Juniper® Validated Design

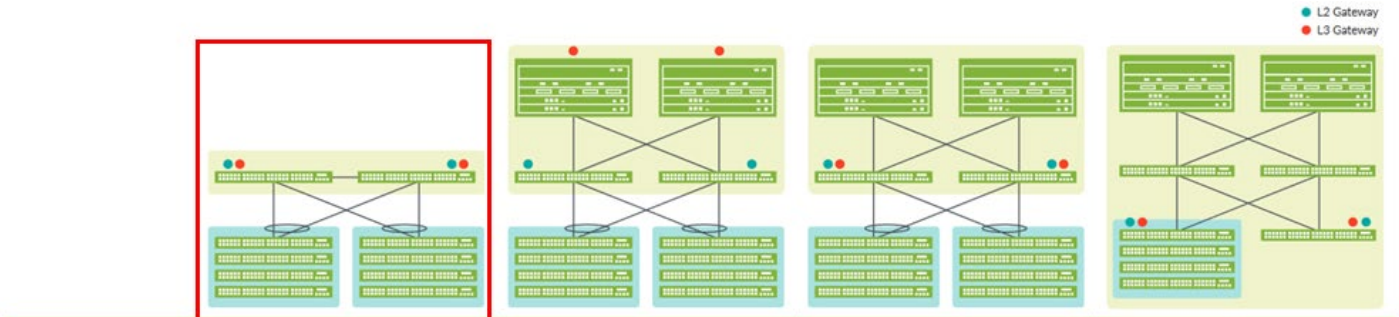
JVD Solution Overview: Campus Fabric EVPN Multihoming Using Juniper Mist™ Wired Assurance

sol-overview-JVD-ENTWIRED-EVPNMH-01-01

Executive Summary

Enterprise networks are undergoing massive transitions to accommodate the growing demand for cloud-ready, scalable, and efficient network. There's also demand for the plethora of Internet of Things (IoT) and mobile devices. As the number of devices grows, so does network complexity with an ever-greater need for scalability, segmentation, and security. To meet these challenges, you need a network with automation and Artificial Intelligence (AI) for operational simplification. A Juniper Networks Campus Fabric EVPN Multihoming is a scalable architecture that is simple, programmable, and built on a standards-based architecture (https://www.rfc-editor.org/rfc/rfc8365). This framework coupled with Mist AI's use of AI, machine learning, and data science optimizes user experiences and simplifies operations across wireless, wired and software-defined wide area networking (SD-WAN) domains.

This Juniper Validated Design (JVD) is about the smallest type of campus fabric designs called "EVPN Multihoming" to address the above challenge.



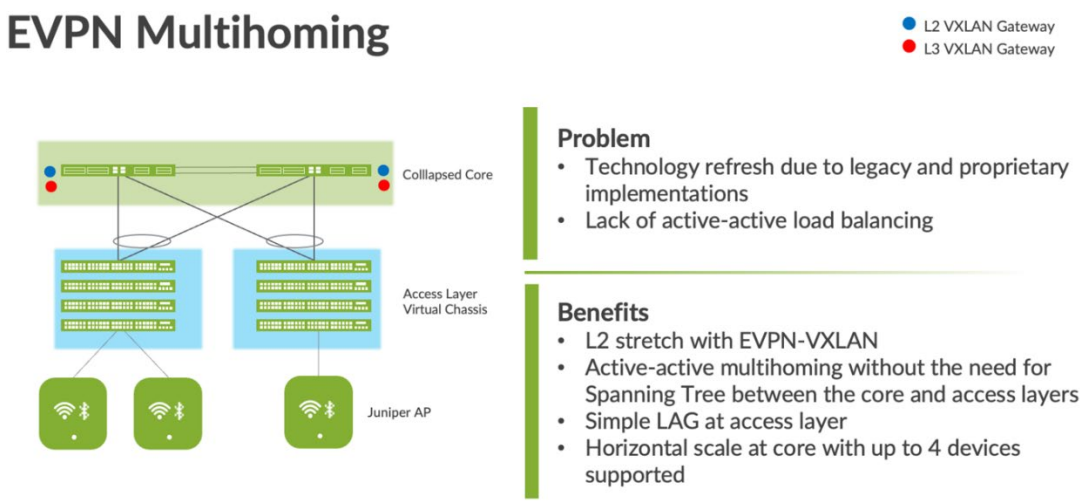
Technology	EVPN Multihoming	Campus Fabric Core-Distribution	Campus Fabric Core-Distribution	Campus Fabric IP Clos
Technology	ESI-LAG	Centrally-routed bridging (CRB)	Edge-routed bridging (ERB)	End-to-End EVPN
Positioning	• Small/medium campus • Collapsed core/distribution • Inter-campus traffic (N/S)	• Small/medium campus • Inter-campus traffic (N/S)	• Medium campus • Intra-campus traffic (E/W)	• Medium/large campus • Intra-campus traffic (E/W) • Recommended when L3 at access
Advantages	• Eliminates STP • Easy migration from Virtual Chassis or MC-LAG	• Simpler as L2/L3 gateway is just on the core • Supports distribution devices that can't perform L3 VXLAN	• Reduced need for gateway re-learning and smaller blast radius • Better multi-vendor interoperability	• Access layer segmentation • Ideal for mobility and IoT devices

Solution Overview

To provide endpoint flexibility, Juniper's Campus Fabric EVPN Multihoming decouples the underlay network (physical topology) from the overlay network (virtual topology). By using overlays, you gain the flexibility of providing Layer 2 and Layer 3 connectivity between endpoints across campus and data centers, while maintaining a consistent underlay architecture.

There are several benefits of a standards-based Campus Fabric EVPN Multihoming in an enterprise campus:

- Reduced flooding and learning—Control plane-based Layer 2 and Layer 3 learning reduces the flood and learn issues associated with data plane learning. Learning MAC addresses in the forwarding plane has an adverse impact on network performance as the number of endpoints grows. This is because more management traffic consumes the bandwidth which leaves less bandwidth available for production traffic. The EVPN control plane handles the exchange and learning of MAC addresses through iBGP route reflectors, rather than a Layer 2 forwarding plane.
- Scalability—More efficient control plane-based Layer 2 and Layer 3 learning. Layer 3 default gateways at the collapsed core layer provide scale.
- Return on Investment—Access switches connect using standards based LACP/LAG without requiring investment in new hardware or software.
- Consistency—A universal EVPN-VXLAN-based architecture across disparate campus and data center deployments enables a seamless end-to-end network for endpoints and applications.
- Migration from legacy technologies—A universal EVPN-VXLAN-based architecture by design allows to:
  - Eliminate the former need of Spanning Tree Protocol (STP).
  - Active/Active usage of all links in the fabric resulting in more bandwidth.
  - Converge from proprietary MC-LAG deployments to standard EVPN/VXLAN using ESI-LAG implementations.



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