

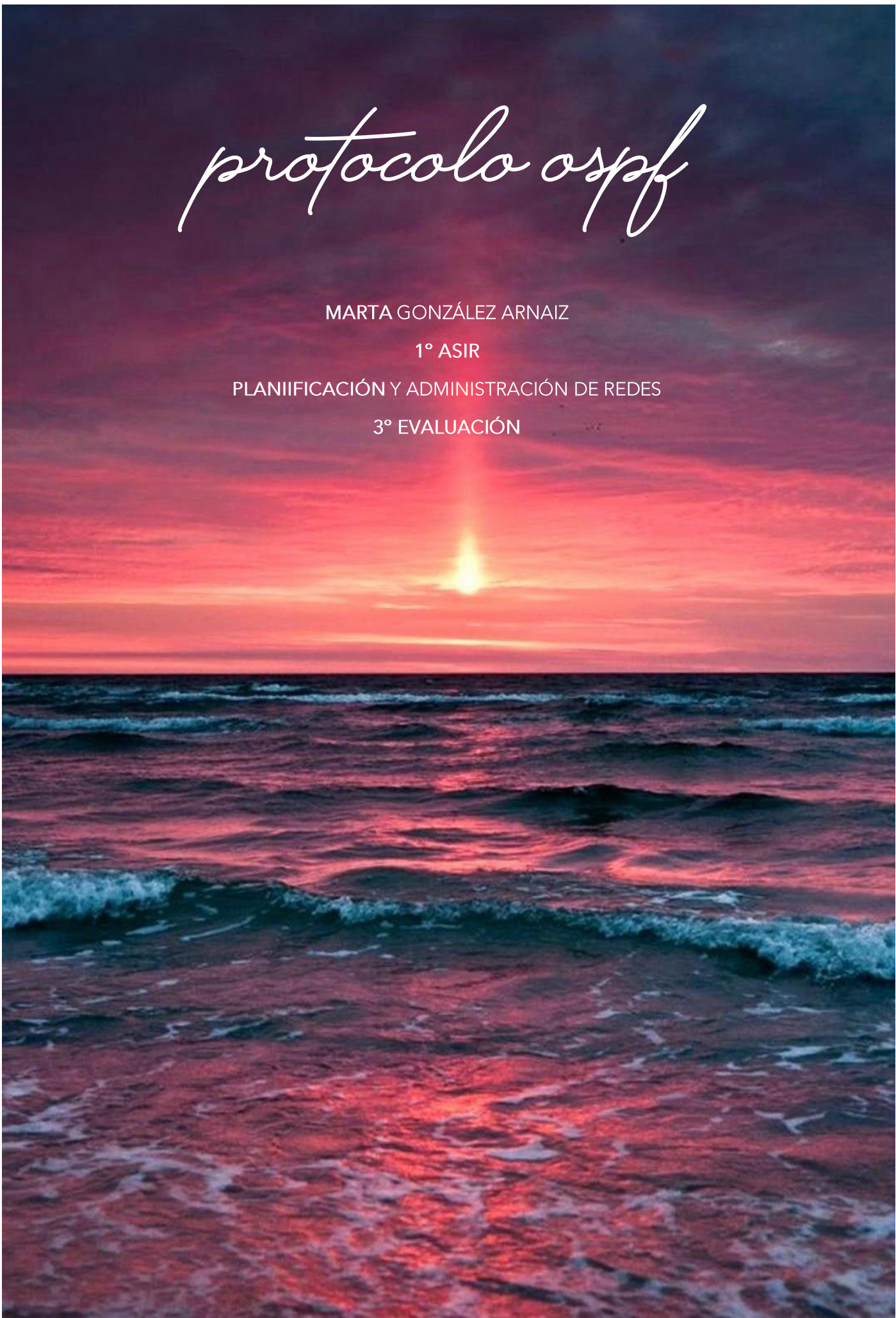
# *protocolo ospf*

MARTA GONZÁLEZ ARNAIZ

1º ASIR

PLANIIFICACIÓN Y ADMINISTRACIÓN DE REDES

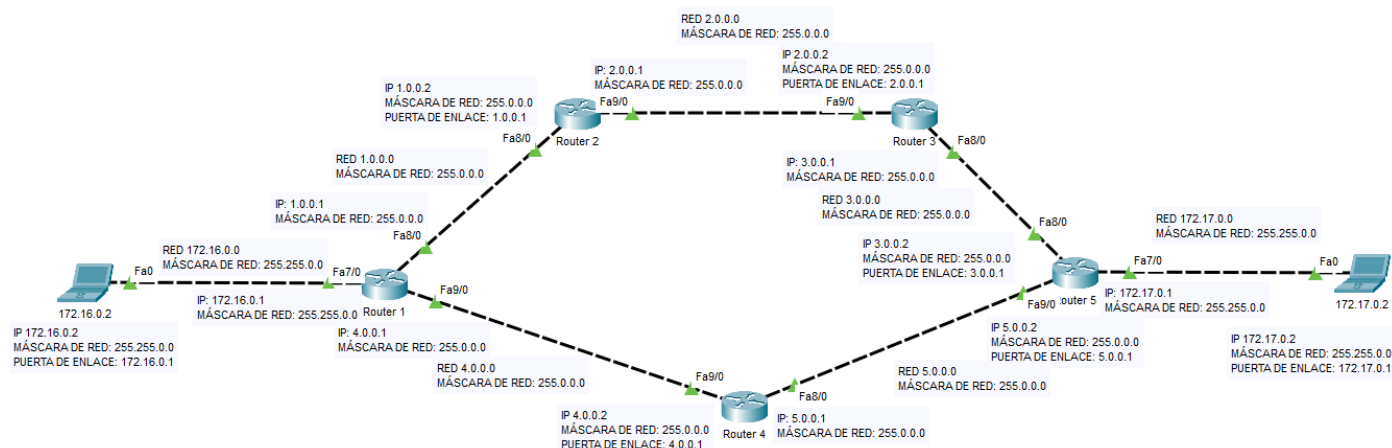
3º EVALUACIÓN



# *tabla de contenido*

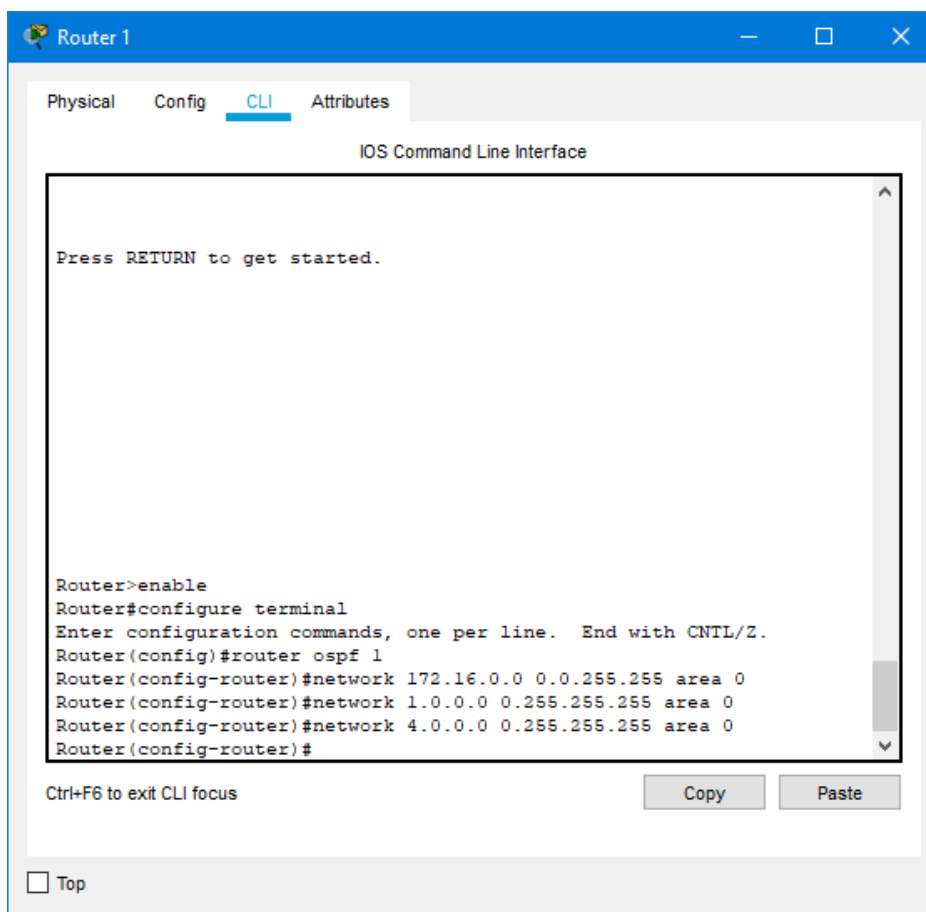
A) CONFIGURA LOS ROUTERS PARA QUE UTILICEN OSPF COMO PROTOCOLO IGP PERO SIN CONFIGURAR EL PARÁMETRO RID (ROUTER ID).....	2
C) PARA CADA ROUTER, OBTÉN QUIÉNES SON LOS ROUTERS VECINOS.....	10
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A partir de este esquema he realizado las siguientes actividades:

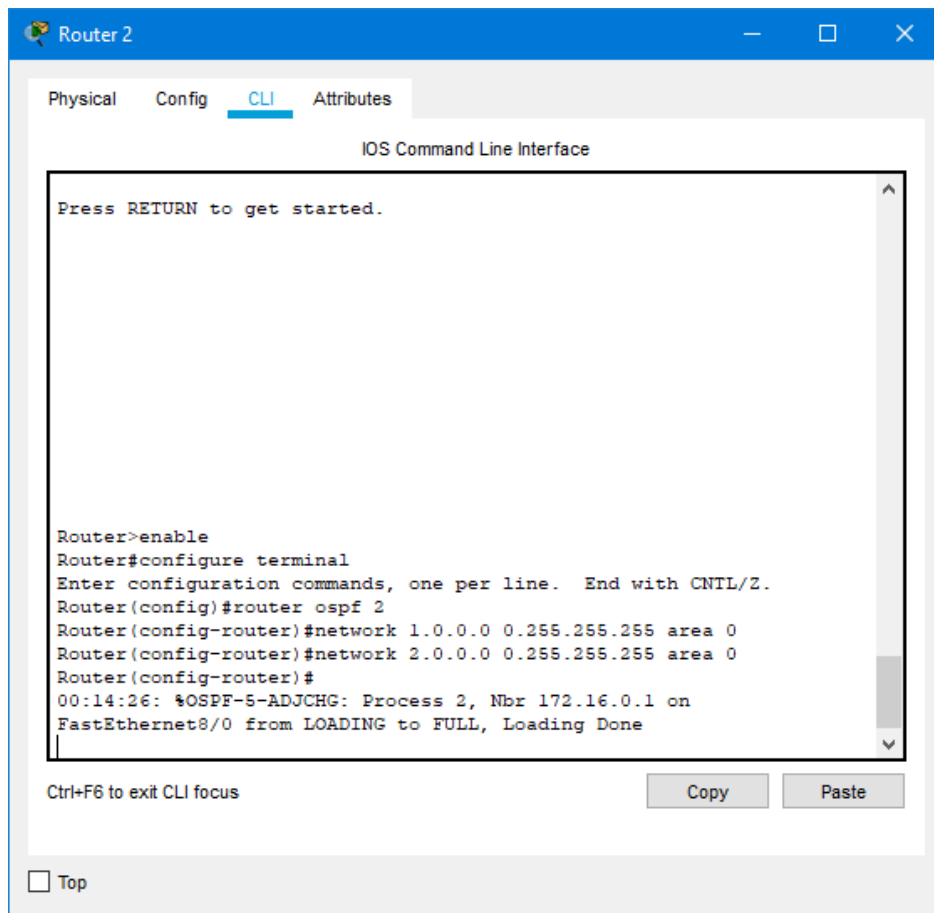


A) CONFIGURA LOS ROUTERS PARA QUE UTILICEN OSPF COMO PROTOCOLO IGP PERO SIN CONFIGURAR EL PARÁMETRO RID (ROUTER ID).

