draft-trr-bess-bgp-srv6-args-01

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Background

• During implementation and interop of BGP Services for SRv6 (RFC 9252) we found that:
  • The specifications were not detailed enough for End.DT2M signalling
  • Certain ambiguities needed to be clarified
  • Examples needed for more clarity
• An incorrect assumption needed to be addressed
  • For End.DT2M imposition, the procedure specified in RFC9252 is to perform OR-ing of SID advertised in RT3 and ARG advertised in RT1
  • However, this is workable only when the SID structures signalled via the two routes are identical
  • Generic mechanism is to pick ARG from RT1 and put it after LOC+FUNC in the SID advertised via RT3

This draft proposes to update RFC9252 for the procedures related to the signalling of EVPN Route Types 1 & 3 with the End.DT2M behavior
Purpose of SID Advertisements with Route Types

• Ethernet ES-AD Route Type 1 (with End.DT2M)
  • To provide Arg.FE2 when using ESI Filtering and the size of the ARG

• IMET Route Type 3 (with End.DT2M)
  • To provide LOC+FUNC parts of the SID
  • To indicate support for receiving Arg.FE2, the ARG size, and ARG position in the SID to be constructed
### Example: With ESI Filtering

<table>
<thead>
<tr>
<th>Ethernet AD-ES Route Type 1</th>
<th>IMET Route Type 3</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Route Type 1:</strong></td>
<td><strong>Route Type 3:</strong></td>
</tr>
<tr>
<td>&lt; NLRI&gt;</td>
<td>&lt; NLRI&gt;</td>
</tr>
<tr>
<td>&lt; other attrs &gt;</td>
<td>&lt; other attrs &gt;</td>
</tr>
<tr>
<td>BGP Prefix SID Attr:</td>
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<tr>
<td>SRv6 L2 Service TLV:</td>
<td>SRv6 L2 Service TLV:</td>
</tr>
<tr>
<td>SRv6 SID Information sub-TLV:</td>
<td>SRv6 SID Information sub-TLV:</td>
</tr>
<tr>
<td>SID: 0:0:0:aaaa:</td>
<td>SID: 2001:db8:1:fbd1:</td>
</tr>
<tr>
<td>Behaviour: End.DT2M</td>
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</tr>
<tr>
<td>SRv6 SID Structure sub-sub-TLV:</td>
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</tr>
</tbody>
</table>

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Example: Without ESI Filtering (or no multi-homing)

**Ethernet AD-ES Route Type 1**

Route Type 1:
\(<\text{NLRI}\>
\(<\text{other attrs}\>)
BGP Prefix SID Attr:
   SRv6 L2 Service TLV:
      SRv6 SID Information sub-TLV:
         SID: ::
         Behaviour: End.DT2M
      SRv6 SID Structure sub-sub-TLV:
         \( LBL: 32, LNL: 16, FL: 16, AL: 0, TPOS-L: 0, TPOS-O: 0 \)

**IMET Route Type 3**

Route Type 3:
\(<\text{NLRI}\>
\(<\text{other attrs}\>)
BGP Prefix SID Attr:
   SRv6 L2 Service TLV:
      SRv6 SID Information sub-TLV:
         SID: 2001:db8:1:fbd1::
         Behaviour: End.DT2M
      SRv6 SID Structure sub-sub-TLV:
         \( LBL: 32, LNL: 16, FL: 16, AL: 0, TPOS-L: 0, TPOS-O: 0 \)
Processing on Ingress PE to form the End.DT2M Service SID used in the packet

• Received Route Type 3 gives the LOC+FUNC and the structure of the SID
  • Check if ARG is supported (e.g., when ESI filtering is in use) via the SID Structure in RT3

• IF no support for ARG:
  • Then the encoded SID is just LOC+FUNC signalled via RT3

• Else:
  • Check for matching Route Type 1 and if has been signalled with End.DT2M behavior
  • If yes, check that the ARG Length (AL in SID Structure) in Route Type 1 match to what is advertised in Route Type 3
  • If ARG length is consistent, encode the ARG value signalled via Route Type 1 into the position of ARG as indicated by the SID structure of Route Type 3 (i.e., after the LOC+FUNC)

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Backward Compatibility

• No encoding changes
• Mostly procedural clarifications
• Interoperates with RFC9252 procedure for OR-ing of SID values between Route Types 1 & 3 as long as their SID Structures are identical
Next Steps ...

• Seek WG review and inputs

• Can we do an expedited WG adoption?
  • The need for these clarifications have been acknowledged by many WG members