

Yang Model for BESS WG

*draft-zhuang-l2vpn-yang-cfg-00/
draft-zhuang-l2vpn-evpn-yang-cfg-00/
draft-zhuang-l3vpn-yang-cfg-00*

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Background for Yang model for BESS WG

- Yang model and Netconf have been well accepted.
- VPN are important services for fast provision:
 - IP RAN: draft-zhang-i2rs-mbh-usecases-00
 - Data Center: Much work on VPN for DC
 - ...
- draft-li-bess-instant-vpn-arch-00 is to try to outline the configuration requirements for provision VPN services.

Introduction of draft-zhuang-l2vpn-yang-cfg-00

- This document defines a YANG data model that can be used to configure and manage L2VPN, including
 - LDP-based VPWS
 - LDP-based VPLS
 - BGP-based VPLS
 - BGP-AD-based VPLS

Overview of L2VPN Data Model

```
module: l2vpn  
  +--rw l2vpncommon  
  ...  
  +--rw l2vpnvpls  
  ...  
  +--rw l2vpnvpls  
  ...  
  ...
```

L2VPN Common Configuration

```
+--rw l2vpncommon
  |--rw l2vpnGlobal
    |--rw l2vpnEnable          boolean
    |--rw vplsLoopDetectEnable?  boolean
  |--rw pwTemplates
    |--rw pwTemplate* [pwTemplateName]
      |--rw pwTemplateName      string
      |--rw peerAddr?           inet:ip-address
      |--rw mtu?                 uint16
      |--rw ctrlWord?            enumeration
      |--rw tunnelPolicy?        string
      |--rw tdmEncapsulateNumber? uint8
      |--rw jitterBuffer?        uint16
      |--rw rtpHeader?           boolean
      |--rw idleCode?            string
      |--rw tdmSequenceNumber?   boolean
      |--rw payloadCompression?  boolean
      |--rw timeSlot?            uint8
      |--rw maxAtmCells?         uint8
      |--rw atmPackOvertime?     uint16
      |--rw atmTransmitCell?     uint8
      |--rw sequenceNumber?      boolean
  ...
```

Overview of VPWS Configuration

```
+--rw l2vpnvpws
```

```
|  +--rw vpwsStatisticInfo
```

```
|  ...
```

```
|  +--rw vpwsInstances
```

```
|  ...
```

```
|  +--rw vpwsSwitchInstances
```

```
|  ...
```

Overview of VPLS Configuration

```
+--rw l2vpnpls
  +--rw vplsStatisticInfo
    | +--rw vplsInstStatisticsInfo
    | ...
    | +--rw vplsPwStatisticsInfo
    | ...
    | +--rw vplsAcStatisticsInfo
    | ...
    | +--ro vplsInlRefInfos
    | ...
    | +--rw vplsLoopDetectStaticInfo
    |   +--ro totalVplsLoopDetectNum?   uint32
+--rw vplsInstances
  +--rw vplsInstance* [instanceName]
    +--rw instanceName                string
    +--rw description?                 string
    +--rw memberDiscoveryMode?         enumeration
    +--rw encapsulateType?             pw-encapsulation
    +--rw mtuValue?                    uint16
    ...
```

VPLS Configuration -- VPLS Instance Configuration

```
+--rw vplsInstances
  +--rw vplsInstance* [instanceName]
    +--rw instanceName          string
    +--rw description?          string
    +--rw memberDiscoveryMode?  enumeration
    +--rw encapsulateType?      pw-encapsulation
    +--rw mtuValue?             uint16
    ...
    +--rw vsiPipe
    ...
    +--rw vplsLdpInst
      | +--rw vsiId?             uint32
      ...
    +--rw vplsBgpAdInst
      | +--rw vplsId?            string
      | +--ro bgpAdRd?           string
      | +--ro vsiId?             inet:ip-address
      | +--rw vpnTargets
      ...
    +--rw vplsBgpInst
      | +--rw bgpRd?             string
      | +--rw ignoreMtu?        boolean
      ...
    +--rw vplsAcs
      | +--rw vplsAc* [interfaceName]
      ...
    +--rw vplsLoopDetectInfo
      ...
```


Introduction of draft-zhuang-l2vpn- evpn-yang-cfg-00

- This document defines a YANG data model that can be used to configure and manage Ethernet VPN.

```
module: evn
  +--rw interfaces
  | ...
  +--rw evn
  | ...
  +--rw evn-bgp
  | ...
  +--rw evn-instances
  ...
```

MP-BGP Configuration for EVPN (1)

