



**Aplicación de conceptos básicos y avanzados en la configuración de
Dispositivos de Red.**

JOHN EDUARDO GOYENECHE AVELLA

CÓDIGO: 80185097

GRUPO: 203092_31

Presentado A:

EFRAIN ALEJANDRO PEREZ

UNIVERSIDAD NACIONAL ABIERTA Y A DISTANCIA UNAD

CEAD JOSE ACEVEDO & GOMEZ

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INTRODUCCIÓN

Evaluación –Prueba de habilidades prácticas CCNA

Descripción general de la prueba de habilidades

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

Para esta actividad, el estudiante dispone de cerca de dos semanas para realizar las tareas asignadas en cada uno de los 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.

La prueba de habilidades podrá ser desarrollada en el **Laboratorio SmartLab** o mediante el uso de **herramientas de Simulación (Puede ser Packet Tracer o GNS3)**. El estudiante es libre de escoger bajo qué mediación tecnológica resolverá cada escenario. No obstante, es importante mencionar que **aquellos estudiantes que hagan uso del laboratorio SmartLab se les considerará un estímulo adicional a la hora de evaluar el informe, teniendo en cuenta que su trabajo fue realizado sobre equipos reales y con ello será la oportunidad poner a prueba las habilidades y competencias adquiridas durante el diplomado**. Adicionalmente, es importante considerar, que esta actividad puede ser realizada en varias sesiones sobre este entorno, teniendo en cuenta que disponen de casi 15 días para su desarrollo.

Finalmente, el informe deberá cumplir con las normas ICONTEC para la presentación de trabajos escritos, teniendo en cuenta que este documento deberá ser entregado al final del curso en el Repositorio Institucional, acorde con los lineamientos institucionales para grado. Proceso que les será socializado al finalizar el curso.

Es muy importante mencionar que esta actividad es de carácter **INDIVIDUAL**. El informe deberá estar acompañado de las respectivas evidencias de configuración de los dispositivos, las cuales generarán veracidad al trabajo realizado. **El informe deberá ser entregado en el espacio creado para tal fin en el Campus Virtual de la UNAD.**



OBJETIVOS

El siguiente trabajo práctico tiene como fin aplicar todos los conocimientos adquiridos, durante el semestre, respecto al **DIPLOMADO DE CISCO CCNA**, cursado y aplicado.

Todos los temas vistos se unen en la siguiente actividad realizada en Cisco Packet Tracer, en el actual consolidado observaremos paso a paso como se realizó la configuración de los dispositivos de red y se efectuaron las respectivas pruebas de interconexión.

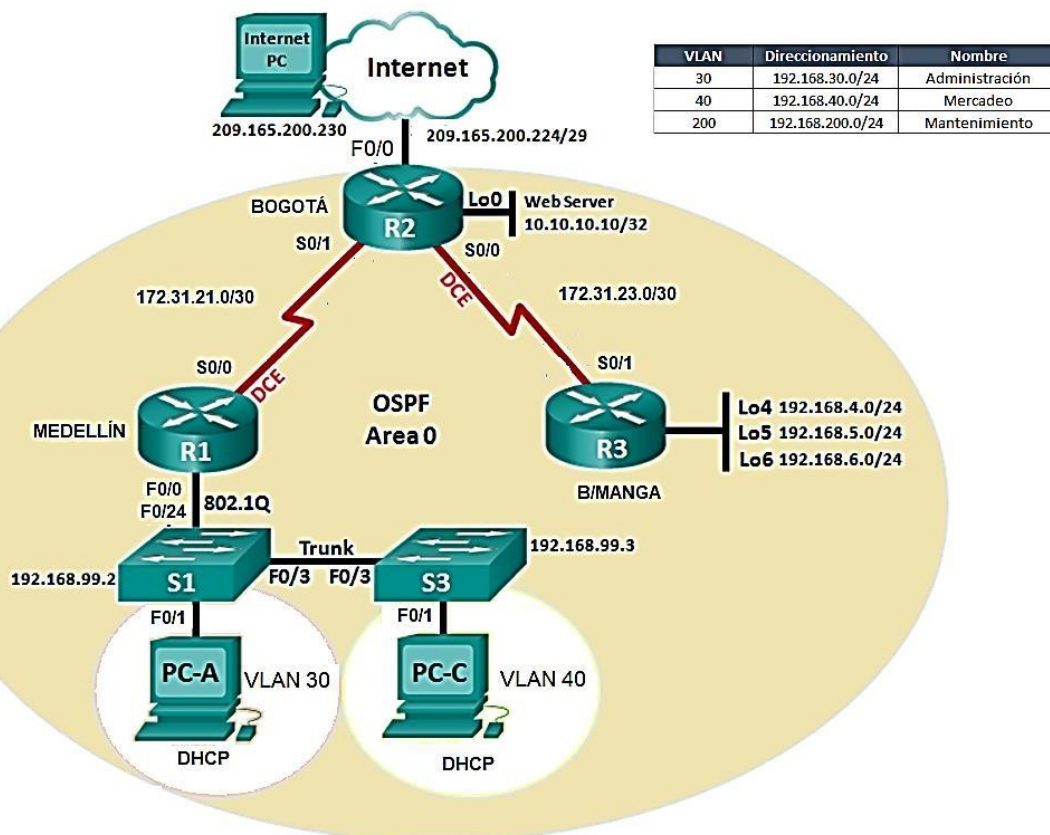
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Descripción del escenario propuesto para la prueba de habilidades

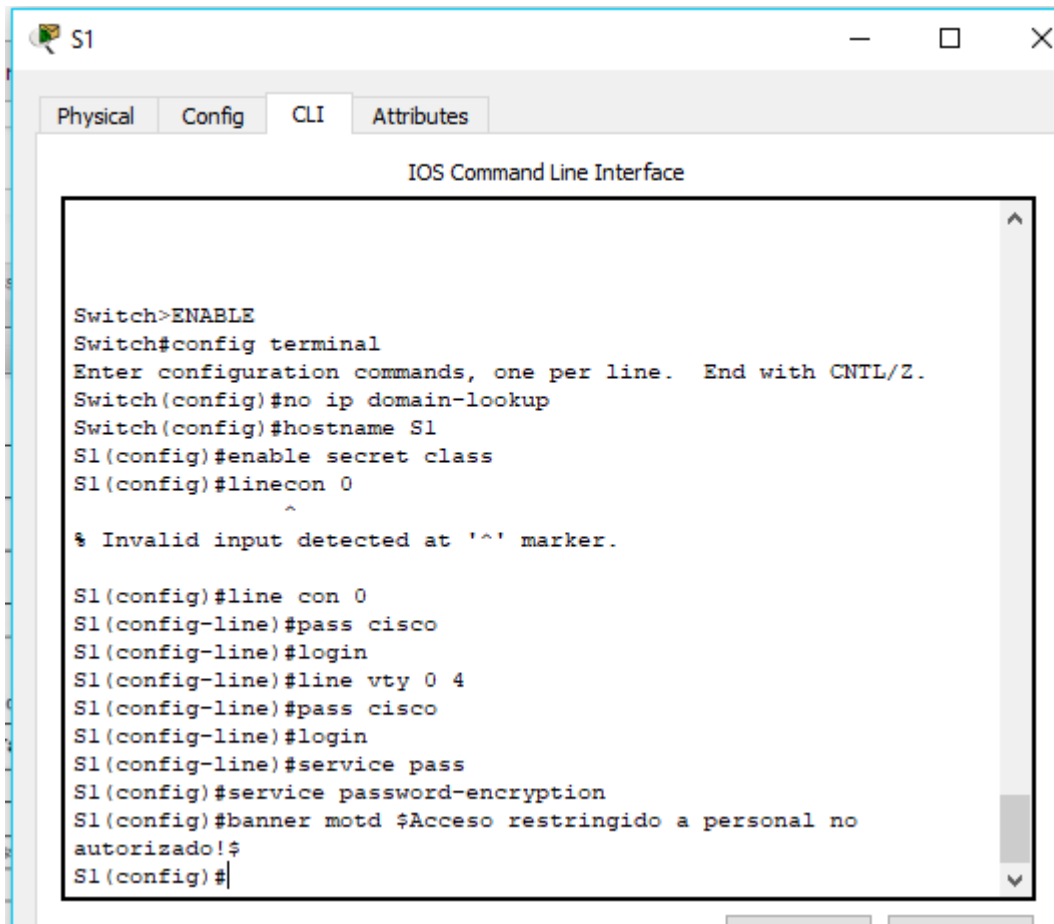
Escenario: Una empresa de Tecnología posee tres sucursales distribuidas en las ciudades de Bogotá, Medellín y Bucaramanga, en donde el estudiante será el administrador de la red, el cual deberá configurar e interconectar entre sí cada uno de los dispositivos que forman parte del escenario, acorde con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

