

**DIPLOMADO DE PROFUNDIZACION CISCO CCNP
PRUEBA DE HABILIDADES PRÁCTICAS
(MÓDULO CCNP SWITCH)**

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TABLA DE CONTENIDO

Pág.

1. LISTA DE TABLAS	3
2. LISTA DE FIGURAS	4
3. INTRODUCCIÓN.....	5
4. ESCENARIO 1	6
5. ESCENARIO 2	15
6. ESCENARIO 3.....	25
7. CONCLUSIONES.....	42
8. REFERENCIAS BIBLIOGRÁFICAS.....	43

1. LISTA DE TABLAS

pág.

Tabla No.1. Esquema de Escenario 1, guía y simulación Packet Tracer	4
Tabla No.2. Esquema de Escenario 2, guía y simulación Packet Tracer	13
Tabla No.3. Configuraciones de routers para Escenario 2.	13
Tabla No.4. Esquema de Escenario 3, guía y simulación Packet Tracer ...	23
Tabla No.5. Asociación de VLAN y configuración de IP en base a las direcciones IP de las PCs	31
Tabla No.6. Ejemplo de Asociación de VLAN y configuración de IP	30
Tabla No.7. Configurar las direcciones IP en los Switches y Direccionamiento VLAN 99.	33

2. LISTA DE FIGURAS

pág.

Figura No.1. Esquema de Escenario 1, guía y simulación Packet Tracer. ...4	
Figura No.2. Tabla de enrutamiento de router R3, verificación mediante el comando show ip route... .. 10	
Figura No.3. Tabla De Enrutamiento para las rutas del sistema Autónomo para Router R1..... 11	
Figura No.4. Tabla De Enrutamiento para las rutas del sistema Autónomo para Router R5..... 12	
Figura No.5. Esquema de Escenario 2, guía y simulación Packet Tracer ... 13	
Figura No.6. Comando Show IP Route R1 en Escenario 2. 17	
Figura No.7. Comando Show IP Route R2 en Escenario 2. 17	
Figura No.8. Comando Show IP Route R2 en Escenario 2 19	
Figura No.9. Comando Show IP Route R3 en Escenario 2 20	
Figura No.10. Comando Show IP Route R3 en Escenario 2 21	
Figura No.11. Comando Show IP Route R4 en Escenario 2 22	
Figura No.12. Esquema de Escenario 3, guía y simulación Packet Tracer 23	
Figura No.13. Comando show VTP Status SWT1 en Escenario 3 24	
Figura No.14. Comando show VTP Status SWT2 en Escenario 3 25	
Figura No.15. Comando show VTP Status SWT3 en Escenario 3 25	
Figura No.16. Comando Show Interfaces Trunk Router SWT1 en Escenario 3 26	
Figura No.17. Comando Show Interfaces Trunk Router SWT1 en Escenario 3 27	
Figura No.18. Comando Show Interfaces Trunk Router SWT1 en Escenario 3 28	
Figura No.19. Comando Show Interfaces Trunk Router SWT1 en Escenario 3 30	
Figura No.20. Comando Show Interfaces Trunk Router SWT2 en Escenario 3 30	
Figura No.21. Ping PC1 a 190.108.20.1 Fallido 34	
Figura No.22. Ping PC1 a 190.108.10.3 Exitoso 34	
Figura No.23. Ping PC5 a 190.108.20.2 Exitoso 35	
Figura No.24. Ping PC9 a 190.108.30.1 Exitoso. 35	
Figura No.25. Ping STW1 a 190.108.99.2 a 190.108.99.3. 37	
Figura No.26. Ping STW3 a 190.108.99.1 a 190.108.99.2 37	
Figura No.27. Ping STW2 a 190.108.99.1 a 190.108.99.3 38	
Figura No.28. Ping STW1 a 190.108.30.1 a 190.108.20.1 a 190.108.10.11. 38	
Figura No.29. Ping STW2 a 190.108.30.3 a 190.108.20.3 a 190.108.10.3 . 39	
Figura No.30. Ping STW3 a 190.108.30.3 a 190.108.20.3 a 190.108.10.3 . 39	

3. INTRODUCCIÓN

El presente trabajo lo he analizado y desarrollado, para dar cumplimiento a la guía de actividades en base a la prueba de habilidades prácticas, en el desarrollo del Diplomado de Profundización CCNP, desarrollado en base a varias actividades y Evaluaciones según toda la programación de redes trabajada en el curso de una forma colaborativa, el presente trabajo tiene como gran objetivo identificar toda la temática trabajada, poniéndola en práctica, adquiriendo habilidades en el desarrollo de los ejercicios propuestos para la prueba de habilidades prácticas, adquiriendo destrezas en los niveles de comprensión y soluciones efectivas en problemas como los tres escenarios presentados como ejercicios desarrollado con el software Packet Tracer, también es muy importante como podemos aplicar todas nuestras habilidades dando soluciones en la vida real relacionados con diversos aspectos de Networking.

Se requiere que los estudiantes desarrollemos las actividades en base a los tres escenarios presentados para esta prueba de habilidades prácticas, teniendo en cuenta los temas revisados en el diplomado, en base a configuración de sistemas de red soportados en VLANs, y Administración, Seguridad, Escalabilidad en redes conmutadas y finalmente Protocolos de Enrutamiento Avanzado, en el cual hemos implementado las soluciones soportadas en enrutamiento avanzado utilizando los softwares de programación de redes Packet Tracer y GNS3.

En el desarrollo de los tres escenarios, se da a conocer la sustentación solicitada en un documento, por medio de fotos y código origen, en el desarrollo de cada escenario, demostrando el paso a paso del desarrollo en la configuración y comprobación de cada uno de los dispositivos de cada ejercicio, en la verificación de conectividad de cada escenario se realizado mediante los comandos ping, traceroute, show ip route, e otros.

DESARROLLO COMPLETO DE LOS TRES ESCENARIOS

4. Escenario 1

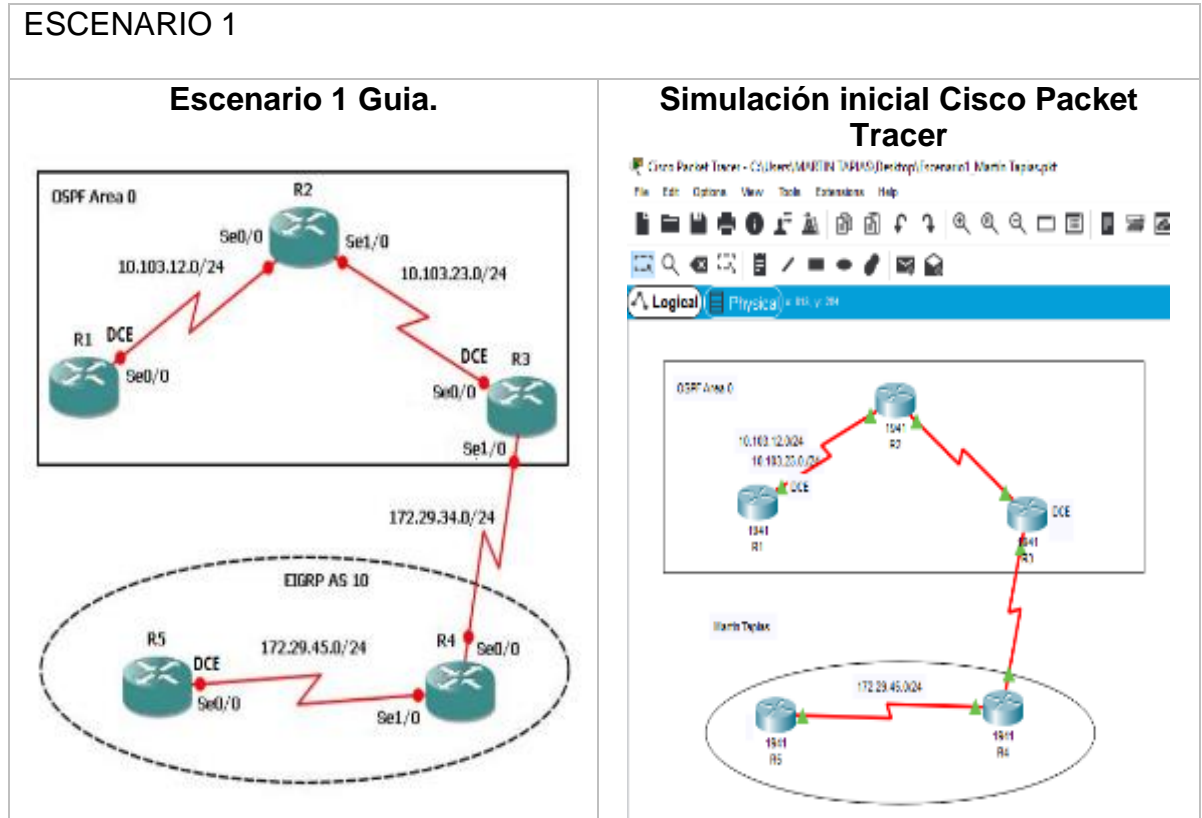


Tabla No.1. Esquema de Escenario 1, guía y simulación Packet Tracer.

1. Aplique las configuraciones iniciales y los protocolos de enrutamiento para los routers R1, R2, R3, R4 y R5 según el diagrama. No asigne passwords en los routers. Configurar las interfaces con las direcciones que se muestran en la topología de red.

Se configuran las interfaces para cada router:

Router R1

```
Router>en
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#hostname R1
R1(config)#int s0/0/0
R1(config-if)#ip add 10.103.12.1 255.255.255.0
R1(config-if)#no sh
%LINK-5-CHANGED: Interface Serial0/0/0, changed state to down
R1(config-if)#
R1#
%SYS-5-CONFIG_I: Configured from console by console
```

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

Router R2

```
Router>en
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#hostname R2
R2(config)#int s0/0/0
R2(config-if)#ip add 10.103.12.2 255.255.255.0
R2(config-if)#no sh
R2(config-if)#
%LINK-5-CHANGED: Interface Serial0/0/0, changed state to up
ex
R2(config)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0, changed state to up
R2(config)#int s0/0/1
R2(config-if)#ip add 10.103.23.1 255.255.255.0
R2(config-if)#no sh
%LINK-5-CHANGED: Interface Serial0/0/1, changed state to down
R2(config-if)#
```

Router R3

```
Router>en
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#hostname R3
R3(config)#int s0/0/0
R3(config-if)#ip add 10.103.23.2 255.255.255.0
R3(config-if)#no sh
R3(config-if)#
%LINK-5-CHANGED: Interface Serial0/0/0, changed state to up
R3(config-if)#ex
R3(config)#int
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0, changed state to up
R3(config)#in s0/0/1
R3(config-if)#ip add 172.29.34.1 255.255.255.0
R3(config-if)#no sh
%LINK-5-CHANGED: Interface Serial0/0/1, changed state to down
R3(config-if)#
```

Router R4

```
Router>en
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#hostname R4
R4(config)#int s0/0/0
R4(config-if)#ip add 172.29.34.2 255.255.255.0
R4(config-if)#no sh
R4(config-if)#
%LINK-5-CHANGED: Interface Serial0/0/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0, changed
state to up
R4(config-if)#int s0/0/1
R4(config-if)#ip add 172.29.45.1 255.255.255.0
R4(config-if)#no sh
%LINK-5-CHANGED: Interface Serial0/0/1, changed state to down
R4(config-if)#
```

Router R5

```
Router>en
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#hostname R5
R5(config)#int s0/0/0
R5(config-if)#ip add 172.29.45.2 255.255.255.0
R5(config-if)#no sh
R5(config-if)#
%LINK-5-CHANGED: Interface Serial0/0/0, changed state to up
R5(config-if)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0, changed
state to up
```

Configuración de protocolos segundo diagrama

Router R1

```
R1>en
R1#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R1(config)#router ospf 1
R1(config-router)#network 10.103.12.0 0.0.0.255 area 0
R1(config-router)#g
```


Router R2

```
R2>en
R2#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R2(config)#router ospf 1
R2(config-router)#network 10.103.12.0 0.0.0.255 area 0
R2(config-router)#network 10.103.23.0 0.0.0.255 area 0
R2(config-router)#
```

Router R3

```
R3>en
R3#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R3(config)#router ospf 1
R3(config-router)#network 10.103.23.0 0.0.0.255 area 0
R3(config-router)#
```

Router R3

```
R2>en
R3(config)#
R3(config)#route eigrp
R3(config-router)#network 172.29.34.0 0.0.0.255
R3(config-router)#
```

Router R4

```
R4#conf t t
Enter configuration commands, one per line. End with CNTL/Z.
R4(config)#router eigrp 10
R4(config-router)#no auto-summary
R4(config-router)#network 172.29.45.0 0.0.0.255
R4(config-router)#network 172.29.34.0 0.0.0.255
R4(config-router)#
%DUAL-5-NBRCHANGE: IP-EIGRP 10: Neighbor 172.29.34.1 (Serial0/0/0) is
up: new adjacency
```

Router R5

```
R5>en
R5#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R5(config)#router eigrp 10
```

```
R5(config-router)#network 172.29.45.0 0.0.0.255
R5(config-router)#
%DUAL-5-NBRCHANGE: IP-EIGRP 10: Neighbor 172.29.45.1 (Serial0/0/0) is
up: new adjacency
```

2. Cree cuatro nuevas interfaces de Loopback en R1 utilizando la asignación de direcciones 10.1.0.0/22 y configure esas interfaces para participar en el área 0 de OSPF.

Solución:

```
R1>en
R1#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R1(config)#int loopback 0
R1(config-if)#
%LINK-5-CHANGED: Interface Loopback0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback0, changed
state to up
R1(config-if)#ip add 10.1.0.1 255.255.252.0
R1(config-if)#int loopback 1
R1(config-if)#
%LINK-5-CHANGED: Interface Loopback1, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback1, changed
state to up
R1(config-if)#ip add 10.2.0.1 255.255.252.0
R1(config-if)#int loopback 2

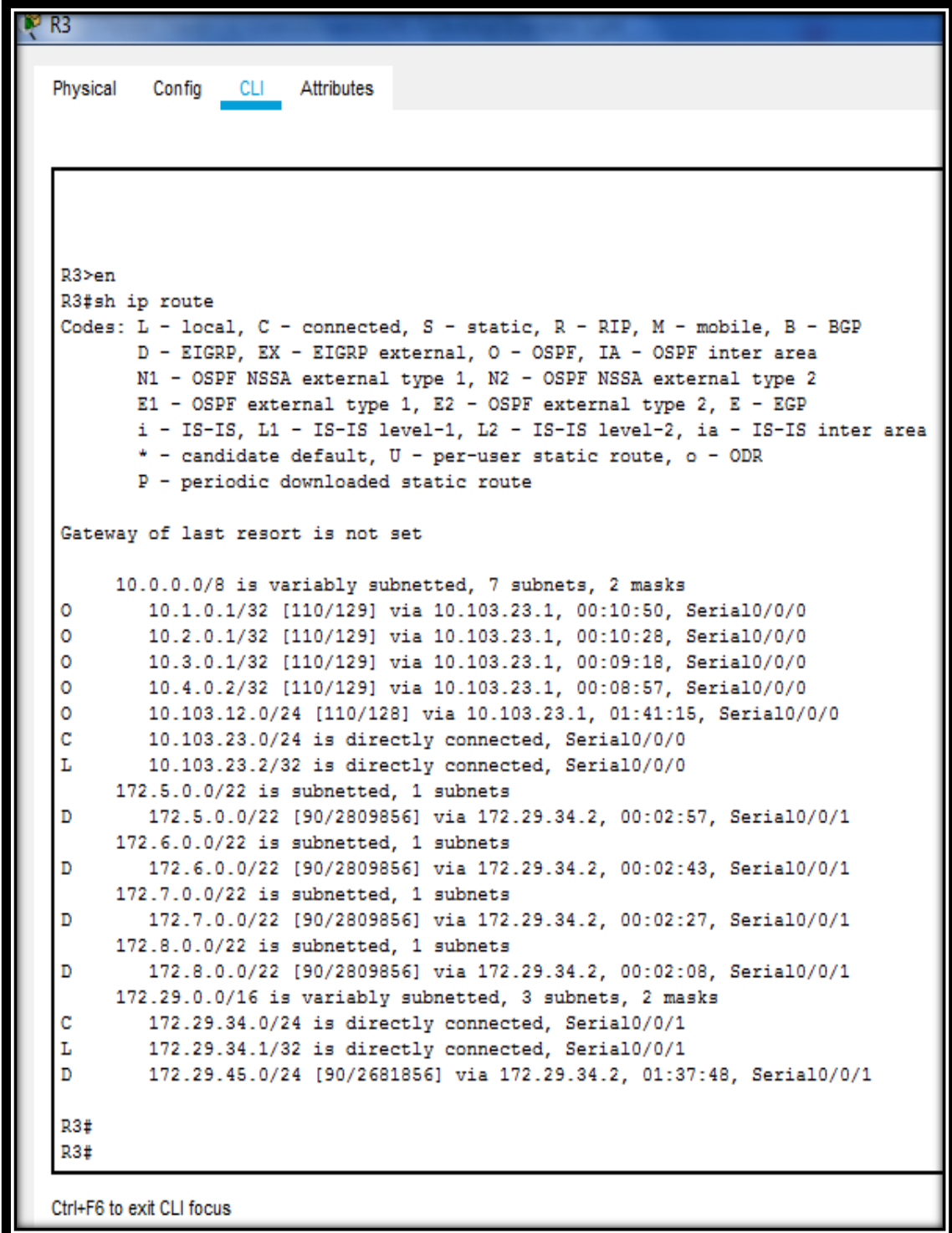
R1(config-if)#
%LINK-5-CHANGED: Interface Loopback2, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback2, changed
state to up
R1(config-if)#ip add 10.3.0.1 255.255.252.0
R1(config-if)#int loopback 3
R1(config-if)#
%LINK-5-CHANGED: Interface Loopback3, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback3, changed
state to up
R1(config-if)#ip add 10.4.0.2 255.255.252.0
R1(config-if)#exit
R1(config)#router ospf 1
R1(config-router)#network 10.103.12.0 0.0.0.255 area 0
R1(config-router)#network 10.1.0.0 0.0.3.255 area 0
R1(config-router)#network 10.2.0.0 0.0.3.255 area 0
R1(config-router)#network 10.3.0.0 0.0.3.255 area 0
R1(config-router)#network 10.4.0.0 0.0.3.255 area 0
```

3. Cree cuatro nuevas interfaces de Loopback en R5 utilizando la asignación de direcciones 172.5.0.0/22 y configure esas interfaces para participar en el Sistema Autónomo EIGRP 10.

