实验报告

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【实验题目】**RIP 配置实验**

【实验目的】学习 RIPv2 的配置方法。

【配置命令】

- 配置 RIPv2 协议。

  R1(config)# router rip

  R1(config-router)# version 2

  R1(config-router)# network 192.168.2.0　！发布属于有类网络的网络的接口的子网

  R1(config-router)# network 192.168.3.0

- 把交换机接口变为**三层接口**，然后就可以配置 IP 地址。（本实验要把交换机当路由器用）

  (config)#interface f0/1

  (config-if)#no switchport

  (config-if)#ip address　192.168.1.5　255.255.255.0

- 为**环回接口**配置 IP 地址。环回接口是路由器内部的软接口，除非路由器失效，否则，环回接口一直有效。

  (config)#interface loopback 0　　！号码范围：0~2147483647

  (config-if)#ip address　192.168.1.5　255.255.255.0

- **取消自动汇总**

  (config-router)#router rip

  (config-router)#auto-summary　　!启动自动汇总(默认)

  (config-router)#no auto-summary　　!取消自动汇总

- **配置水平分割**

  (config)#interface f0/1

  (config-if)#ip split-horizon　　！配置水平分割(默认)

  (config-if)#no ip split-horizon　　！取消水平分割

- **显示调试信息**

  #debug ip rip　　！显示 rip 调试信息

  #no debug ip rip　　！停止显示 rip 调试信息

  #no debug all　　！停止显示所有调试信息

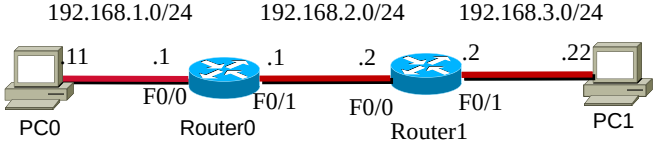
  (config)#ip routing　　！启动三层功能

  (config)#ip subnet-zero　！允许 0 作为子网号（有的交换机要设置）

  主机号全 0 的不能用

【实验任务】

1、 (RIP1.pkt)按下图配置 RIPv2 路由协议。



[1A、PC0 ping 通 PC1 后截屏]

```
PC>ping 192.168.3.22

Pinging 192.168.3.22 with 32 bytes of data:

Reply from 192.168.3.22: bytes=32 time=0ms TTL=126
Reply from 192.168.3.22: bytes=32 time=0ms TTL=126
Reply from 192.168.3.22: bytes=32 time=0ms TTL=126
Reply from 192.168.3.22: bytes=32 time=0ms TTL=126

Ping statistics for 192.168.3.22:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms
```

[1B、Router0 的路由表]

```
Router#sh ip rou
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route

Gateway of last resort is not set

C    192.168.1.0/24 is directly connected, FastEthernet0/0
C    192.168.2.0/24 is directly connected, FastEthernet0/1
R    192.168.3.0/24 [120/1] via 192.168.2.2, 00:00:18, FastEthernet0/1
```

[1C、Router1 的路由表]

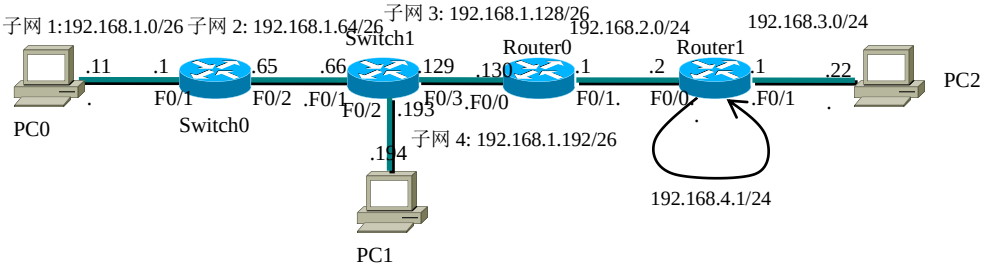
```
Router#sh ip rou
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route

Gateway of last resort is not set

R    192.168.1.0/24 [120/1] via 192.168.2.1, 00:00:07, FastEthernet0/0
C    192.168.2.0/24 is directly connected, FastEthernet0/0
C    192.168.3.0/24 is directly connected, FastEthernet0/1
```

[2D、把 Router0、Router1 的 Running-Config 保存到文件 s1.txt]

2、(RIP2.pkt)配置 RIPv2（连续子网）。把两台交换机当成路由器使用，并配置三层接口。如下图所示,把 192.168.1.0/24 划分成四个子网(子网 1~子网 4)，并和 192.168.2.0/24、192.168.3.0/24 一起配置成七个网络，见下图。路由器和交换机均设置为自动汇总（默认）。请先在下图标注网络号、接口名和接口 IP 地址(可以利用已有的输入位置.)，然后进行配置。



