

The Network Reinvented:

Switching and Routing Innovations

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Agenda

1. **Software Innovations:**
 - Cloud / Hybrid Cloud
 - Resiliency & Performance
2. **Hardware Innovations:**
 - Routers
 - Switches

Software Innovations

Cisco's Platform Approach to Secure Networking

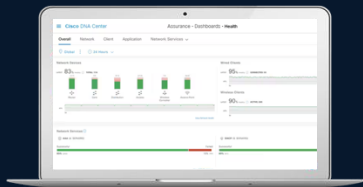
One Unified Networking Experience

Unified Hardware & Licensing Model



Choice of Management

On-Premise
Management



Hybrid



Cloud
Management



Unified IT management

Single dashboard with flexible cloud, on-prem or hybrid control.

Security fused into the Network

Firewall, cloud security and Cisco Talos threat protection everywhere,

AI-powered operations

Embedded assistants automate tasks, provide insights and guide next steps

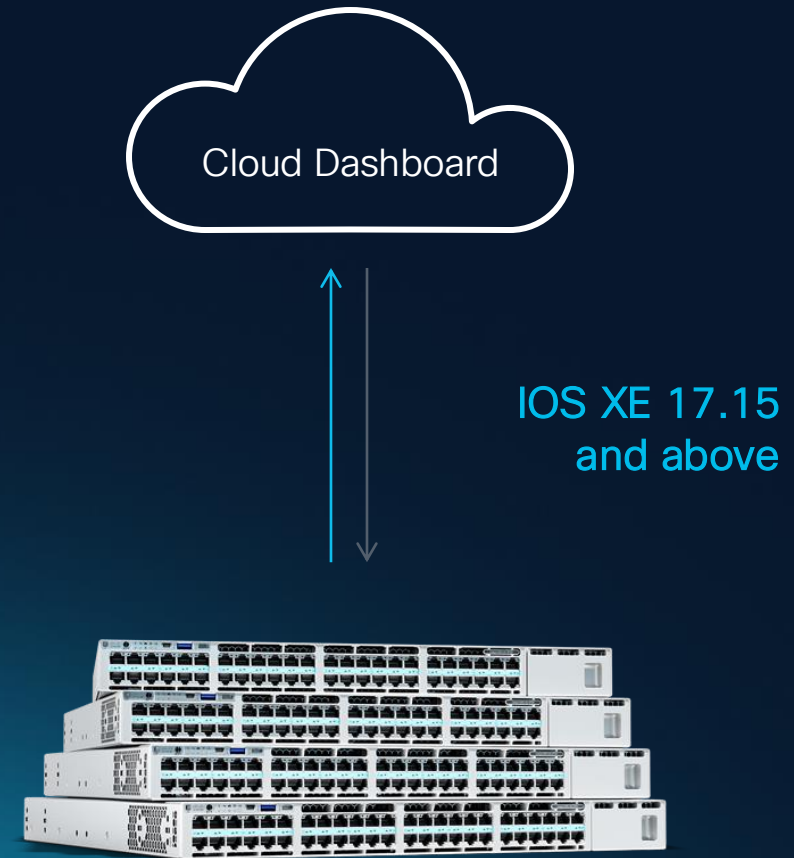
End-to-end visibility and assurance

ThousandEyes delivers AI insights to assure every connection

An improved architecture, built on a trusted foundation

IOS XE 17.15+

- Seamless upgrade with existing firmware
- Flexible configuration management options
- CLI for power users to access full IOS XE set
- Faster out of box provisioning and time to value



Maintain operational flexibility with cloud management

Configuration Source: Cloud



UNLOCK FULL CLOUD SIMPLICITY

Configurations are performed in the cloud and managed using the dashboard UI

Configuration Source: Device



RETAIN ADVANCED CONTROL

Configurations are managed via traditional methods and performed local to the device

FLEXIBLE OPTIONS FOR MANAGING YOUR DEVICES FROM THE CLOUD

Expanded cloud management for Catalyst portfolio



Wireless

Full wireless support
Scale large campus wireless
with Campus Gateway

GA | MAY



Switching

Expanded management for
access and core switching,
including C9200 and C9500

GA | JULY



Routing

Next-gen routing
support coming

ALPHA | JUNE

Cloud management powered by cloud-native IOS XE

Combined with advanced features powered by IOS XE

What's New

IOS XE 17.18.1 (beta) brings advanced capabilities to the cloud through the introduction of advanced routing and high availability features. Additional cloud expansion features Bring greater value to enterprise customers through the introduction of simplified support for troubleshooting, monitoring, and configuration management tasks.

Cloud CLI

Access an embedded cloud terminal within the Meraki dashboard.

Expanded Support

Support for new hardware models and expanded support for cloud features.

Advanced Routing

Advanced capabilities like BGP and VRF are now supported in the cloud dashboard

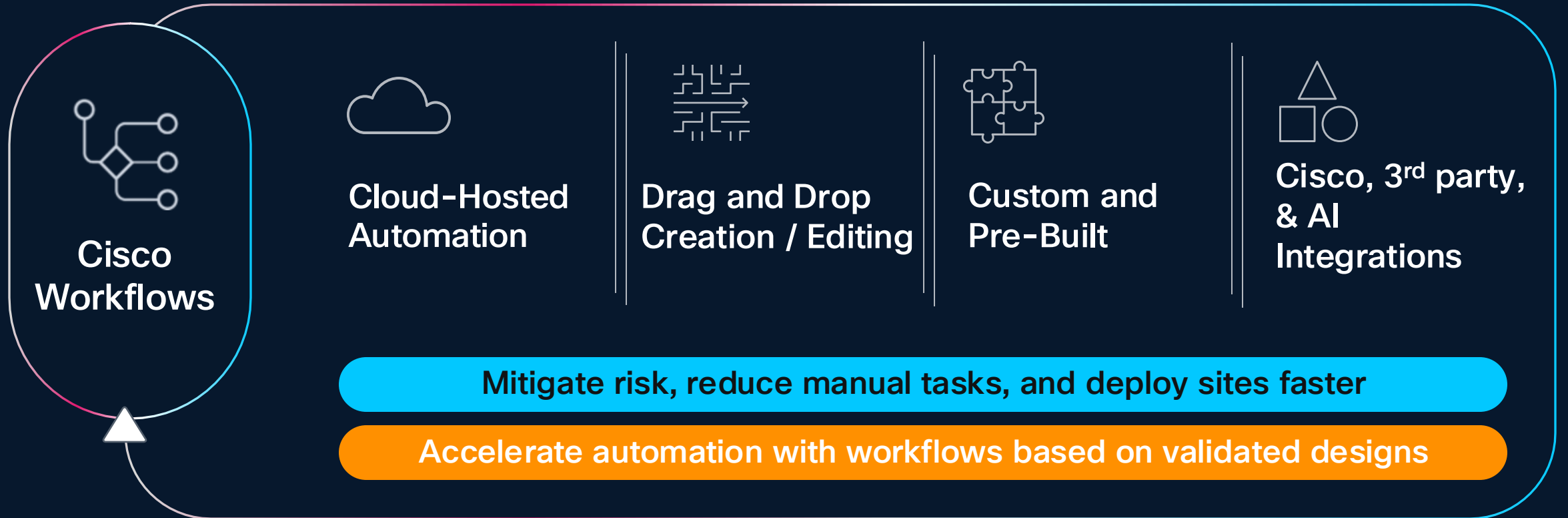
High Availability

In-Service Software Upgrades, Virtual Stacking for C9500, and more.

