

SOLUCIÓN DE ESTUDIOS DE CASO BAJO EL USO
DE TECNOLOGÍA CISCO
PRUEBA DE HABILIDADES PRÁCTICAS

ANDRES STIVEN LUGO CRUZ

UNIVERSIDAD NACIONAL ABIERTA Y A DISTANCIA – UNAD
ESCUELA DE CIENCIAS BÁSICAS, *TECNOLOGÍA E INGENIERÍA*
BOGOTÁ
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ANDRES STIVEN LUGO CRUZ

Diplomado de Profundización Cisco CCNP

Profesor

Gerardo Granados Acuña

Instructor Excellence - Cisco Networking Academy

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INTRODUCCIÓN

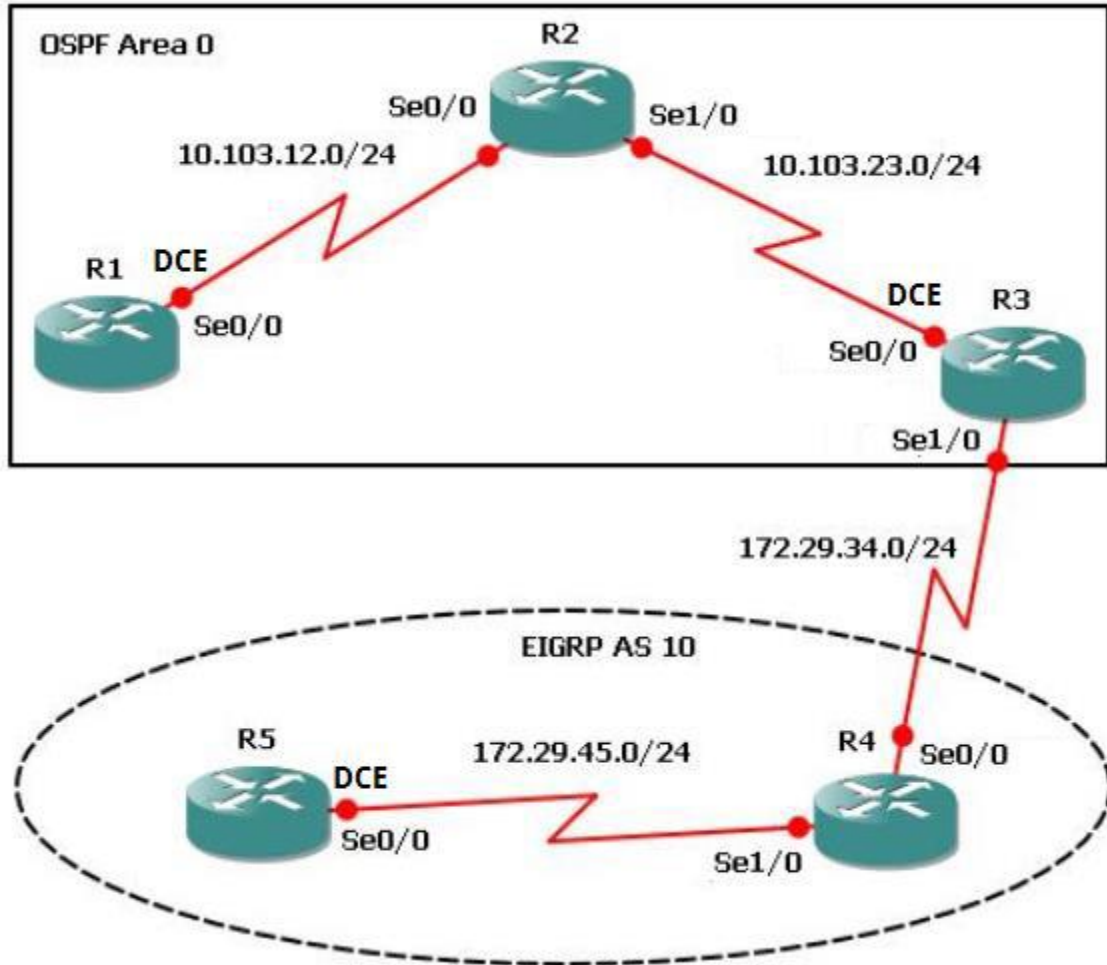
Cada día vemos como cada empresa implementa redes para comunicar sus sucursales, sus empleados y cada una de las oficinas que la conforman, pero esto ha cambiado, últimamente notamos la necesidad de tener una red en casa para conectar los diferentes pc o servicios que tenemos aparte.

El presente trabajo colaborativo tiene como fin recopilar una serie de habilidades en la administración, seguridad y escalabilidad en redes conmutadas de switch, a través del desarrollo 3 prácticas de escenarios correspondientes a la actividad practica de habilidades del diplomado de profundización CCNP.

Los temas que se abordan para el desarrollo de los laboratorios son: Los protocolos de redundancia de primer salto, las tecnologías de conmutación, la alta disponibilidad, la implementación de administración de seguridad en switch, al final se espera adquirir las habilidades y competencias necesarias para la implementación de una red tipo campus.

DESARROLLO DE LA ACTIVIDAD

ESCENARIO 1



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.

1.1. Configuración en R1:

```
Router>enable
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#no ip domain-lookup
Router(config)#hostname R1
R1(config)#line con 0
R1 (config-line)#logging synchronous
R1 (config-line)#exec-timeout 0 0
R1(config-line)#exit
R1(config)#interface 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)#interface serial 0/0/1
R1(config-if)#ip address 10.103.12.2 255.255.255.0
R1(config-if)#clock rate 128000
R1(config-if)#no shutdown
R1(config-if)#
%LINK-5-CHANGED: Interface Serial0/0/1, changed state to up
R1(config-if)#exit
R1(config)#exit
R1#
%SYS-5-CONFIG_I: Configured from console by console
R1#
R1(config)#router ospf 1
R1(config-router)#router-id 1.1.1.1 Router(config-router)#network 10.1.0.0
0.0.3.255 area 0
```

```
R1(config-router)#network 10.103.12.0 0.0.0.255 area 0
R1#
%SYS-5-CONFIG_I: Configured from console by console
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/1, changed state
to up
R1#Router#copy ru st
Destination filename [startup-config]?
Building configuration...
[OK]
R1#
```

1.2. Configuración en R2:

```
Router>enable
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#no ip domain-lookup
Router(config)#hostname R2
R2(config)#line con 0
R2(config-line)#logging synchronous
R2(config-line)#exec-timeout 0 0
R2(config-line)#exit
R2(config)#interface loopback 2
R2(config-if)#
%LINK-5-CHANGED: Interface Loopback2, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback2, changed state
to up
R2(config-if)#interface serial 0/0/0
```

```
R2(config-if)#ip address 10.103.12.1 255.255.255.0
R2(config-if)#no shut
R2(config-if)#
%LINK-5-CHANGED: Interface Serial0/0/0, changed state to up
R2(config-if)#interface serial 0/0/1
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0, changed state
to up
R2(config-if)#interface serial 0/0/1
R2(config-if)#ip address 10.103.23.2 255.255.255.0
R2(config-if)#no shut Router(config-if)#
%LINK-5-CHANGED: Interface Serial0/0/1, changed state to up
R2(config-if)#exit
R2(config)#exit
R2#
R2(config)#router ospf 1
R2(config-router)#router-id 2.2.2.2
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#
%SYS-5-CONFIG_I: Configured from console by console
R2#copy
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/1, changed state
to up
R2#copy ru st
Destination filename [startup-config]?
Building configuration...
[OK]
R2#
```

1.3. Configuración en R3:

```
Router>enable
```

```
Router#configure terminal
```

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

```
Router(config)#no ip domain-lookup
```

```
Router(config)#hostname R3
```

```
R3(config)#line con 0
```

```
R3(config-line)#logging synchronous Router(config-line)#exec-timeout 0 0
```

```
R3(config-line)#exit
```

```
R3(config)#interface lookback 3
```

```
^
```

```
% Invalid input detected at '^' marker.
```

```
R3(config)#interface loopback 3
```

```
R3(config-if)#
```

```
%LINK-5-CHANGED: Interface Loopback3, changed state to up
```

```
%LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback3, changed state to up Router(config-if)#interface serial 0/0/0
```

```
R3(config-if)#ip address 10.103.23.1 255.255.255.0
```

```
R3(config-if)#clock rate 128000
```

```
R3(config-if)#no shutdown
```

```
R3(config-if)#
```

```
%LINK-5-CHANGED: Interface Serial0/0/0, changed state to up
```

```
R3(config-if)#exit
```

```
R3(config)#int
```

