
TECHNICAL DECISION MAKER PRESENTATION

Cisco Catalyst 8000 Edge Platforms Family

Prepared as a convenient PDF reference for network planning, platform evaluation, and procurement discussions.

Source presentation: Cisco. Layer23-Switch added this cover and closing resource page. Cisco and related marks belong to Cisco Systems, Inc. This material may include historical roadmap content; verify current specifications, lifecycle status, licensing, and availability before purchase or deployment.



Catalyst 8000 Edge Platforms Family TDM

Jan 2020

It's a Multicloud World



Journey to Cloud

Fueled by Technology Transformation

Multicloud



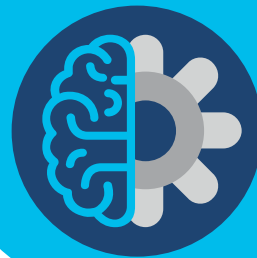
“Cloud migration will continue to accelerate the adoption of SD-WAN”
- Markets & Markets

5G, Edge Compute



“5G Enterprise Market is expected... CAGR of over 42% during the forecast period (2020-2025)... pushing toward the industrial revolution 4.0”
- Mordor Intelligence Report

AI/ML Insights



“By 2022, 72% of network strategists project using AI-enabled predictive insights or prescriptive remediation”
- Cisco VNI Report

Facilitating more service acceleration at the edge in a multicloud world

Powered by secure cloud scale SD-WAN

Cisco's flexible architecture for Intent-based Networking

Any Deployment



On-premise | Cloud | Multi-tenant
Automation | Network Insights | Machine Learning | AI
Open | Programmable | Scalable

Any Service



Multicloud
Optimization



Multi-Layer
Security



Analytics



Voice



Multi-Domain
IBN Policy

Any Transport



Satellite



Internet



MPLS



5G/LTE

Any Location



Branch



Colocation



Cloud



Remote Work



Cisco Catalyst 8000 Edge Platforms Family

Cloud

VNF

Catalyst 8000V



SRIOV
Hypervisor/Cloud

Headend

QFP

x86

Catalyst 8500



User Centric
Design



Branch

x86

Catalyst 8300



Catalyst 8200



Built on Cisco's Innovative Hardware & Open IOS-XE

Building Blocks

Third Generation QFP ASIC Innovation



The image shows a square, metallic Cisco ASIC chip. It features the Cisco logo at the top, followed by the text "© 00-1083-02", "964142 ES", "L842F021", and "MY". At the bottom, the part number "M8BG455600220" is visible.

- 2X queues**
256k
- Up to 2X NBAR**
Up to 80Gbps
- Inline crypto**
Up to 133Gbps
- 3X CEF**
Up to 189Gbps
- 8X DRAM**
32M CGN | 6M FW Sessions

Integrated L2 MAC

Compact, Powerful
100/40/10/1 GE

Enhanced QoS/Buffering
Ingress classification, oversubscription

Security
WAN Macsec

Time Sensitive Networking
IEEE 1588*

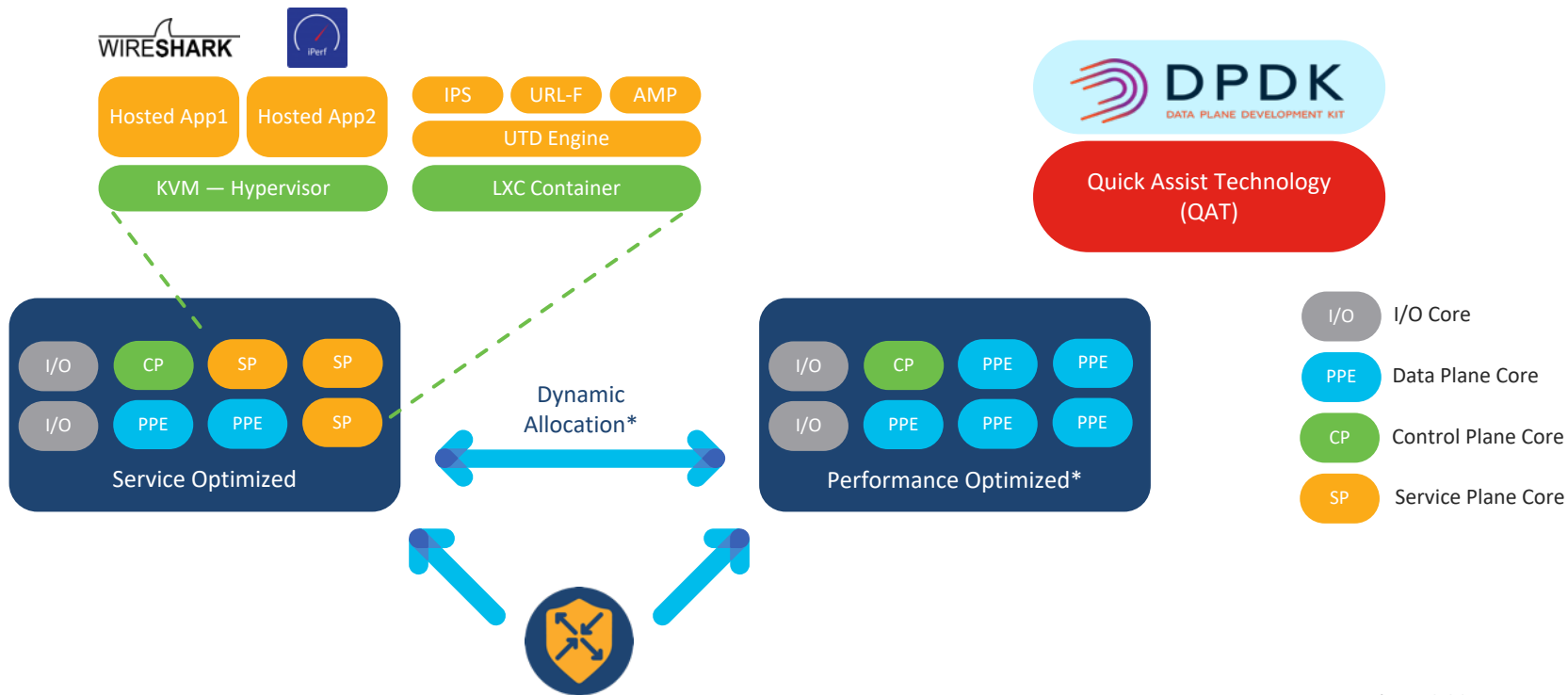
* not supported in sw yet

Scalable & Programmable ASIC – Adapts to the New Technologies



X86 Multi-core CPU

x86 System on Chip (SoC) Architecture



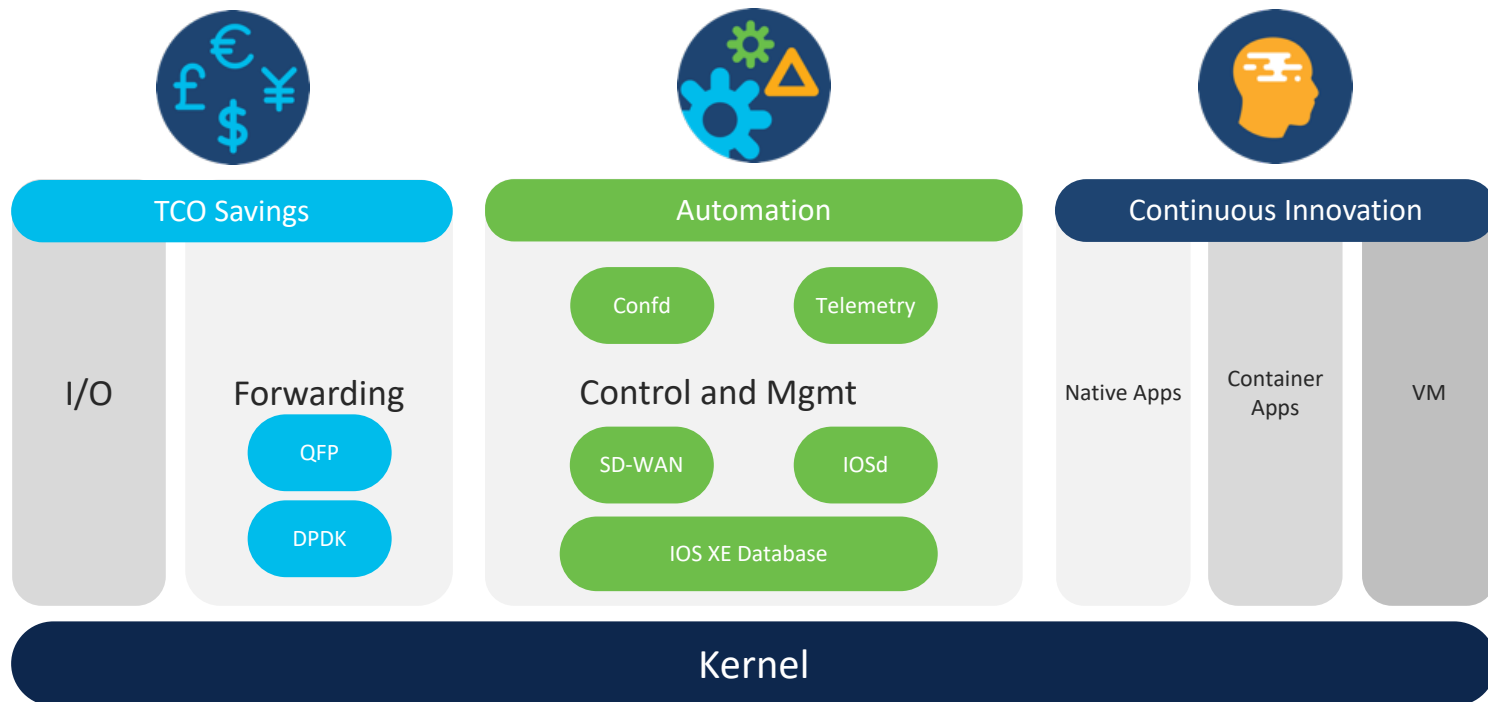
* Available in XE 17.4.1a

Flexible Core allocation – meet throughput and services demand



Open and Extensible IOS
XE

Open IOS XE — A Modern Operating System



Open, Model Driven & Secure Operating Systems

Catalyst 8000 Edge User Centric Design

Catalyst 8K Family with Built-in Radio Frequency Identification (RFID)



Passive Ultra High Frequency (UHF) RFID

Locating the device easy

Good read range: 1 to 4 meters

Industry standard: ISO

18000-6C compliant



Inventory Management (Tracking) has never been Easier



Catalyst 8K Family – Label Tray



Label Tray



A plastic strip contains

Product ID
Serial Number
CLEI

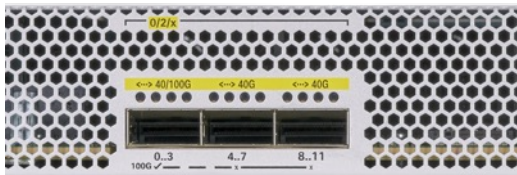
TAN
MAC and
Hardware version number

QR code encoded above info

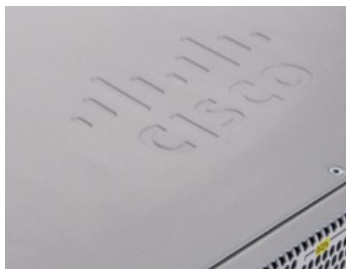
Inventory Management (Tracking) has never been Easier



Catalyst 8K Family – Industrial Design & Ergonomics



**Circle Pattern
Hex Packing**



**Satin Aluminum Based
Textured Finish**



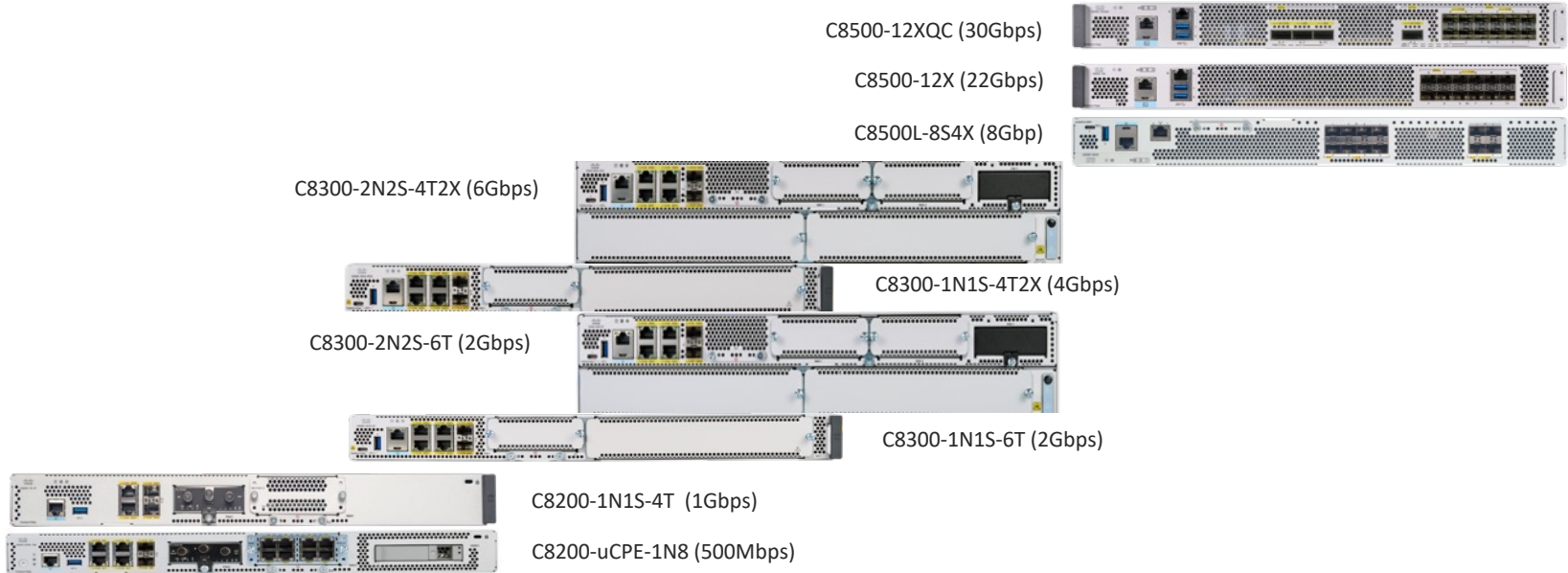
**Rounded Frame
4 mm**

Cisco Catalyst 8000 Edge Platforms Family

The Leading SD-WAN Edge Platforms with Rich Services



Performance and Rich Services



Scalable Architecture with x86 and QFP

Number in () is SD-WAN IPsec throughput with IMIX 14



Catalyst 8500

Cisco Catalyst 8500 Series Edge Platforms

Highly Capable 1RU SD-WAN Headend

Multi-services Support

NBAR2, NAT, Firewall, QoS, etc.
Industry's Leading Service Edge Platforms

Edge Intelligence

Compute
Container based Apps



Scale

Up to 8000 SD-WAN Tunnel Aggregation
High Speed 100/40 Gigabit Ethernet Ports
High Density 10/1 Gigabit Ethernet Ports

