

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