



Edge Platforms: What's in a name? Apparently, quite a bit!

Catalyst 8000 Edge Platforms Family

Rahul Sagi
Engineering Product Manager

Technology transformations

Top digital business initiatives in the cloud age



SASE/Multicloud

Cloud migration will continue to accelerate the adoption of SD-WAN

- Markets & Markets Research



5G/IOT

By 2022, 5G Infra in Branch expected to grow to \$1.9 billion

- IDC Report



Edge Computing

37% of enterprise customers plan to implement SD-Branch in some way in next 5 years

- IDC Report



Predictable Scale

75%

believe SaaS/Cloud are important to WAN choice
[IDC Report](#)



Reducing Risk

43%

of teams identified embedded network security as priority
[Cisco Global Networking Report](#)



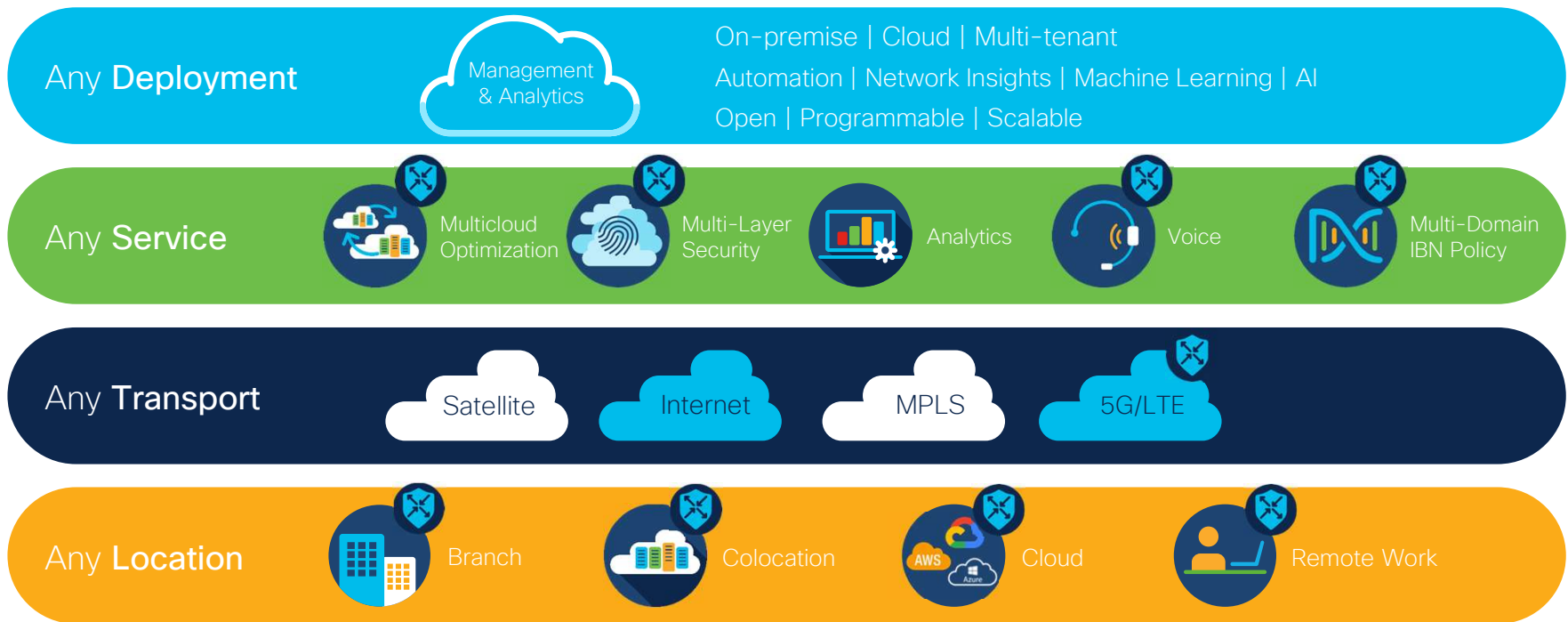
Increasing Agility

50%

of all workloads run outside of enterprise DC by 2021
[Cisco Global Networking Report](#)

Powered by secure cloud scale SD-WAN

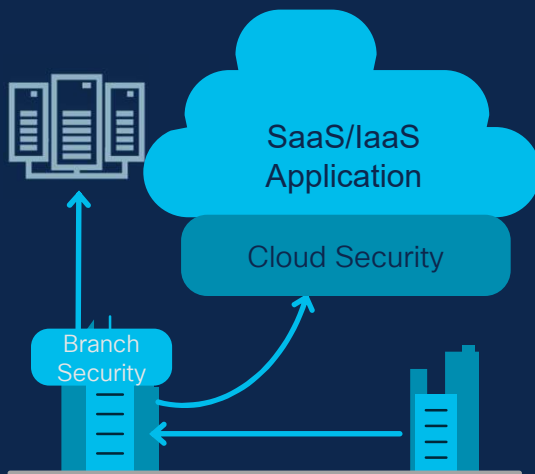
Cisco's flexible architecture for Intent-based Networking



Offering Choice without Compromise

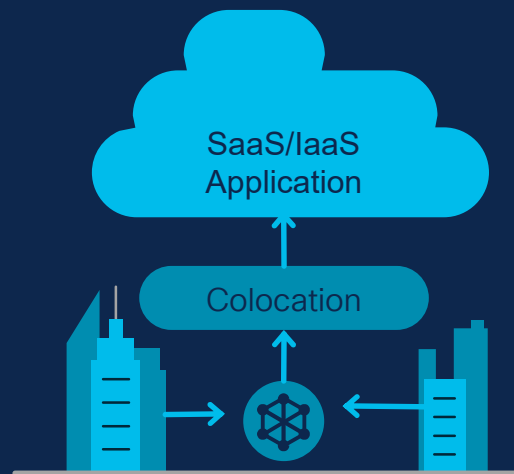
SD-WAN Security Deployment Models

Industry-first Converged Offer



Integrated Security

Single platform for Routing and Branch Security at the branch



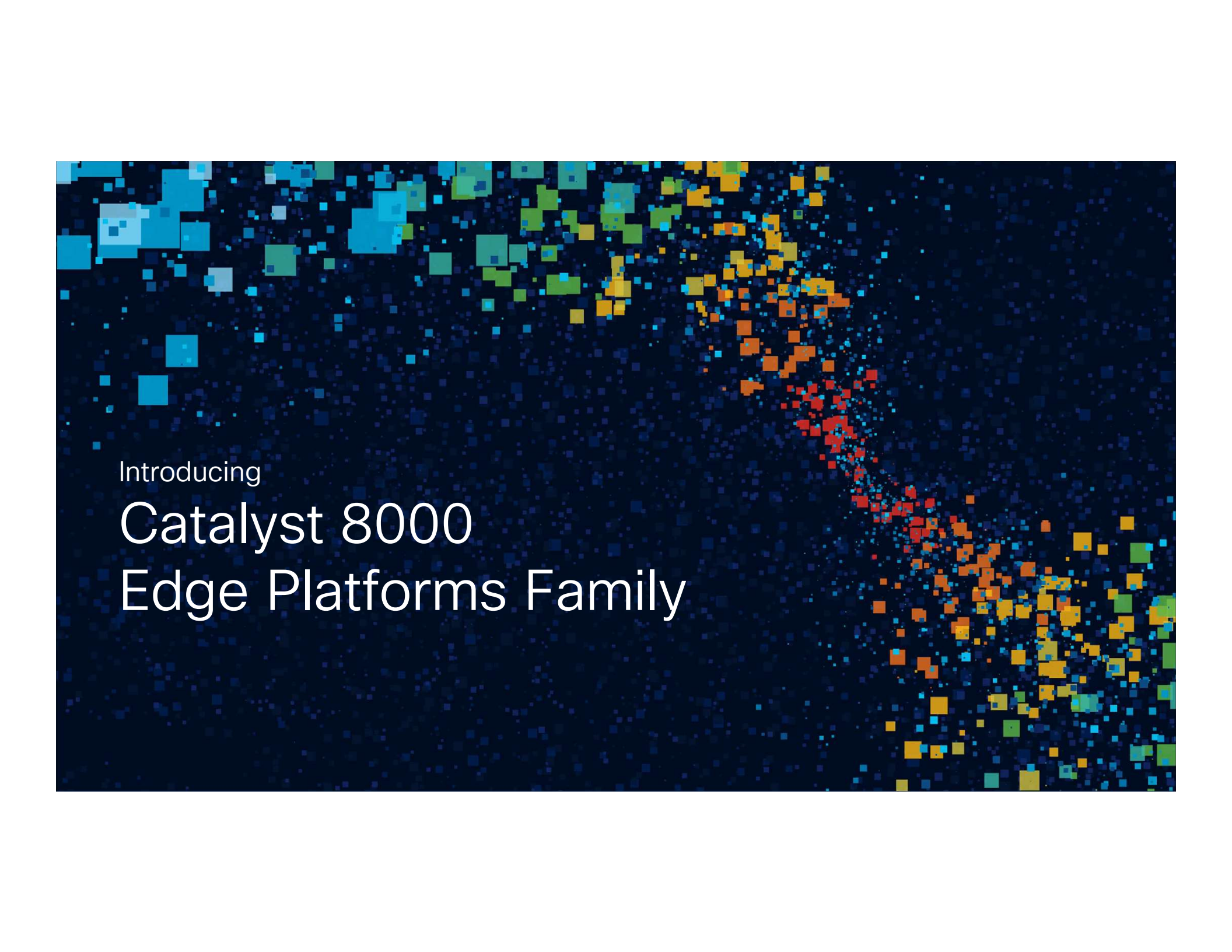
@Regional Hub

Security Services as VNF at Regional Colocation Hub



Cloud Security with SASE

Lean branch with security in the cloud



Introducing

Catalyst 8000 Edge Platforms Family

Expanding Catalyst 8000 Edge Platforms Family

Built for the cloud edge



Catalyst 8000v Edge Software/
Catalyst 8200 Edge uCPE



Catalyst 8300/8200 Series Edge Platforms



Catalyst 8500 Series Edge Platforms



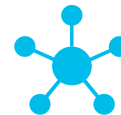
Secure, connected experience

- SD-WAN ready
- Cloud-scale multi-layer security
- 256-bit WAN MACSec



Cloud-native agility

- 2-5x throughput improvement
- 10G in access to 40G/100G in edge
- Integration with leading cloud providers



