A Tunnel Extension to the Interface Management YANG Module
draft-boucadair-netmod-softwire-iftunnel-00

Abstract

This document specifies an extension the Interface Management YANG module.

Editorial Note (To be removed by RFC Editor)

Please update these statements in the document with the RFC number to be assigned to this document:

- "This version of this YANG module is part of RFC XXXX;"
- "RFC XXXX: A Tunnel Extension to the Interface Management YANG Module;"
- "reference: RFC XXXX"

Please update the "revision" date of the YANG module.

Status of This Memo

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

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This Internet-Draft will expire on April 22, 2019.
1. Introduction

This document specifies the initial version of an IANA-maintained module to identify a collection of tunnel types assigned by IANA (Section 2). Furthermore, the document augments the Interface YANG module [RFC8343] with a new parameter which is meant to indicate the type of a given tunnel (Section 3). The tree structure of this extension is shown below:

module: ietf-interface-tunnel
    augment /if:interfaces/if:interface:
        +--rw tunnel-type? identityref

Tunnel-specific extensions may be added to the Interface module as a function of the tunnel type. A sample example is provided in Appendix A. It is not the intent of this document to define tunnel-specific extension for every tunnel encapsulation technology; those are discussed in dedicated document such as [I-D.ietf-softwire-yang].
This document uses the common YANG types defined in [RFC6991] and adopts the Network Management Datastore Architecture (NMDA).

The terminology for describing YANG modules is defined in [RFC7950]. The meaning of the symbols in tree diagrams is defined in [RFC8340].

2. IANA Tunnel Type YANG Module

<CODE BEGINS> file "iana-tunnel-type@2018-10-19.yang"

module iana-tunnel-type {
  yang-version 1.1;
  namespace "urn:ietf:params:xml:ns:yang:iana-tunnel-type";
  prefix iana-tunnel-type;

  import iana-if-type {
    prefix ift;
    reference "RFC 7224: IANA Interface Type YANG Module";
  }

  organization "IANA";
  contact "Internet Assigned Numbers Authority

Postal: ICANN
  12025 Waterfront Drive, Suite 300
  Los Angeles, CA  90094-2536
  United States of America
  Tel:    +1 310 301 5800
  <mailto:iana@iana.org>";

  description "This module contains a collection of YANG data types defined by IANA and used for tunnel types.

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  This version of this YANG module is part of RFC XXXX; see..."
the RFC itself for full legal notices."

revision 2018-10-19 {
  description
    "Initial revision.";
  reference
    "RFC XXXX: A Tunnel Extension to the Interface
     Management YANG Module";
}

identity other {
  base ift:tunnel;
  description
    "None of the following values.";
}

identity direct {
  base ift:tunnel;
  description
    "No intermediate header.";
}

identity gre {
  base ift:tunnel;
  description
    "GRE encapsulation.";
}

identity minimal {
  base ift:tunnel;
  description
    "Minimal encapsulation.";
}

identity l2tp {
  base ift:tunnel;
  description
    "L2TP encapsulation.";
}

identity pptp {
  base ift:tunnel;
  description
    "PPTP encapsulation.";
}

identity l2f {
  base ift:tunnel;
  description
    "L2F encapsulation.";
}

identity udp {
  base ift:tunnel;
  description

"UDP encapsulation."
)
identity atmp {
    base ift:tunnel;
    description
        "ATMP encapsulation."
}
identity msdp {
    base ift:tunnel;
    description
        "MSDP encapsulation."
}
identity sixtofour {
    base ift:tunnel;
    description
        "6to4 encapsulation."
}
identity sixoverfour {
    base ift:tunnel;
    description
        "6over4 encapsulation."
}
identity isatap {
    base ift:tunnel;
    description
        "ISATAP encapsulation."
}
identity teredo {
    base ift:tunnel;
    description
        "Teredo encapsulation."
}
identity iphttps {
    base ift:tunnel;
    description
        "IP over HTTPS."
}
identity softwiremesh {
    base ift:tunnel;
    description
        "softwire mesh tunnel."
}
identity dslite {
    base ift:tunnel;
    description
        "DS-Lite tunnel."
}
}
3. Tunnel Extension to the Interface YANG Module

   The ietf-interface-tunnel module imports the modules defined in [RFC7224] and [RFC8343].

   <CODE BEGINS> file "ietf-interface-tunnel@2018-10-19.yang"

   module ietf-interface-tunnel {
     yang-version 1.1;
     namespace "urn:ietf:params:xml:ns:yang:ietf-interface-tunnel";
     prefix ietf-interface-tunnel;

     import ietf-interfaces {
       prefix if;
       reference
         "RFC 8343: A YANG Data Model for Interface Management";
     }

     import iana-if-type {
       prefix ift;
       reference
         "RFC 7224: IANA Interface Type YANG Module";
     }

     organization "IETF xxx Working Group";

     contact

       "WG Web: <https://datatracker.ietf.org/wg/xxxx/>
       WG List: <mailto:xxxx@ietf.org>

       Editor: Mohamed Boucadair
       <mailto:mohamed.boucadair@orange.com>";

     description

       "This module is a YANG module for associating a tunnel type with
        tunnel interfaces.