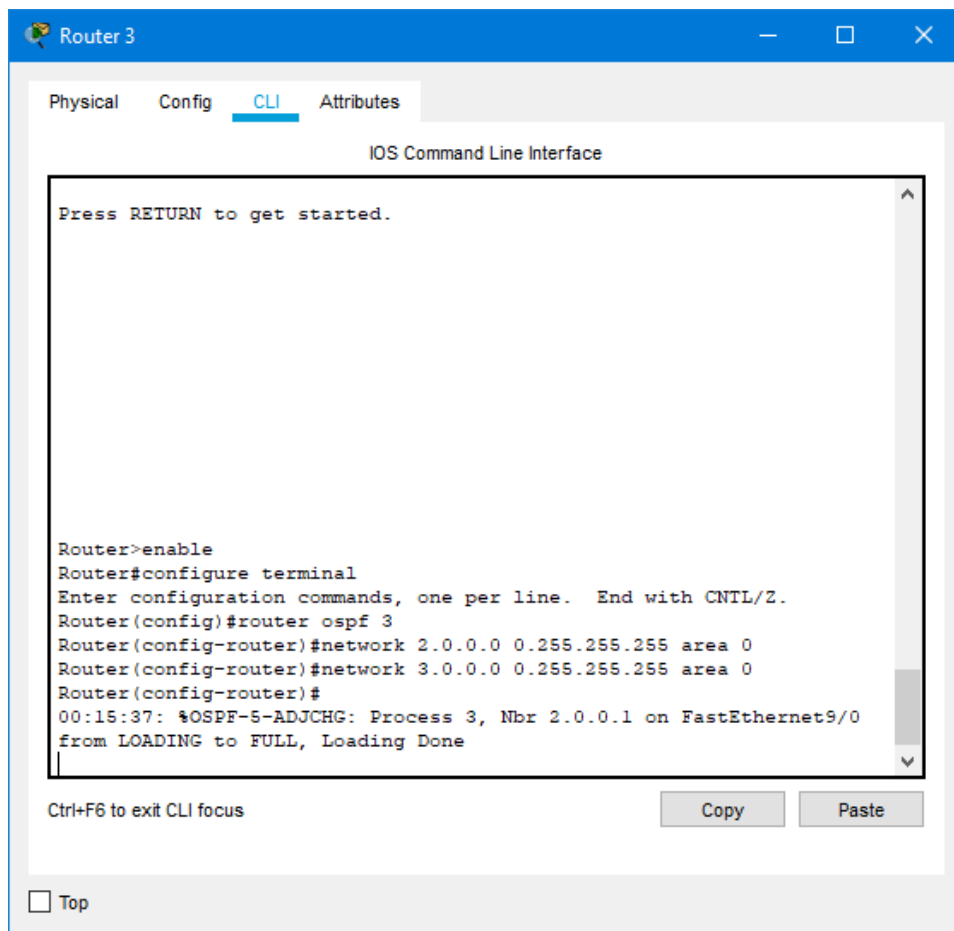
ROUTER 1



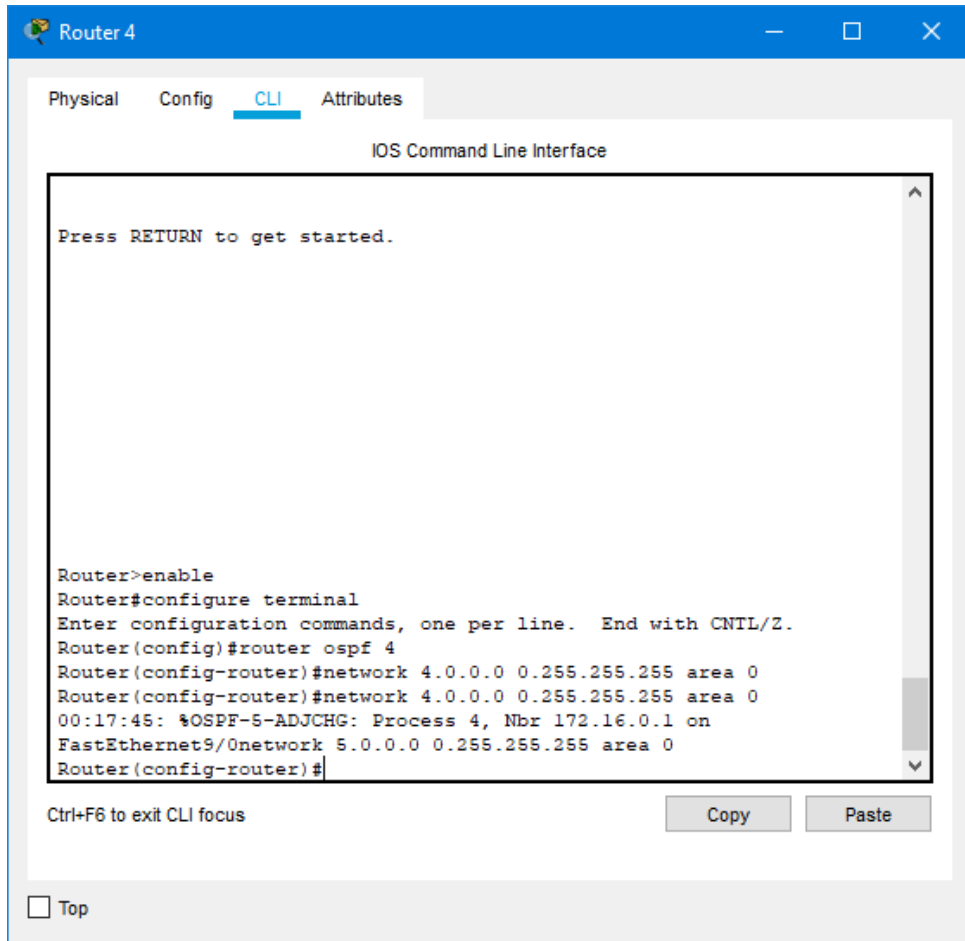
## ROUTER 2



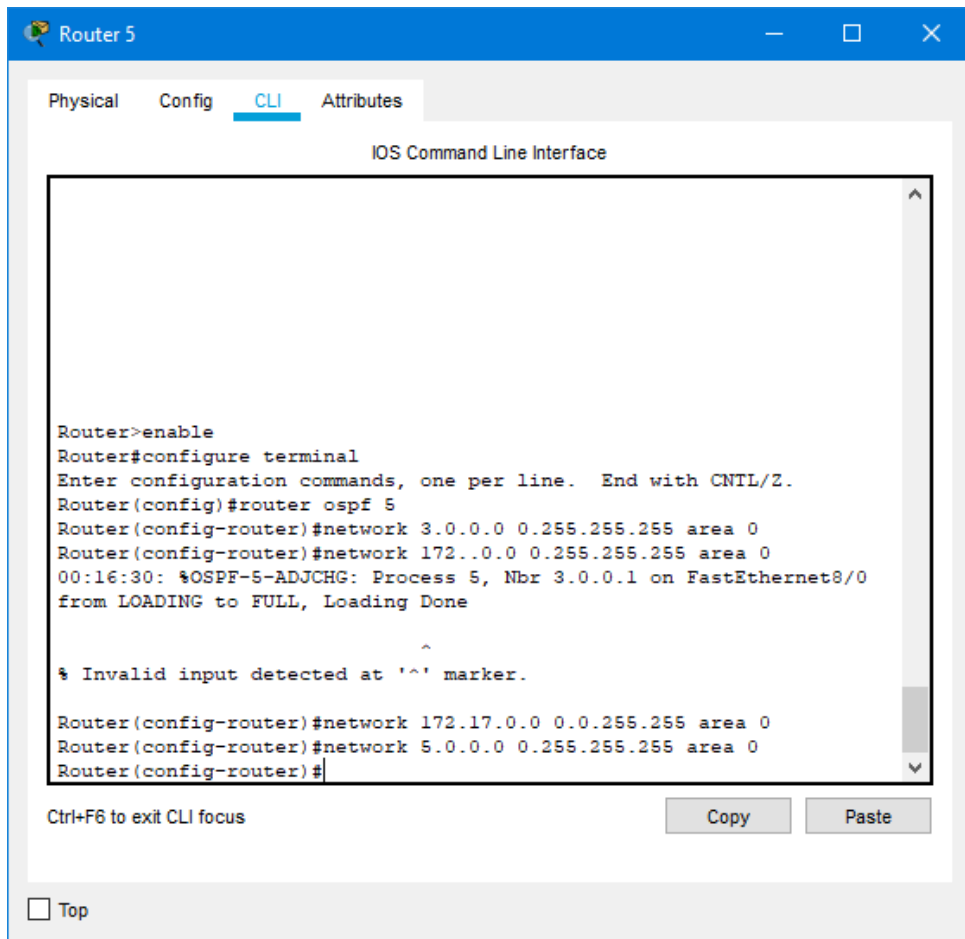
## ROUTER 3



## ROUTER 4



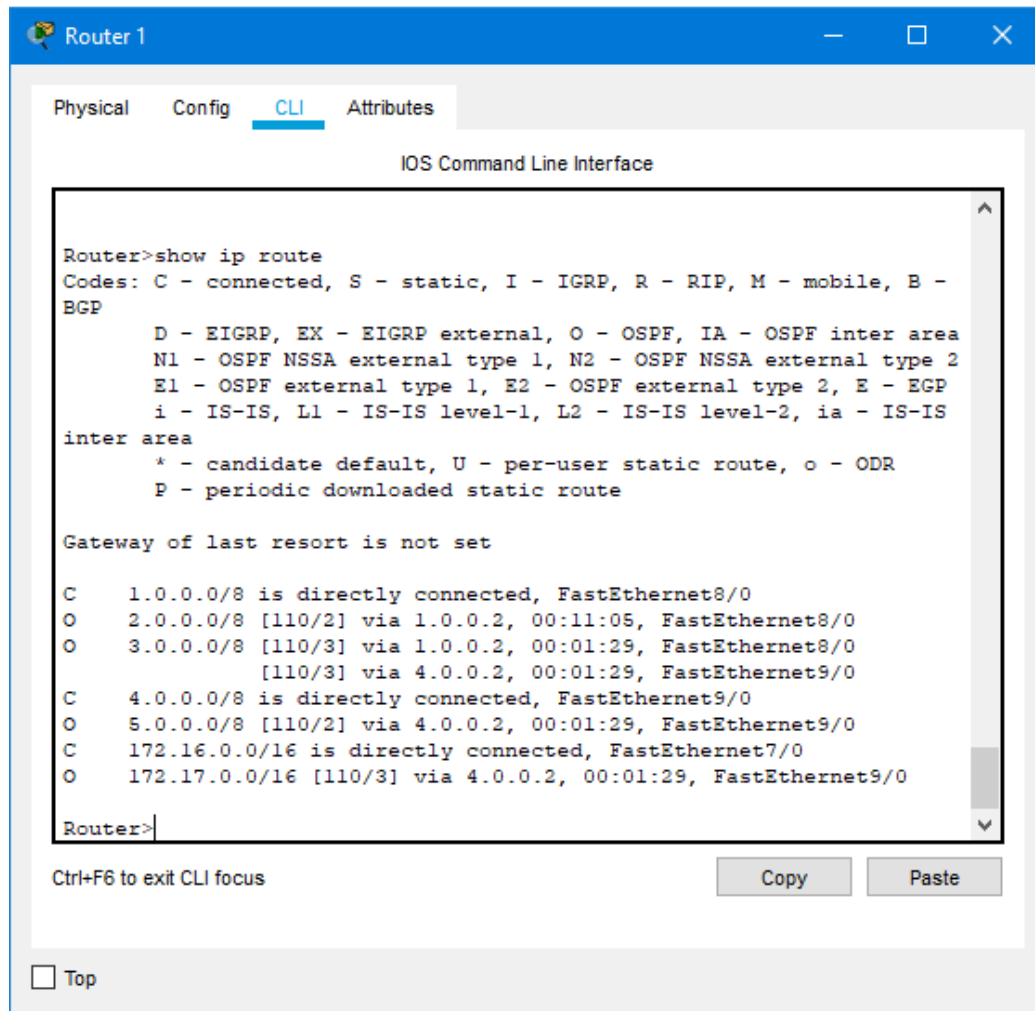
## ROUTER 5



B) OBTÉN EL CONTENIDO DE LA TABLA DE RUTAS DE LOS ROUTERS E INTERPRÉTALO.

### ROUTER 1

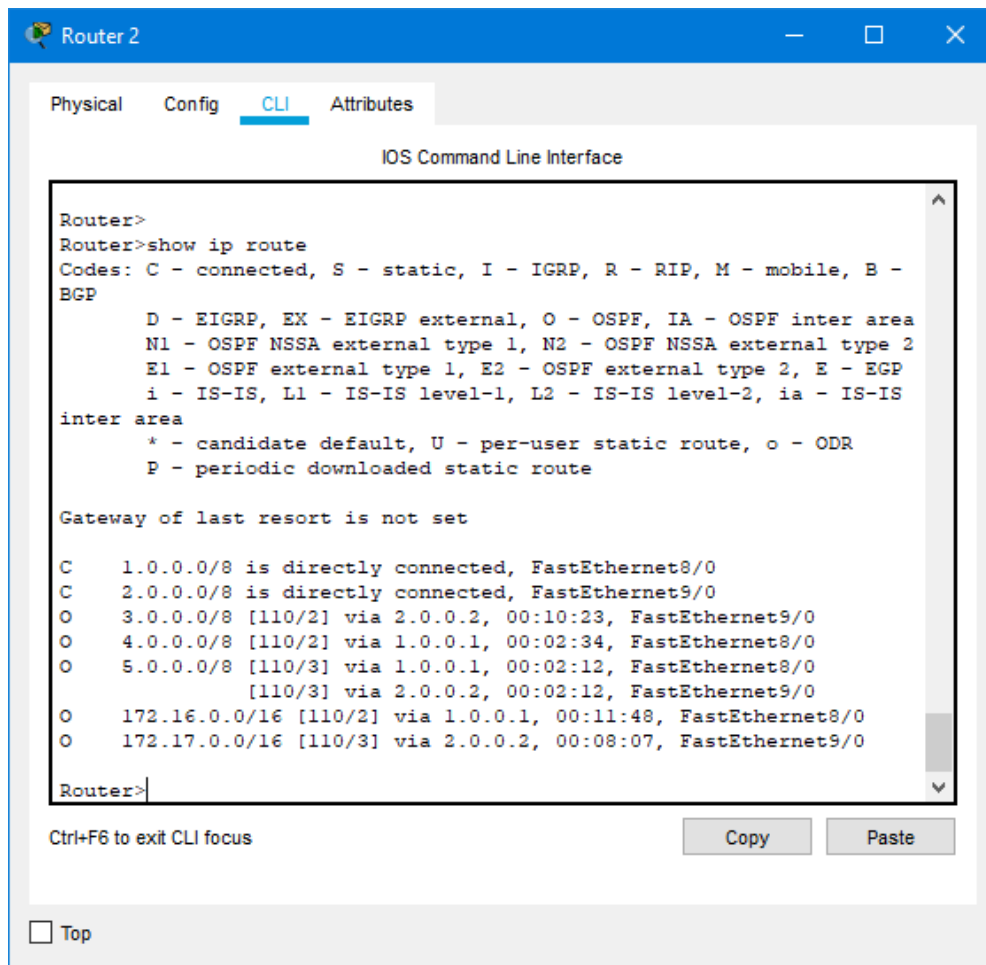
La siguiente imagen nos indica que las rutas a las redes 1.0.0.0, 4.0.0.0 y 172.16.0.0 están directamente conectadas al router y las redes 2.0.0.0, 3.0.0.0, 5.0.0.0, 172.17.0.0 se han obtenido a través del protocolo OSPF. Además, para la red 3.0.0.0 tenemos dos rutas para llegar desde el router 1, la primera a través de la interfaz FastEthernet 8/0 y la segunda a través de FastEthernet 9/0, las dos tienen la misma métrica por lo que dependerá de la congestión del enlace y el ancho de banda.





## ROUTER 2

La siguiente imagen nos indica que las rutas a las redes 1.0.0.0 y 2.0.0.0 están directamente conectadas al router y las redes 3.0.0.0, 4.0.0.0, 5.0.0.0, 172.16.0.0 ,172.17.0.0 se han obtenido a través del protocolo OSPF. Además, para la red 5.0.0.0 tenemos dos rutas para llegar desde el router 2, la primera a través de la interfaz FastEthernet 8/0 y la segunda a través de FastEthernet 9/0, las dos tienen la misma métrica por lo que dependerá de la congestión del enlace y el ancho de banda.



