



The bridge to possible

Cisco Catalyst 8300 & 8200 Series Platforms

Technical Deep Dive

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BRKARC-2882

CISCO *Live!*

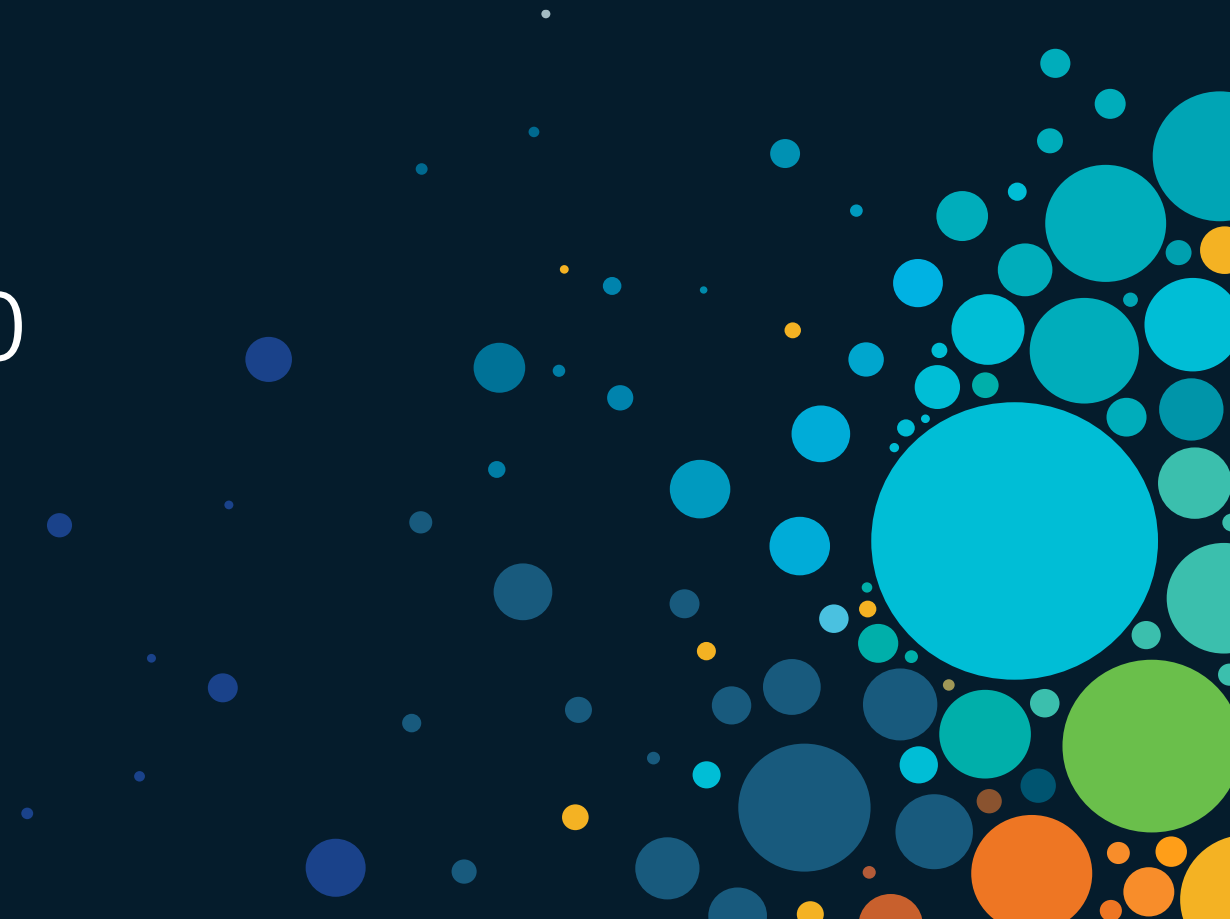
#CiscoLive



Agenda

- Introduction to Catalyst 8000 Platform Family
- Key Building Blocks
- Solution and Use-cases
- Platform Deep Dive
- User Centric Design
- Platform Architecture
- Platform Performance and Comparison
- Conclusion

Introduction Catalyst 8000 Platform Family



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



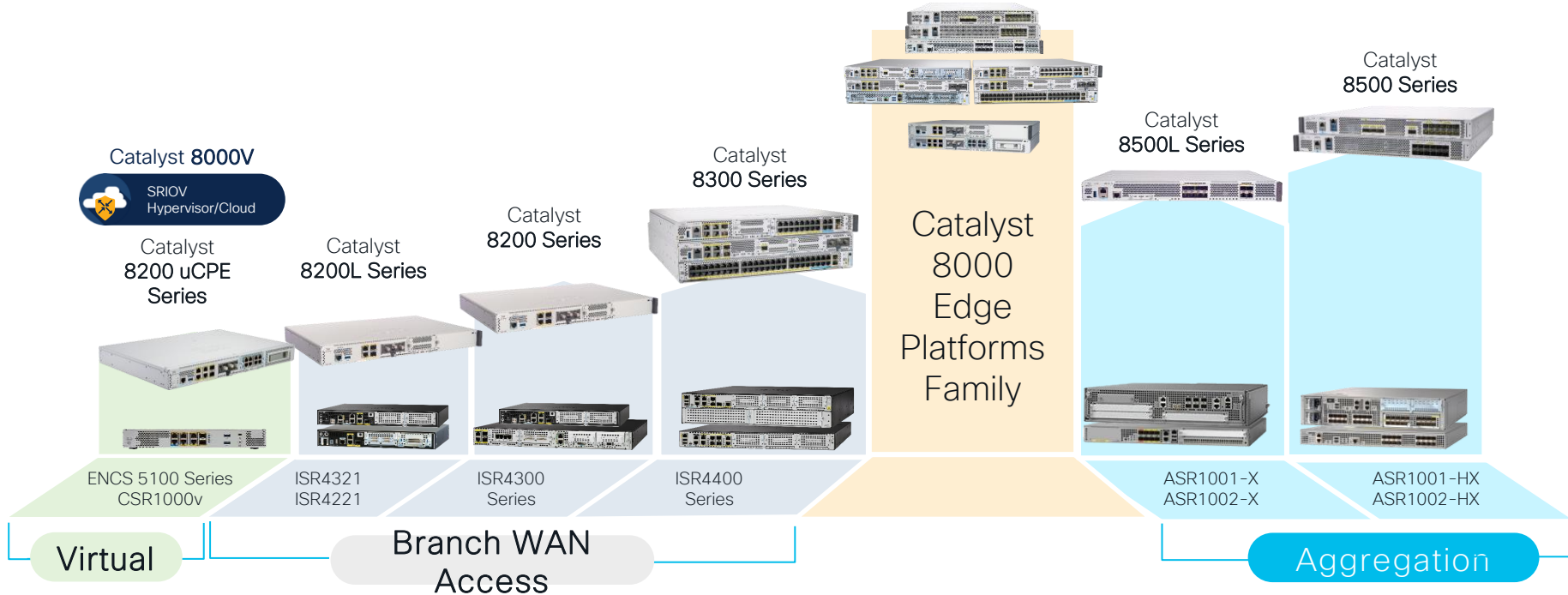
Increasing Agility

50%

of all workloads run outside of enterprise DC by 2021
Cisco Global Networking Report

