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

Evaluación – Prueba de habilidades prácticas CCNA

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TABLA DE CONTENIDO

INTRODUCCIÓN

las Redes Informáticas, es una de las formas de comunicación más utilizadas para poder unir distintos dispositivos informáticos, realizando un intercambio de comunicación de datos, en el que se utiliza como infraestructura no solo al cableado sino también a los servidores o enrutadores, entre otros dispositivos que actúan en esta comunicación. No podemos hablar de la importancia de dichas redes sin retomar la importancia de las computadoras, de las cuales sin estos dispositivos electrónicos no podríamos realizar diversas funciones, se han convertido en parte esencial de nuestra vida ya que nos ayudan a ejecutar diversas funciones.

La finalidad principal por la cual se crea de una red de computadoras es compartir los recursos y la información en la distancia, proveer la confiabilidad, y permitir al usuario poder acceder a una misma información sin problemas llevándola de un equipo a otro.

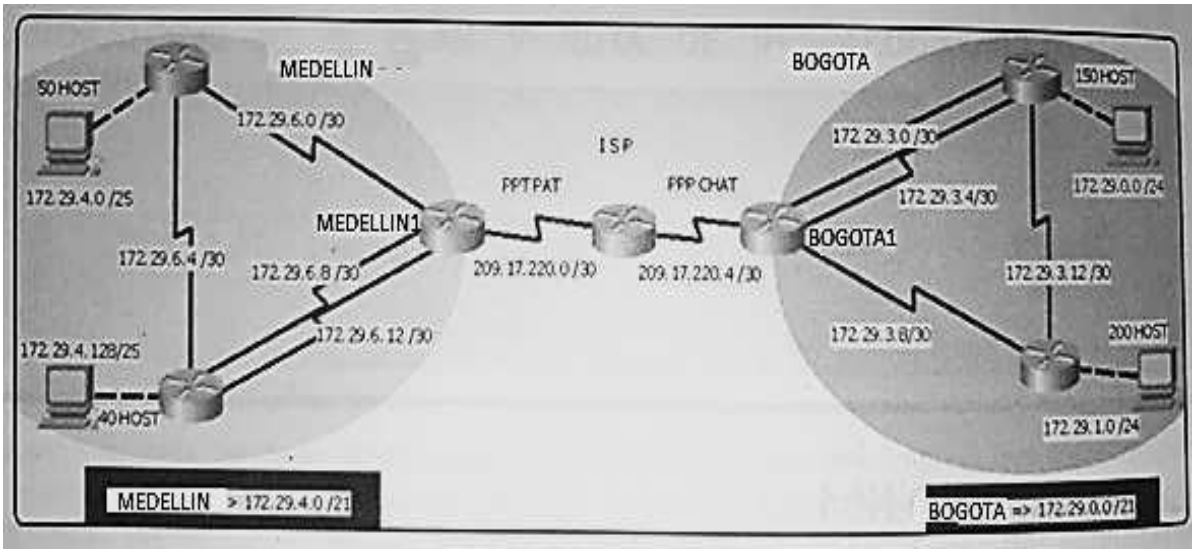
En el presente trabajo presentaremos parte de ese gran esquema que representa la configuración en redes, describiendo la nomenclatura y sintaxis necesaria para el adecuado funcionamiento de los sistemas propuestos.

Descripción de escenarios propuestos 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



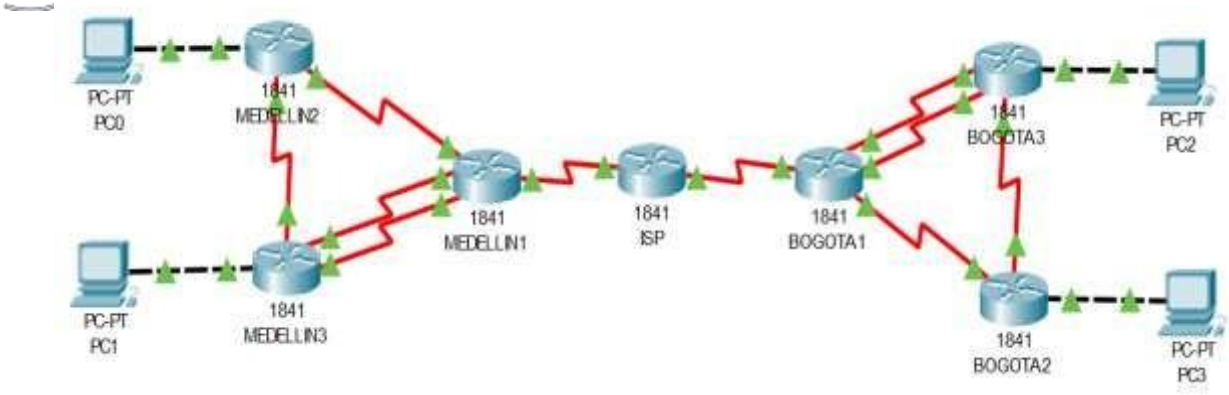
Este escenario plantea el uso de RIP como protocolo de enrutamiento, considerando que se tendran rutas por defecto redistribuidas; asimismo, habilitar el encapsulamiento PPP y su autenticación.

Los routers Bogota2 y medellin2 proporcionan el servicio DHCP a su propia red LAN y a los routers 3 de cada ciudad.

Debe configurar PPP en los enlaces hacia el ISP, con autenticación.

Debe habilitar NAT de sobrecarga en los routers Bogota1 y medellin1.

Desarrollo



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).

Configuramos BOGOTA1
BOGOTA1>en BOGOTA1#conf t Enter configuration commands, one per line. End with CNTL/Z. BOGOTA1(config)#no ip domain-lookup BOGOTA1(config)#service password-encryption BOGOTA1(config)#enable secret class BOGOTA1(config)#banner motd $ Acceso No Autorizado $ 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 BOGOTA1(config-line)#exit BOGOTA1(config)#

```
BOGOTA1#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
BOGOTA1(config)#no ip domain-lookup
BOGOTA1(config)#service password-encryption
BOGOTA1(config)#enable secret class
BOGOTA1(config)#banner motd $ Acceso No Autorizado $
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
BOGOTA1(config-line)#exit
BOGOTA1(config)#
```

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Configuramos BOGOTA2

BOGOTA2>en

BOGOTA2#conf t

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

BOGOTA2(config)#no ip domain-lookup

BOGOTA2(config)#service password-encryption

BOGOTA2(config)#enable secret class

BOGOTA2(config)#banner motd $ Acceso No Autorizado $

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

BOGOTA2(config-line)#exit

BOGOTA2(config)#

BOGOTA2#

```
BOGOTA2>en
BOGOTA2#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
BOGOTA2(config)#no ip domain-lookup
BOGOTA2(config)#service password-encryption
BOGOTA2(config)#enable secret class
BOGOTA2(config)#banner motd $ Acceso No Autorizado $
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
BOGOTA2(config-line)#exit
BOGOTA2(config)#
BOGOTA2#
```

Ctrl+F6 to exit CLI focus Copy Paste

Configuramos BOGOTA3

BOGOTA3>en

BOGOTA3#conf t

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

BOGOTA3(config)#no ip domain-lookup

BOGOTA3(config)#service password-encryption

BOGOTA3(config)#enable secret class

BOGOTA3(config)#banner motd $ Acceso No Autorizado $

BOGOTA3(config)#line console 0

BOGOTA3(config-line)#password cisco

BOGOTA3(config-line)#login

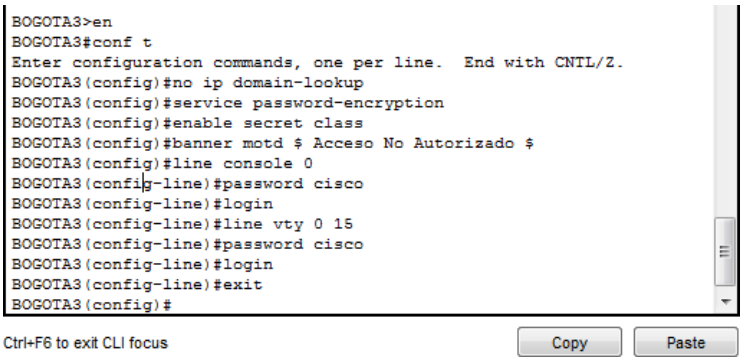
BOGOTA3(config-line)#line vty 0 15

BOGOTA3(config-line)#password cisco

BOGOTA3(config-line)#login

BOGOTA3(config-line)#exit

BOGOTA3(config)#



Configuramos MEDELLIN1

MEDELLIN1>en

MEDELLIN1#conf t

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

MEDELLIN1(config)#no ip domain-lookup

MEDELLIN1(config)#service password-encryption

MEDELLIN1(config)#enable secret class

MEDELLIN1(config)#banner motd $ Acceso No Autorizado $

MEDELLIN1(config)#line console 0

MEDELLIN1(config-line)#password cisco

MEDELLIN1(config-line)#login

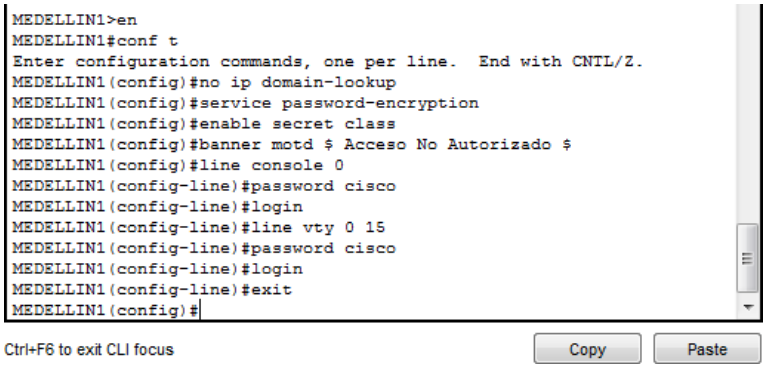
MEDELLIN1(config-line)#line vty 0 15

MEDELLIN1(config-line)#password cisco

MEDELLIN1(config-line)#login

MEDELLIN1(config-line)#exit

MEDELLIN1(config)#



Configuramos MEDELLIN2

MEDELLIN2>en

MEDELLIN2#conf t

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

MEDELLIN2(config)#no ip domain-lookup

MEDELLIN2(config)#service password-encryption

MEDELLIN2(config)#enable secret class

MEDELLIN2(config)#banner motd $ Acceso No Autorizado $

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)#exit

MEDELLIN2(config)#

```
MEDELLIN2>en
MEDELLIN2#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
MEDELLIN2(config)#no ip domain-lookup
MEDELLIN2(config)#service password-encryption
MEDELLIN2(config)#enable secret class
MEDELLIN2(config)#banner motd $ Acceso No Autorizado $
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)#exit
MEDELLIN2(config)#
```

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Configuramos MEDELLIN3

MEDELLIN3>en

MEDELLIN3#conf t

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

MEDELLIN3(config)#no ip domain-lookup

MEDELLIN3(config)#service password-encryption

MEDELLIN3(config)#enable secret class

MEDELLIN3(config)#banner motd $ Acceso No Autorizado $

MEDELLIN3(config)#line console 0

MEDELLIN3(config-line)#password cisco

MEDELLIN3(config-line)#login

MEDELLIN3(config-line)#line vty 0 15

MEDELLIN3(config-line)#password cisco

MEDELLIN3(config-line)#login

MEDELLIN3(config-line)#exit

MEDELLIN3(config)#

```
MEDELLIN3>en
MEDELLIN3#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
MEDELLIN3(config)#no ip domain-lookup
MEDELLIN3(config)#service password-encryption
MEDELLIN3(config)#enable secret class
MEDELLIN3(config)#banner motd $ Acceso No Autorizado $
MEDELLIN3(config)#line console 0
MEDELLIN3(config-line)#password cisco
MEDELLIN3(config-line)#login
MEDELLIN3(config-line)#line vty 0 15
MEDELLIN3(config-line)#password cisco
MEDELLIN3(config-line)#login
MEDELLIN3(config-line)#exit
MEDELLIN3(config)#
```

Ctrl+F6 to exit CLI focus Copy Paste

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

Configuramos MEDELLIN1 con relación al router del ISP

```
Router>en
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#hostname MEDELLIN1
MEDELLIN1#conf t
Enter configuration commands, one per line. End with CNTL/Z.
MEDELLIN1(config)#int s0/0/0
MEDELLIN1(config-if)#ip add 209.17.220.2 255.255.255.252
MEDELLIN1(config-if)#clock rate 4000000
MEDELLIN1(config-if)#no sh
%LINK-5-CHANGED: Interface Serial0/0/0, changed state to down
MEDELLIN1(config-if)#exit
MEDELLIN1(config)#
```

Configuramos MEDELLIN1

```
MEDELLIN1#conf t
Enter configuration commands, one per line. End with CNTL/Z.
MEDELLIN1(config)#int s0/0/1
MEDELLIN1(config-if)#ip add 172.29.6.1 255.255.255.252
MEDELLIN1(config-if)#clock rate 4000000
MEDELLIN1(config-if)#no shutdown
%LINK-5-CHANGED: Interface Serial0/0/1, changed state to down
MEDELLIN1(config-if)#exit
MEDELLIN1(config)#
```

MEDELLIN1#conf t

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

MEDELLIN1(config)#int s0/1/0

MEDELLIN1(config-if)#ip add 172.29.6.9 255.255.255.252

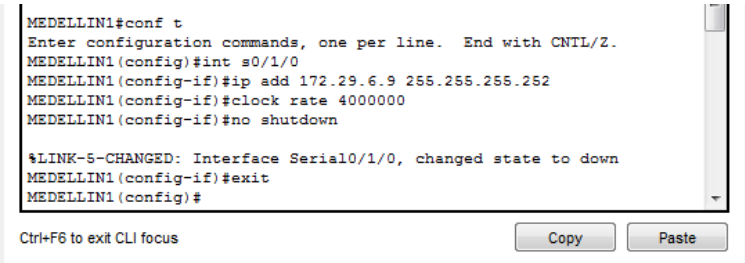
MEDELLIN1(config-if)#clock rate 4000000

MEDELLIN1(config-if)#no shutdown

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

MEDELLIN1(config-if)#exit

MEDELLIN1(config)#



Configuramos MEDELLIN2

Router>en

Router#conf t

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

Router(config)#int s0/0/0

Router(config-if)#ip add 172.29.6.2 255.255.255.252

Router(config-if)#clock rate 4000000

Router(config-if)#no shutdown

Router(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

Router(config-if)#exit

Router(config)#hostname MEDELLIN2

MEDELLIN2(config)#

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

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Router(config)#hostname MEDELLIN2

MEDELLIN2(config)#int s0/0/1

MEDELLIN2(config-if)#ip add 172.29.6.5 255.255.255.252

MEDELLIN2(config-if)#clock rate 4000000

MEDELLIN2(config-if)#no shutdown

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

MEDELLIN2(config-if)#no shutdown

```
Router(config-if)#exit
Router(config)#hostname MEDELLIN2
MEDELLIN2(config)#int s0/0/1
MEDELLIN2(config-if)#ip add 172.29.6.5 255.255.255.252
MEDELLIN2(config-if)#clock rate 4000000
MEDELLIN2(config-if)#no shutdown
```

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MEDELLIN2(config-if)#exit

MEDELLIN2(config)#int fo/0

MEDELLIN2(config-if)#ip add 172.29.4.1 255.255.255.128

MEDELLIN2(config-if)#no shutdown

MEDELLIN2(config-if)#

%LINK-5-CHANGED: Interface FastEthernet0/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up

MEDELLIN2(config-if)#

MEDELLIN2#

```
MEDELLIN2(config-if)#exit
MEDELLIN2(config)#int f0/0
MEDELLIN2(config-if)#ip add 172.29.4.1 255.255.255.128
MEDELLIN2(config-if)#no shutdown

MEDELLIN2(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0,
changed state to up

MEDELLIN2(config-if)#
MEDELLIN2#
```

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Configuramos MEDELLIN3

Router>EN

Router#conf t

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

Router(config)#hostname MEDELLIN3

MEDELLIN3(config)#int s0/0/0

MEDELLIN3(config-if)#ip add 172.29.6.10 255.255.255.252

MEDELLIN3(config-if)#no shutdown

MEDELLIN3(config-if)#

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

MEDELLIN3(config-if)#

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

MEDELLIN3(config-if)#exit

```
Router>EN
Router#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#hostname MEDELLIN3
MEDELLIN3(config)#int s0/0/0
MEDELLIN3(config-if)#ip add 172.29.6.10 255.255.255.252
MEDELLIN3(config-if)#no shutdown

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

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

MEDELLIN3(config-if)#exit
```

