



## **TRABAJO FINAL**

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**DIPLOMADO DE PROFUNDIZACIÓN CISCO**

**BOGOTÁ**

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## INTRODUCCIÓN

En el presente ejercicio se evidencia la práctica en packertracer del ejercicio final de pruebas de habilidades de CNNA del diplomado de profundización, donde se pone a prueba los conocimientos adquiridos en el desarrollo de este diplomado.

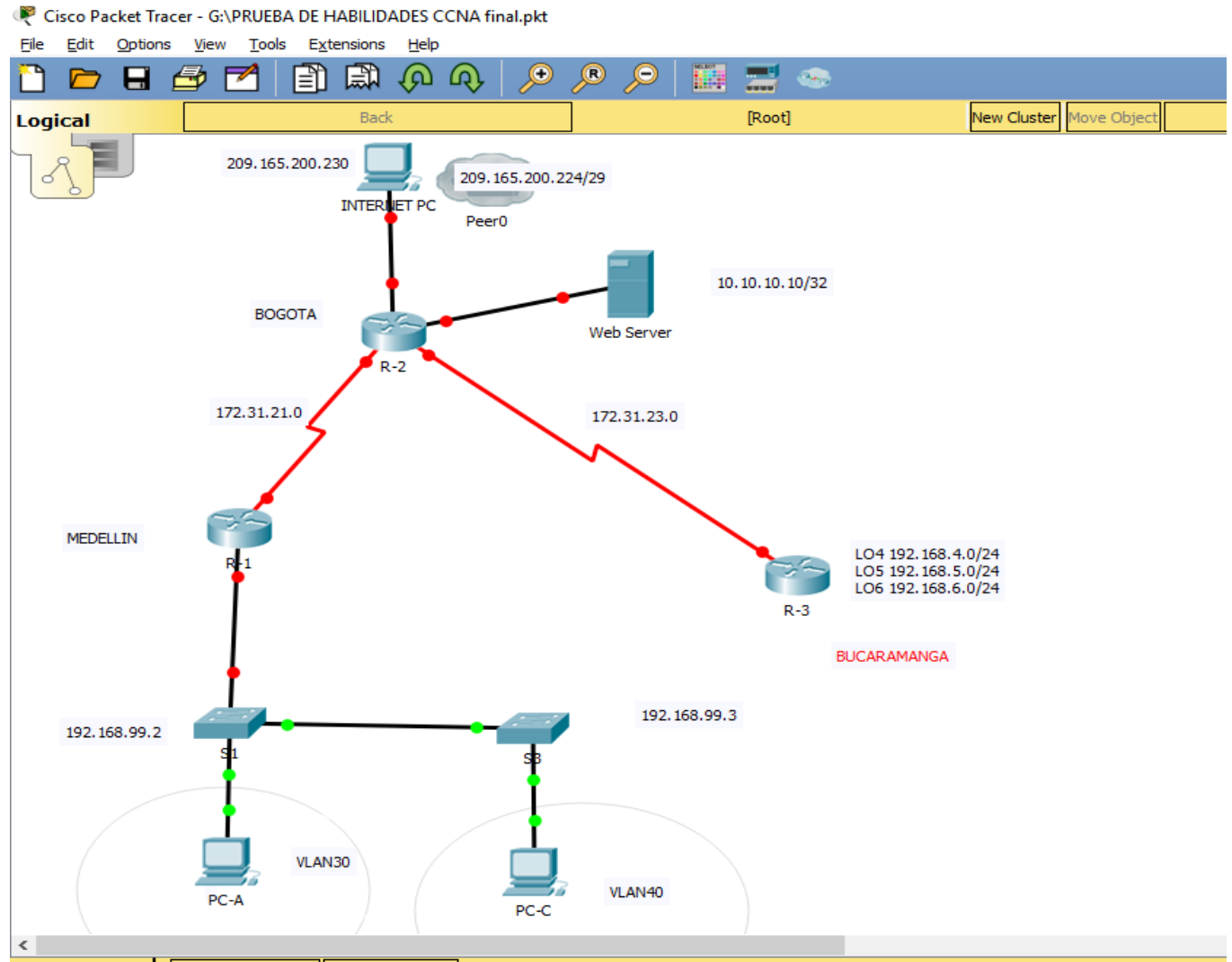
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## Desarrollo

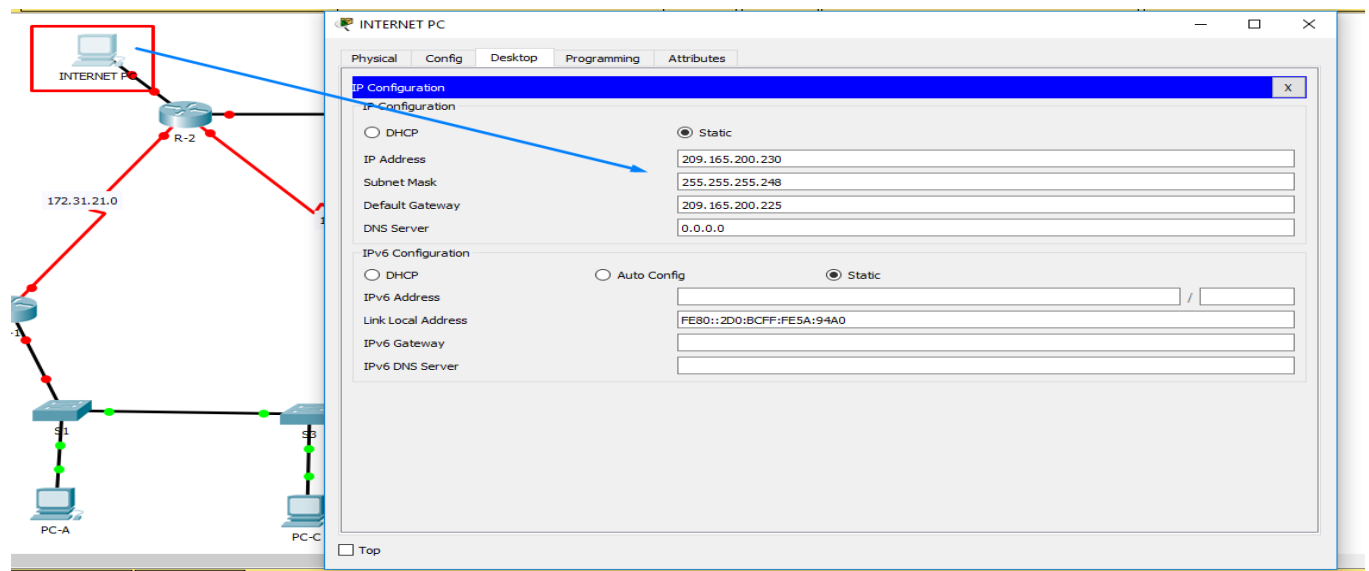
### Tipologia

No se encuentran elementos de tabla de ilustraciones.

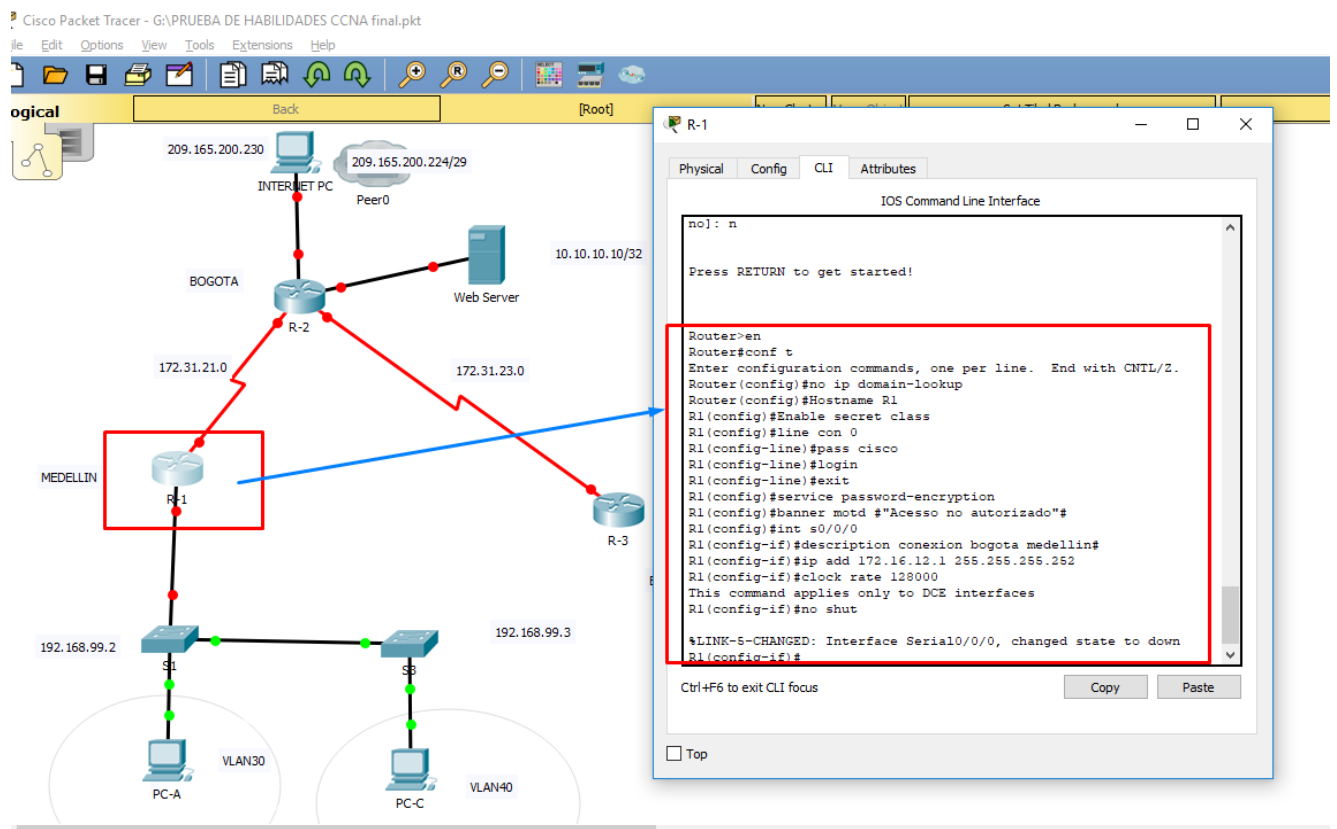


## Configurar el direccionamiento IP acorde con la topología de red para cada uno de los dispositivos que forman parte del escenario

