

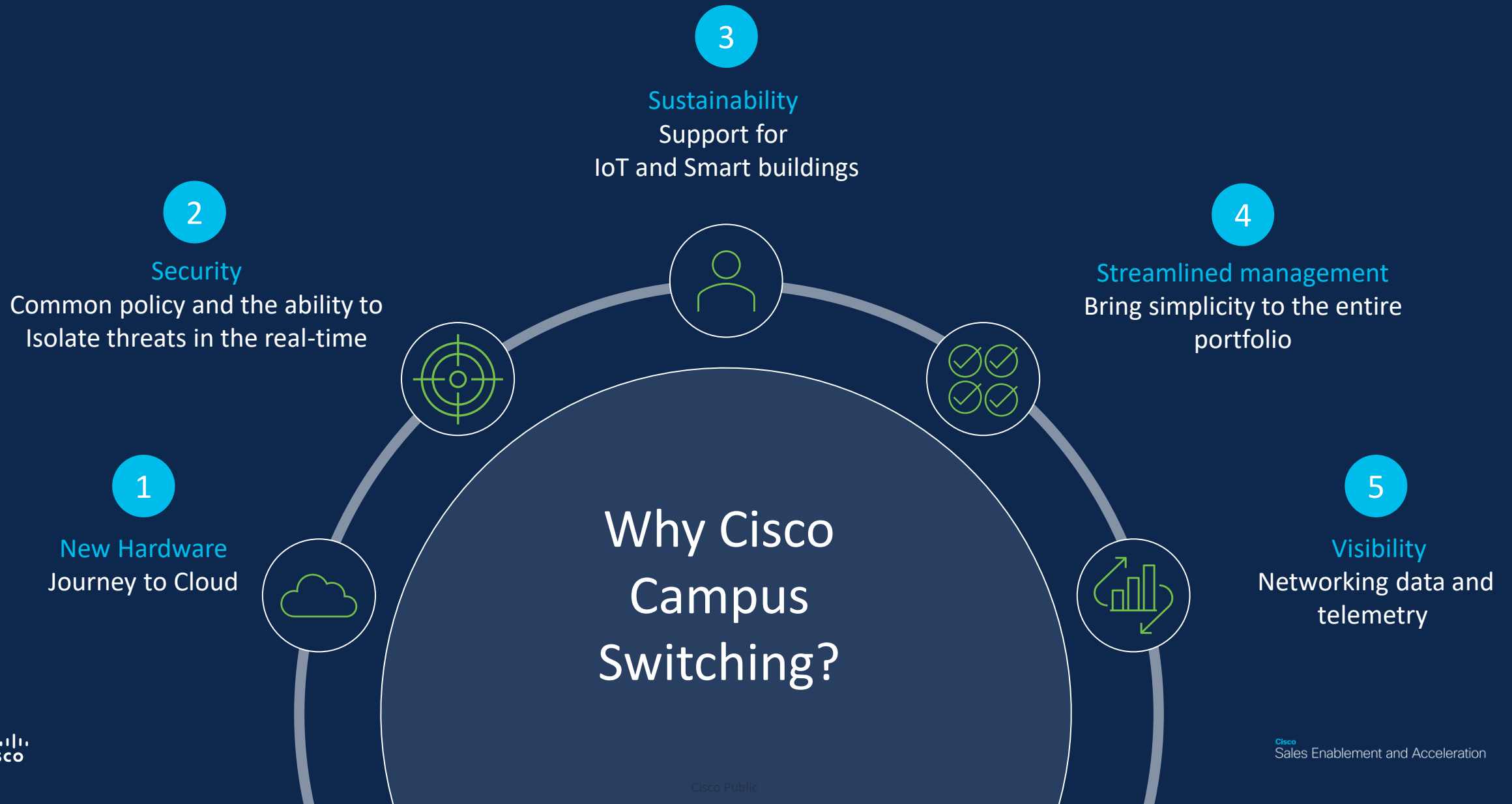
# Power of the Platform

Catalyst X-Series Switching Innovations

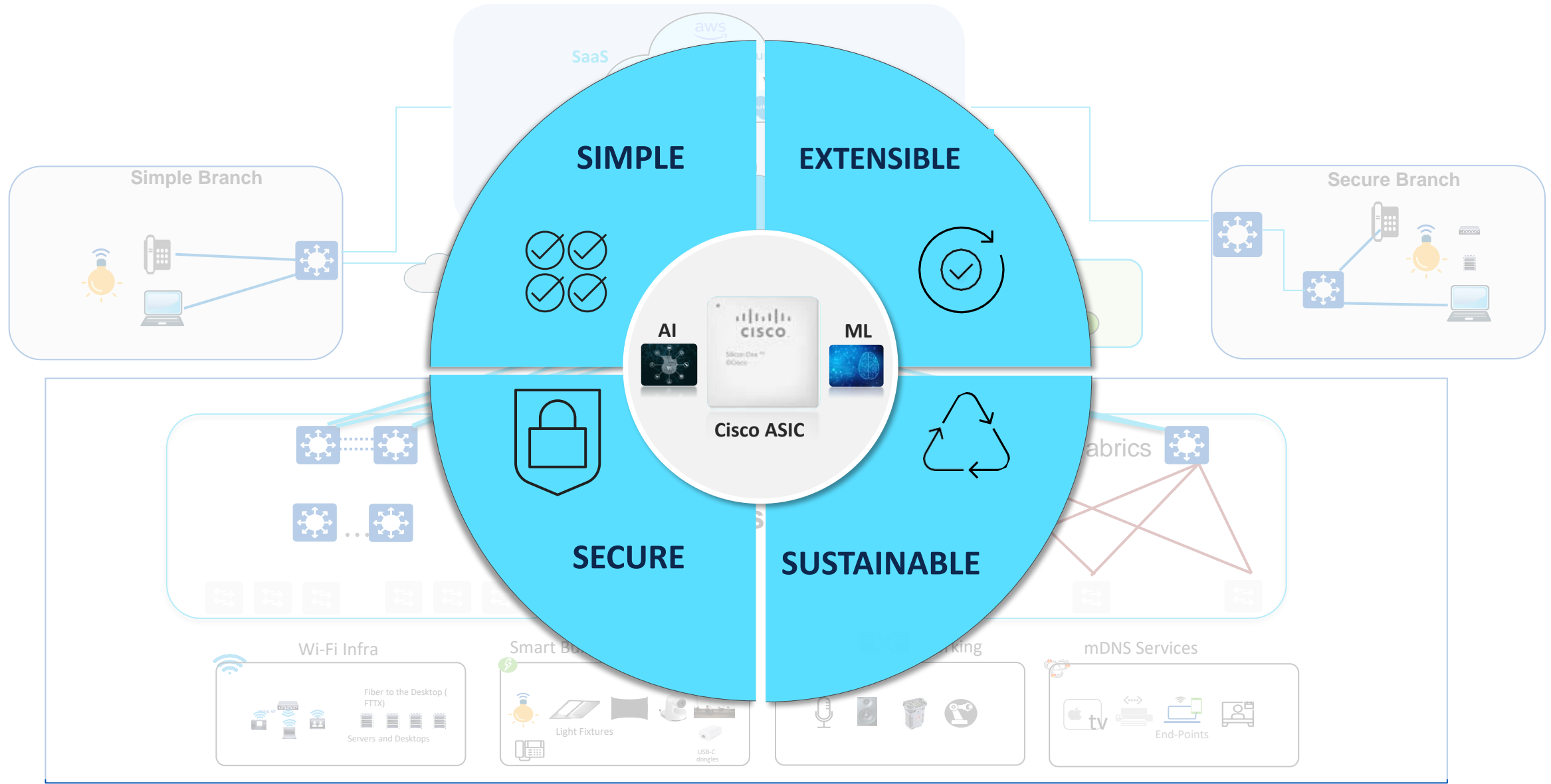
*SE René Andersen*



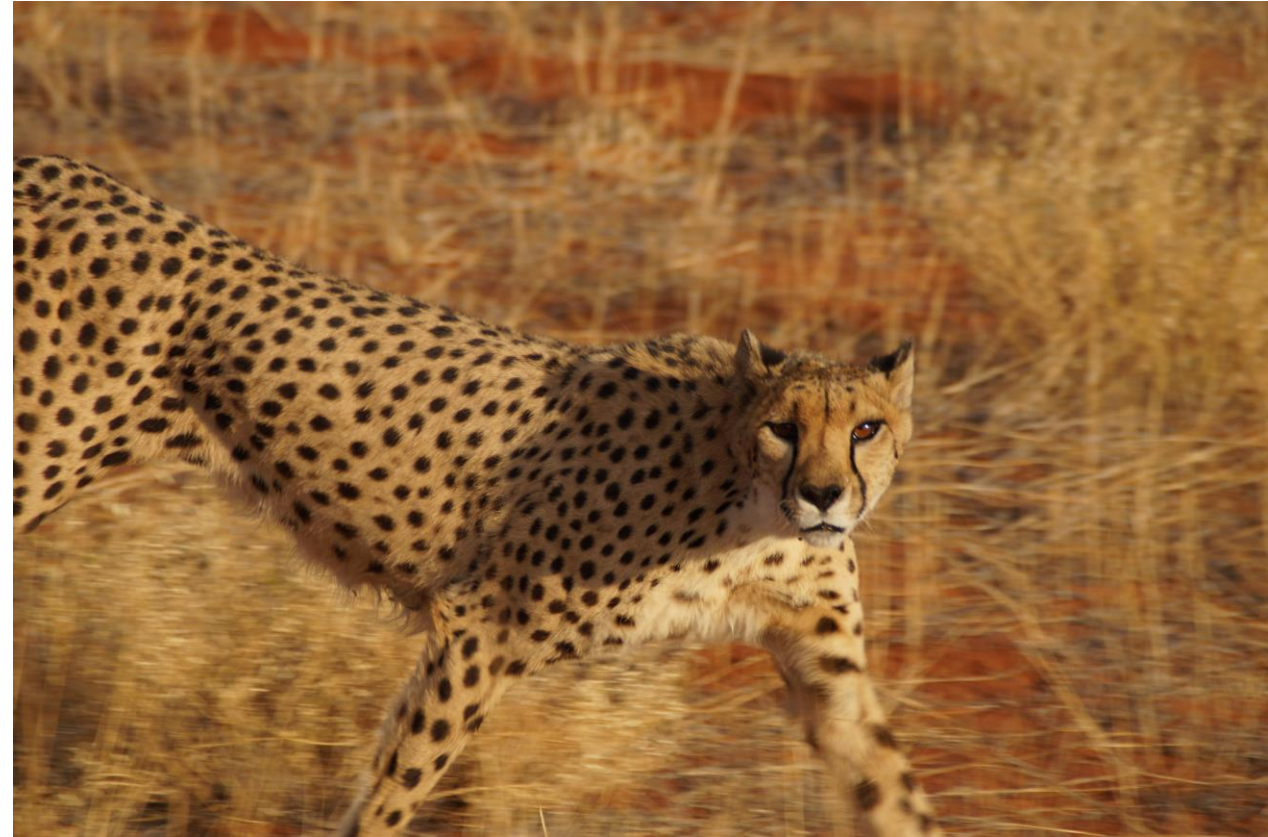
# Cisco Campus Switching – Driving Network Transformation



