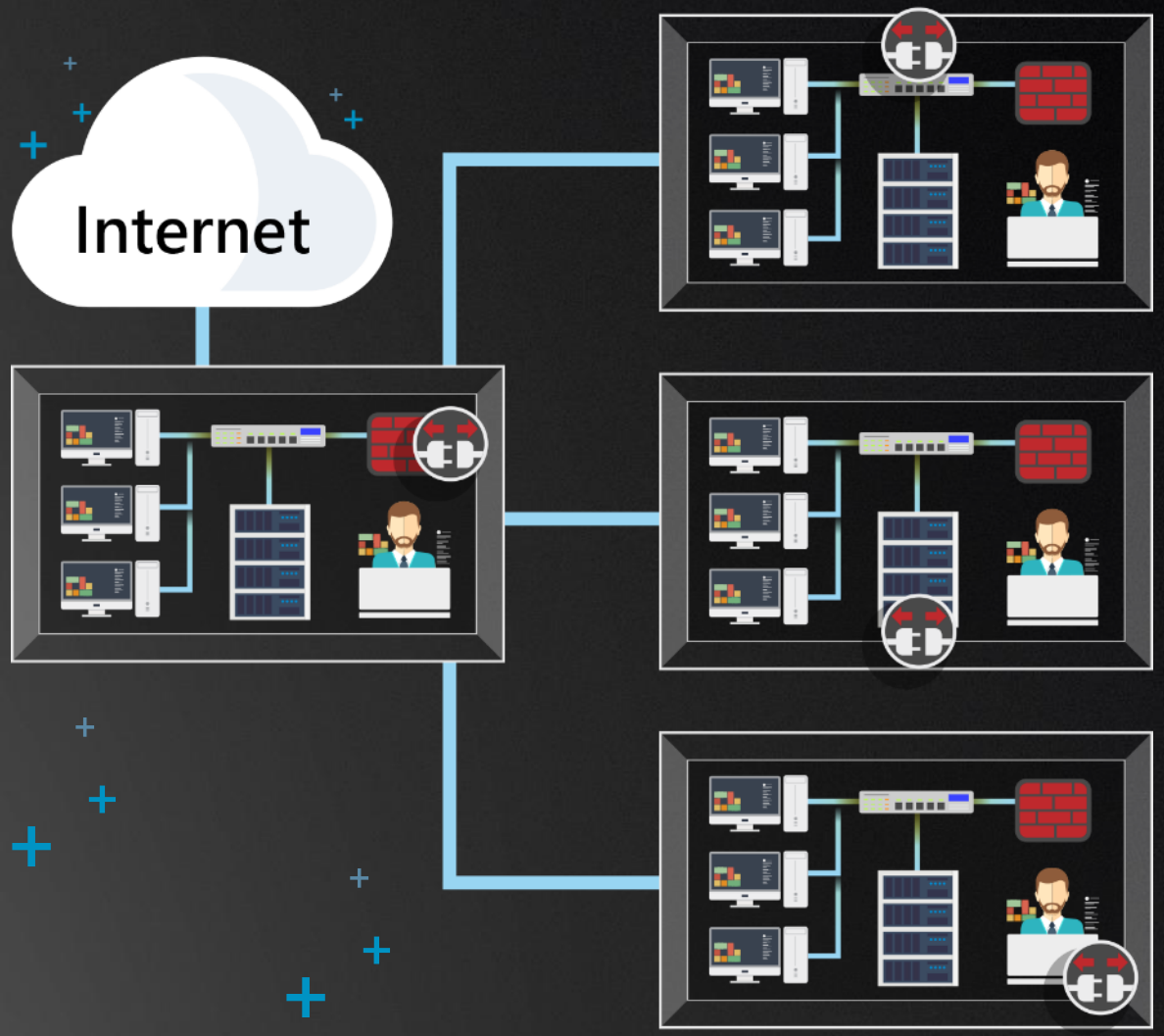


- Customer shall install 2.5” disk for “Application Volume”
- Assign “virtual disk” for VM/Container
- If 1 x disk or 2 x disks installed
  - 2 x 4TB 2.5 disk > System will build **RAID 1**
  - Total size is 4TB for application volume

QuCPE / QNE / AMIZ Cloud

Convergences of
Network, Computing,
and Cloud services

Current Enterprise WAN and IT infra for branch

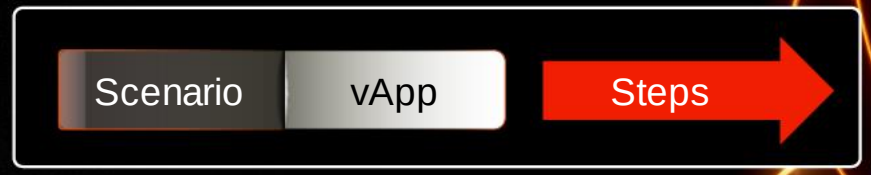


- **More WAN investment of HQ**
  - WAN aggregation to HQ
- **Investment for IT staff**
  - Manage hundreds of network appliances
- **Keep business continuity**
  - Long / lead time to maintenance
  - Difficulties to upgrade

Agile & digital transformation require **a disruptive-tech platform**

- **More WAN investment of HQ**
  - Adoption of QNAP SD-WAN
- **Investment for IT staff**
  - Lean operation cost with QNE and centralized cloud management
- **Keep business continuity**
  - QNE, virtualized network and service

The PLAYBOOK



Scenario	vApp
WAN management	QuWAN QuWAN Orchestrator
Network virtualization	Network Manager Service Composer
Services virtualization	Virtualization Station Container Station
Performance optimization	SR-IOV Intel QAT OVS-DPDK
Secure system integrity	Security Center (Anti-Tampering)
Zero-trust for services	QuFirewall
Zero-IT surveillance for facilities	QVR Elite Hybrid Mount QNE
High Availability	HA Manager
Zero cost for deployment	AMIZ Cloud
Cloud managed SD-branches	AMIZ Cloud VMO/VMO myQNAPcloud
K8S cluster	K8S Agent

SD-WAN (QuWAN)

SD-Branch and IT transformation

Why digital transformation requires SD-WAN

WAN Spike Traffic

HQ & Branches MPLS cost up

Traffic from Remote workers and re-located branches

Unmanaged security

Branches security became unmanaged

IT facilities and network require more IT staffs for management

Higher growing cost via business growth

Subscription of all kinds of IT service

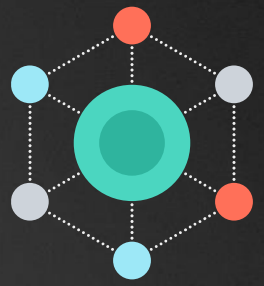
Non-disclosed high operational cost while business is growing

QNAP SD-WAN – QuWAN

Build for digital transformation
Best-fit for Small-to-Medium Enterprises

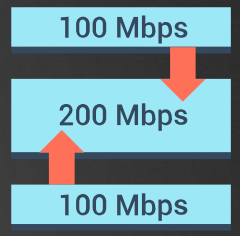
https://live.qnap.com/zh-tw/slide/download/d5d47f91347a0a17cc4382bc883669d3

Cost effective WAN than MPLS and VPN



Auto Mesh VPN

- Reduce 50% WAN cost
- Reliable than legacy VPN
- High-Gbps IPSec (QuCPE 7010 > 5Gbps)



WAN Optimization

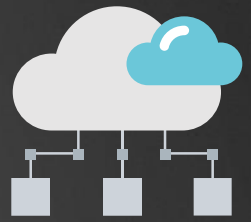
- Auto-aggregation of multiple ISP lines
- Auto-failover from unstable ISP lines

More information, https://www.qnap.com/solution/quwan-sd-wan/

Cost effective WAN than MPLS and VPN

Firewall rules
Cloud deployment

- Simplified firewall rules on Branch WAN
- Subscription-free

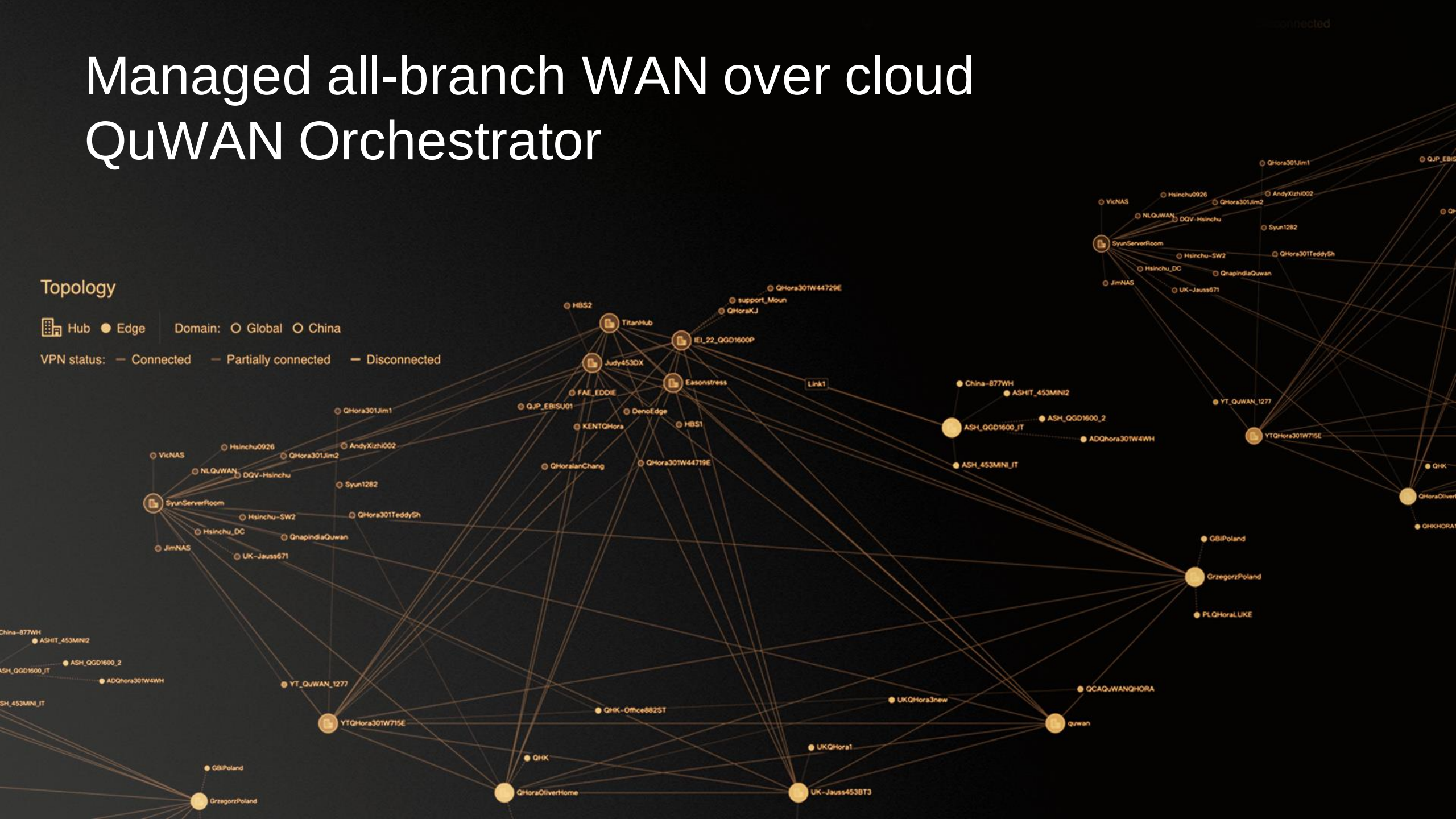


500+ application QoS
via DPI technologies

- Near line-rate DPI technologies
- Auto-enabled application QoS
- Video-conference / modern workplace cloud application QoS optimization

