Alternate Marking method for passive performance monitoring

draft-ietf-ippm-alt-mark-02

Giuseppe Fioccola
Alessandro Capello
Mauro Cociglio
Mach Chen
Vero Zheng
Greg Mirsky
Tal Mizrahi

Document changes: -01 to -02

Important Modification:

- New Section "Timing Aspects"
  - This addresses the comments received from Qin Wu (on the mailing list) and J. Ignacio Alvarez-Hamelin (in Berlin)

- Delay variation Measurement details
  - This addresses the comments received from Qin Wu (on the mailing list)

- Editorial changes
  - Move some statements in "Implementation and deployment" and "Acknowledgement" Sections in order to make the description of the methodology more general
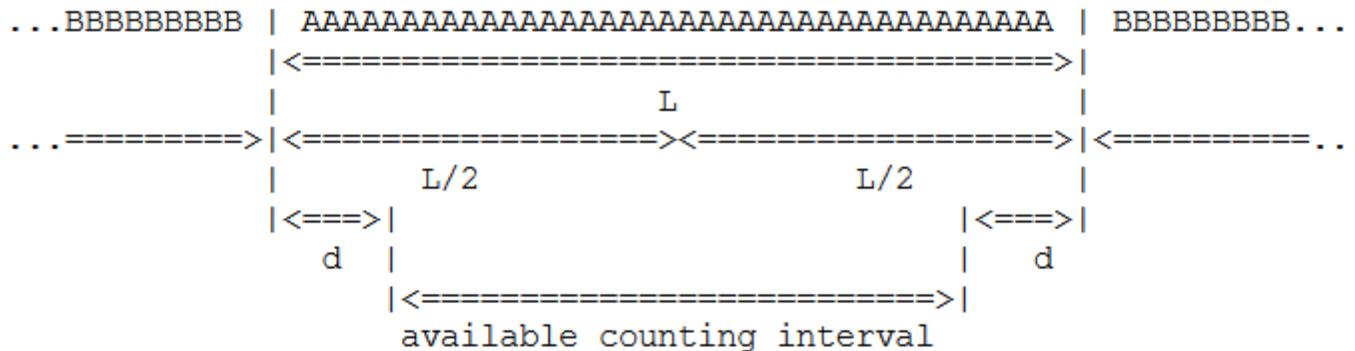
Timing Aspects (1/2)

Alternate Marking measurements are affected by two contributions:

* Clock Error between measurement points

* Out of Order at batch boundaries, strictly related to the delay between measurement points

In this new version we take into account this two contributions together and not separately, in order to avoid confusion

The only hypothesis is that: each marked packet MUST be assigned to the right batch by each router

Timing Aspects (2/2)

```
...BBBBBBBBB | AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA | BBBBBBBBB...
             |<=========================================>|
             |                      L                    |
...========>|<=================><=================>|<=========...
             |       L/2                    L/2            |
             |<===>|                              |<===>|
                d  |                              |   d
             |<==========================>|
                  available counting interval
```

The guardband d is given by: d = A + D_max - D_min,

where A is the clock accuracy,
D_max is an upper bound on the network delay,
D_min is a lower bound on the network delay.

The available counting interval is L - 2d that must be > 0.

The requirement that must be satisfied on the synchronization accuracy is:

d < L/2

Delay Variation measurement

In addition to Delay measurement the method can also be used to measure the Delay Variation.

We refer to the definition in RFC 3393.

- Single marking method: the alternation of colors can be used as a time reference to measure delay variations.

- Double marking method: the time reference is given by the second marked packets.

- Mean delay method: in the same way, it is possible to evaluate the average variation of the interval between consecutive packets of the flow.

Update on Marking Method Use Cases

New versions of the following works:

- MPLS RFC6374:draft-ietf-mpls-flow-ident-02; draft-bryant-mpls-sfl-framework-02; draft-bryant-mpls-rfc6374-sfl-03
  - RFC6374 Packet Loss Measurement is unchanged and stable.
  - We have added text to cover a number of packet delay & jitter measurements.

- BIER WG: draft-ietf-bier-pmmm-oam-00
  - Performance Measurement (PM) with Marking Method in Bit Index Explicit Replication (BIER) Layer: has been adopted by WG

- OOAM: draft-ooamdt-rtgwg-oam-gap-analysis-02
  Work in Progress

Summary and Next Steps

- Consolidated Version of the Document.

- It could be considered Stable for the Content

- WGLC for this draft

Comments always welcome