

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

Presentado por:

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ESCUELA DE CIENCIAS BÁSICAS, TECNOLOGÍA E INGENIERÍA

BOGOTÁ 2019

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## INTRODUCCION

Hoy en día, la importancia que toma la tecnología en nuestro diario vivir es inevitable. Es por eso que las redes, telecomunicaciones, programación, entre otros anexos a las tecnologías están requiriendo cada vez más personas que estén plenamente capacitadas y entrenadas para asumir este rol en la sociedad.

Se ha vuelto muy importante que por lo menos en cada empresa o negocio que se maneje, exista una persona capaz de garantizar el buen funcionamiento de las TIC y fomentar la seguridad de datos.

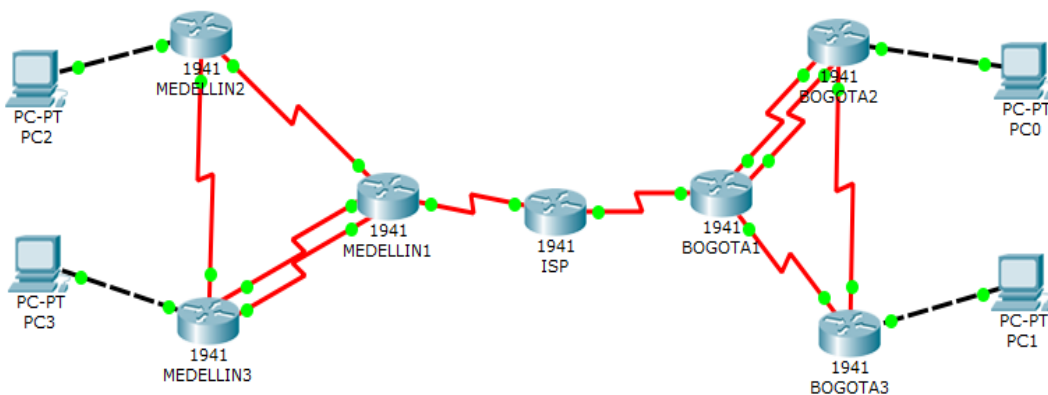
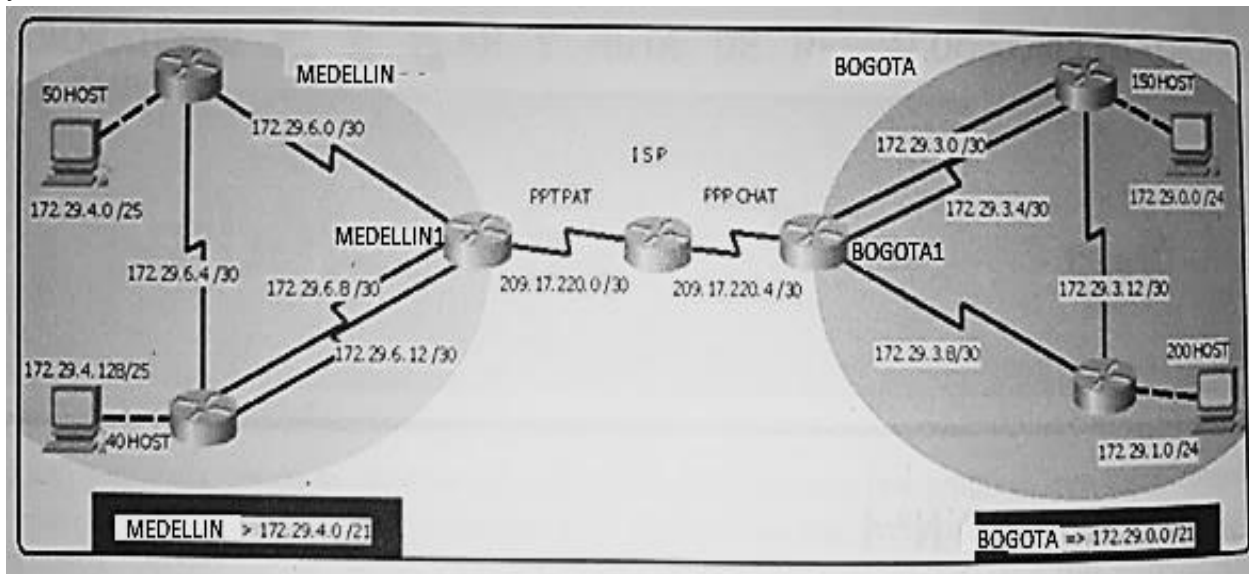
Es por eso que la Universidad Nacional Abierta y a Distancia, brinda para ustedes un programa de profundización en redes Cisco, cuyo objetivo es capacitar a los estudiantes a que se rigen bajo criterio y normas internacionales para mejorar sus estándares de calidad y llevar a cabo este conocimiento que se adquiere durante la profundización.

Por esta razón es que en este trabajo se trata de llevar a cabo y plasmar lo aprendido durante estos meses de trabajo. Aparte de concluir con el diplomado en CCNA1 es adquirir todos estos conocimientos para aplicarlo en un diario vivir, rodeándonos cada vez mas de nuevas tecnologías.

## 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.

Este escenario plantea el uso de RIP como protocolo de enrutamiento, considerando que se tendrán 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.

## SOLUCION

### ROUTER ISP

```
Router>enable
Router#config terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#hostname ISP
ISP(config)#int s0/0/0
ISP(config-if)#ip address 209.17.220.1 255.255.255.252
ISP(config-if)#clock rate 4000000
ISP(config-if)#no shutdown

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

%LINK-5-CHANGED: Interface Serial0/0/1, changed state to down
ISP(config-if)#
ISP(config-if)#
ISP#
%SYS-5-CONFIG_I: Configured from console by console

ISP#enable
ISP#config terminal
Enter configuration commands, one per line. End with CNTL/Z.
ISP(config)#no ip domain-lookup
ISP(config)#service password-encryption
ISP(config)#enable secret class
ISP(config)#banner motd %sistema protegido%
ISP(config)#line console 0
ISP(config-line)#password cisco
ISP(config-line)#login
ISP(config-line)#line vty 0 15
ISP(config-line)#password cisco
ISP(config-line)#login
ISP(config-line)#
```

```

ISP
Physical Config CLI
IOS Command Line Interface
Router>enable
Router#config terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#hostname ISP
ISP(config)#int s0/0/0
ISP(config-if)#ip address 209.17.220.1 255.255.255.252
ISP(config-if)#clock rate 4000000
ISP(config-if)#no shutdown

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

%LINK-5-CHANGED: Interface Serial0/0/1, changed state to down
ISP(config-if)#
ISP(config-if)#
ISP#
%SYS-5-CONFIG_I: Configured from console by console

ISP#enable
ISP#config terminal
Enter configuration commands, one per line. End with CNTL/Z.
ISP(config)#no ip domain-lookup
ISP(config)#service password-encryption
ISP(config)#enable secret class
ISP(config)#banner motd %sistema protegido%
ISP(config)#line console 0
ISP(config-line)#password cisco
ISP(config-line)#login
ISP(config-line)#line vty 0 15
ISP(config-line)#password cisco
ISP(config-line)#login
ISP(config-line)#
  
```

```

Router>enable
Router#config terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#hostname MEDELLIN1
MEDELLIN1(config)#int s0/0/0
MEDELLIN1(config-if)#ip address 209.17.220.2 255.255.255.252
MEDELLIN1(config-if)#no shutdown

%LINK-5-CHANGED: Interface Serial0/0/0, changed state to down
MEDELLIN1(config-if)#
MEDELLIN1(config-if)#int s0/0/1
MEDELLIN1(config-if)#ip address 172.29.6.1 255.255.255.252
MEDELLIN1(config-if)#clock rate 4000000
This command applies only to DCE interfaces
MEDELLIN1(config-if)#no shutdown

MEDELLIN1(config-if)#
%LINK-5-CHANGED: Interface Serial0/0/1, changed state to up

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

MEDELLIN1(config-if)#int s0/1/0
MEDELLIN1(config-if)#ip address 172.29.6.9 255.255.255.252
MEDELLIN1(config-if)#clock rate 4000000
MEDELLIN1(config-if)#no shutdown

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

```
MEDELLIN1(config-if)#int s0/1/1
MEDELLIN1(config-if)#ip address 172.29.6.13 255.255.255.252
MEDELLIN1(config-if)#clock rate 4000000
MEDELLIN1(config-if)#no shutdown
```

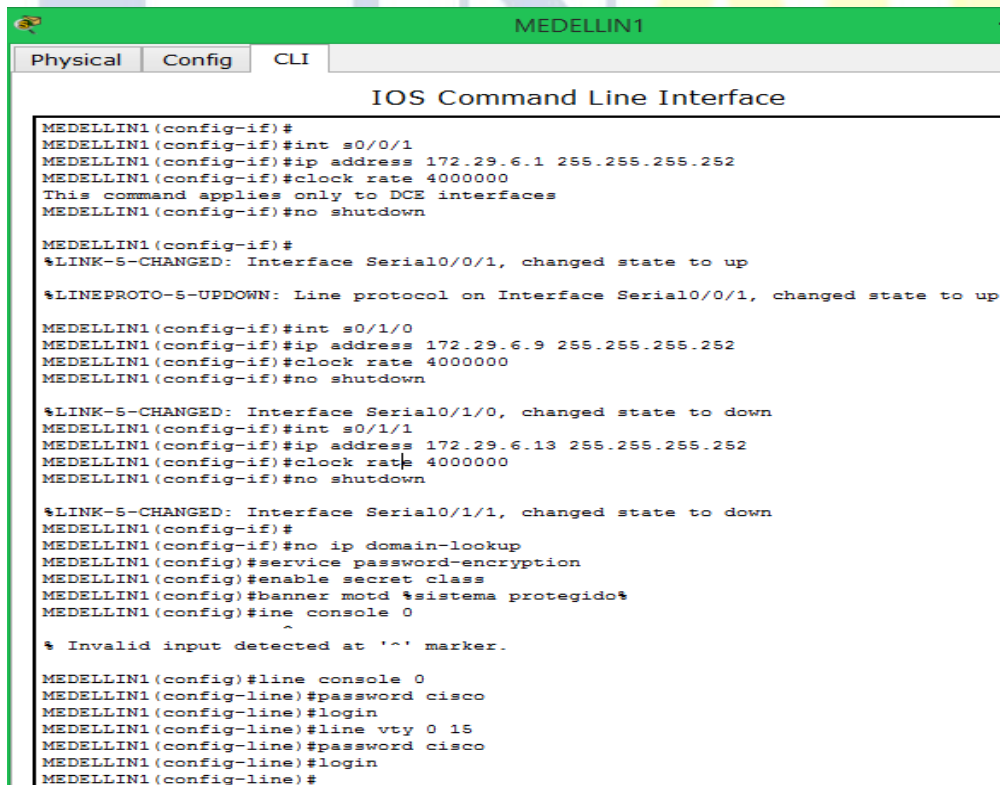
%LINK-5-CHANGED: Interface Serial0/1/1, changed state to down

```
MEDELLIN1(config-if)#
MEDELLIN1(config-if)#no ip domain-lookup
MEDELLIN1(config)#service password-encryption
MEDELLIN1(config)#enable secret class
MEDELLIN1(config)#banner motd %sistema protegido%
MEDELLIN1(config)#line console 0
```

^

% Invalid input detected at '^' marker.

