

**DIPLOMADO DE PROFUNDIZACIÓN CISCO  
PRUEBA DE HABILIDADES PRÁCTICAS CCNA  
Fase final**

**Hector John Jairo Cruz Lara  
Cod. 80256102**

**Tutor:  
Efraín Alejandro Perez**

**Grupo Colaborativo\_ 203092\_2**

**Universidad Nacional Abierta A Distancia – UNAD  
Escuela De Ciencias Básicas Tecnología E Ingeniería – ECBTI  
Bogotá diciembre de 2018**

## Contents

INTRODUCCIÓN .....	- 2 -
Desarrollo del escenario 1 .....	- 3 -
Tabla de direccionamiento.....	- 3 -
Tabla de asignación de VLAN y de puertos.....	- 4 -
Tabla de enlaces troncales.....	- 4 -
Configuración Router ISP .....	- 5 -
Configuración Switch SW2 .....	- 7 -
Configuración Switch SW3 .....	- 8 -
Configuración Router R1 .....	- 10 -
Configuración Router R2 .....	- 11 -
Configuración Router R3 .....	- 15 -
Desarrollo del escenario 2 .....	- 20 -
OSPFv2 area 0.....	- 21 -
Verificar información de OSPF .....	- 21 -
Direccionamiento de Routers .....	- 22 -
Direccionamiento de Switch y terminales .....	- 23 -
Router R2 configuración .....	- 24 -
Router R1 configuración .....	- 25 -
Router R3 configuración .....	- 26 -
Configuración Lo en R3.....	- 27 -
Configuración S1Switch.....	- 30 -
Configuración S3Switch.....	- 32 -
Configuración de ordenadores en DHCP .....	- 33 -
Lista de figuras.....	- 34 -
Conclusiones .....	- 35 -
Referencias.....	- 36 -

## INTRODUCCIÓN

En nuestro entorno como ingenieros es importante conocer el diseño de las redes ya que en algún momento sea nuestra área de desempeño o en el ámbito laboral dependeremos de ellas para llegar del punto A al B.

Necesitaremos saber que protocolo debo aplicar para hacer factible la comunicación, también que deseo configurar, quien quiero que ingrese y a quien debo restringir, cuantos equipos quiero conectar, de qué manera quiero que estén conectados, cual es la velocidad de esa conexión y a que distancia se encuentra uno del otro

Todas estas variables y algunas que posiblemente no mencione y encontraremos en el desarrollo de la actividad hacen que este curso cobre valor y haga interesante su aprendizaje

## Desarrollo del escenario 1

Figure 1.Planteamiento Escenario 1

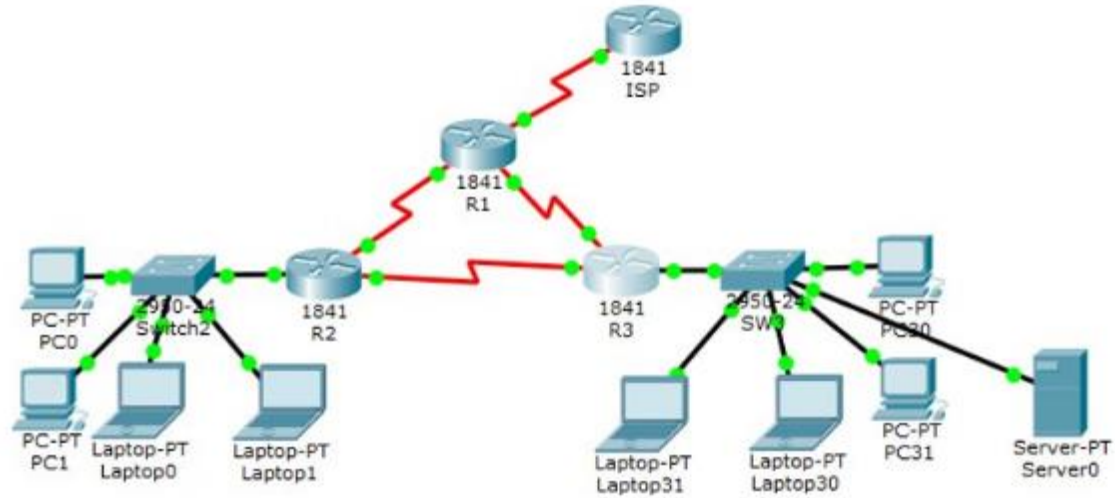


Tabla de direccionamiento

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

	Se0/0/1	10.0.0.10	255.255.255.252	N/D
SW2	VLAN 100	N/D	N/D	N/D
	VLAN 200	N/D	N/D	N/D
SW3	VLAN1	N/D	N/D	N/D

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

Tabla de asignación de VLAN y de puertos

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

Tabla de enlaces troncales

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

## Configuración Router ISP

### **/\*Iniciamos la configuración de Router ISP\*/**

Cisco CISCO1941/K9 (revision 1.0) with 491520K/32768K bytes of memory.  
Processor board ID FTX152400KS  
2 Gigabit Ethernet interfaces  
4 Low-speed serial(sync/async) network interface(s)  
DRAM configuration is 64 bits wide with parity disabled.  
255K bytes of non-volatile configuration memory.  
249856K bytes of ATA System CompactFlash 0 (Read/Write)

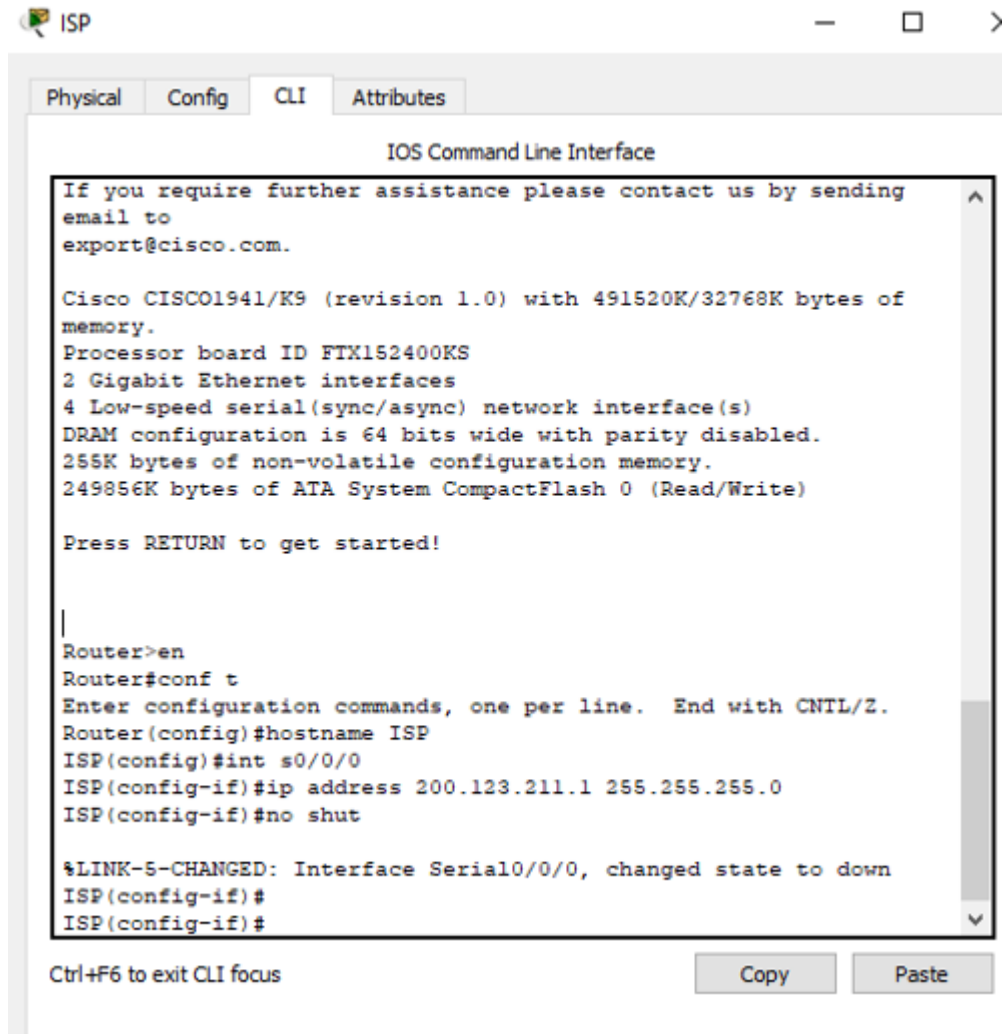
Press RETURN to get started!

