Signaling MSD (Maximum SID Depth) using BGP-LS

draft-tantsura-idr-bgp-ls-segment-routing-msd-04

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Signaling MSD Using BGP-LS

- For a controller/PCE to know various nodes/links MSD "Maximum SID Depth" of the node or link where SR tunnel exits over – ingress node/node expanding binding SID
- A controller/PCE should never use a tunnel with a label depth exceeding that supported by a node/link
  - Ingress node != BGP-LS or PCEP speaker

- PCEP SR extensions [I-D.ietf-pce-segment-routing] has defined MSD, to signal in SR PCE Capability TLV, METRIC Object, however requires:
  - PCEP session with the node
  - Signals only node MSD

- MSD values are advertised through OSPF/ISIS as defined in

- Do not confuse with RLD - Readable Label Depth as defined in [I-D.ietf-mpls-spring-entropy-label]
How?

Through new TLV in BGP-LS (RFC 7752) Node NLRI and Link NLRI

- MSD Supported by Node
  - Node MSD is encoded in a new Node Attribute TLV, as defined in [RFC7752]

<table>
<thead>
<tr>
<th>Type</th>
<th>Length</th>
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<tbody>
<tr>
<td>++++++++++++++++++++++++</td>
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<tr>
<td>Sub-Type and Values...</td>
<td></td>
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</tbody>
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Node MSD TLV

- Type: from BGP-LS Node Descriptor, Link Descriptor, Prefix Descriptor, and Attribute TLVs registry
  - Code Point (TBD) Suggested Value 1050 (To be assigned by IANA)
- Value: Contains
  - Sub-Types (as defined in IGP drafts) with Sub-Type 1 as Base MSD
    - Value represented SHOULD be the lowest value that node can support
    - Future sub-types to characterize the MSD type would be added later
MSD Supported on a Link

- Link MSD is encoded in a New Link Attribute TLV [RFC 7752]

```
0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
| Type | Length |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
| Sub-Type and Values.. |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
```

Link MSD TLV

- Type: from BGP-LS Node Descriptor, Link Descriptor, Prefix Descriptor, and Attribute TLVs registry
- Code Point (TBD) Suggested Value 1110 (To be assigned by IANA)
- Value: 0-254.
  - Sub-Types (as defined in IGP drafts) with Sub-Type 1 as Base MSD
  - Future sub-types to characterize the MSD type would be added later
- This sub-TLV is optional
Next Steps:

- IGP drafts are working group documents in respective WG’s and we plan to request WGLC
- Requested early allocation to IANA
- Request WG Adoption for BGP draft

Thank you!