Multi-Layer Security

High Throughput MACsec and IPsec
Trustworthy Systems

System

Cisco Catalyst
8500 Series
Edge Platform



Connectivity

All Ports
Built-In

WAN
MACsec

Third
Generation
QFP

x86 Adv. Flow
Forwarding

5G
Ready

Manageability

vManage

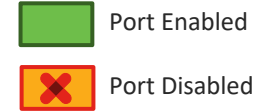
Multi-tenant

Open APIs

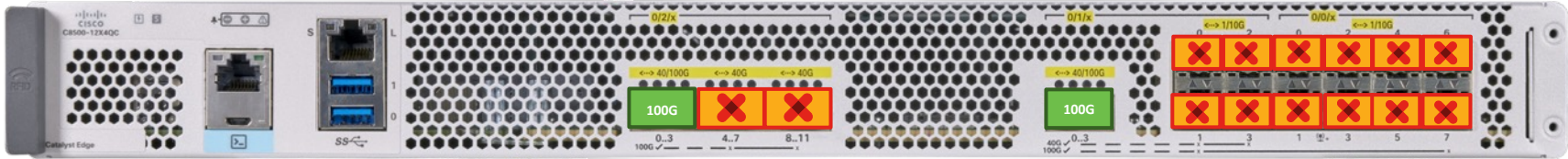
Analytics

100G, 40G Connectivity Options (i)

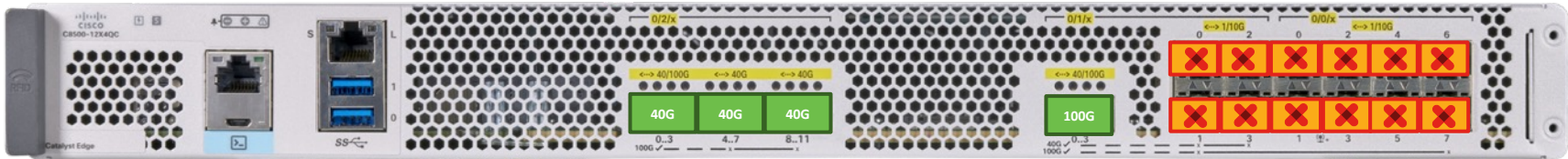
C8500-12x4QC



Option 1 2 x 100G



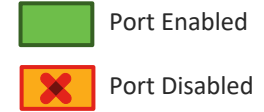
Option 2 1 x 100G + 3 x 40G Ports



Note: For port speed change on any bay; there is an expected 1 sec traffic disruption due to backplane reset

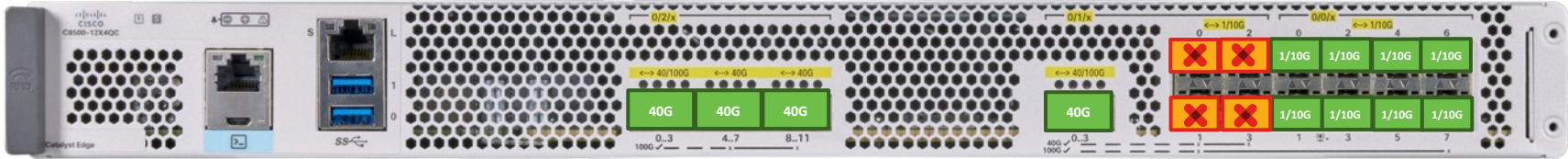
100G, 40G Connectivity Options (ii)

C8500-12x4QC



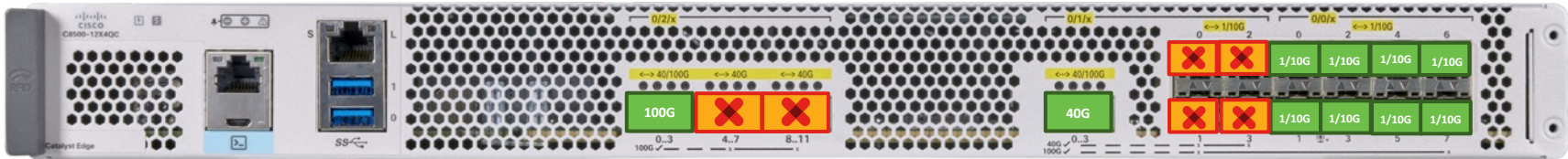
Option 3

4 x 40G + 8 x 10G



Option 4

1 x 100G + 1 x 40G + 8 x 10G



Note: For port speed change on any bay; there is an expected 1 sec traffic disruption due to backplane reset

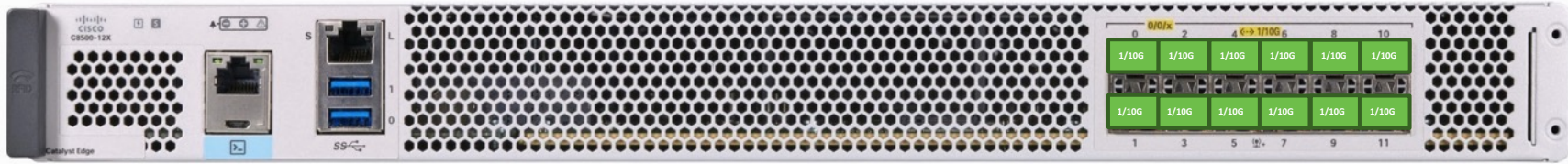
High Density 10G, 1G Connectivity Options

C8500-12X and C8500-12x4QC, C8500L-8S4X



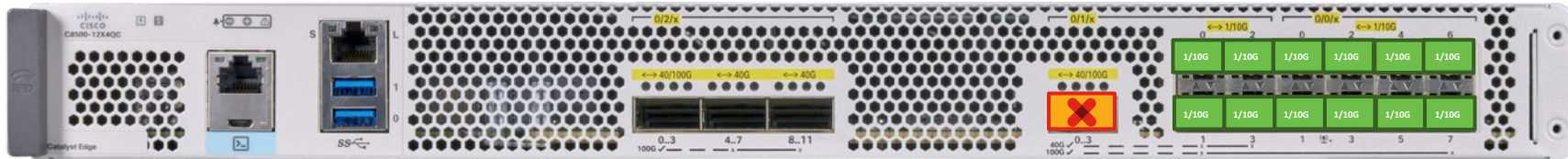
Option 5,6

C8500-12X: 12 x 1/10GE



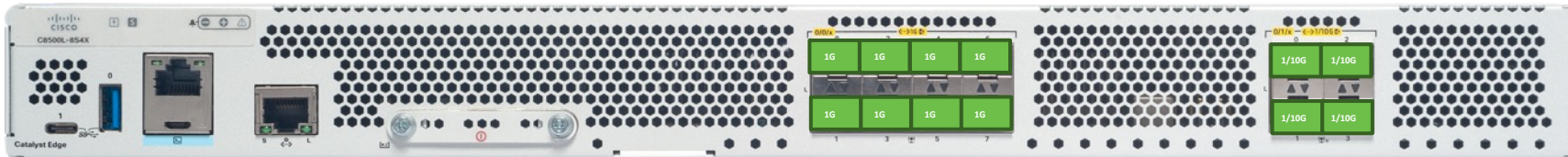
Option 5,6

C8500-12X4QC: 12 x 1/10GE

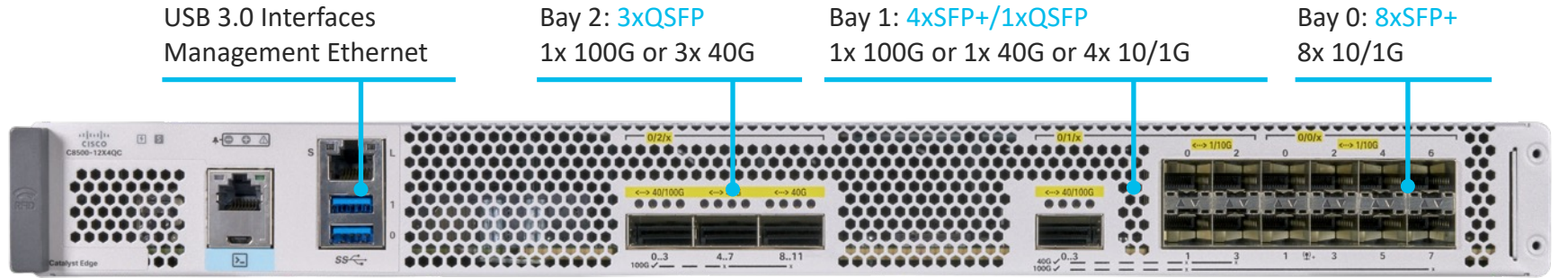


Fixed ports

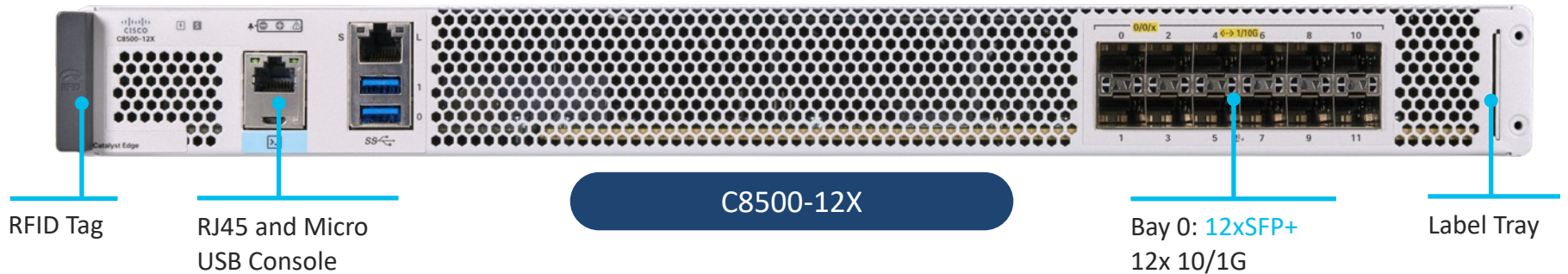
C8500L-8S4X: 4 x 1/10GE + 8 x 10GE



Catalyst 8500 Series Front View (i)



C8500-12X4QC



C8500-12X

Catalyst 8500 Series Front View (ii)

