Yang model for requesting Path Computation

draft-ietf-teas-yang-path-computation-05
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Summary of changes from v04

• Added optional enhancement to request the setup of a path already computed using path computation RPC:
  – The server maintain a «temporary state» within the «operational DS» for each computed path
  – The client can request the setup of a computed path creating a TE Tunnel in «running DS» with the same «tunnel name» and «path name» identifying that computed path within the «operational DS»
  – The server will setup that path, if still available.
  – An optional Transaction ID allows fast deletion of computed path state when no longer needed. A timer with default value is always set in the request to delete transient state at expiration time.

• The behavior would be similar to the stateful solution (compute-only te-tunnel) without relying on «permanent» state in the «running DS»

• Added text describing this solution in section 3.3 and 3.3.1 reflecting mailing list discussion

• Aligned Yang model to the last version of yang ietf-te-types.yang and ietf-te.yang modules

• Corrected bugs, solved issues: https://github.com/rvilalta/ietf-te-path-computation
Open Issue #61: path computation in a flat/distributed approach (1)

- Mailing list discussion about distributed path computation as per RFC5441 (BRPC)
- Use case: Multi-domain, networks are own by different operators/business units within the same operator, with no centralized orchestrator/parent controller.
Open Issue #61: path computation in a flat/distributed approach (2)

• Questions
  – Anything missing in current YANG model?
    • Or the current YANG model already supports this use case?
  – Need to describe this use case?
    • Or just clarify that the use cases in the draft are not prescriptive and that the model supports other use cases (e.g., distributed scenarios): path computation request can be used independently of architecture
Open Issue #49: Path computation for protected tunnels (1)

• We had further discussion about this issue and we agree on the requirement to have the possibility to request a computed path with protection capability.
• 2 different use cases:
  – the request is to compute both the working and the protection path for a tunnel that does not yet exists.
  – the request is to compute a protection path to protect the working path of an existing tunnel.
• Two possible alternatives for YANG model:
  – single request to compute working and protecting path related to a single tunnel
  – two requests one to compute a working path and the other for protecting path, optionally, with an association between the two requests within the same RPC
Open Issue #49: Path computation for protected tunnels (2)

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

Do we have requirements/scenarios to use only the Path Computation RPC without the TE Tunnel model?
Open Issues status

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

• Tracking Open Issues, discussions and resolutions linked to YANG model
  • 3 closed since IETF 103
  • 8 open (only 1 new since IETF 103)
    – 3 specific for path computation RPC
    – 3 are being discussed jointly with TE Tunnel
    – 1 editorial (review terminology)
    – 1 pending the YANG model becoming stable
      (example of path computation request)
• Thanks to Carlo Perocchio and Francesco Lazzeri for their continuous feedback, review comments and model enhancement proposal

• Thanks to Igor Bryskin, Dhruv Dhody, Dieter Beller and Xufeng Liu for the input to “temporary reporting path state”

• Thanks to Olivier Dugeon, Igor Bryskin, Adrian Farrel and Young Lee for discussion about “flat/distributed approach”
Next Steps

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

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