

PRUEBA DE HABILIDADES PRACTICAS CCNA

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GRUPO

20

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INTRODUCCIÓN

El Internet y las todas las tecnologías que lleva consigo, en especial la de IP han crecido con mucha rapidez. Y parte de las razones en este crecimiento es la flexibilidad del diseño original. Pero, ese diseño no previó la popularidad que tendría el Internet con la gran demanda producto de direcciones IP. Un ejemplo es: cada host y cada dispositivo que se encuentra conectado a Internet demanda una dirección IP con versión 4 (IPv4) única. Y debido al gran crecimiento, el número de direcciones IP disponibles se está terminando con gran velocidad.

La evaluación denominada “Prueba de habilidades prácticas”, forma parte de las actividades evaluativas del Diplomado de Profundización CCNA, y busca identificar el grado de desarrollo de competencias y habilidades que fueron adquiridas a lo largo del diplomado. Lo esencial es poner a prueba los niveles de comprensión y solución de problemas relacionados con diversos aspectos de Networking.

DESARROLLO DE LOS ESCENARIOS

ESCENARIO 1

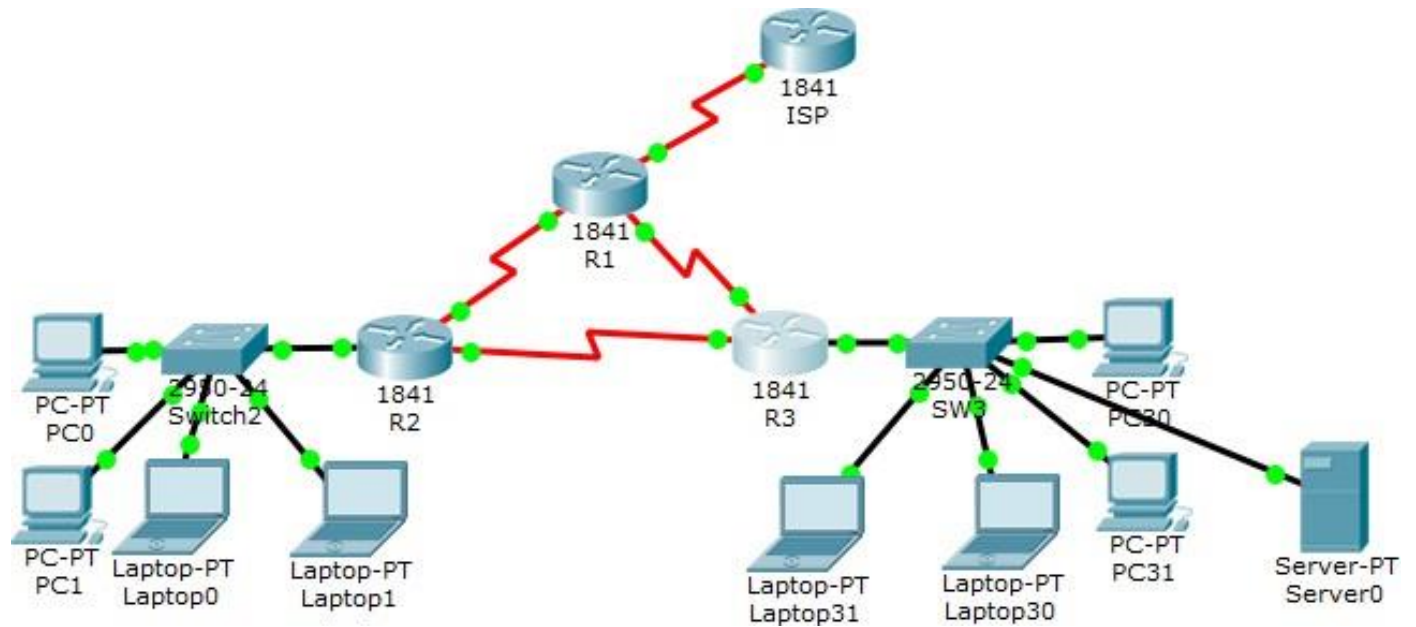


Tabla de direccionamiento

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 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 de enlaces troncales