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

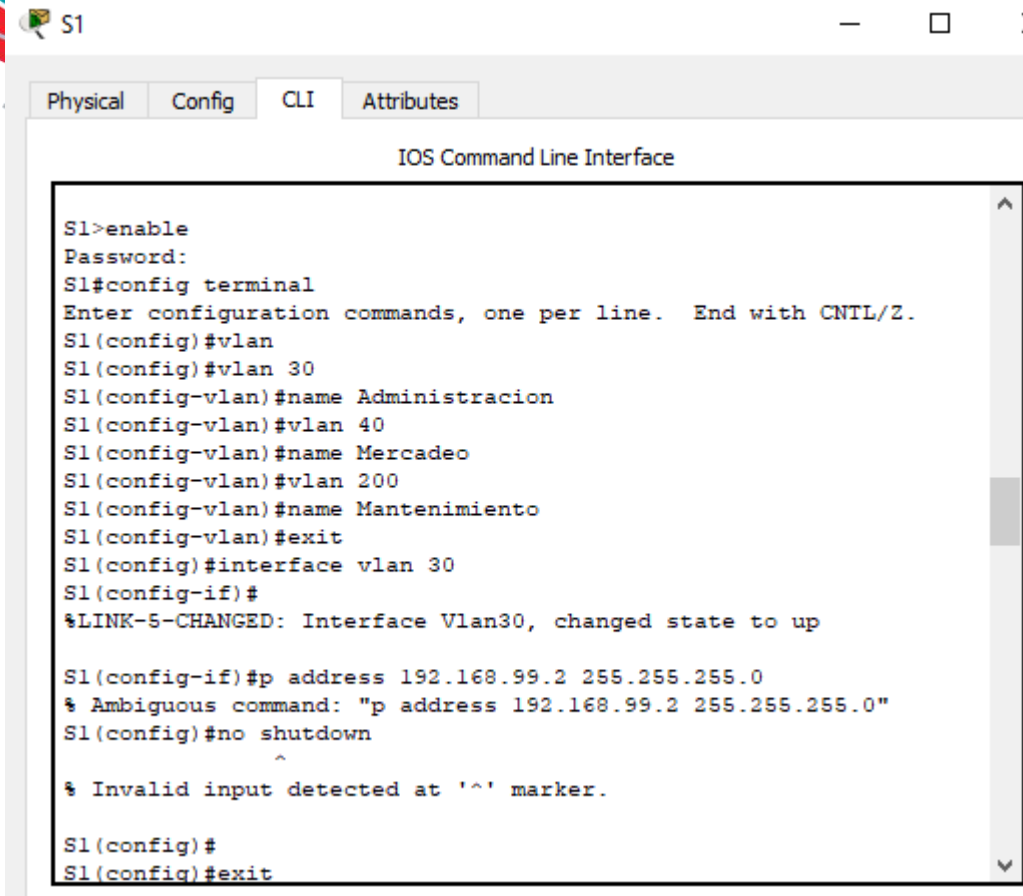
S1



```

Switch>ENABLE
Switch#config terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Switch(config)#no ip domain-lookup
Switch(config)#hostname S1
S1(config)#enable secret class
S1(config)#linecon 0
      ^
% Invalid input detected at '^' marker.

S1(config)#line con 0
S1(config-line)#pass cisco
S1(config-line)#login
S1(config-line)#line vty 0 4
S1(config-line)#pass cisco
S1(config-line)#login
S1(config-line)#service pass
S1(config)#service password-encryption
S1(config)#banner motd $Acceso restringido a personal no
autorizado!$
S1(config)#
  
```



```
S1
Physical Config CLI Attributes
IOS Command Line Interface

S1>enable
Password:
S1#config terminal
Enter configuration commands, one per line. End with CNTL/Z.
S1(config)#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
S1(config-vlan)#exit
S1(config)#interface vlan 30
S1(config-if)#
%LINK-5-CHANGED: Interface Vlan30, changed state to up

S1(config-if)#ip address 192.168.99.2 255.255.255.0
% Ambiguous command: "ip address 192.168.99.2 255.255.255.0"
S1(config)#no shutdown
      ^
% Invalid input detected at '^' marker.

S1(config)#
S1(config)#exit
```

S1

Physical Config CLI Attributes

IOS Command Line Interface

```

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

S1#config terminal
Enter configuration commands, one per line. End with CNTL/Z.
S1(config)#ip default-gateway 192.168.99.1
S1(config)#interface f0/3
S1(config-if)#switchport mode trunk

S1(config-if)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/3,
changed state to down

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/3,
changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan30, changed
state to up

S1(config-if)#switchport trunk native vlan 1
S1(config-if)#interface f0/5
S1(config-if)#switchport mode trunk
S1(config-if)#switchport trunk native vlan 1
S1(config-if)#interface range fa0/1-2,fa0/4, fa0/6-24,g1/1-2
interface range not validated - command rejected
S1(config-if)#switchport mode access
  
```

Ctrl+F6 to exit CLI focus

Copy Paste

S1

Physical Config CLI Attributes

IOS Command Line Interface

```

% Invalid input detected at '^' marker.

S1(config)#interface fa0/6
S1(config-if)#interface range fa0/6
S1(config-if-range)#switchport mode access
S1(config-if-range)#switchport access vlan 30
S1(config-if-range)#exit
S1(config)#interface fa0/6
S1(config-if)#switchport mode access
S1(config-if)#switchport access vlan 30
S1(config-if)#int range fa0/7-24
S1(config-if-range)#shutdown

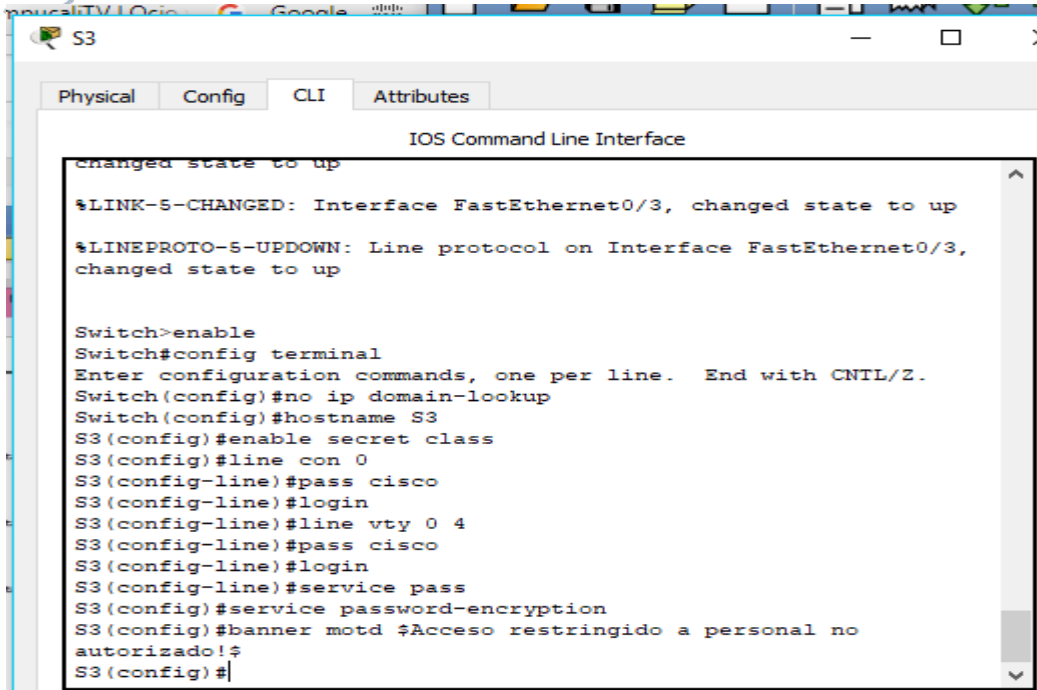
%LINK-5-CHANGED: Interface FastEthernet0/7, changed state to
administratively down

%LINK-5-CHANGED: Interface FastEthernet0/8, changed state to
administratively down

%LINK-5-CHANGED: Interface FastEthernet0/9, changed state to
administratively down

%LINK-5-CHANGED: Interface FastEthernet0/10, changed state to
administratively down
  
```

S3



```
changed state to up
%LINK-5-CHANGED: Interface FastEthernet0/3, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/3,
changed state to up

Switch>enable
Switch#config terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Switch(config)#no ip domain-lookup
Switch(config)#hostname S3
S3(config)#enable secret class
S3(config)#line con 0
S3(config-line)#pass cisco
S3(config-line)#login
S3(config-line)#line vty 0 4
S3(config-line)#pass cisco
S3(config-line)#login
S3(config-line)#service pass
S3(config)#service password-encryption
S3(config)#banner motd $Acceso restringido a personal no
autorizado!$
S3(config)#
```

```
S3
Physical Config CLI Attributes
IOS Command Line Interface
Password:
S3>enable
Password:
S3#config terminal
Enter configuration commands, one per line. End with CNTL/Z.
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)#interface vlan 200
S3(config-if)#
%LINK-5-CHANGED: Interface Vlan200, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan200, changed
state to up

S3(config-if)#ip address 192.168.200.3 255.255.255.0
S3(config-if)#no shutdown
S3(config-if)#exit
S3(config)#ip default-gateway 192.168.200.1
S3(config)#interface fa0/3
S3(config-if)#switchport mode trunk

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

S3

Physical Config CLI Attributes

IOS Command Line Interface

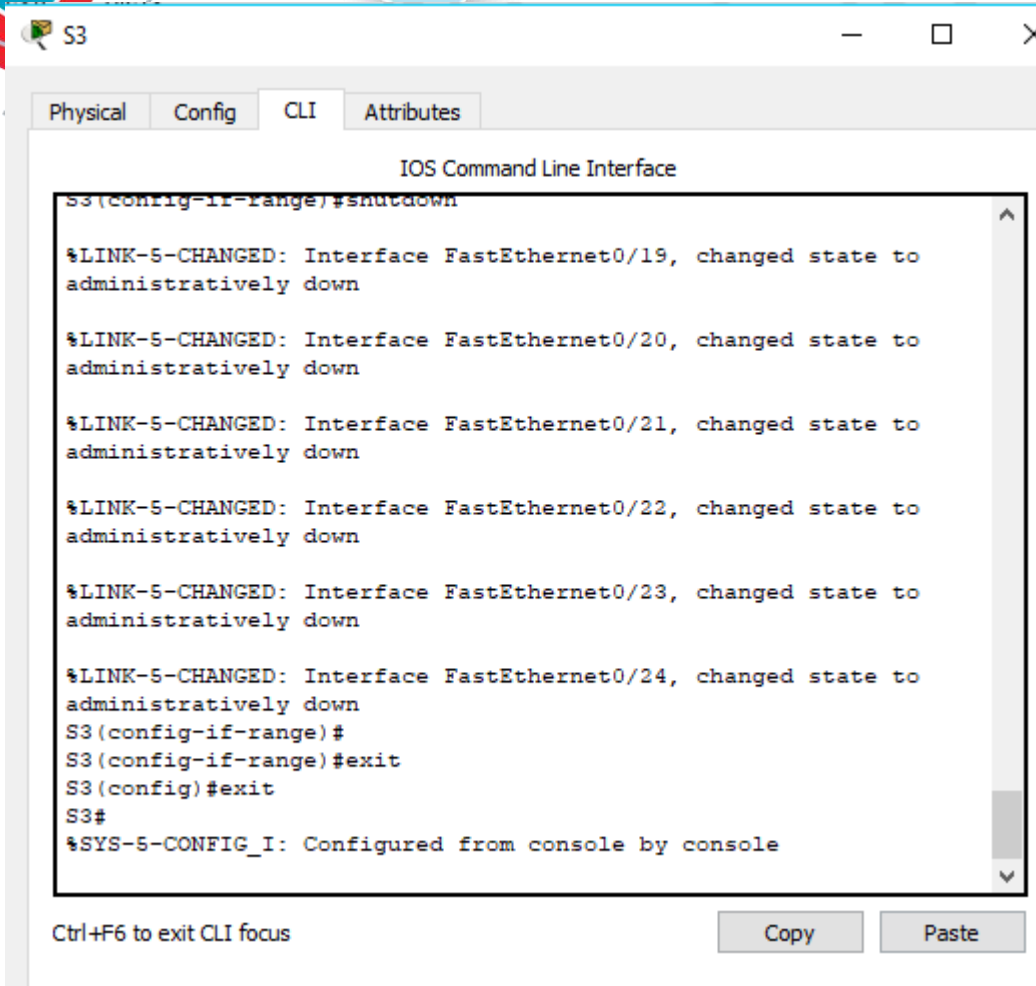
```

