



Cisco para SUA infraestrutura

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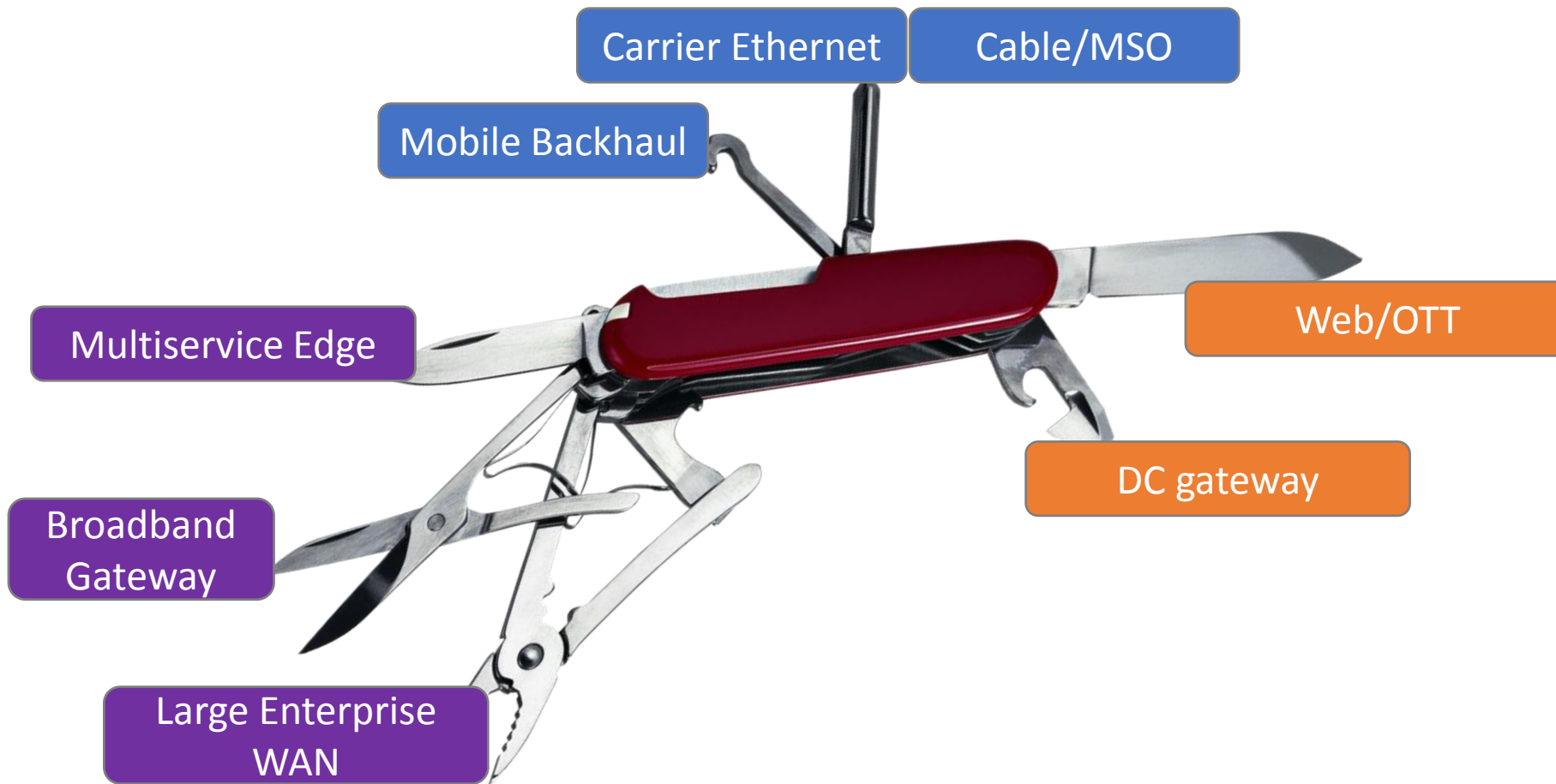
Engenheiro de Sistemas

Por que estamos aqui hoje?

- Prestigiar evento
- Apresentar ASR 9000
- Ouvir/dar sugestões, tirar dúvidas, participar

