



Possibilities

#CiscoConnect

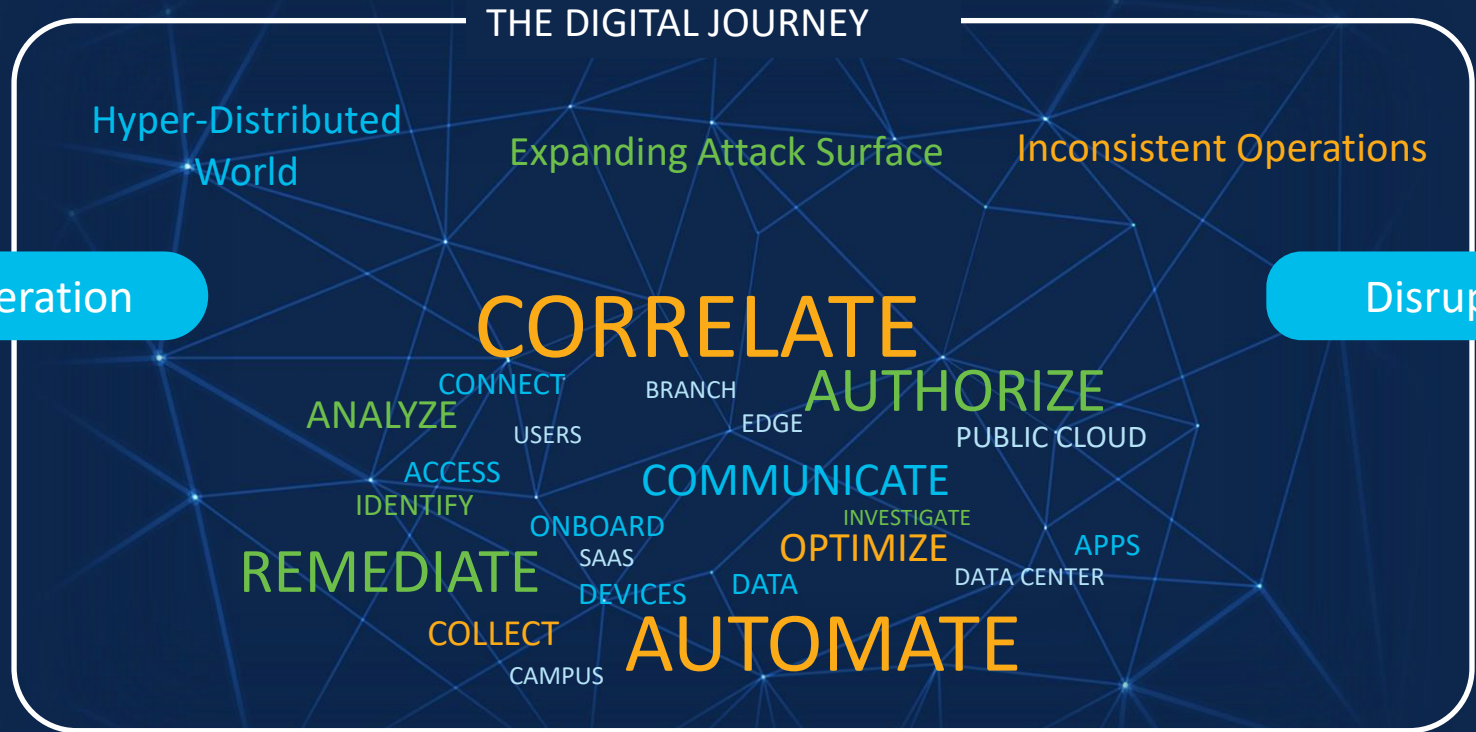


A New Way to Build Your Network for the Cloud Edge

CISCO *Connect*



2020 Business Environment



What's needed

THE DIGITAL JOURNEY

Acceleration

**Business
Resiliency**

Disruption

Cisco Connected Experiences

THE DIGITAL JOURNEY

Acceleration



CONNECT

Users, Devices,
Apps, Data



SECURE

Workforce,
Workload,
Workplace



AUTOMATE

IT Processes,
Business Processes

Disruption

Innovations to deliver simplicity and IT agility


Agile Platform Strategy

WAN



SD-WAN
vManage

Data Center



Nexus
Dashboard

Hybrid Cloud



CISCO
INTER-SIGHT

Intersight

Security



Secure X

Collaboration



WebEx


Hardware Innovations

WAN




Catalyst
8000 Edge
Family

WAN



Catalyst
Cellular
Gateway

Analytics



Cisco IoT and
Meraki
Sensors

Securing Multicloud Access in any “norm”

Delivering secure experiences connecting distributed users to multicloud applications

Pre-pandemic Challenge

Connect enterprise user to business applications,
In the data center, or in any cloud....



In-pandemic Challenge

Over-rotation to majority distributed and
remote workforce has implications...

60% of orgs expect majority of
apps to be SaaS by 2021

79% of orgs shifting to some or
all direct internet access

50% of workforce will be
remote by 2021

Impacting IT....

Multicloud Access

To connect a now-
distributed workforce to
multicloud environment

WAN Edge

To secure anywhere, to
dynamically scale, and to adapt
to new needs, ie edge compute

Wireless WAN

To adopt new forms of SD-WAN
beyond broadband, with cellular
access

Securing Multicloud Access in any “norm”

Delivering secure experiences connecting distributed users to multicloud applications

IT Needs to...

Multicloud Access

To connect a now-distributed workforce to multicloud environment

Secure WAN Edge

To secure anywhere, to dynamically scale, and to adapt to new needs, ie edge compute

Wireless WAN

To adopt new forms of SD-WAN beyond broadband, with cellular access

While Delivering...

Predictable app experience

Right security, right place

Always on, easily available

And Planning for...

5G

IoT

SASE



Cisco SD-WAN Innovations

Secure SD-WAN and WAN Edge Innovation

Driving Next-Generation WAN Edge Connectivity

Catalyst 8000 Edge Platforms Family



Catalyst 8000V



Catalyst 8300



Catalyst 8500

Built for SD-WAN, SD-Branch,
Edge Computing & SASE Services



Secure, connected experience

- Multilayer security and networking
- 2-5x throughput improvement
- 10G in access to 40G/100G in edge



Cloud-native agility

- Open and programmable
- All leading cloud providers
- Support for container-based apps



Business-first resiliency

- Edge compute and virtualization
- End-to-end analytics
- Easy upgrade path to 5G

SASE Convergence: Cloud Security and SD-WAN

- **Better protection and control** with a single multi-function cloud security solution
- **Predictable app performance** and integrated multicloud capabilities
- **Rapid ROI** enabled by automated deployment and centralized management



