ARISTA

APAC Cloud Builders 2023

Friday, 29 September
Hanoi

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APAC Cloud Builders 2023

Data Center Continuous Innovation

Hung Le

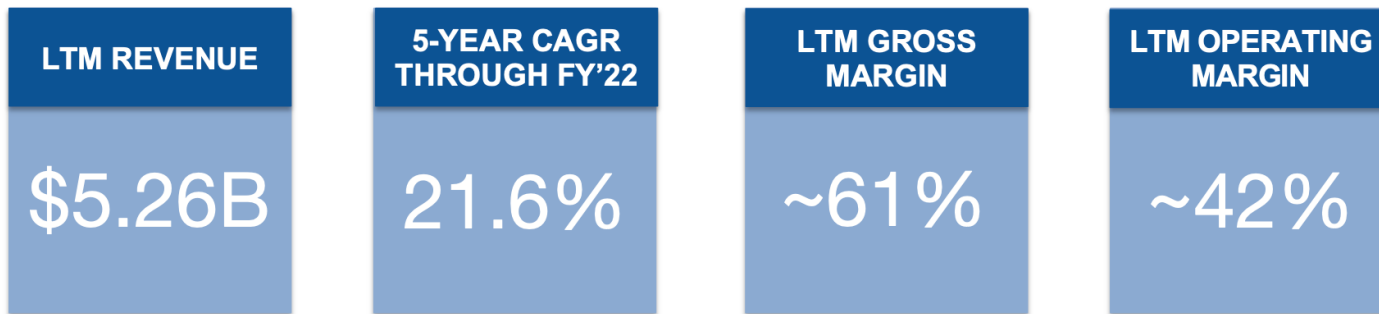# Agenda

- ❑ Arista At A Glance

- ❑ EOS – Modern Networks Operating System

- ❑ Universal Cloud Networking Architectures

- ❑ Platform Overview

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Arista At A Glance

Arista At A Glance   NYSE: ANET   Market Cap $60B

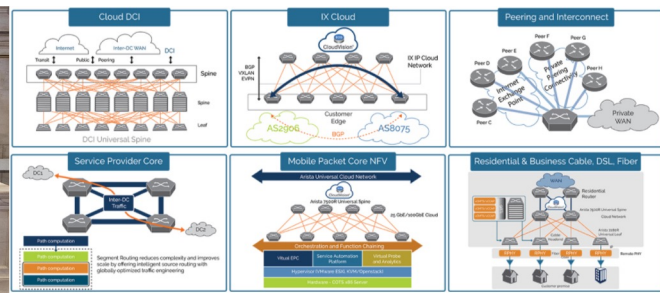| LTM REVENUE	5-YEAR CAGR THROUGH FY'22	LTM GROSS MARGIN	LTM OPERATING MARGIN
$5.26B	21.6%	~61%	~42%

IPO 2014
June 6th

S&P 500
Added in 2018

Leader in 100/400G

9000+
Customers

Gartner Leader
2020 Magic Quadrant for Data Center and Cloud Networking

Forrester Wave Leader
Open Programmable Switches for Business Wide SDN

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Arista Networks

2004
Ken Duda and Andy Bechtolsheim (cofounder of Sun Microsystem) who had been with Granite Systems was acquired by Cisco. This would later become the Catalyst product. Went on to create **Arastra** (later renamed **Arista**)

With the vision of creating a Network OS which was built from the ground up to be highly scalable for the cloud. Customer immediately took notice.

2008
Jayshree Ullal who had been with Cisco for 15 years join Arista as the CEO. Before leaving Cisco she was the VP of Data Center & Switching which oversaw the Catalyst & Nexus product lines.

By this time Arista had customers from Financial Institutions, Hyperscalers, Enterprise and Service providers

2014
With all cylinders firing and customers such as Microsoft, Google, Facebook, Netflix, Twitter, eBay and many more Arista went public.

Arista continued to expand their teams but stayed true to a single OS across all platforms. As more features were added the lines between switches and routers blurred as every switch had full features

2020 & Beyond
While continuing to service enterprises, Arista continues to innovate and make strategic acquisitions to both expand the code base that make it so successful today - while adding strategic tools that are able to leverage the foundational network operating system of EOS.

2018 - Mojo Networks (Wireless)
2018 - MetaMako (Ultra Low Latency FPGA)
2020 - BigSwitch (Monitoring)
2020 - AWAKE (NDR)
2022 – Untangle
2022 - Pluribus Networks

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Arista by the numbers

+80*

Arista NPS
2022

#1
100G
400G

6
Consecutive Years
Leader
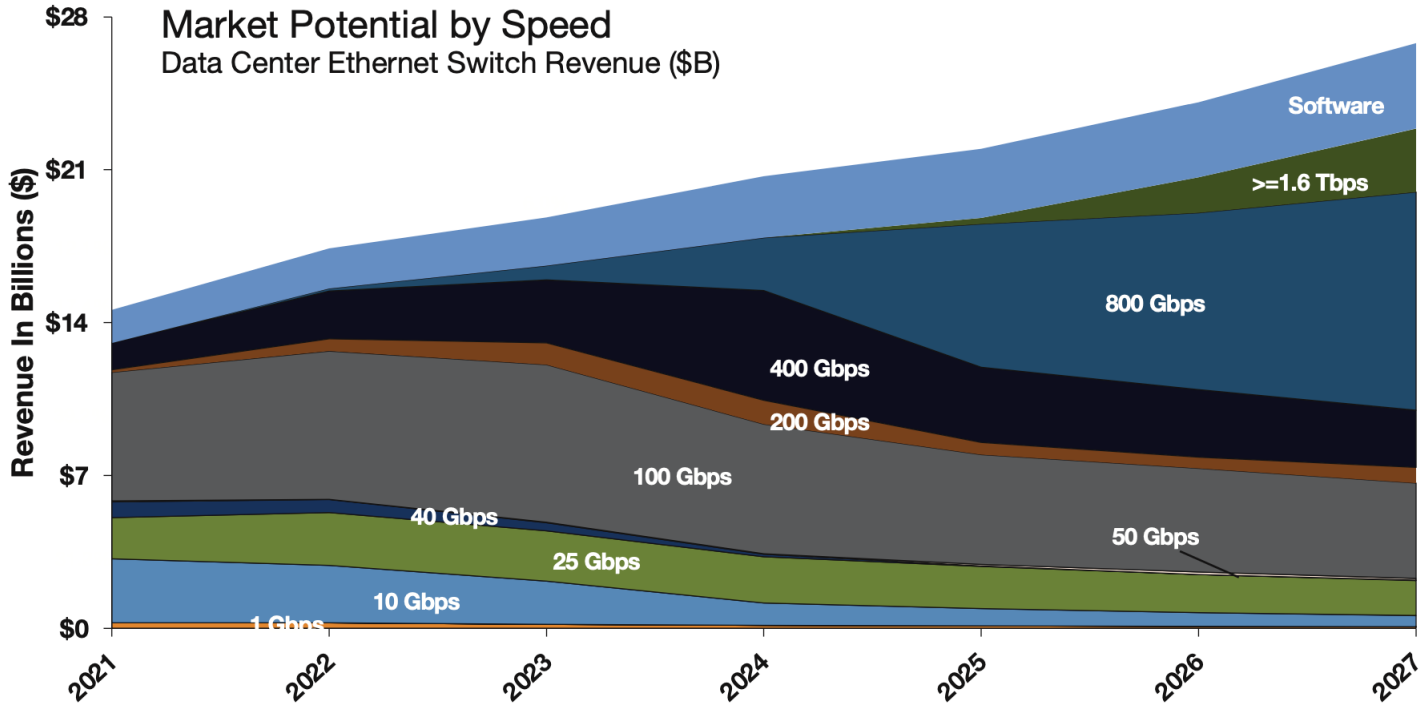Gartner MQ

1
Operating
System

9000+
Customers

* Net Promoter Score Definition
The Net Promoter Score is an index ranging from -100 to 100 that measures the ***willingness of customers to recommend a company's products or services*** to others. It is used as a proxy for gauging the customer's *overall satisfaction with a company's product or service* and the customer's loyalty to the brand.

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Data Center Ethernet Switch Analysis and Forecast

Market Potential by Speed
Data Center Ethernet Switch Revenue ($B)

Revenue In Billions ($)

Software
>=1.6 Tbps
800 Gbps
400 Gbps
200 Gbps
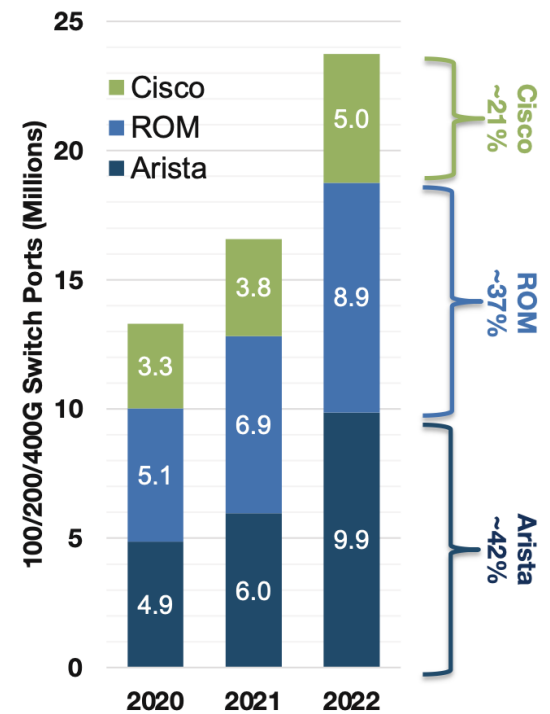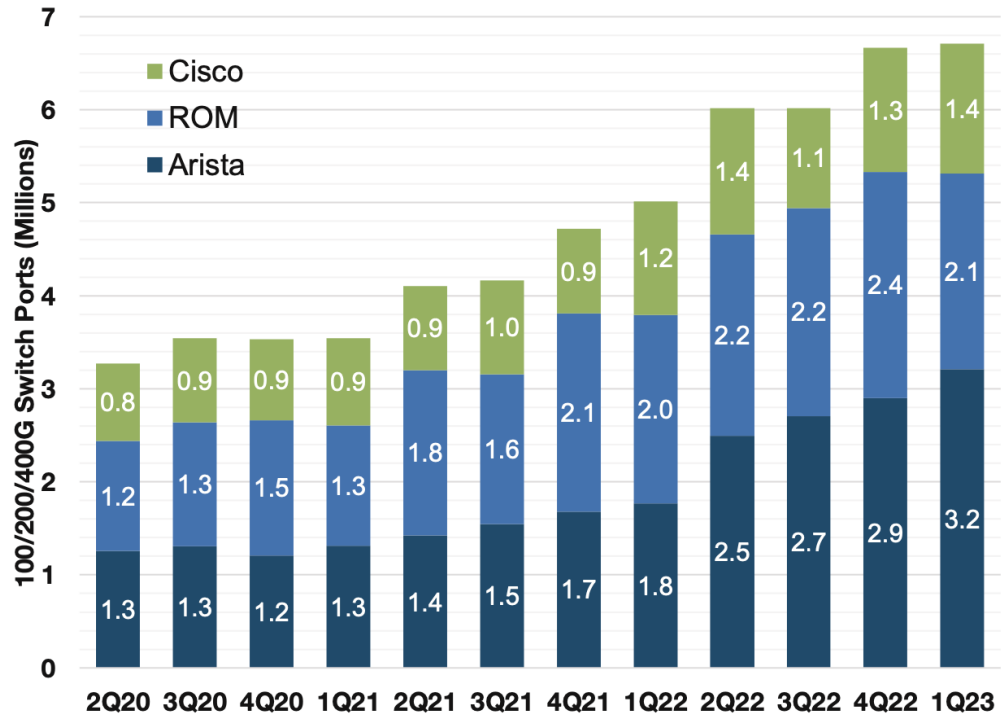100 Gbps
40 Gbps
25 Gbps
50 Gbps
10 Gbps
1 Gbps

Source: Dell'Oro January 2023 - Long Term Ethernet Switch Forecast
Note - Initial 800 Gbps shipments will not be using 800 G Ethernet MAC and will be configured mostly as 2x400 Gbps or as 8x100 Gbps
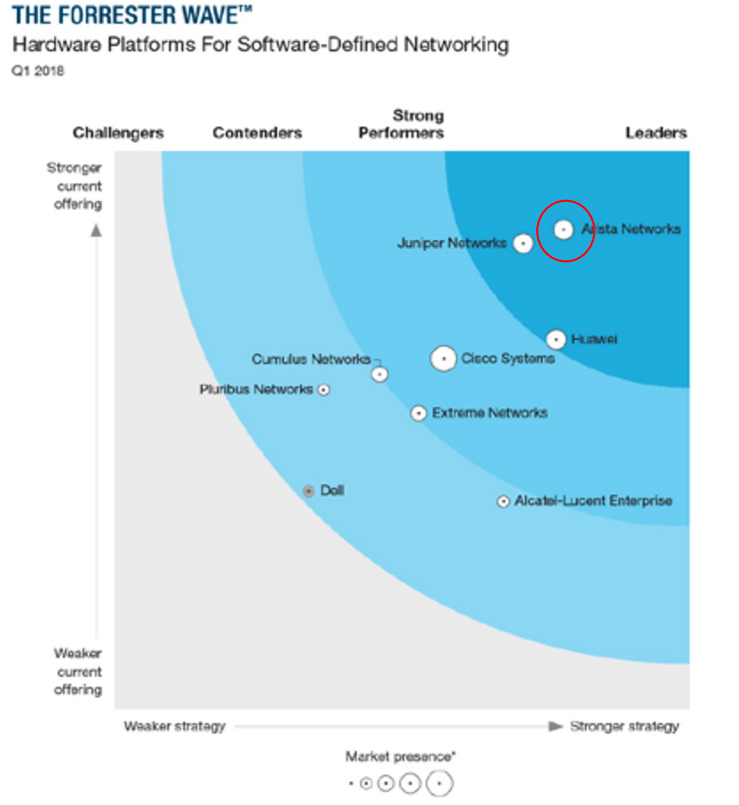
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Arista's Market Leadership in 100G/200G/400G Data Center
High Speed Ethernet Port Analysis

Source: Crehan Ethernet Switch Data Center Total Vendor Tables – 1Q'23

Arista Recognition

THE FORRESTER WAVE™

Hardware Platforms For Software-Defined Networking

Q1 2018
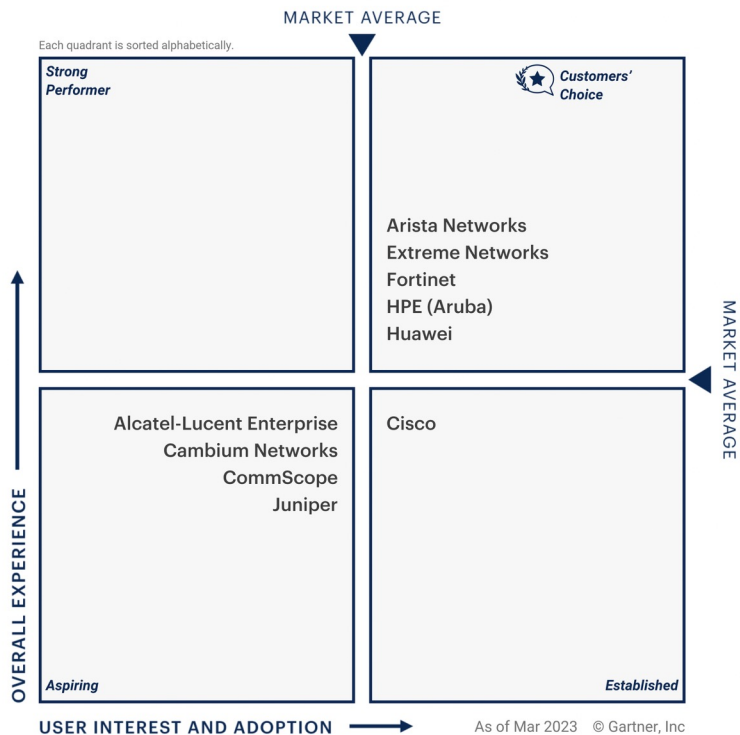
Arista recognized as a leader and visionary 6th year (2015-2020)

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Gartner Peer Insights "Voice of the Customer"

CONGRATULATIONS!!

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Arista EOS Philosophy – It's all about QUALITY

Criteria	Total in ~15 years
# of EOS code versions across ~60+ shipping products	1
Software Field notices	54
Software Regression bugs	8
EOS Security Advisories	42
Security Advisories Requiring Downtime	2
Quality Control Testbeds	~1,000
Auto-tests Per Day	230,000+
EOS Defect Rate	< 1%

Quality comes from three places:

✓ Culture
✓ Architecture
✓ Testing

Quality is <u>the</u> most important attribute of our products. Not one of the most important, it's <u>the</u> most important.
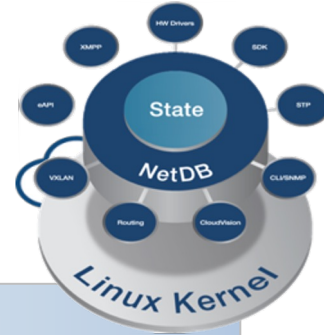
Ken Duda - CTO

Stability, reliability, and security starts with software quality

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Our Aspiration from Day 1: Build a Better NOS
Arista Extensible Operating System (EOS)

A better architecture leads to a more reliable switch

- Linux Kernel - Standard and fully open

- Agent - completely isolated processes

- NetDB – contains all state

- Publish / Subscribe model

    – NetDB delivers state between all agents

- Hardware Abstraction

    – One binary for all hardware platforms

Key Benefits:

Fault Isolation
no other processes or data plane impacted

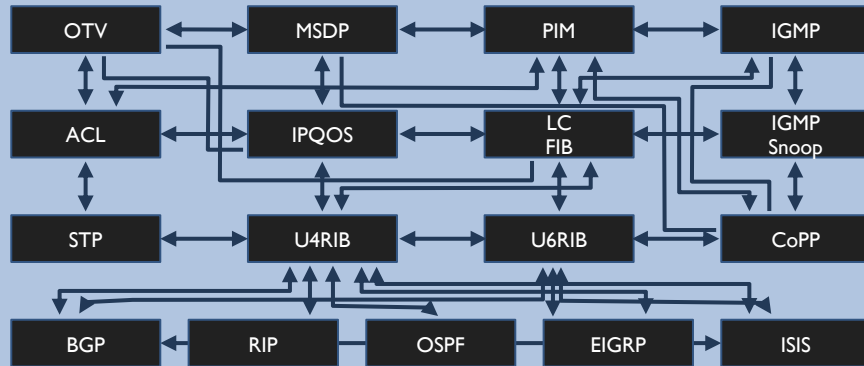Fault Repair
immediately restart a failed agent

ISSU
install RPMs or bug fixes or field upgrades with no downtime

3rd Party Integration
seamless integration 3rd party

One, Single binary image for all platforms

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Resilient Hyperscale Architecture

Legacy – Spaghetti Code

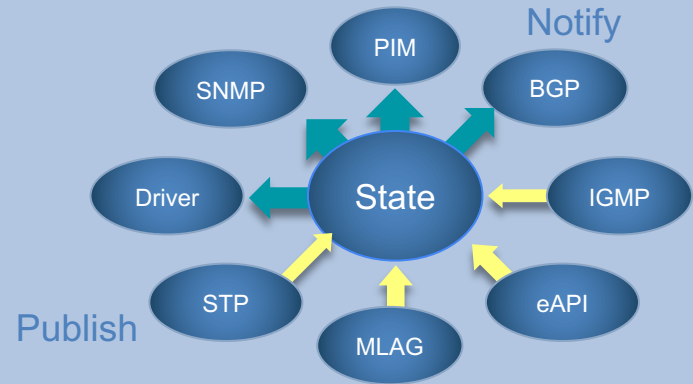| OTV	MSDP	PIM	IGMP
ACL	IPQOS	LC FIB	IGMP Snoop
STP	U4RIB	U6RIB	CoPP
BGP	RIP	OSPF	EIGRP	ISIS

High Inter-Process Communication

N² Messaging Passing
Susceptible to Process Failure; Difficult Recovery

Difficult to Scale

Arista EOS – Publish / Subscribe

Notify

SNMP   PIM   BGP

Driver   State   IGMP

STP   MLAG   eAPI

Publish

Efficient Publish/Subscribe

Linear Cloud Scale

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Arista EOS Architecture
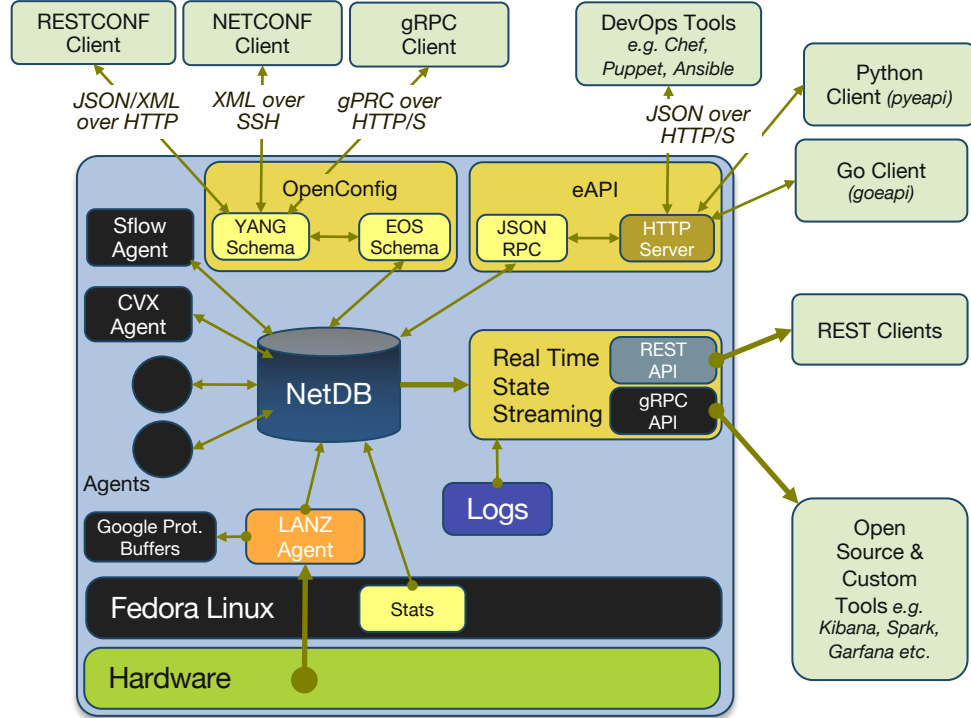
Benefits:

- Fault Isolation – no other processes or data plane impacted

- Fault Repair – immediately restart a failed agent

- Hitless Patching - install RPMs or bug fixes or field upgrades with no downtime; 91% hitless patch record

- 3rd Party Integration – seamless integration with 3rd party s/w and APIs. (i.e Splunk, Openconfig, Ansible)

- Fully Programmable Operating System

Better software architecture leads to a more reliable Carrier Grade Router

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If You Love Unix/Linux, You Will Love EOS!