Business-first resiliency

- Built-in edge compute resources
- End-to-end analytics and assurance

Cisco Catalyst 8000 Edge Platforms Family

Optimized for SASE with Cisco Secure Cloud-scale SD-WAN

Catalyst
8500/8500L Series
Edge Platforms



ASR 1K Fixed
Aggregation

Catalyst 8300/8200
Series Edge
Platforms



ISR 4400/4300
Modular Access

Catalyst 8000V Edge
Software
Catalyst 8200 Edge uCPE

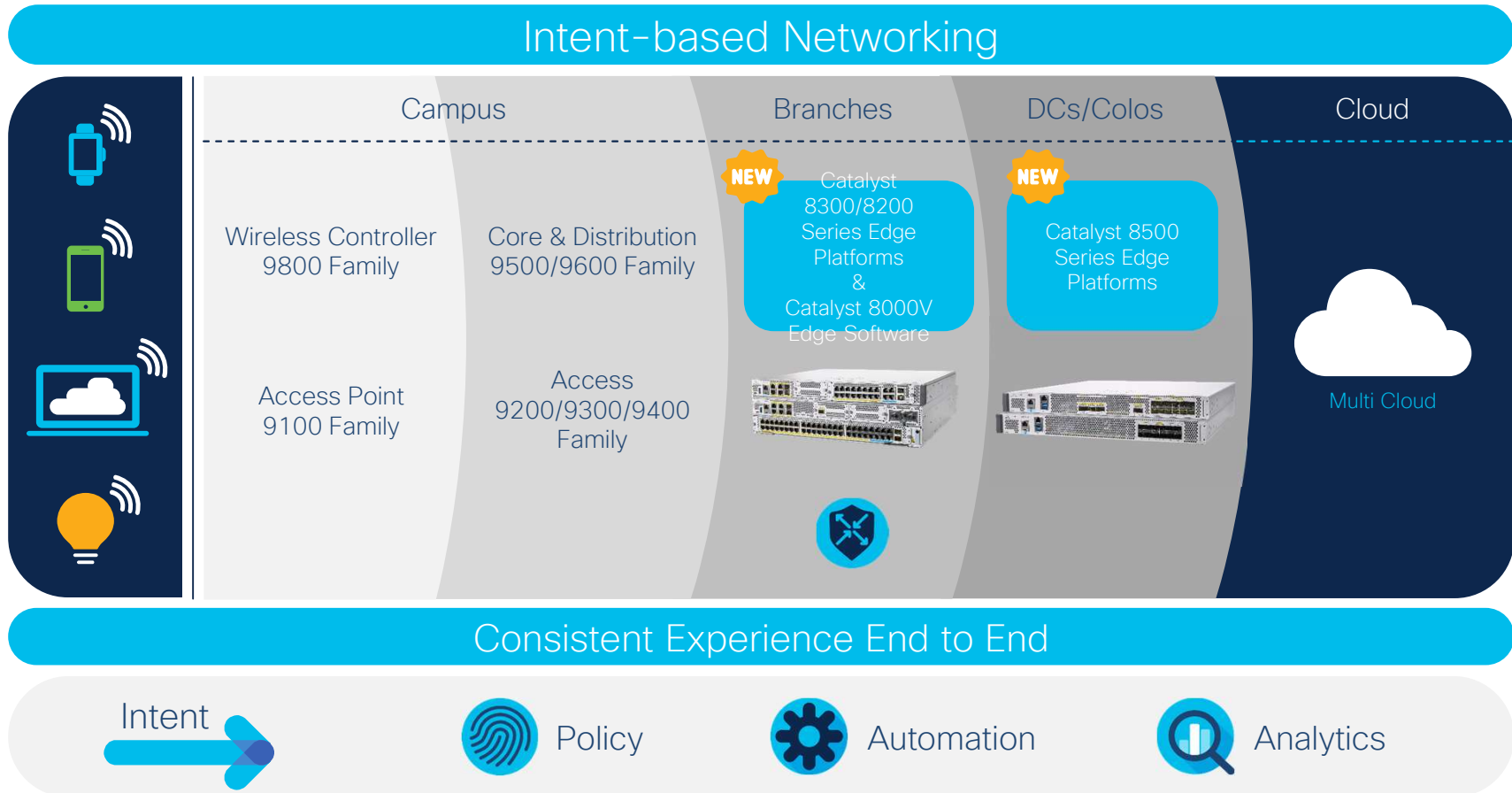


CSR 1000V/ENCS 5100
Cloud/Virtual

Delivering SASE for your Multicloud WAN Edge needs

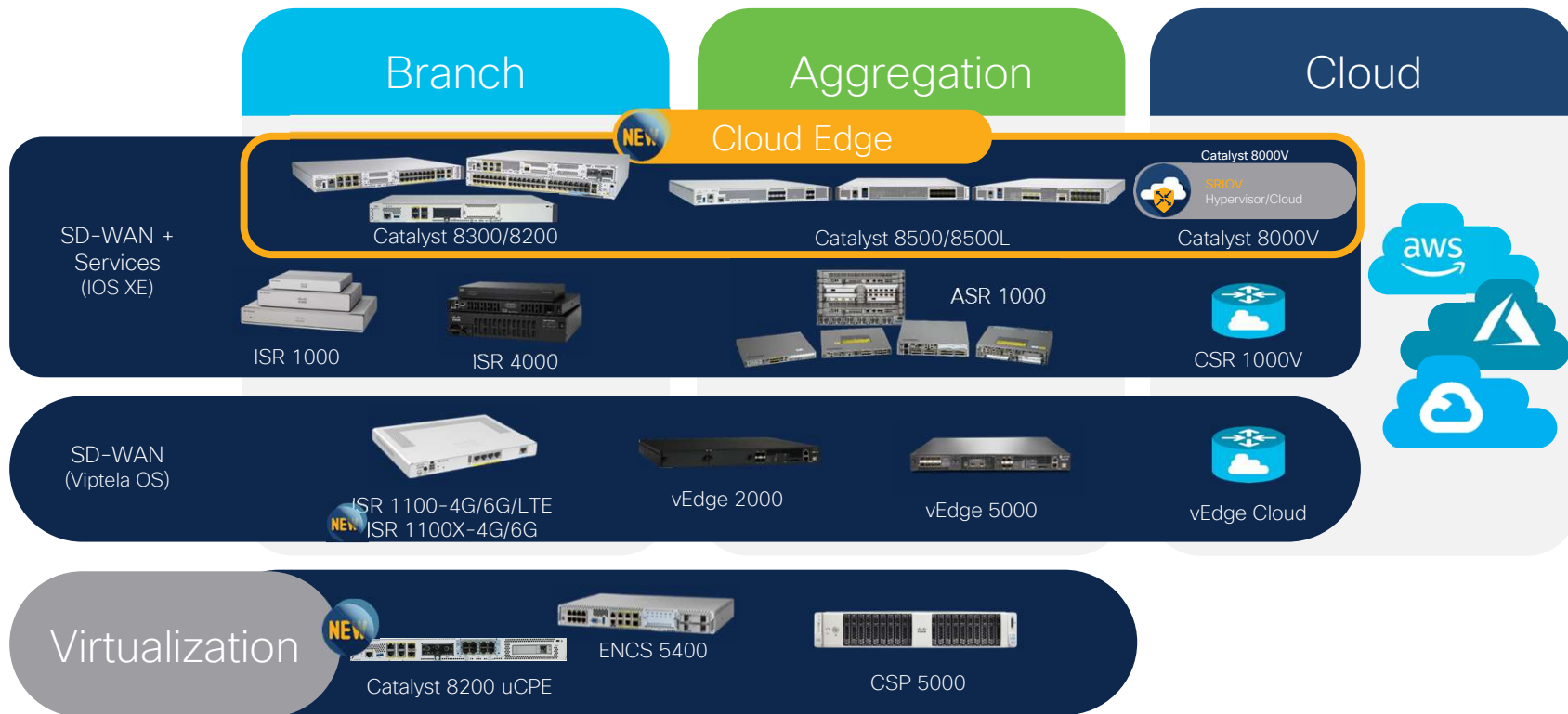
Cisco Catalyst for Intent-based Networking

Why Catalyst?



