Yang Data Model for TE Topologies

draft-liu-teas-yang-te-topo

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

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TE Topology – Yang Model

- Yang Data Model for representing and manipulating TE Topologies:
    - Technology agnostic TE Topology building blocks
        - Generic Node/Link attributes
        - Information Sources
    - Model captures overlay and underlay relationship for nodes and links
        - Allows Hierarchical TE Topology views
    - Time scheduling parameters
        - Can be specified for the topology as a whole or each individual topological element
    - Abstract TE Topologies
   - Model facilitates the notion of "TE Topology as a Service"

TE Topology Building Blocks

- **Generic TE Link Attributes**
  - Bandwidth, Admin groups, SRLGs, Switching Capabilities, TE metric extensions etc.

- **Generic TE Node Attributes**
  - Generic Connectivity Matrix

- **Information Sources**
  - Each TE topological element can have multiple TE information sources (OSPF-TE, ISIS-TE, BGP-LS, User-Configured, Other)
  - Each information source is associated with a credibility preference.

# Overlay/Underlay Relationship

- Model captures overlay and underlay relationship for TE nodes/links.
  - In hierarchical TE Topologies, model allows vertical traversal of topological elements.
    - Facilitates Hierarchical TE Topology Views
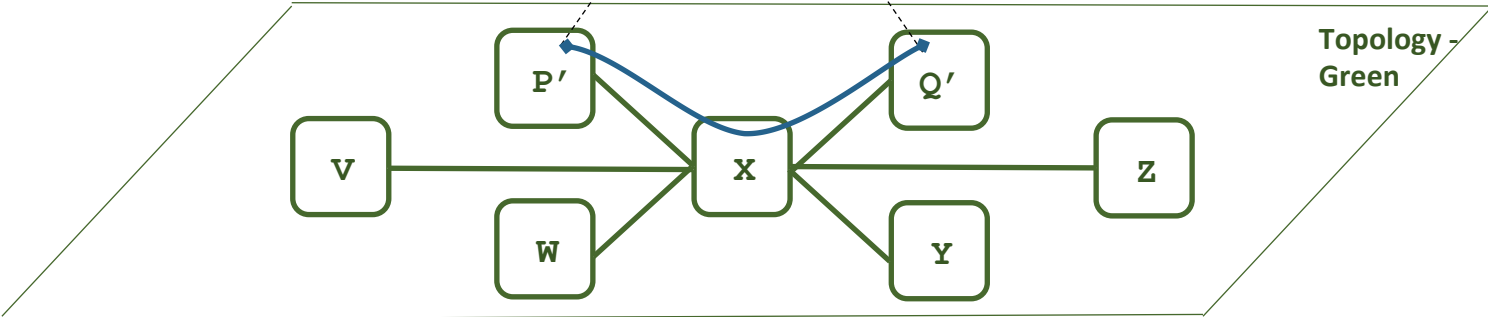
Hierarchical TE Topology Views
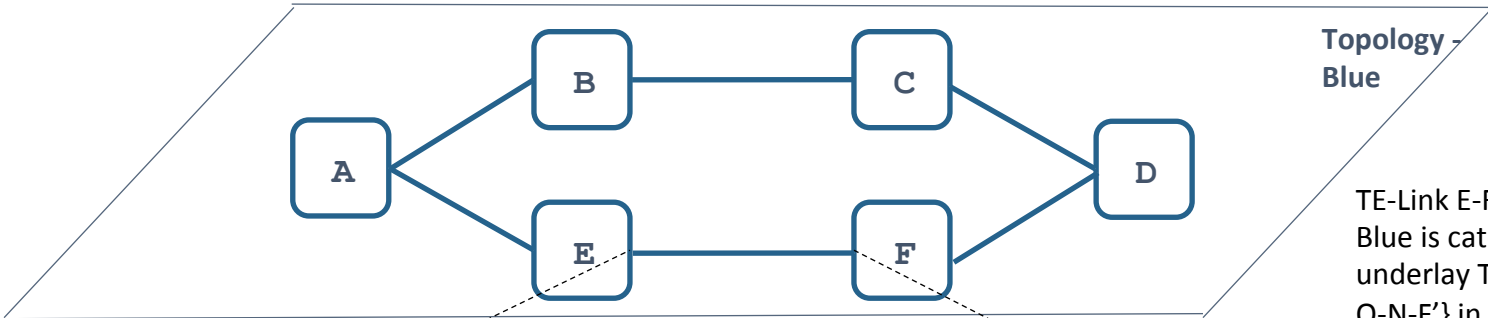
Topology - Blue

