

# Using BGP between PE and CE in EVPN

draft-li-l2vpn-evpn-pe-ce-01

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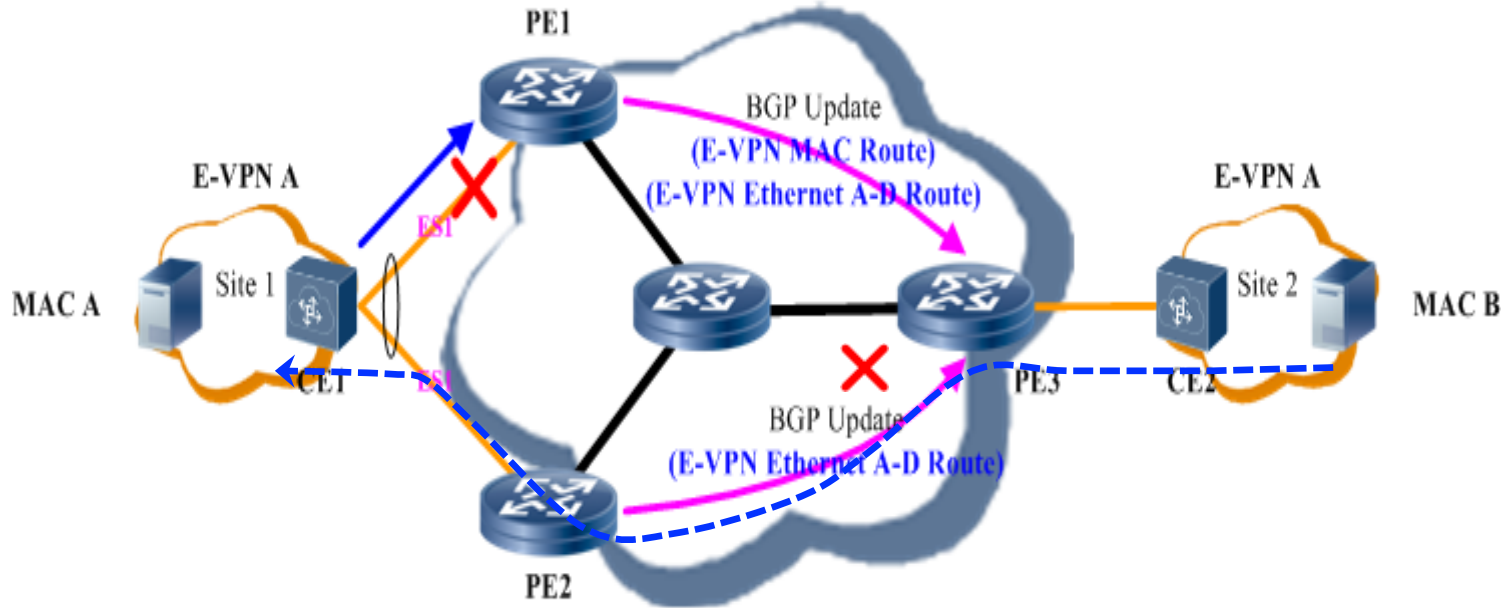
# Introduction

- This draft is to introduce BGP between PE and CE in EVPN to complete the learning of local MAC addresses

# Updates

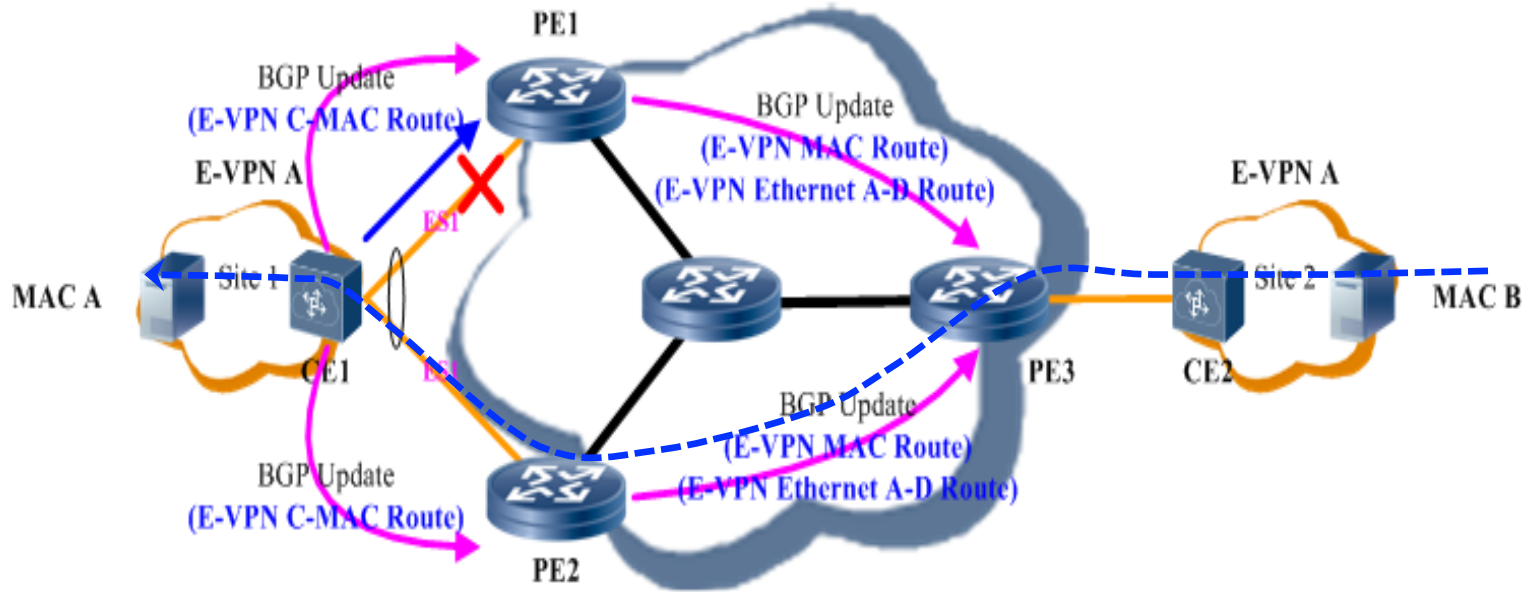
- Refine Fast Convergence Use Case
- Add EVPN Inter-AS Option A Use Case
- Response to comments

