



Casos de estudio con tecnología Cisco

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Escuela de ciencias básicas
Tecnología e Ingeniería
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Resumen

El presente trabajo, es un desarrollo en el cual se plantea la solución más óptima a la exposición de 2 ejercicios, los cuales exponen temas de Networking, tales como la configuración de dispositivos Swiches, direccionamiento IP, pruebas de funcionamiento en el simulador Packet Tracer.

De esta forma se pretende abarca las lecciones aprendidas del diplomado de Cisco CCNA y poner a prueba las destrezas y habilidades adquiridas en el curso.

Palabras clave: (Networking, CCNA, Packet Tracert).

Abstract

The present work, is a development, in which, it is seen, it is solved, highlighted, highlighted, exposed, exposed, exposed, integrated, Switches devices are configured, IP addressing, tests are carried out of operation in the Packet Tracer simulator.

This is intended to cover the lessons learned from the Cisco CCNA diploma course and test the skills and abilities acquired in the course.

Keywords: (Networking, CCNA, Packet Tracert).

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Introducción

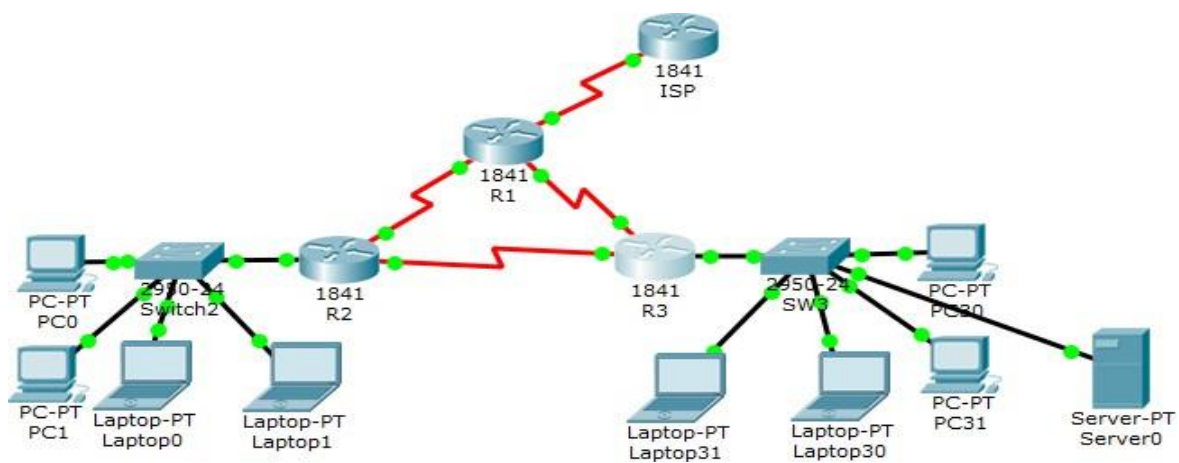
En el presente trabajo escrito, se quiere dar alcance por medio de una solución práctica, a dos ejercicios, los cuales son la prueba final del diplomado de profundización de Cisco.

Adicionalmente, vamos a poner en desarrollo los conocimientos adquiridos en las etapas anteriormente vistas en los módulos pasados.

Es importante mencionar que los ejercicios, serán realizados en la aplicación Packet Tracer, versión 7.2.

1. Primer Escenario

El siguiente escenario será planteado, creado y ejecutado en el simulador de Packet Tracer



1.1 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.

1.2 SW1 VLAN y las asignaciones de puertos de VLAN deben cumplir con la tabla 1

De acuerdo a las especificaciones de la tabla # 1, vamos a realizar la siguiente configuración en los Switches.

SW2

```
hostname SW2
vlan 100
name LAPTOPS
vlan 200
name DESKTOPS

interface FastEthernet0/1
switchport mode trunk

interface FastEthernet0/2
switchport access vlan 100
switchport mode access

interface FastEthernet0/3
switchport access vlan 100
switchport mode access

interface FastEthernet0/4
switchport access vlan 200
switchport mode access

interface FastEthernet0/5
switchport access vlan 200
switchport mode access
```

SW3

```
hostname SW3
int range f0/1-6
switchport mode access
switchport access vlan 1
```

1.3 Los puertos de red que no se utilizan se deben deshabilitar

Para los puertos que no se van a usar se seleccionan por medio de un rango, correspondiente con sus interfaces

SW2

```
interface range f0/6-24,g0/1-2
shutdown
```

SW3

```
interface range f0/7-24, g0/1-2
shutdown
```

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

Configuramos, de acuerdo a la tabla de direccionamiento # 1, aplicamos a los Router 1 2 y 3.

R1

```
hostname R1
interface Serial0/0/0
ip address 200.123.211.2 255.255.255.0
no shutdown
```

```
interface Serial0/1/0
ip address 10.0.0.1 255.255.255.252
no shutdown
```

```
interface Serial0/1/1
ip address 10.0.0.5 255.255.255.252
no shutdown
```

R2

```
hostname R2
```

```
interface FastEthernet0/0
no shutdown

interface FastEthernet0/0.100
encapsulation dot1Q 100
ip address 192.168.20.1 255.255.255.0

interface FastEthernet0/0.200
encapsulation dot1Q 200
ip address 192.168.21.1 255.255.255.0

interface Serial0/0/0
ip address 10.0.0.2 255.255.255.252
no shutdown

interface Serial0/0/1
ip address 10.0.0.9 255.255.255.252
clock rate 2000000
no shutdown
```

R3

```
hostname R3
ipv6 unicast-routing
interface FastEthernet0/0
ip address 192.168.30.1 255.255.255.0
ipv6 address 2001:DB8:130::9C0:80F:301/64
ipv6 dhcp server VLAN30IPV6
no shutdown

interface Serial0/0/0
ip address 10.0.0.6 255.255.255.252
no shutdown

interface Serial0/0/1
ip address 10.0.0.10 255.255.255.252
no shutdown
```

1.5 Laptop20, Laptop21, PC20, PC21, Laptop31, PC30 y PC31 deben obtener información IPV4 del servidor DHCP

Verificamos como evidencia, por medio de capturas que las asignaciones por DHCP sean las correctas para la configuración (Aplica para las laptops y PC's).

Laptop31

Physical Config **Desktop** Programming Attributes

DHCP Static

IP Address: 192.168.30.11
Subnet Mask: 255.255.255.0
Default Gateway: 192.168.30.1
DNS Server: 8.8.8.8

IPv6 Configuration

DHCP Auto Config Static

IPv6 Address: 2001:DB8:130:0:2D0:BAFF:FE8E:B89E / 64
Link Local Address: FE80::2D0:BAFF:FE8E:B89E
IPv6 Gateway: FE80::2D0:FFFF:FE16:ED01
IPv6 DNS Server: 2001:DB8:130::9C0:80F:302

802.1X

Use 802.1X Security

Authentication: MD5
Username:
Password:

Laptop30

Physical Config **Desktop** Programming Attributes

DHCP Static

IP Address: 192.168.30.13
Subnet Mask: 255.255.255.0
Default Gateway: 192.168.30.1
DNS Server: 8.8.8.8

IPv6 Configuration

DHCP Auto Config Static

IPv6 Address: 2001:DB8:130:0:201:97FF:FE0A:24B1 / 64
Link Local Address: FE80::201:97FF:FE0A:24B1
IPv6 Gateway: FE80::2D0:FFFF:FE16:ED01
IPv6 DNS Server: 2001:DB8:130::9C0:80F:302

802.1X

Use 802.1X Security

Authentication: MD5
Username:
Password:

PC30

Physical Config **Desktop** Programming Attributes

DHCP Static

IP Address: 192.168.30.14

Subnet Mask: 255.255.255.0

Default Gateway: 192.168.30.1

DNS Server: 8.8.8.8

IPv6 Configuration

DHCP Auto Config Static

IPv6 Address: 2001:DB8:130:0:260:47FF:FEA5:8171 / 64

Link Local Address: FE80::260:47FF:FEA5:8171

IPv6 Gateway: FE80::2D0:FFFF:FE16:ED01

IPv6 DNS Server: 2001:DB8:130::9C0:80F:302

802.1X

Use 802.1X Security

Authentication: MD5

Username:

Password:

PC31

Physical Config **Desktop** Programming Attributes

DHCP Static

IP Address: 192.168.30.12

Subnet Mask: 255.255.255.0

Default Gateway: 192.168.30.1

DNS Server: 8.8.8.8

IPv6 Configuration

DHCP Auto Config Static

IPv6 Address: 2001:DB8:130:0:20B:BEFF:FEAD:AD9E / 64

Link Local Address: FE80::20B:BEFF:FEAD:AD9E

IPv6 Gateway: FE80::2D0:FFFF:FE16:ED01

IPv6 DNS Server: 2001:DB8:130::9C0:80F:302

802.1X

Use 802.1X Security

Authentication: MD5

Username:

Password:

Top

1.6 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.

Se aplica una configuración sobre los routers, con una lista de acceso, este direccionamiento (Nateo) es público.

```
R1

interface Serial0/0/0
ip nat outside

interface Serial0/1/0
ip nat inside

interface Serial0/1/1
ip nat inside

ip nat inside source list INSIDE-DEVS interface Serial0/0/0 overload

ip access-list standard INSIDE-DEVS
permit 192.168.20.0 0.0.0.255
permit 192.168.21.0 0.0.0.255
permit 192.168.30.0 0.0.0.255
```

1.7 R1 debe tener una ruta estática predeterminada al ISP que se configuró y que incluye esa ruta en el dominio RIPv2.

En el router, se configura la ruta estática al ISP

```
R1
router rip
version 2
passive-interface Serial0/0/0
network 10.0.0.0
default-information originate
no auto-summary
```

```
ip route 0.0.0.0 0.0.0.0 Serial0/0/0
```

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

Para el router 2, se establece que es un servidor DHCP.

R2

```
ip dhcp excluded-address 192.168.20.1 192.168.20.10
ip dhcp excluded-address 192.168.21.1 192.168.21.10

ip dhcp pool VLAN100
 network 192.168.20.0 255.255.255.0
 default-router 192.168.20.1
 dns-server 8.8.8.8
ip dhcp pool VLAN200
 network 192.168.21.0 255.255.255.0
 default-router 192.168.21.1
 dns-server 8.8.8.8
```

