Simple TWAMP (STAMP) Extensions for Segment Routing Networks

draft-gandhi-ippm-stamp-srpm-02

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Agenda

- Requirements and Scope
- Summary of Extensions
- Next Steps

Requirements, Goals and Scope

Requirements:

- In-band Performance Measurement for links and SR paths

Goals:

- Avoid provisioning and maintaining test sessions on Session-Reflector - stateless mode
- Avoid control protocol for signaling dynamic parameters

Scope:

- STAMP [RFC 8762]
- STAMP Extensions [RFC 8972]

Updates Since Version-00

Updates:

- ✓ STAMP Extensions for SR was moved from draft-gandhi-spring-stamp-srpm
- ✓ Replaced TWAMP Light draft with STAMP draft
- ✓ Updated terminology to align with STAMP
- ✓ Removed STAMP direct measurement stand-alone messages
- ✓ Moved Control Code to Return Path TLV
- ✓ Various editorial changes to address review comments

Open Items:

- None

STAMP Destination Node Address TLV

Destination Node Address TLV (value TBA1):

- Indicates the address of the intended destination of the Session-Sender test packet.
- The Session-Reflector that supports this TLV, **MUST NOT** send reply if it is not the intended destination of the Session-Sender test packet.
- Useful when test packet is sent with 127/8 destination address (e.g. sweeping ECMP paths).

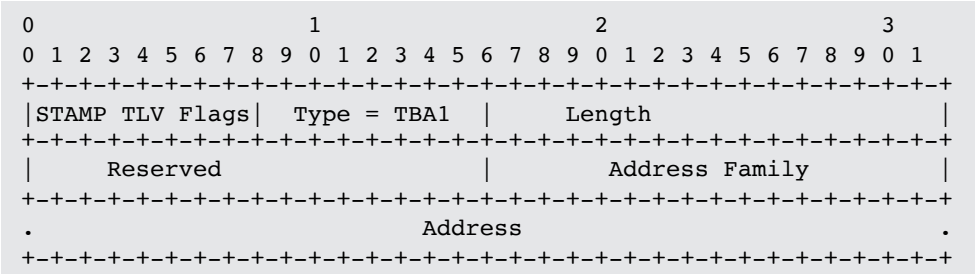

Figure: Destination Node Address TLV Format

STAMP Return Path TLV

Return Path TLV (value TBA2) to carry one Sub-TLV for return path:

Return Path Sub-TLVs Types:

- Type (value 1): Return Path Control Code. Reply test packet based on the control code flags.
  - 0x0: No Reply Requested.
  - 0x1: In-band Reply Requested.
- Type (value 2): Return Address. Destination address for the reply; different than the Source Address in the Session-Sender test packet
- Type (value 3): SR-MPLS Label Stack of the Return SR Path
- Type (value 4): SR-MPLS Binding SID [draft-ietf-pce-binding-label-sid] of the Return SR Policy
- Type (value 5): SRv6 Segment List of the Return SR Path
- Type (value 6): SRv6 Binding SID [draft-ietf-pce-binding-label-sid] of the Return SR Policy

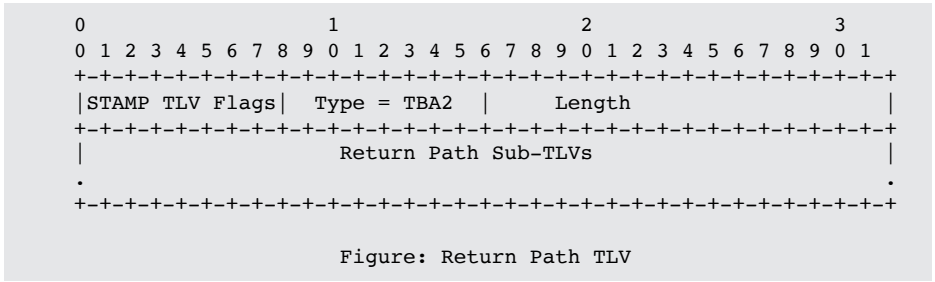

Figure: Return Path TLV

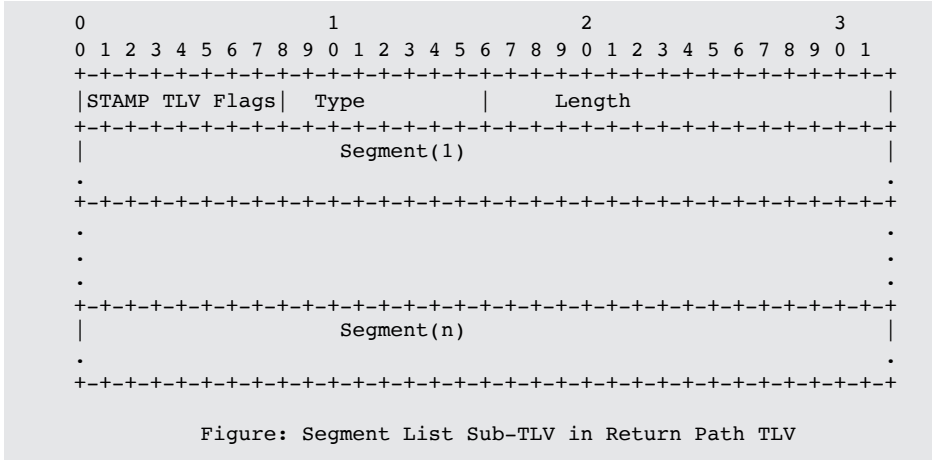

Figure: Segment List Sub-TLV in Return Path TLV

Return Path Control Code Sub-TLV - Usage

- In-band Reply Requested:
  - For link delay measurement
    - Session-Reflector transmits test packet in-band on the same incoming link in the reverse direction
    - Link can be Virtual, LAG or LAG member
  - Avoid maintaining each test session (session id, source-address) on Session-Reflector
    - Stateless mode of STAMP Session-Reflector as defined in RFC 8762
- No Reply Requested:
  - The Session-Reflector does not transmit reply test packet to the Session-Sender and terminates the Session-Sender test packet
  - Optionally, the Session-Reflector can send the performance metrics via streaming telemetry using the information from the received Session-Sender test packet

Return Address Sub-TLV - Usage

- The STAMP Session-Reflector reply test packet may be transmitted to a different node than the Session-Sender
  - E.g. to a controller for telemetry use-cases
- For this, the Session-Sender can specify in the test packet the receiving destination address for the Session-Reflector reply test packet

Return Path Segment List Sub-TLVs - Usage

- For SR path, Session-Reflector reply test packet may need to be sent in-band on a specific return SR path
- For bidirectional SR path - dynamically computed forward and reverse paths using CSPF by the head-end node
  - Path can change often based on topology change, link/node failure in the network, etc.
- No signaling in SR (PCE can be used)
- Avoid signaling and maintaining dynamic state on Session-Reflector for the return path for each STAMP test session (each session-id, source-address)
  - Order of 10K SR Policy (that can have active and standby candidate-path and each can have multiple segment-lists)

Next Steps

- Welcome your comments and suggestions
- Requesting WG adoption

Thank you