

IGMP & MLD Snooping YANG Model

draft-zhao-pim-igmp-ml-d-snooping-yang-03

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IETF100

Status

- version 03
 - Second version for presentation
 - A new agreement about the whole structure is reached. The igmp-snooping-instance is defined to configure the parameters and show the operational state. It also follows the NMDA standard.
 - Effort from multicast yang design team
(Ericsson/Jabil/Huawei/Cisco)

Structure

- Define a fully functional schema for IGMP Snooping instance

```
module: ietf-igmp-mld-snooping
  +--rw igmp-snooping-instances
  |   +--rw igmp-snooping-instance* [name]
  |   |   +--rw name                               string
  |   |   +--rw id?                               uint32
  |   |   +--rw type?                             enumeration
  |   |   +--rw enable?                           boolean {admin-enable}?
  |   |   +--rw forwarding-mode?                 enumeration
  |   |   +--rw explicit-tracking?               boolean {explicit-tracking}?
  |   |   +--rw exclude-lite?                   boolean {exclude-lite}?
  |   |   +--rw send-query?                      boolean
  |   |   +--rw immediate-leave?                empty {immediate-leave}?
  |   |   +--rw last-member-query-interval?     uint16
  |   |   +--rw query-interval?                 uint16
  |   |   +--rw query-max-response-time?       uint16
  |   |   +--rw require-router-alert?          boolean {require-router-alert}?
  |   |   +--rw robustness-variable?           uint8
  |   |   +--rw version?                         uint8
  |   |   +--rw static-bridge-mrouter-interface* if:interface-ref {static-l2-multicast-group}?
  |   |   +--rw static-vpls-mrouter-interface*  l2vpn-instance-pw-ref {static-l2-multicast-group}?
  |   |   +--rw querier-source?                 inet:ipv4-address
  |   |   +--rw static-l2-multicast-group* [group source-addr] {static-l2-multicast-group}?
  |   |   |   +--rw group                         inet:ipv4-address
  |   |   |   +--rw source-addr                   source-ipv4-addr-type
  |   |   |   +--rw bridge-outgoing-interface*  if:interface-ref
  |   |   |   +--rw vpls-outgoing-ac*           l2vpn-instance-ac-ref
  |   |   |   +--rw vpls-outgoing-pw*          l2vpn-instance-pw-ref
  |   |   ...
  |   ...
```

The igmp-snooping-instance could fit for both bridge and VPLS scenario. It is determined by the value of “type”.

The multicast router interfaces and l2 multicast routing group could be configured manually.

Structure

- The read-only attributes are the operational state data. There are 3 kinds of outgoing interface which is interface-ref, l2vpn-instance-ac-ref, or l2vpn-instance-pw-ref. We have utilized the existing ietf-interfaces and ietf-l2vpn module to indicate the outgoing interface.

```
module: ietf-igmp-mld-snooping
  +--rw igmp-snooping-instances
  |   +--rw igmp-snooping-instance* [name]
  |   |   ...
  |   |   +--ro bridge-mrouter-interface*          if:interface-ref
  |   |   +--ro vpls-mrouter-interface*            l2vpn-instance-pw-ref
  |   |   +--ro group* [address]
  |   |   |   +--ro address          inet:ipv4-address
  |   |   |   +--ro mac-address?     yang:phys-address
  |   |   |   +--ro expire?          uint32
  |   |   |   +--ro up-time?         uint32
  |   |   |   +--ro last-reporter?   inet:ipv4-address
  |   |   |   +--ro source* [address]
  |   |   |   |   +--ro address          inet:ipv4-address
  |   |   |   |   +--ro bridge-outgoing-interface*  if:interface-ref
  |   |   |   |   +--ro vpls-outgoing-ac*           l2vpn-instance-ac-ref
  |   |   |   |   +--ro vpls-outgoing-pw*          l2vpn-instance-pw-ref
  |   |   |   |   +--ro up-time?                   uint32
  |   |   |   |   +--ro expire?                     uint32
  |   |   |   |   +--ro host-count?                 uint32 {explicit-tracking}?
  |   |   |   |   +--ro last-reporter?              inet:ipv4-address
  |   |   |   |   +--ro host* [host-address] {explicit-tracking}?
  |   |   |   |   |   +--ro host-address          inet:ipv4-address
  |   |   |   |   |   +--ro host-filter-mode?    enumeration
```

