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A YANG Data Model for WSON (Wavelength Switched Optical Networks)

[draft-ietf-ccamp-wson-yang-22](#)

Abstract

This document provides a YANG data model for the routing and wavelength assignment (RWA) TE topology in wavelength switched optical networks (WSONs). The YANG data model defined in this document conforms to the Network Management Datastore Architecture defined in [RFC 8342](#).

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Table of Contents

1.	Introduction.....	2
1.1.	Requirements Language.....	3
1.2.	Terminology.....	3
1.3.	Tree diagram.....	4
1.4.	Prefixes in Data Node Names.....	4
2.	YANG Model (Tree Structure).....	5
3.	IETF-WSN-Topology YANG Model.....	28
4.	Security Considerations.....	67
5.	IANA Considerations.....	69
6.	References.....	69
6.1.	Normative References.....	69
6.2.	Informative References.....	70
7.	Contributors.....	71
	Authors' Addresses.....	71

[1. Introduction](#)

This document provides a YANG data model for the routing and wavelength assignment (RWA) Traffic Engineering (TE) topology in transparent wavelength switched optical networks (WSNs). The YANG model described in this document is a WSON technology-specific YANG model based on the information model developed in [[RFC7446](#)] and the

two encoding documents [[RFC7581](#)] and [[RFC7579](#)] that developed protocol independent encodings based on [[RFC7446](#)].

[G.698.2] defines amplified multichannel dense wavelength division multiplexing applications with single channel optical interfaces. The YANG data model defined in this document refers to the standard application mode defined in [[G.698.2](#)].

What is not in scope of this document is both impairment-aware optical networks and flexi-grid. Refer to [Impairment] for impairment-aware optical network topology model and [flexi-grid] for flexi-grid optical network topology model.

Additionally, resource block models (e.g., 3R Regeneration) is not also in the scope of this document, which will be addressed in a separate document.

This document defines one YANG model: ietf-wson-topology ([Section 3](#)). This document augments the generic TE topology draft [[TE-TOPO](#)].

There are multiple applications for the yang data model defined in this document. For example, nodes within the network can use the data model to capture their understanding of the overall WSON topology and expose it to a controller. A controller can further propagate the topology to other controllers. The YANG model is used by NETCONF [[RFC6020](#)], [[RFC8341](#)] or a RESTCONF [[RFC8040](#)] protocol. The YANG data model defined in this document conforms to the Network Management Datastore Architecture [[RFC8342](#)].

[1.1](#). Requirements Language

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "NOT RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in [BCP 14](#) [[RFC2119](#)] [[RFC8174](#)] when, and only when, they appear in all capitals, as shown here.

[1.2](#). Terminology

Refer to [[RFC7446](#)] and [[RFC7581](#)] for the key terms used in this document.

The following terms are defined in [[RFC7950](#)] and are not redefined here:

- o client
- o server
- o augment
- o data model
- o data node

The following terms are defined in [\[RFC6241\]](#) and are not redefined here:

- o configuration data
- o state data

The terminology for describing YANG data models is found in [\[RFC7950\]](#).

[1.3. Tree diagram](#)

A simplified graphical representation of the data model is used in chapter 2 of this document. The meaning of the symbols in these diagrams is defined in [\[RFC8340\]](#).

[1.4. Prefixes in Data Node Names](#)

In this document, names of data nodes and other data model objects are prefixed using the standard prefix associated with the corresponding YANG imported modules, as shown in Table 1.

Prefix	YANG module	Reference
layer0-type	ietf-layer0-types	[Layer0-Types]
wson	ietf-wson-topology	[RFCXXXX]
nw	ietf-network	[RFC8345]
nt	ietf-network-topology	[RFC8345]
tet	ietf-te-topology	[TE-TOPO]

Table 1: Prefixes and corresponding YANG modules

Note: The RFC Editor will replace XXXX with the number assigned to the RFC once this draft becomes an RFC.

2. YANG Model (Tree Structure)

```

module: ietf-wson-topology
  augment /nw:networks/nw:network/nw:network-types/tet:te-topology:
    +--rw wson-topology!
  augment /nw:networks/nw:network/nt:link/tet:te/tet:te-link-
attributes:
  augment /nw:networks/nw:network/nw:node/nt:termination-point/tet:te:
    +--rw supported-payload-types* [index]
    | +--rw index          uint16
    | +--rw payload-type?  string
    +--rw client-facing?   boolean
  augment /nw:networks/nw:network/nw:node/tet:te/tet:te-node-
attributes:
  +--rw wson-node
    +--rw node-type?  identityref
  augment /nw:networks/nw:network/nw:node/tet:te/tet:tunnel-
termination-point:
  +--rw supported-operational-modes*   layer0-types:operational-mode
  +--rw configured-operational-modes?  layer0-types:operational-mode
  +--rw supported-fec-types*           identityref
  +--rw supported-termination-types*   identityref
  +--rw supports-bit-stuffing?         boolean
  +--rw is-tunable?                   boolean
  +--rw max-subcarrier-channel-num?    uint8
  augment /nw:networks/nw:network/nw:node/nt:termination-
point/tet:te/tet:interface-switching-capability/tet:max-lsp-
bandwidth/tet:te-bandwidth/tet:technology:
  +--:(wson)
    +--rw bandwidth-type?  identityref
  augment /nw:networks/nw:network/nw:node/tet:te/tet:te-node-
attributes/tet:connectivity-matrices/tet:path-constraints/tet:te-
bandwidth/tet:technology:
  +--:(wson)
    +--rw supported-bandwidth-list*  identityref
  augment /nw:networks/nw:network/nw:node/tet:te/tet:te-node-
attributes/tet:connectivity-matrices/tet:connectivity-matrix/tet:path-
constraints/tet:te-bandwidth/tet:technology:
  +--:(wson)
    +--rw supported-bandwidth-list*  identityref

```

```
augment /nw:networks/nw:network/nw:node/tet:te/tet:information-
source-entry/tet:connectivity-matrices/tet:path-constraints/tet:te-
bandwidth/tet:technology:
  +--:(wson)
    +--ro supported-bandwidth-list*  identityref
augment /nw:networks/nw:network/nw:node/tet:te/tet:information-
source-entry/tet:connectivity-matrices/tet:connectivity-
matrix/tet:path-constraints/tet:te-bandwidth/tet:technology:
  +--:(wson)
    +--ro supported-bandwidth-list*  identityref
augment /nw:networks/nw:network/nw:node/tet:te/tet:tunnel-
termination-point/tet:client-layer-adaptation/tet:switching-
capability/tet:te-bandwidth/tet:technology:
  +--:(wson)
    +--rw supported-bandwidth-list*  identityref
augment /nw:networks/nw:network/nw:node/tet:te/tet:tunnel-
termination-point/tet:local-link-connectivities/tet:path-
constraints/tet:te-bandwidth/tet:technology:
  +--:(wson)
    +--rw supported-bandwidth-list*  identityref
augment /nw:networks/nw:network/nw:node/tet:te/tet:tunnel-
termination-point/tet:local-link-connectivities/tet:local-link-
connectivity/tet:path-constraints/tet:te-bandwidth/tet:technology:
  +--:(wson)
    +--rw supported-bandwidth-list*  identityref
augment /nw:networks/nw:network/nt:link/tet:te/tet:te-link-
attributes/tet:interface-switching-capability/tet:max-lsp-
bandwidth/tet:te-bandwidth/tet:technology:
  +--:(wson)
    +--rw bandwidth-type?  identityref
augment /nw:networks/nw:network/nt:link/tet:te/tet:te-link-
attributes/tet:max-link-bandwidth/tet:te-bandwidth/tet:technology:
  +--:(wson)
    +--rw supported-bandwidth-list*  identityref
augment /nw:networks/nw:network/nt:link/tet:te/tet:te-link-
attributes/tet:max-resv-link-bandwidth/tet:te-bandwidth/tet:technology:
  +--:(wson)
    +--rw supported-bandwidth-list*  identityref
augment /nw:networks/nw:network/nt:link/tet:te/tet:te-link-
attributes/tet:unreserved-bandwidth/tet:te-bandwidth/tet:technology:
  +--:(wson)
```

```
    +--rw supported-bandwidth-list*  identityref
    augment /nw:networks/nw:network/nt:link/tet:te/tet:information-
source-entry/tet:interface-switching-capability/tet:max-lsp-
bandwidth/tet:te-bandwidth/tet:technology:
    +--:(wson)
    +--ro bandwidth-type?  identityref
    augment /nw:networks/nw:network/nt:link/tet:te/tet:information-
source-entry/tet:max-link-bandwidth/tet:te-bandwidth/tet:technology:
    +--:(wson)
    +--ro supported-bandwidth-list*  identityref
    augment /nw:networks/nw:network/nt:link/tet:te/tet:information-
source-entry/tet:max-resv-link-bandwidth/tet:te-
bandwidth/tet:technology:
    +--:(wson)
    +--ro supported-bandwidth-list*  identityref
    augment /nw:networks/nw:network/nt:link/tet:te/tet:information-
source-entry/tet:unreserved-bandwidth/tet:te-bandwidth/tet:technology:
    +--:(wson)
    +--ro supported-bandwidth-list*  identityref
    augment /nw:networks/tet:te/tet:templates/tet:link-template/tet:te-
link-attributes/tet:interface-switching-capability/tet:max-lsp-
bandwidth/tet:te-bandwidth/tet:technology:
    +--:(wson)
    +--rw bandwidth-type?  identityref
    augment /nw:networks/tet:te/tet:templates/tet:link-template/tet:te-
link-attributes/tet:max-link-bandwidth/tet:te-bandwidth/tet:technology:
    +--:(wson)
    +--rw supported-bandwidth-list*  identityref
    augment /nw:networks/tet:te/tet:templates/tet:link-template/tet:te-
link-attributes/tet:max-resv-link-bandwidth/tet:te-
bandwidth/tet:technology:
    +--:(wson)
    +--rw supported-bandwidth-list*  identityref
    augment /nw:networks/tet:te/tet:templates/tet:link-template/tet:te-
link-attributes/tet:unreserved-bandwidth/tet:te-
bandwidth/tet:technology:
    +--:(wson)
    +--rw supported-bandwidth-list*  identityref
    augment /nw:networks/nw:network/nw:node/tet:te/tet:te-node-
attributes/tet:connectivity-matrices/tet:label-restrictions/tet:label-
restriction:
```

```

    +--rw grid-type?    identityref
    +--rw priority?     uint8
    augment /nw:networks/nw:network/nw:node/tet:te/tet:te-node-
attributes/tet:connectivity-matrices/tet:label-restrictions/tet:label-
restriction/tet:label-start/tet:te-label/tet:technology:
    +--:(wson)
        +--rw (grid-type)?
            +--:(dwdm)
                | +--rw dwdm-n?    int16
            +--:(cwdm)
                +--rw cwdm-n?    int16
    augment /nw:networks/nw:network/nw:node/tet:te/tet:te-node-
attributes/tet:connectivity-matrices/tet:label-restrictions/tet:label-
restriction/tet:label-end/tet:te-label/tet:technology:
    +--:(wson)
        +--rw (grid-type)?
            +--:(dwdm)
                | +--rw dwdm-n?    int16
            +--:(cwdm)
                +--rw cwdm-n?    int16
    augment /nw:networks/nw:network/nw:node/tet:te/tet:te-node-
attributes/tet:connectivity-matrices/tet:label-restrictions/tet:label-
restriction/tet:label-step/tet:technology:
    +--:(wson)
        +--rw (layer0-grid-type)?
            +--:(dwdm)
                | +--rw wson-dwdm?    identityref
            +--:(cwdm)
                +--rw wson-cwdm?    identityref
    augment /nw:networks/nw:network/nw:node/tet:te/tet:te-node-
attributes/tet:connectivity-matrices/tet:underlay/tet:primary-
path/tet:path-element/tet:type/tet:label/tet:label-hop/tet:te-
label/tet:technology:
    +--:(wson)
        +--rw (grid-type)?
            +--:(dwdm)
                | +--rw (single-or-super-channel)?
                |     +--:(single)
                |         | +--rw dwdm-n?                int16
                |         +--:(super)
                |             +--rw subcarrier-dwdm-n*    int16

```

```

    +--:(cwdm)
      +--rw cwdm-n? int16
    augment /nw:networks/nw:network/nw:node/tet:te/tet:te-node-
attributes/tet:connectivity-matrices/tet:underlay/tet:backup-
path/tet:path-element/tet:type/tet:label/tet:label-hop/tet:te-
label/tet:technology:
  +--:(wson)
    +--rw (grid-type)?
      +--:(dwdm)
        | +--rw (single-or-super-channel)?
        |   +--:(single)
        |     | +--rw dwdm-n? int16
        |     +--:(super)
        |       +--rw subcarrier-dwdm-n* int16
      +--:(cwdm)
        +--rw cwdm-n? int16
    augment /nw:networks/nw:network/nw:node/tet:te/tet:te-node-
attributes/tet:connectivity-
matrices/tet:optimizations/tet:algorithm/tet:metric/tet:optimization-
metric/tet:explicit-route-exclude-objects/tet:route-object-exclude-
object/tet:type/tet:label/tet:label-hop/tet:te-label/tet:technology:
  +--:(wson)
    +--rw (grid-type)?
      +--:(dwdm)
        | +--rw (single-or-super-channel)?
        |   +--:(single)
        |     | +--rw dwdm-n? int16
        |     +--:(super)
        |       +--rw subcarrier-dwdm-n* int16
      +--:(cwdm)
        +--rw cwdm-n? int16
    augment /nw:networks/nw:network/nw:node/tet:te/tet:te-node-
attributes/tet:connectivity-
matrices/tet:optimizations/tet:algorithm/tet:metric/tet:optimization-
metric/tet:explicit-route-include-objects/tet:route-object-include-
object/tet:type/tet:label/tet:label-hop/tet:te-label/tet:technology:
  +--:(wson)
    +--rw (grid-type)?
      +--:(dwdm)
        | +--rw (single-or-super-channel)?
        |   +--:(single)