[2A、PC0 ping PC1 和 PC2 后截屏]

```
PC>ping 192.168.1.194

Pinging 192.168.1.194 with 32 bytes of data:

Reply from 192.168.1.194: bytes=32 time=0ms TTL=126
Reply from 192.168.1.194: bytes=32 time=0ms TTL=126
Reply from 192.168.1.194: bytes=32 time=1ms TTL=126
Reply from 192.168.1.194: bytes=32 time=0ms TTL=126

Ping statistics for 192.168.1.194:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 1ms, Average = 0ms

PC>ping 192.168.3.22

Pinging 192.168.3.22 with 32 bytes of data:

Reply from 192.168.3.22: bytes=32 time=0ms TTL=124
Reply from 192.168.3.22: bytes=32 time=1ms TTL=124
Reply from 192.168.3.22: bytes=32 time=0ms TTL=124
Reply from 192.168.3.22: bytes=32 time=0ms TTL=124

Ping statistics for 192.168.3.22:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 1ms, Average = 0ms
```

[2B、Router0 的路由表]

```
Router#sh ip rou
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route

Gateway of last resort is not set

     192.168.1.0/26 is subnetted, 4 subnets
R       192.168.1.0 [120/2] via 192.168.1.129, 00:00:24, FastEthernet0/0
R       192.168.1.64 [120/1] via 192.168.1.129, 00:00:24, FastEthernet0/0
C       192.168.1.128 is directly connected, FastEthernet0/0
R       192.168.1.192 [120/1] via 192.168.1.129, 00:00:24, FastEthernet0/0
C    192.168.2.0/24 is directly connected, FastEthernet0/1
R    192.168.3.0/24 [120/1] via 192.168.2.2, 00:00:13, FastEthernet0/1
```

[2C、Router1 的路由表]

```
Router#sh ip rou
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route

Gateway of last resort is not set

     192.168.1.0/24 is variably subnetted, 2 subnets, 2 masks
R       192.168.1.0/24 [120/1] via 192.168.2.1, 00:00:25, FastEthernet0/0
R       192.168.1.192/26 is possibly down, routing via 192.168.2.1, FastEthernet
0/0
C    192.168.2.0/24 is directly connected, FastEthernet0/0
C    192.168.3.0/24 is directly connected, FastEthernet0/1
C    192.168.4.0/24 is directly connected, Loopback0
```

[2D、Switch0 的路由表]

```
Switch#sh ip rou
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route

Gateway of last resort is not set

     192.168.1.0/26 is subnetted, 4 subnets
C       192.168.1.0 is directly connected, FastEthernet0/1
C       192.168.1.64 is directly connected, FastEthernet0/2
R       192.168.1.128 [120/1] via 192.168.1.66, 00:00:13, FastEthernet0/2
R       192.168.1.192 [120/1] via 192.168.1.66, 00:00:13, FastEthernet0/2
R    192.168.2.0/24 [120/2] via 192.168.1.66, 00:00:13, FastEthernet0/2
R    192.168.3.0/24 [120/3] via 192.168.1.66, 00:00:13, FastEthernet0/2
```

[2E、Switch1 的路由表]

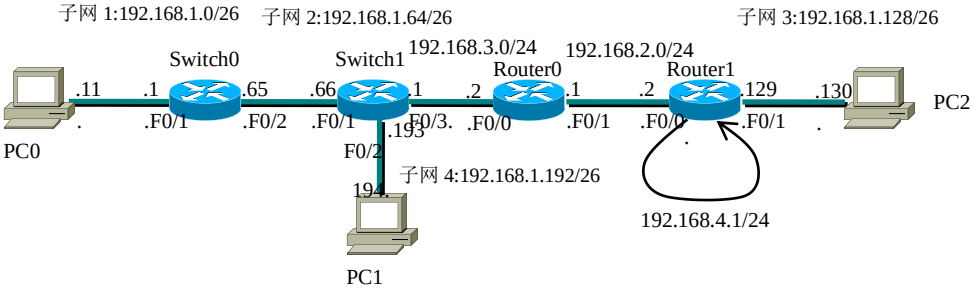
```
Switch#sh ip rou
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route

Gateway of last resort is not set

     192.168.1.0/26 is subnetted, 4 subnets
R       192.168.1.0 [120/1] via 192.168.1.65, 00:00:17, FastEthernet0/1
C       192.168.1.64 is directly connected, FastEthernet0/1
C       192.168.1.128 is directly connected, FastEthernet0/3
C       192.168.1.192 is directly connected, FastEthernet0/2
R    192.168.2.0/24 [120/1] via 192.168.1.130, 00:00:20, FastEthernet0/3
R    192.168.3.0/24 [120/2] via 192.168.1.130, 00:00:20, FastEthernet0/3
```

[2F、把 Router0、Router1、Switch0、Switch1 的 Running-Config 保存到文件 s2.txt]

3、(RIP3.pkt)接上一步,调整为下图的非连续子网，标注网络号、接口名和接口 IP 地址。路由器和交换机均设置为自动汇总（默认）。



[3A、PC0 ping PC1 和 PC2 后截屏]

```
PC>ping 192.168.1.194

Pinging 192.168.1.194 with 32 bytes of data:

Reply from 192.168.1.194: bytes=32 time=0ms TTL=126
Reply from 192.168.1.194: bytes=32 time=0ms TTL=126
Reply from 192.168.1.194: bytes=32 time=0ms TTL=126
Reply from 192.168.1.194: bytes=32 time=0ms TTL=126

Ping statistics for 192.168.1.194:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms

PC>ping 192.168.1.130

Pinging 192.168.1.130 with 32 bytes of data:

Reply from 192.168.1.1: Destination host unreachable.
Reply from 192.168.1.1: Destination host unreachable.
Reply from 192.168.1.1: Destination host unreachable.
Reply from 192.168.1.1: Destination host unreachable.

Ping statistics for 192.168.1.130:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
```