# Catalyst 9000 Switching Campus



# Catalyst 9000X Power series



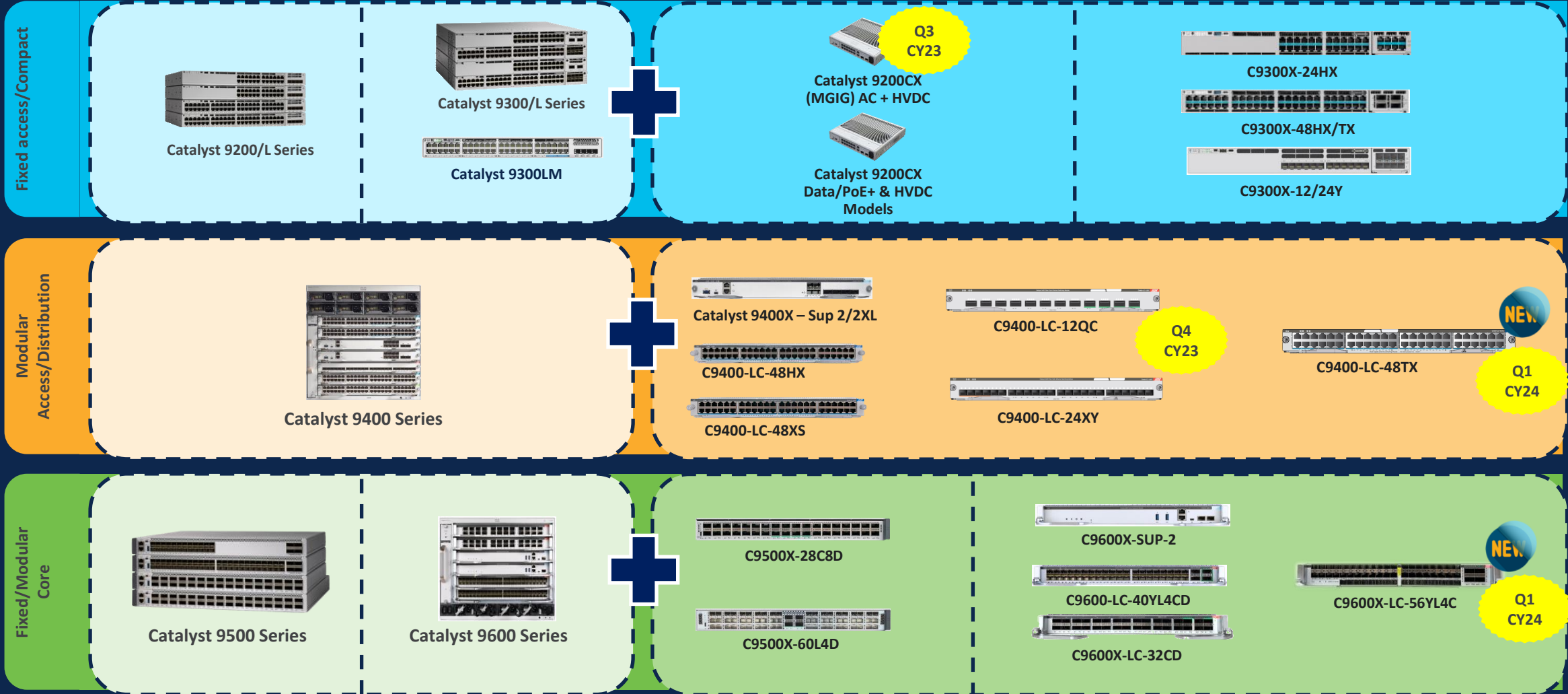


# Cisco Catalyst 9000 Switching Portfolio

One Family from Access to Core

Catalyst 9000 Series

Catalyst 9000X Models



# C9600X-56YL4C : High Density Line Card



Catalyst® 9600X SUP-2



Catalyst® 9606R

Combo line card with dense 10G/25G/50G and 100G ports

NEW



56 x 10G/25G/50G + 4x40G/100G

**C9600X-LC-56YL4C**



**First line card with 3 rows of ports**  
Supported with SUP-2

- 3.2Tbps with SUP-2



**Flexible deployment options**

- Uplink and downlink
- 10G through 100G on the same slot
- Breakout and QSA support\*\*



**High-speed secure transport**

- IPSEC\*, MACsec, WAN-MACsec
- IEEE 1588 and PTP v2 \*\*
- Hitless MUX (HMUX)

# C9600 Series High Speed Port Options

Get the highest performance with Silicon One based SUP-2 (C9600X) and 2<sup>nd</sup> Gen Line Cards

Line Card	10/25/50G	100G	400G	LAN MACsec	WAN MACsec	IPsec
<b>NEW</b> C9600X-LC-56YL4C	56	4	NA	✓	✓	✓ **
C9600X-LC-32CD	NA	30	2	✓	✓	✗
C9600-LC-40YL4CD	40	2	2	✓	✓	✗
C9600-LC-48YL	48	NA	NA	✗	✗	✗
C9600-LC-24C	NA	24	NA	✗	✗	✗



256\* x SFP+ ports serving high port density along with LAN / WAN MACsec

# Catalyst 9500 Series

Extending the Catalyst 9500 High-Performance Fixed Core

Non-XL Scale

**Catalyst 9500H (UADP 3.0)**



C9500-32C / C9500-32QC



C9500-48Y4C / C9500-24Y4C

Total Capacity

**3.2 Tbps**

32 x 100G or  
48 x 25G + 4 x 100G

Core  
+  
Edge

XL Scale

**Catalyst 9500X (S1 Q200)**



C9500X-28C8D

Total Capacity

**6.0 Tbps**

36 x 100G or  
28 x 100G + 8 x 400G

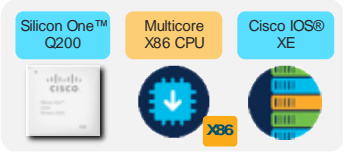
2x





# Introducing Catalyst 9500X-60L4D

Dense 1 RU SFP56 Switch – 60 x 10/25/50G + 4 x 40/100/200\*/400G



## ~3 x Switch Performance

Upto 4.6 Tbps switching capacity  
Upto 8 Bpps forwarding rate

## 10x Route Scale and ultra-deep Buffers

Up to 2 million route scale  
8 GB of ultra-deep buffers

## 50G SFP in Campus

Dual rate optics for future proofing  
High Port Density

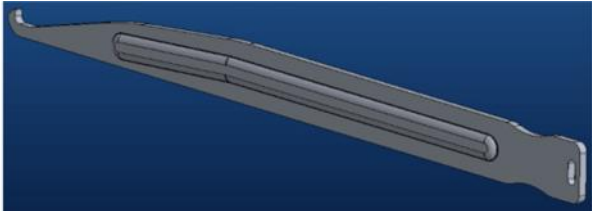
## IOS-XE 17.10.1

## Unmatched Flexibility with Customizable Templates

## 50G & 400G leadership

## Secure with LAN & WAN MACsec or IPsec\*

## Application Hosting (2 x 10G AppGig ports)



## Reversible Airflow

Front to Back  
Back to Front

## Highest Fixed Resiliency

Redundant fans (5+1)  
Redundant power supplies (AC & DC options)  
StackWise® Virtual (17.11.1)

