Update of the STAMP CoS Extension for ECN

draft-whimir-ippm-stamp-cos-ecn-00

Greg White, Greg Mirsky, Xiao Min

IPPM @ IETF123

24 July 2025

Purpose

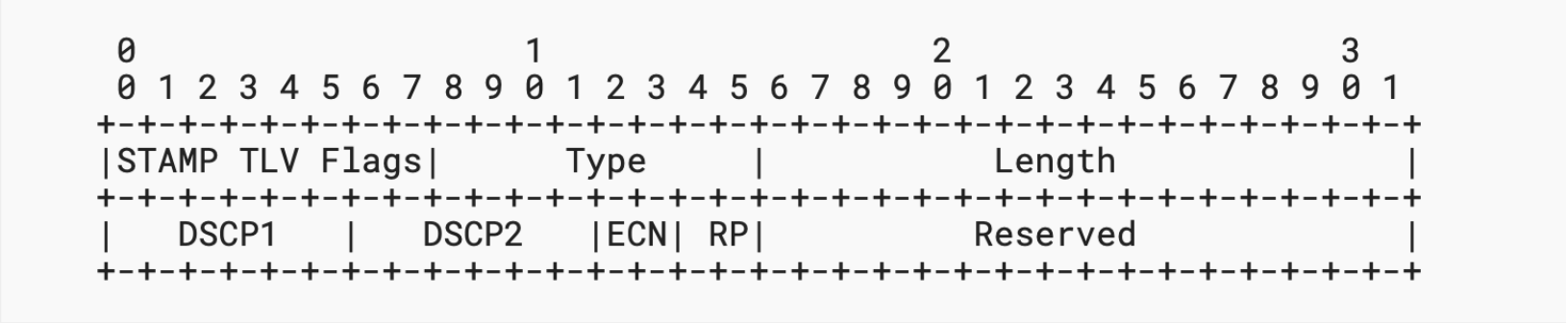
- Define a STAMP Extension (TLV) to enable bi-directional measurements of ECN traversal
  - Detect ECN field manipulation in each direction
    - Congestion marking
    - Bleaching and other pathological cases
  - Perform differential measurements of path latency based on ECN value

- Existing Class of Service TLV enables bi-directional DSCP measurement, but only reliably enables one-way ECN measurement

Recap of Discussion

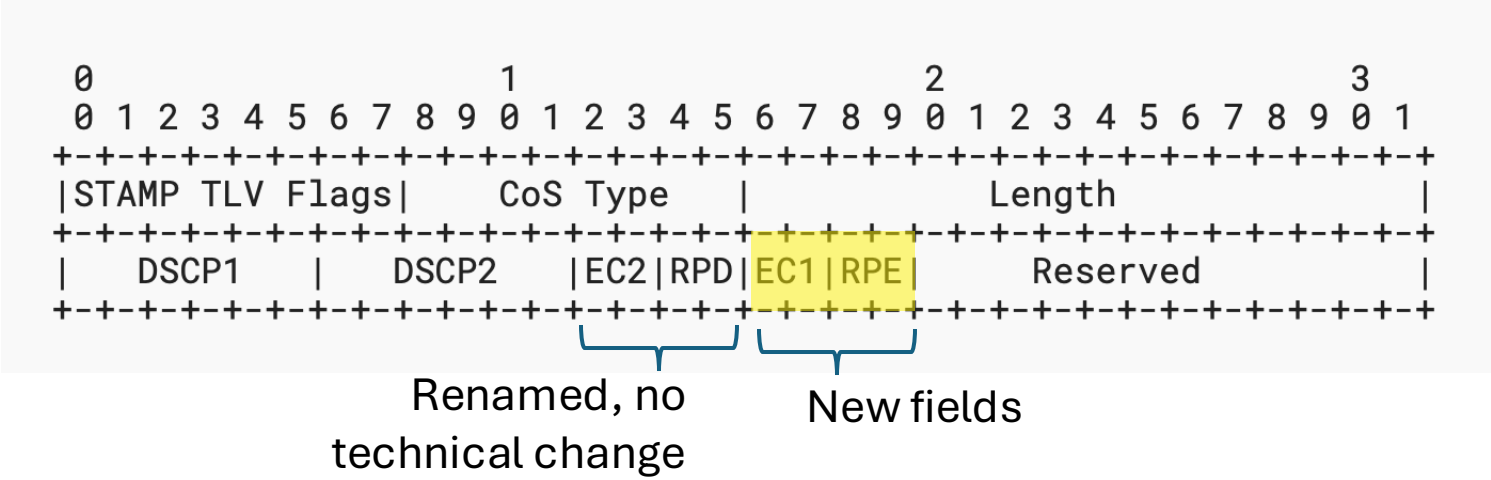
- IETF122
  - draft-white-ippm-stamp-ecn proposed a new STAMP TLV for this purpose
  - Presented at IPPM & TSVWG
  - Good engagement and interest
- Mailing list discussion
  - Several posts in favor of this proposal
  - draft-mirsky-ippm-stamp-cos-ext proposed an alternative:
    - update the existing CoS TLV in a backward-compatible way
  - Several inputs from the WG on the details of the text
  - Xiao Min proposed a different syntax to avoid an ambiguity
- Decided to develop a joint draft adopting the mailing list proposals