[3B、PC2 依次 ping 到 PC0 的路径上的 IP 地址后截屏]

```
PC>ping 192.168.1.194

Pinging 192.168.1.194 with 32 bytes of data:

Reply from 192.168.1.194: bytes=32 time=0ms TTL=126
Reply from 192.168.1.194: bytes=32 time=0ms TTL=126
Reply from 192.168.1.194: bytes=32 time=0ms TTL=126
Reply from 192.168.1.194: bytes=32 time=0ms TTL=126

Ping statistics for 192.168.1.194:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms

PC>ping 192.168.1.130

Pinging 192.168.1.130 with 32 bytes of data:

Reply from 192.168.1.1: Destination host unreachable.
Reply from 192.168.1.1: Destination host unreachable.
Reply from 192.168.1.1: Destination host unreachable.
Reply from 192.168.1.1: Destination host unreachable.

Ping statistics for 192.168.1.130:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
```

```
PC>ping 192.168.2.1

Pinging 192.168.2.1 with 32 bytes of data:

Reply from 192.168.2.1: bytes=32 time=0ms TTL=254
Request timed out.
Reply from 192.168.2.1: bytes=32 time=0ms TTL=254
Request timed out.

Ping statistics for 192.168.2.1:
    Packets: Sent = 4, Received = 2, Lost = 2 (50% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms

PC>ping 192.168.3.2

Pinging 192.168.3.2 with 32 bytes of data:

Reply from 192.168.3.2: bytes=32 time=0ms TTL=254
Request timed out.
Reply from 192.168.3.2: bytes=32 time=0ms TTL=254
Request timed out.

Ping statistics for 192.168.3.2:
    Packets: Sent = 4, Received = 2, Lost = 2 (50% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms

PC>ping 192.168.3.1

Pinging 192.168.3.1 with 32 bytes of data:

Request timed out.
Request timed out.
Request timed out.
Request timed out.

Ping statistics for 192.168.3.1:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
```

```
PC>ping 192.168.2.1

Pinging 192.168.2.1 with 32 bytes of data:

Request timed out.
Request timed out.
Request timed out.
Request timed out.

Ping statistics for 192.168.2.1:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

PC>ping 192.168.3.2

Pinging 192.168.3.2 with 32 bytes of data:

Reply from 192.168.1.129: Destination host unreachable.
Reply from 192.168.1.129: Destination host unreachable.
Reply from 192.168.1.129: Destination host unreachable.
Reply from 192.168.1.129: Destination host unreachable.

Ping statistics for 192.168.3.2:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

PC>ping 192.168.3.1

Pinging 192.168.3.1 with 32 bytes of data:

Reply from 192.168.1.129: Destination host unreachable.
Request timed out.
Reply from 192.168.1.129: Destination host unreachable.
Request timed out.
```

```
PC>ping 192.168.1.66

Pinging 192.168.1.66 with 32 bytes of data:

Reply from 192.168.1.129: Destination host unreachable.
Request timed out.
Reply from 192.168.1.129: Destination host unreachable.
Reply from 192.168.1.129: Destination host unreachable.

Ping statistics for 192.168.1.66:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

PC>ping 192.168.1.65

Pinging 192.168.1.65 with 32 bytes of data:

Reply from 192.168.1.129: Destination host unreachable.
Reply from 192.168.1.129: Destination host unreachable.
Reply from 192.168.1.129: Destination host unreachable.
Reply from 192.168.1.129: Destination host unreachable.

Ping statistics for 192.168.1.65:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
```

```
PC>ping 192.168.1.1

Pinging 192.168.1.1 with 32 bytes of data:

Reply from 192.168.1.129: Destination host unreachable.
Reply from 192.168.1.129: Destination host unreachable.
Reply from 192.168.1.129: Destination host unreachable.
Reply from 192.168.1.129: Destination host unreachable.

Ping statistics for 192.168.1.1:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

PC>ping 192.168.1.11

Pinging 192.168.1.11 with 32 bytes of data:

Reply from 192.168.1.129: Destination host unreachable.
Reply from 192.168.1.129: Destination host unreachable.
Reply from 192.168.1.129: Destination host unreachable.
Reply from 192.168.1.129: Destination host unreachable.

Ping statistics for 192.168.1.11:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
```

[3C、Router0 的路由表]

```
Router#sh ip rou
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route

Gateway of last resort is not set

R    192.168.1.0/24 [120/1] via 192.168.3.1, 00:00:10, FastEthernet0/0
                    [120/1] via 192.168.2.2, 00:00:11, FastEthernet0/1
C    192.168.2.0/24 is directly connected, FastEthernet0/1
C    192.168.3.0/24 is directly connected, FastEthernet0/0
```

[3D、Router1 的路由表]

```
Router#sh ip rou
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route

Gateway of last resort is not set

     192.168.1.0/26 is subnetted, 1 subnets
C       192.168.1.128 is directly connected, FastEthernet0/1
C    192.168.2.0/24 is directly connected, FastEthernet0/0
R    192.168.3.0/24 [120/1] via 192.168.2.1, 00:00:23, FastEthernet0/0
C    192.168.4.0/24 is directly connected, Loopback0
```

