DIPLOMADO DE PROFUNDIZACIÓN CISCO (DISEÑO E IMPLEMENTACIÓN DE SOLUCIONES INTEGRADAS LAN / WAN)

EVALUACIÓN – PRUEBA DE HABILIDADES PRÁCTICAS CCNA

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Tabla de Contenido

Introducción.....**¡Error! Marcador no definido.**
Escenario 1..... 4
Topología de Red 4
Esquema de topologia-configuración Inicial..... 5
Configuración de Direccionamiento Router ISP. 5
Configuración de Direccionamiento Router Medellin1… 6
Configuración de Direccionamiento Router Medellin2..... 8
Configuración de Direccionamiento Router Medellin3..... 9
Configuración de Direccionamiento Router Bogota1..... 10
Configuración de Direccionamiento Router Bogota2..... 11
Configuración de Direccionamiento Router Bogota3..... 12
Configuración de PC0.....13
Configuración de PC1, PC2, PC3 14
Configuración de enrutamiento protocolo RIP version 2 15
Configuración de Direccionamiento por defecto Medellin1 Bogota1-ISP 17
Tablas de enrutamiento 17
Balanceo de cargas 21
Topología de Escenario 2 23
Esquema de de topologia de red..... 24
Tablas de enrutamiento 24
Configuracion PCA y PCC DHCP.....29
Configuracion PC-WEB 29
Configuracion de direccionamiento R1- Bogota 29
Configuracion de direccionamiento R2- Miami. 33
Configuracion de direccionamiento R3- BuenosAires 37
Configuración S1.....41
Configuración S3 47
Conclusiones..... 49
Referencias. 50

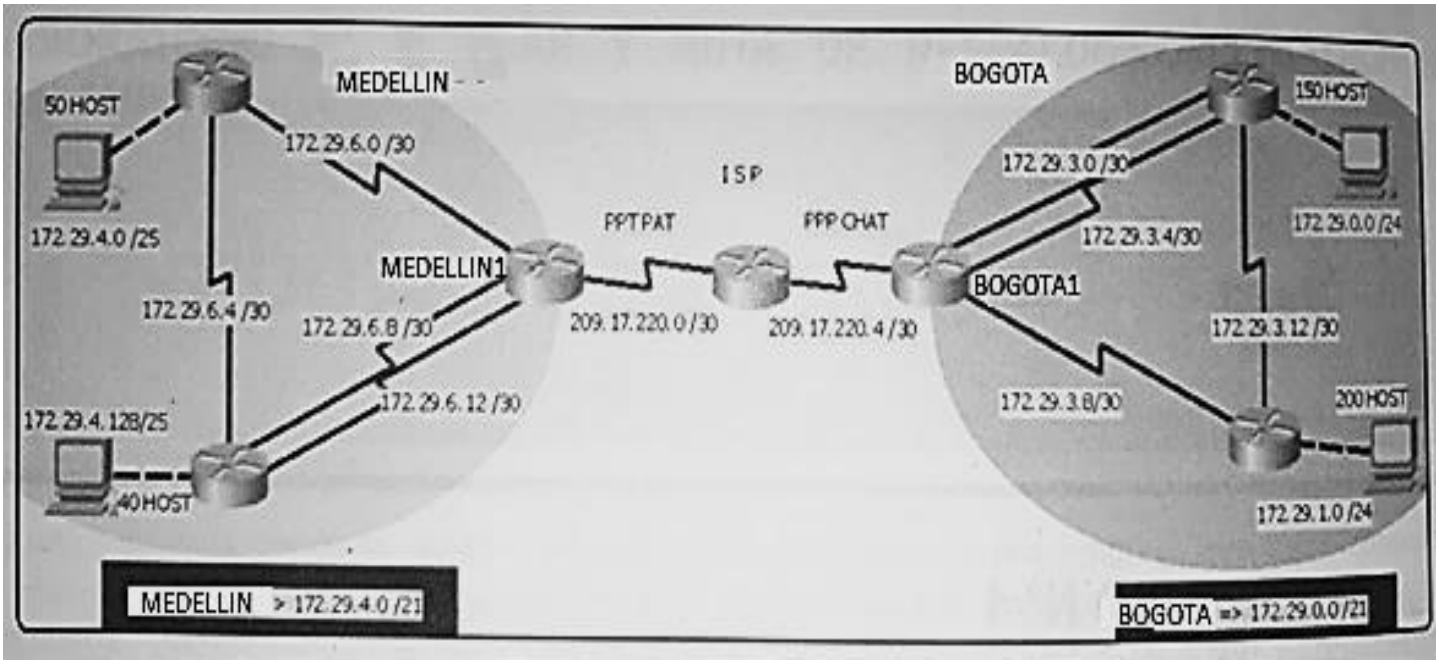
Introducción

El DIPLOMADO DE PROFUNDIZACIÓN CISCO (DISEÑO E IMPLEMENTACIÓN DE SOLUCIONES INTEGRADAS LAN / WAN) enfocado en CCNA1 y CCNA2 Routing & Switching, me permitió fomentar el desarrollo de habilidades y competencias y asi poner a prueba los niveles de comprensión y solución de problemas relacionados con diversos aspectos de Networking, por medio de software Cisco Packet Tracer, GNS3 o laboratorios con SMARTLAB.

Escenario 1

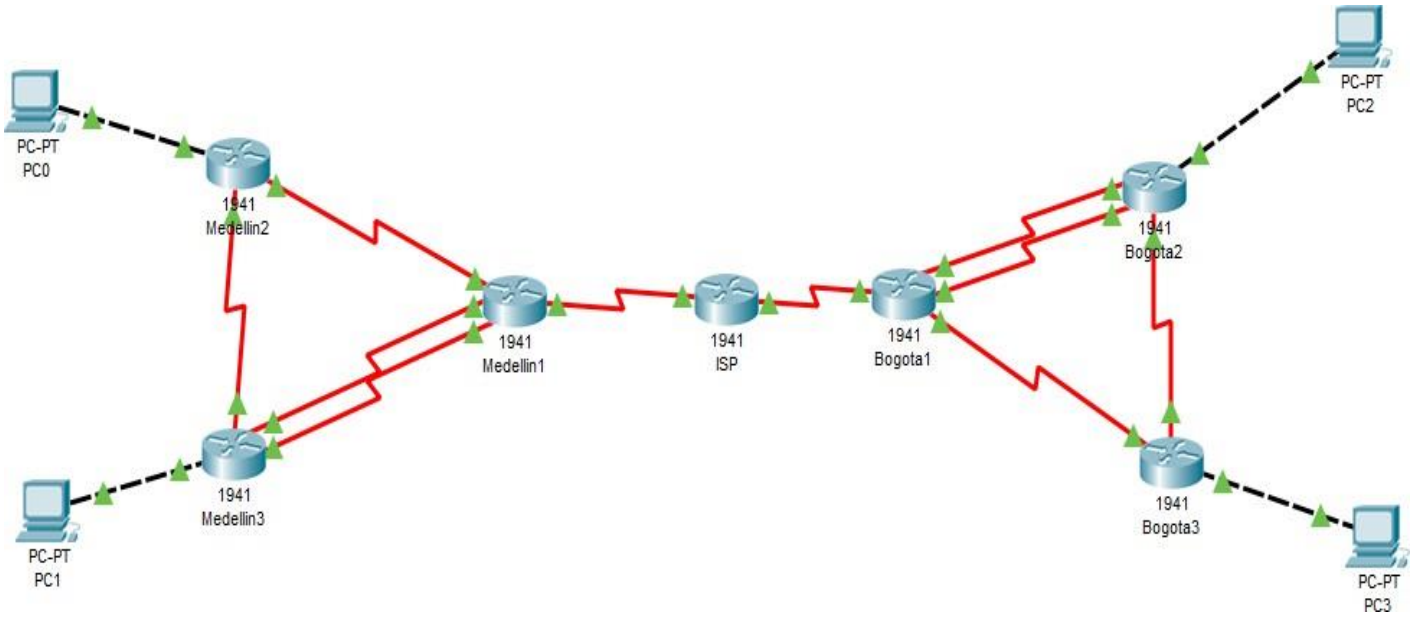
Una empresa posee sucursales distribuidas en las ciudades de Bogotá y Medellín, en donde el estudiante será el administrador de la red, el cual deberá configurar e interconectar entre sí cada uno de los dispositivos que forman parte del escenario, acorde con los lineamientos establecidos para el direccionamiento IP, protocolos de enrutamiento y demás aspectos que forman parte de la topología de red.

Topología de Red



Desarrollo

- Realizar la conexión fisica de los equipos con base en la topología de red



Configuración de direccionamiento Router-ISP

```
Router>en
Router#config t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#no ip domain-lookup
Router(config)#hostname ISP
ISP(config)#enable secret class
ISP(config)#line con 0
ISP(config-line)#pass cisco
ISP(config-line)#login
ISP(config-line)#line vty 0 4
ISP(config-line)#pass cisco
ISP(config-line)#login
ISP(config-line)#service password-encryption
ISP(config)#banner motd "Acceso Restringido"
ISP(config)#
ISP(config)#int s0/0/0
ISP(config-if)#description connection to Medellin1
ISP(config-if)#ip add 209.17.220.1 255.255.255.252
ISP(config-if)#clock rate 128000
This command applies only to DCE interfaces
ISP(config-if)#no sh
```

%LINK-5-CHANGED: Interface Serial0/0/0, changed state to down
ISP(config-if)#
ISP(config-if)#int s0/0/1
ISP(config-if)#description connection to Bogota1
ISP(config-if)#ip add 209.17.220.5 255.255.255.252
ISP(config-if)#clock rate 128000
This command applies only to DCE interfaces
ISP(config-if)#no sh

%LINK-5-CHANGED: Interface Serial0/0/1, changed state to down

Configuración de direccionamiento Router-Medellin1

Router>en
Router#
Router#config t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#no ip domain-lookup
Router(config)#hostname Medellin1
Medellin1(config)#enable secret class
Medellin1(config)#line con 0
Medellin1(config-line)#pass cisco
Medellin1(config-line)#login
Medellin1(config-line)#line vty 0 4
Medellin1(config-line)#pass cisco
Medellin1(config-line)#login
Medellin1(config-line)#service pass
Medellin1(config-line)#service password-encryption
Medellin1(config)#banner motd "Acceso Restringido
Enter TEXT message. End with the character "".
banner motd "Acceso Restringido"