```
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)#
```



```
MEDELLIN1
Physical Config CLI
IOS Command Line Interface
MEDELLIN1(config-if)#
MEDELLIN1(config-if)#int s0/0/1
MEDELLIN1(config-if)#ip address 172.29.6.1 255.255.255.252
MEDELLIN1(config-if)#clock rate 4000000
This command applies only to DCE interfaces
MEDELLIN1(config-if)#no shutdown

MEDELLIN1(config-if)#
%LINK-5-CHANGED: Interface Serial0/0/1, changed state to up

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

MEDELLIN1(config-if)#int s0/1/0
MEDELLIN1(config-if)#ip address 172.29.6.9 255.255.255.252
MEDELLIN1(config-if)#clock rate 4000000
MEDELLIN1(config-if)#no shutdown

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

%LINK-5-CHANGED: Interface Serial0/1/1, changed state to down
MEDELLIN1(config-if)#
MEDELLIN1(config-if)#no ip domain-lookup
MEDELLIN1(config)#service password-encryption
MEDELLIN1(config)#enable secret class
MEDELLIN1(config)#banner motd %sistema protegido%
MEDELLIN1(config)#line console 0
^
% Invalid input detected at '^' marker.

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)#
```

Router>enable

Router#config terminal

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

```
Router(config)#hostname MEDELLIN2
MEDELLIN2(config)#int s0/0/0
MEDELLIN2(config-if)#ip address 172.29.6.2 255.255.255.252
MEDELLIN2(config-if)#no shutdown
```

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

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

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

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

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

```
MEDELLIN2(config-if)#int g0/0
MEDELLIN2(config-if)#ip address 172.29.4.1 255.255.255.128
MEDELLIN2(config-if)#no shutdown
```

```
MEDELLIN2(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

```
MEDELLIN2(config-if)#no ip domain-lookup
MEDELLIN2(config)#service password-encryption
MEDELLIN2(config)#enable secret class
MEDELLIN2(config)#banner motd %sistema protegido%
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)#
```



```

MEDELLIN2
Physical Config CLI
IOS Command Line Interface
Router>enable
Router#config terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#hostname MEDELLIN2
MEDELLIN2 (config)#int s0/0/0
MEDELLIN2 (config-if)#ip address 172.29.6.2 255.255.255.252
MEDELLIN2 (config-if)#no shutdown

%LINK-5-CHANGED: Interface Serial0/0/0, changed state to down
MEDELLIN2 (config-if)#int s0/0/1
MEDELLIN2 (config-if)#ip address 172.29.6.5 255.255.255.252
MEDELLIN2 (config-if)#clock rate 4000000
This command applies only to DCE interfaces
MEDELLIN2 (config-if)#no shutdown

MEDELLIN2 (config-if)#
%LINK-5-CHANGED: Interface Serial0/0/1, changed state to up

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

MEDELLIN2 (config-if)#int g0/0
MEDELLIN2 (config-if)#ip address 172.29.4.1 255.255.255.128
MEDELLIN2 (config-if)#no shutdown

MEDELLIN2 (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

MEDELLIN2 (config-if)#no ip domain-lookup
MEDELLIN2 (config)#service password-encryption
MEDELLIN2 (config)#enable secret class
MEDELLIN2 (config)#banner motd %sistema protegido%
MEDELLIN2 (config)#line console 0
MEDELLIN2 (config-line)#password cisco
MEDELLIN2 (config-line)#login
MEDELLIN2 (config-line)#line vty 0 15
MEDELLIN2 (config-line)#password cisco
MEDELLIN2 (config-line)#login
MEDELLIN2 (config-line)#

```

```

Router>enable
Router#config terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#hostname MED
Router(config)#hostname MEDELLIN3
MEDELLIN3(config)#int s0/0/0
MEDELLIN3(config-if)#ip address 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)#int s0/0/1
MEDELLIN3(config-if)#ip address 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)#  
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/1, changed state to up
```

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

```
%LINK-5-CHANGED: Interface Serial0/1/0, changed state to down  
MEDELLIN3(config-if)#int g0/0  
MEDELLIN3(config-if)#ip address 172.29.4.129 255.255.255.128  
MEDELLIN3(config-if)#no shutdown
```

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

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

```
MEDELLIN3(config-if)#no ip domain-lookup  
MEDELLIN3(config)#service password-encryption  
MEDELLIN3(config)#enable secret class  
MEDELLIN3(config)#banner motd %sistema protegido%  
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)#
```

```

MEDELLIN3
Physical Config CLI
IOS Command Line Interface
%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)#int s0/0/1
MEDELLIN3(config-if)#ip address 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)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/1, changed state to up
MEDELLIN3(config-if)#int s0/1/0
MEDELLIN3(config-if)#ip address 172.29.6.6 255.255.255.252
MEDELLIN3(config-if)#no shutdown
%LINK-5-CHANGED: Interface Serial0/1/0, changed state to down
MEDELLIN3(config-if)#int g0/0
MEDELLIN3(config-if)#ip address 172.29.4.129 255.255.255.128
MEDELLIN3(config-if)#no shutdown
MEDELLIN3(config-if)#
%LINK-5-CHANGED: Interface GigabitEthernet0/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0, changed state to up
MEDELLIN3(config-if)#no ip domain-lookup
MEDELLIN3(config)#service password-encryption
MEDELLIN3(config)#enable secret class
MEDELLIN3(config)#banner motd %sistema protegido%
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)#

```

Router>ENABLE

Router#config terminal

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

Router(config)#hostname BOGOTA1

BOGOTA1(config)#int s0/0/0

BOGOTA1(config-if)#ip address 209.17.220.6 255.255.255.252

BOGOTA1(config-if)#no shutdown

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

BOGOTA1(config-if)#int s0/0/1

BOGOTA1(config-if)#ip address 172.29.3.9 255.255.255.252

BOGOTA1(config-if)#clock rate 4000000

This command applies only to DCE interfaces

BOGOTA1(config-if)#no shutdown

BOGOTA1(config-if)#

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

BOGOTA1(config-if)#

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

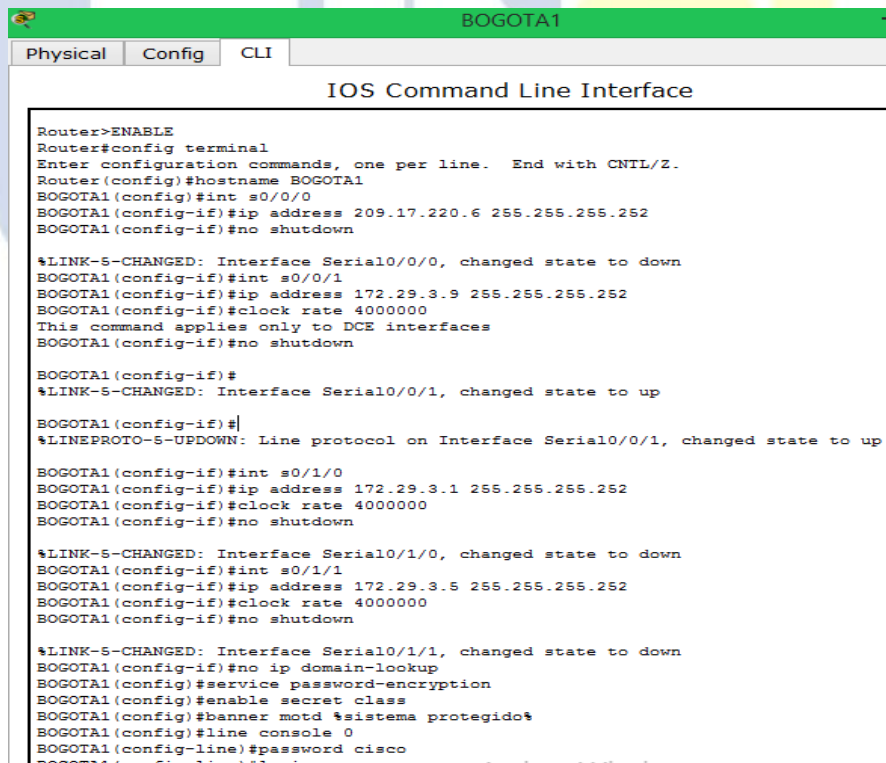
```
BOGOTA1(config-if)#int s0/1/0
BOGOTA1(config-if)#ip address 172.29.3.1 255.255.255.252
BOGOTA1(config-if)#clock rate 4000000
BOGOTA1(config-if)#no shutdown
```

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

```
BOGOTA1(config-if)#int s0/1/1
BOGOTA1(config-if)#ip address 172.29.3.5 255.255.255.252
BOGOTA1(config-if)#clock rate 4000000
BOGOTA1(config-if)#no shutdown
```

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

```
BOGOTA1(config-if)#no ip domain-lookup
BOGOTA1(config)#service password-encryption
BOGOTA1(config)#enable secret class
BOGOTA1(config)#banner motd %sistema protegido%
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)#
```



```

BOGOTA1
Physical Config CLI
IOS Command Line Interface

Router>ENABLE
Router#config terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#hostname BOGOTA1
BOGOTA1(config)#int s0/0/0
BOGOTA1(config-if)#ip address 209.17.220.6 255.255.255.252
BOGOTA1(config-if)#no shutdown

%LINK-5-CHANGED: Interface Serial0/0/0, changed state to down
BOGOTA1(config-if)#int s0/0/1
BOGOTA1(config-if)#ip address 172.29.3.9 255.255.255.252
BOGOTA1(config-if)#clock rate 4000000
This command applies only to DCE interfaces
BOGOTA1(config-if)#no shutdown

BOGOTA1(config-if)#
%LINK-5-CHANGED: Interface Serial0/0/1, changed state to up

BOGOTA1(config-if)#|
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/1, changed state to up

BOGOTA1(config-if)#int s0/1/0
BOGOTA1(config-if)#ip address 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)#int s0/1/1
BOGOTA1(config-if)#ip address 172.29.3.5 255.255.255.252
BOGOTA1(config-if)#clock rate 4000000
BOGOTA1(config-if)#no shutdown

%LINK-5-CHANGED: Interface Serial0/1/1, changed state to down
BOGOTA1(config-if)#no ip domain-lookup
BOGOTA1(config)#service password-encryption
BOGOTA1(config)#enable secret class
BOGOTA1(config)#banner motd %sistema protegido%
BOGOTA1(config)#line console 0
BOGOTA1(config-line)#password cisco
BOGOTA1(config-line)#login

