

Junos Fusion Data Center

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My Presentation Purpose: You will be able to...

- Identify the features supported in Junos Fusion DC
- Explain the key benefits of JFD
- Explain the underlying architecture in EVPN JFD
- Explain JFD roadmap

Agenda

- DC Portfolio
- Junos Fusion DC Stage 2 Update
- Junos Fusion DC Stage 3 Introduction
- Junos Fusion DC Roadmap



DC Switching Portfolio

Juniper Switches Support Diverse Architectures

Network Ops



DevOps



python™ PyEz



Apache Thrift™

IT/Cloud Ops



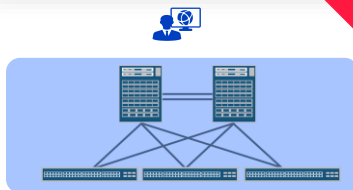
cloudstack



Multi-Tier
Ethernet



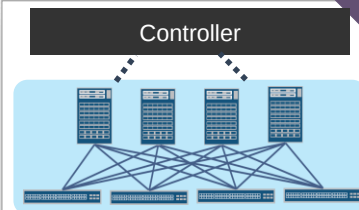
Ethernet Fabric:
Junos Fusion
Virtual Chassis Fabric



IP Fabric
(MPLS, Segment
Routing)



Overlays
(VXLAN, EVPN)



Common Building Block



QFX10K
Spine Switches



QFX5K Leaf Switches

Industry Leading Portfolio for Cloud

DCI
DC EDGE



MX Series



QFX10K Series

SPINE



QFX5200



QFX10002-36/72Q



QFX10008/QFX10016

LEAF



EX4300



QFX5100



QFX5200



QFX5110



QFX10002-36Q

QFX5K Portfolio



QFX5100

- Broadcom Trident 2 Silicon
- 10G/40G optics support
- Ethernet and IP Fabrics
- L2 VXLAN Gateway

QFX5200

- Broadcom Tomahawk Silicon
- 10G/25G/40G/50/100G speed support
- L2 VXLAN Gateway

QFX5110

- Broadcom Trident 2+ Silicon
- Adds 100G optics support
- Ethernet and IP Fabrics
- L2 and L3 VXLAN Gateway

QFX10K: Next Gen Spine with Multi-Vector Scaling



QFX10002-36Q

Fixed

36 x 40GE

12 x 100 GE

144 x 10GE



QFX10002-72Q

Fixed

72 x 40GE

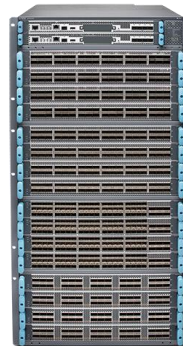
24 x 100 GE

288 x 10GE



QFX10008

8-slot modular



QFX10016

16-slot modular

30 x 100GE per slot

or 30 x 40 GE or 120 x 10GE

36 x 40GE per slot

or 12 x 100 GE or 144 x 10GE

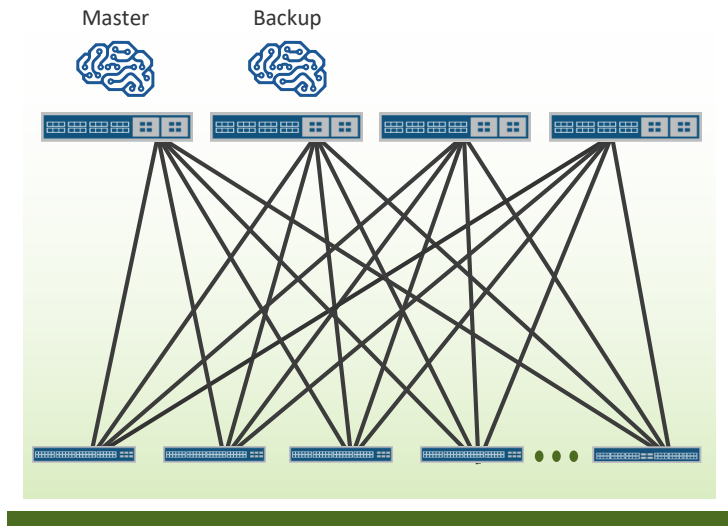
60 x 10GE + 2 x 100 GE per slot

or 60 x 10 GE + 6 x 40 GE or 68 x 10 GE

Industry Leading 100G Density
at 480 100G ports

Multi-Vector Scaling on all dimensions (Buffer, IP etc.)