GA: IOS XE 17.15.4

Beta: IOS XE 17.18.1

Cisco Workflows

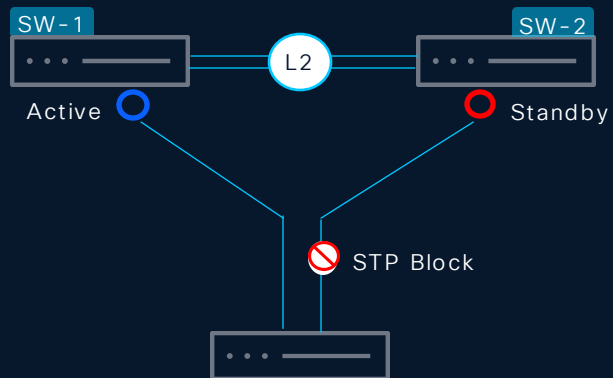


3 Minute Demo: Workflows

EVPN Multihoming - Comparison

FHRP

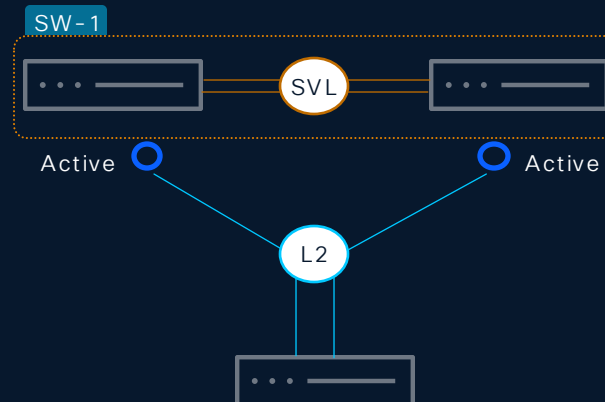
HSRP | VRRP | GLBP



StackWise Virtual

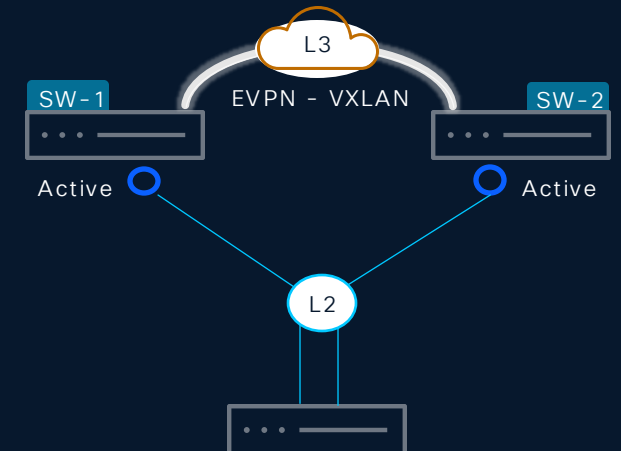


Recommended



EVPN Multihoming

RFC 8365



EVPN Multihoming - Product Support Matrix

**Catalyst 9K
Modular Switch**

Catalyst 9600 Series - Sup-1
Catalyst 9600 Modules - Any

Catalyst 9400 Series - Sup-1
Catalyst 9400X Series - Sup-2
Catalyst 9400 Modules - Any

**Catalyst 9K
Fixed Switch**

Catalyst 9500 Series

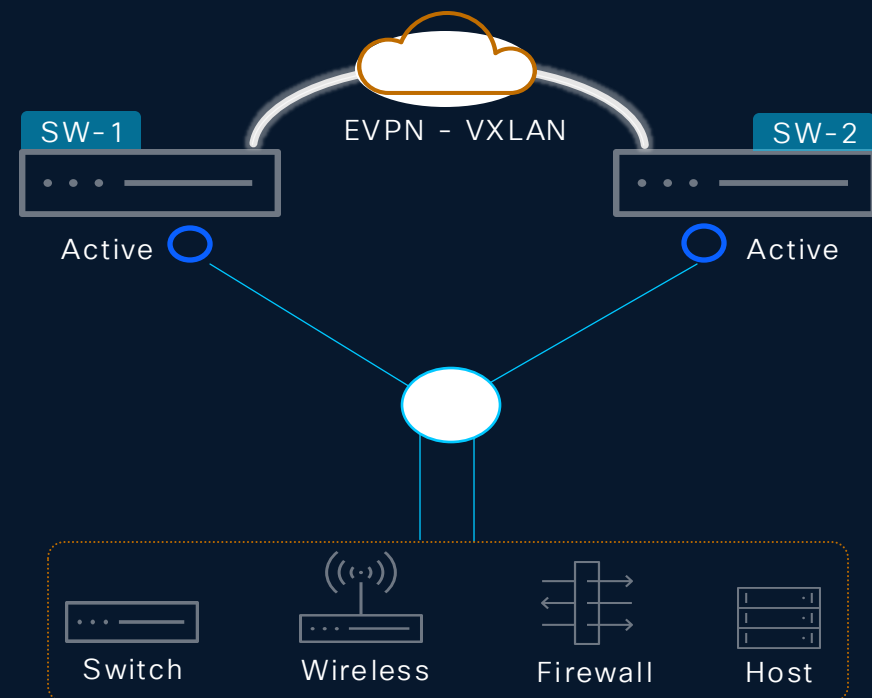
Catalyst 9500-H Series

Catalyst 9300X Series

Catalyst 9300 Series

Software License

Network Advantage



		Conventional Mode	Compressed Mode
Step-1	Inter-Chassis L3 Port-Channel	<pre> ! Interface Port-Channel <ID> description CONNECTED TO ESI mLAG Dist Switch no switchport ip address <IP> <MASK> ! </pre>	<pre> ! Interface Port-Channel <ID> description CONNECTED TO ESI mLAG Dist Switch no switchport ip address <IP> <MASK> ! </pre>
Step-2	IP Routing	<pre> ! router ospf <PID> router-id <IP> ! Interface range Port-Channel <ID>, Loopback <ID> ip ospf <PID> area <0> ! </pre>	<pre> ! router ospf <PID> router-id <IP> ! Interface range Port-Channel <ID>, Loopback <ID> ip ospf <PID> area <0> ! </pre>
Step-3	BGP EVPN Configuration	<pre> ! router bgp <ASN-1> bgp router-id interface Loopback <ID> bgp graceful-restart no bgp default ipv4-unicast bgp log-neighbor-changes ! template peer-policy <EVPN-ESI-PEER-POLICY> send-community both ! template peer-session <EVPN-ESI-PEER-SESSION-POLICY> remote-as <ASN-1> description EVPN-ESI-iBGP-PEER log-neighbor-changes update-source <Loopback0> ! neighbor <ESI-DIST-IP> inherit peer-session <EVPN-ESI-PEER-SESSION-POLICY> ! address-family l2vpn evpn neighbor <ESI-DIST-IP> activate neighbor <ESI-DIST-IP> send-community both neighbor <ESI-DIST-IP> inherit peer-policy <EVPN-ESI-PEER-POLICY> ! </pre>	<pre> ! l2vpn evpn esi-mlag neighbor <ESI-PEER-Lo0-IP> <ASN> <Lo0> ! </pre>