More information, https://www.qnap.com/solution/quwan-sd-wan/

Managed all-branch WAN over cloud
QuWAN Orchestrator



QuWAN – Easy deployment
QuWAN 1-2-3

1 Cloud REG
myQNAPcloud
SSO

2 Setup
Service Composer
>> QuWAN

3 Cloud CFG
Configure all on QuWAN Orchestrator

QuWAN is subscription-free on QuCPE

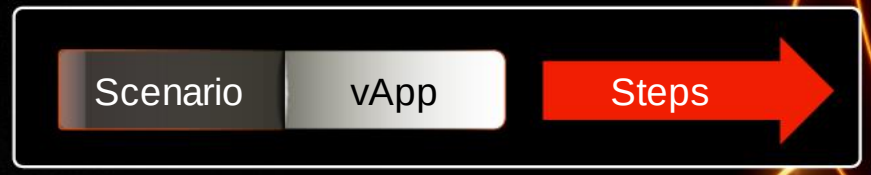
Upgrade your WAN and free-up your IT budget

	QuWAN (QNAP SD-WAN)	V/C Vendors SD-WAN	VPN	MPLS/T1
Fee	$0 (Subs-Free)	$300 to $1000+ / monthly	Expansive VPN equipment	$300 to $1000+ / monthly
MPTCP	Y	Y	n/a	n/a
WAN Opt.	Y	Y	n/a	n/a
HQ cost	50% cost saving	Cost saving	$$$	$$$
IPSec Perf.	Half-10Gbps	100 Mbps to Gbps	100 Mbps to Gbps	n/a
Benefit	Business growth freely	Cost up while biz grows	Bottleneck and re-infra again	Extremely cost up while biz grows

QuCPE for virtualization

The Playbook

The PLAYBOOK



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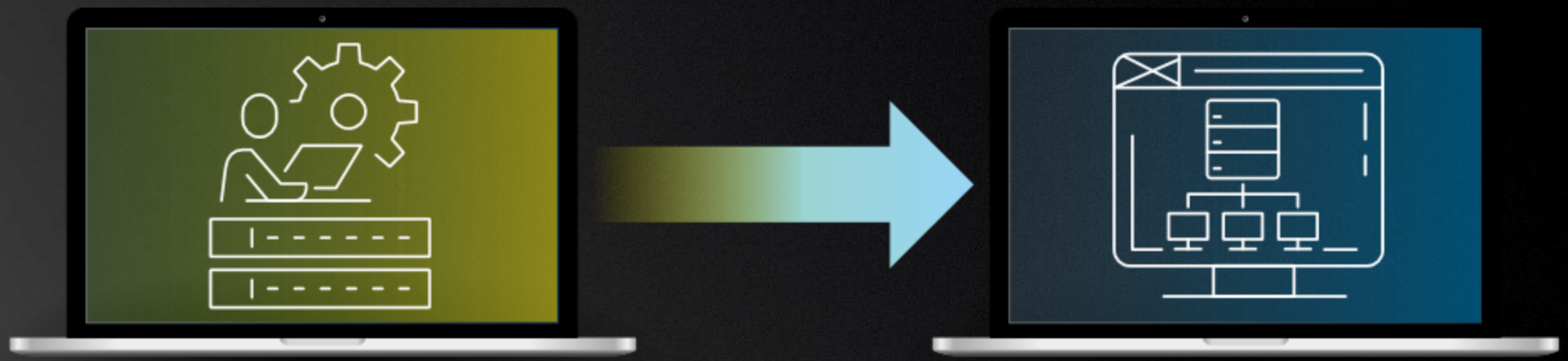
Still manage a messy network?
Virtualized your network

Two steps to virtualized network
Network Manager & Service Composer



Network Manager

- Assign physical ports for VNF
- Optimize performance by OVS-DPDK

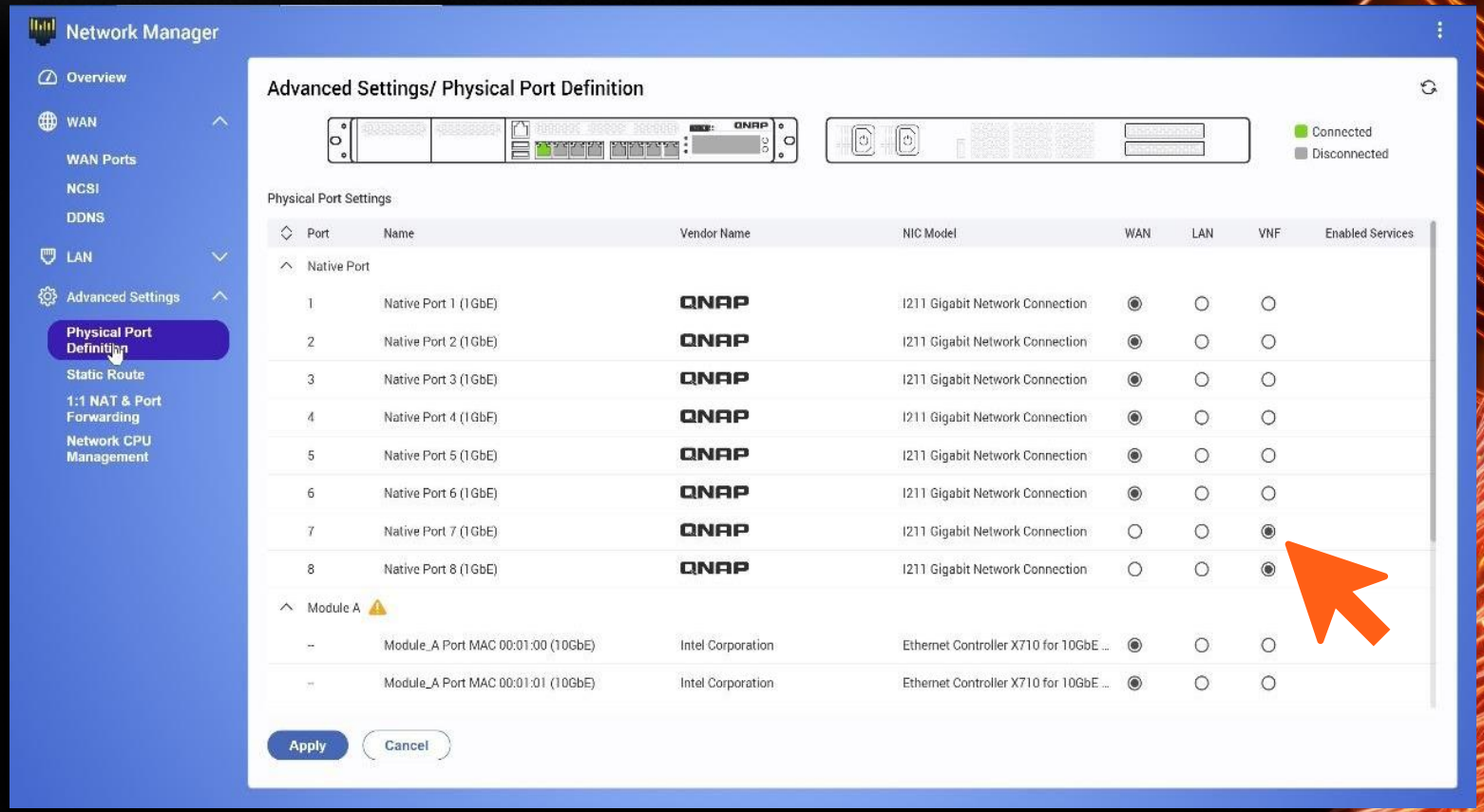
Service Composer

- Construct virtualized network
- Plan and edit your network

Terminology : VNF (Virtualized Network Functions)

Network Manager – VNF ports

Assign connected physical ports to VNF (Virtualized Network Function) ports

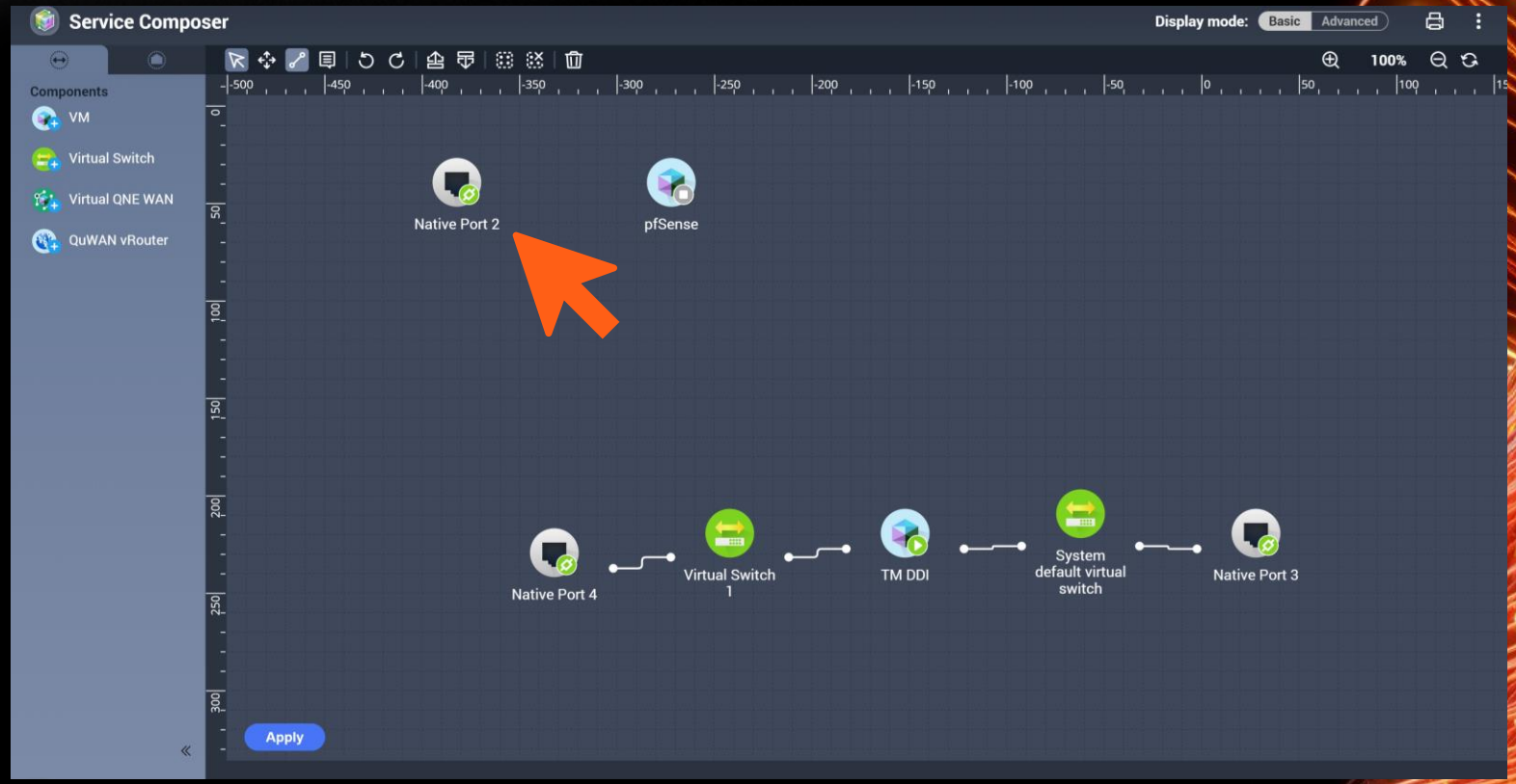


Service Composer (1)

