EVPN Multi-Active Multihoming

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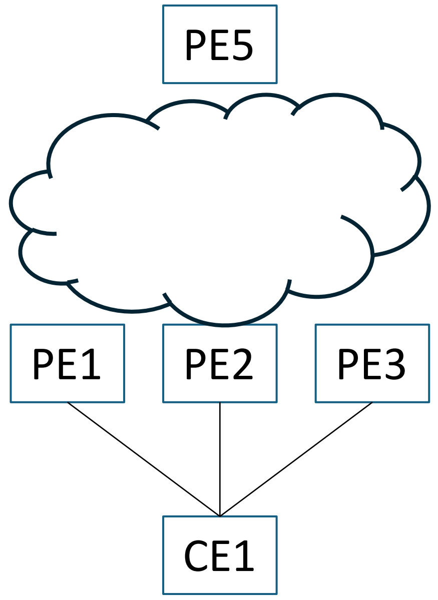
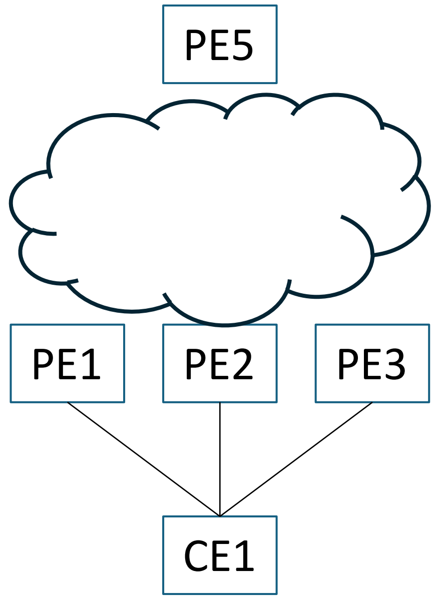
Background

- EVPN supports All-Active or Single-Active multihoming
  - All-Active: all PEs on an MHES can forward unicast traffic
    - Ingress PEs load balance traffic to all
    - Only the DF forwards BUM traffic
  - Single-Active: only the DF is active and forwards unicast/BUM traffic; others are inactive
    - No load-balancing from ingress PEs
- Operators may want to have a hybrid mode
  - PE1/PE2 are active and both forward unicast traffic
  - PE3 is inactive and does not forward traffic
    - Until PE1/PE2 fails



Multi-Active MH

- An MHES that has a set of PEs in All-Active and a set of PEs in Single-Active mode
  - Based on configured preferences
- A PE may move from one set to another
  - E.g., PE3 was previously not preferred, inactive, in Single-Active mode, but becomes preferred and moves into the All-Active set when PE1 fails



Mechanism

- All PEs on a Multi-Active MHES are provisioned with a preference value, which is signaled in the DF Election Extended Community
  - In their Ethernet Segment routes
- Based on the preference value, the preferred PEs operate in All-Active mode, and signal P=1/B=0 in the L2-Attribute Extended Community
  - In their Ethernet A-D per EVI routes
  - Ingress PEs load-balance traffic to the preferred PEs (which signals P=1)
    - Existing behavior
- Non-preferred PEs operate in Single-Active mode and signal P=0/B=0
  - One might signal P=0/B=1 if it happens to be the BDF
- All PEs (including the non-preferred) do signal All-Active in the ESI label EC
  - For backward compatibility

Some Details 1/3

- Only the MHES PEs need to understand the Multi-Active mode
  - Other PEs act on the P/B-bit as usual
- Preference is signaled as part of the DF Election EC even if it is not used for DF Election
- Preference-based DF Election does not change
- Other election methods need a small change
  - So that non-preferred PEs don’t become the DF, since they’re inactive
  - Based on the AC-Influenced DF Election Capability
    - PEs signaling P=0 in the L2-Attribute EC are excluded from the candidate list

Some Details 2/3

- Why not simply signal P=1 for both DF and BDF
  - Regardless of the DF Election method
  - W/o the need for a preference value
- That works, but with caveats:
  - For Two-Active only
    - Unless we do a backup-backup-DF election for Three-Active, or even more
  - Does not work for Strict-mode
    - Next slide

Some Details 3/3

- E.g., PE1/2/3/4 with preference 100/100/80/80 respectively
- Strict-mode: only the most preferred PEs are active
  - They have the same preference value
  - When PE1 fails, PE3 does not become active
    - but it may become the BDF – that’s why we don’t simply set P=1 for all DF/BDF
- Loose-mode: the M-preferred PEs are active
  - They could have different preferences
  - When PE1 fails, PE2/PE3 (100/80) are active

Next Steps

- Seeking comments
- We believe there is no backward compatibility issue
  - But please scrutinize