

Multicast Tree Setup via PCEP

[draft-li-pce-multicast]

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Motivation

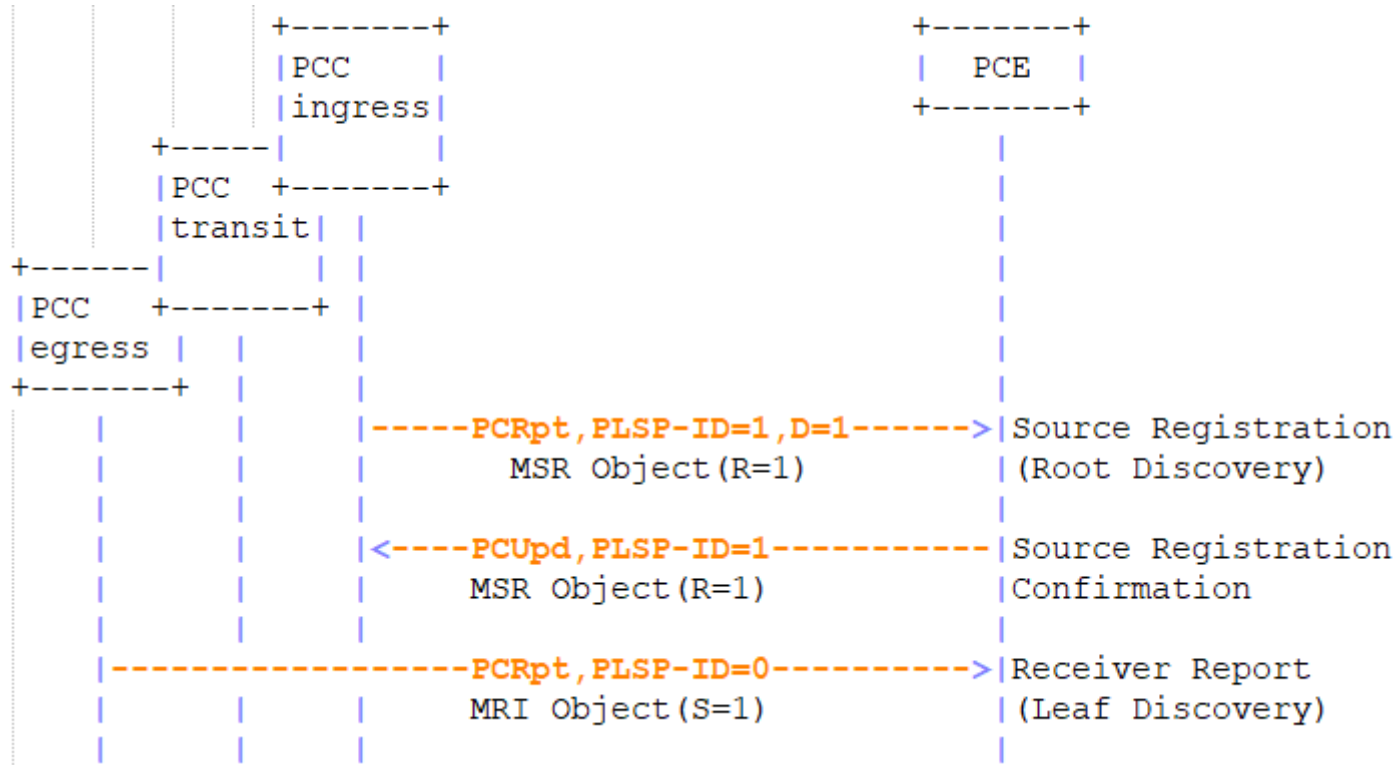
A draft of multicast tree management based on PCE:

- **Covering multiple multicast trees** (IP, mLDP, SR-P2MP)

Our consideration of the Procedures:

- **Multicast Tree Information Discovery**: collect relevant information of root and leaf nodes to calculate multicast tree.
- **Multicast Tree State Setup/Update**: association between multicast tree and P2MP path under different forwarding technologies (mLDP, SR-P2MP, BIER).
- **Multicast Statistics Synchronization**: Synchronize multicast statistics between egress and PCE and between PCE and ingress for multicast service analysis and business development.