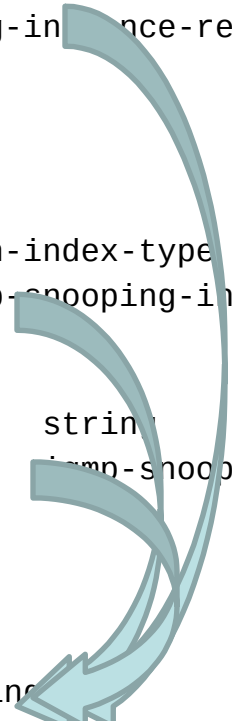
- For example, l2vpn-instance-pw-ref is the leafref for /l2vpn:l2vpn/l2vpn:instances/l2vpn:instance/l2vpn:endpoint/l2vpn:pw/l2vpn:name

```
typedef l2vpn-instance-pw-ref {
  type leafref {
    path "/l2vpn:l2vpn/l2vpn:instances" +
        "/l2vpn:instance/l2vpn:endpoint/l2vpn:pw/l2vpn:name";
  }
}
```

Bridge scenario

- The igmp-snooping-instance could be referenced in bridge scenario.

```
+--rw bridges
|   +--rw bridge* [name]
|       +--rw name                               name-type
|       +--rw igmp-snooping-instance?           igmp-snooping-instance-ref
|       +--rw component* [name]
|           +--rw name                           string
|           +--rw bridge-vlan
|               +--rw vlan* [vid]
|                   +--rw vid                     vlan-index-type
|                   +--rw igmp-snooping-instance? igmp-snooping-instance-ref
|                       +--rw interfaces
|                           +--rw interface* [name]
|                               +--rw name         string
|                               +--rw igmp-snooping-instance? igmp-snooping-instance-ref
|
module: ietf-igmp-mld-snooping
+--rw igmp-snooping-instance* [name]
|   +--rw name                               string
|   +--rw id?                               uint32
|   +--rw type?                             enumeration
|   +--rw enable?                           boolean {admin-enable}?
```

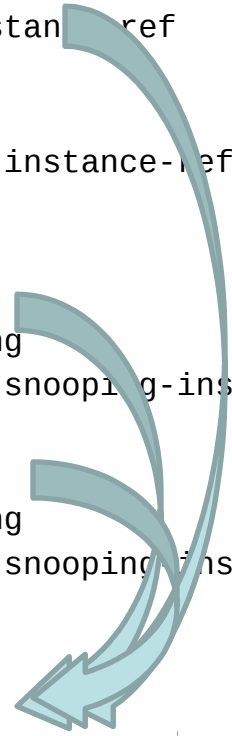


I2vpn scenario

- The igmp-snooping-instance could be referenced in I2vpn scenario.

```
+--rw l2vpn-instances
  +--rw l2vpn-instance* [name]
    +--rw name string
    +--rw igmp-snooping-instance? igmp-snooping-instance-ref
    +--rw endpoint* [name]
      +--rw name string
      +--rw igmp-snooping-instance? igmp-snooping-instance-ref
      +--rw (ac-or-pw-or-redundancy-grp)?
        +--:(ac)
          | +--rw ac* [name]
          |   +--rw name string
          |   +--rw igmp-snooping-instance? igmp-snooping-instance-ref
        +--:(pw)
          | +--rw pw* [name]
          |   +--rw name string
          |   +--rw igmp-snooping-instance? igmp-snooping-instance-ref
        ...
  ...

module: ietf-igmp-mld-snooping
  +--rw igmp-snooping-instance* [name]
    | +--rw name string
    | +--rw id? uint32
    | +--rw type? enumeration
    | +--rw enable? boolean {admin-enable}?
```



IGMP snooping RPC

Clears the specified IGMP Snooping cache tables.

```
module: ietf-igmp-mld-snooping
```

```
rpcs:
```

```
+---x clear-igmp-snooping-groups {rpc-clear-groups}?  
| +---w input  
|   +---w id?      uint32  
|   +---w group?   inet:ipv4-address  
|   +---w source?  inet:ipv4-address
```

Unsolved problem

- The attribute forwarding-mode maybe reconsidered because it only fits for instance, but doesn't fit for interface.
- Counter to non-member leave would also be useful ?

Next Step

- Apply for WG adoption
- Welcome more vendors and carriers involved
- Need more comments