Cisco ASR 9000 System

Edge Routing -- Cisco ASR9000 Market Roles



1. High-End Aggregation & Transport

1. Mobile Backhaul
2. L2/Metro Aggregation
3. CMTS Aggregation
4. Video Distribution & Services

2. DC Gateway Router

1. DC Interconnect
2. DC WAN Edge
3. WEB/OTT

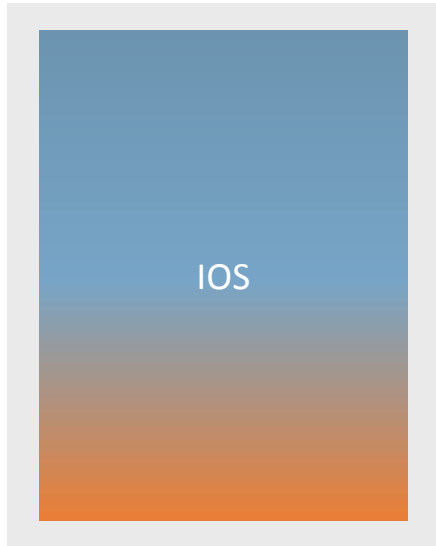
3. Services Router

1. Business Services
2. Residential Broadband
3. Converged Edge/Core
4. Enterprise WAN

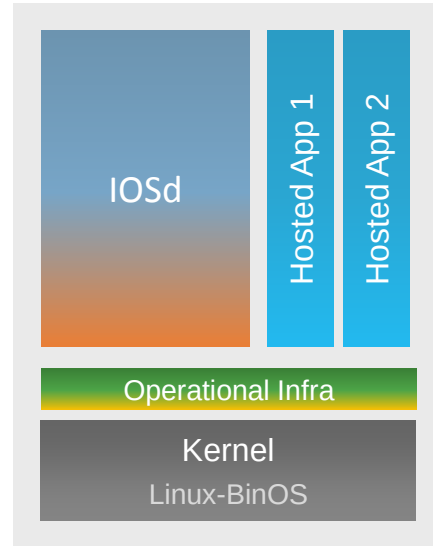
IOS-XR Architecture

Cisco IOS – A Recap

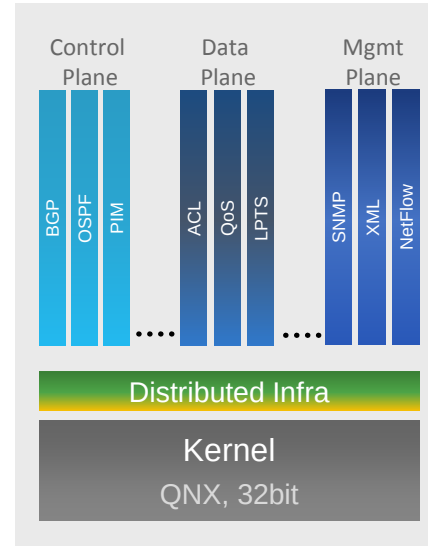
Cisco IOS



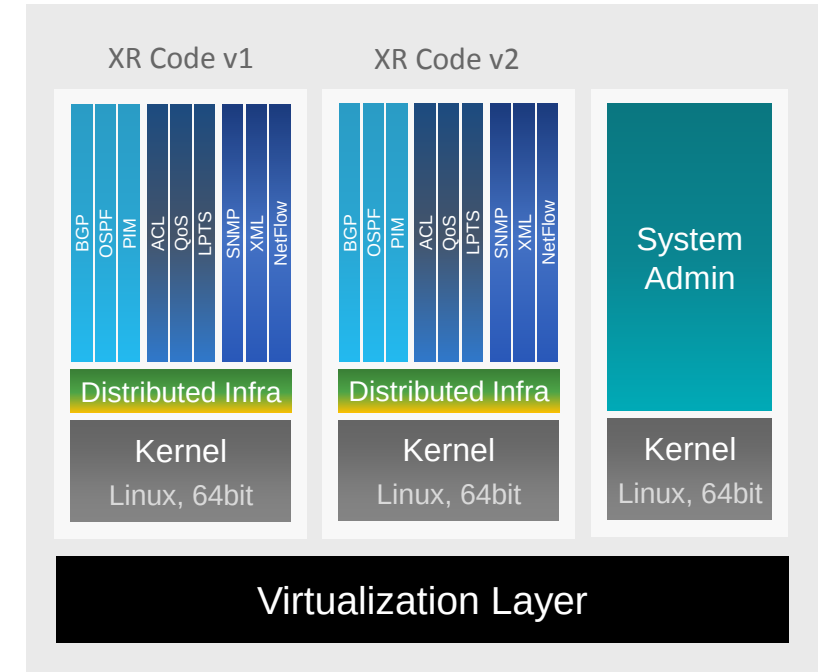
Cisco IOS-XE



