

Simple TWAMP (STAMP) Extensions for Segment Routing Networks

draft-gandhi-ippm-stamp-srpm-00

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Agenda

- Requirements and Scope
- History of the Draft
- Summary of Extensions
- Next Steps

Requirements and Scope

Requirements:

- Support In-band Delay and Synthetic Loss Measurement
- Support stand-alone direct-mode Loss Measurement

Scope:

- STAMP [RFC 8762]
- STAMP TLVs [draft-ietf-ippm-stamp-option-tlv]

STAMP - Summary of PM Drafts

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- Defines procedures for delay, synthetic loss and direct-mode loss measurements
 - For Links and end-to-end SR Paths for SR-MPLS and SRv6 data planes

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- Defines extensions for STAMP for Segment Routing
 - Defines Session-Sender Control Code field for in-band response request
 - Defines TLV to carry Return Path
 - Defines TLV to carry Destination Node Address
 - Defines stand-alone direct-mode loss measurement query and response messages

History of the Draft

- Feb 2019
 - Draft was published - *draft-gandhi-spring-twamp-srpm-00*
- Mar 2019
 - Presented *draft-gandhi-spring-twamp-srpm-00* at IETF 104 Prague in SPRING WG
- May 2019
 - Added STAMP TLV for Return Path
- July 2019
 - Presented *draft-gandhi-spring-twamp-srpm-01* at IETF 105 Montreal in IPPM WG
 - Slide 9 Titled - Applicability of STAMP
- Nov 2019
 - SPRING Chairs announced in the meeting the agreement with IPPM chairs to progress the draft in SPRING WG
 - Presented *draft-gandhi-spring-twamp-srpm-04* at IETF 106 Singapore in SPRING WG
- Mar 2020
 - Moved STAMP support to *draft-gandhi-spring-stamp-srpm-00*
 - Keep TWAMP Light support as informational in *draft-gandhi-spring-twamp-srpm-08*
- Jul 2020
 - Presented *draft-gandhi-spring-stamp-srpm-01* at IETF 108 in SPRING and IPPM WG
- Oct 2020
 - Split draft into *draft-gandhi-spring-stamp-srpm-03* and *draft-gandhi-ippm-stamp-srpm-00*

STAMP - Session-Sender Control Code Field

In a Query: **Session-Sender Control Code**

0x0: Out-of-band Response Requested.
This is the existing behavior.

0x1: In-band Response Requested.
Indicates that this query has been sent over a bidirectional path and the probe response is required over the same path in reverse direction.

0x2: No Response Requested.

