VPLS using IS-IS
draft-xu-l2vpn-vpls-isis-00

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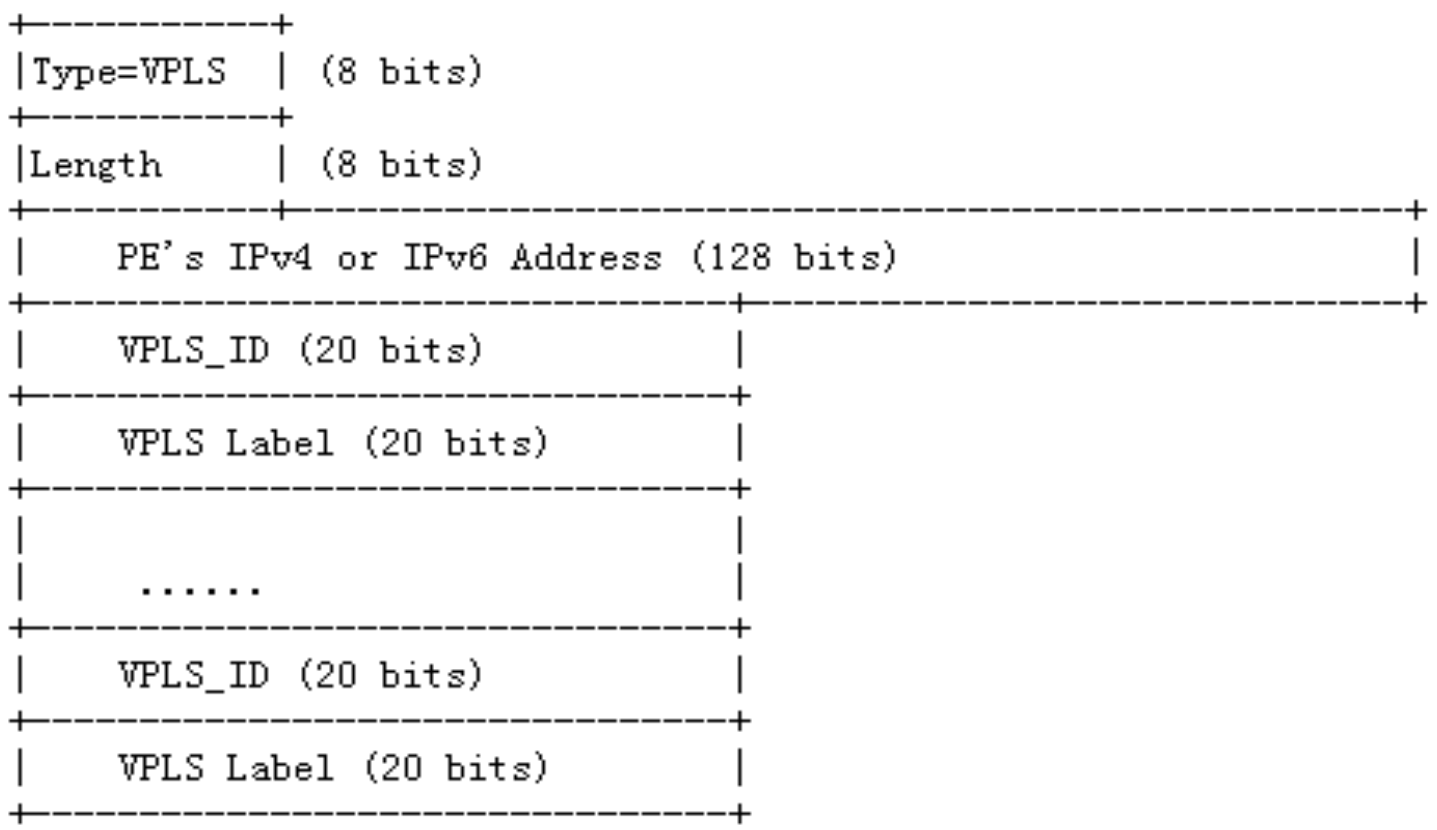
Motivation

- **VPLS could be a good option for cloud data center network technology due to its following capabilities:**
  - Shortest path forwarding.
  - Equal Cost Multi-Path (ECMP).
  - A large amount of VPN instances (>4096).
  - Forwarding table scalability, especially for P routers.
- **However, BGP VPLS [RFC4761] and LDP VPLS [RFC4762] protocols seem a bit heavy-weight.**
  - Separate protocol for VPLS should be deployed besides IGP.
- **Could the already deployed IGP (e.g., IS-IS) be extended a bit so as to deliver a light-weight VPLS?**

Extended IS-IS TLV for VPLS



Auto-Discovery and Signaling in IS-IS VPLS

- **Auto-Discovery**
  - Each PE router could automatically discover which other PE routers are part of a given VPLS instance identified by the globally unique VPLS ID.
  - PE router's configuration consists only of the identities of the VPLS instances established on this PE router, not the identities of any other PE routers belonging to that VPLS instance.
- **Signaling**
  - PE router assigns the same MPLS label for a given VPLS instance to any other PE routers.
  - The VPLS label doesn’t need to be globally unique.

Implications on the Control Plane

- **The extended IS-IS TLV for VPLS is partially transparent to P routers.**
  - P routers don't need to process the VPLS membership information contained in that IS-IS TLV, but only need to synchronize the Link State PDUs with their IS-IS neighbors.

Implications on the Data Plane

- **Data encapsulation and data forwarding are not changed.**
- **The only change is to the data-driven MAC learning:**
  - The VPLS label in the received VPLS packet is only intended to identify a given VPLS instance on the egress PE.
  - Hence, the source IP address in the IP-based tunnel header should be resorted to identify the ingress PE of the received VPLS packet.

Next Steps

- **Solicit more comments from the WG.**
- **Ask for WG adoption.**