

INSTITUTO TÉCNOLOGICO DE SALINA CRUZ

REDES DE COMPUTADORA

SEMESTRE FEBRERO-AGOSTO 2015

REPORTE DE PRÁCTICAS

PRACTICA N°: 4

UNIDAD: 4

FECHA: 11 DE MAYO DE 2015

NOMBRE: EDUARDO SALAZAR IRRIZARI

Objetivo:

El objetivo de esta práctica es conocer el modo de operar de los protocolos de enrutamiento dinámico según trabajen con el vector distancia o con el estado del enlace, tomando como ejemplos RIPv2 y OSPF, utilizando para ello el simulador Cisco Packet Tracer.

Instrucciones:

- 1.- Crear la topología de la red.
- 2.- Realizar la tabla de enrutamiento.
- 3.- Realizar configuraciones iniciales.
- 4.- Comprobar la conectividad.

Materiales:

- 1.- Computadoras.
- 2.- Cisco Packet Tracer.
- 3.- Silla.

Escenario.

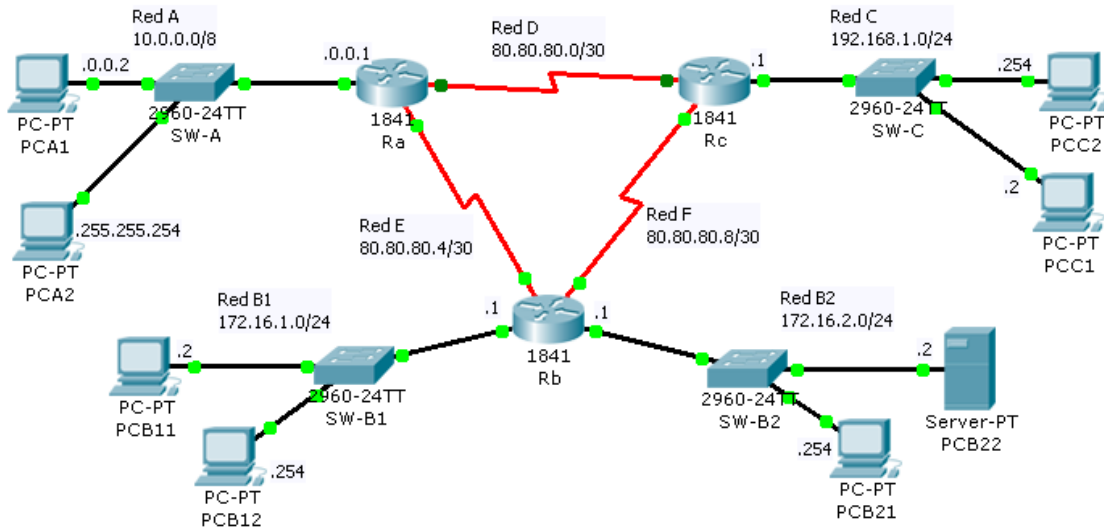


Tabla de enrutamiento.

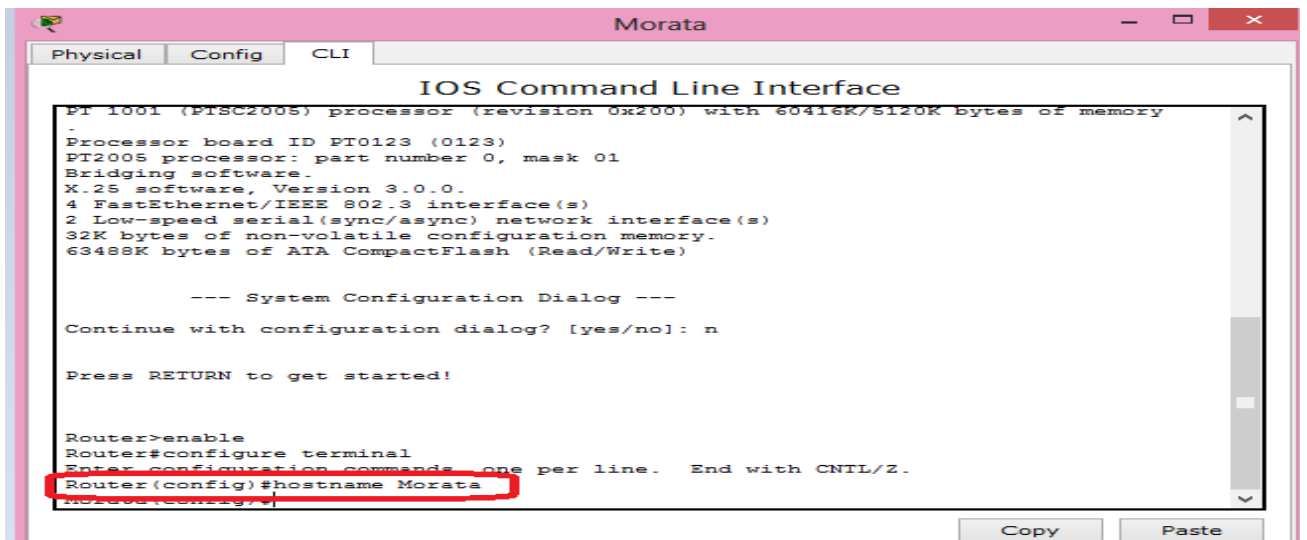
Dispositivo	Interfaz	Red	Dirección IP	Máscara	Gateway
Router Ra	Fa0/0	A	10.0.0.1	255.0.0.0	---
	S0/0/0	D	200.0.1.1	255.0.0.0	---
	S0/0/1	E	200.0.2.1	255.0.0.0	---
Router Rb	Fa0/0	B1	172.16.1.1	255.255.255.0	---
	Fa0/1	B2	172.16.2.1	255.255.255.0	---
	S0/0/0	E	200.0.2.2	255.255.255.252	---
	S0/0/1	F	200.0.3.1	255.255.255.252	---
Router Rc	Fa0/0	C	192.168.1.1	255.255.255.0	---
	S0/0/0	D	200.0.1.2	255.255.255.252	---
	S0/0/0	F	200.0.3.2	255.255.255.252	---
PCA1	NIC	A	10.0.0.2	255.0.0.0	10.0.0.1
PCA2	NIC	A	10.255.255.254	255.0.0.0	10.0.0.1
PCB11	NIC	B1	172.16.1.2	255.255.255.0	172.16.1.1
PCB12	NIC	B1	172.16.1.254	255.255.255.0	172.16.1.1
PCB21	NIC	B2	172.16.2.2	255.255.255.0	172.16.2.1
PCB22	NIC	B2	172.16.2.254	255.255.255.0	172.16.2.1
PCC1	NIC	C	192.168.1.2	255.255.255.0	192.168.1.1
PCC2	NIC	C	192.168.1.254	255.255.255.0	192.168.1.1

CONFIGURACIÓN INICIAL.

En este apartado es donde nosotros realizaremos configuraciones tales como: cambio de nombre, asignación de un password y asignación de un banner a cada uno de los routers.

R1 (Morata).

Cambio de nombre.



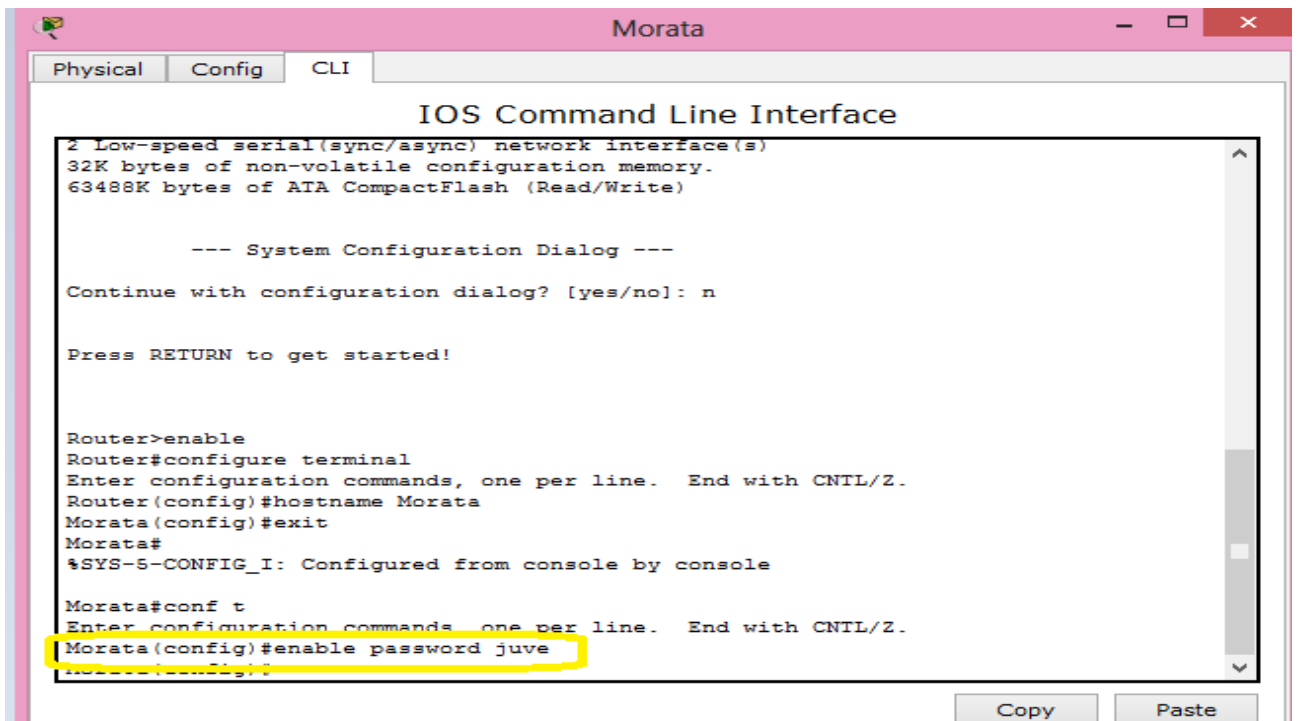
```
PT 1001 (PTSC2005) processor (revision 0x200) with 60416K/5120K bytes of memory
.
Processor board ID PT0123 (0123)
PT2005 processor: part number 0, mask 01
Bridging software.
X.25 software, Version 3.0.0.
4 FastEthernet/IEEE 802.3 interface(s)
2 Low-speed serial(sync/async) network interface(s)
32K bytes of non-volatile configuration memory.
63488K bytes of ATA CompactFlash (Read/Write)

--- System Configuration Dialog ---
Continue with configuration dialog? [yes/no]: n

Press RETURN to get started!

Router>enable
Router#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#hostname Morata
Morata(config)#
```

Configuración de una contraseña.



```
2 Low-speed serial(sync/async) network interface(s)
32K bytes of non-volatile configuration memory.
63488K bytes of ATA CompactFlash (Read/Write)

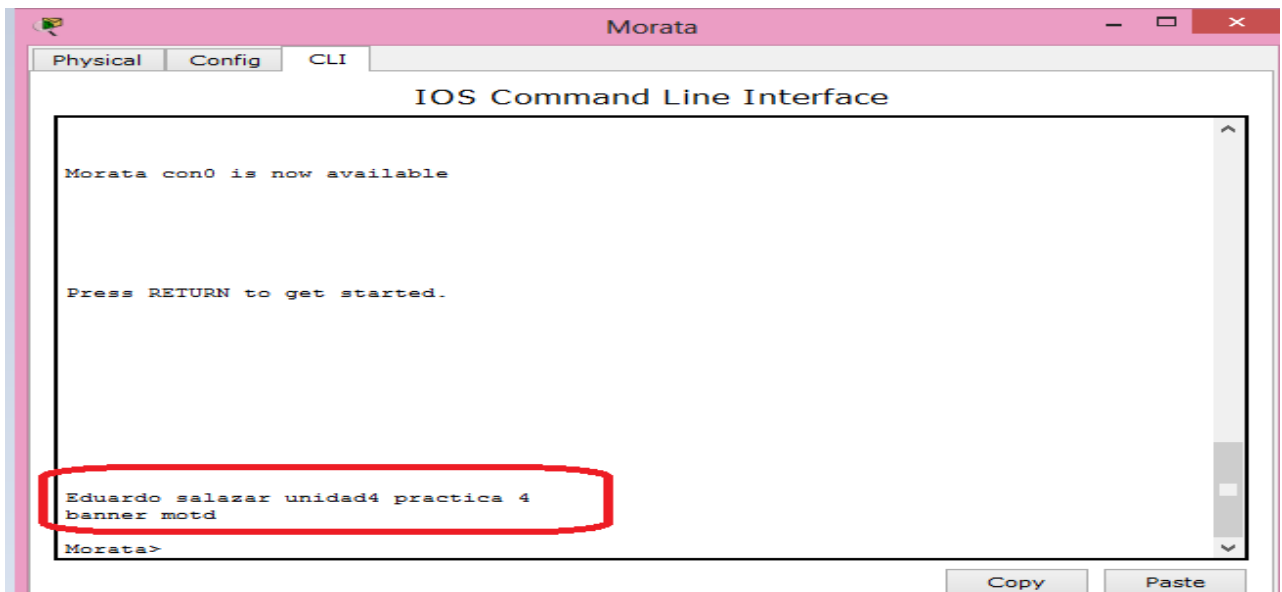
--- System Configuration Dialog ---
Continue with configuration dialog? [yes/no]: n

Press RETURN to get started!

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

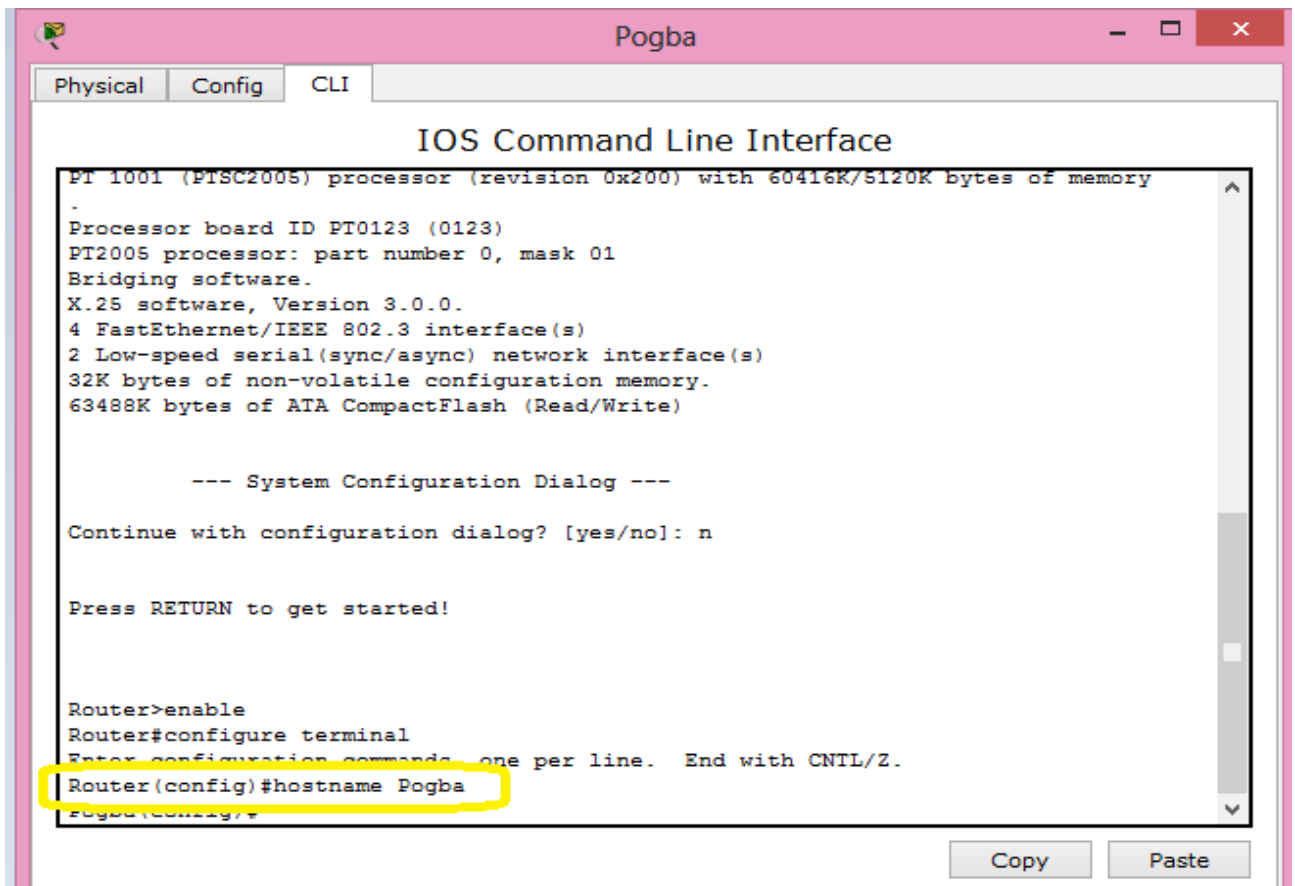
Morata#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
Morata(config)#enable password juve
Morata(config)#
```

Asignación de un banner.

