Yang model for requesting Path Computation

draft-ietf-teas-yang-path-computation-07
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Summary of changes from v06

• Added text describing in a new section 5.3
  – describing the proposed solution for open issue #49 to allow requesting path computation for protected tunnels

• No YANG modifications
  – waiting for WG feedbacks on the proposed approach
Open Issue #49: Path computation for protected tunnels (1)

• Addressing 2 different use cases:
  – the request is to compute both the working and the protection paths for a tunnel that does not exist yet
  – the request is to compute the protection path to add protection for an existing tunnel.

• Taking into account the feedbacks from previous discussions:
  – two path requests within the same RPC: one for the working path and other for the protecting path, with some association
Open Issue #49: Path computation for protected tunnels (2)

<table>
<thead>
<tr>
<th>PROS</th>
<th>Option 1 (Single Tunnel Request)</th>
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<tbody>
<tr>
<td>• tighter alignment with TE tunnel model and operations</td>
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<tr>
<td>• Implicit support of all associations of paths within a tunnel: e.g., unidir and bidir paths (issue #43)</td>
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<table>
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<tr>
<th>CONS</th>
<th>Option 2 (Two Path Requests)</th>
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<tr>
<td>• Major and heavy restructure of existing YANG model</td>
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<td>• Impacts on synchronization vector (SVEC) model unclear</td>
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<td>• Different approach than PCEP (using SVEC and ASSOCIATION objects)</td>
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• just add new attributes to the existing YANG model
• the model already supports requesting the computation of multiple paths with one RPC

• need to define new mechanisms to associate paths to be used in the same tunnel e.g. unidir and bidir paths #43
• duplication of tunnel parameters in multiple requests: e.g. source, destination, bandwidth

The proposed solution in v07 is addressing these drawbacks
Objectives of the proposal

The proposal permits:

1. associating multiple path requests intended to be used within the same tunnel

2. avoiding repeating the same set of per-tunnel parameters on all the requested paths that are intended to belong to the same tunnel
   - the server can easily understand what attributes are intended to be configured per-tunnel and what attributes are intended to be configured per-path
Basic Yang tree concept (1)

```text
+---- path-request* [request-id]
 | +---- request-id                       uint32
 | +---- (tunnel-information)?
 | | +----:(tunnel-association)
 | | | +---- (tunnel-exist)?
 | | | | +----:(tunnel-ref)
 | | | | | +---- tunnel-ref leafref
 | | | | +----:(tunnel-association-id)
 | | | | | +---- tunnel-association-id uint32
 | | | | <...
 | | | +----:(tunnel-attributes)
 | | | <...
 | +----:(tunnel-attributes)* [tunnel-association-id]
 | | +---- tunnel-association-id?          uint32
 | | <...
```

• The (tunnel-association) case, associates multiple paths by either
  - Referencing an existing tunnel: e.g., when computing the protection path to add protection for an existing tunnel
  - Referencing an entry to the new tunnel-associations list when computing multiple paths for a tunnel that does not exist yet: tunnel attributes (e.g. tunnel-name, source/destination TTP, encoding and switching-type) are provided here

• The (tunnel-association) case also provides information about the role of the path being requesting within tunnel (primary or secondary)
Basic Yang tree concept (2)

+----- path-request* [request-id]
  |   +---- request-id                      uint32
  |   +---- (tunnel-information)?
  |     |   +----:(tunnel-association)
  |     |     |     <...>
  |     |   +----:(tunnel-attributes)
  |     |     |     <...>

- The (tunnel-attributes) case provides the set of tunnel attributes (e.g. tunnel-name, source/destination TTP, encoding and switching-type) in case there is no need to associated multiple path requests (e.g., path computation for an unprotected tunnel which does not exist yet)

- The server will have all the information to know how to create a tunnel within the operational DS, when requested (alignment with the tunnel model is strengthened)
Open Issues status

• GitHub Repository
  https://github.com/rvilalta/ietf-te-path-comp utation

• Tracking Open Issues, discussions and resolutions linked to YANG model
  • Still 10 open, 5 specific for path computation RPC
    – 3 out of them can be addressed with the proposal for issue #4 9 on protected tunnel
      » #43 on bidirectional tunnels
      » #65 on bidirectional path with asymmetric path properties
    – 1 editorial (review terminology)
    – 1 pending the YANG model becoming stable
      (example of path computation request)
Next Steps

• Resolve current open issues
  – Continue cooperation with TE Tunnel model authors

• Provide guidance for technology specific augmentations
  – Synch up with OTN tunnel model authors, WSON and flex-grid tunnel authors

• Plan to request YANG doctor review at IE TF 108