Instituto Politécnico Nacional

Escuela Superior de Cómputo

Administración de Servicio en Red

Práctica 5 - Redistribución de rutas OSPF y RIPv2

Grupo: 4CV13

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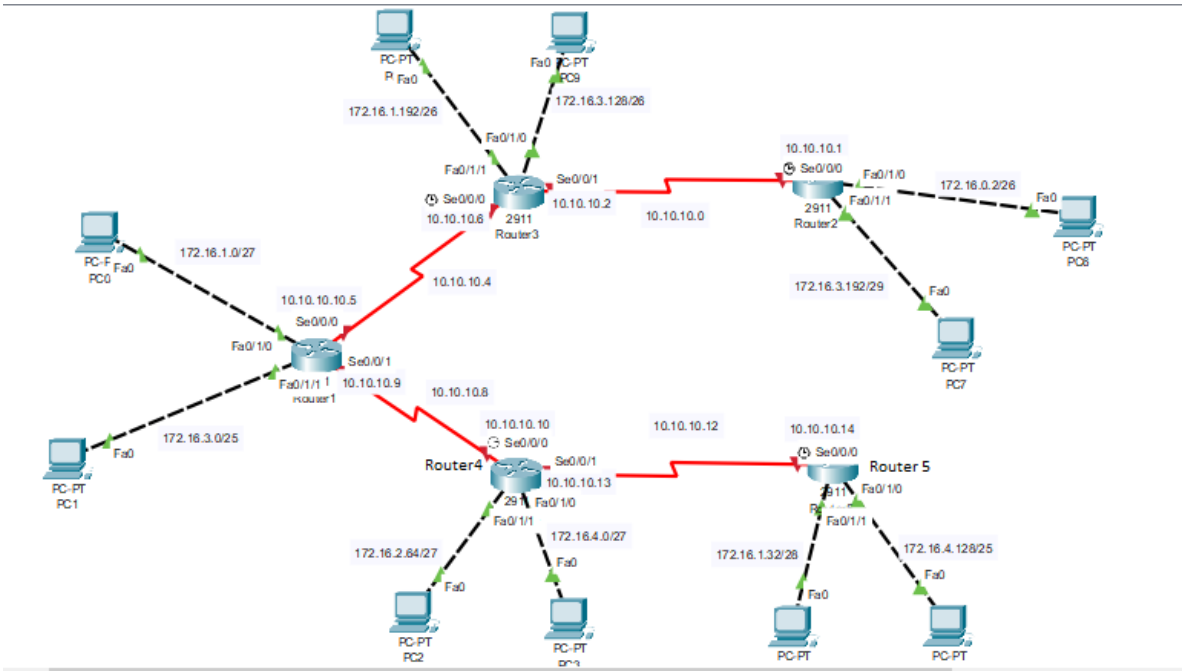
Práctica.



- ➔ Configurar los nodos mostrados en la topología anterior empleando OSPF
- ➔ Realizar pruebas de conexión entre los equipos.
- ➔ Los segmentos de red conectados a los R1, R2, R8 Y R9 emplearán RIPv2 y OSPF process ID:100
- ➔ Utilizar Packet Tracer para la elaboración de la práctica.
- ➔ Guardar la configuración de cada uno de los routers,
- ➔ Adjuntar la configuración de los routers R1, R2, R8 Y R9 , así como su tabla de enrutamiento

Desarrollo.

Configuración del router R1.

```
interface GigabitEthernet0/0
 ip address 210.1.1.65 255.255.255.192
 duplex auto
 speed auto
!
interface GigabitEthernet0/1
 no ip address
 duplex auto
 speed auto
 shutdown
!
interface GigabitEthernet0/2
 no ip address
 duplex auto
 speed auto
 shutdown
!
interface Serial0/3/0
 ip address 30.3.3.1 255.255.255.252
 ip ospf cost 5
 clock rate 2000000
!
interface Serial0/3/1
 ip address 30.3.3.9 255.255.255.252
 ip ospf cost 1
!
interface Vlan1
 no ip address
 shutdown
!
router ospf 100
 log-adjacency-changes
 redistribute rip subnets
 network 30.3.3.8 0.0.0.3 area 1
 network 30.3.3.0 0.0.0.3 area 1
!
router rip
 version 2
 redistribute ospf 100 metric 5
 network 210.1.1.0
 no auto-summary
!
ip classless
```