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

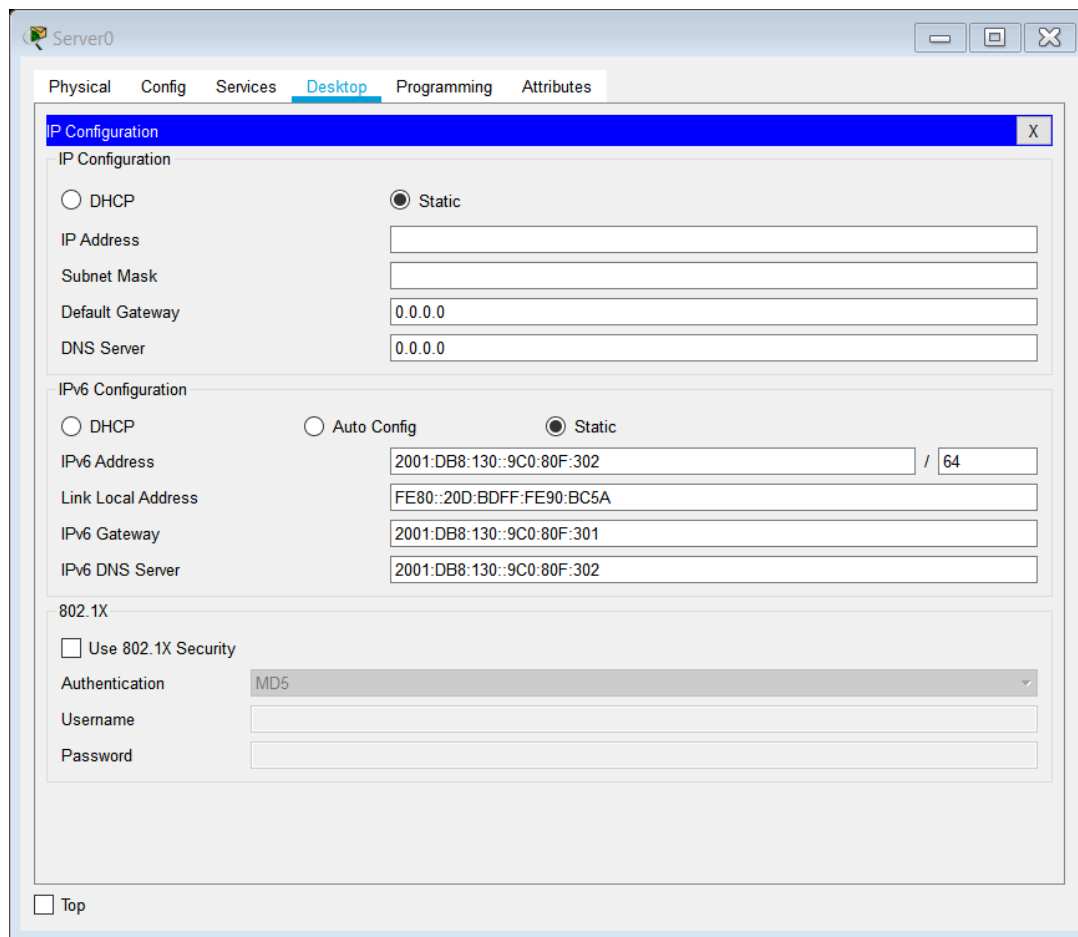
Las conexiones para las VLAN 100 y 200, deben estar configuradas para la red.

R2

```
router rip
 version 2
 passive-interface FastEthernet0/0.100
 passive-interface FastEthernet0/0.200
 network 10.0.0.0
 network 192.168.20.0
 network 192.168.21.0
 no auto-summary
```

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

Se anexa capturas, con la evidencia del Servidor0 y su direccionamiento con IPV6 aplicado



The screenshot displays the configuration window for 'Server0' in a network management tool. The 'Desktop' tab is active, and the 'IP Configuration' window is open. The configuration is as follows:

Section	Option	Value
IP Configuration	Static	<input checked="" type="radio"/>
	IP Address	
	Subnet Mask	
	Default Gateway	0.0.0.0
	DNS Server	0.0.0.0
IPv6 Configuration	Static	<input checked="" type="radio"/>
	IPv6 Address	2001:DB8:130::9C0:80F:302 / 64
	Link Local Address	FE80::20D:BDFF:FE90:BC5A
	IPv6 Gateway	2001:DB8:130::9C0:80F:301
	IPv6 DNS Server	2001:DB8:130::9C0:80F:302
802.1X	Use 802.1X Security	<input type="checkbox"/>
	Authentication	MD5
	Username	
	Password	

At the bottom left of the configuration window, there is a 'Top' button with a checkbox next to it.

1.11 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.

R3

```
ip dhcp excluded-address 192.168.30.1 192.168.30.10

ip dhcp pool VLAN30
 network 192.168.30.0 255.255.255.0
 default-router 192.168.30.1
 dns-server 8.8.8.8

ipv6 unicast-routing
ipv6 dhcp pool VLAN30IPV6
 dns-server 2001:DB8:130::9C0:80F:302
 domain-name inside-devs.com
interface FastEthernet0/0
 ip address 192.168.30.1 255.255.255.0
 ipv6 address 2001:DB8:130::9C0:80F:301/64
 ipv6 dhcp server VLAN30IPV6
 no shutdown
```

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

R3

```
interface FastEthernet0/0
 ip address 192.168.30.1 255.255.255.0
 ipv6 address 2001:DB8:130::9C0:80F:301/64
 ipv6 dhcp server VLAN30IPV6
 no shutdown
```

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

Para los Routers 1, 2 y 3 se aplica una configuración por medio de RIP versión 2, la cual permite a los equipos compartir información.

R1

```
router rip
version 2
passive-interface Serial0/0/0
network 10.0.0.0
default-information originate
no auto-summary
```

R2

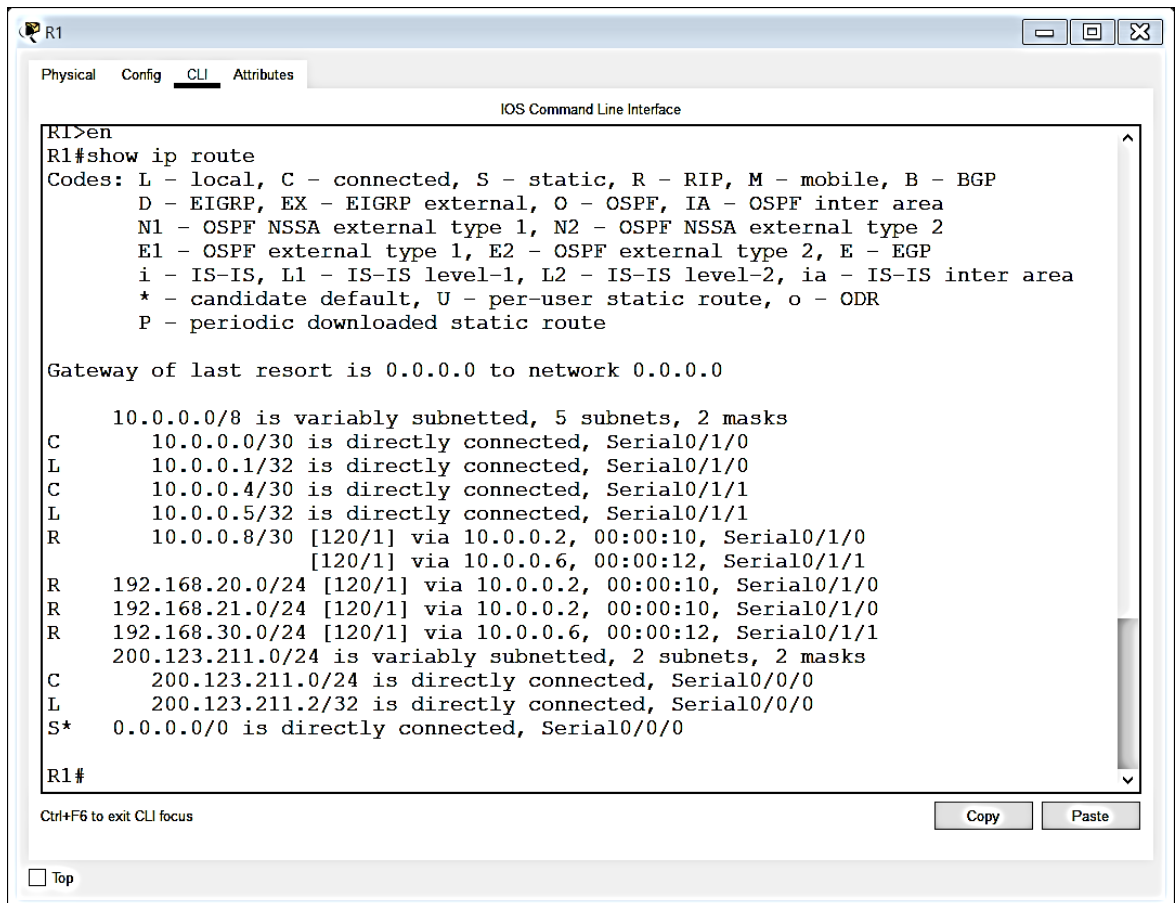
```
router rip
version 2
passive-interface FastEthernet0/0.100
passive-interface FastEthernet0/0.200
network 10.0.0.0
network 192.168.20.0
network 192.168.21.0
no auto-summary
```

R3

```
router rip
version 2
passive-interface FastEthernet0/0
network 10.0.0.0
network 192.168.30.0
no auto-summary
```

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

Se anexa captura, con evidencia de los Routers 1, 2 y 3 que permiten ver las rutas entre ellos (1 captura por cada Router).



```
R1>en
R1#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 0.0.0.0 to network 0.0.0.0

    10.0.0.0/8 is variably subnetted, 5 subnets, 2 masks
C       10.0.0.0/30 is directly connected, Serial0/1/0
L       10.0.0.1/32 is directly connected, Serial0/1/0
C       10.0.0.4/30 is directly connected, Serial0/1/1
L       10.0.0.5/32 is directly connected, Serial0/1/1
R       10.0.0.8/30 [120/1] via 10.0.0.2, 00:00:10, Serial0/1/0
         [120/1] via 10.0.0.6, 00:00:12, Serial0/1/1
R      192.168.20.0/24 [120/1] via 10.0.0.2, 00:00:10, Serial0/1/0
R      192.168.21.0/24 [120/1] via 10.0.0.2, 00:00:10, Serial0/1/0
R      192.168.30.0/24 [120/1] via 10.0.0.6, 00:00:12, Serial0/1/1
C      200.123.211.0/24 is variably subnetted, 2 subnets, 2 masks
L      200.123.211.0/24 is directly connected, Serial0/0/0
L      200.123.211.2/32 is directly connected, Serial0/0/0
S*    0.0.0.0/0 is directly connected, Serial0/0/0

R1#
```

Ctrl+F6 to exit CLI focus

Copy Paste

Top

R2

Physical Config CLI Attributes

IOS Command Line Interface

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

```
R2>en
R2#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 10.0.0.1 to network 0.0.0.0

 10.0.0.0/30 is subnetted, 3 subnets
C    10.0.0.0 is directly connected, Serial0/0/0
R    10.0.0.4 [120/1] via 10.0.0.1, 00:00:11, Serial0/0/0
     [120/1] via 10.0.0.10, 00:00:04, Serial0/0/1
C    10.0.0.8 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
R    192.168.30.0/24 [120/1] via 10.0.0.10, 00:00:04, Serial0/0/1
R*   0.0.0.0/0 [120/1] via 10.0.0.1, 00:00:11, Serial0/0/0

R2#
```

Ctrl+F6 to exit CLI focus

Copy Paste

Top

R3

Physical Config CLI Attributes

IOS Command Line Interface

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

```
R3>en
R3#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 10.0.0.5 to network 0.0.0.0

 10.0.0.0/30 is subnetted, 3 subnets
R    10.0.0.0 [120/1] via 10.0.0.9, 00:00:09, Serial0/0/1
     [120/1] via 10.0.0.5, 00:00:20, Serial0/0/0
C    10.0.0.4 is directly connected, Serial0/0/0
C    10.0.0.8 is directly connected, Serial0/0/1
R    192.168.20.0/24 [120/1] via 10.0.0.9, 00:00:09, Serial0/0/1
R    192.168.21.0/24 [120/1] via 10.0.0.9, 00:00:09, Serial0/0/1
C    192.168.30.0/24 is directly connected, FastEthernet0/0
R*   0.0.0.0/0 [120/1] via 10.0.0.5, 00:00:20, Serial0/0/0

R3#
```

