RSVP Extensions For Re-optimization of Loosely Routed Point-to-Multipoint Traffic Engineering Label Switched Paths (LSPs)

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Outline

- **Requirement**
- **Recent Update**
- **Next Steps**

Requirement

- **P2MP-TE LSP [RFC4875]**
- **Loosely routed LSP re-optimization [RFC4736]**
- **As per P2MP-TE [RFC4875], an LSR may:**
  - **Re-optimize the entire P2MP-TE LSP by resignaling all its S2L sub-LSP(s), i.e. all destinations.**
  - **Combine multiple Path/PathErr messages using S2L sub-LSP descriptor-list to alleviate scale issue.**
  - **A combined message with large number of S2L sub-LSPs in the descriptor-list may be fragmented by the sender and arrive out of order at the receiver.**

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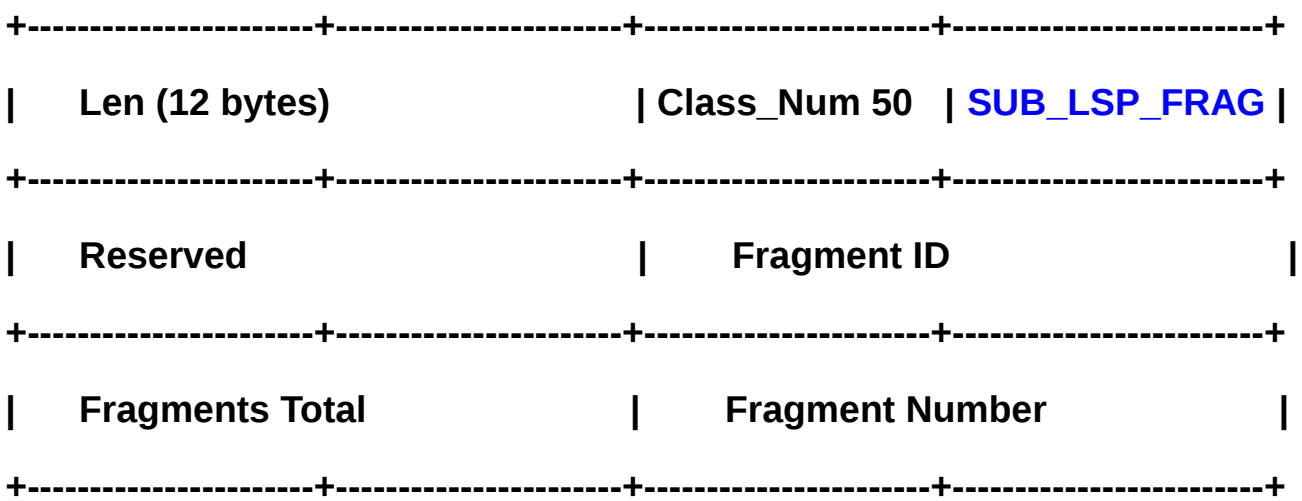
S2L_SUB_LSP_FRAG Object Format

- S2L_SUB_LSP_FRAG: Class-Num 50, C-Type TBA by IANA



- **Fragment ID:** 16-bit integer in the range of 1 to 65535. This value is incremented for each new RSVP message that needs to be fragmented.
- **Fragments Total:** 16-bit integer in the range of 1 to 65535. This value indicates the number of fragments sent for the given RSVP message.
- **Fragment Number:** 16-bit integer in the range of 1 to 65535. This value identifies the specific fragment of the original packet.
- The S2L_SUB_LSP_FRAG Object is added before adding the S2L_SUB_LSP_IPv4 or S2L_SUB_LSP_IPv6 Object in the fragmented message.

Fragmented Path Messages with S2L_SUB_LSP_FRAG Object

<Path Message Frag-1> ::= <Common Header> [<INTEGRITY>]
<SESSION> <RSVP_HOP>
[<EXPLICIT_ROUTE>] ….
<sender descriptor>
<S2L sub-LSP descriptor list-1>]

<Path Message Frag-N> ::= <Common Header> [<INTEGRITY>]
<SESSION> <RSVP_HOP>
[<EXPLICIT_ROUTE>] ….
<sender descriptor>
<S2L sub-LSP descriptor list-N>]

Format of S2L sub-LSP descriptor-list:

<S2L sub-LSP descriptor list> ::= <S2L_SUB_LSP_FRAG> <S2L sub-LSP descriptor>
[<S2L sub-LSP descriptor list>]
<S2L sub-LSP descriptor> ::= <S2L_SUB_LSP>
[<P2MP SECONDARY_EXPLICIT_ROUTE>]

S2L_SUB_LSP_FRAG Object Usage

- **LSR adds optional S2L_SUB_LSP_FRAG Object with a sub-set of S2L sub-LSP descriptor list(s) in each Path/PathErr message fragment.**
  - **A mid-point LSR SHOULD wait to accumulate all fragments and put them in-order before attempting to re-evaluate preferable path when a Path message with "Path Re-evaluation Request" is received.**
  - **An ingress node SHOULD wait to accumulate all fragments and put them in-order before attempting to trigger re-optimization when a PathErr message with "Preferable Path Exists" is received.**

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Next Steps

- **Document is updated to address review comments from Pavan**
- **Welcome comments from the WG on the document especially on the changes presented today**

- **IPR poll was completed for the WG LC**
- **Requesting WG LC**

Thank You.