SEC: A | CN LAB: 08 | BATCH: A3

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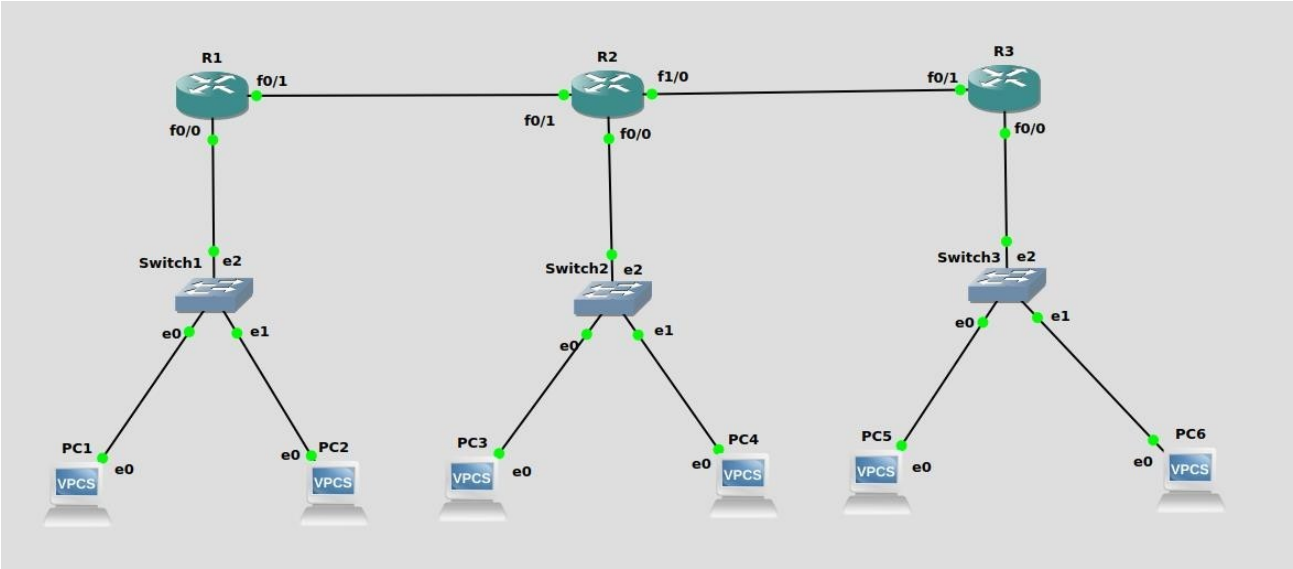
EXPERIMENT 01

TOPOLOGY



CONFIGURING R1, R2 AND R3

R1

File Edit View Search Terminal Help

```
R1(config)#
R1(config)#int f0/0
R1(config-if)#ip add
R1(config-if)#ip address 10.10.10.254 255.255.255.0
R1(config-if)#no shutdown
R1(config-if)#do wr
Building configuration...
[OK]
R1(config-if)#exit
R1(config)#
R1(config)#int f0/1
R1(config-if)#ip add
R1(config-if)#ip address 40.40.40.1 255.255.255.0
R1(config-if)#no shut
R1(config-if)#no shutdown
R1(config-if)#do wr
Building configuration...
[OK]
R1(config-if)#
*Mar  1 00:02:45.615: %LINK-3-UPDOWN: Interface FastEthernet0/1, changed state t
o up
*Mar  1 00:02:46.615: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthern
et0/1, changed state to up
R1(config-if)#exit
```

```
R2(config)#int f0/0
R2(config-if)#ip add
R2(config-if)#ip address 20.20.20.254 255.255.255.0
R2(config-if)#no shut
R2(config-if)#no shutdown
R2(config-if)#do wr
Building configuration...
[OK]
R2(config-if)#
*Mar  1 00:05:56.191: %LINK-3-UPDOWN: Interface FastEthernet0/0, changed state to up
*Mar  1 00:05:57.191: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up
R2(config-if)#exit
R2(config)#int f0/1
R2(config-if)#ip add
R2(config-if)#ip address 40.40.40.2 255.255.255.0
R2(config-if)#no shut
R2(config-if)#no shutdown
R2(config-if)#do wr
Building configuration...
[OK]
R2(config-if)#exit
*Mar  1 00:06:22.219: %LINK-3-UPDOWN: Interface FastEthernet0/1, changed state to up
*Mar  1 00:06:23.219: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to up
R2(config-if)#exit
R2(config)#int f1/0
R2(config-if)#ip add
R2(config-if)#ip address 50.50.50.2 255.255.255.0
R2(config-if)#no shut
R2(config-if)#no shutdown
R2(config-if)#do wr
Building configuration...
[OK]
```