Service Composer

Mouse drag and drop the

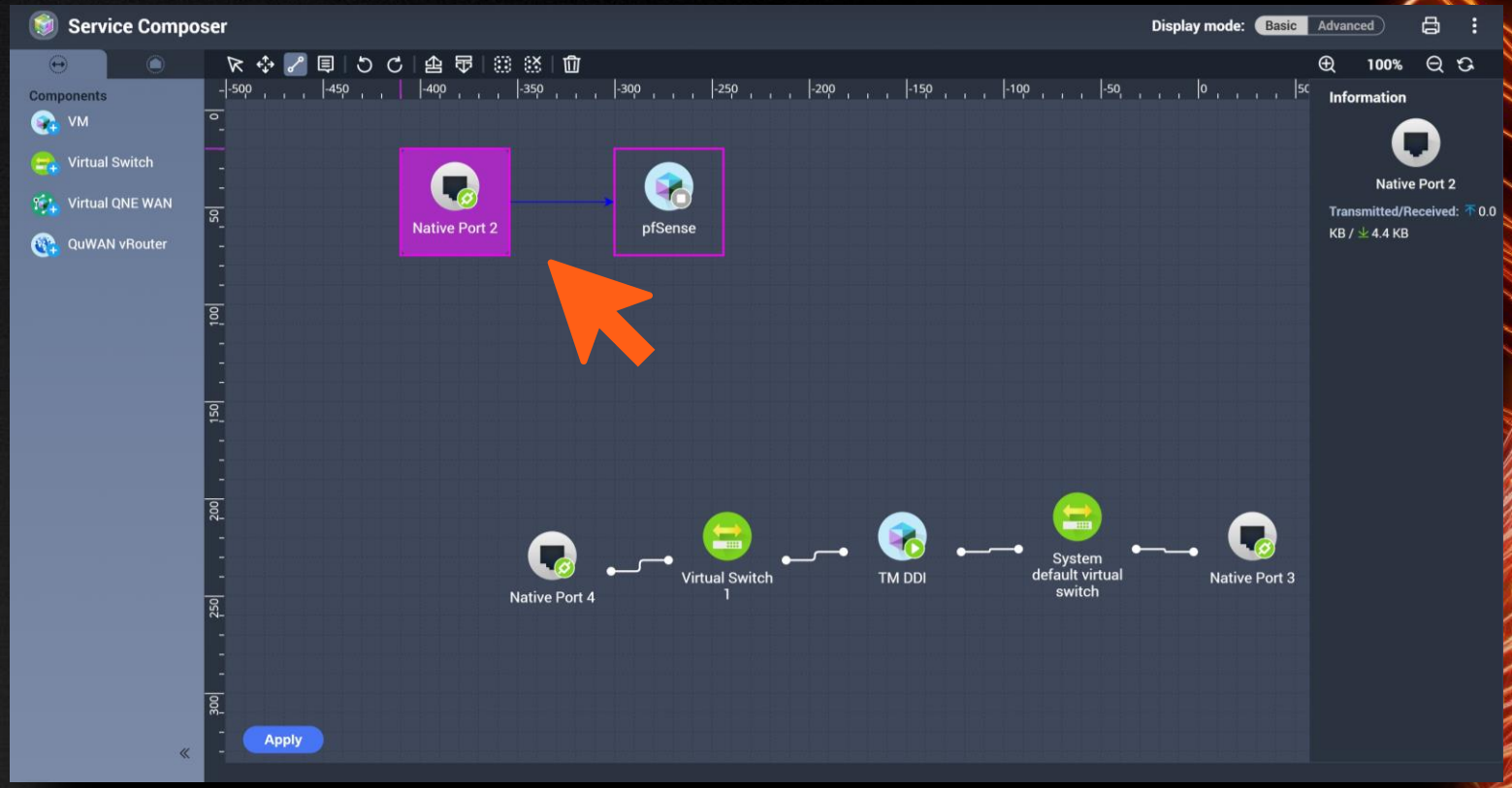
VNF port to right



Service Composer (2)

Service Composer

- Setup the pFsense
- Add “connection” line to VNF ports
- Start the “VM service”



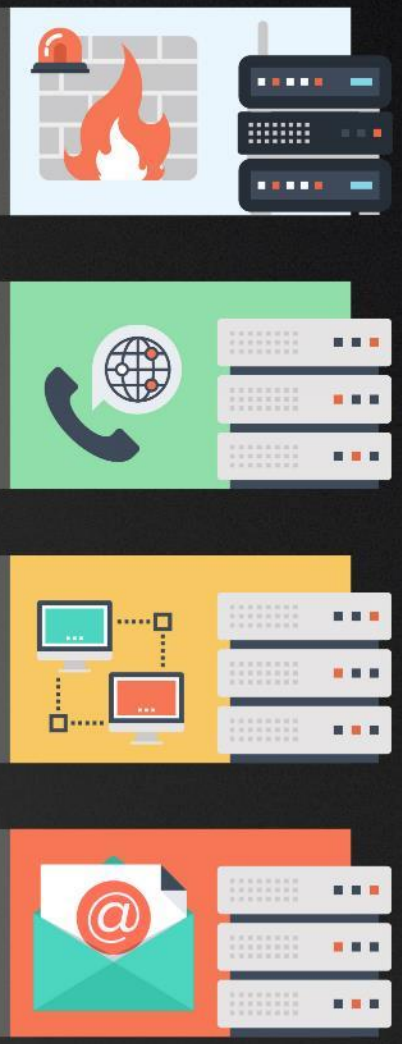
Network appliance and server virtualization

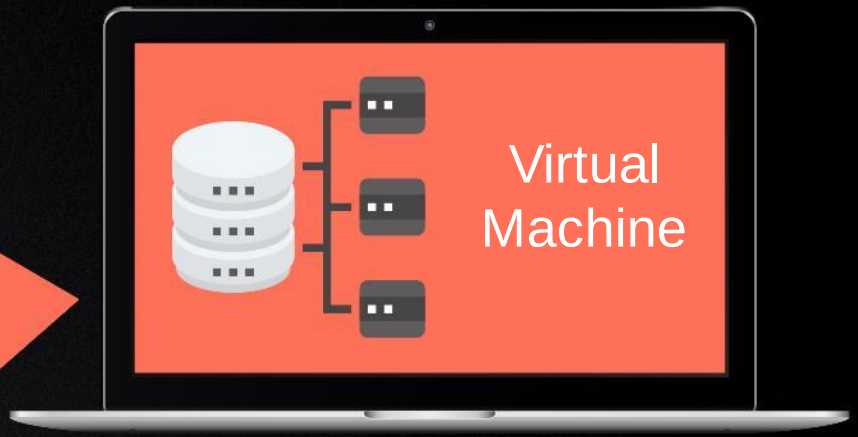
Firewall

IP-PBX

Business Server

Email Server





Virtualization Station

Container Station

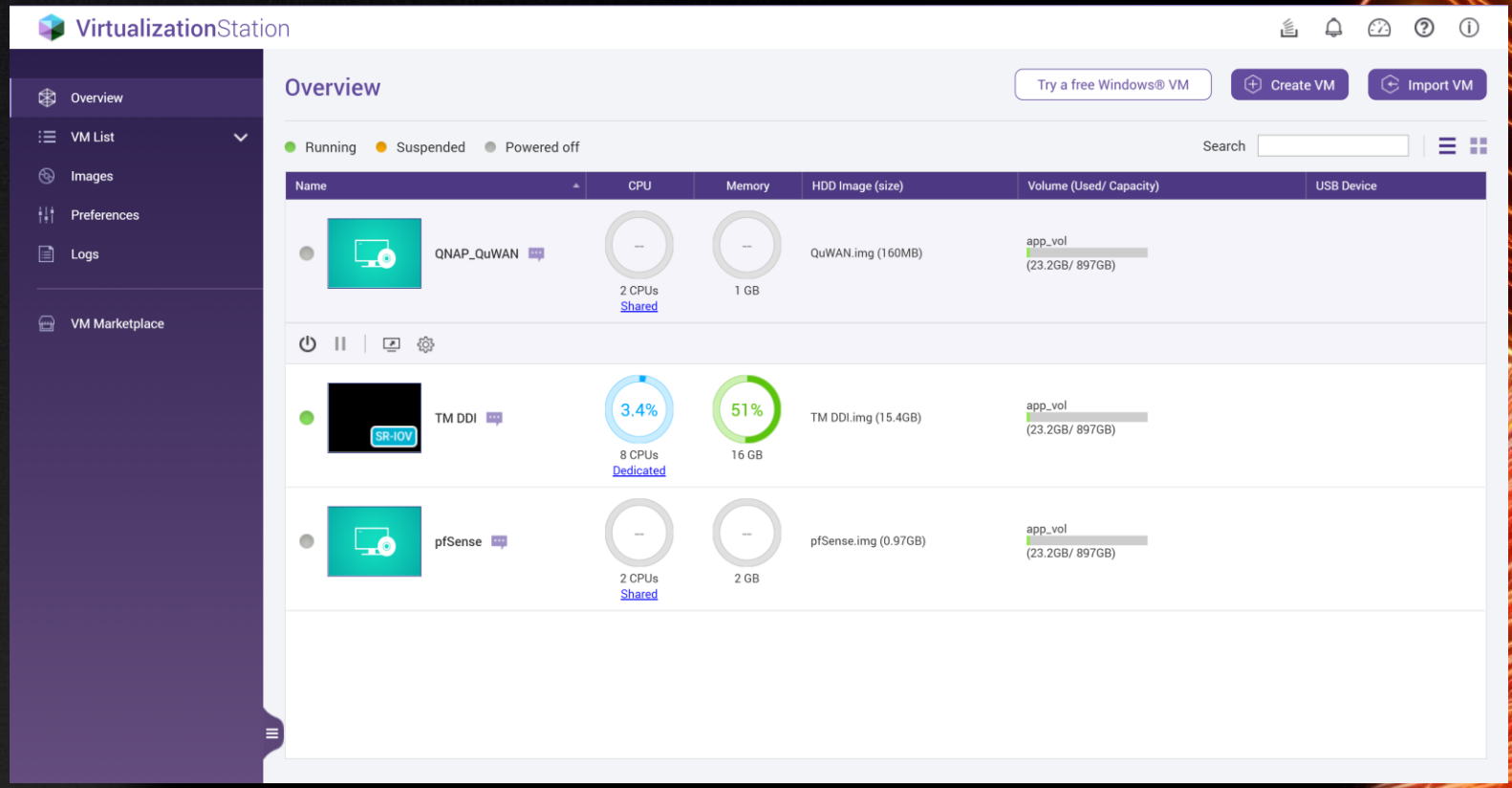
Virtualization Station (1)

Virtualization Station

Manage all virtual machines

Overview

- VM status overview
- Configure resources for VMs



Virtualization Station (2)

