

DIPLOMADO CISCO

Informe de Habilidades Prácticas

**Soluciones de dos Estudios de Caso Soportados en el Uso de Tecnología
CISCO**

Presentado por:

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Programa: Ingeniería de Sistemas

UNIVERSIDAD NACIONAL ABIERTA Y A DISTANCIA

ECEBTI

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**UNIVERSIDAD NACIONAL ABIERTA Y A DISTANCIA
BOGOTÁ D.C.**

2019

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Firma del Jurado

DEDICATORIA

El presente trabajo es dedicado en primer instancia a Dios por darme la fuerza para sobre pasar todos los obstáculos durante el procesos de formación, en honor a mi difunta madre que fue el motor para continuar cada día y a mi hijo quien es la inspiración más grande y heredara todo lo aprendido.

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Agradecido con Dios y con la vida por las oportunidades brindadas, a pesar de los duros momentos siempre hay una solución una luz, que hace las cosas buenas te pasen.

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INTRODUCCIÓN

Durante el curso extensivo de CCNA 1 Y CCNA2, se apropiaron conceptos y tecnicismo determinantes para meternos en el mundo networking, en base a la práctica constate se puede lograr a desarrollar las propuestas expuestas que nos servirán de entrenamiento para adquirir habilidades necesarias para desempeñarnos en el renombrado mundo networking.

OBJETIVOS

Objetivos Generales

Determinar la configuración de los escenarios propuestos.

Objetivos Específicos

- Configuración de parámetros básicos de dispositivos intermedios.
- Configuración de parámetros de interconexión de dispositivos finales.

DESARROLLO DE LOS ESCENARIOS

1. INFORME DE HABILIDADES PRACTICAS 1

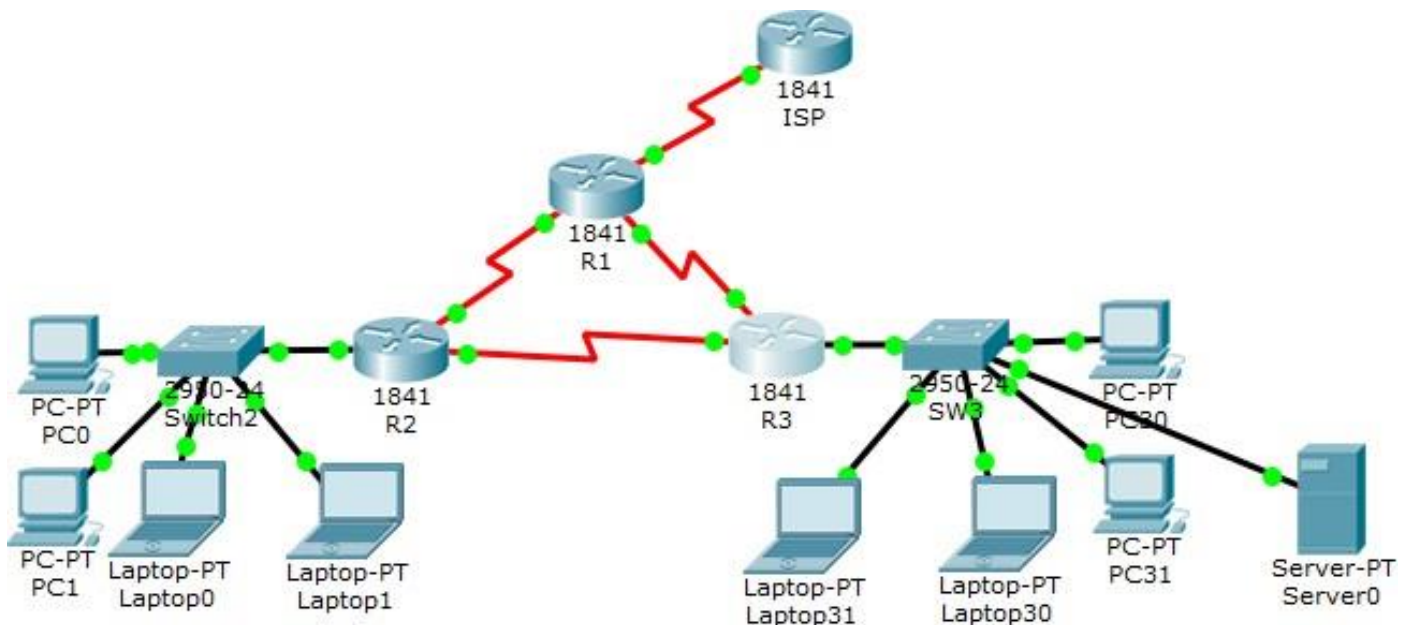


Figura 1

Tabla de direccionamiento

El administrador	Interfaces	Dirección IP	Máscara de subred	Gateway predeterminado
ISP	S0/0/0	200.123.211.1	255.255.255.0	N/D
R1	Se0/0/0	200.123.211.2	255.255.255.0	N/D
	Se0/1/0	10.0.0.1	255.255.255.252	N/D
	Se0/1/1	10.0.0.5	255.255.255.252	N/D
R2	Fa0/0,100	192.168.20.1	255.255.255.0	N/D
	Fa0/0,200	192.168.21.1	255.255.255.0	N/D
	Se0/0/0	10.0.0.2	255.255.255.252	N/D
	Se0/0/1	10.0.0.9	255.255.255.252	N/D
R3	Fa0/0	192.168.30.1	255.255.255.0	N/D
		2001:db8:130::9C0:80F:301	/64	N/D
	Se0/0/0	10.0.0.6	255.255.255.252	N/D
	Se0/0/1	10.0.0.10	255.255.255.252	N/D
SW2	VLAN 100	N/D	N/D	N/D
	VLAN 200	N/D	N/D	N/D

SW3	VLAN1	N/D	N/D	N/D
-----	-------	-----	-----	-----

PC20	NIC	DHCP	DHCP	DHCP
PC21	NIC	DHCP	DHCP	DHCP
PC30	NIC	DHCP	DHCP	DHCP
PC31	NIC	DHCP	DHCP	DHCP
Laptop20	NIC	DHCP	DHCP	DHCP
Laptop21	NIC	DHCP	DHCP	DHCP
Laptop30	NIC	DHCP	DHCP	DHCP
Laptop31	NIC	DHCP	DHCP	DHCP

Tabla 1

Tabla de asignación de VLAN y de puertos

Dispositivo	VLAN	Nombre	Interfaz
SW2	100	LAPTOPS	Fa0/2-3
SW2	200	DESTOPS	Fa0/4-5
SW3	1	-	Todas las interfaces

Tabla 2

Tabla de enlaces troncales

Dispositivo local	Interfaz local	Dispositivo remoto
SW2	Fa0/2-3	100

Tabla 3

Situación

En esta actividad, demostrará y reforzará su capacidad para implementar NAT, servidor de DHCP, RIPV2 y el routing entre VLAN, incluida la configuración de direcciones IP, las VLAN, los enlaces troncales y las subinterfaces. Todas las pruebas de alcance deben realizarse a través de ping únicamente.

Descripción de las actividades

- 1.1 SW1** VLAN y las asignaciones de puertos de VLAN deben cumplir con la tabla 1.

Vlans y Puertos

```
SW2
Switch>enable
Switch#config
Configuring from terminal, memory, or network [terminal]?
Enter configuration commands, one per line. End with CNTL/Z.
1(config)#HOSTNAME SW2
SW2(config)#VLAN 100
SW2(config-vlan)#name Laptops
SW2(config-vlan)#vlan 200
SW2(config-vlan)#name destops
SW2(config-vlan)#exit
SW2(config)#interface range fa0/2-3
SW2(config-if-range)#switchport mode access
SW2(config-if-range)#switchport access vlan 100
SW2(config-if-range)#exit
SW2(config)#interface range fa0/4-5
SW2(config-if-range)#switchport mode acces
SW2(config-if-range)#switchport access vlan 200
SW2(config-if-range)#interface fa0/1
SW2(config-if)#switchport mode trunk
SW2(config-if)#exit
```

Figura 2

```
SW3
Switch>enable
Switch#config
Configuring from terminal, memory, or network [terminal]?
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#hostname SW3
SW3(config)#Vlan 1
SW3(config-vlan)#exit
SW3(config)#interface range f0/1-24
SW3(config-if-range)#switchport mode access
SW3(config-if-range)#switchport access vlan 1
SW3(config-if-range)#exit
SW3#show vlan brief
```

```
VLAN Name Status Ports
-----
1 default active Fa0/1, Fa0/2, Fa0/3, Fa0/4
Fa0/5, Fa0/6, Fa0/7, Fa0/8
Fa0/9, Fa0/10, Fa0/11, Fa0/12
Fa0/13, Fa0/14, Fa0/15, Fa0/16
Fa0/17, Fa0/18, Fa0/19, Fa0/20
Fa0/21, Fa0/22, Fa0/23, Fa0/24
1002 fddi-default active
1003 token-ring-default active
1004 fddinet-default active
1005 trnet-default active
SW3#
```

Figura 3

1.2 Los puertos de red que no se utilizan se deben deshabilitar.

```
SW2
SW2(config)#interface range fa0/6-24
SW2(config-if-range)#shutdown

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

%LINK-5-CHANGED: Interface FastEthernet0/24, changed state
to administratively down
SW2(config-if-range)#exit
SW2(config)#
```

