Cisco Networking Academy® Mind Wide Open™

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

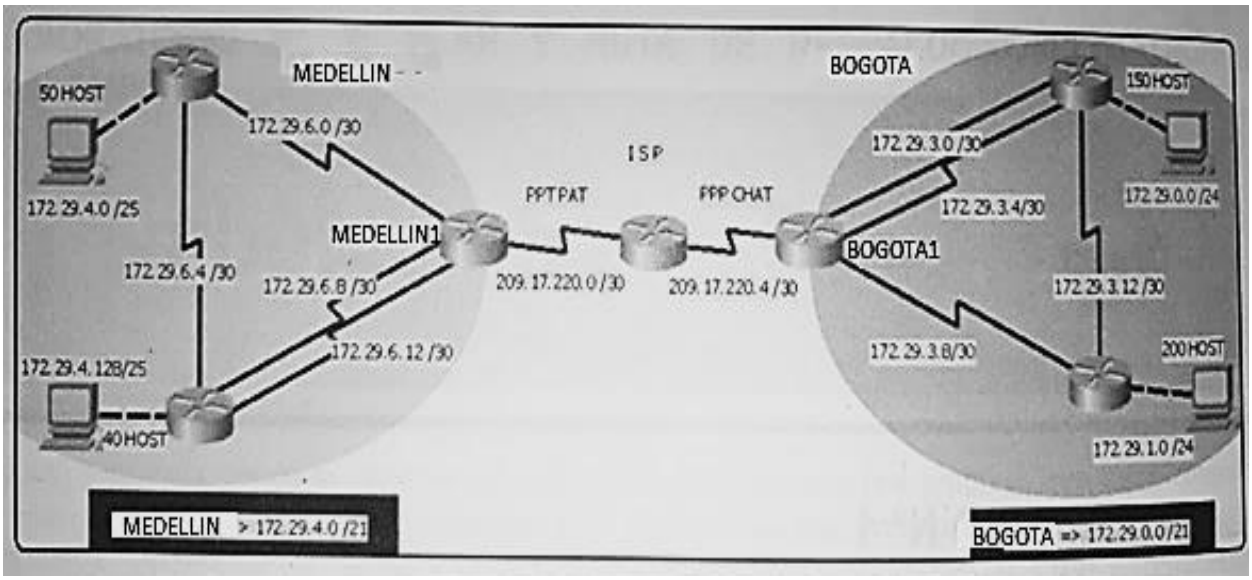
- Realizar y configurar la red planteada en el caso de estudio de habilidades prácticas.
- Aplicar lo aprendido en los cursos de CCNA1 y CCNA2, y establecer lo comprendido en la prueba de habilidades practicas
- Comprobar y configurar el funcionamiento de los escenarios planteados
- Desarrollar la practica 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 fisica 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

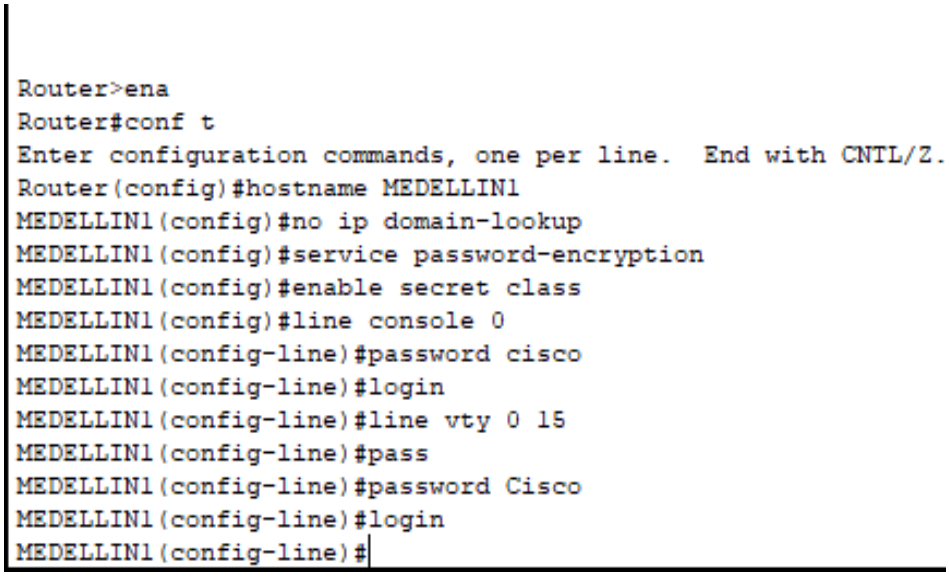
MEDELLIN1(config-line)#password cisco

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)#hostnam 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)#hostnam 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 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 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

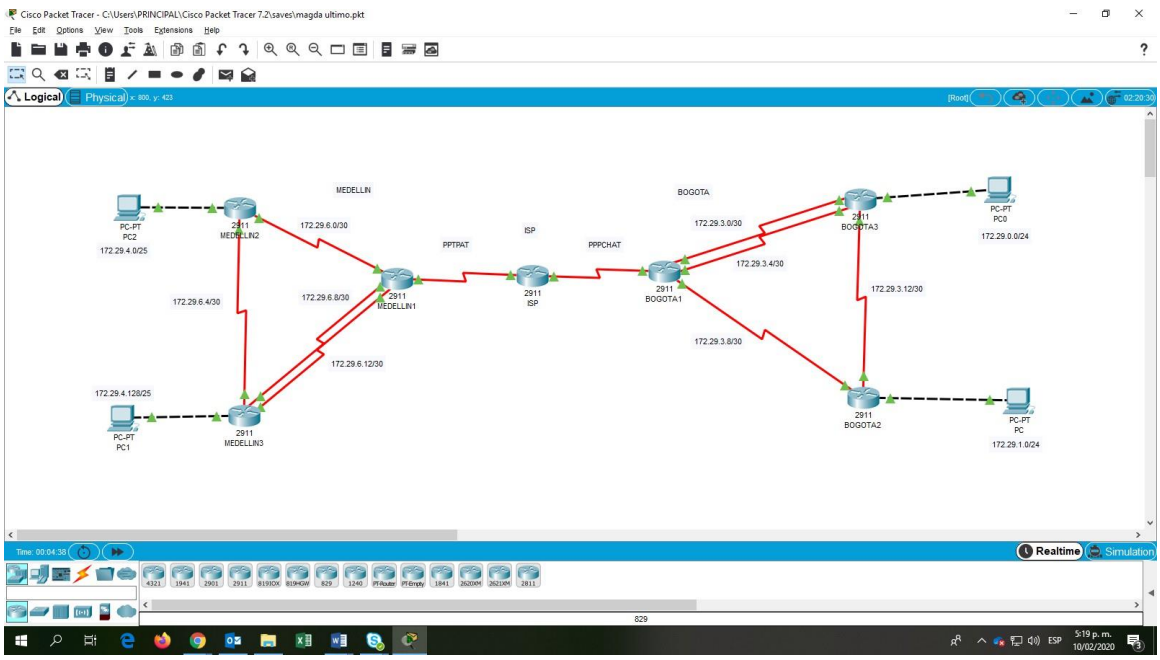
BOGOTA3(config-line)#login

```
Router>ena
Router#conf t
Enter configuration commands, one per line.  End with CNTL/Z
Router(config)#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
```

Realizar la conexión fisica 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
```

```
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, change
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)#clock rate 4000000
This command applies only to DCE interfaces
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)#
BOGOTA1(config-if)#clock rate 4000000
This command applies only to DCE interfaces
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)#clock rate 4000000
This command applies only to DCE interfaces
BOGOTA1(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 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)#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
```

```
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

BOGOTA3(config-if)#
%LINK-5-CHANGED: Interface Serial0/0/1, changed state to up

BOGOTA3(config-if)#
%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

BOGOTA3(config-if)#
%LINK-5-CHANGED: Interface Serial0/1/0, changed state to up

BOGOTA3(config-if)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/1/0, changed
state to up

BOGOTA3(config-if)#int g0/0
BOGOTA3(config-if)#172.29.0.1 255.255.255.0
                  ^
% Invalid input detected at '^' marker.

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

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
BOGOTA1(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
```

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 sumarizan 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

```
MEDELLIN1#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

MEDELLIN1#
```

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
Medellín1	SERIAL0/0/0; SERIAL0/0/1; SERIAL0/1/1
Medellín2	SERIAL0/0/0; SERIAL0/0/1
Medellín3	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:

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
BOGOTA1(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.

a. Según la topología se requiere que el enlace Medellín1 con ISP sea configurado con autenticación PAT.
b. 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

```
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
```

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

```
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
BOGOTA1(config-if)#
BOGOTA1#
%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

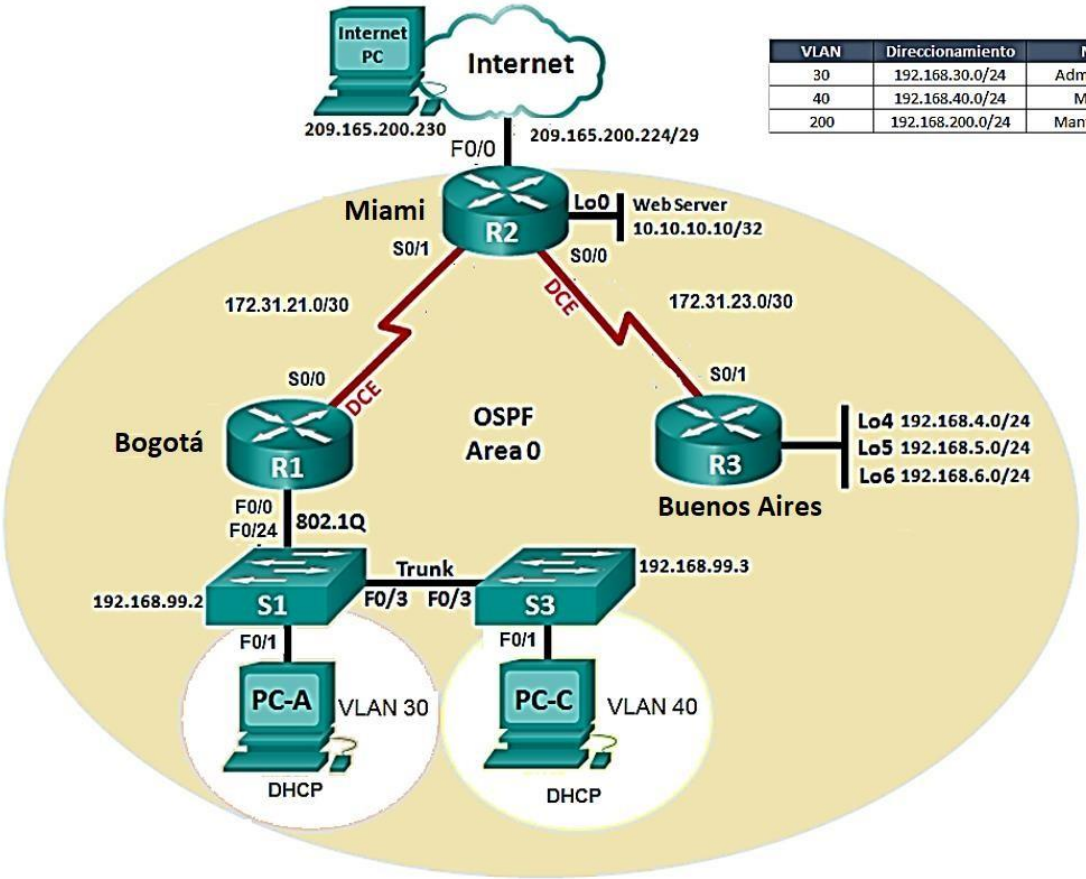
BOGOTA3(config)#int g0/0

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.