		Conventional Mode	Compressed Mode
Step-4	BGP Best Practices	<pre> ! ip prefix-list <ESI-PEER-SW2> permit <ESI-PEER-Lo0-IP>/32 ! route-map ESI-PEER-FALLBACK permit 10 match ip address prefix-list <ESI-PEER-SW2> ! router bgp <ASN-1> ! template peer-session <EVPN-ESI-PEER-SESSION-POLICY> fall-over route-map ESI-PEER-FALLBACK ! address-family l2vpn evpn bgp nexthop trigger delay 0 ! </pre>	<pre> ! Default and auto-generated ! </pre>
Step-5	L2VPN, User VLAN and EVI	<pre> ! l2vpn evpn anycast-gateway mac auto ! vlan <USER-VLAN-ID> - <USER-VLAN-ID> ! name USER-VLAN-ID NAME ! vlan configuration <USER-VLAN-ID> - <USER-VLAN-ID> member evpn-instance ! </pre>	<pre> ! Default and auto-generated ! </pre>
Step-6	NVE Interface	<pre> interface nve <ID> source-interface Loopback <ID> host-reachability protocol bgp ! </pre>	<pre> ! Default and auto-generated (NVE 1) ! </pre>
Step-7	L2 mLAG Port-Channel	<pre> interface Port-Channel <ID> description CONNECTED TO L2 ACCESS NETWORK DEVICE switchport trunk allowed vlan <USER-VLAN-ID> evpn ethernet-segment auto lacp df-election wait-time 1 ! </pre>	<pre> interface Port-Channel <ID> description CONNECTED TO L2 ACCESS NETWORK DEVICE switchport trunk allowed vlan <USER-VLAN-ID> evpn ethernet-segment auto lacp df-election wait-time 1 ! </pre>

What is xFSU?



xFSU (Extended Fast Software Upgrade) is a feature designed to minimize downtime during software reloads and upgrades

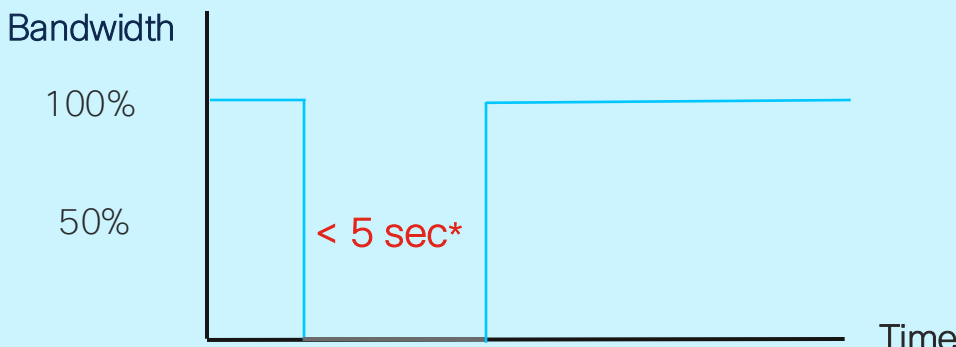
Wide Deployment Flexibility

- Supported on Catalyst 9300 series switches
Works on both standalone and stack setups
- Supported in Multiple Network Topologies
Compatible with Layer 2 (L2 Access) and Layer 3 (L3 Routed Access) networks
- No Topology Modifications Needed



Why is xFSU Needed?

Designed for the Access layer to prevent service interruptions in mission-critical networks

	Regular Upgrade	xFSU
Traffic Impact on Switch	 Bandwidth 100% 50% > 10 minutes Time	 Bandwidth 100% 50% < 5 sec* Time
Service Impact	- Traditional upgrades cause PoE resets, leading to AP and IP phone reboots. - Wi-Fi downtime can last up to 15 minutes due to AP reboot, regaining IP and client reconnections.	- xFSU supports Hitless Perpetual PoE, that keeps APs and IP phones powered during upgrades. - With downtime reduced to > 5 sec, there is no impact on Wi-Fi connectivity or client associations.

xFSU Journey on Catalyst 9300



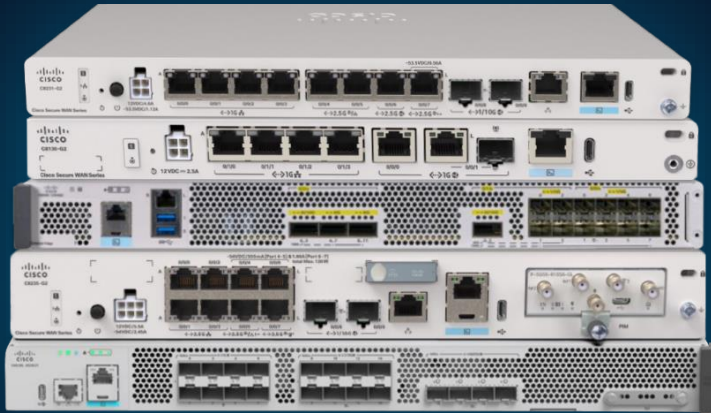
IOS XE Release	17.3.2a	→	17.7.1	→	17.15.2
Supported 9300 Platforms	Catalyst 9300/L		All		All
Downtime	< 30 seconds		< 30 seconds		< 5 seconds



Hardware Innovations

Cisco Secure Router

Cisco 8000 Series Secure Router

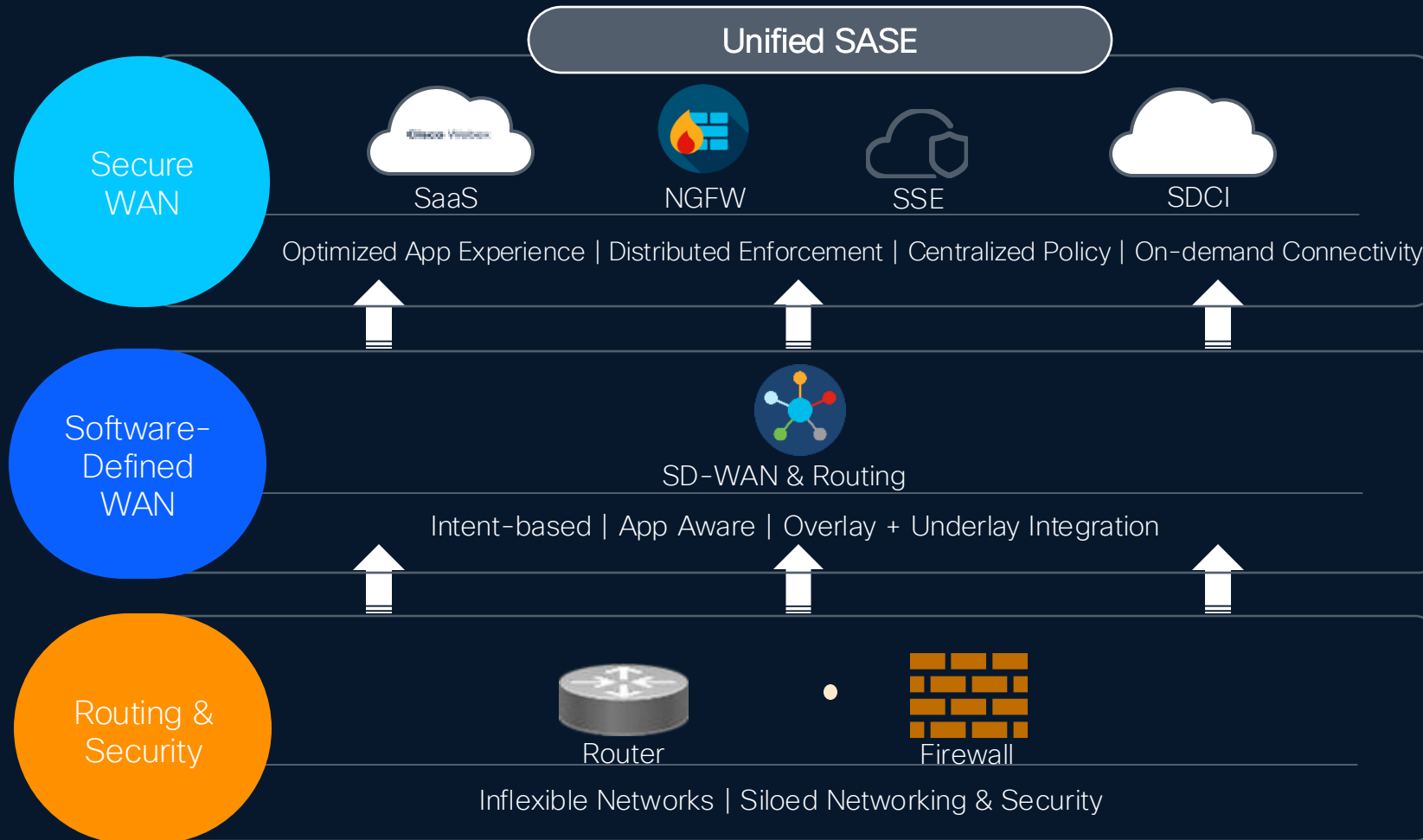


Introducing the industry's **most advanced router**

- **Secure Networking Processor** - leapfrogs with 3x higher throughput
- **Advanced Security** - Post Quantum Cryptography capable, NFGW & SASE with 3x threat protection throughput
- **Assurance** - ThousandEyes Traffic Insights, GenAI troubleshooting
- **Operational Simplicity** - IOS-XE managed by Dashboard & Simplified Licensing