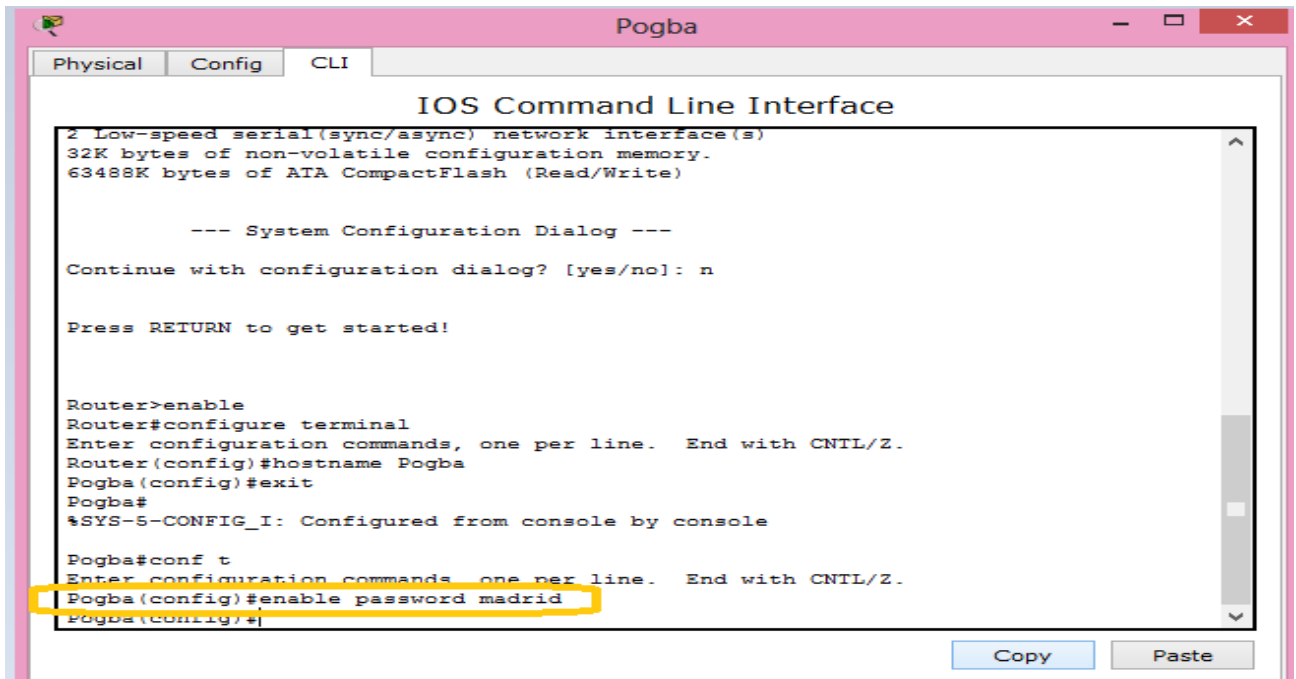


R2 (Pogba).

Cambio de nombre



Configuración de una contraseña.



The screenshot shows the IOS Command Line Interface for a device named 'Pogba'. The interface has tabs for 'Physical', 'Config', and 'CLI'. The main window displays the following text:

```
2 Low-speed serial(sync/async) network interface(s)
32K bytes of non-volatile configuration memory.
63488K bytes of ATA CompactFlash (Read/Write)

--- System Configuration Dialog ---

Continue with configuration dialog? [yes/no]: n

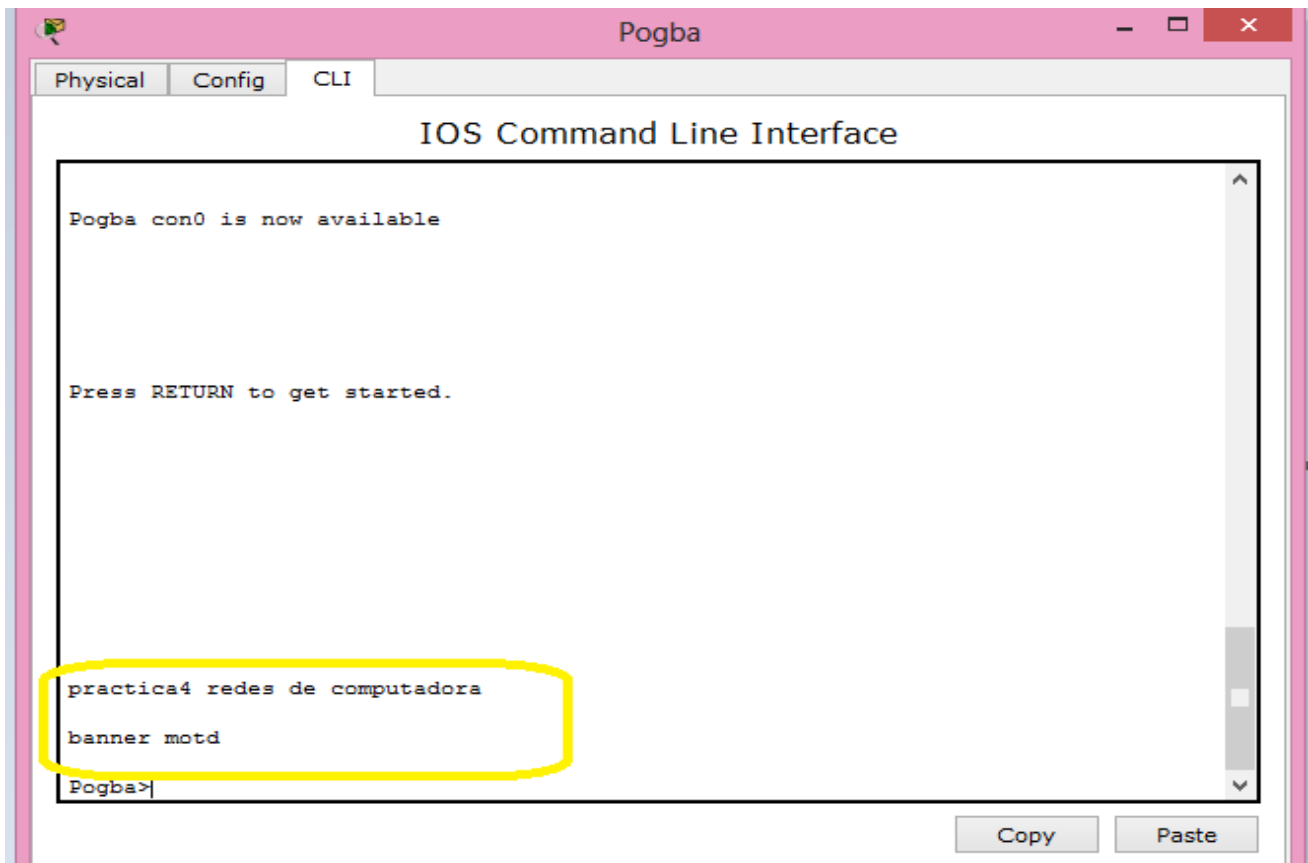
Press RETURN to get started!

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

Pogba#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Pogba(config)#enable password madrid
Pogba(config)#
```

The command `Pogba(config)#enable password madrid` is highlighted with a yellow box. At the bottom right, there are 'Copy' and 'Paste' buttons.

Asignación de un banner.



The screenshot shows the IOS Command Line Interface for a device named 'Pogba'. The interface has tabs for 'Physical', 'Config', and 'CLI'. The main window displays the following text:

```
Pogba con0 is now available

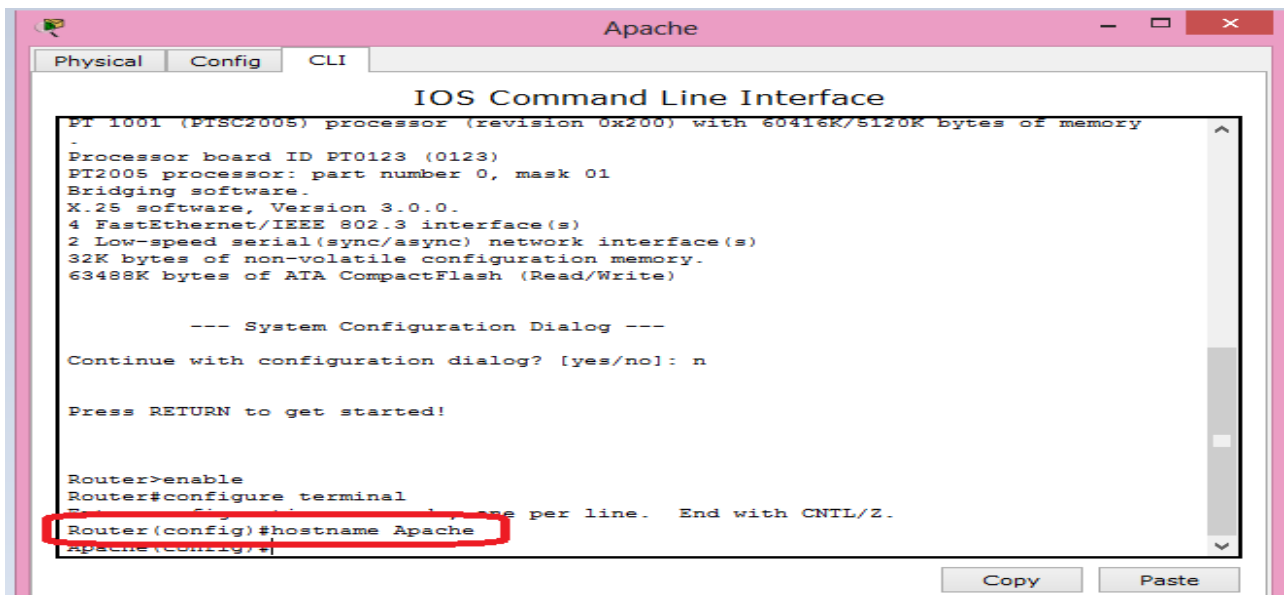
Press RETURN to get started.

practica4 redes de computadora
banner motd
Pogba>
```

The commands `practica4 redes de computadora` and `banner motd` are highlighted with a yellow box. At the bottom right, there are 'Copy' and 'Paste' buttons.

R3 (Apache).

Cambio de nombre



The screenshot shows the Apache CLI interface with the following text:

```
PT 1001 (PTSC2005) processor (revision 0x200) with 60416K/5120K Bytes of memory
-
Processor board ID PT0123 (0123)
PT2005 processor: part number 0, mask 01
Bridging software.
X.25 software, Version 3.0.0.
4 FastEthernet/IEEE 802.3 interface(s)
2 Low-speed serial(sync/async) network interface(s)
32K bytes of non-volatile configuration memory.
63488K bytes of ATA CompactFlash (Read/Write)

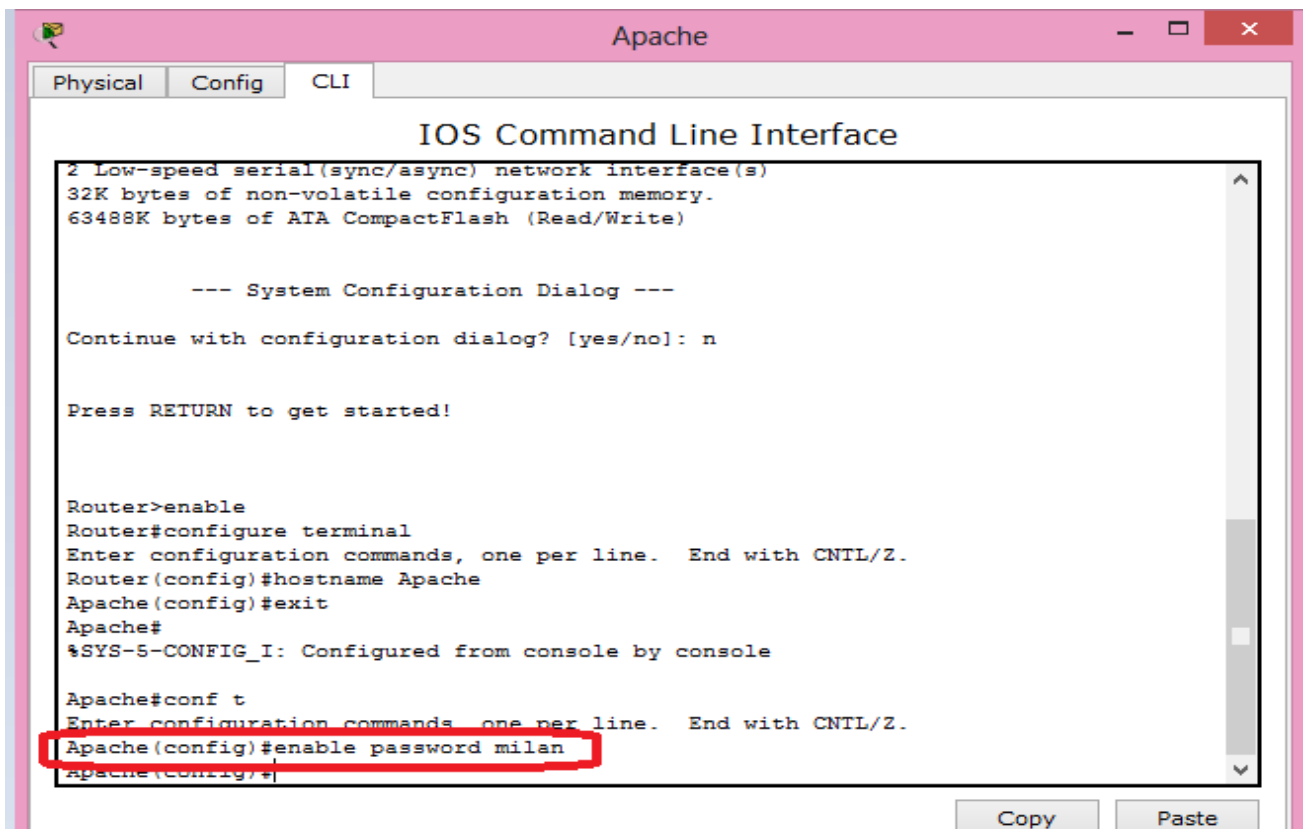
--- System Configuration Dialog ---
Continue with configuration dialog? [yes/no]: n

Press RETURN to get started!

Router>enable
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#hostname Apache
Apache(config)#
```

The command `Router(config)#hostname Apache` is highlighted with a red box.