Figura 4

```
SW3
SW3#config
Configuring from terminal, memory, or network [terminal]?
SW3(config)#interface range f0/7-24
SW3(config-if-range)#shutdown
%LINK-5-CHANGED: Interface FastEthernet0/7, changed state to
administratively down
%LINK-5-CHANGED: Interface FastEthernet0/8, changed state to
administratively down
%LINK-5-CHANGED: Interface FastEthernet0/9, changed state to
administratively down
%LINK-5-CHANGED: Interface FastEthernet0/10, changed state
to administratively down
%LINK-5-CHANGED: Interface FastEthernet0/11, changed state
to administratively down
```



```

%LINK-5-CHANGED: Interface FastEthernet0/12, changed state
to administratively down
%LINK-5-CHANGED: Interface FastEthernet0/13, changed state
to administratively down
%LINK-5-CHANGED: Interface FastEthernet0/14, changed state
to administratively down
%LINK-5-CHANGED: Interface FastEthernet0/15, changed state
to administratively down
%LINK-5-CHANGED: Interface FastEthernet0/16, changed state
to administratively down
%LINK-5-CHANGED: Interface FastEthernet0/17, changed state
to administratively down
%LINK-5-CHANGED: Interface FastEthernet0/18, changed state
to administratively down
%LINK-5-CHANGED: Interface FastEthernet0/19, changed state
to administratively down
%LINK-5-CHANGED: Interface FastEthernet0/20, changed state
to administratively down
%LINK-5-CHANGED: Interface FastEthernet0/21, changed state
to administratively down
%LINK-5-CHANGED: Interface FastEthernet0/22, changed state
to administratively down
%LINK-5-CHANGED: Interface FastEthernet0/23, changed state
to administratively down
%LINK-5-CHANGED: Interface FastEthernet0/24, changed state
to administratively down
SW3(config-if-range)#

```

Figura 5

- 1.3** La información de dirección IP R1, R2 y R3 debe cumplir con la tabla 1.

```

R2
Router>enable
Router #config
Configuring from terminal, memory, or network [terminal]?
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#hostname R2
R2(config)#
R2(config)#interface f0/0.100
R2(config-subif)#encapsulation dot1q 100
R2(config-subif)#ip address 192.168.20.1 255.255.255.0
R2(config-subif)#interface f0/0.200
R2(config-subif)#encapsulation dot1q 200
R2(config-subif)#ip address 192.168.21.1 255.255.255.0
R2(config-subif)#exit
R2(config)#interface f0/0
R2(config-if)#no shutdown
R2(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

%LINK-5-CHANGED: Interface FastEthernet0/0.100, changed
state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface
FastEthernet0/0.100, changed state to up

%LINK-5-CHANGED: Interface FastEthernet0/0.200, changed
state to up

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

R2(config-if)#exit
R2(config)#interface s0/0/0
R2(config-if)#ip address 10.0.0.2 255.255.255.252
R2(config-if)#no shutdown

%LINK-5-CHANGED: Interface Serial0/0/0, changed state to
down
R2(config-if)#exit
R2(config)#interface s0/0/1
R2(config-if)#ip address 10.0.0.9 255.255.255.252
R2(config-if)#no shutdown

%LINK-5-CHANGED: Interface Serial0/0/1, changed state to
down
R2(config-if)#exit
R2(config)#

```

Figura 6

```

R1
Router>enable
Router#config
Configuring from terminal, memory, or network [terminal]?
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#hostname R1
R1(config)#interface s0/0/0
R1(config-if)# ip address 200.123.211.2 255.255.255.0
R1(config-if)#no shutdown

%LINK-5-CHANGED: Interface Serial0/0/0, changed state to
down
R1(config-if)#

```

```

R1(config-if)#interface s0/1/0
R1(config-if)#ip address 10.0.0.1 255.255.255.252
R1(config-if)#no shutdown

R1(config-if)#
%LINK-5-CHANGED: Interface Serial0/1/0, changed state to up

R1(config-if)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface
Serial0/1/0, changed state to up.
R1(config-if)#interface s0/1/1
R1(config-if)#ip address 10.0.0.5 255.255.255.252
R1(config-if)#no shutdown

%LINK-5-CHANGED: Interface Serial0/1/1, changed state to
down
R1(config-if)#
R1(config-if)#

```

Figura 7

```

R3
Router>enable
Router#config
Configuring from terminal, memory, or network [terminal]?
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#hostname R3
R3(config)#ipv6 unicast-routing
R3(config)#interface f0/0
R3(config-if)#ip address 192.168.30.1 255.255.255.0
R3(config-if)# ipv6 address 2001:db8:130::9C0:80F:301/64
R3(config-if)#ipv6 dhcp server vlan_1
R3(config-if)#ipv6 nd other-config-flag
R3(config-if)#no shutdown

R3(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

R3(config-if)#interface s0/0/0
R3(config-if)#ip address 10.0.0.6 255.255.255.252
R3(config-if)#no shutdown

R3(config-if)#
%LINK-5-CHANGED: Interface Serial0/0/0, changed state to up

R3(config-if)#i

```

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

% Ambiguous command: "i"
R3(config-if)#interface s0/0/1
R3(config-if)#ip address 10.0.0.10 255.255.255.252
R3(config-if)#no shutdown

R3(config-if)#
%LINK-5-CHANGED: Interface Serial0/0/1, changed state to up

R3(config-if)#exit
R3(config)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface
Serial0/0/1, changed state to up
```

Figura 8

```
ISP
Router>enable
Router#config
Configuring from terminal, memory, or network [terminal]?
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#hostname ISP
ISP(config)#interface s0/0/0
ISP(config-if)#ip address 200.123.211.1 255.255.255.0
ISP(config-if)#no shutdown