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

```
R3(config)#interface loopback 3 Router(config-if)#interface serial 0/0/1
R3(config-if)#ip address 172.29.34.2 255.255.255.0
R3(config-if)#no shutdown
R3(config-if)#
%LINK-5-CHANGED: Interface Serial0/0/1, changed state to up
R3(config-if)#exit
R3(config)#exit
R3#
R3#
R3(config)#router ospf 1
R3(config-router)#router-id 3.3.3.3
R3(config-router)#network 10.103.23.0 0.0.0.255 area 0
R3#
%SYS-5-CONFIG_I: Configured from console by console
R3#copy ru %LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/1,
changed state to up
R3#copy ru st
Destination filename [startup-config]?
Building configuration...
[OK]
R3#
```

1.4. Configuración en R4:

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

```
Router(config)#no ip domain-lookup
Router(config)#hostname R4
R4(config)#line con 0
R4(config-line)#logging synchronous
R4(config-line)#exec-timeout 0 0
R4(config-line)#exit
R4(config)#interface loopback 4
R4(config-if)#
%LINK-5-CHANGED: Interface Loopback4, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback4, changed state
to up
R4(config-if)#interface serial 0/0/0
R4(config-if)#ip address 172.29.34.1 255.255.255.0
R4(config-if)#no shut
R4(config-if)#
%LINK-5-CHANGED: Interface Serial0/0/0, changed state to up
R4(config-if)#interface serial 0/0/
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0, changed state
to up
1
R4(config-if)#interface serial 0/0/1
R4(config-if)#ip address 172.29.45.2 255.255.255.0
R4(config-if)#no shut
R4(config-if)#
%LINK-5-CHANGED: Interface Serial0/0/1, changed state to up
R4(config-if)#exit
R4(config)#exit
R4#
```

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

Router#copy ru st

Destination filename [startup-config]?

%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/1, changed state to up

Destination filename [startup-config]?

Building configuration...

[OK]

R4#

1.5. Configuración en R5:

Router>enable

Router#configure terminal

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

Router(config)#no ip domain-lookup

Router(config)#hostname R5

R5(config)#line con 0

R5(config-line)#logging synchronous

R5(config-line)#exec-timeout 0 0

R5(config-line)#exit

R5(config)#interface loopback 5

R5(config-if)#

%LINK-5-CHANGED: Interface Loopback5, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback5, changed state to up

R5(config-if)#interface serial 0/0/0

R5(config-if)#ip address 172.29.45.1 255.255.255.0

```

R5(config-if)#clock rate 128000
R5(config-if)#no shut
R5(config-if)#
%LINK-5-CHANGED: Interface Serial0/0/0, changed state to up Router(config-
if)#exit
R5(config)#exit
R5#
%SYS-5-CONFIG_I: Configured from console by console
Router#copy ru st
Destination filename [startup-config]?
Building configuration...
[OK]
R5#
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0, changed state
to up
R5#

```

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.

Cuatro Interfaces Loopback en R1	
Loopback11	10.1.0.1/22
Loopback12	10.1.4.1/22
Loopback13	10.1.8.1/22
Loopback14	10.1.12.1/22

2.1. Configuración en R1

```

R1>enable
R1#configure terminal

```

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

```
R1(config)#interface loopback11
```

```
R1(config-if)#
```

```
%LINK-5-CHANGED: Interface Loopback11, changed state to up
```

```
%LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback11, changed state to up
```

```
R1(config-if)#ip address 10.1.0.1 255.255.252.0
```

```
R1(config-if)#exit
```

```
R1(config)#interface loopback12
```

```
R1(config-if)#
```

```
%LINK-5-CHANGED: Interface Loopback12, changed state to up
```

```
%LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback12, changed state to up
```

```
R1(config-if)#ip address 10.1.4.1 255.255.252.0
```

```
R1(config-if)#exit
```

```
R1(config)#interface loopback13
```

```
R1(config-if)#
```

```
%LINK-5-CHANGED: Interface Loopback13, changed state to up
```

```
%LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback13, changed state to up
```

```
R1(config-if)#ip address 10.1.8.1 255.255.252.0
```

```
R1(config-if)#exit
```

```
R1(config)#interface loopback14
```

```
R1(config-if)#
```

```
%LINK-5-CHANGED: Interface Loopback14, changed state to up
```

```
%LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback14, changed state to up
```

```
R1(config-if)#ip address 10.1.12.1 255.255.252.0
```

```
R1(config-if)#exit
R1(config)#R1 ospf 1
R1(config-R1)#R1-id 1.1.1.1
R1(config-R1)#network 10.1.0.0 0.0.3.255 area 0
R1(config-R1)#network 10.103.12.0
R1#
%SYS-5-CONFIG_I: Configured from console by console
R1#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
R1(config)#R1 ospf 1
R1(config-R1)#network 10.103.12.0 0.0.0.255 area 0
R1(config-R1)#exit
R1(config)#exit
R1#
%SYS-5-CONFIG_I: Configured from console by console
R1#copy ru st
Destination filename [startup-config]?
Building configuration...
[OK]
R1#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
R1(config)#interface loopback11
R1(config-if)#ip ospf network point-to-point
R1(config-if)#exit
R1(config)#interface loopback12
R1(config-if)#ip ospf network point-to-point
R1(config-if)#exit
```

```

R1(config)#interface loopback13
R1(config-if)#ip ospf network point-to-point
R1(config-if)#exit
R1(config)#interface loopback14
R1(config-if)#ip ospf network point-to-point
R1(config-if)#exit
R1(config)#exit
R1#
%SYS-5-CONFIG_I: Configured from console by console
R1#copy ru st
Destination filename [startup-config]?
Building configuration...
[OK]
R1#

```

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.

Cuatro Interfaces Loopback en R5	
Loopback51	172.5.0.1
Loopback52	172.5.4.1
Loopback53	172.5.8.1
Loopback54	172.5.12.1

3.1. Configuración en R5

```

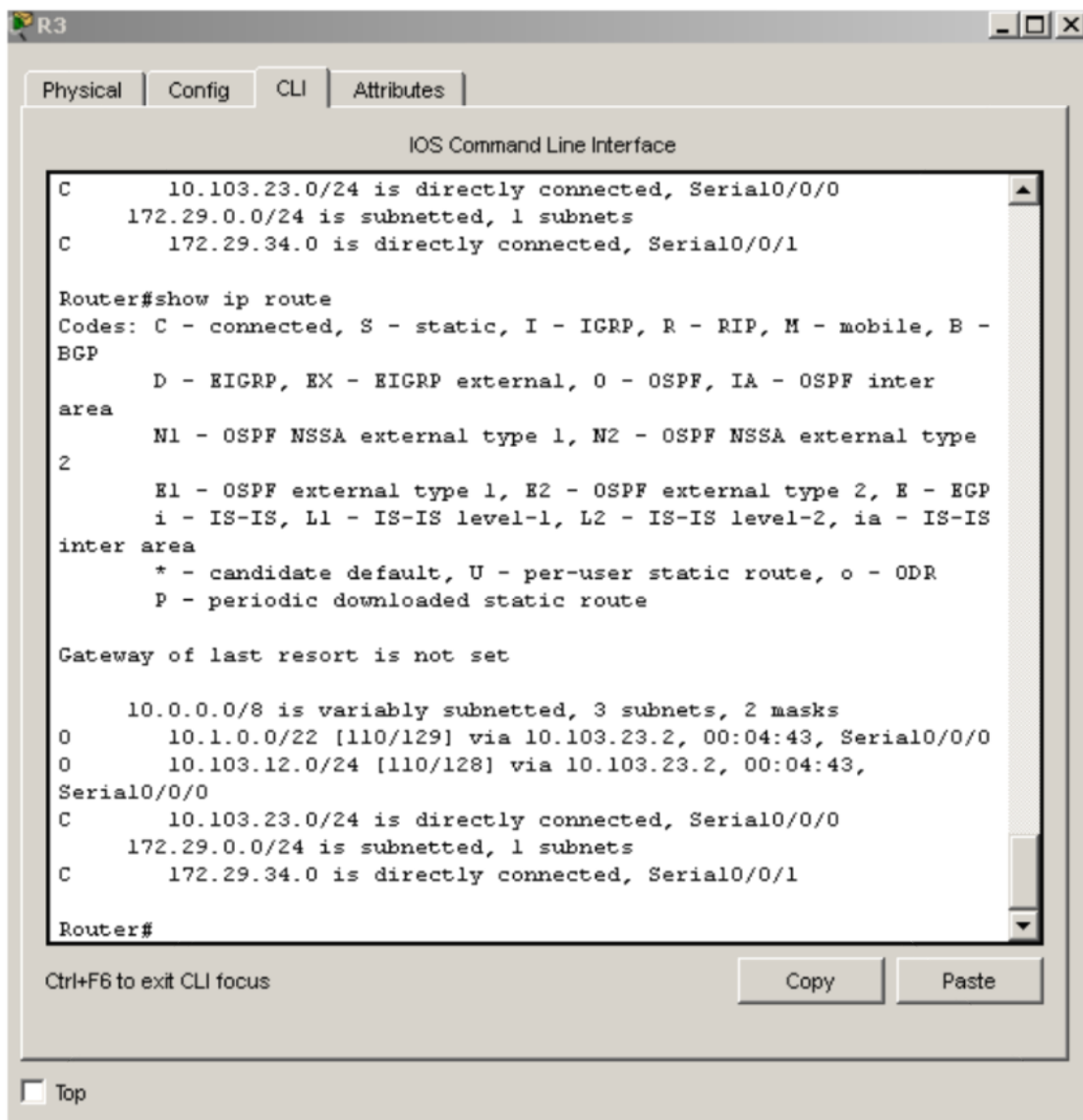
R5>enable
R5#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
R5(config)#interface loopback51