[3E、Switch0 的路由表]

```
Switch#sh ip rou
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route

Gateway of last resort is not set

     192.168.1.0/26 is subnetted, 3 subnets
C       192.168.1.0 is directly connected, FastEthernet0/1
C       192.168.1.64 is directly connected, FastEthernet0/2
R       192.168.1.192 [120/1] via 192.168.1.66, 00:00:20, FastEthernet0/2
R    192.168.2.0/24 [120/2] via 192.168.1.66, 00:00:20, FastEthernet0/2
R    192.168.3.0/24 [120/1] via 192.168.1.66, 00:00:20, FastEthernet0/2
```

[3F、Switch1 的路由表]

```
Switch#sh ip rou
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route

Gateway of last resort is not set

     192.168.1.0/26 is subnetted, 3 subnets
R       192.168.1.0 [120/1] via 192.168.1.65, 00:00:14, FastEthernet0/1
C       192.168.1.64 is directly connected, FastEthernet0/1
C       192.168.1.192 is directly connected, FastEthernet0/2
R    192.168.2.0/24 [120/1] via 192.168.3.2, 00:00:04, FastEthernet0/3
C    192.168.3.0/24 is directly connected, FastEthernet0/3
```

[3G、把 Router0、Router1、Switch0、Switch1 的 Running-Config 分别保存到文件 s3.txt]

[3H、分析结果]

两个子网 192.168.1.128 和 192.168.1.192 到 Router0 的距离相同，Router0 需要自动汇总，但不知道选哪一个子网放入 RIP 包内发给邻居，所以邻居没有 Router0 中有类子网 192.168.1.0 的路由表。

4、(RIP4.pkt)接上一步，在两个路由器上取消自动汇总，然后：

[4A、PC0 依次 ping PC1 和 PC2 后截屏]

```
PC>ping 192.168.1.194

Pinging 192.168.1.194 with 32 bytes of data:

Reply from 192.168.1.194: bytes=32 time=0ms TTL=126
Reply from 192.168.1.194: bytes=32 time=0ms TTL=126
Reply from 192.168.1.194: bytes=32 time=0ms TTL=126
Reply from 192.168.1.194: bytes=32 time=0ms TTL=126

Ping statistics for 192.168.1.194:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms

PC>ping 192.168.1.130

Pinging 192.168.1.130 with 32 bytes of data:

Reply from 192.168.1.130: bytes=32 time=1ms TTL=124
Reply from 192.168.1.130: bytes=32 time=4ms TTL=124
Reply from 192.168.1.130: bytes=32 time=0ms TTL=124
Reply from 192.168.1.130: bytes=32 time=0ms TTL=124

Ping statistics for 192.168.1.130:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 4ms, Average = 1ms
```

[4B、PC2 依次 ping 到 PC0 的路径上的 IP 地址后截屏]

```
PC>ping 192.168.1.129

Pinging 192.168.1.129 with 32 bytes of data:

Reply from 192.168.1.129: bytes=32 time=0ms TTL=255
Reply from 192.168.1.129: bytes=32 time=0ms TTL=255
Reply from 192.168.1.129: bytes=32 time=0ms TTL=255
Reply from 192.168.1.129: bytes=32 time=0ms TTL=255

Ping statistics for 192.168.1.129:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms

PC>ping 192.168.2.2

Pinging 192.168.2.2 with 32 bytes of data:

Reply from 192.168.2.2: bytes=32 time=0ms TTL=255
Reply from 192.168.2.2: bytes=32 time=0ms TTL=255
Reply from 192.168.2.2: bytes=32 time=0ms TTL=255
Reply from 192.168.2.2: bytes=32 time=0ms TTL=255

Ping statistics for 192.168.2.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms

PC>ping 192.168.2.1

Pinging 192.168.2.1 with 32 bytes of data:

Reply from 192.168.2.1: bytes=32 time=8ms TTL=254
Reply from 192.168.2.1: bytes=32 time=1ms TTL=254
Reply from 192.168.2.1: bytes=32 time=0ms TTL=254
Reply from 192.168.2.1: bytes=32 time=0ms TTL=254

Ping statistics for 192.168.2.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 8ms, Average = 2ms
```

```
PC>ping 192.168.3.2

Pinging 192.168.3.2 with 32 bytes of data:

Reply from 192.168.3.2: bytes=32 time=0ms TTL=254
Reply from 192.168.3.2: bytes=32 time=1ms TTL=254
Reply from 192.168.3.2: bytes=32 time=0ms TTL=254
Reply from 192.168.3.2: bytes=32 time=0ms TTL=254

Ping statistics for 192.168.3.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 1ms, Average = 0ms

PC>ping 192.168.3.1

Pinging 192.168.3.1 with 32 bytes of data:

Reply from 192.168.3.1: bytes=32 time=0ms TTL=253
Reply from 192.168.3.1: bytes=32 time=1ms TTL=253
Reply from 192.168.3.1: bytes=32 time=0ms TTL=253
Reply from 192.168.3.1: bytes=32 time=1ms TTL=253

Ping statistics for 192.168.3.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 1ms, Average = 0ms

PC>ping 192.168.1.66

Pinging 192.168.1.66 with 32 bytes of data:

Reply from 192.168.1.66: bytes=32 time=0ms TTL=253
Reply from 192.168.1.66: bytes=32 time=0ms TTL=253
Reply from 192.168.1.66: bytes=32 time=0ms TTL=253
Reply from 192.168.1.66: bytes=32 time=0ms TTL=253

Ping statistics for 192.168.1.66:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms
```

```
PC>ping 192.168.1.66

Pinging 192.168.1.66 with 32 bytes of data:

Reply from 192.168.1.66: bytes=32 time=0ms TTL=253
Reply from 192.168.1.66: bytes=32 time=0ms TTL=253
Reply from 192.168.1.66: bytes=32 time=0ms TTL=253
Reply from 192.168.1.66: bytes=32 time=0ms TTL=253

Ping statistics for 192.168.1.66:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms

PC>ping 192.168.1.65

Pinging 192.168.1.65 with 32 bytes of data:

Reply from 192.168.1.65: bytes=32 time=1ms TTL=252
Reply from 192.168.1.65: bytes=32 time=0ms TTL=252
Reply from 192.168.1.65: bytes=32 time=1ms TTL=252
Reply from 192.168.1.65: bytes=32 time=0ms TTL=252

Ping statistics for 192.168.1.65:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 1ms, Average = 0ms
```

```
PC>ping 192.168.1.1

Pinging 192.168.1.1 with 32 bytes of data:

Reply from 192.168.1.1: bytes=32 time=0ms TTL=252
Reply from 192.168.1.1: bytes=32 time=1ms TTL=252
Reply from 192.168.1.1: bytes=32 time=0ms TTL=252
Reply from 192.168.1.1: bytes=32 time=0ms TTL=252

Ping statistics for 192.168.1.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 1ms, Average = 0ms

PC>ping 192.168.1.11

Pinging 192.168.1.11 with 32 bytes of data:

Reply from 192.168.1.11: bytes=32 time=2ms TTL=124
Reply from 192.168.1.11: bytes=32 time=2ms TTL=124
Reply from 192.168.1.11: bytes=32 time=0ms TTL=124
Reply from 192.168.1.11: bytes=32 time=0ms TTL=124

Ping statistics for 192.168.1.11:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 2ms, Average = 1ms
```

