Base YANG Data Model for NVO3 Protocols

draft-zhang-nvo3-yang-cfg-05.txt

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Motivation of the draft

- Network Virtualization Overlay related works
  - Data plane: VXLAN(RFC7348), NVGRE(RFC7637), GENEVE (in progress),…
  - Control plane: RFC8365, draft-boutros-bess-evpn-geneve
  - YANG: Not standardized yet
- Why bulid a base NVO3 YANG first?
  - Several encapsulations and VPN technologies exist, to avoid repetitive works and non-consistent approaches, a common and reusable YANG should be defined
  - A start point for incremental work to fit a specific technology: augment the base YANG when necessary
- References
  - NVO3 RFCs: Framework(RFC7365), architecture (RFC8014)
  - The EVPN related RFCs and drafts

Design of the NVE container

```
+--rw nve* [if-name source-interface]
   +--rw if-name                        ifName
   +--rw vtep-ip?                       inet:ipv4-address-no-zone
   +--rw ipv6-vtep-ip?                  inet:ipv6-address-no-zone
   +--rw source-interface               ifName
   +--rw mac-address?                   yang:mac-address
   +--rw bypass-vtep-ip?                inet:ipv4-address-no-zone
   +--rw vni-members
      +--rw vni-member* [vni-id]
         +--rw vni-id           uint32
         +--rw protocol-bgp?    protocolType
         +--rw peers
            +--rw peer* [peer-ip]
               +--rw peer-ip            inet:ipv4-address-no-zone
               +--rw out-vni-id?              uint32
               +--rw split-horizon-group?     string
         +--rw ipv6-peers
            +--rw ipv6-peer* [ipv6-peer-ip]
               +--rw ipv6-peer-ip       inet:ipv6-address-no-zone
         +--rw flood-proxys
            +--rw flood-proxy* [peer-ip]
               +--rw peer-ip       inet:ipv4-address-no-zone
         +--rw mcast-group* [mcast-group]
            +--rw mcast-group      inet:ipv4-address-no-zone
```

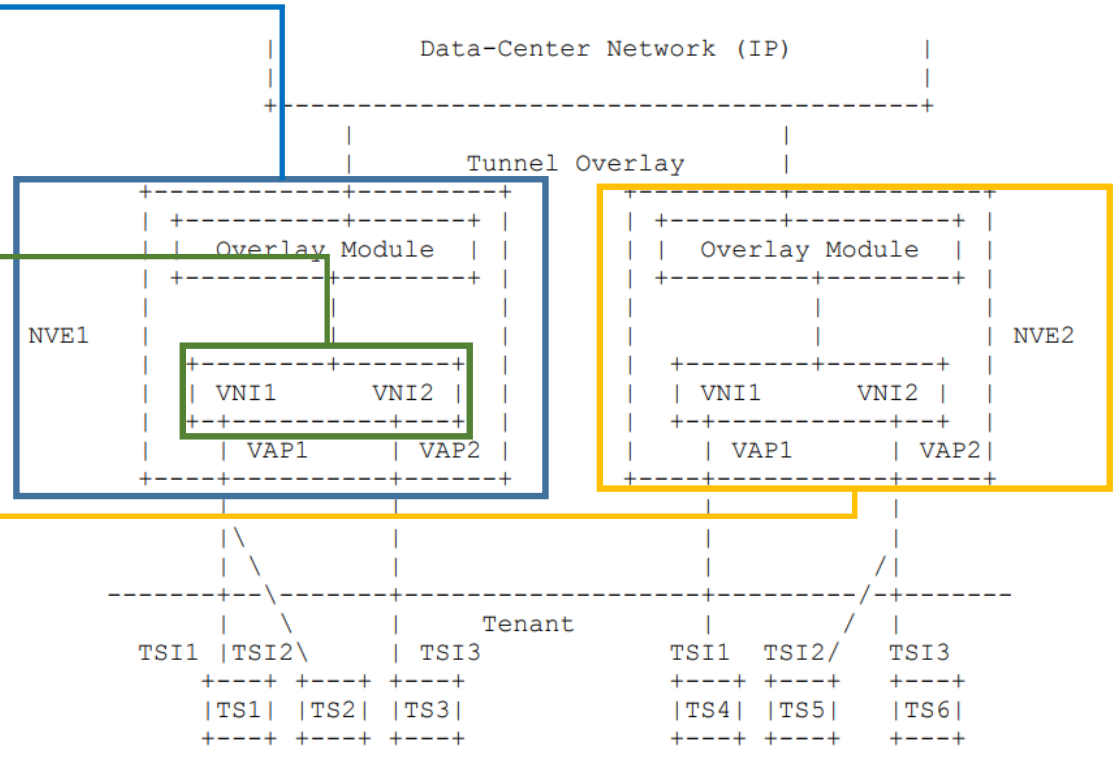
When multihoming, if-name, vtep-ip, ipv6-vtep-ip and mac-address should correspond to the anycast gateway.

