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A YANG Data Model for IP Configuration  
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## Abstract

This document defines a YANG data model for configuration of IP addresses on network interfaces.

## Status of this Memo

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## 1. Introduction

This document defines a YANG [RFC6020] data model for configuration of IP addresses on network interfaces.

```
+-----+
| Open Question                                     |
+-----+
| What is the proper scope of this document? IP addresses only, or |
| IP configuration in general?                                   |
+-----+
```

The keywords "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].

## 2. IP Data Model

The module "ietf-ip" augments the "interface" list defined in the "ietf-interfaces" module [I-D.ietf-netmod-interfaces-cfg] with the following nodes:

```

+--rw if:interfaces
  +--rw if:interface [name]
    ...
    +--rw ipv4
      | +--rw address [ip]
      |   +--rw ip                inet:ipv4-address
      |   +--rw prefix-length?    uint8
    +--rw ipv6
      | +--rw address [ip]
      |   +--rw ip                inet:ipv6-address
      |   +--rw prefix-length?    uint8
```

The data model defines two containers, "ipv4" and "ipv6", representing the IPv4 and IPv6 address families. In each container, there is a list of manually configured addresses.

### 3. IP Address YANG Module

RFC Ed.: update the date below with the date of RFC publication and remove this note.

<CODE BEGINS> file "ietf-ip@2011-05-20.yang"

```
module ietf-ip {  
  
    namespace "urn:ietf:params:xml:ns:yang:ietf-ip";  
    prefix ip;  
  
    import ietf-interfaces {  
        prefix if;  
    }  
    import ietf-inet-types {  
        prefix inet;  
    }  
  
    organization  
        "IETF NETMOD (NETCONF Data Modeling Language) Working Group";  
  
    contact  
        "WG Web:    <http://tools.ietf.org/wg/netmod/>  
        WG List:    <mailto:netmod@ietf.org>  
  
        WG Chair: David Kessens  
                  <mailto:david.kessens@nsn.com>  
  
        WG Chair: Juergen Schoenwaelder  
                  <mailto:j.schoenwaelder@jacobs-university.de>  
  
        Editor:    Martin Bjorklund  
                  <mailto:mbj@tail-f.com>";  
  
    description  
        "This module contains a collection of YANG definitions for  
        configuring IP addresses on network interfaces.  
  
        Copyright (c) 2011 IETF Trust and the persons identified as  
        authors of the code. All rights reserved.  
  
        Redistribution and use in source and binary forms, with or  
        without modification, is permitted pursuant to, and subject  
        to the license terms contained in, the Simplified BSD License  
        set forth in Section 4.c of the IETF Trust's Legal Provisions  
        Relating to IETF Documents  
        (http://trustee.ietf.org/license-info)."
```

```

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

// RFC Ed.: replace XXXX with actual RFC number and remove this
// note.

// RFC Ed.: update the date below with the date of RFC publication
// and remove this note.
revision 2011-05-20 {
    description
        "Initial revision.";
    reference
        "RFC XXXX: A YANG Data Model for IP Configuration";
}

augment "/if:interfaces/if:interface" {
    container ipv4 {
        description
            "Parameters for the IPv4 address familiy.";
        list address {
            key "ip";
            description
                "The list of manually configured IPv4 addresses
                on the interface.";

            leaf ip {
                type inet:ipv4-address;
            }
            leaf prefix-length {
                type uint8 {
                    range "0..32";
                }
            }
        }
    }
    container ipv6 {
        description
            "Parameters for the IPv6 address familiy.";
        list address {
            key "ip";
            description
                "The list of manually configured IPv6 addresses
                on the interface.";

            leaf ip {
                type inet:ipv6-address;
            }
            leaf prefix-length {

```

```

                                type uint8 {
                                  range "0..128";
                                }
                              }
                            }
                          }
                        }
                      }
                    }
                  }
                }
              }
            }
          }
        }
      }
    }
  }
}

<CODE ENDS>
```

#### 4. IANA Considerations

This document registers a URI in the IETF XML registry [RFC3688]. Following the format in RFC 3688, the following registration is requested to be made.

URI: urn:ietf:params:xml:ns:yang:ietf-ip

Registrant Contact: The NETMOD WG of the IETF.

XML: N/A, the requested URI is an XML namespace.

This document registers a YANG module in the YANG Module Names registry [RFC6020].

name:	ietf-ip
namespace:	urn:ietf:params:xml:ns:yang:ietf-ip
prefix:	ip
reference:	RFC XXXX



## 5. Security Considerations

The YANG module defined in this memo is designed to be accessed via the NETCONF protocol [I-D.ietf-netconf-4741bis]. The lowest NETCONF layer is the secure transport layer and the mandatory-to-implement secure transport is SSH [I-D.ietf-netconf-rfc4742bis].

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., edit-config) to these data nodes without proper protection can have a negative effect on network operations. These are the subtrees and data nodes and their sensitivity/vulnerability:

<list subtrees and data nodes and state why they are sensitive>

Some of the readable data nodes in the YANG module may be considered sensitive or vulnerable in some network environments. It is thus important to control read access (e.g., via get, get-config, or notification) to these data nodes. These are the subtrees and data nodes and their sensitivity/vulnerability:

<list subtrees and data nodes and state why they are sensitive>

## 6. Normative References

- [I-D.ietf-netconf-4741bis]  
Enns, R., Bjorklund, M., Schoenwaelder, J., and A. Bierman, "Network Configuration Protocol (NETCONF)", draft-ietf-netconf-4741bis-10 (work in progress), March 2011.
- [I-D.ietf-netconf-rfc4742bis]  
Wasserman, M. and T. Goddard, "Using the NETCONF Configuration Protocol over Secure Shell (SSH)", draft-ietf-netconf-rfc4742bis-08 (work in progress), March 2011.
- [I-D.ietf-netmod-interfaces-cfg]  
Bjorklund, M., "A YANG Data Model for Interface Configuration", draft-ietf-netmod-interfaces-cfg-01 (work in progress), May 2011.
- [RFC2119] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", BCP 14, RFC 2119, March 1997.
- [RFC3688] Mealling, M., "The IETF XML Registry", BCP 81, RFC 3688, January 2004.
- [RFC6020] Bjorklund, M., "YANG - A Data Modeling Language for the Network Configuration Protocol (NETCONF)", RFC 6020, October 2010.

## Appendix A. Example: NETCONF &lt;get-config&gt; reply

This section gives an example of a reply to the NETCONF <get> request for a device that implements the example data models above.

```
<rpc-reply
  xmlns="urn:ietf:params:xml:ns:netconf:base:1.0"
  message-id="101">
  <data>
    <interfaces
      xmlns="urn:ietf:params:xml:ns:yang:ietf-interfaces">
      <interface>
        <name>eth0</name>
        <type>ethernetCsmacd</type>
        <location>0</location>
        <if-index>2</if-index>
        <ipv4 xmlns="urn:ietf:params:xml:ns:yang:ietf-ip">
          <address>
            <ip>192.0.2.1</ip>
            <prefix-length>24</prefix-length>
          </address>
        </ipv4>
      </interface>
    </interfaces>
  </data>
</rpc-reply>
```

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