S3(config-if)#ip address 192.168.200.3 255.255.255.0
S3(config-if)#no shutdown
S3(config-if)#exit
S3(config)#ip default-gateway 192.168.200.1
S3(config)#interface fa0/3
S3(config-if)#switchport mode trunk
S3(config-if)#switchport trunk native vlan 1
S3(config-if)#interface range fa0/1-2
S3(config-if-range)#interface range fa0/4-24
S3(config-if-range)#interface range g1/1-2
interface range not validated - command rejected
S3(config)#interface range fa0/4-24
S3(config-if-range)#exit
S3(config)#switchport mode access
^
% Invalid input detected at '^' marker.

S3(config)#interface range fa0/4-24
S3(config-if-range)#switchport mode access
S3(config-if-range)#int fa0/18
S3(config-if)#switchport mode access
S3(config-if)#switchport mode acces
S3(config-if)#switchport access vlan 40
S3(config-if)#interface range fa0/19-24
  
```

Ctrl+F6 to exit CLI focus

Copy Paste



R1

```

Router>enable
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#hostname R1
R1(config)#EXIT
R1#
%SYS-5-CONFIG_I: Configured from console by console

R1#
R1#CONFIGURE TERMINAL
Enter configuration commands, one per line. End with CNTL/Z.
R1(config)#

```

Ctrl+F6 to exit CLI focus

Copy

Paste

Estilos Edición

R1

Physical Config CLI Attributes

IOS Command Line Interface

```

Router#
Router#
Router#config terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#no ip domain-lookup
Router(config)#hostname R1
R1(config)#enable secret class
R1(config)#line console 0
R1(config-line)#pass cisco
R1(config-line)#login
R1(config-line)#line vty 0 4
R1(config-line)#pass cisco
R1(config-line)#login
R1(config-line)#exit
R1(config)#service pass
R1(config)#service password-encryption
R1(config)#banner motd $Acceso restringido a personal no
autorizado$
R1(config)#interface serial 0/0/0
R1(config-if)#description connection to R2
R1(config-if)#IP ADDRESS 172.16.21.1
% Incomplete command.
R1(config-if)#IP ADDRESS 172.16.21.1 255.255.255.252
R1(config-if)#clock rate 128000
R1(config-if)#no shutdown

```

R2

```
Router>enable
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#hostname R2
R2(config)#EXIT
R2#
%SYS-5-CONFIG_I: Configured from console by console

R2#
R2#
```

Ctrl+F6 to exit CLI focus

Copy

Paste

R2
— □ ×

Physical

Config

CLI

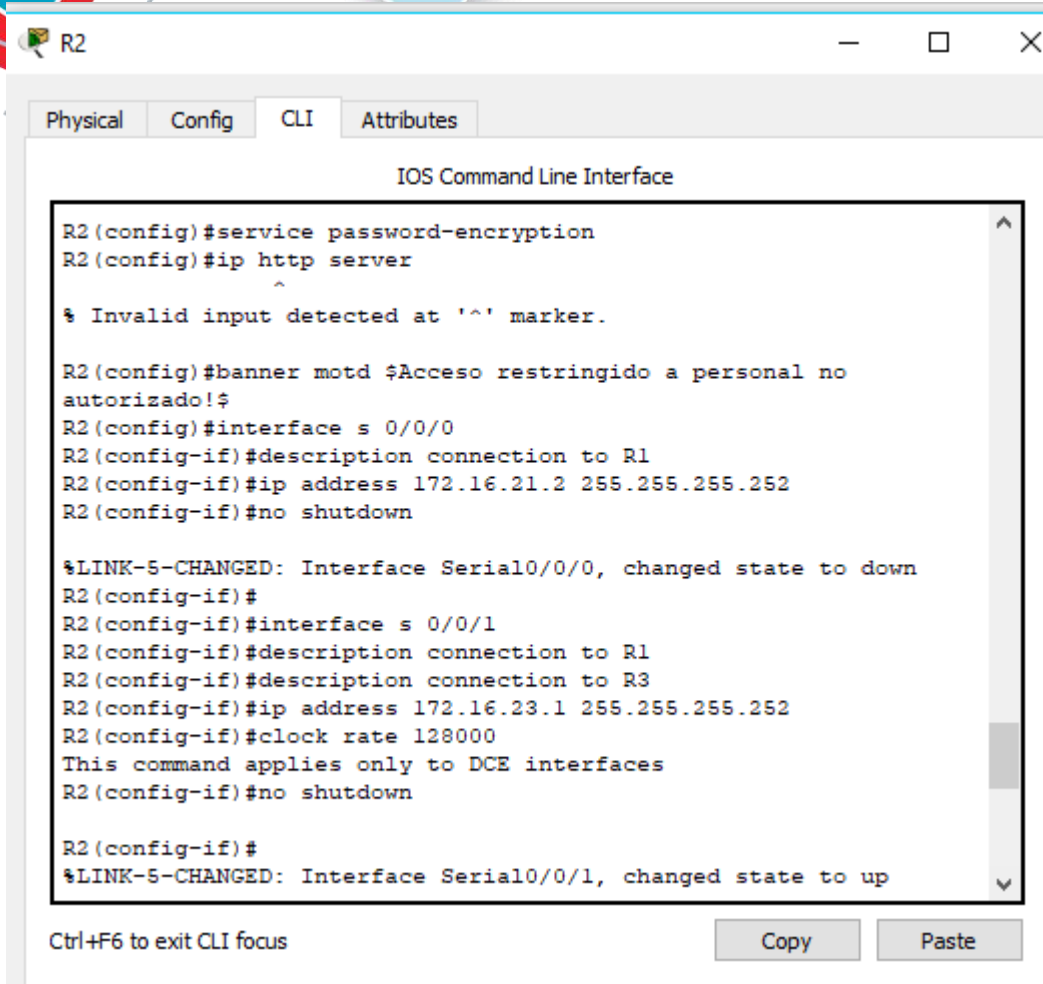
Attributes

IOS Command Line Interface

```
Press RETURN to get started!

Router>enable
Router#config terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#no ip domain-lookup
Router(config)#hostname R2
R2(config)#enable secret class
R2(config)#line con 0
R2(config-line)#pass cisco
R2(config-line)#login
R2(config-line)#line vty 0 4
R2(config-line)#pass cisco
R2(config-line)#login
R2(config-line)#exit
R2(config)#service
% Incomplete command.
R2(config)#service password-encryption
^
% Invalid input detected at '^' marker.