Tabla de ruteo del router R1.

```
R1#show ip route
Codes: L - local, 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, 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

     20.0.0.0/30 is subnetted, 6 subnets
O IA    20.1.1.0/30 [110/11] via 30.3.3.2, 01:31:51, Serial0/3/0
O IA    20.1.1.4/30 [110/15] via 30.3.3.2, 01:31:51, Serial0/3/0
O IA    20.1.1.8/30 [110/12] via 30.3.3.2, 01:31:51, Serial0/3/0
O IA    20.1.1.12/30 [110/10] via 30.3.3.2, 01:31:51, Serial0/3/0
O IA    20.1.1.16/30 [110/7] via 30.3.3.2, 01:31:51, Serial0/3/0
O IA    20.1.1.20/30 [110/11] via 30.3.3.2, 01:31:51, Serial0/3/0
     30.0.0.0/8 is variably subnetted, 5 subnets, 2 masks
C       30.3.3.0/30 is directly connected, Serial0/3/0
L       30.3.3.1/32 is directly connected, Serial0/3/0
O       30.3.3.4/30 [110/11] via 30.3.3.10, 01:33:11, Serial0/3/1
C       30.3.3.8/30 is directly connected, Serial0/3/1
L       30.3.3.9/32 is directly connected, Serial0/3/1
     40.0.0.0/30 is subnetted, 3 subnets
O IA    40.4.4.0/30 [110/12] via 30.3.3.2, 01:31:51, Serial0/3/0
O IA    40.4.4.4/30 [110/11] via 30.3.3.2, 01:31:51, Serial0/3/0
O IA    40.4.4.8/30 [110/12] via 30.3.3.2, 01:31:51, Serial0/3/0
     210.1.1.0/24 is variably subnetted, 3 subnets, 2 masks
C       210.1.1.64/26 is directly connected, GigabitEthernet0/0
L       210.1.1.65/32 is directly connected, GigabitEthernet0/0
O E2    210.1.1.128/26 [110/20] via 30.3.3.10, 01:33:11, Serial0/3/1
```

Configuración del router R2

```
interface GigabitEthernet0/0
 ip address 210.1.1.129 255.255.255.192
 duplex auto
 speed auto
!
interface GigabitEthernet0/1
 no ip address
 duplex auto
 speed auto
 shutdown
!
interface GigabitEthernet0/2
 no ip address
 duplex auto
 speed auto
 shutdown
!
interface Serial0/3/0
 ip address 30.3.3.5 255.255.255.252
 ip ospf cost 10
 clock rate 2000000
!
interface Serial0/3/1
 ip address 30.3.3.10 255.255.255.252
 ip ospf cost 1
 clock rate 2000000
!
interface Vlan1
 no ip address
 shutdown
!
router ospf 100
 log-adjacency-changes
 redistribute rip subnets
 network 30.3.3.4 0.0.0.3 area 1
 network 30.3.3.8 0.0.0.3 area 1
!
router rip
 version 2
 redistribute ospf 100 metric 5
 network 210.1.1.0
 no auto-summary
!
ip classless
```

Tabla de ruteo del router R2

```
R2#show ip route
Codes: L - local, 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, 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

     20.0.0.0/30 is subnetted, 6 subnets
O IA    20.1.1.0/30 [110/12] via 30.3.3.9, 01:36:24, Serial0/3/1
O IA    20.1.1.4/30 [110/16] via 30.3.3.9, 01:36:04, Serial0/3/1
O IA    20.1.1.8/30 [110/13] via 30.3.3.9, 01:36:24, Serial0/3/1
O IA    20.1.1.12/30 [110/11] via 30.3.3.9, 01:36:04, Serial0/3/1
O IA    20.1.1.16/30 [110/8] via 30.3.3.9, 01:36:24, Serial0/3/1
O IA    20.1.1.20/30 [110/12] via 30.3.3.9, 01:36:04, Serial0/3/1
     30.0.0.0/8 is variably subnetted, 5 subnets, 2 masks
O       30.3.3.0/30 [110/6] via 30.3.3.9, 01:37:04, Serial0/3/1
C       30.3.3.4/30 is directly connected, Serial0/3/0
L       30.3.3.5/32 is directly connected, Serial0/3/0
C       30.3.3.8/30 is directly connected, Serial0/3/1
L       30.3.3.10/32 is directly connected, Serial0/3/1
     40.0.0.0/30 is subnetted, 3 subnets
O IA    40.4.4.0/30 [110/13] via 30.3.3.9, 01:36:04, Serial0/3/1
O IA    40.4.4.4/30 [110/12] via 30.3.3.9, 01:36:04, Serial0/3/1
O IA    40.4.4.8/30 [110/13] via 30.3.3.9, 01:36:04, Serial0/3/1
     210.1.1.0/24 is variably subnetted, 3 subnets, 2 masks
O E2    210.1.1.64/26 [110/20] via 30.3.3.9, 01:37:04, Serial0/3/1
C       210.1.1.128/26 is directly connected, GigabitEthernet0/0
L       210.1.1.129/32 is directly connected, GigabitEthernet0/0
```