Evolution to Cisco Secure WAN

Security and Networking Converge



Purpose built for the Future AI Workloads

Secure Networking Processor



64-bit Multi-threaded Parallel Processing
Embedded Security Engine, Crypto agility
Hardware Accelerated Data plane
AI/ML Engine

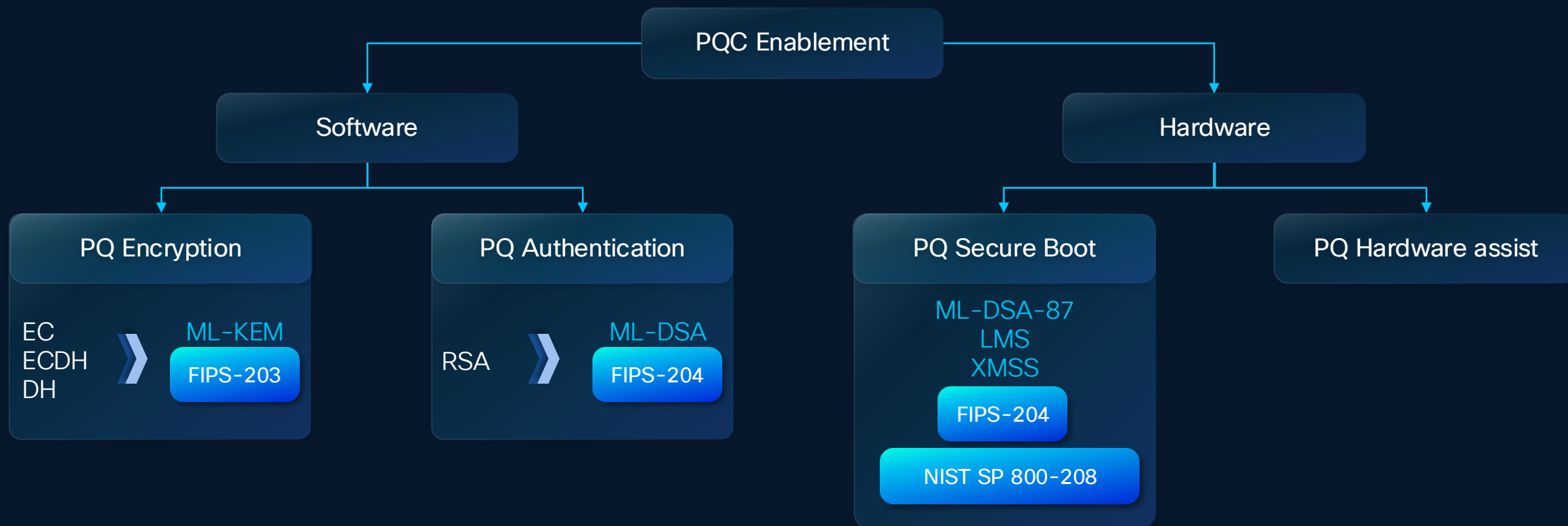
Greater IO



10GE Interfaces in Branch
25GE Interfaces for Campus
40GE/100GE Interfaces for DC
PDP – 30% reduced power

What is Post-Quantum Cryptography?

A Comprehensive list of Quantum-Safe Algorithms defined by NIST as a part of [CNSA 2.0 suite](#)

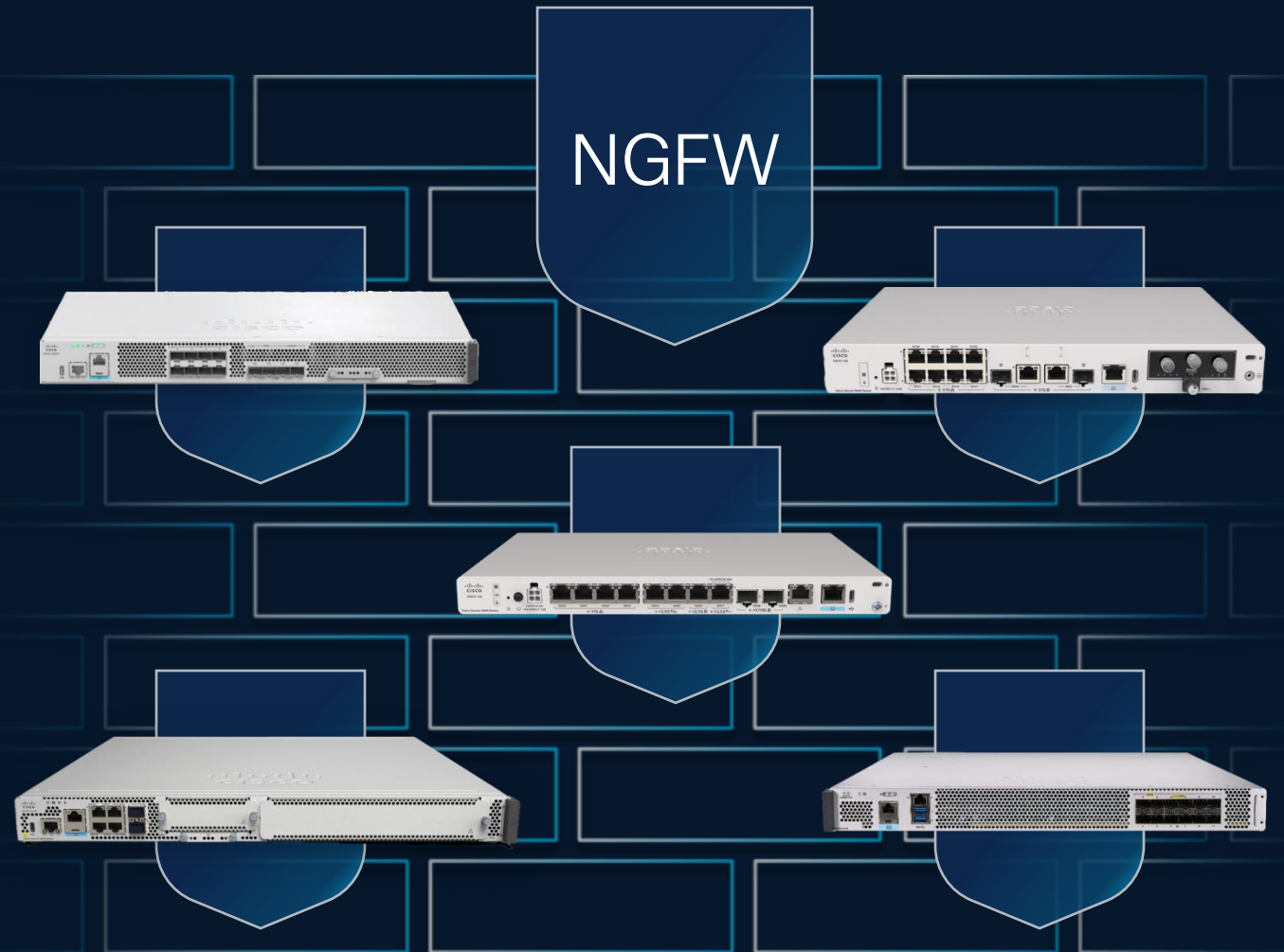


Comprehensive PQC enablement is targeted only on Cisco Secure 8000 series

By January 2027 : All new NSS acquisitions must be CNSA2.0 compliant
By December 2030 : Phase out all network equipment not compliant with CNSA2.0
By December 2031 : Mandatory use of CNSA2.0

