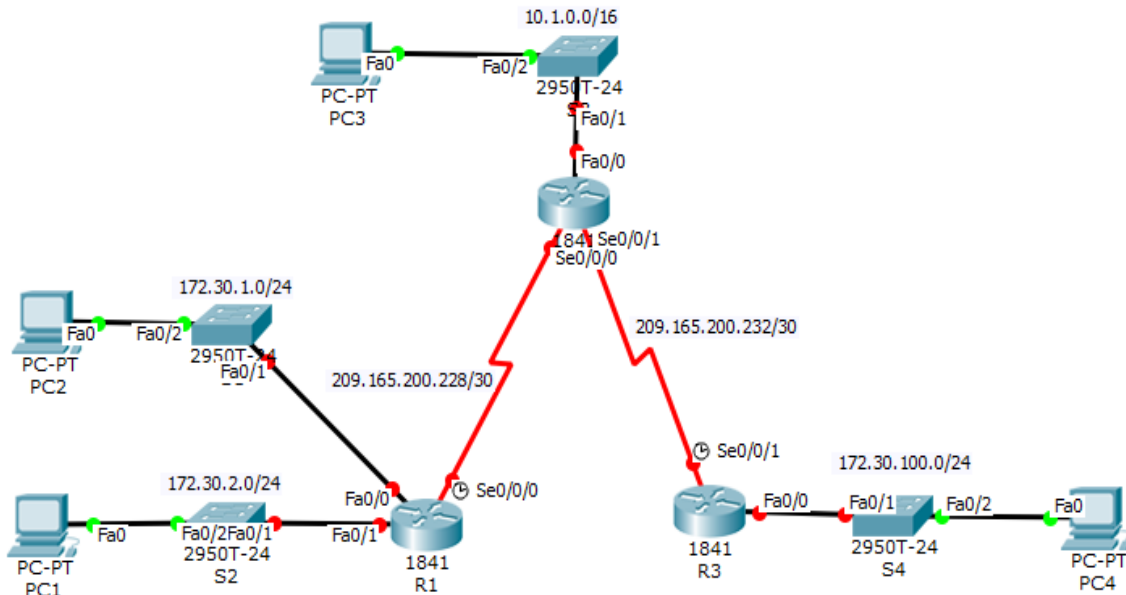


Lab 7.5.1: RIPv2 Basic Configuration Lab

Task 1: Cable, Erase, and Reload the Routers.



Task 2: Load Routers with the Supplied Scripts.

Step 1: Load the following script onto R1.

```
Router>en
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#hostname R1
R1(config)#int fa0/0
R1(config-if)#ip add 172.30.1.1 255.255.255.0
R1(config-if)#duplex auto
R1(config-if)#speed auto
R1(config-if)#no shut

R1(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to
up

R1(config-if)#int fa0/1
R1(config-if)#ip add 172.30.2.1 255.255.255.0
R1(config-if)#duplex auto
R1(config-if)#speed auto
R1(config-if)#no shut
```

```

R1(config-if)#int s0/0/0
R1(config-if)#ip add 209.165.200.230 255.255.255.252
R1(config-if)#clock rate 64000
R1(config-if)#no shut

%LINK-5-CHANGED: Interface Serial0/0/0, changed state to down
R1(config-if)#router rip
R1(config-router)#passive-interface fa0/0

R1(config-router)#passive-interface fa0/1
R1(config-router)#network 172.30.0.0
R1(config-router)#network 209.165.200.0
R1(config-router)#line con 0
R1(config-line)#line vty 0 4
R1(config-line)#login
% Login disabled on line 194, until 'password' is set
% Login disabled on line 195, until 'password' is set
% Login disabled on line 196, until 'password' is set
% Login disabled on line 197, until 'password' is set
% Login disabled on line 198, until 'password' is set
R1(config-line)#end
R1#
%SYS-5-CONFIG_I: Configured from console by console

