Enhanced Alternate Marking Method

draft-zhou-ippm-enhanced-alternate-marking-00

Tianran Zhou
Haoyu Song
Zhenbin Li
Huawei

Zhenqiang Li
China Mobile
Motivation

• Alternate Marking (RFC8321) is technique is an hybrid performance measurement method.
  ➢ It can be used to measure packet loss, latency, and jitter on live traffic.
  ➢ The basic Alternate Marking method requires one or two bits to mark consecutive batches of packets.

• However
  ➢ In some protocols, no additional bit can be used
  ➢ Limited by the scalability for further extension
Basic Ideas

- Two kinds of measurement:
  - Flow ID: help to identify the measured flow.
  - More reserved field for further use.

- Delay, packet loss
  - End to end

- Delay, packet loss
  - Hop by hop
Encapsulate with the End to End IOAM

- IOAM [I-D.ietf-ippm-ioam-data] defines a generic meta data structure to records OAM information within user packets while the packets traverse a network.

- The IOAM-E2E-Type field within the IOAM edge-to-edge option header is a 16-bit identifier which specifies which data types are used in the E2E option data.

- One bit from bit 4-15 can be used to indicate the presence of data used for alternate marking.

```
+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+
| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 |
+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+
|   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+
| L | D |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+
|   |   | Reserved |   |   |   |   |   |   |   |   |   |   |   |   |   |
+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+
|   |   |   |   |   | FlowID |   |   |   |   |   |   |   |   |   |   |
+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+
|   |   |   |   |   |   | FlowID (cont'd) |   |   |   |   |   |   |   |   |   |
+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+
```

where:
- **L** - Loss flag;
- **D** - Delay flag;
- **FlowID** - 6-octet unsigned integer. Flow identifier field is to uniquely identify a monitored flow within the in-situ OAM domain.
Encapsulate with the PostCard Base Telemetry

- The PostCard Base Telemetry (PBT) [I-D.song-ippm-postcard-based-telemetry] is proposed to directly export the telemetry data to a collector through separated OAM packets called postcards, while not require inserting telemetry data into user packets.

- This proposes to use the two bits from the Reserved field from the Telemetry Information Header (TIH).

- The existing FlowID within the TIH can be reused.

```
  0  1  2  3  4  5  6  7  8  9  0  1  2  3  4  5  6  7  8  9  0  1
+-----------------------------------------------+----------------+
| Next Header       | TIH Length     | Reserved | L | D | Hop Count |
+-----------------------------------------------+----------------+
```

where:
- L - Loss flag;
- D - Delay flag.
Thank You and Comments