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MEDELLIN3(config)#

MEDELLIN3(config)#int s0/0/1

MEDELLIN3(config-if)#ip add 172.29.6.14 255.255.255.252

MEDELLIN3(config-if)#no shutdown

MEDELLIN3(config-if)#

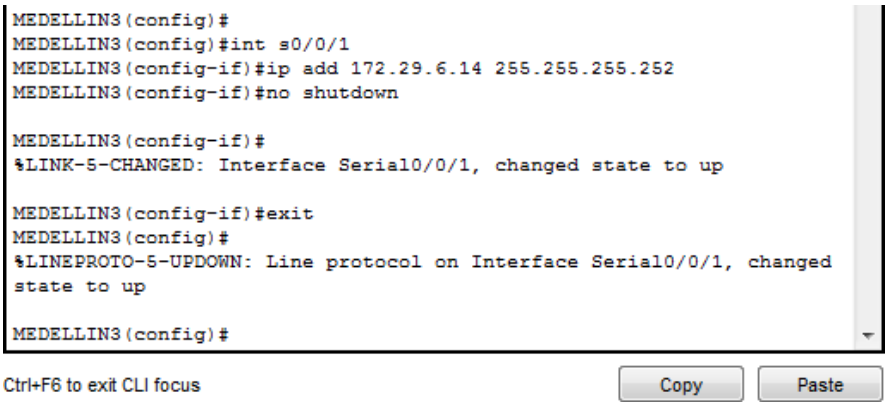
%LINK-5-CHANGED: Interface Serial0/0/1, changed state to up

MEDELLIN3(config-if)#exit

MEDELLIN3(config)#

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

MEDELLIN3(config)#



MEDELLIN3(config)#

MEDELLIN3(config)#int s0/1/0

MEDELLIN3(config-if)#ip add 172.29.6.6 255.255.255.252

MEDELLIN3(config-if)#no shutdown

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)#exit

```
MEDELLIN3(config)#
MEDELLIN3(config)#int s0/1/0
MEDELLIN3(config-if)#ip add 172.29.6.6 255.255.255.252
MEDELLIN3(config-if)#no shutdown

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)#exit
```

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MEDELLIN3(config)#

MEDELLIN3(config)#int s0/1/0

MEDELLIN3(config-if)#ip add 172.29.3.14 255.255.255.252

MEDELLIN3(config-if)#no shutdown

MEDELLIN3(config-if)#exit

MEDELLIN3(config)#

```
MEDELLIN3(config)#
MEDELLIN3(config)#int s0/1/0
MEDELLIN3(config-if)#ip add 172.29.3.14 255.255.255.252
MEDELLIN3(config-if)#no shutdown
MEDELLIN3(config-if)#exit
MEDELLIN3(config)#
```

Ctrl+F6 to exit CLI focus Copy Paste

MEDELLIN3(config)#

MEDELLIN3(config)#int fo/0

MEDELLIN3(config-if)#ip add 172.29.4.129 255.255.255.128

MEDELLIN3(config-if)#no shutdown

MEDELLIN3(config-if)#

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

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

MEDELLIN3(config-if)#

MEDELLIN3#

```
MEDELLIN3(config)#
MEDELLIN3(config)#int f0/0
MEDELLIN3(config-if)#ip add 172.29.4.129 255.255.255.128
MEDELLIN3(config-if)#no shutdown

MEDELLIN3(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0,
changed state to up

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

Ctrl+F6 to exit CLI focus Copy Paste

Configuramos

Router>en

Router#conf t

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

Router(config)#hostname ISP

ISP(config)#int s0/0/0

ISP(config-if)#ip add 209.17.220.1 255.255.255.252

ISP(config-if)#no shutdown

ISP(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

ISP(config-if)#exit

ISP(config)#

```
ISP(config)#int s0/0/0
ISP(config-if)#ip add 209.17.220.1 255.255.255.252
ISP(config-if)#no shutdown

ISP(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

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

Ctrl+F6 to exit CLI focus Copy Paste

ISP(config)#

ISP(config)#int s0/0/1

ISP(config-if)#ip add 209.17.220.5 255.255.255.252

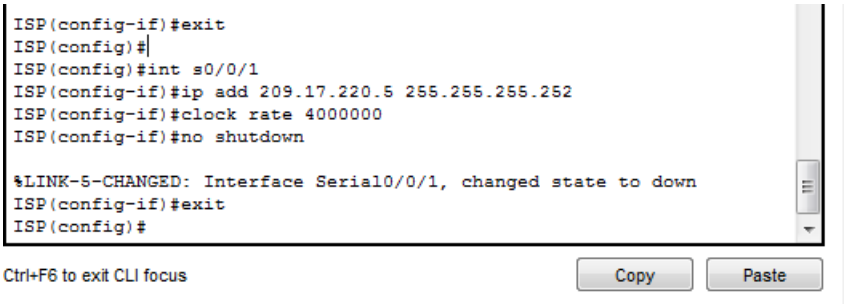
ISP(config-if)#clock rate 4000000

ISP(config-if)#no shutdown

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

ISP(config-if)#exit

ISP(config)#



Configuramos BoGOTA1

Router>en

Router#conf t

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

Router(config)#hostname BOGOTA1

BOGOTA1(config)#int s0/0/0

BOGOTA1(config-if)#ip add 209.17.220.6 255.255.255.252

BOGOTA1(config-if)#no shutdown

BOGOTA1(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

BOGOTA1(config-if)#exit

BOGOTA1(config)#

```
Router>en
Router#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#hostname BOGOTA1
BOGOTA1(config)#int s0/0/0
BOGOTA1(config-if)#ip add 209.17.220.6 255.255.255.252
BOGOTA1(config-if)#no shutdown

BOGOTA1(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

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

Ctrl+F6 to exit CLI focus Copy Paste

BOGOTA1(config)#int s0/0/1

BOGOTA1(config-if)#ip add 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 shutdown

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

BOGOTA1(config-if)#no shutdown

BOGOTA1(config-if)#exit

BOGOTA1(config)#

```
BOGOTA1(config)#int s0/0/1
BOGOTA1(config-if)#ip add 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 shutdown

%LINK-5-CHANGED: Interface Serial0/0/1, changed state to down
BOGOTA1(config-if)#no shutdown
BOGOTA1(config-if)#exit
BOGOTA1(config)#
```

Ctrl+F6 to exit CLI focus Copy Paste

BOGOTA1#conf t

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

BOGOTA1(config)#int s0/1/0

BOGOTA1(config-if)#ip add 172.29.3.1 255.255.255.252

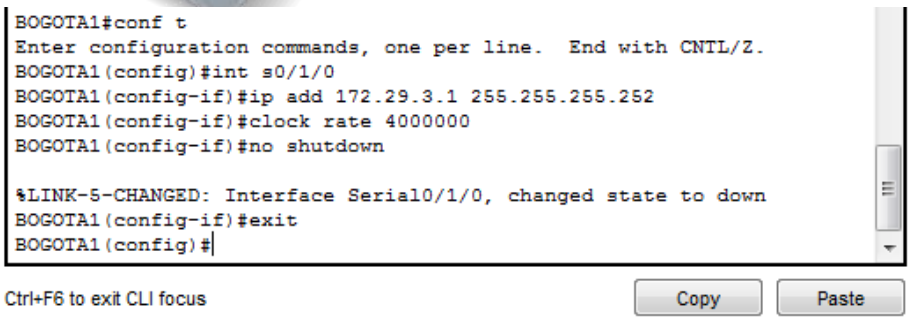
BOGOTA1(config-if)#clock rate 4000000

BOGOTA1(config-if)#no shutdown

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

BOGOTA1(config-if)#exit

BOGOTA1(config)#



BOGOTA1#conf t

Enterconfigurationcommands,oneperline. EndwithCNTL/Z.

BOGOTA1(config)#int s0/1/1

BOGOTA1(config-if)#ip add 172.29.3.5 255.255.255.252

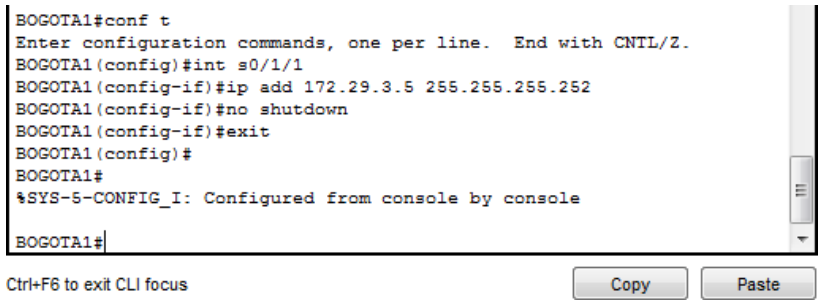
BOGOTA1(config-if)#no shutdown

BOGOTA1(config-if)#exit

BOGOTA1(config)#

BOGOTA1#

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



Configuramos BoGOTA2

Router>en

Router#conf t

Enterconfigurationcommands,oneperline. EndwithCNTL/Z.

Router(config)#hostname BOGOTA2

BOGOTA2(config)#int s0/0/0

BOGOTA2(config-if)#ip add 172.29.3.10 255.255.255.252

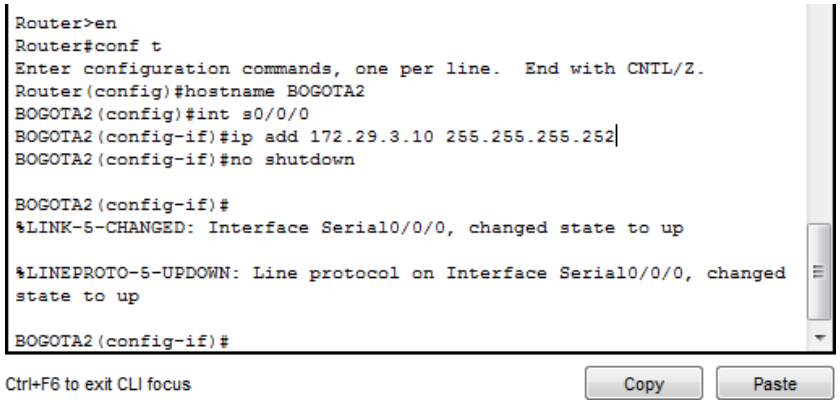
BOGOTA2(config-if)#no shutdown

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)#



BOGOTA2(config)#

BOGOTA2(config)#int s0/0/1

BOGOTA2(config-if)#ip add 172.9.3.13 255.255.255.252

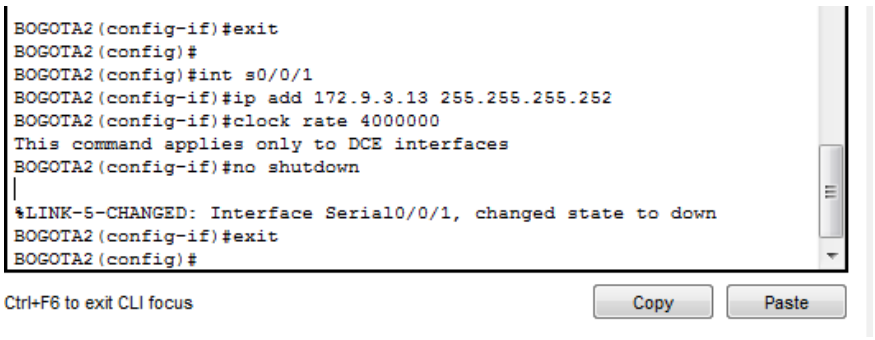
BOGOTA2(config-if)#clock rate 4000000

This command applies only to DCE interfaces

BOGOTA2(config-if)#no shutdown

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

BOGOTA2(config-if)#exit



BOGOTA2(config)#

BOGOTA2(config)#int f0/0

BOGOTA2(config-if)#ip add 172.29.1.1 255.255.255.0

BOGOTA2(config-if)#no shutdown

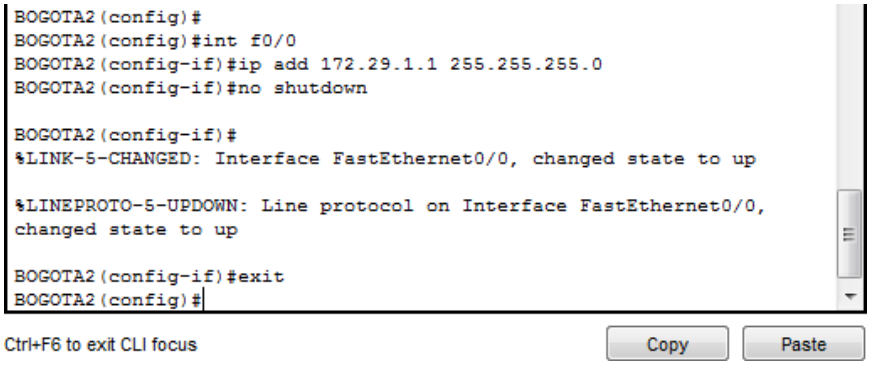
BOGOTA2(config-if)#

%LINK-5-CHANGED: Interface FastEthernet0/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up

BOGOTA2(config-if)#exit

BOGOTA2(config)#



Configuramos BoGOTA3

Router>en

Router#conf t

Enterconfigurationcommands,oneperline. EndwithCNTL/Z.

Router(config)#hostname BOGOTA3

BOGOTA3(config)#int s0/0/0

BOGOTA3(config-if)#ip add 172.29.3.2 255.255.255.252

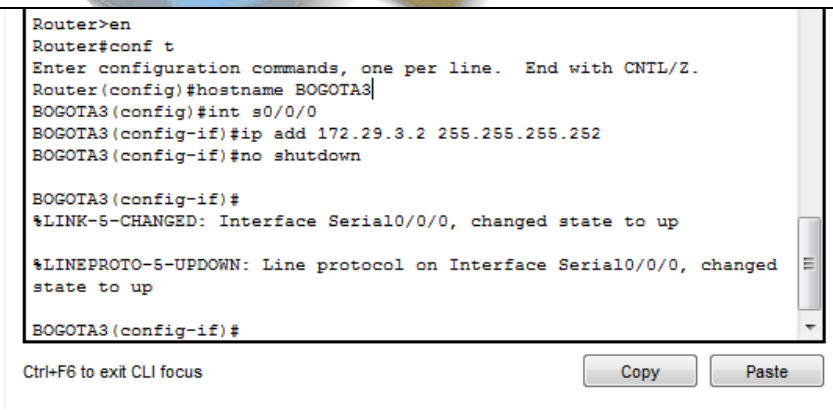
BOGOTA3(config-if)#no shutdown

BOGOTA3(config-if)#

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

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

BOGOTA3(config-if)#



BOGOTA3(config)#

BOGOTA3(config)#int s0/0/1

BOGOTA3(config-if)#ip add 172.29.3.6 255.255.255.252

BOGOTA3(config-if)#no shutdown

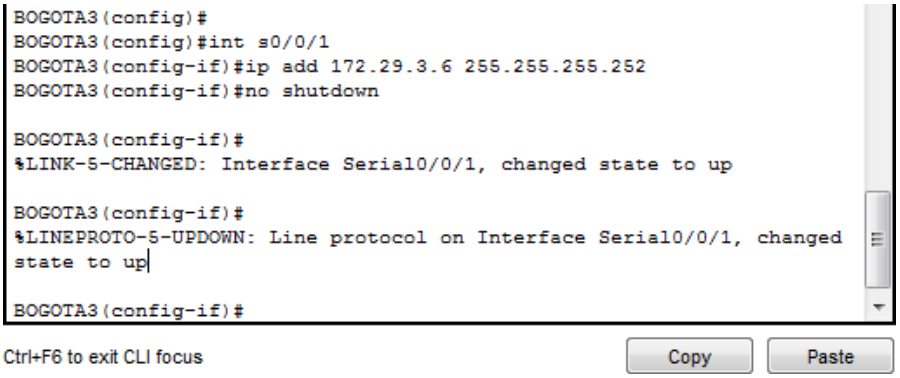
BOGOTA3(config-if)#

%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)#



BOGOTA3(config)#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 shutdown

BOGOTA3(config-if)#

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

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

to up

BOGOTA3(config-if)#exit

BOGOTA3(config)#

```
BOGOTA3(config)#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 shutdown