Secure SD-WAN and Cloud Networking Innovations

Automated deployment



Automated SD-WAN extension with AWS TGW



Automate Azure virtual WAN deployment



Integrated unified communications for easy configuration

Optimized performance



O365 granular policy & traffic control

O365 enhanced automated path selection

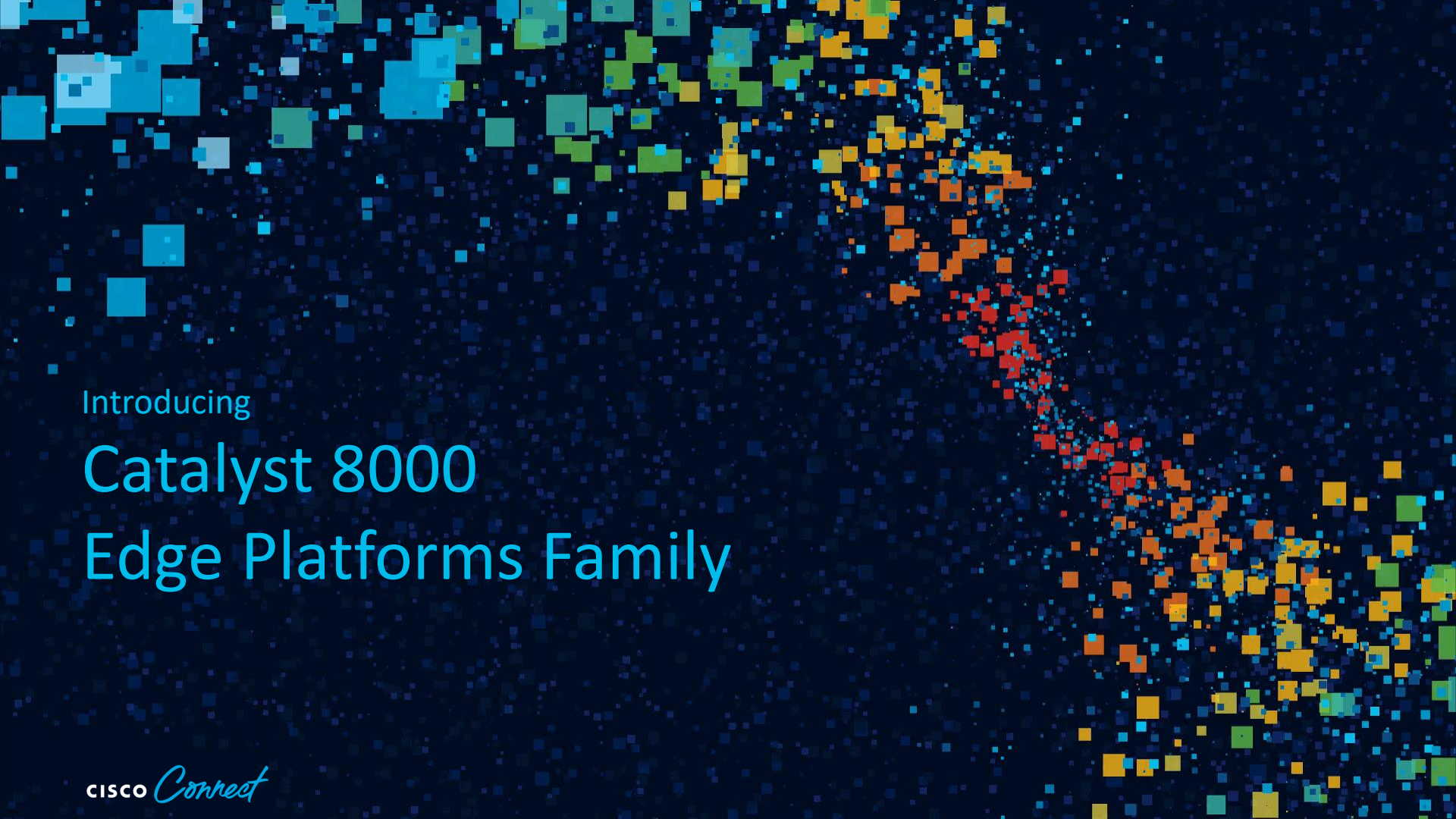
Easy management



Megaport Software-Defined Interconnects integration



Cisco SD-WAN on Google Cloud Marketplace



Introducing

Catalyst 8000

Edge Platforms Family

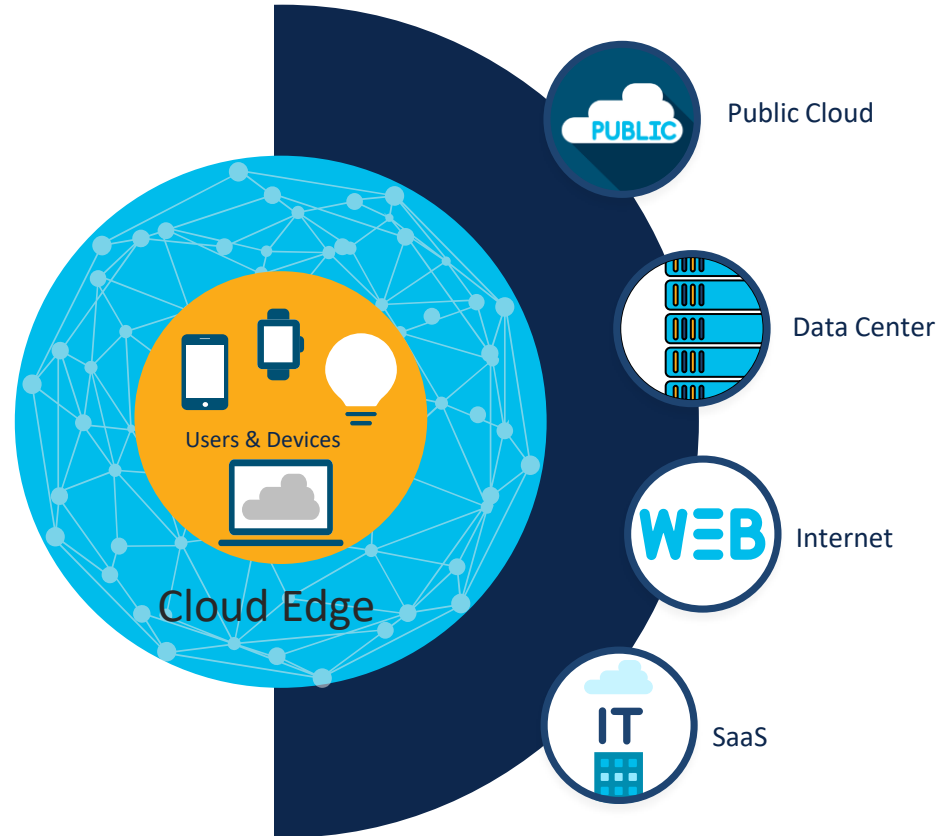
CISCO *Connect*

Disruption at the cloud edge

50% of workforce will be remote by 2021

60% of orgs expect majority of apps to be SaaS by 2021

79% of orgs shifting to some or all direct internet access



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



Predictable Scale

75%

believe SaaS/Cloud are important to WAN choice

[IDC Report](#)



5G/IOT

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

- IDC Report



Reducing Risk

43%

of teams identified embedded network security as priority

[Cisco Global Networking Report](#)



Edge Computing

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

IDC Report



Increasing Agility

50%

of all workloads run outside of enterprise DC by 2021

[Cisco Global Networking Report](#)

Digital businesses need more from their WAN Today

To overcome the barriers to WAN transformation & Digitization

Security

69%

prefer integrated SD-WAN and security capabilities from the same vendor

Flexibility

41%

benefitted from best of breed platform and service options when adopting multicloud

Insights

39%

find insight into cloud (SaaS and IaaS) applications and performance most helpful out of SD-WAN visibility tools

Platform strategy plays a core component architecture that brings together solutions to help businesses securely **connect people, scale operations and unlock IT agility**