## Hardware Encryption

LAN MACsec  
WAN MACsec  
IPsec\*

Industry first

# Cisco Catalyst 9400 Series

SUP2/2XL



Catalyst® 9400X SUP-2/XL

2nd Gen

Unmatched flexibility

100G leadership in access

3-4X Bandwidth Boost

C9400-LC-24XY



C9400-LC-12QC



C9400-LC-48XS



C9400-LC-24S



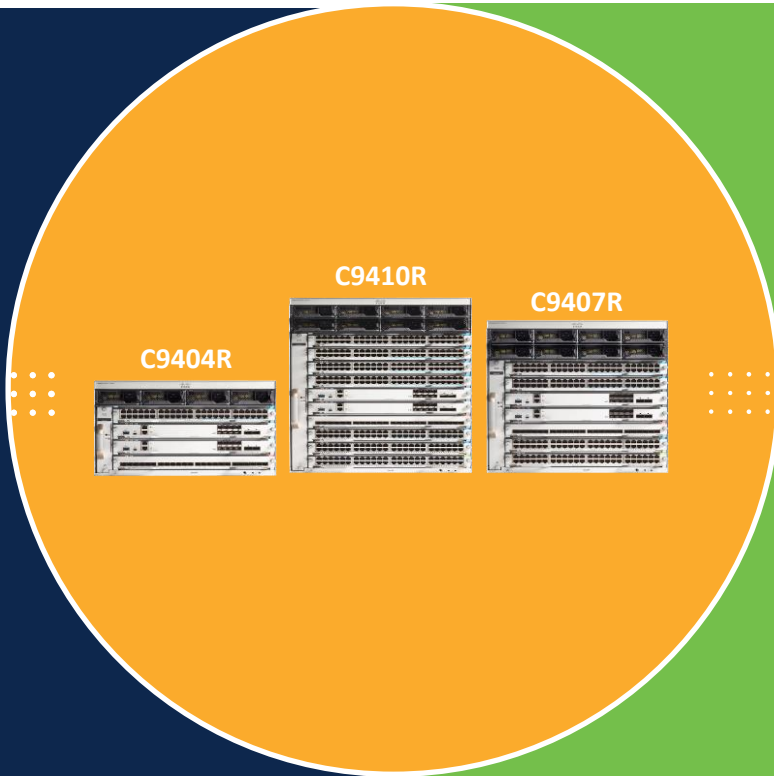
C9400-LC-48HX



C9400-LC-48HN



C9400-LC-48UX



480G per slot BW  
Higher bandwidth per slot

High Speed Transport Security  
100G IPsec | Line-rate MACsec

Smart & Sustainable  
Fast/Perpetual PoE | Titanium PS

Customizable Templates  
Layer 2 | Layer 3 | Security

Higher Speeds  
1/2.5/5/10/25/40G/100G

Larger Buffers  
Up to 36MB packet buffer/ASIC

RJ45, mGig, PoE/UPoE, UPoE+, SFP, SPF+,  
SFP28, QSFP28,

\*1G not supported on the SUP2/2XL Uplink ports

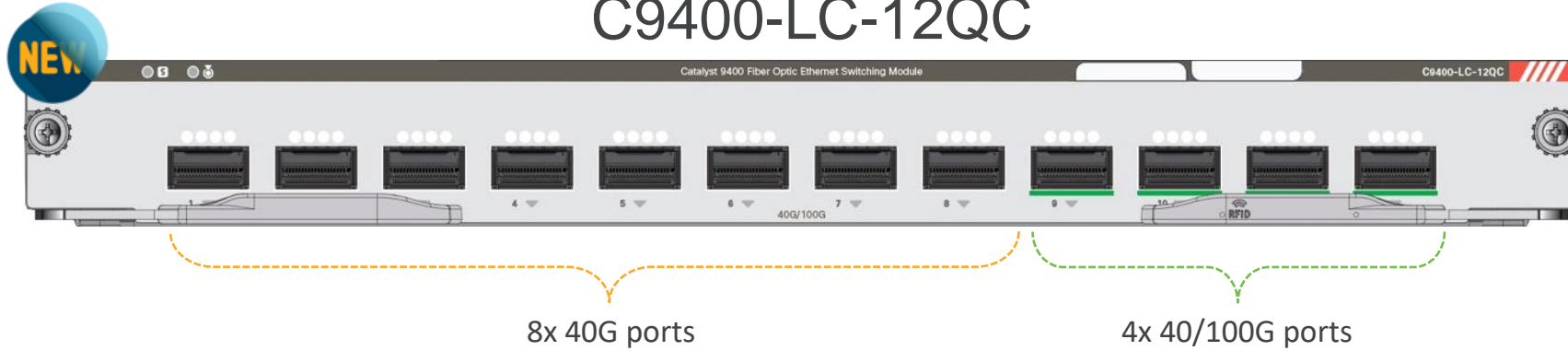
Enhanced Capabilities

# Introducing 25G & 40G/100G Line Cards on C9400X



IOS XE 17.12.1

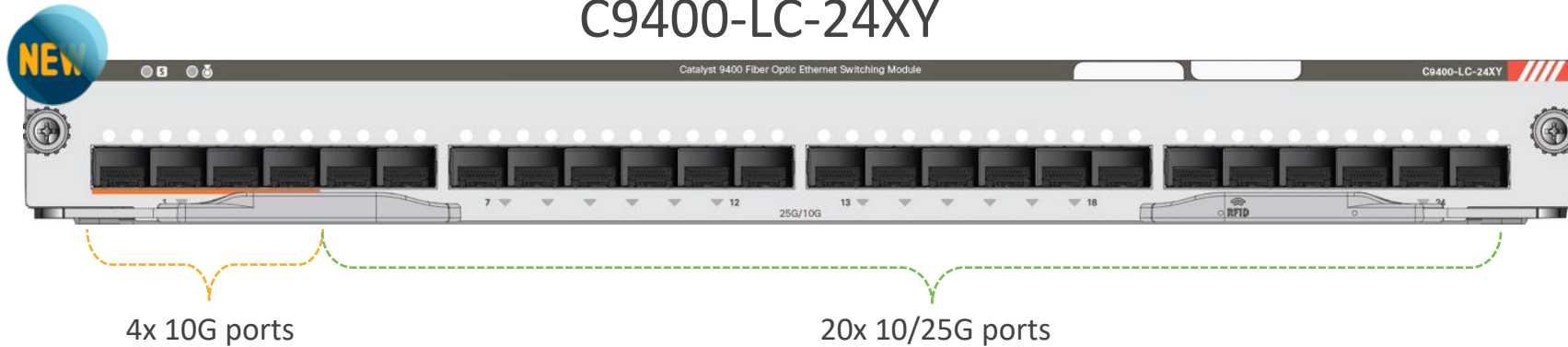
## C9400-LC-12QC



Enabling Collapsed  
Access & Distribution  
Transition with SUP2

Higher speed downlinks  
for High-end Access  
expanded designs

## C9400-LC-24XY



Supported with SUP-2  
& SUP-2XL Only

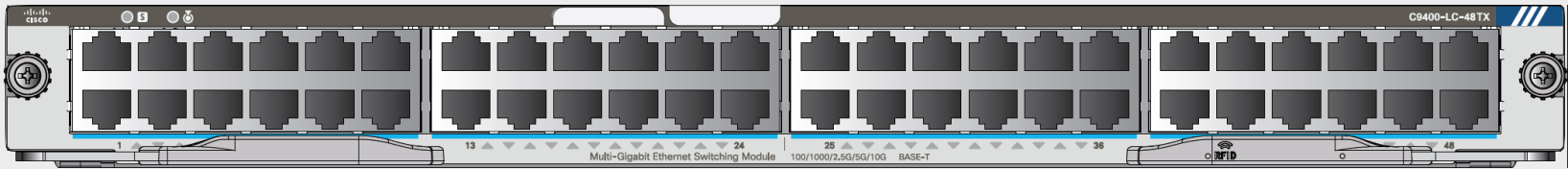
# Cisco Catalyst 9400 Series

## 48-port Multigigabit line card & New Titanium-Rated Power Supply

NEW

Data Only Multigigabit Line card

Q1CY24



C9400-LC-48TX (48x 10G Multigigabit Data Only)

2nd Gen

- 48 ports of Copper
- Up to 10G line rate on all 48 ports with SUP-2XL
- Supported speeds: 100M, 1G, 2.5G, 5G, 10G
- 2:1 oversubscription with SUP-2

UADP 3.0sec

Catalyst® 9400X SUP-2/XL



C9404R

C9410R

C9407R



NEW

New Titanium Rated PS sustainable & low operating cost for customers

current state

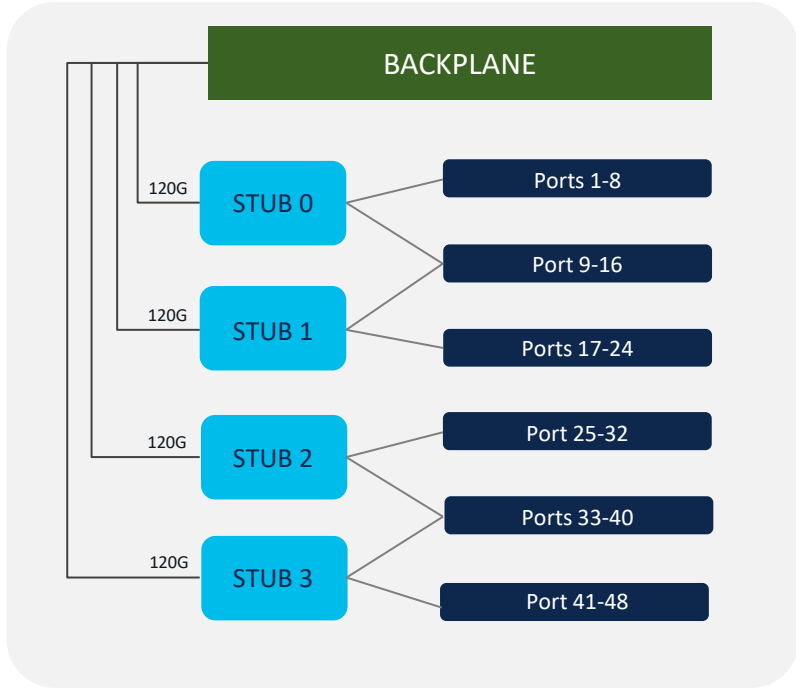
Q1CY24



C9400-PWR-3200ACT







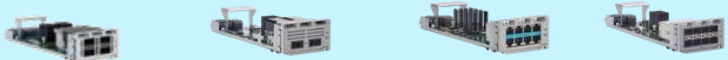




Titanium is the highest efficiency rating in the market, with a +5% gain above Platinum at 100% load



# Cisco Catalyst 9300 Series


Expanded Catalyst 9300 Series with Catalyst 9300X and Catalyst 9300/L/LM models

Catalyst 9300X Flexible Uplink Switches		Catalyst 9300 Flexible Uplink Switches	Catalyst 9300L/LM Fixed Uplink Switches
<b>mGig</b>	100G HW IPsec StackWise® 1T	Cisco StackPower StackWise® 480	Front Panel SSD* StackWise® 320
 Highest mGig/UPOE+ density	 mGig + UPOE	 Depth<=13.2(C9300LM)	
100G Uplinks			 715W DC 600WAC 1000W AC
Resilient, Secure Campus			Business Critical Branch
<b>Fiber</b>			
 1/10/25G Fiber	 1G Fiber		
Modular Uplinks	Modular Uplinks		
 QSFP 4x 100/40G * 2x 100/40G QSFP    8x 10G-Mgig    8x 25/10/1G	 4x mGig    4x 1G SFP    2x 1/10/25G    8x 1/10G SFP/SFP+    2x 40G QSFP	 Fixed Fiber Uplinks	

 Smart/Sustainable buildings	 Collapsed access	 WiFi 6/6E deployments	 UPOE+/UPOE	 IT/OT devices	 Server Connectivity	 Fiber To The Desktop (FTTD)
--	---	--	---	--	--	--




# Catalyst 9300X Multigigabit Models




C9300X-48HX

48x 100M/1G/2.5G/5G/10G ports with UPOE+




C9300X-48TX

48x 100M/1G/2.5G/5G/10G ports Data Only



C9300X-48HXN

36x 100M/1G/2.5G/5G with UPOE+ 12x 100M/1G/2.5G/5G/10G with UPOE+



C9300X-24HX

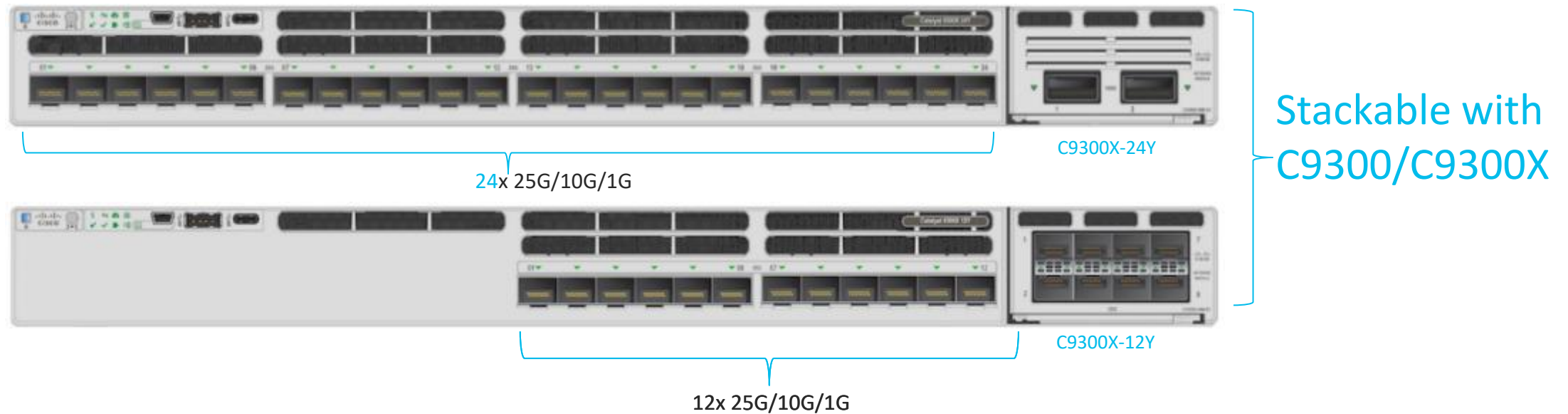
24x 100M/1G/2.5G/5G/10G ports with UPOE+

448 mGig Ports with 8-Member Stack

Q4 -CY22

Highest Multigigabit Ports in the Industry with Standalone and StackWise-1T

# Catalyst 9300X High-Speed Fiber



3850 10G Fiber Replacement



Collapsed Access

FTTD



Servers



Bringing Stackable High-Speed fiber to the Access

# Catalyst 9300LM- Shallow Depth



## Dimension(H X W x D)

SKU	AC PSU	DC PSU
Data Models	17.50" x 1.73" x <b>12.39"</b>	17.50" x 1.73" x <b>11.86"</b>
UPOE/mGig Models	17.50" x 1.73" x <b>13.17"</b>	17.50" x 1.73" x <b>13.03"</b>