The screenshot shows the CLI of Router 2 with the 'show ip route' command executed. The output displays the routing table with codes for various protocols and their metrics. The routes are as follows:

```
Router>
Router>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

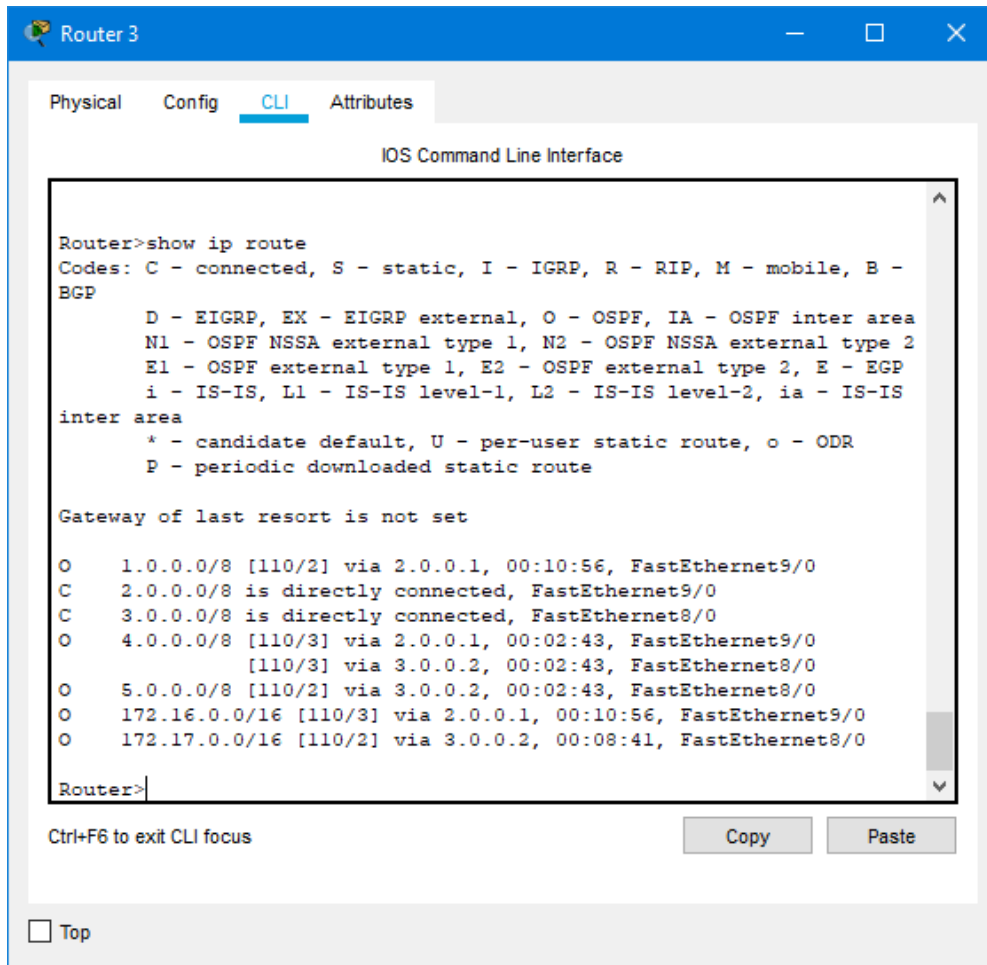
C    1.0.0.0/8 is directly connected, FastEthernet8/0
C    2.0.0.0/8 is directly connected, FastEthernet9/0
O    3.0.0.0/8 [110/2] via 2.0.0.2, 00:10:23, FastEthernet9/0
O    4.0.0.0/8 [110/2] via 1.0.0.1, 00:02:34, FastEthernet8/0
O    5.0.0.0/8 [110/3] via 1.0.0.1, 00:02:12, FastEthernet8/0
      [110/3] via 2.0.0.2, 00:02:12, FastEthernet9/0
O    172.16.0.0/16 [110/2] via 1.0.0.1, 00:11:48, FastEthernet8/0
O    172.17.0.0/16 [110/3] via 2.0.0.2, 00:08:07, FastEthernet9/0

Router>
```

Below the CLI window, there are buttons for 'Copy' and 'Paste', and a checkbox labeled 'Top'.

### ROUTER 3

La siguiente imagen nos indica que las rutas a las redes 2.0.0.0 y 3.0.0.0 están directamente conectadas al router y las redes 1.0.0.0, 4.0.0.0, 5.0.0.0, 172.16.0.0 ,172.17.0.0 se han obtenido a través del protocolo OSPF. Además, para la red 4.0.0.0 tenemos dos rutas para llegar desde el router 3, la primera a través de la interfaz FastEthernet 9/0 y la segunda a través de FastEthernet 8/0, las dos tienen la misma métrica por lo que dependerá de la congestión del enlace y el ancho de banda.



The screenshot shows the CLI of Router 3 with the 'show ip route' command executed. The output displays the routing table, including codes for various protocols and a list of routes. The routes for 1.0.0.0/8, 2.0.0.0/8, 3.0.0.0/8, 4.0.0.0/8, 5.0.0.0/8, 172.16.0.0/16, and 172.17.0.0/16 are shown, indicating their source and the interfaces used.

```
Router 3
Physical Config CLI Attributes
IOS Command Line Interface

Router>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

O    1.0.0.0/8 [110/2] via 2.0.0.1, 00:10:56, FastEthernet9/0
C    2.0.0.0/8 is directly connected, FastEthernet9/0
C    3.0.0.0/8 is directly connected, FastEthernet8/0
O    4.0.0.0/8 [110/3] via 2.0.0.1, 00:02:43, FastEthernet9/0
      [110/3] via 3.0.0.2, 00:02:43, FastEthernet8/0
O    5.0.0.0/8 [110/2] via 3.0.0.2, 00:02:43, FastEthernet8/0
O    172.16.0.0/16 [110/3] via 2.0.0.1, 00:10:56, FastEthernet9/0
O    172.17.0.0/16 [110/2] via 3.0.0.2, 00:08:41, FastEthernet8/0

Router>
```

Ctrl+F6 to exit CLI focus

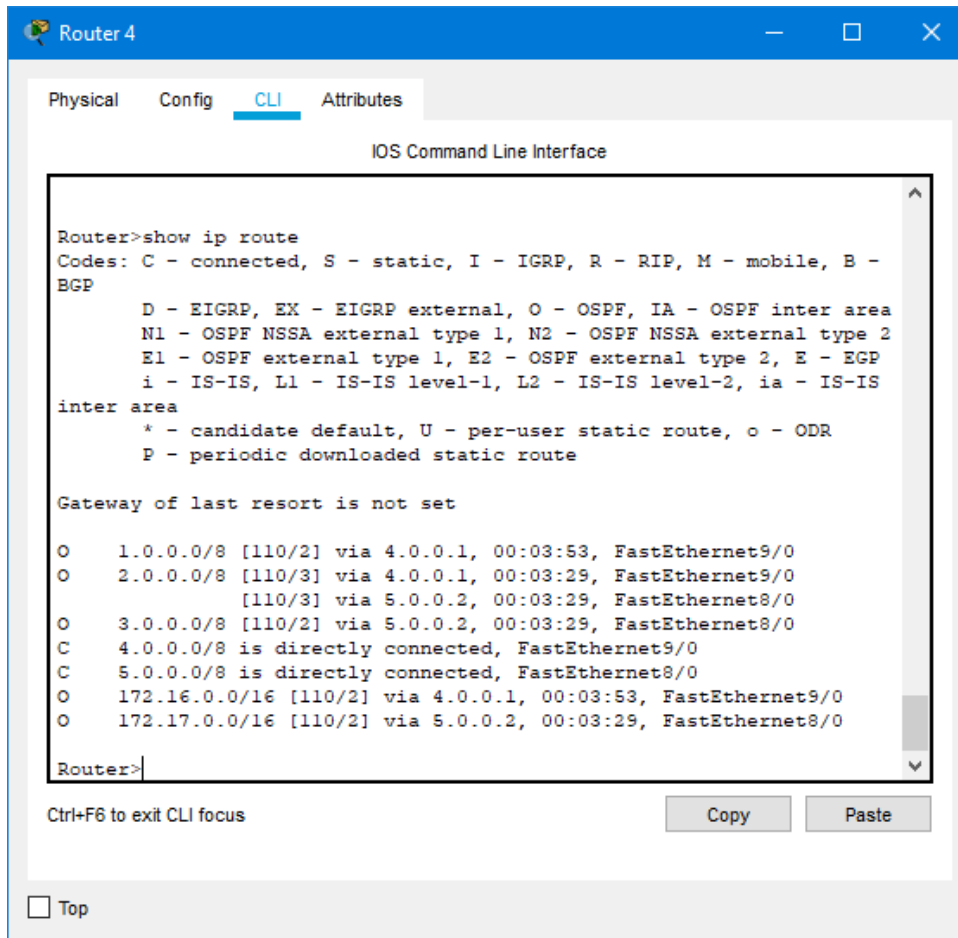
Copy Paste

☐ Top



## ROUTER 4

La siguiente imagen nos indica que las rutas a las redes 4.0.0.0 y 5.0.0.0 están directamente conectadas al router y las redes 1.0.0.0, 2.0.0.0, 3.0.0.0, 172.16.0.0 ,172.17.0.0 se han obtenido a través del protocolo OSPF. Además, para la red 2.0.0.0 tenemos dos rutas para llegar desde el router 4, la primera a través de la interfaz FastEthernet 9/0 y la segunda a través de FastEthernet 8/0, las dos tienen la misma métrica por lo que dependerá de la congestión del enlace y el ancho de banda.



```
Router 4
Physical Config CLI Attributes
IOS Command Line Interface

Router>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

O    1.0.0.0/8 [110/2] via 4.0.0.1, 00:03:53, FastEthernet9/0
O    2.0.0.0/8 [110/3] via 4.0.0.1, 00:03:29, FastEthernet9/0
      [110/3] via 5.0.0.2, 00:03:29, FastEthernet8/0
O    3.0.0.0/8 [110/2] via 5.0.0.2, 00:03:29, FastEthernet8/0
C    4.0.0.0/8 is directly connected, FastEthernet9/0
C    5.0.0.0/8 is directly connected, FastEthernet8/0
O    172.16.0.0/16 [110/2] via 4.0.0.1, 00:03:53, FastEthernet9/0
O    172.17.0.0/16 [110/2] via 5.0.0.2, 00:03:29, FastEthernet8/0

Router>
```

