



Campus update

NtwrkPeople DET

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Solutions Engineer

Agenda

- 01 Catalyst Center
- 02 Fabric (LISP & EVPN)
- 03 C9k Smart Switches

Catalyst Center 3.1.X Release

3.X Releases Numbering Scheme

A | Major

Significant market value

Required when there is a break in backward compatibility of published API; significant regressions or changes in semantics or workflow

▣ **New market value; anchor point for long-lived release**

B | Minor

Required when: Extended update times, or significant jump points in platform which requires application updates (i.e., platform revisions)

Permitted only with seamless upgrade, preserve backward compatibility, no regression in functionality, no regression in telemetry, etc.

▣ **Value: Bug-fixes and new device support**

C | Patch

Permitted for the correction of errors or omissions only, seamless installation with full roll-back, no new functionality or changes in semantics or workflows

New features and key enhancements – 3.1.x



Platform

- Catalyst Center on Azure
- Site Based RBAC
- Contextual RCA for Support bundle
- CCGM Updates



NetOps

- Brownfield device onboarding workflow
- New SWIM Dashboard
- Rule-Based Compliance
- Campus Network Automation
- AP priming for C9K WLC
- Campus Automation - Industrial Configuration
- App Hosting for IE
- REP topology view for fabric and non-fabric
- Per Device Config - AP configuration
- Cloning profiles across multiple WLC
- PRP configuration support



AIOps

- Energy management dashboard
- Install TE agent workflow
- Enhanced visibility into Cisco ISE authentication failures
- Event Analytics AI Outlier
- Service Now Bidirectional Integration



SecOps

- Security Service Insertion
- Pub-Sub for brownfield deployments and migration-Beta
- Allowed VLAN, add a native VLAN on a TRUNK link
- Voice VLAN template for user ports
- SDA Fabric can experience outages caused by SSDP
- Overlapping IP Pools



DevOps

- New APIs
- API enhancements
- New reports

What's new under the hood of 3.X release

- New Linux
- New File System
- NFS Backup Support
- Parallel Install
- 2.3.x = Ubuntu 18.04.6 LTS
 - Kernel: 5.4.0-139-generic
 - Kubernetes: 1.18.15-cisco
- File System
 - ext4
- 3.1.x = Ubuntu 22.04.5 LTS
 - Kernel: 5.15.0-72-generic
 - Kubernetes: 1.29.10-cisco
 - File Systems
 - xfs



Upgrade Methods



Same appliance (DN2 and DN3) in place update using network upgrade package



From Appliance A (2.3.7) to Appliance B (3.1.X) – Appliance B on 3.1X will connect to Appliance A 2.3.7 and grab the backup, convert it and restore (IP change)



From Medium Appliance to Virtual Appliance (AWS/ESXi/Azure)

Backup
Run conversion script
Restore



Virtual Appliance to Virtual Appliance

Backup
Restore

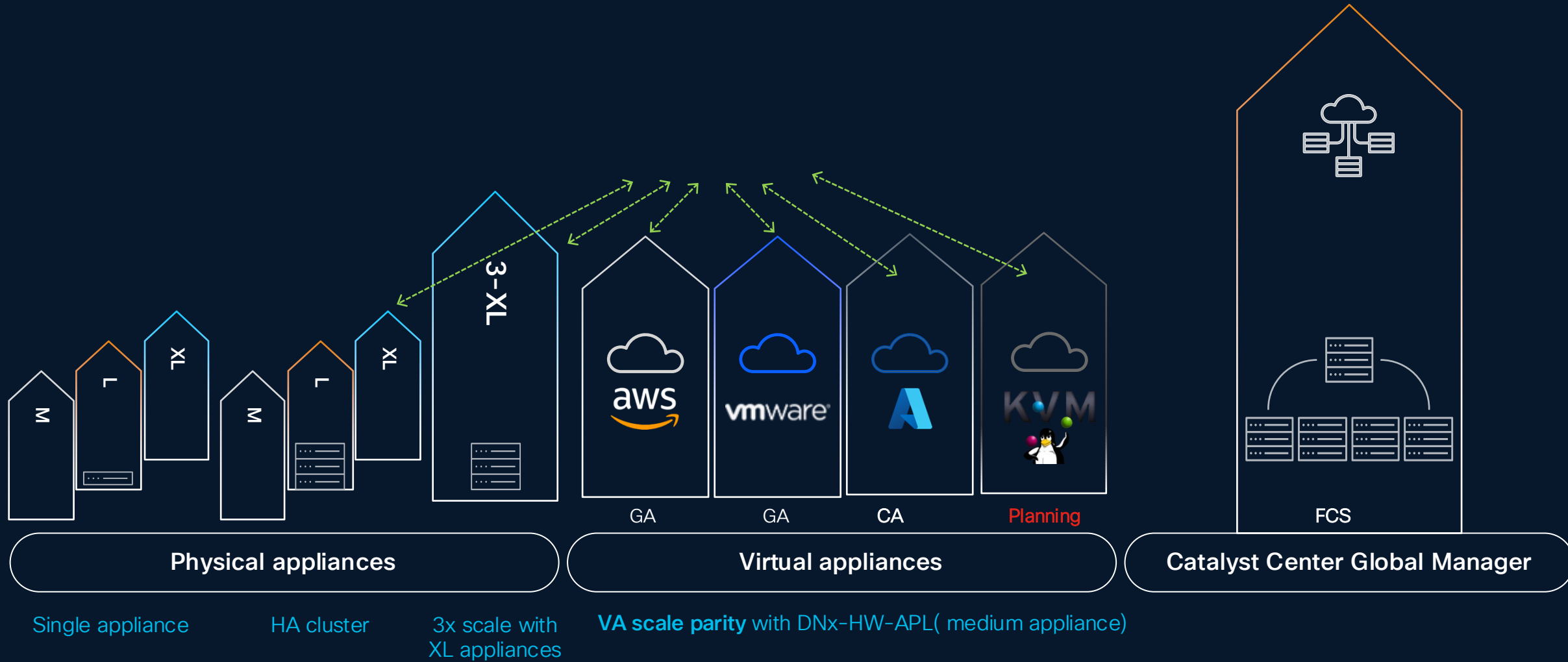
Easier B'n'R

In 2.X release
B'N'R Had to be
to identical
versions

With 3.x with
can convert N-2
backups into 3.X
format on the fly

Catalyst Center operational evolution

Vertical and Horizontal scaling for simplified architecture



Catalyst Center Global Manager use cases

Global Search

Global search via

- IP Address
- Hostname
- MAC address
- other metadata

Cross Launch

- Controller x-launch without additional authentication
- Cross-launch into 360 view of the client/device

Mgmt Plane Visibility

- Enhanced Administrative Efficiency
- System Health / Monitoring
- Appliance Health / Monitoring

Global Visibility

- Monitoring of networks, sites, clients, devices
- Aggregated inventory reporting
- P1/P2/P3 issues drill-down from any Catalyst Center

Programmability

- Open APIs for 3rd party solutions integration
- APIs for monitoring mgmt plane health
- APIs to query global networks/devices/ inventory details

Catalyst Center
Physical
Single Node
M/L/XL

Catalyst Center
Physical
Three Node
Cluster

Catalyst Center
VA
ESXi

Catalyst Center
VA
AWS

Catalyst Center
VA
Azure
(Future*)

Site-Based Role Based Access Control

Site-Based Role Based Access Control

A new feature in Catalyst Center 3.x that grants user access to network devices based on their location within Catalyst Center's hierarchy. Custom Roles can now be applied at the Site level with the introduction of a new feature called an Access Group. This allows Catalyst Center to grant or deny access to network resources, based on location.

Site

An Area, Building or Floor within Catalyst Center hierarchy.