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

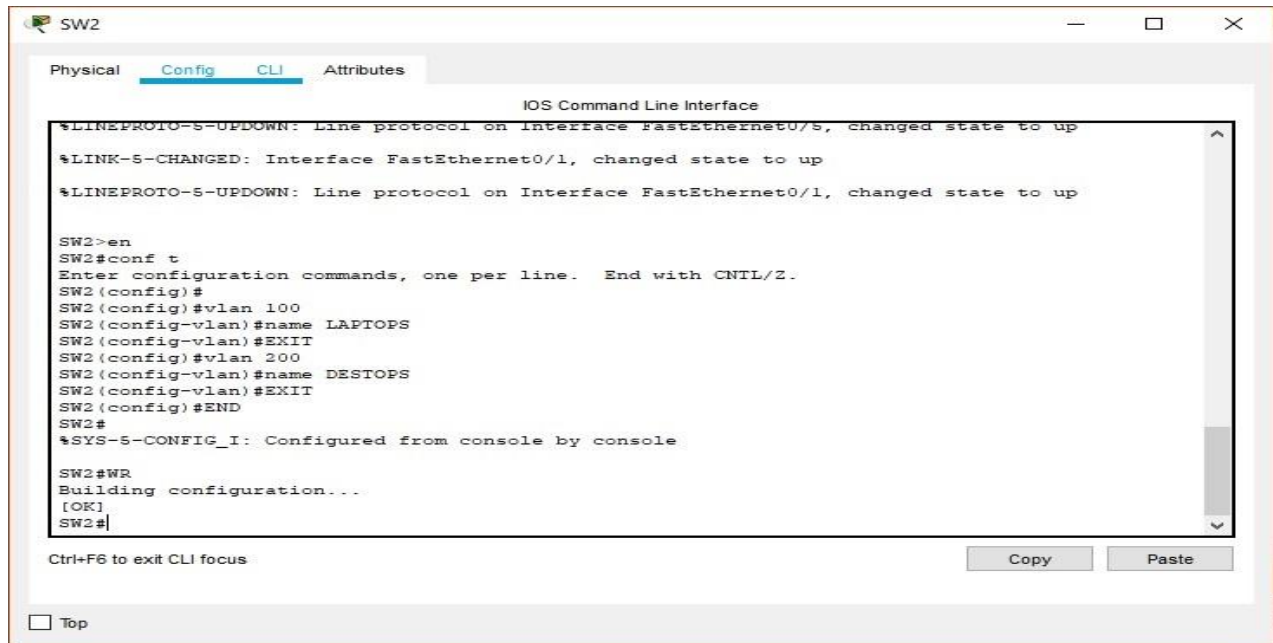
Situación

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

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

Iniciamos con la Configuración del SW2, e iniciamos con la Vlan100 y Vlan200

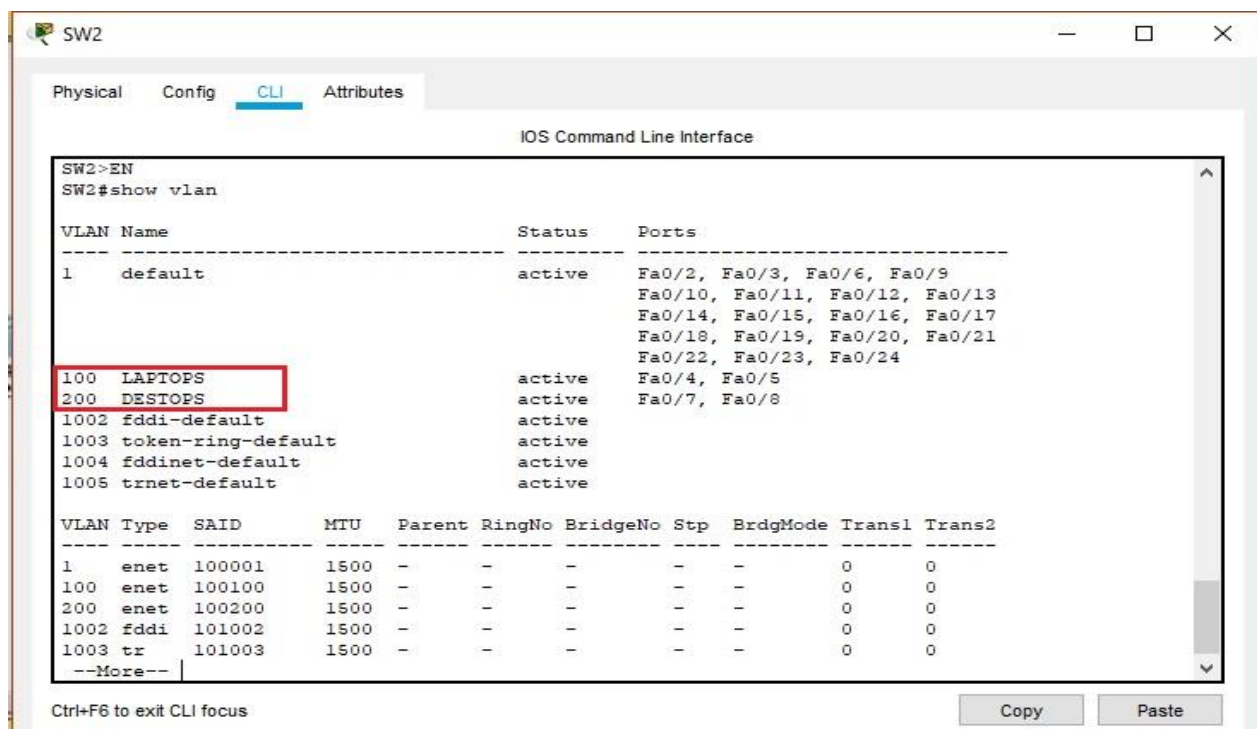


```
SW2
Physical Config CLI Attributes
IOS Command Line Interface
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/5, changed state to up
%LINK-5-CHANGED: Interface FastEthernet0/1, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to up

SW2>en
SW2#conf t
Enter configuration commands, one per line. End with CNTL/Z.
SW2 (config)#
SW2 (config)#vlan 100
SW2 (config-vlan)#name LAPTOS
SW2 (config-vlan)#EXIT
SW2 (config)#vlan 200
SW2 (config-vlan)#name DESTOPS
SW2 (config-vlan)#EXIT
SW2 (config)#END
SW2#
%SYS-5-CONFIG_I: Configured from console by console

SW2#WR
Building configuration...
[OK]
SW2#
```

- A continuación configuramos las interfaces según la tabla de direccionamiento



```
SW2
Physical Config CLI Attributes
IOS Command Line Interface

SW2>EN
SW2#show vlan

VLAN Name                Status    Ports
-----
1    default                active    Fa0/2, Fa0/3, Fa0/6, 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
100  LAPTOS                 active    Fa0/4, Fa0/5
200  DESTOPS                active    Fa0/7, Fa0/8
1002 fddi-default         active
1003 token-ring-default  active
1004 fddinet-default     active
1005 trnet-default       active

VLAN Type  SAID      MTU   Parent  RingNo  BridgeNo  Stp    BrdgMode  Trans1  Trans2
-----
1    enet    100001   1500   -       -        -     -         0       0
100  enet    100100   1500   -       -        -     -         0       0
200  enet    100200   1500   -       -        -     -         0       0
1002 fddi    101002   1500   -       -        -     -         0       0
1003 tr     101003   1500   -       -        -     -         0       0
--More--
```

```

100 LAPTOPS                active   Fa0/2, Fa0/3
200 DESTOPS                active   Fa0/4, Fa0/5
1002 fddi-default          active
1003 token-ring-default    active
1004 fddinet-default       active
1005 trnet-default         active

```

Iniciamos con la Configuración del SW3

```

SW3
Physical Config CLI Attributes
IOS Command Line Interface
Enter configuration commands, one per line. End with CNTL/Z.
SW3(config)#vlan 1
SW3(config-vlan)#exit
SW3(config)#int range 20/1-24
SW3(config-if-range)#switchport mode access
SW3(config-if-range)#switchport access vlan 1
SW3(config-if-range)#exit
SW3(config)#end
SW3#
%SYS-5-CONFIG_I: Configured from console by console

SW3#wr
Building configuration...
[OK]
SW3#show vlan

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

VLAN Type  SAID      MTU    Parent RingNo BridgeNo  Stp  BrdgMode  Trans1  Trans2
-----
1    enet     100001    1500   -      -      -      -      0        0
1002 fddi     101002    1500   -      -      -      -      0        0
1003 tr      101003    1500   -      -      -      -      0        0
1004 fdnet  101004    1500   -      -      -      ieee  0        0
1005 trnet  101005    1500   -      -      -      ibm   0        0

--More--

```

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

Deshabilitamos las interfaces que no van a estar en uso en el SW3


```
SW3#conf t
Enter configuration commands, one per line. End with CNTL/Z.
SW3(config)#
SW3(config)#int range f0/6-23
SW3(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
```

A continuación se hace la especificación de rango de interfaz la cual permite la especificación de un rango de interfaces.

```
SW2>en
SW2#conf t
Enter configuration commands, one per line. End with CNTL/Z.
SW2(config)#int range f0/6-24
SW2(config-if-range)#shutdown

% Invalid input detected at '^' marker.

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
```

Configuramos el puerto troncal en SW2

```

SW2>en
SW2#conf t
Enter configuration commands, one per line. End with CNTL/Z.
SW2(config)#int f0/1
SW2(config-if)#switchport mode trunk
SW2(config-if)#exit
SW2(config)#

```

Configuramos las interfaces, las cuales se configuran como puertos de acceso o puertos troncales. Estos troncales transportan el tráfico de varias VLAN a través de un solo enlace y le permiten extender las VLAN a través de la red. SW3

```

SW3>en
SW3#conf t
Enter configuration commands, one per line. End with CNTL/Z.
SW3(config)#int f0/1
SW3(config-if)#switchport mode trunk

SW3(config-if)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to down
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to up

SW3(config-if)#end
SW3#
%SYS-5-CONFIG_I: Configured from console by console
wr
Building configuration...
[OK]
SW3#

```

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

Actualizamos la información del R1 de acuerdo a la tabla de direccionamiento

```

R1>en
R1#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R1(config)#int s0/0/0
R1(config-if)#ip address 200.123.211.2 255.255.255.0
R1(config-if)#exit
R1(config)#int s0/1/0
R1(config-if)#ip address 10.0.0.1 255.255.255.252
R1(config-if)#exit
R1(config)#int s0/1/1
R1(config-if)#ip address 10.0.0.5 255.255.255.252
R1(config-if)#end
R1#
%SYS-5-CONFIG_I: Configured from console by console
wr
Building configuration...
[OK]
R1#

```

Actualizamos la información del R2 de acuerdo a la tabla de direccionamiento

```
R2>en
R2#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R2(config)#int f0/0
R2(config-if)#exit
R2(config)#int f0/0.100
R2(config-subif)#
%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

R2(config-subif)#encapsulation dot1Q 100
R2(config-subif)#ip address 192.168.20.1 255.255.255.0
R2(config-subif)#exit
R2(config)#int f0/0.200
R2(config-subif)#
%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-subif)#encapsulation dot1Q 200
R2(config-subif)#ip address 192.168.21.1 255.255.255.0
R2(config-subif)#exit
R2(config)#int s0/0/0
R2(config-if)#ip address 10.0.0.2 255.255.255.252
Bad mask 0xFFFFFFF for address 10.0.0.2
R2(config-if)#ip address 10.0.0.2 255.255.255.252
R2(config-if)#exit
%DHCPD-4-PING_CONFLICT: DHCP address conflict: server pinged 192.168.21.1.
t
R2(config)#exit
R2#
%SYS-5-CONFIG_I: Configured from console by console

R2#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R2(config)#int s0/0/1
R2(config-if)#ip address 10.0.0.9 255.255.255.252
R2(config-if)#exit
R2(config)#end
R2#
%SYS-5-CONFIG_I: Configured from console by console
wr
Building configuration...
[OK]
R2#
```