USB 3.0 Interfaces

Management Ethernet

Bay 0: 8x 1G SFP

Bay 1: 8x 10 G SFP+



RJ45 and Micro
USB Console

M.2 SSD drive

Label Tray

RFID Tag

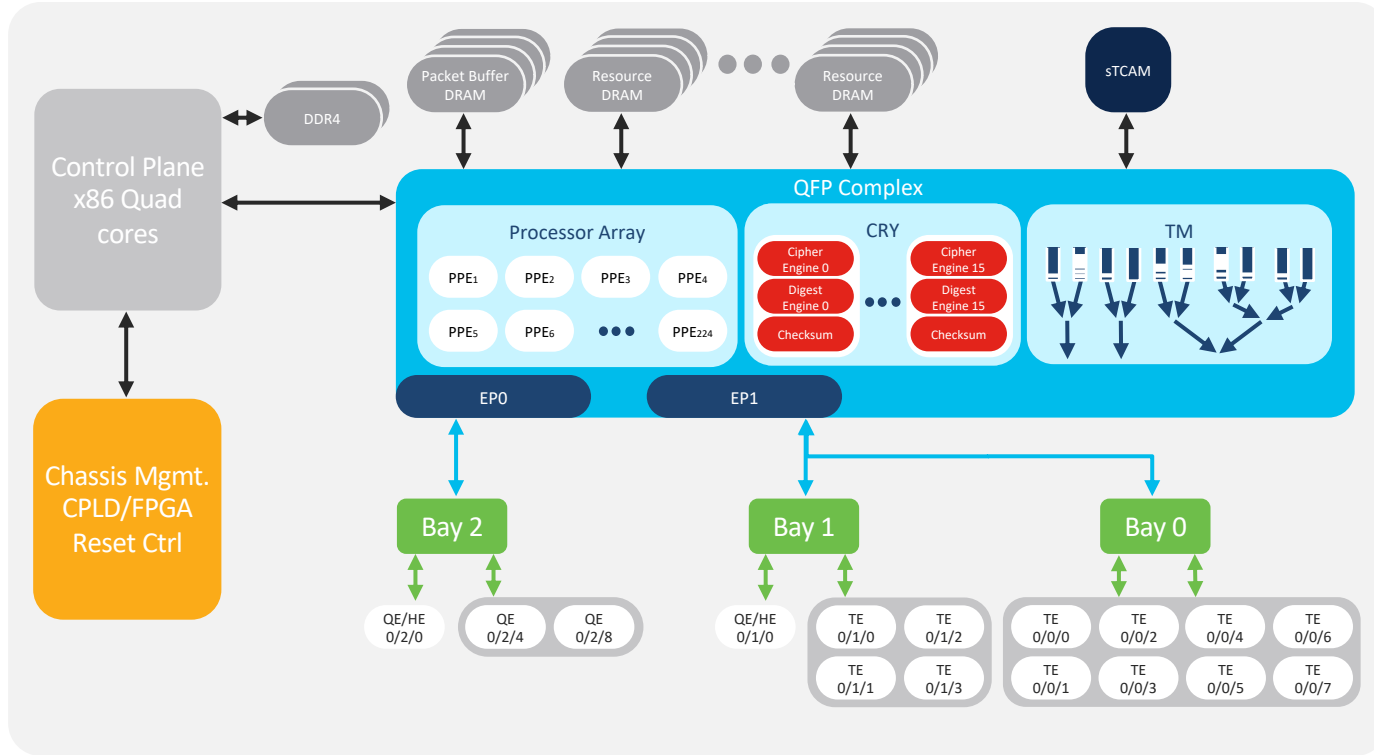
C8500L-8S4X

Catalyst 8500 Back View



C8500-12X4QC Block Diagram

Purpose Built SD-WAN Headend



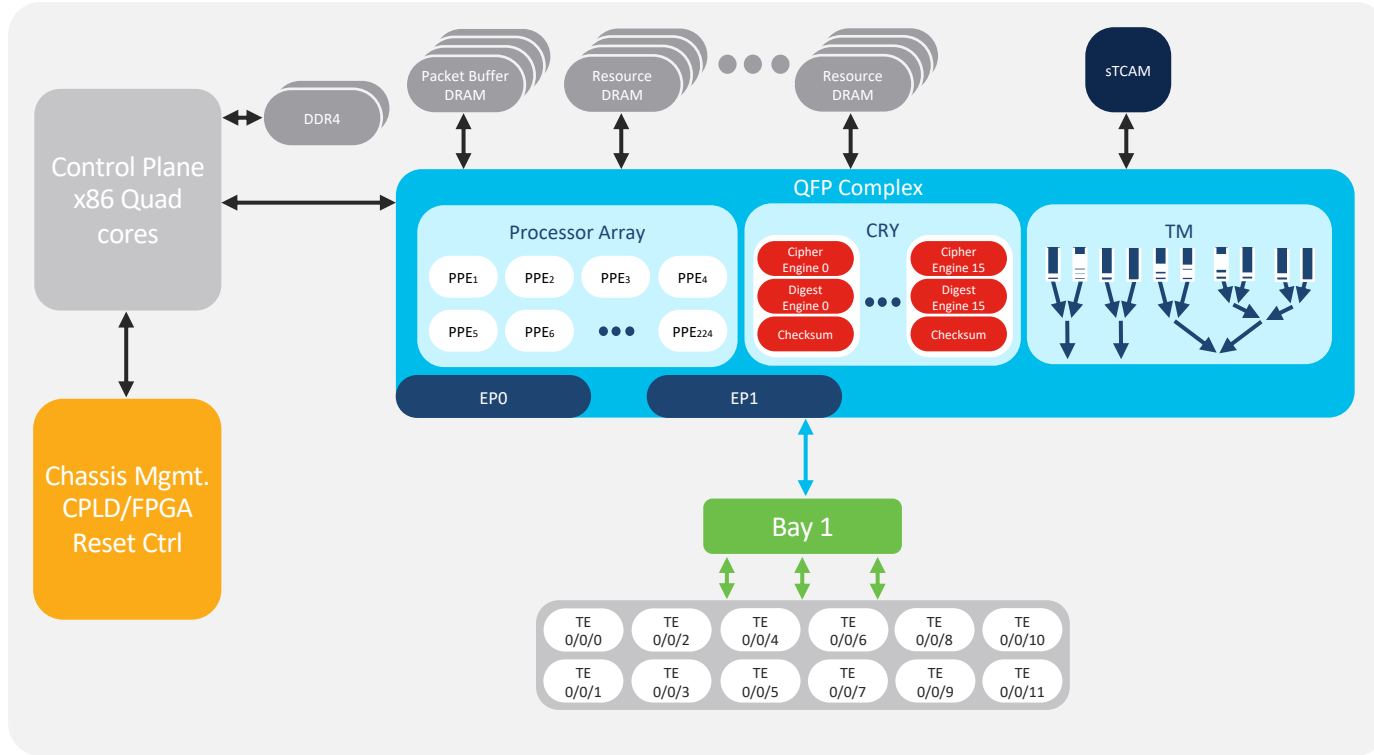
Third Generation QFP

Built-in L2 Sub-system

Built-in Cryptography

C8500-12X Block Diagram

Purpose Built SD-WAN Headend



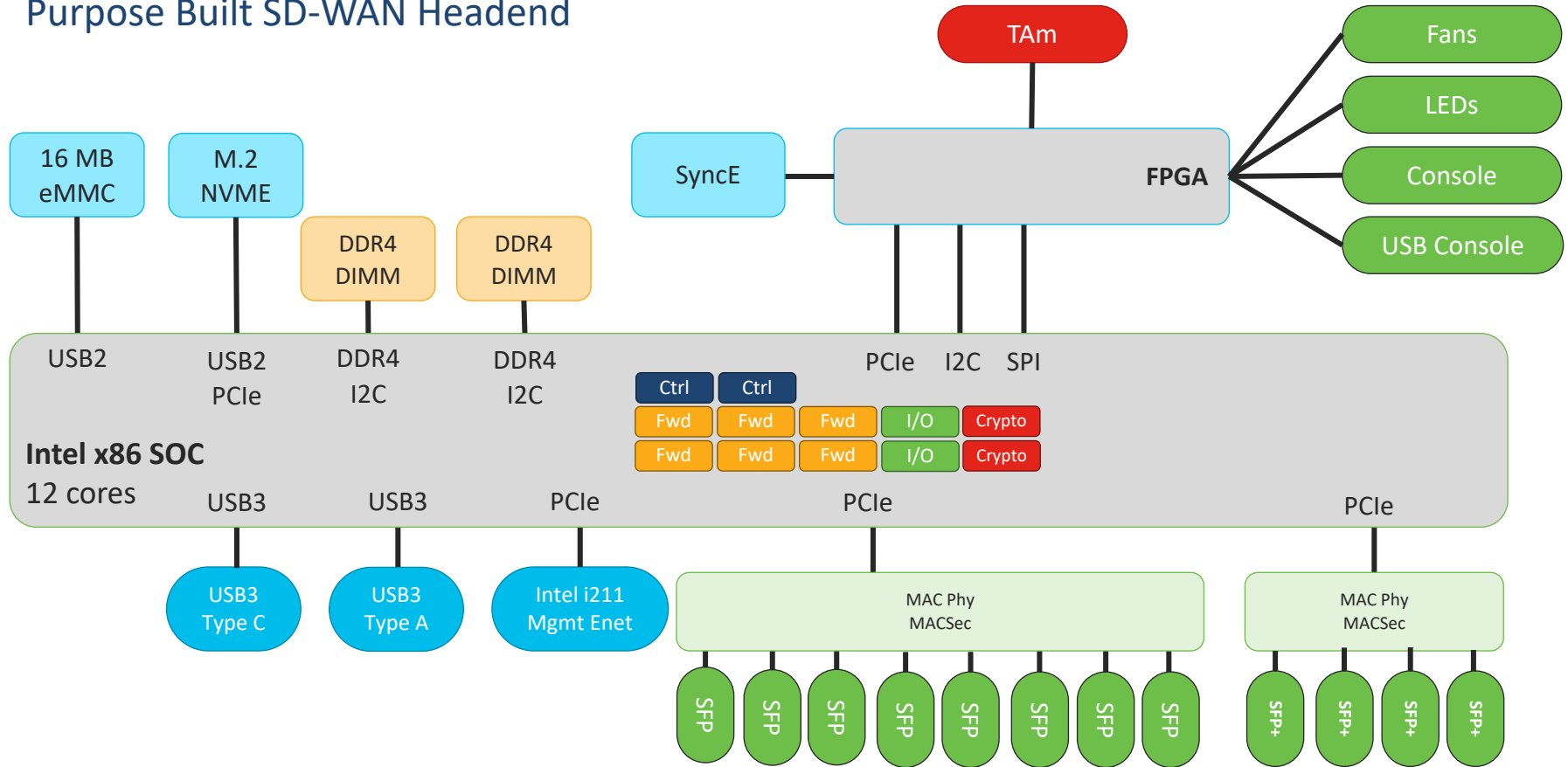
Third Generation QFP

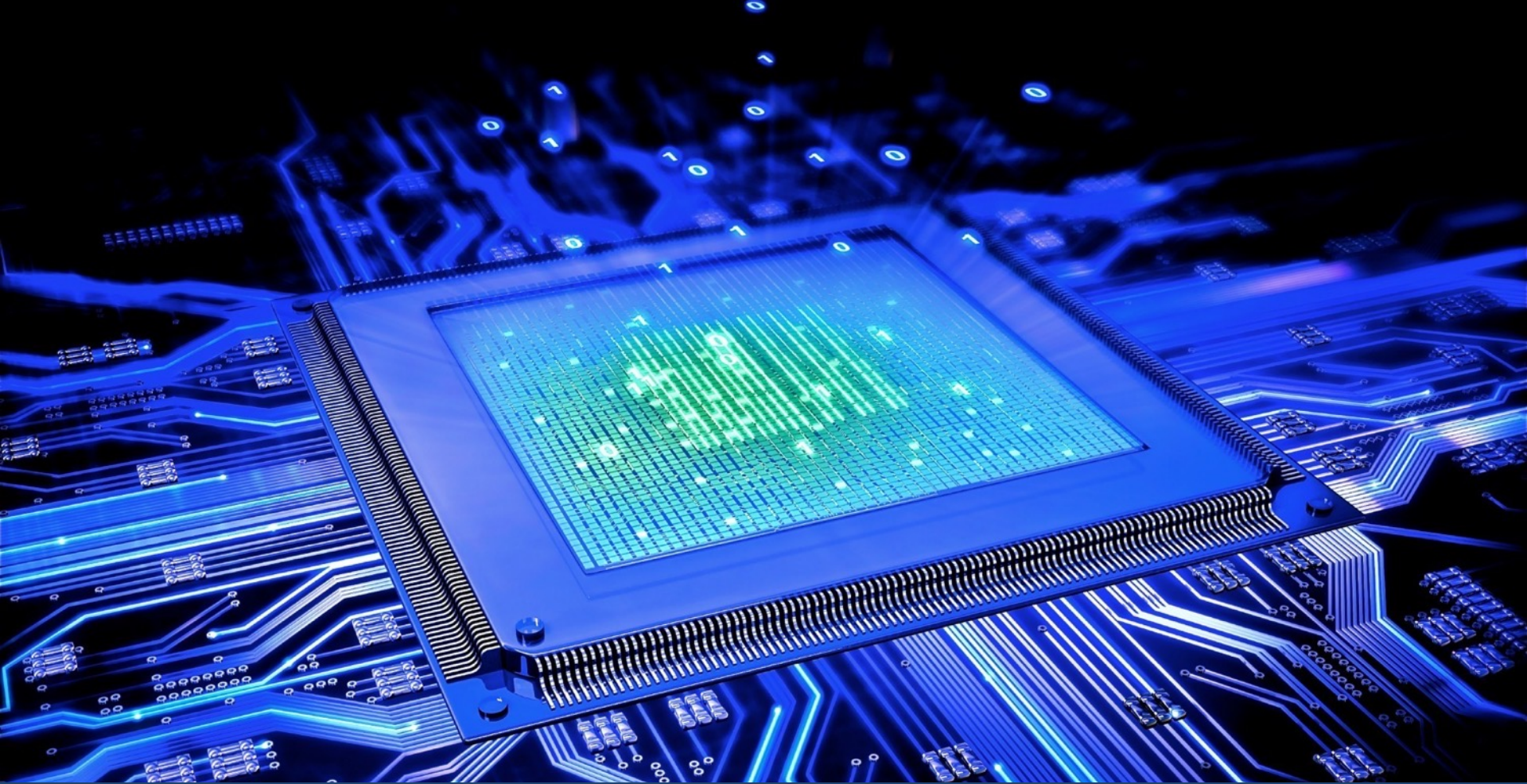
Built-in L2 Sub-system

Built-in Cryptography

C8500L-8S4X Block Diagram

Purpose Built SD-WAN Headend



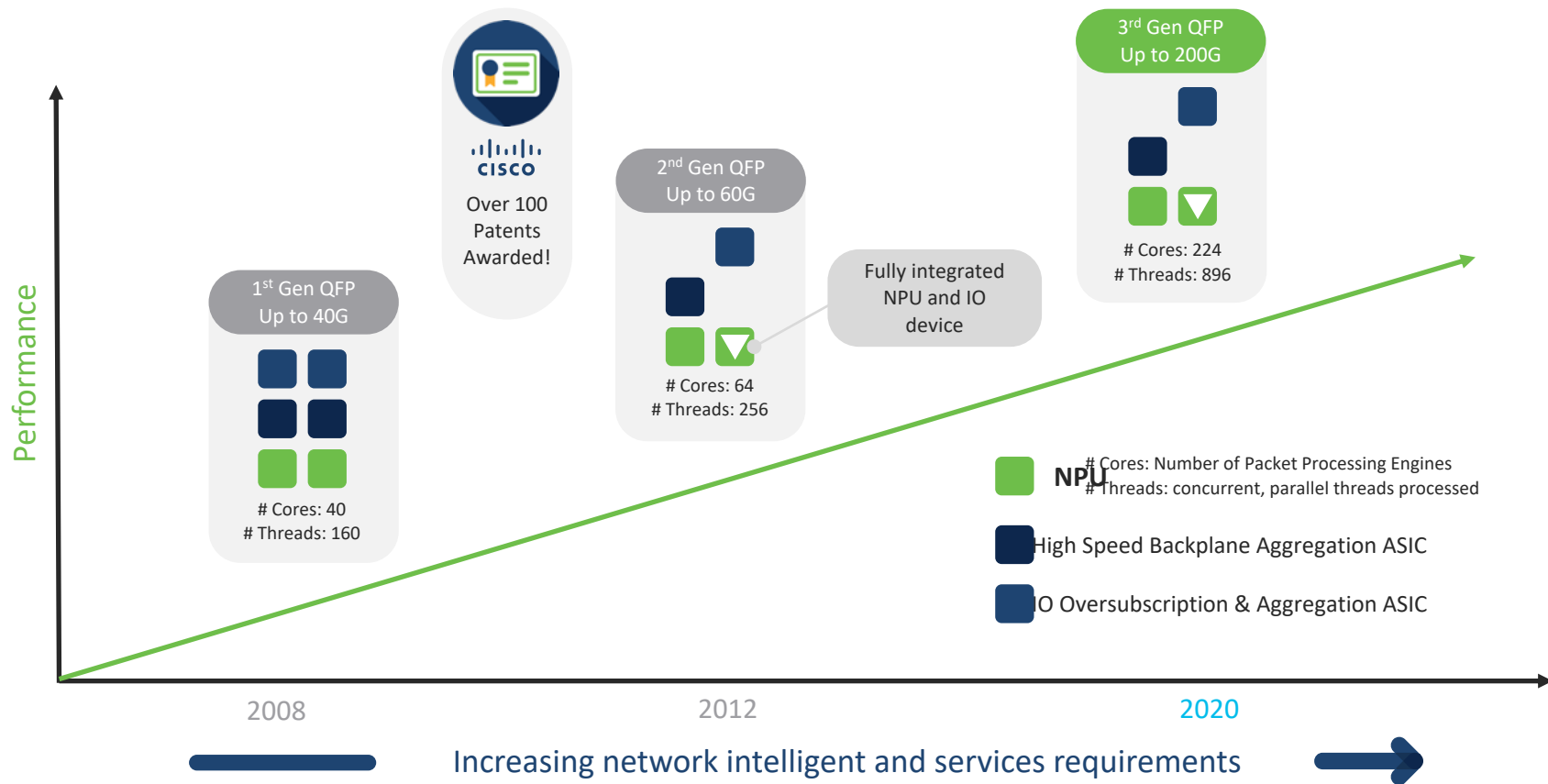


ASICs are a Pillar of Cisco Innovation...



Cisco Enterprise Routing ASIC Leadership

Continuing Investment in Network Processor Technology





Third Generation QFP Architecture

Multicore Architecture

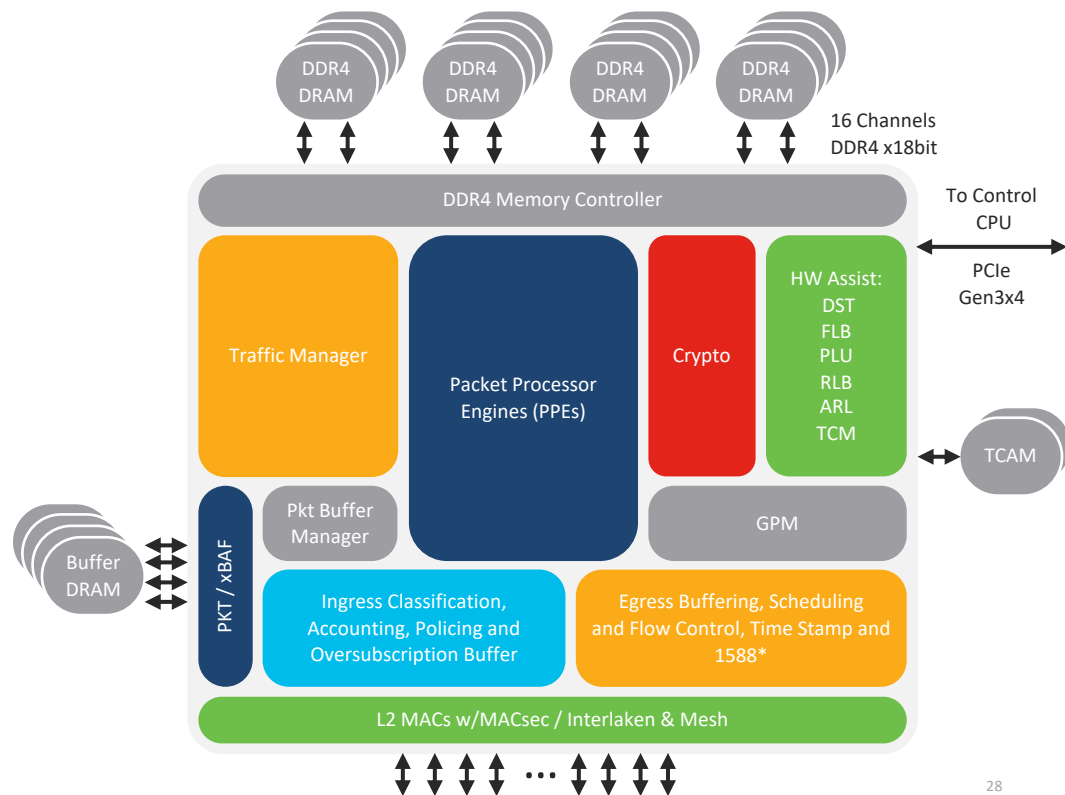
- 28 clusters of 8 PPEs @ 1GHz
- 224 PPEs with 4 threads each = 896 threads

Specialized Hardware Assist

- High Speed Crypto – Inline execution
- Flow queues for complex stateful features

Memory

- 32GB DDR4 Resource memory
- 3 to 4 Billion accesses per second
- 8x increase in Memory for feature scale
- 1.5GB Packet Buffer



*1588 is not supported currently



Third Generation QFP Blocks

Traffic Manager

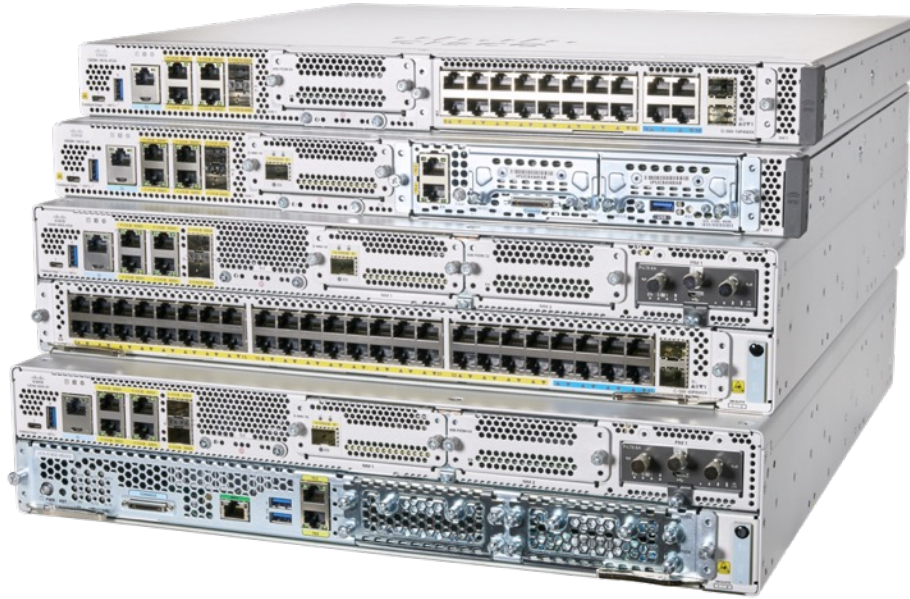
256K useable queues
134K scheduling nodes
Event driven flow control