① Industry Standard Look and Feel:

```
Arista7124SX>
Arista7124SX >en
Arista7124SX #config t
Arista7124SX(config)#?
   aaa           Authentication, Authorization, and Accounting
   agent          Configure an agent
   alias         Add a command alias
   arp           Set a static ARP entry
   banner         Configure system banners
   boot          Modify system boot parameters
   .....
```

② To enter bash it, simply enter 'bash':

```
Arista7124SX#bash

Arista Networks EOS shell

[admin@tm225 ~]$
```

③ EOS commands are basically written in Phython. 'Cli.py' resides in following directory :

```
[admin@tm225 site-packages]$ pwd

/usr/lib/python2.6/site-packages

[admin@tm225 site-packages]$ ls Cli*.py
Cli.py    CliExtensions.py   CliParser.py
CliAuth.py  CliInputWrapper.py  CliSave.py
```

④ You can view the processes running on switch:

```
[admin@tm225 flash]$ ps -ef
UID      PID  PPID  C STIME TTY        TIME CMD
root      1   0 0 May09 ?     00:00:00 /sbin/init
root      2   0 0 May09 ?     00:00:00 [kthreadd]
root      3   2 0 May09 ?     00:00:00 [migration/0]
root      4   2 0 May09 ?     00:00:00 [ksoftirqd/0
...
```

⑤ You can easily do a tcpdump on an Arista switch.

```
tm225#bash sudo tcpdump
tcpdump: WARNING: fabric: no IPv4 address assigned
tcpdump: verbose output suppressed, use -v or -vv for full protocol decode
listening on fabric, link-type EN10MB (Ethernet), capture size 65535 bytes
12:57:30.222171 00:1c:73:0f:80:a6 (oui Unknown) > 01:00:5e:00:00:05 (oui Unknown        ), ethertype 802.1Q (0x8100), length 82: vlan 1, p 0, ethertype IPv4, 10.10.50.1           > OSPF-ALL.MCAST.NET: OSPFv2, Hello, length 44
12:57:40.222687 00:1c:73:0f:80:a6 (oui Unknown) > 01:00:5e:00:00:05 (oui Unknown        ), ethertype 802.1Q (0x8100), length 82: vlan 1, p 0, ethertype IPv4, 10.10.50.1           > OSPF-ALL.MCAST.NET: OSPFv2, Hello, length 44
12:57:50.223172 00:1c:73:0f:80:a6 (oui Unknown) > 01:00:5e:00:00:05 (oui Unknown        ), ethertype 802.1Q (0x8100), length 82: vlan 1, p 0, ethertype IPv4, 10.10.50.1           > OSPF-ALL.MCAST.NET: OSPFv2, Hello, length 44
```

⑥ All images are saved in 'mnt/flash'. You can view, copy, remove, and the start-up config in bash:
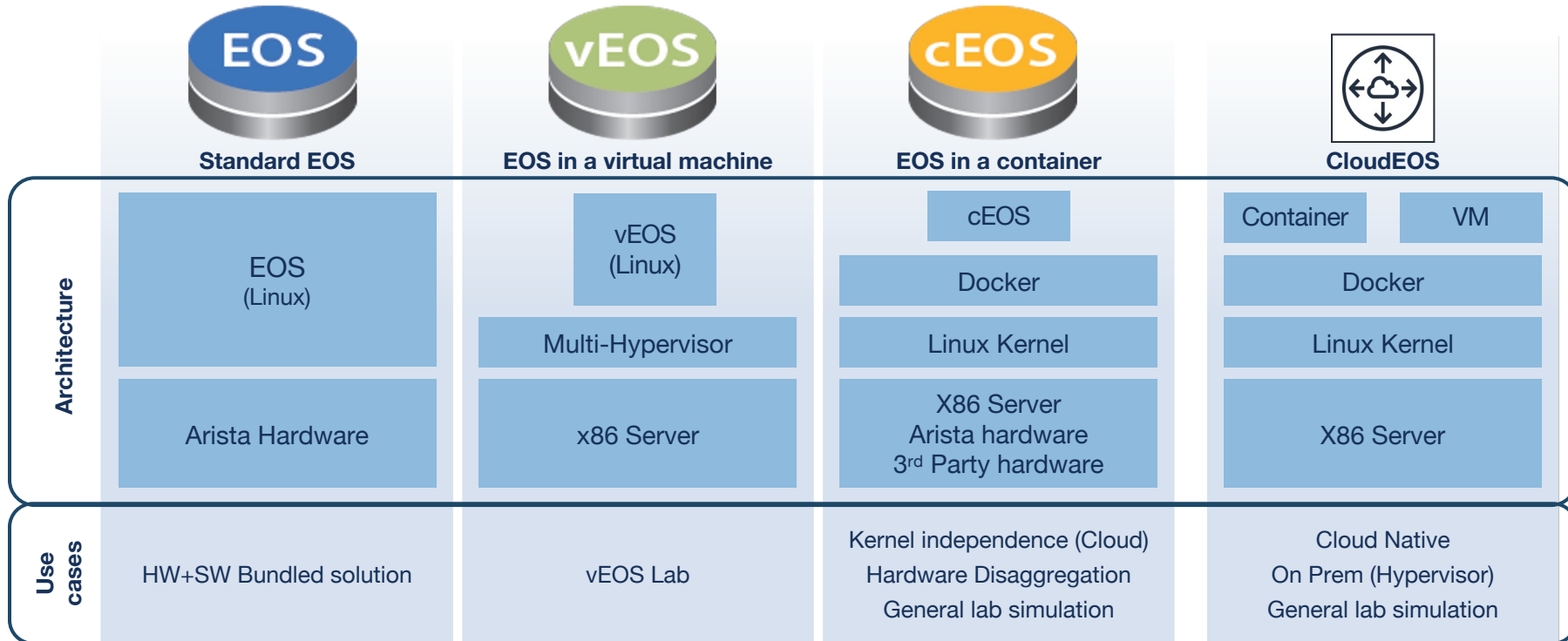
```
[admin@tm225 flash]$ pwd
/mnt/flash
[admin@tm225 flash]$ cat startup-config
! device: tm225 (DCS-7048T-A, EOS-4.6.3)
!
aaa root secret 5 $1$VNh3khl/$d8oEMfdcMhSTpL2gEou0O/
aaa authentication policy local allow-nopassword-remote-login
!
prompt %H.%D{%H:%M:%S}%P
!
hostname tm225
ip name-server 172.22.22.10
ip name-server 172.22.22.40
ip domain-name aristanetworks.com
!
........
```

⑦ You can create and add new commands by simply writing your own python script:

```
localhost# cat -n HelloCli.py
    1 import BasicCli, CliParser
    2 tokenHello = CliParser.KeywordRule( 'hello', helpdesc='Says hello' )
    3 def doHello( mode ):
    4 print "World.\n"
    5 BasicCli.UnprivMode.addCommand( ( tokenHello, doHello ) )
localhost>show ?
...
hello Show your hello
....
localhost>show hello ?
| Output modifiers
<cr>
localhost>show hello
Hello World.
localhost>
```
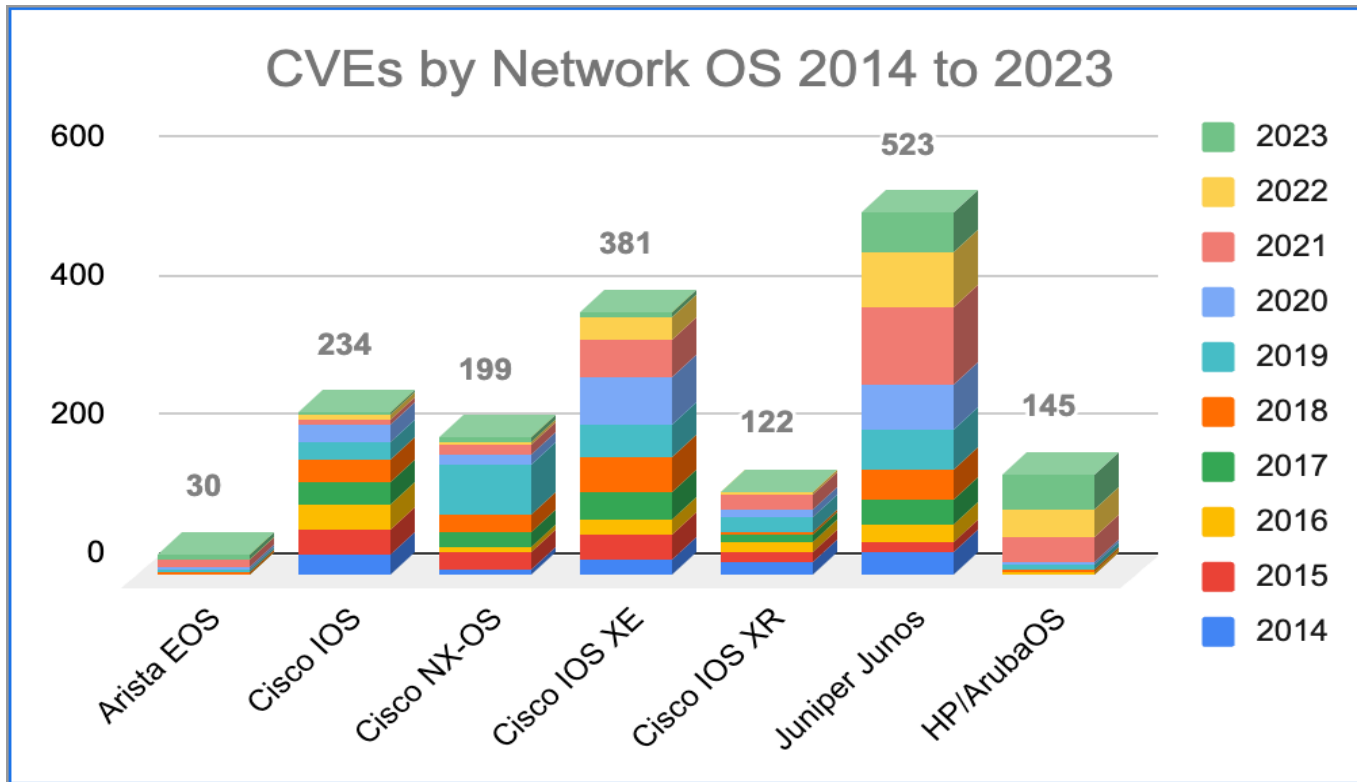
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EOS Platform Flexibility

One EOS. Many packaging options

	Standard EOS	**EOS in a virtual machine**	**EOS in a container**	**CloudEOS**
Architecture	EOS (Linux)	vEOS (Linux)	cEOS	Container / VM
		Multi-Hypervisor	Docker	Docker
			Linux Kernel	Linux Kernel
	Arista Hardware	x86 Server	X86 Server Arista hardware 3rd Party hardware	X86 Server
Use cases	HW+SW Bundled solution	vEOS Lab	Kernel independence (Cloud) Hardware Disaggregation General lab simulation	Cloud Native On Prem (Hypervisor) General lab simulation

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EOS Security Track Record

CVEs by Network OS 2014 to 2023

Network OS	CVE Count
Arista EOS	30
Cisco IOS	234
Cisco NX-OS	199
Cisco IOS XE	381
Cisco IOS XR	122
Juniper Junos	523
HP/ArubaOS	145

Legend: 2023, 2022, 2021, 2020, 2019, 2018, 2017, 2016, 2015, 2014

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Principles

- A Clos network is a kind of multistage circuit-switching network and first formalized by Charles Clos in 1952.
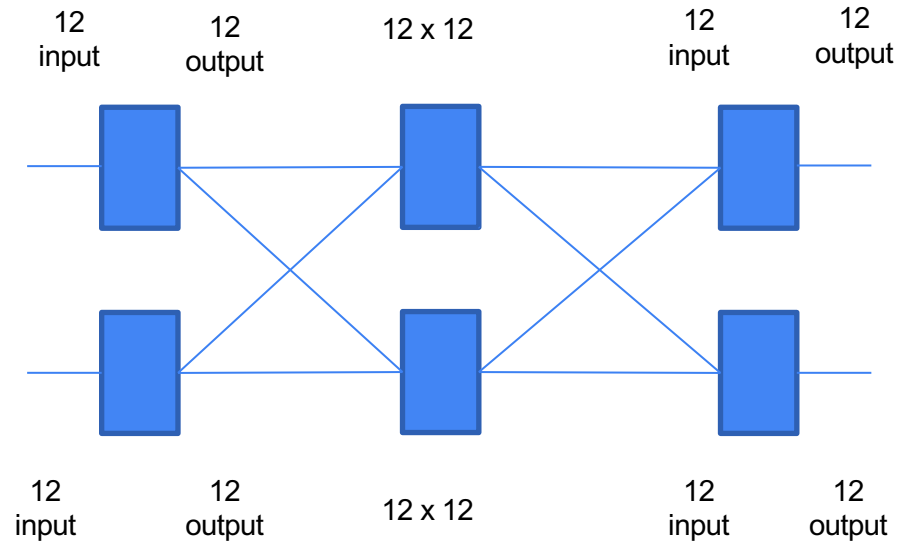
- Non-blocking Clos network required M ≥ N

N input   M output   M input   N output

R Ingress
Crossbar NxM

M Middle
Crossbar RxR

R Egress
Crossbar MxN

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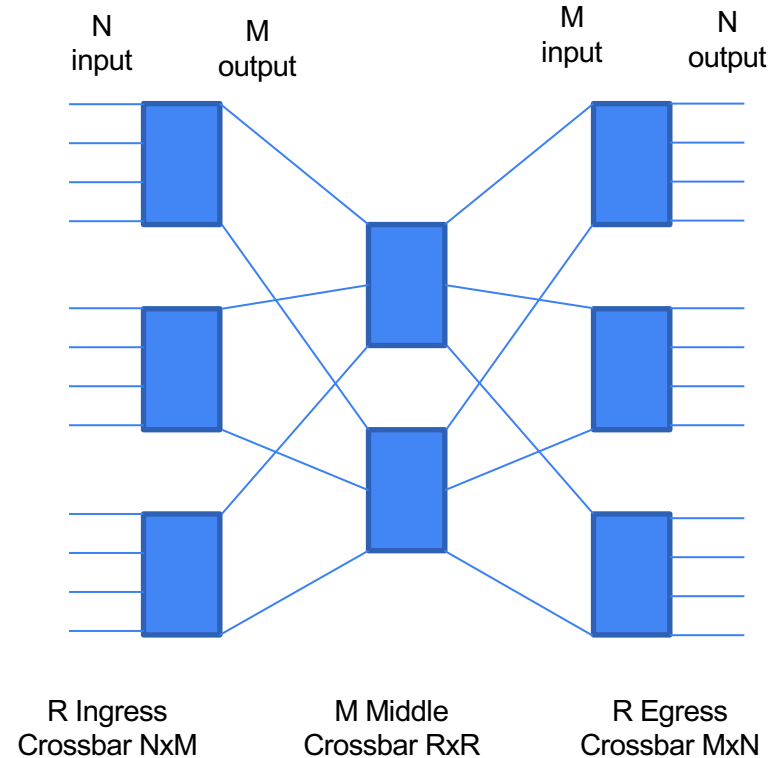
Principles

- 48 Server with only 1G NIC

- Have only 24 port 1G Switch

- How many switches at least to build non-blocking network?

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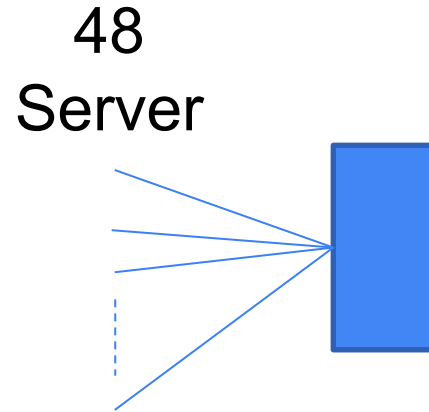# Principles

- 48 Server with only 1G NIC

- Have only 24 port 1G Switch

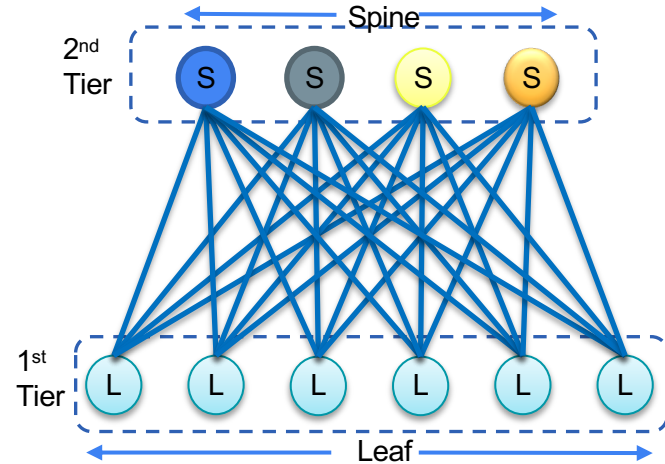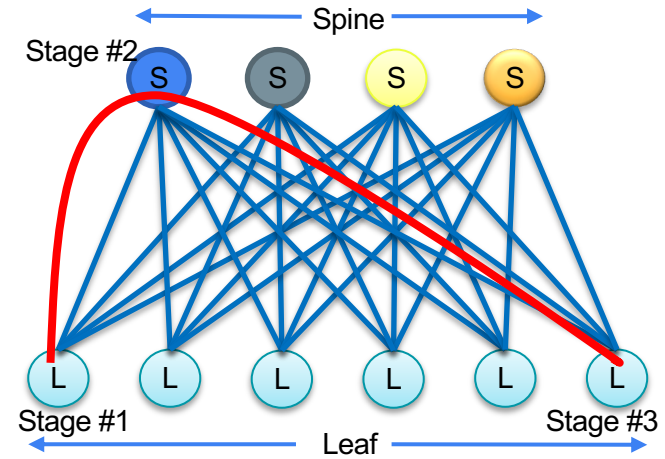- 6 switches at least to build non-blocking network.

12 input	12 output	12 x 12	12 input	12 output

12 input	12 output	12 x 12	12 input	12 output

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Principles

- 48 Server with only 1G NIC

- We wish we have 48 port 1G Switch

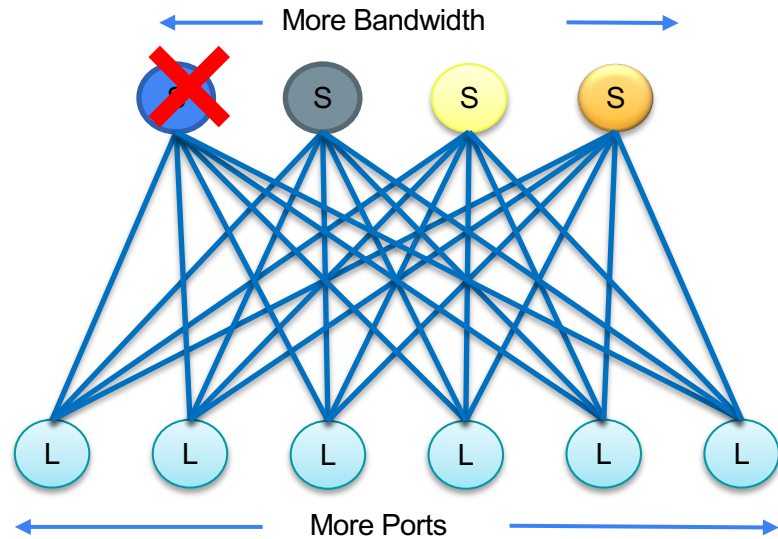- And just need only **1** Switch

48
Server

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Principles

- Leaf and Spine
- Folded Clos
- 3 Stage Clos
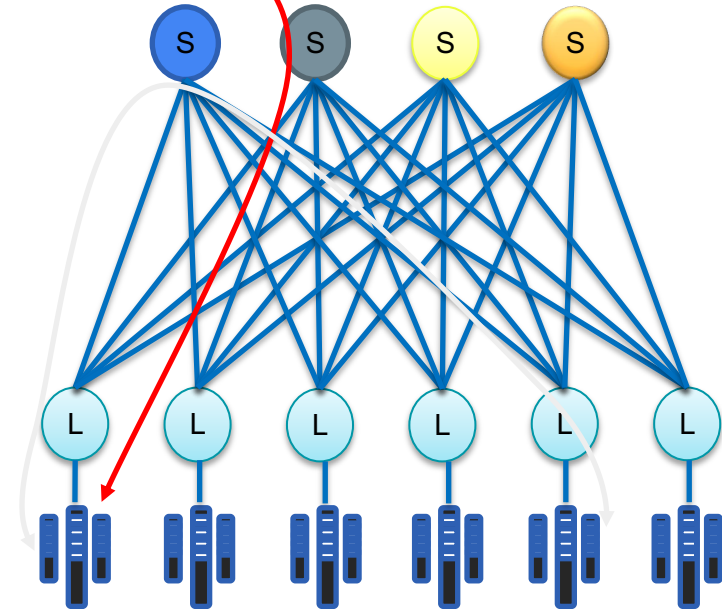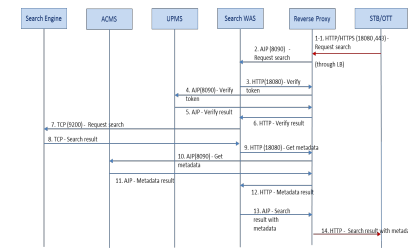- 2 Tier Network
- Fat Tree

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Principles

- A Scale Out Architecture
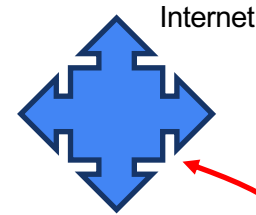 - More Leaf = More Ports
  - More Spine = More Bandwidth

- N +1 Redundancy

- On Spine failure
  - 4 Spine = 25% Impact
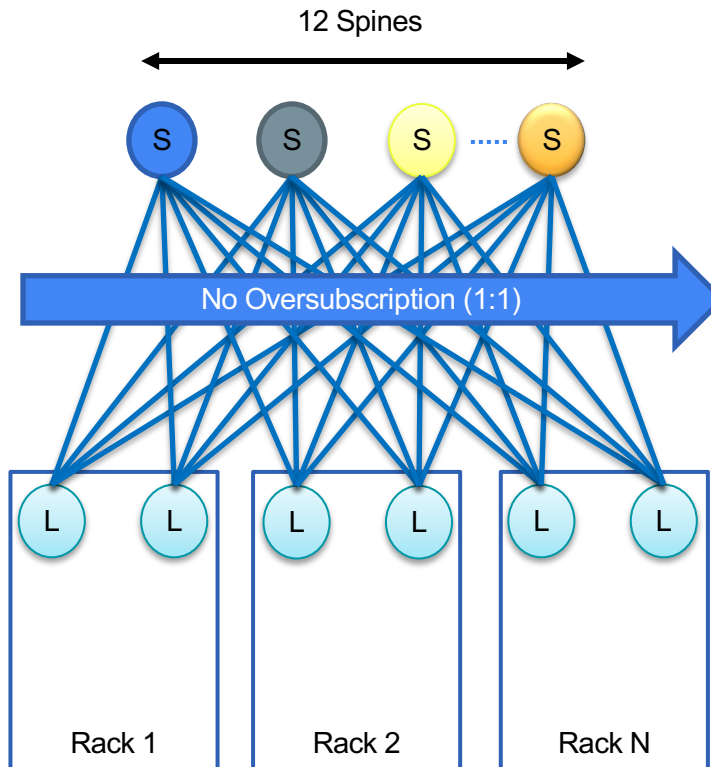 - 8 Spine = 12.5% Impact

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Principles

- West-East traffic account for more than 85% of traffic.
- Optimized for East to West
  - Consistent Latency from Leaf to Leaf
  - Wide ECMP
- Flexibility for North to South
  - External Connectivity at Leaf or Spine Layer

The number of Spines?