Classic IOS-XR



Virtual IOS-XR



1990s



2000s



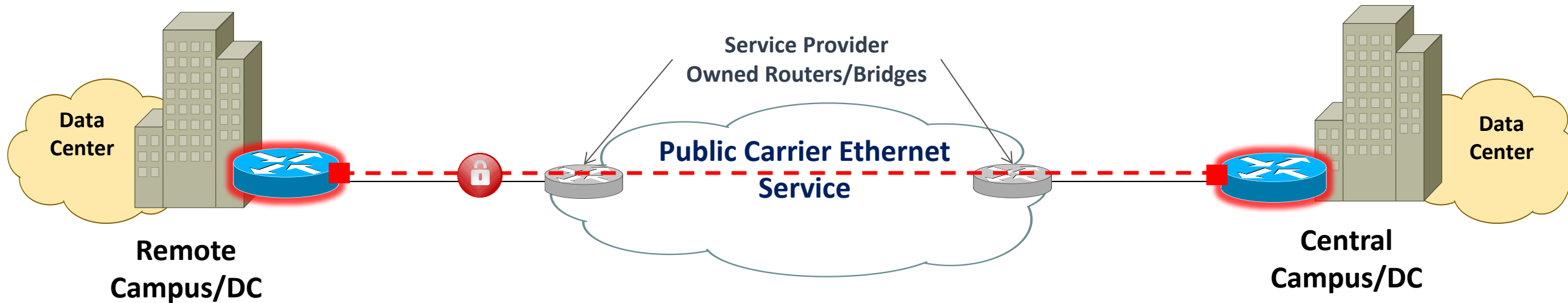
2003-04



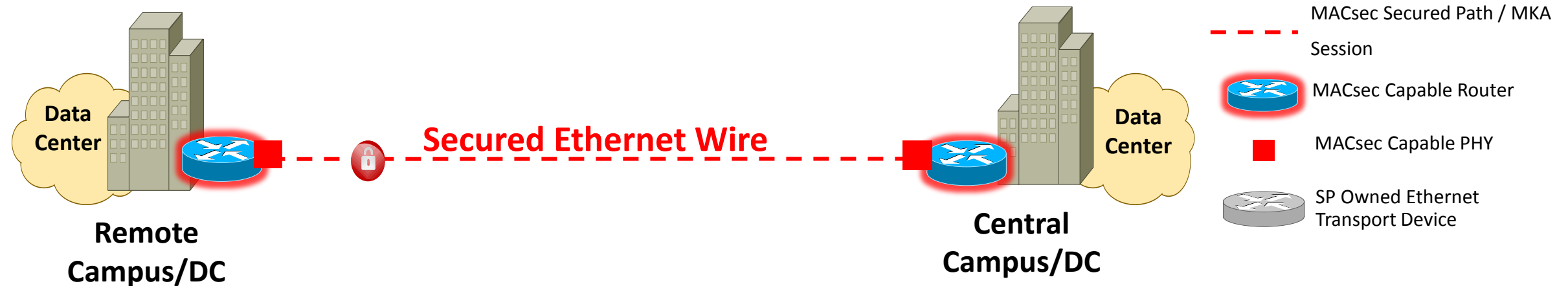
Present Day

WAN MACSec Topology

Basic Site to Site Example – Today Scenario

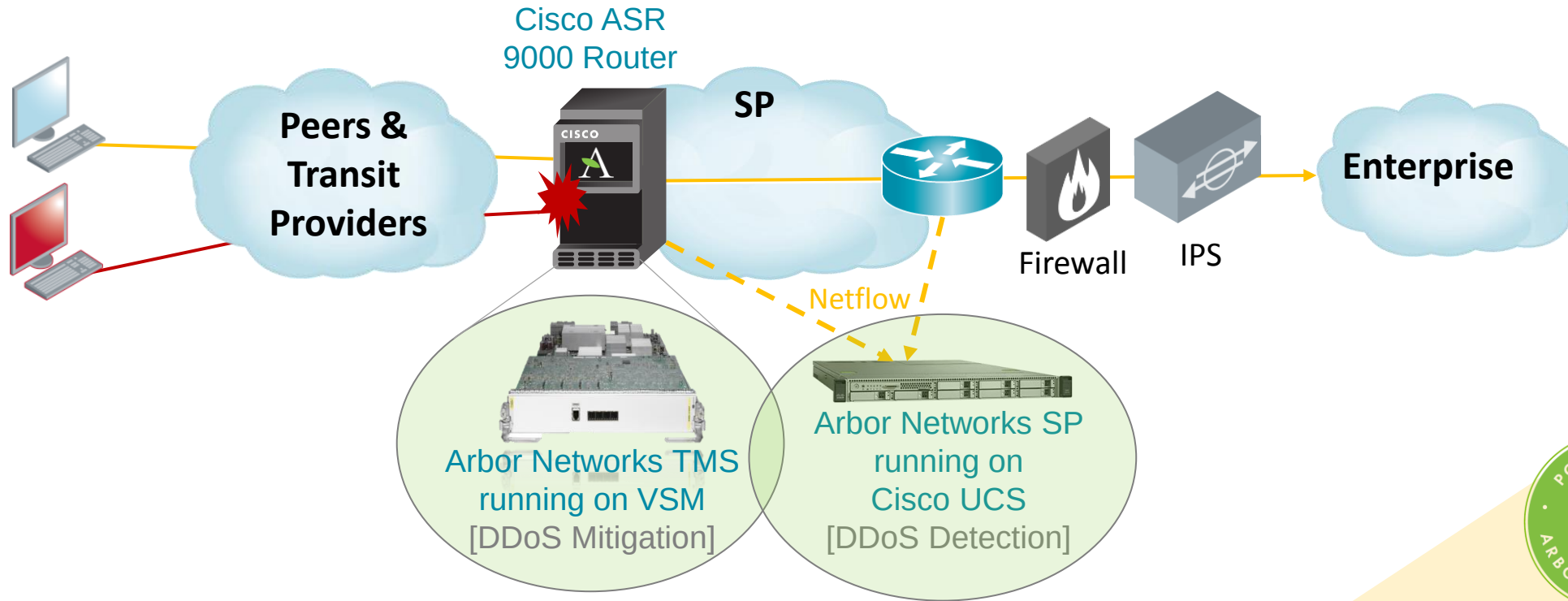


Basic Site to Site Example – MACSec enabled



ASR 9000 Security: vDDoS Protection Solution

Virtual Network Embedded DDoS Protection at Network Edge



DDoS Mitigation: Network Embedded

- Leverage existing ASR 9000 Routers
- Detect DDoS attacks as fast as 1 second
- Port rate blacklisting done automatically
- Scrubbing on box - no backhauling

