NVO3 WG
Internet-Draft
Intended status: Standards Track
Expires: September 12, 2019

Ran. Chen
Fangwei. Hu
Yubao. wang
ZTE Corporation
Yufeng. liu
Volta Networks
March 11, 2019

YANG Data Model for NVO3 Protocol
draft-chen-nvo3-yang-01.txt

Abstract

This document defines a YANG data model for NVO3 configuration and operation. This YANG model covers two types of encapsulations: Geneve, and VXLAN-GPE

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 September 12, 2019.

Table of Contents

1. Introduction

This document defines a YANG data model for NVO3 configuration and operation. This YANG model covers two types of encapsulations: Geneve, and VXLAN-GPE.

2. Design of the Data Model

```
module: ietf-nvo3
  +--rw nvo3
  |  +--rw vxlan-enable?       boolean
  |  +--rw geneve-enable?      boolean
  |  +--rw nvo3-instance* [vni]
  |  |  +--rw vni                        vni
  |  |  +--rw protocol-type?             enumeration
  |  |  +--rw vtep-ipv4?                 inet:ipv4-address-no-zone
  |  |  +--rw vtep-ipv6?                 inet:ipv6-address-no-zone
  |  |  +--rw bridge-interface?          if:interface-ref
  |  |  +--rw (control-plane)?
  |  |  |  +--:(evpn)
  |  |  |  |  +--rw evpn-instance?      evpn-instance-ref
  |  |  |  +--:(static-config)
  |  |  |     +--rw ac-name?            ac-name
  |  |  |     +--rw l2interface-name?   if:interface-ref
  |  |  +--rw unicast-tunnel* [unicast-tunnel-name]
  |  |  |  +--rw unicast-tunnel-name    unicast-tunnel-name
  |  |  +--rw multicast-tunnel* [multicast-tunnel-name]
  |  |     +--rw multicast-tunnel-name    multicast-tunnel-name
  |  +--rw unicast-tunnel* [unicast-tunnel-name]
  |  |  +--rw unicast-tunnel-name         unicast-tunnel-name
  |  |  +--rw encaptype?                  enumeration
  |  |  +--rw tunnel-source-ipv4?         inet:ipv4-prefix
```

```
|  |  +--rw tunnel-source-ipv6?        inet:ipv6-prefix
|  |  +--rw tunnel-destination-ipv4?   inet:ipv4-prefix
|  |  +--rw tunnel-destination-ipv6?   inet:ipv6-prefix
|  +--rw multicast-tunnel* [multicast-tunnel-name]
|     +--rw multicast-tunnel-name      multicast-tunnel-name
|     +--rw encaptype?                 enumeration
|     +--rw tunnel-source-ipv4?        inet:ipv4-prefix
|     +--rw tunnel-source-ipv6?        inet:ipv6-prefix
|     +--rw tunnel-destination-ipv4?   inet:ipv4-prefix
|     +--rw tunnel-destination-ipv6?   inet:ipv6-prefix
+--ro nvo3-state
   +--ro nvo3-instance* [vni]
   |  +--ro vni                        vni
   |  +--ro protocol-type?             enumeration
   |  +--ro vtep-ipv4?                 inet:ipv4-address-no-zone
   |  +--ro vtep-ipv6?                 inet:ipv6-address-no-zone
   |  +--ro bridge-interface?          if:interface-ref
   |  +--ro (control-plane)?
   |  |  +--:(evpn)
   |  |  |  +--ro evpn-instance?      evpn-instance-ref
   |  |  +--:(static-config)
   |  |     +--ro ac-name?            ac-name
   |  |     +--ro l2interface-name?   if:interface-ref
   |  +--ro unicast-tunnel* [unicast-tunnel-name]
   |  |  +--ro unicast-tunnel-name    unicast-tunnel-name
   |  +--ro multicast-tunnel* [multicast-tunnel-name]
   |     +--ro multicast-tunnel-name    multicast-tunnel-name
   +--ro unicast-tunnel* [unicast-tunnel-name]
   |  +--ro unicast-tunnel-name        unicast-tunnel-name
   |  +--ro encaptype?                 enumeration
   |  +--ro tunnel-source-ipv4?        inet:ipv4-prefix
   |  +--ro tunnel-source-ipv6?        inet:ipv6-prefix
   |  +--ro tunnel-destination-ipv4?   inet:ipv4-prefix
   |  +--ro tunnel-destination-ipv6?   inet:ipv6-prefix
   +--ro multicast-tunnel* [multicast-tunnel-name]
      +--ro multicast-tunnel-name      multicast-tunnel-name
      +--ro encaptype?                 enumeration
      +--ro tunnel-source-ipv4?        inet:ipv4-prefix
      +--ro tunnel-source-ipv6?        inet:ipv6-prefix
      +--ro tunnel-destination-ipv4?   inet:ipv4-prefix
      +--ro tunnel-destination-ipv6?   inet:ipv6-prefix
```