```

```
R5(config-if)#
%LINK-5-CHANGED: Interface Loopback51, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback51, changed state to up
R5(config-if)#ip address 172.5.0.1 255.255.252.0
R5(config-if)#exit
R5(config)#interface loopback52
R5(config-if)#
%LINK-5-CHANGED: Interface Loopback52, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback52, changed state to up
R5(config-if)#ip address 172.5.4.1 255.255.252.0
R5(config-if)#exit
R5(config)#interface loopback53
R5(config-if)#
%LINK-5-CHANGED: Interface Loopback53, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback53, changed state to up
R5(config-if)#ip address 172.5.8.1 255.255.252.0
R5(config-if)#exit
R5(config)#interface loopback54
R5(config-if)#
%LINK-5-CHANGED: Interface Loopback54, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback54, changed state to up
R5(config-if)#ip address 172.5.12.1 255.255.252.0
R5(config-if)#exit
R5(config)#
R5(config)#route eigrp 10
```

```
R5(config-R5)#auto-summary
R5(config-R5)#network 172.5.0.0 0.0.3.255
R5(config-R5)#network 172.29.45.0 0.0.0.255
R5#
```

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.



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.

```
R3>enable
```

```
R3#configure terminal
```

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

```
R3(config)#R3 ospf 10
```

```
R3(config-R3)#redistribute eigrp 10 subnets
```

```
R3(config-R3)#exit
```

```
R3(config)#R3 ospf 1
```

```
R3(config-R3)#redistribute eigrp 10
```

```
% Only classful networks will be redistributed
```

```
R3(config-R3)#redistribute eigrp 10 subnets
```

```
R3(config-R3)#exit
```

```
R3(config)#R3 eigrp 10
```

```
R3(config-R3)#redistribute ospf 1 metric 1544 100 255 1 1500
```

```
R3(config-R3)#exit
```

```
R3(config)#exit
```

```
R3#
```

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

```
R3#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

10.0.0.0/8 is variably subnetted, 3 subnets, 2 masks

O 10.1.0.0/22 [110/129] via 10.103.23.2, 00:08:56, Serial0/0/0

O 10.103.12.0/24 [110/128] via 10.103.23.2, 00:08:56, Serial0/0/0

C 10.103.23.0/24 is directly connected, Serial0/0/0

172.29.0.0/24 is subnetted, 1 subnets

C 172.29.34.0 is directly connected, Serial0/0/1

R3#configure terminal

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

R3(config)#R3 ospf 1

R3(config-R3)#network 172.29.34.0 0.0.0.255 area 0

R3(config-R3)#exit

R3(config)#exit

R3#

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

R3#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

10.0.0.0/8 is variably subnetted, 3 subnets, 2 masks
O 10.1.0.0/22 [110/129] via 10.103.23.2, 00:10:57, Serial0/0/0
O 10.103.12.0/24 [110/128] via 10.103.23.2, 00:10:57, Serial0/0/0
C 10.103.23.0/24 is directly connected, Serial0/0/0
172.29.0.0/24 is subnetted, 1 subnets
C 172.29.34.0 is directly connected, Serial0/0/1

R3#configure terminal

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

R3(config)#R3 ospf 1

R3(config-R3)#redistribute eigrp 10 subnets

R3(config-R3)#log-adjacency-changes

R3(config-R3)#redistribute eigrp 7 subnets

R3(config-R3)#network 172.29.45.0 0.0.0.255 area 0

R3(config-R3)#exit

R3(config)#R3 eigrp 10

R3(config-R3)#redistribute ospf 1 metric 50000 200 255 1 1500

R3(config-R3)#auto-summary

R3(config-router)#exit

R3(config)#

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.

Router>enable
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
10.0.0.0/8 is variably subnetted, 6 subnets, 2 masks
C 10.1.0.0/22 is directly connected, Loopback11
C 10.1.4.0/22 is directly connected, Loopback12
C 10.1.8.0/22 is directly connected, Loopback13
C 10.1.12.0/22 is directly connected, Loopback14
C 10.103.12.0/24 is directly connected, Serial0/0/1
O 10.103.23.0/24 [110/128] via 10.103.12.1, 00:24:06, Serial0/0/1
172.29.0.0/24 is subnetted, 1 subnets
O 172.29.34.0 [110/192] via 10.103.12.1, 00:11:32, Serial0/0/1
Router#

Ctrl+F6 to exit CLI focus

Copy Paste

Top

R5

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

    172.5.0.0/16 is variably subnetted, 5 subnets, 2 masks
D       172.5.0.0/16 is a summary, 01:56:39, Null0
C       172.5.4.0/22 is directly connected, Loopback52
C       172.5.8.0/22 is directly connected, Loopback53
C       172.5.12.0/22 is directly connected, Loopback54
C       172.5.16.0/22 is directly connected, Loopback51
    172.29.0.0/16 is variably subnetted, 3 subnets, 2 masks
D       172.29.0.0/16 is a summary, 01:56:39, Null0
D       172.29.34.0/24 [90/41024000] via 172.29.45.2, 00:09:41,
Serial0/0/0
C       172.29.45.0/24 is directly connected, Serial0/0/0

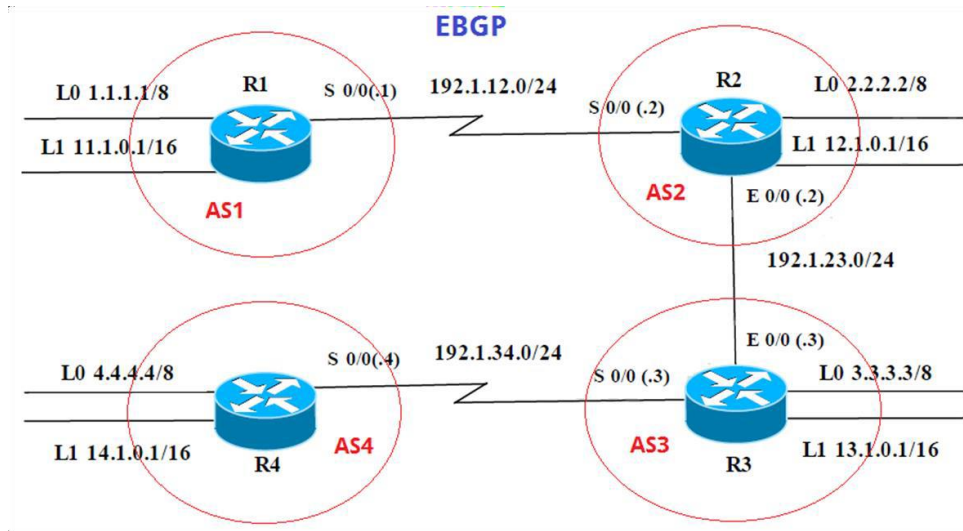
Router#
```

Ctrl+F6 to exit CLI focus

Copy Paste

Top

ESCENARIO 2



Información para configuración de los dispositivos:

Dispositivo	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
Dispositivo	Interfaz	Dirección IP	Máscara
R2	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
Dispositivo	Interfaz	Dirección IP	Máscara
R3	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
Dispositivo	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

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.

```
AS1#enable
```

```
AS1#configure term
```