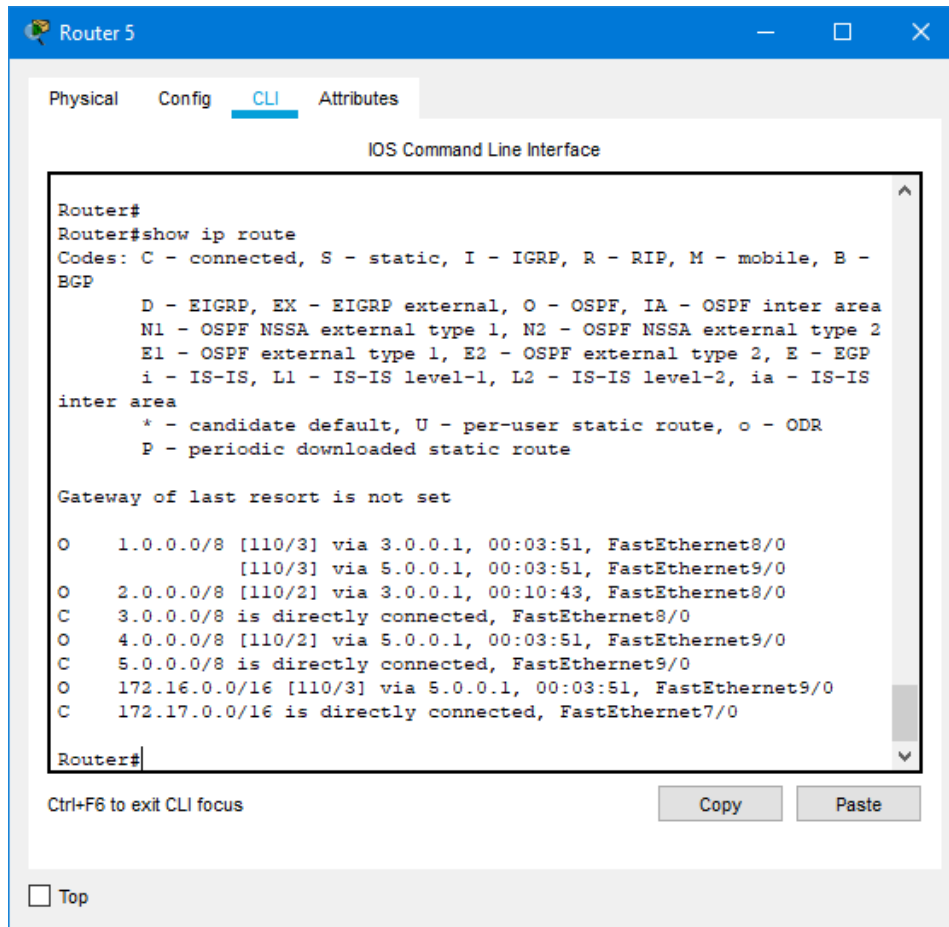
Ctrl+F6 to exit CLI focus

Copy Paste

☐ Top

## ROUTER 5

La siguiente imagen nos indica que las rutas a las redes 3.0.0.0, 5.0.0.0 y 172.17.0.0 están directamente conectadas al router y las redes 1.0.0.0, 2.0.0.0, 4.0.0.0 y 172.16.0.0 se han obtenido a través del protocolo OSPF. Además, para la red 1.0.0.0 tenemos dos rutas para llegar desde el router 5, la primera a través de la interfaz FastEthernet 8/0 y la segunda a través de FastEthernet 9/0, las dos tienen la misma métrica por lo que dependerá de la congestión del enlace y el ancho de banda.



```
Router 5
Physical Config CLI Attributes
IOS Command Line Interface

Router#
Router#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

O    1.0.0.0/8 [110/3] via 3.0.0.1, 00:03:51, FastEthernet8/0
      [110/3] via 5.0.0.1, 00:03:51, FastEthernet9/0
O    2.0.0.0/8 [110/2] via 3.0.0.1, 00:10:43, FastEthernet8/0
C    3.0.0.0/8 is directly connected, FastEthernet8/0
O    4.0.0.0/8 [110/2] via 5.0.0.1, 00:03:51, FastEthernet9/0
C    5.0.0.0/8 is directly connected, FastEthernet9/0
O    172.16.0.0/16 [110/3] via 5.0.0.1, 00:03:51, FastEthernet9/0
C    172.17.0.0/16 is directly connected, FastEthernet7/0

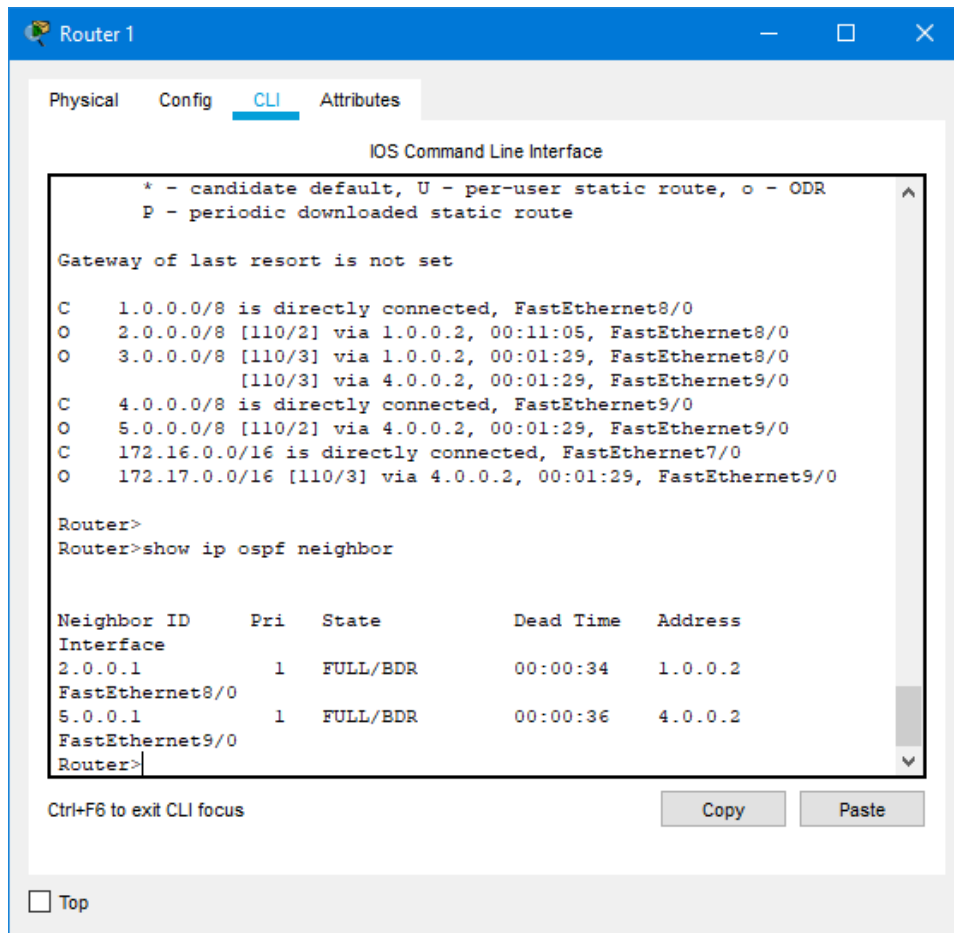
Router#
```

Ctrl+F6 to exit CLI focus

Copy Paste

☐ Top

C) PARA CADA ROUTER, OBTÉN QUIÉNES SON LOS ROUTERS VECINOS.  
ROUTER 1

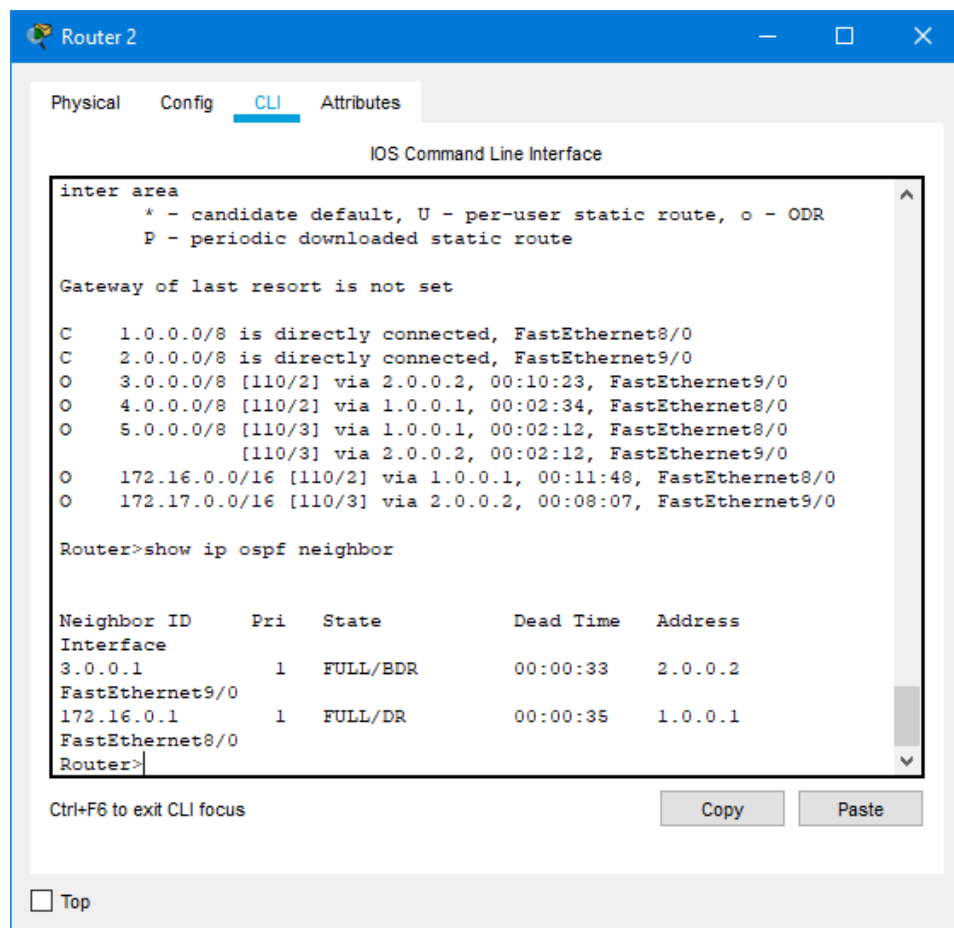


The screenshot shows the CLI of Router 1. The 'Config' tab is selected. The output of the 'show ip ospf neighbor' command is displayed, showing two neighbors: 2.0.0.1 on FastEthernet8/0 and 5.0.0.1 on FastEthernet9/0, both in FULL/BDR state.

```
Router 1
Physical Config CLI Attributes
IOS Command Line Interface
* - candidate default, U - per-user static route, o - ODR
P - periodic downloaded static route
Gateway of last resort is not set
C 1.0.0.0/8 is directly connected, FastEthernet8/0
O 2.0.0.0/8 [110/2] via 1.0.0.2, 00:11:05, FastEthernet8/0
O 3.0.0.0/8 [110/3] via 1.0.0.2, 00:01:29, FastEthernet8/0
[110/3] via 4.0.0.2, 00:01:29, FastEthernet9/0
C 4.0.0.0/8 is directly connected, FastEthernet9/0
O 5.0.0.0/8 [110/2] via 4.0.0.2, 00:01:29, FastEthernet9/0
C 172.16.0.0/16 is directly connected, FastEthernet7/0
O 172.17.0.0/16 [110/3] via 4.0.0.2, 00:01:29, FastEthernet9/0
Router>
Router>show ip ospf neighbor

Neighbor ID    Pri   State           Dead Time   Address
Interface
2.0.0.1        1     FULL/BDR        00:00:34    1.0.0.2
FastEthernet8/0
5.0.0.1        1     FULL/BDR        00:00:36    4.0.0.2
FastEthernet9/0
Router>
```

