

CO323 Lab 05

E/14/158

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15/05/2018

1 Question 01

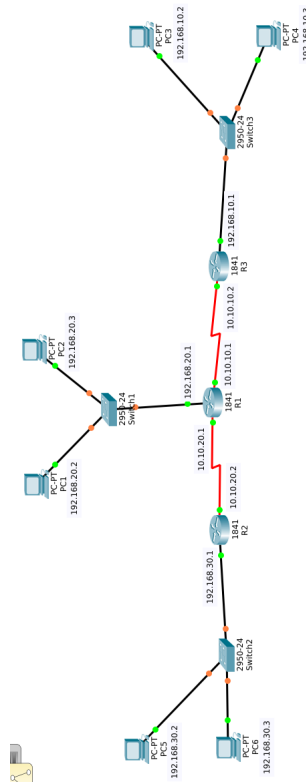


Figure 1: Network configuration

1.1 IP addresses

PC1 - 192.168.20.2

PC2 - 192.168.20.3

1.2 Adding static routes

1.3 R1

```
Router>enable
Router#
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface FastEthernet0/0
Router(config-if)#ip address 192.168.20.1 255.255.255.0
Router(config-if)#exit
Router(config)#interface Serial0/1/0
Router(config-if)#ip address 10.10.20.1 255.255.255.0
Router(config-if)#exit
Router(config)#interface Serial0/1/1
Router(config-if)#ip address 10.10.10.1 255.255.255.0
Router(config-if)#exit
Router(config)#ip route 192.168.30.0 255.255.255.0 10.10.20.2
Router(config)#ip route 192.168.10.0 255.255.255.0 10.10.10.2
Router(config)#exit
Router#copy running-config startup-config
Destination filename [startup-config]?
Building configuration...
[OK]
```

1.3.1 R2

```
Router>enable
Router#configure terminal
Router(config)#interface Serial0/1/0
Router(config-if)#ip address 10.10.20.2 255.255.255.0
Router(config-if)#exit
Router(config)#interface FastEthernet0/0
Router(config-if)#ip address 192.168.30.1 255.255.255.0
Router(config-if)#exit
Router(config)#ip route 192.168.20.0 255.255.255.0 10.10.20.1
Router(config)#ip route 192.168.30.0 255.255.255.0 10.10.20.1

Router(config)#exit
Router#copy running-config startup-config
Destination filename [startup-config]?
```

Building configuration...

[OK]

1.3.2 R3

```
Router>enable
Router#configure terminal
Router(config)#interface Serial0/1/0
Router(config-if)#ip address 10.10.20.2 255.255.255.0
Router(config-if)#exit
Router(config)#interface FastEthernet0/0
Router(config-if)#ip address 192.168.30.1 255.255.255.0
Router(config)#exit
Router(config)#ip route 192.168.20.0 255.255.255.0 10.10.10.1
Router(config)#ip route 192.168.30.0 255.255.255.0 10.10.10.1
Router(config)#exit
Router#copy running-config startup-config
Destination filename [startup-config]?
Building configuration...
[OK]
```

1.4 IP Routes R1

```
Router#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

```
10.0.0.0/24 is subnetted, 2 subnets
C      10.10.10.0 is directly connected, Serial0/1/1
C      10.10.20.0 is directly connected, Serial0/1/0
S      192.168.10.0/24 [1/0] via 10.10.10.2
C      192.168.20.0/24 is directly connected, FastEthernet0/0
S      192.168.30.0/24 [1/0] via 10.10.20.2
```

2 Q2

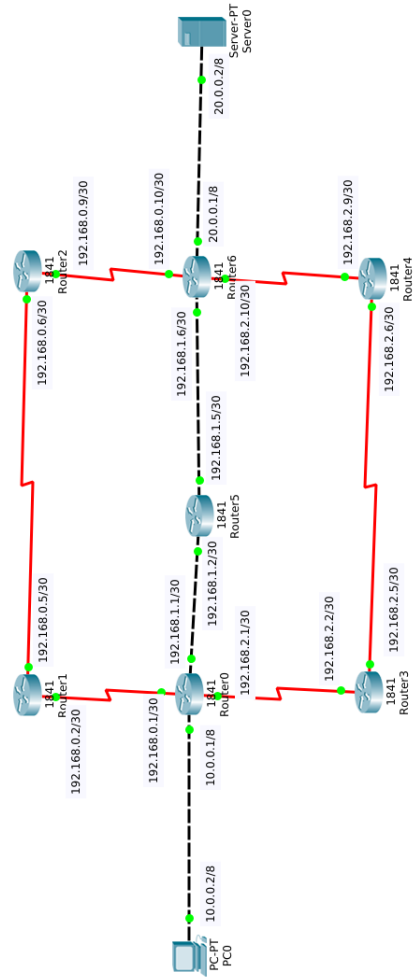


Figure 2: Network configuration

2.1 Configuring the RIP Protocol

2.1.1 PC0

Gateway = 10.0.0.1

2.1.2 R0

