DATA SHEET

Brocade BGP-EVPN Network Virtualization and Data Center Interconnect

HIGHLIGHTS

- Enables workload mobility, security, and segmentation within and across data centers
- Ensures multitenant scalability and resiliency for large-scale cloud deployments
- Simplifies network virtualization by leveraging open standards for a cost-effective, controller-less implementation
- Automates operational workflows independent of underlying physical network configurations
- Provides line-rate VXLAN bridging and routing for all ports with Brocade VDX switch portfolio ASIC technology
- Supports data center interconnect across multivendor and multifabric networks

Enabling Workload Mobility and Security through Open Standards

Network provisioning and maintenance can be tedious and time-consuming, especially when networks are experiencing rapid, large, and unpredictable increases in usage. Network virtualization simplifies these and other administrative tasks to ensure optimization of workload mobility, scalability, and security. Using this approach, all network servers and services are considered one pool of resources, which may be used without regard to the physical components. Brocade® BGP-EVPN Network Virtualization is a controller-less architecture that simplifies data center operations by leveraging open, standards-based protocols to abstract network control plane, data plane, and automation functions from the underlying physical platforms.As an integral part of the Brocade open data center design stack elements (see Figure 1), Brocade BGP-EVPN Network Virtualization builds upon underlying infrastructure platforms, fabrics, and automation to deliver simplified and secure network operations.

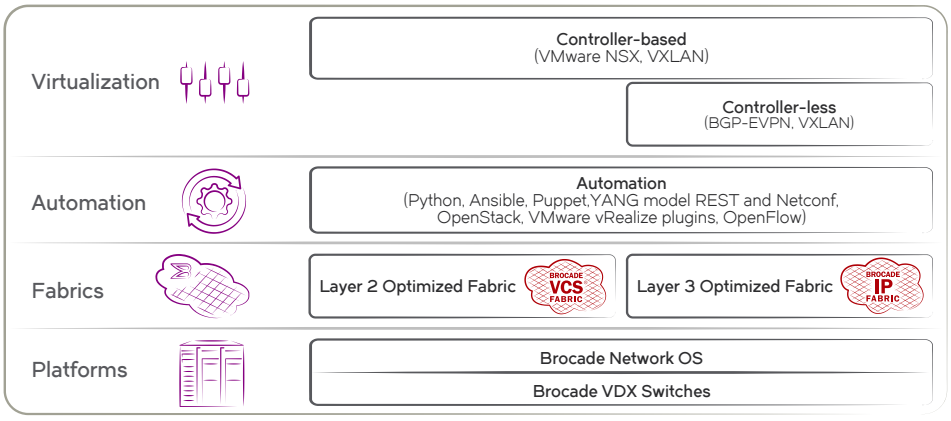

Figure 1: Brocade open, standards-based data center design stack elements.