Cisco Catalyst Routing Portfolio

Refreshed from Branch, Aggregation and Cloud



Cisco Catalyst 8000 Edge Platforms Family

Modular Access for branch

Catalyst 8300

Up to 12 Gbps CEF
5 Gbps SDWAN



Catalyst 8200

Up to 3.8 Gbps CEF
1 Gbps SDWAN



Catalyst 8200L

Up to 3.8 Gbps CEF
500 Mbps SDWAN



ISR 4451/4431



ISR 4331

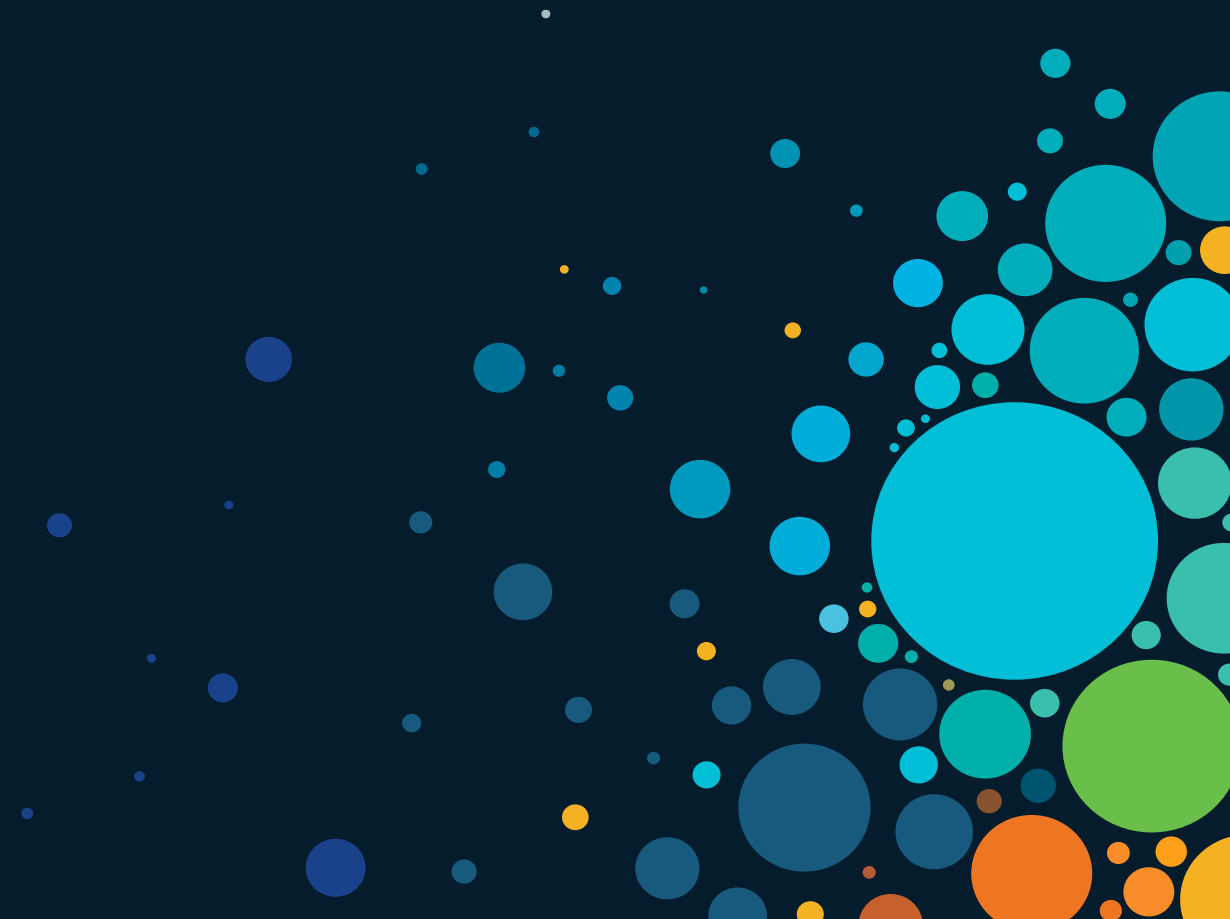


ISR 4321/4221

Modular Access

Delivering SASE for your Multicloud WAN Edge needs

Key Building Blocks



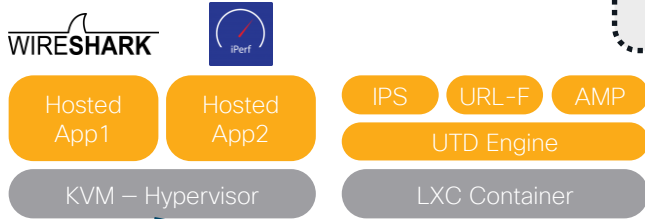
x86 Multi-core SoC Architecture

Key Datapath Innovation

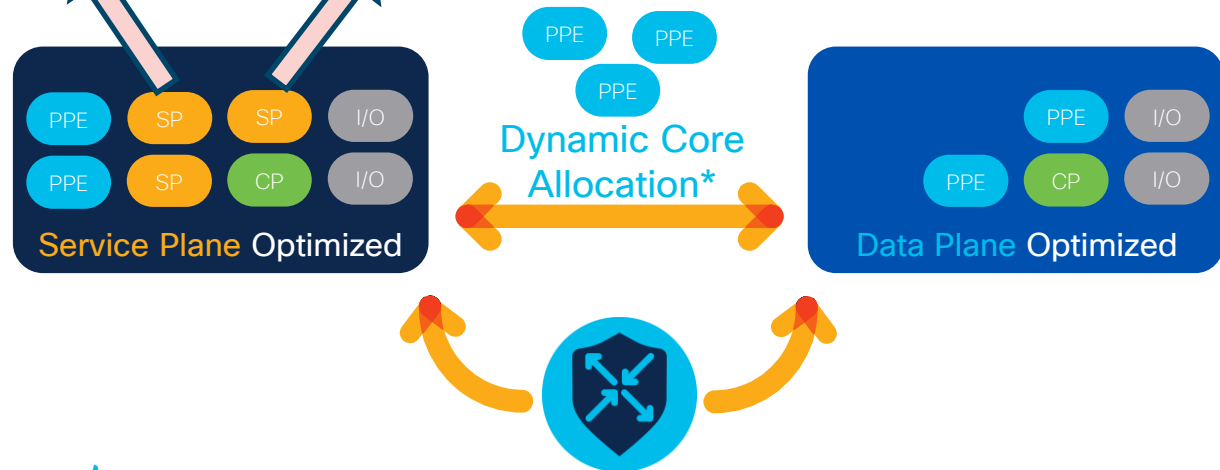


X86 Multi-core CPU

```
(config)#platform resource ?
data-plane-heavy Use Data Plane Heavy template
service-plane-heavy Use Service Plane Heavy template
```



Quick Assist Technology (QAT)



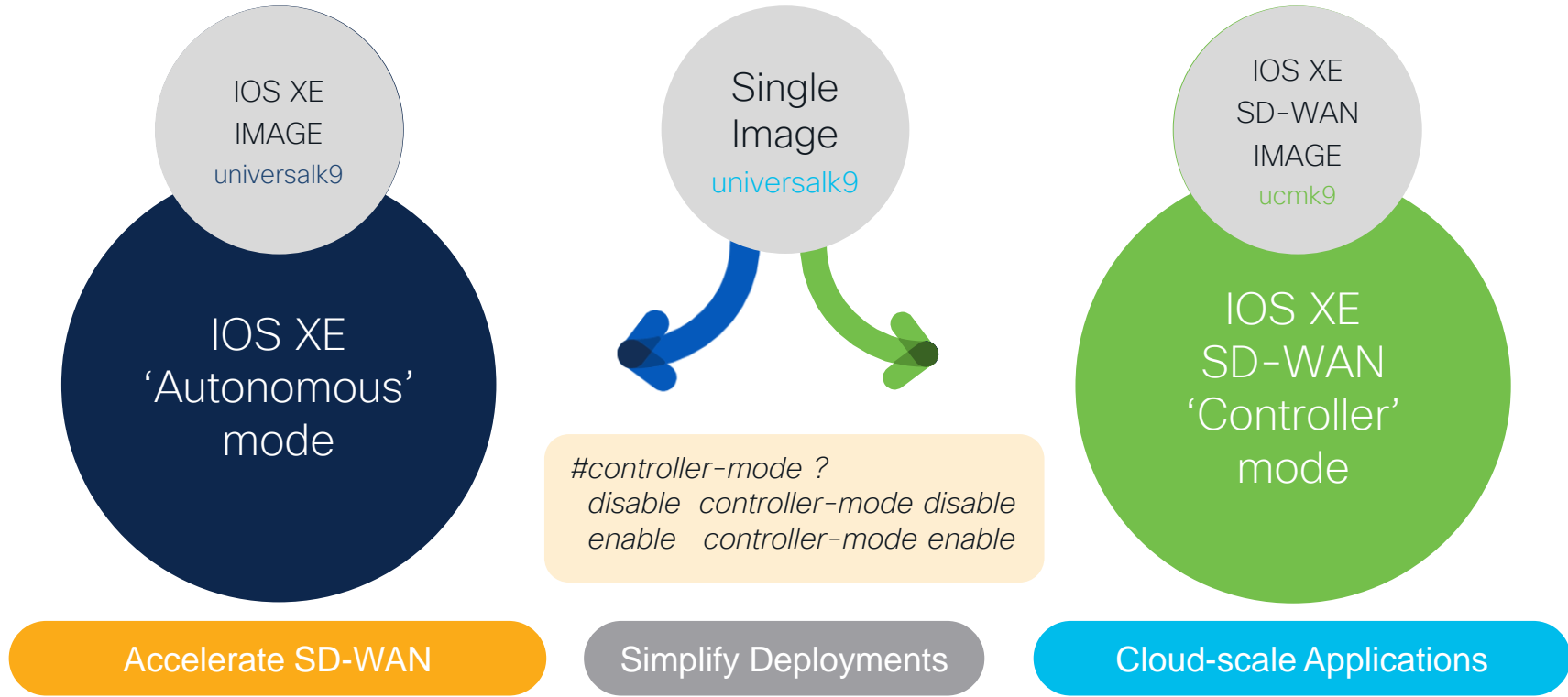
- I/O Core
- Data Plane Core
- Control Plane Core
- Service Plane Core



Easy Operations with Single Image

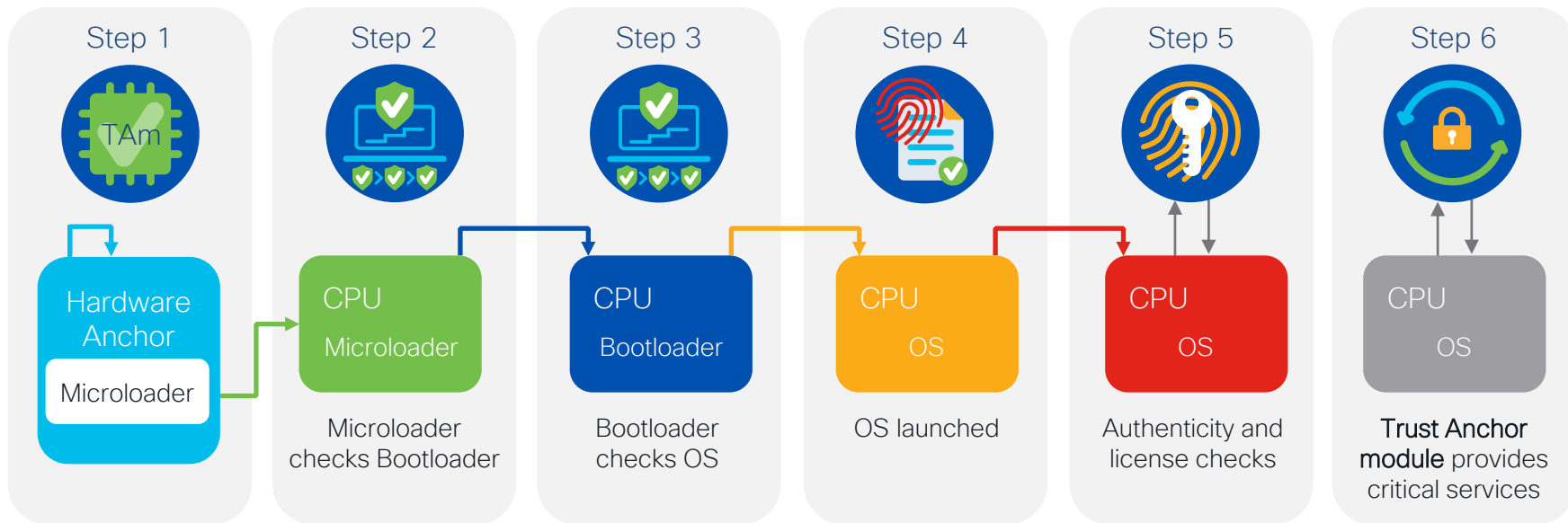


Open and Extensible
IOS XE



Open, API, Model Driven & Secure Operating Systems

Secure Platform with Trustworthy Solutions



First instructions run on CPU stored in tamper-resistant hardware

Confidentiality

Integrity

Authenticity

Single Offer with common DNA Subscription

Systems



Catalyst 8300,8200 Edge



DNA Subscription



Cisco DNA Premier



Cisco DNA Advantage



Cisco DNA Essentials

Performance, Flexibility & Investment Protection

Solution and Use Cases



Catalyst 8300 Series Edge Platforms Use Cases

Enterprise WAN Edge
Traditional & SD-WAN
High Performance WAN
Voice and Compute

Internet Gateway
High Speed VPNs
Advanced Cryptography
Network Address Translation

Deployment
Use-case



Catalyst 8300,8200
Series Edge
Platforms

Managed Service Providers
Managed CPE and Core Routing
Wireless WAN
SLA Monitoring and Management

Secure Access Services
Edge (SASE)
Cloud OnRamp for IaaS & SaaS
Umbrella SIG Integration
Multi-layer security

Purpose built edge platforms centered around cloud, services & SD-WAN

Catalyst 8300,8200 Series Edge Platforms

One platform, many solutions

SD-WAN & SASE

Cloud OnRamp for SaaS
Cloud OnRamp for IaaS
Umbrella SIG
Multi-layer Security
UC SD-WAN

Internet Gateway

High Throughput Performance
High Scale NAT44, NAT64
10/1G Port Offering
Firewall DDoS protection

Secure WAN

Site-to-site
Remote Access VPN
GETVPN, DMVPN, FlexVPN
Zone Based Firewall
256-bit WAN MACsec
Encryption Traffic Analysis