ROUTER 2



The screenshot shows the CLI of Router 2. The 'Config' tab is selected. The output of the 'show ip ospf neighbor' command is displayed, showing two neighbors: 3.0.0.1 on FastEthernet9/0 and 172.16.0.1 on FastEthernet8/0, both in FULL/DR state.

```
Router 2
Physical Config CLI Attributes
IOS Command Line Interface
inter area
* - candidate default, U - per-user static route, o - ODR
P - periodic downloaded static route
Gateway of last resort is not set
C 1.0.0.0/8 is directly connected, FastEthernet8/0
C 2.0.0.0/8 is directly connected, FastEthernet9/0
O 3.0.0.0/8 [110/2] via 2.0.0.2, 00:10:23, FastEthernet9/0
O 4.0.0.0/8 [110/2] via 1.0.0.1, 00:02:34, FastEthernet8/0
O 5.0.0.0/8 [110/3] via 1.0.0.1, 00:02:12, FastEthernet8/0
[110/3] via 2.0.0.2, 00:02:12, FastEthernet9/0
O 172.16.0.0/16 [110/2] via 1.0.0.1, 00:11:48, FastEthernet8/0
O 172.17.0.0/16 [110/3] via 2.0.0.2, 00:08:07, FastEthernet9/0
Router>show ip ospf neighbor

Neighbor ID    Pri   State           Dead Time   Address
Interface
3.0.0.1        1     FULL/BDR        00:00:33    2.0.0.2
FastEthernet9/0
172.16.0.1     1     FULL/DR         00:00:35    1.0.0.1
FastEthernet8/0
Router>
```

## ROUTER 3

Router 3

Physical Config **CLI** Attributes

IOS Command Line Interface

```

inter area
  * - candidate default, U - per-user static route, o - ODR
  P - periodic downloaded static route

Gateway of last resort is not set

O   1.0.0.0/8 [110/2] via 2.0.0.1, 00:10:56, FastEthernet9/0
C   2.0.0.0/8 is directly connected, FastEthernet9/0
C   3.0.0.0/8 is directly connected, FastEthernet8/0
O   4.0.0.0/8 [110/3] via 2.0.0.1, 00:02:43, FastEthernet9/0
    [110/3] via 3.0.0.2, 00:02:43, FastEthernet8/0
O   5.0.0.0/8 [110/2] via 3.0.0.2, 00:02:43, FastEthernet8/0
O   172.16.0.0/16 [110/3] via 2.0.0.1, 00:10:56, FastEthernet9/0
O   172.17.0.0/16 [110/2] via 3.0.0.2, 00:08:41, FastEthernet8/0

Router>show ip ospf neighbor

```

Neighbor ID	Pri	State	Dead Time	Address
Interface				
2.0.0.1	1	FULL/DR	00:00:37	2.0.0.1
FastEthernet9/0				
172.17.0.1	1	FULL/BDR	00:00:30	3.0.0.2
FastEthernet8/0				

Router>

Ctrl+F6 to exit CLI focus

Copy Paste

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## ROUTER 4

Router 4

Physical Config **CLI** Attributes

IOS Command Line Interface

```

  * - candidate default, U - per-user static route, o - ODR
  P - periodic downloaded static route

Gateway of last resort is not set

O   1.0.0.0/8 [110/2] via 4.0.0.1, 00:03:53, FastEthernet9/0
O   2.0.0.0/8 [110/3] via 4.0.0.1, 00:03:29, FastEthernet9/0
    [110/3] via 5.0.0.2, 00:03:29, FastEthernet8/0
O   3.0.0.0/8 [110/2] via 5.0.0.2, 00:03:29, FastEthernet8/0
C   4.0.0.0/8 is directly connected, FastEthernet9/0
C   5.0.0.0/8 is directly connected, FastEthernet8/0
O   172.16.0.0/16 [110/2] via 4.0.0.1, 00:03:53, FastEthernet9/0
O   172.17.0.0/16 [110/2] via 5.0.0.2, 00:03:29, FastEthernet8/0

Router>
Router>show ip ospf neighbor

```

Neighbor ID	Pri	State	Dead Time	Address
Interface				
172.16.0.1	1	FULL/DR	00:00:33	4.0.0.1
FastEthernet9/0				
172.17.0.1	1	FULL/DR	00:00:31	5.0.0.2
FastEthernet8/0				

Router>

Ctrl+F6 to exit CLI focus

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## ROUTER 5

Router 5

Physical Config **CLI** Attributes

IOS Command Line Interface

\* - candidate default, U - per-user static route, o - ODR  
P - periodic downloaded static route

Gateway of last resort is not set

O 1.0.0.0/8 [110/3] via 3.0.0.1, 00:03:51, FastEthernet8/0  
[110/3] via 5.0.0.1, 00:03:51, FastEthernet9/0  
O 2.0.0.0/8 [110/2] via 3.0.0.1, 00:10:43, FastEthernet8/0  
C 3.0.0.0/8 is directly connected, FastEthernet8/0  
O 4.0.0.0/8 [110/2] via 5.0.0.1, 00:03:51, FastEthernet9/0  
C 5.0.0.0/8 is directly connected, FastEthernet9/0  
O 172.16.0.0/16 [110/3] via 5.0.0.1, 00:03:51, FastEthernet9/0  
C 172.17.0.0/16 is directly connected, FastEthernet7/0

Router#  
Router#show ip ospf neighbor

Neighbor ID	Pri	State	Dead Time	Address
Interface				
3.0.0.1	1	FULL/DR	00:00:38	3.0.0.1
FastEthernet8/0				
5.0.0.1	1	FULL/BDR	00:00:32	5.0.0.1
FastEthernet9/0				

Router#

Ctrl+F6 to exit CLI focus

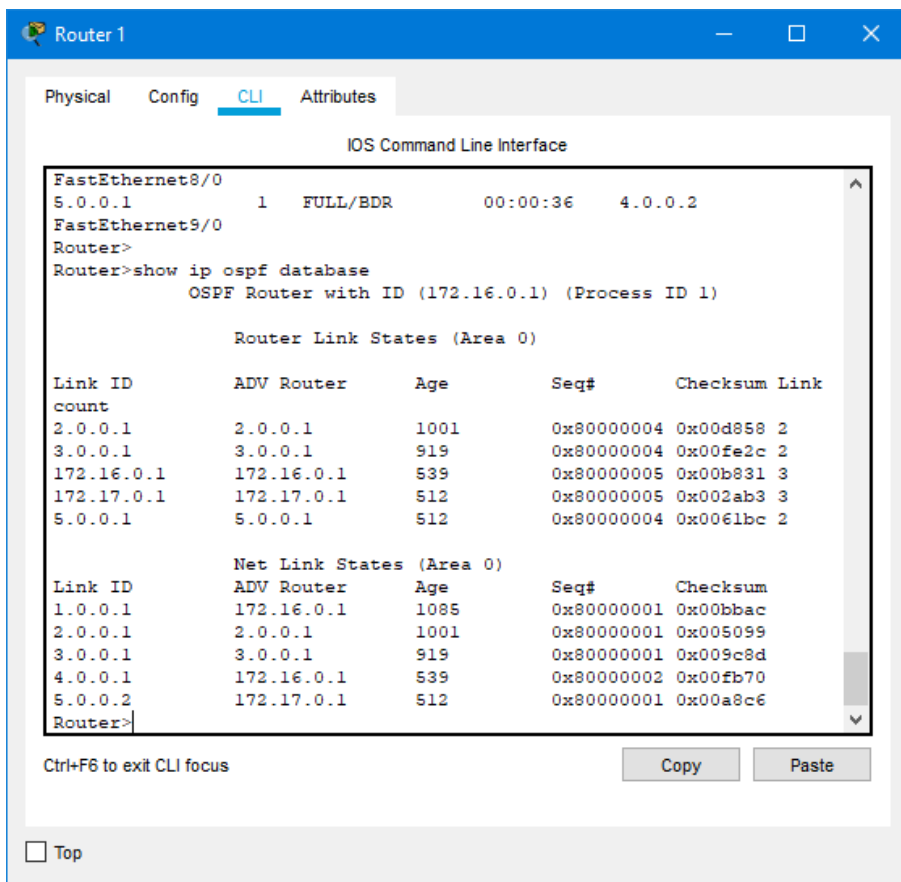
Copy Paste

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D) OBTÉN EL RID DE CADA ROUTER E INDICA POR QUÉ TIENEN ESE VALOR.

El valor asignado al RID es la IP más alta de su entorno. Para obtener su RID o Router ID los routers observaran las IP que tienen "conectadas" y escogerá la más alta.

