The bridge to possible

Novinky v SP a Private WAN sítích

Cisco Tech Club webinář

Peter Morvay & Martin Slinták
Systems Engineer– #55452, Systems Architect | EMEAR SP
12.4.2022

Internet for the Future

New Normals

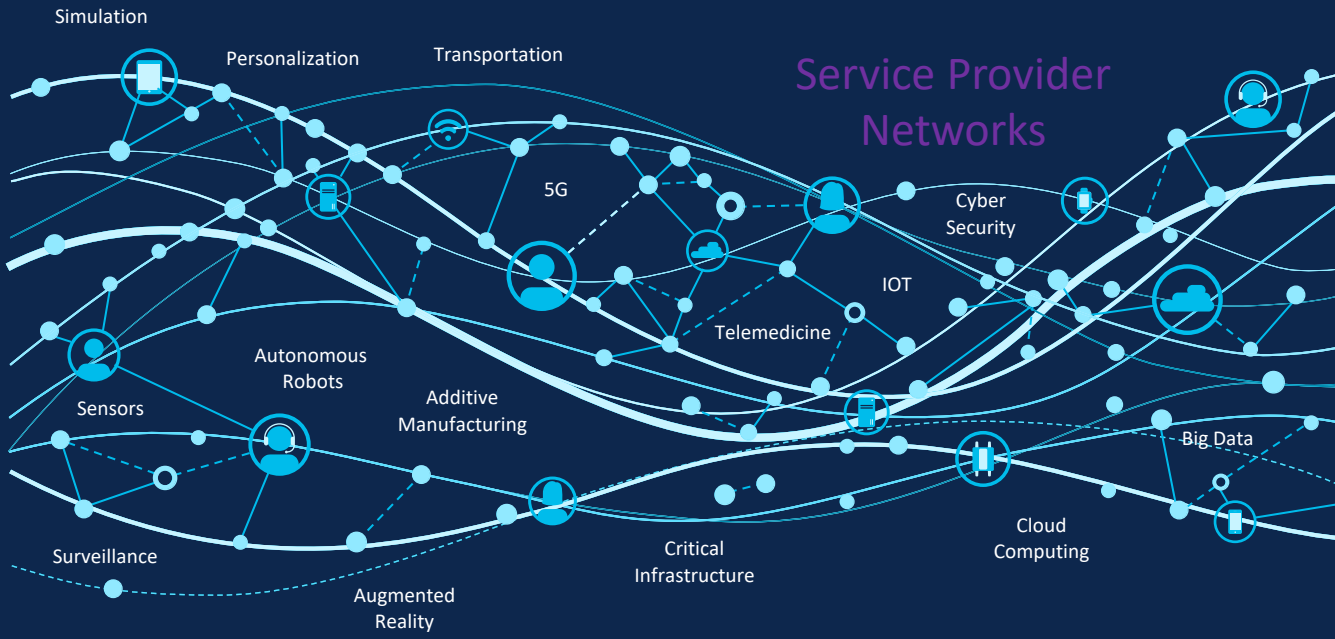
For the way we Work, Live, Play, and Learn

New Participants

Many remain unconnected and emerging IoT

New Potentials

The foundation of economies, governments, and societies

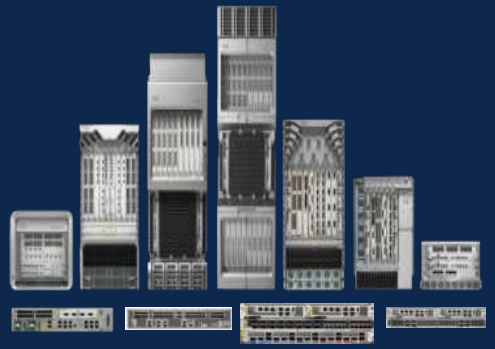


ASR 9K family

ASR 9000 Compact and Modular Routers

Swiss Army Knife

Access | Edge | Aggregation | Core



ASR 9000

IOS XR

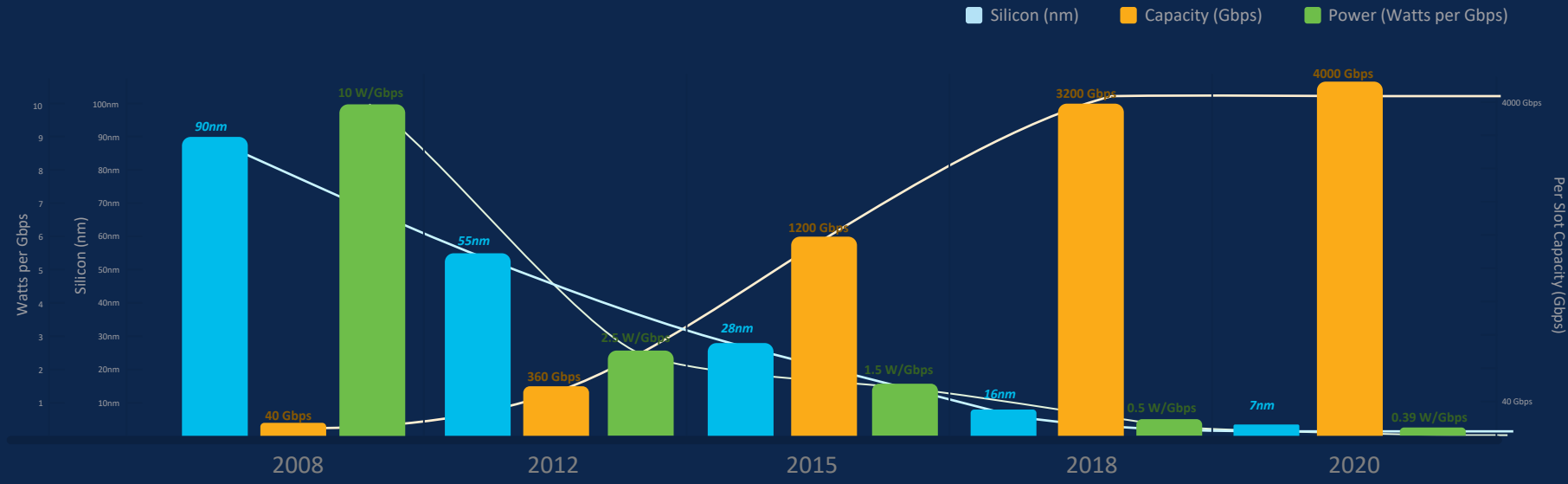
- Three Feature Releases and Three EMRs Each Year
- Flexible Consumption Model and EA
- Customizable
  Integrated + disaggregated, Golden ISO model, open APIs
- Breadth of Features
  SR, SRv6, EVPN, YANG, MDT, timing, trust

Architectures

- 5G Converged SDN Transport
  Mobile backhaul, R-PHY, IP+DCO
- Intelligent Peering and DCI
  Traffic steering, analytics, security
- 400G Transition
- Enterprise
  Private SD-WAN Core
- RON, cnBNG, Cloud Edge

Intent Driven | Automated | Validated

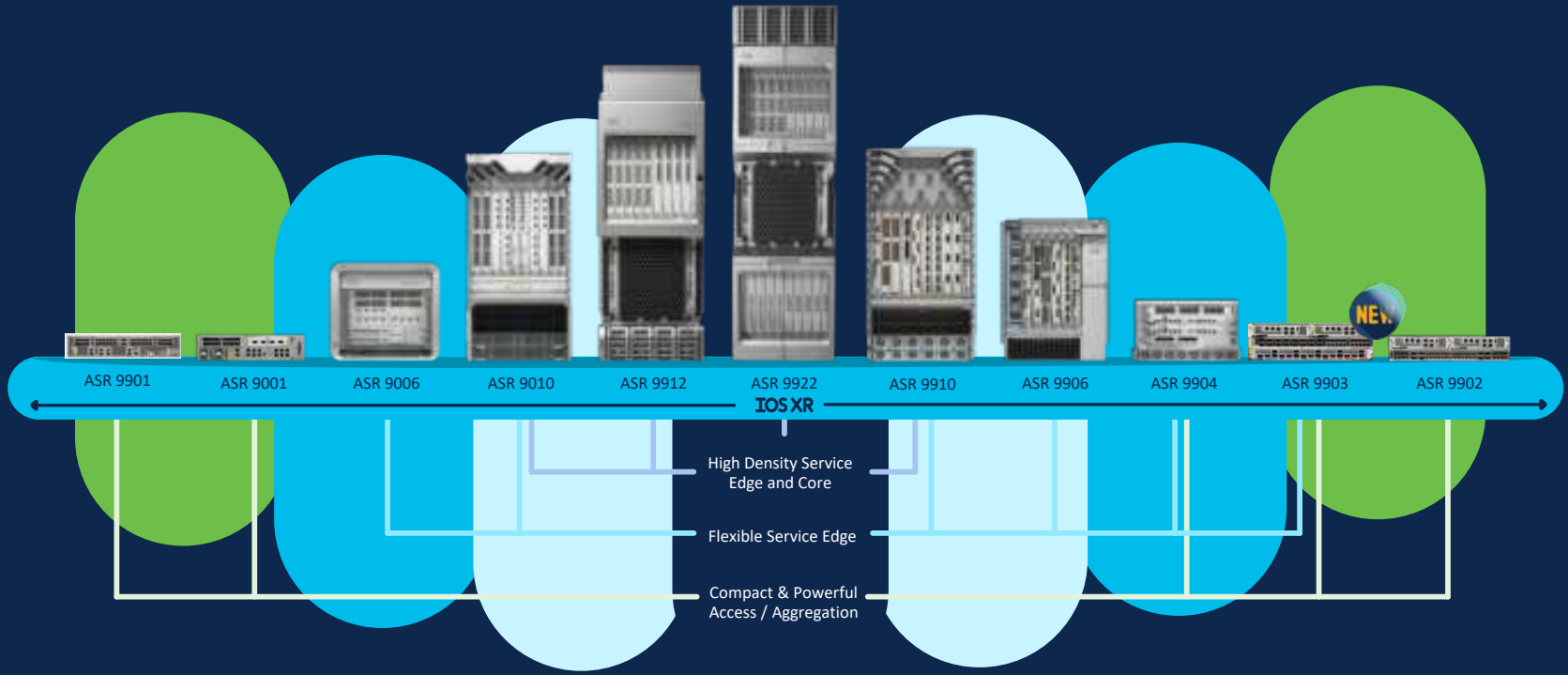
Cisco ASR 9000 Silicon Evolution



		1St Generation	2nd Generation	3rd Generation	4th Generation	5th Generation
Silicon		90nm, 15 Gbps	55nm, 60 Gbps	28nm, 240 Gbps	16nm, 400 Gbps	7nm, 400 Gbps
Fabric Interconnect ASIC		130nm, 60 Gbps	65nm, 60 Gbps	28nm, 200 Gbps	-	-
CPU		PowerPC Dual Core,1.2 Ghz	PowerPC Quad Core,1.5 Ghz	X86 6 Core, 2 Ghz	X86 8 Core, 2.2 Ghz	X86 8 Core, 2.2 Ghz