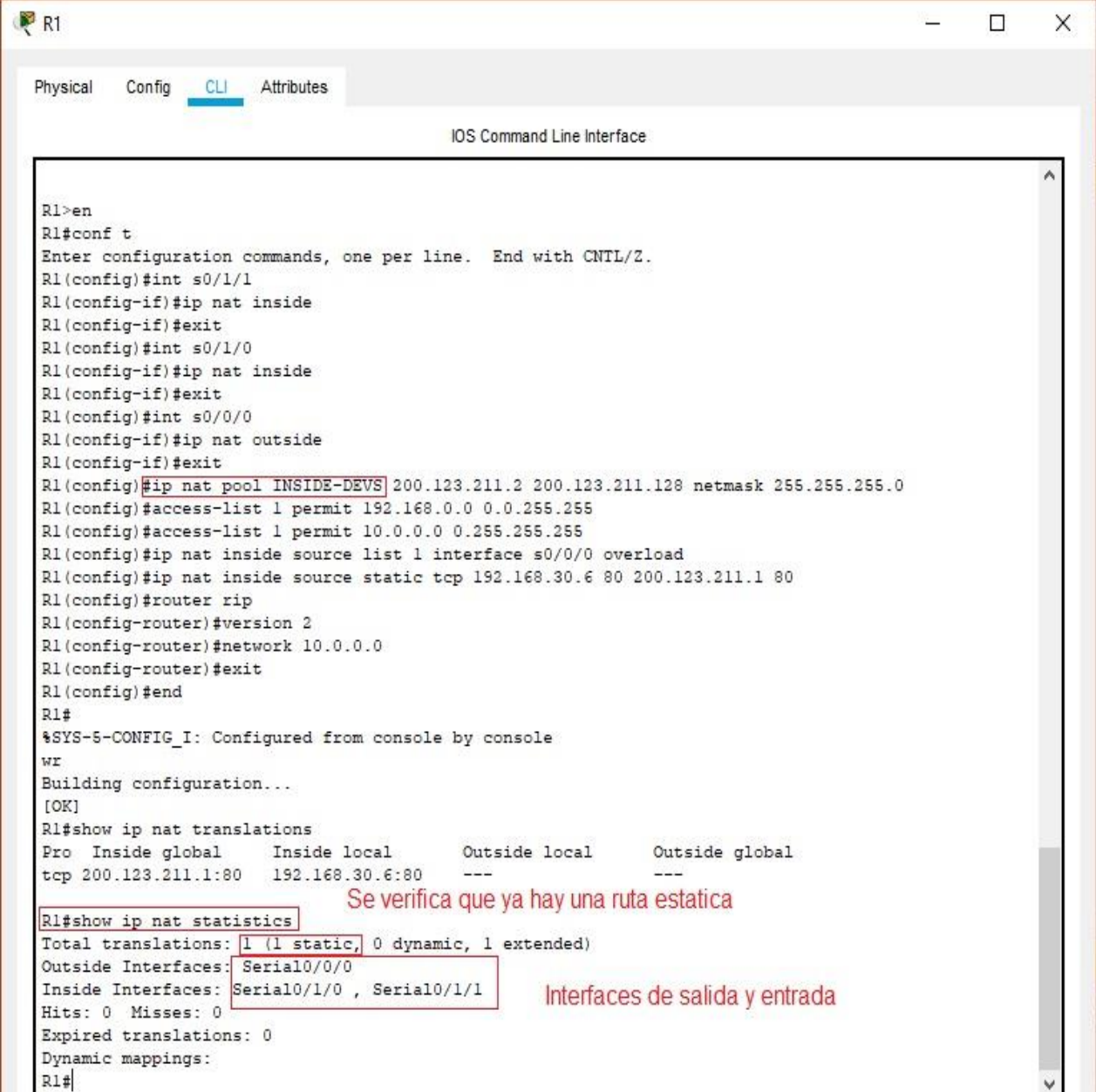
- **Laptop20, Laptop21, PC20, PC21, Laptop30, Laptop31, PC30 y PC31** deben obtener información IPv4 del servidor DHCP.

Se hace la respectiva verificación para que todos queden activos en DHCP

- **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** debe tener una ruta estática predeterminada al ISP que se configuró y que incluye esa ruta en **el dominio RIPv2**.

Lista de control de acceso, se crea una lista de acceso estándar con el nombre indicado y permitiendo las tres redes, creamos el Nat con sobrecarga (overload), lo que significa que se hará con sobre carga, las direcciones privadas se convertirán en públicas.

Creamos una ruta predeterminada.



```
R1
Physical Config CLI Attributes
IOS Command Line Interface

R1>en
R1#conf t
Enter configuration commands, one per line. End with CNIL/Z.
R1(config)#int s0/1/1
R1(config-if)#ip nat inside
R1(config-if)#exit
R1(config)#int s0/1/0
R1(config-if)#ip nat inside
R1(config-if)#exit
R1(config)#int s0/0/0
R1(config-if)#ip nat outside
R1(config-if)#exit
R1(config)#ip nat pool INSIDE-DEVS 200.123.211.2 200.123.211.128 netmask 255.255.255.0
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 translations
Pro Inside global      Inside local      Outside local      Outside global
tcp 200.123.211.1:80    192.168.30.6:80  ---                ---

R1#show ip nat statistics
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#
```

Se verifica que ya hay una ruta estática

Interfaces de salida y entrada

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

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

```

R2>en
R2#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R2(config)#ip dhcp exclud-address 10.0.0.2 10.0.0.9
% Invalid input detected at '^' marker.
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)#int 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)#int 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)#
R2(config-if)#end
R2#
%SYS-5-CONFIG_I: Configured from console by console
wr
Building configuration...
[OK]
R2#
  
```

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

Se hace ping satisfactorio a los 4 equipos

Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num
	Successful	Server0	PC30	ICMP	Green	0.000	N	2
	Successful	Server0	Laptop30	ICMP	Grey	0.000	N	3
	Successful	Server0	Laptop31	ICMP	Purple	0.000	N	4

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.

Laptop31

Physical Config **Desktop** Programming Attributes

DHCP Static DHCP request successful.

IP Address 192.168.30.2
Subnet Mask 255.255.255.0
Default Gateway 192.168.30.1
DNS Server 0.0.0.0

IPv6 Configuration

DHCP Auto Config Static ipv6 Autoconfig request successful.

IPv6 Address 2001:DB8:130:0:203:E4FF:FE2C:C460 / 64
Link Local Address FE80::203:E4FF:FE2C:C460
IPv6 Gateway FE80::1
IPv6 DNS Server

802.1X

Use 802.1X Security

Authentication MDS
Username
Password

Top

Laptop30

Physical Config **Desktop** Programming Attributes

DHCP Static DHCP request successful.

IP Address 192.168.30.4
Subnet Mask 255.255.255.0
Default Gateway 192.168.30.1
DNS Server 0.0.0.0

IPv6 Configuration

DHCP Auto Config Static ipv6 Autoconfig request successful.

IPv6 Address 2001:DB8:130:0:201:97FF:FE32:6065 / 64
Link Local Address FE80::201:97FF:FE32:6065
IPv6 Gateway FE80::1
IPv6 DNS Server

802.1X

Use 802.1X Security

Authentication MDS
Username
Password

Top

PC31

Physical Config **Desktop** Programming Attributes

DHCP Static

IP Address: 192.168.30.3
Subnet Mask: 255.255.255.0
Default Gateway: 192.168.30.1
DNS Server: 0.0.0.0

IPv6 Configuration

DHCP Auto Config Static

IPv6 Address: 2001:DB8:130:0:20C:85FF:FE03:4271 / 64
Link Local Address: FE80::20C:85FF:FE03:4271
IPv6 Gateway: FE80::1
IPv6 DNS Server:

802.1X

Use 802.1X Security

Authentication: MD5
Username:
Password:

Top

PC30

Physical Config **Desktop** Programming Attributes

DHCP Static

IP Address: 192.168.30.5
Subnet Mask: 255.255.255.0
Default Gateway: 192.168.30.1
DNS Server: 0.0.0.0

IPv6 Configuration

DHCP Auto Config Static

IPv6 Address: 2001:DB8:130:0:207:ECFF:FE4A:183C / 64
Link Local Address: FE80::207:ECFF:FE4A:183C
IPv6 Gateway: FE80::1
IPv6 DNS Server:

802.1X

Use 802.1X Security

Authentication: MD5
Username:
Password:

Top

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

```

R3>en
R3#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R3(config)#ipv6 unicast-routing
R3(config)#int 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::9C0:80F:301/64
R3(config-if)#NO SHUTDOWN
R3(config-if)#

