

Enhanced Alternate Marking Method

draft-zhou-ippm-enhanced-alternate-marking-07

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Motivation

- Alternate Marking ([RFC8321](#), [RFC8889](#)) technique is an hybrid performance measurement method.
 - It can be used to measure packet loss, latency, and jitter on live traffic.
 - **RFC8321** requires one or two bits to mark consecutive batches of packets.
 - **RFC8889** generalizes the application of RFC8321 for multipoint unicast and allows a flexible performance management approach

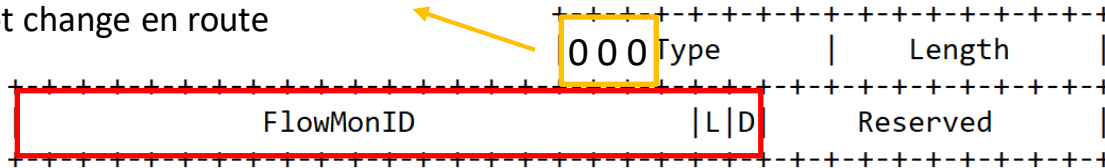
- However, there are some pending points to explore:
 - In some protocols, no additional bit can be used.
 - Learn from deployment experience (e.g. FlowMonID in AltMark Option for IPv6).
 - Need to figure out how to implement the alternate marking framework, included multipoint measurements.
 - Further 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



- **L** and **D** are the Marking Fields
- The Flow Monitoring Identification (**FlowMonID**) is required by the implementation:
 - 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.

If the 20 bit FlowMonID is set independently and pseudo randomly, there is a 50% chance of collision for just 1206 flows! And 1% for 145 flows!

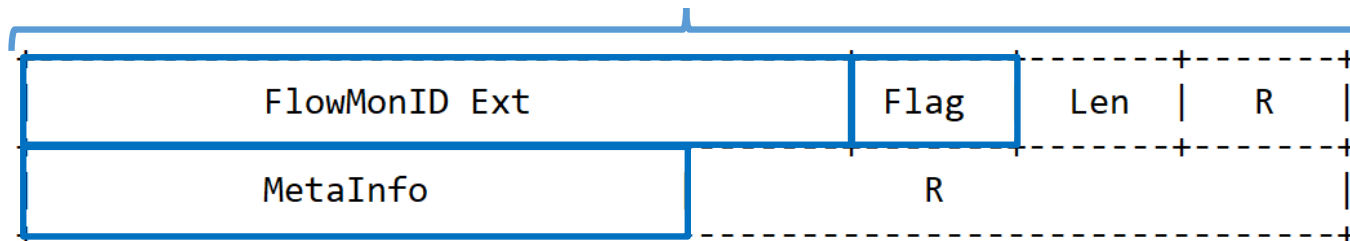
- **For more entropy, FlowMonID size could be increased** or combined with other identifying flow information

How to enhance the method

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**



- **NextHeader** Identify whether to carry the extended data fields.
- **FlowMonID Ext** 20 bits to extend the FlowMonID to increase the entropy.
- **Flag** A 4 bits flag to indicate the special purpose usage.
- **MetaInfo** A 16 bits Bitmap to indicate more meta data attached for the enhanced function.
- **R** - Reserved for further use. This bit MUST be set to zero.
- **Len** - Length. It indicates the length of extension headers.

Enhanced Alternate Marking capabilities

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

1. **shortest marking periods** of single marking method for thicker 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. **automatically set up the backward direction** flow monitoring.
5. (further extensions to explore)

Thank You

Comments are welcome!