Cisco ASR 9000 Series

Hardware portfolio

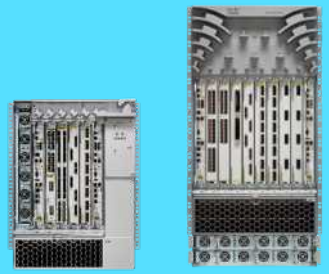


ASR 9000 Systems and Switch Fabric Overview

Integrated Fabric on RSP

ASR 9904 ASR 9006 ASR 9010

Hybrid Systems



ASR 9906 ASR 9910

Dedicated Fabric Cards

ASR 9912 ASR 9922

Integrated Fabric/RP/LC

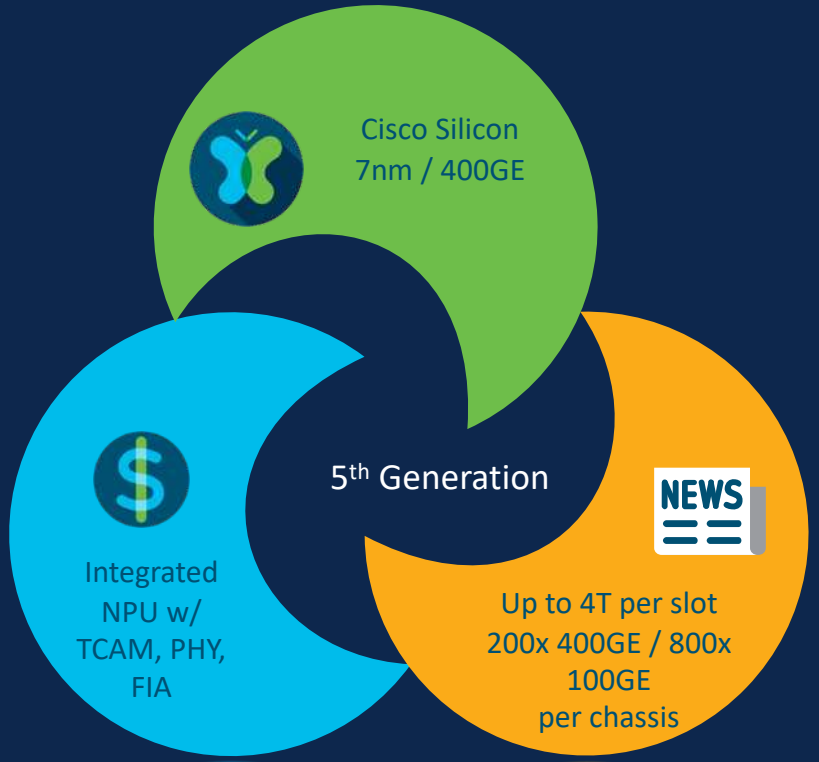
ASR 9901

NEW

Integrated Fabric w/ Redundant RP

ASR 9903 ASR 9902

400GE & 25GE Ready with 5th Generation



Innovations with 5th Generation

Futureproof Technologies

- Dynamic TCAM allocation, Port buffer pooling
- MACSec, Class C Timing
- 10G,25G,40G,100G & 400G Ready

Investment Protection

- **One set commons** –3rd, 4th & 5th Gen
- **Up to 4T** available per slot
- **400G DCO Support**

ZR/ZR+ Support for Compact & Modular Routers

Unmatched Performance

- **High (Unmatched IPv6 performance)**
- Enhanced Convergence (Newer CPU)
- Service Edge at SP Scale & Performance (Higher Cache)

TCO Optimized

- **7Nm**; Integrated Arch : NPU, FIA & TCAM in same complex
- **High** Power efficiency 0.4 W/Gbps
- Slice Turn-Off/On (APM Functionality)

Edge Ready From Day 0

3rd Gen Feature Parity at 5th Gen Performance

One Set of Commons for 3rd, 4th, 5th Generation

A99-RP3-SE/TR & A9K-RSP5-SE/TR

4th Generation Route Processor Card

- 9006/9010 - 1.2T/slot throughput (redundant configuration)
- 8 Core Intel CPU at 2G processor
- Available in both TR (24GB)/ SE (40GB) variants

Line Cards Supported

- 5th Generation
- 4th Generation
- 3rd Generation

RSP5 Supported Chassis

- 9006/9010/9910/9906/9904

RP3 Supported Chassis

- 9912 / 9922

5th Generation 4T Line Card

A99-10X400GE-X-SE/TR

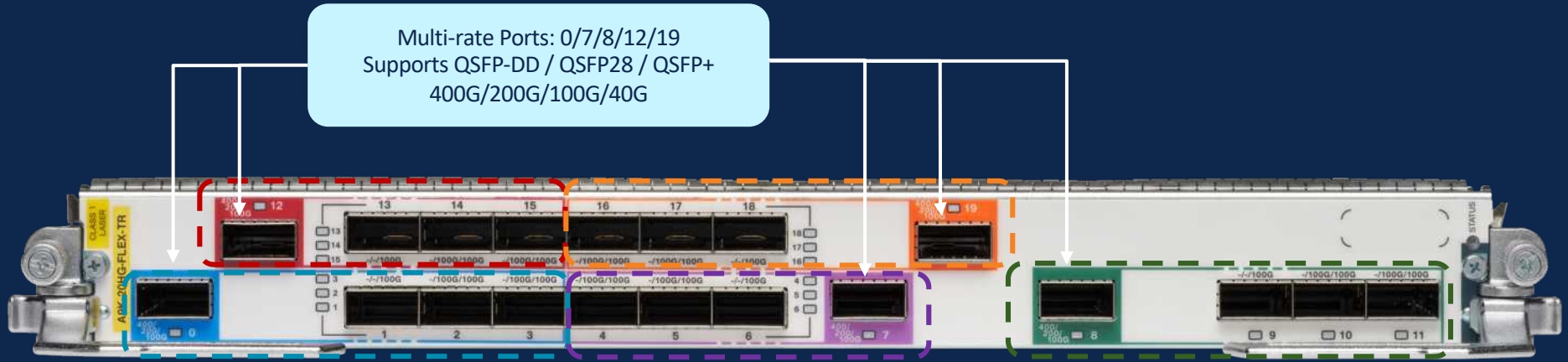
- 5th Generation ASIC based Line card having a faceplate density of 4 Tb/Sec – 10 Ports of QSFP-DD
- 7 Fabric card; Supported on ASR-99XX Chassis Only
- ZR/ZR+ QDD-DCO Optics Supported*
- Supports MACSEC on all ports
- Supports following port modes:1X400G, 4X100G, 2X100G, 1X40G, 4X10G, 4X25G
- FCS Release: XR 7.3.1

*Note: Thermal simulations underway

✓ All ports can support ZR Optics @ 40 C

ASR 9000 5th Generation 2T Combo Card

A9K-20HG-FLEX-SE/TR



400G Ready

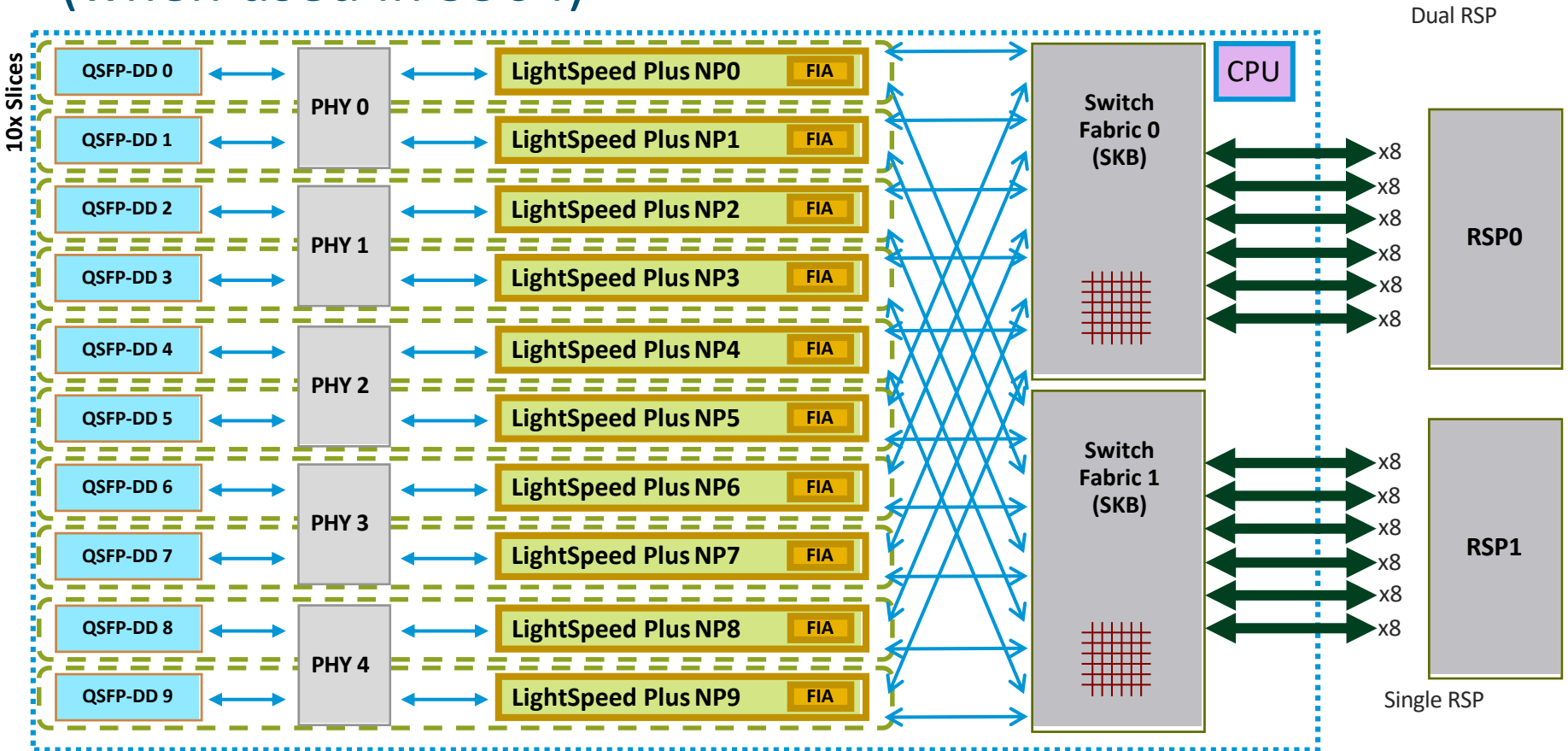
- 10G/25G/40G/100G/200G/400G Support

Each Slice Independently Configured as:

- 1x400G
- 1x200G + 2x100G or 2x40G
- 4x100G or 4x40G

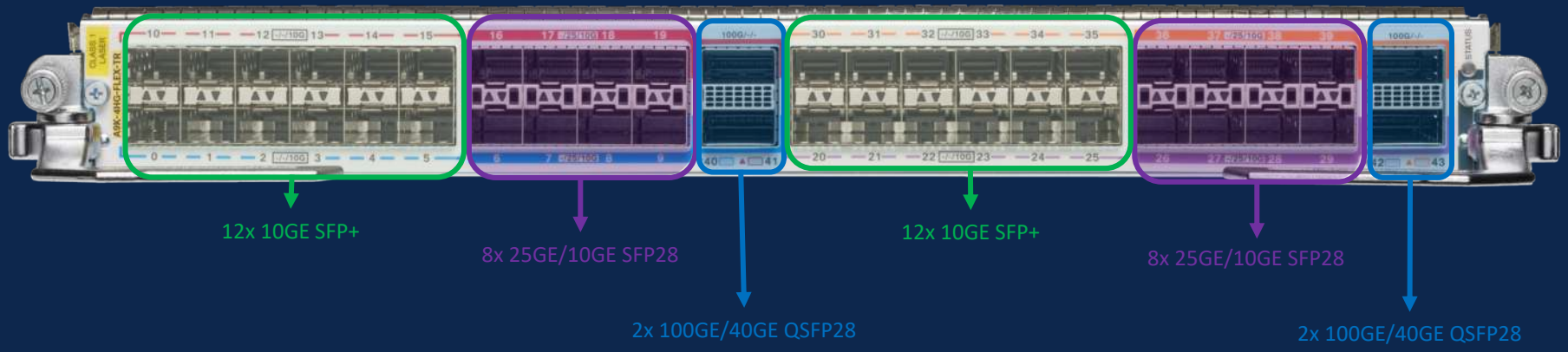
Each 100G Breakout into 4x25G or 4x10G **Total 80x 10/25GE**

A99-10X400GE-X-SE/TR (7-fabric) LC Architecture (when used in 9904)



5th Generation 400GE Multi-rate Cards

A9K-4HG-FLEX-TR/SE, A99-4HG-FLEX-TR/SE



- Flexible multi-rate line card
  - Supports multiple interface speeds in one slot
  - Each “port-group of 100G”can work independently as 1x 100G/40G or 4x 25G or 10x 10G
- 7- & 5-Fabric variant
- Supports MACSEC on all ports

ASR9K 5th Gen 400GE Flexible Multi-Rate Cards

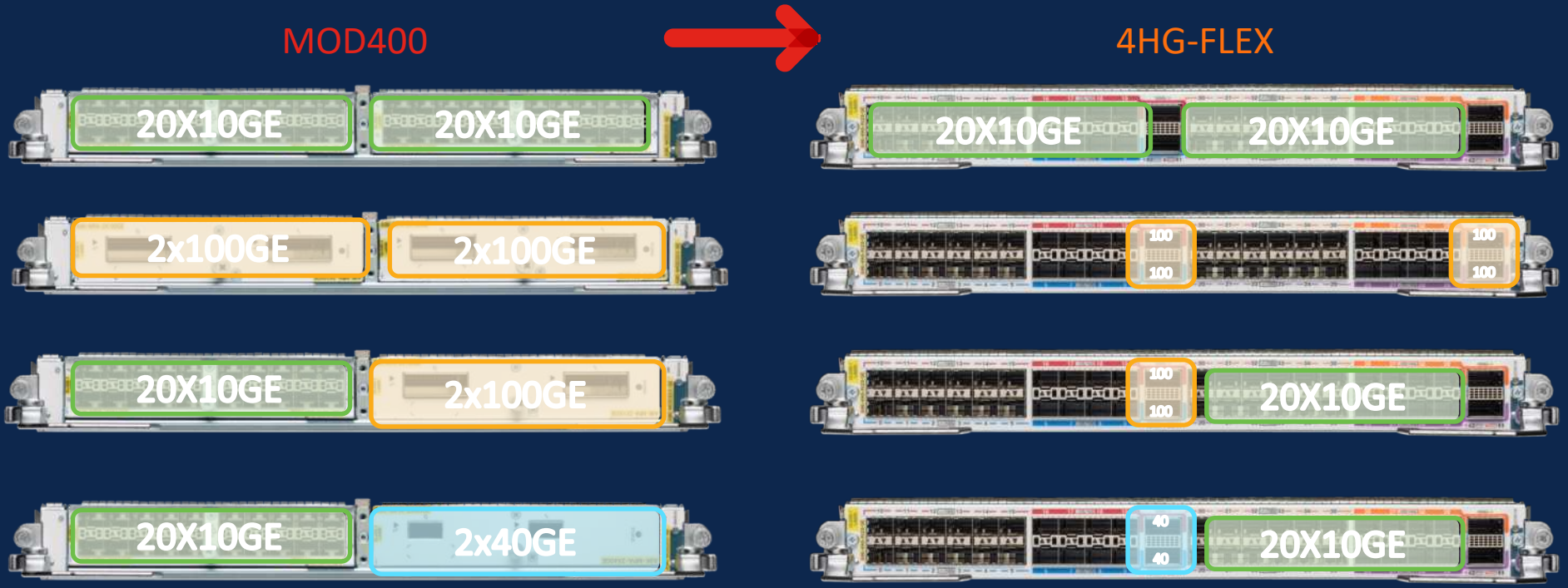
A9K-4HG-FLEX-TR/SE, A99-4HG-FLEX-TR/SE

- 4xQSFP28,16xSFP28, 24xSFP+ ports
- Supporting 100GE, 40GE, 25G, 10GE
- Each 100G can break out into 4x25G or 4x10G
- Line Card is served by a single NPU and can deliver 400G
- 4x Port-Groups: each Port-Group has a certain color and provides 100G throughput
- LC uses Meta-DX1 PHY with MACsec and PTP

- 5- and 7-Fabric card options: Works in all ASR9k modular chassis: 9922, 9912, 9910, 9906, 9904, 9010 & 9006
- Can work with LightSpeed and Tomahawk commons
- Line-rate performance:
  - ASR 9922, 9912, 9910 & 9906 chassis
    - 400G linerate with fabric redundancy
  - ASR 9904 chassis
    - 400G linerate with dual RSP5 and with single RSP5
  - ASR 9010 & 9006 chassis
    - 400G linerate with dual RSP5 and with single RSP5

ASR9K 5th Gen 400GE Flexible Multi-Rate Cards

400G Evolution & Migration Path: 3rd Gen → 5th Gen – 1



ASR9K 5th Gen 400GE Flexible Multi-Rate Cards

400G Evolution & Migration Path: 3rd Gen → 5th Gen – 2

4X100GE Octane

4HG-FLEX

48X10G-1GE PG (Non-Oversubscribed)

4HG-FLEX

4x100G LAN Mini-Skyhammer

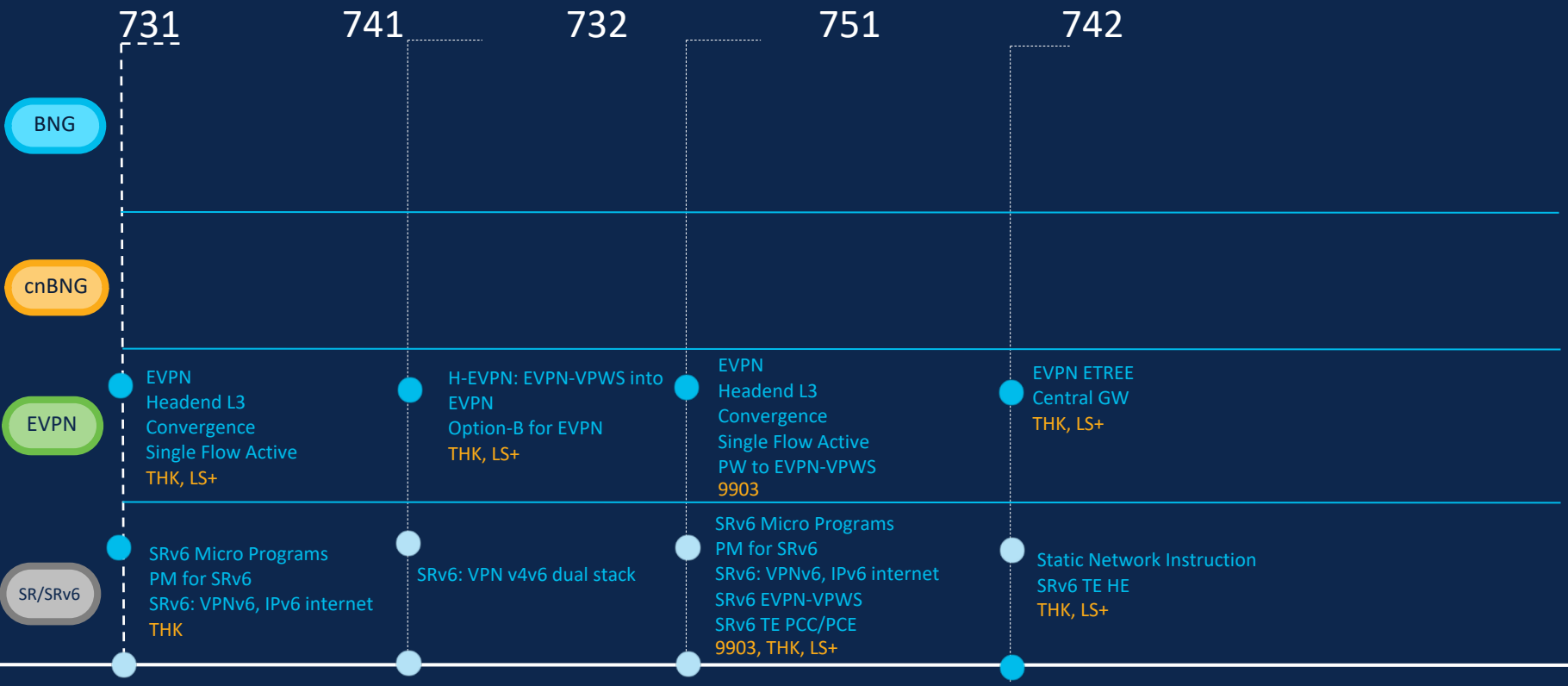
4HG-FLEX

ASR 9000 5th Generation Portfolio

400GE to 4T

	Ports	Bandwidth	Combo Ports	MACSec	Timing	RSP / RP
 A99-32X100GE-X	32 Ports of QSFP28	3.2 Tbps	No	No	Class B SyncE	RSP5, RP3
 A9K-20HG-FLEX	15 Ports QSFP28 5 Ports QSFP-DD	2 Tbps	Yes	MACSec	Class C SyncE	RSP5, RP3
 A9K-8HG-FLEX	6 Ports QSFP28 2 Ports QSFP-DD	800 Gbps	Yes	MACSec	Class C SyncE	RSP5, RSP880-LT, RSP880, RP3, RP2
 A99-10X400GE-X	10 Ports of QSFP-DD	4 Tbps	Yes	MACSec	Class B SyncE	RSP5, RP3
 A9K-4HG-FLEX	4 Ports QSFP28 16 Ports SFP28 24 Ports SFP+	400 Gbps	Yes	MACSec	Class C SyncE	RSP5, RSP880-LT, RSP880, RP3, RP2

