

**DIPLOMADO DE PROFUNDIZACIÓN CISCO (DISEÑO E IMPLEMENTACIÓN DE
SOLUCIONES INTEGRADAS LAN / WAN) (OPCI
PRUEBA DE HABILIDADES CCNA**

**PRESENTADO POR:
EDGAR ANDRES ARIAS
GRUPO: 203092_26**

TUTOR: DIEGO EDINSON RAMIREZ

**UNIVERSIDAD NACIONAL ABIERTA Y A DISTANCIA UNAD
ESCUELAS DE CIENCIAS BÁSICAS, TECNOLOGÍA E INGENIERÍA
INGENIERÍA ELECTRÓNICA
NEIVA HUILA
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INTRODUCCIÓN

Las redes y la tecnología se han transformado en un elemento muy importante en el desarrollo administrativo y tecnológico de cualquier organización, por tal motivo, cualquier red debe ser cien por ciento seguro, viable, estable y eficiente.

Como futuros ingenieros y profesionales debemos establecer prioridades en las redes de cualquier institución, es por ello que el proceso de aprendizaje se acrecienta las razones por las cuales debemos desplegar redes que cumplan con todos estos requisitos previamente establecidos.

Cuando diseñamos una red de datos es necesario extraer el máximo rendimiento de sus capacidades, la red debe estar dispuesta para efectuar enlaces a través de otras redes, con ayuda de protocolos que nos permiten generar estas conexiones. Es así que a continuación encontraremos el desarrollo de las actividades plasmadas en la prueba de habilidades prácticas, que nos permite poner en conocimiento y ejecución lo aprendido durante el desarrollo del curso.

OBJETIVOS

OBJETIVO PRINCIPAL

Simular el diseño e implementación de dos escenarios planteados como trabajo de grado y habilidades prácticas en el curso de cisco (diseño e implementación de soluciones integradas LAN / WAN)

OBJETIVOS SECUNDARIOS

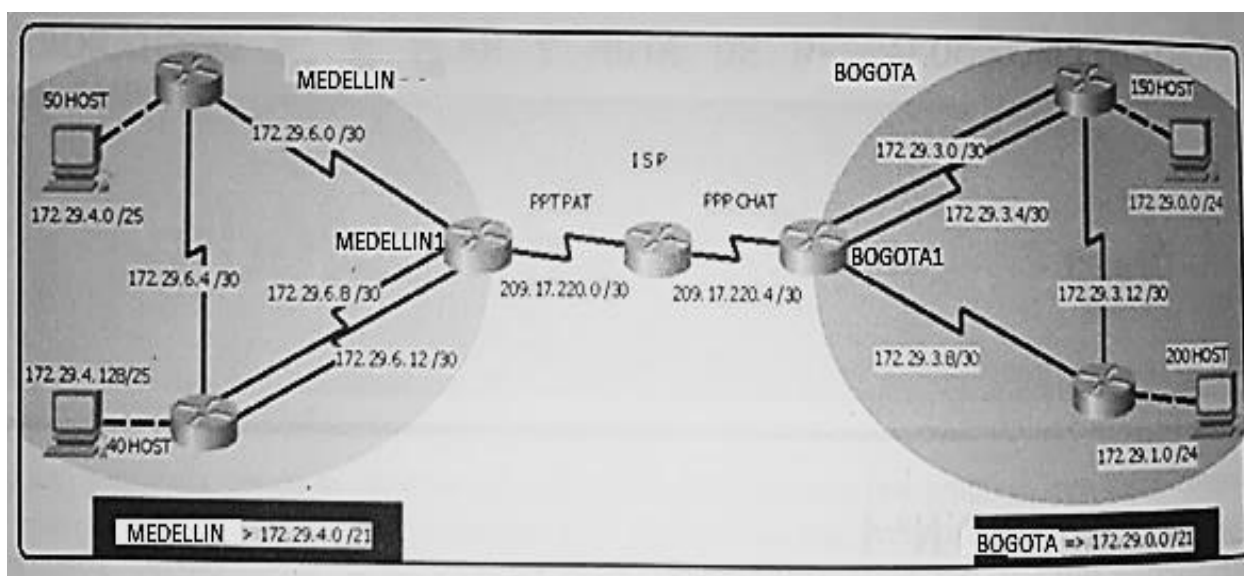
- Realizar y configurar la red planteada en el caso de estudio de habilidades prácticas.
- Aplicar lo aprendido en los cursos de CCNA1 y CCNA2, y establecer lo comprendido en la prueba de habilidades practicas
- Comprobar y configurar el funcionamiento de los escenarios planteados
- Desarrollar la practica utilizando el simulador Packet Tracer de Cisco para hacer el montaje de la red con cada una de sus especificaciones
- Afianzar los conocimientos adquiridos para la configuración de dispositivos como switches, router, y PCs.
- Configurar el protocolo de enrutamiento y realizar el montaje de prueba en el simulador Packet Tracer

DESCRIPCIÓN DEL ESCENARIO PROPUESTO PARA LA PRUEBA DE HABILIDADES

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



Como trabajo inicial se debe realizar lo siguiente.

- Realizar las rutinas de diagnóstico y dejar los equipos listos para su configuración (asignar nombres de equipos, asignar claves de seguridad, etc).

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

```
Router>ENABLE
```

```
Router#CONF T
```

Enter configuration commands, one per line. End with CNTL/Z.

```
Router(config)#hostname MEDELLIN1
```

```
MEDELLIN1(config)#no ip domain-lookup
```

```
MEDELLIN1(config)#service password-encryption
```

```
MEDELLIN1(config)#enable secret class
```

```
MEDELLIN1(config)#line console 0
```

```
MEDELLIN1(config-line)#password cisco
```

```
MEDELLIN1(config-line)#login
```

```
MEDELLIN1(config-line)#LINE VTY 0 15
```

```
MEDELLIN1(config-line)#password cisco
```

```
MEDELLIN1(config-line)#login
```

```
Router>ena
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#hostname MEDELLIN1
MEDELLIN1(config)#no ip domain-lookup
MEDELLIN1(config)#service password-encryption
MEDELLIN1(config)#enable secret class
MEDELLIN1(config)#line console 0
MEDELLIN1(config-line)#password cisco
MEDELLIN1(config-line)#login
MEDELLIN1(config-line)#line vty 0 15
MEDELLIN1(config-line)#pass
MEDELLIN1(config-line)#password Cisco
MEDELLIN1(config-line)#login
MEDELLIN1(config-line)#
```

```
Router>ena
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#hostname MEDELLIN2
MEDELLIN2(config)#no ip domain-lookup
MEDELLIN2(config)#service password-encryption
MEDELLIN2(config)#enable secret class
MEDELLIN2(config)#line console 0
MEDELLIN2(config-line)#password cisco
MEDELLIN2(config-line)#LOGIN
MEDELLIN2(config-line)#LINE VTY 0 15
MEDELLIN2(config-line)#password cisco
MEDELLIN2(config-line)#LOGIN
```

```
Router>ena
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#hostname MEDELLIN2
MEDELLIN2(config)#no ip domain-lookup
MEDELLIN2(config)#service password-encryption
MEDELLIN2(config)#enable secret class
MEDELLIN2(config)#line console 0
MEDELLIN2(config-line)#password cisco
MEDELLIN2(config-line)#LOGIN
MEDELLIN2(config-line)#LINE VTY 0 15
MEDELLIN2(config-line)#password cisco
MEDELLIN2(config-line)#LOGIN
MEDELLIN2(config-line)#
```

```
Router>ena
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#host MEDELLIN3
MEDELLIN3(config)#no ip domain-lookup
```

```
MEDELLIN3(config)#service password-encryption
MEDELLIN3(config)#enable secret class
MEDELLIN3(config)#line console 0
MEDELLIN3(config-line)#password cisco
MEDELLIN3(config-line)#login
MEDELLIN3(config-line)#password cisco
MEDELLIN3(config-line)#LINE VTY 0 15
MEDELLIN3(config-line)#password cisco
MEDELLIN3(config-line)#login
```

```
Router>ena
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#host MEDELLIN3
MEDELLIN3(config)#no ip domain-lookup
MEDELLIN3(config)#service password-encryption
MEDELLIN3(config)#
MEDELLIN3(config)#enable secret class
MEDELLIN3(config)#line console 0
MEDELLIN3(config-line)#password cisco
MEDELLIN3(config-line)#login
MEDELLIN3(config-line)#password cisco
MEDELLIN3(config-line)#password cisco
MEDELLIN3(config-line)#LINE VTY 0 15
MEDELLIN3(config-line)#password cisco
MEDELLIN3(config-line)#login
MEDELLIN3(config-line)#
```

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

```
ISP(config)#service password-encryption
ISP(config)#enable secret class
ISP(config)#line console 0
ISP(config-line)#password cisco
ISP(config-line)#login
ISP(config-line)#LINE VTY 0 15
ISP(config-line)#password cisco
ISP(config-line)#login
```

```
Router>ena
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#host ISP
ISP(config)#no ip domain-lookup
ISP(config)#service password-encryption
ISP(config)#enable secret class
ISP(config)#line console 0
ISP(config-line)#
ISP(config-line)#password cisco
ISP(config-line)#login
ISP(config-line)#LINE VTY 0 15
ISP(config-line)#password cisco
ISP(config-line)#login
```

```
Router>ena
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#host BOGOTA1
BOGOTA1(config)#no ip domain-lookup
BOGOTA1(config)#service password-encryption
```

```
BOGOTA1(config)#enable secret class
BOGOTA1(config)#line console 0
BOGOTA1(config-line)#password cisco
BOGOTA1(config-line)#login
BOGOTA1(config-line)#LINE VTY 0 15
BOGOTA1(config-line)#password cisco
BOGOTA1(config-line)#login
```

```
Router>ena
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#host BOGOTAL
BOGOTAL(config)#no ip domain-lookup
BOGOTAL(config)#service password-encryption
BOGOTAL(config)#enable secret class
BOGOTAL(config)#line console 0
BOGOTAL(config-line)#password cisco
BOGOTAL(config-line)#login
BOGOTAL(config-line)#LINE VTY 0 15
BOGOTAL(config-line)#password cisco
BOGOTAL(config-line)#login
```

```
Router>ena
Router#conf ter
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#host BOGOTA2
BOGOTA2(config)#no ip domain-lookup
BOGOTA2(config)#service password-encryption
BOGOTA2(config)#enable secret class
BOGOTA2(config)#line console 0
BOGOTA2(config-line)#password cisco
BOGOTA2(config-line)#login
BOGOTA2(config-line)#LINE VTY 0 15
BOGOTA2(config-line)#password cisco
BOGOTA2(config-line)#login
```

```
Router>ena
Router#conf ter
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#host BOGOTA2
BOGOTA2(config)#no ip domain-lookup
BOGOTA2(config)#service password-encryption
BOGOTA2(config)#enable secret class
BOGOTA2(config)#line console 0
BOGOTA2(config-line)#password cisco
BOGOTA2(config-line)#login
BOGOTA2(config-line)#LINE VTY 0 15
BOGOTA2(config-line)#password cisco
BOGOTA2(config-line)#login
```

```
Router>ena
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#hostn BOGOTA3
BOGOTA3(config)#no ip domain-lookup
BOGOTA3(config)#service password-encryption
BOGOTA3(config)#enable secret class
BOGOTA3(config)#line console 0
BOGOTA3(config-line)#password cisco
BOGOTA3(config-line)#login
BOGOTA3(config-line)#LINE VTY 0 15
BOGOTA3(config-line)#password cisco
BOGOTA3(config-line)#login
```

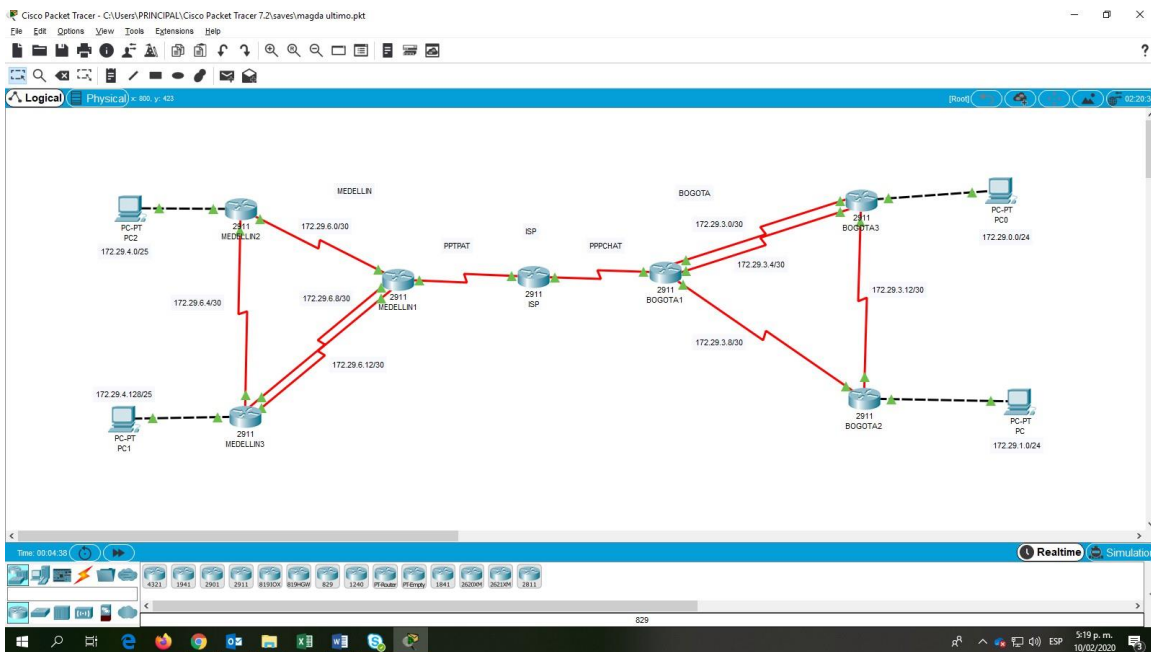
```

Router>ena
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z
Router(config)#hostname BOGOTA3
BOGOTA3(config)#no ip domain-lookup
BOGOTA3(config)#service password-encryption
BOGOTA3(config)#enable secret class
BOGOTA3(config)#line console 0
BOGOTA3(config-line)#password cisco
BOGOTA3(config-line)#login
BOGOTA3(config-line)#LINE VTY 0 15
BOGOTA3(config-line)#password cisco
BOGOTA3(config-line)#login

```

**Realizar la conexión física de los equipos con base en la topología de red
Configurar la topología de red, de acuerdo con las siguientes especificaciones.**

Parte 1: Configuración del enrutamiento



- a. **Configurar el enrutamiento en la red usando el protocolo RIP versión 2, declare la red principal, desactive la sumarización automática.**

Router ISP

ISP>ena

Password:

ISP#conf t

Enter configuration commands, one per line. End with CNTL/Z.

ISP(config)#int s0/0/0

ISP(config-if)#ip address 209.17.220.1 255.255.255.252

ISP(config-if)#clock rate 4000000

ISP(config-if)#no shut

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

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

ISP(config-if)#ip address 209.17.220.5 255.255.255.252

ISP(config-if)#clock rate 4000000

This command applies only to DCE interfaces

ISP(config-if)#no shut

```
Password:
ISP>ena
Password:
Password:
ISP#conf t
Enter configuration commands, one per line. End with CNTL/Z.
ISP(config)#int s0/0/0
ISP(config-if)#ip address 209.17.220.1 255.255.255.252
ISP(config-if)#clock rate 4000000
ISP(config-if)#no shut

%LINK-5-CHANGED: Interface Serial0/0/0, changed state to down
ISP(config-if)#int s0/0/1
ISP(config-if)#ip address 209.17.220.5 255.255.255.252
ISP(config-if)#clock rate 4000000
This command applies only to DCE interfaces
ISP(config-if)#no shut

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

ROUTER_MEDELLIN1

MEDELLIN1#conf t

Enter configuration commands, one per line. End with CNTL/Z.

MEDELLIN1(config)#int s0/0/0

MEDELLIN1(config-if)#ip address 209.17.220.2 255.255.255.252

MEDELLIN1(config-if)#no shut

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)#ip address 172.29.6.1 255.255.255.252

MEDELLIN1(config-if)#clock rate 4000000

This command applies only to DCE interfaces

MEDELLIN1(config-if)#no shut

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

MEDELLIN1(config-if)#

MEDELLIN1(config-if)#int s0/1/0

MEDELLIN1(config-if)#ip address 172.29.6.9 255.255.255.252

MEDELLIN1(config-if)#clock rate 4000000

MEDELLIN1(config-if)#no shut

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

MEDELLIN1(config-if)#int s0/1/1

MEDELLIN1(config-if)#ip address 172.29.6.13 255.255.255.252

MEDELLIN1(config-if)#clock rate 4000000

MEDELLIN1(config-if)#no shut

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

MEDELLIN1(config-if)#

```
MEDELLIN1>ena
Password:
MEDELLIN1#int s0/0/0
      ^
% Invalid input detected at '^' marker.

MEDELLIN1#conf t
Enter configuration commands, one per line. End with CNTL/Z.
MEDELLIN1(config)#int s0/0/0
MEDELLIN1(config-if)#ip address 209.17.220.2 255.255.255.252
MEDELLIN1(config-if)#no shut

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, change
state to up

MEDELLIN1(config-if)#int s0/0/1
MEDELLIN1(config-if)#ip address 172.29.6.1 255.255.255.252
MEDELLIN1(config-if)#clock rate 4000000
This command applies only to DCE interfaces
MEDELLIN1(config-if)#no shut

%LINK-5-CHANGED: Interface Serial0/0/1, changed state to down
MEDELLIN1(config-if)#
MEDELLIN1(config-if)#int s0/1/0
MEDELLIN1(config-if)#ip address 172.29.6.9 255.255.255.252
MEDELLIN1(config-if)#clock rate 4000000
MEDELLIN1(config-if)#no shut

%LINK-5-CHANGED: Interface Serial0/1/0, changed state to down
MEDELLIN1(config-if)#int s0/1/1
MEDELLIN1(config-if)#ip address 172.29.6.13 255.255.255.252
MEDELLIN1(config-if)#clock rate 4000000
MEDELLIN1(config-if)#no shut

%LINK-5-CHANGED: Interface Serial0/1/1, changed state to down
MEDELLIN1(config-if)#
```

MEDELLIN2

```
MEDELLIN2#conf t
Enter configuration commands, one per line. End with CNTL/Z.
MEDELLIN2(config)#int s0/0/0
MEDELLIN2(config-if)#ip address 172.29.6.2 255.255.255.252
MEDELLIN2(config-if)#clock rate 4000000
MEDELLIN2(config-if)#no shut
MEDELLIN2(config-if)#
```

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

MEDELLIN2(config-if)#

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

MEDELLIN2(config-if)#int s0/0/1

MEDELLIN2(config-if)#ip address 172.29.6.5 255.255.255.252

MEDELLIN2(config-if)#clock rate 4000000

This command applies only to DCE interfaces

MEDELLIN2(config-if)#no shut

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

MEDELLIN2(config-if)#

MEDELLIN2(config-if)#int g0/0

MEDELLIN2(config-if)#ip address 172.29.4.1 255.255.255.128

MEDELLIN2(config-if)#no shut

MEDELLIN2(config-if)#

%LINK-5-CHANGED: Interface GigabitEthernet0/0, changed state to up

```

Password:
MEDELLIN2>ena
Password:
MEDELLIN2#conf t
Enter configuration commands, one per line. End with CNTL/Z.
MEDELLIN2 (config)#int s0/0/0
MEDELLIN2 (config-if)#ip address 172.29.6.2 255.255.255.252
MEDELLIN2 (config-if)#clock rate 4000000
MEDELLIN2 (config-if)#no shut

MEDELLIN2 (config-if)#
%LINK-5-CHANGED: Interface Serial0/0/0, changed state to up

MEDELLIN2 (config-if)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0, changed
state to up

MEDELLIN2 (config-if)#int s0/0/1
MEDELLIN2 (config-if)#ip address 172.29.6.5 255.255.255.252
MEDELLIN2 (config-if)#clock rate 4000000
This command applies only to DCE interfaces
MEDELLIN2 (config-if)#no shut

%LINK-5-CHANGED: Interface Serial0/0/1, changed state to down
MEDELLIN2 (config-if)#
MEDELLIN2 (config-if)#int g0/0
MEDELLIN2 (config-if)#ip address 172.29.4.1 255.255.255.128
MEDELLIN2 (config-if)#no shut

MEDELLIN2 (config-if)#
%LINK-5-CHANGED: Interface GigabitEthernet0/0, changed state to up

```

MEDELLIN3

```
MEDELLIN3#conf t
```

Enter configuration commands, one per line. End with CNTL/Z.

