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Introduction

This document introduces IGMP snooping configuration examples.

Prerequisites

This document is not restricted to specific software or hardware versions.

The configuration examples in this document were created and verified in a lab environment, and all the switches were started with the factory default configuration. When you are working on a live network, make sure you understand the potential impact of every command on your network.

This document assumes that you have basic knowledge of IGMP snooping.

Example: Configuring multicast group policies

Network configuration

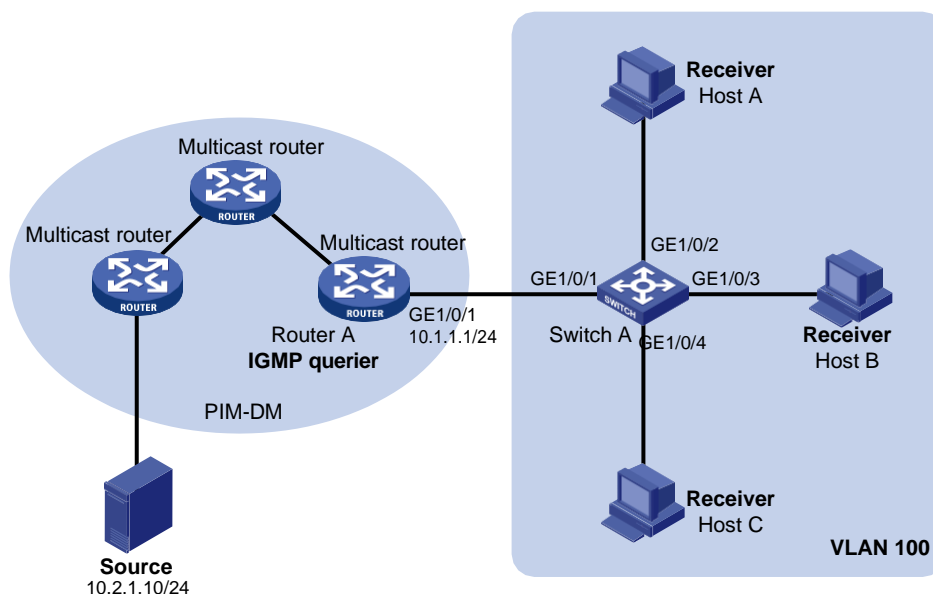
As shown in [Figure 1](#):

- Router A runs IGMP and acts as the IGMP querier.
- Switch A runs IGMP snooping.

Configure multicast group policies on Switch A to meet the following requirements:

- Host A receives only the multicast data addressed to multicast group 224.1.1.1.
- Host B and Host C receive only the multicast data addressed to multicast group 225.1.1.1.

Figure 1 Network diagram



Analysis

To meet the network requirements, you must perform the following tasks:

- IGMPv2 snooping cannot process IGMPv3 messages. It floods IGMPv3 messages in the VLAN to which the IGMPv3 messages belong. To avoid this problem, specify IGMP snooping version 3 for VLAN 100.
- To avoid receiver hosts in VLAN 100 from receiving multicast data addressed to other groups, enable dropping unknown multicast data in VLAN 100.
- To configure multicast group policies, specify a basic ACL and create ACL rules to define the groups that you want the receiver hosts to join.

Applicable hardware and software versions

The following matrix shows the hardware and software versions to which this configuration example is applicable:

Hardware	Software version
SC 3570 switch series	Release 11xx
SC 5525 switch series	Release 63xx, Release 65xx, Release 6615Pxx, Release 6628Pxx
SC 5520 switch series	Release 63xx, Release 65xx, Release 6615Pxx, Release 6628Pxx
SC 3130 switch series	Release 63xx
SC 3170 switch series	Release 11xx

Restrictions and guidelines

When you configure multicast group polices, follow these restrictions and guidelines:

- You must globally enable IGMP snooping in system view before you enable IGMP snooping for a VLAN in VLAN view.
- You can configure multicast group policies for all ports in IGMP-snooping view or for the current port in interface view. The configuration made in interface view takes priority over the configuration made in IGMP-snooping view.