Asignación de una contraseña.



The screenshot shows the Apache CLI interface with the following text:

```
2 Low-speed serial(sync/async) network interface(s)
32K bytes of non-volatile configuration memory.
63488K bytes of ATA CompactFlash (Read/Write)

--- System Configuration Dialog ---
Continue with configuration dialog? [yes/no]: n

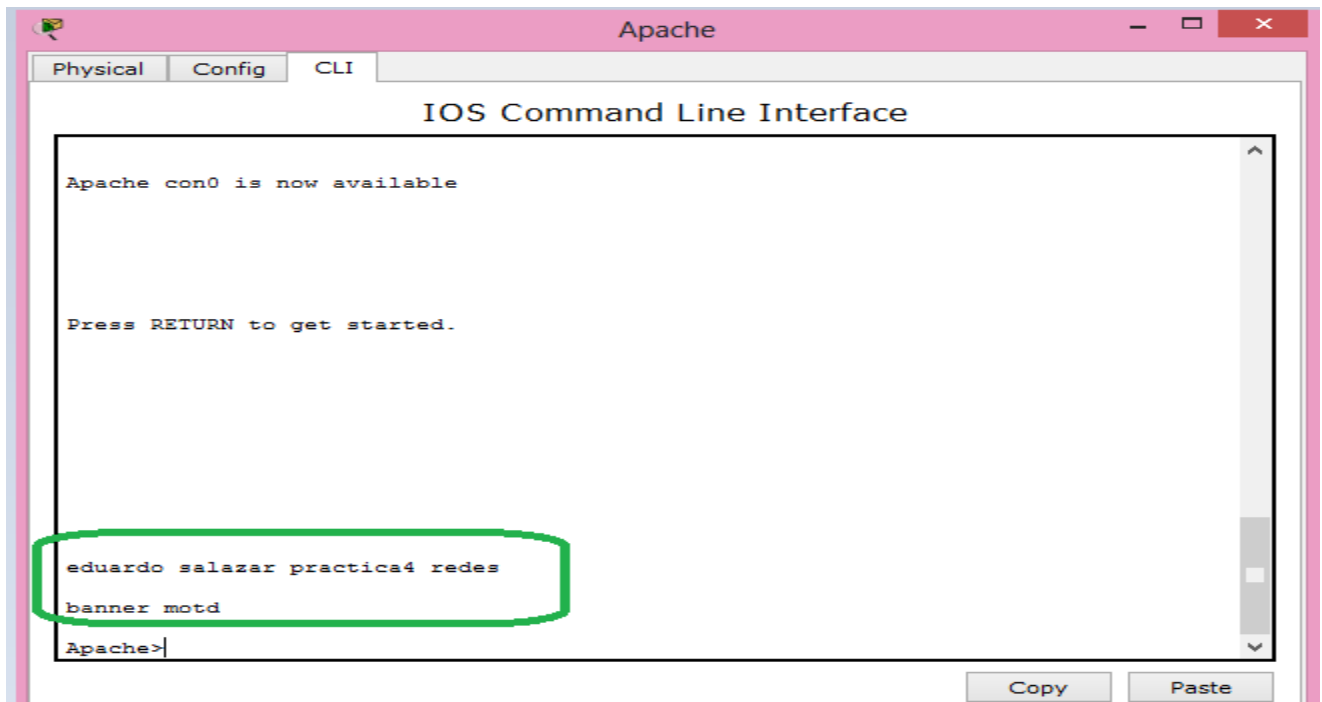
Press RETURN to get started!

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

Apache#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Apache(config)#enable password milan
Apache(config)#
```

The command `Apache(config)#enable password milan` is highlighted with a red box.

Agregación de un banner.



```
Apache
Physical Config CLI
IOS Command Line Interface

Apache con0 is now available

Press RETURN to get started.

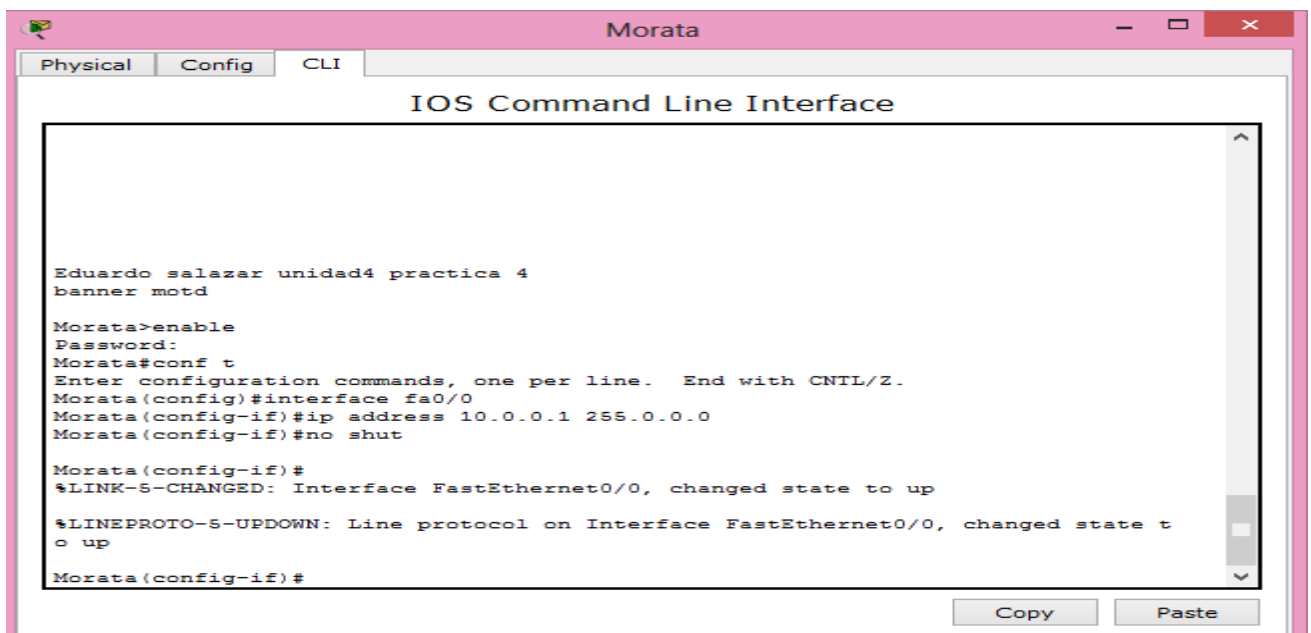
eduardo salazar practica4 redes
banner motd
Apache>
```

Copy Paste

Después de todas estas configuraciones pasamos al levantamiento o habilitación de puertos, tanto de Fa como seriales, esto con el fin de que se pueda llevar a cabo las conexiones.

Morata (R1)

Puerto fa0/0



```
Morata
Physical Config CLI
IOS Command Line Interface

Eduardo salazar unidad4 practica 4
banner motd

Morata>enable
Password:
Morata#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Morata(config)#interface fa0/0
Morata(config-if)#ip address 10.0.0.1 255.0.0.0
Morata(config-if)#no shut

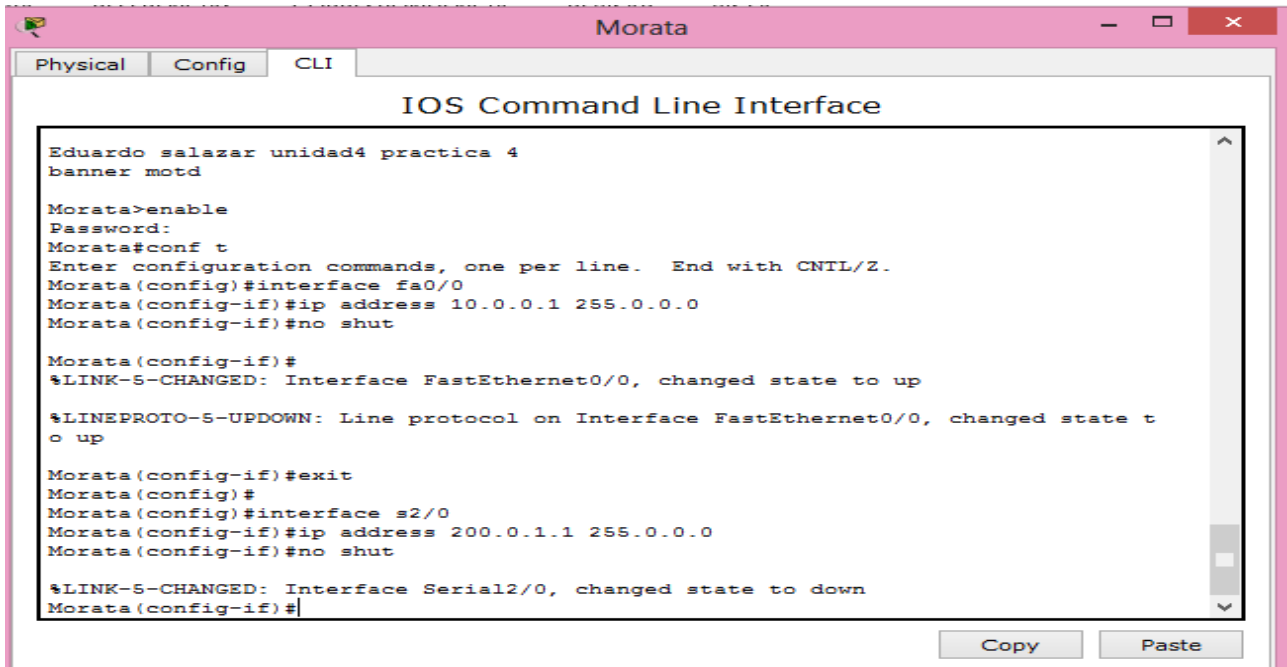
Morata(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state t
o up

Morata(config-if)#
```

Copy Paste

Serial 2/0



The screenshot shows the Morata CLI interface with the following text:

```
Eduardo salazar unidad4 practica 4
banner motd

Morata>enable
Password:
Morata#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Morata(config)#interface fa0/0
Morata(config-if)#ip address 10.0.0.1 255.0.0.0
Morata(config-if)#no shut

Morata(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/0, changed state to up

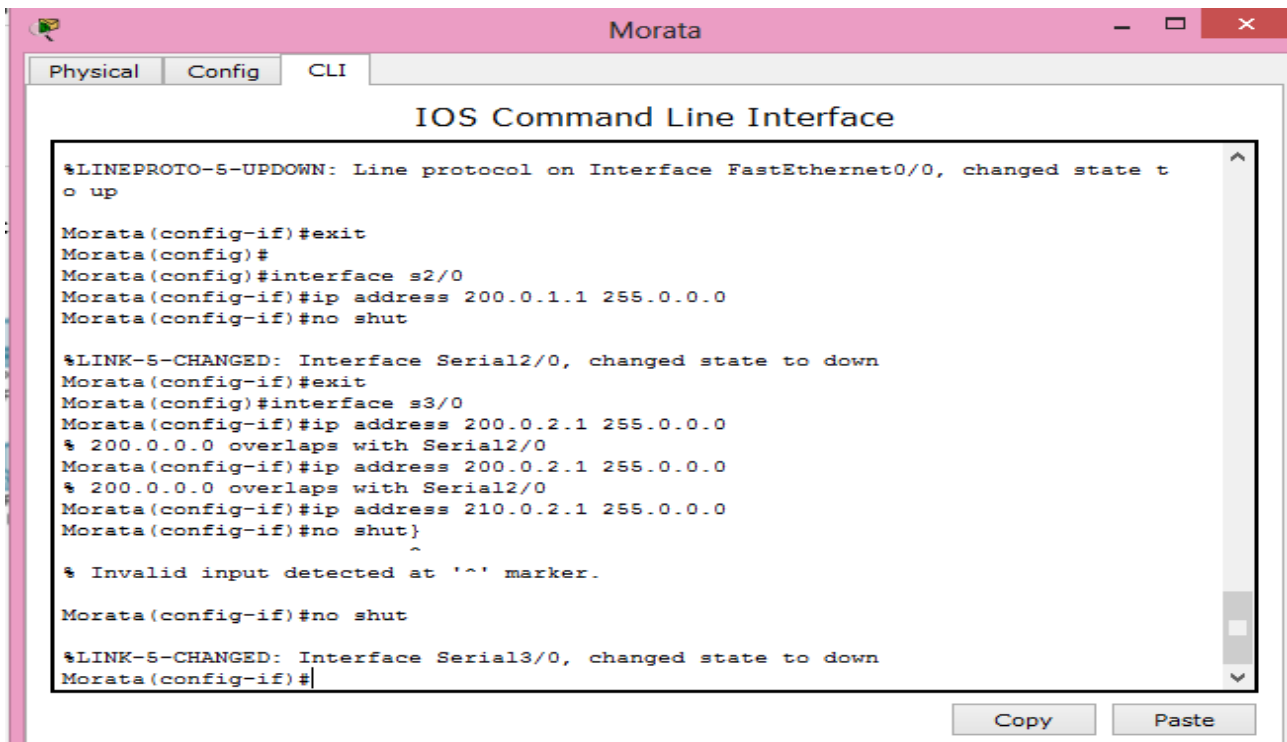
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up

Morata(config-if)#exit
Morata(config)#
Morata(config)#interface s2/0
Morata(config-if)#ip address 200.0.1.1 255.0.0.0
Morata(config-if)#no shut

%LINK-5-CHANGED: Interface Serial2/0, changed state to down
Morata(config-if)#
```

Buttons for Copy and Paste are visible at the bottom right.

