

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



**Presentado por
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GRUPO_37



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INTRODUCCIÓN

En el desarrollo de esta actividad vamos a realizar la evaluación denominada Prueba de habilidades prácticas”, que 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.

Para esta actividad, debemos disponer de cerca de dos semanas para realizar las tareas asignadas en cada uno de los dos 2 escenarios propuestos, acompañado de los respectivos procesos de documentación de la solución, correspondientes al registro de la configuración de cada uno de los dispositivos, la descripción detallada del paso a paso de cada una de las etapas realizadas durante su desarrollo, el registro de los procesos de verificación de conectividad mediante el uso de comandos ping, traceroute, show ip route, entre otros.

Teniendo en cuenta que la Prueba de habilidades está conformada por dos (2) debemos realizar el proceso de configuración de usando cualquiera de las siguientes herramientas: Packet Tracer o GNS3.



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

ESCENARIO 1

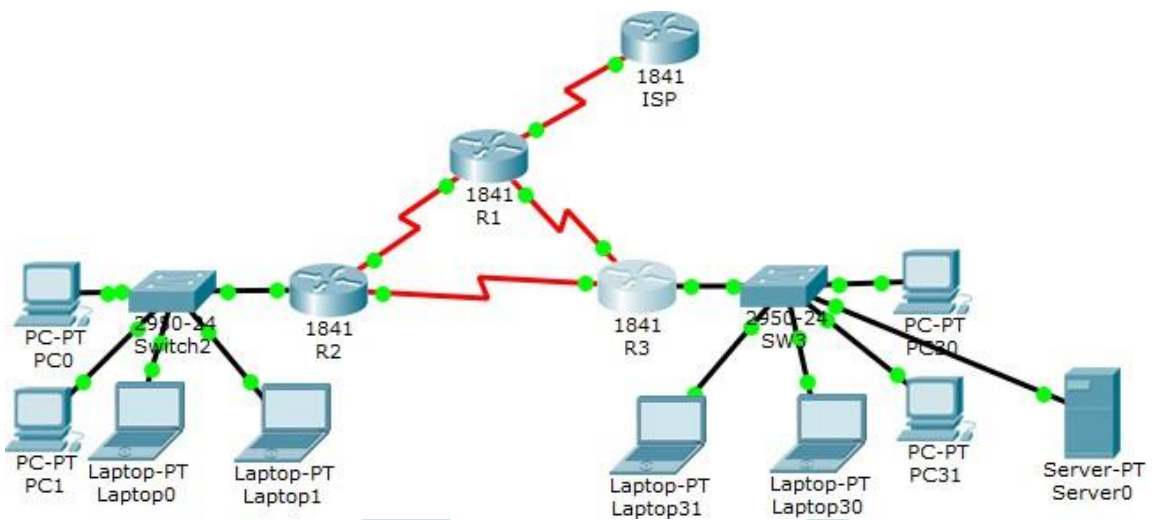


Tabla de direccionamiento

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
R2	Se0/1/1	10.0.0.5	255.255.255.252	N/D
	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
R3	Fa0/0	10.0.0.9	255.255.255.252	N/D
		192.168.30.1	255.255.255.0	N/D
	Se0/0/0	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

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

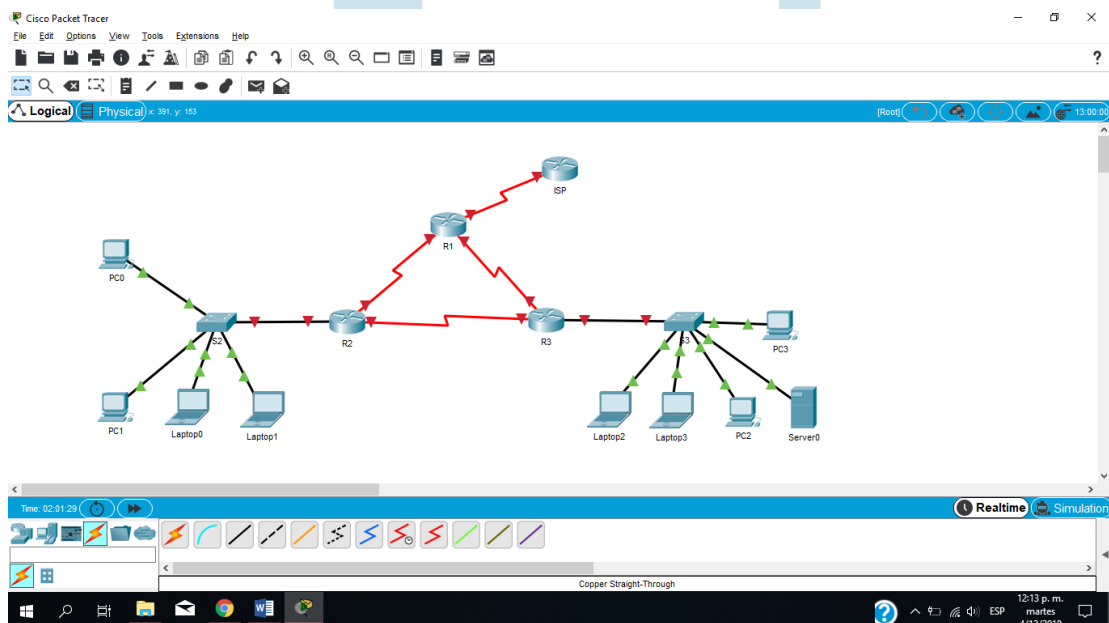
Situación

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.
- Los puertos de red que no se utilizan se deben deshabilitar.
- La información de dirección IP R1, R2 y R3 debe cumplir con la tabla 1.
- Laptop20, Laptop21, PC20, PC21, Laptop30, Laptop31, PC30 y PC31 deben obtener información IPv4 del servidor 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.
- 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.
- El Servidor0 es sólo un servidor IPv6 y solo debe ser accesibles para los dispositivos en R3 (ping).
- 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.
- La interfaz FastEthernet 0/0 del R3 también deben tener direcciones IPv4 e IPv6 configuradas (dual- stack).
- R1, R2 y R3 intercambian información de routing mediante RIPv2.
- R1, R2 y R3 deben saber sobre las rutas de cada uno y la ruta predeterminada desde R1.
- 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.



Ingresamos en s2

Switch#conf t

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

```
Switch(config)#host S2
```

```
S2(config)#vlan 100
```

```
S2(config-vlan)#name LAPTOPS
```

```
S2(config-vlan)#exit
```

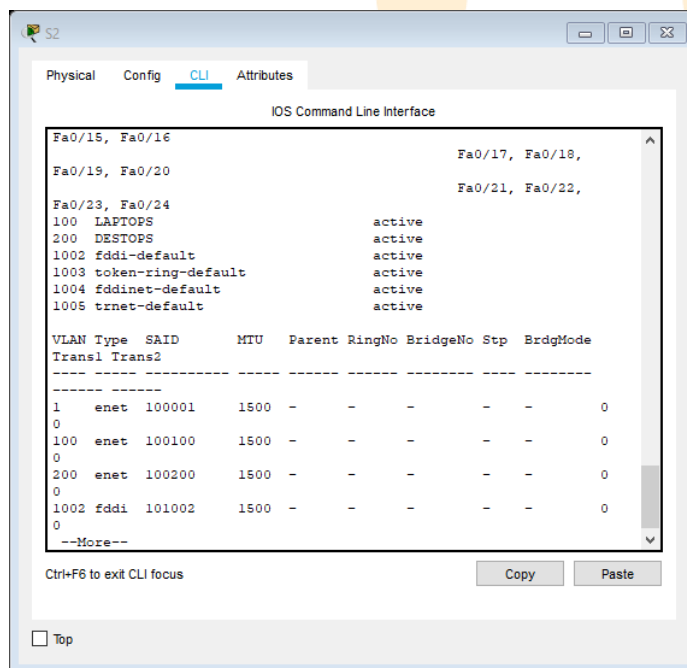
```
S2(config)#vlan 200
```

```
S2(config-vlan)#name DESTOPS
```

```
S2(config-vlan)#exit
```

```
S2(config)#end
```

```
S2#
```



Ahora para asignar las vlan a las interfaces en cada switch como lo pide la guía ingresamos en s2 y s3

```
S2(config)#int range f0/2-3
```

```
S2(config-if-range)#switchport mode access
```

```
S2(config-if-range)#switchport access vlan 100
```

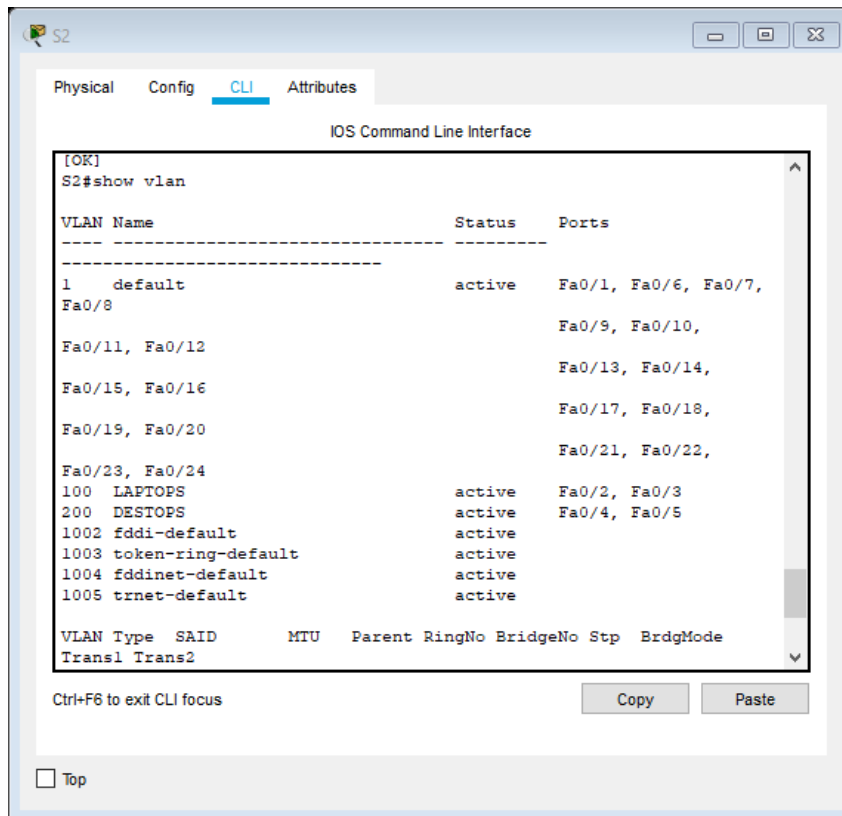
```
S2(config-if-range)#int range f0/4-5
```

```
S2(config-if-range)#switchport mode access
```

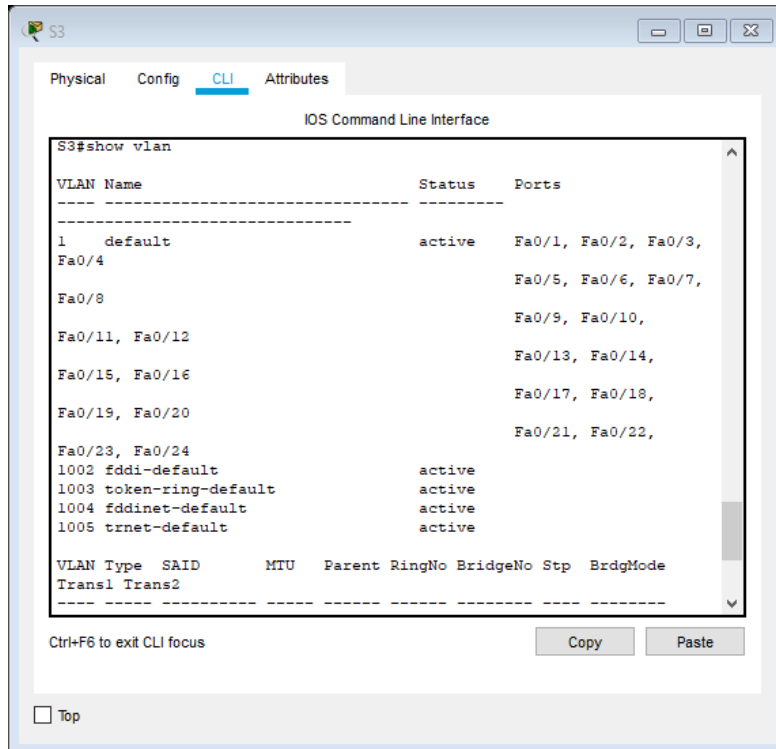
```
S2(config-if-range)#switchport access vlan 200
```

```
S2(config-if-range)#exit
```

```
S2(config)#end
```



```
S3(config)#vlan 1
S3(config-vlan)# exit
S3(config)#int range f0/1-24
S3(config-if-range)#switchport mode access
S3(config-if-range)#switchport access vlan 1
S3(config-if-range)#exit
S3(config)#end
```



El siguiente paso es deshabilitar los puertos que no estén en uso

S3(config)#int range f0/7-24

S3(config-if-range)#shutdown

Port	Link	VLAN	IP Address	MAC Address
FastEthernet0/1	Down	1	--	0090.0C75.9C01
FastEthernet0/2	Up	1	--	0090.0C75.9C02
FastEthernet0/3	Up	1	--	0090.0C75.9C03
FastEthernet0/4	Up	1	--	0090.0C75.9C04
FastEthernet0/5	Up	1	--	0090.0C75.9C05
FastEthernet0/6	Up	1	--	0090.0C75.9C06
FastEthernet0/7	Down	1	--	0090.0C75.9C07
FastEthernet0/8	Down	1	--	0090.0C75.9C08
FastEthernet0/9	Down	1	--	0090.0C75.9C09
FastEthernet0/10	Down	1	--	0090.0C75.9C0A
FastEthernet0/11	Down	1	--	0090.0C75.9C0B
FastEthernet0/12	Down	1	--	0090.0C75.9C0C
FastEthernet0/13	Down	1	--	0090.0C75.9C0D
FastEthernet0/14	Down	1	--	0090.0C75.9C0E
FastEthernet0/15	Down	1	--	0090.0C75.9C0F
FastEthernet0/16	Down	1	--	0090.0C75.9C10
FastEthernet0/17	Down	1	--	0090.0C75.9C11
FastEthernet0/18	Down	1	--	0090.0C75.9C12
FastEthernet0/19	Down	1	--	0090.0C75.9C13
FastEthernet0/20	Down	1	--	0090.0C75.9C14
FastEthernet0/21	Down	1	--	0090.0C75.9C15
FastEthernet0/22	Down	1	--	0090.0C75.9C16
FastEthernet0/23	Down	1	--	0090.0C75.9C17
FastEthernet0/24	Down	1	--	0090.0C75.9C18
Vlan1	Down	1	<not set>	00D0.BAD5.0024