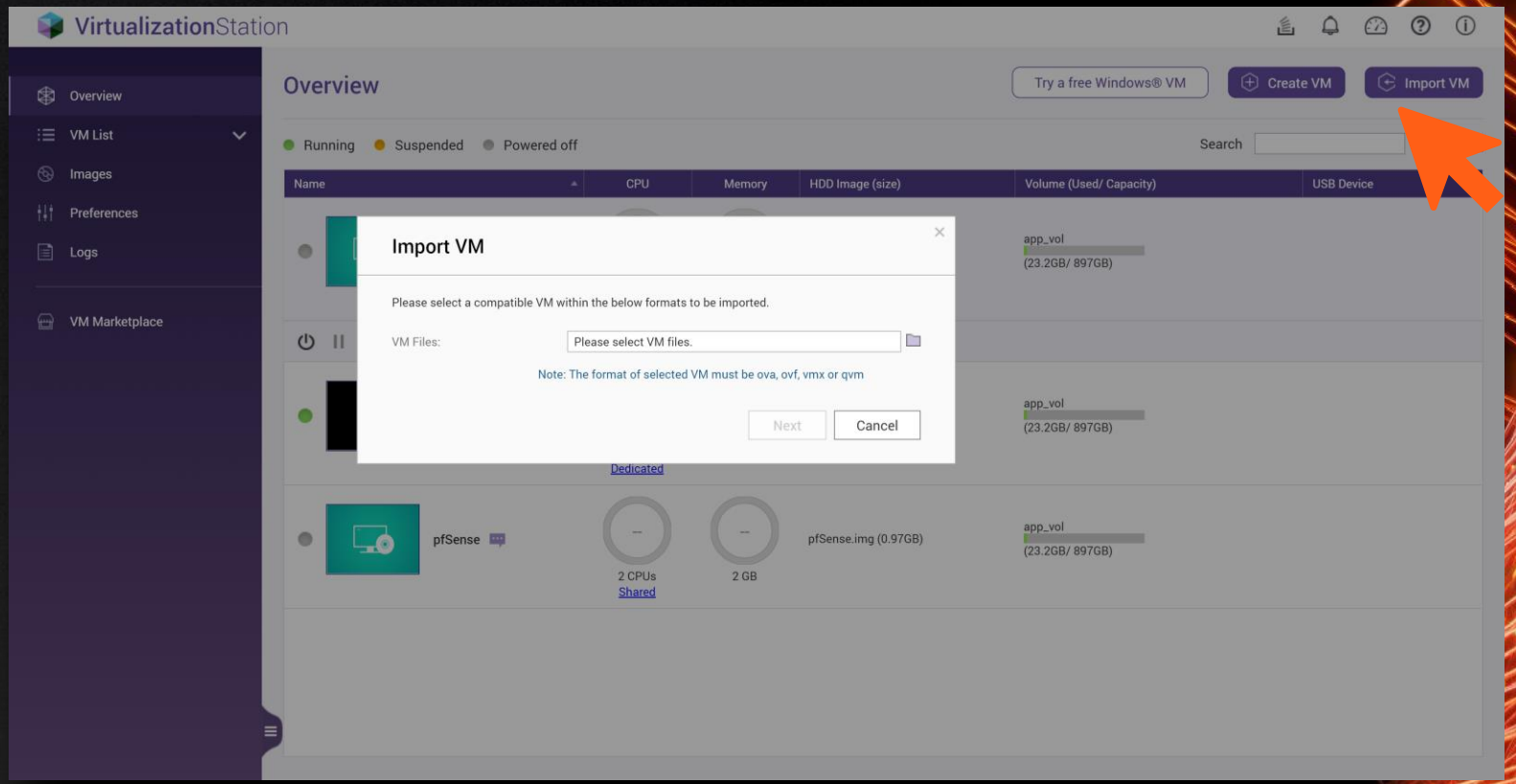
Virtualization Station

Manage all virtual machines

Import or build your VMs

- Upload installation ISO
- Or Import the VMs

  Support ova, ovf, vmx, qvm



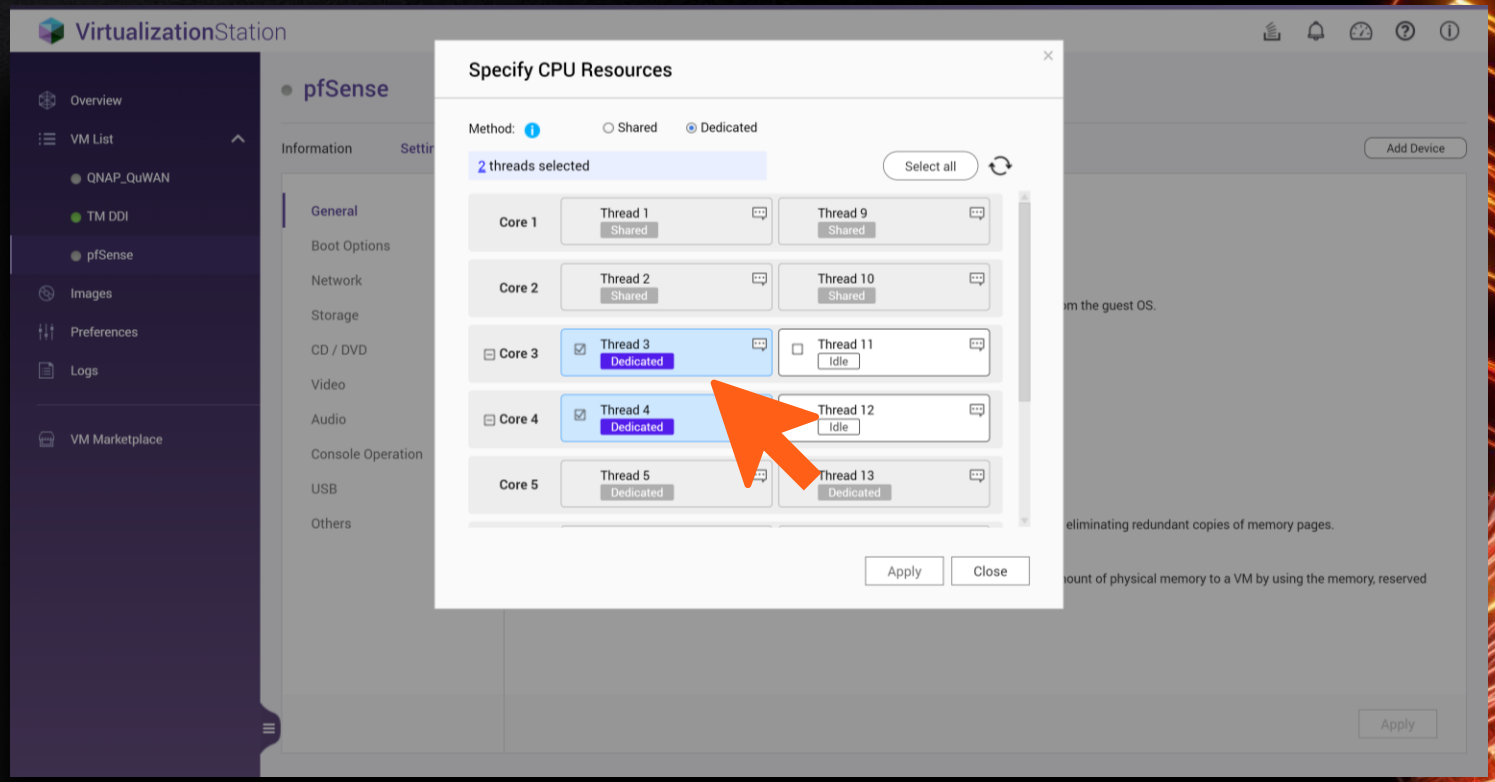
Virtualization Station (3)

Virtualization Station

Manage all virtual machines

CPU Pinning

- Assign dedicated CPU for critical VMs (services)



Network performance acceleration

OVS-DPDK

Accelerate packet processing speed in between physical / virtual networks

SR-IOV

Accelerate 10Gbps+ Smart NIC via SR-IOV Best-in-class passthrough for Smart-NIC

Intel @ QAT

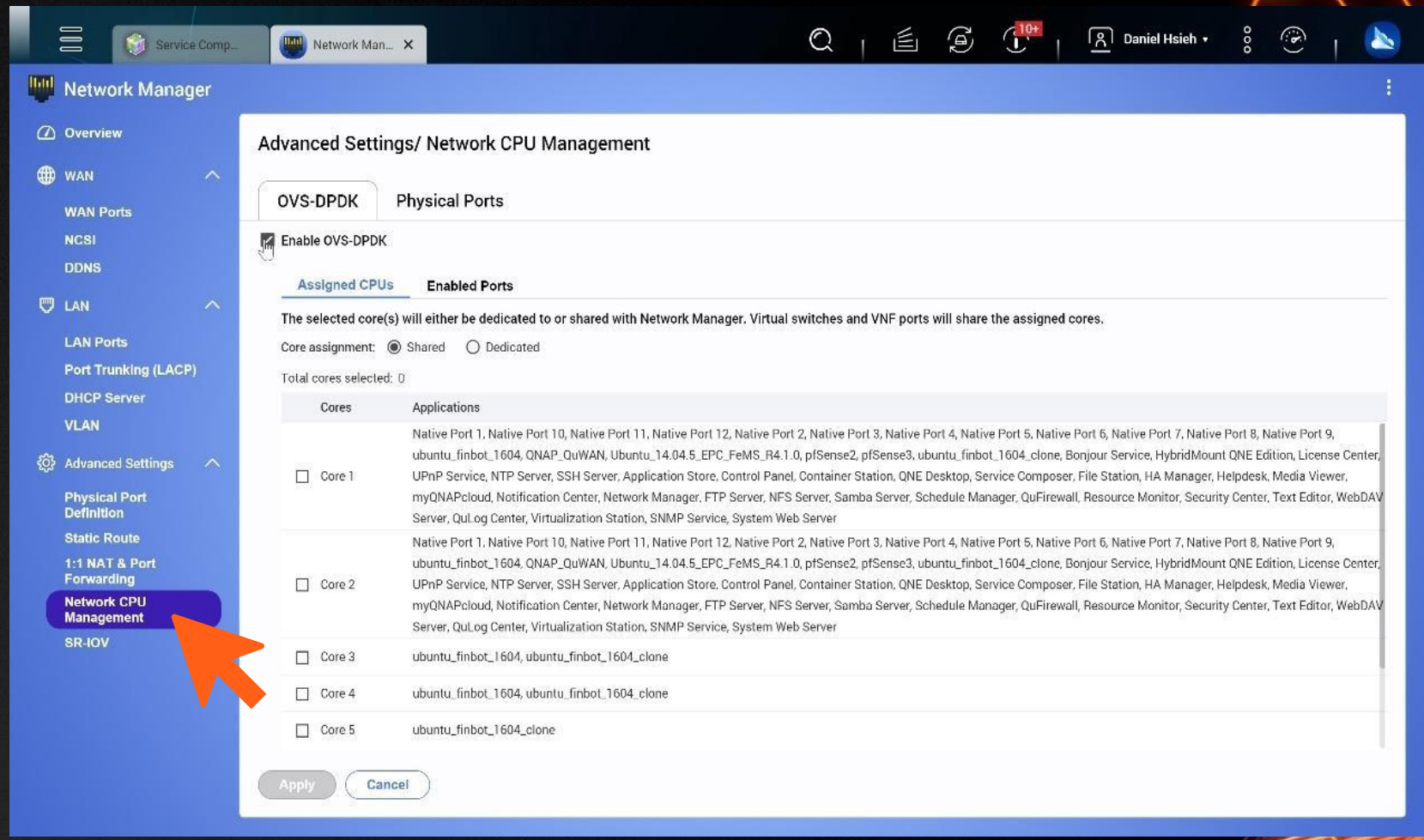
Speed up QuWAN or IPSec encryption and decryptions

*Note: QuCPE-7010-D2123IT-8G model has no Intel QAT support

OVS-DPDK

OVS-DPDK

- Open vSwitch DPDK: Accelerate packet processing instead of kernel stacks
- Performance acceleration by assigning CPU cores