Cisco offers the broadest portfolio for WAN transformation

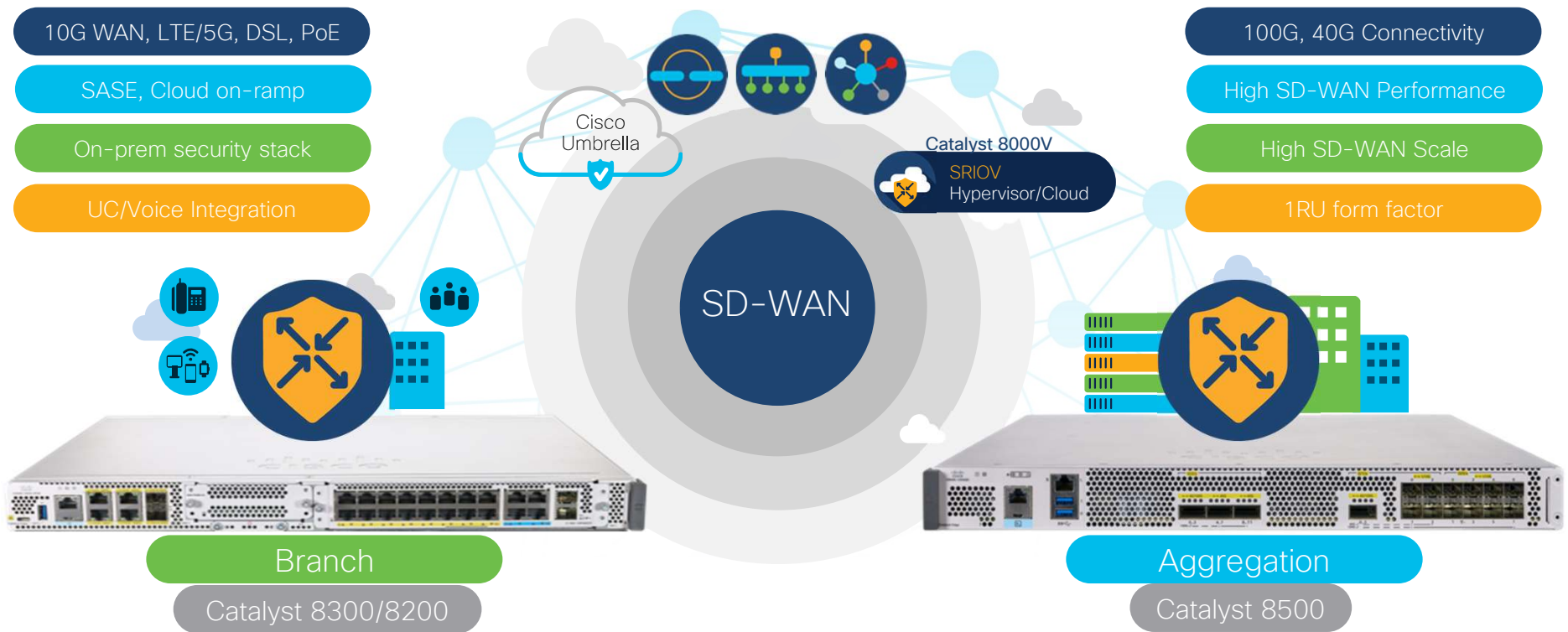
Resilient Infrastructure to deliver IT agility