R2(config)#service pass
R2(config)#service password-encryption
```



The screenshot shows a window titled "R2" with tabs for "Physical", "Config", "CLI", and "Attributes". The "CLI" tab is active, displaying the "IOS Command Line Interface". The terminal output shows the following commands and responses:

```

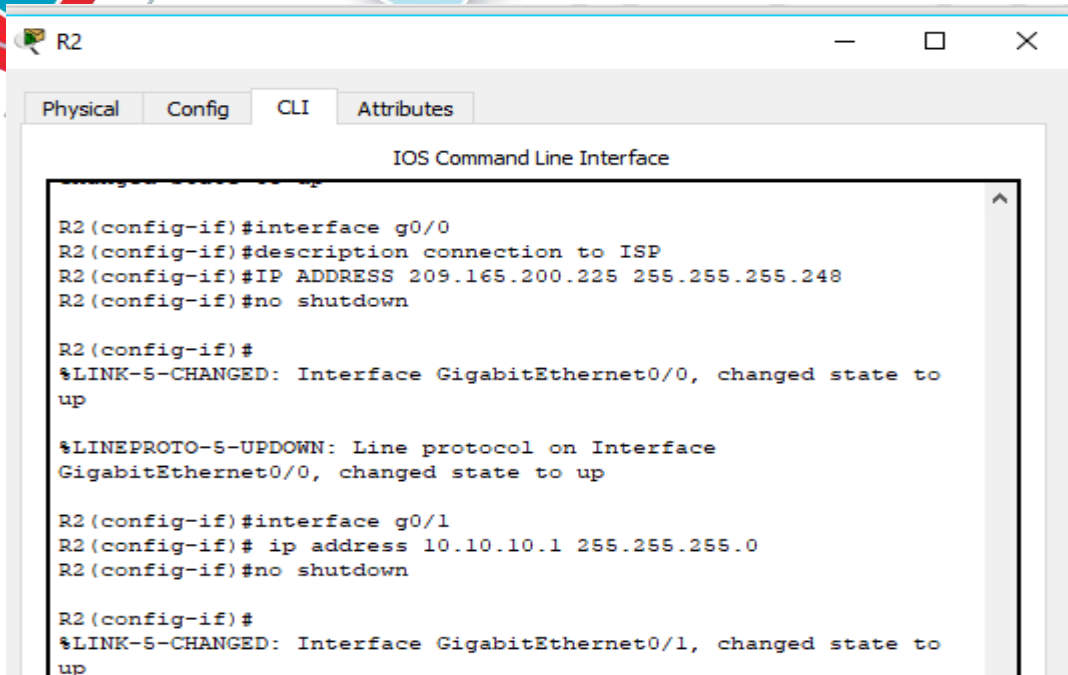
R2(config)#service password-encryption
R2(config)#ip http server
      ^
% Invalid input detected at '^' marker.

R2(config)#banner motd $Acceso restringido a personal no
autorizado!$
R2(config)#interface s 0/0/0
R2(config-if)#description connection to R1
R2(config-if)#ip address 172.16.21.2 255.255.255.252
R2(config-if)#no shutdown

%LINK-5-CHANGED: Interface Serial0/0/0, changed state to down
R2(config-if)#
R2(config-if)#interface s 0/0/1
R2(config-if)#description connection to R1
R2(config-if)#description connection to R3
R2(config-if)#ip address 172.16.23.1 255.255.255.252
R2(config-if)#clock rate 128000
This command applies only to DCE interfaces
R2(config-if)#no shutdown

R2(config-if)#
%LINK-5-CHANGED: Interface Serial0/0/1, changed state to up
  
```

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



A screenshot of a network configuration window titled 'R2'. The window has tabs for 'Physical', 'Config', 'CLI', and 'Attributes', with 'CLI' selected. The main area is titled 'IOS Command Line Interface' and contains the following text:

```

R2(config-if)#interface g0/0
R2(config-if)#description connection to ISP
R2(config-if)#IP ADDRESS 209.165.200.225 255.255.255.248
R2(config-if)#no shutdown

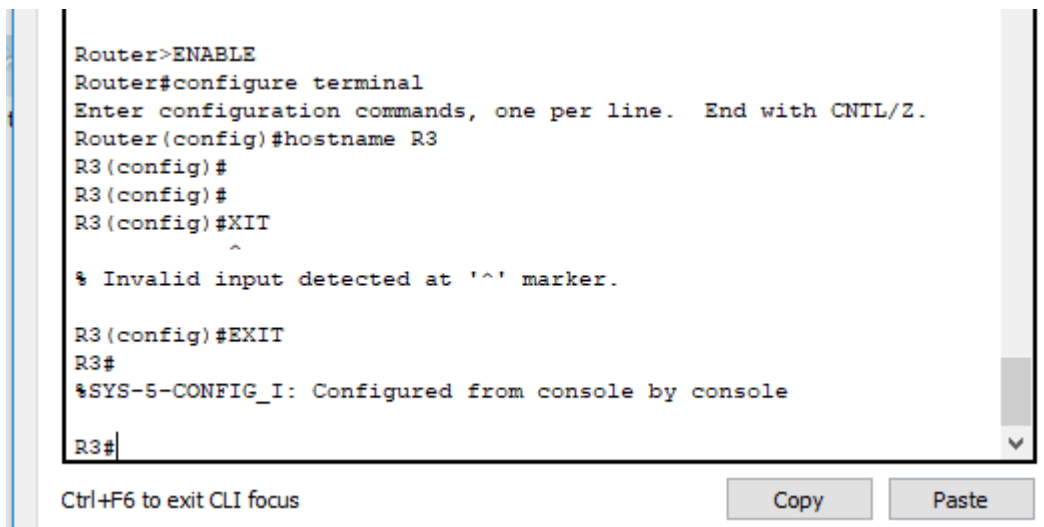
R2(config-if)#
%LINK-5-CHANGED: Interface GigabitEthernet0/0, changed state to
up

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

R2(config-if)#interface g0/1
R2(config-if)# ip address 10.10.10.1 255.255.255.0
R2(config-if)#no shutdown

R2(config-if)#
%LINK-5-CHANGED: Interface GigabitEthernet0/1, changed state to
up
  
```

R3



A screenshot of a network configuration window titled 'R3'. The window contains the following text:

```

Router>ENABLE
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#hostname R3
R3(config)#
R3(config)#
R3(config)#XIT
^
% Invalid input detected at '^' marker.

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

R3#
  
```

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

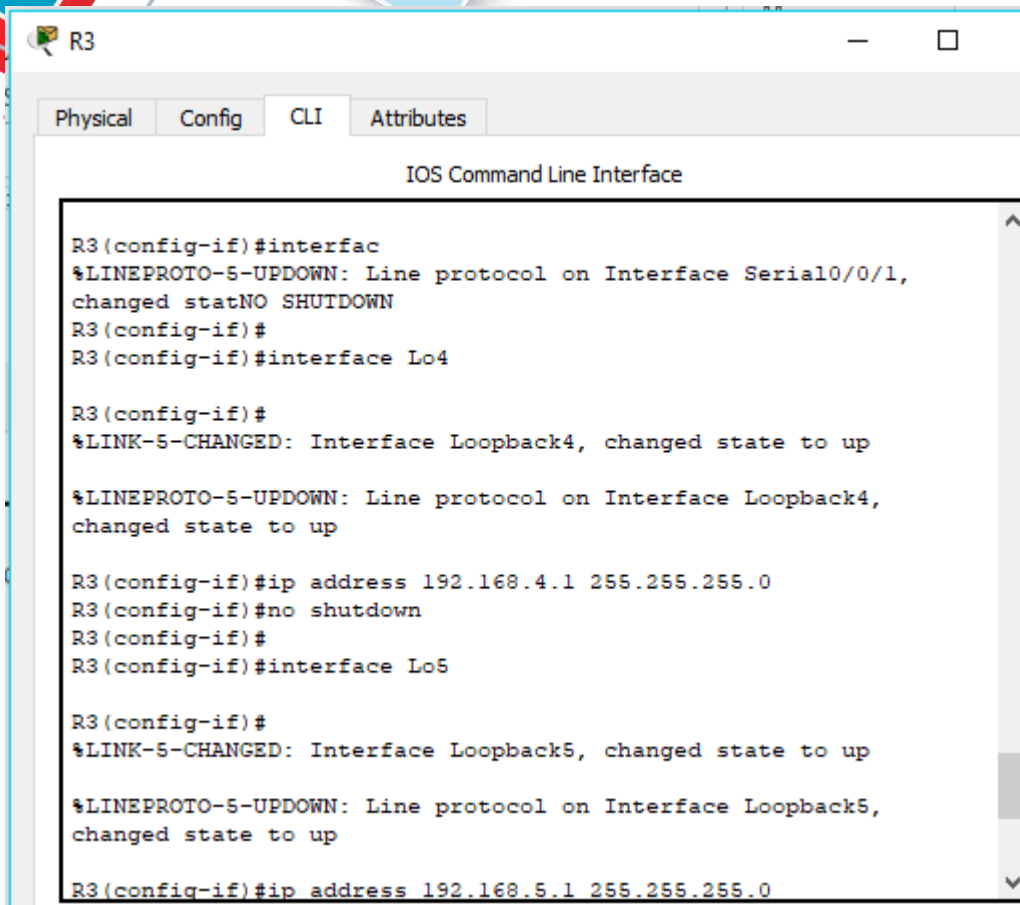
R3

Physical Config CLI Attributes

IOS Command Line Interface

```

Router>enable
Router#config terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#no ip domain-lookup
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
% Incomplete command.
R3(config)#service pass
R3(config)#service password-encryption
R3(config)#banner motd $Acceso restringido a personal no
autorizado!$
R3(config)#interface s0/0/1
R3(config-if)#description connection to R2
R3(config-if)#IP ADDRESS 172.16.23.2 255.255.255.252
R3(config-if)#NO SHUTDOWN
    
```



The screenshot shows a window titled 'R3' with four tabs: 'Physical', 'Config', 'CLI', and 'Attributes'. The 'CLI' tab is active, displaying the 'IOS Command Line Interface'. The terminal output shows the following sequence of commands and responses:

```
R3(config-if)#interfac
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/1,
changed statNO SHUTDOWN
R3(config-if)#
R3(config-if)#interface 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

