STAMP Extensions for Reflecting STAMP Packet MPLS Extension Headers

draft-gandhi-ippm-stamp-mpls-hdr-07

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126th IETF, Vienna

Agenda

- Requirements
- Updates
- Summary
- Next Steps

History

WG document *draft-ietf-ippm-stamp-ext-hdr* was split into two drafts in June 2025:

1. IPv4/IPv6 Data plane - *draft-ietf-ippm-stamp-ext-hdr*
2. MPLS Data plane - *draft-gandhi-ippm-stamp-mpls-hdr*

Requirements, Goals, and Scope

Requirements:

- STAMP Extensions to Reflect STAMP packet MPLS extension headers - In-Stack and Post-Stack MNA headers and ancillary data
  - ✓ Hop-by-hop and edge-to-edge measurements
  - ✓ Two-way and one-way measurements

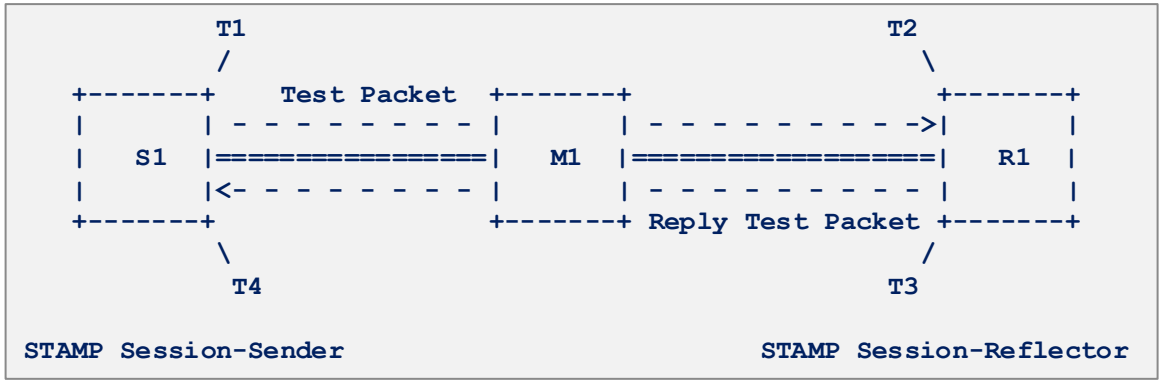
Goals:

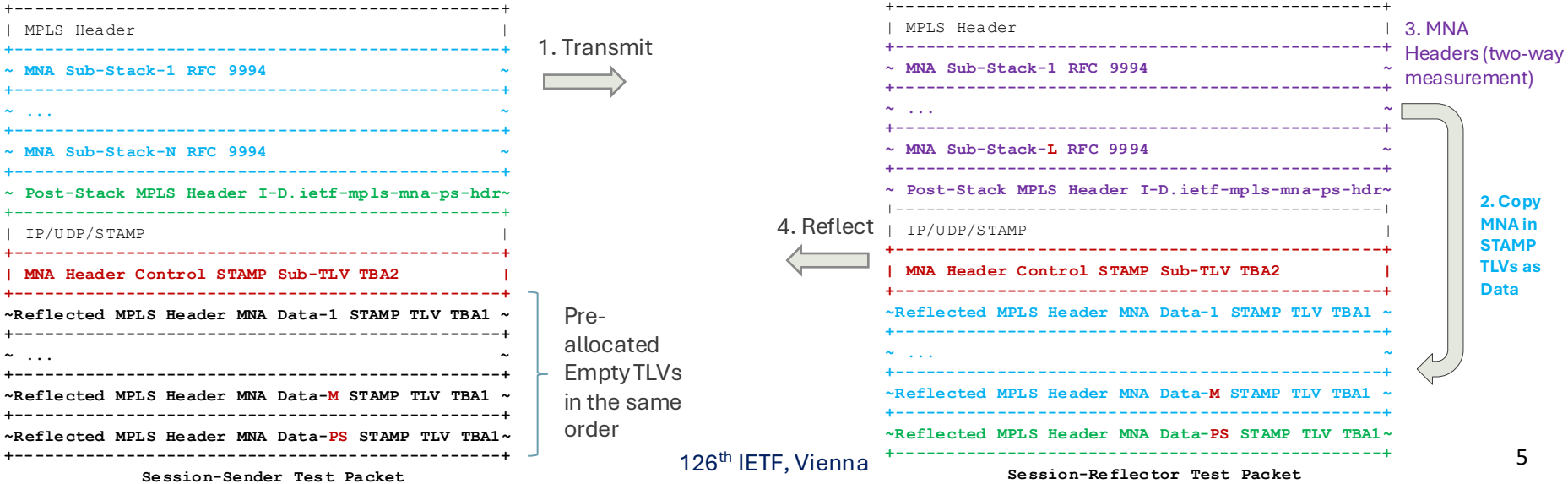
- Leverage the existing implementation of MNA on midpoint nodes for hop-by-hop measurement
  - ✓ Midpoint nodes are agnostics to STAMP protocol