Cisco Catalyst 8000 Edge Platforms Family

Built for New Age of Intent Based WAN

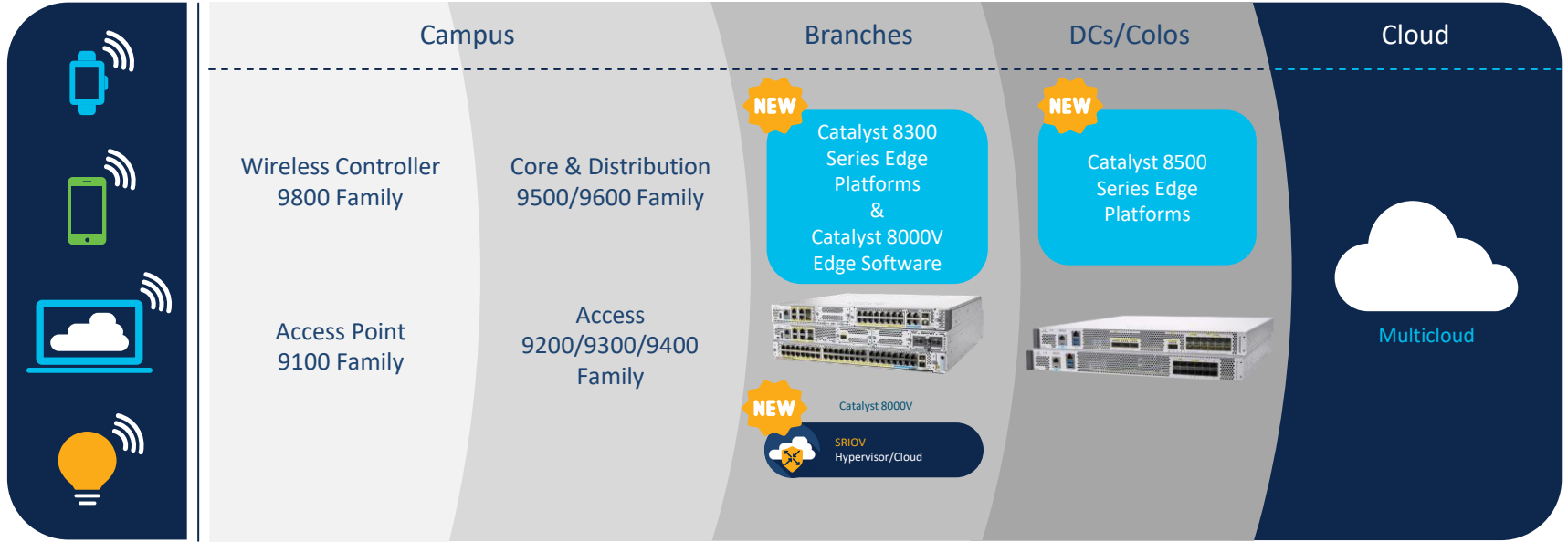


Delivering all your multicloud needs

Catalyst Everywhere

From Access Edge to WAN Edge

Intent-based Networking



Consistent Experience End to End

Intent



Policy



Automation



Analytics

Catalyst 8000 Edge Platforms Family at the WAN Edge



Software-Defined WAN

SD-WAN for secure, optimized multicloud connectivity



Software-Defined Branch

SD-Branch for consolidating branch services.



5G Ready

Connecting remote sites using 5G



SASE Architecture

Evolving WAN architecture to Secure Access Service Edge (SASE)