### ROUTER 1



The screenshot shows the CLI of Router 1. The command `show ip ospf database` has been executed, displaying the OSPF Router with ID (172.16.0.1) (Process ID 1). The output includes the Router Link States (Area 0) and Net Link States (Area 0) tables.

```
FastEthernet8/0
5.0.0.1 1 FULL/BDR 00:00:36 4.0.0.2
FastEthernet9/0
Router>
Router>show ip ospf database
        OSPF Router with ID (172.16.0.1) (Process ID 1)

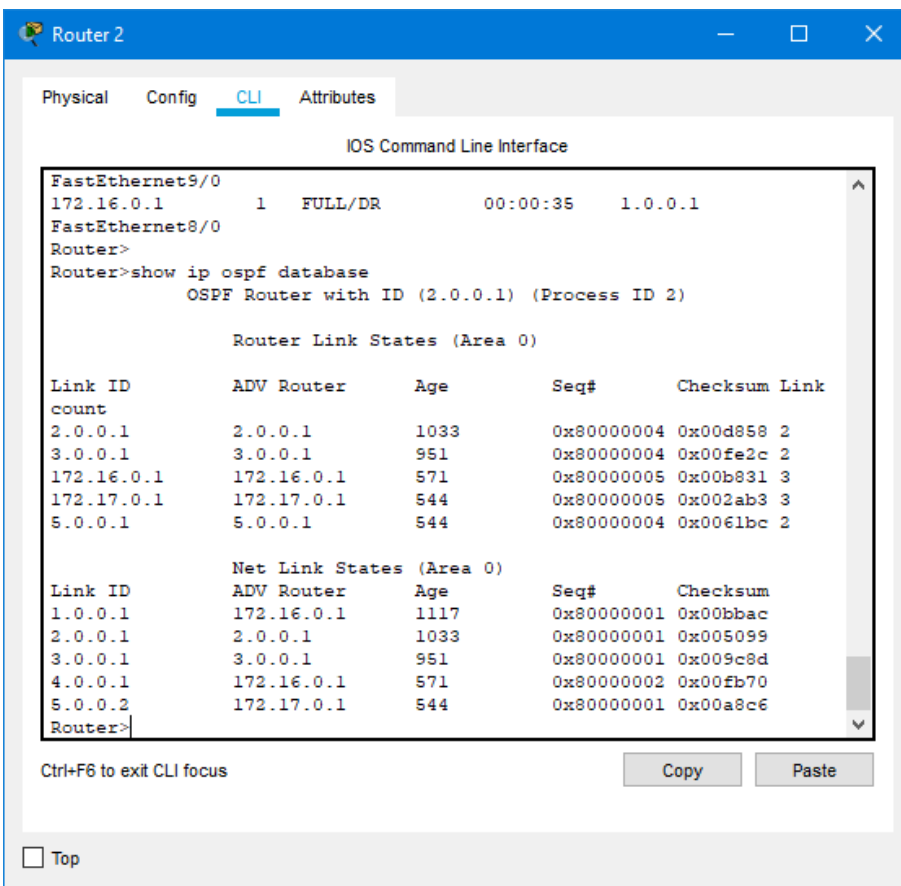
        Router Link States (Area 0)

Link ID      ADV Router   Age         Seq#         Checksum Link
count
2.0.0.1      2.0.0.1      1001        0x80000004  0x00d858 2
3.0.0.1      3.0.0.1      919         0x80000004  0x00fe2c 2
172.16.0.1   172.16.0.1   539         0x80000005  0x00b831 3
172.17.0.1   172.17.0.1   512         0x80000005  0x002ab3 3
5.0.0.1      5.0.0.1      512         0x80000004  0x0061bc 2

        Net Link States (Area 0)

Link ID      ADV Router   Age         Seq#         Checksum
1.0.0.1      172.16.0.1   1085        0x80000001  0x00bbac
2.0.0.1      2.0.0.1      1001        0x80000001  0x005099
3.0.0.1      3.0.0.1      919         0x80000001  0x009c8d
4.0.0.1      172.16.0.1   539         0x80000002  0x00fb70
5.0.0.2      172.17.0.1   512         0x80000001  0x00a8c6
Router>
```

### ROUTER 2



The screenshot shows the CLI of Router 2. The command `show ip ospf database` has been executed, displaying the OSPF Router with ID (2.0.0.1) (Process ID 2). The output includes the Router Link States (Area 0) and Net Link States (Area 0) tables.

```
FastEthernet9/0
172.16.0.1 1 FULL/DR 00:00:35 1.0.0.1
FastEthernet8/0
Router>
Router>show ip ospf database
        OSPF Router with ID (2.0.0.1) (Process ID 2)

        Router Link States (Area 0)

Link ID      ADV Router   Age         Seq#         Checksum Link
count
2.0.0.1      2.0.0.1      1033        0x80000004  0x00d858 2
3.0.0.1      3.0.0.1      951         0x80000004  0x00fe2c 2
172.16.0.1   172.16.0.1   571         0x80000005  0x00b831 3
172.17.0.1   172.17.0.1   544         0x80000005  0x002ab3 3
5.0.0.1      5.0.0.1      544         0x80000004  0x0061bc 2

        Net Link States (Area 0)

Link ID      ADV Router   Age         Seq#         Checksum
1.0.0.1      172.16.0.1   1117        0x80000001  0x00bbac
2.0.0.1      2.0.0.1      1033        0x80000001  0x005099
3.0.0.1      3.0.0.1      951         0x80000001  0x009c8d
4.0.0.1      172.16.0.1   571         0x80000002  0x00fb70
5.0.0.2      172.17.0.1   544         0x80000001  0x00a8c6
Router>
```



## ROUTER 3

Router 3

Physical Config **CLI** Attributes

IOS Command Line Interface

```

2.0.0.1      1  FULL/DR      00:00:37  2.0.0.1
FastEthernet9/0
172.17.0.1   1  FULL/BDR      00:00:30  3.0.0.2
FastEthernet8/0
Router>show ip ospf database
          OSPF Router with ID (3.0.0.1) (Process ID 3)

          Router Link States (Area 0)

Link ID      ADV Router    Age         Seq#         Checksum Link
count
2.0.0.1      2.0.0.1       1056        0x80000004  0x00d858 2
3.0.0.1      3.0.0.1       974         0x80000004  0x00fe2c 2
172.16.0.1   172.16.0.1    594         0x80000005  0x00b831 3
172.17.0.1   172.17.0.1    567         0x80000005  0x002ab3 3
5.0.0.1      5.0.0.1       567         0x80000004  0x0061bc 2

          Net Link States (Area 0)

Link ID      ADV Router    Age         Seq#         Checksum
1.0.0.1      172.16.0.1    1140        0x80000001  0x00bbac
2.0.0.1      2.0.0.1       1056        0x80000001  0x005099
3.0.0.1      3.0.0.1       974         0x80000001  0x009c8d
4.0.0.1      172.16.0.1    594         0x80000002  0x00fb70
5.0.0.2      172.17.0.1    567         0x80000001  0x00a8c6
Router>
  
```

Ctrl+F6 to exit CLI focus

Copy Paste

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## ROUTER 4

Router 4

Physical Config **CLI** Attributes

IOS Command Line Interface

```

FastEthernet9/0
172.17.0.1   1  FULL/DR      00:00:31  5.0.0.2
FastEthernet8/0
Router>
Router>show ip ospf database
          OSPF Router with ID (5.0.0.1) (Process ID 4)

          Router Link States (Area 0)

Link ID      ADV Router    Age         Seq#         Checksum Link
count
2.0.0.1      2.0.0.1       1082        0x80000004  0x00d858 2
3.0.0.1      3.0.0.1       1000        0x80000004  0x00fe2c 2
172.16.0.1   172.16.0.1    620         0x80000005  0x00b831 3
5.0.0.1      5.0.0.1       593         0x80000004  0x0061bc 2
172.17.0.1   172.17.0.1    593         0x80000005  0x002ab3 3

          Net Link States (Area 0)

Link ID      ADV Router    Age         Seq#         Checksum
1.0.0.1      172.16.0.1    1166        0x80000001  0x00bbac
2.0.0.1      2.0.0.1       1082        0x80000001  0x005099
3.0.0.1      3.0.0.1       1000        0x80000001  0x009c8d
4.0.0.1      172.16.0.1    620         0x80000002  0x00fb70
5.0.0.2      172.17.0.1    593         0x80000001  0x00a8c6
Router>
  
