

MVPN IPv6-Infras

draft-duan-bess-mvpn-ipv6-infras-03

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Background

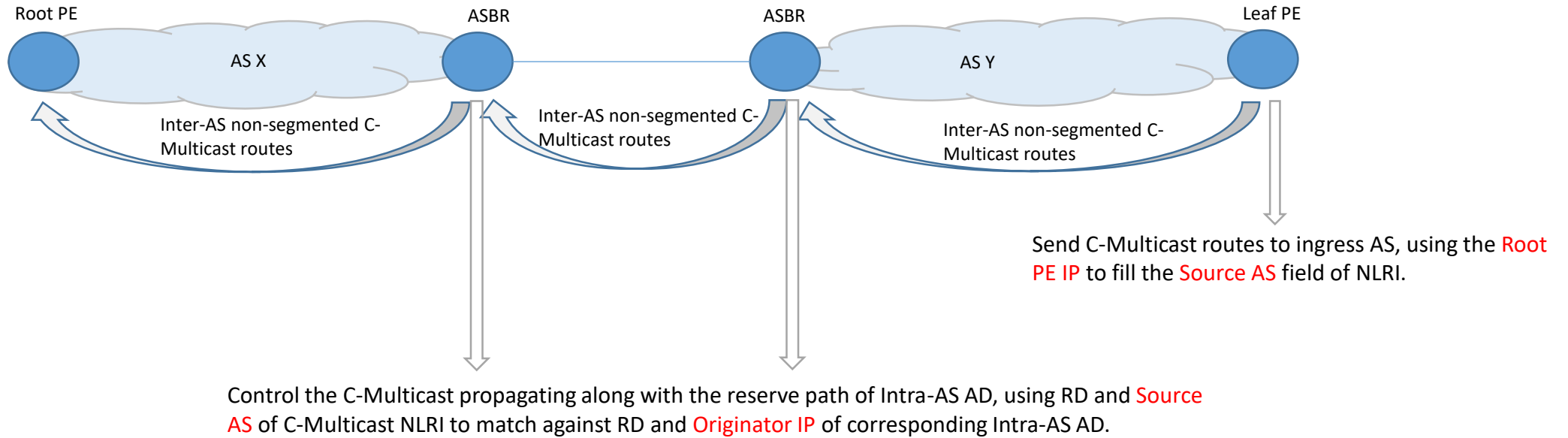
- Published before IETF 112.
- Presented in IETF 113 & IETF 114.
- Discussed with Jeffrey in mailing list (on “[bess] A new draft for MVPN in IPv6-only network”).

https://mailarchive.ietf.org/arch/msg/bess/8JPbw9Zd7_WhPKMD1Zk63GLGkKU/

- Adoption requested after IETF 114, but no reply received from working group.

BGP MVPN gaps for provider's IPv6 network

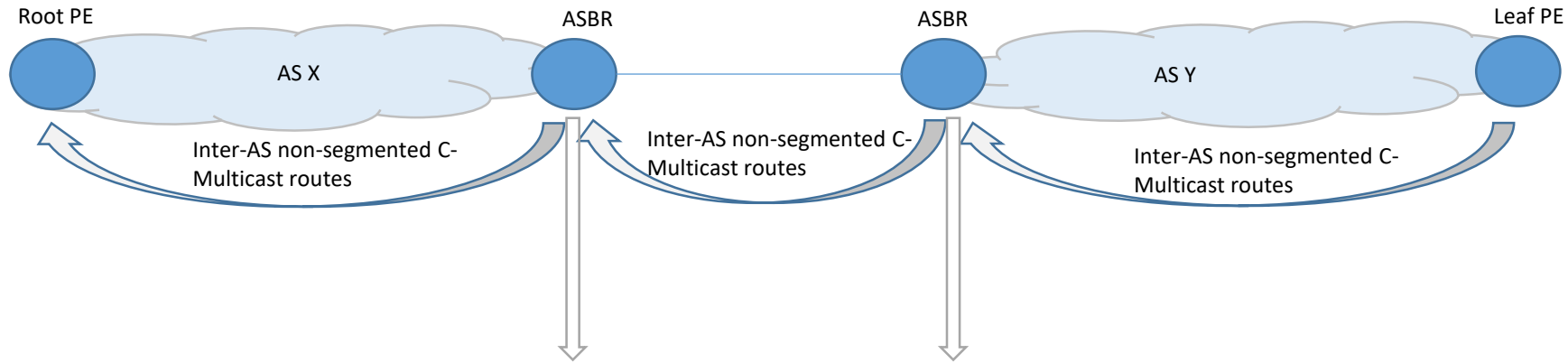
- Non-segmented inter-AS tunnel establishment procedure which defined in [RFC6514] faces following problems.



