Interface Stack Table Definition for ~~Point~~ Point-~~to~~-to-Point (P2P)
Interface over
                              LAN
                   draft-liu-lsr-p2poverlan-00

Commenté [BMT1]: After reading the document, the purpose is not clear to me, especially whether it aims to complement a iftype registration. You may clarify the scope in the introduction.

Overall, please refer to RFC8892 which provides more guidelines to follow in this document

Abstract

   The point-to-point circuit type is one of the mainly used circuit
   types in link state routing protocols~~protocol~~. It is important to
identify
   the correct circuit type when forming adjacencies, flooding link
   state database packets, and monitoring the link state. This document
   defines the point-to-point interface type and relevant stack tables to
   provide benefits for operation, maintenance, and statistics.

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 December 18, 2021.

Copyright Notice

Table of Contents

1. Introduction

   Point-to-point (P2P) is the predominant circuit type used by link
state
   routing protocols such as IS-IS [RFC1195] [1] and OSPF [RFC2328] [2]
   [RFC5340] [3]. Compare with broadcast interfaces, the point-to-point
   Interface type is used differently when establishing neighbor
adjacencies,
   flooding link state information, representing the topology, etc.

   To simplify configuration and operation, it is helpful To to represent
   the fact that an interface is to be considered as a point-to-point
   interface explicitly in the interface stack. This enables, for
   example, routing protocols to automatically use the correct operating
   mode without further configuration.

   So it is necessary to abstract P2P as special sub-interface type and
   define relevant interface stack table.

2. Requirements Language

   The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT",
   "SHOULD", "SHOULD NOT", "RECOMMENDED", "NOT RECOMMENDED", "MAY", and
   "OPTIONAL" in this document are to be interpreted as described in BCP
   14 [RFC2119] [RFC8174] when, and only when, they appear in all
   capitals, as shown here.
   The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT",
   "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this
   document are to be interpreted as described in RFC 2119 [4].

3. Relationship to the IF-MIB and Interfaces YANG Module

   As defined in [RFC8343] [5], if the device implements the IF-MIB
   [RFC2863], each entry in the "/interfaces/interface" list in the
   operational state is typically mapped to one ifEntry.

So P2P as sub-interface type should also fully map to one ifEntry,
meanwhile define the "higher-layer-if" and "lower-layer-if" in the
YANG corresponding to "ifStackTable" in IF-MIB to setup a complete
interface stack table, then the P2P interface type can borrow all
existing items in interfaces YANG and IF-MIB to take the full
advantages from operation, statistic, etc.

The "higher-layer-if" should be a network layer interface type, and
the lower-layer-if should be a data link layer interface type.

```
+-----------------------------------+---------------------------+
| YANG data node in                 | IF-MIB object             |
| /interfaces/interface             |                           |
+-----------------------------------+---------------------------+
| name                              | ifName                    |
| type                              | ifType                    |
| description                       | ifAlias                   |
| admin-status                      | ifAdminStatus             |
| oper-status                       | ifOperStatus              |
| last-change                       | ifLastChange              |
| if-index                          | ifIndex                   |
| link-up-down-trap-enable          | ifLinkUpDownTrapEnable    |
| phys-address                      | ifPhysAddress             |
| higher-layer-if and lower-layer-if| ifStackTable              |
| speed                             | ifSpeed and ifHighSpeed   |
| discontinuity-time                | ifCounterDiscontinuityTime|
| in-octets                         | ifHCInOctets              |
| in-unicast-pkts                   | ifHCInUcastPkts           |
| in-broadcast-pkts                 | ifHCInBroadcastPkts       |
| in-multicast-pkts                 | ifHCInMulticastPkts       |
| in-discards                       | ifInDiscards              |
| in-errors                         | ifInErrors                |
| in-unknown-protos                 | ifInUnknownProtos         |
| out-octets                        | ifHCOutOctets             |
| out-unicast-pkts                  | ifHCOutUcastPkts          |
| out-broadcast-pkts                | ifHCOutBroadcastPkts      |
| out-multicast-pkts                | ifHCOutMulticastPkts      |
| out-discards                      | ifOutDiscards             |
| out-errors                        | ifOutErrors               |
+-----------------------------------+---------------------------+
```

YANG Data Nodes and Related IF-MIB Objects

Figure 1 YANG Data Nodes and Related IF-MIB Objects

4. Interface Stack Table for P2P Interface Type

   P2P interface type is a kind of point-to-point circuit type. P2P
   interface higher layer should be network layer "ipForward" (defined
   in IANA [6]) to run routing protocol, P2P interface lower layer is
   link data layer "ethernetCsmacd" (defined in IANA).

   P2P interface type ifStackTable should be defined as:

```
                <interface>
                  <name>isis_int</name>
                  <type>ianaift:ipForward</type>
                </interface>

                <interface>
                  <name>eth1</name>
                  <type>ianaift:ethernetCsmacd</type>
                </interface>

                <interface>
                  <name>p2p</name>
                  <type>ianaift:p2pOverLan</type>
                  <higher-layer-if>isis_int</higher-layer-if>
                  <lower-layer-if>eth1</lower-layer-if>
                  <enabled>false</enabled>
                  <admin-status>down</admin-status>
                  <oper-status>down</oper-status>
                  <statistics>
                    <discontinuity-time>
                      2021-04-01T03:00:00+00:00
                    </discontinuity-time>
                    <!-- counters now shown here -->
                  </statistics>
                </interface>
```

                        Figure 2

5. Security Considerations

   The interface stack table specified in this document is read-only.
   Read operations to this table without complete protection shouldn't
   have a negative effect on network operations.

