



TURN
IT
UP

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The bridge to possible

Cisco Catalyst 8300 series Platforms

Technical Deep Dive

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Agenda

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

Introduction Catalyst 8000 Platform Family

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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

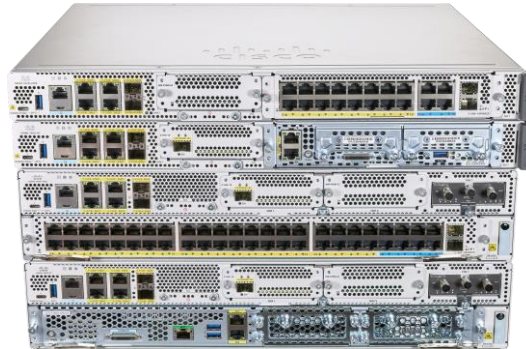
Catalyst 8000V



SRIOV
Hypervisor/Cloud



Catalyst 8500 Series



Catalyst 8300 Series



Catalyst 8200 Series

Catalyst 8000 Edge Platforms Family

Built for New Age of Intent Based WAN

Catalyst 8300 Key Building Blocks

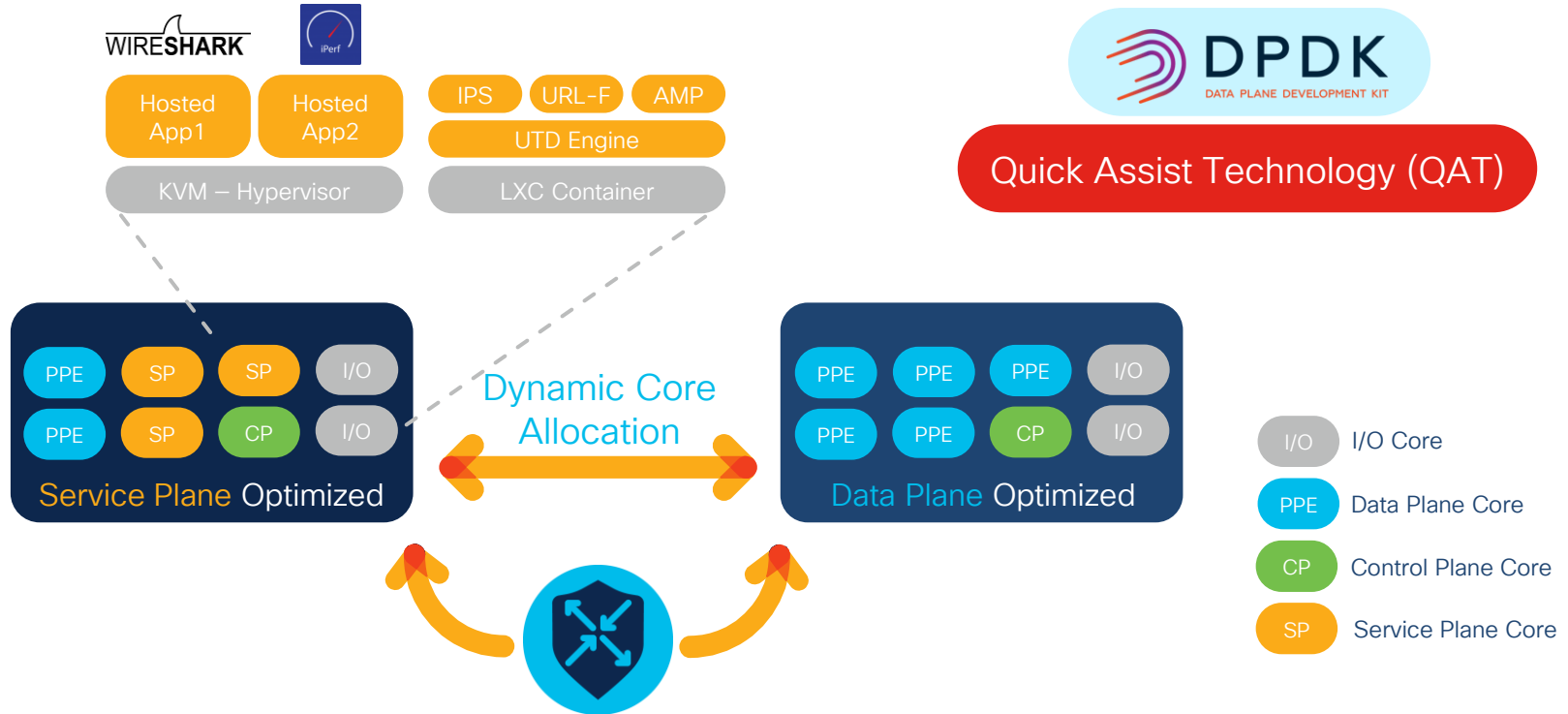
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x86 Multi-core SoC Architecture