```

Step 2: Load the following script onto R2.

```

Router>en
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#hostname R2
R2(config)#int fa0/0
R2(config-if)#ip add 10.1.0.1 255.255.0.0
R2(config-if)#duplex auto
R2(config-if)#speed auto
R2(config-if)#no shut

R2(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up

R2(config-if)#int s0/0/0
R2(config-if)#ip add 209.165.200.229 255.255.255.252
R2(config-if)#no shut

R2(config-if)#
%LINK-5-CHANGED: Interface Serial0/0/0, changed state to up

R2(config-if)#in
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0, changed state to up
% Ambiguous command: "i"
R2(config-if)#int s0/0/1
R2(config-if)#ip add 209.165.200.233 255.255.255.252
R2(config-if)#clock rate 64000
This command applies only to DCE interfaces
R2(config-if)#no shut

```

```
%LINK-5-CHANGED: Interface Serial0/0/1, changed state to down
R2(config-if)#router rip
R2(config-router)#passive-interface fa0/0
R2(config-router)#network 10.0.0.0
R2(config-router)#network 209.165.200.0
R2(config-router)#line con 0
R2(config-line)#line vty 0 4
R2(config-line)#login
% Login disabled on line 194, until 'password' is set
% Login disabled on line 195, until 'password' is set
% Login disabled on line 196, until 'password' is set
% Login disabled on line 197, until 'password' is set
% Login disabled on line 198, until 'password' is set
R2(config-line)#end
R2#
%SYS-5-CONFIG_I: Configured from console by console
```

R2#

Step 3: Load the following script onto R3.

```
Router>en
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#hostname R3
R3(config)#int fa0/0
R3(config-if)#ip add 172.30.100.1 255.255.255.0
R3(config-if)#duplex auto
R3(config-if)#speed auto
R3(config-if)#no shut

R3(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up

R3(config-if)#int s0/0/1
R3(config-if)#ip add 209.165.200.234 255.255.255.252
R3(config-if)#no shut

R3(config-if)#
%LINK-5-CHANGED: Interface Serial0/0/1, changed state to up

R3(config-if)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/1, changed state to up

R3(config-if)#interface loopback0
R3(config-if)#ip add 172.30.110.1 255.255.255.0
R3(config-if)#interface loopback1

R3(config-if)#
%LINK-5-CHANGED: Interface Loopback1, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback1, changed state to up

R3(config-if)#ip add 172.30.200.17 255.255.255.240
R3(config-if)#interface loopback2

R3(config-if)#
%LINK-5-CHANGED: Interface Loopback2, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback2, changed state to up
```

```

R3(config-if)#ip add 172.30.200.33 255.255.255.240
R3(config-if)#router rip
R3(config-router)#passive-interface fa0/0
R3(config-router)#network 172.30.0.0
R3(config-router)#network 209.165.200.0
R3(config-router)#line con 0
R3(config-line)#line vty 0 4
R3(config-line)#login
% Login disabled on line 194, until 'password' is set
% Login disabled on line 195, until 'password' is set
% Login disabled on line 196, until 'password' is set
% Login disabled on line 197, until 'password' is set
% Login disabled on line 198, until 'password' is set
R3(config-line)#ens
^
% Invalid input detected at '^' marker.

R3(config-line)#end
R3#
%SYS-5-CONFIG_I: Configured from console by console

```

Task 3: Examine the Current Status of the Network.

Step 1: Verify that both serial links are up.

```

R2#show ip int brief

```

Interface	IP-Address	OK?	Method	Status	Protocol
FastEthernet0/0	10.1.0.1	YES	manual	up	up
FastEthernet0/1	unassigned	YES	unset	administratively down	down
Serial0/0/0	209.165.200.229	YES	manual	up	up
Serial0/0/1	209.165.200.233	YES	manual	up	up
Vlan1	unassigned	YES	unset	administratively down	down

```

R2#

```

Step 2: Check the connectivity from R2 to the hosts on the R1 and R3 LANs.

```

R2#ping 172.30.1.1

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 172.30.1.1, timeout is 2 seconds:
!U!
Success rate is 60 percent (3/5), round-trip min/avg/max = 8/22/40 ms

R2#ping 172.30.100.1

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 172.30.100.1, timeout is 2 seconds:
!U!
Success rate is 60 percent (3/5), round-trip min/avg/max = 3/15/18 ms

R2#

```

Step 3: Check the connectivity between the PCs.