```
MEDELLIN3(config)#int s0/0/0
```

```
MEDELLIN3(config-if)#ip address 172.29.6.10 255.255.255.252
```

```
MEDELLIN3(config-if)#clock rate 4000000
```

This command applies only to DCE interfaces

```
MEDELLIN3(config-if)#no shut
```

```
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 s0/0/1
```

```
MEDELLIN3(config-if)#ip address 172.29.6.14 255.255.255.252
```

```
MEDELLIN3(config-if)#clock rate 4000000
```

This command applies only to DCE interfaces

```
MEDELLIN3(config-if)#no shut
```

```
MEDELLIN3(config-if)#
```

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

```
MEDELLIN3(config-if)#
```

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

```
MEDELLIN3(config-if)#int s0/1/0
```

```
MEDELLIN3(config-if)#ip address 172.29.6.6 255.255.255.252
```

```
MEDELLIN3(config-if)#clock rate 4000000
```

```
MEDELLIN3(config-if)#no shut
```

```
MEDELLIN3(config-if)#
```

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

```
MEDELLIN3(config-if)#
```

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

MEDELLIN3(config-if)#int g0/0

MEDELLIN3(config-if)#ip address 172.29.4.129 255.255.255.128

MEDELLIN3(config-if)#no shut

MEDELLIN3(config-if)#

%LINK-5-CHANGED: Interface GigabitEthernet0/0, changed state to up

```
MEDELLIN3>ena
Password:
MEDELLIN3#conf t
Enter configuration commands, one per line. End with CNTL/Z.
MEDELLIN3(config)#int s0/0/0
MEDELLIN3(config-if)#ip address 172.29.6.10 255.255.255.252
MEDELLIN3(config-if)#clock rate 4000000
This command applies only to DCE interfaces
MEDELLIN3(config-if)#no shut

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 s0/0/1
MEDELLIN3(config-if)#ip address 172.29.6.14 255.255.255.252
MEDELLIN3(config-if)#clock rate 4000000
This command applies only to DCE interfaces
MEDELLIN3(config-if)#no shut

MEDELLIN3(config-if)#
%LINK-5-CHANGED: Interface Serial0/0/1, changed state to up

MEDELLIN3(config-if)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/1, changed
state to up

MEDELLIN3(config-if)#int s0/1/0
MEDELLIN3(config-if)#ip address 172.29.6.6 255.255.255.252
MEDELLIN3(config-if)#clock rate 4000000
MEDELLIN3(config-if)#no shut

MEDELLIN3(config-if)#
%LINK-5-CHANGED: Interface Serial0/1/0, changed state to up

MEDELLIN3(config-if)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/1/0, changed
state to up

MEDELLIN3(config-if)#int g0/0
MEDELLIN3(config-if)#ip address 172.29.4.129 255.255.255.128
MEDELLIN3(config-if)#no shut

MEDELLIN3(config-if)#
%LINK-5-CHANGED: Interface GigabitEthernet0/0, changed state to up
```

BOGOTA1

BOGOTA1>ena

Password:

BOGOTA1#conf t

Enter configuration commands, one per line. End with CNTL/Z.

```
BOGOTA1(config)#int s0/0/0
BOGOTA1(config-if)#ip address 209.17.220.6 255.255.255.252
BOGOTA1(config-if)#clock rate 4000000
BOGOTA1(config-if)#no shut
BOGOTA1(config-if)#
%LINK-5-CHANGED: Interface Serial0/0/0, changed state to up
BOGOTA1(config-if)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0, changed state to up
BOGOTA1(config-if)#int s0/0/1
BOGOTA1(config-if)#ip address 172.29.3.9 255.255.255.252
BOGOTA1(config-if)#no shut
%LINK-5-CHANGED: Interface Serial0/0/1, changed state to down
BOGOTA1(config-if)#int s0/1/0
BOGOTA1(config-if)#ip address 172.29.3.1 255.255.255.252
BOGOTA1(config-if)#no shut
%LINK-5-CHANGED: Interface Serial0/1/0, changed state to down
BOGOTA1(config-if)#int s0/1/1
BOGOTA1(config-if)#ip address 172.29.3.5 255.255.255.252
BOGOTA1(config-if)#no shut
%LINK-5-CHANGED: Interface Serial0/1/1, changed state to down
```

```
BOGOTAL(config)#int s0/0/0
BOGOTAL(config-if)#ip address 209.17.220.6 255.255.255.252
BOGOTAL(config-if)#clock rate 4000000
BOGOTAL(config-if)#no shut

BOGOTAL(config-if)#
%LINK-5-CHANGED: Interface Serial10/0/0, changed state to up

BOGOTAL(config-if)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial10/0/0, change
state to up

BOGOTAL(config-if)#int s0/0/1
BOGOTAL(config-if)#ip address 172.29.3.9 255.255.255.252
BOGOTAL(config-if)#clock rate 4000000
This command applies only to DCE interfaces
BOGOTAL(config-if)#no shut

%LINK-5-CHANGED: Interface Serial10/0/1, changed state to down
BOGOTAL(config-if)#int s0/1/0
BOGOTAL(config-if)#ip address 172.29.3.1 255.255.255.252
BOGOTAL(config-if)#
BOGOTAL(config-if)#clock rate 4000000
This command applies only to DCE interfaces
BOGOTAL(config-if)#no shut

%LINK-5-CHANGED: Interface Serial10/1/0, changed state to down
BOGOTAL(config-if)#int s0/1/1
BOGOTAL(config-if)#ip address 172.29.3.5 255.255.255.252
BOGOTAL(config-if)#clock rate 4000000
This command applies only to DCE interfaces
BOGOTAL(config-if)#no shut
```

BOGOTA2

BOGOTA2#conf t

Enter configuration commands, one per line. End with CNTL/Z.

```
BOGOTA2(config)#int g0/0
```

```
BOGOTA2(config-if)#ip address 172.29.1.1 255.255.255.0
```

```
BOGOTA2(config-if)#no shut
```

```
BOGOTA2(config-if)#
```

```
%LINK-5-CHANGED: Interface GigabitEthernet0/0, changed state to up
```

```
BOGOTA2(config-if)#int s0/0/0
```

```
BOGOTA2(config-if)#ip address 172.29.3.10 255.255.255.252
```

```
BOGOTA2(config-if)#no shut
```

```
BOGOTA2(config-if)#
```

```
%LINK-5-CHANGED: Interface Serial10/0/0, changed state to up
```

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

```
BOGOTA2(config-if)#int s0/0/1
```

```
BOGOTA2(config-if)#ip address 172.29.3.13 255.255.255.252
```

```
BOGOTA2(config-if)#no shut
```

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

```
BOGOTA2(config-if)#int s0/0/0
```

```
BOGOTA2(config-if)#clock rate 4000000
```

```
BOGOTA2(config-if)#no shut
```

```
BOGOTA2>ena
Password:
BOGOTA2#conf t
Enter configuration commands, one per line. End with CNTL/Z.
BOGOTA2(config)#int g0/0
BOGOTA2(config-if)#ip address 172.29.1.1 255.255.255.0
BOGOTA2(config-if)#no shut

BOGOTA2(config-if)#
%LINK-5-CHANGED: Interface GigabitEthernet0/0, changed state to up

BOGOTA2(config-if)#int s0/0/0
BOGOTA2(config-if)#ip address 172.29.3.10 255.255.255.252
BOGOTA2(config-if)#no shut

BOGOTA2(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

BOGOTA2(config-if)#int s0/0/1
BOGOTA2(config-if)#ip address 172.29.3.13 255.255.255.252
BOGOTA2(config-if)#clock rate 4000000
This command applies only to DCE interfaces
BOGOTA2(config-if)#no shut

%LINK-5-CHANGED: Interface Serial0/0/1, changed state to down
BOGOTA2(config-if)#int s0/0/0
BOGOTA2(config-if)#clock rate 4000000
BOGOTA2(config-if)#no shut
BOGOTA2(config-if)#
```

BOGOTA3

```
BOGOTA3#conf t
```

Enter configuration commands, one per line. End with CNTL/Z.

```
BOGOTA3(config)#int s0/0/0
```

```
BOGOTA3(config-if)#ip address 172.29.3.2 255.255.255.252
```

```
BOGOTA3(config-if)#clock rate 4000000
```

```
BOGOTA3(config-if)#no shut
```

```
BOGOTA3(config-if)#
```

```
%LINK-5-CHANGED: Interface Serial0/0/0, changed state to up
```

```
BOGOTA3(config-if)#
```

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

```
BOGOTA3(config-if)#int s0/0/1
```

```
BOGOTA3(config-if)#ip address 172.29.3.6 255.255.255.252
```

```
BOGOTA3(config-if)#clock rate 4000000
```

```
BOGOTA3(config-if)#no shut
```

```
%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
```

```
BOGOTA3(config-if)#int s0/1/0
```

```
BOGOTA3(config-if)#ip address 172.29.3.14 255.255.255.252
```

```
BOGOTA3(config-if)#clock rate 4000000
```

```
BOGOTA3(config-if)#no shut
```

```
%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
```

```
BOGOTA3(config-if)#int g0/0
```

```
BOGOTA3(config-if)#ip add 172.29.0.1 255.255.255.0
```

```
BOGOTA3(config-if)#no shut
```

```
%LINK-5-CHANGED: Interface GigabitEthernet0/0, changed state to up
```

```

BOGOTAS#conf t
Enter configuration commands, one per line. End with CNTL/Z.
BOGOTAS(config)#int s0/0/0
BOGOTAS(config-if)#ip address 172.29.3.2 255.255.255.252
BOGOTAS(config-if)#clock rate 4000000
BOGOTAS(config-if)#no shut

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

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

BOGOTAS(config-if)#int s0/0/1
BOGOTAS(config-if)#ip address 172.29.3.6 255.255.255.252
BOGOTAS(config-if)#clock rate 4000000
BOGOTAS(config-if)#no shut

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

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

BOGOTAS(config-if)#int s0/1/0
BOGOTAS(config-if)#ip address 172.29.3.14 255.255.255.252
BOGOTAS(config-if)#clock rate 4000000
BOGOTAS(config-if)#no shut

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

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

BOGOTAS(config-if)#int g0/0
BOGOTAS(config-if)#172.29.0.1 255.255.255.0
^
% Invalid input detected at '^' marker.
BOGOTAS(config-if)#ip add 172.29.0.1 255.255.255.0
BOGOTAS(config-if)#no shut

```

CONFIGURACION RIP

MEDELLIN1

MEDELLIN1>ena

Password:

MEDELLIN1#conf t

Enter configuration commands, one per line. End with CNTL/Z.

MEDELLIN1(config)#router rip

MEDELLIN1(config-router)#version 2

MEDELLIN1(config-router)#no auto-summary

MEDELLIN1(config-router)#do show ip route connected

C 172.29.6.0/30 is directly connected, Serial0/0/1

C 172.29.6.8/30 is directly connected, Serial0/1/0

C 172.29.6.12/30 is directly connected, Serial0/1/1

C 209.17.220.0/30 is directly connected, Serial0/0/0

```
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)#passive-interface s0/0/0
```

User Access Verification

Password:

```
MEDELLIN1>ena
```

Password:

```
MEDELLIN1#conf t
```

Enter configuration commands, one per line. End with CNTL/Z.

```
MEDELLIN1(config)#router rip
```

```
MEDELLIN1(config-router)#version 2
```

```
MEDELLIN1(config-router)#no auto-summary
```

```
MEDELLIN1(config-router)#do show ip route connected
```

```
 C 172.29.6.0/30 is directly connected, Serial0/0/1
```

```
 C 172.29.6.8/30 is directly connected, Serial0/1/0
```

```
 C 172.29.6.12/30 is directly connected, Serial0/1/1
```

```
 C 209.17.220.0/30 is directly connected, Serial0/0/0
```

```
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)#passive-interface s0/0/0
```

```
MEDELLIN1(config-router)#
```

MEDELLIN2

```
MEDELLIN2>ena
```

Password:

```
MEDELLIN2#conf t
```

Enter configuration commands, one per line. End with CNTL/Z.

```
MEDELLIN2(config)#router rip
```

```
MEDELLIN2(config-router)#version 2
```

```
MEDELLIN2(config-router)#no auto-summary
```

```
MEDELLIN2(config-router)#do show ip route connected
```

```
C 172.29.4.0/25 is directly connected, GigabitEthernet0/0
```

```
C 172.29.6.0/30 is directly connected, Serial0/0/0
```

```
C 172.29.6.4/30 is directly connected, Serial0/0/1
```

```
MEDELLIN2(config-router)#network 172.29.4.0
```

```
MEDELLIN2(config-router)#network 172.29.6.0
```

```
MEDELLIN2(config-router)#network 172.29.6.4
```

```
MEDELLIN2(config-router)#passive-interface g0/0
```

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

```
User Access Verification
```

```
Password:
```

```
Password:
```

```
MEDELLIN2>ena
```

```
Password:
```

```
MEDELLIN2#conf t
```

```
Enter configuration commands, one per line. End with CNTL/Z.
```

```
MEDELLIN2(config)#router rip
```

```
MEDELLIN2(config-router)#version 2
```

```
MEDELLIN2(config-router)#no auto-summary
```

```
MEDELLIN2(config-router)#do show ip route connected
```

```
C 172.29.4.0/25 is directly connected, GigabitEthernet0/0
```

```
C 172.29.6.0/30 is directly connected, Serial0/0/0
```

```
C 172.29.6.4/30 is directly connected, Serial0/0/1
```

```
MEDELLIN2(config-router)#network 172.29.4.0
```

```
MEDELLIN2(config-router)#network 172.29.6.0
```

```
MEDELLIN2(config-router)#network 172.29.6.4
```

```
MEDELLIN2(config-router)#passive-interface g0/0
```

```
MEDELLIN2(config-router)#
```

MEDELLIN3

MEDELLIN3>ena

Password:

MEDELLIN3#conf t

Enter configuration commands, one per line. End with CNTL/Z.

MEDELLIN3(config)#router rip

MEDELLIN3(config-router)#version 2

MEDELLIN3(config-router)#no auto-summary

MEDELLIN3(config-router)#do show ip route connected

C 172.29.4.128/25 is directly connected, GigabitEthernet0/0

C 172.29.6.4/30 is directly connected, Serial0/1/0

C 172.29.6.8/30 is directly connected, Serial0/0/0

C 172.29.6.12/30 is directly connected, Serial0/0/1

MEDELLIN3(config-router)#network 172.29.4.128

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)#passive-interface g0/0

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

User Access Verification

Password:

```
MEDELLIN3>ena
```

Password:

```
MEDELLIN3#conf t
```

Enter configuration commands, one per line. End with CNTL/Z.

```
MEDELLIN3(config)#router rip
```

```
MEDELLIN3(config-router)#version 2
```

```
MEDELLIN3(config-router)#no auto-summary
```

```
MEDELLIN3(config-router)#do show ip route connected
```

```
 C 172.29.4.128/25 is directly connected, GigabitEthernet0/0
```

```
 C 172.29.6.4/30 is directly connected, Serial0/1/0
```

```
 C 172.29.6.8/30 is directly connected, Serial0/0/0
```

```
 C 172.29.6.12/30 is directly connected, Serial0/0/1
```

```
MEDELLIN3(config-router)#network 172.29.4.128
```

```
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)#passive-interface g0/0
```

```
MEDELLIN3(config-router)#
```

BOGOTA1

```
BOGOTA1>ena
```

Password:

```
BOGOTA1#conf t
```

Enter configuration commands, one per line. End with CNTL/Z.

```
BOGOTA1(config)#router rip
```

```
BOGOTA1(config-router)#version 2
```

```
BOGOTA1(config-router)#no auto-summary
```

```
BOGOTA1(config-router)#do show ip route connected
```

```
 C 172.29.3.0/30 is directly connected, Serial0/1/0
```

```
 C 172.29.3.4/30 is directly connected, Serial0/1/1
```

```
 C 172.29.3.8/30 is directly connected, Serial0/0/1
```

```
 C 209.17.220.4/30 is directly connected, Serial0/0/0
```

```
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)#passive-interface s0/0/0
```

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

```
User Access Verification
```

```
Password:
Password:
```

```
BOGOTAL>ena
Password:
BOGOTAL#conf t
Enter configuration commands, one per line. End with CNTL/Z.
BOGOTAL(config)#router rip
BOGOTAL(config-router)#version 2
BOGOTAL(config-router)#no auto-summary
BOGOTAL(config-router)#do show ip route connected
C 172.29.3.0/30 is directly connected, Serial0/1/0
C 172.29.3.4/30 is directly connected, Serial0/1/1
C 172.29.3.8/30 is directly connected, Serial0/0/1
C 209.17.220.4/30 is directly connected, Serial0/0/0

BOGOTAL(config-router)#network 172.29.3.0
BOGOTAL(config-router)#network 172.29.3.4
BOGOTAL(config-router)#network 172.29.3.8
BOGOTAL(config-router)#passive-interface s0/0/0
BOGOTAL(config-router)#
```

BOGOTA2

```
BOGOTA2>ena
Password:
BOGOTA2#conf t
Enter configuration commands, one per line. End with CNTL/Z.
BOGOTA2(config)#router rip
BOGOTA2(config-router)#version 2
```

```
BOGOTA2(config-router)#no auto-summary
BOGOTA2(config-router)#do show ip route connected
C 172.29.1.0/24 is directly connected, GigabitEthernet0/0
C 172.29.3.8/30 is directly connected, Serial0/0/0
C 172.29.3.12/30 is directly connected, Serial0/0/1
BOGOTA2(config-router)#network 172.29.1.0
BOGOTA2(config-router)#network 172.29.3.8
BOGOTA2(config-router)#network 172.29.3.12
BOGOTA2(config-router)#passive-interface g0/0
BOGOTA2(config-router)#
```

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

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

User Access Verification

Password:

BOGOTA2>ena
Password:
BOGOTA2#conf t
Enter configuration commands, one per line. End with CNTL/Z.
BOGOTA2(config)#router rip
BOGOTA2(config-router)#version 2
BOGOTA2(config-router)#no auto-summary
BOGOTA2(config-router)#do show ip route connected
C 172.29.1.0/24 is directly connected, GigabitEthernet0/0
C 172.29.3.8/30 is directly connected, Serial0/0/0
C 172.29.3.12/30 is directly connected, Serial0/0/1

BOGOTA2(config-router)#network 172.29.1.0
BOGOTA2(config-router)#network 172.29.3.8
BOGOTA2(config-router)#network 172.29.3.12
BOGOTA2(config-router)#passive-interface g0/0
BOGOTA2(config-router)#
```

BOGOTA3

```
BOGOTA3>ena
```

```
Password:
```

```
BOGOTA3#conf t
```

```
Enter configuration commands, one per line. End with CNTL/Z.
```

```
BOGOTA3(config)#router rip
```

```
BOGOTA3(config-router)#version 2
```

```
BOGOTA3(config-router)#no auto-summary
```

```
BOGOTA3(config-router)#do show ip route connected
```

```
C 172.29.0.0/24 is directly connected, GigabitEthernet0/0
```

```
C 172.29.3.0/30 is directly connected, Serial0/0/0
```

```
C 172.29.3.4/30 is directly connected, Serial0/0/1
```

```
C 172.29.3.12/30 is directly connected, Serial0/1/0
```

```
BOGOTA3(config-router)#network 172.29.0.0
```

```
BOGOTA3(config-router)#network 172.29.3.0
```

```
BOGOTA3(config-router)#network 172.29.3.4
```

```
BOGOTA3(config-router)#passive-interface g0/0
```

```
BOGOTA3(config-router)#
```

User Access Verification

Password:

```
BOGOTA3>ena
```

Password:

```
BOGOTA3#conf t
```

Enter configuration commands, one per line. End with CNTL/Z.

```
BOGOTA3(config)#router rip
```

```
BOGOTA3(config-router)#version 2
```

```
BOGOTA3(config-router)#no auto-summary
```

```
BOGOTA3(config-router)#do show ip route connected
```

```
 C 172.29.0.0/24 is directly connected, GigabitEthernet0/0
```

```
 C 172.29.3.0/30 is directly connected, Serial0/0/0
```

```
 C 172.29.3.4/30 is directly connected, Serial0/0/1
```

```
 C 172.29.3.12/30 is directly connected, Serial0/1/0
```

```
BOGOTA3(config-router)#network 172.29.0.0
```

```
BOGOTA3(config-router)#network 172.29.3.0
```

```
BOGOTA3(config-router)#network 172.29.3.4
```

```
BOGOTA3(config-router)#passive-interface g0/0
```

```
BOGOTA3(config-router)#
```

- b. 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>ena
```

Password:

```
MEDELLIN1#conf t
```

Enter configuration commands, one per line. End with CNTL/Z.

