

SEC: A

CN LAB: 08

BATCH: A3

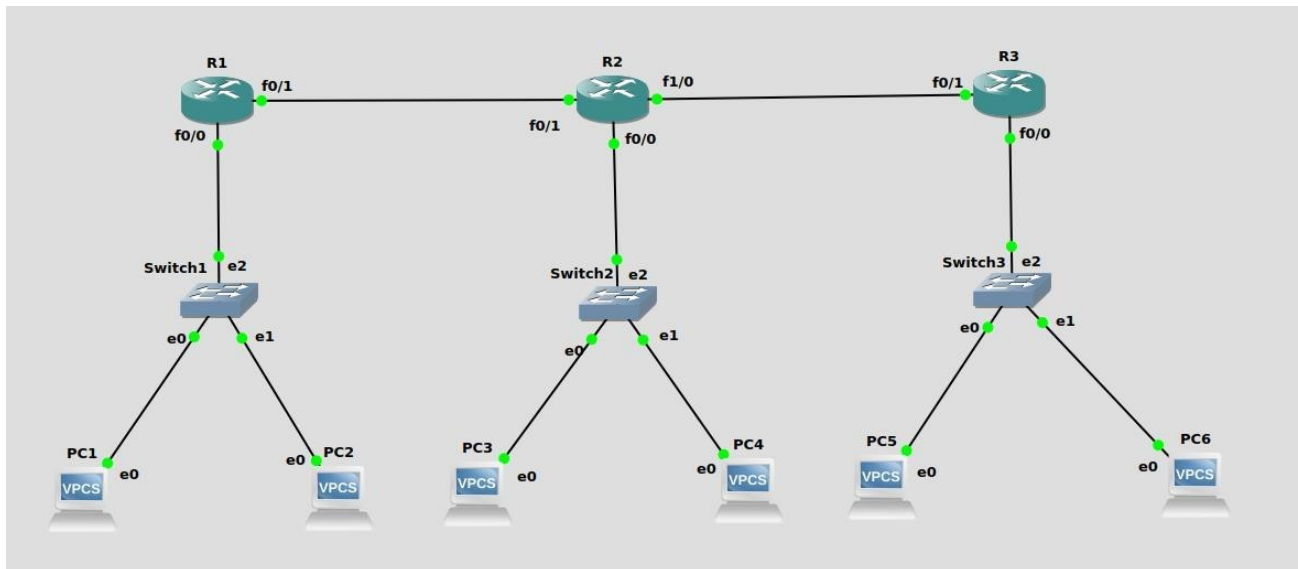
REG: 190905513

CSE 3113

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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 to up
*Mar  1 00:02:46.615: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, 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
R3#config t
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 to up
*Mar 1 00:07:05.403: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, 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)#
*Mar 1 00:07:22.547: %LINK-3-UPDOWN: Interface FastEthernet0/1, changed state to up
```

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
R1(config)#
```

```
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
R2(config)#
```

```
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
R3(config)#
```

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
```

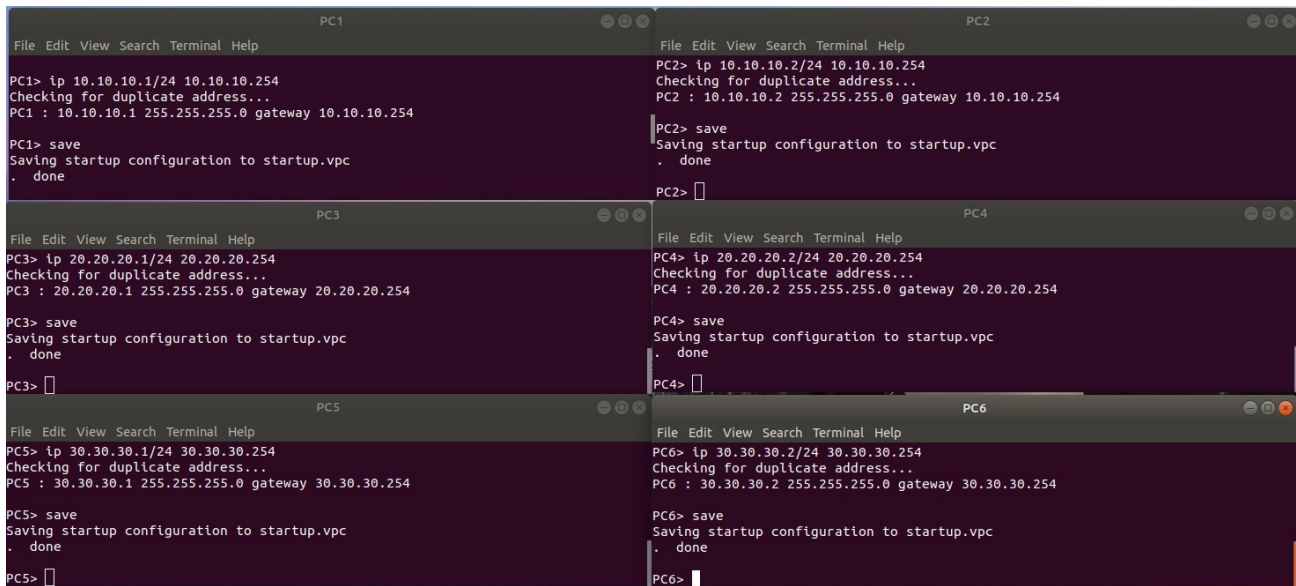
```
Codes: C - connected, S - static, R - RIP, M - mobile, B - BGP  
D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area  
N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2  
E1 - OSPF external type 1, E2 - OSPF external type 2  
i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, 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)



