Abstract

This document provides a YANG data model for the routing and wavelength assignment (RWA) TE topology in wavelength switched optical networks (WSONs).

Status of this Memo

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1. Introduction

This document 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 based on the information model developed in [RFC7446] and the two encoding documents [RFC7581] and [RFC7579] that developed protocol...
independent encodings based on [RFC7446]. This document augments the
generic TE topology draft [TE-TOPO].

What is not in scope of this document is both impairment-aware WSON
and flex-grid.

2. YANG Model (Tree Structure)

module: ietf-wson-topology
  augment /nd:networks/nd:network/nd:network-types:
    +--rw wson-topology!
  augment /nd:networks/nd:network/nd:node/tet:te/tet:te-node-
 attributes/tet:connectivity-matrices/tet:connectivity-matrix:
    +--rw matrix-interface* [in-port-id]
      +--rw in-port-id  wson-interface-ref
      +--rw out-port-id?  wson-interface-ref
  augment /nd:networks/nd:network/lnk:link/tet:te/tet:te-link-attributes:
    +--rw channel-max?                   int32
    +--rw default-frequency?             decimal64
    +--rw channel-spacing?               decimal64
    +--rw wavelength-available-bitmap*   binary
    +--rw wson-node
      +--rw device-type?  devicetype
      +--rw dir?           directionality
      +--rw interfaces* [name]
        +--rw name           string
        +--rw port-number?   uint32
        +--rw input-port?    boolean
        +--rw output-port?   boolean
        +--rw description?   string
      +--rw resource-pool* [resource-pool-id]
        +--rw resource-pool-id   uint32
        +--rw pool-state?        boolean
        +--rw matrix-interface* [in-port-id]
          +--rw in-port-id    wson-interface-ref
          +--rw out-port-id?   wson-interface-ref
3. WSON-RWA YANG Model

<CODE BEGINS> file "ietf-wson-topology@2017-07-03.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 "nd";
    }
    import ietf-network-topology {
        prefix "lnk";
    }
    import ietf-inet-types {
        prefix "inet";
    }
    import ietf-te-topology {
        prefix "tet";
    }
    organization
        "IETF CCAMP Working Group";
    contact
        "Editor: Young Lee <leeyoung@huawei.com>";
    description
        "This module contains a collection of YANG definitions for
        RWA WSON."

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    authors of the code. All rights reserved.

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    without modification, is permitted pursuant to, and subject
    to the license terms contained in, the Simplified BSD
typedef wson-topology-id {
    type inet:uri;
    description
        "The WSON Topology ID";
}

typedef wson-node-id {
    type inet:ip-address;
    description
        "The WSON Node ID";
}

typedef devicetype {
    type enumeration {
        enum adm {
            value 1;
            description
                "Device is ADM";
        }
    enum roadm {
            value 2;
            description
                "Device is ROAMD/OXC";
        }
    }
    description
        "device type: fixed (ADM) or switched (ROADM/OXC)";
}

typedef directionality {
    type enumeration {
        enum bidir {
            value 0;
            description
                "bi-directional";
        }
    }
}
enum input {
    value 1;
    description
        "input direction";
}

enum output {
    value 2;
    description
        "output direction";
}

description
    "The directionality of link set";

typedef wson-interface-ref {
    type leafref {
        path "/nd:networks/nd:network/nd:node/tet:te/
            + "tet:te-node-attributes/wson:wson-node/
                + "wson:interfaces/wson:name";
        description
            "This type is used by data models that need to
                reference WSON interface.";
    }
}

grouping wson-topology-type {
    description "wson-topology type";
    container wson-topology {
        presence "indicates a topology of wson";
        description
            "Container to identify wson topology type";
    }
}

grouping wson-node-attributes {
    description "wson node attributes";
    container wson-node {
        description "WSON node attributes.";
        leaf device-type {
            type devicetype;
            description
                "device type: fixed (ADM) or switched
                    (ROADM/OXC)";
        }
        leaf dir {
            type directionality;
            description
                "bi-directionality or input or output";
of link set;
}
list interfaces {
key "name";
unique "port-number"; // TODO Puerto y TP ID
description "List of interfaces contained in the node";
uses node-interface;
}
}

grouping node-interface {

description "node interface definition"

leaf name {

type string;
description "Interface name"
}
leaf port-number {

type uint32;
description "Number of the port used by the interface"
}
leaf input-port {

type boolean;
description "Determines if the port is an input port"
}
leaf output-port {

type boolean;
description "Determines if the port is an output port"
}
leaf description {

type string;
description "Description of the interface"
}
}

grouping available-wavelength {

description "describe available wavelengths"
leaf-list wavelength-available-bitmap {

type binary;
description "array of bits (i.e., bitmap) that indicates if a wavelength is available or not on each channel."
}
}

grouping wson-link-attributes {

description "Set of WSON link attributes";
leaf channel-max {
    type int32;
    description "Maximum Number of OCh channels available
by the node";
}

leaf default-frequency {
    type decimal64 {
        fraction-digits 5;
    }
    units THz;
    default 193.1;
    description "Default Central Frequency";
}

leaf channel-spacing {
    type decimal64 {
        fraction-digits 5;
    }
    units GHz;
    description "This is fixed channel spacing for WSON,
e.g, 12.5, 25, 50, 100, ..";
}

grouping wson-connectivity-matrix {
    description "wson connectivity matrix";
    list matrix-interface {
        key "in-port-id";
        description "matrix-interface describes input-ports
and out-ports around a connectivity
matrix";
        leaf in-port-id {
            type wson-interface-ref;
            description "The reference to in-port";
        }
        leaf out-port-id {
            type wson-interface-ref;
            description "The reference to out-port";
        }
    }
}

grouping resource-pool-attributes {
    description "resource pool describes regeneration or wave converter";
list resource-pool {
  key "resource-pool-id";
  description "The resource pool list";

  leaf resource-pool-id {
    type uint32;
    description "The resource pool ID";
  }

  leaf pool-state {
    type boolean;
    description "TRUE is state UP; FALSE is state down";
  }

  uses wson-connectivity-matrix;
}

augment "/nd:networks/nd:network/nd:network-types" {
  description "wson-topology augmented";
  uses wson-topology-type;
}

  when "/nd:networks/nd:network/nd:network-types" + "wson-topology" {
    description "This augment is only valid for WSON connectivity matrix.";
  }
  description "WSON connectivity matrix state augmentation";
  uses wson-connectivity-matrix;
}

  when "/nd:networks/nd:network/nd:network-types" + "wson-topology" {
    description "This augment is only valid for WSON.";
  }
  description "WSON Link augmentation.";
augment "/nd:networks/nd:network/nd:node/tet:te"
  + "/tet:te-node-attributes" {
  when "/nd:networks/nd:network/nd:network-types"
    +"/wson-topology" {
  description
    "This augment is only valid for WSON.";
  }
  description "WSON Node augmentation.";
  uses wson-node-attributes;
  uses resource-pool-attributes;
}
7. References

7.1. Normative References


7.2. Informative References


8. Contributors

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