```

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

R1 – interfaces que están conectadas directamente

```

R1>en
R1#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R1(config)#router rip
R1(config-router)#version 2
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

R1(config-router)#net
% Incomplete command.
R1(config-router)#network 10.0.0.0
R1(config-router)#network 10.0.0.4
R1(config-router)#end
R1#
%SYS-5-CONFIG_I: Configured from console by console

R1#wr
Building configuration...
[OK]
R1#

```

R2 – interfaces que están conectadas directamente

```

R2>en
R2#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R2(config)#router rip
R2(config-router)#version 2
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

R2(config-router)#end
R2#
%SYS-5-CONFIG_I: Configured from console by console

R2#wr
Building configuration...
[OK]
R2#

```


R3 – interfaces que están conectadas directamente

```
R3>en
R3#conf t
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)#show ip route connected
^
% Invalid input detected at '^' marker.

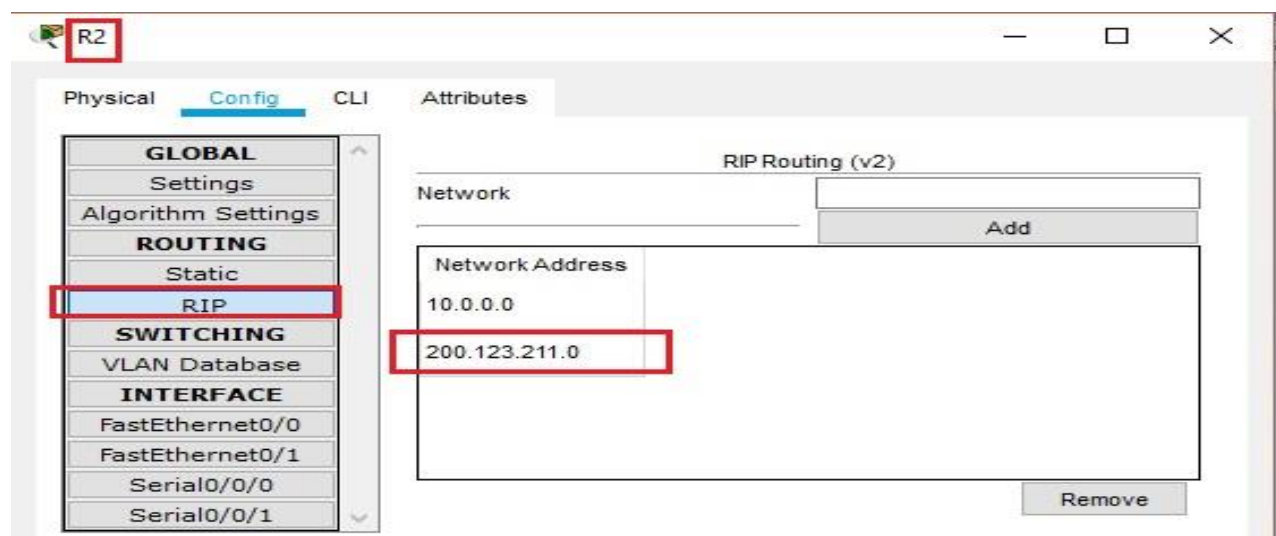
R3(config-router)#end
R3#
%SYS-5-CONFIG_I: Configured from console by console

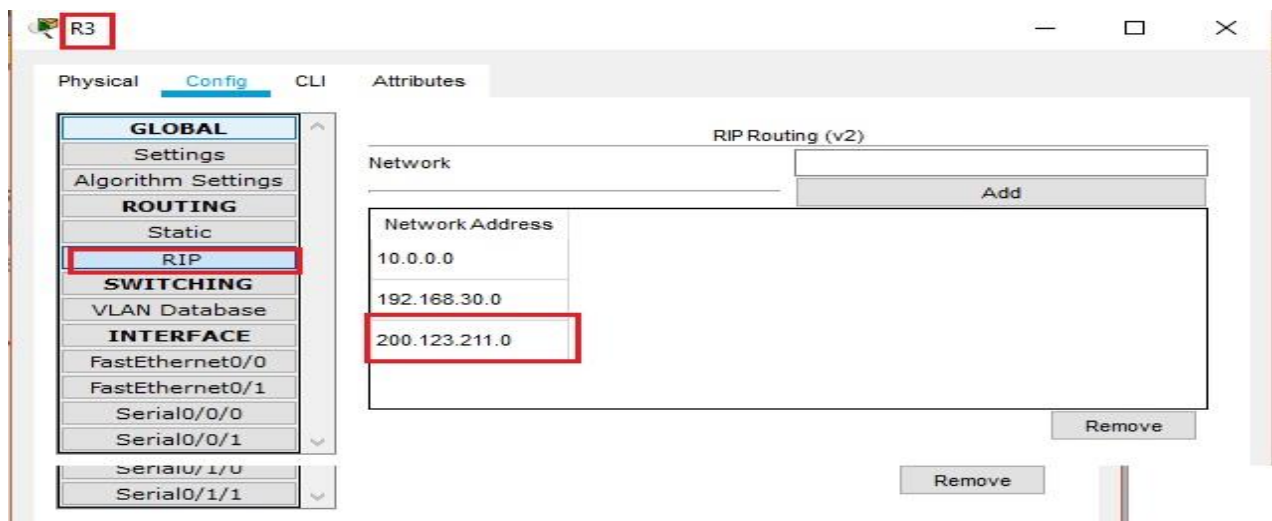
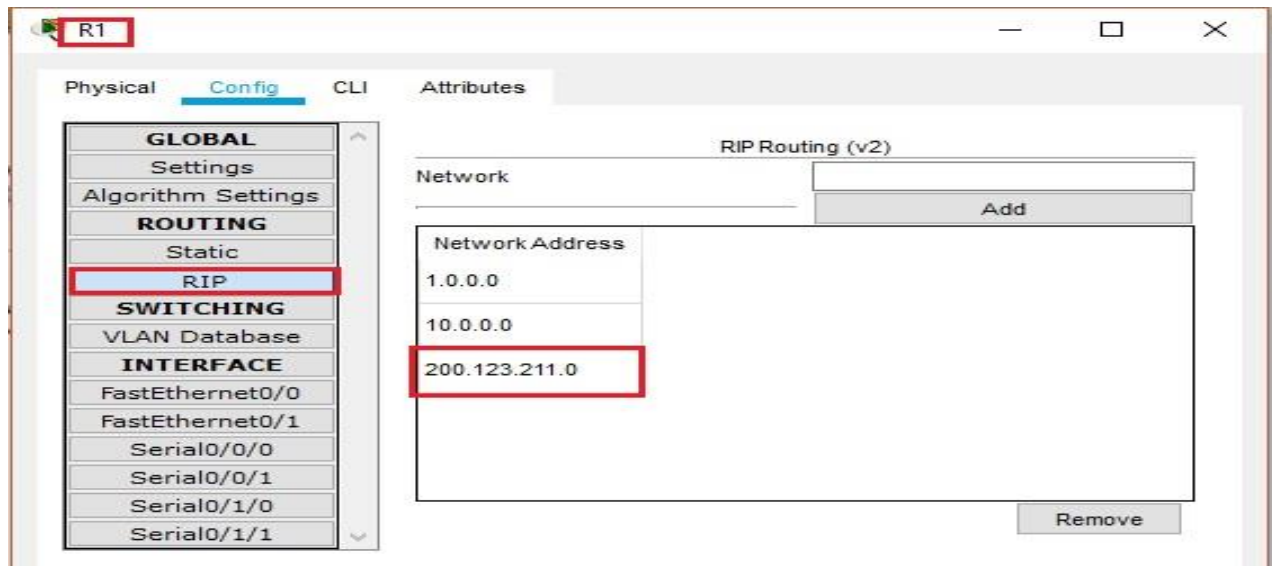
R3#show ip route connected
C 10.0.0.4/30 is directly connected, Serial0/0/0
C 10.0.0.8/30 is directly connected, Serial0/0/1
C 192.168.30.0/24 is directly connected, FastEthernet0/0

R3#wr
Building configuration...
[OK]
R3#
```

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




























Ya se configuró anteriormente. Cada uno conoce sus rutas porque lo aprende por medio del protocolo de Rip Version 2, y cada uno lo tiene el protocolo activo ya que se activó en cada router.