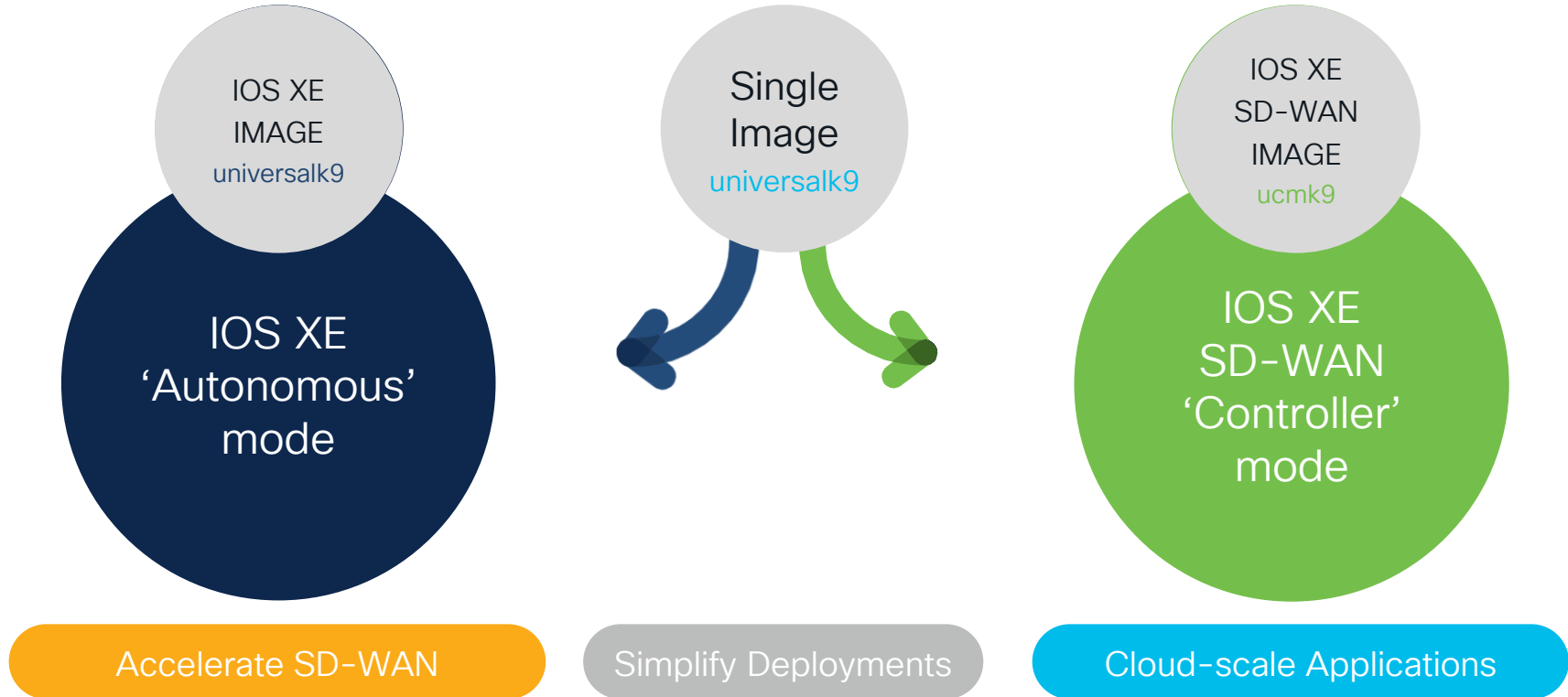
Key Datapath Innovations





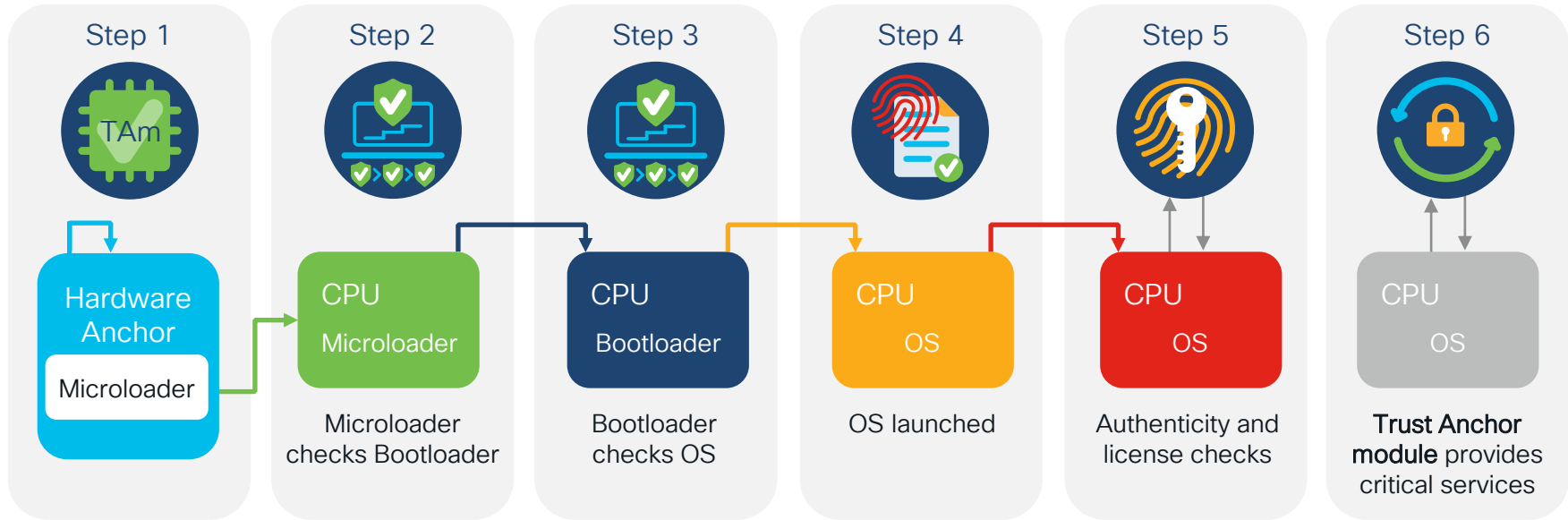
Open and Extensible
IOS XE

Easy Operations with Single Image





Secure Platform with Trustworthy Solutions



First instructions run on CPU stored in tamper-resistant hardware

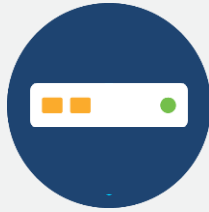
Confidentiality

Integrity

Authenticity

Single Offer with common DNA Subscription

Systems



Catalyst 8300 Edge



DNA Subscription



Cisco DNA Premier



Cisco DNA Advantage



Cisco DNA Essentials

Performance, Flexibility & Investment Protection

Solution and Use Cases

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Catalyst 8300 Series Edge Platforms Use Cases

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

Deployment
Use-case



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

Internet Gateway
High Speed VPNs
Advanced Cryptography
Network Address Translation

Catalyst 8300 Series
Edge Platforms

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 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

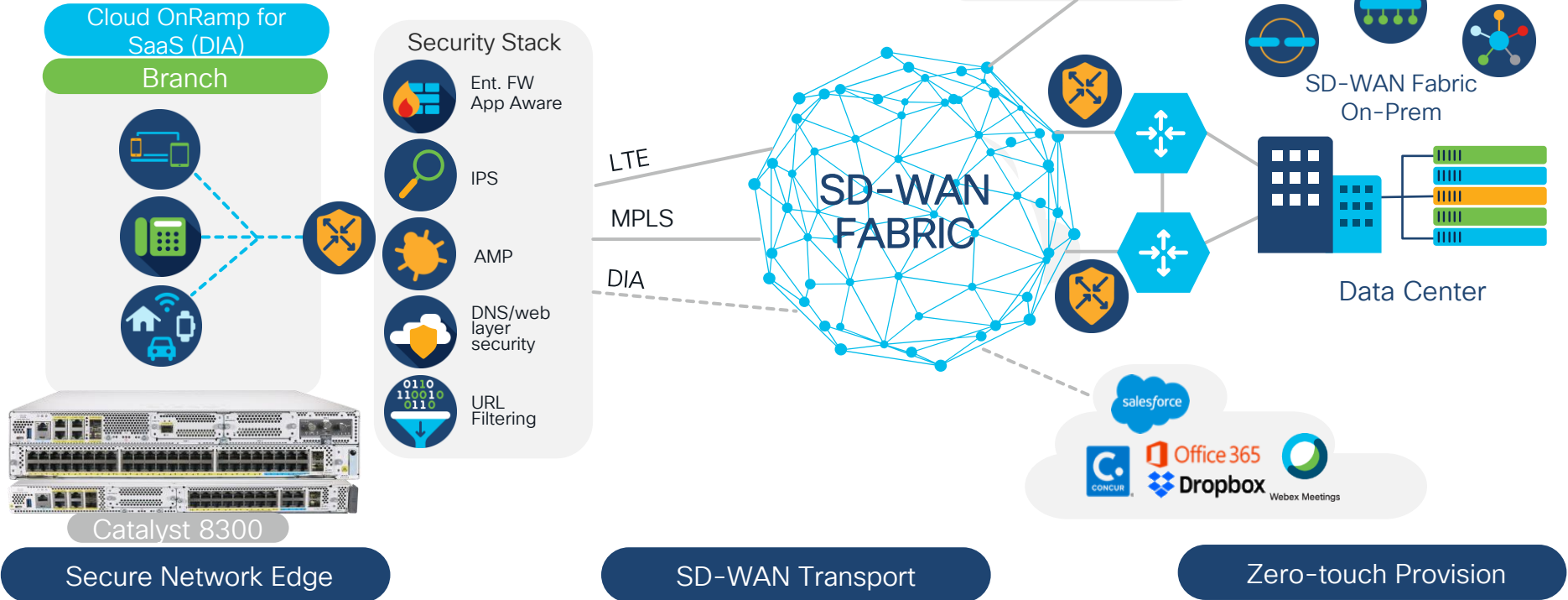
SD-Access

Control Plane node
Border node
Fabric edge node (roadmap)