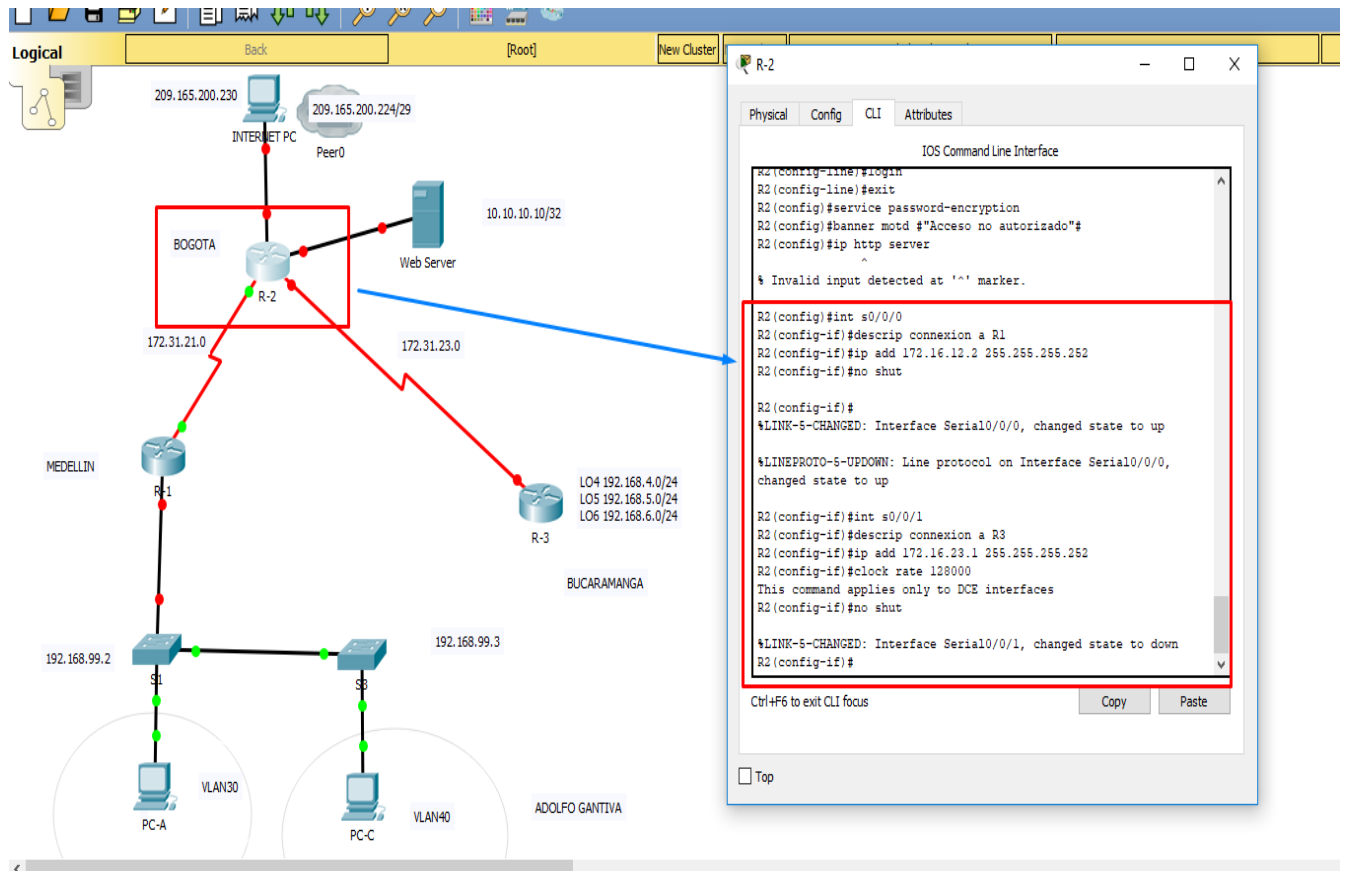
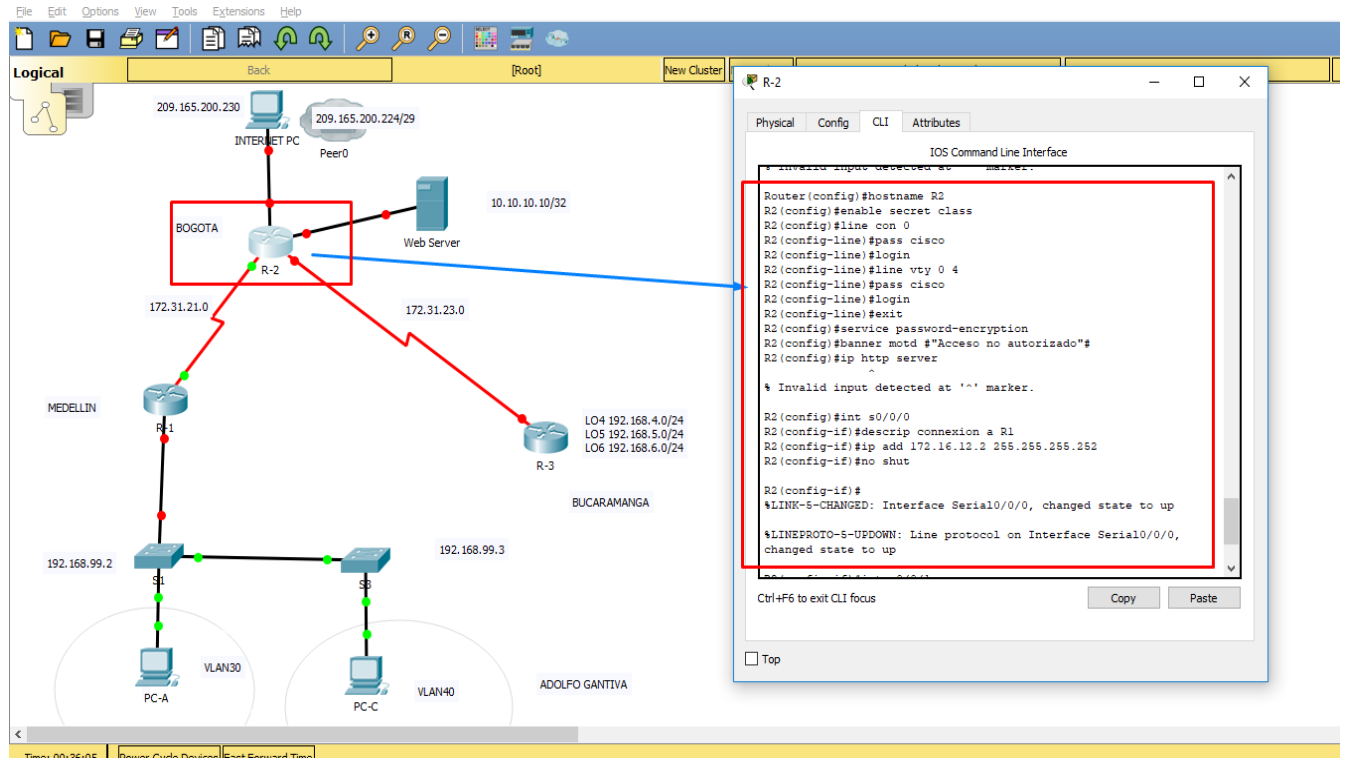
### Internet PC

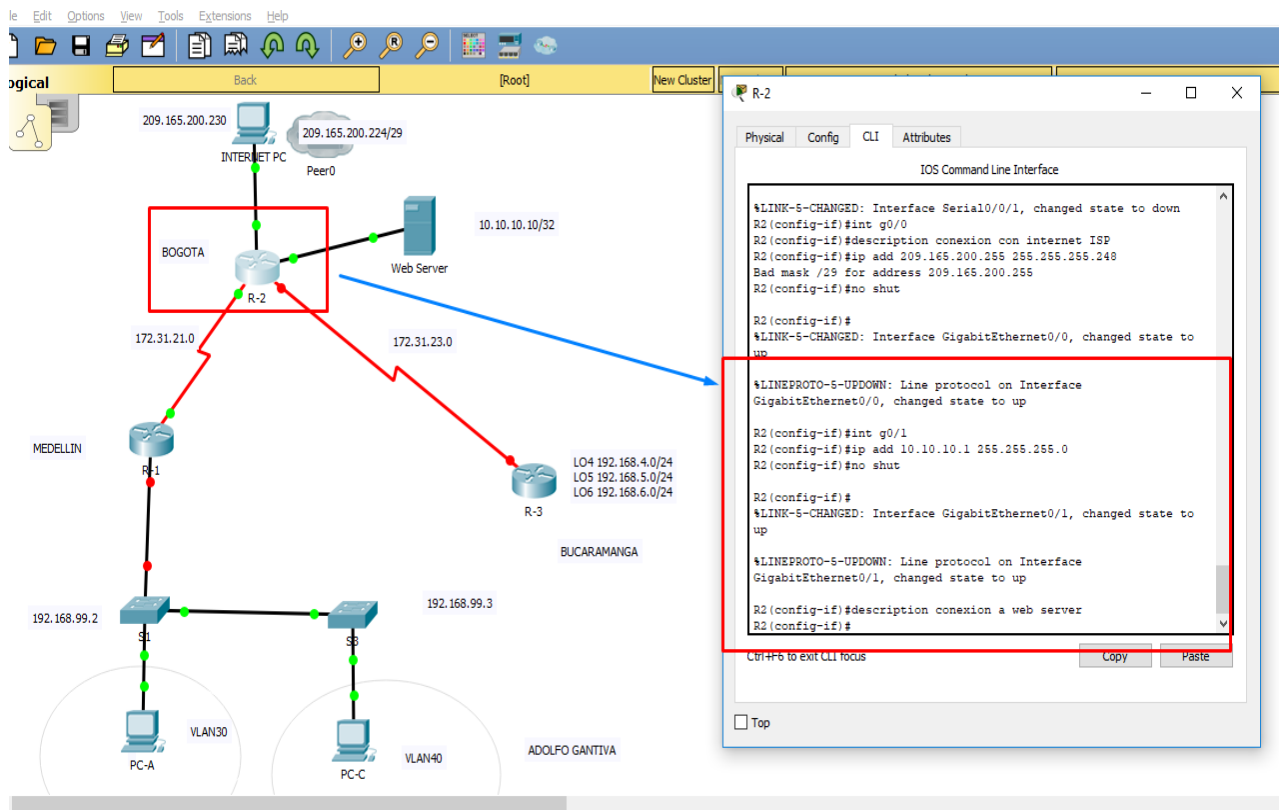
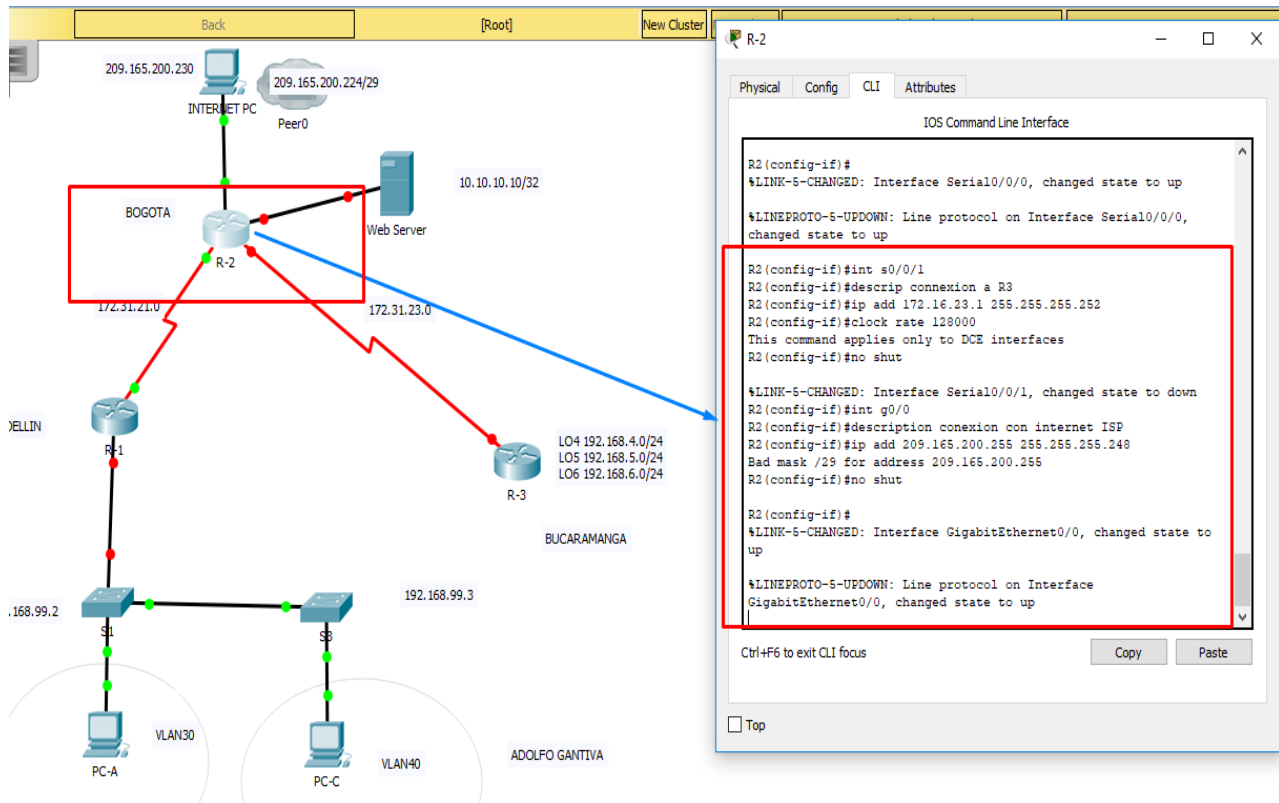