12 Spines

Server requirement
- 24 Server per Rack
- 2 x 25Gbps NIC per Server
- 1 x NIC per switch

No Oversubscription (1:1)

Uplink Requirements
- 48 x 25 Gbps per Leaf
- 1.2 Tbps Uplink from Leaf to Spine
- 12 x 100 Gbps toward Spine
- With 100G between Leaf-Spine, we need 12 Spines for 1:1 Oversubscription.

S S S S

L L   L L   L L

Rack 1   Rack 2   Rack N

The number of Spines?

Server requirement
- 24 Server per Rack
- 2 x 25Gbps NIC per Server
- 1 x NIC per switch

6 Spines

No Oversubscription (2:1)

Rack 1

Rack 2

Rack N

Uplink Requirements
- 48 x 25 Gbps per Leaf
- 1.2 Tbps Uplink from Leaf to Spine
- 12 x 100 Gbps toward Spine
- With 100G between Leaf-Spine, we need 6 Spines for 2:1 Oversubscription.

The number of Spines?

4 Spines

Server requirement
- 24 Server per Rack
- 2 x 25Gbps NIC per Server
- 1 x NIC per switch

No Oversubscription (3:1)

S   S   S   S

L   L   L   L   L   L

Rack 1   Rack 2   Rack N

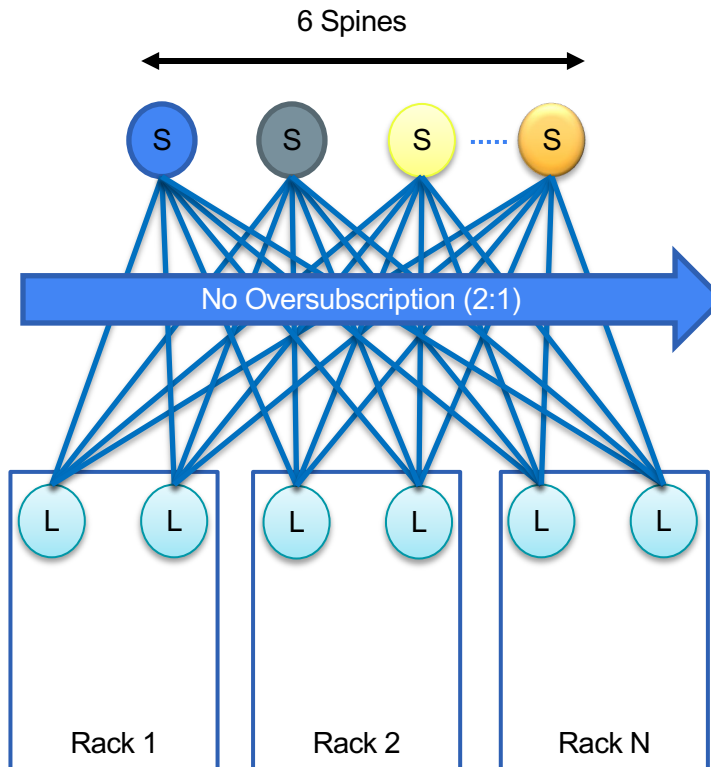**Uplink Requirements**
- 48 x 25 Gbps per Leaf
- 1.2 Tbps Uplink from Leaf to Spine
- 12 x 100 Gbps toward Spine
- With 100G between Leaf-Spine, we need 4 Spines for 3:1 Oversubscription.

The number of Spines?

2 Spines

Server requirement
- 24 Server per Rack
- 2 x 25Gbps NIC per Server
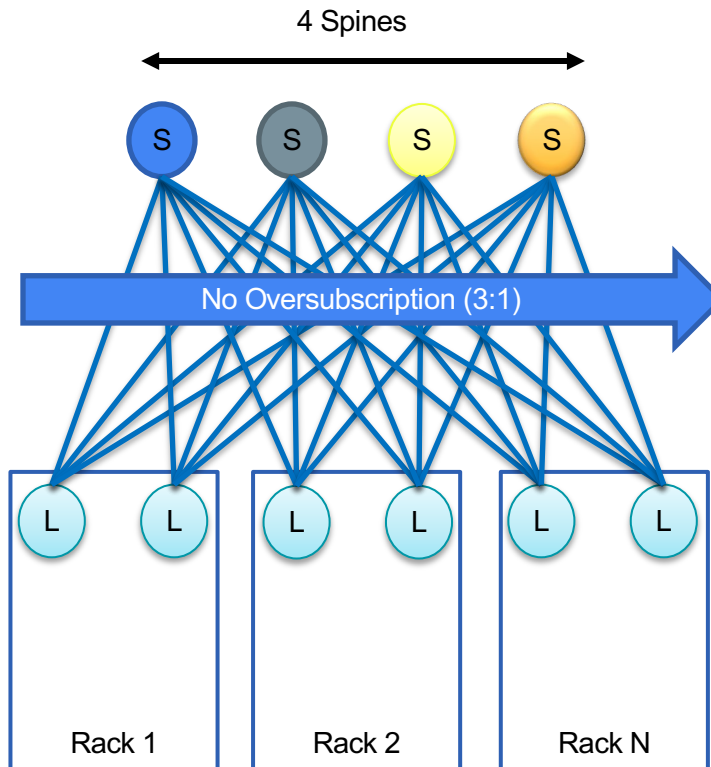- 1 x NIC per switch

No Oversubscription (6:1)

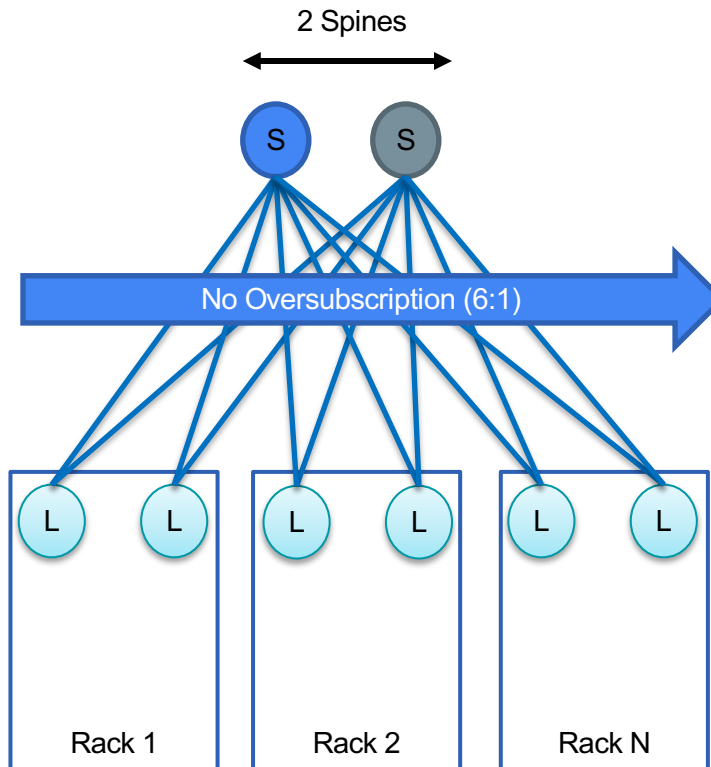**Uplink Requirements**
- 48 x 25 Gbps per Leaf
- 1.2 Tbps Uplink from Leaf to Spine
- 12 x 100 Gbps toward Spine
- With 100G between Leaf-Spine, we need 2 Spines for 6:1 Oversubscription.

Rack 1

Rack 2

Rack N

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Common DC Network: A system with Many Parameters

- ❑ Bandwidth & Capacity
  - ○ Servers and services link speed, NICs & Optics
  - ○ Switch ASICs, Platforms
  - ○ Systems with mix of 25G to 400G speeds, also can support 800G in Core layer
- ❑ Scale and scalability
  - ○ Topology and routing
  - ○ MACsec and IPSec at high speeds
  - ○ Lifecycle, Deployment and retrofits
- ❑ Cabling & Powering
  - ○ Fiber infrastructure, high efficiency with 100G SerDes
  - ○ Distance
  - ○ Power budget
- ❑ Automation and management

Timelines: need by vs. technology availability and development

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Data Center Network Architecture Evolution
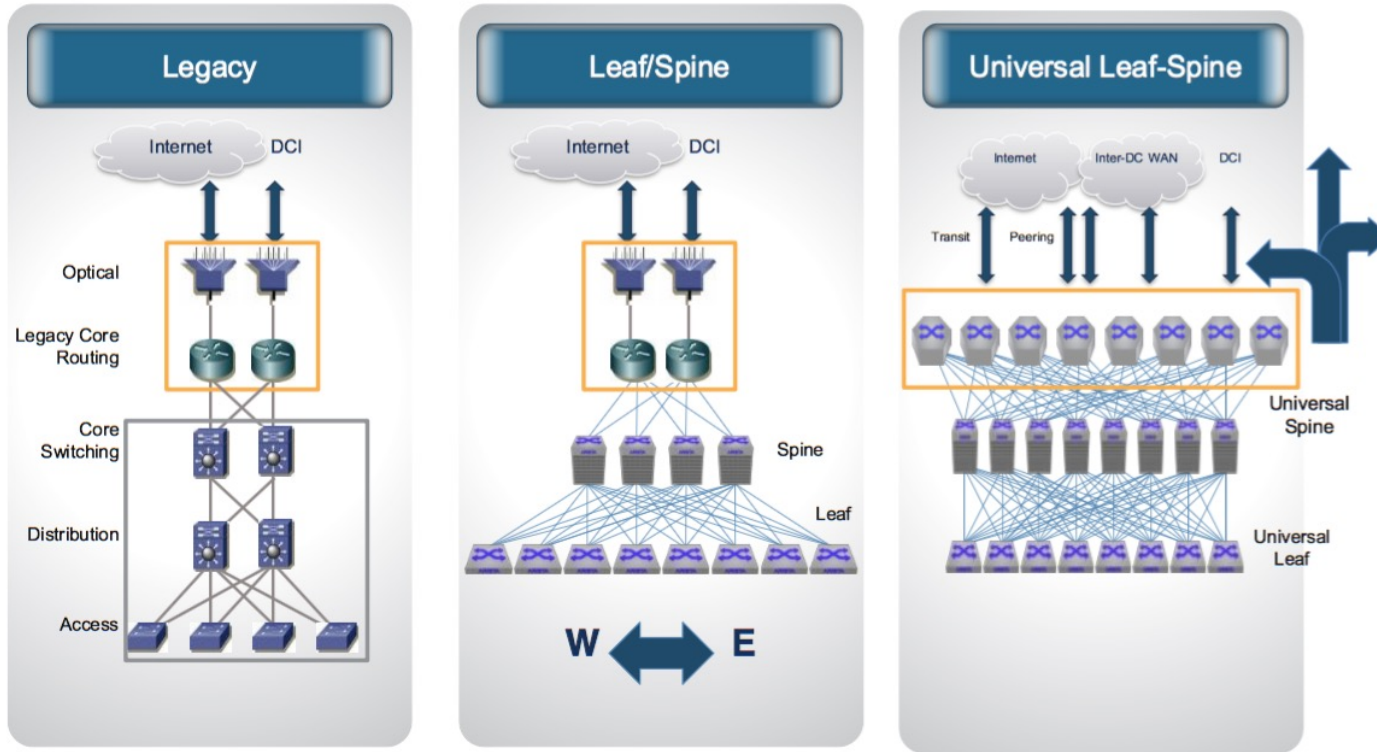
Routing is Integrated into the Universal Spine and Leaf

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Universal Cloud Network Design

- Using a consistent architecture across all leaf switches and cabinets can easily support any portion of the network without having to relearn how each section of the topology is constructed.

ARISTA
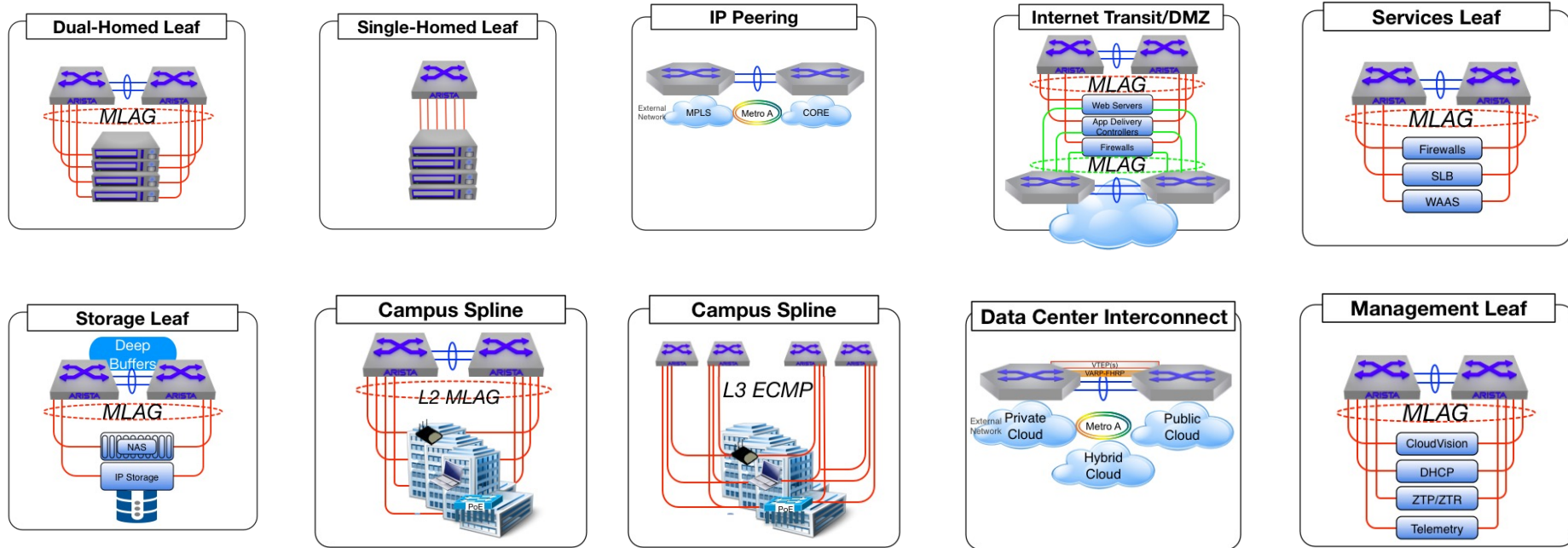
Universal Cloud Networking Architectures

Layer 2 and Layer 3 Leaf/Spine network for data scale

Layer 2 / MLAG
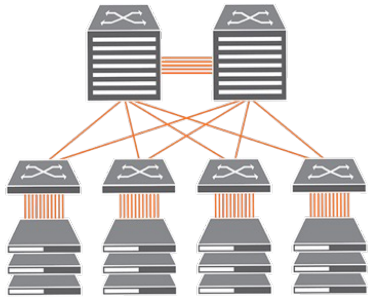
Layer 3 / ECMP

VXLAN with EVPN

Hybrid Cloud

Public Cloud 1

Public Cloud 2

Public Cloud 3
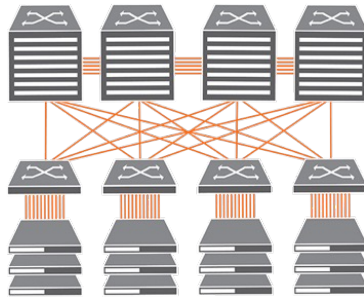
100 to 10,000

500 to 100,000+
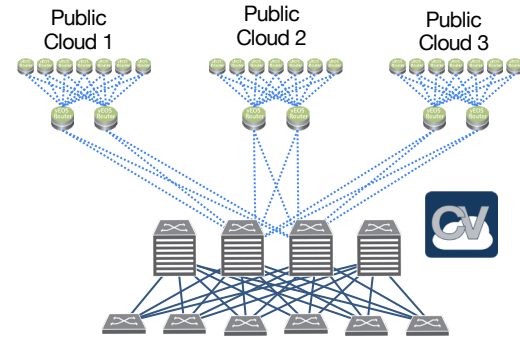
500 to 100,000+

500 to 100,000+

Standard protocols - no proprietary fabrics

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Arista UCN – L2LS
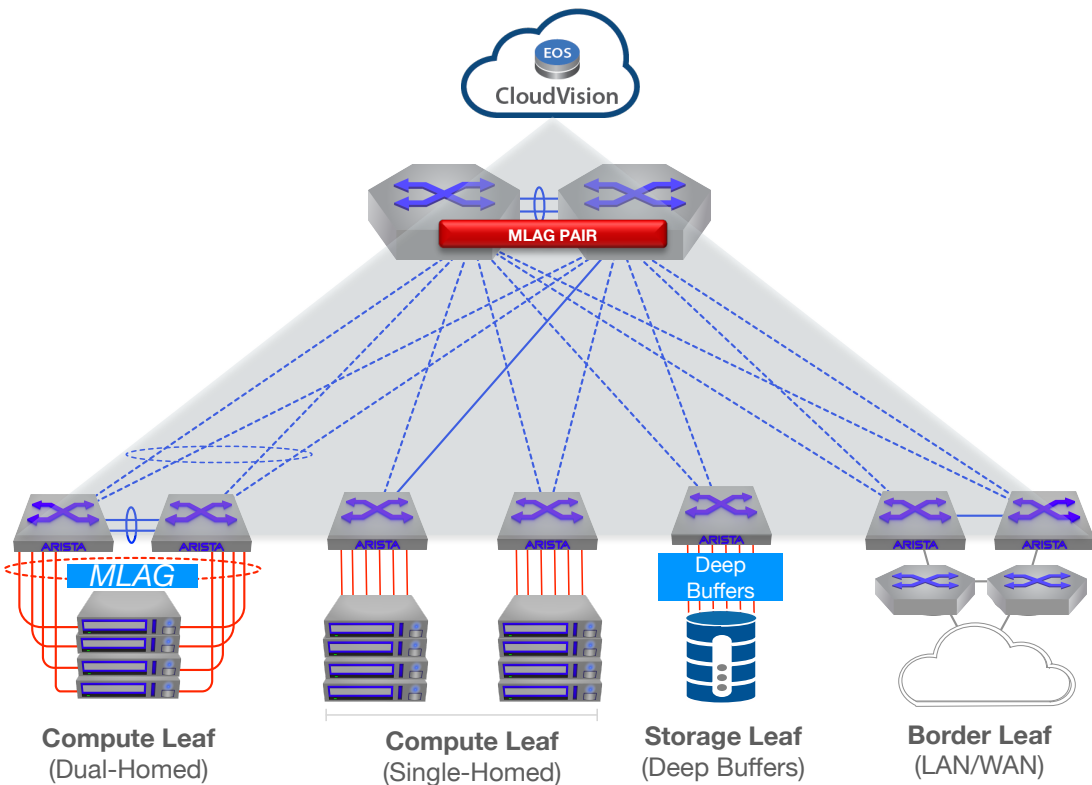
L2LS MLAG Spine Design

- Ease of Workload Mobility
- Segmentation via VLANs
- Simple design to provision and manage
- All Active links
- Leverage Standards based protocols
- Consistent Leaf designs (ToR)
- Spine to interconnect leafs
- Scale limited by MAC, VLAN and Spine density

Compute Leaf (Dual-Homed)   Compute Leaf (Single-Homed)   Storage Leaf (Deep Buffers)   Border Leaf (LAN/WAN)

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Arista UCN – L3 LS

Compute Leaf
(Dual-Homed)

Compute Leaf
(Single-Homed)

Storage Leaf
(Deep Buffers)