Medellin1(config-if)#int s0/0/0
Medellin1(config-if)#description connection to ISP
Medellin1(config-if)#ip add 209.17.220.2 255.255.255.252
Medellin1(config-if)#clock rate 128000
Medellin1(config-if)#no sh

Medellin1(config-if)#
%LINK-5-CHANGED: Interface Serial0/0/0, changed state to up

Medellin1(config-if)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0, changed state to up

Medellin1(config-if)#int s0/0/1

```
Medellin1(config-if)#description connection to Medellin2
Medellin1(config-if)#ip add 172.29.6.1 255.255.255.252
Medellin1(config-if)#clock rate 128000
This command applies only to DCE interfaces
Medellin1(config-if)#no sh

%LINK-5-CHANGED: Interface Serial0/0/1, changed state to down

Medellin1(config-if)#int s0/1/0
Medellin1(config-if)#description connection to Medellin3
Medellin1(config-if)#ip add 172.29.6.9 255.255.255.252
Medellin1(config-if)#clock rate 128000
This command applies only to DCE interfaces
Medellin1(config-if)#no sh

%LINK-5-CHANGED: Interface Serial0/1/0, changed state to down

Medellin1(config-if)#int s0/1/1
Medellin1(config-if)#description connection to Medellin3backup
Medellin1(config-if)#ip add 172.29.6.13 255.255.255.252
Medellin1(config-if)#clock rate 128000
This command applies only to DCE interfaces
Medellin1(config-if)#no sh

%LINK-5-CHANGED: Interface Serial0/1/1, changed state to down
```

Configuración de direccionamiento Router-Medellin2

```
Router>en
Router#config t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#no ip domain-lookup
Router(config)#enable secret class
Router(config)#line con 0
Router(config-line)#pass cisco
Router(config-line)#login
Router(config-line)#lin vty 0 4
Router(config-line)#pass cisco
Router(config-line)#login
Router(config-line)#service password-encryption
Router(config)#banner motd "Acceso Restringido"
Router(config)#int s0/1/0
%Invalid interface type and number
Router(config)#int s0/0/1
Router(config-if)#description connection to Medellin1
Router(config-if)#ip add 172.29.6.2 255.255.255.252
Router(config-if)#clock rate 128000
```

```
Router(config-if)#no sh

Router(config-if)#
%LINK-5-CHANGED: Interface Serial0/0/1, changed state to up

Router(config-if)#int s
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/1, changed state to up

Router(config-if)#int s0/0/0
Router(config-if)#description connection to Medellin3
Router(config-if)#ip add 172.29.6.5 255.255.255.252
Router(config-if)#clock rate 128000
This command applies only to DCE interfaces
Router(config-if)#no sh

%LINK-5-CHANGED: Interface Serial0/0/0, changed state to down
Router(config-if)#int g0/0
Router(config-if)#description connection to net50Host
Router(config-if)#ip add 172.29.4.1 255.255.255.128
Router(config-if)#no sh

Router(config-if)#
%LINK-5-CHANGED: Interface GigabitEthernet0/0, changed state to up

Router#
%SYS-5-CONFIG_I: Configured from console by console
```

Configuración de direccionamiento Router-Medellin3

```
Router>en
Router#config t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#no ip domain-lookup
Router(config)#hostname Medellin3
Medellin3(config)#enable secret class
Medellin3(config)#line con 0
Medellin3(config-line)#pass cisco
Medellin3(config-line)#login
Medellin3(config-line)#line vty 0 4
Medellin3(config-line)#pass cisco
Medellin3(config-line)#login
```

```
Medellin3(config-line)#service password-encryption
Medellin3(config)#banner motd "Acceso Restringido"
Medellin3(config)#int s0/0/0
Medellin3(config-if)#description connection to Medellin2
Medellin3(config-if)#ip add 172.29.6.6 255.255.255.252
Medellin3(config-if)#clock rate 128000
Medellin3(config-if)#no sh

Medellin3(config-if)#
%LINK-5-CHANGED: Interface Serial0/0/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0, changed state to up

Medellin3(config-if)#int s0/1/0
Medellin3(config-if)#description connection to Medellin1
Medellin3(config-if)#ip add 172.29.6.10 255.255.255.252
Medellin3(config-if)#clock rate 128000
Medellin3(config-if)#no sh

Medellin3(config-if)#
%LINK-5-CHANGED: Interface Serial0/1/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/1/0, changed state to up
Medellin3(config-if)#int s0/1/1
Medellin3(config-if)#description connection to Medellin1Backup
Medellin3(config-if)#ip add 172.29.6.14 255.255.255.252
Medellin3(config-if)#clock rate 128000
Medellin3(config-if)#no sh

Medellin3(config-if)#
%LINK-5-CHANGED: Interface Serial0/1/1, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/1/1, changed state to up

Medellin3(config-if)#int g0/0
Medellin3(config-if)#description connection to net40host
Medellin3(config-if)#ip add 172.29.4.129 255.255.255.128
Medellin3(config-if)#no sh

Medellin3(config-if)#
%LINK-5-CHANGED: Interface GigabitEthernet0/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0, changed state to up
```

Configuración de direccionamiento Router-Bogota1

```
Router>en
Router#config t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#no ip domain-lookup
Router(config)#hostname Bogota1
Bogota1(config)#enable secret class
Bogota1(config)#line con 0
Bogota1(config-line)#pass cisco
Bogota1(config-line)#login
Bogota1(config-line)#line vty 0 4
Bogota1(config-line)#pass cisco
Bogota1(config-line)#login
Bogota1(config-line)#service password-encryption
Bogota1(config)#banner motd "Acceso Restringido"
Bogota1(config)#int s0/0/0
Bogota1(config-if)#description connection to Bogota2
Bogota1(config-if)#ip add 172.29.3.1 255.255.255.252
Bogota1(config-if)#no description connection to Bogota2
Bogota1(config-if)#description connection to Bogota3
Bogota1(config-if)#no ip add 172.29.3.1  255.255.255.252
Bogota1(config-if)#ip add 172.29.3.9255.255.255.252
Bogota1(config-if)#clock rate 128000
This command applies only to DCE interfaces
Bogota1(config-if)#no sh

%LINK-5-CHANGED: Interface Serial0/0/0, changed state to down
Bogota1(config-if)#
Bogota1(config-if)#int s0/1/0
Bogota1(config-if)#description connection to Bogota2
Bogota1(config-if)#ip add 172.29.3.1  255.255.255.252
Bogota1(config-if)#clock rate 128000
Bogota1(config-if)#no sh

%LINK-5-CHANGED: Interface Serial0/1/0, changed state to down
Bogota1(config-if)#
Bogota1(config-if)#int s0/1/1
Bogota1(config-if)#description connection to Bogota2Backup
Bogota1(config-if)#ip add 172.29.3.5 255.255.255.252
Bogota1(config-if)#clock rate 128000
Bogota1(config-if)#no sh

%LINK-5-CHANGED: Interface Serial0/1/1, changed state to down
Bogota1(config-if)#
```

Configuración de direccionamiento Router-Bogota2

```
Router>en
Router#config t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#no ip domain-lookup
Router(config)#enable secret class
Router(config)#line con 0
Router(config-line)#pass cisco
Router(config-line)#line vty 0 4
Router(config-line)#pass cisco
Router(config-line)#exit
Router(config)#line con 0
Router(config-line)#pass cisco
Router(config-line)#login
Router(config-line)#line vty 0 4
Router(config-line)#pass cisco
Router(config-line)#login
Router(config-line)#service password-encryption
Router(config)#banner motd "Acceso Restringido"
Router(config)#int s0/0/1
Router(config-if)#description connection to Bogota2
Router(config-if)#ip add 172.29.3.14  255.255.255.252
Router(config-if)#clock rate 128000
Router(config-if)#no sh

Router(config-if)#
%LINK-5-CHANGED: Interface Serial0/0/1, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/1, changed state to up

Router(config-if)#int s0/1/0
Router(config-if)#description connection to Bogota1
Router(config-if)#ip add 172.29.3.2 255.255.255.252
Router(config-if)#clock rate 128000
Router(config-if)#no sh

Router(config-if)#
%LINK-5-CHANGED: Interface Serial0/1/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/1/0, changed state to up

Router(config-if)#int s0/1/1
Router(config-if)#description connection to Bogota1Backup
Router(config-if)#ip add 172.29.3.6 255.255.255.252
Router(config-if)#clock rate 128000
```

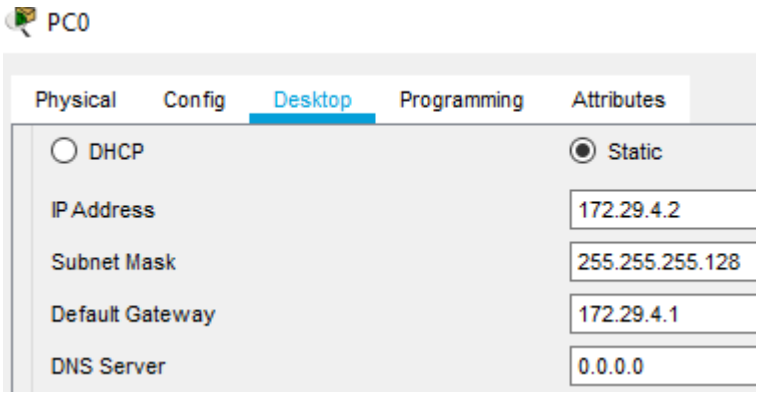
```
Router(config-if)#no sh

Router(config-if)#
%LINK-5-CHANGED: Interface Serial0/1/1, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/1/1, changed state to up

Router(config-if)#int g0/0
Router(config-if)#description connection to net150host
Router(config-if)#ip add 172.29.0.1 255.255.255.0
Router(config-if)#no sh

Router(config-if)#
%LINK-5-CHANGED: Interface GigabitEthernet0/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0, changed state to up

Router(config-if)#hostname Bogota2
Bogota2(config)#
```

