

YANG Data Models for TE and RSVP Tunnels and Interfaces draft-saad-teas-yang-te-00 draft-saad-teas-yang-rsvp-00

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Agenda

- Objective and scope
- Progress update
- Discussion/Next steps

Motivation

A design team spun off post IETF91 to

- Coordinate efforts and converge on a unified YANG models for TE, RSVP and RSVP-TE
- Define a modular structure for TE, RSVP and RSVP-TE YANG models
- Define submodules that hold reusable type definitions, derived types, and groupings (e.g. for packet/MPLS)

Presented
at IETF91

Proposed MPLS Yang Module Structure/Hierarchy

```
+ ietf-mpls-base.yang  
  + -- ietf-mpls-te-base.yang  
    + -- ietf-mpls-te-rsvp.yang  
    + -- ietf-mpls-tp.yang  
    + -- ietf-mpls-te-sr.yang  
  + -- ietf-mpls-static.yang  
  + -- ietf-mpls-ldp.yang
```

```
+ ietf-mpls-base-types.yang  
  |  
  + -- ietf-mpls-te-types.yang  
  + -- ietf-mpls-sr-types.yang  
  + -- ietf-mpls-ldp-types.yang
```

Base MPLS TE data model

Base MPLS RSVP-TE data
model

...

Reusable MPLS types and
groupings

Generic
models

Proposed MPLS Yang Module Structure/Hierarchy

```
+ ietf-mpls-base.yang
  + -- ietf-te.yang
    + -- ietf-te-rsvp.yang
      +-- ietf-te-mpls-rsvp.yang
      +-- ietf-te-otn-rsvp.yang
    + -- ietf-mpls-te-sr.yang
```

...

```
+ ietf-routing
  + -- ietf-rsvp.yang
```

Base TE data model

Base RSVP-TE data model

Packet/MPLS RSVP-TE
module

...

In Scope

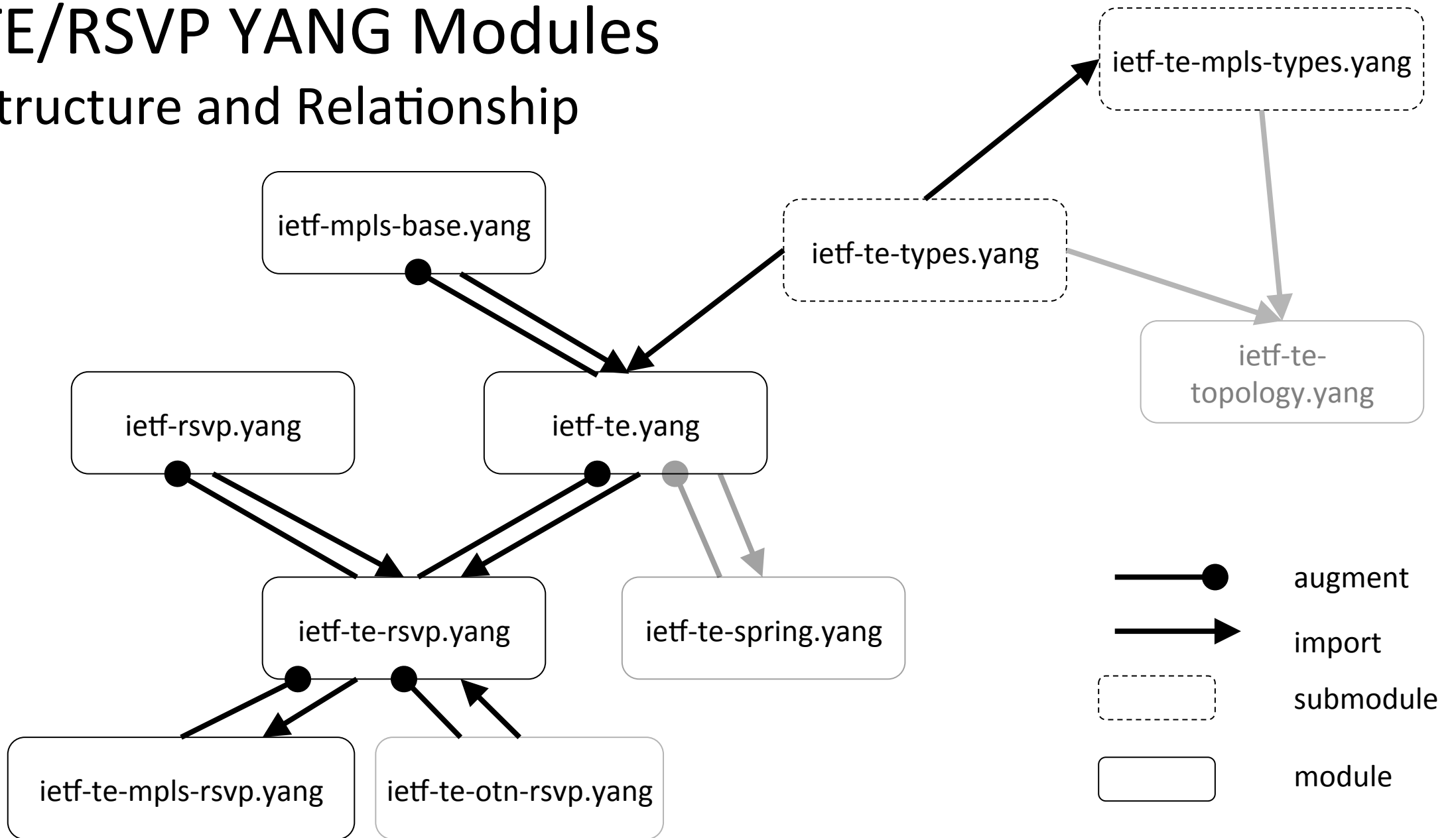
- Base TE YANG model
- Base RSVP YANG model
- Base and packet/MPLS RSVP-TE YANG model
- Extensions to Base TE for SPRING Segment-Routing TE and MPLS-TP