DDoS Detection: 100% Virtual

- Netflow sampling used to monitor network for DDoS threats
- Programs ACLs on Tomahawk/Typhoon line cards to automatically block threats

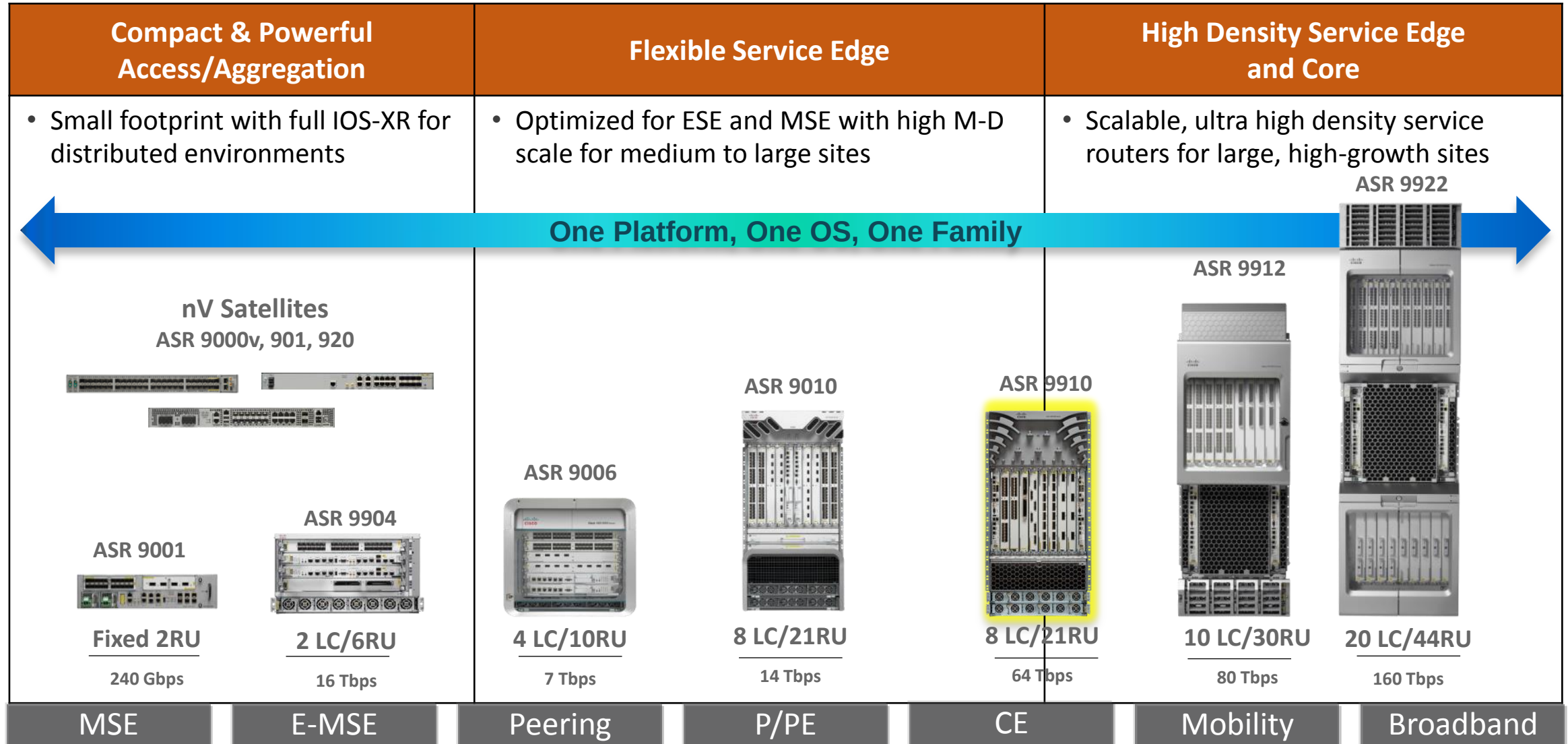
Arbor Powered

- Industry-leading SP solution
- Complete surgical DDoS protection
- Scales from 10 Gbps to Tbps
- Powered by ATLAS threat feeds