[4C、Router0 的路由表]

```
Router#sh ip rou
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route

Gateway of last resort is not set

     192.168.1.0/24 is variably subnetted, 2 subnets, 2 masks
R       192.168.1.0/24 [120/1] via 192.168.3.1, 00:00:20, FastEthernet0/0
R    192.168.1.128/26 [120/1] via 192.168.2.2, 00:00:10, FastEthernet0/1
C    192.168.2.0/24 is directly connected, FastEthernet0/1
C    192.168.3.0/24 is directly connected, FastEthernet0/0
```

[4D、Router1 的路由表]

```
Router#sh ip rou
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route

Gateway of last resort is not set

     192.168.1.0/24 is variably subnetted, 2 subnets, 2 masks
R       192.168.1.0/24 [120/2] via 192.168.2.1, 00:00:08, FastEthernet0/0
C       192.168.1.128/26 is directly connected, FastEthernet0/1
C    192.168.2.0/24 is directly connected, FastEthernet0/0
R    192.168.3.0/24 [120/1] via 192.168.2.1, 00:00:08, FastEthernet0/0
C    192.168.4.0/24 is directly connected, Loopback0
```

[4E、Switch0 的路由表]

```
Switch#sh ip rou
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route

Gateway of last resort is not set

     192.168.1.0/26 is subnetted, 4 subnets
C       192.168.1.0 is directly connected, FastEthernet0/1
C       192.168.1.64 is directly connected, FastEthernet0/2
R       192.168.1.128 [120/3] via 192.168.1.66, 00:00:12, FastEthernet0/2
R       192.168.1.192 [120/1] via 192.168.1.66, 00:00:12, FastEthernet0/2
R    192.168.2.0/24 [120/2] via 192.168.1.66, 00:00:12, FastEthernet0/2
R    192.168.3.0/24 [120/1] via 192.168.1.66, 00:00:12, FastEthernet0/2
```

[4F、Switch1 的路由表]

```
Switch#sh ip rou
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route

Gateway of last resort is not set

     192.168.1.0/26 is subnetted, 4 subnets
R       192.168.1.0 [120/1] via 192.168.1.65, 00:00:09, FastEthernet0/1
C       192.168.1.64 is directly connected, FastEthernet0/1
R       192.168.1.128 [120/2] via 192.168.3.2, 00:00:11, FastEthernet0/3
C       192.168.1.192 is directly connected, FastEthernet0/2
R    192.168.2.0/24 [120/1] via 192.168.3.2, 00:00:11, FastEthernet0/3
C    192.168.3.0/24 is directly connected, FastEthernet0/3
```