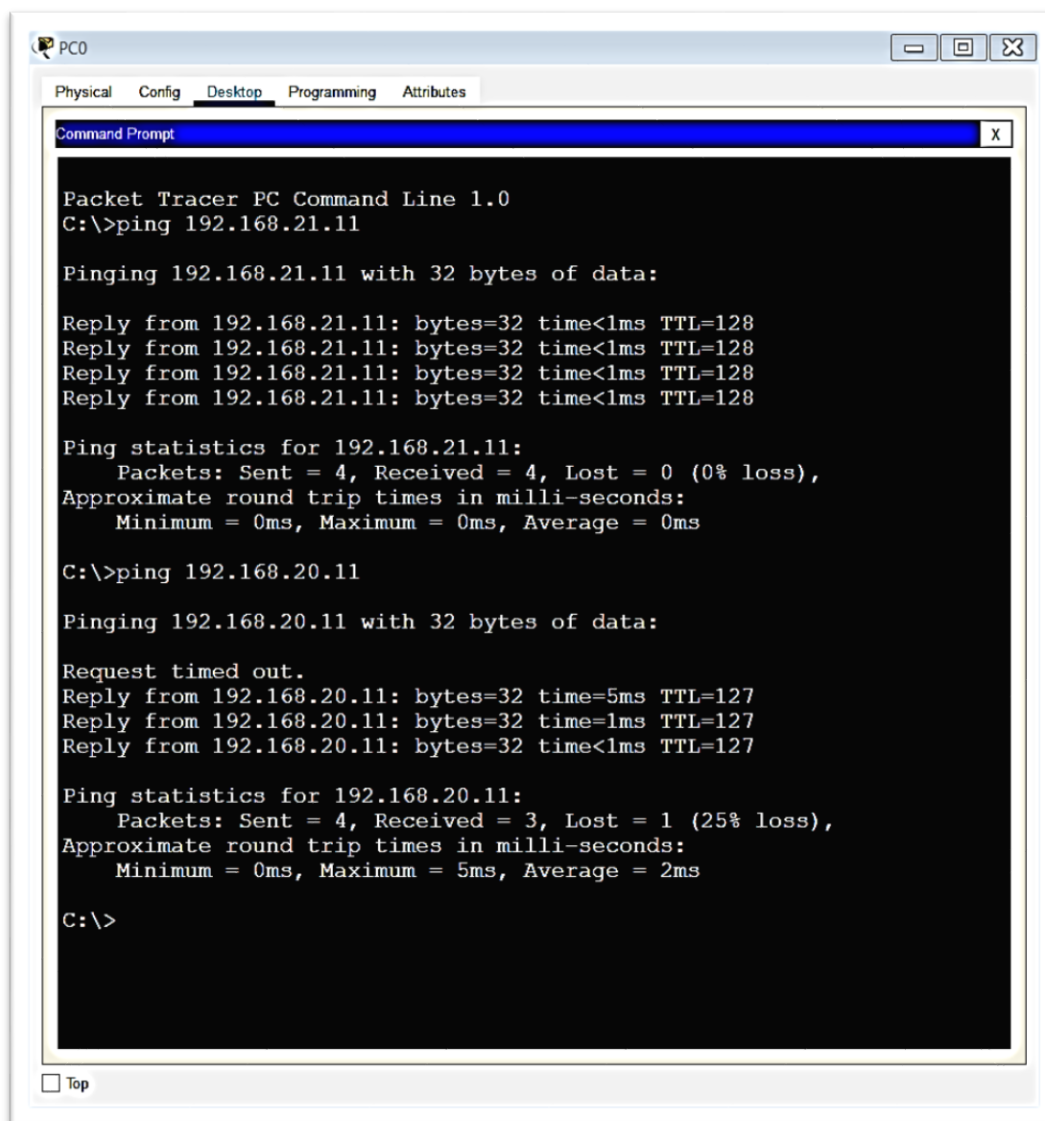
Ctrl+F6 to exit CLI focus

Copy Paste

Top

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

Para los equipos y la solución de este punto, se anexa captura con evidencia de que, si hay conexión entre los equipos, en las capturas se puede observar que los pines son exitosos.



The image shows a Packet Tracer PC Command Line window for PC0. The window has tabs for Physical, Config, Desktop, Programming, and Attributes. The Desktop tab is active, showing a Command Prompt window. The Command Prompt displays the following text:

```
Packet Tracer PC Command Line 1.0
C:\>ping 192.168.21.11

Pinging 192.168.21.11 with 32 bytes of data:

Reply from 192.168.21.11: bytes=32 time<1ms TTL=128
Reply from 192.168.21.11: bytes=32 time<1ms TTL=128
Reply from 192.168.21.11: bytes=32 time<1ms TTL=128
Reply from 192.168.21.11: bytes=32 time<1ms TTL=128

Ping statistics for 192.168.21.11:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>ping 192.168.20.11

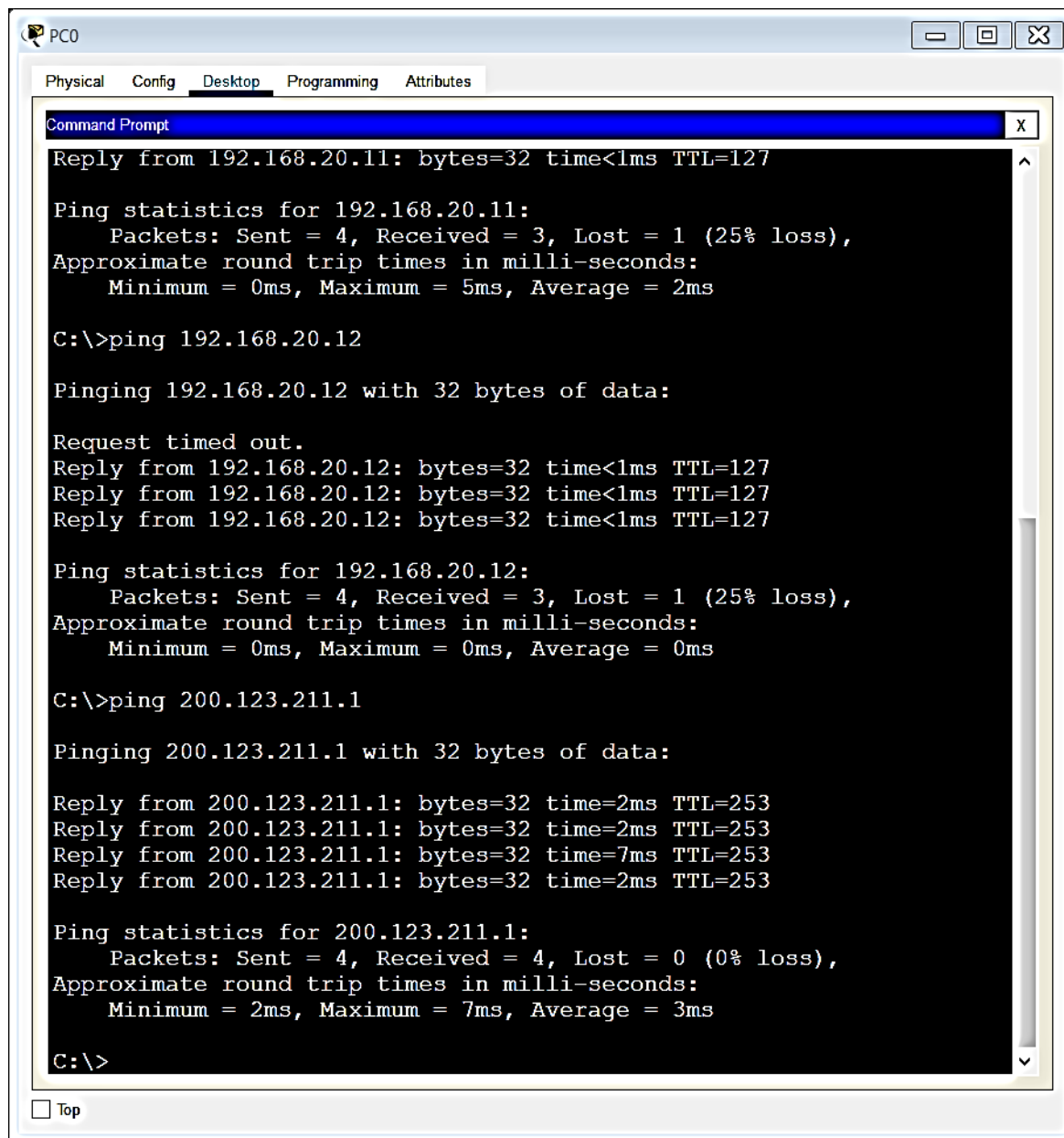
Pinging 192.168.20.11 with 32 bytes of data:

Request timed out.
Reply from 192.168.20.11: bytes=32 time=5ms TTL=127
Reply from 192.168.20.11: bytes=32 time=1ms TTL=127
Reply from 192.168.20.11: bytes=32 time<1ms TTL=127

Ping statistics for 192.168.20.11:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 5ms, Average = 2ms

C:\>
```

At the bottom left of the Command Prompt window, there is a checkbox labeled "Top".



The screenshot shows a Command Prompt window titled "PC0" with tabs for "Physical", "Config", "Desktop", "Programming", and "Attributes". The window contains the following text:

```
Command Prompt
Reply from 192.168.20.11: bytes=32 time<1ms TTL=127

Ping statistics for 192.168.20.11:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 5ms, Average = 2ms

C:\>ping 192.168.20.12

Pinging 192.168.20.12 with 32 bytes of data:

Request timed out.
Reply from 192.168.20.12: bytes=32 time<1ms TTL=127
Reply from 192.168.20.12: bytes=32 time<1ms TTL=127
Reply from 192.168.20.12: bytes=32 time<1ms TTL=127

Ping statistics for 192.168.20.12:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>ping 200.123.211.1

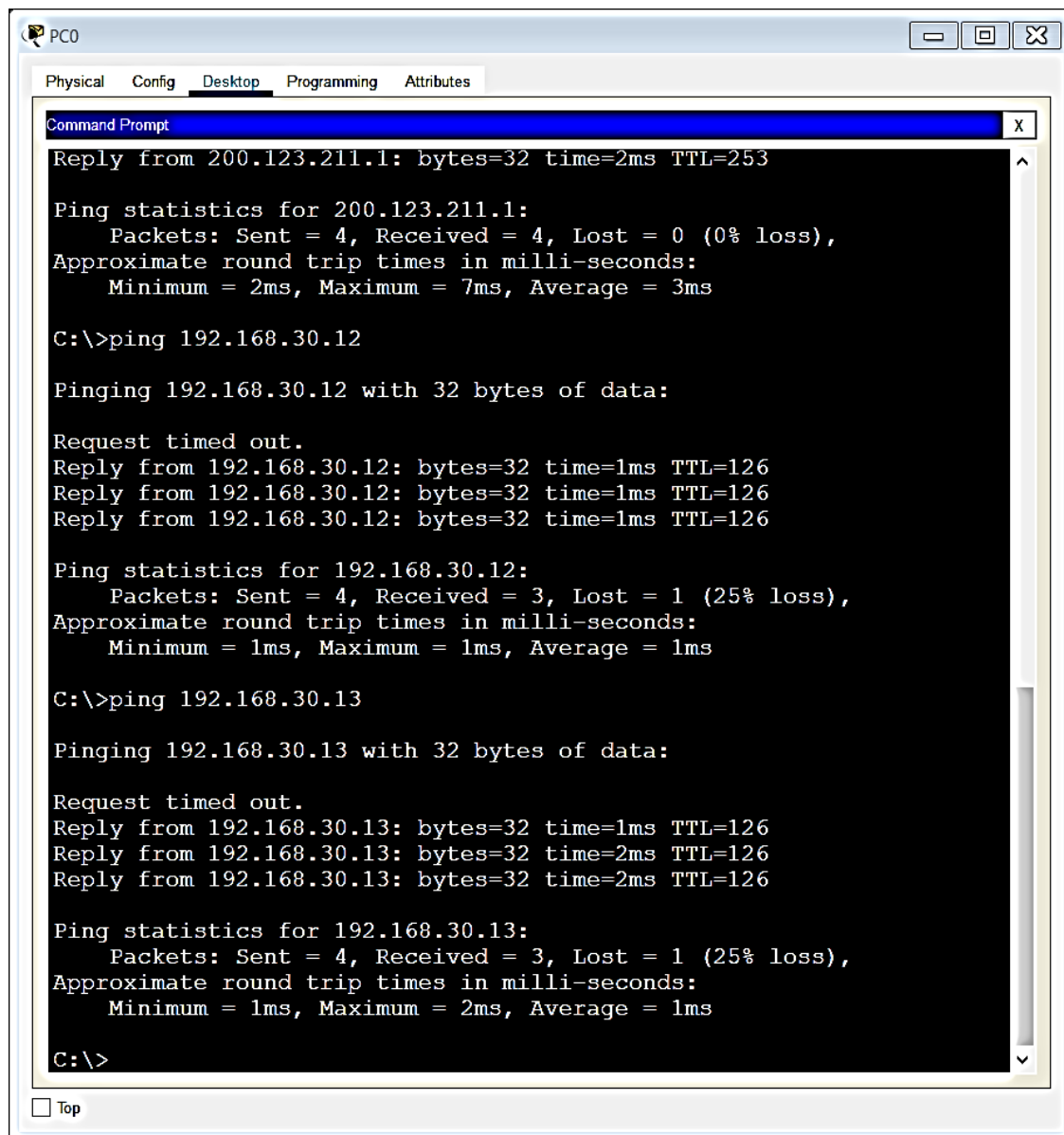
Pinging 200.123.211.1 with 32 bytes of data:

Reply from 200.123.211.1: bytes=32 time=2ms TTL=253
Reply from 200.123.211.1: bytes=32 time=2ms TTL=253
Reply from 200.123.211.1: bytes=32 time=7ms TTL=253
Reply from 200.123.211.1: bytes=32 time=2ms TTL=253

Ping statistics for 200.123.211.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 2ms, Maximum = 7ms, Average = 3ms

C:\>
```