ASR 9000 Models

Cisco ASR 9000 System Comprehensive Portfolio



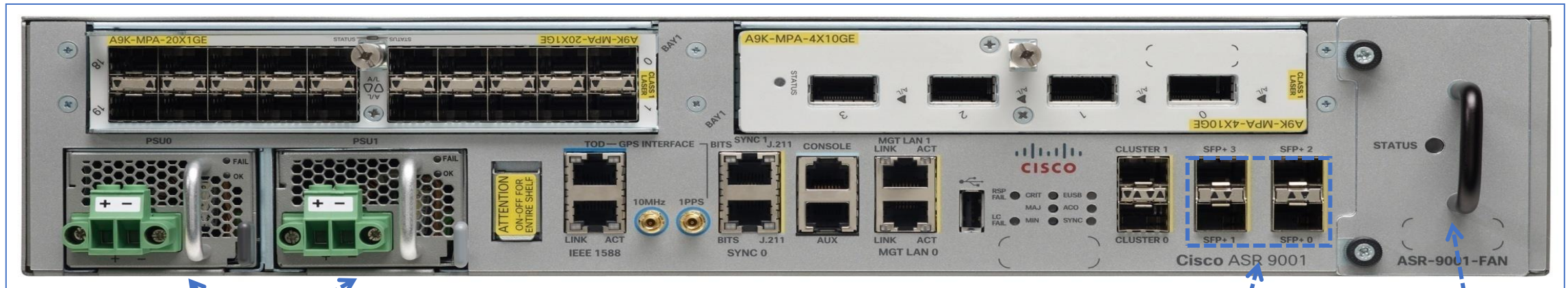
ASR 9001/ASR 9001-S Compact Chassis

Side-to-Side airflow
2RU

Front-to-back air flow with air flow
baffles, 4RU, require V2 fan

Sub-slot 0 with MPA*

Sub-slot 1 with MPA*



Redundant
(AC or DC)
Power Supplies
Field Replaceable

Supported MPAs:

20x1GE
2x10GE
4x10GE
1x40GE

Fixed 4x10G SFP+
ports

Fan Tray
Field Replaceable

*MPA: Modular Port Adapter

Cisco ASR 9006 Overview

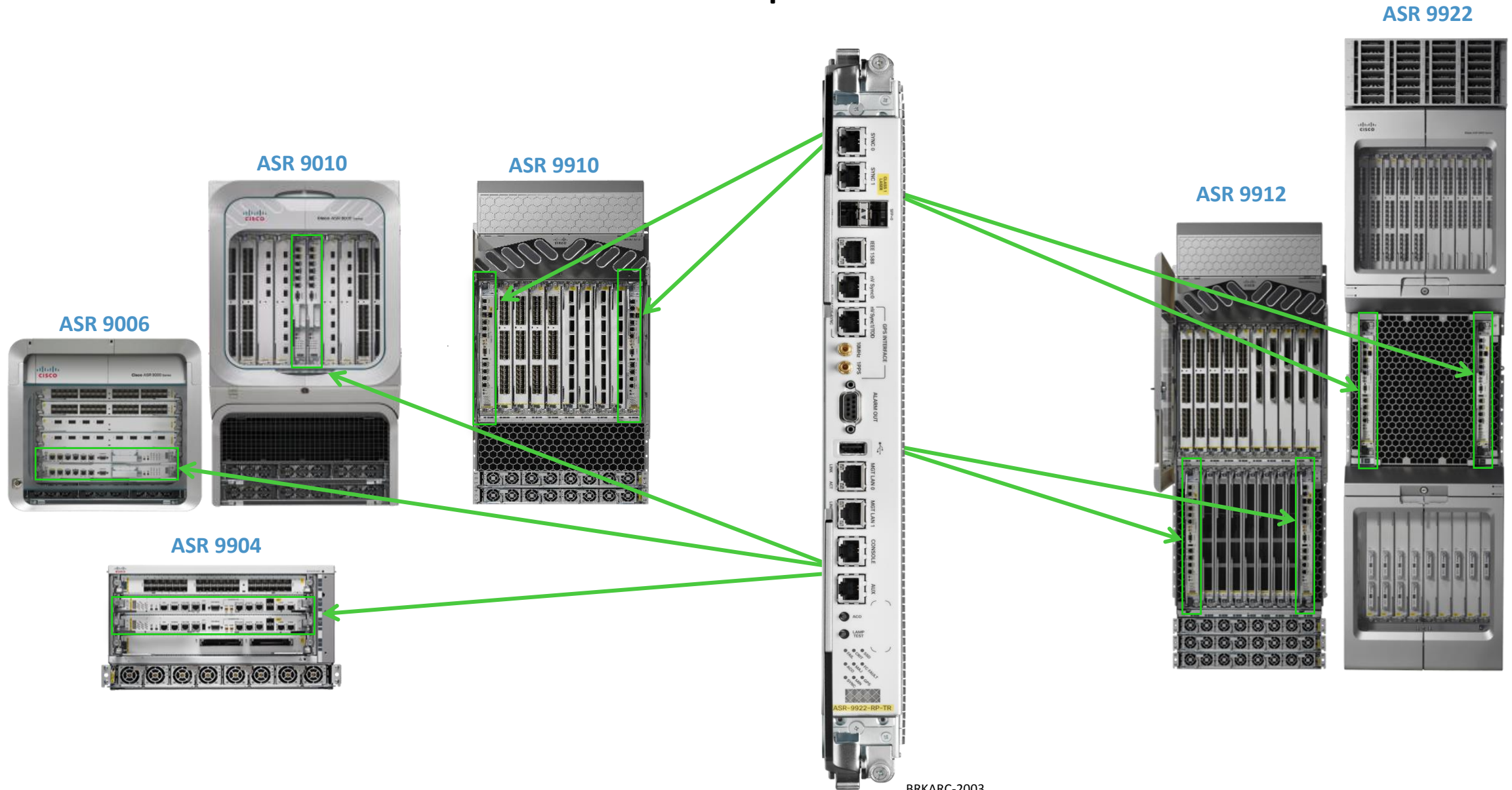
Front-to-back air flow
with air flow baffles,
13RU, vertical

