Finite state machine YANG model augmentation for Transponder Reconfiguration

draft-sambo-ccamp-yang-fsm-transponder-reconf-00

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Proposal

- YANG models for finite state machine to program recovery actions in flexible transponders
- Augmentation of the model in draft-sambo-netmod-yang-fsm-02
- Use case:
  - Flexible transponders in elastic optical networks: multiple rates, multiple modulation formats, multiple FECs
  - Format and FEC can be set based on optical physical layer (e.g., PM-QPSK more robust than PM-16QAM)
  - If physical conditions change (e.g., soft failure: BER increase), format or FEC can be adapted to get more robust transmission
State of the art

- Active service connection
- Degradation
- OAM H
- Alarm
- Transmission parameter computation
- SDN controller
- Configuration
- Recovery

Time consuming
Use case of application for FSM YANG model

Active service connection

SDN controller

Instructions

Instructions

Degradation

Fast reaction based on instructions

Faster
YANG model

module: ietf-treconf
  +---rw current-state?  leafref
  +---rw states
    +---rw state [id]
      +---rw id  state-id-type
      +---rw description?  string
      +---rw transitions
        +---rw transition [name]
          +---rw name  string
          +---rw description?  string
          +---rw threshold-parameter?  decimal64
          +---rw threshold-operator?  string
          +---rw transition-action
            +---rw action [id]
              +---rw id  transition-id-type
              +---rw type  enumeration
              +---rw simple
                +---rw execute
                +---rw next-action?  transition-id-type
                +---rw next-state?
Implementation

- Event: BER > BER_{th}
  - Reaction: e.g., format adaptation

- Event: BER < BER_{th}
  - Reaction: format adaptation
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