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

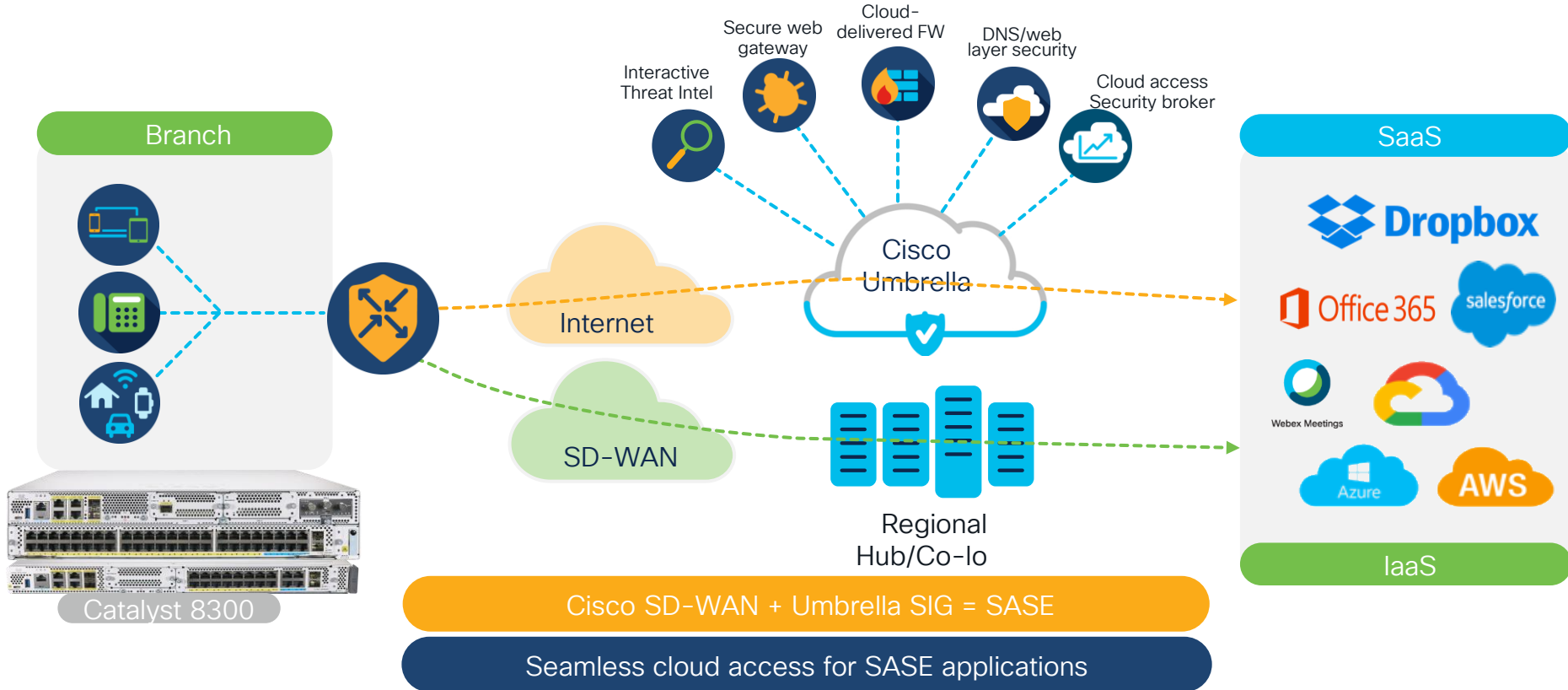
Enterprise Branch Office

SD-WAN Controller Cloud/On-Prem



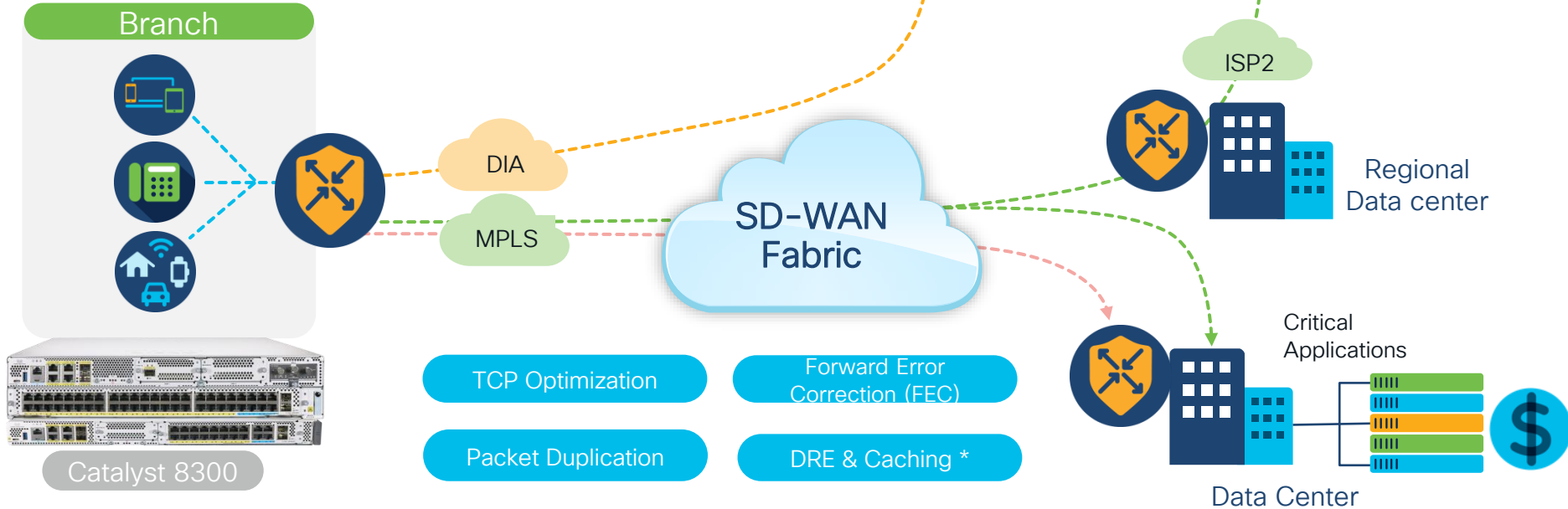
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SASE Cloud Adoption with SD-WAN