```
MEDELLIN1(config)#ip route 0.0.0.0 0.0.0.0 209.17.220.1
```

```
MEDELLIN1(config)#router rip
```

```
MEDELLIN1(config-router)#default-information originate
MEDELLIN1(config-router)#
```

```
MEDELLIN1>ena
Password:
MEDELLIN1#conf t
Enter configuration commands, one per line. End with CNTL/Z.
MEDELLIN1(config)#ip route 0.0.0.0 0.0.0.0 209.17.220.1
MEDELLIN1(config)#router rip
MEDELLIN1(config-router)#default-information originate
MEDELLIN1(config-router)#
```

BOGOTA1

```
BOGOTA1>ena
Password:
BOGOTA1#conf t
Enter configuration commands, one per line. End with CNTL/Z.
BOGOTA1(config)#ip route 0.0.0.0 0.0.0.0 209.17.220.5
BOGOTA1(config)#route rip
BOGOTA1(config-router)#default-information origina
BOGOTA1(config-router)#
```

```
BOGOTA1>ena
Password:
BOGOTA1#conf t
Enter configuration commands, one per line. End with CNTL/Z.
BOGOTA1(config)#ip route 0.0.0.0 0.0.0.0 209.17.220.5
BOGOTA1(config)#route rip
BOGOTA1(config-router)#default-information origina
BOGOTA1(config-router)#
BOGOTA1#
%SYS-5-CONFIG_I: Configured from console by console
```

- c. El router ISP deberá tener una ruta estática dirigida hacia cada red interna de Bogotá y Medellín para el caso se suman las subredes de cada uno a /22.

ISP

ISP#conf t

Enter configuration commands, one per line. End with CNTL/Z.

ISP(config)#ip route 172.29.4.0 255.255.252.0 209.17.220.2

ISP(config)#ip route 172.29.0.0 255.255.252.0 209.17.220.6

```
ISP#conf t
Enter configuration commands, one per line. End with CNTL/Z.
ISP(config)#ip route 172.29.4.0 255.255.252.0 209.17.220.2
ISP(config)#ip route 172.29.0.0 255.255.252.0 209.17.220.6
ISP(config)#
```

Parte 2: Tabla de Enrutamiento.

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

SHOW IP ROUTER

MEDELLIN1

```

MEDELLINI#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 209.17.220.1 to network 0.0.0.0

    172.29.0.0/16 is variably subnetted, 9 subnets, 3 masks
R       172.29.4.0/25 [120/1] via 172.29.6.2, 00:00:15, Serial0/0/1
R       172.29.4.128/25 [120/1] via 172.29.6.14, 00:00:09,
Serial0/1/1
                               [120/1] via 172.29.6.10, 00:00:09,
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, 00:00:15, Serial0/0/1
                               [120/1] via 172.29.6.14, 00:00:09, Serial0/1/1
                               [120/1] via 172.29.6.10, 00:00:09, 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, 2 subnets, 2 masks
C       209.17.220.0/30 is directly connected, Serial0/0/0
L       209.17.220.2/32 is directly connected, Serial0/0/0
S*    0.0.0.0/0 [1/0] via 209.17.220.1

MEDELLINI#

```

BOGOTA1

```

BOGOTA1#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 209.17.220.5 to network 0.0.0.0

    172.29.0.0/16 is variably subnetted, 9 subnets, 3 masks
R       172.29.0.0/24 [120/1] via 172.29.3.6, 00:00:01, Serial0/1/1
                               [120/1] via 172.29.3.2, 00:00:01, Serial0/1/0
R       172.29.1.0/24 [120/1] via 172.29.3.10, 00:00:04, Serial0/0/1
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, Serial0/0/1
L       172.29.3.9/32 is directly connected, Serial0/0/1
R       172.29.3.12/30 [120/1] via 172.29.3.10, 00:00:04, Serial0/0/1
                               [120/1] via 172.29.3.6, 00:00:01, Serial0/1/1
                               [120/1] via 172.29.3.2, 00:00:01, Serial0/1/0
    209.17.220.0/24 is variably subnetted, 2 subnets, 2 masks
C       209.17.220.4/30 is directly connected, Serial0/0/0
L       209.17.220.6/32 is directly connected, Serial0/0/0
S*    0.0.0.0/0 [1/0] via 209.17.220.5

```

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

BOGOTA3

```

-----
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 172.29.3.1 to network 0.0.0.0

    172.29.0.0/16 is variably subnetted, 10 subnets, 3 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, 00:00:13, Serial0/1/0
C    172.29.3.0/30 is directly connected, Serial0/0/0
L    172.29.3.2/32 is directly connected, Serial0/0/0
C    172.29.3.4/30 is directly connected, Serial0/0/1
L    172.29.3.6/32 is directly connected, Serial0/0/1
R    172.29.3.8/30 [120/1] via 172.29.3.5, 00:00:23, Serial0/0/1
    [120/1] via 172.29.3.1, 00:00:23, Serial0/0/0
    [120/1] via 172.29.3.13, 00:00:13, Serial0/1/0
C    172.29.3.12/30 is directly connected, Serial0/1/0
L    172.29.3.14/32 is directly connected, Serial0/1/0
R*   0.0.0.0/0 [120/1] via 172.29.3.1, 00:00:23, Serial0/0/0
    [120/1] via 172.29.3.5, 00:00:23, Serial0/0/1

BOGOTA3#
-----

```

MEDELLIN3

```

MEDELLIN3#show ip rout
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 172.29.6.9 to network 0.0.0.0

    172.29.0.0/16 is variably subnetted, 10 subnets, 3 masks
R    172.29.4.0/25 [120/1] via 172.29.6.5, 00:00:09, Serial0/1/0
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 172.29.6.13, 00:00:26, Serial0/0/1
    [120/1] via 172.29.6.9, 00:00:26, Serial0/0/0
    [120/1] via 172.29.6.5, 00:00:09, Serial0/1/0
C    172.29.6.4/30 is directly connected, Serial0/1/0
L    172.29.6.6/32 is directly connected, Serial0/1/0
C    172.29.6.8/30 is directly connected, Serial0/0/0
L    172.29.6.10/32 is directly connected, Serial0/0/0
C    172.29.6.12/30 is directly connected, Serial0/0/1

MEDELLIN3#
-----

```

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.

- d. Los routers Medellín2 y Bogotá2 también presentan redes conectadas directamente y recibidas mediante RIP.
- e. Las tablas de los routers restantes deben permitir visualizar rutas redundantes para el caso de la ruta por defecto.
- f. El router ISP solo debe indicar sus rutas estáticas adicionales a las directamente conectadas.

DICHOS PUNTOS SE PUEDEN VALIDAR EN LA TABLA DEL ROUTER ISP

ISP

```

Password:

ISP>ena
Password:
ISP#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

      172.29.0.0/22 is subnetted, 2 subnets
S       172.29.0.0/22 [1/0] via 209.17.220.6
S       172.29.4.0/22 [1/0] via 209.17.220.2
      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

ISP#
  
```

Parte 3: Deshabilitar la propagación del protocolo RIP.

- a. Para no propagar las publicaciones por interfaces que no lo requieran se debe deshabilitar la propagación del protocolo RIP, en la siguiente tabla se indican las interfaces de cada router que no necesitan desactivación.

ROUTER	INTERFAZ
Bogota1	SERIAL0/0/1; SERIAL0/1/0; SERIAL0/1/1
Bogota2	SERIAL0/0/0; SERIAL0/0/1
Bogota3	SERIAL0/0/0; SERIAL0/0/1; SERIAL0/1/0
Medellin1	SERIAL0/0/0; SERIAL0/0/1; SERIAL0/1/1
Medellin2	SERIAL0/0/0; SERIAL0/0/1
Medellin3	SERIAL0/0/0; SERIAL0/0/1; SERIAL0/1/0
ISP	No lo requiere

CONFIGURACION RIP

MEDELLIN1

MEDELLIN1>ena

Password:

MEDELLIN1#conf t

Enter configuration commands, one per line. End with CNTL/Z.

MEDELLIN1(config)#router rip

MEDELLIN1(config-router)#version 2

MEDELLIN1(config-router)#no auto-summary

MEDELLIN1(config-router)#do show ip route connected

C 172.29.6.0/30 is directly connected, Serial0/0/1

C 172.29.6.8/30 is directly connected, Serial0/1/0

C 172.29.6.12/30 is directly connected, Serial0/1/1

```
C 209.17.220.0/30 is directly connected, Serial0/0/0
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)#passive-interface s0/0/0
```

User Access Verification

```
Password:
```

```
MEDELLIN1>ena
```

```
Password:
```

```
MEDELLIN1#conf t
```

```
Enter configuration commands, one per line. End with CNTL/Z.
```

```
MEDELLIN1(config)#router rip
```

```
MEDELLIN1(config-router)#version 2
```

```
MEDELLIN1(config-router)#no auto-summary
```

```
MEDELLIN1(config-router)#do show ip route connected
```

```
 C   172.29.6.0/30 is directly connected, Serial0/0/1
```

```
 C   172.29.6.8/30 is directly connected, Serial0/1/0
```

```
 C   172.29.6.12/30 is directly connected, Serial0/1/1
```

```
 C   209.17.220.0/30 is directly connected, Serial0/0/0
```

```
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)#passive-interface s0/0/0
```

```
MEDELLIN1(config-router)#
```

MEDELLIN2

```
MEDELLIN2>ena
```

```
Password:
```

```
MEDELLIN2#conf t
```

```
Enter configuration commands, one per line. End with CNTL/Z.
```

```
MEDELLIN2(config)#router rip
```

```
MEDELLIN2(config-router)#version 2
```

```
MEDELLIN2(config-router)#no auto-summary
```

```
MEDELLIN2(config-router)#do show ip route connected
C 172.29.4.0/25 is directly connected, GigabitEthernet0/0
C 172.29.6.0/30 is directly connected, Serial0/0/0
C 172.29.6.4/30 is directly connected, Serial0/0/1
MEDELLIN2(config-router)#network 172.29.4.0
MEDELLIN2(config-router)#network 172.29.6.0
MEDELLIN2(config-router)#network 172.29.6.4
MEDELLIN2(config-router)#passive-interface g0/0
```

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

User Access Verification

Password:
Password:

MEDELLIN2>ena
Password:
MEDELLIN2#conf t
Enter configuration commands, one per line. End with CNTL/Z.
MEDELLIN2(config)#router rip
MEDELLIN2(config-router)#version 2
MEDELLIN2(config-router)#no auto-summary
MEDELLIN2(config-router)#do show ip route connected
C 172.29.4.0/25 is directly connected, GigabitEthernet0/0
C 172.29.6.0/30 is directly connected, Serial0/0/0
C 172.29.6.4/30 is directly connected, Serial0/0/1

MEDELLIN2(config-router)#network 172.29.4.0
MEDELLIN2(config-router)#network 172.29.6.0
MEDELLIN2(config-router)#network 172.29.6.4
MEDELLIN2(config-router)#passive-interface g0/0
MEDELLIN2(config-router)#
```

MEDELLIN3

MEDELLIN3>ena

Password:

MEDELLIN3#conf t

Enter configuration commands, one per line. End with CNTL/Z.

MEDELLIN3(config)#router rip

MEDELLIN3(config-router)#version 2

MEDELLIN3(config-router)#no auto-summary

MEDELLIN3(config-router)#do show ip route connected

C 172.29.4.128/25 is directly connected, GigabitEthernet0/0

C 172.29.6.4/30 is directly connected, Serial0/1/0

C 172.29.6.8/30 is directly connected, Serial0/0/0

C 172.29.6.12/30 is directly connected, Serial0/0/1

MEDELLIN3(config-router)#network 172.29.4.128

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)#passive-interface g0/0

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

User Access Verification

Password:

MEDELLIN3>ena
Password:
MEDELLIN3#conf t
Enter configuration commands, one per line. End with CNTL/Z.
MEDELLIN3(config)#router rip
MEDELLIN3(config-router)#version 2
MEDELLIN3(config-router)#no auto-summary
MEDELLIN3(config-router)#do show ip route connected
C 172.29.4.128/25 is directly connected, GigabitEthernet0/0
C 172.29.6.4/30 is directly connected, Serial0/1/0
C 172.29.6.8/30 is directly connected, Serial0/0/0
C 172.29.6.12/30 is directly connected, Serial0/0/1

MEDELLIN3(config-router)#network 172.29.4.128
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)#passive-interface g0/0
MEDELLIN3(config-router)#
```

BOGOTA1

```
BOGOTA1>ena
```

```
Password:
```

```
BOGOTA1#conf t
```

```
Enter configuration commands, one per line. End with CNTL/Z.
```

```
BOGOTA1(config)#router rip
```

```
BOGOTA1(config-router)#version 2
```

```
BOGOTA1(config-router)#no auto-summary
```

```
BOGOTA1(config-router)#do show ip route connected
```

```
C 172.29.3.0/30 is directly connected, Serial0/1/0
```

```
C 172.29.3.4/30 is directly connected, Serial0/1/1
```

```
C 172.29.3.8/30 is directly connected, Serial0/0/1
```

```
C 209.17.220.4/30 is directly connected, Serial0/0/0
```

```
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)#passive-interface s0/0/0
```

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

```
User Access Verification
```

```
Password:
Password:
```

```
BOGOTAL>ena
Password:
BOGOTAL#conf t
Enter configuration commands, one per line. End with CNTL/Z.
BOGOTAL(config)#router rip
BOGOTAL(config-router)#version 2
BOGOTAL(config-router)#no auto-summary
BOGOTAL(config-router)#do show ip route connected
C 172.29.3.0/30 is directly connected, Serial0/1/0
C 172.29.3.4/30 is directly connected, Serial0/1/1
C 172.29.3.8/30 is directly connected, Serial0/0/1
C 209.17.220.4/30 is directly connected, Serial0/0/0

BOGOTAL(config-router)#network 172.29.3.0
BOGOTAL(config-router)#network 172.29.3.4
BOGOTAL(config-router)#network 172.29.3.8
BOGOTAL(config-router)#passive-interface s0/0/0
BOGOTAL(config-router)#
```

BOGOTA2

```
BOGOTA2>ena
Password:
BOGOTA2#conf t
Enter configuration commands, one per line. End with CNTL/Z.
BOGOTA2(config)#router rip
BOGOTA2(config-router)#version 2
```

```
BOGOTA2(config-router)#no auto-summary
BOGOTA2(config-router)#do show ip route connected
C 172.29.1.0/24 is directly connected, GigabitEthernet0/0
C 172.29.3.8/30 is directly connected, Serial0/0/0
C 172.29.3.12/30 is directly connected, Serial0/0/1
BOGOTA2(config-router)#network 172.29.1.0
BOGOTA2(config-router)#network 172.29.3.8
BOGOTA2(config-router)#network 172.29.3.12
BOGOTA2(config-router)#passive-interface g0/0
BOGOTA2(config-router)#
```

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

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

User Access Verification

Password:

BOGOTA2>ena
Password:
BOGOTA2#conf t
Enter configuration commands, one per line. End with CNTL/Z.
BOGOTA2(config)#router rip
BOGOTA2(config-router)#version 2
BOGOTA2(config-router)#no auto-summary
BOGOTA2(config-router)#do show ip route connected
C 172.29.1.0/24 is directly connected, GigabitEthernet0/0
C 172.29.3.8/30 is directly connected, Serial0/0/0
C 172.29.3.12/30 is directly connected, Serial0/0/1

BOGOTA2(config-router)#network 172.29.1.0
BOGOTA2(config-router)#network 172.29.3.8
BOGOTA2(config-router)#network 172.29.3.12
BOGOTA2(config-router)#passive-interface g0/0
BOGOTA2(config-router)#
```

BOGOTA3

```
BOGOTA3>ena
```

```
Password:
```

```
BOGOTA3#conf t
```

```
Enter configuration commands, one per line. End with CNTL/Z.
```

```
BOGOTA3(config)#router rip
```

```
BOGOTA3(config-router)#version 2
```

```
BOGOTA3(config-router)#no auto-summary
```

```
BOGOTA3(config-router)#do show ip route connected
```

```
C 172.29.0.0/24 is directly connected, GigabitEthernet0/0
```

```
C 172.29.3.0/30 is directly connected, Serial0/0/0
```

```
C 172.29.3.4/30 is directly connected, Serial0/0/1
```

```
C 172.29.3.12/30 is directly connected, Serial0/1/0
```

```
BOGOTA3(config-router)#network 172.29.0.0
```

```
BOGOTA3(config-router)#network 172.29.3.0
```

```
BOGOTA3(config-router)#network 172.29.3.4
```

```
BOGOTA3(config-router)#passive-interface g0/0
```

```
BOGOTA3(config-router)#
```

User Access Verification

```
Password:
```

```
BOGOTA3>ena
```

```
Password:
```

```
BOGOTA3#conf t
```

```
Enter configuration commands, one per line. End with CNTL/Z.
```

```
BOGOTA3(config)#router rip
```

```
BOGOTA3(config-router)#version 2
```

```
BOGOTA3(config-router)#no auto-summary
```

```
BOGOTA3(config-router)#do show ip route connected
```

```
C 172.29.0.0/24 is directly connected, GigabitEthernet0/0
```

```
C 172.29.3.0/30 is directly connected, Serial0/0/0
```

```
C 172.29.3.4/30 is directly connected, Serial0/0/1
```

```
C 172.29.3.12/30 is directly connected, Serial0/1/0
```

```
BOGOTA3(config-router)#network 172.29.0.0
```

```
BOGOTA3(config-router)#network 172.29.3.0
```

```
BOGOTA3(config-router)#network 172.29.3.4
```

```
BOGOTA3(config-router)#passive-interface g0/0
```

```
BOGOTA3(config-router)#
```

Parte 4: Verificación del protocolo RIP.

- a. Verificar y documentar las opciones de enrutamiento configuradas en los routers, como el passive interface para la conexión hacia el ISP, la versión de RIP y las interfaces que participan de la publicación entre otros datos.