Hostname: S3

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

S2(config)#int range f0/6-24

S2(config-if-range)#shutdown

Port	Link	VLAN	IP Address	MAC Address
FastEthernet0/1	Down	1	--	00D0.97B2.9D01
FastEthernet0/2	Up	100	--	00D0.97B2.9D02
FastEthernet0/3	Up	100	--	00D0.97B2.9D03
FastEthernet0/4	Up	200	--	00D0.97B2.9D04
FastEthernet0/5	Up	200	--	00D0.97B2.9D05
FastEthernet0/6	Down	1	--	00D0.97B2.9D06
FastEthernet0/7	Down	1	--	00D0.97B2.9D07
FastEthernet0/8	Down	1	--	00D0.97B2.9D08
FastEthernet0/9	Down	1	--	00D0.97B2.9D09
FastEthernet0/10	Down	1	--	00D0.97B2.9D0A
FastEthernet0/11	Down	1	--	00D0.97B2.9D0B
FastEthernet0/12	Down	1	--	00D0.97B2.9D0C
FastEthernet0/13	Down	1	--	00D0.97B2.9D0D
FastEthernet0/14	Down	1	--	00D0.97B2.9D0E
FastEthernet0/15	Down	1	--	00D0.97B2.9D0F
FastEthernet0/16	Down	1	--	00D0.97B2.9D10
FastEthernet0/17	Down	1	--	00D0.97B2.9D11
FastEthernet0/18	Down	1	--	00D0.97B2.9D12
FastEthernet0/19	Down	1	--	00D0.97B2.9D13
FastEthernet0/20	Down	1	--	00D0.97B2.9D14
FastEthernet0/21	Down	1	--	00D0.97B2.9D15
FastEthernet0/22	Down	1	--	00D0.97B2.9D16
FastEthernet0/23	Down	1	--	00D0.97B2.9D17
FastEthernet0/24	Down	1	--	00D0.97B2.9D18
Vlan1	Down	1	<not set>	00D0.97DD.0412

Hostname: S2

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

Configuro el Puerto truncal en S2

S2(config)#int f0/1

S2(config-if)#switchport mode trunk

S2(config-if)#exit

A hora en s3

S3(config)#int f0/1

S3(config-if)#switchport mode trunk

S3(config-if)#exit

Procedo a configurar los IP de R1, R2 R3 y ISP según la tabla

```
R1(config)#int s0/0/0
R1(config-if)#ip add 200.123.211.2 255.255.255.0
R1(config-if)#no sh
R1(config-if)#exit
R1(config)#int s0/1/0
R1(config-if)#ip add 10.0.0.1 255.255.255.252
R1(config-if)#no sh
R1(config-if)#exit
R1(config)#int s0/1/1
R1(config-if)#ip add 10.0.0.5 255.255.255.252
R1(config-if)#exit
R1(config)#
```

En R2

```
R2(config)#int F0/0.100
R2(config-subif)#encapsulation dot1Q 100
R2(config-subif)#ip add 192.168.20.1 255.255.255.0
R2(config-subif)#no sh
R2(config-subif)#exit
R2(config)#int F0/0.200
R2(config-subif)#encapsulation dot1Q 200
R2(config-subif)#ip add 192.168.21.1 255.255.255.0
R2(config-subif)#no sh
R2(config-subif)#exit
R2(config)#int s0/0/0
R2(config-if)#ip add 10.0.0.2 255.255.255.252
R2(config-if)#no sh
R2(config-if)#exit
R2(config)#int s0/0/1
R2(config-if)#ip add 10.0.0.9 255.255.255.252
R2(config-if)#no sh
R2(config-if)#exit
R2(config)#ip dhcp pool vlan_100
R2(dhcp-config)#network 192.168.20.1 255.255.255.0
R2(dhcp-config)#default-router 192.168.20.1
R2(dhcp-config)#ip dhcp pool vlan_200
R2(dhcp-config)#network 192.168.21.1 255.255.255.0
R2(dhcp-config)#default-router 192.168.21.1
```

En R3

```
R3(config)#int F0/0
R3(config-if)#ip add 192.168.30.1 255.255.255.0
R3(config-if)#no sh
R3(config-if)#exit
```

```
R3(config)#ipv6 unicast-routing
R3(config)#int Se0/0/0
R3(config-if)#ip add 10.0.0.6 255.255.255.252
R3(config-if)#no sh
R3(config-if)#exit
R3(config)#int Se0/0/1
R3(config-if)#ip add 10.0.0.10 255.255.255.252
R3(config-if)#no sh
R3(config)#ip dhcp pool vlan_1
R3(dhcp-config)#network 192.168.30.1 255.255.255.0
R3(dhcp-config)#default-router 192.168.30.1
R3(dhcp-config)#ipv6 dhcp pool vlan_1
R3(config-dhcpv6)#dns-server 2001:db8:130::
R3(config-dhcpv6)#exit
R3(config)#
```

En ISP

```
ISP(config)#int S0/0/0
ISP(config-if)#ip add 200.123.211.1 255.255.255.0
ISP(config-if)#no sh
ISP(config-if)#exit
```

Verificamos que Laptop20, Laptop21, PC20, PC21, Laptop30, Laptop31, PC30 y PC31 esten en información IPv4 del servidor DHCP, teniendo todos estos dispositivos con las casilla DHCP activada continuamos.

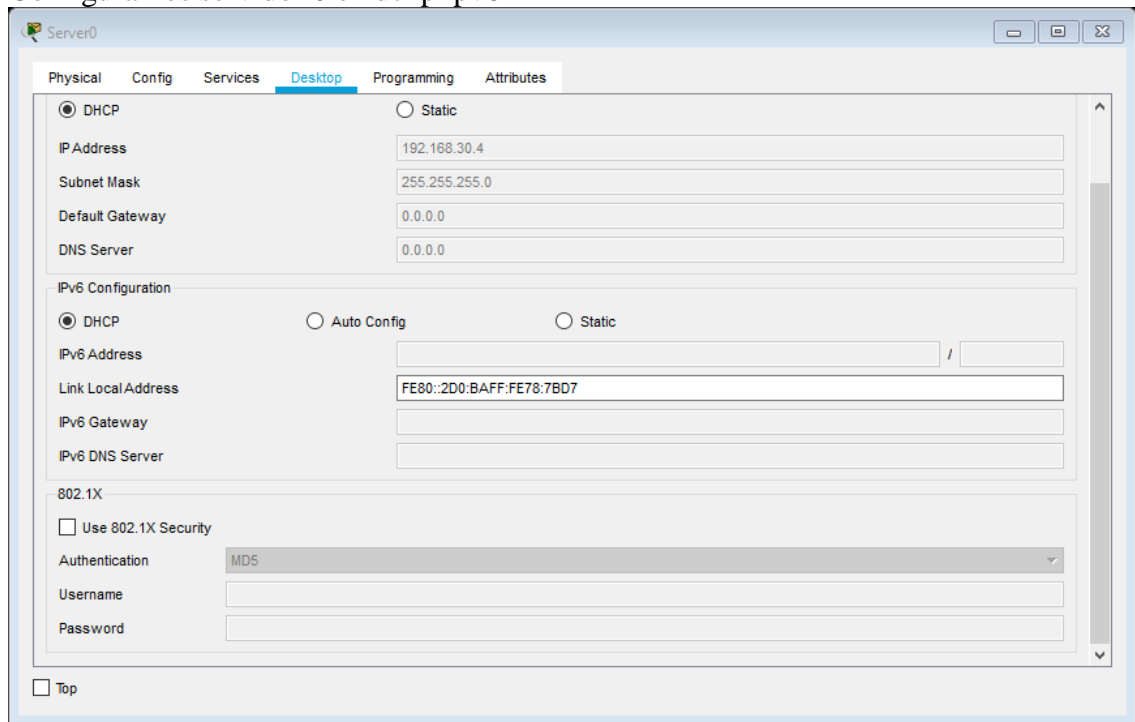
Para realizar una NAT con sobrecarga en R1 ingresamos

```
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 0.0.0.255
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)#exit
```

Lo siguiente es configurar R2 para que sea un servidor de DHCP para los dispositivos conectados a los puertos mencionados

```
R2(config)# ip dhcp excluded-address 10.0.0.2 10.0.0.9
R2(config)#ip dhcp pool INSIDE-DEVS
R2(dhcp-config)#dns-server 0.0.0.0
R2(dhcp-config)#exit
R2(config)#
```

Configuramos servidor 0 en dhcp ipv6



The screenshot shows the configuration page for 'Server0' in a network management tool. The 'Desktop' tab is selected. Under the 'DHCP' section, the 'DHCP' radio button is selected, and the 'Static' radio button is unselected. The IP Address is set to 192.168.30.4, Subnet Mask to 255.255.255.0, Default Gateway to 0.0.0.0, and DNS Server to 0.0.0.0. In the 'IPv6 Configuration' section, the 'DHCP' radio button is selected, 'Auto Config' is unselected, and 'Static' is unselected. The IPv6 Address field is empty, the Link Local Address is set to FE80::2D0:BAFF:FE78:7BD7, and the IPv6 Gateway and IPv6 DNS Server fields are empty. In the '802.1X' section, the 'Use 802.1X Security' checkbox is unselected, the Authentication dropdown is set to MD5, and the Username and Password fields are empty. A 'Top' link is visible at the bottom left of the configuration area.

Hacemos ping con server 0

```
Laptop31
Physical Config Desktop Programming Attributes
Command Prompt
Pinging 192.168.30.4 with 32 bytes of data:
Reply from 192.168.30.4: bytes=32 time<lms TTL=128
Reply from 192.168.30.4: bytes=32 time<lms TTL=128
Reply from 192.168.30.4: bytes=32 time<lms TTL=128
Reply from 192.168.30.4: bytes=32 time<lms TTL=128

Ping statistics for 192.168.30.4:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>ping 192.168.30.4

Pinging 192.168.30.4 with 32 bytes of data:
Reply from 192.168.30.4: bytes=32 time<lms TTL=128
Reply from 192.168.30.4: bytes=32 time<lms TTL=128
Reply from 192.168.30.4: bytes=32 time<lms TTL=128
Reply from 192.168.30.4: bytes=32 time<lms TTL=128

Ping statistics for 192.168.30.4:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = lms, Average = 0ms

C:\>
```

Ahora con un dispositivo fuera de R3

```
PC20
Physical Config Desktop Programming Attributes
Command Prompt
C:\>ping 192.168.20.2

Pinging 192.168.20.2 with 32 bytes of data:
Reply from 192.168.20.2: bytes=32 time<lms TTL=127
Reply from 192.168.20.2: bytes=32 time<lms TTL=127
Reply from 192.168.20.2: bytes=32 time<lms TTL=127
Reply from 192.168.20.2: bytes=32 time<lms TTL=127

Ping statistics for 192.168.20.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>ping 192.168.30.4

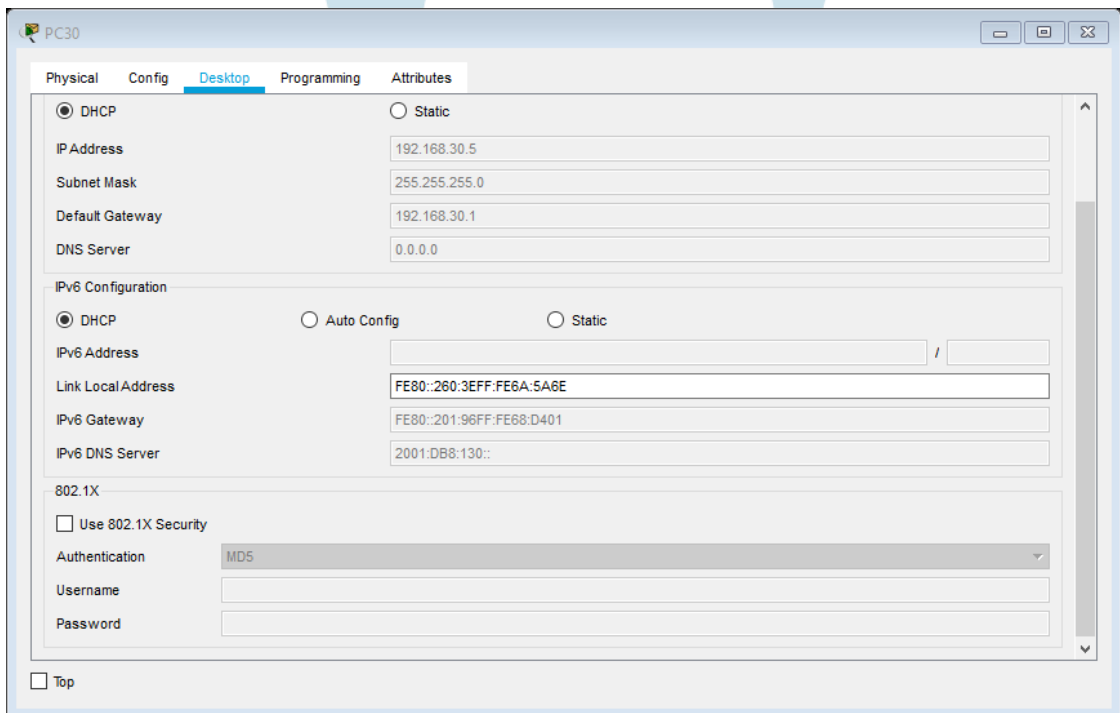
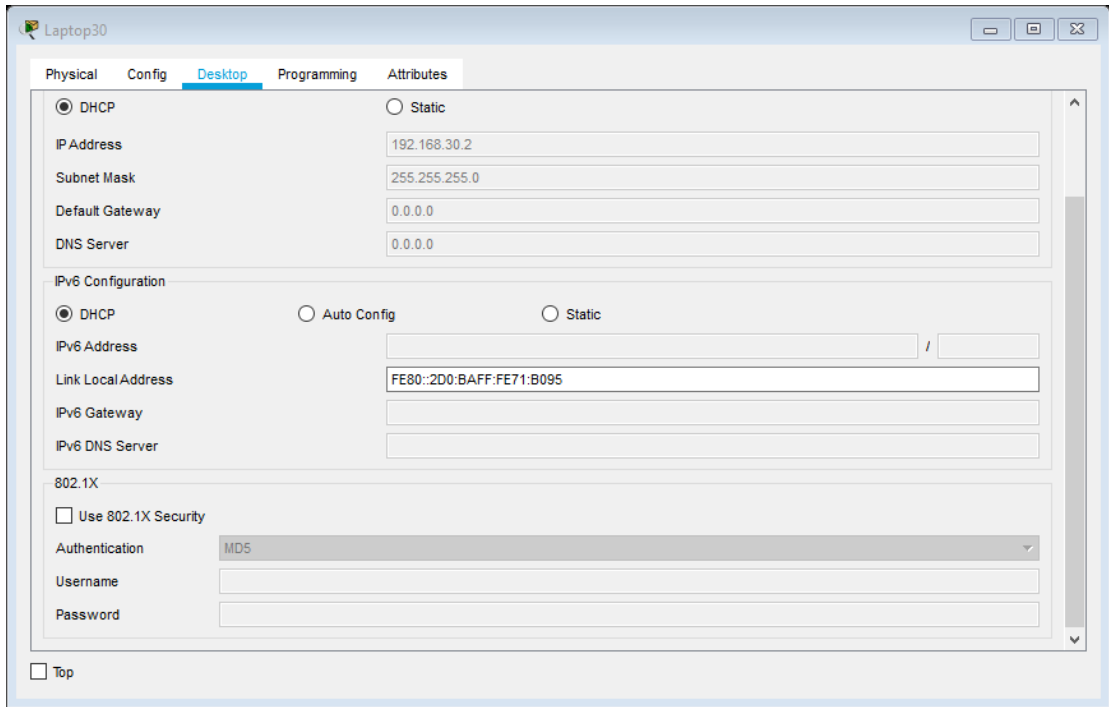
Pinging 192.168.30.4 with 32 bytes of data:

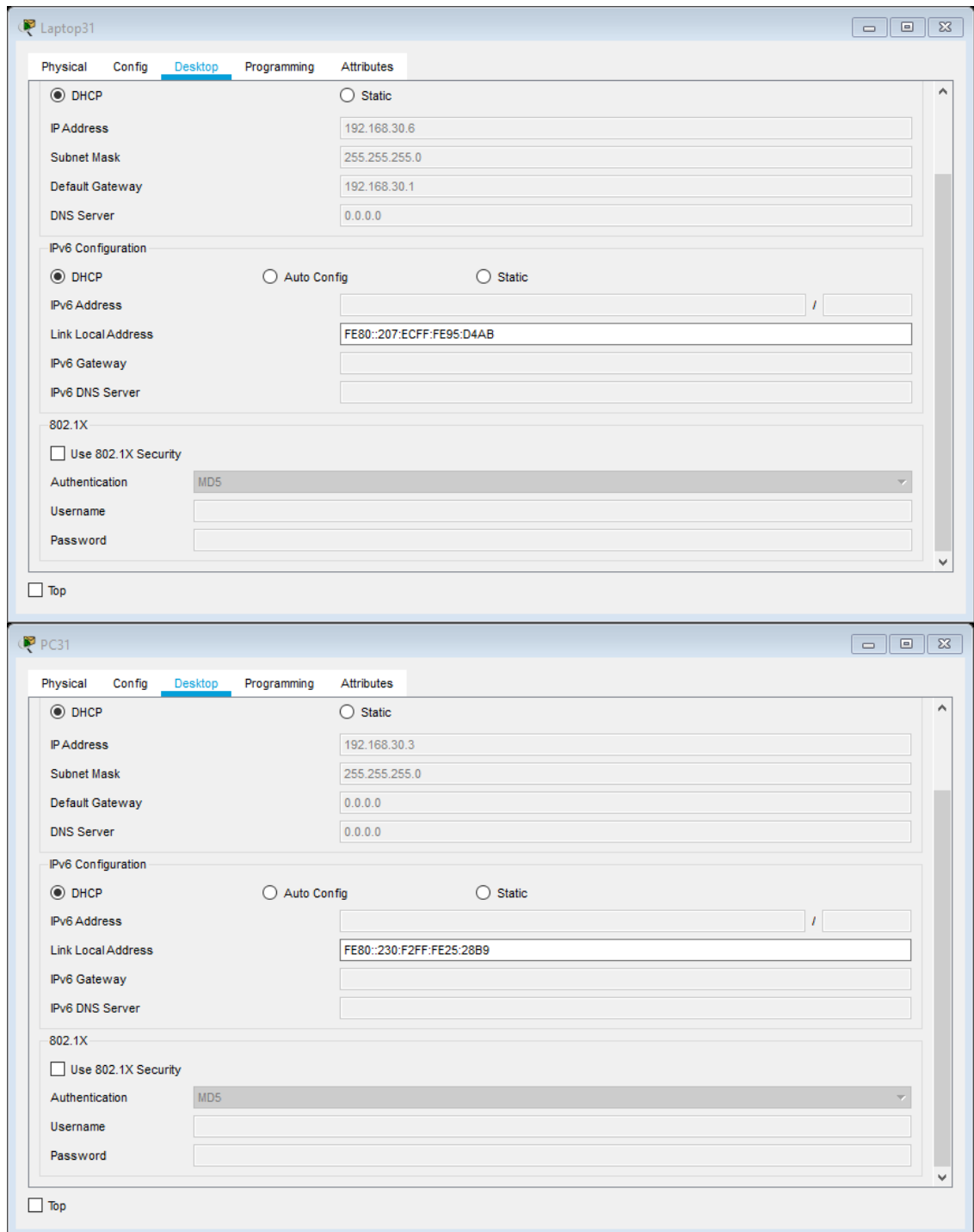
Reply from 200.123.211.1: Destination host unreachable.
Reply from 200.123.211.1: Destination host unreachable.
Reply from 200.123.211.1: Destination host unreachable.
Reply from 200.123.211.1: Destination host unreachable.

Ping statistics for 192.168.30.4:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

C:\>
```

