IGP Extensions for Segment Routing
Service Segment

draft-lz-lsr-igp-sr-service-segments-02

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Background

- SR service programming is described in *draft-ietf-spring-sr-service-programming*
  - achieve service function chaining (SFC) in SR-enabled MPLS and IPv6 networks
  - associate an service (FW, LB, DPI, etc) with an SID
  - an SR-unaware service is associated with a service segment instantiated on the SR proxy

- BPG-LS extensions are specified in *draft-dawra-idr-bgp-ls-sr-service-segments*
  - SR-C can receive BGP-LS updates to discover topology

- This document defines IGP (IS-IS, OSPFv2, OSPFv3) extensions for service segments
  - use IGP to advertise the SF information intra AS
  - definitions of many fields are the same as *draft-dawra-idr-bgp-ls-sr-service-segments*
IS-IS Extensions

- new sub-sub-TLVs for SRv6 End SID sub-TLV and SR-MPLS Prefix-SID Sub-TLV
  - Service Chaining (SC) TLV
    
    0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1
    +-----------------------------------------------+
    | Type | Length | Service Info |
    +-----------------------------------------------+
    | Flags | Traffic Type | RESERVED |
  - Traffic Type: indicates if Service Function is IPv4 or IPv6 or L2 Ethernet Capable

    0 1 2 3 4 5 6 7 0 1 2 3 4 5 6 7
    +-----------------------------------------------+
    | P FLAG | Service Type |
    +-----------------------------------------------+
    | Service Info Field |
  - Service Info Field
    - Service Type: categorizes the service function type, such as "Firewall", "Load Balance" etc.
    - P Flag: indicates the SR proxy Type
      
      0000: SR-aware function.
      0001: Static proxy.
      0010: Dynamic proxy.
      0011: Masquerading proxy (for SRv6 only)
      0100: Shared memory proxy.
      Other values are reserved.

P Flag is mainly defined for SR-MPLS.

In SRv6, useful in situations like:
- the proxy of certain type cannot be associated with a network programming function
- the user want to define a new type of proxy for private use
IS-IS Extensions

- new sub-sub-TLVs for SRv6 End SID sub-TLV and SR-MPLS Prefix-SID Sub-TLV

  - Opaque Metadata (OM) TLV

    - Opaque Type: 8-bit field. Only publishers and consumers of the opaque data are supposed to understand the data.
    - Flags: 8 bit field. Bits SHOULD be 0 on transmission and MUST be ignored on reception.
    - Value: Variable Length. Based on the data being encoded and length is recorded in length field.

- encode vendor specific information
- same as draft-dawra-idr-bgp-ls-sr-service-segments

- OSPFv2 and OSPFv3 extensions are similar
Next Steps

• Request feedbacks and comments
Thank You!