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

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

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

Ctrl+F6 to exit CLI focus Copy Paste

BOGOTA3(config)#

BOGOTA3(config)#int fo/o

BOGOTA3(config-if)#ip add 172.29.0.1 255.255.255.0

BOGOTA3(config-if)#no shutdown

BOGOTA3(config-if)#

%LINK-5-CHANGED: Interface FastEtherneto/o, changed state to up

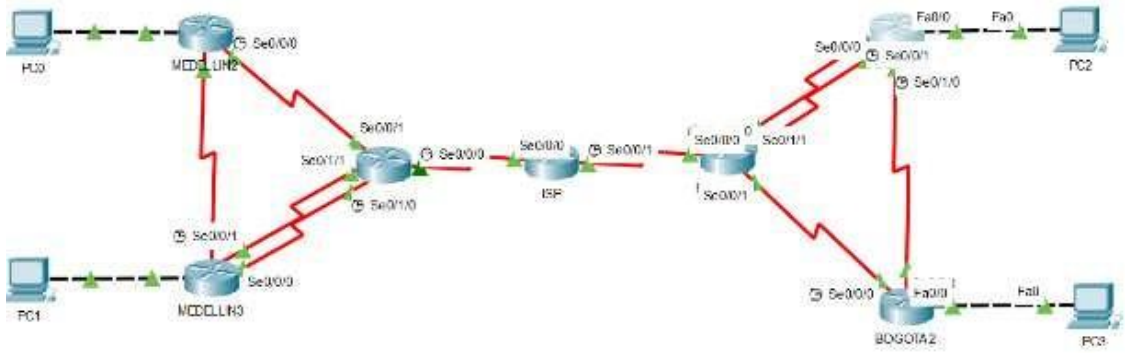
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEtherneto/o, changed state to up

BOGOTA3(config-if)#exit

BOGOTA3(config)#

```
BOGOTA3(config)#
BOGOTA3(config)#int f0/0
BOGOTA3(config-if)#ip add 172.29.0.1 255.255.255.0
BOGOTA3(config-if)#no shutdown

BOGOTA3(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0,
changed state to up

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

Ctrl+F6 to exit CLI focus Copy Paste



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.

RTA:

Configuramos MEDELLIN1
MEDELLIN1>en 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

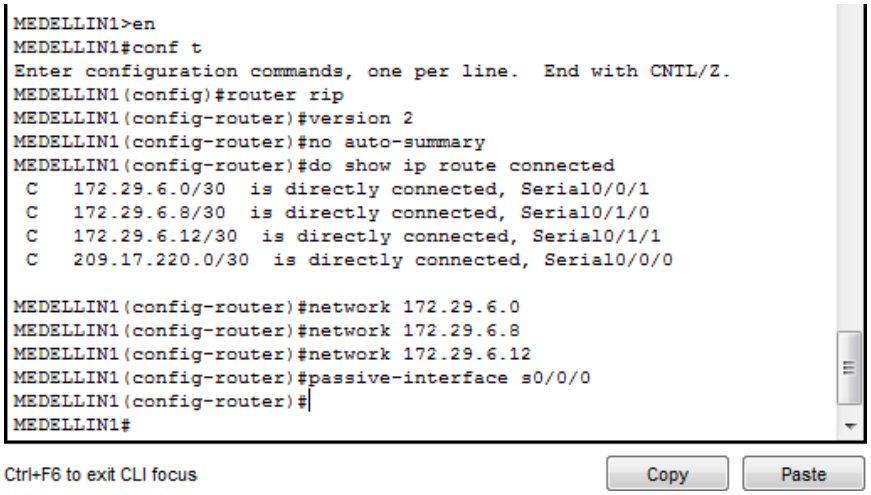
MEDELLIN1(config-router)#network 172.29.6.8

MEDELLIN1(config-router)#network 172.29.6.12

MEDELLIN1(config-router)#passive-interface s0/0/0

MEDELLIN1(config-router)#

MEDELLIN1#



Configuramos MEDELLIN2

MEDELLIN2>en

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, FastEthernet0/0

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

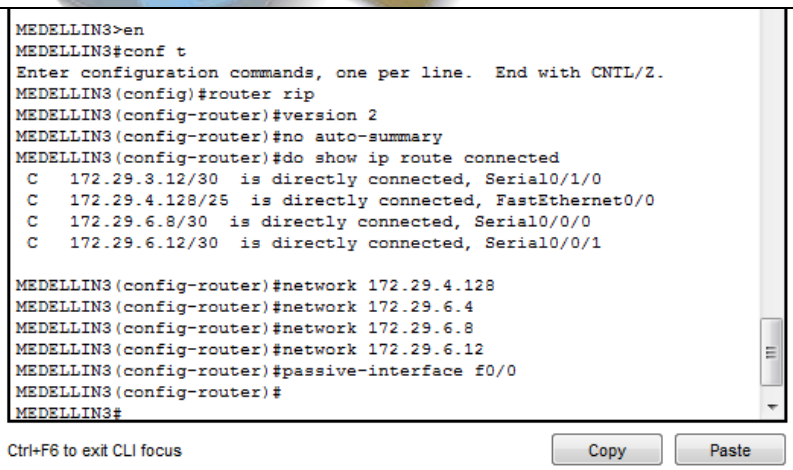
MEDELLIN2(config-router)#network 172.29.6.4

MEDELLIN2(config-router)#passive-interface f0/0

MEDELLIN2(config-router)#

Configuramos MEDELLIN3

MEDELLIN3>en
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 172.29.3.12/30 is directly connected, Serial0/1/0
C 172.29.4.128/25 is directly connected, FastEthernet0/0
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 f0/0
MEDELLIN3(config-router)#
MEDELLIN3#



Configuramos BOGOTA1

BOGOTA1>en

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

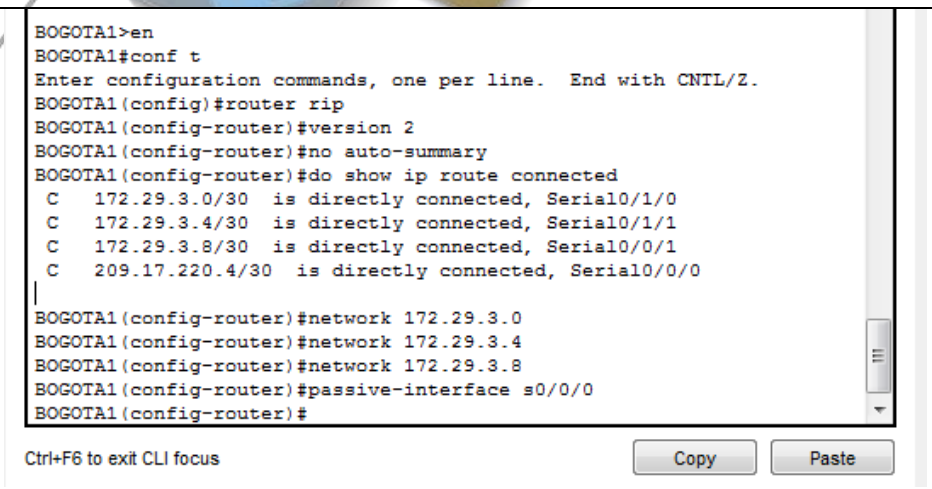
BOGOTA1(config-router)#network 172.29.3.0

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)#



Configuramos BOGOTA2

BOGOTA2>en

BOGOTA2#conf t

Enterconfigurationcommands,oneperline. EndwithCNTL/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 172.9.3.12/30 is directly connected, Serial0/0/1

C 172.29.1.0/24 is directly connected, FastEthernet0/0

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

BOGOTA2(config-router)#network 172.9.3.12

BOGOTA2(config-router)#network 172.29.1.0

BOGOTA2(config-router)#network 172.29.3.8

BOGOTA2(config-router)#passive-interface f0/0

BOGOTA2(config-router)#

```
BOGOTA2>en
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    172.9.3.12/30  is directly connected, Serial0/0/1
 C    172.29.1.0/24  is directly connected, FastEthernet0/0
 C    172.29.3.8/30  is directly connected, Serial0/0/0

BOGOTA2(config-router)#network 172.9.3.12
BOGOTA2(config-router)#network 172.29.1.0
BOGOTA2(config-router)#network 172.29.3.8
BOGOTA2(config-router)#passive-interface f0/0
BOGOTA2(config-router)#
```

Ctrl+F6 to exit CLI focus Copy Paste

Configuramos BOGOTA3

BOGOTA3>en

BOGOTA3#conf t

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

BOGOTA3(config)#route 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, FastEthernet0/0

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

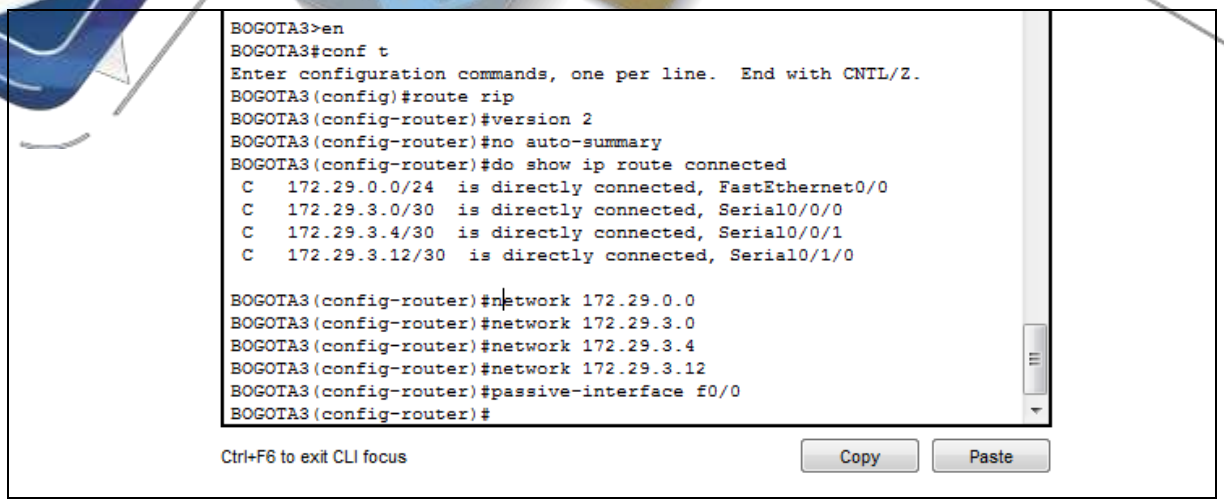
BOGOTA3(config-router)#network 172.29.3.0

BOGOTA3(config-router)#network 172.29.3.4

BOGOTA3(config-router)#network 172.29.3.12

BOGOTA3(config-router)#passive-interface f0/0

BOGOTA3(config-router)#



b. Los routers Bogota1 y Medellín1 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.

Verificación del Router en MEDELLIN1

MEDELLIN1>show ip route

Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP

D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area

N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2

E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP

i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area

* - candidate default, U - per-user static route, o - ODR

P - periodic downloaded static route

Gateway of last resort is not set

172.29.0.0/16 is variably subnetted, 7 subnets, 2 masks

R 172.29.3.12/30 [120/1] via 172.29.6.14, 00:00:07, Serial0/1/1

[120/1] via 172.29.6.10, 00:00:07, Serial0/1/0

R 172.29.4.0/25 [120/1] via 172.29.6.2, 00:00:21, Serial0/0/1

R 172.29.4.128/25 [120/1] via 172.29.6.14, 00:00:07, Serial0/1/1

[120/1] via 172.29.6.10, 00:00:07, Serial0/1/0

```
C    172.29.6.0/30 is directly connected, Serial0/0/1
R    172.29.6.4/30 [120/1] via 172.29.6.2, 00:00:21,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
     209.17.220.0/30 is subnetted, 1 subnets
C    209.17.220.0 is directly connected, Serial0/0/0

MEDELLIN1>
```

Verificación del Router en BOGOTA1

```
BOGOTA1#show ip route
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route
```

Gateway of last resort is not set

172.9.0.0/30 is subnetted, 1 subnets

R 172.9.3.12 [120/1] via 172.29.3.10, 00:00:18, Serial0/0/1

172.29.0.0/16 is variably subnetted, 6 subnets, 2 masks

R 172.29.0.0/24 [120/1] via 172.29.3.2, 00:00:20, Serial0/1/0

[120/1] via 172.29.3.6, 00:00:20, Serial0/1/1

R 172.29.1.0/24 [120/1] via 172.29.3.10, 00:00:18, Serial0/0/1

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

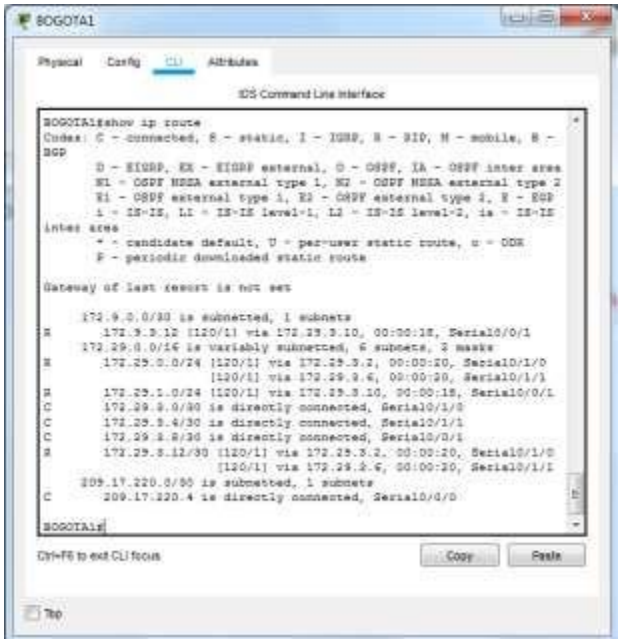
R 172.29.3.12/30 [120/1] via 172.29.3.2, 00:00:20, Serial0/1/0

[120/1] via 172.29.3.6, 00:00:20, Serial0/1/1

209.17.220.0/30 is subnetted, 1 subnets

C 209.17.220.4 is directly connected, Serial0/0/0

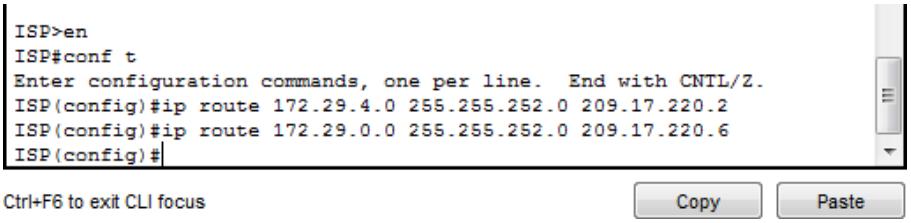
BOGOTA1#



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.

Ruta estática dirigida hacia cada red interna de Bogotá y Medellín del Router ISP

```
ISP>en
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.