- 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.

Successful	Lapto...	Laptop30	ICMP		0.000	N	0
Successful	PC31	Laptop30	ICMP		0.000	N	1
Successful	PC30	PC31	ICMP		0.000	N	2
Successful	PC30	Laptop30	ICMP		0.000	N	3
Successful	PC30	Laptop31	ICMP		0.000	N	4
Successful	Lapto...	PC31	ICMP		0.000	N	5
Successful	Server0	PC30	ICMP		0.000	N	6
Successful	Server0	PC31	ICMP		0.000	N	7
Successful	Server0	Laptop30	ICMP		0.000	N	8

●	Successful	Server0	Laptop31	ICMP		0.000	N	9
●	Successful	Server0	ISP	ICMP		0.000	N	10
●	Successful	Server0	R1	ICMP		0.000	N	11
●	Successful	Server0	R3	ICMP		0.000	N	12
●	Successful	Server0	R2	ICMP		0.000	N	13
●	Failed	SW3	Server0	ICMP		0.000	N	14
●	Failed	SW3	Laptop31	ICMP		0.000	N	15
●	Failed	SW3	Laptop30	ICMP		0.000	N	16
●	Failed	SW3	PC31	ICMP		0.000	N	17
●	Successful	PC30	R1	ICMP		0.000	N	18
●	Successful	R3	R1	ICMP		0.000	N	19
●	Successful	R2	R3	ICMP		0.000	N	20
●	Successful	R1	R2	ICMP		0.000	N	21
●	Successful	R2	ISP	ICMP		0.000	N	22
●	Successful	R3	ISP	ICMP		0.000	N	23
●	Successful	R1	ISP	ICMP		0.000	N	24
●	Failed	ISP	Laptop31	ICMP		0.000	N	25
●	Failed	ISP	Laptop30	ICMP		0.000	N	26
●	Failed	ISP	PC31	ICMP		0.000	N	27
●	Failed	ISP	PC30	ICMP		0.000	N	28
●	Failed	ISP	Laptop21	ICMP		0.000	N	29
●	Failed	ISP	Laptop20	ICMP		0.000	N	30
●	Failed	ISP	PC21	ICMP		0.000	N	31
●	Failed	ISP	PC20	ICMP		0.000	N	32
●	Failed	SW2	ISP	ICMP		0.000	N	33
●	Failed	SW2	PC21	ICMP		0.000	N	34
●	Successful	Lapto...	Laptop21	ICMP		0.000	N	35

Nota: PC21 y PC20 agarran otro tipo de direccionamiento, lo cual no se pudo hallar solución, de igual forma no acceden al R1 ni tampoco al ISP.

Ping satisfactorio del PC 31 al Server0

```
C:\>ping FE80::2E0:F9FF:FE2E:A20E

Pinging FE80::2E0:F9FF:FE2E:A20E with 32 bytes of data:

Reply from FE80::2E0:F9FF:FE2E:A20E: bytes=32 time<lms TTL=128
Reply from FE80::2E0:F9FF:FE2E:A20E: bytes=32 time<lms TTL=128
Reply from FE80::2E0:F9FF:FE2E:A20E: bytes=32 time<lms TTL=128
Reply from FE80::2E0:F9FF:FE2E:A20E: bytes=32 time<lms TTL=128

Ping statistics for FE80::2E0:F9FF:FE2E:A20E:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>
```

Ping satisfactorio del PC 30 al Server0

```
C:\>ping FE80::2E0:F9FF:FE2E:A20E

Pinging FE80::2E0:F9FF:FE2E:A20E with 32 bytes of data:

Reply from FE80::2E0:F9FF:FE2E:A20E: bytes=32 time=lms TTL=128
Reply from FE80::2E0:F9FF:FE2E:A20E: bytes=32 time<lms TTL=128
Reply from FE80::2E0:F9FF:FE2E:A20E: bytes=32 time<lms TTL=128
Reply from FE80::2E0:F9FF:FE2E:A20E: bytes=32 time<lms TTL=128

Ping statistics for FE80::2E0:F9FF:FE2E:A20E:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = lms, Average = 0ms

C:\>
```

Ping satisfactorio del Laptop30 al Server0

```
C:\>ping FE80::2E0:F9FF:FE2E:A20E

Pinging FE80::2E0:F9FF:FE2E:A20E with 32 bytes of data:

Reply from FE80::2E0:F9FF:FE2E:A20E: bytes=32 time=lms TTL=128
Reply from FE80::2E0:F9FF:FE2E:A20E: bytes=32 time<lms TTL=128
Reply from FE80::2E0:F9FF:FE2E:A20E: bytes=32 time<lms TTL=128
Reply from FE80::2E0:F9FF:FE2E:A20E: bytes=32 time<lms TTL=128

Ping statistics for FE80::2E0:F9FF:FE2E:A20E:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = lms, Average = 0ms

C:\>
```

Ping satisfactorio del Laptop31 al Server0

```
C:\>ping FE80::2E0:F9FF:FE2E:A20E

Pinging FE80::2E0:F9FF:FE2E:A20E with 32 bytes of data:

Reply from FE80::2E0:F9FF:FE2E:A20E: bytes=32 time<lms TTL=128
Reply from FE80::2E0:F9FF:FE2E:A20E: bytes=32 time=lms TTL=128
Reply from FE80::2E0:F9FF:FE2E:A20E: bytes=32 time=lms TTL=128
Reply from FE80::2E0:F9FF:FE2E:A20E: bytes=32 time<lms TTL=128

Ping statistics for FE80::2E0:F9FF:FE2E:A20E:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = lms, Average = 0ms

C:\>|
```

Ping satisfactorio del Laptop31 al PC31

```
C:\>ping FE80::20C:85FF:FE03:4271

Pinging FE80::20C:85FF:FE03:4271 with 32 bytes of data:

Reply from FE80::20C:85FF:FE03:4271: bytes=32 time=lms TTL=128
Reply from FE80::20C:85FF:FE03:4271: bytes=32 time<lms TTL=128
Reply from FE80::20C:85FF:FE03:4271: bytes=32 time<lms TTL=128
Reply from FE80::20C:85FF:FE03:4271: bytes=32 time=lms TTL=128

Ping statistics for FE80::20C:85FF:FE03:4271:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = lms, Average = 0ms
```

Ping satisfactorio del Laptop31 al Laptop30

```
C:\>ping FE80::201:97FF:FE32:6065

Pinging FE80::201:97FF:FE32:6065 with 32 bytes of data:

Reply from FE80::201:97FF:FE32:6065: bytes=32 time=2ms TTL=128
Reply from FE80::201:97FF:FE32:6065: bytes=32 time<lms TTL=128
Reply from FE80::201:97FF:FE32:6065: bytes=32 time<lms TTL=128
Reply from FE80::201:97FF:FE32:6065: bytes=32 time<lms TTL=128

Ping statistics for FE80::201:97FF:FE32:6065:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 2ms, Average = 0ms

C:\>|
```