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

```
AS1(config)#router bgp 1
```

```
AS1(config-router)#exit
```

```
AS1(config)#no router bgp 1
```

```
AS1(config)#router bgp 1
```

```
AS1(config-router)#bgp router-id 11.11.11.11
```

```
AS1(config-router)#neighbor 192.1.12.2 remote-as 2
```

```
AS1(config-router)#network 1.1.1.1 mask 255.0.0.0
```

```
AS1(config-router)#network 11.1.0.1 mask 255.255.0.0
```

```
AS1(config-router)#exit
```

```
AS1(config)#exit
```

```
AS1#
```

```

R1
Physical Config CLI Attributes
IOS Command Line Interface

AS1>enable
AS1#show ip bgp
BGP table version is 6, local router ID is 11.11.11.11
Status codes: s suppressed, d damped, h history, * valid, > best, i
- internal,
                r RIB-failure, S Stale
Origin codes: i - IGP, e - EGP, ? - incomplete

   Network          Next Hop          Metric LocPrf Weight Path
*> 1.0.0.0/8        0.0.0.0            0      0 32768 i
*                   192.1.12.2         0      0      0 2 i
*> 11.1.0.0/16      0.0.0.0            0      0 32768 i

AS1#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, Loopback0
     11.0.0.0/16 is subnetted, 1 subnets
C      11.1.0.0 is directly connected, Loopback1
C    192.1.12.0/24 is directly connected, Serial0/0/0

AS1#

```

Ctrl+F6 to exit CLI focus

Copy Paste

Top

AS2>enable

AS2#config term

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

AS2(config)#router bgp 2

```
AS2(config-router)#bgp router-id 22.22.22.22
AS2(config-router)#neighbor 192.1.12.1 remote-as 1
AS2(config-router)#neighbor 192.1.34.3 remote-as 3
AS2(config-router)#neighbor 192.1.23.3 remote-as 3
AS2(config-router)#%BGP-5-ADJCHANGE: neighbor 192.1.12.1 Up
AS2(config-router)#network 1.1.1.0
AS2(config-router)#network 11.1.0.0
AS2(config-router)#exit
AS2(config)#exit
AS2#
%SYS-5-CONFIG_I: Configured from console by console
```

```

R2
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

B   1.0.0.0/8 [20/0] via 192.1.12.1, 00:00:00
C   2.0.0.0/8 is directly connected, Loopback0
    11.0.0.0/16 is subnetted, 1 subnets
B     11.1.0.0 [20/0] via 192.1.12.1, 00:00:00
    12.0.0.0/16 is subnetted, 1 subnets
C     12.1.0.0 is directly connected, Loopback1
C   192.1.12.0/24 is directly connected, Serial0/0/0
C   192.1.23.0/24 is directly connected, FastEthernet0/0

AS2#show ip bgp
BGP table version is 6, local router ID is 22.22.22.22
Status codes: s suppressed, d damped, h history, * valid, > best, i
- internal,
              r RIB-failure, S Stale
Origin codes: i - IGP, e - EGP, ? - incomplete

   Network          Next Hop          Metric LocPrf Weight Path
*> 1.0.0.0/8        0.0.0.0            0      0      0 2 i
*>                  192.1.12.1         0      0      0 1 i
*> 11.1.0.0/16     192.1.12.1         0      0      0 1 i

AS2#
  
```

Ctrl+F6 to exit CLI focus

Copy Paste

Top

- 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 ip route.

```
AS3>enable
AS3#config term
Enter configuration commands, one per line. End with CNTL/Z.
AS3(config)#router bgp 3
AS3(config-router)#neighbor 192.1.12.2 remote-as 2
AS3(config-router)#neighbor 192.1.23.2 remote-as 2
AS3#%BGP-5-ADJCHANGE: neighbor 192.1.23.2 Up
AS3(config-router)#neighbor 192.1.34.4 remote-as 4
AS3(config-router)#network 4.4.4.4 mask 255.0.0.0
AS3(config-router)#network 14.1.0.1 mask 255.255.0.0
AS3(config-router)#network 2.2.2.2 mask 255.0.0.0
AS3(config-router)#network 12.1.0.1 mask 255.255.0.0
AS3(config-router)#network 3.3.3.3 mask 255.0.0.0
AS3(config-router)#network 13.1.0.1 mask 255.255.0.0
AS3(config-router)#exit
```

R3

Physical Config CLI Attributes

IOS Command Line Interface

```

AS3#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

B    1.0.0.0/8 [20/0] via 192.1.23.2, 00:00:00
C    3.0.0.0/8 is directly connected, Loopback0
     11.0.0.0/16 is subnetted, 1 subnets
B    11.1.0.0 [20/0] via 192.1.23.2, 00:00:00
     13.0.0.0/16 is subnetted, 1 subnets
C    13.1.0.0 is directly connected, Loopback1
C    192.1.23.0/24 is directly connected, FastEthernet0/0
C    192.1.34.0/24 is directly connected, Serial0/0/0

AS3#show ip bgp
BGP table version is 6, local router ID is 13.1.0.1
Status codes: s suppressed, d damped, h history, * valid, > best, i
- internal,
              r RIB-failure, S Stale
Origin codes: i - IGP, e - EGP, ? - incomplete

   Network          Next Hop          Metric LocPrf Weight Path
*> 1.0.0.0/8        192.1.23.2         0      0      0 2 i
*> 3.0.0.0/8        0.0.0.0            0      0 32768 i
*> 11.1.0.0/16      192.1.23.2         0      0      0 2 1 i
*> 13.1.0.0/16      0.0.0.0            0      0 32768 i
* 192.1.23.0/24     192.1.23.2         0      0      0 2 i
AS3#

```

Ctrl+F6 to exit CLI focus

Copy Paste

Top

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.

```
AS4>enable
```

```
AS4#config term
```

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

```
AS4(config)#router bgp 4
```

```
AS4(config-router)#neighbor 192.1.34.3 remote-as 3
```

```
AS4(config-router)#%BGP-5-ADJCHANGE: neighbor 192.1.34.3 Up
```

```
AS4(config-router)#neighbor 192.1.23.3 remote-as 3
```

```
AS4(config-router)#%BGP-5-ADJCHANGE: neighbor 192.1.23.3 Up
```

```
AS4(config-router)#neighbor 192.1.23.2 remote-as 2
```

```
AS4(config-router)#neighbor 192.1.12.2 remote-as 2
```

```
AS4(config-router)#neighbor 192.1.12.1 remote-as 1
```

```
AS4(config-router)#%BGP-5-ADJCHANGE: neighbor 192.1.34.3 Up
```

```
AS4(config-router)#network 3.3.3.3 mask 255.0.0.0
```

```
AS4(config-router)#network 13.1.0.1 mask 255.255.0.0
```

```
AS4(config-router)#network 12.1.0.1 mask 255.255.0.0
```

```
AS4(config-router)#network 2.2.2.2 mask 255.0.0.0
```

```
AS4(config-router)#network 11.1.0.1 mask 255.255.0.0
```

```
AS4(config-router)#network 4.4.4.4 mask 255.0.0.0
```

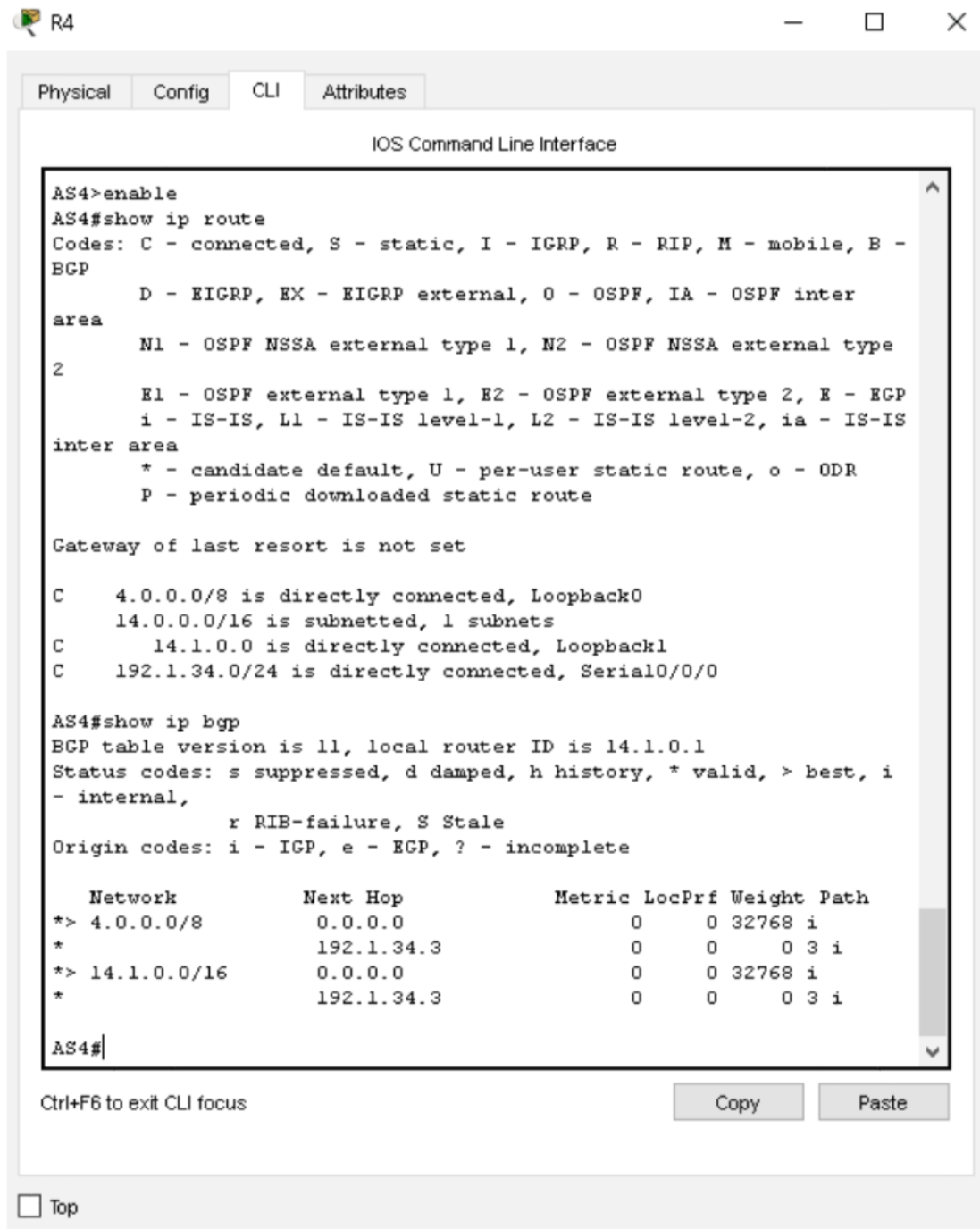
```
AS4(config-router)#network 14.1.0.1 mask 255.255.0.0
```

```
AS4(config-router)#exit
```

```
AS4(config)#exit
```