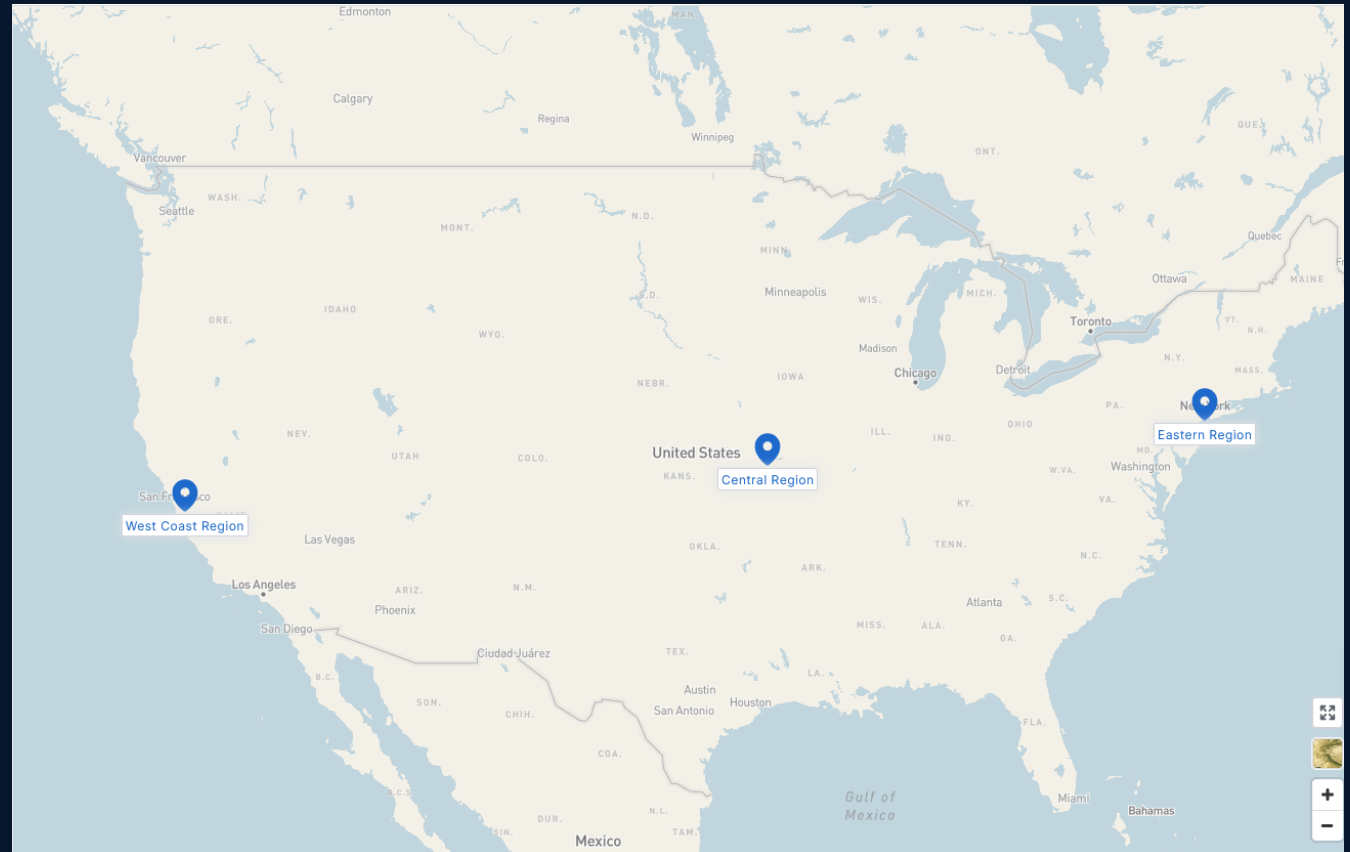


Custom Role

A user-defined set of access privileges used to permit and/or deny access to network devices within Catalyst Center.

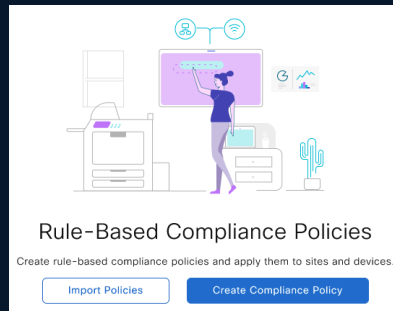
Access Group

An object that applies the settings of a custom role to a particular site, providing Site-Based Role Based Access Control.

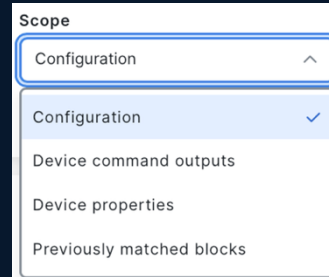


Rule-Based Compliance

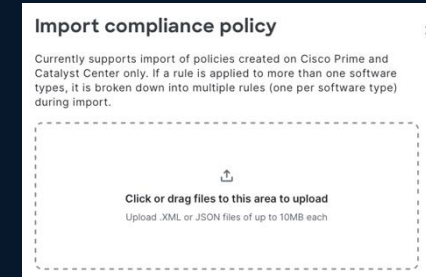
Custom network compliance policies



Validate the presence or absence with powerful Scope options – audit ready



Prime parity and import support

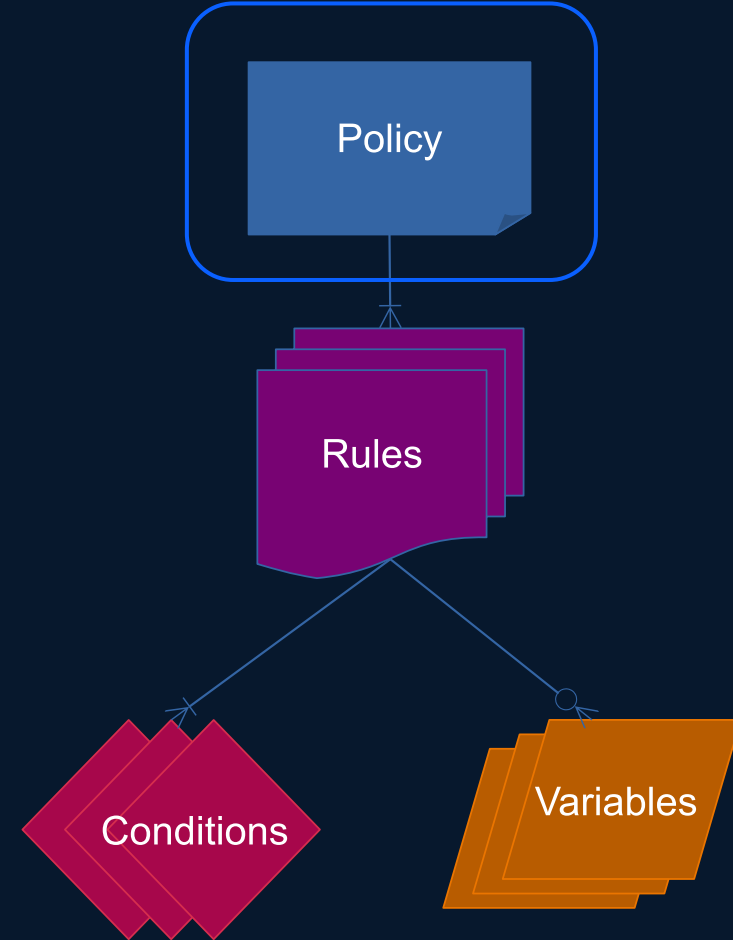
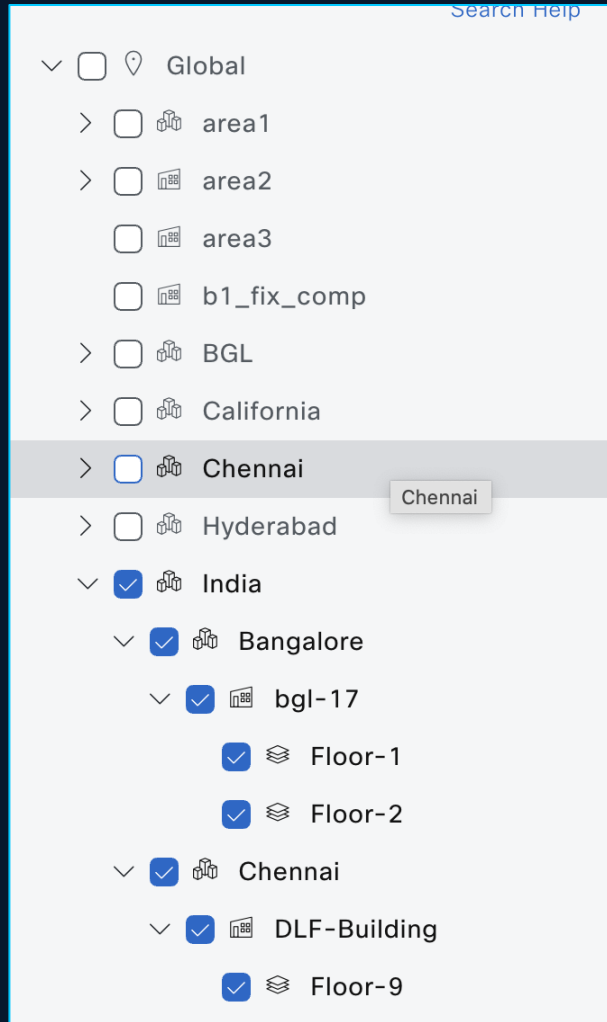


Precursor for future innovation and

Policies to simplify Regulatory Compliance
NIST types, PCI, HIPPA, STIG, and others

Secure Posture Protection
Validate best practices in place

Rule-Based Compliance



Campus Fabric Update

Campus Fabric Positioning Guidance

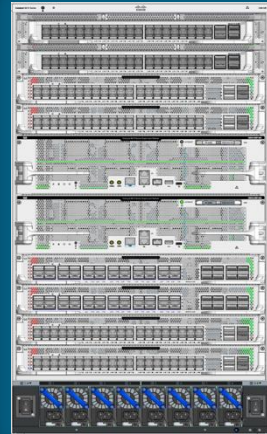
No two customers are alike; Cisco meets your customer where they are

Profile	Lead with	Business Criteria	Outcomes
On-Premises Enterprises	Catalyst Center & LISP	<ul style="list-style-type: none">• On-Prem operating model (airgap)• Wireless-first user base• Large single site or many sites sharing policy• OT/IoT integration	<ul style="list-style-type: none">• Proven large & multisite scale, deep assurance• Optimized wireless mobility• Common Policy, SSI• Support for CX & IE
Cloud-First Enterprises	Meraki Dashboard & EVPN-VXLAN	<ul style="list-style-type: none">• Cloud-first operating model• Many geographic distributed sites• Fast rollout needs• Meraki (MS) Access integration	<ul style="list-style-type: none">• SaaS simplicity• Cloud-managed, vendor agnostic• Phased deployment (Distro-first)• Adaptive Policy, Access Manager
On-Premise with Strong DevOps	Programmable (EVPN/LISP)	<ul style="list-style-type: none">• Existing NetDevOps pipelines• Multi-vendor environments• Custom control requirements	<ul style="list-style-type: none">• Deep automation & CI/CD workflows• Vendor interoperability with EVPN• Proven scale with LISP

SDA LISP: Advancing Automation Capabilities



Cisco C9000 Family

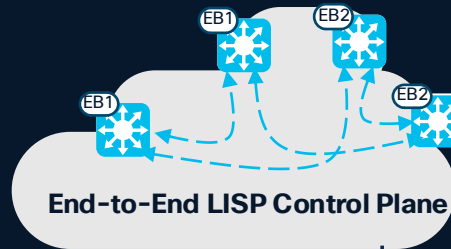


Silicon One Hardware Support

C9350 with IOS-XE 17.18.2, Dec'25
Catalyst Center 2.3.7.11 & 3.1.6

C9610 with IOS-XE 26.1.1
Catalyst Center 3.2.1 Mar'26

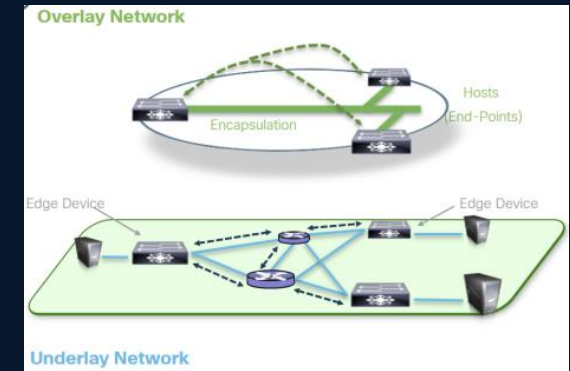
EFT



PubSub Architecture & Migration

Simplified border design with faster convergence with the new PubSub architecture.