```

```

    |      |  +--rw dwdm-n?                int16
    |      +--:(super)
    |      +--rw subcarrier-dwdm-n*        int16
    +--:(cwdm)
        +--rw cwdm-n?                      int16
augment /nw:networks/nw:network/nw:node/tet:te/tet:te-node-
attributes/tet:connectivity-matrices/tet:path-properties/tet:path-
route-objects/tet:path-route-object/tet:type/tet:label/tet:label-
hop/tet:te-label/tet:technology:
    +--:(wson)
        +--ro (grid-type)?
            +--:(dwdm)
                |  +--ro (single-or-super-channel)?
                |      +--:(single)
                |      |  +--ro dwdm-n?                int16
                |      +--:(super)
                |      +--ro subcarrier-dwdm-n*        int16
            +--:(cwdm)
                +--ro cwdm-n?                      int16
augment /nw:networks/nw:network/nw:node/tet:te/tet:te-node-
attributes/tet:connectivity-matrices/tet:connectivity-
matrix/tet:from/tet:label-restrictions/tet:label-restriction:
    +--rw grid-type?    identityref
    +--rw priority?     uint8
augment /nw:networks/nw:network/nw:node/tet:te/tet:te-node-
attributes/tet:connectivity-matrices/tet:connectivity-
matrix/tet:from/tet:label-restrictions/tet:label-restriction/tet:label-
start/tet:te-label/tet:technology:
    +--:(wson)
        +--rw (grid-type)?
            +--:(dwdm)
                |  +--rw dwdm-n?    int16
            +--:(cwdm)
                +--rw cwdm-n?    int16
augment /nw:networks/nw:network/nw:node/tet:te/tet:te-node-
attributes/tet:connectivity-matrices/tet:connectivity-
matrix/tet:from/tet:label-restrictions/tet:label-restriction/tet:label-
end/tet:te-label/tet:technology:
    +--:(wson)
        +--rw (grid-type)?
            +--:(dwdm)

```

```

        | +--rw dwdm-n?   int16
        +--:(cwdm)
          +--rw cwdm-n?   int16
    augment /nw:networks/nw:network/nw:node/tet:te/tet:te-node-
attributes/tet:connectivity-matrices/tet:connectivity-
matrix/tet:from/tet:label-restrictions/tet:label-restriction/tet:label-
step/tet:technology:
    +--:(wson)
      +--rw (layer0-grid-type)?
        +--:(dwdm)
          | +--rw wson-dwdm?   identityref
          +--:(cwdm)
            +--rw wson-cwdm?   identityref
    augment /nw:networks/nw:network/nw:node/tet:te/tet:te-node-
attributes/tet:connectivity-matrices/tet:connectivity-
matrix/tet:to/tet:label-restrictions/tet:label-restriction:
    +--rw grid-type?   identityref
    +--rw priority?    uint8
    augment /nw:networks/nw:network/nw:node/tet:te/tet:te-node-
attributes/tet:connectivity-matrices/tet:connectivity-
matrix/tet:to/tet:label-restrictions/tet:label-restriction/tet:label-
start/tet:te-label/tet:technology:
    +--:(wson)
      +--rw (grid-type)?
        +--:(dwdm)
          | +--rw dwdm-n?   int16
          +--:(cwdm)
            +--rw cwdm-n?   int16
    augment /nw:networks/nw:network/nw:node/tet:te/tet:te-node-
attributes/tet:connectivity-matrices/tet:connectivity-
matrix/tet:to/tet:label-restrictions/tet:label-restriction/tet:label-
end/tet:te-label/tet:technology:
    +--:(wson)
      +--rw (grid-type)?
        +--:(dwdm)
          | +--rw dwdm-n?   int16
          +--:(cwdm)
            +--rw cwdm-n?   int16
    augment /nw:networks/nw:network/nw:node/tet:te/tet:te-node-
attributes/tet:connectivity-matrices/tet:connectivity-

```

```
matrix/tet:to/tet:label-restrictions/tet:label-restriction/tet:label-
step/tet:technology:
```

```
  +--:(wson)
```

```
    +--rw (layer0-grid-type)?
```

```
      +--:(dwdm)
```

```
        | +--rw wson-dwdm?  identityref
```

```
      +--:(cwdm)
```

```
        +--rw wson-cwdm?  identityref
```

```
  augment /nw:networks/nw:network/nw:node/tet:te/tet:te-node-
attributes/tet:connectivity-matrices/tet:connectivity-
```

```
matrix/tet:underlay/tet:primary-path/tet:path-
```

```
element/tet:type/tet:label/tet:label-hop/tet:te-label/tet:technology:
```

```
  +--:(wson)
```

```
    +--rw (grid-type)?
```

```
      +--:(dwdm)
```

```
        | +--rw (single-or-super-channel)?
```

```
          +--:(single)
```

```
            | +--rw dwdm-n?  int16
```

```
          +--:(super)
```

```
            | +--rw subcarrier-dwdm-n*  int16
```

```
      +--:(cwdm)
```

```
        +--rw cwdm-n?  int16
```

```
  augment /nw:networks/nw:network/nw:node/tet:te/tet:te-node-
attributes/tet:connectivity-matrices/tet:connectivity-
```

```
matrix/tet:underlay/tet:backup-path/tet:path-
```

```
element/tet:type/tet:label/tet:label-hop/tet:te-label/tet:technology:
```

```
  +--:(wson)
```

```
    +--rw (grid-type)?
```

```
      +--:(dwdm)
```

```
        | +--rw (single-or-super-channel)?
```

```
          +--:(single)
```

```
            | +--rw dwdm-n?  int16
```

```
          +--:(super)
```

```
            | +--rw subcarrier-dwdm-n*  int16
```

```
      +--:(cwdm)
```

```
        +--rw cwdm-n?  int16
```

```
  augment /nw:networks/nw:network/nw:node/tet:te/tet:te-node-
attributes/tet:connectivity-matrices/tet:connectivity-
```

```
matrix/tet:optimizations/tet:algorithm/tet:metric/tet:optimization-
```

```
metric/tet:explicit-route-exclude-objects/tet:route-object-exclude-
```

```
object/tet:type/tet:label/tet:label-hop/tet:te-label/tet:technology:
```

```

+--:(wson)
  +--rw (grid-type)?
    +--:(dwdm)
      | +--rw (single-or-super-channel)?
      |   +--:(single)
      |     | +--rw dwdm-n?                int16
      |   +--:(super)
      |     +--rw subcarrier-dwdm-n*      int16
    +--:(cwdm)
      +--rw cwdm-n?                      int16
  augment /nw:networks/nw:network/nw:node/tet:te/tet:te-node-
attributes/tet:connectivity-matrices/tet:connectivity-
matrix/tet:optimizations/tet:algorithm/tet:metric/tet:optimization-
metric/tet:explicit-route-include-objects/tet:route-object-include-
object/tet:type/tet:label/tet:label-hop/tet:te-label/tet:technology:
+--:(wson)
  +--rw (grid-type)?
    +--:(dwdm)
      | +--rw (single-or-super-channel)?
      |   +--:(single)
      |     | +--rw dwdm-n?                int16
      |   +--:(super)
      |     +--rw subcarrier-dwdm-n*      int16
    +--:(cwdm)
      +--rw cwdm-n?                      int16
  augment /nw:networks/nw:network/nw:node/tet:te/tet:te-node-
attributes/tet:connectivity-matrices/tet:connectivity-matrix/tet:path-
properties/tet:path-route-objects/tet:path-route-
object/tet:type/tet:label/tet:label-hop/tet:te-label/tet:technology:
+--:(wson)
  +--ro (grid-type)?
    +--:(dwdm)
      | +--ro (single-or-super-channel)?
      |   +--:(single)
      |     | +--ro dwdm-n?                int16
      |   +--:(super)
      |     +--ro subcarrier-dwdm-n*      int16
    +--:(cwdm)
      +--ro cwdm-n?                      int16

```

```

    augment /nw:networks/nw:network/nw:node/tet:te/tet:information-
source-entry/tet:connectivity-matrices/tet:label-
restrictions/tet:label-restriction:

```

```

    +-ro grid-type?    identityref

```

```

    +-ro priority?    uint8

```

```

    augment /nw:networks/nw:network/nw:node/tet:te/tet:information-
source-entry/tet:connectivity-matrices/tet:label-
restrictions/tet:label-restriction/tet:label-start/tet:te-
label/tet:technology:

```

```

    +--:(wson)

```

```

    +-ro (grid-type)?

```

```

    +--:(dwdm)

```

```

    | +-ro dwdm-n?    int16

```

```

    +--:(cwdm)

```

```

    +-ro cwdm-n?    int16

```

```

    augment /nw:networks/nw:network/nw:node/tet:te/tet:information-
source-entry/tet:connectivity-matrices/tet:label-
restrictions/tet:label-restriction/tet:label-end/tet:te-
label/tet:technology:

```

```

    +--:(wson)

```

```

    +-ro (grid-type)?

```

```

    +--:(dwdm)

```

```

    | +-ro dwdm-n?    int16

```

```

    +--:(cwdm)

```

```

    +-ro cwdm-n?    int16

```

```

    augment /nw:networks/nw:network/nw:node/tet:te/tet:information-
source-entry/tet:connectivity-matrices/tet:label-
restrictions/tet:label-restriction/tet:label-step/tet:technology:

```

```

    +--:(wson)

```

```

    +-ro (layer0-grid-type)?

```

```

    +--:(dwdm)

```

```

    | +-ro wson-dwdm?    identityref

```

```

    +--:(cwdm)

```

```

    +-ro wson-cwdm?    identityref

```

```

    augment /nw:networks/nw:network/nw:node/tet:te/tet:information-
source-entry/tet:connectivity-matrices/tet:underlay/tet:primary-
path/tet:path-element/tet:type/tet:label/tet:label-hop/tet:te-
label/tet:technology:

```

```

    +--:(wson)

```

```

    +-ro (grid-type)?

```

```

    +--:(dwdm)

```

```

    |   +--ro (single-or-super-channel)?
    |   +--:(single)
    |   |   +--ro dwdm-n?                int16
    |   +--:(super)
    |   +--ro subcarrier-dwdm-n*        int16
    +--:(cwdm)
    +--ro cwdm-n?                        int16
  augment /nw:networks/nw:network/nw:node/tet:te/tet:information-
source-entry/tet:connectivity-matrices/tet:underlay/tet:backup-
path/tet:path-element/tet:type/tet:label/tet:label-hop/tet:te-
label/tet:technology:
    +--:(wson)
    +--ro (grid-type)?
    +--:(dwdm)
    |   +--ro (single-or-super-channel)?
    |   +--:(single)
    |   |   +--ro dwdm-n?                int16
    |   +--:(super)
    |   +--ro subcarrier-dwdm-n*        int16
    +--:(cwdm)
    +--ro cwdm-n?                        int16
  augment /nw:networks/nw:network/nw:node/tet:te/tet:information-
source-entry/tet:connectivity-
matrices/tet:optimizations/tet:algorithm/tet:metric/tet:optimization-
metric/tet:explicit-route-exclude-objects/tet:route-object-exclude-
object/tet:type/tet:label/tet:label-hop/tet:te-label/tet:technology:
    +--:(wson)
    +--ro (grid-type)?
    +--:(dwdm)
    |   +--ro (single-or-super-channel)?
    |   +--:(single)
    |   |   +--ro dwdm-n?                int16
    |   +--:(super)
    |   +--ro subcarrier-dwdm-n*        int16
    +--:(cwdm)
    +--ro cwdm-n?                        int16
  augment /nw:networks/nw:network/nw:node/tet:te/tet:information-
source-entry/tet:connectivity-
matrices/tet:optimizations/tet:algorithm/tet:metric/tet:optimization-
metric/tet:explicit-route-include-objects/tet:route-object-include-
object/tet:type/tet:label/tet:label-hop/tet:te-label/tet:technology:

```

```

+---:(wson)
  +--ro (grid-type)?
    +---:(dwdm)
      | +--ro (single-or-super-channel)?
      |   +---:(single)
      |     | +--ro dwdm-n?                int16
      |     +---:(super)
      |       +--ro subcarrier-dwdm-n*    int16
    +---:(cwdm)
      +--ro cwdm-n?                      int16
  augment /nw:networks/nw:network/nw:node/tet:te/tet:information-
source-entry/tet:connectivity-matrices/tet:path-properties/tet:path-
route-objects/tet:path-route-object/tet:type/tet:label/tet:label-
hop/tet:te-label/tet:technology:
    +---:(wson)
      +--ro (grid-type)?
        +---:(dwdm)
          | +--ro (single-or-super-channel)?
          |   +---:(single)
          |     | +--ro dwdm-n?                int16
          |     +---:(super)
          |       +--ro subcarrier-dwdm-n*    int16
        +---:(cwdm)
          +--ro cwdm-n?                      int16
      augment /nw:networks/nw:network/nw:node/tet:te/tet:information-
source-entry/tet:connectivity-matrices/tet:connectivity-
matrix/tet:from/tet:label-restrictions/tet:label-restriction:
        +--ro grid-type?    identityref
        +--ro priority?     uint8
      augment /nw:networks/nw:network/nw:node/tet:te/tet:information-
source-entry/tet:connectivity-matrices/tet:connectivity-
matrix/tet:from/tet:label-restrictions/tet:label-restriction/tet:label-
start/tet:te-label/tet:technology:
        +---:(wson)
          +--ro (grid-type)?
            +---:(dwdm)
              | +--ro dwdm-n?    int16
            +---:(cwdm)
              +--ro cwdm-n?     int16
          augment /nw:networks/nw:network/nw:node/tet:te/tet:information-
source-entry/tet:connectivity-matrices/tet:connectivity-