AS4#

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



The screenshot shows a terminal window titled "R4" with tabs for "Physical", "Config", "CLI", and "Attributes". The "CLI" tab is active, displaying the "IOS Command Line Interface". The user has entered the command "enable" and "show ip route". The output shows the routing table with entries for 4.0.0.0/8, 14.1.0.0/16, and 192.1.34.0/24. The user then enters "show ip bgp", and the output shows the BGP table with entries for 4.0.0.0/8 and 14.1.0.0/16. The window also includes a "Ctrl+F6 to exit CLI focus" message and "Copy" and "Paste" buttons.

```
AS4>enable
AS4#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     4.0.0.0/8 is directly connected, Loopback0
      14.0.0.0/16 is subnetted, 1 subnets
C       14.1.0.0 is directly connected, Loopback1
C     192.1.34.0/24 is directly connected, Serial0/0/0

AS4#show ip bgp
BGP table version is 11, local router ID is 14.1.0.1
Status codes: s suppressed, d damped, h history, * valid, > best, i
- internal,
              r RIB-failure, S Stale
Origin codes: i - IGP, e - EGP, ? - incomplete

   Network          Next Hop          Metric LocPrf Weight Path
*> 4.0.0.0/8        0.0.0.0            0      0 32768 i
*                   192.1.34.3         0      0      0 3 i
*> 14.1.0.0/16      0.0.0.0            0      0 32768 i
*                   192.1.34.3         0      0      0 3 i

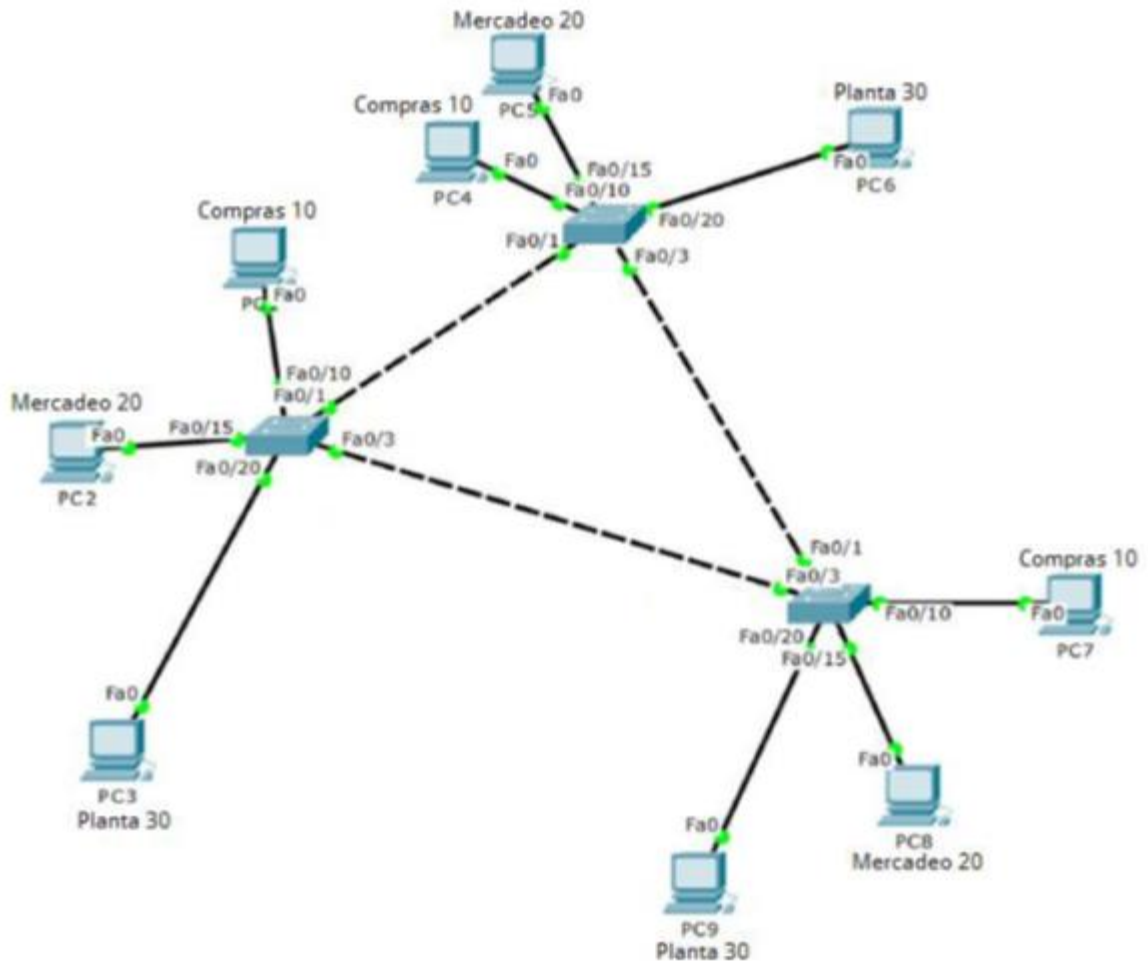
AS4#
```

Ctrl+F6 to exit CLI focus

Copy Paste

Top

ESCENARIO 3



1. Configurar VTP

- 1.1. 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.

```
Switch>enable
```

```
Switch#config terminal
```

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

```
Switch(config)#hostname SWT1
SWT1(config)#vtp domain CCNP
Changing VTP domain name from NULL to CCNP
SWT1(config)#vtp version 2
SWT1(config)#vtp mode client
Setting device to VTP CLIENT mode.
SWT1(config)#vtp password cisco
Setting device VLAN database password to cisco
SWT1(config)#
Switch>enable
Switch#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#hostname SWT3
SWT3(config)#vtp domain CCNP
Changing VTP domain name from NULL to CCNP
SWT3(config)#vtp version 2
SWT3(config)#vtp mode client
Setting device to VTP CLIENT mode.
SWT3(config)#vtp password cisco
Setting device VLAN database password to cisco
SWT3(config)#
Switch>enable
Switch#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#hostname SWT2
SWT2(config)#vtp domain CCNP
Changing VTP domain name from NULL to CCNP
SWT2(config)#vtp version 2
```

```
SWT2(config)#vtp mode server
```