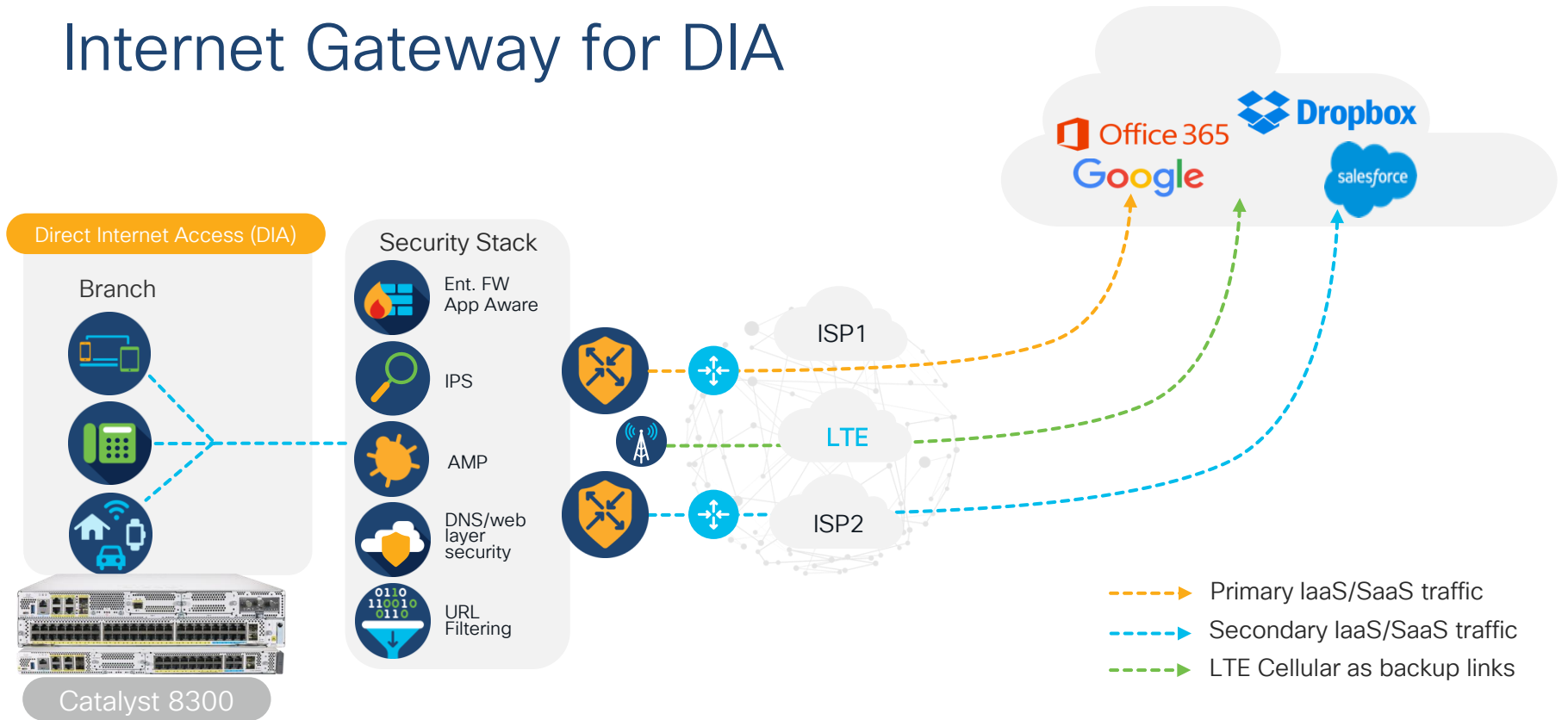
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AppQoE with SD-WAN



