

# Yang Data Model for TE Topologies

draft-ietf-teas-yang-te-topo-02

Github: <https://github.com/ietf-mpls-yang/te/blob/master/ietf-te-topology.yang>

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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 leafs.
  - 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.

```

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.

```

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

```

```

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.

```
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 (<domain-id>) to help identify the domain that the given node belongs to – Ref. [RFC5152], [RFC5392], [RFC5316].

```
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].

```
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).

```
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.

```
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:
    - <https://github.com/ietf-mpls-yang/te/blob/master/ietf-te-topology-todo-list.txt>
- Request further review.