Layer 2 Sub-system

240Gbps Aggregation
Per Port L2/L3 classification
Line rate WAN MACsec

Inline Crypto

Higher IPsec throughput
16 Crypto Engines
Next Generation Strong
Encryption: Suite-B



Catalyst 8300

Cisco Catalyst 8300 Series Edge Platforms

Foundation for the Secure Cloud Scale SD-WAN Branch



Integrated Rich Services

Voice Survivability, Forward Error Correction and Packet Duplication, TCP Optimization

Edge Intelligence

Compute
Container based Apps



Scale

Up to 5x IPSec and IP CEF Performance
Core Availability for 3-4x
Services Performance

Multi-Layer Security

SSL Acceleration
Application Firewall
IPS/IDS, URL Filtering
AMP, Threatgrid

System

Cisco Catalyst 8300
Series
Edge Platforms



Connectivity

Higher
WAN Port
density

Default 8G
DRAM

10GE w/
MACSec

Pluggable
NVMe
Storage

5G Ready

Manageability

vManage

Multi-tenant

Open APIs

Analytics

SD-WAN Branch Platform with Rich Connectivity

70+ Varieties of Modules and Interfaces

ISR 4400 Modules*

New Modules

UCS-E M3
SM Modules

Compute

SD-WAN

Perf.

MACsec

Ethernet WAN

L3 1x10G
WAN Module



4P/8P/8P PoE
NIM Modules

Ethernet LAN

L2 1G/2.5mG/10G
Switch Modules



CAT4/6
NIM Modules

LTE/5G

5G**/CAT18 LTE
PIM



FXS/FXO/BRI/T1E1
SM-NIM Modules

Voice

Voice DSP Modules for IP
Services



Voice

Serial/Async/DSL

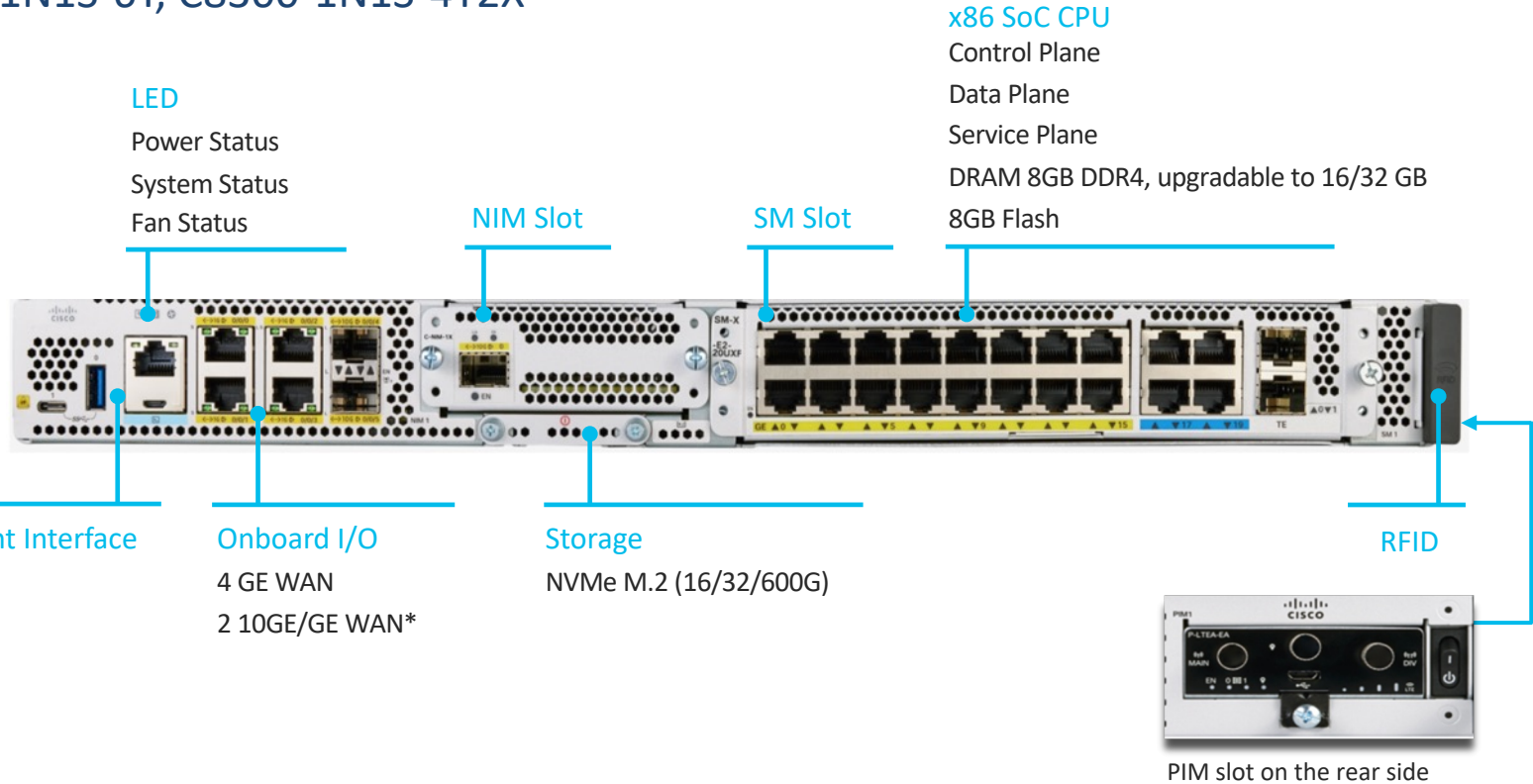
Legacy WAN

*ISR 4K Modules Not Supported: UCS-E M1/M2, Ethernet SM, Ethernet WAN, SM-NIM Carrier