-Từ PC1 không thể ping tới PC2, tỉ lệ thành công là 0%

```
PC>ping 172.30.2.10

Pinging 172.30.2.10 with 32 bytes of data:

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

Ping statistics for 172.30.2.10:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
```

-Từ PC1 không thể ping tới PC3, tỉ lệ thành công là 0%

```
PC>ping 10.1.0.10

Pinging 10.1.0.10 with 32 bytes of data:

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

Ping statistics for 10.1.0.10:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
```

-Từ PC1 không thể ping tới PC4, tỉ lệ thành công là 0%

```
PC>ping 172.30.100.10

Pinging 172.30.100.10 with 32 bytes of data:

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

Ping statistics for 172.30.100.10:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
```

-Từ PC4 không thể ping tới PC2, tỉ lệ thành công là 0%

```
PC>ping 172.30.2.10

Pinging 172.30.2.10 with 32 bytes of data:

Reply from 172.30.100.1: Destination host unreachable.
Request timed out.
Reply from 172.30.100.1: Destination host unreachable.
Reply from 172.30.100.1: Destination host unreachable.

Ping statistics for 172.30.2.10:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
```

-Từ PC4 có thể ping tới PC3, tỉ lệ thành công là 25%

```

PC>ping 10.1.0.10

Pinging 10.1.0.10 with 32 bytes of data:

Request timed out.
Request timed out.
Reply from 10.1.0.10: bytes=32 time=1ms TTL=126
Request timed out.

Ping statistics for 10.1.0.10:
    Packets: Sent = 4, Received = 1, Lost = 3 (75% loss),
Approximate round trip times in milli-seconds:
    Minimum = 1ms, Maximum = 1ms, Average = 1ms

```

Step 4: View the routing table on R2.

```

R2#show ip route
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

```

      10.0.0.0/16 is subnetted, 1 subnets
C       10.1.0.0 is directly connected, FastEthernet0/0
R       172.30.0.0/16 [120/1] via 209.165.200.230, 00:00:18, Serial0/0/0
          [120/1] via 209.165.200.234, 00:00:28, Serial0/0/1
      209.165.200.0/30 is subnetted, 2 subnets
C       209.165.200.228 is directly connected, Serial0/0/0
C       209.165.200.232 is directly connected, Serial0/0/1

```

Step 5: Examine the routing table on the R1 router.

```

R1#show ip route
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       10.0.0.0/8 [120/1] via 209.165.200.229, 00:00:03, Serial0/0/0
      172.30.0.0/24 is subnetted, 2 subnets
C       172.30.1.0 is directly connected, FastEthernet0/0
C       172.30.2.0 is directly connected, FastEthernet0/1
      209.165.200.0/30 is subnetted, 2 subnets
C       209.165.200.228 is directly connected, Serial0/0/0
R       209.165.200.232 [120/1] via 209.165.200.229, 00:00:03, Serial0/0/0
R1#

```

Step 6: Examine the routing table on the R3 router.


```
R3#show ip route
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    10.0.0.0/8 [120/1] via 209.165.200.233, 00:00:08, Serial0/0/1
    172.30.0.0/16 is variably subnetted, 4 subnets, 2 masks
C    172.30.100.0/24 is directly connected, FastEthernet0/0
C    172.30.110.0/24 is directly connected, Loopback0
C    172.30.200.16/28 is directly connected, Loopback1
C    172.30.200.32/28 is directly connected, Loopback2
    209.165.200.0/30 is subnetted, 2 subnets
R    209.165.200.228 [120/1] via 209.165.200.233, 00:00:08, Serial0/0/1
C    209.165.200.232 is directly connected, Serial0/0/1
R3#
```

Step 7: Examine the RIPv1 packets that are being received by R2.

```
R2#debug ip rip
RIP protocol debugging is on
R2#RIP: received v1 update from 209.165.200.230 on Serial0/0/0
    172.30.0.0 in 1 hops
RIP: sending v1 update to 255.255.255.255 via Serial0/0/0 (209.165.200.229)
RIP: build update entries
    network 10.0.0.0 metric 1
    network 209.165.200.232 metric 1
RIP: sending v1 update to 255.255.255.255 via Serial0/0/1 (209.165.200.233)
RIP: build update entries
    network 10.0.0.0 metric 1
    network 209.165.200.228 metric 1
```

Task 4: Configure RIP Version 2.

Step 1: Use the version 2 command to enable RIP version 2 on each of the routers.

R1

```
R1>en
R1#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R1(config)#router rip
R1(config-router)#version 2
```

R2

```
R2#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R2(config)#router rip
R2(config-router)#version 2
```

R3

```
R3>en
R3#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R3(config)#router rip
R3(config-router)#version 2
```

Step 2: Verify that RIPv2 is running on the routers.