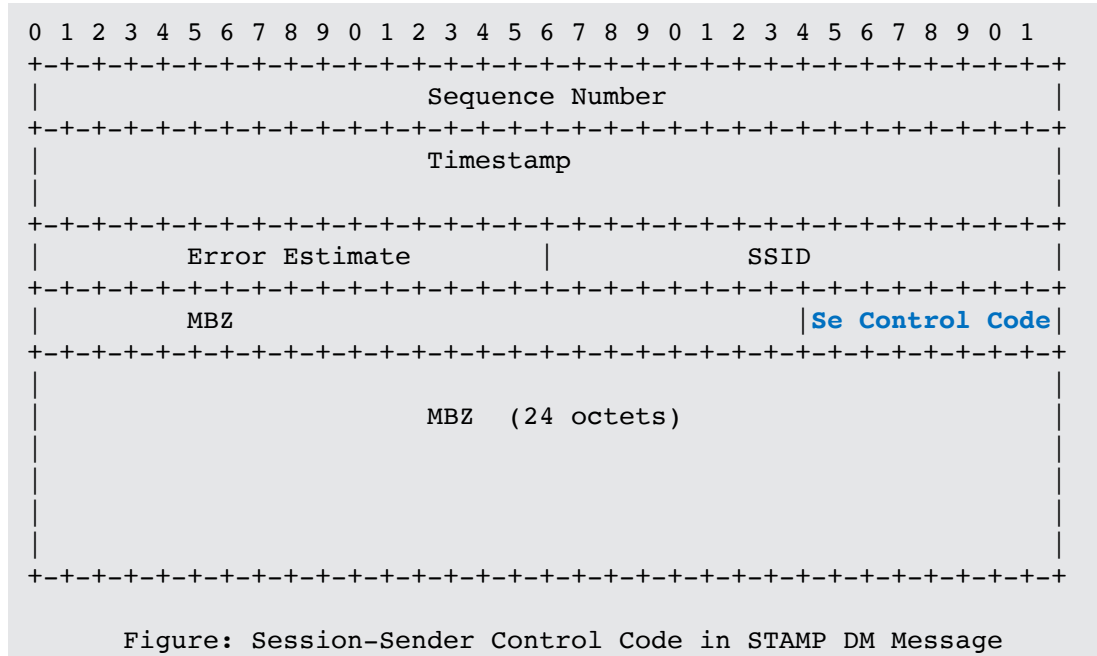


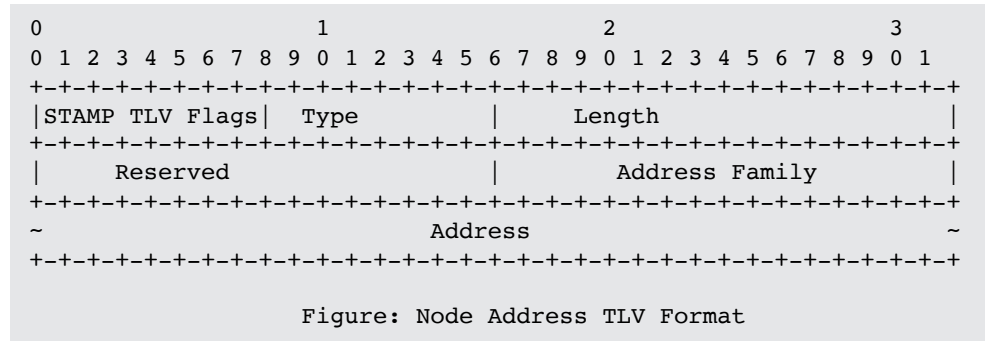
Figure: Session-Sender Control Code in STAMP DM Message

- With this, the Session-Reflector node does not require any additional state for PM

STAMP - Destination Node Address TLV

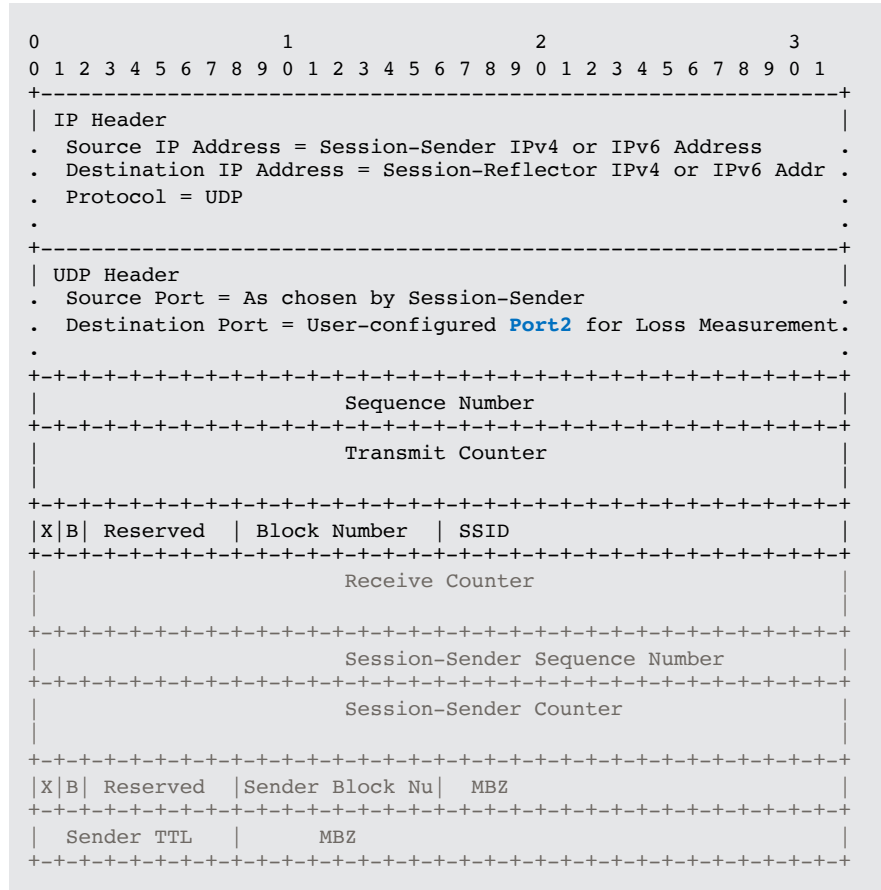
Destination Node Address TLV (value TBA1):

