DNS/LDP Based VC VPNs

<draft-heinanen-dirldp-uni-vc-vpns-01.txt>

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Overview

- Simple, easy to configure alternative to kompella-ppvpn-l2vpn

- connects LDP capable CE routers via VCs

- BGP free - uses LDP both for label and Layer 3 address distribution

- merges labels so that each CE has a single VC for all incoming packets
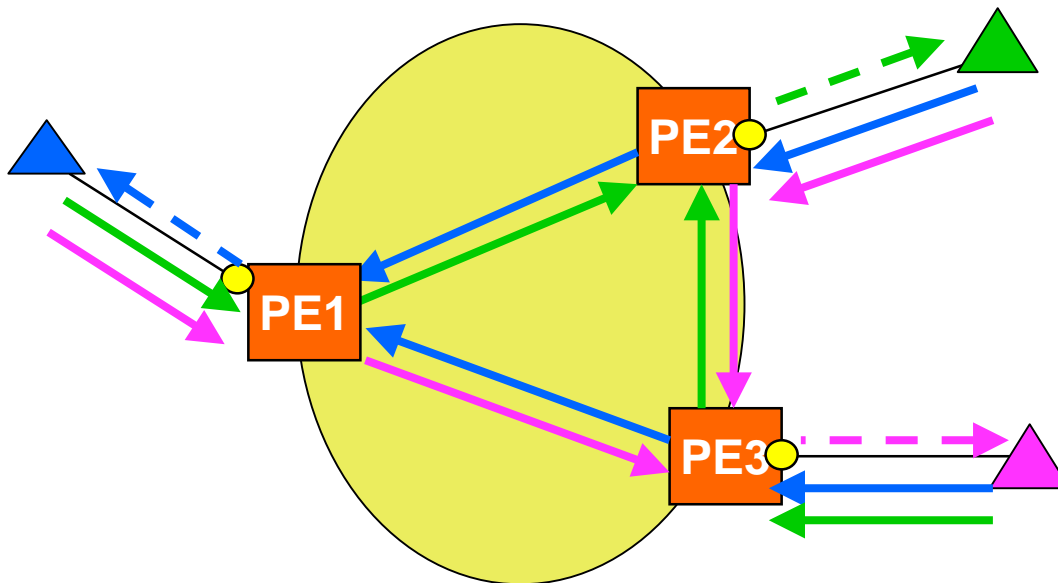
- uses DNS for PE discovery

Configuration

- CE is assigned one or more Layer 3 addresses for the VPN

- IP address of each new PE of a VPN is added to DNS, e.g.
  - vpn#.as#.domain IN A pe-address

- PE ports connecting the CEs are configured to belong to the VPN:
  - <vpn#, as#, domain, "vc">

Example

vpn-id.domain. IN A PE1
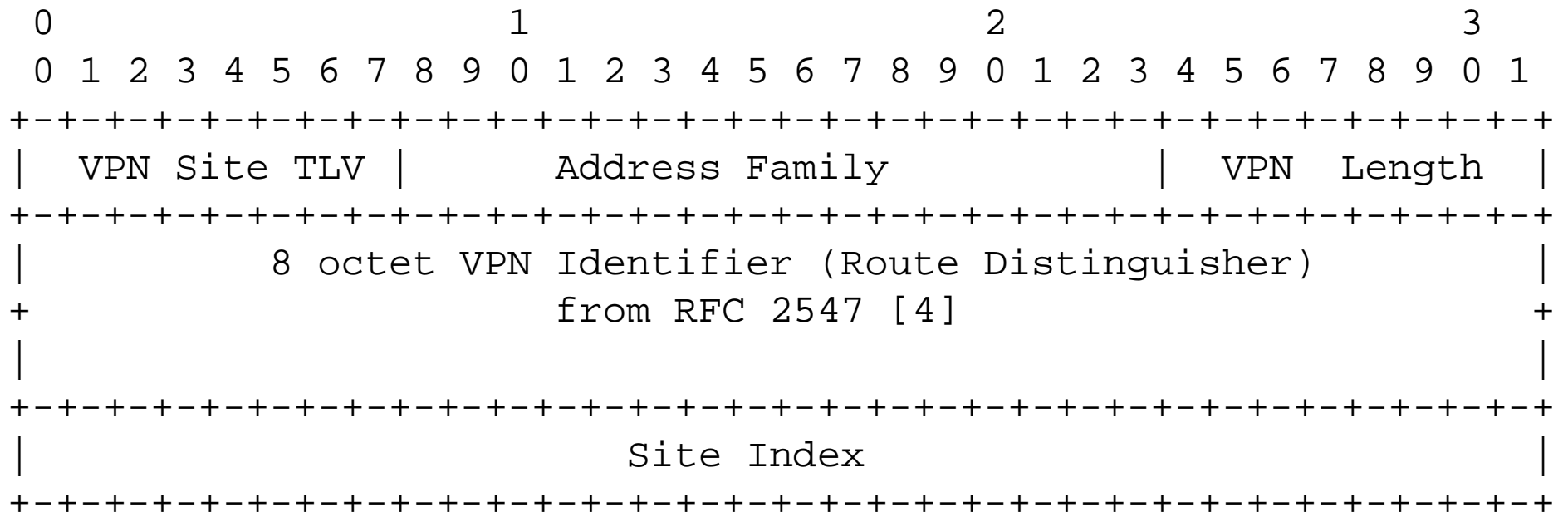   IN A PE2
                IN A PE3

FEC Elements

- PE -> CE
  - VPN FEC
- CE -> PE
  - VPN and Host Address FECs
- PE -> PE
  - VPN Site and Host Address FECs

VPN Site FEC Element

```
 0                   1                   2                   3
 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
| VPN Site TLV  |       Address Family          |  VPN  Length  |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
|        8 octet VPN Identifier (Route Distinguisher)           |
+                     from RFC 2547 [4]                         +
|                                                               |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
|                        Site Index                             |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
```

Data Plane

- CE-PE can use label stack entry, FR, or ATM AAL5 frame format

- PE-PE uses label stack entry frame format and any tunneling technology

- Layer 3 packet is prefixed by a protocol identifier, e.g., NLPID

Proposal

- DNS/LDP is adopted by the PPVPN WG as one PE discovery/label and address distribution technology for provider based VC VPNs