Multicast Tree Information Discovery



➤ Procedures

- **Root Discovery:** PCC report. Carrying **Tree Identifier** and **VPN information TLV**
- **Leaf Discovery:** PCC report. Carrying **Tree Identifier** and **VPN information TLV**, and selectively carries **BFR information TLV** of egresses in BIER scenario

➤ Tree Identifier:

- IP multicast: **Multicast Address TLV**, i.e. (s,g)/(*,g) tuple
- mLDP multicast: **mLDP FEC TLV** for mLDP multicast
- SR-P2MP multicast: (Root, Tree-ID) tuple, defined in I-D.ietf-pce-sr-p2mp-policy ³

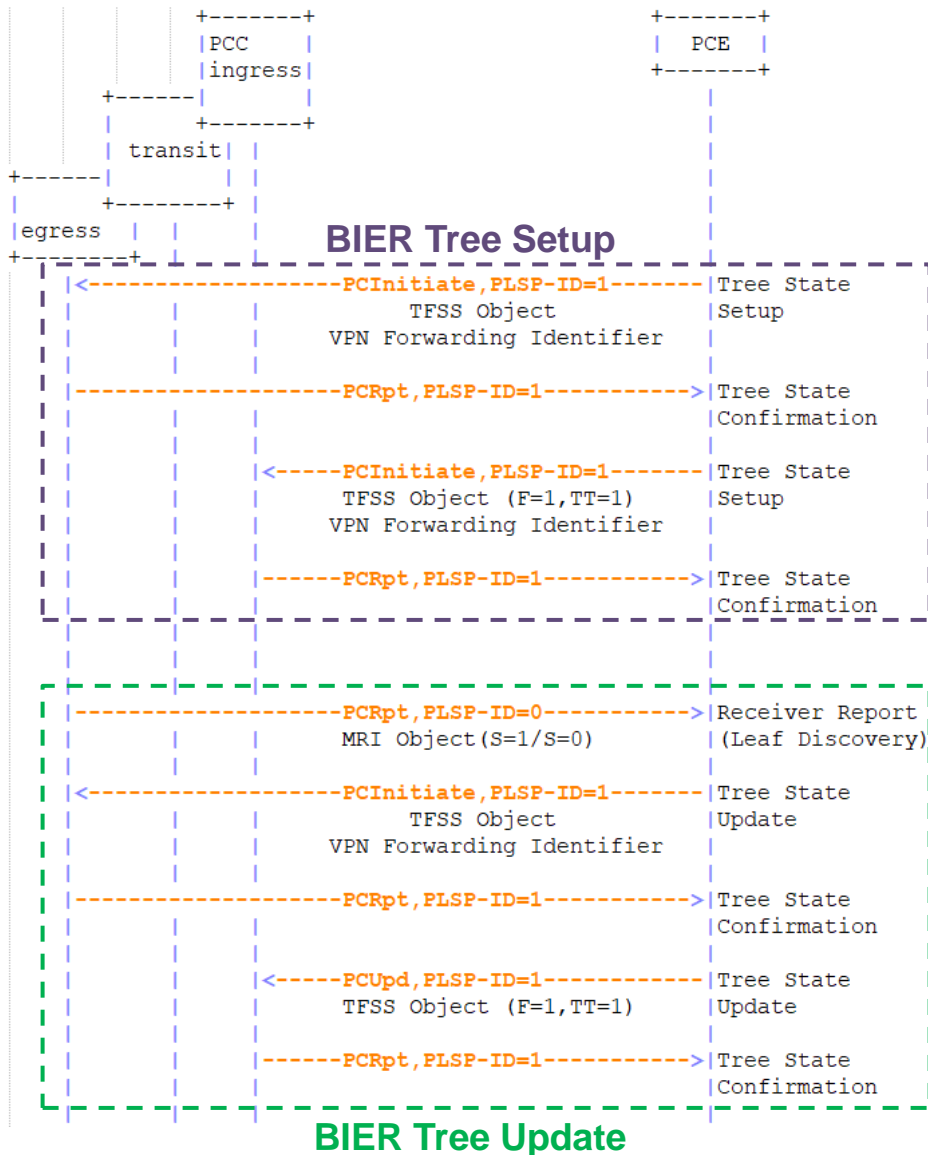
Multicast Tree State Setup/Update (Labeled Tree)

- Procedures are as per I-D.ietf-pce-sr-p2mp-policy. Follow the label download process