Managed SP CPE

MPLS, Segment Routing
L2VPN, L3VPN
AVC, NBAR2, QoS/HQoS
MP-BGP

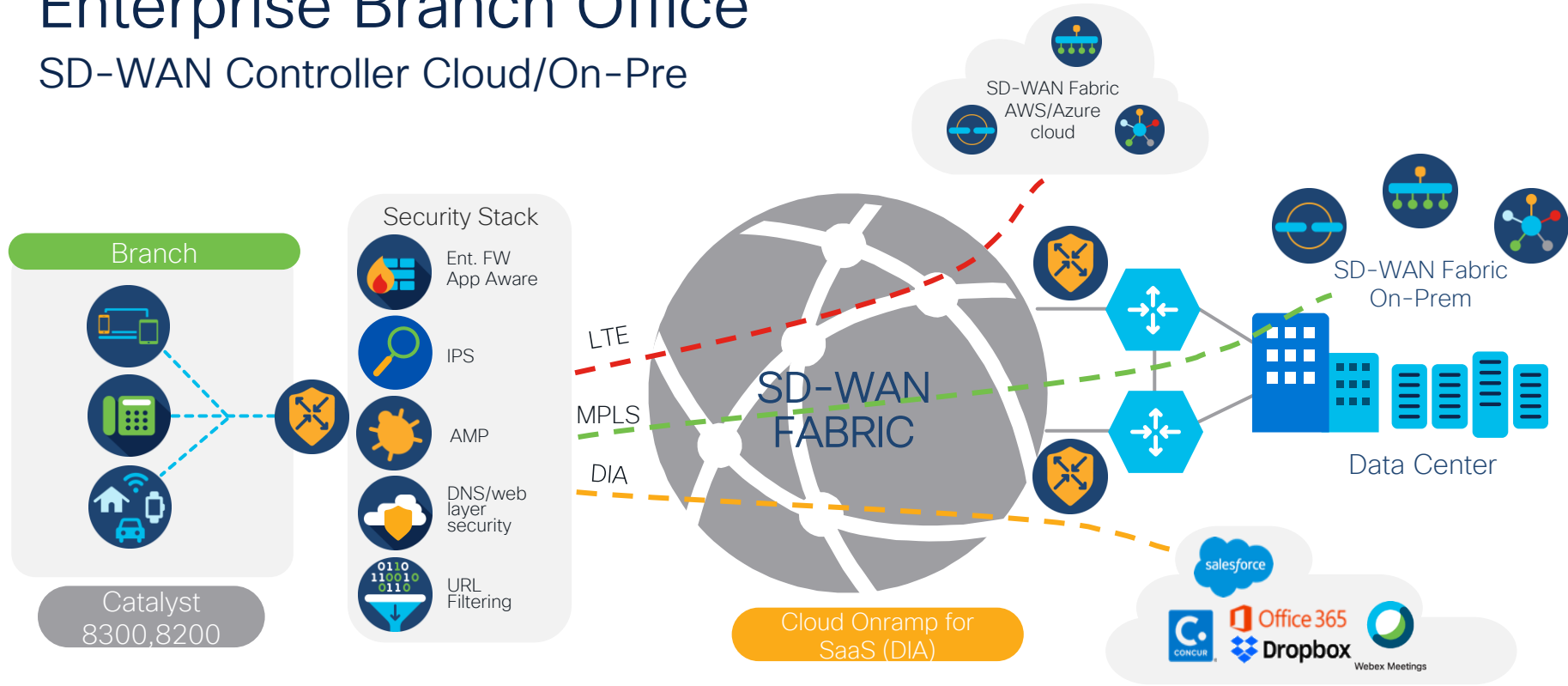
SD-Access

Control Plane node
Border node
Fabric edge node (roadmap)