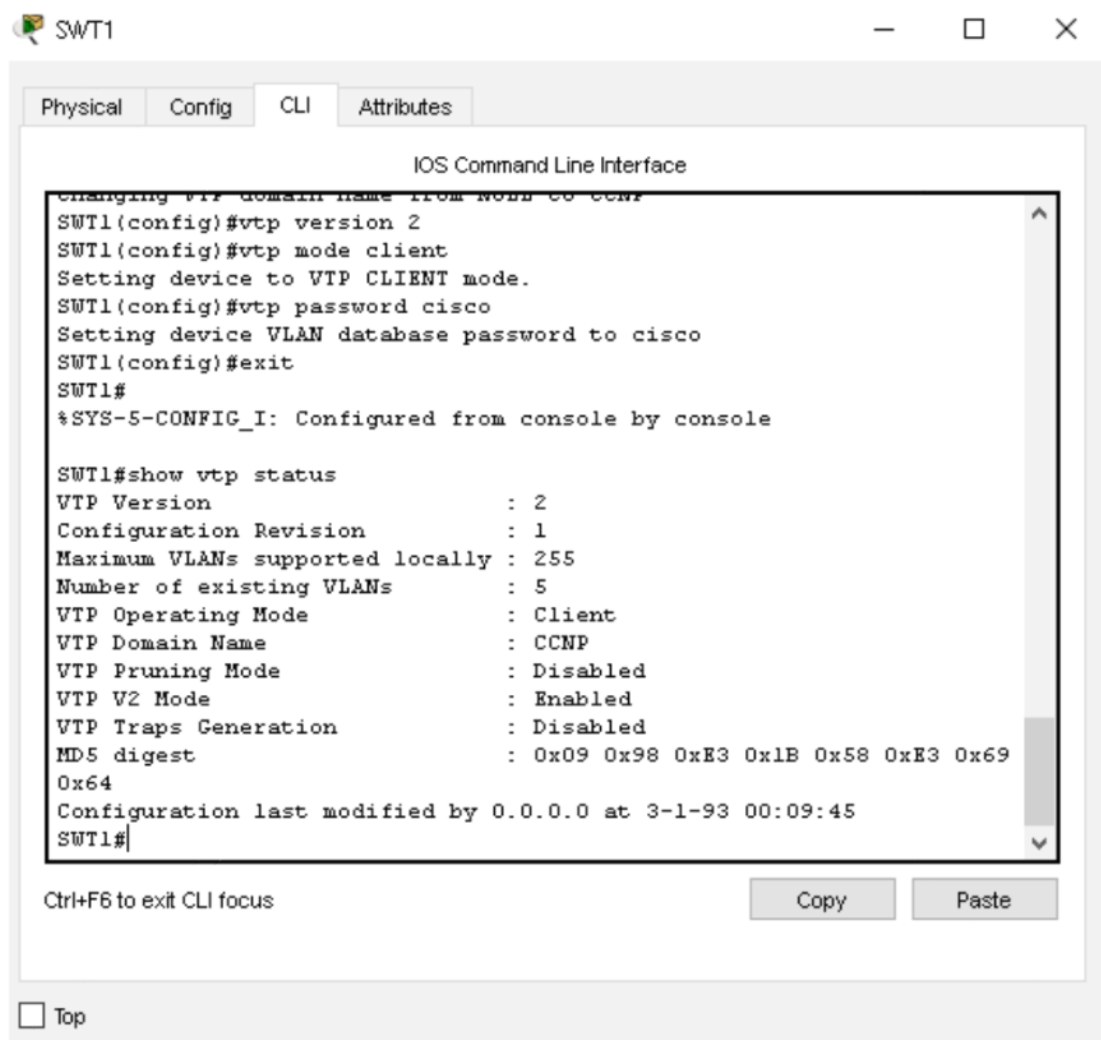
Device mode already VTP SERVER.

```
SWT2(config)#vtp password cisco
```

Setting device VLAN database password to cisco

```
SWT2(config)#
```

1.2. Verificar las configuraciones mediante el comando show vtp status.



The screenshot shows a terminal window titled "SWT1" with tabs for "Physical", "Config", "CLI", and "Attributes". The "CLI" tab is active, displaying the "IOS Command Line Interface". The terminal output shows the following commands and their results:

```
SWT1(config)#vtp version 2
SWT1(config)#vtp mode client
Setting device to VTP CLIENT mode.
SWT1(config)#vtp password cisco
Setting device VLAN database password to cisco
SWT1(config)#exit
SWT1#
%SYS-5-CONFIG_I: Configured from console by console

SWT1#show vtp status
VTP Version                : 2
Configuration Revision     : 1
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                : Enabled
VTP Traps Generation       : Disabled
MD5 digest                 : 0x09 0x98 0xE3 0x1B 0x58 0xE3 0x69
0x64
Configuration last modified by 0.0.0.0 at 3-1-93 00:09:45
SWT1#
```

At the bottom of the terminal window, there is a prompt "Ctrl+F6 to exit CLI focus" and two buttons labeled "Copy" and "Paste". A "Top" button is also visible at the bottom left of the window.

SWT2

Physical Config CLI Attributes

IOS Command Line Interface

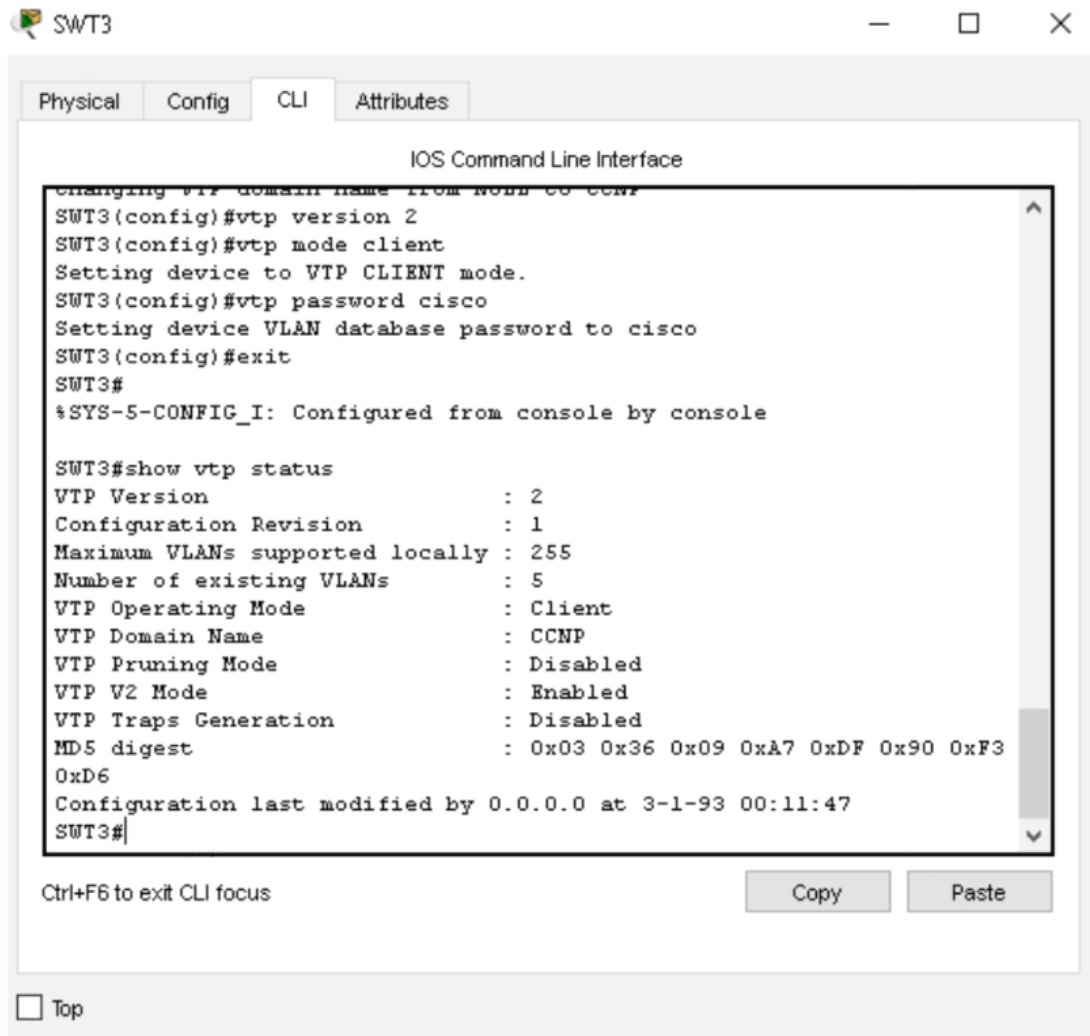
```
SWT2(config)#vtp version 2
SWT2(config)#vtp mode server
Device mode already VTP SERVER.
SWT2(config)#vtp password cisco
Setting device VLAN database password to cisco
SWT2(config)#exit
SWT2#
%SYS-5-CONFIG_I: Configured from console by console

SWT2#show vtp status
VTP Version                : 2
Configuration Revision     : 1
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                : Enabled
VTP Traps Generation      : Disabled
MD5 digest                 : 0x0B 0x55 0x88 0xF6 0xE6 0x09 0x7A
0xBB
Configuration last modified by 0.0.0.0 at 3-1-93 00:12:53
Local updater ID is 0.0.0.0 (no valid interface found)
SWT2#
```

Ctrl+F6 to exit CLI focus

Copy Paste

Top



2. Configurar DTP (Dynamic Trunking Protocol)

2.1. 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>enable

SWT1#conf term

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

```
SWT1(config)#interface fa
```

```
SWT1(config)#interface fastEthernet 0/1
```

```
SWT1(config-if)#switchport mode dynamic desirable
```

```
SWT1(config-if)#
```

```
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, 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
```