Configuración de direccionamiento Router-Bogota3

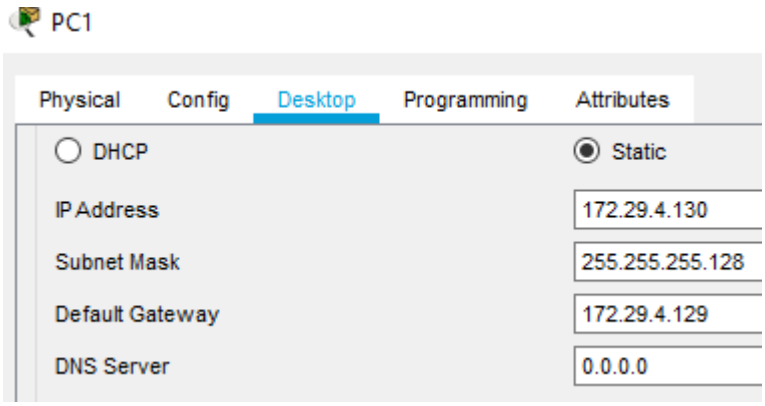
```
Router>en
Router#config t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#no ip domain-lookup
Router(config)#hostname Bogota3
Bogota3(config)#enable secret class
Bogota3(config)#line con 0
Bogota3(config-line)#pass cisco
Bogota3(config-line)#login
Bogota3(config-line)#line vty 0 4
Bogota3(config-line)#pass cisco
Bogota3(config-line)#login
Bogota3(config-line)#service password-encryption
Bogota3(config)#banner motd "Acceso Restringido"
Bogota3(config)#int s0/0/0
Bogota3(config-if)#description connection to Bogota1
Bogota3(config-if)#ip add 172.29.3.10 255.255.255.252
Bogota3(config-if)#clock rate 128000
Bogota3(config-if)#no sh

Bogota3(config-if)#
%LINK-5-CHANGED: Interface Serial0/0/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0, changed state to up
```

```
Bogota3(config-if)#int s0/0/1
Bogota3(config-if)#description connection to Bogota2
Bogota3(config-if)#ip add 172.29.3.13 255.255.255.252
Bogota3(config-if)#clock rate 128000
This command applies only to DCE interfaces
Bogota3(config-if)#no sh

%LINK-5-CHANGED: Interface Serial0/0/1, changed state to down
Bogota3(config-if)#
Bogota3(config-if)#int g0/0
Bogota3(config-if)#description connection to net200host
Bogota3(config-if)#ip add 172.29.1.1 255.255.255.0
Bogota3(config-if)#no sh

Bogota3(config-if)#
%LINK-5-CHANGED: Interface GigabitEthernet0/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0, changed state to up
```

Configuración PC0

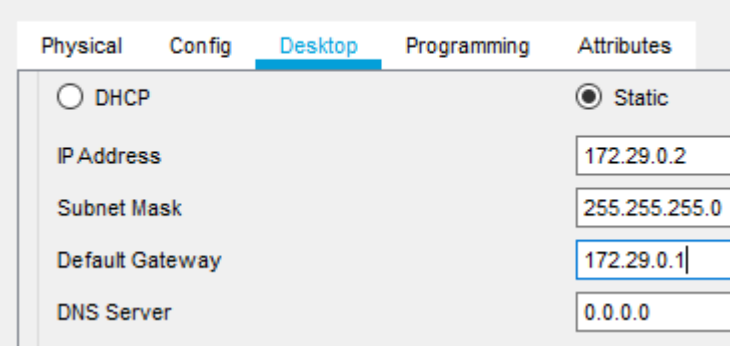


Configuración PC1



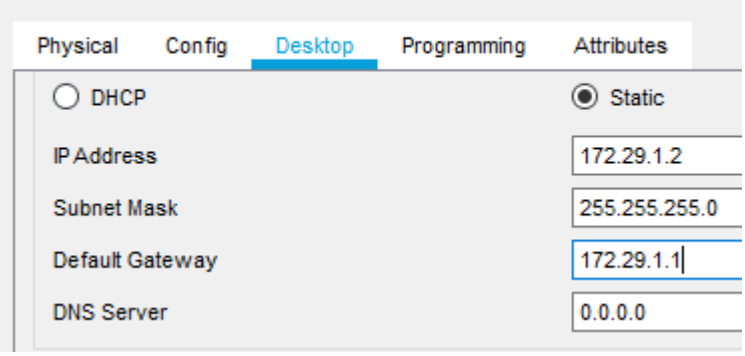
Configuración PC2

PC2



Configuración PC3

PC3



Topología de red, de acuerdo con las especificaciones.

Configuración del enrutamiento
Configurar el enrutamiento en la red usando el protocolo RIP versión 2, declare la red principal, desactive la sumarización automática.

ISP

```
ISP>en
Password:
ISP#config t
Enter configuration commands, one per line. End with CNTL/Z.
ISP(config)#router rip
ISP(config-router)#network   209.17.220.4
ISP(config-router)#network   209.17.220.0
ISP(config-router)#version 2
```

```
ISP(config-router)#no auto-summary
ISP(config-router)#exit
ISP(config)#
ISP#
%SYS-5-CONFIG_I: Configured from console by console
```

Medellin1

```
Medellin1>en
Password:
Medellin1#config t
Enter configuration commands, one per line. End with CNTL/Z.
Medellin1(config)#router rip
Medellin1(config-router)#network 209.17.220.0
Medellin1(config-router)#network    172.29.6.0
Medellin1(config-router)#network    172.29.6.8
Medellin1(config-router)#network 172.29.6.12
Medellin1(config-router)#version 2
Medellin1(config-router)#no auto-summary
Medellin1(config-router)#exit
Medellin1(config)#exit
Medellin1#
```

Medellin2

```
Medellin2(config)#router rip
Medellin2(config-router)#network    172.29.6.0
Medellin2(config-router)#network    172.29.4.0
Medellin2(config-router)#network    172.29.6.4
Medellin2(config-router)#version 2
Medellin2(config-router)#no auto-summary
Medellin2(config-router)#exit
Medellin2(config)#exit
Medellin2#
```

Medellin3

```
Medellin3>en
Password:
Medellin3#config t
Enter configuration commands, one per line. End with CNTL/Z.
Medellin3(config)#router rip
Medellin3(config-router)#network    172.29.6.4
Medellin3(config-router)#network    172.29.6.8
Medellin3(config-router)#network 172.29.6.12
Medellin3(config-router)#network 172.29.4.128
Medellin3(config-router)#version 2
```

```
Medellin3(config-router)#no auto-summary
Medellin3(config-router)#exit
Medellin3(config)#exit
Medellin3#
```

Bogota1

```
Bogota1>en
Password:
Bogota1#config t
Enter configuration commands, one per line. End with CNTL/Z.
Bogota1(config)#router rip
Bogota1(config-router)#network 209.17.220.4
Bogota1(config-router)#network    172.29.3.0
Bogota1(config-router)#network    172.29.3.4
Bogota1(config-router)#network    172.29.3.8
Bogota1(config-router)#version 2
Bogota1(config-router)#no auto-summary
Bogota1(config-router)#exit
Bogota1(config)#exit
Bogota1#
```

Bogota2

```
Bogota2>en
Password:
Bogota2#config t
Enter configuration commands, one per line. End with CNTL/Z.
Bogota2(config)#router rip
Bogota2(config-router)#network    172.29.3.0
Bogota2(config-router)#network    172.29.3.4
Bogota2(config-router)#network    172.29.2.8
Bogota2(config-router)#network 209.17.220.4
Bogota2(config-router)#version 2
        Bogota2(config-router)#no auto-summary
Bogota2(config-router)#exit
Bogota2(config)#exit
Bogota2#
```

Bogota3

```
Bogota3>en
Password:
Bogota3#config t
Enter configuration commands, one per line. End with CNTL/Z.
Bogota3(config)#router rip
Bogota3(config-router)#network 172.29.3.12
Bogota3(config-router)#network 172.29.3.8
```

```
Bogota3(config-router)#network 172.29.1.0
Bogota3(config-router)#version 2
Bogota3(config-router)#no auto-summary
Bogota3(config-router)#exit
Bogota3(config)#exit
Bogota3#
```

Los routers Bogota1 y Medellín deberán añadir a su configuración de enrutamiento una ruta por defecto hacia el ISP y, a su vez, redistribuirla dentro de las publicaciones de RIP.

Medellin1

```
Medellin1(config)#ip default-network 209.17.220.1
```

Bogota1

```
Bogota1(config)#ip default-network 209.17.220.5
```

Tablas de Enrutamiento.

a. Verificar la tabla de enrutamiento en cada uno de los routers para comprobar las redes y sus rutas.

```
Bogota1#sh ip route
    172.29.0.0/16 is variably subnetted, 15 subnets, 4 masks
    R 172.29.0.0/24 [120/1] via 172.29.3.2, 00:00:19, Serial0/1/0
    [120/1] via 172.29.3.6, 00:00:19, Serial0/1/1
    R 172.29.1.0/24 [120/1] via 172.29.3.10, 00:00:12, Serial0/0/0
    C 172.29.3.0/30 is directly connected, Serial0/1/0
    L 172.29.3.1/32 is directly connected, Serial0/1/0
    C 172.29.3.4/30 is directly connected, Serial0/1/1
    L 172.29.3.5/32 is directly connected, Serial0/1/1
    C 172.29.3.8/30 is directly connected, Serial0/0/0
    L 172.29.3.9/32 is directly connected, Serial0/0/0
    R 172.29.3.12/30 [120/1] via 172.29.3.2, 00:00:19, Serial0/1/0
    [120/1] via 172.29.3.6, 00:00:19, Serial0/1/1
    [120/1] via 172.29.3.10, 00:00:12, Serial0/0/0
    R 172.29.4.0/25 [120/3] via 209.17.220.5, 00:00:03, Serial0/0/1
    R 172.29.4.128/25 [120/3] via 209.17.220.5, 00:00:03, Serial0/0/1
    R 172.29.6.0/30 [120/2] via 209.17.220.5, 00:00:03, Serial0/0/1
    R 172.29.6.4/30 [120/3] via 209.17.220.5, 00:00:03, Serial0/0/1
    R 172.29.6.8/30 [120/2] via 209.17.220.5, 00:00:03, Serial0/0/1
    R 172.29.6.12/30 [120/2] via 209.17.220.5, 00:00:03, Serial0/0/1
    209.17.220.0/24 is variably subnetted, 4 subnets, 3 masks
    S 209.17.220.0/24 [1/0] via 209.17.220.5
    R 209.17.220.0/30 [120/1] via 209.17.220.5, 00:00:03, Serial0/0/1
    C 209.17.220.4/30 is directly connected, Serial0/0/1
    L 209.17.220.6/32 is directly connected, Serial0/0/1
```

