

# Enhanced Alternate Marking Method

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

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# Motivation

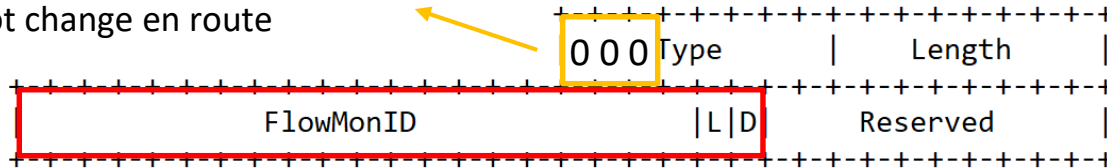
- Alternate Marking (RFC8321, RFC8889) technique is an hybrid performance measurement method.
  - It can be used to measure packet loss, latency, and jitter on live traffic.
  - **RFC8321** requires one or two bits to mark consecutive batches of packets.
  - **RFC8889** generalizes the application of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



- **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.

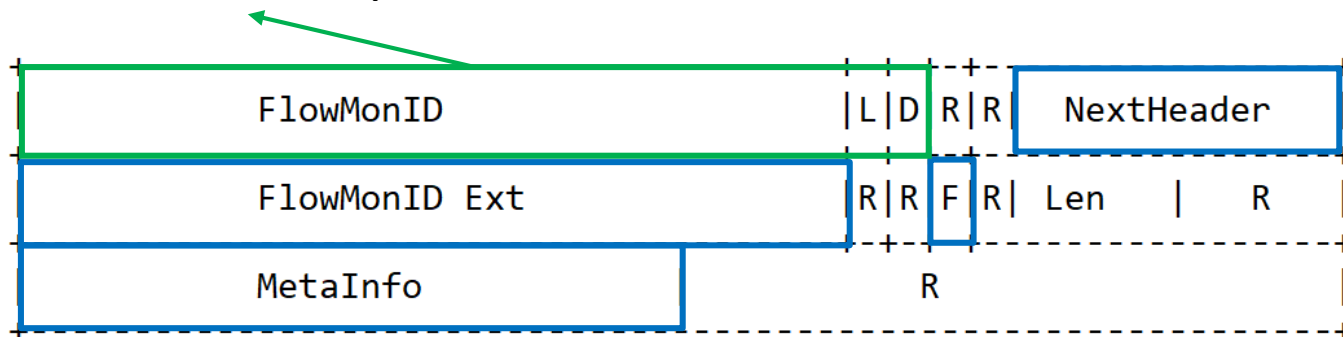
If the 20 bit FlowMonID is set independently and pseudo randomly, there is a 50% chance of collision for just 1206 flows!

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

# 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** - same as defined in AltMark Option draft-ietf-6man-ipv6-alt-mark.
- **L** and **D** - 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 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 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. further extensions to explore

Thank You

Comments are welcome!