The screenshot displays six terminal windows arranged in a 3x2 grid, each representing a different PC (PC1 through PC6). Each window has a menu bar with 'File', 'Edit', 'View', 'Search', 'Terminal', and 'Help'. The terminals show the process of setting an IP address, checking for duplicates, and saving the configuration to the startup.vpc file.

```
PC1> ip 10.10.10.1/24 10.10.10.254
Checking for duplicate address...
PC1 : 10.10.10.1 255.255.255.0 gateway 10.10.10.254

PC1> save
Saving startup configuration to startup.vpc
. done
PC1>

PC2> ip 10.10.10.2/24 10.10.10.254
Checking for duplicate address...
PC2 : 10.10.10.2 255.255.255.0 gateway 10.10.10.254

PC2> save
Saving startup configuration to startup.vpc
. done
PC2>

PC3> ip 20.20.20.1/24 20.20.20.254
Checking for duplicate address...
PC3 : 20.20.20.1 255.255.255.0 gateway 20.20.20.254

PC3> save
Saving startup configuration to startup.vpc
. done
PC3>

PC4> ip 20.20.20.2/24 20.20.20.254
Checking for duplicate address...
PC4 : 20.20.20.2 255.255.255.0 gateway 20.20.20.254

PC4> save
Saving startup configuration to startup.vpc
. done
PC4>

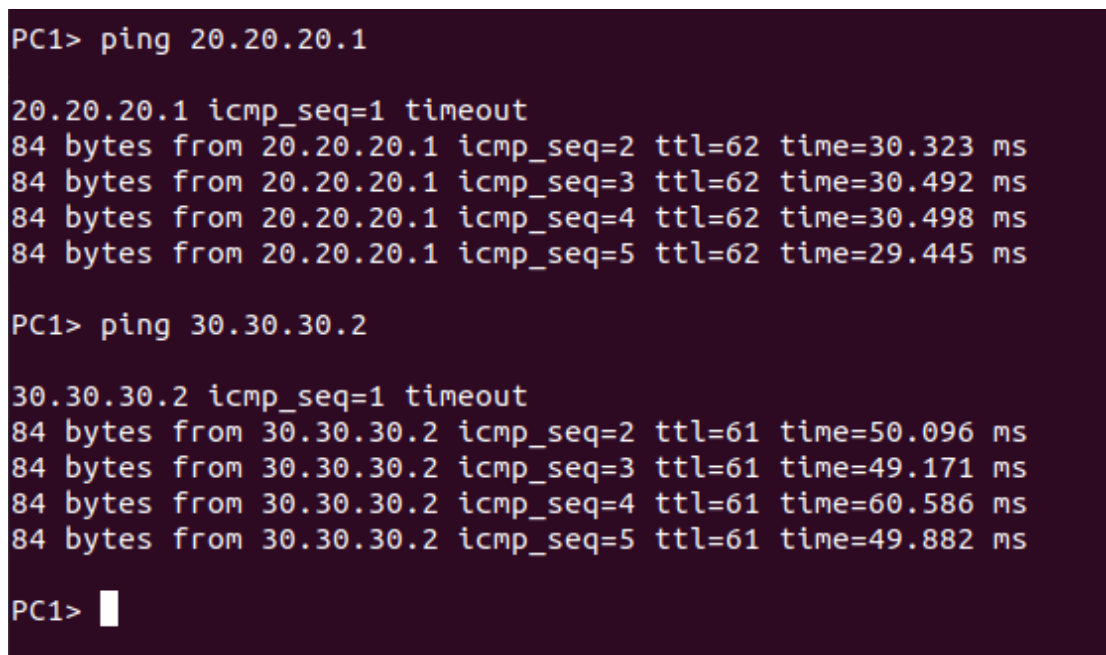
PC5> ip 30.30.30.1/24 30.30.30.254
Checking for duplicate address...
PC5 : 30.30.30.1 255.255.255.0 gateway 30.30.30.254

PC5> save
Saving startup configuration to startup.vpc
. done
PC5>

PC6> ip 30.30.30.2/24 30.30.30.254
Checking for duplicate address...
PC6 : 30.30.30.2 255.255.255.0 gateway 30.30.30.254

PC6> save
Saving startup configuration to startup.vpc
. done
PC6>
```

PING FROM PC1 TO PC3 AND PC6



The screenshot shows the PC1 terminal window with the results of ping commands sent to PC3 (20.20.20.1) and PC6 (30.30.30.2). The first ping to PC3 shows a timeout for the first attempt, followed by four successful pings with response times between 29.445 ms and 30.492 ms. The second ping to PC6 also shows a timeout for the first attempt, followed by four successful pings with response times between 49.171 ms and 60.586 ms.

```
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> █
```