### **/\*Asignamos IP y mascara\*/**

```
Router>en
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#hostname ISP
ISP(config)#int s0/0/0
ISP(config-if)#ip address 200.123.211.1 255.255.255.0
ISP(config-if)#no shut

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

Figure 2. Configuración Router ISP



## Configuración Switch SW2

```
Switch>en
Switch#conf t
Enter configuration commands, one per line. End with CNTL/Z.
/*Activamos las interface VLAN en SW2*/
Switch(config)#hostname SW2
SW2(config)#int vlan 100
SW2(config-if)#no shut
SW2(config-if)#exit
SW2(config)#int vlan 200
SW2(config-if)#exit
SW2(config)#vlan 100
SW2(config-vlan)#
%LINK-5-CHANGED: Interface Vlan100, changed state to up

SW2(config-vlan)#no shut
^
% Invalid input detected at '^' marker.
SW2(config-vlan)#exit
SW2(config)#vlan 200
SW2(config-vlan)#
%LINK-5-CHANGED: Interface Vlan200, changed state to up

SW2(config-vlan)#
SW2(config-vlan)#
SW2(config-vlan)#exit
SW2(config)#int vlan 1
SW2(config-if)#no shut

SW2(config-if)#
%LINK-5-CHANGED: Interface Vlan1, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan1, changed state to up
```



Figure 3. Configuración Switch SW2



The screenshot shows a network switch CLI window titled 'S2'. The window has tabs for 'Physical', 'Config', 'CLI', and 'Attributes', with 'CLI' selected. The main area is titled 'IOS Command Line Interface' and displays the following commands and output:

```
Switch>en
Switch#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#hostname SW2
SW2(config)#int vlan 100
SW2(config-if)#no shut
SW2(config-if)#exit
SW2(config)#int vlan 200
SW2(config-if)#exit
SW2(config)#vlan 100
SW2(config-vlan)#
%LINK-5-CHANGED: Interface Vlan100, changed state to up

SW2(config-vlan)#no shut
^
% Invalid input detected at '^' marker.

SW2(config-vlan)#exit
SW2(config)#vlan 200
SW2(config-vlan)#
%LINK-5-CHANGED: Interface Vlan200, changed state to up

SW2(config-vlan)#
```

Configuración Switch SW3

Switch>EN

Switch#conf t

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

Switch(config)#hostname SW3

**/\*Activamos las interface VLAN en SW3\*/**

SW3(config)#int vlan 1

SW3(config-if)#exit

SW3(config)#vlan 1

SW3(config-vlan)#no shut

^

% Invalid input detected at '^' marker.

SW3(config-vlan)#

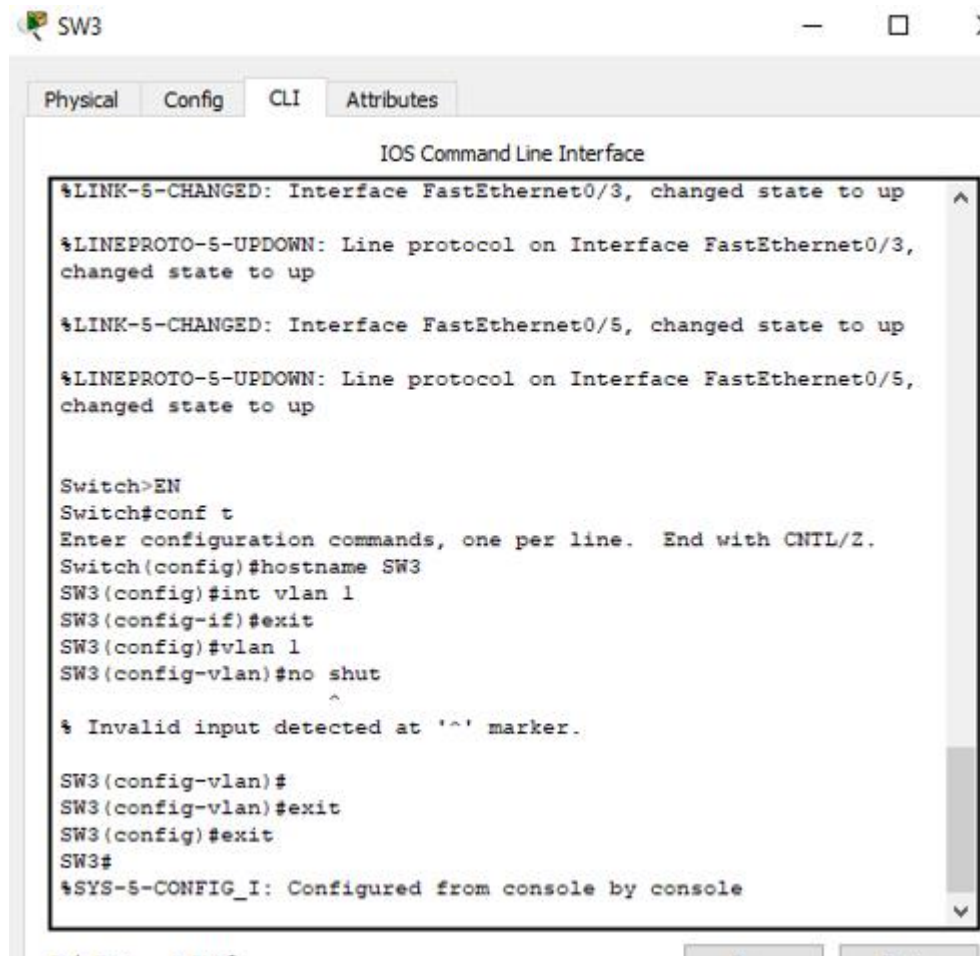
SW3(config-vlan)#exit

```
SW3(config)#exit
```

```
SW3#
```

```
%SYS-5-CONFIG_I: Configured from console by console
```

Figure 4. Configuración Switch SW3



```
SW3
Physical Config CLI Attributes
IOS Command Line Interface
%LINK-5-CHANGED: Interface FastEthernet0/3, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/3,
changed state to up
%LINK-5-CHANGED: Interface FastEthernet0/5, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/5,
changed state to up

Switch>EN
Switch#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#hostname SW3
SW3(config)#int vlan 1
SW3(config-if)#exit
SW3(config)#vlan 1
SW3(config-vlan)#no shut
^
% Invalid input detected at '^' marker.

SW3(config-vlan)#
SW3(config-vlan)#exit
SW3(config)#exit
SW3#
%SYS-5-CONFIG_I: Configured from console by console
```

Configuración Router R1

**/\*Iniciamos la configuración de Router R1\*/**

Router>en

Router#conf t

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

Router(config)#hostname R1

R1(config)#int Se0/0/0

**/\*Asignamos IP y Mascar para el Router para la interface Se0/0/0 e R1\*/**

R1(config-if)#ip address 200.123.211.2 255.255.255.0

R1(config-if)#no shut

R1(config-if)#

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

R1(config-if)#

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

R1(config-if)#exit

**/\*Asignamos IP y Mascar para el Router para la interface Se0/1/0 e R1\*/**

R1(config)#int Se0/1/0

R1(config-if)#ip address 10.0.0.1 255.255.255.252

R1(config-if)#no shut

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

R1(config-if)#exit

**/\*Asignamos IP y Mascar para el Router para la interface Se0/1/1 e R1\*/**

R1(config)#int Se0/1/1

R1(config-if)#ip address 10.0.0.5 255.255.255.252

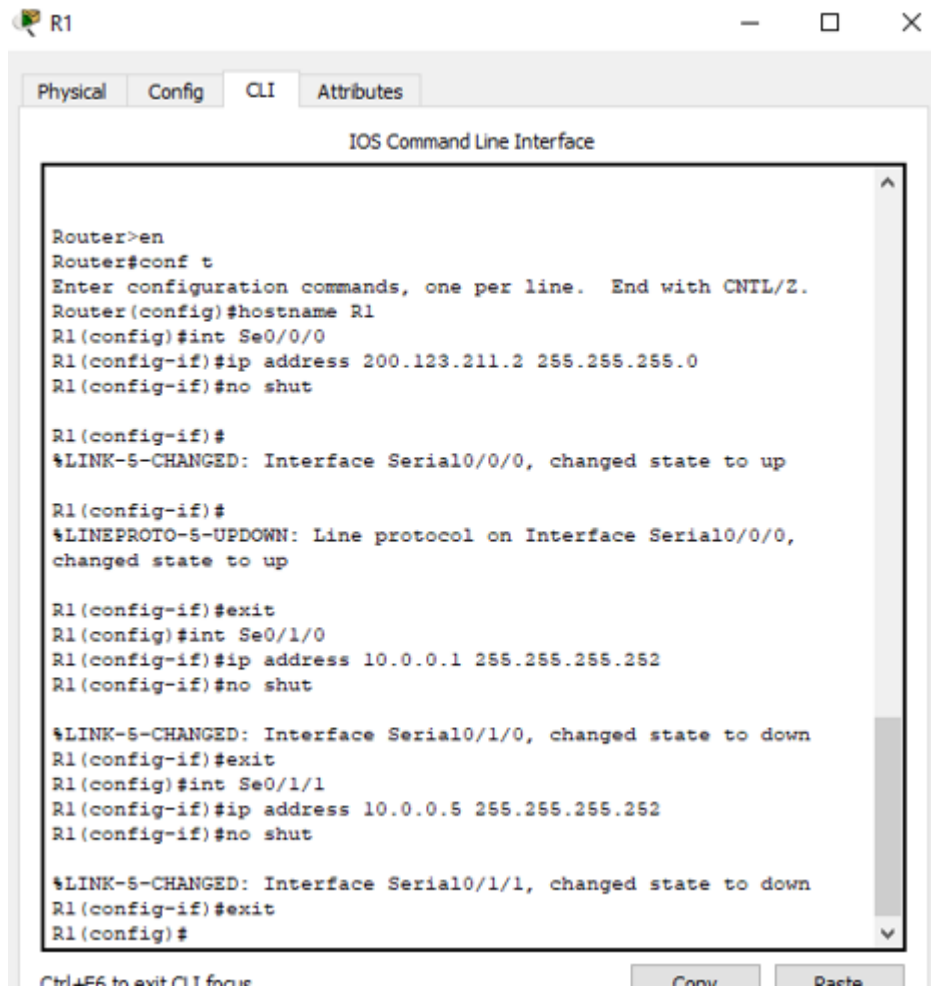
R1(config-if)#no shut

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

R1(config-if)#exit

R1(config)#

Figure 5. Configuración Router R1