**5G Roadmap

Catalyst 8300 Series Front View (i)

C8300-1N1S-6T, C8300-1N1S-4T2X



* C8300-1N1S-6T has in-built 2 SFP
C8300-1N1S-4T2X has in-built 2 SFP/SFP+

Catalyst 8300 Series Front View (ii)

C8300-2N2S-6T, C8300-2N2S-4T2X

LED

Power Status
System Status
Fan Status

Onboard I/O

4 GE WAN
2 10GE/G WAN*

2xNIM Slot

x86 SoC CPU

Control Plane
Data Plane
Service Plane
DRAM 8GB DDR4, upgradable to 16/32 GB
8GB Flash

Management Interface

RJ 45 Console
Micro-USB
USB Type A

Storage

NVMe M.2 (16/32/600G)

2xSM Slot

LTE WAN (PIM slot)

CAT 4/6/18 PIM

RFID



* C8300-1N1S-6T has in-built 2 SFP
C8300-1N1S-4T2X has in-built 2 SFP/SFP+

Catalyst 8300 Series Back View (i)

C8300-1N1S-6T, C8300-1N1S-4T2X

Power supply Slot 1

PSU Internal FAN
AC/DC PSU

Power supply Slot 0

PSU Internal FAN
AC/DC PSU



FAN

FANs
FAN Tray

LTE WAN (PIM slot)

CAT 4/6/18 PIM

Catalyst 8300 Series Back View (ii)

C8300-2N2S-6T, C8300-2N2S-4T2X

Power supply Slot 1

PSU Internal FAN
AC/DC PSU

Power supply Slot 0

PSU Internal FAN
AC/DC PSU

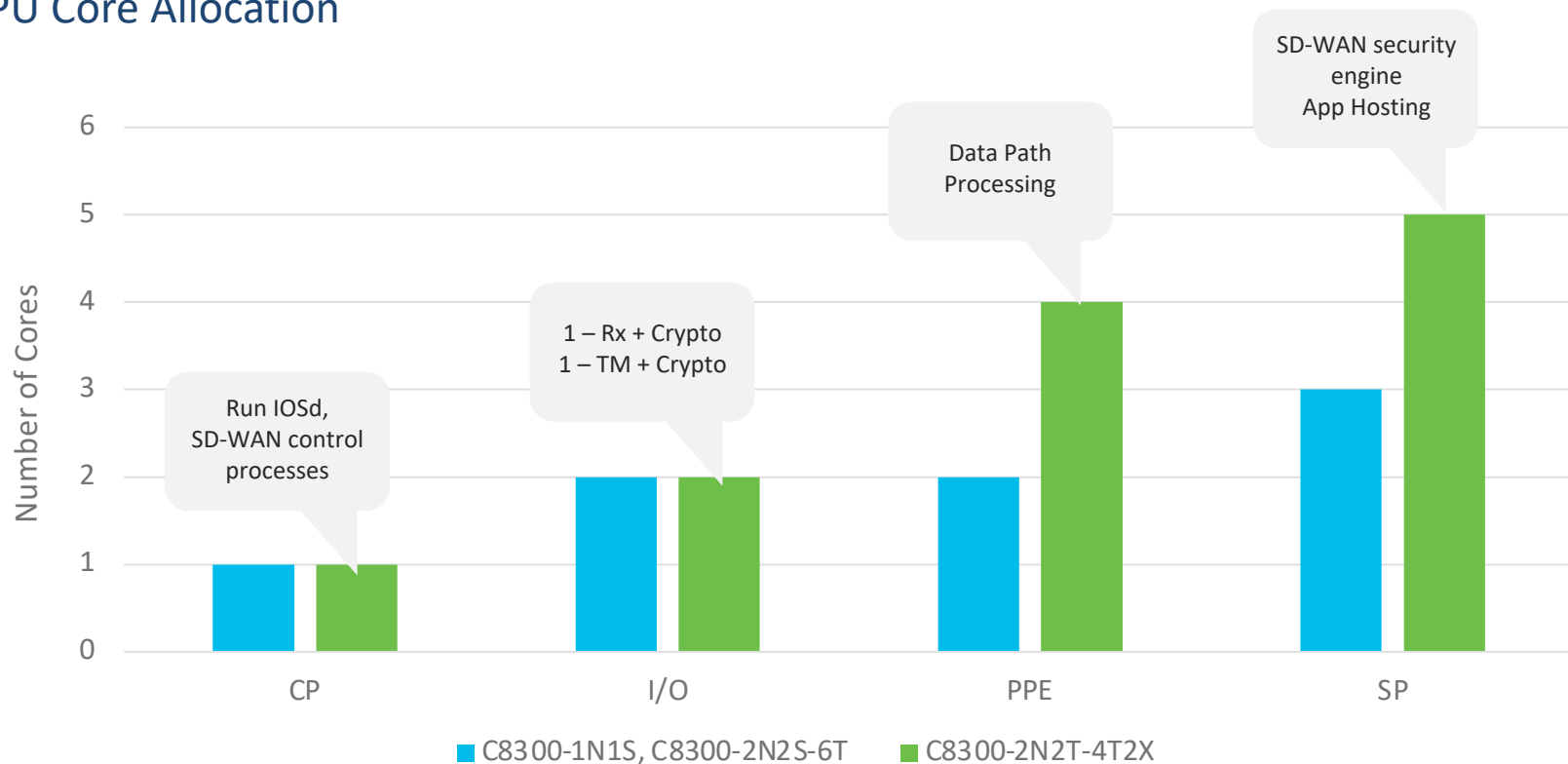


FAN

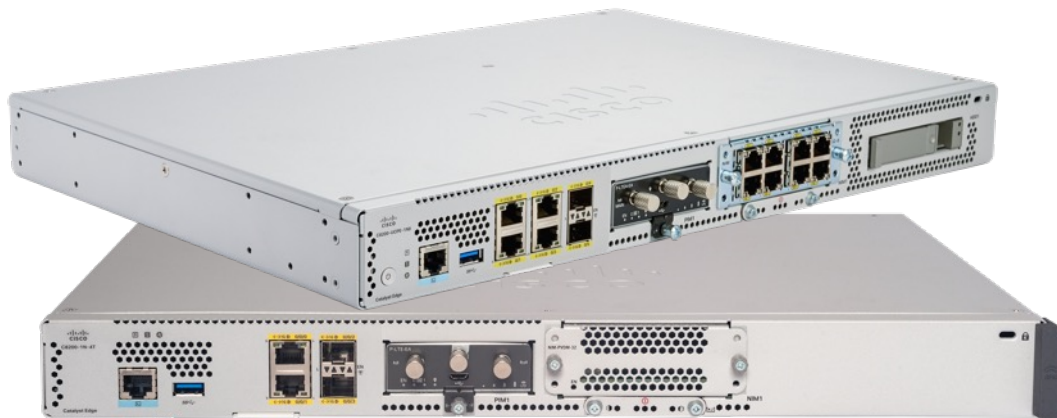
FANs
FAN Tray

Catalyst 8300 Built for Service Optimization

CPU Core Allocation



Rx: receive packets from onboard I/O, NIM, SM, enqueue
TM: traffic manager, scheduler and queueing



Catalyst 8200

Cisco Catalyst 8200 Series Edge Platforms

Foundation for the Secure Cloud Scale SD-WAN branch

Integrated Rich Services

Voice Survivability, Forward Error Correction
& Packet Duplication, TCP Optimization

Edge Intelligence

Container based Apps



Scale

Up to 2x IPsec and 4x IP CEF Performance
Core Availability for 2x Services Performance

Multi-layer Security

SSL Acceleration
Application Firewall
IPS/IDS, URL Filtering
AMP, Threat Grid
Umbrella SIG

Connectivity

Higher
WAN Port
density

Default 8G
DRAM

PIM
Support

Pluggable
NVMe
Storage

5G Ready

Manageability

vManage

DNA Center

Open APIs

Analytics



YES
Modularity

Cisco Catalyst 8200 Series Edge Platforms

Introducing 1G in Access with higher port density

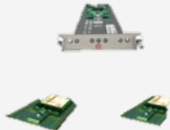
1G WAN Ports 'T'
& 1G IPsec

C8200-1N-4T



2 RJ45
2 SFP

NVMe
Storage



Voice/
Cellular



User Centric Design
(RFID, QR label, FRUs)



C8200-1N-4T Front View

1 NIM and 1 PIM

Status/physical security

Status LED

FAN LED

Power LED

Data Interfaces (FPGE)

2 RJ45 GE WAN

2 SFP GE WAN

Network Modules

PIM slot

NIM slot

Management

RJ45 Console

USB Type A

Inventory

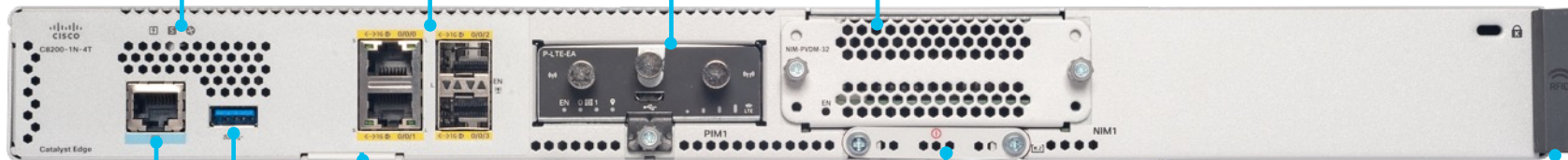
QR Label

Storage

NVMe M.2 (16/32/600G)

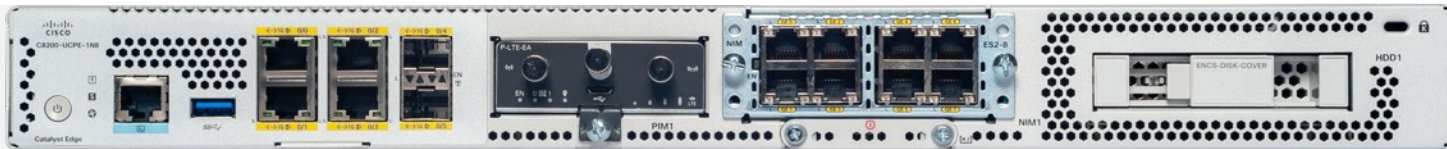
Inventory

RFID



Cisco Catalyst 8200 Series Edge uCPE

Designed for Software-Defined Small and Lean Branches



More Cores



5G Ready



Diverse Orchestration
Support



More Storage



01

More VNFs on a single platform

02

Higher WAN port density with 5G readiness

03

More support for business applications

04

Easy, zero-touch provisioning

Cisco Catalyst 8200 Edge uCPE Platform

Introducing uCPE with Higher port density and LTE WAN

6x1G LAN/WAN Ports

C8200-uCPE-1N8



4 RJ45
2 SFP

NVMe and SFF
Storage

T1/LTE NIM WAN/
CAT18 LTE PIM

User Centric Design
(QR label, FRUs)



Catalyst 8200 Edge uCPU Front View

System Status

- Status LED
- FAN LED
- Power LED

USB Storage

- USB 3.0

LTE WAN PIM Slot

- CAT 4/6/18 PIM

Network Modules

- NIM slot

Physical Security

- Kensington lock



Management Interface

- RJ 45 Console

Data Interfaces (FPGE)

- 4 RJ45 GE WAN
- 2 SFP WAN

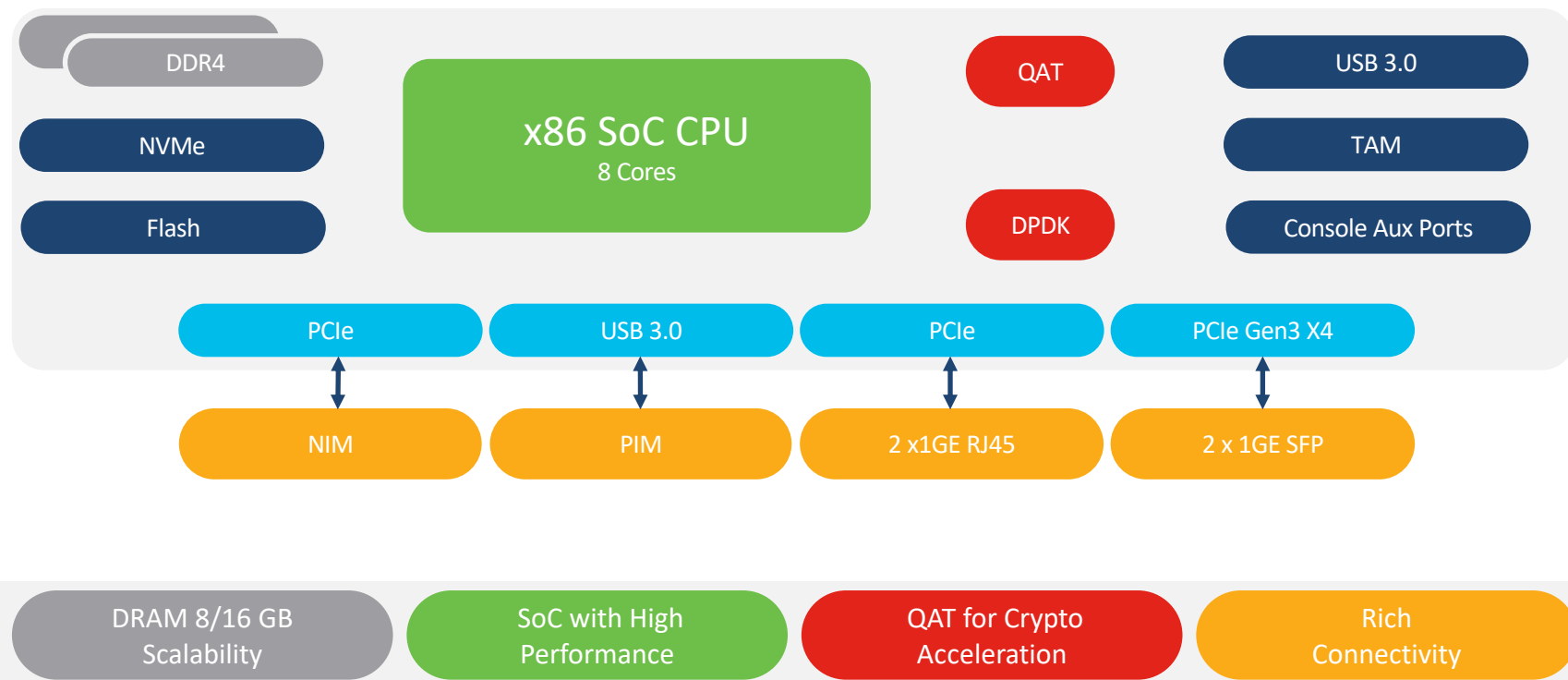
Storage

- USB M.2 (32GB)
- NVMe SSD M.2 (600GB, 2TB)