Solución 3:

```
R5>en
R5#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R5(config)#int loopback 0
R5(config-if)#
%LINK-5-CHANGED: Interface Loopback0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback0, changed
state to up
R5(config-if)#ip add 172.5.0.1 255.255.252.0
R5(config-if)#int loopback 1
R5(config-if)#
%LINK-5-CHANGED: Interface Loopback1, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback1, changed
state to up
R5(config-if)#ip add 172.6.0.1 255.255.252.0
R5(config-if)#exit
R5(config)#int loopback 2
R5(config-if)#
%LINK-5-CHANGED: Interface Loopback2, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback2, changed
state to up
R5(config-if)#ip add 172.7.0.1 255.255.252.0
R5(config-if)#int loopback 3
R5(config-if)#
%LINK-5-CHANGED: Interface Loopback3, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback3, changed
state to up
R5(config-if)#ip add 172.8.0.1 255.255.252.0
R5(config-if)#router eigrp 10
R5(config-router)#no auto-summary
R5(config-router)#network 172.5.0.0 0.0.3.255
R5(config-router)#network 172.6.0.0 0.0.3.255
R5(config-router)#network 172.7.0.0 0.0.3.255
R5(config-router)#network 172.8.0.0 0.0.3.255
```

4. Analice la tabla de enrutamiento de R3 y verifique que R3 está aprendiendo las nuevas interfaces de Loopback mediante el comando **show ip route**.



```
R3
Physical Config CLI Attributes

R3>en
R3#sh ip route
Codes: L - local, C - connected, S - static, 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

    10.0.0.0/8 is variably subnetted, 7 subnets, 2 masks
O       10.1.0.1/32 [110/129] via 10.103.23.1, 00:10:50, Serial0/0/0
O       10.2.0.1/32 [110/129] via 10.103.23.1, 00:10:28, Serial0/0/0
O       10.3.0.1/32 [110/129] via 10.103.23.1, 00:09:18, Serial0/0/0
O       10.4.0.2/32 [110/129] via 10.103.23.1, 00:08:57, Serial0/0/0
O       10.103.12.0/24 [110/128] via 10.103.23.1, 01:41:15, Serial0/0/0
C       10.103.23.0/24 is directly connected, Serial0/0/0
L       10.103.23.2/32 is directly connected, Serial0/0/0
172.5.0.0/22 is subnetted, 1 subnets
D       172.5.0.0/22 [90/2809856] via 172.29.34.2, 00:02:57, Serial0/0/1
172.6.0.0/22 is subnetted, 1 subnets
D       172.6.0.0/22 [90/2809856] via 172.29.34.2, 00:02:43, Serial0/0/1
172.7.0.0/22 is subnetted, 1 subnets
D       172.7.0.0/22 [90/2809856] via 172.29.34.2, 00:02:27, Serial0/0/1
172.8.0.0/22 is subnetted, 1 subnets
D       172.8.0.0/22 [90/2809856] via 172.29.34.2, 00:02:08, Serial0/0/1
172.29.0.0/16 is variably subnetted, 3 subnets, 2 masks
C       172.29.34.0/24 is directly connected, Serial0/0/1
L       172.29.34.1/32 is directly connected, Serial0/0/1
D       172.29.45.0/24 [90/2681856] via 172.29.34.2, 01:37:48, Serial0/0/1

R3#
R3#

Ctrl+F6 to exit CLI focus
```

Figura No.2. Tabla de enrutamiento de router R3, verificación mediante el comando show ip route.

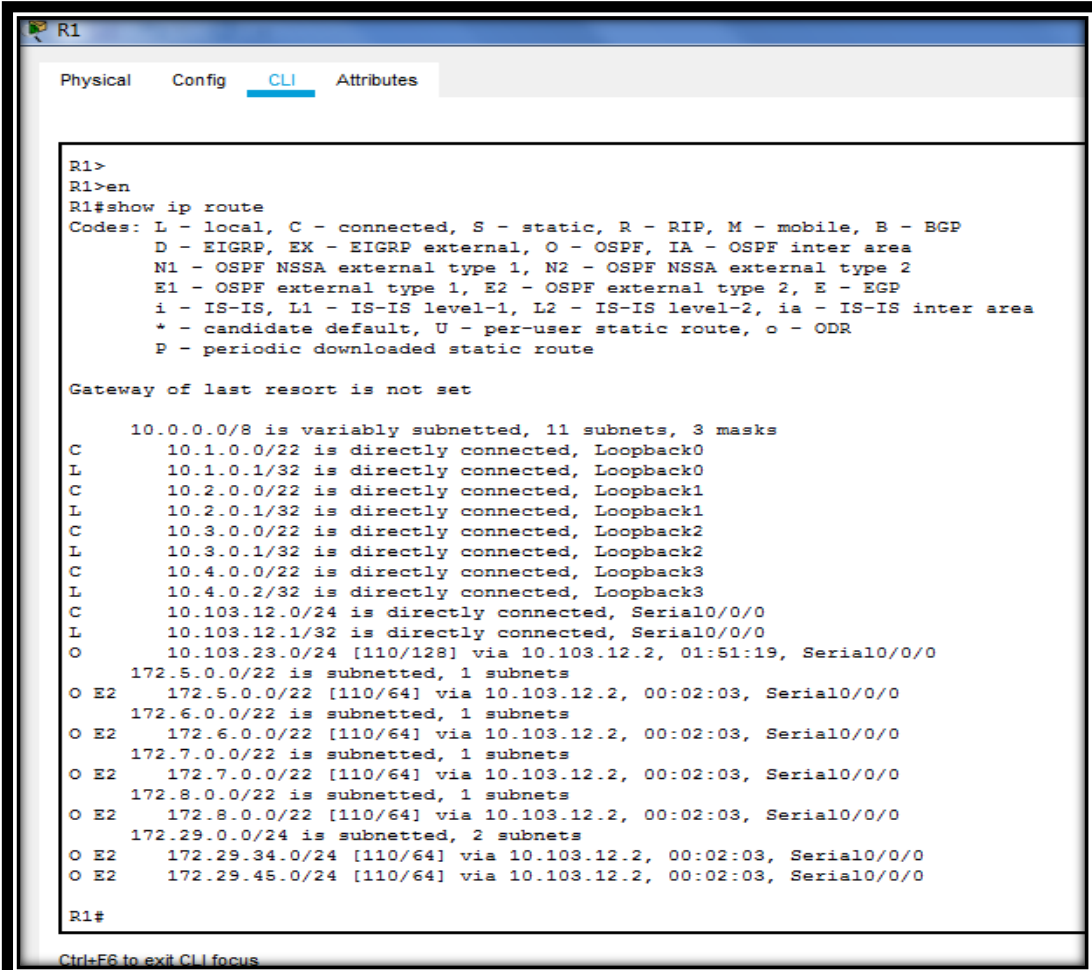
5. Configure R3 para redistribuir las rutas EIGRP en OSPF usando el costo de 50000 y luego redistribuya las rutas OSPF en EIGRP usando un ancho de banda T1 y 20,000 microsegundos de retardo.

Solución 5:

```
R3#conf t
Enter configuration commands, one per line. End with
CNTL/Z. R3(config)#router eigrp 10
R3(config-router)#redistribute ospf 1 metric 50000 100 255 1 500
R3(config-router)#router ospf 1
R3(config-router)#redistribute eigrp 10 metric 64 subnets
R3(config-
router)# R3#
```

6. Verifique en R1 y R5 que las rutas del sistema autónomo opuesto existen en su tabla de enrutamiento mediante el comando *show ip route*

Verificación Router R1



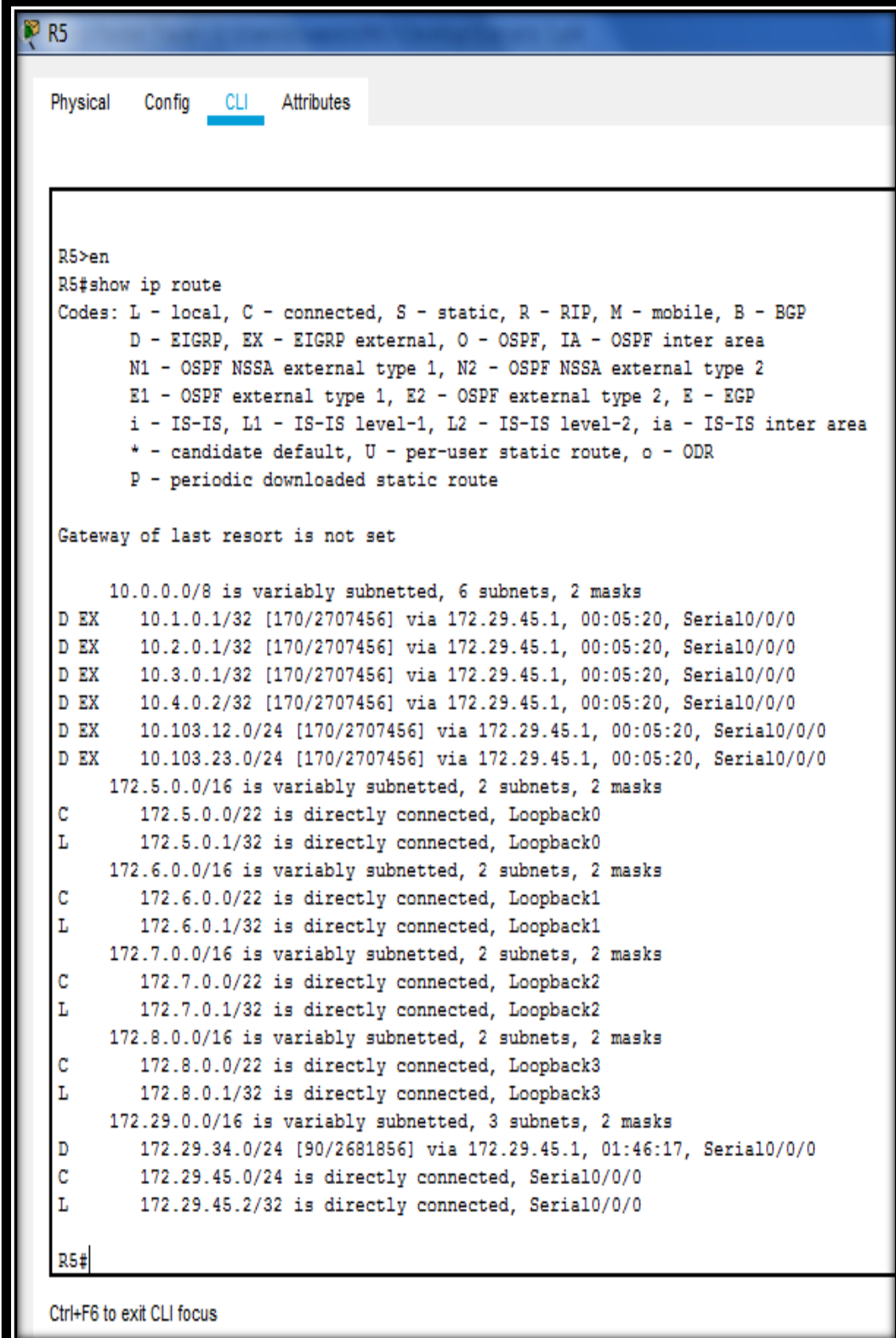
```
R1
Physical Config CLI Attributes
R1>
R1>en
R1#show ip route
Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP
D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
E1 - OSPF external type 1, E2 - OSPF 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

10.0.0.0/8 is variably subnetted, 11 subnets, 3 masks
C 10.1.0.0/22 is directly connected, Loopback0
L 10.1.0.1/32 is directly connected, Loopback0
C 10.2.0.0/22 is directly connected, Loopback1
L 10.2.0.1/32 is directly connected, Loopback1
C 10.3.0.0/22 is directly connected, Loopback2
L 10.3.0.1/32 is directly connected, Loopback2
C 10.4.0.0/22 is directly connected, Loopback3
L 10.4.0.2/32 is directly connected, Loopback3
C 10.103.12.0/24 is directly connected, Serial0/0/0
L 10.103.12.1/32 is directly connected, Serial0/0/0
O 10.103.23.0/24 [110/128] via 10.103.12.2, 01:51:19, Serial0/0/0
172.5.0.0/22 is subnetted, 1 subnets
O E2 172.5.0.0/22 [110/64] via 10.103.12.2, 00:02:03, Serial0/0/0
172.6.0.0/22 is subnetted, 1 subnets
O E2 172.6.0.0/22 [110/64] via 10.103.12.2, 00:02:03, Serial0/0/0
172.7.0.0/22 is subnetted, 1 subnets
O E2 172.7.0.0/22 [110/64] via 10.103.12.2, 00:02:03, Serial0/0/0
172.8.0.0/22 is subnetted, 1 subnets
O E2 172.8.0.0/22 [110/64] via 10.103.12.2, 00:02:03, Serial0/0/0
172.29.0.0/24 is subnetted, 2 subnets
O E2 172.29.34.0/24 [110/64] via 10.103.12.2, 00:02:03, Serial0/0/0
O E2 172.29.45.0/24 [110/64] via 10.103.12.2, 00:02:03, Serial0/0/0
R1#
Ctrl+F6 to exit CLI focus
```

Figura Nro.3. Tabla De Enrutamiento para las rutas del sistema Autónomo para Router R1.