Streamlined migration path from BGP/LISP to enhanced PubSub-based fabrics (IP/SDA Transits)



Automated IPv6 Underlay

Ipv6 Only Underlay - 3.2.1
Dual Stack Underlay - 3.2.3

SDA LISP: Advancing Automation Capabilities

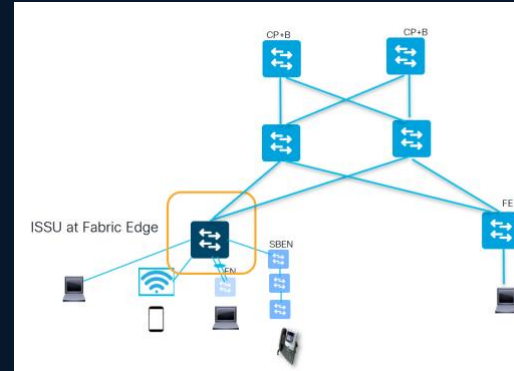


IOS XE 26.2.1
Catalyst Center 3.2.3

Silent Host Discovery in SDA LISP

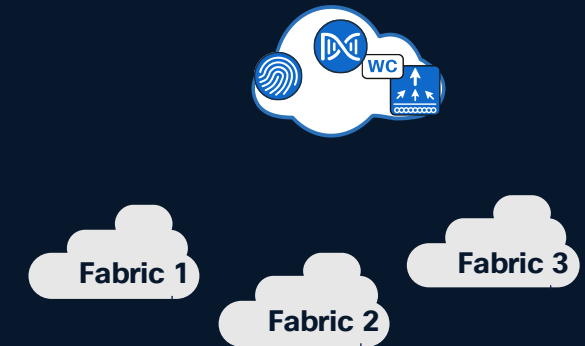
Discover silent/sleeping endpoints without L2 flooding using an on-demand, control-plane approach. Scales seamlessly across fabrics

➔ New CLI: *silent-host-detection* under router LISP.



Resilient Architecture

- XFSU Support- Cat9300 Fabric Edge
- ISSU Support for 9500/9600 Edge/Border/Control Plane, 9400 Border/CP



Shared WLC across Fabrics

Single Wireless Controller across multiple Fabric sites for ease of use and flexibility in wireless SDA deployments

SSI Fabric: Stateful Security On-Demand

Intelligent Protection for Your SD-A Fabric Network



Key Concept

SSI Fabric empowers NetOps and SecOps to **divert *only the required traffic*** on the fly to security appliances. This means:



Policy-Driven Protection — Seamless Cisco or 3rd-Party Integration



Efficient, Scalable Design — Optimize Firewall Investments



Flexible — topology-agnostic rollout for **faster time-to-value**

Campus Fabric Update (Cloud)

We have been accelerating feature development...

Platform Enablement

C9500



C9350



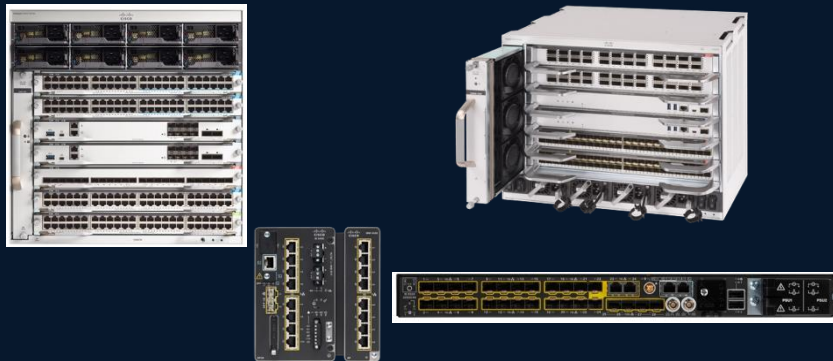
C9300/X/L/LM



C9200/L/CX

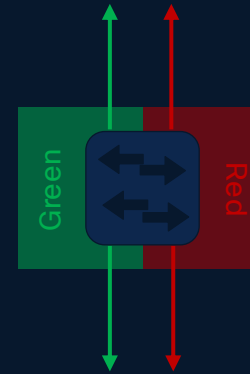


More Coming...

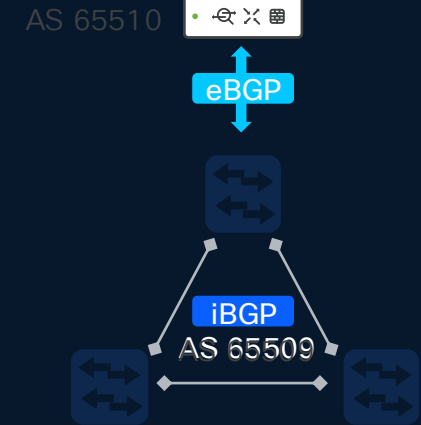


Enterprise Feature Development

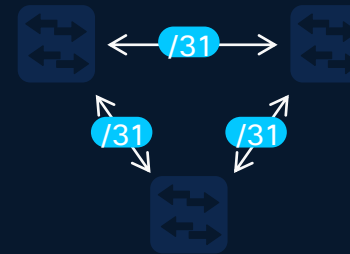
VRF



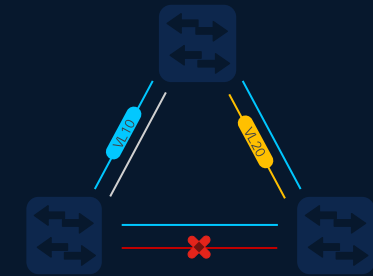
BGP



Routed Interfaces

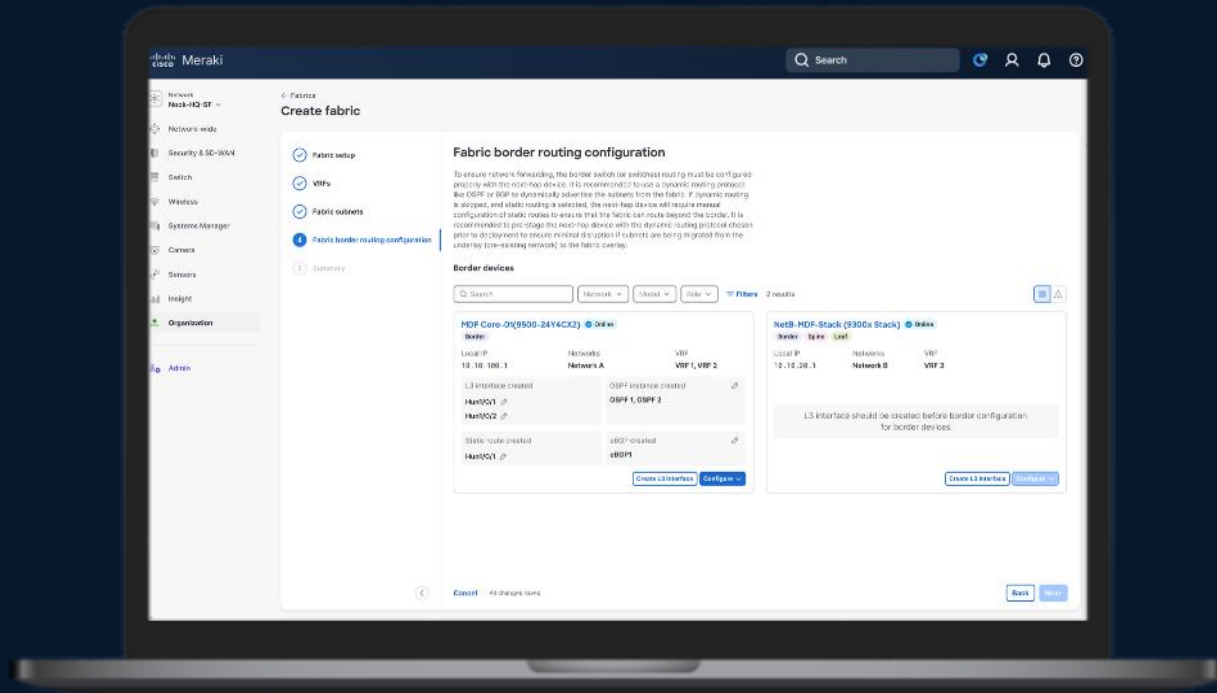


R-PVST



Introducing Cloud-Managed Fabric

EVPN Fabric Orchestration from Meraki Dashboard



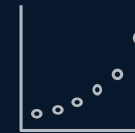
Benefit from Cloud Simplicity

Build and manage large sites from an intuitive cloud networking platform



Leverage Existing Investments

Modernize the network while utilizing existing C9K infrastructure



Migrate at Your Own Pace

Incrementally migrate devices and subnets to the cloud over time

Alot more to come....