```

```
matrix/tet:from/tet:label-restrictions/tet:label-restriction/tet:label-
end/tet:te-label/tet:technology:
```

```
  +--:(wson)
```

```
    +--ro (grid-type)?
```

```
      +--:(dwdm)
```

```
        | +--ro dwdm-n?  int16
```

```
      +--:(cwdm)
```

```
        +--ro cwdm-n?  int16
```

```
  augment /nw:networks/nw:network/nw:node/tet:te/tet:information-
source-entry/tet:connectivity-matrices/tet:connectivity-
matrix/tet:from/tet:label-restrictions/tet:label-restriction/tet:label-
step/tet:technology:
```

```
    +--:(wson)
```

```
      +--ro (layer0-grid-type)?
```

```
        +--:(dwdm)
```

```
          | +--ro wson-dwdm?  identityref
```

```
        +--:(cwdm)
```

```
          +--ro wson-cwdm?  identityref
```

```
  augment /nw:networks/nw:network/nw:node/tet:te/tet:information-
source-entry/tet:connectivity-matrices/tet:connectivity-
matrix/tet:to/tet:label-restrictions/tet:label-restriction:
```

```
    +--ro grid-type?  identityref
```

```
    +--ro priority?   uint8
```

```
  augment /nw:networks/nw:network/nw:node/tet:te/tet:information-
source-entry/tet:connectivity-matrices/tet:connectivity-
matrix/tet:to/tet:label-restrictions/tet:label-restriction/tet:label-
start/tet:te-label/tet:technology:
```

```
    +--:(wson)
```

```
      +--ro (grid-type)?
```

```
        +--:(dwdm)
```

```
          | +--ro dwdm-n?  int16
```

```
        +--:(cwdm)
```

```
          +--ro cwdm-n?  int16
```

```
  augment /nw:networks/nw:network/nw:node/tet:te/tet:information-
source-entry/tet:connectivity-matrices/tet:connectivity-
matrix/tet:to/tet:label-restrictions/tet:label-restriction/tet:label-
end/tet:te-label/tet:technology:
```

```
    +--:(wson)
```

```
      +--ro (grid-type)?
```

```
        +--:(dwdm)
```

```
          | +--ro dwdm-n?  int16
```

```

    +---:(cwdm)
      +---ro cwdm-n?    int16
    augment /nw:networks/nw:network/nw:node/tet:te/tet:information-
source-entry/tet:connectivity-matrices/tet:connectivity-
matrix/tet:to/tet:label-restrictions/tet:label-restriction/tet:label-
step/tet:technology:
  +---:(wson)
    +---ro (layer0-grid-type)?
      +---:(dwdm)
        | +---ro wson-dwdm?    identityref
      +---:(cwdm)
        +---ro wson-cwdm?    identityref
    augment /nw:networks/nw:network/nw:node/tet:te/tet:information-
source-entry/tet:connectivity-matrices/tet:connectivity-
matrix/tet:underlay/tet:primary-path/tet:path-
element/tet:type/tet:label/tet:label-hop/tet:te-label/tet:technology:
  +---:(wson)
    +---ro (grid-type)?
      +---:(dwdm)
        | +---ro (single-or-super-channel)?
        |   +---:(single)
        |     | +---ro dwdm-n?          int16
        |     +---:(super)
        |       +---ro subcarrier-dwdm-n*  int16
      +---:(cwdm)
        +---ro cwdm-n?          int16
    augment /nw:networks/nw:network/nw:node/tet:te/tet:information-
source-entry/tet:connectivity-matrices/tet:connectivity-
matrix/tet:underlay/tet:backup-path/tet:path-
element/tet:type/tet:label/tet:label-hop/tet:te-label/tet:technology:
  +---:(wson)
    +---ro (grid-type)?
      +---:(dwdm)
        | +---ro (single-or-super-channel)?
        |   +---:(single)
        |     | +---ro dwdm-n?          int16
        |     +---:(super)
        |       +---ro subcarrier-dwdm-n*  int16
      +---:(cwdm)
        +---ro cwdm-n?          int16

```

```

augment /nw:networks/nw:network/nw:node/tet:te/tet:information-
source-entry/tet:connectivity-matrices/tet:connectivity-
matrix/tet:optimizations/tet:algorithm/tet:metric/tet:optimization-
metric/tet:explicit-route-exclude-objects/tet:route-object-exclude-
object/tet:type/tet:label/tet:label-hop/tet:te-label/tet:technology:

```

```

  +--:(wson)
    +--ro (grid-type)?
      +--:(dwdm)
        | +--ro (single-or-super-channel)?
        |   +--:(single)
        |     | +--ro dwdm-n?                int16
        |     +--:(super)
        |       +--ro subcarrier-dwdm-n*    int16
      +--:(cwdm)
        +--ro cwdm-n?                        int16

```

```

augment /nw:networks/nw:network/nw:node/tet:te/tet:information-
source-entry/tet:connectivity-matrices/tet:connectivity-
matrix/tet:optimizations/tet:algorithm/tet:metric/tet:optimization-
metric/tet:explicit-route-include-objects/tet:route-object-include-
object/tet:type/tet:label/tet:label-hop/tet:te-label/tet:technology:

```

```

  +--:(wson)
    +--ro (grid-type)?
      +--:(dwdm)
        | +--ro (single-or-super-channel)?
        |   +--:(single)
        |     | +--ro dwdm-n?                int16
        |     +--:(super)
        |       +--ro subcarrier-dwdm-n*    int16
      +--:(cwdm)
        +--ro cwdm-n?                        int16

```

```

augment /nw:networks/nw:network/nw:node/tet:te/tet:information-
source-entry/tet:connectivity-matrices/tet:connectivity-
matrix/tet:path-properties/tet:path-route-objects/tet:path-route-
object/tet:type/tet:label/tet:label-hop/tet:te-label/tet:technology:

```

```

  +--:(wson)
    +--ro (grid-type)?
      +--:(dwdm)
        | +--ro (single-or-super-channel)?
        |   +--:(single)
        |     | +--ro dwdm-n?                int16
        |     +--:(super)

```

```

        |      +--ro subcarrier-dwdm-n*   int16
      +--:(cwdm)
        +--ro cwdm-n?                      int16
    augment /nw:networks/nw:network/nw:node/tet:te/tet:tunnel-
termination-point/tet:local-link-connectivities/tet:label-
restrictions/tet:label-restriction:
    +--rw grid-type?   identityref
    +--rw priority?    uint8
    augment /nw:networks/nw:network/nw:node/tet:te/tet:tunnel-
termination-point/tet:local-link-connectivities/tet:label-
restrictions/tet:label-restriction/tet:label-start/tet:te-
label/tet:technology:
    +--:(wson)
    +--rw (grid-type)?
    +--:(dwdm)
    |   +--rw dwdm-n?   int16
    +--:(cwdm)
    |   +--rw cwdm-n?   int16
    augment /nw:networks/nw:network/nw:node/tet:te/tet:tunnel-
termination-point/tet:local-link-connectivities/tet:label-
restrictions/tet:label-restriction/tet:label-end/tet:te-
label/tet:technology:
    +--:(wson)
    +--rw (grid-type)?
    +--:(dwdm)
    |   +--rw dwdm-n?   int16
    +--:(cwdm)
    |   +--rw cwdm-n?   int16
    augment /nw:networks/nw:network/nw:node/tet:te/tet:tunnel-
termination-point/tet:local-link-connectivities/tet:label-
restrictions/tet:label-restriction/tet:label-step/tet:technology:
    +--:(wson)
    +--rw (layer0-grid-type)?
    +--:(dwdm)
    |   +--rw wson-dwdm?   identityref
    +--:(cwdm)
    |   +--rw wson-cwdm?   identityref
    augment /nw:networks/nw:network/nw:node/tet:te/tet:tunnel-
termination-point/tet:local-link-
connectivities/tet:underlay/tet:primary-path/tet:path-
element/tet:type/tet:label/tet:label-hop/tet:te-label/tet:technology:

```

```

+---:(wson)
  +--rw (grid-type)?
    +---:(dwdm)
      | +--rw (single-or-super-channel)?
      |   +---:(single)
      |     | +--rw dwdm-n?                int16
      |   +---:(super)
      |     +--rw subcarrier-dwdm-n*      int16
    +---:(cwdm)
      +--rw cwdm-n?                      int16
  augment /nw:networks/nw:network/nw:node/tet:te/tet:tunnel-
termination-point/tet:local-link-
connectivities/tet:underlay/tet:backup-path/tet:path-
element/tet:type/tet:label/tet:label-hop/tet:te-label/tet:technology:
+---:(wson)
  +--rw (grid-type)?
    +---:(dwdm)
      | +--rw (single-or-super-channel)?
      |   +---:(single)
      |     | +--rw dwdm-n?                int16
      |   +---:(super)
      |     +--rw subcarrier-dwdm-n*      int16
    +---:(cwdm)
      +--rw cwdm-n?                      int16
  augment /nw:networks/nw:network/nw:node/tet:te/tet:tunnel-
termination-point/tet:local-link-
connectivities/tet:optimizations/tet:algorithm/tet:metric/tet:optimizat
ion-metric/tet:explicit-route-exclude-objects/tet:route-object-exclude-
object/tet:type/tet:label/tet:label-hop/tet:te-label/tet:technology:
+---:(wson)
  +--rw (grid-type)?
    +---:(dwdm)
      | +--rw (single-or-super-channel)?
      |   +---:(single)
      |     | +--rw dwdm-n?                int16
      |   +---:(super)
      |     +--rw subcarrier-dwdm-n*      int16
    +---:(cwdm)
      +--rw cwdm-n?                      int16
  augment /nw:networks/nw:network/nw:node/tet:te/tet:tunnel-
termination-point/tet:local-link-

```

connectivities/tet:optimizations/tet:algorithm/tet:metric/tet:optimization-metric/tet:explicit-route-include-objects/tet:route-object-include-object/tet:type/tet:label/tet:label-hop/tet:te-label/tet:technology:

```

+--:(wson)
  +--rw (grid-type)?
    +--:(dwdm)
      | +--rw (single-or-super-channel)?
      |   +--:(single)
      |     | +--rw dwdm-n?          int16
      |     +--:(super)
      |       +--rw subcarrier-dwdm-n*  int16
    +--:(cwdm)
      +--rw cwdm-n?          int16

```

augment /nw:networks/nw:network/nw:node/tet:te/tet:tunnel-termination-point/tet:local-link-connectivities/tet:path-properties/tet:path-route-objects/tet:path-route-object/tet:type/tet:label/tet:label-hop/tet:te-label/tet:technology:

```

+--:(wson)
  +--ro (grid-type)?
    +--:(dwdm)
      | +--ro (single-or-super-channel)?
      |   +--:(single)
      |     | +--ro dwdm-n?          int16
      |     +--:(super)
      |       +--ro subcarrier-dwdm-n*  int16
    +--:(cwdm)
      +--ro cwdm-n?          int16

```

augment /nw:networks/nw:network/nw:node/tet:te/tet:tunnel-termination-point/tet:local-link-connectivities/tet:local-link-connectivity/tet:label-restrictions/tet:label-restriction:

```

+--rw grid-type?  identityref
+--rw priority?   uint8

```

augment /nw:networks/nw:network/nw:node/tet:te/tet:tunnel-termination-point/tet:local-link-connectivities/tet:local-link-connectivity/tet:label-restrictions/tet:label-restriction/tet:label-start/tet:te-label/tet:technology:

```

+--:(wson)
  +--rw (grid-type)?
    +--:(dwdm)
      | +--rw dwdm-n?  int16
    +--:(cwdm)

```

```

        +--rw cwdm-n?    int16
    augment /nw:networks/nw:network/nw:node/tet:te/tet:tunnel-
termination-point/tet:local-link-connectivities/tet:local-link-
connectivity/tet:label-restrictions/tet:label-restriction/tet:label-
end/tet:te-label/tet:technology:
    +--:(wson)
        +--rw (grid-type)?
            +--:(dwdm)
                | +--rw dwdm-n?    int16
            +--:(cwdm)
                +--rw cwdm-n?    int16
    augment /nw:networks/nw:network/nw:node/tet:te/tet:tunnel-
termination-point/tet:local-link-connectivities/tet:local-link-
connectivity/tet:label-restrictions/tet:label-restriction/tet:label-
step/tet:technology:
    +--:(wson)
        +--rw (layer0-grid-type)?
            +--:(dwdm)
                | +--rw wson-dwdm?    identityref
            +--:(cwdm)
                +--rw wson-cwdm?    identityref
    augment /nw:networks/nw:network/nw:node/tet:te/tet:tunnel-
termination-point/tet:local-link-connectivities/tet:local-link-
connectivity/tet:underlay/tet:primary-path/tet:path-
element/tet:type/tet:label/tet:label-hop/tet:te-label/tet:technology:
    +--:(wson)
        +--rw (grid-type)?
            +--:(dwdm)
                | +--rw (single-or-super-channel)?
                |     +--:(single)
                |         | +--rw dwdm-n?                int16
                |         +--:(super)
                |             +--rw subcarrier-dwdm-n*    int16
            +--:(cwdm)
                +--rw cwdm-n?                int16
    augment /nw:networks/nw:network/nw:node/tet:te/tet:tunnel-
termination-point/tet:local-link-connectivities/tet:local-link-
connectivity/tet:underlay/tet:backup-path/tet:path-
element/tet:type/tet:label/tet:label-hop/tet:te-label/tet:technology:
    +--:(wson)
        +--rw (grid-type)?

```

```

    +---:(dwdm)
    |   +---rw (single-or-super-channel)?
    |       +---:(single)
    |           |   +---rw dwdm-n?                int16
    |       +---:(super)
    |           +---rw subcarrier-dwdm-n*         int16
    +---:(cwdm)
        +---rw cwdm-n?                            int16
augment /nw:networks/nw:network/nw:node/tet:te/tet:tunnel-
termination-point/tet:local-link-connectivities/tet:local-link-
connectivity/tet:optimizations/tet:algorithm/tet:metric/tet:optimizatio
n-metric/tet:explicit-route-exclude-objects/tet:route-object-exclude-
object/tet:type/tet:label/tet:label-hop/tet:te-label/tet:technology:
    +---:(wson)
        +---rw (grid-type)?
            +---:(dwdm)
            |   +---rw (single-or-super-channel)?
            |       +---:(single)
            |           |   +---rw dwdm-n?                int16
            |       +---:(super)
            |           +---rw subcarrier-dwdm-n*         int16
            +---:(cwdm)
                +---rw cwdm-n?                            int16
augment /nw:networks/nw:network/nw:node/tet:te/tet:tunnel-
termination-point/tet:local-link-connectivities/tet:local-link-
connectivity/tet:optimizations/tet:algorithm/tet:metric/tet:optimizatio
n-metric/tet:explicit-route-include-objects/tet:route-object-include-
object/tet:type/tet:label/tet:label-hop/tet:te-label/tet:technology:
    +---:(wson)
        +---rw (grid-type)?
            +---:(dwdm)
            |   +---rw (single-or-super-channel)?
            |       +---:(single)
            |           |   +---rw dwdm-n?                int16
            |       +---:(super)
            |           +---rw subcarrier-dwdm-n*         int16
            +---:(cwdm)
                +---rw cwdm-n?                            int16
augment /nw:networks/nw:network/nw:node/tet:te/tet:tunnel-
termination-point/tet:local-link-connectivities/tet:local-link-

```

connectivity/tet:path-properties/tet:path-route-objects/tet:path-route-object/tet:type/tet:label/tet:label-hop/tet:te-label/tet:technology:

```

+--:(wson)
  +--ro (grid-type)?
    +--:(dwdm)
      | +--ro (single-or-super-channel)?
      |   +--:(single)
      |     | +--ro dwdm-n?                int16
      |     +--:(super)
      |       +--ro subcarrier-dwdm-n*    int16
    +--:(cwdm)
      +--ro cwdm-n?                      int16