```
Router>en
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#hostname R1
R1(config)#int Se0/0/0
R1(config-if)#ip address 200.123.211.2 255.255.255.0
R1(config-if)#no shut

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

R1(config-if)#
%LINEPROTO-S-UPDOWN: Line protocol on Interface Serial0/0/0,
changed state to up

R1(config-if)#exit
R1(config)#int Se0/1/0
R1(config-if)#ip address 10.0.0.1 255.255.255.252
R1(config-if)#no shut

%LINK-S-CHANGED: Interface Serial0/1/0, changed state to down
R1(config-if)#exit
R1(config)#int Se0/1/1
R1(config-if)#ip address 10.0.0.5 255.255.255.252
R1(config-if)#no shut

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

## Configuración Router R2

```
R2>en
R2#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R2(config)#int g0/0.100
R2(config-subif)#encapsulation dot1Q 100
R2(config-subif)#ip address 192.168.20.1 255.255.255.0
R2(config-subif)#no shut
R2(config-subif)#int g0/0.200
R2(config-subif)#encapsulation dot1Q 200
R2(config-subif)#ip address 192.168.21.1 255.255.255.0
R2(config-subif)#no shut
R2(config-subif)#int g0/0
```

```
R2(config-if)#no shut
```

```
R2(config-if)#
```

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

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

```
%LINK-5-CHANGED: Interface GigabitEthernet0/0.100, changed state to up
```

```
%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0.100,  
changed state to up
```

```
%LINK-5-CHANGED: Interface GigabitEthernet0/0.200, changed state to up
```

```
%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0.200,  
changed state to up
```

```
R2(config-if)#
```

```
/*Asignamos IP y Mascar para el Router para la interface Se0/0/0 e R2*/
```

```
R2(config)#int Se0/0/0
```

```
R2(config-if)#ip address 10.0.0.2 255.255.255.252
```

```
R2(config-if)#no shut
```

```
R2(config-if)#
```

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

```
R2(config-if)#
```

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

```
R2(config-if)#exit
```

```
^
```

```
% Invalid input detected at '^' marker.
```

```
R2(config-if)#exit
```

```
/*Asignamos IP y Mascar para el Router para la interface Se0/0/1 e R2*/
```

```
R2(config)#int Se0/0/1
```

```
R2(config-if)#ip address 10.0.0.9 255.255.255.252
```

```
R2(config-if)#no shut
```

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

```
R2(config-if)#exit
```

```
R2(config)#
```

```
R2(config)#exit
```

R2#

Configuración DHCP

R2#conf t

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

R2(config)#int g0/0

R2(config-if)#ip address 192.168.1.1 255.255.255.0

R2(config-if)#no shut

R2(config-if)#exit

R2(config)#

**/\*Configuramos el DHCP en el Router R2\*/**

R2(config)#ip dhcp pool unad

R2(dhcp-config)#network 192.168.1.0 255.255.255.0

R2(dhcp-config)#default-router 192.168.1.1%DHCPD-4-PING\_CONFLICT: DHCP  
address conflict: server pinged 192.168.1.1.

R2(dhcp-config)#default-router 192.168.1.1

R2(dhcp-config)#exit

R2(config)#ip dhcp excluded-address 192.168.1.1

R2(config)#exit

R2#

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

R2#B

Figure 6. Configuración Router R2

```
R2>en
R2#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R2(config)#int g0/0.100
R2(config-subif)#encapsulation dot1Q 100
R2(config-subif)#ip address 192.168.20.1 255.255.255.0
R2(config-subif)#no shut
R2(config-subif)#int g0/0.200
R2(config-subif)#encapsulation dot1Q 200
R2(config-subif)#ip address 192.168.21.1 255.255.255.0
R2(config-subif)#no shut
R2(config-subif)#int g0/0
R2(config-if)#no shut

R2(config-if)#
%LINK-5-CHANGED: Interface GigabitEthernet0/0, changed state to
up

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

%LINK-5-CHANGED: Interface GigabitEthernet0/0.100, changed state
to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface
GigabitEthernet0/0.100, changed state to up

%LINK-5-CHANGED: Interface GigabitEthernet0/0.200, changed state
to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface
GigabitEthernet0/0.200, changed state to up

R2(config-if)#
```

Ctrl+F6 to exit CLI focus

Copy Paste

## Configuración Router R3

```
Router>en
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#hostname R3
/*Activamos la interface 0/0 en R3*/
R3(config)#int g0/0
R3(config-if)#ip address 192.168.30.1 255.255.255.0
R3(config-if)#ipv6 address 2001:db8:130::9C0:80F:301/64
R3(config-if)#no shut

R3(config-if)#
%LINK-5-CHANGED: Interface GigabitEthernet0/0, changed state to up

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

R3(config-if)#exit
/*Configuramos el Serial 0/0/0 R3*/
R3(config)#int Se0/0/0
R3(config-if)#ip address 10.0.0.6 255.255.255.252
R3(config-if)#no shut

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

R3(config-if)#exit
R3(config)#no shut
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0, changed state
/*Configuramos el Serial 0/0/1 R3*/
R3(config)#int Se0/0/1
R3(config-if)#ip address 10.0.0.10 255.255.255.252
R3(config-if)#no shut

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

R3(config-if)#exit
R3(config)#
```

## Asignación DHCP R3



```

R3>en
R3#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R3(config)#ip dhcp ipv4
^
% Invalid input detected at '^' marker.
R3(config)#ip dhcp pool ipv4
/*Configuramos el DHCP en el Router R3*/
R3(dhcp-config)#network 192.168.30.0 255.255.255.0
R3(dhcp-config)#default-router 192.168.30.1
R3(dhcp-config)#exit
R3(config)#ip dhcp excluded-address %DHCPD-4-PING_CONFLICT: DHCP
address conflict: server pinged 192.168.30.1.

% Incomplete command.
R3(config)#ip dhcp excluded-address 192.168.30.1
R3(config)#exit
R3#
%SYS-5-CONFIG_I: Configured from console by console

R3#en
R3#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R3(config)#ip dhcp pool ipv6
R3(dhcp-config)#exit
/*Configuramos el DHCP IPV6 en el Router R3*/
R3(config)#ipv6 unicast-routing
R3(config)#ipv6 dhcp pool ipsv6
R3(config-dhcpv6)#address prefix 2001:1111:1111:1111::/64
^
% Invalid input detected at '^' marker.
R3(config-dhcpv6)# address prefix 2001:1111:1111:1111::/64
^
% Invalid input detected at '^' marker.
R3(config-dhcpv6)#prefix-delegation pool
% Incomplete command.
R3(config-dhcpv6)#prefix-delegation pool
R3(config-dhcpv6)#prefix-delegation pool 2001:1111:1111:1111::/64
R3(config-dhcpv6)# dns-server 2001:4860:4860::8888
R3(config-dhcpv6)# domain-name NETWORKLESSON.UNAD
R3(config-dhcpv6)# dns-server 2001:db8:130::9C0:80F:301/64
^
% Invalid input detected at '^' marker.
R3(config-dhcpv6)# dns-server 2001:db8:130::9C0:80F:301