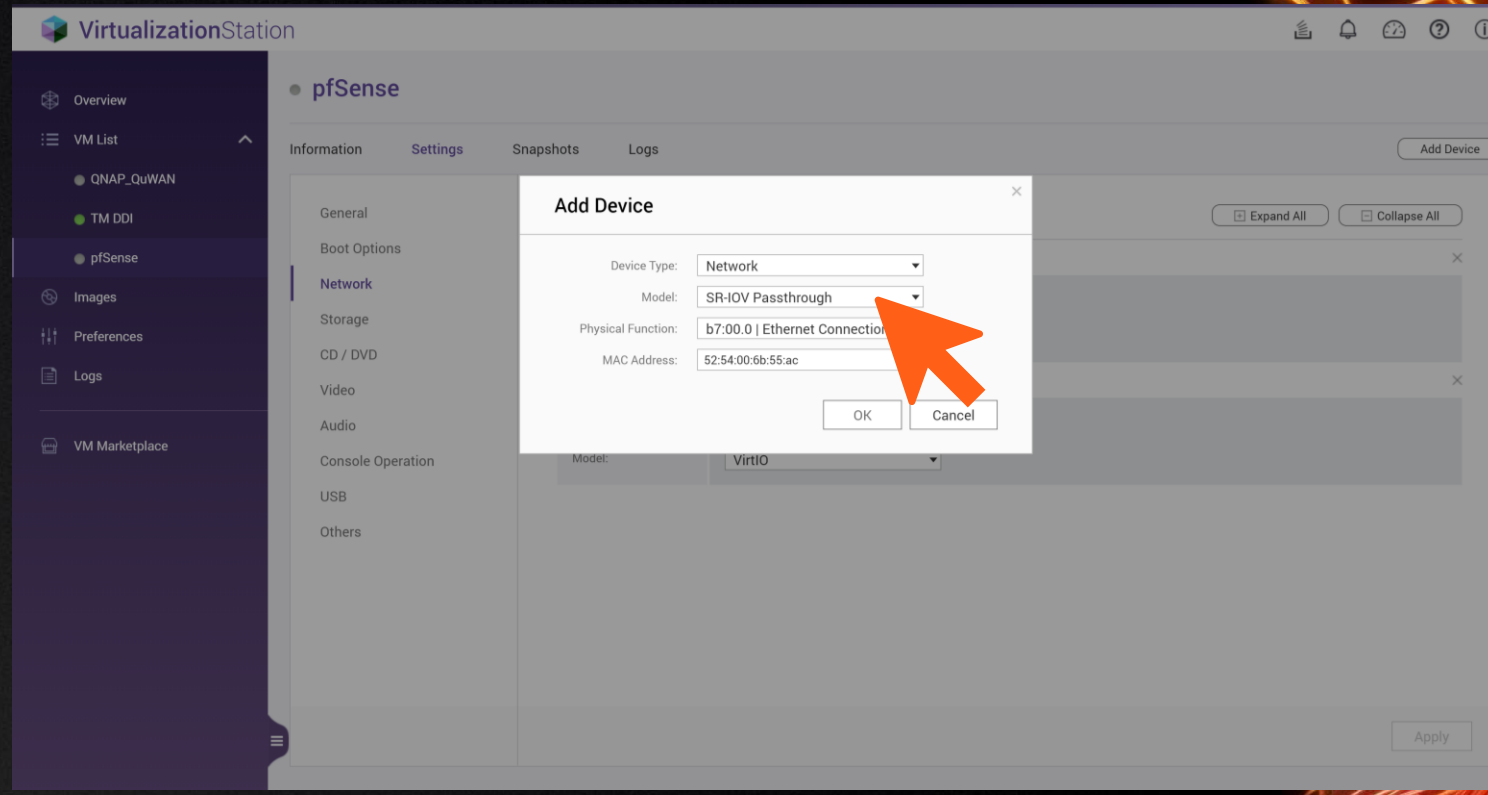


More information of DPDK: https://zh.wikipedia.org/wiki/DPDK

SR-IOV

Single-Root Input / Output Virtualization

- Accelerate Smart-NIC to gain best multiple-Gbps performance
- Virtualization Station >
  - Network
  - Add Device - Smart NIC
  - Set it as SR-IOV passthrough



***Note**: SR-IOV could be enable on compatible NIC which include QuCPE-7010 10GbE SFP+ and 10GbE/25GbE expansion network module

The PLAYBOOK

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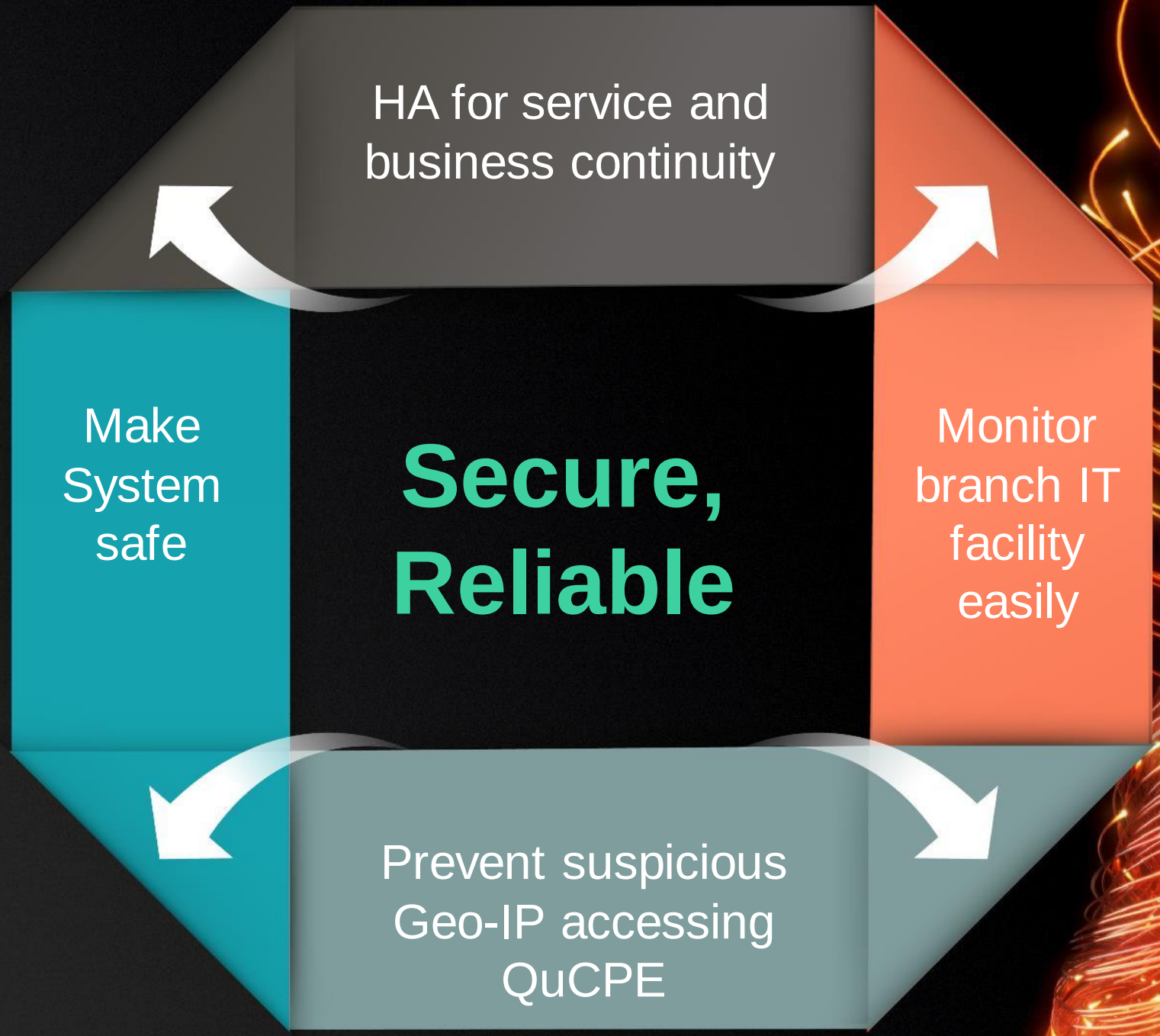
Security and reliability