```

augment /nw:networks/nw:network/nt:link/tet:te/tet:te-link-attributes/tet:underlay/tet:primary-path/tet:path-element/tet:type/tet:label/tet:label-hop/tet:te-label/tet:technology:

```

+--:(wson)
  +--rw (grid-type)?
    +--:(dwdm)
      | +--rw (single-or-super-channel)?
      |   +--:(single)
      |     | +--rw dwdm-n?                int16
      |     +--:(super)
      |       +--rw subcarrier-dwdm-n*    int16
    +--:(cwdm)
      +--rw cwdm-n?                      int16

```

augment /nw:networks/nw:network/nt:link/tet:te/tet:te-link-attributes/tet:underlay/tet:backup-path/tet:path-element/tet:type/tet:label/tet:label-hop/tet:te-label/tet:technology:

```

+--:(wson)
  +--rw (grid-type)?
    +--:(dwdm)
      | +--rw (single-or-super-channel)?
      |   +--:(single)
      |     | +--rw dwdm-n?                int16
      |     +--:(super)
      |       +--rw subcarrier-dwdm-n*    int16
    +--:(cwdm)
      +--rw cwdm-n?                      int16

```

augment /nw:networks/nw:network/nt:link/tet:te/tet:te-link-attributes/tet:label-restrictions/tet:label-restriction:

```

+--rw grid-type?  identityref

```

```

    +--rw priority?      uint8
  augment /nw:networks/nw:network/nt:link/tet:te/tet:te-link-
attributes/tet:label-restrictions/tet:label-restriction/tet:label-
start/tet:te-label/tet:technology:
    +--:(wson)
      +--rw (grid-type)?
        +--:(dwdm)
          | +--rw dwdm-n?   int16
        +--:(cwdm)
          +--rw cwdm-n?    int16
  augment /nw:networks/nw:network/nt:link/tet:te/tet:te-link-
attributes/tet:label-restrictions/tet:label-restriction/tet:label-
end/tet:te-label/tet:technology:
    +--:(wson)
      +--rw (grid-type)?
        +--:(dwdm)
          | +--rw dwdm-n?   int16
        +--:(cwdm)
          +--rw cwdm-n?    int16
  augment /nw:networks/nw:network/nt:link/tet:te/tet:te-link-
attributes/tet:label-restrictions/tet:label-restriction/tet:label-
step/tet:technology:
    +--:(wson)
      +--rw (layer0-grid-type)?
        +--:(dwdm)
          | +--rw wson-dwdm?  identityref
        +--:(cwdm)
          +--rw wson-cwdm?   identityref
  augment /nw:networks/nw:network/nt:link/tet:te/tet:information-
source-entry/tet:label-restrictions/tet:label-restriction:
    +--ro grid-type?    identityref
    +--ro priority?     uint8
  augment /nw:networks/nw:network/nt:link/tet:te/tet:information-
source-entry/tet:label-restrictions/tet:label-restriction/tet:label-
start/tet:te-label/tet:technology:
    +--:(wson)
      +--ro (grid-type)?
        +--:(dwdm)
          | +--ro dwdm-n?    int16
        +--:(cwdm)
          +--ro cwdm-n?     int16

```

```

augment /nw:networks/nw:network/nt:link/tet:te/tet:information-
source-entry/tet:label-restrictions/tet:label-restriction/tet:label-
end/tet:te-label/tet:technology:

```

```

+--:(wson)

```

```

+--ro (grid-type)?

```

```

+--:(dwdm)

```

```

| +--ro dwdm-n?    int16

```

```

+--:(cwdm)

```

```

+--ro cwdm-n?    int16

```

```

augment /nw:networks/nw:network/nt:link/tet:te/tet:information-
source-entry/tet:label-restrictions/tet:label-restriction/tet:label-
step/tet:technology:

```

```

+--:(wson)

```

```

+--ro (layer0-grid-type)?

```

```

+--:(dwdm)

```

```

| +--ro wson-dwdm?  identityref

```

```

+--:(cwdm)

```

```

+--ro wson-cwdm?  identityref

```

```

augment /nw:networks/tet:te/tet:templates/tet:link-template/tet:te-
link-attributes/tet:underlay/tet:primary-path/tet:path-
element/tet:type/tet:label/tet:label-hop/tet:te-label/tet:technology:

```

```

+--:(wson)

```

```

+--rw (grid-type)?

```

```

+--:(dwdm)

```

```

| +--rw (single-or-super-channel)?

```

```

|   +--:(single)

```

```

|   | +--rw dwdm-n?          int16

```

```

|   +--:(super)

```

```

|   +--rw subcarrier-dwdm-n*  int16

```

```

+--:(cwdm)

```

```

+--rw cwdm-n?          int16

```

```

augment /nw:networks/tet:te/tet:templates/tet:link-template/tet:te-
link-attributes/tet:underlay/tet:backup-path/tet:path-
element/tet:type/tet:label/tet:label-hop/tet:te-label/tet:technology:

```

```

+--:(wson)

```

```

+--rw (grid-type)?

```

```

+--:(dwdm)

```

```

| +--rw (single-or-super-channel)?

```

```

|   +--:(single)

```

```

|   | +--rw dwdm-n?          int16

```

```

|   +--:(super)

```

```

        |      +--rw subcarrier-dwdm-n*   int16
        +---:(cwdm)
            +--rw cwdm-n?                  int16
    augment /nw:networks/tet:te/tet:templates/tet:link-template/tet:te-
link-attributes/tet:label-restrictions/tet:label-restriction:
    +--rw grid-type?   identityref
    +--rw priority?    uint8
    augment /nw:networks/tet:te/tet:templates/tet:link-template/tet:te-
link-attributes/tet:label-restrictions/tet:label-restriction/tet:label-
start/tet:te-label/tet:technology:
    +---:(wson)
        +--rw (grid-type)?
        +---:(dwdm)
            | +--rw dwdm-n?   int16
            +---:(cwdm)
                +--rw cwdm-n?   int16
    augment /nw:networks/tet:te/tet:templates/tet:link-template/tet:te-
link-attributes/tet:label-restrictions/tet:label-restriction/tet:label-
end/tet:te-label/tet:technology:
    +---:(wson)
        +--rw (grid-type)?
        +---:(dwdm)
            | +--rw dwdm-n?   int16
            +---:(cwdm)
                +--rw cwdm-n?   int16
    augment /nw:networks/tet:te/tet:templates/tet:link-template/tet:te-
link-attributes/tet:label-restrictions/tet:label-restriction/tet:label-
step/tet:technology:
    +---:(wson)
        +--rw (layer0-grid-type)?
        +---:(dwdm)
            | +--rw wson-dwdm?   identityref
            +---:(cwdm)
                +--rw wson-cwdm?   identityref

```

3. IETF-WSON-Topology YANG Model

<CODE BEGINS> file ietf-wson-topology@2019-02-27.yang

```

module ietf-wson-topology {

    yang-version 1.1;

```

```
namespace "urn:ietf:params:xml:ns:yang:ietf-wson-topology";

prefix "wson";

import ietf-network {
  prefix "nw";
  reference
    "RFC 8345: A YANG Data Model for Network Topologies";
}

import ietf-network-topology {
  prefix "nt";
  reference
    "RFC 8345: A YANG Data Model for Network Topologies";
}

import ietf-te-topology {
  prefix "tet";
  reference
    "RFC YYYY: YANG Data Model for
    Traffic Engineering (TE) Topologies";
}

/* Note: The RFC Editor will replace YYYY with the number assigned to
the RFC once draft-ietf-teas-yang-te-topo becomes an RFC.*/

import ietf-layer0-types {
  prefix "layer0-types";
  reference
    "RFC XXXX: A YANG Data Model for WSON
    (Wavelength Switched Optical Networks)";
}

/* Note: The RFC Editor will replace XXXX with the number assigned to
the RFC once draft-ietf-ccamp-wson-yang becomes an RFC.*/

organization
  "IETF CCAMP Working Group";

contact
  "Editor:   Young Lee   <leeyoung@huawei.com>
  Editor:   Aihua Guo   <aihuaguo@huawei.com>";

description
  "This module provides a YANG data model for the routing and
  wavelength assignment (RWA) Traffic Engineering (TE)
  topology in wavelength switched optical networks (WSONs).
  The YANG model described in this document is a WSON
  technology-specific YANG model augmenting the generic TE
```


topology module (ietf-te-topology) based on the information model developed in [RFC 7446](#) and the two encoding documents [RFC 7581](#) and [RFC 7579](#) that developed protocol independent encodings based on [RFC 7446](#).

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```
revision 2019-02-27 {
  description
    "Initial Version";

  reference
    "RFC XXXX: A YANG Data Model for WSON (Wavelength Switched
      Optical Networks)";
}

/*
 * Groupings
 */
grouping wson-node-attributes {
  description "WSON node attributes";
  container wson-node {
    description "WSON node attributes";
    leaf node-type {
      type identityref {
        base layer0-types:layer0-node-type;
      }
      description "WSON node type";
    }
  }
}

grouping wson-link-attributes {
  description
    "Future WSON link attributes extensions";
}

grouping wson-tp-attributes {
  description "wson-tp-attributes";
```



```
list supported-payload-types {
  key "index";
  description
    "Supported payload types of a TP (Termination Point).
    The payload type is defined as the generalized PIDs
    (Payload Identifiers) in GMPLS";
  leaf index {
    type uint16;
    description "payload type index";
  }
  leaf payload-type {
    type string;
    description "the payload type supported by this client TP";
    reference
      "http://www.iana.org/assignments/gmpls-sig-parameters
      /gmpls-sig-parameters.xhtml";
  }
}

leaf client-facing {
  type boolean;
  default 'false';
  description
    "Indicates if it is a client-facing TP";
}

grouping wson-ttp-attributes {
  description
    "WSON tunnel termination point (e.g., transponder) attributes";

  leaf-list supported-operational-modes {
    type layer0-types:operational-mode;
    description
      "List of all supported vendor-specific
      mode identifiers";
  }

  leaf configured-operational-modes {
    type layer0-types:operational-mode;
    description
      "Vendor-specific mode identifier configured
      on the TTP (TE-tunnel Termination Point)";
  }

  leaf-list supported-fec-types {
    type identityref {
      base layer0-types:fec-type;
    }
  }
}
```

description

Lee, et al.

Expires January 2020

[Page 31]

```
    "List of all supported FEC (Forward Error Correction)
    types by this TTP";
}

leaf-list supported-termination-types {
  type identityref {
    base layer0-types:term-type;
  }
  description
    "List of all supported termination types by this TTP";
}

leaf supports-bit-stuffing {
  type boolean;
  description
    "Indicates whether bit stuffing is supported by this TTP";
}

leaf is-tunable {
  type boolean;
  description
    "Indicates if the TTP, or transponder, is tunable. Tunable
    transponders are assumed to be fully tunable to any of the
    96 channels within DWDM C-band";
}

leaf max-subcarrier-channel-num {
  type uint8 {
    range "1..max";
  }
  default 1;
  description
    "Indicates the maximum number of subcarrier channels for
    super-channel transponders. When the value equals 1 it
    represents regular single-channel transponder";
}
}

/*
 * Data nodes
 */

augment "/nw:networks/nw:network/nw:network-types"
+ "/tet:te-topology" {
  description "wson-topology augmented";
  container wson-topology {
    presence "indicates a topology of WSON";
    description
```

"Container to identify WSON topology type";

```
    }
  }

  augment "/nw:networks/nw:network/nt:link/tet:te"
    + "/tet:te-link-attributes" {
    when "/nw:networks/nw:network/nw:network-types"
      +"/tet:te-topology/wson:wson-topology" {
      description "This augment is only valid for WSON";
    }
    description "WSON Link augmentation.";
    uses wson-link-attributes;
  }

  augment "/nw:networks/nw:network/nw:node/nt:termination-point/"
    + "tet:te" {
    when "/nw:networks/nw:network/nw:network-types"
      +"/tet:te-topology/wson:wson-topology" {
      description "This augment is only valid for WSON";
    }
    description "WSON TP attributes";
    uses wson-tp-attributes;
  }

  augment "/nw:networks/nw:network/nw:node/tet:te"
    + "/tet:te-node-attributes" {
    when "/nw:networks/nw:network/nw:network-types"
      +"/tet:te-topology/wson:wson-topology" {
      description "This augment is only valid for WSON";
    }
    description "WSON Node augmentation";
    uses wson-node-attributes;
  }

  augment "/nw:networks/nw:network/nw:node/tet:te"
    + "/tet:tunnel-termination-point" {
    when "/nw:networks/nw:network/nw:network-types"
      +"/tet:te-topology/wson:wson-topology" {
      description "This augment is only valid for WSON";
    }
    description "WSON tunnel termination point augmentation";
    uses wson-ttp-attributes;
  }

  /*
  * Augment TE bandwidth
  */

  augment "/nw:networks/nw:network/nw:node/nt:termination-point/"
```

+ "tet:te/"

```
    + "tet:interface-switching-capability/tet:max-lsp-bandwidth/"
    + "tet:te-bandwidth/tet:technology" {
when "../..../nw:network-types/tet:te-topology/"
    + "wson:wson-topology" {
    description "Augment WSON TE bandwidth";
}
description
    "Augment maximum LSP WSON bandwidth of link termination point
    (LTP)";
case wson {
    uses layer0-types:wson-path-bandwidth;
}
}

augment "/nw:networks/nw:network/nw:node/tet:te/"
    + "tet:te-node-attributes/tet:connectivity-matrices/"
    + "tet:path-constraints/tet:te-bandwidth/tet:technology" {
when "../..../nw:network-types/tet:te-topology/"
    + "wson:wson-topology" {
    description "Augment WSON TE bandwidth";
}
description
    "Augment WSON bandwidth path constraints of
    connectivity-matrices";
case wson {
    uses layer0-types:wson-link-bandwidth;
}
}

augment "/nw:networks/nw:network/nw:node/tet:te/"
    + "tet:te-node-attributes/tet:connectivity-matrices/"
    + "tet:connectivity-matrix/"
    + "tet:path-constraints/tet:te-bandwidth/tet:technology" {
when "../..../nw:network-types/tet:te-topology/"
    + "wson:wson-topology" {
    description "Augment WSON TE bandwidth";
}
description
    "Augment WSON bandwidth path constraints of
    connectivity-matrix";
case wson {
    uses layer0-types:wson-link-bandwidth;
}
}

augment "/nw:networks/nw:network/nw:node/tet:te/"
    + "tet:information-source-entry/tet:connectivity-matrices/"
    + "tet:path-constraints/tet:te-bandwidth/tet:technology" {
```

when "../../../nw:network-types/tet:te-topology/"