Serial 3/0



The screenshot shows the Morata CLI interface with the following text:

```
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up

Morata(config-if)#exit
Morata(config)#
Morata(config)#interface s2/0
Morata(config-if)#ip address 200.0.1.1 255.0.0.0
Morata(config-if)#no shut

%LINK-5-CHANGED: Interface Serial2/0, changed state to down
Morata(config-if)#exit
Morata(config)#interface s3/0
Morata(config-if)#ip address 200.0.2.1 255.0.0.0
% 200.0.0.0 overlaps with Serial2/0
Morata(config-if)#ip address 200.0.2.1 255.0.0.0
% 200.0.0.0 overlaps with Serial2/0
Morata(config-if)#ip address 210.0.2.1 255.0.0.0
Morata(config-if)#no shut}
^
% Invalid input detected at '^' marker.

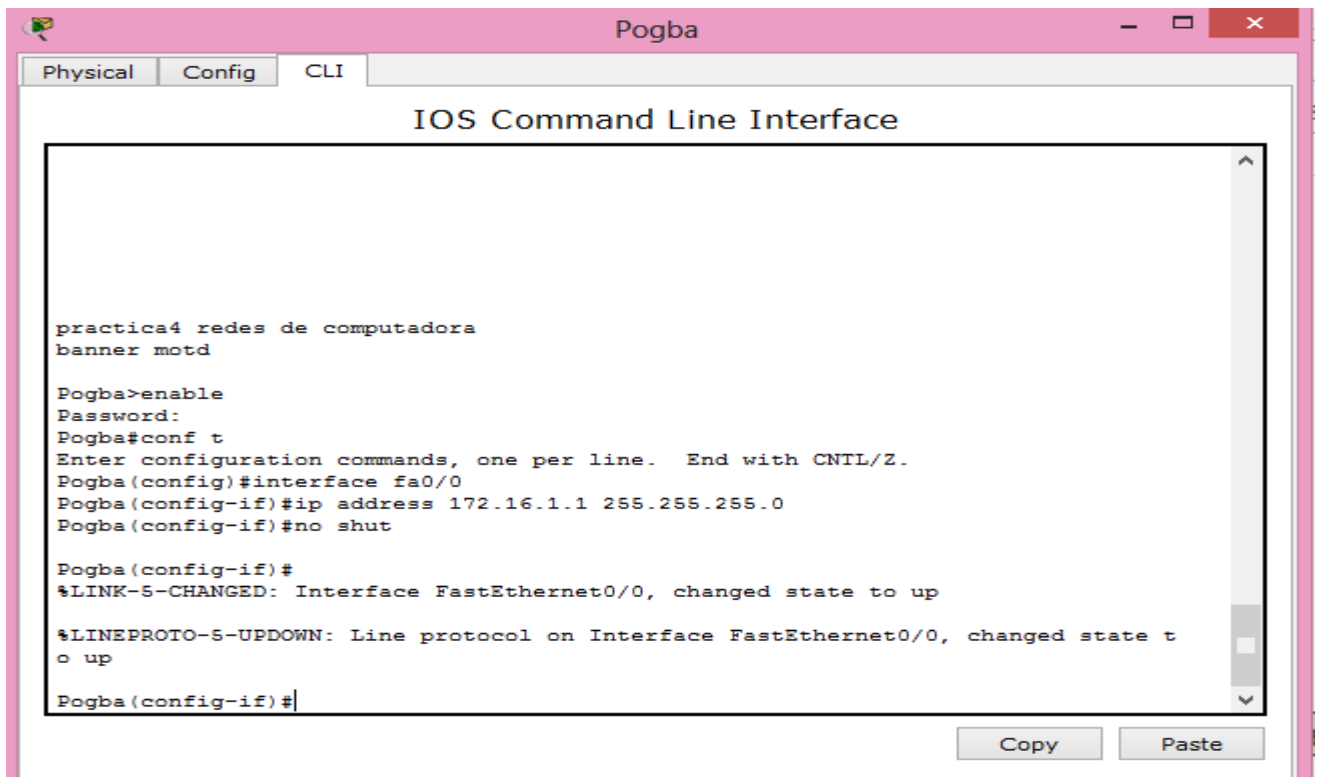
Morata(config-if)#no shut

%LINK-5-CHANGED: Interface Serial3/0, changed state to down
Morata(config-if)#
```

Buttons for Copy and Paste are visible at the bottom right.

Pogba (R2)

Puerto fa0/0



The screenshot shows a window titled "Pogba" with tabs for "Physical", "Config", and "CLI". The main area is titled "IOS Command Line Interface" and contains the following text:

```
practica4 redes de computadora
banner motd

Pogba>enable
Password:
Pogba#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
Pogba(config)#interface fa0/0
Pogba(config-if)#ip address 172.16.1.1 255.255.255.0
Pogba(config-if)#no shut

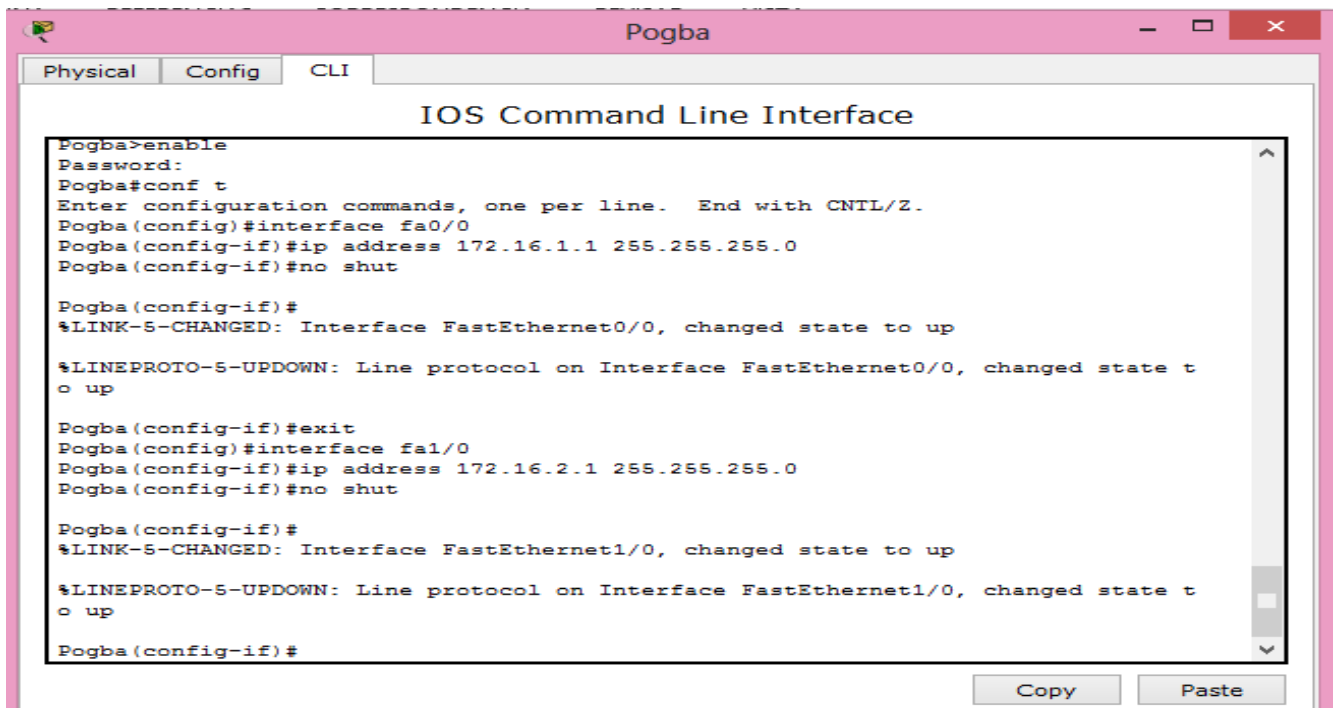
Pogba(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state t
o up

Pogba(config-if)#
```

At the bottom right of the window, there are "Copy" and "Paste" buttons.

Puerto fa1/0.



The screenshot shows a window titled "Pogba" with tabs for "Physical", "Config", and "CLI". The main area is titled "IOS Command Line Interface" and contains the following text:

```
Pogba>enable
Password:
Pogba#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
Pogba(config)#interface fa0/0
Pogba(config-if)#ip address 172.16.1.1 255.255.255.0
Pogba(config-if)#no shut

Pogba(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state t
o up

Pogba(config-if)#exit
Pogba(config)#interface fa1/0
Pogba(config-if)#ip address 172.16.2.1 255.255.255.0
Pogba(config-if)#no shut

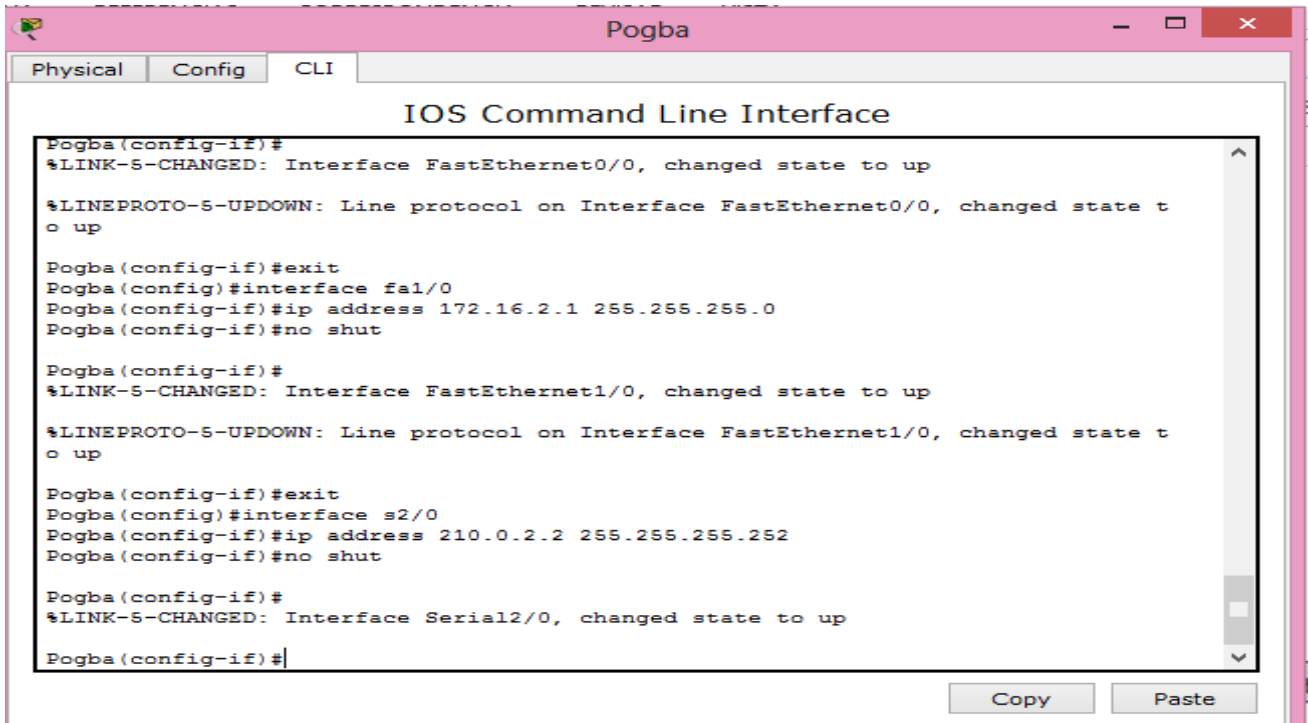
Pogba(config-if)#
%LINK-5-CHANGED: Interface FastEthernet1/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet1/0, changed state t
o up

Pogba(config-if)#
```

At the bottom right of the window, there are "Copy" and "Paste" buttons.

Serial 2/0.



The screenshot shows a terminal window titled "Pogba" with tabs for "Physical", "Config", and "CLI". The main content is the "IOS Command Line Interface" showing the following commands and their outputs:

```
Pogba(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up

Pogba(config-if)#exit
Pogba(config)#interface fa1/0
Pogba(config-if)#ip address 172.16.2.1 255.255.255.0
Pogba(config-if)#no shut

Pogba(config-if)#
%LINK-5-CHANGED: Interface FastEthernet1/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet1/0, changed state to up

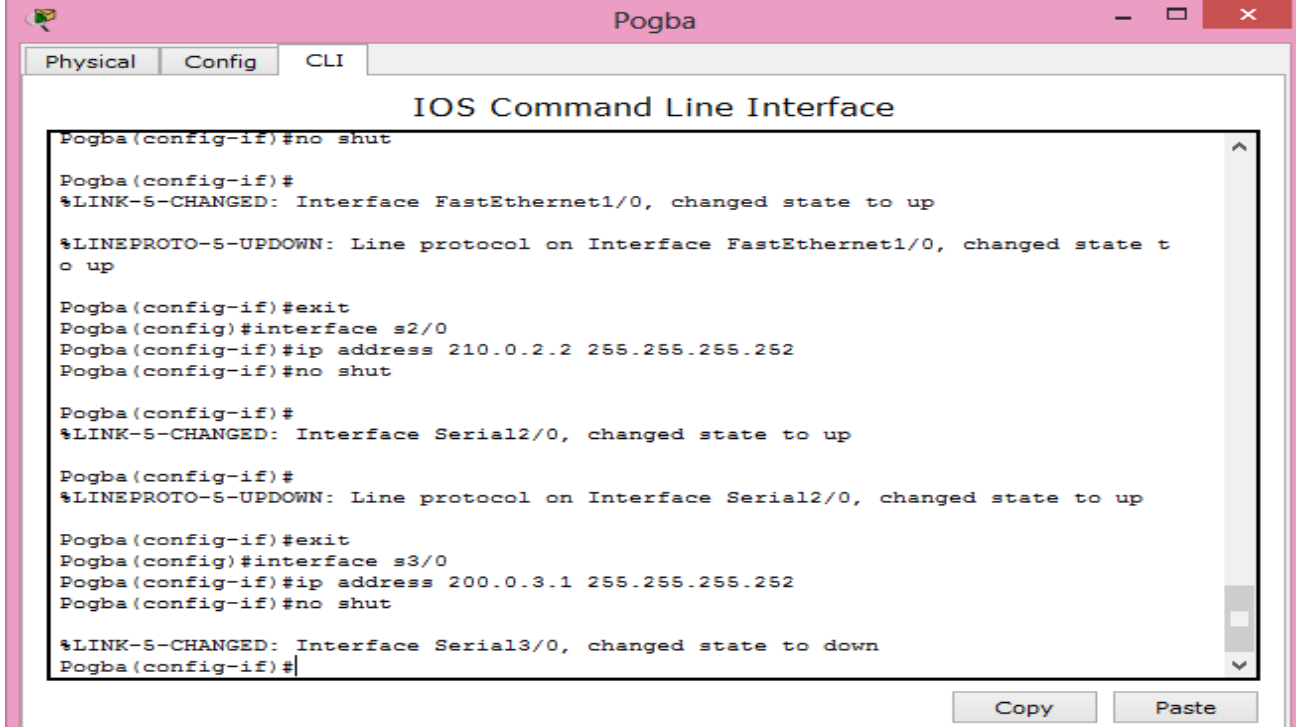
Pogba(config-if)#exit
Pogba(config)#interface s2/0
Pogba(config-if)#ip address 210.0.2.2 255.255.255.252
Pogba(config-if)#no shut

Pogba(config-if)#
%LINK-5-CHANGED: Interface Serial2/0, changed state to up

Pogba(config-if)#
```

Buttons for "Copy" and "Paste" are visible at the bottom right of the terminal window.

