

CCAMP Working Group
Internet-Draft
Intended status: Standards Track
Expires: March 3, 2019

H. Zheng
A. Guo
I. Busi
Huawei Technologies
Y. Xu
CAICT
Y. Zhao
China Mobile
X. Liu
Jabil
G. Fioccola
Telecom Italia
August 30, 2018

**A YANG Data Model for Client-layer Tunnel
draft-zheng-ccamp-client-tunnel-yang-03**

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.

Status of This Memo

This Internet-Draft is submitted in full conformance with the provisions of [BCP 78](#) and [BCP 79](#).

Internet-Drafts are working documents of the Internet Engineering Task Force (IETF). Note that other groups may also distribute working documents as Internet-Drafts. The list of current Internet-Drafts is at <https://datatracker.ietf.org/drafts/current/>.

Internet-Drafts are draft documents valid for a maximum of six months and may be updated, replaced, or obsoleted by other documents at any time. It is inappropriate to use Internet-Drafts as reference material or to cite them other than as "work in progress."

This Internet-Draft will expire on March 3, 2019.

Copyright Notice

Copyright (c) 2018 IETF Trust and the persons identified as the document authors. All rights reserved.

This document is subject to [BCP 78](#) and the IETF Trust's Legal Provisions Relating to IETF Documents

(<https://trustee.ietf.org/license-info>) in effect on the date of publication of this document. Please review these documents carefully, as they describe your rights and restrictions with respect to this document. Code Components extracted from this document must include Simplified BSD License text as described in Section 4.e of the Trust Legal Provisions and are provided without warranty as described in the Simplified BSD License.

Table of Contents

1.	Introduction	2
2.	Terminology and Notations	3
3.	YANG Model for Client-layer Tunnel	3
3.1.	YANG Tree for Ethernet Tunnel	3
3.2.	YANG Tree for Tunnel of other Client Signal Model	4
4.	YANG Code for Client-layer Tunnel	4
4.1.	The ETH Tunnel YANG Code	4
4.2.	Other Client-layer Tunnel YANG Code	6
5.	Considerations and Open Issue	6
6.	IANA Considerations	6
7.	Manageability Considerations	6
8.	Security Considerations	6
9.	Acknowledgements	7
10.	Contributors	7
11.	References	7
11.1.	Normative References	7
11.2.	Informative References	8
	Authors' Addresses	9

[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.lee-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 [\[I-D.ietf-netmod-yang-tree-diagrams\]](#). 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.

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-name?  string
        +--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
```

[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@huawei.com);
      Yunbin Xu (xuyunbin@ritt.cn);
      Yang Zhao (zhaoyangyjj@chinamobile.com);
      Xufeng Liu (Xufeng_Liu@jabil.com);
      Giuseppe Fioccola (giuseppe.fioccola@telecomitalia.it);
  ";

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

revision 2018-03-01 {
  description
    "Initial revision";
  reference
    "draft-zheng-ccamp-client-tunnel-yang-02";
}

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

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

  leaf tag-type {
    type eth-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>

[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. Acknowledgements

We would like to thank Igor Bryskin and Daniel King for their comments and discussions.

10. Contributors

Yanlei Zheng
China Unicom
Email: zhengyl@dimpt.com

Zhe Liu
Huawei Technologies,
Email: liuzhe123@huawei.com

Zheyu Fan
Huawei Technologies,
Email: fanzheyu2@huawei.com

Sergio Belotti
Nokia,
Email: sergio.belotti@nokia.com

Yingxi Yao
Shanghai Bell,
yingxi.yao@nokia-sbell.com

11. References

11.1. Normative References

[I-D.ietf-ccamp-otn-topo-yang]
zhenghaomian@huawei.com, z., Guo, A., Busi, I., Sharma, A., Liu, X., Belotti, S., Xu, Y., Wang, L., and O. Dios, "A YANG Data Model for Optical Transport Network Topology", [draft-ietf-ccamp-otn-topo-yang-05](#) (work in progress), August 2018.

[I-D.ietf-ccamp-otn-tunnel-model]

zhenghaomian@huawei.com, z., Guo, A., Busi, I., Sharma, A., Rao, R., Belotti, S., Lopezalvarez, V., Li, Y., and Y. Xu, "OTN Tunnel YANG Model", [draft-ietf-ccamp-otn-tunnel-model-05](#) (work in progress), August 2018.

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

Saad, T., Gandhi, R., Liu, X., Beeram, V., Shah, H., and I. Bryskin, "A YANG Data Model for Traffic Engineering Tunnels and Interfaces", [draft-ietf-teas-yang-te-16](#) (work in progress), July 2018.

[RFC6241] Enns, R., Ed., Bjorklund, M., Ed., Schoenwaelder, J., Ed., and A. Bierman, Ed., "Network Configuration Protocol (NETCONF)", [RFC 6241](#), DOI 10.17487/RFC6241, June 2011, <<https://www.rfc-editor.org/info/rfc6241>>.

[RFC7139] Zhang, F., Ed., Zhang, G., Belotti, S., Ceccarelli, D., and K. Pithewan, "GMPLS Signaling Extensions for Control of Evolving G.709 Optical Transport Networks", [RFC 7139](#), DOI 10.17487/RFC7139, March 2014, <<https://www.rfc-editor.org/info/rfc7139>>.

[RFC7950] Bjorklund, M., Ed., "The YANG 1.1 Data Modeling Language", [RFC 7950](#), DOI 10.17487/RFC7950, August 2016, <<https://www.rfc-editor.org/info/rfc7950>>.

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

11.2. Informative References

[I-D.ietf-netmod-yang-tree-diagrams]

Bjorklund, M. and L. Berger, "YANG Tree Diagrams", [draft-ietf-netmod-yang-tree-diagrams-06](#) (work in progress), February 2018.

[I-D.lee-ccamp-wson-tunnel-model]

Lee, Y., Dhody, D., Lopezalvarez, V., King, D., Yoon, B., and R. Vilata, "A Yang Data Model for WSON Tunnel", [draft-lee-ccamp-wson-tunnel-model-04](#) (work in progress), January 2018.

[I-D.zhang-teas-transport-service-model]

Zhang, X. and J. Ryoo, "A Service YANG Model for Connection-oriented Transport Networks", [draft-zhang-teas-transport-service-model-01](#) (work in progress), October 2016.

[RFC7062] Zhang, F., Ed., Li, D., Li, H., Belotti, S., and D. Ceccarelli, "Framework for GMPLS and PCE Control of G.709 Optical Transport Networks", [RFC 7062](#), DOI 10.17487/RFC7062, November 2013, <<https://www.rfc-editor.org/info/rfc7062>>.

Authors' Addresses

Haomian Zheng
Huawei Technologies
F3 R&D Center, Huawei Industrial Base, Bantian, Longgang District
Shenzhen, Guangdong 518129
P.R.China

Email: zhenghaomian@huawei.com

Aihua Guo
Huawei Technologies

Email: aihuaguo@huawei.com

Italo Busi
Huawei Technologies

Email: Italo.Busi@huawei.com

Yunbin Xu
CAICT

Email: xuyunbin@rictt.cn

Yang Zhao
China Mobile

Email: zhaoyangyjy@chinamobile.com

Xufeng Liu
Jabil

Email: Xufeng_Liu@jabil.com

Giuseppe Fioccola
Telecom Italia

Email: giuseppe.fioccola@telecomitalia.it