Side-to-side airflow, 10 RU



Feature	Description
Total Capacity	3.68T
Capacity per Slot	920G
Slots	6 slots - 4 Line Cards and 2 RSPs
Rack size	10RU
Power	1 Power Shelf, 4 Power Modules 2.1 KW DC / 3.0 KW AC supplies
Fan:	Side to Side Airflow Optional Baffle for Front-to-Back Airflow 2 Fan Trays, FRU
RSPs	Integrated Fabric, 1+1 Redundancy
Line cards	Tomahawk Typhoon VSM SIP700 & SPAs

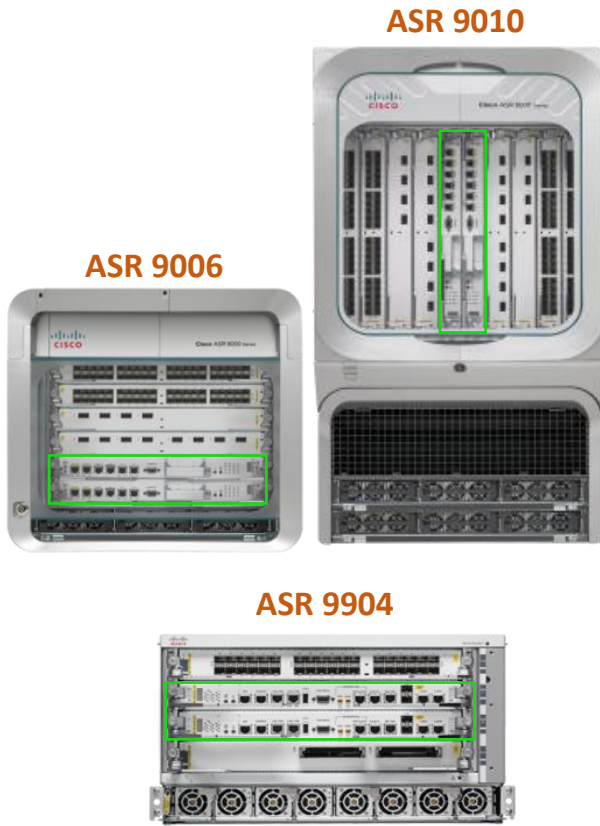
ASR 9000 Hardware Components – RP/RSP



ASR 9000 Route Switch Processor

- ✓ Common for ASR 9904, ASR 9006, and ASR 9010
- ✓ Common internal HW with RP for feature parity on IOS XR
- ✓ Integrated Multi-Stage Switch Fabric
- ✓ TR and SE Memory options
- ✓ Time and Synchronization Support

	RPS440	RSP880
Availability	Q1CY12	Q1CY15
Processor	Four Cores - 2.1GHz	Eight Cores - 2.2GHz
NPU Bandwidth	60G	240G
Fabric Capacity	440G	880G
Memory	6G for TR 12G for SE	16G for TR 32G for SE
SSD	2x 16GB Slim SATA	2x 32GB Slim SATA
LC Support	Typhoon	Tomahawk/Typhoon