```

```
Router>enable
Router#config terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#hostname BOGOTA2
BOGOTA2(config)#int s0/0/0
BOGOTA2(config-if)#ip address 172.29.3.10 255.255.255.252
BOGOTA2(config-if)#no shutdown

%LINK-5-CHANGED: Interface Serial0/0/0, changed state to down
BOGOTA2(config-if)#int s0/0/1
BOGOTA2(config-if)#ip address 172.29.3.13 255.255.255.252
BOGOTA2(config-if)#clock rate 4000000
This command applies only to DCE interfaces
BOGOTA2(config-if)#no shutdown

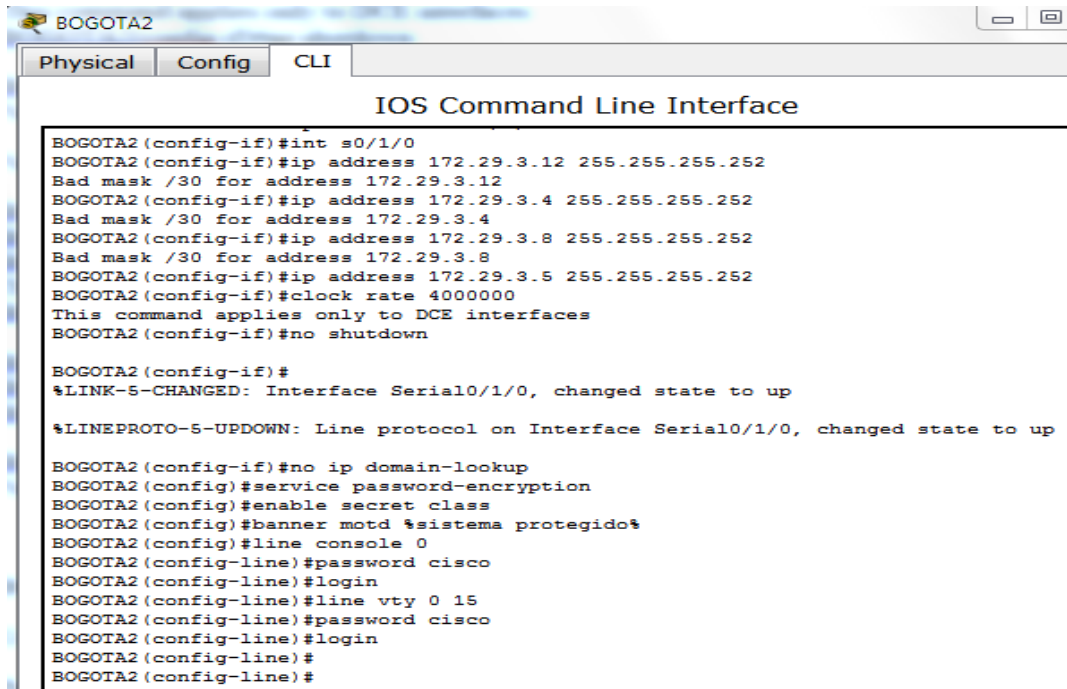
BOGOTA2(config-if)#
%LINK-5-CHANGED: Interface Serial0/0/1, changed state to up

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

BOGOTA2(config-if)#int s0/0/1
BOGOTA2(config-if)#ip address 172.29.3.5 255.255.255.252
BOGOTA2(config-if)#clock rate 4000000
This command applies only to DCE interfaces
BOGOTA2(config-if)#no shutdown

BOGOTA2(config-if)#int g0/0
BOGOTA2(config-if)#ip address 172.29.1.1 255.255.255.0
BOGOTA2(config-if)#no shutdown

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



```

BOGOTA2
Physical Config CLI
IOS Command Line Interface
BOGOTA2(config-if)#int s0/1/0
BOGOTA2(config-if)#ip address 172.29.3.12 255.255.255.252
Bad mask /30 for address 172.29.3.12
BOGOTA2(config-if)#ip address 172.29.3.4 255.255.255.252
Bad mask /30 for address 172.29.3.4
BOGOTA2(config-if)#ip address 172.29.3.8 255.255.255.252
Bad mask /30 for address 172.29.3.8
BOGOTA2(config-if)#ip address 172.29.3.5 255.255.255.252
BOGOTA2(config-if)#clock rate 4000000
This command applies only to DCE interfaces
BOGOTA2(config-if)#no shutdown

BOGOTA2(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

BOGOTA2(config-if)#no ip domain-lookup
BOGOTA2(config)#service password-encryption
BOGOTA2(config)#enable secret class
BOGOTA2(config)#banner motd %sistema protegido%
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)#
BOGOTA2(config-line)#

```

BOGOTA3

User Access Verification

Password:

BOGOTA3>enable

Password:

BOGOTA3#config t

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

BOGOTA3(config)#hostname BOGOTA3

BOGOTA3(config)#int s0/0/0

BOGOTA3(config-if)#ip address 172.29.3.2 255.255.255.252

BOGOTA3(config-if)#no shutdown

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

BOGOTA3(config-if)#ip address 172.29.3.6 255.255.255.252

BOGOTA3(config-if)#no shutdown

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

BOGOTA3(config-if)#ip address 172.29.3.14 255.255.255.252

BOGOTA3(config-if)#no shutdown

BOGOTA3(config-if)#int g0/0

BOGOTA3(config-if)#ip address 172.29.0.1 255.255.255.0

BOGOTA3(config-if)#no shutdown

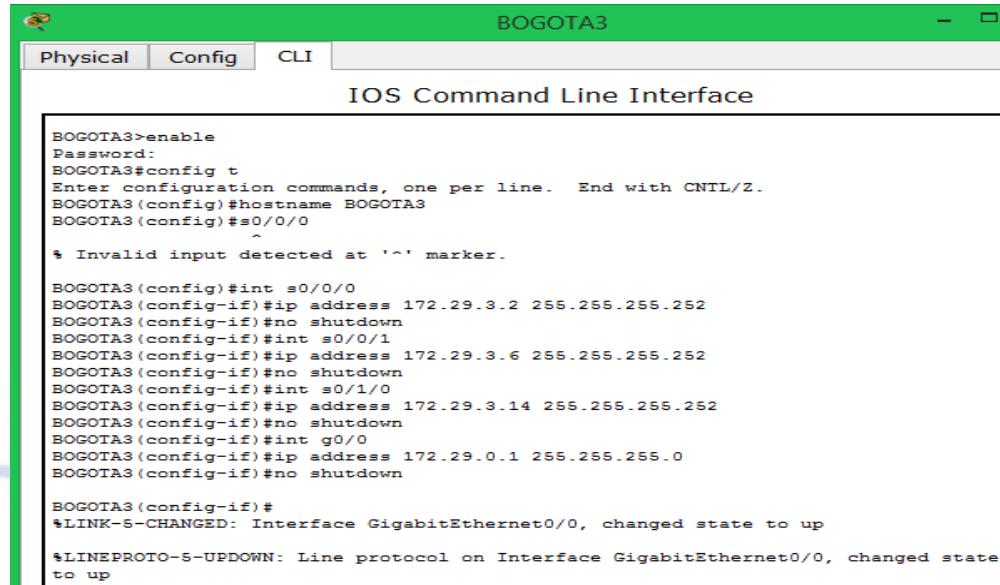
BOGOTA3(config-if)#

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

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

BOGOTA3#

%SYS-5-CONFIG\_I: Configured from console by console



```

BOGOTA3>enable
Password:
BOGOTA3#config t
Enter configuration commands, one per line. End with CNTL/Z.
BOGOTA3 (config)#hostname BOGOTA3
BOGOTA3 (config)#s0/0/0
^
% Invalid input detected at '^' marker.

BOGOTA3 (config)#int s0/0/0
BOGOTA3 (config-if)#ip address 172.29.3.2 255.255.255.252
BOGOTA3 (config-if)#no shutdown
BOGOTA3 (config-if)#int s0/0/1
BOGOTA3 (config-if)#ip address 172.29.3.6 255.255.255.252
BOGOTA3 (config-if)#no shutdown
BOGOTA3 (config-if)#int s0/1/0
BOGOTA3 (config-if)#ip address 172.29.3.14 255.255.255.252
BOGOTA3 (config-if)#no shutdown
BOGOTA3 (config-if)#int g0/0
BOGOTA3 (config-if)#ip address 172.29.0.1 255.255.255.0
BOGOTA3 (config-if)#no shutdown

BOGOTA3 (config-if)#
%LINK-S-CHANGED: Interface GigabitEthernet0/0, changed state to up

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

## 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.

MEDELLIN1>enable

Password:

MEDELLIN1#config terminal

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
Physical Config CLI
IOS Command Line Interface
sistema protegido
User Access Verification
Password:
MEDELLIN1>enable
Password:
MEDELLIN1#config terminal
Enter configuration commands, one per line. End with CNTL/Z.
MEDELLIN1(config)#router rip
MEDELLIN1(config-router)#version 2
MEDELLIN1(config-router)#no auto-summary
MEDELLIN1(config-router)#do show ip route connected |
C 172.29.6.0/30 is directly connected, Serial0/0/1
C 172.29.6.8/30 is directly connected, Serial0/1/0
C 172.29.6.12/30 is directly connected, Serial0/1/1
C 209.17.220.0/30 is directly connected, Serial0/0/0
MEDELLIN1(config-router)#network 172.29.6.0
MEDELLIN1(config-router)#network 172.29.6.8
MEDELLIN1(config-router)#network 172.29.6.12
MEDELLIN1(config-router)#passive-interface s0/0/0
MEDELLIN1(config-router)#

```

```

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

```



```

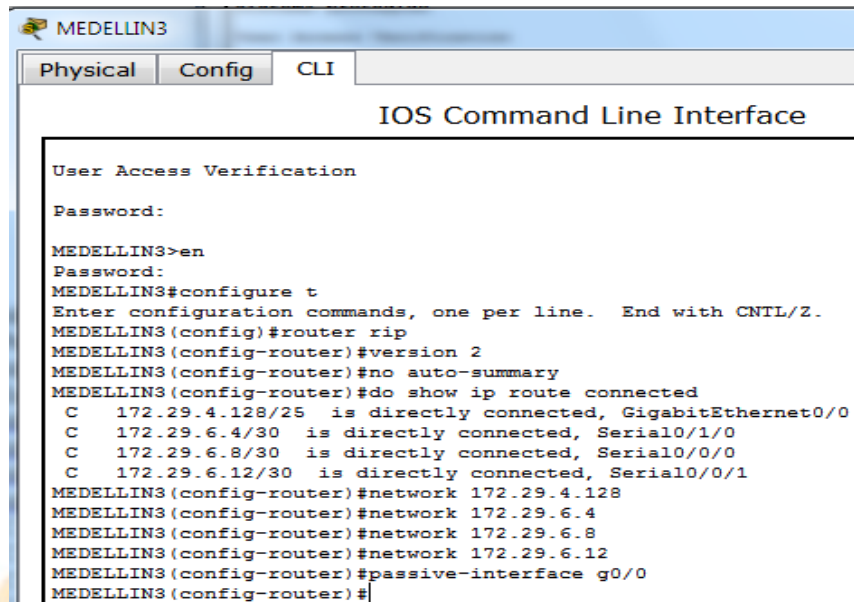
MEDELLIN2
Physical Config CLI
IOS Command Line Interface
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/1, char
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0, char
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/1, char
sistema protegido
User Access Verification
Password:
MEDELLIN2>enable
Password:
MEDELLIN2#conf t
Enter configuration commands, one per line. End with CNTL/Z.
MEDELLIN2 (config)#router rip
MEDELLIN2 (config-router)#version 2
MEDELLIN2 (config-router)#no auto-summary
MEDELLIN2 (config-router)#do show ip route connected
C 172.29.4.0/25 is directly connected, GigabitEthernet0/0
C 172.29.6.0/30 is directly connected, Serial0/0/0
C 172.29.6.4/30 is directly connected, Serial0/0/1
MEDELLIN2 (config-router)#

```