3. Configuration

This Container defines the configuration parameters related to NVO3.

The configuration includes vxlan enable,geneve enable, parameters associated with nvo3-instance, parameters associated with unicast-tunnel and multicast-tunnel.

In this document, we contains two types of encapsulation: GENEVE[I-D.ietf-nvo3-geneve]and VXLAN-GPE[I-D.ietf-nvo3-vxlan-gpe].

4. Control plane configuration

This Module will be defined in the next version.

5. States

The operational states contains basic parameters associated with nvo3, such as parameters associated with nvo3-instance ,unicast-tunnel and multicast-tunnel.

6. NVO3 YANG Data Model

```
<CODE BEGINS> file "ietf-NVO3@2019-03-11.yang"
module ietf-nvo3{
        namespace "urn:ietf:params:xml:ns:yang:ietf-nvo3";
        prefix "nvo3";


        import ietf-inet-types {
    prefix "inet";
        }

        import ietf-interfaces {
    prefix "if";
        }

        organization
          "IETF Nvo3( Network Virtualization Overlays) Working Group";

        contact
       "WG List:  <mailto:nvo3@ietf.org>
        WG Chair: Matthew Bocci
                  <mailto:matthew.bocci@nokia.com>
         WG Chair: Sam Aldrin
                  <mailto:aldrin.ietf@gmail.com>

                Editor:   Ran Chen
                               <mailto:chen.ran@zte.com.cn>
        Editor:   Fangwei Hu
                <mailto:hu.fangwei@zte.com.cn>
                Editor:   yubao wang
```

```
                <mailto:wang.yubao@zte.com.cn>
                Editor:   xufeng liu
                <mailto:xufeng.liu.ietf@gmail.com>
                ";

                description
                "The YANG module defines a generic configuration model for nvo3
yang module.";

                revision 2019-03-11{
                description
                "01 version";
                reference "draft-chen-nvo3-yang-01";
     }
                revision 2018-10-31{
                description
                "Initial version";
                reference "draft-chen-nvo3-yang-00";
     }


    /*Typedefs*/

    typedef vni{
          type uint32;
          description
            "Virtual Network Identifier";
         }


        typedef unicast-tunnel-name{
          type string;
          description
            "the name for unicast tunnel";
         }
        typedef multicast-tunnel-name{
          type string;
          description
            "the name for multicast tunnel";
         }

         typedef evpn-instance-ref {
       type leafref {
         path "/evpn/evpn-instances/evpn-instance/name";
       }
       description "A leafref type to an EVPN instance";
     }

        typedef ac-name{
```

```
          type string;
          description
            "the name for ac";
         }

        typedef interface-name{
          type string;
          description
            "the name for interface";
         }


         grouping tunnel-cfg{
            leaf encaptype{
                  type enumeration{
                    enum "vxlan"{
                      description
                        "vxlan type";
                            }
                    enum "geneve"{
                      description
                        "geneve type";
                            }
                    }
             description "the type for encapsulation.";
             }
           leaf tunnel-source-ipv4{
                 type inet:ipv4-prefix;
                 description
                 "tunnel source ipv4 prefix.";
              }
           leaf tunnel-source-ipv6{
                 type inet:ipv6-prefix;
                 description
                 "tunnel source ipv6 prefix.";
              }
                  leaf tunnel-destination-ipv4{
                 type inet:ipv4-prefix;
                 description
                 "tunnel destination ipv4 prefix.";
              }
              leaf tunnel-destination-ipv6{
                 type inet:ipv6-prefix;
                 description
                 "tunnel destination ipv6 prefix.";
              }
              description
                 "defines the tunnel configuration.";
```

```
            }
        container nvo3{
          leaf vxlan-enable{
                type boolean;
            default false;
            description
              "Enables vxlan protocol.";
                }
          leaf geneve-enable{
                type boolean;
            default false;
            description
              "Enables geneve protocol.";
                }
           list nvo3-instance {
           key "vni";
           leaf vni {
             type vni;
             description "Virtual Network Identifier.";
           }
           leaf protocol-type{
             type enumeration{
                       enum "ipv4"{
                         description
                           "ipv4 protocol";
                             }
                       enum "ipv6"{
                         description
                           "ipv6 protocol";
                              }
                       enum "ethernet"{
                         description
                           "ethernet protocol";
                             }
                       enum "mpls"{
                         description
                           "mpls protocol";
                             }
                       enum "GBP"{
                         description
                           "gbp";
                          }
                      enum "vBNG"{
                        description
                          "vbng";
                             }
                       }
             description "the next protocol type";
```

```
             }
                         leaf vtep-ipv4 {
             type inet:ipv4-address-no-zone;
             description
               "NVO3 tunnel source address";
           }
           leaf vtep-ipv6 {
             type inet:ipv6-address-no-zone;
             description
               "ipv6 NVO3 tunnel source address";
           }

           leaf bridge-interface {
            type if:interface-ref;
            description "bridge interface.";
                }

                choice control-plane {
                  case evpn{
                     leaf evpn-instance{