```

```
R3(config-dhcpv6)# no shut
^
% Invalid input detected at '^' marker.
R3(config-dhcpv6)#exit
R3(config)#exit
R3#
%SYS-5-CONFIG_I: Configured from console by console
```

```
R3#show ipv6 dhcp pool
DHCPv6 pool: ipsv6
Prefix pool: 2001:1111:1111:1111::/64
preferred lifetime 604800, valid lifetime 2592000
DNS server: 2001:DB8:130::9C0:80F:301
Domain name: NETWORKLESSON.UNAD
Active clients: 0
R3#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R3(config)#int g0/0
R3(config-if)#ipv6 address 2001:1111:1111:1111::1/64
R3(config-if)#ipv6 dhcp server ipsv6
R3(config-if)#ipv6 nd managed-config-flag
```

Figure 7. Configuración Router R3

```
IOS Command Line Interface
Router>en
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#hostname R3
R3(config)#int g0/0
R3(config-if)#ip address 192.168.30.1 255.255.255.0
R3(config-if)#ipv6 address 2001:db8:130::9C0:80F:301/64
R3(config-if)#no shut

R3(config-if)#
%LINK-5-CHANGED: Interface GigabitEthernet0/0, changed state to
up
|
%LINEPROTO-5-UPDOWN: Line protocol on Interface
GigabitEthernet0/0, changed state to up

R3(config-if)#exit
R3(config)#int Se0/0/0
R3(config-if)#ip address 10.0.0.6 255.255.255.252
R3(config-if)#no shut

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

R3(config-if)#exit
R3(config)#no shut
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0,
changed state
R3(config)#int Se0/0/1
R3(config-if)#ip address 10.0.0.10 255.255.255.252
R3(config-if)#no shut

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

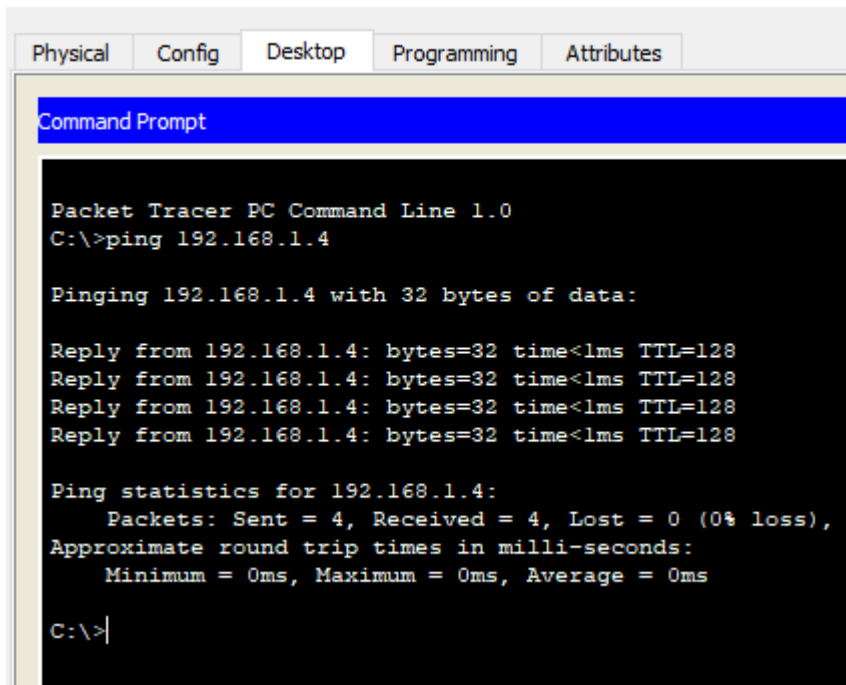
R3(config-if)#exit
R3(config)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/1,
changed state to up
no shut
```

Ctrl+F6 to exit CLI focus

Copy Paste

Figure 8. Validación de conexión en el ordenador

PC0



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

```
Packet Tracer PC Command Line 1.0
C:\>ping 192.168.1.4

Pinging 192.168.1.4 with 32 bytes of data:

Reply from 192.168.1.4: bytes=32 time<lms TTL=128
Reply from 192.168.1.4: bytes=32 time<lms TTL=128
Reply from 192.168.1.4: bytes=32 time<lms TTL=128
Reply from 192.168.1.4: bytes=32 time<lms TTL=128

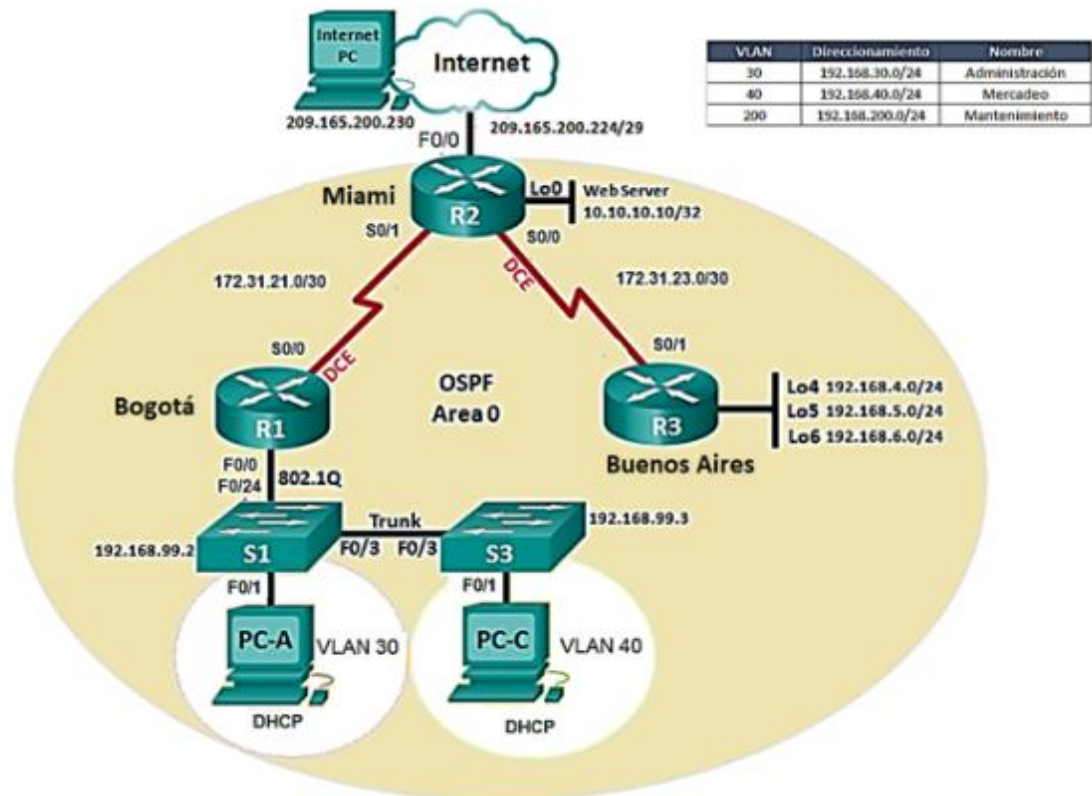
Ping statistics for 192.168.1.4:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>
```

## Desarrollo del escenario 2

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.