Ping satisfactorio del Laptop31 al PC30

```
C:\>ping FE80::207:ECFF:FE4A:183C

Pinging FE80::207:ECFF:FE4A:183C with 32 bytes of data:

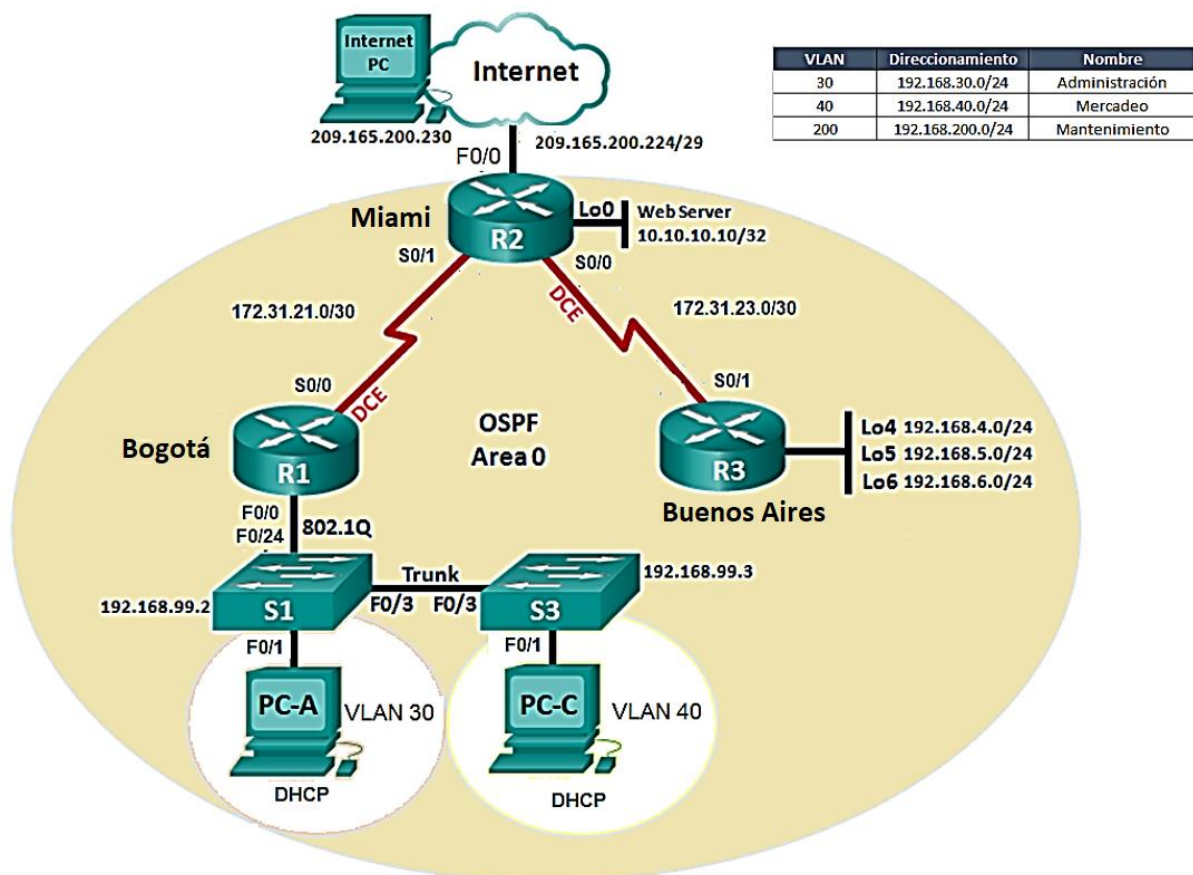
Reply from FE80::207:ECFF:FE4A:183C: bytes=32 time=1ms TTL=128
Reply from FE80::207:ECFF:FE4A:183C: bytes=32 time<1ms TTL=128
Reply from FE80::207:ECFF:FE4A:183C: bytes=32 time<1ms TTL=128
Reply from FE80::207:ECFF:FE4A:183C: bytes=32 time<1ms TTL=128

Ping statistics for FE80::207:ECFF:FE4A:183C:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 1ms, Average = 0ms

C:\>
```

ESCENARIO 2

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



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

R1

```
BOGOTA#enable
```

```
BOGOTA#configure terminal
```

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

```
BOGOTA(config)#int s0/1/0
```

```
BOGOTA(config-if)#ip add 172.31.21.1 255.255.255.252
```

```
BOGOTA(config-if)#clock rate 64000
```

```
BOGOTA(config-if)#no shu
```

R2

```
Router(config)#hostname MIAMI
```

```
MIAMI(config)#int loop0
```

```
MIAMI(config-if)#ip add 10.10.10.10 255.255.255.255
```

```
MIAMI(config-if)#ip add 10.10.10.10 255.255.255.255
```

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

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

```
MIAMI(config-if)#ip add 172.31.23.1 255.255.255.252
```


MIAMI(config-if)#clock rate 64000

MIAMI(config-if)#no shut

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

MIAMI(config-if)#ip add 172.31.21.2 255.255.255.252

MIAMI(config-if)#no shut

MIAMI(config)#int f0/0

MIAMI(config-if)#ip add 209.165.200.255 255.255.255.248

R3

Router#configure terminal

BUENOS(config)#hostname BUENOSAIRE

BUENOSAIRE(config)#int loop4

BUENOSAIRE(config-if)#

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

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

BUENOSAIRE(config-if)#ip add 192.168.4.1 255.255.255.0

BUENOSAIRES(config-if)#no shut

BUENOSAIRES(config-if)#int loop5

BUENOSAIRES(config-if)#

%LINK-5-CHANGED: Interface Loopback5, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback5, changed state to up

BUENOSAIRES(config-if)#ip add 192.168.5.1 255.255.255.0

BUENOSAIRES(config-if)#no shut

BUENOSAIRES(config-if)#int loop6

BUENOSAIRES(config-if)#

%LINK-5-CHANGED: Interface Loopback6, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback6, changed state to up

BUENOSAIRES(config-if)#ip add 192.168.6.1 255.255.255.0

BUENOSAIRES(config-if)#no shut

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

```
BUENOSAIRES(config-if)#ip add 172.31.23.2 255.255.255.252
```

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

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

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

R1

```
BOGOTA>enable
```

```
BOGOTA#configure terminal
```

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)#Reload or use "clear ip ospf process" command, for this to take effect
```

```
BOGOTA(config-router)#network 192.168.99.0 0.0.0.255 area 0
```

```
BOGOTA(config-router)#network 172.31.21.0 0.0.0.3 area 0
```

```
BOGOTA(config-router)#passive-interface f0/0
```

```
BOGOTA(config-router)#int s0/1/0
```

```
BOGOTA(config-if)#bandwidth 128
```

```
BOGOTA(config-if)#ip ospf cost 7500
```

```
BOGOTA(config-if)#int s0/1/1
```

```
BOGOTA(config-if)#bandwidth 128
```

```
BOGOTA(config-if)#
```

R2

```
MIAMI>enable
```

```
MIAMI#configure terminal
```

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

MIAMI(config)#router ospf 1

MIAMI(config-router)#router-id 2.2.2.2

MIAMI(config-router)#network 209.165.200.224 0.0.0.7 area 0

MIAMI(config-router)#network 172.31.21.0 0.0.0.3 area 0

MIAMI(config-router)#network 10.10.10.10 0.0.0.3 area 0

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

MIAMI(config-router)#int s0/1/0

MIAMI(config-if)#bandwidth 128

MIAMI(config-if)#ip ospf cost 7500

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

MIAMI(config-if)#bandwidth 128

MIAMI(config-if)#

R3

BUENOSAIRES>enable

BUENOSAIRES#configure terminal

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

BUENOSAIRES(config)#router ospf 1

BUENOSAIRES(config-router)#router-id 3.3.3.3

BUENOSAIRES(config-router)#network 172.31.23.0 0.0.0.3 area 0

BUENOSAIRES(config-router)#network 192.168.4.0 0.0.0.255 area 0

BUENOSAIRES(config-router)#network 192.168.5.0 0.0.0.255 area 0

BUENOSAIRES(config-router)#network 192.168.6.0 0.0.0.255 area 0

BUENOSAIRES(config-router)#int s0/1/0

BUENOSAIRES(config-if)#bandwidth 128

BUENOSAIRES(config-if)#ip ospf cost 7500

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

BUENOSAIRES(config-if)#bandwidth 128

BUENOSAIRES(config-if)#

Verificar información de OSPF

- Visualizar tablas de enrutamiento y routers conectados por OSPFv2

```
Cisco IOS Software, 1941 Software (C1941-ADVIPSERVICESK9-M), Version 15.4(1S)/11,
RELEASE SOFTWARE (fc2)
Technical Support: http://www.cisco.com/techsupport
Copyright (c) 1986-2007 by Cisco Systems, Inc.
Compiled Wed 18-Jul-07 04:52 by pt_team

Press RETURN to get started!

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to
up
%LINK-5-CHANGED: Interface Serial0/1/1, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/1/1, changed state to up

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

Gateway of last resort is not set

BOGOTA#
```

```
%LINK-5-CHANGED: Interface Serial0/1/0, changed state to up
%LINK-5-CHANGED: Interface Serial0/1/1, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to
up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/1/1, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/1/0, changed state to up

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

Gateway of last resort is not set

      10.0.0.0/32 is subnetted, 1 subnets
C       10.10.10.10 is directly connected, Loopback0
      172.31.0.0/30 is subnetted, 2 subnets
C       172.31.21.0 is directly connected, Serial0/1/1
C       172.31.23.0 is directly connected, Serial0/1/0
MIAMI#
```

```
Buenos Aires
Physical Config CLI
IOS Command Line Interface
Cisco IOS Software, 1841 Software (C1841-ADVIPSERVICESK9-M), Version 12.4(15)T1,
RELEASE SOFTWARE (fc2)
Technical Support: http://www.cisco.com/techsupport
Copyright (c) 1986-2007 by Cisco Systems, Inc.
Compiled Wed 18-Jul-07 04:52 by pt_team

Press RETURN to get started!