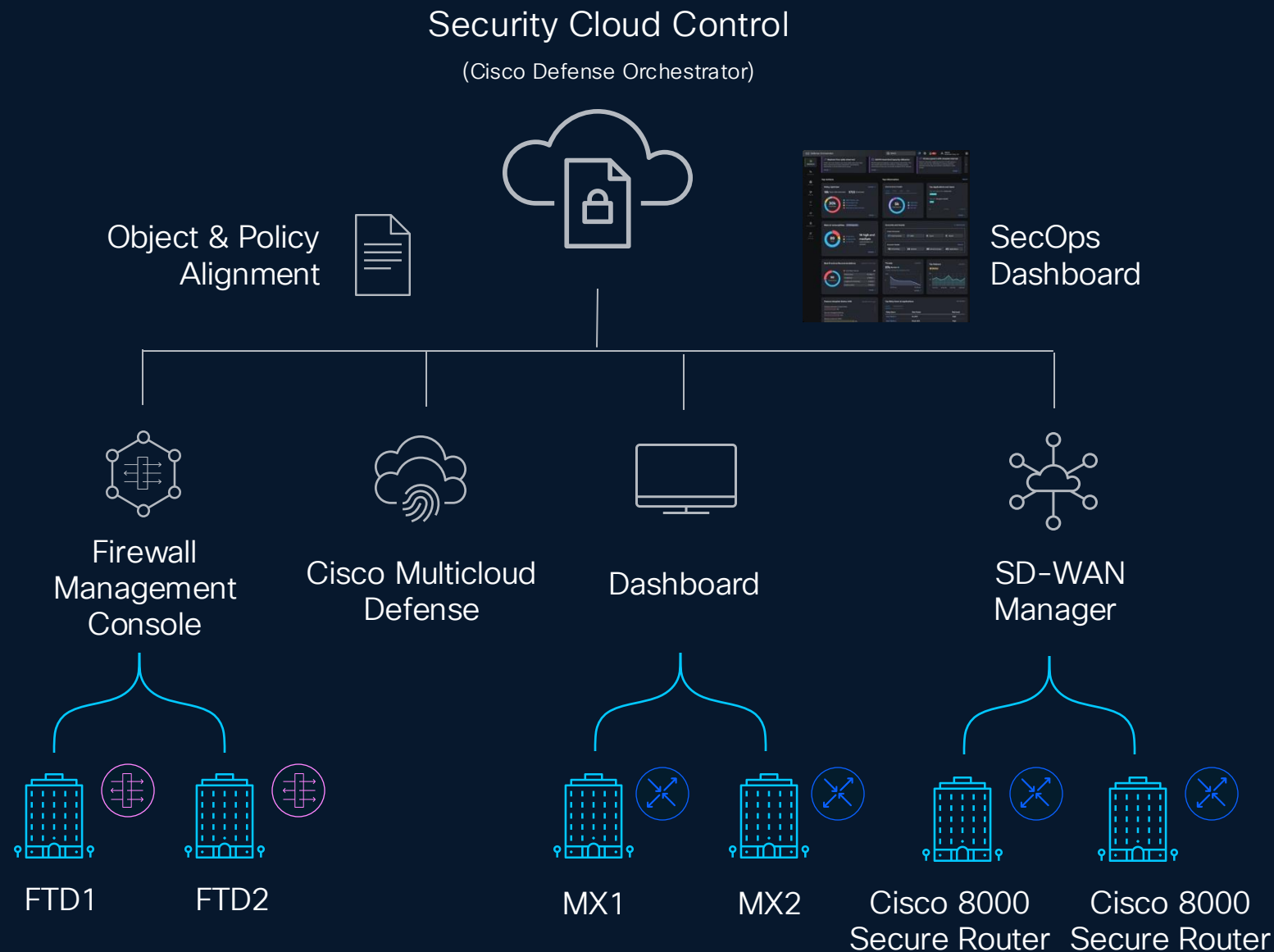
Advanced Security

- **Embedded NFGW stack** with native support in IOS-XE, backed by Talos
- **3x greater threat protection** throughput than previous generation Catalyst 8000
- Physical Security with **Tamper detection**



Centralized security management in Security Cloud Control

Providing SecOps admins with rich, **centralized management** with policy optimization, vulnerability management, and best practice recommendations