R3

File Edit View Search Terminal Help

```
Enter configuration commands, one per line.  End with CNTL/Z.
R3(config)#int f0/0
R3(config-if)#ip add
R3(config-if)#ip address 30.30.30.254 255.255.255.0
R3(config-if)#no shut
R3(config-if)#no shutdown
R3(config-if)#DO WR
Building configuration...

*Mar  1 00:07:04.391: %LINK-3-UPDOWN: Interface FastEthernet0/0, changed state t
o up
*Mar  1 00:07:05.403: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthern
et0/0, changed state to up[OK]
R3(config-if)#exit
R3(config)#int f0/1
R3(config-if)#ip add
R3(config-if)#ip address 50.50.50.1 255.255.255.0
R3(config-if)#no shut
R3(config-if)#no shutdown
R3(config-if)#do wr
Building configuration...
[OK]
R3(config-if)#
```

USING RIP COMMANDS ON R1, R2 AND R3

```
R1(config)#router rip
R1(config-router)#ver 2
R1(config-router)#network 10.10.10.0
R1(config-router)#network 40.40.40.0
R1(config-router)#exit
```

```
R2(config)#router rip
R2(config-router)#ver 2
R2(config-router)#network 20.20.20.0
R2(config-router)#network 40.40.40.0
R2(config-router)#network 50.50.50.0
R2(config-router)#exit
```

```
R3(config)#router rip
R3(config-router)#ver 2
R3(config-router)#network 30.30.30.0
R3(config-router)#network 50.50.50.0
R3(config-router)#exit
```

