draft-li-ospf-ospfv3-srv6-extensions-04

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Overview

• This draft specifies OSPFv3 protocol extensions for SRv6
• It was first published before IETF 101 London and was referenced during the first ISIS SRv6 presentation in London
• draft-ietf-lsr-isis-srv6-extensions has been adopted by WG
• draft-li-ospf-ospfv3-srv6-extensions-04 is fully aligned with draft-ietf-lsr-isis-srv6-extensions-02
• This presentation is focussed on the OSPFv3 protocol encoding aspects
Key Components

• Advertisement of SRv6 Capabilities & Algorithm participation
  • New TLV for SRv6 Capabilities

• Advertisement of SRv6 specific MSD types
  • New MSD types for SRv6

• Advertisement of SRv6 Locator and SIDs associated with node
  • New LSA type for SRv6 Locator
  • New TLV for SRv6 Locator & its attributes
  • New sub-TLVs for SRv6 SIDs and its attributes

• Advertisement of SRv6 SIDs associated with adjacencies
  • New Link Attribute sub-TLVs for SRv6 SIDs for End.X behaviors
SRv6 Capabilities

• New top-level TLV of OSPFv3 Router Information LSA
• Indicates node’s support for SRv6 and its capabilities

• Existing SR Algorithm TLV indicates algorithm participation/support
MSD Types for SRv6

• New MSD types defined for SRH operations and SRv6 capabilities in draft-ietf-lsr-isis-srv6-extensions
  • Defined under the common IGP MSD Types registry
• OSPFv3 shares and uses the same types as ISIS
• MSD types applicable at node and link level
SRv6 Locator LSA

• SRv6 Locators are similar to prefix reachability advertisement but carry algorithm context and have SRv6 SIDs under their subnet
• New SRv6 Locator LSA type introduced in OSPFv3 to carry the locator and all SRv6 SIDs associated with a node under it

• Does not get mixed up with the usual OSPF LSA types for normal prefix reachability
• The scope is determined by the type of locator – intra or inter-area or external
SRv6 Locator TLV

- Used for advertisement of the node’s SRv6 Locator in the SRv6 Locator LSA
- Route Types
  - Intra-area
  - Inter-area
  - External
  - NSSA External
- Flags
  - Metric associated with the locator for specific algorithm

```
\begin{tabular}{|c|c|c|c|c|c|c|c|c|}
\hline
0 & 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 & 0 & 1 \\
\hline
\multicolumn{3}{|c|}{Type} & \multicolumn{3}{|c|}{Length} & \multicolumn{3}{|c|}{Route Type} & \multicolumn{3}{|c|}{Algorithm} & \multicolumn{2}{|c|}{Reserved} & \multicolumn{2}{|c|}{Flags} \\
\hline
\multicolumn{3}{|c|}{Metric} & \multicolumn{3}{|c|}{Locator (128 bits)} & \multicolumn{3}{|c|}{Locator cont} & \multicolumn{3}{|c|}{Locator cont} & \multicolumn{2}{|c|}{Locator cont} & \multicolumn{2}{|c|}{Sub-TLVs (variable)} \\
\hline
0 & 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 & 0 & 1 \\
\hline
\end{tabular}
```
SRv6 SIDs Associated with Node

- SRv6 SIDs associated with the node are advertised using SRv6 SID sub-TLV under their respective SRv6 Locator TLV
- E.g. End & End.OP
- Attributes of the SID may be carried as sub-sub-TLVs
- SIDs inherit the algorithm from the locator

```
0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
| Type | Length |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
| Flags | Reserved | Endpoint Behavior ID |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
|       | SID (128 bits) |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
|       | SID cont ... |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
|       | SID cont ... |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
|       | SID cont ... |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
|       | Sub-Sub-TLVs (variable) |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
```
SRv6 SIDs Associated with Adjacencies

- SRv6 SIDs associated with adjacencies are advertised via new sub-TLVs under the E-Router-Link TLV of the E-Router LSA.
SRv6 SID Structure

• New optional sub-TLV introduced for advertisement of the SRv6 SID Structure
• May be included as sub-sub-TLVs for SIDs associated with node or adjacencies

```
+---------------+---------------+---------------+---------------+
| Type | Length | LB Length | LN Length | Fun. Length | Arg. Length |
+---------------+---------------+---------------+---------------+---------------+---------------+
```
Next Steps …

• Request review and feedback from WG
• Request WG adoption