Introduction to Layer 2 Virtual Private Networks

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A Layer 2 Virtual Private Network (VPN) emulates a physical sub-network in an IP or MPLS network, by creating private connections between two points. Building an L2VPN network requires coordination between the service provider and the customer. The service provider establishes Layer 2 connectivity. The customer builds a network by using the data link resources obtained from the service provider. In an L2VPN service, the service provider does not require information about the customer's network topology and other information. This helps maintain customer privacy while using the service provider resources to establish the network.

The service provider requires Provider Edge (PE) routers with the following capabilities:

- Encapsulation of L2 protocol data units (PDU) into Layer 3 (L3) packets.

- Interconnection of any-to-any L2 transports.

- Support for MPLS tunneling mechanism.

- Process databases that include all information related to circuits and their connections.

L2VPN Interfaces Overview

An L2VPN network enables service providers (SPs) to provide L2 services to geographically disparate customer sites. Typically, an SP uses an access network to connect the customer to the core network. The connection between the customer site and the nearby SP edge router is known as an attachment circuit (AC). Traffic from the customer travels over this link to the edge of the SP core network. The traffic then tunnels through AC over the SP core network to another edge router. The edge router sends the traffic down another AC to the customer's remote site.

Benefits

- Allows SP to have a single infrastructure for both Layer 2 and Layer 3 services.

- Cost-effective due to converged IP or MPLS network.