Launched in JUNE 2025

Cisco 8000 Series Secure Routers for every size location



Small Branch: 8100

4 Variants

IPsec:
Up to 1.5 Gbps

SD-WAN:
Up to 1 Gbps

Threat Protection:
Up to 1 Gbps



Medium Branch: 8200

2 Variants

IPsec:
Up to 5 Gbps

SD-WAN:
Up to 4 Gbps

Threat Protection:
Up to 2.5 Gbps



Large Branch: 8300

2 Variants

IPsec:
Up to 20 Gbps

SD-WAN:
Up to 15 Gbps

Threat Protection:
Up to 7 Gbps



Campus: 8400

3 Variants

IPsec:
Up to 45 Gbps

SD-WAN:
Up to 23 Gbps

Threat Protection:
Up to 11 Gbps



Data Center: 8500

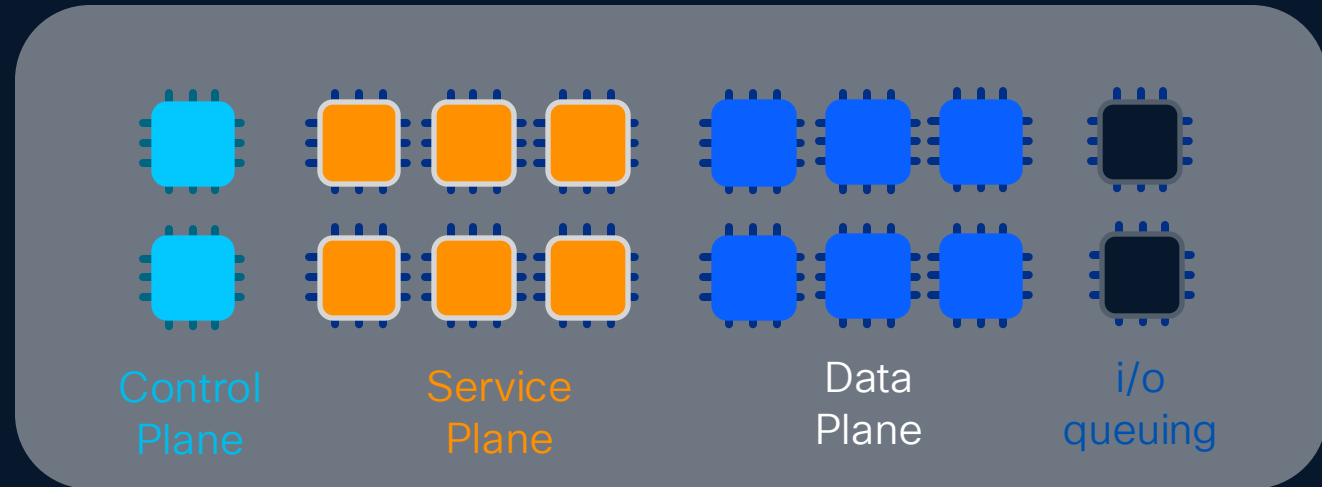
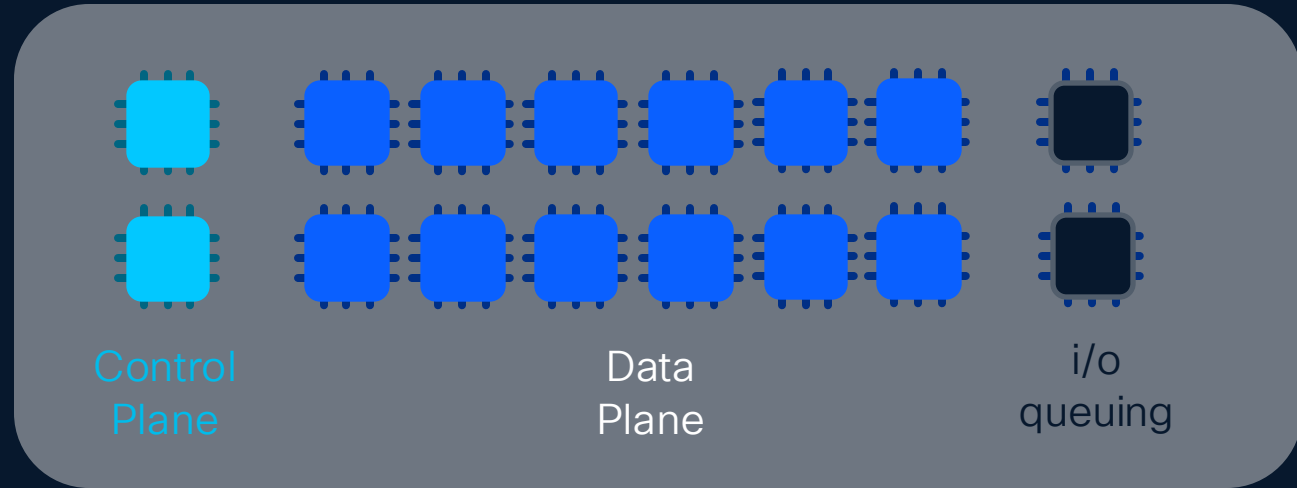
2 Variants

IPSec:
Up to 45 Gbps

SD-WAN:
Up to 23 Gbps

Route Scale up to 8M

C8455-G2: Data Plane vs Service Plane Heavy



CLI configuration and reboot required to change modes.

C84xx-G2 Service Plane Heavy

Configure, Verify



Configure:

```
C8475-G2#config t
C8475-G2(config)#platform resource service-plane-heavy
C8475-G2(config)#end
C8475-G2#wr mem
C8475-G2# reload
```

Verify:

```
C8475-G2#show platform software cpu allocation
CPU alloc information:
```

```
Control plane cpu alloc: 0-1
Data plane cpu alloc: 11-23
```

```
Service plane cpu alloc: 2-10
```

```
Slow control plane cpu alloc:
Template used: CLI-service_plane_heavy
C8475-G2#
```

Configure:

```
C8455-G2#config t
C8455-G2(config)#platform resource service-plane-heavy
C8455-G2(config)#end
C8455-G2#wr mem
C8455-G2# reload
```

Verify:

```
C8455-G2# show platform software cpu allocation
CPU alloc information:
```

```
Control plane cpu alloc: 0-1
Data plane cpu alloc: 8-15
```

```
Service plane cpu alloc: 2-7
```

```
Slow control plane cpu alloc:
Template used: CLI-service_plane_heavy
C8455-G2#
```

SP heavy is the default mode for Cisco SD-WAN 'controller' mode operation

C8500: QFP 3.0 Architecture

Multi-Threaded Parallel Processing

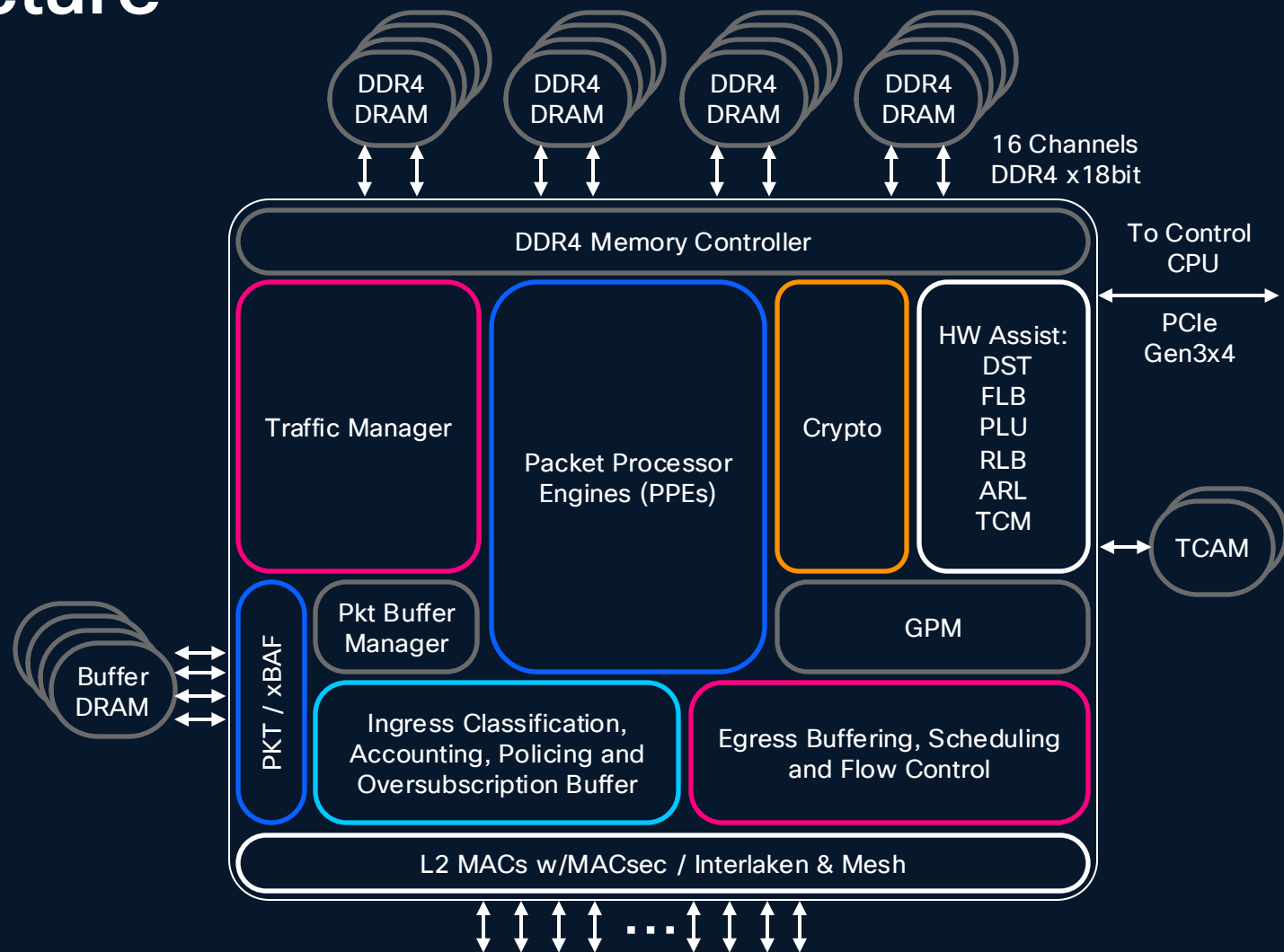
- 28 clusters of 8 PPEs each
- 224 PPEs, 4 threads each → 896 threads

Hardware Accelerated Crypto

- 16 Crypto Engines with dedicated resources
- Flow queues for complex stateful features