Enhanced Application Quality experience

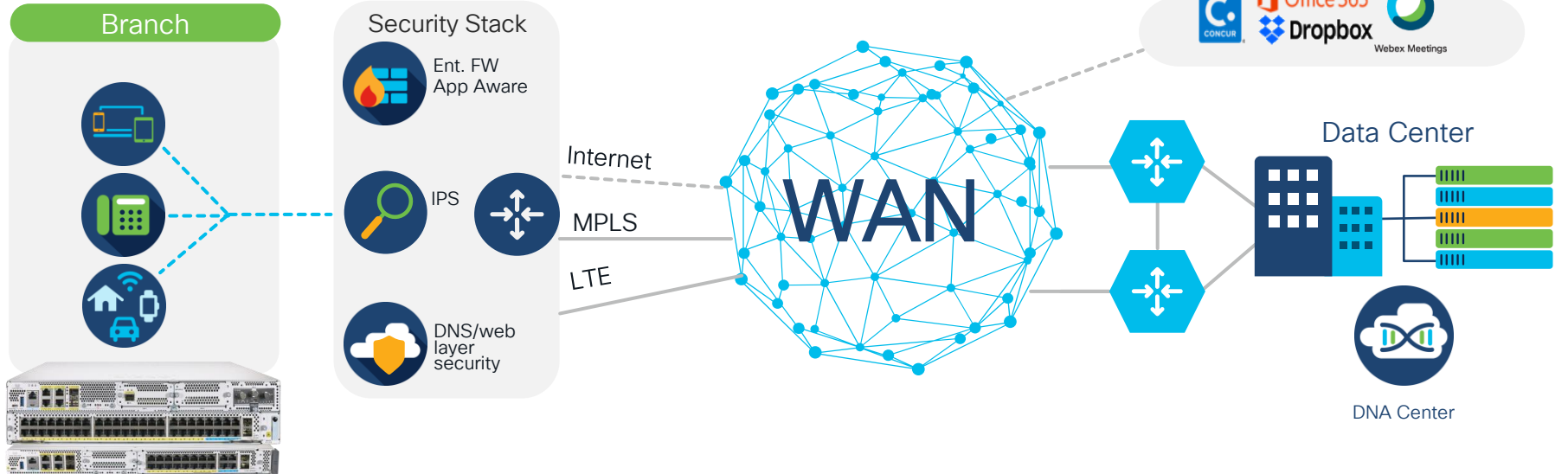
Internet Gateway for DIA



High speed internet access at the service edge

Enterprise Branch Office

Traditional Routing



Secure Network Edge

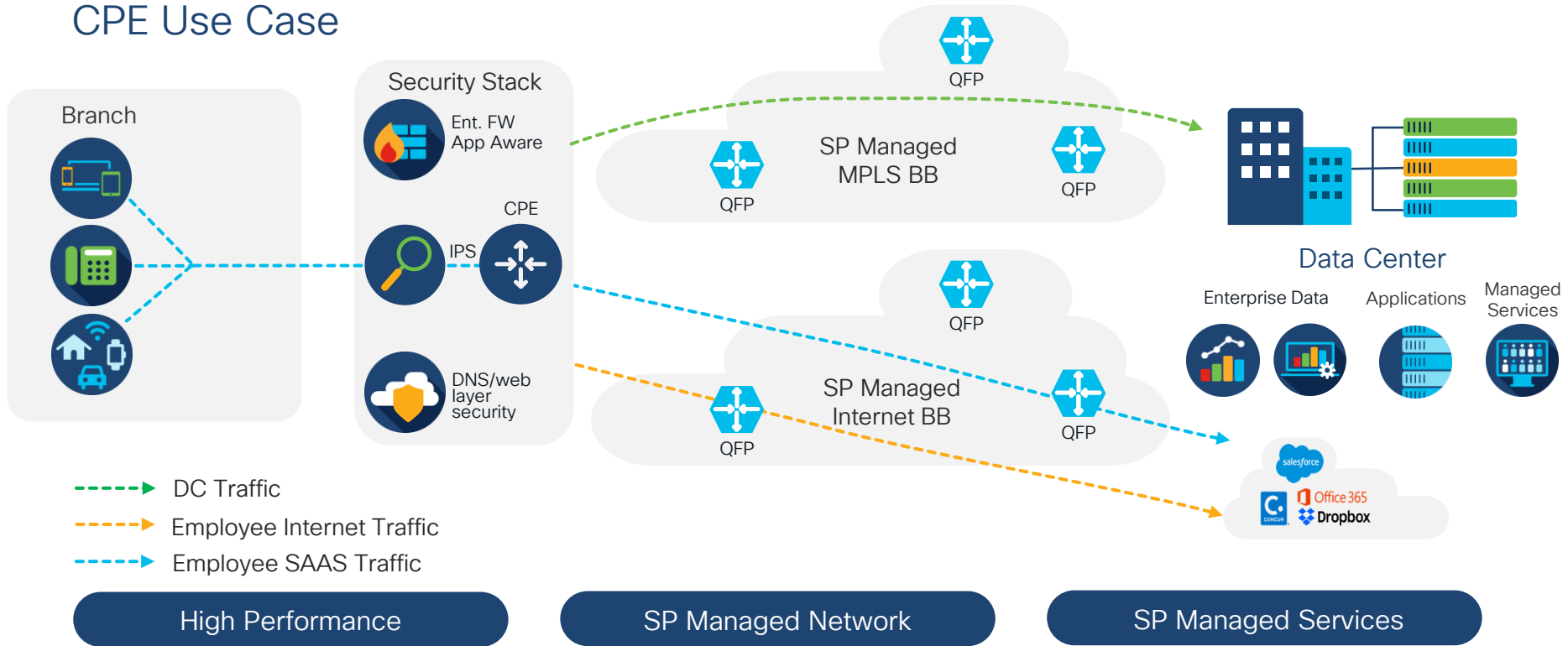
Traditional Transport

Zero-touch Provision

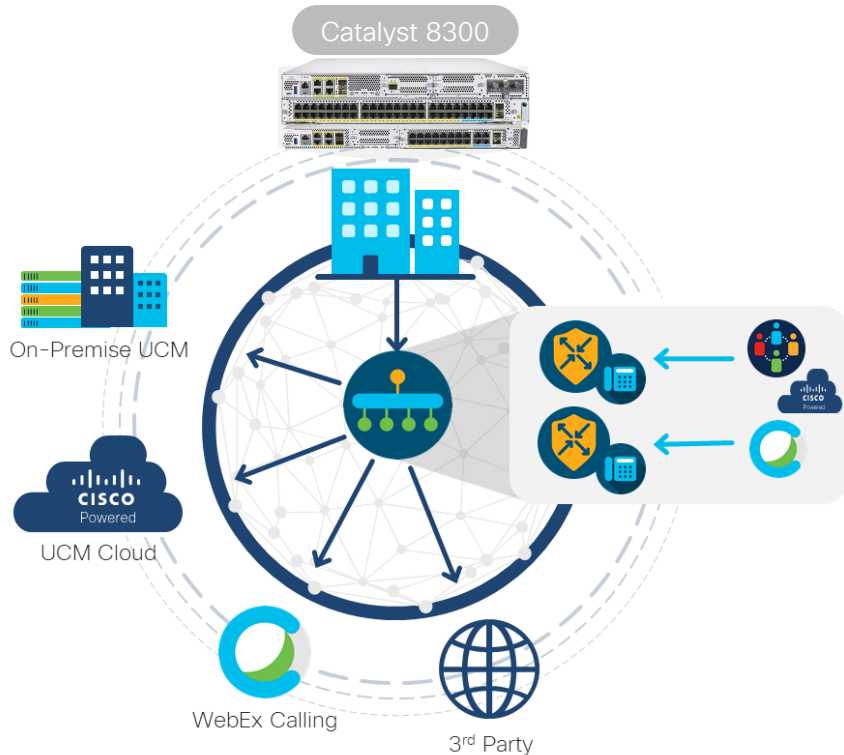
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Managed Service Providers

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

Reduced OpEx and CapEx

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

Reduced Complexity

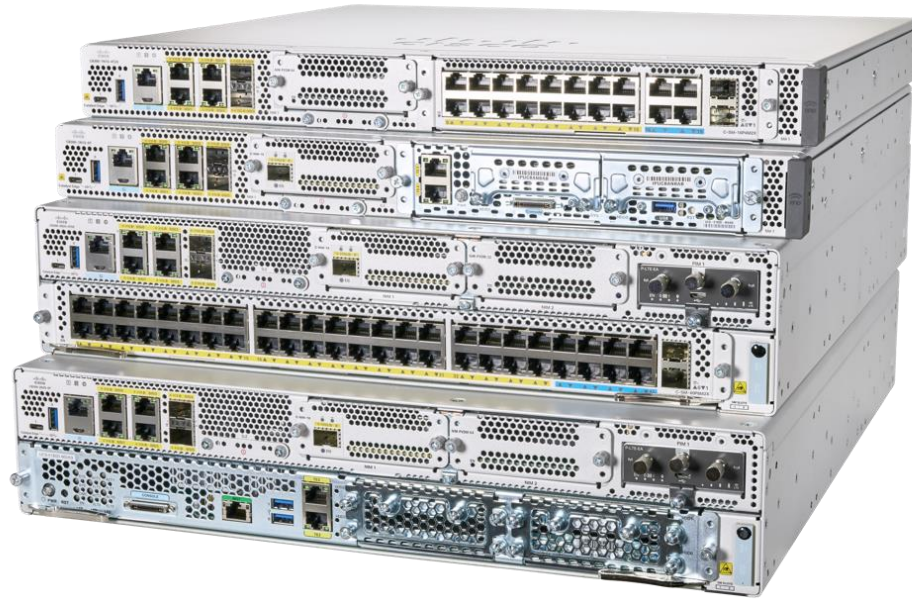
vManage can orchestrate scalable/consistent UC configuration across the entire enterprise via templates

Telephony survivability

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

Middle-mile Optimization

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



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

Connectivity

Higher WAN Port density

Default 8G DRAM

10G w/ MACsec

Pluggable NVMe Storage

5G Ready

Manageability

vManage

DNA Center

Open APIs

Analytics

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



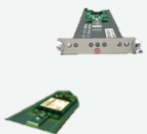
4 RJ45
2 SFP

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



Cisco Catalyst 8300 Series Edge Platforms

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

C8300-2N2S-6T
(1G WAN Ports)



(2 RU, Up to 10 Gbps CEF
Up to 2 Gbps IPsec)

C8300-1N1S-6T
(1G WAN Ports)



(1 RU, Up to 10 Gbps CEF
Up to 2 Gbps IPsec)

C8300-2N2S-4T2X
(10G WAN Ports)



(2 RU, Up to 12 Gbps CEF
Up to 5 Gbps IPsec)

C8300-1N1S-4T2X
(10G WAN Ports)



(1 RU, Up to 12 Gbps CEF
Up to 5 Gbps IPsec)

Cisco IMIX traffic (352 Bytes)
CEF: Autonomous mode Routing
IPsec: Autonomous & Controller/SDWAN mode