### R1

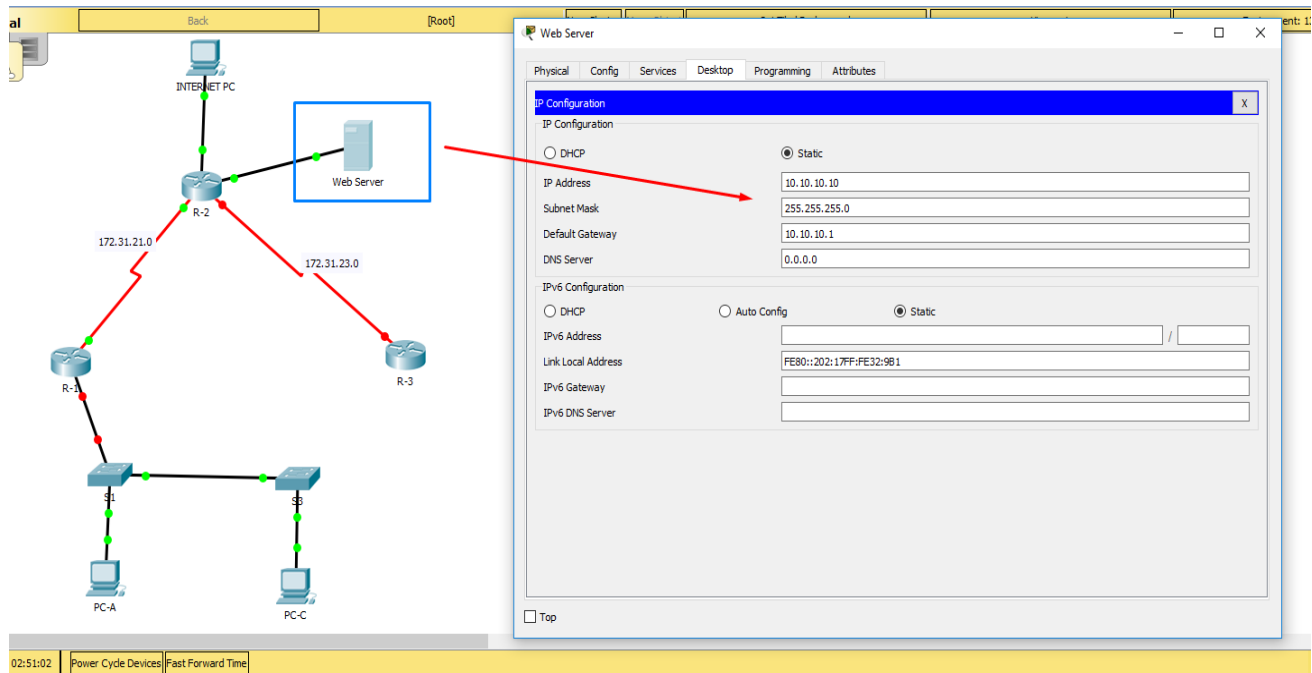


## R2





## Configuración Web server

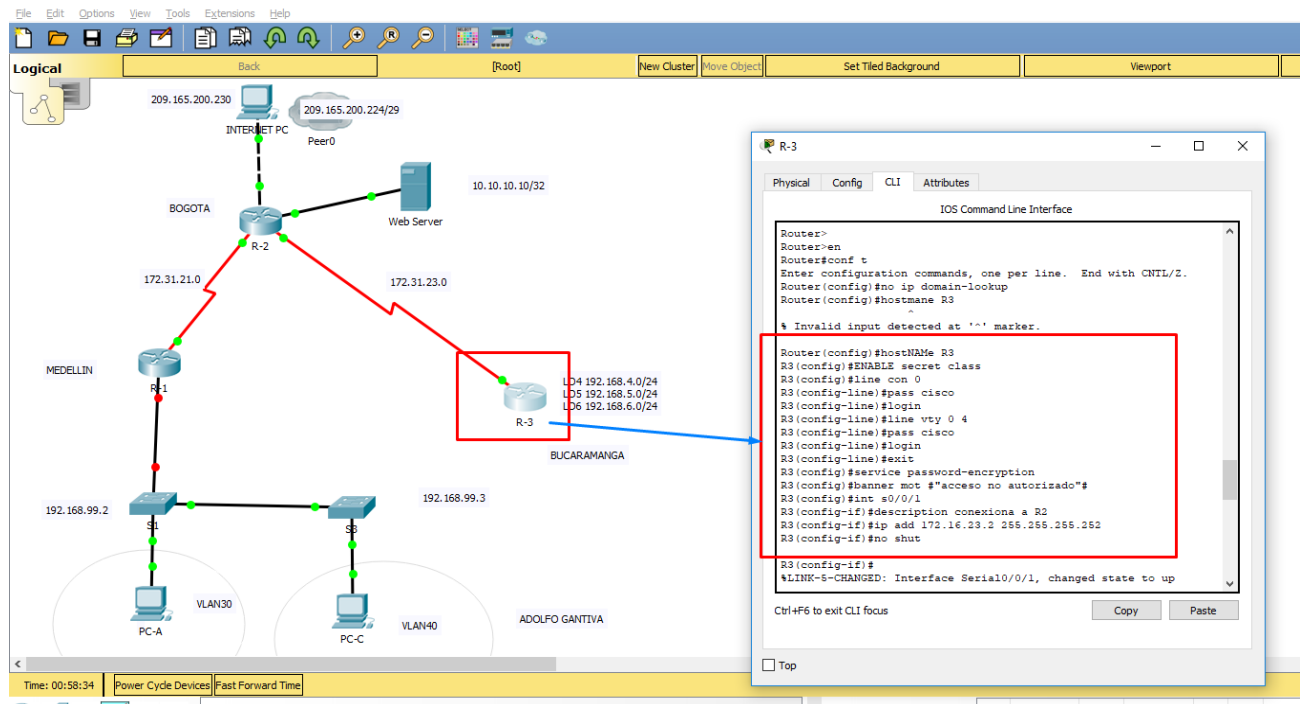


The network diagram shows a topology with three routers: R-1, R-2, and R-3. R-1 is connected to R-2 via a link with IP 172.31.21.0. R-2 is connected to R-3 via a link with IP 172.31.23.0. R-1 is also connected to a switch (S1) which is connected to PC-A. R-2 is connected to a switch (S2) which is connected to PC-C. A Web Server is connected to R-2. The Web Server configuration window is open, showing the IP Configuration tab. The IP Address is set to 10.10.10.10, Subnet Mask to 255.255.255.0, Default Gateway to 10.10.10.1, and DNS Server to 0.0.0.0. The IPv6 Configuration tab is also visible, showing the IPv6 Address as FE80::202:17FF:FE32:9B1.

Web Server Configuration:

- IP Configuration: Static
- IP Address: 10.10.10.10
- Subnet Mask: 255.255.255.0
- Default Gateway: 10.10.10.1
- DNS Server: 0.0.0.0
- IPv6 Configuration: Static
- IPv6 Address: FE80::202:17FF:FE32:9B1
- Link Local Address: FE80::202:17FF:FE32:9B1
- IPv6 Gateway:
- IPv6 DNS Server:

## R3



The network diagram shows a topology with three routers: R-1, R-2, and R-3. R-1 is connected to R-2 via a link with IP 172.31.21.0. R-2 is connected to R-3 via a link with IP 172.31.23.0. R-1 is also connected to a switch (S1) which is connected to PC-A. R-2 is connected to a switch (S2) which is connected to PC-C. A Web Server is connected to R-2. The R-3 configuration window is open, showing the CLI tab. The configuration commands are as follows:

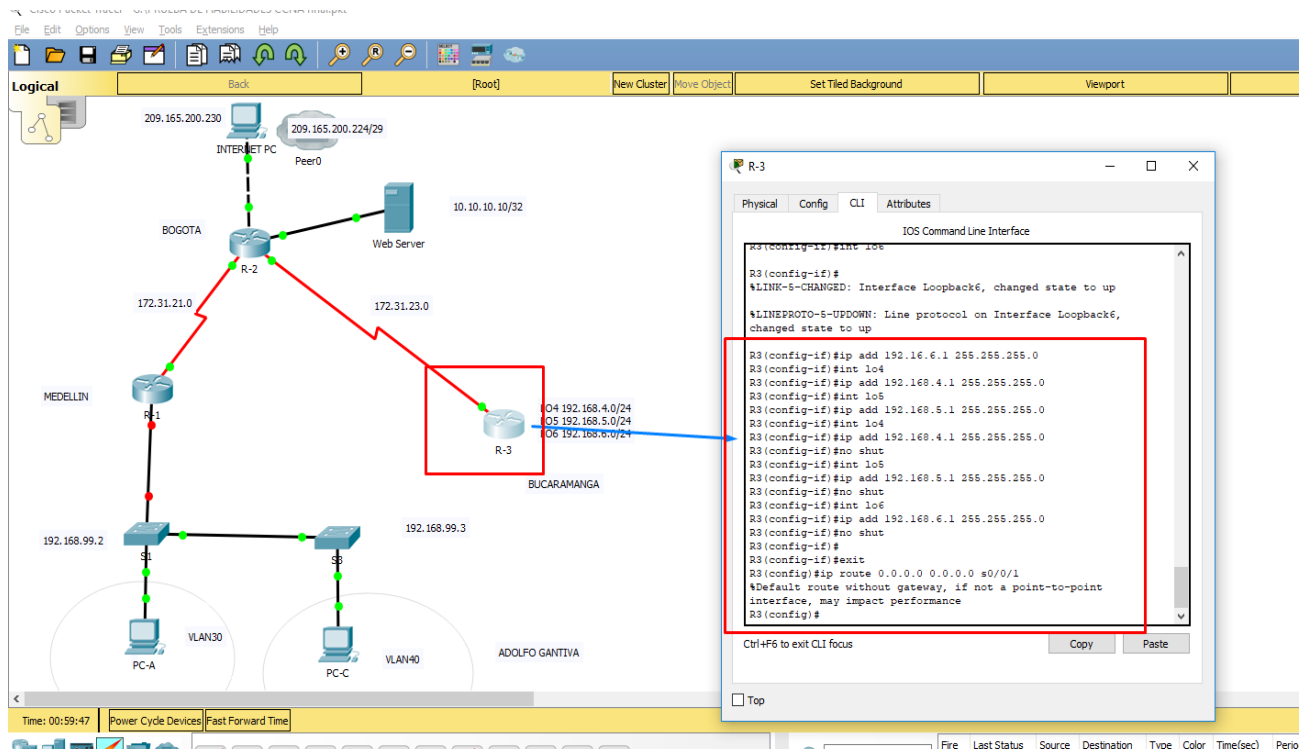
```
Router>
Router#en
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#no ip domain-lookup
Router(config)#hostname R3
% Invalid input detected at '^' marker.

Router(config)#hostname R3
R3(config)#enable secret class
R3(config)#line con 0
R3(config-line)#pass cisco
R3(config-line)#login
R3(config-line)#line vty 0 4
R3(config-line)#pass cisco
R3(config-line)#login
R3(config-line)#exit
R3(config)#service password-encryption
R3(config)#banner motd #"acceso no autorizado#"
R3(config)#int s0/0/1
R3(config-if)#description conexion a R2
R3(config-if)#ip add 172.16.23.2 255.255.255.252
R3(config-if)#no shut

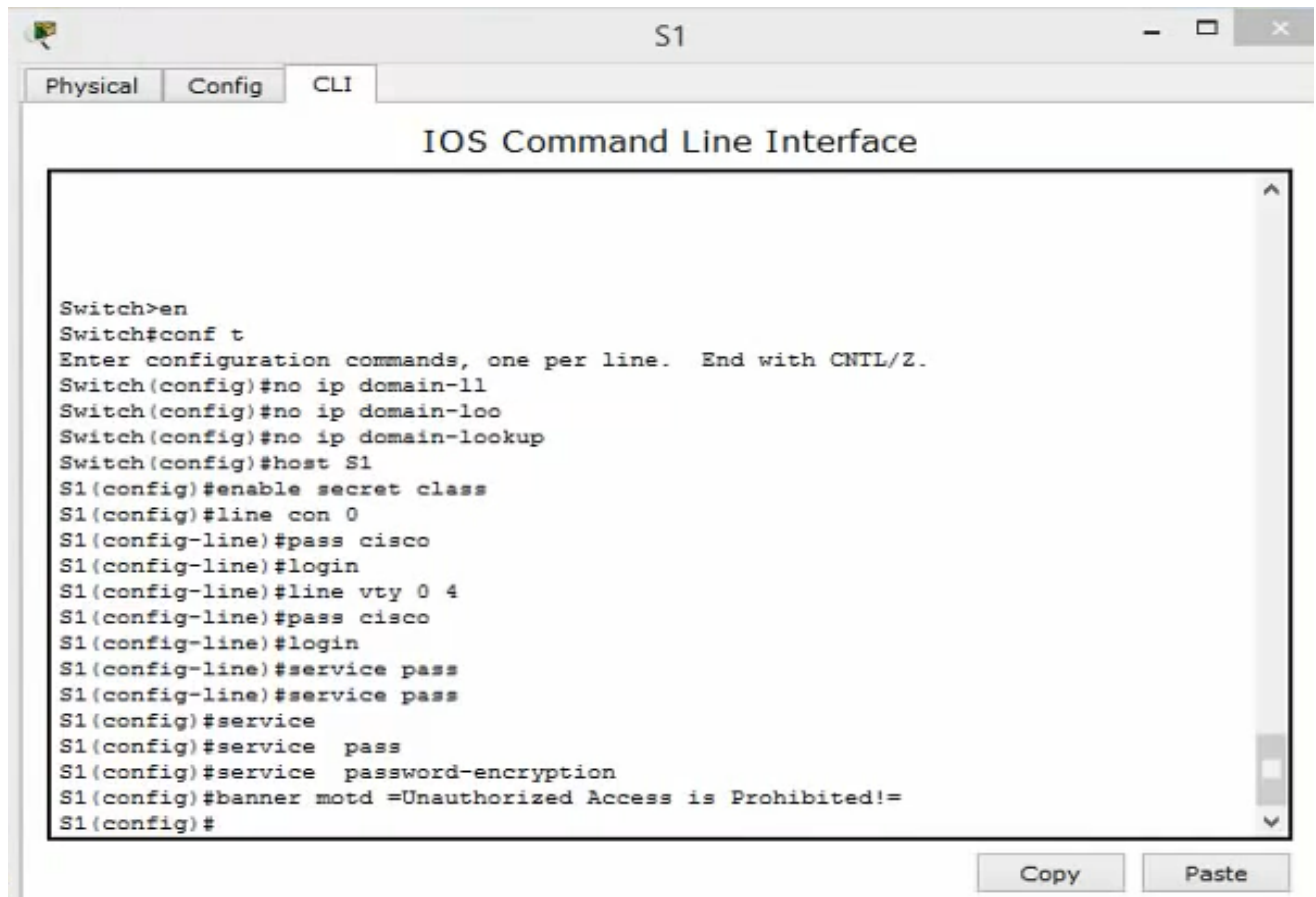
R3(config-if)#
%LINK-5-CHANGED: Interface Serial0/0/1, changed state to up

Ctrl+6 to exit CLI focus
```