Virtual Chassis Fabric



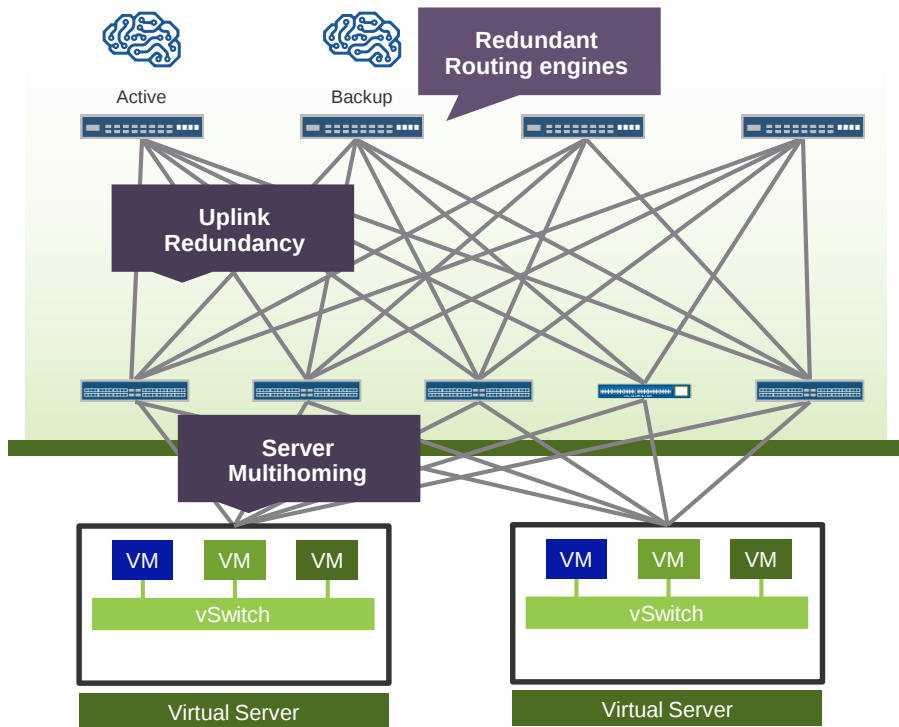
Single Switch to Manage

Scalable to 20 Nodes

Plug N Play Operations

Build In Resiliency at all layers

Virtual Chassis Fabric



Control Plane Redundancy

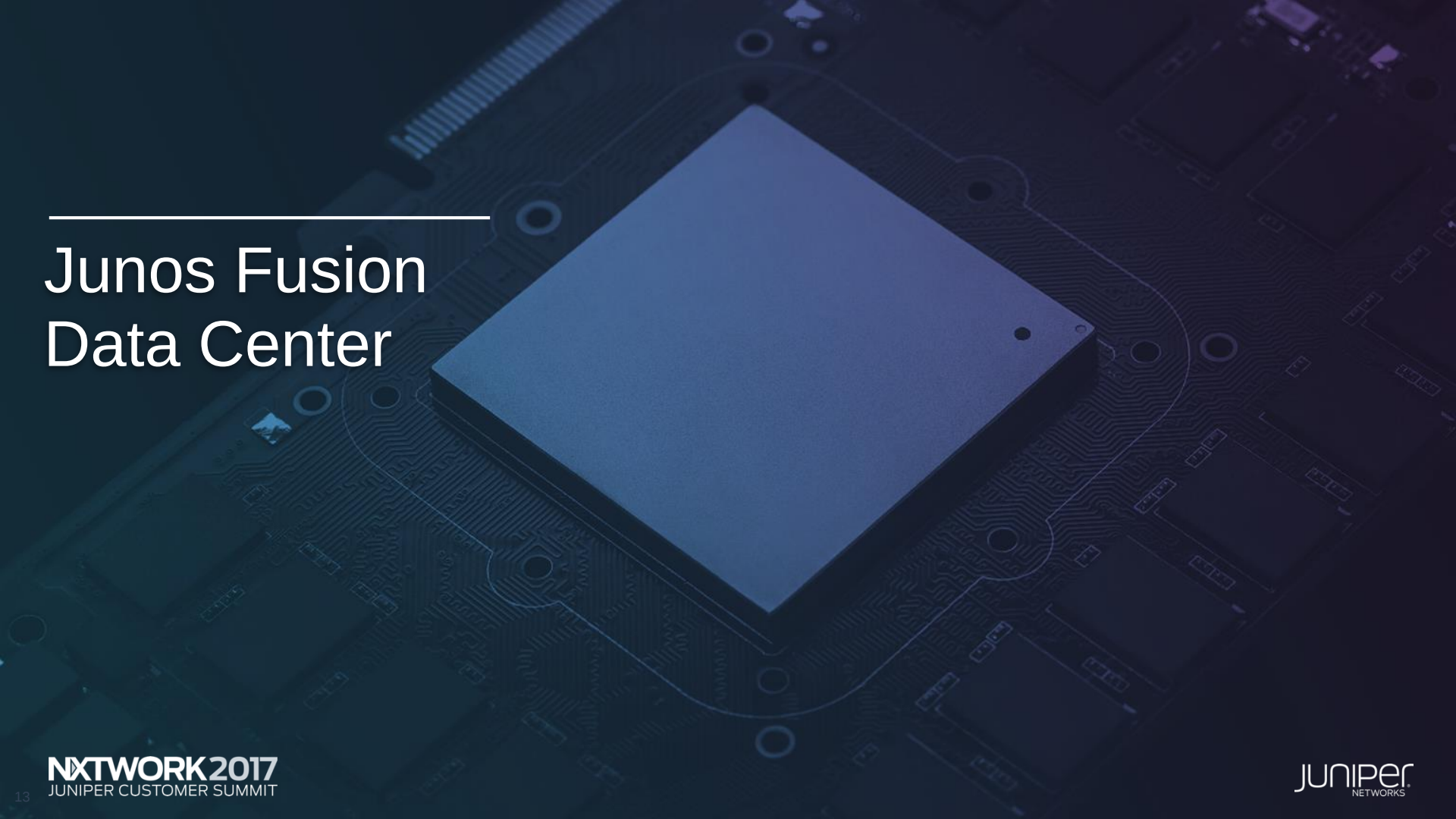
- Dual RE (routing engine) redundancy
- Resilient control plane
- GRES, NSR, NSB