The **Source AS** field of C-Multicast route is 4 bytes length, which cannot hold a IPv6 address .

Proposed solutions

- C-Multicast propagating control

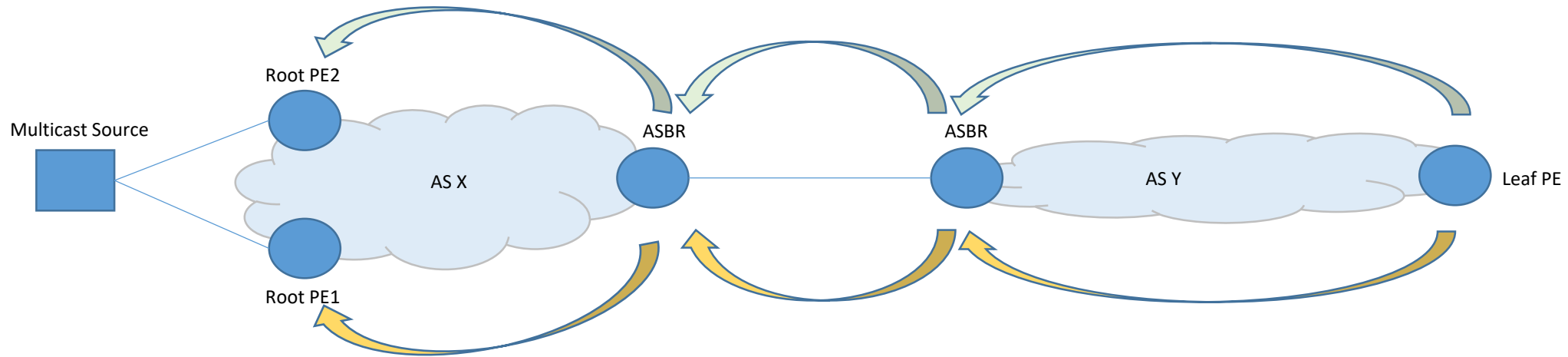


Still control the C-Multicast propagating along with the reserve path of Intra-AS AD, using RD of C-Multicast NLRI and **Global Administrator field of IPv6 C-Multicast Import RT** to match against RD and **Originator IP** of corresponding Intra-AS AD.

Notes: To do precisely extracting of the C-Multicast Import RT on ASBRs, of which the Local Administrator field Should be filled with non-zero value even in GTM scenarios.

Proposed solutions(continue)