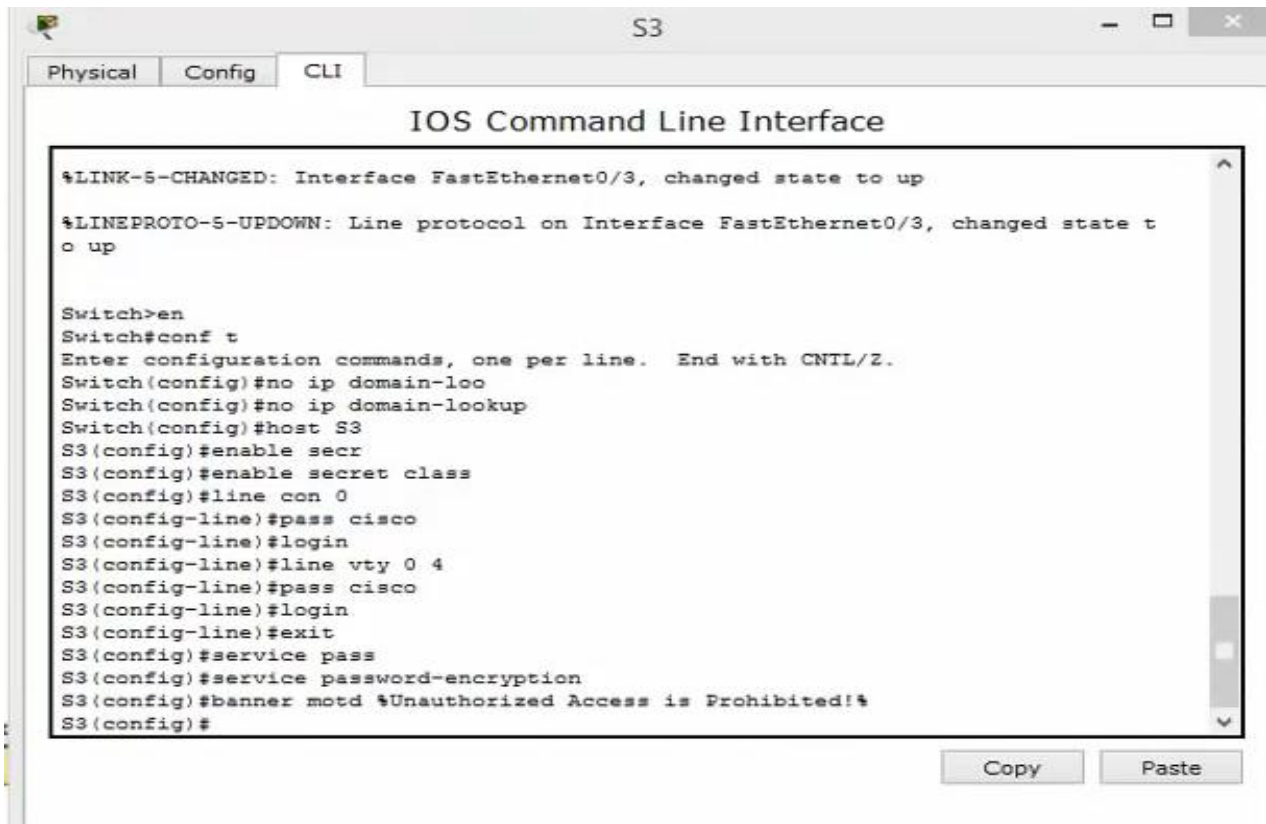




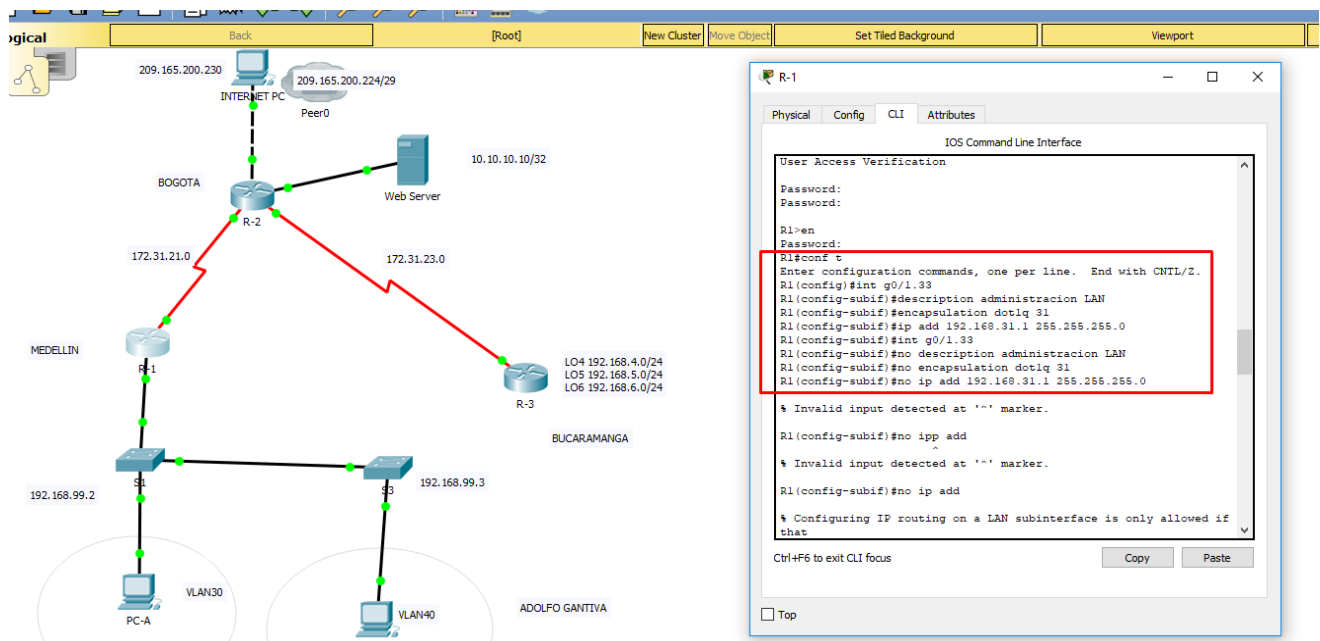
S1

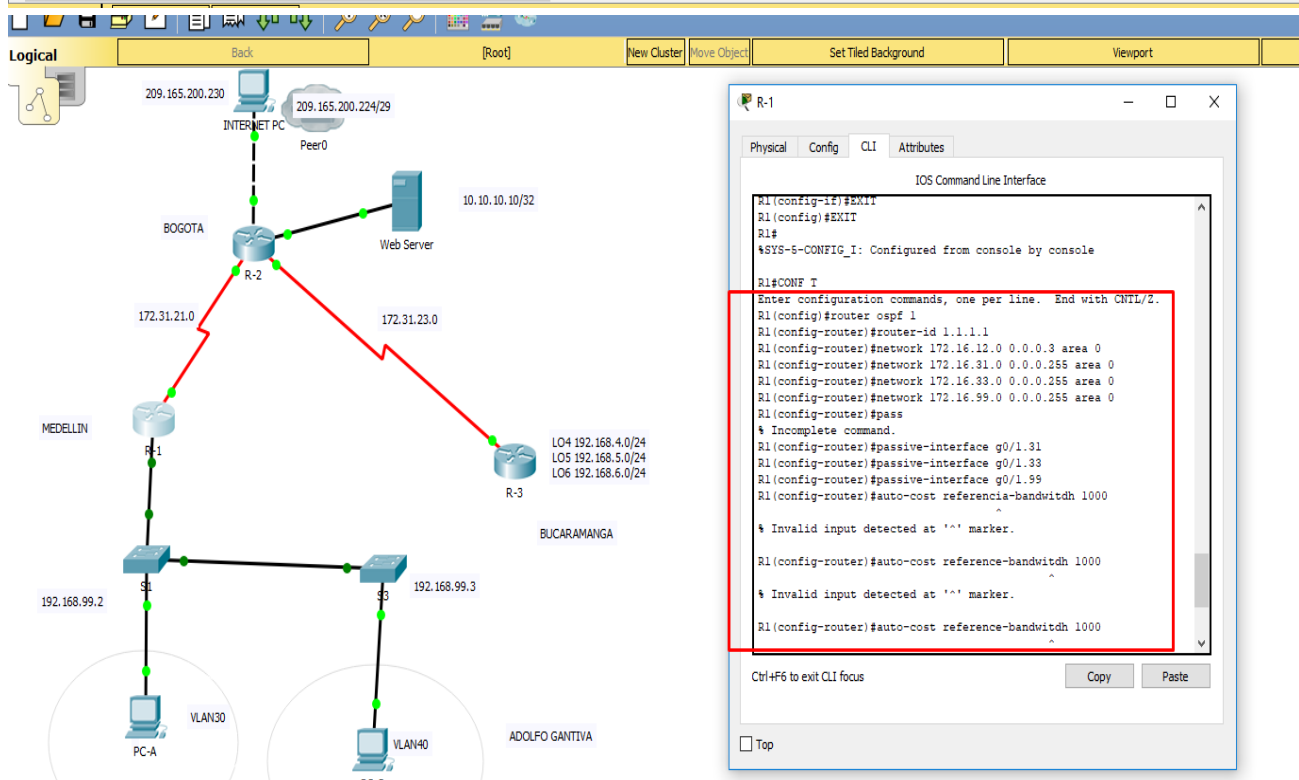
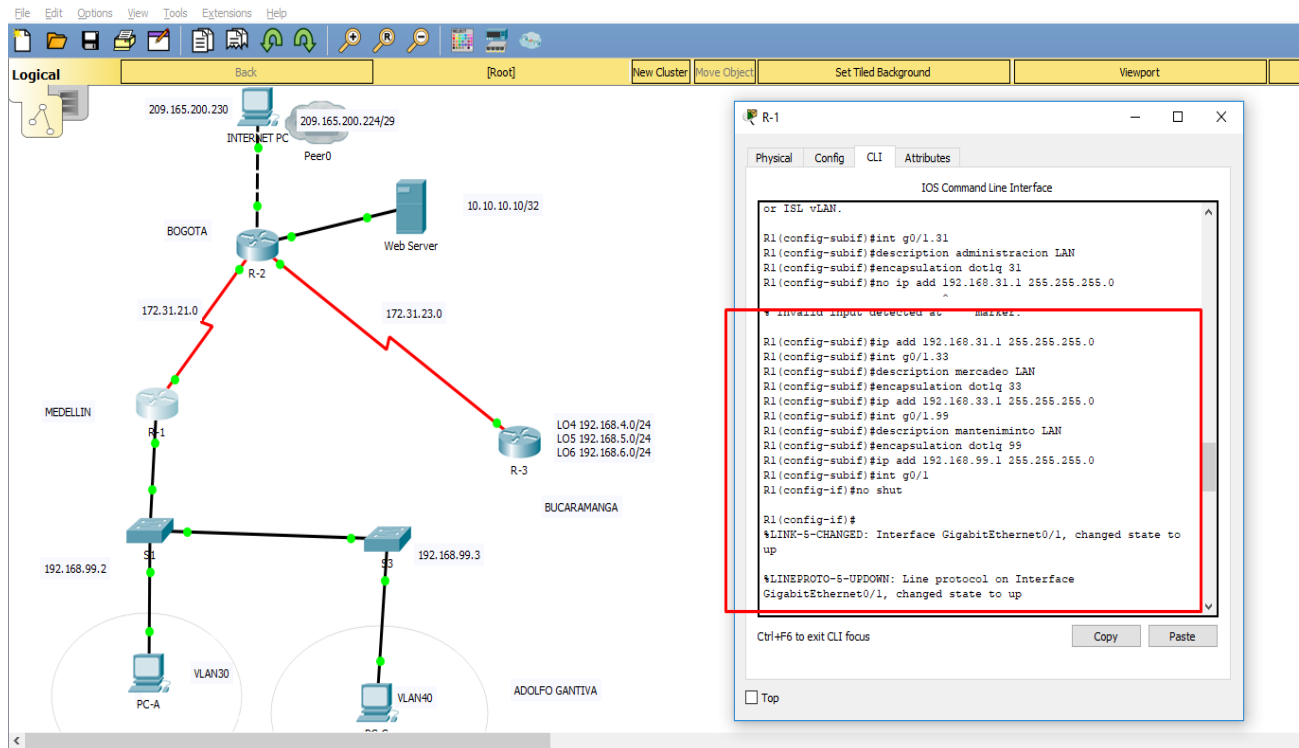