ASR 9000 Continued SW leadership across technologies



ASR 9000
Compact Box Solutions

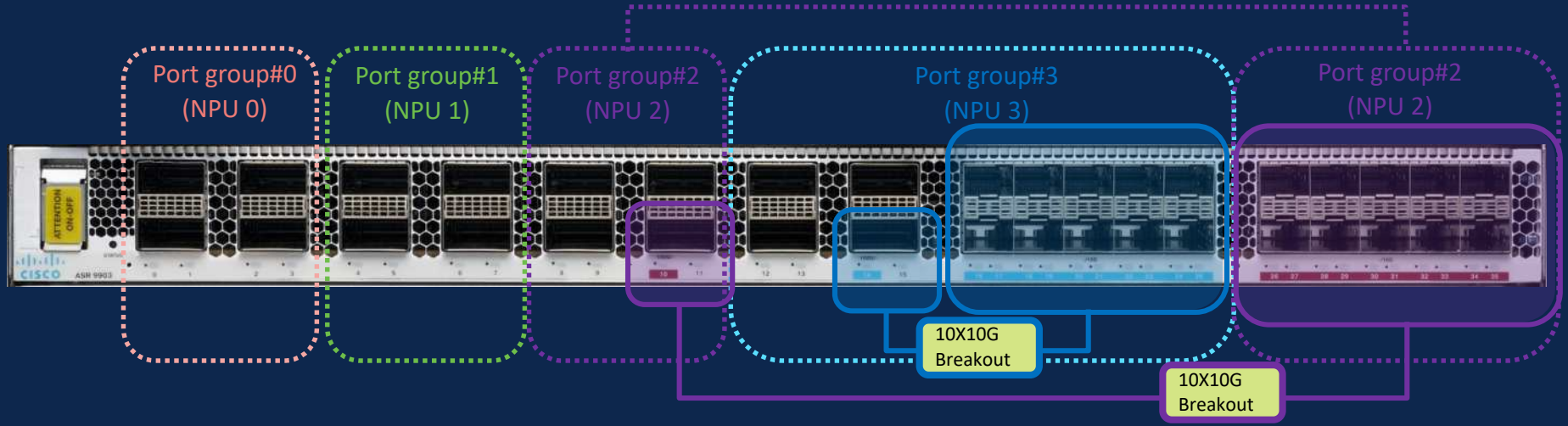
ASR 9903 Overview

Compact High Dense 3RU Chassis using 5th Generation

- 3.6T in 3RU Service Edge Scale 5th Generation
- 600mm in depth
- Front-to-back airflow
- MACSec, Class C Timing

ASR 9903 1.6T Fixed Board – Port Layout

Support of 10x10G breakout on #10 and #14 QSFP28 ports



- By default 10x10G breakout mode is activated; 100G QSFP28 ports #10,#14 are disabled
- To switch 10x10G mode to 100G mode the following CLI should be used on QSFP28 port:

  hw-module location 0/0/cpu0 port <10,14> breakout 1xHundredGigE

ASR 9903 2T Port Expansion Card - Port Layout

Supports native 5x 400GE interfaces

400G/200G/100G Multi-Rate
Ports: 0/4/8/12/16

Port group#0
(NPU 4)

Port group#1
(NPU 5)

Port group#2
(NPU 6)

Port group#3
(NPU 7)

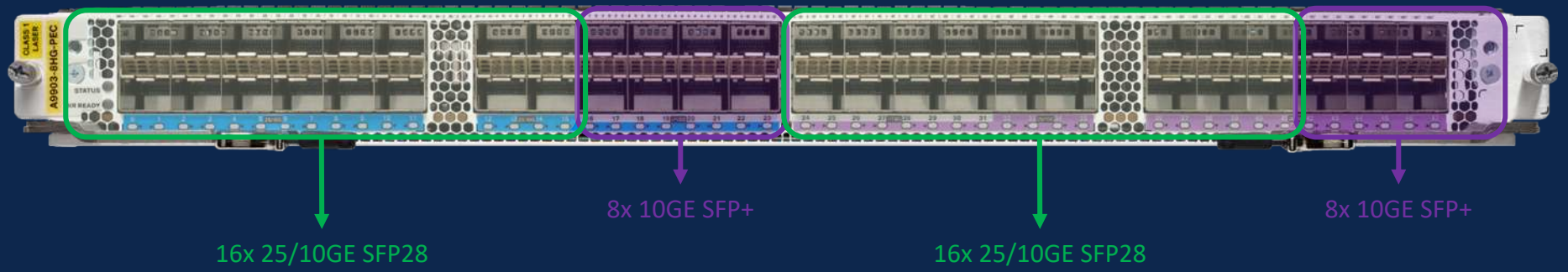
Port group#4
(NPU 8)

- 5 x 400G QSFP-DD ports
- 15 x 100G QSFP28 ports
- 400G/200G/100G/40G/25G/10G support
- Each slice can be independently configured as:
  - 1x400G –or-
  - 1x200G + 2x100G –or-
  - 4x100G
- Each 100G can break out into 4x25G or 4x10G

5 Ports Groups (Slices):
1x 400G/200G/100G multi-rate port
& 3x100G ports per Slice

ASR 9903 800GE Port Expansion Card Port Layout

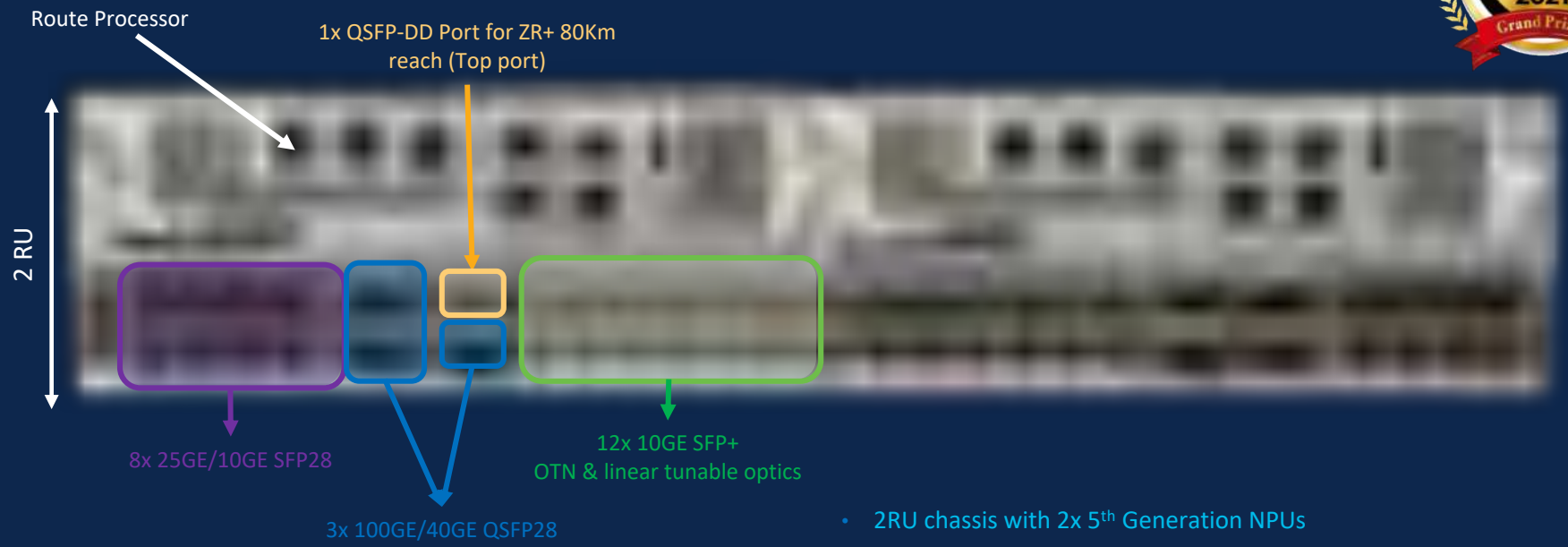
Dense 10/25G interfaces



- 800GE Port Expansion Card has 2 groups of ports distributed between two NPUs
- Supports MACSec on all ports
- Each group contains 16 x 25GE/10GE (SFP28/SFP+) and 8 x 10GE (SFP+) ports
  - SFP28 ports are numbered from 0 to 15
  - SFP+ ports are numbered from 16 to 23
- All SFP28 ports are dual-rate: 25G mode (SFP28 optic) and 10G mode (SFP+ optic) are supported

ASR 9902 - 5th Generation Pizza Box

Evolution of 9901



Height 3.5 in (88.9 mm)
Width 17.50 in (444.5 mm)
Depth 19 in (482.6 mm)

- 2RU chassis with 2x 5th Generation NPUs
- Redundant Control Plane & Power supplies (shared w/ ASR-9903)
- Class C timing & MACSec on all ports

**1GE support via:*

- *Satellite solution (NCS5K, 9000v2)*
- *Smart dual rate SFP+ SR & LR optics up to 2Km in distance*