Figure 9. Parametros del escenario 2



1. Configurar el direccionamiento IP acorde con la topología de red para cada uno de los dispositivos que forman parte del escenario
2. Configurar el protocolo de enrutamiento OSPFv2 bajo los siguientes criterios:

#### OSPFv2 area 0

<b>Configuration Item or Task</b>	<b>Specification</b>
Router ID R1	1.1.1.1
Router ID R2	5.5.5.5
Router ID R3	8.8.8.8
Configurar todas las interfaces LAN como pasivas	
Establecer el ancho de banda para enlaces seriales en	256 Kb/s
Ajustar el costo en la métrica de S0/0 a	9500

#### Verificar información de OSPF

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

## Direccionamiento de Routers

Teniendo en cuenta la asignación realizada en la figura que plantea el direccionamiento generamos la distribución de IP para los tres Routers

Dispositivo	Interfaz	Dirección IP	Máscara de subred	Gateway predeterminado
Miami	G0/0	209.165.200.24	255.255.255.0	N/A
	Lo0	10.10.10.10	255.255.255.255	N/A
Bogotá	G0/0	192.168.99.254	255.255.255.0	N/A
	S0/0/0	172.31.21.2	255.255.255.252	N/A
Buenos Aires	S0/0/1	172.31.23.2	255.255.255.252	N/A
	Lo4	192.168.4.254	255.255.255.0	N/A
	Lo5	192.168.5.254	255.255.255.0	N/A
	Lo6	192.168.6.254	255.255.255.0	N/A

## Direccionamiento de Switch y terminales

Teniendo en cuenta la asignación realizada en la figura que plantea el direccionamiento generamos la distribución de IP para los Switch y los equipos los cuales están en DHCP

<b>Dispositivo</b>	<b>Interfaz</b>	<b>Dirección IP</b>	<b>Máscara de subred</b>	<b>Gateway predeterminado</b>
S1	VLAN30	192.168.30.254	255.255.255.255	N/A
	VLAN200	192.168.200.254	255.255.255.255	N/A
S2	VLAN40	192.168.40.254	255.255.255.255	N/A
PC-A	DHCP	DHCP	DHCP	DHCP
PC-C	DHCP	DHCP	DHCP	DHCP



## Router R2 configuración

```
R2(config)#INT G0/0
```

```
/*Se asigna IP a la interface g0/0 */
```

```
R2(config-if)#ip address 209.165.200.224 255.255.255.248
```

```
Bad mask /29 for address 209.165.200.224
```

```
R2(config-if)#ip address 209.165.200.224 255.255.255.0
```

```
R2(config-if)#no shut
```

```
R2(config-if)#
```

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

```
R2(config-if)#exit
```

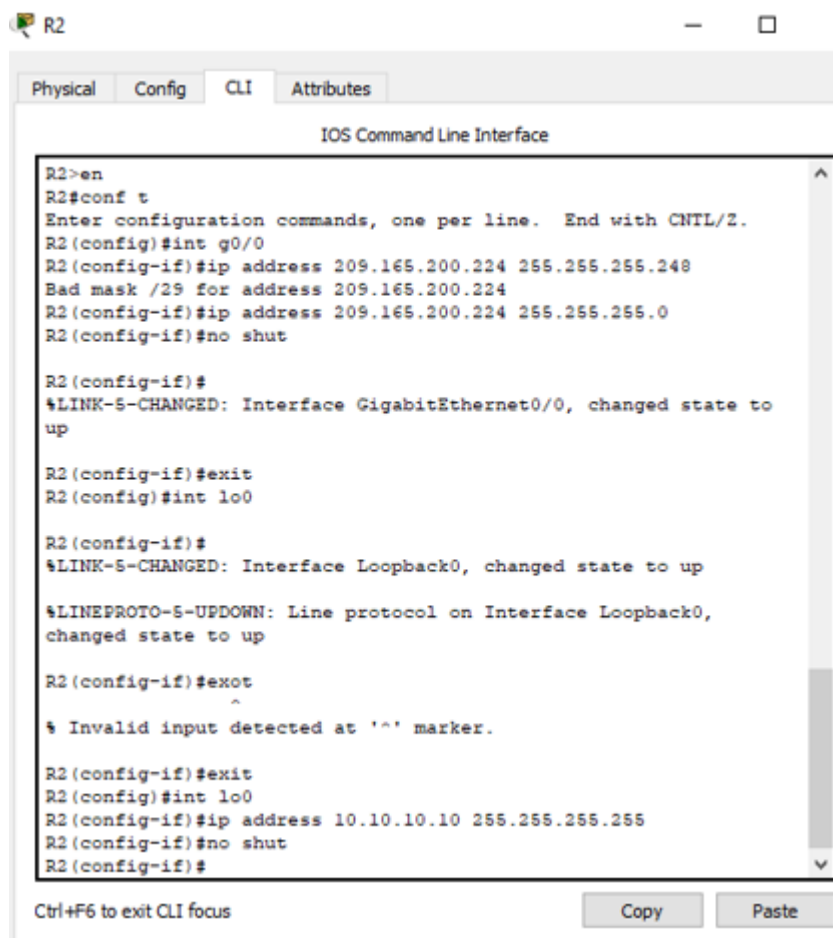
```
/*Se asigna IP a la lo0 */
```

```
R2(config)#int lo0
```

```
R2(config-if)#ip address 10.10.10.10 255.255.255.255
```

```
R2(config-if)#no shut
```

Figure 10. Router R2 configuración



```
R2
IOS Command Line Interface

R2>en
R2#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R2(config)#int g0/0
R2(config-if)#ip address 209.165.200.224 255.255.255.248
Bad mask /29 for address 209.165.200.224
R2(config-if)#ip address 209.165.200.224 255.255.255.0
R2(config-if)#no shut

R2(config-if)#
%LINK-5-CHANGED: Interface GigabitEthernet0/0, changed state to up

R2(config-if)#exit
R2(config)#int lo0

R2(config-if)#
%LINK-5-CHANGED: Interface Loopback0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback0,
changed state to up

R2(config-if)#exot
^
% Invalid input detected at '^' marker.

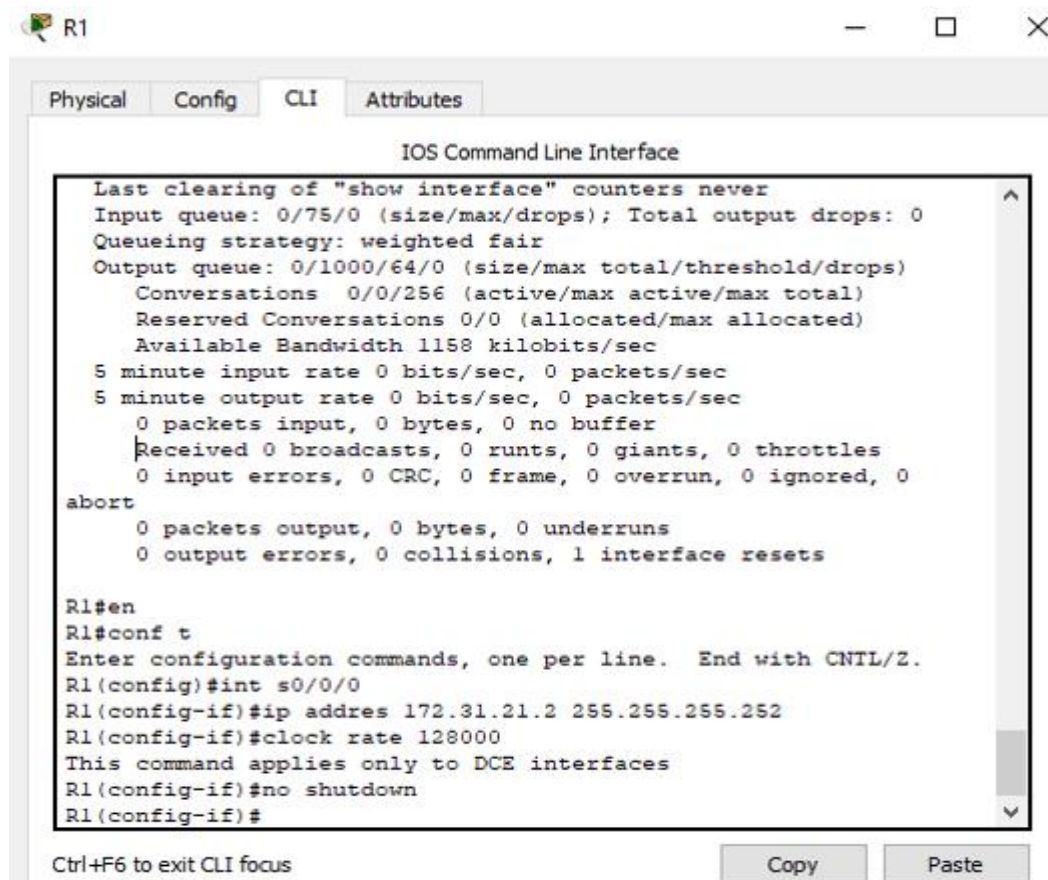
R2(config-if)#exit
R2(config)#int lo0
R2(config-if)#ip address 10.10.10.10 255.255.255.255
R2(config-if)#no shut
R2(config-if)#
```