Inherits all IOS XE innovation from Day-1, Full feature parity with ISR4K

Enterprise Branch Office

SD-WAN Controller Cloud/On-Pre



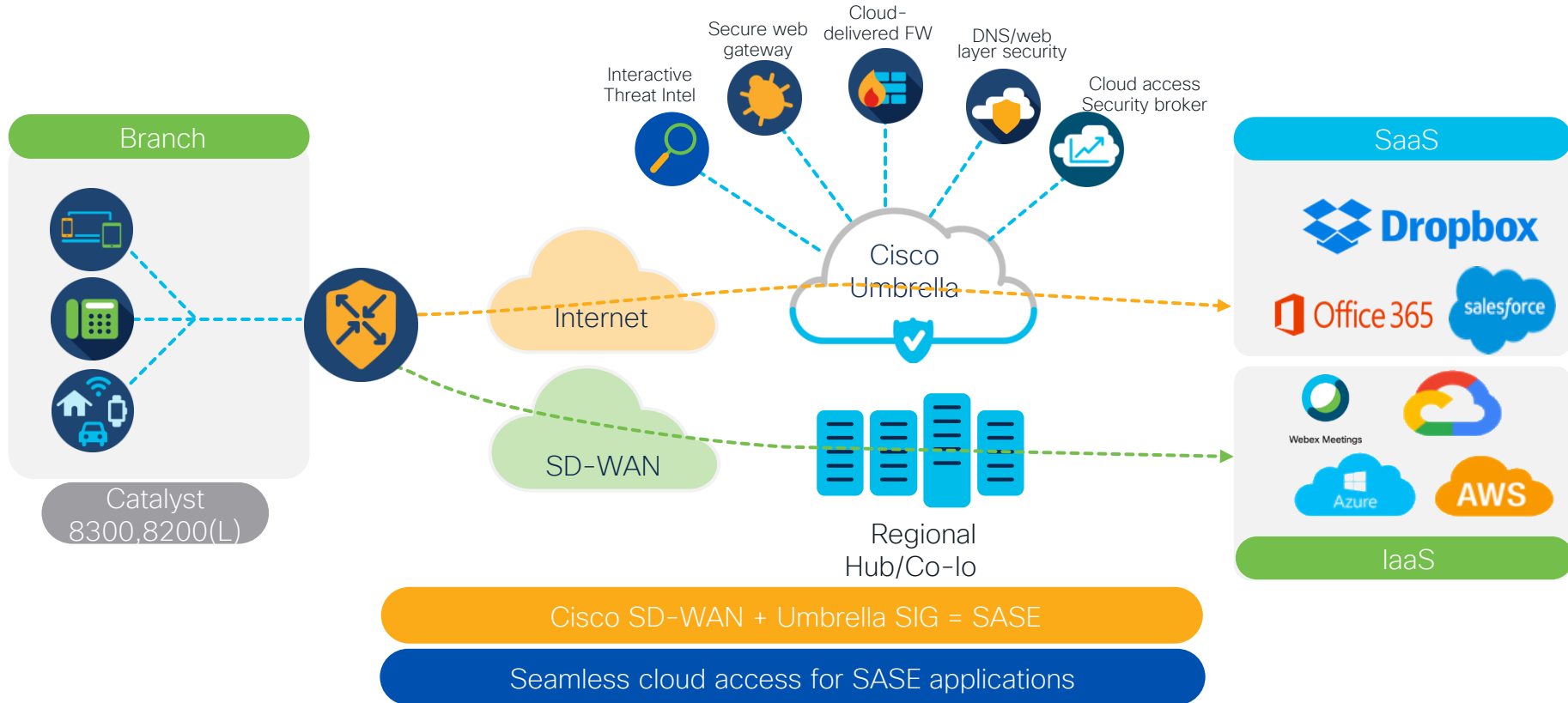
Secure Network Edge

SD-WAN Transport

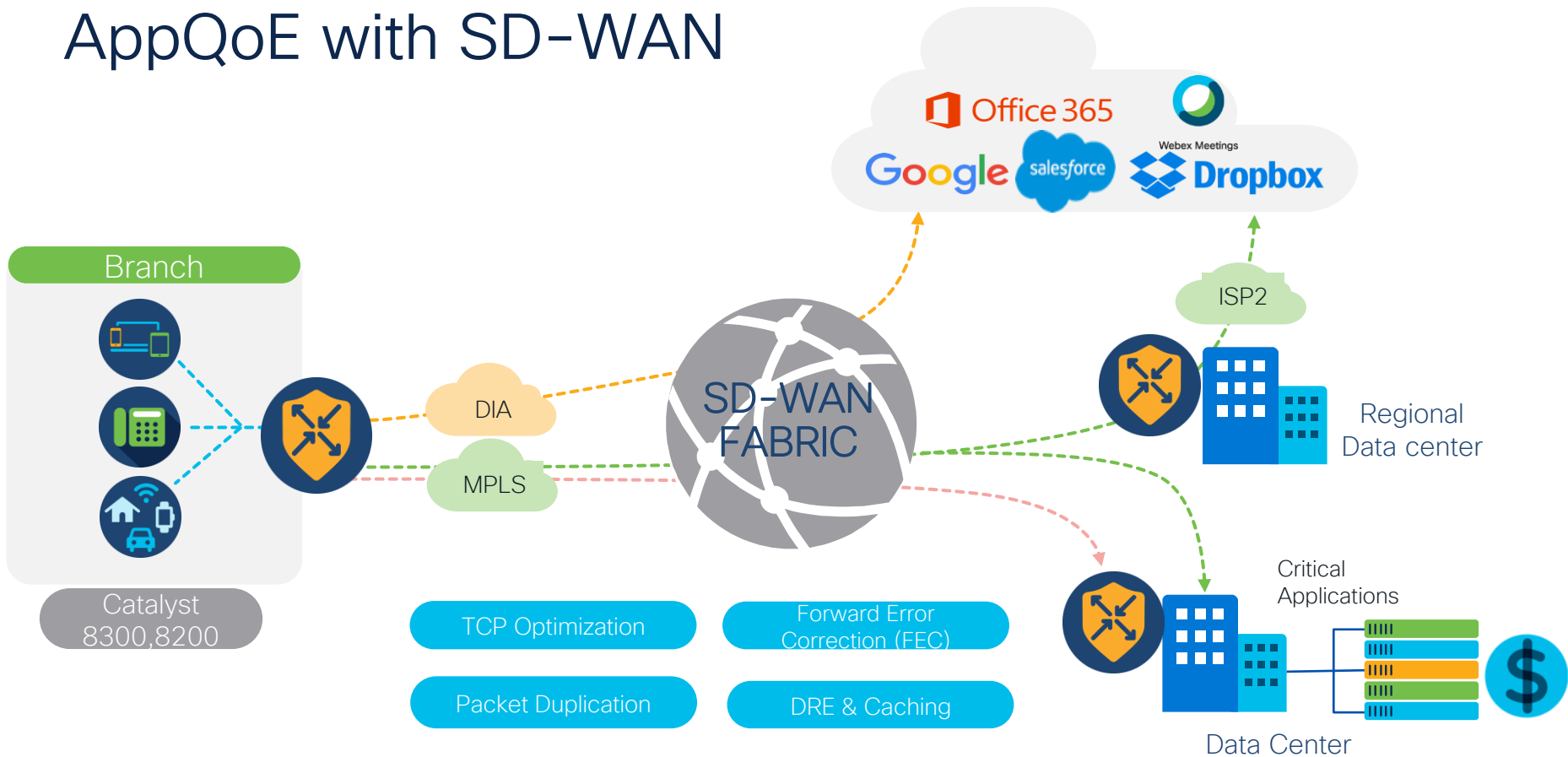
Zero-touch Provision

CISCO *Live!*

SASE Cloud Adoption with SD-WAN

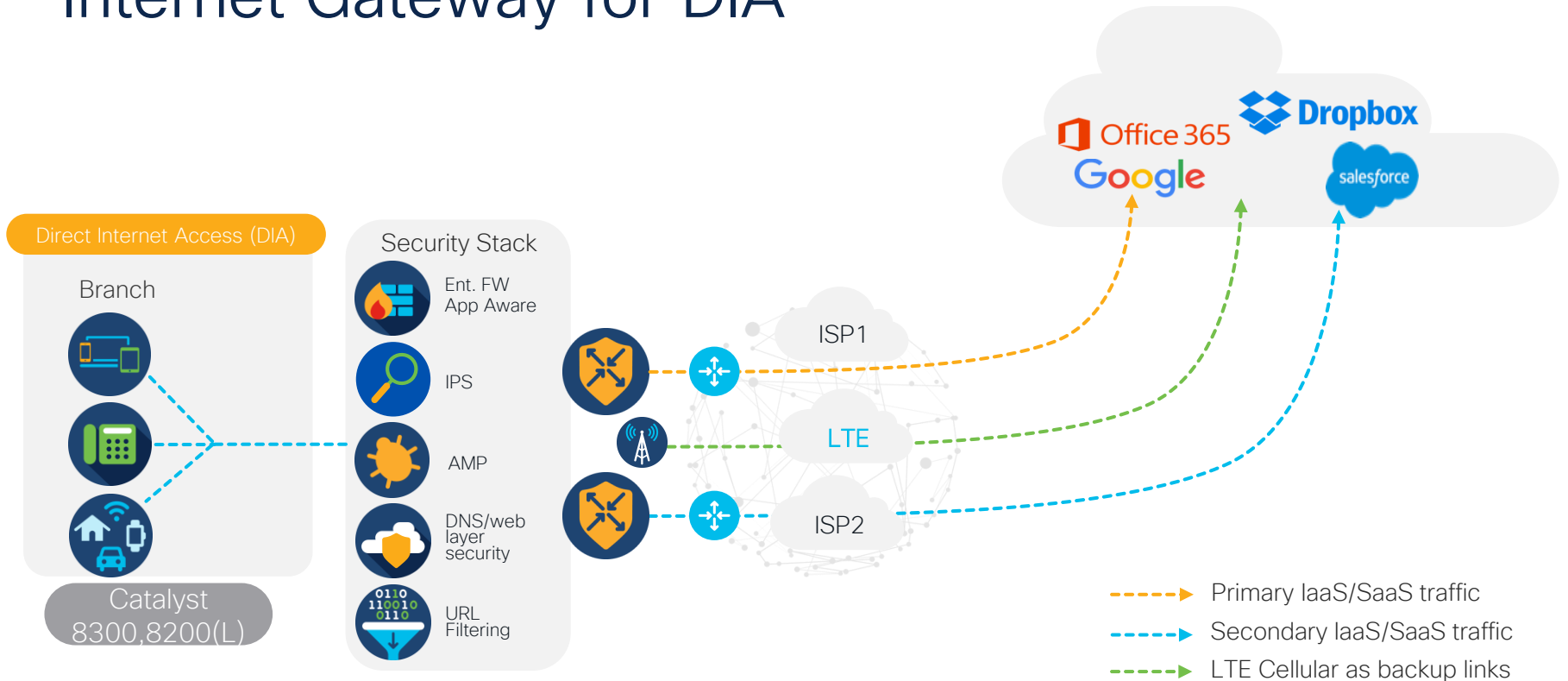


AppQoE with SD-WAN



Enhanced Application Quality of Experience

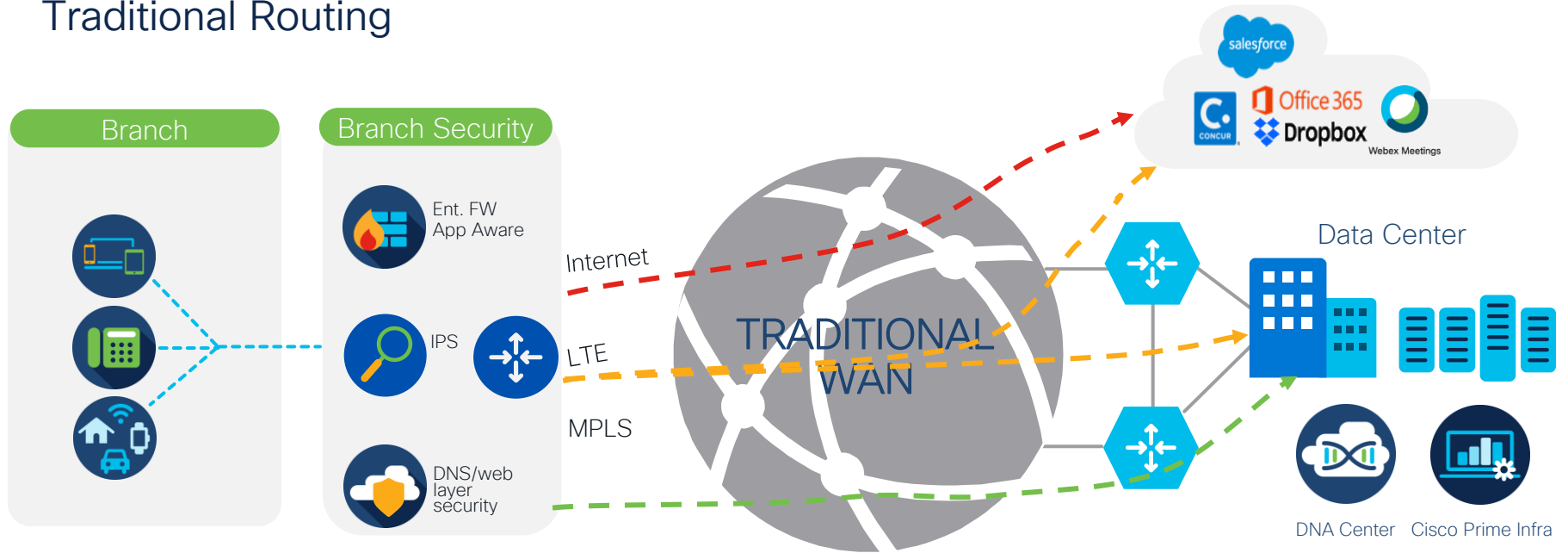
Internet Gateway for DIA



High speed internet access at the service edge

Enterprise Branch Office

Traditional Routing



Catalyst
8300,8200(L)

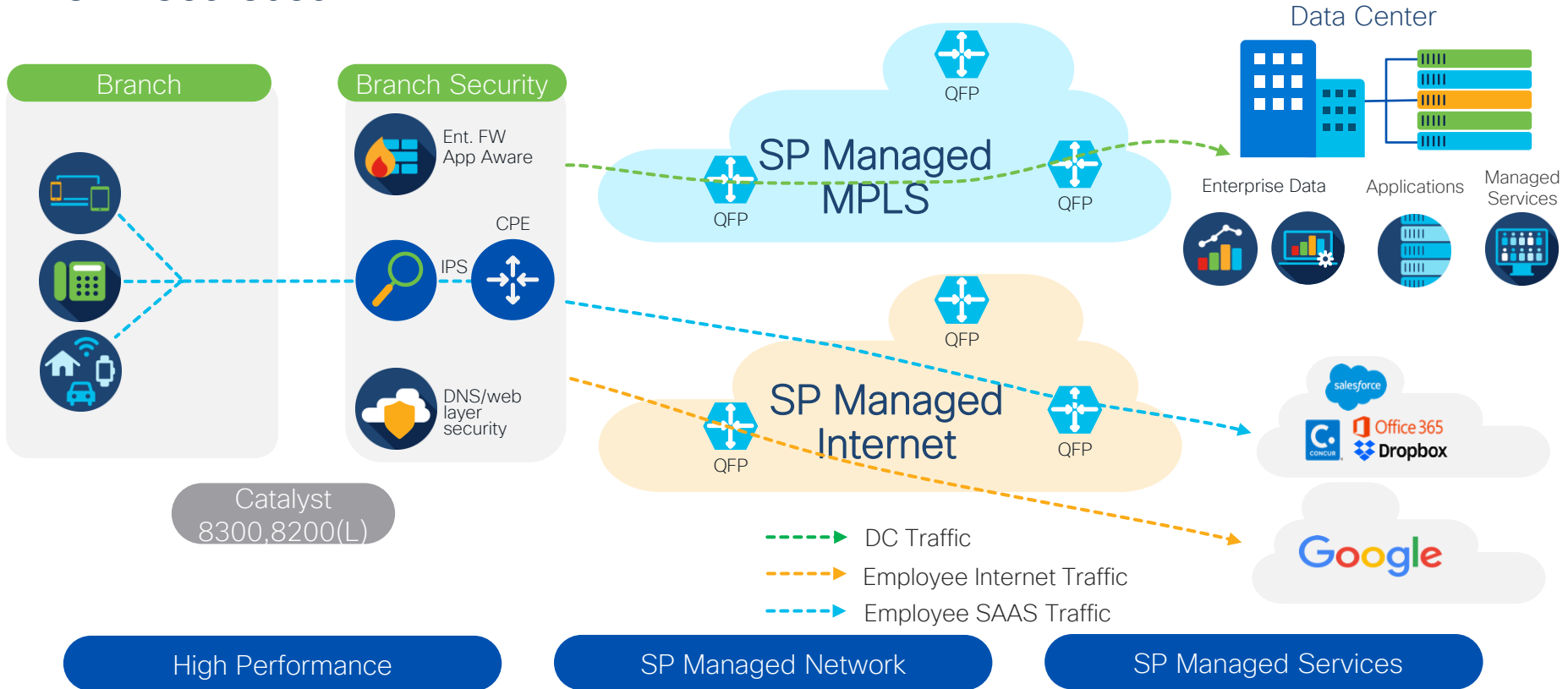
Secure Network Edge

Traditional Transport

Zero-touch Provision

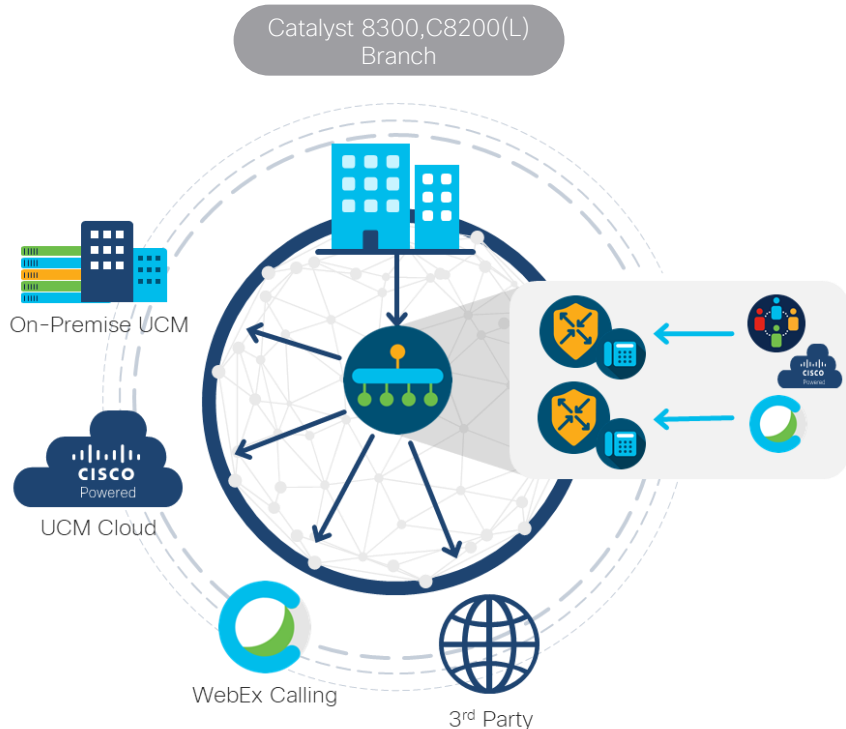
Managed Service Providers

CPE Use Case



Cisco SD-WAN Unified Communications, Voice Integration

Benefits



Telephony Integration

Only vendor to natively integrate analog/digital IP directly into the CPE

Telephony survivability

Prevent internal and external phone outages using SRST enabling branch router to assume role of call control PBX.