```
    + "wson:wson-topology" {
      description "Augment WSON TE bandwidth";
    }
  description
    "Augment WSON bandwidth path constraints of
    connectivity-matrices information-source";
  case wson {
    uses layer0-types:wson-link-bandwidth;
  }
}

augment "/nw:networks/nw:network/nw:node/tet:te/"
  + "tet:information-source-entry/tet:connectivity-matrices/"
  + "tet:connectivity-matrix/"
  + "tet:path-constraints/tet:te-bandwidth/tet:technology" {
  when "../..//../..//../..//nw:network-types/tet:te-topology/"
    + "wson:wson-topology" {
    description "Augment WSON TE bandwidth";
  }
  description
    "Augment WSON bandwidth path constraints of
    connectivity-matrix information-source";
  case wson {
    uses layer0-types:wson-link-bandwidth;
  }
}

augment "/nw:networks/nw:network/nw:node/tet:te/"
  + "tet:tunnel-termination-point/"
  + "tet:client-layer-adaptation/tet:switching-capability/"
  + "tet:te-bandwidth/tet:technology" {
  when "../..//../..//../..//nw:network-types/tet:te-topology/"
    + "wson:wson-topology" {
    description "Augment WSON TE bandwidth";
  }
  description
    "Augment client WSON bandwidth of tunnel termination point
    (TTP)";
  case wson {
    uses layer0-types:wson-link-bandwidth;
  }
}

augment "/nw:networks/nw:network/nw:node/tet:te/"
  + "tet:tunnel-termination-point/"
  + "tet:local-link-connectivities/tet:path-constraints/"
  + "tet:te-bandwidth/tet:technology" {
  when "../..//../..//../..//nw:network-types/tet:te-topology/"
```

```
+ "wson:wson-topology" {
```

```
    description "Augment WSON TE bandwidth";
  }
  description
    "Augment WSON bandwidth path constraints of
    local-link-connectivities";
  case wson {
    uses layer0-types:wson-link-bandwidth;
  }
}

augment "/nw:networks/nw:network/nw:node/tet:te/"
  + "tet:tunnel-termination-point/"
  + "tet:local-link-connectivities/"
  + "tet:local-link-connectivity/tet:path-constraints/"
  + "tet:te-bandwidth/tet:technology" {
  when "../../../../../../../nw:network-types/tet:te-topology/"
    + "wson:wson-topology" {
    description "Augment WSON TE bandwidth";
  }
  description
    "Augment WSON bandwidth path constraints of
    local-link-connectivity (LLC)";
  case wson {
    uses layer0-types:wson-link-bandwidth;
  }
}

augment "/nw:networks/nw:network/nt:link/tet:te/"
  + "tet:te-link-attributes/"
  + "tet:interface-switching-capability/tet:max-lsp-bandwidth/"
  + "tet:te-bandwidth/tet:technology" {
  when "../../../../../../../nw:network-types/tet:te-topology/"
    + "wson:wson-topology" {
    description "WSON TE bandwidth";
  }
  description "Augment maximum LSP WSON bandwidth of TE link";
  case wson {
    uses layer0-types:wson-path-bandwidth;
  }
}

augment "/nw:networks/nw:network/nt:link/tet:te/"
  + "tet:te-link-attributes/"
  + "tet:max-link-bandwidth/"
  + "tet:te-bandwidth/tet:technology" {
  when "../../../../../../../nw:network-types/tet:te-topology/"
    + "wson:wson-topology" {
    description "WSON TE bandwidth";
  }
}
```

}

Lee, et al.

Expires January 2020

[Page 36]

```
    description
      "Augment maximum WSON bandwidth of TE link";
    case wson {
      uses layer0-types:wson-link-bandwidth;
    }
  }

augment "/nw:networks/nw:network/nt:link/tet:te/"
  + "tet:te-link-attributes/"
  + "tet:max-resv-link-bandwidth/"
  + "tet:te-bandwidth/tet:technology" {
  when "../..../nw:network-types/tet:te-topology/"
    + "wson:wson-topology" {
    description "WSON TE bandwidth";
  }
  description
    "Augment maximum reservable WSON bandwidth of
    TE link";
  case wson {
    uses layer0-types:wson-link-bandwidth;
  }
}

augment "/nw:networks/nw:network/nt:link/tet:te/"
  + "tet:te-link-attributes/"
  + "tet:unreserved-bandwidth/"
  + "tet:te-bandwidth/tet:technology" {
  when "../..../nw:network-types/tet:te-topology/"
    + "wson:wson-topology" {
    description "WSON TE bandwidth";
  }
  description
    "Augment unreserved WSON bandwidth of TE Link";
  case wson {
    uses layer0-types:wson-link-bandwidth;
  }
}

augment "/nw:networks/nw:network/nt:link/tet:te/"
  + "tet:information-source-entry/"
  + "tet:interface-switching-capability/"
  + "tet:max-lsp-bandwidth/"
  + "tet:te-bandwidth/tet:technology" {
  when "../..../nw:network-types/tet:te-topology/"
    + "wson:wson-topology" {
    description "WSON TE bandwidth";
  }
  description
```

"Augment maximum LSP WSON bandwidth of TE link

Lee, et al.

Expires January 2020

[Page 37]

```
        information-source";
    case wson {
        uses layer0-types:wson-path-bandwidth;
    }
}

augment "/nw:networks/nw:network/nt:link/tet:te/"
    + "tet:information-source-entry/"
    + "tet:max-link-bandwidth/"
    + "tet:te-bandwidth/tet:technology" {
    when "../..../nw:network-types/tet:te-topology/"
        + "wson:wson-topology" {
        description "WSON TE bandwidth";
    }
    description
        "Augment maximum WSON bandwidth of TE link
        information-source";
    case wson {
        uses layer0-types:wson-link-bandwidth;
    }
}

augment "/nw:networks/nw:network/nt:link/tet:te/"
    + "tet:information-source-entry/"
    + "tet:max-resv-link-bandwidth/"
    + "tet:te-bandwidth/tet:technology" {
    when "../..../nw:network-types/tet:te-topology/"
        + "wson:wson-topology" {
        description "WSON TE bandwidth";
    }
    description
        "Augment maximum reservable WSON bandwidth of TE link
        information-source";
    case wson {
        uses layer0-types:wson-link-bandwidth;
    }
}

augment "/nw:networks/nw:network/nt:link/tet:te/"
    + "tet:information-source-entry/"
    + "tet:unreserved-bandwidth/"
    + "tet:te-bandwidth/tet:technology" {
    when "../..../nw:network-types/tet:te-topology/"
        + "wson:wson-topology" {
        description "WSON TE bandwidth";
    }
    description
        "Augment unreserved WSON bandwidth of TE link
```

information-source";

Lee, et al.

Expires January 2020

[Page 38]

```
    case wson {
      uses layer0-types:wson-link-bandwidth;
    }
  }

augment "/nw:networks/tet:te/tet:templates/"
  + "tet:link-template/tet:te-link-attributes/"
  + "tet:interface-switching-capability/"
  + "tet:max-lsp-bandwidth/"
  + "tet:te-bandwidth/tet:technology" {
  description
    "Augment maximum WSON LSP bandwidth of TE link
    template";
  case wson {
    uses layer0-types:wson-path-bandwidth;
  }
}

augment "/nw:networks/tet:te/tet:templates/"
  + "tet:link-template/tet:te-link-attributes/"
  + "tet:max-link-bandwidth/"
  + "tet:te-bandwidth/tet:technology" {
  description
    "Augment maximum WSON bandwidth of TE link template";
  case wson {
    uses layer0-types:wson-link-bandwidth;
  }
}

augment "/nw:networks/tet:te/tet:templates/"
  + "tet:link-template/tet:te-link-attributes/"
  + "tet:max-resv-link-bandwidth/"
  + "tet:te-bandwidth/tet:technology" {
  description
    "Augment maximum reservable WSON bandwidth of TE link
    template";
  case wson {
    uses layer0-types:wson-link-bandwidth;
  }
}

augment "/nw:networks/tet:te/tet:templates/"
  + "tet:link-template/tet:te-link-attributes/"
  + "tet:unreserved-bandwidth/"
  + "tet:te-bandwidth/tet:technology" {
  description
    "Augment unreserved WSON bandwidth of TE link template";
  case wson {
```

uses layer0-types:wson-link-bandwidth;

```

    }
  }

  /*
   * Augment TE label.
   */

  augment "/nw:networks/nw:network/nw:node/tet:te/"
    + "tet:te-node-attributes/tet:connectivity-matrices/"
    + "tet:label-restrictions/tet:label-restriction" {
    when "../.../nw:network-types/tet:te-topology/"
      + "wson:wson-topology" {
      description "Augment WSON TE label";
    }
    description
      "Augment WSON label restrictions of connectivity-matrices";
    uses layer0-types:layer0-label-restriction;
  }

  augment "/nw:networks/nw:network/nw:node/tet:te/"
    + "tet:te-node-attributes/tet:connectivity-matrices/"
    + "tet:label-restrictions/tet:label-restriction/"
    + "tet:label-start/"
    + "tet:te-label/tet:technology" {
    when "../.../nw:network-types/tet:te-topology/"
      + "wson:wson-topology" {
      description "Augment WSON TE label";
    }
    description
      "Augment WSON label restrictions start of
      connectivity-matrices";
    case wson {
      uses layer0-types:wson-link-label;
    }
  }

  augment "/nw:networks/nw:network/nw:node/tet:te/"
    + "tet:te-node-attributes/tet:connectivity-matrices/"
    + "tet:label-restrictions/"
    + "tet:label-restriction/tet:label-end/"
    + "tet:te-label/tet:technology" {
    when "../.../nw:network-types/tet:te-topology/"
      + "wson:wson-topology" {
      description "Augment WSON TE label";
    }
    description
      "Augment WSON label restrictions end of

```

connectivity-matrices";

```
    case wson {
      uses layer0-types:wson-link-label;
    }
  }
augment "/nw:networks/nw:network/nw:node/tet:te/"
  + "tet:te-node-attributes/tet:connectivity-matrices/"
  + "tet:label-restrictions/"
  + "tet:label-restriction/tet:label-step/"
  + "tet:technology" {
when "../.../.../.../.../.../..."
  + "nw:network-types/tet:te-topology/"
  + "wson:wson-topology" {
    description "Augment WSON TE label";
  }
description
  "Augment WSON label restrictions step of
  connectivity-matrices";
case wson {
  uses layer0-types:wson-label-step;
}
}
augment "/nw:networks/nw:network/nw:node/tet:te/"
  + "tet:te-node-attributes/tet:connectivity-matrices/"
  + "tet:underlay/tet:primary-path/tet:path-element/"
  + "tet:type/tet:label/tet:label-hop/"
  + "tet:te-label/tet:technology" {
when "../.../.../.../.../.../..."
  + "nw:network-types/tet:te-topology/"
  + "wson:wson-topology" {
    description "Augment WSON TE label";
  }
description
  "Augment WSON label hop of underlay primary path of
  connectivity-matrices";
case wson {
  uses layer0-types:wson-path-label;
}
}
}
augment "/nw:networks/nw:network/nw:node/tet:te/"
  + "tet:te-node-attributes/tet:connectivity-matrices/"
  + "tet:underlay/tet:backup-path/tet:path-element/"
  + "tet:type/tet:label/tet:label-hop/"
  + "tet:te-label/tet:technology" {
when "../.../.../.../.../.../..."
  + "nw:network-types/tet:te-topology/"
  + "wson:wson-topology" {
    description "Augment WSON TE label";
```

}

Lee, et al.

Expires January 2020

[Page 41]

```
description
  "Augment WSON label hop of underlay backup path of
  connectivity-matrices";
case wson {
  uses layer0-types:wson-path-label;
}
}

augment "/nw:networks/nw:network/nw:node/tet:te/"
+ "tet:te-node-attributes/tet:connectivity-matrices/"
+ "tet:optimizations/tet:algorithm/tet:metric/"
+ "tet:optimization-metric/"
+ "tet:explicit-route-exclude-objects/"
+ "tet:route-object-exclude-object/"
+ "tet:type/tet:label/tet:label-hop/"
+ "tet:te-label/tet:technology" {
when "../../../../../../../../../../../../../../../"
+ "nw:network-types/tet:te-topology/"
+ "wson:wson-topology" {
  description "Augment WSON TE label";
}
description
  "Augment WSON label hop of route-exclude of
  connectivity-matrices";
case wson {
  uses layer0-types:wson-path-label;
}
}

augment "/nw:networks/nw:network/nw:node/tet:te/"
+ "tet:te-node-attributes/tet:connectivity-matrices/"
+ "tet:optimizations/tet:algorithm/tet:metric/"
+ "tet:optimization-metric/"
+ "tet:explicit-route-include-objects/"
+ "tet:route-object-include-object/"
+ "tet:type/tet:label/tet:label-hop/"
+ "tet:te-label/tet:technology" {
when "../../../../../../../../../../../../../../../"
+ "nw:network-types/tet:te-topology/"
+ "wson:wson-topology" {
  description "Augment WSON TE label";
}
description
  "Augment WSON label hop of route-include of
  connectivity-matrices";
case wson {
  uses layer0-types:wson-path-label;
}
}
```

}

Lee, et al.

Expires January 2020

[Page 42]

```

augment "/nw:networks/nw:network/nw:node/tet:te/"
  + "tet:te-node-attributes/tet:connectivity-matrices/"
  + "tet:path-properties/tet:path-route-objects/"
  + "tet:path-route-object/tet:type/tet:label/tet:label-hop/"
  + "tet:te-label/tet:technology"{
when "../../../../../../../../../../../"
  + "nw:network-types/tet:te-topology/"
  + "wson:wson-topology" {
  description "Augment WSON TE label";
}
description
  "Augment WSON label hop of path-route of
  connectivity-matrices";
case wson {
  uses layer0-types:wson-path-label;
}
}

```

```

augment "/nw:networks/nw:network/nw:node/tet:te/"
  + "tet:te-node-attributes/tet:connectivity-matrices/"
  + "tet:connectivity-matrix/tet:from/"
  + "tet:label-restrictions/tet:label-restriction" {
when "../../../../../../../../../../../"
  + "nw:network-types/tet:te-topology/"
  + "wson:wson-topology" {
  description "Augment WSON TE label";
}
description
  "Augment ingress WSON label restrictions of
  connectivity-matrix";
uses layer0-types:layer0-label-restriction;
}

```