Verificación Router R5



```
R5
Physical Config CLI Attributes

R5>en
R5#show ip route
Codes: L - local, C - connected, S - static, 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

    10.0.0.0/8 is variably subnetted, 6 subnets, 2 masks
D EX   10.1.0.1/32 [170/2707456] via 172.29.45.1, 00:05:20, Serial0/0/0
D EX   10.2.0.1/32 [170/2707456] via 172.29.45.1, 00:05:20, Serial0/0/0
D EX   10.3.0.1/32 [170/2707456] via 172.29.45.1, 00:05:20, Serial0/0/0
D EX   10.4.0.2/32 [170/2707456] via 172.29.45.1, 00:05:20, Serial0/0/0
D EX   10.103.12.0/24 [170/2707456] via 172.29.45.1, 00:05:20, Serial0/0/0
D EX   10.103.23.0/24 [170/2707456] via 172.29.45.1, 00:05:20, Serial0/0/0
    172.5.0.0/16 is variably subnetted, 2 subnets, 2 masks
C       172.5.0.0/22 is directly connected, Loopback0
L       172.5.0.1/32 is directly connected, Loopback0
    172.6.0.0/16 is variably subnetted, 2 subnets, 2 masks
C       172.6.0.0/22 is directly connected, Loopback1
L       172.6.0.1/32 is directly connected, Loopback1
    172.7.0.0/16 is variably subnetted, 2 subnets, 2 masks
C       172.7.0.0/22 is directly connected, Loopback2
L       172.7.0.1/32 is directly connected, Loopback2
    172.8.0.0/16 is variably subnetted, 2 subnets, 2 masks
C       172.8.0.0/22 is directly connected, Loopback3
L       172.8.0.1/32 is directly connected, Loopback3
    172.29.0.0/16 is variably subnetted, 3 subnets, 2 masks
D       172.29.34.0/24 [90/2681856] via 172.29.45.1, 01:46:17, Serial0/0/0
C       172.29.45.0/24 is directly connected, Serial0/0/0
L       172.29.45.2/32 is directly connected, Serial0/0/0

R5#
```

Ctrl+F6 to exit CLI focus

Figura Nro.4. Tabla De Enrutamiento para las rutas del sistema Autónomo para Router R5.

5. Escenario 2

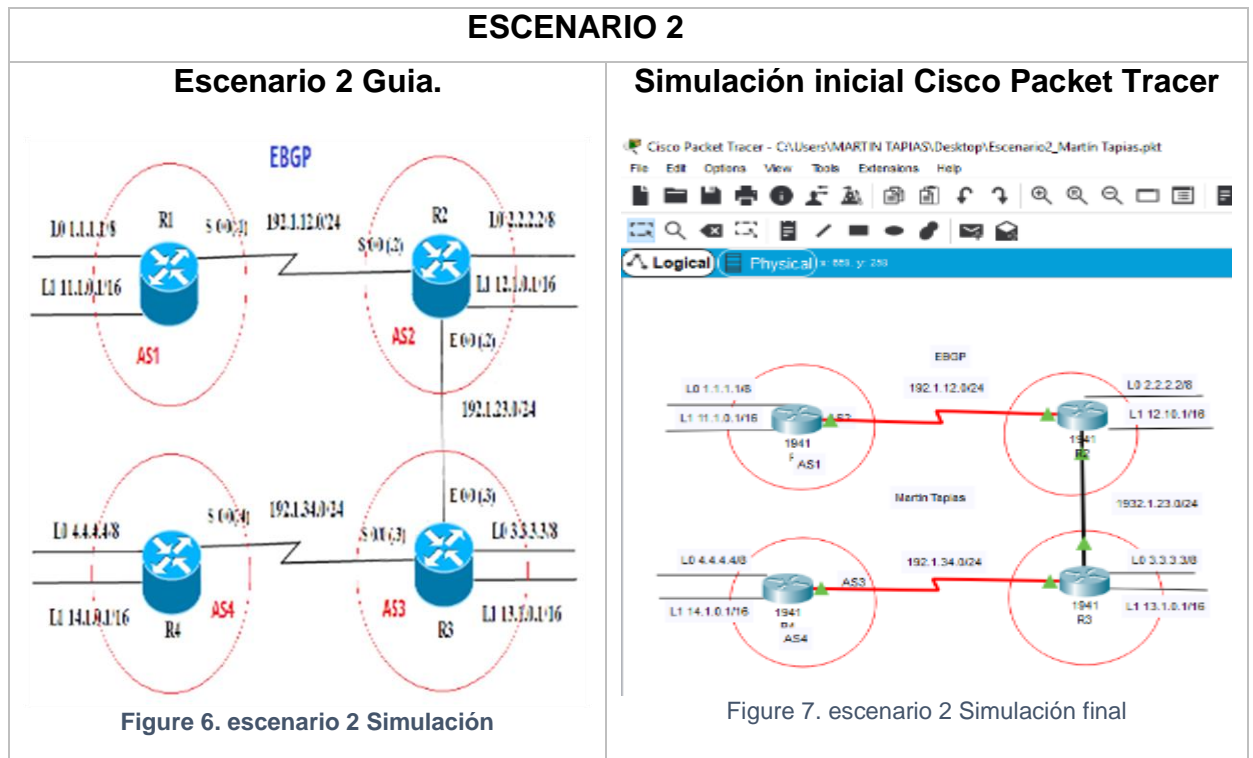


Tabla No.2. Esquema de Escenario 2, guía y simulación Packet Tracer

	Interfaz	Dirección IP	Máscara
R1	Loopback 0	1.1.1.1	255.0.0.0
	Loopback 1	11.1.0.1	255.255.0.0
	S 0/0	192.1.12.1	255.255.255.0
R2	Interfaz	Dirección IP	Máscara
	Loopback 0	2.2.2.2	255.0.0.0
	Loopback 1	12.1.0.1	255.255.0.0
	S 0/0	192.1.12.2	255.255.255.0
	E 0/0	192.1.23.2	255.255.255.0
R3	Interfaz	Dirección IP	Máscara
	Loopback 0	3.3.3.3	255.0.0.0
	Loopback 1	13.1.0.1	255.255.0.0
	E 0/0	192.1.23.3	255.255.255.0
	S 0/0	192.1.34.3	255.255.255.0

	Interfaz	Dirección IP	Máscara
R4	Loopback 0	4.4.4.4	255.0.0.0
	Loopback 1	14.1.0.1	255.255.0.0
	S 0/0	192.1.34.4	255.255.255.0

Tabla No.3.Configuraciones de routers para Escenario 2.

Router R1

```

Router>en
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#hostname R1.
R1(config)#int s0/0/0
R1(config-if)#ip add 192.1.12.1 255.255.255.0
R1(config-if)#clockrate 64000
This command applies only to DCE interfaces
R1(config-if)#no shut
%LINK-5-CHANGED: Interface Serial0/0/0, changed state to down
R1(config-if)#
R1(config-if)#int loopback 0
%LINK-5-CHANGED: Interface Loopback0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback0, changed
state to up
R1(config-if)#ip add 1.1.1.1 255.0.0.0
R1(config-if)#int loopback 1
R1(config-if)#
%LINK-5-CHANGED: Interface Loopback1, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback1, changed
state to up
R1(config-if)#ip add 11.1.0.1 255.255.0.0
R1(config-if)#
R1#

```

Router R2

```

Router>en
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#hostname R2
R2(config)#int s0/0/0
R2(config-if)#ip add 192.1.12.2 255.255.255.0
R2(config-if)#no sh
R2(config-if)#
%LINK-5-CHANGED: Interface Serial0/0/0, changed state to up

```



```

R2(config-if)#int g0/0
R2(config-if)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0, changed
state to up
R2(config-if)#ip add 192.1.23.2 255.255.255.0
R2(config-if)#no sh
R2(config-if)#
%LINK-5-CHANGED: Interface GigabitEthernet0/0, changed state to up
R2(config-if)#int loopback 0
R2(config-if)#
%LINK-5-CHANGED: Interface Loopback0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback0, changed
state to up
R2(config-if)#ip add 2.2.2.2 255.0.0.0
R2(config-if)#
R2(config-if)#int loopback 1
R2(config-if)#
%LINK-5-CHANGED: Interface Loopback1, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback1, changed
state to up
R2(config-if)#ip add 12.1.0.1 255.255.0.0
R2#

```

Router R3

```

Router>en
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#hostname R3
R3(config)#int s0/0/0
R3(config-if)#ip add 192.1.34.3 255.255.255.0
R3(config-if)#no sh
%LINK-5-CHANGED: Interface Serial0/0/0, changed state to down
R3(config-if)#int g0/0.
R3(config-if)#ip add 192.1.23.3 255.255.255.0
R3(config-if)#no sh
R3(config-if)#
%LINK-5-CHANGED: Interface GigabitEthernet0/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0,
changed state to up
R3(config-if)#int loopback 0
R3(config-if)#
%LINK-5-CHANGED: Interface Loopback0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback0, changed
state to up
R3(config-if)#ip add 3.3.3.3 255.0.0.0
R3(config-if)#int loopback 1
R3(config-if)#

```

```
%LINK-5-CHANGED: Interface Loopback1, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback1, changed
state to up
R3(config-if)#ip add 13.1.0.1 255.255.0.0
R3(config-if)#
```

Router R4

```
Router>en
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#hostname R4
R4(config)#int s0/0/0
R4(config-if)#ip add 192.1.34.4 255.255.255.0
R4(config-if)#clock rate 64000
This command applies only to DCE interfaces
R4(config-if)#no sh
R4(config-if)#
%LINK-5-CHANGED: Interface Serial0/0/0, changed state to up
R4(config-if)#int loopback 0
R4(config-if)#
%LINK-5-CHANGED: Interface Loopback0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback0, changed
state to up
R4(config-if)#ip add 4.4.4.4 255.0.0.0
R4(config-if)#int loopback 1
R4(config-if)#
%LINK-5-CHANGED: Interface Loopback1, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback1, changed
state to up
R4(config-if)#ip add 14.1.0.1 255.255.0.0
R4(config-if)#
```

1. Configure una relación de vecino BGP entre R1 y R2. R1 debe estar en **AS1** y R2 debe estar en **AS2**. Anuncie las direcciones de Loopback en BGP. Codifique los ID para los routers BGP como 11.11.11.11 para R1 y como 22.22.22.22 para R2. Presente el paso a con los comandos utilizados y la salida del comando **show ip route**.

Solución:

```
R1>en
R1#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R1(config)#router bgp 1
```

```

R1(config-router)#no synchronization
R1(config-router)#bgp router-id 11.11.11.11
R1(config-router)#neighbor 192.1.12.2 remote-as 2
R1(config-router)#network 1.0.0.0 mask 255.0.0.0
R1(config-router)#network 11.1.0.0 mask 255.255.0.0
R1(config-router)#
R1(config-router)#%BGP-5-ADJCHANGE: neighbor 192.1.12.2 Up
R2>en
R2#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R2(config)#router bgp 2
R2(config-router)#no synchronization
R2(config-router)#bgp router-id 22.22.22.22
R2(config-router)#neighbor 192.1.12.1 remote-as 1
R2(config-router)#%BGP-5-ADJCHANGE: neighbor 192.1.12.1 Up
R2(config-router)#network 2.0.0.0 mask 255.0.0.0
R2(config-router)#network 12.1.0.0 mask 255.255.0.0
R2(config-router)#

```

```

R1
Physical Config CLI Attributes
IOS Command Line Interface
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

  1.0.0.0/8 is variably subnetted, 2 subnets, 2 masks
C    1.0.0.0/8 is directly connected, Loopback0
L    1.1.1.1/32 is directly connected, Loopback0
B    2.0.0.0/8 [20/0] via 192.1.12.2, 00:00:00
  11.0.0.0/8 is variably subnetted, 2 subnets, 2 masks
C    11.1.0.0/16 is directly connected, Loopback1
L    11.1.0.1/32 is directly connected, Loopback1
B    12.0.0.0/16 is subnetted, 1 subnets
  12.1.0.0/16 [20/0] via 192.1.12.2, 00:00:00
  192.1.12.0/24 is variably subnetted, 2 subnets, 2 masks
C    192.1.12.0/24 is directly connected, Serial0/0/0
L    192.1.12.1/32 is directly connected, Serial0/0/0
R1#
Ctrl+F6 to exit CLI focus
Copy Paste

```

Figura No.6. Comando Show IP Route R1 en Escenario 2.

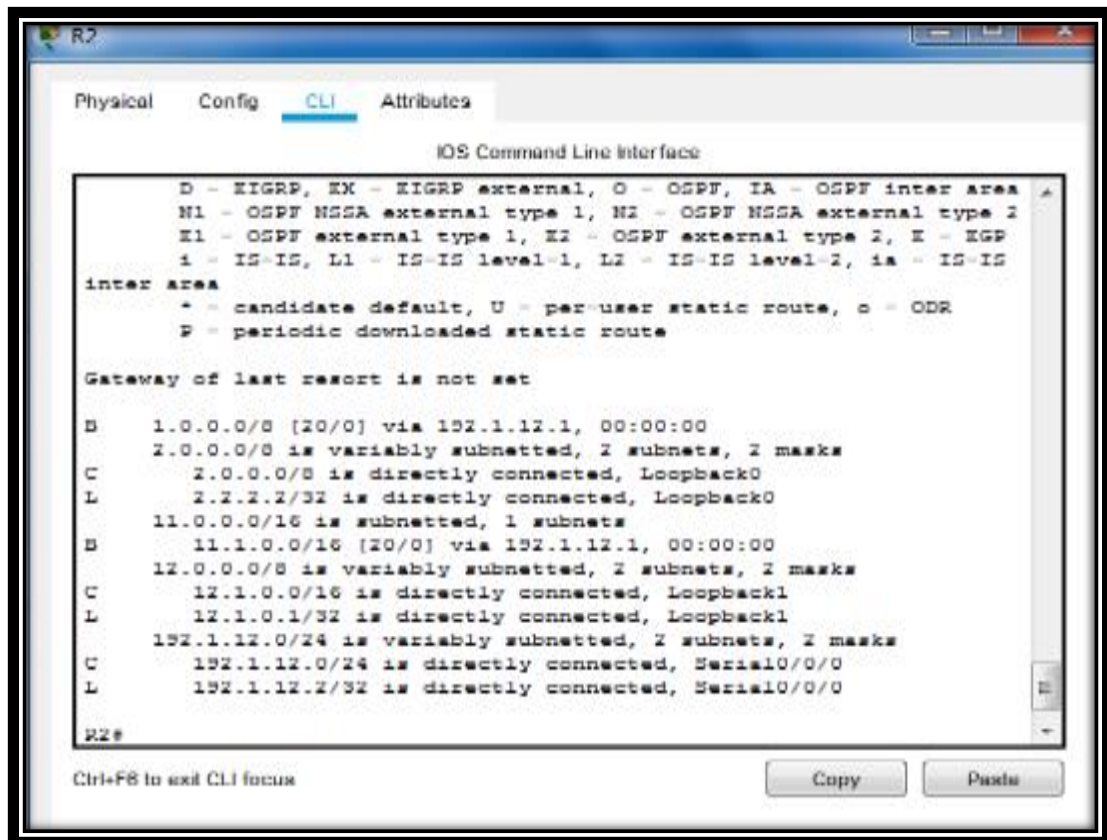


Figura No.7. Comando Show IP Route R2 en Escenario 2.

2. Configure una relación de vecino BGP entre R2 y R3. R2 ya debería estar configurado en **AS2** y R3 debería estar en **AS3**. Anuncie las direcciones de Loopback de R3 en BGP. Codifique el ID del router R3 como 33.33.33.33. Presente el paso a con los comandos utilizados y la salida del comando **show iproute**.