Existing Class of Service TLV



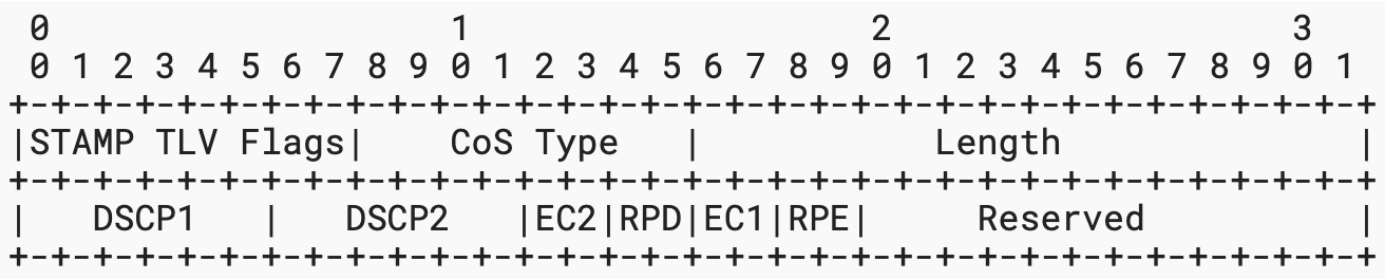
- DSCP1: DSCP value intended by the session-sender to be used as the DSCP value of the reflected test packet¶
- DSCP2: received value in the DSCP field at the ingress of the session-reflector¶
- ECN: received value in the ECN field at the ingress of the session-reflector¶
- RP (reverse path): a session-sender **MUST** set the value of the RP field to 0 on transmission¶

Proposed Update



- EC1: ECN value intended by the Session-Sender to be used as the ECN value of the reflected test packet.
- RPE (reverse path ECN): two-bit field indicating whether the Session-Reflector used EC1 as the ECN value of the reflected test packet; a Session-Sender **MUST** set the value of the RPE field to 0b00 on transmission.

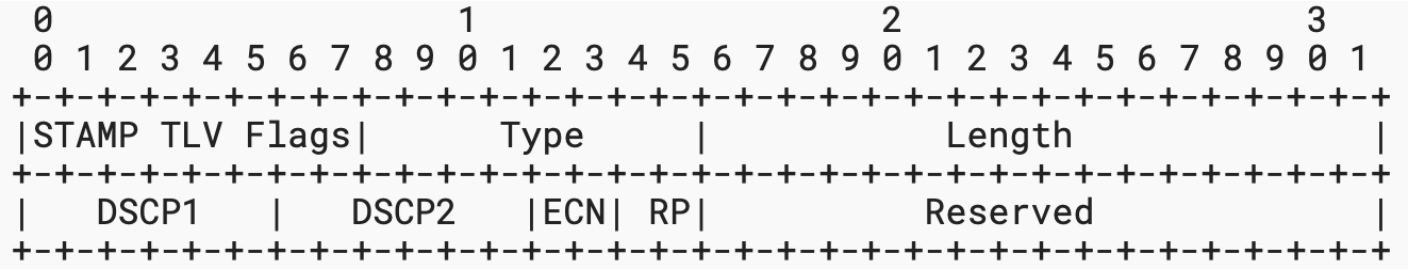
RPD and RPE Fields



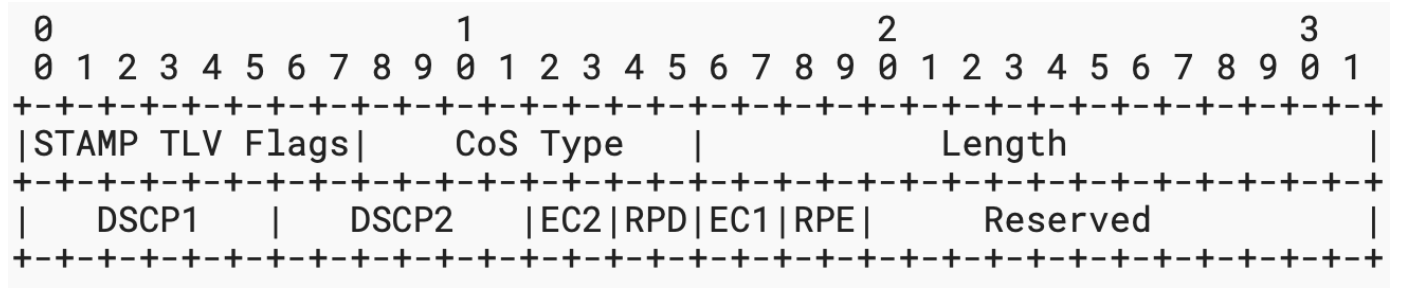
- Session-Sender
  - Sets both Fields to 0b00 on transmission
- Session-Reflector
  - RPD (Return Path DSCP) [no change]
    - Return 0b00 if IP DSCP is set to DSCP1 value
    - Return 0b01 if unable to set IP DSCP to DSCP1
  - RPE (Return Path ECN) [new field]
    - Return 0b01 if IP ECN is set to ECN1 value
    - Return 0b00 otherwise.
- Note, by necessity RPD and RPE use different syntax