[4G、显示 Switch0 的 RIP 路由表 # show ip rip database]

```
Switch#sh ip rip data
192.168.1.0/26    auto-summary
192.168.1.0/26    directly connected, FastEthernet0/1
192.168.1.64/26    auto-summary
192.168.1.64/26    directly connected, FastEthernet0/2
192.168.1.128/26    auto-summary
192.168.1.128/26
    [3] via 192.168.1.66, 00:00:18, FastEthernet0/2
192.168.1.192/26    auto-summary
192.168.1.192/26
    [1] via 192.168.1.66, 00:00:18, FastEthernet0/2
192.168.2.0/24    auto-summary
192.168.2.0/24
    [2] via 192.168.1.66, 00:00:18, FastEthernet0/2
192.168.3.0/24    auto-summary
192.168.3.0/24
    [1] via 192.168.1.66, 00:00:18, FastEthernet0/2
```

[4H、显示 Switch0 的 RIP 协议的信息 # show ip protocols]

```
Switch#sh ip pro
Routing Protocol is "rip"
Sending updates every 30 seconds, next due in 12 seconds
Invalid after 180 seconds, hold down 180, flushed after 240
Outgoing update filter list for all interfaces is not set
Incoming update filter list for all interfaces is not set
Redistributing: rip
Default version control: send version 2, receive 2
  Interface             Send  Recv  Triggered RIP  Key-chain
  FastEthernet0/2       2     2
  FastEthernet0/1       2     2
Automatic network summarization is in effect
Maximum path: 4
Routing for Networks:
        192.168.1.0
        192.168.2.0
        192.168.3.0
Passive Interface(s):
Routing Information Sources:
        Gateway         Distance      Last Update
        192.168.1.66         120      00:00:17
Distance: (default is 120)
```

[4I、把 Router0、Router1、Switch0、Switch1 的 Running-Config 分别保存到文件 s4.txt]

[4J、分析 Switch0 到每个子网的距离(RIP 协议的开销)]

Switch0 到 192.168.1.0/26 的距离为 0，直连；Switch0 到 192.168.1.64/26 的距离为 0，直连；Switch0 到 192.168.1.192/26 的距离为 1；Switch0 到 192.168.3.0/24 的距离为 1；Switch0 到 192.168.2.0/24 的距离为 2；Switch0 到 192.168.1.128/26 的距离为 3。

5、(RIP5.pkt)接上一步，在交换机上也取消自动汇总，对于 Switch0 通往 Switch1 的接口，配置为水平分割(默认)，查看和记录发出的 RIP Update 分组，然后取消水平分割，再查看和记录发出的 RIP Update 分组。分析在这两种情况下 RIP Update 分组差异。* RIP5.pkt 为取消水平分割后保存的文件。

[5A、PC0 依次 ping PC1 和 PC2 后截屏]

```
PC>ping 192.168.1.194

Pinging 192.168.1.194 with 32 bytes of data:

Reply from 192.168.1.194: bytes=32 time=7ms TTL=126
Reply from 192.168.1.194: bytes=32 time=0ms TTL=126
Reply from 192.168.1.194: bytes=32 time=0ms TTL=126
Reply from 192.168.1.194: bytes=32 time=0ms TTL=126

Ping statistics for 192.168.1.194:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 7ms, Average = 1ms

PC>ping 192.168.1.130

Pinging 192.168.1.130 with 32 bytes of data:

Reply from 192.168.1.130: bytes=32 time=0ms TTL=124
Reply from 192.168.1.130: bytes=32 time=0ms TTL=124
Reply from 192.168.1.130: bytes=32 time=0ms TTL=124
Reply from 192.168.1.130: bytes=32 time=0ms TTL=124

Ping statistics for 192.168.1.130:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms
```

