ISIS Extension to Support Transport Network Slices

draft-zch-lsr-isis-network-slicing-05
draft-peng-lsr-isis-network-slicing-srv6-00

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Purpose

• A framework of transport slices is provided in draft-nsdt-teas-ns-framework.

• A unified TN-slice identifier to indicate the topology, computing, storage resources of the dedicated virtual network and how to compute SR-BE or SR-TE path according to TN-slice Identifier combined with other criteria is defined in draft-peng-teas-network-slicing.

• These draft describes the IS-IS extensions required to distribute TN-slice Identifier (that is All in this draft) information in an AS.
Extensions

- **Router Capabilities for TN-slice Identifier**

- **Advertising TN-slice Identifier as a new TE parameter of a link**
  - Defines a new TN-slice Identifier list sub-TLV to indicate which slice the link is in.

- **Advertising TN-slice Identifier for L2 Bundle Member**
  - Defines a new L2 Bundle Member TN-slice Identifier sub-TLV of TLV-25 to advertise TN-slice Identifier for L2 Bundle Member associated with a parent L3 adjacency.

- **Advertising Segment Routing Identifiers per TN-slice Identifier**
  - **SR-MPLS**
    - Advertising prefix-SID per TN-slice Identifier
    - Advertising Adjacency-SID per TN-slice Identifier
    - Advertising LAN-Adj-SID per TN-slice Identifier
  - **SRv6**
    - Advertising Locators and End SIDs for specific TN-slice
    - Advertising SRv6 End.X SIDs and SRv6 LAN End.X SID for specific TN-slice
Router Capabilities for TN-slice Identifier

- A new sub-TLV of IS-IS Router Capability TLV-242

- Number: The Number of virtual networks.
- AII for VN: allocate different TN-slice identifier (AII) for different virtual networks. AII is used to distinguish different virtual network resources.
Advertising TN-slice ID as a new TE parameter of a link

- The TN-slice Identifier list sub-TLV

```
+-----------------+-----------------+-----------------+-----------------+-----------------+
|       0         |       1         |       2         |       3         |
+-----------------+-----------------+-----------------+-----------------+
| 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 |         |
| Type=TBD2       | Length          | Reserved        | Number          |
|                 |                 |                 |                 |
|                 |                 |                 |                 |
|                 |                 | AII for virtual |                 |
|                 |                 | networks 1      |                 |
|                 |                 |                 |                 |
|                 |                 |                 |                 |
|                 |                 | ......           |                 |
|                 |                 | AII for virtual |                 |
|                 |                 | networks N      |                 |
|                 |                 |                 |                 |
```

- Number: The Number of virtual networks.
- AII for VN: allocate different TN-slice identifier (AII) for different virtual networks. AII is used to distinguish different virtual network resources.
- This sub-TLV SHOULD appear once at most in each TLV. Indicates that a link MAY belong to multiple virtual networks.
Advertising TN-slice Identifier for L2 Bundle Member

- A new L2 Bundle Member TN-slice Identifier sub-TLV of TLV-25 (L2 Bundle Member Attributes) [RFC8668].
  - advertise TN-slice Identifier for L2 Bundle Member associated with a parent L3 adjacency which is Point-to-Point.
Advertising MPLS SIDs per TN-slice Identifier

- Advertising prefix-SID per TN-slice Identifier
  - A new extension of the existing Prefix-SID [RFC8667].

- Advertising Adjacency-SID per TN-slice Identifier
  - A new extension of the existing Adjacency Segment Identifier (Adj-SID) Sub-TLV [RFC8667].
Advertising MPLS SIDs per TN-slice Identifier

- Advertising LAN-Adj-SID per TN-slice Identifier
  - A new extension of the existing Adjacency Segment Identifier (LAN-Adj-SID) Sub-TLV [RFC8667].
Advertising SRv6 Locators for specific TN-slice Identifier

- Advertising SRv6 Locator per TN-slice

  Followed by one or more locator entries of the form:

  | Type | Length |
  ++++++++

  SRv6 Locator per TN-slice format

  | 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 |
  +----------------------------------

- Advertising SRv6 End SID for specific TN-slice
  - Reuse SRv6 End SID sub-TLV(defined in draft-ietf-lsr-isis-srv6-extensions)
  - SRv6 End SIDs inherit the AII from the parent locator.
Advertising SRv6 Adjacency SIDs for specific TN-slice Identifier

- Advertising SRv6 End.X SID per TN-slice sub-TLV

- Advertising SRv6 LAN End.X SID per TN-slice sub-TLV
Purpose

• This document describes how to create Flex-algo with L2bundles scenario.
What’s about the latest version?

• Remove L2 Bundle Member EAG Extension.
• Use L2 Bundle Member Attributes TLV/sub-TLV with traditional "Administrative group (color) Sub-TLV" and "Extended Administrative Group Sub-TLV“ (RFC8668) based on discussions on LSR mailist.
• Change the document to informational.
IGP L2 Bundle Member EAG advertisement

• ISIS L2 Bundle Member EAG advertisement
  – "Administrative group (color) Sub-TLV" and "Extended Administrative Group Sub-TLV“ MAY be contained in ISIS TLV-25
  – Advertise multiple L2 Bundle Attribute TLV (ISIS TLV-25) with each specify a single bundle member.

• OSPF L2 Bundle Member EAG advertisement
  – "Administrative group (color) Sub-TLV" and "Extended Administrative Group Sub-TLV“ MAY be contained in "L2 Bundle Member Attributes sub-TLV" .
  – Advertise "L2 Bundle Member Attributes sub-TLV" per L2 Bundle Member.
Next Step

• Welcome questions, comments.
• Welcome to fulfill this work together

Thank you!