Edge Computing

Edge compute for low latency applications including IoT



Secure Remote Access

Cloud delivered security for securing direct internet access

Catalyst 8000

Human centric design powered by machine centric intelligence

Custom ASIC enabled Scale



Scalable on-chip services at Aggregation

Secure containers
Application hosting

x86

x86 multicore CPU

Model-driven APIs
Streaming telemetry



Open and
Extensible Cisco IOS XE



Third Generation QFP ASIC Innovation



2x queues
256k



Up to 2x NBAR
Up to 80Gbps



Inline Crypto
Up to 137Gbps



Up to 3x CEF
Up to 200Gbps



8x DRAM
32M CGN | 6M FW
Sessions



Integrated L2 MAC

Compact, Powerful
100/40/10/1 GE

Enhanced QoS/Buffering
Ingress classification, oversubscription

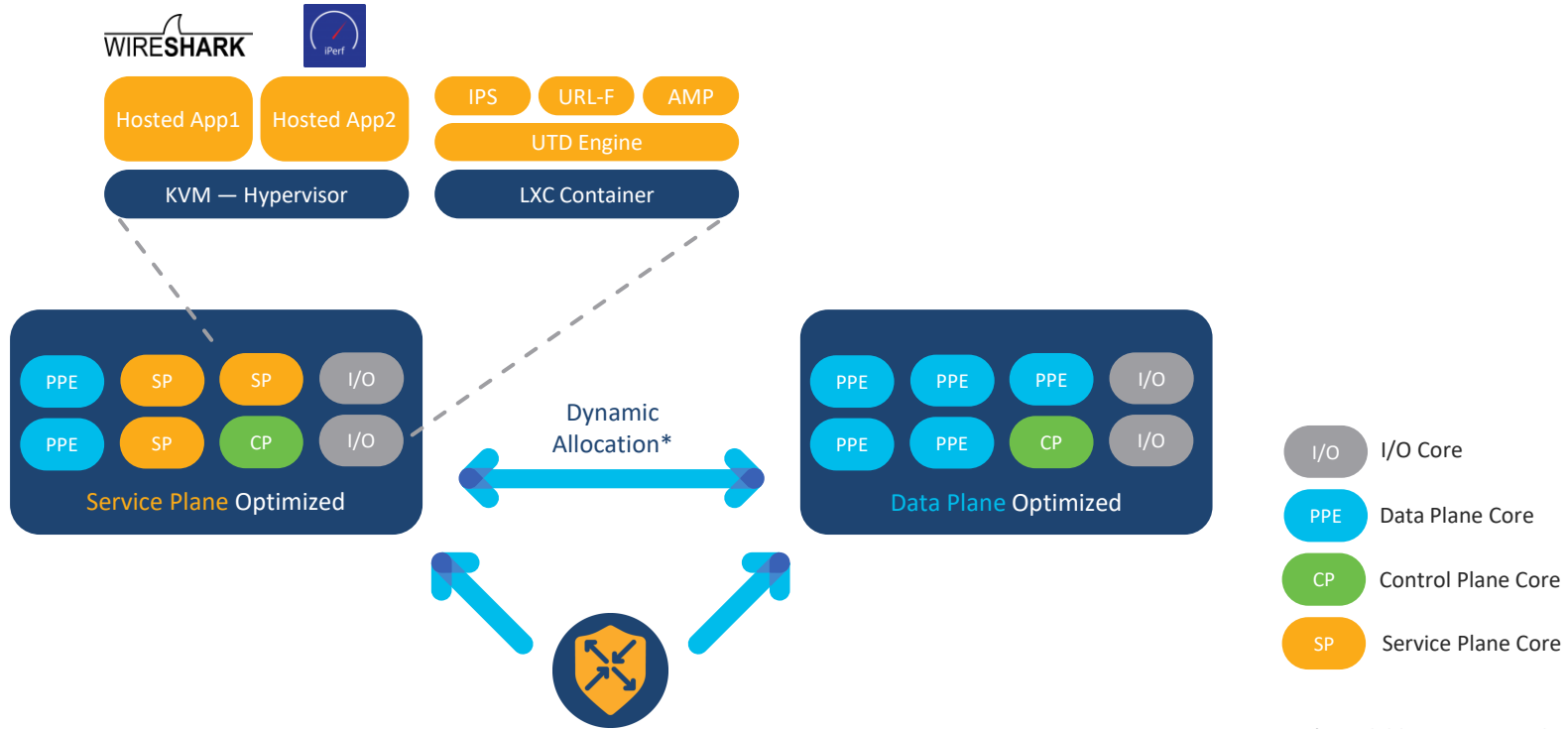
Security
WAN MACsec

Scalable & Programmable ASIC – Adapts to the New Technologies



X86 Multi-core CPU

Catalyst 8000 Edge Platforms Family — SoC



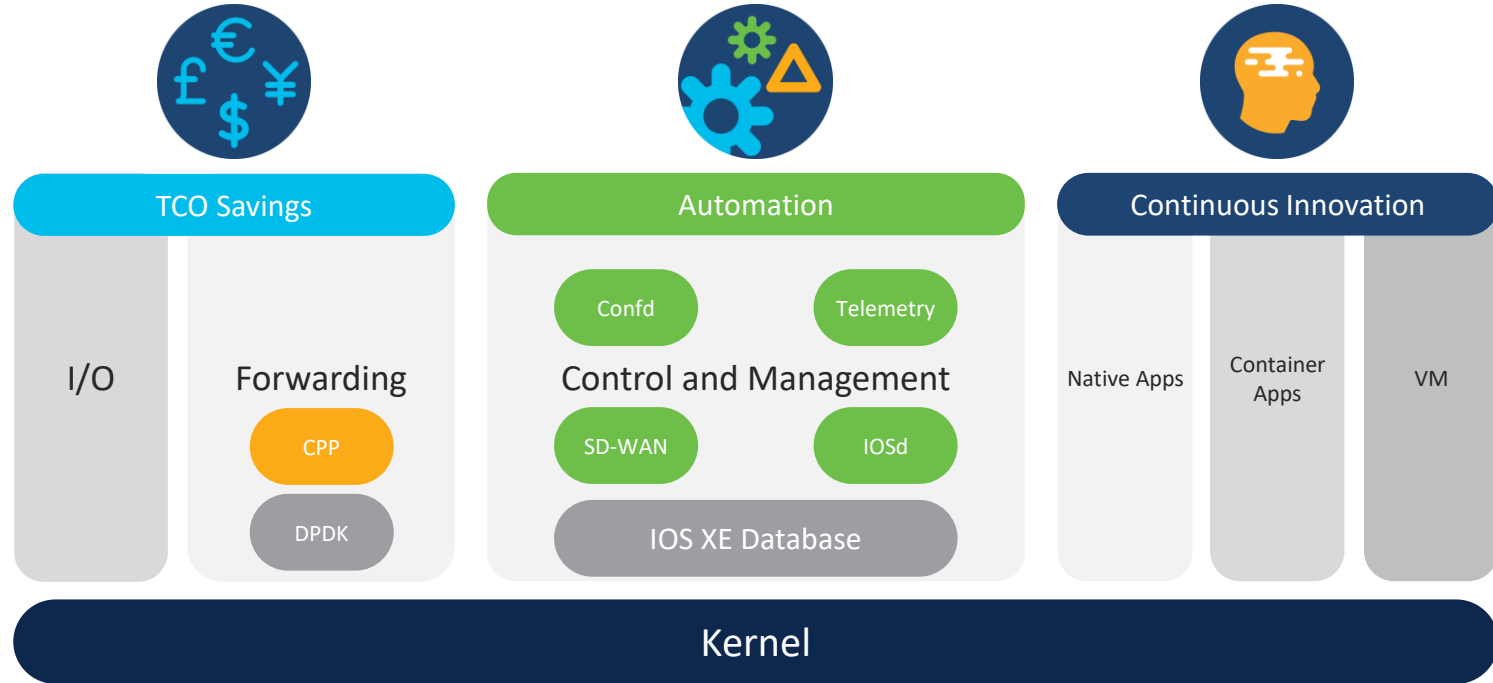
* Available in XE 17.4 release

Dynamic Core allocation — meet throughput and services demand



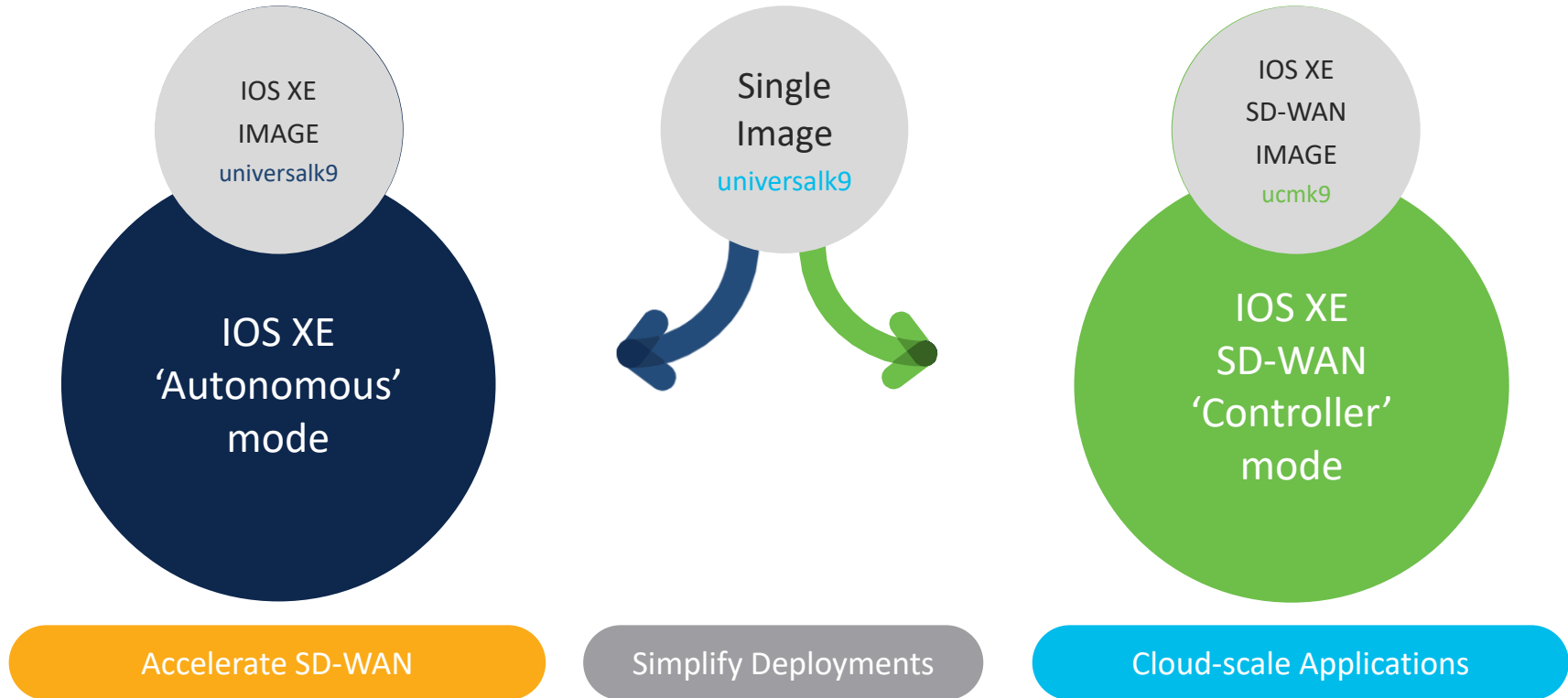
Open and Extensible IOS XE

Open IOS XE — A Modern Operating System



Open, API, Model Driven & Secure Operating Systems

Easy Operations with Single Image





Cisco Catalyst 8500 Series Edge Platforms

Industry's first 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



Cisco Catalyst 8500 Series Edge Platforms

Industry's most Powerful SD-WAN Headend

Integrated Rich Services

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

Edge Intelligence

Compute
Container based Apps



Scale

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

Multi-layer Security

High Throughput MACsec and IPsec
Trustworthy Solutions
Umbrella SIG

Highlights

All Ports
Built-in

WAN
MACsec

Third
Generation
QFP

Up to
200Gbps
CEF

5G Ready

Manageability

vManage

DNA Center

Open APIs

Analytics

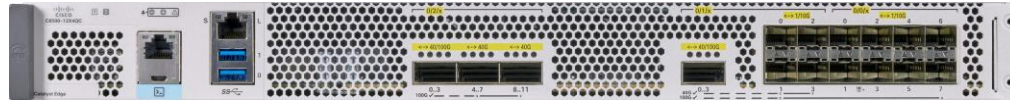


Built-in Port
Flexibility

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



Catalyst 8500 for Cloud-Scale, Co-location

Large capacity in small form factor

Cloud MSP: Edge, CPE

Rich Features

Multi-tenant, VRF Aware

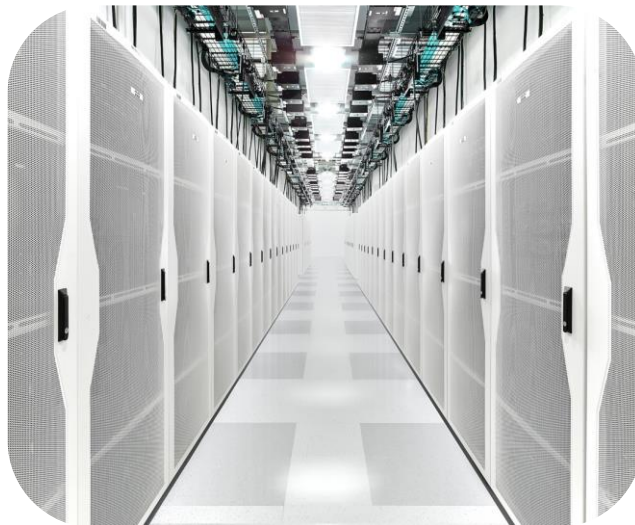
VxLAN

Route Scale

Convergence Services

IPsec, NAT, Firewall

B2B Redundancy



Colo, Cloud Gateway

Highly Scalable

8000 VRFs

4M IPv4, IPv6 Routes

16M NAT, 32M CGN

6M Firewall Sessions

Up to 8000 IPsec Tunnels

WAN MACsec on all ports

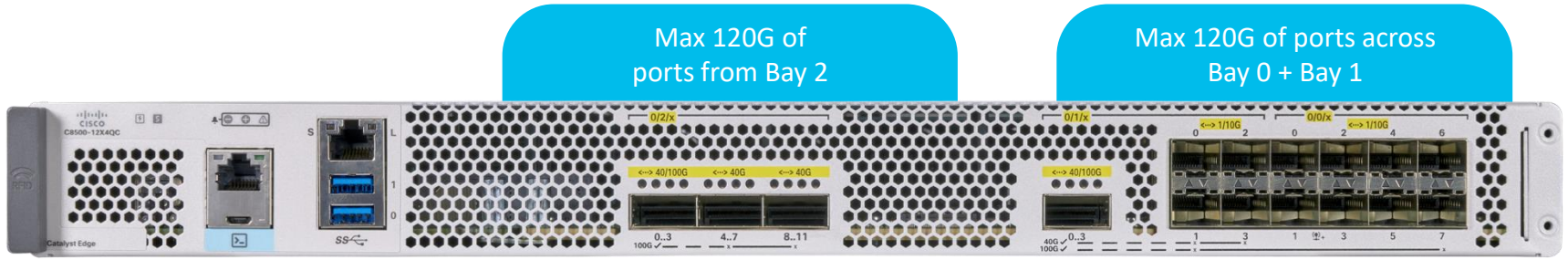
Port Flexibility: 100/40/10/1G

Small 1 RU form factor

Platinum Power Efficiency

C8500-12X4QC Port Connectivity

Industry's 1st 100G, 40G Port SD-WAN 1RU Platform