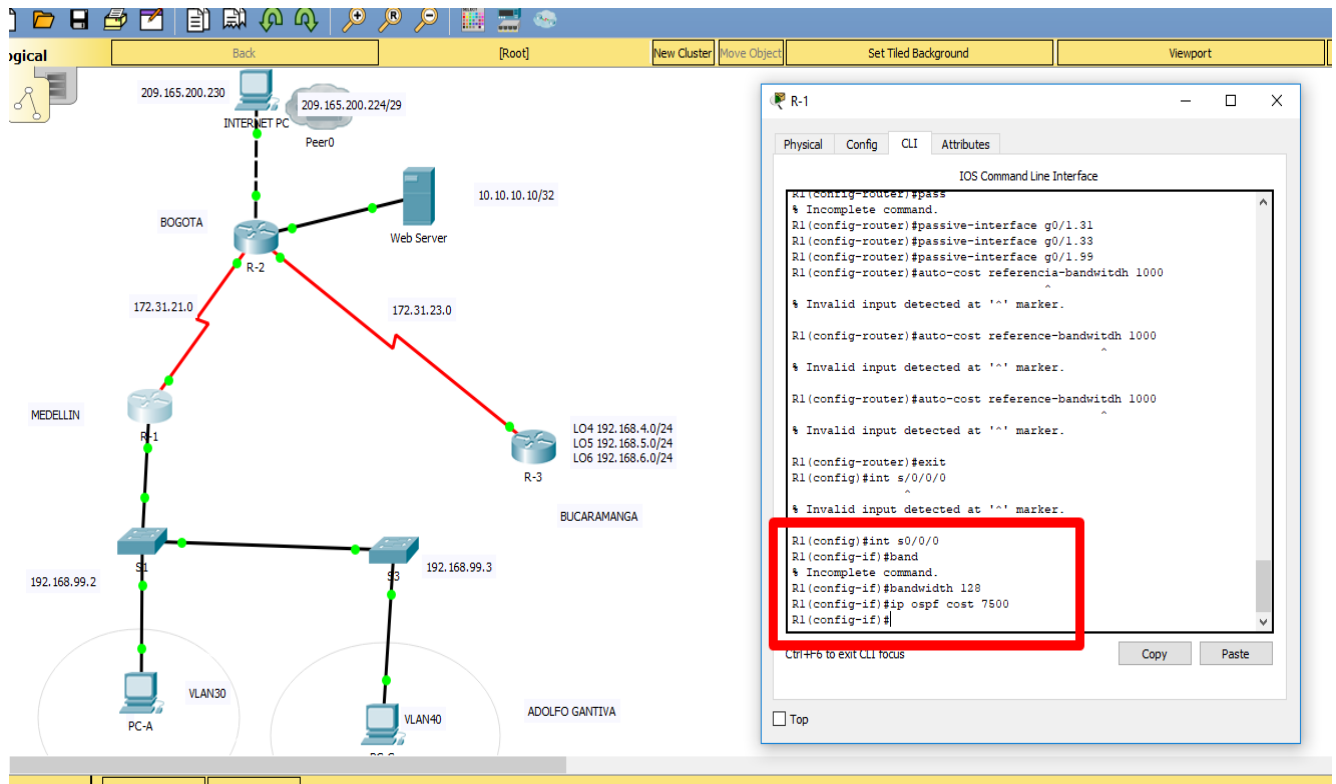
S3



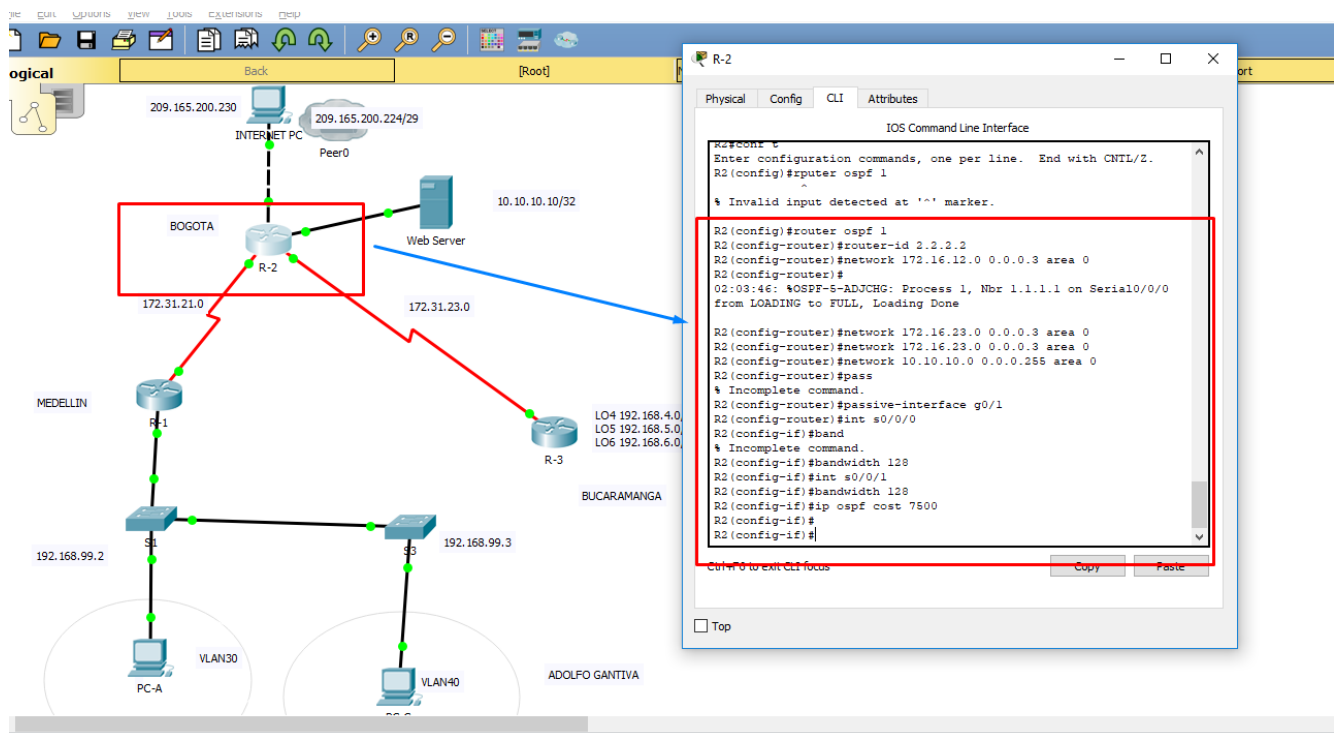
**Configurar el protocolo de enrutamiento OSPFv2 bajo los siguientes criterios**



