HBH Use Case: IPv6 Application of the Alternate Marking Method

draft-ietf-6man-ipv6-alt-mark
draft-fz-spring-srv6-alt-mark

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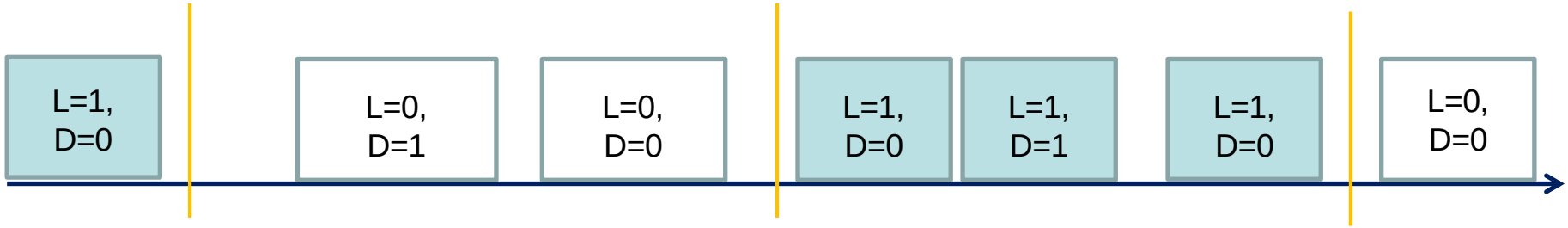
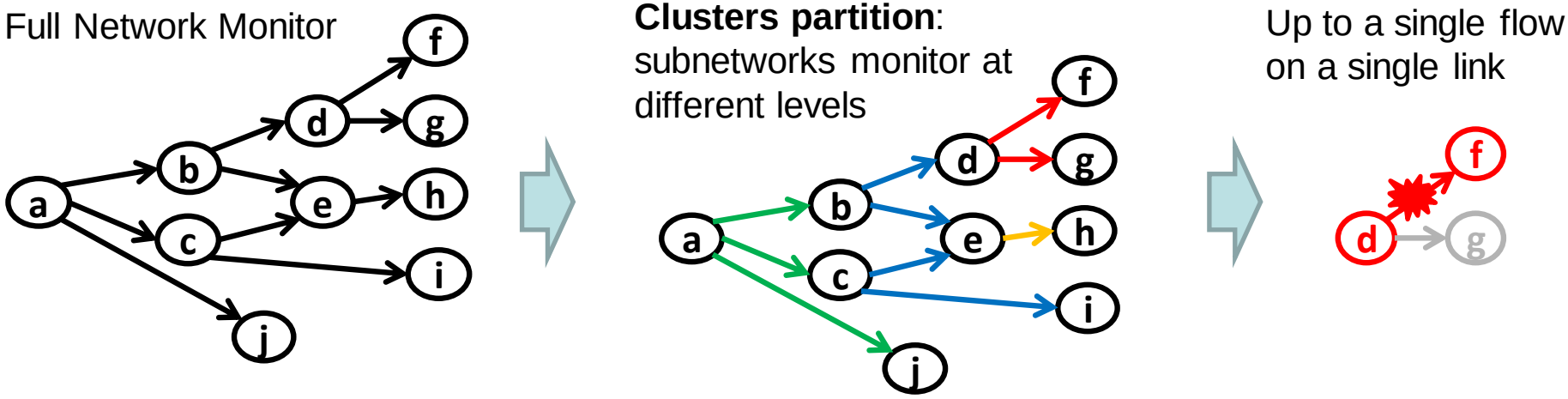
Alternate Marking at a glance

Alternate Marking methodology (**RFC 8321**) is an OAM Passive PM technique

- Batching packets based on time interval to measure **Packet Loss** by switching value of L flag.
- Use D flag to create a new set of marked packets: D-marked packets to calculate **more informative Packet Delay Metrics**

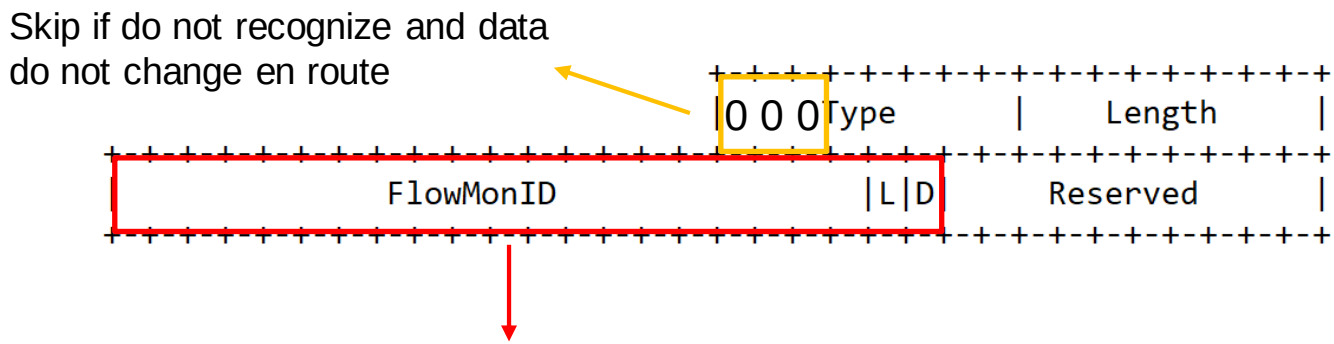


Multipoint Alternate Marking methodology (**RFC 8889**) generalizes the application for multipoint unicast flows and allows a flexible performance management approach



Alt-Mark HbH Use Case

- Definition of a new TLV to be encoded in the Options Header
- The **AltMark Option** is expected to be encapsulated as Hop-by-Hop Options Header or Destination Options Header.



  - **L** and **D** are the Marking Fields
  - The Flow Monitoring Identification (**FlowMonID**) is required for specific deployment reasons

  - The **source node** is the only one that writes the Option Header to mark alternately the flow (for both Hop-by-Hop and Destination Option).
  - In case of **Hop-by-Hop Option Header**, it can only be read by the **intermediate nodes** along the path. The measurement is hop-by-hop.
  - In case of **Destination Option Header**, it is not processed by any node until the packet reaches the **destination node**. The measurement is end-to-end.

Considerations on Alt-Mark HbH

- Hop-by-Hop Option allows measurement on every router on the path with feature enabled (in many cases end-to-end measurement is not enough).
  - Nodes only examine and process the Hop-by-Hop Options header if explicitly configured to do so
  - Nodes that do not support the Hop-by-Hop Option SHOULD ignore them. In this case, the measurement does not account for all links and nodes along a path.

- Alt-Mark HbH is designed to minimize impacts both on nodes that do not recognize the Option and on nodes that support it. The three high-order bits are 000 and this means "skip if do not recognize and data do not change en route".

- The application to a controlled domain should avoid the risk of arbitrary nodes dropping packets with Hop-by-Hop Options.

- But, in practice, the things may be different in the implementation and it can happen that packets with Hop-by-Hop are forced onto the slow path.

Summary

It is desirable to modify HBH Option Processing to make HBH options more practical so as to allow further uses (including Alt-Mark telemetry):

- Welcome questions, comments

Thank you