BGP Request for Candidate Paths of SR TE Policies

draft-li-ldr-bgp-request-cp-sr-te-policy-01

Robin Li, Lily Li (Huawei)
Huaimo Chen (Futurewei)
Yanhe Fan (Casa)
Xufeng Liu (Volta Networks)
Lei Liu (Fujitsu)
Introduction

- Headend receives SR candidate paths by different means passively
- Controller initiated
- In some cases, headend demands controller for expected SR paths
- Similar mechanism exists in PCE
- Extend BGP to request controller for SR paths (UPDATE as request)
Tunnel Encaps Attribute contains a Tunnel Encapsulation Attribute TLV of type 15 (i.e., SR Policy TLV), which comprises a number of sub-TLVs such as Binding SID sub-TLV, preference sub-TLV, Segment List sub-TLV.

- **Tunnel Encaps Attribute (23)**
  - **Tunnel Type (15):** **SR Policy**
    - Preference sub-TLV
    - Binding SID sub-TLV
    - Explicit NULL Label Policy (ENLP) sub-TLV
    - Priority sub-TLV
    - Policy Name sub-TLV
    - ...

- **Extensions**
  - (New) Request Parameter sub-TLV
  - SR Path Attributes sub-TLV
  - Synchronization sub-TLV
  - Metric sub-TLV
  - Include Route sub-TLV
  - Load Balance sub-TLV

**Updates to Previous version**

(Extensions to SR Policy Encoding)

Information about request for SR paths
Updates: A new Request Parameter Sub-TLV

It specifies the request identifier (Request-ID) and other parameters for a path request.

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<tr>
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<tr>
<th>Type</th>
<th>Length</th>
<th>Flags</th>
<th>Request-ID</th>
<th>Optional sub-TLVs</th>
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Flags (16 bits): Three flag bits are currently defined as follows:

* R (Reoptimization - 1 bit): when set, it indicates that the SR path request message is for the reoptimization of an existing SR path, which is represented by a segment list Sub-TLV in the message.

* B (Bi-directional - 1 bit): when set, it indicates that the SR path request relates to bi-directional paths that has the same traffic engineering requirements including fate sharing, TE links, and other requirements (such as latency and jitter) in each direction.

* O (strict/loose - 1 bit): when set, it indicates that a loose path is acceptable. Otherwise (i.e., when cleared), it indicates that a path exclusively made of strict hops is required.
Updates: Details in Synchronization Sub-TLV

- Name change (SVEC → Synchronization)
- Request-IDs for a set of M dependent or independent SR path requests are added.

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- Request-ID No1
- Request-ID NoM

- Request-ID No1, ..., NoM: each of which uniquely identifies one of M SR path requests to be synchronized.
Updates: SR Path Attributes Sub-TLV

- Name change (LSPA → SR Path Attributes)
- Format Changes.

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+----------------------------------|
| Type   | Length   | Flags   | Reserved |
+----------------------------------|
| Include-any |
| Include-any |
| Include-all |
| Optional sub-TLVs ~ |
```

- Exclude-any: A 32-bit vector representing a set of attribute filters associated with a path any of which renders a link unacceptable.
- Include-any: A 32-bit vector representing a set of attribute filters associated with a path any of which renders a link acceptable (with respect to this test). A null set (all bits set to zero) automatically passes.
- Include-all: A 32-bit vector representing a set of attribute filters associated with a path all of which must be present for a link to be acceptable (with respect to this test). A null set (all bits set to zero) automatically passes.
Next Step

Comments