Bogotá 2

```
172.29.0.0/16 is variably subnetted, 16 subnets, 4 masks
C 172.29.0.0/24 is directly connected, GigabitEthernet0/0
L 172.29.0.1/32 is directly connected, GigabitEthernet0/0
R 172.29.1.0/24 [120/1] via 172.29.3.13, 00:00:04, Serial0/0/1
C 172.29.3.0/30 is directly connected, Serial0/1/0
L 172.29.3.2/32 is directly connected, Serial0/1/0
C 172.29.3.4/30 is directly connected, Serial0/1/1
L 172.29.3.6/32 is directly connected, Serial0/1/1
R 172.29.3.8/30 [120/1] via 172.29.3.1, 00:00:03, Serial0/1/0
[120/1] via 172.29.3.5, 00:00:03, Serial0/1/1
[120/1] via 172.29.3.13, 00:00:04, Serial0/0/1
C 172.29.3.12/30 is directly connected, Serial0/0/1
L 172.29.3.14/32 is directly connected, Serial0/0/1
R 172.29.4.0/25 [120/4] via 172.29.3.1, 00:00:03, Serial0/1/0
[120/4] via 172.29.3.5, 00:00:03, Serial0/1/1
R 172.29.4.128/25 [120/4] via 172.29.3.1, 00:00:03, Serial0/1/0
[120/4] via 172.29.3.5, 00:00:03, Serial0/1/1
R 172.29.6.0/30 [120/3] via 172.29.3.1, 00:00:03, Serial0/1/0
[120/3] via 172.29.3.5, 00:00:03, Serial0/1/1
R 172.29.6.4/30 [120/4] via 172.29.3.1, 00:00:03, Serial0/1/0
[120/4] via 172.29.3.5, 00:00:03, Serial0/1/1
R 172.29.6.8/30 [120/3] via 172.29.3.1, 00:00:03, Serial0/1/0
[120/3] via 172.29.3.5, 00:00:03, Serial0/1/1
R 172.29.6.12/30 [120/3] via 172.29.3.1, 00:00:03, Serial0/1/0
[120/3] via 172.29.3.5, 00:00:03, Serial0/1/1
209.17.220.0/30 is subnetted, 2 subnets
R 209.17.220.0/30 [120/2] via 172.29.3.1, 00:00:03, Serial0/1/0
[120/2] via 172.29.3.5, 00:00:03, Serial0/1/1
R 209.17.220.4/30 [120/1] via 172.29.3.1, 00:00:03, Serial0/1/0
[120/1] via 172.29.3.5, 00:00:03, Serial0/1/1
```

Bogotá 3

```
172.29.0.0/16 is variably subnetted, 15 subnets, 4 masks
R 172.29.0.0/24 [120/1] via 172.29.3.14, 00:00:12, Serial0/0/1
C 172.29.1.0/24 is directly connected, GigabitEthernet0/0
L 172.29.1.1/32 is directly connected, GigabitEthernet0/0
R 172.29.3.0/30 [120/1] via 172.29.3.14, 00:00:12, Serial0/0/1
[120/1] via 172.29.3.9, 00:00:21, Serial0/0/0
R 172.29.3.4/30 [120/1] via 172.29.3.14, 00:00:12, Serial0/0/1
[120/1] via 172.29.3.9, 00:00:21, Serial0/0/0
C 172.29.3.8/30 is directly connected, Serial0/0/0
L 172.29.3.10/32 is directly connected, Serial0/0/0
C 172.29.3.12/30 is directly connected, Serial0/0/1
L 172.29.3.13/32 is directly connected, Serial0/0/1
```

R 172.29.4.0/25 [120/4] via 172.29.3.9, 00:00:21, Serial0/0/0
R 172.29.4.128/25 [120/4] via 172.29.3.9, 00:00:21, Serial0/0/0
R 172.29.6.0/30 [120/3] via 172.29.3.9, 00:00:21, Serial0/0/0
R 172.29.6.4/30 [120/4] via 172.29.3.9, 00:00:21, Serial0/0/0
R 172.29.6.8/30 [120/3] via 172.29.3.9, 00:00:21, Serial0/0/0
R 172.29.6.12/30 [120/3] via 172.29.3.9, 00:00:21, Serial0/0/0
209.17.220.0/30 is subnetted, 2 subnets
R 209.17.220.0/30 [120/2] via 172.29.3.9, 00:00:21, Serial0/0/0
R 209.17.220.4/30 [120/1] via 172.29.3.9, 00:00:21, Serial0/0/0

Medellin1

172.29.0.0/16 is variably subnetted, 15 subnets, 4 masks
R 172.29.0.0/24 [120/3] via 209.17.220.1, 00:00:10, Serial0/0/0
R 172.29.1.0/24 [120/3] via 209.17.220.1, 00:00:10, Serial0/0/0
R 172.29.3.0/30 [120/2] via 209.17.220.1, 00:00:10, Serial0/0/0
R 172.29.3.4/30 [120/2] via 209.17.220.1, 00:00:10, Serial0/0/0
R 172.29.3.8/30 [120/2] via 209.17.220.1, 00:00:10, Serial0/0/0
R 172.29.3.12/30 [120/3] via 209.17.220.1, 00:00:10, Serial0/0/0
R 172.29.4.0/25 [120/1] via 172.29.6.2, 00:00:16, Serial0/0/1
R 172.29.4.128/25 [120/1] via 172.29.6.14, 00:00:24, Serial0/1/1
[120/1] via 172.29.6.10, 00:00:24, Serial0/1/0
C 172.29.6.0/30 is directly connected, Serial0/0/1
L 172.29.6.1/32 is directly connected, Serial0/0/1
R 172.29.6.4/30 [120/1] via 172.29.6.2, 00:00:16, Serial0/0/1
[120/1] via 172.29.6.14, 00:00:24, Serial0/1/1
[120/1] via 172.29.6.10, 00:00:24, Serial0/1/0
C 172.29.6.8/30 is directly connected, Serial0/1/0
L 172.29.6.9/32 is directly connected, Serial0/1/0
C 172.29.6.12/30 is directly connected, Serial0/1/1
L 172.29.6.13/32 is directly connected, Serial0/1/1
209.17.220.0/24 is variably subnetted, 4 subnets, 3 masks
S 209.17.220.0/24 [1/0] via 209.17.220.1
C 209.17.220.0/30 is directly connected, Serial0/0/0
L 209.17.220.2/32 is directly connected, Serial0/0/0
R 209.17.220.4/30 [120/1] via 209.17.220.1, 00:00:10, Serial0/0/0

Medellin2

172.29.0.0/16 is variably subnetted, 15 subnets, 4 masks
R 172.29.0.0/24 [120/4] via 172.29.6.1, 00:00:03, Serial0/0/1
R 172.29.1.0/24 [120/4] via 172.29.6.1, 00:00:03, Serial0/0/1
R 172.29.3.0/30 [120/3] via 172.29.6.1, 00:00:03, Serial0/0/1
R 172.29.3.4/30 [120/3] via 172.29.6.1, 00:00:03, Serial0/0/1
R 172.29.3.8/30 [120/3] via 172.29.6.1, 00:00:03, Serial0/0/1
R 172.29.3.12/30 [120/4] via 172.29.6.1, 00:00:03, Serial0/0/1
C 172.29.4.0/25 is directly connected, GigabitEthernet0/0

L 172.29.4.1/32 is directly connected, GigabitEthernet0/0
R 172.29.4.128/25 [120/1] via 172.29.6.6, 00:00:03, Serial0/0/0
C 172.29.6.0/30 is directly connected, Serial0/0/1
L 172.29.6.2/32 is directly connected, Serial0/0/1
C 172.29.6.4/30 is directly connected, Serial0/0/0
L 172.29.6.5/32 is directly connected, Serial0/0/0
R 172.29.6.8/30 [120/1] via 172.29.6.1, 00:00:03, Serial0/0/1
[120/1] via 172.29.6.6, 00:00:03, Serial0/0/0
R 172.29.6.12/30 [120/1] via 172.29.6.1, 00:00:03, Serial0/0/1
[120/1] via 172.29.6.6, 00:00:03, Serial0/0/0
209.17.220.0/30 is subnetted, 2 subnets
R 209.17.220.0/30 [120/1] via 172.29.6.1, 00:00:03, Serial0/0/1
R 209.17.220.4/30 [120/2] via 172.29.6.1, 00:00:03, Serial0/0/1

Medellin3

172.29.0.0/16 is variably subnetted, 16 subnets, 4 masks
R 172.29.0.0/24 [120/4] via 172.29.6.9, 00:00:06, Serial0/1/0
R 172.29.1.0/24 [120/4] via 172.29.6.9, 00:00:06, Serial0/1/0
R 172.29.3.0/30 [120/3] via 172.29.6.9, 00:00:06, Serial0/1/0
R 172.29.3.4/30 [120/3] via 172.29.6.9, 00:00:06, Serial0/1/0
R 172.29.3.8/30 [120/3] via 172.29.6.9, 00:00:06, Serial0/1/0
R 172.29.3.12/30 [120/4] via 172.29.6.9, 00:00:06, Serial0/1/0
R 172.29.4.0/25 [120/1] via 172.29.6.5, 00:00:03, Serial0/0/0
C 172.29.4.128/25 is directly connected, GigabitEthernet0/0
L 172.29.4.129/32 is directly connected, GigabitEthernet0/0
R 172.29.6.0/30 [120/1] via 172.29.6.5, 00:00:03, Serial0/0/0
[120/1] via 172.29.6.9, 00:00:06, Serial0/1/0
C 172.29.6.4/30 is directly connected, Serial0/0/0
L 172.29.6.6/32 is directly connected, Serial0/0/0
C 172.29.6.8/30 is directly connected, Serial0/1/0
L 172.29.6.10/32 is directly connected, Serial0/1/0
C 172.29.6.12/30 is directly connected, Serial0/1/1
L 172.29.6.14/32 is directly connected, Serial0/1/1
209.17.220.0/30 is subnetted, 2 subnets
R 209.17.220.0/30 [120/1] via 172.29.6.9, 00:00:06, Serial0/1/0
[120/1] via 172.29.6.13, 00:00:06, Serial0/1/1
R 209.17.220.4/30 [120/2] via 172.29.6.9, 00:00:06, Serial0/1/0
[120/2] via 172.29.6.13, 00:00:06, Serial0/1/1