# Applications – Fast Convergence



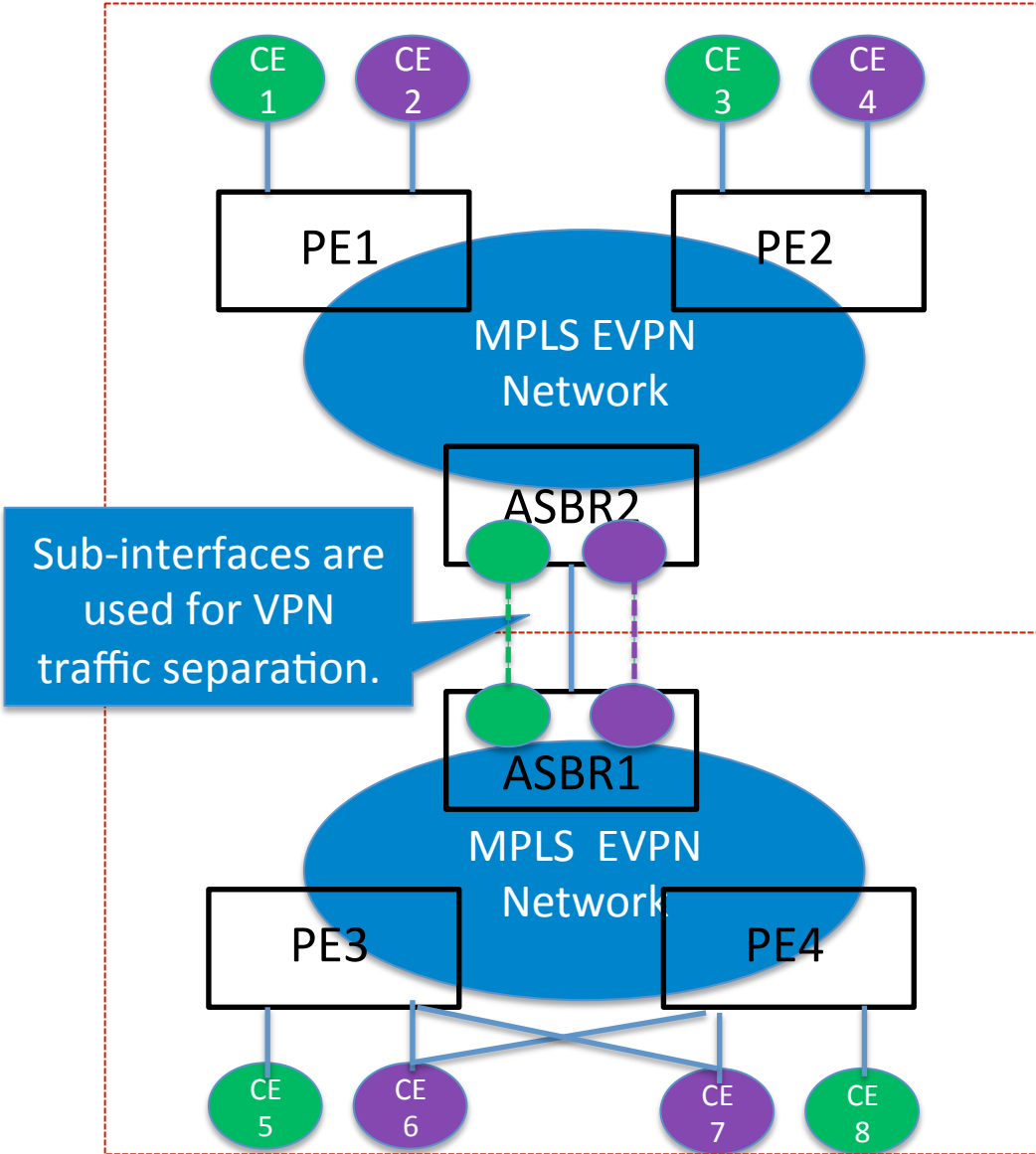
- T0- PE3 receives the Ethernet A-D routes per ESI from PE1 and PE2.
- T1- When the MAC Advertisement Route from PE1 and the Ethernet A-D routes per EVI from PE1 and PE2 are received, PE3 can forward traffic destined to MAC A to both PE1 and PE2.
- T2- After T1, when the ES1 connected to PE1 fails, PE1 MUST withdraw its Ethernet A-D route per ESI, then PE3 forwards traffic destined to MAC A to PE2 only.
- T3- After T2, PE1 MUST also withdraw the MAC advertisement routes (MAC A) that are impacted by the failure. Before PE2 learns MAC A and advertises a MAC route for MAC A, PE3 will treat traffic to MAC A as unknown unicast. If the behavior is to drop the unknown unicast based on administrative policy, the traffic to MAC A on PE3 will be interrupted.