Border Leaf
(LAN/WAN)
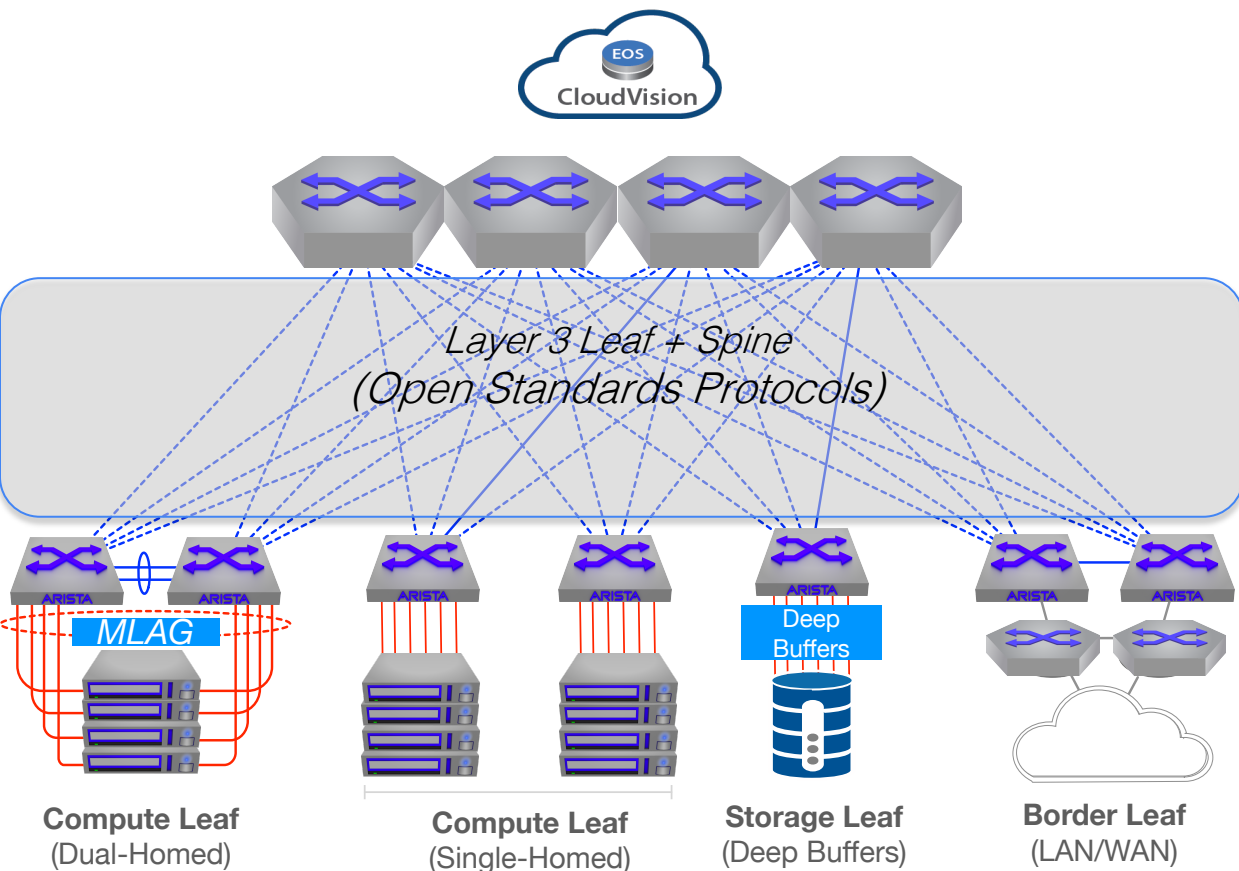
L3LS ECMP Spine Design

- Spine redundancy
- Grow/scale from 2 to 128 way
- Minimal fault domains
- Deterministic failover and simpler troubleshooting
- (ToR) Leafs as FHR
- eBGP between Leaf & Spine
- Stability by reducing scope of Layer 2 domain
- Deployed and Managed by CloudVision

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Arista's IP Storage/Big Data UCN

Hyper-converged
Storage Racks
(Small)

Dedicated Storage Rack
(Medium)

Dedicated Storage Spine
(Large)
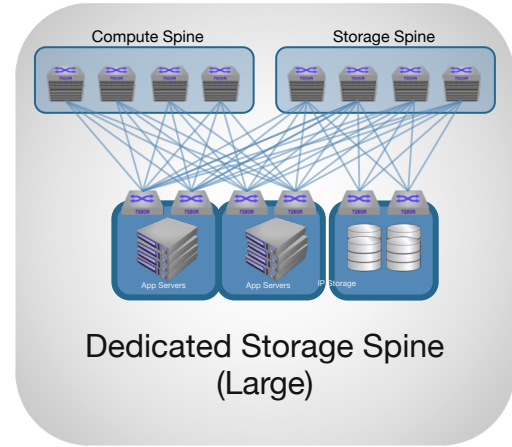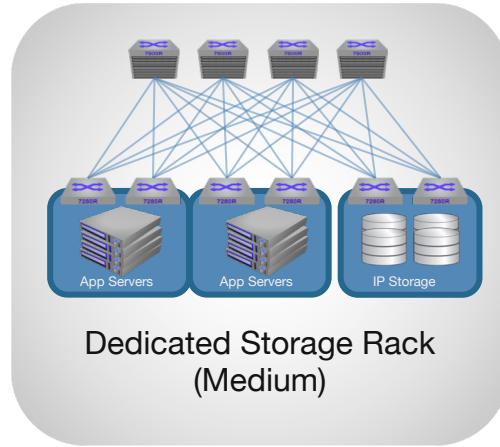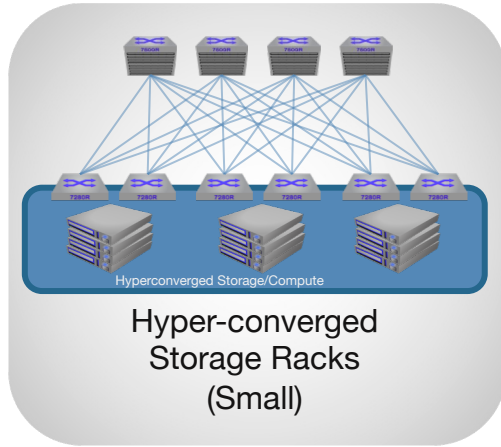
Scalable to Petabytes	Lossless Transport	High Availability	Visibility	Simplified Management	Return on Investment
UCN Architecture, Dense switching	Deep Buffering, VOQ, DCB/PFC	Smart System Upgrades, Self-healing OS	LANZ, VM Tracer, MapReduce, Tracer	CloudVision provisioning	Low power consumption, compact form factors

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Arista Universal Leaf 7280: 100X More Buffer than traditional Leaf.

Packet Memory

3GB/4GB
Deep Buffer

32/40MB
Shallow Memory Buffer

Arista7050/ Cisco NX9K/
Juniper QFX

Arista 7280

How much buffer?

FCT under different buffer settings

Flow completion time (s)

Per-port buffer size per 10Gbps bandwidth (B)

Flow completion times dropped dramatically with a minimum of 10 Mbytes buffer per 10G port
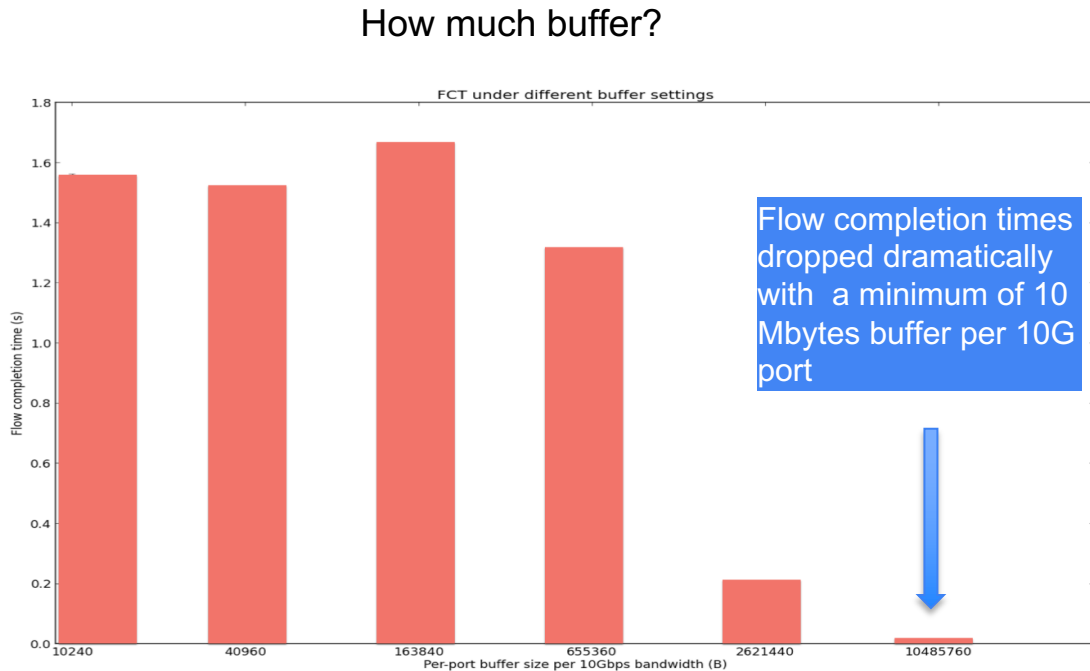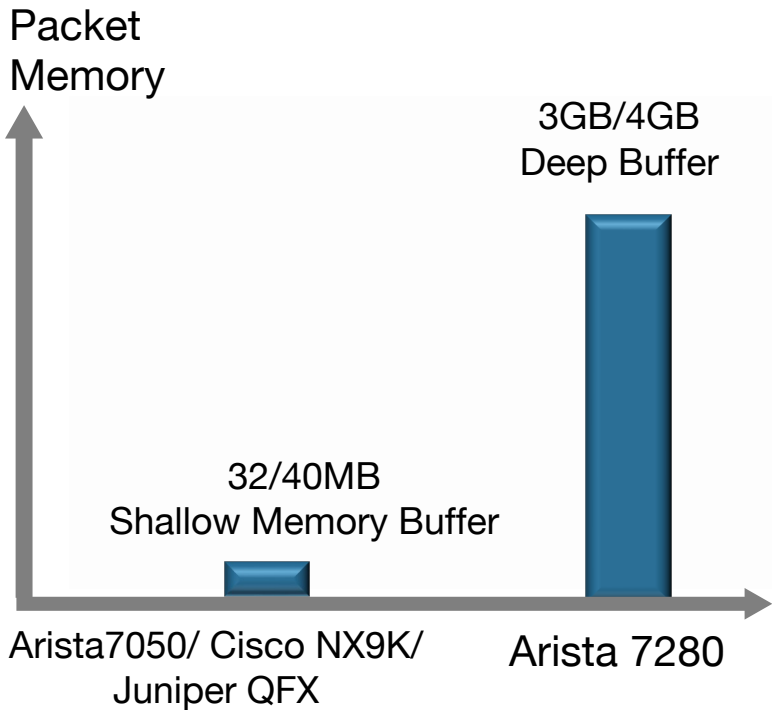
Lossless: Deep packet buffer for Big Data, IP Storage, HPC & incast scenarios

ARISTA

Arista UCN – L3LS-With EVPN
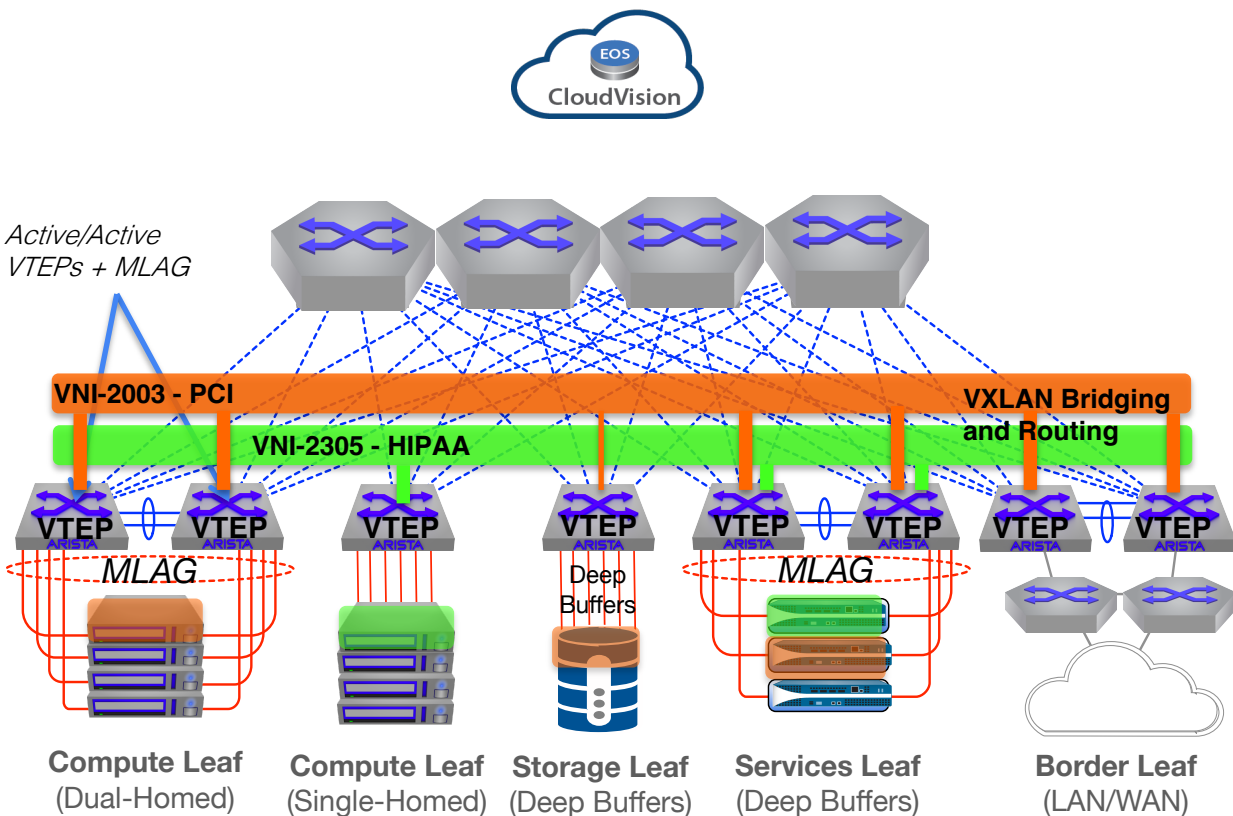
L3LS-EVPN Use Case

- Network Based Overlay
- Physical Virtual Tunnel End Points (VTEP's)
- BGP for underlay and overlay
- Enable Macro-Segmentation Services with VXLAN
- CloudVision Orchestration, Management, and Learning

Labels in diagram:
- Active/Active VTEPs + MLAG
- VNI-2003 - PCI
- VNI-2305 - HIPAA
- VXLAN Bridging and Routing
- MLAG
- Deep Buffers
- Compute Leaf (Dual-Homed)
- Compute Leaf (Single-Homed)
- Storage Leaf (Deep Buffers)
- Services Leaf (Deep Buffers)
- Border Leaf (LAN/WAN)

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First Hop Redundancy Protocol – VRRP, HSRP,…

VRRP Control Packet

ARISTA
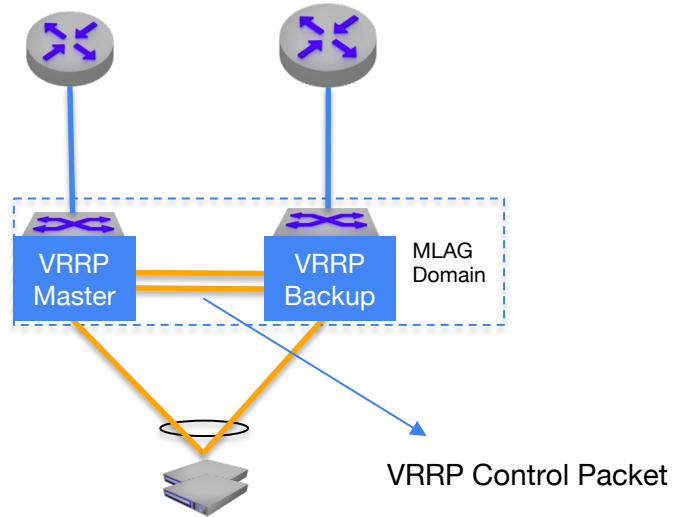
First Hop Redundancy Protocol - VARP (Virtual ARP)

Leaf

Layer 3 adjacency

VARP IP/MAC

VARP IP/MAC

MLAG Domain

No Control Packet needed for VARP

ARISTA
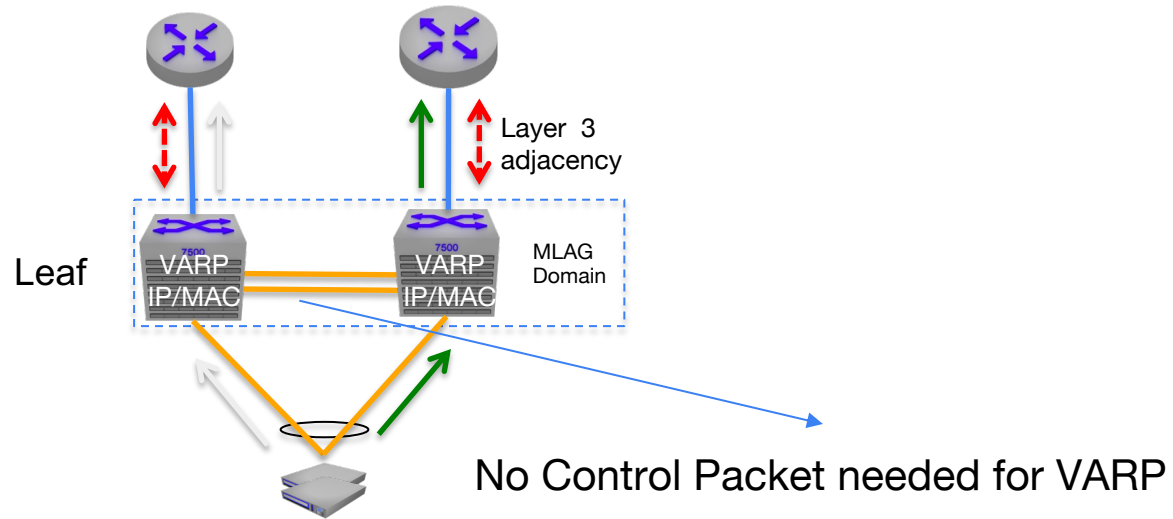
Multi-Pod Architecture
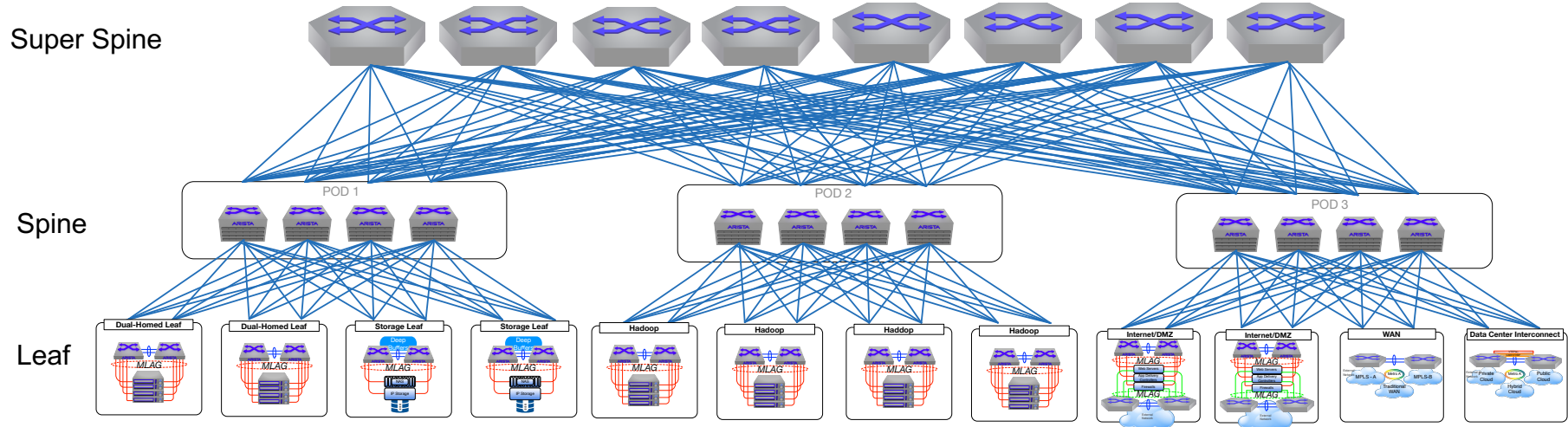
- Any Network Design (L2LS/L3LS/L3LS-V)
- Multiple Data Room Interconnect
- All with the same rich services (MSS/Virtualization/Tracers/DANZ/LANZ)
- CloudVision Orchestration, Management, and Learning

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Multi Plane Super Spine – Hyper Scale Architecture

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Multi - DCs Architecture (L3LS)