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

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

Figura 9

1.4 Laptop20, Laptop21, PC20, PC21, Laptop30, Laptop31, PC30 y PC31 deben obtener información IPv4 del servidor DHCP.

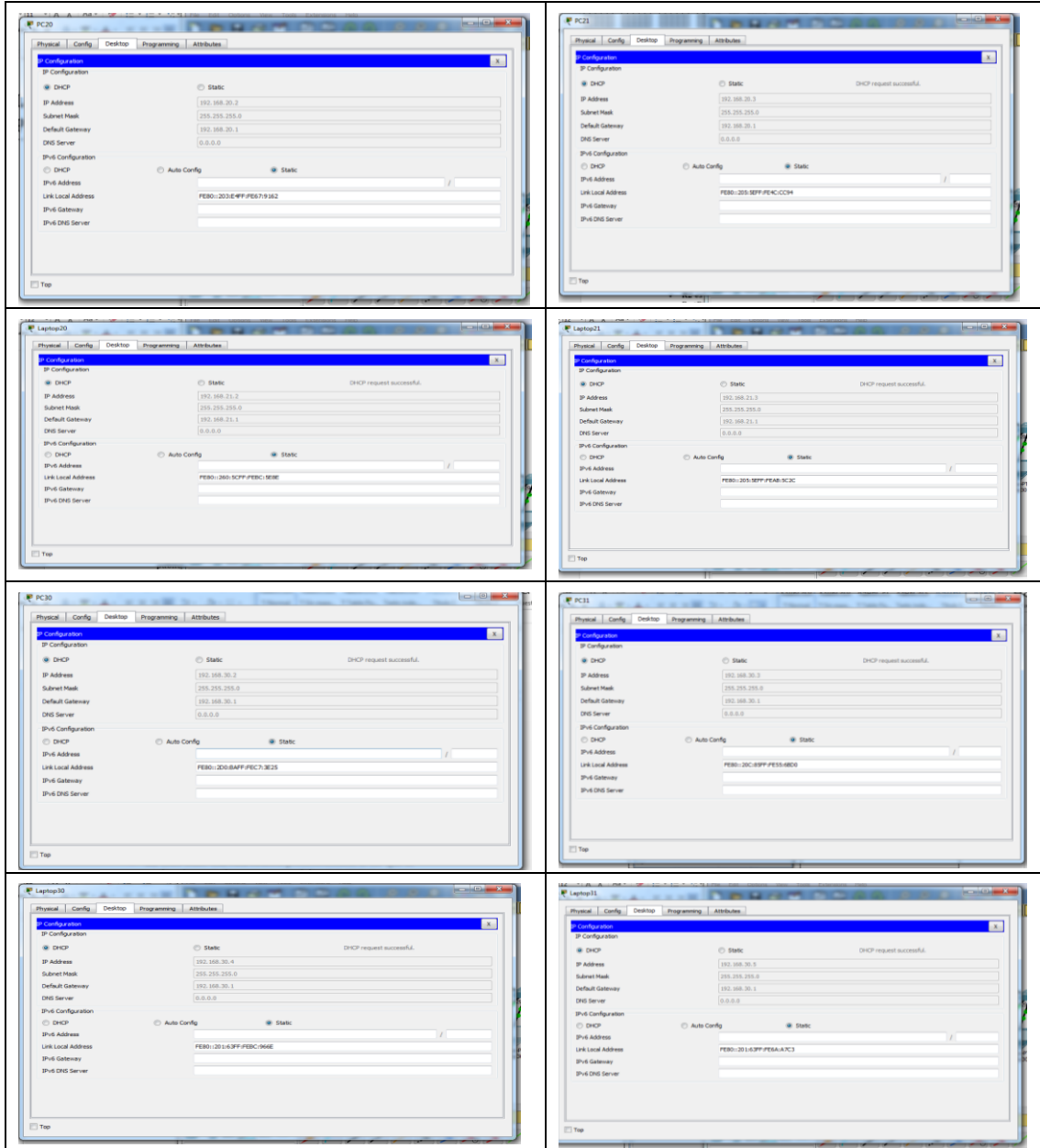


Figura 10

1.5 R1 debe realizar una NAT con sobrecarga sobre una dirección IPv4 pública. Asegúrese de que todos los terminales pueden comunicarse con Internet pública (haga ping a la dirección ISP) y la lista de acceso estándar se **llama INSIDE-DEVS**.

```
R1-Config Nat Ipv4
R1>enable
R1#config
Configuring from terminal, memory, or network [terminal]?
Enter configuration commands, one per line. End with CNTL/Z.
R1(config)#interface s0/1/1
R1(config-if)#ip nat inside
R1(config-if)#interface s0/1/1
R1(config-if)#exit
R1(config)#int s0/1/0
R1(config-if)#ip nat inside
R1(config-if)#exit
R1(config)#interface s0/0/0
R1(config-if)#ip nat outside
R1(config-if)#exit
R1(config)#ip nat pool INSADE-DESV 200.123.211.2 200.213.211.50
netmask 255.0.0.0
R1(config)#access-list 1 permit 192.168.0.0 0.0.255.255
R1(config)#access-list 1 permit 10.0.0.0 0.255.255.255
R1(config)#ip nat inside source list 1 interface s0/0/0 overload
R1(config)#ip nat inside source static tcp 192.168.30.6 80 200.123.211.1 80
R1(config)#router rip
R1(config-router)#version 2
R1(config-router)#network 10.0.0.0
R1(config-router)#exit
R1(config)#end
R1#
%SYS-5-CONFIG_I: Configured from console by console
wr
Building configuration...
[OK]
R1#show ip nat tr
Pro Inside global Inside local Outside local Outside global
tcp 200.123.211.1:80 192.168.30.6:80 --- ---

R1#show ip nat sta
Total translations: 1 (1 static, 0 dynamic, 1 extended)
Outside Interfaces: Serial0/0/0
Inside Interfaces: Serial0/1/0 , Serial0/1/1
Hits: 0 Misses: 0
Expired translations: 0
```

```
Dynamic mappings:  
R1#
```

Figura 11

1.6 R2 es un servidor de DHCP para los dispositivos conectados al puerto FastEthernet0/0.

```
R2  
R2>enable  
R2#config  
Configuring from terminal, memory, or network [terminal]?  
Enter configuration commands, one per line. End with CNTL/Z.  
R2(config)#ip dhcp excluded-address 10.0.0.2 10.0.0.9  
R2(config)#ip dhcp pool INSIDE-DEVS  
R2(dhcp-config)#network 192.168.20.1 255.255.255.0  
R2(dhcp-config)#network 192.168.21.1 255.255.255.0  
R2(dhcp-config)#default-router 192.168.1.1  
R2(dhcp-config)#dns-server 0.0.0.0  
R2(dhcp-config)#exit  
R2(config)#
```

Figura 12

1.7 R2 debe, además de enrutamiento a otras partes de la red, ruta entre las VLAN 100 y 200.

```
R2  
R2#enable  
R2#config  
Configuring from terminal, memory, or network [terminal]?  
Enter configuration commands, one per line. End with CNTL/Z.  
R2(config)#interface vlan 100  
R2(config-if)#ip address 192.168.20.1 255.255.255.0  
% 192.168.20.0 overlaps with FastEthernet0/0.100  
R2(config-if)#exit  
R2(config)#interface vlan 200  
R2(config-if)#ip address 192.168.21.1 255.255.255.0  
% 192.168.21.0 overlaps with FastEthernet0/0.200  
R2(config-if)#exit
```

Figura 13

1.8 El Servidor0 es sólo un servidor IPv6 y solo debe ser accesible para los dispositivos en R3 (ping).

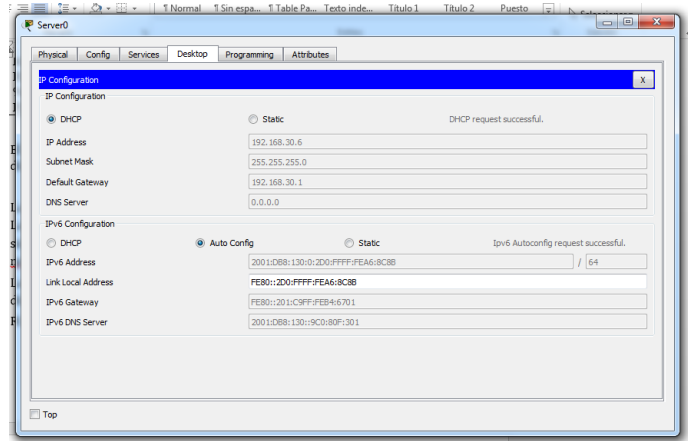


Figura 14

Ping al servidor desde PC30

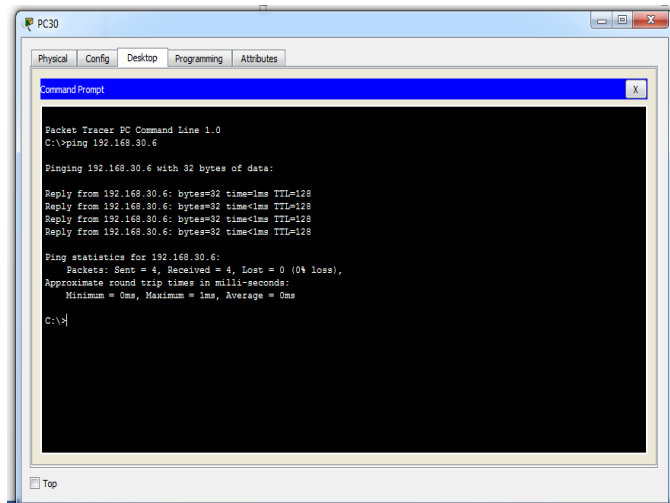


Figura 15

1.10 La NIC instalado en direcciones IPv4 e IPv6 de Laptop30, de Laptop31, de PC30 y obligación de configurados PC31 simultáneas (dual-stack). Las direcciones se deben configurar mediante DHCP y DHCPv6.

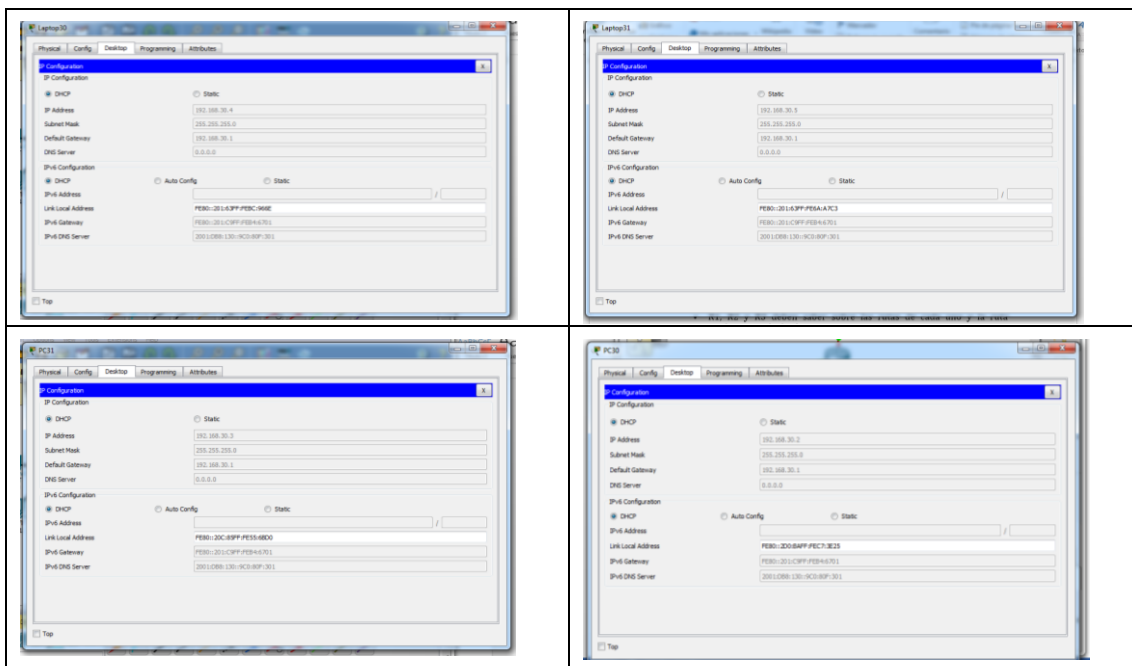


Figura 16

1.11 La interfaz FastEthernet 0/0 del R3 también deben tener direcciones IPv4 e IPv6 configuradas (dual- stack).

```

R3
R3>enable
R3#config
Configuring from terminal, memory, or network [terminal]?
Enter configuration commands, one per line. End with CNTL/Z.
R3(config)#ipv6 u
R3(config)#ipv6 unicast-routing
R3(config)#interface f0/0
R3(config-if)#ipv6 enable
R3(config-if)#ip address 192.168.30.1 255.255.255.0
R3(config-if)#ipv6 address 2001:db8:130::9C0:80F:301/64
R3(config-if)#no shutdown
R3(config-if)#exit
R3(config)#

```

Figura 17

1.12 R1, R2 y R3 intercambian información de routing mediante RIP versión 2.

```
R1
R1#config
Configuring from terminal, memory, or network [terminal]?
Enter configuration commands, one per line. End with CNTL/Z.
R1(config)#router rip
R1(config-router)#version 2
R1(config-router)#network 10.0.0.0
R1(config-router)#network 10.0.0.4
R1(config-router)#do show ip route connected
C 10.0.0.0/30 is directly connected, Serial0/1/0
C 10.0.0.4/30 is directly connected, Serial0/1/1
C 200.123.211.0/24 is directly connected, Serial0/0/0
```