Solución en la relación de vecino BGP entre R2 y R3, mediante del comando **show iproute**.

```
R2>en
```

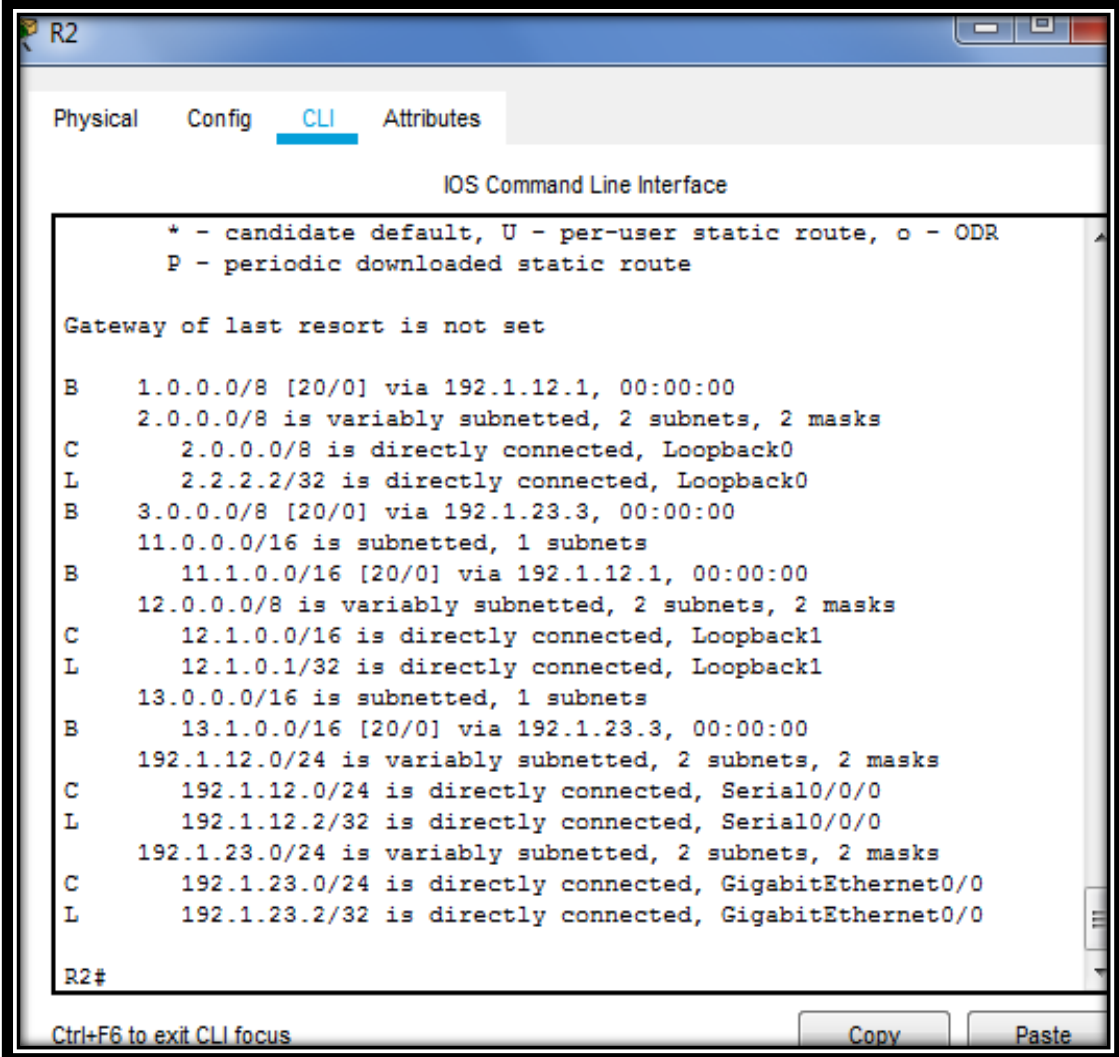
```
R2#conf t
```

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

```
R2(config)#router bgp 2
```

```
R2(config-router)#neighbor 192.1.23.3 remote-as 3
```

```
R2(config-router)#%BGP-5-ADJCHANGE: neighbor 192.1.23.3 Up
```



```
R2
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
B 1.0.0.0/8 [20/0] via 192.1.12.1, 00:00:00
2.0.0.0/8 is variably subnetted, 2 subnets, 2 masks
C 2.0.0.0/8 is directly connected, Loopback0
L 2.2.2.2/32 is directly connected, Loopback0
B 3.0.0.0/8 [20/0] via 192.1.23.3, 00:00:00
11.0.0.0/16 is subnetted, 1 subnets
B 11.1.0.0/16 [20/0] via 192.1.12.1, 00:00:00
12.0.0.0/8 is variably subnetted, 2 subnets, 2 masks
C 12.1.0.0/16 is directly connected, Loopback1
L 12.1.0.1/32 is directly connected, Loopback1
13.0.0.0/16 is subnetted, 1 subnets
B 13.1.0.0/16 [20/0] via 192.1.23.3, 00:00:00
192.1.12.0/24 is variably subnetted, 2 subnets, 2 masks
C 192.1.12.0/24 is directly connected, Serial0/0/0
L 192.1.12.2/32 is directly connected, Serial0/0/0
192.1.23.0/24 is variably subnetted, 2 subnets, 2 masks
C 192.1.23.0/24 is directly connected, GigabitEthernet0/0
L 192.1.23.2/32 is directly connected, GigabitEthernet0/0
R2#
Ctrl+F6 to exit CLI focus Copy Paste
```

Figura No.8. Comando Show IP Route R2 en Escenario 2

```

R3>en
R3#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R3(config)#router bgp 3
R3(config-router)#bgp router-id 33.33.33.33
R3(config-router)#no synchronization
R3(config-router)#neighbor 192.1.23.2 remote-as 2
R3(config-router)#%BGP-5-ADJCHANGE: neighbor 192.1.23.2 Up
R3(config-router)#neighbor 192.1.34.4 remote-as 4
R3(config-router)#network 3.0.0.0 mask 255.0.0.0
R3(config-router)#network 13.1.0.0 mask 255.255.0.0
R3(config-router)#exit
R3(config)#

```

```

R3
Physical Config CLI Attributes
IOS Command Line Interface

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

B    1.0.0.0/8 [20/0] via 192.1.23.2, 00:00:00
B    2.0.0.0/8 [20/0] via 192.1.23.2, 00:00:00
     3.0.0.0/8 is variably subnetted, 2 subnets, 2 masks
C    3.0.0.0/8 is directly connected, Loopback0
L    3.3.3.3/32 is directly connected, Loopback0
     11.0.0.0/16 is subnetted, 1 subnets
B    11.1.0.0/16 [20/0] via 192.1.23.2, 00:00:00
     12.0.0.0/16 is subnetted, 1 subnets
B    12.1.0.0/16 [20/0] via 192.1.23.2, 00:00:00
     13.0.0.0/8 is variably subnetted, 2 subnets, 2 masks
C    13.1.0.0/16 is directly connected, Loopback1
L    13.1.0.1/32 is directly connected, Loopback1
B    192.1.12.0/24 [20/0] via 192.1.23.2, 00:00:00
     192.1.23.0/24 is variably subnetted, 2 subnets, 2 masks
C    192.1.23.0/24 is directly connected, GigabitEthernet0/0
L    192.1.23.3/32 is directly connected, GigabitEthernet0/0

R3#
Ctrl+F6 to exit CLI focus
Copy Paste

```

Figura No.9. Comando Show IP Route R3 en Escenario 2

3. Configure una relación de vecino BGP entre R3 y R4. R3 ya debería estar configurado en **AS3** y R4 debería estar en **AS4**. Anuncie las direcciones de Loopback de R4 en BGP. Codifique el ID del router R4 como 44.44.44.44. Establezca las relaciones de vecino con base en las direcciones de Loopback 0. Cree rutas estáticas para alcanzar la Loopback 0 del otro router. No anuncie la Loopback 0 en BGP. Anuncie la red Loopback de R4 en BGP. Presente el paso a con los comandos utilizados y la salida del comando **show ip route**.

Solución en la configuración de vecino BGP Entre R4 y R3:

```
R3#en
R3#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R3(config)#router bgp 3
R3(config-router)#neighbor 192.1.34.4 remote-as 4
R3(config-router)#
```

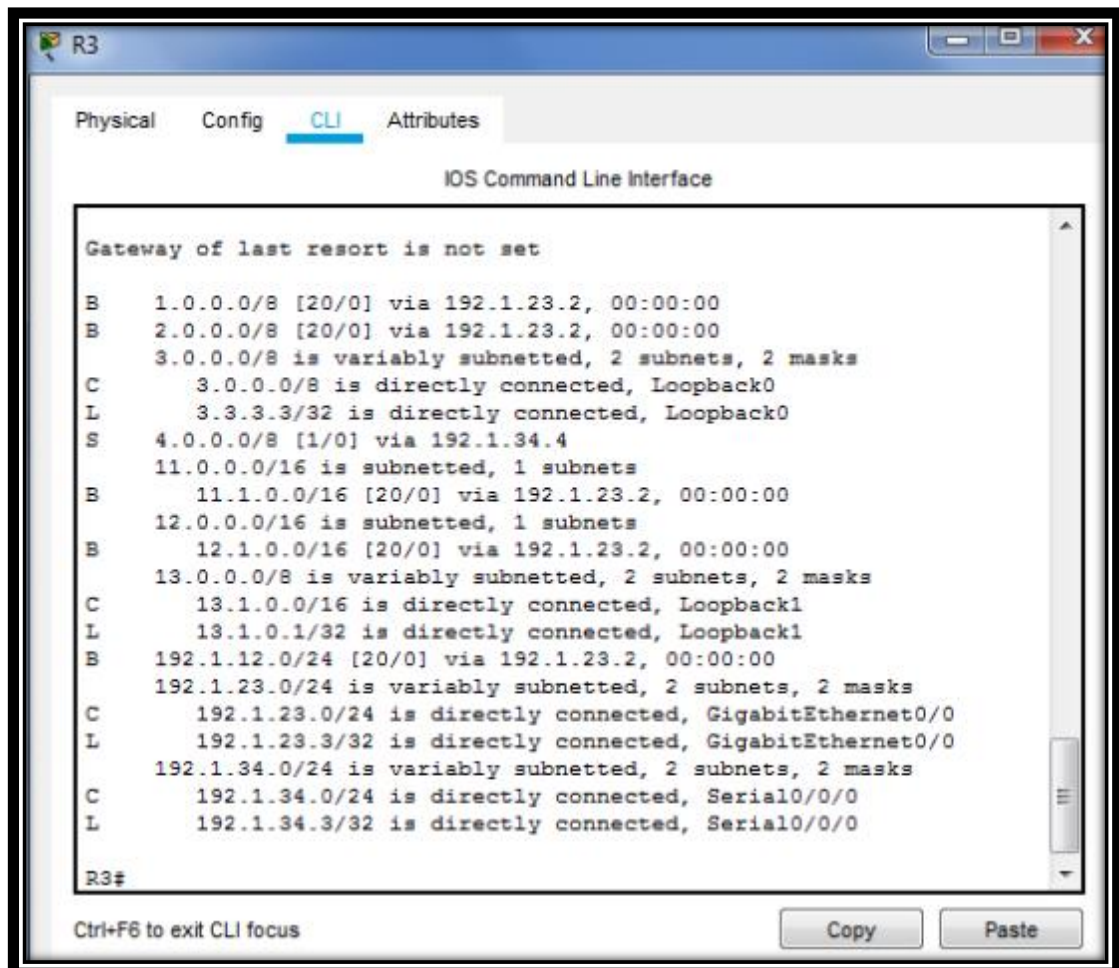


Figura No.10. Comando Show IP Route R3 en Escenario 2

```

R4>en
R4#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R4(config)#router bgp 4
R4(config-router)#bgp router-id 44.44.44.44
R4(config-router)#no synchronization
R4(config-router)#neighbor 192.1.34.3 remote-as 3
R4(config-router)#%BGP-5-ADJCHANGE: neighbor 192.1.34.3 Up
R4(config-router)#network 4.0.0.0 mask 255.0.0.0
R4(config-router)#network 14.1.0.0 mask 255.255.0.0
R4(config-router)#
R4#

```

```

R4
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

B    1.0.0.0/8 [20/0] via 3.3.3.3, 00:00:00
B    2.0.0.0/8 [20/0] via 3.3.3.3, 00:00:00
S    3.0.0.0/8 [1/0] via 192.1.34.3
     4.0.0.0/8 is variably subnetted, 2 subnets, 2 masks
C     4.0.0.0/8 is directly connected, Loopback0
L     4.4.4.4/32 is directly connected, Loopback0
     11.0.0.0/16 is subnetted, 1 subnets
B     11.1.0.0/16 [20/0] via 3.3.3.3, 00:00:00
     12.0.0.0/16 is subnetted, 1 subnets
B     12.1.0.0/16 [20/0] via 3.3.3.3, 00:00:00
     13.0.0.0/16 is subnetted, 1 subnets
B     13.1.0.0/16 [20/0] via 3.3.3.3, 00:00:00
B    192.1.12.0/24 [20/0] via 192.1.34.3, 00:00:00
B    192.1.23.0/24 [20/0] via 3.3.3.3, 00:00:00
     192.1.34.0/24 is variably subnetted, 2 subnets, 2 masks
C     192.1.34.0/24 is directly connected, Serial10/0/0
L     192.1.34.4/32 is directly connected, Serial10/0/0

R4#
R4#

```

Ctrl+F6 to exit CLI focus

Copy Paste

Figura No.11. Comando Show IP Route R4 en Escenario 2

6. Escenario 3

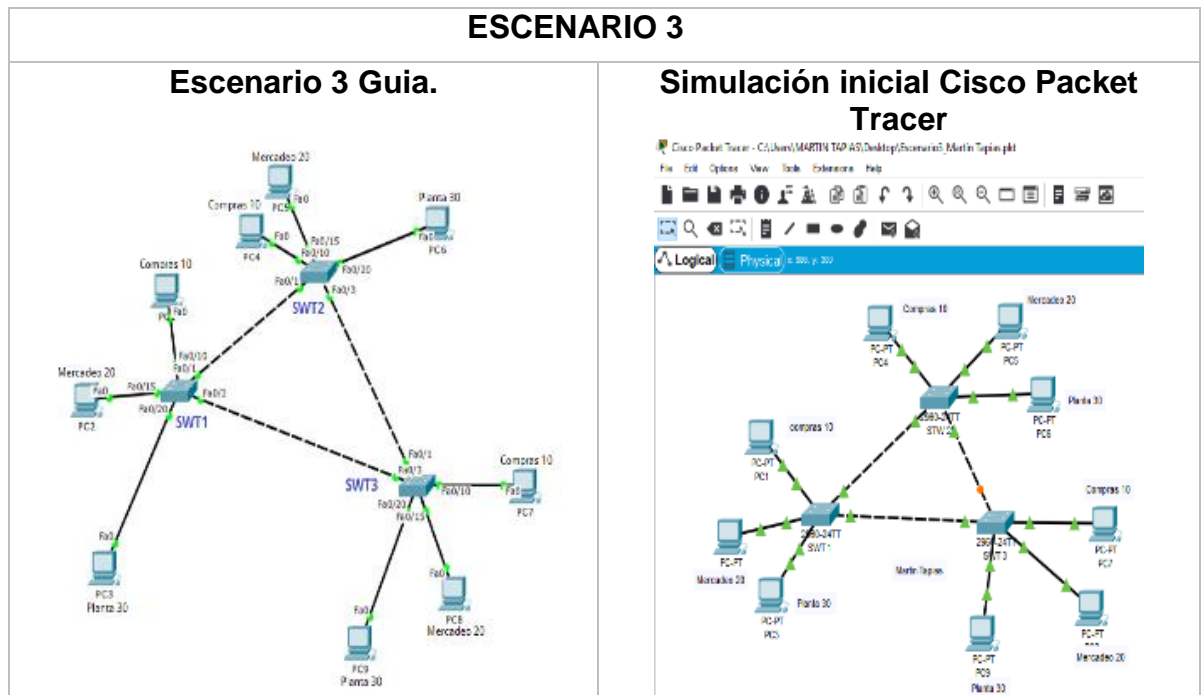


Tabla No.4. Esquema de Escenario 3, guía y simulación Packet Tracer

PARTE A CONFIGURAR VTP

1. Todos los switches se configurarán para usar VTP para las actualizaciones de VLAN. El switch SWT2 se configurará como el servidor. Los switches SWT1 y SWT3 se configurarán como clientes. Los switches estarán en el dominio VPT llamado CCNP y usando la contraseña cisco.