At the bottom left of the window, there is a checkbox labeled "Top" which is currently unchecked.



The screenshot shows a Windows desktop environment with a window titled "PC0". The window has tabs for "Physical", "Config", "Desktop", "Programming", and "Attributes", with "Desktop" selected. Inside the window is a "Command Prompt" window. The Command Prompt displays the following text:

```
Reply from 200.123.211.1: bytes=32 time=2ms TTL=253

Ping statistics for 200.123.211.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 2ms, Maximum = 7ms, Average = 3ms

C:\>ping 192.168.30.12

Pinging 192.168.30.12 with 32 bytes of data:

Request timed out.
Reply from 192.168.30.12: bytes=32 time=1ms TTL=126
Reply from 192.168.30.12: bytes=32 time=1ms TTL=126
Reply from 192.168.30.12: bytes=32 time=1ms TTL=126

Ping statistics for 192.168.30.12:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
Approximate round trip times in milli-seconds:
    Minimum = 1ms, Maximum = 1ms, Average = 1ms

C:\>ping 192.168.30.13

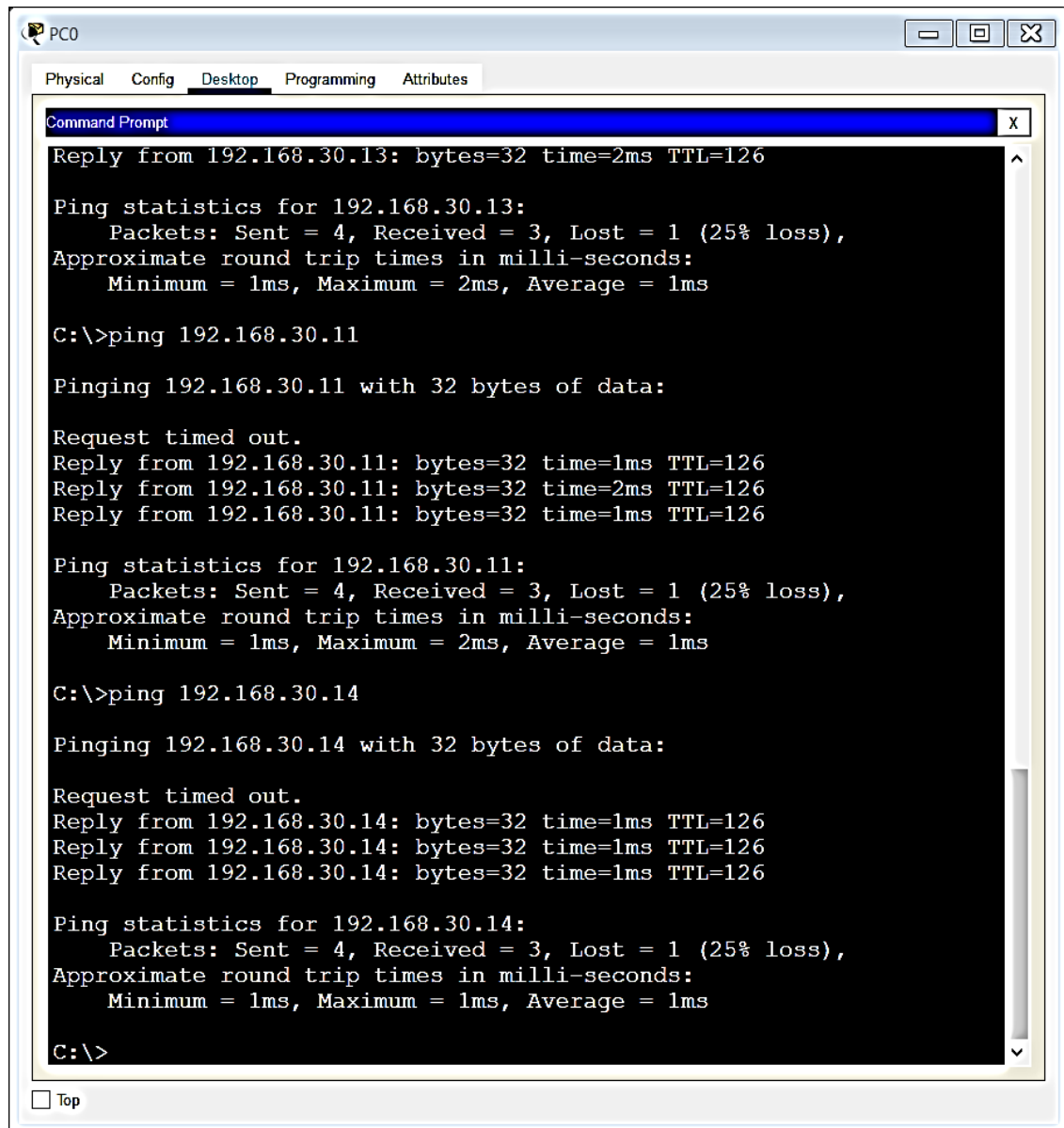
Pinging 192.168.30.13 with 32 bytes of data:

Request timed out.
Reply from 192.168.30.13: bytes=32 time=1ms TTL=126
Reply from 192.168.30.13: bytes=32 time=2ms TTL=126
Reply from 192.168.30.13: bytes=32 time=2ms TTL=126

Ping statistics for 192.168.30.13:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
Approximate round trip times in milli-seconds:
    Minimum = 1ms, Maximum = 2ms, Average = 1ms

C:\>
```

At the bottom left of the Command Prompt window, there is a checkbox labeled "Top" which is currently unchecked.



```
PC0
Physical Config Desktop Programming Attributes
Command Prompt
Reply from 192.168.30.13: bytes=32 time=2ms TTL=126

Ping statistics for 192.168.30.13:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
Approximate round trip times in milli-seconds:
    Minimum = 1ms, Maximum = 2ms, Average = 1ms

C:\>ping 192.168.30.11

Pinging 192.168.30.11 with 32 bytes of data:

Request timed out.
Reply from 192.168.30.11: bytes=32 time=1ms TTL=126
Reply from 192.168.30.11: bytes=32 time=2ms TTL=126
Reply from 192.168.30.11: bytes=32 time=1ms TTL=126

Ping statistics for 192.168.30.11:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
Approximate round trip times in milli-seconds:
    Minimum = 1ms, Maximum = 2ms, Average = 1ms

C:\>ping 192.168.30.14

Pinging 192.168.30.14 with 32 bytes of data:

Request timed out.
Reply from 192.168.30.14: bytes=32 time=1ms TTL=126
Reply from 192.168.30.14: bytes=32 time=1ms TTL=126
Reply from 192.168.30.14: bytes=32 time=1ms TTL=126

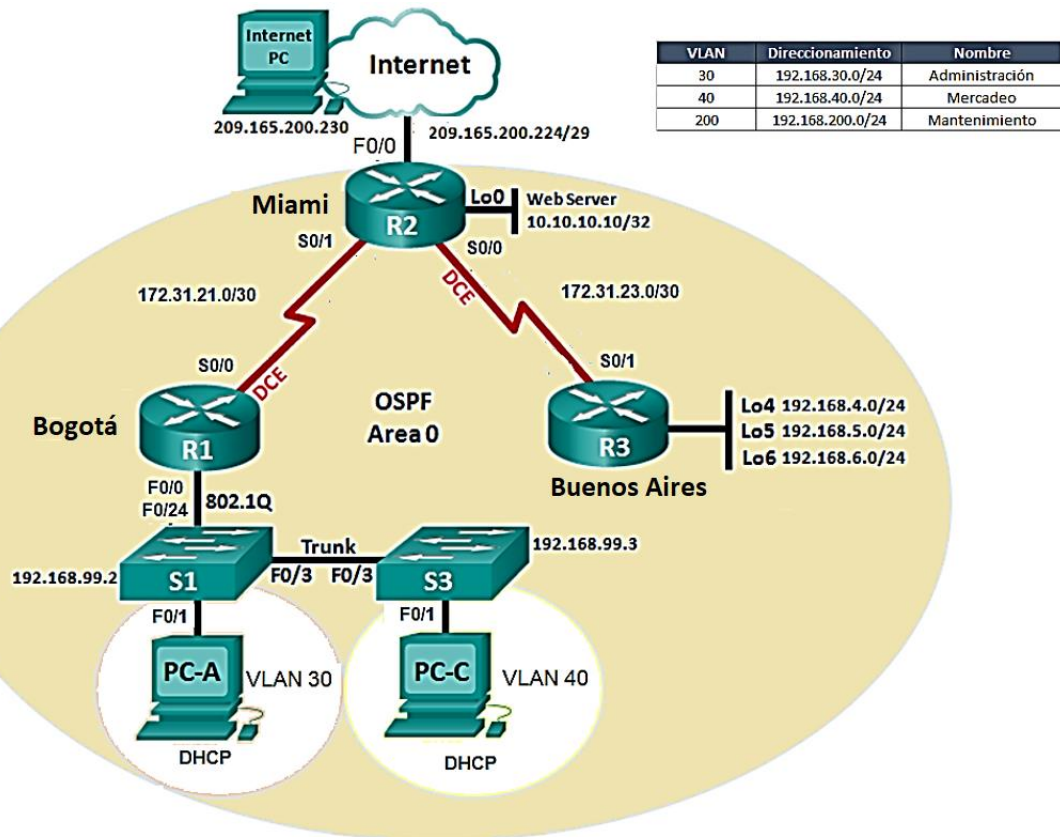
Ping statistics for 192.168.30.14:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
Approximate round trip times in milli-seconds:
    Minimum = 1ms, Maximum = 1ms, Average = 1ms

C:\>
```

Top

2. Segundo 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.



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

Para este segundo escenario, se aplica de acuerdo al ejercicio, el direccionamiento adecuado sobre los Routers y Swiches relacionados como tal.