Procedures

1. Assign an IP address and subnet mask to each interface on the routers in the PIM-DM domain. (Details not shown.)
2. Configure a unicast routing protocol on the routers in the PIM-DM domain. (Details not shown.)
3. Enable multicast routing globally on the routers in the PIM-DM domain. (Details not shown.)
4. Enable PIM-DM for the interfaces through which routers connect with each other on the routers in the PIM-DM domain. (Details not shown.)
5. Configure Router A:

Enable IP multicast routing globally.

```
<RouterA> system-view
[RouterA] multicast routing
[RouterA-mrib] quit
```

Enable IGMPv3 on GigabitEthernet 1/0/1.

```
[RouterA] interface gigabitethernet 1/0/1
[RouterA-GigabitEthernet1/0/1] igmp enable
[RouterA-GigabitEthernet1/0/1] igmp version 3
[RouterA-GigabitEthernet1/0/1] quit
```

6. Configure Switch A:

Enable IGMP snooping globally.

```
<SwitchA> system-view
[SwitchA] igmp-snooping
[SwitchA-igmp-snooping] quit
```

Create VLAN 100, and assign GigabitEthernet 1/0/1 through GigabitEthernet 1/0/4 to VLAN 100.

```
[SwitchA] vlan 100
[SwitchA-vlan100] port gigabitethernet 1/0/1 to gigabitethernet 1/0/4
```

Enable IGMPv3 snooping and enable dropping unknown multicast data for VLAN 100.

```
[SwitchA-vlan100] igmp-snooping enable
[SwitchA-vlan100] igmp-snooping version 3
[SwitchA-vlan100] igmp-snooping drop-unknown
```

```
[SwitchA-vlan100] quit
# Configure a multicast group policy for VLAN 100 on GigabitEthernet 1/0/2 so that Host A can
join only multicast group 224.1.1.1.
[SwitchA] acl basic 2000
[SwitchA-acl-ipv4-basic-2000] rule permit source 224.1.1.1 0
[SwitchA-acl-ipv4-basic-2000] quit
[SwitchA] interface gigabitethernet 1/0/2
[SwitchA-GigabitEthernet1/0/2] igmp-snooping group-policy 2000 vlan 100
[SwitchA-GigabitEthernet1/0/2] quit
# Configure a multicast group policy globally for VLAN 100 so that Host B and Host C can join
only multicast group 225.1.1.1.
[SwitchA] acl basic 2001
[SwitchA-acl-ipv4-basic-2001] rule permit source 225.1.1.1 0
[SwitchA-acl-ipv4-basic-2001] quit
[SwitchA] igmp-snooping
[SwitchA-igmp-snooping] group-policy 2001 vlan 100
[SwitchA-igmp-snooping] quit
```

Verifying the configuration

Send IGMP reports from Host A, Host B, and Host C to join multicast groups 224.1.1.1, 224.2.2.2, and 225.1.1.1. (Details not shown.)

Send multicast data from the source to the multicast groups. (Details not shown.)

Display dynamic IGMP snooping group entries for VLAN 100 on Switch A.

```
[SwitchA] display igmp-snooping group vlan 100
Total 2 entries.
```

```
VLAN 100: Total 2 entries.
```

```
(0.0.0.0, 224.1.1.1)
```

```
Host ports (1 in total):
```

```
GE1/0/2 (00:03:09)
```

```
(0.0.0.0, 225.1.1.1)
```

```
Host ports (2 in total):
```

```
GE1/0/3 (00:04:04)
```

```
GE1/0/4 (00:02:38)
```

The output shows the following information:

- Host A has joined multicast group 224.1.1.1 through GigabitEthernet 1/0/2, and it has not joined multicast groups 224.2.2.2 and 225.1.1.1.
- Host B and Host C have joined multicast group 225.1.1.1 through GigabitEthernet 1/0/3 and GigabitEthernet 1/0/4, respectively. They have not joined multicast groups 224.1.1.1 and 224.2.2.2.
- Multicast group policies have taken effect.

Configuration files



IMPORTANT:

Support for the **port link-mode bridge** command depends on the device model.

- **Router A:**

```
#
interface GigabitEthernet1/0/1
 port link-mode route
 ip address 10.1.1.1 255.255.255.0
 igmp enable
 igmp version 3
#
multicast routing
#
```

- **Switch A:**

```
#
igmp-snooping
 group-policy 2001 vlan 100
#
vlan 100
 igmp-snooping enable
 igmp-snooping drop-unknown
 igmp-snooping version 3
#
interface GigabitEthernet1/0/1
 port link-mode bridge
 port access vlan 100
#
interface GigabitEthernet1/0/2
 port link-mode bridge
 port access vlan 100
 igmp-snooping group-policy 2000 vlan 100
#
interface GigabitEthernet1/0/3
 port link-mode bridge
 port access vlan 100
#
interface GigabitEthernet1/0/4
 port link-mode bridge
 port access vlan 100
#
acl basic 2000
 rule 0 permit source 224.1.1.1 0
#
acl basic 2001
 rule 0 permit source 225.1.1.1 0
#
```

