Multicast Information Model

draft-zhang-mboned-multicast-info-model-02

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Why introduce Multicast Info Model?

✓ Existed multicast YANG models:

- PIM
- IGMP
- BIER

- These models describe different technologies for multicast;
- These models are distributed as separate file and focus on the protocol itself;
- They are device models;
- They cannot describe a high-level multicast information.

➢ Stand at a high level to take advantage of these models to control the multicast network to implement multicast service
What is Multicast Info Model?

- Provide a human readability of the whole multicast network;
- Frame different components and correlate them;
- Based on the human readable UML Class Diagram, instantiate these classes through YANG model;
- Take full advantage of and depend on existed multicast YANG models;
- Open for future multicast technologies;
Multicast Information Model 02 update

• Add Overlay Tech in the UML diagram.
• Add BIER-TE in Multicast Transport layer.
• Revise the model YANG program.

• This model has been verified in ODL BIER project. The project had been released in Carbon version.
• This model is feasible and practicable.
• **http://www.opendaylight.org/**

• OpenDaylight is a highly available, modular, extensible, scalable and multi-protocol controller infrastructure built for SDN deployments on modern heterogeneous multi-vendor networks. OpenDaylight provides a model-driven service abstraction platform that allows users to write apps that easily work across a wide variety of hardware and south-bound protocols.

• ODL employs a model-driven approach to describe the network, the functions to be performed on it and the resulting state or status achieved.

• By sharing YANG data structures in a common data store and messaging infrastructure, OpenDaylight allows for fine-grained services to be created then combined together to solve more complex problems. In the ODL Model Driven Service Abstraction Layer (MD-SAL), any app or function can be bundled into a service that is then loaded into the controller. Services can be configured and chained together in any number of ways to match fluctuating needs within the network.
The BIER project is driven by two YANG models:

**Multicast Information Model**
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**YANG Data Model for BIER Protocol**
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https://wiki.opendaylight.org/view/BIER:Main
Multicast Data Model Overview

module: ietf-multicast-information

+-rw multicast-information
  +-rw multicast-info
      -----
  +--rw multicast-overlay
      -----
  +--rw multicast-transport
      -----
  +--rw multicast-underlay
      -----

Divide the multicast data model into three layers as well.
Multicast Data Model - Information

+--rw multicast-info* [vpn-id source-address source-wildcard group-address group-wildcard vni-type vni-value]
   +--rw vpn-id               uint32
   +--rw source-address       inet:ip-address
   +--rw source-wildcard      uint8
   +--rw group-address        inet:ip-address
   +--rw group-wildcard       uint8
   +--rw vni-type             virtual-type
   +--rw vni-value            uint32

Multicast info:
✓ Basic multicast flow information;
✓ Key of the multicast service.
Multicast Data Model – Overlay 02 update

+-rw multicast-overlay
  |  |  +--rw nodes-information
  |  |  |  |  +--rw ingress-node?  inet:ip-address
  |  |  |  |  +--rw egress-nodes* [egress-node]
  |  |  |  |  +--rw egress-node  inet:ip-address
  |  +--rw bier-information
  |  |  +--rw sub-domain?  sub-domain-id
  |  |  +--rw ingress-node?  bfr-id
  |  |  +--rw egress-nodes* [egress-node]
  |  |  +--rw egress-node  bfr-id
  +--rw overlay-technology
     |  +--rw (overlay-tech-type)?
     |     +--:(mld)
     |     +--:(mvpn)
     |     +--:(bgp)
     |     +--:(mld-snooping)

Overlay layer includes:

✓ Ingress/egress nodes information;
✓ Overlay technology.
Multicast Data Model – Transport 02 update

Transport layer includes:

✓ Transport technology type
✓ Corresponding individual YANG models
Multicast Data Model – Underlay 02 update

---rw multicast-underlay
  +--rw underlay-requirement? boolean
  +--rw bgp
  +--rw ospf
    |  +--rw topology-id? uint16
  +--rw isis
    |  +--rw topology-id? uint16
  +--rw babel
  +--rw pim

**Underlay layer includes:**

- Underlay technology type
- Corresponding individual YANG models
Next Steps

• Any comments ^
• WG adoption?