```

R1#show ip protocols
Routing Protocol is "rip"
Sending updates every 30 seconds, next due in 0 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
  Serial0/0/0         2     2
Automatic network summarization is in effect
Maximum path: 4
Routing for Networks:
  172.30.0.0
  209.165.200.0
Passive Interface(s):
  FastEthernet0/0
  FastEthernet0/1
Routing Information Sources:
  Gateway            Distance      Last Update
  209.165.200.229    120          00:00:03
Distance: (default is 120)
R1#

```

Task 5: Examine the Automatic Summarization of Routes.

R2

```

R2#show ip route
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

  10.0.0.0/16 is subnetted, 1 subnets
C       10.1.0.0 is directly connected, FastEthernet0/0
R       172.30.0.0/16 [120/1] via 209.165.200.230, 00:00:12, Serial0/0/0
          [120/1] via 209.165.200.234, 00:00:16, Serial0/0/1
  209.165.200.0/30 is subnetted, 2 subnets
C       209.165.200.228 is directly connected, Serial0/0/0
C       209.165.200.232 is directly connected, Serial0/0/1

```

R1

```

R1#show ip route
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       10.0.0.0/8 [120/1] via 209.165.200.229, 00:00:05, Serial0/0/0
  172.30.0.0/24 is subnetted, 2 subnets
C       172.30.1.0 is directly connected, FastEthernet0/0
C       172.30.2.0 is directly connected, FastEthernet0/1
  209.165.200.0/30 is subnetted, 2 subnets
C       209.165.200.228 is directly connected, Serial0/0/0
R       209.165.200.232 [120/1] via 209.165.200.229, 00:00:05, Serial0/0/0

```


R3

```
R3#show ip route
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    10.0.0.0/8 [120/1] via 209.165.200.233, 00:00:14, Serial0/0/1
    172.30.0.0/16 is variably subnetted, 4 subnets, 2 masks
C    172.30.100.0/24 is directly connected, FastEthernet0/0
C    172.30.110.0/24 is directly connected, Loopback0
C    172.30.200.16/28 is directly connected, Loopback1
C    172.30.200.32/28 is directly connected, Loopback2
    209.165.200.0/30 is subnetted, 2 subnets
R    209.165.200.228 [120/1] via 209.165.200.233, 00:00:14, Serial0/0/1
C    209.165.200.232 is directly connected, Serial0/0/1
```

Task 6: Disable Automatic Summarization.

R2

```
R2(config)#router rip
R2(config-router)#no auto-summary
```

R1

```
R1(config)#router rip
R1(config-router)#no auto-summary
```

R3

```
R3(config)#router rip
R3(config-router)#no auto-summary
```

Task 7: Examine the Routing Tables.

R2

```
R2#show ip route
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

```
    10.0.0.0/16 is subnetted, 1 subnets
C    10.1.0.0 is directly connected, FastEthernet0/0
    172.30.0.0/16 is variably subnetted, 7 subnets, 3 masks
R    172.30.0.0/16 [120/1] via 209.165.200.230, 00:02:18, Serial0/0/0
        [120/1] via 209.165.200.234, 00:01:22, Serial0/0/1
R    172.30.1.0/24 [120/1] via 209.165.200.230, 00:00:04, Serial0/0/0
R    172.30.2.0/24 [120/1] via 209.165.200.230, 00:00:04, Serial0/0/0
R    172.30.100.0/24 [120/1] via 209.165.200.234, 00:00:26, Serial0/0/1
R    172.30.110.0/24 [120/1] via 209.165.200.234, 00:00:26, Serial0/0/1
R    172.30.200.16/28 [120/1] via 209.165.200.234, 00:00:26, Serial0/0/1
R    172.30.200.32/28 [120/1] via 209.165.200.234, 00:00:26, Serial0/0/1
    209.165.200.0/30 is subnetted, 2 subnets
C    209.165.200.228 is directly connected, Serial0/0/0
--More--
```