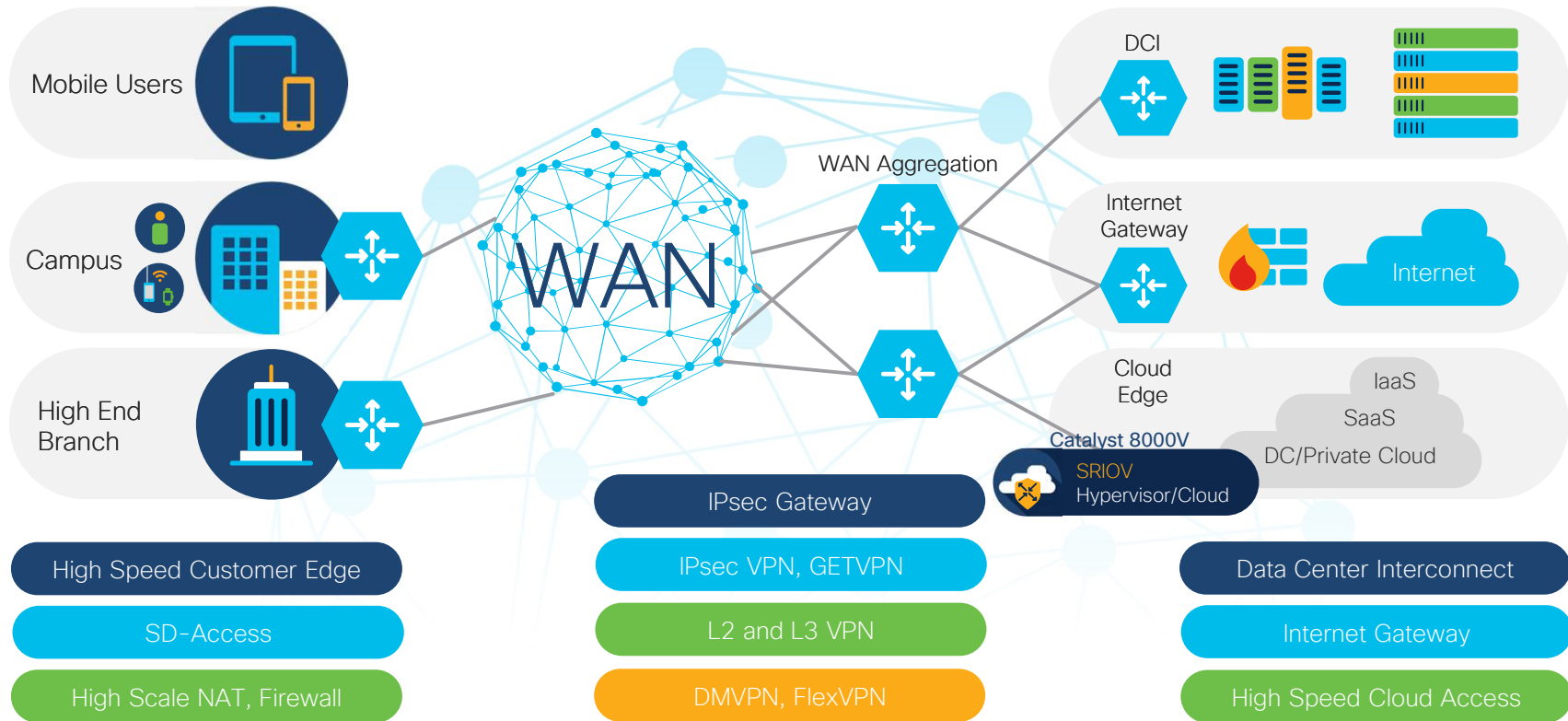
Solutions, Use-Cases



SD-WAN Hub, Branch and Cloud

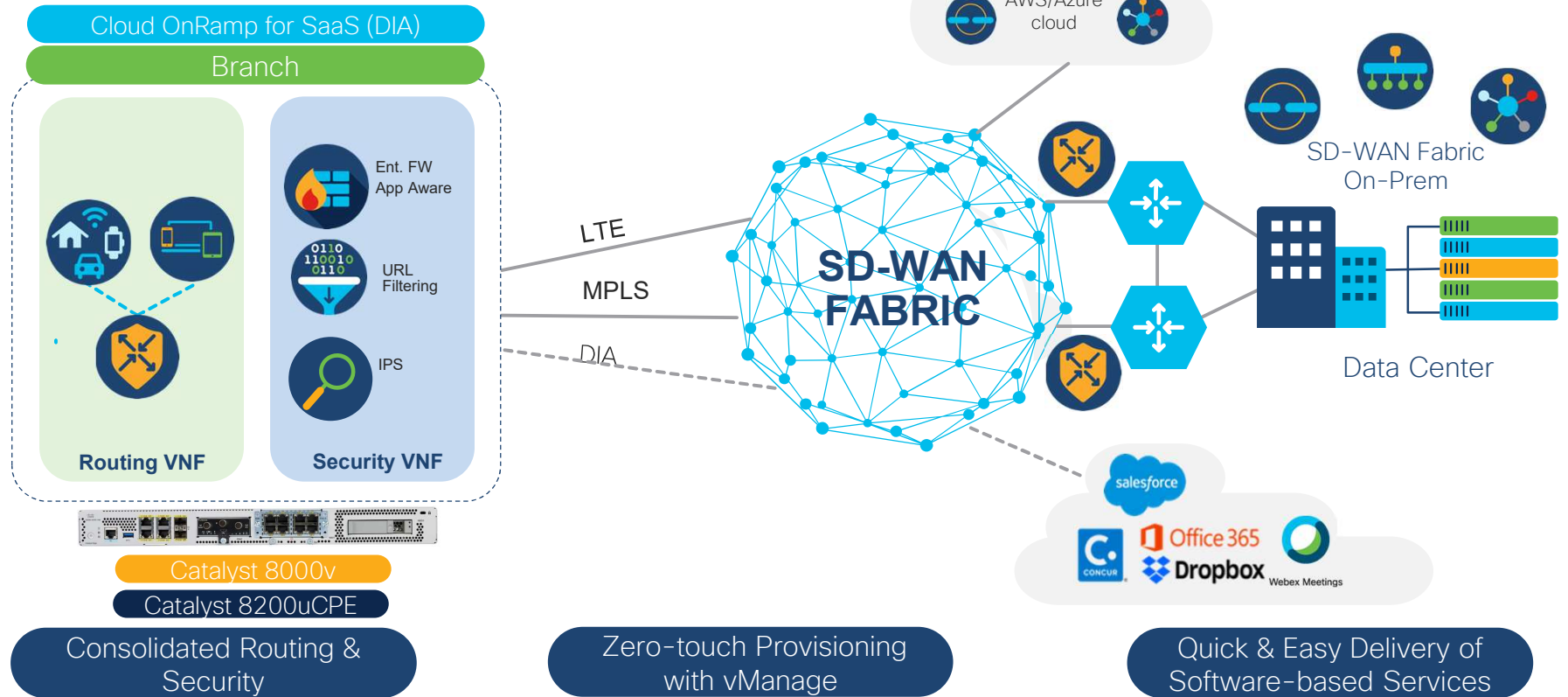


Enterprise Applications

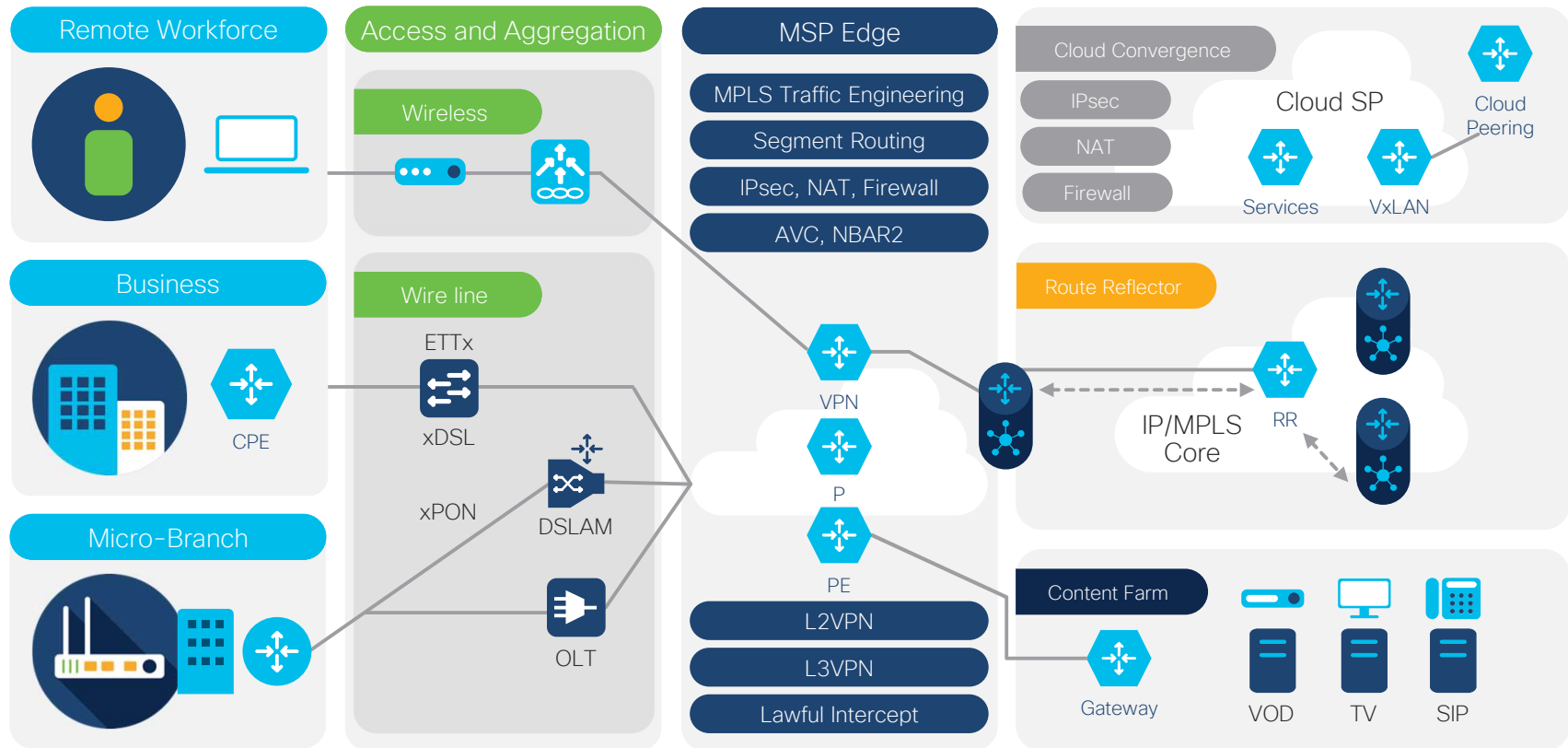


SD-Branch Use Case

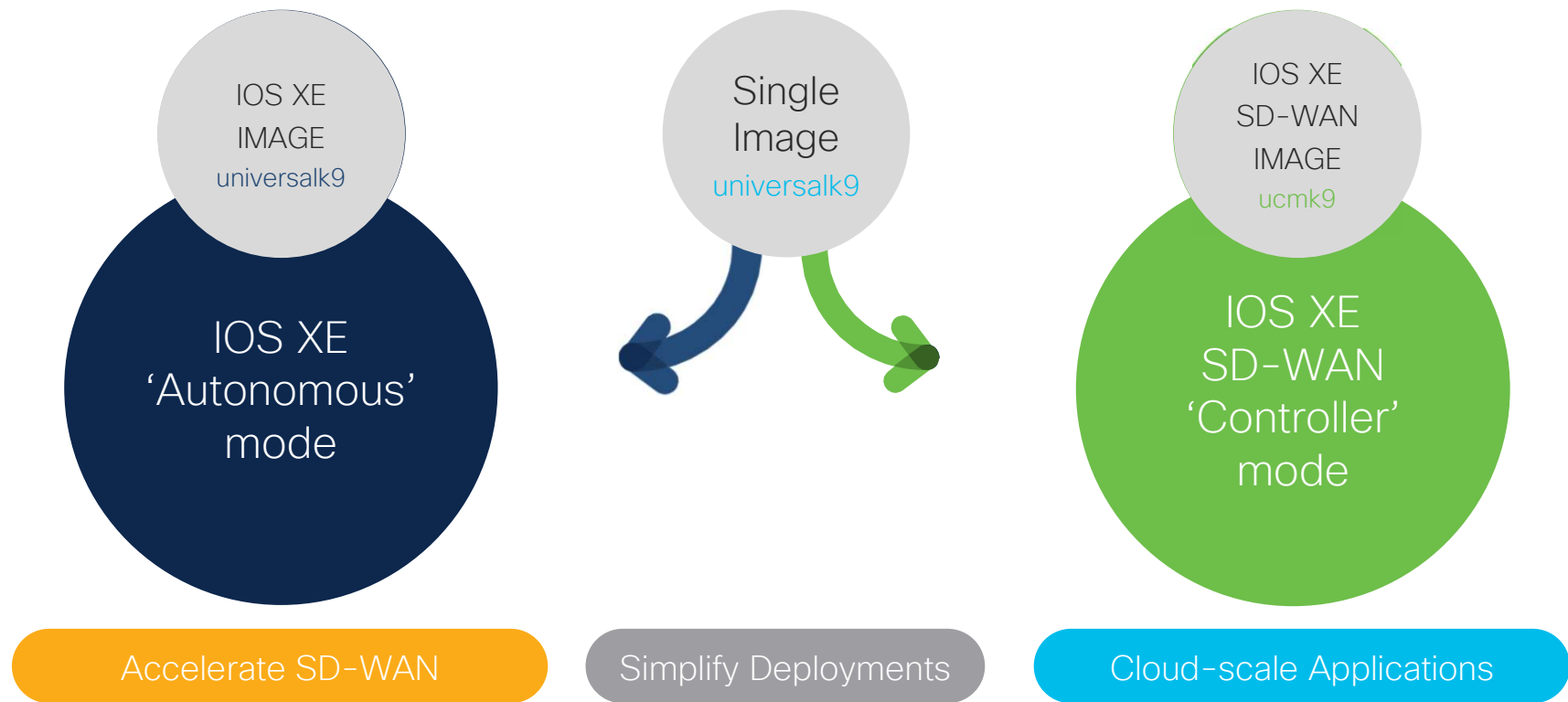
Enterprise Virtual Branch Office



Managed Service Provider Applications



Easy Operations with Single Image



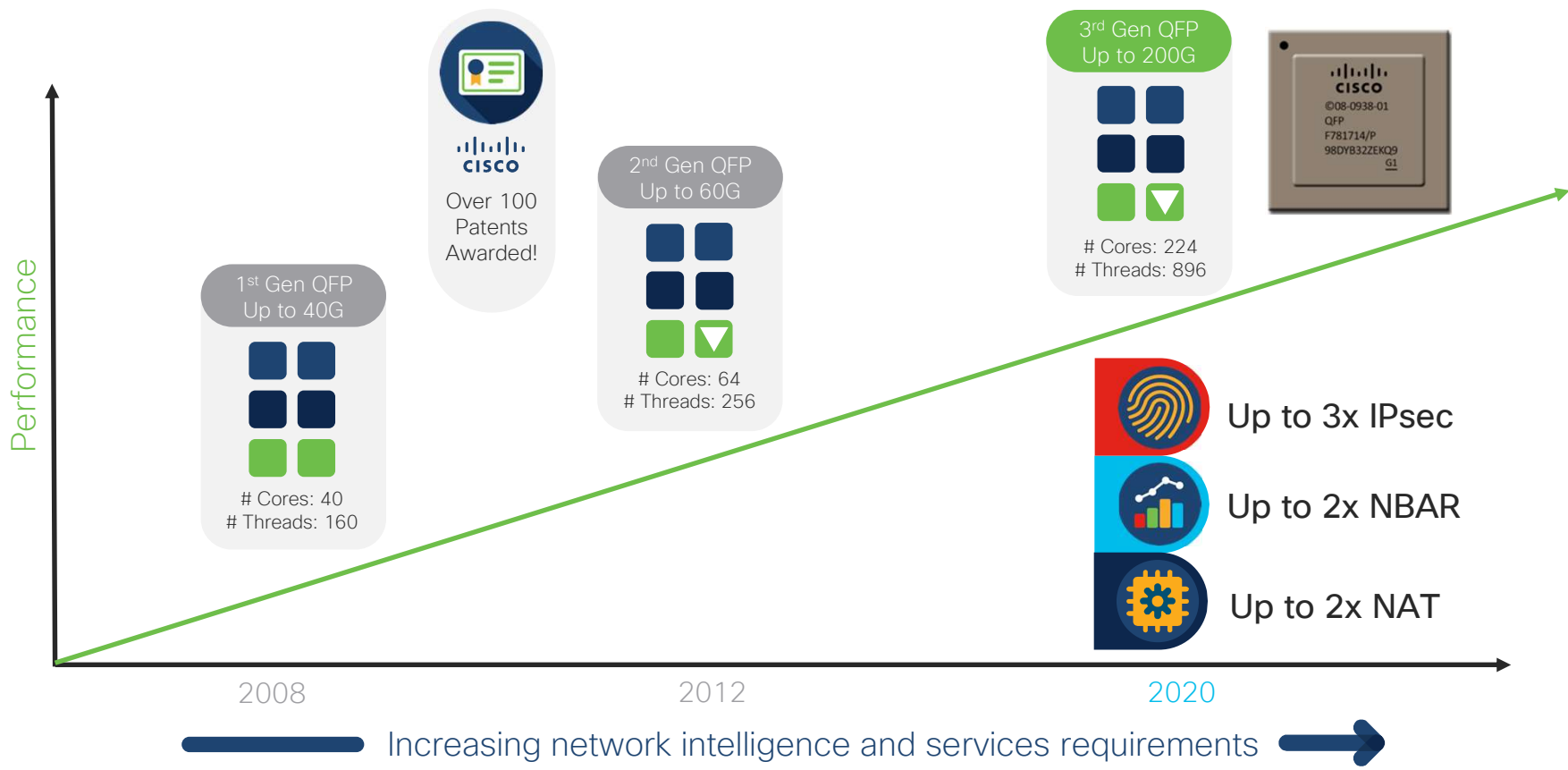


Catalyst 8500/8500L

Aggregation Redefined

Cisco Enterprise Routing ASIC Leadership

Continuing Investment in Network Processor Technology





Cisco Catalyst 8500 Platforms

Powerful SD-WAN 1RU Platform with 100G, 40G ports

01 Improved Data Plane

02 Accelerated SD-WAN Services

03 High Speed Multicloud Access

04 Highly Scalable Control Plane

3rd Generation Quantum
Flow Processor



Hardware
Accelerated Services



Up to 8000 SD-WAN
IPsec Tunnels



High Speed DIA, DCA
100/40/10/1G Ports



Catalyst 8500 Series Edge Platforms

100G, 40G
'C' 'Q'

C8500-12X4QC



2 QSFP28, 2 QSFP
12 SFP+

10G, 1G
'X'

C8500-12X



12 SFP+

Up to 200 Gbps CEF,
High Performance IPsec

3rd Generation QFP,
Hardware Accelerated Services

User Centric Design,
RFID, Label Tray, FRUs





Cisco Catalyst 8500L Platforms

High Performance SD-WAN 1RU Platform with integrated 4x10G ports

01 Powerful Data Plane

02 Accelerated SD-WAN Services

03 High Speed Multicloud Access

04 Highly Scalable Control Plane

Highly efficient flow
optimized forwarding



Advanced Flow-based
Forwarding algorithm



High Scale SD-WAN
IPSec Tunnels



High Speed DIA, DCA
10/1G Ports



Cisco Catalyst 8500L Edge Platform