Scope:

- STAMP [RFC8762] and STAMP Extensions [RFC8972]
- In-Stack MPLS Network Action Solution [RFC9994]
- Post-Stack MPLS Network Action Solution [draft-ietf-mpls-mna-ps-hdr]
- Use Case: IOAM Using MPLS Network Actions [draft-ietf-mpls-mna-ioam]

STAMP Extension for MPLS Data plane (Two-Way Measurement)



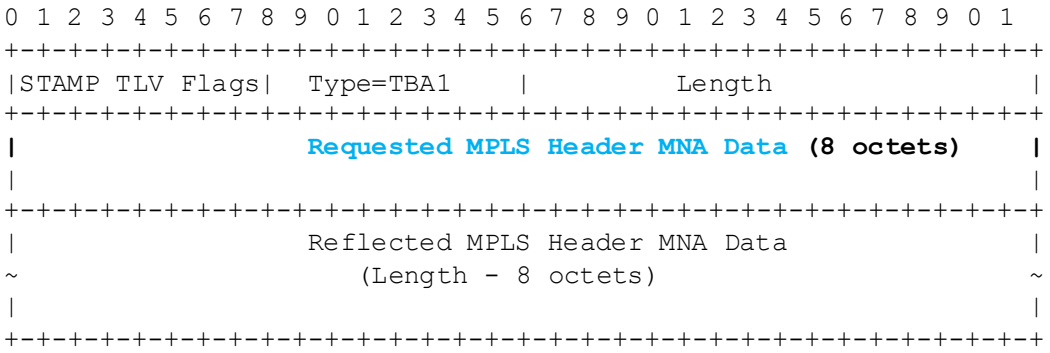


Updates Since IETF-124 Montreal – 1/4

1. Welcome Fabian as co-author
2. Added Implementation Section
3. Use normative language
4. Presented in the MPLS WG session in IETF-125 Shenzhen to solicit feedback
    a. WG Chair shared the draft on the MPLS WG mailing list for review

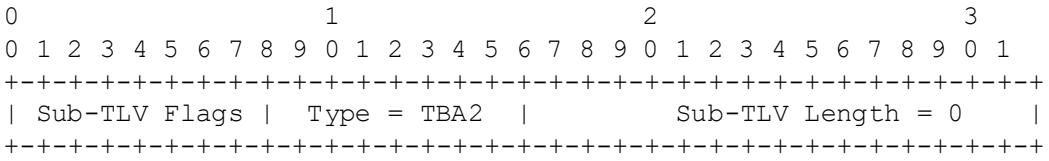
Updates Since IETF-124 Montreal – 2/4

1. Updated STAMP TLV figures and text for the first 8 bytes for “Requested MPLS Header MNA Data” field
2. Set Conformance TLV Flag
   a. Session-Reflector could not reflect MPLS extension header in MPLS Header MNA Data TLV
3. Added Section on “Receiving MPLS Header from the Data Plane on Egress Node”
   a. “An MNA-capable node performing Penultimate Hop Popping (PHP) that pops the forwarding label with only the NAS(es) remaining on the stack MUST NOT remove the NAS(es)” [RFC9994]



Updates Since IETF-124 Montreal – 3/4

1. MNA Header Control Sub-TLV in two-way measurement
   a. Presence used for adding NEW matching MPLS extension headers in the Session-Reflector test packets – behaviour (including length) based on a local policy
2. Set Conformance TLV Flag
   a. Session-Reflector does not support adding the NEW matching MPLS extension header
   b. Multiple Sub-TLVs present



Updates Since IETF-124 Montreal – 4/4

1. Operational Considerations
    a. Provision a local policy on Session-Reflector to not reflect headers in STAMP TLVs
2. Security Considerations
    a. Single network administrative domain
    b. Checks for timestamps to be valid
    c. Session ID generation not predictable

IANA Requests - New STAMP TLV and Sub-TLV Type

Value	Description	Reference
TBA1	Reflected MPLS Header MNA Data	This document

STAMP TLV Type

Value	Description	TLV Used	Reference
TBA2	MNA Header Control	Reflected Test Packet Control	This document

Sub-TLV Type for STAMP Reflected Test Packet Control TLV (Type 12)

Implementation Status

An open-source implementation for both One-Way and Two-Way measurement types for hop-by-hop delay measurement available in Tofino2:

- ✔ STAMP with optional TLVs [RFC8972]
- ✔ MPLS Network Action (with In-Stack and Post-Stack Data)
- ✔ IOAM pre-allocated trace option [RFC9197]
- ✔ Extensions defined in this draft

https://github.com/uni-tue-kn/stamp-mpls-mna-poc

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Next Steps

- Welcome your review comments and suggestions
- This draft was already part of an IPPM WG document
- Implementation exists
- Requested IPPM WG adoption on the mailing list

Thank you!