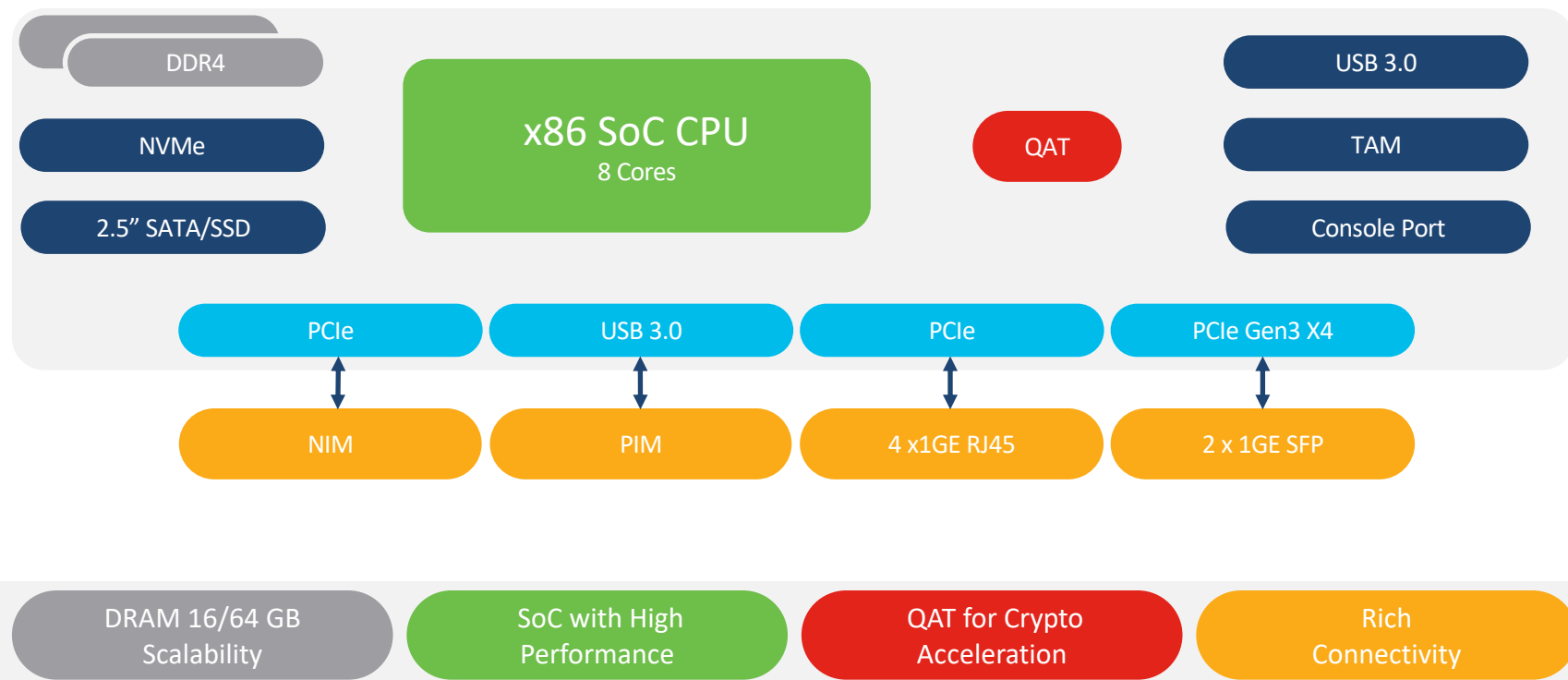
Storage

- SATA/SSD(2TB/4TB)

C8200-1N-4T Block Diagram



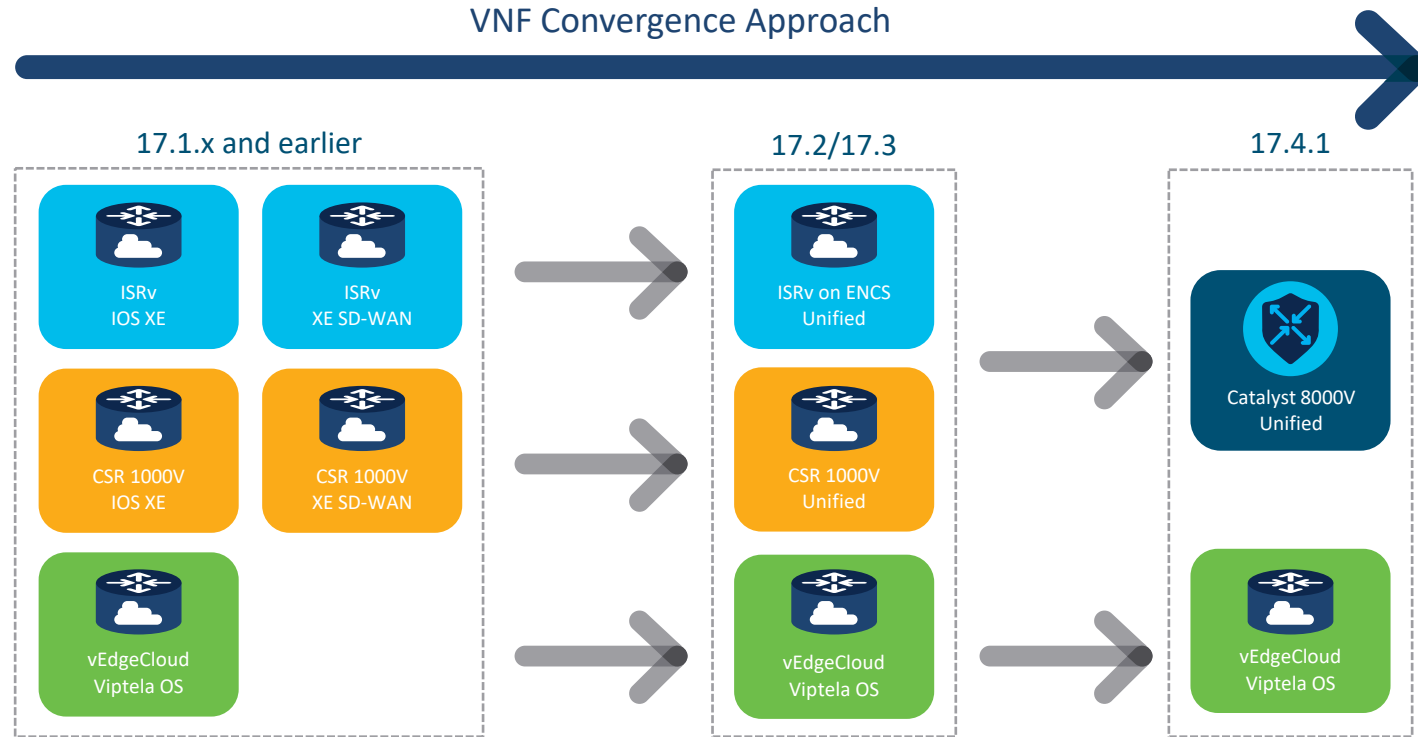
C8200-uCPE-1N8 Block Diagram



Catalyst 8000V



Virtual Router Convergence



Cisco Catalyst 8000V Edge Software

Enterprise-class Networking and Security with Flexibility of a x86 Based VNF

Multiservices Support

Feature-rich IOS XE and XE SD-WAN software
Supported features such as NAT, Firewall, NBAR QoS, etc.

Runs on any x86 VM platform

Cloud Integration

Extends connectivity, visibility, security into public and private clouds

Auto-scaling capability

Integration with Azure vWAN and AWS TGW

Supports wide variety of cloud instances



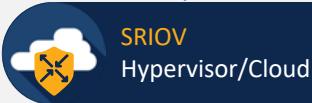
Performance Elasticity

CPU Hypervisors: 1 – 8 vCPU
Cloud Providers: 1- 16 vCPUs
Memory Scale: 4 – 16Gb

Multi-layer Security

Secure object storage
High Throughput IPsec
IPS/IDS, URL Filtering, AMP/TG

Catalyst 8000V



Up to 10
Gbps IPsec
in cloud

ENCS NIM
support

TGW and
vWAN
integration

DPDK IO

SD-WAN
in AWS,
Azure,
and GCP

*Roadmap

Highlights

Manageability

vManage

DNA Center*

Open APIs

Analytics

Available in all major cloud marketplaces



C5n class, C5 class, T3.medium



F32, F16,
DS4_v2, DS3_v2, DS2_v2



Google Cloud Platform

N1-standard-8, 4, 2

Catalyst 8000V supports more than 20 different instance profiles across the three clouds

Effortlessly deploy on x86 hypervisors



Enterprise Linux 7.5
Enterprise Linux 7.7



ESXi 6.5 Update 2
ESXi 6.7 Update 3



NFVIS on ENCS &
CSP Platforms



Hyper-V
(roadmap)

Elastic resource allocation



Physical Hardware:

- CPU - Intel Nehalem or AMD
- CPU with clock frequency ≥ 2.0
- TenGigabit and Gigabit Ethernet interfaces

Catalyst 8000V

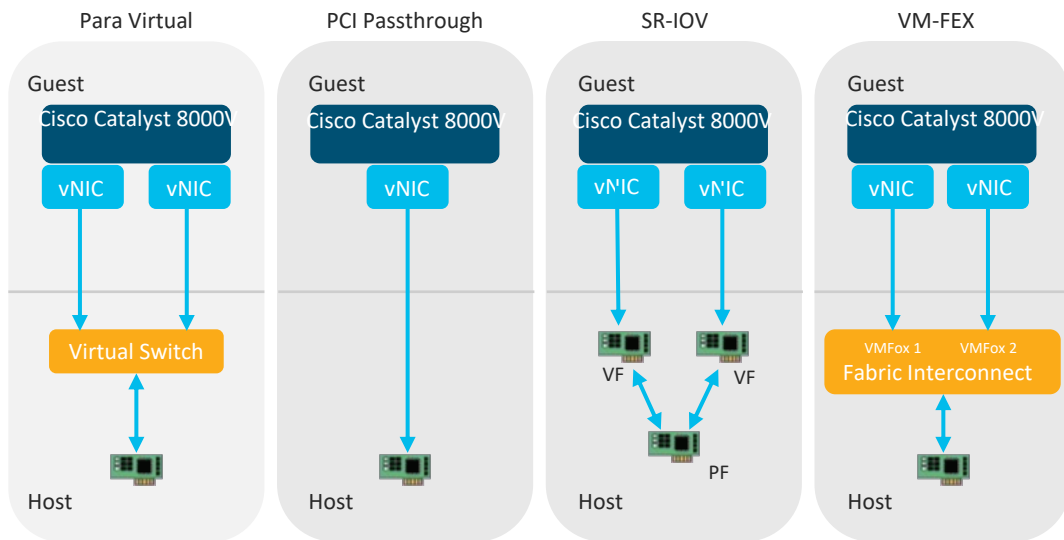


Catalyst 8000V Virtual Machine specs:

- CPU: 1 to 16 virtual CPUs
- Memory: 4 GB to 16 GB
- Disk space: 8 GB or 16GB
- Virtual Network Interface Cards (vNICs):
 - ESXI - A maximum of 8 vNICs is supported;
VMXNET3, iXGBevf, and i40eVF
 - KVM - A maximum of 26 vNICs is supported;
Virtio, ixgbevfv, or i40evf

Extended I/O support

- Paravirtual
- PCI pass-through
- Single-root I/O virtualization (SR-IOV)
 - Accelerated Networking 
 - Enhanced Networking 
- Cisco Virtual Machine Fabric Extender (VM-FEX)
- DPDK support using poll-mode drivers



Enhanced software security - Secure Object Store

- Storage partitions for NVRAM, licensing and other data are now created as Object stores
- Individual Object stores are encrypted to ensure data security
- Cisco Secure Development lifecycle (CSDL) compliant
- 16G disk cycle profile support

8G Disk Layout



EFI/GRUB (1MB)

boot (2GB)

objstore (1GB)

bootflash (rest)

16G Disk Layout



EFI/GRUB (1MB)

boot (4GB)

objstore (1GB)

bootflash (rest)