- **Newly defined TLVs:**
 - **Tree Label:** Identifying a multicast tree at the forwarding level
 - **VPN Forwarding Identifier:** determine which VRF to forward the packet to for egresses

- **Extension to Objects:**
 - **CCI Object:** Tree Label TLV, VPN Forwarding Identifier TLV
 - **LSP Object:** Multicast Address TLV or mLDP FEC TLV (associate multicast tree and p2mp path)

Multicast Tree State Setup/Update (BIER Tree)



➤ Procedures:

1. PCE combine BFR info of egresses
2. PCE sends VPN Forwarding Identifier to egresses
3. PCE sends BitString and VPN Forwarding Identifier to ingress

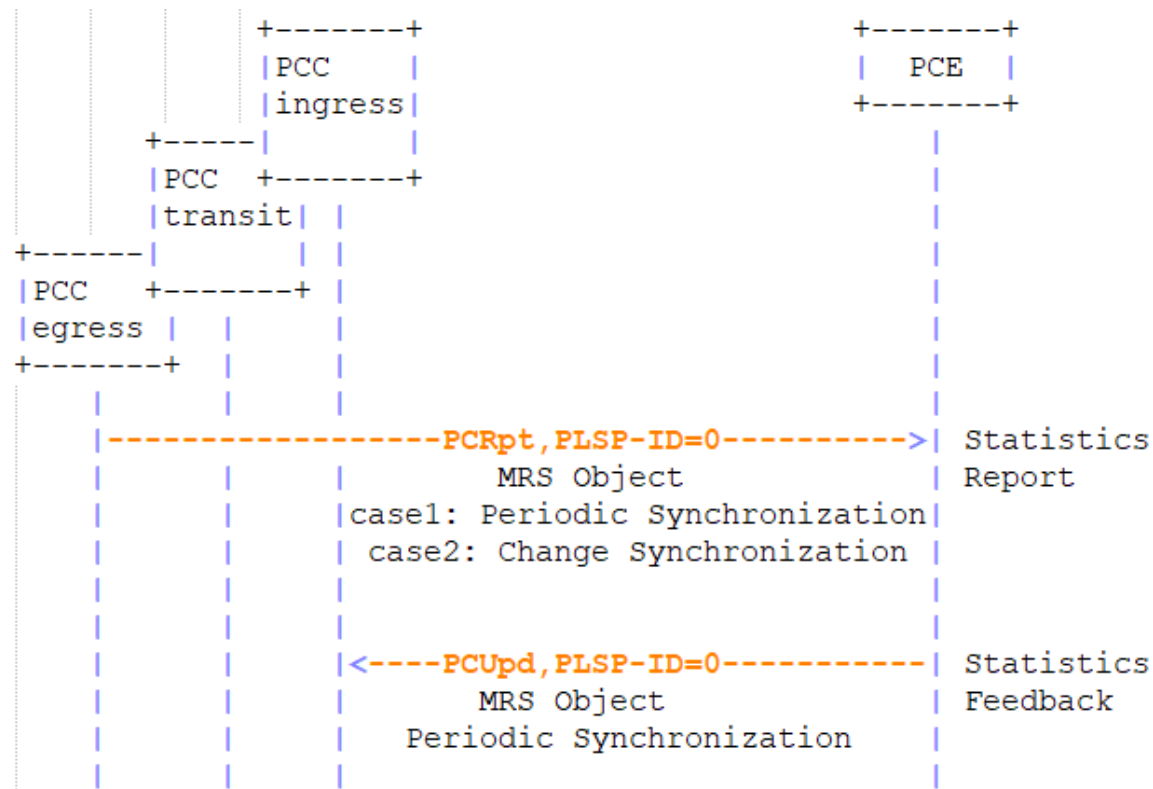
➤ Newly defined Object and TLV:

- TFSS Object for Tree state management
- BIER Attribute TLV (BitString)

➤ Extension to Object:

- **LSP Object:** Multicast Address TLV (associate multicast tree and BitString)

Multicast Statistics Synchronization



- **Egresses syncs to PCE:** multicast statistics is the number of listeners or next-hop devices connected directly to egress.
- **PCE syncs to ingress :** overall of all egresses multicast statistics

Further Action

- comments are welcome.

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