Re-Imagined x86 based powerful 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 Density 10/1 Gigabit Ethernet Ports

Multi-layer Security

High Throughput MACsec and IPSec
Trustworthy Systems
Umbrella SIG



Connectivity

All Ports
Built-in

WAN
MACsec

x86
Advanced
Flow
Forwarding

Up to 20
Gbps CEF

5G Ready

Manageability

vManage

DNA Center

Open APIs

Analytics

ASR1001-X vs C8500L-8S4X

Product Comparison

Up to 4.5 Gbps SD-WAN, 6000 tunnels

Up to 20Gbps CEF, 5.5Gbps Crypto

2M NAT/PAT, 15 Gbps NAT perf

4GB DP Memory, 16K Queues

Ports: 6x 1G, 2x 10G

8GB to 32GB upgradable DRAM

QFP 2.0, 31 Cores

Up to 8.5Gbps SD-WAN, 8000 tunnels

Up to 20Gbps CEF, 13Gbps Crypto

2M NAT/PAT, 17 Gbps NAT perf

Max 4GB DP Memory, 16K Queues

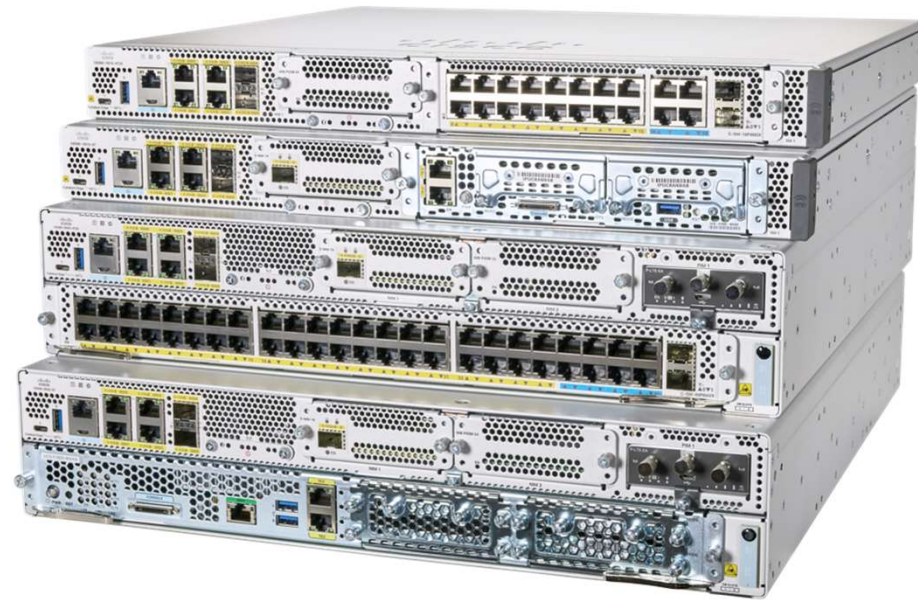
Ports: 8x 1G, 4x 1/10G

16GB to 64GB upgradable DRAM

x86, 12 Cores, Flow Based Architecture



All perf numbers are aggregate IMIX throughput



Catalyst 8300/8200

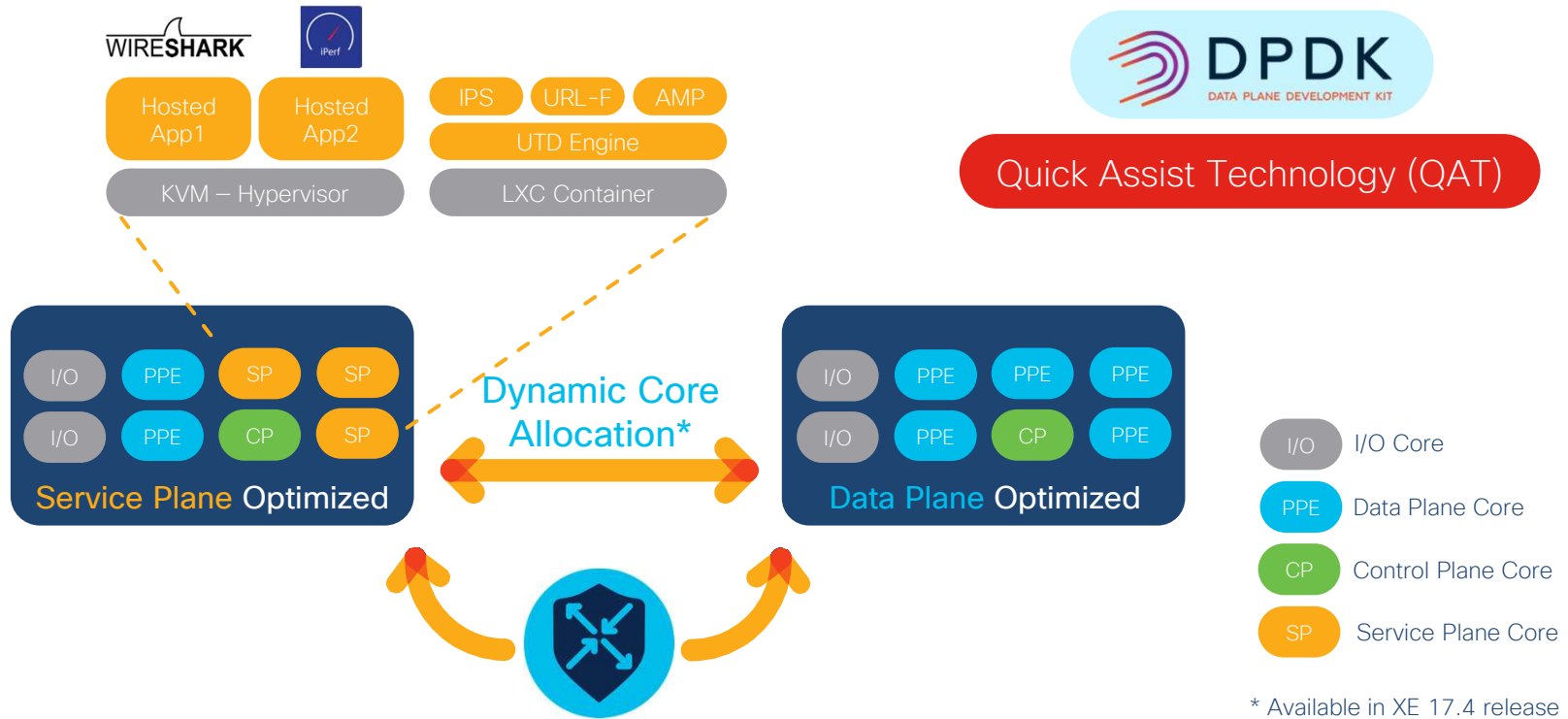
New Age Branch

x86 Multi-core SoC Architecture

Key Datapath Innovations



X86 Multi-core CPU



Dynamic Core allocation – meet throughput and services demand

Cisco Catalyst 8300/8200 Series Edge Platforms

Multi Gig SD-WAN branch with Accelerated Services



5X Data plane Performance



4X Services Performance



Gigabit+ Cellular, 5G Ready



SD-WAN Voice Integration

SoC Architecture for
Dynamic Core allocations



x86

Hardware
Accelerated Services



Up to 6000 SD-WAN
IPsec Tunnels



High Speed Cloud Access
With 10/1G Ports



Cisco Catalyst 8300 Series Edge Platforms

Introducing 10G in Access with higher port density

10G WAN Ports 'X'
& 5G IPsec

C8300-2N2S-4T2X (12C)