Example: Configuring IGMP snooping static ports

Network configuration

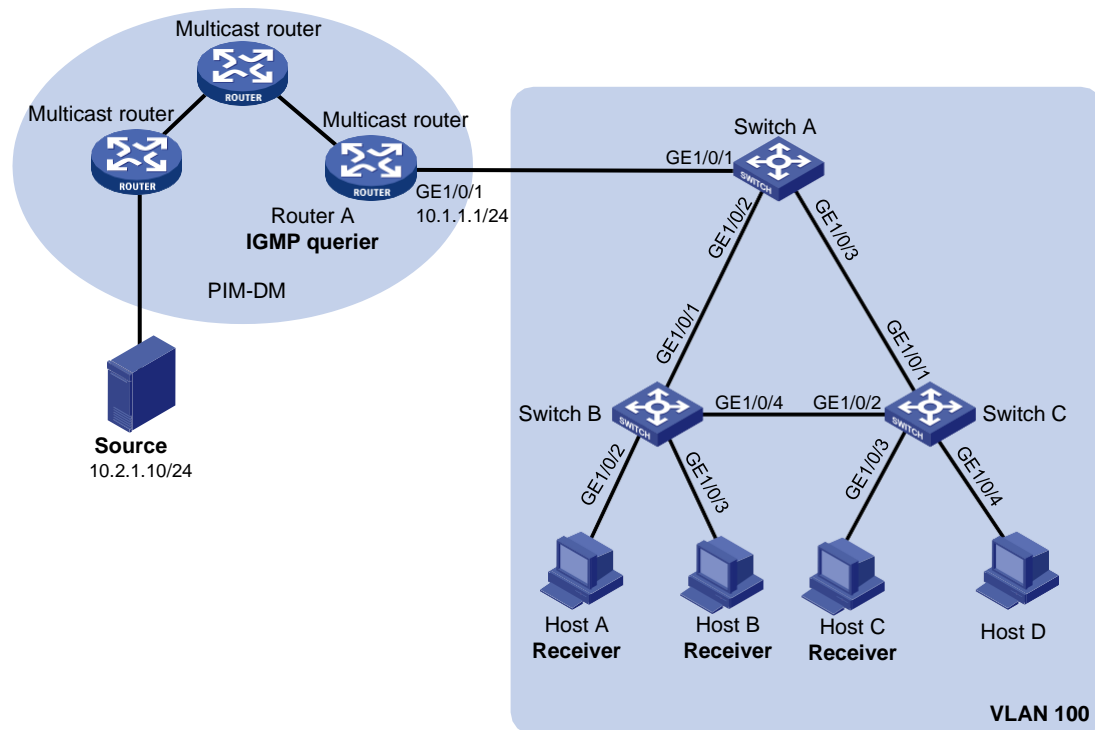
As shown in Figure 2:

- All switches in VLAN 100 run IGMP snooping.
- Router A runs IGMPv2 and acts as the IGMP querier.
- STP runs in VLAN 100. The direct route between Switch A and Switch B or the route from Switch A to Switch B with Switch C as the intermediate device is blocked to avoid loops.

Configure IGMP snooping static ports to meet the following requirements:

- Multicast data uninterruptedly flows to the receiver hosts after a link switchover occurs between Switch A and Switch B.
- Host A, Host B, and Host C permanently receive the multicast data addressed to multicast group 224.1.1.1.

Figure 2 Network diagram



Analysis

To meet the network requirements, you must perform the following tasks:

- By default, when a link switchover occurs, multicast data can flow along the new link after a minimum of one IGMP query-response cycle. Multicast delivery is interrupted during this process.

Configure GigabitEthernet 1/0/2 and GigabitEthernet 1/0/3 on Switch A, GigabitEthernet 1/0/4 on Switch B, and GigabitEthernet 1/0/2 on Switch C as static router ports. Then, multicast data will be forwarded to these ports.

- Configure GigabitEthernet 1/0/2 and GigabitEthernet 1/0/3 on Switch B, and GigabitEthernet 1/0/3 on Switch C as static member ports of multicast group 224.1.1.1. Then, multicast data for the group will always be forwarded out of these ports, and Host A, Host B, and Host C can always receive the data.

Applicable hardware and software versions

The following matrix shows the hardware and software versions to which this configuration example is applicable:

Hardware	Software version
SC 3570 switch series	Release 11xx
SC 5525 switch series	Release 63xx, Release 65xx, Release 6615Pxx, Release 6628Pxx
SC 5520 switch series	Release 63xx, Release 65xx, Release 6615Pxx, Release 6628Pxx
SC 3130 switch series	Release 63xx
SC 3170 switch series	Release 11xx

Restrictions and guidelines

When you configure IGMP snooping static ports, you must globally enable IGMP snooping in system view before you enable IGMP snooping for a VLAN in VLAN view.

