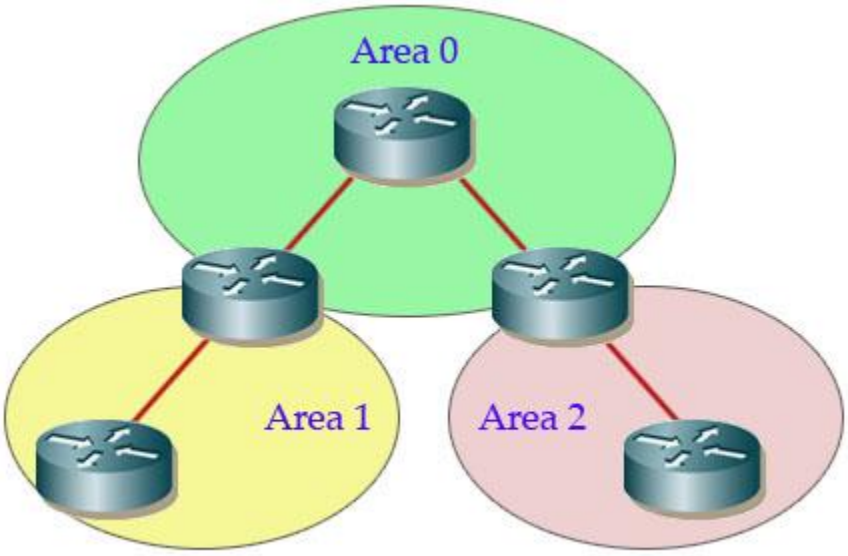
OSPF PROTOCOL

project



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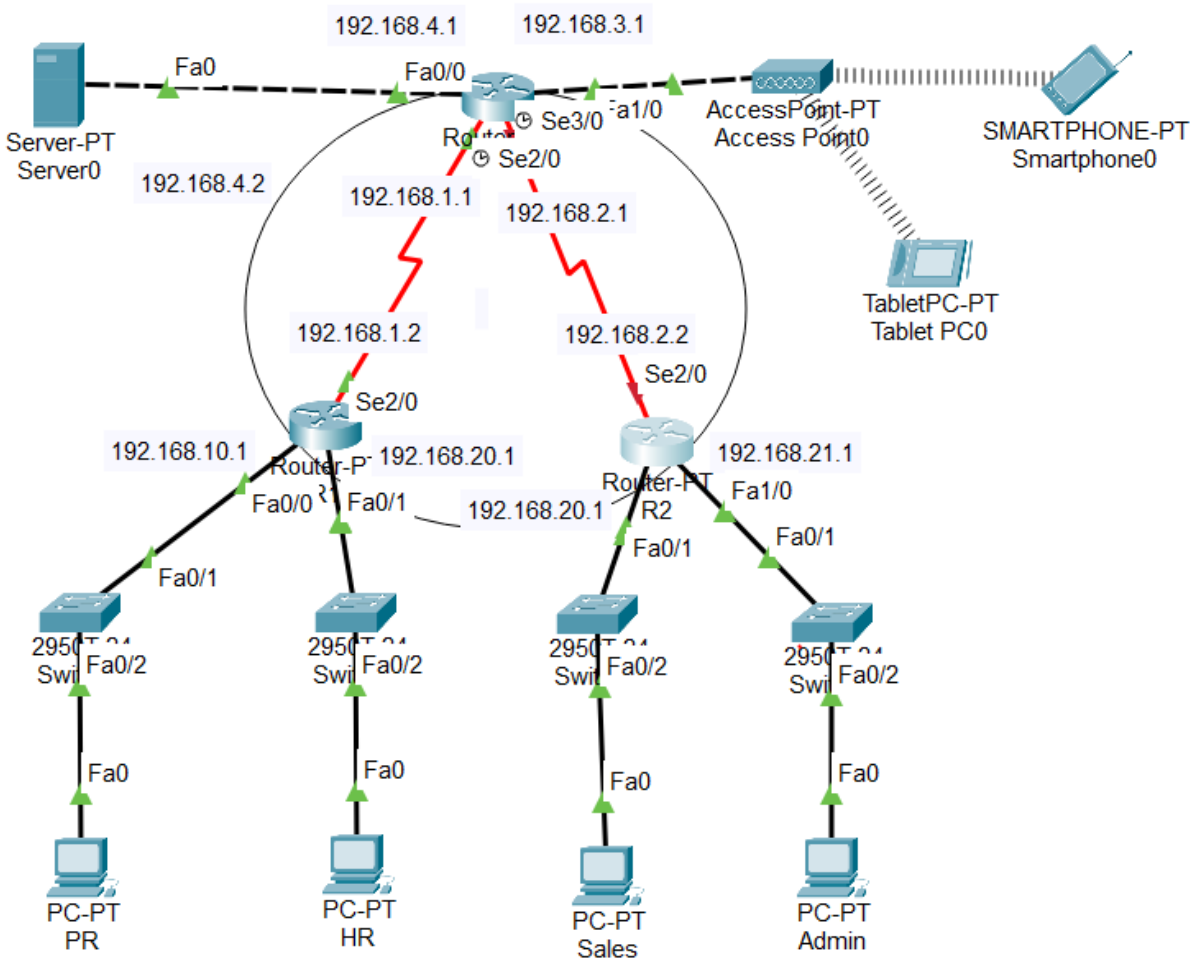
Project OSPF protocol

- Routers R1 and R2 were configured with OSPF routing and subnets were created for different departments on each router. Router R0 was configured as the central router to connect R1 and R2 along with providing DHCP and DNS services. Ping tests verified connectivity between devices on different subnets routing through the OSPF configured routers.