Data Plane Redundancy

- Active-active uplink forwarding
- Server multi-homing
- Uplink redundancy

Positioning – VCF / Fusion DC / EVPN-VXLAN

	VCF	Fusion	EVPN-VxLAN
POD Scale	<=20 Nodes	10-64 Nodes (upto 128 nodes for JFE)	> 30 Nodes
Broadcom and Juniper Custom Silicon Support	Only Broadcom	Yes	Yes
Multi-vendor Support	No	No	Yes
Fabric Speed	10G/40G	10G/40G/100G	10G/40G/100G
Access Port Speed	1G/10G/40G/100G	1G/10G/25G/40G/50G/100G	1G/10G/25G/40G/50G/100G
Simplified Management	Yes	Yes	No



Junos Fusion Data Center

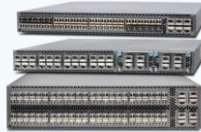
Junos Fusion – One Technology

Junos Fusion Provider Edge



MX

QFX5100



EX4300

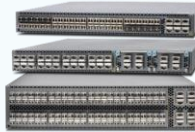


Junos Fusion Data Center



**QFX10002
QFX10008*
QFX10016***

**QFX5100
QFX5110*
QFX5200***



EX4300



Junos Fusion Enterprise

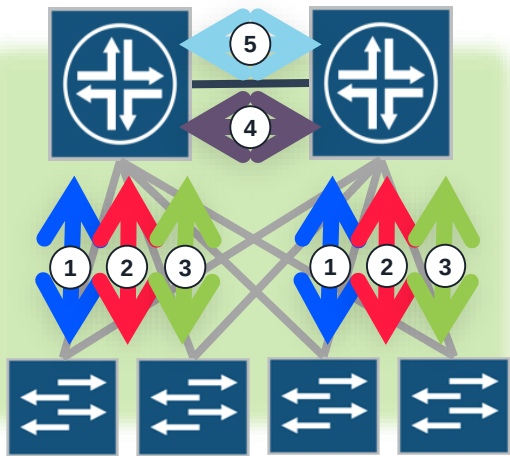


EX9200

**EX4300
EX3400
EX2300
QFX5100
EX4600***



Stage 2 - Protocols Used Internally



1

LLDP

Devices **discovery** and auto provisioning

2

802.1BR+

Satellites management for all **traffic related** aspects (config / statistics / ports state)

3

json-rpc

Satellites management for **non-traffic related** aspects (chassis, environment, upgrade ..)

4

Netconf

Configuration synchronization between Aggregation devices

5

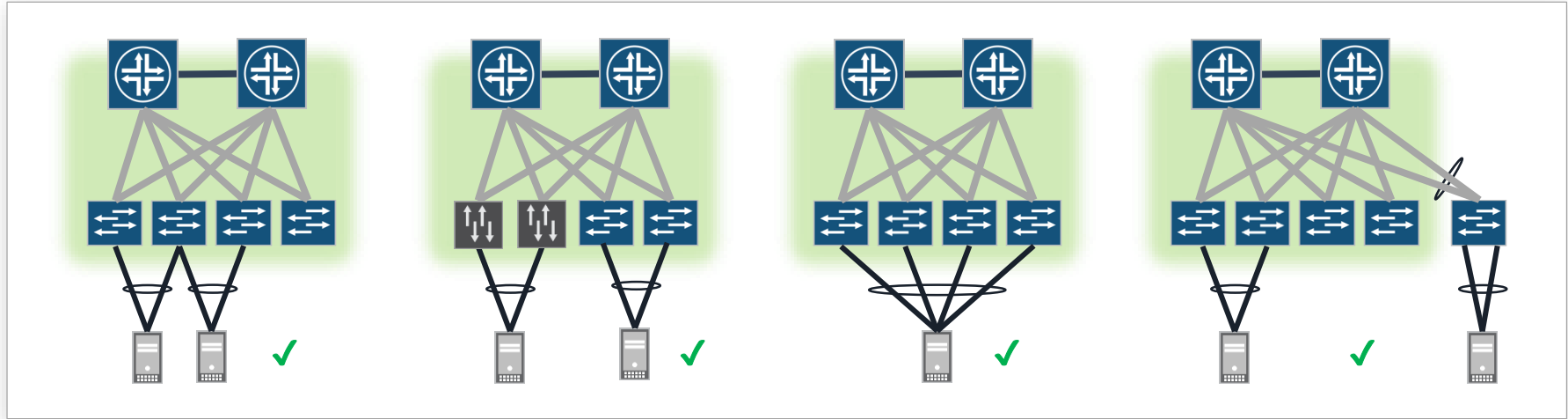
ICCP

LAG synchronization between Aggregation devices (MC-LAG)