2.2. 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 FastEthernet0/1,
changed state to down

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1,
changed state to up

SWT1(config-if)#end
SWT1#
%SYS-5-CONFIG_I: Configured from console by console

SWT1#show interface 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

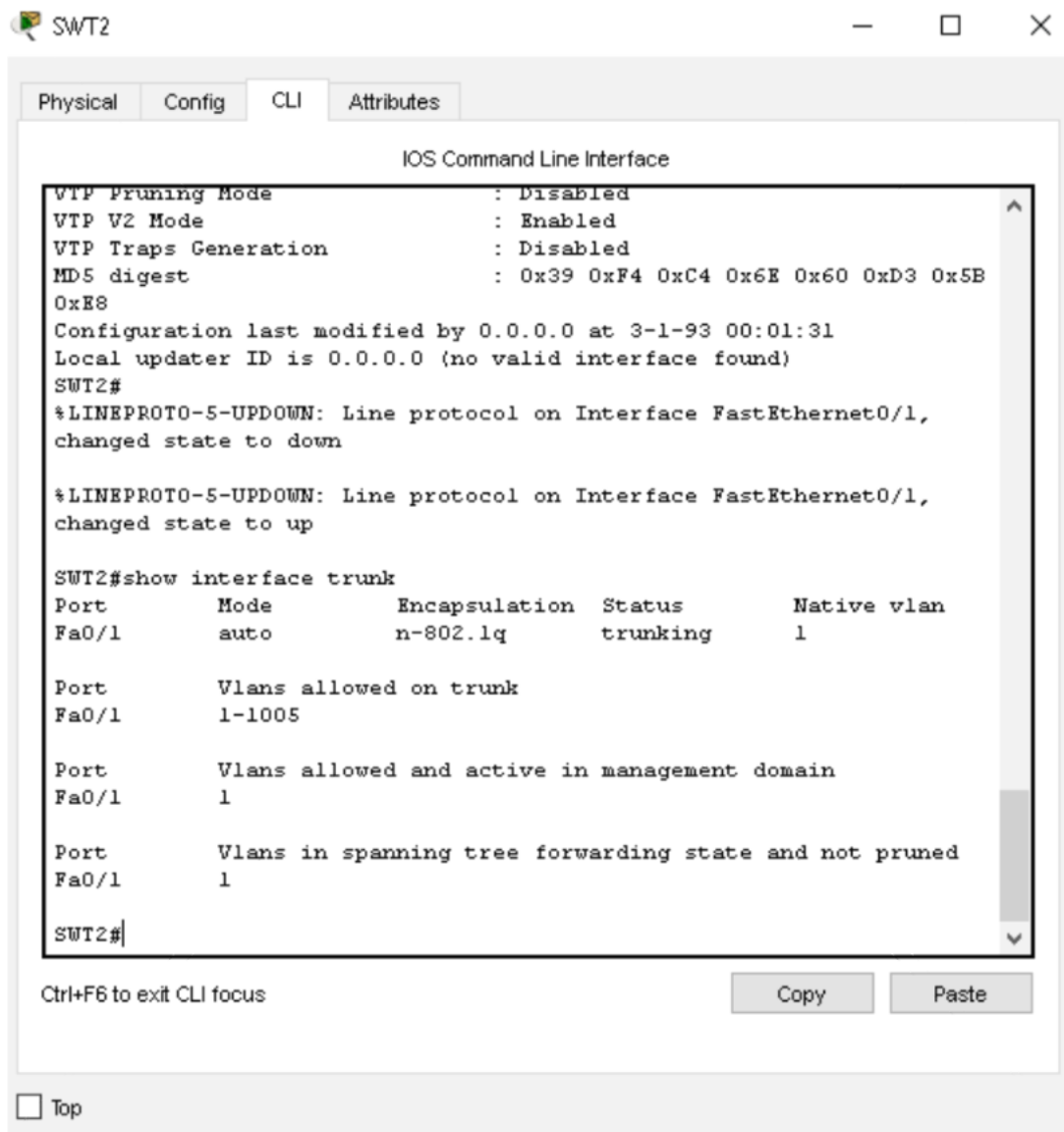
Port      Vlans in spanning tree forwarding state and not pruned
Fa0/1     1

SWT1#
```

Ctrl+F6 to exit CLI focus

Copy Paste

Top



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

SWT1>enable

SWT1#configure terminal

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

```
SWT1(config)#interface fa
```

```
SWT1(config)#interface fastEthernet 0/3
```

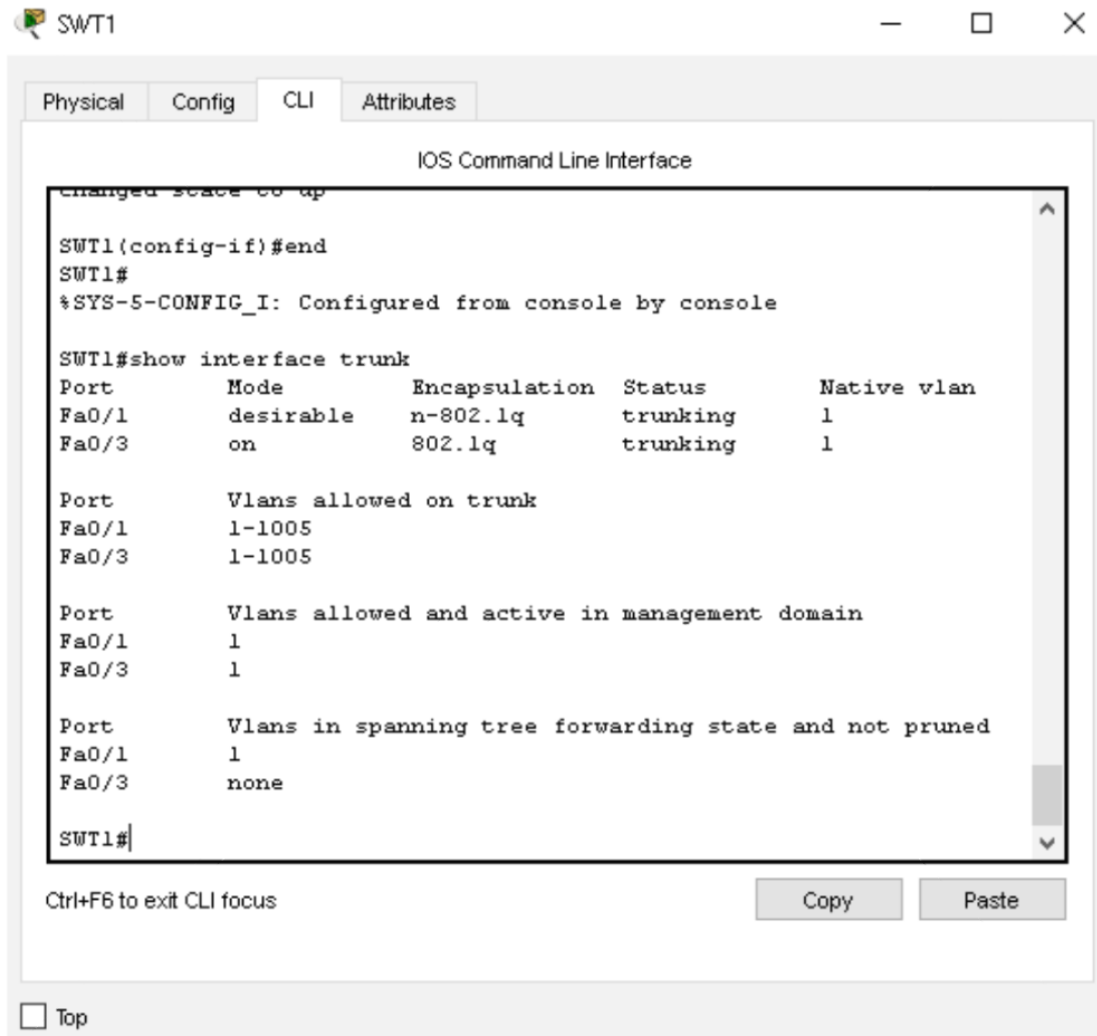
```
SWT1(config-if)#switchport mode trunk
```

```
SWT1(config-if)#
```

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

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

2.4. Verifique el enlace "trunk" el comando show interfaces trunk en SWT1.



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

```
SWT2>enable
```

```
SWT2#configure terminal
```

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

```
SWT2(config)#interface fa
```

```
SWT2(config)#interface fastEthernet 0/3
```

```
SWT2(config-if)#switchport mode trunk
```

```
SWT2(config-if)#
```

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

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

```
SWT2(config-if)#exit
```

```
SWT2(config)#
```

```
SWT3>enable
```

```
%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
```

```
SWT3#configure terminal
```

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

```
SWT3(config)#interface fa
```

```
SWT3(config)#interface fastEthernet 0/1
```

```
SWT3(config-if)#switchport mode trunk
```

```
SWT3(config-if)#exit
```

```
SWT3(config)#end
```

```
SWT3#
```

3. Agregar VLANs y asignar puertos.

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

STW1:

```
SWT1>enable
```

```
SWT1#configure terminal
```

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.