Verificación tabla de enrutamiento del Router MEDELLIN1

```
MEDELLIN1>show ip route
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route

Gateway of last resort is not set

    172.29.0.0/16 is variably subnetted, 7 subnets, 2 masks
```

```
R    172.29.3.12/30 [120/1] via 172.29.6.14, 00:00:14, Serial0/1/1
                    [120/1] via 172.29.6.10, 00:00:14, Serial0/1/0
R    172.29.4.0/25 [120/1] via 172.29.6.2, 00:00:17, Serial0/0/1
R    172.29.4.128/25 [120/1] via 172.29.6.14, 00:00:14, Serial0/1/1
                    [120/1] via 172.29.6.10, 00:00:14, Serial0/1/0
C    172.29.6.0/30 is directly connected, Serial0/0/1
R    172.29.6.4/30 [120/1] via 172.29.6.2, 00:00:17, 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
   209.17.220.0/30 is subnetted, 1 subnets
C    209.17.220.0 is directly connected, Serial0/0/0

MEDELLIN1>
```

Verificación tabla de enrutamiento del Router MEDELLIN2

```
MEDELLIN2>show ip route
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
```

* - candidate default, U - per-user static route, o - ODR

P - periodic downloaded static route

Gateway of last resort is not set

172.29.0.0/16 is variably subnetted, 7 subnets, 2 masks

R 172.29.3.12/30 [120/2] via 172.29.6.1, 00:00:06, Serial0/0/0

C 172.29.4.0/25 is directly connected, FastEthernet0/0

R 172.29.4.128/25 [120/2] via 172.29.6.1, 00:00:06, Serial0/0/0

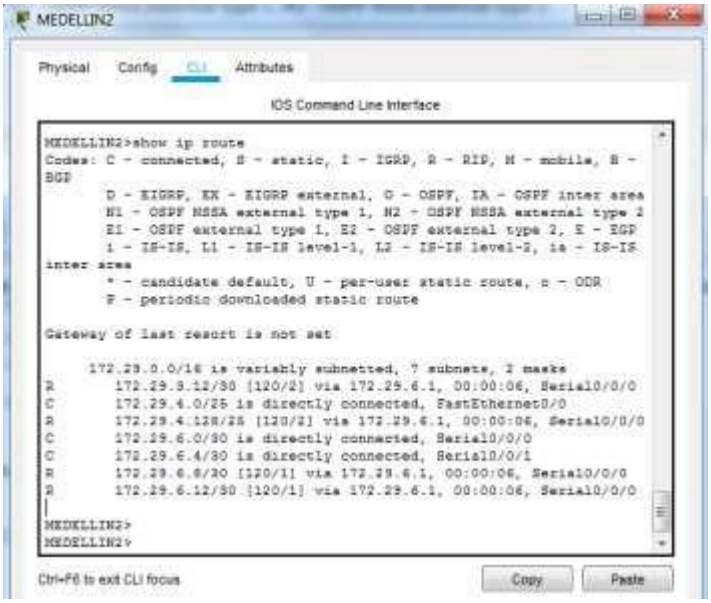
C 172.29.6.0/30 is directly connected, Serial0/0/0

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

R 172.29.6.8/30 [120/1] via 172.29.6.1, 00:00:06, Serial0/0/0

R 172.29.6.12/30 [120/1] via 172.29.6.1, 00:00:06, Serial0/0/0

MEDELLIN2>



Verificación tabla de enrutamiento del Router MEDELLIN3

MEDELLIN3>show ip route

Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP

D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area

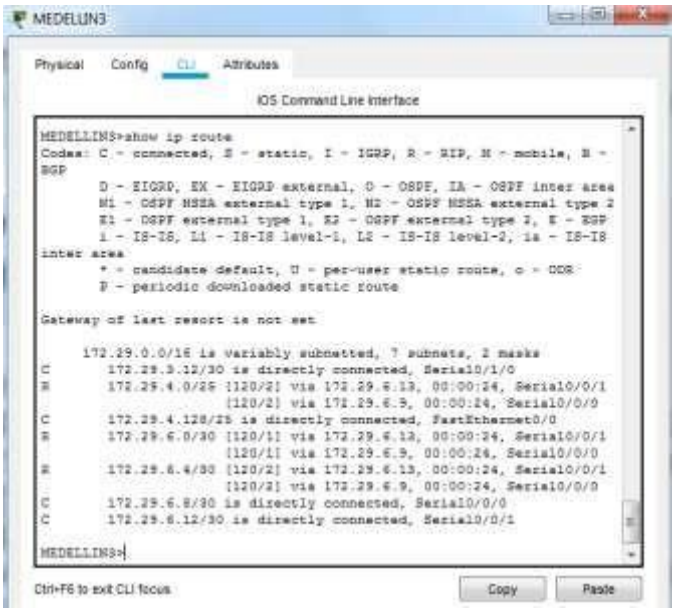
N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2

E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
* - candidate default, U - per-user static route, o - ODR
P - periodic downloaded static route

Gateway of last resort is not set

172.29.0.0/16 is variably subnetted, 7 subnets, 2 masks
C 172.29.3.12/30 is directly connected, Serial0/1/0
R 172.29.4.0/25 [120/2] via 172.29.6.13, 00:00:24, Serial0/0/1
[120/2] via 172.29.6.9, 00:00:24, Serial0/0/0
C 172.29.4.128/25 is directly connected, FastEthernet0/0
R 172.29.6.0/30 [120/1] via 172.29.6.13, 00:00:24, Serial0/0/1
[120/1] via 172.29.6.9, 00:00:24, Serial0/0/0
R 172.29.6.4/30 [120/2] via 172.29.6.13, 00:00:24, Serial0/0/1
[120/2] via 172.29.6.9, 00:00:24, Serial0/0/0
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>



Verificación tabla de enrutamiento del Router BOGOTA1

```
BOGOTA1>show ip route
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route

Gateway of last resort is not set

     172.9.0.0/30 is subnetted, 1 subnets
R       172.9.3.12 [120/1] via 172.29.3.10, 00:00:08, Serial0/0/1
     172.29.0.0/16 is variably subnetted, 6 subnets, 2 masks
R       172.29.0.0/24 [120/1] via 172.29.3.2, 00:00:24, Serial0/1/0
                      [120/1] via 172.29.3.6, 00:00:24, Serial0/1/1
R       172.29.1.0/24 [120/1] via 172.29.3.10, 00:00:08, Serial0/0/1
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
R       172.29.3.12/30 [120/1] via 172.29.3.2, 00:00:24, Serial0/1/0
                       [120/1] via 172.29.3.6, 00:00:24, Serial0/1/1
     209.17.220.0/30 is subnetted, 1 subnets
C       209.17.220.4 is directly connected, Serial0/0/0

BOGOTA1>
```

Verificación tabla de enrutamiento del Router BOGOTA2

BOGOTA2>show ip route

Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP

D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area

N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2

E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP

i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area

* - candidate default, U - per-user static route, o - ODR

P - periodic downloaded static route

Gateway of last resort is not set

172.9.0.0/30 is subnetted, 1 subnets

C 172.9.3.12 is directly connected, Serial0/0/1

172.29.0.0/16 is variably subnetted, 6 subnets, 2 masks

R 172.29.0.0/24 [120/2] via 172.29.3.9, 00:00:22, Serial0/0/0

C 172.29.1.0/24 is directly connected, FastEthernet0/0

R 172.29.3.0/30 [120/1] via 172.29.3.9, 00:00:22, Serial0/0/0

R 172.29.3.4/30 [120/1] via 172.29.3.9, 00:00:22, Serial0/0/0

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

R 172.29.3.12/30 [120/2] via 172.29.3.9, 00:00:22, Serial0/0/0

BOGOTA2>

Verificación tabla de enrutamiento del Router BOGOTA3

BOGOTA3>show ip route

Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
* - candidate default, U - per-user static route, o - ODR
P - periodic downloaded static route

Gateway of last resort is not set

172.9.0.0/30 is subnetted, 1 subnets
R 172.9.3.12 [120/2] via 172.29.3.1, 00:00:15, Serial0/0/0
[120/2] via 172.29.3.5, 00:00:15, Serial0/0/1
172.29.0.0/16 is variably subnetted, 6 subnets, 2 masks
C 172.29.0.0/24 is directly connected, FastEthernet0/0
R 172.29.1.0/24 [120/2] via 172.29.3.1, 00:00:15, Serial0/0/0

```
                [120/2] via 172.29.3.5, 00:00:15, Serial0/0/1
C       172.29.3.0/30 is directly connected, Serial0/0/0
C       172.29.3.4/30 is directly connected, Serial0/0/1
R       172.29.3.8/30 [120/1] via 172.29.3.1, 00:00:15, Serial0/0/0
                [120/1] via 172.29.3.5, 00:00:15, Serial0/0/1
C       172.29.3.12/30 is directly connected, Serial0/1/0

BOGOTA3>
```

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

Verificación del balanceo de carga del Router MEDELLIN1

```
MEDELLIN1>show ip route
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route
```

Gateway of last resort is not set

172.29.0.0/16 is variably subnetted, 7 subnets, 2 masks
R 172.29.3.12/30 [120/1] via 172.29.6.14, 00:00:06, Serial0/1/1
[120/1] via 172.29.6.10, 00:00:06, Serial0/1/0
R 172.29.4.0/25 [120/1] via 172.29.6.2, 00:00:22, Serial0/0/1
R 172.29.4.128/25 [120/1] via 172.29.6.14, 00:00:06, Serial0/1/1
[120/1] via 172.29.6.10, 00:00:06, Serial0/1/0
C 172.29.6.0/30 is directly connected, Serial0/0/1
R 172.29.6.4/30 [120/1] via 172.29.6.2, 00:00:22, 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
209.17.220.0/30 is subnetted, 1 subnets
C 209.17.220.0 is directly connected, Serial0/0/0

MEDELLIN1>

Verificación del balanceo de carga del Router MEDELLIN3

MEDELLIN3>show ip route
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
* - candidate default, U - per-user static route, o - ODR
P - periodic downloaded static route

Gateway of last resort is not set

172.29.0.0/16 is variably subnetted, 7 subnets, 2 masks
C 172.29.3.12/30 is directly connected, Serial0/1/0
R 172.29.4.0/25 [120/2] via 172.29.6.13, 00:00:03, Serial0/0/1

[120/2] via 172.29.6.9, 00:00:03, Serial0/0/0

C 172.29.4.128/25 is directly connected, FastEthernet0/0

R 172.29.6.0/30 [120/1] via 172.29.6.13, 00:00:03, Serial0/0/1

[120/1] via 172.29.6.9, 00:00:03, Serial0/0/0

R 172.29.6.4/30 [120/2] via 172.29.6.13, 00:00:03, Serial0/0/1

[120/2] via 172.29.6.9, 00:00:03, Serial0/0/0

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>

Verificación del balanceo de carga del Router BOGOTA1

BOGOTA1>show ip route

Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP

D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area

N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2

E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP

i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area

* - candidate default, U - per-user static route, o - ODR

P - periodic downloaded static route

Gateway of last resort is not set

172.9.0.0/30 is subnetted, 1 subnets

R 172.9.3.12 [120/1] via 172.29.3.10, 00:00:02, Serial0/0/1

172.29.0.0/16 is variably subnetted, 6 subnets, 2 masks

R 172.29.0.0/24 [120/1] via 172.29.3.2, 00:00:23, Serial0/1/0

[120/1] via 172.29.3.6, 00:00:23, Serial0/1/1

R 172.29.1.0/24 [120/1] via 172.29.3.10, 00:00:02, Serial0/0/1

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

R 172.29.3.12/30 [120/1] via 172.29.3.2, 00:00:23, Serial0/1/0

[120/1] via 172.29.3.6, 00:00:23, Serial0/1/1

209.17.220.0/30 is subnetted, 1 subnets

C 209.17.220.4 is directly connected, Serial0/0/0

BOGOTA1>

Verificación del balanceo de carga del Router BOGOTA3

BOGOTA3>show ip route

Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP

D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area

N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2

E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP

i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area

* - candidate default, U - per-user static route, o - ODR

P - periodic downloaded static route

Gateway of last resort is not set

172.9.0.0/30 is subnetted, 1 subnets

R 172.9.3.12 [120/2] via 172.29.3.1, 00:00:21, Serial0/0/0

[120/2] via 172.29.3.5, 00:00:21, Serial0/0/1

172.29.0.0/16 is variably subnetted, 6 subnets, 2 masks

C 172.29.0.0/24 is directly connected, FastEthernet0/0

R 172.29.1.0/24 [120/2] via 172.29.3.1, 00:00:21, Serial0/0/0

[120/2] via 172.29.3.5, 00:00:21, Serial0/0/1

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

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

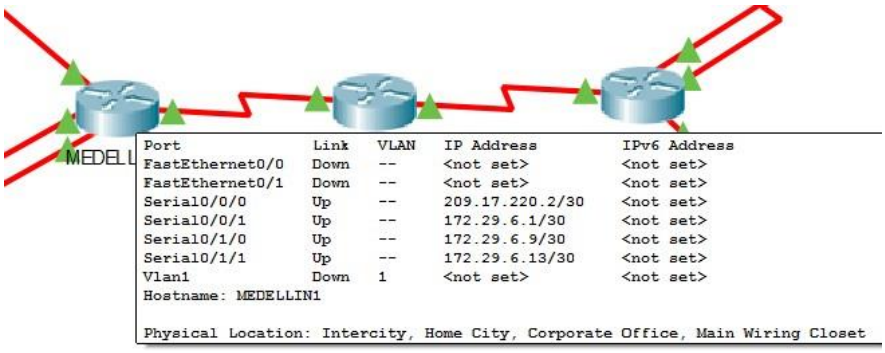
R 172.29.3.8/30 [120/1] via 172.29.3.1, 00:00:21, Serial0/0/0

[120/1] via 172.29.3.5, 00:00:21, Serial0/0/1

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

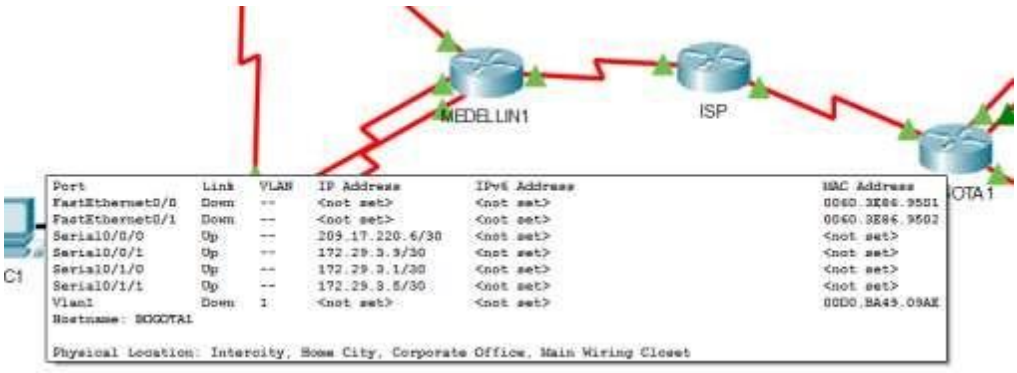
BOGOTA3>

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.

Similitud por su ubicación BOGOTA1 y MEDELLIN1
MEDELLIN1 

```
Port              Link   VLAN   IP Address         IPv6 Address
FastEthernet0/0   Down   --     <not set>          <not set>
FastEthernet0/1   Down   --     <not set>          <not set>
Serial0/0/0       Up     --     209.17.220.2/30    <not set>
Serial0/0/1       Up     --     172.29.6.1/30      <not set>
Serial0/1/0       Up     --     172.29.6.9/30      <not set>
Serial0/1/1       Up     --     172.29.6.13/30     <not set>
Vlan1             Down   1      <not set>          <not set>
Hostname: MEDELLIN1

Physical Location: Intercity, Home City, Corporate Office, Main Wiring Closet
```

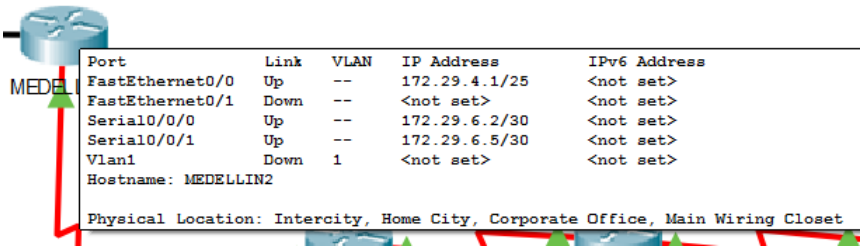
BOGOTA1




```
Port              Link   VLAN   IP Address         IPv6 Address                MAC Address
FastEthernet0/0   Down   --     <not set>          <not set>                   0060.3E86.9501
FastEthernet0/1   Down   --     <not set>          <not set>                   0060.3E86.9502
Serial0/0/0       Up     --     209.17.220.6/30    <not set>                   <not set>
Serial0/0/1       Up     --     172.29.9.9/30      <not set>                   <not set>
Serial0/1/0       Up     --     172.29.9.1/30      <not set>                   <not set>
Serial0/1/1       Up     --     172.29.9.5/30      <not set>                   <not set>
Vlan1             Down   1      <not set>          <not set>                   00D0.BA49.09AE
Hostname: BOGOTA1

Physical Location: Intercity, Home City, Corporate Office, Main Wiring Closet
```

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

Redes conectadas directamente y recibidas mediante RIP MEDELLÍN2 y BOGOTÁ2
MEDELLIN2



Port	Link	VLAN	IP Address	IPv6 Address
FastEthernet0/0	Up	--	172.29.4.1/25	<not set>
FastEthernet0/1	Down	--	<not set>	<not set>
Serial0/0/0	Up	--	172.29.6.2/30	<not set>
Serial0/0/1	Up	--	172.29.6.5/30	<not set>
Vlan1	Down	1	<not set>	<not set>

