Enhanced Alternate Marking Method

draft-zhou-ippm-enhanced-alternate-marking-03

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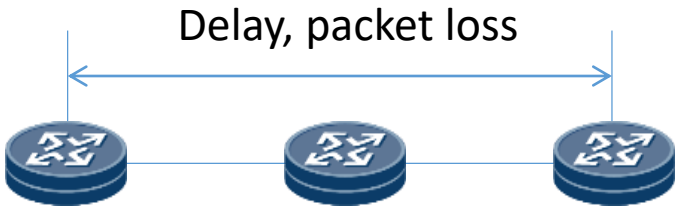
Motivation

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

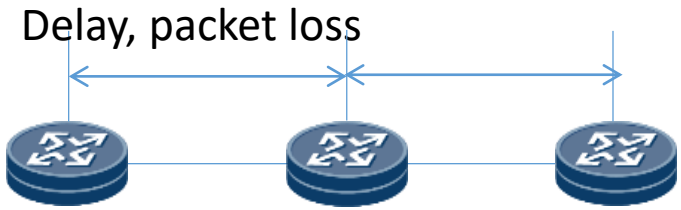
- However, there are some pending considerations to explore:
  - In some protocols, no additional bit can be used.
  - Learn from deployment experience (FlowID).
  - Need to figure out how to implement the alternate marking framework, included multipoint measurements.
  - Further extension to be considered.

Basic Ideas and Scope

Two kinds of measurement with Alternate Marking:

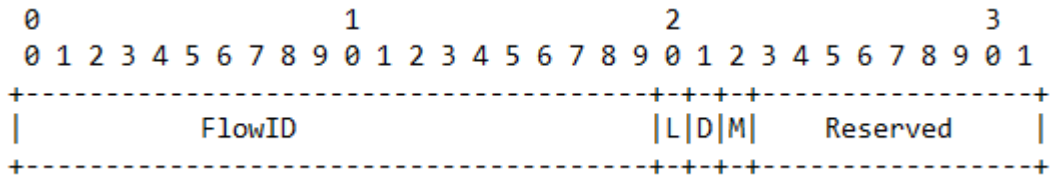


End to end



Hop by hop

Define the **Data Fields format** for all the transport protocols, by considering:
- Small header space (4 bytes only),
- Deployment experience,
- Support of Multipoint flow measurements.



- **L,D**: Loss and Delay Marking Fields as defined in RFC8321.
- **M**: Marker for PBT-M implementation.
- **FlowID**: help to identify the measured flow.
- More **Reserved** field for further use.

Implementation experience: Flow ID in addition to L and D bits

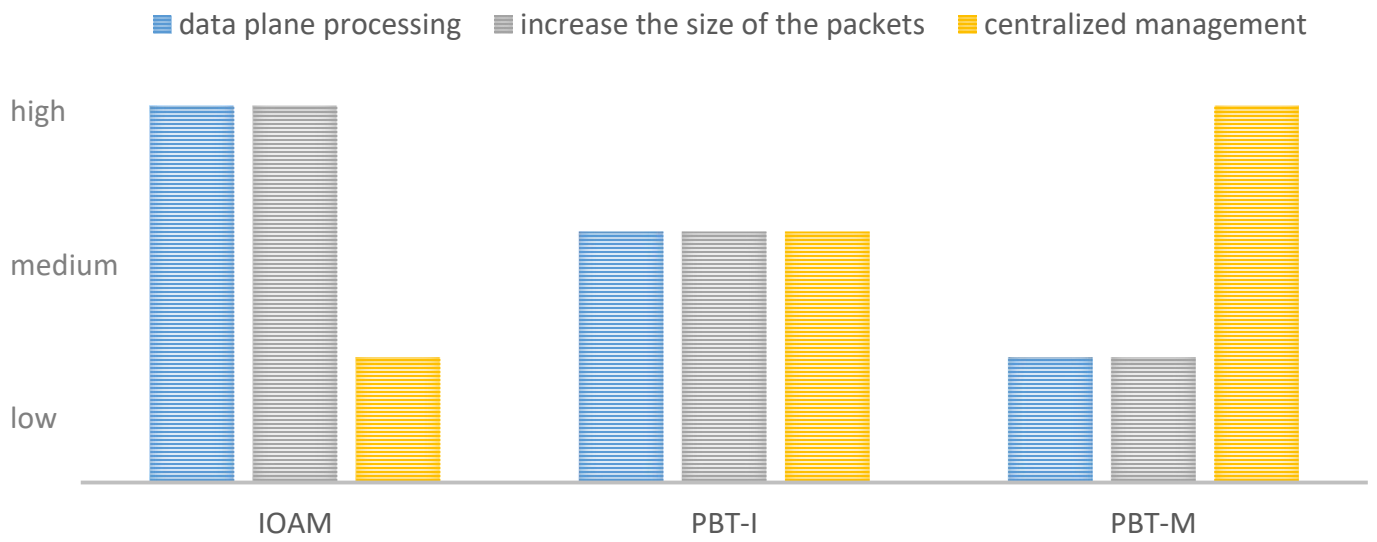
The Alternate Marking deployment practice gives useful inputs for the definition of the AltMark Data Fields.

FlowID can be introduced.

- Firstly, it helps **to reduce the per node configuration**.
  - FlowID avoids the configuration of ACLs for each node and for all the monitored flows;
  - FlowID can introduce different granularity for the flow definition.
- Secondly, it **simplifies the counters handling**, hardware can be hard to pull out and match the flow tuples defined by ACLs, especially in tunnels.
- Thirdly, FlowID **eases the data export and correlation** for the collectors.

Network Management for Multipoint AltMark

IOAM, PBT-I and PBT-M can support Alternate Marking. But what is best?



For Multipoint Alternate Marking, centralized management needs to be medium/high, while it is not necessary to have high data plane processing and increase too much the size of packets.

- **PBT-M is preferred** to support this flexible and adaptable performance management.
- The Controller holds the **overall view of the network topology** to change the performance measurement settings based on the network condition.

Alternate Marking "Best Practice"

- **Generalized Data Fields**
  - It is a separate light weight header that is **based on the deployment experience**
  - It can be encapsulated to specific transport protocols
  - Focus on PBT-M architecture (draft-song-ippm-postcard-based-telemetry)
  - It does not depend on IOAM/PBT-I but can **complement IOAM/PBT-I**

- draft-ietf-ippm-multipoint-alt-mark suggests more considerations about the implementation
  - Controller management is desirable and PBT gives more flexibility

Thank You

Comments are welcome!