Using Flex-Algorithm for SR based NRP

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• Network Resource Partition (NRP) is a collection of network resources allocated on a set of links in the underlay network
  • The NRP concept is introduced in RFC 9543 (IETF Network Slice Framework)
  • An NRP can be used to support enhanced VPN or network slice services

• Resource-aware SR SIDs represent subsets of resources allocated on network segments for packet processing
  • Can be used to build SR based NRPs with the required topology and network resource attributes

• In some network scenarios, the number of required NRPs is relatively small
  • Each NRP can be associated with a unique Flex-Algorithm for constraint-path computation

• This document proposes a mechanism to advertise information of SR based NRPs using IGP Flex-Algo and IGP L2 bundle
  • Flex-Algorithm is used to specify the topology constraints of the NRP
  • IGP L2 bundle is used to specify the set of link resources and attributes associated with the NRP
Proposed Mechanisms

• Advertisement of NRP Topology Attributes
  • Each NRP is associated with a unique Flex-Algo
    • The Flex-Algo ID can be used to identify an NRP in control plane
  • The topology of an NRP can be described using the associated Flex-Algo
  • SR-MPLS or SRv6 resource-aware SIDs associated with the Flex-Algo can be used for NRP-specific traffic forwarding

• Advertisement of NRP Resource Attributes
  • The NRP resource attributes can be used by network controller or ingress nodes for SR-TE path computation in an NRP
  • The partition of link resources can be seen as virtual or physical member links of a layer-3 link
  • IGP L2 bundle is used to advertise the link resource related attributes of NRPs
    • Correlation of an NRP (Flex-Algo) with the bundle member links is achieved using Admin Group (color)
    • A new “E” flag in L2 bundle TLV is used to indicate that the member links are exclusively used for traffic of the corresponding NRP
Updates Since Last Presentation

• According to the consensus in TEAS WG, the term VTN has been replaced by NRP to align with the network slice framework and enhanced VPN framework documents

• Clarifies the scenarios where the proposed approach applies

• Further clarifies the usage of the “E” Flag

• Refines the scalability considerations

• Some editorial changes
Next Steps

- The content of this document has been stable

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