Solución en la configuración para usar VTP para las actualizaciones de VLAN:

SWT1

```
Switch>EN
Switch#CONF T
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#vtp mode client
Setting device to VTP CLIENT mode.
Switch(config)#vtp domain CCNP
Changing VTP domain name from NULL to CCNP
Switch(config)#vtp password cisco
Setting device VLAN database password to cisco
Switch(config)#
```

SWT2

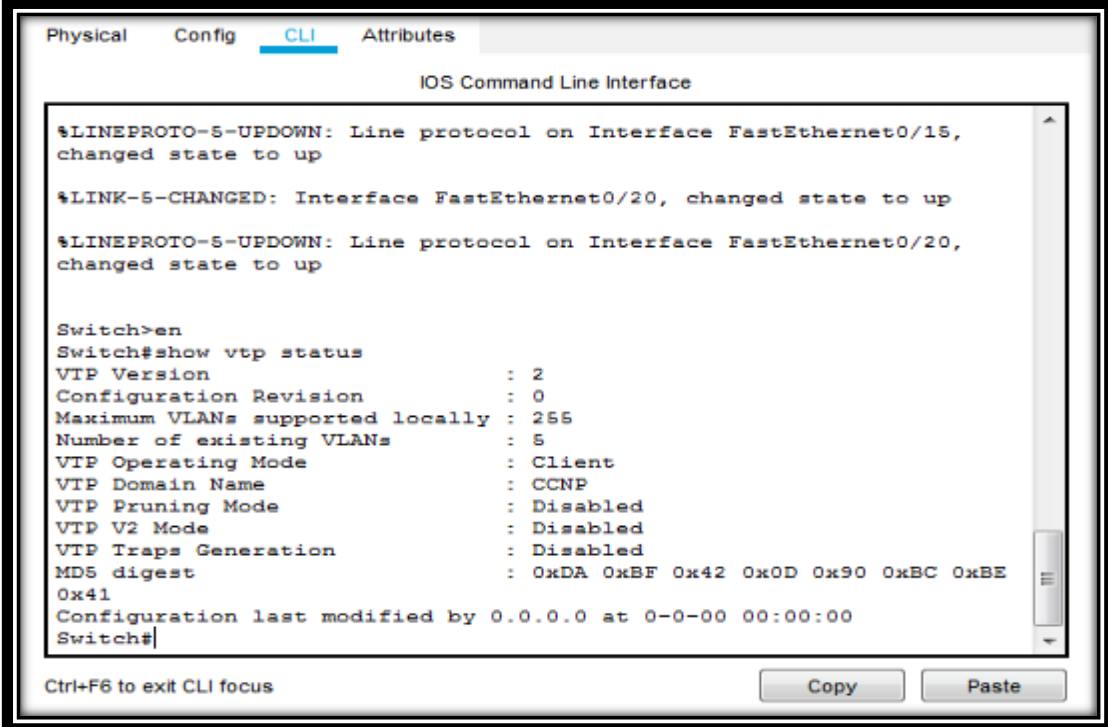
```
Switch(config-if)#  
Switch(config)#vtp mode server  
Device mode already VTP SERVER.  
Switch(config)#vtp domain CCNP  
Changing VTP domain name from NULL to CCNP  
Switch(config)#vtp password cisco  
Setting device VLAN database password to cisco
```

SWT3

```
Switch(config)#vtp mode client  
Setting device to VTP CLIENT mode.  
Switch(config)#vtp domain CCNP  
Changing VTP domain name from NULL to CCNP  
Switch(config)#vtp password cisco  
Setting device VLAN database password to cisco  
Switch(config)#
```

2. Verifique las configuraciones mediante el comando **show vtp status**.

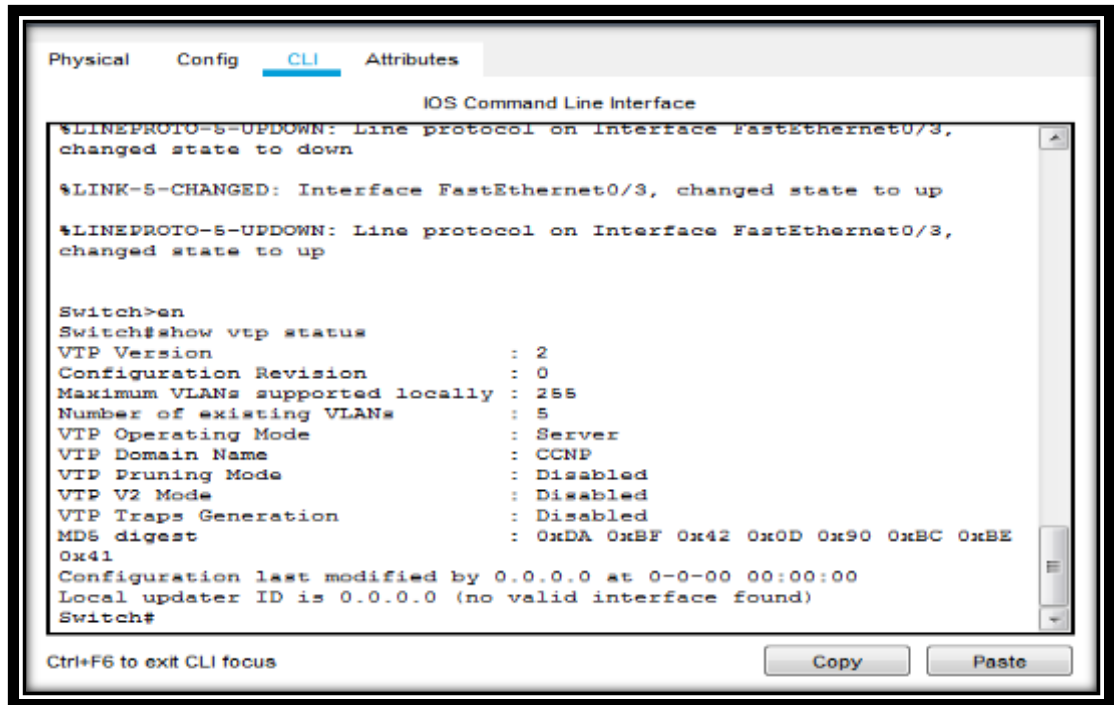
SWT1



```
Physical Config CLI Attributes  
IOS Command Line Interface  
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/15,  
changed state to up  
%LINK-5-CHANGED: Interface FastEthernet0/20, changed state to up  
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/20,  
changed state to up  
  
Switch>en  
Switch#show vtp status  
VTP Version : 2  
Configuration Revision : 0  
Maximum VLANs supported locally : 255  
Number of existing VLANs : 5  
VTP Operating Mode : Client  
VTP Domain Name : CCNP  
VTP Pruning Mode : Disabled  
VTP V2 Mode : Disabled  
VTP Traps Generation : Disabled  
MDS digest : 0xDA 0xBF 0x42 0x0D 0x90 0xBC 0xBE  
0x41  
Configuration last modified by 0.0.0.0 at 0-0-00 00:00:00  
Switch#
```

Figura No.13. Comando show VTP Status SWT1 en Escenario 3

SWT2



The screenshot shows the CLI of a switch (SW2) in the 'CLI' tab. The interface displays several status messages at the top: '%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/3, changed state to down', '%LINK-5-CHANGED: Interface FastEthernet0/3, changed state to up', and '%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/3, changed state to up'. Below these, the user enters the command 'show vtp status'. The output shows the following details: VTP Version: 2, Configuration Revision: 0, Maximum VLANs supported locally: 255, Number of existing VLANs: 5, VTP Operating Mode: Server, VTP Domain Name: CCNP, VTP Pruning Mode: Disabled, VTP V2 Mode: Disabled, VTP Traps Generation: Disabled, and MD5 digest: 0xDA 0xBF 0x42 0x0D 0x90 0xBC 0xBE 0x41. The configuration was last modified by 0.0.0.0 at 0-0-00 00:00:00. The local updater ID is 0.0.0.0 (no valid interface found). The prompt is 'Switch#'. At the bottom, there are 'Copy' and 'Paste' buttons and the text 'Ctrl+F6 to exit CLI focus'.

```
Physical  Config  CLI  Attributes

IOS Command Line Interface

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

%LINK-5-CHANGED: Interface FastEthernet0/3, changed state to up

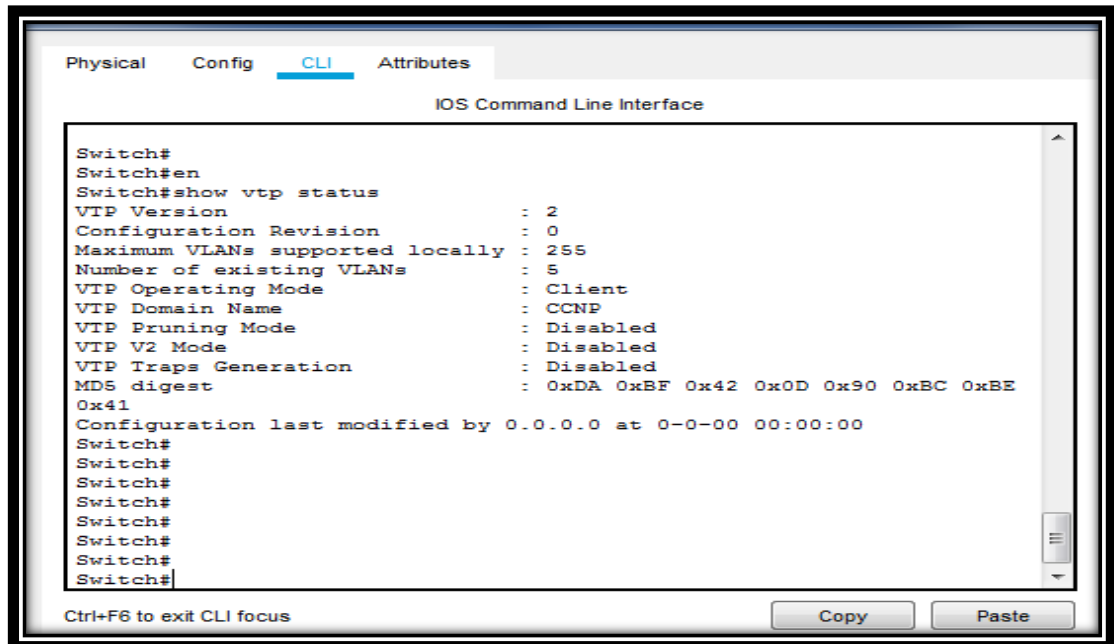
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/3,
changed state to up

Switch>en
Switch#show vtp status
VTP Version                : 2
Configuration Revision     : 0
Maximum VLANs supported locally : 255
Number of existing VLANs   : 5
VTP Operating Mode         : Server
VTP Domain Name            : CCNP
VTP Pruning Mode           : Disabled
VTP V2 Mode                : Disabled
VTP Traps Generation       : Disabled
MD5 digest                 : 0xDA 0xBF 0x42 0x0D 0x90 0xBC 0xBE
0x41
Configuration last modified by 0.0.0.0 at 0-0-00 00:00:00
Local updater ID is 0.0.0.0 (no valid interface found)
Switch#

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

Figura No.14. Comando show VTP Status SWT2 en Escenario 3

SWT 3



The screenshot shows the CLI of a switch (SW3) in the 'CLI' tab. The user enters the command 'show vtp status'. The output shows the following details: VTP Version: 2, Configuration Revision: 0, Maximum VLANs supported locally: 255, Number of existing VLANs: 5, VTP Operating Mode: Client, VTP Domain Name: CCNP, VTP Pruning Mode: Disabled, VTP V2 Mode: Disabled, VTP Traps Generation: Disabled, and MD5 digest: 0xDA 0xBF 0x42 0x0D 0x90 0xBC 0xBE 0x41. The configuration was last modified by 0.0.0.0 at 0-0-00 00:00:00. The prompt is 'Switch#'. At the bottom, there are 'Copy' and 'Paste' buttons and the text 'Ctrl+F6 to exit CLI focus'.

```
Physical  Config  CLI  Attributes

IOS Command Line Interface

Switch#
Switch#en
Switch#show vtp status
VTP Version                : 2
Configuration Revision     : 0
Maximum VLANs supported locally : 255
Number of existing VLANs   : 5
VTP Operating Mode         : Client
VTP Domain Name            : CCNP
VTP Pruning Mode           : Disabled
VTP V2 Mode                : Disabled
VTP Traps Generation       : Disabled
MD5 digest                 : 0xDA 0xBF 0x42 0x0D 0x90 0xBC 0xBE
0x41
Configuration last modified by 0.0.0.0 at 0-0-00 00:00:00
Switch#
Switch#
Switch#
Switch#
Switch#
Switch#
Switch#
Switch#

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

Figura No.15. Comando show VTP Status SWT3 en Escenario 3

B. Configurar DTP (Dynamic Trunking Protocol)

1. Configure un enlace troncal ("trunk") dinámico entre SWT1 y SWT2. Debido a que el modo por defecto es **dynamic auto**, solo un lado del enlace debe configurarse como **dynamic desirable**.

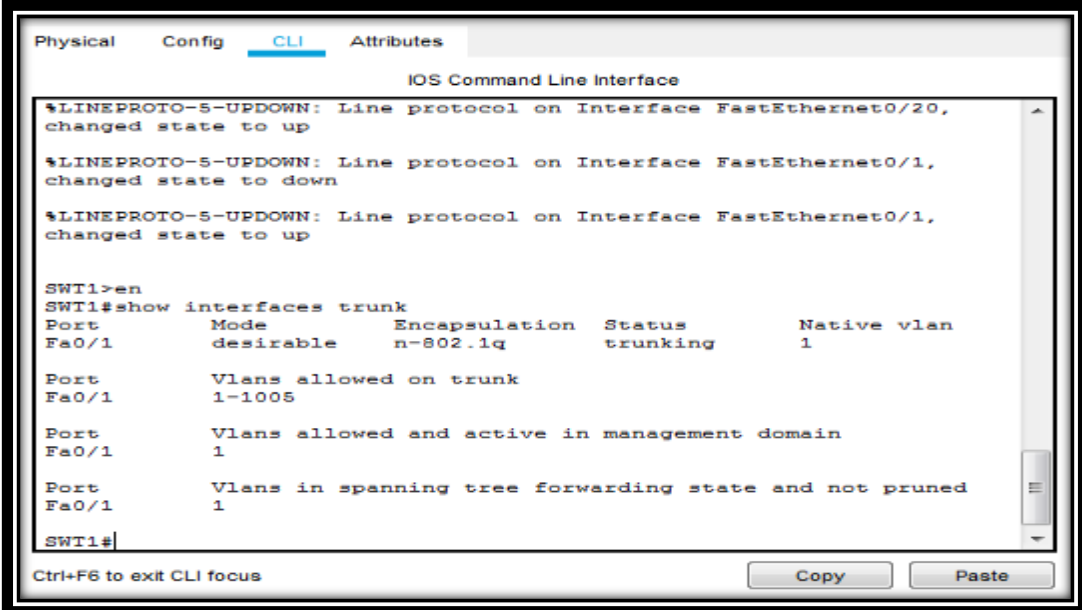
SWT1

```
SWT1>
SWT1>en
SWT1#conf t
Enter configuration commands, one per line. End with CNTL/Z.
SWT1(config)#int fa0/1
SWT1(config-if)#switchport mode trunk
SWT1(config-if)#switchport mode dynamic desirable
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1,
changed state to up
```

SWT2

```
SWT2>en
SWT2#conf t
Enter configuration commands, one per line. End with CNTL/Z.
SWT2(config)#int fa0/1
SWT2(config-if)#switchport mode trunk
SWT2(config-if)#
SWT2#
```

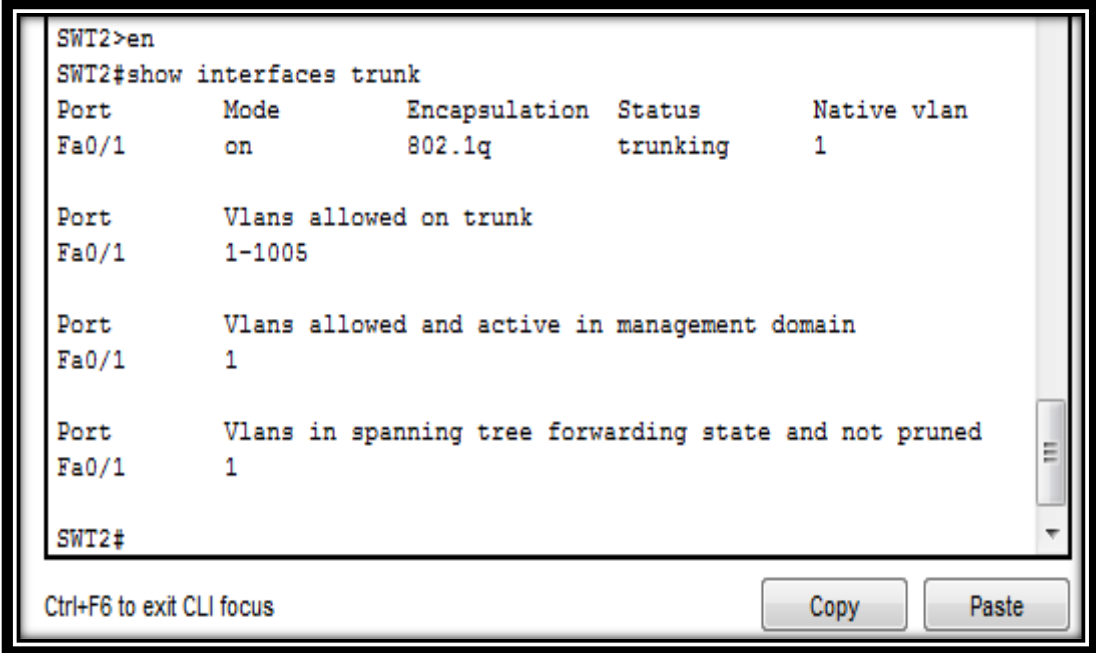
2. Verifique el enlace "trunk" entre SWT1 y SWT2 usando el comando **show interfaces trunk**



```
Physical Config CLI Attributes
IOS Command Line Interface
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/20,
changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1,
changed state to down
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1,
changed state to up
SWT1>en
SWT1#show interfaces trunk
Port      Mode           Encapsulation  Status        Native vlan
Fa0/1     desirable     n-802.1q       trunking      1
Port      Vlans allowed on trunk
Fa0/1     1-1005
Port      Vlans allowed and active in management domain
Fa0/1     1
Port      Vlans in spanning tree forwarding state and not pruned
Fa0/1     1
SWT1#
```

Figura No.16. Comando Show Interfaces Trunk Router SWT1 en Escenario 3

STW 2



```
SWT2>en
SWT2#show interfaces trunk
Port      Mode      Encapsulation  Status      Native vlan
Fa0/1     on        802.1q         trunking    1

Port      Vlans allowed on trunk
Fa0/1     1-1005

Port      Vlans allowed and active in management domain
Fa0/1     1

Port      Vlans in spanning tree forwarding state and not pruned
Fa0/1     1

SWT2#
```

Ctrl+F6 to exit CLI focus

Copy Paste

Figura No.17. Comando Show Interfaces Trunk Router SWT2 en Escenario 3

- Entre SWT1 y SWT3 configure un enlace "trunk" estático utilizando el comando switchport **mode trunk** en la interfaz F0/3 de SWT1

Solución en SWT1 y SWT3.