Option	Port Speed	Maximum Port Configuration
1	100G	2x100G
2	100/40G	1x100G + 3x40G
3	40/10G	4x40G + 8x10G
4	100/40/10G	1x100G + 1x40G + 8x10G
5	10G	12x10G
6	1G	12x1G

ASR1002-HX vs C8500-12X4QC

Product Comparison

Up to 18Gbps SD-WAN, 6000 tunnels

Up to 100Gbps CEF, 25Gbps Crypto

8M NAT/PAT, 12M CGN Sessions

4GB DP Memory, 232K Queues

Ports: 8x 1G, 8x 10G, One EPA Slot

16GB to 32GB upgradable DRAM

QFP 2.0, 124 Cores, extra Crypto HW

Up to 33Gbps SD-WAN, 8000 tunnels

Up to 200Gbps CEF, 46Gbps Crypto

16M NAT/PAT, 32M CGN Sessions

32GB DP Memory, 256K Queues

Ports: 12x 1/10G, 2x 40/100G, 2x 40G

16GB to 64GB upgradable DRAM

QFP 3.0, 224 Cores, Inbuilt Crypto & L2



All perf numbers are aggregate throughput

ASR1001-HX vs C8500-12X

Product Comparison

Up to 11.5Gbps SD-WAN, 6000 tunnels

Up to 60Gbps CEF, 16Gbps Crypto

2M NAT/PAT, 4M CGN Sessions

1GB DP Memory, 116K Queues

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

16GB to 32GB upgradable DRAM

QFP 2.0, 124 Cores, extra. Crypto HW

Up to 23Gbps SD-WAN, 8000 tunnels

Up to 120Gbps CEF, 30Gbps Crypto

12M NAT/PAT, 24M CGN Sessions

32GB DP Memory, 256K Queues

Ports: 12x 1/10G

16GB to 64GB upgradable DRAM

QFP 3.0, 224 Cores, Inbuilt Crypto & L2



All perf numbers are aggregate throughput



Cisco Catalyst 8300 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*



Hardware
Accelerated Services



Up to 6000 SD-WAN
IPsec Tunnels



High Speed Cloud Access
With 10/1G Ports



Cisco Catalyst 8300 Series Edge Platforms

Foundation for the Secure Cloud Scale SD-WAN branch

Integrated Rich Services

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

Edge Intelligence

Compute
Container based Apps



Scale

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

Multi-layer Security

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

Connectivity

Higher
WAN Port
density

Default 8G
DRAM

10G w/
MACsec

Pluggable
NVMe
Storage

5G Ready

Manageability

vManage

DNA Center

Open APIs

Analytics

YES
Modularity

Cisco Catalyst 8300 Series Edge Platforms

Introducing 10G in Access with higher port density

10G WAN Ports 'X'
& 5G IPsec

C8300-2N2S-4T2X



C8300-1N1S-4T2X



4 RJ45
2 SFP+

1G WAN Ports 'T'
& 2G IPsec

C8300-2N2S-6T



C8300-1N1S-6T



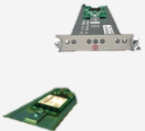
4 RJ45
2 SFP

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

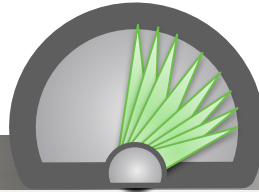


ISR 4451 vs C8300-2N2S

Product Comparison

- Up to 4000 IPsec Tunnels
- Up to 1.4Gbps SD-WAN IPsec
- Up to 3.8Gbps CEF, 2Gbps Crypto
- 240Mbps IPS/IDS + URL-Filtering
- 4GB to 16GB upgradable DRAM
- Ports/Slots: 4P , 2NIM/2SM
- Split CP/DP, 4C+6C