Junos Fusion DC – AD/SD Support

- Supported AD
 - QFX10002-72Q
 - QFX10002-36Q
 - QFX10008 and QFX10016 targeted for 1H2018
- Supported SD
 - QFX5100
 - QFX5100-48SH and QFX5100-48TH
 - EX4300
 - QFX5110 and QFX5200 targeted for 1H2018

Junos Fusion DC – Supported Topologies



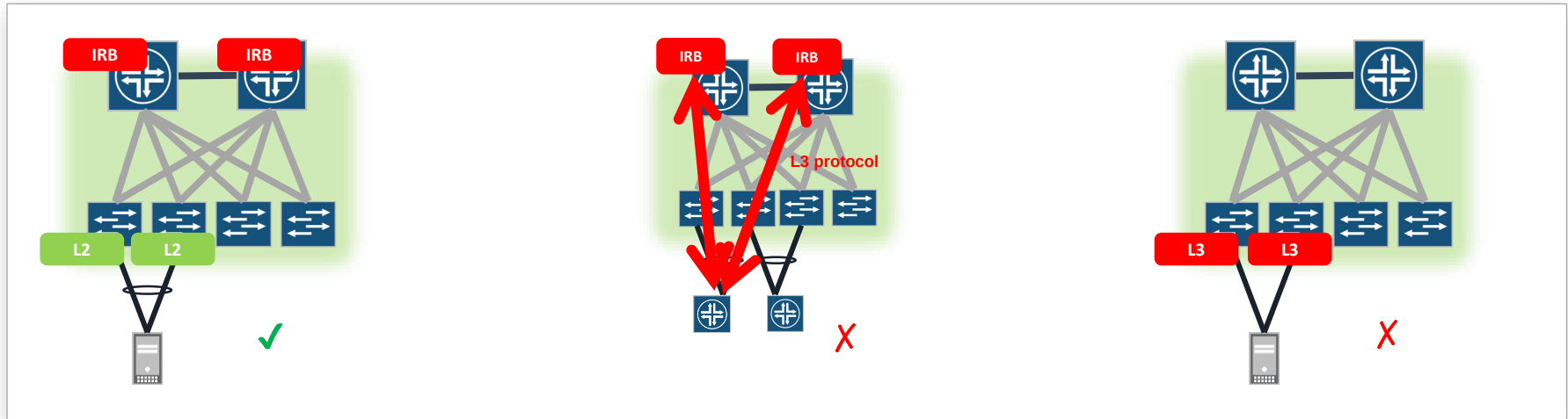
Dual AD
With local switching

Dual AD
Different types of mode on
SD

Dual AD
LAG across more than 2 SD

Dual AD
Non-Fusion Switch using
MC-LAG

Junos Fusion DC – Layer 3 Support

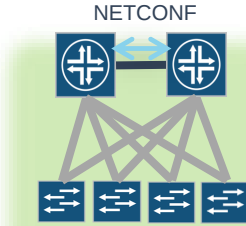


L2 Extended ports
VRRP or IRB MAC Sync on
AD Supported

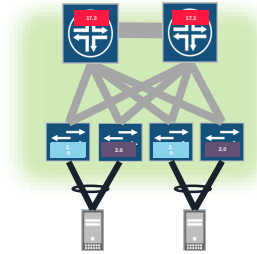
Routing protocols between
AD and devices on
Extended ports
NOT supported

L3 on Extended port
NOT supported

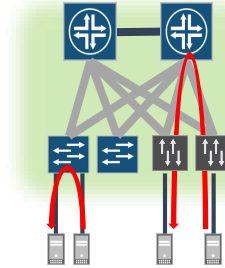
Key Features



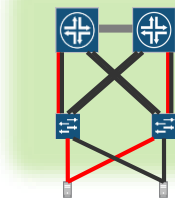
Auto ICCP/VLAN Autosense/Config
Synchronization