Figura 18

```
R2
R2>enable
R2#config .
R2(config)#router rip
R2(config-router)#version 2
R2(config-router)#do show ip route connected
R2(config-router)#network 10.0.0.0
R2(config-router)#network 10.0.0.8
R2(config-router)#do show ip route connected
C 10.0.0.0/30 is directly connected, Serial0/0/0
C 10.0.0.8/30 is directly connected, Serial0/0/1
C 192.168.20.0/24 is directly connected, FastEthernet0/0.100
C 192.168.21.0/24 is directly connected, FastEthernet0/0.200
```

Figura 19

```
R3
R3>enable
R3#config
Configuring from terminal, memory, or network [terminal]?
Enter configuration commands, one per line. End with CNTL/Z.
R3(config)#router rip
R3(config-router)#version 2
R3(config-router)#network 10.0.0.0
R3(config-router)#network 10.0.0.8
R3(config-router)#end
```

Figura 20

1.13 R1, R2 y R3 deben saber sobre las rutas de cada uno y la ruta predeterminada desde R1.

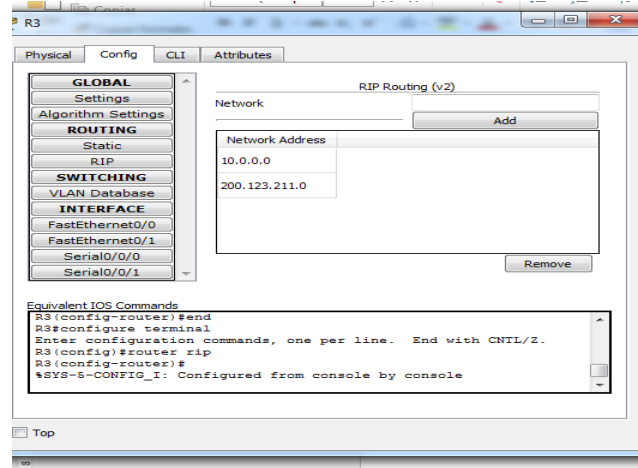


Figura 21

1.14 Verifique la conectividad. Todos los terminales deben poder hacer ping entre sí y a la dirección IP del ISP. Los terminales bajo el R3 deberían poder hacer IPv6-ping entre ellos y el servidor.

Ping Laptop 31 a R3

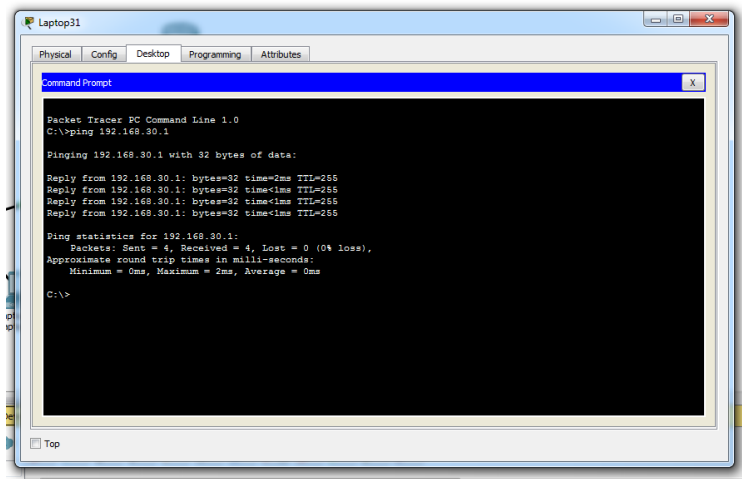


Figura 22

2. INFORME DE HABILIDAD PRACTICA 2

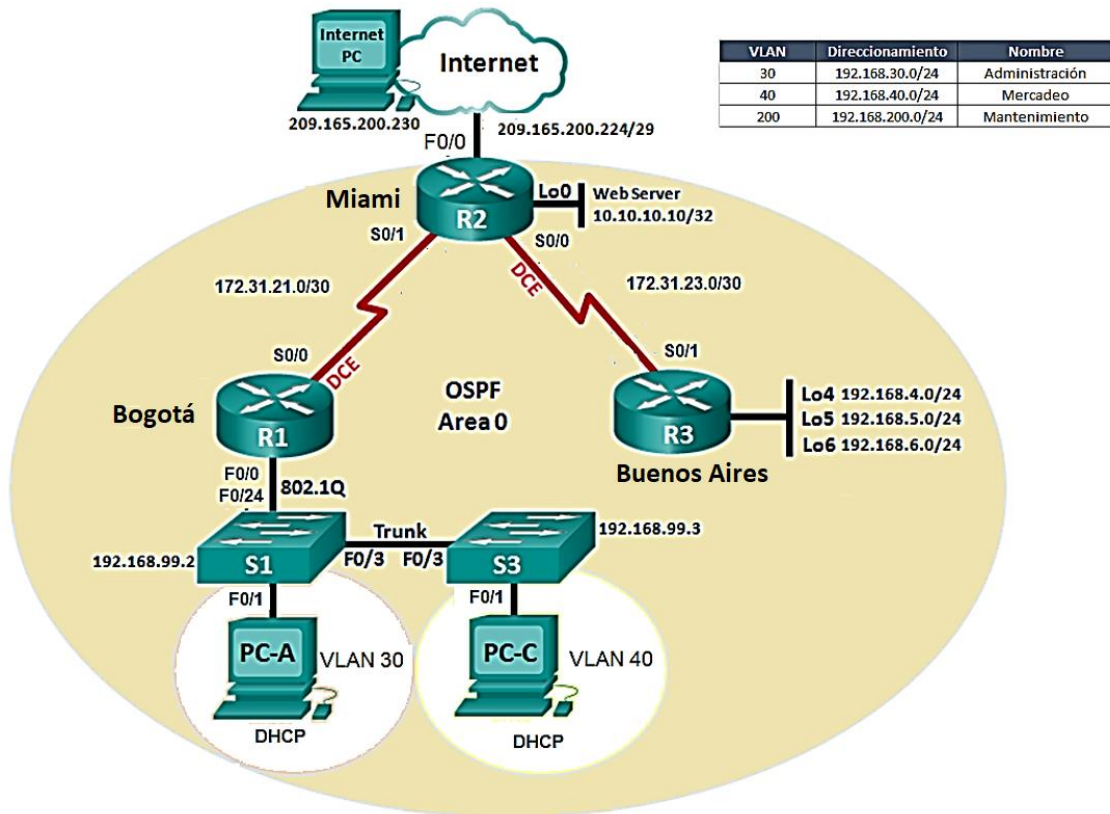


Figura 23

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

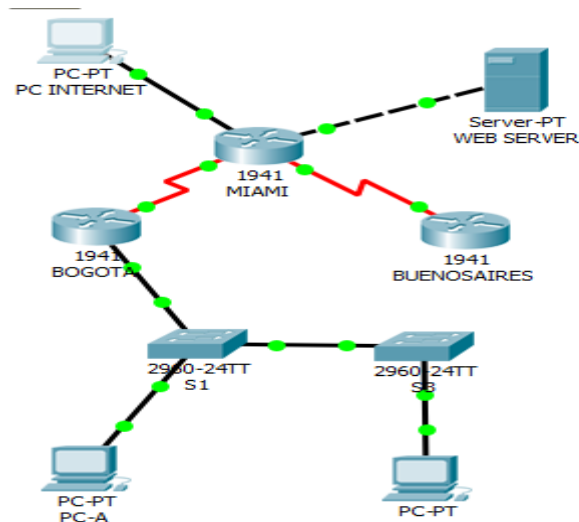


Figura 24

1.1 Direccionamiento ip

Direccionamiento IP ROUTER MAIMI

```

Router>enable
Router#config
Router(config)#hostname MIAMI
MIAMI(config)#int s0/0/1
MIAMI(config-if)#ip address 172.31.21.1 255.255.255.252
MIAMI(config-if)#no shut
%LINK-5-CHANGED: Interface Serial0/0/1, changed state to down
MIAMI(config-if)#int g0/0
MIAMI(config-if)#ip address 209.165.200.225 255.255.255.248
MIAMI(config-if)#no shut
MIAMI(config-if)#
%LINK-5-CHANGED: Interface GigabitEthernet0/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0,
changed state to up
MIAMI(config-if)#int s0/0/0
MIAMI(config-if)#ip address 172.31.23.1
% Incomplete command.
MIAMI(config-if)#ip address 172.31.23.1 255.255.255.252
MIAMI(config-if)#no shut
%LINK-5-CHANGED: Interface Serial0/0/0, changed state to down
MIAMI(config-if)#
MIAMI(config-if)#int lo0
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 add 10.10.10.11 255.255.255.255
MIAMI(config-if)#no shut
MIAMI(config-if)#
```

Figura 25

Direccionamiento IP ROUTER BOGOTA

```
Router>ENABLE
Router#CONFIG
Configuring from terminal, memory, or network [terminal]?
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#HOSTNAME BOGOTA
BOGOTA(config)#int s0/0/0
BOGOTA(config-if)#ip address 172.31.21.2 255.255.255.252
BOGOTA(config-if)#no shut
BOGOTA(config-if)#int g0/0
BOGOTA(config-if)#ip address 192.168.30.1 255.255.255.0
BOGOTA(config-if)#no shut
```