Lean IT budget for

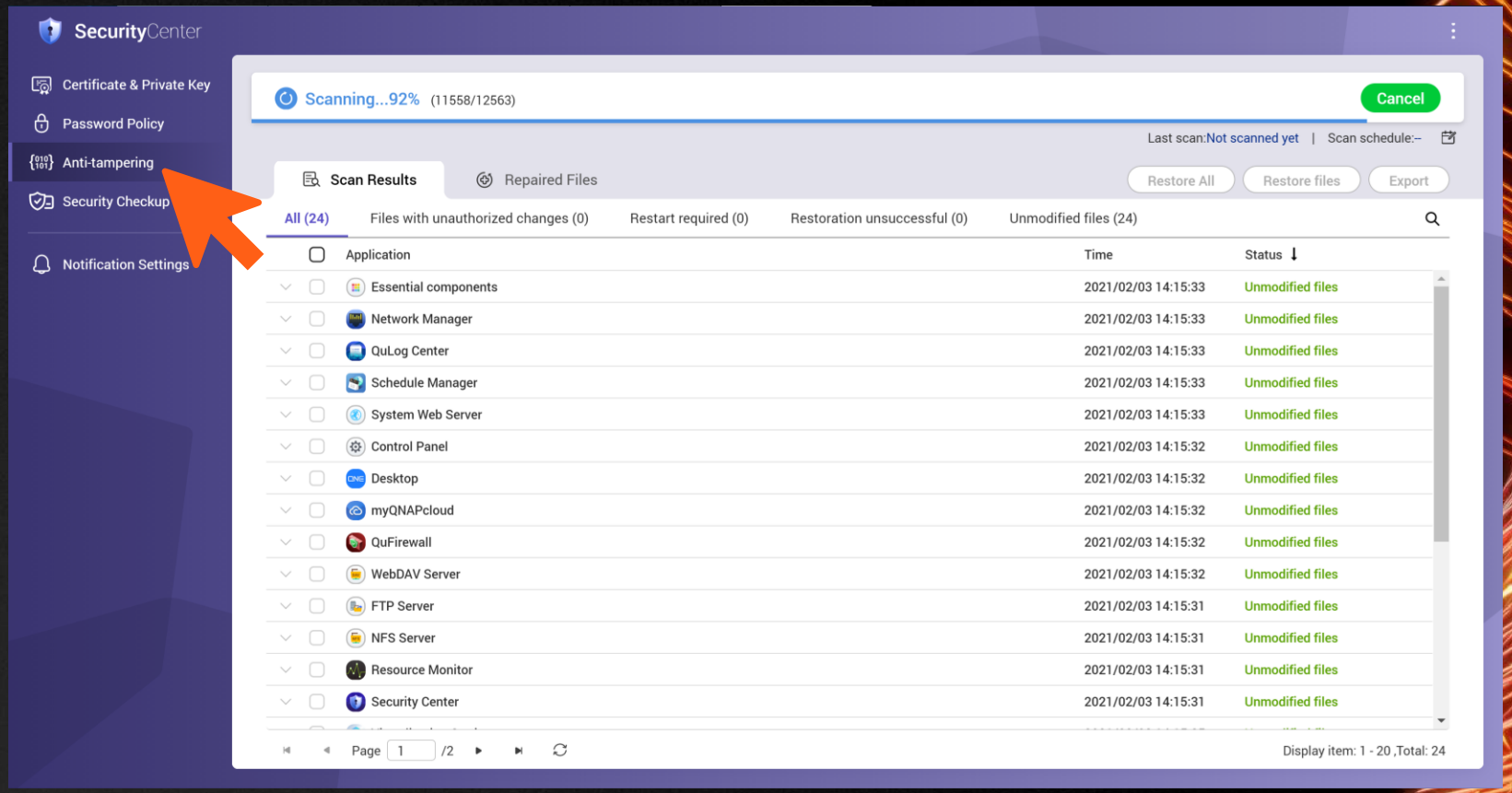
operation



Security Center – Anti-tampering

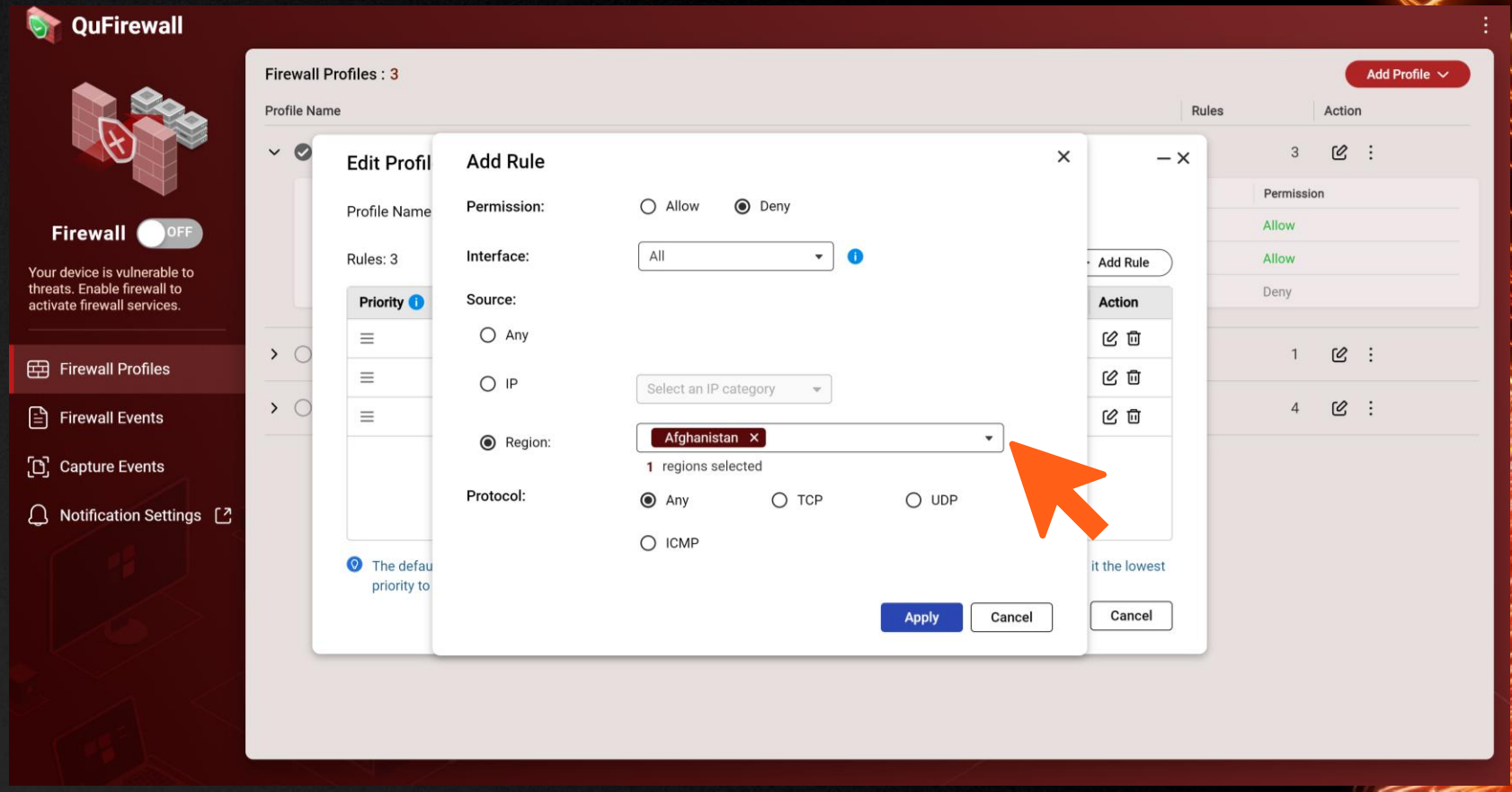
Anti-tampering

- Technologies to validate system integrity
- Prevent system being hacked and hidden for further attacks



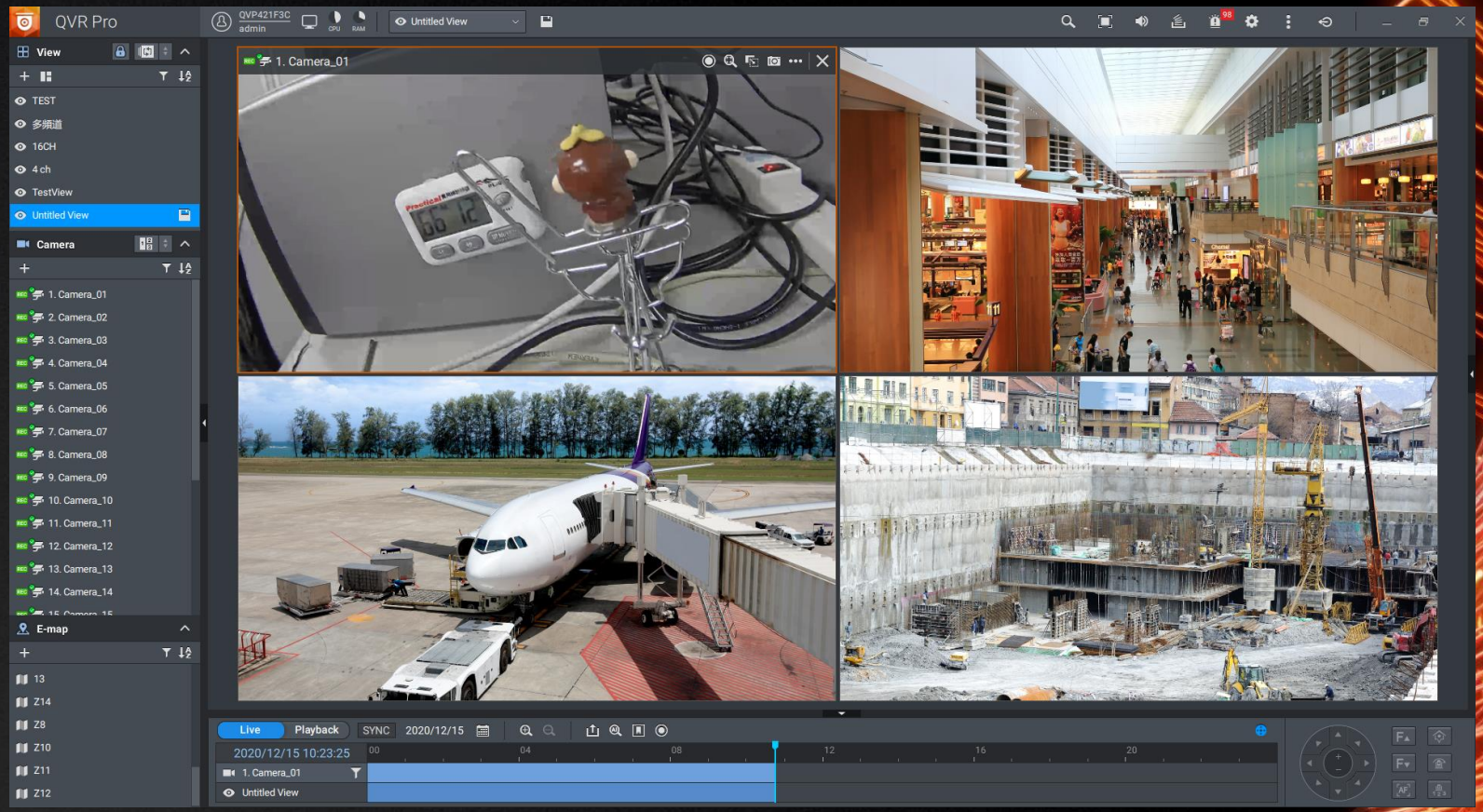
QuFirewall

- Firewall for QuCPE / QNE
- Prevent the suspicious access from certain regions
- Easily apply default rule by QuFirewall templates



QVR Elite – Branch or IT facility surveillance

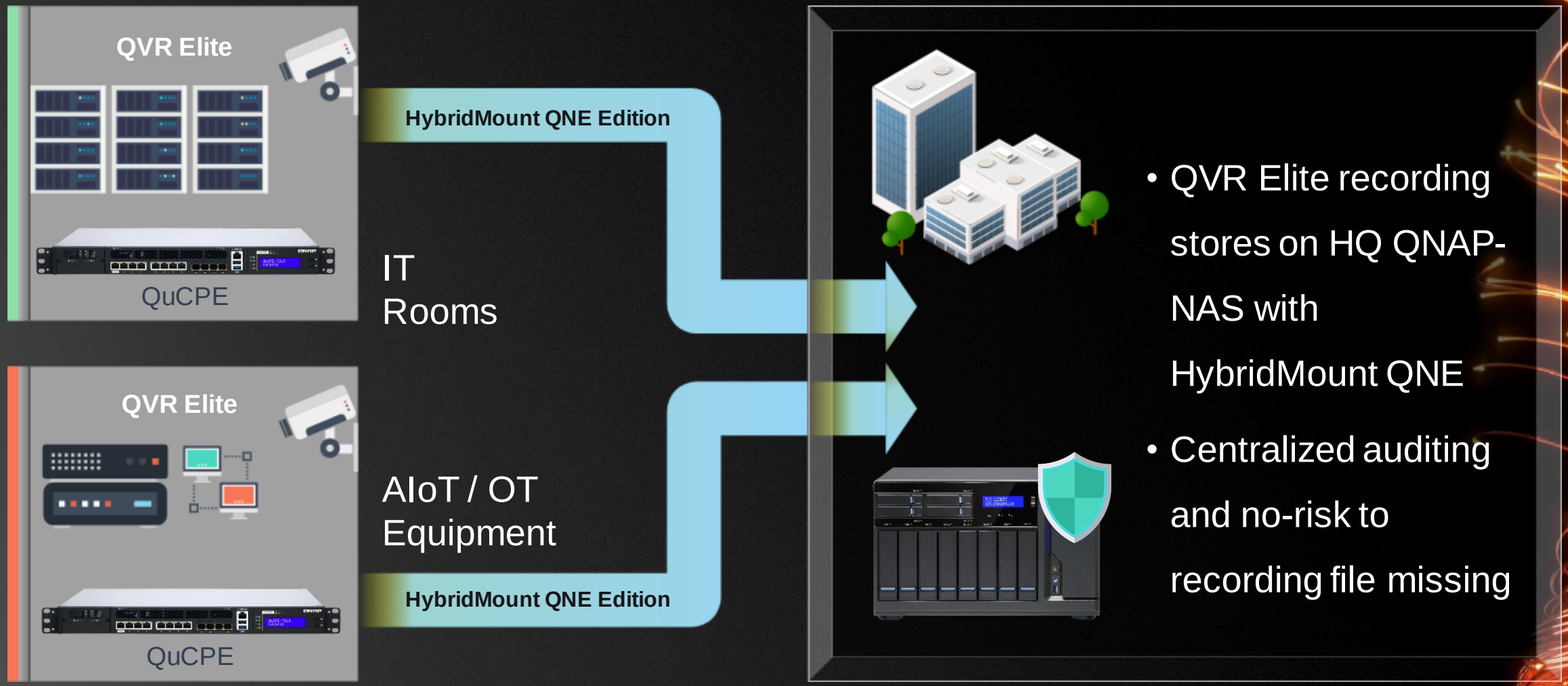
- Support 5,000+ IP Camera
- Easily setup and monitor IT facilities / rooms in the branches
- Budget-free for surveillances *(1) & *(2)