```

MEDELLIN3>en
Password:
MEDELLIN3#configure t
Enter configuration commands, one per line. End with CNTL/Z.
MEDELLIN3(config)#router rip
MEDELLIN3(config-router)#version 2
MEDELLIN3(config-router)#no auto-summary
MEDELLIN3(config-router)#do show ip route connected
C 172.29.4.128/25 is directly connected, GigabitEthernet0/0
C 172.29.6.4/30 is directly connected, Serial0/1/0
C 172.29.6.8/30 is directly connected, Serial0/0/0
C 172.29.6.12/30 is directly connected, Serial0/0/1
MEDELLIN3(config-router)#network 172.29.4.128
MEDELLIN3(config-router)#network 172.29.6.4
MEDELLIN3(config-router)#network 172.29.6.8
MEDELLIN3(config-router)#network 172.29.6.12
MEDELLIN3(config-router)#passive-interface g0/0
MEDELLIN3(config-router)#

```



```

MEDELLIN3
Physical Config CLI
IOS Command Line Interface

User Access Verification

Password:

MEDELLIN3>en
Password:
MEDELLIN3#configure t
Enter configuration commands, one per line. End with CNTL/Z.
MEDELLIN3 (config)#router rip
MEDELLIN3 (config-router)#version 2
MEDELLIN3 (config-router)#no auto-summary
MEDELLIN3 (config-router)#do show ip route connected
C 172.29.4.128/25 is directly connected, GigabitEthernet0/0
C 172.29.6.4/30 is directly connected, Serial0/1/0
C 172.29.6.8/30 is directly connected, Serial0/0/0
C 172.29.6.12/30 is directly connected, Serial0/0/1
MEDELLIN3 (config-router)#network 172.29.4.128
MEDELLIN3 (config-router)#network 172.29.6.4
MEDELLIN3 (config-router)#network 172.29.6.8
MEDELLIN3 (config-router)#network 172.29.6.12
MEDELLIN3 (config-router)#passive-interface g0/0
MEDELLIN3 (config-router)#

```

BOGOTA1>enable

Password:

BOGOTA1#conf t

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

BOGOTA1(config)#router rip

BOGOTA1(config-router)#version 2

BOGOTA1(config-router)#no auto-summary

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

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

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

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

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

BOGOTA1(config-router)#network 172.29.3.0

BOGOTA1(config-router)#network 172.29.3.4

BOGOTA1(config-router)#network 172.29.3.8

BOGOTA1(config-router)#passive-interface s0/0/0

BOGOTA1(config-router)#

```

BOGOTA1
Physical Config CLI
IOS Command Line Interface
-----
sistema protegido
User Access Verification
Password:
BOGOTA1>enable
Password:
BOGOTA1#conf t
Enter configuration commands, one per line. End with CNTL/Z.
BOGOTA1(config)#router rip
BOGOTA1(config-router)#version 2
BOGOTA1(config-router)#no auto-summary
BOGOTA1(config-router)#do show ip route connected
C 172.29.3.0/30 is directly connected, Serial0/1/0
C 172.29.3.4/30 is directly connected, Serial0/1/1
C 172.29.3.8/30 is directly connected, Serial0/0/1
C 209.17.220.4/30 is directly connected, Serial0/0/0
BOGOTA1(config-router)#network 172.29.3.0
BOGOTA1(config-router)#network 172.29.3.4
BOGOTA1(config-router)#network 172.29.3.8|
BOGOTA1(config-router)#passive-interface s0/0/0
BOGOTA1(config-router)#
    
```

BOGOTA2>en

Password:

BOGOTA2#conf t

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

BOGOTA2(config)#router rip

BOGOTA2(config-router)#version 2

BOGOTA2(config-router)#no auto-summary

BOGOTA2(config-router)#do show ip route connected

C 172.29.1.0/24 is directly connected, GigabitEthernet0/0

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

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

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

BOGOTA2(config-router)#network 172.29.1.0

BOGOTA2(config-router)#network 172.29.3.8

BOGOTA2(config-router)#network 172.29.3.12

BOGOTA2(config-router)#passive-interface g0/0

BOGOTA2(config-router)#

```

BOGOTA2
Physical Config CLI
IOS Command Line Interface
-----
sistema protegido
User Access Verification
Password:
BOGOTA2>en
Password:
BOGOTA2#conf t
Enter configuration commands, one per line. End with CNTL/Z.
BOGOTA2(config)#router rip
BOGOTA2(config-router)#version 2
BOGOTA2(config-router)#no auto-summary
BOGOTA2(config-router)#do show ip route connected
C 172.29.1.0/24 is directly connected, GigabitEthernet0/0
C 172.29.3.4/30 is directly connected, Serial0/1/0
C 172.29.3.8/30 is directly connected, Serial0/0/0
C 172.29.3.12/30 is directly connected, Serial0/0/1
BOGOTA2(config-router)#network 172.29.1.0
BOGOTA2(config-router)#network 172.29.3.8
BOGOTA2(config-router)#network 172.29.3.12
BOGOTA2(config-router)#passive-interface g0/0
BOGOTA2(config-router)#

```

```

BOGOTA3>en
Password:
BOGOTA3#conf t
Enter configuration commands, one per line. End with CNTL/Z.
BOGOTA3(config)#router rip
BOGOTA3(config-router)#version 2
BOGOTA3(config-router)#no auto-summary
BOGOTA3(config-router)#do show ip route connected
C 172.29.0.0/24 is directly connected, GigabitEthernet0/0
C 172.29.3.0/30 is directly connected, Serial0/0/0
C 172.29.3.4/30 is directly connected, Serial0/0/1
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 g0/0
BOGOTA3(config-router)#

```

```

BOGOTA3
Physical Config CLI
IOS Command Line Interface
-----
sistema protegido
User Access Verification
Password:
BOGOTA3>en
Password:
BOGOTA3#conf t
Enter configuration commands, one per line. End with CNTL/Z.
BOGOTA3(config)#router rip
BOGOTA3(config-router)#version 2
BOGOTA3(config-router)#no auto-summary
BOGOTA3(config-router)#do show ip route connected
C 172.29.0.0/24 is directly connected, GigabitEthernet0/0
C 172.29.3.0/30 is directly connected, Serial0/0/0
C 172.29.3.4/30 is directly connected, Serial0/0/1
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 g0/0
BOGOTA3(config-router)#
    
```

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

#### Configuración de enrutamiento

```

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

```

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

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

Para comprobar las rutas estaticas dirigidas, en el router ISP, colocamos el comando #show ip route, donde se muestra

```

ISP
-----
Physical Config CLI
IOS Command Line Interface
User Access Verification
Password:
ISP>en
Password:
ISP#show ip route
Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP
        D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
        N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
        E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
        i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
        * - candidate default, U - per-user static route, o - ODR
        P - periodic downloaded static route

Gateway of last resort is not set

    209.17.220.0/24 is variably subnetted, 4 subnets, 2 masks
C       209.17.220.0/30 is directly connected, Serial0/0/0
L       209.17.220.1/32 is directly connected, Serial0/0/0
C       209.17.220.4/30 is directly connected, Serial0/0/1
L       209.17.220.5/32 is directly connected, Serial0/0/1
ISP#
    
```

Demostrando la conexión entre ISP y las dos ciudades.

Para poder llegar a las redes internas de cada una de las ciudades es necesario crear rutas estaticas para que el IPS pueda llegar a estas redes.

## Parte 2: Tabla de Enrutamiento.

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

TABLA DE ENRUTAMIENTO

BOGOTA																
172.29.0.0/24	172	29	0	0	0	0	0	0	0	0	0	0	0	0	0	0
172.29.1.0/24	172	29	0	0	0	0	0	0	0	0	1	0	0	0	0	0
172.29.3.12/3	172	29	0	0	0	0	0	0	1	1	0	0	0	0	1	1
172.29.3.8/30	172	29	0	0	0	0	0	0	1	1	0	0	0	0	1	0
172.29.3.0/30	172	29	0	0	0	0	0	0	1	1	0	0	0	0	0	0
172.29.3.4/30	172	29	0	0	0	0	0	0	1	1	0	0	0	0	0	1
172.29.0.0/22	172	29	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MEDELLIN																
172.29.4.0/25	172	29	0	0	0	0	0	1	0	0	0	0	0	0	0	0
172.29.4.128/	172	29	0	0	0	0	0	1	0	0	1	0	0	0	0	0
172.29.6.4/30	172	29	0	0	0	0	0	1	1	0	0	0	0	0	1	0
172.29.6.8/30	172	29	0	0	0	0	0	1	1	0	0	0	0	0	1	0
172.29.6.12/3	172	29	0	0	0	0	0	1	1	0	0	0	0	0	1	1
172.29.6.0/30	172	29	0	0	0	0	0	1	1	0	0	0	0	0	0	0
172.29.4.0/22	172	29	0	0	0	0	0	1	1	0	0	0	0	0	0	0

Se configura el ISP de acuerdo a la sumarizacion de las IP y las mascaras:

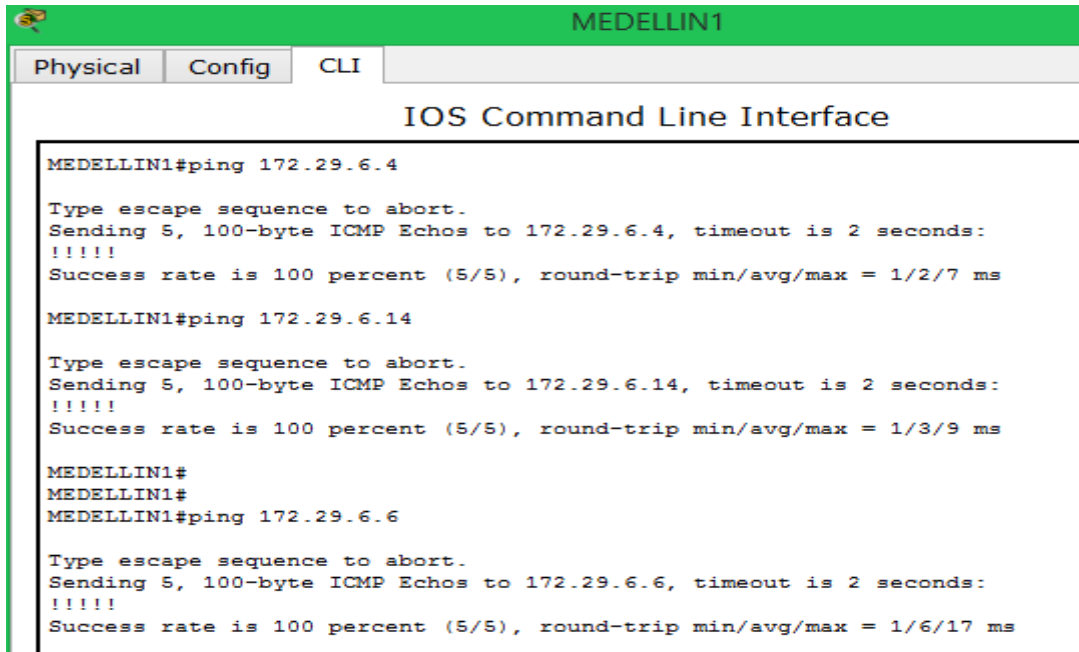
```

