# Connecting IPv6 Multicast Islands over IPv4 MPLS Using IPv6 Provider Edge Routers (6PE)

draft-li-idr-mcast-6pe-00

Zhenbin Li, Shunwan Zhuang, Hui Ni
*Huawei Technologies*

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# Requirements & Motivations

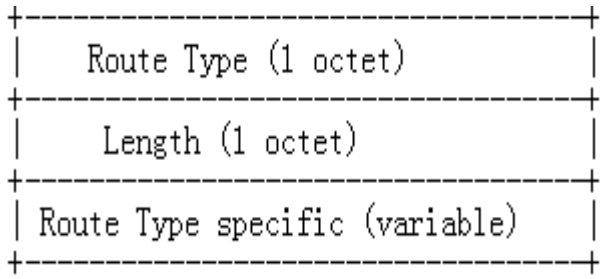
- Interconnecting IPv6 C-Multicast islands over a MPLS-enabled IPv4 cloud
- Making full use of existing 6PE solutions. Providing IPv6 C-Multicast service easily without IPv6 MPLS backbone.
- Service Providers which has deployed Unicast 6PE service would like to provide multicast service in a similar way: BGP-MVPN need change CE&PE deployment.
- MCAST 6PE solutions are introduced in this draft.

# Benefits of MCAST 6PE

- Be able to co-exist with existing 6PE solutions.
- Similar protocol extensions & procedures as BGP-based MVPN.
- MPLS-based Service Providers may use Multicast 6PE mechanism to provide IPv6 Multicast service without upgrading internal nodes.

# BGP Extensions

- This document defines a new BGP NLRI, called as the MCAST-6PE NLRI:




- This document defines the following Route Types for A-D routes:
  - + 1 - Intra-AS 6PE I-PMSI A-D route;
  - + 2 - Inter-AS 6PE I-PMSI A-D route;
  - + 3 - 6PE S-PMSI A-D route;
  - + 4 - 6PE Leaf A-D route;
  - + 5 - 6PE Source Active A-D route.
- This document defines the following Route Types for IPv6 C-multicast routes:
  - + 6 - 6PE Shared Tree Join route;
  - + 7 - 6PE Source Tree Join route;
- Comparing with MCAST-VPN NLRI, remove unnecessary RD/RT fields in MCAST-6PE NLRI to be consistent with existing process of public routes.

# Operations

- MCAST 6PE routers follow BGP-MVPN protocol extensions& procedures and remove unnecessary process on RT/RD.
- PMSI Tunnel Attribute described in [RFC6514] is kept in MCAST 6PE.
- Source AS Extended Community described in [RFC6514] is kept in MCAST 6PE.
- Route Import Extended Community is defined instead of reusing VRF Route Import Extended Community in [RFC6514].
  - Local Administrator is set to 0 and the Global Administrator field MUST be set to an IP address of the MCAST 6PE router.

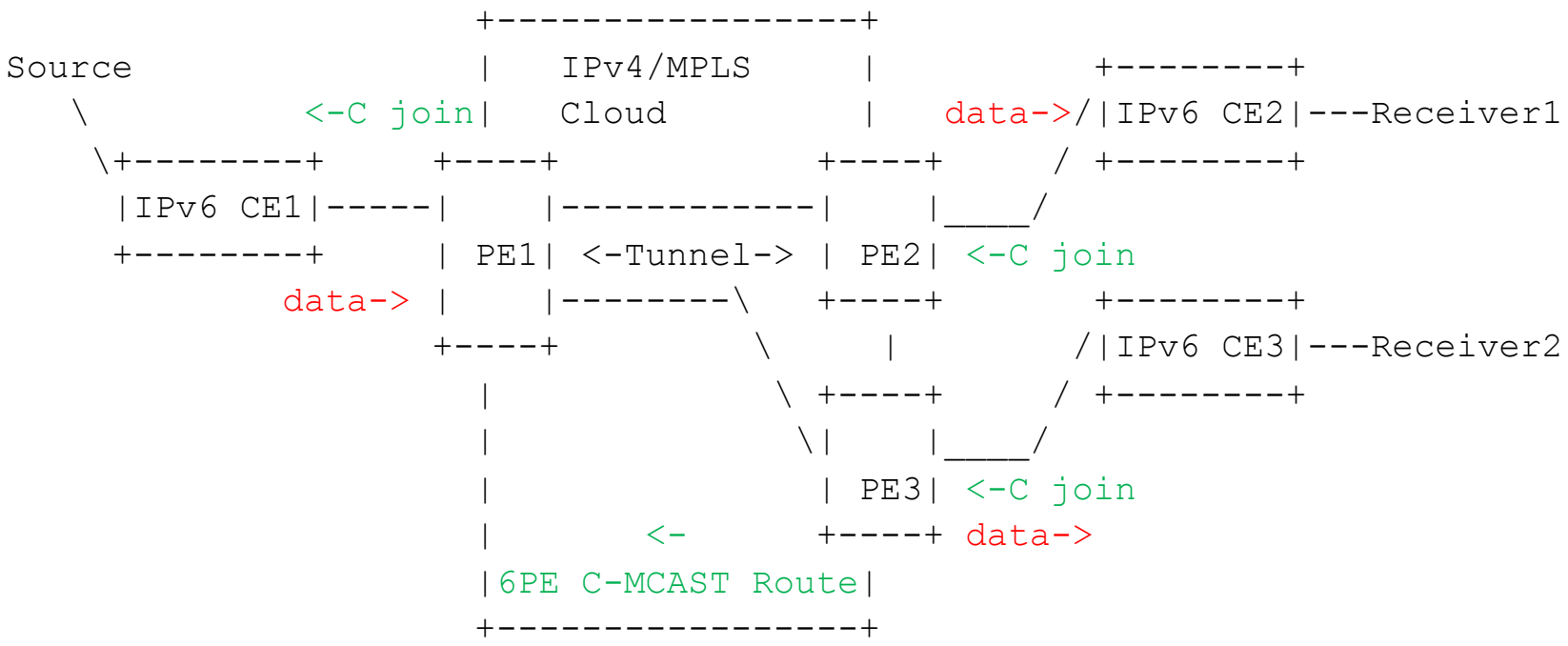
# MCAST 6PE Membership Auto-Discovery

- MCAST 6PE Membership A-D is done by means of a new address family: MCAST-6PE address family.
- Any PE that attaches to a MCAST-6PE service MUST issue the MCAST-6PE A-D route, along with a specific set of attributes.
  - Do not need RDs for A-D routes.
  - Do not need Route Targets for A-D routes.
  - Other attributes follow BGP-MVPN protocol extensions & procedures.

# Selecting Upstream Multicast Hop (UMH)

- For a PE as the MCAST-6PE sender, it will issue the UMH route through a 6PE UCAST route carrying Route Import Extended Community and Source AS Extended Community.
  - Do not need RDs for UMH routes.
  - When construct IPv6 C-Multicast Import RT, the Local administrator field is set to 0 and the Global Administrator field MUST be set to an IP address of the MCAST-6PE router.

# C-MCAST Route & Data flow




- As shown in the figure, MCAST 6PE Receiver receiving C join message, translating it to 6PE C-MCAST Route.
- When MCAST 6PE Sender receives 6PE C-MCAST Route, translating it back into C join message and send it to its CE.
- After C-MCAST Routes are exchanged, IPv6 C-MCAST data can be transmitted from Source to Receiver.

# Next Steps

- Solicit more comments & feedbacks
- Revise the draft