ARISTA
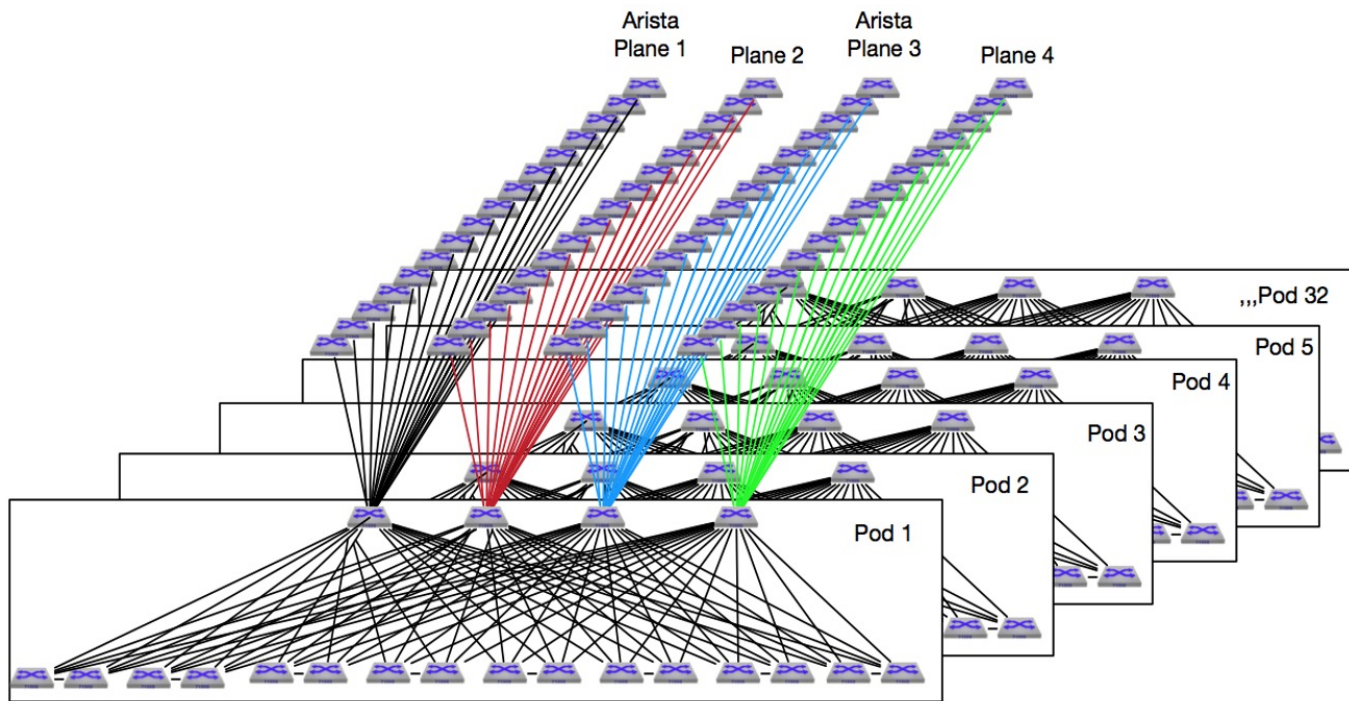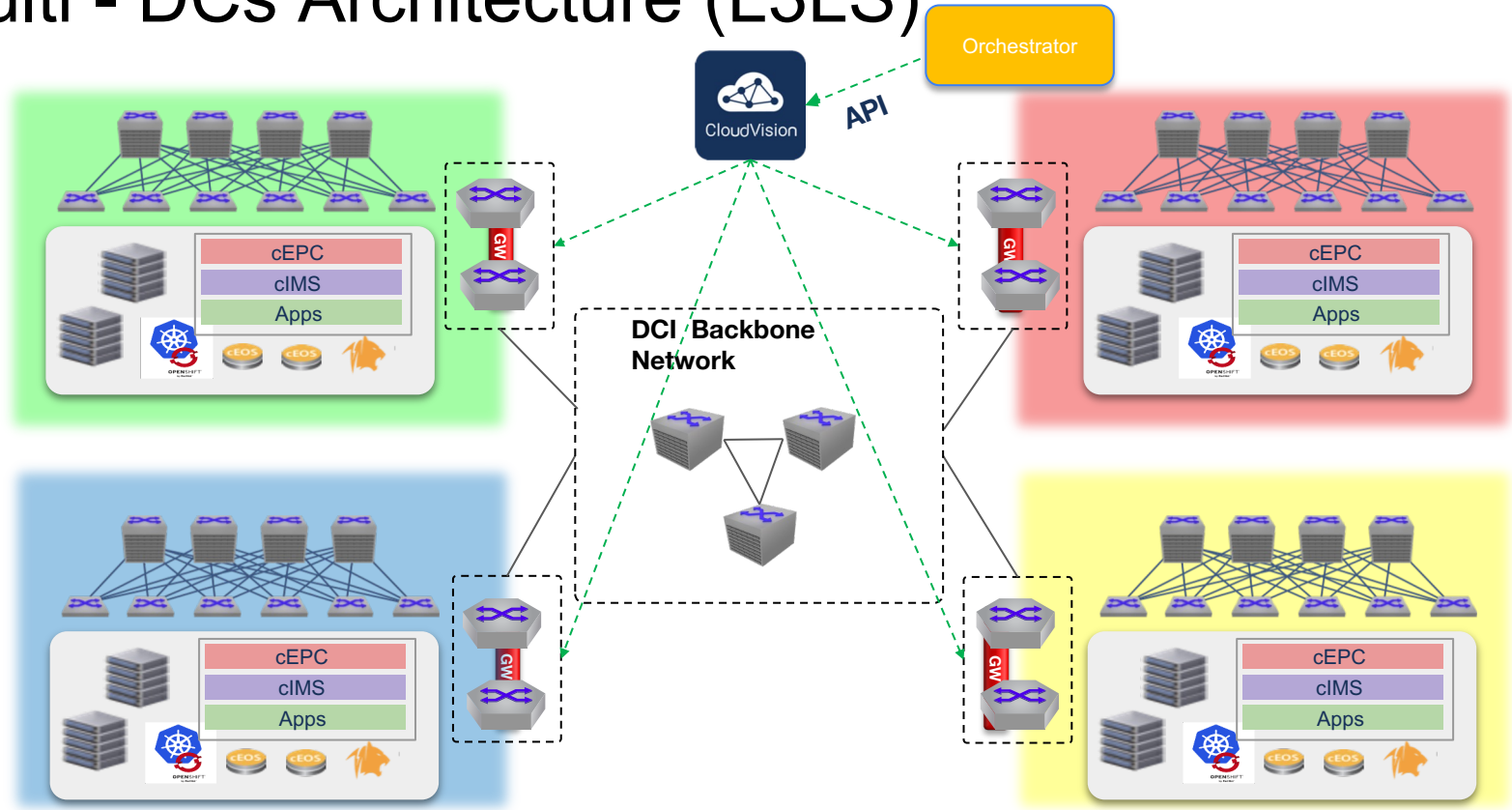
Multi - DCs Architecture (L3LS with EVPN overlay)
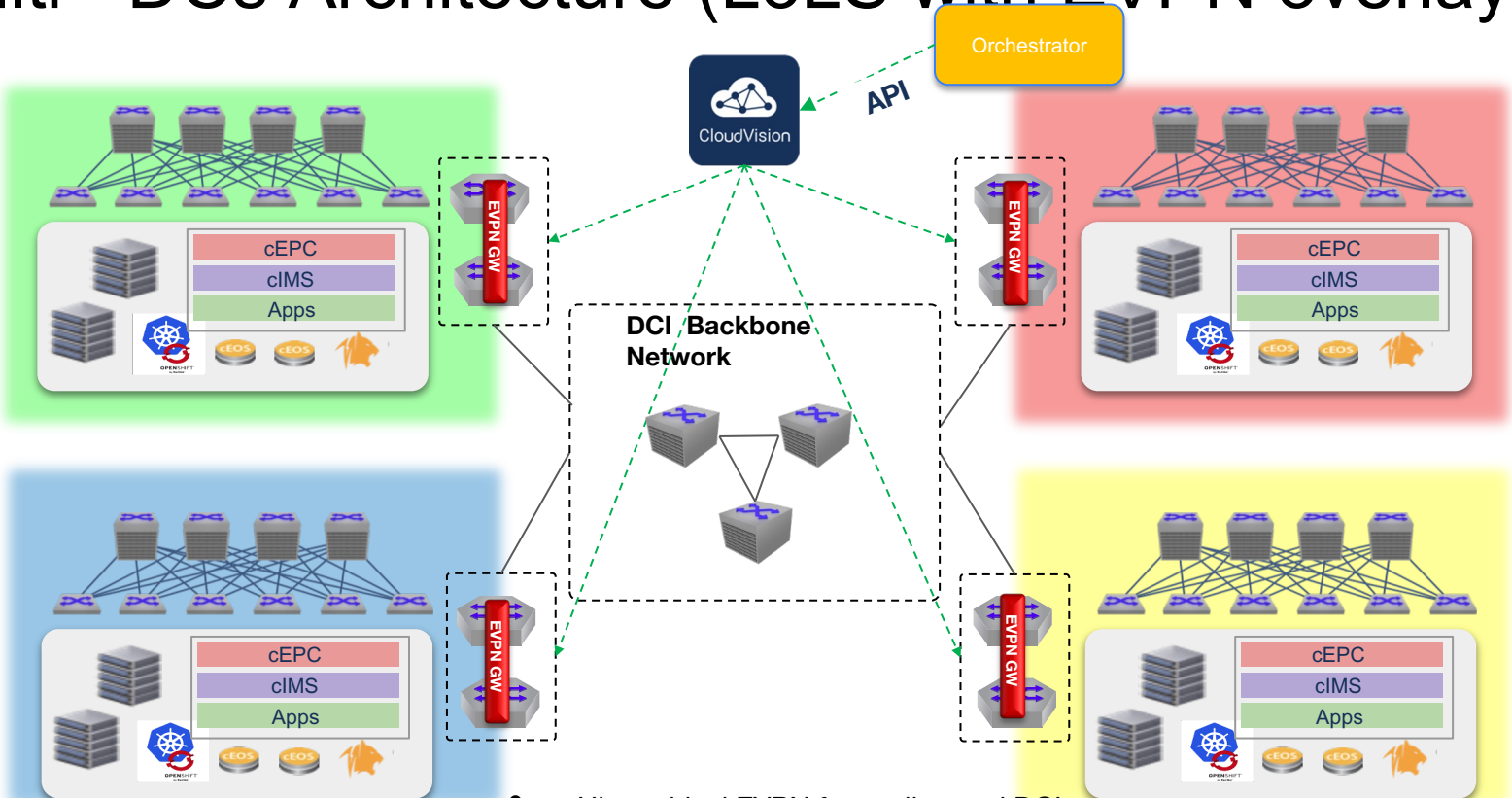
- Hierarchical EVPN for scaling and DCI
- Interconnect EVPN domains geographically separate locations

ARISTA

EVPN GW – Hierarchical EVPN for scaling and DCI

☐ **IETF BESS working group, number of RFCs/Drafts for EVPN GW behavior**

- ○ Support for both Layer 2 (type-2 & 3) and 3 (type-5) DCI solutions
- ○ Interop across different BGP Address families and data-plane encapsulations (VXLAN, PBB, MPLS)

| Draft	Overview	
A Network Virtualization Overlay Solution using EVPN **RFC 8365**	EVPN control plane for L2 VPNs with an NVO environment with VXLAN, NVGRE and GENEVE encap– DCI using GWs and DCI using ASBRs	
EVPN and IP-VPN Integrated Solution **draft-ietf-bess-evpn-ipvpn-interworking-07**	Layer 3 DCI interop between EVPN-VXLAN/MPLS and IP-VPN WAN for layer 3 DCI	L3 GW solution
Multi-site EVPN based VXLAN using Border Gateways **draft-sharma-bess-multi-site-evpn-01**	GW DCI solution focused only on EVPN-VXLAN, support for a single control planes (EVPN) and single data-plane (VXLAN)	
Interconnect Solution for EVPN Overlay networks **RFC 9014**	EVPN GW solution for L2 interconnecting of multiple control planes (VPLS/EVPN) and data-planes (MPLS, VXLAN, PBB)	Industry adopted L2 GW
EVPN multicast forwarding for EVPN to EVPN GWs **draft-rabnic-bess-evpn-mcast-eeg-00**	EVPN GW solution for providing seamless multicast interconnect between EVPN domains, across VXLAN and MPLS data-planes	
Domain Path (D-PATH) for Ethernet VPN (EVPN) Interconnect Networks **draft-sr-bess-evpn-dpath-02**	D-path community for EVPN routes to provide loop-free route advertisement between EVPN domains for layer 2.	

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EVPN GW – EVPN VXLAN/MPLS GW

- How does EVPN GW work?
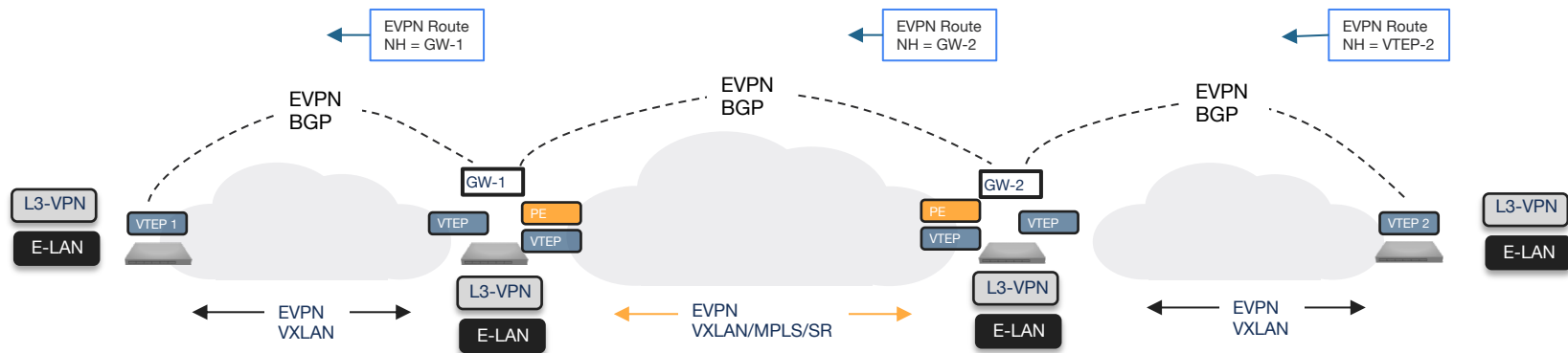
EVPN GW behavior

- PE/VTEP nodes EVPN peer with their local GW node via eBGP or iBGP
- GW node EVPN peer with the GW nodes in the remote domain via eBGP or iBGP
- Import received type-2 & 5 routes based on RT policy
- Export type-2 & 5 routes between domains based on RT policy
- When exporting between domains, new Next-hop, encap and label

Benefits

- End-to-End Layer 2 and 3 connectivity regardless of interdomain encap
- Support L2 and L3 VPN between VXLAN VTEPs and MPLS PE nodes
- EVPN A-A for GW redundancy for L2 interconnect across domains
- Hierarchical flood-list for BUM traffic forwarding
- Reduction in EVPN state churn across domains

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EVPN GW – EVPN VXLAN/MPLS GW

❑ EVPN Gateway Solution

○ Not just a point-to-point DCI solution

○ Support for multiple domains improved DC scale with inter-POD(s) or inter-Site(s) connectivity

○ Support for all BGP topology variants in the Local and remote domains (eBGP and iBGP)

ARISTA
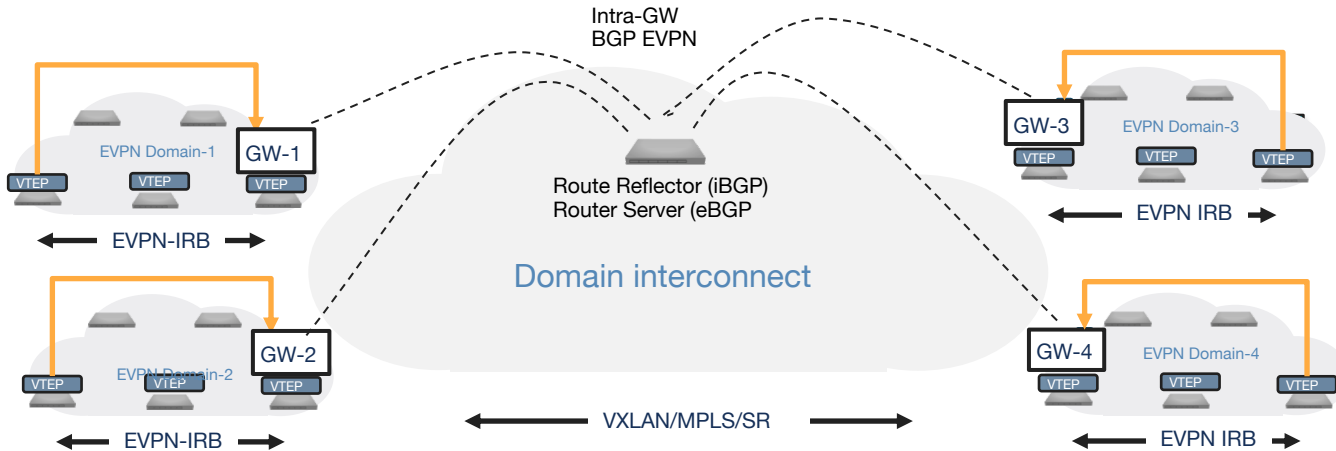
EVPN Gateway Resiliency Models

- To provide resiliency, EVPN GW nodes can be deployed in choice of topologies
- The chosen approach depends on the level of resiliency required and how appliances/services will be attached to the GW nodes, if required
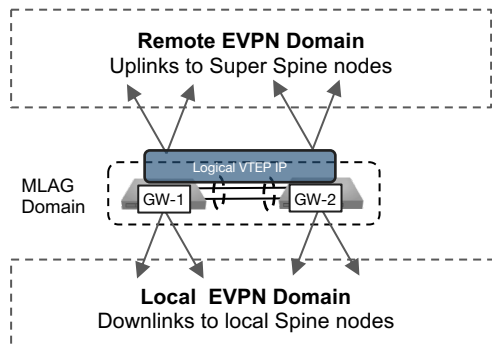
EVPN-GW with MLAG	EVPN-GW with Anycast IP	EVPN-GW with All-Active
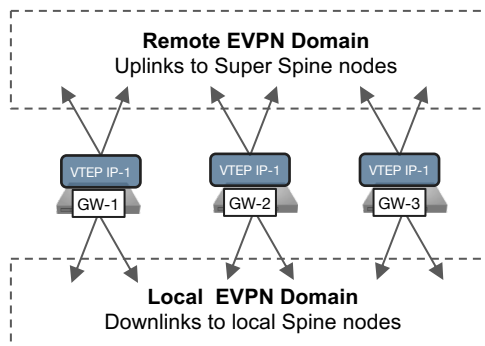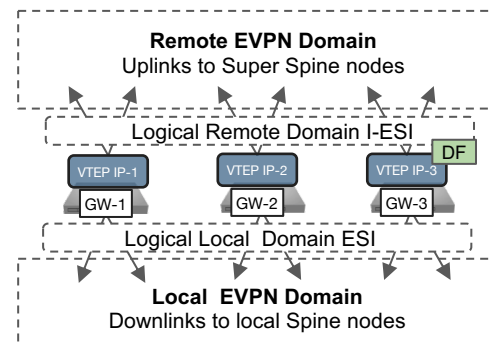
Note that R-Series products are recommended as EVPN Gateways

ARISTA

MLAG Gateway for EVPN VXLAN

- **Pair of interconnected gateway nodes** within a domain are configured in an MLAG topology to also provide **host connectivity.**
- Each node has EVPN peering sessions with both the local and remote domains
- EVPN routes advertised between the domains
- The two GW nodes act as a single logical VTEP by using the same shared loopback IP and router MAC address

```
mlag configuration → Standard MLAG configuration between GW-1 and GW-2
    domain-id GW1-GW2-Domain
    local-interface Vlan4094
    peer-address 10.0.0.1
    peer-link Po101
!
 interface Loopback1
    ip address 1.1.1.1/32 → Shared loopback IP address
!
interface Vxlan1
    vxlan source-interface Loopback1 → Logical GW VTEP IP for the MLAG
    vxlan virtual-router encapsulation mac-address mlag-system-id → Rtr-MAC for the GW VTEP
!
router bgp 64512
    address-family evpn
        neighbor EVPN_SPINE activate → EVPN Local domain peering with Spine
        neighbor EVPN_RR activate
        neighbor EVPN_RR domain remote → EVPN Remote domain peering with a RR
```


Remote EVPN Domain

Routing Table
1.1.1.1 -> GW-1
    -> GW-2

Routing Table
1.1.1.1 -> GW-1
    -> GW-2

BGP EVPN   BGP EVPN

MLAG
Domain

Logical VTEP IP
1.1.1.1/32/MAC-1

GW-1   MLAG-peer-link   GW-2

BGP EVPN   BGP EVPN

Routing Table
1.1.1.1 -> GW-1
    -> GW-2

Routing Table
1.1.1.1 -> GW-1
    -> GW-2

Local EVPN Domain
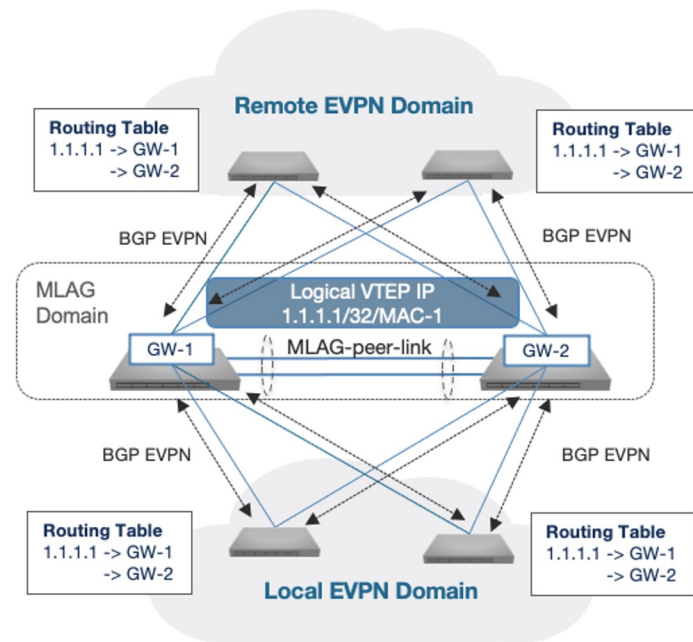
Note that MLAG is required for hosts

ARISTA

Anycast Gateway for EVPN VXLAN

- **Gateway nodes** within a domain are **not interconnected**
- Each have EVPN peering sessions with both the local and remote domains
- For resiliency, nodes within a domain will share the same anycast VTEP IP and router MAC address, meaning the GW nodes within a domain act as a single anycast VTEP
- **No restriction on the number of gateway nodes** that can be deployed within a single domain

```
interface Loopback1
    ip address 1.1.1.1/32 → Anycast IP address
!
interface Vxlan1
    vxlan source-interface Loopback1 → Anycast GW VTEP IP
    vxlan virtual-router encapsulation mac-address 00:bb:bb:bb:bb:bb → Anycast GW Rtr-MAC
!
router bgp 64512
    address-family evpn
        neighbor EVPN_SPINE activate → EVPN Local domain peering with Spine
        neighbor EVPN_RR activate
        neighbor EVPN_RR domain remote → EVPN Remote domain peering with a RR
```

Same on All Gateway Nodes

Routing Table	Remote EVPN Domain	Routing Table
1.1.1.1 -> GW-1		1.1.1.1 -> GW-1
-> GW-2		-> GW-2
-> GW-3		-> GW-3

BGP EVPN   BGP EVPN

Anycast VTEP IP	Anycast VTEP IP	Anycast VTEP IP
1.1.1.1/32/MAC-1	1.1.1.1/32/MAC-1	1.1.1.1/32/MAC-1
GW-1	GW-2	GW-3

BGP EVPN

Routing Table		Routing Table
1.1.1.1 -> GW-1		1.1.1.1 -> GW-1
-> GW-2		-> GW-2
-> GW-3	Local EVPN Domain	-> GW-3