Figura 26

Direccionamiento Ip R3

```
Router>ENABLE
Router#CONFIG
Router(config)#HOSTNAME BUENOSAIRES
BUENOSAIRES(config)#int s0/0/1
BUENOSAIRES(config-if)#ip address 172.31.23.2 255.255.255.252
BUENOSAIRES(config-if)#no shut
BUENOSAIRES(config-if)#int I04
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)#int I05
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)#int I06
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)#

Figura 27

1.2 Web Server

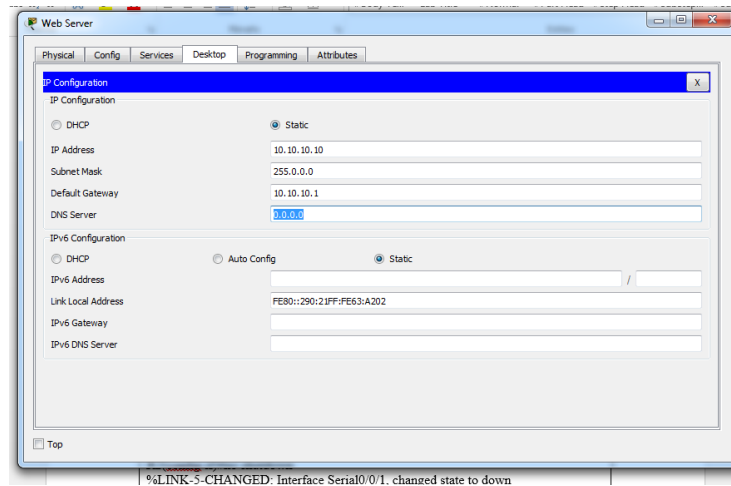


Figura 28

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

Tabla 4

Ilustración de las configuraciones hechas en los routers; MIAMI, BUENOS AIRES, BOGTOA en sus interfaces.

2.1 ROUTER MIAMI

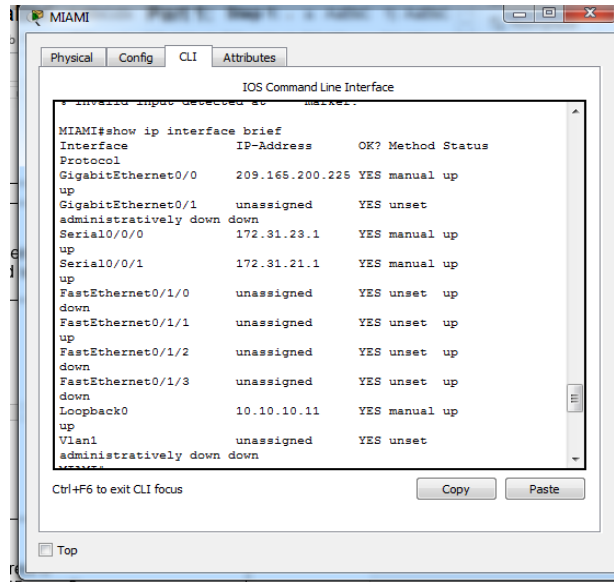


Figura 29

2.2 ROUTER BOGOTA

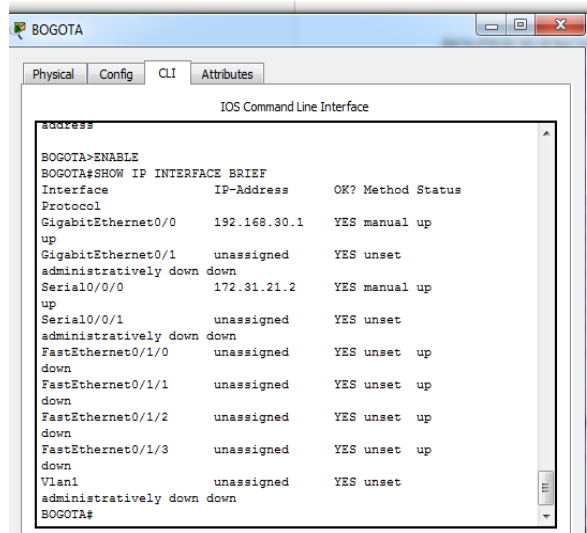


Figura 30

2.3.2 ROUTER BUENOSAIRES

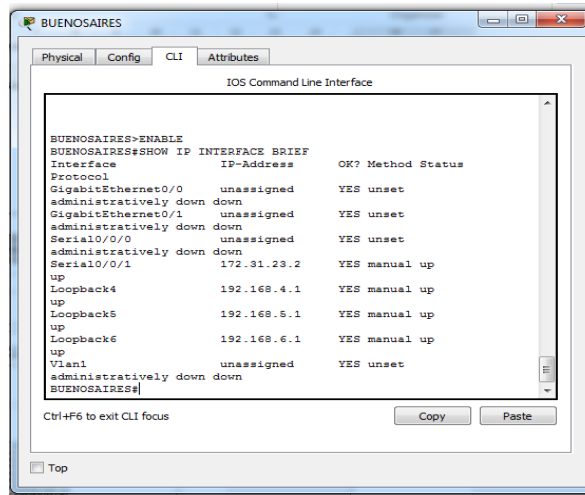


Figura 31

2.4 CONFIGURACION ROUTERS

ROUTER BOGOTA

```
BOGOTA>enable
BOGOTA#config
BOGOTA(config)#router ospf 1
BOGOTA(config-router)#router-id 1.1.1.1
BOGOTA(config-router)#network 172.31.21.0 0.0.0.3 area 0
BOGOTA(config-router)#network 192.168.30.0 0.0.0.255 area 0
BOGOTA(config-router)#network 192.168.40.0 0.0.0.255 area 0
BOGOTA(config-router)#network 192.168.200.0 0.0.0.255 area 0
BOGOTA(config-router)#passive-interface g0/1.30
BOGOTA(config-router)#passive-interface g0/1.40
BOGOTA(config-router)#passive-interface g0/1.200
BOGOTA(config-router)#exit
BOGOTA(config)#int s0/0/0
BOGOTA(config-if)#bandwidth 256
BOGOTA(config-if)#ip ospf cost 9500
BOGOTA(config-if)#exit
BOGOTA(config)#exit
BOGOTA#show ip ospf interface serial 0/0/0
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 00:00:03
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)
BOGOTA#
```

Figura 32

```
ROUTER MAIMI
```

```
MIAMI>enable
MIAMI#config
Configuring from terminal, memory, or network [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)#network 172.32.21.0 0.0.0.3 area 0
MIAMI(config-router)#network 172.31.23.0 0.0.0.3 area 0
MIAMI(config-router)#network 10.10.10.0 0.0.0.255 area 0
MIAMI(config-router)#passive-interface g0/1
MIAMI(config-router)#int s0/0/0
MIAMI(config-if)#bandwidth 256
MIAMI(config-if)#int s0/0/1
MIAMI(config-if)#bandwidth 256
MIAMI(config-if)#ip ospf cost 9500
MIAMI(config-if)#exit
MIAMI(config)#exit
MIAMI#
MIAMI#show ip ospf interface serial 0/0/0