- Up to 6000 IPsec Tunnels
- Up to 5Gbps SD-WAN IPsec
- Up to 20Gbps CEF, 7Gbps Crypto
- 900Mbps IPS/IDS + URL-Filtering
- 8GB to 32GB upgradable DRAM
- Ports/Slots: 4P+2xGE/TE, 2NIM/2SM/1PIM
- X86 SoC, 12C/8C Cores, HW Crypto



All perf numbers are aggregate throughput

ISR 4431 vs C8300-1N1S

Product Comparison

Up to 3500 IPsec Tunnels

Up to 750Mbps SD-WAN IPsec

Up to 3.8Gbps CEF, 1Gbps Crypto

150Mbps IPS/IDS + URL-Filtering

4GB to 16GB upgradable DRAM

Ports/Slots: 4P , 1NIM/1SM

Split CP/DP, 4C+6C

Up to 6000 IPsec Tunnels

Up to 4.7Gbps SD-WAN IPsec

Up to 15Gbps CEF, 5.4Gbps Crypto

600Mbps IPS/IDS + URL-Filtering

8GB to 32GB upgradable DRAM

Ports/Slots: 4P+2xGE/TE, 1NIM/1SM/1PIM

X86 SoC, 8C Cores, HW Crypto



All perf numbers are aggregate throughput

Backward Module Compatibility

ISR 4400 Modules*

New Modules

UCS-E M3
SM Modules

Compute

SD-WAN

Perf.

MACsec

Ethernet WAN

L3 1x10G
WAN Module



4P/8P/8P PoE
NIM Modules

Ethernet LAN

L2 1G/2.5mG/10G
Switch Modules



CAT4/6
NIM Modules

LTE/5G

5G**/CAT18 LTE
PIM



FXS/FXO/BRI/T1E1
SM-NIM Modules

Voice

Voice DSP Modules for IP
Services



Serial/Async/DSL

Legacy WAN

Voice

Catalyst 8300 Supported Modules



LAN

NIM-ES2-8
NIM-ES2-8-P
C-SM-40G8M2X
C-SM-16G4M2X

Async

NIM-16A
NIM-24A
SM-X-64A

WAN

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*

LTE

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*

5G

(1H, CY21 : Roadmap)

5G sub-6GHz CGW
5G sub-6GHz PIM

Voice

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

DSL

NIM-VAB-A
NIM-VA-B
NIM-VAB-M
NIM-4SHDSL-EA

ADAPTOR

C-SM-NIM-ADPT

Storage

SSD-M2NVME-600G
M2USB-16G
M2USB-32G

UCS-E

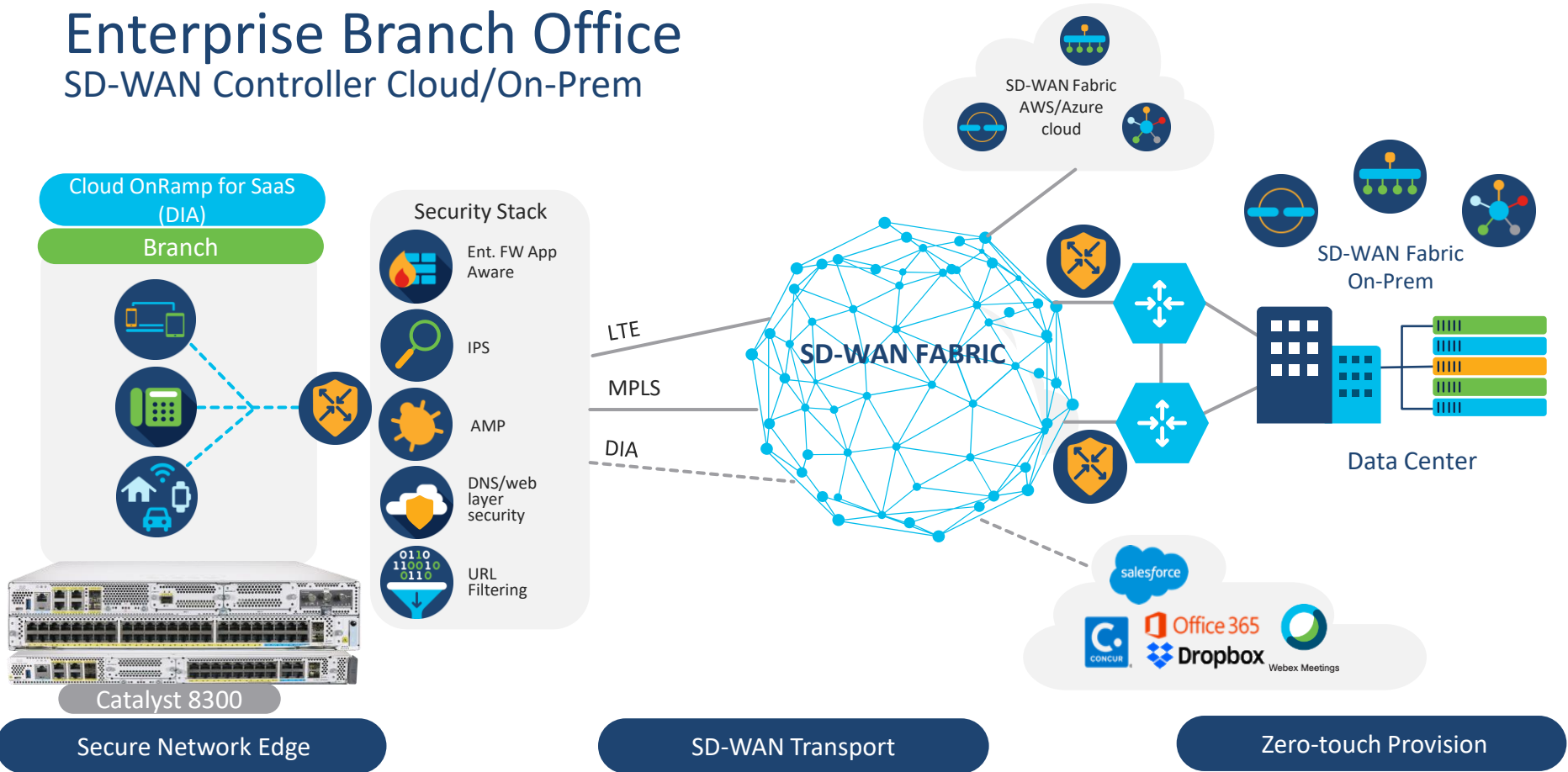
UCS-E160S-M3/K9
UCS-E1120D-M3/k9
UCS-E180D-M3/K9

