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Enhanced Alternate Marking Method  
draft-zhou-ippm-enhanced-alternate-marking-06

Abstract

This document extends the IPv6 alternate marking option to provide the enhanced capabilities.

Requirements Language

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in [RFC 2119](#) [[RFC2119](#)].

Status of This Memo

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[1.](#) Introduction

The Alternate Marking [[RFC8321](#)] and Multipoint Alternate Marking [[I-D.ietf-ippm-multipoint-alt-mark](#)] define the Alternate Marking technique that is an hybrid performance measurement method, per [[RFC7799](#)] classification of measurement methods. This method is based on marking consecutive batches of packets and it can be used to measure packet loss, latency, and jitter on live traffic.

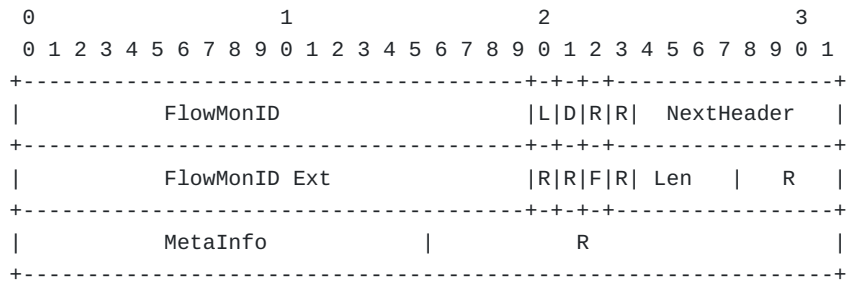
AltMark Option [[I-D.ietf-6man-ipv6-alt-mark](#)] applies the Alternate Marking Method for IPv6 protocol, and defines Extension Header Option to encode Alternate Marking Method for both Hop-by-Hop Options Header and Destination Options Header.

While the AltMark Option implement the basic alternate marking method, this document defines the extended data fields for the AltMark Option and provides the enhanced capabilities.

It is worth mentioning that the enhanced capabilities are intended for further use and are optional.

[2.](#) Data Fields Format

The following figure shows the data fields format for enhanced alternate marking. This data is expected to be encapsulated to specific transports.



where:

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

### 3. 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 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. and so on.

#### [4. Security Considerations](#)

TBD

#### [5. IANA Considerations](#)

This document has no request to IANA.

#### [6. References](#)

##### [6.1. Normative References](#)

[I-D.ietf-ippm-multipoint-alt-mark]

Fioccola, G., Cociglio, M., Sapio, A., and R. Sisto, "Multipoint Alternate Marking method for passive and hybrid performance monitoring", [draft-ietf-ippm-multipoint-alt-mark-09](#) (work in progress), March 2020.

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[RFC7799] Morton, A., "Active and Passive Metrics and Methods (with Hybrid Types In-Between)", [RFC 7799](#), DOI 10.17487/RFC7799, May 2016, <<https://www.rfc-editor.org/info/rfc7799>>.

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##### [6.2. Informative References](#)

[I-D.ietf-6man-ipv6-alt-mark]

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