Catalyst 8000V continues to build on CSR 1000V

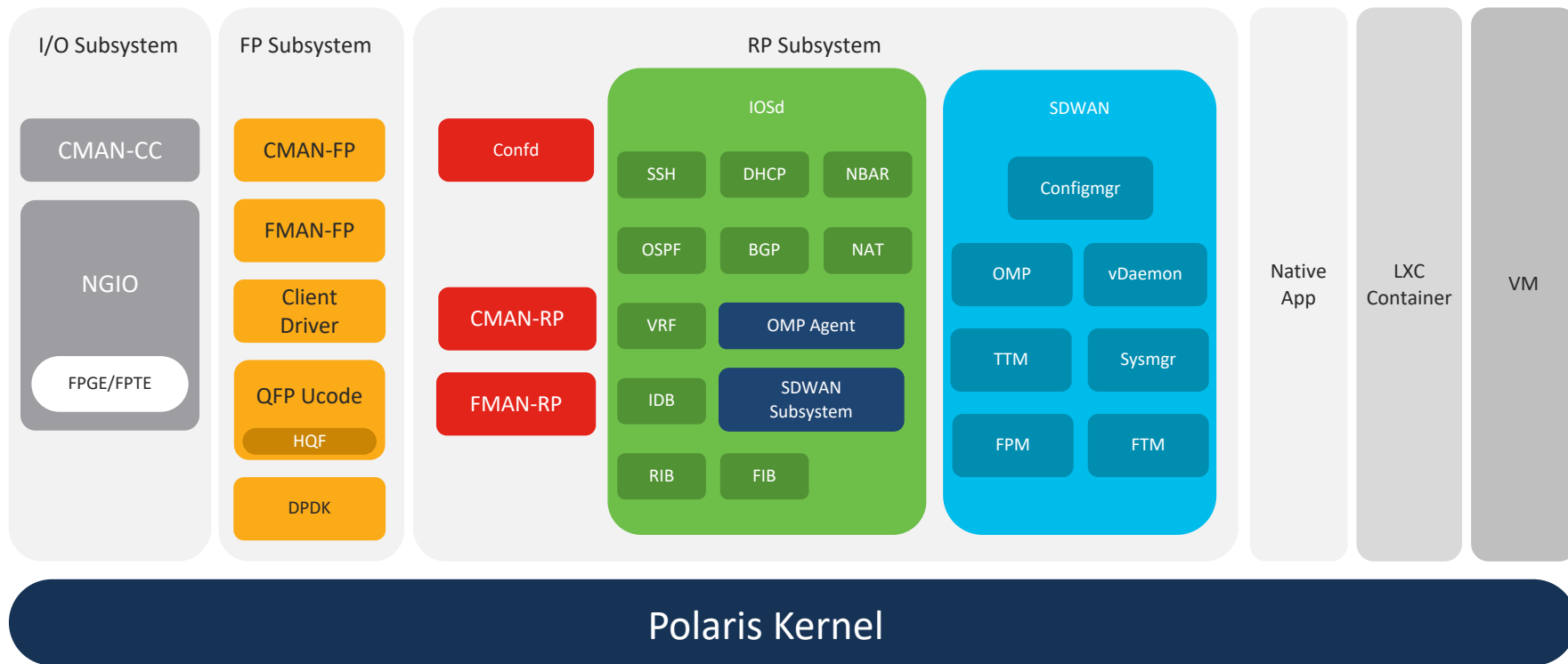
Catalyst 8000V		CSR 1000V
✓	Secure Object Store	✗
✓	ENCS NIM Support	✗
✓	SD-WAN on Google Cloud	✗
✓	Azure Virtual WAN Integration	✗
DNA Licensing	Licensing	Classic + DNA licensing



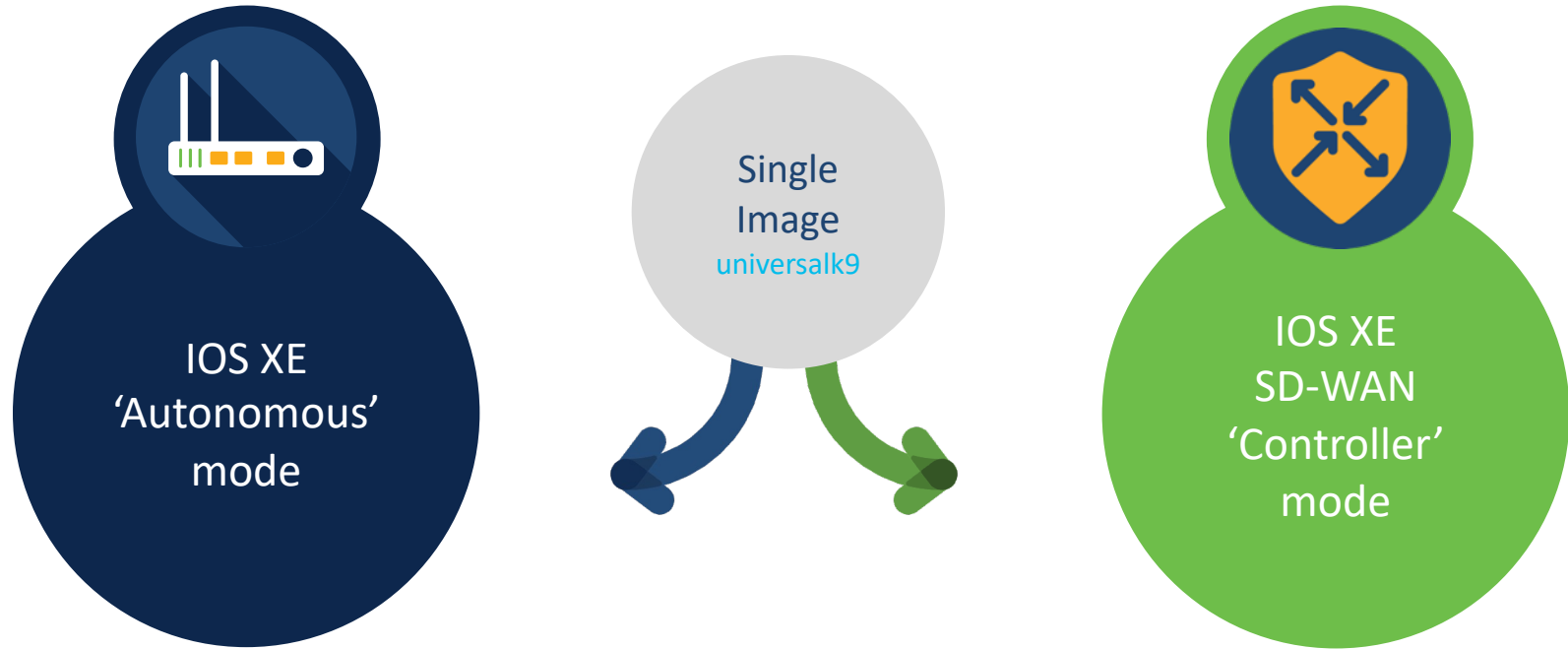
Open IOS XE Architecture

IOS XE Software Architecture

Seamless SD-WAN Integration

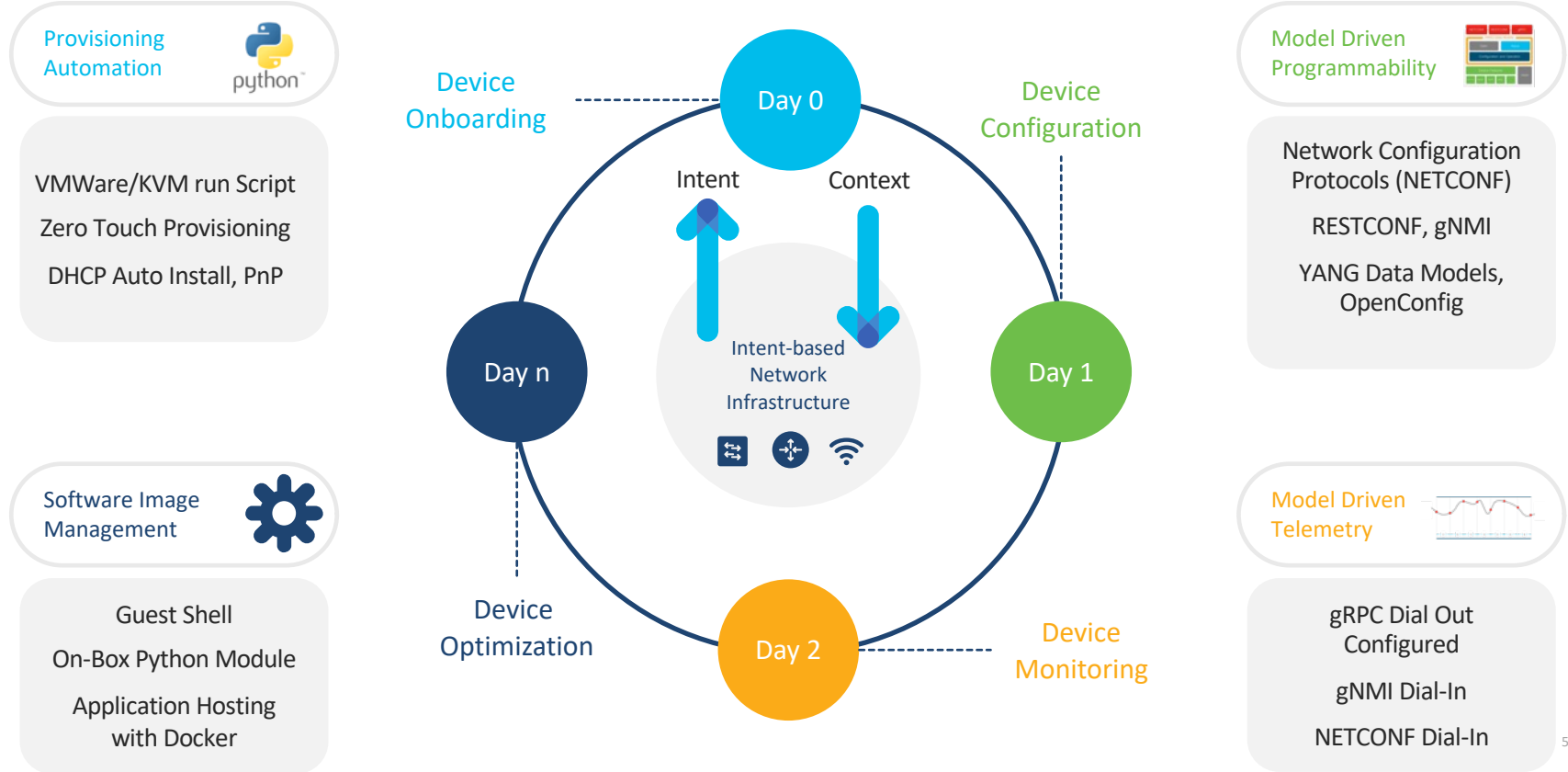


Easy Operations with Single Image



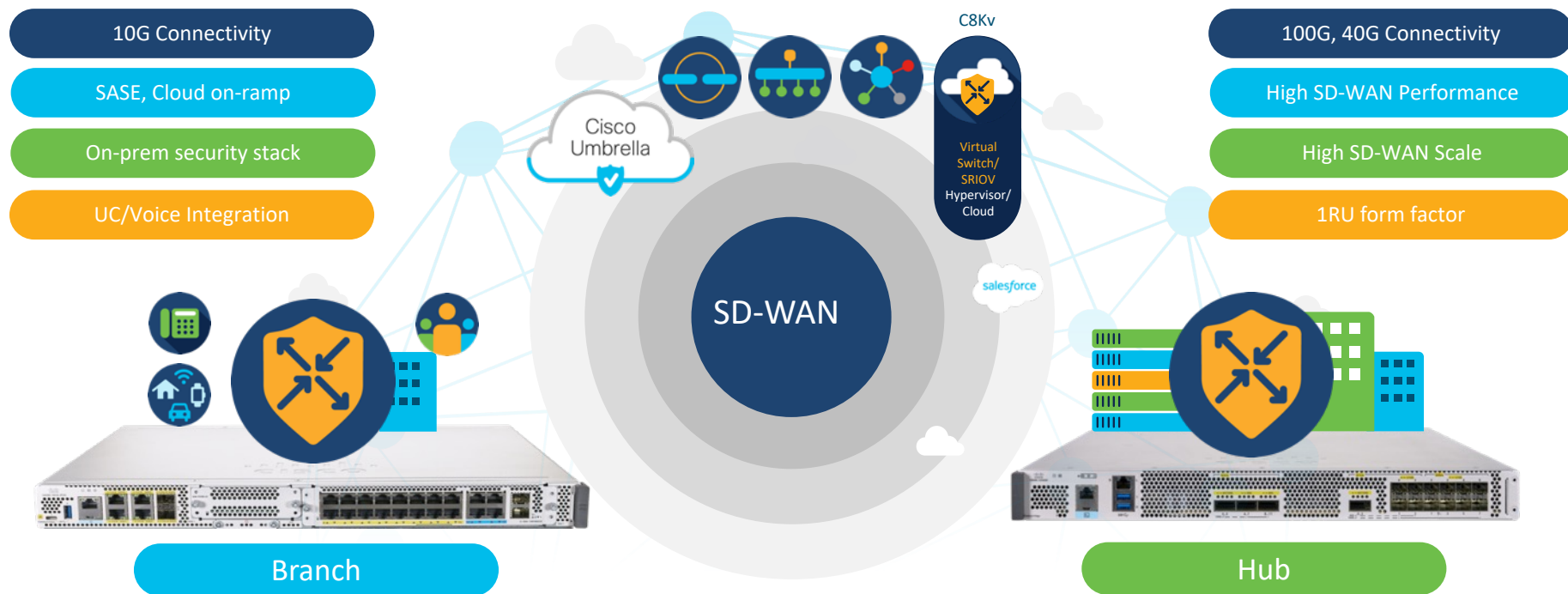
Accelerate SD-WAN Journey | Simplify Deployments | Cloud-scale Application Support