Progress Update

- Weekly recurring meetings since IETF91
- Work-in-progress code:
 - Maintained in Github: <https://github.com/ietf-mpls-yang>
 - May migrate to IETF work-in-progress repository: <https://github.com/YangModels/yang/> once the group decides ready
- Wiki:
<https://github.com/ietf-mpls-yang/te/wiki/MPLS-TE-YANG>

TE/RSVP YANG Modules

Structure and Relationship



TE YANG Data Model

High-level Structure

```
module: ietf-te
```

```
+te!
```

```
+--rw tunnels
```

```
...
```

```
+--rw interfaces
```

```
...
```

```
+--rw globals
```

```
...
```

```
+--ro tunnels-state
```

```
+--ro lsps-state
```

```
+--ro interface-state
```

```
+--ro global-state
```

```
rpcs:
```

```
+---x tunnels-rpc
```

```
+---x lsps-rpc
```

```
+---x global-rpc
```

```
+---x interfaces-rpc
```

```
notifications:
```

```
+---n tunnels-notif
```

```
+---n lsps-notif
```

```
+---n interfaces-notif
```

```
+---n global-notif
```

TE Data Model

TE Globals and Interfaces (config)

```
module: ietf-te
  +--rw te!
    +--rw globals
      | +--rw interface-named-admin-groups* [name]
      | ...
      | +--rw interface-named-srlgs* [name]
      | ...
      | +--rw explicit-paths* [name]
      | ...
      | +--rw path-named-constraints* [name]
      |   +--rw path-constraints
      |   ...
      |   +--rw path-selection
      |   ...
      |   +--rw path-affinities?
      |   ...
      |   +--rw path-srlgs
      |   ...
      +--rw interfaces
        | +--rw interface* [interface]
        | +--rw interface
        if:interface-ref
          | +--rw named-admin-groups*
          | +--rw named-srlgs* [named-srlg]?
          | +--rw switching-capabilities*
          | +--rw te-metric?
          | +--rw affinities
          | | +--:(admin-groups)
          | | +--:(extended-admin-groups)?
          | +--rw srlgs
          | | +--:(srlg-name)
          | | +--:(srlg-value)
          | +--rw (bc-model-type)?
          | | +--:(bc-model-rdm)
          | | +--:(bc-model-mam)
          | +--rw thresholds
          | | +--:(equal-steps)
          | | +--:(unequal-steps)
          ...
```

TE Data Model

TE Tunnels (config)

Ctd ...