## Router R1 configuración

```
Router(config)#hostname R1
R1(config)#int g0/0
R1(config-if)#ip address 192.168.99.254 255.255.255.0
R1(config-if)#no shut
R1(config)#INT S0/0/0
/*Se asigna IP a la interface s0/0/0 y se aplica solo para DCE*/
R1(config-if)#ip address 172.31.21.2 255.255.255.252
R1(config-if)#clock rate 128000
R1(config-if)#applies only to DCE interfaces
R1(config-if)#clock rate 128000
R1(config-if)#no shut

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

Figure 11. Router R1 configuración

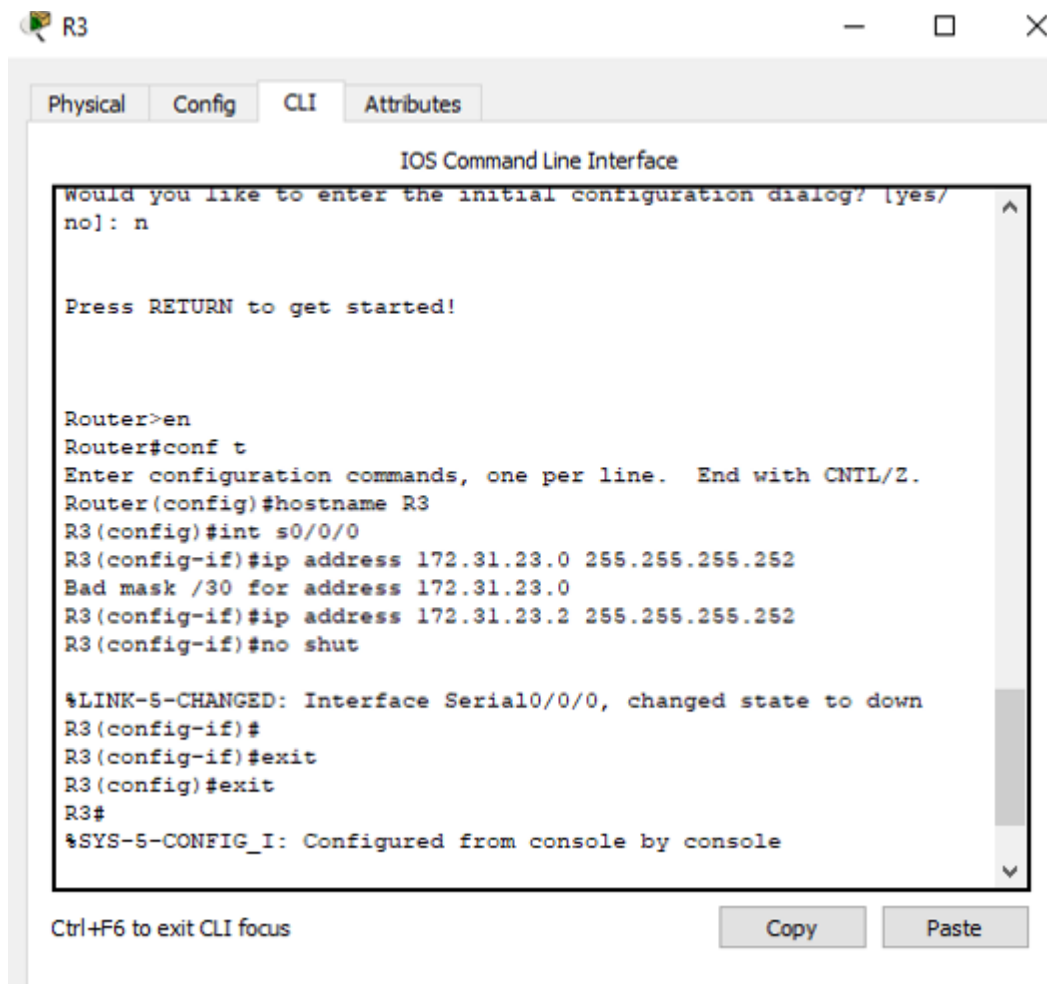


## Router R3 configuración

```
Router(config)#hostname R3
R3(config)#int s0/0/0
/*Se asigna IP a la interface s0/0/0 */
R3(config-if)#ip address 172.31.23.0 255.255.255.252
Bad mask /30 for address 172.31.23.0
R3(config-if)#ip address 172.31.23.0 255.255.255.252
Bad mask /30 for address 172.31.23.0
R3(config-if)#no shut
```

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

Figure 12. Router R3 configuración



## Configuración Lo en R3

```
R3(config)#int lo4
```

```
R3(config-if)#
```

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

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

```
R3(config-if)#ip address 192.168.4.0 255.255.255.0
```

```
Bad mask /24 for address 192.168.4.0
```

```
R3(config-if)#exit
```

```
R3(config)#int lo5
```

```
R3(config-if)#
```

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

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

```
R3(config-if)#ip address 192.168.5.0 255.255.255.0
```

```
Bad mask /24 for address 192.168.5.0
```

```
R3(config-if)#exit
```

```
R3(config)#int lo6
```

```
R3(config-if)#
```

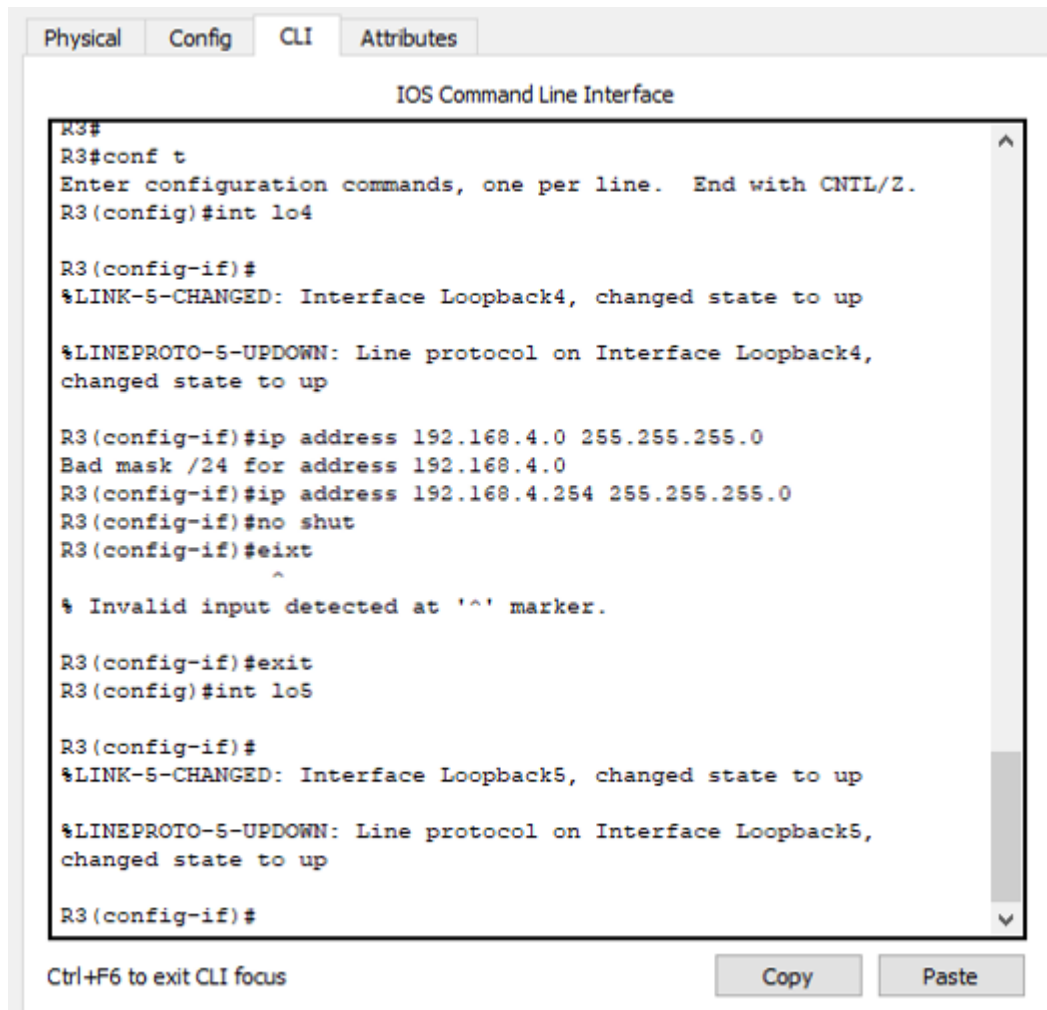
```
%LINK-5-CHANGED: Interface Loopback6, changed state to up
```

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

```
R3(config-if)#ip address 192.168.6.0 255.255.255.0
```

```
Bad mask /24 for address 192.168.6.0
```

Figure 133. Configuración Lo en R3



The screenshot shows the IOS Command Line Interface for router R3. The interface has tabs for Physical, Config, CLI, and Attributes. The CLI tab is active, displaying the following commands and their outputs:

```
R3#
R3#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R3(config)#int lo4

R3(config-if)#
%LINK-5-CHANGED: Interface Loopback4, changed state to up

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

R3(config-if)#ip address 192.168.4.0 255.255.255.0
Bad mask /24 for address 192.168.4.0
R3(config-if)#ip address 192.168.4.254 255.255.255.0
R3(config-if)#no shut
R3(config-if)#eixt
R3(config-if)#
^
% Invalid input detected at '^' marker.