```

augment "/nw:networks/nw:network/nw:node/tet:te/"
  + "tet:te-node-attributes/tet:connectivity-matrices/"
  + "tet:connectivity-matrix/tet:from/"
  + "tet:label-restrictions/tet:label-restriction/"
  + "tet:label-start/"
  + "tet:te-label/tet:technology" {
when "../../../../../../../../../../../"
  + "nw:network-types/tet:te-topology/"
  + "wson:wson-topology" {
  description "Augment WSON TE label";
}
description
  "Augment ingress WSON label restrictions start of
  connectivity-matrix ";

```

case wson {

Lee, et al.

Expires January 2020

[Page 43]

```

    uses layer0-types:wson-link-label;
  }
}

augment "/nw:networks/nw:network/nw:node/tet:te/"
  + "tet:te-node-attributes/tet:connectivity-matrices/"
  + "tet:connectivity-matrix/tet:from/"
  + "tet:label-restrictions/tet:label-restriction/"
  + "tet:label-end/"
  + "tet:te-label/tet:technology" {
when "../.../.../.../.../.../.../.../..."
  + "nw:network-types/tet:te-topology/"
  + "wson:wson-topology" {
  description "Augment WSON TE label";
}
description
  "Augment ingress WSON label restrictions end of
  connectivity-matrix";
case wson {
  uses layer0-types:wson-link-label;
}
}

augment "/nw:networks/nw:network/nw:node/tet:te/"
  + "tet:te-node-attributes/tet:connectivity-matrices/"
  + "tet:connectivity-matrix/tet:from/"
  + "tet:label-restrictions/tet:label-restriction/"
  + "tet:label-step/"
  + "tet:technology" {
when "../.../.../.../.../.../.../.../..."
  + "nw:network-types/tet:te-topology/"
  + "wson:wson-topology" {
  description "Augment WSON TE label";
}
description
  "Augment ingress WSON label restrictions step of
  connectivity-matrix";
case wson {
  uses layer0-types:wson-label-step;
}
}

augment "/nw:networks/nw:network/nw:node/tet:te/"
  + "tet:te-node-attributes/tet:connectivity-matrices/"
  + "tet:connectivity-matrix/tet:to/"
  + "tet:label-restrictions/tet:label-restriction" {
when "../.../.../.../.../.../.../..."
  + "nw:network-types/tet:te-topology/"

```

```
+ "wson:wson-topology" {
```

```
        description "Augment WSON TE label";
    }
    description
        "Augment egress WSON label restrictions of
        connectivity-matrix";
    uses layer0-types:layer0-label-restriction;
}

augment "/nw:networks/nw:network/nw:node/tet:te/"
    + "tet:te-node-attributes/tet:connectivity-matrices/"
    + "tet:connectivity-matrix/tet:to/"
    + "tet:label-restrictions/tet:label-restriction/"
    + "tet:label-start/"
    + "tet:te-label/tet:technology" {
when "../../../../../../../../../../../"
    + "nw:network-types/tet:te-topology/"
    + "wson:wson-topology" {
    description "Augment WSON TE label";
}
description
    "Augment egress WSON label restrictions start of
    connectivity-matrix";
case wson {
    uses layer0-types:wson-link-label;
}
}

augment "/nw:networks/nw:network/nw:node/tet:te/"
    + "tet:te-node-attributes/tet:connectivity-matrices/"
    + "tet:connectivity-matrix/tet:to/"
    + "tet:label-restrictions/tet:label-restriction/"
    + "tet:label-end/"
    + "tet:te-label/tet:technology" {
when "../../../../../../../../../../../"
    + "nw:network-types/tet:te-topology/"
    + "wson:wson-topology" {
    description "Augment WSON TE label";
}
description
    "Augment egress WSON label restrictions end of
    connectivity-matrix";
case wson {
    uses layer0-types:wson-link-label;
}
}

augment "/nw:networks/nw:network/nw:node/tet:te/"
    + "tet:te-node-attributes/tet:connectivity-matrices/"
```

+ "tet:connectivity-matrix/tet:to/"

```

    + "tet:label-restrictions/tet:label-restriction/"
    + "tet:label-step/"
    + "tet:technology" {
when "../.../.../.../.../.../.../.../.../..."
    + "nw:network-types/tet:te-topology/"
    + "wson:wson-topology" {
    description "Augment WSON TE label";
}
description
    "Augment egress WSON label restrictions step of
    connectivity-matrix";
case wson {
    uses layer0-types:wson-label-step;
}
}

augment "/nw:networks/nw:network/nw:node/tet:te/"
    + "tet:te-node-attributes/tet:connectivity-matrices/"
    + "tet:connectivity-matrix/"
    + "tet:underlay/tet:primary-path/tet:path-element/"
    + "tet:type/tet:label/tet:label-hop/"
    + "tet:te-label/tet:technology" {
when "../.../.../.../.../.../.../.../.../..."
    + "nw:network-types/tet:te-topology/"
    + "wson:wson-topology" {
    description "Augment WSON TE label";
}
description
    "Augment WSON label hop of underlay primary path of
    connectivity-matrix";
case wson {
    uses layer0-types:wson-path-label;
}
}

augment "/nw:networks/nw:network/nw:node/tet:te/"
    + "tet:te-node-attributes/tet:connectivity-matrices/"
    + "tet:connectivity-matrix/"
    + "tet:underlay/tet:backup-path/tet:path-element/"
    + "tet:type/tet:label/tet:label-hop/"
    + "tet:te-label/tet:technology" {
when "../.../.../.../.../.../.../.../.../..."
    + "nw:network-types/tet:te-topology/"
    + "wson:wson-topology" {
    description "Augment WSON TE label";
}
description
    "Augment WSON label hop of underlay backup path of

```

connectivity-matrix";

```

    case wson {
      uses layer0-types:wson-path-label;
    }
  }
augment "/nw:networks/nw:network/nw:node/tet:te/"
  + "tet:te-node-attributes/tet:connectivity-matrices/"
  + "tet:connectivity-matrix/tet:optimizations/"
  + "tet:algorithm/tet:metric/tet:optimization-metric/"
  + "tet:explicit-route-exclude-objects/"
  + "tet:route-object-exclude-object/tet:type/"
  + "tet:label/tet:label-hop/tet:te-label/tet:technology" {
  when "../.../.../.../.../.../.../.../.../.../..."
    + "nw:network-types/tet:te-topology/"
    + "wson:wson-topology" {
      description "Augment WSON TE label";
    }
  description
    "Augment WSON label hop of route-exclude of
    connectivity-matrix";
  case wson {
    uses layer0-types:wson-path-label;
  }
}

augment "/nw:networks/nw:network/nw:node/tet:te/"
  + "tet:te-node-attributes/tet:connectivity-matrices/"
  + "tet:connectivity-matrix/tet:optimizations/"
  + "tet:algorithm/tet:metric/tet:optimization-metric/"
  + "tet:explicit-route-include-objects/"
  + "tet:route-object-include-object/tet:type/"
  + "tet:label/tet:label-hop/tet:te-label/tet:technology" {
  when "../.../.../.../.../.../.../.../.../.../..."
    + "nw:network-types/tet:te-topology/"
    + "wson:wson-topology" {
      description "Augment WSON TE label";
    }
  description
    "Augment WSON label hop of route-include of
    connectivity-matrix";
  case wson {
    uses layer0-types:wson-path-label;
  }
}

augment "/nw:networks/nw:network/nw:node/tet:te/"
  + "tet:te-node-attributes/tet:connectivity-matrices/"
  + "tet:connectivity-matrix/"
  + "tet:path-properties/tet:path-route-objects/"

```

+ "tet:path-route-object/tet:type/"

```
    + "tet:label/tet:label-hop/tet:te-label/tet:technology" {
when "../../../../../../../../../../../"
    + "nw:network-types/tet:te-topology/"
    + "wson:wson-topology" {
    description "Augment WSON TE label";
}
description
    "Augment WSON label hop of path-route of
    connectivity-matrix";
case wson {
    uses layer0-types:wson-path-label;
}
}
```

```
augment "/nw:networks/nw:network/nw:node/tet:te/"
    + "tet:information-source-entry/"
    + "tet:connectivity-matrices/tet:label-restrictions/"
    + "tet:label-restriction" {
when "../../../../../../../nw:network-types/tet:te-topology/"
    + "wson:wson-topology" {
    description "Augment WSON TE label";
}
description
    "Augment WSON label restrictions of connectivity-matrices
    information-source";
uses layer0-types:layer0-label-restriction;
}
```

```
augment "/nw:networks/nw:network/nw:node/tet:te/"
    + "tet:information-source-entry/"
    + "tet:connectivity-matrices/tet:label-restrictions/"
    + "tet:label-restriction/"
    + "tet:label-start/tet:te-label/tet:technology" {
when "../../../../../../../"
    + "nw:network-types/tet:te-topology/"
    + "wson:wson-topology" {
    description "Augment WSON TE label";
}
description
    "Augment WSON label restrictions start of
    connectivity-matrices information-source";
case wson {
    uses layer0-types:wson-link-label;
}
}
```

```
augment "/nw:networks/nw:network/nw:node/tet:te/"
    + "tet:information-source-entry/"
```

+ "tet:connectivity-matrices/tet:label-restrictions/"

```

    + "tet:label-restriction/"
    + "tet:label-end/tet:te-label/tet:technology" {
when "../.../.../.../.../.../.../..."
    + "nw:network-types/tet:te-topology/"
    + "wson:wson-topology" {
description "Augment WSON TE label";
}
description
  "Augment WSON label restrictions end of
  connectivity-matrices information-source";
case wson {
  uses layer0-types:wson-link-label;
}
}

augment "/nw:networks/nw:network/nw:node/tet:te/"
  + "tet:information-source-entry/"
  + "tet:connectivity-matrices/tet:label-restrictions/"
  + "tet:label-restriction/"
  + "tet:label-step/tet:technology" {
when "../.../.../.../.../.../.../..."
  + "nw:network-types/tet:te-topology/"
  + "wson:wson-topology" {
description "Augment WSON TE label";
}
description
  "Augment WSON label restrictions step of
  connectivity-matrices information-source";
case wson {
  uses layer0-types:wson-label-step;
}
}

augment "/nw:networks/nw:network/nw:node/tet:te/"
  + "tet:information-source-entry/tet:connectivity-matrices/"
  + "tet:underlay/tet:primary-path/tet:path-element/tet:type/"
  + "tet:label/tet:label-hop/tet:te-label/tet:technology" {
when "../.../.../.../.../.../.../..."
  + "nw:network-types/tet:te-topology/"
  + "wson:wson-topology" {
description "Augment WSON TE label";
}
description
  "Augment WSON label hop of underlay primary path of
  connectivity-matrices information-source";
case wson {
  uses layer0-types:wson-path-label;
}
}

```

}

Lee, et al.

Expires January 2020

[Page 49]

```
augment "/nw:networks/nw:network/nw:node/tet:te/"
  + "tet:information-source-entry/tet:connectivity-matrices/"
  + "tet:underlay/tet:backup-path/tet:path-element/tet:type/"
  + "tet:label/tet:label-hop/tet:te-label/tet:technology" {
when "../../../../../../../../../../../"
  + "nw:network-types/tet:te-topology/"
  + "wson:wson-topology" {
  description "Augment WSON TE label";
}
description
  "Augment label hop of underlay backup path of
  connectivity-matrices information-source";
case wson {
  uses layer0-types:wson-path-label;
}
}
```

```
augment "/nw:networks/nw:network/nw:node/tet:te/"
  + "tet:information-source-entry/tet:connectivity-matrices/"
  + "tet:optimizations/tet:algorithm/tet:metric/"
  + "tet:optimization-metric/"
  + "tet:explicit-route-exclude-objects/"
  + "tet:route-object-exclude-object/tet:type/"
  + "tet:label/tet:label-hop/tet:te-label/tet:technology" {
when "../../../../../../../../../../../"
  + "nw:network-types/tet:te-topology/"
  + "wson:wson-topology" {
  description "Augment WSON TE label";
}
description
  "Augment WSON label hop of route-exclude of
  connectivity-matrices information-source";
case wson {
  uses layer0-types:wson-path-label;
}
}
```

```
augment "/nw:networks/nw:network/nw:node/tet:te/"
  + "tet:information-source-entry/tet:connectivity-matrices/"
  + "tet:optimizations/tet:algorithm/tet:metric/"
  + "tet:optimization-metric/"
  + "tet:explicit-route-include-objects/"
  + "tet:route-object-include-object/tet:type/"
  + "tet:label/tet:label-hop/tet:te-label/tet:technology" {
when "../../../../../../../../../../../"
  + "nw:network-types/tet:te-topology/"
  + "wson:wson-topology" {
```

description "Augment WSON TE label";

Lee, et al.

Expires January 2020

[Page 50]

```
    }
    description
      "Augment WSON label hop of route-include of
      connectivity-matrices information-source";
    case wson {
      uses layer0-types:wson-path-label;
    }
  }

augment "/nw:networks/nw:network/nw:node/tet:te/"
  + "tet:information-source-entry/tet:connectivity-matrices/"
  + "tet:path-properties/tet:path-route-objects/"
  + "tet:path-route-object/tet:type/"
  + "tet:label/tet:label-hop/tet:te-label/tet:technology" {
  when "../.../.../.../.../.../.../.../..."
    + "nw:network-types/tet:te-topology/"
    + "wson:wson-topology" {
    description "Augment WSON TE label";
  }
  description
    "Augment WSON label hop of path-route of connectivity-matrices
    information-source";
  case wson {
    uses layer0-types:wson-path-label;
  }
}

augment "/nw:networks/nw:network/nw:node/tet:te/"
  + "tet:information-source-entry/tet:connectivity-matrices/"
  + "tet:connectivity-matrix/"
  + "tet:from/tet:label-restrictions/tet:label-restriction" {
  when "../.../.../.../.../.../.../.../..."
    + "nw:network-types/tet:te-topology/"
    + "wson:wson-topology" {
    description "Augment WSON TE label";
  }
  description
    "Augment ingress WSON label restrictions of
    connectivity-matrix information-source";
  uses layer0-types:layer0-label-restriction;
}

augment "/nw:networks/nw:network/nw:node/tet:te/"
  + "tet:information-source-entry/tet:connectivity-matrices/"
  + "tet:connectivity-matrix/"
  + "tet:from/tet:label-restrictions/"
  + "tet:label-restriction/"
  + "tet:label-start/tet:te-label/tet:technology" {
```

when ".../.../.../.../.../.../.../.../.../.../..."