Cloud Fabric Limited Availability

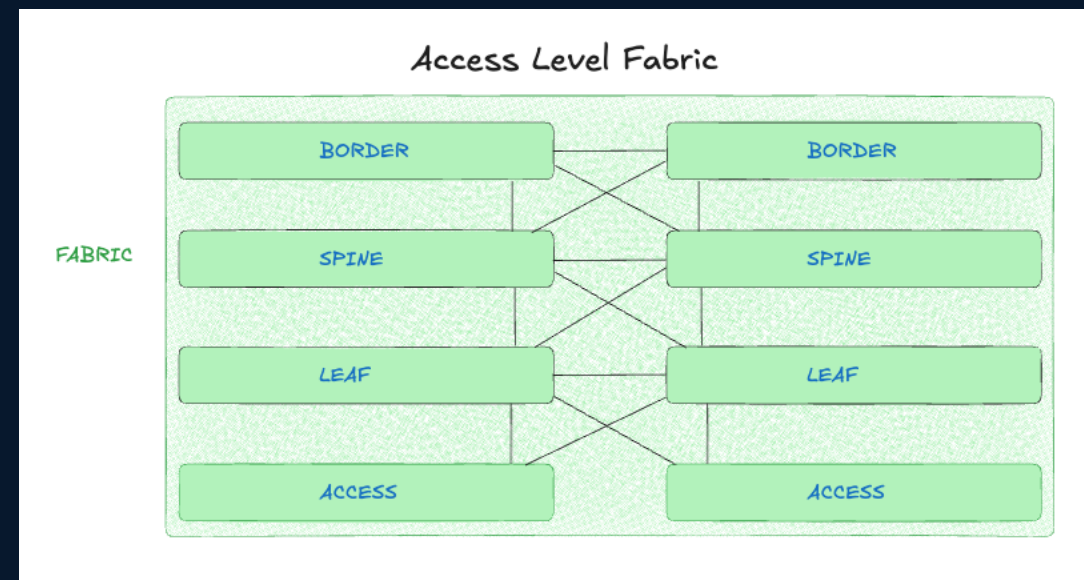
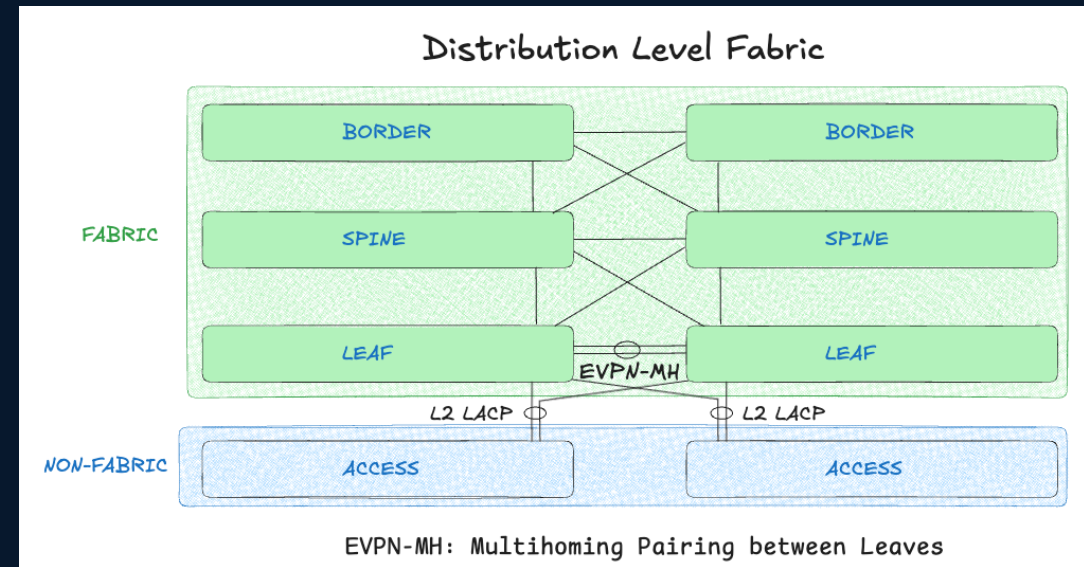
- Distribution Level Fabric
 - Fabric begins at the Distribution/Core
 - Multicast/Broadcast limited to Leaf
- Scale (1k Aps, 10k clients, 4 Leafs, 384 Switches, 300 Subnets)

Cloud Fabric – Phase 1 (Spring '26)

- EVPN-MH Multihoming
- Brownfield subnet migration

Cloud Fabric – Phase 2 (Sept '26)

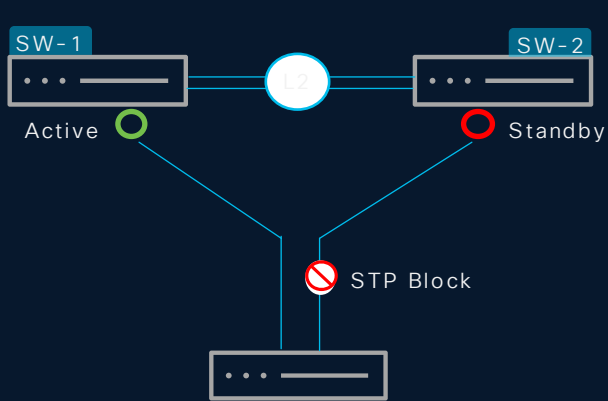
- Access Level Fabric
 - Pure-Layer 3 underlay
 - Fully Flood-free Routed Access
- Tenant Routed Multicast and MSDP
- Multi-Cluster support for scale
- Topology-based Fabric Automation and Assurance
- Increased scale -> 100K clients
- AI-driven day2 operations



EVPN Multihoming

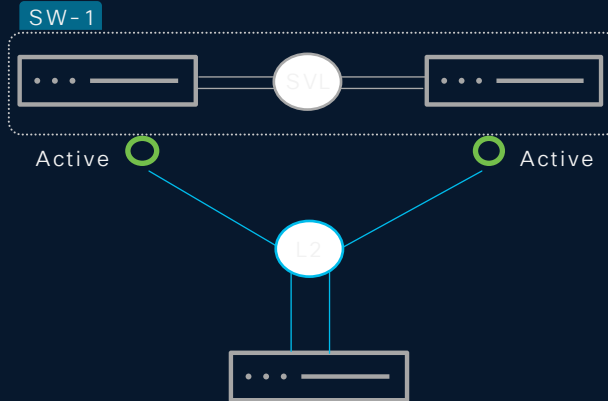
FHRP

HSRP | VRRP | GLBP



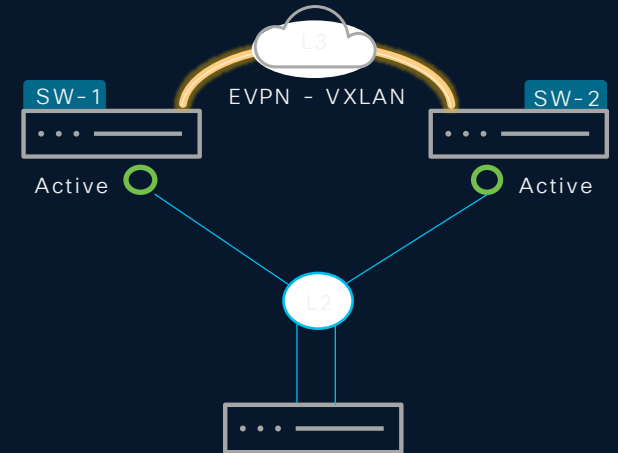
StackWise Virtual

Recommended



EVPN Multihoming

RFC 8365



Active VLAN (green circle)
Standby VLAN (red circle)



