IOAM Trace Option Extensions for Incorporating the Alternate-Marking Method

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Motivation and Objective

Motivation

- The Alternate-Marking Method ([RFC9341], [RFC9343]) has been widely employed in operator's networks to implement performance measurements such as packet loss, delay, and jitter.
- IOAM Trace Option defined in RFC9197（passport mode） has no ability to monitor packet drop and packet drop location.

Objective

- This document defines the IOAM Trace Option extensions for incorporating the Alternate-Marking Method to augment IOAM's performance measurement.

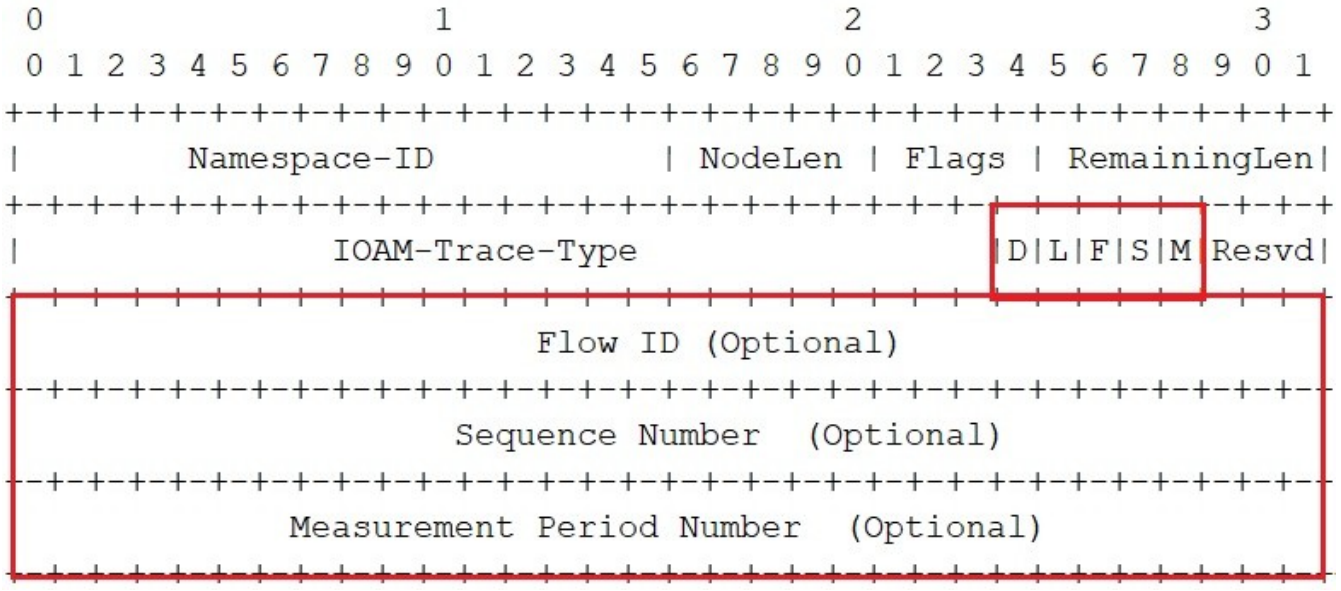
The Extended Trace Option-Type Format

The format of the extended Trace Option-Type is depicted in this figure. All fields are same as Trace Option-Type Format defined in RFC9197 except the Reserved field. The extended Trace Option-Type format uses the most significant 5 bits of the Reserved field.

- L: 1-bit Loss flag for Packet Loss Measurement
- D: 1-bit Delay flag for Packet Delay Measurement
- F: 1-bit Flow ID flag
- S: 1-bit SN flag
- M: 1-bit MPN flag

IANA Consideration:

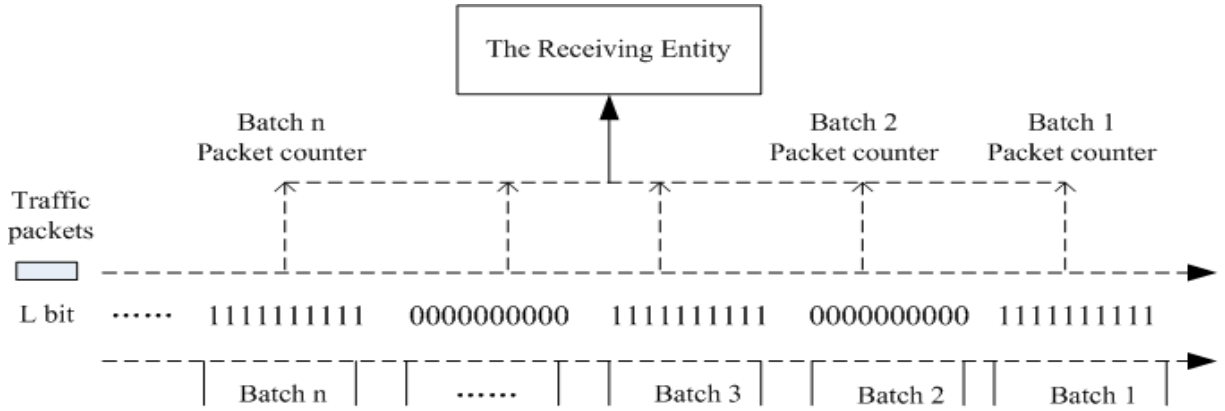
- IOAM Option-Type: IOAM Extended Trace Option Type (TBA-type, suggested code point 6)
- the Reserved field Bit 0(L), Bit 1(D), Bit 2(F), Bit 3(s), Bit 4(M)



The IOAM Operation

The extended Trace Option-Type SHOULD support to perform both performance measurement and IOAM trace monitoring concurrently:

- ✓ For performance measurement, an IOAM encapsulating node MUST mark all the service traffic packets of interest it forwards in “L” and ”D” flag of the extended Trace Option-Type.
- ✓ for IOAM trace monitoring, all the traffic of interest or only a subset of the packets COULD be selected by an IOAM encapsulating node. For every selected packet, an IOAM encapsulating node MUST set corresponding bit flag to 1 in IOAM- Trace-Type field of the extended Trace Option-Type so that every node along the path needs to generate the specified IOAM data filled in the node data list field of packet; for all the other packets not selected, an IOAM encapsulating node MUST set all 24 bits flag to 0 in IOAM-Trace-Type field of the extended Trace Option-Type, such that each node along the path doesn’t need to generate the IOAM data filled in the node data list field of packet.



Next Steps

- Any comments or any suggestions?
- Possible implementation and verification