Backward Compatibility (1)

old



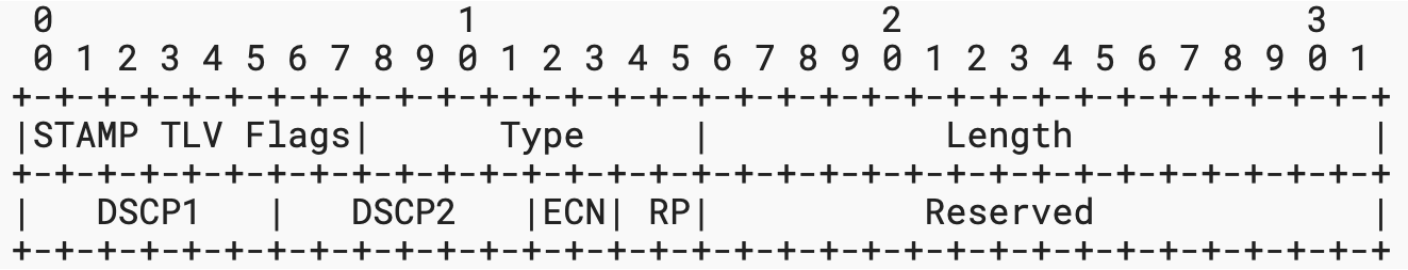
new



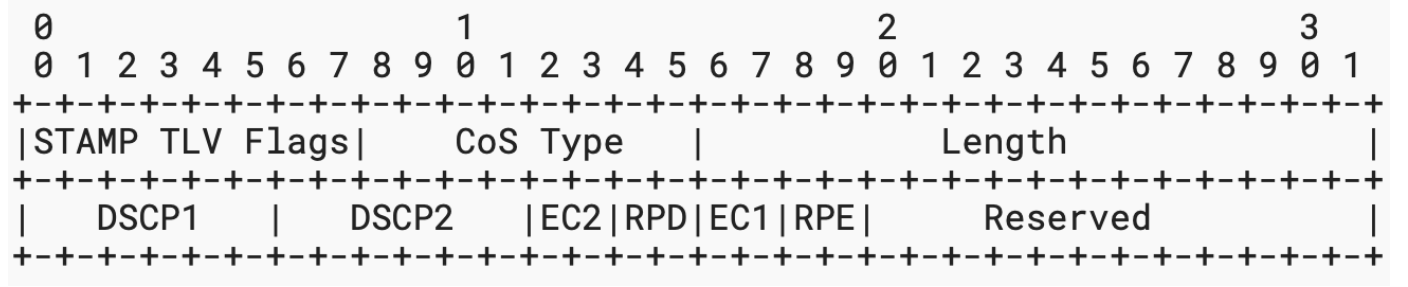
- New Session-Sender, Old Session-Reflector:
  - New Session-Sender could send a value in the EC1 field.
  - Old Session-Reflector :
    - Is required (in RFC 8972) to ignore the “reserved” field (incl. EC1 & RPE)
    - IP ECN value is undefined (likely 0b00)
    - Would return 0b00 in RPE
  - New Session-Sender:
    - Would see RPE == 0b00, interpret as EC1 not used by Session-Reflector

Backward Compatibility (2)

old



new



- Old Session-Sender, new Session-Reflector
  - Old Session-Sender is required to send 0x0000 in Reserved field
    - i.e. EC1 = RPE = 0b00
  - New Session-Reflector:
    - Sees EC1 set to 0b00, indicating to use IP ECN = 0 (default for IP anyway).
    - Would return 0b01 in RPE indicating that EC1 was used
  - Old Session-Sender:
    - Would ignore RPE as it is a reserved field (per RFC8972)

Implementation Status

- Implementation of the current definition (per this draft) is available in https://github.com/cerfcast/teaparty

- Other implementations?

- Interop testing at IETF124?

Consider Adoption?

- Verbal consensus during/after last IETF that this feature is important.
- Good participation in the discussion on the list to refine the proposal.
- Will the WG consider adopting this draft?