ISP>en
Password:
ISP#configure terminal
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)#
```

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

Se realiza PING a cada uno de los routers de la red, para verificar su comunicacion:



```
MEDELLIN1
Physical Config CLI
IOS Command Line Interface

MEDELLIN1#ping 172.29.6.4
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 172.29.6.4, timeout is 2 seconds:
!!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 1/2/7 ms

MEDELLIN1#ping 172.29.6.14
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 172.29.6.14, timeout is 2 seconds:
!!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 1/3/9 ms

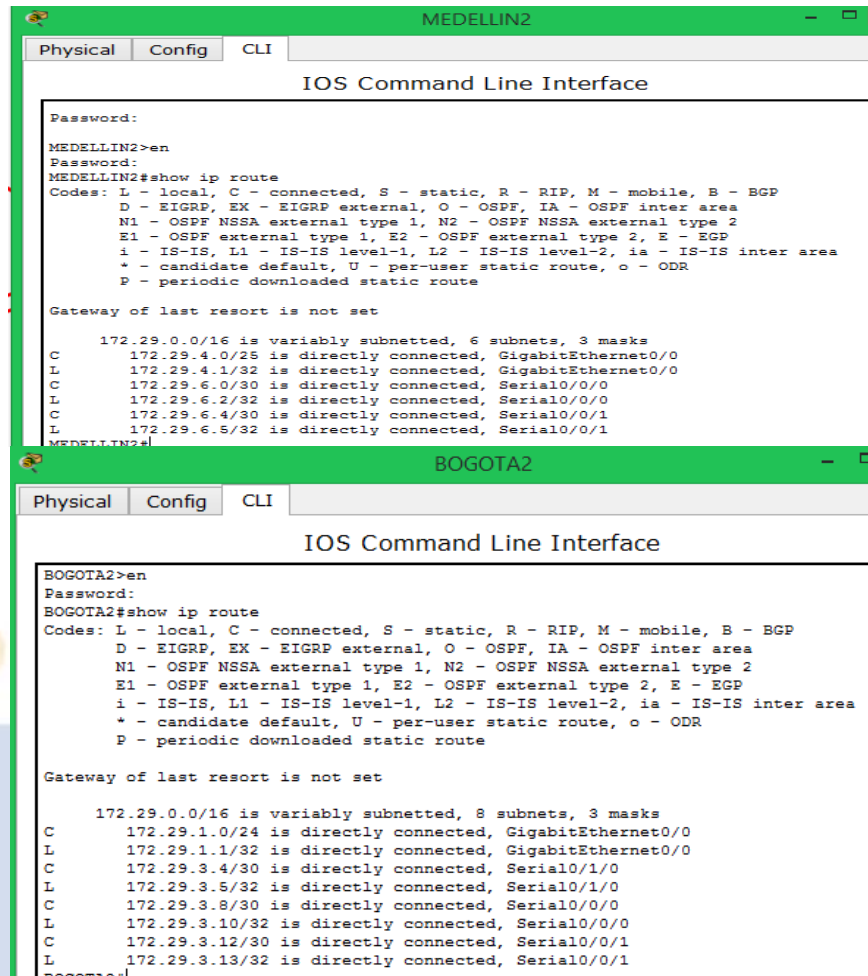
MEDELLIN1#
MEDELLIN1#
MEDELLIN1#ping 172.29.6.6
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 172.29.6.6, timeout is 2 seconds:
!!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 1/6/17 ms
```

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

Las dos subredes son similares por tal motivo tienen una igualdad de carga de equipos y routers.

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

Se observa el balanceo de redes que hay en las dos ciudades:



```

MEDELLIN2
-----
Physical Config CLI
IOS Command Line Interface
Password:
MEDELLIN2>en
Password:
MEDELLIN2#show ip route
Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP
D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
* - candidate default, U - per-user static route, o - ODR
P - periodic downloaded static route

Gateway of last resort is not set

172.29.0.0/16 is variably subnetted, 6 subnets, 3 masks
C 172.29.4.0/25 is directly connected, GigabitEthernet0/0
L 172.29.4.1/32 is directly connected, GigabitEthernet0/0
C 172.29.6.0/30 is directly connected, Serial0/0/0
L 172.29.6.2/32 is directly connected, Serial0/0/0
C 172.29.6.4/30 is directly connected, Serial0/0/1
L 172.29.6.5/32 is directly connected, Serial0/0/1

BOGOTA2
-----
Physical Config CLI
IOS Command Line Interface
BOGOTA2>en
Password:
BOGOTA2#show ip route
Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP
D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
* - candidate default, U - per-user static route, o - ODR
P - periodic downloaded static route

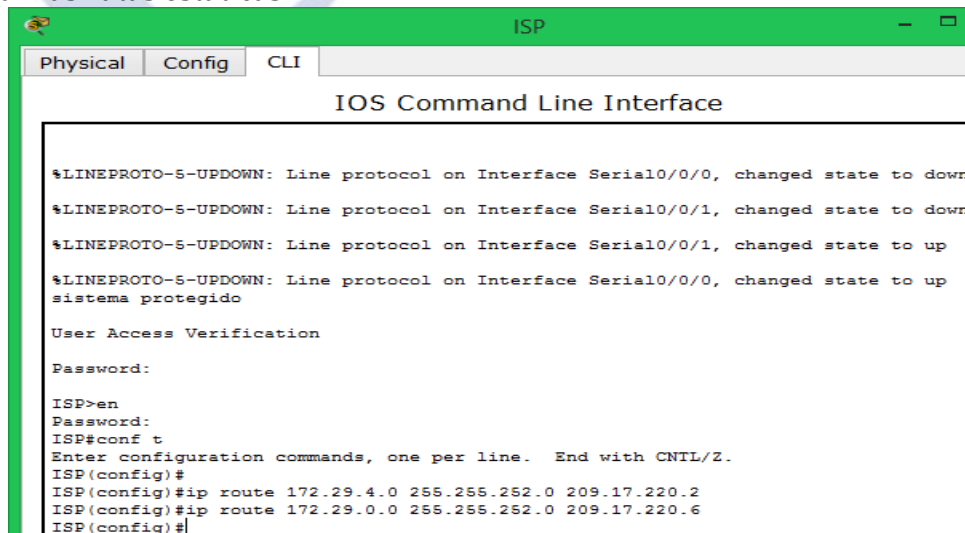
Gateway of last resort is not set

172.29.0.0/16 is variably subnetted, 8 subnets, 3 masks
C 172.29.1.0/24 is directly connected, GigabitEthernet0/0
L 172.29.1.1/32 is directly connected, GigabitEthernet0/0
C 172.29.3.4/30 is directly connected, Serial0/1/0
L 172.29.3.5/32 is directly connected, Serial0/1/0
C 172.29.3.8/30 is directly connected, Serial0/0/0
L 172.29.3.10/32 is directly connected, Serial0/0/0
C 172.29.3.12/30 is directly connected, Serial0/0/1
L 172.29.3.13/32 is directly connected, Serial0/0/1

```

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

Se observan las rutas estáticas:



```

ISP
-----
Physical Config CLI
IOS Command Line Interface

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

User Access Verification

Password:
ISP>en
Password:
ISP#conf t
Enter configuration commands, one per line. End with CNTL/Z.
ISP(config)#
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 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
<b>Bogota1</b>	SERIAL0/0/1; SERIAL0/1/0; SERIAL0/1/1
<b>Bogota2</b>	SERIAL0/0/0; SERIAL0/0/1
<b>Bogota3</b>	SERIAL0/0/0; SERIAL0/0/1; SERIAL0/1/0
<b>Medellín1</b>	SERIAL0/0/0; SERIAL0/0/1; SERIAL0/1/1
<b>Medellín2</b>	SERIAL0/0/0; SERIAL0/0/1
<b>Medellín3</b>	SERIAL0/0/0; SERIAL0/0/1; SERIAL0/1/0
<b>ISP</b>	No lo requiere

Estas son las interfaces que no se deben deshabilitar y que por tal motivo ya se realizó al momento de la configuración del 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.

Ya se llevó acabo en la configuración de RIP.

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.

Ya se llevó acabo en la configuración de RIP.

### Parte 5: Configurar encapsulamiento y autenticación PPP.

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

```
MEDELLIN1>en
Password:
MEDELLIN1#username ISP password cisco
MEDELLIN1#conf t
Enter configuration commands, one per line. End with CNTL/Z.
MEDELLIN1(config)#username ISP password cisco
MEDELLIN1(config)#int s0/0/0
```

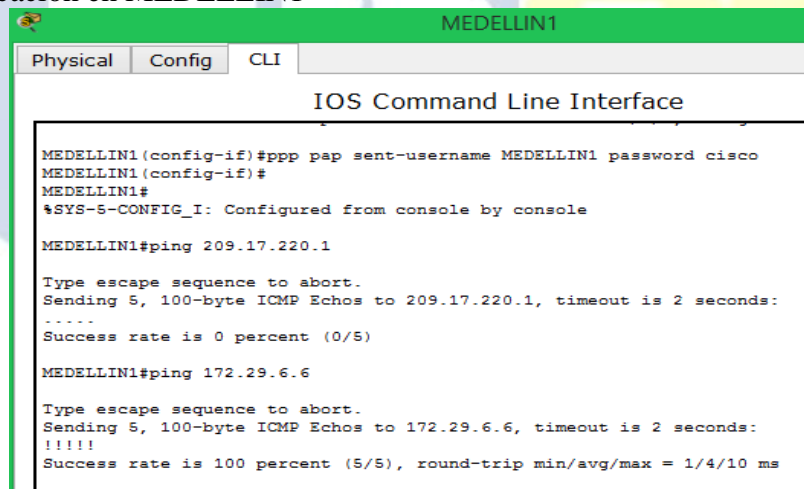
```
MEDELLIN1(config-if)#encapsulation ppp
MEDELLIN1(config-if)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0, changed state to down
```

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

```
ISP>en
Password:
ISP#en
ISP#conf t
Enter configuration commands, one per line. End with CNTL/Z.
ISP(config)#username MEDELLIN1 password cisco
ISP(config)#int s0/0/0
ISP(config-if)#encapsulation ppp
ISP(config-if)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0, changed state to down
```

```
ISP(config-if)#ppp authentication pap
ISP(config-if)#ppp pap sent-username ISP password cisco
ISP(config-if)#
```