```

    + "nw:network-types/tet:te-topology/"
    + "wson:wson-topology" {
description "Augment WSON TE label";
}
description
  "Augment ingress WSON label restrictions start of
  connectivity-matrix information-source";
case wson {
  uses layer0-types:wson-link-label;
}
}
augment "/nw:networks/nw:network/nw:node/tet:te/"
  + "tet:information-source-entry/tet:connectivity-matrices/"
  + "tet:connectivity-matrix/"
  + "tet:from/tet:label-restrictions/"
  + "tet:label-restriction/"
  + "tet:label-end/tet:te-label/tet:technology" {
when "../../../../../../../../../../../"
  + "nw:network-types/tet:te-topology/"
  + "wson:wson-topology" {
description "Augment WSON TE label";
}
description
  "Augment ingress WSON label restrictions end of
  connectivity-matrix information-source";
case wson {
  uses layer0-types:wson-link-label;
}
}

augment "/nw:networks/nw:network/nw:node/tet:te/"
  + "tet:information-source-entry/tet:connectivity-matrices/"
  + "tet:connectivity-matrix/"
  + "tet:from/tet:label-restrictions/"
  + "tet:label-restriction/"
  + "tet:label-step/tet:technology" {
when "../../../../../../../../../../../"
  + "nw:network-types/tet:te-topology/"
  + "wson:wson-topology" {
description "Augment WSON TE label";
}
description
  "Augment ingress WSON label restrictions step of
  connectivity-matrix information-source";
case wson {
  uses layer0-types:wson-label-step;
}
}

```



```
augment "/nw:networks/nw:network/nw:node/tet:te/"
  + "tet:information-source-entry/tet:connectivity-matrices/"
  + "tet:connectivity-matrix/"
  + "tet:to/tet:label-restrictions/tet:label-restriction" {
when "../.../.../.../.../.../.../.../..."
  + "nw:network-types/tet:te-topology/"
  + "wson:wson-topology" {
  description "Augment WSON TE label";
}
description
  "Augment egress WSON label restrictions of connectivity-matrix
  information-source";
uses layer0-types:layer0-label-restriction;
}
```

```
augment "/nw:networks/nw:network/nw:node/tet:te/"
  + "tet:information-source-entry/tet:connectivity-matrices/"
  + "tet:connectivity-matrix/"
  + "tet:to/tet:label-restrictions/tet:label-restriction/"
  + "tet:label-start/tet:te-label/tet:technology" {
when "../.../.../.../.../.../.../.../..."
  + "nw:network-types/tet:te-topology/"
  + "wson:wson-topology" {
  description "Augment WSON TE label";
}
description
  "Augment egress WSON label restrictions start of
  connectivity-matrix information-source";
case wson {
  uses layer0-types:wson-link-label;
}
}
```

```
augment "/nw:networks/nw:network/nw:node/tet:te/"
  + "tet:information-source-entry/tet:connectivity-matrices/"
  + "tet:connectivity-matrix/"
  + "tet:to/tet:label-restrictions/tet:label-restriction/"
  + "tet:label-end/tet:te-label/tet:technology" {
when "../.../.../.../.../.../.../.../..."
  + "nw:network-types/tet:te-topology/"
  + "wson:wson-topology" {
  description "Augment WSON TE label";
}
description
  "Augment egress WSON label restrictions end of
  connectivity-matrix information-source";
case wson {
  uses layer0-types:wson-link-label;
}
```

}

Lee, et al.

Expires January 2020

[Page 53]

```
}

augment "/nw:networks/nw:network/nw:node/tet:te/"
  + "tet:information-source-entry/tet:connectivity-matrices/"
  + "tet:connectivity-matrix/"
  + "tet:to/tet:label-restrictions/tet:label-restriction/"
  + "tet:label-step/tet:technology" {
when "../../../../../../../../../../../"
  + "nw:network-types/tet:te-topology/"
  + "wson:wson-topology" {
  description "Augment WSON TE label";
}
description
  "Augment egress WSON label restrictions step of
  connectivity-matrix information-source";
case wson {
  uses layer0-types:wson-label-step;
}
}

augment "/nw:networks/nw:network/nw:node/tet:te/"
  + "tet:information-source-entry/tet:connectivity-matrices/"
  + "tet:connectivity-matrix/"
  + "tet:underlay/tet:primary-path/tet:path-element/tet:type/"
  + "tet:label/tet:label-hop/tet:te-label/tet:technology" {
when "../../../../../../../../../../../"
  + "nw:network-types/tet:te-topology/"
  + "wson:wson-topology" {
  description "Augment WSON TE label";
}
description
  "Augment WSON label hop of underlay primary path of
  connectivity-matrix information-source";
case wson {
  uses layer0-types:wson-path-label;
}
}

augment "/nw:networks/nw:network/nw:node/tet:te/"
  + "tet:information-source-entry/tet:connectivity-matrices/"
  + "tet:connectivity-matrix/"
  + "tet:underlay/tet:backup-path/tet:path-element/tet:type/"
  + "tet:label/tet:label-hop/tet:te-label/tet:technology" {
when "../../../../../../../../../../../"
  + "nw:network-types/tet:te-topology/"
  + "wson:wson-topology" {
  description "Augment WSON TE label";
}
}
```

description

Lee, et al.

Expires January 2020

[Page 54]

```

    "Augment WSON label hop of underlay backup path of
    connectivity-matrix information-source";
  case wson {
    uses layer0-types:wson-path-label;
  }
}

augment "/nw:networks/nw:network/nw:node/tet:te/"
+ "tet:information-source-entry/tet:connectivity-matrices/"
+ "tet:connectivity-matrix/"
+ "tet:optimizations/tet:algorithm/tet:metric/"
+ "tet:optimization-metric/"
+ "tet:explicit-route-exclude-objects/"
+ "tet:route-object-exclude-object/tet:type/"
+ "tet:label/tet:label-hop/tet:te-label/tet:technology" {
  when "../../../../../../../../../../../../../../../"
  + "nw:network-types/tet:te-topology/"
  + "wson:wson-topology" {
    description "Augment WSON TE label";
  }
  description
    "Augment label hop of route-exclude of connectivity-matrix
    information-source";
  case wson {
    uses layer0-types:wson-path-label;
  }
}

augment "/nw:networks/nw:network/nw:node/tet:te/"
+ "tet:information-source-entry/tet:connectivity-matrices/"
+ "tet:connectivity-matrix/"
+ "tet:optimizations/tet:algorithm/tet:metric/"
+ "tet:optimization-metric/"
+ "tet:explicit-route-include-objects/"
+ "tet:route-object-include-object/tet:type/"
+ "tet:label/tet:label-hop/tet:te-label/tet:technology" {
  when "../../../../../../../../../../../../../../../"
  + "nw:network-types/tet:te-topology/"
  + "wson:wson-topology" {
    description "Augment WSON TE label";
  }
  description
    "Augment WSON label hop of route-include of
    connectivity-matrix information-source";
  case wson {
    uses layer0-types:wson-path-label;
  }
}

```



```
augment "/nw:networks/nw:network/nw:node/tet:te/"
  + "tet:information-source-entry/tet:connectivity-matrices/"
  + "tet:connectivity-matrix/"
  + "tet:path-properties/tet:path-route-objects/"
  + "tet:path-route-object/tet:type/"
  + "tet:label/tet:label-hop/tet:te-label/tet:technology" {
when "../../../../../../../../../../../../../../../"
  + "nw:network-types/tet:te-topology/"
  + "wson:wson-topology" {
  description "Augment WSON TE label";
}
description
  "Augment WSON label hop of path-route of connectivity-matrix
  information-source";
case wson {
  uses layer0-types:wson-path-label;
}
}
```

```
augment "/nw:networks/nw:network/nw:node/tet:te/"
  + "tet:tunnel-termination-point/"
  + "tet:local-link-connectivities/"
  + "tet:label-restrictions/tet:label-restriction" {
when "../../../../../../../../../../../nw:network-types/tet:te-topology/"
  + "wson:wson-topology" {
  description "Augment WSON TE label";
}
description
  "Augment WSON label restrictions of
  local-link-connectivities";
uses layer0-types:layer0-label-restriction;
}
```

```
augment "/nw:networks/nw:network/nw:node/tet:te/"
  + "tet:tunnel-termination-point/"
  + "tet:local-link-connectivities/"
  + "tet:label-restrictions/tet:label-restriction/"
  + "tet:label-start/"
  + "tet:te-label/tet:technology" {
when "../../../../../../../../../../../"
  + "nw:network-types/tet:te-topology/"
  + "wson:wson-topology" {
  description "Augment WSON TE label";
}
description
  "Augment WSON label restrictions start of
  local-link-connectivities";
case wson {
```

```
uses layer0-types:wson-link-label;
```

```
    }
  }

  augment "/nw:networks/nw:network/nw:node/tet:te/"
    + "tet:tunnel-termination-point/"
    + "tet:local-link-connectivities/"
    + "tet:label-restrictions/tet:label-restriction/"
    + "tet:label-end/"
    + "tet:te-label/tet:technology"{
  when "../../../../../../../"
    + "nw:network-types/tet:te-topology/"
    + "wson:wson-topology" {
    description "Augment WSON TE label";
  }
  description
    "Augment WSON label restrictions end of
    local-link-connectivities";
  case wson {
    uses layer0-types:wson-link-label;
  }
}
```

```
augment "/nw:networks/nw:network/nw:node/tet:te/"
  + "tet:tunnel-termination-point/"
  + "tet:local-link-connectivities/"
  + "tet:label-restrictions/tet:label-restriction/"
  + "tet:label-step/"
  + "tet:technology"{
when "../../../../../../../"
  + "nw:network-types/tet:te-topology/"
  + "wson:wson-topology" {
  description "Augment WSON TE label";
}
description
  "Augment WSON label restrictions step of
  local-link-connectivities";
case wson {
  uses layer0-types:wson-label-step;
}
}
```

```
augment "/nw:networks/nw:network/nw:node/tet:te/"
  + "tet:tunnel-termination-point/"
  + "tet:local-link-connectivities/"
  + "tet:underlay/tet:primary-path/tet:path-element/tet:type/"
  + "tet:label/tet:label-hop/tet:te-label/tet:technology" {
when "../../../../../../../"
  + "nw:network-types/tet:te-topology/"
```

```
+ "wson:wson-topology" {
```

```
    description "Augment WSON TE label";
  }
  description
    "Augment WSON label hop of underlay primary path of
    local-link-connectivities";
  case wson {
    uses layer0-types:wson-path-label;
  }
}

augment "/nw:networks/nw:network/nw:node/tet:te/"
  + "tet:tunnel-termination-point/"
  + "tet:local-link-connectivities/"
  + "tet:underlay/tet:backup-path/tet:path-element/tet:type/"
  + "tet:label/tet:label-hop/tet:te-label/tet:technology" {
  when "../../../../../../../../../../../"
    + "nw:network-types/tet:te-topology/"
    + "wson:wson-topology" {
    description "Augment WSON TE label";
  }
  description
    "Augment WSON label hop of underlay backup path of
    local-link-connectivities";
  case wson {
    uses layer0-types:wson-path-label;
  }
}

augment "/nw:networks/nw:network/nw:node/tet:te/"
  + "tet:tunnel-termination-point/"
  + "tet:local-link-connectivities/"
  + "tet:optimizations/tet:algorithm/tet:metric/"
  + "tet:optimization-metric/"
  + "tet:explicit-route-exclude-objects/"
  + "tet:route-object-exclude-object/tet:type/"
  + "tet:label/tet:label-hop/tet:te-label/tet:technology" {
  when "../../../../../../../../../../../"
    + "nw:network-types/tet:te-topology/"
    + "wson:wson-topology" {
    description "Augment WSON TE label";
  }
  description
    "Augment WSON label hop of route-exclude of
    local-link-connectivities";
  case wson {
    uses layer0-types:wson-path-label;
  }
}
```



```
augment "/nw:networks/nw:network/nw:node/tet:te/"
  + "tet:tunnel-termination-point/"
  + "tet:local-link-connectivities/"
  + "tet:optimizations/tet:algorithm/tet:metric/"
  + "tet:optimization-metric/"
  + "tet:explicit-route-include-objects/"
  + "tet:route-object-include-object/tet:type/"
  + "tet:label/tet:label-hop/tet:te-label/tet:technology" {
when "../../../../../../../../../../../"
  + "nw:network-types/tet:te-topology/"
  + "wson:wson-topology" {
  description "Augment WSON TE label";
}
description
  "Augment label hop of route-include of
  local-link-connectivities";
case wson {
  uses layer0-types:wson-path-label;
}
}
```

```
augment "/nw:networks/nw:network/nw:node/tet:te/"
  + "tet:tunnel-termination-point/"
  + "tet:local-link-connectivities/"
  + "tet:path-properties/tet:path-route-objects/"
  + "tet:path-route-object/tet:type/"
  + "tet:label/tet:label-hop/tet:te-label/tet:technology" {
when "../../../../../../../../../../../"
  + "nw:network-types/tet:te-topology/"
  + "wson:wson-topology" {
  description "Augment WSON TE label";
}
description
  "Augment WSON label hop of path-route of
  local-link-connectivities";
case wson {
  uses layer0-types:wson-path-label;
}
}
```

```
augment "/nw:networks/nw:network/nw:node/tet:te/"
  + "tet:tunnel-termination-point/"
  + "tet:local-link-connectivities/"
  + "tet:local-link-connectivity/"
  + "tet:label-restrictions/tet:label-restriction" {
when "../../../../../../../nw:network-types/tet:te-topology/"
  + "wson:wson-topology" {
  description "Augment WSON TE label";
}
```

}

Lee, et al.

Expires January 2020

[Page 59]

```
description
  "Augment WSON label restrictions of
  local-link-connectivity (LLC)";
uses layer0-types:layer0-label-restriction;
}

augment "/nw:networks/nw:network/nw:node/tet:te/"
+ "tet:tunnel-termination-point/"
+ "tet:local-link-connectivities/"
+ "tet:local-link-connectivity/"
+ "tet:label-restrictions/tet:label-restriction/"
+ "tet:label-start/tet:te-label/tet:technology" {
when "../.../.../.../.../.../.../.../.../..."
+ "nw:network-types/tet:te-topology/"
+ "wson:wson-topology" {
  description "Augment WSON TE label";
}
description
  "Augment WSON label restrictions start of
  local-link-connectivity (LLC)";
case wson {
  uses layer0-types:wson-link-label;
}
}

augment "/nw:networks/nw:network/nw:node/tet:te/"
+ "tet:tunnel-termination-point/"
+ "tet:local-link-connectivities/"
+ "tet:local-link-connectivity/"
+ "tet:label-restrictions/tet:label-restriction/"
+ "tet:label-end/tet:te-label/tet:technology" {
when "../.../.../.../.../.../.../.../.../..."
+ "nw:network-types/tet:te-topology/"
+ "wson:wson-topology" {
  description "Augment WSON TE label";
}
description
  "Augment WSON label restrictions end of
  local-link-connectivity (LLC)";
case wson {
  uses layer0-types:wson-link-label;
}
}

augment "/nw:networks/nw:network/nw:node/tet:te/"
+ "tet:tunnel-termination-point/"
+ "tet:local-link-connectivities/"
+ "tet:local-link-connectivity/"
```

+ "tet:label-restrictions/tet:label-restriction/"