* IOS XE is supported, SD-WAN support in 17.4

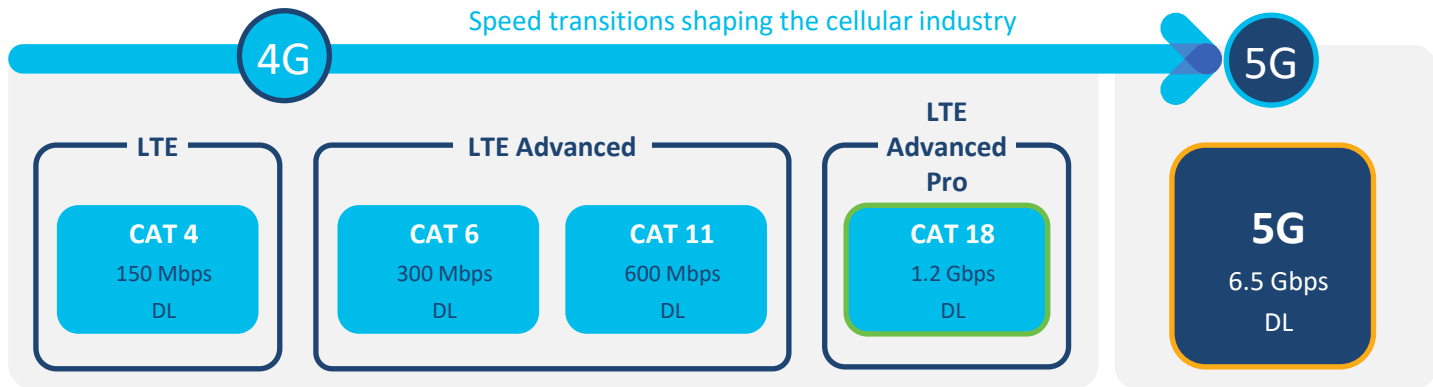
Blue color: new modules

Enterprise Branch Office

SD-WAN Controller Cloud/On-Prem



Enabling Secure, High Speed Wireless Connectivity



Integrated Solutions



Cellular Gateways



© IDC projects LTE Router/Gateway market to hit **\$1.9B** in 2022

Cisco Catalyst Cellular Gateway

Flexibility & Simplicity Redefined for Multigigabit Wireless WAN

Giga-Bit Class Cellular

LTE/CAT18 Speeds
Dual SIM

SD-WAN Ready

Automation, Assurance
Cloud/On-Prem Managed



Secure by Design

Trustworthy Solutions
Failure Recovery

Operational Resiliency

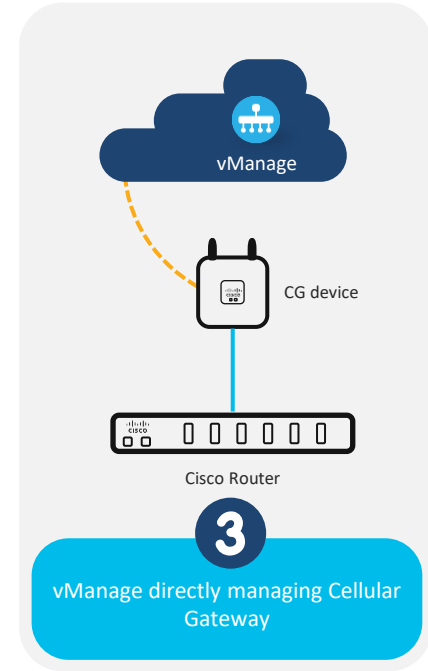
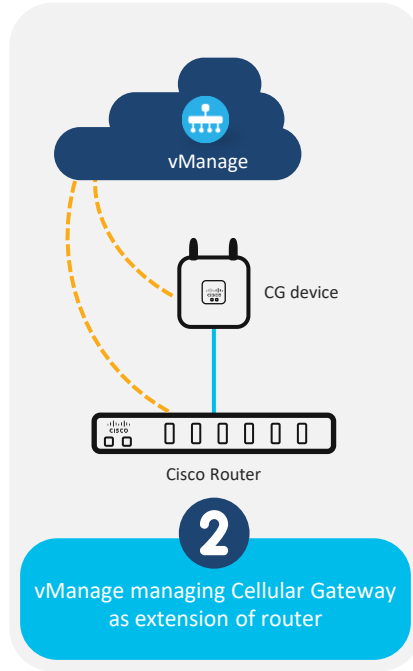
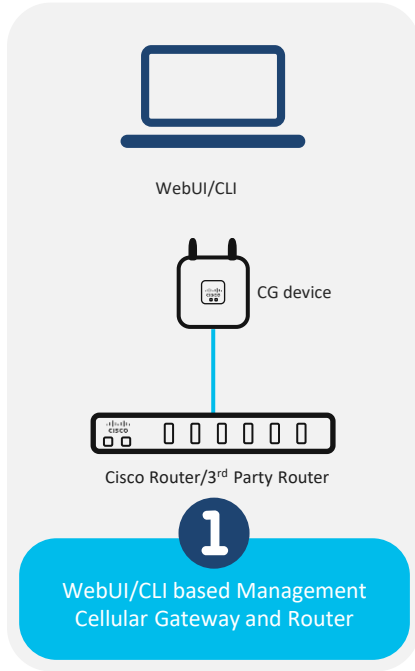
Out-of-band management
IP Passthrough using Single PDN

High-speed Failover or Primary
Cellular WAN

Precision Placement for Better
Coverage

PoE or External
Power Source

Scale deployments with Management Flexibility



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

Cisco Catalyst 8000V Edge Software

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

Multiservices Support

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

Runs on any x86 VM platform

Cloud Integration

Extends connectivity, visibility, security into public and private clouds
Auto-scaling capability
Integration with Azure vWAN and AWS TGW
Supports wide variety of cloud instances