Reduced OpEx and CapEx

Cisco SD-WAN now supports UC and SD-WAN within a single CPE

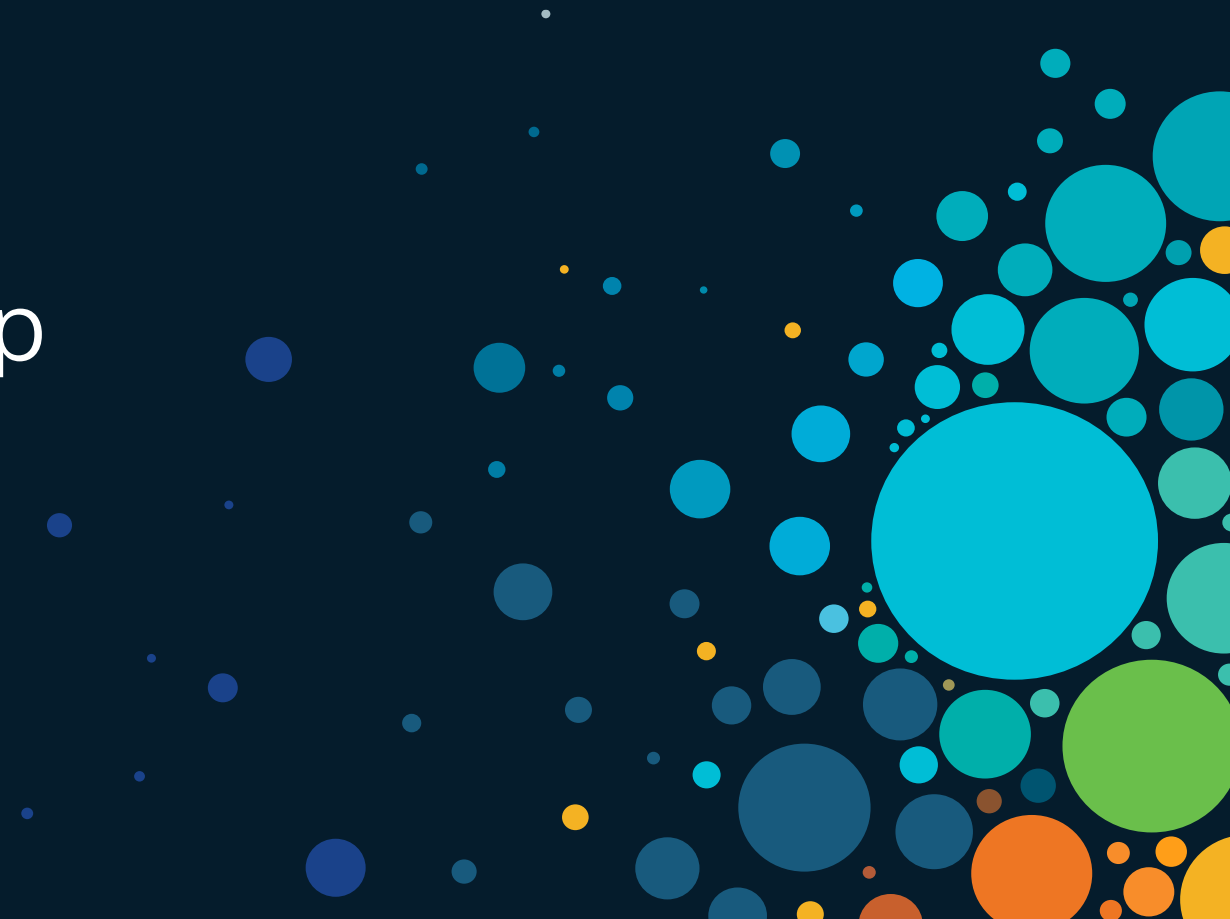
Reduced Complexity

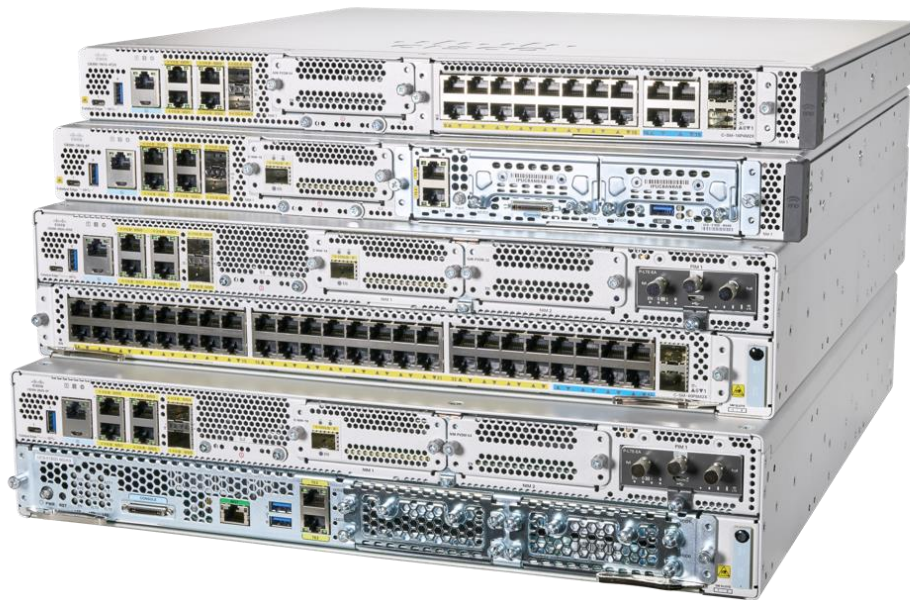
vManage can orchestrate scalable/consistent UC configuration across the entire enterprise via templates

Middle-mile Optimization

Only vendor actively partnering with colocation and SDCI Partners for optimization with cloud applications (WebEx, UCM Cloud and more)

Platform Deep Dive





Catalyst 8300

New Age Branch

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
Higher IPsec Tunnel Scale

Multi-layer Security

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

Enhancements

6 WAN
ports

Default
8G Up to
32G
DRAM

10G
256-bit
MACsec

Pluggable
Storage
up to
600GB

5G
Cellular
Ready

Management

vManage

DNA Center

Cisco Prime Infra

Open APIs



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

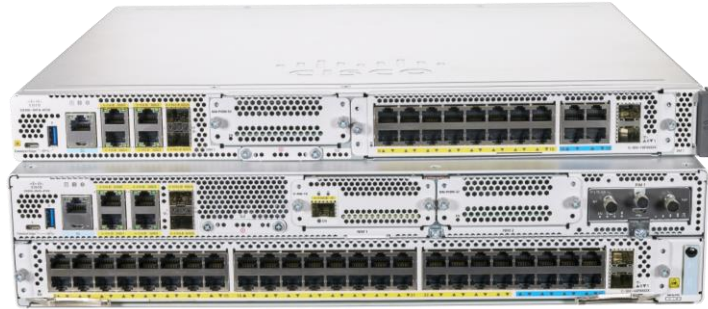
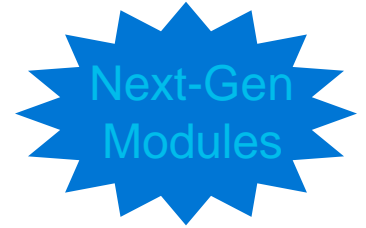
UADP-based switch
modules/10G WAN module

User Centric Design
(RFID, QR label, FRUs)

Higher-efficiency AC
and DC power supplies



Catalyst 8300 Supported Modules



LAN

NIM-ES2-4
 NIM-ES2-8
 NIM-ES2-8-P
 C-SM-40P8M2X
 C-SM-16P4M2X

Async

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

WAN

C-NIM-1X
 C-NIM-2T
 C-NIM-1M
 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-LTEA-EA
 P-LTEA-LA
 P-LTEAP18-GL
 CG418-E (HW version)

5G

P-5GS6-GL (PIM version)
 CG522-EE (HW version)

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



Catalyst 8200(L)

New Branch Addition

Cisco Catalyst C8200-1N-4T

Foundation for the Secure Cloud Scale SD-WAN branch

Now supports
1G WAN MACsec



Integrated Rich Services

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

Edge Intelligence

Container based Apps



Performance & Scale

Up to 1G IPsec and 3.8G CEF Performance
Up to 400M On-prem Services Performance
Up to 2500 SDWAN & 4000 IPsec tunnels

Multi-layer Security

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

Enhancements

4 WAN
ports

Default
8G Up to
32G
DRAM

Less than
12"
depth

Pluggable
Storage
up to
600GB

5G
Cellular
Ready

Management

vManage

DNA Center

Cisco Prime Infra

Open APIs



Cisco Catalyst 8200L-1N-4T

High Throughput SASE Compliant Secure Cloud

Now supports
1G WAN MACsec



Integrated Rich Services

Voice feature parity with C8300

SASE Compliance

Cloud based Security for the small branch



Scale

Up to 3.8G CEF Performance
Up to 500M IPSEC performance
Up to 1500 SDWAN & 4000 IPsec tunnels

SASE Compliant Security

High Throughput IPsec
Trustworthy Solutions
Umbrella SIG

Enhancements



4 WAN
ports

Default
4G Up to
32G
DRAM

Less than
12"
depth

Pluggable
Storage
up to
600GB

5G
Cellular
Ready

Manageability

vManage

DNA Center

Cisco Prime Infra

Open APIs

Cisco Catalyst 8200 Series Edge Platforms

Introducing 1G Access Edge with higher WAN port density

1G WAN Ports 'T'
& 1G,500M IPsec

C8200-1N-4T / C8200L-
1N-4T

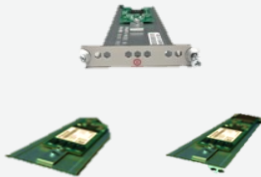


2 RJ45
2 SFP

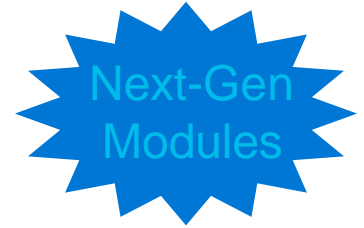
NVMe
Storage

Voice/WAN/
Cellular

User Centric Design
(RFID, QR label, FRUs)



Catalyst 8200/L Supported Modules



LAN

NIM-ES2-4
NIM-ES2-8
NIM-ES2-8-P

Async

NIM-16A
NIM-24A

WAN

C-NIM-2T
C-NIM-1M
NIM-1T
NIM-2T
NIM-4T
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-LTEA-EA
P-LTEA-LA
P-LTEAA-EA
P-LTEAP18-GL
CG418-E(HW version)

5G

P-5GS6-GL (PIM version)
CG522-EE (HW version)