%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

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

Gateway of last resort is not set

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
BUENOSAIRE#
```

- 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

```
MIAMI(config-router)#do sh ip ospf interface

Loopback0 is up, line protocol is up
  Internet address is 10.10.10.10/32, Area 0
  Process ID 1, Router ID 2.2.2.2, Network Type LOOPBACK, Cost: 1
  Loopback interface is treated as a stub Host
Serial0/1/1 is up, line protocol is up
  Internet address is 172.31.21.2/30, Area 0
  Process ID 1, Router ID 2.2.2.2, Network Type POINT-TO-POINT, Cost: 781
  Transmit Delay is 1 sec, State POINT-TO-POINT, Priority 0
  No designated router on this network
  No backup designated router on this network
  Timer intervals configured, Hello 10, Dead 40, Wait 40, Retransmit 5
  Hello due in 00:00:00
  Index 2/2, flood queue length 0
  Next 0x0(0)/0x0(0)
  Last flood scan length is 1, maximum is 1
  Last flood scan time is 0 msec, maximum is 0 msec
  Suppress hello for 0 neighbor(s)
MIAMI(config-router)#
```



```
BUENOSAIRE (config-router)#do sh ip ospf interface
Loopback4 is up, line protocol is up
  Internet address is 192.168.4.1/24, Area 0
  Process ID 1, Router ID 3.3.3.3, Network Type LOOPBACK, Cost: 1
  Loopback interface is treated as a stub Host
Loopback5 is up, line protocol is up
  Internet address is 192.168.5.1/24, Area 0
  Process ID 1, Router ID 3.3.3.3, Network Type LOOPBACK, Cost: 1
  Loopback interface is treated as a stub Host
Loopback6 is up, line protocol is up
  Internet address is 192.168.6.1/24, Area 0
  Process ID 1, Router ID 3.3.3.3, Network Type LOOPBACK, Cost: 1
  Loopback interface is treated as a stub Host
BUENOSAIRE (config-router)#
```

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

S1

Switch>enable

Switch#configure terminal

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

Switch(config)#vlan 30

Switch(config-vlan)#name Administracion

Switch(config-vlan)#exit

S2

Switch>enable

Switch#configure terminal

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

Switch(config)#vlan 40

Switch(config-vlan)#name Mercadeo

Switch(config-vlan)#

```
Switch#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
                                           Gig0/1, Gig0/2
40   Mercadeo                active
1002 fddi-default          active
1003 token-ring-default   active
1004 fddinet-default      active
1005 trnet-default        active
Switch#
```

Se configura la seguridad

Switch(config)#line console 0

Switch(config-line)#pass cisco

Switch(config-line)#line vty 04

Switch(config-line)#pass cisco

Switch(config-line)#enable secret cisco

Switch(config)#

Se configura en el switch las interfaces que pertenecen a cada VLAN

```
Switch(config)#interface range fa0/1
```

```
Switch(config-if-range)#switchport mode access
```

```
Switch(config-if-range)#switchport access vlan 30
```

```
Switch(config-if-range)#exit
```

```
Switch(config)#
```

Se configura la encapsulación en los troncales:

```
BOGOTA>enable
```

```
BOGOTA#configure terminal
```

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

```
BOGOTA(config)#interface f0/0
```

```
BOGOTA(config-if)#no shutdown
```

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

```
BOGOTA(config)#interface f0/0.3
```

```
BOGOTA(config-subif)#
```

```
%LINK-5-CHANGED: Interface FastEthernet0/0.3, changed state to up
```

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0.3, changed state to up

```
BOGOTA(config-subif)#encapsulation dot1Q 30
```

```
BOGOTA(config-subif)#ip address 192.168.30.1 255.255.255.0
```

```
BOGOTA(config-subif)#interface f0/0.4
```

```
BOGOTA(config-subif)#
```

%LINK-5-CHANGED: Interface FastEthernet0/0.4, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0.4, changed state to up

```
BOGOTA(config-subif)#encapsulation dot1Q 40
```

```
BOGOTA(config-subif)#ip address 192.168.40.1 255.255.255.0
```

```
BOGOTA(config-subif)#exit
```

```
BOGOTA(config)#
```

4. En el Switch 3 deshabilitar DNS lookup

```
no ip domain-lookup
```

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

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

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

```
Switch(config)#int vlan 1
```

```
Switch(config-if)#ip address 192.168.99.3 255.255.255.0
```

```
Switch(config-if)#
```

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

A través de la interfaz se procede con la desactivación

```
MIAMI(config-if)#
```

```
%LINK-5-CHANGED: Interface FastEthernet0/1, changed state to administratively down
```

```
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to down
```

7. Implement DHCP and NAT for IPv4

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

```
BOGOTA(config)#ip dhcp pool vlan30
```

```
BOGOTA(dhcp-config)#network 192.168.30.0 255.255.255.0
```

```
BOGOTA(dhcp-config)#default-router 192.168.30.1
```

```
BOGOTA(dhcp-config)#ip dhcp pool vlan40
```

```
BOGOTA(dhcp-config)#network 192.168.40.0 255.255.255.0
```

```
BOGOTA(dhcp-config)#default-router 192.168.40.1
```

```
BOGOTA(dhcp-config)#ip dhcp pool vlan200
```

```
BOGOTA(dhcp-config)#network 192.168.200.0 255.255.255.0
```

```
BOGOTA(dhcp-config)#default-router 192.168.200.1
```

```
BOGOTA(dhcp-config)#
```

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.
--------------------------------------	--

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

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

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

```
MIAMI(config)#
```

```
MIAMI(config)#interface FastEthernet0/0
```

```
MIAMI(config-if)#ip nat inside
```

```
MIAMI(config)#interface Serial0/1/0
```

```
MIAMI(config-if)#ip nat outside
```

```
MIAMI(config-if)#interface Serial0/1/1
```

```
MIAMI(config-if)#ip nat outside
```

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

```
MIAMI(config)#
```

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

```
BUENOSAIRES(config)#access-list 102 deny icmp any 192.168.3.1 0.0.0.255
```

```
BUENOSAIRES(config)#access-list 102 deny icmp any 192.168.4.1 0.0.0.255
```

```
BUENOSAIRES(config)#do show access
```

```
Extended IP access list 102
```

```
10 deny icmp any 192.168.3.0 0.0.0.255
```

```
20 deny icmp any 192.168.4.0 0.0.0.255
```

```
BUENOSAIRES(config)#
```

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

```
BOGOTA>enable
```

```
BOGOTA#configure terminal
```

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