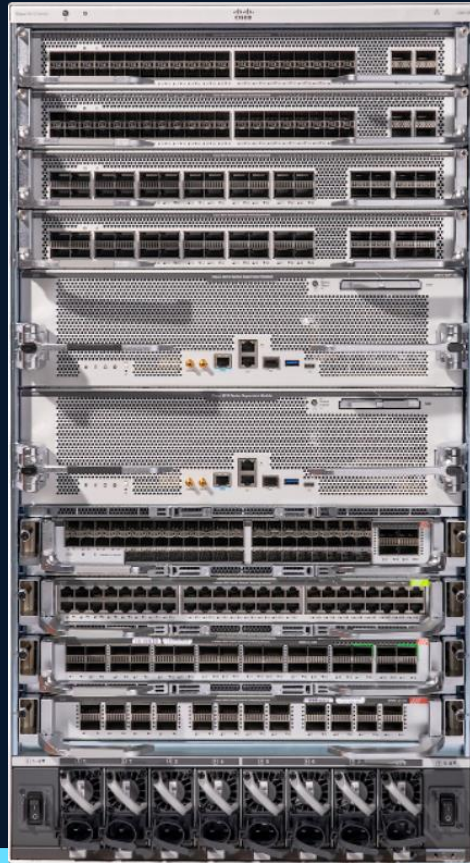
Layer 2 Aggregation

- 240Gbps of aggregation
- Per Port Classification and Accounting



Cisco Smart Switch

Cisco C9610



Cisco C9350



Cisco C9000 Smart Switches

AI-Ready Hardware

C9350, C9610, Silicon One, IOS XE

Security fused into the network

PQC Compliant, Deploy Compensating Controls

Operational Simplicity with Platform Flexibility

One hardware, your choice of management platform

Architecture for the AI-Ready Secure Networks

Introducing Cisco C9350 Series Smart Switch

Next Generation Access Smart Switch

Smart & Energy Efficient

EnergyStar Rated
Smart power
System and Endpoint Hibernation
EEE/Auto-off Components

Advanced Security

Crypto-Ready, PQC Resistant

Full throttle - Downlinks

All 48 ports simultaneous Full
mgig/10G with UPOE+, Perpetual POE,
Fast POE

25/50G & 100G uplinks

Dense uplinks: 2 or 4x 100G/40G,
50G at access: 8x 25G/10G or 4x
50G, 8x 10G/mGig



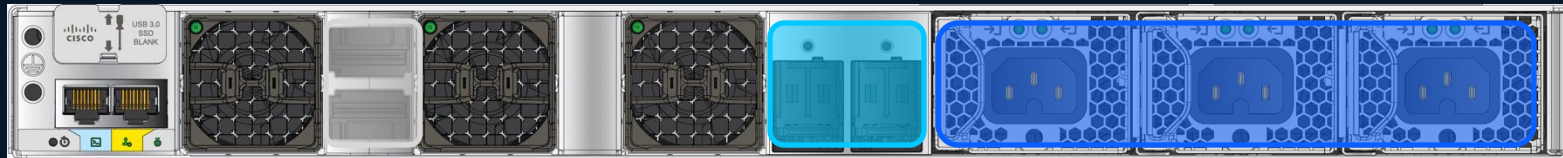
Higher Bandwidth

1.3 Terabytes

Silicon One A100

Higher Scale

4 x MAC Scale/ 4 x ACL
Scale /6 x ROUTE Scale



1.6T Stacking

Next Gen Stackwise Architecture
N+1 redundant fan trays with
reversible air flow options.

StackPower+

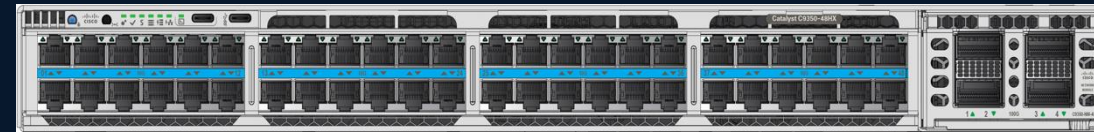
Enhanced power pooling with
StackPower+

3 Power Supplies

Combined, Redundant Mode(N+1),
Cold Redundant Mode

Unified Experience: The New out-of-box Experience

Effortless Onboarding: Catalyst or Meraki mode, hands-free!



Switch boot up

PnP/ZTP Initiated

Switch connects to PnP/ZTP Server

Provision Switch on Catalyst Center

NexTunnel Initiated

Switch connects to Meraki Dashboard

Claim Switch on Dashboard

Hybrid
Operating Mode

Cloud
Operating Mode

Your Choice

★ One box, your choice, hands free
No CLI conversion or -M SKUs needed!

Cisco C9350 Series Smart Switches



On-prem

Gigabit

Up to 1 GB



C9350-24P/48P

- 24/48x 1G/100M/10M copper
- 30W PoE+



C9350-24U/48U

- 24/48x 1G/100M/10M copper
- 60W UPoE



C9350-24T/48T

- 24/48x 1G/100M/10M copper
- Data only

MultiGig

Up to 10 GB (mGig)



C9350-48HX

- 48x 10G mGig
- 90W UPOE+



C9350-48TX

- 24/48x 10G mGig
- Data only



Cloud management

Unified Product-Single SKU

C9350 only flexible
Uplinks – Introducing 50G
Uplinks in Access

Cisco C9350 Exclusive Modular uplinks



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3 Slot Titanium PSU For
Maximum Resiliency