***Note 1**: QVR Elite (estimated) to release by 2021/Q2

*Note 2: QVR Elite support 2 channel / IP camera as free-of-charge

QVR Elite + HybridMount QNE Edition



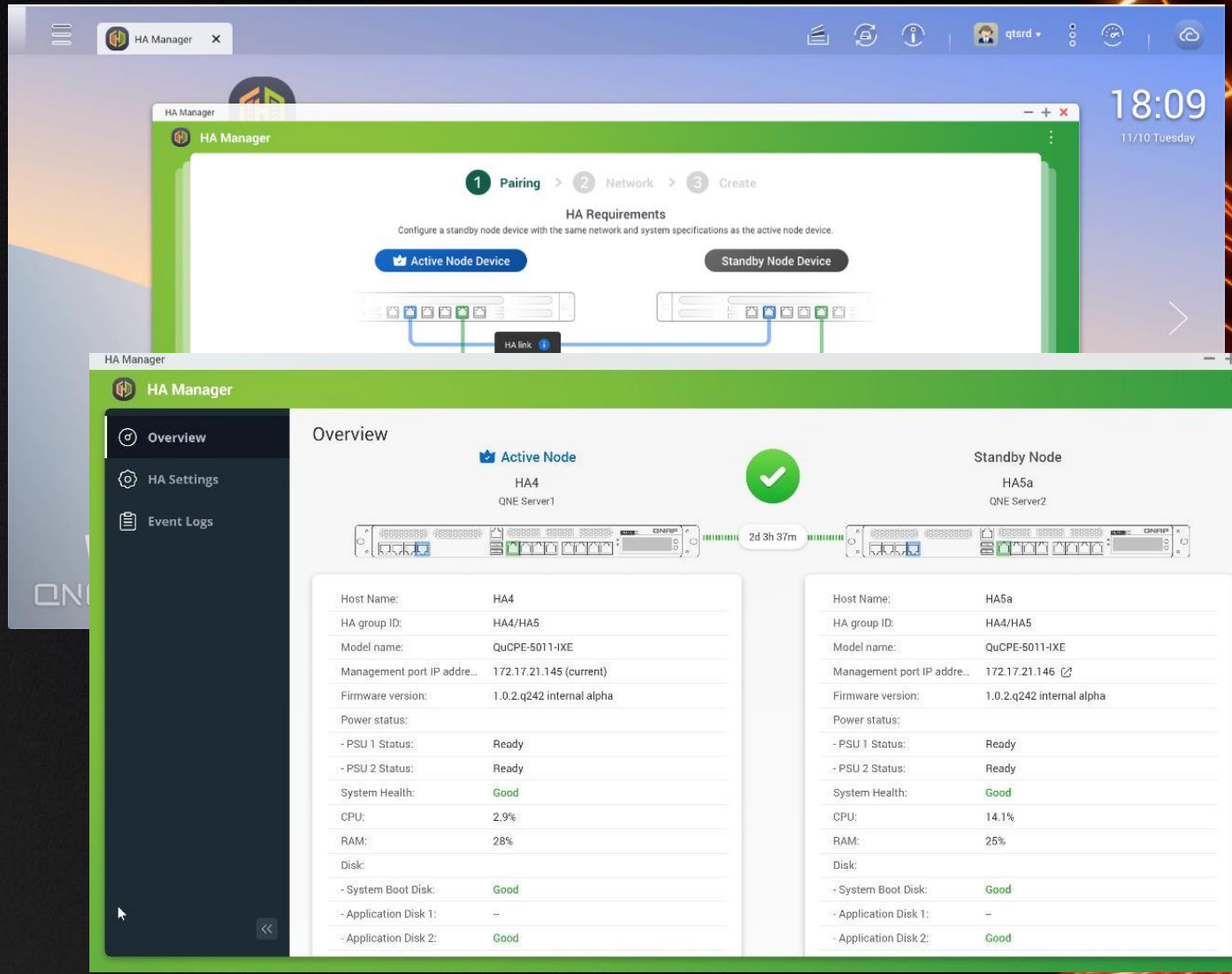
HA Manger – High availability of QuCPE

HA Manager will auto-sync the data of VM/Containers
From Active to Standby

*** Note:** HA function (estimated) release by 2021/Q2

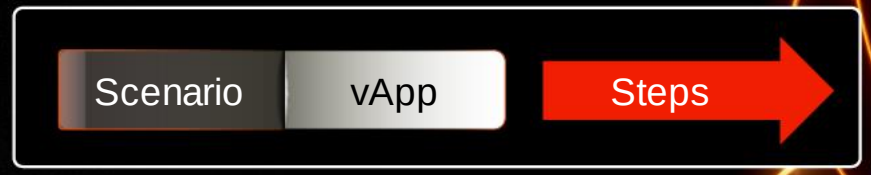
HA Manger

- Wizard guides all setup
- Clear status of current HA setup and active / standby machine (QuCPE)



*** Note:** HA function (estimated) release by 2021/Q2

The PLAYBOOK



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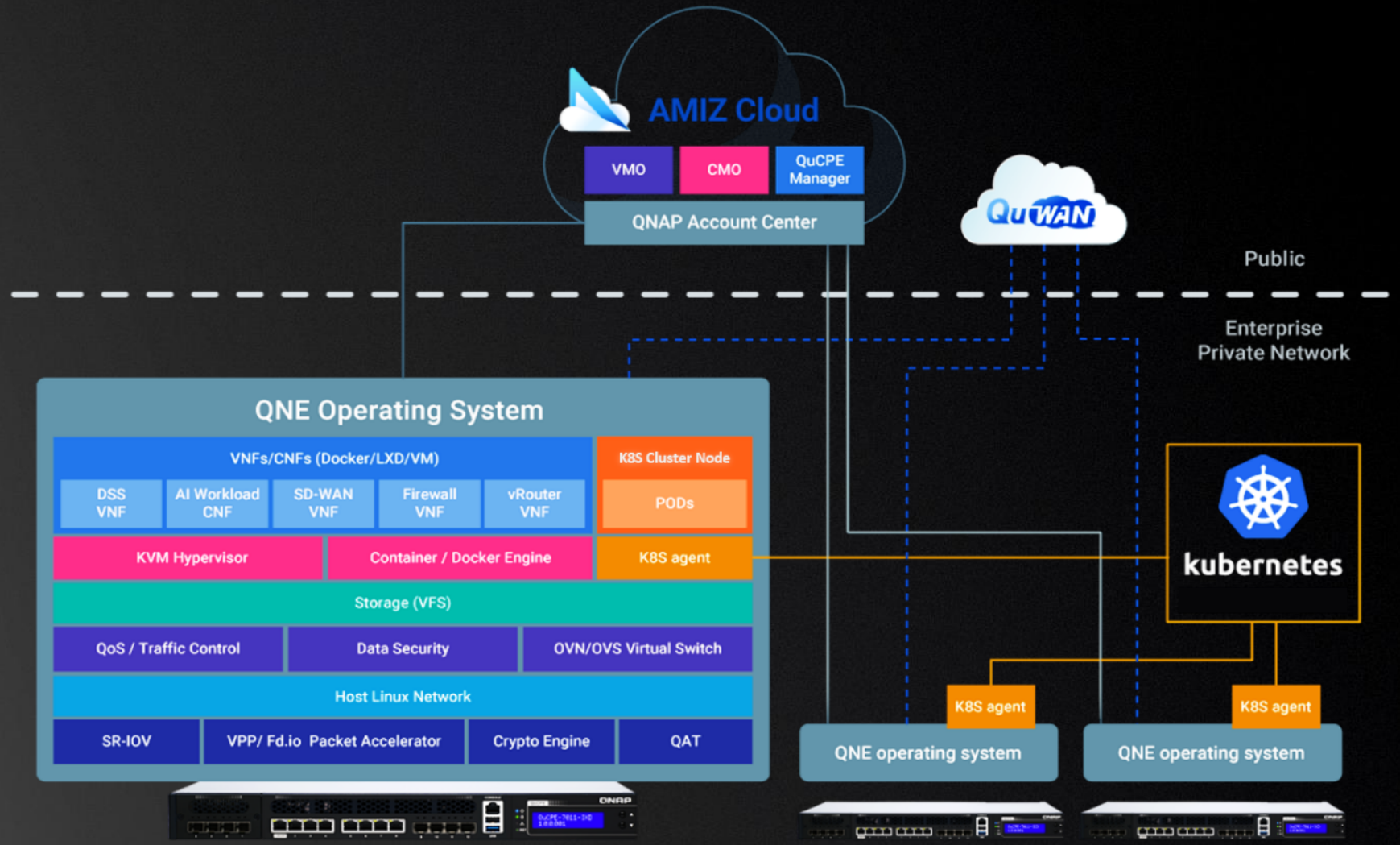
AMIZ Cloud

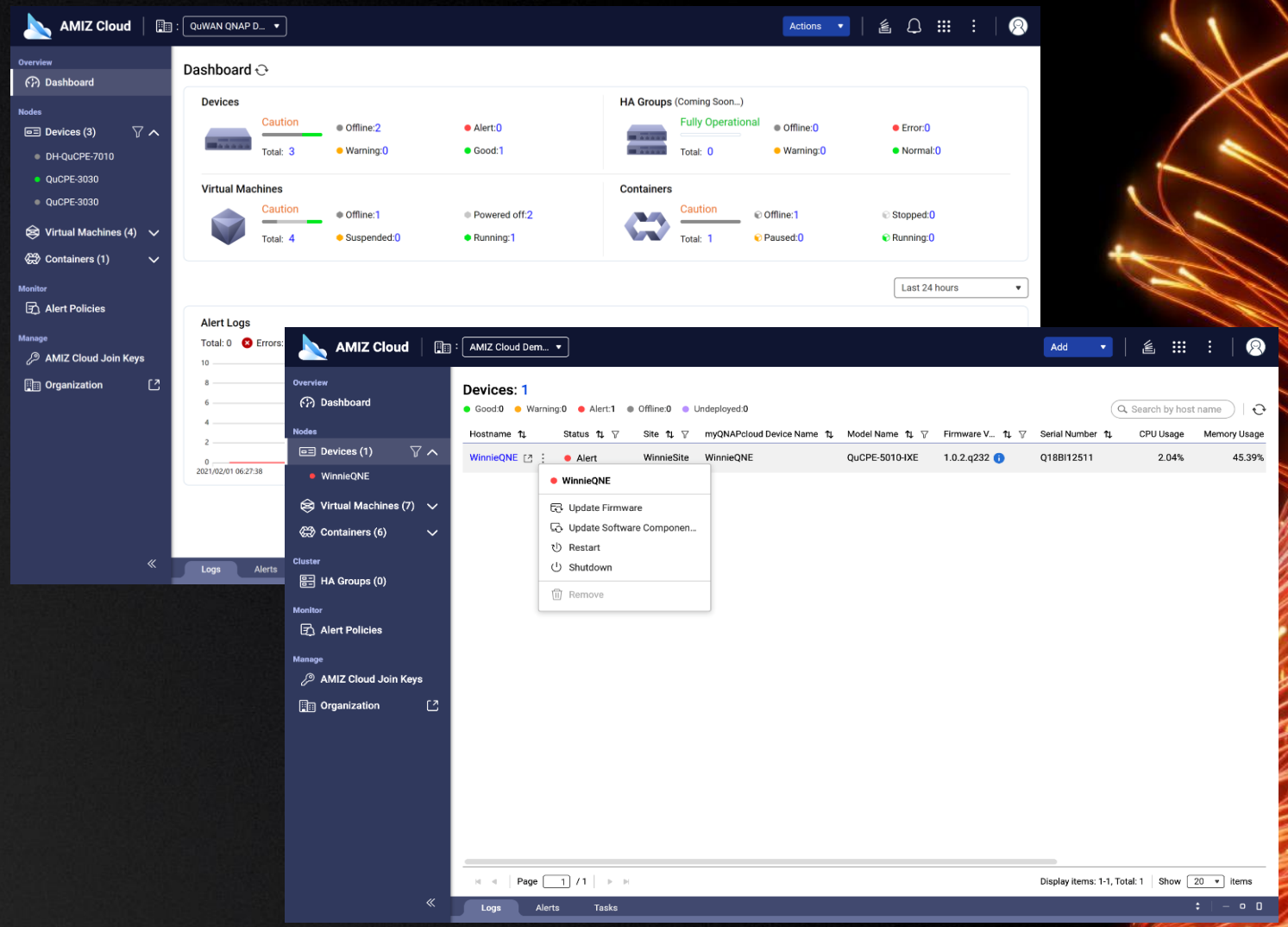
Manage QuCPEs across multiple sites or organizations



