

Simple Two-way Active Measurement Protocol (STAMP) Extensions

draft-mirsky-ippm-stamp-option-tlv

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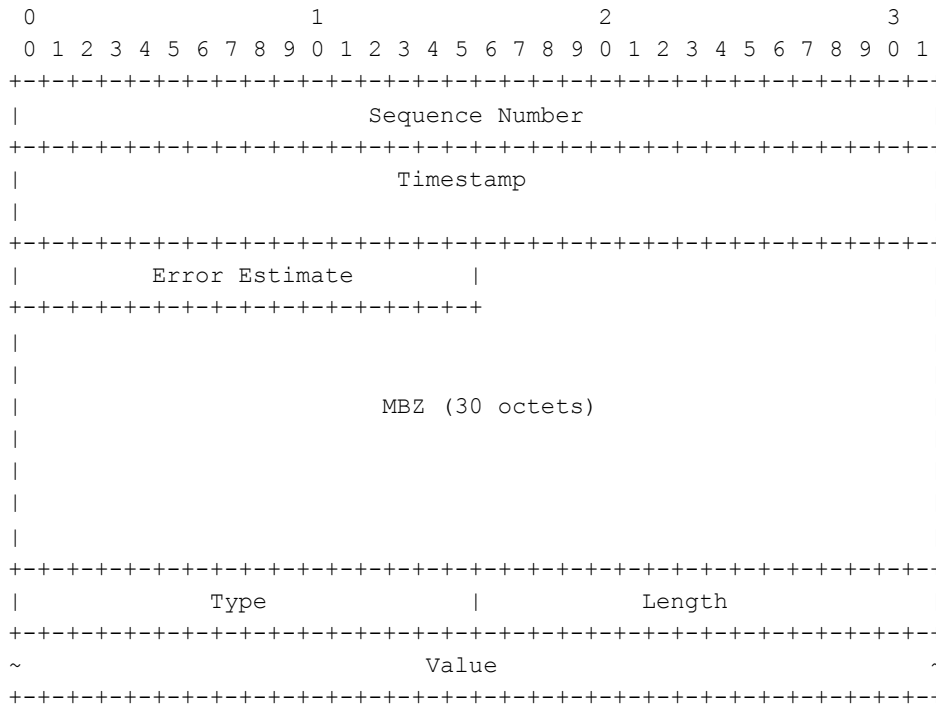
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Our thanks

- Thanks to Rakesh Gandhi and Tianran Zhou for their comments, suggestions that helped us improve the document

STAMP Extensions

- When STAMP Extension is used, a STAMP Session-Sender MUST use STAMP base packet 44 octets long



- A STAMP Session-Reflector MUST compare the value in the Length field of the UDP header with the length of the STAMP base packet (44 octets). If the difference is larger than the length of the UDP header, the Session-Reflector MUST process STAMP Extensions accordingly.