Note that front-panel ports are **NOT** supported

ARISTA

All-Active Gateway for EVPN VXLAN

- **Gateway nodes** within a domain are **not interconnected**
- Each have EVPN peering sessions with both the local and remote domains
- To provide resiliency, GW nodes within each domain are deployed using EVPN multihoming as defined in RFC 7432.
- GW nodes use a unique Ethernet Segment (ES) for the domain, termed the I-ESI (Interconnect Ethernet Segment Identifier)
- Standard election for the Designated Forwarder (DF) for BUM forwarding
- Support for up to **16 nodes** in a single I-ESI

```
interface Loopback1
    ip address 1.1.1.1/32 → Unique IP address
!
interface Vxlan1
    vxlan source-interface Loopback1 → GW VTEP IP
!
router bgp 64512
    address-family evpn
        neighbor EVPN_SPINE activate → EVPN Local domain peering with Spine
        neighbor EVPN_RR activate
        neighbor EVPN_RR domain remote → EVPN Remote domain peering with a RR
        !
        evpn ethernet-segment domain remote
            identifier 0000:0001:0001:0000:0106  → I-ESI for the local and remote domain peerings
            designated-forwarder election algorithm preference 100 → preference based DF election
            route-target import 00:00:00:00:01:06
```
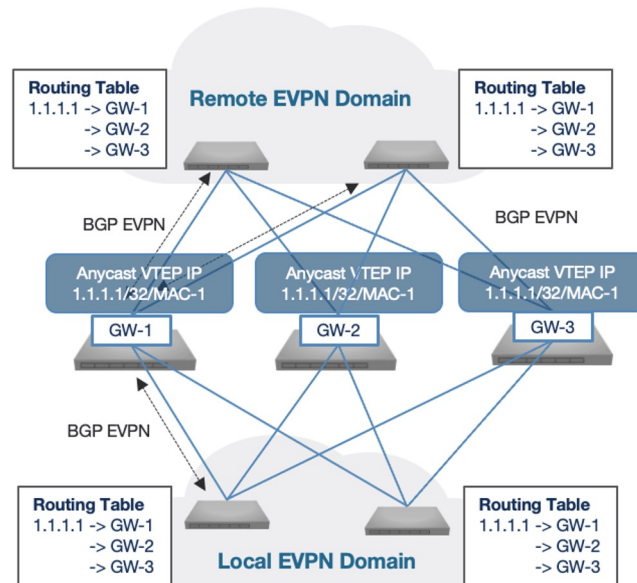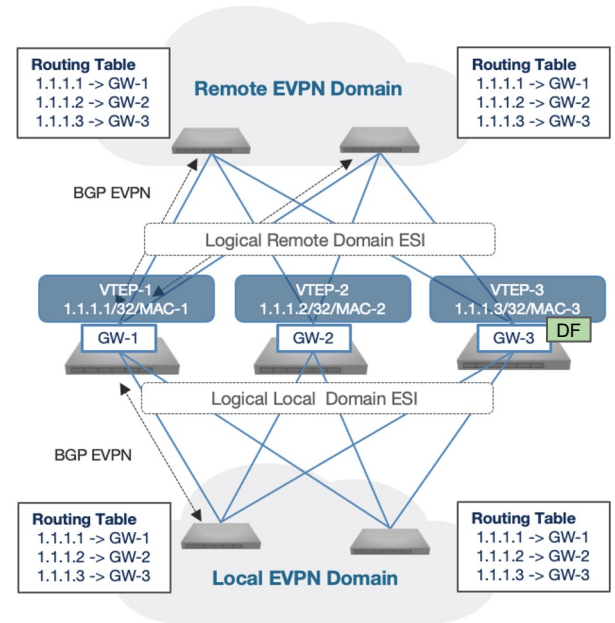
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EVPN Gateway Failure Behavior – MLAG

- Forwarding behavior during a failure within a domain is dependent on the resiliency model deployed
- Gateway nodes using an MLAG model are interconnected via a peer-link and IBGP session
  - Provides fast-failover in the event of single or multiple link failures
  - EVPN peering session of both GW nodes is retained
  - Traffic can take the path via the peer-link during a failure
- No additional configuration is required
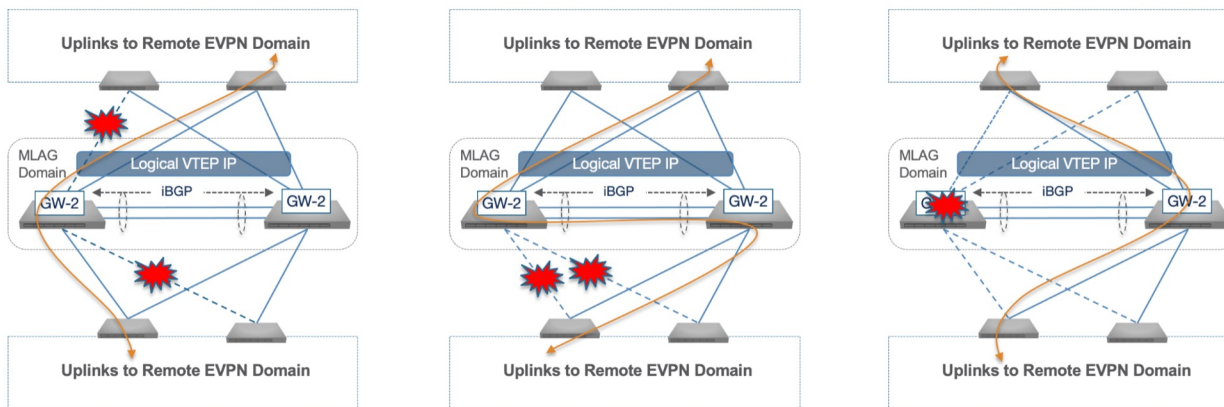
Recommendation: at least two links between MLAG peers

ARISTA

EVPN GW Failover Behaviour – Anycast and All-Active Gateway

- If a **node fails**, all EVPN sessions will go down and **traffic will route around** the failure
- If all **uplinks** to the remote domain **fail**, remote EVPN session will go down
  - **Local EVPN domain session will persist**, causing traffic to be **blackholed**
- Same issue occurs in the opposite scenario; local uplinks and EVPN session fail, remote uplinks and EVPN session remain up
- Note that Blackholing will only affect **Layer 2** traffic which is load-balanced across the GW members of an **All-Active I-ESI** which is still undesirable.
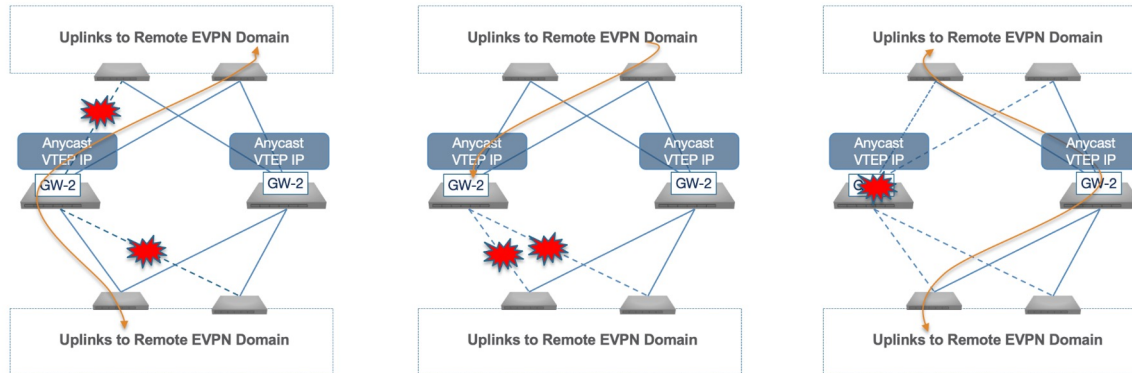
Loss of EVPN sessions to one of the domains will blackhole traffic

ARISTA

BGP Session Tracker – Core Isolation

- Support for tracking static and dynamic BGP peers

- Tracked interface placed in "errdisable" state

- Recovery time configurable per object

- Peer can only be a member of one tracker object

- Recovery on a single peer, not all peers

- Solution for ESI core-isolation

- **Solution for EVPN GW isolation**

  - Anycast-IP and All-Active

```
router bgp 100
   neighbor SPINE_EVPN session tracker EVPN_Local → Tracker for Local
   neighbor RR_EVPN session tracker EVPN_Remote  → Tracker for Remote
   !
   session tracker EVPN_Local → BGP Session tracker definition
      recovery delay 300 seconds
   !
   session tracker EVPN_Remote → BGP Session tracker definition
      recovery delay 300 seconds
!
interface Ethernet1/1,2/1 -> Interface to errdisable
   bgp session tracker EVPN_Remote
interface Ethernet3/1,4/1 -> Interface to errdisable
   bgp session tracker EVPN_Local
```



```
ANYCAST-GW1#show interface status errdisabled
   Port            Name            Status           Reason
------------ --------------- ---------------- ------------------
   Et1/1                       errdisabled     bgp-session-tracker
```
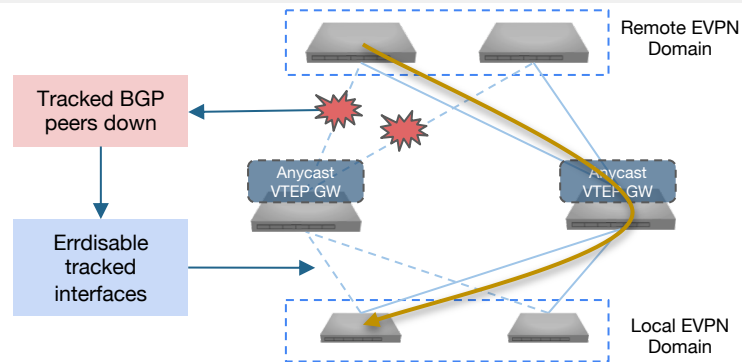
Helps with traffic blackholing by tracking BGP session state

ARISTA

Gateway Loop Prevention Mechanisms

MLAG & Anycast IP

- EVPN Update Nexthop uses the shared logical VTEP loopback IP.
- Peers will mark the updates as invalid as the nexthop will match a local interface.
- Route-reflectors will re-advertise updates from GWs.
  - If a unique RD is configured per peer, both will be reflected.
  - Shared RD will cause only one update
  - But update will be ultimately marked invalid due to the local interface match

If IBGP is used, external RR could reflect back the update

EBGP or IBGP

Remote EVPN Domain

H1 NH: 1.1.1.1

MLAG VTEP GW

MLAG VTEP GW

1.1.1.1
AS: 65001

1.1.1.1
AS: 65001

H1

Local EVPN Domain
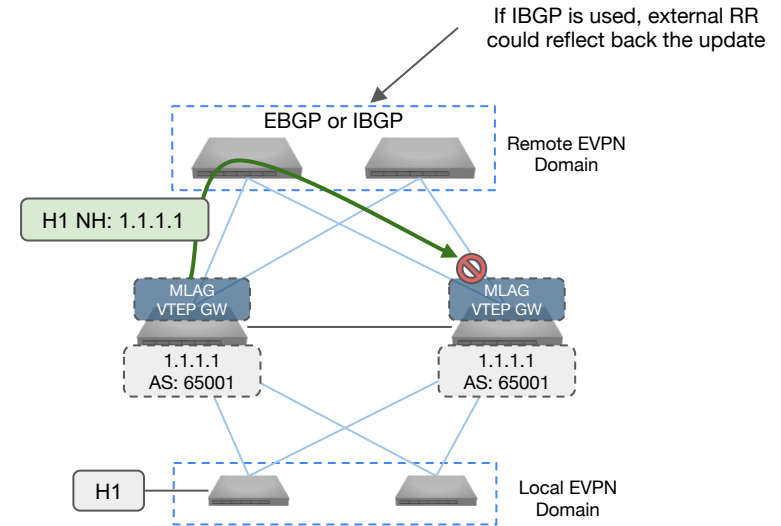
No Additional Configuration Required

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Gateway Loop Prevention Mechanisms

Update Accepted by GW3

Remote EVPN Domain

H1 NH: **1.1.1.1**, AS: **65001**

AA VTEP GW
1.1.1.1
AS 65001

AA VTEP GW
2.2.2.2
AS 65001

AA VTEP GW
3.3.3.3
AS 65003

H1

Local EVPN Domain

Redundant All-Active Gateways
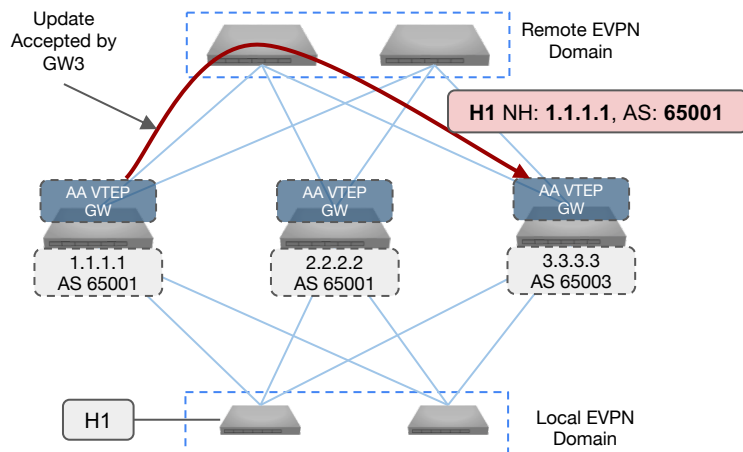
- Each peer uses a **unique VTEP IP/Nexthop & RD** (due to unique ASNs)
- Has the potential to be re-advertised back to another gateway peer and accepted causing a loop.
- A **route-map is required** to filter updates advertised by peer gateways in each domain.
- A future version of EOS will support **D-PATH** attribute as per ***draft-sr-bess-evpn-dpath*** to avoid loops

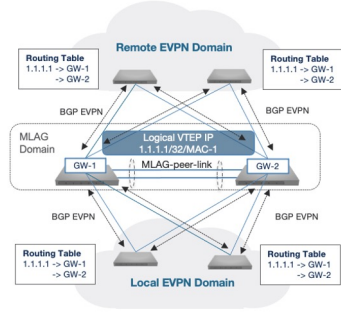Filter Updates from other Gateways using a Route-Map

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EVPN Gateway Resiliency Model Summary

MLAG - 4.26.1F | Anycast-IP - 4.27.1F | All-Active - 4.29.0F
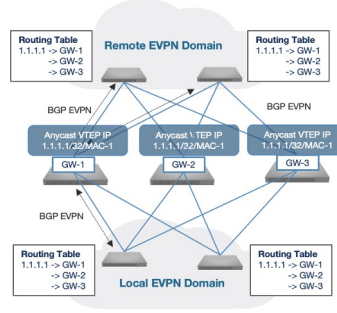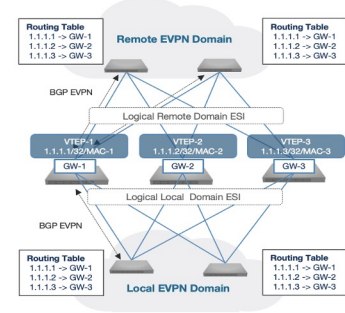
Max # of nodes	Limited to 2 nodes - Single MLAG domain site	No Restriction on # of GW per site	Up to 16 GW nodes
	Single Logical VTEP IP	Single Logical VTEP IP	VTEP IP per Node
r	No additional routes – MLAG Sync	No additional routes for state sync	Type-1 (AD per ES/EVI) – Type-4 (ES)
r	Next-hop Logical VTEP IP	Next-hop Anycast VTEP IP	VTEP IP of node, with ES on Type-2 routes
	Shared Logical IP – GW receive and forward a single copy	Shared Logical IP – GW receive and forward a single copy	Each GW receives a copy only DF forwards BUM out
	Underlay Load Balancing	Underlay Load Balancing	Overlay Load Balancing
	Supported	Not Supported	Supported
Loop Prevention	Native, no additional configuration	Native, no additional configuration	Should be considered and route-maps applied

ARISTA

LS Topology with number of odd Spines?

Could we build the spine layer with the number of 3,5,.. spines?

Arista say yes with the high number ECMP path

Compute Leaf
(Dual-Homed)

Compute Leaf
(Single-Homed)

Storage Leaf
(Deep Buffers)

Border Leaf
(LAN/WAN)
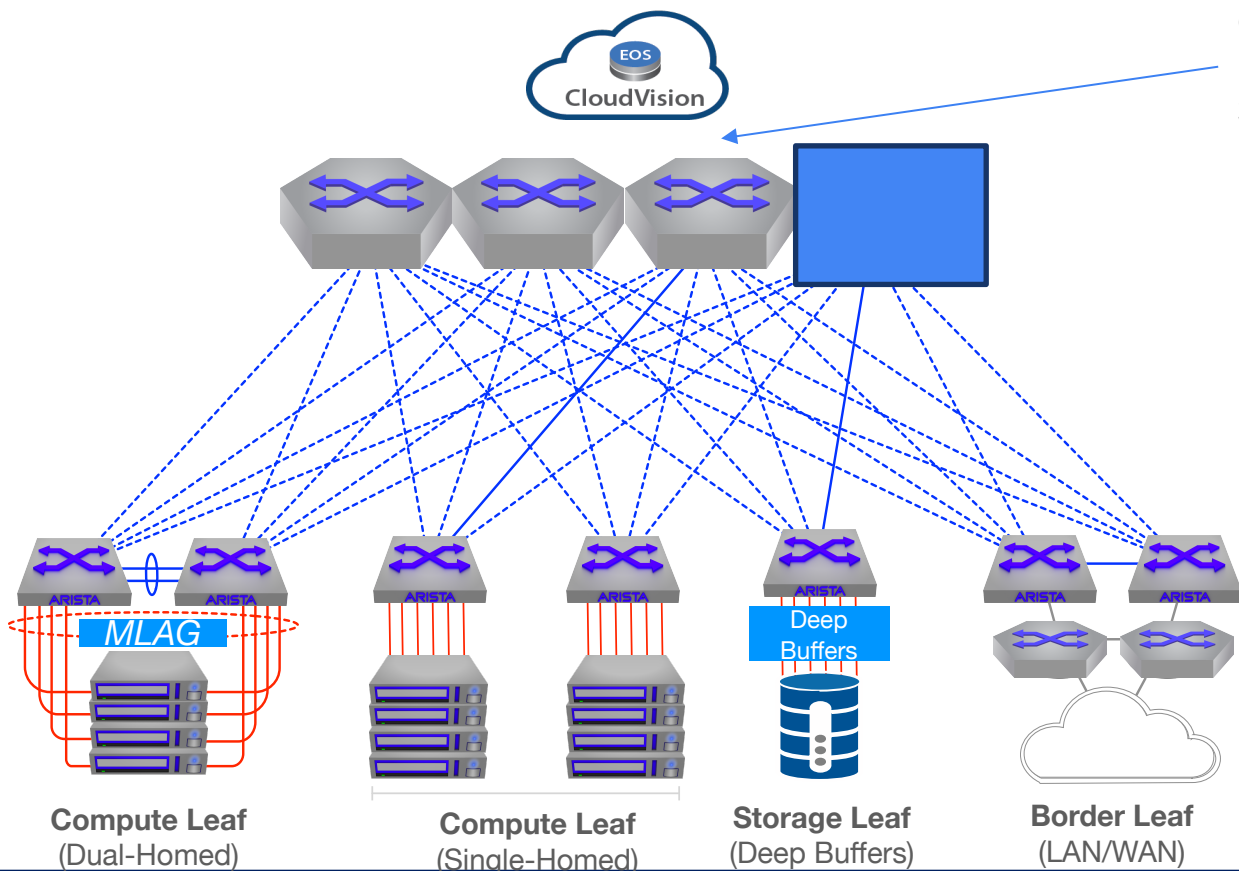
Arista's Hardware Strategy

- Use the best merchant silicon available

- Design for datacenter, campus, service provider and special use cases

- Build for scalable, high-performance, ultra-low-latency networks and cloud computing networks

- Innovate to solve real world problems

ARISTA

Arista Product Overview - 2023

7300X / 7358X / 7368X / 7388X

7500R / 7800R

Spine/Spline™

EOS

7050X / 7060X / 720X / 750X

7130 / 7170 / 7280R

Leaf

Volume

Value

Single Image Arista EOS Across All Platforms

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Arista Solution– Merchant Silicon, One EOS Image

Modular

7300/750

7500R/R2/R3 7800R3

EOS
Standard EOS

vEOS
EOS in a virtual machine

cEOS
EOS in a container

Fixed

7010/7050/7060/7260/720

7170/7280R/R2/R3
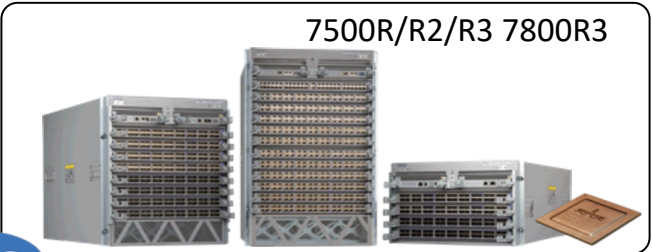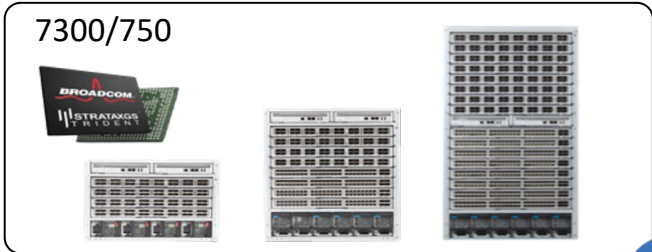
General Data Centre

Scale Out & Richness

Single consistent EOS Image across all platforms across multiple applications

Telemetry & Analytics	Campus	Routing & Switching	IP Storage & Peering	OnPrem DC & DCI	M&E	TAP Agg

ARISTA

Silicon Roadmap 2023 and beyond

- ❑ **Tomahawk**2, TH3, TH4, TH5 (speed, density, 100G, 400G,800G)

| 7060X | 7368X | 7388X |

- ❑ **Trident**3, T3.* T4.* (DC features, 25G, 100G)

| 7050X | 7300X | 7358X | 720X |

- ❑ **Jericho**2, J2c, J2c+, J3 (buffers, features, tables, 100G, 400G, 800G)

| 7280R | 7500R | 7800R |

- ❑ **Barefoot** Tofino, Tofino2 (flexibility, scale, L4)

| 7170 |

- ❑ **Xilinx** and **L1** (low latency switching)

| 7130 |

- ❑ *: Alta, T+, H4, J, J+, Q, T2, T2+, TH, TH+, XP (still going supported)
- ❑ MACsec at 400G, 100G, 25G, 10G and more

Arista 7000 Series products

To see full list of Arista 7000 Series products, Please visit:

https://www.arista.com/en/products/platforms

ARISTA

Arista 7000 Series products

How to interpret Arista SKU:

