YANG Data Models for TE and RSVP

draft-ietf-teas-yang-te-08

draft-ietf-teas-yang-rsvp-07

draft-ietf-teas-yang-rsvp-te-01

code @ https://github.com/ietf-mpls-yang/te

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Agenda

• Updates to I-Ds (since IETF98)

• Open issues

• Next steps
I-D: draft-ietf-teas-yang-te-08
Summary of Changes

• Credits:
  – Thanks to Sergio Belotti, Italo Busi, Carlo Perocchio, Francesco Lazzeri et. al for their feedback and review comments
  – Thanks to multi-vendor team for the continued discussions during meetings

• High-level model changes:
  – Moved auto-bandwidth properties to te-mpls module
  – Additional path constraints
  – Per LSP oper state and path computed properties
  – In/out segment stitching properties
Update # 1
LSP path operational state

```
+-- ro lsp
  
  +-- ro operational-state? identityref

  identity lsp-path-computing {
    base lsp-state-type;
    description
    "State path compute in progress";
  }

  identity lsp-path-computation-ok {
    base lsp-state-type;
    description
    "State path compute successful";
  }

  identity lsp-path-computation-failed {
    base lsp-state-type;
    description
    "State path compute failed";
  }

  identity lsp-state-setting-up {
    base lsp-state-type;
    description
    "State setting up";
  }
```

```
+-- ro lsp
  
  +-- ro operational-state? identityref

  identity lsp-state-setup-ok {
    base lsp-state-type;
    description
    "State setup successful";
  }

  identity lsp-state-setup-failed {
    base lsp-state-type;
    description
    "State setup failed";
  }

  identity lsp-state-up {
    base lsp-state-type;
    description "State up";
  }
```
Update # 2
TE path computed computed properties state

• Models per LSP path state computed properties
  – Accumulative path-metrics
    • TE, IGP, latency, hop-count, average-delay, and other additive metrics
  – Accumulative path affinities
    • presented as bit-map values or names
  – Accumulative path SRLGs
    • presented as bit-map values or names
TE path computed state

• Models per LSP path state computed computed properties:
  – Shows for head-end/ingress LSPs
  – Shows for transit for path expanded transit LSPs
  – Path computed route/ERO
Update # 4

TE path additional constraints

- Path metric bounds, covers bounds on metric types
  - TE, IGP, latency, hop-count, average-delay, and other additive metrics
- Added hop-type for strict/loose (applies to all route-hop-types)
- Added sid-hop to covers segment-routing hop
Update # 5
Optimization criteria

• Optimization criteria
  – Optimize using standard objective function (RFC5541)
  – Optimize for a metric, or list of metrics by weight
• In case of ECMP, apply tiebreaker list criteria
  – in list order top to bottom
Update # 6

Updated resource affinity constraints

• Per RFC3209, added usage parameter to cover checks for 3 additional bit-maps:
  1. Exclude-any
  2. Include-any
  3. Include-all
Update # 7

Segment stitching constraints

- In/out segment stitching
  - candidate labels on in/out interface of tunnel termination points
- forward and reverse for bidirectional segments

<draft-ietf-teas-yang-te-08>
I-D: draft-ietf-teas-yang-rsvp-07
I-D: draft-ietf-teas-yang-rsvp-te-01
Summary of Changes

• No change to draft-ietf-teas-yang-rsvp
• Changes to draft-ietf-teas-yang-rsvp-te are mostly editorial to align with augmented TE model
Open Issue:
Migration to NMDA style

- Impact on-going existing implementation
- Impact on augmenting modules (defined in out-of-scope documents)
- Impact on state created tunnels, e.g.:
  - PCE instantiated tunnels
  - auto-created primary or bypass tunnels
  - Currently, such tunnel properties accessible under “state” branches at last level
  - NMDA proposes a having those under a state branch at the top
Next Steps

• Close on NMDA or OC-style for model

• Continue work on defining tunnel RPCs

• RSVP base/extended in I-D is stable and ready for WGLC

• Request further review and comments on other models
Thank You
TE/RSVP and MPLS YANG Modules
Structure and Relationship

ietf-te-Device.yang
ietf-te-rsvp.yang
ietf-te-sr-mpls.yang
ietf-te-pcc.yang
ietf-mpls-base.yang
ietf-otn-base.yang
ietf-rsvp.yang
ietf-rsvp-ext.yang
ietf-te.yang
ietf-te-rsvp-mpls.yang
ietf-te-as-yang-te-05

augment
To be defined
Defined
YANG module
YANG module