- Indicates the address of the intended recipient node of the query message.
- The Session-Reflector node **MUST NOT** send response if it is not the intended destination node of the query.
- Useful when query is sent with 127/8 destination address.



STAMP - Stand-alone Direct-mode LM Message Format

- Stand-alone Direct-mode Loss Measurement (LM) query and response messages defined
 - Hardware efficient counter-stamping
 - Well-known locations for transmit and receive traffic counters
 - Stand-alone LM message, not tied to DM
- Direct-mode LM message format is also defined for authenticated mode
- User-configured destination UDP **Port2** is used for identifying direct-mode LM probe packets
- Does not modify existing STAMP (which is for DM) procedure as different destination UDP port is used for direct-mode LM



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1. Draft status:
 - a) Draft defines extensions for RFC 8762 - STAMP
 - Updates RFC 8762 due to new field (control code) in the message
2. Extensions are not specific to SR, document should be renamed
3. Editorial
 - a) Define Abbreviations (BSID, SRH, HMAC-SHA)
 - b) Use Session-Sender, Session-Reflector terms
 - c) Show entire test packet with session-sender control code field
 - d) Indicate packet loss is direct-mode loss
 - e) Move Receive Counter and other Response message fields to Section 4.1 from 3.2
 - Explain how the counters and sequence numbers are used to do loss measurement
4. Extend ICMP for direct-mode loss measurement – out of scope

Next Steps

- Welcome your comments and suggestions
- In IPPM WG adoption poll

Thank you

Backup

draft-gandhi-spring-stamp-srpm - Review Comments

1. Add references for well-known terms “Link”, “SR Path”, and “Congruent paths”
2. Destination UDP port used has zero UDP checksum for IPv6 header
 - a) Add Reference for RFC 6936 in Security Section
 - b) For IPv4 and IPv6 probe messages, where the hardware is not capable of re-computing the UDP checksum or adding checksum complement [[RFC7820](#)], the sender node **MAY** set the UDP checksum to 0 [[RFC8085](#)] **and reflector node MAY accept it as long as it meets requirements specified in [[RFC6936](#)]**
3. Add reference for Yang data model draft in provisioning model section
4. Liveness is to compute “connection loss” performance metric
 - a) Similar to the widely deployed synthetic packet loss metric
5. Editorial
 - a) Indicate packet loss is direct-mode loss
 - b) Use test packet term for query message
 - c) H/W timestamps required -> H/W timestamps recommended
 - d) IPv6 address ::1/128 or ::FFFF:127/104
 - e) Clarify - Section 4.1.4.2 and 4.2.2.2 depict the packet format with word “as needed” for inner IP Header
 - f) Different UDP destination ports when running authenticated and unauthenticated sessions simultaneously