Majority Front Panel Ports
C = QSFP100
D = QSFP-DD
P = OSFP
Y = SFP28
S = SFP

7280CR3A-24D12

Standard Scale
Standard Scaling
No Encryption

7280R3A

Chipset Family
R3 = Broadcom Jericho2
R3A = Broadcom Jericho2C+

7280CR3AM-24D12

Encryption
Standard Scaling
MACsec, IPSec,
TunnelSec

7280CR3AK-24D12

Large Scale
Large Scale Routing

ARISTA

2023: Next Generation Silicon for Customer Networks

Feature Rich

Trident4

4X Higher Performance

12.8Tbps and 132MB Buffer

Programmable Pipeline

Highest Bandwidth

Tomahawk4

2X Higher Performance

25.6Tbps with 64 x 400G

Scale Out and High Radix

Carrier Grade Scale

Jericho2C+

50% Higher Performance

7.2Tbps and 2.7Bpps

Deep Buffers and Extensible

Consistent High Performance and Extensible EOS

ARISTA

Domain-Specific Products for Data Center Networks

7050X Series

StrataXGS Trident (Broadcom)

Enterprise application stacks

RoCEv2, EVPN, VXLAN

Rich Telemetry for deep visibility

Compute TOR for 10/25/50/100G

Flexible traffic management

7060X Series

StrataXGS Tomahawk (Broadcom)

Cloud application stacks

Highest switch performance

Lowest Latency

Scale Out & High Radix

High density 400G Fixed Spines

128 x 200G in 4RU

7280/7800R Series

StrataDNX Jericho (Broadcom)

Storage TOR with deep buffers

EVPN, MPLS, SR

High capacity scaling

Metro & DCI with MACSec & ZR

Fixed and Modular form factors

Consistent High Performance and Extensible EOS

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Key Silicon Families - Single EOS

	Trident 7050X	Tomahawk 7060X	Jericho 7280R/7800R
Table Scale	****	***	*****
Port speed	****	*****	****
Radix - fixed	****	*****	****
Radix - chassis	***	****	*****
Flexibility	****	***	*****
Buffering	****	***	*****
Variants	TD3*,TD4*	TH2,TH3,TH4,*TH5*	J2*,Q2*,*J3,Q3*
EVPN	****	**	*****
Routing	****	**	*****

ARISTA

Data Center and Routing Portfolio

7800R Series
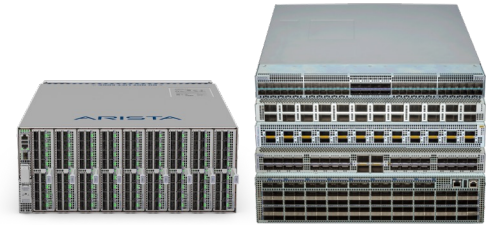100G and 400G, 800G ready
Dynamic Deep Buffer

7500R Series
10G to 400G
Dynamic Deep Buffer

Arista 7280R Series
10G to 400G
Dynamic Deep Buffer

7360X / 7388X Series
Cloudscale Data Center Networks
25G to 400G Leaf and Spine

Arista 7060X Series
Scale out applications and
Cloudscale Data Center

Arista 7350X / 7050X Series
Large Enterprise and Carrier Networks
Rich features

ARISTA

10G to 400G : Industry Leading Platforms for Leaf and Spine Networks

Arista R-Series

High Performance Routers for
Universal Leaf / Spine and Carrier
10G to 400G
Dynamic Deep Buffers
Optimized for Routing and IP Storage
Feature rich for Edge, Core and DC

Arista X-Series

High Performance Leaf and Spine
Scale out applications and
Data Center Networks
Power Efficient 10G to 400G Spine
Machine Virtualization and Containerization
Rich features for wirespeed L2/L3 Networks

Arista 7170 Series

Multi-function Programmable switch
High performance 100G
Fully programmable pipeline
EOS and P4 profiles for Cloud,
Enterprise, Service Provider and CDN
Rich telemetry and visibility

Switches and Routers Optimized for high performance and next generation networking

ARISTA

The Best Data Center Spine and Routing Portfolio

Arista 7800R Series

High Performance Routers
100G and 400G
Dynamic Deep Buffer
Universal Spine and Carrier Core
Optimized for Routing and Storage

Arista 7500R Series

High Performance Routers
10G to 400G
Dynamic Deep Buffer
Universal Spine and IP Storage
Optimized for Routing and Storage

Arista 7300X3 Series

High Performance
Enterprise and Carrier Networks
Power Efficient 10G to 100G Spine
Machine Virtualization and Containerization
Rich features for L2/L3 Networks

Arista 7368/7388X Series

Highest Performance
Scale out applications and
Cloudscale Datacenter Networks
25G to 400G Leaf and Spine
Optimized for throughput and density

ARISTA

The Best Data Center Leaf and Routing Portfolio

Arista 7280R Series
High Performance Routers
10G to 400G
Dynamic Deep Buffer
Universal Leaf and Spine
Optimized for Routing and Storage

Arista 7060X Series
Highest Performance
Scale out applications and
Cloudscale Datacenter Networks
25G to 400G Fixed Leaf and Spine
Optimized for throughput and density

Arista 7050X Series
High Performance
Enterprise and Carrier Leaf Networks
10G to 100G Fixed Leaf and Spine
Machine Virtualization and Containerization
Rich features for L2/L3 Networks

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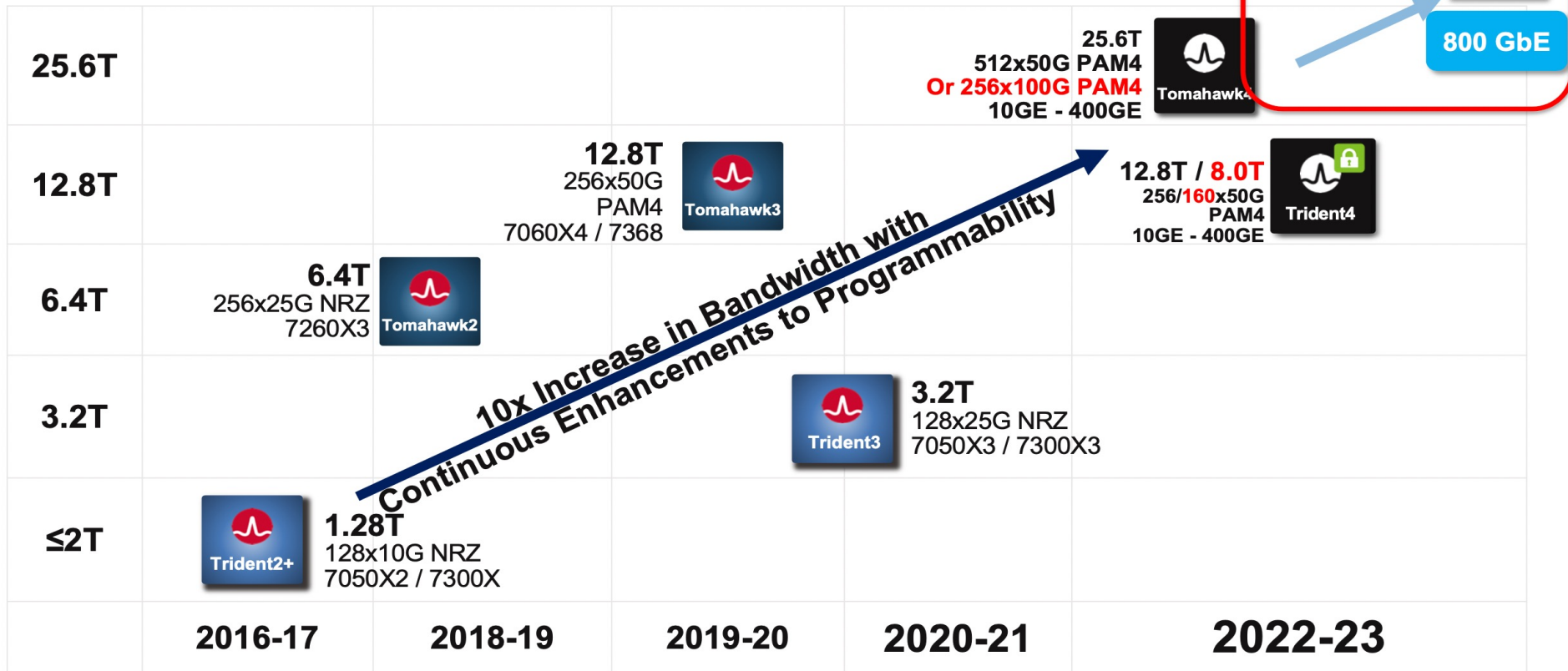# Why Merchant Network Silicon is Winning

Merchant Silicon Firsts

2008: First ultra-low latency 24-port 10G single chip

2010: First Large Buffer 10G Chip with VOQ Fabric

2011: First 64-port 10G single chip switch

2012: First 32-port 40G single chip

2013: First Large Buffer 40G Chip with VOQ Fabric

2015: First 32-port 100G single chip

2016: First Router 100G Chip with VOQ Fabric

2017: First 64-port 100G single chip

2018: First 32-port 400G single chip

2019: First Router 400G Chip with VOQ Fabric

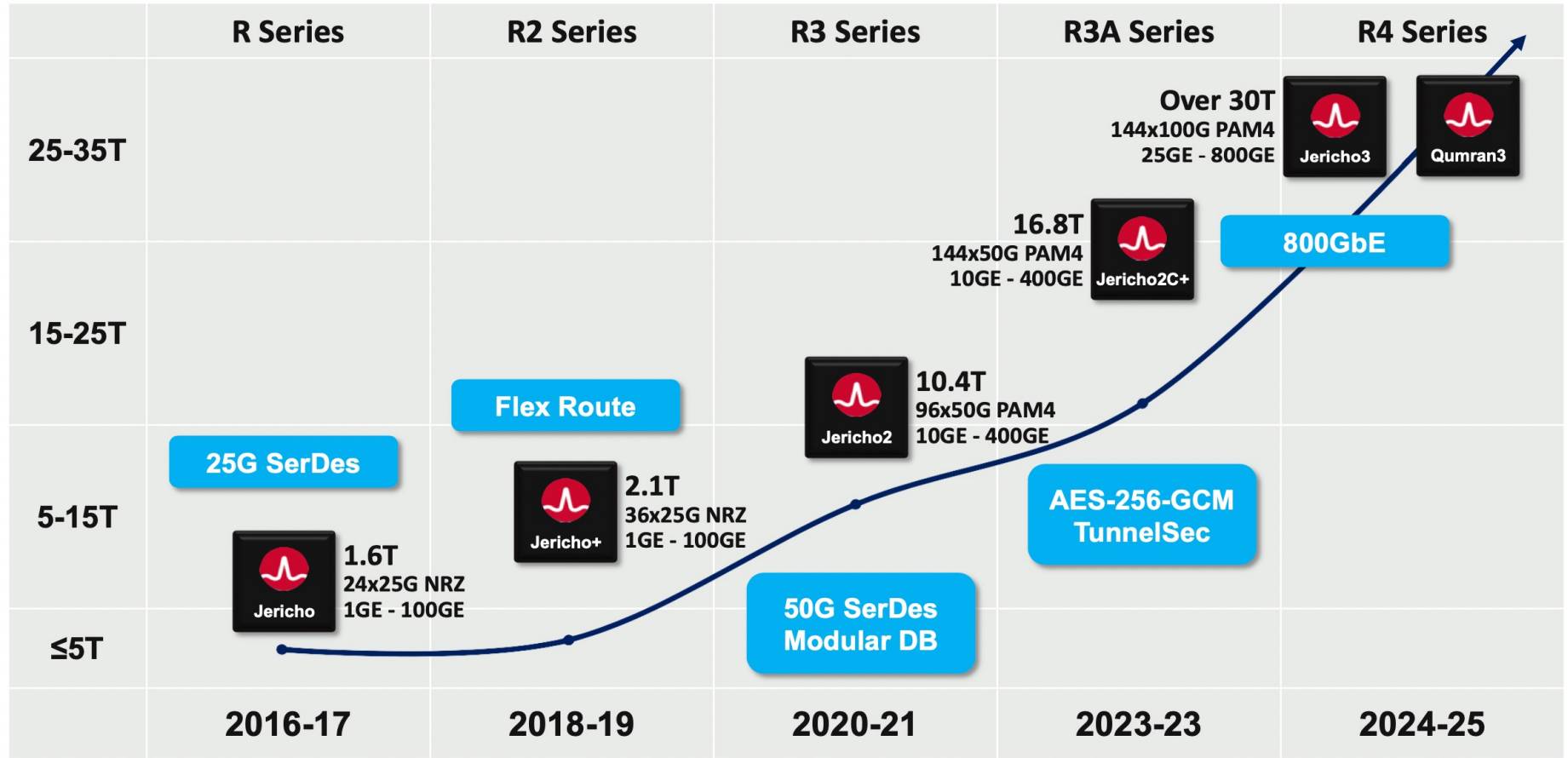2021: First 64-port 400G single chip

Bandwidth Improvement
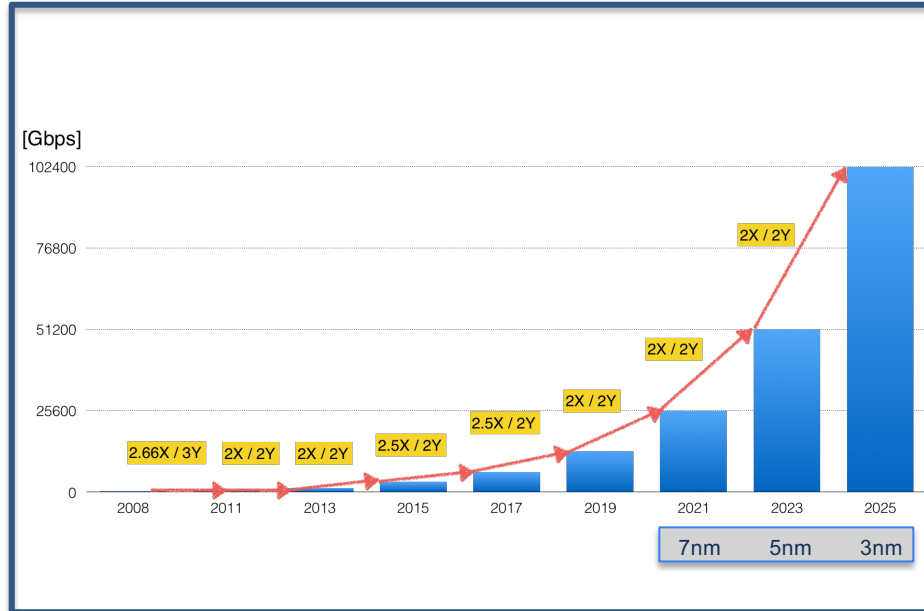
Merchant Silicon: Faster Time-to-Market, Better Execution and Faster Innovation

ARISTA

Arista 7050X and 7060X Evolutions

51.2T
512x100G PAM4
100GE - 800GE
Tomahawk5

800 GbE

25.6T
512x50G PAM4
Or 256x100G PAM4
10GE - 400GE
Tomahawk4

12.8T
256x50G
PAM4
7060X4 / 7368
Tomahawk3

12.8T / 8.0T
256/160x50G
PAM4
10GE - 400GE
Trident4

6.4T
256x25G NRZ
7260X3
Tomahawk2

3.2T
128x25G NRZ
7050X3 / 7300X3
Trident3

1.28T
128x10G NRZ
7050X2 / 7300X
Trident2+

10x Increase in Bandwidth with Continuous Enhancements to Programmability

	25.6T	12.8T	6.4T	3.2T	≤2T

2016-17 **2018-19** **2019-20** **2020-21** **2022-23**

ARISTA

R Series Data Center Portfolio

	R Series	R2 Series	R3 Series	R3A Series	R4 Series
25-35T				**Over 30T** 144x100G PAM4 25GE - 800GE — Jericho3	Qumran3
15-25T				**16.8T** 144x50G PAM4 10GE - 400GE — Jericho2C+	**800GbE**
5-15T	**25G SerDes** 1.6T 24x25G NRZ 1GE - 100GE — Jericho	**Flex Route** **2.1T** 36x25G NRZ 1GE - 100GE — Jericho+	**10.4T** 96x50G PAM4 10GE - 400GE — Jericho2	**AES-256-GCM** **TunnelSec**	
≤5T			**50G SerDes** **Modular DB**		
	2016-17	**2018-19**	**2020-21**	**2023-23**	**2024-25**

ARISTA

5 Generations of 7050 Systems

7050X4

Trident4
32 x 400GbE
128 x 100GbE

7050X3

Trident3
32 x 100GbE

7050X2

Trident2+
32 x 40GbE

7050X

Trident2
32 x 40GbE

7050

Trident
16 x 40GbE
64 x 10GbE

| 2011 | 2013 | 2016 | 2018 | 2022 |
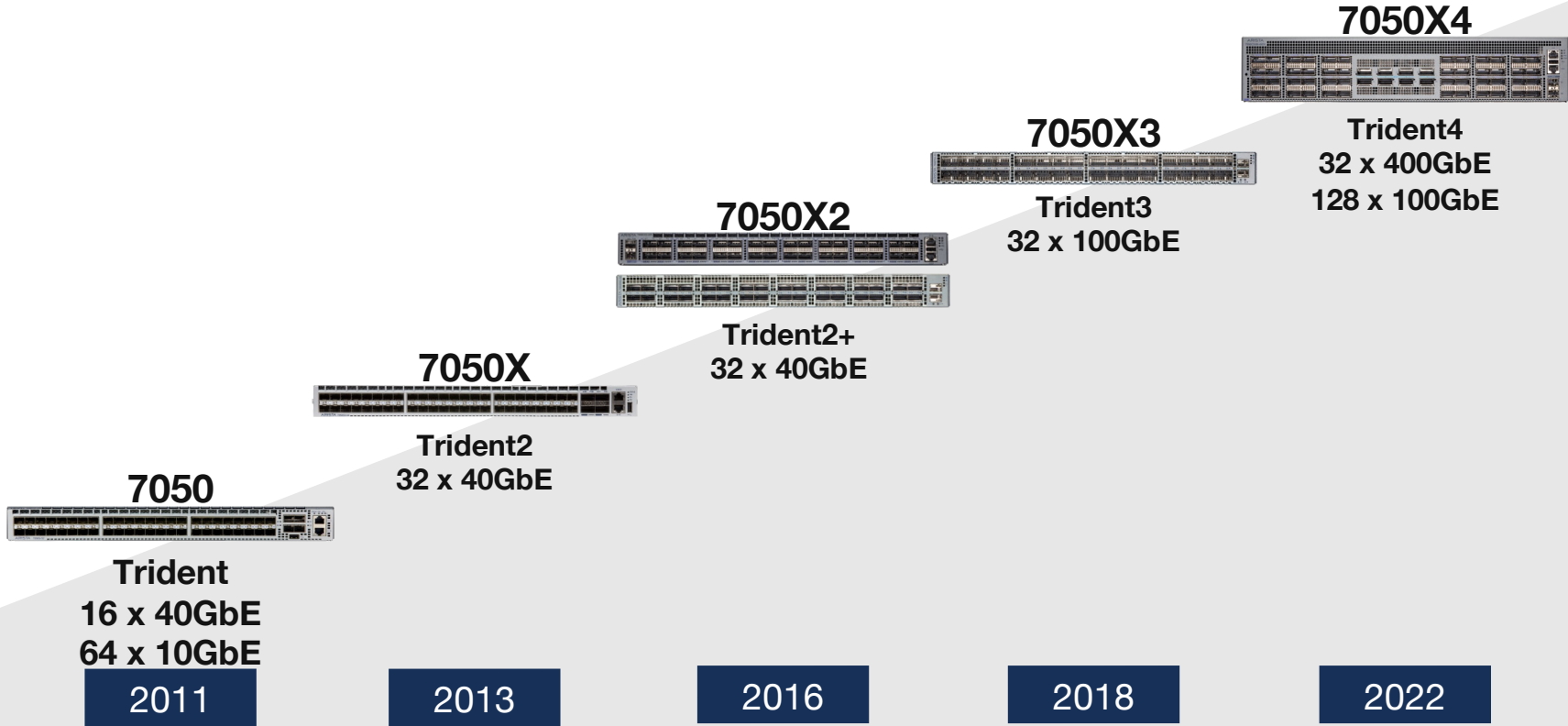
ARISTA

Arista 7050X4 Series 32 Ports 400G

1U High Density Fixed 400G Leaf

- Server rack optimized front to rear airflow
- High performance servers – 25G to 400G
- Full range of cables and optics:
  - 400G ports up to 16W per port
  - 4x100G and 2 x 200G modes on all ports

- Comprehensive L2 / L3 with forwarding enhancements
  - OSPF, BGP, Multicast & MLAG
  - Support for over 800K routes, 128-way ECMP, 64 way MLAG
  - Flexible and programmable pipeline
  - EVPN/VXLAN Routing in hardware
  - Rich instrumentation and in-band streaming telemetry

- Hot-swap / redundant power supplies
  - AC and DC Power options
  - Front to rear and rear to front

- Three hot-swap / redundant fan modules

32 400G Ports – 12.8Tbps

DCS-7050DX4-32S
DCS-7050PX4-32S

Agile deployment of 100/200/400G

- Flexible speeds in any OSFP/DD port
- Mix and Match speeds
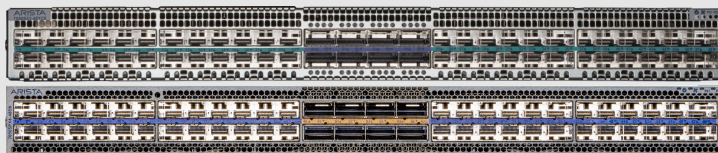
ARISTA

Next Generation 7050X4 Series – 8T Systems

Flexible 100 and 400G Systems with Large Resources and Programmable Profiles

- 48 port 100G **SFP-DD or DSFP** and 8 port 400G in **1RU**
- Optimized for Next Generation PCIe4 Server
- 100G based on **2x50G** PAM4 lanes
- Consistent Trident Architecture

- 48 port 100G **QSFP28** and 8 port 400G in **2RU**
- Optimized for 50/100G NRZ Server Migration
- 100G based on **4x25G** NRZ lanes
- Consistent Trident Architecture
- **MACSec** support on all ports

- 40 port 200G **QSFP56** in 1RU
- Optimized for Next Generation HPC 200G Server
- 200G based on 4x50G PAM4 lanes
- Consistent Trident Architecture

- 24 port 200G QSFP56 and 8 port 400G in 1RU
- Flexibility of native 200G & 400G ports
- Optimized for Next Generation HPC 100/200G Server
- Consistent Trident Architecture