SHOW IP PROTOCOL

MEDELLIN1

```
MEDELLIN1>ena
Password:
MEDELLIN1#show ip protocol
Routing Protocol is "rip"
Sending updates every 30 seconds, next due in 1 seconds
Invalid after 180 seconds, hold down 180, flushed after 240
Outgoing update filter list for all interfaces is not set
Incoming update filter list for all interfaces is not set
Redistributing: rip
Default version control: send version 2, receive 2
  Interface          Send  Recv  Triggered RIP  Key-chain
  Serial0/0/1        2     2
  Serial0/1/0        2     2
  Serial0/1/1        2     2
Automatic network summarization is not in effect
Maximum path: 4
Routing for Networks:
  172.29.0.0
Passive Interface(s):
  Serial0/0/0
Routing Information Sources:
  Gateway            Distance      Last Update
  172.29.6.2         120          00:00:12
  172.29.6.14        120          00:00:21
  172.29.6.10        120          00:00:21
Distance: (default is 120)
```

MEDELLIN2

```
MEDELLIN2>ena
Password:
MEDELLIN2#show ip protocol
Routing Protocol is "rip"
Sending updates every 30 seconds, next due in 12 seconds
Invalid after 180 seconds, hold down 180, flushed after 240
Outgoing update filter list for all interfaces is not set
Incoming update filter list for all interfaces is not set
Redistributing: rip
Default version control: send version 2, receive 2
  Interface          Send Recv Triggered RIP Key-chain
  Serial0/0/0        2     2
  Serial0/0/1        2     2
Automatic network summarization is not in effect
Maximum path: 4
Routing for Networks:
  172.29.0.0
Passive Interface(s):
  GigabitEthernet0/0
Routing Information Sources:
  Gateway            Distance      Last Update
  172.29.6.1         120           00:00:26
  172.29.6.6         120           00:00:18
Distance: (default is 120)
.....!
```

MEDELLIN3

```
MEDELLIN3>ena
Password:
MEDELLIN3#show ip protoc
Routing Protocol is "rip"
Sending updates every 30 seconds, next due in 27 seconds
Invalid after 180 seconds, hold down 180, flushed after 240
Outgoing update filter list for all interfaces is not set
Incoming update filter list for all interfaces is not set
Redistributing: rip
Default version control: send version 2, receive 2
  Interface          Send Recv Triggered RIP Key-chain
  Serial0/0/0        2     2
  Serial0/0/1        2     2
  Serial0/1/0        2     2
Automatic network summarization is not in effect
Maximum path: 4
Routing for Networks:
  172.29.0.0
Passive Interface(s):
  GigabitEthernet0/0
Routing Information Sources:
  Gateway            Distance      Last Update
  172.29.6.9         120           00:00:08
  172.29.6.13        120           00:00:08
  172.29.6.5         120           00:00:23
```

BOGOTA1

```
BOGOTA1>ena
Password:
BOGOTA1#show ip protocol
Routing Protocol is "rip"
Sending updates every 30 seconds, next due in 13 seconds
Invalid after 180 seconds, hold down 180, flushed after 240
Outgoing update filter list for all interfaces is not set
Incoming update filter list for all interfaces is not set
Redistributing: rip
Default version control: send version 2, receive 2
  Interface          Send Recv Triggered RIP Key-chain
  Serial0/0/1        2     2
  Serial0/1/0        2     2
  Serial0/1/1        2     2
Automatic network summarization is not in effect
Maximum path: 4
Routing for Networks:
  172.29.0.0
Passive Interface(s):
  Serial0/0/0
Routing Information Sources:
  Gateway           Distance      Last Update
  172.29.3.6        120          00:00:14
  172.29.3.2        120          00:00:14
  172.29.3.10       120          00:00:18
Distance: (default is 120)
BOGOTA1#
```

BOGOTA2

```
BOGOTA2>ena
Password:
BOGOTA2#show ip protoco
Routing Protocol is "rip"
Sending updates every 30 seconds, next due in 10 seconds
Invalid after 180 seconds, hold down 180, flushed after 240
Outgoing update filter list for all interfaces is not set
Incoming update filter list for all interfaces is not set
Redistributing: rip
Default version control: send version 2, receive 2
  Interface          Send Recv Triggered RIP Key-chain
  Serial0/0/0        2     2
  Serial0/0/1        2     2
Automatic network summarization is not in effect
Maximum path: 4
Routing for Networks:
  172.29.0.0
Passive Interface(s):
  GigabitEthernet0/0
Routing Information Sources:
  Gateway           Distance      Last Update
  172.29.3.9        120          00:00:14
  172.29.3.14       120          00:00:14
Distance: (default is 120)
BOGOTA2#
```

BOGOTA3

```
BOGOTA3>ena
Password:
BOGOTA3#show ip proto
Routing Protocol is "rip"
Sending updates every 30 seconds, next due in 0 seconds
Invalid after 180 seconds, hold down 180, flushed after 240
Outgoing update filter list for all interfaces is not set
Incoming update filter list for all interfaces is not set
Redistributing: rip
Default version control: send version 2, receive 2
  Interface          Send Recv Triggered RIP Key-chain
Serial0/0/0          2     2
Serial0/0/1          2     2
Serial0/1/0          2     2
Automatic network summarization is not in effect
Maximum path: 4
Routing for Networks:
  172.29.0.0
Passive Interface(s):
  GigabitEthernet0/0
Routing Information Sources:
  Gateway           Distance      Last Update
  172.29.3.1         120          00:00:01
  172.29.3.5         120          00:00:01
  172.29.3.13        120          00:00:03
Distance: (default is 120)
-----
```

- b. Verificar y documentar la base de datos de RIP de cada router, donde se informa de manera detallada de todas las rutas hacia cada red.**

MEDELLIN1

```
Router(config-router)#do show ip route connected
C 172.29.6.0/30 is directly connected, Serial0/0/1
C 172.29.6.8/30 is directly connected, Serial0/1/0
C 172.29.6.12/30 is directly connected, Serial0/1/1
C 209.17.220.0/30 is directly connected, Serial0/0/0
```

BOGOTA1

```
Router(config-router)#do show ip route connected
C 172.29.3.0/30 is directly connected, Serial0/1/0
C 172.29.3.4/30 is directly connected, Serial0/1/1
C 172.29.3.8/30 is directly connected, Serial0/0/1
C 209.17.220.4/30 is directly connected, Serial0/0/0
```

PARTE 5: CONFIGURAR ENCAPSULAMIENTO Y AUTENTICACIÓN PPP.

- Según la topología se requiere que el enlace Medellín1 con ISP sea configurado con autenticación PAT.
- El enlace Bogotá1 con ISP se debe configurar con autenticación CHAT.

PUNTOS A Y B

ISP

```
ISP>ena
```

```
Password:
```

```
ISP#conf t
```

```
Enter configuration commands, one per line. End with CNTL/Z.
```

```
ISP(config)#username MEDELLIN password cisco
```

```
ISP(config)#int s0/0/0
```

```
ISP(config-if)#encapsulation ppp
```

```
ISP(config-if)#
```

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

```
ISP(config-if)#ppp authentication pap
```

```
ISP(config-if)#ppp pap sent-username ISP password cisco
ISP(config-if)#exit
ISP(config)#username BOGOTA password cisco
ISP(config)#int s0/0/1
ISP(config-if)#encapsulation ppp
ISP(config-if)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/1, changed state to
down
```

```
ISP>ena
Password:
ISP#conf t
Enter configuration commands, one per line. End with CNTL/Z.
ISP(config)#username MEDELLIN password cisco
ISP(config)#int s0/0/0
ISP(config-if)#encapsulation ppp
ISP(config-if)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0, changed
state to down
ISP(config-if)#ppp authentication pap
ISP(config-if)#ppp pap sent-username ISP password cisco
ISP(config-if)#exit
ISP(config)#username BOGOTA password cisco
ISP(config)#int s0/0/1
ISP(config-if)#encapsulation ppp
ISP(config-if)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/1, changed
state to down
```

MEDELLIN1

```
MEDELLIN1>ena
Password:
MEDELLIN1#conf t
Enter configuration commands, one per line. End with CNTL/Z.
MEDELLIN1(config)#username ISP password cisco
MEDELLIN1(config)#int s0/0/0
MEDELLIN1(config-if)#encapsulation ppp
MEDELLIN1(config-if)#ppp authentication pap
MEDELLIN1(config-if)#ppp pap sent-username MEDELLIN password cisco
```

MEDELLIN1(config-if)#end

```
User Access Verification
Password:

MEDELLIN1>ena
Password:
MEDELLIN1#conf t
Enter configuration commands, one per line. End with CNTL/Z.
MEDELLIN1(config)#username ISP password cisco
MEDELLIN1(config)#int s0/0/0
MEDELLIN1(config-if)#encapsulation ppp
MEDELLIN1(config-if)#ppp authentication pap
MEDELLIN1(config-if)#ppp pap sent-username MEDELLIN password cisco
MEDELLIN1(config-if)#end
MEDELLIN1#
%SYS-5-CONFIG_I: Configured from console by console
```

BOGOTA1

BOGOTA1>ena

Password:

BOGOTA1#conf t

Enter configuration commands, one per line. End with CNTL/Z.

BOGOTA1(config)#username ISP password cisco

BOGOTA1(config)#int s0/0/0

BOGOTA1(config-if)#encapsulation ppp

BOGOTA1(config-if)#

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

BOGOTA1(config-if)#ppp authentication chap

BOGOTA1(config-if)#

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

```
BOGOTAL>ena
Password:
BOGOTAL#conf t
Enter configuration commands, one per line. End with CNTL/Z.
BOGOTAL(config)#username ISP password cisco
BOGOTAL(config)#int s0/0/0
BOGOTAL(config-if)#encapsulation ppp
BOGOTAL(config-if)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0, changed
state to up
BOGOTAL(config-if)#ppp authentication chap
BOGOTAL(config-if)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0, changed
state to down
```

PARTE 6: CONFIGURACIÓN DE PAT.

- a. En la topología, si se activa NAT en cada equipo de salida (Bogotá1 y Medellín1), los routers internos de una ciudad no podrán llegar hasta los routers internos en el otro extremo, sólo existirá comunicación hasta los routers Bogotá1, ISP y Medellín1.
- b. Después de verificar lo indicado en el paso anterior proceda a configurar el NAT en el router Medellín1. Compruebe que la traducción de direcciones indique las interfaces de entrada y de salida. Al realizar una prueba de ping, la dirección debe ser traducida automáticamente a la dirección de la interfaz serial 0/1/0 del router Medellín1, cómo diferente puerto.
- c. Proceda a configurar el NAT en el router Bogotá1. Compruebe que la traducción de direcciones indique las interfaces de entrada y de salida. Al realizar una prueba de ping, la dirección debe ser traducida automáticamente a la dirección de la interfaz serial 0/1/0 del router Bogotá1, cómo diferente puerto.

Se resuelven todos los puntos (a, b, c, de la parte 6) de una sola vez.

MEDELLIN1

MEDELLIN1#conf t

Enter configuration commands, one per line. End with CNTL/Z.

MEDELLIN1(config)#ip nat inside source list 1 interface s0/0/0 overload

MEDELLIN1(config)#access-list 1 permit 172.29.4.0 0.0.3.255

MEDELLIN1(config)#INT S0/0/0

MEDELLIN1(config-if)#ip nat outside

MEDELLIN1(config-if)#INT S0/0/1

MEDELLIN1(config-if)#ip nat inside

MEDELLIN1(config-if)#INT S0/1/1

MEDELLIN1(config-if)#ip nat inside

MEDELLIN1(config-if)#INT S0/1/0

MEDELLIN1(config-if)#ip nat inside

```
MEDELLIN1#conf t
Enter configuration commands, one per line. End with CNTL/Z.
MEDELLIN1(config)#ip nat inside source list 1 interface s0/0/
overload
MEDELLIN1(config)#access-list 1 permit 172.29.4.0 0.0.3.255
MEDELLIN1(config)#INT S0/0/0
MEDELLIN1(config-if)#ip nat outside
MEDELLIN1(config-if)#INT S0/0/1
MEDELLIN1(config-if)#ip nat inside
MEDELLIN1(config-if)#INT S0/1/1
MEDELLIN1(config-if)#ip nat inside
MEDELLIN1(config-if)#INT S0/1/0
MEDELLIN1(config-if)#ip nat inside
```

BOGOTA1

BOGOTA1#CONF T

Enter configuration commands, one per line. End with CNTL/Z.

BOGOTA1(config)#ip nat inside source list 1 interface s0/0/0 overload

```
BOGOTA1(config)#access-list 1 permit 172.29.0.0 0.0.3.255
BOGOTA1(config)#int s0/0/0
BOGOTA1(config-if)#ip nat outside
BOGOTA1(config-if)#int s0/1/0
BOGOTA1(config-if)#ip nat inside
BOGOTA1(config-if)#int s0/1/1
BOGOTA1(config-if)#ip nat inside
```

```
BOGOTAL#
BOGOTAL#CONF T
Enter configuration commands, one per line. End with CNTL/Z.
BOGOTAL(config)#ip nat inside source list 1 interface s0/0/0 overload
BOGOTAL(config)#access-list 1 permit 172.29.0.0 0.0.3.255
BOGOTAL(config)#int s0/0/0
BOGOTAL(config-if)#ip nat outside
BOGOTAL(config-if)#int s0/1/0
BOGOTAL(config-if)#ip nat inside
BOGOTAL(config-if)#int s0/1/1
BOGOTAL(config-if)#ip nat inside
BOGOTAL(config-if)#
BOGOTAL#
%SYS-5-CONFIG_I: Configured from console by console
```

PARTE 7: CONFIGURACIÓN DEL SERVICIO DHCP.

- a. Configurar la red Medellín2 y Medellín3 donde el router Medellín 2 debe ser el servidor DHCP para ambas redes Lan.
- b. El router Medellín3 deberá habilitar el paso de los mensajes broadcast hacia la IP del router Medellín2.
- c. Configurar la red Bogotá2 y Bogotá3 donde el router Medellín2 debe ser el servidor DHCP para ambas redes Lan.
- d. Configure el router Bogotá1 para que habilite el paso de los mensajes Broadcast hacia la IP del router Bogotá2.

Se configuran todos los puntos de la parte 7.

MEDELLIN2

```
MEDELLIN2>ena
```

```
Password:
```

```
MEDELLIN2#conf t
```

```
Enter configuration commands, one per line. End with CNTL/Z.
```

```
MEDELLIN2(config)#ip dhcp excluded-address 172.29.4.1 172.29.4.5
```

```
MEDELLIN2(config)#ip dhcp excluded-address 172.29.4.129 172.29.4.133
```

```
MEDELLIN2(config)#ip dhcp pool MEDELLIN2
```

```
MEDELLIN2(dhcp-config)#network 172.29.4.0 255.255.255.128
```

```
MEDELLIN2(dhcp-config)#default-router 172.29.4.1
```

```
MEDELLIN2(dhcp-config)#dns-server 8.8.8.8
```

```
MEDELLIN2(dhcp-config)#exit
```

```
MEDELLIN2(config)#ip dhcp pool MEDELLIN3
```

```
MEDELLIN2(dhcp-config)#network 172.29.4.128 255.255.255.128
```

```
MEDELLIN2(dhcp-config)#default-router 172.29.4.129
```

```
MEDELLIN2(dhcp-config)#dns-server 8.8.8.8
```

```
MEDELLIN2(dhcp-config)#exit
```

```
MEDELLIN2>ena
Password:
MEDELLIN2#conf t
Enter configuration commands, one per line. End with CNTL/Z.
MEDELLIN2 (config)#ip dhcp excluded-address 172.29.4.1 172.29.4.5
MEDELLIN2 (config)#ip dhcp excluded-address 172.29.4.129 172.29.4.133
MEDELLIN2 (config)#ip dhcp pool MEDELLIN2
MEDELLIN2 (dhcp-config)#network 172.29.4.0 255.255.255.128
MEDELLIN2 (dhcp-config)#default-router 172.29.4.1
MEDELLIN2 (dhcp-config)#dns-server 8.8.8.8
MEDELLIN2 (dhcp-config)#exit
MEDELLIN2 (config)#ip dhcp pool MEDELLIN3
MEDELLIN2 (dhcp-config)#network 172.29.4.128 255.255.255.128
MEDELLIN2 (dhcp-config)#default-router 172.29.4.129
MEDELLIN2 (dhcp-config)#dns-server 8.8.8.8
MEDELLIN2 (dhcp-config)#exit
MEDELLIN2 (config)#
```

MEDELLIN3

MEDELLIN3>ena

Password:

MEDELLIN3#conf t

Enter configuration commands, one per line. End with CNTL/Z.

MEDELLIN3(config)#int g0/0

MEDELLIN3(config-if)#ip helper-address 172.29.6.5

MEDELLIN3(config-if)#

```
MEDELLIN3>ena
Password:
MEDELLIN3#conf t
Enter configuration commands, one per line. End with CNTL/Z.
MEDELLIN3(config)#int g0/0
MEDELLIN3(config-if)#ip helper-address 172.29.6.5
MEDELLIN3(config-if)#
```

BOGOTA3

BOGOTA3#conf t

Enter configuration commands, one per line. End with CNTL/Z.

BOGOTA3(config)#ip dhcp excluded-address 172.29.1.1 172.29.1.5

BOGOTA3(config)#ip dhcp excluded-address 172.29.0.1 172.29.0.5

BOGOTA3(config)#ip dhcp pool BOGOTA2

BOGOTA3(dhcp-config)#NETWORK 172.29.1.0 255.255.255.0

BOGOTA3(dhcp-config)#DEFAULT-ROUTER 172.29.1.1

BOGOTA3(dhcp-config)#dns-server 8.8.8.8

BOGOTA3(dhcp-config)#ip dhcp pool BOGOTA3

BOGOTA3(dhcp-config)#NETWORK 172.29.0.0 255.255.255.0

BOGOTA3(dhcp-config)#DEFAULT-ROUTER 172.29.0.1

BOGOTA3(dhcp-config)#dns-server 8.8.8.8

User Access Verification

Password:

```
BOGOTA3>ena
Password:
BOGOTA3#conf t
Enter configuration commands, one per line. End with CNTL/Z.
BOGOTA3(config)#ip dhcp excluded-address 172.29.1.1 172.29.1.5
BOGOTA3(config)#ip dhcp excluded-address 172.29.0.1 172.29.0.5
BOGOTA3(config)#ip dhcp pool BOGOTA2
BOGOTA3(dhcp-config)#NETWORK 172.29.1.0 255.255.255.0
BOGOTA3(dhcp-config)#DEFAULT-ROUTER 172.29.1.1
BOGOTA3(dhcp-config)#dns-server 8.8.8.8
BOGOTA3(dhcp-config)#ip dhcp pool BOGOTA3
BOGOTA3(dhcp-config)#NETWORK 172.29.0.0 255.255.255.0
BOGOTA3(dhcp-config)#DEFAULT-ROUTER 172.29.0.1
BOGOTA3(dhcp-config)#dns-server 8.8.8.8
BOGOTA3(dhcp-config)#
```

BOGOTA3

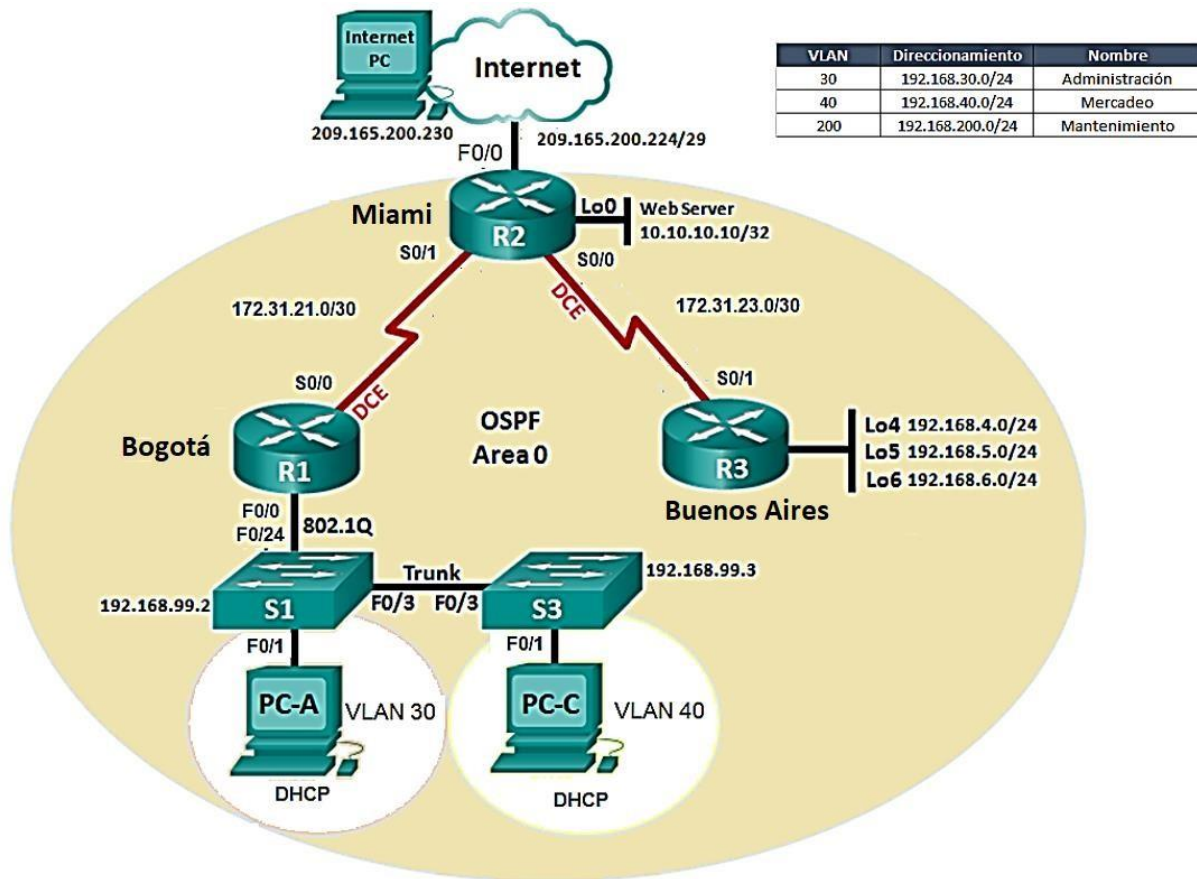
```
BOGOTA3(config)#int g0/0
```

```
BOGOTA3(config-if)#ip helper-address 172.29.3.13
```

```
BOGOTA3 (config) #
BOGOTA3 (config) #int g0/0
BOGOTA3 (config-if) #ip helper-address 172.29.3.13
BOGOTA3 (config-if) #
```

Escenario 2

Escenario: 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.