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

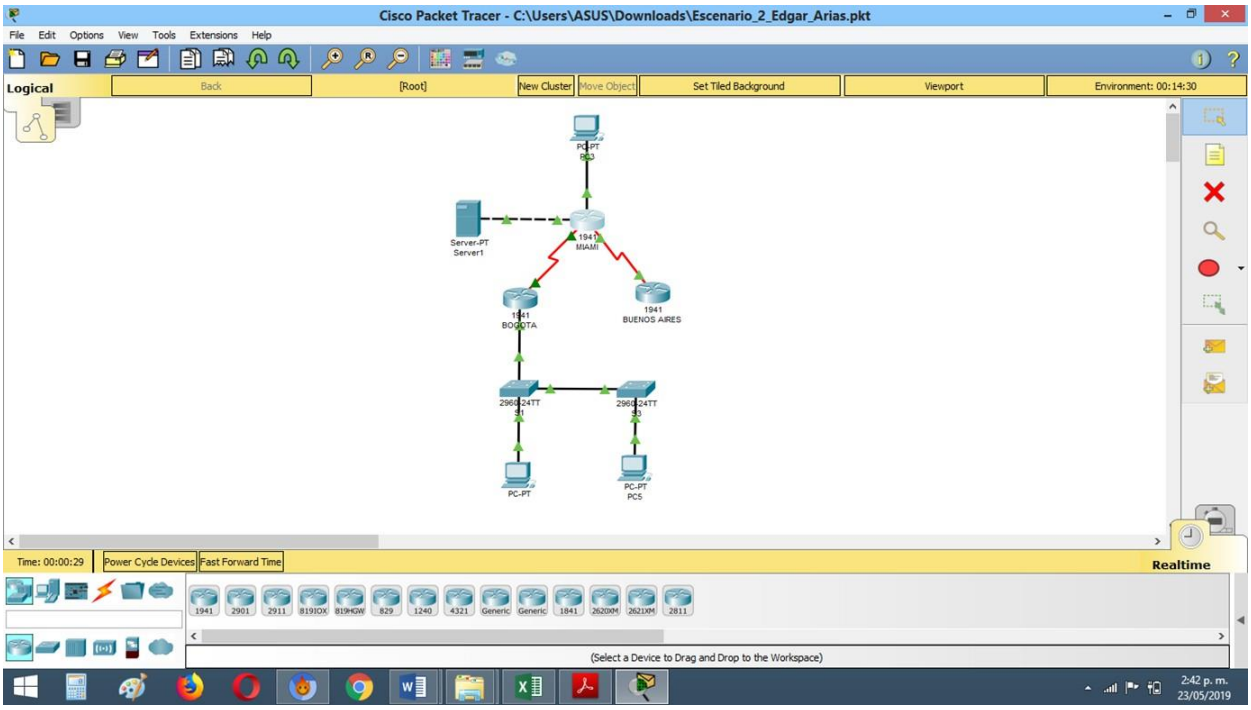
Configurar el direccionamiento IP acorde con la topología de red para cada uno de los dispositivos que forman parte del escenario

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

MONTAJE



Verificar información de OSPF

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

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

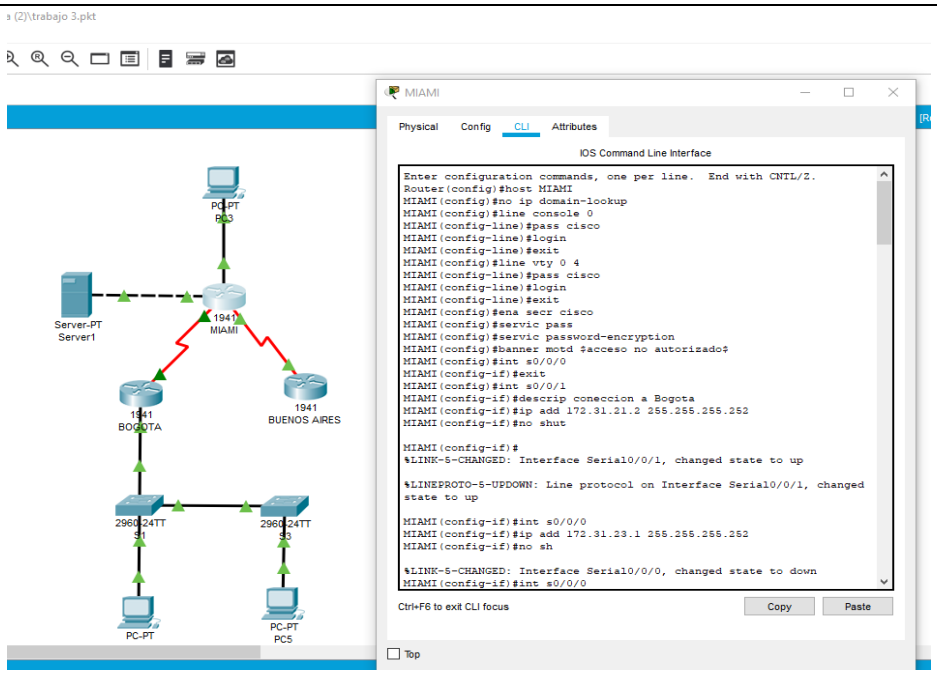
S2(config-line)#pass cisco

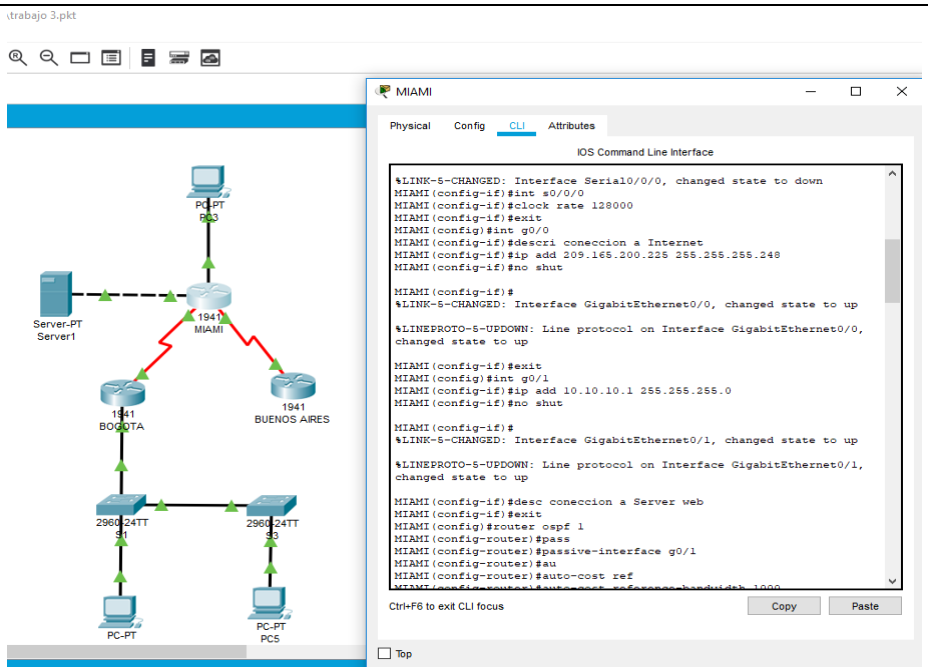
S2(config-line)#login

S2(config-line)#service pass

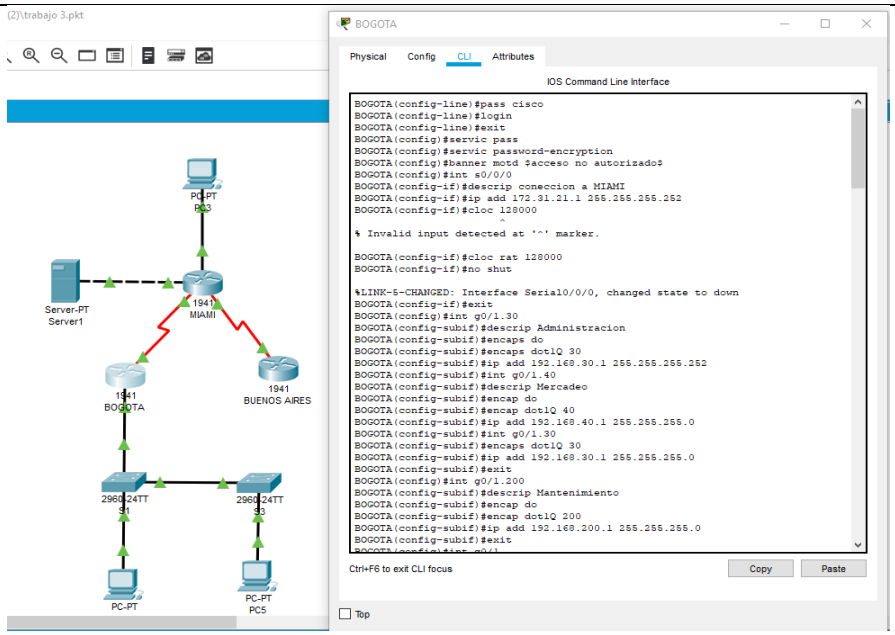
S2(config)#service password-encryption

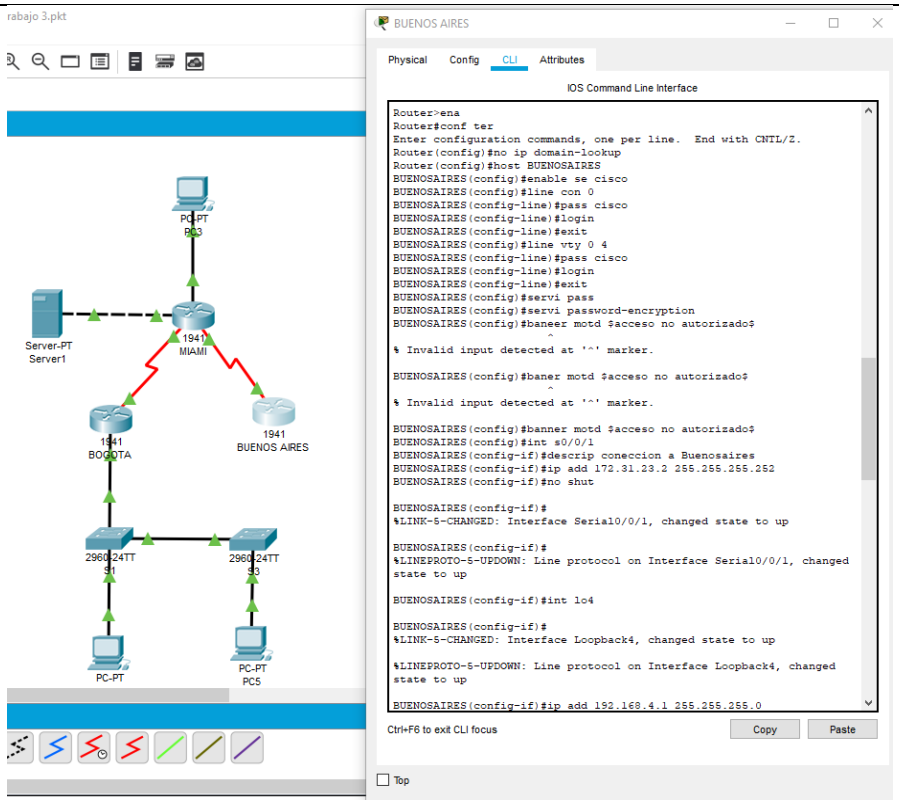
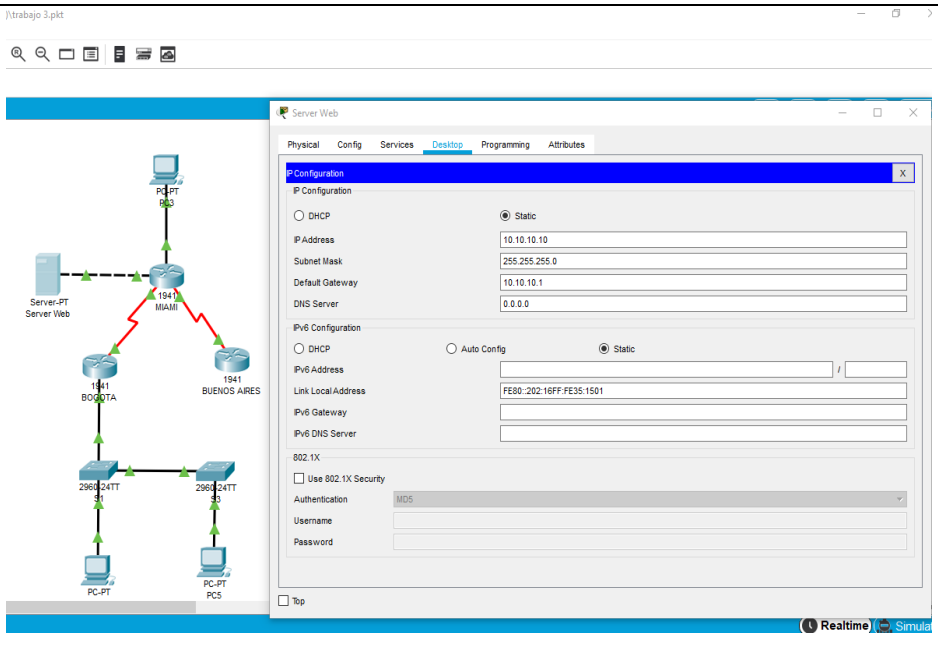
S2(config)#banner motd $Acceso Denegado$