              type evpn-instance-ref;
                          description "Reference to an EVPN instance";
                         }
                        }
                  case static-config{
           leaf ac-name {
             type ac-name;
             description "the name for ac.";
           }
                   leaf l2interface-name{
                     type if:interface-ref;
            description "L2 interface.";
                }
          description
                                 "static-config.";
            }
         description "the control-plane.";
           }
                list unicast-tunnel{
           key "unicast-tunnel-name";
           leaf unicast-tunnel-name {
             type unicast-tunnel-name;
             description "the name for unicast tunnel.";
           }
          description
                                 "the information for the unicast tunnel
configuration.";
                }
```

```
        list multicast-tunnel{
           key "multicast-tunnel-name";
           leaf multicast-tunnel-name {
             type multicast-tunnel-name;
             description "the name for multicast tunnel.";
           }
        description
                               "the information for the multicast tunnel.";
                }
        description
                               "defines the nvo3 instance configuration.";
       }

                list unicast-tunnel{
           key "unicast-tunnel-name";
           leaf unicast-tunnel-name {
             type unicast-tunnel-name;
             description "the name for unicast tunnel.";
           }
                    uses nvo3:tunnel-cfg;
        description
                               "defines the unicast tunnel configuration.";
                }


              list multicast-tunnel{
           key "multicast-tunnel-name";
           leaf multicast-tunnel-name {
             type multicast-tunnel-name;
             description "the name for multicast tunnel.";
           }
                    uses nvo3:tunnel-cfg;
        description
                               "defines the multicast tunnel configuration.";
                }
                description
                    "defines the nvo3 configuration.";
                }

                container nvo3-state{
             config false;
                 description
                   "nvo3 operational state.";
                 list nvo3-instance {
           key "vni";
           leaf vni {
             type vni;
             description "Virtual Network Identifier.";
```

```
          }
          leaf protocol-type{
            type enumeration{
                      enum "ipv4"{
                        description
                          "ipv4 protocol";
                             }
                      enum "ipv6"{
                        description
                          "ipv6 protocol";
                              }
                      enum "ethernet"{
                        description
                          "ethernet protocol";
                             }
                      enum "mpls"{
                        description
                          "mpls protocol";
                             }
                      enum "GBP"{
                        description
                          "gbp";
                         }
                     enum "vBNG"{
                       description
                         "vbng";
                             }
                      }
            description "the next protocol type";
            }
            leaf vtep-ipv4 {
            type inet:ipv4-address-no-zone;
            description
              "NVO3 tunnel source address";
          }
          leaf vtep-ipv6 {
            type inet:ipv6-address-no-zone;
            description
              "ipv6 NVO3 tunnel source address";
          }
          leaf bridge-interface {
           type if:interface-ref;
           description "bridge interface.";
               }
               choice control-plane {
                 case evpn{
                    leaf evpn-instance{
              type evpn-instance-ref;
```

```
                        description "Reference to an EVPN instance";
                       }
                      }
              case static-config{
          leaf ac-name {
            type ac-name;
            description "the name for ac.";
          }
                  leaf l2interface-name{
                    type if:interface-ref;
           description "L2 interface.";
               }
         description
                              "static-config.";
           }
        description "the control-plane.";
          }
               list unicast-tunnel{
          key "unicast-tunnel-name";
          leaf unicast-tunnel-name {
            type unicast-tunnel-name;
            description "the name for unicast tunnel.";
          }
         description
                              "the information for the unicast tunnel.";
               }

         list multicast-tunnel{
            key "multicast-tunnel-name";
            leaf multicast-tunnel-name {
              type multicast-tunnel-name;
              description "the name for multicast tunnel.";
            }
         description
                              "the state for multicast tunnel.";
               }
         description
                              "the state for nvo3 instance.";
        }

               list unicast-tunnel{
          key "unicast-tunnel-name";
          leaf unicast-tunnel-name {
            type unicast-tunnel-name;
            description "the name for unicast tunnel.";
          }
                    uses nvo3:tunnel-cfg;
         description
```

```
                              "the state for the unicast tunnel.";
                }

                list multicast-tunnel{
             key "multicast-tunnel-name";
             leaf multicast-tunnel-name {
               type multicast-tunnel-name;
               description "the name for multicast tunnel.";
             }
                      uses nvo3:tunnel-cfg;
          description
                              "the state for the multicast tunnel.";
                }
                }
                }
```