Procedures

1. Assign an IP address and subnet mask to each interface on the routers in the PIM-DM domain. (Details not shown.)
2. Configure OSPF on the routers in the PIM-DM domain. (Details not shown.)
3. Enable multicast routing globally on the routers in the PIM-DM domain. (Details not shown.)
4. Enable PIM-DM for the interfaces through which routers connects with each other in the PIM-DM domain. (Details not shown.)
5. Configure Router A:

Enable IP multicast routing.

```
<RouterA> system-view
[RouterA] multicast routing
[RouterA-mrib] quit
```

Enable IGMP on GigabitEthernet 1/0/1.

```
[RouterA] interface gigabitethernet 1/0/1
[RouterA-GigabitEthernet1/0/1] igmp enable
[RouterA-GigabitEthernet1/0/1] quit
```

6. Configure Switch A:

Enable IGMP snooping globally.

```
<SwitchA> system-view
[SwitchA] igmp-snooping
[SwitchA-igmp-snooping] quit
```

Create VLAN 100, assign GigabitEthernet 1/0/1 through GigabitEthernet 1/0/4 to this VLAN, and enable IGMP snooping for this VLAN.

```
[SwitchA] vlan 100
[SwitchA-vlan100] port gigabitethernet 1/0/1 to gigabitethernet 1/0/4
[SwitchA-vlan100] igmp-snooping enable
[SwitchA-vlan100] quit
```

Configure GigabitEthernet 1/0/2 and GigabitEthernet 1/0/3 as static router ports.

```
[SwitchA] interface gigabitethernet 1/0/2
[SwitchA-GigabitEthernet1/0/2] igmp-snooping static-router-port vlan 100
[SwitchA-GigabitEthernet1/0/2] quit
[SwitchA] interface gigabitethernet 1/0/3
[SwitchA-GigabitEthernet1/0/3] igmp-snooping static-router-port vlan 100
[SwitchA-GigabitEthernet1/0/3] quit
```

7. Configure Switch B:

Enable IGMP snooping globally.

```
<SwitchB> system-view
[SwitchB] igmp-snooping
```

```
[SwitchB-igmp-snooping] quit
```

Create VLAN 100, assign GigabitEthernet 1/0/1 and GigabitEthernet 1/0/4 to this VLAN, and enable IGMP snooping for this VLAN.

```
[SwitchB] vlan 100
```

```
[SwitchB-vlan100] port gigabitethernet 1/0/1 gigabitethernet 1/0/4
```

```
[SwitchB-vlan100] igmp-snooping enable
```

```
[SwitchB-vlan100] quit
```

Configure GigabitEthernet 1/0/4 as a static router port.

```
[SwitchB] interface gigabitethernet 1/0/4
```

```
[SwitchB-GigabitEthernet1/0/4] igmp-snooping static-router-port vlan 100
```

```
[SwitchB-GigabitEthernet1/0/4] quit
```

Configure GigabitEthernet 1/0/2 and GigabitEthernet 1/0/3 as static member ports for multicast group 224.1.1.1 in VLAN 100.

```
[SwitchB] interface gigabitethernet 1/0/2
```

```
[SwitchB-GigabitEthernet1/0/2] igmp-snooping static-group 224.1.1.1 vlan 100
```

```
[SwitchB-GigabitEthernet1/0/2] quit
```

```
[SwitchB] interface gigabitethernet 1/0/3
```

```
[SwitchB-GigabitEthernet1/0/3] igmp-snooping static-group 224.1.1.1 vlan 100
```

```
[SwitchB-GigabitEthernet1/0/3] quit
```

8. Configure Switch C:

Enable IGMP snooping globally.

```
<SwitchC> system-view
```

```
[SwitchC] igmp-snooping
```

```
[SwitchC-igmp-snooping] quit
```

Create VLAN 100, assign GigabitEthernet 1/0/1 through GigabitEthernet 1/0/4 to this VLAN, and enable IGMP snooping for this VLAN.

```
[SwitchC] vlan 100
```

```
[SwitchC-vlan100] port gigabitethernet 1/0/1 to gigabitethernet 1/0/4
```

```
[SwitchC-vlan100] igmp-snooping enable
```

```
[SwitchC-vlan100] quit
```