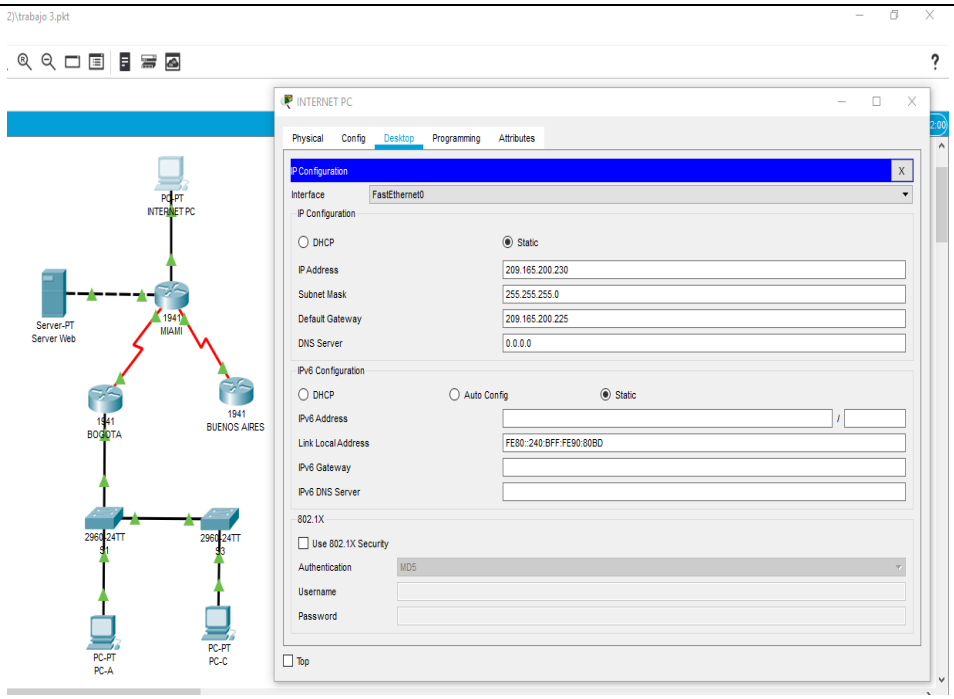
MIAMI	


\trabajo 3.pkt
PC-PT
PC3
Server-PT
Server1
1941
MIAMI
1941
BOGOTA
1941
BUENOS AIRES
2960-24TT
2960-24TT
PC-PT
PC-PT
PC5
MIAMI
Physical
Config
CLI
Attributes
IOS Command Line Interface
%LINK-5-CHANGED: Interface Serial0/0/0, changed state to down
MIAMI(config-if)#int s0/0/0
MIAMI(config-if)#clock rate 128000
MIAMI(config-if)#exit
MIAMI(config)#int g0/0
MIAMI(config-if)#descri coneccion 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)#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)#desc coneccion 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
Copy
Paste
Top

BOGOTA


(2)\trabajo 3.pkt
PC-PT
PC3
Server-PT
Server1
1941
MIAMI
1941
BOGOTA
1941
BUENOS AIRES
2960-24TT
2960-24TT
PC-PT
PC-PT
PC5
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)#descrip coneccion a MIAMI
BOGOTA(config-if)#ip add 172.31.21.1 255.255.255.252
BOGOTA(config-if)#cloc 128000
% Invalid input detected at '^' marker.
BOGOTA(config-if)#cloc rat 128000
BOGOTA(config-if)#no shut
%LINK-5-CHANGED: Interface Serial0/0/0, changed state to down
BOGOTA(config-if)#exit
BOGOTA(config)#int g0/1.30
BOGOTA(config-subif)#descrip 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)#descrip 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)#descrip 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
Ctrl+F6 to exit CLI focus
Copy
Paste
Top

BUENOS AIRES	
SERVER WEB	

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)#

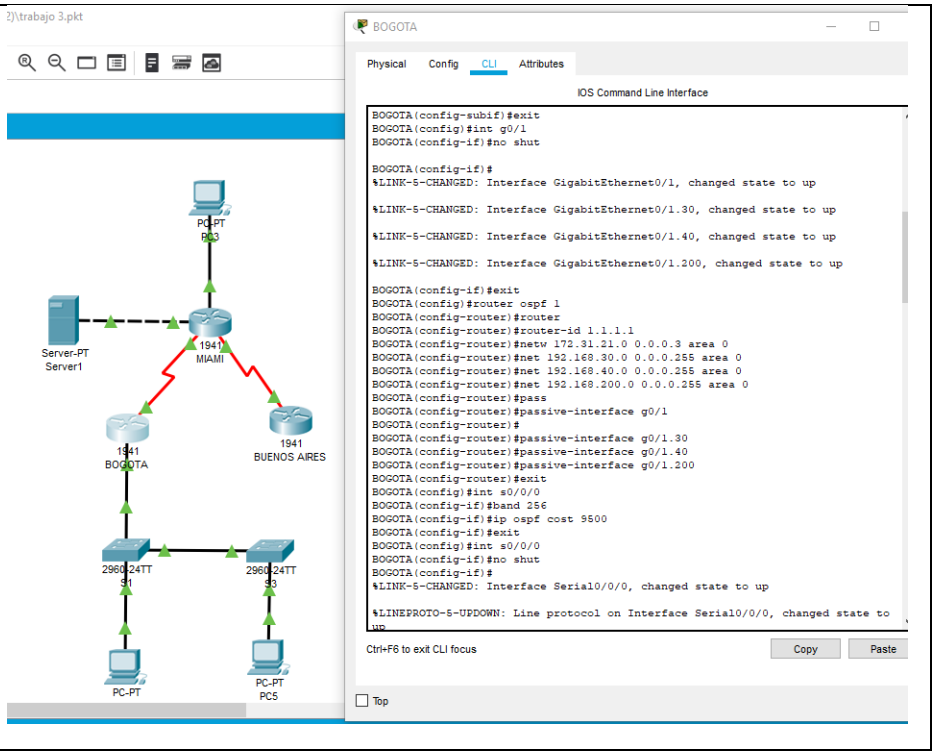
Implement DHCP and NAT for IPv4

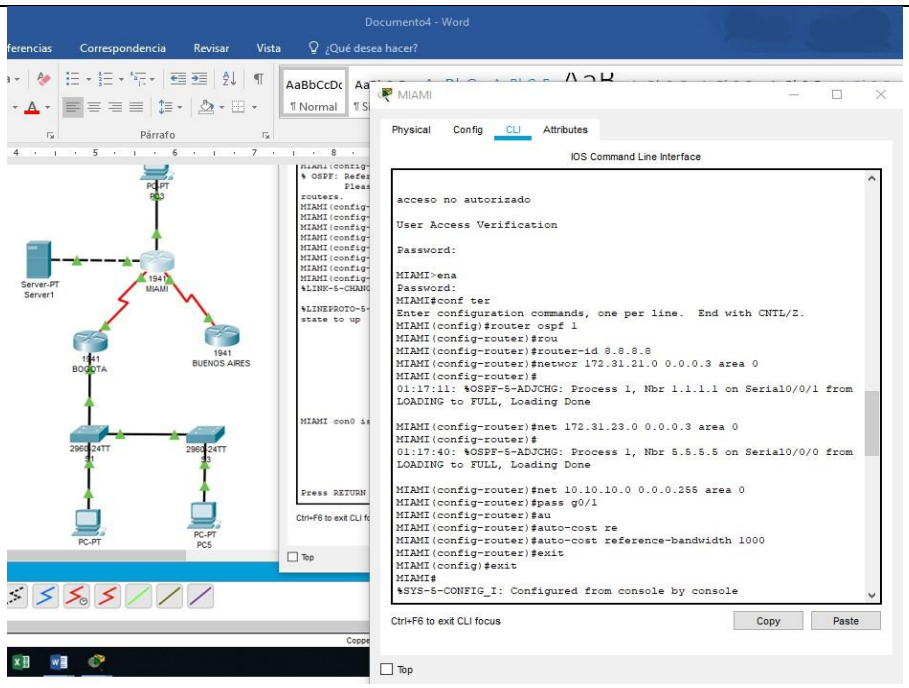
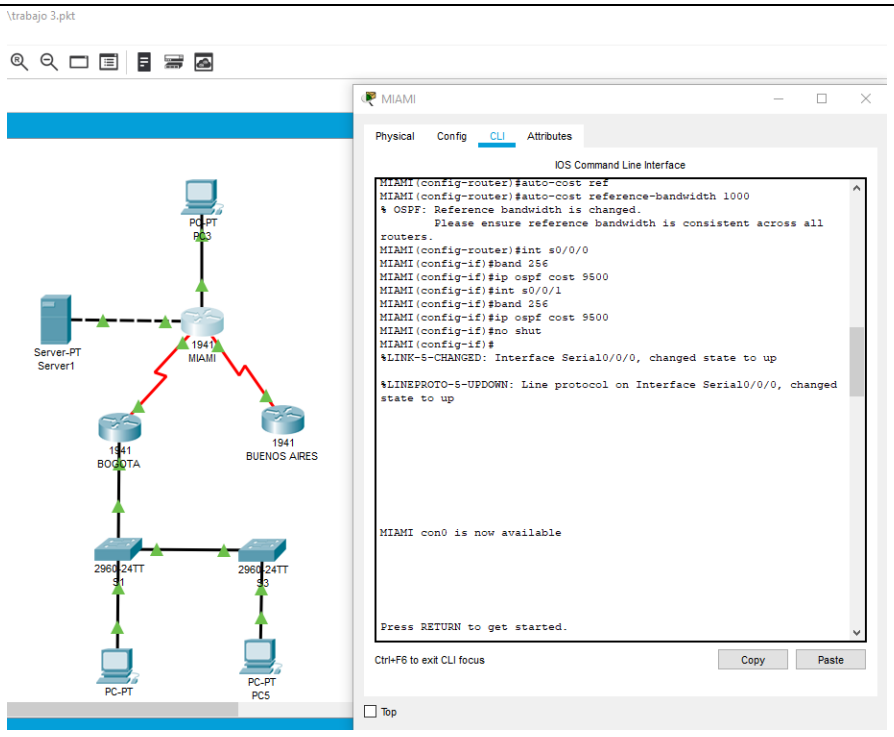
R1#conf t

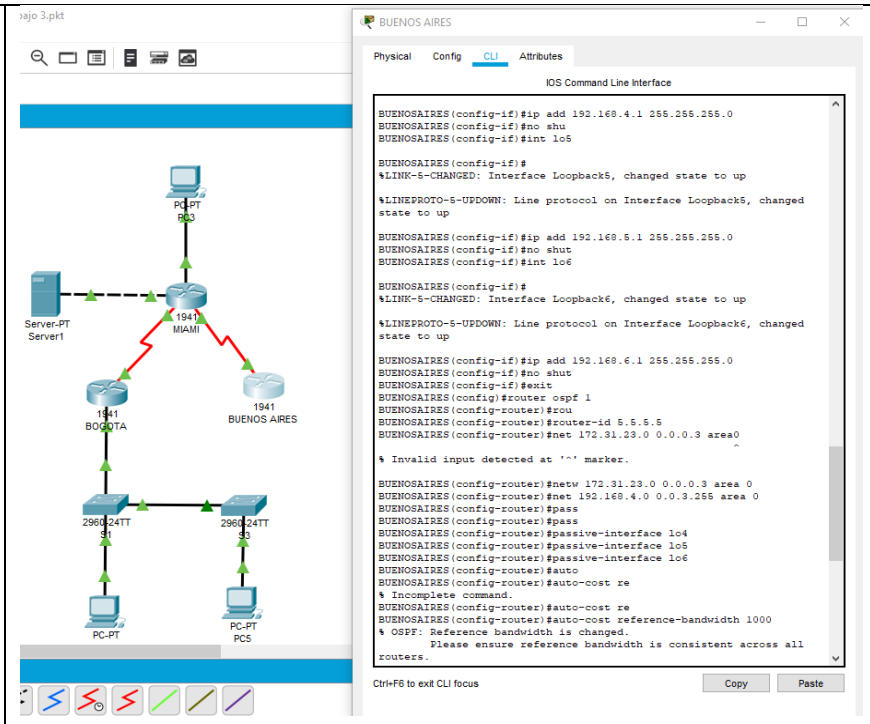
Enter configuration commands, one per line. End with CNTL/Z.

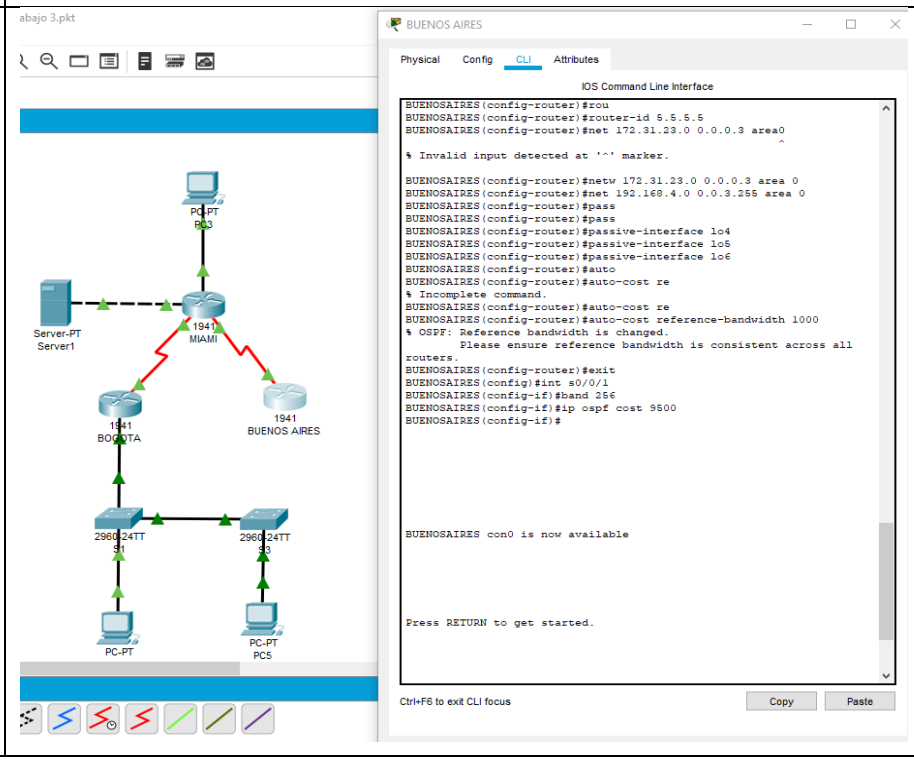
R1(config)#ip dhcp excluded-address 192.168.30.1 192.168.30.30

