PPVPN using L2TP

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Presentation overview

- L2TP Overview

- L2 and L3 VPNs with L2TP

- VPN Discovery Mechanism

- VPN Discovery using L2TP

- Simple VPN Discovery Example

- Attractions in this approach

- Questions

L2TP Overview

- Tunnel signaling protocol, layered above IP
- L2TP has decoupled itself from PPP, and currently can tunnel a variety of payload
- It has a good Tunnel encapsulation header having 2-levels of de-multiplexing fields
- Tunnel keep-alive available
- Tunnel authentication available
- Layered above IP, and hence can use IPSec (in transport mode), if security is needed

L2 and L3 VPNs using L2TP

- L2 VPNs by Tunneling PPP, FR, Ethernet, already supported. VPLS can use L2TP with little or no extensions.

- L3 VPNs – Can tunnel IPv4, IPv6, IPX, Netbeui

- L3 VPNs of the VR model, can use L2TP tunneling to setup and discover VPN tunnels. Any IGP can be run over the Tunnel Virtual Interface created by L2TP, to exchange the VPN routes.

- L3 VPNs of the 2547 model, can use L2TP tunneling instead of MPLS tunneling, to support non-MPLS networks

VPN Discovery mechanism

- VPN discovery could be done with simple extensions to L2TP. Following slides explain more.

- However, if one wishes to use Discovery mechanisms involving BGP in 2547 and VR models, they can still be used with L2TP tunnels. Simple changes proposed.

VPN Discovery using L2TP

- This needs simple AVP (TLV) extensions to L2TP.
- Supports: mesh, hub&spoke topologies for the VPN tunnels. Other topologies can be added.
- The control connections meant to discover and exchange VPN information can be:
  - Mesh, Star (Hub&Spoke), collection of Star
- Highly scalable VPN membership discovery and automatic setup of tunnels proposed

Simple VPN Discovery Example
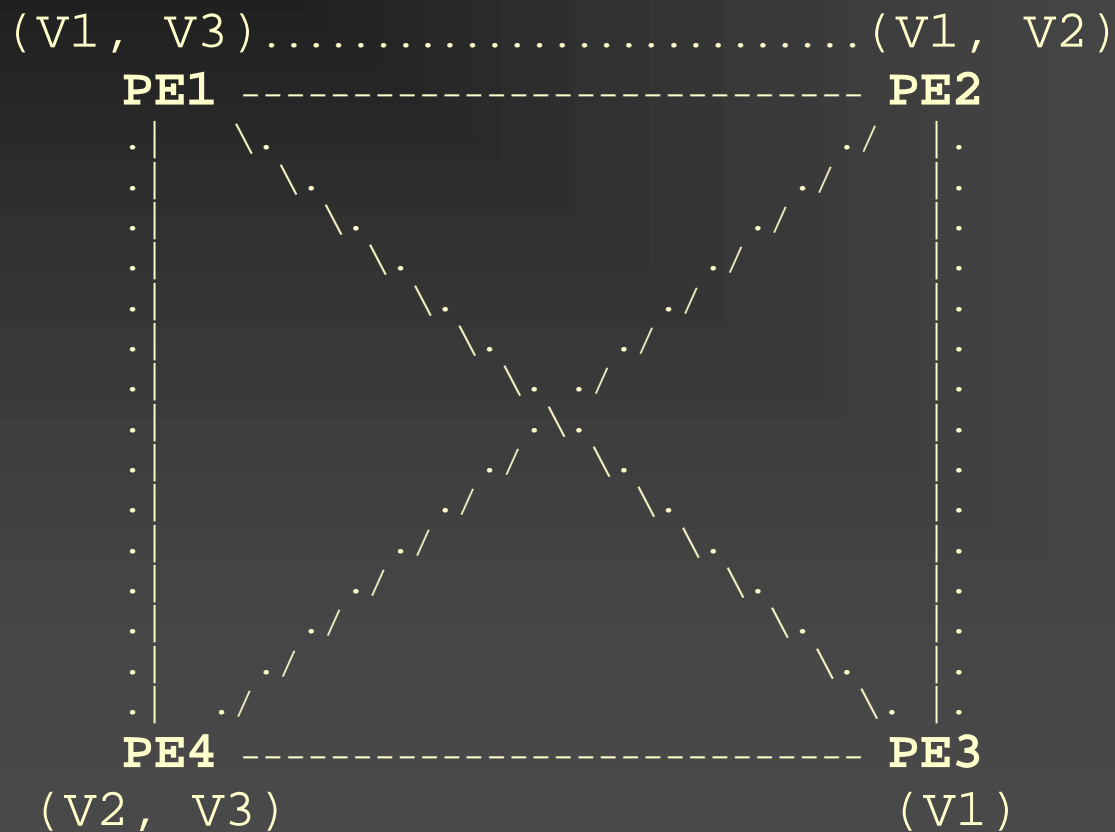
Attractions in this approach

- Provides a layered solution, by decoupling tunneling from learning of VPN tables
- Does not enforce MPLS, but still can work on MPLS networks
- Does not enforce IPSec, but still can use IPSec when security is needed
- Provides a good hierarchical Tunnel Encapsulation header
- With simple extensions, can provide highly scalable VPN auto-discovery and tunnel setup

QUESTIONS ?