Verizon provides Virtual Private LAN Service (VPLS) to support the Layer 2 Virtual Private Network Services (L2VPNS) on Networkx.

**BENEFITS**
Converged Packet Architecture (CPA) network infrastructure uses Multi-Protocol Label Switching (MPLS) over it core to provide VPLS. Verizon CPA networks provide Ethernet access between a Building Ethernet Aggregation Switch (BEAS) at a customer location and a Multi-Service Edge (MSE) switch in a Verizon Point of Presence (POP). The BEAS will provide an Ethernet interface to an Agency’s Customer Edge (CE) router (or Layer 2/3 switch). The MSE serves as the distribution point for all types of access traffic and as a VPLS Provider Edge (PE) switch. CPA will support local and metro area VPLS networks through the VPLS PE; wide area VPLS will be provided by interconnecting VPLS PEs using a combination of MPLS-based pseudowire and point-to-point Packet-Over-SONET (POS) trunks.

**FEATURES**
VPLS access bandwidth is available in increments of 1 Mbps (up to 10 Mbps), 10 Mbps (up to 100 Mbps) and 100 Mbps (up to 1000 Mbps). CPA networks use Ethernet today to encapsulate traffic from customer locations and will be migrating to pseudowires as the technology becomes commercially available. For Ethernet-based CPA networks, Ethernet is used as an encapsulation protocol only and not for bridging. Privacy and logical separation of Agency traffic is provided using Virtual LANs (VLANs) with Q-tag stacking. All switching in CPA networks is done on a per flow basis using the port/VLAN pair. This approach means VLAN tags have local significance only, providing a transparent, highly scalable architecture. The VPLS PE provides bridging and forwarding for full mesh Layer 2 multipoint connectivity much like RFC 2547bis provides full mesh any-to-any connectivity for Layer 3 VPNs. Each VPLS domain (Layer 2 VPN) establishes and maintains its own Ethernet Media Access Control (MAC) forwarding table in each VPLS PE participating in the domain. Each MAC forwarding table instance is interconnected using domain-specific Label Switched Paths (LSPs), thereby maintaining privacy and logical separation between each VPLS domain. In order to maintain MAC forwarding tables to a reasonable size, Verizon is limiting the number of accepted MAC addresses per VPLS connection. For this reason, Verizon recommends that Agencies use Layer 3 routing in conjunction with Layer 2 switching to aggregate MAC addresses to promote maximum scalability and performance in the VPLS backbone. IP routing capability will also be required to monitor Key Performance Indicators (KPIs).

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