Using Flex-Algo for Segment Routing based VTN

draft-zhu-lsr-isis-sr-vtn-flexalgo-04

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• A VTN is a virtual underlay network with the required topology and resource characteristics
  • Introduced in `draft-ietf-teas-enhanced-vpn`
  • In the context of network slicing, this concept is similar to the Network Resource Partition (NRP) defined in draft-ietf-teas-ietf-network-slices

• Resource-aware SR SIDs represent different sets of resources allocated on network segments for packet processing
  • Can be used to build SR VTNs as described in `draft-ietf-spring-sr-for-enhanced-vpn`

• This document describes the mechanism of applying Flex-Algo to build SR VTNs
  • Applicable to networks where the required number of VTN is small
Mechanism in this draft

• Each VTN is associated with an independent Flex-Algo
  • Flex-Algo ID is reused as the control plane identifier of VTN

• Use Flex-Algo to describe the topology constraints of a VTN
  • Can be applied to the default topology or a logical topology
  • Algorithm-specific SR-MPLS SIDs are advertised based on IS-IS SR-MPLS extensions defined in RFC 8667
  • Algorithm-specific SRv6 Locators/SIDs are advertised based on IS-IS SRv6 extensions defined in draft-ietf-lsr-isis-srv6-extensions

• Use Flex-Algo + L2 bundle to advertise the TE attributes associated with different VTNs
  • Details are on the next slide
Mechanism in this draft (cont.)

- Flex-Algo + L2 bundle to advertise the TE attributes associated with different VTNs
  - The L2 bundle could be a bundle of layer-2 physical or virtual member links
  - A new flag "E" (Exclusive) is defined in the flag field of the Parent L3 Neighbor Descriptor in TLV 25
    - When the E flag is set, it indicates each member link is used exclusively for the associated VTN, and load balancing is disabled
  - The correlation between a Flex-Algo and the layer-2 member links is based on the (Extended) Admin Group (i.e. color)
    - Layer-2 member links of a VTN are configured with a unique color, which is included in the corresponding FAD
    - The Admin Group of the parent layer-3 link is set to the union of the colors of its layer-2 member links
  - The TE attributes of the layer-2 member links are advertised based on RFC 8668
Updates in Recent Revisions

• Solves the comments received online and offline

• Clarifies the role of the “E” Flag in the L2 bundle TLV

• Clarifies the correlation mechanism between Flex-Algo and the layer-2 member links

• Polish the descriptions about the forwarding plane behaviors on algorithm-specific prefix-SIDs and adj-SIDs associated with a VTN

• Some editorial changes
Next Steps

• The mechanism and content is stable

• Authors would like to ask for WG adoption of this document
Thank You