R1

```

R1#show ip route
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

10.0.0.0/8 is variably subnetted, 2 subnets, 2 masks
R    10.0.0.0/8 is possibly down, routing via 209.165.200.229, Serial0/0/0
R    10.1.0.0/16 [120/1] via 209.165.200.229, 00:00:19, Serial0/0/0
    172.30.0.0/16 is variably subnetted, 6 subnets, 2 masks
C    172.30.1.0/24 is directly connected, FastEthernet0/0
C    172.30.2.0/24 is directly connected, FastEthernet0/1
R    172.30.100.0/24 [120/2] via 209.165.200.229, 00:00:19, Serial0/0/0
R    172.30.110.0/24 [120/2] via 209.165.200.229, 00:00:19, Serial0/0/0
R    172.30.200.16/28 [120/2] via 209.165.200.229, 00:00:19, Serial0/0/0
R    172.30.200.32/28 [120/2] via 209.165.200.229, 00:00:19, Serial0/0/0
    209.165.200.0/30 is subnetted, 2 subnets
C    209.165.200.228 is directly connected, Serial0/0/0
--More--

```

R3

```

R3#show ip route
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

10.0.0.0/8 is variably subnetted, 2 subnets, 2 masks
R    10.0.0.0/8 is possibly down, routing via 209.165.200.233, Serial0/0/1
R    10.1.0.0/16 [120/1] via 209.165.200.233, 00:00:00, Serial0/0/1
    172.30.0.0/16 is variably subnetted, 6 subnets, 2 masks
R    172.30.1.0/24 [120/2] via 209.165.200.233, 00:00:00, Serial0/0/1
R    172.30.2.0/24 [120/2] via 209.165.200.233, 00:00:00, Serial0/0/1
C    172.30.100.0/24 is directly connected, FastEthernet0/0
C    172.30.110.0/24 is directly connected, Loopback0
C    172.30.200.16/28 is directly connected, Loopback1
C    172.30.200.32/28 is directly connected, Loopback2
    209.165.200.0/30 is subnetted, 2 subnets
R    209.165.200.228 [120/1] via 209.165.200.233, 00:00:00, Serial0/0/1
--More-- |

```

Task 8: Verify Network Connectivity.

Step 1: Check connectivity between R2 router and PCs.

```

R2#ping 172.30.2.1

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 172.30.2.1, timeout is 2 seconds:
!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 1/6/12 ms

```

```
R2#ping 172.30.100.1
```

Type escape sequence to abort.

Sending 5, 100-byte ICMP Echos to 172.30.100.1, timeout is 2 seconds:

!!!!

Success rate is 100 percent (5/5), round-trip min/avg/max = 7/12/22 ms

Step 2: Check the connectivity between the PCs.

```
PC>ping 10.1.0.10
```

Pinging 10.1.0.10 with 32 bytes of data:

Reply from 10.1.0.10: bytes=32 time=1ms TTL=126

Reply from 10.1.0.10: bytes=32 time=17ms TTL=126

Reply from 10.1.0.10: bytes=32 time=1ms TTL=126

Reply from 10.1.0.10: bytes=32 time=1ms TTL=126

Ping statistics for 10.1.0.10:

Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),

Approximate round trip times in milli-seconds:

Minimum = 1ms, Maximum = 17ms, Average = 5ms

```
Packet Tracer PC Command Line 1.0
```

```
PC>ping 172.30.100.10
```

Pinging 172.30.100.10 with 32 bytes of data:

Reply from 172.30.100.10: bytes=32 time=8ms TTL=126

Reply from 172.30.100.10: bytes=32 time=1ms TTL=126

Reply from 172.30.100.10: bytes=32 time=15ms TTL=126

Reply from 172.30.100.10: bytes=32 time=5ms TTL=126

Ping statistics for 172.30.100.10:

Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),

Approximate round trip times in milli-seconds:

Minimum = 1ms, Maximum = 15ms, Average = 7ms

```
PC>
```

```
PC>ping 10.1.0.10
```

Pinging 10.1.0.10 with 32 bytes of data:

Reply from 10.1.0.10: bytes=32 time=10ms TTL=128

Reply from 10.1.0.10: bytes=32 time=9ms TTL=128

Reply from 10.1.0.10: bytes=32 time=8ms TTL=128

Reply from 10.1.0.10: bytes=32 time=8ms TTL=128

Ping statistics for 10.1.0.10:

Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),

Approximate round trip times in milli-seconds:

Minimum = 8ms, Maximum = 10ms, Average = 8ms

```
PC>ping 172.30.100.10

Pinging 172.30.100.10 with 32 bytes of data:

Reply from 172.30.100.10: bytes=32 time=10ms TTL=128
Reply from 172.30.100.10: bytes=32 time=8ms TTL=128
Reply from 172.30.100.10: bytes=32 time=8ms TTL=128
Reply from 172.30.100.10: bytes=32 time=3ms TTL=128

Ping statistics for 172.30.100.10:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 3ms, Maximum = 10ms, Average = 7ms
```

Giải thích dòng lệnh

En vào chế độ đặc quyền

Conf t: vào chế độ cấu hình

Hostname: cấu hình tên thiết bị

Các lệnh show dùng để kiểm tra cấu hình OSPF

- *show ip protocol*
- *show ip route*
- *show ip ospf*
- *show ip ospf interface*
- *show ip ospf neighbor detail*

Ip default-gateway: gán default-gateway

Int f0/0 và *ip add*: để gán ip cho fastEthernet 0/0

Int s0/0/0 và *ip add*: để gán ip cho serial 0/0/0

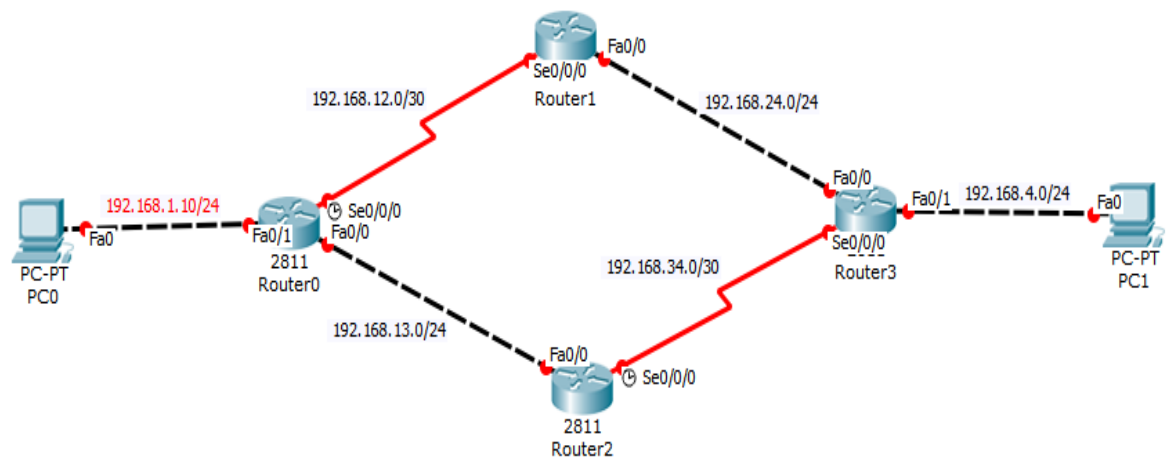
No shutdown để bật interface

Show ip int brief: để show các ip interface

Router ospf 10: bật osp

Lab04 : RIP v2 Configuration

I.Mô hình



II. Chuẩn bị

- Cáp đấu nối theo sơ đồ
- Đặt IP và tên cho các thiết bị

R1

```
R1>en
R1#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R1(config)#int
% Incomplete command.
R1(config)#int f0/0
R1(config-if)#ip add 192.168.13.1 255.255.255.0
R1(config-if)#no sh
R1(config-if)#ex
R1(config)#int f0/1
R1(config-if)#ip add 192.168.1.254 255.255.255.0
R1(config-if)#no sh
R1(config-if)#ex
R1(config)#int s0/0/0
R1(config-if)#ip add 192.168.12.1 255.255.255.252
R1(config-if)#no sh
R1(config-if)#ex
R1(config)#router rip
R1(config-router)#version 2
R1(config-router)#network 192.168.12.0
R1(config-router)#network 192.168.13.0
R1(config-router)#no auto-summary
R1(config-router)#passive-interface f0/1
R1(config-router)#
```