C8300-1N1S-4T2X (8C)



4 RJ45
2 SFP+

1G WAN Ports 'T'
& 2G IPsec

C8300-2N2S-6T (8C)



C8300-1N1S-6T (8C)



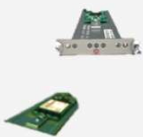
4 RJ45
2 SFP

M.2 USB/
NVMe Storage

UADP-based switch
modules/10G WAN module

User Centric Design
(RFID, QR label, FRUs)

Higher-efficiency AC
and DC power supplies



Cisco Catalyst 8200 Series Edge Platforms

Optimized for Multicloud SD-WAN branch

Integrated Rich Services

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

5G Ready

5G Integrated Module
5G External Gateway



Scale

Up to 2x IPsec and 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

1G WAN Ports 'T'
& 1G IPsec



C8200-1N-4T

2 RJ45
2 SFP

Manageability

vManage

DNA Center

Open APIs

Analytics

ISR 4331 vs C8200-1N-4T

Product Comparison

- 1500 Up to IPsec Tunnels
- Up to 500 Mbps SD-WAN IPsec
- Up to 1.8 Gbps CEF, 0.57 Gbps Crypto
- 4GB to 16GB upgradable DRAM
- Ports/Slots: 4P , 1NIM/1SM
- X86 SoC, 8 Cores

- Up to 2500 IPsec Tunnels
- Up to 1 Gbps SD-WAN IPsec
- Up to 3.8 Gbps CEF, 1 Gbps Crypto
- 8GB to 32GB upgradable DRAM
- Ports/Slots: 4P , 1NIM/1PIM
- X86 SoC, 8C Cores, HW Crypto



All perf numbers are aggregate throughput

C8300/8200 Connectivity Richness

Next-gen modules and backward compatibility



Slot type

Pluggable Interface
Module (PIM)

Network Interface
Module (NIM)

Services Module (SM)

Module type

4G / LTE / 5G

LAN, WAN, LTE, VOICE,
DSL, UCS-E, ASYNC

LAN, WAN, VOICE,
UCS-E, ADAPTOR

70+ varieties
of
Modules and
Interfaces

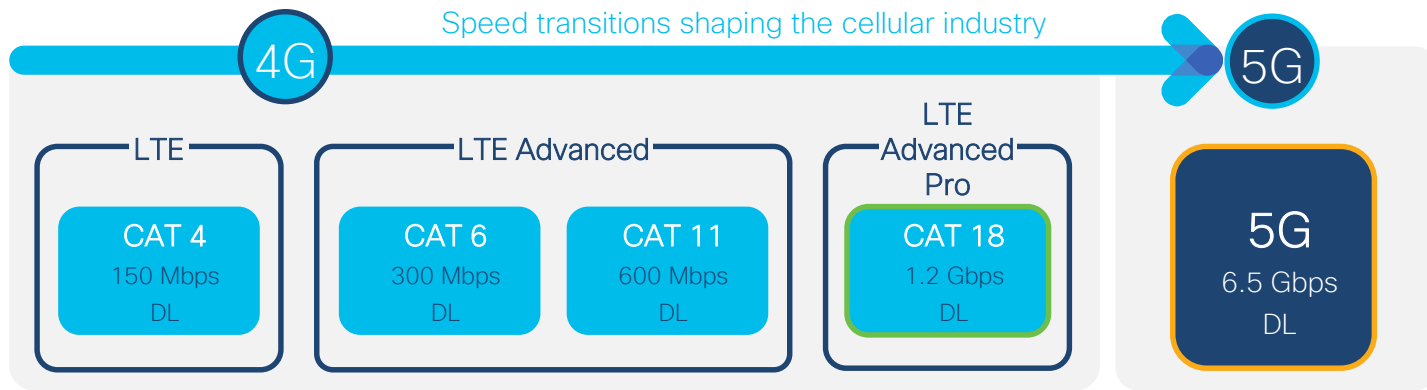
Catalyst 8300/8200 Supported Modules



LAN	WAN	LTE	Voice		DSL	Storage
NIM-ES2-8 NIM-ES2-8-P C-SM-40G8M2X C-SM-16G4M2X	C-NIM-1X NIM-1T NIM-2T NIM-4T SM-X-1T3/E3* NIM-2BRI-S/T* NIM-4BRI-S/T* WAN + Voice: NIM-1MFT-T1/E1 NIM-2MFT-T1/E1 NIM-4MFT-T1/E1 NIM-8MFT-T1/E1 NIM-1CE1T1-PRI* NIM-2CE1T1-PRI* NIM-8CE1T1-PRI*	NIM-LTEA-EA NIM-LTEA-LA P-LTE-VZ P-LTE-NA P-LTE-US P-LTE-JN P-LTE-GB P-LTE-IN P-LTE-AU P-LTEA-EA P-LTEA-LA P-LTEAA-EA P-LTEAP18-GL CAT18 CGW*	SM-X-PVDM-3000 SM-X-PVDM-2000 SM-X-PVDM-1000 SM-X-PVDM-500 SM-X-24FXS/4FXO SM-X-16FXS/2FXO SM-X-8FXS/12FXO SM-X-72FXS	NIM-2FXSP NIM-4FXSP NIM-2FXS/4FXOP NIM-2FXO NIM-4FXO NIM-4E/M* NIM-2BRI-NT/TE* NIM-4BRI-NT/TE* NIM-PVDM-32 NIM-PVDM-64 NIM-PVDM-128 NIM-PVDM-256	NIM-VAB-A NIM-VA-B NIM-VAB-M NIM-4SHDSL-EA	SSD-M2NVME-600G M2USB-16G M2USB-32G
Async NIM-16A NIM-24A SM-X-64A		5G (1H, CY21 : Roadmap) 5G sub-6GHz CGW 5G sub-6GHz PIM			ADAPTOR C-SM-NIM-ADPT	UCS-E UCS-E160S-M3/K9 UCS-E1120D-M3/k9 UCS-E180D-M3/K9

* IOS XE is supported, SD-WAN support in 17.4
 Blue color: new modules

Enabling Secure, High Speed Wireless Connectivity



Integrated Solutions + Cellular Gateways

Integrated Solutions

- ISR1K/ISR4K/C8K
- Network Modules
- 4G/Cat18 (PIM)
- 5G/sub-6 (PIM) **Targeting 2Q CY21**

Cellular Gateways

- 4G/Cat18 **Shipping**
- 5G/Sub-6 **Targeting 1Q, CY21**

Going beyond backup connectivity, extending high-speed connectivity, expanding revenue opportunities

Cisco Catalyst Cellular Gateway

Flexibility & Simplicity for Cat18 LTE & 5G Wireless WAN



Giga-Bit Class Cellular

- 4G/CAT18 (October 2020)
- 5G sub-6 (Feb 2021)
- Dual SIM
- 2.5Gbps mGig port

SD-WAN Ready

- Automation, Assurance
- API Support

Secure by Design

- Trustworthy Systems
- Failure Recovery

Operational Resiliency

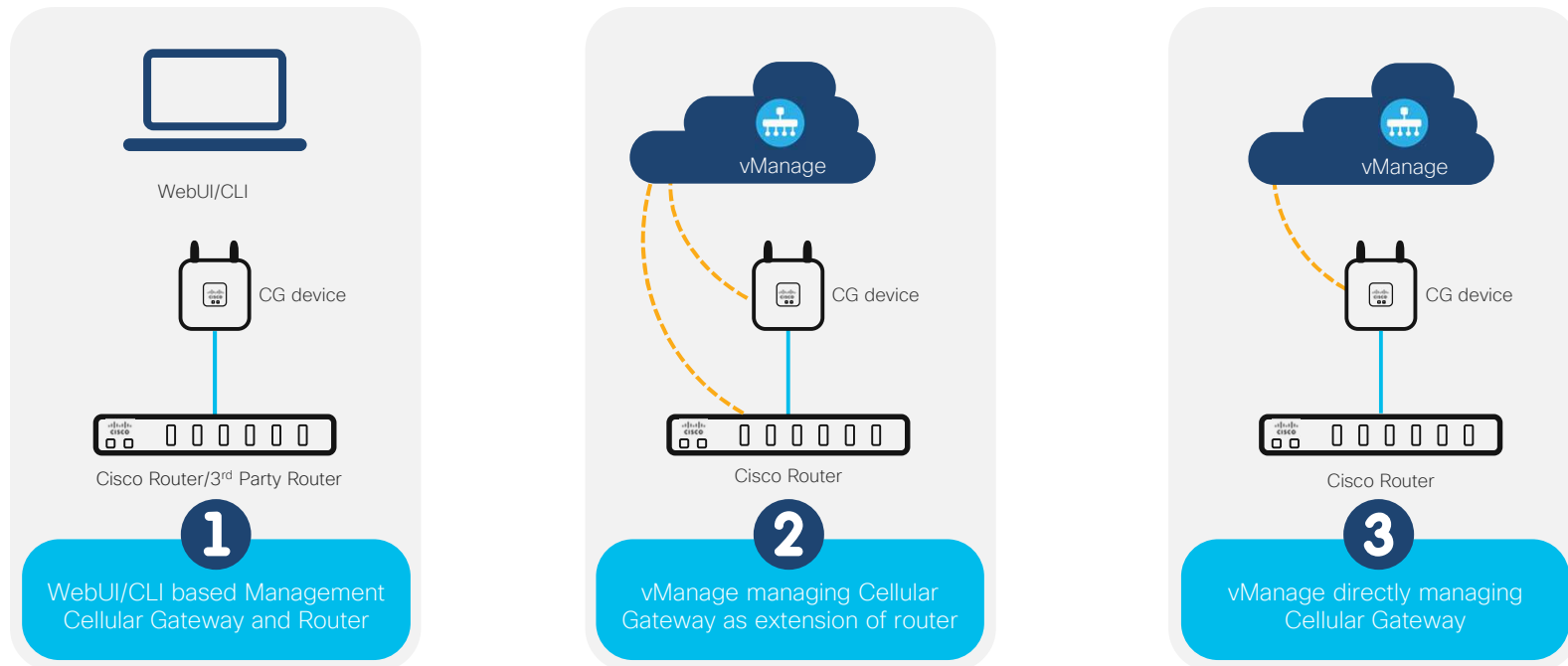
- Out-of-band management
- IP Passthrough using Single PDN