Hostname: MEDELLIN2

Physical Location: Intercity, Home City, Corporate Office, Main Wiring Closet

BOGOTA2

Port	Link	VLAN	IP Address	IPv6 Address	MAC Address
FastEthernet0/0	Up	--	172.29.1.1/24	<not set>	00E0.A3AD.2201
FastEthernet0/1	Down	--	<not set>	<not set>	00E0.A3AD.2202
Serial0/0/0	Up	--	172.29.3.10/30	<not set>	<not set>
Serial0/0/1	Up	--	172.9.3.13/30	<not set>	<not set>
Vlan1	Down	1	<not set>	<not set>	0000.0C78.68B5

Hostname: BOGOTA2

Physical Location: Intercity, Home City, Corporate Office, Main Wiring Closet

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

Rutas redundantes BOGOTA1

BOGOTA1>show ip route

Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP

D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area

N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2

E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP

i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area

* - candidate default, U - per-user static route, o - ODR

P - periodic downloaded static route

Gateway of last resort is not set

172.9.0.0/30 is subnetted, 1 subnets

R 172.9.3.12 [120/1] via 172.29.3.10, 00:00:24, Serial0/0/1

172.29.0.0/16 is variably subnetted, 6 subnets, 2 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, 00:00:24,Serial0/0/1
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
R 172.29.3.12/30 [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
209.17.220.0/30 is subnetted, 1 subnets
C 209.17.220.4 is directly connected, Serial0/0/0

BOGOTA1>

Rutas redundantes BOGOTA3

BOGOTA3>show ip route
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
* - candidate default, U - per-user static route, o - ODR
P - periodic downloaded static route

Gateway of last resort is not set

172.9.0.0/30 is subnetted, 1 subnets
R 172.9.3.12 [120/2] via 172.29.3.5, 00:00:14, Serial0/0/1
[120/2] via 172.29.3.1, 00:00:14, Serial0/0/0
172.29.0.0/16 is variably subnetted, 6 subnets, 2 masks
C 172.29.0.0/24 is directly connected, FastEthernet0/0
R 172.29.1.0/24 [120/2] via 172.29.3.5, 00:00:14,Serial0/0/1
[120/2] via 172.29.3.1, 00:00:14,Serial0/0/0
C 172.29.3.0/30 is directly connected, Serial0/0/0
C 172.29.3.4/30 is directly connected, Serial0/0/1
R 172.29.3.8/30 [120/1] via 172.29.3.5, 00:00:14,Serial0/0/1

[120/1] via 172.29.3.1, 00:00:14, Serial0/0/0

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

BOGOTA3>

Rutas redundantes MEDELLIN1

MEDELLIN1>show ip route

Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
* - candidate default, U - per-user static route, o - ODR
P - periodic downloaded static route

Gateway of last resort is not set

172.29.0.0/16 is variably subnetted, 7 subnets, 2 masks

R 172.29.3.12/30 [120/1] via 172.29.6.14, 00:00:04, Serial0/1/1
[120/1] via 172.29.6.10, 00:00:04, Serial0/1/0

R 172.29.4.0/25 [120/1] via 172.29.6.2, 00:00:18, Serial0/0/1

R 172.29.4.128/25 [120/1] via 172.29.6.14, 00:00:04, Serial0/1/1
[120/1] via 172.29.6.10, 00:00:04, Serial0/1/0

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

R 172.29.6.4/30 [120/1] via 172.29.6.2, 00:00:18, 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

209.17.220.0/30 is subnetted, 1 subnets

C 209.17.220.0 is directly connected, Serial0/0/0

MEDELLIN1>

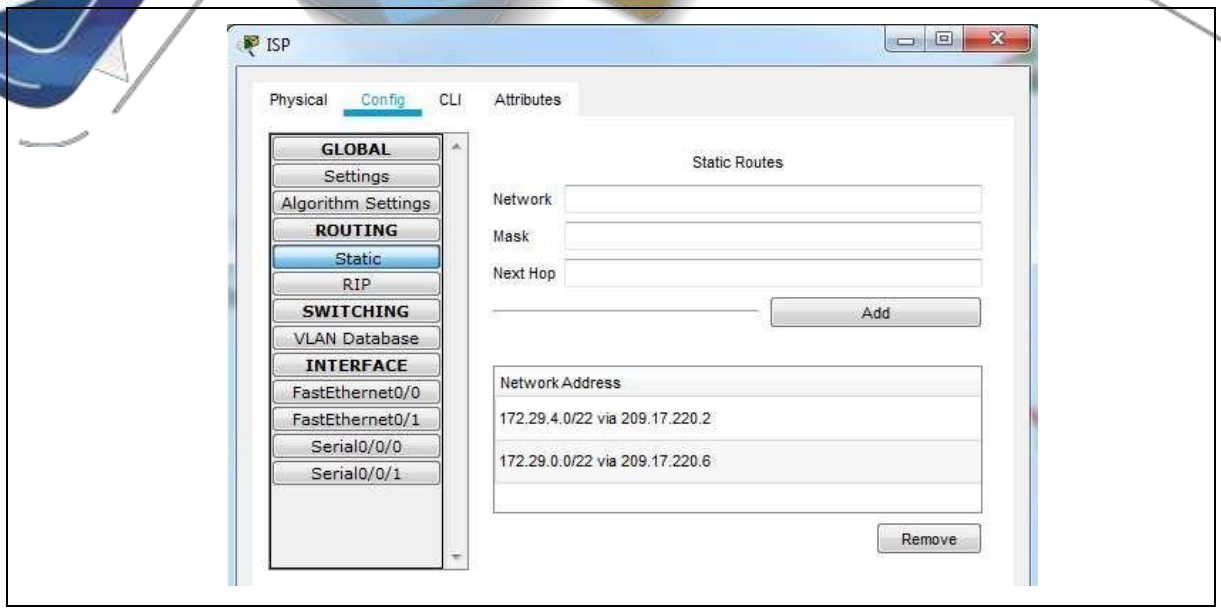
Rutas redundantes MEDELLIN3

MEDELLIN3>show ip route

```
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route

Gateway of last resort is not set

     172.29.0.0/16 is variably subnetted, 7 subnets, 2 masks
C       172.29.3.12/30 is directly connected, Serial0/1/0
R       172.29.4.0/25 [120/2] via 172.29.6.9, 00:00:28, Serial0/0/0
                      [120/2] via 172.29.6.13, 00:00:28, Serial0/0/1
C       172.29.4.128/25 is directly connected, FastEthernet0/0
R       172.29.6.0/30 [120/1] via 172.29.6.9, 00:00:28, Serial0/0/0
                      [120/1] via 172.29.6.13, 00:00:28, Serial0/0/1
R       172.29.6.4/30 [120/2] via 172.29.6.9, 00:00:28, Serial0/0/0
                      [120/2] via 172.29.6.13, 00:00:28, Serial0/0/1
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>
```

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

Rutas estaticas 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.

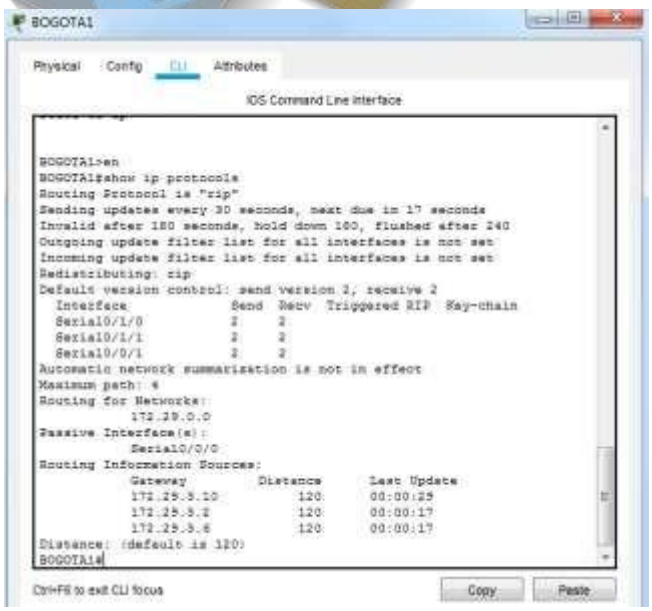
ROUTER	**INTERFAZ**
Bogota1	SERIAL0/0/1; SERIAL0/1/0; SERIAL0/1/1
Bogota2	SERIAL0/0/0; SERIAL0/0/1
Bogota3	SERIAL0/0/0; SERIAL0/0/1; SERIAL0/1/0
Medellín1	SERIAL0/0/0; SERIAL0/0/1; SERIAL0/1/1
Medellín2	SERIAL0/0/0; SERIAL0/0/1
Medellín3	SERIAL0/0/0; SERIAL0/0/1; SERIAL0/1/0
ISP	No lo requiere

RTA: Esta parte se configuró en la **Parte 1:** Configuración del enrutamiento **enciso a)** Configurar el enrutamiento en la red usando el protocolo RIP.

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.

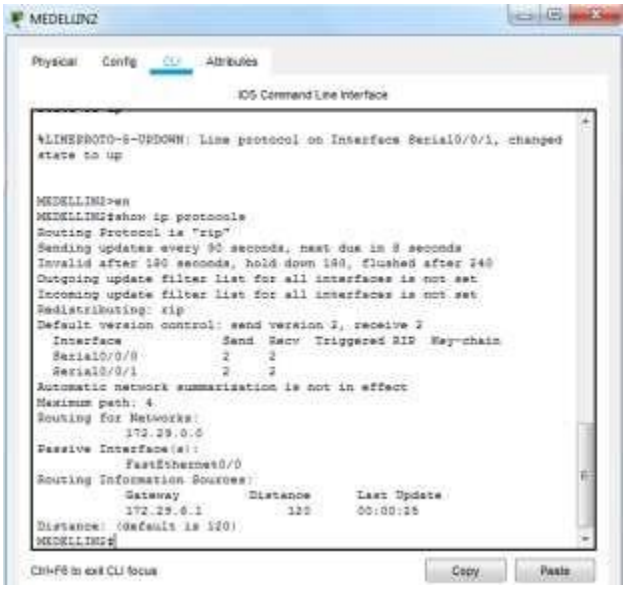
Verificación del protocolo RIP BOGOTA:


BOGOTA1
Physical
Config
CLI
Attributes
IOS Command Line Interface
BOGOTA1>en
BOGOTA1#show ip protocols
Routing Protocol is "rip"
Sending updates every 30 seconds, next due in 17 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
Serial0/1/0 2 2
Serial0/1/1 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):
Serial0/0/0
Routing Information Sources:
Gateway Distance Last Update
172.29.9.10 120 00:00:25
172.29.9.2 120 00:00:17
172.29.9.6 120 00:00:17
Distance: (default is 120)
BOGOTA1#
Ctrl+F6 to exit CLI focus
Copy
Paste

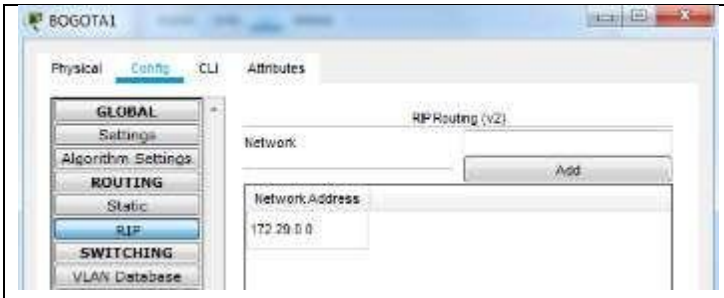
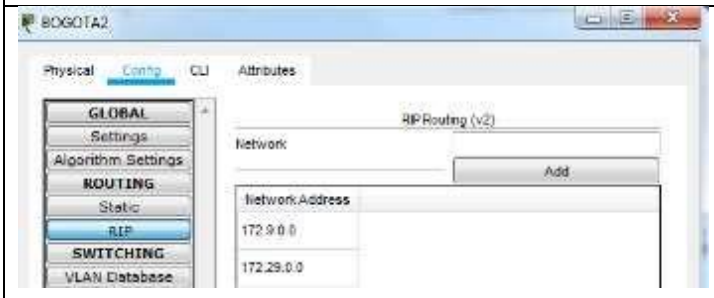

BOGOTA2
Physical
Config
CLI
Attributes
IOS Command Line Interface
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/1, changed state to up
BOGOTA2>en
BOGOTA2#show ip protocols
Routing Protocol is "rip"
Sending updates every 30 seconds, next due in 3 seconds
Invalid after 180 seconds, hold down 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:
172.0.0.0
172.29.0.0
Passive Interface(s):
FastEthernet0/0
Routing Information Sources:
Gateway Distance Last Update
172.29.9.9 120 00:00:08
Distance: (default is 120)
BOGOTA2#
Ctrl+F6 to exit CLI focus
Copy
Paste

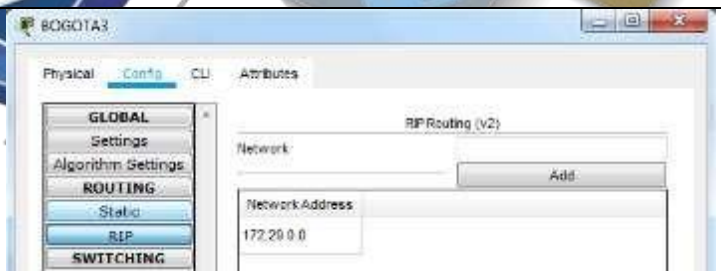
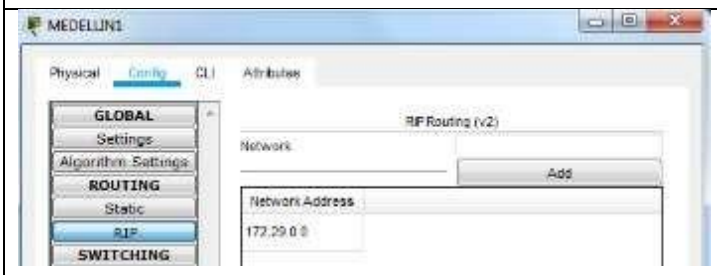
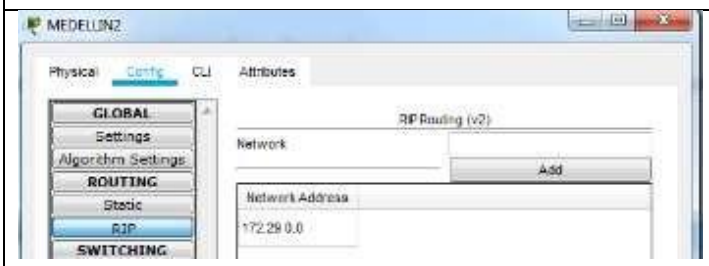

BOGOTA3
Physical
Config
CLI
Attributes
IOS Command Line Interface
state to up
BOGOTA3>en
BOGOTA3#show ip protocols
Routing Protocol is "rip"
Sending updates every 30 seconds, next due in 1 seconds
Invalid after 180 seconds, hold down 180, flushed after 240
Outgoing update filter list for all interfaces 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
Serial0/0/0 2 2
Automatic network summarization is not in effect
Maximum path: 4
Routing for Networks:
172.29.0.0
Passive Interface(s):
FastEthernet0/0
Routing Information Sources:
Gateway Distance Last Update
172.29.9.1 120 00:00:21
172.29.9.5 120 00:00:21
Distance: (default is 120)
BOGOTA3#
Ctrl+F6 to exit CLI focus
Copy
Paste

Verificación del protocolo RIP MEDELLIN



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.

	BOGOTA1(config)#router rip 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
	BOGOTA2(config)#router rip BOGOTA2(config-router)#do show ip route connected C 172.9.3.12/30 is directly connected, Serial0/0/1 C 172.29.1.0/24 is directly connected, FastEthernet0/0 C 172.29.3.8/30 is directly connected, Serial0/0/0 BOGOTA2(config-router)#

	BOGOTA3(config)#router rip BOGOTA3(config-router)#do show ip route connected C 172.29.0.0/24 is directly connected, FastEthernet0/0 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
	MEDELLIN1(config)#router rip 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
	MEDELLIN2(config)#router rip MEDELLIN2(config-router)#do show ip route connected C 172.29.4.0/25 is directly connected, FastEthernet0/0 C 172.29.6.0/30 is directly connected, Serial0/0/0 C 172.29.6.4/30 is directly connected, Serial0/0/1
	MEDELLIN3(config)#router rip MEDELLIN3(config-router)#do show ip route connected C 172.29.3.12/30 is directly connected, Serial0/1/0 C 172.29.4.128/25 is directly connected, FastEthernet0/0 C 172.29.6.8/30 is directly connected, Serial0/0/0 C 172.29.6.12/30 is directly connected, Serial0/0/1

Parte 5: Configurar encapsulamiento y autenticación PPP.

