EVPN and BGP-based L2VPN Seamless Integration

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Agenda

• EVPN VPWS and BGP-based L2VPN (RFC 6624) Seamless Integration
  • Covers single home, single-active, port-active and all-active support

• Extension to EVVPN and VPLS Seamless Integration with All-active Support
EVPN VPWS and BGP-L2VPN Seamless Integration

- Allow the co-existence of BGP-L2VPN VPWS and EVPN VPWS in the same VPN over the same IP/MPLS network
- Requires no software upgrade of legacy BGP based L2VPN PE (RFC 6624)
Control Plane / Data Plane Behavior for VPWS

Composite PE

- Supports both EVPN-VPWS and BGP-based L2VPN (RFC 6624)
- For each point-to-point VPWS service
  - One L2VPN Auto-discovery route, RFC 6624 procedure
  - One EVPN per E-AD per EVI route, RFC 8214 procedure
- Establish EVPN-VPWS PW when receiving both L2VPN auto-discovery route and EVPN per E-AD per EVI route for the same point-to-point service.
- Data Plane – make before break in the migration phase
**VPWS - Composite PE Single-active / port-active Multihoming**

**single-active**

- **DF**
- **NDF**
- LAG interface from CE1 to PE1/PE2
- Port based DF election
- NDF sends out-of-sync to the multihomed CE

**port-active**
VPWS - Composite PE All-active Multihoming

All-active support:

- **Control Plane**
  - Based on seamless integration without the need for additional procedure

- **Data Plane**
  - Bidirectional forwarding between composite PE’s DF and L2VPN PE
  - Unidirectional forwarding from composite PE’s NDF to L2VPN PE
Extension for EVPN and BGP-VPLS Seamless Integration

RFC 8560: EVPN and VPLS seamless integration with single-active multihomed support

Extension to RFC 8560 for all-active support

No software upgrade on VPLS PE

Avoid BUM Looping on EVPN/VPLS PEs
- EVPN all-active MH with Split Horizon label

Avoid Duplicated BUM traffic to multihomed CE
- NDF blocks the BUM traffic from VPLS PE
Extension for EVPN and BGP-VPLS Seamless Integration
Known Unicast Traffic in All-active Multihoming

Symmetric Forwarding for known unicast traffic
- EVPN/VPLS PEs advertise BGP-VPLS NLRIs with different VE-IDs respectively

Avoid MAC flip-flop on VPLS PE
- L2VPN PE with PW MAC pinning

EVPN/VPLS node failure or access link failure
- Triggers MAC flush on VPLS PE
- VPLS PE re-learns the multihomed MAC from other PW
Next Step

EVPN and VPLS seamless integration with all-active support
• Work in Progress for document mac-flushing procedure upon EVPN/VPLS PE node or local access interface failure

VPWS seamless integration can be extended for
• Other types of point-to-point Ethernet service if it is needed

Seek and address comments from the WG.

Will seek WG adoption afterwards