```
Router>enable
Router#
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface FastEthernet0/0
Router(config-if)#ip address 10.0.0.1 255.0.0.0
Router(config-if)#exit
Router(config)#interface FastEthernet0/1
Router(config-if)#ip address 192.168.1.1 255.255.255.252
Router(config-if)#exit
Router(config)#interface Serial0/1/0
Router(config-if)#ip address 192.168.0.1 255.255.255.252
Router(config-if)#exit
Router(config)#interface Serial0/1/1
Router(config-if)#ip address 192.168.2.1 255.255.255.252
Router(config-if)#exit
Router(config)#router rip
Router(config-router)#network 10.0.0.0
Router(config-router)#network 192.168.0.0
Router(config-router)#network 192.168.1.0
Router(config-router)#network 192.168.2.0
Router(config)#end
Router#copy running-config startup-config
```

2.1.3 R1

```
Router>enable
Router#
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface Serial0/1/0
Router(config-if)#ip address 192.168.0.2 255.255.255.252
Router(config-if)#exit
Router(config)#interface Serial0/1/1
Router(config-if)#ip address 192.168.0.2 255.255.255.252
Router(config-if)#exit
Router(config)#router rip
Router(config-router)#network 192.168.0.0
Router(config)#end
```

```
Router#copy running-config startup-config
```

2.2 R2

```
Router>enable
Router#
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface Serial0/1/0
Router(config-if)#ip address 192.168.0.9 255.255.255.252
Router(config-if)#exit
Router(config)#interface Serial0/1/1
Router(config-if)#ip address 192.168.0.6 255.255.255.252
Router(config-if)#exit
Router(config)#router rip
Router(config-router)#network 192.168.0.0
Router(config)#end
Router#copy running-config startup-config
```

2.3 R3

```
Router>enable
Router#
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface Serial0/1/0
Router(config-if)#ip address 192.168.2.5 255.255.255.252
Router(config-if)#exit
Router(config)#interface Serial0/1/1
Router(config-if)#ip address 192.168.2.2 255.255.255.252
Router(config-if)#exit
Router(config)#router rip
Router(config-router)#network 192.168.2.0
Router(config)#end
Router#copy running-config startup-config
```

2.4 R4

```
Router>enable
Router#
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface Serial0/1/0
Router(config-if)#ip address 192.168.2.6 255.255.255.252
Router(config-if)#exit
Router(config)#interface Serial0/1/1
Router(config-if)#ip address 192.168.2.9 255.255.255.252
```

```

Router(config-if)#exit
Router(config)#router rip
Router(config-router)#network 192.168.2.0
Router(config)#end
Router#copy running-config startup-config

```

2.4.1 R5

```

Router>enable
Router#
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface FastEthernet0/0
Router(config-if)#ip address 192.168.1.5 255.255.255.252
Router(config-if)#exit
Router(config)#interface FastEthernet0/1
Router(config-if)#ip address 192.168.1.2 255.255.255.252
Router(config-if)#exit
Router(config)#router rip
Router(config-router)#network 192.168.1.0
Router(config)#end
Router#copy running-config startup-config

```

2.4.2 R6

```

Router>enable
Router#
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface FastEthernet0/0
Router(config-if)#ip address 192.168.1.6 255.255.255.252
Router(config-if)#exit
Router(config)#interface FastEthernet0/1
Router(config-if)#ip address 20.0.0.1 255.0.0.0
Router(config-if)#exit
Router(config)#interface Serial0/1/0
Router(config-if)#ip address 192.168.0.10 255.255.255.252
Router(config-if)#exit
Router(config)#interface Serial0/1/1
Router(config-if)#ip address 192.168.2.10 255.255.255.252
Router(config-if)#exit
Router(config)#router rip
Router(config-router)#network 20.0.0.0
Router(config-router)#network 192.168.0.0
Router(config-router)#network 192.168.1.0
Router(config-router)#network 192.168.2.0
Router(config)#end

```