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

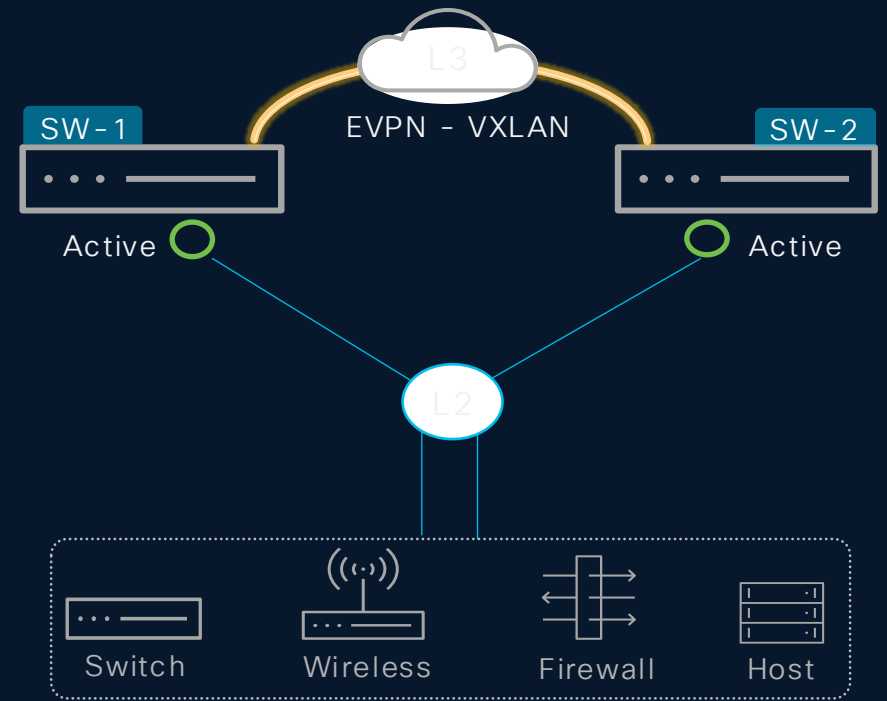
Catalyst 9500-H Series

Catalyst 9300X Series

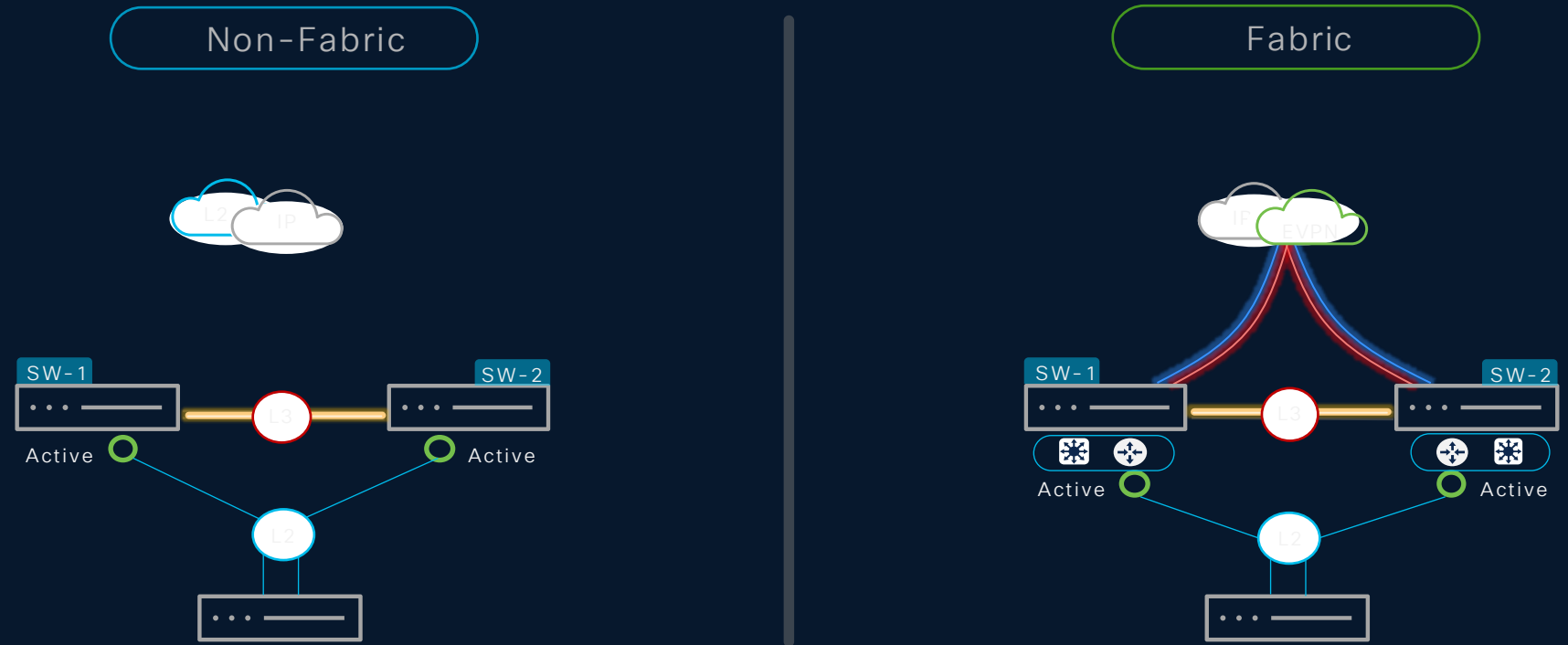
Catalyst 9300 Series

Software License

Network Advantage



Active VLAN

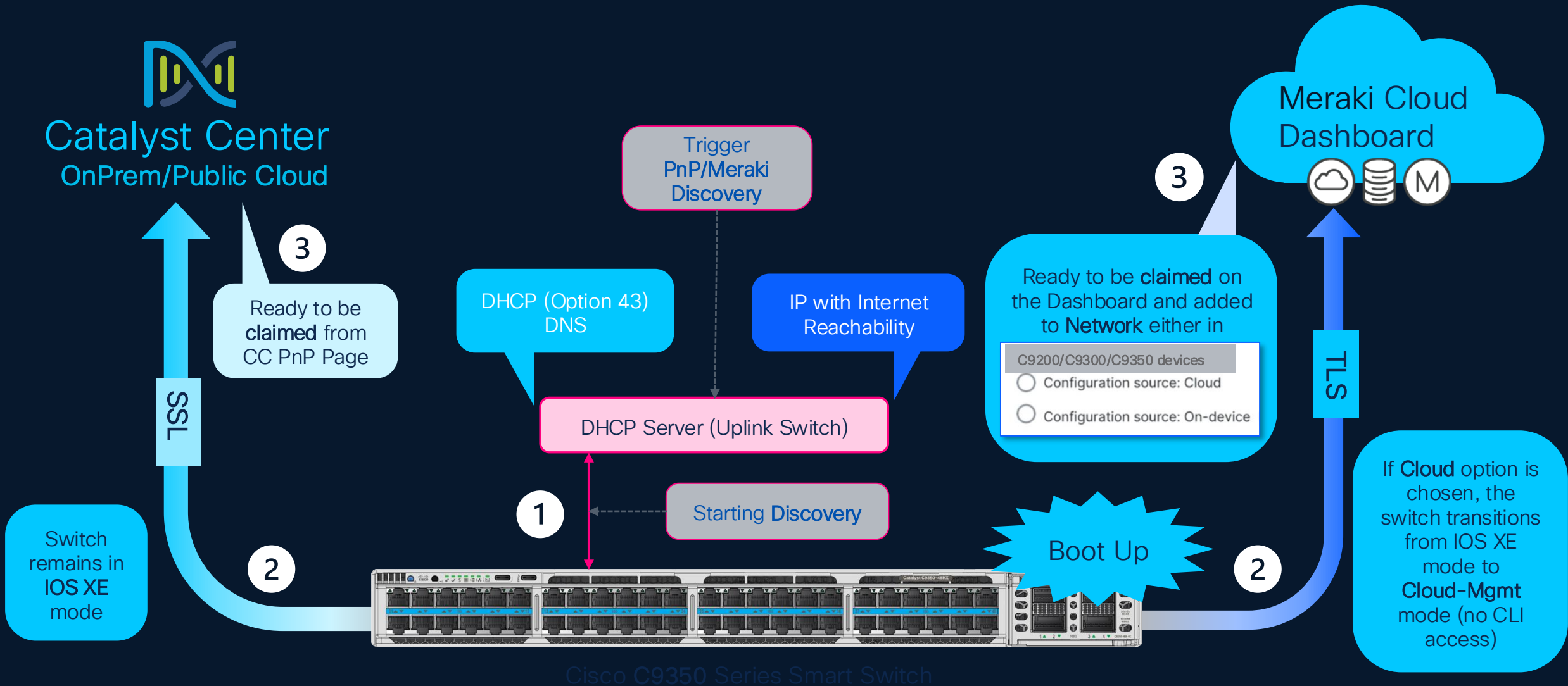


17.18.2 – Dec’25 – General Availability

- Transparent L2 Multipath solution for traditional IP / non-fabric networks
- Seamless transition path from FHRP to EVPN Multihoming – 2X performance, redundancy and scale.
- Extensible technology supporting Layer 3 segmentation and Layer 2 extension with EVPN fabric
- Hybrid L2 network support for hybrid Non-Fabric and Fabric networks

C9k Smart Switches

Unified Onboarding Experience



Cisco Smart Switching

C9350 and C9610 series

RECAP

1.6 Tbps

*Stacking
bandwidth*

4x100G

*Uplink
Modules*

PQC

*Post-Quantum
Security*

4x

*Higher MAC &
ARP scale*



C9350 series

C9610R



25.6 Tbps

*System
bandwidth*

256x100G

*Modular
Line-Cards*

PQC

*Post-Quantum
Security*

10-Slot

*To power
Core density*

Cisco Smart Switching

C9350 and C9610 series

RECAP

C9350-24P/48P
24/48x 1G/100M/10M copper
30W PoE+

C9350-24T/48T
24/48x 1G/100M/10M copper
Data only

C9350-24U/48U
24/48x 1G/100M/10M copper
60W UPoE

C9350-48HX
48x 10G mGig
90W UPOE+

C9350-48TX
24/48x 10G mGig
Data only



C9350 series



C9610R

C9610-SUP3XL/3

C9610-LC-40YL4CD

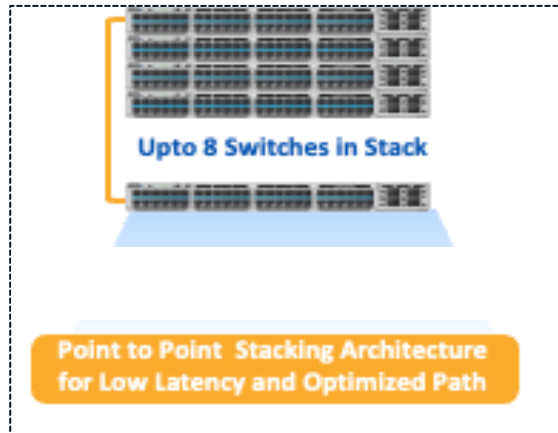
C9610-LC-32CD

Cisco C9350 – Smart Stacking (NG-Stackwise)

New architecture for the new networking demands

1

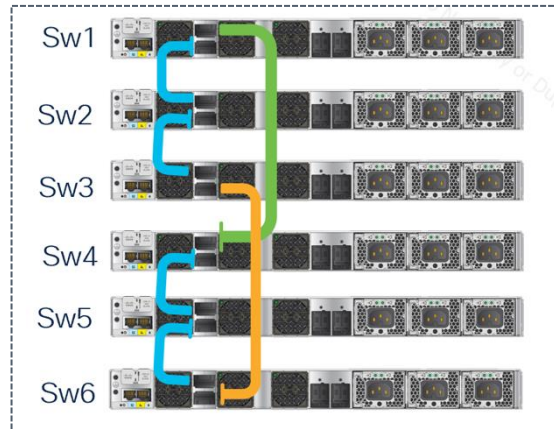
New stacking architecture
Open-standards based



Open shortest path algorithm.
Same code base as front-panel stacking.