ISP

172.29.0.0/16 is variably subnetted, 12 subnets, 3 masks
R 172.29.0.0/24 [120/2] via 209.17.220.6, 00:00:07, Serial0/0/1
R 172.29.1.0/24 [120/2] via 209.17.220.6, 00:00:07, Serial0/0/1
R 172.29.3.0/30 [120/1] via 209.17.220.6, 00:00:07, Serial0/0/1
R 172.29.3.4/30 [120/1] via 209.17.220.6, 00:00:07, Serial0/0/1

R 172.29.3.8/30 [120/1] via 209.17.220.6, 00:00:07, Serial0/0/1
R 172.29.3.12/30 [120/2] via 209.17.220.6, 00:00:07, Serial0/0/1
R 172.29.4.0/25 [120/2] via 209.17.220.2, 00:00:12, Serial0/0/0
R 172.29.4.128/25 [120/2] via 209.17.220.2, 00:00:12, Serial0/0/0
R 172.29.6.0/30 [120/1] via 209.17.220.2, 00:00:12, Serial0/0/0
R 172.29.6.4/30 [120/2] via 209.17.220.2, 00:00:12, Serial0/0/0
R 172.29.6.8/30 [120/1] via 209.17.220.2, 00:00:12, Serial0/0/0
R 172.29.6.12/30 [120/1] via 209.17.220.2, 00:00:12, Serial0/0/0
209.17.220.0/24 is variably subnetted, 4 subnets, 2 masks
C 209.17.220.0/30 is directly connected, Serial0/0/0
L 209.17.220.1/32 is directly connected, Serial0/0/0
C 209.17.220.4/30 is directly connected, Serial0/0/1
L 209.17.220.5/32 is directly connected, Serial0/0/1

b. Verificar el balanceo de carga que presentan los routers.

```
Bogota3#ping
Protocol [ip]:
Target IP address: 172.29.3.9
Repeat count [5]: 3
Datagram size [100]:
Timeout in seconds [2]:
Extended commands [n]: y
Source address or interface: 172..29.1.1
% Invalid source
Source address or interface: 172.29.1.1
Type of service [0]:
Set DF bit in IP header? [no]:
Validate reply data? [no]:
Data pattern [0xABCD]:
Loose, Strict, Record, Timestamp, Verbose[none]:
Sweep range of sizes [n]:
Type escape sequence to abort.
Sending 3, 100-byte ICMP Echos to 172.29.3.9, timeout is 2 seconds:
Packet sent with a source address of 172.29.1.1
!!!
Success rate is 100 percent (3/3), round-trip min/avg/max = 1/2/5 ms
```

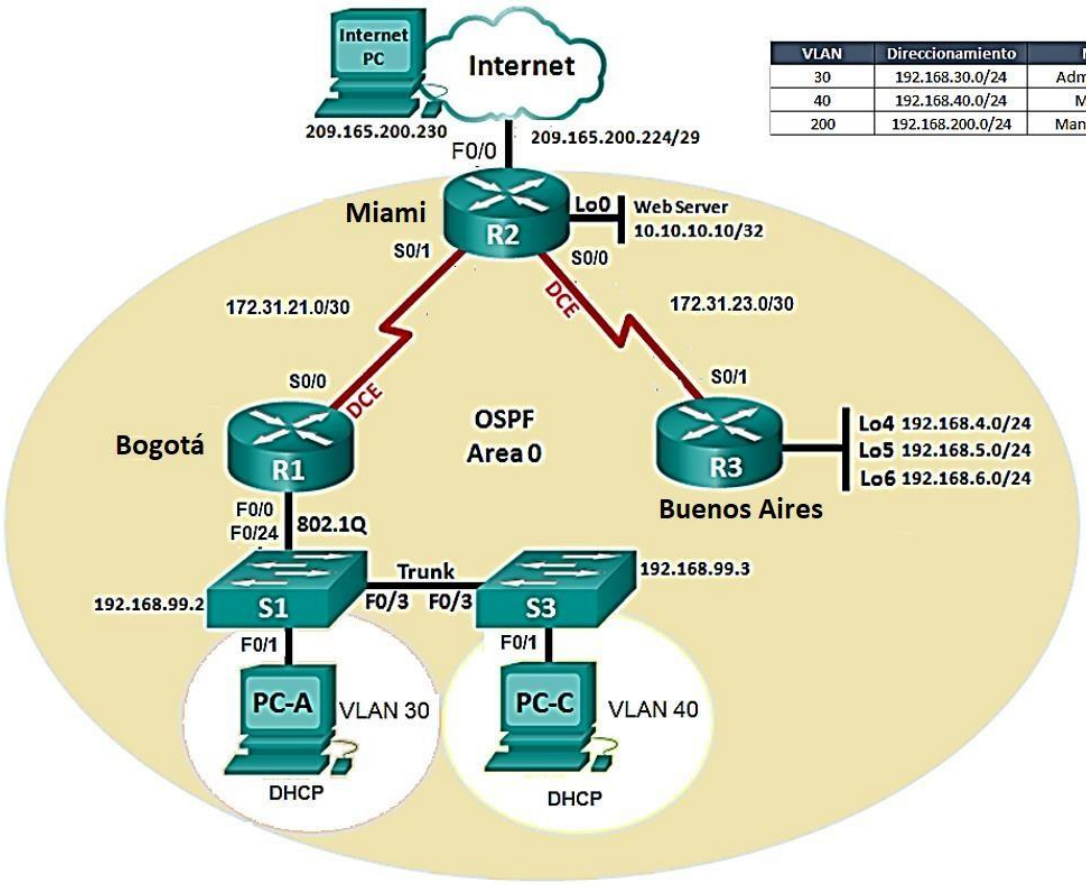
c. Obsérvese en los routers Bogotá1 y Medellín1 cierta similitud por su ubicación, por tener dos enlaces de conexión hacia otro router y por la ruta por defecto que manejan. Correcto

d. Los routers Medellín2 y Bogotá2 también presentan redes conectadas directamente y recibidas mediante RIP.correcto

e. Las tablas de los routers restantes deben permitir visualizar rutas redundantes para el caso de la ruta por defecto. correcto

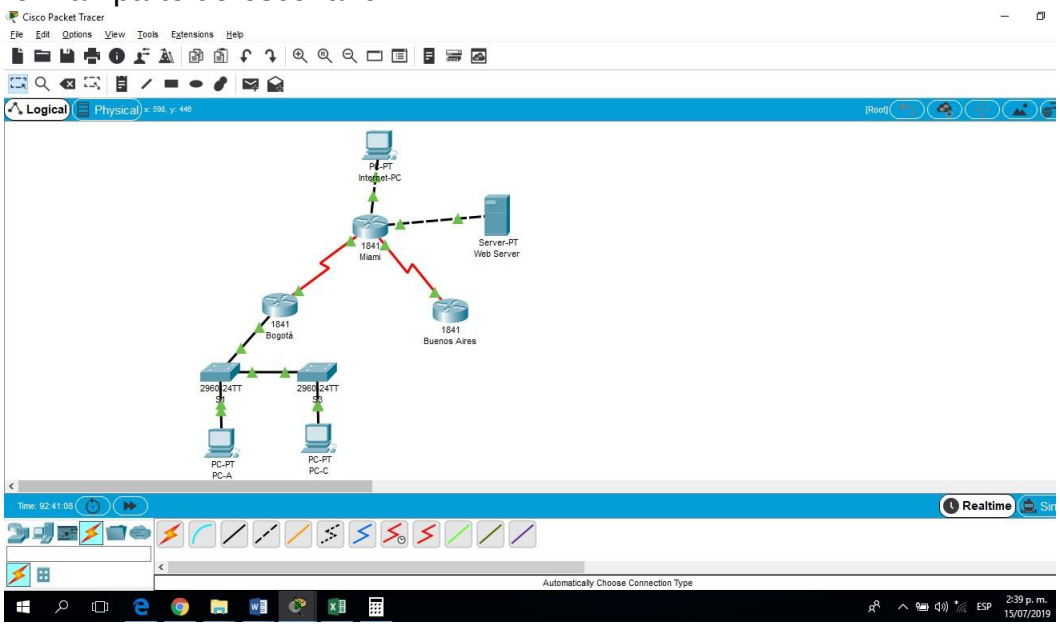
f. El router ISP solo debe indicar sus rutas estáticas adicionales a las directamente conectadas. Correcto.

Escenario 2: Una empresa de Tecnología posee tres sucursales distribuidas en las ciudades de Miami, Bogotá y Buenos Aires, en donde el estudiante será el administrador de la red, el cual deberá configurar e interconectar entre sí cada uno de los dispositivos que forman parte del escenario, acorde con los lineamientos establecidos para el direccionamiento IP, protocolos de enrutamiento y demás aspectos que forman parte de la topología de red.



VLAN	Direccionamiento	Nombre
30	192.168.30.0/24	Administración
40	192.168.40.0/24	Mercadeo
200	192.168.200.0/24	Mantenimiento

1. Configurar el direccionamiento IP acorde con la topología de red para cada uno de los dispositivos que forman parte del escenario



2. Configurar el protocolo de enrutamiento OSPFv2 bajo los siguientes criterios:

OSPFv2 area 0

Configuration Item orTask	Specification
Router ID R1	1.1.1.1
Router ID R2	5.5.5.5
Router ID R3	8.8.8.8
Configurar todas las interfaces LAN como pasivas	
Establecer el ancho de banda para enlaces seriales en	256 Kb/s
Ajustar el costo en la métrica de S0/0 a	9500

Verificar información de OSPF

- Visualizar tablas de enrutamiento y routers conectados por OSPFv2
- Visualizar lista resumida de interfaces por OSPF en donde se ilustre el costo de cada interface
- Visualizar el OSPF Process ID, Router ID, Address summarizations, Routing Networks, and passive interfaces configuradas en cada router.