R1

```
hostname R1
```

```
interface FastEthernet0/0  
no shutdown
```

```
interface FastEthernet0/0.30  
encapsulation dot1Q 30  
ip address 192.168.30.1 255.255.255.0
```

```
interface FastEthernet0/0.40  
encapsulation dot1Q 40  
ip address 192.168.40.1 255.255.255.0
```

```
interface FastEthernet0/0.200  
encapsulation dot1Q 200  
ip address 192.168.200.1 255.255.255.0
```

```
interface Serial0/0  
ip address 172.31.21.1 255.255.255.252  
no shutdown
```

R2

```
hostname R2
```

```
interface Loopback0  
ip address 10.10.10.10 255.255.255.255
```

```
interface FastEthernet0/0  
ip address 209.165.200.225 255.255.255.248  
no shutdown
```

```
interface Serial0/0
```

```
ip address 172.31.23.1 255.255.255.252
no shutdown
```

```
interface Serial0/1
ip address 172.31.21.2 255.255.255.252
no shutdown
```

```
hostname R3
interface Loopback4
ip address 192.168.4.1 255.255.255.0
```

```
interface Loopback5
ip address 192.168.5.1 255.255.255.0
```

```
interface Loopback6
ip address 192.168.6.1 255.255.255.0
```

```
interface Serial0/1
ip address 172.31.23.2 255.255.255.252
no shutdown
```

S1

```
hostname S1
```

```
vlan 30
vlan 40
vlan 200
```

```
interface Vlan200
ip address 192.168.200.2 255.255.255.0
no shutdown
```

```
ip default-gateway 192.168.200.1
```

S3

```
hostname S3
vlan 30
vlan 40
```

```

vlan 200

interface Vlan200
ip address 192.168.200.3 255.255.255.0
no shutdown

ip default-gateway 192.168.200.1

```

2.2 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

De acuerdo a la tabla anterior de direccionamiento, en los Routers 1, 2 y 3, se deben asociar sus Router ID (Todos con ID diferente).

```

R1
interface Serial0/0
bandwidth 256
ip ospf cost 9500

router ospf 1
router-id 1.1.1.1
log-adjacency-changes
passive-interface FastEthernet0/0.30
passive-interface FastEthernet0/0.40
passive-interface FastEthernet0/0.200
network 172.31.21.0 0.0.0.3 area 0
network 192.168.30.0 0.0.0.255 area 0

```



```
network 192.168.40.0 0.0.0.255 area 0
network 192.168.200.0 0.0.0.255 area 0
```

R2

```
interface Serial0/0
bandwidth 256
ip address 172.31.23.1 255.255.255.252
ip ospf cost 9500
ip nat inside
clock rate 2000000
no shutdown
interface Serial0/1
bandwidth 256
```

```
router ospf 1
router-id 5.5.5.5
log-adjacency-changes
passive-interface FastEthernet0/0
passive-interface Loopback0
network 10.10.10.10 0.0.0.0 area 0
network 172.31.21.0 0.0.0.3 area 0
network 172.31.23.0 0.0.0.3 area 0
default-information originate
```

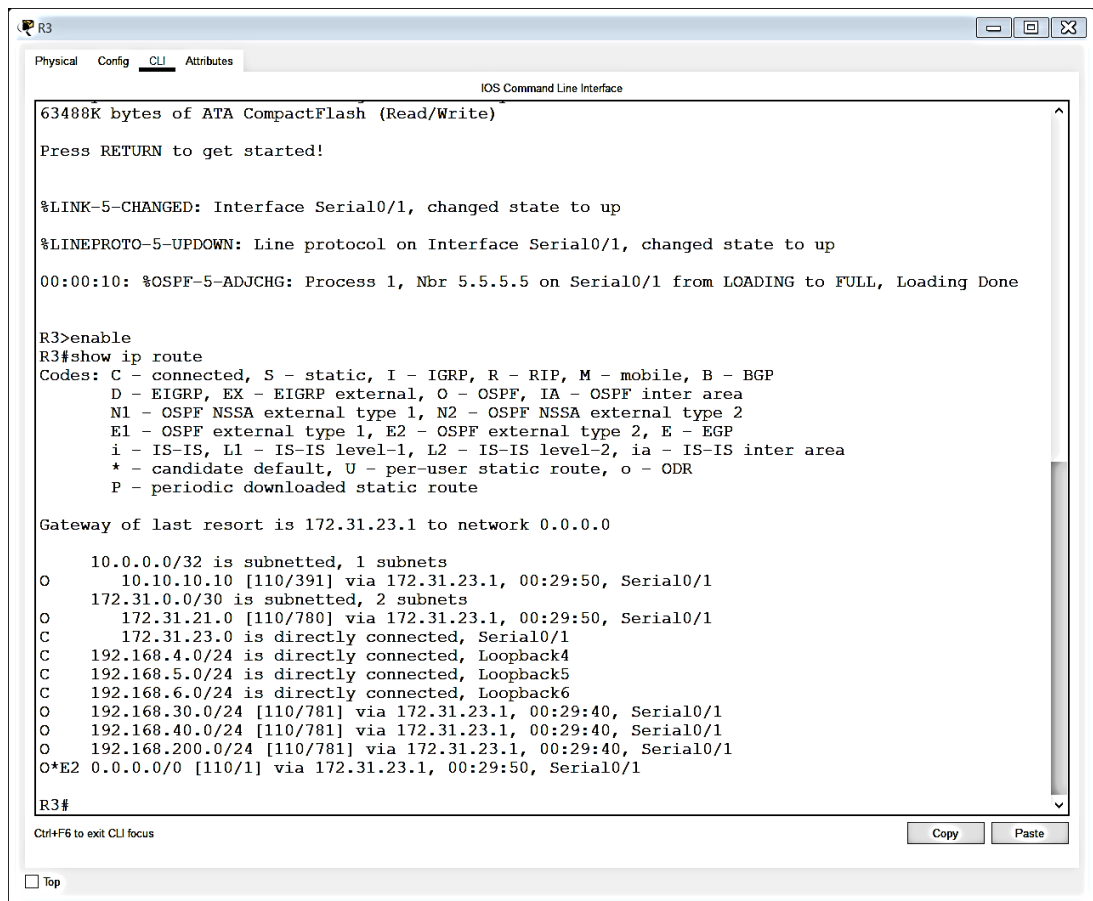
R3

```
interface Serial0/1
bandwidth 256

router ospf 1
router-id 8.8.8.8
log-adjacency-changes
passive-interface Loopback4
passive-interface Loopback5
passive-interface Loopback6
network 172.31.23.0 0.0.0.3 area 0
network 192.168.4.0 0.0.0.255 area 0
network 192.168.5.0 0.0.0.255 area 0
network 192.168.6.0 0.0.0.255 area 0
```

2.3 Verificar información de OSPF - Visualizar tablas de enrutamiento y routers conectados por OSPFv2.

Se anexan capturas como evidencia, de la información solicitada para ver OSPF y el estado connected, entre los equipos.



```
R3
Physical Config CLI Attributes
IOS Command Line Interface
63488K bytes of ATA CompactFlash (Read/Write)
Press RETURN to get started!

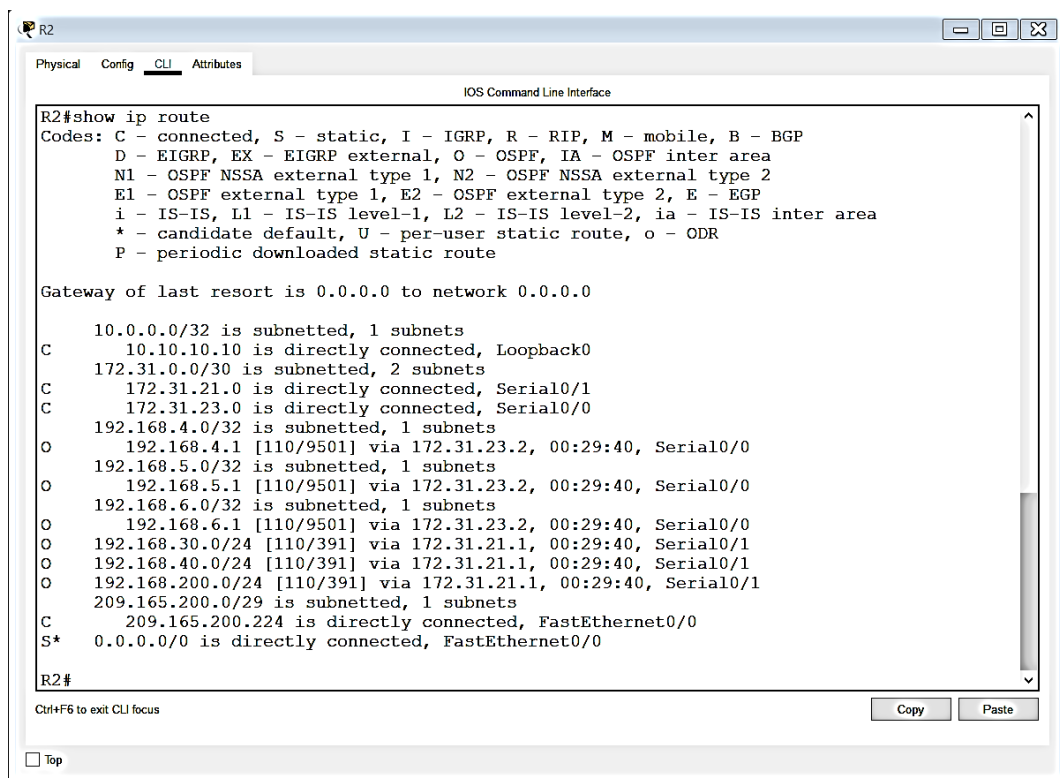
%LINK-5-CHANGED: Interface Serial0/1, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/1, changed state to up
00:00:10: %OSPF-5-ADJCHG: Process 1, Nbr 5.5.5.5 on Serial0/1 from LOADING to FULL, Loading Done

R3>enable
R3#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 172.31.23.1 to network 0.0.0.0

  10.0.0.0/32 is subnetted, 1 subnets
    O   10.10.10.10 [110/391] via 172.31.23.1, 00:29:50, Serial0/1
  172.31.0.0/30 is subnetted, 2 subnets
    O   172.31.21.0 [110/780] via 172.31.23.1, 00:29:50, Serial0/1
    C   172.31.23.0 is directly connected, Serial0/1
    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
    O   192.168.30.0/24 [110/781] via 172.31.23.1, 00:29:40, Serial0/1
    O   192.168.40.0/24 [110/781] via 172.31.23.1, 00:29:40, Serial0/1
    O   192.168.200.0/24 [110/781] via 172.31.23.1, 00:29:40, Serial0/1
O*E2 0.0.0.0/0 [110/1] via 172.31.23.1, 00:29:50, Serial0/1

R3#
Ctrl+F6 to exit CLI focus
Copy Paste
Top
```



```
R2#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 0.0.0.0 to network 0.0.0.0

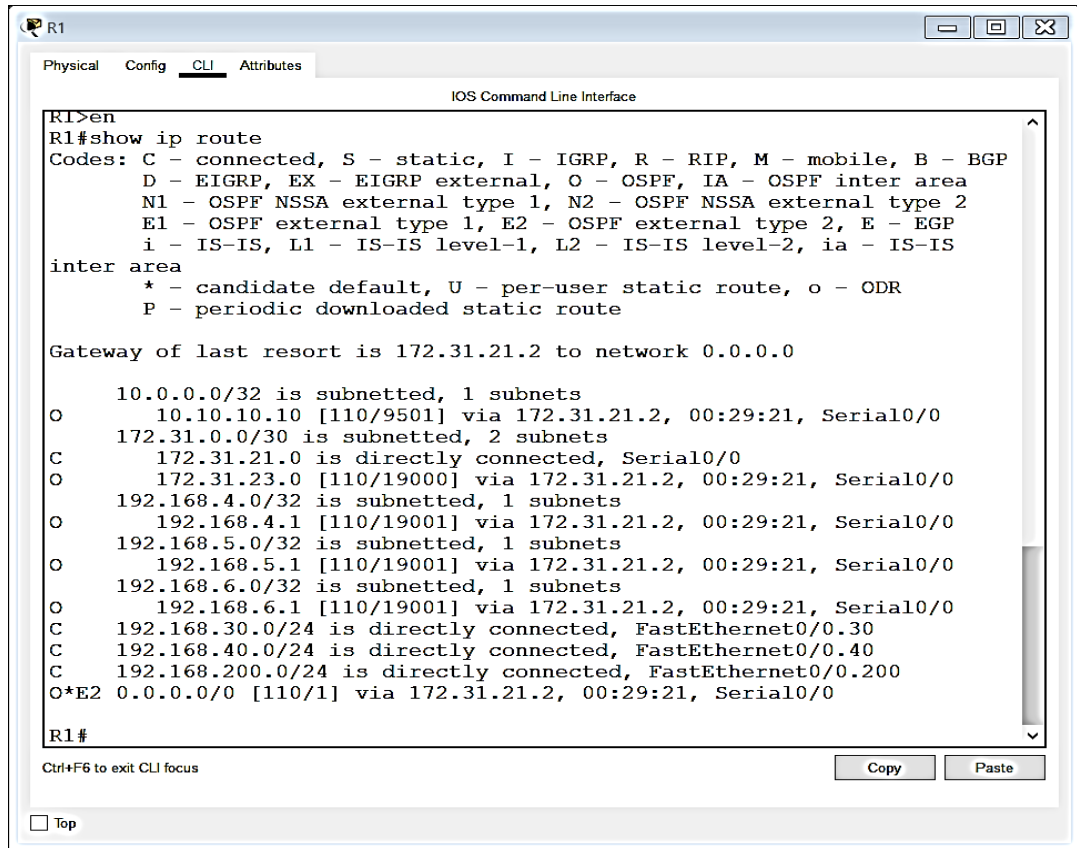
    10.0.0.0/32 is subnetted, 1 subnets
C       10.10.10.10 is directly connected, Loopback0
    172.31.0.0/30 is subnetted, 2 subnets
C       172.31.21.0 is directly connected, Serial0/1
C       172.31.23.0 is directly connected, Serial0/0
    192.168.4.0/32 is subnetted, 1 subnets
O       192.168.4.1 [110/9501] via 172.31.23.2, 00:29:40, Serial0/0
    192.168.5.0/32 is subnetted, 1 subnets
O       192.168.5.1 [110/9501] via 172.31.23.2, 00:29:40, Serial0/0
    192.168.6.0/32 is subnetted, 1 subnets
O       192.168.6.1 [110/9501] via 172.31.23.2, 00:29:40, Serial0/0
O       192.168.30.0/24 [110/391] via 172.31.21.1, 00:29:40, Serial0/1
O       192.168.40.0/24 [110/391] via 172.31.21.1, 00:29:40, Serial0/1
O       192.168.200.0/24 [110/391] via 172.31.21.1, 00:29:40, Serial0/1
C       209.165.200.0/29 is subnetted, 1 subnets
C       209.165.200.224 is directly connected, FastEthernet0/0
S*     0.0.0.0/0 is directly connected, FastEthernet0/0

R2#
```