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.





Procedo a hacer la configuración configuradas (dual-stack) en R3.

```

R3(config)#ipv6 unicast-routing
R3(config)#int g0/0
R3(config-if)#ipv6 enable
R3(config-if)#ip add 192.168.30.1 255.255.255.0
R3(config-if)#ipv6 add 2001:db8:130::9C0:80F:301/64
R3(config-if)#ipv6 dhcp server vlan_1

```

```
R3(config-if)#ipv6 nd other-config-flag
R3(config-if)#no sh
```

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

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

En R1

```
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)#ip route 0.0.0.0 0.0.0.0 s0/0/0
R1(config-router)#network 10.0.0.0
R1(config-router)#network 10.0.0.4
R1(config-router)#default-information originate
```

EN R2

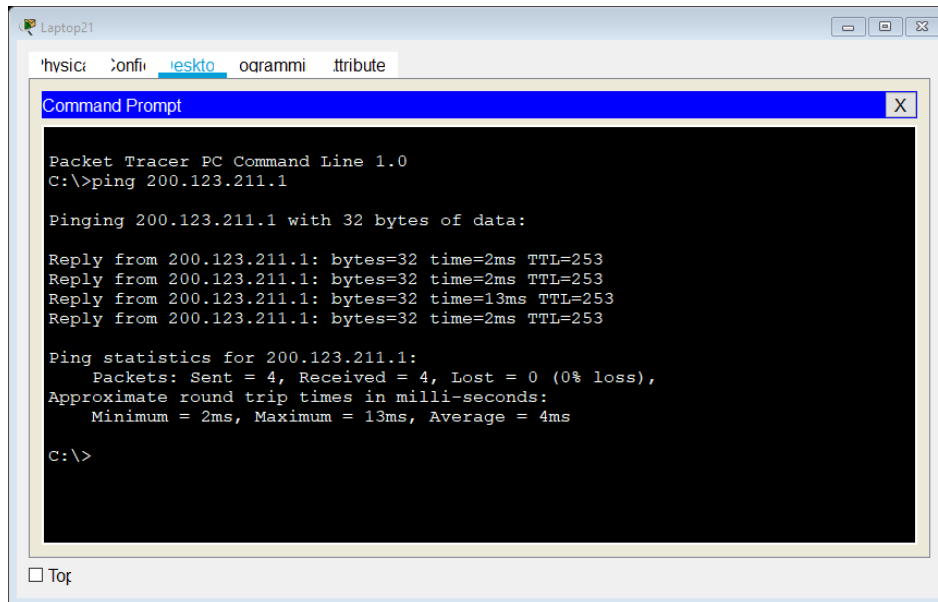
```
R2(config)#router rip
R2(config-router)#version 2
R2(config-router)#network 10.0.0.0
R2(config-router)#network 192.168.30.0
R2(config-router)#network 192.168.20.0
R2(config-router)#network 192.168.21.0
R2(config-router)#network 10.0.0.8
R2(config-router)#network 200.123.211.0
```

En R3

```
R3(config)#router rip
R3(config-router)#version 2
R3(config-router)#network 192.168.0.0
R3(config-router)#network 10.0.0.4
R3(config-router)#network 10.0.0.8
R3(config-router)#do 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
```

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

Ping desde laptop21 a ISP



```
'hysic: >onfi leskto oarammi ttribute
Command Prompt
Packet Tracer PC Command Line 1.0
C:\>ping 200.123.211.1

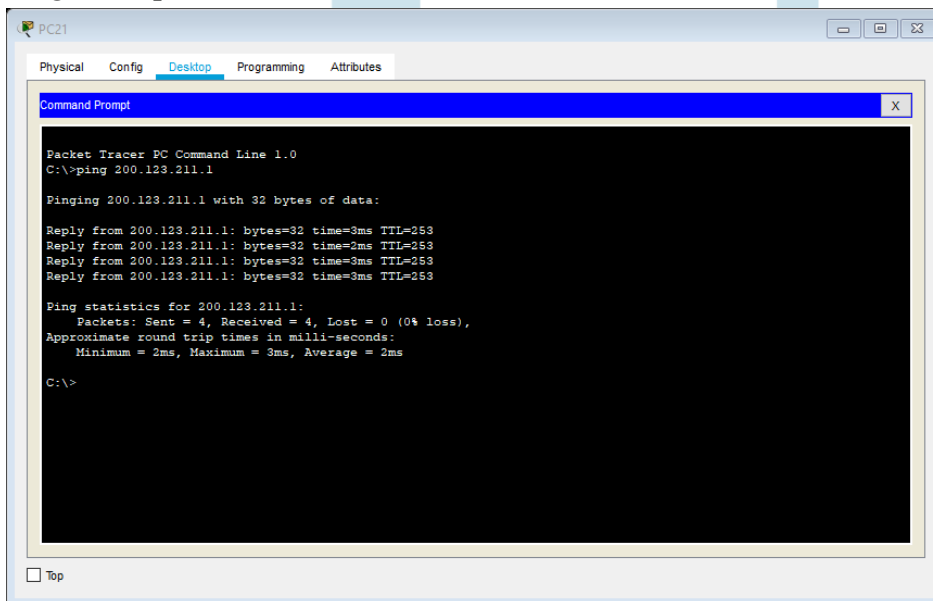
Pinging 200.123.211.1 with 32 bytes of data:

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=13ms 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 = 13ms, Average = 4ms

C:\>
```

Ping desde pc21 a ISP



```
Physical Config Desktop Programming Attributes
Command Prompt
Packet Tracer PC Command Line 1.0
C:\>ping 200.123.211.1

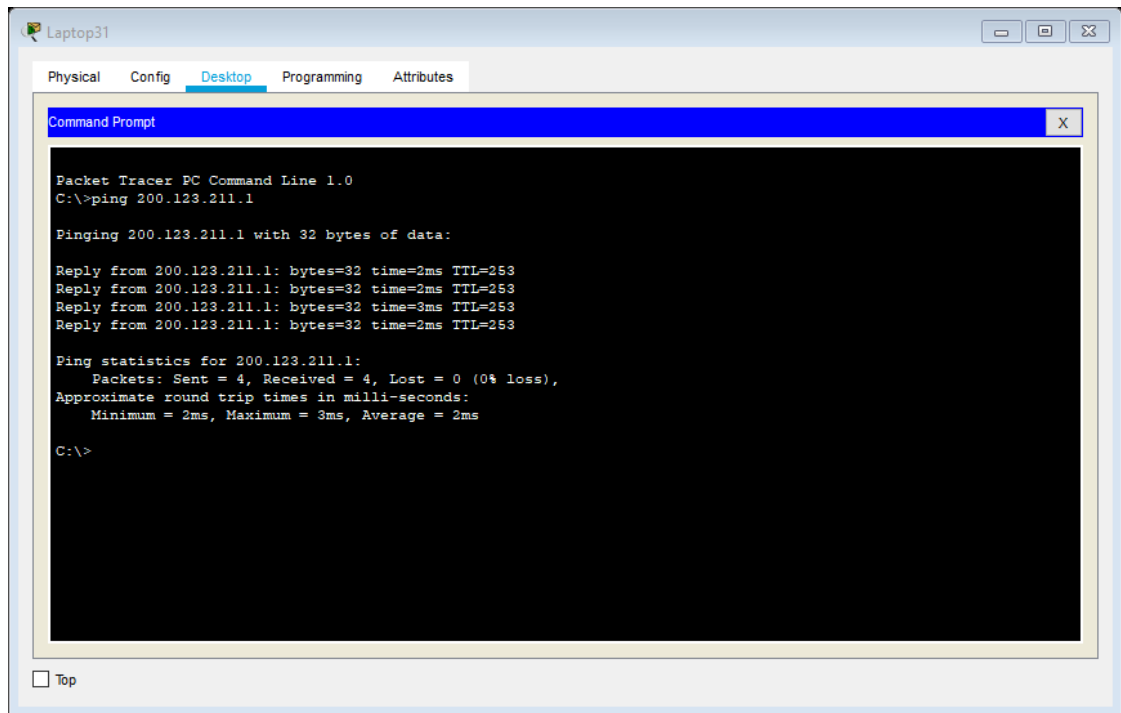
Pinging 200.123.211.1 with 32 bytes of data:

Reply from 200.123.211.1: bytes=32 time=3ms TTL=253
Reply from 200.123.211.1: bytes=32 time=2ms TTL=253
Reply from 200.123.211.1: bytes=32 time=3ms TTL=253
Reply from 200.123.211.1: bytes=32 time=3ms 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 = 3ms, Average = 2ms

C:\>
```

Ping desde laptop31 a ISP



The screenshot shows a Packet Tracer PC Command Prompt window titled "Laptop31". The window has tabs for "Physical", "Config", "Desktop", "Programming", and "Attributes", with "Desktop" selected. The Command Prompt displays the following text:

```
Packet Tracer PC Command Line 1.0
C:\>ping 200.123.211.1

Pinging 200.123.211.1 with 32 bytes of data:

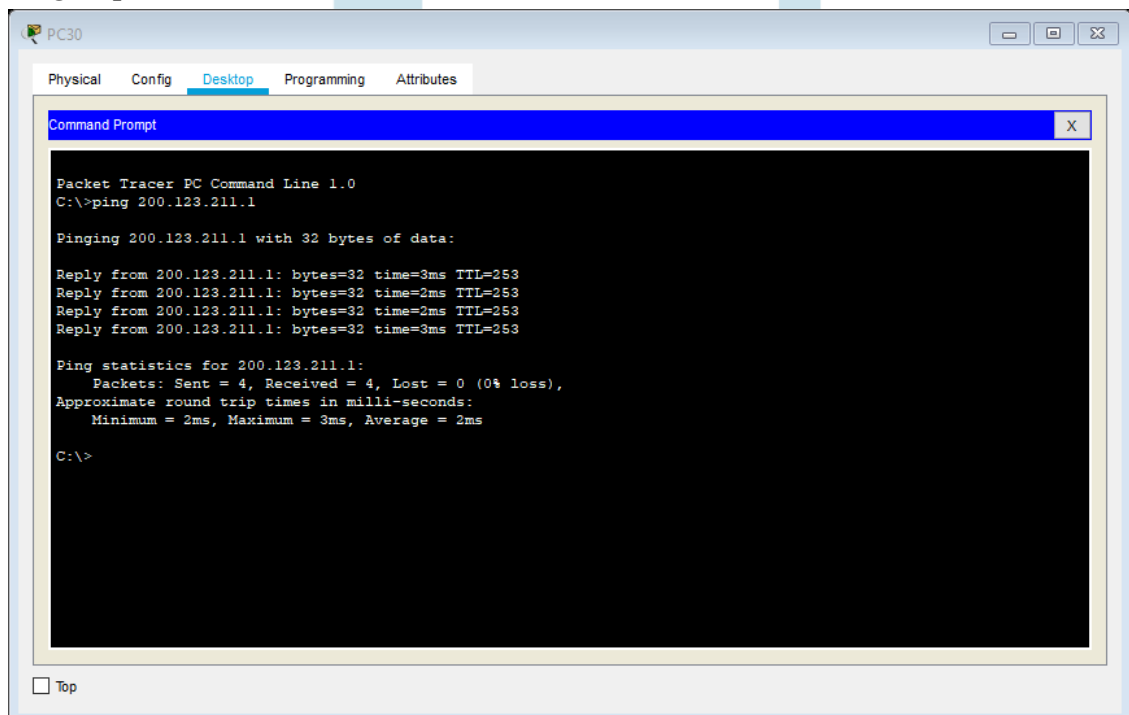
Reply from 200.123.211.1: bytes=32 time=2ms TTL=253
Reply from 200.123.211.1: bytes=32 time=2ms TTL=253
Reply from 200.123.211.1: bytes=32 time=3ms TTL=253
Reply from 200.123.211.1: bytes=32 time=2ms TTL=253

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 = 3ms, Average = 2ms

C:\>
```

At the bottom left of the window, there is a "Top" button.