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

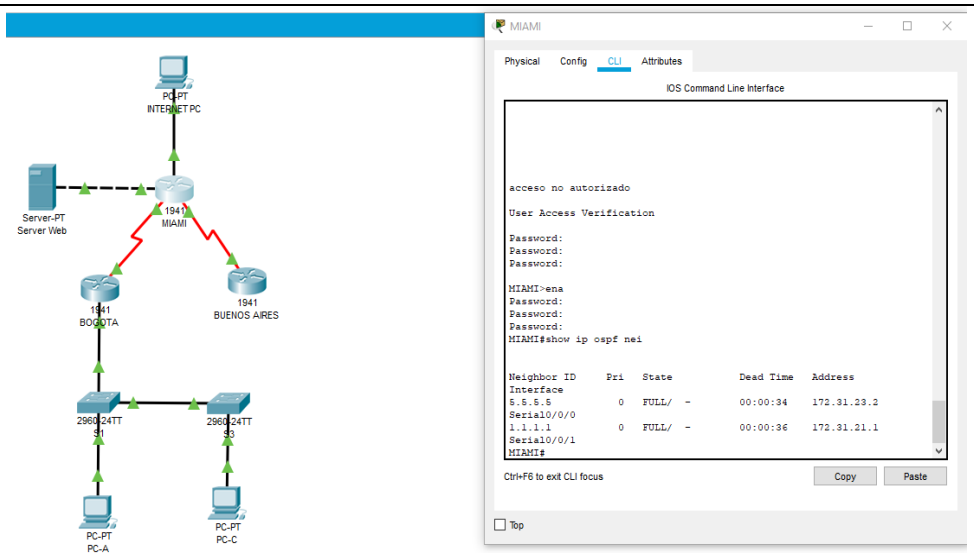
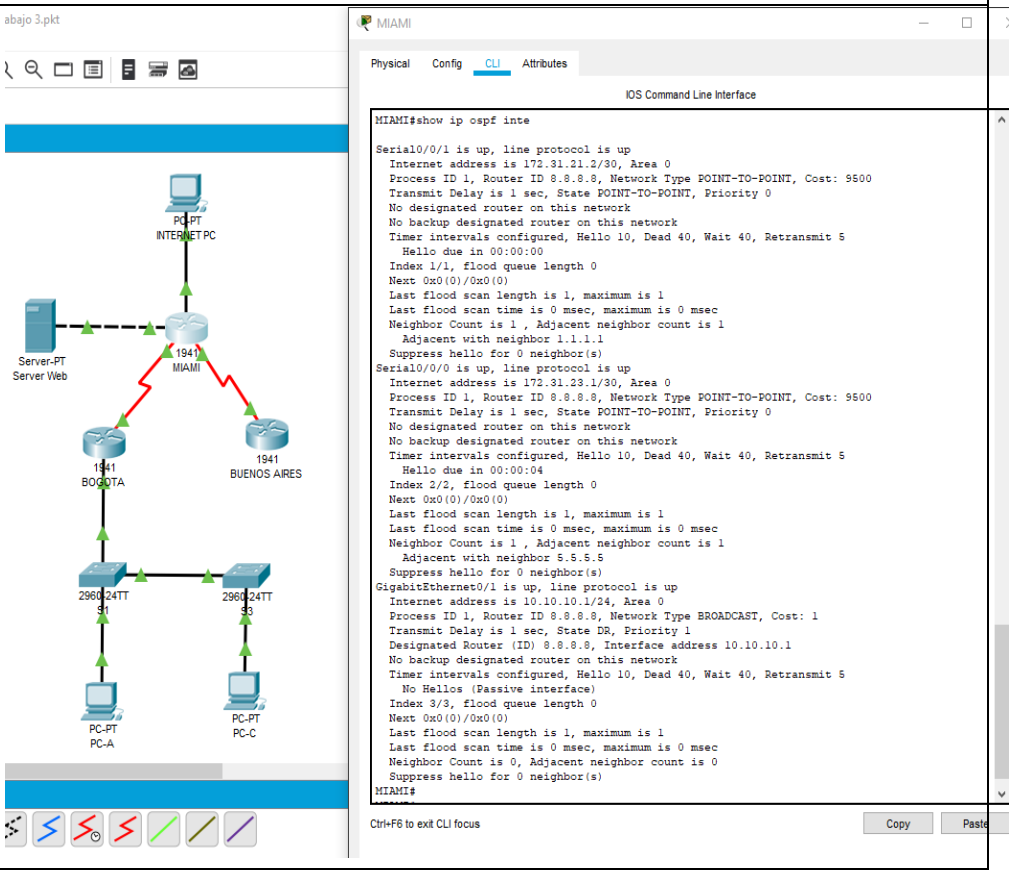
BOGOTA	

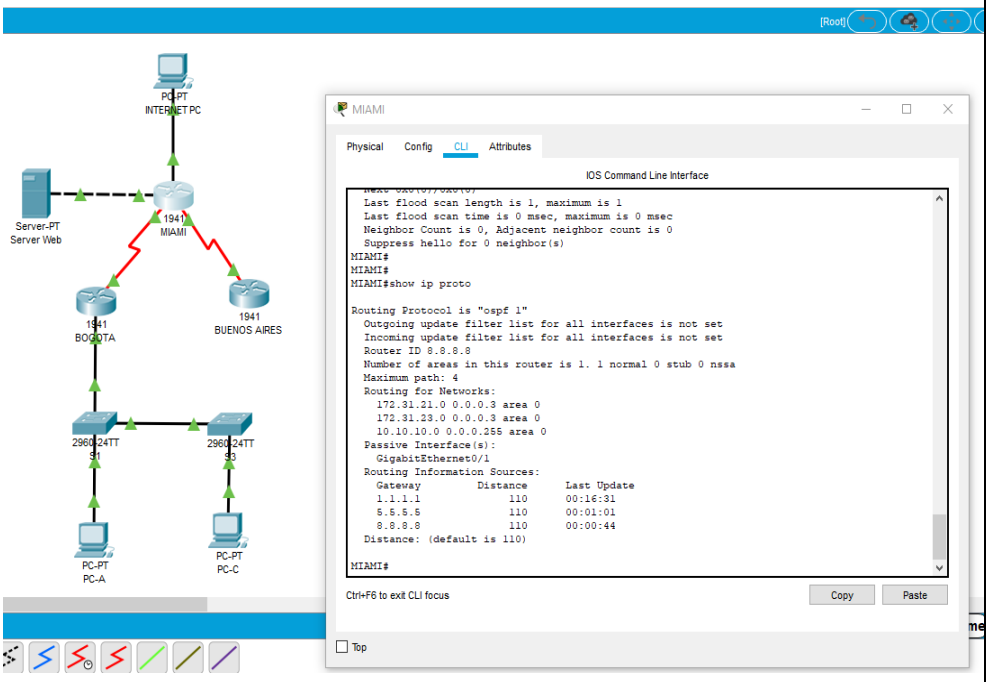
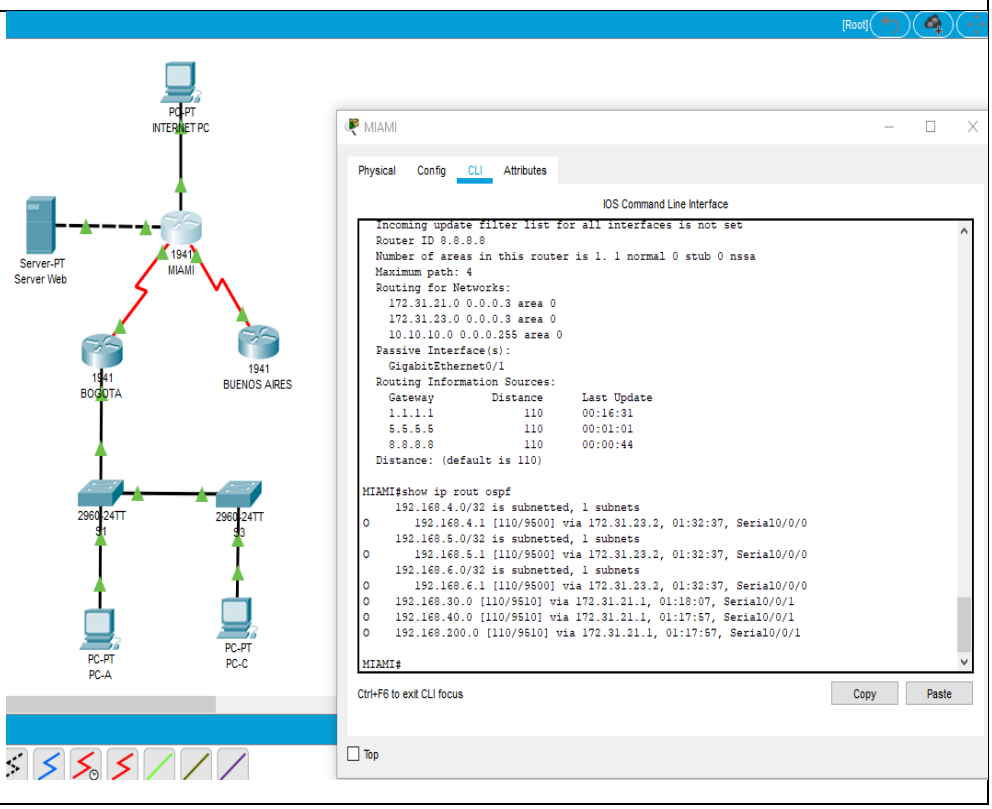
MIAMI	
BUENOS AIRES	


ajo 3.pkt
PC-PT
R03
Server-PT
Server1
1941
MIAMI
1941
BOGOTA
1941
BUENOS AIRES
2960-24TT
S1
2960-24TT
S3
PC-PT
PC-PT
PC5
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-5-CHANGED: Interface Loopback5, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback5, changed state to up
BUENOSAIRES(config-if)#ip add 192.168.5.1 255.255.255.0
BUENOSAIRES(config-if)#no shut
BUENOSAIRES(config-if)#int lo6
BUENOSAIRES(config-if)#
%LINK-5-CHANGED: Interface Loopback6, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback6, changed state to up
BUENOSAIRES(config-if)#ip add 192.168.6.1 255.255.255.0
BUENOSAIRES(config-if)#no 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
% 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

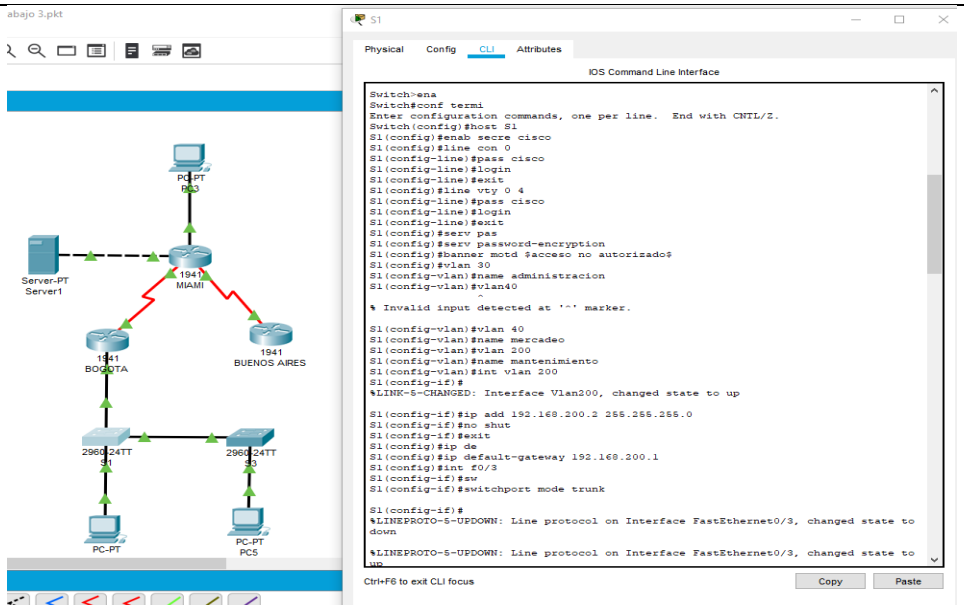
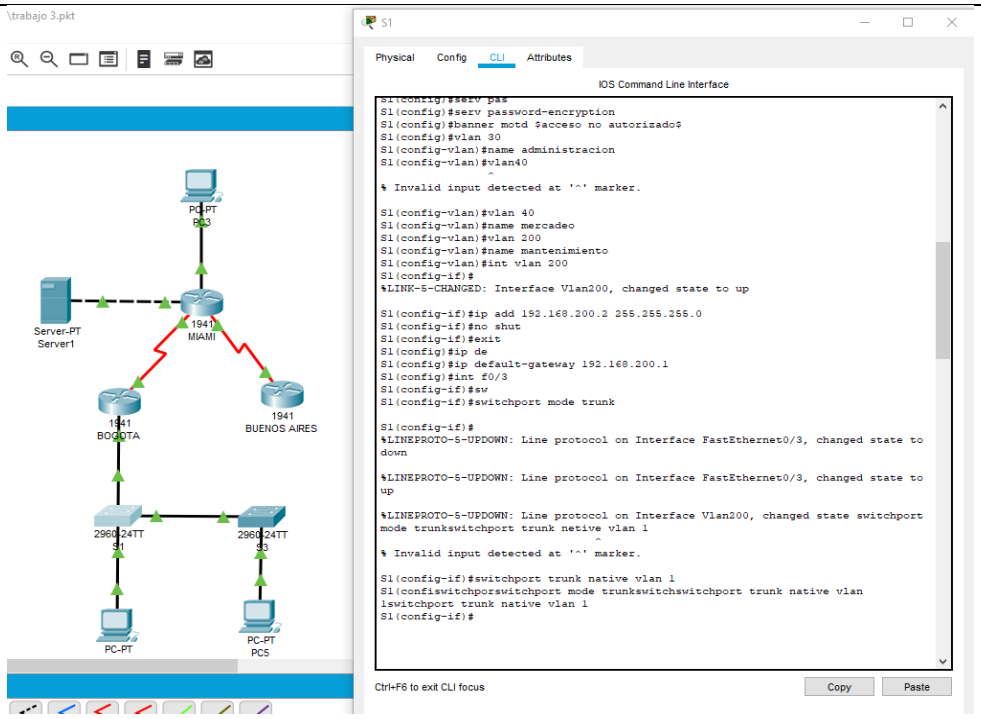

abajo 3.pkt
PC-PT
R03
Server-PT
Server1
1941
MIAMI
1941
BOGOTA
1941
BUENOS AIRES
2960-24TT
S1
2960-24TT
S3
PC-PT
PC-PT
PC5
BUENOS AIRES
Physical
Config
CLI
Attributes
IOS Command Line Interface
BUENOSAIRES(config-router)#rou
BUENOSAIRES(config-router)#router-id 5.5.5.5
BUENOSAIRES(config-router)#net 172.31.23.0 0.0.0.3 area0
% 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