R2

```

R2>en
R2#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R2(config)#int s0/0/0
R2(config-if)#ip add 192.168.12.2 255.255.255.252
R2(config-if)#
R2(config-if)#no sh
R2(config-if)#ex
R2(config)#int f0/0
R2(config-if)#ip add 192.168.24.1 255.255.255.0
R2(config-if)#no sh
R2(config-if)#ex
R2(config)#router rip
R2(config-router)#version 2
R2(config-router)#network 192.168.12.0
R2(config-router)#network 192.168.24.0
R2(config-router)#no auto-summary

```

R3

```

R3>en
R3#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R3(config)#int f0/0
R3(config-if)#ip add 192.168.13.2 255.255.255.0
R3(config-if)#no sh
R3(config-if)#int s0/0/0
R3(config-if)#ip add 192.168.34.1 255.255.255.252
R3(config-if)#no sh
R3(config-if)#router rip
R3(config-router)#version 2
R3(config-router)#network 192.168.13.0
R3(config-router)#network 192.168.34.0
R3(config-router)#no auto-summary
R3(config-router)#ex
R3(config)#ex

```

R4

```

R4>en
R4#conf t
R4(config)#int f0/0
R4(config-if)#ip add 192.168.24.2 255.255.255.0
R4(config-if)#no sh
R4(config-if)#ex
R4(config)#int f0/1
R4(config-if)#ip add 192.168.4.254 255.255.255.0
R4(config-if)#no sh
R4(config-if)#ex
R4(config)#int s0/0/0
R4(config-if)#ip add 192.168.34.2 255.255.255.252

R4(config-if)#no sh
R4(config-if)#e
% Ambiguous command: "e"
R4(config-if)#ex
R4(config)#router rip
R4(config-router)#version 2
R4(config-router)#network 192.168.4.0
R4(config-router)#network 192.168.24.0
R4(config-router)#network 192.168.34.0
R4(config-router)#no auto-summary
R4(config-router)#passive-interface f0/1
R4(config-router)#ex
R4(config)#ex
R4#

```


PCA

PCA

Physical Config Desktop Custom Interface

IP Configuration

IP Configuration

☐ DHCP ☒ Static

IP Address: 192.168.1.1

Subnet Mask: 255.255.255.0

Default Gateway: 192.168.1.254

DNS Server:

PCB

PCB

Physical Config Desktop Custom Interface

IP Configuration

IP Configuration

☐ DHCP ☒ Static

IP Address: 192.168.4.1

Subnet Mask: 255.255.255.0

Default Gateway: 192.168.4.254

DNS Server:

III. Triển khai định tuyến RIPv2 trên Router Cisco

1. Cấu hình RIPv2 trên Router R1

```
R1#sh ip route
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, FastEthernet0/1
R    192.168.4.0/24 [120/2] via 192.168.12.2, 00:00:10, Serial0/0/0
     192.168.12.0/24 is variably subnetted, 2 subnets, 2 masks
R      192.168.12.0/24 [120/3] via 192.168.13.2, 00:00:20, FastEthernet0/0
C      192.168.12.0/30 is directly connected, Serial0/0/0
C    192.168.13.0/24 is directly connected, FastEthernet0/0
R    192.168.24.0/24 [120/1] via 192.168.12.2, 00:00:10, Serial0/0/0
     192.168.34.0/24 is variably subnetted, 2 subnets, 2 masks
R      192.168.34.0/24 is possibly down, routing via 192.168.13.2, FastEthernet0/0
R      192.168.34.0/30 [120/2] via 192.168.12.2, 00:00:10, Serial0/0/0
R1#
```

2. Cấu hình RIPv2 trên Router cisco R2

```
R2#show ip route
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 192.168.12.1, 00:00:01, Serial0/0/0
R    192.168.4.0/24 [120/1] via 192.168.24.2, 00:00:10, FastEthernet0/0
     192.168.12.0/30 is subnetted, 1 subnets
C     192.168.12.0 is directly connected, Serial0/0/0
R    192.168.13.0/24 [120/1] via 192.168.12.1, 00:00:01, Serial0/0/0
C    192.168.24.0/24 is directly connected, FastEthernet0/0
     192.168.34.0/30 is subnetted, 1 subnets
R     192.168.34.0 [120/1] via 192.168.24.2, 00:00:10, FastEthernet0/0
R2#
```