   The interface stack table defines tocan be accessed via network
   management protocols such as NETCONF [RFC6241], RESTCONF [RFC8040].
   The NETCONF is must run over on layera secure transport, and the
mandatory
   secure transport is Secure Shell (SSH) [RFC6242]. The lowest

RESTCONF layer is HTTPS, and the mandatory-to-implement secure
transport is TLS [RFC5246].

6. IANA Considerations

IANA need to update the "Interface Types(ifType)" registry (available
at https://www.iana.org/assignments/smi-numbers/smi-
numbers.xhtml#smi-numbers-5) with the following status types:

Decimal	Name	Description
=========	============	==================================
303	p2pOverLan	Point to Point over LAN interface

Table Figure 3xx

IANA need to update the "IANAifType-MIB" registry (available at
https://www.iana.org/assignments/ianaiftype-mib/ianaiftype-mib.xhtml)
with the following status types:

Value	Name	Description
=======	============	==================================
303	p2pOverLan	Point to Point over LAN interface

Figure 4

IANA need to update the "iana-if-type YANG Module" registry
(available at https://www.iana.org/assignments/iana-if-type/iana-if-
type.xhtml) with the following status types:

                    identity p2pOverLan {
                      base iana-interface-type;
                      description
                        "Point to Point over LAN interface.";
                    }

Figure 5

7. References

7.1. Normative references

Commenté [BMT6]: The lowest MTI is RFC8446. Please update accordingly.

You can check at https://trac.ietf.org/trac/ops/wiki/yang-security-guidelines

Commenté [BMT7]: This entry is already present in the registry.

Not sure what the update is about. Please update to explicit the requested update.

Commenté [BMT8]: Entries must not be added directly to the MIB. This is handled automatically by IANA.

Commenté [BMT9]: The module is maintained by IANA and it will be automatically updated when a new entry is added to the ifType registry

Commenté [BMT10]: References have to be "cleaned up" and checked the ones that are really normative.

   [RFC2119] Bradner, S., "Key words for use in RFCs to Indicate
              Requirement Levels", BCP 14, RFC 2119,
              DOI 10.17487/RFC2119, March 1997,
              <https://www.rfc-editor.org/info/rfc2119>.

   [RFC2863] McCloghrie, K. and F. Kastenholz, "The Interfaces Group
              MIB", RFC 2863, DOI 10.17487/RFC2863, June 2000,
              <https://www.rfc-editor.org/info/rfc2863>.

   [RFC5246] Dierks, T. and E. Rescorla, "The Transport Layer Security
              (TLS) Protocol Version 1.2", RFC 5246,
              DOI 10.17487/RFC5246, August 2008,
              <https://www.rfc-editor.org/info/rfc5246>.

   [RFC6020] Bjorklund, M., "YANG - A Data Modeling Language for the
              Network Configuration Protocol (NETCONF)", RFC 6020,
              DOI 10.17487/RFC6020, October 2010,
              <https://www.rfc-editor.org/info/rfc6020>.

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

   [RFC6242] Wasserman, M., "Using the NETCONF Protocol over Secure
              Shell (SSH)", RFC 6242, DOI 10.17487/RFC6242, June 2011,
              <https://www.rfc-editor.org/info/rfc6242>.

   [RFC6991] Schoenwaelder, J., "Common YANG Data Types", RFC 6991,
              DOI 10.17487/RFC6991, June 2011,
              <https://www.rfc-editor.org/info/rfc6991>.

   [RFC7950] Bjorklund, M., "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>.

   [RFC8342] Bjorklund, M., Schoenwaelder, J., Shafer, P., Watsen, K.,
              and R. Wilton, "Network Management Datastore Architecture
              (NMDA)", RFC 8342, DOI 10.17487/RFC8342, March 2018,
              <https://www.rfc-editor.org/info/rfc8342>.

   [RFC8343] Bjorklund, M., "A YANG Data Model for Interface
              Management", RFC 8343, DOI 10.17487/RFC8343, March 2018,
              <https://www.rfc-editor.org/info/rfc8343>.

7.2. Informative References

   [RFC7224] Bjorklund, M., "IANA Interface Type YANG Module",
              RFC 7224, DOI 10.17487/RFC7224, May 2014,
              <https://www.rfc-editor.org/info/rfc7224>.

   [RFC8340] Bjorklund, M. and L. Berger, "YANG Tree Diagrams",
              BCP 215, RFC 8340, DOI 10.17487/RFC8340, March 2018,
              <https://www.rfc-editor.org/info/rfc8340>.

7.3. URIs

   [1] https://datatracker.ietf.org/doc/html/rfc1195

   [2] https://datatracker.ietf.org/doc/html/rfc2328

   [3] https://datatracker.ietf.org/doc/html/rfc5340

   [4] https://datatracker.ietf.org/doc/html/rfc2119

   [5] https://datatracker.ietf.org/doc/html/rfc8343

   [6] https://www.iana.org/assignments/iana-if-type/iana-if-type.xhtml

Authors' Addresses

   Daiying Liu
   Ericsson
   No.5 Lize East street
   Beijing 100102
   China

   Email: harold.liu@ericsson.com

   Joel Halpern
   Ericsson

   Email: joel.halpern@ericsson.com

   Congjie Zhang
   Ericsson

   Email: congjie.zhang@ericsson.com