Serial 3/0



The screenshot shows a terminal window titled "Pogba" with tabs for "Physical", "Config", and "CLI". The main content is the "IOS Command Line Interface" showing the following commands and their outputs:

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

Pogba(config-if)#
%LINK-5-CHANGED: Interface FastEthernet1/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet1/0, changed state to up

Pogba(config-if)#exit
Pogba(config)#interface s2/0
Pogba(config-if)#ip address 210.0.2.2 255.255.255.252
Pogba(config-if)#no shut

Pogba(config-if)#
%LINK-5-CHANGED: Interface Serial2/0, changed state to up

Pogba(config-if)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial2/0, changed state to up

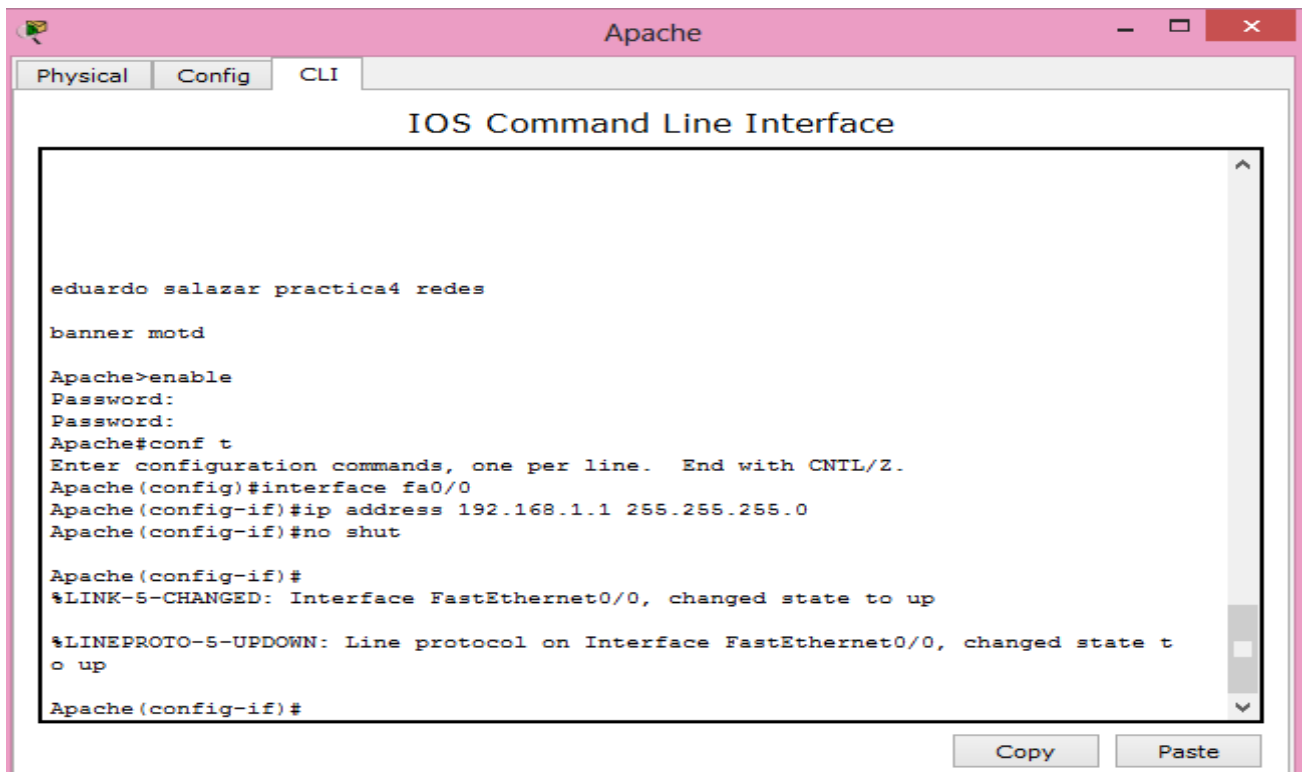
Pogba(config-if)#exit
Pogba(config)#interface s3/0
Pogba(config-if)#ip address 200.0.3.1 255.255.255.252
Pogba(config-if)#no shut

%LINK-5-CHANGED: Interface Serial3/0, changed state to down
Pogba(config-if)#
```

Buttons for "Copy" and "Paste" are visible at the bottom right of the terminal window.

Apache (R3)

Puerto fa0/0



The screenshot shows a terminal window titled "Apache" with tabs for "Physical", "Config", and "CLI". The main content is the "IOS Command Line Interface" where the following commands and outputs are visible:

```
eduardo salazar practica4 redes

banner motd

Apache>enable
Password:
Password:
Apache#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Apache(config)#interface fa0/0
Apache(config-if)#ip address 192.168.1.1 255.255.255.0
Apache(config-if)#no shut

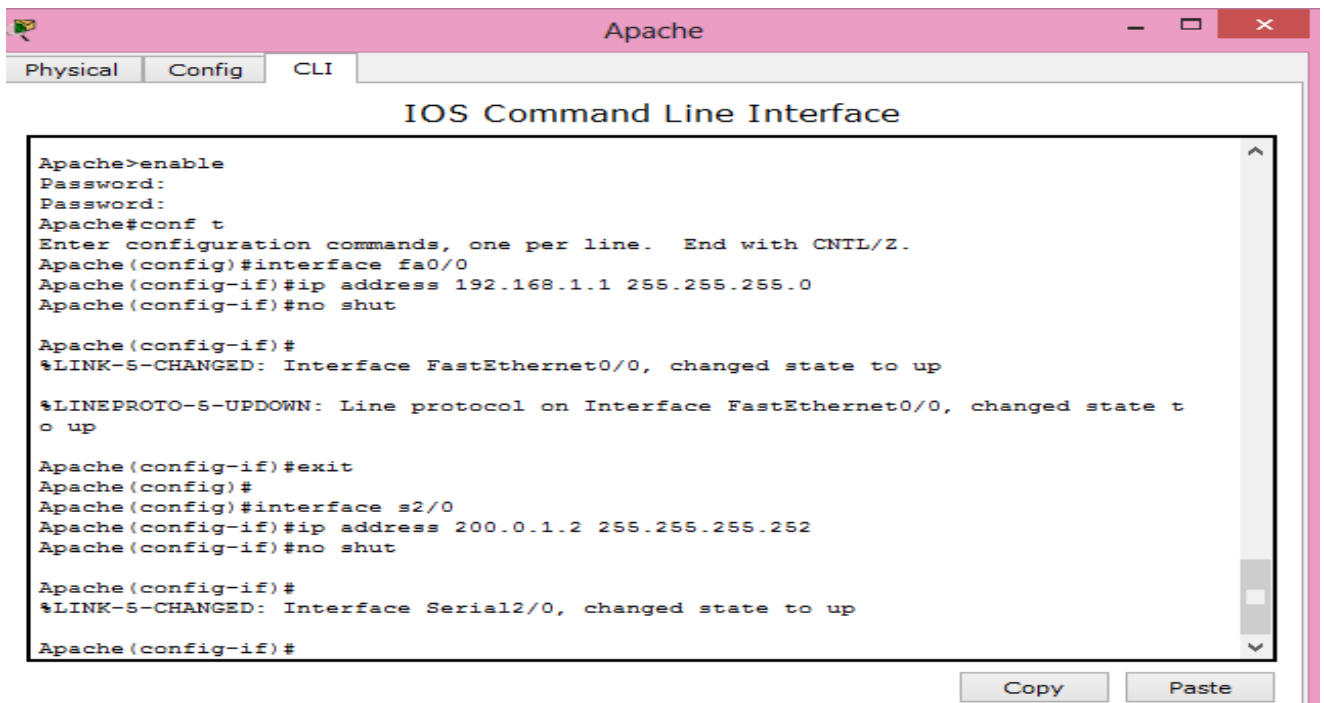
Apache(config-if)#
%LINK-S-CHANGED: Interface FastEthernet0/0, changed state to up

%LINEPROTO-S-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state t
o up

Apache(config-if)#
```

At the bottom right of the terminal window, there are "Copy" and "Paste" buttons.

Serial 2/0



The screenshot shows a terminal window titled "Apache" with tabs for "Physical", "Config", and "CLI". The main content is the "IOS Command Line Interface" where the following commands and outputs are visible:

```
Apache>enable
Password:
Password:
Apache#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Apache(config)#interface fa0/0
Apache(config-if)#ip address 192.168.1.1 255.255.255.0
Apache(config-if)#no shut

Apache(config-if)#
%LINK-S-CHANGED: Interface FastEthernet0/0, changed state to up

%LINEPROTO-S-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state t
o up

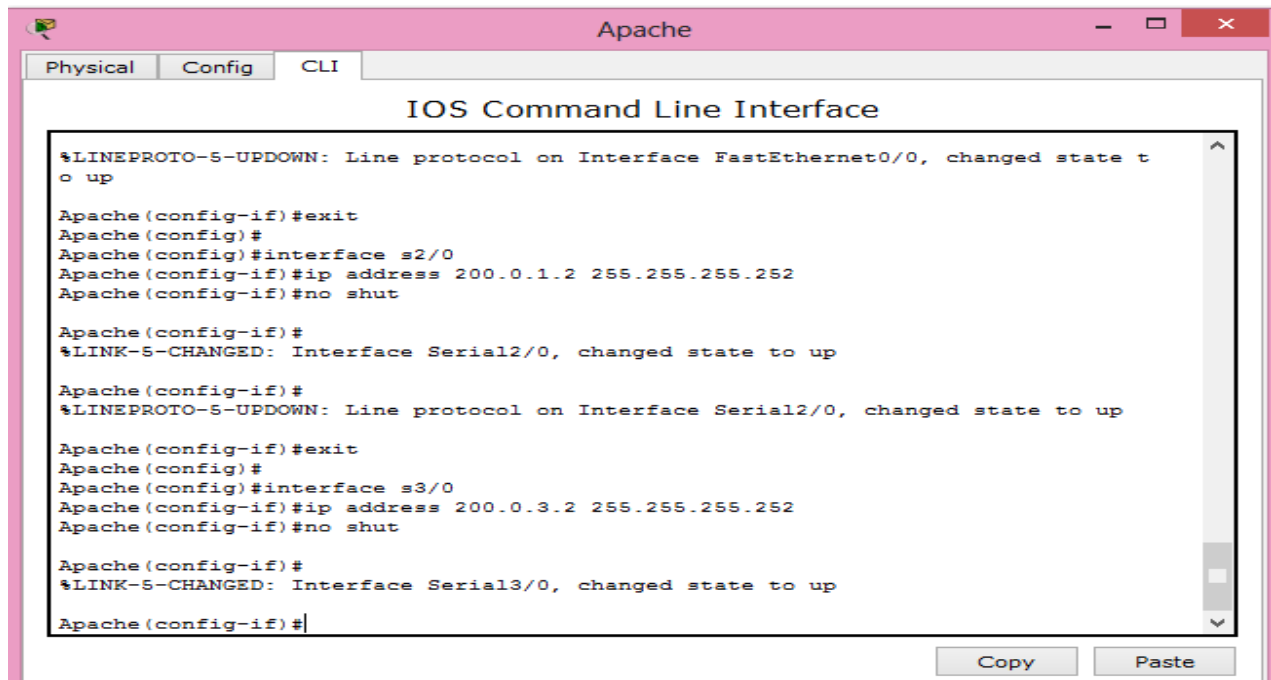
Apache(config-if)#exit
Apache(config)#
Apache(config)#interface s2/0
Apache(config-if)#ip address 200.0.1.2 255.255.255.252
Apache(config-if)#no shut

Apache(config-if)#
%LINK-S-CHANGED: Interface Serial2/0, changed state to up

Apache(config-if)#
```

At the bottom right of the terminal window, there are "Copy" and "Paste" buttons.

Serial 3/0



```
Apache
Physical Config CLI
IOS Command Line Interface

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up

Apache(config-if)#exit
Apache(config)#
Apache(config)#interface s2/0
Apache(config-if)#ip address 200.0.1.2 255.255.255.252
Apache(config-if)#no shut

Apache(config-if)#
%LINK-5-CHANGED: Interface Serial2/0, changed state to up

Apache(config-if)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial2/0, changed state to up

Apache(config-if)#exit
Apache(config)#
Apache(config)#interface s3/0
Apache(config-if)#ip address 200.0.3.2 255.255.255.252
Apache(config-if)#no shut

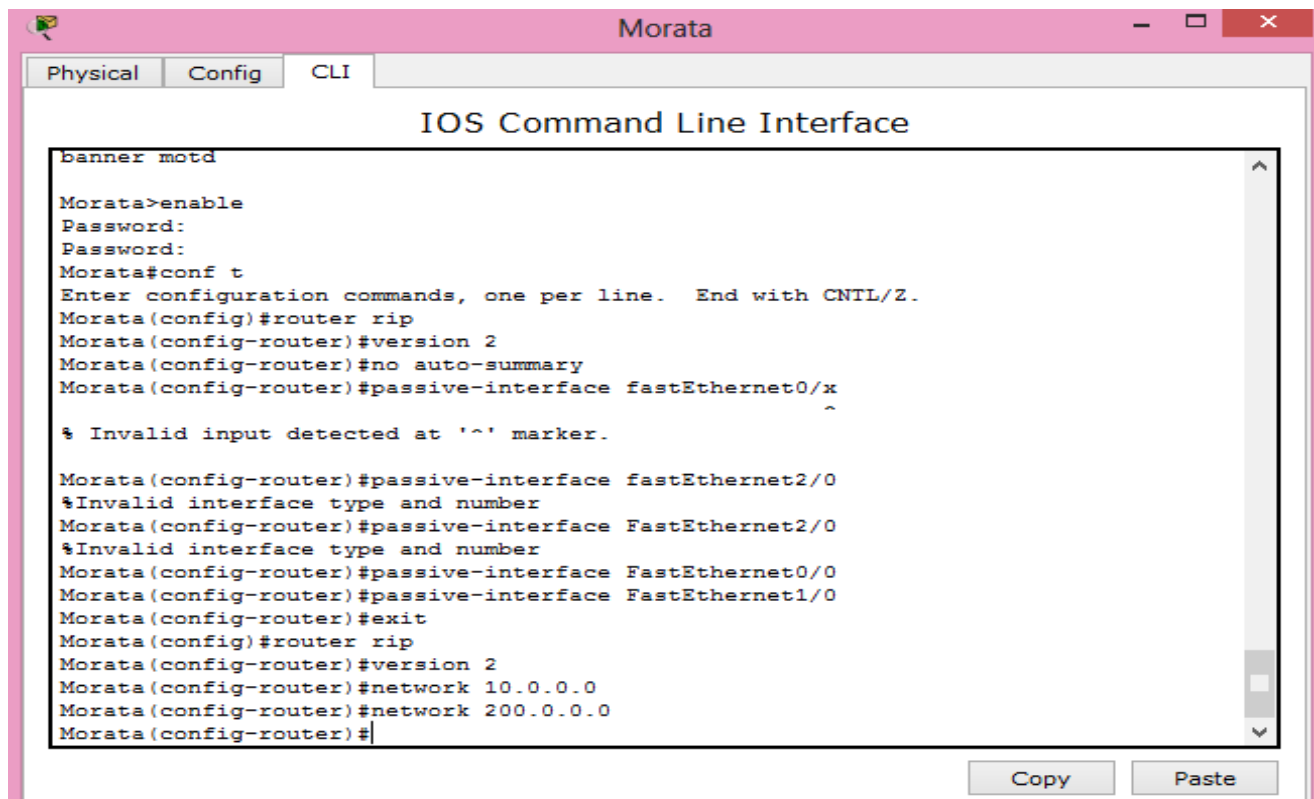
Apache(config-if)#
%LINK-5-CHANGED: Interface Serial3/0, changed state to up

Apache(config-if)#|
```

Copy Paste

Configuración de RIPv2 en un router Cisco.

R1 (Morata).