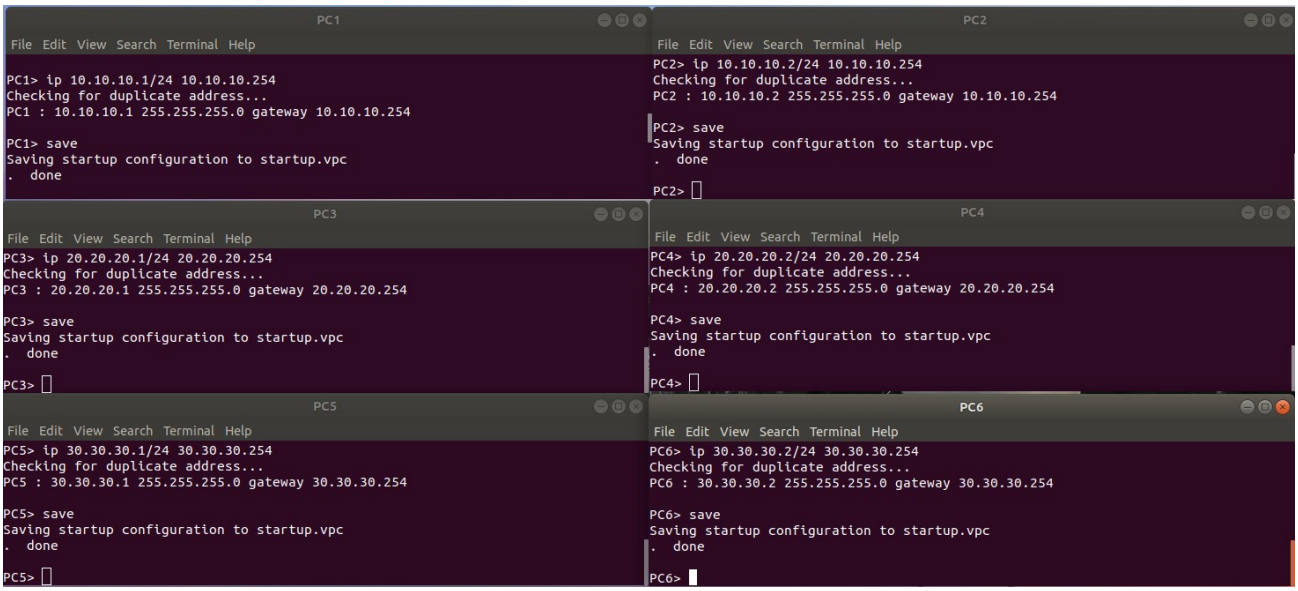
SHOWING IP ROUTES OF R1, R2 AND R3 SET VIA RIP

```
R1#show ip route
Codes: C - connected, S - static, 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
       i - IS-IS, su - IS-IS summary, 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    50.0.0.0/8 [120/1] via 40.40.40.2, 00:00:05, FastEthernet0/1
R    20.0.0.0/8 [120/1] via 40.40.40.2, 00:00:05, FastEthernet0/1
     40.0.0.0/24 is subnetted, 1 subnets
C       40.40.40.0 is directly connected, FastEthernet0/1
     10.0.0.0/24 is subnetted, 1 subnets
C       10.10.10.0 is directly connected, FastEthernet0/0
R    30.0.0.0/8 [120/2] via 40.40.40.2, 00:00:05, FastEthernet0/1
R1#
```

```
R2#show ip route
Codes: C - connected, S - static, 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
       i - IS-IS, su - IS-IS summary, 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

     50.0.0.0/24 is subnetted, 1 subnets
C       50.50.50.0 is directly connected, FastEthernet1/0
     20.0.0.0/24 is subnetted, 1 subnets
C       20.20.20.0 is directly connected, FastEthernet0/0
     40.0.0.0/24 is subnetted, 1 subnets
C       40.40.40.0 is directly connected, FastEthernet0/1
R    10.0.0.0/8 [120/1] via 40.40.40.1, 00:00:22, FastEthernet0/1
R    30.0.0.0/8 [120/1] via 50.50.50.1, 00:00:27, FastEthernet1/0
R2#
```

```
R3#show ip route
Codes: C - connected, S - static, 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
       i - IS-IS, su - IS-IS summary, 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

     50.0.0.0/24 is subnetted, 1 subnets
C       50.50.50.0 is directly connected, FastEthernet0/1
R    20.0.0.0/8 [120/1] via 50.50.50.2, 00:00:16, FastEthernet0/1
R    40.0.0.0/8 [120/1] via 50.50.50.2, 00:00:16, FastEthernet0/1
R    10.0.0.0/8 [120/2] via 50.50.50.2, 00:00:16, FastEthernet0/1
     30.0.0.0/24 is subnetted, 1 subnets
C       30.30.30.0 is directly connected, FastEthernet0/0
R3#
```

SETTING IPs OF EACH PC (PC1 THROUGH PC6)



PING FROM PC1 TO PC3 AND PC6

```
PC1> ping 20.20.20.1

20.20.20.1 icmp_seq=1 timeout
84 bytes from 20.20.20.1 icmp_seq=2 ttl=62 time=30.323 ms
84 bytes from 20.20.20.1 icmp_seq=3 ttl=62 time=30.492 ms
84 bytes from 20.20.20.1 icmp_seq=4 ttl=62 time=30.498 ms
84 bytes from 20.20.20.1 icmp_seq=5 ttl=62 time=29.445 ms

PC1> ping 30.30.30.2

30.30.30.2 icmp_seq=1 timeout
84 bytes from 30.30.30.2 icmp_seq=2 ttl=61 time=50.096 ms
84 bytes from 30.30.30.2 icmp_seq=3 ttl=61 time=49.171 ms
84 bytes from 30.30.30.2 icmp_seq=4 ttl=61 time=60.586 ms
84 bytes from 30.30.30.2 icmp_seq=5 ttl=61 time=49.882 ms

PC1>
```