```
Router#copy running-config startup-config
```

```
subsectionServer Gateway=20.0.0.1
```

2.5 RIP routing table on R5

```
Router>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 192.168.1.1, 00:00:13, FastEthernet0/1  
R    20.0.0.0/8 [120/1] via 192.168.1.6, 00:00:04, FastEthernet0/0  
R    192.168.0.0/24 [120/1] via 192.168.1.1, 00:00:13, FastEthernet0/1  
                        [120/1] via 192.168.1.6, 00:00:04, FastEthernet0/0  
        192.168.1.0/30 is subnetted, 2 subnets  
C        192.168.1.0 is directly connected, FastEthernet0/1  
C        192.168.1.4 is directly connected, FastEthernet0/0  
R    192.168.2.0/24 [120/1] via 192.168.1.1, 00:00:13, FastEthernet0/1  
                        [120/1] via 192.168.1.6, 00:00:04, FastEthernet0/0
```

2.6 Configuring with OSPF

2.6.1 R0

```
Router(config)#router ospf 1  
Router(config-router)network 10.0.0.0 0.255.255.255 area 0  
Router(config-router)network 192.168.0.0 0.0.0.3 area 0  
Router(config-router)network 192.168.1.0 0.0.0.3 area 0  
Router(config-router)network 192.168.2.0 0.0.0.3 area 0  
Router(config)#end  
Router#copy running-config startup-config
```

2.6.2 R1

```
Router(config)#router ospf 1  
Router(config-router)network 192.168.0.0 0.0.0.3 area 0  
Router(config-router)network 192.168.0.4 0.0.0.3 area 0  
Router(config)#end  
Router#copy running-config startup-config
```


2.6.3 R2

```
Router(config)#router ospf 1
Router(config-router)network 192.168.0.8 0.0.0.3 area 0
Router(config-router)network 192.168.0.4 0.0.0.3 area 0
Router(config)#end
Router#copy running-config startup-config
```

2.6.4 R3

```
Router(config)#router ospf 1
Router(config-router)network 192.168.2.0 0.0.0.3 area 0
Router(config-router)network 192.168.2.4 0.0.0.3 area 0
Router(config)#end
Router#copy running-config startup-config
```

```
\subsection{R4}
\begin{lstlisting}[language=CISCO]
```

```
Router(config)#router ospf 1
Router(config-router)network 192.168.2.8 0.0.0.3 area 0
Router(config-router)network 192.168.2.4 0.0.0.3 area 0
Router(config)#end
Router#copy running-config startup-config
```

2.6.5 R5

```
Router(config)#router ospf 1
Router(config-router)network 192.168.1.0 0.0.0.3 area 0
Router(config-router)network 192.168.1.4 0.0.0.3 area 0
Router(config)#end
Router#copy running-config startup-config
```

2.6.6 R6

```
Router(config)#router ospf 1
Router(config-router)network 192.168.1.0 0.0.0.3 area 0
Router(config-router)network 192.168.1.4 0.0.0.3 area 0
Router(config-router)network 192.168.1.4 0.0.0.3 area 0
Router(config-router)network 20.0.0.0 0.255.255.255.255 area 0

Router(config)#end
Router#copy running-config startup-config
```

2.7 OSPF Routing table of R5

Router#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

```
O    10.0.0.0/8 [110/2] via 192.168.1.1, 00:38:06, FastEthernet0/1
O    20.0.0.0/8 [110/2] via 192.168.1.6, 00:38:06, FastEthernet0/0
    192.168.0.0/30 is subnetted, 3 subnets
O      192.168.0.0 [110/65] via 192.168.1.1, 00:38:06, FastEthernet0/1
O      192.168.0.4 [110/129] via 192.168.1.1, 00:38:06, FastEthernet0/1
        [110/129] via 192.168.1.6, 00:38:06, FastEthernet0/0
O      192.168.0.8 [110/65] via 192.168.1.6, 00:38:06, FastEthernet0/0
    192.168.1.0/30 is subnetted, 2 subnets
C      192.168.1.0 is directly connected, FastEthernet0/1
C      192.168.1.4 is directly connected, FastEthernet0/0
    192.168.2.0/30 is subnetted, 3 subnets
O      192.168.2.0 [110/65] via 192.168.1.1, 00:38:06, FastEthernet0/1
```