Ctrl+F6 to exit CLI focus

Copy Paste

Top



```

R1>en
R1#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 172.31.21.2 to network 0.0.0.0

    10.0.0.0/32 is subnetted, 1 subnets
O      10.10.10.10 [110/9501] via 172.31.21.2, 00:29:21, Serial0/0
    172.31.0.0/30 is subnetted, 2 subnets
C      172.31.21.0 is directly connected, Serial0/0
O      172.31.23.0 [110/19000] via 172.31.21.2, 00:29:21, Serial0/0
    192.168.4.0/32 is subnetted, 1 subnets
O      192.168.4.1 [110/19001] via 172.31.21.2, 00:29:21, Serial0/0
    192.168.5.0/32 is subnetted, 1 subnets
O      192.168.5.1 [110/19001] via 172.31.21.2, 00:29:21, Serial0/0
    192.168.6.0/32 is subnetted, 1 subnets
O      192.168.6.1 [110/19001] via 172.31.21.2, 00:29:21, Serial0/0
C      192.168.30.0/24 is directly connected, FastEthernet0/0.30
C      192.168.40.0/24 is directly connected, FastEthernet0/0.40
C      192.168.200.0/24 is directly connected, FastEthernet0/0.200
O*E2  0.0.0.0/0 [110/1] via 172.31.21.2, 00:29:21, Serial0/0

R1#

```

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

Como lo solicita este punto, se evidencia el costo por cada interfaz (lista resumida).

```

interface Serial0/0
bandwidth 256
ip address 172.31.21.1 255.255.255.252
ip ospf cost 9500
clock rate 2000000
no shutdown

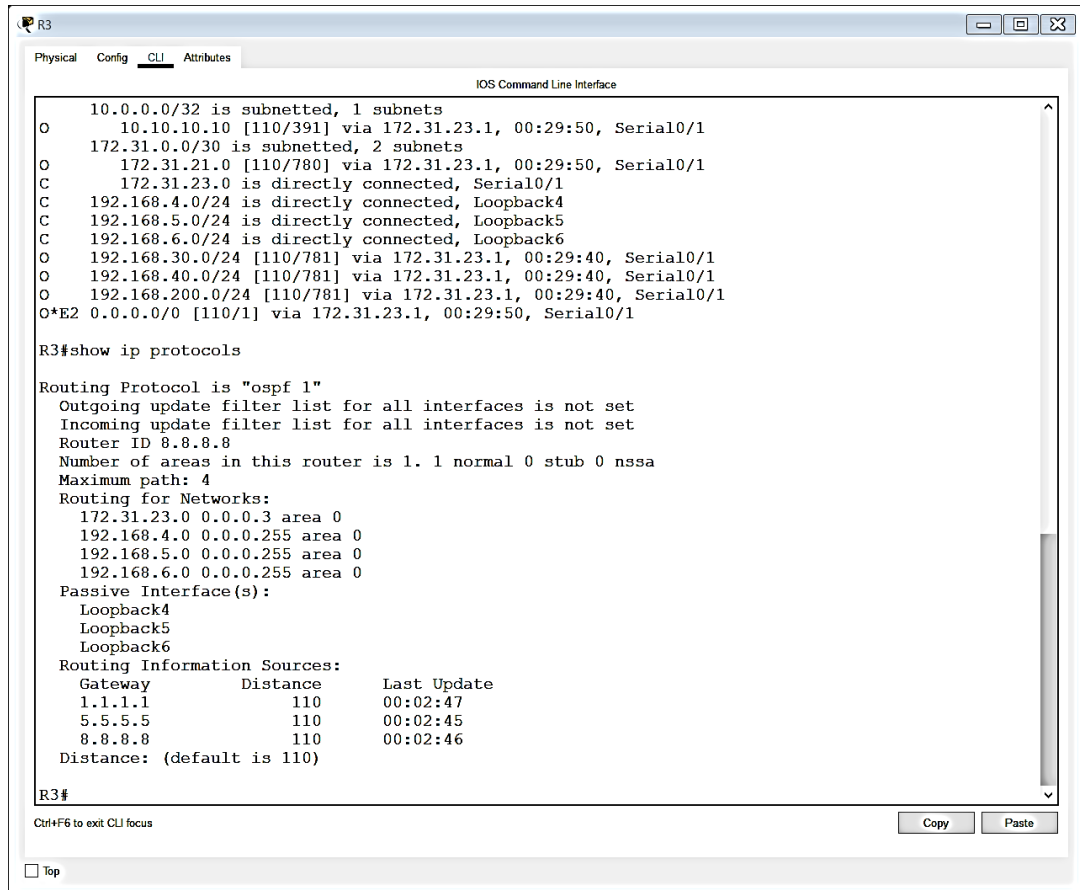
interface Serial0/0

```

```
bandwidth 256
ip address 172.31.23.1 255.255.255.252
ip ospf cost 9500
ip nat inside
clock rate 2000000
no shutdown
```

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

Se evidencia por medio de captura, la información solicitada de este punto, por medio del comando show ip protocols, que me permite traer la configuración asociada por cada uno de los routers (1 captura por cada router).



The screenshot shows a Cisco IOS Command Line Interface window for Router R3. The window has tabs for Physical, Config, CLI, and Attributes. The CLI tab is active, displaying the following output:

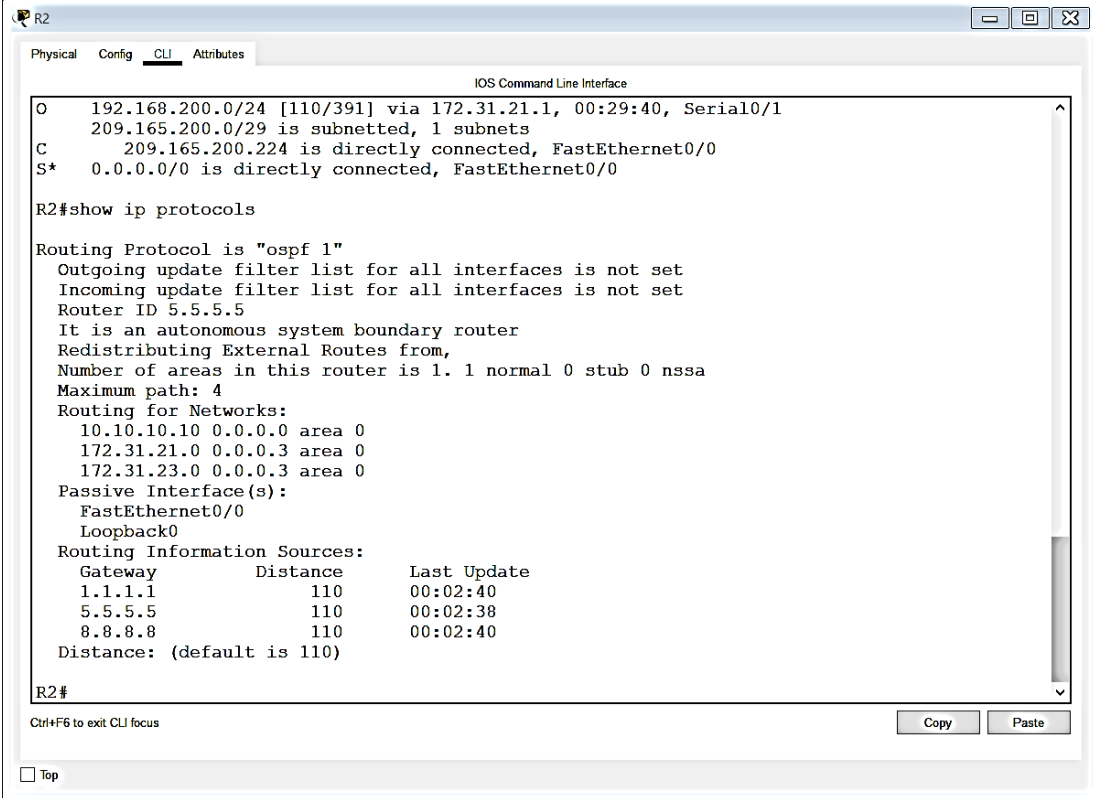
```
10.0.0.0/32 is subnetted, 1 subnets
O   10.10.10.10 [110/391] via 172.31.23.1, 00:29:50, Serial0/1
172.31.0.0/30 is subnetted, 2 subnets
O   172.31.21.0 [110/780] via 172.31.23.1, 00:29:50, Serial0/1
C   172.31.23.0 is directly connected, Serial0/1
C   192.168.4.0/24 is directly connected, Loopback4
C   192.168.5.0/24 is directly connected, Loopback5
C   192.168.6.0/24 is directly connected, Loopback6
O   192.168.30.0/24 [110/781] via 172.31.23.1, 00:29:40, Serial0/1
O   192.168.40.0/24 [110/781] via 172.31.23.1, 00:29:40, Serial0/1
O   192.168.200.0/24 [110/781] via 172.31.23.1, 00:29:40, Serial0/1
O*E2 0.0.0.0/0 [110/1] via 172.31.23.1, 00:29:50, Serial0/1

R3#show ip protocols

Routing Protocol is "ospf 1"
  Outgoing update filter list for all interfaces is not set
  Incoming update filter list for all interfaces is not set
  Router ID 8.8.8.8
  Number of areas in this router is 1. 1 normal 0 stub 0 nssa
  Maximum path: 4
  Routing for Networks:
    172.31.23.0 0.0.0.3 area 0
    192.168.4.0 0.0.0.255 area 0
    192.168.5.0 0.0.0.255 area 0
    192.168.6.0 0.0.0.255 area 0
  Passive Interface(s):
    Loopback4
    Loopback5
    Loopback6
  Routing Information Sources:
    Gateway         Distance      Last Update
    1.1.1.1          110          00:02:47
    5.5.5.5          110          00:02:45
    8.8.8.8          110          00:02:46
  Distance: (default is 110)

R3#
```

At the bottom of the window, there is a status bar with the text "Ctrl+F6 to exit CLI focus" and two buttons: "Copy" and "Paste". A "Top" button is also visible in the bottom left corner.



The screenshot shows a Cisco IOS Command Line Interface window for router R2. The window has tabs for Physical, Config, CLI, and Attributes, with CLI selected. The main content area displays the following text:

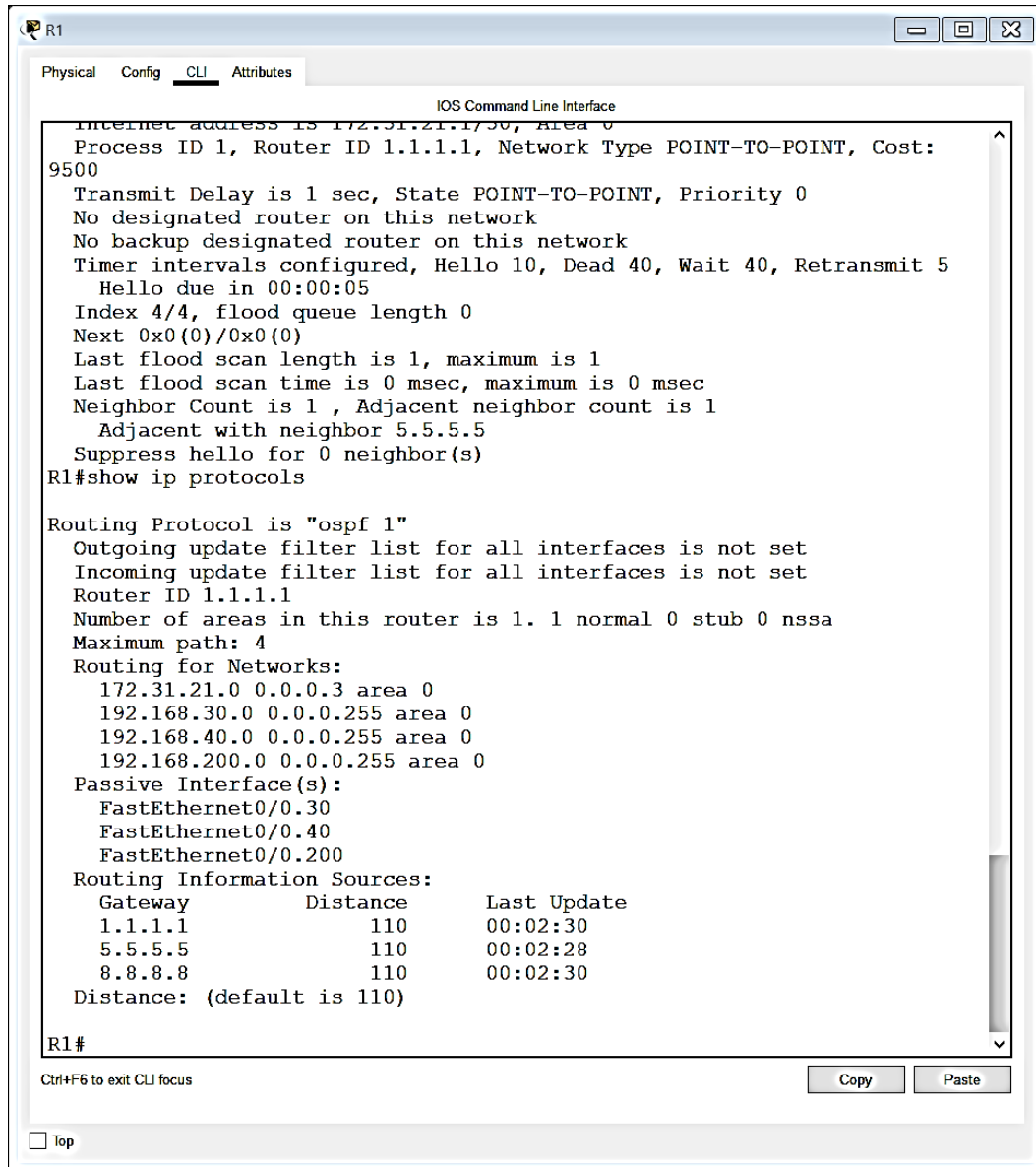
```
O 192.168.200.0/24 [110/391] via 172.31.21.1, 00:29:40, Serial0/1
  209.165.200.0/29 is subnetted, 1 subnets
C   209.165.200.224 is directly connected, FastEthernet0/0
S* 0.0.0.0/0 is directly connected, FastEthernet0/0

R2#show ip protocols

Routing Protocol is "ospf 1"
  Outgoing update filter list for all interfaces is not set
  Incoming update filter list for all interfaces is not set
  Router ID 5.5.5.5
  It is an autonomous system boundary router
  Redistributing External Routes from,
  Number of areas in this router is 1. 1 normal 0 stub 0 nssa
  Maximum path: 4
  Routing for Networks:
    10.10.10.10 0.0.0.0 area 0
    172.31.21.0 0.0.0.3 area 0
    172.31.23.0 0.0.0.3 area 0
  Passive Interface(s):
    FastEthernet0/0
    Loopback0
  Routing Information Sources:
    Gateway         Distance      Last Update
    1.1.1.1          110          00:02:40
    5.5.5.5          110          00:02:38
    8.8.8.8          110          00:02:40
  Distance: (default is 110)

R2#
```

At the bottom of the window, there is a status bar with the text "Ctrl+F6 to exit CLI focus" and two buttons labeled "Copy" and "Paste". A "Top" button is also visible in the bottom left corner.



The screenshot shows a Cisco IOS Command Line Interface (CLI) window titled "R1". The window has tabs for "Physical", "Config", "CLI", and "Attributes", with "CLI" selected. The main content area displays the output of the command "show ip protocols". The output shows OSPF configuration details for a router with ID 1.1.1.1. The configuration includes a single area 0 with four networks: 172.31.21.0/24, 192.168.30.0/24, 192.168.40.0/24, and 192.168.200.0/24. The router is configured as a non-backup designated router. The output also shows the routing information sources, which are three static routes with a distance of 110 and a last update time of 00:02:30.

```
Internet address is 172.31.21.1/24, 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 00:00:05
Index 4/4, flood queue length 0
Next 0x0(0)/0x0(0)
Last flood scan length is 1, maximum is 1
Last flood scan time is 0 msec, maximum is 0 msec
Neighbor Count is 1 , Adjacent neighbor count is 1
Adjacent with neighbor 5.5.5.5
Suppress hello for 0 neighbor(s)
R1#show ip protocols

Routing Protocol is "ospf 1"
Outgoing update filter list for all interfaces is not set
Incoming update filter list for all interfaces is not set
Router ID 1.1.1.1
Number of areas in this router is 1. 1 normal 0 stub 0 nssa
Maximum path: 4
Routing for Networks:
 172.31.21.0 0.0.0.3 area 0
 192.168.30.0 0.0.0.255 area 0
 192.168.40.0 0.0.0.255 area 0
 192.168.200.0 0.0.0.255 area 0
Passive Interface(s):
 FastEthernet0/0.30
 FastEthernet0/0.40
 FastEthernet0/0.200
Routing Information Sources:
 Gateway          Distance      Last Update
 1.1.1.1           110          00:02:30
 5.5.5.5           110          00:02:28
 8.8.8.8           110          00:02:30
Distance: (default is 110)

R1#
```

Ctrl+F6 to exit CLI focus

Copy Paste

Top

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

De acuerdo a la configuración brindada para este ejercicio, se debe configurar el nombre del dispositivo (Switches), número de VLAN, modo de acceso por los puertos, e interfaz afectada del dispositivo.

```
S1
vlan 30
name ADMINISTRACION
vlan 40
name MERCADEO
vlan 200
name MANTENIMIENTO

interface FastEthernet0/1
switchport access vlan 30
switchport mode access

interface FastEthernet0/3
switchport mode trunk

interface FastEthernet0/24
switchport mode trunk

S3
vlan 30
name ADMINISTRACION
vlan 40
name MERCADEO
vlan 200
name MANTENIMIENTO

interface FastEthernet0/1
switchport access vlan 40
switchport mode access

interface FastEthernet0/3
switchport mode trunk
```

2.7 En el Switch 3 deshabilitar DNS lookup.

Como lo solicita el punto, se debe deshabilitar el DNS lookup.

```
S3
no ip domain-lookup
```

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

```
S1

hostname S1

vlan 30
vlan 40
vlan 200

interface Vlan200
ip address 192.168.200.2 255.255.255.0
no shutdown

ip default-gateway 192.168.200.1

S3

hostname S3

vlan 30
vlan 40
vlan 200

interface Vlan200
ip address 192.168.200.3 255.255.255.0
no shutdown

ip default-gateway 192.168.200.1
```

2.9 Desactivar todas las interfaces que no Sean utilizadas en el esquema de red.

Para el esquema de red del punto 2, se deshabilita las interfaces que no vamos a usar

S1

```
interface FastEthernet0/2  
shutdown
```

```
interface range FastEthernet0/4-23  
shutdown
```

```
interface range GigabitEthernet0/1-2  
shutdown
```

S3

```
interface FastEthernet0/2  
shutdown
```

```
interface range f0/4-24,g0/1-2  
shutdown
```

2.10 Implement DHCP and NAT for IPv4.

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

2.12 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.
-----------------------------------	--

De acuerdo a la tabla anterior, se aplica a los dispositivos, el nombre de su respectivo dominio, la ip para el servidor DNS y Gateway.