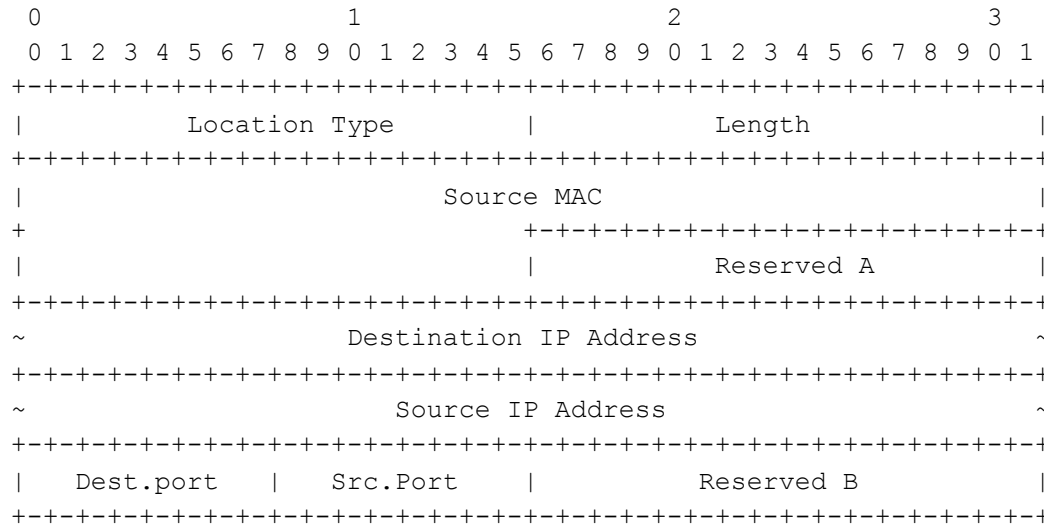
STAMP Namespace

- Type value space is split:
 - Mandatory
 - Optional
 - Experimental
 - Vendor Private Use - the first four octets MUST be that vendor's the Structure of Management Information Private Enterprise Number, in network octet order. The rest of the Value field is private to the vendor.
- The Type value will indicate whether TLV is required in every PDU (i.e., Class of Service TLV), or optionally intermittent. With the rules of the TLV, a Session-Sender may, always include the TLV or include a TLV intermittently. Optionally intermittent TLVs may be sent in every PDU at the Session-Sender discretion.

Extra Padding TLV

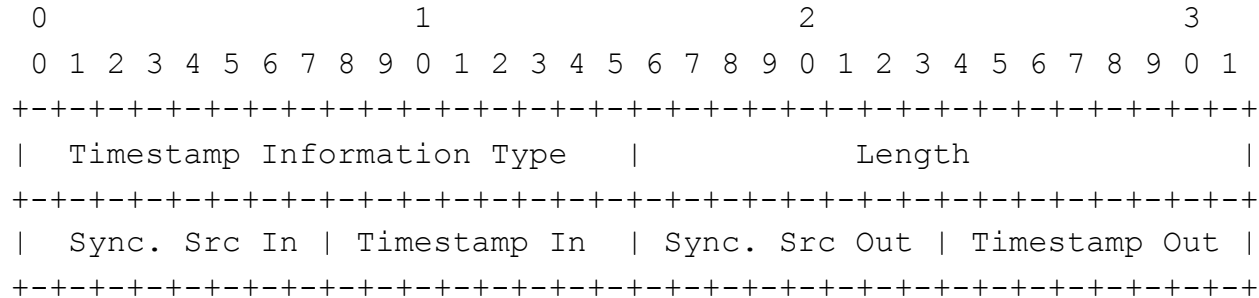
- The Extra Padding TLV is similar to the Packet Padding field in TWAMP-Test packet [RFC5357]. In STAMP the Packet Padding field is used to ensure symmetrical size between Session-Sender and Session-Reflector test packets. Extra Padding TLV **MUST** be used to create STAMP test packets of larger size.

Location TLV



- The Location TLV MAY be used to determine the penultimate node. A Session-Reflector MUST include the Location TLV with the reflected STAMP filling the values from the received STAMP. The value of the Source MAC address MAY be monitored by the Session-Sender whether there has been a path switch on the penultimate node. The values in the Destination and Source IP address fields and UDP port will indicate if there is a NAT router on the path and allows the Session-Sender to identify the IP address of the Session-Reflector behind the NAT, detect changes in the NAT mapping that could cause sending the STAMP packets to the wrong Session-Reflector.