```

Ctrl+F6 to exit CLI focus

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# ROUTER 5

Router 5

Physical
Config
CLI
Attributes

IOS Command Line Interface

```

3.0.0.1      1      FULL/DR      00:00:38      3.0.0.1
FastEthernet8/0
5.0.0.1      1      FULL/BDR      00:00:32      5.0.0.1
FastEthernet9/0
Router#show ip ospf database
          OSPF Router with ID (172.17.0.1) (Process ID 5)

          Router Link States (Area 0)

Link ID      ADV Router      Age      Seq#      Checksum Link
count
2.0.0.1      2.0.0.1          951      0x80000004 0x00d858 2
3.0.0.1      3.0.0.1          869      0x80000004 0x00fe2c 2
172.16.0.1   172.16.0.1       489      0x80000005 0x00b831 3
172.17.0.1   172.17.0.1       462      0x80000005 0x002ab3 3
5.0.0.1      5.0.0.1          462      0x80000004 0x0061bc 2

          Net Link States (Area 0)

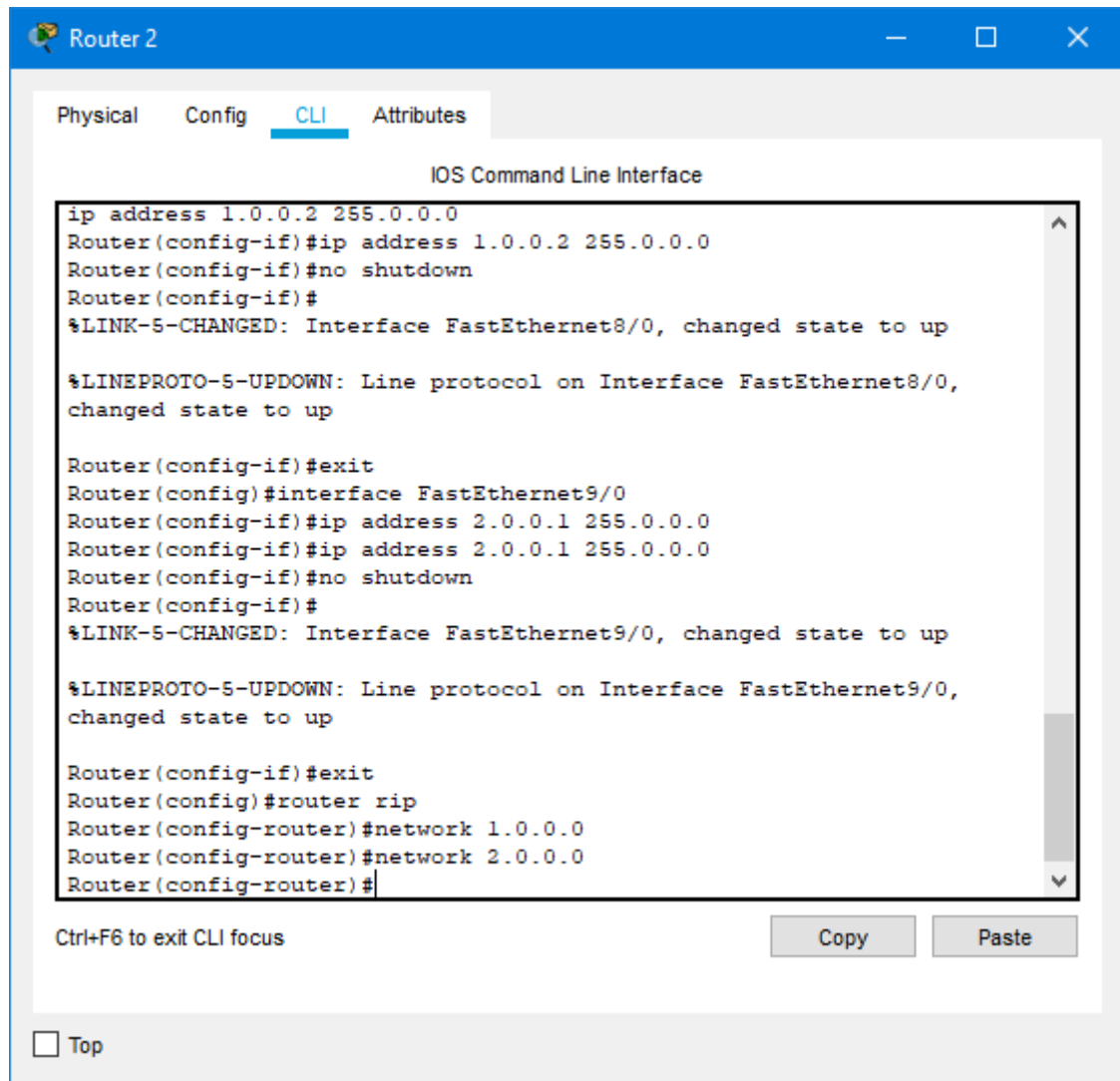
Link ID      ADV Router      Age      Seq#      Checksum
1.0.0.1      172.16.0.1     1035     0x80000001 0x00bbac
2.0.0.1      2.0.0.1        951      0x80000001 0x005099
3.0.0.1      3.0.0.1        869      0x80000001 0x009c8d
4.0.0.1      172.16.0.1     489      0x80000002 0x00fb70
5.0.0.2      172.17.0.1     462      0x80000001 0x00a8c6
Router#

```

Ctrl+F6 to exit CLI focus
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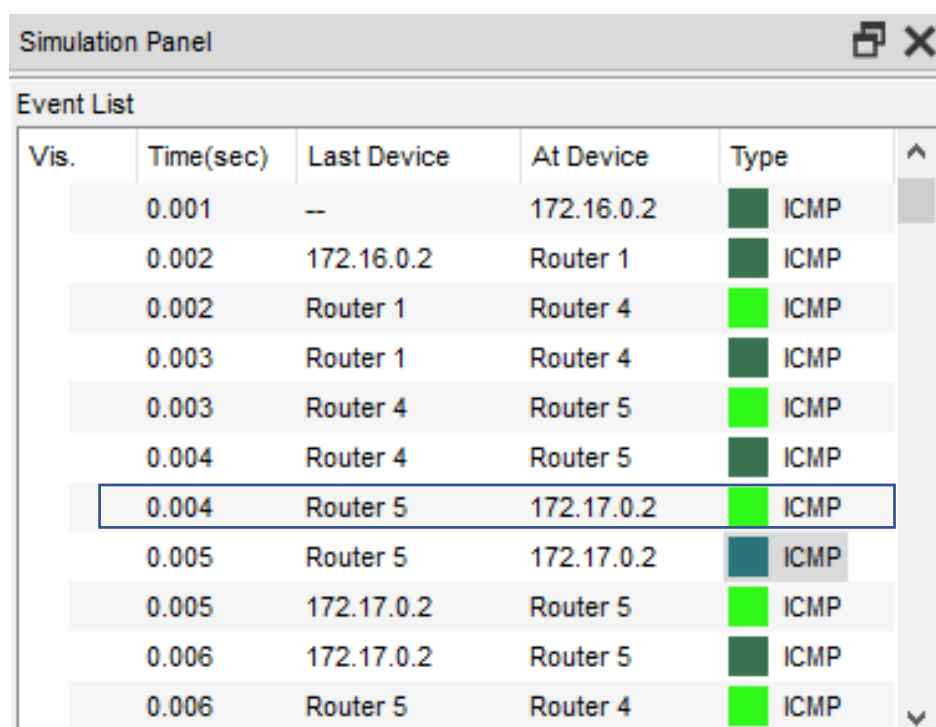
☐ Top

E) CONFIGURA R2 PARA QUE UTILICE RIPV1 O RIPV2 Y ENVÍA UN MENSAJE DE TIPO ICMP(8)  
Configuramos el router 2 con el protocolo RIP y publicamos las redes.



```
Router 2
Physical Config CLI Attributes
IOS Command Line Interface
ip address 1.0.0.2 255.0.0.0
Router(config-if)#ip address 1.0.0.2 255.0.0.0
Router(config-if)#no shutdown
Router(config-if)#
%LINK-5-CHANGED: Interface FastEthernet8/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet8/0,
changed state to up
Router(config-if)#exit
Router(config)#interface FastEthernet9/0
Router(config-if)#ip address 2.0.0.1 255.0.0.0
Router(config-if)#ip address 2.0.0.1 255.0.0.0
Router(config-if)#no shutdown
Router(config-if)#
%LINK-5-CHANGED: Interface FastEthernet9/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet9/0,
changed state to up
Router(config-if)#exit
Router(config)#router rip
Router(config-router)#network 1.0.0.0
Router(config-router)#network 2.0.0.0
Router(config-router)#
Ctrl+F6 to exit CLI focus
Copy Paste
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```

Creamos un paquete que vaya desde el host 172.16.0.2 al host 172.17.0.2 e interceptamos el paquete con destino 172.17.0.2



Vis.	Time(sec)	Last Device	At Device	Type
	0.001	--	172.16.0.2	ICMP
	0.002	172.16.0.2	Router 1	ICMP
	0.002	Router 1	Router 4	ICMP
	0.003	Router 1	Router 4	ICMP
	0.003	Router 4	Router 5	ICMP
	0.004	Router 4	Router 5	ICMP
	0.004	Router 5	172.17.0.2	ICMP
	0.005	Router 5	172.17.0.2	ICMP
	0.005	172.17.0.2	Router 5	ICMP
	0.006	172.17.0.2	Router 5	ICMP
	0.006	Router 5	Router 4	ICMP

Podemos observar que se trata de un mensaje ICMP 8

PDU Information at Device: 172.17.0.2

**OSI Model**   Inbound PDU Details   Outbound PDU Details

At Device: 172.17.0.2  
Source: 172.16.0.2  
Destination: 172.17.0.2

**In Layers**

Layer7
Layer6
Layer5
Layer4
Layer 3: IP Header Src. IP: 172.16.0.2, Dest. IP: 172.17.0.2 ICMP Message Type: 8
Layer 2: Ethernet II Header 00D0.FF4E.BC39 >> 0002.16B2.E147
Layer 1: Port FastEthernet0

**Out Layers**

Layer7
Layer6
Layer5
Layer4
Layer 3: IP Header Src. IP: 172.17.0.2, Dest. IP: 172.16.0.2 ICMP Message Type: 0
Layer 2: Ethernet II Header 0002.16B2.E147 >> 00D0.FF4E.BC39
Layer 1: Port(s): FastEthernet0

1. FastEthernet0 receives the frame.

Challenge Me   << Previous Layer   Next Layer >>

Su TTL es de 252 ya que ha escogido la ruta mas corta que es la que atraviesa los routers 1,4 y 5

PDU Information at Device: 172.17.0.2

**OSI Model**   **Inbound PDU Details**   Outbound PDU Details

PDU Formats

**EthernetII**

PREAMBLE: 101010..10		SFD	DEST ADDR: 0002.16B2.E147	
SRC ADDR: 00D0.FF4E.BC39	TYPE: 0x0800	DATA (VARIABLE LENGTH)		FCS: 0x00000000

**IP**

VER: 4	IHL	DSCP: 0x00	TL: 28	
ID: 0x0012		FLAGS: 0x0	FRAG OFFSET: 0x000	
TTL: 252	PRO: 0x01	CHKSUM		
SRC IP: 172.16.0.2				
DST IP: 172.17.0.2				
OPT: 0x00000000			PADDING: 0x00	
DATA (VARIABLE LENGTH)				

**ICMP**

Type: 8		Code: 0		
Checksum: 0x00000000				
Destination Unreachable				