Ping de pc 30 a ISP



The screenshot shows a Packet Tracer PC Command Prompt window titled "PC30". The window has tabs for "Physical", "Config", "Desktop", "Programming", and "Attributes", with "Desktop" selected. The Command Prompt displays the following text:

```
Packet Tracer PC Command Line 1.0
C:\>ping 200.123.211.1

Pinging 200.123.211.1 with 32 bytes of data:

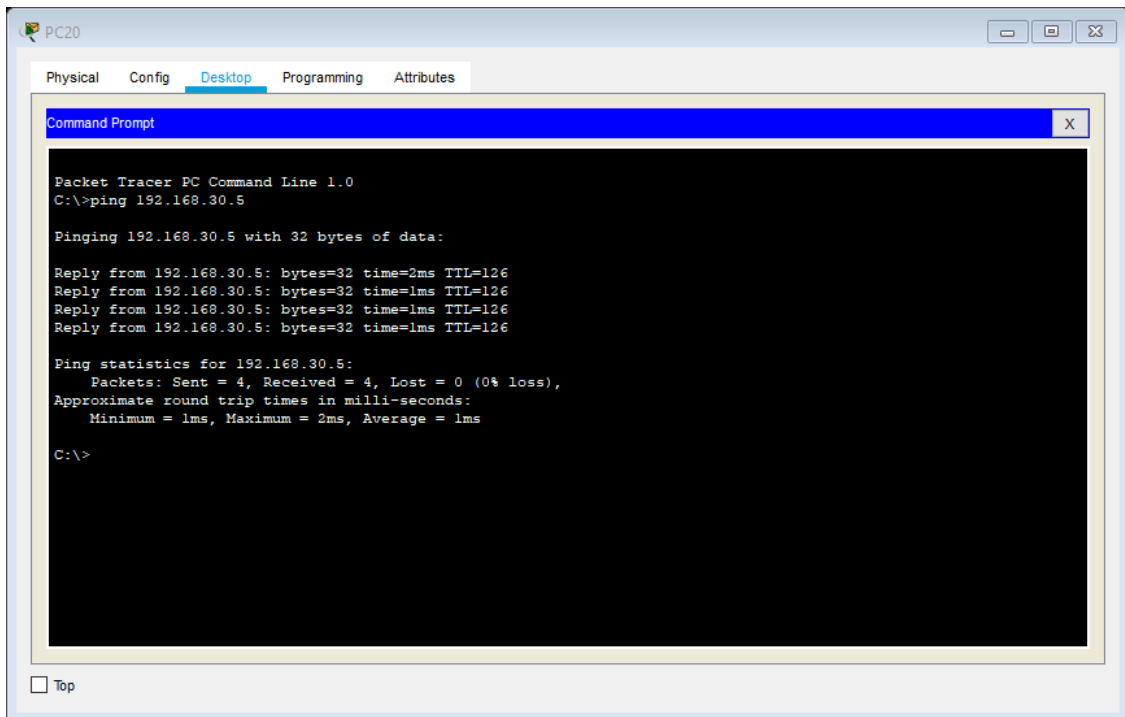
Reply from 200.123.211.1: bytes=32 time=3ms TTL=253
Reply from 200.123.211.1: bytes=32 time=2ms TTL=253
Reply from 200.123.211.1: bytes=32 time=2ms TTL=253
Reply from 200.123.211.1: bytes=32 time=3ms TTL=253

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 = 3ms, Average = 2ms

C:\>
```

At the bottom left of the window, there is a "Top" button.

Ping de PC20 A PC 30



The screenshot shows a desktop environment for PC20. A Command Prompt window is open, displaying the output of a ping command to 192.168.30.5. The output shows four successful replies with 32 bytes of data, a time of 1ms, and a TTL of 126. The statistics indicate 0% loss.

```
Packet Tracer PC Command Line 1.0
C:\>ping 192.168.30.5

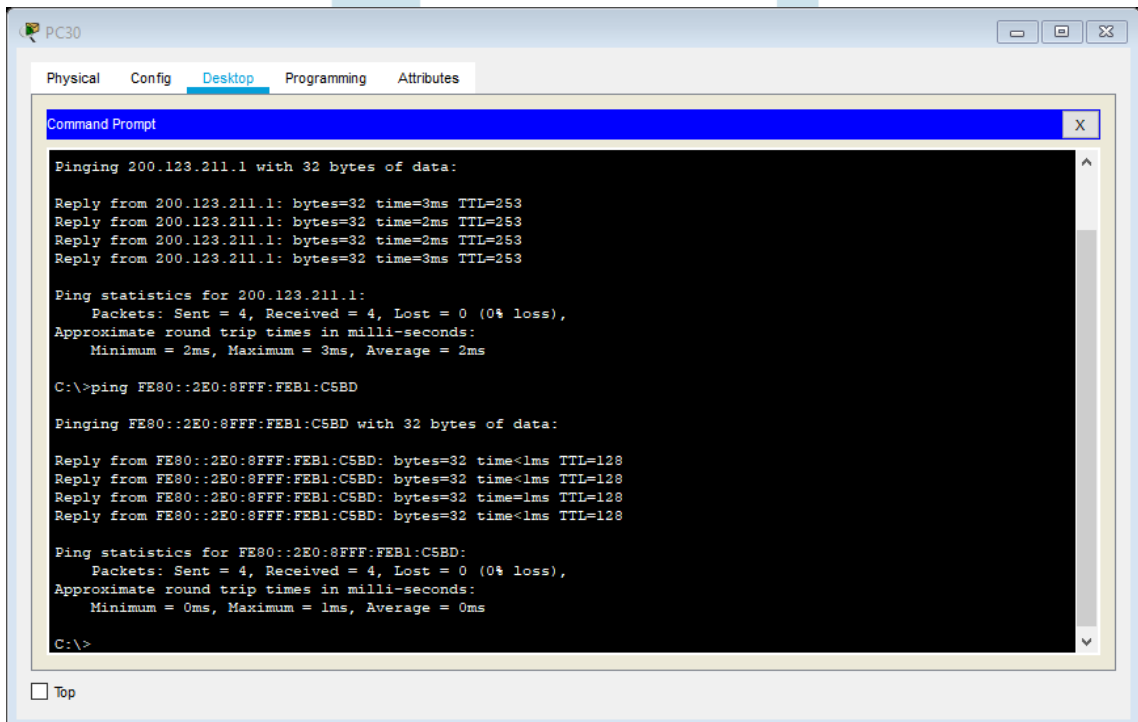
Pinging 192.168.30.5 with 32 bytes of data:

Reply from 192.168.30.5: bytes=32 time=2ms TTL=126
Reply from 192.168.30.5: bytes=32 time=1ms TTL=126
Reply from 192.168.30.5: bytes=32 time=1ms TTL=126
Reply from 192.168.30.5: bytes=32 time=1ms TTL=126

Ping statistics for 192.168.30.5:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 1ms, Maximum = 2ms, Average = 1ms

C:\>
```

PING DE PC30 A laptop30



The screenshot shows a desktop environment for PC30. A Command Prompt window is open, displaying the output of two ping commands. The first command is for 200.123.211.1, showing four successful replies with 32 bytes of data, a time of 2-3ms, and a TTL of 253. The second command is for the IPv6 address FE80::2E0:8FFF:FEB1:C5BD, showing four successful replies with 32 bytes of data, a time of <1ms, and a TTL of 128. The statistics indicate 0% loss for both.

```
Pinging 200.123.211.1 with 32 bytes of data:

Reply from 200.123.211.1: bytes=32 time=3ms TTL=253
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=3ms 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 = 3ms, Average = 2ms

C:\>ping FE80::2E0:8FFF:FEB1:C5BD

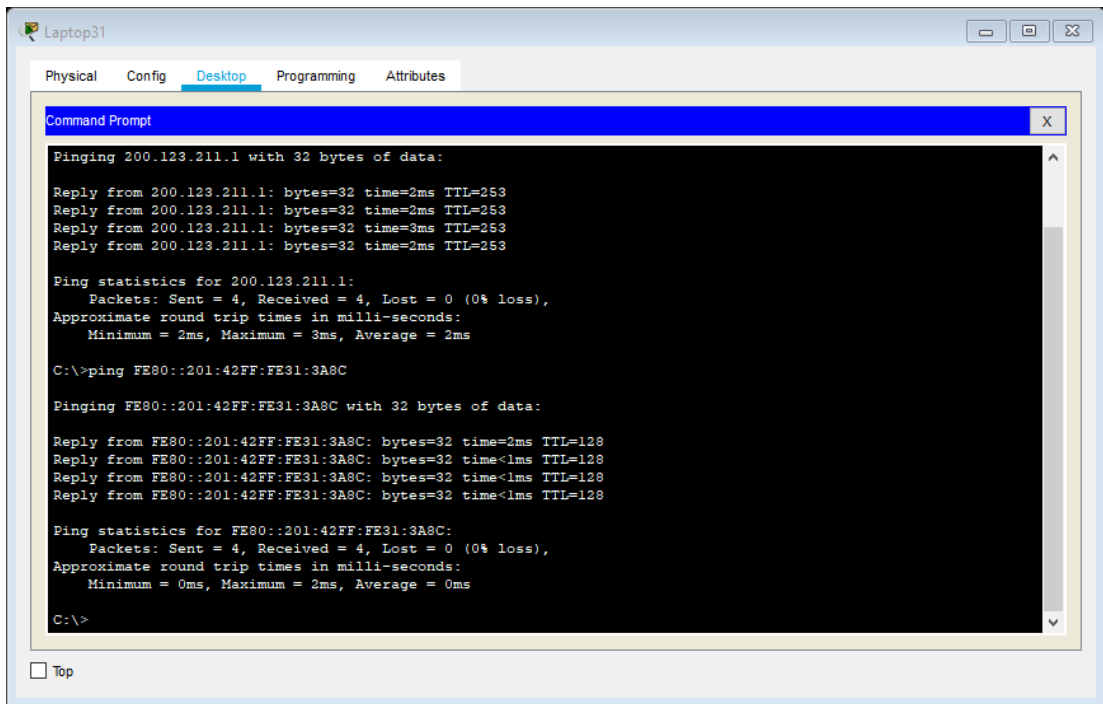
Pinging FE80::2E0:8FFF:FEB1:C5BD with 32 bytes of data:

Reply from FE80::2E0:8FFF:FEB1:C5BD: bytes=32 time<1ms TTL=128
Reply from FE80::2E0:8FFF:FEB1:C5BD: bytes=32 time<1ms TTL=128
Reply from FE80::2E0:8FFF:FEB1:C5BD: bytes=32 time=1ms TTL=128
Reply from FE80::2E0:8FFF:FEB1:C5BD: bytes=32 time<1ms TTL=128

Ping statistics for FE80::2E0:8FFF:FEB1:C5BD:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 1ms, Average = 0ms

C:\>
```