Serial0/0/0 is up, line protocol is up
Internet address is 172.31.23.1/30, Area 0
Process ID 1, Router ID 5.5.5.5, Network Type POINT-TO-POINT, Cost: 64
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 00:00:03
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)
MIAMI#
```

Figura 32

ROUTER BUENOSAIRES

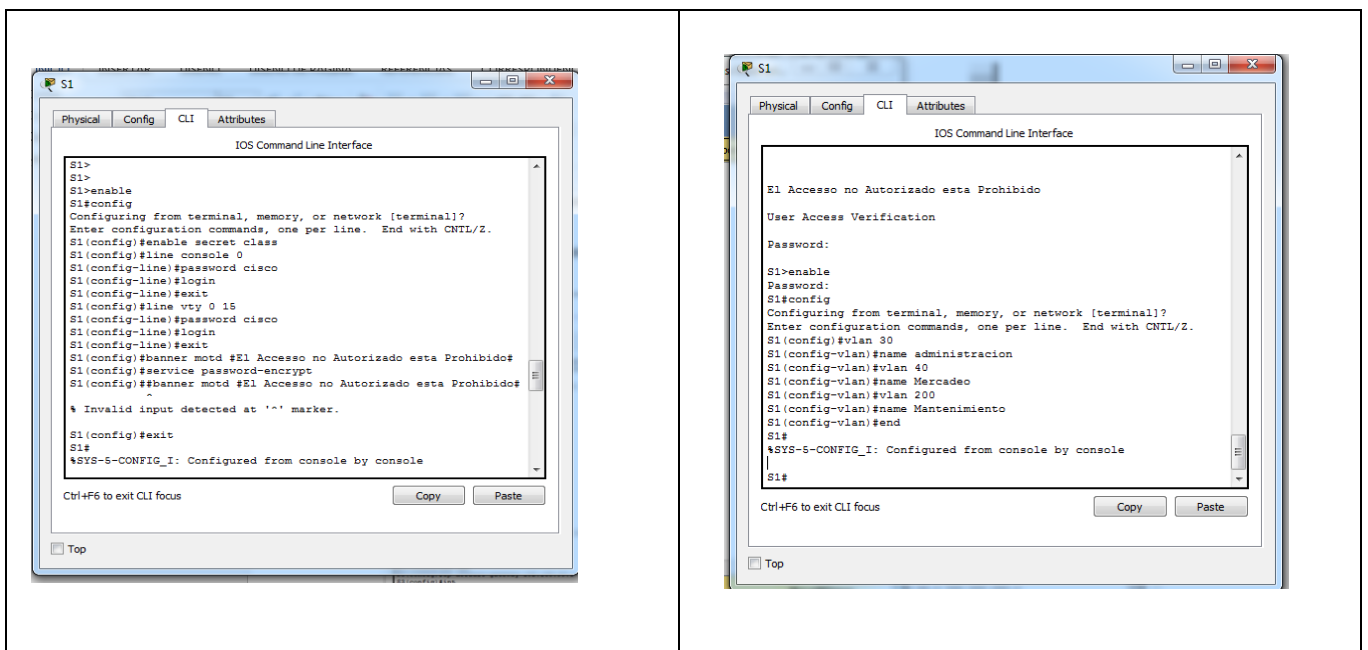
```
BUENOSAIRES>
BUENOSAIRES>ENABLE
BUENOSAIRES#CONFIG
Configuring from terminal, memory, or network [terminal]?
Enter configuration commands, one per line. End with CNTL/Z.
BUENOSAIRES(config)#route ospf 1
BUENOSAIRES(config-router)#router-id 8.8.8.8
BUENOSAIRES(config-router)#network 172.32.23.0 0.0.0.3 area 0
BUENOSAIRES(config-router)#passive-interface I04
BUENOSAIRES(config-router)#passive-interface I05
BUENOSAIRES(config-router)#passive-interface I06
BUENOSAIRES(config-router)#exit
BUENOSAIRES(config)#int s0/0/1
BUENOSAIRES(config-if)#bandwidth 256
BUENOSAIRES(config-if)#exit
BUENOSAIRES(config)#
BUENOSAIRES(config)#exit
BUENOSAIRES#
%SYS-5-CONFIG_I: Configured from console by console
exit
```

Figura 33

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

3.1 Configuración de Switches;

SWITCHES 1, 3



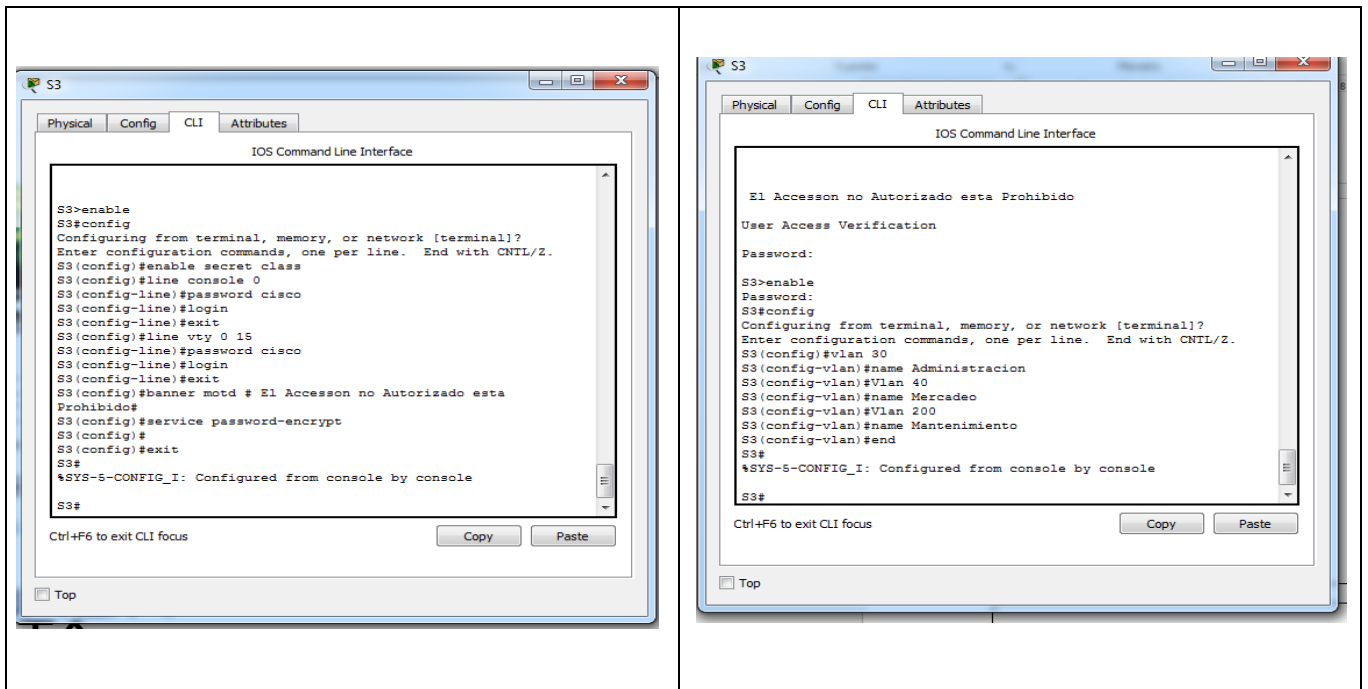


Figura 34

3.2 Configuración de puertos Troncales

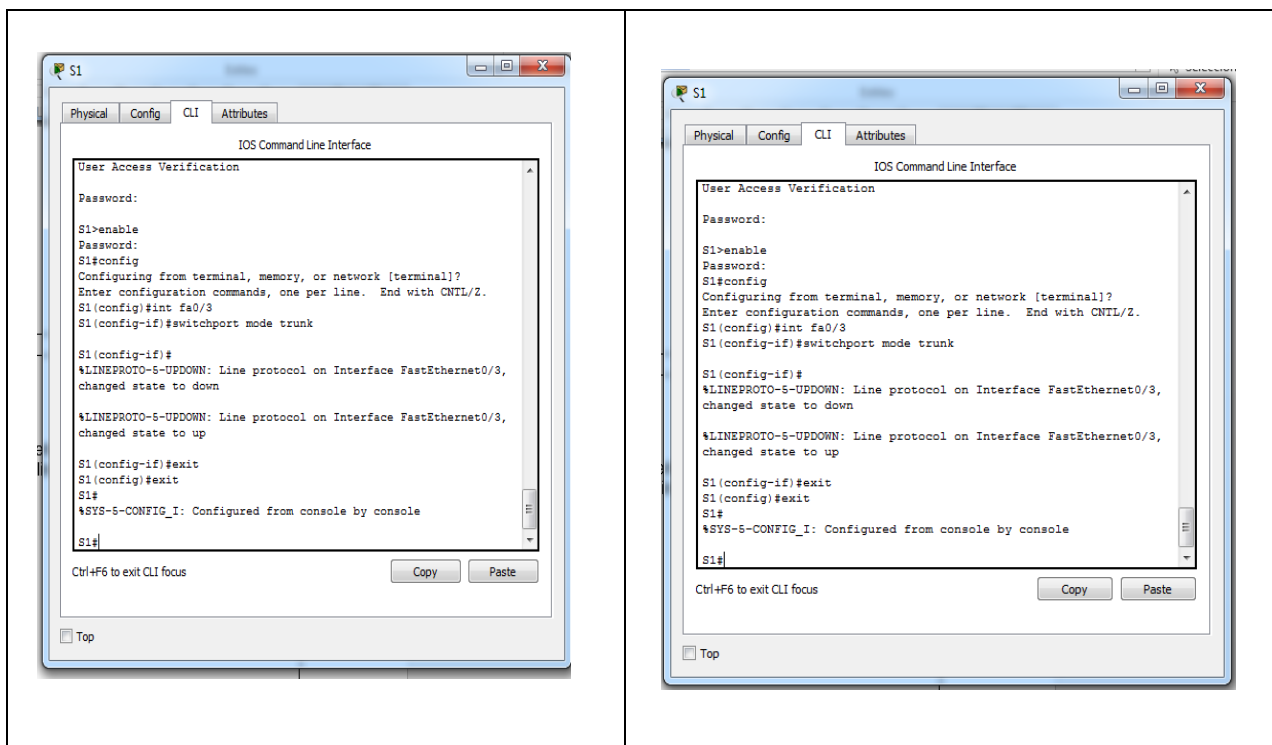


Figura 35

4 En el Switch 3 deshabilitar DNS lookup.

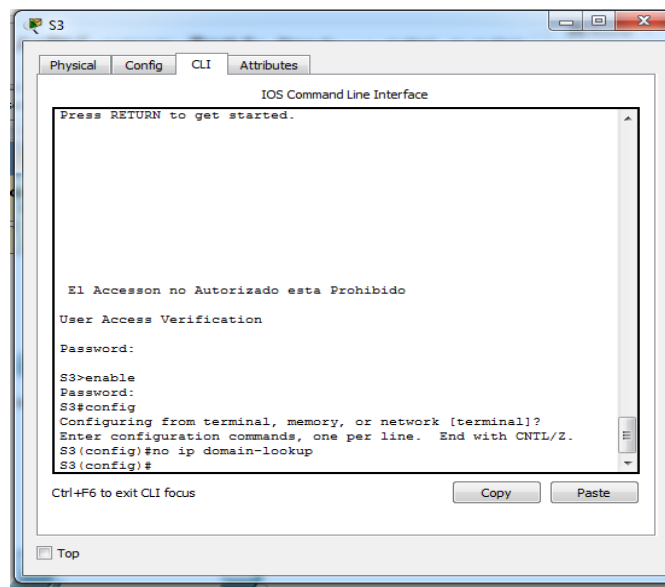


Figura 36

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

5.1 S1

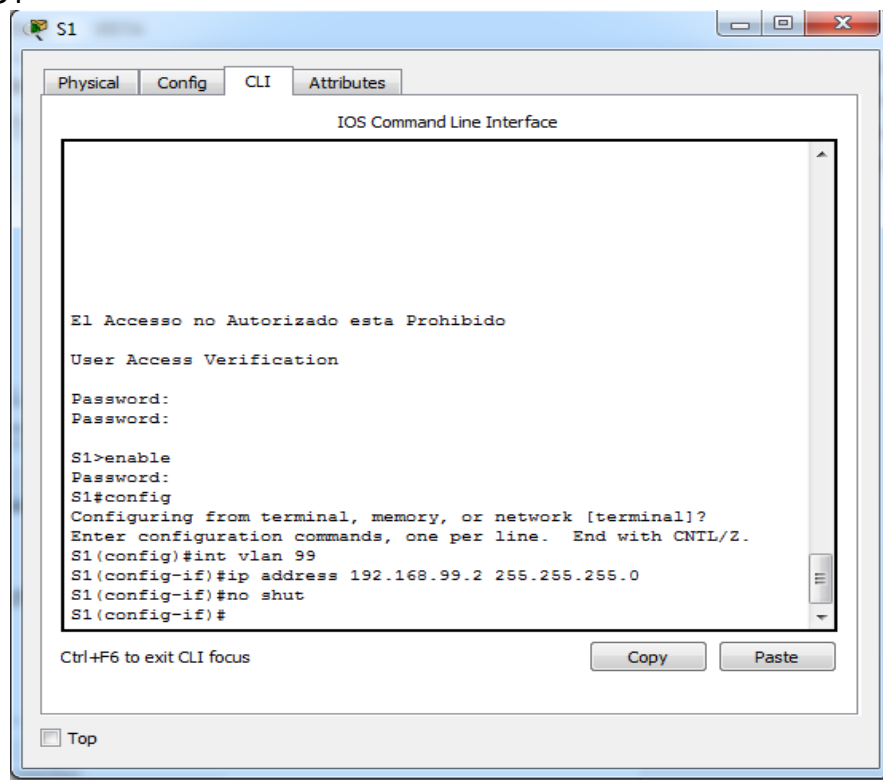


Figura 37

5.2 S3

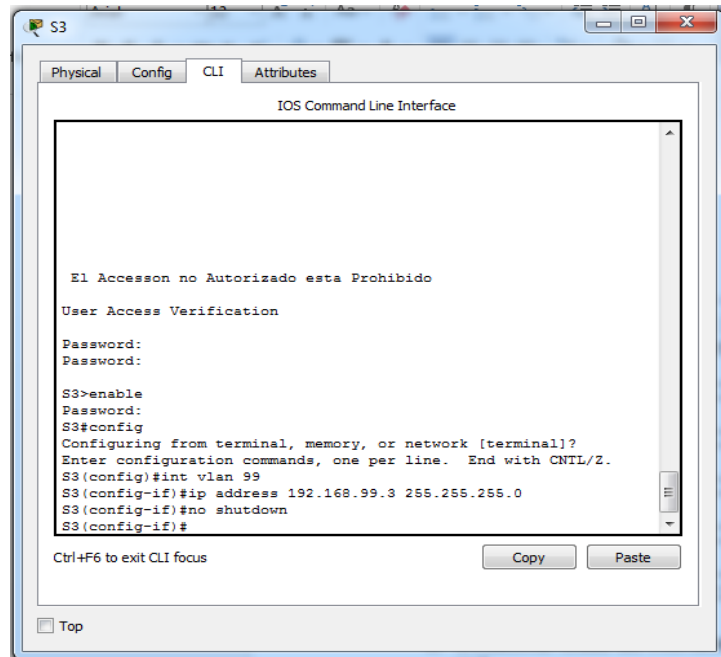


Figura 38

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

6.1 S1

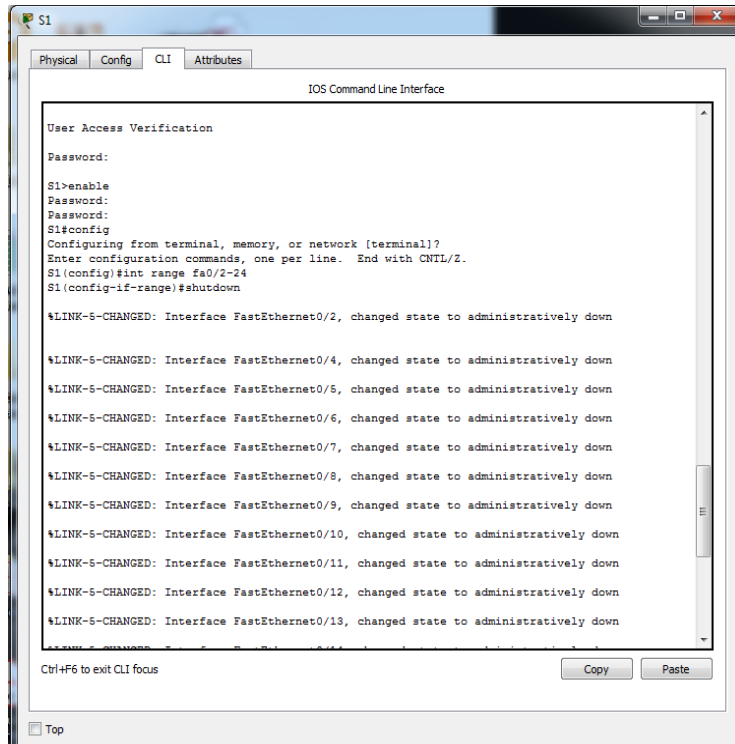


Figura 39

6.2 S3

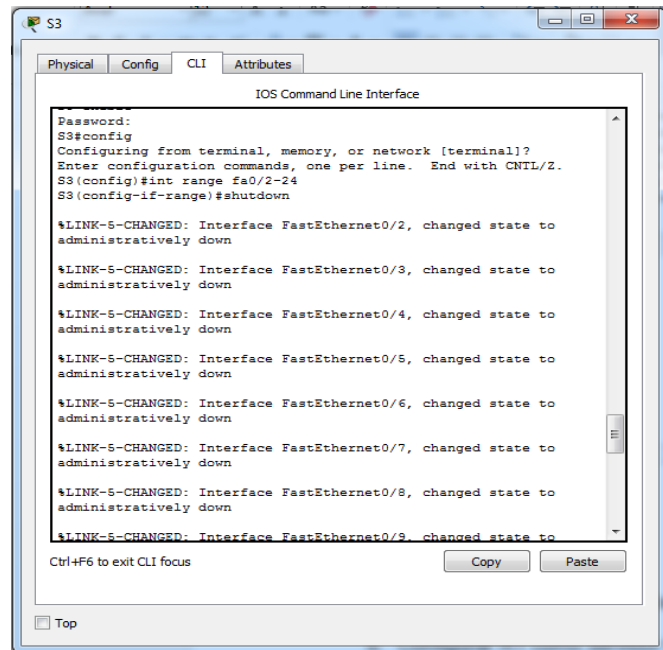


Figura 40

7 Implement DHCP and NAT for IPv4

7.1 Implementaremos en el router Bogotá, DHCP

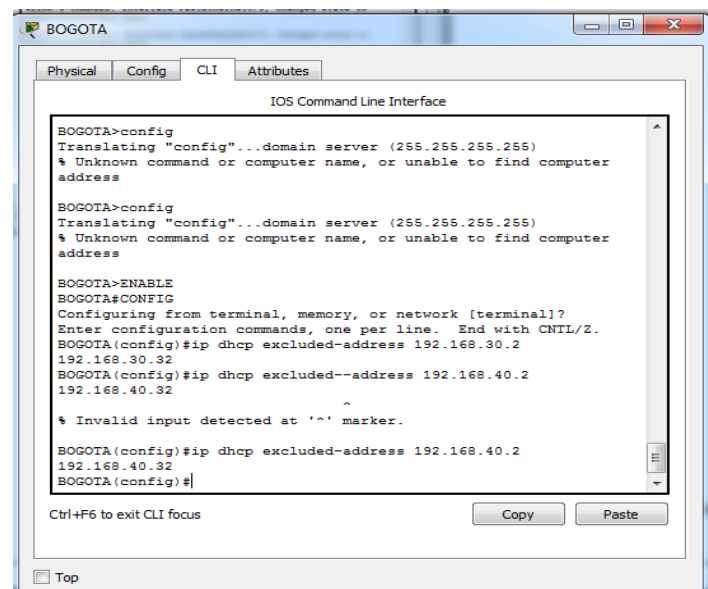


Figura 41

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