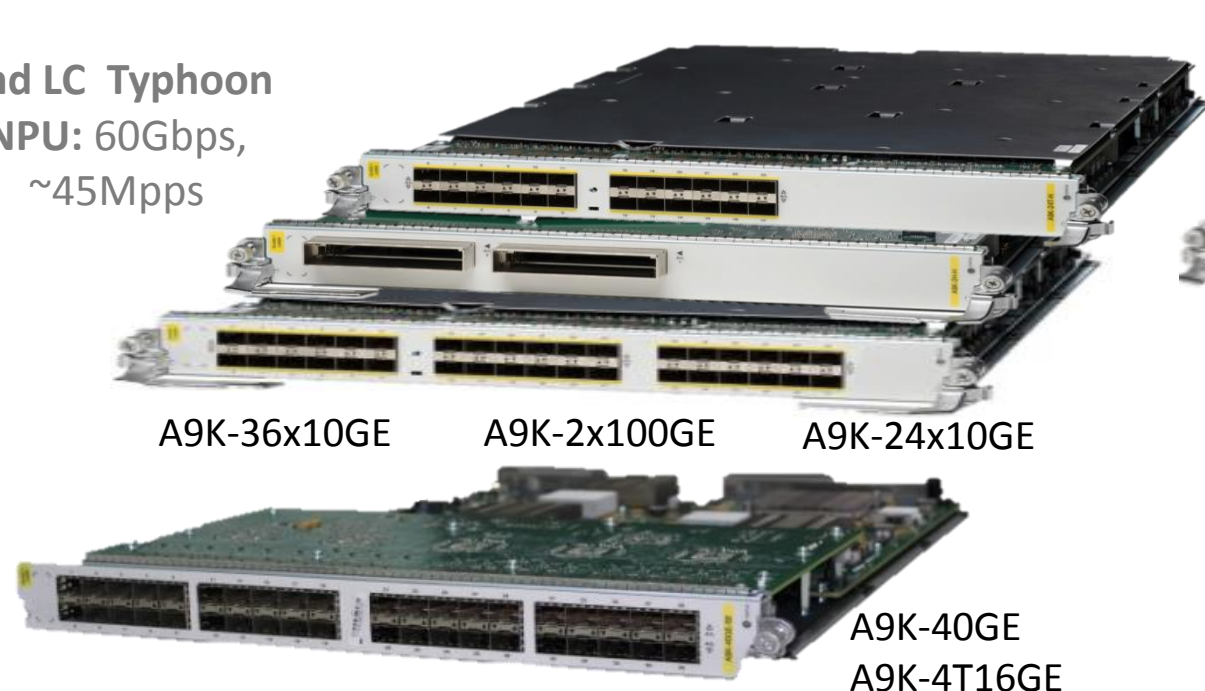


ASR9000 Line Card Details

ASR 9K Ethernet Line Card Overview

2nd LC Typhoon

NPU: 60Gbps,
~45Mpps



A9K-36x10GE

A9K-2x100GE

A9K-24x10GE

A9K-40GE

A9K-4T16GE



A9K-MOD80

A9K-MOD160



MPAs
20x1GE
2x10GE
4x10GE
1x40GE
2x40GE

3rd LC Tomahawk

NPU: 240Gbps,
~150Mpps



A9K-12x100GE

A9K-8x100GE

A9K-4x100GE



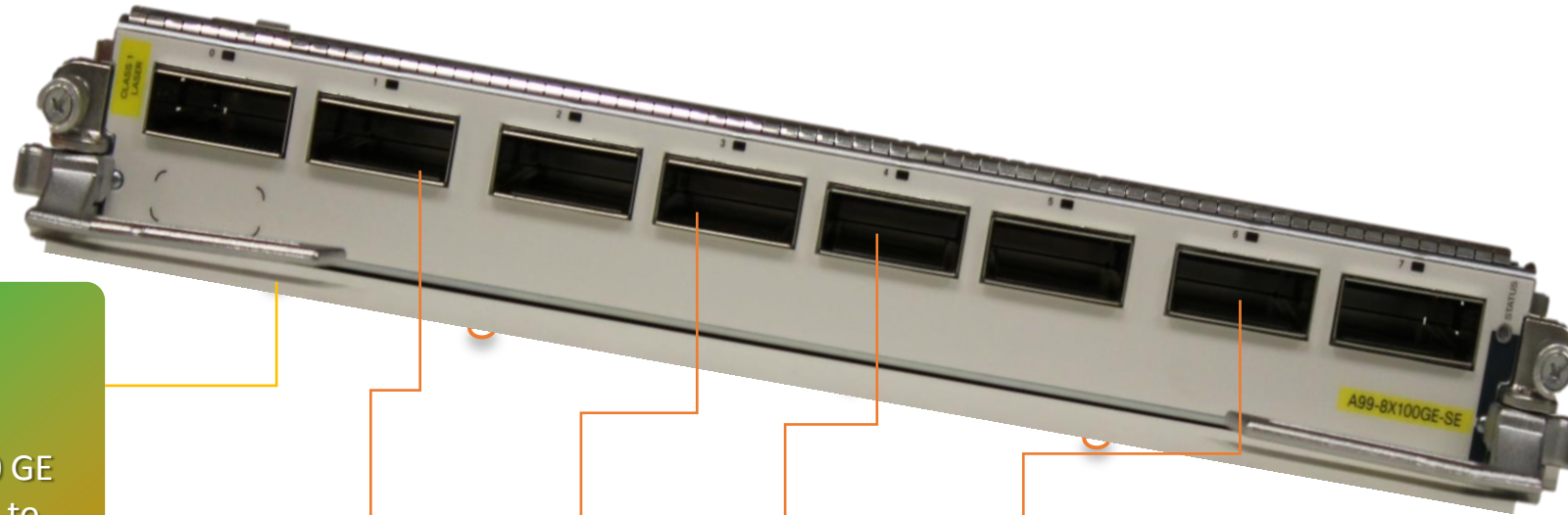
A9K-MOD400/MOD200

A9K-400G-DWDM

MPAs
1x100GE
2x100GE
20x10GE
+
Typhoon
MPAs

-TR, -SE

Flex 100G CPAK



Investment Protection

Start with 10 GE and upgrade to 100 GE in the future

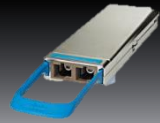
100 GE LR4

10x10 GE

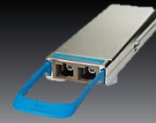
2x40 GE

100 GE SR10

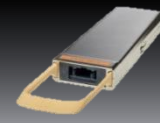
CPAK Options



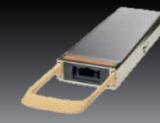
CPAK 100 GE ER4



CPAK 100 GE LR4



CPAK 100 GE SR10



CPAK
10x10-LR

Tomahawk Scale Differences

Metric	Tomahawk -TR Scale	Tomahawk -SE Scale
MPLS Labels	1M	
MAC Addresses	2M	
FIB Routes (v4/v6) – Search Memory	10M(v4) / 5M(v6)	
Mroute/MFIB (v4/v6)	128k/32k	
VRF	8K	
Bridge Domains	64K	
TCAM (acl space v4/v6)	TCAM – 1/4 -SE	TCAM (80Mbit)
Packet Buffer	Packet Buffer – 100ms (6G/NPU)	Packet Buffer – 200ms (12G/NPU)
EFPs	16K/LC	128K/LC (64K/NP)
L3 Subif (incl. BNG)	8K	128K (64K/NP)
IP/PPP/LAC subscriber sessions per LC	16K	256K (64K/NP)
Egress Queues	8 Queues / port + nV Sat Q's	1M/NPU (4M for 8x100GE!)
Policers	32K/NPU	512K/NPU
QOS/ACL (v4/v6)	16k v4 or 4k v6 ACEs/LC	98k v4 / 16k v6 ACEs

