

IPPM  
Internet-Draft  
Intended status: Standards Track  
Expires: January 13, 2021

T. Zhou, Ed.  
G. Fioccola  
Huawei  
S. Lee  
LG U+  
M. Cociglio  
Telecom Italia  
W. Li  
Huawei  
July 12, 2020

**Enhanced Alternate Marking Method**  
**draft-zhou-ippm-enhanced-alternate-marking-05**

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

This Internet-Draft is submitted in full conformance with the provisions of [BCP 78](#) and [BCP 79](#).

Internet-Drafts are working documents of the Internet Engineering Task Force (IETF). Note that other groups may also distribute working documents as Internet-Drafts. The list of current Internet-Drafts is at <https://datatracker.ietf.org/drafts/current/>.

Internet-Drafts are draft documents valid for a maximum of six months and may be updated, replaced, or obsoleted by other documents at any time. It is inappropriate to use Internet-Drafts as reference material or to cite them other than as "work in progress."

This Internet-Draft will expire on January 13, 2021.

Copyright Notice

Copyright (c) 2020 IETF Trust and the persons identified as the document authors. All rights reserved.

This document is subject to [BCP 78](#) and the IETF Trust's Legal Provisions Relating to IETF Documents (<https://trustee.ietf.org/license-info>) in effect on the date of publication of this document. Please review these documents carefully, as they describe your rights and restrictions with respect to this document. Code Components extracted from this document must include Simplified BSD License text as described in Section 4.e of the Trust Legal Provisions and are provided without warranty as described in the Simplified BSD License.

## Table of Contents

<a href="#">1.</a>	Introduction . . . . .	<a href="#">2</a>
<a href="#">2.</a>	Data Fields Format . . . . .	<a href="#">2</a>
<a href="#">3.</a>	Enhanced Alternate Marking capabilities . . . . .	<a href="#">3</a>
<a href="#">4.</a>	Security Considerations . . . . .	<a href="#">4</a>
<a href="#">5.</a>	IANA Considerations . . . . .	<a href="#">4</a>
<a href="#">6.</a>	References . . . . .	<a href="#">4</a>
<a href="#">6.1.</a>	Normative References . . . . .	<a href="#">4</a>
<a href="#">6.2.</a>	Informative References . . . . .	<a href="#">4</a>
	Authors' Addresses . . . . .	<a href="#">4</a>

## [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.

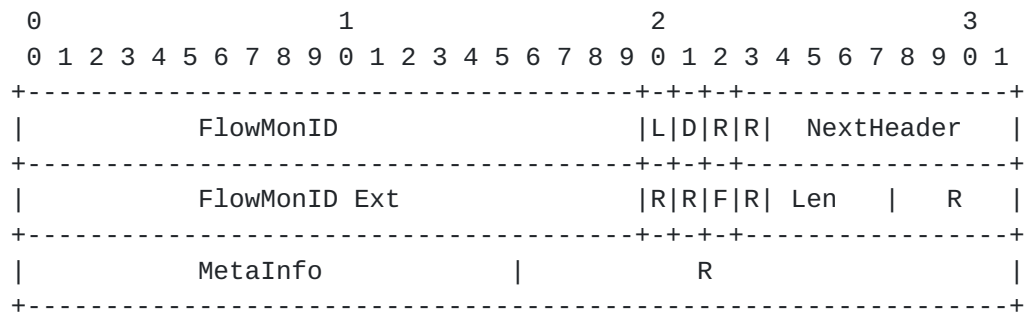
While the AltMark Option implement the basic alternate marking method, this document defines the extended data fields for the AltMark Option and provides the enhanced capabilities.

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.
- [RFC2119] Bradner, S., "Key words for use in RFCs to Indicate  
Requirement Levels", [BCP 14](#), [RFC 2119](#),  
DOI 10.17487/RFC2119, March 1997,  
<<https://www.rfc-editor.org/info/rfc2119>>.
- [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>>.
- [RFC8321] Fioccola, G., Ed., Capello, A., Cociglio, M., Castaldelli,  
L., Chen, M., Zheng, L., Mirsky, G., and T. Mizrahi,  
"Alternate-Marking Method for Passive and Hybrid  
Performance Monitoring", [RFC 8321](#), DOI 10.17487/RFC8321,  
January 2018, <<https://www.rfc-editor.org/info/rfc8321>>.

##### **6.2. Informative References**

- [I-D.ietf-6man-ipv6-alt-mark]  
Fioccola, G., Zhou, T., Cociglio, M., Qin, F., and R.  
Pang, "IPv6 Application of the Alternate Marking Method",  
[draft-ietf-6man-ipv6-alt-mark-01](#) (work in progress), June  
2020.

Authors' Addresses



Tianran Zhou  
Huawei  
156 Beiqing Rd.  
Beijing 100095  
China

Email: zhoutianran@huawei.com

Giuseppe Fioccola  
Huawei  
Riesstrasse, 25  
Munich 80992  
Germany

Email: giuseppe.fioccola@huawei.com

Shinyoung Lee  
LG U+  
71, Magokjungang 8-ro, Gangseo-gu  
Seoul  
Republic of Korea

Email: leesy@lguplus.co.kr

Mauro Cociglio  
Telecom Italia  
Via Reiss Romoli, 274  
Torino 10148  
Italy

Email: mauro.cociglio@telecomitalia.it

Weidong Li  
Huawei  
156 Beiqing Rd.  
Beijing 100095  
China

Email: poly.li@huawei.com