```
SWT1(config)#
```

STW2:

```
SWT2>enable
```

```
SWT2#configure terminal
```

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 Admon
```

```
SWT2(config-vlan)#exit
```

```
SWT2(config)#
```

4. Verifique que las VLANs han sido agregadas correctamente.

En SWT1: No se pude crear la vlan 10 ya que en el switch 1 tiene un vtp en modo cliente, lo que no permite crear la Vlan.

SWT2:

SWT2

Physical Config CLI Attributes

IOS Command Line Interface

```
SWT2#show vlan
```

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
10 Compras	active	
20 Mercadeo	active	
30 Planta	active	
99 Admon	active	
1002 fddi-default	active	
1003 token-ring-default	active	
1004 fddinet-default	active	
1005 trnet-default	active	

VLAN	Type	SAID	MTU	Parent	RingNo	BridgeNo	Stp	BrdgMode
1	enet	100001	1500	-	-	-	-	0
10	enet	100010	1500	-	-	-	-	0

Ctrl+F6 to exit CLI focus

Copy Paste

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5. 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

SWT1:

```
SWT1>enable
```

```
SWT1#configure terminal
```

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

```
SWT1(config)#interface vlan 10
```

```
SWT1(config-if)#
```

```
%LINK-5-CHANGED: Interface Vlan10, changed state to up
```

```
%LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan10, changed state to up
```

```
SWT1(config-if)#ip address 190.108.10.1 255.255.255.0
```

```
SWT1(config-if)#exit
```

```
SWT1(config)#interface vlan 20
```

```
SWT1(config-if)#
```

```
%LINK-5-CHANGED: Interface Vlan20, changed state to up
```

```
%LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan20, changed state to up
```

```
SWT1(config-if)#ip address 190.108.20.1 255.255.255.0
```

```
SWT1(config-if)#exit
```

```
SWT1(config)#interface vlan 30
```

```
SWT1(config-if)#
%LINK-5-CHANGED: Interface Vlan30, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan30, changed state to up
SWT1(config-if)#ip address 190.108.30.1 255.255.255.0
SWT1(config-if)#exit
```

SWT2:

```
SWT2>enable
```

```
SWT2#configure terminal
```

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

```
SWT2(config)#interface vlan 10
```

```
SWT2(config-if)#ip address 190.108.10.2 255.255.255.0
```

```
SWT2(config-if)#exit
```

```
SWT2(config)#interface vlan 20
```

```
SWT2(config-if)#ip address 190.108.20.2 255.255.255.0
```

```
SWT2(config-if)#exit
```

```
SWT2(config)#interface vlan 30
```

```
SWT2(config-if)#ip address 190.108.30.2 255.255.255.0
```

```
SWT2(config-if)#exit
```

SWT3:

```
SWT3>enable
```

```
SWT3#configure terminal
```

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

```
SWT3(config)#interface vlan 10
```

```
SWT3(config-if)#
```

```
%LINK-5-CHANGED: Interface Vlan10, changed state to up
```

```
%LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan10, changed state to up
SWT3(config-if)#ip address 190.108.10.3 255.255.255.0
SWT3(config-if)#exit
SWT3(config)#interface vlan 20
SWT3(config-if)#
%LINK-5-CHANGED: Interface Vlan20, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan20, changed state to up
SWT3(config-if)#ip address 190.108.20.3 255.255.255.0
SWT3(config-if)#exit
SWT3(config)#interface vlan 30
SWT3(config-if)#
%LINK-5-CHANGED: Interface Vlan30, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan30, changed state to up
SWT3(config-if)#ip address 190.108.30.3 255.255.255.0
SWT3(config-if)#exit
```

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

```
SWT1:
SWT1>enable
SWT1#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
SWT1(config)#interface fa
SWT1(config)#interface fastEthernet 0/10
SWT1(config-if)#switchport mode access
SWT1(config-if)#switchport access vlan 10
SWT1(config-if)#exit
```

```
SWT1(config)#exit
SWT1#
%SYS-5-CONFIG_I: Configured from console by console
```

```
SWT2:
SWT2(config)#interface fa
SWT2(config)#interface fastEthernet 0/10
SWT2(config-if)#switchport mode access
SWT2(config-if)#switchport access vlan 10
SWT2(config-if)#exit
SWT2(config)#
SWT2#
```

```
SWT3:
SWT3>enable
SWT3#configure terminal
Enter configuration commands, one per line. End with CNTL/Z..
SWT3(config)#interface fa
SWT3(config)#interface fastEthernet 0/10
SWT3(config-if)#switchport mode access
SWT3(config-if)#switchport access vlan 10
SWT3(config-if)#exit
SWT3(config)#exit
SWT3#
%SYS-5-CONFIG_I: Configured from console by console
SWT3#
```

7. 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.

SWT1:

```
SWT1>enable
```

```
SWT1#configure terminal
```

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

```
SWT1(config)#interface fa
```

```
SWT1(config)#interface fastEthernet 0/15
```

```
SWT1(config-if)#switchport mode access
```

```
SWT1(config-if)#switchport access vlan 20
```

```
SWT1(config-if)#exit
```

```
SWT1(config)#interface fa
```

```
SWT1(config)#interface fastEthernet 0/20
```

```
SWT1(config-if)#switchport mode access
```

```
SWT1(config-if)#switchport access vlan 30
```

```
SWT1(config-if)#exit
```

```
SWT1(config)#exit
```

```
SWT1#
```

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

SWT2:

```
SWT2>enable
```

```
SWT2#configure terminal
```

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

```
SWT2(config)#interface fa
```

```
SWT2(config)#interface fastEthernet 0/15
```

```
SWT2(config-if)#switchport mode access
SWT2(config-if)#switchport access vlan 20
SWT2(config-if)#no shut
SWT2(config-if)#exit
SWT2(config)#interface fa
SWT2(config)#interface fastEthernet 0/20
SWT2(config-if)#switchport mode access
SWT2(config-if)#switchport access vlan 30
SWT2(config-if)#end
SWT2#
%SYS-5-CONFIG_I: Configured from console by console
```

```
SWT3:
SWT3>enable
SWT3#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
SWT3(config)#interface fa
SWT3(config)#interface fastEthernet 0/15
SWT3(config-if)#switchport mode access
SWT3(config-if)#switchport access vlan 20
SWT3(config-if)#exit
SWT3(config)#interface fa
SWT3(config)#interface fastEthernet 0/20
SWT3(config-if)#switchport mode access
SWT3(config-if)#switchport access vlan 30
SWT3(config-if)#exit
SWT3(config)#exit
```

SWT3#

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

8. 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

SWT1:

SWT1>enable

SWT1#config terminal

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

SWT1(config)#interface vlan99

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)#exit

SWT1(config)#

SWT2:

SWT2>enable

SWT2#configure terminal

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)#exit
```

SWT3:

```
SWT3>enable
```

```
SWT3#configure terminal
```

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

```
SWT3(config)#interface vlan 99
```

```
SWT3(config-if)#
```

```
%LINK-5-CHANGED: Interface Vlan99, changed state to up
```

```
%LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan99, changed state to up
```

```
SWT3(config-if)#ip address 190.108.99.3 255.255.255.0
```

```
SWT3(config-if)#exit
```

```
SWT3(config)#end
```

```
SWT3#
```

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

```
SWT3#
```

9. Verificar la conectividad Extremo a Extremo

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

El ping es exitoso entre equipos de la misma vlan, los ping de equipos que no hacen parte de la misma vlan fallan, además porque existe una ip en la vlan 99 y esta se encarga de comunicar los switches.

CONCLUSIONES

El protocolo HSRP puede lograr evitar fallas en la red por medio de la redundancia y la verificación de estados.

El protocolo GLBP complementa a los protocolos de redundancia a través del balanceo de carga en la red, esto implica la asignación de prioridades.

Es posible sincronizar los relojes de los dispositivos de red mediante el protocolo NTP, cual requiere de un servidor central.

Es posible administrar una red mediante protocolos que supervisen busque y resuelvan conflictos, por ejemplo, el protocolo SNMP permite el intercambio de información y la administración de dispositivos.

La implementación de características de seguridad en switch permite mitigar las instrucciones a los dispositivos activos de la red.

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