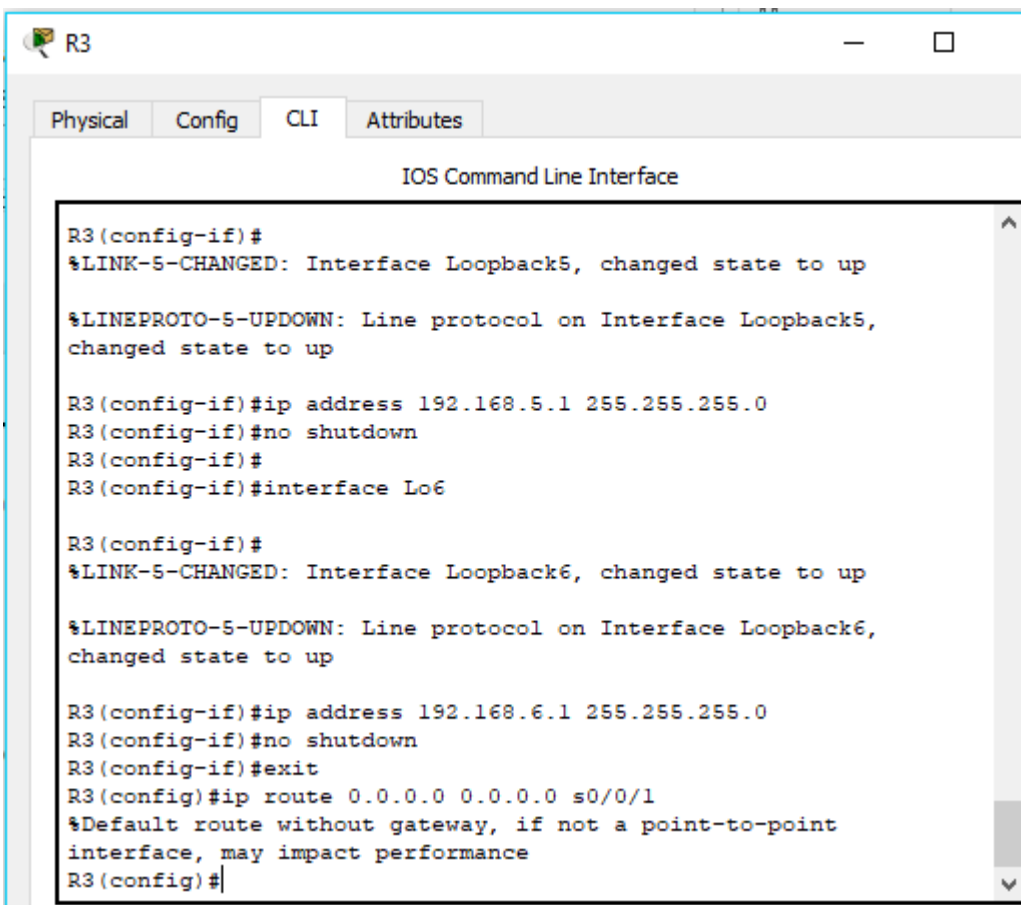
R3(config-if)#ip address 192.168.4.1 255.255.255.0
R3(config-if)#no shutdown
R3(config-if)#
R3(config-if)#interface Lo5

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 192.168.5.1 255.255.255.0
```

Configuration Item or Task	Specification
Router ID R1	1.1.1.1
Router ID R2	2.2.2.2
Router ID R3	3.3.3.3
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



```

R3
Physical Config CLI Attributes
IOS Command Line Interface

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 192.168.5.1 255.255.255.0
R3(config-if)#no shutdown
R3(config-if)#
R3(config-if)#interface Lo6

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

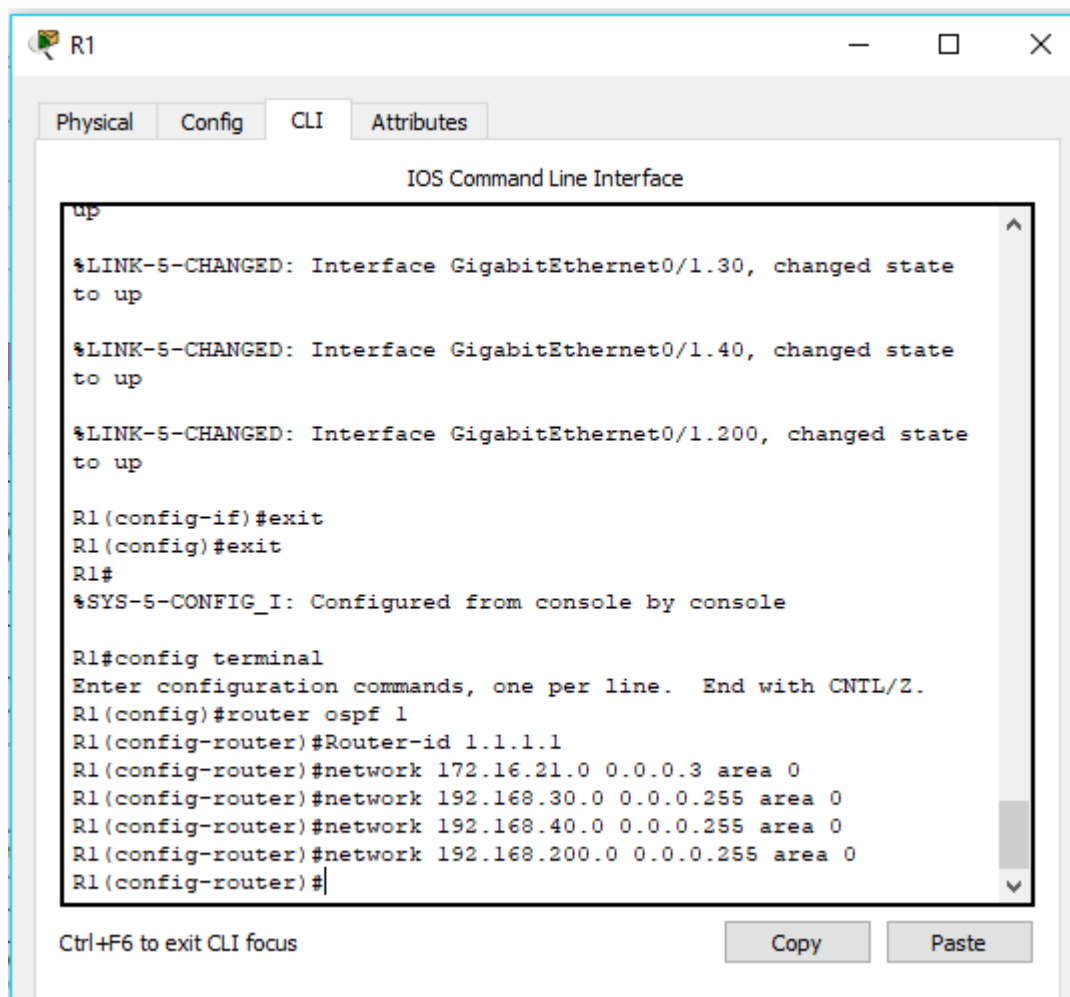
%LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback6,
changed state to up

R3(config-if)#ip address 192.168.6.1 255.255.255.0
R3(config-if)#no shutdown
R3(config-if)#exit
R3(config)#ip route 0.0.0.0 0.0.0.0 s0/0/1
%Default route without gateway, if not a point-to-point
interface, may impact performance
R3(config)#
  
```

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

OSPFv2 área 0

OSPF – R1



```

R1
Physical Config CLI Attributes
IOS Command Line Interface
up
%LINK-5-CHANGED: Interface GigabitEthernet0/1.30, changed state
to up
%LINK-5-CHANGED: Interface GigabitEthernet0/1.40, changed state
to up
%LINK-5-CHANGED: Interface GigabitEthernet0/1.200, changed state
to up
R1(config-if)#exit
R1(config)#exit
R1#
%SYS-5-CONFIG_I: Configured from console by console
R1#config terminal
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 172.16.21.0 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)#
Ctrl+F6 to exit CLI focus
Copy Paste
  
```

Configurar todas las interfaces LAN como pasivas

```

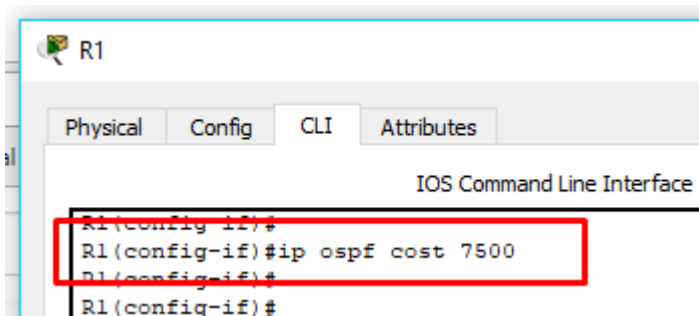
R1
Physical Config CLI Attributes
IOS Command Line Interface
%LINK-5-CHANGED: Interface GigabitEthernet0/1.40, changed state
to up
%LINK-5-CHANGED: Interface GigabitEthernet0/1.200, changed state
to up
R1(config-if)#exit
R1(config)#exit
R1#
%SYS-5-CONFIG_I: Configured from console by console
R1#config terminal
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 172.16.21.0 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)#pass
% Incomplete command.
R1(config-router)#passive-interface g0/1.30
R1(config-router)#passive-interface g0/1.40
R1(config-router)#passive-interface g0/1.200
R1(config-router)#
Ctrl+F6 to exit CLI focus
Copy Paste
  
```

Establecer el ancho de banda para enlaces seriales en 128 Kb/s