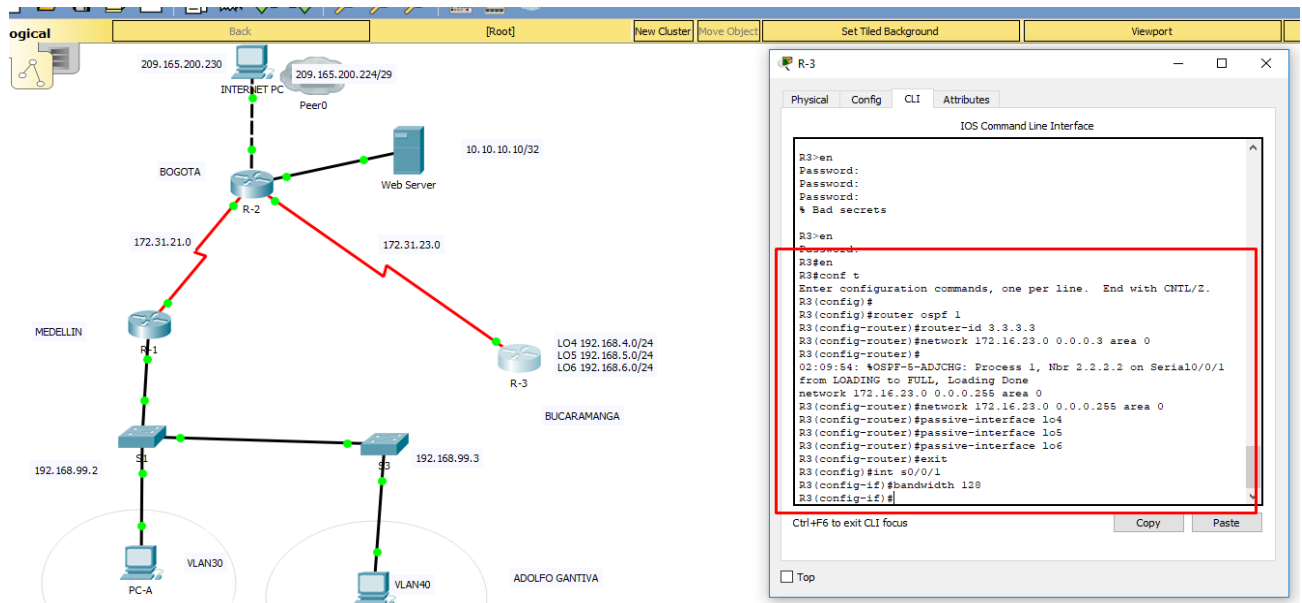




## R2

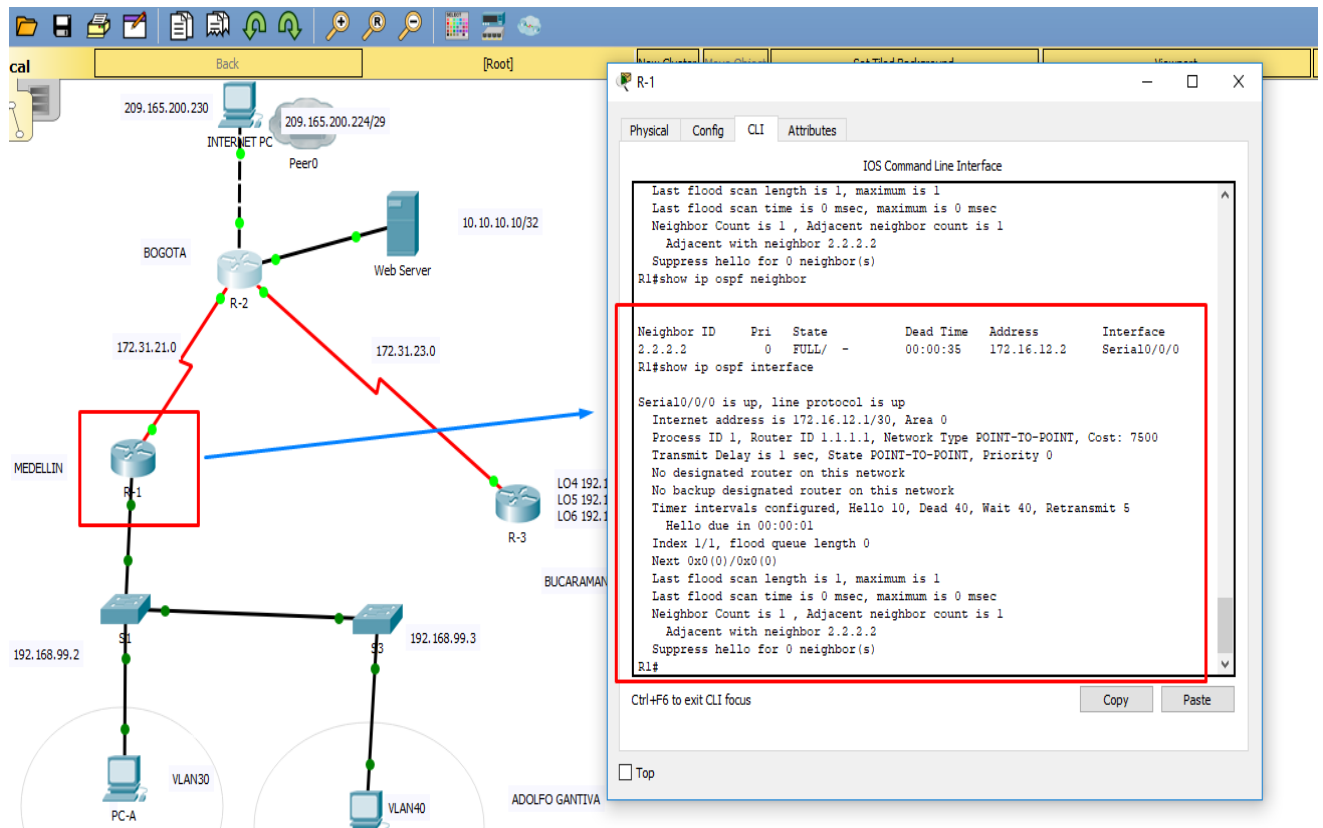


R3

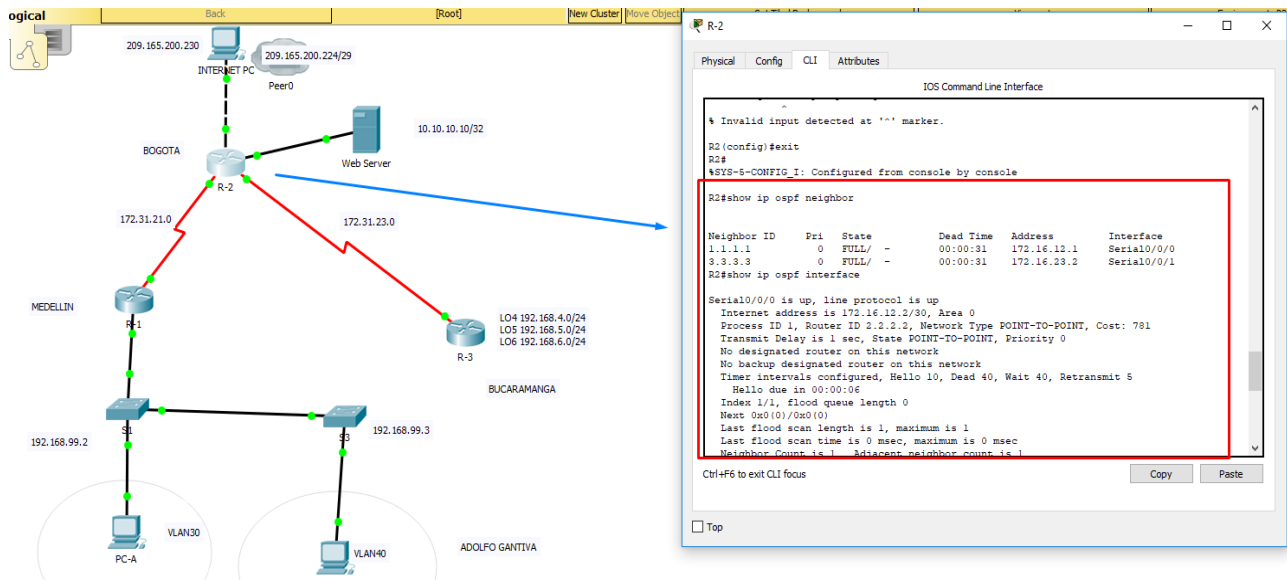


## Visualizar tablas de enrutamiento y routers conectados por OSPFv2

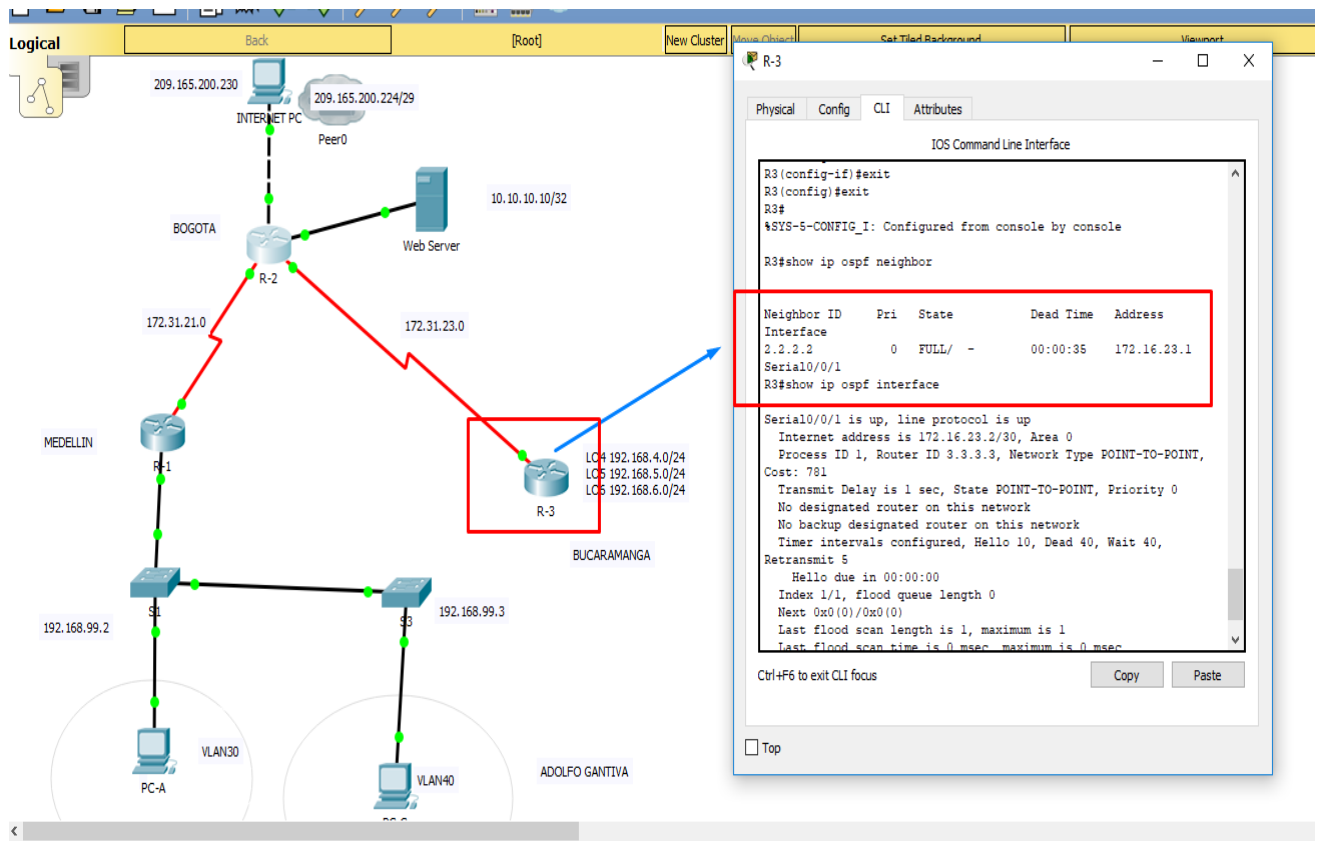
R1



## R2




## R3



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

R1

 R-1

PhysicalConfigCLIAttributes

IOS Command Line Interface

```
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 2.2.2.2
  Suppress hello for 0 neighbor(s)
R1#show ip ospf neighbor

Neighbor ID      Pri   State           Dead Time   Address        Interface
2.2.2.2          0    FULL/  -        00:00:35    172.16.12.2    Serial0/0/0
R1#show ip ospf interface

Serial0/0/0 is up, line protocol is up
Internet address is 172.16.12.1/30, Area 0
Process ID 1, Router ID 1.1.1.1, Network Type POINT-TO-POINT, Cost: 7500
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 00:00:01
Index 1/1, flood queue length 0
Next 0x0(0)/0x0(0)|
Last flood scan length is 1, maximum is 1
Last flood scan time is 0 msec, maximum is 0 msec
Neighbor Count is 1 , Adjacent neighbor count is 1
  Adjacent with neighbor 2.2.2.2
  Suppress hello for 0 neighbor(s)
R1#
```

Ctrl+F6 to exit CLI focus

CopyPaste

☐ Top

R2

The screenshot shows the CLI of router R2. The 'CLI' tab is selected. The command 'show ip ospf interface' is entered, and the output is displayed. The output shows the configuration for Serial0/0/0 and Serial0/0/1. The 'Cost' for Serial0/0/0 is 781, and the 'Cost' for Serial0/0/1 is 7500. The output is highlighted with a green box.

```
R2#show ip ospf interface
Serial0/0/0 is up, line protocol is up
Internet address is 172.16.12.2/30, Area 0
Process ID 1, Router ID 2.2.2.2, Network Type POINT-TO-POINT, Cost: 781
Transmit Delay is 1 sec, State POINT-TO-POINT, Priority 0
No designated router on this network
No backup designated router on this network
Timer intervals configured, Hello 10, Dead 40, Wait 40, Retransmit 5
Hello due in 00:00:06
Index 1/1, flood queue length 0
Next 0x0(0)/0x0(0)
Last flood scan length is 1, maximum is 1
Last flood scan time is 0 msec, maximum is 0 msec
Neighbor Count is 1, Adjacent neighbor count is 1
Adjacent with neighbor 1.1.1.1
Suppress hello for 0 neighbor(s)
Serial0/0/1 is up, line protocol is up
Internet address is 172.16.23.1/30, Area 0
Process ID 1, Router ID 2.2.2.2, Network Type POINT-TO-POINT, Cost: 7500
Transmit Delay is 1 sec, State POINT-TO-POINT, Priority 0
No designated router on this network
No backup designated router on this network

R2#show ip ospf interface
Serial0/0/0 is up, line protocol is up
Internet address is 172.16.12.2/30, Area 0
```

Ctrl+F6 to exit CLI focus

Copy Paste

Top

R3

The screenshot shows the CLI of router R3. The 'CLI' tab is selected. The command 'show ip ospf neighbor' is entered, and the output is displayed. The output shows the neighbor 2.2.2.2 in the FULL state. The command 'show ip ospf interface' is also entered, and the output is displayed. The output shows the configuration for Serial0/0/1. The 'Cost' for Serial0/0/1 is 781. The output is highlighted with a green box.

```
R3#
R3#show ip ospf neighbor
Neighbor ID      Pri   State           Dead Time   Address
Interface
2.2.2.2          0    FULL/-          00:00:37    172.16.23.1
Serial0/0/1

R3#show ip ospf interface
Serial0/0/1 is up, line protocol is up
Internet address is 172.16.23.2/30, Area 0
Process ID 1, Router ID 3.3.3.3, Network Type POINT-TO-POINT,
Cost: 781
Transmit Delay is 1 sec, State POINT-TO-POINT, Priority 0
No designated router on this network
No backup designated router on this network
Timer intervals configured, Hello 10, Dead 40, Wait 40,
Retransmit 5
Hello due in 00:00:00
Index 1/1, flood queue length 0
Next 0x0(0)/0x0(0)
Last flood scan length is 1, maximum is 1
Last flood scan time is 0 msec, maximum is 0 msec
Neighbor Count is 1, Adjacent neighbor count is 1
Adjacent with neighbor 2.2.2.2
Suppress hello for 0 neighbor(s)
R3#
```

Ctrl+F6 to exit CLI focus

Copy Paste

Top



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

Cisco Packet Tracer - G:\PRUEBA DE HABILIDADES CCNA final.pkt

R-1

Physical Config CLI Attributes

IOS Command Line Interface

Neighbor Count is 1, Adjacent neighbor count is 1  
Adjacent with neighbor 2.2.2.2  
Suppress hello for 0 neighbor(s)  
R1#  
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:  
172.16.12.0 0.0.0.3 area 0  
172.16.31.0 0.0.0.255 area 0  
172.16.33.0 0.0.0.255 area 0  
172.16.99.0 0.0.0.255 area 0  
Passive Interface(s):  
GigabitEthernet0/1.33  
GigabitEthernet0/1.31  
GigabitEthernet0/1.99  
Routing Information Sources:  
Gateway Distance Last Update  
1.1.1.1 110 00:21:28  
2.2.2.2 110 00:15:13  
3.3.3.3 110 00:12:59  
Distance: (default is 110)  
--More--

Ctrl+F6 to exit CLI focus Copy Paste

Top

R-2

Physical Config CLI Attributes

IOS Command Line Interface

Process ID 1, Router ID 2.2.2.2, Network Type POINT-TO-POINT, Cost: 7500  
Transmit Delay is 1 sec, State POINT-TO-POINT, Priority 0  
No designated router on this network  
No backup designated router on this network  
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 2.2.2.2  
Number of areas in this router is 1. 1 normal 0 stub 0 nssa  
Maximum path: 4  
Routing for Networks:  
172.16.12.0 0.0.0.3 area 0  
172.16.23.0 0.0.0.3 area 0  
10.10.10.0 0.0.0.255 area 0  
Passive Interface(s):  
GigabitEthernet0/1  
Routing Information Sources:  
Gateway Distance Last Update  
1.1.1.1 110 00:21:45  
2.2.2.2 110 00:15:30  
3.3.3.3 110 00:13:16  
Distance: (default is 110)  
R2#

Ctrl+F6 to exit CLI focus Copy Paste

Top

R-3

Physical Config CLI Attributes

IOS Command Line Interface

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 2.2.2.2  
Suppress hello for 0 neighbor(s)  
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 3.3.3.3  
Number of areas in this router is 1. 1 normal 0 stub 0 nssa  
Maximum path: 4  
Routing for Networks:  
172.16.23.0 0.0.0.3 area 0  
172.16.23.0 0.0.0.255 area 0  
Passive Interface(s):  
Loopback4  
Loopback5  
Loopback6  
Routing Information Sources:  
Gateway Distance Last Update  
1.1.1.1 110 00:21:39  
2.2.2.2 110 00:15:24  
3.3.3.3 110 00:13:10  
Distance: (default is 110)  
R3#