Voice

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

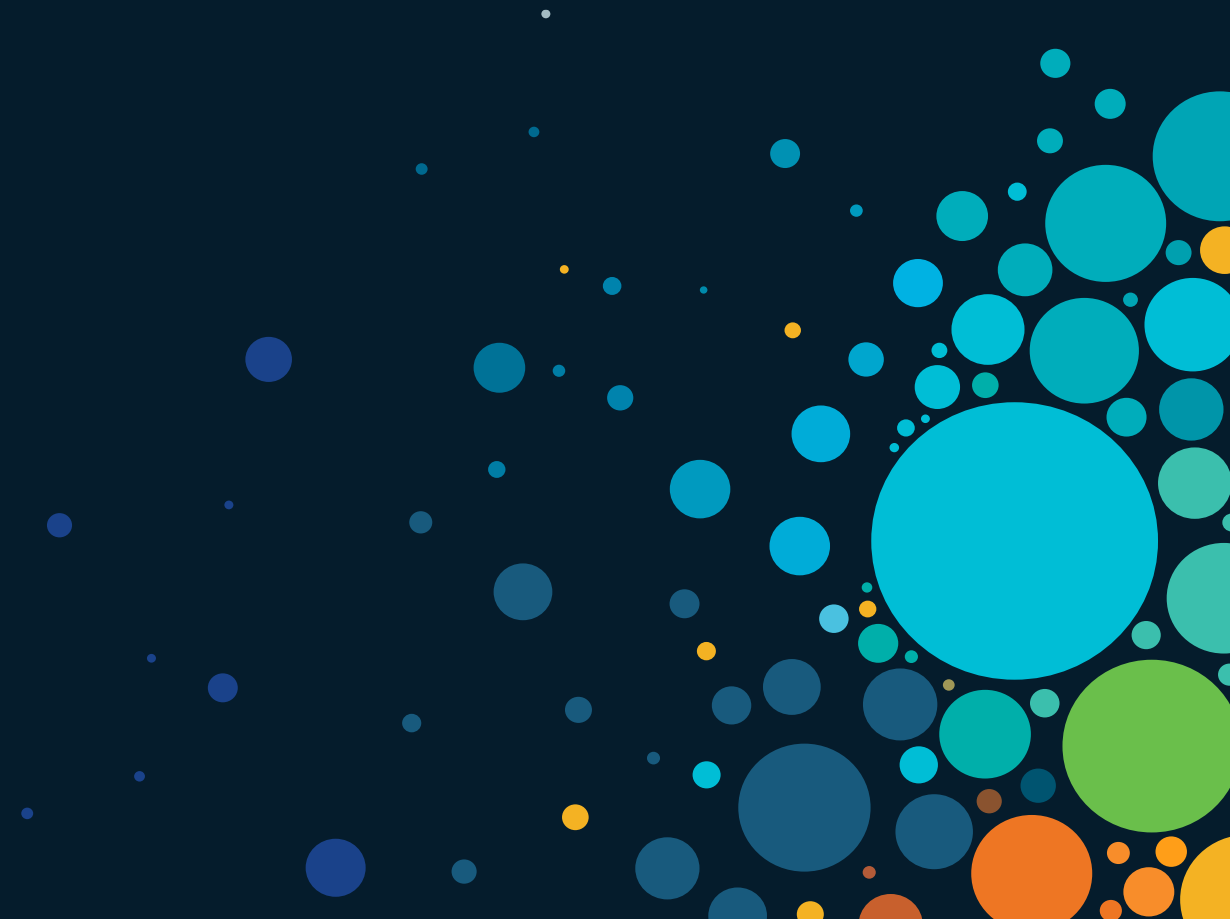
DSL

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

Storage

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

User Centric Design



Label Tray



Label Tray is a **Plastic strip** that can be pulled out

Label Tray contains:

Product ID

PID version ID

CLEI

TAN

Serial Number



Label tray contains a **QR code** with above information encoded in it:

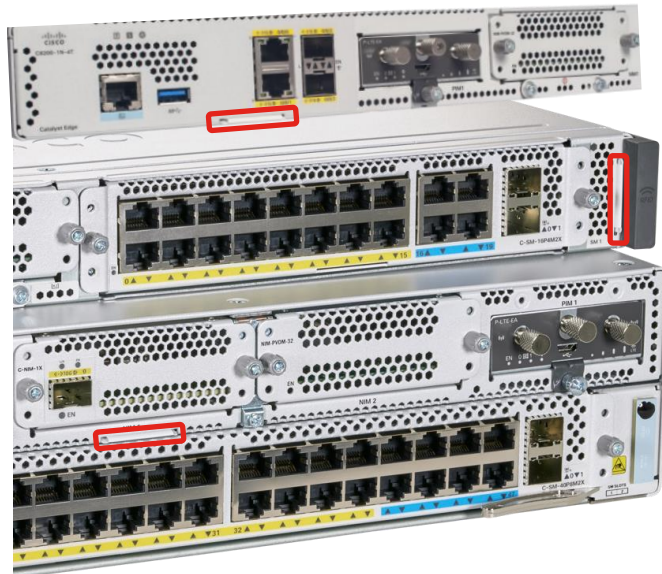
Device Family, Base PID

Device MAC

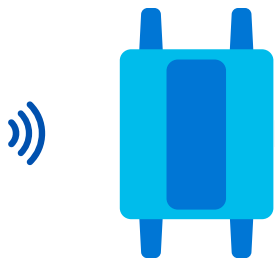
Vendor

Serial Number

HW Version



Radio Frequency Identification (RFID)



Facing **Passive UHF RFID**



Ultra High Frequency (**UHF**) Specs

860 to 960 MHz

1 to 4 meter Distance

Supply Chain Applications



UHF Benefits:

Good read range

Low cost

Industry adopted standard

Storage Options

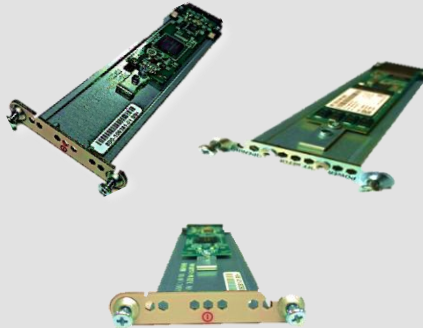
External M.2 storage



Storage Options

8 GB default bootflash

16G default M2. USB
32 GB M.2 USB options
600 GB M.2 NVMe SSD options



Use Case

Storage for App Hosting

Logging local

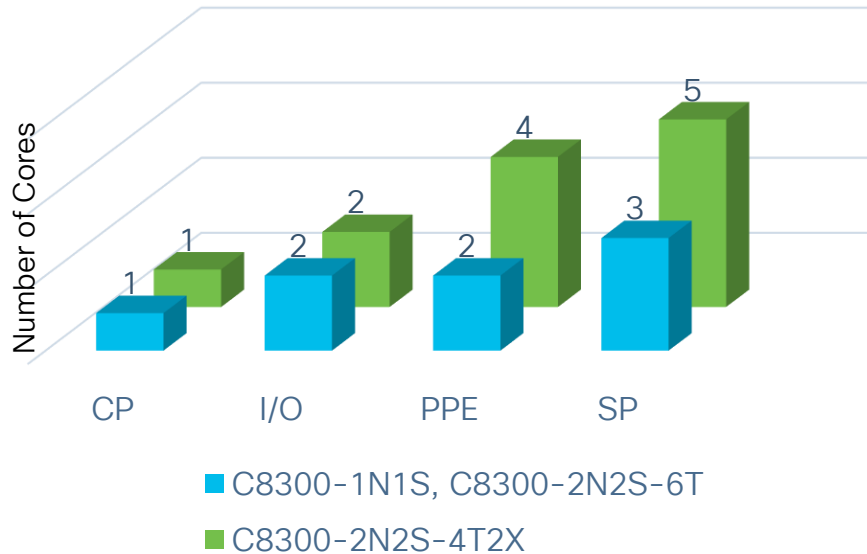
WAN Optimization, SSL
inspection

Platform Architecture

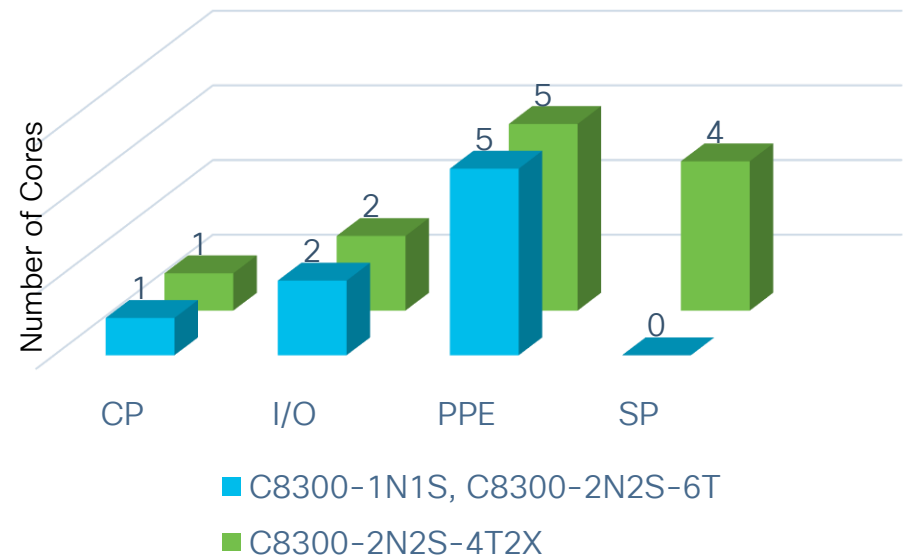


Catalyst 8300 CPU core allocations

Service Optimized mode



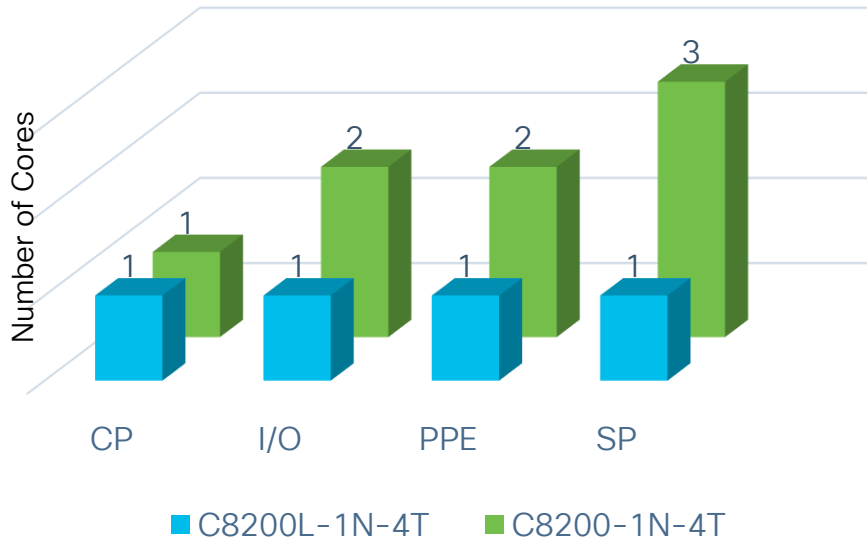
Data Optimized mode



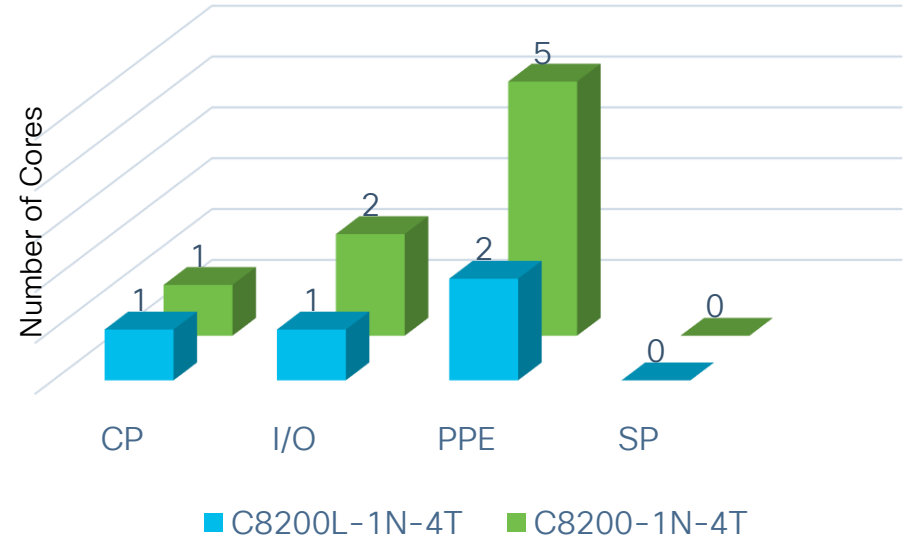
No container service support in **Data plane optimized** mode in 8 Core systems

