Ethernet Virtual Private Networks (EVPN) for BSP

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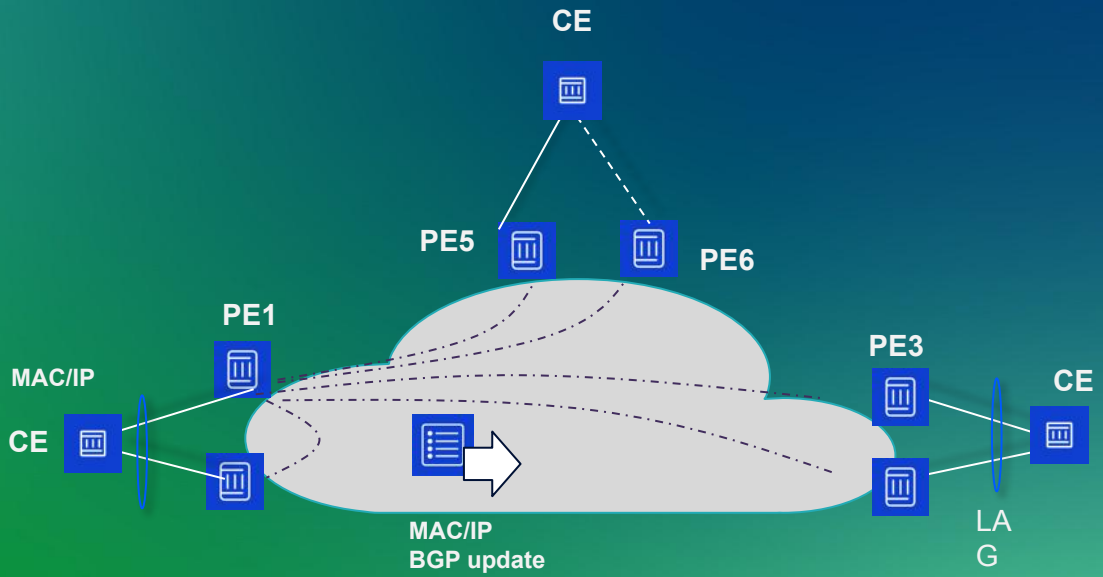
Agenda

1. EVPN Overview
2. EVPN Benefits
3. EVPN Application
4. EVPN Take away

EVPN Overview

- Next-generation full-service bearer VPN solution
- Connect Layer 2 network over Layer 3 Network for various VPN services
- Uses BGP extensions to transmit Layer 2 or Layer 3 reachability information
- Separating the forwarding plane from the control plane



EVPN vs VPLS

A comparison

VPN Requirements	EVPN	VPLS	What difference does it make?
Optimum service label consumption	+	-	Label per-VRF as opposed to per-VRF-per-PE
All-Active Multi-homing (Flow-based Load Balancing)	+	-	VPLS only supports single-active MH
Mass-withdrawal for fast convergence	+	-	VPLS single-active MH convergence increases with scale
BUM flooding reduction/suppression	+	-	VPLS based on flood and learn
Integrated proxy-ARP/ND functions	+	-	
Near hitless host mobility	+	-	Mobility allowed in EVPN based on MAC SEQ numbers
Controlled MAC learning with policies	+	-	EVPN supports BGP import/export policies
Simplified configuration	+	-	RFC7432 allows auto-configuration of many service parameters

Why do we move to EVPN

Superior Multi-Homing Capabilities

Improved Security

Controlled MAC Learning (BGP)

L2 and L3 awareness (even in L2 BDs)