Ctrl+F6 to exit CLI focus Copy Paste

Top

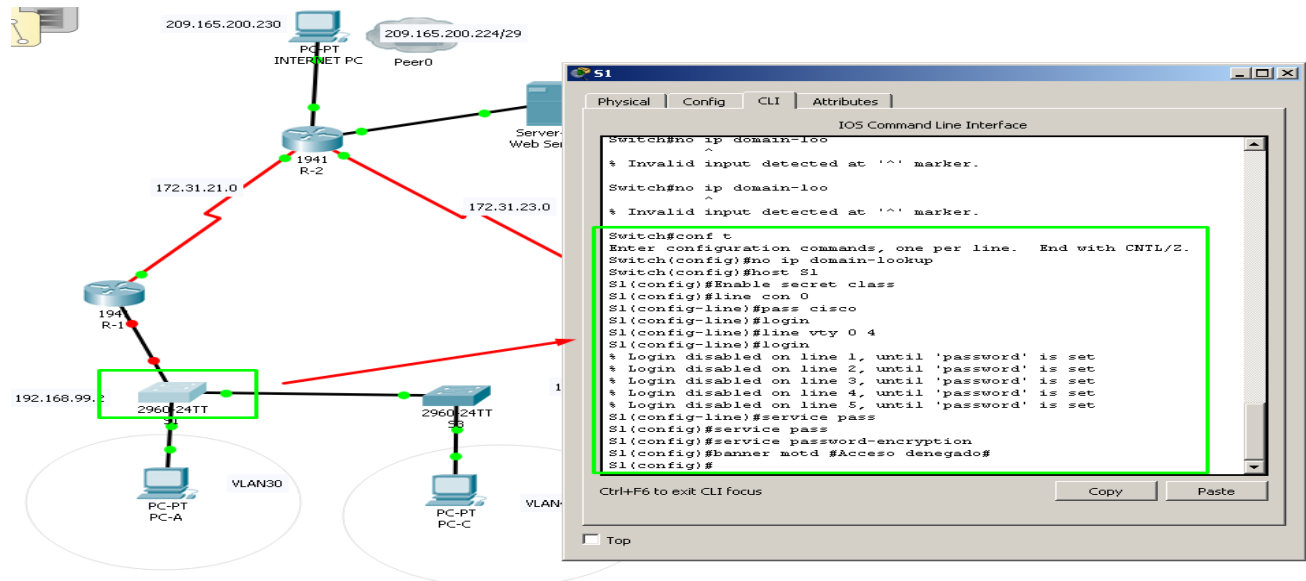
PC-A VLAN30

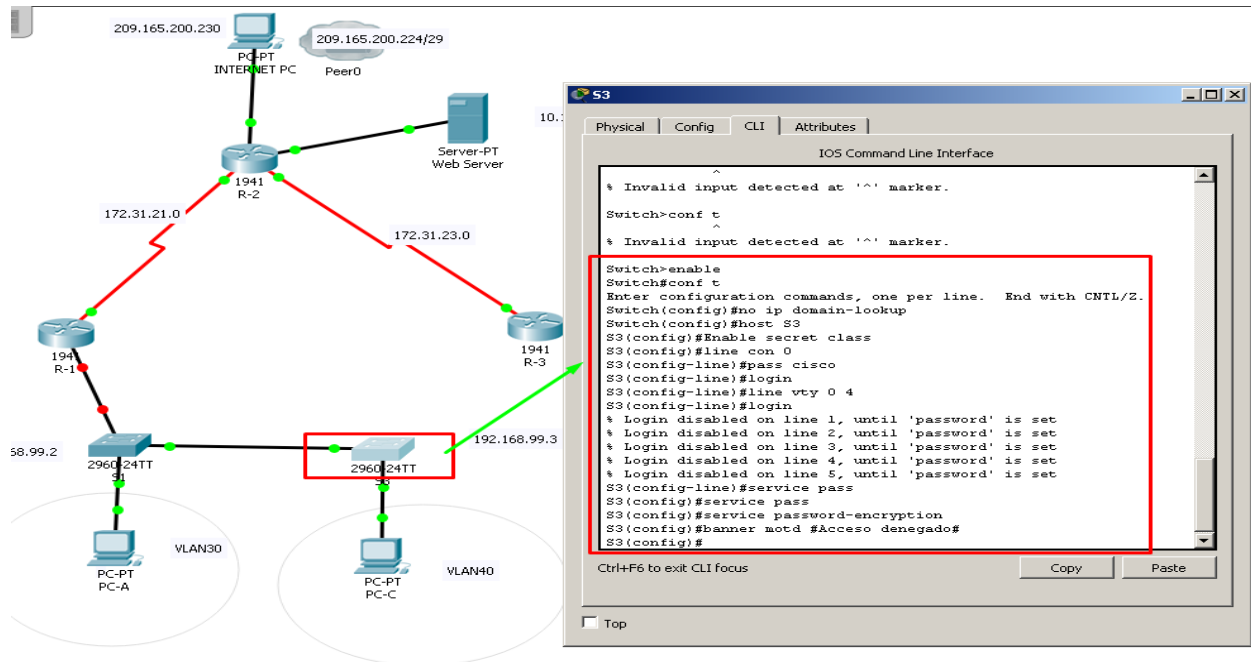
VLAN40

ADOLFO GANTIVA

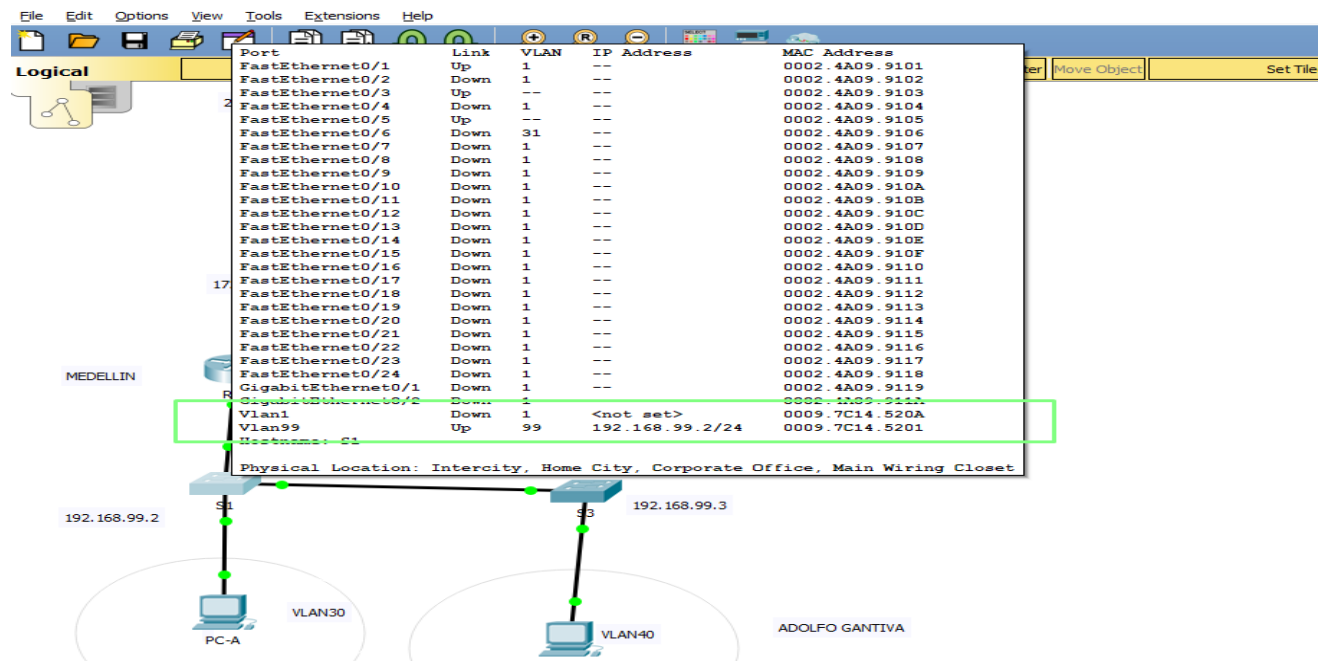
## Configurar VLANs, Puertos troncales, puertos de acceso, encapsulamiento, Inter-VLAN Routing y Seguridad en los Switches acorde a la topología de red establecida.

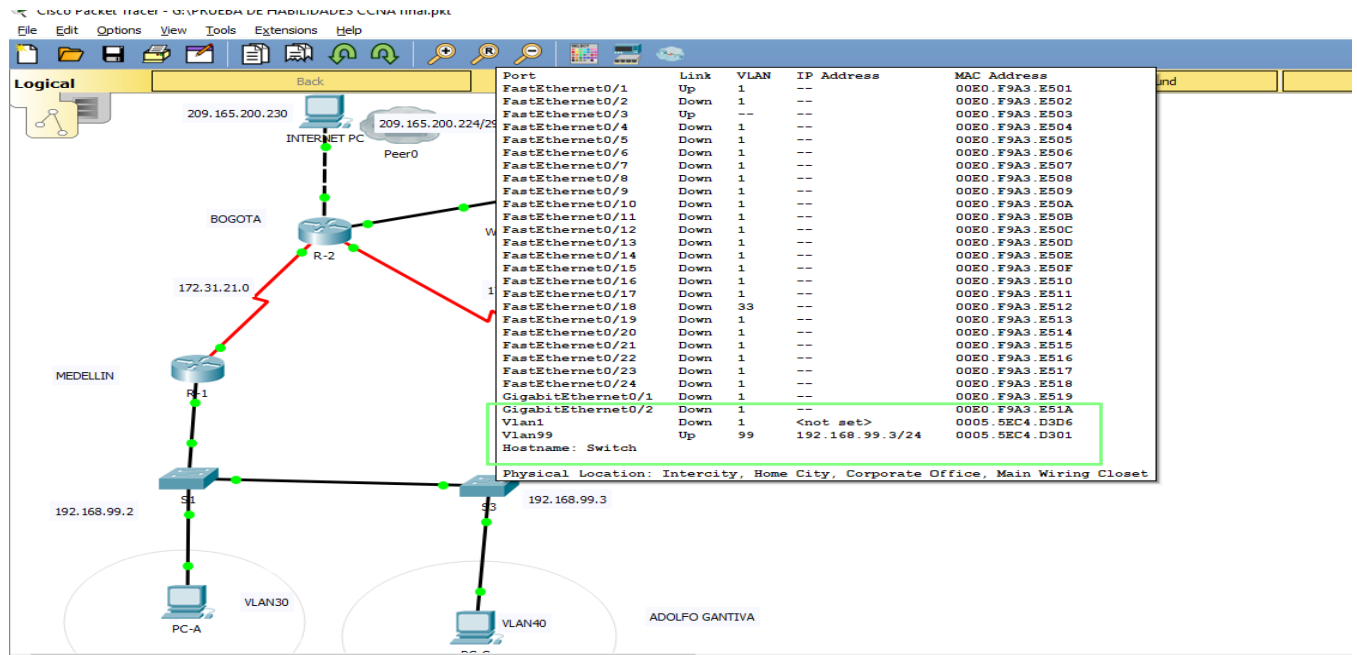
S1





Asignar direcciones IP a los Switches acorde a los lineamientos.





## Implement DHCP and NAT for IPv4

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

Reservar las primeras 30 direcciones IP de las VLAN 30 y 40 para configuraciones estáticas.

```

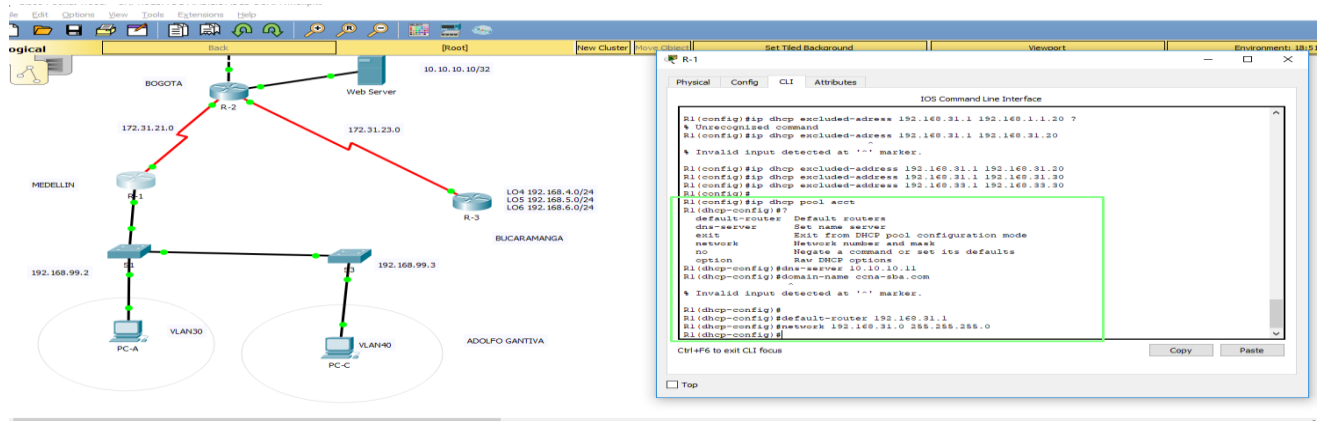
R1>en
Password:
R1#en
R1#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R1(config)#ip dhcp excluded-address 192.168.31.1 192.168.1.1.20
% Invalid input detected at '^' marker.

R1(config)#ip dhcp excluded-address 192.168.31.1 192.168.1.1.20 ?
% Unrecognized command
R1(config)#ip dhcp excluded-address 192.168.31.1 192.168.31.20
% Invalid input detected at '^' marker.

R1(config)#ip dhcp excluded-address 192.168.31.1 192.168.31.20
R1(config)#ip dhcp excluded-address 192.168.31.1 192.168.31.30
R1(config)#ip dhcp excluded-address 192.168.33.1 192.168.33.30
R1(config)#
  