Configuración del router R8

```
!
interface GigabitEthernet0/0
 ip address 220.2.2.65 255.255.255.192
 duplex auto
 speed auto
!
interface GigabitEthernet0/1
 no ip address
 duplex auto
 speed auto
 shutdown
!
interface GigabitEthernet0/2
 no ip address
 duplex auto
 speed auto
 shutdown
!
interface Serial0/3/0
 ip address 40.4.4.1 255.255.255.252
 ip ospf cost 1
 clock rate 2000000
!
interface Serial0/3/1
 ip address 40.4.4.9 255.255.255.252
 ip ospf cost 1
!
interface Vlan1
 no ip address
 shutdown
!
router ospf 100
 log-adjacency-changes
 redistribute rip subnets
 network 40.4.4.0 0.0.0.3 area 2
 network 40.4.4.8 0.0.0.3 area 2
!
router rip
 version 2
 redistribute ospf 100 metric 5
 network 220.2.2.0
 no auto-summary
!
ip classless
```

Tabla de ruteo del router R8

```
R8#show ip route
Codes: L - local, 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, 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

     20.0.0.0/30 is subnetted, 6 subnets
O IA    20.1.1.0/30 [110/11] via 40.4.4.2, 01:37:45, Serial0/3/0
O IA    20.1.1.4/30 [110/5] via 40.4.4.2, 01:39:15, Serial0/3/0
O IA    20.1.1.8/30 [110/9] via 40.4.4.10, 01:38:55, Serial0/3/1
                    [110/9] via 40.4.4.2, 01:37:45, Serial0/3/0
O IA    20.1.1.12/30 [110/5] via 40.4.4.10, 01:38:55, Serial0/3/1
                     [110/5] via 40.4.4.2, 01:37:45, Serial0/3/0
O IA    20.1.1.16/30 [110/7] via 40.4.4.10, 01:38:55, Serial0/3/1
                     [110/7] via 40.4.4.2, 01:37:45, Serial0/3/0
O IA    20.1.1.20/30 [110/2] via 40.4.4.2, 01:37:45, Serial0/3/0
     30.0.0.0/30 is subnetted, 3 subnets
O IA    30.3.3.0/30 [110/12] via 40.4.4.10, 01:38:55, Serial0/3/1
                    [110/12] via 40.4.4.2, 01:37:45, Serial0/3/0
O IA    30.3.3.4/30 [110/15] via 40.4.4.10, 01:38:55, Serial0/3/1
                    [110/15] via 40.4.4.2, 01:37:45, Serial0/3/0
O IA    30.3.3.8/30 [110/13] via 40.4.4.10, 01:38:55, Serial0/3/1
                    [110/13] via 40.4.4.2, 01:37:45, Serial0/3/0
     40.0.0.0/8 is variably subnetted, 5 subnets, 2 masks
C       40.4.4.0/30 is directly connected, Serial0/3/0
L       40.4.4.1/32 is directly connected, Serial0/3/0
O       40.4.4.4/30 [110/2] via 40.4.4.10, 01:39:15, Serial0/3/1
C       40.4.4.8/30 is directly connected, Serial0/3/1
L       40.4.4.9/32 is directly connected, Serial0/3/1
     210.1.1.0/26 is subnetted, 2 subnets
O E2    210.1.1.64/26 [110/20] via 40.4.4.2, 01:39:05, Serial0/3/0
O E2    210.1.1.128/26 [110/20] via 40.4.4.2, 01:38:55, Serial0/3/0
     220.2.2.0/24 is variably subnetted, 3 subnets, 2 masks
O E2    220.2.2.0/26 [110/20] via 40.4.4.10, 01:39:15, Serial0/3/1
C       220.2.2.64/26 is directly connected, GigabitEthernet0/0
L       220.2.2.65/32 is directly connected, GigabitEthernet0/0
```