2

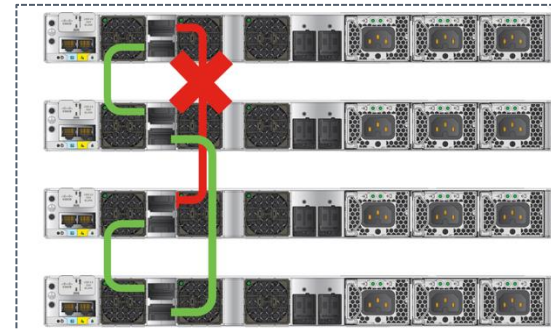
Flexible user-friendly
stacking design



No restrictions on how or where
you connect to form a full ring.
Eliminate long cable requirement

3

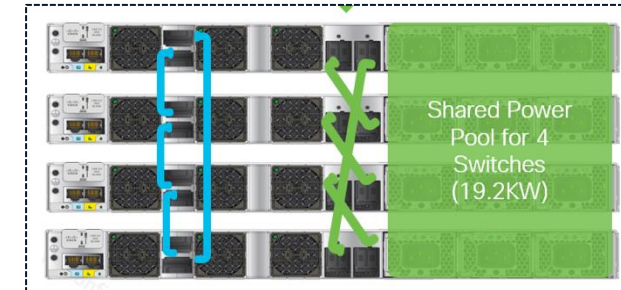
Isolated bandwidth loss
during failure



Failure only affects bandwidth for
directly connected switches.
**Other switches in the stack
operate at full bandwidth**

4

Enhanced StackPower
Higher power sharing



New cables handle higher current
(**55A**)
**30% more power sharing via
StackPower ports**

Unique to the C9350 series. Not applicable for C9300(L)(X) series

C9350 Smart Switch Reload Enhanced

Improving Boot times with Kernal-exec Reload

CLI	Behavior	What does it do?	When to use?
<code>reload</code>	New behavior for existing command. Replaces the current 'reload' command.	<ul style="list-style-type: none"> Kernel-exec reload Bypasses ROMMON during boot ~44 seconds faster boot 	<ul style="list-style-type: none"> General routine reloads Memory and CPU related reloads
<code>reload firmware</code>	Same behavior as existing 'reload' command	<ul style="list-style-type: none"> ROMMON based reload Full hardware (PHY, MCU, FPGA) flush 	<ul style="list-style-type: none"> Any reload requiring an update to hardware entries Example - Routing table flush and re-learn.

Tested Boot Time		
Platform	Reload (in seconds)	Reload Firmware (in seconds)
C9300X	N/A	197*
C9350-24/48 U/P/T	71	121
C9350 - 24/48 HX/TX	78	157

*C9300X and older will not support Kexec based reload. The behavior of reload command will be equivalent to 'reload firmware' on the C9350 series



Default `reload` : Catalyst 9300 → ROMMON boot | Cisco C9350 → Kexec based boot
Use `reload firmware` on Cisco C9350 for ROMMON boot

The Next Gen xFSU on C9350 Smart Switches



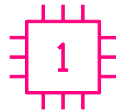
Achieving **Sub-sec downtime** for upgrades and reloads

What's New in C9350 xFSU



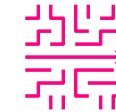
Control Plane Reload Now 3x Faster

C9350 uses **kexec-based reload** instead of ROMMON. This reduces bring-up time from **3 min to just 1 min.**



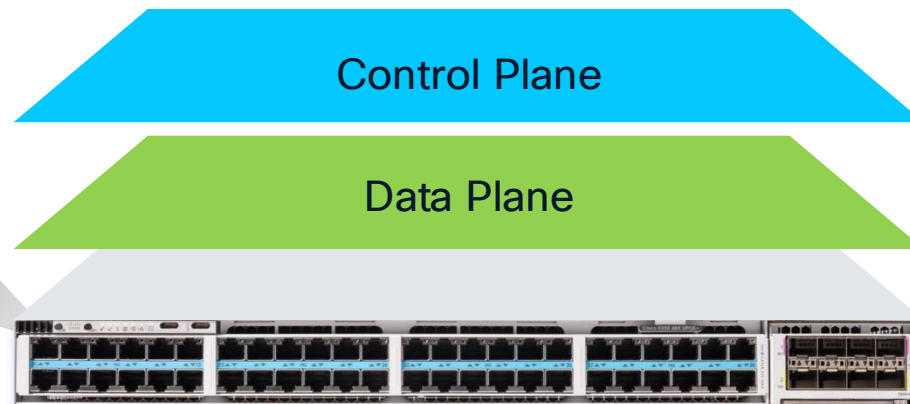
S1 ASIC Preservation Minimized Downtime

Unlike UADP, S1 ASIC isn't fully reprogrammed. Traffic impact limited to **select registers** based on operational features



Layer 2 Resiliency with STP Offload

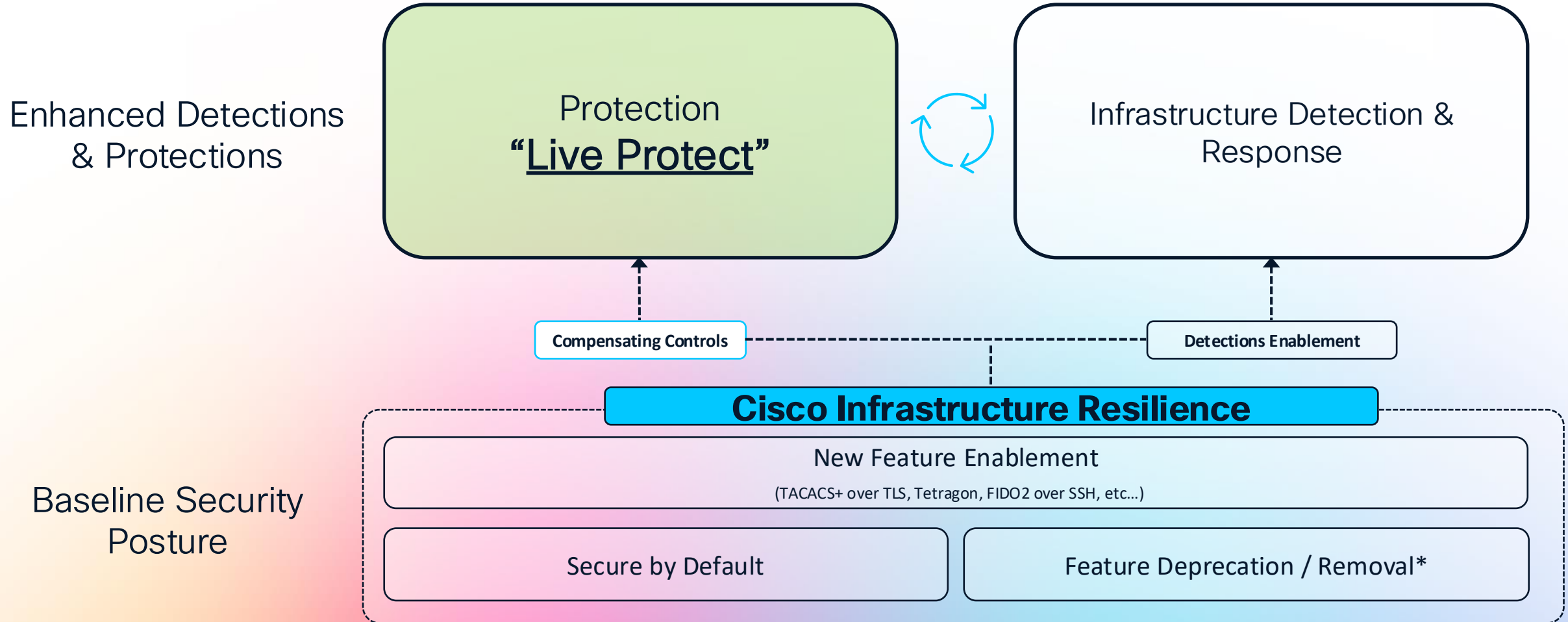
STP offload to NPU Host ensures **uninterrupted BPDUs** transmission. This allows xFSU support on Layer 2 roots.