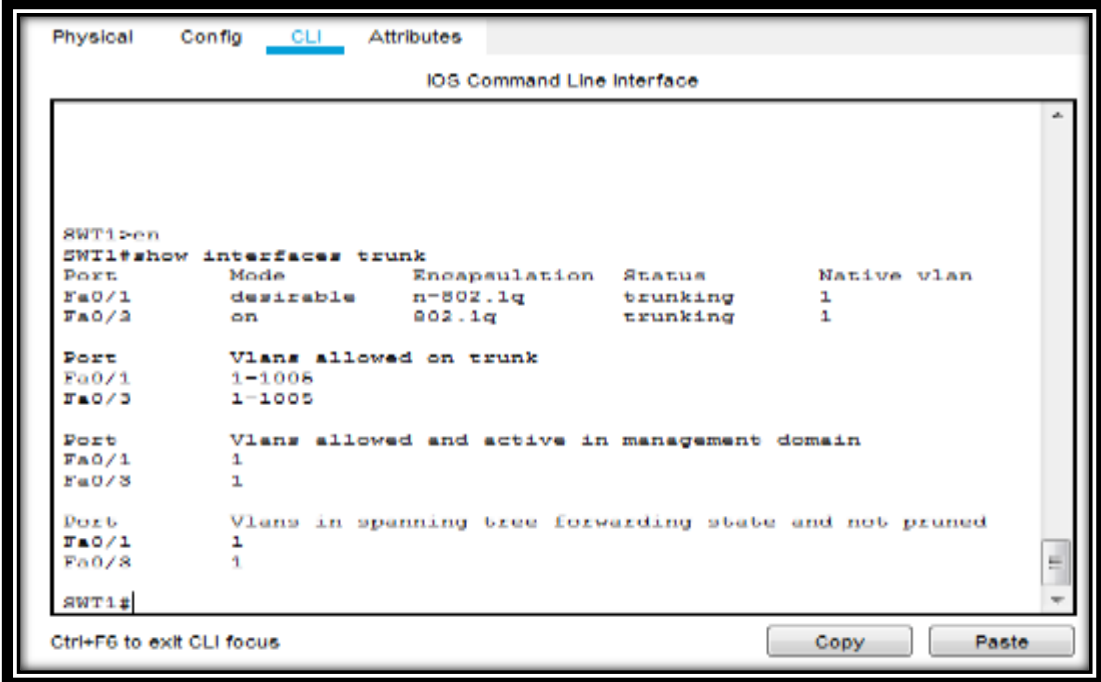
SWT1

```
SWT1>en
SWT1#conf t
Enter configuration commands, one per line. End with CNTL/Z.
SWT1(config)#int fa0/3
SWT1(config-if)#switchportmodetrunk
```

SWT3

```
SWT3>en
SWT3#conf t
Enter configuration commands, one per line. End with CNTL/Z.
SWT3(config)#int fa0/3
SWT3(config-if)#switchport mode trunk
```

4. Verifique el enlace "trunk" el comando **show interfaces trunk** en SWT1



```
SWT1>en
SWT1#show interfaces trunk
Port      Mode      Encapsulation  Status        Native vlan
Fa0/1     desirable n-802.1q       trunking      1
Fa0/3     on        802.1q         trunking      1

Port      Vlans allowed on trunk
Fa0/1     1-1006
Fa0/3     1-1005

Port      Vlans allowed and active in management domain
Fa0/1     1
Fa0/3     1

Port      Vlans in spanning tree forwarding state and not pruned
Fa0/1     1
Fa0/3     1

SWT1#
```

Figura No.17. Comando Show Interfaces Trunk Router SWT1 en Escenario 3

5. Configure un enlace "trunk" permanente entre SWT2 y SWT3.

Solución 5B. Configuración enlace "trunk" permanente entre SWT2 y SWT3.
Escenario 3:

SWT2

```
SWT2>en
SWT2#conf t
Enter configuration commands, one per line. End with CNTL/Z.
SWT2(config)#int fa0/3
SWT2(config-if)#switchport mode trunk
```

SWT3

```
SWT3#en
SWT3#conf t
Enter configuration commands, one per line. End with CNTL/Z.
SWT3(config)#int fa0/1
SWT3(config-if)#switchport mode trunk
```

C. Agregar VLANs y asignar puertos.

1. En STW1 agregue la VLAN 10. En STW2 agregue las VLANS Compras (10), Mercadeo (20), Planta (30) y Admon (99)

Solución 1C: Agregar VLANs y asignar puertos. Escenario 3

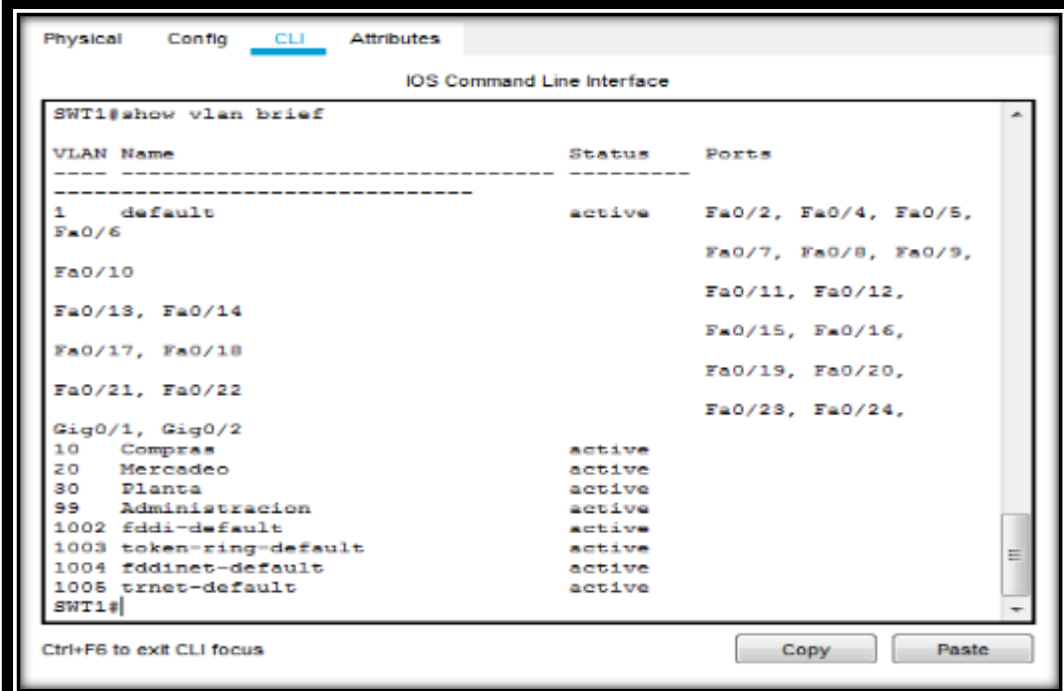
SWT1

```
SWT1>en
SWT1#conf t
Enter configuration commands, one per line. End with CNTL/Z.
SWT1(config)#vlan 10
VTP VLAN configuration not allowed when device is in CLIENT mode.
```

SWT2

```
SWT2#en
SWT2#conf t
Enter configuration commands, one per line. End with CNTL/Z.
SWT2(config)#vlan 10
SWT2(config-vlan)#name Compras
SWT2(config-vlan)#vlan 20
SWT2(config-vlan)#name Mercadeo
SWT2(config-vlan)#vlan 30
SWT2(config-vlan)#name Planta
SWT2(config-vlan)#vlan 99
SWT2(config-vlan)#name Administracion
SWT2(config-vlan)#
```

2. Verifique que las VLANs han sido agregadas correctamente.

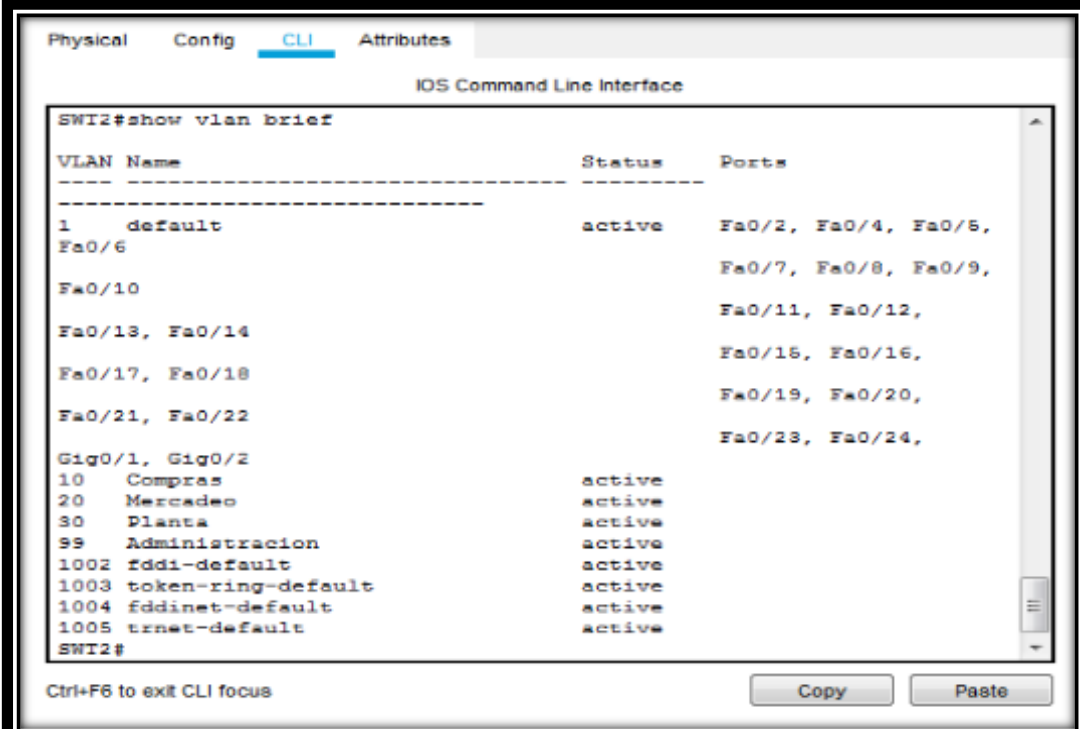


```
SWT1#show vlan brief
```

VLAN Name	Status	Ports
1 default	active	Fa0/2, Fa0/4, Fa0/5, Fa0/6, Fa0/7, Fa0/8, Fa0/9, Fa0/10, Fa0/11, Fa0/12, Fa0/13, Fa0/14, Fa0/15, Fa0/16, Fa0/17, Fa0/18, Fa0/19, Fa0/20, Fa0/21, Fa0/22, Fa0/23, Fa0/24, Gig0/1, Gig0/2
10 Compras	active	
20 Mercadeo	active	
30 Planta	active	
99 Administracion	active	
1002 fddi-default	active	
1003 token-ring-default	active	
1004 fddinet-default	active	
1005 trnet-default	active	

SWT1#

Figura No.19. Comando Show Interfaces Trunk Router SWT1 en Escenario 3



```
SWT2#show vlan brief
```

VLAN Name	Status	Ports
1 default	active	Fa0/2, Fa0/4, Fa0/5, Fa0/6, Fa0/7, Fa0/8, Fa0/9, Fa0/10, Fa0/11, Fa0/12, Fa0/13, Fa0/14, Fa0/15, Fa0/16, Fa0/17, Fa0/18, Fa0/19, Fa0/20, Fa0/21, Fa0/22, Fa0/23, Fa0/24, Gig0/1, Gig0/2
10 Compras	active	
20 Mercadeo	active	
30 Planta	active	
99 Administracion	active	
1002 fddi-default	active	
1003 token-ring-default	active	
1004 fddinet-default	active	
1005 trnet-default	active	

SWT2#

Figura No.20. Comando Show Interfaces Trunk Router SWT2 en Escenario 3

3. Asocie los puertos a las VLAN y configure las direcciones IP de acuerdo con la siguiente tabla.

Interfaz	VLAN	Direcciones IP de los PCs
F0/10	VLAN 10	190.108.10.X / 24
F0/15	VLAN 20	190.108.20.X /24
F0/20	VLAN 30	190.108.30.X /24

X = número de cada PC particular

Tabla No.5. Asociación de VLAN y configuración de IP en base a las direcciones IP de las PCs.

Ejemplo:

Vlan 20	190.108.20.1
Vlan 10	190.108.10.1
Vlan 30	190.105.30.1

Tabla 6. Ejemplo de Asociación de VLAN y configuración de IP.

4. Configure el puerto F0/10 en modo de acceso para SWT1, SWT2 y SWT3 y asígnelo a la VLAN 10.

Solución 4C Escenario 3: Configuración en el puerto F0/10 en modo de acceso para SWT1, SWT2 y SWT3 y asígnelo a la VLAN 10.

SWT1

```
SWT1>en
SWT1#conf t
Enter configuration commands, one per line. End with CNTL/Z.
SWT1(config)#interface f0/10
SWT1(config-if)#switchport mode access
SWT1(config-if)#switchport access
SWT1(config-if)#
SWT1#
```

SWT2

```
SWT2#
SWT2#en
SWT2#conf t
Enter configuration commands, one per line. End with CNTL/Z.
SWT2(config)#interface f0/10
SWT2(config-if)#switchport mode access
SWT2(config-if)#switchport access
SWT2(config-if)#
```

SWT2#

SWT3

SWT3>en

SWT3#conf t

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

SWT3(config)#interface f0/10

SWT3(config-if)#switchport mode access

SWT3(config-if)#switchport access

SWT3(config-if)#

SWT3#

5. Repita el procedimiento para los puertos F0/15 y F0/20 en SWT1, SWT2 y SWT3. Asigne las VLANs y las direcciones IP de los PCs de acuerdo con la tabla de arriba.

