Performance Measurement On Link Aggregation Group(LAG)

draft-li-ippm-pm-on-lag

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Motivation

- Link Aggregation Group (LAG) is widely used in the field
  - Combine multiple physical links into a single logical link
  - Provide higher bandwidth and better resiliency
- Active IP Performance Monitoring OAM protocols view a LAG as a single logical link
  - The measured metrics reflect the performance of one member link or an average of some/all member links of the LAG
- In some cases, the delays of the member links of a LAG are different because the member links traverse different transport paths
- To provide low delay service to time sensitive traffic, it has to know the link delay of each member link of a LAG and then steer traffic accordingly
- This document defines extensions to OWAMP, TWAMP and STAMP to implement performance measurement on a particular member link of a LAG

Summary of the Proposal

- OWAMP-Control
  - A new command (Request-OW-Micro-Session) is defined
- OWAMP-Test
  - Reuses the OWAMP-Test packet format and procedures
  - OWAMP Session-Receiver associates received test packet with the particular member link
- TWAMP-Control
  - A new command (Request-TW-Micro-Session) is defined
- TWAMP-Test
  - Extensions to TWAMP-Test packet format and procedures
  - TWAMP Session-Receiver associates received test packet with the particular member link
- STAMP
  - A new STAMP Extension for per member link performance measurement
  - STAMP Session-Receiver associates received test packet with the particular member link

Next steps

- Your comments, suggestions, questions always welcome and greatly appreciated
- Refine the document according to the feedbacks from WG

Supplemental slides

Micro OWAMP

- Extensions to OWAMP-Control
  - A new command (Request-OW-Micro-Session) is defined
    - When receives the command, if the session is accepted, the OWAMP Server MUST build an association between the session and the specified member link
    - To build the association, two options:
      - Carry the member link identifier in the control message, or
      - Directly associate with the link from which the Request message is received (proposed in the draft)
- Extensions to OWAMP-Test
  - Reuses the OWAMP-Test packet format and procedures, and
  - The micro OWAMP Sender MUST send the micro OWAMP-Test packets over the member link with which the session is associated.
  - The micro OWAMP receiver MUST use the member link from which the Test packet is received to correlate the micro OWAMP session.

Micro TWAMP-Control

- Extensions to TWAMP-Control
  - A new command (Request-TW-Micro-Session) is defined
    - When receives the command, if the session is accepted, the OWAMP Server MUST build an association between the session and the specified member link
    - To build the association, two options:
      - Directly associate with the link from which the Request message is received (proposed in the draft),
        - » Control messages (Request and Response) are required to send along the specified member link
        - » Most of them are implementation detail, friendly to operations
      - Carry the member link identifiers in the control message
        - » Extensions to control messages needed
        - » Operators need to specify which the member link is associated with which session

Micro TWAMP-Test

- Extensions to TWAMP-Test
  - Reuse the TWAMP-Test packet formats with following additions:
    - Two new fields: Send Member Link ID and Reflector Member Link ID
  - Reuse the TWAMP-Test procedure with following additions:
    - The micro TWAMP Sender MUST send the micro TWAMP-Test packets over the member link with which the session is associated.
    - The micro TWAMP receiver MUST use the member link from which the Test packet is received to correlate the micro TWAMP session.

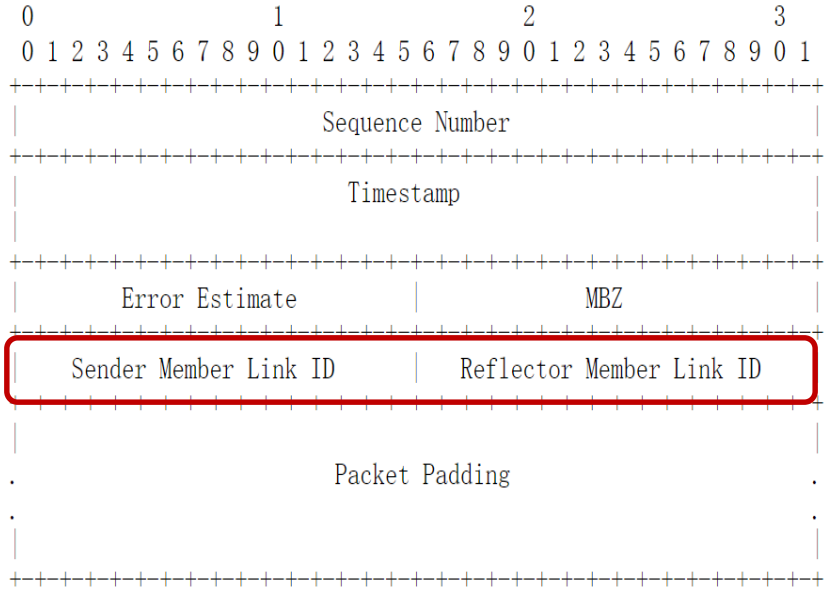
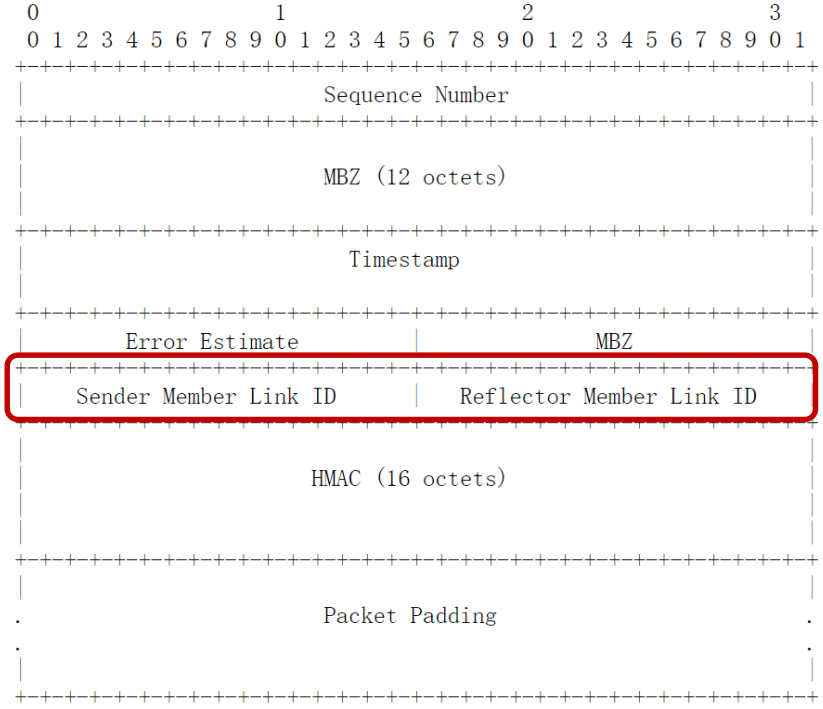