```

R1
Physical Config CLI Attributes
IOS Command Line Interface
R1(config-router)#exit
R1(config)#interface s0/0/0
R1(config-if)#bandwidth 128
R1(config-if)#
R1(config-if)#
  
```

Ajustar el costo en la métrica de S0/0 a 7500

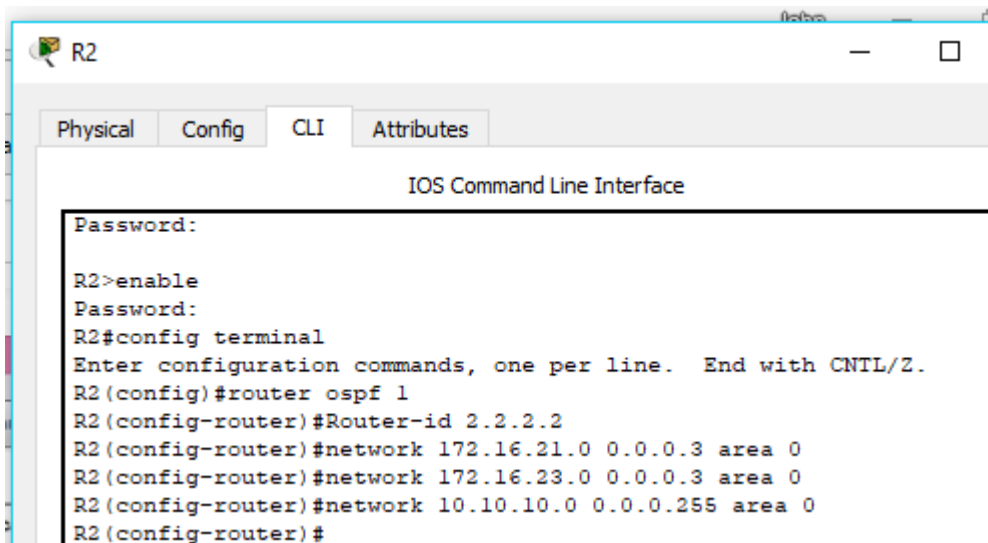


The screenshot shows the CLI interface for router R1. The 'CLI' tab is selected. The command 'R1(config-if)# ip ospf cost 7500' is entered and highlighted with a red box. The prompt returns to 'R1(config-if)#'.

```

R1
-----
Physical  Config  CLI  Attributes
-----
IOS Command Line Interface
R1(config-if)#
R1(config-if)# ip ospf cost 7500
R1(config-if)#
R1(config-if)#
  
```

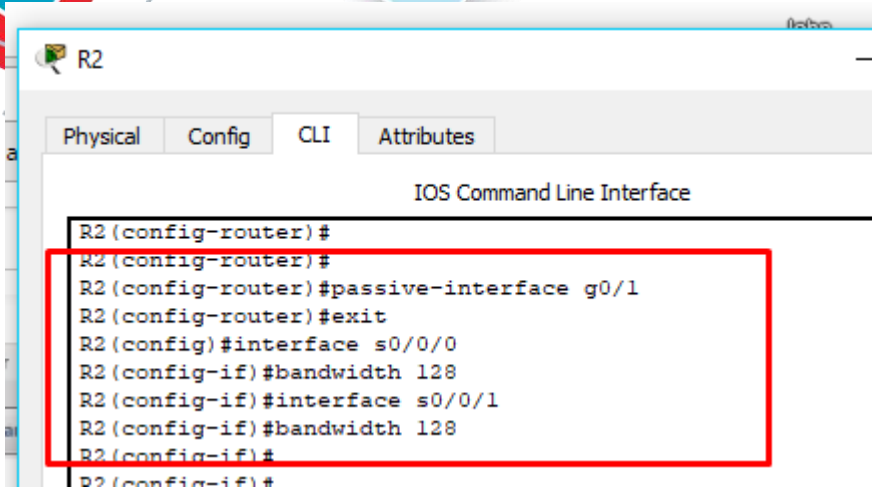
OSPF – R2



The screenshot shows the CLI interface for router R2. The 'CLI' tab is selected. The user enters 'enable' to reach the privileged EXEC mode. Then, 'config terminal' is entered to enter configuration mode. The following OSPF configuration commands are entered: 'router ospf 1', 'Router-id 2.2.2.2', and three 'network' statements for the interfaces.

```

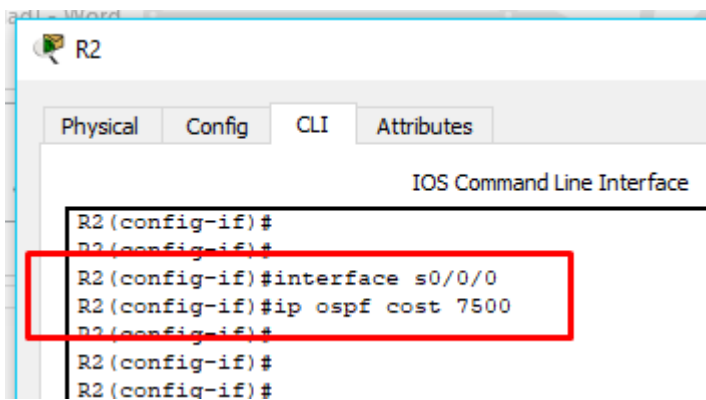
R2
-----
Physical  Config  CLI  Attributes
-----
IOS Command Line Interface
Password:
R2>enable
Password:
R2#config terminal
Enter configuration commands, one per line.  End with CNTL/Z.
R2(config)#router ospf 1
R2(config-router)#Router-id 2.2.2.2
R2(config-router)#network 172.16.21.0 0.0.0.3 area 0
R2(config-router)#network 172.16.23.0 0.0.0.3 area 0
R2(config-router)#network 10.10.10.0 0.0.0.255 area 0
R2(config-router)#
  
```



A screenshot of the Cisco Packet Tracer interface showing the CLI for router R2. The 'CLI' tab is selected. The terminal output shows the following commands and prompts:

```
R2 (config-router)#  
R2 (config-router)#  
R2 (config-router)#passive-interface g0/1  
R2 (config-router)#exit  
R2 (config)#interface s0/0/0  
R2 (config-if)#bandwidth 128  
R2 (config-if)#interface s0/0/1  
R2 (config-if)#bandwidth 128  
R2 (config-if)#  
R2 (config-if)#
```

The first five lines of the terminal output are enclosed in a red rectangular box.



A screenshot of the Cisco Packet Tracer interface showing the CLI for router R2. The 'CLI' tab is selected. The terminal output shows the following commands and prompts:

```
R2 (config-if)#  
R2 (config-if)#  
R2 (config-if)#interface s0/0/0  
R2 (config-if)#ip ospf cost 7500  
R2 (config-if)#  
R2 (config-if)#  
R2 (config-if)#
```

The last three lines of the terminal output are enclosed in a red rectangular box.

OSPF – R3

```

R3
Physical Config CLI Attributes
IOS Command Line Interface
Password:
R3>enable
Password:
R3#config terminal
Enter configuration commands, one per line. End with CNTL/Z.
R3(config)#router ospf 1
R3(config-router)#Router-id 3.3.3.3
R3(config-router)#network 172.16.23.0 0.0.0.3 area 0
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)#exit
R3(config)#interface s0/0/1
R3(config-if)#bandwidth 128
R3(config-if)#ip ospf cost 7500
R3(config-if)#
R3(config-if)#
R3(config-if)#
R3(config-if)#
R3(config-if)#
R3(config-if)#
R3(config-if)#
R3(config-if)#

```

3. 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

R2

Physical

Config

CLI

Attributes

IOS Command Line Interface

```
R2#show ip ospf interface

Serial0/0/0 is up, line protocol is up
  Internet address is 172.16.21.2/30, 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
  Timer intervals configured, Hello 10, Dead 40, Wait 40,
Retransmit 5
  Hello due in 00:00:05
  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
  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: 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
```

```

R2
Physical Config CLI Attributes
IOS Command Line Interface
Retransmit 5
  Hello due in 00:00:01
  Index 2/2, flood queue length 0
  Next 0x0(0)/0x0(0)
  Last flood scan length is 1, maximum is 1
  Last flood scan time is 0 msec, maximum is 0 msec
  Suppress hello for 0 neighbor(s)
GigabitEthernet0/1 is up, line protocol is up
Internet address is 10.10.10.1/24, Area 0
Process ID 1, Router ID 2.2.2.2, Network Type BROADCAST, Cost:
1
  Transmit Delay is 1 sec, State WAITING, Priority 1
  No designated router on this network
  No backup designated router on this network
  Timer intervals configured, Hello 10, Dead 40, Wait 40,
Retransmit 5
  No Hellos (Passive interface)
  Index 3/3, 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 0, Adjacent neighbor count is 0
  Suppress hello for 0 neighbor(s)
R2#
R2#
Ctrl+F6 to exit CLI focus
Copy Paste
  
```

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

The screenshot shows a terminal window titled 'R2' with tabs for 'Physical', 'Config', 'CLI', and 'Attributes'. The active tab is 'CLI', displaying the 'IOS Command Line Interface'. The terminal output shows the following configuration:

```

R2#
R2#
R2#
R2#
R2#
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:
    172.16.21.0 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
    2 2 2 2         110          00-12-31
  
```

5. Configurar VLANs, Puertos troncales, puertos de acceso, encapsulamiento, Inter-VLAN Routing y Seguridad en los Switches acorde a la topología de red establecida.
6. En el Switch 3 deshabilitar DNS lookup
7. Asignar direcciones IP a los Switches acorde a los lineamientos.

EN LAS IMÁGENES ANTERIORES DE LOS SWITCHES Y ROUTERS SE OBSERVAN ESTAS CONFIGURACIONES DEL PUNTO 3 AL 7

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

9. Implement DHCP and NAT for IPv4
10. Configurar R1 como servidor DHCP para las VLANs 30 y 40.
11. Reservar las primeras 30 direcciones IP de las VLAN 30 y 40 para configuraciones estáticas.