Solución 5C Escenario 3 Configuración y Asignación en las VLANs y las direcciones IP de los PCs, en F0/15 y F0/20

SWT1

SWT1>

SWT1>en

SWT1#conf t

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

SWT1(config)#interface f0/15

SWT1(config-if)#switchport mode access

SWT1(config-if)#switchport access

SWT1(config-if)#interface f0/20

SWT1(config-if)#switchport mode access

SWT1(config-if)#switchport access

SWT1(config-if)#

SWT1#

SWT2

SWT2>en

SWT2#conf t

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

SWT2(config)#interface f0/15

SWT2(config-if)#switchport mode access

SWT2(config-if)#switchport access

SWT2(config-if)#interface f0/20

SWT2(config-if)#switchport mode access

SWT2(config-if)#switchport access

SWT2(config-if)#

SWT3

```
SWT3>en
SWT3#conf t
Enter configuration commands, one per line. End with CNTL/Z.
SWT3(config)#interface f0/15
SWT3(config-if)#switchport mode access
SWT3(config-if)#switchport access
SWT3(config-if)#interface f0/20
SWT3(config-if)#switchport mode access
SWT3(config-if)#switchport access
SWT3(config-if)#
SWT3#
```

D. Configurar las direcciones IP en los Switches.

En cada uno de los Switches asigne una dirección IP al SVI (*Switch Virtual Interface*) para VLAN 99 de acuerdo con la siguiente tabla de direccionamiento y active la interfaz.

Equipo	Interfaz	Dirección IP	Máscara
SWT1	VLAN 99	190.108.99.1	255.255.255.0
SWT2	VLAN 99	190.108.99.2	255.255.255.0
SWT3	VLAN 99	190.108.99.3	255.255.255.0

Tabla No.7. Configurar las direcciones IP en los Switches y Direccionamiento VLAN 99.

Solución D. Escenario 3:

SWT1

```
SWT1>en
SWT1#conf t
Enter configuration commands, one per line. End with CNTL/Z.
SWT1(config)#interface vlan 99
SWT1(config-if)#
%LINK-5-CHANGED: Interface Vlan99, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan99, changed state
to up
SWT1(config-if)#ip address 190.108.99.1 255.255.255.0
SWT1(config-if)#
```

SWT2

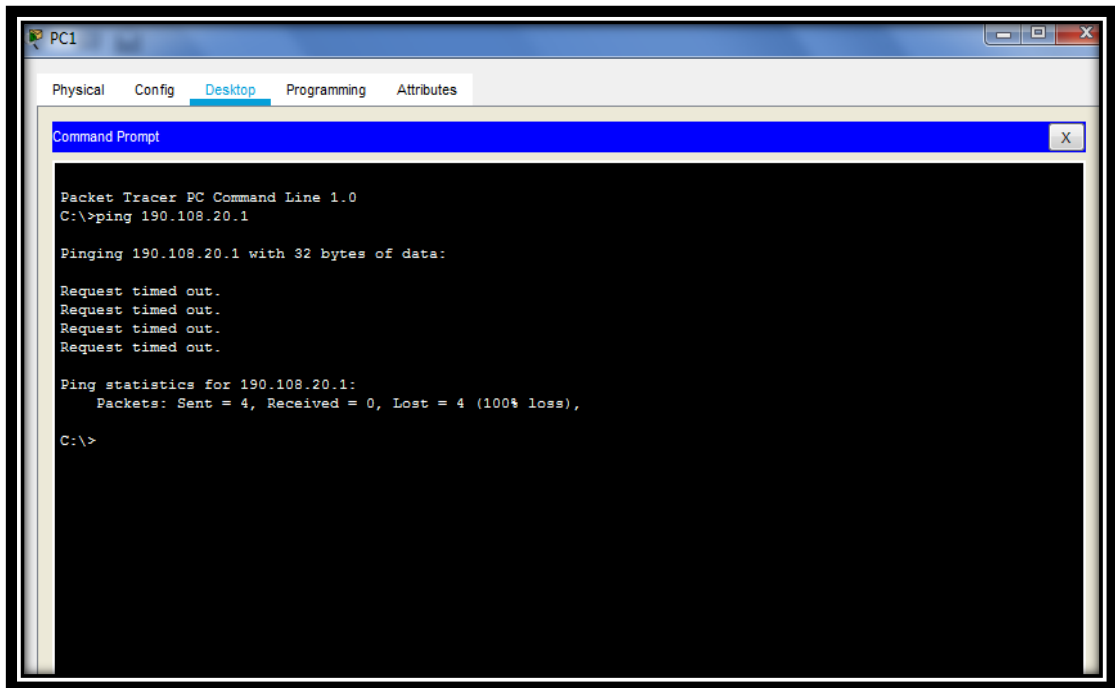
```
SWT2>en
SWT2#conf t
Enter configuration commands, one per line. End with CNTL/Z.
SWT2(config)#interface vlan 99
SWT2(config-if)#
%LINK-5-CHANGED: Interface Vlan99, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan99, changed state
to up
SWT2(config-if)#ip address 190.108.99.2 255.255.255.0
SWT2(config-if)#
```

SWT3

```
SWT3>en
SWT3#conf t
Enter configuration commands, one per line. End with CNTL/Z.
SWT3(config)#interface vlan 99
SWT3(config-if)#ip address 190.108.99.3 255.255.255.0
SWT3(config-if)#
```

E. Verificar la conectividad Extremo a Extremo

1. Ejecute un Ping desde cada PC a los demás. Explique por qué el ping tuvo o no tuvo éxito.



```
PC1
Physical Config Desktop Programming Attributes
Command Prompt
Packet Tracer PC Command Line 1.0
C:\>ping 190.108.20.1

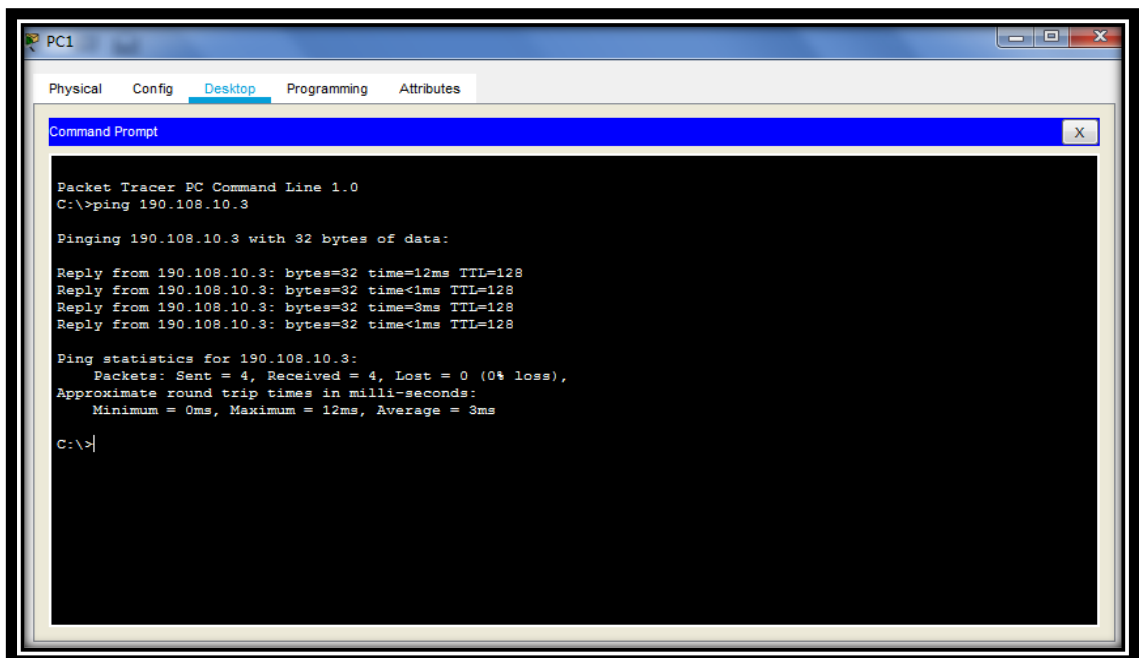
Pinging 190.108.20.1 with 32 bytes of data:

Request timed out.
Request timed out.
Request timed out.
Request timed out.

Ping statistics for 190.108.20.1:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

C:\>
```

Figura No.21. Ping PC1 a 190.108.20.1 Fallido.



```
PC1
Physical Config Desktop Programming Attributes
Command Prompt
Packet Tracer PC Command Line 1.0
C:\>ping 190.108.10.3

Pinging 190.108.10.3 with 32 bytes of data:

Reply from 190.108.10.3: bytes=32 time=12ms TTL=128
Reply from 190.108.10.3: bytes=32 time<1ms TTL=128
Reply from 190.108.10.3: bytes=32 time=3ms TTL=128
Reply from 190.108.10.3: bytes=32 time<1ms TTL=128

Ping statistics for 190.108.10.3:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 12ms, Average = 3ms

C:\>
```

Figura No.22. Ping PC1 a 190.108.10.3 Exitoso.

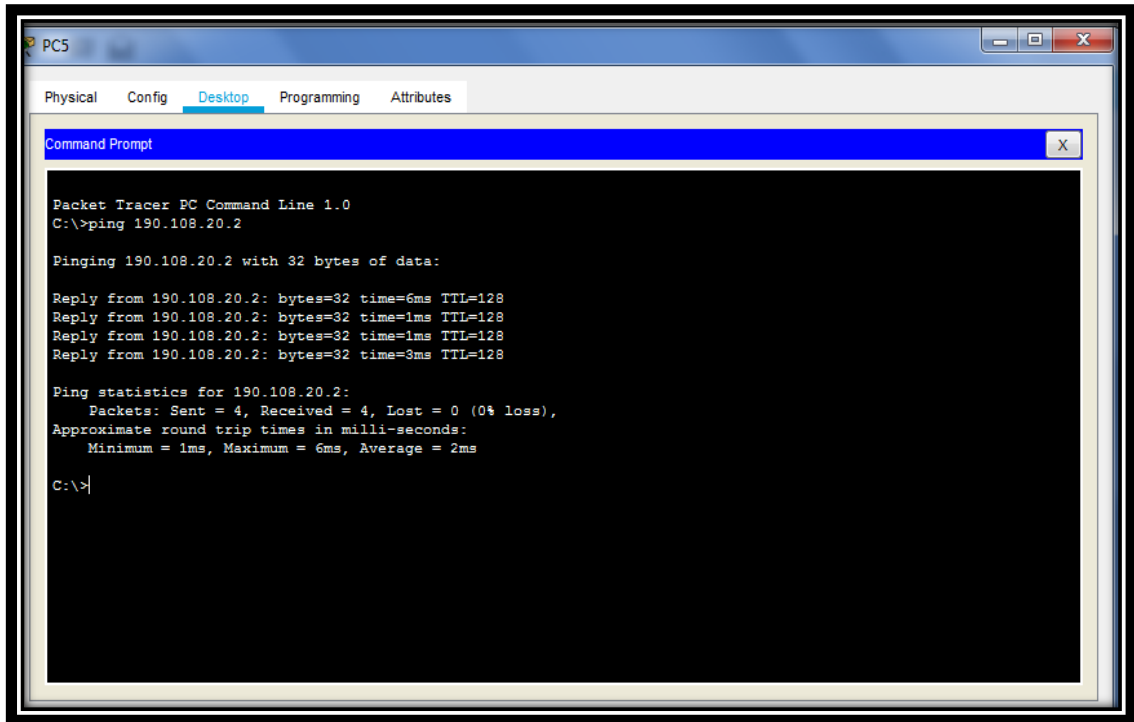


Figura No.23. Ping PC5 a 190.108.20.2 Exitoso.

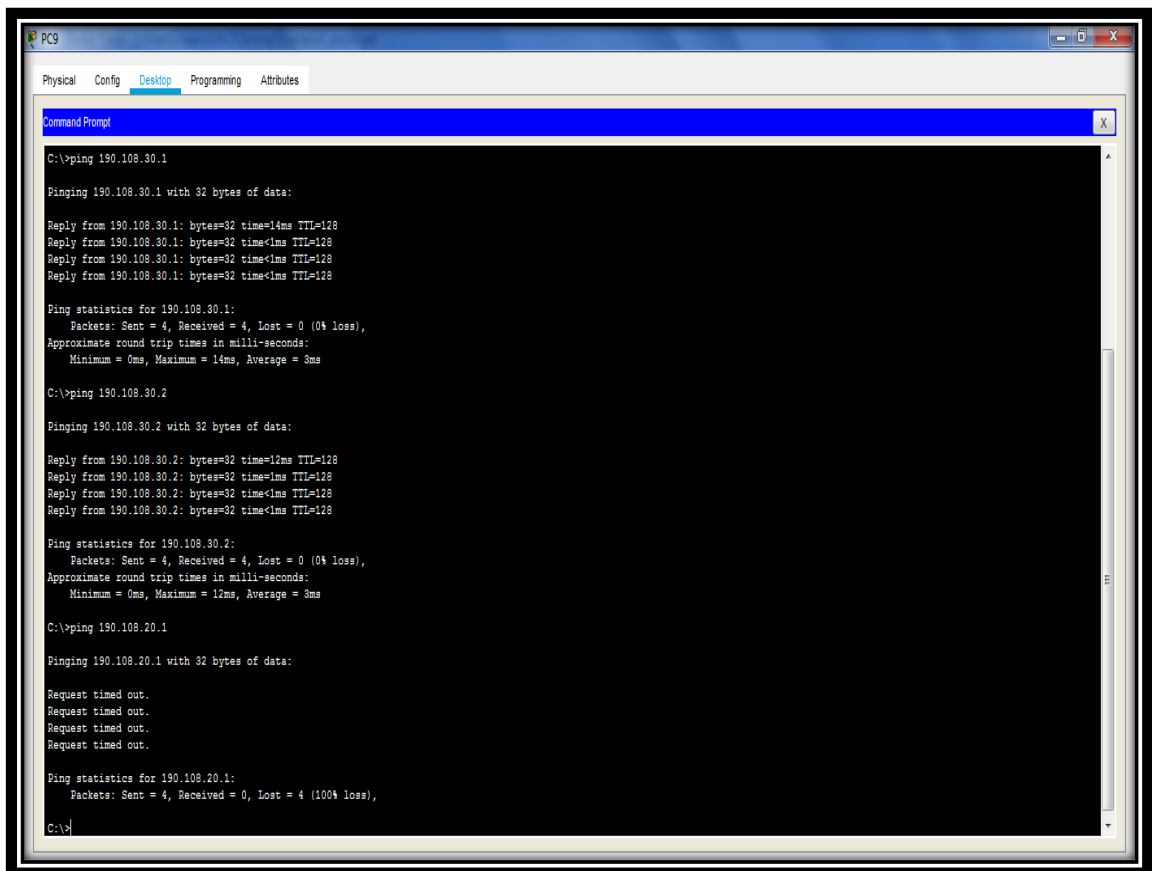


Figura No.24. Ping PC5 a 190.108.30.1 Exitoso.