```

BOGOTA>enable
BOGOTA#config
Configuring from terminal, memory, or network [terminal]?
Enter configuration commands, one per line. End with CNTL/Z.
BOGOTA(config)#ip dhcp pool administracion
BOGOTA(dhcp-config)#network 192.168.99.0 255.255.255.0
BOGOTA(dhcp-config)#default-router 192.168.99.1
    
```

Figura 42

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.

Tabla 5

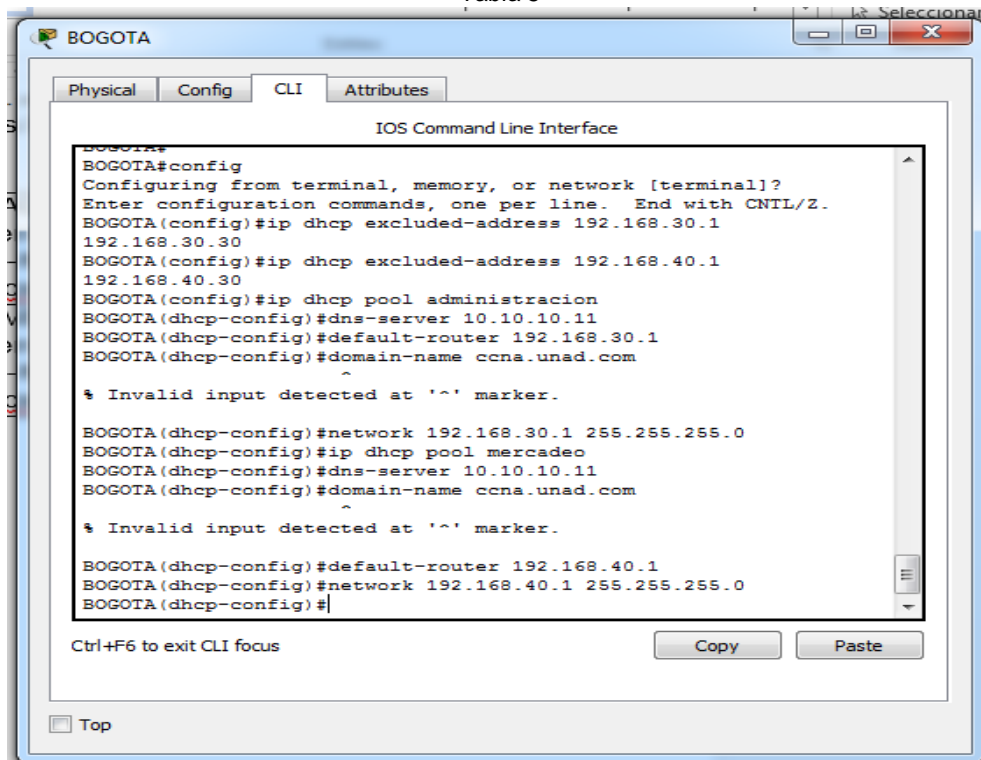


Figura 43

El comando domain-name ccna.unad.com, no es reconocido por packet tracer

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