ASR 9000 5th Generation Compact Chassis

	Throughput	Ports	Multi-rate Ports	MACSec/OTN	Timing
 ASR-9902	800 Gbps	2 Ports QSFP-DD 6 Ports QSFP28 16 Ports SFP28 24 Ports SFP+	Yes	MACSec/ OTN	Class C
 ASR-9903 (Fixed Ports)	1.6 Tbps	16 Ports QSFP28 20 Ports SFP+	Yes	MACSec	Class C
 A9903-20HG-PEC	2 Tbps	15 Ports QSFP28 5 Ports QSFP-DD	Yes	MACSec	Class C
 A9903-8HG-PEC	800 Gbps	32 Ports SFP28 16 Ports SFP+	Yes	MACSec	Class C

Cisco ASR 9000 Compact Routers

	ASR 9901	ASR 9903	ASR 9902
			
RU Size	2 RU	3 RU	2 RU
Depth	600 mm	600 mm	483 mm
Air Flow	Front to Back	Front to Back	Front to Back
Capacity	Up to 456 Gbps	Up to 3.6 Tbps	Up to 800GE
Route Processor	Integrated RP	Redundant RP	Redundant RP
Ports/Slots	Fixed Ports: Total 42 • 2x100GE • 24 x 1/10GE (Linear tunable optics) • 16x1GE	Fixed Board: 14x100GE QSFP28 + 2x100G | 20x10GE SFP+ 1 Port Expansion Card: • 2T Port exp. card • 800G Port exp. Card	Fixed Ports: Total 48 • 8x 100GE • 16x 25G / 10GE • 24x 10GE w/ OTN mode ((Linear tunable optics)
MACSec	Yes	Yes	Yes
Applications	Access / Aggregation / Service Edge	Service Edge	Service Edge / Aggregation
OS	IOS XR (64 Bit)	IOS XR (64 Bit)	IOS XR (64 Bit)

Zamerané na rýchlosť

Cisco Silicon ONE

Flexible Forwarding ASIC

One unified silicon architecture

- Comprehensive routing with switching efficiency
- Multiple segments: web and service provider
- Multiple functions: system-on-a-chip, line card, and fabric
- Multiple form-factors: fixed or modular

Delivers performance without compromise

- First routing silicon to break 10Tbps barrier
- 2x bandwidth, 3x packets-per-second over current industry routing silicon
- 2x more power efficient
- Global route scale, deep buffering, P4 programmable

One architecture. Unmatched capabilities

Unmatched programmability, performance, flexibility, and efficiency

Higher bandwidth

More network bandwidth than other routing silicon

Larger Scale

Ready for massive internet scale

Better Performance

More packets per second than other networking silicon

Endlessly programmable

Fully programmable for faster feature delivery and future-ready deployments

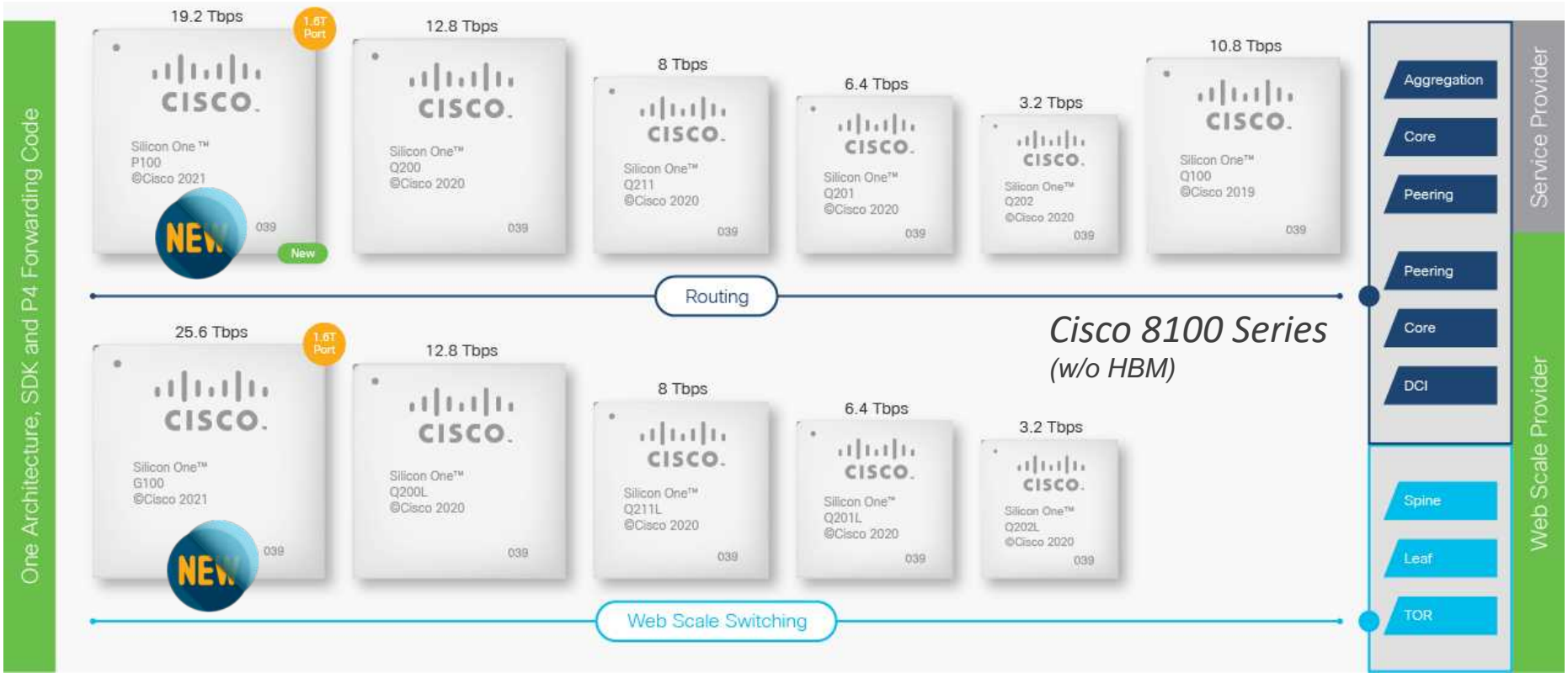
Lower Power

Routing features, scale, and performance at better than switching power efficiency

Deeper buffers

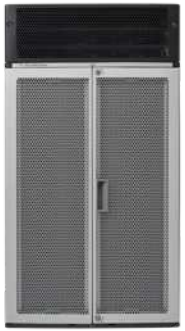
Switching devices with fully shared on-die buffers and routing devices with seamless extension to large buffers

Cisco Silicon One Family



Cisco 8800 Modular Routers

Portfolio



	8804	8808	8812	8818
FCS	Q2 2021	Shipping	Shipping	Shipping
Rack Units	10 RU	16 RU	21 RU	33 RU
Slots	4	8	12	18
Ports & Line Cards	 48x100GE w/ MACSec  36x400GE w/ Q100	 36x400GE w/ MACSec  36x400GE w/ Q200	 34x100GE & 14x400GE w/ Q200	
Total Throughput	57.6 Tbps	115 Tbps	172 Tbps	259.2 Tbps
Typical Power	4.2 KW	8.3 KW	16.3 KW	19.5kW(18 LCs) 16.4kW (12 LCs)

Cisco 8100 and 8200 Fixed Routers

Portfolio





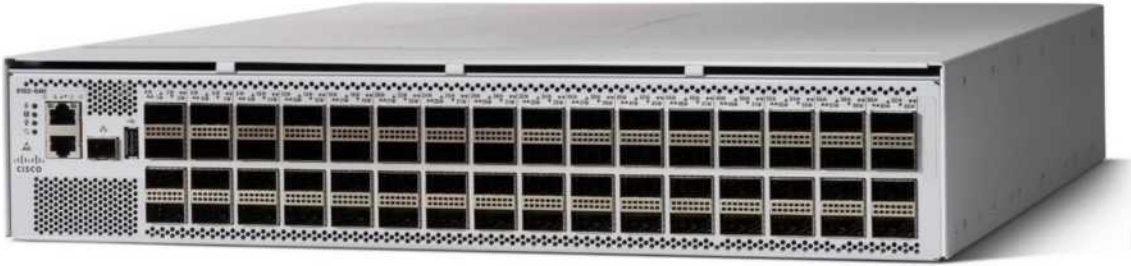

	8101-32H	8102-64H	8201	8202	8101-32FH	8201-32FH
FCS	Q2 2021	Q1 2021	Shipping	Shipping	Q3 2021	Q2 2021
ASIC	Q202	Q201	Q100	Q100	Q200	Q200
HBM/No HBM	No HBM	No HBM	HBM	HBM	No HBM	HBM
MACsec	No	No	No	No	No	No
Rack Units	1RU	2RU	1RU	2RU	1RU	1RU
Slots	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed
Ports	32x100GE	64x100GE	24x400GE + 12x100GE	12x400GE + 60x100GE	32x400GE	32x400GE
Total Throughput	3.2 Tbps	6.4 Tbps	10.8 Tbps	10.8 Tbps	12.8 Tbps	12.8 Tbps
Typical Power	172W	256W	415W	750W	288W	288W

8200 Series

8201-32FH

8201

8202



8200 Hardware Reference

	8201-32FH	8201	8202
Bandwidth	12.8 Tbps	10.8 Tbps	10.8 Tbps
ASIC	Q200	Q100	Q100
QSFP28	0	12	60
QSFP56-DD (400G)	32	24	12
Depth	23.6” / 600mm	20.1” / 511 mm	20.1” / 511 mm
Weight	31 lb / 14.1 kg	24 lb / 10.9 kg	42 lbs / 19 kg
CPU / Memory	Intel Broadwell 4-core with 32 GB DRAM & 128 GB SSD		
Fans	5+1	4+1	2+1
Airflow	Bidirectional	Bidirectional	Bidirectional
Typical/Max power	288/675W	415/660W	700/1150W