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

Configurar el protocolo de enrutamiento OSPFv2 bajo los siguientes criterios:

- 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.

Desarrollo escenario 2

- **Para configurar direccionamientos IP de R1**

```
Router>enable
Router>conf t
Router(config)#no ip domain-lookup
Router(config)#hostname R1
R1(config)#enable secret class
R1(config)#line con 0
R1(config-line)#pass cisco
R1(config-line)#login
R1(config-line)#line vty 0 4
R1(config-line)#pass cisco
R1(config-line)#login
R1(config-line)#exit
R1(config)#service password-encryption
R1(config)#banner motd $Acceso prohibido$
R1(config)#int s0/0/0
R1(config-if)#description Connection to R2
R1(config-if)#ip add 172.31.21.1 255.255.255.252
R1(config-if)#clock rate 128000
R1(config-if)#no shutdown
```

```
R1(config)#ip route 0.0.0.0 0.0.0.0 s0/0/0
```

- **Para configurar direccionamientos IP de R2**

```
Router>enable
Router>conf t
Router(config)#no ip domain-lookup
Router(config)#host R2
R2(config)#enable secret class
R2(config)#line con 0
R2(config-line)#pass cisco
R2(config-line)#login
R2(config-line)#line vty 0 4
R2(config-line)#pass cisco
R2(config-line)#login
R2(config-line)#exit
R2(config)#service password-encryption
R2(config)#banner motd $acceso prohibido$
R2(config)#int s0/0/0
R2(config-if)#descrip Connection to R1
R2(config-if)#ip add 172.16.12.2 255.255.255.252
R2(config-if)#no shut
R2(config-if)#int s0/0/1
R2(config-if)#descrip Connection to R3
R2(config-if)#ip add 172.16.23.1 255.255.255.252
R2(config-if)#clock rate 128000
R2(config-if)#no shut
```

```
R2(config-if)#int g0/1
R2(config-if)#ip add 10.10.10.1 255.255.255.0
R2(config-if)#no shut
R2(config-if)#description Connection to Web Server
```

- **Para configurar direccionamientos IP de R3**

```
Router>enable
Router>conf t
Router(config)#no ip domain-lookup
Router(config)#host R3
R3(config)#enable secret class
R3(config)#line con 0
R3(config-line)#pass cisco
R3(config-line)#login
R3(config-line)#line vty 0 4
R3(config-line)#pass cisco
R3(config-line)#login
R3(config-line)#exit
R3(config)#service password-encryption
R3(config)#banner motd $Acceso denegado$
R3(config)#int s0/0/1
R3(config-if)#description Connection to R2
R3(config-if)#ip add 172.16.23.2 255.255.255.252
R3(config-if)#no shut
R3(config-if)#int lo4
R3(config-if)#ip add 192.168.4.1 255.255.255.0
R3(config-if)#no shut
R3(config-if)#int lo5
```

```
R3(config-if)#ip add 192.168.5.1 255.255.255.0
R3(config-if)#no shut
R3(config-if)#int lo6
R3(config-if)#ip add 192.168.6.1 255.255.255.0
R3(config-if)#exit
R3(config)#ip route 0.0.0.0 0.0.0.0 s0/0/1
```

- **Para configurar direccionamientos IP de S1**

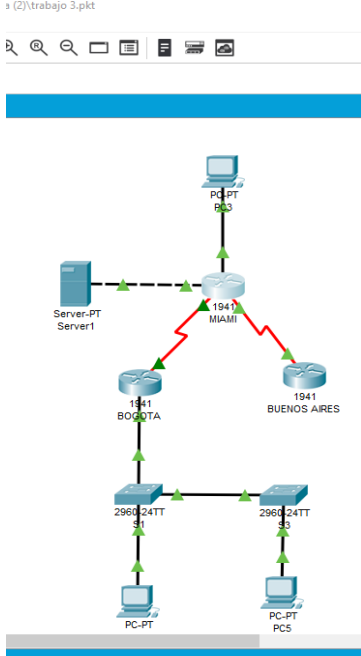
```
Switch>enable
Switch#conf t
Switch(config)#no ip domain-lookup
Switch(config)#host S1
S1(config)#enable secret class
S1(config)#line con 0
S1(config-line)#pass cisco
S1(config-line)#login
S1(config-line)#line vty 0 4
S1(config-line)#pass cisco
S1(config-line)#login
S1(config-line)#service pass
S1(config)#service password-encryption
S1(config)#banner motd $Acceso Denegado$
```

- **Para configurar direccionamientos IP de S2**

```
Switch>enable
Switch#conf t
Switch(config)#no ip domain-lookup
```

```
Switch(config)#host S2
S2(config)#enable secret class
S2(config)#line con 0
S2(config-line)#pass cisco
S2(config-line)#login
S2(config-line)#line vty 0 4
S2(config-line)#pass cisco
S2(config-line)#login
S2(config-line)#service pass
S2(config)#service password-encryption
S2(config)#banner motd $Acceso Denegado$
```

MIAMI

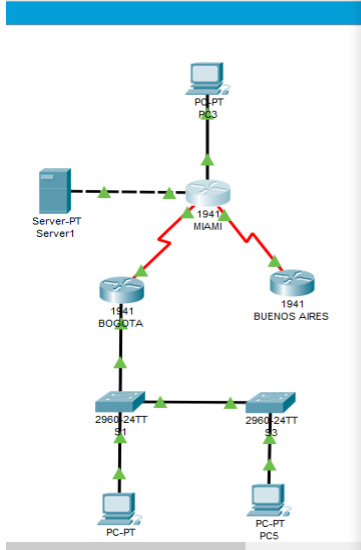


```

Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#host MIAMI
MIAMI(config)#no ip domain-lookup
MIAMI(config)#line console 0
MIAMI(config-line)#pass cisco
MIAMI(config-line)#login
MIAMI(config-line)#exit
MIAMI(config)#line vty 0 4
MIAMI(config-line)#pass cisco
MIAMI(config-line)#login
MIAMI(config-line)#exit
MIAMI(config)#ena secr cisco
MIAMI(config)#servic pass
MIAMI(config)#banner motd $acceso no autorizado$
MIAMI(config)#int s0/0/0
MIAMI(config-if)#exit
MIAMI(config)#int s0/0/1
MIAMI(config-if)#descrip coneccion a Bogota
MIAMI(config-if)#ip add 172.31.21.2 255.255.255.252
MIAMI(config-if)#no shut

MIAMI(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
MIAMI(config-if)#int s0/0/0
MIAMI(config-if)#ip add 172.31.23.1 255.255.255.252
MIAMI(config-if)#no sh
%LINK-5-CHANGED: Interface Serial0/0/0, changed state to down
MIAMI(config-if)#int s0/0/0
                    
```

trabajo 3.pkt



MIAMI

Physical Config **CLI** Attributes

IOS Command Line Interface

```

%LINK-5-CHANGED: Interface Serial10/0/0, changed state to down
MIAMI (config-if)#int s0/0/0
MIAMI (config-if)#clock rate 128000
MIAMI (config-if)#exit
MIAMI (config-if)#int g0/0
MIAMI (config-if)#descr conexion a Internet
MIAMI (config-if)#ip add 209.165.200.225 255.255.255.248
MIAMI (config-if)#no shut

MIAMI (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
MIAMI (config-if)#exit
MIAMI (config-if)#int g0/1
MIAMI (config-if)#ip add 10.10.10.1 255.255.255.0
MIAMI (config-if)#no shut

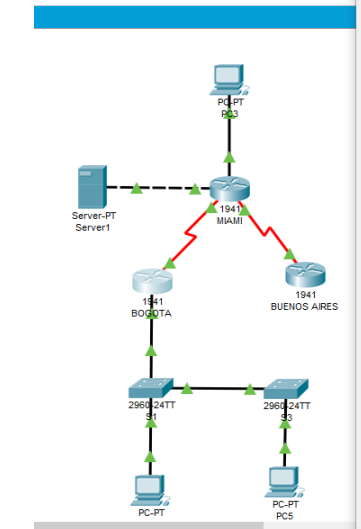
MIAMI (config-if)#
%LINK-5-CHANGED: Interface GigabitEthernet0/1, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/1,
changed state to up
MIAMI (config-if)#descr conexion a Server web
MIAMI (config-if)#exit
MIAMI (config)#router ospf 1
MIAMI (config-router)#pass
MIAMI (config-router)#passive-interface g0/1
MIAMI (config-router)#au
MIAMI (config-router)#auto-cost ref
          
```

Ctrl+F6 to exit CLI focus

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(2)trabajo 3.pkt

BOGOTA



BOGOTA

Physical Config **CLI** Attributes

IOS Command Line Interface

```

BOGOTA (config-line)#pass cisco
BOGOTA (config-line)#login
BOGOTA (config-line)#exit
BOGOTA (config)#servic pass
BOGOTA (config)#servic password-encryption
BOGOTA (config)#banner motd %acceso no autorizado%
BOGOTA (config)#int s0/0/0
BOGOTA (config-if)#descr conexion a MIAMI
BOGOTA (config-if)#ip add 172.31.21.1 255.255.255.252
BOGOTA (config-if)#clock 128000

% Invalid input detected at '^' marker.

BOGOTA (config-if)#clock rat 128000
BOGOTA (config-if)#no shut

%LINK-5-CHANGED: Interface Serial10/0/0, changed state to down
BOGOTA (config-if)#int g0/1.30
BOGOTA (config-subif)#descr Administracion
BOGOTA (config-subif)#encaps do
BOGOTA (config-subif)#encaps dot1Q 30
BOGOTA (config-subif)#ip add 192.168.30.1 255.255.255.252
BOGOTA (config-subif)#int g0/1.40
BOGOTA (config-subif)#descr Mercadeo
BOGOTA (config-subif)#encap do
BOGOTA (config-subif)#encap dot1Q 40
BOGOTA (config-subif)#ip add 192.168.40.1 255.255.255.0
BOGOTA (config-subif)#int g0/1.30
BOGOTA (config-subif)#encaps dot1Q 30
BOGOTA (config-subif)#ip add 192.168.30.1 255.255.255.0
BOGOTA (config-subif)#exit
BOGOTA (config)#int g0/1.200
BOGOTA (config-subif)#descr Mantenimiento
BOGOTA (config-subif)#encap do
BOGOTA (config-subif)#encap dot1Q 200
BOGOTA (config-subif)#ip add 192.168.200.1 255.255.255.0
BOGOTA (config-subif)#exit
BOGOTA (config-subif)#int g0/1
          
```

Ctrl+F6 to exit CLI focus

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BUENOS AIRES

rabajo 3.pkt

```

Router>ena
Router#conf ter
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#no ip domain-lookup
Router(config)#host BUENOSAIRES
BUENOSAIRES(config)#enable se cisco
BUENOSAIRES(config)#line con 0
BUENOSAIRES(config-line)#pass cisco
BUENOSAIRES(config-line)#login
BUENOSAIRES(config-line)#exit
BUENOSAIRES(config)#line vty 0 4
BUENOSAIRES(config-line)#pass cisco
BUENOSAIRES(config-line)#login
BUENOSAIRES(config-line)#exit
BUENOSAIRES(config)#servi pass
BUENOSAIRES(config)#servi password-encryption
BUENOSAIRES(config)#banner motd %acceso no autorizado%
^
% Invalid input detected at '^' marker.
BUENOSAIRES(config)#banner motd %acceso no autorizado%
^
% Invalid input detected at '^' marker.
BUENOSAIRES(config)#banner motd %acceso no autorizado%
BUENOSAIRES(config-if)#descrip coneccion a Buenosaires
BUENOSAIRES(config-if)#ip add 172.31.23.2 255.255.255.252
BUENOSAIRES(config-if)#no shut

BUENOSAIRES(config-if)#
%LINK-5-CHANGED: Interface Serial10/0/1, changed state to up
BUENOSAIRES(config-if)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial10/0/1, changed
state to up
BUENOSAIRES(config-if)#int 104
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
    
```

Ctrl+F6 to exit CLI focus

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Top

SERVER WEB

Trabajo 3.pkt

Server Web

Physical Config Services Desktop Programming Attributes

IP Configuration

DHCP

Static

IP Address: 10.10.10.10

Subnet Mask: 255.255.255.0

Default Gateway: 10.10.10.1

DNS Server: 0.0.0.0

IPv6 Configuration

DHCP

Auto Config

Static

IPv6 Address: [] / []

Link Local Address: FE80::202:16FF:FE35:1501

IPv6 Gateway: []

IPv6 DNS Server: []

802.1X

Use 802.1X Security

Authentication: MDS

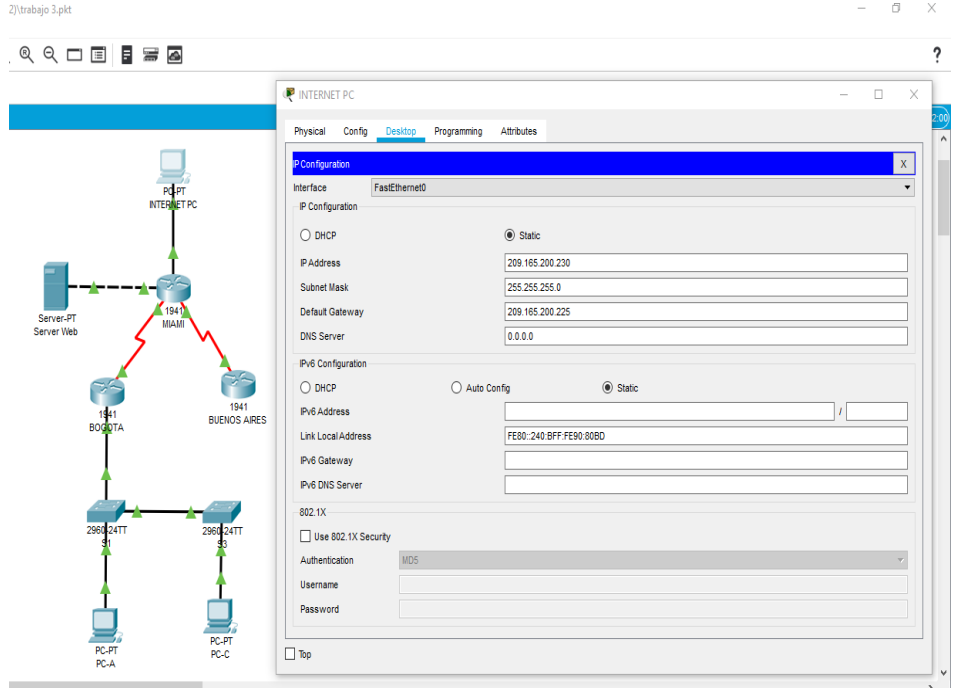
Username: []

Password: []

Top

Realtime Simula

PC INTERNET



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

Configurar el protocolo de enrutamiento OSPFv2 bajo los siguientes criterios:

- **OSPFv2 area 0**

Configuration Item or Task	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

- **Enrutamiento OSPFv2 en R1,**

```
R1>enable
R1#conf t
R1(config)#router ospf 1
R1(config-router)#router-id 1.1.1.1
R1(config-router)#network 172.31.21.0 0.0.0.3 area 0
R1(config-router)#network 192.168.30.0 0.0.0.255 area 0
R1(config-router)#network 192.168.40.0 0.0.0.255 area 0
R1(config-router)#network 192.168.200.0 0.0.0.255 area 0
```

Enrutamiento OSPFv2 en R1, debe ser 1.1.1.1., de acuerdo a la tabla generada

```
R1(config-router)#passive-interface g0/1.30
R1(config-router)# passive-interface g0/1.40
R1(config-router)# passive-interface g0/1.200
```

Para los seriales en 256kb/s y métrica de s0/0 a 9500,

```
R1(config)#int s0/0/0
R1(config-if)#bandwidth 256
R1(config-if)#ip ospf cost 7500
```

Para el routers conectados por OSPFv2, se ejecuta el comando “show ip ospf neighbor” en R2.

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

```
S1>enable
Password:
S1#conf t
```

Enter configuration commands, one per line. End with CNTL/Z.

```
S1(config)#vlan 30
S1(config-vlan)#name administracion
S1(config-vlan)#banner motd $acceso restringido$
S1(config)#vlan 40
S1(config-vlan)#name mercadeo
S1(config-vlan)#vlan 200
S1(config-vlan)#name mantenimiento
S1(config-vlan)#exit
S1(config)#
```

Implement DHCP and NAT for IPv4

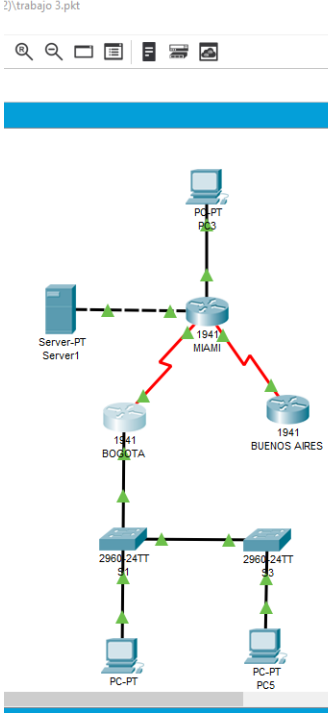
```
R1#conf t
```

Enter configuration commands, one per line. End with CNTL/Z.

```
R1(config)#ip dhcp excluded-address 192.168.30.1 192.168.30.30
```

```
R1(config)#ip dhcp excluded-address 192.168.40.1 192.168.40.30
```

BOGOTA



IOS Command Line Interface

```

BOGOTA (config-subif)#exit
BOGOTA (config)#int g0/1
BOGOTA (config-if)#no shut

BOGOTA (config-if)#
%LINK-5-CHANGED: Interface GigabitEthernet0/1, changed state to up
%LINK-5-CHANGED: Interface GigabitEthernet0/1.30, changed state to up
%LINK-5-CHANGED: Interface GigabitEthernet0/1.40, changed state to up
%LINK-5-CHANGED: Interface GigabitEthernet0/1.200, changed state to up

BOGOTA (config-if)#exit
BOGOTA (config)#router ospf 1
BOGOTA (config-router)#router
BOGOTA (config-router)#router-id 1.1.1.1
BOGOTA (config-router)#netw 172.31.21.0 0.0.0.3 area 0
BOGOTA (config-router)#net 192.168.30.0 0.0.0.255 area 0
BOGOTA (config-router)#net 192.168.40.0 0.0.0.255 area 0
BOGOTA (config-router)#net 192.168.200.0 0.0.0.255 area 0
BOGOTA (config-router)#pass
BOGOTA (config-router)#passive-interface g0/1
BOGOTA (config-router)#passive-interface g0/1.30
BOGOTA (config-router)#passive-interface g0/1.40
BOGOTA (config-router)#passive-interface g0/1.200
BOGOTA (config-router)#exit
BOGOTA (config)#int s0/0/0
BOGOTA (config-if)#band 256
BOGOTA (config-if)#ip ospf cost 9500
BOGOTA (config-if)#exit
BOGOTA (config)#int s0/0/0
BOGOTA (config-if)#no shut
BOGOTA (config-if)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0, changed state to up

Ctrl+F6 to exit CLI focus
                
```