Píng de laptop 31 a server 0



```
Laptop31
Physical Config Desktop Programming Attributes

Command Prompt
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=3ms 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 = 3ms, Average = 2ms

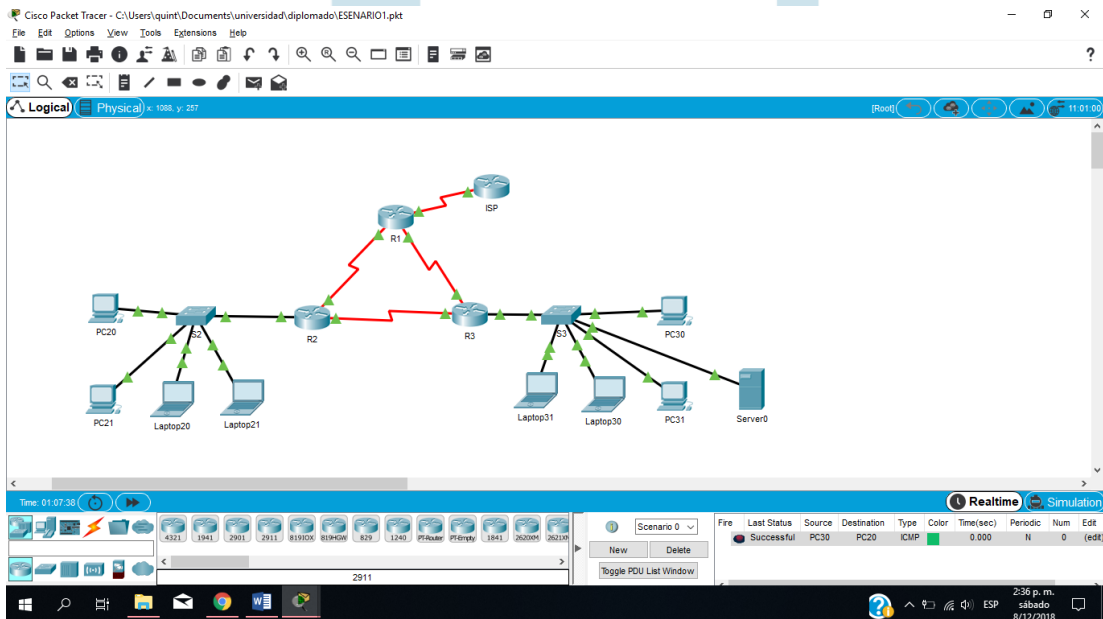
C:\>ping FE80::201:42FF:FE31:3A8C

Pinging FE80::201:42FF:FE31:3A8C with 32 bytes of data:

Reply from FE80::201:42FF:FE31:3A8C: bytes=32 time=2ms TTL=128
Reply from FE80::201:42FF:FE31:3A8C: bytes=32 time<1ms TTL=128
Reply from FE80::201:42FF:FE31:3A8C: bytes=32 time<1ms TTL=128
Reply from FE80::201:42FF:FE31:3A8C: bytes=32 time<1ms TTL=128

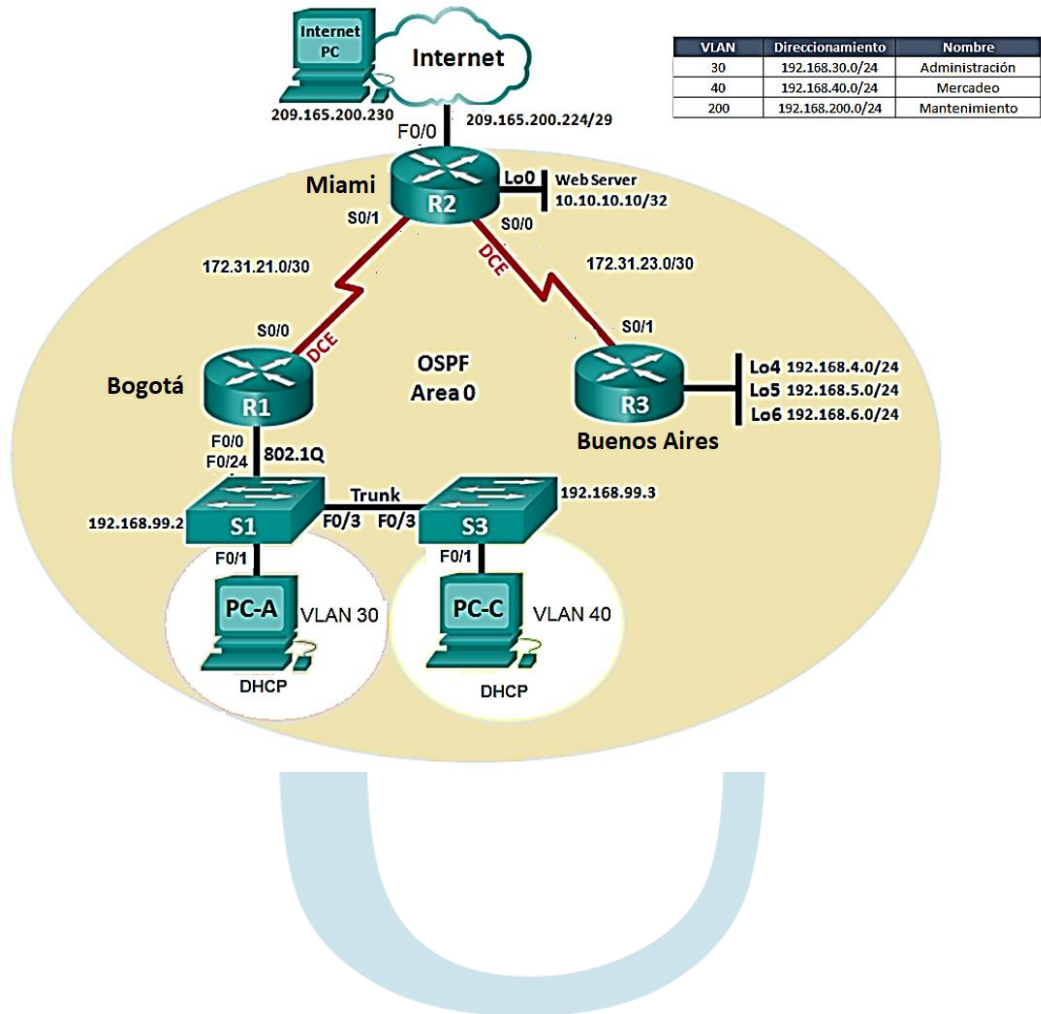
Ping statistics for FE80::201:42FF:FE31:3A8C:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 2ms, Average = 0ms

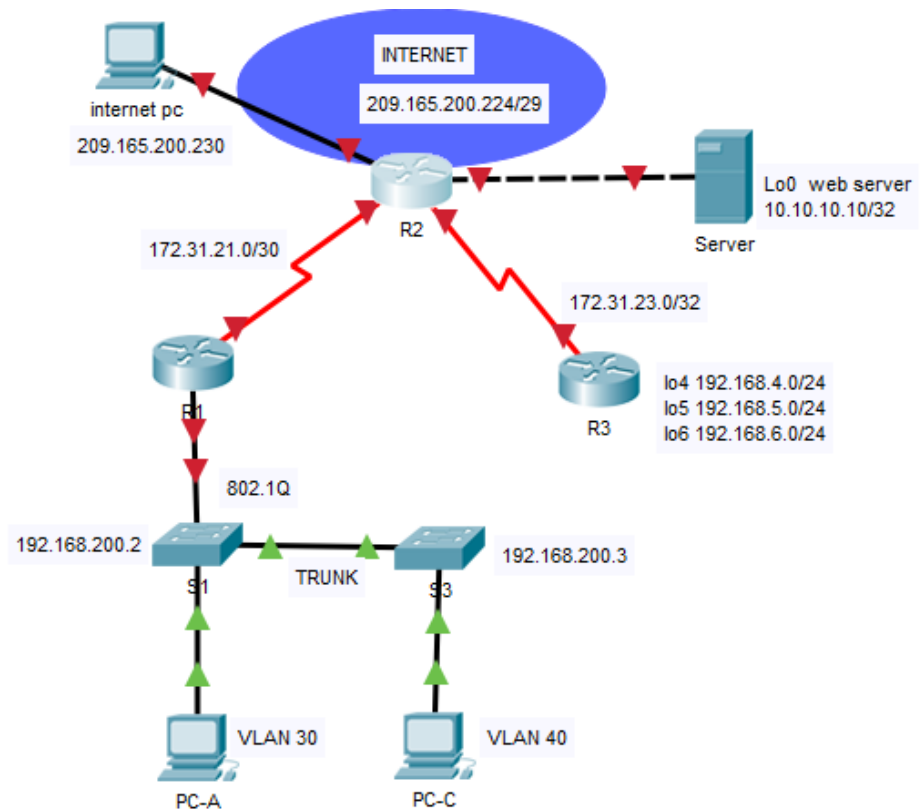
C:\>
```



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.

Internet pc	
Dirección ip	209.165.200.230
mascara	255.255.255.248
Gateway	209.165.200.225

server	
Dirección ip	10.10.10.10
mascara	255.255.255.0
Gateway	10.10.10.1

Configuraciones	Especificación
Desactivar la búsqueda de DNS	
nombre del router	R1
Contraseña encriptada exec privilegiado	class
contraseña de acceso a la consola	cisco
contraseña de acceso telnet	cisco
Cifrar las contraseñas de texto	
banner MOTD	el acceso sin autorización está prohibido
Interfaz S0 / 0/0	Establecer la descripción Ajustar la dirección R1(config)#int s0/0/0 R1(config-if)#ip add 172.31.21.1 255.255.255.252 R1(config-if)#no sh Ajuste la velocidad del reloj de 128000 #int s0/0/0 R1(config-if)#clock rate 128000 Interfaz Activar R1(config-if)#no sh

Elemento de configuración o de tareas	Especificación
Desactivar la búsqueda de DNS	
nombre del router	R2
Contraseña encriptada exec privilegiado	class
contraseña de acceso a la consola	cisco
contraseña de acceso telnet	cisco
Cifrar las contraseñas de texto	

Habilitar servidor HTTP	
banner MOTD	el acceso sin autorización esta prohibido
Interfaz S0 / 0/0	<p>Ajustar la dirección</p> <p>R2(config-if)#int s0/0/0</p> <p>R2(config-if)#ip add 172.31.23.1 255.255.255.252</p> <p>Ajuste la velocidad del reloj de 128000</p> <p>R2(config-if)#clock rate 128000</p> <p>Interfaz Activar</p> <p>R2(config-if)#no sh</p>
Interfaz S0 / 0/1	<p>Ajustar la dirección IP</p> <p>R2(config-if)#int s0/0/1</p> <p>R2(config-if)#ip add 172.31.21.2 255.255.255.252</p> <p>Interfaz Activar</p> <p>R2(config-if)#no sh</p>
G0 interfaz / 0 (Internet simulado)	<p>Ajustar la dirección</p> <p>R2(config-if)#int g0/0</p> <p>R2(config-if)#ip add 209.165.200.225 255.255.255.248</p> <p>R2(config-if)#no sh</p>
Interfaz loopback 0 (simulado servidor Web)	<p>Ajustar la dirección IP.</p> <p>R2(config-if)#int g0/1</p> <p>R2(config-if)#ip add 10.10.10.10 255.255.255.0</p> <p>R2(config-if)#no sh</p>

Elemento de configuración o de tareas	Especificación
Desactivar la búsqueda de DNS	
nombre del router	R3

Contraseña encriptada exec privilegiado	class
contraseña de acceso a la consola	cisco
contraseña de acceso telnet	cisco
Cifrar las contraseñas de texto	
banner MOTD	el acceso sin autorización esta prohibido
Interfaz S0 / 0/1	Ajustar la dirección IP R3(config)#int s0/0/1 R3(config-if)#ip add 172.31.23.2 255.255.255.252 R3(config-if)#no sh
Loopback Interface 4	R3(config-if)#int lo4 R3(config-if)#ip add 192.168.4.1 255.255.255.0
Interfaz loopback 5	R3(config-if)#int lo5 R3(config-if)#ip add 192.168.5.1 255.255.255.0
Loopback Interface 6	R3(config-if)#int lo6 R3(config-if)#ip add 192.168.6.1 255.255.255.0

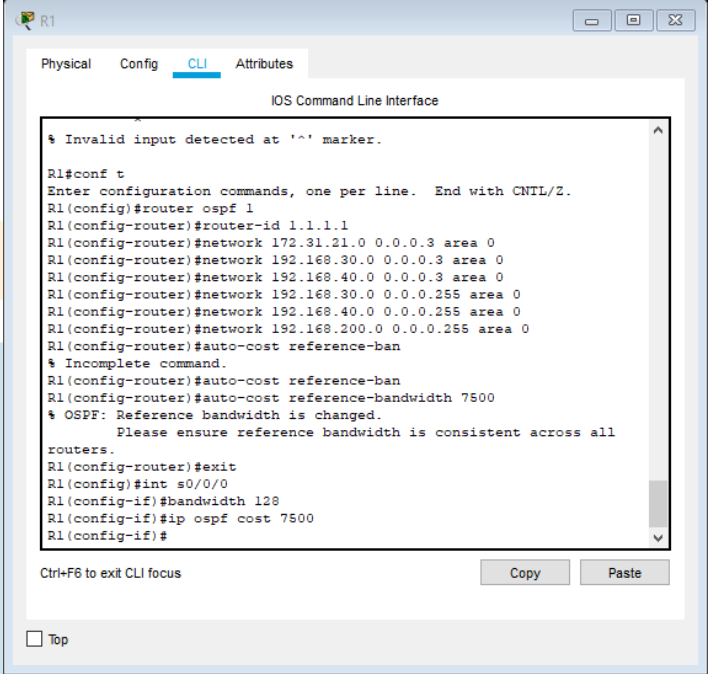
Elemento de configuración o de tareas	Especificación
Desactivar la búsqueda de DNS	
nombre de conmutador	S1
Contraseña encriptada exec privilegiado	class
contraseña de acceso a la consola	cisco

contraseña de acceso telnet	cisco
Cifrar las contraseñas de texto	
banner MOTD	el acceso sin autorización esta prohibido

Elemento de configuración o de tareas	Especificación
Desactivar la búsqueda de DNS	
nombre de conmutador	S3
Contraseña encriptada exec privilegiado	class
contraseña de acceso a la consola	cisco
contraseña de acceso telnet	cisco
Cifrar las contraseñas de texto	
banner MOTD	el acceso sin autorización esta prohibido

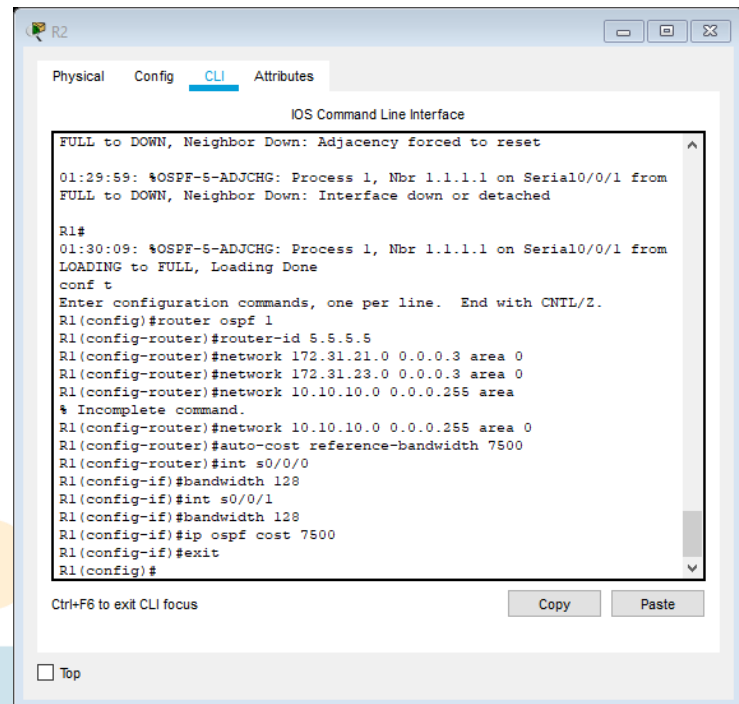
2. Configurar el protocolo de enrutamiento OSPFv2 bajo los siguientes criterios:

OSPFv2 area 0

Configuration Item or Task	Specification
<p>Router ID R1</p>	<p>1.1.1.1</p>  <pre> R1#conf t Enter configuration commands, one per line. End with CNTL/Z. R1(config)#router ospf 1 R1(config-router)#router-id 1.1.1.1 R1(config-router)#network 172.31.21.0 0.0.0.3 area 0 R1(config-router)#network 192.168.30.0 0.0.0.3 area 0 R1(config-router)#network 192.168.40.0 0.0.0.3 area 0 R1(config-router)#network 192.168.30.0 0.0.0.255 area 0 R1(config-router)#network 192.168.40.0 0.0.0.255 area 0 R1(config-router)#network 192.168.200.0 0.0.0.255 area 0 R1(config-router)#auto-cost reference-ban % Incomplete command. R1(config-router)#auto-cost reference-ban R1(config-router)#auto-cost reference-bandwidth 7500 % OSPF: Reference bandwidth is changed. Please ensure reference bandwidth is consistent across all routers. R1(config-router)#exit R1(config)#int s0/0/0 R1(config-if)#bandwidth 128 R1(config-if)#ip ospf cost 7500 R1(config-if)# </pre>

Router ID
R2

5.5.5.5



The screenshot shows the CLI of router R2. The 'CLI' tab is active. The terminal output shows the configuration of OSPF process 1 with router ID 5.5.5.5. The configuration includes two areas: area 0 with networks 172.31.21.0 and 172.31.23.0, and area 0.0.0.255 with network 10.10.10.0. The reference bandwidth is set to 7500. The configuration is applied to interfaces s0/0/0 and s0/0/1 with a bandwidth of 128. The terminal also shows a log message indicating a transition from FULL to DOWN on Serial0/0/1.