Migration Platform for C3650-mini

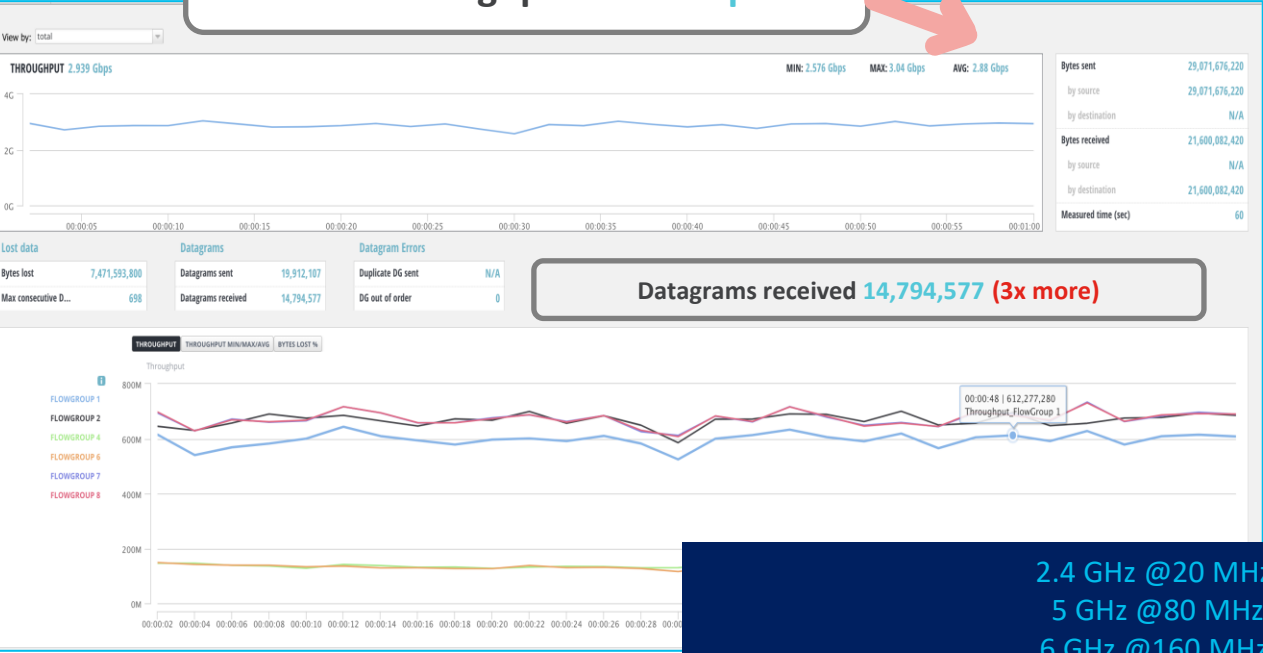
# Why mGig Switch **for** Wi-Fi6/6E Access Points?

# Conclusion – Yes, you will need an mGig Switch

5 Gig (mGig) AP Uplink vs. 1 Gig AP Uplink

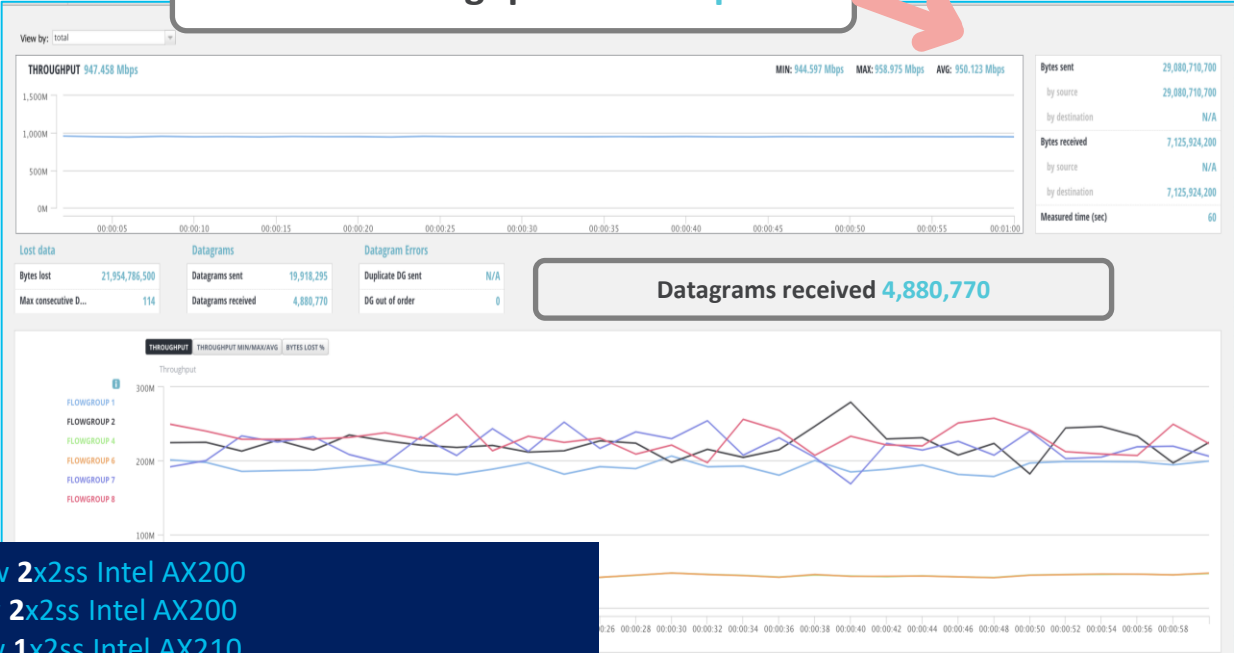
Wi-Fi 6E Performance with mGig (5 Gig) Switch

UDP Throughput 2.88 Gbps



Wi-Fi 6E Performance with Gigabit Switch

UDP Throughput 950 Mbps




2.4 GHz @20 MHz w 2x2ss Intel AX200  
5 GHz @80 MHz w 2x2ss Intel AX200  
6 GHz @160 MHz w 1x2ss Intel AX210



# Catalyst 9300X – 3<sup>rd</sup> Party Certified

Miercom

October 2023  
DR230908G



Cisco Catalyst 9300X  
Feature and Performance Validation  
Assessment

Miercom.com/Cisco

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7.0 Application Hosting with ThousandEyes.....

8.0 Zero Trust Segmentation with MPLS and EVPN .....

8.1 9300X MPLS .....

8.2 9300X BGP EVPN.....

9.0 Network Reliability with High Availability features .....

9.1 xFSU .....

9.2 IPFRR .....

10.0 Enterprise Telemetry and Automation with gRPC/gNOI .....

10.1 NETCONF Interface .....

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11.1.1 Cisco Catalyst 9300X-12Y .....

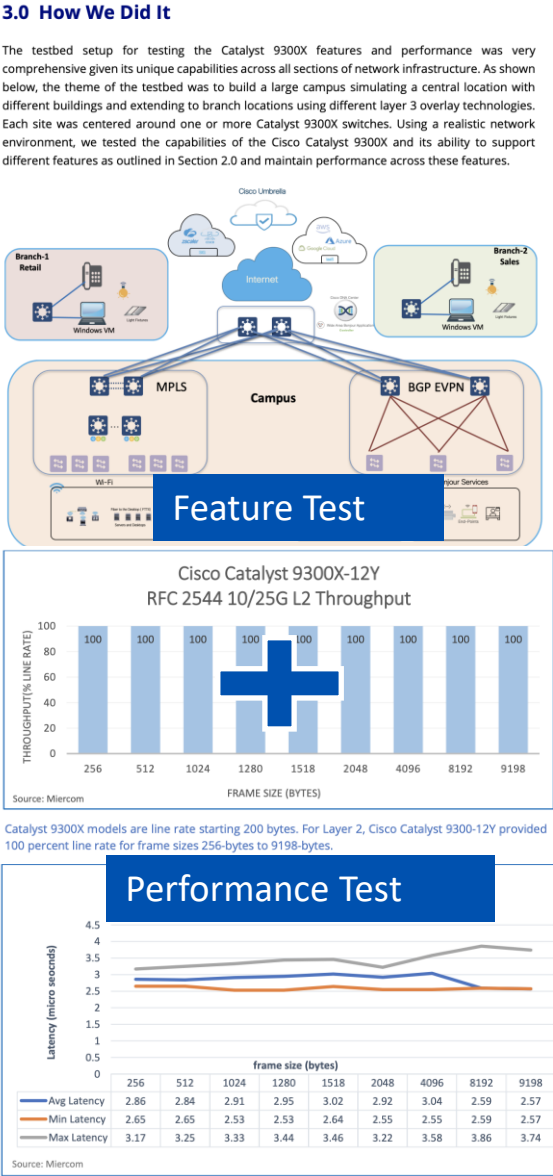
11.1.2 Cisco Catalyst 9300X-24Y .....

11.1.3 Cisco Catalyst 9300X-48HX.....

11.1.4 Full Stack.....

About Miercom .....

Use of This Report.....



# Cisco ASAc Hosted on Catalyst 9300/L(LM)/X

Seamless Firewall Service Insertion in the Network

FCS Nov 2023

IOS-XE 17.12.2

ASA 9.20.2

## Technical Specifications



ASAv Feature parity



Reuse ASAv license



200-350MB (IMIX) throughput



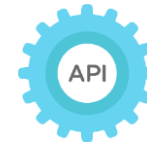
10 logical interfaces



Routed Mode Firewall



App Hosting HA (Cold)