Se hace la verificación en MEDELLIN1



```
MEDELLIN1
Physical Config CLI
IOS Command Line Interface
MEDELLIN1(config-if)#ppp pap sent-username MEDELLIN1 password cisco
MEDELLIN1(config-if)#
MEDELLIN1#
%SYS-5-CONFIG_I: Configured from console by console
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 0 percent (0/5)
MEDELLIN1#ping 172.29.6.6
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 172.29.6.6, timeout is 2 seconds:
!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 1/4/10 ms
```

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

```
ISP>enable
Password:
```

```
ISP#username ISP password cisco
ISP#conf t
Enter configuration commands, one per line. End with CNTL/Z.
ISP(config)#username ISP password cisco
ISP(config)#username BOGOTA1 password cisco
ISP(config)#int s0/0/1
ISP(config-if)#encapsulation ppp
ISP(config-if)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/1, changed state to down
ISP(config-if)#ppp authentication chap
ISP(config-if)#
```

```
BOGOTA1>enable
Password:
BOGOTA1#conf t
Enter configuration commands, one per line. End with CNTL/Z.
BOGOTA1(config)#username ISP password cisco
BOGOTA1(config)#int s0/0/0
BOGOTA1(config-if)#encapsulation ppp
BOGOTA1(config-if)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0, changed state to down

BOGOTA1(config-if)#ppp authentication chap
BOGOTA1(config-if)#
```

## 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.

```
MEDELLIN1>ena
Password:
MEDELLIN1#conf t
Enter configuration commands, one per line. End with CNTL/Z.
MEDELLIN1(config)#p nat inside source list 1 interface s0/0/0 overload
% Ambiguous command: "p nat inside source list 1 interface s0/0/0 overload "
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)#
```

```
BOGOTA1>ena
Password:
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)#
```

### 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.

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

MEDELLIN3>ena

Password:

MEDELLIN3#conf t

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

MEDELLIN3(config)#ip dhcp excluded-address 172.29.4.129 172.29.4.133

MEDELLIN3(config)#ip dhcp excluded-address 172.29.4.1 172.29.4.5

MEDELLIN3(config)#ip dhcp pool MEDELLIN3

MEDELLIN3(dhcp-config)#network 172.29.4.129 255.255.255.129

172.29.4.129 / 255.255.255.129 is an invalid network.

MEDELLIN3(dhcp-config)#network 172.29.4.129 255.255.255.127

172.29.4.1 / 255.255.255.127 is an invalid network.

MEDELLIN3(dhcp-config)#network 172.29.4.129 255.255.255.128

MEDELLIN3(dhcp-config)#default-router 172.29.4.1

MEDELLIN3(dhcp-config)#default-router 172.29.4.129

MEDELLIN3(dhcp-config)#dns-server 8.8.8.8

MEDELLIN3(dhcp-config)#EXIT

MEDELLIN3(config)#ip dhcp pool MEDELLIN2

MEDELLIN3(dhcp-config)#network 172.29.4.128 255.255.255.128

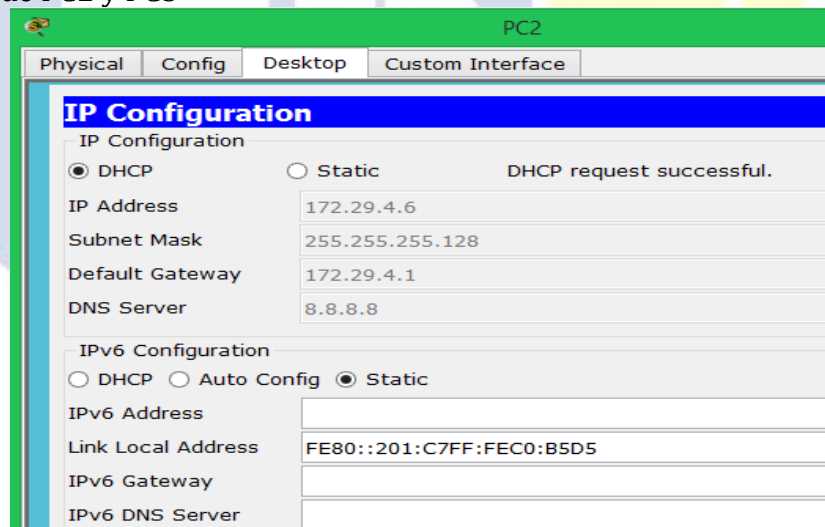
MEDELLIN3(dhcp-config)#default-router 172.29.4.1

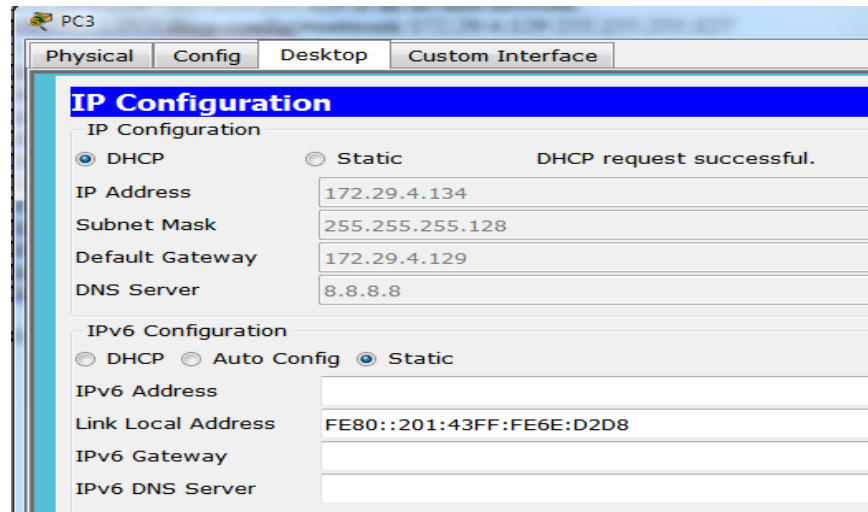
MEDELLIN3(dhcp-config)#dns-server 8.8.8.8

MEDELLIN3(dhcp-config)#EXIT

MEDELLIN3(config)#

### Configuración de PC2 y PC3





b. El router Medellín3 deberá habilitar el paso de los mensajes broadcast hacia la IP del router Medellín2.

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

c. Configurar la red Bogotá2 y Bogotá3 donde el router Medellín2 debe ser el servidor DHCP para ambas redes Lan.

```
BOGOTA2>enable
Password:
BOGOTA2#config terminal
Enter configuration commands, one per line. End with CNTL/Z.
BOGOTA2(config)#ip dhcp excluded-address 172.29.1.1 172.29.1.5
BOGOTA2(config)#ip dhcp excluded-address 172.29.1.1 172.29.0.5
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 8.8.8.8
BOGOTA2(dhcp-config)#ip dhcp pool BOGOTA3
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 8.8.8.8
BOGOTA2(dhcp-config)#
```

```
BOGOTA3>enable
```

Password:

BOGOTA3#config t

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

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

BOGOTA3(config)#ip dhcp excluded-address 172.29.0.1 172.29.1.5

BOGOTA3(config)#ip dhcp pool BOGOTA3

BOGOTA3(dhcp-config)#network 172.29.0.0 255.255.255.0

BOGOTA3(dhcp-config)#default-router 172.29.0.1

BOGOTA3(dhcp-config)#dns-server 8.8.8.8

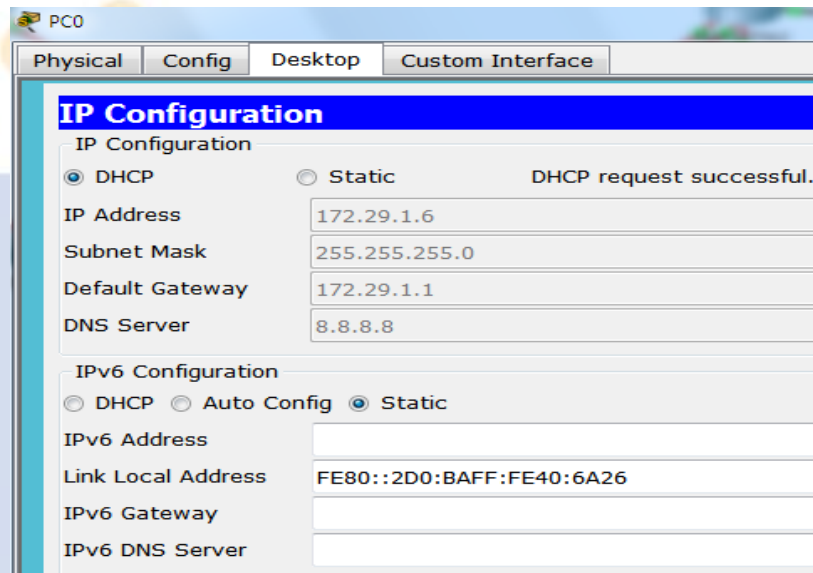
BOGOTA3(dhcp-config)#ip dhcp pool BOGOTA2

BOGOTA3(dhcp-config)#network 172.29.1.1 255.255.255.0

BOGOTA3(dhcp-config)#default-router 172.29.1.1

BOGOTA3(dhcp-config)#dns-server 8.8.8.8

BOGOTA3(dhcp-config)#



d. Configure el router Bogotá1 para que habilite el paso de los mensajes Broadcast hacia la IP del router Bogotá2.

BOGOTA1>enable

Password:

BOGOTA1#config t

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

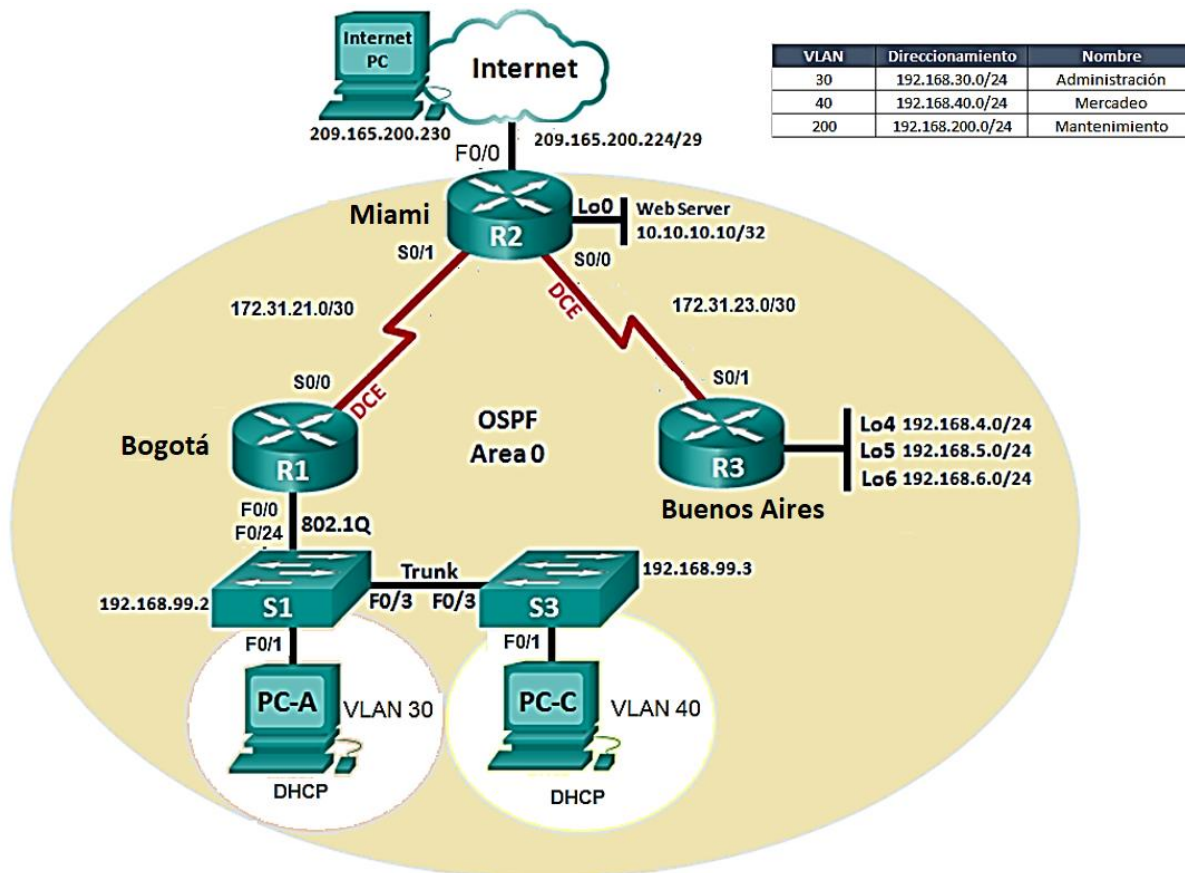
BOGOTA1(config)#int g0/0

BOGOTA1(config-if)#ip helper-address 172.29.3.13

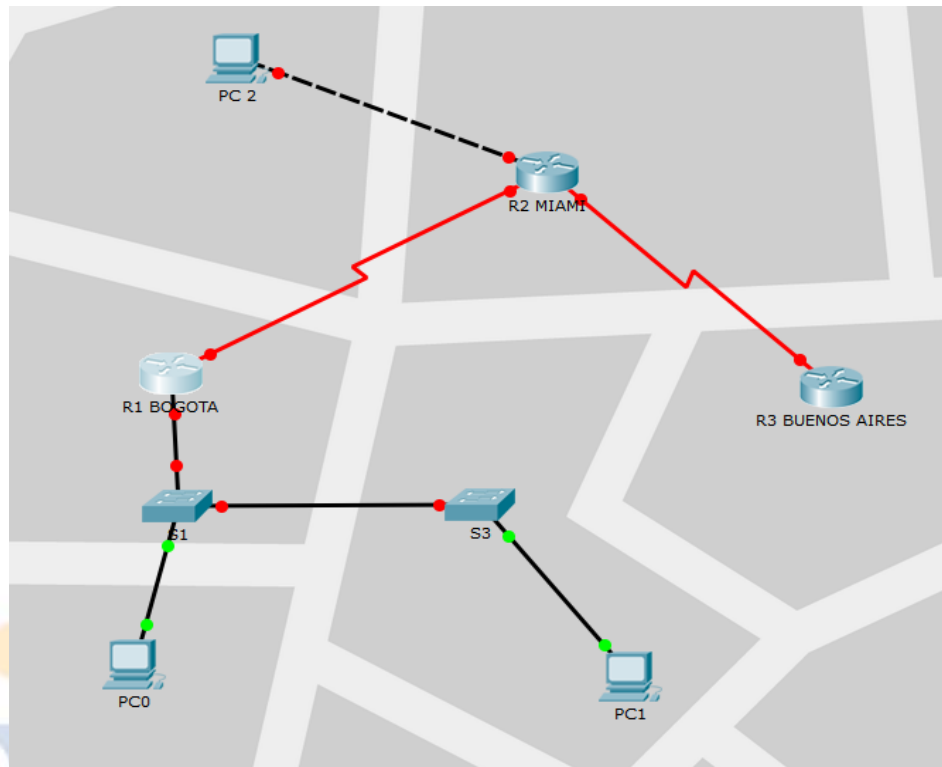
BOGOTA1(config-if)#

## Escenario 2

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







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

```

Router>enable
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#no ip domain-lookup
Router(config)#hostname BOGOTA
BOGOTA(config)#enable secret class
BOGOTA(config)#line con 0
BOGOTA(config-line)#pass cisco
BOGOTA(config-line)#login
BOGOTA(config-line)#line vty 0 4
BOGOTA(config-line)#pass cisco
BOGOTA(config-line)#login
BOGOTA(config-line)#exit
BOGOTA(config)#service pass
BOGOTA(config)#service password-encryption
BOGOTA(config)#banner motd $Prohibido el Acceso! $
BOGOTA(config)#int s0/0/0
BOGOTA(config-if)#description Connection to MIAMI
BOGOTA(config-if)#ip add 172.16.12.1 255.255.255.252
BOGOTA(config-if)#clock rate 128000
BOGOTA(config-if)#no shut

```

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

```
Router>enable
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#no ip domain-lookup
Router(config)#hostname MIAMI
MIAMI(config)#enable secret class
MIAMI(config)#line con 0
MIAMI(config-line)#pass cisco
MIAMI(config-line)#login
MIAMI(config-line)#line vty 0 4
MIAMI(config-line)#pass cisco
MIAMI(config-line)#login
MIAMI(config-line)#exit
MIAMI(config)#service password-encryption
MIAMI(config)#banner motd $Prohibido el Acceso! $
MIAMI(config)#int s0/0/0
MIAMI(config-if)#descrip connection to BOGOTA
MIAMI(config-if)#no shut

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

```
Router>enable
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#no ip domain-lookup
Router(config)#hostname BUENOS AIRES
Router(config)#hostname BUENOSAIRE
BUENOSAIRE(config)#enable secret class
BUENOSAIRE(config)#line con 0
BUENOSAIRE(config-line)#pass cisco
BUENOSAIRE(config-line)#login
BUENOSAIRE(config-line)#line vty 0 4
BUENOSAIRE(config-line)#pass cisco
BUENOSAIRE(config-line)#login
BUENOSAIRE(config-line)#exit
BUENOSAIRE(config)#service pass
BUENOSAIRE(config)#service password-encryption
BUENOSAIRE(config)#banner motd $Prohibido el Acceso! $
BUENOSAIRE(config)#int s0/0/1
BUENOSAIRE(config-if)#description Connection to MIAMI
BUENOSAIRE(config-if)#ip add 172.16.14.1 255.255.255.252
```

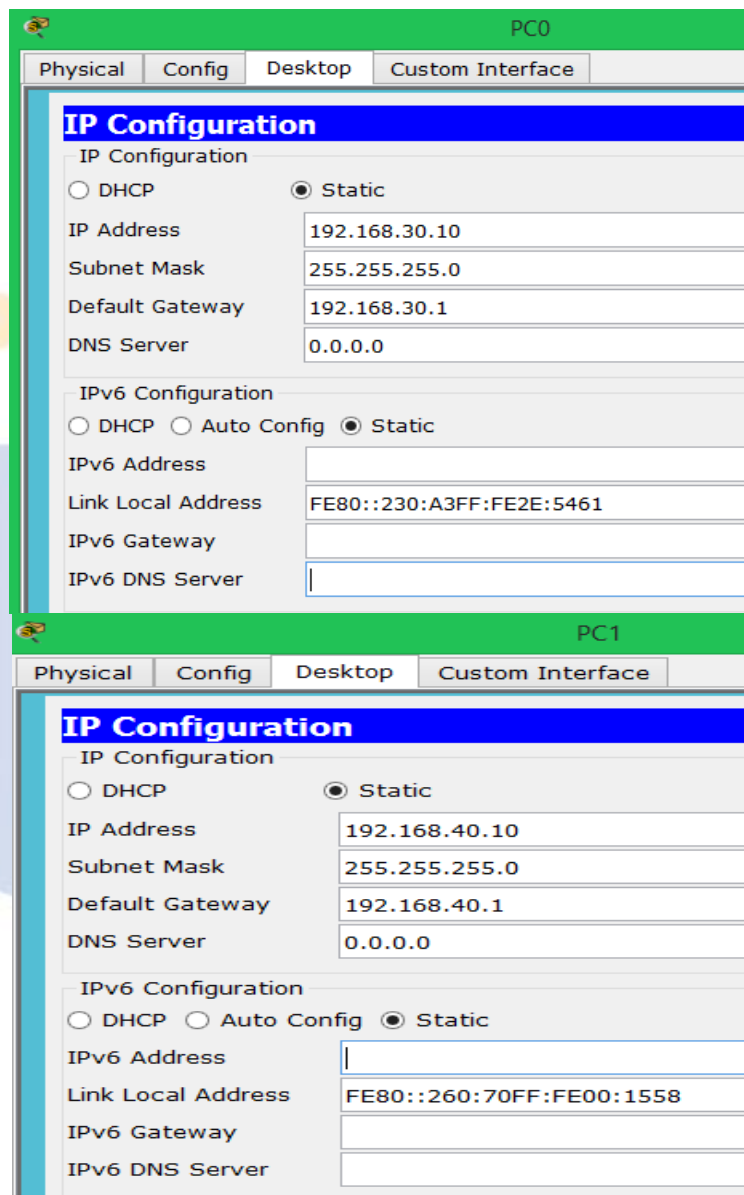
```
BUENOSAIRE(config-if)#clock rate 128000
```

This command applies only to DCE interfaces

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

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

```
BUENOSAIRE(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

### Verificar información de OSPF

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

### Configuraciones OSPF

```
MIAMI>enable
Password:
MIAMI#configure terminal
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 g0/0
MIAMI(config-router)#
```

```
BOGOTA>enable
Password:
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 g0/0
BOGOTA(config-router)#
```

```
BUENOSAIRES>enable
Password:
```

BUENOSAIRE#conf t

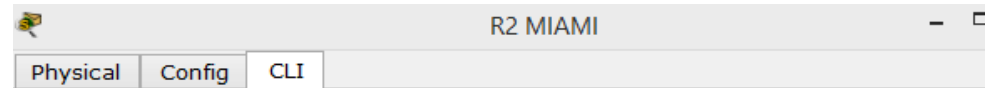
Enter configuration commands, one per line. End with CNTL/Z.

