

PRUEBA DE HABILIDADES PRACTICAS CISCO CCNP

DIEGO FERNANDO CORTES ANDRADE

UNIVERSIDAD NACIONAL ABIERTA Y A DISTANCIA - UNAD
ESCUELA DE CIENCIAS BASICAS, TECNOLOGIA E INGENIERIA - ECTBI
INGENIERIA ELECTRONICA
MEDELLIN
2019

PRUEBA DE HABILIDADES PRACTICAS CISCO CCNP

DIEGO FERNANDO CORTES ANDRADE

Diplomado de opción de grado presentado para optar el título de
INGENIERO ELECTRONICO

DIRECTOR:
MG. GERARDO GRANADOS ACUÑA

UNIVERSIDAD NACIONAL ABIERTA Y A DISTANCIA - UNAD
ESCUELA DE CIENCIAS BASICAS, TECNOLOGIA E INGENIERIA - ECTBI
INGENIERIA ELECTRONICA
MEDELLIN
2019

Nota de Aceptación:

Firma del Presidente del Jurado

Firma del Jurado

Firma del Jurado

Medellín, 5 de junio de 2019

AGRADECIMIENTOS

Los más sinceros agradecimientos al tutor Gerardo Granados y toda la red de tutores de la universidad que nos ayudaron alcanzar los objetivos y metas de aprendizaje durante este largo proceso que culmina con éxito.

CONTENIDO

	Pág.
LISTA DE TABLAS.....	6
LISTA DE FIGURAS.....	8
GLOSARIO.....	9
RESUMEN.....	10
INTRODUCCION.....	11
ESCENARIO 1.....	12
ESCENARIO 2.....	23
ESCENARIO 3.....	31
CONCLUSIONES.....	47
REFERENCIAS BIBLIOGRAFICAS.....	48

LISTA DE TABLAS

	Pág.
Tabla 1. Router R1.....	13
Tabla 2. Router R2.....	14
Tabla 3. Router R3.....	15
Tabla 4. Router R4.....	16
Tabla 5. Router R5.....	17
Tabla 6. Loopback R1.....	17
Tabla 7. Configuración R1.....	18
Tabla 8. Loopback R5.....	19
Tabla 9. Configuración R5.....	19
Tabla 10. Configuración De Los Routers R1-R5.....	23
Tabla 11. Configuración R1 a R5.....	25
Tabla 12. Vecino BGP Entre R1 y R2.....	26
Tabla 13. Vecino BGP Entre R2 y R3.....	27
Tabla 14. Vecino BGP R3.....	29
Tabla 15. Vecino BGP R4.....	29
Tabla 16. Configuración SWT1.....	31
Tabla 17. Configuración SWT2.....	32
Tabla 18. Configuración SWT3.....	32
Tabla 19. Enlace Troncal SWT1.....	34
Tabla 20. Enlace Troncal SWT2.....	34
Tabla 21. SWT1 Switchport Mode Trunk.....	35
Tabla 22. SWT3 Switchport Mode Trunk.....	35
Tabla 23. Trunk Permanente de SWT2.....	36
Tabla 24. Trunk Permanente de SWT3.....	36
Tabla 25. STW1 VLAN 10.....	37
Tabla 26. STW2 Otras VLANS.....	37
Tabla 27. Configuración Direcciones IP.....	38

Tabla 28. Configuración Puerto F0/10 para SWT1.....	38
Tabla 29. Configuración Puerto F0/10 para SWT2.....	38
Tabla 30. Configuración Puerto F0/10 para SWT3.....	39
Tabla 31. Configuración Puerto F0/15 y F0/20 para SWT1.....	39
Tabla 32. Configuración Puerto F0/15 y F0/20 para SWT2.....	40
Tabla 33. Configuración Puerto F0/15 y F0/20 para SWT3.....	40
Tabla 34. Configuración de los Switches.....	41
Tabla 35. Direccionamiento SWT1.....	41
Tabla 36. Direccionamiento SWT2.....	42
Tabla 37. Direccionamiento SWT3.....	42

LISTA DE FIGURAS

	Pág.
Figura 1. Descripción Escenario 1.....	12
Figura 2. Montaje escenario 1.....	12
Figura 3. Interfaces De Loopback R3.....	20
Figura 4. Show IP Router R1 y R5.....	22
Figura 5. Descripción Escenario 2.....	24
Figura 6. Montaje escenario 2.....	24
Figura 7. Configuración en R1.....	26
Figura 8. Configuración en R2.....	27
Figura 9. Evidencia BGP en R2.....	28
Figura 10. Evidencia BGP en R3.....	28
Figura 11. Vecino BGP en R3.....	30
Figura 12. Vecino BGP en R4.....	30
Figura 13. Descripción Escenario 3.....	31
Figura 14. Montaje Escenario 3.....	32
Figura 15. SWT1 Show Vtp Status.....	33
Figura 16. SWT2 Show Vtp Status.....	33
Figura 17. SWT3 Show Vtp Status.....	34
Figura 18. Trunk entre SWT1 y SWT2.....	35
Figura 19. Evidencia Enlace Trunk SWT1.....	36
Figura 20. Evidencias VLANS Agregadas.....	37
Figura 21. Evidencia Ping desde PC5.....	43
Figura 22. Evidencia Ping desde PC9.....	44
Figura 23. Evidencia Ping SWT1.....	44
Figura 24. Evidencia Ping SWT2.....	45
Figura 25. Evidencia Ping a cada PC.....	46

GLOSARIO

RED: es un conjunto de equipos nodos y software conectados entre sí por medio de dispositivos físicos o inalámbricos que envían y reciben impulsos eléctricos, ondas electromagnéticas o cualquier otro medio para el transporte de datos, con la finalidad de compartir información, recursos y ofrecer servicios

ROUTER: permite interconectar computadoras que funcionan en el marco de una red, se encarga de establecer qué ruta se destinará a cada paquete de datos dentro de una red informática.