[5B、PC2 依次 ping 到 PC0 的路径上的 IP 地址后截屏]

```
PC>ping 192.168.1.129

Pinging 192.168.1.129 with 32 bytes of data:

Reply from 192.168.1.129: bytes=32 time=1ms TTL=255
Reply from 192.168.1.129: bytes=32 time=0ms TTL=255
Reply from 192.168.1.129: bytes=32 time=0ms TTL=255
Reply from 192.168.1.129: bytes=32 time=0ms TTL=255

Ping statistics for 192.168.1.129:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 1ms, Average = 0ms

PC>ping 192.168.2.2

Pinging 192.168.2.2 with 32 bytes of data:

Reply from 192.168.2.2: bytes=32 time=1ms TTL=255
Reply from 192.168.2.2: bytes=32 time=0ms TTL=255
Reply from 192.168.2.2: bytes=32 time=0ms TTL=255
Reply from 192.168.2.2: bytes=32 time=0ms TTL=255

Ping statistics for 192.168.2.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 1ms, Average = 0ms

PC>ping 192.168.2.1

Pinging 192.168.2.1 with 32 bytes of data:

Reply from 192.168.2.1: bytes=32 time=0ms TTL=254
Reply from 192.168.2.1: bytes=32 time=0ms TTL=254
Reply from 192.168.2.1: bytes=32 time=0ms TTL=254
Reply from 192.168.2.1: bytes=32 time=0ms TTL=254

Ping statistics for 192.168.2.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms
```

```
PC>ping 192.168.3.2

Pinging 192.168.3.2 with 32 bytes of data:

Reply from 192.168.3.2: bytes=32 time=0ms TTL=254
Reply from 192.168.3.2: bytes=32 time=0ms TTL=254
Reply from 192.168.3.2: bytes=32 time=0ms TTL=254
Reply from 192.168.3.2: bytes=32 time=0ms TTL=254

Ping statistics for 192.168.3.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms

PC>ping 192.168.3.1

Pinging 192.168.3.1 with 32 bytes of data:

Reply from 192.168.3.1: bytes=32 time=9ms TTL=253
Reply from 192.168.3.1: bytes=32 time=0ms TTL=253
Reply from 192.168.3.1: bytes=32 time=0ms TTL=253
Reply from 192.168.3.1: bytes=32 time=0ms TTL=253

Ping statistics for 192.168.3.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 9ms, Average = 2ms

PC>ping 192.168.1.66

Pinging 192.168.1.66 with 32 bytes of data:

Reply from 192.168.1.66: bytes=32 time=2ms TTL=253
Reply from 192.168.1.66: bytes=32 time=0ms TTL=253
Reply from 192.168.1.66: bytes=32 time=0ms TTL=253
Reply from 192.168.1.66: bytes=32 time=0ms TTL=253

Ping statistics for 192.168.1.66:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 2ms, Average = 0ms
```

```
PC>ping 192.168.1.65

Pinging 192.168.1.65 with 32 bytes of data:

Reply from 192.168.1.65: bytes=32 time=0ms TTL=252
Reply from 192.168.1.65: bytes=32 time=0ms TTL=252
Reply from 192.168.1.65: bytes=32 time=1ms TTL=252
Reply from 192.168.1.65: bytes=32 time=0ms TTL=252

Ping statistics for 192.168.1.65:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 1ms, Average = 0ms

PC>ping 192.168.1.1

Pinging 192.168.1.1 with 32 bytes of data:

Reply from 192.168.1.1: bytes=32 time=1ms TTL=252
Reply from 192.168.1.1: bytes=32 time=0ms TTL=252
Reply from 192.168.1.1: bytes=32 time=1ms TTL=252
Reply from 192.168.1.1: bytes=32 time=0ms TTL=252

Ping statistics for 192.168.1.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 1ms, Average = 0ms

PC>ping 192.168.1.11

Pinging 192.168.1.11 with 32 bytes of data:

Reply from 192.168.1.11: bytes=32 time=0ms TTL=124
Reply from 192.168.1.11: bytes=32 time=0ms TTL=124
Reply from 192.168.1.11: bytes=32 time=0ms TTL=124
Reply from 192.168.1.11: bytes=32 time=1ms TTL=124

Ping statistics for 192.168.1.11:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 1ms, Average = 0ms
```

[5C、Router0 的路由表]

```
Router#sh ip rou
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route

Gateway of last resort is not set

     192.168.1.0/24 is subnetted, 4 subnets
R       192.168.1.0 [120/2] via 192.168.3.1, 00:00:13, FastEthernet0/0
R       192.168.1.64 [120/1] via 192.168.3.1, 00:00:13, FastEthernet0/0
R       192.168.1.128 [120/1] via 192.168.2.2, 00:00:10, FastEthernet0/1
R       192.168.1.192 [120/1] via 192.168.3.1, 00:00:13, FastEthernet0/0
C    192.168.2.0/24 is directly connected, FastEthernet0/1
C    192.168.3.0/24 is directly connected, FastEthernet0/0
```

[5D、Router1 的路由表]

```
Router#sh ip rou
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route

Gateway of last resort is not set

     192.168.1.0/24 is subnetted, 4 subnets
R       192.168.1.0 [120/3] via 192.168.2.1, 00:00:19, FastEthernet0/0
R       192.168.1.64 [120/2] via 192.168.2.1, 00:00:19, FastEthernet0/0
C       192.168.1.128 is directly connected, FastEthernet0/1
R       192.168.1.192 [120/2] via 192.168.2.1, 00:00:19, FastEthernet0/0
C    192.168.2.0/24 is directly connected, FastEthernet0/0
R    192.168.3.0/24 [120/1] via 192.168.2.1, 00:00:19, FastEthernet0/0
C    192.168.4.0/24 is directly connected, Loopback0
```

[5E、Switch0 的路由表]

```
Switch#sh ip rou
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route

Gateway of last resort is not set

     192.168.1.0/24 is subnetted, 4 subnets
C       192.168.1.0 is directly connected, FastEthernet0/1
C       192.168.1.64 is directly connected, FastEthernet0/2
R       192.168.1.128 [120/3] via 192.168.1.66, 00:00:16, FastEthernet0/2
R       192.168.1.192 [120/1] via 192.168.1.66, 00:00:16, FastEthernet0/2
R    192.168.2.0/24 [120/2] via 192.168.1.66, 00:00:16, FastEthernet0/2
R    192.168.3.0/24 [120/1] via 192.168.1.66, 00:00:16, FastEthernet0/2
```

[5F、Switch1 的路由表]

```
Switch#sh ip rou
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route

Gateway of last resort is not set

     192.168.1.0/26 is subnetted, 4 subnets
R       192.168.1.0 [120/1] via 192.168.1.66, 00:00:03, FastEthernet0/1
C       192.168.1.64 is directly connected, FastEthernet0/1
R       192.168.1.128 [120/2] via 192.168.3.2, 00:00:22, FastEthernet0/3
C       192.168.1.192 is directly connected, FastEthernet0/2
R    192.168.2.0/24 [120/1] via 192.168.3.2, 00:00:22, FastEthernet0/3
C    192.168.3.0/24 is directly connected, FastEthernet0/3
```