Performance and Rich Services

Flexible SoC Architecture with Multiple Cores

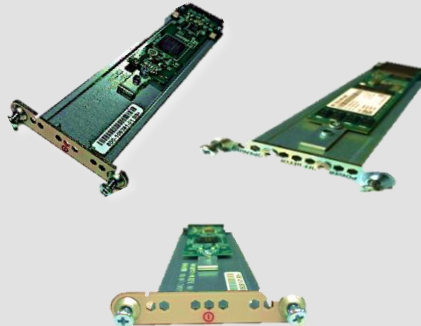
C8300 Storage Options

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

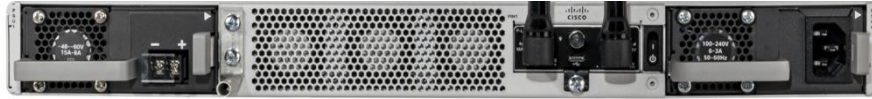
SD-WAN storage

App Hosting

Logging local

Guest Shell/Python

C8300 Power Supply



Dual AC, DC, POE PSUs

HVDC PSU support

PoE, PoE+ & UPOE Capable

PoE Boost with 500W and 1000W

Device Model	Power Supply	AC 250W	DC 400W	DC 400W HV	Dual AC PSU	Dual DC PSU	AC + POE 500W	AC + DC Mix mode
C8300-1N1S-6T	Internal	✓	✓	✓	✓	✓	✓	✓
C8300-1N1S-4T2X	Internal	✓	✓	✓	✓	✓	✓	✓

Device Model	Power Supply	AC 650W	DC 650W	DC 650W NEBS	Dual AC PSU	Dual DC PSU	PoE Adaptor	AC + DC Mix mode
C8300-2N2S-6T	Internal	✓	✓	✓	✓	✓	✓	✓
C8300-2N2S-4T2X	Internal	✓	✓	✓	✓	✓	✓	✓

PoE Supported Modules

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



1 + 1 Redundancy with Inline Power

C8300 Field Replaceable FAN Module

Replaceable fan tray, 4 Internal Fans assembly module for Chassis cooling + PSU fan



Field Replaceable Fan Tray

Reverse Airflow (NEBS)

Front-to-Back Airflow

Fixed Fan tray, 3 Internal Fans assembly module for Chassis cooling + PSU Fan



Internal Fan tray

Front-to-Back Airflow

FAN Module Build N+1 Redundancy for Cooling

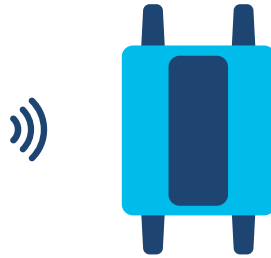
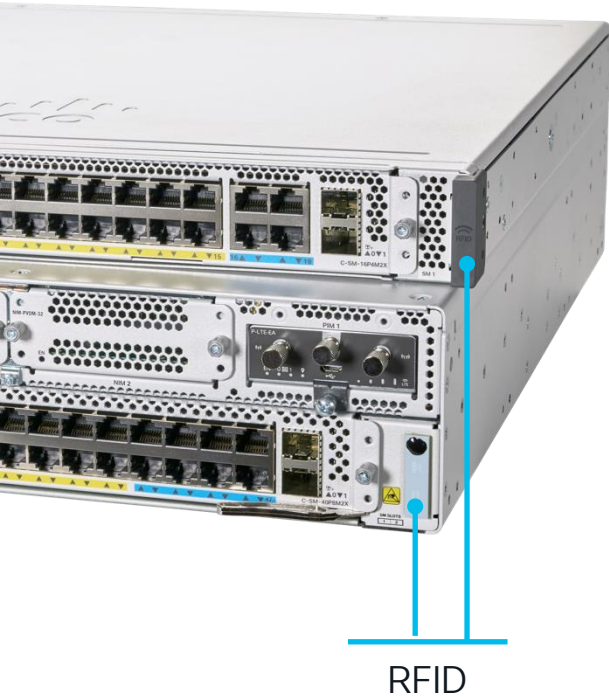
User Centric Design

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Radio Frequency Identification (RFID)



Front Facing **Passive UHF RFID**



Ultra High Frequency (**UHF**) Specs

860 to 960 MHz

1-to-4-meter Distance

Supply Chain Applications



UHF Benefits:

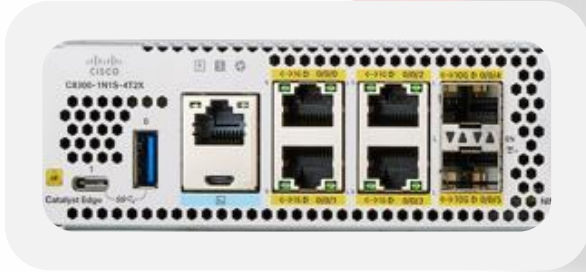
Good read range

Low cost

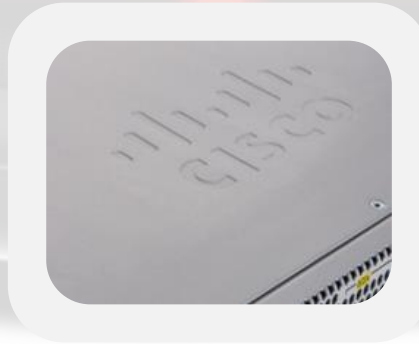
Industry adopted standard



Industrial Design and Ergonomics



Circle Pattern
Hex Packing



Satin Aluminum Based
Textured Finish



Rounded Frame
4 mm

Connectivity Richness

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C8300 Connectivity Richness

Next-gen modules and backward compatibility



Slot type

Pluggable Interface
Module (PIM)

Network Interface
Module (NIM)

Services Module (SM)

Module type

LTE

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

LAN, WAN, VOICE,
UCS-E, ADAPTOR

70+ varieties
of Modules and
Interfaces

Catalyst 8300 Supported Modules

* IOS XE is supported, SD-WAN support is in the roadmap

Blue color: new 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
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
CG418-E
CG522-EE

5G

(1H, CY21 : Roadmap)

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

Platform Architecture

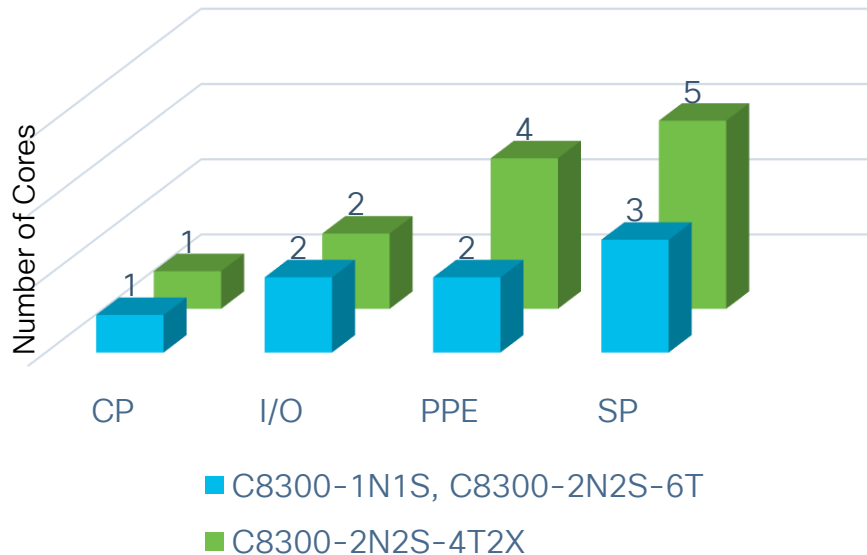
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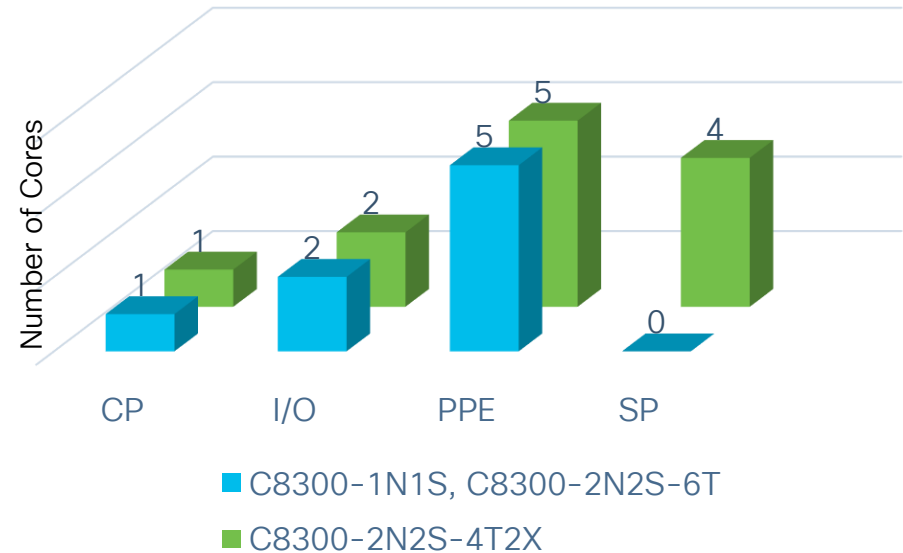
Catalyst 8300 Built for Service Optimization