3. Configurar VLANs, Puertos troncales, puertos de acceso, encapsulamiento, Inter-VLAN Routing y Seguridad en los Switches acorde a la topología de red establecida.

4. En el Switch 3 deshabilitar DNS lookup

5. Asignar direcciones IP a los Switches acorde a los lineamientos.

6. Desactivar todas las interfaces que no sean utilizadas en el esquema de red.

7. Implement DHCP and NAT for IPv4

8. Configurar R1 como servidor DHCP para las VLANs 30 y 40.

9. Reservar las primeras 30 direcciones IP de las VLAN 30 y 40 para configuraciones estáticas.

Configurar DHCP pool para VLAN 30	Name: ADMINISTRACION DNS-Server: 10.10.10.11 Domain-Name: ccna-unad.com Establecer default gateway.
Configurar DHCP pool para VLAN 40	Name: MERCADEO DNS-Server: 10.10.10.11 Domain-Name: ccna-unad.com Establecer default gateway.

10. Configurar NAT en R2 para permitir que los host puedan salir a internet

11. Configurar al menos dos listas de acceso de tipo estándar a su criterio en para restringir o permitir tráfico desde R1 o R3 hacia R2.

12. Configurar al menos dos listas de acceso de tipo extendido o nombradas a su criterio en para restringir o permitir tráfico desde R1 o R3 hacia R2.

13. Verificar procesos de comunicación y redireccionamiento de tráfico en los routers mediante el uso de Ping y Traceroute

14. Solución

1

R1(Ajustes DHCP Server)		
IP reserva VLAN 30	192.168.30.1	192.168.30.30
IP reserva VLAN 40	192.168.40.1	192.168.40.30

2

R1 OSPF			
ID	Pasive Interface	Área 0	Interface
1.1.1.1	F0/0.30	192.168.30.0	
	F0/0.40	192.168.40.0	
	F0/0.200	192.168.200.0	
		172.31.21.0	S0/0/0

3

Bogotá	Dirección IP	Mascara	Gateway	DNS-Server	BW	Costo métrica	DCE
DHCP	192.168.30.1	255.255.255.0	192.168.30.1	10.10.10.11			
ADMINISTRACIÓN							
DHCP	192.168.40.1	255.255.255.0	192.168.40.1	10.10.10.11			
MERCADEO							
F0/0 .30	192.168.30.1	255.255.255.0					
802.1Q							

F0/0 .40	192.168.40.1	255.255.255.0					
802.1Q							
F0/0.200	192.168.200.1	255.255.255.0					
802.1Q							
S0/0/0	172.31.21.1	255.255.255.252			256Kb/s	9500	250000

4

R2 OSPF			
ID	Pasive Interface	Área 0	Interface
5.5.5.5	F0/1	192.168.30.0	
		172.31.21.0	S0/0/1
		172.31.23.0	S0/0/0

5

MIAMI	Dirección IP	Mascara	Gateway	DNS	BW	Costo	DCE	Netmask
F0/0	209.165.200.225	255.255.255.248						
F0/1	10.10.10.1	255.255.255.0						
S0/0/0	172.31.23.1	255.255.255.252			256Kb/s	9500	250000	
s0/0/1	172.31.21.2	255.255.255.252						
NAT Pool Internet	209.165.200.225	255.255.255.248						209.165.200.229
NAT inside	10.10.10.10							209.165.200.229

Telnet (ADMIN)	172.31.21.1							

6

R3 OSPF			
ID	Pasive Interface	Área 0	Interface
8.8.8.8	Lo4	192.168.4.0	
	Lo5		
	Lo6		
		172.31.23.0	S0/0/1

7

S1	Dirección IP	Mascara
F0/1 Vlan 30		
F0/3 Trunk		
F0/24 Trunk		
Vlan 200	192.168.99.2	255.255.255.0

8

S3	Dirección IP	Mascara
F0/1 Vlan 40		

F0/3 Trunk		
Vlan 200	192.168.99.3	255.255.255.0

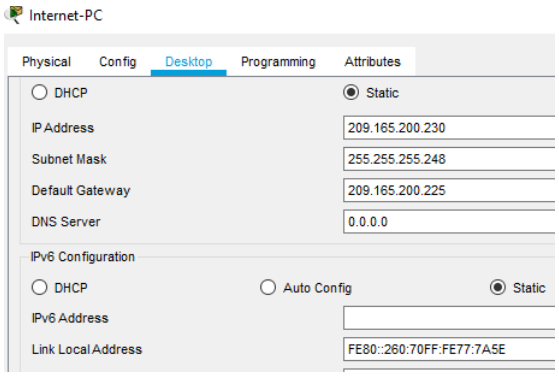
9

PC- Internet	Dirección IP	Mascara	Gateway
FastEthernet	209.165.200.230	255.255.255.248	209.165.200.225

10

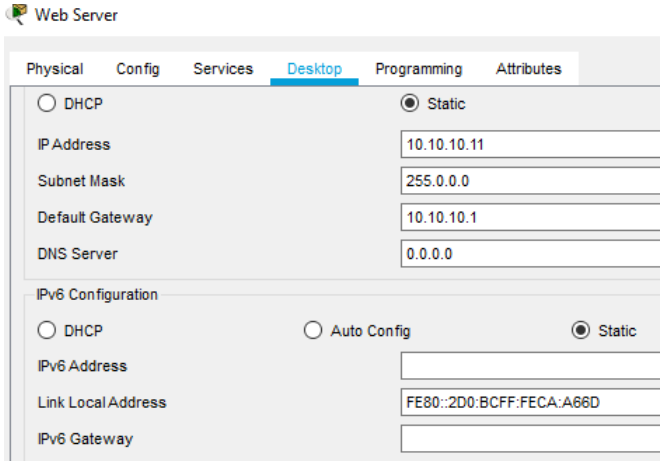
Web Server	Dirección IP	Mascara	Gateway
FastEthernet	10.10.10.10	255.255.255.0	10.10.10.1

Internet-PC



PC-A y PC-C →DHCP

Web-Server



Configuración de direccionamiento R1- Bogotá

```
Bogota#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Bogota(config)#interface Serial0/0/0
Bogota(config-if)#description connect to Miami
Bogota(config-if)#ip add 172.31.21.1 255.255.255.252
Bogota(config-if)#clock rate 250000
This command applies only to DCE interfaces
Bogota(config-if)#no shut
Bogota(config-if)#no shu
Bogota(config-if)#no shutdown
Bogota(config-if)#
```

Bogotá

Physical Config CLI Attributes

IOS Command Line Interface

```
Bogota(config-if)#exit
Bogota(config)#interface FastEthernet0/0
Bogota(config-if)#interface FastEthernet0/0.30
Bogota(config-subif)#
%LINK-5-CHANGED: Interface FastEthernet0/0.30, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0.30,
changed state to up

Bogota(config-subif)#description Administracion LAN
Bogota(config-subif)#encapsulation d
Bogota(config-subif)#encapsulation dot1Q 30
Bogota(config-subif)#ip add 192.168.30.1 255.255.255.0
Bogota(config-subif)#int f0/0.40
Bogota(config-subif)#
%LINK-5-CHANGED: Interface FastEthernet0/0.40, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0.40,
changed state to up

Bogota(config-subif)#description Mercadeo LAN
Bogota(config-subif)#ip add 192.168.40.1 255.255.255.0

% Configuring IP routing on a LAN subinterface is only allowed if
that
```

Bogotá

Physical Config CLI Attributes

IOS Command Line Interface

```
that
subinterface is already configured as part of an IEEE 802.10, IEEE
802.1Q,
or ISL vLAN.

Bogota(config-subif)#encapsulation d
Bogota(config-subif)#encapsulation dot1Q 40
Bogota(config-subif)#int f0/0.200
Bogota(config-subif)#
%LINK-5-CHANGED: Interface FastEthernet0/0.200, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0.200,
changed state to up

Bogota(config-subif)#description Mantenimiento LAN
Bogota(config-subif)#enc
Bogota(config-subif)#encapsulation d
Bogota(config-subif)#encapsulation dot1Q  200
Bogota(config-subif)#ip add 192.168.200.1 255.255.255.0
Bogota(config-subif)#int f0/0
Bogota(config-if)#no s
Bogota(config-if)#no shu
Bogota(config-if)#no shutdown
Bogota(config-if)#
Bogota#
```

```
Bogota(config)#interface Serial0/0/0
Bogota(config-if)#clock rate 250000
This command applies only to DCE interfaces
Bogota(config-if)#interface Serial0/0/0
Bogota(config-if)#bandwidth 256
Bogota(config-if)#ip ospf cost 9500
Bogota(config-if)#
```

```
Bogota>en
Password:
Bogota#config t
Enter configuration commands, one per line.  End with CNTL/Z.
Bogota(config)#ip dhcp excluded-address 192.168.30.1 192.168.30.30
Bogota(config)#ip dhcp excluded-address 192.168.40.1 192.168.40.30
Bogota(config)#
```

```
Bogota(config)#ip dhcp pool ADMINISTRACION
Bogota(dhcp-config)#dns-server 10.10.10.11
Bogota(dhcp-config)#domain-name ccna-unad.com
Bogota(dhcp-config)#
Bogota(dhcp-config)#default-router 192.168.30.1
Bogota(dhcp-config)#network 192.168.30.0 255.255.255.0
Bogota(dhcp-config)#
```

```
Bogota(config)#ip dhcp pool MERCADEO
Bogota(dhcp-config)#dns-server 10.10.10.11
Bogota(dhcp-config)#domain-name ccna-unad.com
Bogota(dhcp-config)#default-router 192.168.40.1
Bogota(dhcp-config)#network 192.168.40.0 255.255.255.0
Bogota(dhcp-config)#
```