Overview all QuCPE status from AMIZ Cloud

AMIZ Cloud monitors

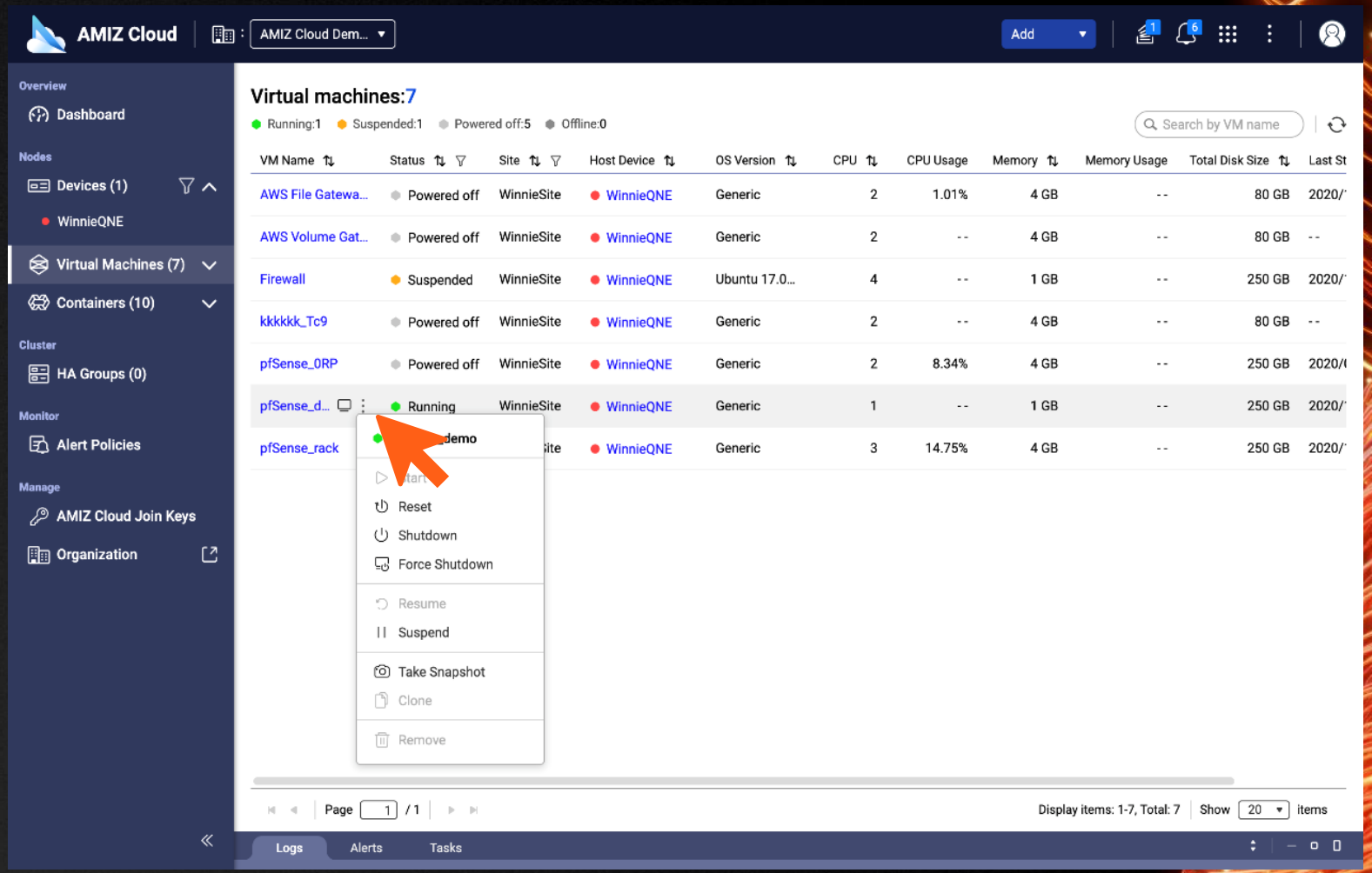
- QuCPE alerts / warnings
- All managed QuCPE list
- Upgrade firmware or restart the machine, etc.



VM and Containers management

Manage VM/CM @ Cloud

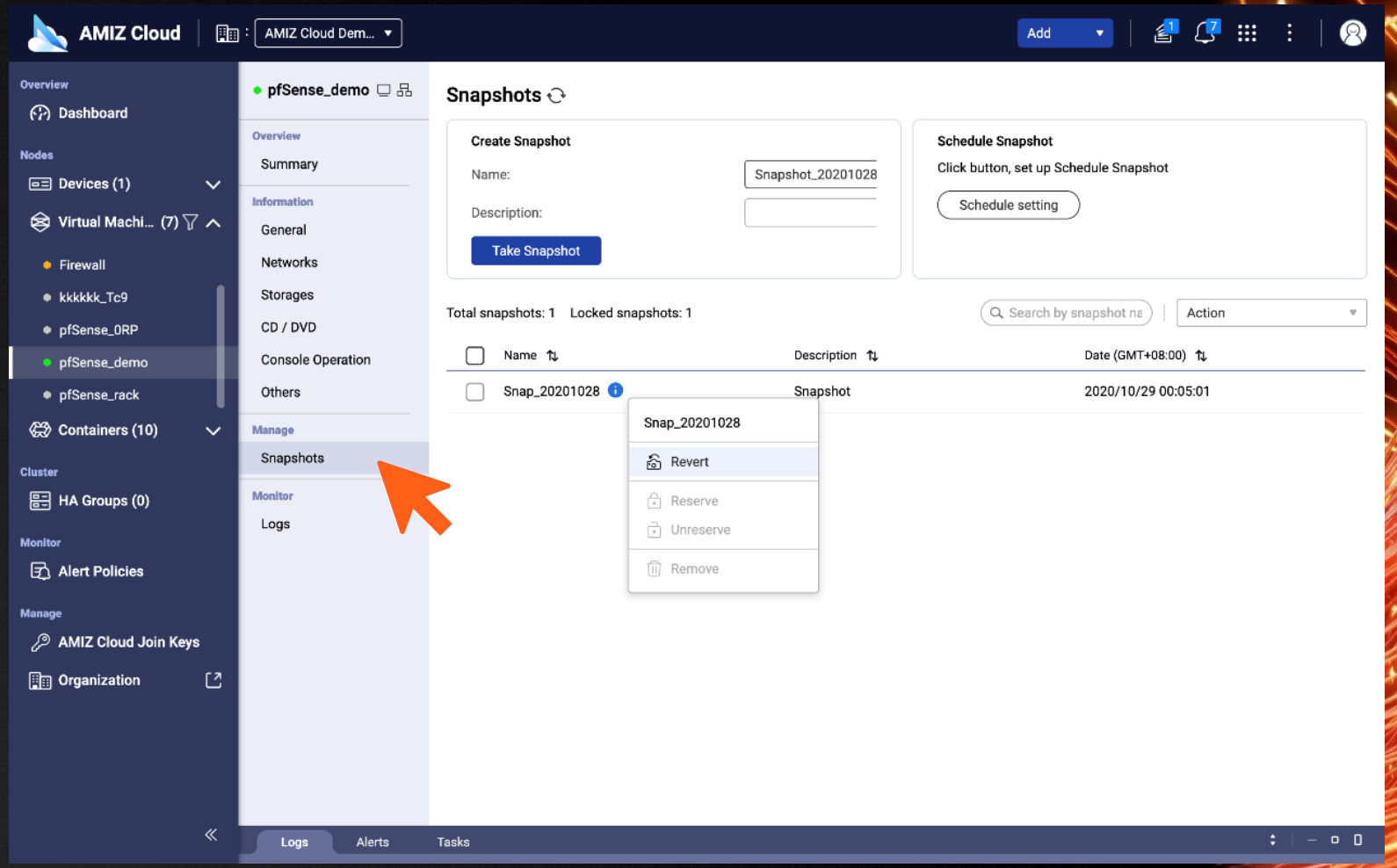
- Online/upgrade/shutdown (virtualized) service from cloud
- Create a service VM / container from cloud



Restore service: Snapshot

Snapshot over cloud

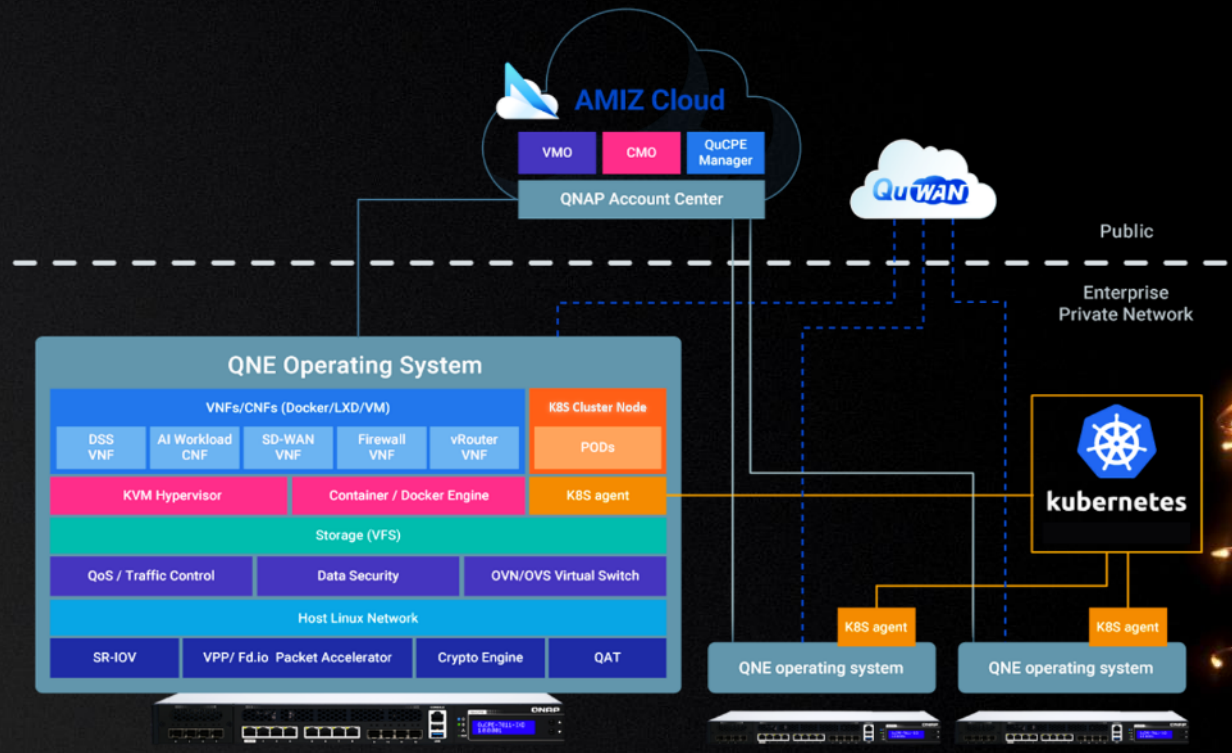
- Snapshot before service production
- Restore the production service in-time over cloud



Kubernetes integration for edge services

Manage and deploy services to Edge

- Seamless service deployment to QuCPE at edge
- Service management through Kubernetes *1



*Note: K8S Agent / Integration release date is estimated by 2021/Q2
*More information about Kubernetes：https://zh.wikipedia.org/zh-tw/Kubernetes

QNAP

QuCPE 7010

SD-WAN / VNF / Intel Xeon® D

10G Network Virtualization Equipment