7050SD/PX4-48D8
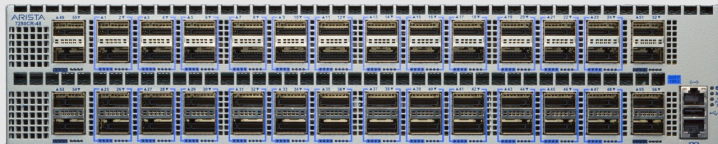
7050CX4M-48D8

7050CX4-40D
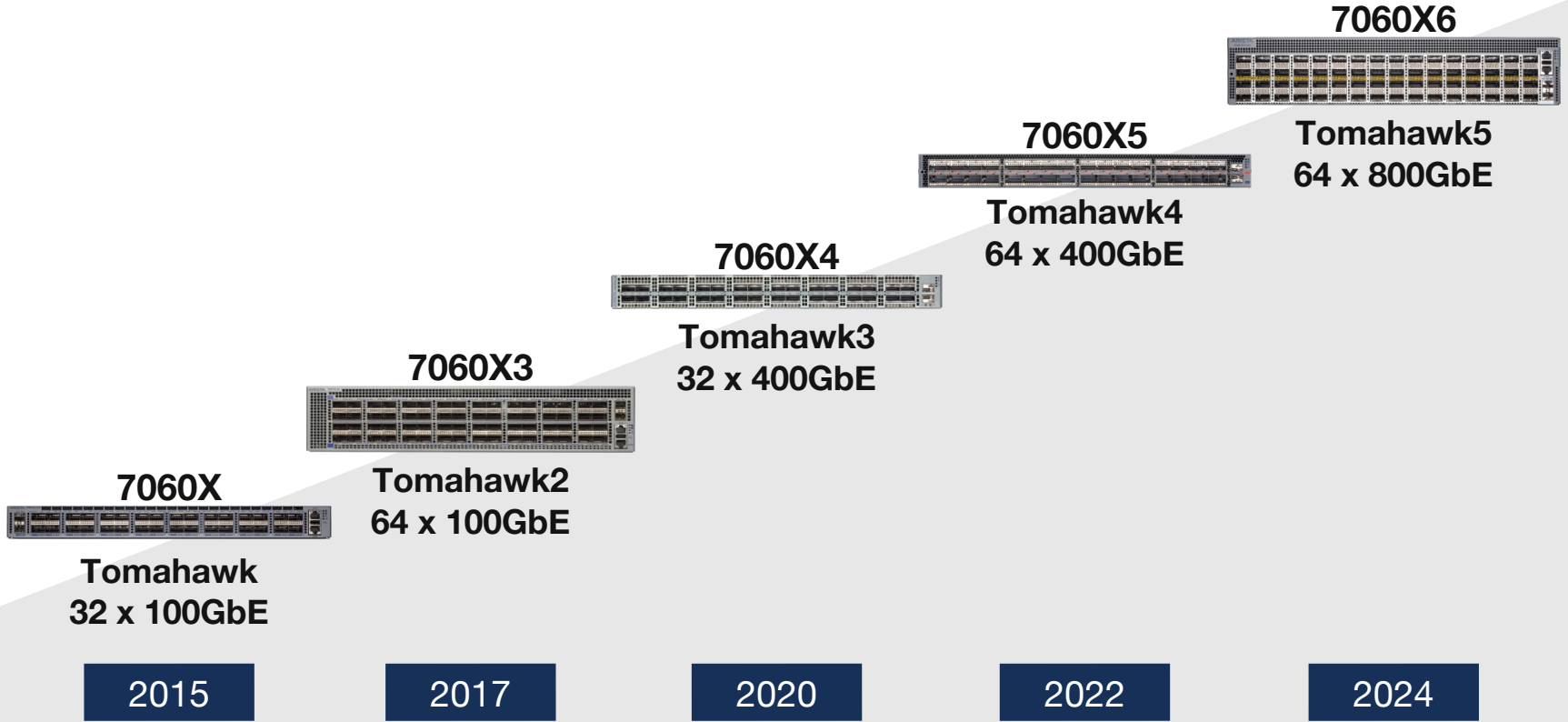
7050CX4-24D8

ARISTA

Arista 7358X4 Series 100G/400G

- 7358X4-SC – Trident4 for 73xx Series (12.8T)
  - New switch card carries the Trident-4 switch chip
  - 132MB buffer, flexible scale and VXLAN
  - High density - 128 x 100G or 32 x 400G
  - Flexible 25G, 50G, 100G, 200G and 400G options

Common to 7368X4

ARISTA

5 Generations of 7060 Systems

7060X6

**Tomahawk5
64 x 800GbE**

7060X5

**Tomahawk4
64 x 400GbE**

7060X4

**Tomahawk3
32 x 400GbE**

7060X3

**Tomahawk2
64 x 100GbE**

7060X

**Tomahawk
32 x 100GbE**

| 2015 | 2017 | 2020 | 2022 | 2024 |

ARISTA

Next Generation 7060X5 Series Expanded Portfolio

High Density 100/200/400/800G Systems Optimized for Hyperscale Cloud

32 port **800G*** (2x400G) OSFP or QSFP-DD in **1RU**
- 800G based on **256x 100G** PAM4 Serdes
- Each 800G port can support 2x400G based optics

64 port 400G QSFP-DD in 2RU
- 400G based on **512x 50G** PAM4 Serdes
- Consistent 7060X Series Architecture with addition of VXLAN
- Optimized for Hyperscale Cloud & Deep Learning AI Clusters

128 port 200G QSFP56 or 64 port 400G in 4RU
- Cloud Optimized – High Network Radix Modular Design
- 200/400G based on **512x 50G** PAM4 Serdes
- Flexible – 8 Hot Swap Removable IO Modules
- 16x 200G or 8x 400G MACsec or 8x 400G Non-MACsec
- Flexible speed and port breakouts – 256 100G ports

32 port 400G QSFP-DD in 1RU
- 400G based on **256x 50G** PAM4 Serdes
- Each 400G port can support 4x breakouts to 10/25/50/100G
- Power optimized with support for VXLAN

7060DX5-64 & 7060PX5-64

7060DX5-64S

7388X5

7060DX5-32

ARISTA

Single Chip TH4: 7388X5 - 128x200G

- High Network Radix Modular System
- High performance 25.6Tbps switch card
- Removable Management Module
- Hot swap Fans and Power
- Choice of port module configurations
  - 8 vertical module slots:
  - 16 x 100G QSFP / 200G QSFP56
  - 8 x 400G QSFP-DD with MACSec
- Max Power Measured
  - Under 1.75KW for 128x200G
  - Under 3.5KW for 64x400G MACsec
- 4U Optimized for DC
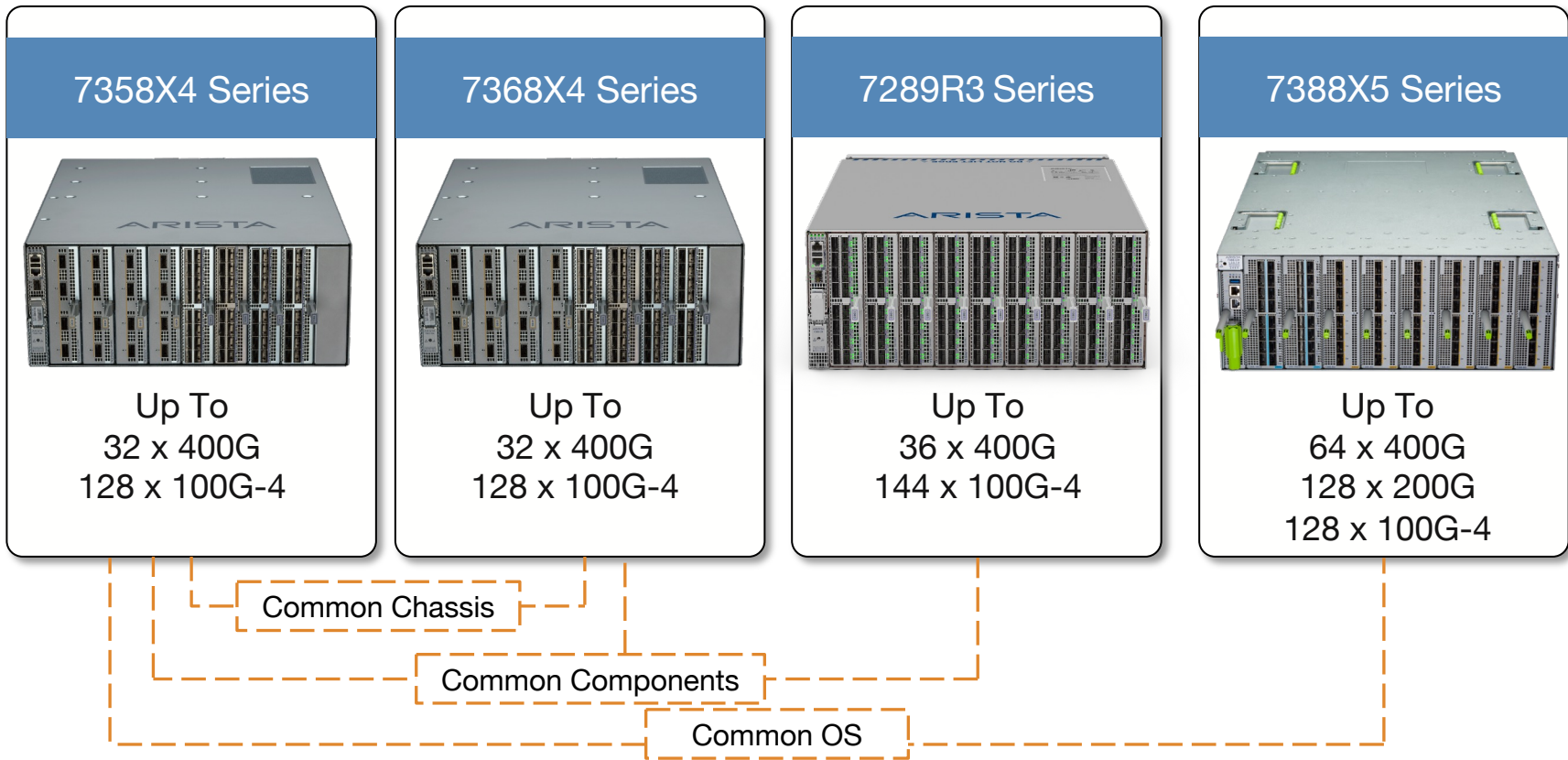
ARISTA

Arista 7280R3A Compact Modular System Overview

100/400G High Performance Modular System

- High Performance 100G/400G 2x J2C+ System
  - High Performance with 14.4Tbps and 5.6Bpps
  - Up to 36 x 400G or 144 x 100G
  - 16 GB Deep Packet Buffers
- Eight core x86 CPU
- 64GB System Memory
- 240GB M.2 SSD
- Console, Management and USB ports
- 5 Hot swap Fan Modules
- Up to 4 hot-swap / redundant power supplies
  - Front to rear airflow
  - HxWxD: 4U x 17.4" x 27.1" (17.9 x 44.2 x 68.83 cm)
  - Typical/Max Power: 1244 / 1927 W

Consistent certification, knowledge, sparing, and architecture
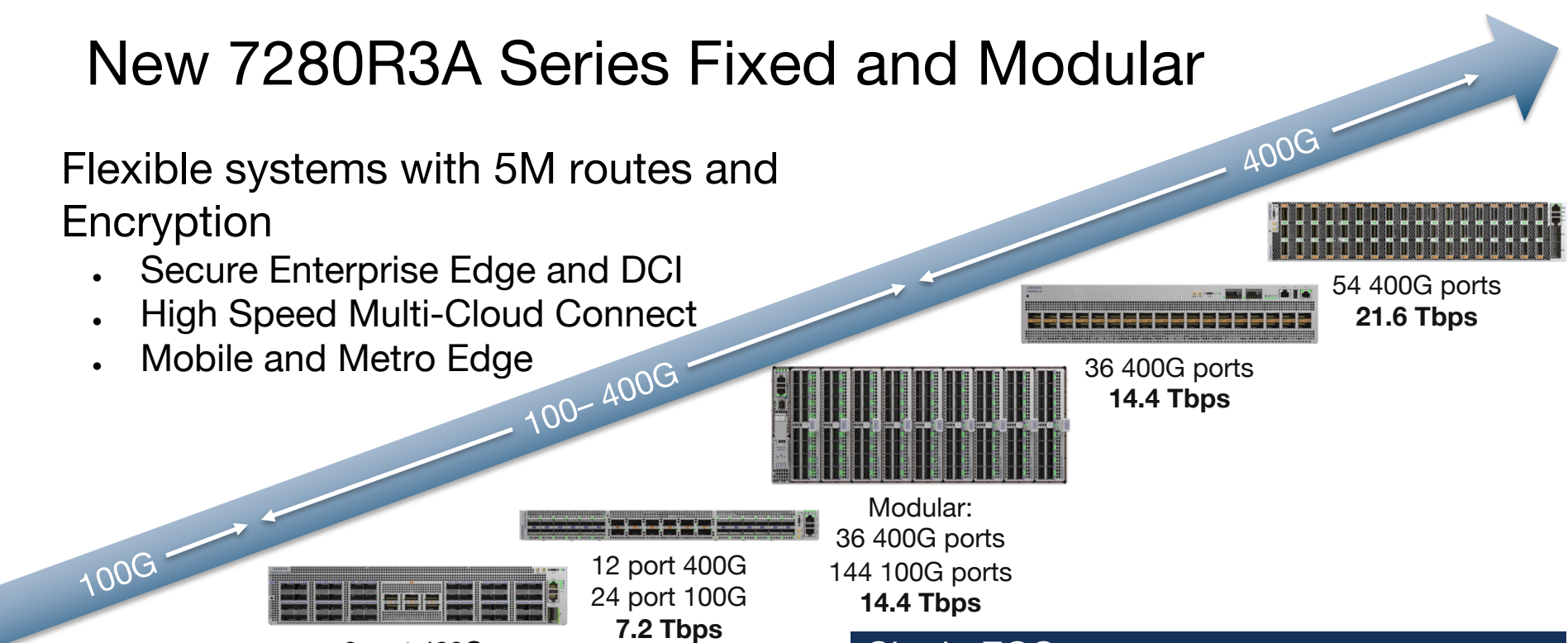
ARISTA

Streamlining Manufacturing – Common Components

7358X4 Series	7368X4 Series	7289R3 Series	7388X5 Series
Up To 32 x 400G 128 x 100G-4	Up To 32 x 400G 128 x 100G-4	Up To 36 x 400G 144 x 100G-4	Up To 64 x 400G 128 x 200G 128 x 100G-4

Common Chassis

Common Components

Common OS

ARISTA

7 Generations of 7280 Fixed Systems

7280R4

7280R3A   **Jericho3 - 14.4T**

7280R3   **Jericho2C+ - 7.2T**

7280R2   **Jericho2 - 4.8T**

7280R   **Jericho+ - 2.1Tbps**

7280E   **Jericho - 1.6Tbps**

7048T   **Arad - 480Gbps**

Petra - 200Gbps

| 2010 | 2012 | 2014 | 2016 | 2019 | 2022 | 2024 |
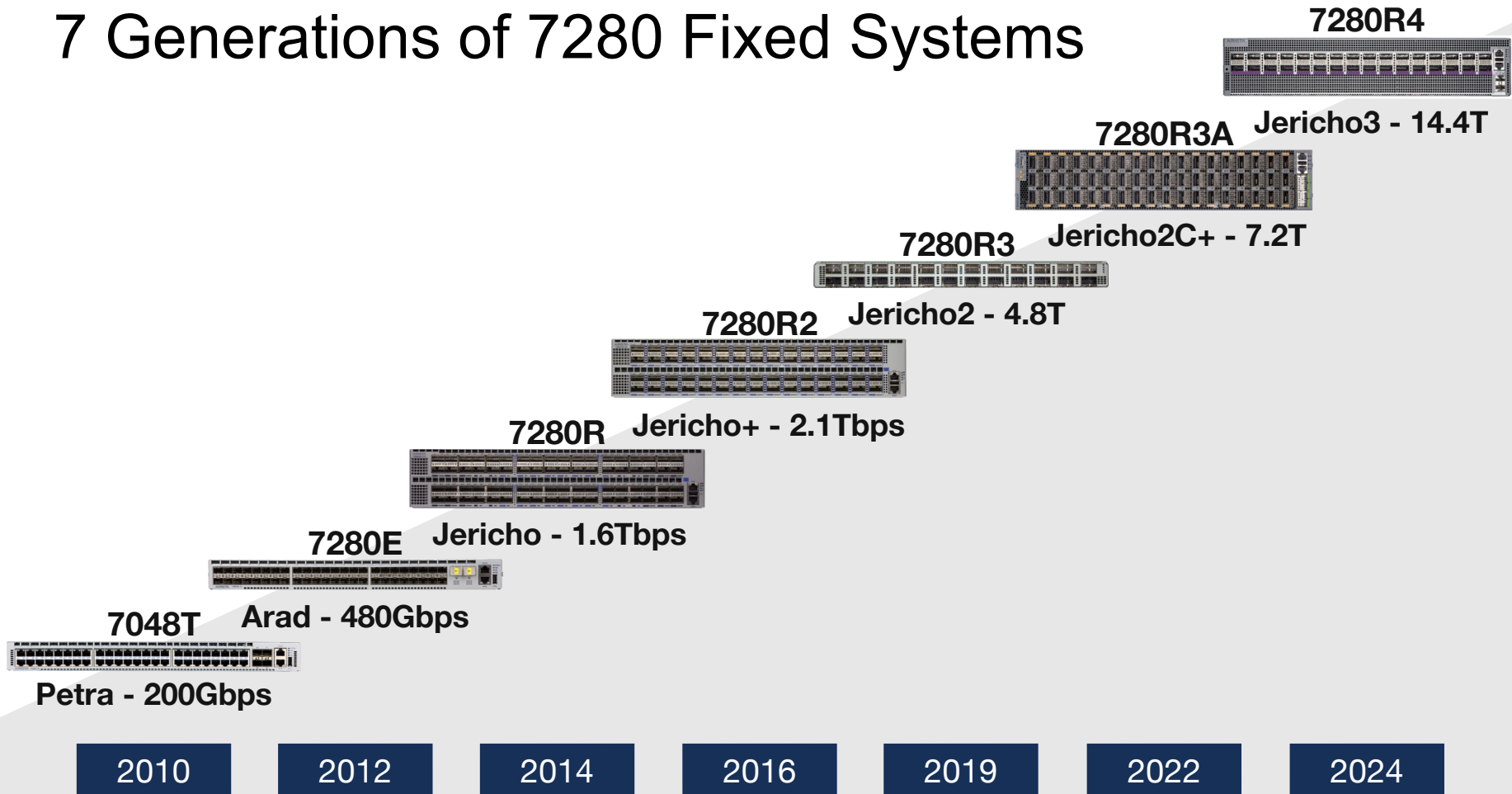
ARISTA

New 7280R3A Series Fixed and Modular

Flexible systems with 5M routes and Encryption

- Secure Enterprise Edge and DCI
- High Speed Multi-Cloud Connect
- Mobile and Metro Edge

400G

100– 400G

100G

72 port 100G
7.2 Tbps

6 port 400G
48 port 100G
7.2 Tbps

12 port 400G
24 port 100G
7.2 Tbps

Modular:
36 400G ports
144 100G ports
14.4 Tbps

36 400G ports
14.4 Tbps

54 400G ports
21.6 Tbps

Single EOS
Rich and Consistent R3 Features
Integrated Arista TunnelSec™
Base Encryption and Scale Options

ARISTA

7280R3A Series Fixed 100G/400G Switches

Wire Speed 100/400G with Deep Buffers

High Performance:
- Up to 54 x 400G wire speed ports
- Non-blocking up to 21.6 Tbps and 8.1 Bpps
- FlexRoute™ - 2 / 5 Million+ IP Routes

R-Series Architecture:
- VOQ architecture and deep buffers for lossless forwarding
- EOS for convergence and scale

Advanced Features:
- VXLAN Routing, Advanced Load Balancing
- Algorithmic ACLs, Network Telemetry and Accelerated sFlow
- EVPN, MPLS, Segment Routing
- Wire speed AES-256 MACsec, IPsec and TunnelSec

Cloud and Carrier Grade Networking:
- Dense 100G and 400G for SP, Cloud, Internet, HPC & CDN
- Dense 400G ZR and ZR+, Integrated Line-System Ports
- DC Optimized airflow and AC / DC power

3x J2C+
54 400G
21.6 Tbps
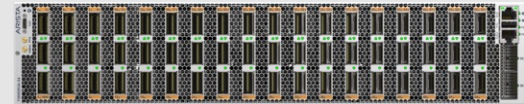
7280DR3A-54 (Standard / Encryption / Scale)

2x J2C+
36 400G
14.4 Tbps

7280DR3A-36 (Standard / Encryption / Scale)

1x J2C+
24 100G + 12 400
7.2 Tbps

7280CR3A-24D12 (Standard / Encryption / Scale)

1x J2C+
48 100G + 6 400
7.2 Tbps

7280CR3A-48D6 (Standard / Encryption / Scale)

1x J2C+
72x 100G
7.2 Tbps

7280CR3A-72 (Standard / Encryption / Scale)

ARISTA

New 7800R3A – Systems and Line Cards

Cloud-Grade 460 Tbps with Encryption and 5M routes

- Secure Enterprise Edge, DCI and Peering
- High Speed Multi-Cloud Connect
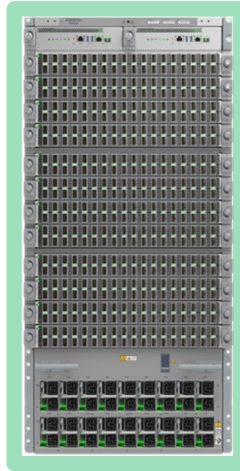- Service Provider, Mobile and Metro Edge
- 800G Ready

R3A Line Cards

>50% Power Reduction

+50%

+33%

7804R3	7808R3	7812R3	7816R3
115 Tbps	230 Tbps	345 Tbps	460 Tbps

Single EOS - Consistent R3 Features – Arista TunnelSec™

ARISTA

7800R3 Family 10G – 400G Line Cards

36 x 400G
QSFP-DD

36 x 400G
OSFP

48 x 100G
QSFP

72 Port SFP28/56

ARISTA

7800R3 Family 10G – 400G Line Cards

36 x 400G
QSFP-DD

36 x 400G
OSFP

48 x 100G
QSFP

72 Port SFP28/56

ARISTA

APAC Cloud Builders 2023

Q&A