<h2 style="text-align: center;">MIAMI</h2>	<pre> MIAMI (config) % OSPF: Reference bandwidth is 100. Please ensure reference bandwidth is consistent across all routers. MIAMI (config)#router ospf 1 MIAMI (config-router)#router-id 8.8.8.8 MIAMI (config-router)#network 172.31.21.0 0.0.0.3 area 0 MIAMI (config-router)# 01:17:11: %OSPF-5-ADJCHG: Process 1, Nbr 1.1.1.1 on Serial0/0/1 from LOADING to FULL, Loading Done MIAMI (config-router)#net 172.31.23.0 0.0.0.3 area 0 MIAMI (config-router)# 01:17:40: %OSPF-5-ADJCHG: Process 1, Nbr 5.5.5.5 on Serial0/0/0 from LOADING to FULL, Loading Done MIAMI (config-router)#net 10.10.10.0 0.0.0.255 area 0 MIAMI (config-router)#pass g0/1 MIAMI (config-router)#au MIAMI (config-router)#auto-cost re MIAMI (config-router)#auto-cost reference-bandwidth 1000 MIAMI (config-router)#exit MIAMI (config)#exit MIAMI# %SYS-5-CONFIG_I: Configured from console by console </pre>
<h2 style="text-align: center;">BUENOS AIRES</h2>	<pre> MIAMI (config-router)#auto-cost ref MIAMI (config-router)#auto-cost reference-bandwidth 1000 % OSPF: Reference bandwidth is changed. Please ensure reference bandwidth is consistent across all routers. MIAMI (config-router)#int s0/0/0 MIAMI (config-if)#band 256 MIAMI (config-if)#ip ospf cost 9500 MIAMI (config-if)#int s0/0/1 MIAMI (config-if)#band 256 MIAMI (config-if)#ip ospf cost 9500 MIAMI (config-if)#no shut 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 con0 is now available Press RETURN to get started. </pre>

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BUENOS AIRES

```

Physical Config CLI Attributes
IOS Command Line Interface
BUENOSAIRES(config-if)#ip add 192.168.4.1 255.255.255.0
BUENOSAIRES(config-if)#no shu
BUENOSAIRES(config-if)#int lo5
BUENOSAIRES(config-if)#
%LINK-6-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 shut
BUENOSAIRES(config-if)#int lo6
BUENOSAIRES(config-if)#
%LINK-6-CHANGED: Interface Loopback6, changed state to up
%LINEPROTO-6-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 shut
BUENOSAIRES(config-if)#exit
BUENOSAIRES(config)#router ospf 1
BUENOSAIRES(config-router)#rou
BUENOSAIRES(config-router)#router-id 5.5.5.5
BUENOSAIRES(config-router)#net 172.31.23.0 0.0.0.3 area0
BUENOSAIRES(config-router)#
^
% Invalid input detected at '^' marker.
BUENOSAIRES(config-router)#netw 172.31.23.0 0.0.0.3 area 0
BUENOSAIRES(config-router)#net 192.168.4.0 0.0.3.255 area 0
BUENOSAIRES(config-router)#pass
BUENOSAIRES(config-router)#pass
BUENOSAIRES(config-router)#passive-interface lo4
BUENOSAIRES(config-router)#passive-interface lo5
BUENOSAIRES(config-router)#passive-interface lo6
BUENOSAIRES(config-router)#auto
BUENOSAIRES(config-router)#auto-cost re
% Incomplete command.
BUENOSAIRES(config-router)#auto-cost re
BUENOSAIRES(config-router)#auto-cost reference-bandwidth 1000
% OSPF: Reference bandwidth is changed.
Please ensure reference bandwidth is consistent across all
routers.
Ctrl+F6 to exit CLI focus
Copy Paste

```

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BUENOS AIRES

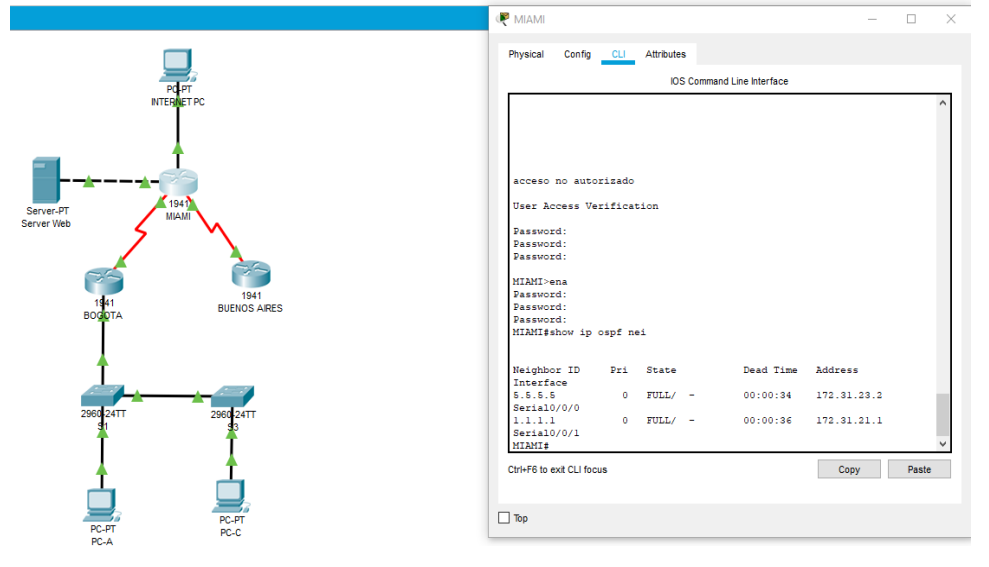
```

Physical Config CLI Attributes
IOS Command Line Interface
BUENOSAIRES(config-router)#rou
BUENOSAIRES(config-router)#router-id 5.5.5.5
BUENOSAIRES(config-router)#net 172.31.23.0 0.0.0.3 area0
BUENOSAIRES(config-router)#
^
% Invalid input detected at '^' marker.
BUENOSAIRES(config-router)#netw 172.31.23.0 0.0.0.3 area 0
BUENOSAIRES(config-router)#net 192.168.4.0 0.0.3.255 area 0
BUENOSAIRES(config-router)#pass
BUENOSAIRES(config-router)#pass
BUENOSAIRES(config-router)#passive-interface lo4
BUENOSAIRES(config-router)#passive-interface lo5
BUENOSAIRES(config-router)#passive-interface lo6
BUENOSAIRES(config-router)#auto
BUENOSAIRES(config-router)#auto-cost re
% Incomplete command.
BUENOSAIRES(config-router)#auto-cost re
BUENOSAIRES(config-router)#auto-cost reference-bandwidth 1000
% OSPF: Reference bandwidth is changed.
Please ensure reference bandwidth is consistent across all
routers.
BUENOSAIRES(config-router)#exit
BUENOSAIRES(config)#int s0/0/1
BUENOSAIRES(config-if)#band 256
BUENOSAIRES(config-if)#ip ospf cost 9500
BUENOSAIRES(config-if)#
BUENOSAIRES con0 is now available
Press RETURN to get started.
Ctrl+F6 to exit CLI focus
Copy Paste

```

Verificar información de OSPF

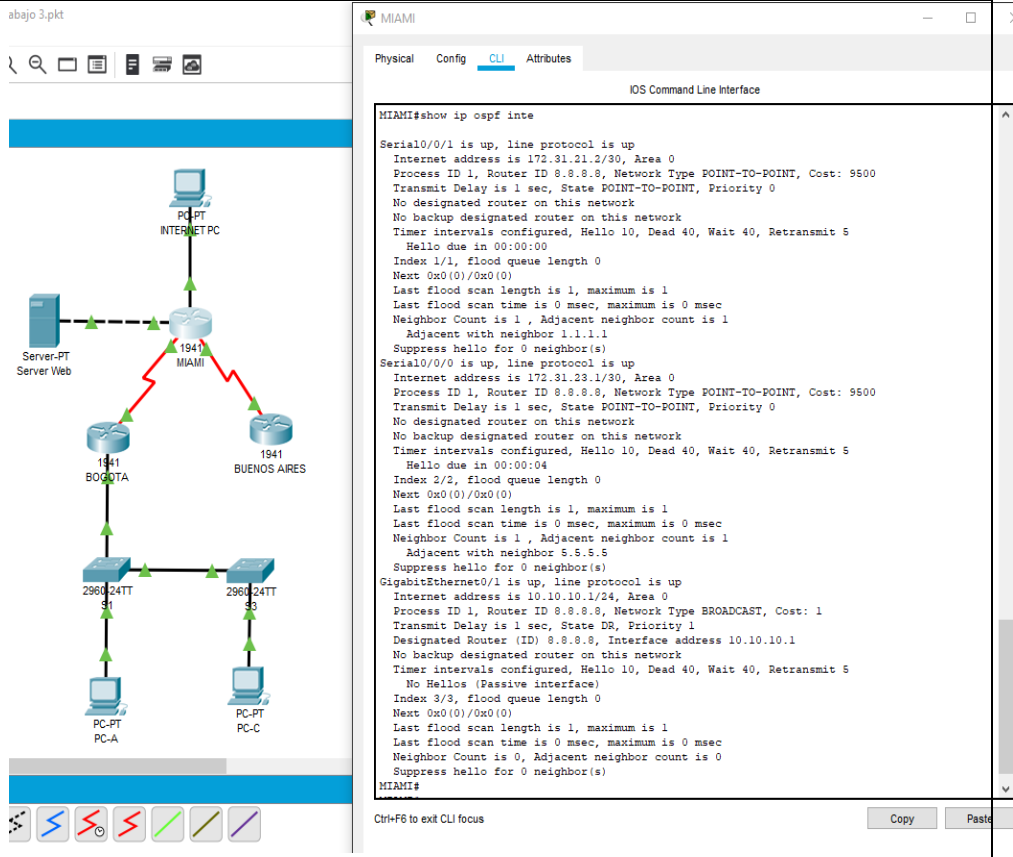
Visualizar tablas de enrutamiento y routers conectados por OSPFv2



The network diagram shows a central router (MIAMI) connected to three other routers: BOGOTA, BUENOS AIRES, and a 2960-24TT. The 2960-24TT is connected to two PCs (PC-A and PC-C). A Server-PT (Server Web) and a PC-PT (Internet PC) are also connected to the central router. The CLI screenshot shows the output of the command 'show ip ospf nei' on the MIAMI router, displaying the following table:

Neighbor ID	Pri	State	Dead Time	Address
Interface	5.5.5.5	0 FULL/ -	00:00:34	172.31.23.2
Serial0/0/0	1.1.1.1	0 FULL/ -	00:00:36	172.31.21.1
Serial0/0/1	MIAMI#			

Visualizar lista resumida de interfaces por OSPF en donde se ilustre el costo de cada interface



The network diagram is identical to the one above. The CLI screenshot shows the output of the command 'show ip ospf inte' on the MIAMI router, displaying detailed information for each interface:

```

MIAMI#show ip ospf inte
Serial0/0/1 is up, line protocol is up
 Internet address is 172.31.21.2/30, Area 0
 Process ID 1, Router ID 8.8.8.8, Network Type POINT-TO-POINT, Cost: 9500
 Transmit Delay is 1 sec, State POINT-TO-POINT, Priority 0
 No designated router on this network
 No backup designated router on this network
 Timer intervals configured, Hello 10, Dead 40, Wait 40, Retransmit 5
 Hello due in 00:00:00
 Index 1/1, flood queue length 0
 Next 0x0(0)/0x0(0)
 Last flood scan length is 1, maximum is 1
 Last flood scan time is 0 msec, maximum is 0 msec
 Neighbor Count is 1, Adjacent neighbor count is 1
 Adjacent with neighbor 1.1.1.1
 Suppress hello for 0 neighbor(s)
Serial0/0/0 is up, line protocol is up
 Internet address is 172.31.23.1/30, Area 0
 Process ID 1, Router ID 8.8.8.8, Network Type POINT-TO-POINT, Cost: 9500
 Transmit Delay is 1 sec, State POINT-TO-POINT, Priority 0
 No designated router on this network
 No backup designated router on this network
 Timer intervals configured, Hello 10, Dead 40, Wait 40, Retransmit 5
 Hello due in 00:00:04
 Index 2/2, flood queue length 0
 Next 0x0(0)/0x0(0)
 Last flood scan length is 1, maximum is 1
 Last flood scan time is 0 msec, maximum is 0 msec
 Neighbor Count is 1, Adjacent neighbor count is 1
 Adjacent with neighbor 5.5.5.5
 Suppress hello for 0 neighbor(s)
GigabitEthernet0/1 is up, line protocol is up
 Internet address is 10.10.10.1/24, Area 0
 Process ID 1, Router ID 8.8.8.8, Network Type BROADCAST, Cost: 1
 Transmit Delay is 1 sec, State DR, Priority 1
 Designated Router (ID) 8.8.8.8, Interface address 10.10.10.1
 No backup designated router on this network
 Timer intervals configured, Hello 10, Dead 40, Wait 40, Retransmit 5
 No Hellos (Passive interface)
 Index 3/3, flood queue length 0
 Next 0x0(0)/0x0(0)
 Last flood scan length is 1, maximum is 1
 Last flood scan time is 0 msec, maximum is 0 msec
 Neighbor Count is 0, Adjacent neighbor count is 0
 Suppress hello for 0 neighbor(s)
MIAMI#
    
```

Visualizar el OSPF Process ID, Router ID, Address summarization, Routing Networks, and passive interfaces configuradas en cada router.

The network diagram shows a central MIAMI router (1941) connected to BOGOTA (1941) and BUENOS AIRES (1941). BOGOTA is connected to a 2960-24TT switch, which is connected to PC-A. BUENOS AIRES is connected to another 2960-24TT switch, which is connected to PC-C. An Internet PC is connected to the MIAMI router. A Server-PT (Server Web) is also connected to the MIAMI router.

```

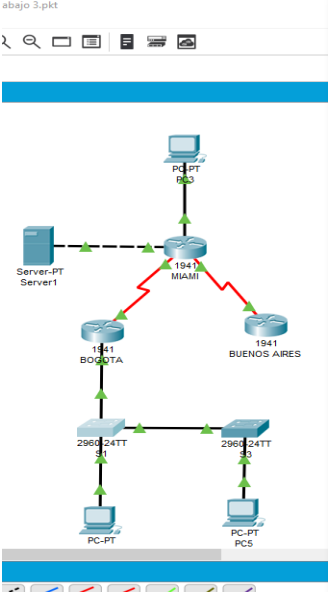
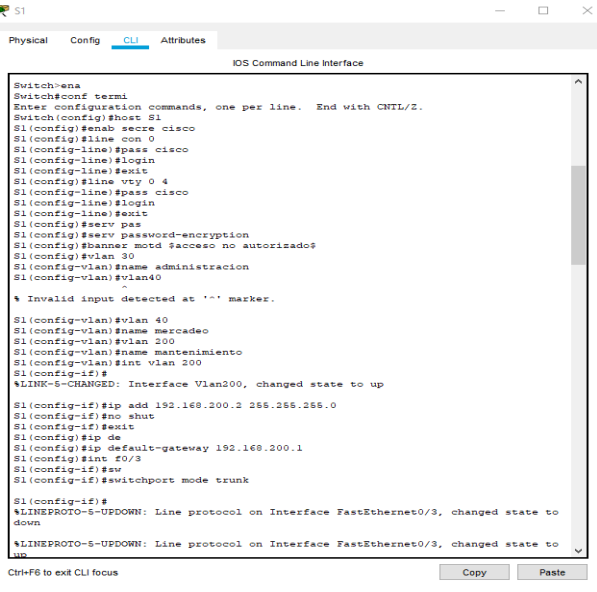
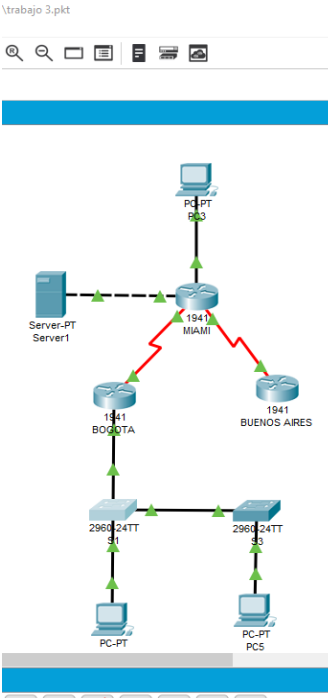
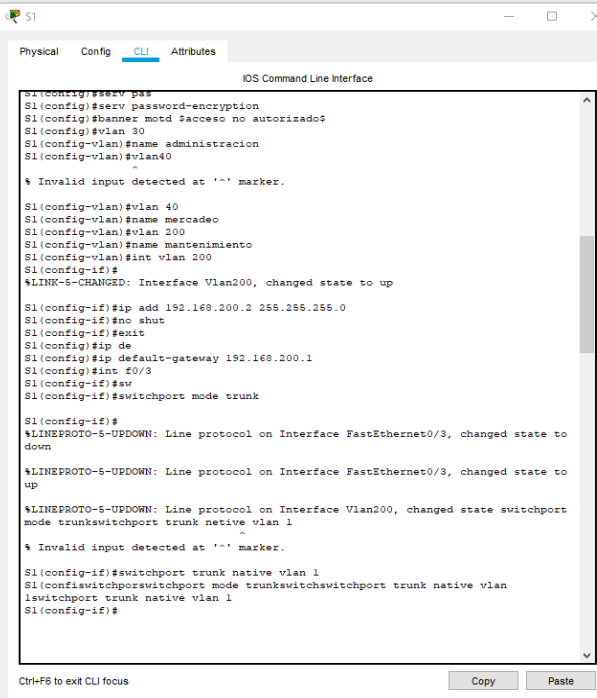
MIAMI#show ip proto
Routing Protocol is "ospf 1"
  Outgoing update filter list for all interfaces is not set
  Incoming update filter list for all interfaces is not set
  Router ID 8.8.8.8
  Number of areas in this router is 1. 1 normal 0 stub 0 nssa
  Maximum path: 4
  Routing for Networks:
    172.31.21.0 0.0.0.3 area 0
    172.31.23.0 0.0.0.3 area 0
    10.10.10.0 0.0.0.255 area 0
  Passive Interface(s):
    GigabitEthernet0/1
  Routing Information Sources:
    Gateway         Distance      Last Update
  1.1.1.1           110          00:16:31
  5.5.5.5           110          00:01:01
  8.8.8.8           110          00:00:44
  Distance: (default is 110)
  
```

The network diagram is identical to the one above.

```

MIAMI#show ip rout ospf
 192.168.4.0/32 is subnetted, 1 subnets
O   192.168.4.1 [110/9500] via 172.31.23.2, 01:32:37, Serial0/0/0
 192.168.5.0/32 is subnetted, 1 subnets
O   192.168.5.1 [110/9500] via 172.31.23.2, 01:32:37, Serial0/0/0
 192.168.6.0/32 is subnetted, 1 subnets
O   192.168.6.1 [110/9500] via 172.31.23.2, 01:32:37, Serial0/0/0
O   192.168.30.0 [110/9510] via 172.31.21.1, 01:18:07, Serial0/0/1
O   192.168.40.0 [110/9510] via 172.31.21.1, 01:17:57, Serial0/0/1
O   192.168.200.0 [110/9510] via 172.31.21.1, 01:17:57, Serial0/0/1
  
```

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

<p>Switch</p> <p>1</p>		 <pre> Switch>ena Switch#conf term Enter configuration commands, one per line. End with CNTL/Z. Switch(config)#shost S1 S1(config)#enab secre cisco S1(config)#line con 0 S1(config-line)#pass cisco S1(config-line)#login S1(config-line)#exit S1(config)#line vty 0 4 S1(config-line)#pass cisco S1(config-line)#login S1(config-line)#exit S1(config)#serv pas S1(config)#serv password-encryption S1(config)#banner motd %access no autorizado% S1(config)#vlan 30 S1(config-vlan)#name administracion S1(config-vlan)#vland0 % Invalid input detected at '^' marker. S1(config-vlan)#vlan 40 S1(config-vlan)#name mercadeo S1(config-vlan)#vlan 200 S1(config-vlan)#name mantenimiento S1(config-vlan)#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 shut S1(config-if)#exit S1(config)#ip de S1(config)#ip default-gateway 192.168.200.1 S1(config)#int f0/3 S1(config-if)#sw 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 S1(config-if)#switchport trunk native vlan 1 S1(config-if)# </pre>
		 <pre> S1(config-if)#serv pas S1(config)#serv password-encryption S1(config)#banner motd %access no autorizado% S1(config)#vlan 30 S1(config-vlan)#name administracion S1(config-vlan)#vland0 % Invalid input detected at '^' marker. S1(config-vlan)#vlan 40 S1(config-vlan)#name mercadeo S1(config-vlan)#vlan 200 S1(config-vlan)#name mantenimiento S1(config-vlan)#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 shut S1(config-if)#exit S1(config)#ip de S1(config)#ip default-gateway 192.168.200.1 S1(config)#int f0/3 S1(config-if)#sw 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 Vlan200, changed state switchport mode trunkswitchport trunk native vlan 1 % Invalid input detected at '^' marker. S1(config-if)#switchport trunk native vlan 1 S1(config-if)#switchport mode trunkswitchport trunk native vlan 1 S1(config-if)#switchport trunk native vlan 1 S1(config-if)# </pre>

trabajo 3.pkt

S1

Physical Config **CLI** Attributes

IOS Command Line Interface

```

Press RETURN to get started.

acceso no autorizado
User Access Verification
Password:
Password:
S1>ena
Password:
S1>int f0/24
% Invalid input detected at '^' marker.
S1>conf term
Enter configuration commands, one per line. End with CNTL/Z.
S1(config)#int f0/24
S1(config-if)#switchport mode trunk
S1(config-if)#switchport trunk native vlan 1
S1(config-if)#exit
S1(config)#int f0/1
S1(config-if)#switchport mode access
S1(config-if)#switchport access vlan 30
S1(config-if)#
    
```