+--rw **tunnels**

```
| +--rw tunnel* [name type]
|   +--rw name          string
|   +--rw type          identityref
|   +--rw identifier?   uint16
|   +--rw description?  string
|   +--rw admin-status? identityref
|   +--rw (routing-choice)?
|   |   +--:(autoroute)
|   |   +--:(forwarding-adjacency)
|   +--rw forwarding
|   |   +--rw load-share?  uint32
|   |   +--rw (policy-type)?
|   +--rw bidirectional
<...>
```

+--:(p2p)

```
| +--rw destination?
| +--rw primary-paths* [preference]
|   +--rw preference          uint8
|   +--rw path-properties
|   |   +--rw path-named-constraint?
|   |   |   +--:(dynamic)
|   |   |   +--:(explicit)
|   +--rw secondary-paths* [preference]
|     +--rw preference          uint8
|     +--rw path-properties
|     |   +--rw path-named-constraint?
|     |   +--rw path-constraints
|     |   |   +--:(dynamic)
|     |   |   +--:(explicit)
```

+--:(p2mp)

```
+--rw p2mp-paths* [destination]
+--rw destination          inet:ip-address
+--rw primary-paths* [preference]
+--rw preference          uint8
+--rw path-properties
|   +--rw path-named-constraint?
|   |   +--:(dynamic)
|   |   +--:(explicit)
+--rw secondary-paths* [preference]
```

RSVP Data Model (config)

```
module: ietf-rsvp
  +--rw rsvp!
    +--rw globals
      | +--rw signaling
      |   +--rw graceful-restart! {graceful-restart}?
      <snip>
      |   +--rw hello {hellos}?
      |       <snip>
      |   +--rw refresh
      |       +--rw reduction {refresh-reduction}?
      <snip>
    +--rw interfaces
      | +--rw authentication {authentication}?
      <snip>
      | +--rw signaling
      <snip>
      | +--rw interface* [interface]
      |   +--rw interface          if:interface-ref
      |   +--rw authentication {authentication}?
      |   +--rw signaling
      +--rw sessions
      |   +--rw session* [src_port dst_port source dest]
      |       <snip>
    +--rw neighbors
      | +--rw neighbor* [address]
      |   <snip>
    +--ro interface-state
      <snip>
    +--ro sessions-state
      | +--ro session* [src_port dst_port source dest]
      |   <snip>
    +--ro neighbors-state
      +--ro neighbor* [address]
      <snip>
```

RSVP-TE (packet/MPLS) Data Model

Augmentation of RSVP and TE Base Models

```
module: ietf-rsvp-te
augment /rsvp:rsvp/rsvp:globals:
  +--rw frr-local-revert!
    +--rw frr-local-revert-delay? uint32
augment /ietf-te:te/ietf-te:tunnels/ietf-te:tunnel:
  <snip>
  +--rw source? inet:ip-address
  +--rw fast-reroute!
    | +--rw bandwidth-protection-desired? empty
    | +--rw node-protection-desired? empty
  +--rw se-style-desired? empty
  +--rw soft-preemption-desired? empty
  +--rw record-route-desired? empty
  +--rw signaled-name? string
  +--rw priority
    | +--rw setup? uint8
    | +--rw hold? uint8
  +--rw soft-preemption? empty

augment /rsvp:rsvp/rsvp:interfaces:
  +--rw signaling

augment /rsvp:rsvp/rsvp:interfaces/rsvp:interfac
  <snip>

augment /rsvp:rsvp/rsvp:sessions:
  <snip>

augment /rsvp:rsvp/rsvp:neighbors:
  <snip>

augment /rsvp:rsvp/rsvp:sessions-state:
  <snip>

augment /rsvp:rsvp/rsvp:neighbors-state:
  <snip>
```

Next Steps

- Complete outstanding work for state/rpc/notification for TE, RSVP and RSVP-TE YANG models
- Converge on Base MPLS YANG model
 - common attributes across MPLS control plane technologies (?)
 - more suitable for representation of MPLS data plane properties (?)
- Add MPLS Static, SPRING and TP

Thank You