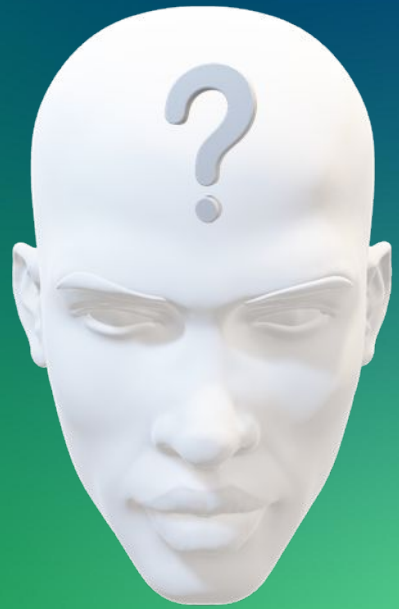
Reduced impact of BUM

Host Mobility

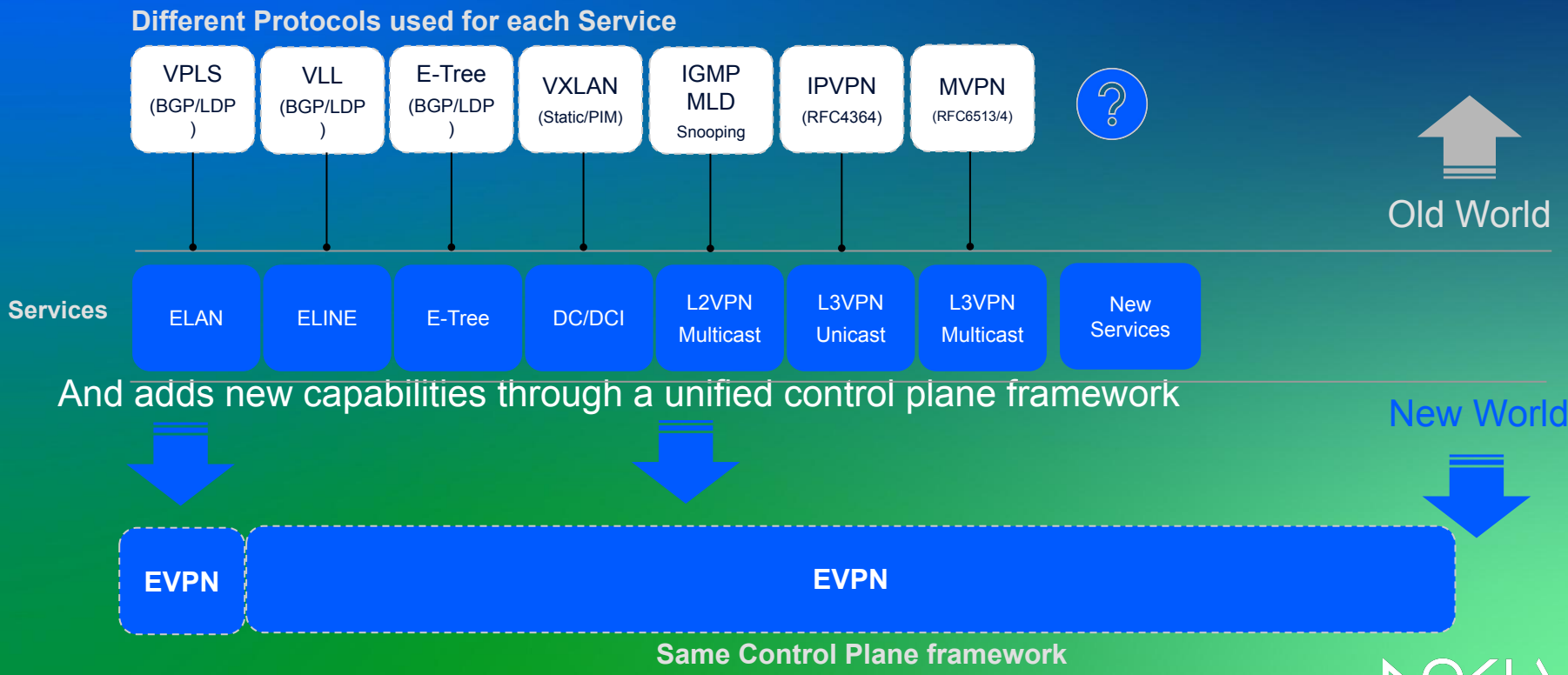
L2 and L3 forwarding integration (unicast/multicast)

WAN and DC Integration

Universal Control Plane



Unified Service Delivery in the New World



EVPN Application

1

EVPN for ELAN, ELINE and E-Tree

2

EVPN for DC/DCI (VXLAN)