```
BOGOTA(config)#access-list 102 deny icmp any 192.168.5.1 0.0.0.255
```

```
BOGOTA(config)#access-list 102 deny icmp any 192.168.6.1 0.0.0.255
```

```
BOGOTA(config)#do show access
```

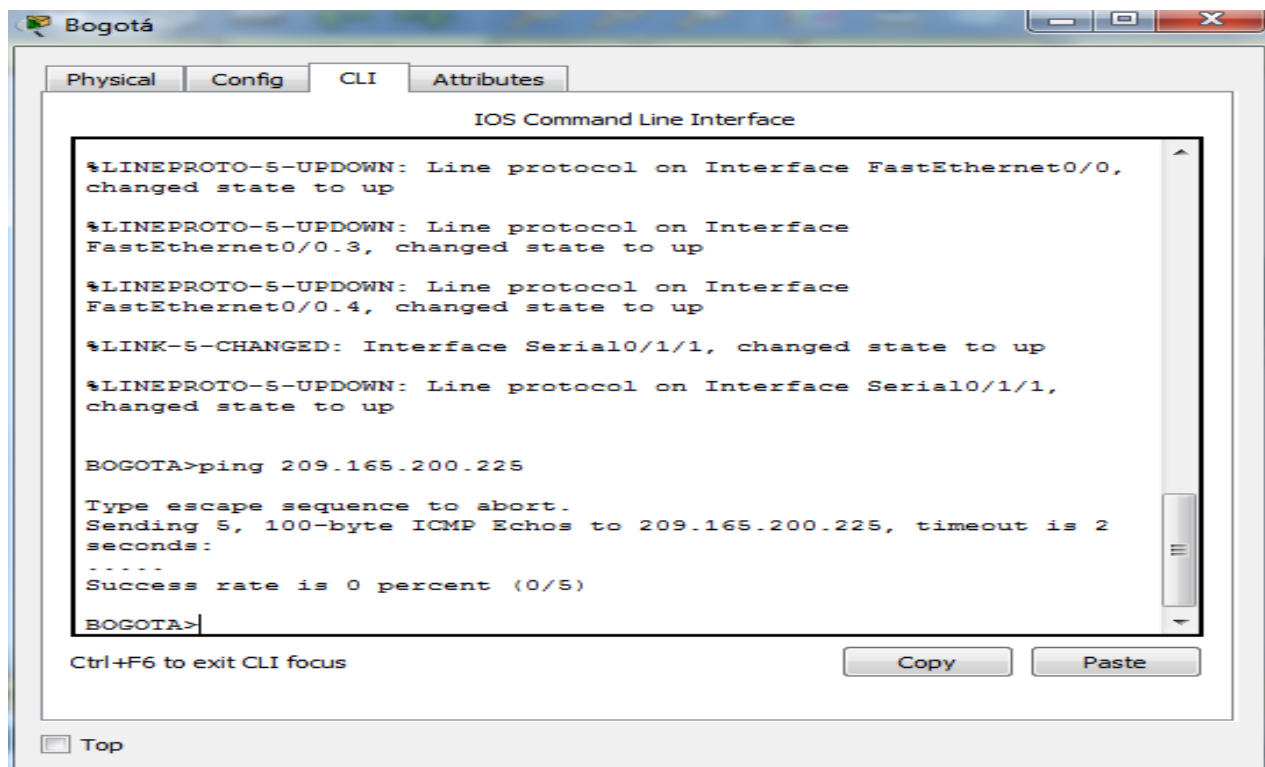
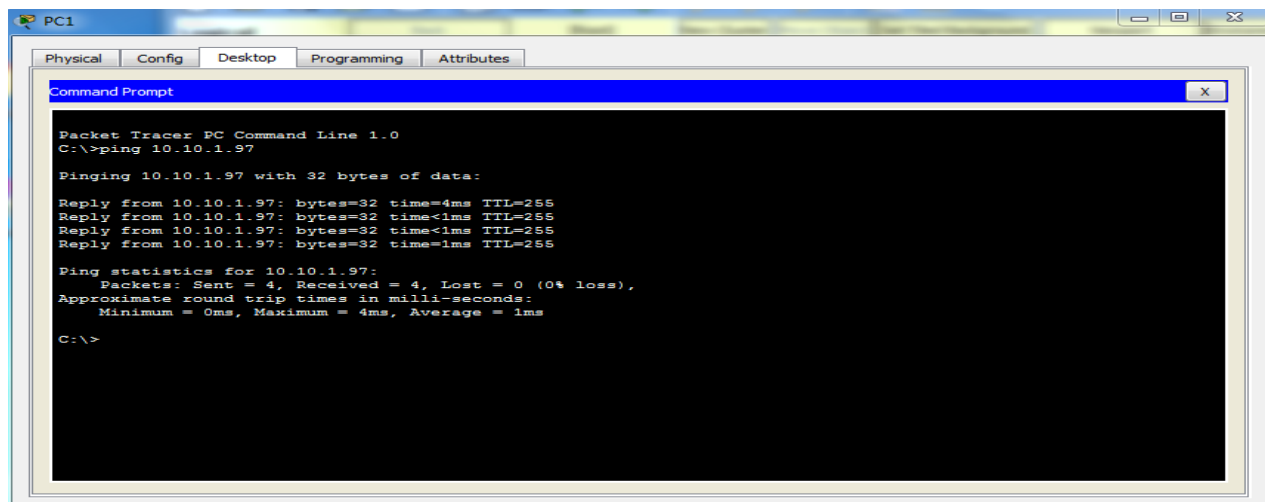
```
Extended IP access list 102
```

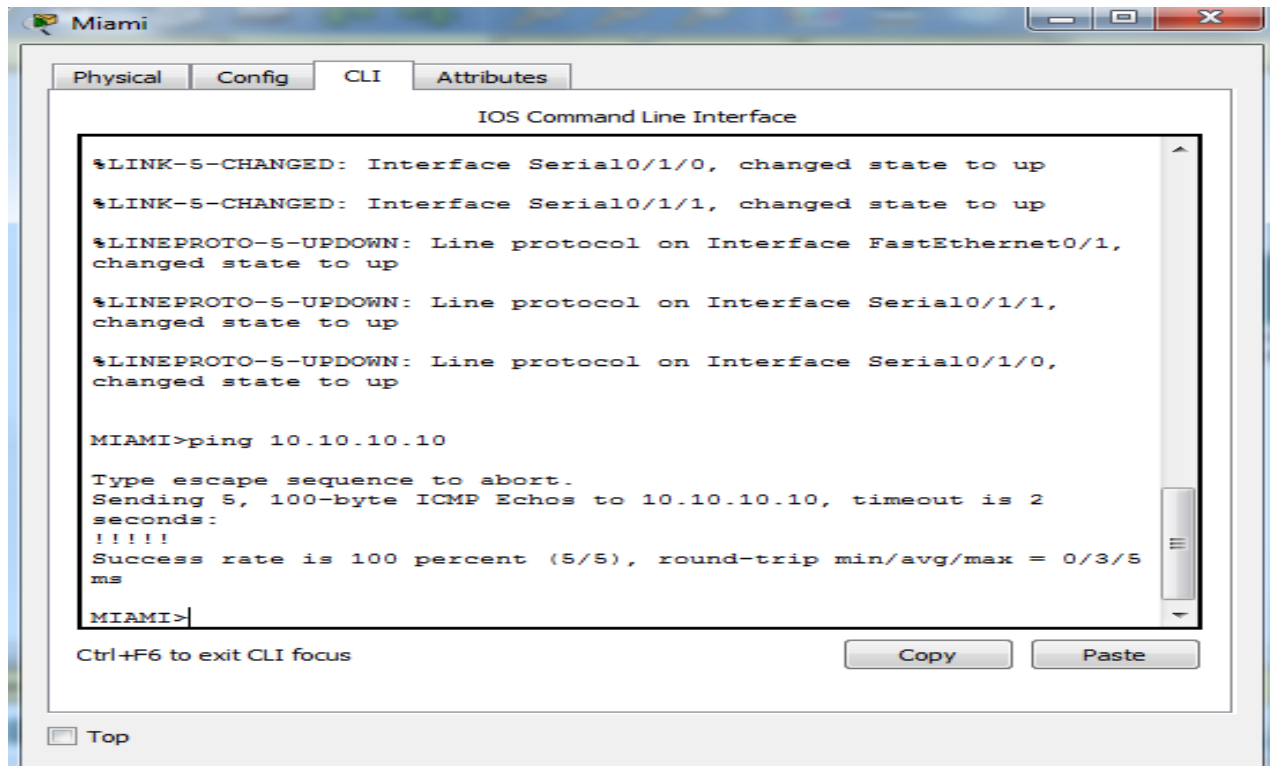
```
10 deny icmp any 192.168.5.0 0.0.0.255
```


20 deny icmp any 192.168.6.0 0.0.0.255

BOGOTA(config)#

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





CONCLUSIONES

Se trabaja lo visto en todo el curso, lo cual nos permitió adquirir conocimientos con demostraciones, reforzando la 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. Y verificando finalmente hacienda ping entre los equipos.

Nota: Se adjunta enlace de los archivos prácticos de Packet Tracer los cuales se realizaron con el **Packet Tracer Version 7.2**

Escenario 1

<https://drive.google.com/open?id=1aTHsUNt82s3ZIE9c7IjqBr-1Fe8Qp4Sj>

Escenario 2

https://drive.google.com/open?id=1INzNN3ZqiWfuPQWFyrwnj5_jikOlaLiJ

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