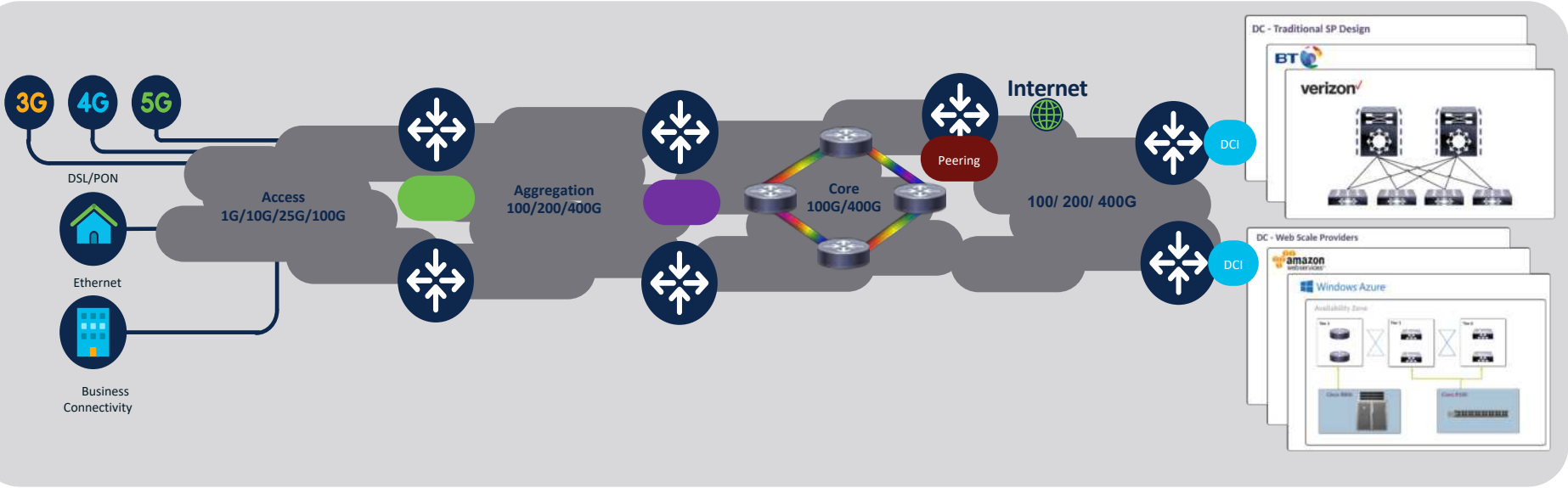
Novinky v SP

Cisco Tech Club webinář

Martin Slinták
Systems Architect | EMEAR SP

Cisco Service Provider Platform Portfolio

NOW!



Access:
NCS 540, 560
ASR 900

Aggregation:
NCS 5500, 5700
ASR 9000

Edge:
ASR 9000

Core:
Cisco 8000
NCS 5500, 5700
ASR 9000

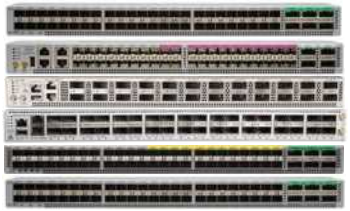
SP DC:
Nexus 9000
Web-scale DC:
Cisco 8100, Nexus 9000

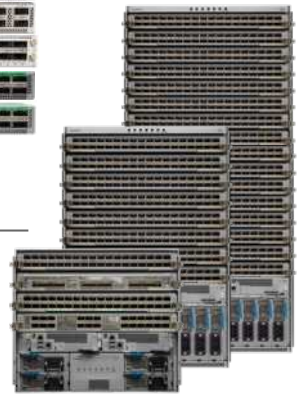
Packet Platform Selection Criteria (some)

- Capacity & Ports Density (Feeds & Speeds) vs Virtual/CN alternatives
  - NCS540, NCS560, NCS5500, NCS5700, ASR9K, 8K, Nexus9K, XRv9000, CSR1000v,..
- HW Features
  - MACsec, SyncE/PTP, NF/FT, Depth, Watts, Airflow, Modularity, I-Temp, Buffering,.. Optics support!
- SW Features & Service Scalability – Edge/Leaf Devices
  - L2/L3VPNs, QoS, Security, Tunnels, IPv4/IPv6 prefixes, MACs,..
- Domain Scalability – Edge/Leaf & Core/Spine Devices
  - IGP & other Control Planes
- Controller – for Service Lifecycle etc.
  - EPNM, CNC, APIC, NDFC,..
- Cisco Validated Designs
  - SDNT4.0, RON1.0, Core/Peering Fabric & NXOS & ACI Designs,..
- TCO & Licensing Model
  - Feature vs Tier Licenses, Smart (Centralized) Licensing, PAYG, EA/SPNA,..