Switch Fabric Architecture

ASR 9000 Switch Fabric Overview

Integrated fabric/RP/LC



9001, 2RU, 120G



9001-S, 2RU, 60G

Fabric is integrated on RSP 1+1 redundancy



9904

RSP880: 805G+805G/slot



9006



9010

RSP880: 450G+450G /slot

Integrated + Separated Fabric 6+1 redundancy



9910

1.38Tb+230G /slot

Separated fabric card 6+1 redundancy



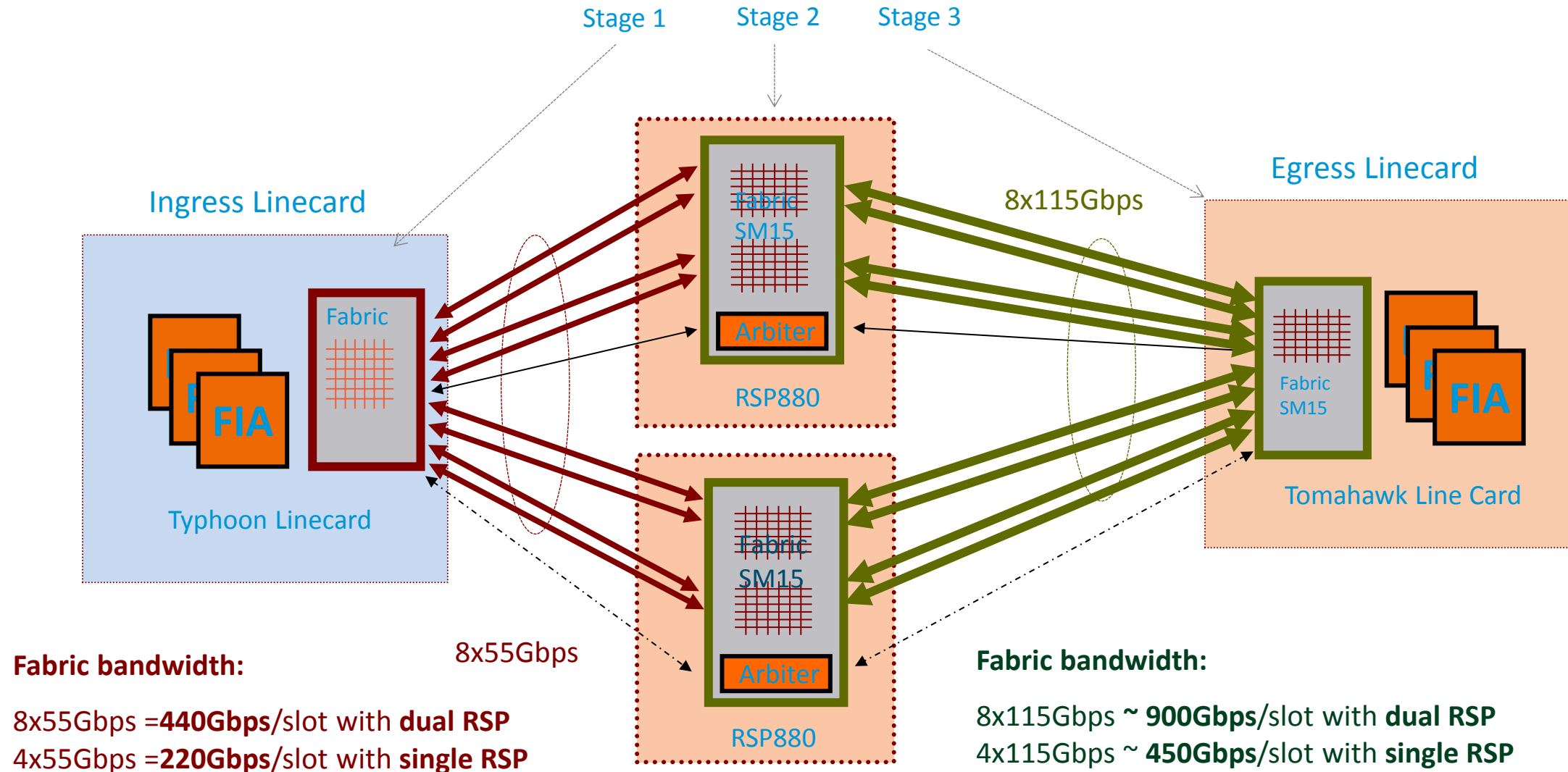
9912



9922

1.38Tb+230G /slot

ASR90xx – RSP880 and Mixed LC



Quero saber mais...

Como podemos te ajudar?

- Mais informações sobre o ASR 9000:

<http://www.cisco.com/c/en/us/products/routers/asr-9000-series-aggregation-services-routers/models-comparison.html>

- Novo modelo de Softwares Cisco

www.cisco.com/go/one

- Sessões semanais GRÁTIS Cisco:

http://www.cisco.com/web/BR/eventos/quintas_quinze.html



E por último...