CPU Core Allocation

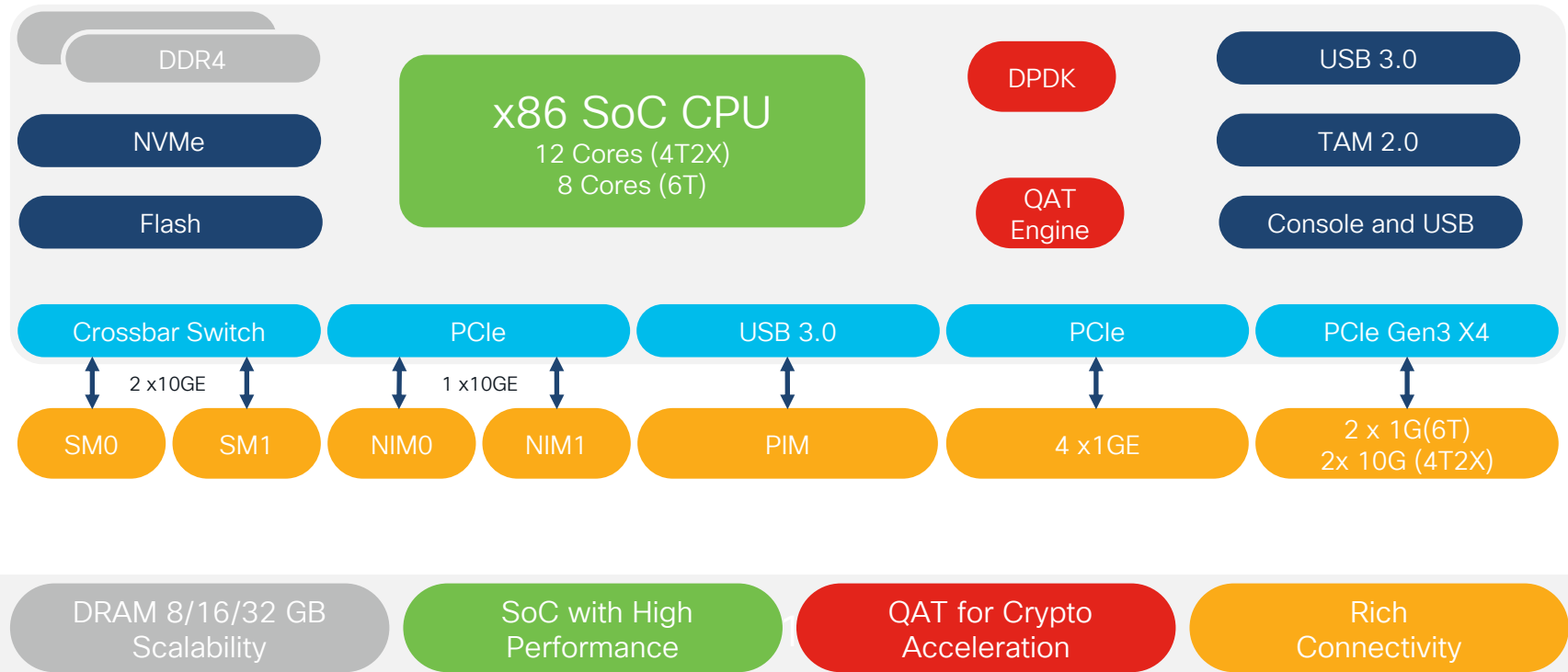
Service Optimized mode



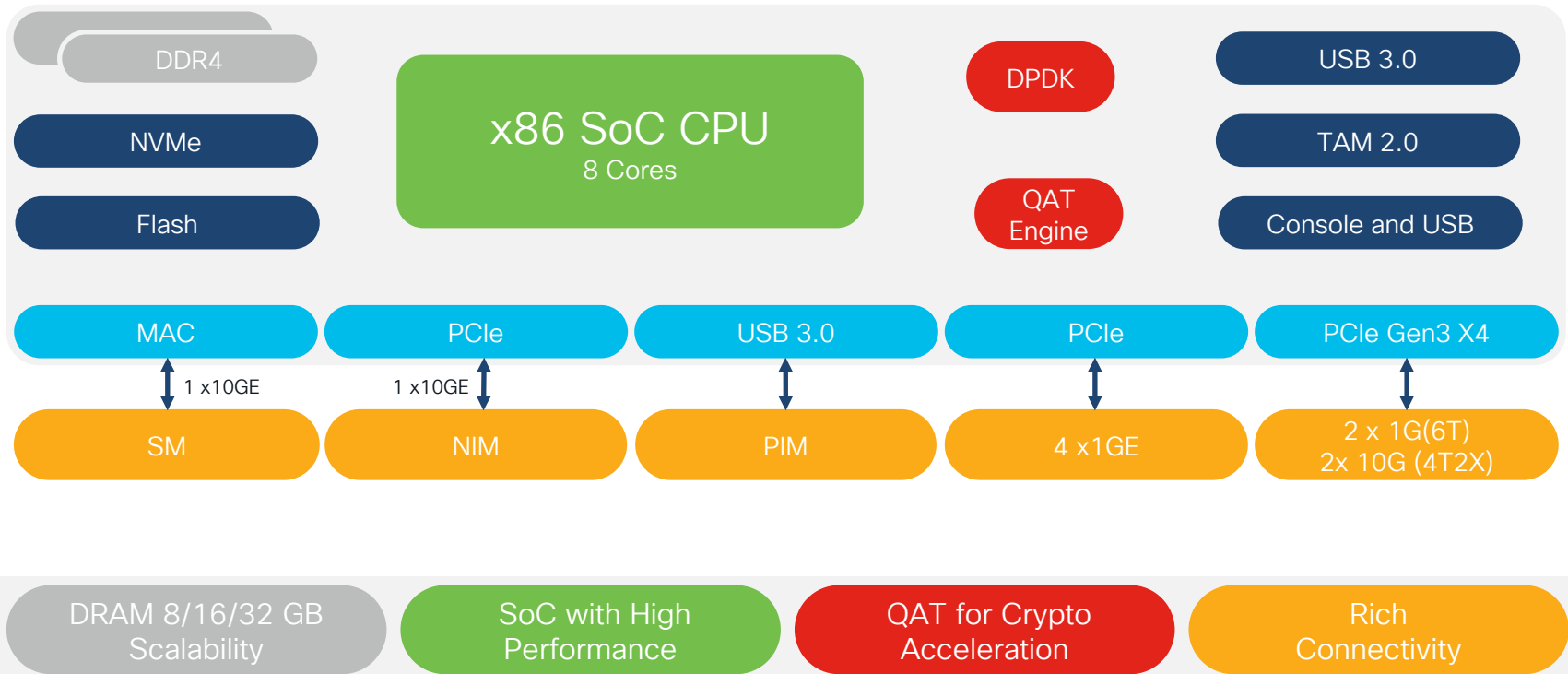
Data Optimized mode



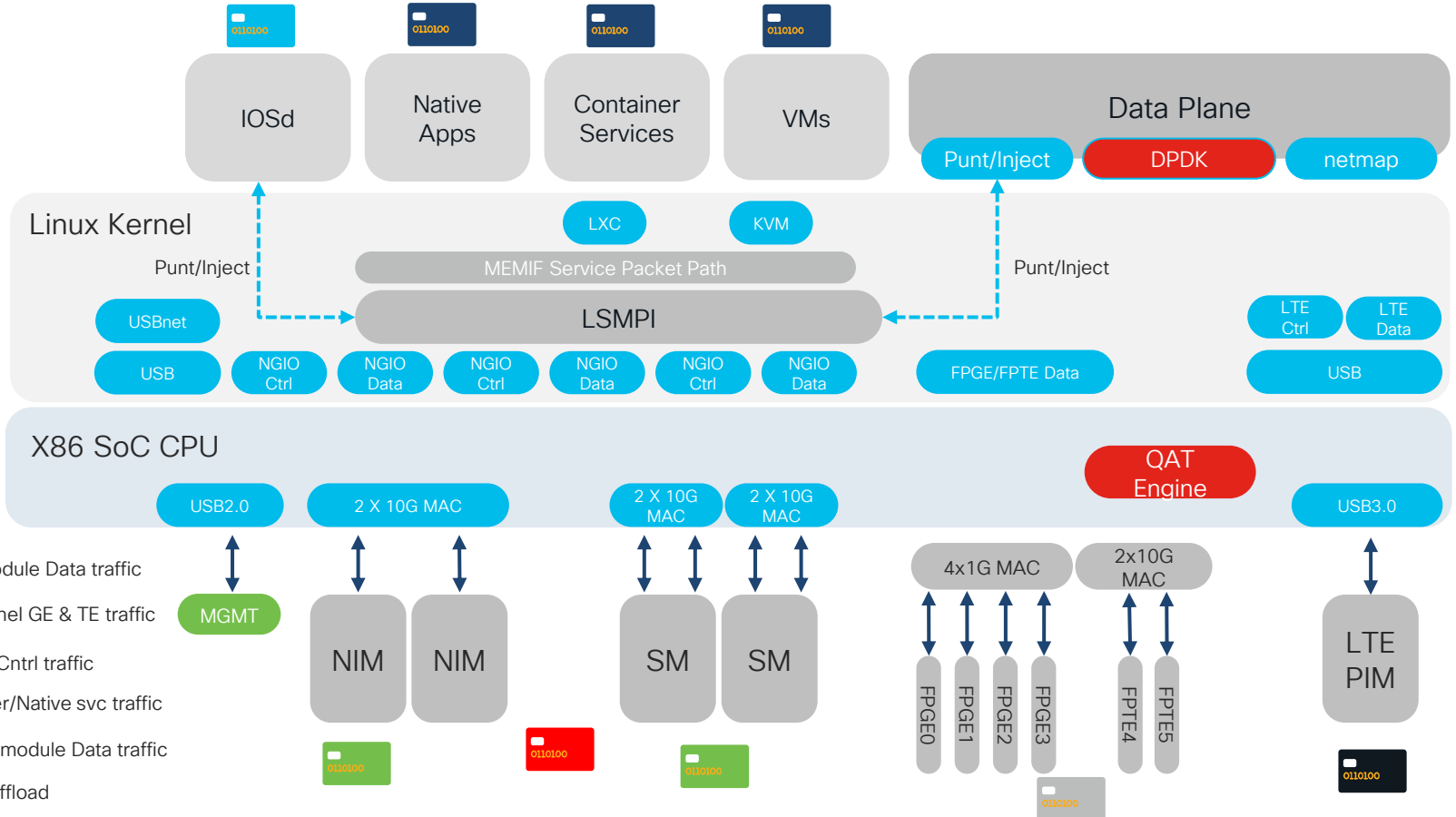
C8300-2N2S Block Diagram



C8300-1N1S Block Diagram



Catalyst 8300 and Life of a Packet



Platform Comparisons

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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 , 3NIM/2SM

Split CP/DP, 4C+6C

Up to 6000 IPsec Tunnels

Up to 2-5Gbps SD-WAN IPsec

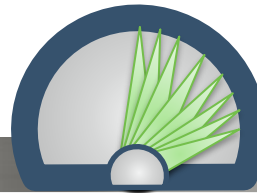
Up to 10-12Gbps CEF, 2-5Gbps Crypto

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 IMIX of aggregate throughput

ISR 4431 vs C8300-1N1S

Product Comparison

Up to 3500 IPsec Tunnels

Up to 750Mbps SD-WAN IPsec

Up to 3.4Gbps CEF, 1Gbps Crypto

150Mbps IPS/IDS + URL-Filtering

4GB to 16GB upgradable DRAM

Ports/Slots: 4P , 3NIM

Split CP/DP, 4C+6C

Up to 6000 IPsec Tunnels

Up to 2-5Gbps SD-WAN IPsec

Up to 10-12Gbps CEF, 2-5Gbps 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 IMIX for Crypto throughput

Conclusion



Cisco Catalyst 8300 Series Edge Platform

Foundation for the Secure Cloud Scale SD-WAN branch



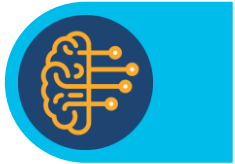
Ready for the Agile Cloud Journey

High Speed Cloud Access
Multi-Cloud Application Optimization
Compact, Powerful 1RU Platforms



Accelerated Multi-Layer Security

QAT chip for Crypto offload
SASE driven Feature Innovations
Full-stack On-premise security



5G Ready Edge Intelligence

Future proof for 5G high speed WAN
Multi-Domain Intent Based Networking



User Centric Design

Operational Ease for better Tracing
Passive UHF Radio Frequency ID
Easy Access Label Tray
Field Replaceable FAN Tray

10G, 1RU
SD-WAN Platform



Crypto Hardware
Acceleration



Up to 12Gbps
CEF Aggregate
Throughput



High WAN
port-density



High Performance
IPsec, MACsec



Highly
Programmable

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The bridge to possible

Thank you



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