

Update of the STAMP CoS Extension for ECN

[draft-ietf-ippm-stamp-cos-ecn-00](#)

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IPPM @ IETF125

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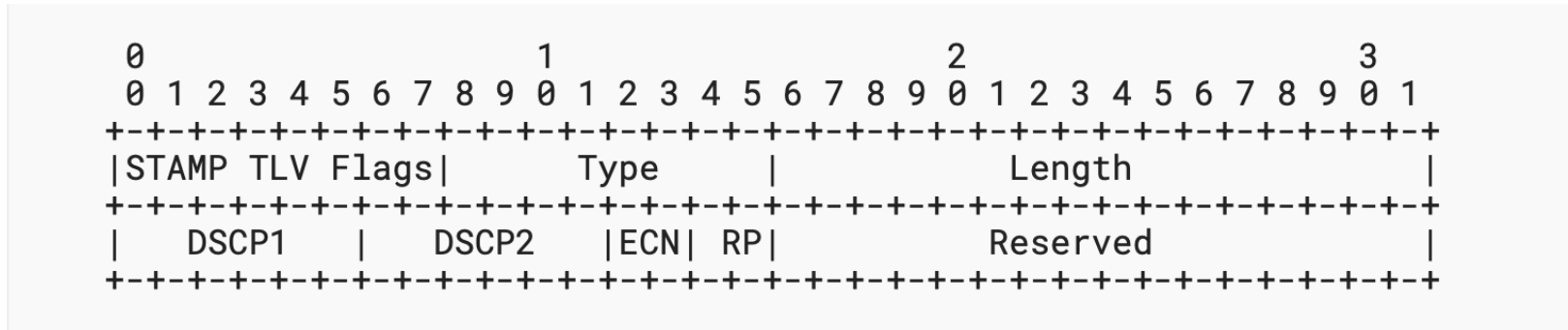
Purpose

- Define a STAMP Extension (TLV) to enable bi-directional monitoring 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 monitoring, but only reliably enables downstream ECN monitoring (SS->SR)

Current Status

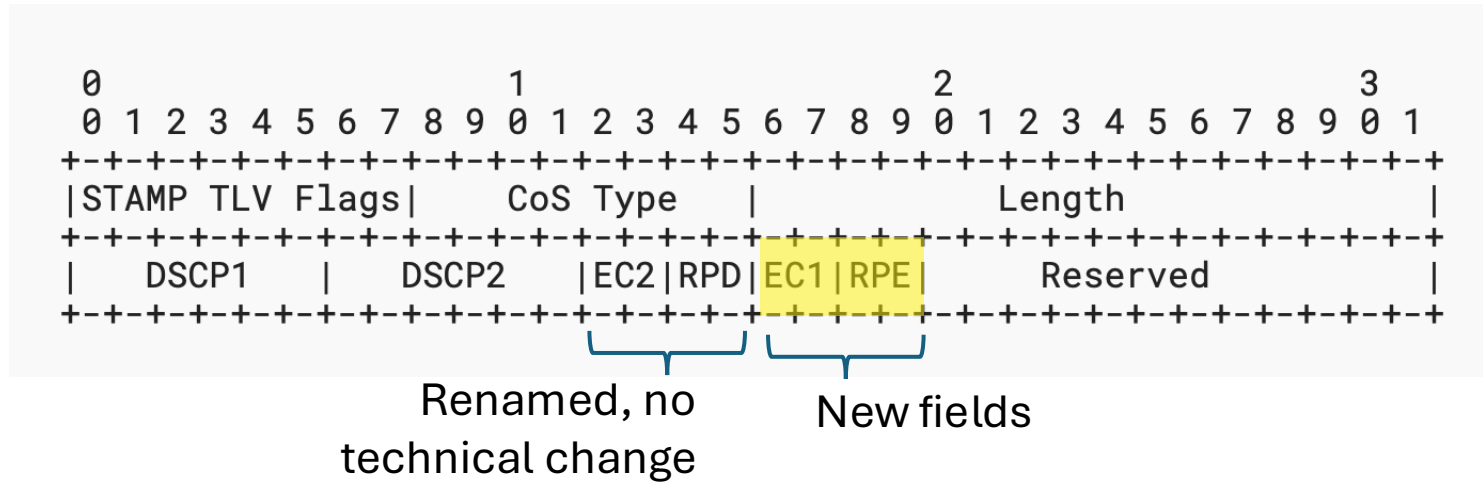
- IETF122 timeframe
 - [draft-white-ippm-stamp-ecn](#) proposed a new STAMP TLV for this purpose
 - [draft-mirsky-ippm-stamp-cos-ext](#) proposed an alternative
 - Xiao Min proposed a different syntax to avoid an ambiguity
- IETF123 timeframe
 - Presented a joint draft adopting the mailing list proposals
 - Added a discussion of congestion response
- IETF124 timeframe
 - Discussed and resolved a corner-case situation
 - A couple of other comments were received and addressed
 - Call for Adoption conducted & draft was adopted by IPPM