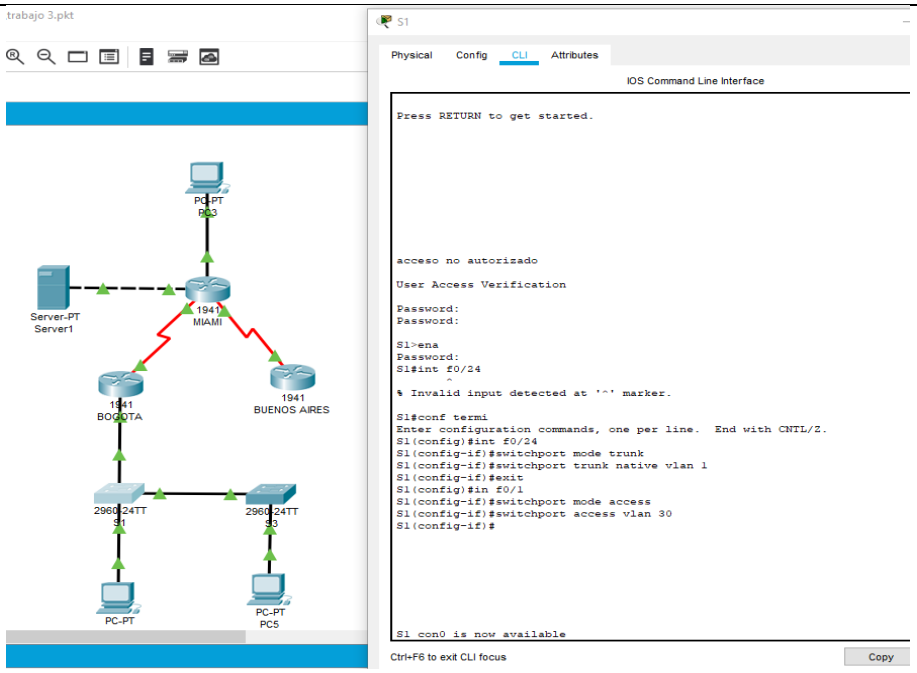
Verificar información de OSPF

Visualizar tablas de enrutamiento y routers conectados por OSPFv2	
Visualizar lista resumida de interfaces por OSPF en donde se ilustre el costo de cada interface	

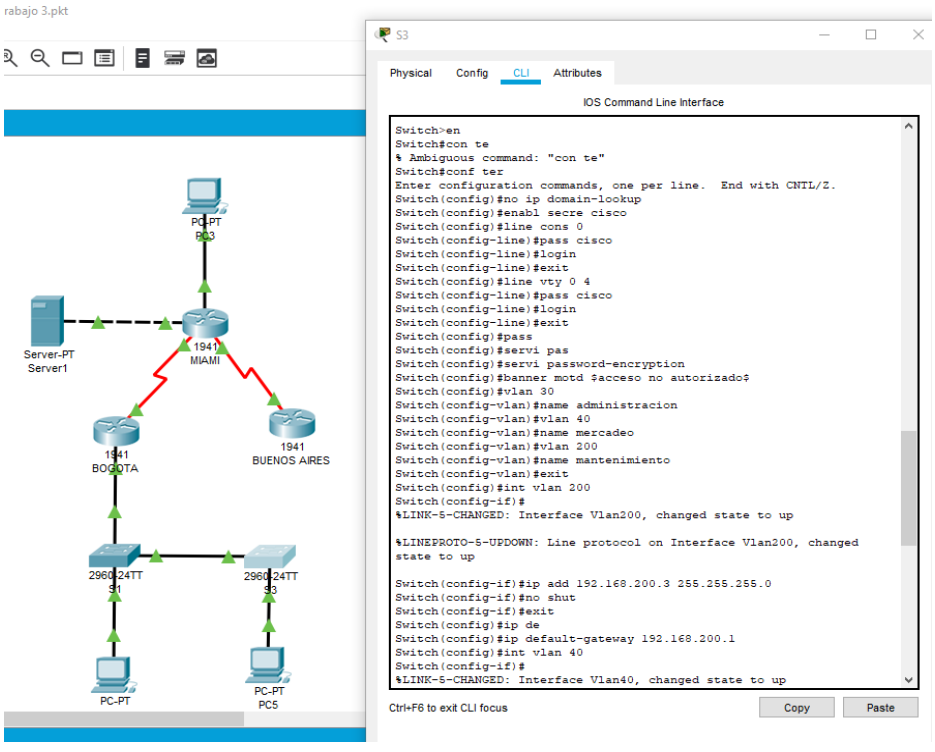
Visualizar el OSPF Process ID, Router ID, Address summarizations, Routing Networks, and passive interfaces configuradas en cada router.	
	

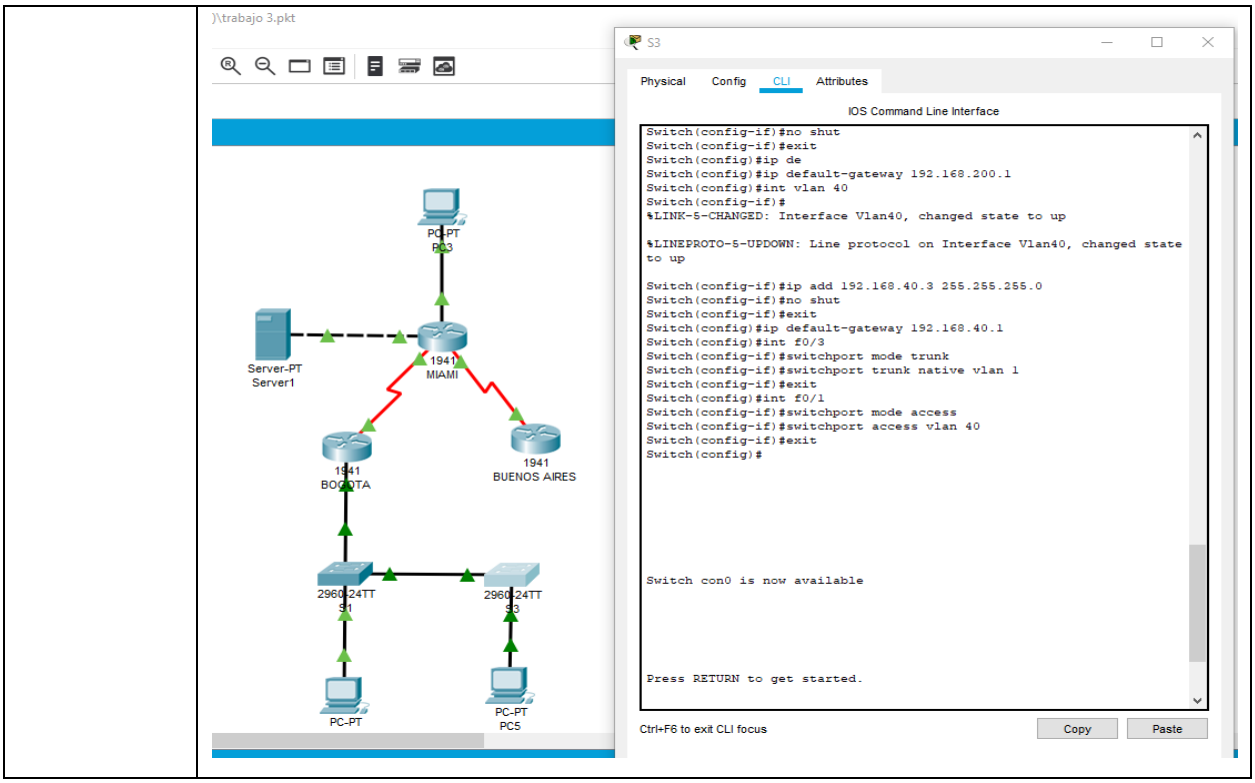
Configurar VLANs, Puertos troncales, puertos de acceso, encapsulamiento, Inter-VLAN Routing y Seguridad en los Switches acorde a la topología de red establecida.

Switch 1	
	

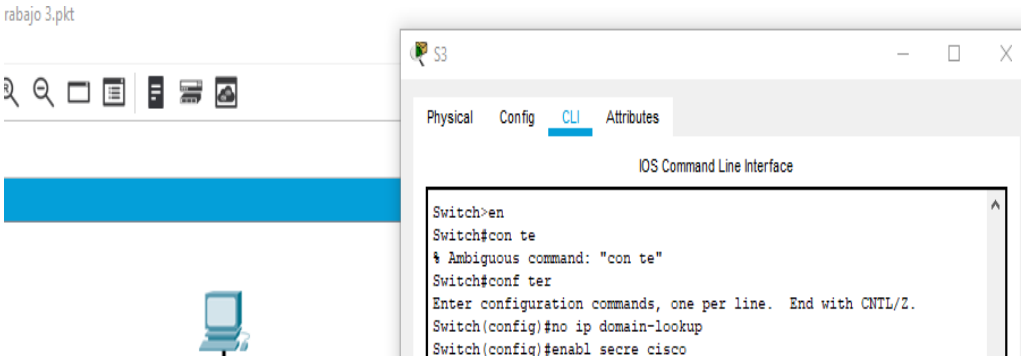

trabajo 3.pkt
S1
Physical
Config
CLI
Attributes
IOS Command Line Interface
Press RETURN to get started.
acceso no autorizado
User Access Verification
Password:
Password:
S1>ena
Password:
S1#int f0/24
% Invalid input detected at '^' marker.
S1#conf termi
Enter configuration commands, one per line. End 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)#in 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
PC-PT PC3
Server-PT Server1
1941 MIAMI
1941 BOGOTA
1941 BUENOS AIRES
2960-24TT S1
2960-24TT S3
PC-PT
PC-PT PC5

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
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
PC-PT PC3
Server-PT Server1
1941 MIAMI
1941 BOGOTA
1941 BUENOS AIRES
2960-24TT S1
2960-24TT S3
PC-PT
PC-PT PC5