Cmd: show running-config

```
Bogota#show running-config
Building configuration...

Current configuration : 2142 bytes
!
version 12.4
no service timestamps log datetime msec
no service timestamps debug datetime msec
service password-encryption
!
hostname Bogota
!
!
!
enable secret 5 $1$mERr$9cTjUIEqNGurQiFU.ZeCi1
!
!
ip dhcp excluded-address 192.168.30.1 192.168.30.30
ip dhcp excluded-address 192.168.40.1 192.168.40.30
!
ip dhcp pool ADMINISTRACION
 network 192.168.30.0 255.255.255.0
 default-router 192.168.30.1
 dns-server 10.10.10.11
```

```
 domain-name ccna-unad.com
ip dhcp pool MERCADEO
 network 192.168.40.0 255.255.255.0
 default-router 192.168.40.1
 dns-server 10.10.10.11
 domain-name ccna-unad.com
!
!
!
no ip cef
no ipv6 cef
!
!
!
!
!
!
!
!
!
!
no ip domain-lookup
!
!
spanning-tree mode pvst

interface FastEthernet0/0.30
 description Administracion LAN
 encapsulation dot1Q 30
 ip address 192.168.30.1 255.255.255.0
!
interface FastEthernet0/0.40
 description Mercadeo LAN
 encapsulation dot1Q 40
 ip address 192.168.40.1 255.255.255.0
!
interface FastEthernet0/0.200
 description Mantenimiento LAN
 encapsulation dot1Q 200
 ip address 192.168.200.1 255.255.255.0
!
interface FastEthernet0/1
 no ip address
 duplex auto
 speed auto
 shutdown
!
interface Serial0/0/0
 description Administracion LAN
 bandwidth 256
 --More--
```

```
 ip address 172.31.21.1 255.255.255.252
 ip ospf cost 9500
 clock rate 250000
!
interface Serial0/0/1
 no ip address
 clock rate 2000000
 shutdown
!
interface Vlan1
 no ip address
 shutdown
!
router ospf 1
 router-id 1.1.1.1
 log-adjacency-changes
 passive-interface FastEthernet0/0.30
 passive-interface FastEthernet0/0.40
 passive-interface FastEthernet0/0.200
 network 172.31.21.0 0.0.0.0 area 0
 network 192.168.200.0 0.0.0.0 area 0
 network 192.168.40.0 0.0.0.255 area 0
 network 192.168.30.0 0.0.0.255 area 0
 network 192.168.200.0 0.0.0.255 area 0
 --More-- |
```

```
ip classless
ip route 0.0.0.0 0.0.0.0 Serial0/0/0
!
ip flow-export version 9
!
!
!
banner motd ^CAcceso no autorizado^C
!
!
!
!
!
line con 0
 password 7 0822455D0A16
 login
!
line aux 0
!
line vty 0 4
 password 7 0822455D0A16
 login
!
!
 --More-- |
```

End

Configuración de direccionamiento R2- Miami

Router>en
Router#
Router#config t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#no ip domain-lookup

```
Router(config)#hostname Miami
Miami(config)#enable secret class
Miami(config)#line con 0
Miami(config-line)#pass cisco
Miami(config-line)#login
Miami(config-line)#line vty 0 4
Miami(config-line)#pass cisco
Miami(config-line)#login
Miami(config-line)#exit
Miami(config)#service password-encryption
Miami(config)#banner motd "Acceso no autorizado"
Miami(config)#int s0/0/0
Miami(config-if)#description connection to Bogota
Miami(config-if)#ip add 172.31.21.2 255.255.255.252
Miami(config-if)#no shutdown
Miami(config-if)#
%LINK-5-CHANGED: Interface Serial0/0/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0, changed state to up
Miami(config-if)#int s0/0/1
Miami(config-if)#description connection to BuenosAires
Miami(config-if)#ip add 172.31.23.2 255.255.255.252
Miami(config-if)#clock rate 250000
Miami(config-if)#no shutdown
%LINK-5-CHANGED: Interface Serial0/0/1, changed state to down
Miami(config-if)#
Miami#
%SYS-5-CONFIG_I: Configured from console by console
Miami(config)#int f0/0
Miami(config-if)#description Internet connection to ISP
Miami(config-if)#ip add 209.165.200.225 255.255.255.248
Miami(config-if)#no shutdown

Miami(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/0, changed state to up

Miami(config)#int f0/1
Miami(config-if)#ip add 10.10.10.1 255.255.255.0
Miami(config-if)#no shutdown

Miami(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/1, changed state to up

Miami(config-if)#exit
Miami(config)#ip route 0.0.0.0 0.0.0.0 f0/0
Miami(config)#router ospf 1
Miami(config-router)#router-id 5.5.5.5
```

```
Miami(config-router)#network 172.31.21.0 0.0.0.3 area 0
Miami(config-router)#network 172.31.23.0 0.0.0.3 area 0
Miami(config-router)#network 10.10.10.0 0.0.0.255 area 0
Miami(config-router)#

Miami(config-router)#passive-interface f0/1
Miami(config-router)#exit
Miami(config)#int s0/0/0
Miami(config-if)#bandwidth 256
Miami(config-if)#ip ospf cost 9500
Miami(config-if)#exit
Miami(config)#int s0/0/1
Miami(config-if)#bandwidth 256
Miami(config-if)#exit
Miami(config)#exit
Miami#
%SYS-5-CONFIG_I: Configured from console by console
exit
Password:
Miami>en
Password:
Miami#config t
Enter configuration commands, one per line. End with CNTL/Z.
Miami(config)#

Miami(config)#ip list
Miami(config)#ip access-list standard MANTENIMIENTO-MERCADEO
Miami(config-std-nacl)#permit host 172.31.21.1
Miami(config-std-nacl)#exit
Miami(config)#line vty 0 4
Miami(config-line)#access-class MANTENIMIENTO-MERCADEO in
Miami(config-line)#exit
Miami(config)#

CMD show running config
```

```
Miami#show r
Building configuration...

Current configuration : 1467 bytes
!
version 12.4
no service timestamps log datetime msec
no service timestamps debug datetime msec
service password-encryption
!
hostname Miami
!
!
!
enable secret 5 $1$mERr$9cTjUIEqNGurQiFU.ZeCi1
!
!
!
!
!
!
no ip cef
no ipv6 cef
!
no ip domain-lookup
!
!
spanning-tree mode pvst
!
!
!
!
!
!
interface FastEthernet0/0
 description Internet connection to ISP
 ip address 209.165.200.225 255.255.255.248
 duplex auto
 speed auto
!
interface FastEthernet0/1
 description connection to web server
 ip address 10.10.10.1 255.255.255.0
 duplex auto
 speed auto
!
interface Serial0/0/0
 description connection to Bogota
```

```
 bandwidth 256
 ip address 172.31.21.2 255.255.255.252
 ip ospf cost 9500
 clock rate 2000000
!
interface Serial0/0/1
 description connection to BuenosAires
 bandwidth 256
 ip address 172.31.23.2 255.255.255.252
 clock rate 250000
!
interface Vlan1
 no ip address
 shutdown
!
router ospf 1
 router-id 5.5.5.5
 log-adjacency-changes
 passive-interface FastEthernet0/1
 network 172.31.21.0 0.0.0.3 area 0
 network 172.31.23.0 0.0.0.3 area 0
 network 10.10.10.0 0.0.0.255 area 0
!
ip classless

ip route 0.0.0.0 0.0.0.0 FastEthernet0/0
!
ip flow-export version 9
!
!
ip access-list standard MANTENIMIENTO-MERCADEO
 permit host 172.31.21.1
!
banner motd ^CAcceso no autorizado^C
!
!
!
!
!
line con 0
 password 7 0822455D0A16
 login
!
line aux 0
!
line vty 0 4
 access-class MANTENIMIENTO-MERCADEO in
 password 7 0822455D0A16
 login
```

End

Configuración de direccionamiento R3- BuenosAires

Router>en
Router#config t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#no ip domain-lookup
Router(config)#hostname BuenosAires
BuenosAires(config)#enable secret class
BuenosAires(config)#line con 0

```
BuenosAires(config-line)#pass cisco
BuenosAires(config-line)#login
BuenosAires(config-line)#
BuenosAires(config-line)#line vty 0 4
BuenosAires(config-line)#pass cisco
BuenosAires(config-line)#login
BuenosAires(config-line)#exit
BuenosAires(config)#service password-encryption
BuenosAires(config)#banner motd "Acceso no autorizado"
BuenosAires(config)#int s0/0/1
BuenosAires(config-if)#description connection to Miami
BuenosAires(config-if)#ip add 172.31.23.2 255.255.255.252
BuenosAires(config-if)#no shutdown

BuenosAires(config-if)#
%LINK-5-CHANGED: Interface Serial0/0/1, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/1, changed state to up
BuenosAires(config-if)#int lo4

BuenosAires(config-if)#
%LINK-5-CHANGED: Interface Loopback4, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback4, changed state to up

BuenosAires(config-if)#ip add 192.168.4.1 255.255.255.0
BuenosAires(config-if)#no shutdown
BuenosAires(config-if)#int lo5

BuenosAires(config-if)#
%LINK-5-CHANGED: Interface Loopback5, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback5, changed state to up

BuenosAires(config-if)#ip add 192.168.5.1 255.255.255.0
BuenosAires(config-if)#no shutdown
BuenosAires(config-if)#int lo6

BuenosAires(config-if)#
%LINK-5-CHANGED: Interface Loopback6, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback6, changed state to up

BuenosAires(config-if)#ip add 192.168.6.1 255.255.255.0
BuenosAires(config-if)#no shutdown
```

```
BuenosAires(config-if)#ip route 0.0.0.0 0.0.0.0 s0/0/1
BuenosAires(config)#router ospf 1
BuenosAires(config-router)#router-id 8.8.8.8
BuenosAires(config-router)#network 172.31.23.0 0.0.0.3 area 0
BuenosAires(config-router)#network 192
18:40:19: %OSPF-5-ADJCHG: Process 1, Nbr 5.5.5.5 on Serial0/0/1 from LOADING to FULL, Lo
BuenosAires(config-router)#network 192.168.4.0 0.0.3.255 area 0
BuenosAires(config-router)#passive-interface   lo4
BuenosAires(config-router)#passive-interface   lo5
BuenosAires(config-router)#passive-interface   lo6
BuenosAires(config-router)#
BuenosAires(config-router)#exit
BuenosAires(config)#
```