REST API  
Programmable  
Scripts



CDO  
Security Policy  
Management



Cisco Catalyst Center  
App Lifecycle  
Management

**Centralized  
Management**



App Resources  
Memory (RAM) : 2 GB  
Disk (SSD) : 40 MB  
CPU : 1 Core

**Local Management**



ASDM



CLI

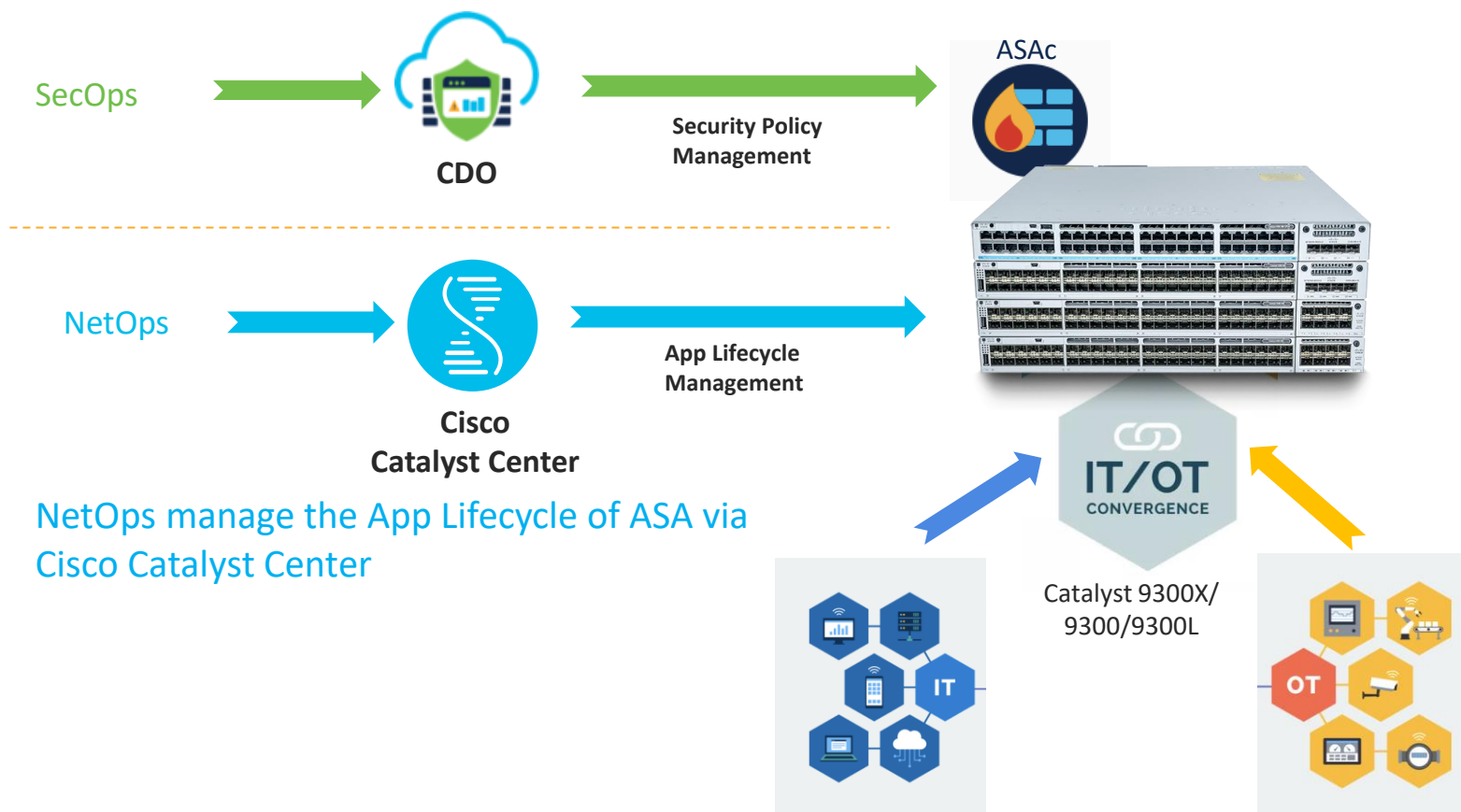


SSD Required

# ASAc Firewall on C9K Switches

Simplify Security Service Insertion in the Network

SecOps manage the security policy config of ASA via CDO

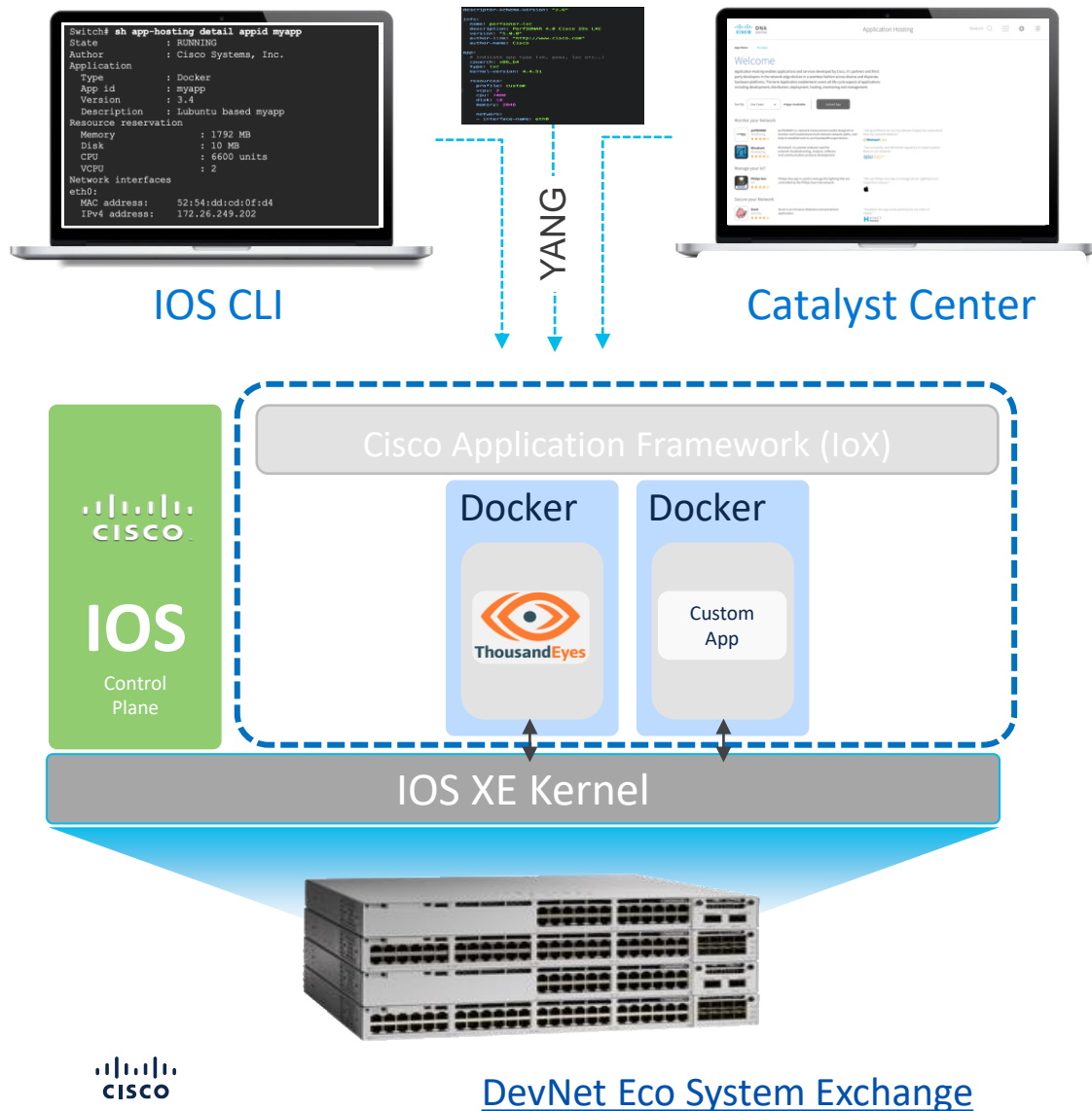


NetOps manage the App Lifecycle of ASA via Cisco Catalyst Center

## Use Cases

- ❖ **Stateful inspection** of traffic flowing across IT/OT domains for security compliance
- ❖ Reduces the attack surface by logically **segmenting** the network
- ❖ Enforce **granular access controls** across the network
- ❖ Connect isolated OT/IoT clusters securely using **IPsec tunnels**
- ❖ **Secure remote management** of internal resources with SSL/TLS VPN
- ❖ Avoid network bottlenecks by replacing the physical firewall appliances

# Application Hosting on Catalyst 9000 Switches

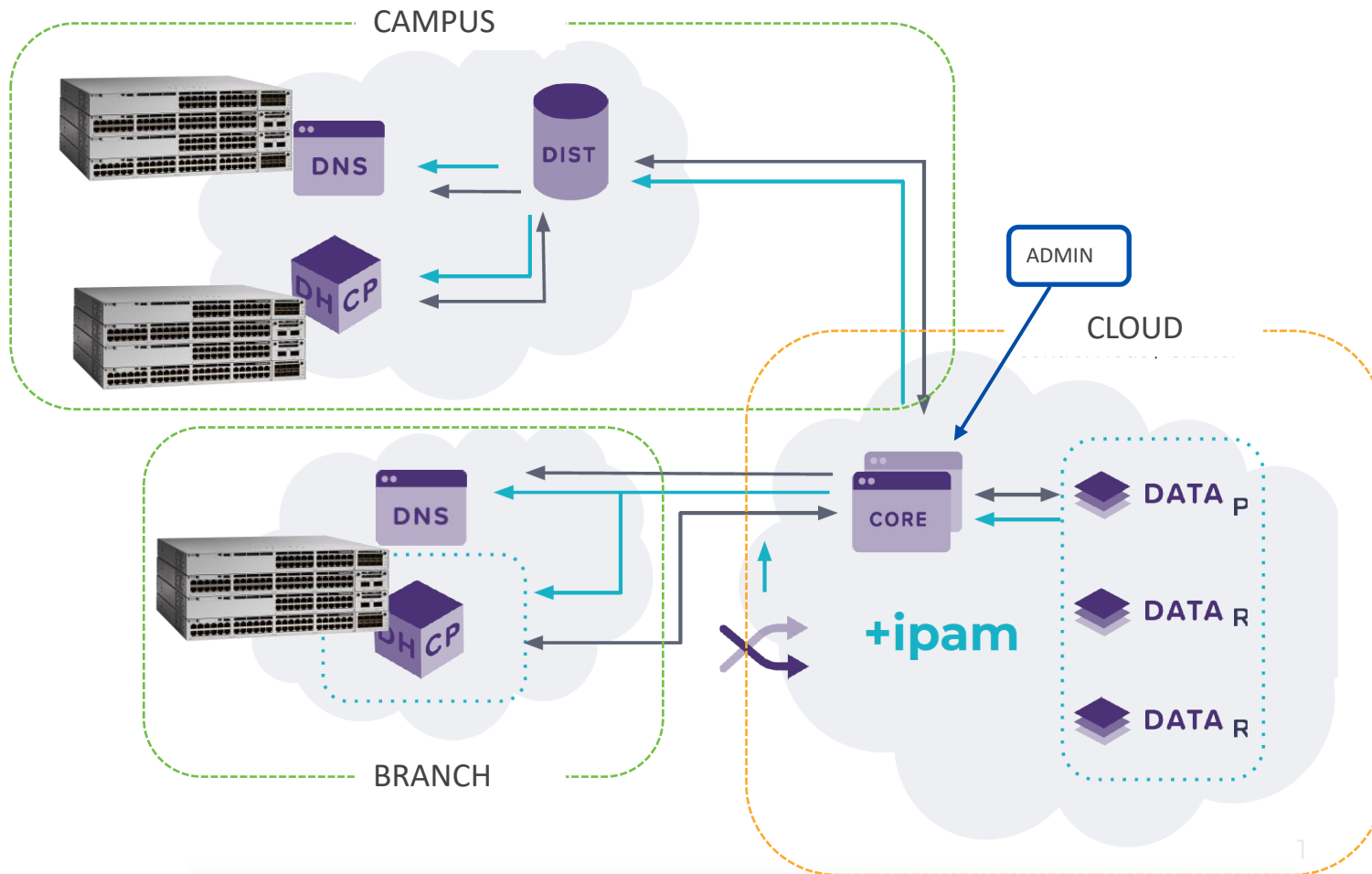


## Catalyst 9000 Application Ecosystem



- Cisco Signed Apps supported on Flash – SSD not mandatory
- Multiple App deployment (on same switch) supported for Cisco Signed Apps contingent resource availability
- Cisco does not support third-party or open-source app function, unless specifically called