```
Morata
Physical Config CLI
IOS Command Line Interface

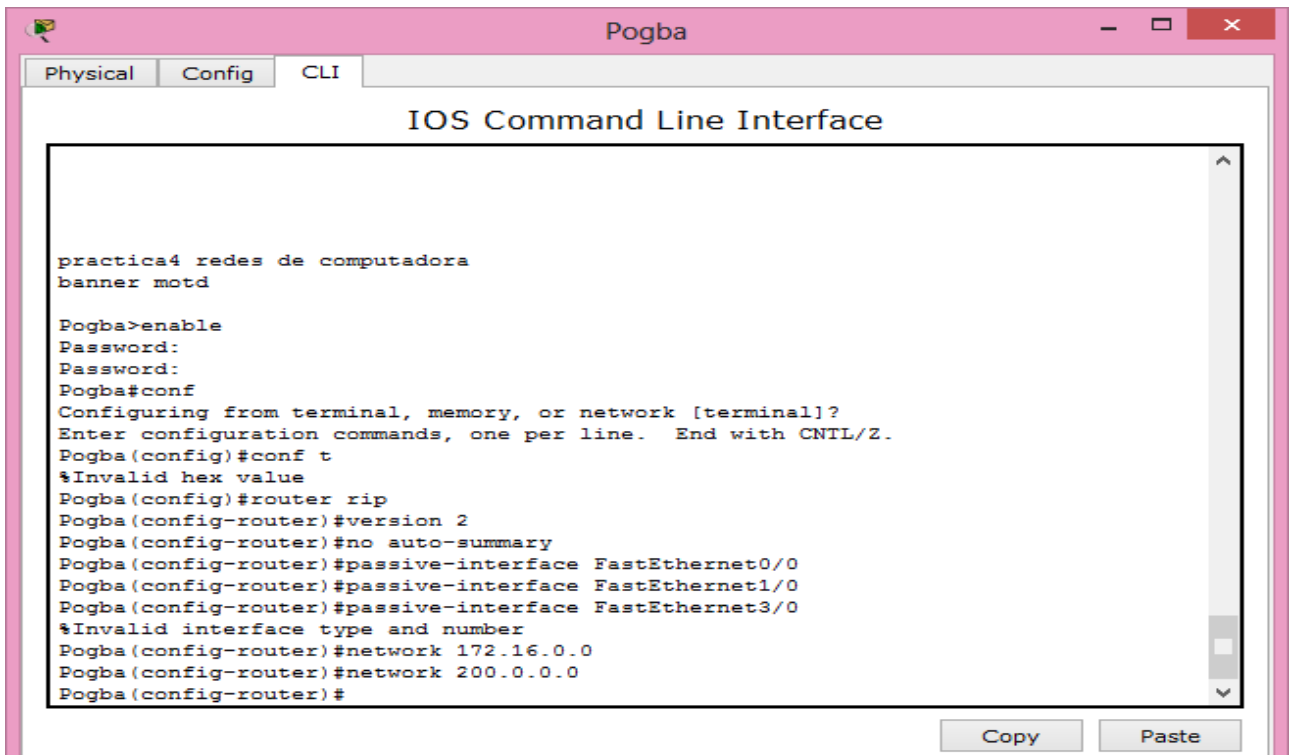
banner motd

Morata>enable
Password:
Password:
Morata#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Morata(config)#router rip
Morata(config-router)#version 2
Morata(config-router)#no auto-summary
Morata(config-router)#passive-interface fastEthernet0/x
^
% Invalid input detected at '^' marker.

Morata(config-router)#passive-interface fastEthernet2/0
%Invalid interface type and number
Morata(config-router)#passive-interface FastEthernet2/0
%Invalid interface type and number
Morata(config-router)#passive-interface FastEthernet0/0
Morata(config-router)#passive-interface FastEthernet1/0
Morata(config-router)#exit
Morata(config)#router rip
Morata(config-router)#version 2
Morata(config-router)#network 10.0.0.0
Morata(config-router)#network 200.0.0.0
Morata(config-router)#|
```

Copy Paste

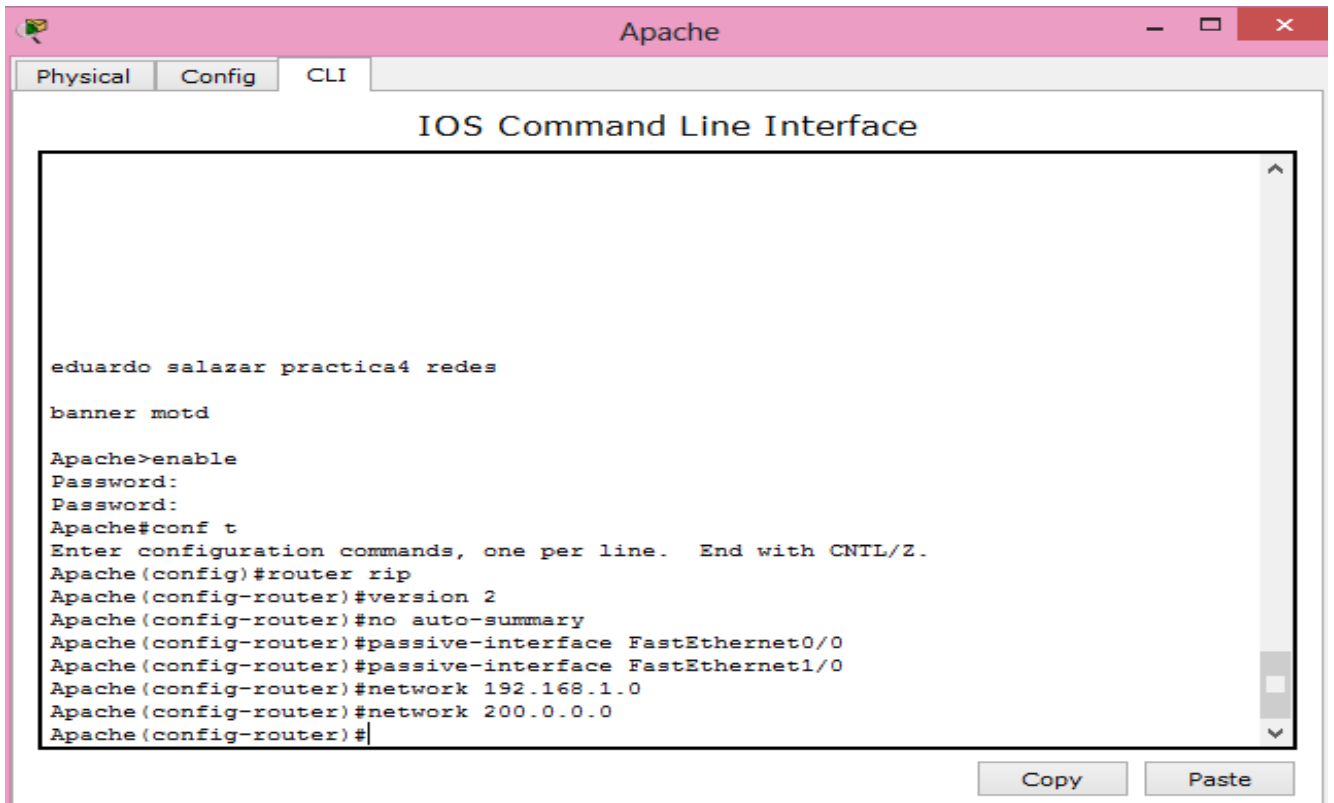
R2 (Pogba).



```
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Pogba>enable
Password:
Password:
Pogba#conf
Configuring from terminal, memory, or network [terminal]?
Enter configuration commands, one per line.  End with CNTL/Z.
Pogba(config)#conf t
%Invalid hex value
Pogba(config)#router rip
Pogba(config-router)#version 2
Pogba(config-router)#no auto-summary
Pogba(config-router)#passive-interface FastEthernet0/0
Pogba(config-router)#passive-interface FastEthernet1/0
Pogba(config-router)#passive-interface FastEthernet3/0
%Invalid interface type and number
Pogba(config-router)#network 172.16.0.0
Pogba(config-router)#network 200.0.0.0
Pogba(config-router)#
```

R3 (Apache).

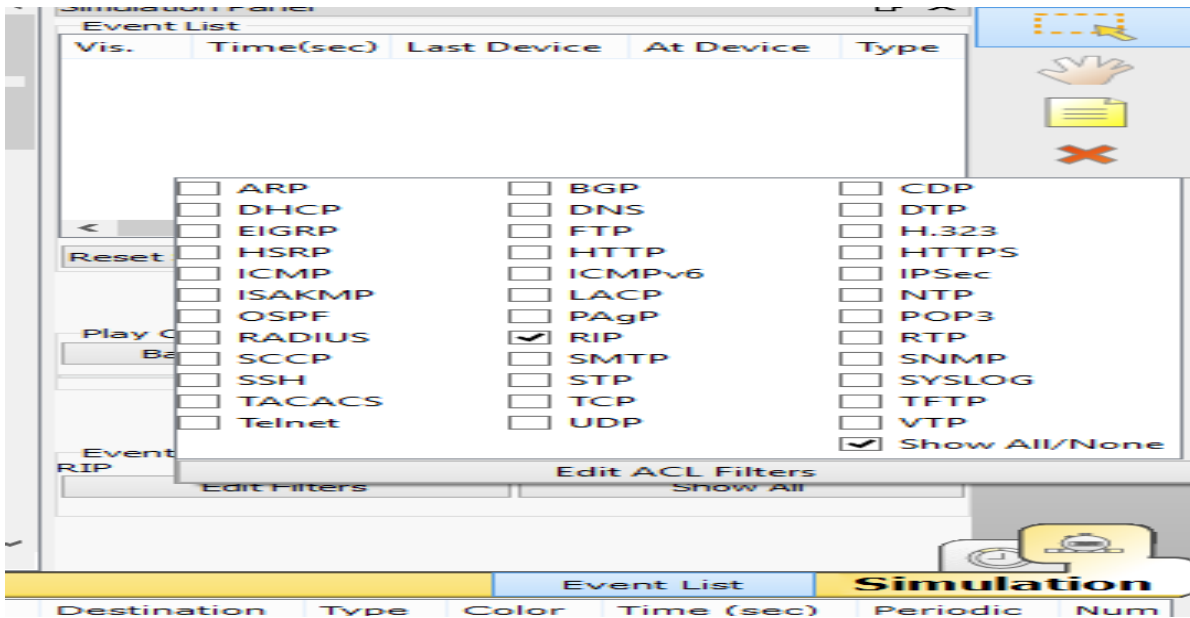


```
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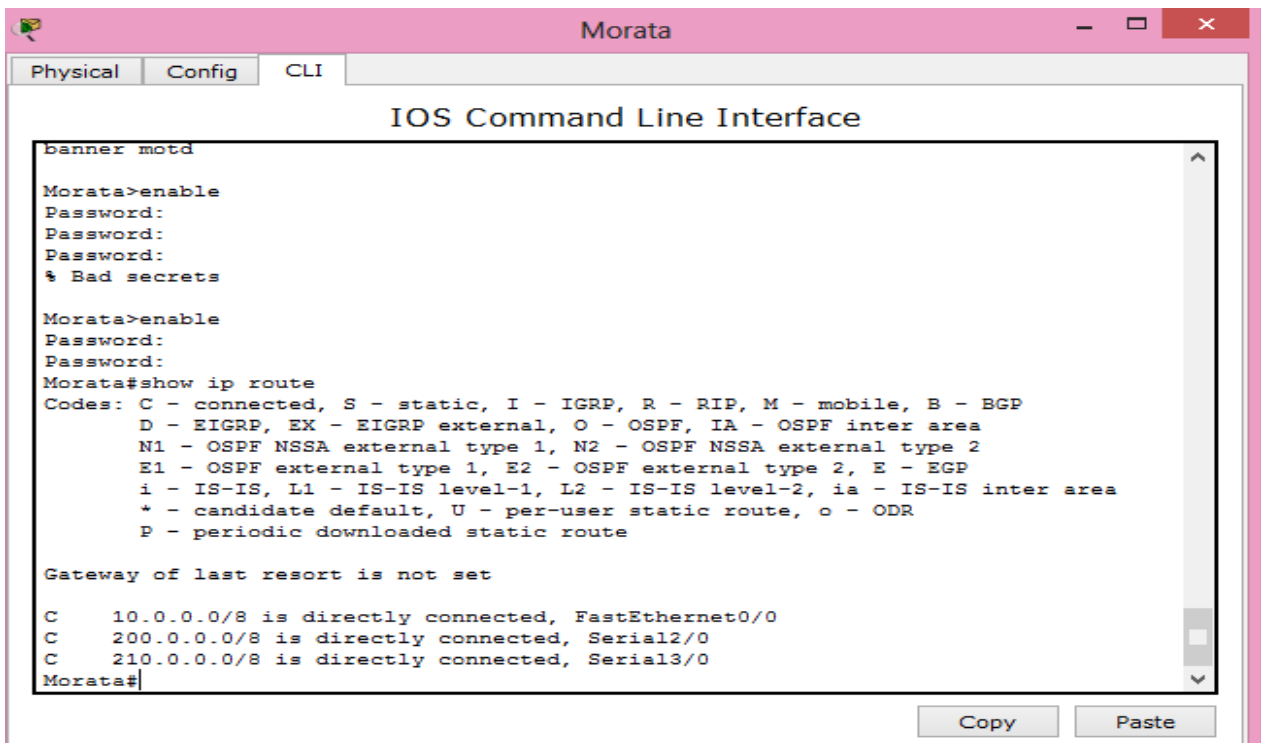
Apache>enable
Password:
Password:
Apache#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
Apache(config)#router rip
Apache(config-router)#version 2
Apache(config-router)#no auto-summary
Apache(config-router)#passive-interface FastEthernet0/0
Apache(config-router)#passive-interface FastEthernet1/0
Apache(config-router)#network 192.168.1.0
Apache(config-router)#network 200.0.0.0
Apache(config-router)#
```

Una vez finalizado el proceso de configuración del protocolo de enrutamiento, entre en el modo simulación y filtre los paquetes por protocolo RIP.



Verificar que las tablas de enrutamiento de los routers han incorporado las rutas hasta las redes remotas. Mediante el siguiente comando: show ip route.

R1.



R2.