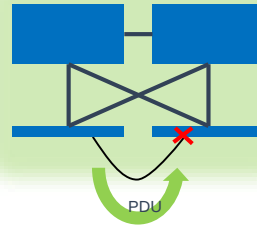
SUGs



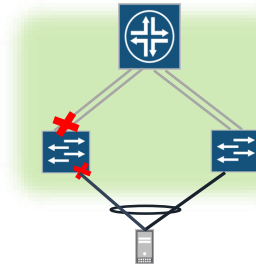
Local
Switching



Uplink
Port Selection

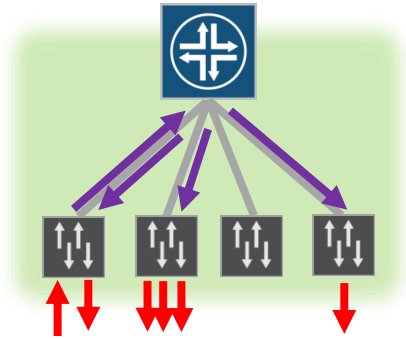


Loop Detection

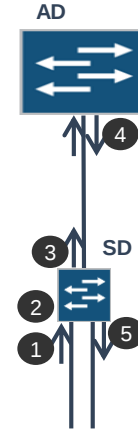


UFD

Key Features

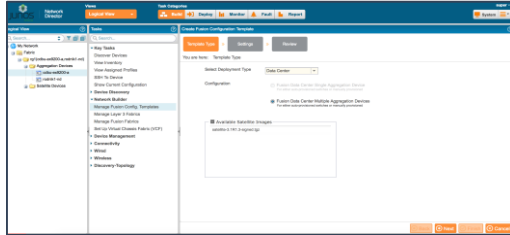


Multicast Egress Replication

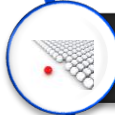


Class of Service

Network Director 3.1 : Junos Fusion for DC support



Holistic life cycle management – Design, Auto deploy, Operate and Monitor



Pre & Post deployment automation workflow



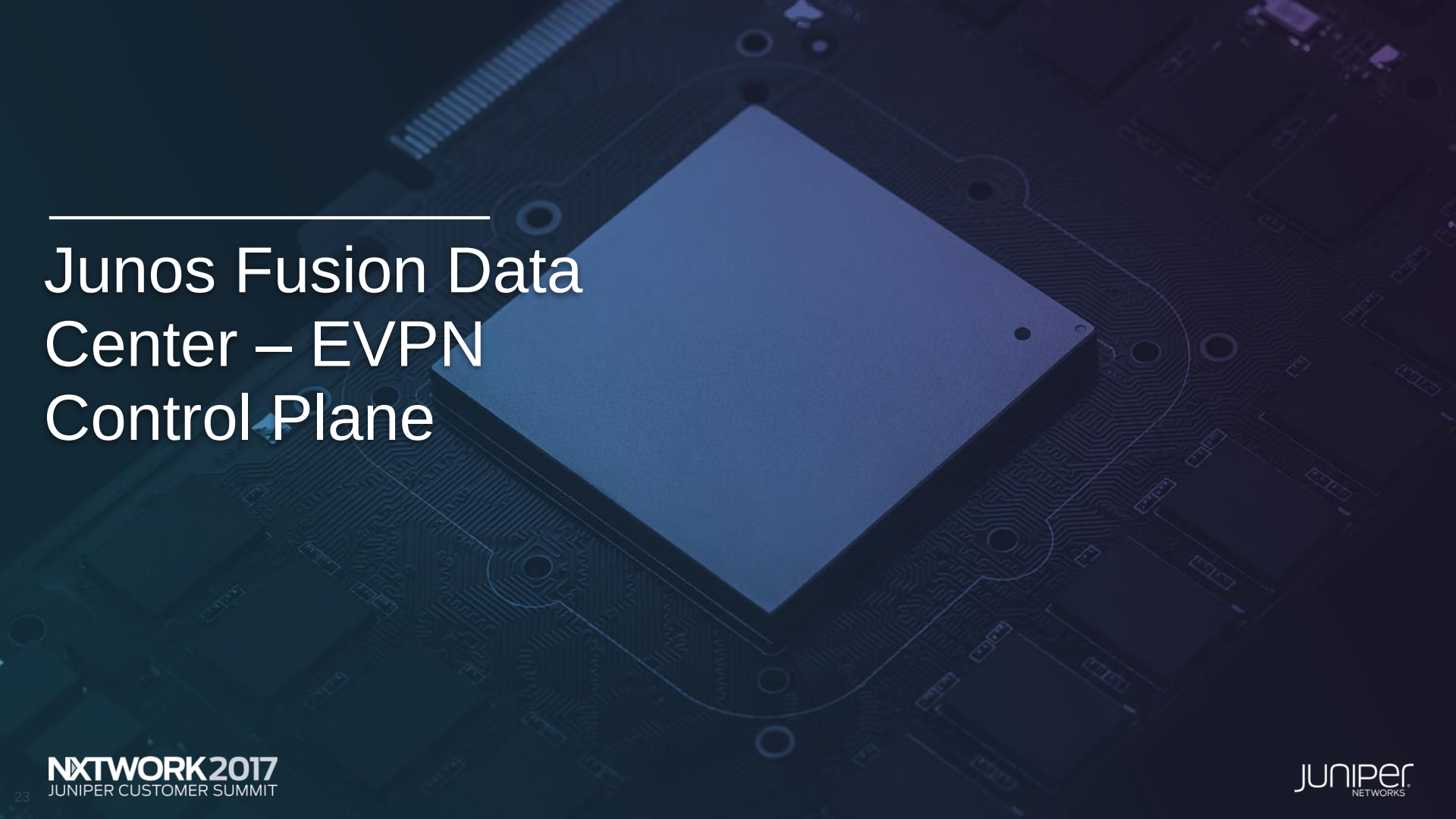
Template driven network design for mass scale deployments



Extensive monitoring and troubleshooting

Junos Fusion DC Licensing

- Junos Fusion DC requires licenses for SNOS based ToR
 - No license required for JUNOS based ToR
 - License is required for the SNOS based ToR
 - QFX5100-48sh
 - QFX5100-48th