EXPERIMENT 02

SETTING IP ROUTES USING OSPF COMMANDS

```
R1(config)#router ospf 512
R1(config-router)#network 10.10.10.0 0.0.0.255 area 0
R1(config-router)#network 40.40.40.0 0.0.0.255 area 0
R1(config-router)#exit
R1(config)#exit
```

```
R2(config)#router ospf 512
R2(config-router)#network 20.20.20.0 0.0.0.255 area 0
R2(config-router)#network 40.40.40.0 0.0.0.255 area 0
R2(config-router)#network 50.50.50.0 0.0.0.255 area 0
R2(config-router)#exit
```

```
R3(config)#router ospf 512
R3(config-router)#network 30.30.30.0 0.0.0.255 area 0
R3(config-router)#network 50.50.50.0 0.0.0.255 area 0
R3(config-router)#exit
R3(config)#exit
```

SHOWING IP ROUTES OF R1, R2 AND R3 SET THROUGH OSPF

```
R1#show ip route
Codes: C - connected, S - static, 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
       i - IS-IS, su - IS-IS summary, 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

     50.0.0.0/24 is subnetted, 1 subnets
O       50.50.50.0 [110/11] via 40.40.40.2, 00:00:25, FastEthernet0/1
     20.0.0.0/24 is subnetted, 1 subnets
O       20.20.20.0 [110/20] via 40.40.40.2, 00:00:25, FastEthernet0/1
     40.0.0.0/24 is subnetted, 1 subnets
C       40.40.40.0 is directly connected, FastEthernet0/1
     10.0.0.0/24 is subnetted, 1 subnets
C       10.10.10.0 is directly connected, FastEthernet0/0
     30.0.0.0/24 is subnetted, 1 subnets
O       30.30.30.0 [110/21] via 40.40.40.2, 00:00:25, FastEthernet0/1
R1#
```

```
R2#show ip route
Codes: C - connected, S - static, 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
       i - IS-IS, su - IS-IS summary, 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

     50.0.0.0/24 is subnetted, 1 subnets
C       50.50.50.0 is directly connected, FastEthernet1/0
     20.0.0.0/24 is subnetted, 1 subnets
C       20.20.20.0 is directly connected, FastEthernet0/0
     40.0.0.0/24 is subnetted, 1 subnets
C       40.40.40.0 is directly connected, FastEthernet0/1
     10.0.0.0/24 is subnetted, 1 subnets
O       10.10.10.0 [110/20] via 40.40.40.1, 00:00:10, FastEthernet0/1
     30.0.0.0/24 is subnetted, 1 subnets
O       30.30.30.0 [110/11] via 50.50.50.1, 00:00:10, FastEthernet1/0
R2#
```

```
R3#show ip route
Codes: C - connected, S - static, 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
       i - IS-IS, su - IS-IS summary, 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

     50.0.0.0/24 is subnetted, 1 subnets
C       50.50.50.0 is directly connected, FastEthernet0/1
     20.0.0.0/24 is subnetted, 1 subnets
O       20.20.20.0 [110/20] via 50.50.50.2, 00:00:21, FastEthernet0/1
     40.0.0.0/24 is subnetted, 1 subnets
O       40.40.40.0 [110/20] via 50.50.50.2, 00:00:21, FastEthernet0/1
     10.0.0.0/24 is subnetted, 1 subnets
O       10.10.10.0 [110/30] via 50.50.50.2, 00:00:21, FastEthernet0/1
     30.0.0.0/24 is subnetted, 1 subnets
C       30.30.30.0 is directly connected, FastEthernet0/0
R3#
```

PINGS FROM PC2 TO PC4 AND PC5

```
PC2> ping 20.20.20.2

20.20.20.2 icmp_seq=1 timeout
84 bytes from 20.20.20.2 icmp_seq=2 ttl=62 time=29.533 ms
84 bytes from 20.20.20.2 icmp_seq=3 ttl=62 time=29.404 ms
84 bytes from 20.20.20.2 icmp_seq=4 ttl=62 time=29.874 ms
84 bytes from 20.20.20.2 icmp_seq=5 ttl=62 time=29.785 ms

PC2> ping 30.30.30.1

30.30.30.1 icmp_seq=1 timeout
84 bytes from 30.30.30.1 icmp_seq=2 ttl=61 time=41.262 ms
84 bytes from 30.30.30.1 icmp_seq=3 ttl=61 time=59.311 ms
84 bytes from 30.30.30.1 icmp_seq=4 ttl=61 time=59.807 ms
84 bytes from 30.30.30.1 icmp_seq=5 ttl=61 time=59.429 ms

PC2>
```