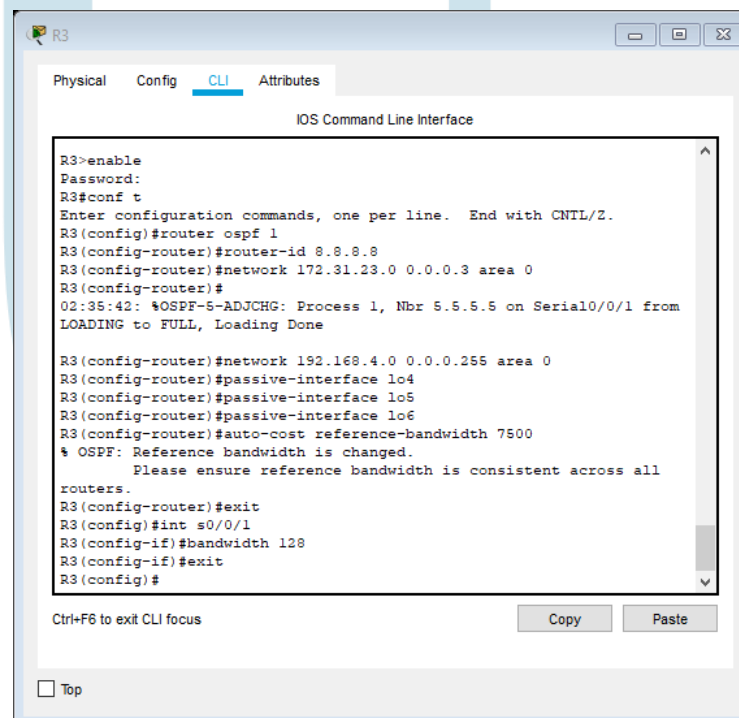
```
R2
Physical Config CLI Attributes
IOS Command Line Interface
FULL to DOWN, Neighbor Down: Adjacency forced to reset
01:29:59: %OSPF-5-ADJCHG: Process 1, Nbr 1.1.1.1 on Serial0/0/1 from
FULL to DOWN, Neighbor Down: Interface down or detached

R1#
01:30:09: %OSPF-5-ADJCHG: Process 1, Nbr 1.1.1.1 on Serial0/0/1 from
LOADING to FULL, Loading Done
conf t
Enter configuration commands, one per line. End with CNTL/Z.
R1(config)#router ospf 1
R1(config-router)#router-id 5.5.5.5
R1(config-router)#network 172.31.21.0 0.0.0.3 area 0
R1(config-router)#network 172.31.23.0 0.0.0.3 area 0
R1(config-router)#network 10.10.10.0 0.0.0.255 area
% Incomplete command.
R1(config-router)#network 10.10.10.0 0.0.0.255 area 0
R1(config-router)#auto-cost reference-bandwidth 7500
R1(config-router)#int s0/0/0
R1(config-if)#bandwidth 128
R1(config-if)#int s0/0/1
R1(config-if)#bandwidth 128
R1(config-if)#ip ospf cost 7500
R1(config-if)#exit
R1(config)#

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

Router ID
R3

8.8.8.8



The screenshot shows the CLI of router R3. The 'CLI' tab is active. The terminal output shows the configuration of OSPF process 1 with router ID 8.8.8.8. The configuration includes two areas: area 0 with networks 172.31.23.0 and 192.168.4.0, and area 0.0.0.255 with network 10.10.10.0. The reference bandwidth is set to 7500. The configuration is applied to interfaces s0/0/1, lo4, lo5, and lo6 with a bandwidth of 128. The terminal also shows a log message indicating a transition from LOADING to FULL on Serial0/0/1.

```
R3
Physical Config CLI Attributes
IOS Command Line Interface
R3>enable
Password:
R3#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R3(config)#router ospf 1
R3(config-router)#router-id 8.8.8.8
R3(config-router)#network 172.31.23.0 0.0.0.3 area 0
R3(config-router)#
02:35:42: %OSPF-5-ADJCHG: Process 1, Nbr 5.5.5.5 on Serial0/0/1 from
LOADING to FULL, Loading Done

R3(config-router)#network 192.168.4.0 0.0.0.255 area 0
R3(config-router)#passive-interface lo4
R3(config-router)#passive-interface lo5
R3(config-router)#passive-interface lo6
R3(config-router)#auto-cost reference-bandwidth 7500
% OSPF: Reference bandwidth is changed.
Please ensure reference bandwidth is consistent across all
routers.
R3(config-router)#exit
R3(config)#int s0/0/1
R3(config-if)#bandwidth 128
R3(config-if)#exit
R3(config)#

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

Configurar todas las interfaces LAN como pasivas	
Establecer el ancho de banda para enlaces seriales en	128 Kb/s
Ajustar el costo en la métrica de S0/0 a	7500

Verificar información de OSPF

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

```
R1
Physical Config CLI Attributes
IOS Command Line Interface
Password:
R1>enable
Password:
R1#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R1(config)#exit
R1#
%SYS-5-CONFIG_I: Configured from console by console

R1#sh 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

   10.0.0.0/24 is subnetted, 1 subnets
O       10.10.10.0/24 [110/7575] via 172.31.21.2, 00:09:18,
Serial0/0/0
   172.31.0.0/16 is variably subnetted, 3 subnets, 2 masks
C       172.31.21.0/30 is directly connected, Serial0/0/0
L       172.31.21.1/32 is directly connected, Serial0/0/0
O       172.31.23.0/30 [110/12357] via 172.31.21.2, 00:09:18,
Serial0/0/0
   192.168.4.0/32 is subnetted, 1 subnets
O       192.168.4.1/32 [110/12357] via 172.31.21.2, 00:02:42,
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

```
Enter configuration commands, one per line. End with CNTL/Z.
R1(config)#host R2
R2(config)#sh ip route
^
% Invalid input detected at '^' marker.

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

R2#sh ip route
Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B -
BGP
        D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
        N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
        E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
        i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS
inter area
        * - candidate default, U - per-user static route, o - ODR
        P - periodic downloaded static route

Gateway of last resort is not set

    10.0.0.0/8 is variably subnetted, 2 subnets, 2 masks
C       10.10.10.0/24 is directly connected, GigabitEthernet0/1
L       10.10.10.10/32 is directly connected, GigabitEthernet0/1
    172.31.0.0/16 is variably subnetted, 4 subnets, 2 masks
C       172.31.21.0/30 is directly connected, Serial0/0/1
L       172.31.21.2/32 is directly connected, Serial0/0/1
C       172.31.23.0/30 is directly connected, Serial0/0/0
L       172.31.23.1/32 is directly connected, Serial0/0/0
    192.168.4.0/32 is subnetted, 1 subnets
O       192.168.4.1/32 [110/4857] via 172.31.23.2, 00:05:23,
Serial0/0/0
    209.165.200.0/24 is variably subnetted, 2 subnets, 2 masks
C       209.165.200.224/29 is directly connected, GigabitEthernet0/0
L       209.165.200.225/32 is directly connected, GigabitEthernet0/0
```

Ctrl+F6 to exit CLI focus

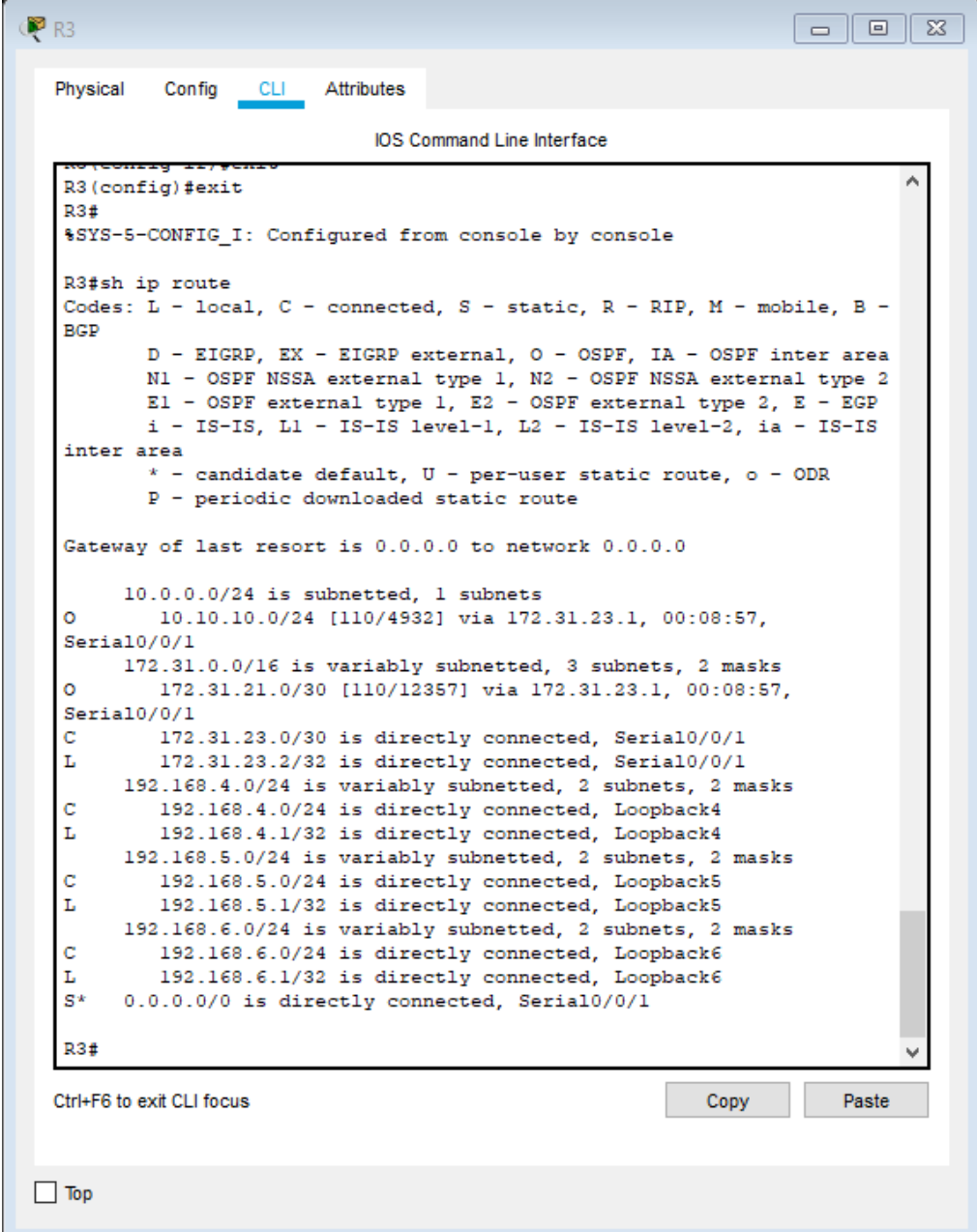
Copy Paste

Top

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

- **Configuro S1.**

Tareas de configuración para S1 incluyen los siguientes:



```
R3
Physical Config CLI Attributes
IOS Command Line Interface
R3(config)#exit
R3#
%SYS-5-CONFIG_I: Configured from console by console

R3#sh 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

    10.0.0.0/24 is subnetted, 1 subnets
O       10.10.10.0/24 [110/4932] via 172.31.23.1, 00:08:57,
Serial0/0/1
    172.31.0.0/16 is variably subnetted, 3 subnets, 2 masks
O       172.31.21.0/30 [110/12357] via 172.31.23.1, 00:08:57,
Serial0/0/1
C       172.31.23.0/30 is directly connected, Serial0/0/1
L       172.31.23.2/32 is directly connected, Serial0/0/1
    192.168.4.0/24 is variably subnetted, 2 subnets, 2 masks
C       192.168.4.0/24 is directly connected, Loopback4
L       192.168.4.1/32 is directly connected, Loopback4
    192.168.5.0/24 is variably subnetted, 2 subnets, 2 masks
C       192.168.5.0/24 is directly connected, Loopback5
L       192.168.5.1/32 is directly connected, Loopback5
    192.168.6.0/24 is variably subnetted, 2 subnets, 2 masks
C       192.168.6.0/24 is directly connected, Loopback6
L       192.168.6.1/32 is directly connected, Loopback6
S*    0.0.0.0/0 is directly connected, Serial0/0/1

R3#
```

Ctrl+F6 to exit CLI focus

Copy Paste

Top

Elemento de configuración o de tareas	Especificación
Crear la base de datos de VLAN	S1(config)#vlan 30 S1(config-vlan)#name administracion S1(config-vlan)#vlan 40 S1(config-vlan)#name mercadeo S1(config-vlan)#vlan 200 S1(config-vlan)#name mantenimiento
Asignar la dirección IP de mantenimiento.	S1(config-vlan)#int vlan 200 S1(config-if)#ip add 192.168.200.2 255.255.255.0
Asignar el default-gateway	S1(config-if)#ip default-gateway 192.168.200.1
trunking vigor el interfaz F0 / 3	S1(config)#int f0/3 S1(config-if)#switchport mode trunk S1(config-if)#switchport trunk native vlan 1
trunking vigor el interfaz F0 / 24	S1(config-if)#int f0/24 S1(config-if)#switchport mode trunk S1(config-if)#switchport trunk native vlan 1
Configurar todos los otros puertos como puertos de acceso	S1(config-if)#int range f0/2,f0/4-23, g0/1-2 S1(config-if-range)#switchport mode access
Asignar F0 / 1 a la VLAN 30	S1(config-if-range)#int f0/1 S1(config-if)#switchport access vlan 30
Apagado de todos los puertos no utilizados	S1(config-if)#int range f0/2,f0/4-23, g0/1-2 S1(config-if-range)#shutdown

Configuro el S2

Elemento de configuración o de tareas	Especificación
Crear la base de datos de VLAN	<pre>S3(config)#vlan 30 S3(config-vlan)#name administracion S3(config-vlan)#vlan 40 S3(config-vlan)#name mercadeo S3(config-vlan)#vlan 200 S3(config-vlan)#name mantenimiento S3(config-vlan)#exit</pre>
Asignar la dirección IP de administración	<pre>S3(config)#int vlan 200 S3(config-if)#ip add 192.168.200.3 255.255.255.0 S3(config-if)#no sh</pre>
Asignar el default-gateway	<pre>S3(config)#ip default-gateway 192.168.200.1</pre>
trunking vigor el interfaz F0 / 3	<pre>S3(config)#int f0/3 S3(config-if)#switchport mode trunk S3(config-if)#switchport trunk native vlan 1</pre>
Configurar todos los otros puertos como puertos de acceso	<pre>S1(config-if-range)#int range f0/2, f0/4-24, g0/1-2 S3(config-if-range)#switchport mode access S3(config-if-range)#exit</pre>
Asignar F0 / 1 a la VLAN 40	<pre>S3(config)#int f0/1 S3(config-if)#switchport access vlan 40</pre>
Apagado de todos los puertos no utilizados	<pre>S3(config-if)#int range f0/2, f0/4-24, g0/1-2 S3(config-if-range)#shutdown</pre>

Configuramos R1

R1	Commandos
Se crea la Sub interface 30	<pre>R1(config)#int g0/1.30 R1(config-subif)#encapsulation dot1q 30 R1(config-subif)#ip add 192.168.30.1 255.255.255.0</pre>
Se crea la Sub interface 40	<pre>R1(config-subif)#int g0/1.40 R1(config-subif)#encapsulation dot1q 40 R1(config-subif)#ip add 192.168.40.1 255.255.255.0</pre>
Se crea la Sub interface 200	<pre>R1(config-subif)#int g0/1.200 R1(config-subif)#encapsulation dot1q 200 R1(config-subif)#ip add 192.168.200.1 255.255.255.0 R1(config-subif)#int g0/1 R1(config-if)#no sh</pre>

4. En el Switch 3 deshabilitar DNS lookup