TE-Link E-F in Topology-Blue is catered to by underlay TE-path {E'-M-P-Q-N-F'} in Topology-Red
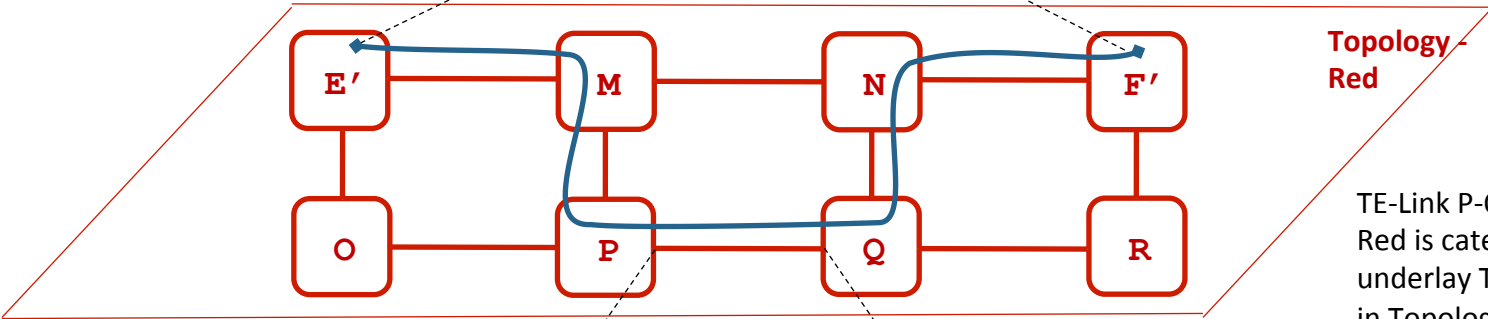
Topology - Red

TE-Link P-Q in Topology-Red is catered to by underlay TE-path {P'-X-Q'} in Topology-Green

Topology - Green

Time Scheduling Attributes

- Time Scheduling parameters can be specified for the topology as a whole or for each individual topological element.

- Allows the provider to present different topological views to the client at different time slots.

```
+--rw schedules* [schedule-id]
    |  +--rw schedule-id         uint32
    |  +--rw start?              yang:date-and-time
    |  +--rw schedule-duration?  string
    |  +--rw repeat-interval?    string
```

Abstract TE Topology: Topology as a Service

- Model allows the provider to present the network in abstract TE terms on per client basis
- Model allows the client to request changes to the abstract TE Topology that is presented to it

