

Simple TWAMP (STAMP) Extensions for Segment Routing Networks

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Agenda

- Requirements and Scope
- Summary of Extensions
- Next Steps

Requirements and Scope

Requirements:

- Support in-band Performance Measurement for links and SR paths

Goals:

- Avoid provisioning test sessions on Session-Reflector for stateless mode
- Avoid control protocol for signaling dynamic parameters
- High scale for number of test sessions and faster detection interval
 - Support hardware implementation

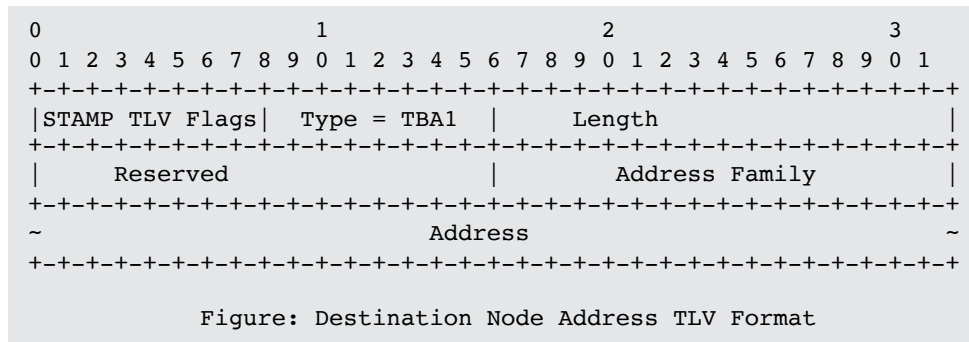
Scope:

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

STAMP Destination Node Address TLV

Destination Node Address TLV (value TBA1):

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



STAMP Return Path TLV

Return Path TLV (value TBA2) to carry one Sub-TLV for 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 node address for the reply; different than the Source Address in the 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

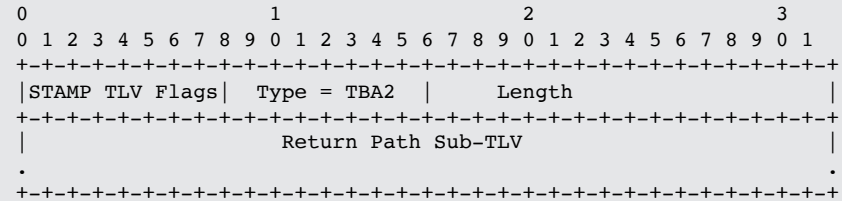


Figure: Return Path TLV

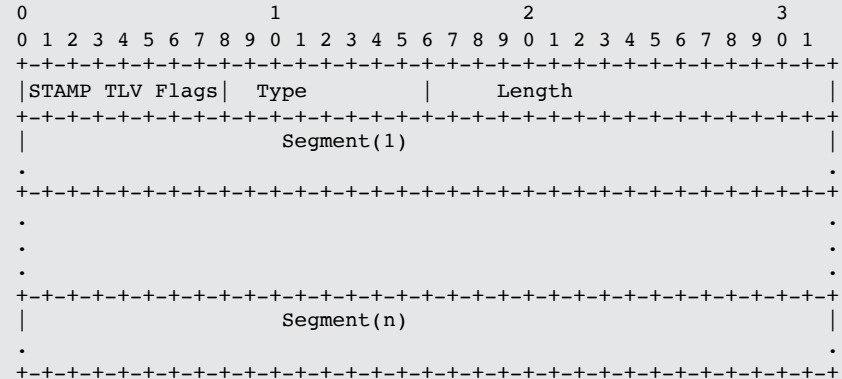


Figure: Segment List Sub-TLV in Return Path TLV

Return Path Control Code Field - Usage

- For link delay measurement
 - Session-Reflector needs to send reply on the same incoming link (symmetric delay on forward and reverse link)
 - Link can be Virtual, LAG or LAG member
- Avoid provisioning each test session (session id, source-address) on Session-Reflector (can have an order of 1K links)
 - Stateless mode of STAMP Session-Reflector as defined in RFC 8762

STAMP Return Segment List - Usage

- For SR path, reply test packet may need to be sent on a specific return SR path
- Bidirectional SR path (forward and reverse) dynamically computed 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
- Avoid signaling and maintaining dynamic state on Session-Reflector to store return paths for each 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