# Catalyst enabled DDlaaS with NS1



## Deployment

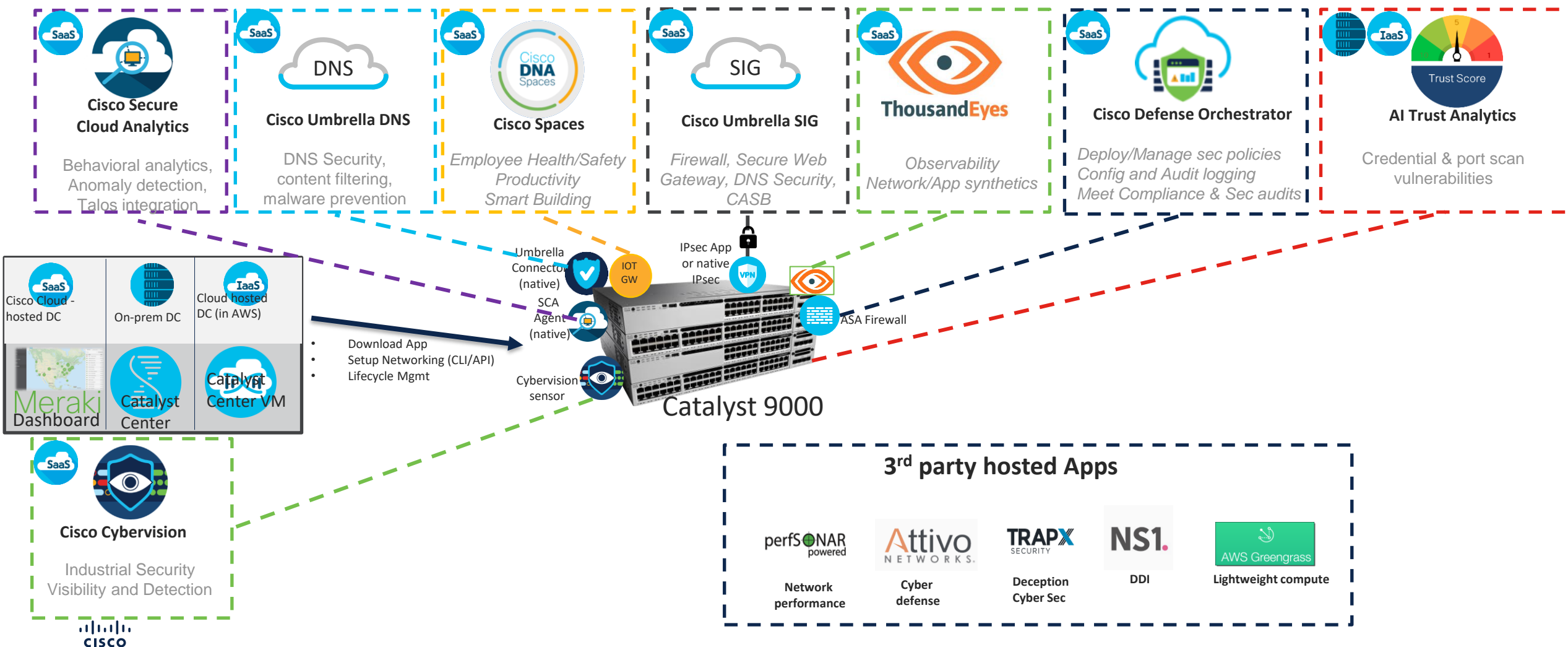
- DNS and/or DHCP docker containers hosted in C9K
- Distributed model with Centralized Cloud Management.
- Deployment on Scale with Catalyst Center
- Supported on C9300 and C9400

<https://ns1.com/writable/resources/ns1-ds-NS1-integration-with-Catalyst-9300-and-Catalyst-9400-Enterprise-Edge-Switches.pdf>



# Catalyst 9000 with Catalyst Advantage

## Enables Cisco Catalyst Full Stack Value



Orderable

# Catalyst 9200CX Family

## Migration Platform for C2960CX and C3560CX

### AC Models

#### C9200CX-8UXG-2X

- 4x mGig/10G + 4 x 1G (802.3bt Type 3 Class 6 60W all ports)
- 2x 1/10G SFP+
- Internal AC or hVDC power supply options
- 240W PoE power budget

mGig/UPOE

#### C9200CX-12T-2X2G

- 12 x 1G data
- 3 x 1G copper and 2 x SFP+ uplinks
- Powered by 802.3bt Class 6 60W UL
- OR External 80W PS (LVDC support)

Data-Only

#### C9200CX-8P-2X2G

#### C9200CX-12P-2X2G

- 8 or 12 x 1G PoE+
- 2 x 1G copper and 2 x SFP+ uplinks
- Internal AC power supply
- 240W PoE power budget

1G/PoE+

### hVDC Models

#### C9200CX-8UXG-2XH

- 4x mGig/10G + 4 x 1G (802.3bt Type 3 Class 6 60W all ports)
- 2x 1/10G SFP+
- Internal hVDC power supply
- 240W PoE power budget

mGig/UPOE

#### C9200CX-8P-2X2GH

#### C9200CX-12P-2X2GH

- 8 or 12 x 1G PoE+
- 2 x 1G copper and 2 x SFP+ uplinks
- Internal hVDC power supply
- 240W PoE power budget

1G/PoE+

### hVDC Benefits:

- Avoids double conversion from DC → AC, then AC → DC:
- Considerably lower power losses compared to 120VAC over long distance lines
- Sustainable Building Designs for smart buildings

MORE  
THAN  
C9200

C9200

C9200CX

Programmability

Full Flexible NetFlow

Cold patching

Trustworthy solutions

SD-Access (16 VNs)

802.3bt 60W UPOE\*\*

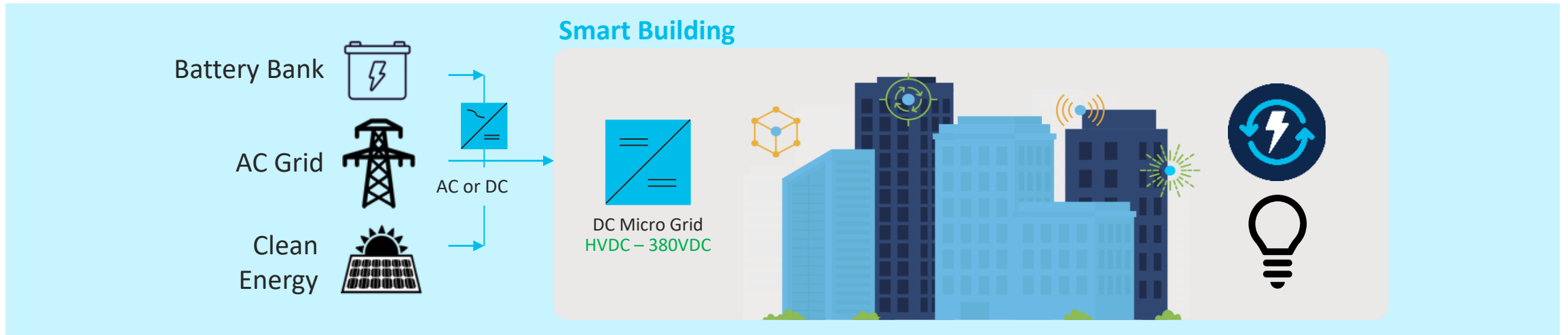
MACsec-256

EoS for C2960CX/C3560CX is April 2024

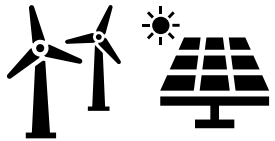
\*Excluding mGig and Passthrough Models\*

\*\* Available on the C9200CX-8UXG-2X/C9200CX-8UXG-2XH

# Why High Voltage DC?



## Benefits



**Avoids double conversion. From DC → AC, then AC → DC:**

- Production of Wind/Solar power is in DC
- Electrical devices with transistors use DC power



**Higher voltage helps reduce conductor material required (less copper) or improve transition efficiency:**

- Controllability
- Better voltage regulation



**Considerably lower power losses compared to 120VAC when transporting over long distances:**

- Offshore power needs/Undersea power lines
- Power transmission for longer distances

# Catalyst 9200CX Compact Family

## HVDC Power Supply Units

NEW

HVDC 1G/PoE+

Orderable

C9200CX-8P-2X2GH



- 8 x 1G PoE+
- 2 x 1G copper and 2 x SFP+ uplinks
- Internal HVDC power supply
- 240W PoE power budget

C9200CX-12P-2X2GH



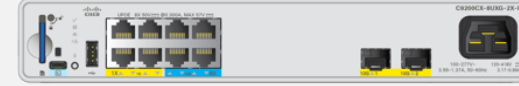
- 12 x 1G PoE+
- 2 x 1G copper and 2 x SFP+ uplinks
- Internal HVDC power supply
- 240W PoE power budget

NEW

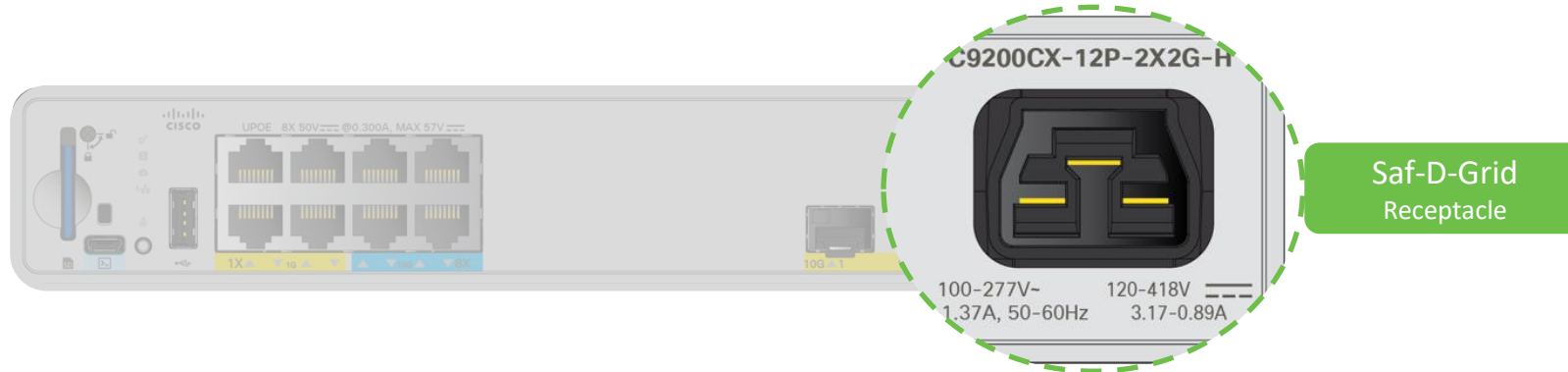
HVDC mGig/UPOE

Q3  
CY23

C9200CX-8UXG-2XH



- 4x mGig/10G + 4 x 1G (802.3bt Type 3 Class 6 60W all ports)
- 2x 1/10G SFP+
- Internal HVDC power supply
- 240W PoE power budget



Saf-D-Grid  
Receptacle

Powered  
by AC or  
hVDC

### Powering Options

AC (110-240VAC)

Plenum Voltage (277VAC)<sup>1</sup>

HVDC (120V-418VDC), 380VDC<sup>2</sup>

### Cabling Options<sup>3</sup>

Ring terminal to SAF-D-GRID



C14 to SAF-D-GRID



C20 to SAF-D-GRID



Investment protection  
with MAX flexibility!