High-speed Failover or
Primary Cellular WAN

Precision Placement for
Better Coverage

PoE Powered or External
Power Source

Scale deployments with Management Flexibility



Simplified management and cellular deployment while offering a bridge into 5G wireless WAN

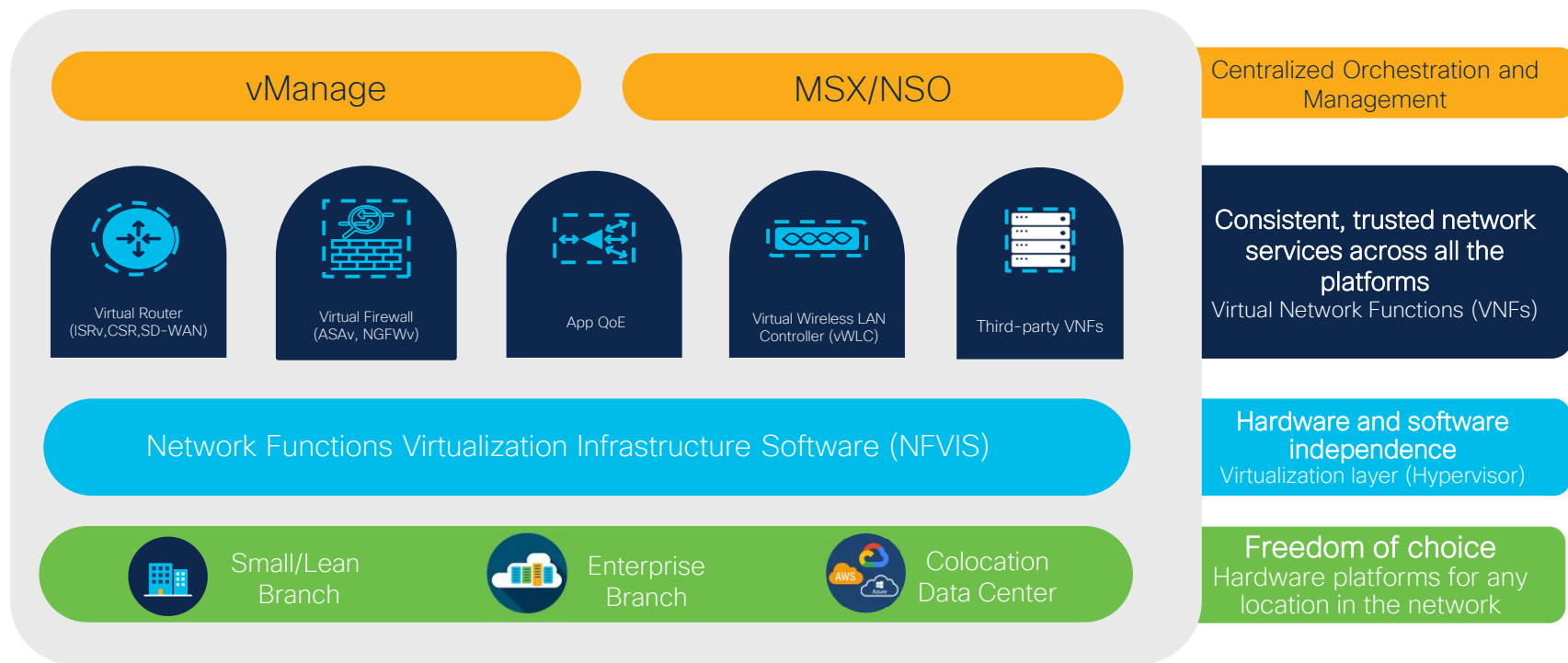


Catalyst 8200 uCPE

Future of Virtualization

Cisco's virtualization portfolio

Network services on any platform, anywhere - branch or data center




Cisco Catalyst 8200 Series Edge uCPE

Designed for Software-Defined Small and Lean Branches

Improved Performance



5G Ready



Diverse Orchestration Support



More Storage



- 01 More VNFs on a single platform with 8 compute cores and up to 500 Mbps aggregate IPsec performance
- 02 Higher WAN port density and 5G-ready interface
- 03 More support for business applications with up to 4TB storage
- 04 Easy, zero-touch provisioning with MSX, NSO and vManage

Cisco Catalyst 8200uCPE

uCPE designed for Service Providers

Rich Service Chain

Routing and security functions on one platform
SD-WAN Routing, Security, WLC VNFs

Performance Elasticity

Scale throughput according to branch requirements
Up to 500 Mbps IPsec with QAT & 2 Gbps CEF



Edge Intelligence

AI/ML Analytics
IoT and Business Applications

Compact and Secure

Cisco Trustworthy Solution
Hardware Anchor Module
Less than 12-inch depth

Highlights

8 Core CPU
Up to 4 VNFs

WAN/LAN
Module
Diversity

5G Ready

Higher WAN
Port Density

Up to 4TB
Storage

Manageability

vManage

NSO

MSX

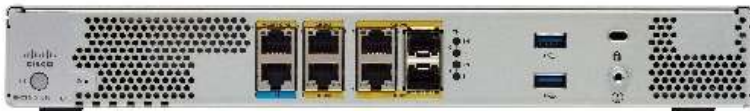
Analytics

ENCS 5104 vs Catalyst 8200 uCPE

Product Comparison

- HDD: None
- M.2: Up to 400G SATA
- Up to 32G DRAM
- Ports: 2 x 1G CU + 2 x 1G SFP
- Slots: None
- Up to 2 VNFs on 4-core AMD SOC

- HDD: Up to 4TB
- M.2: Up to 32G USB & up to 2TB NVMe
- Up to 64G DRAM
- Ports: 4 x 1G CU + 2 x 1G SFP
- Slots: 1 NIM + 1 PIM
- Up to 4 VNFs on 8-core Intel x86 SOC