3

EVPN for Unicast L3VPN

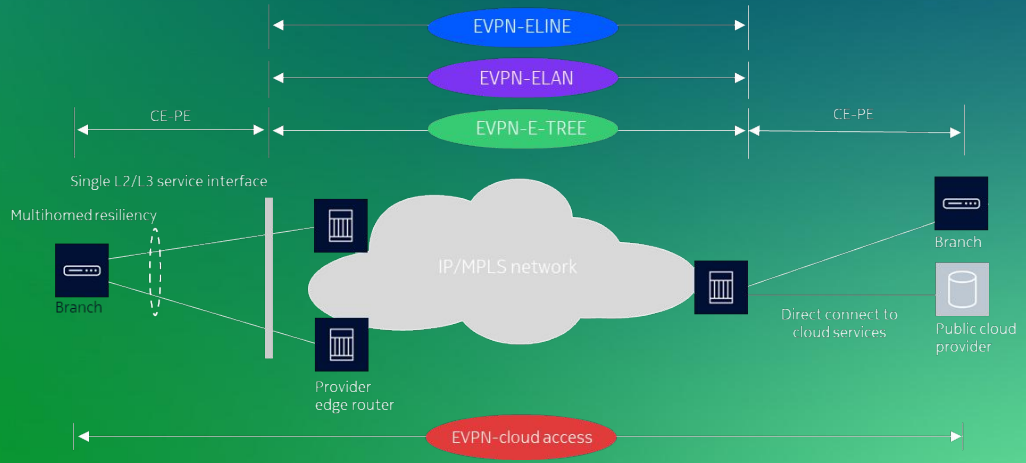
4

Takeaways

1

EVPN for ELAN, ELINE and E-Tree

- RFC7432 Basic EVPN
- EVPN Multi-Homing
- EVPN VPWS
- EVPN-VPLS
- EVPN E-Tree



2

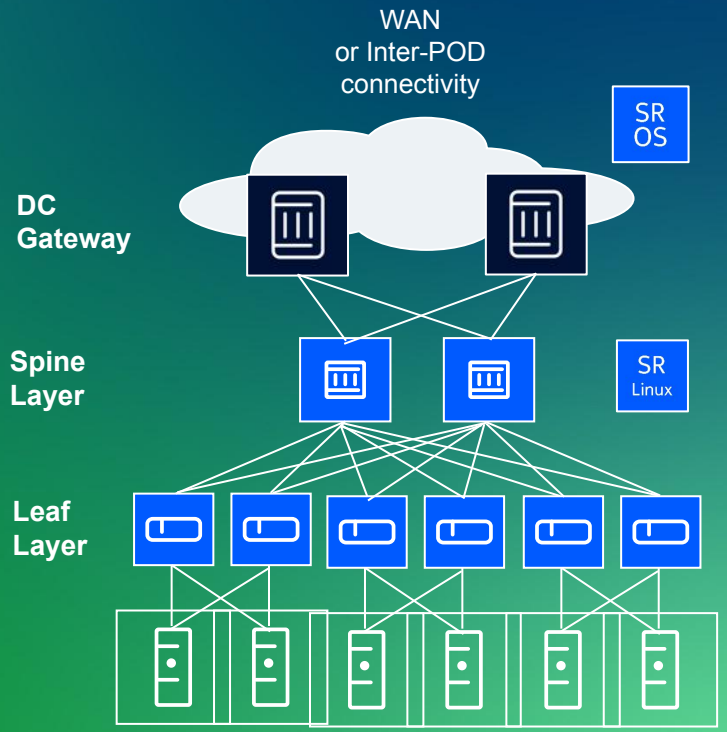
EVPN for DC/DCI (VXLAN)

EVPN for VXLAN

Local Bias for EVPN-VXLAN Multi-Homing

EVPN Assisted Replication

DCI



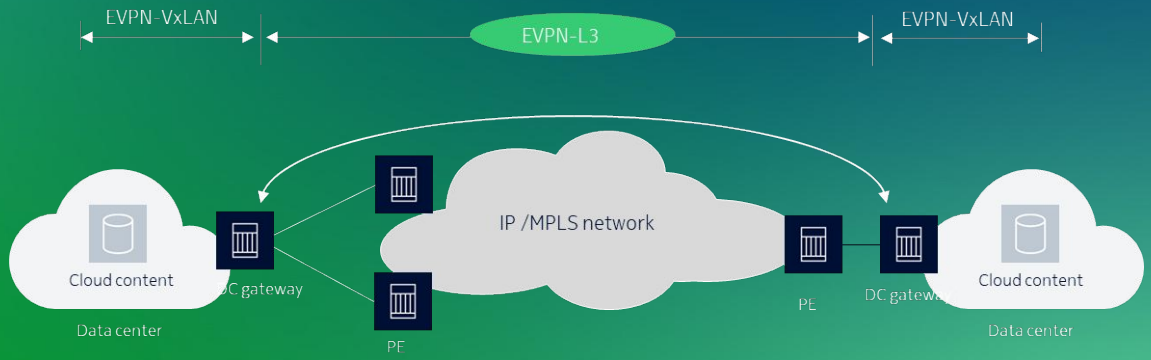
3

EVPN for Unicast L3VPN

EVPN for L3VPN

L3VPN Unicast services

L3VPN Multicast services

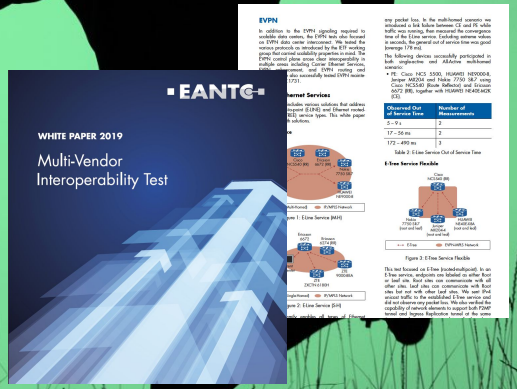


“50% of service providers had EVPN deployed somewhere in their network in 2022. This percentage is forecast to rise to 85 percent by the end of 2024”

https://www.nokia.com/blog/evpn-adoption-accelerates/?did=d000000001gb&utm_medium_=organic
Source: HIS Markit

EVPN take away

8+ vendors carried out dozens of interoperability test around the main EVPN applications and services



“24 successful EVPN test combinations addressing varieties of IETF drafts in scalability, security, protection and OAM”

EVPN is a true Multi-Vendor Technology

EANTC Multi-Vendor Interoperability Test White Paper 2019


NOKIA