# Applications – Fast Convergence (Cont.)



- If the specific MAC (MAC A) can also be learned by PE2 using BGP and PE2 also advertises the MAC route for MAC A before PE1 withdraws its MAC route, PE3 would continue forwarding traffic destined to MAC A.

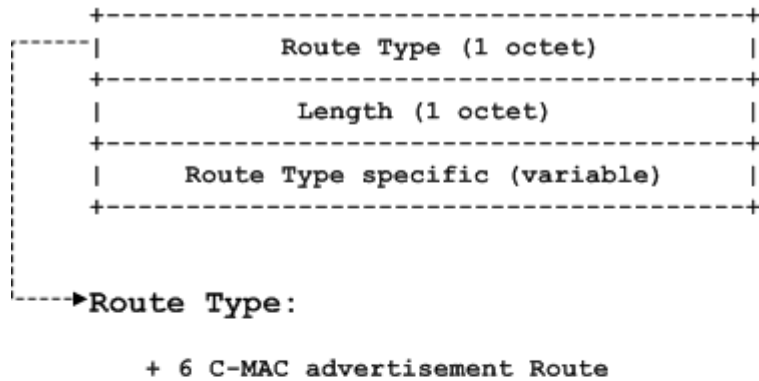
# Applications – Inter-AS EVPN Option-A solution



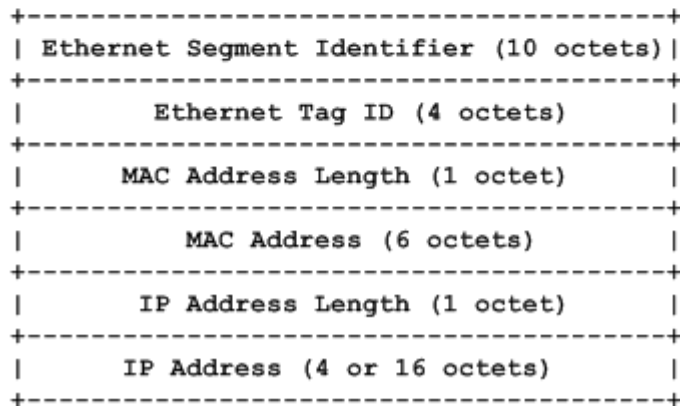
Inter-AS EVPN Option-A solution:

- Using BGP between ASBRs.
  - ① Learning of MAC Addresses can be controlled via Peer-Based Policy between ASBRs;
  - ② Unified Control-Plane for MAC routing information .

# Solution 1: The C-MAC Advertisement Route



## C-MAC Advertisement Route Specific Content



- Originating MAC Route at the CE:
  - When a CE learns MAC addresses in the data plane in a given VLAN which is in the setting of VLANs across the Ethernet links attached to a given PE.
- Receiving a MAC Route by the PE:
  - The PE SHOULD install forwarding state for the associated MAC addresses based on the Ethernet Segment and VLAN inferred from the MAC route.
  - the PE SHOULD advertises the MAC addresses it learns from CE in the control plane, to all the other PEs in the associated EVPN instance.

## Solution 2: Reuse EVPN MAC Advertisement Route

- Reusing EVPN MAC Advertisement Route defined in [I-D.ietf-l2vpn-evpn] to exchange MAC route information between CE and PE.
  - In this case RD, MPLS Label1 and MPLS Label2 fields SHOULD be set as 0.
  - In addition, the RT for the route SHOULD also be set as 0.



# Response to Comments

- Comment 1: Set a delay timer for withdrawing the MAC after withdrawing the Ethernet A-D Route Per ESI, e.g. 5min.
- Response: In some degree, this solution can work, but the timer value can't determine and it depends on the scale of the network.
  
- Comment 2: In the baseline draft it says that you can learn over AC both in data plane or the control plane.
- Response: Yes, the baseline draft says that but doesn't describe details, we need clearly define such behavior.

# Next Step

- Add Inter-as EVPN Option A use case to draft
- Solicit comments and feedbacks
- Revise the draft