NCS 540/560/5500/5700

NCS 540/560/5500/5700 Portfolio





NCS 5500/5700

J/J+/QMX/J2/J2C/Q2C

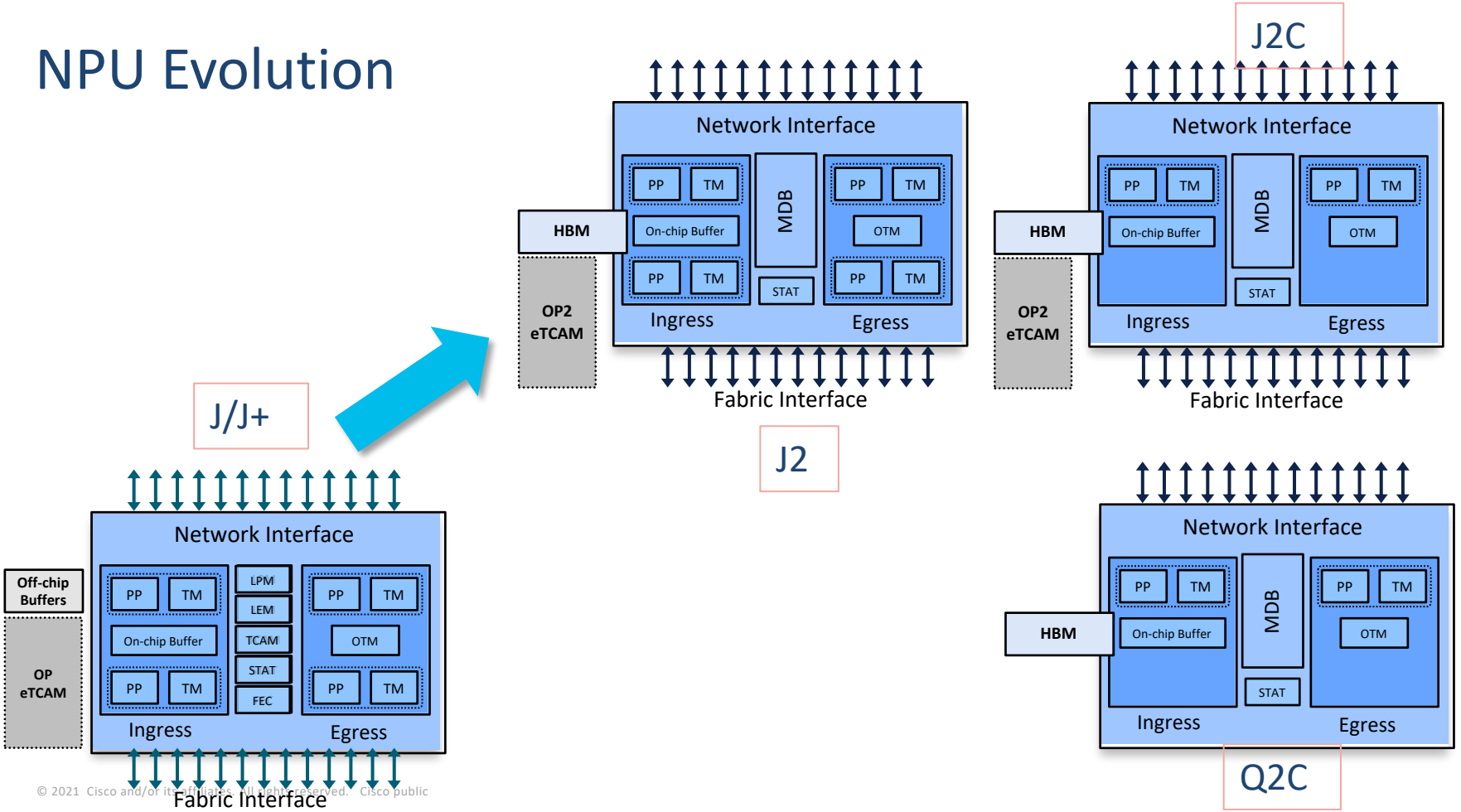
NCS 560

QMX

NCS 540

QAX/QUX/J+/Q2A

NPU Evolution



NCS 5500/5700 Portfolio Today

Jericho QMX

Jericho+

Jericho2

Jericho2C

Fixed

NCS 5502/SE

NCS 5501/SE

NCS-55A1-48Q6H

NCS 55A1-36H-S/SE

NCS 55A1-24H

NCS 55A2-MOD-S/SE/HD/HX

NCS-55A1-24Q6H-S/SS

NCS-57B1-6D24/5DSE

NCS-57C3-MOD-(SE)-S

Linecards

NC55-36X100G/-S

NC55-24H12F-SE

NC55-24X100G-SE

NC55-18H18F

NC55-6x200-DWDM-S

NC55-MOD-A-S/SE

NC55-36X100G-A-SE

NC55-32T16Q4H-A

NCS 5516

NCS 5508

NC57-18DD-SE

NC57-24DD

NC57-36H-SE

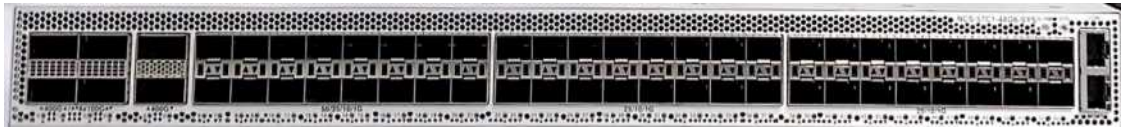
NC57-36H6D-S

Modular

NCS 5504

4/8/16 J2 Ready FC2 & FAN2

Naming Logic - Fixed NCS 5500/5700



NCS57C1-48Q6D-S

NCS55 → Q/Mx/J/J+
NCS57 → J2/J2C/Q2C

0 → Jericho
A → J+
B → J2
C → J2C/Q2C
D → J2C+

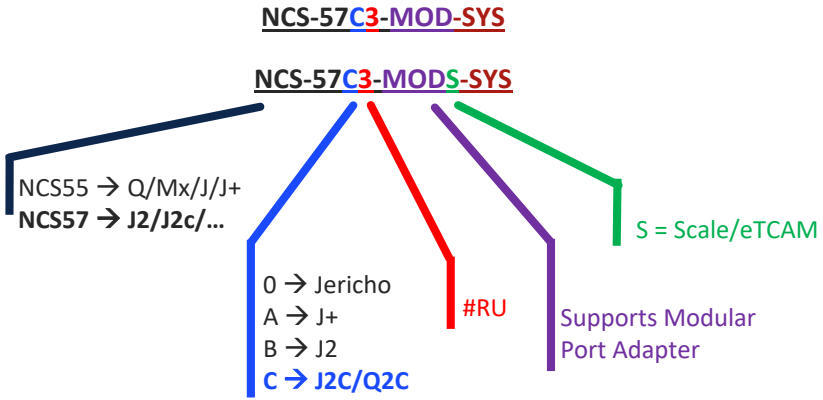
#RU

48x1/10/25G + 6x400G

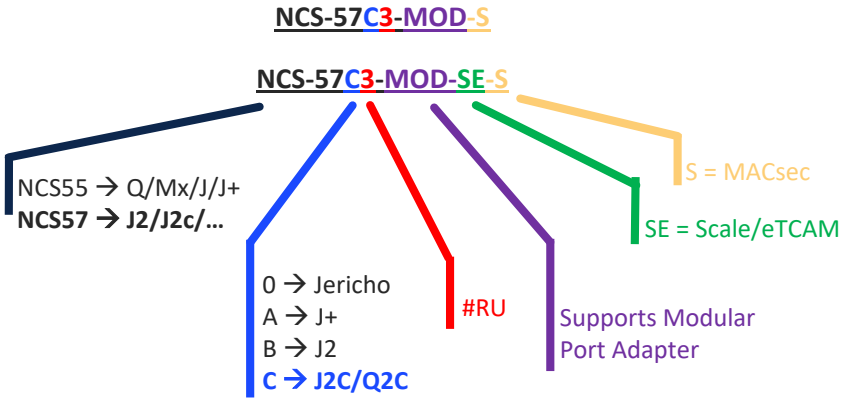
S = MACSEC

Naming Logic - Modular NCS 5500/5700

Flexible Consumption Model



Perpetual (BAU)



NCS 5500/5700 Positioning

Aggregation

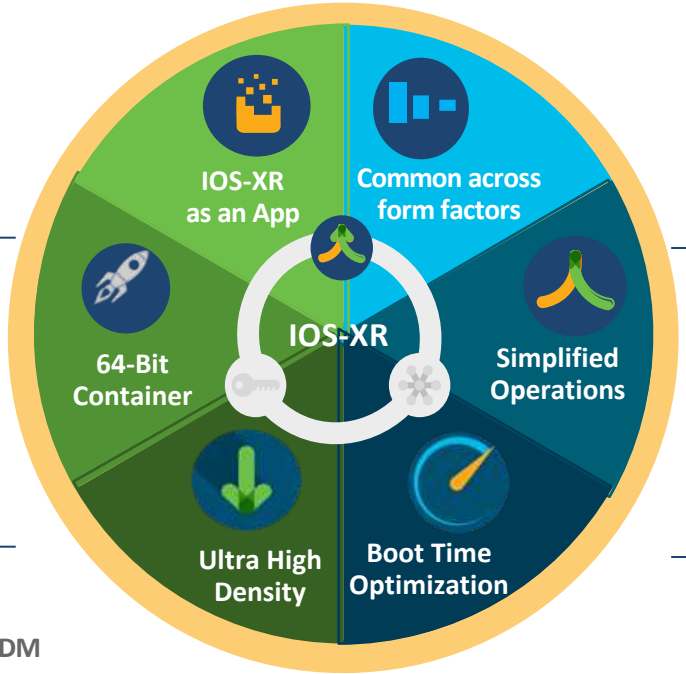
- VPWS, EVPN P2MP, L2/L3 VPN
- L2 MCAST, BGP PIC-Edge, mVPN
- SRV6

Peering

- v4/v6 Scale ACL/LPTS/
- LI, uRFP, Hybrid ACL, Storm Control
- BGP FlowSpec, QPPB
- Ingress/Egress Netflow

Data Center

- IP/MPLS LSR, EVPN/SR, MACsec, IPoDWDM
- EVPN/SR-TILFA/TE/ODN
- Sticky EMCP
- VXLAN DC GW/GPE



LSR/Core

- IPv4/v6 MPLS, BFD, LSR, MPLS-TE, PIM
- TI-LFA, LDPoTE
- IPv6 BFD, SRv6

SP Access / 5G

- VPWS, L2/BVI
- TWAMP, Y.1732, Eth Loopback, Timing
- G.8032, DHCP, GTP Hashing
- IP-SLA, Y.1564

R-PHY (CIN)

- L2 MCAST, IGMP Snooping
- 802.1X, Dual v6 Source, DHCP snooping
- MLD Snooping

NCS 560 Variants

	NCS560-7 (7RU, 16 IMs)	NCS560-4 (4RU, 6 IMs)
ASIC/CPU/Mem	800 Gbps BCOM Qumran MX, Intel Broadwell 4C 1.8GHz CPU, 32GB RAM, 128G SSD	800 Gbps BCOM Qumran MX, Intel Broadwell 4C 1.8GHz CPU, 32GB RAM, 128G SSD
Port Config	Modular: 100/50/40/25/10/1G	Modular: 100/50/40/25/10/1G
PSU/Fan	Modular & redundant PSUs and fans Side-to-side airflow. Front-to-back airflow plenum option.	Modular & redundant PSUs and fans Side-to-side airflow. Front-to-back airflow plenum option (2RU).
Temperature Support Range	I-Temp -40C to +65C	I-Temp -40C to +65C Conformal coated SKU's for hot humid conditions
Software	FCS 64-bit IOS XR 6.6.25	FCS 64-bit IOS XR 6.6.25
Timing	1PPS in/out, 10MHz in/out, ToD, GNSS SyncE, G.8265.1, G.8275.1/2, Class B BC	1PPS in/out, 10MHz in/out, ToD, GNSS, SyncE, G.8265.1, G.8275.1/2, Class B BC
Programmability	NETCONF/YANG, BGP-LS, PCEP SR-PCE Integration	NETCONF/YANG, BGP-LS, PCEP SR-PCE Integration
Advanced Routing	SR, SR-TE, TI-LFA, On Demand Next Hop	SR, SR-TE, TI-LFA, On Demand Next Hop
ISSU	50ms EMR to EMR Upgrades/ SMU	50ms EMR to EMR Upgrades/ SMU

N560-7-SYS(-E)

N560-4-SYS(-E)

N560-4-RSP4(E)
N560-7-RSP4(E)

NCS 540 Family Today

Small	Medium	Large	Fronthaul
			
64G or 104G QUX-64/120 1/10/25GE (2x SFP28) PSU: Fixed AC/DC 1+1 or non-redundant I-Temp S2S or F2L Airflow, Fixed Fans Depth: 23cm C-Temp PID: Single AC/DC PSU, F2L Airflow, no timing Passive PID: Fixed DC PSU 1+1, 2.5RU, depth 38cm **Shipping** 7.3.1/7.4.1/7.5.2*/7.8.1*	136G to 300G QAX-160/300 1/10/25/40/100GE (2/4x QSFP28) PSU: FRU 1+1 AC/DC or Fixed 1+1 DC/1 AC I-Temp or C-Temp F2B or S2S Airflow, Modular or Fixed Fans GNSS Receiver MACsec Depth: 25-28cm **Shipping** 6.3.2/6.5.2/7.0.1/7.5.2*	800G Q2A 1/10/25/40/50/100/200/400GE (2x QSFP56-DD, 8x SFP56) PSU: FRU 1+1 AC/DC I-Temp F2B Airflow, Modular or Fixed Fans GNSS Receiver MACsec* Depth: 30cm **Shipping** 7.4.1	800G or 900G QAX-300/J+ 1/10/25/40/100GE (2/4x QSFP28) 2/24x 10/25GE TSN 802.1Qbu* 12/24x CPRI 3-8 PSU: FRU 1+1 AC/DC -Temp or C-Temp F2B Airflow, Modular or Fixed Fans GNSS Receiver MACsec* Depth: 35/55cm **Shipping** 7.3.2

* Roadmap

NCS 540 Highlights

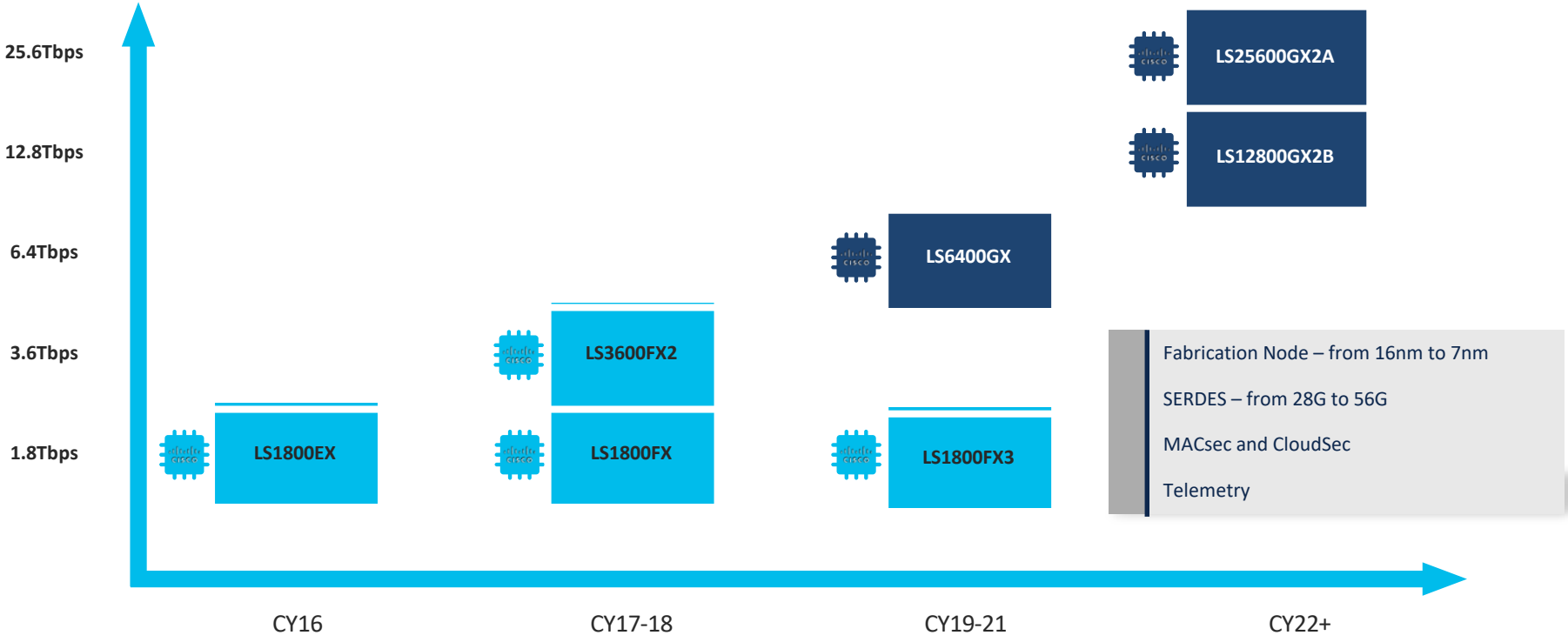
- **THE Smallest IOS XR routers EVER**
- **THE Most cost-optimized IOS XR routers EVER**
- **THE Lowest power-consuming IOS XR routers EVER**

