SRv6 for Inter-Layer Network Programming

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Background Recap

• Operators usually have a multi-layered network, the layer-3 is normally IP, while different technologies can be used in layer-2 and below
  • Cross-layer network planning and optimization is expected for better efficiency and resiliency
• SRv6 enables network programming by encoding network instructions in IPv6 packet header
  • Currently only the network instructions related to IP packet layer are defined
  • The SRv6 network programming concept can be further extended for inter-layer network integration
• This document describes the typical use cases of inter-layer network integration, and proposes SRv6 based mechanisms for inter-layer network programming
  • A new SRv6 behavior is defined to instruct a node to send packet through an (non-IP) underlay link or connection
SRv6 End.XU Behavior

• Endpoint with Underlay cross-connect
  • A variant of End.X
  • SID instance of this behavior is associated with an underlay interface, which connects to one or more underlay links or connections
  • The line S15 from the End processing is replaced by the following

  S15. Send the packet through one of the underlay links associated with the underlay interface identified by S
Updates since Last Presentation

• Elaborates the reason of introducing End.XU as a variant of End.X
  • End.X is defined to “send packet via one of a group layer-3 adjacencies”, the behavior is similar
  • The underlay connections (e.g. MTN paths, ODUk or DWDM connections) can be unidirectional, which
does not meet the bidirectional check for a functional layer-3 adjacency
  • Operators may want these underlay connections being invisible in L3 topology, so that they can only
  be used by a controller for cross-layer traffic engineering for specific types of services
  • Endpoints of an underlay connection may reside in different areas or domains, which makes the
  establishment of layer-3 adjacency difficult
• Clarifies the possible mechanisms of obtaining layer-2 information required for packet
  encapsulation
  • mechanisms such as static Neighbor Discovery (ND) Cache can be used
• Some editorial changes to improve readability
Next Steps

• This document is now in a good shape, all the received comments are addressed

• Operators have interests to deploy it in SRv6 networks

• Request for WG adoption
Thank You