2. Ejecute un Ping desde cada Switch a los demás. Explique por qué el ping tuvo o no tuvo éxito.

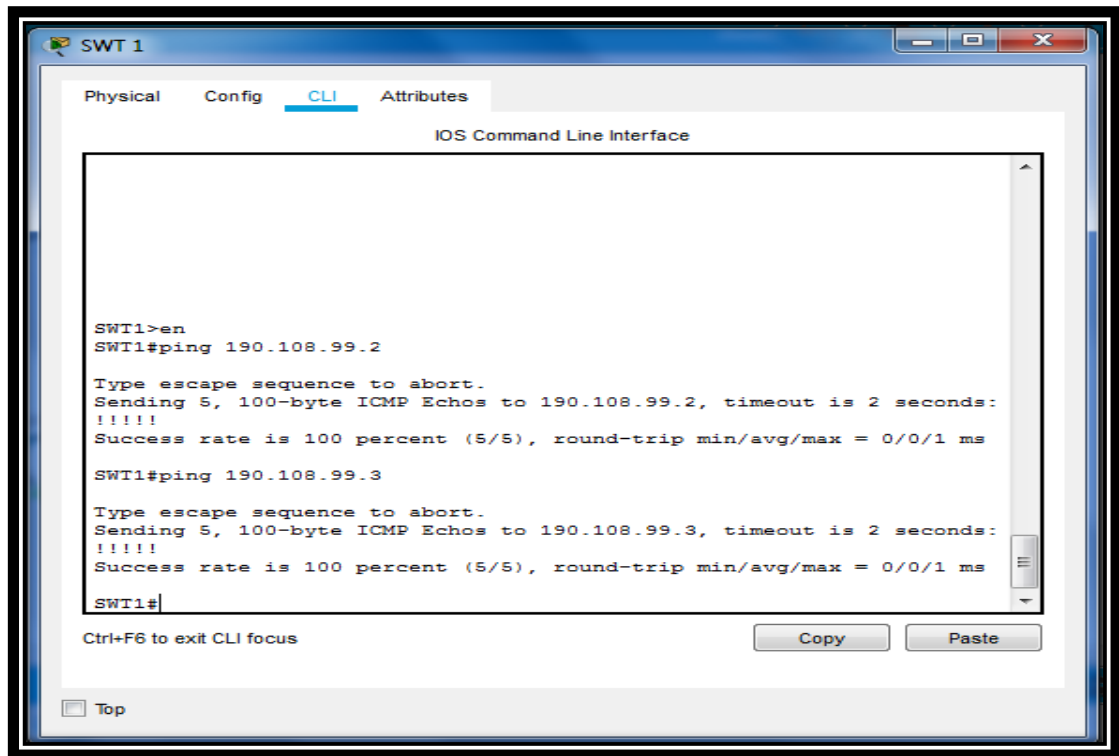


Figura No.25.Ping STW1 a 190.108.99.2 a 190.108.99.3

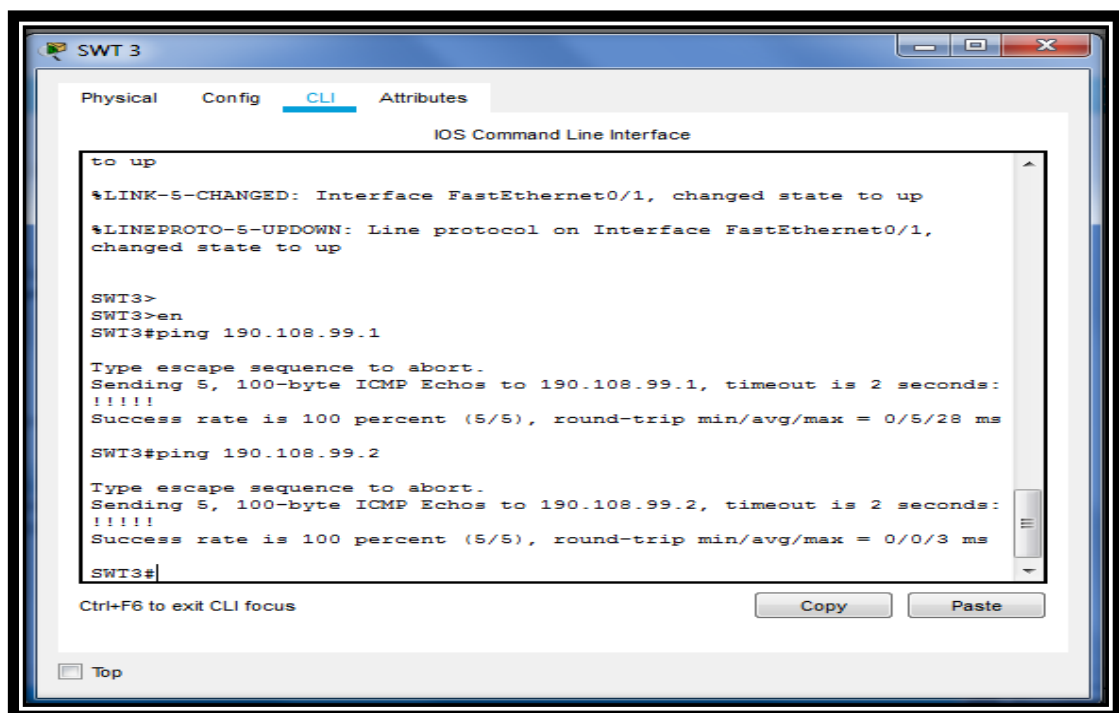


Figura No.26. Ping STW3 a 190.108.99.1 a 190.108.99.2

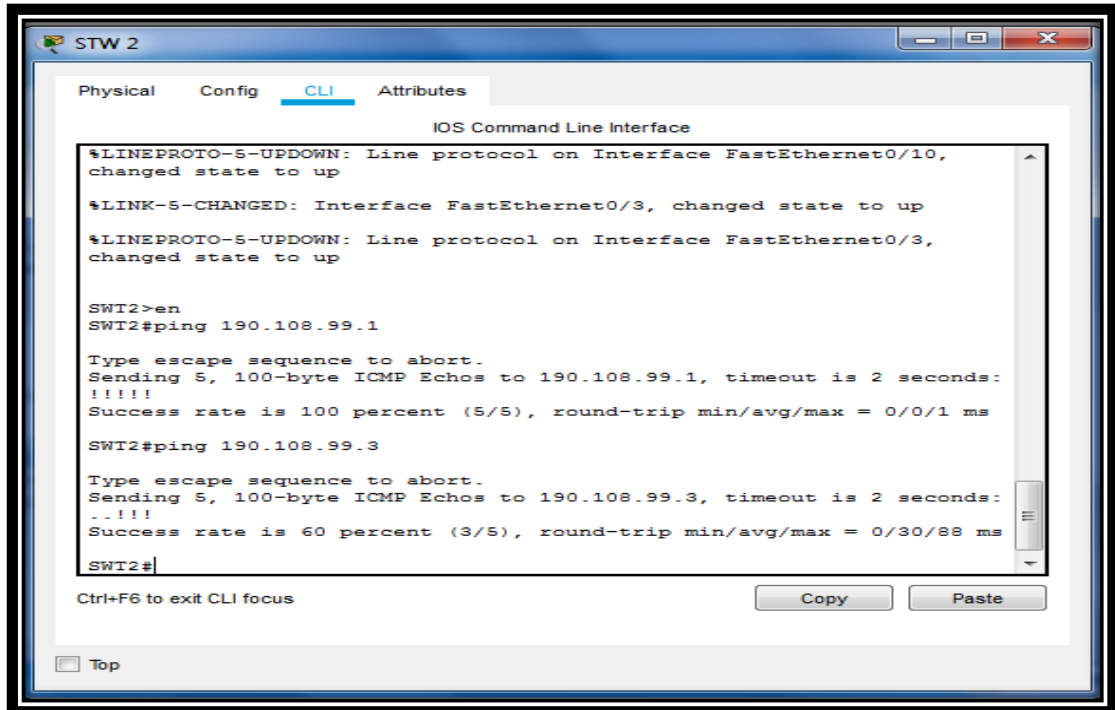


Figura No.27. Ping STW2 a 190.108.99.1 a 190.108.99.3

Finalmente podemos concluir que STW1, SWT2 y SWT3 al momento de realizar el ping podemos observar que es exitoso, en base al proceso que realiza la IP, porque están configuradas de la misma manera.

3. Ejecute un Ping desde cada Switch a cada PC. Explique por qué el ping tuvo o no tuvo éxito.

SWT1

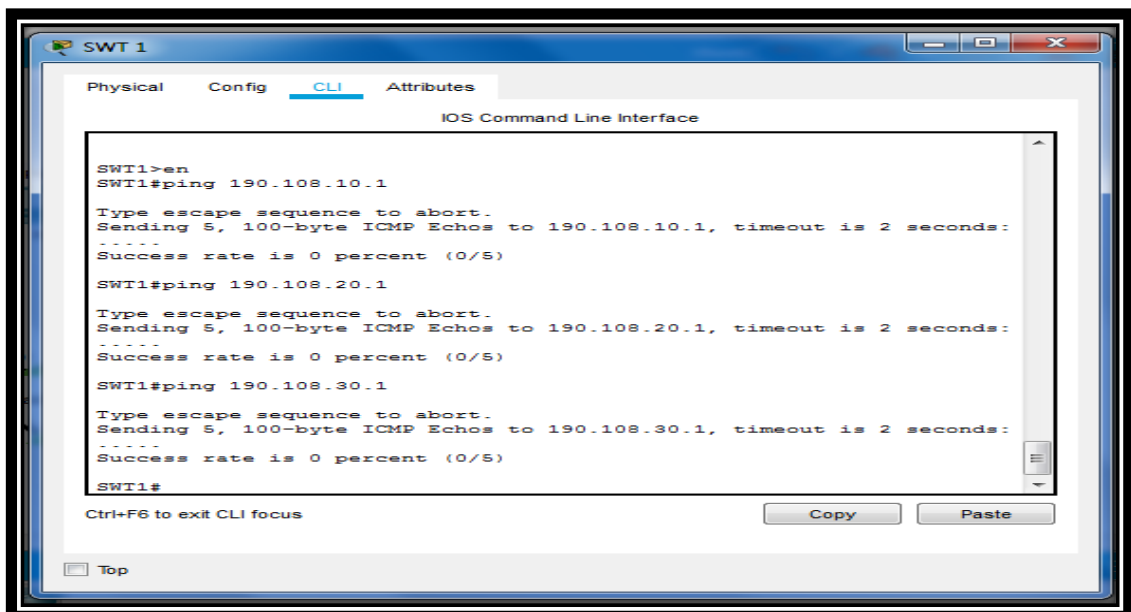
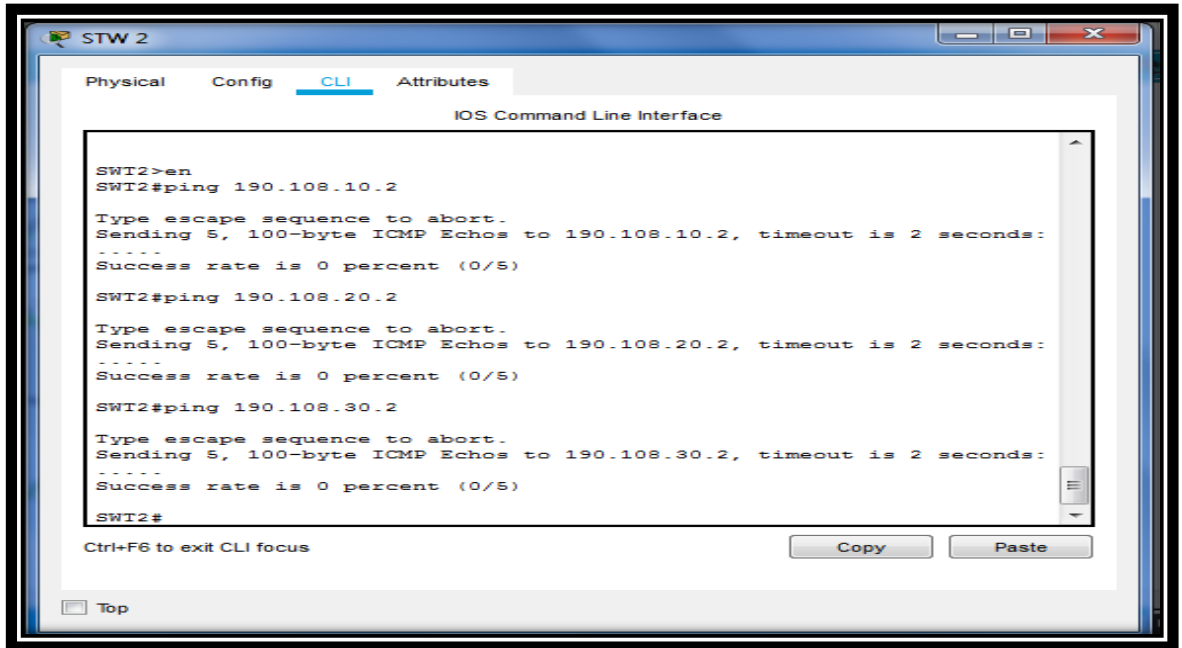


Figura No.28. Ping STW1 a 190.108.30.1 a 190.108.20.1 a 190.108.10.1

SWT 2



```
SWT 2
Physical Config CLI Attributes
IOS Command Line Interface

SWT2>en
SWT2#ping 190.108.10.2

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 190.108.10.2, timeout is 2 seconds:
.....
Success rate is 0 percent (0/5)

SWT2#ping 190.108.20.2

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 190.108.20.2, timeout is 2 seconds:
.....
Success rate is 0 percent (0/5)

SWT2#ping 190.108.30.2

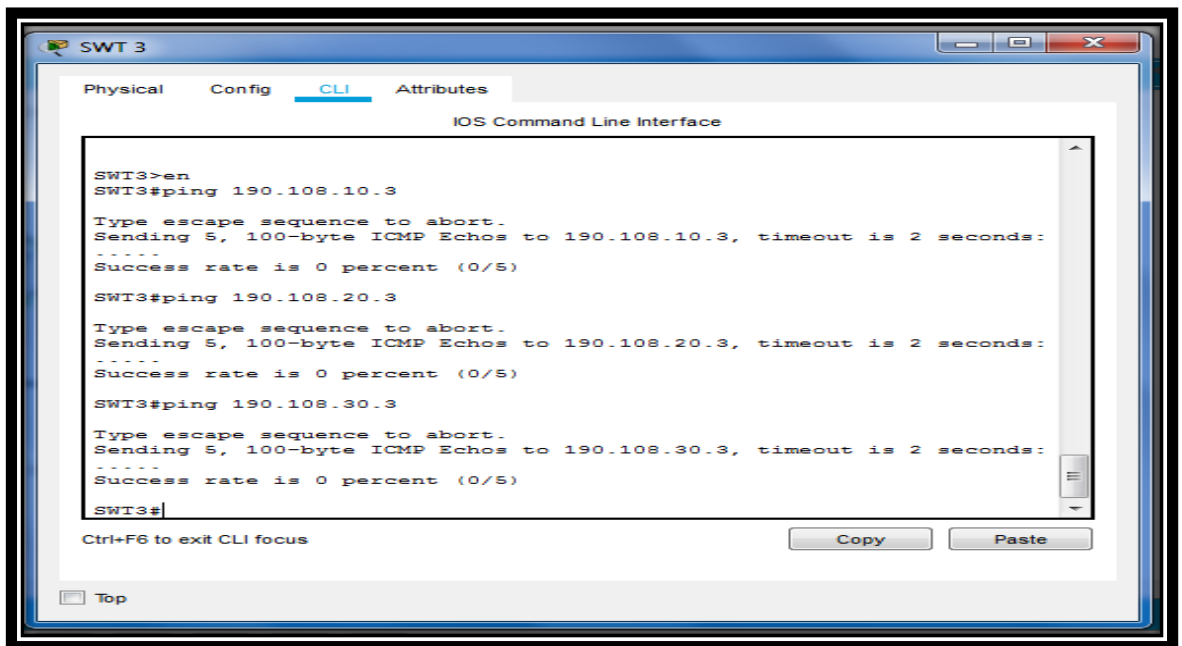
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 190.108.30.2, timeout is 2 seconds:
.....
Success rate is 0 percent (0/5)

SWT2#

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

Figura No.29. Ping STW2 a 190.108.30.3 a 190.108.20.3 a 190.108.10.3

SWT 3



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

SWT3>en
SWT3#ping 190.108.10.3

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 190.108.10.3, timeout is 2 seconds:
.....
Success rate is 0 percent (0/5)

SWT3#ping 190.108.20.3

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 190.108.20.3, timeout is 2 seconds:
.....
Success rate is 0 percent (0/5)

SWT3#ping 190.108.30.3

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 190.108.30.3, timeout is 2 seconds:
.....
Success rate is 0 percent (0/5)

SWT3#

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

Figura No.30. Ping STW3 a 190.108.30.3 a 190.108.20.3 a 190.108.10.3

7. CONCLUSIONES

- Para el desarrollo de los tres ejercicios he utilizado el software de simulación Packet Tracer en la solución y realización en cada uno de los procesos en la configuración de dispositivos de Networking en base a los lineamientos sugeridos para cada escenario.
- Se ha revisado la temática en todo el diplomado, observando unidad por unidad cada tema a tratar en la simulación de los tres escenarios, mirando el desarrollo de competencias en el área del uso de protocolos de enrutamiento avanzado.
- Esta prueba de habilidades prácticas en el diplomado de Profundización de Cisco CCNP nos orienta en el desarrollo de nuestras habilidades en la vida real, el tener la capacidad de desarrollar todo tipo de problemas relacionados los todos los aspectos que vemos en Networking.
- En cada escenario desarrollado, se ha simulado y verificado el registro de los procesos de conectividad mediante el uso de comandos ping, traceroute, show ip route, entre otros, para así poder observar su correcto funcionamiento en base a su programación.

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