```

R1(dhcp-config)#ip dhcp excluded-address 192.168.30.1
192.168.30.30
R1(config)#ip dhcp excluded-address 192.168.40.1 192.168.40.30
R1(config)#
  
```

12. Configurar DHCP pool para VLAN 30

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

```

R1
Physical Config CLI Attributes
IOS Command Line Interface
R1(config)#I
% Ambiguous command: "I"
R1(config)#ip dhcp pool Admin
R1(dhcp-config)#?
  default-router  Default routers
  dns-server      Set name server
  exit            Exit from DHCP pool configuration mode
  network         Network number and mask
  no              Negate a command or set its defaults
  option          Raw DHCP options
R1(dhcp-config)#
R1(dhcp-config)#
R1(dhcp-config)#dns-server 10.10.10.11
R1(dhcp-config)#domain-name ccna-sba.com
^
  
```

13. Configurar DHCP pool para VLAN 40

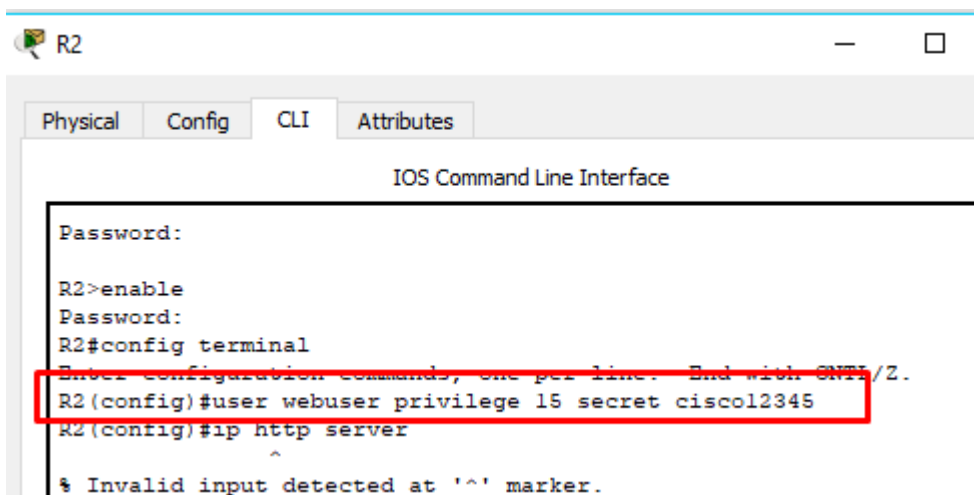
Configurar DHCP pool para VLAN 40	Name: MERCADEO DNS-Server: 10.10.10.11 Domain-Name: ccna-unad.com Establecer default gateway.
-----------------------------------	---

```

% Invalid input detected at '^' marker.

R1(dhcp-config)#default-router 192.168.30.1
R1(dhcp-config)#network 192.168.30.0 255.255.255.0
R1(dhcp-config)#ip dhcp pool Mercadeo
R1(dhcp-config)#dns-server 10.10.10.11
R1(dhcp-config)#domain-name ccna-sba.com
^
% Invalid input detected at '^' marker.
  
```

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



```

R2
Physical Config CLI Attributes
IOS Command Line Interface

Password:
R2>enable
Password:
R2#config terminal
Enter configuration commands, one per line. End with CNTL/Z.
R2(config)#user webuser privilege 15 secret cisco12345
R2(config)#ip http server
^
% Invalid input detected at '^' marker.
  
```

15. 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.

R1 A R2

R2

Physical Config CLI Attributes

IOS Command Line Interface

```

%LINK-5-CHANGED: Interface Serial0/0/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/1, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/1, changed state to up
Acceso restringido a personal no autorizado!

User Access Verification

Password:

R2>enable
Password:
R2#config terminal
Enter configuration commands, one per line. End with CNTL/Z.
R2(config)#ip access-list standard ADMIN-MGT
R2(config-std-nacl)#
  
```

Ctrl+F6 to exit CLI focus

Copy Paste

```

administratively down down
R1#
R1#telnet 172.16.21.1
Trying 172.16.21.1 ...OpenAcceso restringido a personal no autorizado!

User Access Verification

Password:
R1>enable
Password:
R1#exit

[Connection to 172.16.21.1 closed by foreign host]
R1#
  
```

Ctrl+F6 to exit CLI focus

Copy Paste

IOS Command Line Interface

```
R1#  
R1#telnet 172.16.21.1  
Trying 172.16.21.1 ...OpenAcceso restringido a personal no  
autorizado!  
  
User Access Verification  
  
Password:  
R1>enable  
Password:  
R1#exit  
  
[Connection to 172.16.21.1 closed by foreign host]  
R1#telnet 172.16.21.2  
Trying 172.16.21.2 ...OpenAcceso restringido a personal no  
autorizado!  
  
User Access Verification  
  
Password:  
R2>enable  
Password:  
R2#
```

Ctrl+F6 to exit CLI focus

Copy

Paste

EXITOSO

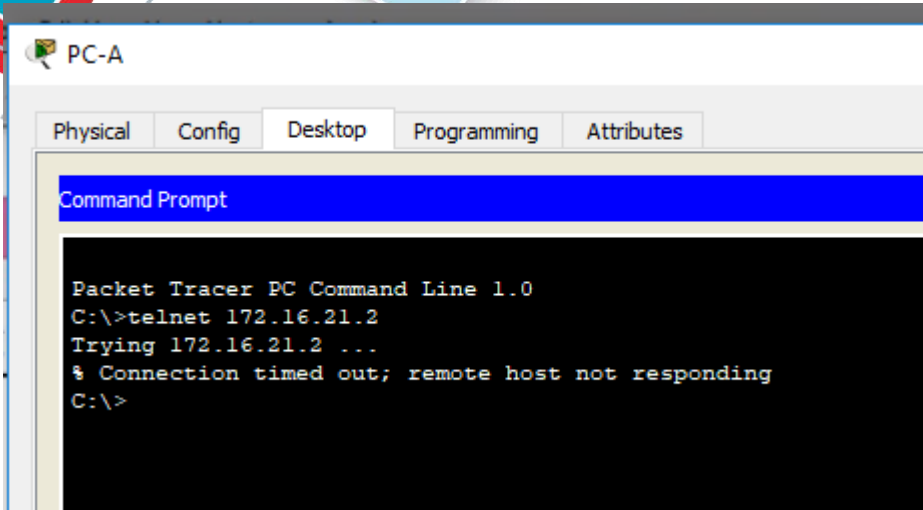
R3 A R2

```
Acceso restringido a personal no autorizado!  
  
User Access Verification  
  
Password:  
Password:  
  
R3>enable  
Password:  
R3#telnet 172.16.23.1  
Trying 172.16.23.1 ...  
% Connection refused by remote host  
R3#
```

Ctrl+F6 to exit CLI focus

Copy

Paste



SOLO R1 PUEDE HACER TELNET A R2

16. 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.

```

* incomplete command.
R2(config)#access-list 101 permit tcp any host 209.165.200.229 eq
www
R2(config)#access-list 101 permit icmp any any echo reply
^
% Invalid input detected at '^' marker.

R2(config)#access-list 101 permit icmp any any echo-reply
^
% Invalid input detected at '^' marker.

R2(config)#access-list 101 permit icmp any any echo reply
^
% Invalid input detected at '^' marker.

R2(config)#access-list 101 permit icmp any any echo-reply
R2(config)#

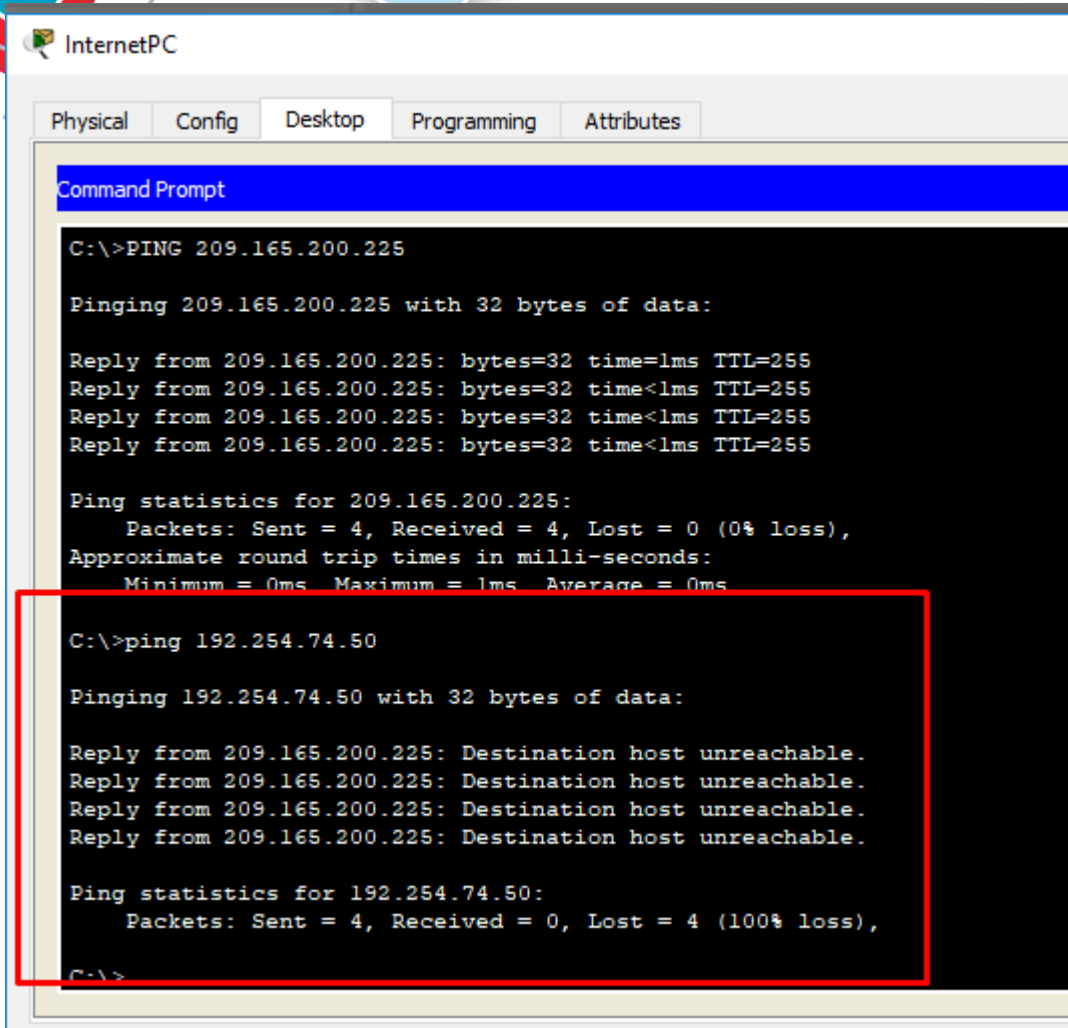
```

Ctrl+F6 to exit CLI focus

Copy

Paste

PRUEBA DESDE INTERNET PC A PC-A DEBE SER INALCANZABLE



