Simple Two-way Active Measurement Protocol (STAMP) Extensions
draft-mirsky-ippm-asymmetrical-pkts

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### Reflected Test Packet Control TLV

<table>
<thead>
<tr>
<th>STAMP TLV Flags</th>
<th>Type</th>
<th>Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length of the Reflected Packet</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of the Reflected Packets</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interval Between the Reflected Packets</td>
<td></td>
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</tr>
<tr>
<td>~ Sub-TLVs ~</td>
<td></td>
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</tr>
</tbody>
</table>

Length of the Reflected Packet – in octets
Number of the Reflected Packets – unsigned integer. (Do we need to set an upper limit?)
Interval Between the Reflected Packets – in nanoseconds
Performance Monitoring in a Multicast Network

- Usually, an operator is interested in only one-way downstream performance metrics
  - Use the Reflected Packet Control TLV with Number of the Reflected Packets set to 0
- Significant number (thousands, tens of thousands) of reflected STAMP test packets arrive as the Session-Sender in a very short time
  - Either suppress test packet reflection or use an Address Group sub-TLV
- An ability to measure performance over a multicast network to a sub-set of the members of the given multicast distribution tree is beneficial
  - Use an Address Group TLV
- If a reflected packet is not transmitted, how to collect measured performance metrics?
  - Management plane, e.g., IPFIX or based on STAMP YANG data model.
  - Fetch using a STAMP extension? An open question.
Layer 2 Address Group Sub-TLV

- Defines the applicability of the Reflected Test Packet Control TLV

If (Session-Reflector MAC Address && EUI-48 Address Group Mask == EUI-48 Address Group)

Reflected Test Packet Control TLV is applicable
Layer 3 Address Group Sub-TLV

- Defines the applicability of the Reflected Test Packet Control TLV

\[
\text{If (Session-Reflector IP Address/Prefix Length == IP Address/Prefix Length)}
\]

\[
\text{Reflected Test Packet Control TLV is applicable}
\]
Next steps

• PM in a multicast environment:
  – Session-Reflector as STAMP Attenuator
  – Session-Reflector as STAMP Amplifier

• One-way measurement collection

• Welcome your questions, comments, and cooperation

Thank You!