```
Pogba>enable
Password:
Password:
Pogba#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Pogba(config)#exit
Pogba#show ip route
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route

Gateway of last resort is not set

     172.16.0.0/24 is subnetted, 2 subnets
C       172.16.1.0 is directly connected, FastEthernet0/0
C       172.16.2.0 is directly connected, FastEthernet1/0
     200.0.3.0/30 is subnetted, 1 subnets
C       200.0.3.0 is directly connected, Serial3/0
     210.0.2.0/30 is subnetted, 1 subnets
C       210.0.2.0 is directly connected, Serial2/0
Pogba#
```

R3.

```
Apache>enable
Password:
Password:
Password:
% Bad secrets

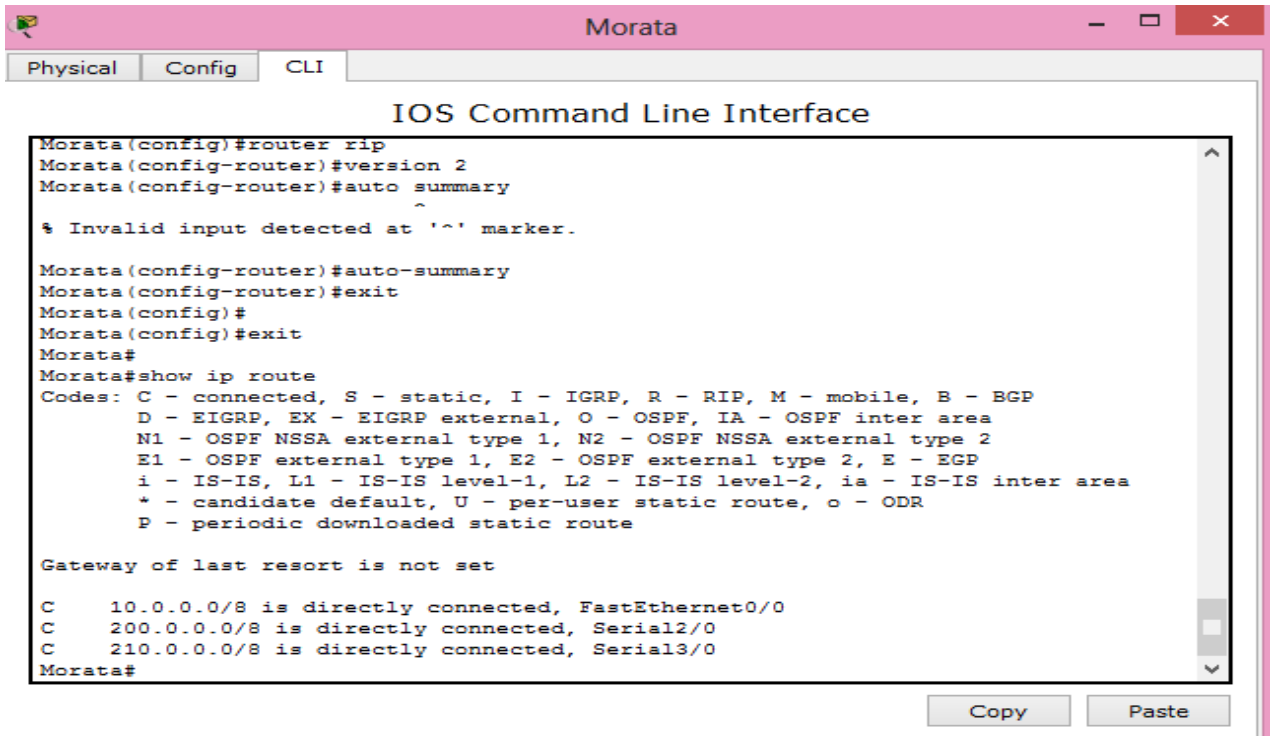
Apache>enable
Password:
Apache#show ip route
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF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

Gateway of last resort is not set

C       192.168.1.0/24 is directly connected, FastEthernet0/0
     200.0.1.0/30 is subnetted, 1 subnets
C       200.0.1.0 is directly connected, Serial2/0
     200.0.3.0/30 is subnetted, 1 subnets
C       200.0.3.0 is directly connected, Serial3/0
Apache#
```

Posteriormente reactivamos la sumarización de rutas y después analizamos nuevamente la tabla de enrutamiento, mediante el comando anterior.

R1.



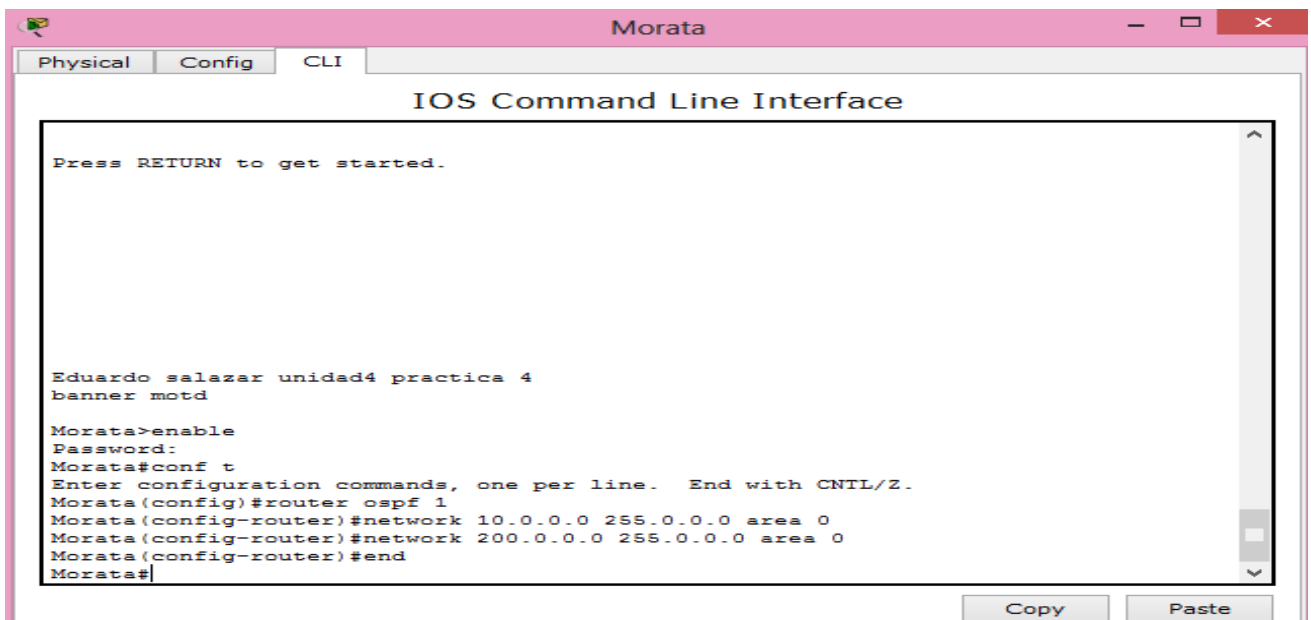
```
Morata
Physical Config CLI
IOS Command Line Interface
Morata(config)#router rip
Morata(config-router)#version 2
Morata(config-router)#auto summary
^
% Invalid input detected at '^' marker.
Morata(config-router)#auto-summary
Morata(config-router)#exit
Morata(config)#
Morata(config)#exit
Morata#
Morata#show ip route
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
        D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
        N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
        E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
        i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
        * - candidate default, U - per-user static route, o - ODR
        P - periodic downloaded static route

Gateway of last resort is not set

C    10.0.0.0/8 is directly connected, FastEthernet0/0
C    200.0.0.0/8 is directly connected, Serial2/0
C    210.0.0.0/8 is directly connected, Serial3/0
Morata#
```

La activación del protocolo OSPF debe llevarse a cabo en cada uno de los routers bajo una administración común. El proceso es el que se describe a continuación:

R1.

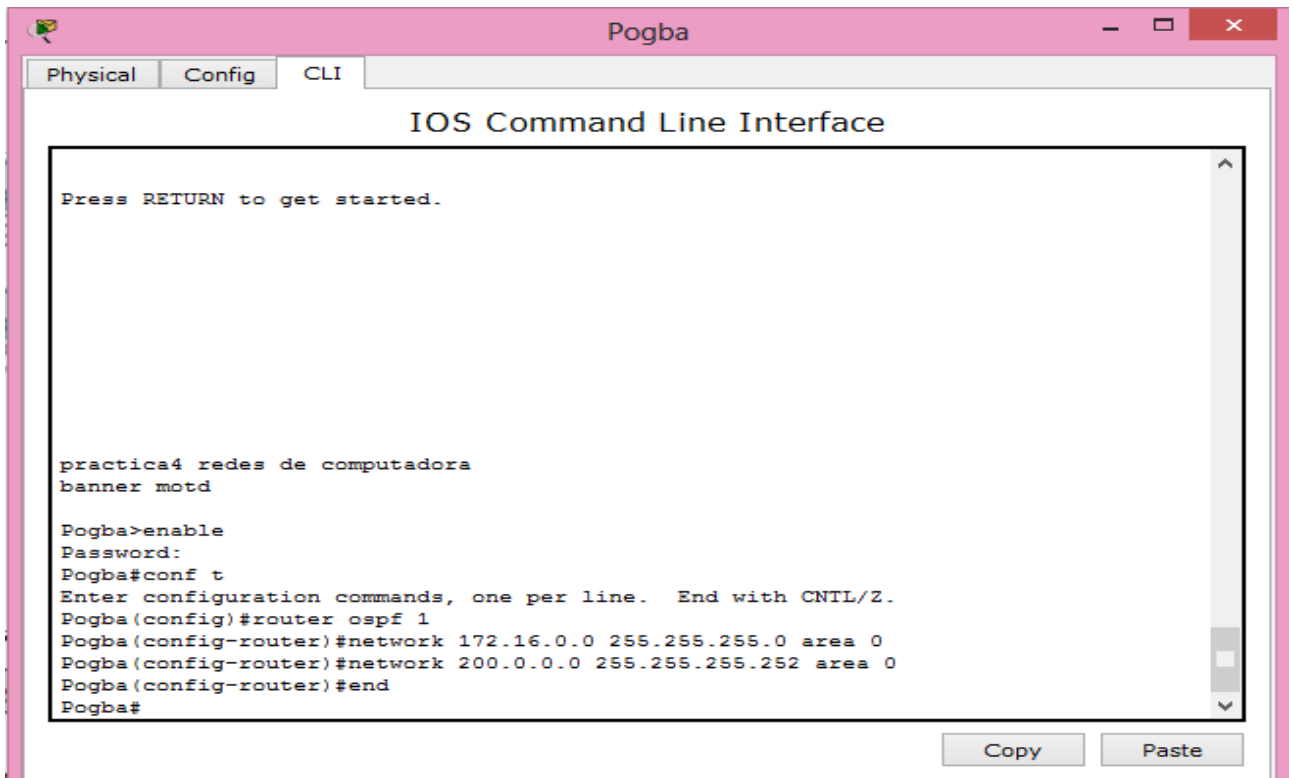


```
Morata
Physical Config CLI
IOS Command Line Interface
Press RETURN to get started.

Eduardo salazar unidad4 practica 4
banner motd

Morata>enable
Password:
Morata#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Morata(config)#router ospf 1
Morata(config-router)#network 10.0.0.0 255.0.0.0 area 0
Morata(config-router)#network 200.0.0.0 255.0.0.0 area 0
Morata(config-router)#end
Morata#
```

R2.



The screenshot shows a Cisco IOS Command Line Interface window titled "Pogba". The window has tabs for "Physical", "Config", and "CLI". The main area displays the following text:

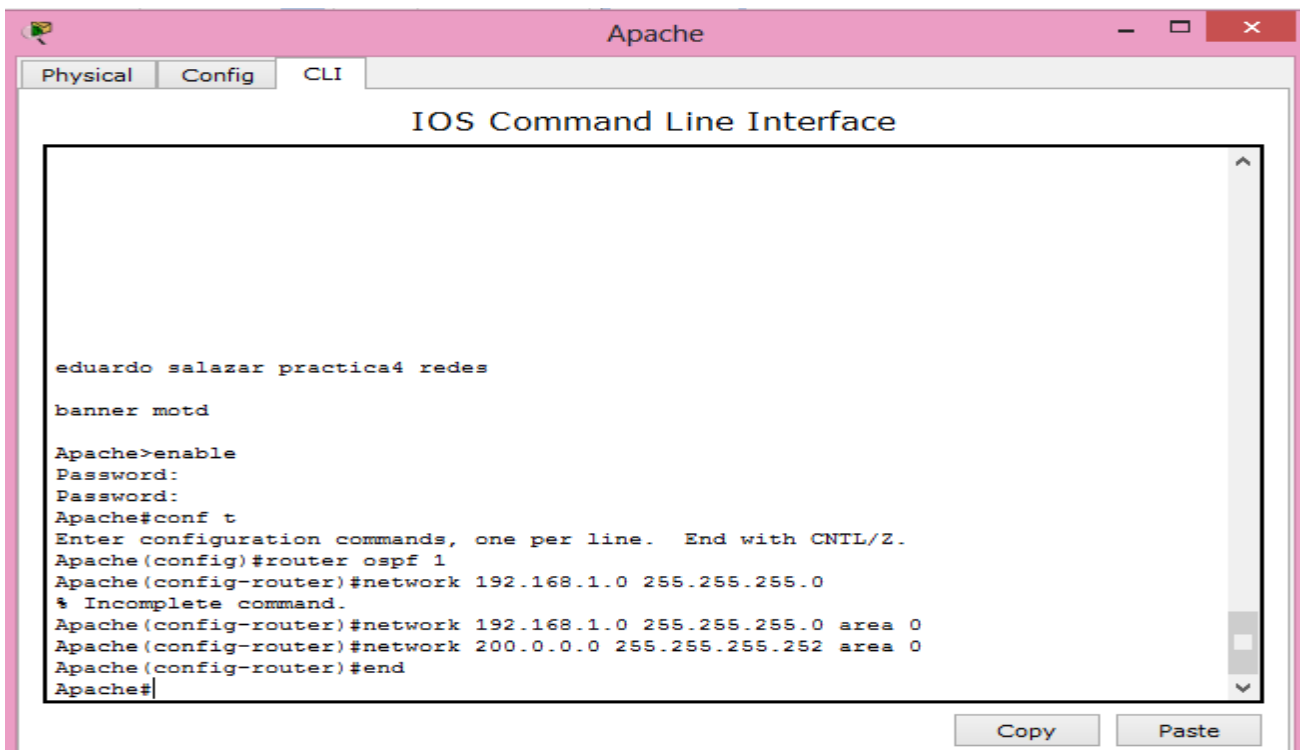
```
Press RETURN to get started.

