A YANG Data Model for Optical Transport Network Client Signals

draft-zheng-ccamp-otn-client-signal-yang-01

Abstract

A transport network is a server-layer network to provide connectivity services to its client. The topology and tunnel information in the transport layer has already been defined by Traffic-engineered models and OTN models, however, the access to the network has not been described. These information is useful to both client and provider.

This draft describe how the client signals are carried over OTN and defined corresponding YANG data model which is required during configuration procedure. More specifically, several client signal (of OTN) models including ETH, STM-n, FC and so on, are defined in this draft.

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# Introduction

A transport network is a server-layer network designed to provide connectivity services for a client-layer network to carry the client traffic transparently across the server-layer network resources. Currently there has been topology and tunnel model defined for transport network, such as [I-D.ietf-ccamp-otn-topo-yang] and [I-D.ietf-ccamp-otn-tunnel-model], which has described the network model between PEs. However, there is a missing piece between the PE and CE, which is expected to be solved in this document.

This document defines a data model of all OTN network client signals, using YANG language defined in [RFC7950]. The model can be used by applications exposing to a transport controller via a REST interface. Furthermore, it can be used by an application for the following purposes (but not limited to):

o To request/update an end-to-end service by driving a new OTN tunnel to be set up to support this service;

o To request/update an end-to-end service by using an existing OTN tunnel;

o To receive notification with regard to the information change of the given service;

The YANG model defined in this document is independent of control plane protocols and captures topology related information pertaining to an Optical Transport Networks (OTN)-electrical layer, as the scope specified by [RFC7062] and [RFC7139]. Furthermore, it is not a stand-alone model, but augmenting from the TE topology YANG model defined in [I-D.ietf-teas-yang-te-topo].

# Terminology and Notations

A simplified graphical representation of the data model is used in this document. The meaning of the symbols in the YANG data tree presented later in this document is defined in [I-D.ietf-netmod-yang-tree-diagrams]. They are provided below for reference.

o Brackets "[" and "]" enclose list keys.

o Abbreviations before data node names: "rw" means configuration (read-write) and "ro" state data (read-only).

o Symbols after data node names: "?" means an optional node, "!" means a presence container, and "\*" denotes a list and leaf-list.

o Parentheses enclose choice and case nodes, and case nodes are also marked with a colon (":").

o Ellipsis ("...") stands for contents of subtrees that are not shown.

# OTN Client Signal Overview

The OTN is usually a server-layer network designed to provide connectivity services for a client-layer network to carry the client traffic opaquely across the server-layer network resources. A transport network may be constructed from equipments utilizing any of a number of different transport technologies such as the evolving optical transport infrastructure (SONET/SDH and OTN) or packet transport as epitomized by the MPLS Transport Profile (MPLS-TP).

A full list of G-PID was summarized in [RFC7139], which can be divided into a few categories of OTN client signal. The first category of service type is Ethernet related, including GE, WAN/LAN to support EPL/EVPL service. Another category of service type would be client service which includes SDH/SONET, OTN service, SAN storage (FICON, Fiber Channel) and other applications such as video service (HD-SDI, 3G-SDI, etc.).

# YANG Model for OTN Client Signal

## YANG Tree for Ethernet Service

See the tree file on Github: ietf-eth-tran-service@2017-09-12.tree.

## YANG Tree for Other OTN Client Signal Model

This section will be completed later..

# YANG Code for OTN Client Signal

## The ETH Service YANG Codes

See the YANG file on Github: ietf-eth-tran-service@2017-09-12.yang.

## YANG Code for ETH Transport Type

See the YANG file on Github: ietf-eth-tran-types@2017-09-12.yang.

## Other OTN Client Signal YANG Code

TBD.

# Considerations and Open Issue

Editor Notes: This section is used to note temporary discussion/conclusion that to be fixed in the future version, and will be removed before publication.

Currently this work only covers the Ethernet related service model. Other client signals would be defined in later version. We currently assume that there won't be much common part between Ethernet service model and other client signals service model, therefore the two groups of models are defined independetly.

It is possible that there can be something in common for Ethernet service and other client signal service. If there is any need to construct a base model, we will also work it out in this draft. It is worth noting that a previous ID [draft-zhang-teas-transport-service-model] is also addressing the same problem by defining a base model. But unfortunately we have not found any chance to augment to that model. Need to determine how we should go depending on the discussion in WG.

# IANA Considerations

TBD.

# Manageability Considerations

TBD.

# Security Considerations

The data following the model defined in this document is exchanged via, for example, the interface between an orchestrator and a transport network controller. The security concerns mentioned in [ietf-teas-yang-te-topo] for using ietf-te-topology.yang model also applies to this document.

The YANG module defined in this document can be accessed via the RESTCONF protocol defined in [RFC8040], or maybe via the NETCONF protocol [RFC6241].

There are a number of data nodes defined in the YANG module which 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., POST) to these data nodes without proper protection can have a negative effect on network operations.

Editors note: to list specific subtrees and data nodes and their sensitivity/vulnerability.

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# Contributors

Will be updated in XML by editor.

# References

Will be updated in XML by editor.

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Will be updated in XML by editor.