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

ISP autenticación PAP

ISP>en

ISP#conf t

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

ISP(config)#username MEDELLIN1

ISP(config)#username MEDELLIN1 password M1

ISP(config)#int s0/0/0

ISP(config-if)#encapsulation ppp

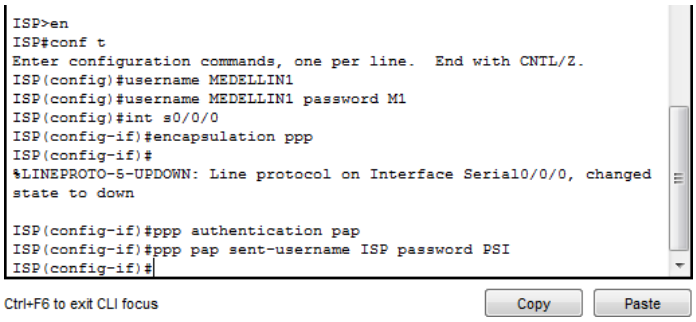
ISP(config-if)#

%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 PSI

ISP(config-if)#



MEDELLIN1>en

MEDELLIN1#conf t

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

MEDELLIN1(config)#username ISP password PSI

MEDELLIN1(config)#int s0/0/0

MEDELLIN1(config-if)#encapsulation ppp

MEDELLIN1(config-if)#ppp authentication pap

MEDELLIN1(config-if)#ppp pap sent-username MEDELLIN1 password M1

MEDELLIN1(config-if)#

```
MEDELLIN1>en
MEDELLIN1#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
MEDELLIN1(config)#username ISP password PSI
MEDELLIN1(config)#int s0/0/0
MEDELLIN1(config-if)#encapsulation ppp
MEDELLIN1(config-if)#ppp authentication pap
MEDELLIN1(config-if)#ppp pap sent-username MEDELLIN1 password M1
MEDELLIN1(config-if)#
```

Ctrl+F6 to exit CLI focus Copy Paste

MEDELLIN1#ping 209.17.220.1

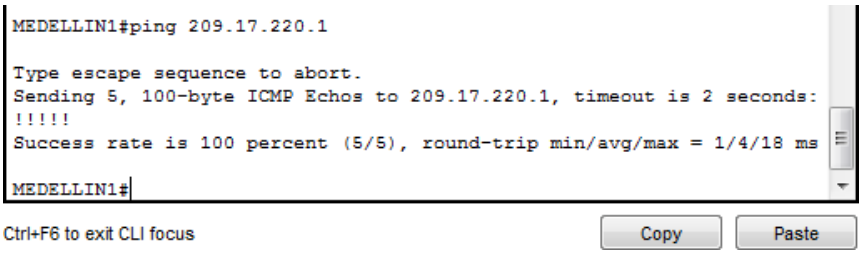
Type escape sequence to abort.

Sending 5, 100-byte ICMP Echos to 209.17.220.1, timeout is 2 seconds:

!!!!!

Success rate is 100 percent (5/5), round-trip min/avg/max = 1/4/18 ms

MEDELLIN1#



b. El enlace Bogotá1 con ISP se debe configurar con autenticación CHAT.

Configuración con autenticación CHAT

ISP#conf t

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

ISP(config)#username BOGOTA1 password B1

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(config-if)#ppp authentication chap

ISP(config-if)#

```
ISP#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
ISP(config)#username BOGOTA1 password B1
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(config-if)#ppp authentication chap
ISP(config-if)#
```

Ctrl+F6 to exit CLI focus Copy Paste

BOGOTA1>en

BOGOTA1#conf t

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

BOGOTA1(config)#username ISP password PSI

BOGOTA1(config)#int s0/0/0

BOGOTA1(config-if)#encapsulation ppp

BOGOTA1(config-if)#ppp authentication chap

BOGOTA1(config-if)#

```
BOGOTA1>en
BOGOTA1#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
BOGOTA1(config)#username ISP password PSI
BOGOTA1(config)#int s0/0/0
BOGOTA1(config-if)#encapsulation ppp
BOGOTA1(config-if)#ppp authentication chap
BOGOTA1(config-if)#
```

Ctrl+F6 to exit CLI focus Copy Paste

BOGOTA1#ping 209.17.220.5

Type escape sequence to abort.

Sending 5, 100-byte ICMP Echos to 209.17.220.5, timeout is 2 seconds:

!!!!!

Success rate is 100 percent (5/5), round-trip min/avg/max = 1/9/29 ms

BOGOTA1#

```
BOGOTA1#ping 209.17.220.5

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 209.17.220.1, timeout is 2 seconds:
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 1/9/29 ms

BOGOTA1#
```

Ctrl+F6 to exit CLI focus Copy Paste

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.

Configuración de PAT

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-if)#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 s0/1/0

MEDELLIN1(config-if)#ip nat inside

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

MEDELLIN1(config-if)#ip nat inside

MEDELLIN1(config-if)#exit

MEDELLIN1(config)#

```
MEDELLIN1>en
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 s0/1/0
MEDELLIN1(config-if)#ip nat inside
MEDELLIN1(config-if)#int s0/1/1
MEDELLIN1(config-if)#ip nat inside
MEDELLIN1(config-if)#end
MEDELLIN1#
```

Ctrl+F6 to exit CLI focus Copy Paste

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 s0/0/1
BOGOTA1(config-if)#ip nat inside
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)#end
BOGOTA1#
```

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.

Configuración del servicio DHCP

```
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 4.4.4.4

MEDELLIN2(dhcp-config)#exit

MEDELLIN2(config)#ip dhcp pool MEDELLIN3

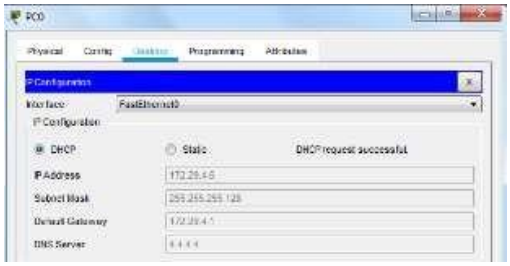
MEDELLIN2(dhcp-config)#network 172.29.4.128 255.255.255.128

MEDELLIN2(dhcp-config)#default-router 172.29.4.129

MEDELLIN2(dhcp-config)#dns-server 4.4.4.4

MEDELLIN2(dhcp-config)#exit

MEDELLIN2(config)#



MEDELLIN3>EN

MEDELLIN3#conf t

Enterconfigurationcommands,oneperline. EndwithCNTL/Z.

MEDELLIN3(config)#int fo/0

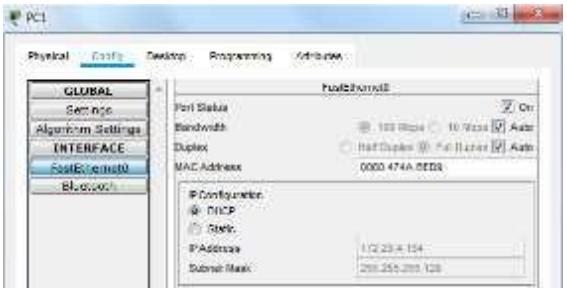
MEDELLIN3(config-if)#ip helper-address 172.29.6.5

MEDELLIN3(config-if)#exit

MEDELLIN3(config)#

```
MEDELLIN3>EN
MEDELLIN3#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
MEDELLIN3(config)#int f0/0
MEDELLIN3(config-if)#ip helper-address 172.29.6.5
MEDELLIN3(config-if)#exit
MEDELLIN3(config)#
```

Ctrl+F6 to exit CLI focus Copy Paste



BOGOTA2>en

BOGOTA2#conf t

BOGOTA2(config)#ip dhcp excluded-address 172.29.0.1 172.29.0.4

BOGOTA2(config)#ip dhcp excluded-address 172.29.1.1 172.29.1.4

BOGOTA2(config)#ip dhcp pool BOGOTA2

BOGOTA2(dhcp-config)#network 172.29.1.0 255.255.255.0

BOGOTA2(dhcp-config)#default-router 172.29.1.1

BOGOTA2(dhcp-config)#dns-server 8.8.4.4

BOGOTA2(dhcp-config)#exit

BOGOTA2(config)#ip dhcp pool BOGOTA1

BOGOTA2(dhcp-config)#network 172.29.0.0 255.255.255.0

BOGOTA2(dhcp-config)#default-router 172.29.0.1

BOGOTA2(dhcp-config)#dns-server 8.8.4.4

BOGOTA2(dhcp-config)#exit

```
BOGOTA2(config)#
BOGOTA2(config)#ip dhcp excluded-address 172.29.1.1 172.29.1.4
BOGOTA2(config)#ip dhcp pool BOGOTA2
BOGOTA2(dhcp-config)#network 172.29.1.0 255.255.255.0
BOGOTA2(dhcp-config)#default-router 172.29.1.1
BOGOTA2(dhcp-config)#dns-server 8.8.4.4
BOGOTA2(dhcp-config)#exit
BOGOTA2(config)#ip dhcp pool BOGOTA1
BOGOTA2(dhcp-config)#network 172.29.0.0 255.255.255.0
BOGOTA2(dhcp-config)#default-router 172.29.0.1
BOGOTA2(dhcp-config)#dns-server 8.8.4.4
BOGOTA2(dhcp-config)#exit
BOGOTA2(config)#
```

Ctrl+F6 to exit CLI focus Copy Paste

BOGOTA3>en

BOGOTA3#conf t

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

BOGOTA3(config)#ip dhcp excluded-address 172.29.1.1172.29.1.5

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)#default-router 172.29.1.1

BOGOTA3(dhcp-config)#dns-server 5.5.5.5

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 5.5.5.5

BOGOTA3(dhcp-config)#exit

BOGOTA3(config)#int fo/o

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

BOGOTA3(config-if)#exit

BOGOTA3(config)#

```
BOGOTA3>en
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)#default-router 172.29.1.1
BOGOTA3(dhcp-config)#dns-server 5.5.5.5
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 5.5.5.5
BOGOTA3(dhcp-config)#exit
BOGOTA3(config)#int f0/0
BOGOTA3(config-if)#ip helper-address 172.29.3.13
BOGOTA3(config-if)#exit
BOGOTA3(config)#
```

Ctrl+F6 to exit CLI focus Copy Paste

PING de PC2 a PC3

```
C:\>ping 172.29.1.6

Pinging 172.29.1.6 with 32 bytes of data:

Reply from 172.29.1.6: bytes=32 time=3ms TTL=125
Reply from 172.29.1.6: bytes=32 time=2ms TTL=125
Reply from 172.29.1.6: bytes=32 time=2ms TTL=125
Reply from 172.29.1.6: bytes=32 time=3ms TTL=125

Ping statistics for 172.29.1.6:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 2ms, Maximum = 3ms, Average = 2ms

C:\>
```

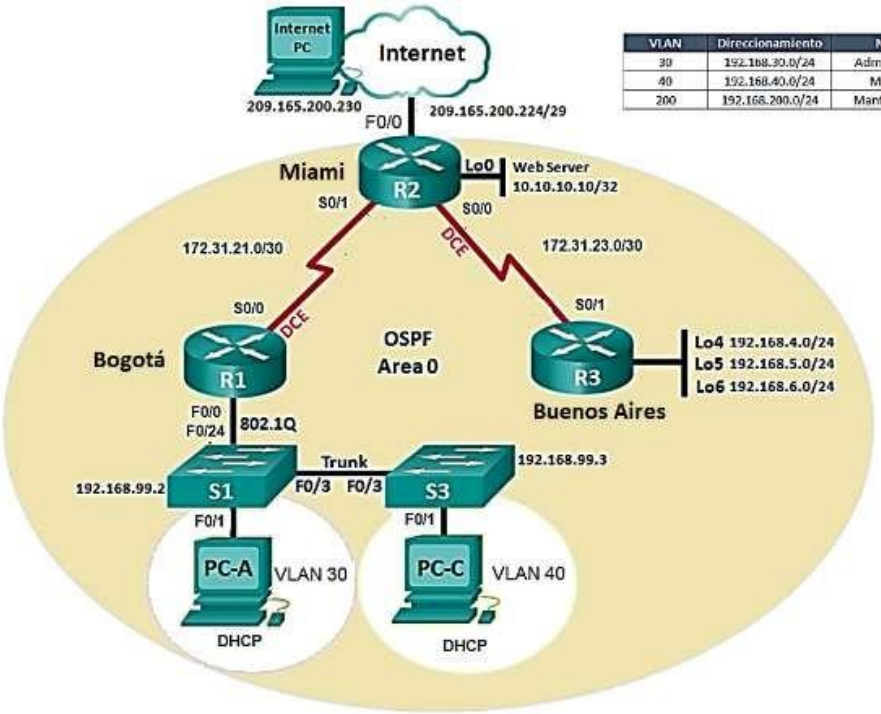
Top

PING de PC3 a PC2

```
C:\>ping 172.29.0.6

Pinging 172.29.0.6 with 32 bytes of data:

Reply from 172.29.0.6: bytes=32 time=2ms TTL=125
Reply from 172.29.0.6: bytes=32 time=13ms TTL=125
Reply from 172.29.0.6: bytes=32 time=2ms TTL=125
Reply from 172.29.0.6: bytes=32 time=4ms TTL=125

Ping statistics for 172.29.0.6:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 2ms, Maximum = 13ms, Average = 5ms

C:\>
```

Escenario 2

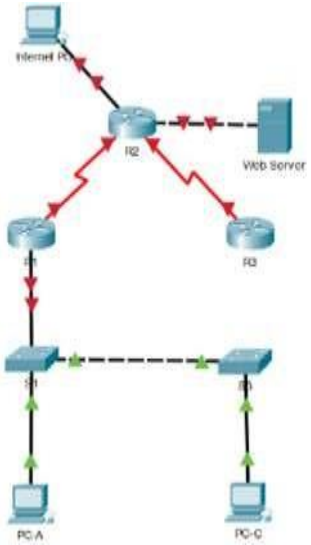
Escenario: Una empresa de Tecnología posee tres sucursales distribuidas en las ciudades de Miami, Bogotá y Buenos Aires, en donde el estudiante será el administrador de la red, el cual deberá configurar e interconectar entre sí cada uno de los dispositivos que forman parte del escenario, acorde con los 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

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

Topología inicial



Configuramos los routers:

Configuración Para R1

Router>en

Router#conf t

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

Router(config)#hostname Bogota

Bogota(config)#int s0/0/0

Bogota(config-if)#ip address172.31.21.2 255.255.255.252

Bogota(config-if)#no shutdown

Configuración Para R2

Router>en

Router#conf t

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

Router(config)#hostname Miami

Miami(config)#int loop0

Miami(config-if)#

%LINK-5-CHANGED: Interface Loopback0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback0, changed state to up

Miami(config-if)#ip address 10.10.10.10 255.255.255.255

Miami(config-if)#no shutdown

Miami(config-if)#int s0/0/0

Miami(config-if)#ip address 172.31.23.1 255.255.255.252

Miami(config-if)#no shutdown

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

Miami(config-if)#

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

Miami(config-if)#ip address 172.31.21.2 255.255.255.252

Miami(config-if)#no shutdown

Miami(config-if)#

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

Miami(config-if)#

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

Miami(config-if)#int g0/0

Miami(config-if)#ip address 209.165.200.225 255.255.255.248

Miami(config-if)#no shutdown

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)#

Configuración Para R3

Router>en

Router#conf t

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

Router(config)#hostname BuenosAires

BuenosAires(config)#int loop4

BuenosAires(config-if)#

%LINK-5-CHANGED: Interface Loopback4, changed state to up

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

BuenosAires(config-if)#ip address 192.168.4.1 255.255.255.0

BuenosAires(config-if)#no shutdown

BuenosAires(config-if)#int loop5

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 address 192.168.5.1 255.255.255.0

BuenosAires(config-if)#no shutdown

BuenosAires(config-if)#int loop6

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 address 192.168.6.1 255.255.255.0

BuenosAires(config-if)#no shutdown

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

BuenosAires(config-if)#ip address 172.31.23.2 255.255.255.252

BuenosAires(config-if)#no shutdown

BuenosAires(config-if)#

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

BuenosAires(config-if)#

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

BuenosAires(config-if)#

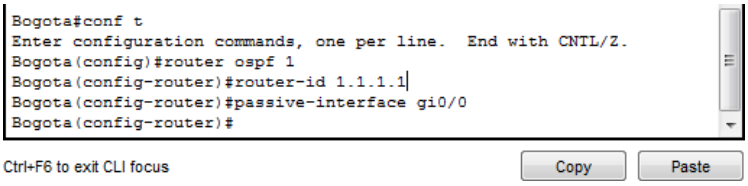
2. Configurar el protocolo de enrutamiento OSPFv2 bajo los siguientes criterios:

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

Configuramos el protocolo de enrutamiento OSPFv2 conforme a los lineamientos de la tabla anterior.