Catalyst 8200 CPU core allocations

Service Optimized mode

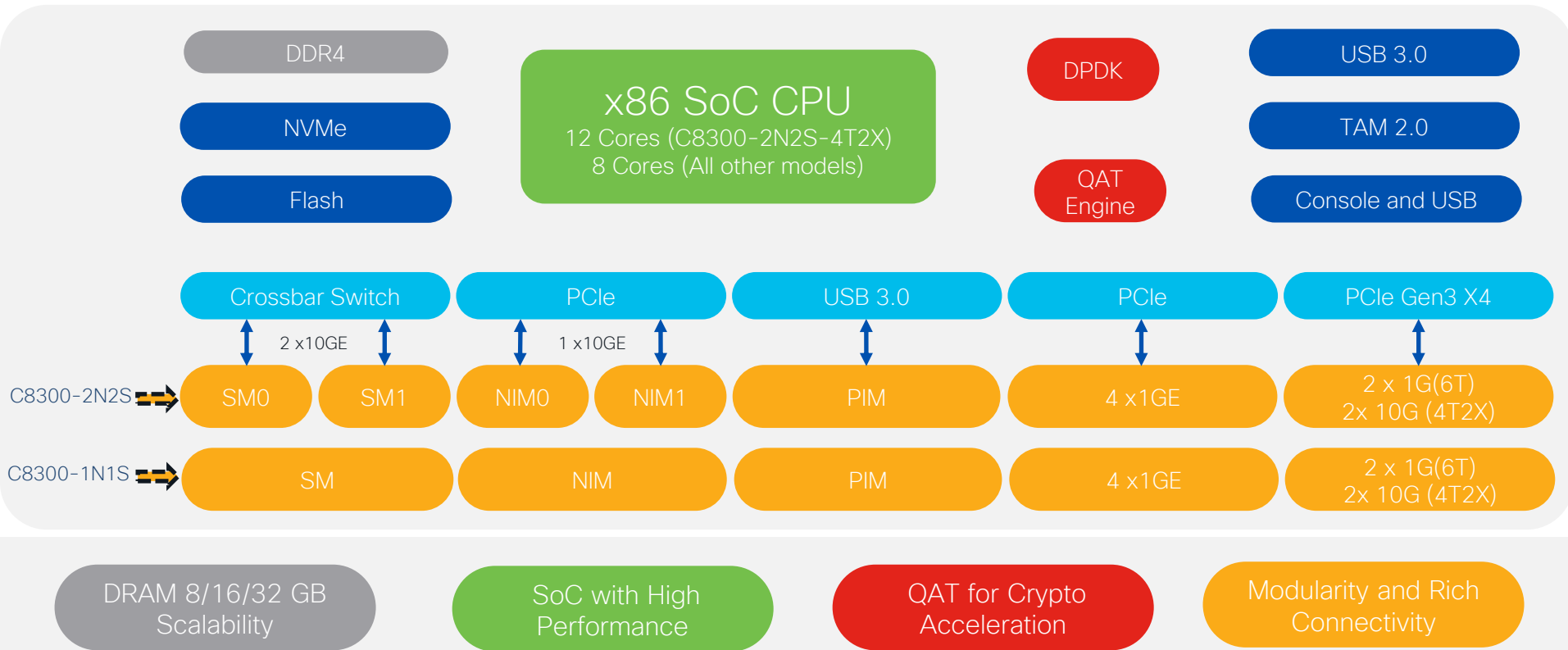


Data Optimized mode

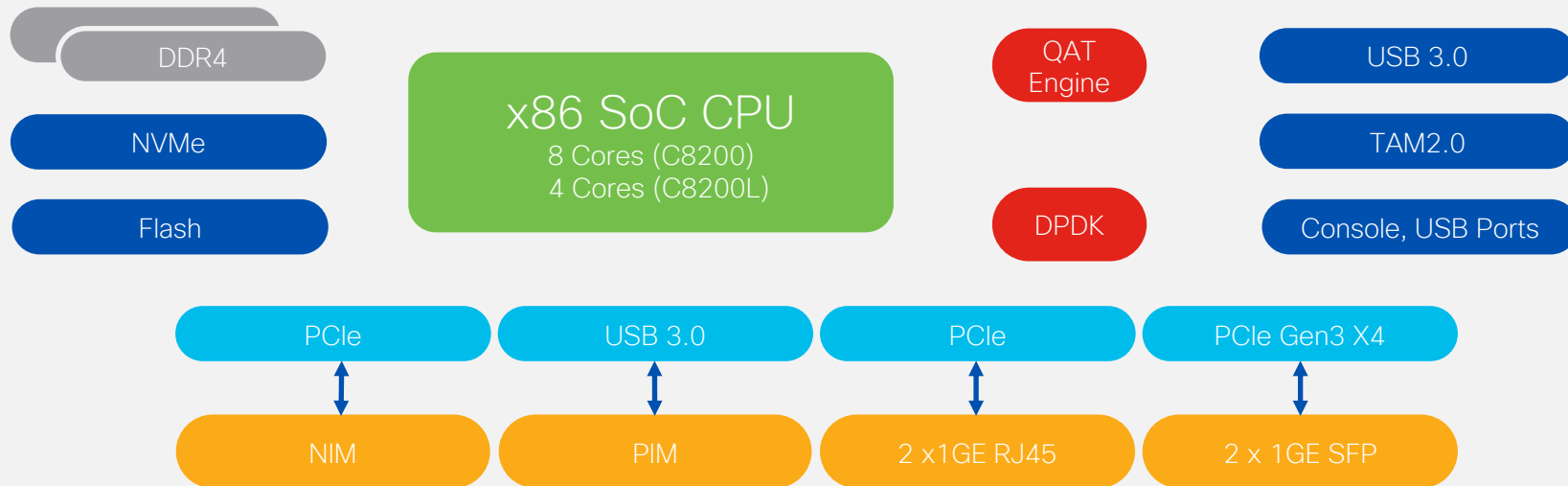


No container service support in **Data plane optimized** mode

C8300 Block Diagram



C8200[L] Block Diagram



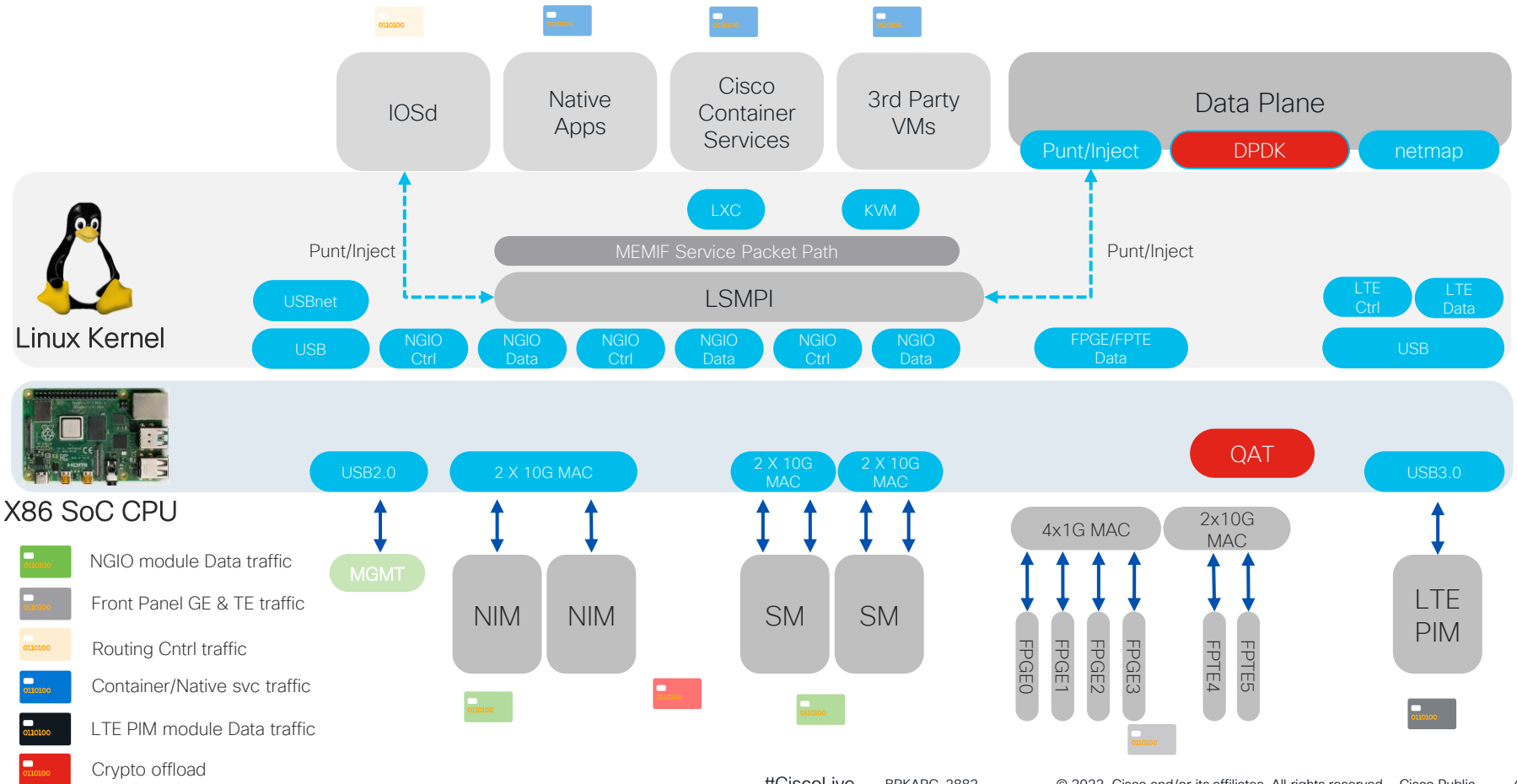
DRAM 8/16/32 GB
Scalability

SoC with High
Performance

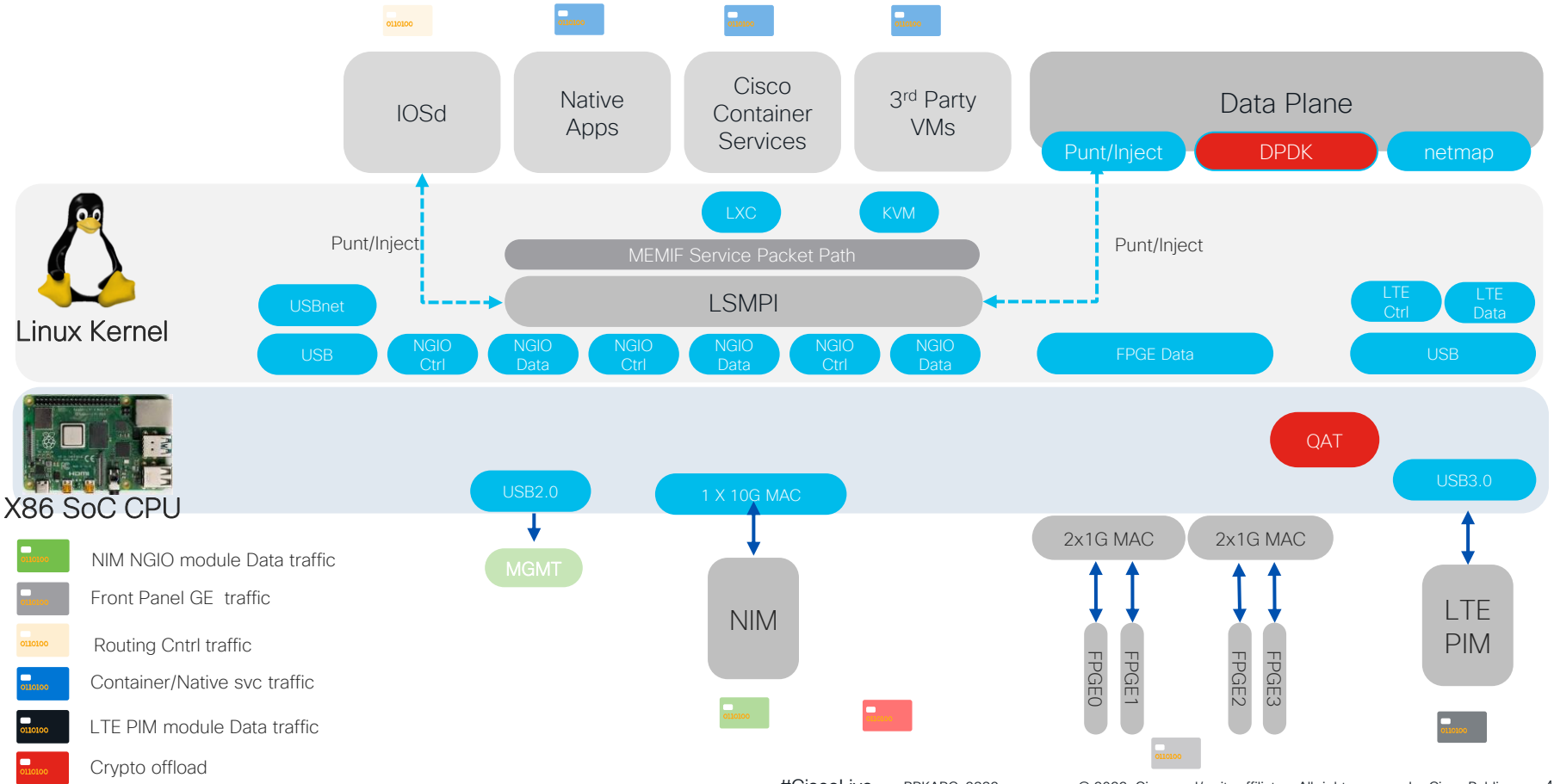
QAT for Crypto
Acceleration

Modularity and Rich
Connectivity

Catalyst 8300 and Life of a Packet



Catalyst 8200 and Life of a Packet



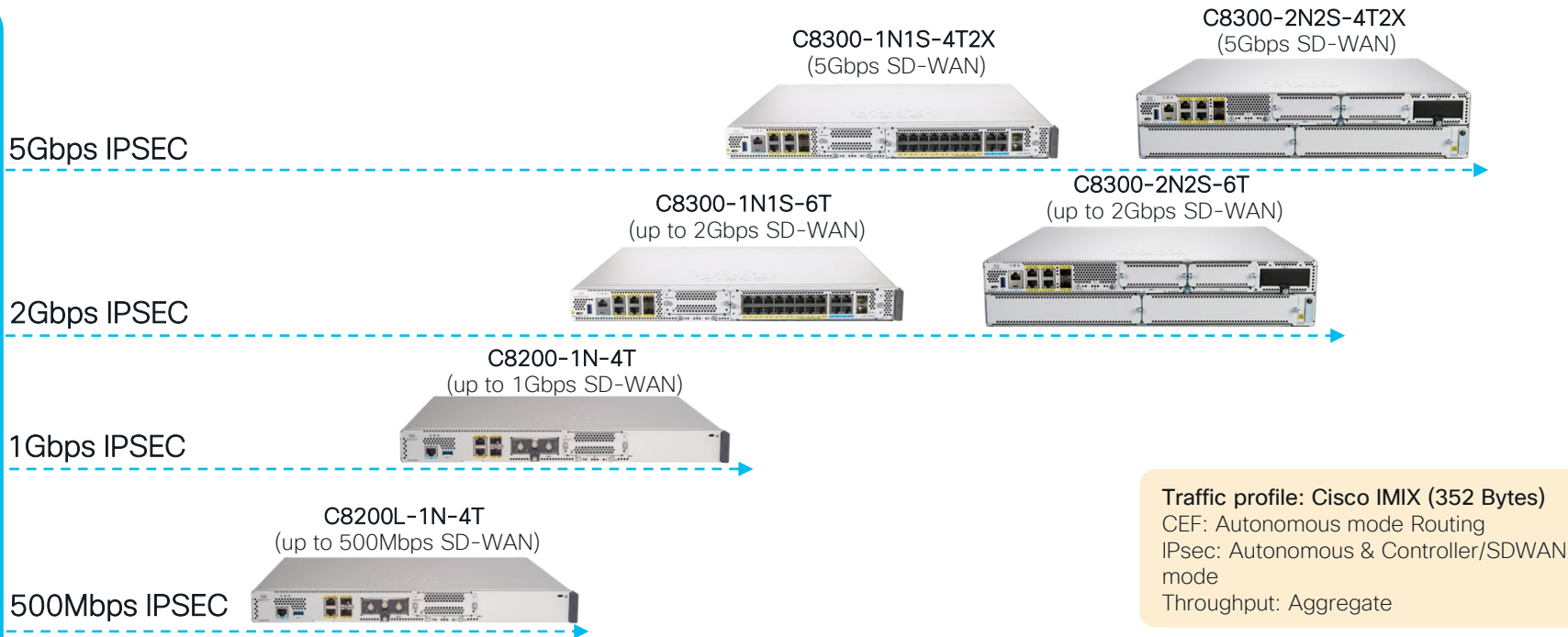
Platform Performance and Comparison



Cisco Catalyst 8300, 8200 Series Edge Platforms

The leading SD-WAN high performance branch router with rich services

Performance and Rich Services



Flexible SoC Architecture with Multiple Cores

ISR4400 vs C8300

Product Comparison

	C8300-2N2S-4T2X	C8300-2N2S-6T	ISR4451	C8300-1N1S-4T2X	C8300-1N1S-6T	ISR4431
Ipssec Tunnels	6000		4000	6000		3500
SD-WAN IPSEC Perf	5Gbps	2Gbps	1.4Gbps	5Gbps	2Gbps	750Mbps
CEF Perf	12Gbps	10Gbps	3.8Gbps	12Gbps	10Gbps	3.4Gbps
Non SD-WAN IPSEC Perf	5Gbps	2Gbps	1.8Gbps	5Gbps	2Gbps	1Gbps
SD-WAN Services Perf (IPS+URL-F)	1Gbps	500Mbps	240Mbps	900Mbps	500Mbps	150Mbps