```
ROUTER MAIMI
MIAMI>enable
MIAMI#config
Configuring from terminal, memory, or network [terminal]?
Enter configuration commands, one per line. End with CNTL/Z.
MIAMI(config)#ip nat inside source static 10.10.10.10 209.165.20.229
MIAMI(config)#int g0/1
MIAMI(config-if)#ip nat inside
MIAMI(config-if)#exit
MIAMI(config)#int g0/1
MIAMI(config-if)#ip nat outside
MIAMI(config-if)#exit
MIAMI(config)#access-list 1 permit 192.168.30.0 0.0.0.255
MIAMI(config)#access-list 1 permit 192.168.40.0 0.0.0.255
MIAMI(config)#access-list 1 permit 192.168.4.0 0.0.3.255
MIAMI(config)#ip nat pool INTERNET 209.165.200.225 209.165.200.228
netmask 255.255.255.248
MIAMI(config)#ip nat inside source list 1 pool INTERNET
MIAMI(config)#do write
Building configuration...
[OK]
MIAMI(config)#
MIAMI(config)#exit
MIAMI#
%SYS-5-CONFIG_I: Configured from console by console

MIAMI#
```

Figura 44

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.

11.1 NAT1 hacia el router R1 BOGOTA

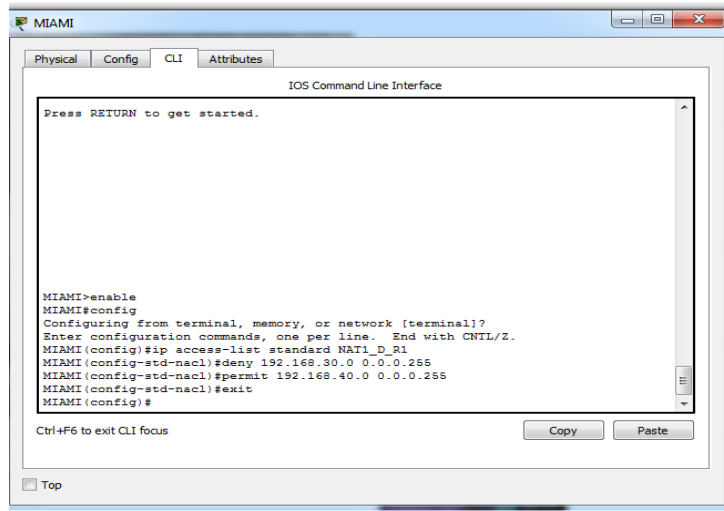


Figura 45

11.2 NAT 2 hacia el router R2 BUENOS AIRES

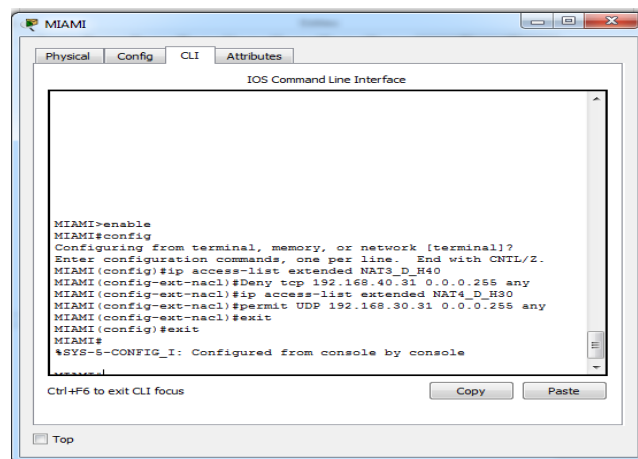


Figura 46

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.

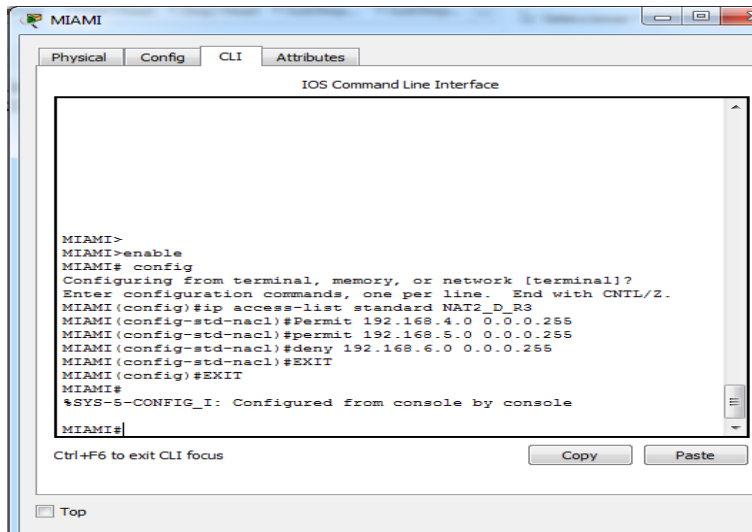


Figura 47

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

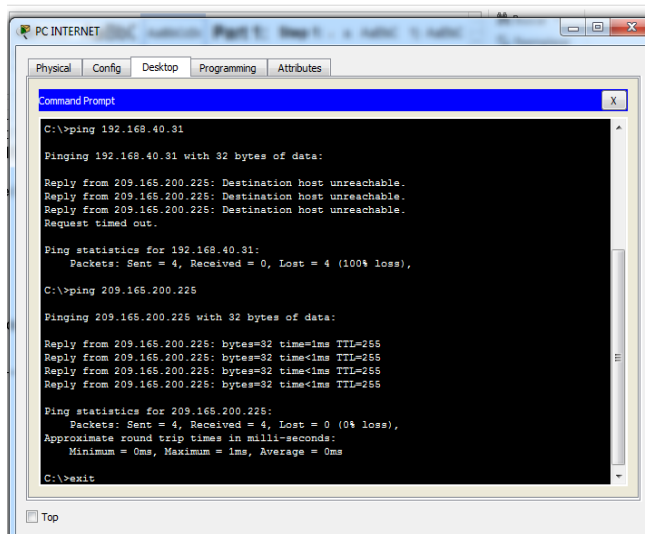
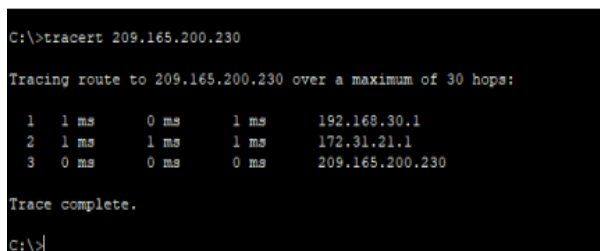
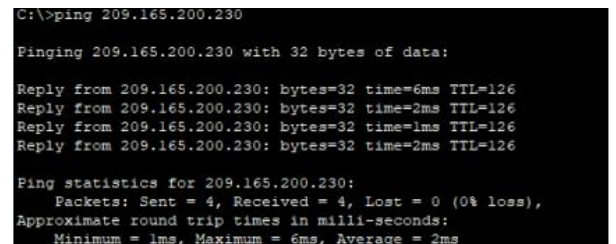


Figura 48



CONCLUSIONES

Teniendo como base las practicas realizadas en el periodo de estudio del curso CCNA1 y CCNA2 según el análisis del escenario en la actividad practica prueba de habilidades, realizado en modo simulación usando el programa Packet Tracer que permite el diseño y la configuración de los escenarios propuesto para la solución del problema. Con el cual se debe contar de tiempo y dedicación para su completo desarrollo y mejor a un entendimiento, del extensivo curso Cisco se a predio a diseñar topologías y direccionarlas, además de la creación de subredes que ayuden a la eficacia de las redes.

A través de las configuraciones realizadas en los dos escenarios se aprendió a coordinar y controlar una red, de manera que sea más eficaz, rápida y robusta en cuanto a la seguridad.

Bibliografía

Macfarlane, J. (2014). Network Routing Basics : Understanding IP Routing in Cisco Systems. Recuperado de: <http://bibliotecavirtual.unad.edu.co:2048/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=e000xww&AN=158227&lang=es&site=ehost-live> Lucas,

M. (2009). Cisco Routers for the Desperate : Router and Switch Management, the Easy Way. San Francisco: No Starch Press. Recuperado de: <http://bibliotecavirtual.unad.edu.co:2048/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=e000xww&AN=440032&lang=es&site=ehost-liv>

Netacad CCNA1 – CCNA2