R1

```
ip dhcp excluded-address 192.168.30.1 192.168.30.30
ip dhcp excluded-address 192.168.40.1 192.168.40.30

ip dhcp pool ADMINISTRACION
network 192.168.30.0 255.255.255.0
default-router 192.168.30.1
dns-server 10.10.10.11
domain-name ccna-unad.com
ip dhcp pool MERCADEO
network 192.168.40.0 255.255.255.0
default-router 192.168.40.1
dns-server 10.10.10.11
domain-name ccna-unad.com
```

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

R2

```
interface FastEthernet0/0
ip nat outside

interface Serial0/0
ip nat inside

interface Serial0/1
ip nat inside

ip nat inside source list 1 interface FastEthernet0/0 overload

access-list 1 permit 192.168.0.0 0.0.255.255
```

2.14 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.

Como lo solicita el punto, para los router 1 y 3, se aplican restricción de salida.

```
R1
interface FastEthernet0/0.200
ip access-group 2 in

access-list 2 deny 192.168.200.0 0.0.0.255
access-list 2 remark Bloquear salida de MANTENIMIENTO
access-list 2 permit any

R3
interface Serial0/1
ip access-group 3 out

access-list 3 deny 192.168.6.0 0.0.0.255
access-list 3 permit any
access-list 3 remark Bloquear salida de Lo6
```

2.15 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.

Como lo solicita el punto, se aplica para los router 1 y 3, listas de acceso para restringir y permitir tráfico entre los otros dispositivos.

```
R1

interface FastEthernet0/0.40
ip access-group 101 in
access-list 101 deny tcp any any eq 20
access-list 101 deny tcp any any eq ftp
access-list 101 remark Bloquear FTP
access-list 101 permit ip any any
```

R3

```
interface Loopback5
ip access-group 102 in
access-list 102 deny tcp any any eq 20
access-list 102 deny tcp any any eq ftp
access-list 102 remark Bloquear FTP
access-list 102 permit ip any any
```

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

Como se puede observar en las capturas, verificamos comunicación entre las sedes por medio de ping de Buenos Aires a Miami, Exitoso

The image shows two windows from Cisco Packet Tracer. The left window displays the configuration for the Serial0/0 interface on a router named MIAMI. The configuration includes:

- Port Status: On
- Duplex: Full Duplex
- Clock Rate: 2000000
- IP Address: 172.31.23.1
- Subnet Mask: 255.255.255.252
- Tx Ring Limit: 10

 The 'Equivalent IOS Commands' section shows the configuration commands:


```
R2 (config-if)#ip address 172.31.23.1 255.255.255.252
R2 (config-if)#
```

The right window shows the CLI of a router named BUENOS AIRES. The user has entered the command `R3#ping 172.31.23.1`. The output shows a successful ping:

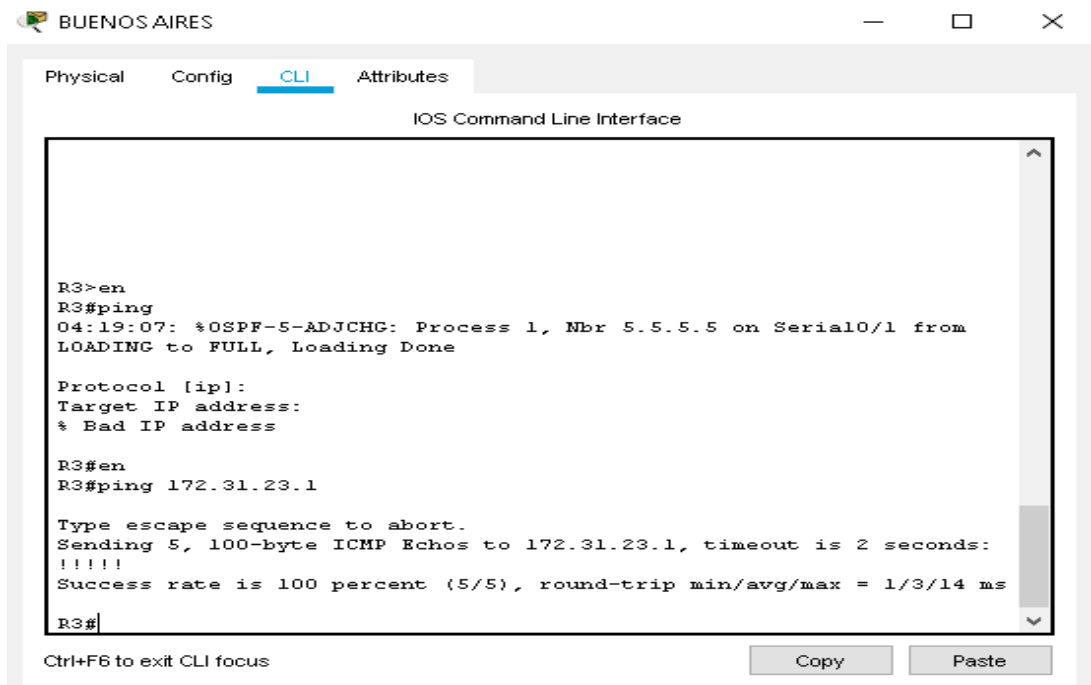

```
R3#en
R3#ping
04:19:07: %OSPF-5-ADJCHG: Process 1, Nbr 5.5.5.5 on Serial0/1 from
LOADING to FULL, Loading Done

Protocol [ip]:
Target IP address:
* Bad IP address

R3#en
R3#ping 172.31.23.1

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 172.31.23.1, timeout is 2 seconds:
!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 1/3/14 ms

R3#
```



```
R3>en
R3#ping
04:19:07: %OSPF-5-ADJCHG: Process 1, Nbr 5.5.5.5 on Serial0/1 from
LOADING to FULL, Loading Done

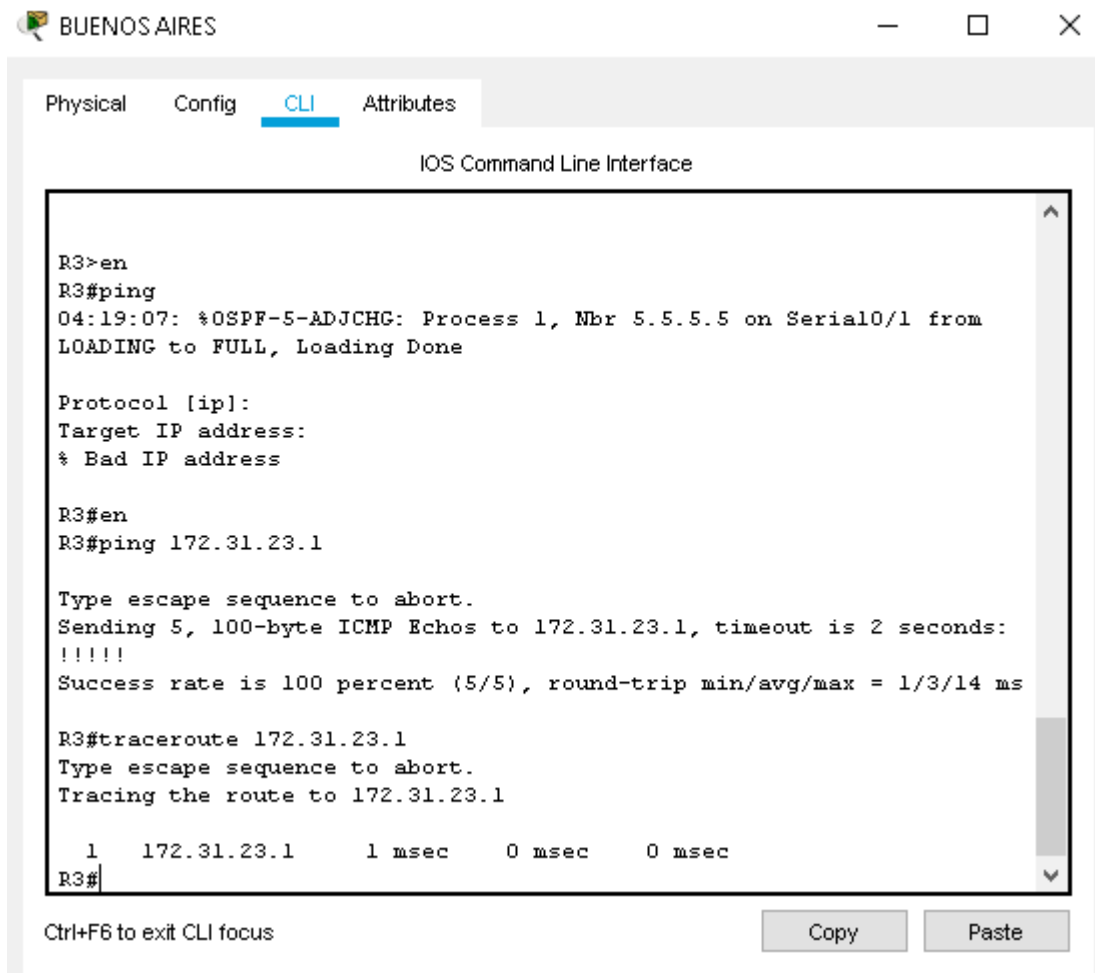
Protocol [ip]:
Target IP address:
% Bad IP address

R3#en
R3#ping 172.31.23.1

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 172.31.23.1, timeout is 2 seconds:
!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 1/3/14 ms
R3#
```

Ctrl+F6 to exit CLI focus

Copy Paste



The screenshot shows a window titled "BUENOS AIRES" with a standard macOS-style title bar (minimize, maximize, close). Below the title bar are four tabs: "Physical", "Config", "CLI" (which is selected and highlighted in blue), and "Attributes". The main content area is titled "IOS Command Line Interface" and contains a terminal window with the following text:

```
R3>en
R3#ping
04:19:07: %OSPF-5-ADJCHG: Process 1, Nbr 5.5.5.5 on Serial0/1 from
LOADING to FULL, Loading Done

Protocol [ip]:
Target IP address:
% Bad IP address

R3#en
R3#ping 172.31.23.1

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 172.31.23.1, timeout is 2 seconds:
!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 1/3/14 ms

R3#traceroute 172.31.23.1
Type escape sequence to abort.
Tracing the route to 172.31.23.1

  1    172.31.23.1      1 msec    0 msec    0 msec
R3#
```

At the bottom of the terminal window, there is a status bar that reads "Ctrl+F6 to exit CLI focus". To the right of this status bar are two buttons: "Copy" and "Paste".

3. Conclusiones

En este trabajo se comprendió la importancia de ejecutar correctamente los comandos aprendidos en el transcurso del diplomado, con el fin de dar solución a los 2 ejercicios expuestos en esta práctica final.

Adicionalmente, puedo aprender la importancia de la gestión de infraestructura de las redes, dentro de una compañía, la comunicación al día de hoy es extremadamente prioritaria, en el ámbito de negocios, en universidades, en cualquier institución que transmita información incluyendo de hecho nuestros Hogares (Internet de las cosas).

Aprender a tener buenas bases de conocimiento de Cisco en nuestra vida profesional, nos permitirá aplicar soluciones a nivel de comunicaciones y tecnología en el mercado. De igual forma este aprendizaje ampliara nuestro crecimiento y metas, con el fin de aplicar a mejores oportunidades laborales a nivel nacional e internacional.

4. Bibliografía

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