Abstract TE Topologies – Usage Example
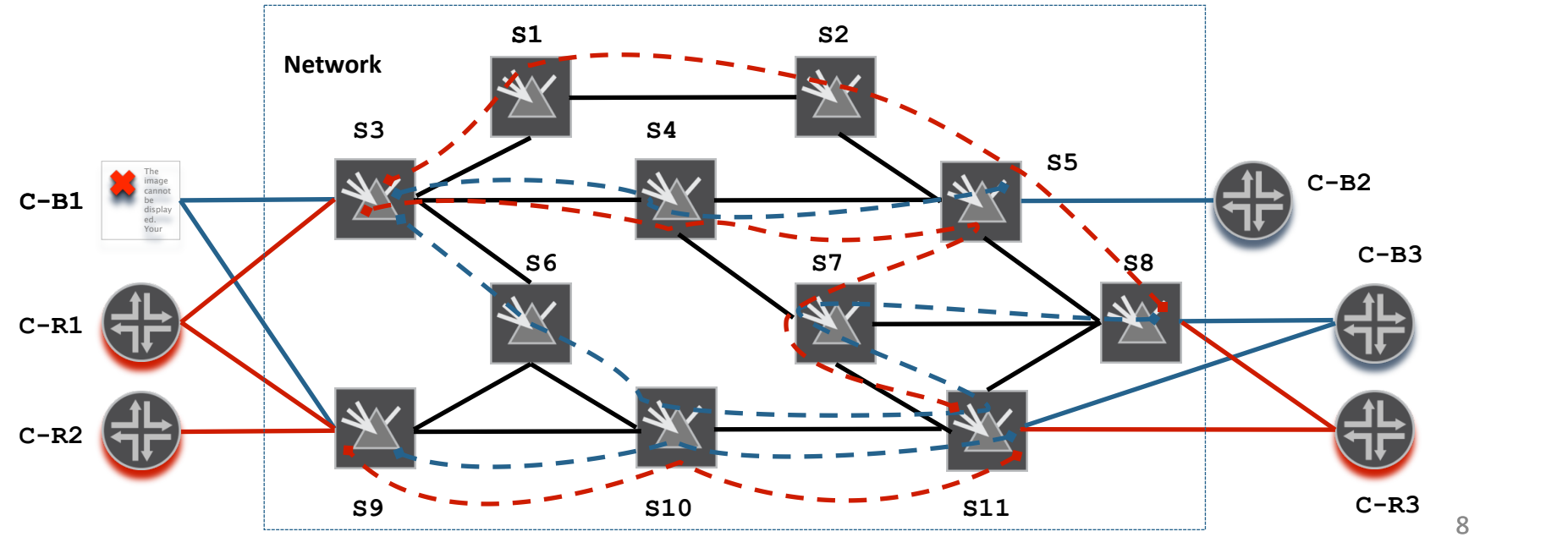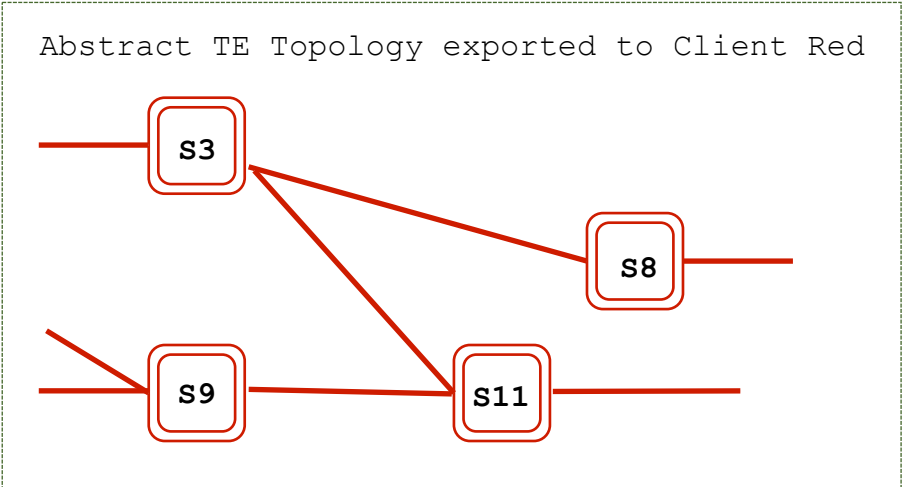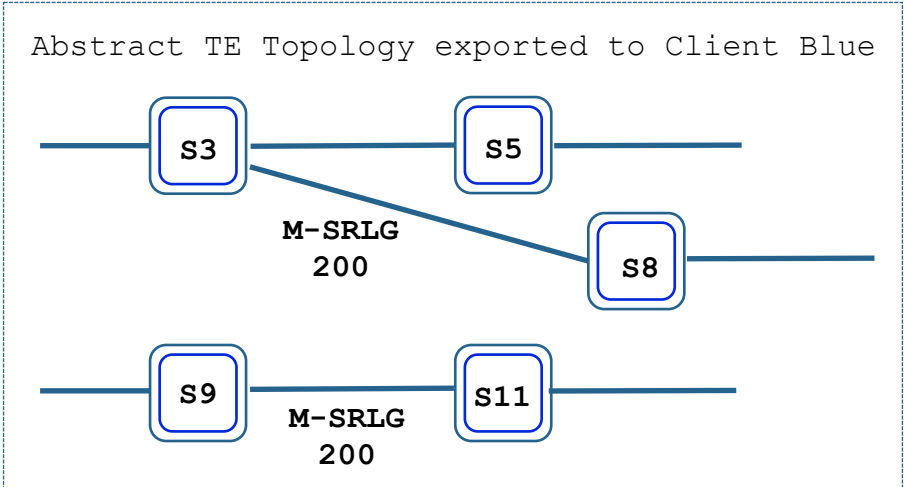
Pending/Open Items

- Open Discussion Items:
  - Relationship with "generic network topology" model

- Pending Work-Items:
  - Incremental Notifications
  - Appendix for use-cases