3. Cấu hình RIPv2 trên Router cisco R3

```
R3#sh ip route
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 192.168.13.1, 00:00:01, FastEthernet0/0
R    192.168.4.0/24 [120/1] via 192.168.34.2, 00:00:10, Serial0/0/0
     192.168.12.0/30 is subnetted, 1 subnets
R     192.168.12.0 [120/1] via 192.168.13.1, 00:00:01, FastEthernet0/0
C    192.168.13.0/24 is directly connected, FastEthernet0/0
R    192.168.24.0/24 [120/1] via 192.168.34.2, 00:00:10, Serial0/0/0
     192.168.34.0/30 is subnetted, 1 subnets
C     192.168.34.0 is directly connected, Serial0/0/0
R3#
```

4. Cấu hình RIPv2 trên Router cisco R4

```
R4#sh ip route
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 [120/2] via 192.168.24.1, 00:00:00, FastEthernet0/0
      [120/2] via 192.168.34.1, 00:00:25, Serial0/0/0
C    192.168.4.0/24 is directly connected, FastEthernet0/1
      192.168.12.0/30 is subnetted, 1 subnets
R    192.168.12.0 [120/1] via 192.168.24.1, 00:00:00, FastEthernet0/0
R    192.168.13.0/24 [120/1] via 192.168.34.1, 00:00:25, Serial0/0/0
C    192.168.24.0/24 is directly connected, FastEthernet0/0
      192.168.34.0/30 is subnetted, 1 subnets
C    192.168.34.0 is directly connected, Serial0/0/0
R4#
```

5. Kiểm tra kết quả :

```
Packet Tracer PC Command Line 1.0
PC>tracert 192.168.4.1

Tracing route to 192.168.4.1 over a maximum of 30 hops:

  1  17 ms    0 ms    0 ms    192.168.1.254
  2   7 ms    11 ms   9 ms    192.168.12.2
  3  *        1 ms    *      Request timed out.
  4  *        1 ms    0 ms    192.168.4.1

Trace complete.

PC>tracert 192.168.4.1

Tracing route to 192.168.4.1 over a maximum of 30 hops:

  1   1 ms    0 ms    1 ms    192.168.1.254
  2  10 ms    7 ms    1 ms    192.168.12.2
  3   2 ms    0 ms   10 ms   192.168.24.2
  4   0 ms    1 ms    2 ms    192.168.4.1

Trace complete.

PC>|
```

6. Kiểm tra tính dự phòng

- Shutdown 1 interface trên R2 or cho R2 chết. Ở đây mình shutdown S0/0/0 của R2

```
R2#sh ip interface brief
```

Interface	IP-Address	OK?	Method	Status	Protocol
FastEthernet0/0	192.168.24.1	YES	manual	up	up
FastEthernet0/1	unassigned	YES	unset	administratively down	down
Serial0/0/0	192.168.12.2	YES	manual	up	up
Ethernet1/0	unassigned	YES	unset	administratively down	down
Vlan1	unassigned	YES	unset	administratively down	down

- Kiểm tra xem pcA còn ping được pc B không. Thì thấy gói tin nó không còn đi qua R2 nữa vì đường R2 đã bị đứt

```
PC>tracert 192.168.4.1

Tracing route to 192.168.4.1 over a maximum of 30 hops:

  1  0 ms      0 ms      0 ms      192.168.1.254
  2  0 ms      0 ms      0 ms      192.168.12.2
  3  1 ms      0 ms      5 ms      192.168.24.2
  4  1 ms      1 ms      1 ms      192.168.4.1

Trace complete.

PC>tracert 192.168.4.1

Tracing route to 192.168.4.1 over a maximum of 30 hops:

  1  1 ms      0 ms      0 ms      192.168.1.254
  2  5 ms      6 ms      4 ms      192.168.12.2
  3  0 ms      0 ms      5 ms      192.168.24.2
  4  0 ms      3 ms      1 ms      192.168.4.1

Trace complete.
```