Configuración del router R9

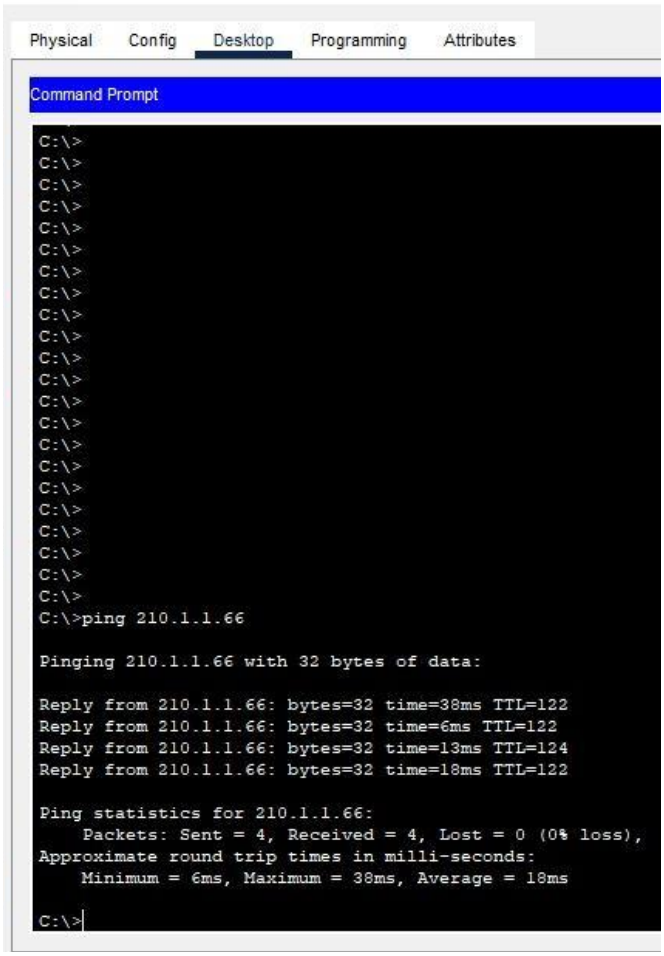
```
interface GigabitEthernet0/0
 ip address 220.2.2.1 255.255.255.192
 duplex auto
 speed auto
!
interface GigabitEthernet0/1
 no ip address
 duplex auto
 speed auto
 shutdown
!
interface GigabitEthernet0/2
 no ip address
 duplex auto
 speed auto
 shutdown
!
interface Serial0/3/0
 ip address 40.4.4.5 255.255.255.252
 ip ospf cost 1
 clock rate 2000000
!
interface Serial0/3/1
 ip address 40.4.4.10 255.255.255.252
 ip ospf cost 1
 clock rate 2000000
!
interface Vlan1
 no ip address
 shutdown
!
router ospf 100
 log-adjacency-changes
 redistribute rip subnets
 network 40.4.4.8 0.0.0.3 area 2
 network 40.4.4.4 0.0.0.3 area 2
!
router rip
 version 2
 redistribute ospf 100 metric 5
 network 220.2.2.0
 no auto-summary
!
ip classless
```