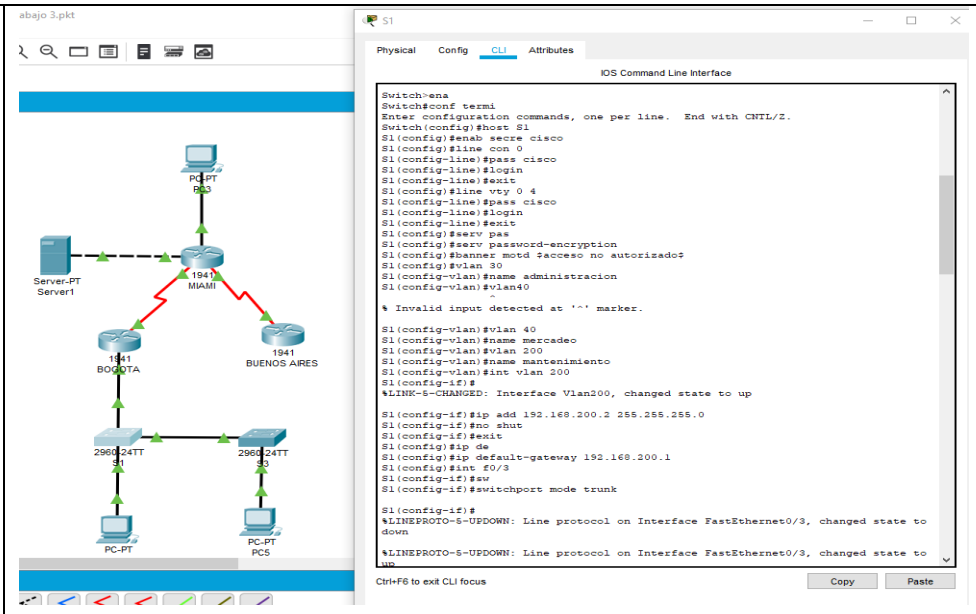


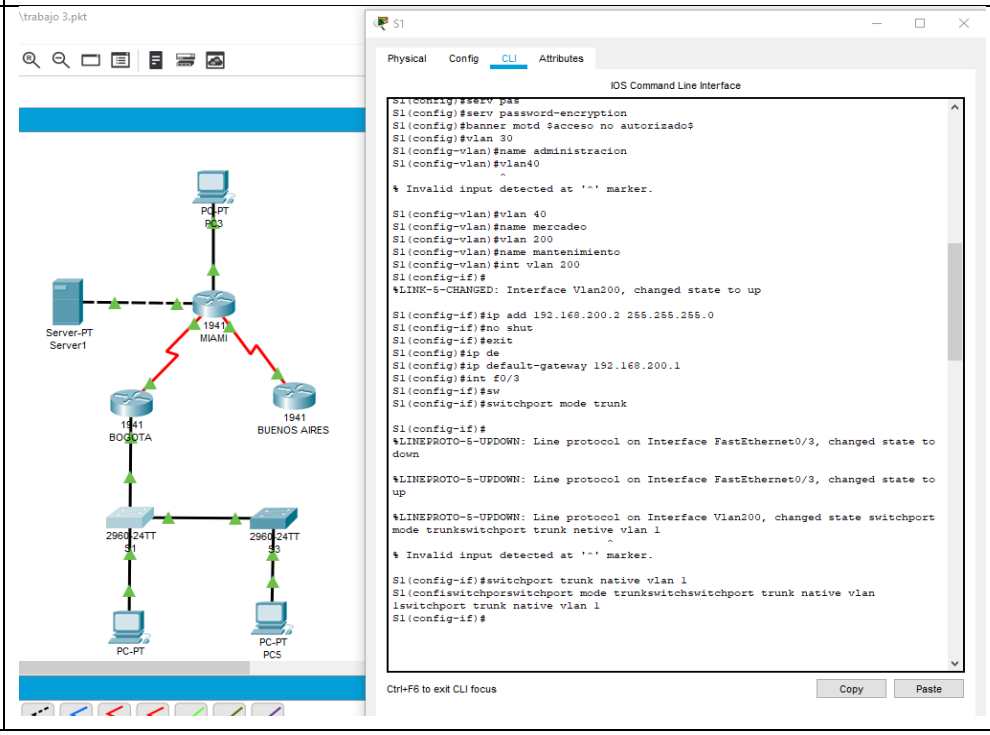
En el Switch 3 deshabilitar DNS lookup

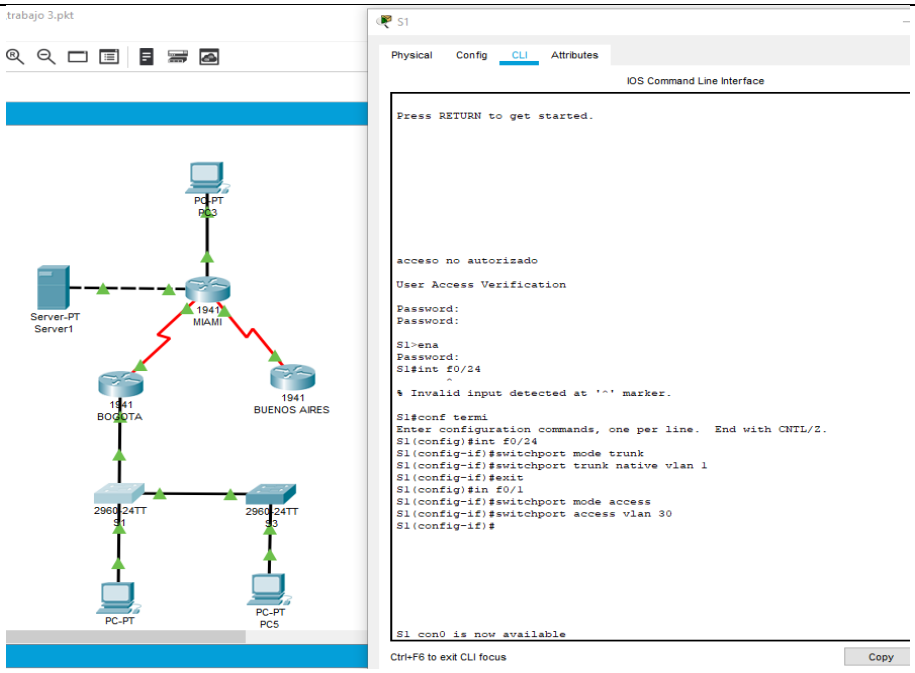


Asignar direcciones IP a los Switches acorde a los lineamientos.

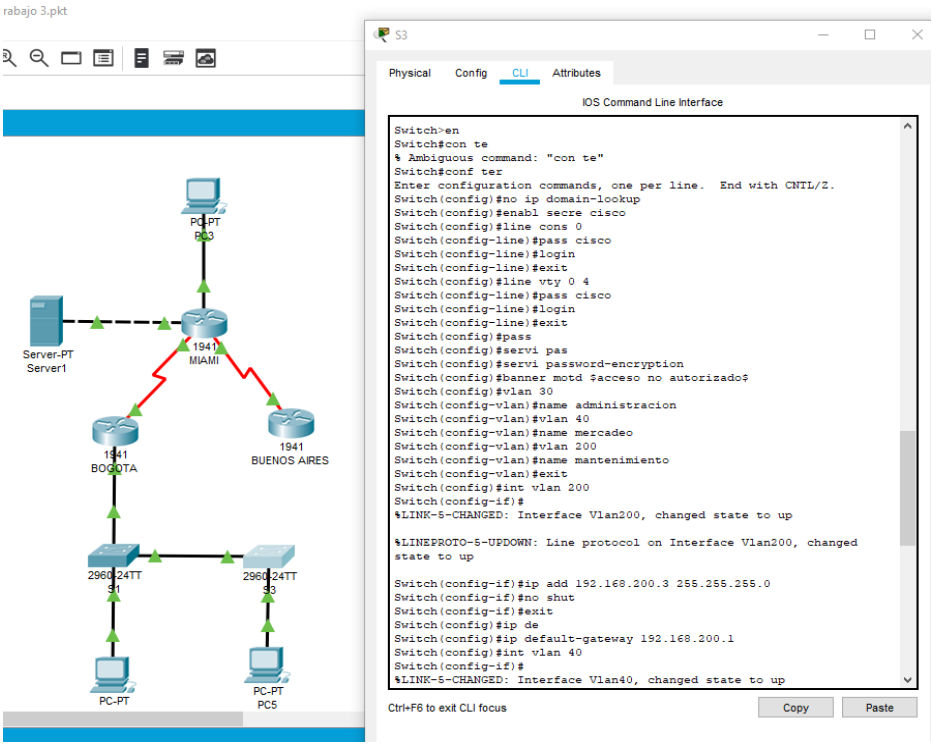
Switch 1

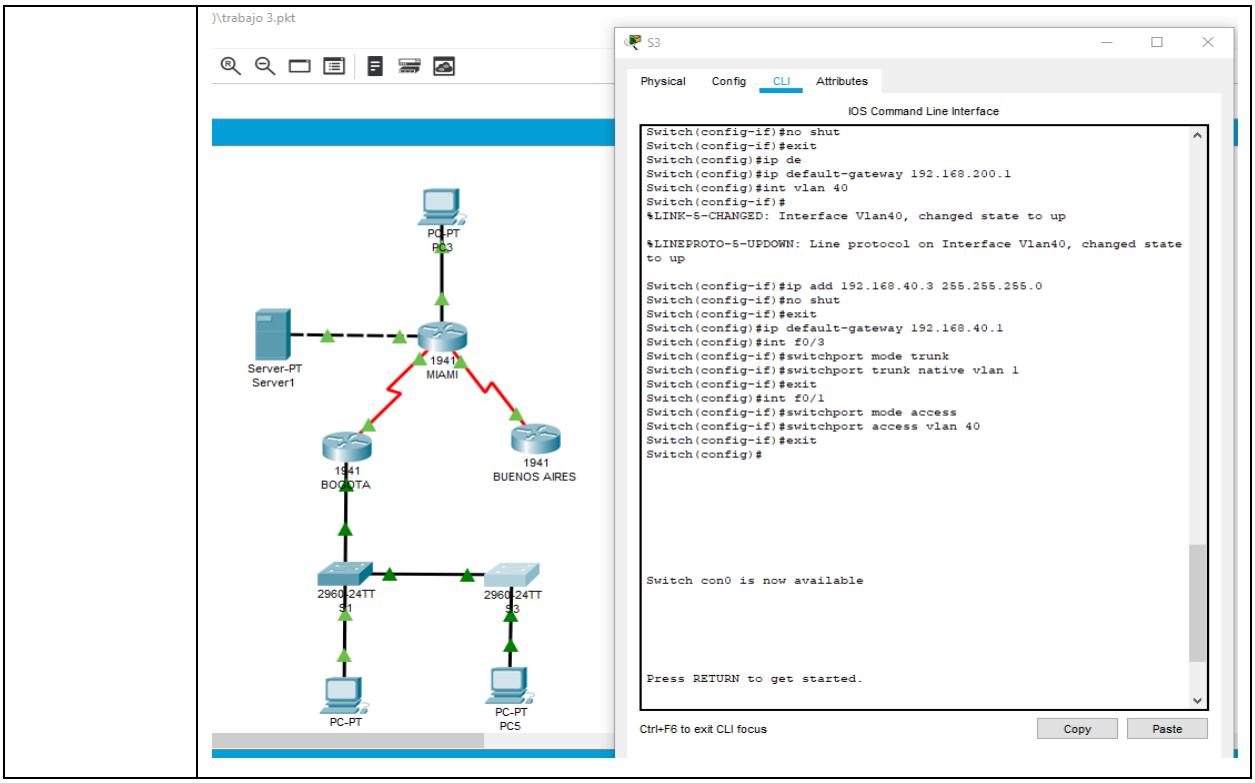




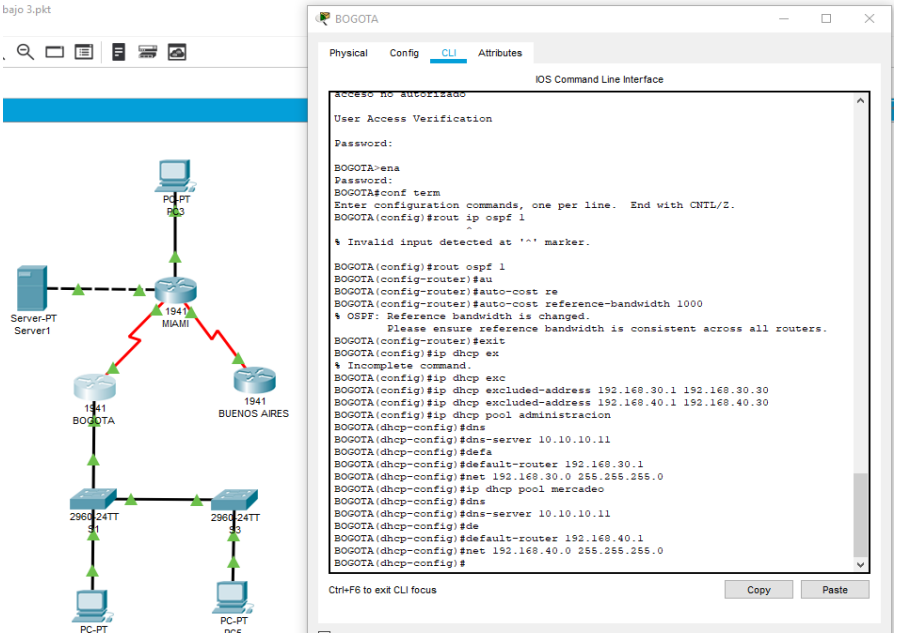

trabajo 3.pkt
PC-PT PC3
Server-PT Server1
1941 MIAMI
1941 BOGOTA
1941 BUENOS AIRES
2960-24TT S1
2960-24TT S3
PC-PT
PC-PT PC5
S1
Physical
Config
CLI
Attributes
IOS Command Line Interface
Press RETURN to get started.
acceso no autorizado
User Access Verification
Password:
Password:
S1>ena
Password:
S1#int f0/24
% Invalid input detected at '^' marker.
S1#conf termi
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)#in 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

