Background / Motivation

Background
• Multicast traffic monitoring is important
  • Reconstruct and visualize the multicast tree
  • Performance monitoring and trouble shooting
• Conventional OAM techniques are insufficient
• On-path telemetry techniques (IOAM, PBT, HTS) in IPPM WG.

Problem
• Currently on-path telemetry techniques have flaws for multicast.
  • IOAM: Every packet carries the entire data trace → data redundancy
  • PBT: No branch identifier → can’t correlate the postcards

Objective
• Modifications are proposed to allow the original multicast tree to be correctly reconstructed without unnecessary replication of telemetry information
Summary

- Two solutions
  - Per-hop Postcard – an enhancement to the original PBT scheme
  - Per-section Postcard – an enhancement to the original IOAM scheme
- Per-hop Postcard
  - A branch node is either the root or any node that replicates packets
  - Each branch node adds a branch identifier to the instruction header
    - For global uniqueness, can use the tuple \{node ID, index\}
Example

- Per-section Postcard
  - A section is the path between two adjacent branch node or between a branch node and its adjacent leaf node.
  - A postcard is send at each section’s end node
    - The postcard contains the data for the entire section
    - Postcards for one packet can be easily stitched together.
  - No need to modify IOAM header format, just need to refresh the header at each section head.

```
P: {A, B}                       P: {B, C, D}
   :                              :
   :                              :
   :                              :
   :  {B}                          :  {D}
   :                              :
   :                              :
   :                              :
   :  {B}                        :  +--.--
   +--.--  +--+--                +--.--
  A    B   C                        D
   +--.--  +--.--                +--.--
  {A}   {B}                      {B, E}
  +--.--  +--.--                +--.--
  {B}   {B, E}
     +--.--
        +--.--
        {B}
```

Request to the WG

- Looking for WG adoption in mboned
  - or perhaps opsawg but they don’t know mcast.