```

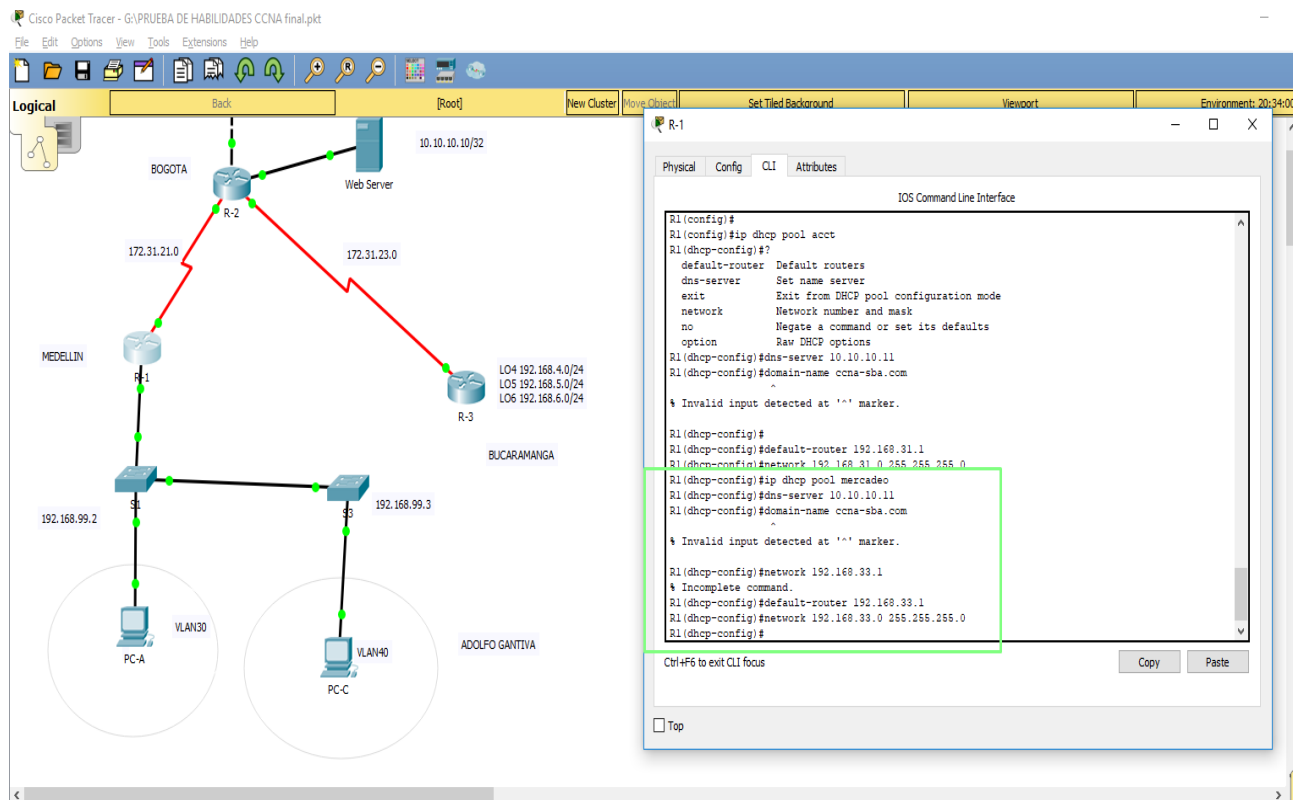
Configurar DHCP pool para VLAN 30

Name: ADMINISTRACION  
DNS-Server: 10.10.10.11  
Domain-Name: ccna-unad.com  
Establecer default gateway.

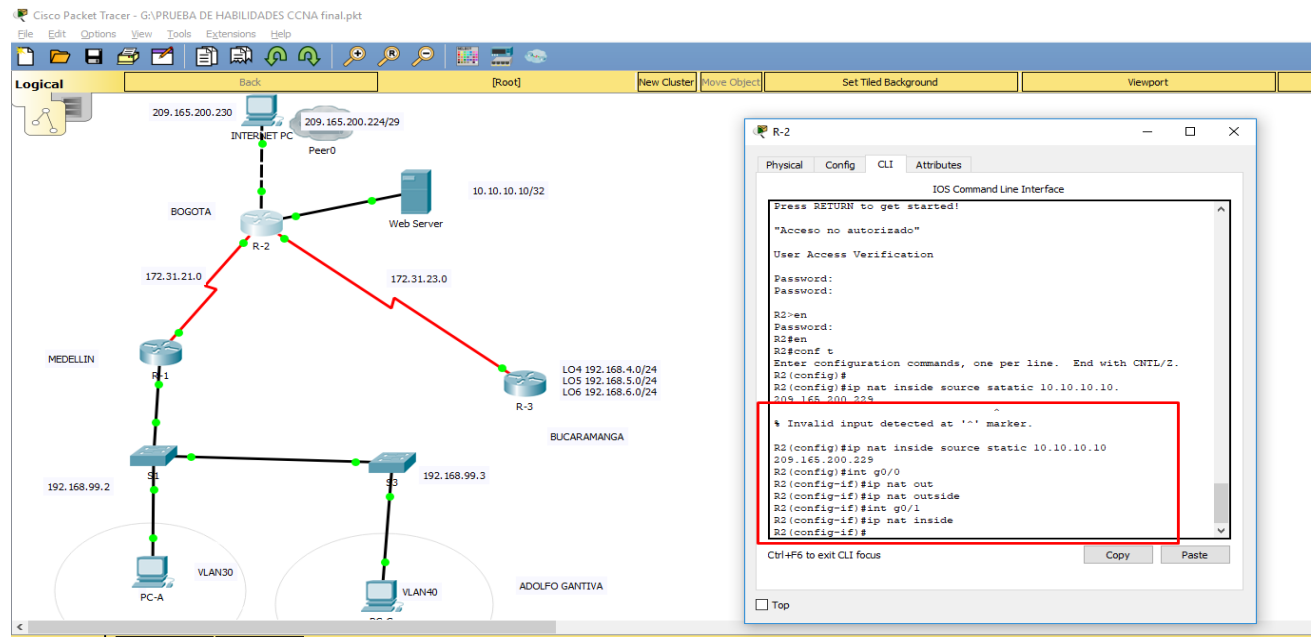


Configurar DHCP pool para VLAN 40

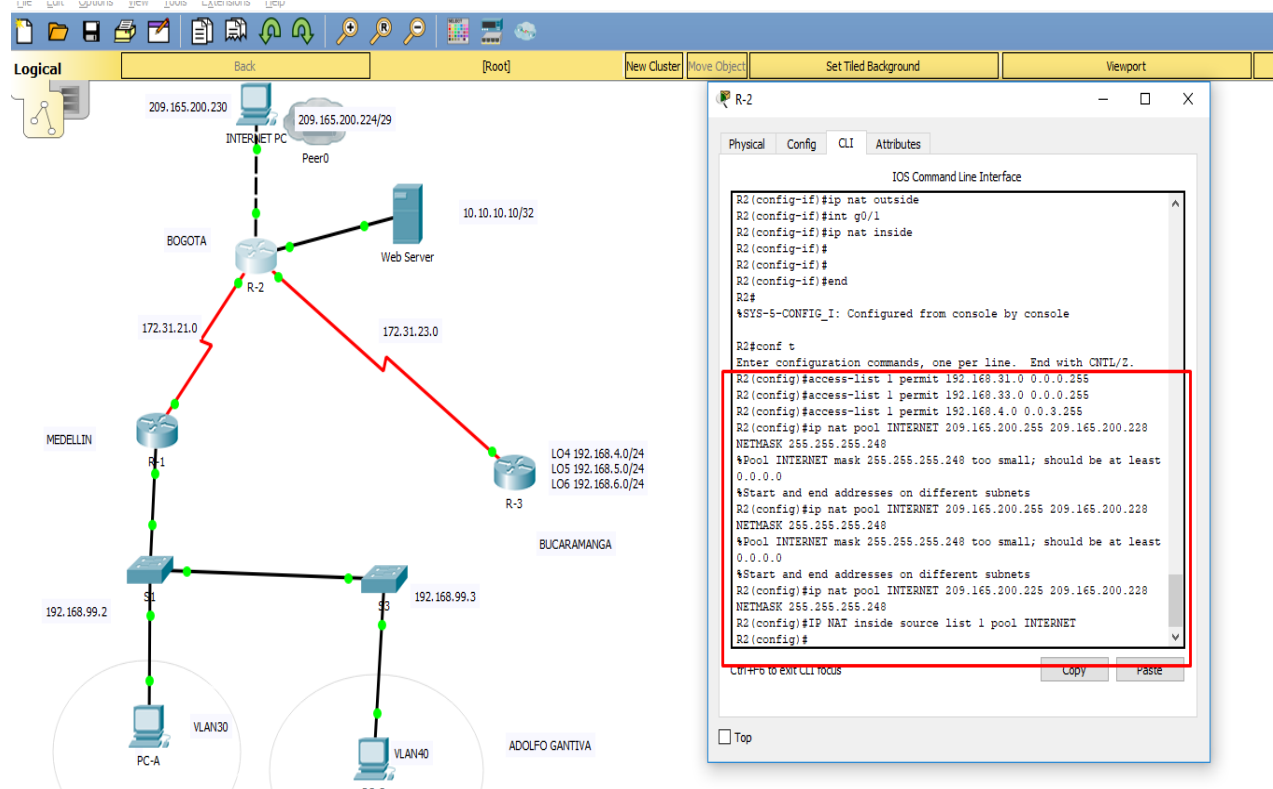
Name: MERCADEO  
DNS-Server: 10.10.10.11  
Domain-Name: ccna-unad.com  
Establecer default gateway.



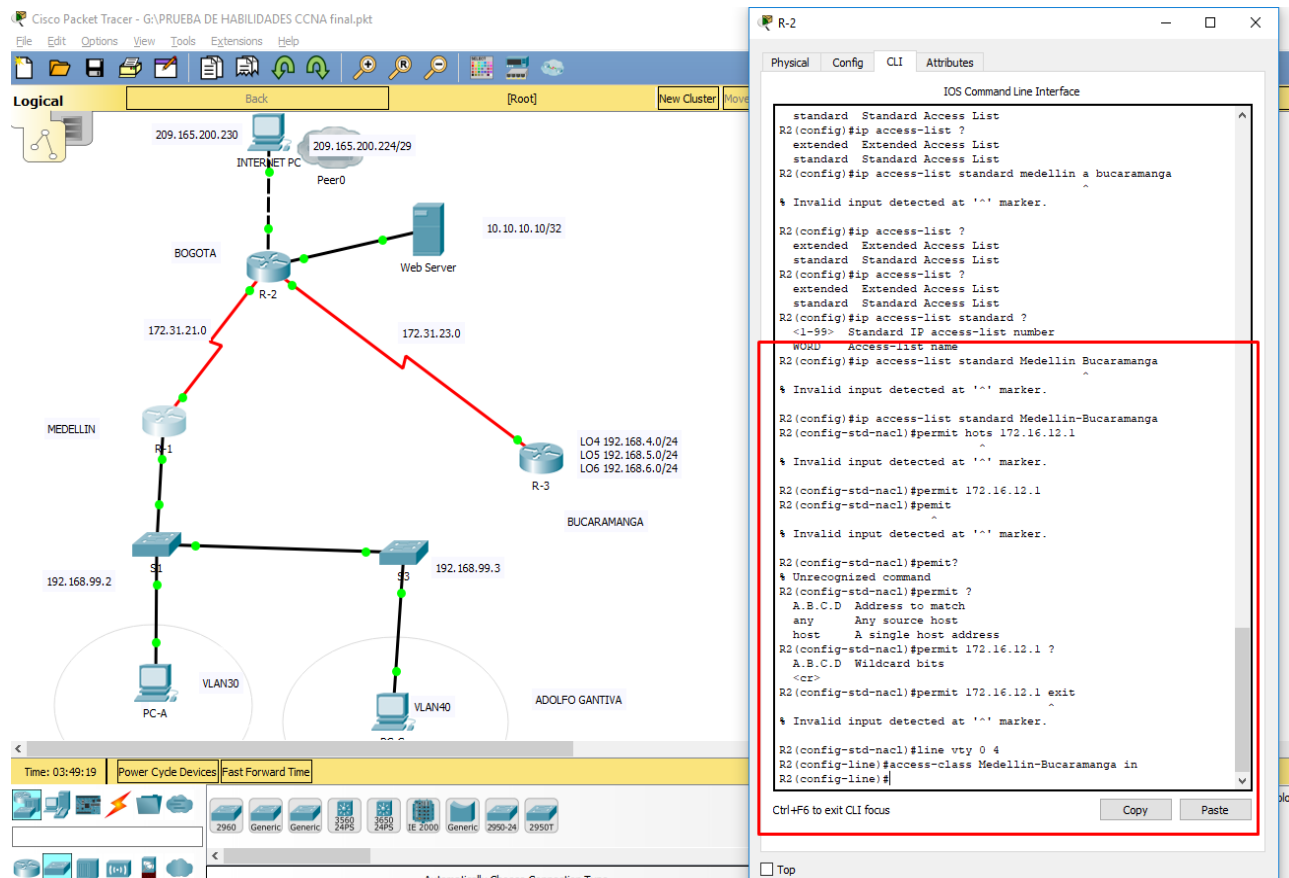
## Configurar NAT en R2 para permitir que los hosts puedan salir a internet



## 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.



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.



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