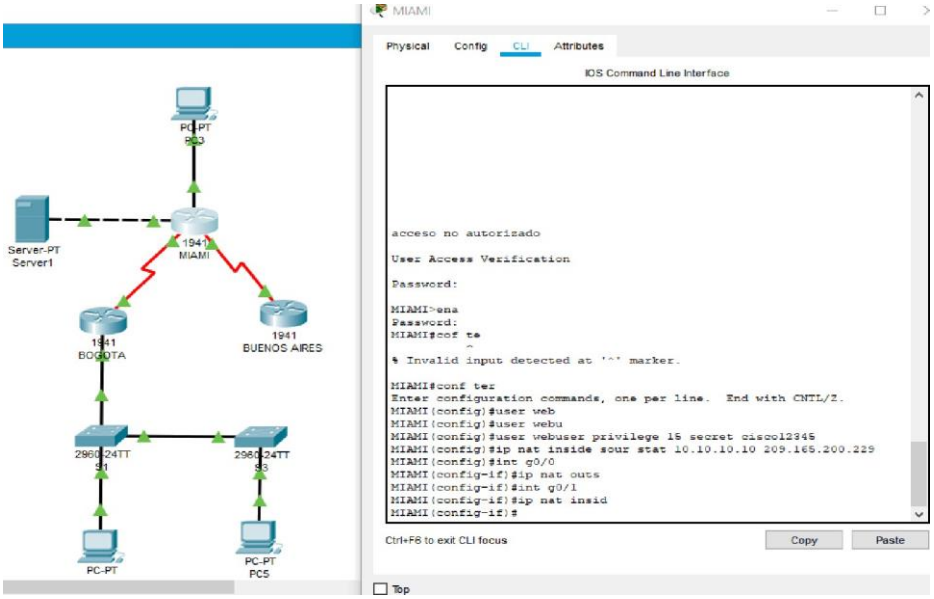
Switch 3

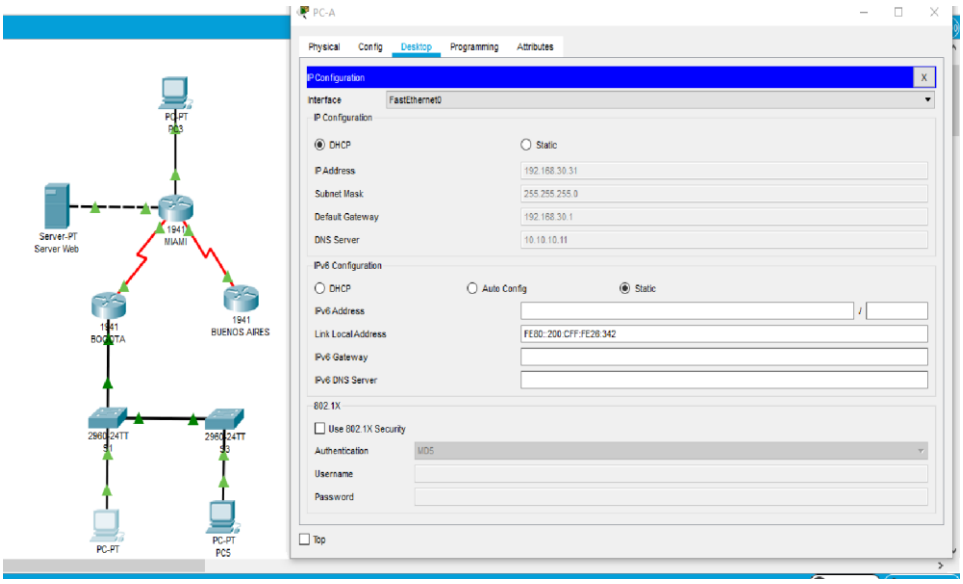

rabajo 3.pkt
PC-PT PC3
Server-PT Server1
1941 MIAMI
1941 BOGOTA
1941 BUENOS AIRES
2960-24TT S1
2960-24TT S3
PC-PT
PC-PT PC5
S3
Physical
Config
CLI
Attributes
IOS Command Line Interface
Switch>en
Switch#con te
% Ambiguous command: "con te"
Switch#conf ter
Enter configuration commands, one per line. End 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
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

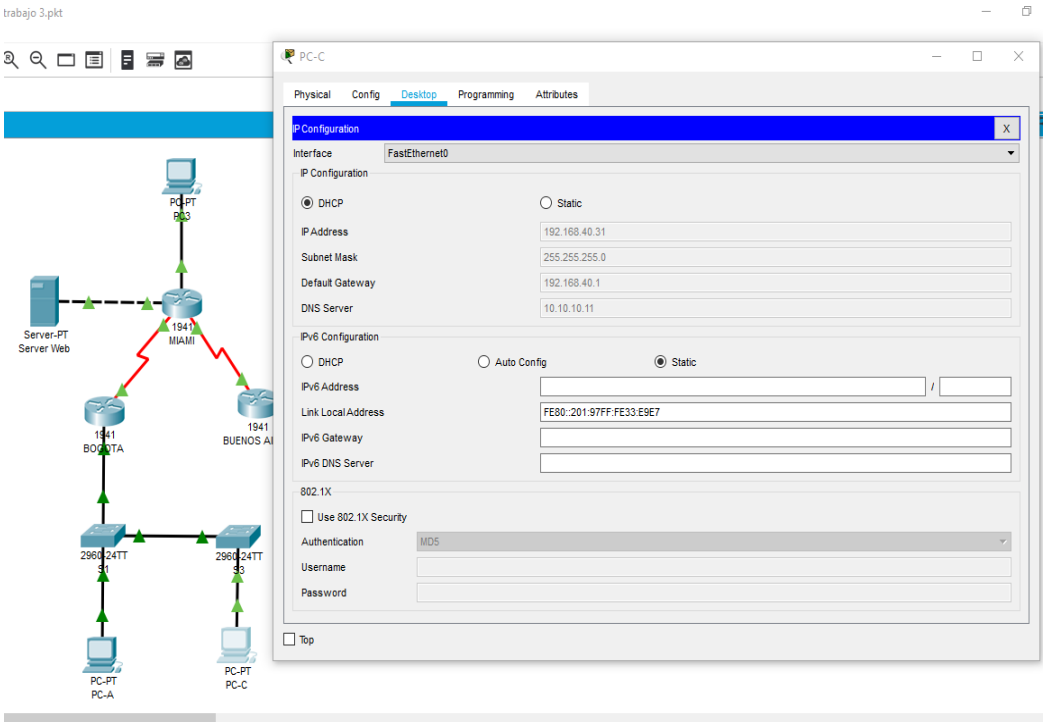


Implementar DHCP and NAT for IPv4

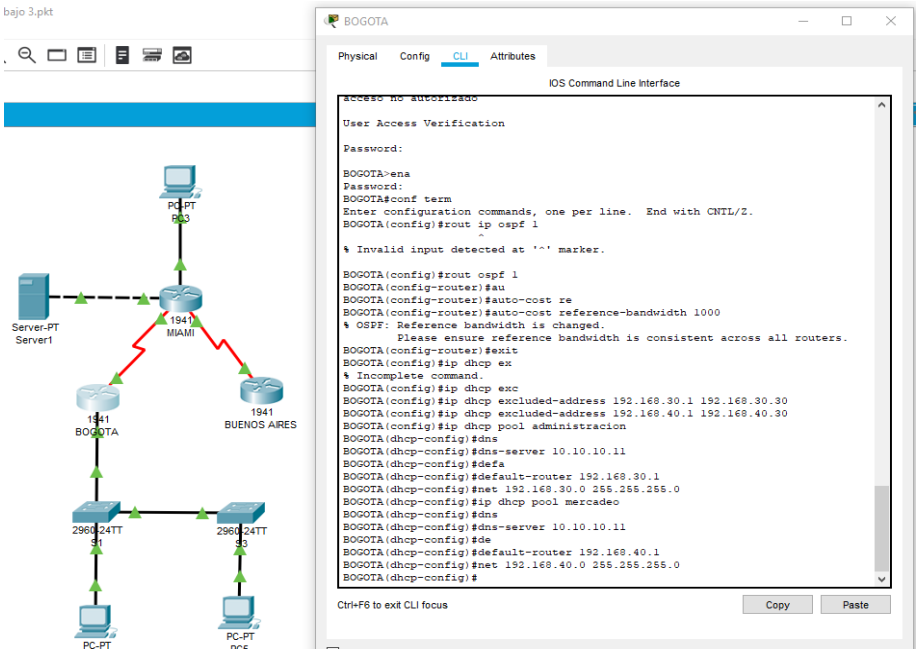



MIAMI
Physical
Config
CLI
Attributes
IOS Command Line Interface
acceso no autorizado
User Access Verification
Password:
MIAMI>ena
Password:
MIAMI#conf te
% Invalid input detected at '^' marker.
MIAMI#conf ter
Enter configuration commands, one per line. End with CNTL/Z.
MIAMI(config)#user web
MIAMI(config)#user 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
Server-PT
Server1
1941
MIAMI
1941
BOGOTA
1941
BUENOS AIRES
PC-PT
PC5

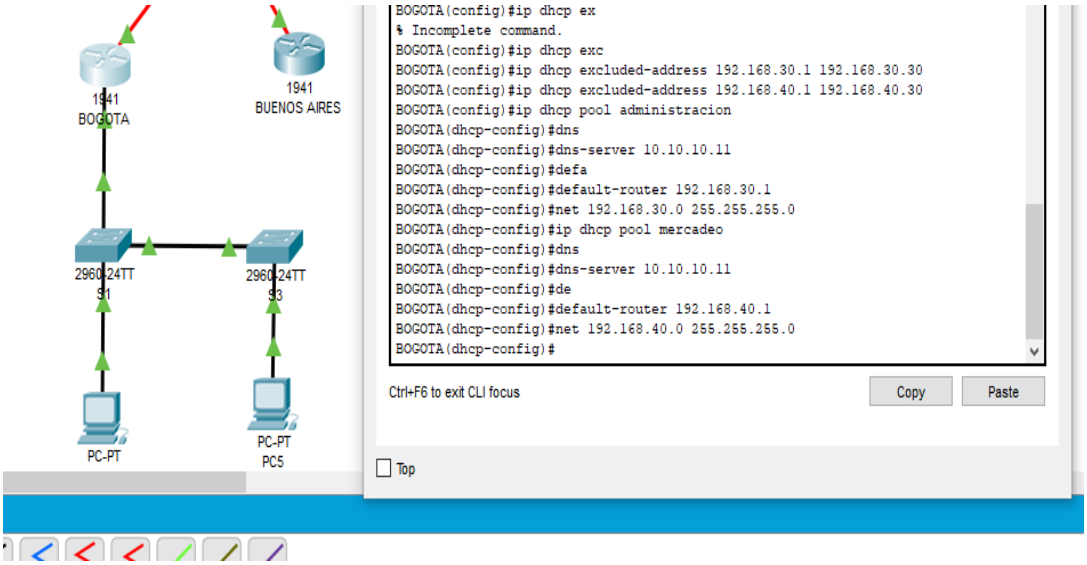

PC-A
Physical
Config
Desktop
Programming
Attributes
IP Configuration
Interface
FastEthernet0
IP Configuration
DHCP
Static
IP Address
192.168.30.31
Subnet Mask
255.255.255.0
Default Gateway
192.168.30.1
DNS Server
10.10.10.11
IPv6 Configuration
DHCP
Auto Config
Static
IPv6 Address
Link Local Address
FE80::200:CFF:FE28:342
IPv6 Gateway
IPv6 DNS Server
802.1X
Use 802.1X Security
Authentication
MD5
Username
Password
Top
Server-PT
Server Web
1941
MIAMI
1941
BOGOTA
1941
BUENOS AIRES
PC-PT
PC5



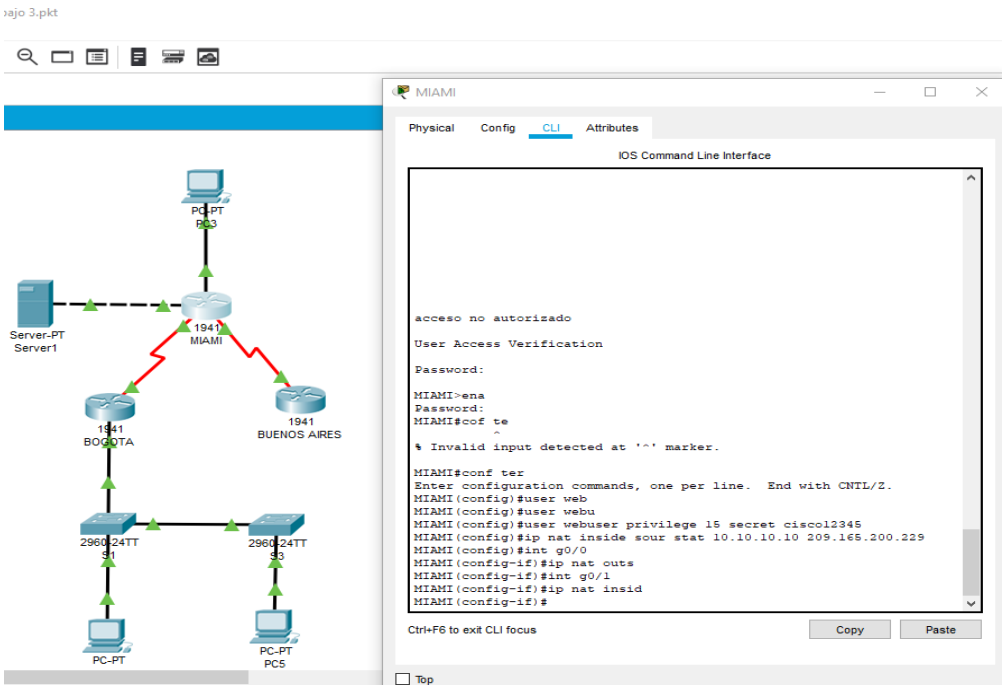
Configurar R1 Como servidor DHCP para las VLANs 30 y 40.