Catalyst 8000V
SRIOV
Hypervisor/Cloud

Performance Elasticity

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

Multi-layer Security

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

Catalyst 8000V

SRIOV
Hypervisor/Cloud

Up to 10
Gbps IPsec
in cloud

ENCS NIM
support

TGW and
vWAN
integration

DPDK IO

SD-WAN
in AWS,
Azure,
and GCP

Highlights

Manageability

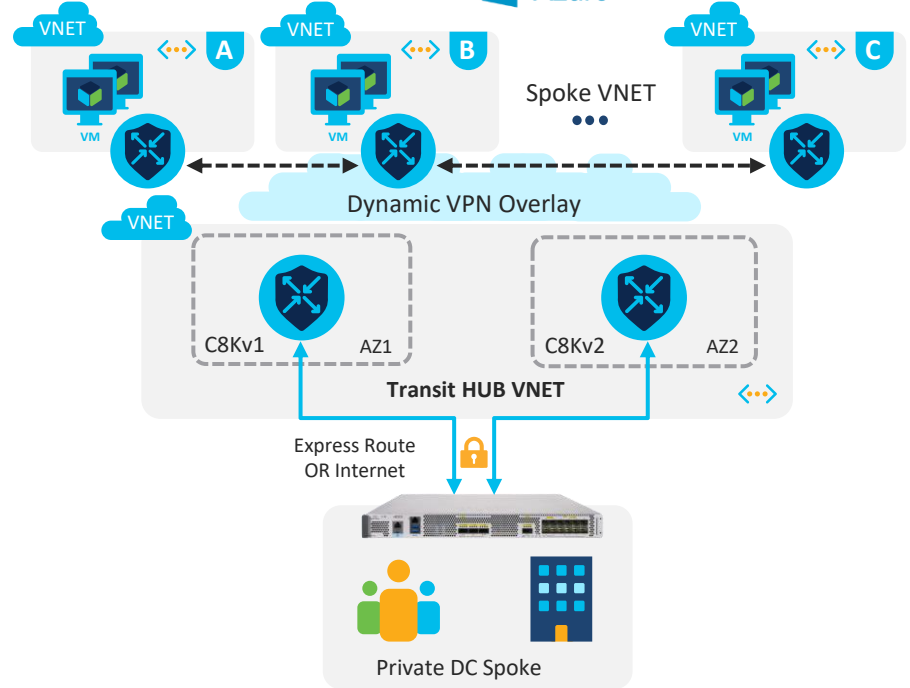
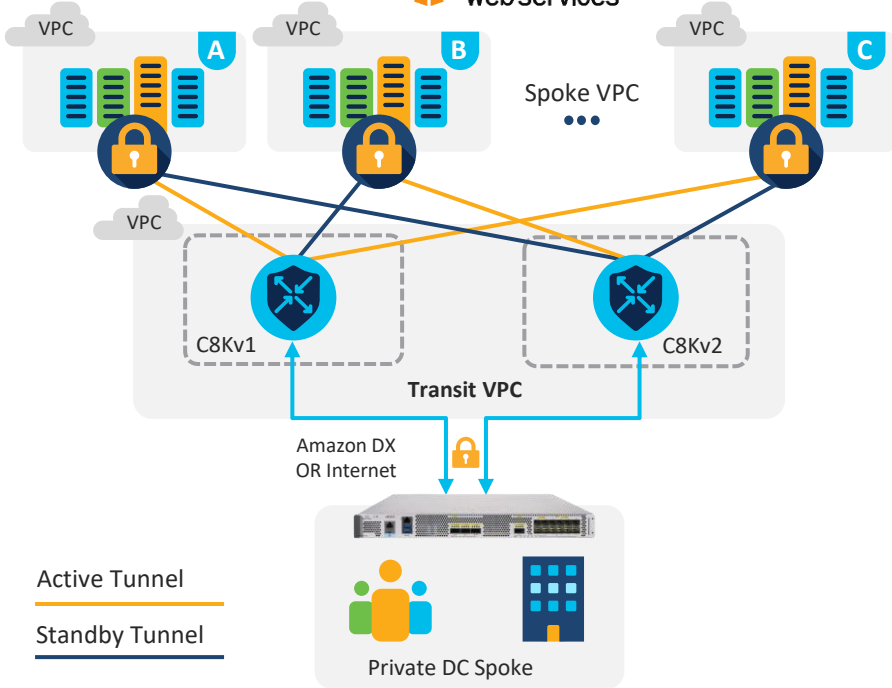
vManage

Open APIs

Analytics

Public Cloud Applications

AWS Transit VPC, Azure Transit VNET



Enhanced flexibility through software subscription

Simple software
subscription tiers

Cisco DNA Premier

Cisco DNA Advantage

Cisco DNA Essentials*

Consistent across the
portfolio



Flexibility and
portability

On-Premises

Cloud Managed

Catalyst 8000 is only available with Cisco DNA software subscription

Cisco Catalyst 8000 Edge Platforms Family

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

Catalyst 8500 Series
Edge Platforms



Catalyst 8300 Series
Edge Platforms



Catalyst 8000V
Edge
Software

Catalyst 8000V



SRIOV
Hypervisor/Cloud



ASR 1001/2-HX

Aggregation



ISR 4400

Modular Access



CSR 1000V

Cloud/Virtual

Delivering SASE for your Multicloud WAN Edge needs

Why Catalyst 8000?



Cloud Native Agility

Higher Scale for Distributed Services
Integration with leading Cloud Providers



SASE

Support for Cisco Umbrella's cloud security services
Integrated security and advanced segmentation to contain threats



Connected Experiences

Enhanced Wireless capabilities for IoT Scale
Improved applications performance
- User to Cloud



Business First Resiliency

Resource elasticity for edge compute and virtualization
Built to produce massive and rich telemetry capabilities

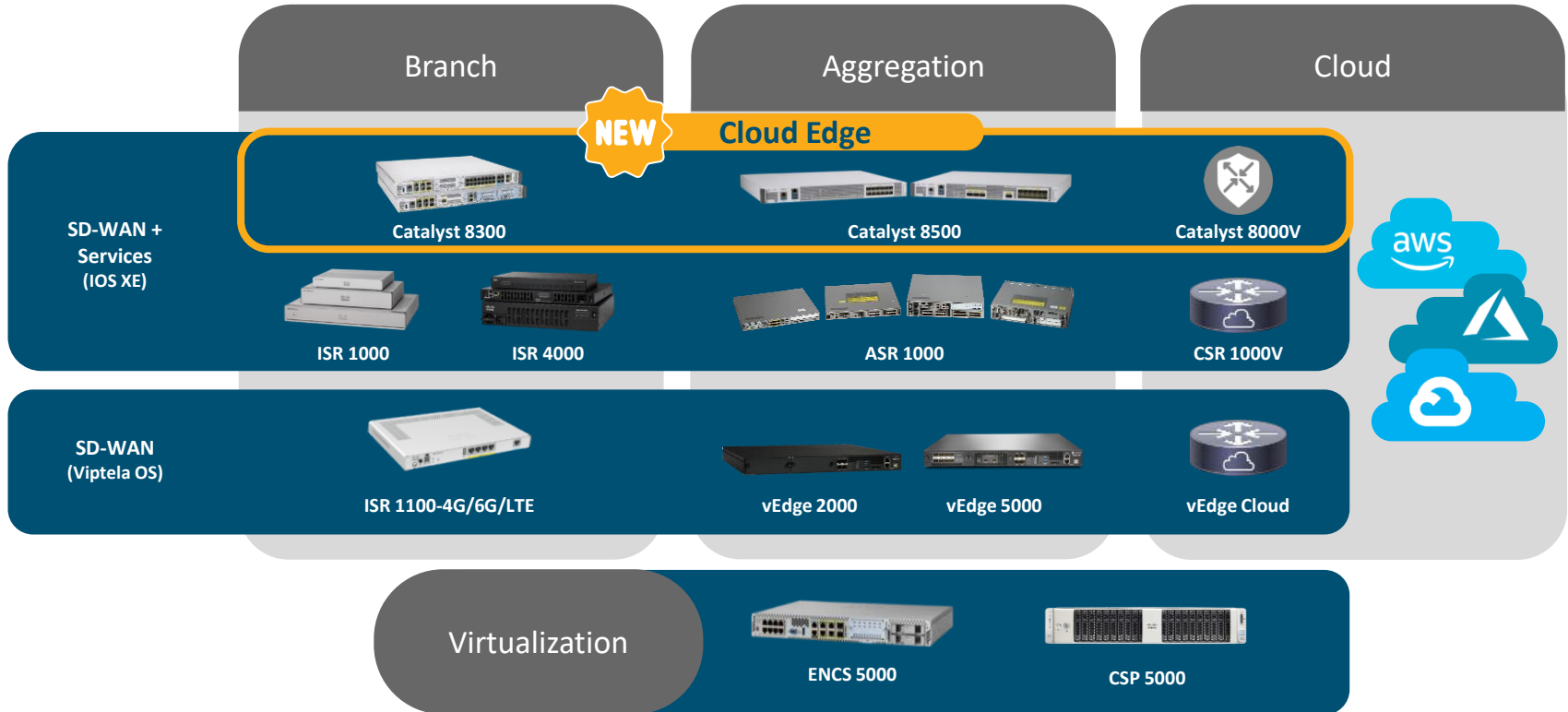


- Next Generation **QFP3.0**
- Higher **SD-WAN** Performance
- Open and programmable **IOS XE**
- Future Proofed – **5G Ready**

Availability:

Now!! Catalyst 8300, 8500
Dec 2020 : Catalyst 8000V

Broadest Set of SD-WAN Platforms



Thank you

CISCO *Connect*