BUENOSAIRE(config)#router ospf 1

BUENOSAIRE(config-router)#router-id 8.8.8.8

BUENOSAIRE(config-router)#passive-interface g0/0

BUENOSAIRE(config-router)#



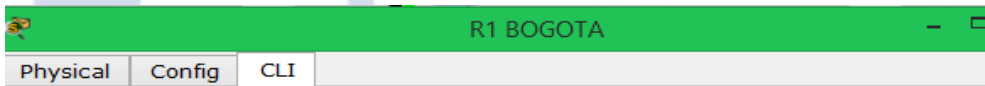
### IOS Command Line Interface

```

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

Gateway of last resort is not set

 10.0.0.0/32 is subnetted, 1 subnets
C    10.10.10.11/32 is directly connected, Loopback0
 172.31.0.0/16 is variably subnetted, 4 subnets, 2 masks
C    172.31.21.0/30 is directly connected, Serial0/0/1
L    172.31.21.1/32 is directly connected, Serial0/0/1
C    172.31.23.0/30 is directly connected, Serial0/0/0
L    172.31.23.1/32 is directly connected, Serial0/0/0
 209.165.200.0/24 is variably subnetted, 2 subnets, 2 masks
C    209.165.200.224/29 is directly connected, GigabitEthernet0/0
L    209.165.200.225/32 is directly connected, GigabitEthernet0/0
MIAMI#
  
```



### IOS Command Line Interface

```

BOGOTA(config)#router ospf 1
BOGOTA(config-router)#router-id 1.1.1.1
BOGOTA(config-router)#passive-interface g0/0
BOGOTA(config-router)#exit
BOGOTA(config)#exit
BOGOTA#
%SYS-5-CONFIG_I: Configured from console by console

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

Gateway of last resort is not set

 172.31.0.0/16 is variably subnetted, 2 subnets, 2 masks
C    172.31.21.0/30 is directly connected, Serial0/0/0
L    172.31.21.2/32 is directly connected, Serial0/0/0
BOGOTA#
  
```

```

R3 BUENOS AIRES
Physical Config CLI
IOS Command Line Interface
BUENOSAIRES>enable
Password:
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 g0/0
BUENOSAIRES(config-router)#
BUENOSAIRES(config-router)#exit
BUENOSAIRES(config)#exit
BUENOSAIRES#
%SYS-5-CONFIG_I: Configured from console by console

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

Gateway of last resort is not set

      172.31.0.0/16 is variably subnetted, 2 subnets, 2 masks
C       172.31.23.0/30 is directly connected, Serial0/0/1
L       172.31.23.2/32 is directly connected, Serial0/0/1
L       192.168.4.0/24 is variably subnetted, 2 subnets, 2 masks
C       192.168.4.0/24 is directly connected, Loopback4
L       192.168.4.1/32 is directly connected, Loopback4
L       192.168.5.0/24 is variably subnetted, 2 subnets, 2 masks
C       192.168.5.0/24 is directly connected, Loopback5
L       192.168.5.1/32 is directly connected, Loopback5
L       192.168.6.0/24 is variably subnetted, 2 subnets, 2 masks
C       192.168.6.0/24 is directly connected, Loopback6
L       192.168.6.1/32 is directly connected, Loopback6
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.

```

Switch>enable
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)#vlan 40
Switch(config-vlan)#name Mercadeo
Switch(config-vlan)#vlan 200
Switch(config-vlan)#name Mantenimiento
Switch(config-vlan)#no ip domain-lookup
Switch(config)#service password-encryption
Switch(config)#enable secret class
Switch(config)#banner motd %sistema protegido%
Switch(config)#line console 0
Switch(config-line)#password cisco
Switch(config-line)#login
Switch(config-line)#line vty 0 15
Switch(config-line)#password cisco
Switch(config-line)#login
    
```

### Puertos Troncales Swith S1

```
Switch(config-line)#int g0/1
Switch(config-if)#no shut
Switch(config-if)#switchport mode trunk Switch
(config-if)#int g0/2 Switch
(config-if)#switchport modetrunk Switch
(config-if)# Switch(config-if)#
```

### Puertos Troncales Swith S3

```
Switch>enable
Switch#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#no ip domain-lookup
Switch(config)#service password-encryption
Switch(config)#enable secret class
Switch(config)#banner motd %sistema protegido%
Switch(config)#line console 0
Switch(config-line)#password cisco
Switch(config-line)#login
Switch(config-line)#line vty 0 15
Switch(config-line)#password cisco
Switch(config-line)#login
Switch(config-line)#int g0/2
Switch(config)#switchport mode trunk
Switch(config)#
```

### Puerta de acceso DNS S1:

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

### Puerta de acceso DNS S3:

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

4. En el Switch 3 deshabilitar DNS lookup

```
Switch(config-if)#  
Switch(config-if)#no ip domain-lookup  
Switch(config)#
```

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

IP para S1

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

IP para S3

```
Switch(config)#int vlan 99  
Switch(config-if)#ip address 192.168.99.3 255.255.255.0  
Switch(config-if)#no shut  
Switch(config-if)#
```

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

Para S1:

```
Switch(config)#int range fa0/4-24  
Switch(config-if-range)#shut
```

Para S3

```
Switch(config)#int range fa0/3-24  
Switch(config-if-range)#sh
```

7. Implement DHCP and NAT for IPv4

```
BOGOTA>ena  
Password:  
BOGOTA#conf t  
Enter configuration commands, one per line. End with CNTL/Z.
```



```
BOGOTA(config)#ip dhcp excluded-address 192.168.30.2 192.168.30.32
BOGOTA(config)#ip dhcp excluded-address 192.168.40.2 192.168.40.32
BOGOTA(config)#
```

8. Configurar R1 como servidor DHCP para las VLANs 30 y 40.
9. Reservar las primeras 30 direcciones IP de las VLAN 30 y 40 para configuraciones estáticas.

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

Direcciones Excluidas:

```
BOGOTA(config)#ip dhcp excluded-address 192.168.30.2 192.168.30.32
BOGOTA(config)#ip dhcp excluded-address 192.168.40.2 192.168.40.32
BOGOTA(config)#
```

DHC POOL:

```
BOGOTA(config)#ip dhcp pool MERCADEO
BOGOTA(dhcp-config)#dns-server 10.10.10.11
BOGOTA(dhcp-config)#default-router 172.31.21.1
BOGOTA(dhcp-config)#
```

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

```
MIAMI(config-ext-nacl)#permit ip 192.168.30.0 0.0.0.255 any
MIAMI(config-ext-nacl)#permit ip 192.168.40.0 0.0.0.255 any
MIAMI(config-ext-nacl)#ex
MIAMI(config)#ip nat pool Miami-pool 209.165.200.225 209.165.200.228 netmask 255.255.255.248
MIAMI(config)#ip nat inside source list ADMINISTRACION pool Miami-pool
MIAMI(config)#int lo0
MIAMI(config-if)#ip nat inside
MIAMI(config-if)#int s0/0/1
MIAMI(config-if)#ip nat outside
MIAMI(config-if)#
```

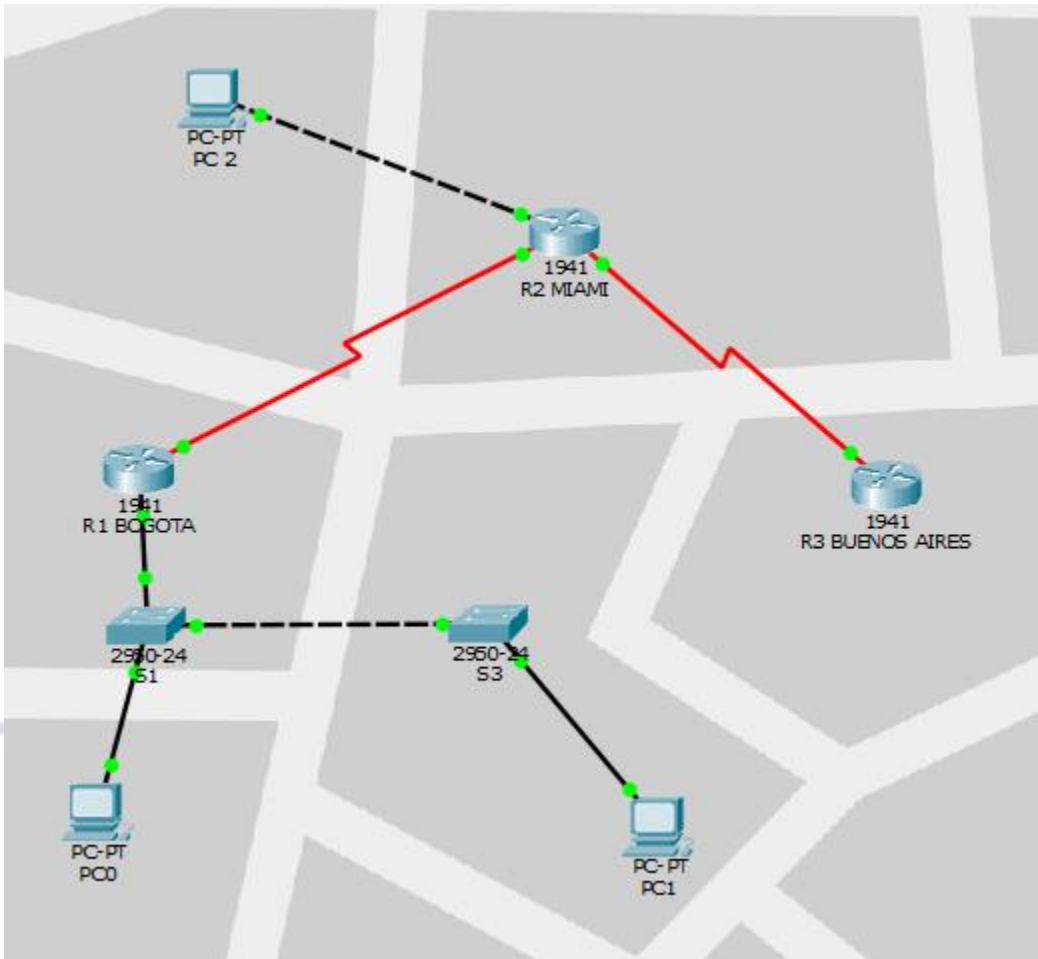
11. Configurar al menos dos listas de acceso de tipo estándar a su criterio en para restringir o permitir tráfico desde R1 o R3 hacia R2.

```
BOGOTA>ena
Password:
BOGOTA#ena
BOGOTA#conf t
Enter configuration commands, one per line. End with CNTL/Z.
BOGOTA(config)#access-list 1 permit 192.168.99.0 0.0.0.255
BOGOTA(config)# access-list 2 deny 192.168.30.0 0.0.0.255
BOGOTA(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>ena
Password:
BUENOSAIRES#conf t
Enter configuration commands, one per line. End with CNTL/Z.
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 172.31.23.0
BUENOSAIRES(config-router)#network 192.168.4.0
BUENOSAIRES(config-router)#network 192.168.5.0
BUENOSAIRES(config-router)#
```

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



## CONCLUSIONES

- ✓ Podemos distinguir entre tipos de cables, Routers, Switch, PCs, a demás de esto podemos montar una red y configurar cada parte realizando cada una de las estructuras y como debe ir organizado.
- ✓ Configuración de cada uno de los switch y routers que se manejaron y reconociendo que la configuración de cada uno de estos dispositivos es muy diferente al de una PC,
- ✓ La importancia que tiene las redes, para lograr estar conectados, no solo con nuestro interés personal o grupal. También a nivel global.
- ✓ La forma correcta de las utilidades que tienen los protocolos RIP
- ✓ La forma correcta de las utilidades que tienen los protocolos NAT.



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