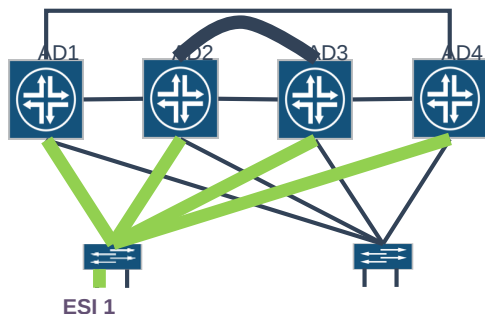


Junos Fusion Data Center – EVPN Control Plane

Benefits of EVPN Fusion over MC-LAG Fusion

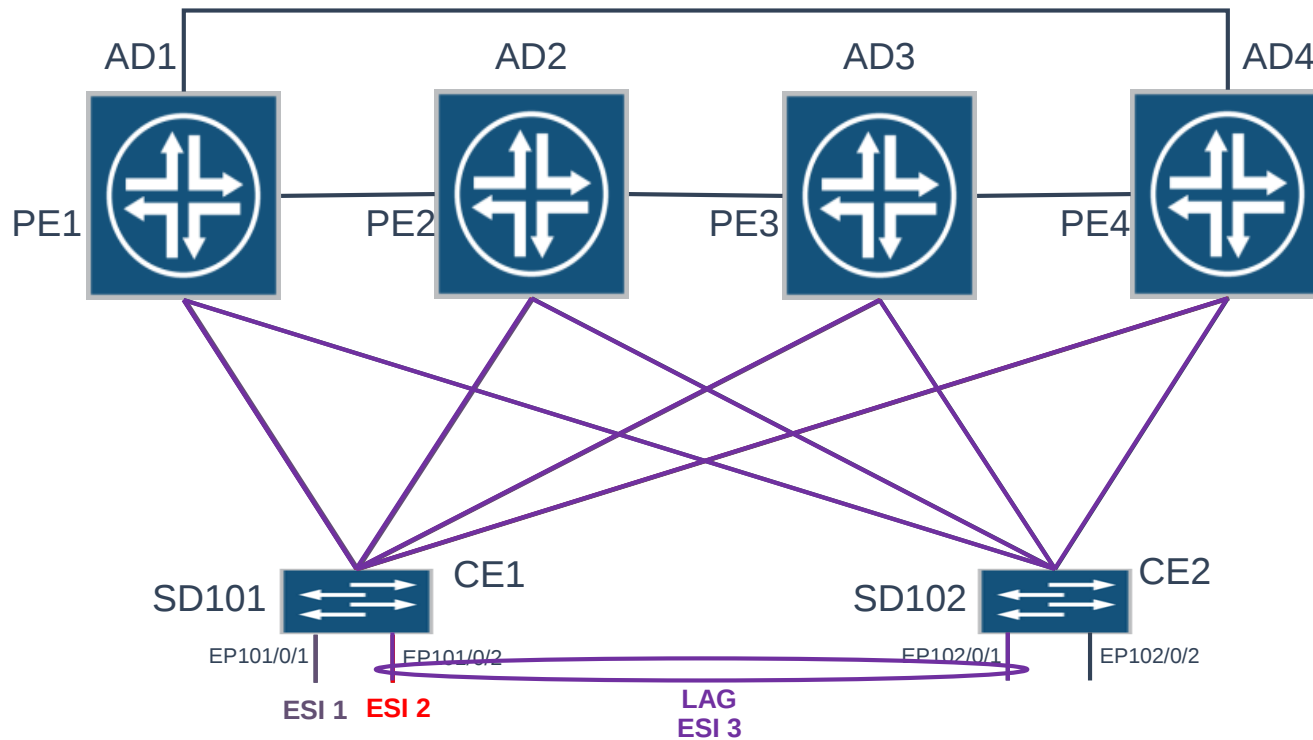
- Improved HA and resiliency
- 75% of internal fabric capacity in the event of an AD failure
- Inherent DCI capabilities enable seamless DCI design
- New possibilities for server connectivity like multi-fabric LAG
- Enhanced monitoring for Fusion