Cisco C9350 Smart Switch

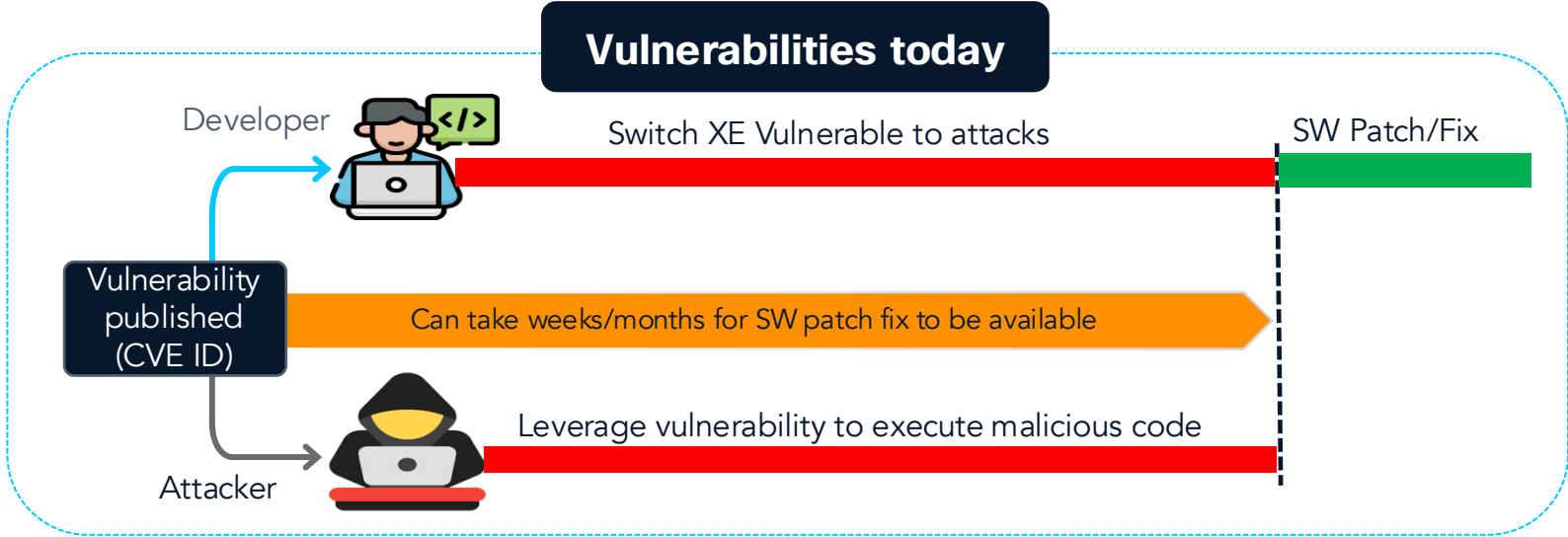


A compelling vision of security and resilience

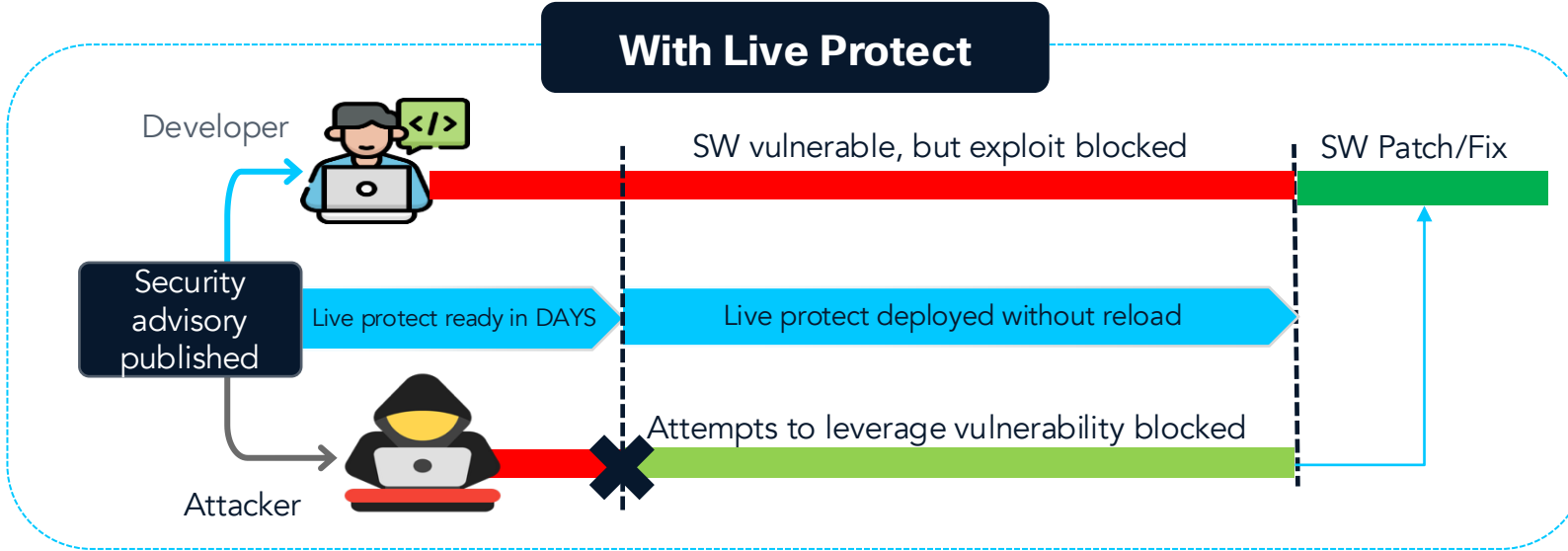


Live Protect for Blocking Attacks Leveraging Security Advisories

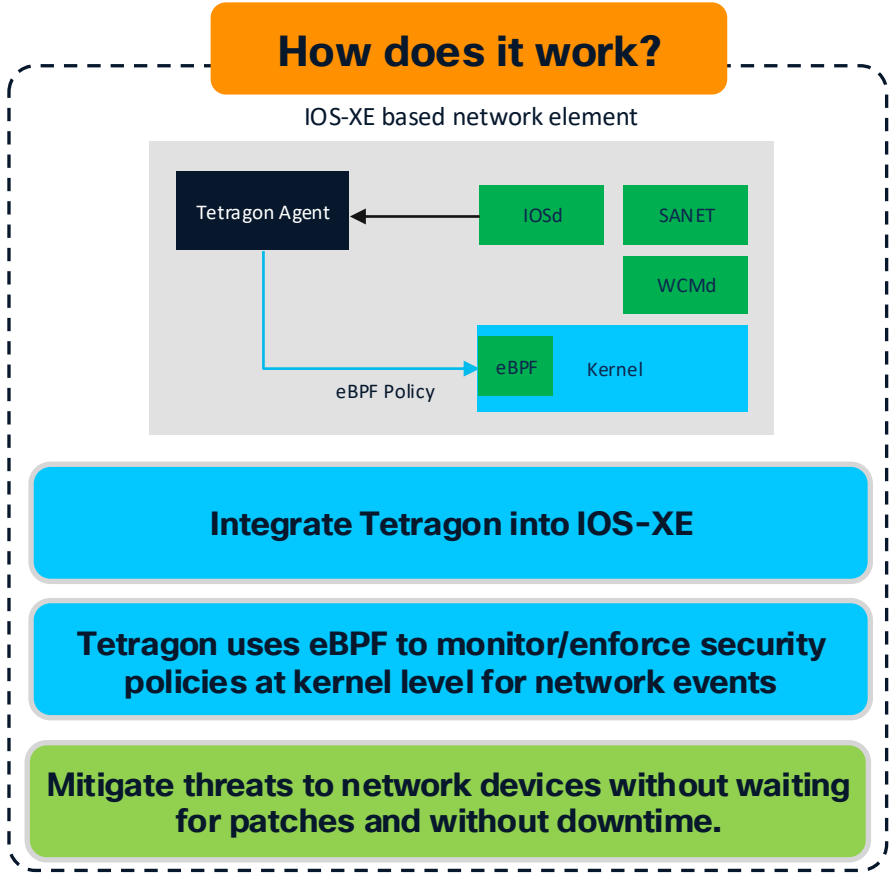
Vulnerabilities today



With Live Protect

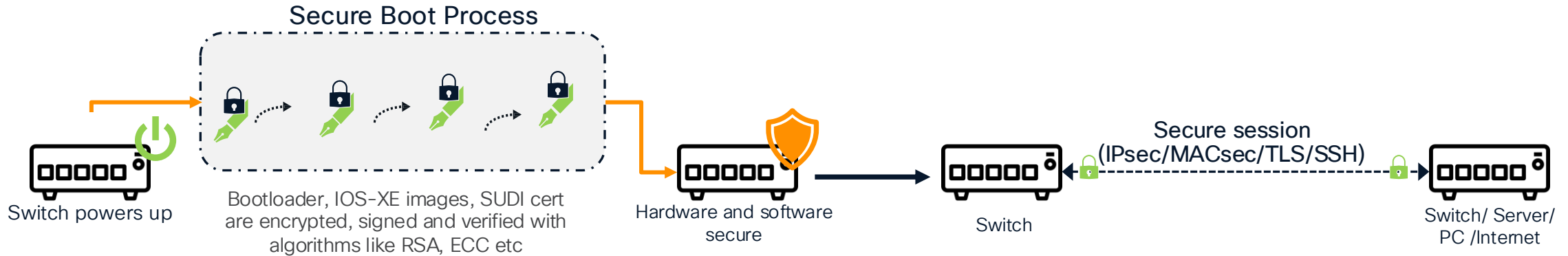


How does it work?



Cryptography in the Network Today

Hardware to Software



Security Feature	Cryptography	Use
IOS-XE image & bootloader image signing / verification	Digital signatures (using asymmetric cryptography)	Ensures authenticity and integrity of system software before booting.
SUDI Certificates / TLS Certificates / Root CA Certificates	Digital certificates (which use digital signatures & asymmetric cryptography)	Provide device identity and authentication, enable trust chaining (PKI).
Secure transportation sessions/ Key exchange	Asymmetric encryption & symmetric encryption	Asymmetric encryption for key exchange , then symmetric encryption for bulk data

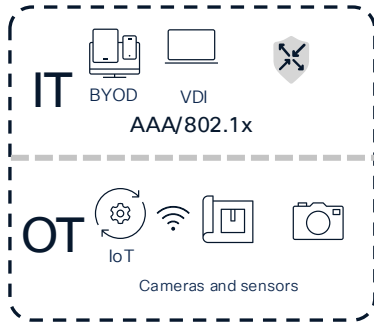
Secure Boot Process on C9000 Smart Switches