DRAM	Default 8GB Up to 32GB	Default 8GB Up to 32GB	Default 4GB Up to 16GB	Default 8GB Up to 32GB	Default 8GB Up to 32GB	Default 4GB Up to 16GB
Built-in Ports/Slots	6/2NIM+2SM +1PIM	6/2NIM+2SM +1PIM	4/3NIM +2SM	6/2NIM+2SM +1PIM	6/2NIM+2SM +1PIM	4/3NIM +2SM

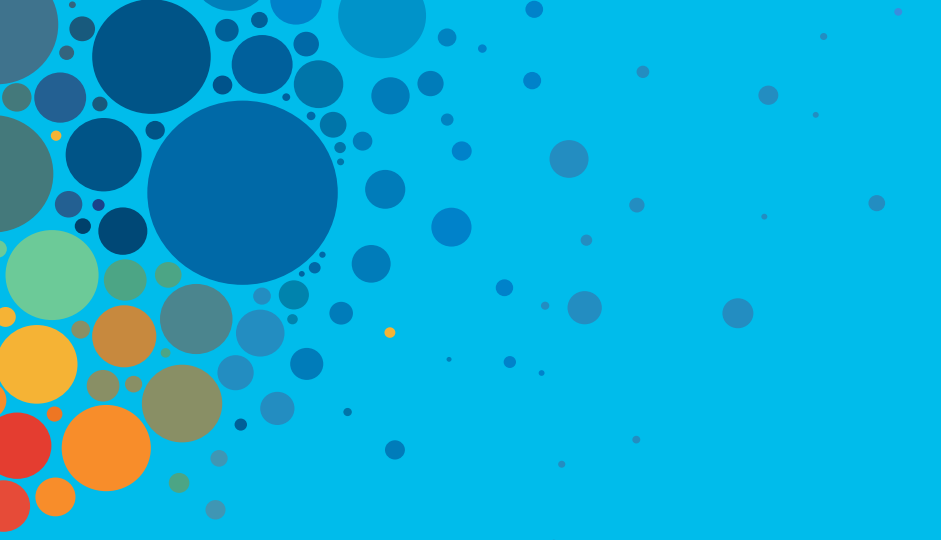
All perf numbers are IMIX (352Bytes): Aggregate throughput

ISR4300 vs C8200

Product Comparison

	C8200-1N4T	ISR4331	C8200L-1N-4T	ISR4321
IPsec Tunnels	2500(SD-WAN)	1000(SD-WAN)	2500(SD-WAN)	250(SD-WAN)
SD-WAN IPSEC Perf	1Gbps	485Mbps	500Mbps	300Mbps
CEF Perf	3.8Gbps	1.8Gbps	3.8Gbps	1.6Gbps
Non SD-WAN IPSEC Perf	1Gbps	445Mbps	500Mbps	300Mbps
SD-WAN Services Perf (IPS+URL-F)	400Mbps	200Mbps	Only Cloud-delivered	150Mbps
DRAM	Default 8GB Up to 32GB	Default 4GB Up to 16GB	Default 4GB Up to 32GB	Default 4GB Up to 8GB
Built-in Ports/Slots	4/1NIM +1PIM	3/2NIM+1SM	4/1NIM +1PIM	2/2NIM

All perf numbers are IMIX (352Bytes): Aggregate throughput



Continue your education

- Visit the Cisco Showcase for related demos
- Book your one-on-one Meet the Engineer meeting
- Attend the interactive education with DevNet, Capture the Flag, and Walk-in Labs
- Visit the On-Demand Library for more sessions at www.CiscoLive.com/on-demand



The bridge to possible

Thank you

CISCO *Live!*

#CiscoLive

CISCO *Live!*

ALL IN

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