EVPN Based Fusion - Protocols

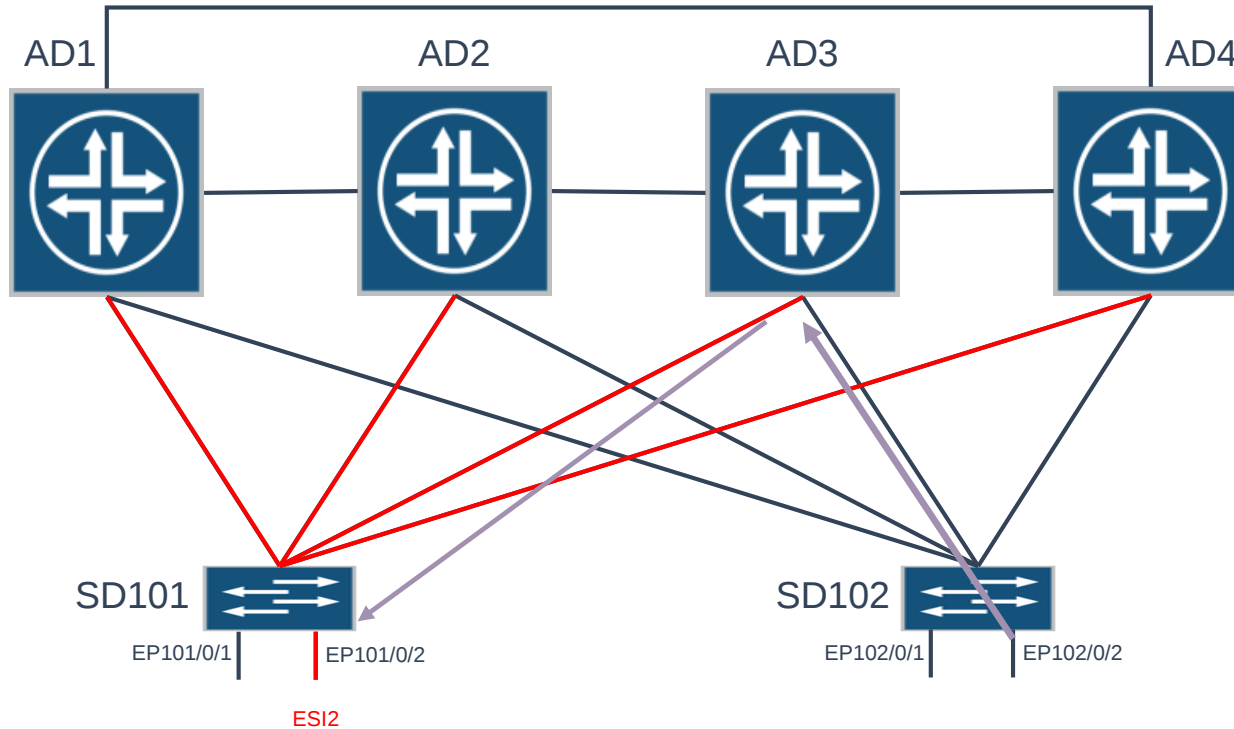


- EVPN user config on ADs
 - OSPF – IP Connectivity/Underlay inside the Fusion topology
 - BGP-EVPN – ES signaling, MAC/IP signaling, Multicast signaling
 - VXLAN – EVPN Dataplane encapsulation between ADs
- Port Extender
 - 802.1BR – Port Extender mux/demux
 - LLDP+ - SD Registration and EP discovery
 - JSON RPC – Device Management, CLI, etc.
 - NETCONF – Config Sync between devices

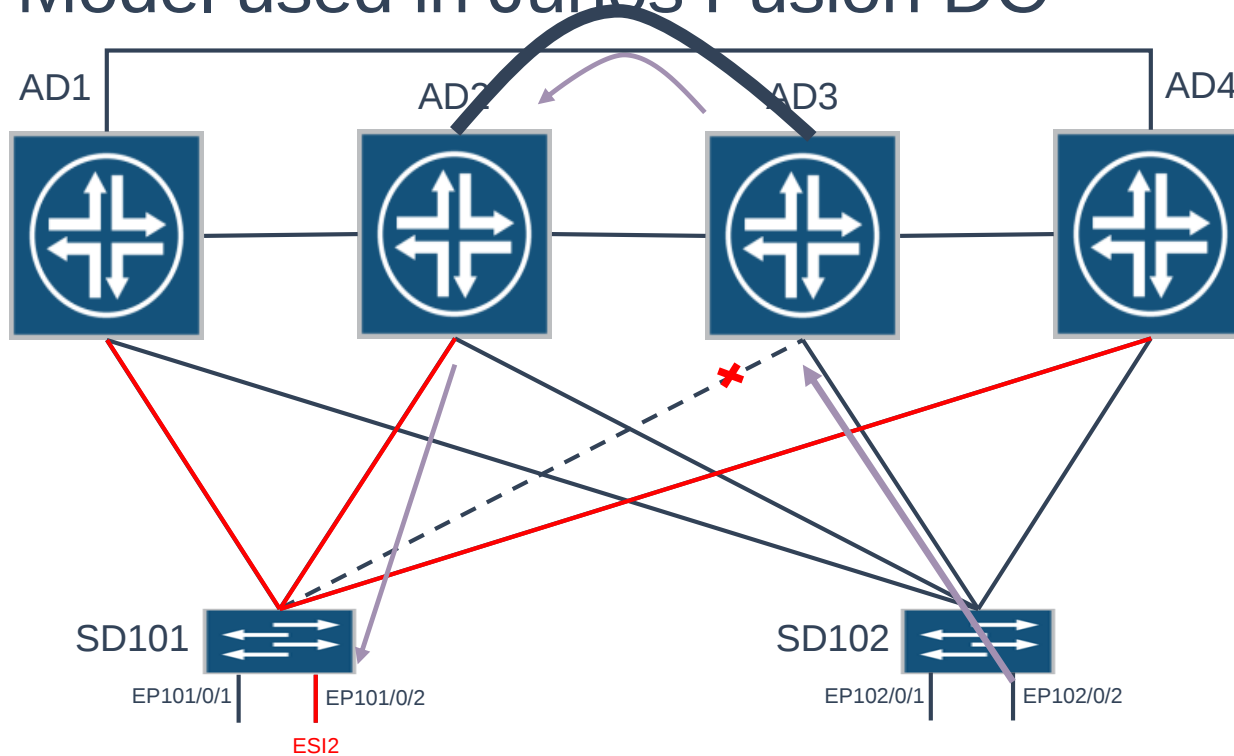
EVPN Model used in Junos Fusion DC



EVPN Model used in Junos Fusion DC



EVPN Model used in Junos Fusion DC



Junos Fusion DC Roadmap (Highlights)