```
S3(config)#no ip domain-lookup
S3(config)#
```
5. Asignar direcciones IP a los Switches acorde a los lineamientos.
6. Desactivar todas las interfaces que no sean utilizadas en el esquema de red.
7. Implement DHCP and NAT for IPv4
8. Configurar R1 como servidor DHCP para las VLANs 30 y 40.
9. Reservar las primeras 30 direcciones IP de las VLAN 30 y 40 para configuraciones estáticas.

Configurar DHCP pool para VLAN 30	<pre>Name: ADMINISTRACION DNS-Server: 10.10.10.11 Domain-Name: ccna-unad.com Establecer default gateway.</pre>
-----------------------------------	----------------------------------------------------------------------------------------------------------------

Elemento de configuración o de tareas	Especificación
---------------------------------------	----------------

Configurar DHCP pool para VLAN 40	Name: MERCADEO DNS-Server: 10.10.10.11 Domain-Name: ccna-unad.com Establecer default gateway.
Reservar las primeras 30 direcciones IP en la VLAN 30 para configuraciones estáticas	R1(config)#ip dhcp excluded-address 192.168.30.1 192.168.30.30
Reservar las primeras 30 direcciones IP en la VLAN 40 para configuraciones estáticas	R1(config)#ip dhcp excluded-address 192.168.40.1 192.168.40.30
Configurar DHCP pool para VLAN 30	R1(config)#ip dhcp pool administracion R1(dhcp-config)#network 192.168.30.0 255.255.255.0 R1(dhcp-config)#default-router 192.168.30.1 R1(dhcp-config)#dns-server 10.10.10.11 R1(dhcp-config)#domain-name ccna-unad.com
Configurar DHCP pool para VLAN 40	R1(dhcp-config)#ip dhcp pool mercadeo R1(dhcp-config)#network 192.168.40.0 255.255.255.0 R1(dhcp-config)#default-router 192.168.40.1 R1(dhcp-config)#dns-server 10.10.10.11 R1(dhcp-config)#domain-name ccna-unad.com

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

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.

192	168	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	192.168.4.0/24
192	168	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	192.168.5.0/24
192	168	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	192.168.6.0/24
192	168	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	192.168.4.0/24

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.

Elemento de configuración o de tareas	Especificación
Crear una base de datos local con la cuenta de usuario 1	R2(config)#username webuser privilege 15 secret cisco
Habilitar el servicio de servidor HTTP	R2(config)#ip http server ^ % Invalid input detected at '^' marker.
Configurar el servidor HTTP para utilizar la base de datos local para la autenticación	R2(config)#ip http authentication local ^ % Invalid input detected at '^' marker.
Crear un NAT estático para el servidor Web	R2(config)#ip nat inside source static 10.10.10.10 209.165.200.227
Asignar la interfaz dentro y fuera de la NAT estática	R2(config)#int g0/0 R2(config-if)#ip nat outside R2(config-if)#int g0/1 R2(config-if)#ip nat inside
Configurar el NAT dinámica dentro del LCA privada	R2(config)#access-list 1 permit 192.168.30.0 0.0.0.255 R2(config)#access-list 1 permit 192.168.40.0 0.0.0.255 R2(config)#access-list 1 permit 192.168.4.0 0.0.3.255

Definir el conjunto de direcciones IP públicas utilizables	R2(config)#ip nat pool internet 209.165.200.225 209.165.200.228 netmask 255.255.255.248
Definir la traducción NAT dinámico	R2(config)#ip nat inside source list 1 pool internet

PC-A Desktop configuration window. The DHCP tab is selected. The configuration is as follows:

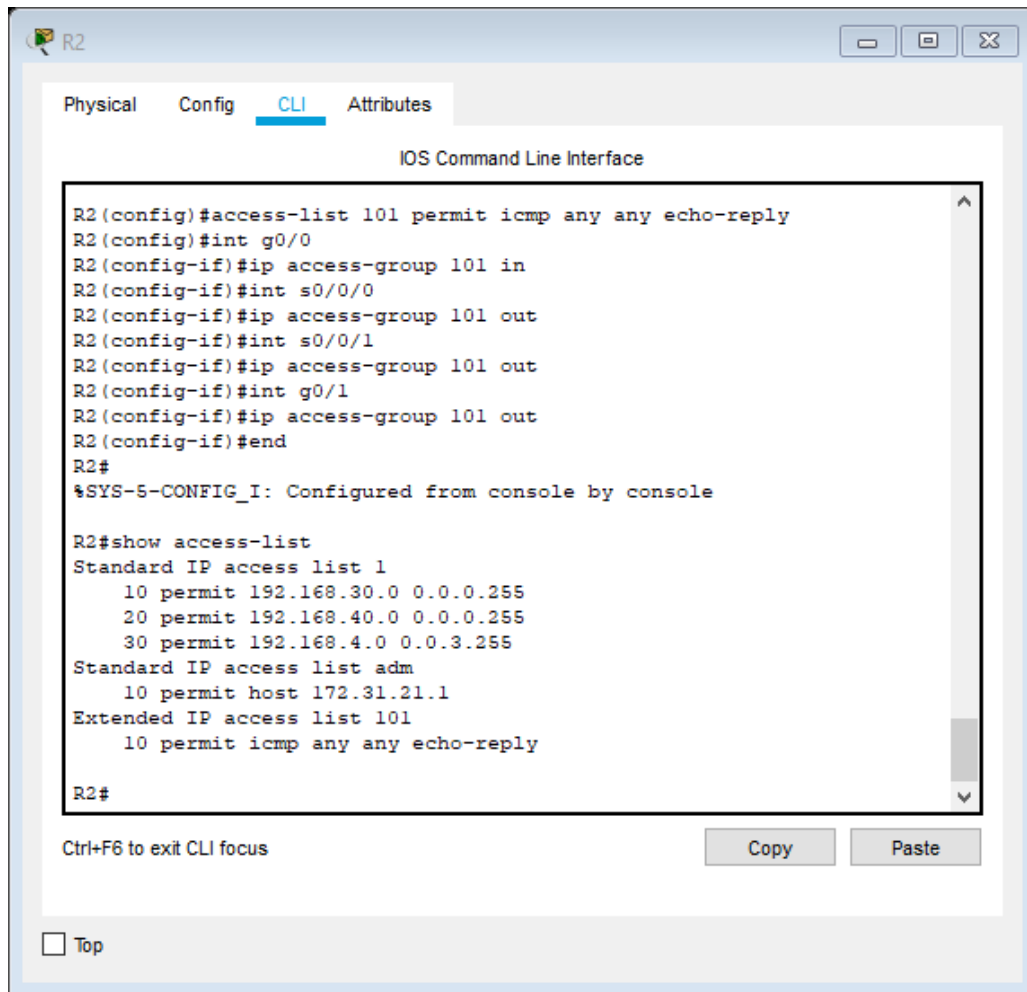
- DHCP:** DHCP, Static
- IP Address:** 192.168.30.31
- Subnet Mask:** 255.255.255.0
- Default Gateway:** 192.168.30.1
- DNS Server:** 10.10.10.11
- IPv6 Configuration:** DHCP, Auto Config, Static
- IPv6 Address:** [Empty]
- Link Local Address:** FE80::290:2BFF:FECC:5602
- IPv6 Gateway:** [Empty]
- IPv6 DNS Server:** [Empty]
- 802.1X:** Use 802.1X Security
- Authentication:** MD5
- Username:** [Empty]
- Password:** [Empty]

PC-C Desktop configuration window. The DHCP tab is selected. The configuration is as follows:

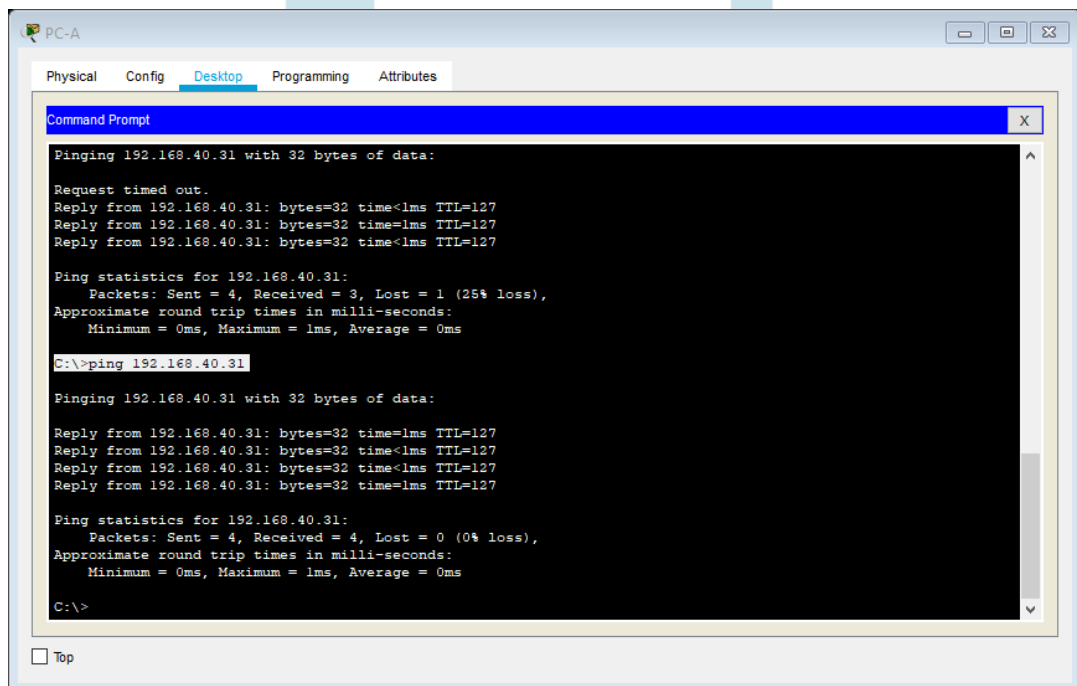
- DHCP:** DHCP, Static
- IP Address:** 192.168.40.31
- Subnet Mask:** 255.255.255.0
- Default Gateway:** 192.168.40.1
- DNS Server:** 10.10.10.11
- IPv6 Configuration:** DHCP, Auto Config, Static
- IPv6 Address:** [Empty]
- Link Local Address:** FE80::230:A3FF:FE5C:2AA3
- IPv6 Gateway:** [Empty]
- IPv6 DNS Server:** [Empty]
- 802.1X:** Use 802.1X Security
- Authentication:** MD5
- Username:** [Empty]
- Password:** [Empty]

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

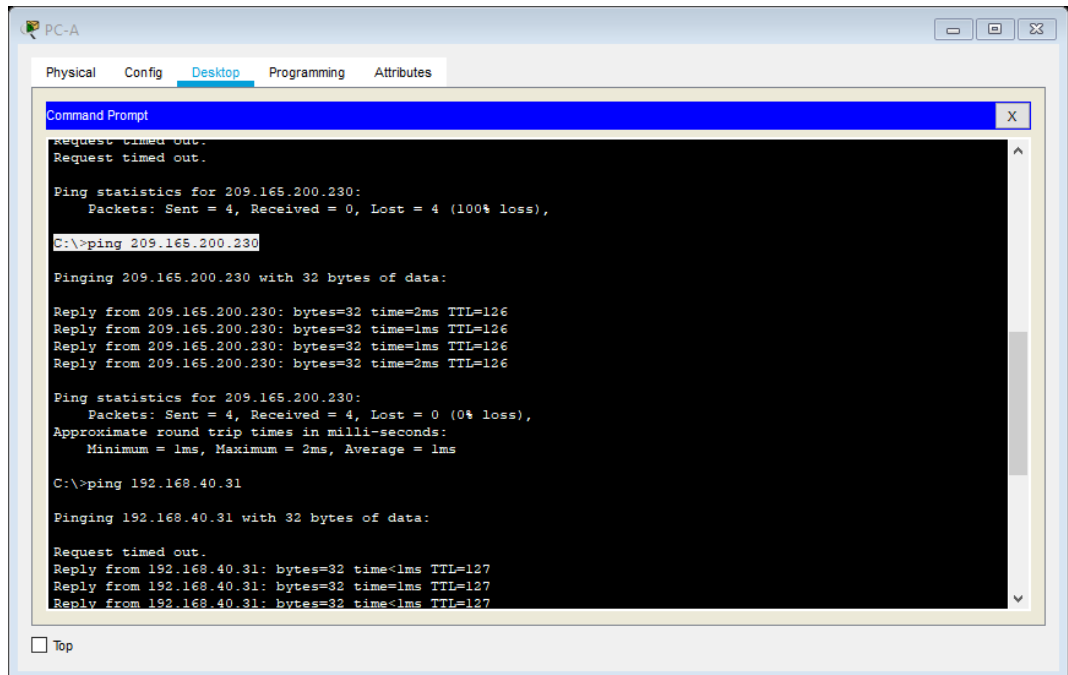




Ping pc-a hasta pc-c



Ping pc-a hasta pc internet



```
PC-A
Physical Config Desktop Programming Attributes
Command Prompt
Request timed out.
Request timed out.