S1 con0 is now available

Ctrl+F6 to exit CLI focus Copy

Switch 3

trabajo 3.pkt

S3

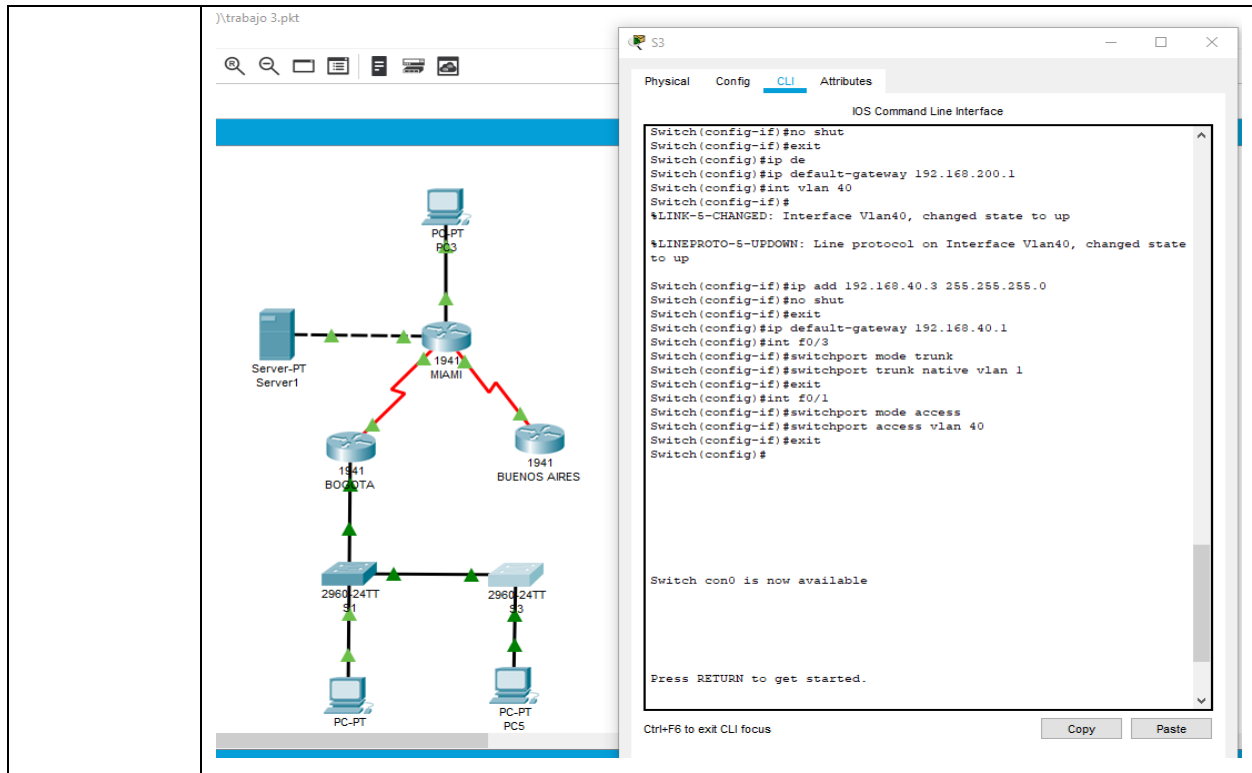
Physical Config **CLI** Attributes

IOS Command Line Interface

```

Switch>en
Switch#con te
% Ambiguous command: "con te"
Switch#conf ter
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#no ip domain-lookup
Switch(config)#enabl secre cisco
Switch(config)#line cons 0
Switch(config-line)#pass cisco
Switch(config-line)#login
Switch(config-line)#exit
Switch(config)#line vty 0 4
Switch(config-line)#pass cisco
Switch(config-line)#login
Switch(config-line)#login
Switch(config-line)#exit
Switch(config)#pass
Switch(config)#servi pas
Switch(config)#servi password-encryption
Switch(config)#banner motd $acceso no autorizado$
Switch(config)#vlan 30
Switch(config-vlan)#name administracion
Switch(config-vlan)#vlan 40
Switch(config-vlan)#name mercadeo
Switch(config-vlan)#vlan 200
Switch(config-vlan)#name mantenimiento
Switch(config-vlan)#exit
Switch(config)#int vlan 200
Switch(config-if)#
%LINK-5-CHANGED: Interface Vlan200, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan200, changed
state to up
Switch(config-if)#ip add 192.168.200.3 255.255.255.0
Switch(config-if)#no shut
Switch(config-if)#exit
Switch(config)#ip de
Switch(config)#ip default-gateway 192.168.200.1
Switch(config)#int vlan 40
Switch(config-if)#
%LINK-5-CHANGED: Interface Vlan40, changed state to up
    
```

Ctrl+F6 to exit CLI focus Copy Paste

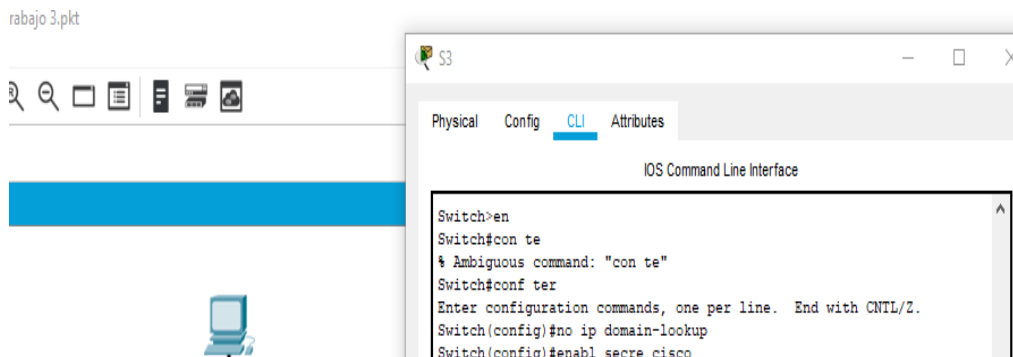


The image shows a network diagram on the left and a CLI window for Switch 3 on the right. The diagram illustrates a network topology with several devices: Server-PT Server1, PC-PT B03, 1941 MIAMI, 1941 BOGOTA, 1941 BUENOS AIRES, 2960-24TT S1, 2960-24TT S3, PC-PT, and PC-PT PCS. The CLI window shows the following configuration commands:

```
Switch(config-if)#no shut
Switch(config-if)#exit
Switch(config)#ip de
Switch(config)#ip default-gateway 192.168.200.1
Switch(config)#int vlan 40
Switch(config-if)#
%LINK-5-CHANGED: Interface Vlan40, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan40, changed state to up
Switch(config-if)#ip add 192.168.40.3 255.255.255.0
Switch(config-if)#no shut
Switch(config-if)#exit
Switch(config)#ip default-gateway 192.168.40.1
Switch(config)#int f0/3
Switch(config-if)#switchport mode trunk
Switch(config-if)#switchport trunk native vlan 1
Switch(config-if)#exit
Switch(config)#int f0/1
Switch(config-if)#switchport mode access
Switch(config-if)#switchport access vlan 40
Switch(config-if)#exit
Switch(config)#
```

Below the commands, the CLI indicates: "Switch con0 is now available." and "Press RETURN to get started." There are "Copy" and "Paste" buttons at the bottom right of the CLI window.

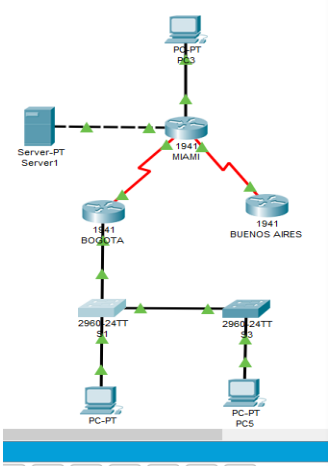
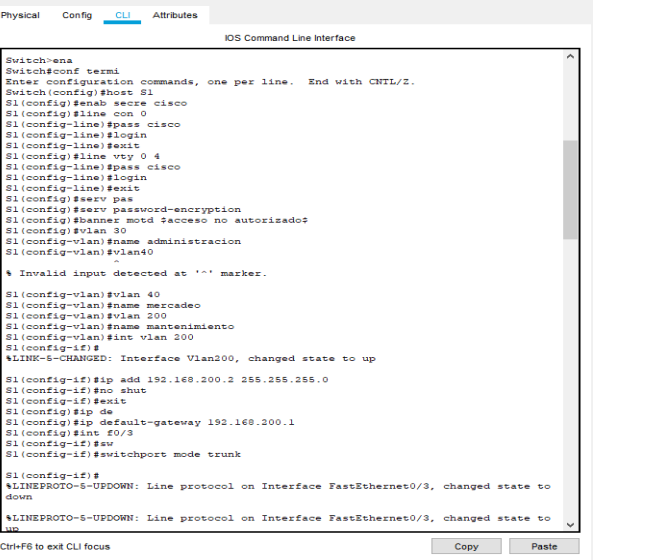
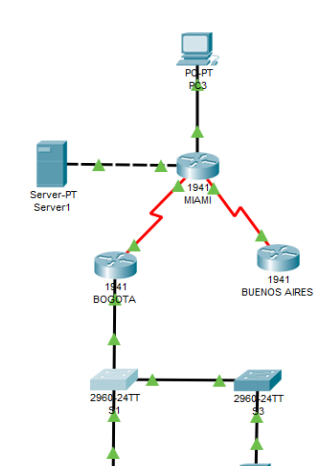
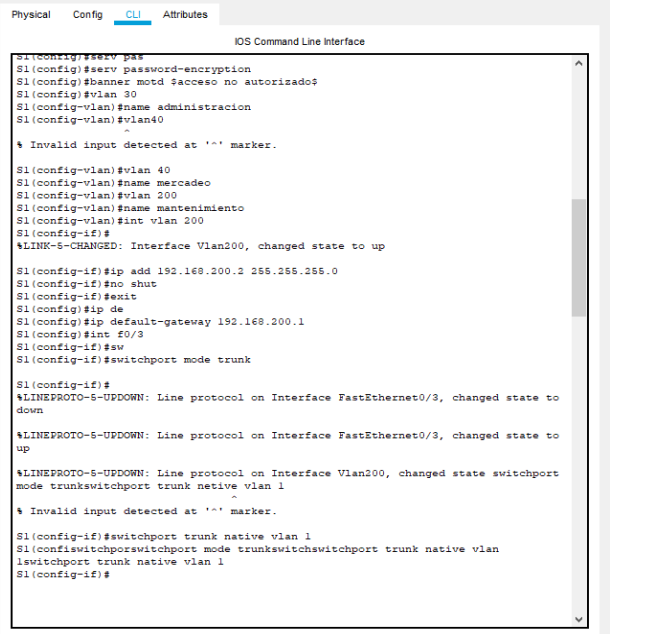
En el Switch 3 deshabilitar DNS lookup



The image shows a network diagram on the left and a CLI window for Switch 3 on the right. The diagram shows a PC-PT device. The CLI window shows the following configuration commands:

```
Switch>en
Switch#con te
% Ambiguous command: "con te"
Switch#conf ter
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#no ip domain-lookup
Switch(config)#enabl secre cisco
```

Asignar direcciones IP a los Switches acorde a los lineamientos.

<p>Switch</p> <p>1</p>		 <pre>Switch>ena Switch>conf term Enter configuration commands, one per line. End with CNTL/Z. Switch(config)#host S1 Switch(config)#enab secre cisco Switch(config)#line con 0 Switch(config-line)#pass cisco Switch(config-line)#exit Switch(config)#line vty 0 4 Switch(config-line)#pass cisco Switch(config-line)#login Switch(config-line)#exit Switch(config)#serv pas Switch(config)#serv password-encryption Switch(config)#banner motd %acceso no autorizado% Switch(config)#vlan 30 Switch(config-vlan)#name administracion Switch(config-vlan)#vlan40 - % Invalid input detected at '^' marker. Switch(config-vlan)#vlan 40 Switch(config-vlan)#name mercadeo Switch(config-vlan)#vlan 200 Switch(config-vlan)#name mantenimiento Switch(config-vlan)#int vlan 200 Switch(config-if)# %LINK-6-CHANGED: Interface Vlan200, changed state to up Switch(config-if)#ip add 192.168.200.2 255.255.255.0 Switch(config-if)#no shut Switch(config-if)#exit Switch(config)#ip de Switch(config)#ip default-gateway 192.168.200.1 Switch(config)#int f0/3 Switch(config-if)#sw Switch(config-if)#switchport mode trunk Switch(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 Ctrl+F6 to exit CLI focus</pre>
		 <pre>Switch(config)#serv pas Switch(config)#serv password-encryption Switch(config)#banner motd %acceso no autorizado% Switch(config)#vlan 30 Switch(config-vlan)#name administracion Switch(config-vlan)#vlan40 - % Invalid input detected at '^' marker. Switch(config-vlan)#vlan 40 Switch(config-vlan)#name mercadeo Switch(config-vlan)#vlan 200 Switch(config-vlan)#name mantenimiento Switch(config-vlan)#int vlan 200 Switch(config-if)# %LINK-6-CHANGED: Interface Vlan200, changed state to up Switch(config-if)#ip add 192.168.200.1 255.255.255.0 Switch(config-if)#no shut Switch(config-if)#exit Switch(config)#ip de Switch(config)#ip default-gateway 192.168.200.1 Switch(config)#int f0/3 Switch(config-if)#sw Switch(config-if)#switchport mode trunk Switch(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 Vlan200, changed state switchport mode trunkswitchport trunk native vlan 1 % Invalid input detected at '^' marker. Switch(config-if)#switchport trunk native vlan 1 Switch(config)#switchport mode trunkswitchport trunk native vlan 1switchport trunk native vlan 1 Switch(config-if)# Ctrl+F6 to exit CLI focus</pre>

trabajo 3.pkt

S1

Physical Config **CLI** Attributes

IOS Command Line Interface

```

Press RETURN to get started.

acceso no autorizado

User Access Verification
Password:
Password:
S1>ena
Password:
S1#int f0/24
~
% Invalid input detected at '^' marker.
S1#conf term
Enter configuration commands, one per line. End with CNTL/Z.
S1(config)#int f0/24
S1(config-if)#switchport mode trunk
S1(config-if)#switchport trunk native vlan 1
S1(config-if)#exit
S1(config)#int f0/1
S1(config-if)#switchport mode access
S1(config-if)#switchport access vlan 30
S1(config-if)#
    
```

S1 con0 is now available

Ctrl+F6 to exit CLI focus Copy

Switch 3

rabajo 3.pkt

S3

Physical Config **CLI** Attributes

IOS Command Line Interface

```

Switch>en
Switch#con te
% Ambiguous command: "con te"
Switch#conf ter
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#no ip domain-lookup
Switch(config)#enabl secre cisco
Switch(config)#line cons 0
Switch(config-line)#pass cisco
Switch(config-line)#login
Switch(config-line)#exit
Switch(config)#line vty 0 4
Switch(config-line)#pass cisco
Switch(config-line)#login
Switch(config-line)#exit
Switch(config)#pass
Switch(config)#servi pas
Switch(config)#servi password-encryption
Switch(config)#banner motd #acceso no autorizado#
Switch(config)#vlan 30
Switch(config-vlan)#name administracion
Switch(config-vlan)#vlan 40
Switch(config-vlan)#name mercadeo
Switch(config-vlan)#vlan 200
Switch(config-vlan)#name mantenimiento
Switch(config-vlan)#exit
Switch(config)#int vlan 200
%LINK-5-CHANGED: Interface Vlan200, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan200, changed
state to up
Switch(config-if)#ip add 192.168.200.3 255.255.255.0
Switch(config-if)#no shut
Switch(config-if)#exit
Switch(config)#ip de
Switch(config)#ip default-gateway 192.168.200.1
Switch(config)#int vlan 40
Switch(config-if)#
%LINK-5-CHANGED: Interface Vlan40, changed state to up
    
```

Ctrl+F6 to exit CLI focus Copy Paste

The network diagram shows a topology with a central Server-PT (Server1) connected to a 1941 MIAMI router. The MIAMI router is connected to two other 1941 routers: BOGOTA and BUENOS AIRES. The BOGOTA router is connected to a 2960-24TT switch (S1), which is connected to a PC-PT. The BUENOS AIRES router is connected to another 2960-24TT switch (S3), which is connected to a PC-PT (PC5). A PC-PT (PC3) is also connected to the MIAMI router.

```

Switch(config-if)#no shut
Switch(config-if)#exit
Switch(config)#ip de
Switch(config)#ip default-gateway 192.168.200.1
Switch(config)#int vlan 40
Switch(config-if)#
%LINK-5-CHANGED: Interface Vlan40, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan40, changed state to up

Switch(config-if)#ip add 192.168.40.3 255.255.255.0
Switch(config-if)#no shut
Switch(config-if)#exit
Switch(config)#ip default-gateway 192.168.40.1
Switch(config)#int f0/3
Switch(config-if)#switchport mode trunk
Switch(config-if)#switchport trunk native vlan 1
Switch(config-if)#exit
Switch(config)#int f0/1
Switch(config-if)#switchport mode access
Switch(config-if)#switchport access vlan 40
Switch(config-if)#exit
Switch(config)#
Switch(config)#

Switch con0 is now available

Press RETURN to get started.

Ctrl+F6 to exit CLI focus
    
```

Implementar DHCP and NAT for IPv4

The network diagram is identical to the one above, showing the topology with the BOGOTA router at the center of the configuration focus.

```

acceso no autorizado
User Access Verification

Password:
BOGOTA>ena
Password:
BOGOTA#conf term
Enter configuration commands, one per line. End with CNTL/Z.
BOGOTA(config)#router ip ospf 1
BOGOTA(config)#
% Invalid input detected at '^' marker.

BOGOTA(config)#router ospf 1
BOGOTA(config-router)#au
BOGOTA(config-router)#auto-cost re
BOGOTA(config-router)#auto-cost reference-bandwidth 1000
% OSPF: Reference bandwidth is changed.
Please ensure reference bandwidth is consistent across all routers.
BOGOTA(config-router)#exit
BOGOTA(config)#ip dhcp ex
% Incomplete command.
BOGOTA(config)#ip dhcp exc
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)#ip dhcp pool administracion
BOGOTA(dhcp-config)#dns
BOGOTA(dhcp-config)#dns-server 10.10.10.11
BOGOTA(dhcp-config)#defa
BOGOTA(dhcp-config)#default-router 192.168.30.1
BOGOTA(dhcp-config)#de
BOGOTA(dhcp-config)#default-router 192.168.40.1
BOGOTA(dhcp-config)#net 192.168.40.0 255.255.255.0
BOGOTA(dhcp-config)#
BOGOTA(dhcp-config)#
    
```