BGP control plane enabler, per VNI basis

Used for DCI (RFC8365)

Multicast group per VNI basis

Multicast service node (RFC8293)



NVE Reference Model in RFC8014

VNI mapping to L2VPN and L3VPN

```
+--rw nve* [if-name source-interface]
   .
   .
   .
   +--rw vni-map-l2vpns
   |  +--rw vni-map-l2vpn* [vni-id]
   |     +--rw l2vpn-id              uint32
   |     +--rw l2vpn-name?           string
   |     +--rw vni-id                uint32
   |     +--rw split-horizon-group?  string
   +--rw vni-map-l3vpns
   |  +--rw vni-map-l3vpn* [l3vpn-name]
   |     +--rw l3vpn-name    vrfName
   |     +--rw vni-id?       uint32
```

- Indicating which VNIs are used for L2VPN(MAC_VRF), which VNI is used for L3VPN(IP_VRF)
- Integrated routing and bridging
  - draft-ietf-bess-evpn-inter-subnet-forwarding-08
  - Traffic within one layer2 VNI is bridged
  - Traffic between layer2 VNIs is routed

Statistics

```
+--ro vnipeer-statistics-infos
|  +--ro vnipeer-satistics-info* [vni-id source-ip peer-ip]
|     +--ro vni-id                 uint32
|     +--ro source-ip              inet:ipv4-address-no-zone
|     +--ro peer-ip                inet:ipv4-address-no-zone
|     +--ro vnipeer_statistics
|        +--ro rx-bits-persec?         uint64
|        +--ro rx-pkts-persec?         uint64
|        +--ro tx-bits-persec?         uint64
|        +--ro tx-pkts-persec?         uint64
|        +--ro rx-pkts?                uint64
|        +--ro rx-bytes?               uint64
|        +--ro tx-pkts?                uint64
|        +--ro tx-bytes?               uint64
|        +--ro rx-unicast-pkts?        uint64
|        +--ro rx-multicast-pkts?      uint64
|        +--ro rx-broadcast-pkts?      uint64
|        +--ro drop-unicast-pkts?      uint64
|        +--ro drop-multicast-pkts?    uint64
|        +--ro drop-broadcast-pkts?    uint64
|        +--ro tx-unicast-pkts?        uint64
|        +--ro tx-multicast-pkts?      uint64
|        +--ro tx-broadcast-pkts?      uint64
```

- Statistics for VNIs, VNIpeers and IPv6 VNIpeers

YANG Validation passed

Yang Validation	0 errors, 0 warnings.
Additional URLs	- Yang catalog entry for ietf-nvo3-base@2019-03-01.yang - Yang impact analysis for draft-zhang-nvo3-yang-cfg

Next steps

- Compliance check according to the NVO3 architecture
- Terminology alignment
- Comments are always welcome
- WG adoption if rough consensus achieved?