Path Tracing in SRv6 networks
draft-filsfils-spring-path-tracing-05

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On behalf of the co-authors
Path Tracing (PT)

• Provides a record of the packet path as a sequence of interface ids.
• In addition, it provides a record of end-to-end delay, per-hop delay, and load on each egress interface along the packet delivery path.
• Designed for linerate hardware implementation in the base pipeline:
  – Minimum MTU overhead. Midpoint Compressed Data (MCD) of 3Bytes to record interface ID, truncated TS and interface Load.
  – Headers Optimized for linerate HW implementation. Minimize variability (no options; same editing by all nodes).
• Implemented at line rate:
  – 5 different ASICs from 3 different vendors
  – Plus, several open source stacks/software
PT Headers

- HbH-PT: IPv6 Option for Path Tracing to be carried in the IPv6 Hop-by-Hop Header.
  - Option Type: TBA1-1
  - Opt Data Len: the length of the MCD stack in bytes.
  - MCD Stack: metadata scratchpad where PT Midpoints record their MCDs
  - Each 3-byte MCD contains 12-bit interface ID, 8-bit timestamp and 4-bit interface load

- DOH-PT: IPv6 Option for Path Tracing to be carried in the IPv6 Destination Options Header.
  - Option Type: TBA1-2
  - Opt Data Len: the length of the DOH-PT in bytes (12).
  - T64: 64-bit Timestamp
  - Session ID: Probe Session identifier
    IF_ID: 12-bit Interface ID
  - IF_LD: 4-bit Interface Load

<table>
<thead>
<tr>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ver</td>
<td>Traffic Class</td>
<td>Flow Label</td>
<td></td>
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Next steps

• Review and feedback
• The draft is currently in the SPRING WG
  – Suggestions/feedback

• Early allocation
  – HbH-PT: TBA1-1
  – DOH-PT: TBA1-2
Thank you