- C-Multicast distinguishing for individual Root PE

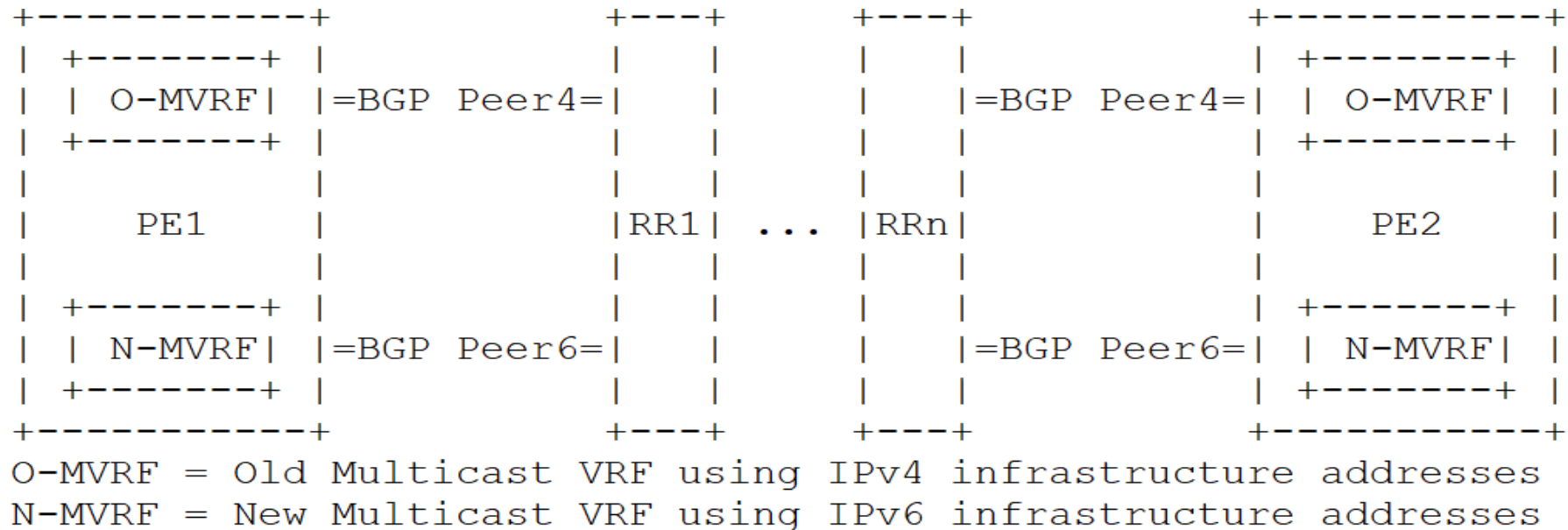


- Option 1, each Root PE configured with distinct RD, which is recommended in RFC 6514.
- Option 2, each Root PE configured with a distinct 4 bytes MVPN distinguisher to be used to fill the Source AS field of C-Multicast NLRI.
- Option 3, all Leaf PEs use a common hash algorithm to calculate the 16 bytes Root IP to a 4 bytes unique distinguisher.

Notes: Option 2 and option 3 are used in the scenarios of all ingress PEs configured with a same RD (GTM as an example). The “Source AS” field in C-Multicast NLRI is renamed to “Root Distinguisher”.

Problems for evolutions to IPv6 underlay

- In the process of evolution to IPv6, IPv4 and IPv6 infrastructure addresses will coexist in the provider's network. The following figure is an example of BGP MVPN evolution to IPv6.



- IPv4 and IPv6 parallel BGP sessions are established, the number of the PATHs of these routes will be doubled with each reflection.

Proposed solutions

- To reduce BGP MVPN routes in Parallel IPv4 and IPv6 BGP sessions networks, the following actions should be taken by sender PEs.
 - For Intra-AS I-PMSI A-D Route, S-PMSI A-D Route and Leaf A-D Route, if the Originating Router's IP Address field in the route is filled with an IPv6 address, it is sent to the IPv6 BGP neighbors; otherwise, it is sent to the IPv4 BGP neighbors.
 - For Inter-AS I-PMSI A-D Route and Source Active A-D Route, it is sent to both IPv6 BGP neighbors and IPv4 BGP neighbors.
 - For C-Multicast Route, If the IPv6 VRF Route Import Extended Community exists in the route, it is sent to the IPv6 BGP neighbors; otherwise, it is sent to the IPv4 BGP neighbors.
- In the reflector routers, the part of routes which are received from IPv6 BGP neighbors will be reflected to other IPv6 BGP neighbors and the other part of routes which are received from IPv4 BGP neighbors will be reflected to other IPv4 BGP neighbors.

Next Steps

- Comments and discussion.
- Call for adoption.

Thanks