```

    + "tet:label-step/tet:technology" {
when "../.../.../.../.../.../.../.../..."
    + "nw:network-types/tet:te-topology/"
    + "wson:wson-topology" {
    description "Augment WSON TE label";
    }
description
    "Augment WSON label restrictions step of
    local-link-connectivity (LLC)";
case wson {
    uses layer0-types:wson-label-step;
}
}

augment "/nw:networks/nw:network/nw:node/tet:te/"
    + "tet:tunnel-termination-point/"
    + "tet:local-link-connectivities/"
    + "tet:local-link-connectivity/"
    + "tet:underlay/tet:primary-path/tet:path-element/tet:type/"
    + "tet:label/tet:label-hop/tet:te-label/tet:technology" {
when "../.../.../.../.../.../.../.../..."
    + "nw:network-types/tet:te-topology/"
    + "wson:wson-topology" {
    description "Augment WSON TE label";
    }
description
    "Augment WSON label hop of underlay primary path of
    local-link-connectivity (LLC)";
case wson {
    uses layer0-types:wson-path-label;
}
}

augment "/nw:networks/nw:network/nw:node/tet:te/"
    + "tet:tunnel-termination-point/"
    + "tet:local-link-connectivities/"
    + "tet:local-link-connectivity/"
    + "tet:underlay/tet:backup-path/tet:path-element/tet:type/"
    + "tet:label/tet:label-hop/tet:te-label/tet:technology" {
when "../.../.../.../.../.../.../.../..."
    + "nw:network-types/tet:te-topology/"
    + "wson:wson-topology" {
    description "Augment WSON TE label";
    }
description
    "Augment WSON label hop of underlay backup path of
    local-link-connectivity (LLC)";
case wson {

```

```
uses layer0-types:wson-path-label;
```

```

    }
  }

  augment "/nw:networks/nw:network/nw:node/tet:te/"
    + "tet:tunnel-termination-point/"
    + "tet:local-link-connectivities/"
    + "tet:local-link-connectivity/"
    + "tet:optimizations/tet:algorithm/tet:metric/"
    + "tet:optimization-metric/"
    + "tet:explicit-route-exclude-objects/"
    + "tet:route-object-exclude-object/tet:type/"
    + "tet:label/tet:label-hop/tet:te-label/tet:technology" {
  when "../../../../../../../../../../../../../../../"
    + "nw:network-types/tet:te-topology/"
    + "wson:wson-topology" {
    description "Augment WSON TE label";
  }
  description
    "Augment WSON label hop of route-exclude of
    local-link-connectivity (LLC)";
  case wson {
    uses layer0-types:wson-path-label;
  }
}

  augment "/nw:networks/nw:network/nw:node/tet:te/"
    + "tet:tunnel-termination-point/"
    + "tet:local-link-connectivities/"
    + "tet:local-link-connectivity/"
    + "tet:optimizations/tet:algorithm/tet:metric/"
    + "tet:optimization-metric/"
    + "tet:explicit-route-include-objects/"
    + "tet:route-object-include-object/tet:type/"
    + "tet:label/tet:label-hop/tet:te-label/tet:technology" {
  when "../../../../../../../../../../../../../../../"
    + "nw:network-types/tet:te-topology/"
    + "wson:wson-topology" {
    description "Augment WSON TE label";
  }
  description
    "Augment WSON label hop of route-include of
    local-link-connectivity (LLC)";
  case wson {
    uses layer0-types:wson-path-label;
  }
}

  augment "/nw:networks/nw:network/nw:node/tet:te/"

```

+ "tet:tunnel-termination-point/"

```

    + "tet:local-link-connectivities/"
    + "tet:local-link-connectivity/"
    + "tet:path-properties/tet:path-route-objects/"
    + "tet:path-route-object/tet:type/"
    + "tet:label/tet:label-hop/tet:te-label/tet:technology" {
when "../.../.../.../.../.../.../.../.../..."
    + "nw:network-types/tet:te-topology/"
    + "wson:wson-topology" {
description "Augment WSON TE label";
}
description
    "Augment WSON label hop of path-route of
    local-link-connectivity (LLC)";
case wson {
    uses layer0-types:wson-path-label;
}
}
augment "/nw:networks/nw:network/nt:link/tet:te/"
    + "tet:te-link-attributes/"
    + "tet:underlay/tet:primary-path/tet:path-element/tet:type/"
    + "tet:label/tet:label-hop/tet:te-label/tet:technology" {
when "../.../.../.../.../.../.../.../..."
    + "nw:network-types/tet:te-topology/"
    + "wson:wson-topology" {
description "Augment WSON TE label";
}
description
    "Augment WSON label hop of underlay primary path of TE link";
case wson {
    uses layer0-types:wson-path-label;
}
}
}

augment "/nw:networks/nw:network/nt:link/tet:te/"
    + "tet:te-link-attributes/"
    + "tet:underlay/tet:backup-path/tet:path-element/tet:type/"
    + "tet:label/tet:label-hop/tet:te-label/tet:technology" {
when "../.../.../.../.../.../.../.../..."
    + "nw:network-types/tet:te-topology/"
    + "wson:wson-topology" {
description "Augment WSON TE label";
}
description
    "Augment WSON label hop of underlay backup path of TE link";
case wson {
    uses layer0-types:wson-path-label;
}
}
}

```



```
augment "/nw:networks/nw:network/nt:link/tet:te/"
  + "tet:te-link-attributes/"
  + "tet:label-restrictions/tet:label-restriction" {
when "../../../nw:network-types/tet:te-topology/"
  + "wson:wson-topology" {
  description "Augment WSON TE label";
}
description
  "Augment WSON label restrictions of TE link";
uses layer0-types:layer0-label-restriction;
}

augment "/nw:networks/nw:network/nt:link/tet:te/"
  + "tet:te-link-attributes/"
  + "tet:label-restrictions/tet:label-restriction/"
  + "tet:label-start/tet:te-label/tet:technology" {
when "../../../nw:network-types/tet:te-topology/"
  + "wson:wson-topology" {
  description "Augment WSON TE label";
}
description
  "Augment WSON label restrictions start of TE link";
case wson {
  uses layer0-types:wson-link-label;
}
}

augment "/nw:networks/nw:network/nt:link/tet:te/"
  + "tet:te-link-attributes/"
  + "tet:label-restrictions/tet:label-restriction/"
  + "tet:label-end/tet:te-label/tet:technology" {
when "../../../nw:network-types/tet:te-topology/"
  + "wson:wson-topology" {
  description "Augment WSON TE label";
}
description
  "Augment WSON label restrictions end of TE link";
case wson {
  uses layer0-types:wson-link-label;
}
}

augment "/nw:networks/nw:network/nt:link/tet:te/"
  + "tet:te-link-attributes/"
  + "tet:label-restrictions/tet:label-restriction/"
  + "tet:label-step/tet:technology" {
when "../../../nw:network-types/tet:te-topology/"
  + "wson:wson-topology" {
```

description "Augment WSON TE label";

Lee, et al.

Expires January 2020

[Page 64]

```
    }
    description
      "Augment WSON label restrictions step of TE link";
    case wson {
      uses layer0-types:wson-label-step;
    }
  }

augment "/nw:networks/nw:network/nt:link/tet:te/"
  + "tet:information-source-entry/"
  + "tet:label-restrictions/tet:label-restriction" {
  when "../../../nw:network-types/tet:te-topology/"
    + "wson:wson-topology" {
    description "Augment WSON TE label";
  }
  description
    "Augment WSON label restrictions of TE link
    information-source";
  uses layer0-types:layer0-label-restriction;
}

augment "/nw:networks/nw:network/nt:link/tet:te/"
  + "tet:information-source-entry/"
  + "tet:label-restrictions/tet:label-restriction/"
  + "tet:label-start/tet:te-label/tet:technology" {
  when "../../../nw:network-types/tet:te-topology/"
    + "wson:wson-topology" {
    description "Augment WSON TE label";
  }
  description
    "Augment WSON label restrictions start of TE link
    information-source";
  case wson {
    uses layer0-types:wson-link-label;
  }
}

augment "/nw:networks/nw:network/nt:link/tet:te/"
  + "tet:information-source-entry/"
  + "tet:label-restrictions/tet:label-restriction/"
  + "tet:label-end/tet:te-label/tet:technology" {
  when "../../../nw:network-types/tet:te-topology/"
    + "wson:wson-topology" {
    description "Augment WSON TE label";
  }
  description
    "Augment WSON label restrictions end of TE link
    information-source";
```

case wson {

Lee, et al.

Expires January 2020

[Page 65]

```
    uses layer0-types:wson-link-label;
  }
}

augment "/nw:networks/nw:network/nt:link/tet:te/"
  + "tet:information-source-entry/"
  + "tet:label-restrictions/tet:label-restriction/"
  + "tet:label-step/tet:technology" {
  when "../../../nw:network-types/tet:te-topology/"
    + "wson:wson-topology" {
    description "Augment WSON TE label";
  }
  description
    "Augment WSON label restrictions step of TE link
    information-source";
  case wson {
    uses layer0-types:wson-label-step;
  }
}

augment "/nw:networks/tet:te/tet:templates/"
  + "tet:link-template/tet:te-link-attributes/"
  + "tet:underlay/tet:primary-path/tet:path-element/tet:type/"
  + "tet:label/tet:label-hop/tet:te-label/tet:technology" {
  description
    "Augment WSON label hop of underlay primary path of TE link
    template";
  case wson {
    uses layer0-types:wson-path-label;
  }
}

augment "/nw:networks/tet:te/tet:templates/"
  + "tet:link-template/tet:te-link-attributes/"
  + "tet:underlay/tet:backup-path/tet:path-element/tet:type/"
  + "tet:label/tet:label-hop/tet:te-label/tet:technology" {
  description
    "Augment WSON label hop of underlay backup path of TE link
    template";
  case wson {
    uses layer0-types:wson-path-label;
  }
}

augment "/nw:networks/tet:te/tet:templates/"
  + "tet:link-template/tet:te-link-attributes/"
  + "tet:label-restrictions/tet:label-restriction" {
  description
```

"Augment WSON label restrictions of TE link template";

Lee, et al.

Expires January 2020

[Page 66]

```
    uses layer0-types:layer0-label-restriction;
  }

  augment "/nw:networks/tet:te/tet:templates/"
    + "tet:link-template/tet:te-link-attributes/"
    + "tet:label-restrictions/tet:label-restriction/"
    + "tet:label-start/tet:te-label/tet:technology" {
    description
      "Augment WSON label restrictions start of TE link template";
    case wson {
      uses layer0-types:wson-link-label;
    }
  }

  augment "/nw:networks/tet:te/tet:templates/"
    + "tet:link-template/tet:te-link-attributes/"
    + "tet:label-restrictions/tet:label-restriction/"
    + "tet:label-end/tet:te-label/tet:technology" {
    description
      "Augment WSON label restrictions end of TE link template";
    case wson {
      uses layer0-types:wson-link-label;
    }
  }

  augment "/nw:networks/tet:te/tet:templates/"
    + "tet:link-template/tet:te-link-attributes/"
    + "tet:label-restrictions/tet:label-restriction/"
    + "tet:label-step/tet:technology" {
    description
      "Augment WSON label restrictions step of TE link template";
    case wson {
      uses layer0-types:wson-label-step;
    }
  }
}

<CODE ENDS>
```

4. Security Considerations

The YANG module specified in this document defines a schema for data that is designed to be accessed via network management protocols such as NETCONF [[RFC6241](#)] or RESTCONF [[RFC8040](#)]. The lowest NETCONF

layer is the secure transport layer, and the mandatory-to-implement secure transport is Secure Shell (SSH) [RFC6242]. The lowest RESTCONF layer is HTTPS, and the mandatory-to-implement secure transport is TLS [RFC8446].

The NETCONF access control model [RFC6536] provides the means to restrict access for particular NETCONF users to a preconfigured subset of all available NETCONF protocol operations and content. The NETCONF Protocol over Secure Shell (SSH) [RFC6242] describes a method for invoking and running NETCONF within a Secure Shell (SSH) session as an SSH subsystem. The Network Configuration Access Control Model (NACM) [RFC8341] provides the means to restrict access for particular NETCONF or RESTCONF users to a preconfigured subset of all available NETCONF or RESTCONF protocol operations and content.

A number of configuration data nodes defined in this document are writable/deletable (i.e., "config true"). These data nodes may be considered sensitive or vulnerable in some network environments.

There are a number of data nodes defined in this YANG module that are writable/creatable/deletable (i.e., config true, which is the default). These data nodes may be considered sensitive or vulnerable in some network environments. Write operations (e.g., edit-config) to these data nodes without proper protection can have a negative effect on network operations. These are the subtrees and data nodes and their sensitivity/vulnerability:

/nw:networks/nw:network/nw:network-types/tet:te-topology

/nw:networks/nw:network/nt:link/tet:te/tet:te-link-attributes

/nw:networks/nw:network/nw:node/nt:termination-point/tet:te

/nw:networks/nw:network/nw:node/tet:te/tet:te-node-attributes
/te-connectivity-matrices/te-connectivity-matrix/tet:path-
constraints/tet:te-bandwidth/tet:technology

/nw:networks/nw:network/nw:node/tet:te
/tet:tunnel-termination-point/tet:local-link-connectivities
/tet:label-restrictions/tet:label-restriction

5. IANA Considerations

This document registers the following namespace URIs in the IETF XML registry [[RFC3688](#)]:

```
-----  
URI: urn:ietf:params:xml:ns:yang: ietf-wson-topology  
Registrant Contact: The IESG.  
XML: N/A, the requested URI is an XML namespace.  
-----
```

This document registers the following YANG modules in the YANG Module Names registry [[RFC7950](#)] & [[RFC6020](#)]:

```
-----  
name:          ietf-wson-topology  
namespace:     urn:ietf:params:xml:ns:yang:ietf-wson-topology  
reference:     RFC XXXX (TDB)  
-----
```

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