Global Sales  
ENABLEMENT TEAM

<sup>1</sup> Need a plenum rated enclosure with switch

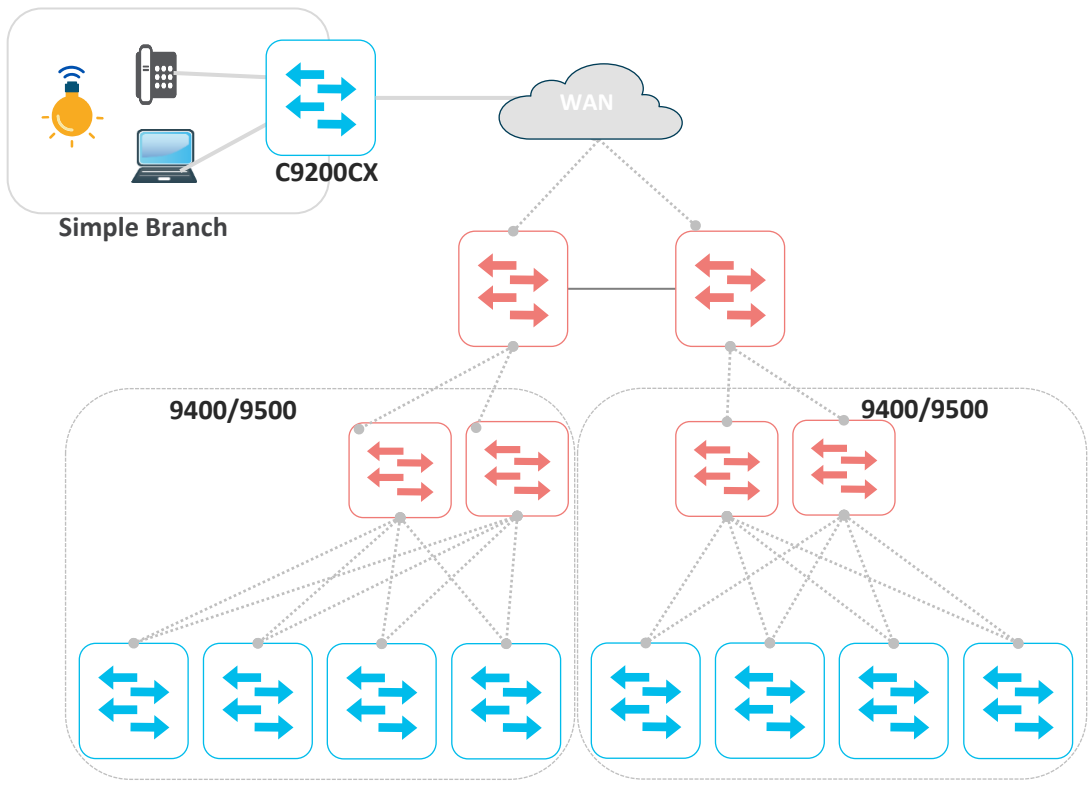
<sup>3</sup> Cables not provided  
Cisco Public

# New Feature Support on Catalyst 9200CX

## BGP

Available w/ IOS 17.13.1

NEW

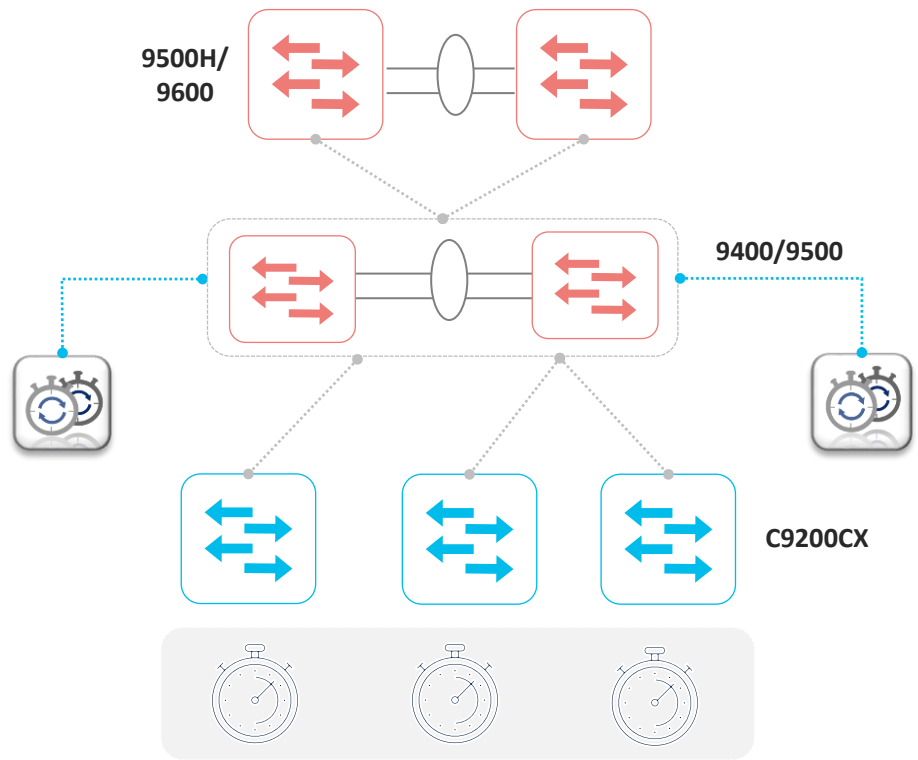


Scale	
BGP Neighbors	16
BGP Routes	4k
v6 BGP Routes	2k

## PTP

Available w/ IOS 17.14.1

NEW



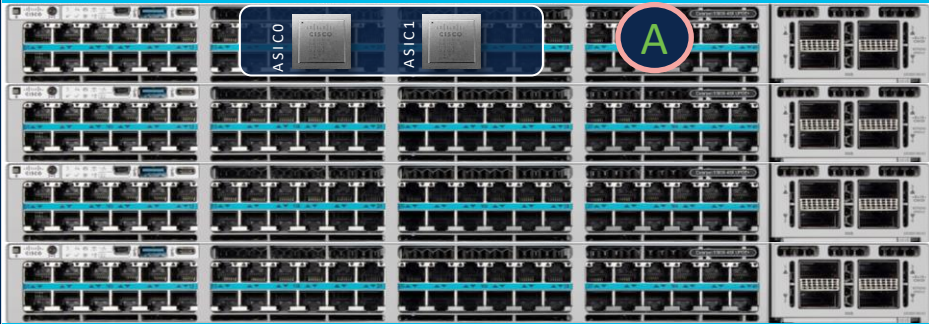
Profiles
Default Profile (1588.v2)
AES67

\*BGP-EVPN not supported



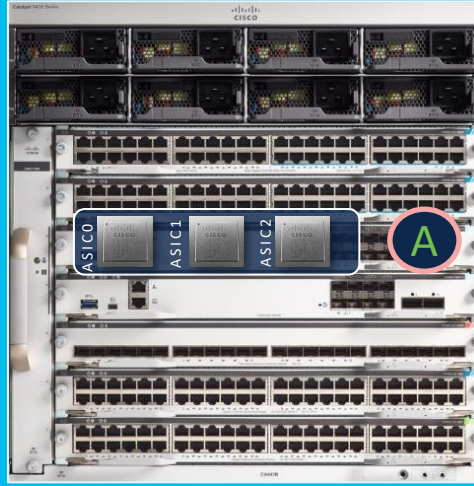
# IPsec Performance and Scale enhancements

9300X - 100G



IPsec processed on ASIC0 of Active switch  
100G aggregated IPsec throughput

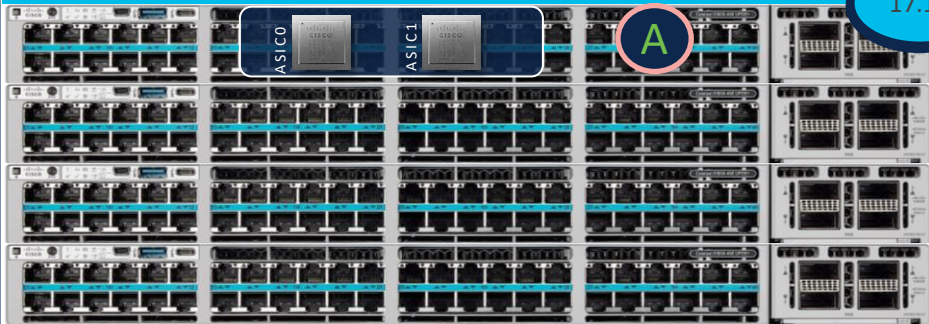
9400X(SUP-2/2XL) - 100G



IPsec processed on ASIC0 of Active SUP  
100G IPsec throughput

NEW

9300X - 200G

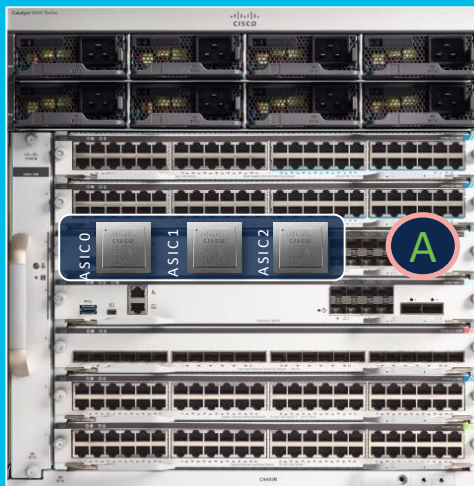


IPsec distributed across ASIC0 & ASIC1  
200G aggregated IPsec throughput

17.14

NEW

9400X(SUP-2/2XL) - 300G



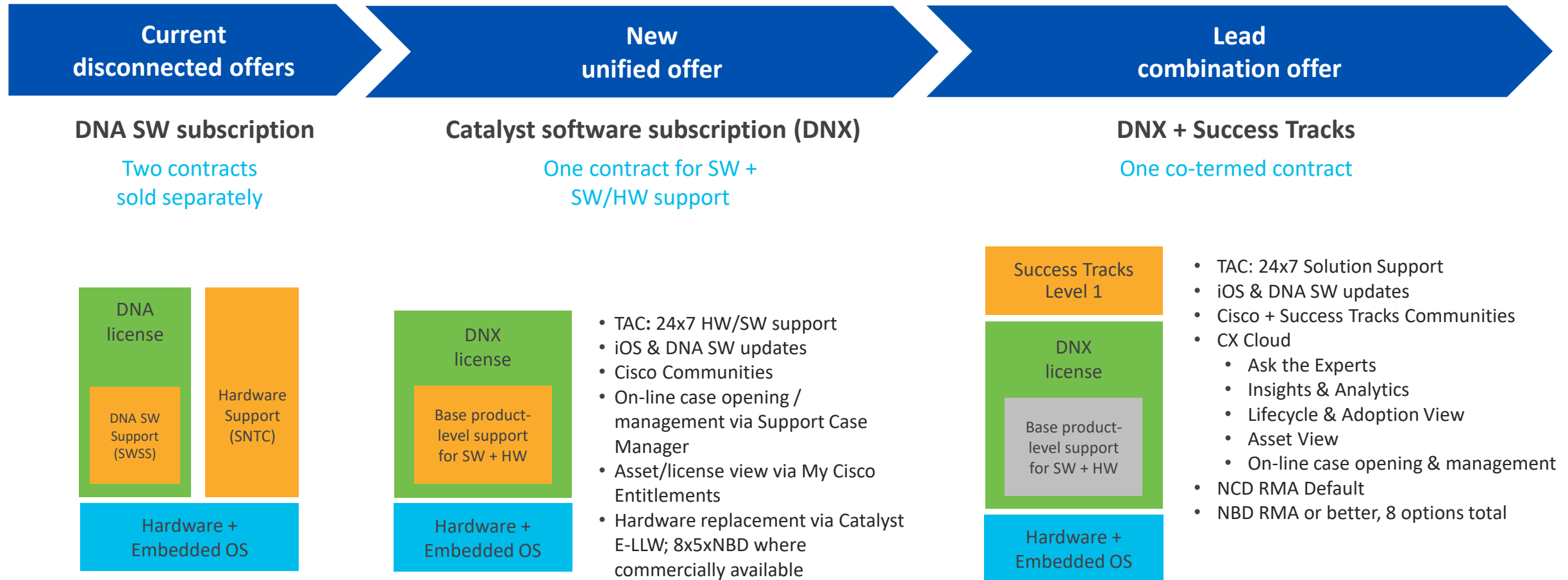
IPsec distributed across ASIC0, ASIC1 & ASIC2  
of Active SUP  
300G IPsec throughput

17.14

IPv4 Tunnel scale:480, IPv6 tunnel scale:240

# Catalyst Software Subscription for Switching

Transition from base product-level support to Success Tracks



EFT/LA Registration Link:

<https://salesconnect.cisco.com/EnterpriseNetworking/s/switching-efts>



Switching IOS XE 17.13.1 Early Field Trial [EFT]

Inviting customers to try and test the most sought after software features before the general availability. Customers can share their feedback about what works (and what does not) directly with our Engineering teams.  
*Note: SW feature EFT will not provide loaner HW.*

Timelines:

EFT Start Date - Sept. 5th, 2023  
EFT End Date - Oct. 17th, 2023

Contact mailer for customers: [polaris-switching-beta@cisco.com](mailto:polaris-switching-beta@cisco.com)

Switching IOS XE 17.13.1 Early Field Trial [EFT]

• Cisco Webex AirPlay, Apple TV, and Printers Remote Service Caching

Supported Platforms - Catalyst 9200,9300/L/X, 9400/X, 9500/X, 9600/X SUP1/SUP2

Modern network environments thrive on seamless service discovery, and we understand the importance of instantaneous mDNS service responses for Cisco Webex AirPlay, Apple TV, and Printers. With the introduction of dynamic caching, Catalyst 9000 series switches will dynamically cache key services received from Cisco DNA Center. This will lead to an exceptional improvement in user experiences for local Wired and Fabric Wireless users.