R3(config-if)#exit
R3(config)#int lo5

R3(config-if)#
%LINK-5-CHANGED: Interface Loopback5, changed state to up

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

R3(config-if)#
```

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".

Physical Config CLI Attributes

IOS Command Line Interface

```
% Invalid input detected at '^' marker.

R3(config-if)#exit
R3(config)#int lo5

R3(config-if)#
%LINK-5-CHANGED: Interface Loopback5, changed state to up

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

R3(config-if)#ip address 192.168.5.254 255.255.255.0
R3(config-if)#no shut
R3(config-if)#exit
R3(config)#int lo6

R3(config-if)#
%LINK-5-CHANGED: Interface Loopback6, changed state to up

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

R3(config-if)#ip address 192.168.6.254 255.255.255.0
R3(config-if)#no shut
R3(config-if)#exit
R3(config)#exit
R3#
%SYS-5-CONFIG_I: Configured from console by console
```

Ctrl+F6 to exit CLI focus

Copy Paste

## Configuración S1Switch

Switch#conf t

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

Switch(config)#hostname S1

**/\*Configuración de vlan en el Switch \*/**

S1(config)#int vlan 30

S1(config-if)#

%LINK-5-CHANGED: Interface Vlan30, changed state to up

S1(config-if)#ip address 192.168.30.0 255.255.255.255

Bad mask /32 for address 192.168.30.0

S1(config-if)#exit

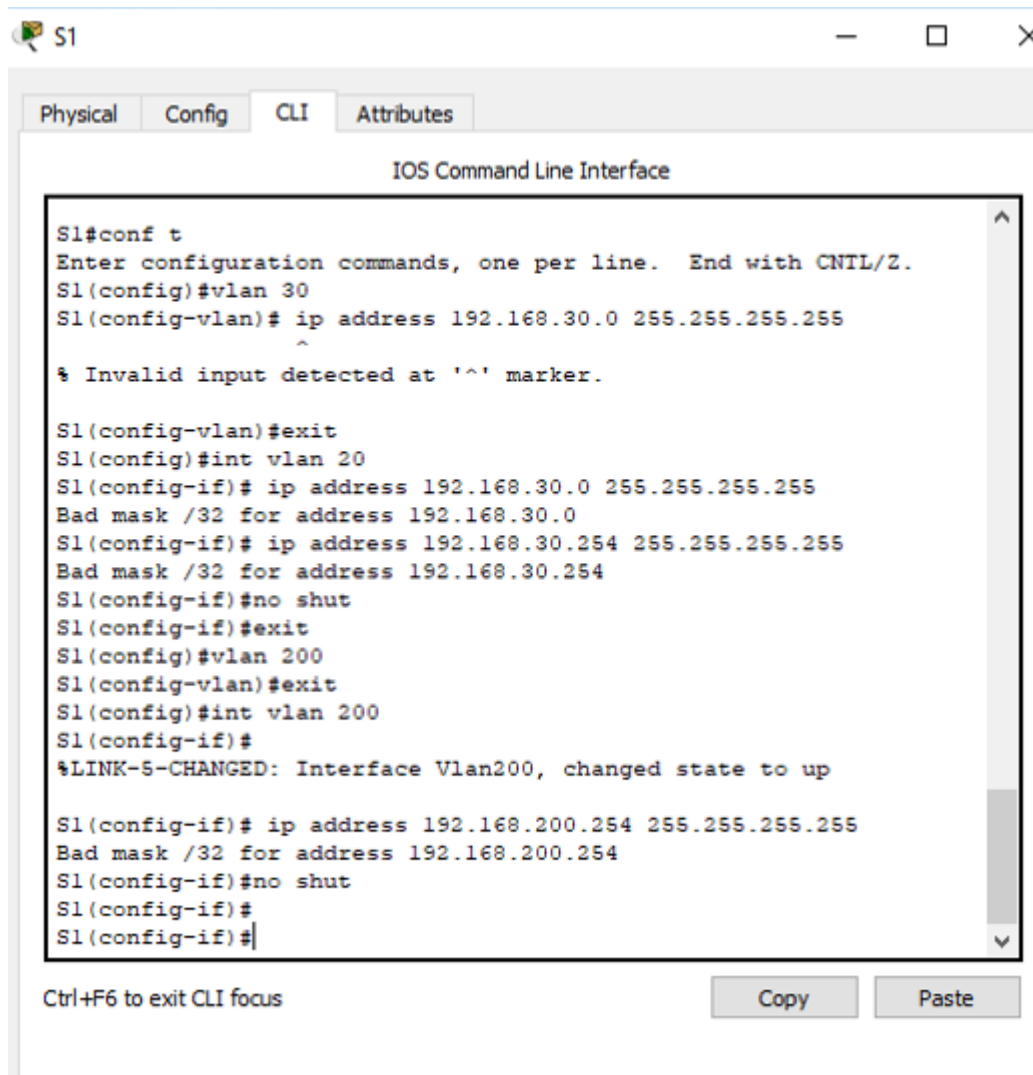
S1(config)#int vlan 200

S1(config-if)#ip address 192.168.200.254 255.255.255.255

Bad mask /32 for address 192.168.200.254

S1(config-if)#exit

Figure 144. Configuración S1Switch



The screenshot shows a window titled 'S1' with a tabbed interface. The 'CLI' tab is active, displaying the 'IOS Command Line Interface'. The terminal text shows the following sequence of commands and outputs:

```
S1#conf t
Enter configuration commands, one per line. End with CNTL/Z.
S1(config)#vlan 30
S1(config-vlan)# ip address 192.168.30.0 255.255.255.255
^
% Invalid input detected at '^' marker.

S1(config-vlan)#exit
S1(config)#int vlan 20
S1(config-if)# ip address 192.168.30.0 255.255.255.255
Bad mask /32 for address 192.168.30.0
S1(config-if)# ip address 192.168.30.254 255.255.255.255
Bad mask /32 for address 192.168.30.254
S1(config-if)#no shut
S1(config-if)#exit
S1(config)#vlan 200
S1(config-vlan)#exit
S1(config)#int vlan 200
S1(config-if)#
%LINK-5-CHANGED: Interface Vlan200, changed state to up

S1(config-if)# ip address 192.168.200.254 255.255.255.255
Bad mask /32 for address 192.168.200.254
S1(config-if)#no shut
S1(config-if)#
S1(config-if)#
```

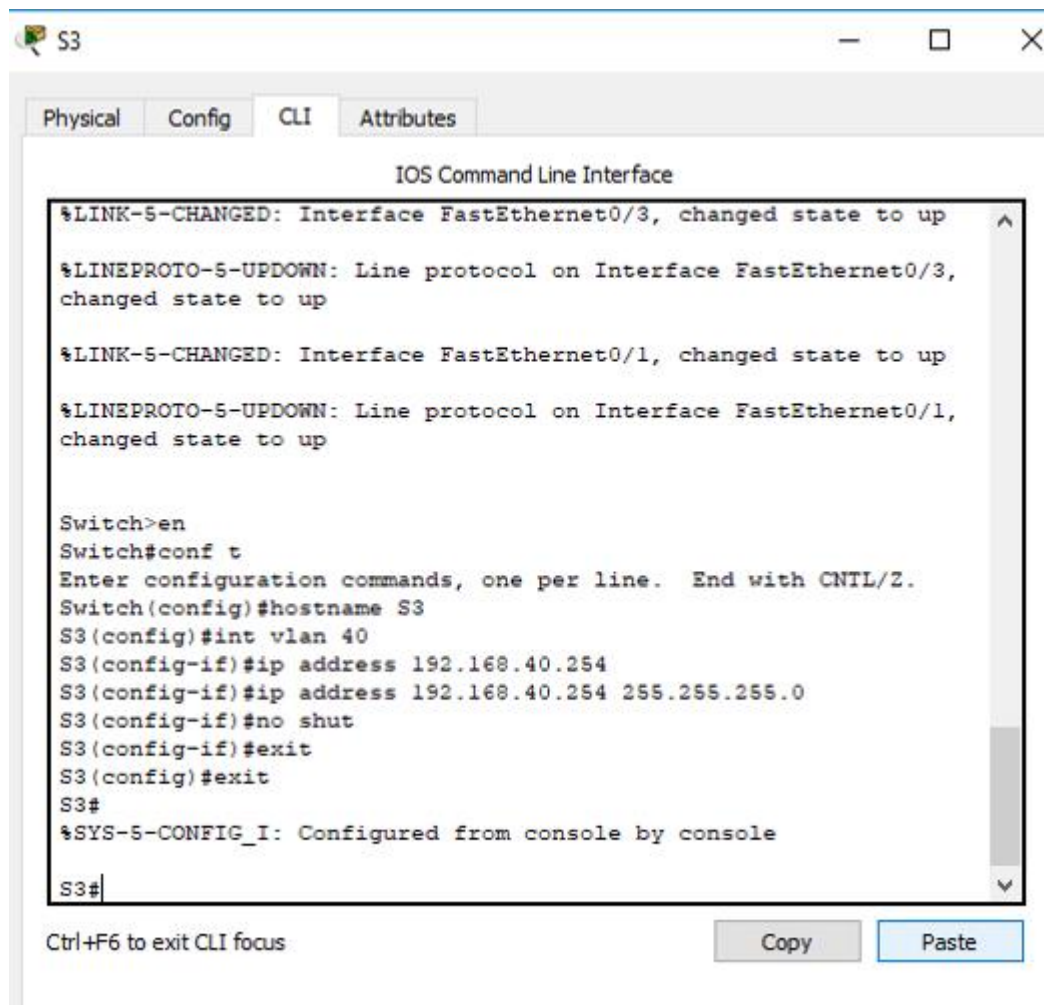
At the bottom of the window, there is a status bar with the text 'Ctrl+F6 to exit CLI focus' and two buttons labeled 'Copy' and 'Paste'.



## Configuración S3Switch