Hardware PQC support with Trust Anchor Module



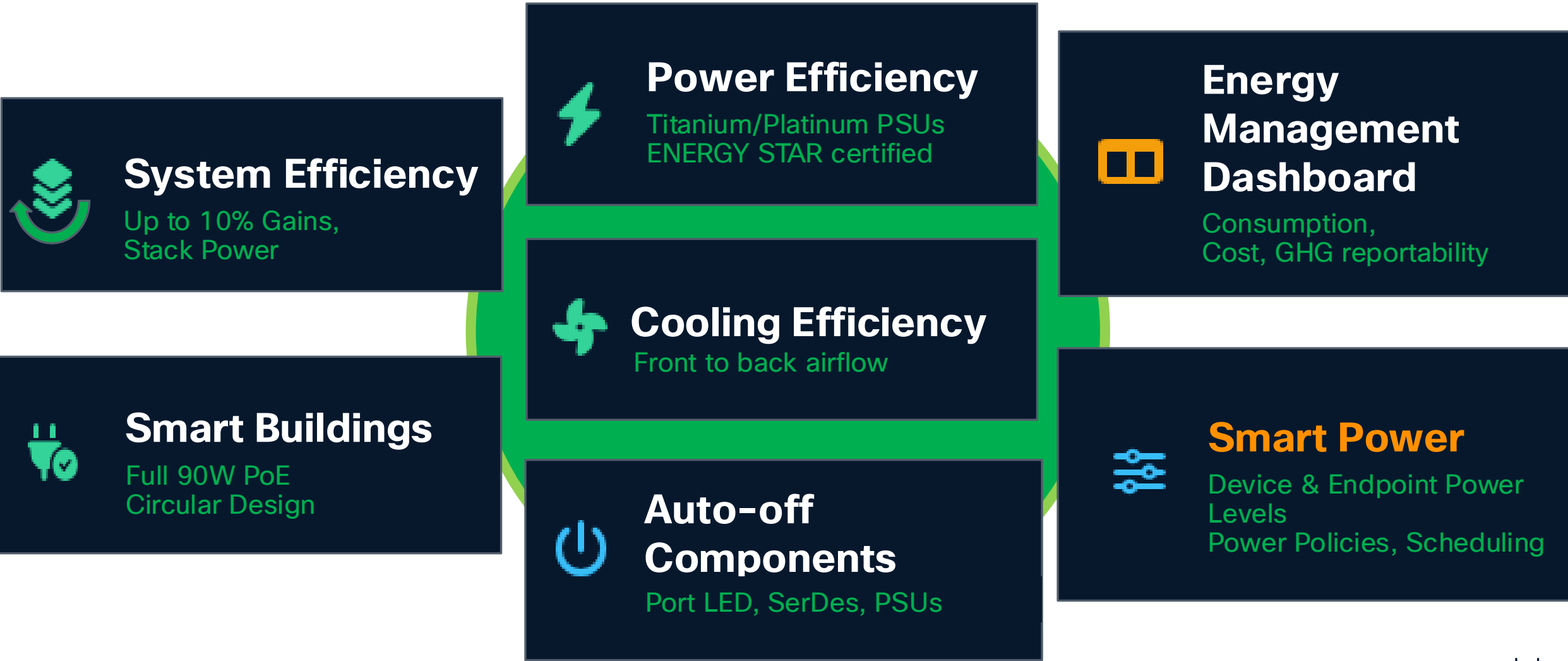
Software PQC Support on C9000 Switches for Transport Encryption

Data Protection with Transport Security in the Network



Encryption Algorithms today		PQC compliance	Remediation
MACSec	Pre-shared Key	PQC resilient	NA
	Certificate based (MKA EAP-TLS)	PQC vulnerable	EAP-TLS 1.3 with ML-KEM <ul style="list-style-type: none"> • C9350 - IOS-XE 26.1.1* • C9610 - IOS-XE 26.2.1*
IPSec	IKEv2 Initial Key Exchange	PQC vulnerable	IKEv2 with ML-KEM and TLS 1.3 with ML-KEM <ul style="list-style-type: none"> • C9350 - IOS-XE 26.2.1* • C9610 - Roadmap

Sustainability Innovations with C9000 Smart switches



Introducing Smart Power : IOS XE 17.18.2

Policy-Driven Power Management and Optimization Framework



Smart Power Domain: Devices are grouped into Smart Power domain with a unique domain name and security credentials



Neighbor Discovery: via UDP port 43440 broadcasts and CDP extensions, **Queries/Replies:** TCP or UDP unicast



Attributes: finetune policies with metadata like *Importance, Role, Keyword, Level, Name*



SDK Interoperability: Provides an SDK for interoperability with non-Cisco devices and facility management systems



Power Levels

Granular endpoint control with defined states ranging from 0 (Off) to 10 (Fully On).

Operates at Layer 2.



Policies

Apply schedules by role, location, or tag. Uses attribute-based logic and conditional activation.



Schedules

Recurring policies with comprehensive time parameters (e.g., "5:30 PM, Mon-Fri").

10

9

8

7

6

5

4

3

2

1

0

Smart Power Policy - How to



1. Target & Action

Select Ports or device groups/tags
Select Desired Action: Power
Level: 0 (Off).



2. Condition

Set the trigger condition for the
policy to run: Importance = 100.



3. Schedule

Use a simple calendar and clock to
Set the recurrence: At 5:30 PM,
Every Day.

Example Policy (CLI)

```
Interface gi1/0/1  
smartpower level 0 recurrence importance 100 at 30 17 1-31 1-12 0-7
```

</> What It Means

This policy targets port **gi1/0/1**.

It sets the power level to **0 (Off)**.

It runs at **5:30 PM** (17:30), **every day** (1-31), **every month** (1-12), on **all days of the week** (0-7).

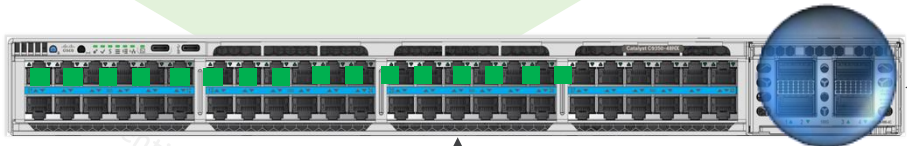
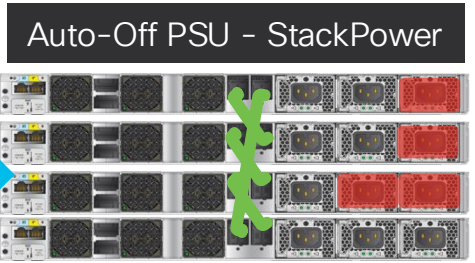
This **only** applies if the device's **importance** is **100**.

System Power Levels

Power Optimization 0 to 100%

Level 1	Power off
Level 2	Hibernation*
Level 3	Deep sleep*
Level 4	NA
Level 5	NA
Level 6	NA
Level 7	Auto off - LED, PSU and SFP
Level 8	Auto off - LED and SFP
Level 9	Auto off - SFP
Level 10	Full Power

switch specific power optimizations



Example: Set Smart Power level to 7
All port LED, SFP and unused PSUs can be turned off

Catalyst Center/ Meraki Cloud Policy Management*

Endpoint Power Levels

Endpoint specific power optimizations

Partner Device integrations*

Room OS Wireless AP Smart Desks Smart lights

Smart Power Packet



Example: Smart Power level # 7 on IP phone turns off screen to save power

9800 & 8875 series IP Phones with PhoneOs supports Smart Power Level 10,7 & 2

Achieving NetZero Goals with the Smart Power Framework

Example: Shifting 1,000 phones from level 10 to level 7 during off-hours can reduce up to 35% power draw

* roadmap

Cisco Catalyst 9200CX Pass-through SKU

For Flexible Powering Deployments Requiring PoE Downlinks



10MB/100MB/1G Speeds

Power via PoE+/UPOE/UPOE+ and/or External Power Adapter*



8X 1G
(PoE+ capable)

2x 1G copper & UPOE+
uplinks



150W/80W
External Power
Adapter

C9200CX-8PT-2G

Kensington Lock

All Downlink Ports PoE+ Capable

240W Max PoE Power Budget**

Power budget details

Aux 80W	Aux 150W	PD1	PD2	POE Power Available	Number of 30W PSE Ports	Number of High Priority Ports
-	Present	Class 8	Class 8	249.5	8	3
-	Present	Class 4	Class 8	210	7	2
Present	-	Class 8	Class 8	179.5	6	2
-	Present	Class 6	Class 6	208.5	6	1
	Present	Class 4	Class 4	168.5	5	0
Present		Class 6	Class 6	138.5	4	1
	Present			129.5	3	0
		Class 8	Class 8	99.5	3	1
Present		Class 4		78.5	2	0
		Class 8	Class 6	79	2	0
Present				59.5	1	0
		Class 8	Class 4	30 **	1	0



Powered by the UADP 2 Mini ASIC

Release strategy

New release structure for a new product family



1 x **EM release** per year
2 x **SM releases** per year

EMR supported for 48 months from FCS
SMR supported for 12 months from FCS

Changing to

Why should you care?

6 months between recommended releases (compared to 12 months today)

2 x **EM releases** per year
One in **Feb** and second in **August**

EM releases are supported for 48 months from FCS date (same as before)

IOS-XE release naming
Year.Release.Build

Next Upcoming releases will be **IOS-XE 26.1.x and 26.2.x**

C9000 Smart Switches upcoming features

Bridging parity gaps



C9350 Smart Switch

Upcoming features
IOS-XE 17.18.2 and 26.1.1

IOS-XE 17.18.2	IOS-XE 26.1.1
L3-Multicast IPv6 Full Key Support	High Availability-ISSU (xFSU)
Full key Multicast support	Fabric-EVPN (Leaf role)
Fabric-SDA (Fabric Edge role)	QoS-AVC
NetFlow (FNF Byte Counter)	L3 Switching-BFD
Security-ACL (ACL Logging)	Security-FHS (IPv6 FHS)
Security-CTS/SGT	L3 Switching-PBR
L3 VPN - MPLS-MPLS	ISIS SA bit support
QOS-MPLS	RACL Multicast
Netflow-Advanced	SGACL Cell Counter Scale
L2 Switching-STP	4K SVI
	MacSec - Switch to Switch

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C9610 Smart Switch

Upcoming features
IOS-XE 17.18.2 and 26.1.1

IOS-XE 17.18.2	IOS-XE 26.1.1
SVL/ISSU	Fabric-SDA border
Full key Multicast support	L3 Switching-NAT
NetFlow Base support	Multicast global resource synchronization
L3 Switching-PBR	L3 Switching-BFD
L3 VPN - MPLS-MPLS	Secure boot
Security-ACL	
Security-CTS/SGT	
DHCP Snooping	
QOS - MPLS	
1G support (Fiber)	
50G support	



Cisco Confidential

Thank you