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The YANG module defined in this document is designed to be accessed via network management protocols such as NETCONF [RFC6241] or RESTCONF [RFC8040]. The lowest NETCONF layer is the secure transport layer, and the mandatory-to-implement secure transport is Secure Shell (SSH) [RFC6242]. The lowest RESTCONF layer is HTTPS, and the mandatory-to-implement secure transport is TLS [RFC8446].
The NETCONF access control model [RFC8341] provides the means to restrict access for particular NETCONF or RESTCONF users to a preconfigured subset of all available NETCONF or RESTCONF protocol operations and content.

All data nodes defined in the YANG module which can be created, modified and deleted (i.e., config true, which is the default) are considered sensitive. Write operations (e.g., edit-config) applied to these data nodes without proper protection can negatively affect network operations.

5. IANA Considerations

This document requests IANA to register the following URIs in the "IETF XML Registry" [RFC3688]:

  Registrant Contact: The IESG.
  XML: N/A; the requested URI is an XML namespace.

  Registrant Contact: IANA.
  XML: N/A; the requested URI is an XML namespace.

This document requests IANA to register the following YANG modules in the "YANG Module Names" registry [RFC7950].

- name: ietf-interface-tunnel
  prefix: ietf-interface-tunnel
  reference: RFC XXXX

- name: iana-tunnel-type
  namespace: urn:ietf:params:xml:ns:yang:iana-tunnel-type
  prefix: iana-tunnel-type
  reference: RFC XXXX

This document defines the initial version of the IANA-maintained iana-tunnel-type YANG module. IANA is requested to add this note:

Tunnel type values must not be directly added to the iana-tunnel-type YANG module. They must instead be respectively added to the "tunnelType" sub-registry (under "ifType definitions" registry).

When an tunnel type is added to the "tunnelType" registry, a new "identity" statement must be added to the iana-tunnel-type YANG module. The name of the "identity" is the same as the corresponding
enumeration in the IANAifType-MIB. The following substatements to
the "identity" statement should be defined:

"base": Contains the value of the tunnel type in lowercase.

"description": Replicate the description from the registry.

"reference": Replicate the reference from the registry and add the
title of the document.

Unassigned or reserved values are not present in the module.

When the iana-tunnel-type YANG module is updated, a new "revision"
statement must be added in front of the existing revision statements.

IANA is requested to add this note to "tunnelType" registry:

When this registry is modified, the YANG module iana-tunnel-type
must be updated as defined in [RFCXXXX].

6. Acknowledgements

Many thanks to Tom Petch.

7. References

7.1. Normative References

[RFC2119]  Bradner, S., "Key words for use in RFCs to Indicate
Requirement Levels", BCP 14, RFC 2119, 
DOI 10.17487/RFC2119, March 1997, 

[RFC3688]  Mealling, M., "The IETF XML Registry", BCP 81, RFC 3688, 
DOI 10.17487/RFC3688, January 2004, 

and A. Bierman, Ed., "Network Configuration Protocol
(NETCONF)", RFC 6241, DOI 10.17487/RFC6241, June 2011, 

[RFC6242]  Wasserman, M., "Using the NETCONF Protocol over Secure
Shell (SSH)", RFC 6242, DOI 10.17487/RFC6242, June 2011, 
7.2. Informative References

[I-D.ietf-softwire-yang]


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Appendix A. Example

The following example illustrate how the interface YANG module can be augmented with tunnel-specific parameters. In this example, the module is augmented with 'remote-endpoint' of the tunnel. A tree structure is also provided below:

```
module: ietf-extension-example
    augment /if:interfaces/if:interface:
        +--rw remote-endpoint? inet:ipv6-address
```

The 'extension-example' module imports the modules defined in [RFC6991] and [RFC8343] in addition to the those defined in this document.

<CODE BEGINS> file "ietf-extension-example@2018-10-19.yang"

module ietf-extension-example {  
yang-version 1.1;

    namespace "urn:ietf:params:xml:ns:yang:ietf-extension-example";
    prefix example;

    import ietf-inet-types {  
        prefix inet;
        reference
            "Section 4 of RFC 6991";
    }

    import ietf-interfaces {  
        prefix if;
        reference
            "RFC 8343: A YANG Data Model for Interface Management";
    }

    import iana-tunnel-type {  
        prefix iana-tunnel-type;
        reference
            "RFC XXXX: A Tunnel Extension to the Interface Management YANG Module";
    }

    import ietf-interface-tunnel {  
        prefix ift;
        reference
            "RFC XXXX: A Tunnel Extension to the Interface Management YANG Module";
    }
```

<CODE ENDS>
organization "IETF xxxx Working Group";

contact

"WG Web:  <https://datatracker.ietf.org/wg/xxx/>
WG List:  <mailto:xxx@ietf.org>
Editor:  Mohamed Boucadair
<mailto:mohamed.boucadair@orange.com>";

description

"This is an example YANG module.

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This version of this YANG module is part of RFC XXXX; see the RFC itself for full legal notices.";

revision 2018-10-19 {
  description
    "Initial revision.";
  reference
    "RFC XXXX: A Tunnel Extension to the Interface Management YANG Module";
}

augment "/if:interfaces/if:interface" {
  when "derived-from(ift:tunnel-type, 'iana-tunnel-type:gre')"
  description
    "Augments Interface module with specific tunnel parameters.";

  leaf remote-endpoint {
    type inet:ipv6-address;
    description
      "IPv6 address of the local GRE endpoint.";
  }
}

<CODE ENDS>
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