Previous Class of Service TLV (RFC 8972)



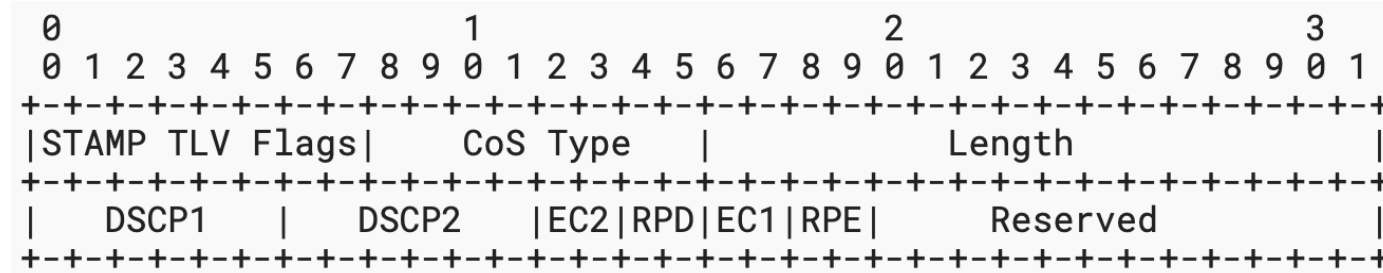
- DSCP1: DSCP value intended by the session-sender to be used as the DSCP value of the reflected test packet
- DSCP2: received value in the DSCP field at the ingress of the session-reflector
- ECN: received value in the ECN field at the ingress of the session-reflector
- RP (reverse path): a session-sender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

New Class of Service TLV (this draft)



- 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.

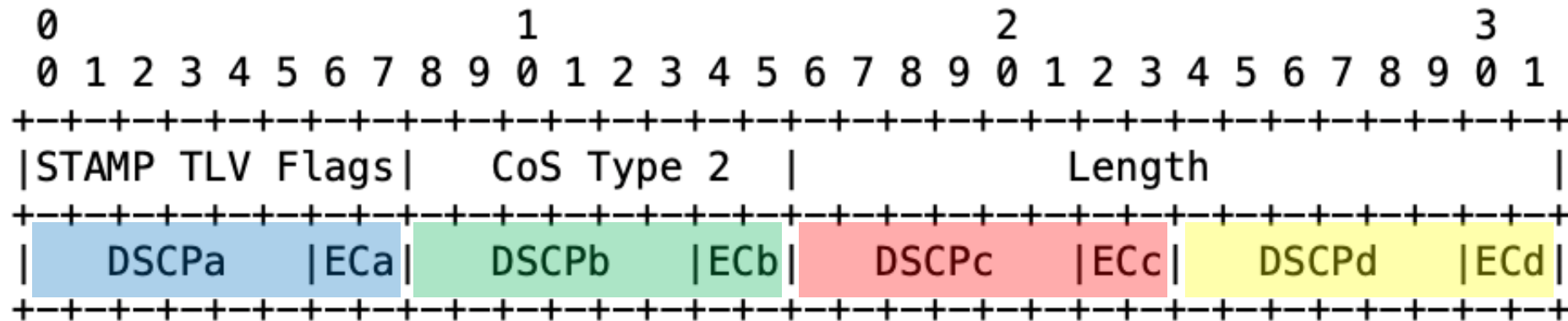
RPD and RPE Fields



- 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 0b00 (“old” Session-Reflector)
 - Return 0b11 (“new” Session-Reflector, if able to set IP ECN = EC1)
 - Return 0b10 (“new” Session-Reflector, if not able to set IP ECN = EC1)
- Note, by necessity RPD and RPE use different syntax

Alternative Proposal

- During the Call for Adoption, an alternative TLV “CoSv2” was proposed:



- Not backward compatible, but simpler structure:
 - **DSCPa|ECa** = intended forward DSCP+ECN values (set by SS)
 - **DSCPb|ECb** = received forward DSCP+ECN values (set by SR)
 - **DSCPc|ECc** = intended reverse DSCP+ECN values (set by SS)
 - **DSCPd|ECd** = applied reverse DSCP+ECN values (set by SR)

Pros/Cons of CoSv2

- Pros
 - Self-contained measurement record.
 - SS does not need to maintain outbound information
 - On-path observer can understand the exchange
 - When the DSCP or ECN request from SS is not followed, SR can indicate exactly which return values it used (as opposed to just a flag)
 - Better alignment with IP header field ordering
- Cons
 - No backward compatibility with original CoS (RFC8972)
 - SS would either need state to know which type to use, or send both TLVs (and define SR behavior upon receiving both TLVs).
 - SR might need to support both TLVs
 - No Reserved bits
 - Consumes another TLV type (227 available)

Next Steps / Implementation Status

- WG needs to decide whether to switch to CoSv2 proposal.
- Implementation of the current definition (per the draft) is available in <https://github.com/cerfcast/teaparty>
- Interop testing at IETF126 Hackathon?