Cisco NFV Orchestration

NSO



Cross-domain, multi-vendor automation solution for Service Providers

MSX



End-to-end Service Lifecycle and Customer Experience Management

vManage



Enterprise Orchestration & Routing VNF Management

Ease of management for both Enterprise and Service Provider NFV solutions

vManage Orchestration for SD-Branch



Single UI
VNF Orchestration
& SDWAN



Cloud Delivered
Private, hosted or
managed



Management
Automated Service
Chaining &
Monitoring

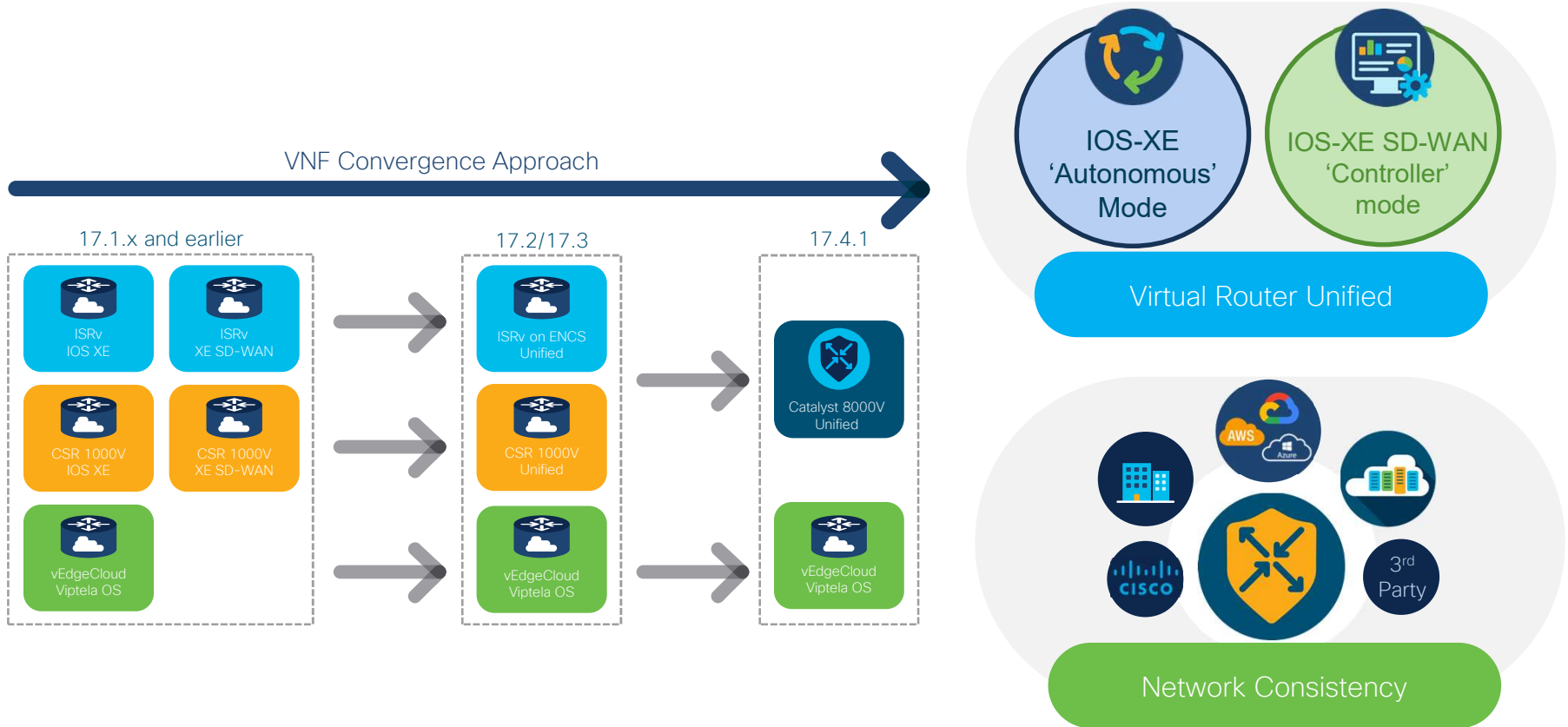
Catalyst 8000V



Catalyst 8000V

Future of Cloud

Virtual Router Convergence




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



Catalyst 8000V
SRIOV
Hypervisor/Cloud



up to **25G***

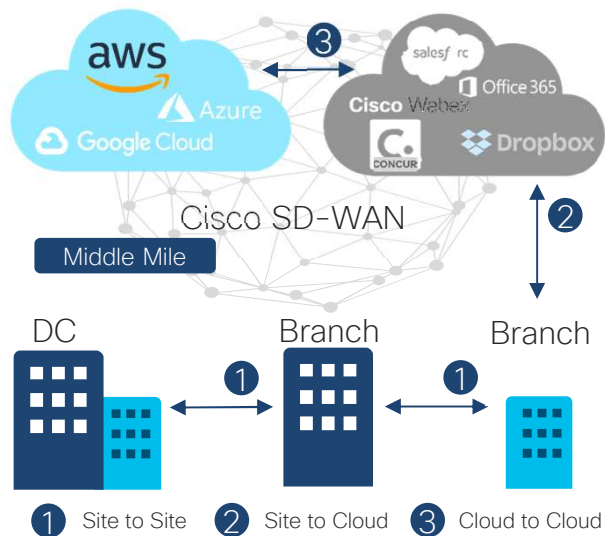


up to **10G***

*Expected throughput, actual performance number is subject to change, will be published at FCS

Cisco Catalyst 8000V Edge Software

Consistent branch to cloud experience



Cloud Scale Features

- Automated Self-service
- Normalized for Multicloud
- Service Level Observability
- Optimal SaaS Experience
- PAYG offered through marketplace
- Ecosystem partnerships for middle mile automation

Enhanced Virtual Platform

- Single virtualized image for all site deployments
- Secure object storage
- Crypto offload at virtualized branch
- Optimized image for 16 vCPU consumption
- ENCS NIM support

Catalyst 8000V – Built to interconnect cloud solutions

Promotion Offers and Summary

Single Offer with common DNA Subscription

Systems



Catalyst 8000 Edge Platforms

DNA Subscription



Cisco DNA Premier

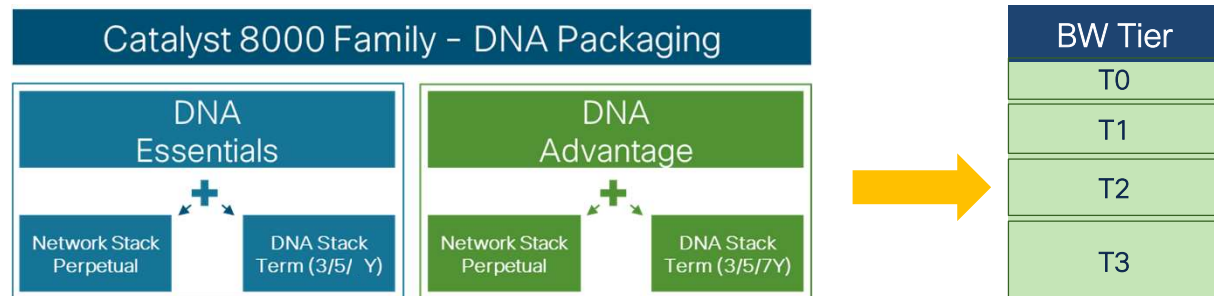


Cisco DNA Advantage



Cisco DNA Essentials*

* Only C8300, C8200 & C8000v



Performance, Flexibility & Investment Protection

Level Up to 8K – Promotional Offer

**LIMITED
TIME OFFER**

ISR G2 (2900/3900)



End of PSIRT Support : Dec '20
LDoS in next 18-24 months



Catalyst 8200/8300



SD-WAN | Voice Survivability | Interface Richness

C8300

Up to 28% on HW models
(Minimum 3Y DNA Tier1 Licenses)

FREE Switch Module



22P Port UADP Based Switch Module



OR

FREE PIM Module



4G/Cat18 Based Gigabit Cellular Module

C8200

Up to 38% on HW models
(Minimum 3Y DNA Tier0 Licenses)

FREE PIM Module



4G/Cat18 Based Gigabit Cellular Module

Offer applicable for Ala-Carte, EA, MSLA across all regions

Catalyst 8000 – Call to Action

Changing the Routing Paradigm



Catalyst 8000 is a multi-services edge platform designed for SD-WAN & Secure Multi-cloud Connectivity



Learn the Catalyst 8000 platform



Proactively engage with customers and use Promo/Offer



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
 Radio Frequency ID, Label Tray
 Field Replaceable FAN Tray



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

3rd Gen QFP, HW Accelerated Services

High Performance

Catalyst 8000V

SRIOV Hypervisor/Cloud

QFP

10GE WAN, Rich connectivity

Cloud Security and on-prem Security

Automation & Telemetry



“Fueled by a growing use of cloud-based applications, tele-medicine, ultra high-definition imaging and remote collaboration, our network must deliver secure, highly resilient and scalable connectivity. As we expand our intent based network, the Cisco Catalyst 8000 Edge Platforms Family checks all the boxes for a flexible SD-WAN solution that can deliver the performance, visibility, and security needed to deliver these real-time connected experiences.”

- Ed Vanderpool, IT Technical Manager at Adventist Health

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Challenges

- Deploy services on-demand to 345 locations
- Secure access for increasing cloud-based applications
- Increase WAN edge performance
- Ensure optimal user experience

Solutions

- Catalyst 8300 Series Edge Platforms
- Cisco SD-WAN
- Combined with existing SD-Access architecture

Results

- Scalable, flexible services and connectivity
- End-to-end visibility
- Secure, connected user experience
- Complete intent-based networking solution

Cisco Catalyst 8000 Edge Platforms DNA Licensing Detail



Cisco DNA Essentials

Connectivity/Mgmt

- Cloud or On-Prem Management
- Flexible Topology
 - Hub and Spoke
 - Full Mesh/Partial Mesh
- App and SLA based policy
- Dynamic Routing (BGP, OSPF)
- VNF Lifecycle Management

Security

- Enterprise Firewall with Talos-powered IPS and application controls
- Cisco Umbrella DNS Monitoring (visibility only)

SD-WAN Services

- Basic Path optimization with FEC and Packet Duplication
- TCP Optimization

Cisco DNA Advantage

Cloud/Analytics

- Cloud OnRamp for IaaS and SaaS
- Automated Service Stitching
- Encrypted Traffic Analytics
- vAnalytics

Security

- Segmentation (Unlimited VPNs)
- Cisco AMP and SSL proxy
- URL filtering
- Cisco Umbrella app discovery

X-domain Innovations

- Integrated Border for Campus (SD-Access)
- Integration with ACI for Application SLA

Services

- Web Caching, DRE (incl. SSL proxy)
- Voice Module and SRST Integration
- Multicast

Cisco DNA Premier

Security

Cisco Umbrella SIG Essentials

Transactional

- Tier 0: 25 Licenses
- Tier 1: 40 Licenses
- Tier 2: 100 Licenses
- Tier 3: 285 Licenses

Enterprise Agreement

- Tier 0: Not Available in Premier
- Tier 1: 45 Licenses
- Tier 2: 110 Licenses
- Tier 3: 325 Licenses

- Additional Cisco Umbrella SIG Essentials licenses can be purchased separately.

Cisco Threat Grid

- Provides entitlement for 200 files per day per customer account
- Files sent to Threat Grid cloud for sandboxing. On-premises Threat Grid not available in Premier
- Global entitlement across all customer sites
- Additional Cisco Threat Grid licenses can be purchased separately.

Cisco Catalyst 8000 Edge Platforms Licensing Network Stack Capabilities



Network Essentials

Catalyst 8300 only

Network Essentials

Perpetual

Routing Essentials: Routing Protocols, Vrf-lite, Multicast, NAT

Security: MACSEC-128, VPNs, ZBFW, PKI, ACLs, Umbrella Connector, Snort IPS

Application Experience: HQOS, PfR, PBR, AVC, NBAR, IPSLA, FnF

Unified Communication: Cube Connector

Router Management: TACACS+, NETCONF, AAA, DNS, DHCP

With DNA Essentials



Network Advantage

Network Advantage
(Inclusive of Essentials)

Perpetual

Overlay Technologies: MPLS, VPLS, LISP, VXLAN, OTV, EVC, OAM

Security: MACSEC-256, ALG for ZBFW, VASI

Cisco Innovation: SMU Patching, SGTs, ETA, ISSU, mDNS Bonjour, EPC

Unified Communication: SRST, Support for Voice Modules

WAN Optimization: Cisco WAAS RTU*

*Available on UCS-E on C8300

With DNA Advantage and DNA Premier

IOS XE