<CODE ENDS>

7. Security Considerations

TBD.

8. IANA Considerations

This document requires no IANA Actions. Please remove this section before RFC publication.

9. Normative references

[I-D.ietf-nvo3-encap]
Boutros, S., "NVO3 Encapsulation Considerations", draft-ietf-nvo3-encap-02 (work in progress), September 2018.

[I-D.ietf-nvo3-geneve]
Gross, J., Ganga, I., and T. Sridhar, "Geneve: Generic Network Virtualization Encapsulation", draft-ietf-nvo3-geneve-11 (work in progress), March 2019.

[I-D.ietf-nvo3-vxlan-gpe]
Maino, F., Kreeger, L., and U. Elzur, "Generic Protocol Extension for VXLAN", draft-ietf-nvo3-vxlan-gpe-06 (work in progress), April 2018.

[RFC6020] Bjorklund, M., Ed., "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., 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>.

[RFC6991] Schoenwaelder, J., Ed., "Common YANG Data Types", RFC 6991, DOI 10.17487/RFC6991, July 2013, <https://www.rfc-editor.org/info/rfc6991>.

[RFC7223] Bjorklund, M., "A YANG Data Model for Interface Management", RFC 7223, DOI 10.17487/RFC7223, May 2014, <https://www.rfc-editor.org/info/rfc7223>.

[RFC7348] Mahalingam, M., Dutt, D., Duda, K., Agarwal, P., Kreeger, L., Sridhar, T., Bursell, M., and C. Wright, "Virtual eXtensible Local Area Network (VXLAN): A Framework for Overlaying Virtualized Layer 2 Networks over Layer 3 Networks", RFC 7348, DOI 10.17487/RFC7348, August 2014, <https://www.rfc-editor.org/info/rfc7348>.

Authors' Addresses

Ran Chen
ZTE Corporation

Email: chen.ran@zte.com.cn

Fangwei Hu
ZTE Corporation

Email: hu.fangwei@zte.com.cn

Yubao wang
ZTE Corporation

Email: wang.yubao@zte.com.cn

Yufeng liu
Volta Networks

Email: xufeng.liu.ietf@gmail.com