YANG data model for Flexi-Grid Optical Networks

draft-vergara-ccamp-flexigrid-yang-05
draft-vergara-ccamp-flexigrid-media-channel-yang-01

Jorge E. López de Vergara (jorge.lopez_vergara@uam.es)
Daniel Perdices (daniel.perdices@naudit.es)
Víctor López (victor.lopezalvarez@telefonica.com)
Óscar González de Dios (oscar.gonzalezdedios@telefonica.com)
Daniel King (d.king@lancaster.ac.uk)
Young Lee (leeyoung@huawei.com)
Gabriele Galimberti (ggalimbe@cisco.com)
Motivation

• Existing YANG models are either technology-agnostic or technology-specific
  – draft-ietf-i2rs-yang-network-topo and draft-ietf-teas-yang-te-topo are generic: they have to be extended for each specific technology
  – draft-ietf-ccamp-wson-yang is specific for WSON technology, extending draft-ietf-teas-yang-te-topo
• We propose a pair of YANG models related to a Flexi-Grid Traffic Engineering Database and Media Channel
  – Based on the ideas presented at RFC 7698: “Framework and Requirements for GMPLS-Based Control of Flexi-Grid Dense Wavelength Division Multiplexing (DWDM) Networks”
  – They also extend from existing generic YANG models
Main changes from prior version (I)

• From comments and requests at CCAMP WG
• Split in two drafts
  – draft-vergara-ccamp-flexigrid-yang-05 (Flexi-grid-TED)
    • Model has been updated to be compatible with last changes on TE Topology model.
    • Proprietary Transponder attributes are not longer part of this model. Operational modes are used instead. These modes are compliant with ITU-T G.698.2 (11/2009) (See section 5.3 of the recommendation).
    • Other minor changes in TED model have also been included (e.g. default slot width granularity).
    • More precise explanations in the example of use.
Main changes from prior version (II)

• Split in two drafts
  – draft-vergara-ccamp-flexigrid-media-channel-yang-00
    • Flexi-grid media-channels are now augmenting TE-Tunnel. Therefore, some attributes are not longer necessary, since TE-Tunnel model already contained them.
    • Link-channel (list of the concatenated elements of the media-channel) is now re-using LSP from TE-Tunnel.
    • More precise explanations in the example of use.

• NMDA Compliant!
Flexi-grid Topology Model

module: ietf-flexi-grid-topology
  +--ro interfaces* [name]
    +- ro name string
    +- ro port-number? uint32
    +- ro input-port? boolean
    +- ro output-port? boolean
    +- ro description? string
    +- ro type? interface-type
    +- ro numbered-interface
      |  +- ro n-i-ip-address? inet:ip-address
    +- ro unnumbered-interface
      +- ro u-i-ip-address? inet:ip-address
      +- ro label? uint32
flexi-grid-connectivity-matrix-attributes
  +-rw connections* [input-port-id]
    +-rw input-port-id flexi-grid-node-port-ref
    +-rw output-port-id? flexi-grid-node-port-ref
flexi-grid-connectivity-matrix-attributes
  +-ro connections* [input-port-id]
    +-ro input-port-id flexi-grid-node-port-ref
    +-ro output-port-id? flexi-grid-node-port-ref
flexi-grid-transponder
  +-rw available-operational-mode* operational-mode
  +-rw operational-mode? operational-mode
flexi-grid-transponder
  +-ro available-operational-mode* operational-mode
  +-ro operational-mode? operational-mode
module: ietf-flexi-grid-media-channel

augment /te:te/te:tunnels/te:tunnel:
  +--rw source-port?      fg-ted:flexi-grid-node-port-ref
  +--rw destination-port? fg-ted:flexi-grid-node-port-ref
  +--rw effective-freq-slot
    +--rw N?   int32
    +--rw M?   int32

augment /te:te/te:tunnels/te:tunnel/te:state:
  +--ro source-port?      fg-ted:flexi-grid-node-port-ref
  +--ro destination-port? fg-ted:flexi-grid-node-port-ref
  +--ro effective-freq-slot
    +--ro N?   int32
    +--ro M?   int32

augment /te:te/te:lsps-state/te:lsp:
  +--ro N?                  int32
  +--ro M?                  int32
  +--ro source-port?        fg-ted:flexi-grid-node-port-ref
  +--ro destination-port?   fg-ted:flexi-grid-node-port-ref
  +--ro link?               fg-ted:flexi-grid-link-ref
  +--ro bidirectional?      boolean
Future work

• Adoption of these drafts as CCAMP WG documents
• draft-vergara-ccamp-flexigrid-yang
  • Study if ports should be LTP to be more coherent with the TE models.
• draft-vergara-ccamp-flexigrid-media-channel-yang
  • Discuss the terminology (e.g. media-channel, network media-channel, tunnel)
  • Study the use of LTP to model ports so that this model doesn't need to use transponder characteristics.
Thanks!
Any comments?