Router ID R1



Bogota#conf t

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

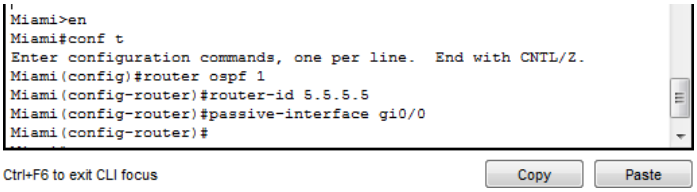
Bogota(config)#router ospf 1

Bogota(config-router)#router-id 1.1.1.1

Bogota(config-router)#passive-interface gi0/0

Bogota(config-router)#

Router ID R2



Miami>en

Miami#conf t

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

Miami(config)#router ospf 1

Miami(config-router)#router-id 5.5.5.5

Miami(config-router)#passive-interface gi0/0

Miami(config-router)#

Router ID R3

```
BuenosAires>en
BuenosAires#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
BuenosAires(config)#router ospf 1
BuenosAires(config-router)#router-id 8.8.8.8
BuenosAires(config-router)#passive-interface gi0/0
BuenosAires(config-router)#
```

Ctrl+F6 to exit CLI focus Copy Paste

BuenosAires>en

BuenosAires#conf t

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

BuenosAires(config)#router ospf 1

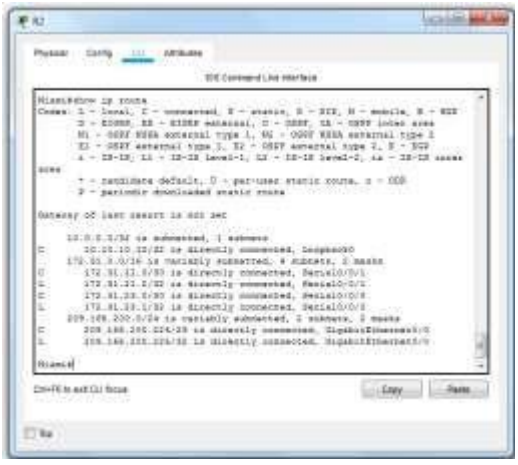
BuenosAires(config-router)#router-id 8.8.8.8

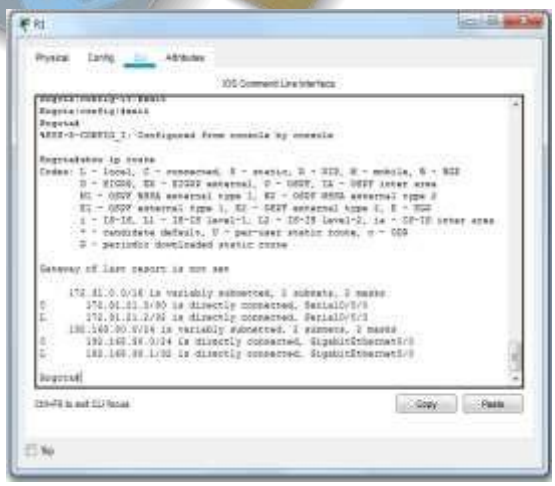
BuenosAires(config-router)#passive-interface gi0/0

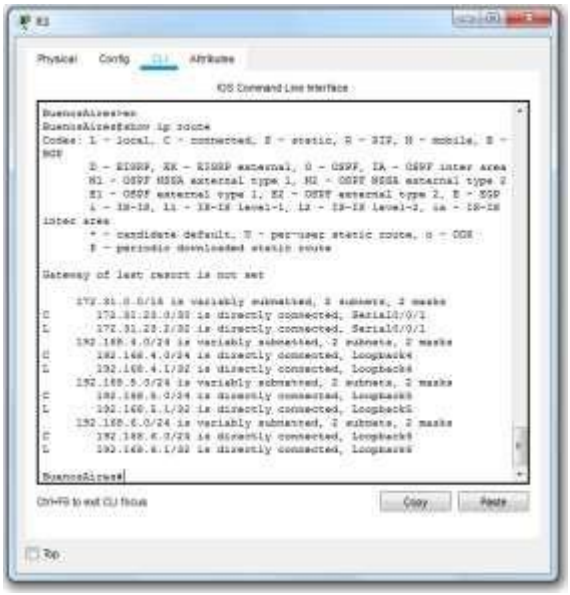
BuenosAires(config-router)#

Verificar información de OSPF

- Visualizar tablas de enrutamiento y routers conectados por OSPFv2

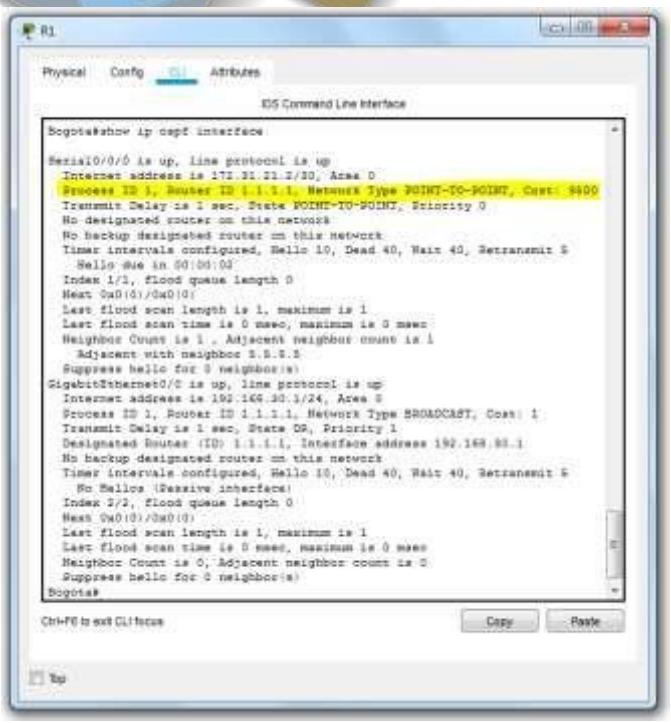






- Visualizar lista resumida de interfaces por OSPF en donde se ilustre el costo de cada interface

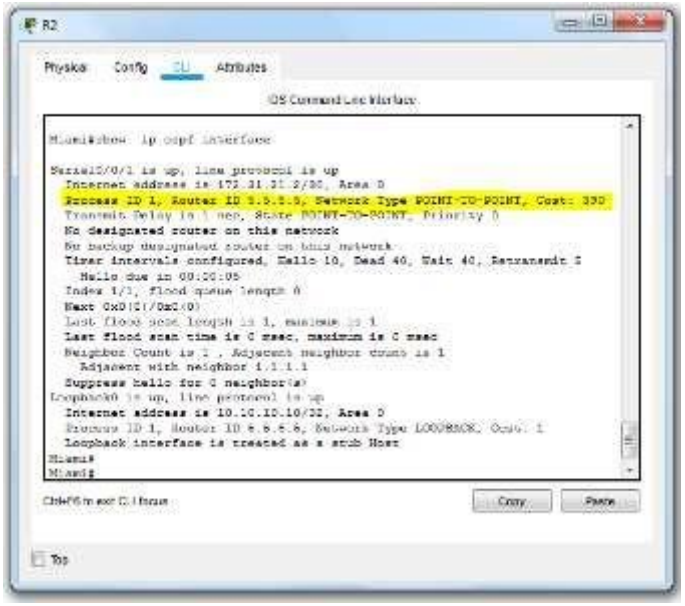
PARA R1:



Bogota>en
Bogota#show ip ospf interface
Serial0/0/0 is up, line protocol is up
  Internet address is 172.31.21.2/30, Area 0
  Process ID 1, Router ID 1.1.1.1, Network Type POINT-TO-POINT, Cost: 9500
  Transmit Delay is 1 sec, State POINT-TO-POINT, Priority 0
  No designated router on this network
  No backup designated router on this network
  Timer intervals configured, Hello 10, Dead 40, Wait 40, Retransmit 5
    Hello due in 00:00:02
  Index 1/1, flood queue length 0
  Next 0x0(0)/0x0(0)
  Last flood scan length is 1, maximum is 1
  Last flood scan time is 0 msec, maximum is 0 msec
  Neighbor Count is 1 , Adjacent neighbor count is 1
  Adjacent with neighbor 5.5.5.5
  Suppress hello for 0 neighbor(s)
GigabitEthernet0/0 is up, line protocol is up
Internet address is 192.168.30.1/24, Area 0
  Process ID 1, Router ID 1.1.1.1, Network Type BROADCAST, Cost: 1
  Transmit Delay is 1 sec, State DR, Priority 1
  Designated Router (ID) 1.1.1.1, Interface address 192.168.30.1
  No backup designated router on this network
  Timer intervals configured, Hello 10, Dead 40, Wait 40, Retransmit 5
  No Hellos (Passive interface)
  Index 2/2, flood queue length 0
  Next 0x0(0)/0x0(0)
  Last flood scan length is 1, maximum is 1

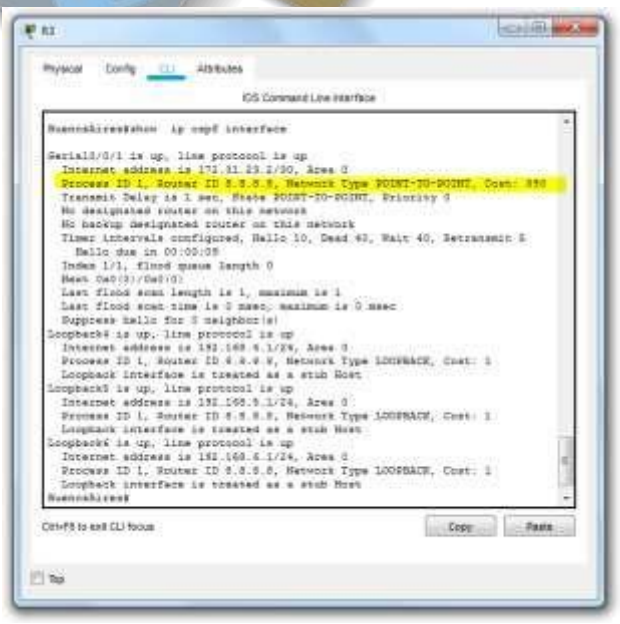
Last flood scan time is 0 msec, maximum is 0 msec
Neighbor Count is 0, Adjacent neighbor count is 0
Suppress hello for 0 neighbor(s)
Bogota#

PARA R2:



Miami#show ip ospf interface
Serial0/0/1 is up, line protocol is up
Internet address is 172.31.21.2/30, Area 0
Process ID 1, Router ID 5.5.5.5, Network Type POINT-TO-POINT, Cost: 390
Transmit Delay is 1 sec, State POINT-TO-POINT, Priority 0
No designated router on this network
No backup designated router on this network
Timer intervals configured, Hello 10, Dead 40, Wait 40, Retransmit 5
Hello due in 00:00:05
Index 1/1, flood queue length 0
Next 0x0(0)/0x0(0)
Last flood scan length is 1, maximum is 1
Last flood scan time is 0 msec, maximum is 0 msec
Neighbor Count is 1 , Adjacent neighbor count is 1
Adjacent with neighbor 1.1.1.1
Suppress hello for 0 neighbor(s)
Loopback0 is up, line protocol is up
Internet address is 10.10.10.10/32, Area 0
Process ID 1, Router ID 5.5.5.5, Network Type LOOPBACK, Cost: 1
Loopback interface is treated as a stub Host
Miami#

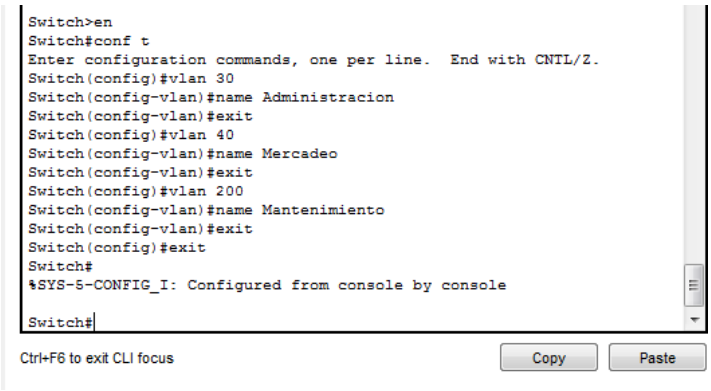
PARA R3:



```
BuenosAires#show ip ospf interface
Serial0/0/1 is up, line protocol is up
Internet address is 172.31.23.2/30, Area 0
  Process ID 1, Router ID 8.8.8.8, Network Type POINT-TO-POINT, Cost: 390
  Transmit Delay is 1 sec, State POINT-TO-POINT, Priority 0
  No designated router on this network
  No backup designated router on this network
  Timer intervals configured, Hello 10, Dead 40, Wait 40, Retransmit 5
    Hello due in 00:00:09
  Index 1/1, flood queue length 0
  Next 0x0(0)/0x0(0)
  Last flood scan length is 1, maximum is 1
  Last flood scan time is 0 msec, maximum is 0 msec
  Suppress hello for 0 neighbor(s)
Loopback4 is up, line protocol is up
  Internet address is 192.168.4.1/24, Area 0
  Process ID 1, Router ID 8.8.8.8, Network Type LOOPBACK, Cost: 1
  Loopback interface is treated as a stub Host
Loopback5 is up, line protocol is up
  Internet address is 192.168.5.1/24, Area 0
  Process ID 1, Router ID 8.8.8.8, Network Type LOOPBACK, Cost: 1
  Loopback interface is treated as a stub Host
Loopback6 is up, line protocol is up
  Internet address is 192.168.6.1/24, Area 0
  Process ID 1, Router ID 8.8.8.8, Network Type LOOPBACK, Cost: 1
  Loopback interface is treated as a stub Host
BuenosAires#
```

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

PARA S1:



Switch>en

Switch#conf t

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

Switch(config)#vlan 30

Switch(config-vlan)#name Administracion

Switch(config-vlan)#exit

Switch(config)#vlan 40

Switch(config-vlan)#name Mercadeo

Switch(config-vlan)#exit

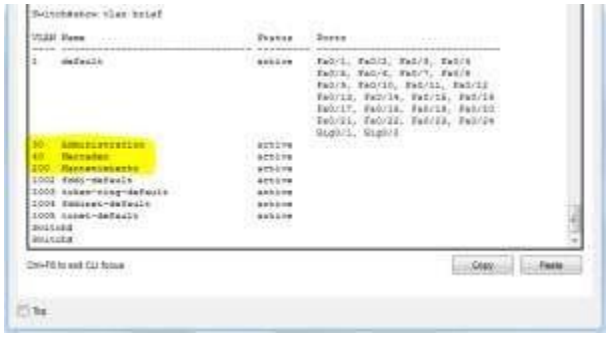
Switch(config)#vlan 200

Switch(config-vlan)#name Mantenimiento

Switch(config-vlan)#exit

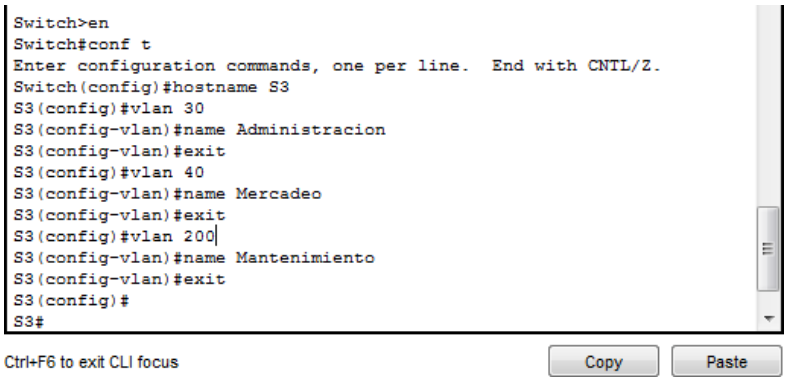
Switch(config)#exit
Switch#

Verificamos con el comando **show vlan brief**



PARA S3:

```
Switch>en
Switch#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#hostname S3
S3(config)#vlan 30
S3(config-vlan)#name Administracion
S3(config-vlan)#exit
S3(config)#vlan 40
S3(config-vlan)#name Mercadeo
S3(config-vlan)#exit
S3(config)#vlan 200
S3(config-vlan)#name Mantenimiento
S3(config-vlan)#exit
S3(config)#
S3#
```