[5G、有水平分割时的 RIP Update 分组]

RIP v.2

0 4 8 16 19 31 Bits		
CMD: 0x2	VER: 0x2	0000 0000 0000 0000
ADDR FAMILY: 0x2	ROUTE TAG: 0x0	
NETWORK: 192.168.1.0		
SUBNET: 255.255.255.192		
NEXT HOP: 192.168.1.65		
METRIC: 0x1		

[5H、取消水平分割时的 RIP Update 分组]

RIP v.2

0 4 8 16 19 31 Bits		
CMD: 0x2	VER: 0x2	0000 0000 0000 0000
ADDR FAMILY: 0x2	ROUTE TAG: 0x0	
NETWORK: 192.168.1.0		
SUBNET: 255.255.255.192		
NEXT HOP: 192.168.1.65		
METRIC: 0x1		
ADDR FAMILY: 0x2	ROUTE TAG: 0x0	
NETWORK: 192.168.1.64		
SUBNET: 255.255.255.192		
NEXT HOP: 192.168.1.65		
METRIC: 0x1		
ADDR FAMILY: 0x2	ROUTE TAG: 0x0	
NETWORK: 192.168.1.128		
SUBNET: 255.255.255.192		
NEXT HOP: 192.168.1.65		
METRIC: 0x4		
ADDR FAMILY: 0x2	ROUTE TAG: 0x0	
NETWORK: 192.168.1.192		
SUBNET: 255.255.255.192		
NEXT HOP: 192.168.1.65		
METRIC: 0x2		
ADDR FAMILY: 0x2	ROUTE TAG: 0x0	
NETWORK: 192.168.2.0		
SUBNET: 255.255.255.0		
NEXT HOP: 192.168.1.65		
METRIC: 0x3		
ADDR FAMILY: 0x2	ROUTE TAG: 0x0	
NETWORK: 192.168.3.0		
SUBNET: 255.255.255.0		
NEXT HOP: 192.168.1.65		
METRIC: 0x2		

[5I、把 Router0、Router1、Switch0、Switch1 的 Running-Config 分别保存到文件 s5.txt]

[5J、分析结果]

使用水平分割技术时，从一个端口收到的路由表项不会从这个端口发出去，所以一开始只有一个 192.168.1.0/26 的路由表项。而关闭水平分割后，路由器将自己的整个路由表一起全部发出去。

6、(RIP6.pkt) 接上一步，先查看 Router1 的路由表，拔掉 Switch0 连接 PC0 的线使它们之间的子网失效，再查看 Router1 的路由表。

[6A、拔线前 Router1 的路由表]

```
Router#sh ip rou
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route

Gateway of last resort is not set

     192.168.1.0/26 is subnetted, 4 subnets
R       192.168.1.0 [120/3] via 192.168.2.1, 00:00:22, FastEthernet0/0
R       192.168.1.64 [120/2] via 192.168.2.1, 00:00:22, FastEthernet0/0
C       192.168.1.128 is directly connected, FastEthernet0/1
R       192.168.1.192 [120/2] via 192.168.2.1, 00:00:22, FastEthernet0/0
C    192.168.2.0/24 is directly connected, FastEthernet0/0
R    192.168.3.0/24 [120/1] via 192.168.2.1, 00:00:22, FastEthernet0/0
C    192.168.4.0/24 is directly connected, Loopback0
```

[6B、拔线后 Router1 的路由表]

```
Router#sh ip rou
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route

Gateway of last resort is not set

     192.168.1.0/26 is subnetted, 4 subnets
R       192.168.1.0 is possibly down, routing via 192.168.2.1, FastEthernet0/0
R       192.168.1.64 [120/2] via 192.168.2.1, 00:00:25, FastEthernet0/0
C       192.168.1.128 is directly connected, FastEthernet0/1
R       192.168.1.192 [120/2] via 192.168.2.1, 00:00:25, FastEthernet0/0
C    192.168.2.0/24 is directly connected, FastEthernet0/0
R    192.168.3.0/24 [120/1] via 192.168.2.1, 00:00:25, FastEthernet0/0
C    192.168.4.0/24 is directly connected, Loopback0
```

[6C、根据上面结果，你认为是否默认启动了触发更新]

实验报告

我认为默认启动了触发更新，断开线后，路由表上马上就出现了“192.168.1.0 is possibly down”的信息，说明该子网的路由表项已经失效。此时 PC2 也是无法 ping 通 PC0 的。

【完成情况】

是否完成以下步骤？（√完成 -未做完 ×未做）

(1) [√] (2) [√] (3) [√] (4) [√] (5) [√] (6) [√]

【实验体会】

写出实验过程中的问题，思考及解决方法，简述实验体会（如果有的话）。

需要注意启动 RIP 的时候，要发布所有属于有类网络的网络的接口的子网，否则一些路由表项没法写入。

【交实验报告】

通过 HTTP 上传交给老师：http://103.26.79.35/netdisk/default.aspx?vm=18net

截止日期（不迟于）：2020 年 7 月 14 日（周二）23:00

上传文件名：学号_姓名_RIP 协议.doc

学号_姓名_RIP 协议.rar (包含.txt 文件和.pkt 文件)