2017

- QFX10002 as AD & QFX5100/EX4300 as SD
- 64 SDs and 3000 extended ports
- 1K LAG
- Local Switching on SD for L2 traffic
- Egress replication on SD for L2 and L3 Multicast traffic
- CoS, Port pinning, LPM

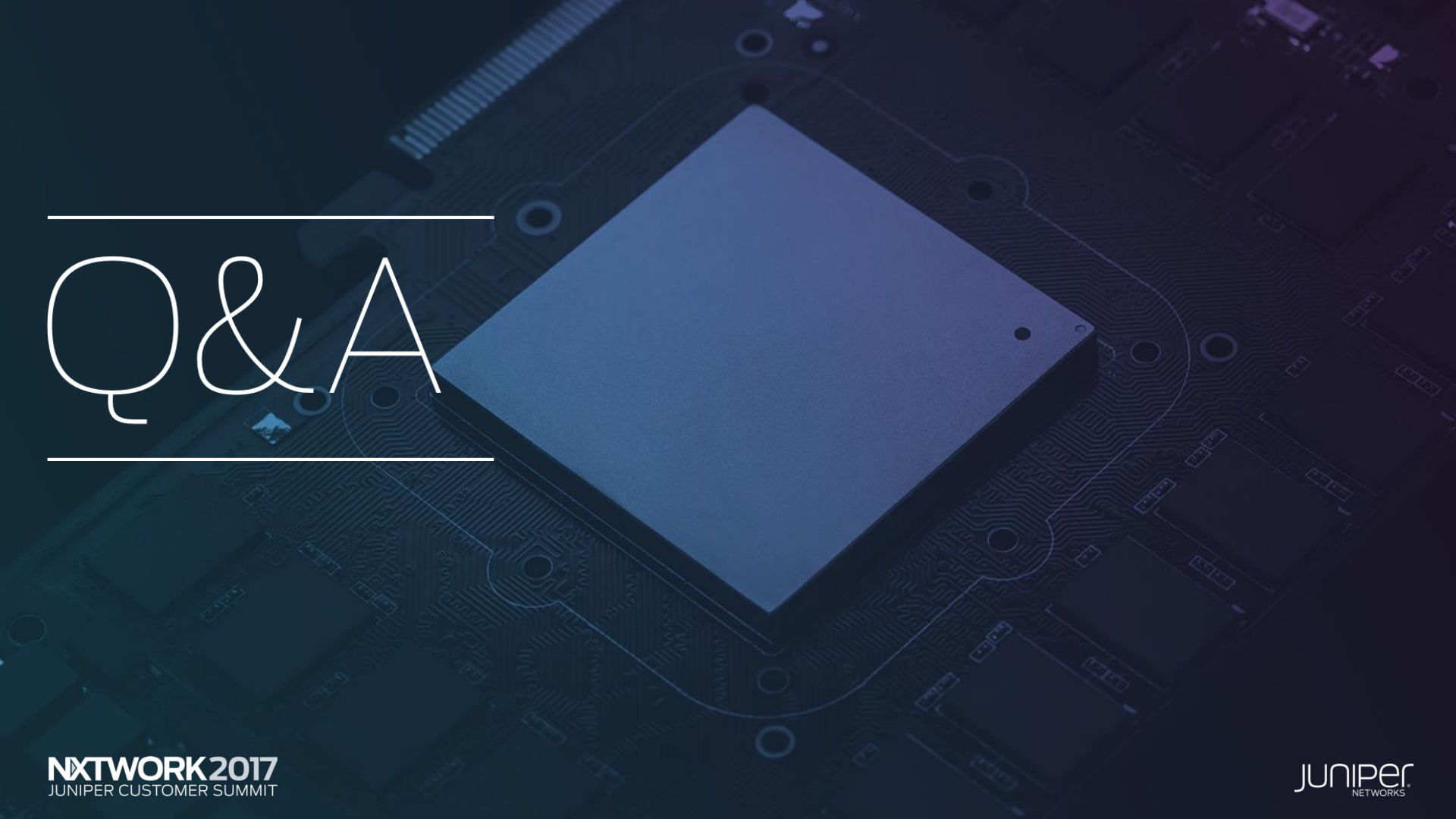


1H2018

- Four AD Fusion
- QFX5110-48S and QFX5200 as SD
- Layer 3 host forwarding on SD
- 1.5K LAG
- Support Fusion DC in Network Director
- QFX10008 and QFX10016 as AD
- VXLAN on Extended ports
- 2-member SD Cluster

Summary

- Manage an entire data center fabric as a single switch
- Hide Routing/Switching complexity between Core and ToR
- Simplify further with Network Director GUI
- Increased resiliency with 4-AD Fusion support



Q&A