Configuramos la seguridad del switch:

EN S1:

Switch#

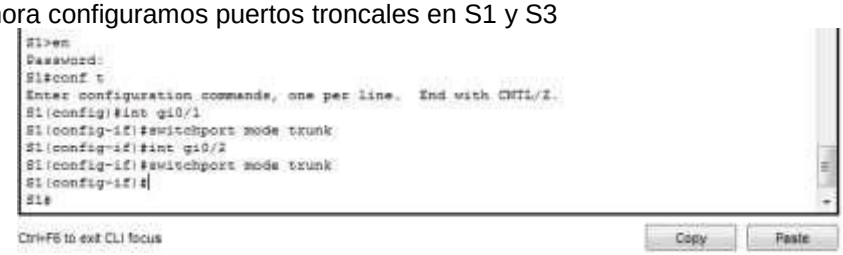
```
Switch#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#line console 0
Switch(config-line)#pass cisco
Switch(config-line)#line vty 0 4
Switch(config-line)#pass cisco
Switch(config-line)#enable secret class
Switch(config)#
```

EN S3:

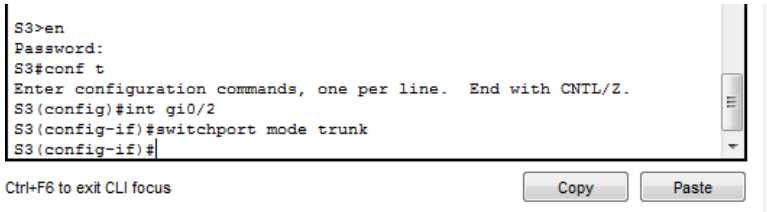
```
S3#
S3#conf t
Enter configuration commands, one per line. End with CNTL/Z.
S3(config)#line console 0
S3(config-line)#pass cisco
S3(config-line)#line vty 0 4
```

S3(config-line)#pass cisco
S3(config-line)#enable secret class
S3(config)#

Ahora configuramos puertos troncales en S1 y S3

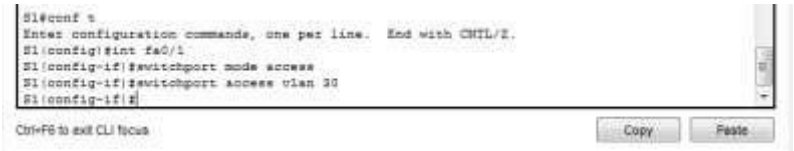


S1>en
Password:
S1#conf t
Enter configuration commands, one per line. End with CNTL/Z.
S1(config)#int gi0/1
S1(config-if)#switchport mode trunk
S1(config-if)#int gi0/2
S1(config-if)#switchport mode trunk
S1(config-if)#
S1#

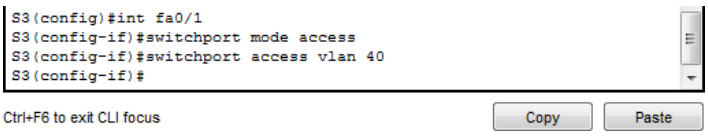


S3>en
Password:
S3#conf t
Enter configuration commands, one per line. End with CNTL/Z.
S3(config)#int gi0/2
S3(config-if)#switchport mode trunk
S3(config-if)#

Configuramos puertos de acceso



S1#conf t
Enter configuration commands, one per line. End with CNTL/Z.
S1(config)#int fa0/1
S1(config-if)#switchport mode access
S1(config-if)#switchport access vlan 30
S1(config-if)#



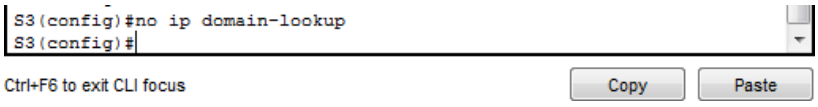
```
S3(config)#int fa0/1
S3(config-if)#switchport mode access
S3(config-if)#switchport access vlan 40
S3(config-if)#
```

Configuramos la encapsulación en los troncales

```
Bogota>en
Bogota#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Bogota(config)#interface g0/0
Bogota(config-if)#no shutdown
Bogota(config-if)#exit
Bogota(config)#interface g0/0.3
Bogota(config-subif)#
%LINK-5-CHANGED: Interface GigabitEthernet0/0.3, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0.3, changed state to up
Bogota(config-subif)#encapsulation dot1Q 30
Bogota(config-subif)#ip address 192.168.30.1 255.255.255.0
% 192.168.30.0 overlaps with GigabitEthernet0/0
Bogota(config-subif)#exit
Bogota(config)#interface g0/0.4
Bogota(config-subif)#
%LINK-5-CHANGED: Interface GigabitEthernet0/0.4, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0.4, changed state to up
Bogota(config-subif)#encapsulation dot1Q 40
Bogota(config-subif)#ip address 192.168.40.1 255.255.255.0
Bogota(config-subif)#exit
Bogota(config)#
```

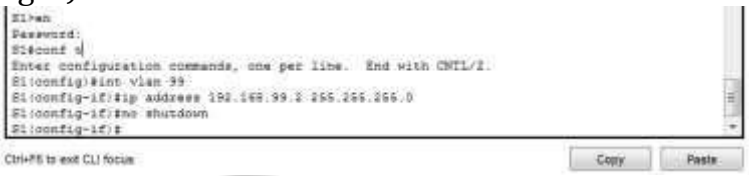
4. En el Switch 3 deshabilitar DNS lookup

   Aplicamos el comando no ip domain-lookup

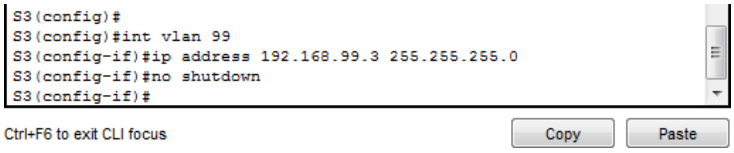


5. Asignar direcciones IP a los Switches acorde a los lineamientos.

```
S1>en
Password:
S1#conf t
Enter configuration commands, one per line. End with CNTL/Z.
S1(config)#int vlan 99
S1(config-if)#ip address 192.168.99.2 255.255.255.0
S1(config-if)#no shutdown
S1(config-if)#
```



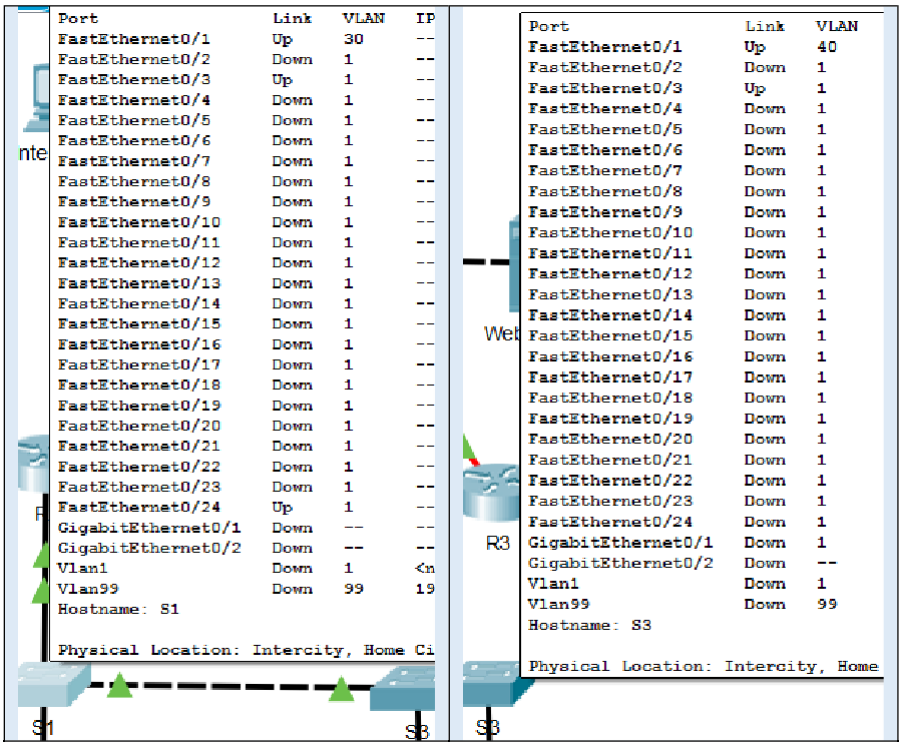
S3(config)#
S3(config)#int vlan 99
S3(config-if)#ip address 192.168.99.3 255.255.255.0
S3(config-if)#no shutdown
S3(config-if)#



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

S1(config-if)#exit
S1(config)#int range fa0/2, fa0/4-23
S1(config-if-range)#shutdown

S3(config-if)#exit
S3(config)#int range fa0/2, fa0/4-24
S3(config-if-range)#shutdown

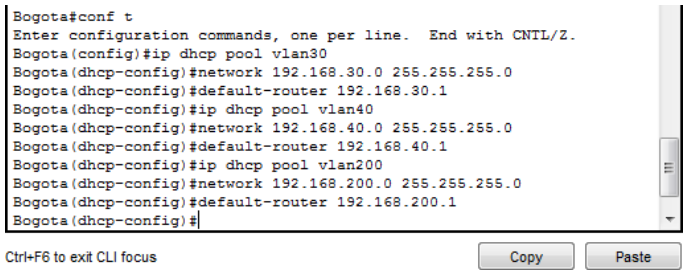


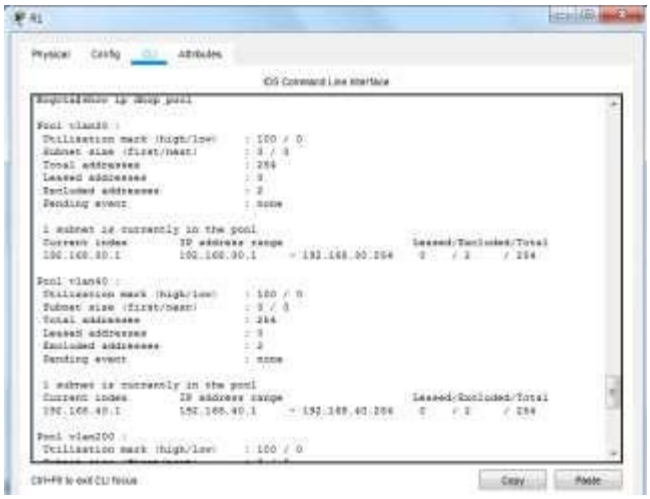
7. Implement DHCP and NAT for IPv4

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

Vamos a configurar R1 (Bogotá) como servidor DHCP:

```
Bogota#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Bogota(config)#ip dhcp pool vlan30
Bogota(dhcp-config)#network 192.168.30.0 255.255.255.0
Bogota(dhcp-config)#default-router 192.168.30.1
Bogota(dhcp-config)#ip dhcp pool vlan40
Bogota(dhcp-config)#network 192.168.40.0 255.255.255.0
Bogota(dhcp-config)#default-router 192.168.40.1
Bogota(dhcp-config)#ip dhcp pool vlan200
Bogota(dhcp-config)#network 192.168.200.0 255.255.255.0
Bogota(dhcp-config)#default-router 192.168.200.1
Bogota(dhcp-config)#
Bogota#
```

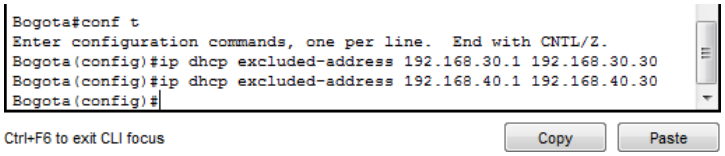




9. Reservar las primeras 30 direcciones IP de las VLAN 30 y 40 para configuraciones estáticas.

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

Excluimos las primeras 30 direcciones IP de las VLAN

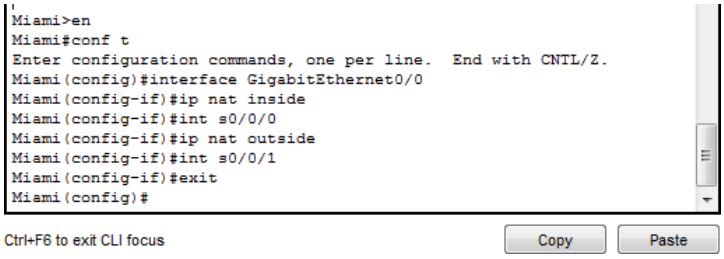


Bogota#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Bogota(config)#ip dhcp excluded-address 192.168.30.1 192.168.30.30
Bogota(config)#ip dhcp excluded-address 192.168.40.1 192.168.40.30
Bogota(config)#

```
Bogota#show running-config | include dhc
ip dhcp excluded-address 192.168.30.1 192.168.30.30
ip dhcp excluded-address 192.168.40.1 192.168.40.30
```

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

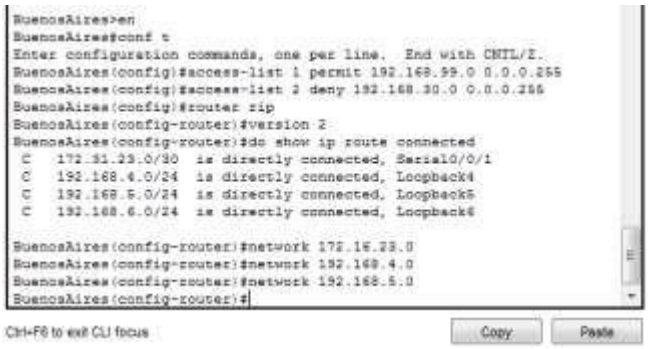
Miami>en
Miami#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Miami(config)#interface GigabitEthernet0/0
Miami(config-if)#ip nat inside
Miami(config-if)#int s0/0/0
Miami(config-if)#ip nat outside
Miami(config-if)#int s0/0/1
Miami(config-if)#exit
Miami(config)#



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

```
BuenosAires>en
BuenosAires#conf t
Enter configuration commands, one per line. End with CNTL/Z.
BuenosAires(config)#access-list 1 permit 192.168.99.0 0.0.0.255
BuenosAires(config)#access-list 2 deny 192.168.30.0 0.0.0.255
BuenosAires(config)#
```

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




```
BuenosAires>en
BuenosAires#conf t
Enter configuration commands, one per line. End with CNTL/Z.
BuenosAires(config)#access-list 1 permit 192.168.99.0 0.0.0.255
BuenosAires(config)#access-list 2 deny 192.168.30.0 0.0.0.255
BuenosAires(config)#router rip
BuenosAires(config-router)#version 2
BuenosAires(config-router)#do show ip route connected
C 172.31.23.0/30 is directly connected, Serial0/0/1
 C 192.168.4.0/24 is directly connected, Loopback4
C 192.168.5.0/24 is directly connected, Loopback5
C 192.168.6.0/24 is directly connected, Loopback6
BuenosAires(config-router)#network 172.16.23.0
BuenosAires(config-router)#network   192.168.4.0
BuenosAires(config-router)#network   192.168.5.0
```

CONCLUSIONES

- ✓ Se logró fortalecer los conceptos teóricos del módulo con la aplicación de los ejercicios prácticos en la herramienta de simulación de Cisco Packet Tracer y Laboratorio Remoto.
- ✓ Logramos identificar conceptos y temáticas relacionadas con el enrutamiento estático y dinámico, mediante protocolos de enlace, asignación dinámica de direcciones y desarrollar problemas propios de subredes y de direccionamiento IP.
- ✓ Apropiamos las tareas asignadas en cada uno de los escenarios propuestos durante y en cada módulo propuesto para este diplomado, conceptualizando, analizando y desarrollando las diferentes temáticas abordadas en este ciclo de preparación
- ✓ El desarrollo de prácticas, en los simuladores de Cisco Packet Tracer y Laboratorio Remoto, aportan ampliamente en el afianzamiento de los conceptos desarrollados y presentados durante las temáticas realizadas, con el fin de aplicar los conocimientos adecuados en las configuraciones, verificaciones y direccionamientos de los esquemas propuestos objeto de estudio.

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