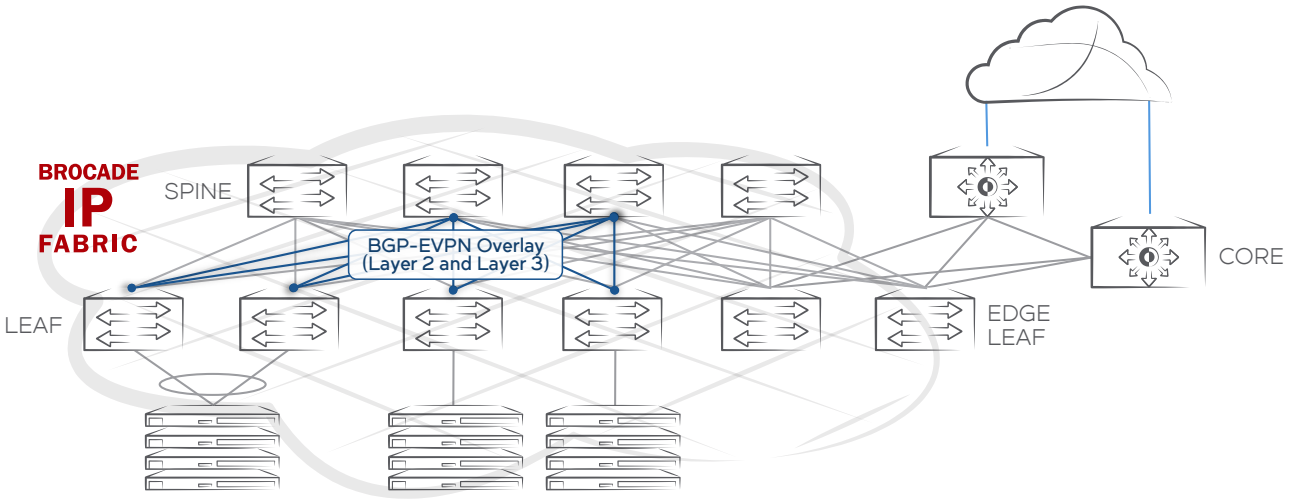

Figure 2: Brocade leverages BGP-EVPN and VXLAN open standards to enable controller-less network virtualization overlays to extend Layer 2 and Layer 3 reachability, ensuring easy and secure scalability.

Brocade leverages the BGP-EVPN protocol to introduce control plane learning behind remote data plane VXLAN Tunnel Endpoints (VTEPs). A unified control plane for both Layer 2 and Layer 3 forwarding provides integrated bridging and routing in VXLAN overlay networks by distributing end-host reachability information among VTEPs. This means the network administrator can easily move workloads within and across data centers using the functionality of the existing network without having to add costly external controllers.

Open-Standards Network Virtualization for Workload Agility and Security

Brocade provides integrated bridging and routing between data center server racks in VXLAN overlay networks by distributing end-host reachability information through BGP-EVPN control plane signaling across VTEPs. In this way, administrators can easily and securely scale their data center networks by extending Layer 2 and Layer 3 reachability across intra-data center racks in a multitenant network, allowing overlapping VLANs and IP subnets between tenants. Because Brocade leverages open standards to enable this network virtualization functionality, there is no need for an expensive, dedicated external controller.

Using BGP-EVPN as a control plane protocol in a controller-less overlay architecture results in efficient MAC address learning. BGP-EVPN is a signaling protocol that introduces control plane learning for end hosts behind remote VTEPs within an IP fabric (see Figure 2). A unified control plane is provided for both Layer 2 and Layer 3 forwarding in a VXLAN overlay network. The underlay BGP protocol brings efficiency, simplicity, and scalability. BGP-EVPN provides many benefits, including the control plane distribution of Address Resolution Protocol (ARP), ND and MAC databases, VRF routing, multi-homing support, fast convergence, automatic discovery of remote VTEPs, and the auto-derivation of RD and RT communities. In addition, BGP-EVPN minimizes network flooding and supports both eBGP and iBGP.

Simplified Data Center Interconnect across Underlay-Agnostic Data Center Sites

Brocade extends integrated bridging and routing across data centers in VXLAN overlay networks through BGP-EVPN-enabled data center edge leaf gateways (see Figure 3). This enables scalable Layer 2 and Layer 3 services over EVPN-VXLAN for virtualized data centers with control-plane signaling of MAC/IP mobility for VMs that move between data centers. Local data center gateways at each data center site optimize routing, ensuring that external traffic is sent to the closest exit. Integrated Layer 2 switching and Layer 3 routing over the same interface or VLAN enable flexible service delivery to VMs. The border leaf pair in each data center enables the interconnect functionality independent of the underlay used in each data center. This use case illustrates a simplified approach to data center interconnectivity for multivendor and multifabric underlay data center networks.