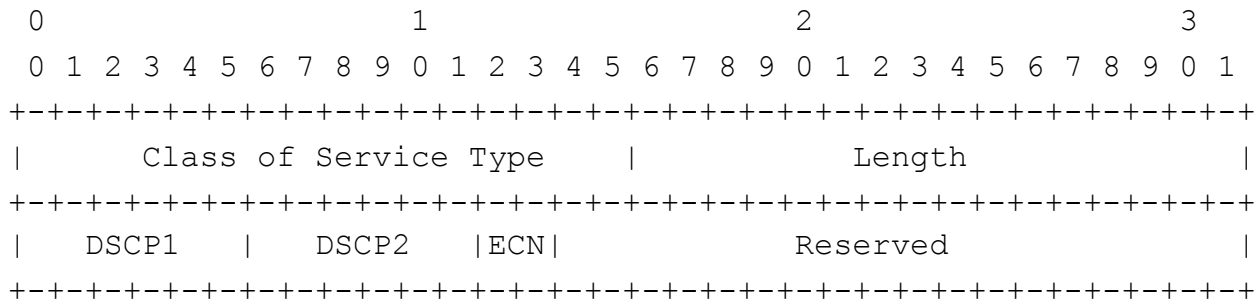
Timestamp TLV



- Sync Src In/Sync Src Out - one octet long field that characterizes the source of clock synchronization at the ingress and egress of Session-Reflector. There are several methods to synchronize the clock, e.g., Network Time Protocol (NTP) [RFC5905], Precision Time Protocol (PTP) [IEEE.1588.2008], Synchronization Supply Unit (SSU) or Building Integrated Timing Supply (BITS), or Global Positioning System (GPS), Global Orbiting Navigation Satellite System (GLONASS) and Long Range Navigation System Version C (LORAN-C).
- Timestamp In/Timestamp Out - one octet long field that characterizes the method by which the ingress of Session-Reflector obtained the timestamp T2 and T3 respectively. A timestamp may be obtained with hardware assist, via software API from a local wall clock, or from a remote clock (the latter referred to as "control plane").

Class of Service TLV

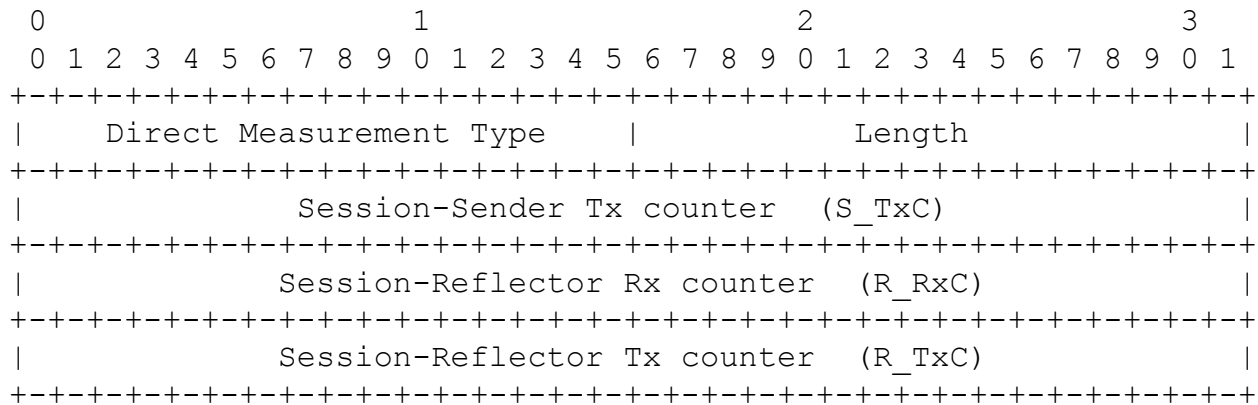
Session-Sender may use CoS TLV to determine directional congestion through comparison of the DSCP2 and ECN information. DSCP1 convey the DSCP value the Session-Reflector must use in the reflected packet.



- DSCP1 - The Differentiated Services Code Point (DSCP) intended by the Session-Sender. To be used as the DSCP value for the reflected STAMP packet by the Session-Reflector
- DSCP2 - The value of the DSCP field in the STAMP packet received by the Session-Reflector
- ECN – The value of the ECN field in the STAMP packet received by the Session-Reflector
- Reserved - 18 bits long field, must be zeroed on transmission and ignored on receipt.

Direct Measurement TLV

Direct Measurement TLV is used to report packet loss using data counters rather than synthetic packets.



- Session-Sender Tx counter (S_TxC) is four octets long field.
- Session-Reflector Rx counter (R_RxC) is four octets long field. MUST be zeroed by the Session-Sender and filled by the Session- Reflector.
- Session-Reflector Tx counter (R_TxC) is four octets long field. MUST be zeroed by the Session-Sender and filled by the Session- Reflector.

Next steps

- Include all changes agreed on in course of the discussion on the list
- Terminology in Direct Loss Measurement
TLV – ITU-T or RFC 6374, e.g., S_TxC vs. TxFCf vs. A_TxP?
- Comments are welcome
- WG adoption call is ... going on