- Traditional BGP Configuration: defined in [I-D.zhdankin-netmod-bgp-cfg]
 - Full mesh BGP peer configuration
 - RR-based BGP peer configuration
- Simplified BGP Configuration:
 - An independent 'evn-bgp container'
 - Client/Server mode based on RR
 - ✓ Method 1: Auto-Discovery of BGP peers
 - ✓ Method 2: Designate the list of EVPN BGP clients

MP-BGP Configuration for EVPN (2)

```
+--rw evn-bgp
|
|  +--rw bfd
|  |
|  |  ...
|  |
|  +--rw mac-limit-per-peer
|  |
|  |  ...
|  |
|  +--rw source-address?                inet:ip-address
|  |
|  +--rw bgpPeers
|  |
|  |  +--rw bgpPeer* [peerAddr]
|  |  |
|  |  |  +--rw peerAddr    inet:ip-address
|  |  |
|  |  +--rw set-route-reflect-function
|  |  |
|  |  |  +--rw (set-type)?
|  |  |  |
|  |  |  |  +--rw bgp-clients
|  |  |  |  |
|  |  |  |  |  +--rw bgp-client* [clientAddr]
|  |  |  |  |  |
|  |  |  |  |  |  +--rw clientAddr    inet:ip-address
|  |  |  |  |
|  |  |  |  +--rw (dynamic)
|  |  |  |  |
|  |  |  |  |  +--rw server-enable?    boolean
|  |  |  |
|  |  |  +--rw redundancy-mode?    enumeration
|  |  |  +--rw df-delay-timer?     uint16
|  |  |  +--rw timer
|  |  |  |
|  |  |  |  +--rw keepaliveTime?    uint16
|  |  |  |  +--rw holdTime?         uint16
```

Introduction of draft-zhuang-l3vpn-yang-cfg-00

- This document defines a YANG data model that can be used to configure and manage L3VPN (BGP/MPLS IP VPN).

Overview of L3VPN Data Model (1)

```
module: l3vpn
  +--rw vpn-instances
  |   +--rw vpn-instance* [vpn-instance-name]
  |   |   +--rw vpn-instance-name      string
  |   |   +--rw description?          string
  |   |   +--rw ipv4-family
  |   |   |   +--rw route-distinguisher? string
  |   |   |   +--rw vpnTargets
  |   |   |   |   +--rw vpnTarget* [vrfRTValue]
  |   |   |   |   |   +--rw vrfRTValue      string
  |   |   |   |   |   +--rw vrfRTType      enumeration
  |   |   |   ...
  |   |   |   +--rw ipv6-family
  |   |   |   ...
  |   |   ...
  |   +--rw vpn-interfaces
  |   |   +--rw vpn-interface* [name]
  |   |   |   +--rw name                  leafref
  |   |   |   +--rw vpn-instance-name?   string
  |   +--rw vrfInfo
  |   |   +--ro vrfCreateTime?          yang:timestamp
  |   |   ...
```

Overview of L3VPNData Model (2)

```
augment /bgp:bgp-router/bgp:vpn4/bgp:unicast:
  +--rw apply-label-per-nexthop?  boolean
  +--rw upeEnable?                boolean
augment /bgp:bgp-router/bgp:vpn6/bgp:unicast:
  +--rw apply-label-per-nexthop?  boolean
  +--rw upeEnable?                boolean
augment /bgp:bgp-router:
  +--rw bgp-af-ipv4-vpn-instances
  |   +--rw bgp-af-ipv4-vpn-instance* [vpn-instance-name]
  |   ...
  +--rw bgp-af-ipv6-vpn-instances
  |   +--rw bgp-af-ipv6-vpn-instance* [vpn-instance-name]
  |   +--rw vpn-instance-name      string
  |   +--rw router-id
  |   |...
  |   ...
```

Discussions

- General Issues:
 - Define basic configurations on common implementations or incorporate configuration all possible features?
 - Define configuration Yang models or incorporate all operation and management data?
 - Difference between BESS WG and I2RS WG: Yang model for all vs. Yang model for I2RS usecase?
 - Coordinate with [I-D.zhdankin-netmod-bgp-cfg].
- Issues on L2VPN Yang models:
 - Divide into VPWS and VPLS?
 - Move Yang model of LDP-based VPWS/VPLS to PALS WG?
 - Structure for L2VPN: L2VPN Common(What WG?), BGP-based L2VPN (BESS WG), LDP-based L2VPN(PALS WG)?

Next Steps

- Solicit comments and collaboration.
- Revise all drafts and move to BESS WG.