… with 1000's of features

- 1RU small form factor with depth <300mm
- Side-to-side or front-to-back airflow
- Environmental hardened, suitable for deployments in indoor or outdoor cabinets
- Low power consumption: Small <90W, Medium <240W, Large <330W
- Versatile Ethernet interface options: 10/100/1000ME, 1/10/25/40/50/100/200/400GE
- Fronthaul CPRI and TSN interfaces
- MACsec support
- Low latency forwarding, typically <10 microseconds
- Precise frequency and phase/time synchronization using the latest industry standards
- G.8273.2 Class B/C
- Integrated GNSS receiver (GPS, Galileo, Glonass, BeiDou)
- Rich Quality of Service capabilities for different SLAs
- MEF 3.0 compliant
- 3rd-party application hosting

Nexus 9300/9500

Cisco Cloud Scale ASICs



Nexus 9300 Cloud Scale 1/10/25G Switches

1/10/25G Switches

96p 1/10/25G SFP + 12p 40/100G
Nexus 93360YC-FX2

48p 1/10/25G SFP + 6p 40/100G
Nexus 93180YC-FX3

1G/10G BaseT Switches

96p 100M/1/10GT + 12p 40/100G
Nexus 93216TC-FX2

48p 100M/1/10GT + 6p 40/100G
Nexus 93108TC-FX3P

100M/1G BaseT Switches

48p 100M/1GT + 4p 1/10/25G + 2p 40/100G
Nexus 9348GC-FXP

48p 100M/1GT + 4p 1/10/25G + 2p 40/100G
Nexus 92348GC-X

Nexus 9300 Cloud Scale 100/400G Switches

ACI Leaf	ACI Spine	ACI Spine or Leaf

36p 100G
Nexus 9336C-FX2

64p 100G
Nexus 9364C

32p 100G
Nexus 9332C

32p 400G
Nexus 9332D-GX2B

28p 40/100G & 8p 400G
Nexus 93600CD-GX

64p 40/100G
Nexus 9364C-GX

16p 400G
Nexus 9316D-GX

NXOS

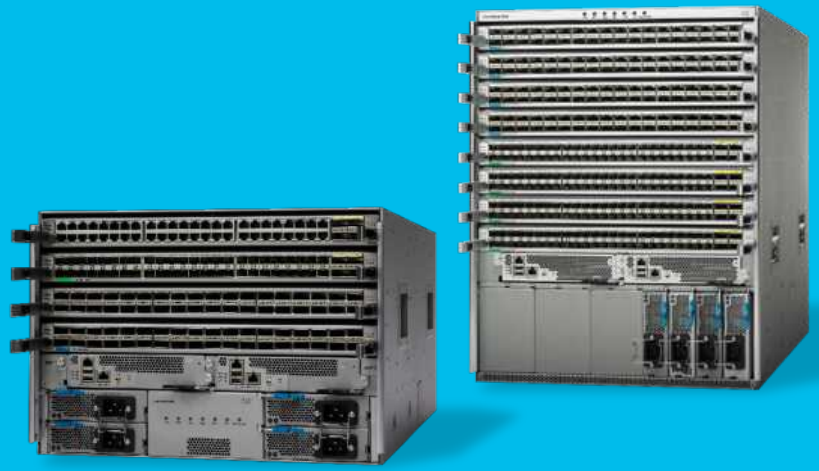
Nexus 9500 Cloud Scale Series Switches

16-port 400G
(MACsec & CloudSec capable)

36-port 100G
(MACsec & CloudSec capable)

48-port 25G + 4-port 100G

48-port 10GT + 4-port 100G
(MACsec & CloudSec capable 100G ports)



Same Chassis – All Speeds

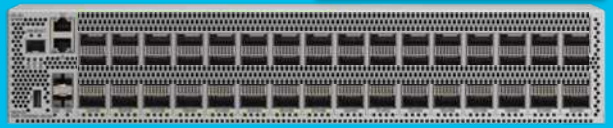
GX Fabric Module

Nexus 9300 High Density 400G Switches

32p 400G
8p MACsec/CloudSec

Nexus 9332D-GX2B

Q3CY2022



48p 400G
48p MACsec/CloudSec

Nexus 9348D-GX2A

Q3CY2022

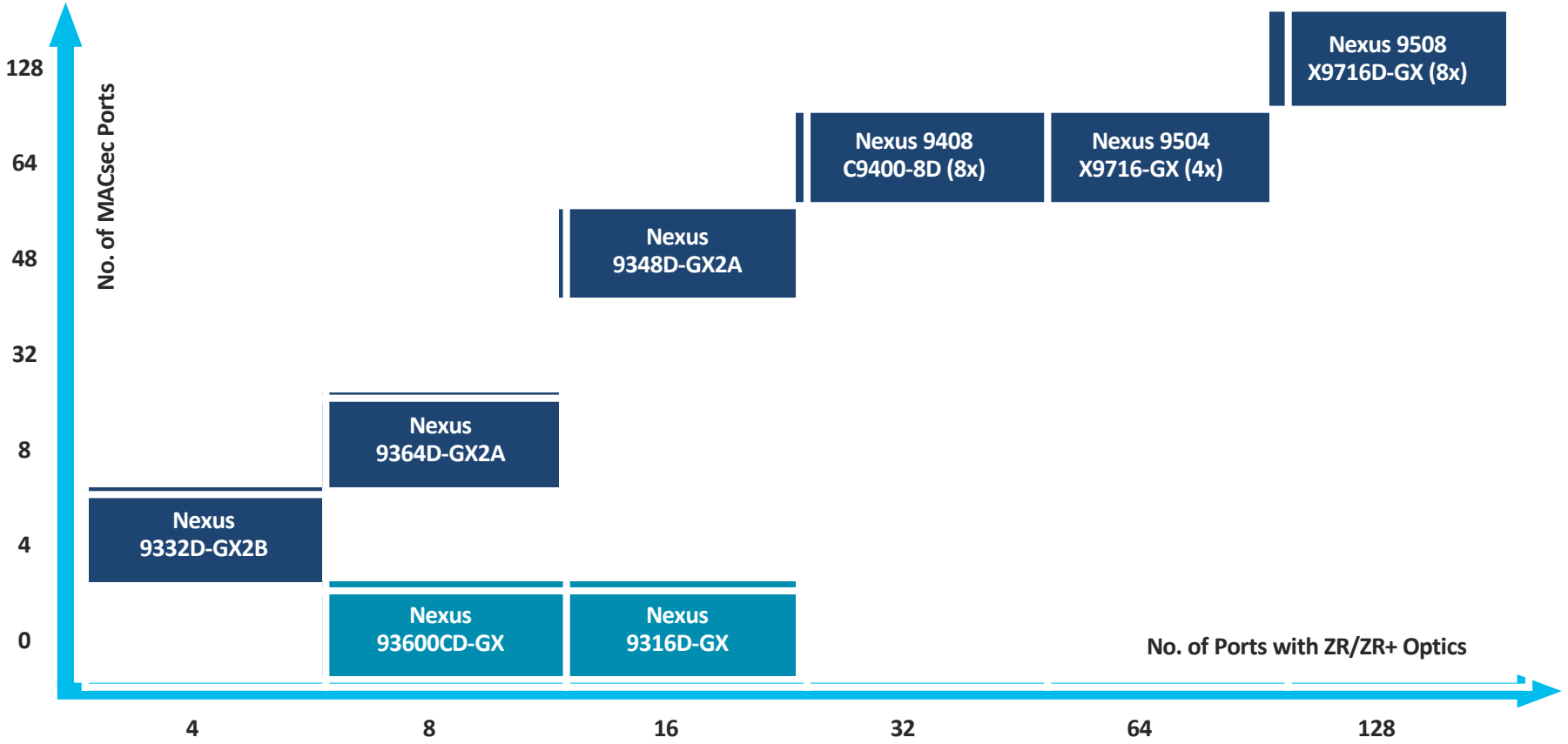
64p 400G
16p MACsec/CloudSec

Nexus 9364D-GX2A

Nexus 9316D-GX
16p 400G

Nexus 93600CD-GX
28p 100G + 8p 400G

Nexus 9000 Series – Mixing MACsec & 400 ZR/ZR+

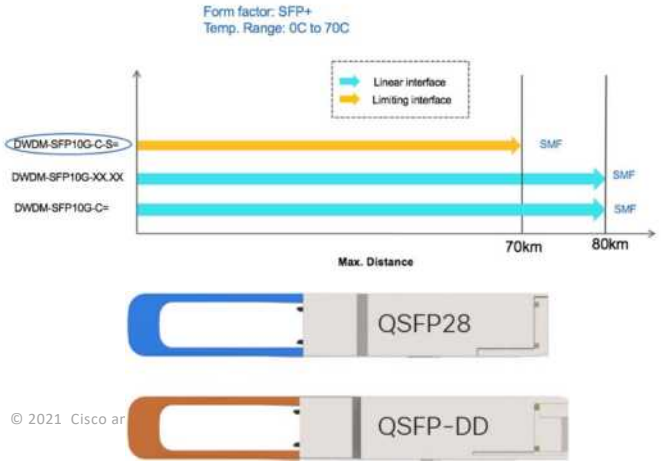


Hardware capability. Check software release notes and Optics compatibility matrix for details.

Cisco Optics

Lots of options to choose from..

Optics	C-Class	S-Class
Multi-rate vs Single-rate	Multi-rate optics: • Ethernet • OTN • WAN-PHY	Single-rate optics: • Ethernet only
Operating temperature range	• Commercial (0C to 70C) • Extended (-5C to 85C) • Industrial (-40C to 85C)	• Commercial (0C to 70C) only



New Tool:

Cisco Optics Product Information

https://copi.cisco.com/

Electrical compatibility between optic module and host platform port

https://tmgmatrix.cisco.com

Optical interoperability between two modules via fiber cable

https://tmgmatrix.cisco.com/iop


CISCO