```
Switch>en
Switch#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#hostname S3
S3(config)#int vlan 40
S3(config-if)#ip address 192.168.40.254 255.255.255.0
S3(config-if)#no shut
S3(config-if)#exit
S3(config)#exit
S3#
```

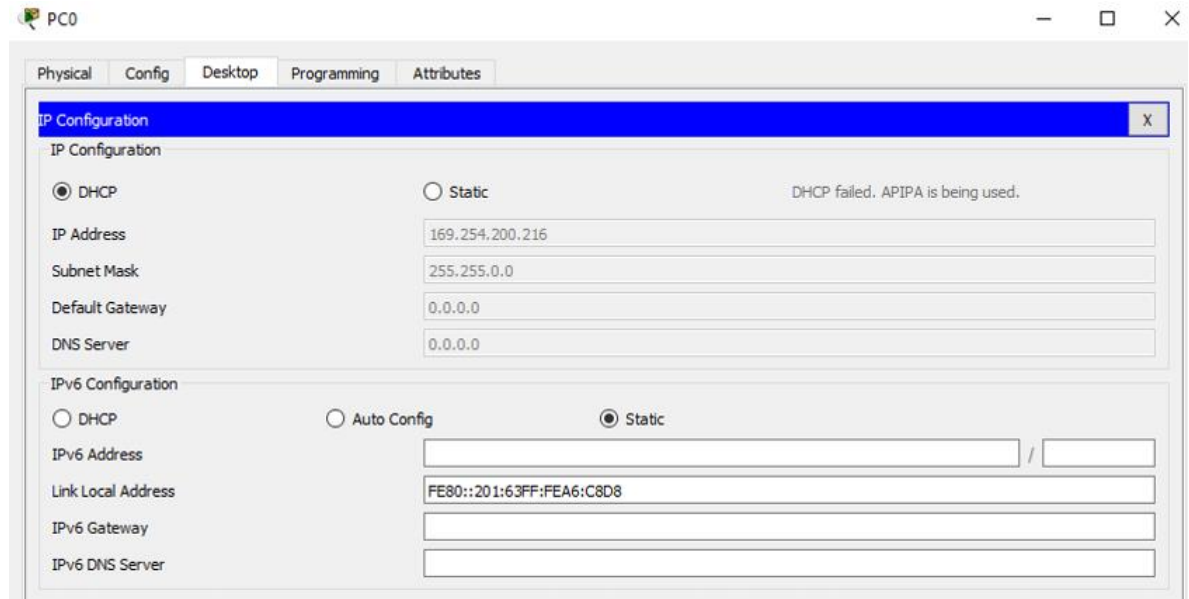
Figure 155. Configuración S3Switch



## Configuración de ordenadores en DHCP

### PC0

Figure 16. Configuración de ordenadores en DHCP



The screenshot shows the IP Configuration window for PC0. The window has tabs for Physical, Config, Desktop, Programming, and Attributes. The IP Configuration section is active, showing DHCP selected. The IP Address is 169.254.200.216, Subnet Mask is 255.255.0.0, Default Gateway is 0.0.0.0, and DNS Server is 0.0.0.0. The IPv6 Configuration section shows Auto Config selected, with a Link Local Address of FE80::201:63FF:FEA6:C8D8.

Field	Value
IP Configuration	<input checked="" type="radio"/> DHCP <input type="radio"/> Static
IP Address	169.254.200.216
Subnet Mask	255.255.0.0
Default Gateway	0.0.0.0
DNS Server	0.0.0.0
IPv6 Configuration	<input type="radio"/> DHCP <input type="radio"/> Auto Config <input checked="" type="radio"/> Static
IPv6 Address	
Link Local Address	FE80::201:63FF:FEA6:C8D8
IPv6 Gateway	
IPv6 DNS Server	

### PC1



The screenshot shows the IP Configuration window for PC1. The window has tabs for Physical, Config, Desktop, Programming, and Attributes. The IP Configuration section is active, showing DHCP selected. The IP Address is 169.254.101.133, Subnet Mask is 255.255.0.0, Default Gateway is 0.0.0.0, and DNS Server is 0.0.0.0. The IPv6 Configuration section shows Auto Config selected, with a Link Local Address of FE80::209:7CFF:FEA0:6585.

Field	Value
IP Configuration	<input checked="" type="radio"/> DHCP <input type="radio"/> Static
IP Address	169.254.101.133
Subnet Mask	255.255.0.0
Default Gateway	0.0.0.0
DNS Server	0.0.0.0
IPv6 Configuration	<input type="radio"/> DHCP <input type="radio"/> Auto Config <input checked="" type="radio"/> Static
IPv6 Address	
Link Local Address	FE80::209:7CFF:FEA0:6585
IPv6 Gateway	

## Lista de figuras

Figure 1. Planteamiento Escenario 1 .....	- 3 -
Figure 2. Configuración Router ISP .....	- 6 -
Figure 3. Configuración Switch SW2 .....	- 8 -
Figure 4. Configuración Switch SW3 .....	- 9 -
Figure 5. Configuración Router R1 .....	- 11 -
Figure 6. Configuración Router R2 .....	- 14 -
Figure 7. Configuración Router R3 .....	- 18 -
Figure 8. Validación de conexión en el ordenador .....	- 19 -
Figure 9. Parametros del escenario 2 .....	- 20 -
Figure 10. Router R2 configuración .....	- 24 -
Figure 11. Router R1 configuración .....	- 25 -
Figure 12. Router R3 configuración .....	- 26 -
Figure 13. Configuración Lo en R3 .....	- 28 -
Figure 14. Configuración S1Switch .....	- 31 -
Figure 15. Configuración S3Switch .....	- 32 -
Figure 16. Configuración de ordenadores en DHCP .....	- 33 -

## Conclusiones

Las IP privadas de nuestros dos escenarios fluctuaron entre todas las clases, la A B y C, nuestros ordenadores se dejaron de clase C pero los switch y routers sí cambiaron según la necesidad.

En el desarrollo de la actividad se puso en práctica los conocimientos obtenidos durante el curso en los cuales se facilitó en la asignación de las Ip pero hubo un grado de complejidad mayor al determinar el Subnet que se deseaba configurar tanto así que la herramienta nos mostró error cuando se quiso configurar una Ip con una máscara que no correspondía.

En términos generales la práctica evidencio que tanto el análisis como la mecánica son importantes para la buena configuración de una red

Las IP privadas de nuestros dos escenarios fluctuaron entre todas las clases, la A B y C, nuestros ordenadores se dejaron de clase C pero los switch y routers sí cambiaron según la necesidad.

## Referencias

<https://www.youtube.com/watch?v=tB7rINyOLVc>

<https://www.youtube.com/watch?v=87moPQ0k82Y>

<https://www.youtube.com/watch?v=rHk-JT0JXmQ>

<https://www.youtube.com/watch?v=YRUjK4DwAy4>

<https://www.youtube.com/watch?v=ThYFUzbi8jA>