BGP Extensions for BIER

draft-ietf-bier-idr-extensions-08

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History

- draft-ietf-bier-idr-extensions had passed WGLC
  - Jeffrey did shepherd review
- The authors had lost steam
- It was only intended for DC scenario (with BGP underlay)
  - If the path to a BFER has a non-BFR, then ingress replication tunneling is done all the way to BFER
    - draft-ietf-bier-multicast-as-a-service has a solution for non-BFRs
      - A general solution cover DC and non-DC scenarios
• **With the pre-08 approach:**
  • All BFRs/BFERs only advertise their own BIER prefix and encapsulation information
  • When BFR1 calculates BIFT entries for BFER1/2/3, the Nexthop is the non-BFR, so it has to tunnel BIER traffic to BFER1/2/3 directly
    • Not just to BFR2 – since BFR1 does not know BFR2 is in the path
• **With the -08 approach:**
  • All BFRs will update BIER encapsulation and Nexthop in BIER TLV when re-advertising BIER prefixes
    • This also allows better packing since they all have the same BIER attribute
    • BFRs do not need to advertise their own BIER prefixes
  • When BFR1 receives the BFER1/2/3 prefixes, they all have BFR2’s encapsulation information and BFR2 as nexthop
    • As a result, BFR1 only need to tunnel to BFR2 – one copy to reach all BFERs beyond BFR2
Procedures

• BFERs advertise BIER prefixes with their own BIER information
  • Encapsulation sub-TLV, which includes BIFT-ID ranges, etc.
    • Both MPLS and non-MPLS encapsulations are supported
    • Optionally with a BIER Nexthop sub-TLV in the BIER TLV
• When a BFR re-advertises a BIER prefix
  • It replaces/adds the BIER Nexthop with its own address
  • It also replace encapsulation info (e.g., BIFT-ID ranges) with its own
• When a non-BFR re-advertise a BIER prefix, nothing is changed
• When a BFR calculates the BIRT/BIFT entry for a BFER
  • The BIER Nexthop is the BFR neighbor to send/tunnel traffic to
  • Using the encapsulation info in the BIER TLV
Proxy Range sub-TLV

• A BFR/BFER may include a Proxy Range sub-TLV in the BIER TLV of its own BIER prefix
  • To advertise BFR-IDs that are reachable via itself
  • draft-ietf-bier-prefix-redistribute

• In the previous example, BFR2 MAY include BFER1/2/3’s BFR-IDs in the Proxy Range sub-TLV in the BIER TLV of its own BIER prefix
  • No need to re-advertise BFER1/2/3 anymore
  • BFR1 can still calculate BIFT entries for BFER1/2/3
Summary of -08 revision

• Extended scope for general applicability
  • Non-MPLS encapsulation as well as MPLS
  • General/brownfield deployment vs. BGP-DC only
    • Handles non-BFR – only tunnel to the next BFR (vs. all the way to BFERs)
    • Moved the solution in draft-ietf-bier-multicast-as-a-service here and simplified it

• Updated signaling
  • Transit BFRs do not need to advertise BIER info with their own BIER prefix
  • Added Proxy Range sub-TLV support

• Added section about BIFT calculation

• Updated text for handling at BIER domain boundary
Next Steps

• Ready for another round of WGLC
• New shepherd needed
  • Jeffrey joined as editor
    • Sandy joined as contributor