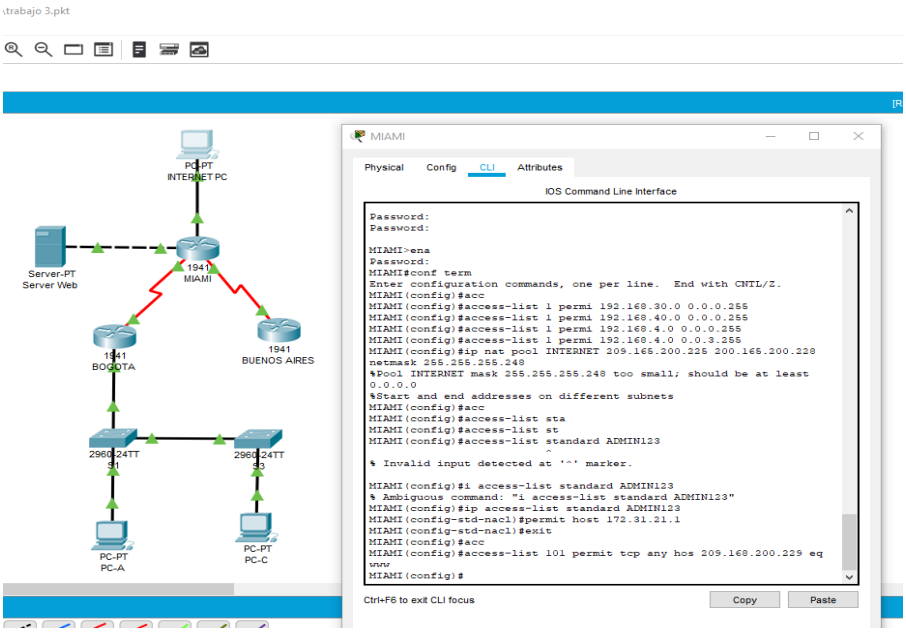
Reservar las primeras 30 direcciones IP de las VLAN 30 y 40 para configuraciones estáticas.



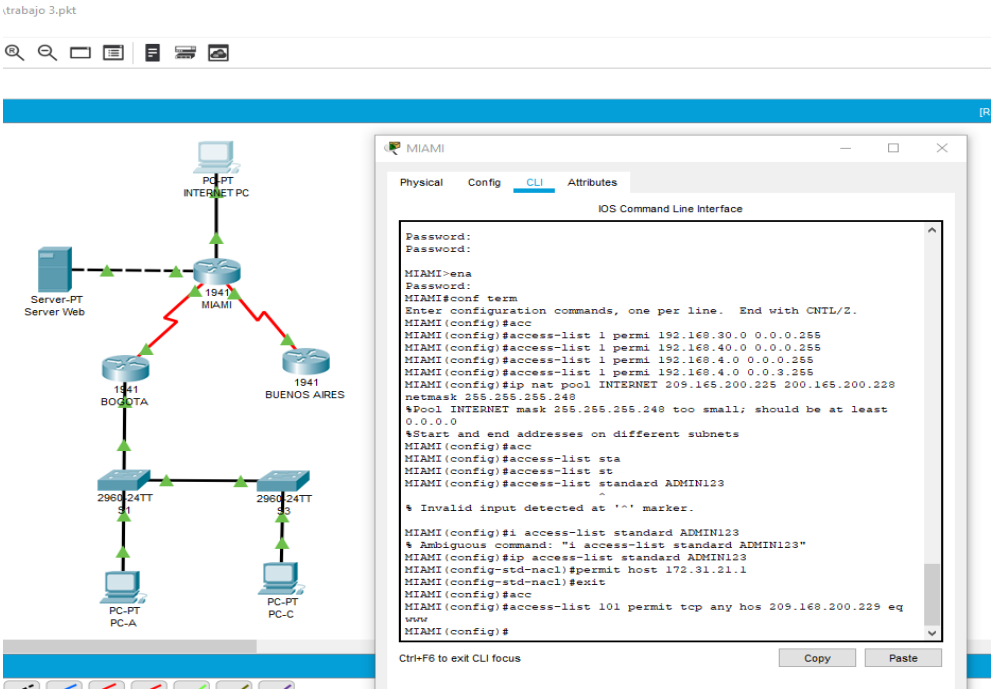
Configurar NAT en R2 para permitir que los host puedan salir a internet



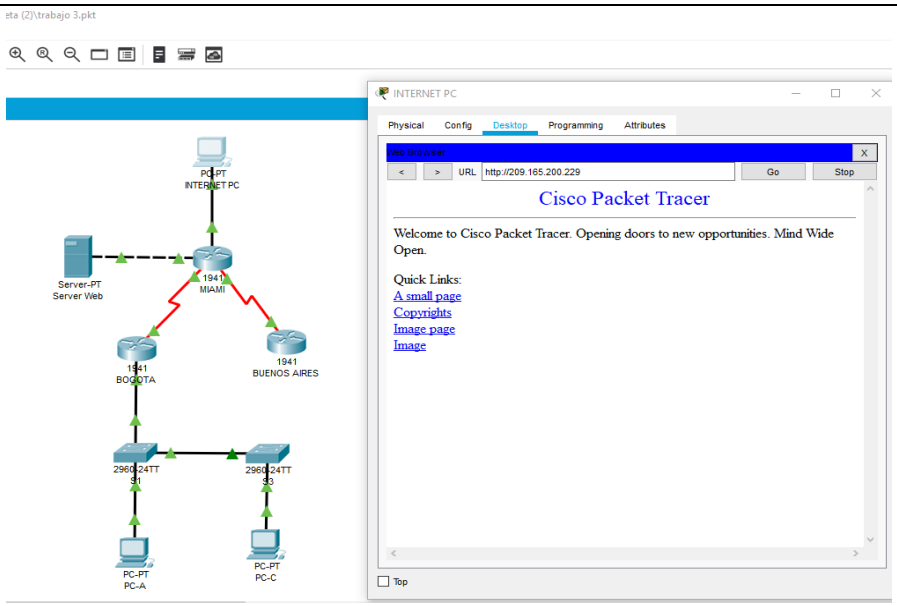
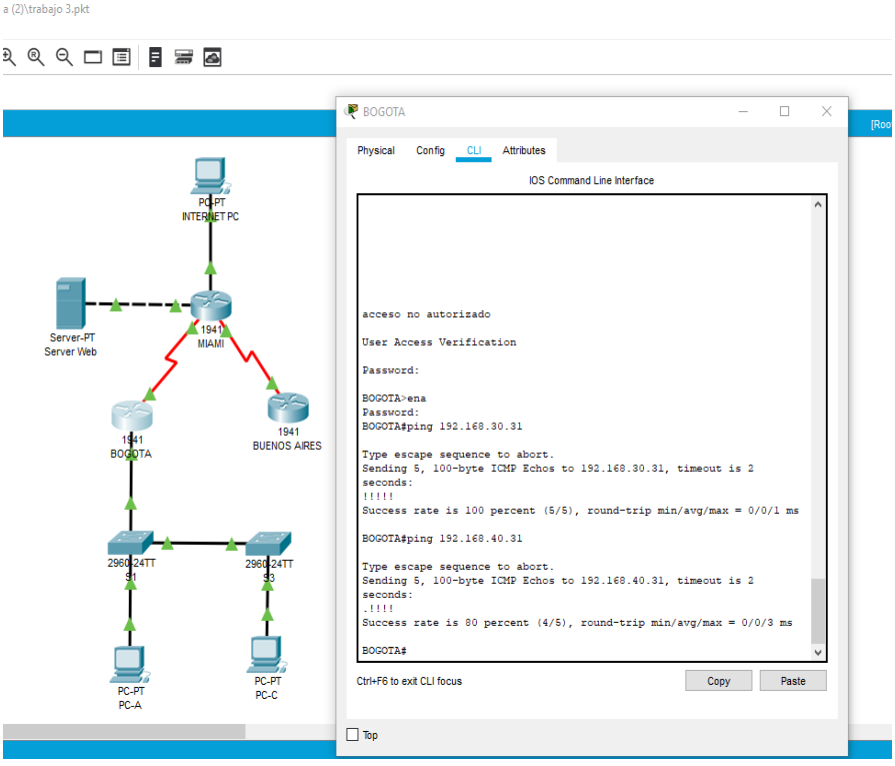
Configurar al menos dos listas de acceso de tipo estándar a su criterio en para restringir o permitir tráfico desde R1 o R3 hacia R2.

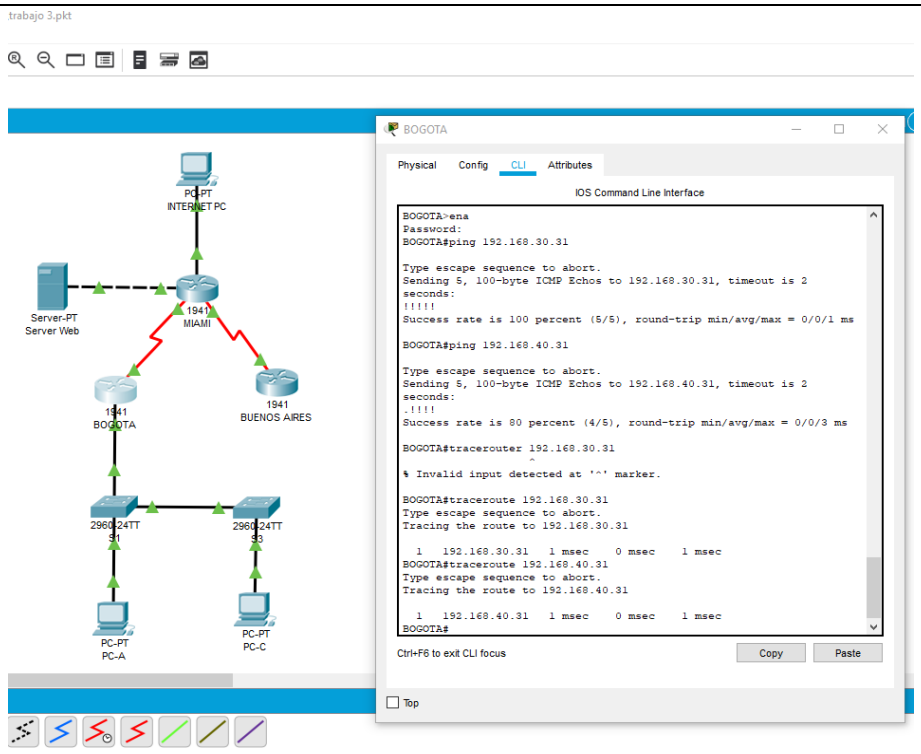
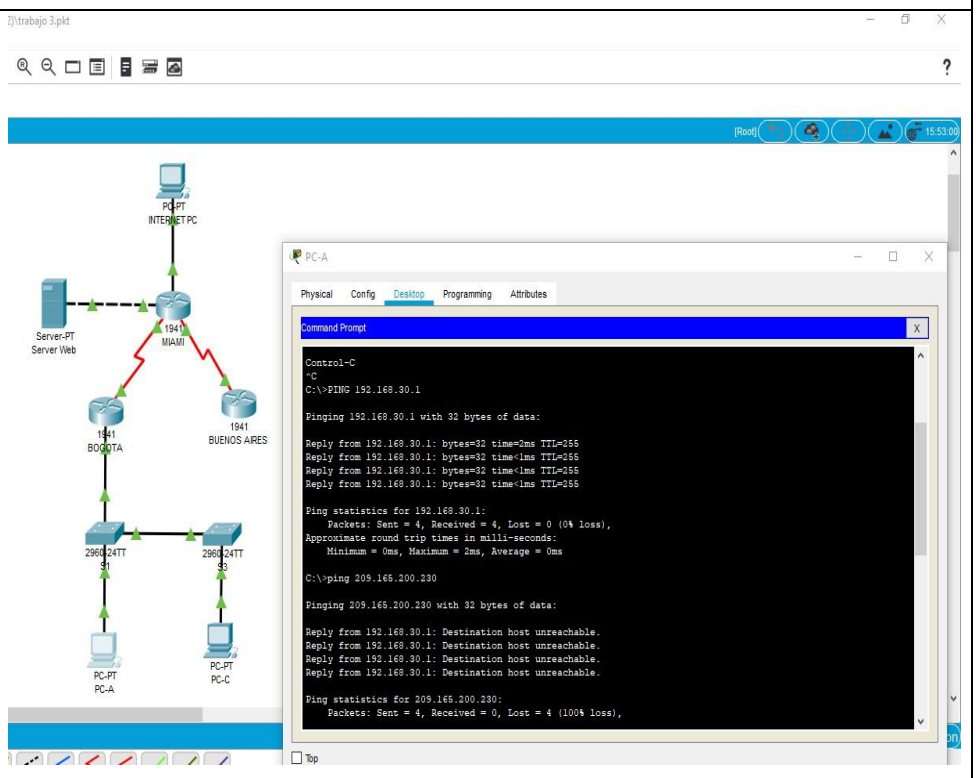


Configurar al menos dos listas de acceso de tipo extendido o nombradas a su criterio en para restringir o permitir tráfico desde R1 o R3 hacia R2.



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

PC INTERNET	
PING ROUTER	

TRACEROUTE	
PING PC	

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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