Configurations on the Router R0

```
Router>enable
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#hostname R0
R0(config)#
R0(config)#router ospf 12
R0(config-router)#network 192.168.1.1 0.0.0.0 area 0
R0(config-router)#network 192.168.2.1 0.0.0.0 area 0
R0(config-router)#network 192.168.3.1 0.0.0.0 area 0
R0(config-router)#network 192.168.4.1 0.0.0.0 area 0
R0(config-router)#exit
R0(config)#ip dhcp pool admin
R0(dhcp-config)#default-router 192.168.3.1
R0(dhcp-config)#dns-server 192.168.4.2
R0(dhcp-config)#exit
R0(config)#write
```

Configurations on the Router R1

```
Router>
Router>enable
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#hostname R1
R1(config)#router ospf 12
R1(config-router)#network 192.168.1.2 0.0.0.0 area 0
R1(config-router)#network 192.168.10.0 0.0.0.255 area 0
R1(config-router)#network 192.168.11.0 0.0.0.255 area 0
R1(config-router)#exit
R1(config)#
```

Configurations on the Router R2

Router>
Router>enable
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#hostname R2
R2(config)#router ospf 12
R2(config-router)#network 192.168.2.2 0.0.0.0 area 0
R2(config-router)#network 192.168.20.0 0.0.0.255 area 0
R2(config-router)#network 192.168.21.0 0.0.0.255 area 0
R2(config-router)#exit
R2(config)#

Routing Table for Router R0

```
R0#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, Serial2/0
C    192.168.2.0/24 is directly connected, Serial3/0
C    192.168.3.0/24 is directly connected, FastEthernet1/0
C    192.168.4.0/24 is directly connected, FastEthernet0/0
O    192.168.10.0/24 [110/65] via 192.168.1.2, 00:14:02, Serial2/0
O    192.168.11.0/24 [110/65] via 192.168.1.2, 00:01:31, Serial2/0
O    192.168.21.0/24 [110/65] via 192.168.2.2, 00:07:37, Serial3/0

R0#
```

Routing Table for 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, Serial2/0
O    192.168.2.0/24 [110/128] via 192.168.1.1, 00:09:56, Serial2/0
O    192.168.3.0/24 [110/65] via 192.168.1.1, 00:16:30, Serial2/0
O    192.168.4.0/24 [110/65] via 192.168.1.1, 00:16:30, Serial2/0
C    192.168.10.0/24 is directly connected, FastEthernet0/0
C    192.168.11.0/24 is directly connected, FastEthernet1/0
O    192.168.21.0/24 [110/129] via 192.168.1.1, 00:09:41, Serial2/0

R1#
```

Routing Table for Router R2

```
R2#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

O    192.168.1.0/24 [110/128] via 192.168.2.1, 00:11:46, Serial2/0
C    192.168.2.0/24 is directly connected, Serial2/0
O    192.168.3.0/24 [110/65] via 192.168.2.1, 00:11:46, Serial2/0
O    192.168.4.0/24 [110/65] via 192.168.2.1, 00:11:46, Serial2/0
O    192.168.10.0/24 [110/129] via 192.168.2.1, 00:11:46, Serial2/0
O    192.168.11.0/24 [110/129] via 192.168.2.1, 00:05:40, Serial2/0
C    192.168.20.0/24 is directly connected, FastEthernet0/0
C    192.168.21.0/24 is directly connected, FastEthernet1/0

R2#
```

Ping Tablet to PC PR

```
C:\>ping 192.168.10.2

Pinging 192.168.10.2 with 32 bytes of data:

Reply from 192.168.10.2: bytes=32 time=17ms TTL=126
Reply from 192.168.10.2: bytes=32 time=20ms TTL=126
Reply from 192.168.10.2: bytes=32 time=11ms TTL=126
Reply from 192.168.10.2: bytes=32 time=6ms TTL=126

Ping statistics for 192.168.10.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 6ms, Maximum = 20ms, Average = 13ms

C:\>
```

Ping HR to Admin

```
C:\>ping 192.168.21.2

Pinging 192.168.21.2 with 32 bytes of data:

Reply from 192.168.21.2: bytes=32 time=26ms TTL=125
Reply from 192.168.21.2: bytes=32 time=19ms TTL=125
Reply from 192.168.21.2: bytes=32 time=19ms TTL=125
Reply from 192.168.21.2: bytes=32 time=18ms TTL=125

Ping statistics for 192.168.21.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 18ms, Maximum = 26ms, Average = 20ms

C:\>
```

Thank You