Figure 1: Session-Sender Packet format in Unauthenticated Mode



Micro STAMP-Test

- Extensions to STAMP-Test
  - Reuse the STAMP-Test packet formats with following additions:
    - Two new fields: Send Member Link ID and Reflector Member Link ID
  - Reuse the STAMP-Test procedures with following additions:
    - The micro STAMP Sender MUST send the micro STAMP-Test packets over the member link with which the session is associated.
    - The micro STAMP receiver MUST use the member link from which the Test packet is received to correlate the micro STAMP session.

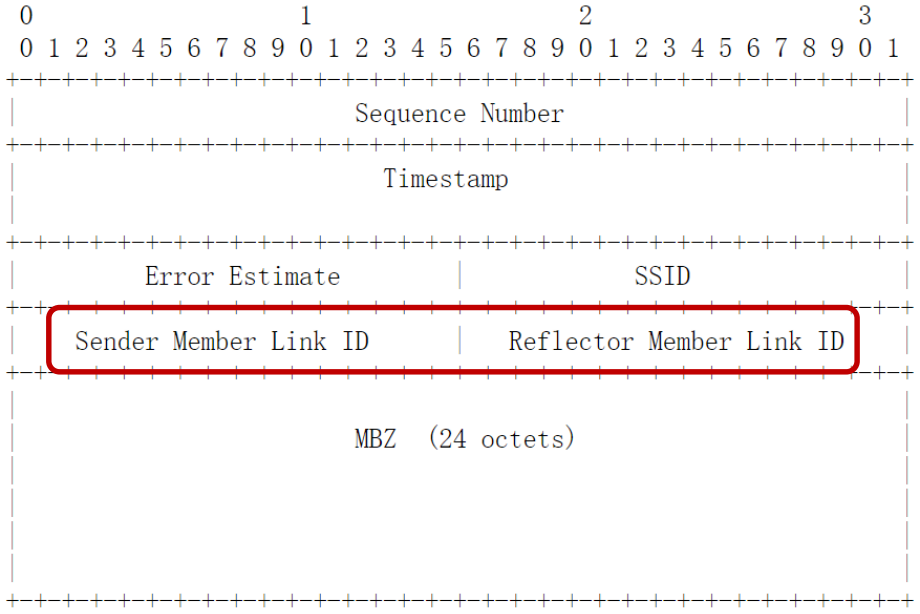


Figure 5: Session-Sender Test Packet in Unauthenticated Mode

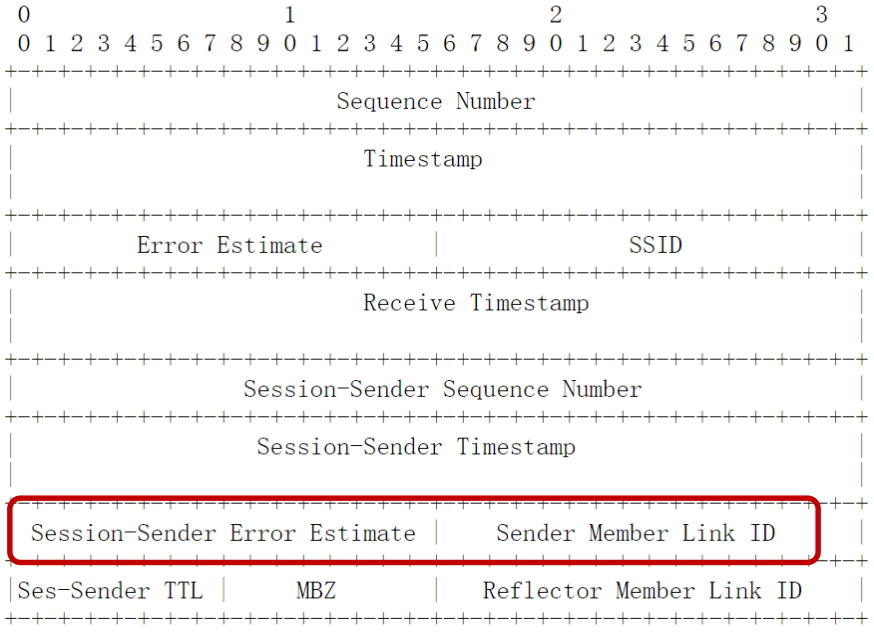


Figure 7: Session-Reflector Test Packet in Unauthenticated Mode