Configure GigabitEthernet 1/0/2 as a static router port in VLAN 100.

```
[SwitchC] interface gigabitethernet 1/0/2
```

```
[SwitchC-GigabitEthernet1/0/2] igmp-snooping static-router-port vlan 100
```

```
[SwitchC-GigabitEthernet1/0/2] quit
```

Configure GigabitEthernet 1/0/3 as a static member port of multicast group 224.1.1.1 in VLAN 100.

```
[SwitchC] interface gigabitethernet 1/0/3
```

```
[SwitchC-GigabitEthernet1/0/3] igmp-snooping static-group 224.1.1.1 vlan 100
```

```
[SwitchC-GigabitEthernet1/0/3] quit
```

Verifying the configuration

Verify the configuration before hosts join any multicast groups.

Display static router port information for VLAN 100 on Switch A.

```
[SwitchA] display igmp-snooping static-router-port vlan 100
```

VLAN 100:

Router ports (2 in total):

GE1/0/2

GE1/0/3

The output shows that GigabitEthernet 1/0/2 and GigabitEthernet 1/0/3 on Switch A have become static router ports in VLAN 100.

Display static router port information for VLAN 100 on Switch B.

```
[SwitchB] display igmp-snooping static-router-port vlan 100
```

VLAN 100:

Router ports (1 in total):

GE1/0/4

The output shows that GigabitEthernet 1/0/4 on Switch B has become a static router port in VLAN 100.

Display static IGMP snooping group entries for VLAN 100 on Switch B.

```
[SwitchB] display igmp-snooping static-group vlan 100
```

Total 1 entries.

VLAN 100: Total 1 entries.

(0.0.0.0, 224.1.1.1)

Host ports (2 in total):

GE1/0/2

GE1/0/3

The output shows that GigabitEthernet 1/0/2 and GigabitEthernet 1/0/3 on Switch B have become static member ports of multicast group 224.1.1.1 in VLAN 100.

Display static router port information for VLAN 100 on Switch C.

```
[SwitchC] display igmp-snooping static-router-port vlan 100
```

VLAN 100:

Router ports (1 in total):

GE1/0/2

The output shows that GigabitEthernet 1/0/2 on Switch C has become a static router port in VLAN 100.

Display static IGMP snooping group entries for VLAN 100 on Switch C.

```
[SwitchC] display igmp-snooping static-group vlan 100
```

Total 1 entries.

VLAN 100: Total 1 entries.

(0.0.0.0, 224.1.1.1)

Host ports (1 in total):

GE1/0/3

The output shows that GigabitEthernet 1/0/3 on Switch C has become a static group member of multicast group 224.1.1.1.

Configuration files



IMPORTANT:

Support for the **port link-mode bridge** command depends on the device model.

- Router A:

#

```

interface GigabitEthernet1/0/1
  port link-mode route
  ip address 10.1.1.1 255.255.255.0
  igmp enable
#
multicast routing
#

```

- **Switch A:**

```

#
igmp-snooping
#
vlan 100
  igmp-snooping enable
#
interface GigabitEthernet1/0/1
  port link-mode bridge
  port access vlan 100
#
interface GigabitEthernet1/0/2
  port link-mode bridge
  port access vlan 100
  igmp-snooping static-router-port vlan 100
#
interface GigabitEthernet1/0/3
  port link-mode bridge
  port access vlan 100
  igmp-snooping static-router-port vlan 100
#

```

- **Switch B:**

```

#
igmp-snooping
#
vlan 100
  igmp-snooping enable
#
interface GigabitEthernet1/0/1
  port link-mode bridge
  port access vlan 100
#
interface GigabitEthernet1/0/2
  port link-mode bridge
  port access vlan 100
  igmp-snooping static-group 224.1.1.1 vlan 100
#
interface GigabitEthernet1/0/3
  port link-mode bridge
  port access vlan 100
  igmp-snooping static-group 224.1.1.1 vlan 100

```

```
#
interface GigabitEthernet1/0/4
port link-mode bridge
port access vlan 100
igmp-snooping static-router-port vlan 100
#
```

- **Switch C:**

```
#
igmp-snooping
#
vlan 100
igmp-snooping enable
#
interface GigabitEthernet1/0/1
port link-mode bridge
port access vlan 100
#
interface GigabitEthernet1/0/2
port link-mode bridge
port access vlan 100
igmp-snooping static-router-port vlan 100
#
interface GigabitEthernet1/0/3
port link-mode bridge
port access vlan 100
igmp-snooping static-group 224.1.1.1 vlan 100
#
interface GigabitEthernet1/0/4
port link-mode bridge
port access vlan 100
#
```