New Titanium-rated power supplies



500W AC



850W AC



1600W AC

New Stack cables capable
of 1.6T Stack Bandwidth



50CM-1M-3M



30CM-150CM

Front to Back and Back to
Front Fan Airflow

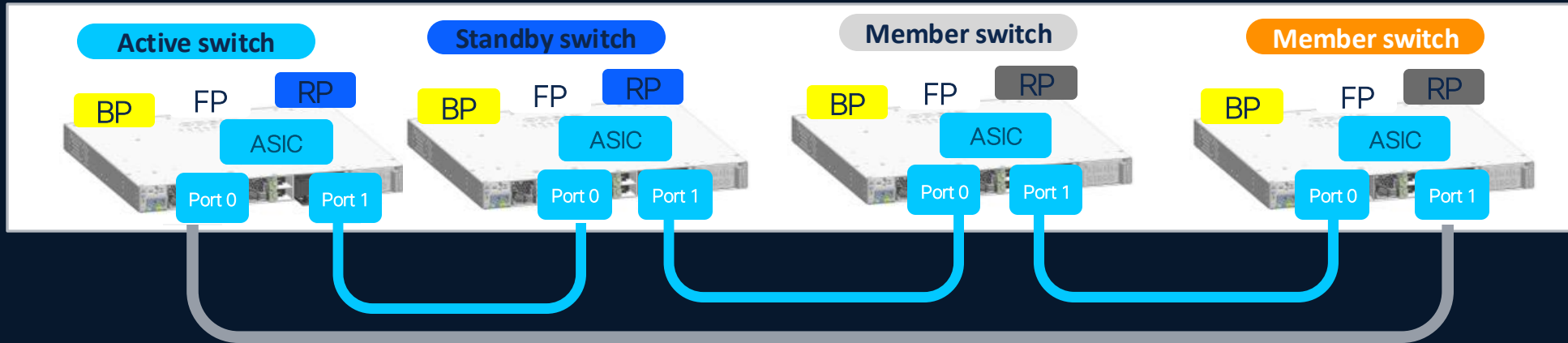
New Modular Fans



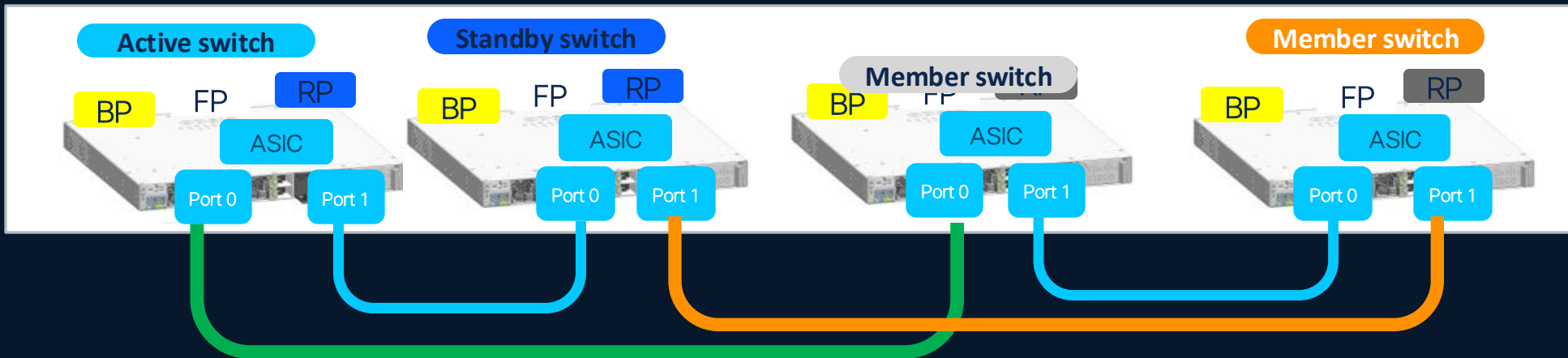
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Cisco C9350 Series Smart Switches

- Next Generation StackWise Architecture



Traditional Stacking Architecture



New Ethernet-based Stacking Architecture

**Standard based
Ethernet Stacking**

**More Flexible Stack
Cable Configurations**

**Up to 12 Stack
Members**

**Reduces the impact of
link failure**

Introducing C9610

Generation 3 modular core

Gen 3 Supervisors



C9610-SUP3



C9610-SUP3XL

2M IPv4/1M IPv6

3.2 Tbps per slot

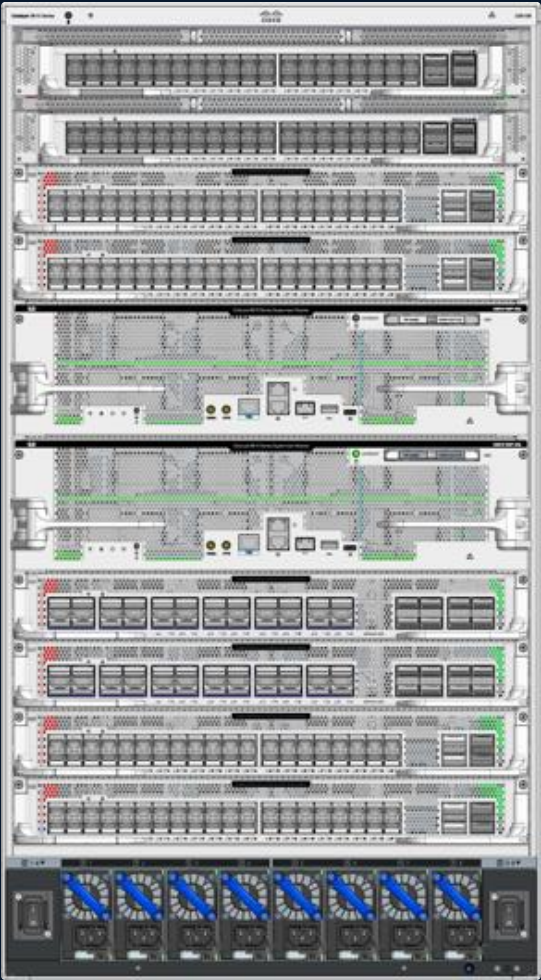
512K hosts or clients*

32G DDR4 memory

256K ACL entries*

8 core X86 CPU @2.0 Ghz

Gen 3 Chassis



C9610

8-line card slots (1.25 RU)

2 supervisor slots (dedicated) (2.5 RU)

51.2 Tbps System Bandwidth

Four serviceable fan trays in rear side

Blue Beacons (system/fan tray, sup, line cards)

Modular power supplies

Gen 3 Line cards



C9610-LC-32CD



C9610-LC-40YL4CD



4x FAN Trays

With front to back airflow

*Hardware Capable

Cisco 9610R Supported Existing Line Cards

C9600-LC-24C - 100G/40G(fiber)

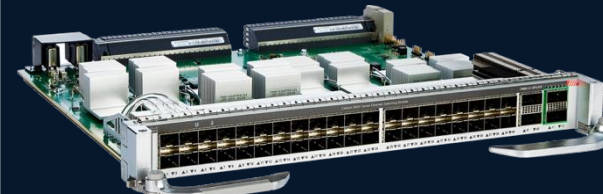
- 24 ports
- QSFP28/QSFP+
- Supports 100G and 40G



FCS+

C9600-LC-40YL4CD - 400G/200G³/100G/50G/40G/25G/10G (fiber)

- 40+2+2 ports
- SFP56/QSFP56+/QSFPDD
- Supports 400G, 200G³, 100G, 50G, 40G, 25G and 10G



C9600-LC-48YL - 50G/25G/10G/1G (fiber)

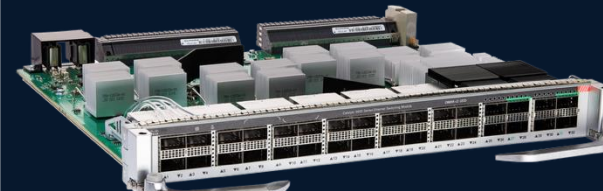
- 48 ports
- SFP56/SFP28/SFP+
- Supports 50G, 25G, 10G, and 1G



FCS+

C9600X-LC-32CD - 400G/200G³/100G/40G(fiber)

- 30+2 ports
- QSFP28/QSFPDD
- Supports 400G, 200G³, 100G, and 40G



C9600-LC-48TX - mGig (copper)

- 48 ports
- Copper 10G (NBASE-T/10BASE-T)
- Supports 10G



C9600X-LC-56YL4C - 100G/50G/40G/25G/10G (fiber)

- 56 50G+4 100G ports
- SFP56/QSFP28
- Supports 100G, 50G, 40G, 25G, 10G



Catalyst 9000 innovations

A look back to 3 decades of industry leadership



First Catalyst:
Catalyst 5000 launched



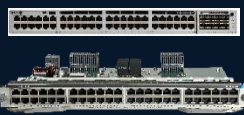
Catalyst 9000
family launched



Catalyst 9200 and
9800 Series launched



Catalyst 9600
Series launched



Catalyst 90W PoE/UPOE+
line introduced



Catalyst 9300X fiber and
microswitches launched



Catalyst 9000X
models launch



Catalyst 9000X
expansion

1993

2017

2018

2019

2020

2021

2022

Industry first innovations

Software-Defined Access	100 Gigabit Ethernet	90W Cisco UPOE®+	Smart buildings	Line-rate IPsec	HVDC
Programmability	MACsec 256	BGP EVPN	SD-AVC	100G uplinks in access, 400G in core	3-row high density 1RU
StackWise® Virtual	Encrypted Traffic Analytics	SDM templates	Cisco ThousandEyes service assurance	WAN MACsec	Cloud management
Hot patching	SD-Access fabric	PTP/AVB			
ISSU/GIR	App hosting	xFSU lossless upgrades	SD-Bonjour	Firewall for OT (ASAc)	

The Network Reinvented:
Switching and Routing Innovations

Call to Action:

Please connect with your Cisco Account teams for more information on these exciting innovations or others!