```
InternetPC
Physical Config Desktop Programming Attributes
Command Prompt
C:\>PING 209.165.200.225

Pinging 209.165.200.225 with 32 bytes of data:

Reply from 209.165.200.225: bytes=32 time=1ms TTL=255
Reply from 209.165.200.225: bytes=32 time<1ms TTL=255
Reply from 209.165.200.225: bytes=32 time<1ms TTL=255
Reply from 209.165.200.225: bytes=32 time<1ms TTL=255

Ping statistics for 209.165.200.225:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms Maximum = 1ms Average = 0ms

C:\>ping 192.254.74.50

Pinging 192.254.74.50 with 32 bytes of data:

Reply from 209.165.200.225: Destination host unreachable.
Reply from 209.165.200.225: Destination host unreachable.
Reply from 209.165.200.225: Destination host unreachable.
Reply from 209.165.200.225: Destination host unreachable.

Ping statistics for 192.254.74.50:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
C:\>
```

PRUEBA DESDE INTERNET PC – A PC-C DEBE SER INALCANZABLE

```

InternetPC
Physical Config Desktop Programming Attributes
Command Prompt
Minimum = 0ms, Maximum = 1ms, Average = 0ms
C:\>ping 192.254.74.50

Pinging 192.254.74.50 with 32 bytes of data:

Reply from 209.165.200.225: Destination host unreachable.
Reply from 209.165.200.225: Destination host unreachable.
Reply from 209.165.200.225: Destination host unreachable.
Reply from 209.165.200.225: Destination host unreachable.

Ping statistics for 192.254.74.50:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

C:\>ping 192.254.200.236

Pinging 192.254.200.236 with 32 bytes of data:

Reply from 209.165.200.225: Destination host unreachable.
Reply from 209.165.200.225: Destination host unreachable.
Reply from 209.165.200.225: Destination host unreachable.
Reply from 209.165.200.225: Destination host unreachable.

Ping statistics for 192.254.200.236:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

C:\>
  
```

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

R1 a r2

```

R1>enable
Password:
R1#ping 172.16.21.2

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 172.16.21.2, timeout is 2
seconds:
!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max =
2/5/14 ms
R1#
  
```

Ctrl+F6 to exit CLI focus

Copy Paste

R2 A R3

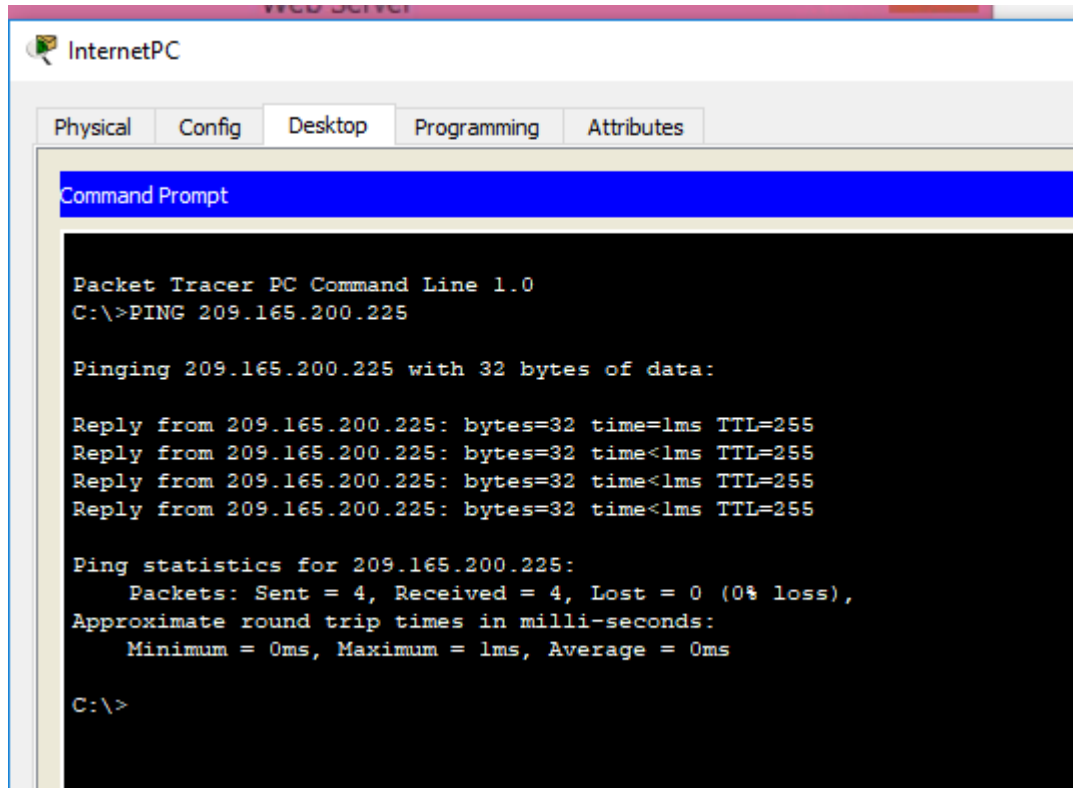
```
R2#  
R2#ping 172.16.23.2  
  
Type escape sequence to abort.  
Sending 5, 100-byte ICMP Echos to 172.16.23.2, timeout is 2  
seconds:  
!!!!  
Success rate is 100 percent (5/5), round-trip min/avg/max =  
1/3/12 ms  
  
R2#
```

Ctrl+F6 to exit CLI focus

Copy

Paste

INTERNET PC – GATEWAY



The screenshot shows a window titled "InternetPC" with tabs for "Physical", "Config", "Desktop", "Programming", and "Attributes". The "Desktop" tab is active, displaying a "Command Prompt" window. The command prompt shows the execution of a ping command to 209.165.200.225, resulting in four successful replies with 0% loss and a 0ms average round-trip time.

```
InternetPC  
Physical Config Desktop Programming Attributes  
Command Prompt  
Packet Tracer PC Command Line 1.0  
C:\>PING 209.165.200.225  
  
Pinging 209.165.200.225 with 32 bytes of data:  
  
Reply from 209.165.200.225: bytes=32 time=1ms TTL=255  
Reply from 209.165.200.225: bytes=32 time<1ms TTL=255  
Reply from 209.165.200.225: bytes=32 time<1ms TTL=255  
Reply from 209.165.200.225: bytes=32 time<1ms TTL=255  
  
Ping statistics for 209.165.200.225:  
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),  
Approximate round trip times in milli-seconds:  
Minimum = 0ms, Maximum = 1ms, Average = 0ms  
  
C:\>
```

WEB SERVER – GATEWAY

Assessment Objective

Server0

Physical Config Services Desktop Programming Attributes

Command Prompt

```

Packet Tracer SERVER Command Line 1.0
C:\>PING 209.165.200.225

Pinging 209.165.200.225 with 32 bytes of data:

Reply from 209.165.200.225: bytes=32 time<1ms TTL=255
Reply from 209.165.200.225: bytes=32 time<1ms TTL=255
Reply from 209.165.200.225: bytes=32 time<1ms TTL=255
Reply from 209.165.200.225: bytes=32 time<1ms TTL=255

Ping statistics for 209.165.200.225:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>

```

Ping S1 – R1

```

Success rate is 0 percent (0/5)

S1#ping 192.168.200.2

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 192.168.200.2, timeout is 2
seconds:
!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 1/3/8
ms

S1#

```

Ctrl+F6 to exit CLI focus

Copy Paste



CONCLUSIONES

Con la anterior práctica, logre afianzar los conocimientos adquiridos durante el semestre los mismos enfocados en la configuración de distintos equipos de red y su interconexión.

A medida que transcurrió el periodo académico y en conjunto con el grupo colaborativo logramos compartir nuestra experiencia en redes y la aplicación de la misma en el ámbito práctico y teórico, de esta manera podemos concluir que adquirimos unas bases sólidas en el ámbito de redes y su configuración básica y avanzada.

Con el uso de la herramienta Packet Tracer, obtuvimos un acercamiento con los diferentes dispositivos de red y sus componentes, aprendimos sobre los diferentes comandos que se deben usar en el momento de su configuración y conexión con los demás dispositivos que componen una red.

De la mano con el curso virtual en la plataforma de Cisco y sus módulos teóricos logramos combinar todas las prácticas planteadas en el semestre y obtener excelentes resultados.

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