Tabla de ruteo del router R9

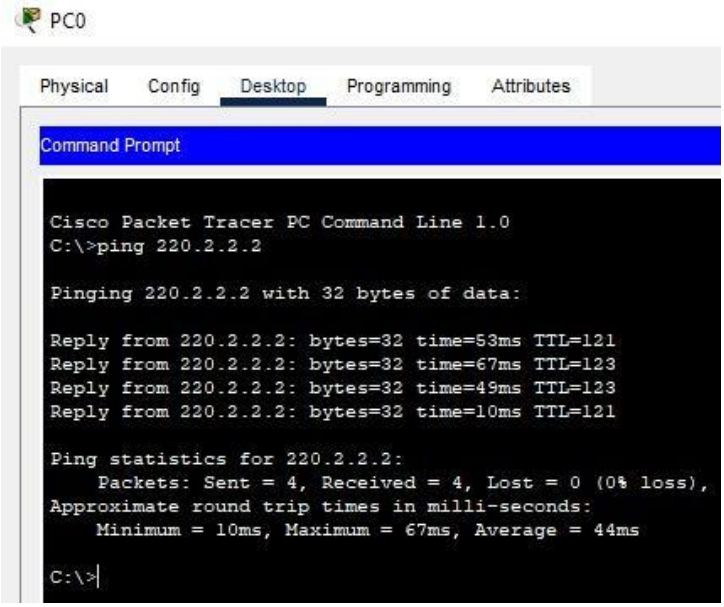
```
R9#ena
R9#show ip route
Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, 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

     20.0.0.0/30 is subnetted, 6 subnets
O IA    20.1.1.0/30 [110/12] via 40.4.4.6, 01:40:48, Serial0/3/0
                    [110/12] via 40.4.4.9, 01:39:43, Serial0/3/1
O IA    20.1.1.4/30 [110/6] via 40.4.4.9, 01:41:33, Serial0/3/1
                    [110/6] via 40.4.4.6, 01:40:48, Serial0/3/0
O IA    20.1.1.8/30 [110/8] via 40.4.4.6, 01:40:48, Serial0/3/0
O IA    20.1.1.12/30 [110/4] via 40.4.4.6, 01:40:48, Serial0/3/0
O IA    20.1.1.16/30 [110/6] via 40.4.4.6, 01:40:48, Serial0/3/0
O IA    20.1.1.20/30 [110/2] via 40.4.4.6, 01:41:33, Serial0/3/0
     30.0.0.0/30 is subnetted, 3 subnets
O IA    30.3.3.0/30 [110/11] via 40.4.4.6, 01:40:48, Serial0/3/0
O IA    30.3.3.4/30 [110/14] via 40.4.4.6, 01:40:48, Serial0/3/0
O IA    30.3.3.8/30 [110/12] via 40.4.4.6, 01:40:48, Serial0/3/0
     40.0.0.0/8 is variably subnetted, 5 subnets, 2 masks
O       40.4.4.0/30 [110/2] via 40.4.4.9, 01:41:33, Serial0/3/1
C       40.4.4.4/30 is directly connected, Serial0/3/0
L       40.4.4.5/32 is directly connected, Serial0/3/0
C       40.4.4.8/30 is directly connected, Serial0/3/1
L       40.4.4.10/32 is directly connected, Serial0/3/1
     220.2.2.0/24 is variably subnetted, 3 subnets, 2 masks
C       220.2.2.0/26 is directly connected, GigabitEthernet0/0
L       220.2.2.1/32 is directly connected, GigabitEthernet0/0
O E2    220.2.2.64/26 [110/20] via 40.4.4.9, 01:41:33, Serial0/3/1
```

Pruebas de conexión

PC3



PC0



PC3

Physical Config Desktop Programming Attributes

Command Prompt

```
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 210.1.1.130

Pinging 210.1.1.130 with 32 bytes of data:

Reply from 210.1.1.130: bytes=32 time=60ms TTL=122
Reply from 210.1.1.130: bytes=32 time=26ms TTL=124
Reply from 210.1.1.130: bytes=32 time=6ms TTL=122
Reply from 210.1.1.130: bytes=32 time=43ms TTL=122

Ping statistics for 210.1.1.130:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 6ms, Maximum = 60ms, Average = 33ms

C:\>
```

PC1

Physical Config Desktop Programming Attributes

Command Prompt

```
C:\>
C:\>
C:\>
C:\>
C:\>
C:\>
C:\>
C:\>
C:\>
C:\>
C:\>
C:\>
C:\>
C:\>
C:\>
C:\>
C:\>
C:\>
C:\>
C:\>
C:\>
C:\>
C:\>
C:\>
C:\>
C:\>
C:\>ping 220.2.2.2

Pinging 220.2.2.2 with 32 bytes of data:

Reply from 210.1.1.129: Destination host unreachable.
Reply from 210.1.1.129: Destination host unreachable.
Request timed out.
Reply from 210.1.1.129: Destination host unreachable.

Ping statistics for 220.2.2.2:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
```

PC1

Physical Config Desktop Programming Attributes

Command Prompt

```
    Minimum = 3ms, Maximum = 4ms, Average = 3ms

C:\>ping 40.4.4.5

Pinging 40.4.4.5 with 32 bytes of data:

Reply from 40.4.4.5: bytes=32 time=82ms TTL=250
Reply from 40.4.4.5: bytes=32 time=10ms TTL=250
Reply from 40.4.4.5: bytes=32 time=39ms TTL=252
Reply from 40.4.4.5: bytes=32 time=76ms TTL=250

Ping statistics for 40.4.4.5:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 10ms, Maximum = 82ms, Average = 51ms

C:\>cls
Invalid Command.

C:\>clear
Invalid Command.

C:\>ping 220.2.2.2

Pinging 220.2.2.2 with 32 bytes of data:

Reply from 220.2.2.2: bytes=32 time=52ms TTL=123
Reply from 220.2.2.2: bytes=32 time=26ms TTL=121
Reply from 220.2.2.2: bytes=32 time=34ms TTL=123
Reply from 220.2.2.2: bytes=32 time=5ms TTL=123

Ping statistics for 220.2.2.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 5ms, Maximum = 52ms, Average = 29ms
```