Yang Data Model for
TE Topologies
draft-ietf-teas-yang-te-topo-02


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Summary Of Changes

- Alignment with I2RS network topology model.
- Support for Multi-Access links.
- Support for Inter-Domain links.
- Support for IACD.
- Support for Recovery Status.
- Moving Scheduling Parameters to a separate module.
Alignment with I2RS network topology:
Network-ID

- Encode TE-Topology IDs (<provider-id>, <client-id>, <te-topology-id>) into <network-id> (type uri), and keep the existing IDs as separate leaves.
  - Keep <network-id> as the primary key.
  - Use (<provider-id>, <client-id>, <te-topology-id>) as alternate key.

module: ietf-network
  +--rw network* [network-id]
    +-- ****
    +--rw network-id network-id
    +-- ****

module: ietf-te-topology
augment /nw:network:
  +--rw te!
    +--rw provider-id te-global-id
    +--rw client-id te-global-id
    +--rw te-topology-id te-topology-id
    +-- ****
Alignment with I2RS network topology:
Node-ID

- Encode `<te-node-id>` into `<node-id>` (type uri), and keep the existing `<te-node-id>` as a separate leaf.
  - Keep `<node-id>` as the primary key.
  - Use `<te-node-id>` as alternate key.

```yaml
module: ietf-network
   +-rw network* [network-id]
      +-  ****
         +-rw node* node-id
            +-rw node-id
               +-  ****

module: ietf-te-topology
augment /nw:network/nw:node:
   +-rw te!
      +-rw te-node-id te-node-id
         +-  ****
```
Alignment with I2RS network topology:
Termination-Point

- Encode TE link endpoint (<te-tp-id>) into <tp-id> (type uri), and keep the <te-tp-id> as a separate leaf.
  - Keep <tp-id> as the primary key.
  - Use <te-tp-id> as alternate key.

```yaml
module: ietf-network-topology
augment /nd:network/nd:node:
  +-rw termination-point* [tp-id]
    +-rw tp-id tp-id
    +-   ****
```

```yaml
module: ietf-te-topology
augment /nw:network/nw:node/nt:termination-point:
  +-rw te!
    +-rw te-tp-id te-tp-id
    +-   ****
```
Alignment with I2RS network topology:

Link

- Map TE link to the link in the generic network topology model.
  - Keep `<link-id>` as the primary key.
  - Keep `<source-node, source-tp, dest-node, dest-tp>` as alternate key.

```yaml
module: ietf-network-topology
augment /nd:network:
  |--rw link* [link-id]
      |--rw source
          | |--rw source-node leafref
          | |--rw source-tp? leafref
          |--rw destination
          | |--rw dest-node leafref
          | |--rw dest-tp? leafref
          |--rw link-id link-id
      |--  ****
```
Support for Multi-Access links

- Add a new leaf to the node state.
  - Model DR as a read-only pseudo node (generated)
    - `<is-multi-access-dr>` true.

- Add a read-write link attribute (access-type = multi-access) to indicate the access type – [RFC3630].

```
module: ietf-te-topology
augment /nw:network/nw:node:
  +--rw te!
    +--rw te-node-id te-node-id
    +--ro state
    +-- ****
    +--+--ro is-multi-access-dr? empty

module: ietf-te-topology
augment /nw:network/nt:link:
  +--rw te!
    +--rw config
      +--rw te-link-attributes
      +-- ****
      +--+--rw access-type? te-link-access-type
```
Support for Inter-Domain links

- Add a read-write node attribute (&lt;domain-id&gt;) to help identify the domain that the given node belongs to – Ref. [RFC5152], [RFC5392], [RFC5316].

```yang
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module: ietf-te-topology
augment /nw:network/nw:node:
  +--rw te!
    +--rw te-node-id te-node-id
    +--rw config
      +--rw te-node-attributes
        +-- ****
        +--rw domain-id? uint32
        +-- ****
```
Support for IACD

- Add a rw attributes list to capture Interface Adjustment Capability Descriptors (IACD) for the given link – Ref. [RFC6001].

```yaml
module: ietf-te-topology
augment /nw:network/nt:link:
  +-rw te!
    +-rw config
      +-rw te-link-attributes
        +- ****
          +-rw interface-switching-capability* [switching-capability]
            +- ****
              +-rw interface-adjustment-capability* [upper-sc]
                +-rw-upper-sc identityref
                +-rw upper-encoding? identityref
                +-rw max-lsp-bandwidth* [priority]
                  +-rw priority uint8
                    +-rw bandwidth? decimal64
```
Support for Recovery Status

- Append link state to capture recovery status (restoration/protection).

```yaml
module: ietf-te-topology
augment /nw:network/nt:link:
  +--rw te!
    +--ro state
      +-- ****
    +--rw te-link-attributes
      +-- ****
    +--ro recovery
      |  +--ro restoration-status? te-recovery-status
      |  +--ro protection-status? te-recovery-status
    +-- ****
```
Scheduling Parameters

- Moved “Scheduling Parameters” to a separate module Model (“schedules”).
  - Currently discussed in Appendix A.
  - Expected to be moved out to a separate document.

```yaml
module: ietf-schedule
grouping schedules:
  +--rw schedules
    +--rw schedule* [schedule-id]
      +--rw schedule-id uint32
      +--rw start? yang:date-and-time
      +--rw schedule-duration? string
      +--rw repeat-interval? string
```
Next Steps

- Address review comments.
  - To Do List:

- Request further review.