Register here: <https://forms.office.com/r/rrL6e9dwjH>

#	Features	
1	Cisco Webex AirPlay, Apple TV, and Printers Remote Service Caching	17.13.1 EFT
2	ASAc on Cat 9300	17.12 LA
3	1G Support on Catalyst 9500X and 9600X SUP-2	17.12 LA
4	BGP EVPN App	
5	Campus Automation	

Campus Automation  
Registration link:



<https://forms.office.com/r/ALWwPkcNJL>

BGP EVPN App  
Registration link:



<https://forms.office.com/r/Hk0bJmizH9>



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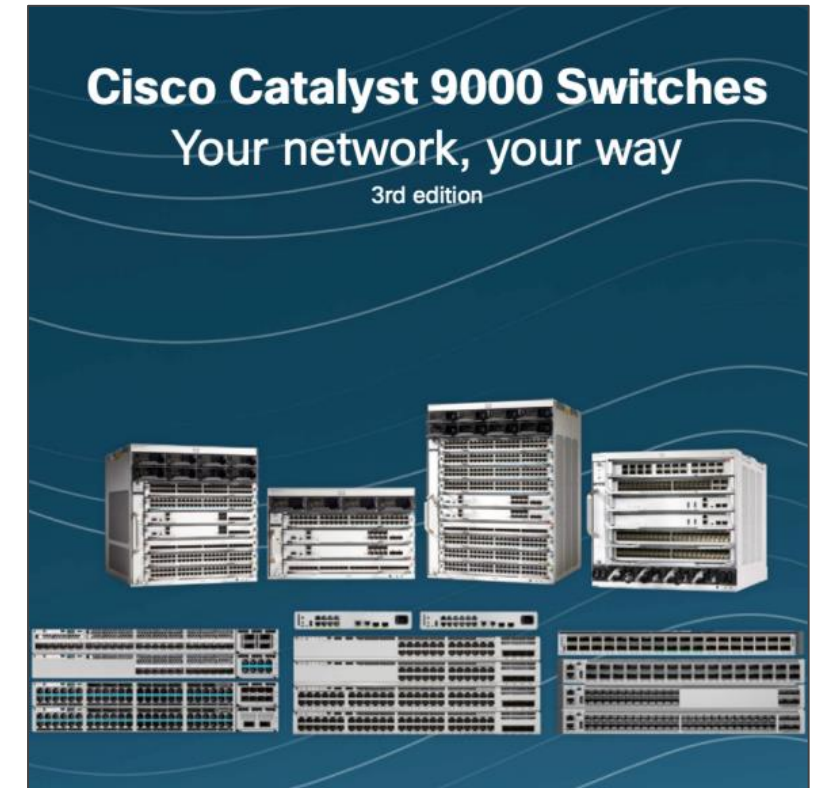
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# Catalyst Meraki 9300

Simply powerful



Orderable with Meraki day 0 experience

## 9x Access SKUs

Orderability: Oct, 2023  
FCS: Nov 15, 2023

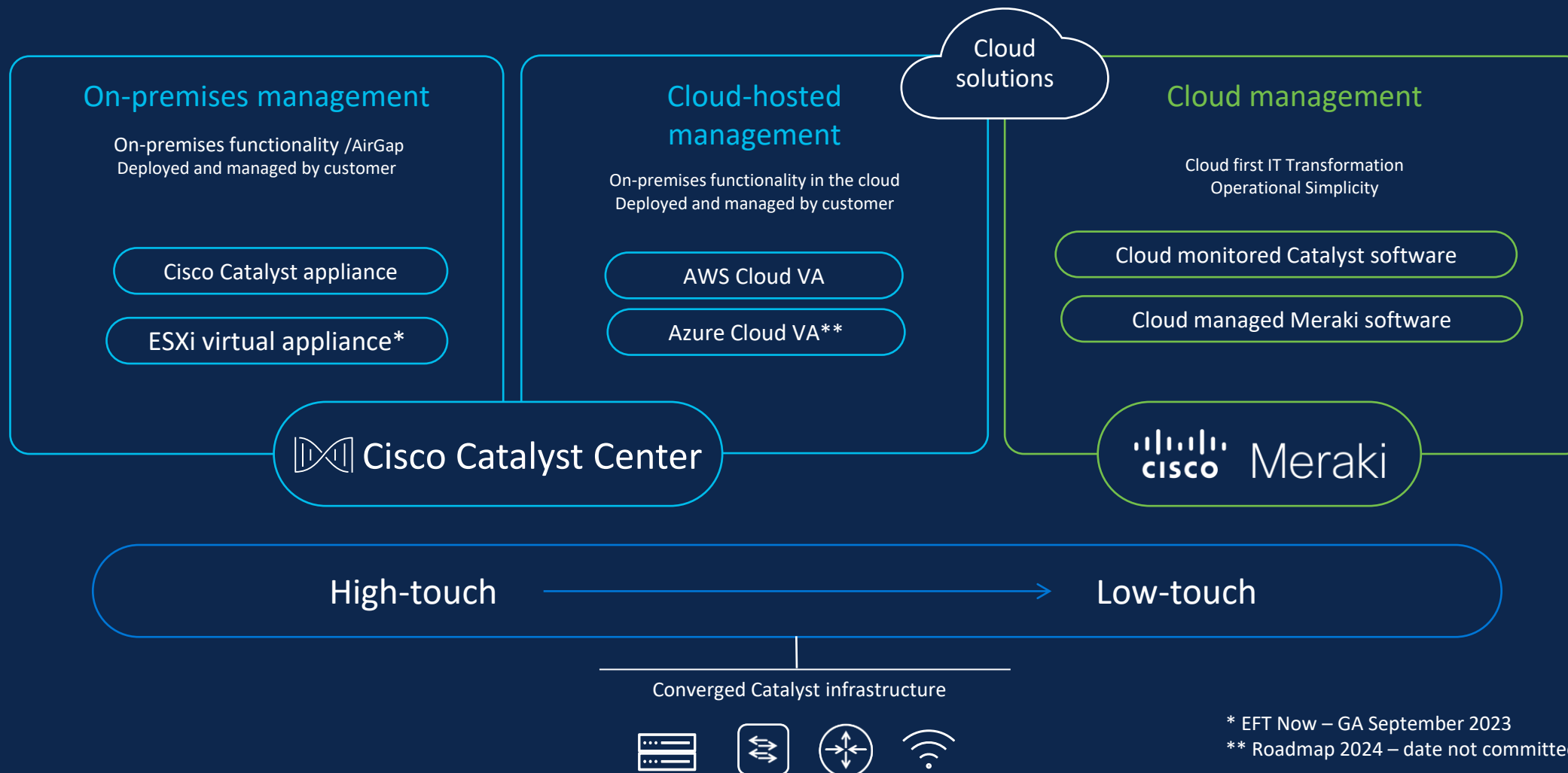
## 4x Fiber SKUs

Orderability/FCS: Q3 FY24

... and more



# Your IT Operation Model, Your Way



\* EFT Now – GA September 2023

\*\* Roadmap 2024 – date not committed

# Catalyst Meraki 9300 Series Overview

Orderable With Meraki Day-0 Experience

## Gigabit

Up to 1 GbE



### C9300 24/48 T

- 24/48x 1G copper
- Data only
- 40G/10G/1G fiber modular uplink options

### C9300 24/48 P

- 24/48x 1G copper
- 30 W PoE+
- 40G/10G/1G fiber modular uplink options



### C9300 24/48 U

- 24/48x 1G copper
- 60 W UPoE
- 40G/10G/1G fiber/10G mGig copper modular uplink options

## Multigig

Up to 10 GbE (mGig)



### C9300 24 UX

- 24x 10G mGig
- 60 W UPoE
- 40G/10G/1G fiber modular uplink option

### C9300 48 UXM

- 36x 2.5G mGig and 12x 10G mGig
- 60 W UPoE
- 40G/10G/1G fiber uplink option



### C9300 48 UN

- 48x 5G mGig
- 60 W UPoE
- 40G/10G/1G fiber/10G mGig copper modular uplink option

## Fiber aggregation

10/1 GbE SFP+ fiber



### C9300 24S/48S

- 24/48 port 1G SFP
- 40G/10G/1G fiber modular uplink options

### C9300X 12Y

- 10G/1G (SFP28)
- 100G hardware-based IPsec

### C9300X 24Y

- 10G/1G (SFP28)
- 100G hardware-based IPsec

Gigabit and multi-gig SKUs target ship date: FY24 Q2

Fiber SKUs migration public preview is available; -M SKUs are coming in 2H CY24.

## Catalyst 9300 modular uplinks



4x 10G/1G SFP



8x 1/10G SFP/SFP+



2x 100G/40G SFP/SFP+



2x 40G QSFP

## SFP/direct attach cables

SFP-1GB-SX  
SFP-1GB-LX10

SFP-10GB-LR  
SFP-10GB-ER  
SFP-10GB-SR  
SFP-10GB-LRM

QSFP-40G-LR  
QSFP-40G-SR4  
QSFP-40G-CSR4  
QSFP-40G-SR-BD

CBL-TA-1M  
CBL-TA-3M

All relevant Meraki optics are supported on C9300-M models.

## StackWise® and StackPower cables



50 cm-1 m-3 m



30 cm-150 cm

## Platinum-rated power supplies



315 W AC



715 W AC/DC



1100 W AC

## Modular fan



# Q&A

# Agenda of today

Time	Sessions	
09:30 - 09:55	Keynote Power of the Platform, Incl Rema1000 Reference Case Speakers: Henrik Stær, Mikkel Vesterled, Nikolaj Lund	
5 min	Break room into two rooms	
	Track A	Track B
10.00 – 10.45	Catalyst X-Series Switching Innovations <i>Speaker: Rene Andersen</i>	Meraki Full Stack Innovations <i>Speaker: Peter H. Andersen</i>
10.45 – 11.30	Catalyst Wireless Innovations <i>Speaker: Ib Hansen</i>	Secure Service Edge og SDWAN <i>Speaker: Søren D. Andreasen</i>
11.30 – 12.15	Cloud Management af Wired og Wireless <i>Speaker: Søren D. Andreasen, Peter H. Andersen</i>	Zero Trust story <i>Speakers: Per Jensen, Rene Andersen</i>
12.15 – 13.00	Catalyst Center Management <i>Speaker: Søren D. Andreasen, Per Jensen</i>	High Speed Firewall Innovations <i>Speakers: Nikolaj P. Nielsen, Christian Heinel</i>
Lunch		
Tak for idag		



The bridge to possible