practica4 redes de computadora
banner motd

Pogba>enable
Password:
Pogba#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Pogba(config)#router ospf 1
Pogba(config-router)#network 172.16.0.0 255.255.255.0 area 0
Pogba(config-router)#network 200.0.0.0 255.255.255.252 area 0
Pogba(config-router)#end
Pogba#
```

At the bottom right of the window, there are "Copy" and "Paste" buttons.

R3.



The screenshot shows a Cisco IOS Command Line Interface window titled "Apache". The window has tabs for "Physical", "Config", and "CLI". The main area displays the following text:

```
eduardo salazar practica4 redes

banner motd

Apache>enable
Password:
Password:
Apache#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Apache(config)#router ospf 1
Apache(config-router)#network 192.168.1.0 255.255.255.0
% Incomplete command.
Apache(config-router)#network 192.168.1.0 255.255.255.0 area 0
Apache(config-router)#network 200.0.0.0 255.255.255.252 area 0
Apache(config-router)#end
Apache#
```

At the bottom right of the window, there are "Copy" and "Paste" buttons.

Una vez finalizado el proceso de configuración del protocolo de enrutamiento, es necesario analizar la tabla de enrutamiento mediante el comando show ip route.

R1.

```
Eduardo salazar unidad4 practica 4
banner motd

Morata>enable
Password:
Morata#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Morata(config)#router ospf 1
Morata(config-router)#network 10.0.0.0 255.0.0.0 area 0
Morata(config-router)#network 200.0.0.0 255.0.0.0 area 0
Morata(config-router)#end
Morata#show ip route
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route

Gateway of last resort is not set

C    10.0.0.0/8 is directly connected, FastEthernet0/0
C    200.0.0.0/8 is directly connected, Serial2/0
C    210.0.0.0/8 is directly connected, Serial3/0
Morata#
```

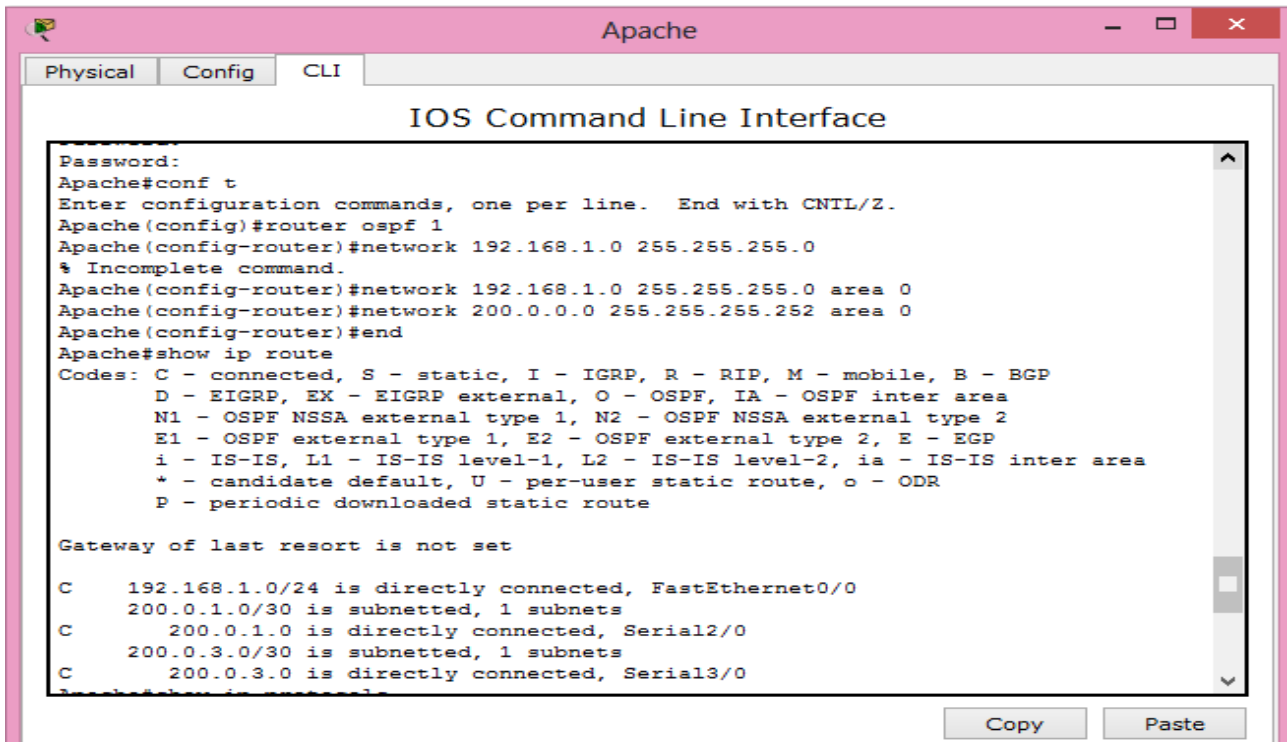
R2.

```
Pogba#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Pogba(config)#router ospf 1
Pogba(config-router)#network 172.16.0.0 255.255.255.0 area 0
Pogba(config-router)#network 200.0.0.0 255.255.255.252 area 0
Pogba(config-router)#end
Pogba#show ip route
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route

Gateway of last resort is not set

      172.16.0.0/24 is subnetted, 2 subnets
C      172.16.1.0 is directly connected, FastEthernet0/0
C      172.16.2.0 is directly connected, FastEthernet1/0
      200.0.3.0/30 is subnetted, 1 subnets
C      200.0.3.0 is directly connected, Serial3/0
      210.0.2.0/30 is subnetted, 1 subnets
C      210.0.2.0 is directly connected, Serial2/0
Pogba#
```

R3.



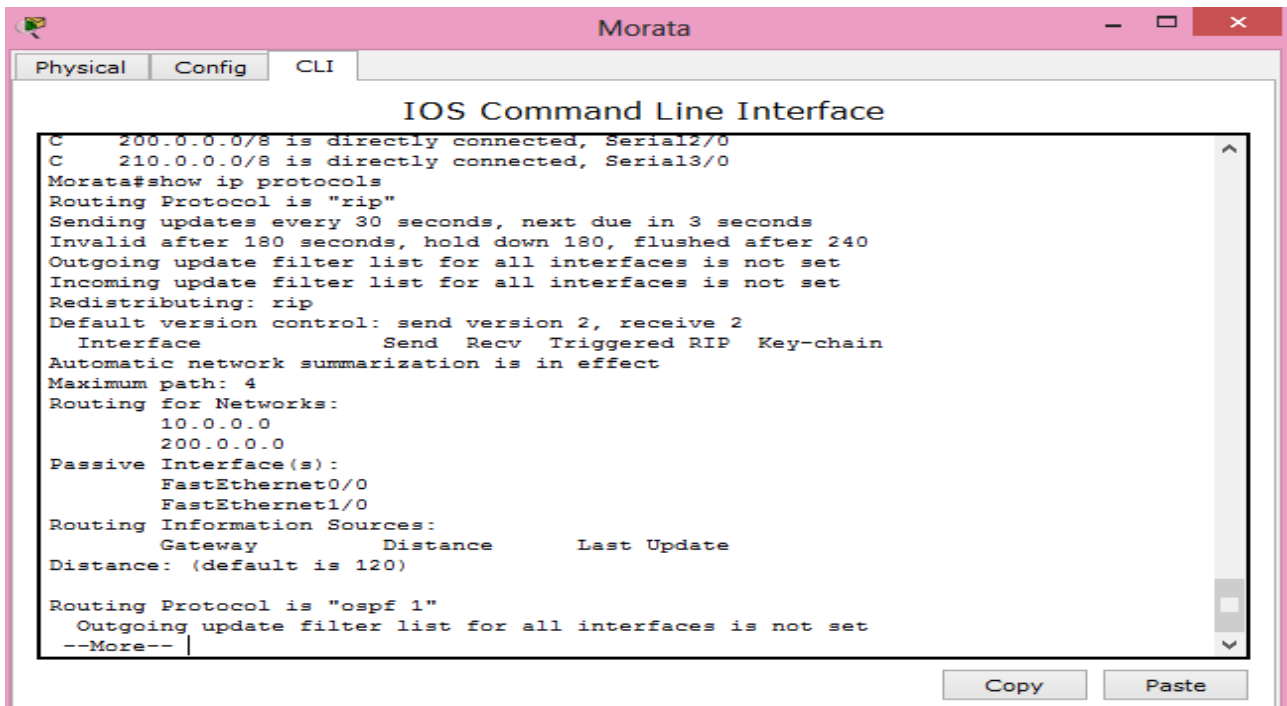
```
Apache
Physical Config CLI
IOS Command Line Interface
Password:
Apache#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Apache(config)#router ospf 1
Apache(config-router)#network 192.168.1.0 255.255.255.0
% Incomplete command.
Apache(config-router)#network 192.168.1.0 255.255.255.0 area 0
Apache(config-router)#network 200.0.0.0 255.255.255.252 area 0
Apache(config-router)#end
Apache#show ip route
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
* - candidate default, U - per-user static route, o - ODR
P - periodic downloaded static route

Gateway of last resort is not set

C    192.168.1.0/24 is directly connected, FastEthernet0/0
C    200.0.1.0/30 is subnetted, 1 subnets
C      200.0.1.0 is directly connected, Serial2/0
C    200.0.3.0/30 is subnetted, 1 subnets
C      200.0.3.0 is directly connected, Serial3/0
--More--
```

Además podemos observar los protocolos que están habilitados mediante el comando show ip protocols.

R1.



```
Morata
Physical Config CLI
IOS Command Line Interface
C    200.0.0.0/8 is directly connected, Serial2/0
C    210.0.0.0/8 is directly connected, Serial3/0
Morata#show ip protocols
Routing Protocol is "rip"
Sending updates every 30 seconds, next due in 3 seconds
Invalid after 180 seconds, hold down 180, flushed after 240
Outgoing update filter list for all interfaces is not set
Incoming update filter list for all interfaces is not set
Redistributing: rip
Default version control: send version 2, receive 2
Interface          Send Recv Triggered RIP Key-chain
Automatic network summarization is in effect
Maximum path: 4
Routing for Networks:
 10.0.0.0
 200.0.0.0
Passive Interface(s):
 FastEthernet0/0
 FastEthernet1/0
Routing Information Sources:
 Gateway         Distance      Last Update
Distance: (default is 120)

Routing Protocol is "ospf 1"
Outgoing update filter list for all interfaces is not set
--More--
```

R2.

```
IOS Command Line Interface

210.0.2.0/30 is subnetted, 1 subnets
C    210.0.2.0 is directly connected, Serial2/0
Pogba#show ip protocols
Routing Protocol is "rip"
  Sending updates every 30 seconds, next due in 7 seconds
  Invalid after 180 seconds, hold down 180, flushed after 240
  Outgoing update filter list for all interfaces is not set
  Incoming update filter list for all interfaces is not set
  Redistributing: rip
  Default version control: send version 2, receive 2
     Interface           Send Recv Triggered RIP Key-chain
Automatic network summarization is not in effect
Maximum path: 4
Routing for Networks:
  172.16.0.0
  200.0.0.0
Passive Interface(s):
  FastEthernet0/0
  FastEthernet1/0
Routing Information Sources:
  Gateway         Distance      Last Update
Distance: (default is 120)

Routing Protocol is "ospf 1"
  Outgoing update filter list for all interfaces is not set
--More--
```

R3.

```
IOS Command Line Interface

C    200.0.3.0 is directly connected, Serial3/0
Apache#show ip protocols
Routing Protocol is "rip"
  Sending updates every 30 seconds, next due in 19 seconds
  Invalid after 180 seconds, hold down 180, flushed after 240
  Outgoing update filter list for all interfaces is not set
  Incoming update filter list for all interfaces is not set
  Redistributing: rip
  Default version control: send version 2, receive 2
     Interface           Send Recv Triggered RIP Key-chain
Automatic network summarization is not in effect
Maximum path: 4
Routing for Networks:
  192.168.1.0
  200.0.0.0
Passive Interface(s):
  FastEthernet0/0
  FastEthernet1/0
Routing Information Sources:
  Gateway         Distance      Last Update
Distance: (default is 120)

Routing Protocol is "ospf 1"
  Outgoing update filter list for all interfaces is not set
Apache#
```

Diferencia entre RIPv1 y RIPv2.

RIPv1	RIPv2
<ul style="list-style-type: none">* No envía máscara de subred durante las actualizaciones de enrutamiento.* Las actualizaciones se envían por medio de broadcast.* Protocolo de enrutamiento classful.* Resume redes en límites de red principales.* No logra la convergencia.* No proporciona soporte para VLSM.* No proporcionan soporte para rutas CIDR.	<ul style="list-style-type: none">* Se incluye la próxima dirección de salto en las actualizaciones.* Las actualizaciones se envían por medio de multicast.* Si logra la convergencia.* Incluye las máscaras de subred.* resumir rutas con una máscara de subred más pequeña que la máscara de subred classful.* Soporta rutas CIDR.* Soporta VLSM.

CONCLUSIÓN

Mediante la realización de esta práctica que fue la implementación del protocolo RIPv2 Y OSPF1, pude observar algunas cosas como por ejemplo que RIPv2 es un protocolo con clase y el OSPF es uno sin clase. Como sabemos es necesario habilitar la versión 2 para trabajar con ella y deshabilitar la sumarización de subredes, un paso nuevo fue el de señalar las interfaces que conectan a redes finales, es decir, digamos como habilitar las interfaces que estén levantadas para que solo se publiquen en estas rutas.

De igual forma la habilitación del protocolo OSPF1, esto se realiza de igual forma con lo del protocolo RIP con las mismas instrucciones, el coste OSPF de una ruta es un valor entero que se obtiene sumando los costes individuales de cada uno de los enlaces que forman parte de la ruta.