Ping statistics for 209.165.200.230:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

C:\>ping 209.165.200.230

Pinging 209.165.200.230 with 32 bytes of data:

Reply from 209.165.200.230: bytes=32 time=2ms TTL=126
Reply from 209.165.200.230: bytes=32 time=1ms TTL=126
Reply from 209.165.200.230: bytes=32 time=1ms TTL=126
Reply from 209.165.200.230: bytes=32 time=2ms TTL=126

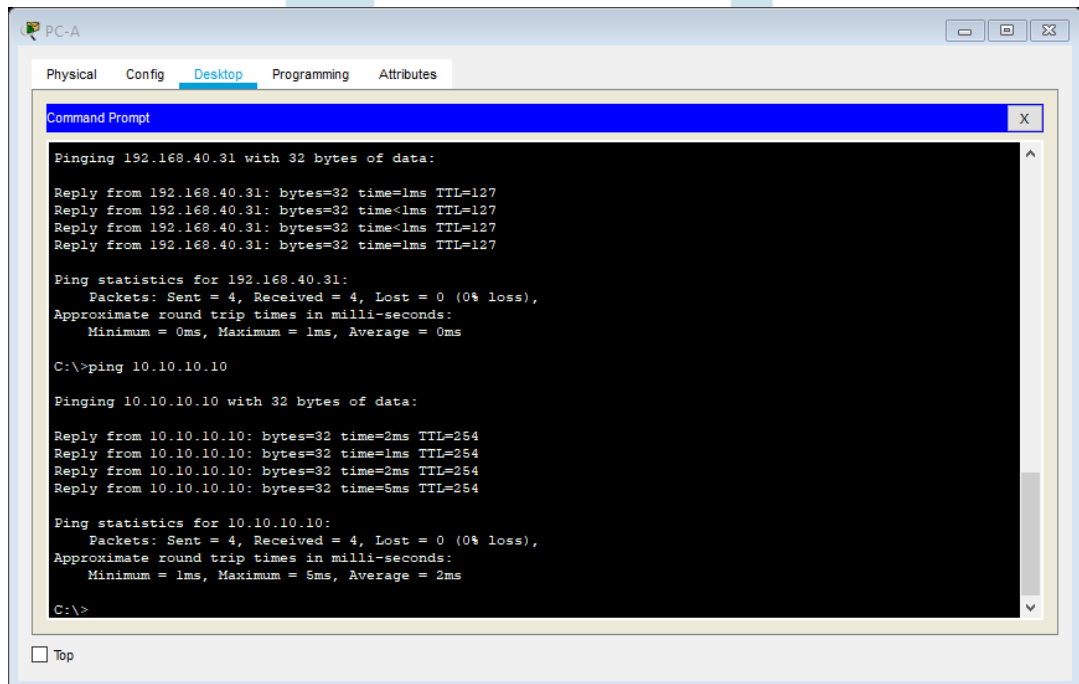
Ping statistics for 209.165.200.230:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 1ms, Maximum = 2ms, Average = 1ms

C:\>ping 192.168.40.31

Pinging 192.168.40.31 with 32 bytes of data:

Request timed out.
Reply from 192.168.40.31: bytes=32 time<1ms TTL=127
Reply from 192.168.40.31: bytes=32 time=1ms TTL=127
Reply from 192.168.40.31: bytes=32 time<1ms TTL=127
```

Ping pc-a hasta server



```
PC-A
Physical Config Desktop Programming Attributes
Command Prompt

Pinging 192.168.40.31 with 32 bytes of data:

Reply from 192.168.40.31: bytes=32 time=1ms TTL=127
Reply from 192.168.40.31: bytes=32 time<1ms TTL=127
Reply from 192.168.40.31: bytes=32 time<1ms TTL=127
Reply from 192.168.40.31: bytes=32 time=1ms TTL=127

Ping statistics for 192.168.40.31:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 1ms, Average = 0ms

C:\>ping 10.10.10.10

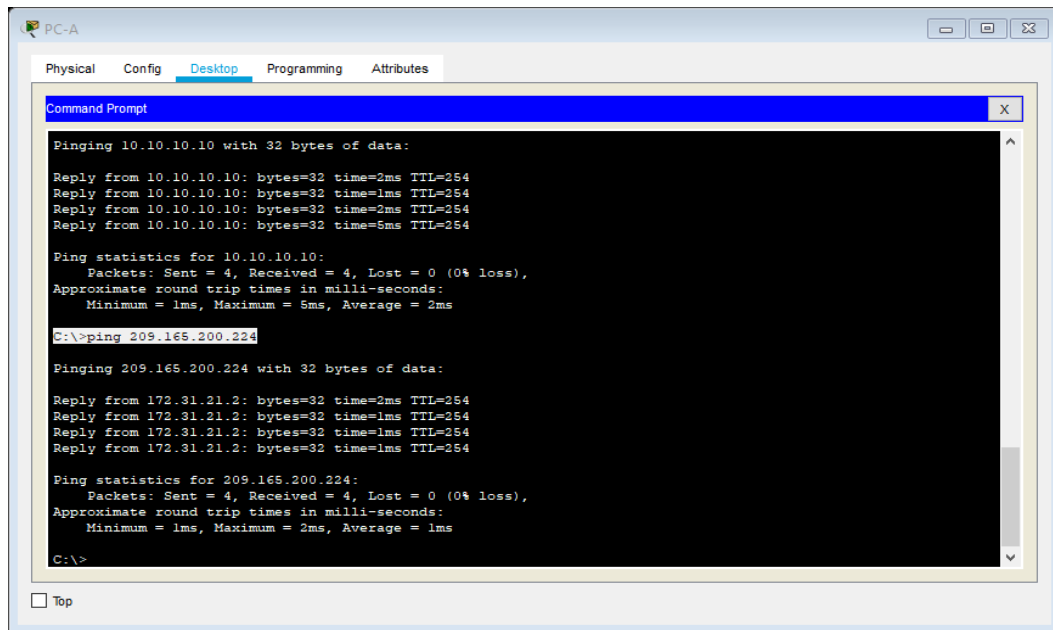
Pinging 10.10.10.10 with 32 bytes of data:

Reply from 10.10.10.10: bytes=32 time=2ms TTL=254
Reply from 10.10.10.10: bytes=32 time=1ms TTL=254
Reply from 10.10.10.10: bytes=32 time=2ms TTL=254
Reply from 10.10.10.10: bytes=32 time=5ms TTL=254

Ping statistics for 10.10.10.10:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 1ms, Maximum = 5ms, Average = 2ms

C:\>
```

Ping pc-a a internet



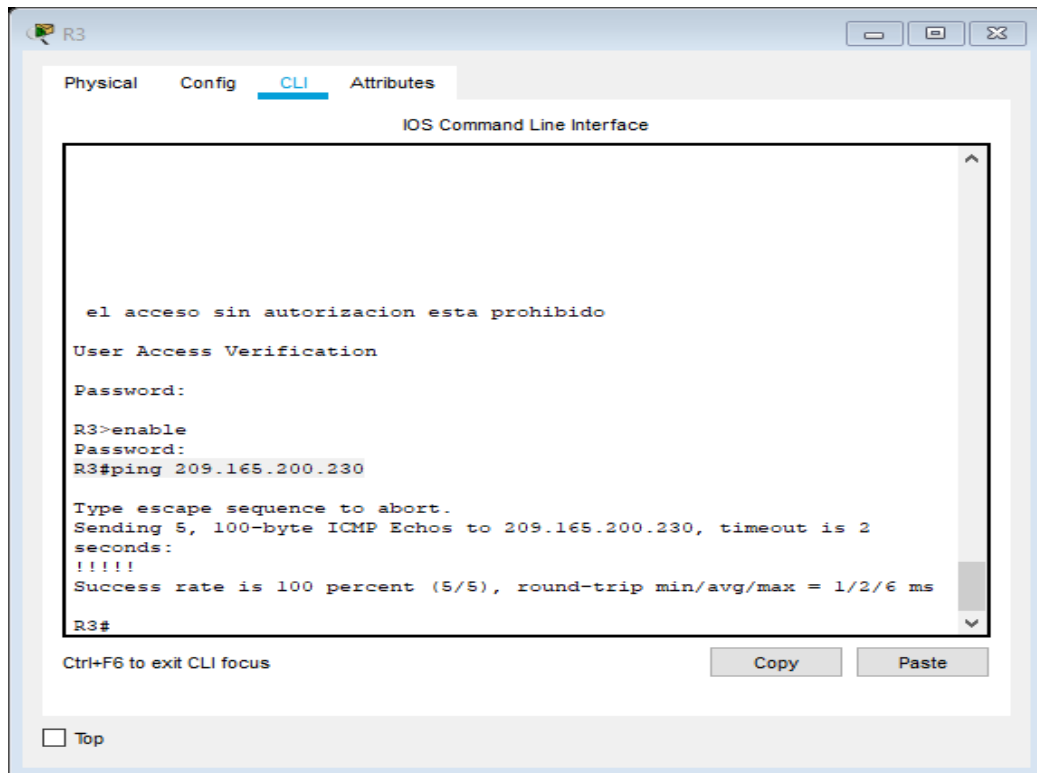
The screenshot shows a Windows Command Prompt window titled "Command Prompt" with a blue header bar. The window is open on a PC-A desktop environment, with tabs for "Physical", "Config", "Desktop", "Programming", and "Attributes". The "Desktop" tab is active. The Command Prompt displays the following text:

```
Pinging 10.10.10.10 with 32 bytes of data:  
Reply from 10.10.10.10: bytes=32 time=2ms TTL=254  
Reply from 10.10.10.10: bytes=32 time=1ms TTL=254  
Reply from 10.10.10.10: bytes=32 time=2ms TTL=254  
Reply from 10.10.10.10: bytes=32 time=5ms TTL=254  
  
Ping statistics for 10.10.10.10:  
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),  
    Approximate round trip times in milli-seconds:  
        Minimum = 1ms, Maximum = 5ms, Average = 2ms  
  
C:\>ping 209.165.200.224  
  
Pinging 209.165.200.224 with 32 bytes of data:  
Reply from 172.31.21.2: bytes=32 time=2ms TTL=254  
Reply from 172.31.21.2: bytes=32 time=1ms TTL=254  
Reply from 172.31.21.2: bytes=32 time=1ms TTL=254  
Reply from 172.31.21.2: bytes=32 time=1ms TTL=254  
  
Ping statistics for 209.165.200.224:  
    Packets: Sent = 4, Received = 4, Lost = 0 (0% 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.

U

Ping R3 hasta internet pc

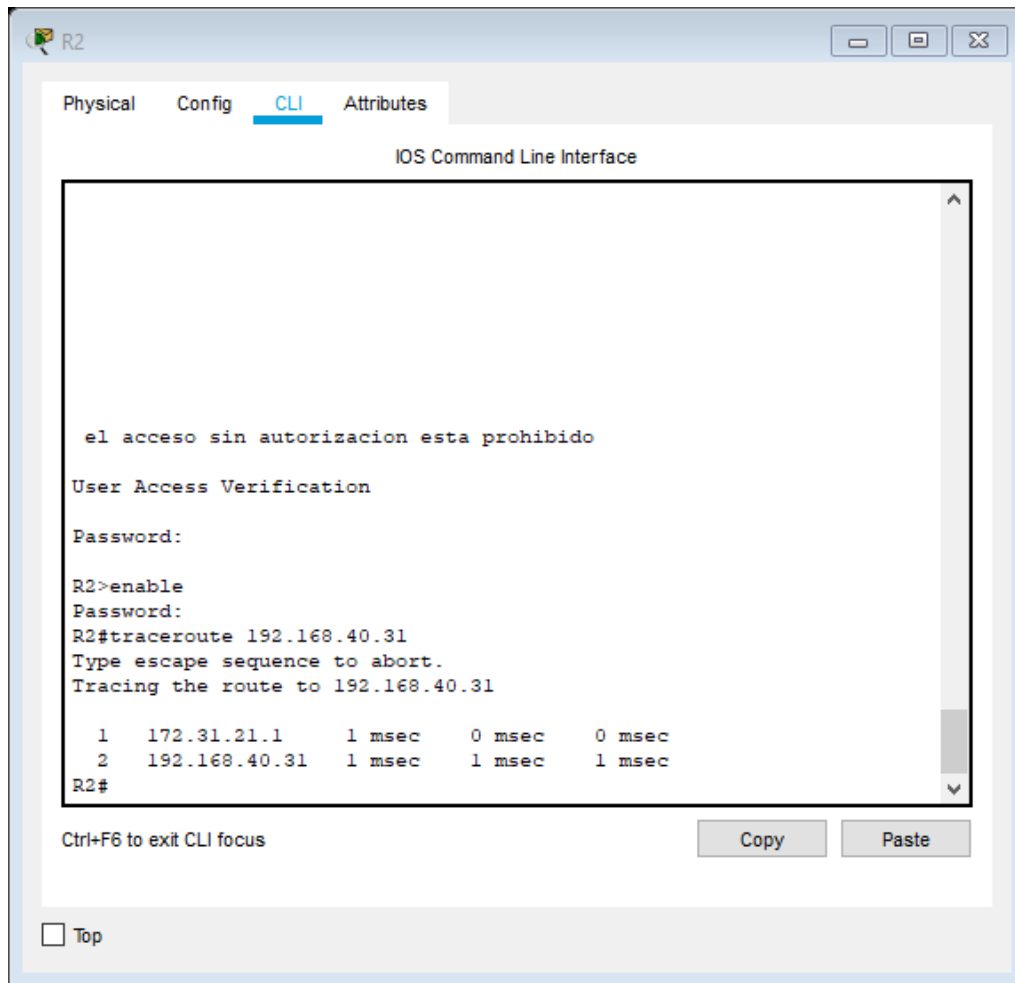


The screenshot shows a terminal window titled "R3" with tabs for "Physical", "Config", "CLI", and "Attributes". The "CLI" tab is active, displaying the "IOS Command Line Interface". The terminal output shows a user access verification prompt, followed by the user entering "enable" and "password". The user then enters the command "R3#ping 209.165.200.230". The output of the command is: "Type escape sequence to abort. Sending 5, 100-byte ICMP Echos to 209.165.200.230, timeout is 2 seconds: !!!!! Success rate is 100 percent (5/5), round-trip min/avg/max = 1/2/6 ms". The prompt "R3#" is visible at the bottom of the terminal. Below the terminal window, there are "Copy" and "Paste" buttons, and a "Top" button with a checkbox.

```
el acceso sin autorizacion esta prohibido
User Access Verification
Password:
R3>enable
Password:
R3#ping 209.165.200.230

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 209.165.200.230, timeout is 2
seconds:
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 1/2/6 ms
R3#
```

Traceroute desde R2 hasta pc-c



```
R2
Physical Config CLI Attributes
IOS Command Line Interface

el acceso sin autorizacion esta prohibido
User Access Verification
Password:
R2>enable
Password:
R2#traceroute 192.168.40.31
Type escape sequence to abort.
Tracing the route to 192.168.40.31

 1  172.31.21.1    1 msec    0 msec    0 msec
 2  192.168.40.31  1 msec    1 msec    1 msec
R2#
```

Ctrl+F6 to exit CLI focus

Copy Paste

Top

Traceroute desde R1 hasta server

The screenshot displays the Cisco Packet Tracer interface. The main window shows a network topology with the following components:

- Internet PC:** IP 209.165.200.230
- Internet:** IP 209.165.200.224/29
- R2:** Connected to Internet and R3. Interface Fa0/30 has IP 172.31.21.0/30.
- R3:** Connected to R2 and Server. Interfaces lo4, lo5, and lo6 have IPs 192.168.4.0/24, 192.168.5.0/24, and 192.168.6.0/24 respectively. Interface Fa0/32 has IP 172.31.23.0/32.
- Server:** IP 10.10.10.10/32
- Switches:** Two switches connected via a TRUNK link. The left switch has IP 192.168.200.2 and is connected to PC-A (VLAN 30). The right switch has IP 192.168.200.3 and is connected to PC-C (VLAN 40). A 802.1Q tag is shown on the link between them.

The CLI window for R1 shows the following configuration and traceroute output:

```
!l acceso sin autorizacion esta prohibido
User Access Verification
Password:
!l-enable
Password:
!l-configure 10.10.10.10
Type escape sequence to abort.
Tracing the route to 10.10.10.10
 0  172.31.21.2    2 msec  1 msec  3 msec
R1#
```

CONCLUSIONES

En el trayecto de este trabajo de habilidades prácticas, pudimos desarrollar lo aprendido durante todo el semestre, en los cuales permitimos ayudar a configurar de los dispositivos que gestionamos para utilizar, para este proyecto sentimos como podemos interconectar diferentes sedes como lo originamos en un entorno real, se deben tener en cuenta los conceptos, las configuraciones que usamos nos autorizan hacer un uso correcto y óptimo de dispositivos, en vez de conectar cada sede independientes podemos centralizar toda la información en una sola y a través de Vlan's y restricciones podemos brindar acceso a varios dispositivos. Agradecimientos a Cisco y la UNAD por admitir progresar con este conocimiento para en futuros escenarios de redes y casos que se presenten, se autoricen aplicar gracias a la teoría y prácticas expuestas.



BIBLOGRAFIA

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