IGMP and MLD Snooping

IGMP (Internet Group Management Protocol) and MLD (Multicast Listener Discovery) snooping are implemented in the bridge driver in the Cumulus Linux kernel and are enabled by default. IGMP snooping processes IGMP v1/v2/v3 reports received on a bridge port in a bridge to identify the hosts which would like to receive multicast traffic destined to that group.

An IGMP query message received on a port is used to identify the port that is connected to a router and is interested in receiving multicast traffic.

MLD snooping processes MLD v1/v2 reports, queries and v1 done messages for IPv6 groups. If IGMP or MLD snooping is disabled, multicast traffic gets flooded to all the bridge ports in the bridge. Similarly, in the absence of receivers in a VLAN, multicast traffic would be flooded to all ports in the VLAN. The multicast group IP address is mapped to a multicast MAC address and a forwarding entry is created with a list of ports interested in receiving multicast traffic destined to that group.

In Cumulus Linux 3.7.4 and later, IGMP and MLD snooping is supported over VXLAN bridges on Broadcom switches; however, this feature is not enabled by default. To enable IGMP and MLD over VXLAN, see Configure IGMP/MLD Snooping over VXLAN.

When an IGMPv2 leave message is received, a group specific query is sent to identify if there are any other hosts interested in that group, before the group is deleted.

Configure IGMP/MLD Snooping over VXLAN

Cumulus Linux 3.7.4 and later supports IGMP/MLD snooping over VXLAN bridges on Broadcom switches, where VXLAN ports are set as router ports.

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To enable IGMP/MLD snooping over VXLAN, run the `net add bridge <bridge> mcsnoop yes` command:

```
cumulus@switch:~$ net add bridge mybridge mcsnoop yes
cumulus@switch:~$ net pending
cumulus@switch:~$ net commit
```

Cumulus Networks recommends that you also configure IGMP/MLD querier. See Configure IGMP/MLD Querier, below.

To disable IGMP/MLD snooping over VXLAN, run the `net add bridge <bridge> mcsnoop no` command.

**Configure IGMP/MLD Querier**

If no multicast router is sending queries to configure IGMP/MLD querier on the switch, you can add a configuration similar to the following in `/etc/network/interfaces`. To enable IGMP and MLD snooping for a bridge, set `bridge-mcquerier` to `1` in the bridge stanza. By default, the source IP address of IGMP queries is `0.0.0.0`. To set the source IP address of the queries to be the bridge IP address, configure `bridge-mcqifaddr 1`.

For an explanation of the relevant parameters, see the `ifupdown-addons-interfaces` man page.

For a VLAN-aware bridge, use a configuration like the following:

```
auto bridge.100
vlan bridge.100
  bridge-igmp-querier-src 123.1.1.1

auto bridge
iface bridge
  bridge-ports swp1 swp2 swp3
  bridge-vlan-aware yes
  bridge-vids 100 200
  bridge-pvid 1
  bridge-mcquerier 1
```

For a VLAN-aware bridge, like `bridge` in the above example, to enable querier functionality for VLAN 100 in the bridge, set `bridge-mcquerier` to `1` in the bridge stanza and set `bridge-igmp-querier-src` to `123.1.1.1` in the bridge.100 stanza.

You can specify a range of VLANs as well. For example:

```
auto bridge.[1-200]
vlan bridge.[1-200]
  bridge-igmp-querier-src 123.1.1.1
```

For a bridge in traditional mode, use a configuration like the following:

```
auto br0
iface br0
  address 192.0.2.10/24
  bridge-ports swp1 swp2 swp3
  bridge-vlan-aware no
  bridge-mcquerier 1
  bridge-mcqifaddr 1
```
Disable IGMP and MLD Snooping

To disable IGMP and MLD snooping, set the `bridge-mcsnoop` value to 0.

```
cumulus@switch:~$ net add bridge bridge mcsnoop no
cumulus@switch:~$ net pending
cumulus@switch:~$ net commit
```

**Example Disable IGMP MLD Snooping Configuration**

The example NCLU commands below create a VLAN-aware bridge interface for a VRR-enabled network:

```
cumulus@switch:~$ net add bridge bridge mcsnoop no
```

The commands above add the `bridge-mcsnoop` line to the following example bridge in `/etc/network/interfaces`:

```
auto bridge
iface bridge
    bridge-mcquerier 1
    bridge-mcsnoop 0
    bridge-ports swp1 swp2 swp3
    bridge-pvid 1
    bridge-vids 100 200
    bridge-vlan-aware yes
```

Troubleshooting

To show the IGMP/MLD snooping bridge state, run `brctl showstp <bridge>`:

```
cumulus@switch:~$ sudo brctl showstp bridge
bridge
bridge id          8000.7072cf8c272c
designated root    8000.7072cf8c272c
root port          0                              path cost
  0
max age            20.00                         bridge max age
20.00
hello time         2.00                          bridge hello time
2.00
forward delay      15.00                         bridge forward delay
15.00
ageing time        300.00
hello timer        0.00                          tcn timer
0.00
topology change timer 0.00
263.70
topology change timer 0.00
263.70
hash elasticity    4096
hash max           4096
mc last member count 2
mc init query count 2
mc snooping
```
mc last member timer 1.00       mc membership timer
260.00
mc querier timer 255.00       mc query interval
125.00
mc response interval 10.00    mc init query interval
31.25
mc querier 0              mc query ifaddr
0
flags

swp1 (1)
port id 8001       state
forwarding
designated root 8000.7072cf8c272c    path cost
2
designated bridge 8000.7072cf8c272c   message age timer
0.00
designated port 8001               forward delay timer
0.00
designated cost 0                  hold timer
0.00
mc router 1              mc fast leave
0
flags

swp2 (2)
port id 8002       state
forwarding
designated root 8000.7072cf8c272c    path cost
2
designated bridge 8000.7072cf8c272c   message age timer
0.00
designated port 8002               forward delay timer
0.00
designated cost 0                  hold timer
0.00
mc router 1              mc fast leave
0
flags

swp3 (3)
port id 8003       state
forwarding
designated root 8000.7072cf8c272c    path cost
2
designated bridge 8000.7072cf8c272c   message age timer
0.00
designated port 8003               forward delay timer
8.98
designated cost 0                  hold timer
0.00
To show the groups and bridge port state, use the `bridge mdb show` command. To show router ports and group information use the `bridge -d -s mdb show` command:

```
cumulus@switch:~$ sudo bridge -d -s mdb show
  dev bridge port swp2 grp 234.10.10.10 temp 241.67
  dev bridge port swp1 grp 238.39.20.86 permanent 0.00
  dev bridge port swp1 grp 234.1.1.1 temp 235.43
  dev bridge port swp2 grp ff1a::9 permanent 0.00
  router ports on bridge: swp3
```

Related Information

- [tools.ietf.org/rfc/rfc2236.txt](https://tools.ietf.org/rfc/rfc2236.txt)
- [tools.ietf.org/search/rfc2710](https://tools.ietf.org/search/rfc2710)