Enhanced Alternate Marking Method

draft-zhou-ippm-enhanced-alternate-marking-05

Online, July 2020, IETF 108

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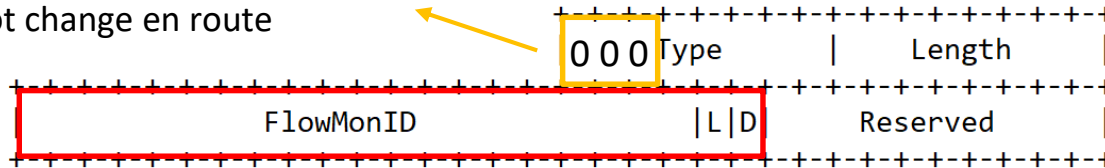**LG U+**

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Motivation

- Alternate Marking (RFC8321) 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, there are some pending considerations to explore:
  ➢ In some protocols, no additional bit can be used.
  ➢ Learn from deployment experience (**FlowMonID**).
  ➢ Need to figure out how to implement the alternate marking framework, included multipoint measurements.
  ➢ Further extension to be considered.

Alternate Marking Data Fields for IPv6
draft-ietf-6man-ipv6-alt-mark

- The AltMark Option is expected to be encapsulated as Hop-by-Hop Options Header or Destination Options Header.

Skip if do not recognize and data do not change en route

```
                              +-+-+-+-+-+-+-+-+-+-+-+-+-+
                        0 0 0 |Type     |    Length     |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
              FlowMonID                 |L|D|   Reserved    |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
```
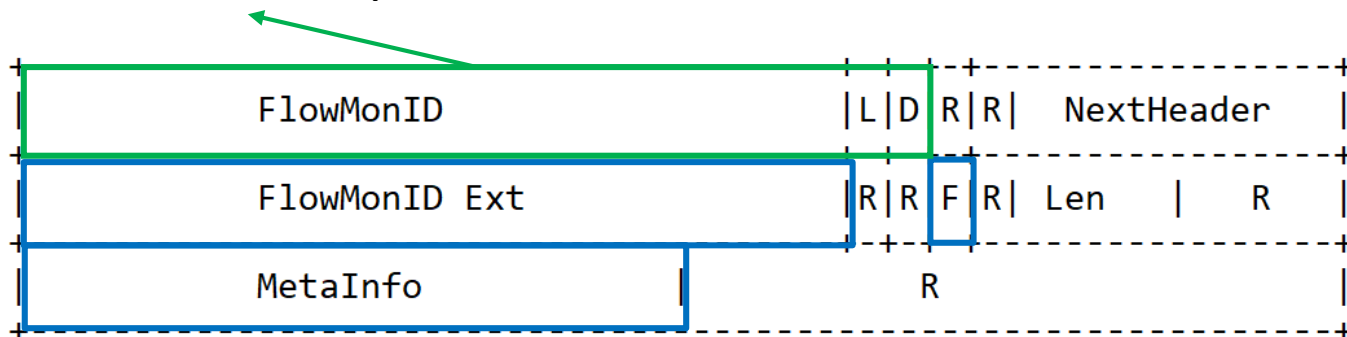
- **L** and **D** are the Marking Fields
- The Flow Monitoring Identification (**FlowMonID**) is required for some general reasons:
    - It helps to reduce the per node configuration.
    - It simplifies the counters handling especially in tunnel interfaces.
    - It eases the data export and correlation for the collectors.

How to enhance the method:
Basic Ideas and Scope

The Alternate Marking deployment practice gives useful inputs for the definition of the AltMark Data Fields for all the transport protocols:

As defined in **draft-ietf-6man-ipv6-alt-mark**

```
+-----------------------------------------------+-+-+-+-+-------------------+
|                 FlowMonID                     |L|D|R|R|    NextHeader      |
+-----------------------------------------------+-+-+-+-+-------------------+
|               FlowMonID Ext                   |R|R|F|R| Len    |    R      |
+-----------------------------------------------+-+-+-+-+-------------------+
|              MetaInfo                         |               R           |
+-----------------------------------------------------------------------+
```

- **FlowMonID** - Flow Monitoring Identification is the same as defined in AltMark Option draft-ietf-6man-ipv6-alt-mark.
- **L** and **D** - Loss and Delay Flags are the same as defined in AltMark Option draft-ietf-6man-ipv6-alt-mark.
- **NextHeader** - Identify whether to carry the extended data fields.
- **FlowMonID Ext** - 20 bits to extend the FlowMonID to reduce the conflict when random allocation is applied and increase the entropy
- **R** - Reserved for further use. This bit MUST be set to zero.
- **F** - Flow direction identification. F = 1, indicate the flow direction is forward.
- **Len** - Length. It indicates the length of extension headers.
- **MetaInfo** - A 16 bits Bitmap to indicate more meta data attached for the enhanced function.

Enhanced Alternate Marking capabilities

The extended data fields presented in the previous section can be used for several uses. Some possible applications can be:

1. **shortest marking periods** of single marking method for real-time packet loss measurements.
2. **more dense delay measurements** than double marking method (down to each packet).
3. **increase the entropy of flow monitoring identifier** by extending the size of FlowMonID.
4. Automatic marking period deployment.
5. further extensions to explore

Thank You

Comments are welcome!