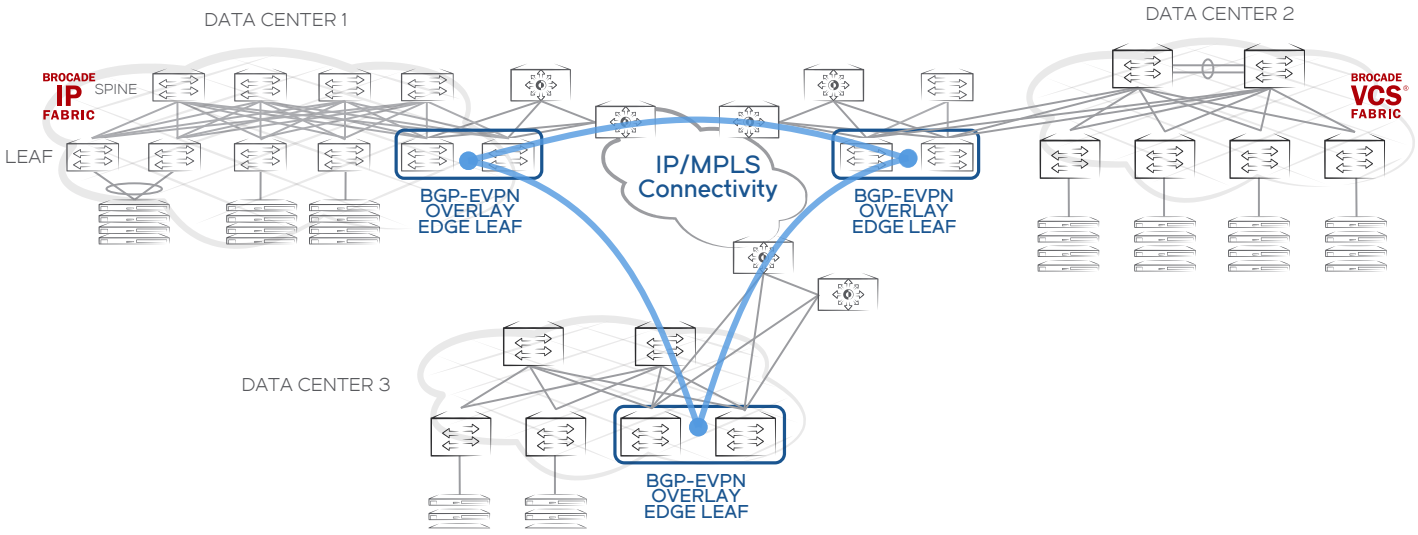

Figure 3: Brocade BGP-EVPN-enabled border leaf switches simplify data center interconnection for Layer 2 and Layer 3 traffic.

High-Performance VXLAN Bridging and Routing

Brocade BGP-EVPN VXLAN overlay networks enabled on Brocade VDX® switches with award-winning Brocade ASIC technology provide high-performance VXLAN bridging and routing for all ports. This unique single-pass, ASIC-based VXLAN routing (RIOT) enables line-rate performance in symmetric and asymmetric inter-subnet routing with BGP-EVPN. Brocade VDX switches support line-rate VXLAN bridging for all ports. For more information about Brocade BGP-EVPN, read the white paper *Brocade Data Center Fabric Architectures for Building Modern Data Center Cloud Networking Infrastructures and Data Center Interconnect Options*.

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Brocade Global Services has the expertise to help organizations build scalable, efficient cloud infrastructures. Leveraging 20 years of expertise in storage, networking, and virtualization, Brocade Global Services delivers world-class professional services, technical support, and education services, enabling organizations to maximize their Brocade investments, accelerate new technology deployments, and optimize the performance of networking infrastructures.

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Brocade BGP-EVPN Network Virtualization Specifications

Supported Features	
Layer 2 switching	• Conversational MAC Learning • Conversational ARP Learning • Dual-homing support with vLAG pair
Layer 3 switching	• Border Gateway Protocol (BGP4+) • Bidirectional Forwarding Detection (BFD) • 32-Way ECMP • BGP EVPN Control Plane Signaling RFC 7432 • BGP-EVPN VXLAN standards-based overlay • Multi-VRF • IP Unnumbered Interface • Inter-subnet Routing (Symmetric and Asymmetric) • Static Anycast Gateway • ARP Suppression • Auto-derivation of RD and RT communities • Support for both iBGP-EVPN and eBGP-EVPN
Hardware and Software System Requirements	
Hardware	• Brocade VDX 6940 and 6740 supported at the leaf • All Brocade VDX platforms supported at the spine
Operating system	• Brocade Network OS, a modular operating system

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