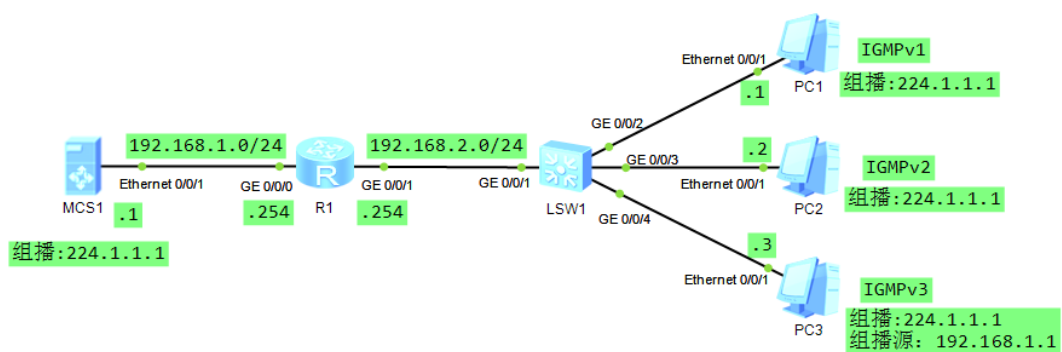


【HCIP 实验 19】 IGMP

一、 实验拓扑



二、 实验需求及解法

本实验模拟不同组成员使用IGMP加入组播组的网络环境。

1. 如图所示，配置各设备IP地址

R1:

```
interface GigabitEthernet0/0/0
 ip address 192.168.1.254 255.255.255.0
interface GigabitEthernet0/0/1
 ip address 192.168.2.254 255.255.255.0
```

2. R1启用组播功能，并在g0/0/0和g0/0/1上开启pim dm。

R1:

```
multicast routing-enable
pim
interface GigabitEthernet0/0/0
 pim dm
interface GigabitEthernet0/0/1
 pim dm
```

3. R1的g0/0/1开启igmp协议

```
interface GigabitEthernet0/0/1
 igmp enable
```

3.1 使用igmp version1, 配置PC1, 使用igmpv1加入组224.1.1.1

R1 :

interface GigabitEthernet0/0/1

igmp version 1

#



3.1.1 R1查看组成员信息：dis igmp group

```
[R1]dis igmp group
Interface group report information of VPN-Instance: public net
GigabitEthernet0/0/1(192.168.2.254):
Total 1 IGMP Group reported
Group Address  Last Reporter  Uptime    Expires
224.1.1.1     192.168.2.1  00:11:49  00:02:08
```

3.1.2 使用MSC播放视频, PC1在组播中启动VLC。

3.1.3 PC1上离开组播组, 再次观察R1的组成员信息。

```
[R1]dis igmp group
Interface group report information of VPN-Instance: public net
GigabitEthernet0/0/1(192.168.2.254):
Total 1 IGMP Group reported
Group Address  Last Reporter  Uptime    Expires
224.1.1.1     192.168.2.1  00:12:20  00:01:37
```

IGMPv1没有离开组消息, 所以加组信息超时之前都会持续转发组播。

3.2 使用igmp version2, 配置PC2, 使用igmpv2加入组224.1.1.1

R1 :

interface GigabitEthernet0/0/1

igmp version 2



3.2.1 R1查看组成员信息：dis igmp group

```
[R1]dis igmp group
Interface group report information of VPN-Instance: public net
GigabitEthernet0/0/1(192.168.2.254):
Total 1 IGMP Group reported
Group Address  Last Reporter  Uptime    Expires
224.1.1.1      192.168.2.2  00:00:16  00:01:55
```

3.2.2 使用MSC播放视频，PC2在组播中启动VLC。

3.2.3 PC2上离开组播组，再次观察R1的组成员信息。

```
[R1]dis igmp group
Interface group report information of VPN-Instance: public net
GigabitEthernet0/0/1(192.168.2.254):
Total 1 IGMP Group reported
Group Address  Last Reporter  Uptime    Expires
224.1.1.1      192.168.2.2  00:00:35  00:00:00
[R1]
[R1]dis igmp group
[R1]
```

IGMPv2有离开组消息，当PC2离开后，R1会立刻发送特定组查询，没有任何PC回复此查询，则认为该组没有成员，停止转发组播。

3.3 使用igmp version3，配置PC3，使用igmpv3加入组224.1.1.1，组播源192.168.1.1

R1：

```
interface GigabitEthernet0/0/1
```

```
igmp version 3
```

```
#
```



3.3.1 R1查看组成员信息：dis igmp group

```
[R1]dis igmp group verbose
Interface group report information of VPN-Instance: public net
Limited entry of this VPN-Instance: -
GigabitEthernet0/0/1(192.168.2.254):
Total entry on this interface: 1
Limited entry on this interface: -
Total 1 IGMP Group reported
Group: 224.1.1.1
  Uptime: 00:00:01
  Expires: off
  Last reporter: 192.168.2.2
  Last-member-query-counter: 0
  Last-member-query-timer-expiry: off
  Group mode: include
  Version1-host-present-timer-expiry: off
  Version2-host-present-timer-expiry: off
  Source list:
    Source: 192.168.1.1
      Uptime: 00:00:01
      Expires: 00:02:09
      Last-member-query-counter: 0
      Last-member-query-timer-expiry: off
```

IGMPv3可以指定源地址。

3.3.2 使用MSC播放视频，PC3在组播中启动VLC。

3.3.3 PC3上离开组播组，再次观察R1的组成员信息。



```
[R1]dis igmp group verbose
[R1]
[R1]
[R1]
```

IGMPv3离开特定源和特定组后，也会发送离开消息。