Cmd show running-config

```
BuenosAires#show running-config
Building configuration...

Current configuration : 1357 bytes
!
version 12.4
no service timestamps log datetime msec
no service timestamps debug datetime msec
service password-encryption
!
hostname BuenosAires
!
!
!
enable secret 5 $1$mERr$9cTjUIEqNGurQiFU.ZeCi1
!
!
!
!
!
!
no ip cef
no ipv6 cef
 --More--
```

```
no ip domain-lookup
!
!
spanning-tree mode pvst
!
!
!
!
!
!
interface Loopback4
 ip address 192.168.4.1 255.255.255.0
!
interface Loopback5
 ip address 192.168.5.1 255.255.255.0
!
interface Loopback6
 ip address 192.168.6.1 255.255.255.0
!
interface FastEthernet0/0
 no ip address
 duplex auto
 speed auto
 shutdown
 --More-- 
interface FastEthernet0/1
 no ip address
 duplex auto
 speed auto
 shutdown
!
interface Serial0/0/0
 no ip address
 clock rate 2000000
 shutdown
!
interface Serial0/0/1
 description connection to Miami
 bandwidth 256
 ip address 172.31.23.2 255.255.255.252
 clock rate 2000000
!
interface Vlan1
 no ip address
 shutdown
!
router ospf 1
 router-id 8.8.8.8
 log-adjacency-changes
 --More-- 
```

```
 passive-interface Loopback4
 passive-interface Loopback5
 passive-interface Loopback6
 network 172.31.23.0 0.0.0.3 area 0
 network 192.168.4.0 0.0.3.255 area 0
!
ip classless
ip route 0.0.0.0 0.0.0.0 Serial0/0/1
!
ip flow-export version 9
!
!
!
banner motd ^CAcceso no autorizado^C
!
!
!
!
!
line con 0
 password 7 0822455D0A16
 login
!
line aux 0
 --More-- 
line vty 0 4
 password 7 0822455D0A16
 login
!
!
!
end
```

Configuración de S1

Switch>enable
Switch#config t
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#no ip domain-lookup
Switch(config)#hostname S1
S1(config)#enable secret class
S1(config)#line con 0
S1(config-line)#pass cisco
S1(config-line)#login
S1(config-line)#line vty 0
S1(config-line)#line vty 0 4
S1(config-line)#pass cisco
S1(config-line)#login
S1(config-line)#servi
S1(config-line)#service password-
S1(config-line)#service password-encryption
S1(config)#banner motd "Acceso no autotizado"
S1(config)#
S1(config)#vlan 30
S1(config-vlan)#name Administracion

```
S1(config-vlan)#vlan 40
S1(config-vlan)#name Mercadeo
S1(config-vlan)#vlan 200
S1(config-vlan)#name Mantenimiento
S1(config-vlan)#
S1(config-vlan)#exit
S1(config)#int vlan 30
S1(config-if)#
%LINK-5-CHANGED: Interface Vlan30, changed state to up

S1(config-if)#ip add 192.168.30.2255.255.255.0
S1(config-if)#no shutdown
S1(config-if)#int vlan 40
S1(config-if)#
%LINK-5-CHANGED: Interface Vlan40, changed state to up

S1(config-if)#ip add 192.168.40.2255.255.255.0
S1(config-if)#no shutdown
S1(config-if)#
S1(config-if)#int vlan 200
S1(config-if)#
%LINK-5-CHANGED: Interface Vlan200, changed state to up

S1(config-if)#ip add 192.168.200.2 255.255.255.0
S1(config-if)#no shutdown
S1(config-if)#int f0/3
S1(config-if)#switchport mode trunk

S1(config-if)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/3, changed state to down

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/3, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan30, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan40, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan200, changed state to up

S1(config-if)#switchport trunk native vlan 1
S1(config-if)#

S1(config)#int f0/24
S1(config-if)#switchport mode trunk

S1(config-if)#
```

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/24, changed state to down

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/24, changed state to up

S1(config-if)#switchport trunk native vlan 1
S1(config-if)#int range fa0/1-2, fa0/4-23
S1(config-if-range)#switchport mode access
S1(config-if-range)#shutdown

%LINK-5-CHANGED: Interface FastEthernet0/2, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/4, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/5, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/6, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/7, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/8, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/9, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/10, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/11, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/12, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/13, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/14, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/15, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/16, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/17, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/18, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/19, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/20, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/21, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/22, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/23, changed state to administratively down
S1(config-if-range)#
%LINK-5-CHANGED: Interface FastEthernet0/1, changed state to administratively down

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to down

S1#
%SYS-5-CONFIG_I: Configured from console by console

Cmd showrunning-config

```
S1#show running-config
Building configuration...

Current configuration : 2286 bytes
!
version 12.2
no service timestamps log datetime msec
no service timestamps debug datetime msec
service password-encryption
!
hostname S1
!
enable secret 5 $1$mERr$9cTjUIEqNGurQiFU.ZeCi1
!
!
!
no ip domain-lookup
!
!
spanning-tree mode pvst
spanning-tree extend system-id
!
interface FastEthernet0/1
 --More--
```

```
 switchport mode access
 shutdown
!
interface FastEthernet0/2
 switchport mode access
 shutdown
!
interface FastEthernet0/3
 switchport mode trunk
!
interface FastEthernet0/4
 switchport mode access
 shutdown
!
interface FastEthernet0/5
 switchport mode access
 shutdown
!
interface FastEthernet0/6
 switchport mode access
 shutdown
!
interface FastEthernet0/7
 switchport mode access
 --More--
 shutdown
!
interface FastEthernet0/8
 switchport mode access
 shutdown
!
interface FastEthernet0/9
 switchport mode access
 shutdown
!
interface FastEthernet0/10
 switchport mode access
 shutdown
!
interface FastEthernet0/11
 switchport mode access
 shutdown
!
interface FastEthernet0/12
 switchport mode access
 shutdown
!
interface FastEthernet0/13
 switchport mode access
 --More--
```

```
 shutdown
!
interface FastEthernet0/14
 switchport mode access
 shutdown
!
interface FastEthernet0/15
 switchport mode access
 shutdown
!
interface FastEthernet0/16
 switchport mode access
 shutdown
!
interface FastEthernet0/17
 switchport mode access
 shutdown
!
interface FastEthernet0/18
 switchport mode access
 shutdown
!
interface FastEthernet0/19
 switchport mode access
 --More-- 
 shutdown
!
interface FastEthernet0/20
 switchport mode access
 shutdown
!
interface FastEthernet0/21
 switchport mode access
 shutdown
!
interface FastEthernet0/22
 switchport mode access
 shutdown
!
interface FastEthernet0/23
 switchport mode access
 shutdown
!
interface FastEthernet0/24
 switchport mode trunk
!
interface GigabitEthernet0/1
!
interface GigabitEthernet0/2
 --More-- 
```

```
interface Vlan1
 no ip address
 shutdown
!
interface Vlan30
 mac-address 0090.0c0c.b501
 ip address 192.168.30.2 255.255.255.0
!
interface Vlan40
 mac-address 0090.0c0c.b502
 ip address 192.168.40.2 255.255.255.0
!
interface Vlan200
 mac-address 0090.0c0c.b503
 ip address 192.168.200.2 255.255.255.0
!
banner motd ^CAcceso no autotizado^C
!
!
!
line con 0
 password 7 0822455D0A16
 login
!
line vty 0 4
 password 7 0822455D0A16
 login
line vty 5 15
 login
!
!
!
!
end
```

Configuración S3

Switch>en
Switch#config t
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#no ip domain-lookup
Switch(config)#hostname S3
S3(config)#enable secret class
S3(config)#line con 0
S3(config-line)#pass cisco
S3(config-line)#login
S3(config-line)#line vty 0 4
S3(config-line)#pass cisco
S3(config-line)#login
S3(config-line)#exit
S3(config)#service password-encryption
S3(config)#banner motd "Acceso no autorizado"
S3(config)#vlan 30
S3(config-vlan)#name Administracion
S3(config-vlan)#vlan 40

```
S3(config-vlan)#name Mercadeo
S3(config-vlan)#vlan 200
S3(config-vlan)#name Mantenimiento
S3(config-vlan)#
%LINK-5-CHANGED: Interface Vlan30, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan30, changed state to up

S3(config-if)#ip add 192.168.30.3 255.255.255.0
S3(config-if)#no shutdown
S3(config-if)#int vlan 40
S3(config-if)#
%LINK-5-CHANGED: Interface Vlan40, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan40, changed state to up

S3(config-if)#ip add 192.168.40.3 255.255.255.0
S3(config-if)#no shutdown
S3(config-if)#int vlan 200
S3(config-if)#
%LINK-5-CHANGED: Interface Vlan200, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan200, changed state to up

S3(config-if)#ip add 192.168.200.3 255.255.255.0
S3(config-if)#no shutdown
S3(config-if)#int vlan 30
S3(config-if)#ip default-gateway 192.168.99.3
S3(config)#int vlan 40
S3(config-if)#ip default-gateway 192.168.99.3
S3(config)#int vlan 200
S3(config-if)#ip default-gateway 192.168.99.3
S3(config)#
S3(config)#int f0/3
S3(config-if)#switchport mode trunk
S3(config-if)#switchport trunk native vlan 1
S3(config-if)#int range f0/1-2, f0/4-24
S3(config-if-range)#switchport mode access
S3(config-if-range)#shutdown

%LINK-5-CHANGED: Interface FastEthernet0/1, changed state to administratively  down


%LINK-5-CHANGED: Interface FastEthernet0/4, changed state to administratively  down
```

%LINK-5-CHANGED: Interface FastEthernet0/5, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/6, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/7, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/8, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/9, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/10, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/11, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/12, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/13, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/14, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/15, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/16, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/17, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/18, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/19, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/20, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/21, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/22, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/23, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/24, changed state to administratively down
S3(config-if-range)#
%LINK-5-CHANGED: Interface FastEthernet0/2, changed state to administratively down

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/2, changed state to down

Conclusiones.

- Aprendí a realizar configuraciones mediante simulaciones y practicas reales en mi trabajo logré realizar la configurar e interconexión entre sí cada de uno de los dispositivos que forman parte del escenario, acorde con los lineamientos establecidos para el direccionamiento IP.
- Las configuraciones de los sistemas de comunicación son complejos y requieren tiempo para desarrollar cada uno de los ejercicios que el curso plantea pero aprendi la importancia de las comunicaciones en cualquier sector
- Ejecute y aprendi la funcionalidad de los comandos con el paso a paso de cada una de las etapas realizadas durante su desarrollo, el registro de los procesos de verificación de conectividad mediante el uso de comandos ping, traceroute, show ip route, entre otros

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