IOS XE Built for Day 0 – Day N User Experience

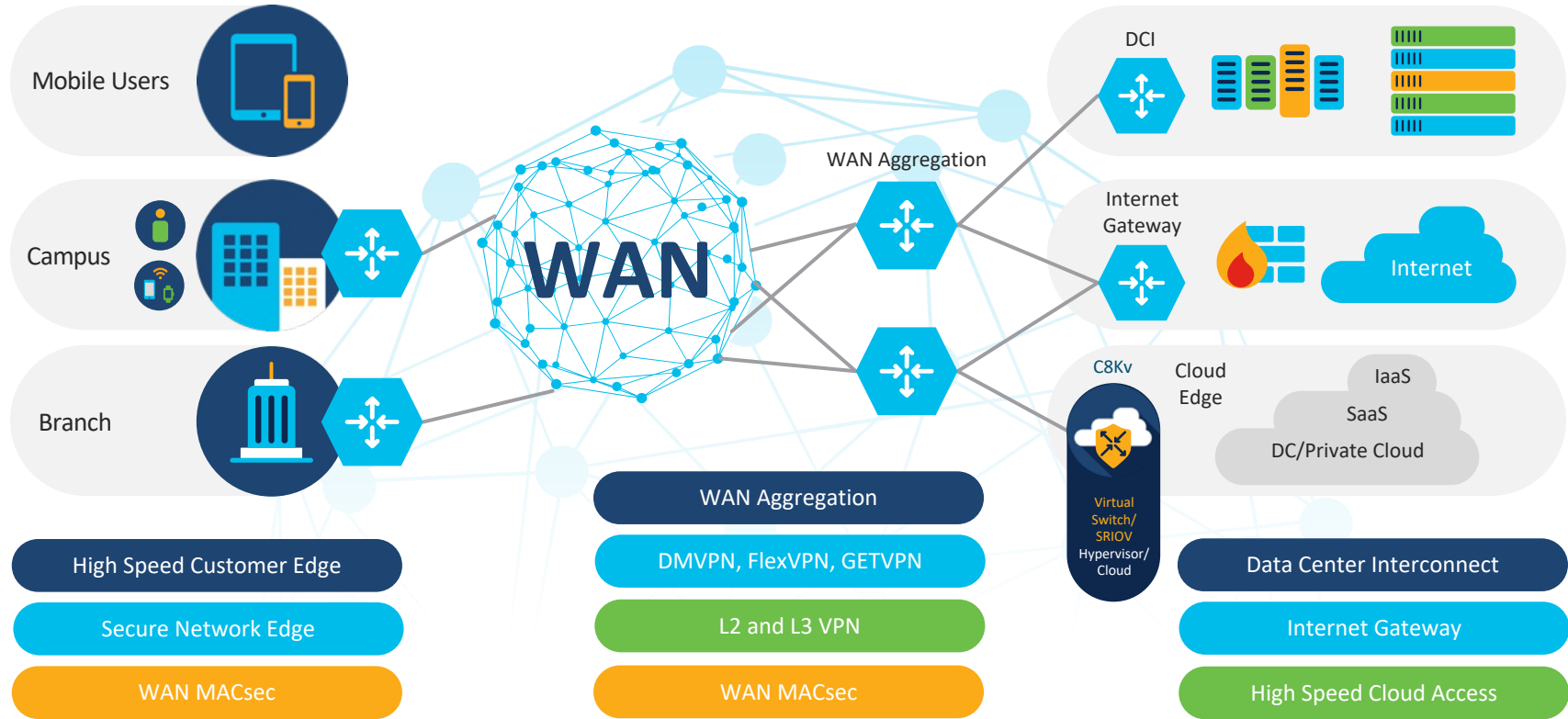


Solution and Use Cases

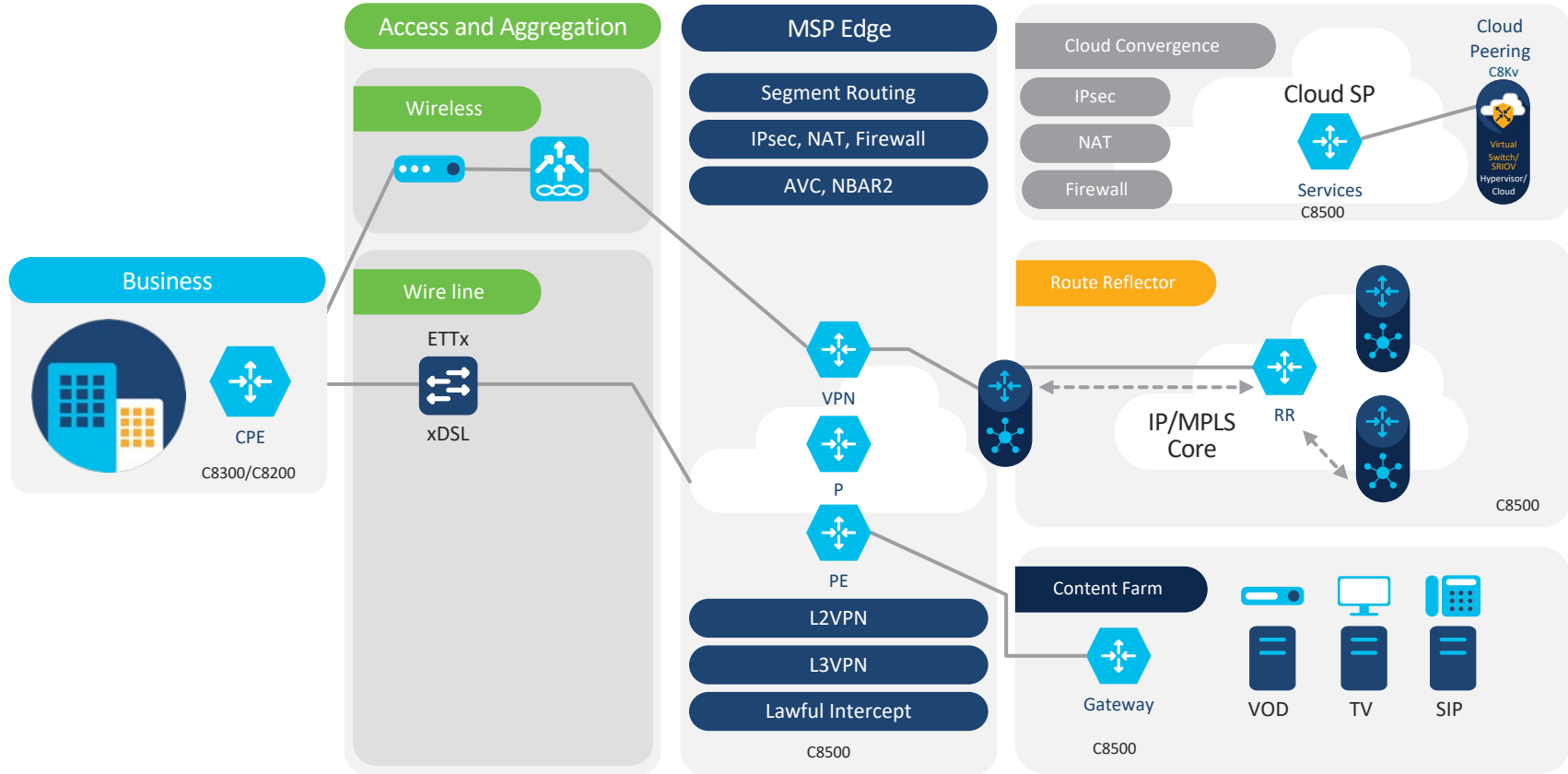
SD-WAN Hub, Branch and Cloud



Enterprise Applications

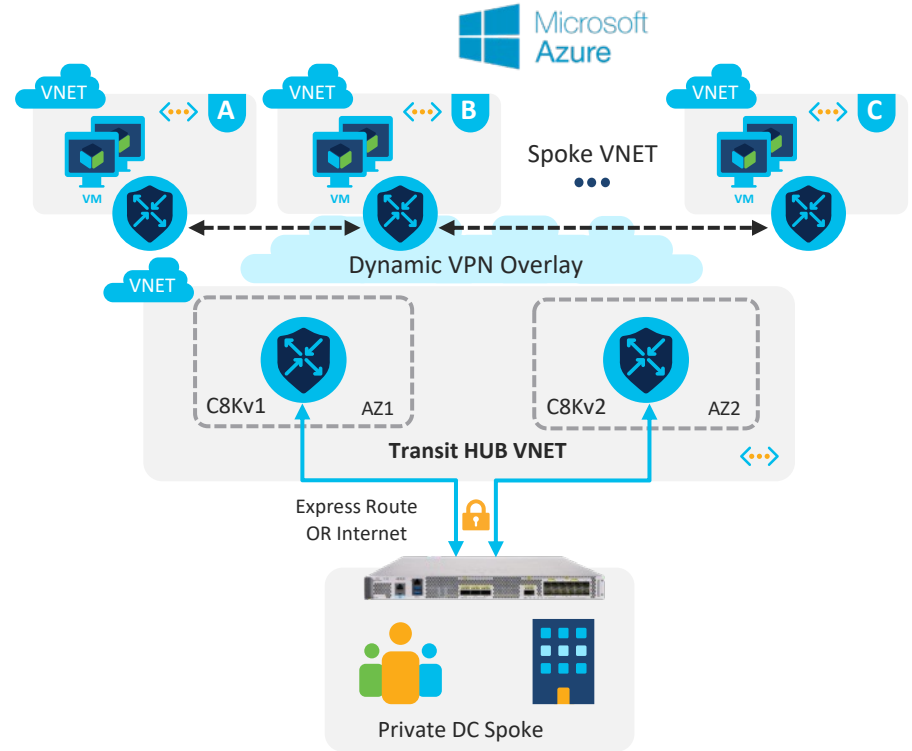
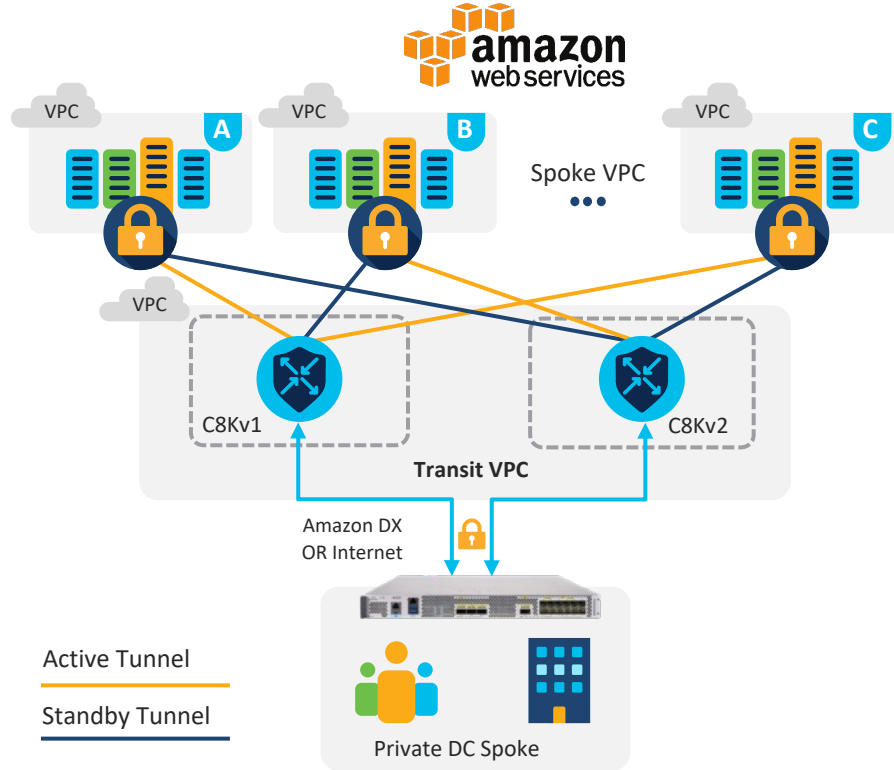


Managed Service Provider Applications



Public Cloud Applications

AWS Transit VPC, Azure Transit VNET



Closing

Cisco Catalyst 8000 Edge Platforms Family

High Performance SD-WAN Headend, Intelligent Branch and Agile Cloud Edge



Ready for the Agile Cloud Journey

High Speed Cloud Access
Multi-Cloud Application Optimization
Compact, Powerful 1RU Platforms



Ready for 5G, Edge Compute

3rd Generation QFP In-Line Crypto
SASE driven Feature Innovations
Improved Services Performance



5G Ready Edge Intelligence

High End Aggregation 100/40/10/1GE Port flexibility
Multi-Domain Intent Based Networking



Equipped with User Centric Design

Operational Ease for better Tracing
Passive UHF Radio Frequency ID
Easy Access Label Tray
Field Replaceable FAN Tray

1st 100/40GE Port
1RU SD-WAN
Platform



3rd Gen QFP, HW
Accelerated Services



High Performance



C8Kv



Virtual
Switch/
SRIOV

Hypervisor/
Cloud



10GE WAN, Rich
connectivity



Cloud Security and
on-prem Security



Automation &
Telemetry





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Send the exact model or BOM and your deployment requirements. Layer23-Switch can review compatibility, availability, and quote options.

- ✓ Exact model or Cisco PID and quantity
- ✓ Port count, media type, PoE budget, and uplink speed
- ✓ Redundancy, licensing, support, and accessory needs
- ✓ Ship-to country, target date, and lead-time constraints

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