The top image shows a network diagram on the left and a CLI window for the MIAMI router on the right. The network diagram includes a central 1941 MIAMI router connected to a 1941 BOGOTA router and a 1941 BUENOS AIRES router. The BOGOTA router is connected to a 2960-24TT switch, which is connected to a PC-PT and a PC-PCS. The BUENOS AIRES router is connected to another 2960-24TT switch, which is connected to a PC-PT and a PC-PCS. A Server-PT Server1 is connected to the MIAMI router. The CLI window shows the following text:

```

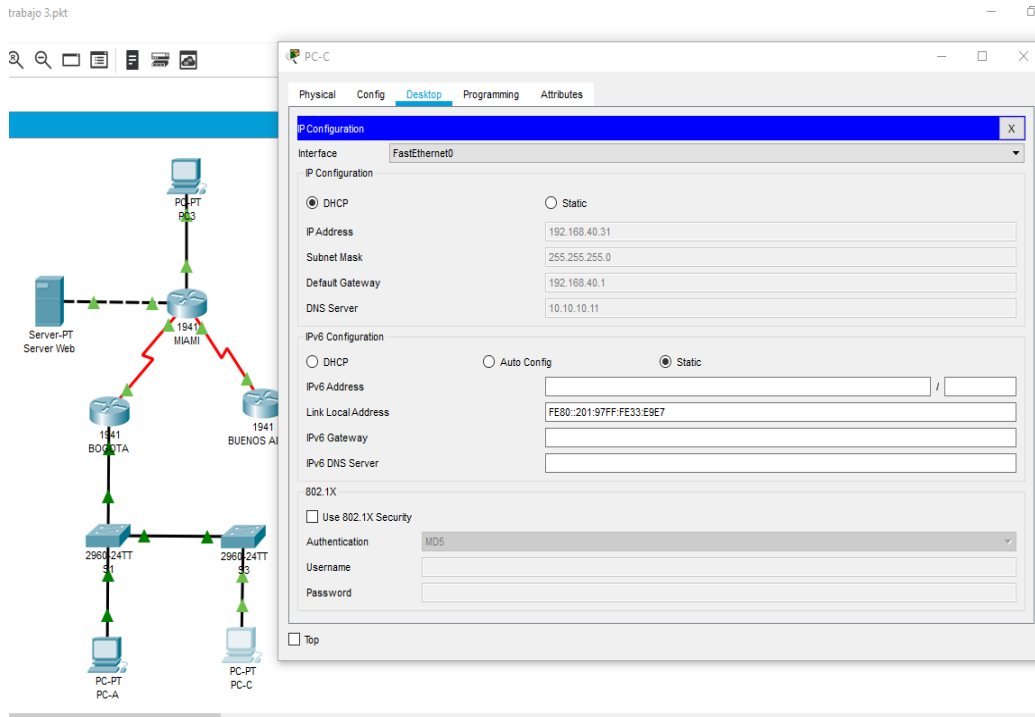
IOS Command Line Interface

acceso no autorizado
User Access Verification
Password:
MIAMI>ena
Password:
MIAMI#conf t>
~
* Invalid input detected at '^' marker.

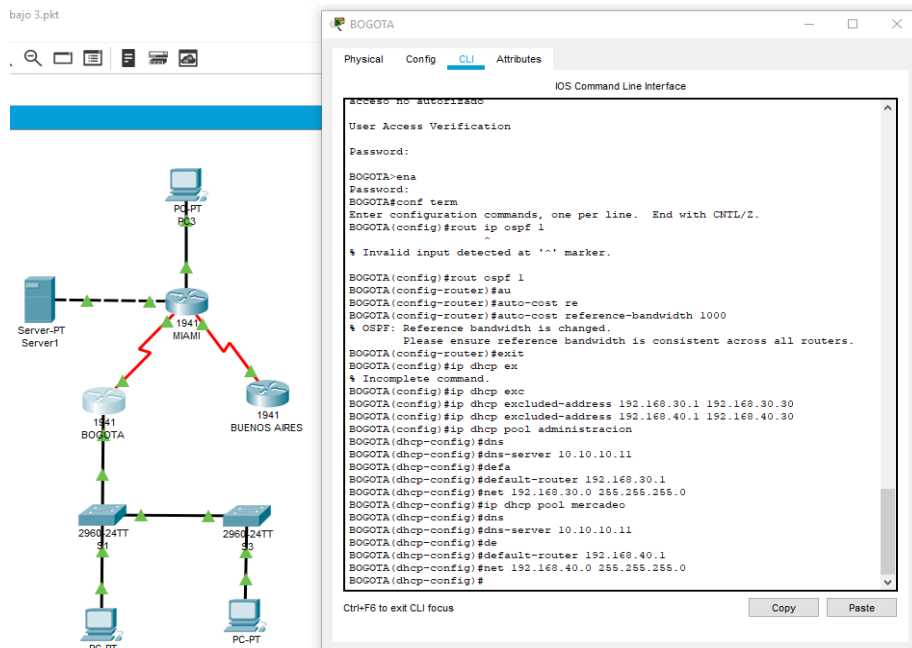
MIAMI#conf t>
Enter configuration commands, one per line. End with CNTL/Z.
MIAMI(config)#user web
MIAMI(config)#user webu
MIAMI(config)#user webuser privilege 15 secret cisco12345
MIAMI(config)#ip nat inside sour stat 10.10.10.10 209.165.200.229
MIAMI(config)#int g0/0
MIAMI(config-if)#ip nat outs
MIAMI(config-if)#int g0/1
MIAMI(config-if)#ip nat insid
MIAMI(config-if)#
    
```

The bottom image shows the same network diagram on the left and an IP configuration window for PC-A on the right. The IP configuration window is titled 'IP Configuration' and shows the following settings:

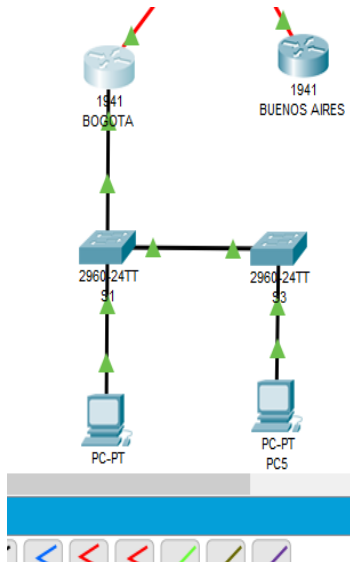
- Interface: FastEthernet0
- IP Configuration:
 - DHCP
 - Static
 - IP Address: 192.168.30.31
 - Subnet Mask: 255.255.255.0
 - Default Gateway: 192.168.30.1
 - DNS Server: 10.10.10.11
- IPv6 Configuration:
 - DHCP
 - Auto Config
 - Static
 - IPv6 Address: [empty]
 - Link Local Address: FE80::200:CFF:FE2B:342
 - IPv6 Gateway: [empty]
 - IPv6 DNS Server: [empty]
- 802.1X:
 - Use 802.1X Security
 - Authentication: [empty]
 - Username: [empty]
 - Password: [empty]



Configurar R1 Como servidor DHCP para las VLANs 30 y 40.



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



```

BOGOTA(config)#ip dhcp ex
% Incomplete command.
BOGOTA(config)#ip dhcp exc
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)#ip dhcp pool administracion
BOGOTA(dhcp-config)#dns
BOGOTA(dhcp-config)#dns-server 10.10.10.11
BOGOTA(dhcp-config)#defa
BOGOTA(dhcp-config)#default-router 192.168.30.1
BOGOTA(dhcp-config)#net 192.168.30.0 255.255.255.0
BOGOTA(dhcp-config)#ip dhcp pool mercadeo
BOGOTA(dhcp-config)#dns
BOGOTA(dhcp-config)#dns-server 10.10.10.11
BOGOTA(dhcp-config)#de
BOGOTA(dhcp-config)#default-router 192.168.40.1
BOGOTA(dhcp-config)#net 192.168.40.0 255.255.255.0
BOGOTA(dhcp-config)#
    
```

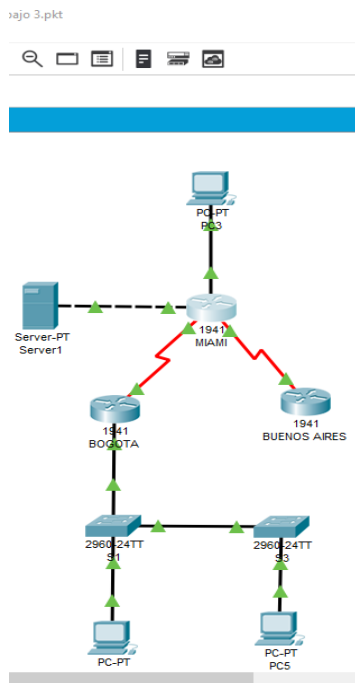
Ctrl+F6 to exit CLI focus

Copy Paste

Top

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

oajo 3.pkt



```

Physical Config CLI Attributes
IOS Command Line Interface

acceso no autorizado
User Access Verification
Password:
MIAMI>ena
Password:
MIAMI#conf te
% Invalid input detected at '^' marker.

MIAMI#conf ter
Enter configuration commands, one per line. End with CNTL/Z.
MIAMI(config)#user web
MIAMI(config)#user webu
MIAMI(config)#user webuser privilege 15 secret cisco12345
MIAMI(config)#ip nat inside sour stat 10.10.10.10 209.165.200.229
MIAMI(config)#int g0/0
MIAMI(config-if)#ip nat outs
MIAMI(config-if)#int g0/1
MIAMI(config-if)#ip nat insid
MIAMI(config-if)#
    
```

Ctrl+F6 to exit CLI focus

Copy Paste

Top

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.

utrabajo 3.pkt



```

MIAMI
Physical Config CLI Attributes
IOS Command Line Interface

Password:
Password:
MIAMI>ena
Password:
MIAMI#conf term
Enter configuration commands, one per line. End with CNTL/Z.
MIAMI (config)#acc
MIAMI (config)#access-list 1 perm 192.168.30.0 0.0.0.255
MIAMI (config)#access-list 1 perm 192.168.40.0 0.0.0.255
MIAMI (config)#access-list 1 perm 192.168.4.0 0.0.0.255
MIAMI (config)#access-list 1 perm 192.168.4.0 0.0.3.255
MIAMI (config)#ip nat pool INTERNET 209.165.200.225 200.165.200.229
netmask 255.255.255.248
%Pool INTERNET mask 255.255.255.248 too small; should be at least
0.0.0.0
%Start and end addresses on different subnets
MIAMI (config)#acc
MIAMI (config)#access-list sta
MIAMI (config)#access-list st
MIAMI (config)#access-list standard ADMIN123
~
% Invalid input detected at '^' marker.

MIAMI (config)#1 access-list standard ADMIN123
% Ambiguous command: "1 access-list standard ADMIN123"
MIAMI (config)#ip access-list standard ADMIN123
MIAMI (config-std-nacl)#permit host 172.31.21.1
MIAMI (config-std-nacl)#exit
MIAMI (config)#acc
MIAMI (config)#access-list 101 permit tcp any hos 209.165.200.225 eq
www
MIAMI (config)#
    
```

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.

utrabajo 3.pkt



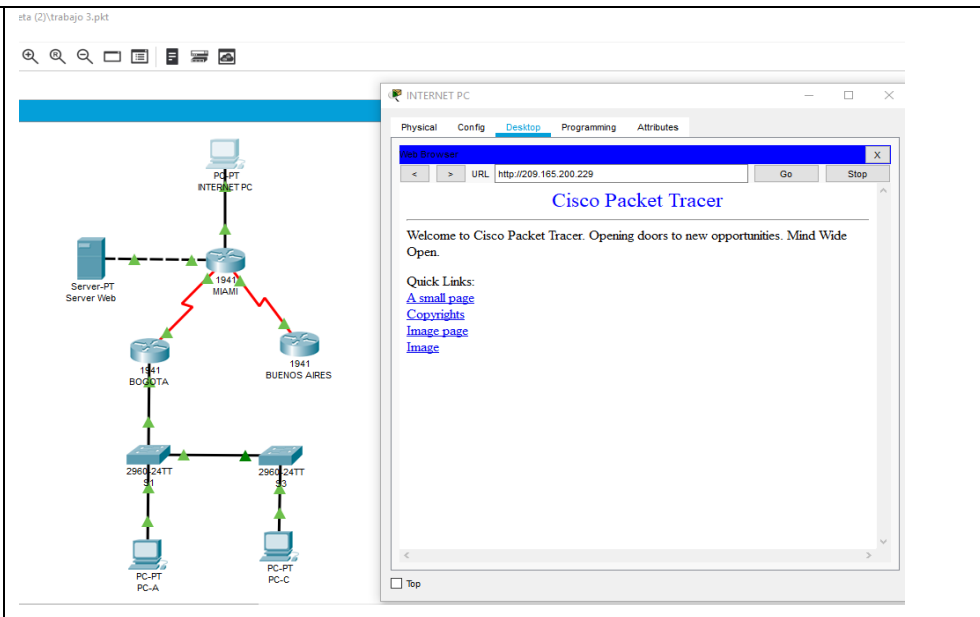
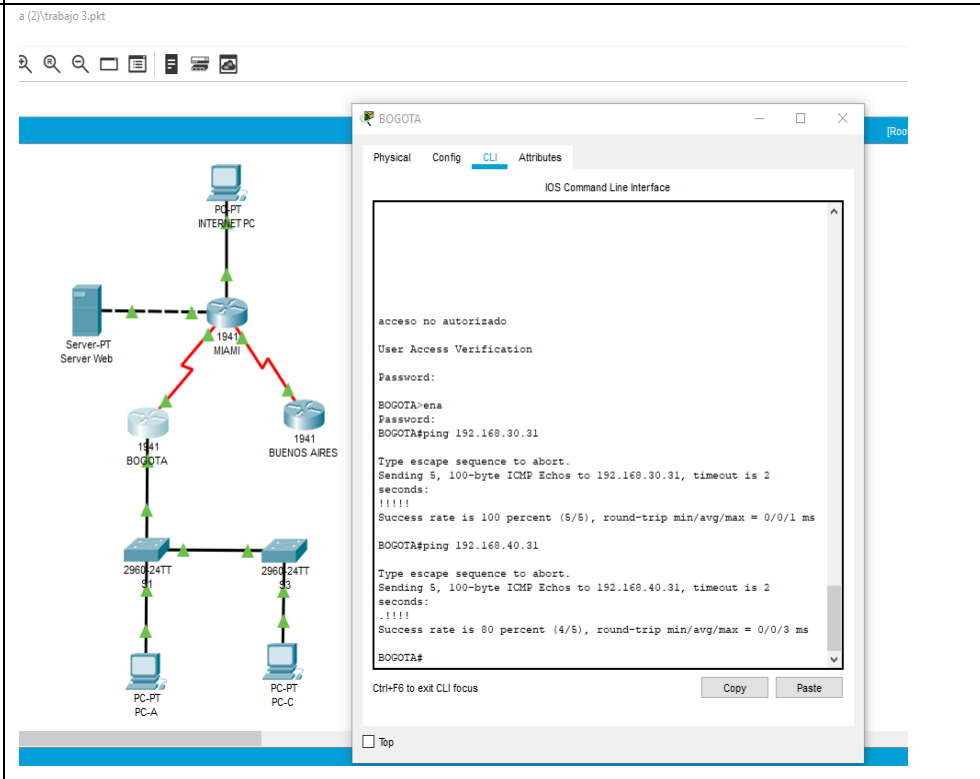
```

MIAMI
Physical Config CLI Attributes
IOS Command Line Interface

Password:
Password:
MIAMI>ena
Password:
MIAMI#conf term
Enter configuration commands, one per line. End with CNTL/Z.
MIAMI (config)#acc
MIAMI (config)#access-list 1 perm 192.168.30.0 0.0.0.255
MIAMI (config)#access-list 1 perm 192.168.40.0 0.0.0.255
MIAMI (config)#access-list 1 perm 192.168.4.0 0.0.0.255
MIAMI (config)#access-list 1 perm 192.168.4.0 0.0.3.255
MIAMI (config)#ip nat pool INTERNET 209.165.200.225 200.165.200.228
netmask 255.255.255.248
%Pool INTERNET mask 255.255.255.248 too small; should be at least
0.0.0.0
%Start and end addresses on different subnets
MIAMI (config)#acc
MIAMI (config)#access-list sta
MIAMI (config)#access-list st
MIAMI (config)#access-list standard ADMIN123
~
% Invalid input detected at '^' marker.

MIAMI (config)#1 access-list standard ADMIN123
% Ambiguous command: "1 access-list standard ADMIN123"
MIAMI (config)#ip access-list standard ADMIN123
MIAMI (config-std-nacl)#permit host 172.31.21.1
MIAMI (config-std-nacl)#exit
MIAMI (config)#acc
MIAMI (config)#access-list 101 permit tcp any hos 209.165.200.225 eq
www
MIAMI (config)#
    
```

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

<h3>PC INTERNET</h3>	 <p>The screenshot shows a network diagram in Cisco Packet Tracer. A central router labeled '1941 MIAMI' is connected to a 'Server-PT Server Web' on the left and two other routers, '1941 BOGOTA' and '1941 BUENOS AIRES', on the right. The BOGOTA router is connected to a '2960-24TT S1' switch, which is connected to 'PC-PT PC-A'. The BUENOS AIRES router is connected to another '2960-24TT S1' switch, which is connected to 'PC-PT PC-C'. An 'INTERNET PC' is also connected to the MIAMI router. A web browser window titled 'INTERNET PC' is open, displaying the Cisco Packet Tracer website with the URL 'http://209.165.200.229'.</p>
<h3>PING ROUTER</h3>	 <p>The screenshot shows the same network diagram as above. A CLI window titled 'BOGOTA' is open, showing the following text:</p> <pre>IOS Command Line Interface acceso no autorizado User Access Verification Password: BOGOTA>ena Password: BOGOTA#ping 192.168.30.31 Type escape sequence to abort. Sending 5, 100-byte ICMP Echos to 192.168.30.31, timeout is 2 seconds: !!!! Success rate is 100 percent (5/5), round-trip min/avg/max = 0/0/1 ms BOGOTA#ping 192.168.40.31 Type escape sequence to abort. Sending 5, 100-byte ICMP Echos to 192.168.40.31, timeout is 2 seconds: .!!!! Success rate is 80 percent (4/5), round-trip min/avg/max = 0/0/3 ms BOGOTA#</pre> <p>Buttons for 'Copy' and 'Paste' are visible at the bottom of the CLI window.</p>

TRACEROUTE

trabajo 3.pkt

```

BOGOTA
-----
Physical Config CLI Attributes
IOS Command Line Interface

BOGOTA>ena
Password:
BOGOTA#ping 192.168.30.31

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 192.168.30.31, timeout is 2
seconds:
!!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 0/0/1 ms

BOGOTA#ping 192.168.40.31

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 192.168.40.31, timeout is 2
seconds:
!!!!!!
Success rate is 80 percent (4/5), round-trip min/avg/max = 0/0/3 ms

BOGOTA#traceroute 192.168.30.31
*
BOGOTA#traceroute 192.168.30.31
Type escape sequence to abort.
Tracing the route to 192.168.30.31
 0 1 192.168.30.31 1 msec 0 msec 1 msec
BOGOTA#traceroute 192.168.40.31
Type escape sequence to abort.
Tracing the route to 192.168.40.31
 0 1 192.168.40.31 1 msec 0 msec 1 msec
BOGOTA#
    
```

PING PC

trabajo 3.pkt

```

PC-A
-----
Physical Config Desktop Programming Attributes
Command Prompt

Control-C
C
C:\>PING 192.168.30.1

Pinging 192.168.30.1 with 32 bytes of data:

Reply from 192.168.30.1: bytes=32 time=2ms TTL=255
Reply from 192.168.30.1: bytes=32 time=1ms TTL=255
Reply from 192.168.30.1: bytes=32 time=1ms TTL=255
Reply from 192.168.30.1: bytes=32 time=1ms TTL=255

Ping statistics for 192.168.30.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 2ms, Average = 0ms

C:\>ping 209.165.200.230

Pinging 209.165.200.230 with 32 bytes of data:

Reply from 192.168.30.1: Destination host unreachable.
Reply from 192.168.30.1: Destination host unreachable.
Reply from 192.168.30.1: Destination host unreachable.
Reply from 192.168.30.1: Destination host unreachable.

Ping statistics for 209.165.200.230:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
    
```

CONCLUSIONES

- El desarrollo de los escenarios planteados o propuestos, nos ha permitido adquirir conocimientos y destrezas de vital importancia, los cuales serán útiles cuando se requiera realizar el análisis, diseño e implementación de cualquier red, ya sea en físico o en un software especializado.
- En el diseño e instalación de una red siempre es necesario conocer con precisión la reglamentación existente (Protocolos), con la cual se pueda centrarse en las normas establecidas por las organizaciones reglamentarias a nivel nacional e internacional así como tomar elementos de prácticas propias y previas en las ejecuciones para tomar la mejor decisión.
- Fue muy enriquecedora la experiencia, pero un poco extensa porque ya que muchos de nosotros trabajamos en campos que no se permite conexión a internet, así que el esfuerzo que se hace demasiado esfuerzo para cumplir con lo estipulado y las responsabilidades, así que es recomendable, que las actividades disminuyan un poco para que nos den la oportunidad de realizar todas las actividades a conciencia.

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