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YANG Data Model for NVO3 Protocol
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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

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This Internet-Draft will expire on September 25, 2019.

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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* [destination-ipv4]
       |     |  +--rw destination-ipv4    inet:ipv4-prefix
       |     +--rw tunnel-destination-ipv6* [destination-ipv6]
       |        +--rw 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* [destination-ipv4]
             |  +--ro destination-ipv4    inet:ipv4-prefix
             +--ro tunnel-destination-ipv6* [destination-ipv6]
                +--ro 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
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                Editor:   xufeng liu
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                ";

                description
                "The YANG module defines a generic configuration model for nvo3
yang module.";
         revision 2019-03-20{
                description
                "02 version";
                reference "draft-chen-nvo3-yang-02";
     }

                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 unicast-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 unicast tunnel configuration.";
             }
             grouping multicast-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.";
            }
                list tunnel-destination-ipv4{
          key "destination-ipv4";
                     description
            "the list of destination ipv4 prefix.";
                    leaf destination-ipv4{
              type inet:ipv4-prefix;
              description
                "tunnel destination ipv4 prefix.";
            }
                       }
                list tunnel-destination-ipv6{
                key "destination-ipv6";
                description
            "the list of destination ipv6 prefix.";
                    leaf destination-ipv6{
```

```
                type inet:ipv6-prefix;
                description
                  "tunnel destination ipv6 prefix.";
              }
                          }
             description
                "defines the multicast 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:unicast-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:multicast-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:unicast-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:multicast-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

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