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A YANG Data Model for Client-layer Tunnel
draft-zheng-ccamp-client-tunnel-yang-18

Abstract

A transport network is a server-layer network to provide connectivity services to its client. In this draft the tunnel of client is described, with the definition of client tunnel YANG model.

About This Document

This note is to be removed before publishing as an RFC.

The latest revision of this draft can be found at https://italobusi.github.io/eth-te-tunnel/draft-zheng-ccamp-client-tunnel-yang.html. Status information for this document may be found at https://datatracker.ietf.org/doc/draft-zheng-ccamp-client-tunnel-yang/.

Discussion of this document takes place on the Common Control and Measurement Plane Working Group mailing list (mailto:ccamp@ietf.org), which is archived at https://mailarchive.ietf.org/arch/browse/ccamp/. Subscribe at https://www.ietf.org/mailman/listinfo/ccamp/.

Source for this draft and an issue tracker can be found at https://github.com/italobusi/eth-te-tunnel.

Status of This Memo

This Internet-Draft is submitted in full conformance with the provisions of BCP 78 and BCP 79.

This Internet-Draft will expire on 18 April 2026.

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1. 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. The tunnel model in Traffic-Engineered network has been defined in both generic way and technology-specific way. The generic model, which is the base TE tunnel YANG model, can be found at [I-D.ietf-teas-yang-te]. Technology-specific models, such as OTN/ WSON tunnel model, have also been defined in [I-D.ietf-ccamp-otn-tunnel-model] and [I-D.ietf-ccamp-wson-tunnel-model] respectively. Corresponding tunnel on client-layer is also required, to have a complete topology view from the perspective of network controllers.

This document defines a data model of all client-layer tunnel, using YANG language defined in [RFC7950]. The model is augmenting the generic TE tunnel model, and can be used by applications exposing to a network controller via a REST interface. Furthermore, it can be used by an application to describe the client tunnel that constructed above the server-layer network. It is also worth noting that the client layer network will only need the tunnel model when there is a demand for switching techniques, such as Carrier Ethernet and MPLS-TP. The transparent signals do not need this model.

2. 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 [RFC8340]. They are provided below for reference.

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

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

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

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

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

3. YANG Model for Client-layer Tunnel

3.1. YANG Tree for Ethernet Tunnel

```
module: ietf-eth-te-tunnel

  augment /te:te/te:tunnels/te:tunnel:
    +--rw src-eth-tunnel-endpoint
    |  +--rw vlanid?     etht-types:vlanid
    |  +--rw tag-type?   etht-types:eth-tag-type
    +--rw dst-eth-tunnel-endpoint
    |  +--rw vlanid?     etht-types:vlanid
    |  +--rw tag-type?   etht-types:eth-tag-type
    +--rw bandwidth-profile
       +--rw bandwidth-profile-type?
       |       etht-types:bandwidth-profile-type
       +--rw CIR?                       uint64
       +--rw CBS?                       uint64
       +--rw EIR?                       uint64
       +--rw EBS?                       uint64
       +--rw color-aware?               boolean
       +--rw coupling-flag?             boolean
```

Figure 1: Ethernet TE Tunnel YANG tree

3.2. YANG Tree for Tunnel of other Client Signal Model

This section will be completed later.

4. YANG Code for Client-layer Tunnel

4.1. The ETH Tunnel YANG Code

```
<CODE BEGINS> file "ietf-eth-te-tunnel@2018-03-01.yang"
module ietf-eth-te-tunnel {

    namespace "urn:ietf:params:xml:ns:yang:ietf-eth-te-tunnel";

    prefix "eth-tunnel";

    import ietf-te {
        prefix "te";
    }

    import ietf-eth-tran-types {
        prefix "etht-types";
    }

    organization
        "Internet Engineering Task Force (IETF) CCAMP WG";
```

```
     contact
       "
         WG List: <mailto:ccamp@ietf.org>

         ID-draft editor:
           Haomian Zheng (zhenghaomian@huawei.com);
           Italo Busi (italo.busi@huawei.com);
           Aihua Guo (aihuaguo.ietf@gmail.com);
           Yunbin Xu (xuyunbin@caict.ac.cn);
           Yang Zhao (zhaoyangyjy@chinamobile.com);
           Xufeng Liu (xufeng.liu.ietf@gmail.com);
       ";

       description
           "This module defines a model for ETH transport tunnel";

       revision 2018-03-01 {
           description
               "Initial revision";
           reference
               "draft-zheng-ccamp-client-tunnel-yang";
       }

       grouping eth-tunnel-endpoint {
           description "Parameters for ETH tunnel.";

           leaf vlanid {
               type etht-types:vlanid;
               description
                   "VLAN tag id.";
           }

           leaf tag-type {
               type etht-types:eth-tag-type;
               description "VLAN tag type.";
           }
       }

       augment "/te:te/te:tunnels/te:tunnel" {
           description
               "Augment with additional parameters required for ETH
               service.";

           container src-eth-tunnel-endpoint {
               description
                   "Source ETH tunnel endpoint.";

               uses eth-tunnel-endpoint;
```

```
            }
            container dst-eth-tunnel-endpoint {
                description
                    "Destination ETH tunnel endpoint.";

                uses eth-tunnel-endpoint;
            }

            container bandwidth-profile {
                description
                    "ETH tunnel bandwidth profile specification.";

                uses etht-types:etht-bandwidth-profiles;
            }
        }
    }
    <CODE ENDS>
```

Figure 2: Ethernet TE Tunnel YANG module

4.2. Other Client-layer Tunnel YANG Code

TBD.

5. 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. This is a part of L2 work, need to discuss how to go with other L2 network models. The expectation is to include all potential L2 TE part in this work.

6. IANA Considerations

TBD.

7. Manageability Considerations

TBD.

8. 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 [I-D.ietf-teas-yang-te] 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].

9. References

9.1. Normative References

[I-D.ietf-teas-yang-te]
Saad, T., Gandhi, R., Liu, X., Beeram, V. P., and I. Bryskin, "A YANG Data Model for Traffic Engineering Tunnels, Label Switched Paths and Interfaces", Work in Progress, Internet-Draft, draft-ietf-teas-yang-te-38, 29 May 2025, <https://datatracker.ietf.org/doc/html/draft-ietf-teas-yang-te-38>.

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[RFC8040] Bierman, A., Bjorklund, M., and K. Watsen, "RESTCONF Protocol", RFC 8040, DOI 10.17487/RFC8040, January 2017, <https://www.rfc-editor.org/rfc/rfc8040>.

9.2. Informative References

[I-D.ietf-ccamp-otn-tunnel-model]
Zheng, H., Busi, I., Belotti, S., Lopez, V., and Y. Xu, "A YANG Data Model for Optical Transport Network (OTN) Tunnels and Label Switched Paths", Work in Progress, Internet-Draft, draft-ietf-ccamp-otn-tunnel-model-23, 4 June 2025, <https://datatracker.ietf.org/doc/html/draft-ietf-ccamp-otn-tunnel-model-23>.

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