SWITCH: que son los encargados de la interconexión de equipos dentro de una misma red, o lo que es lo mismo, son los dispositivos que, junto al cableado, constituyen las redes de área local o LAN.

RESUMEN

En el siguiente Informe, se desarrollaron los escenarios correspondientes a la configuración de los escenarios propuestos en la prueba de habilidades prácticas del diplomado de profundización cisco CCNP, además se encuentra una descripción clara y concisa de todas las configuraciones usadas para su desarrollo con algunas imágenes que evidencian el mismo.

Es importante considerar la importancia que juegan las redes en nuestro mundo moderno, y su aplicación a través del flujo de información, son algunos de los alcances obtenidos más importantes, logrados en el desarrollo del curso, y será mostrado a lo largo de este trabajo.

ABSTRACT

In the following Report, the scenarios corresponding to the configuration of the scenarios proposed in the practical skills test of the CCNP cisco deepening course were developed, as well as a clear and concise description of all the configurations used for its development with some images that they evidence the same.

It is important to consider the importance of networks in our modern world, and its application through the flow of information, are some of the most important achievements obtained in the development of the course, and will be shown throughout this work.

INTRODUCCION

La prueba de habilidades prácticas es considerada una actividad evaluativa del diplomado de profundización CCNP; Mediante su realización logramos identificar nuestro grado de habilidad que fue adquirido a lo largo del curso de diplomado en Profundización CCNP, esto nos permitió entre otras cosas, poner a prueba todos los conocimientos adquiridos mediante la comprensión y solución de los problemas relacionados en diversos aspectos de Networking.

En la actualidad las redes se han convertido una forma habitual en la que se vive cada manera y espacio dentro del desarrollo de las vidas cotidianas de las personas, se evidencia como sus avances han logrado mejorar el estilo de vida del mundo, día a día se logran grandes avances permitiendo que se materialicen actividades de comunicación mediante la redes como llamadas, consultas de información, video conferencias, tele llamadas entre otros servicios más que se brindan mediante el uso de las mismas, todos estos aspectos permiten que la sociedad se comunique de forma oportuna

La actividad nos permitió desarrollar 3 escenarios acompañados de los respectivos procesos de documentación correspondientes al registro de la configuración de cada uno de los dispositivos, la descripción detallada del paso a paso de cada una de las etapas realizadas durante su desarrollo, el registro de los procesos de verificación de conectividad mediante el uso de comandos ping, traceroute, show ip route, entre otros.

ESCENARIO 1

Figura 1. Descripción escenario 1

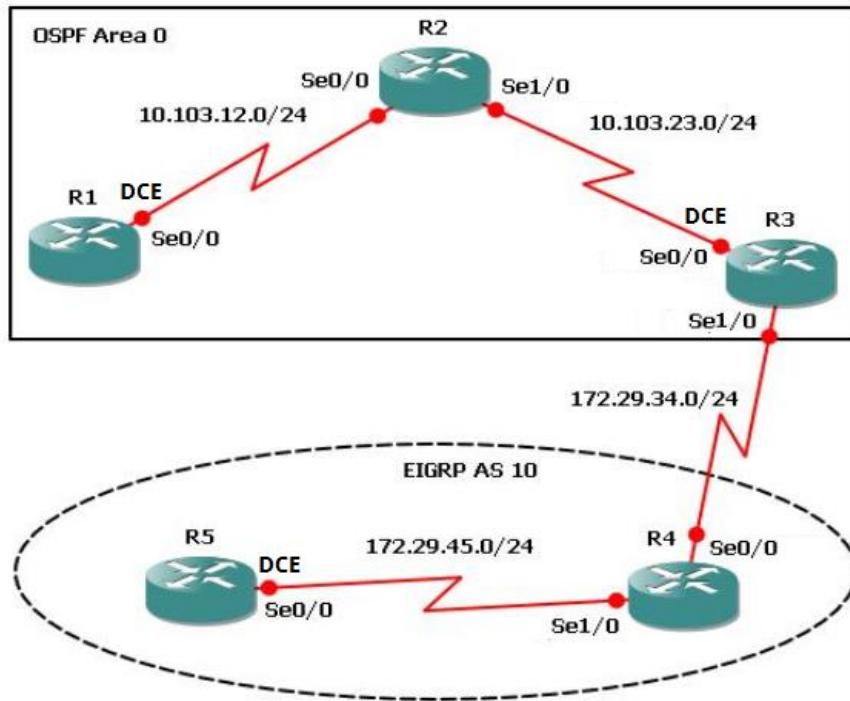
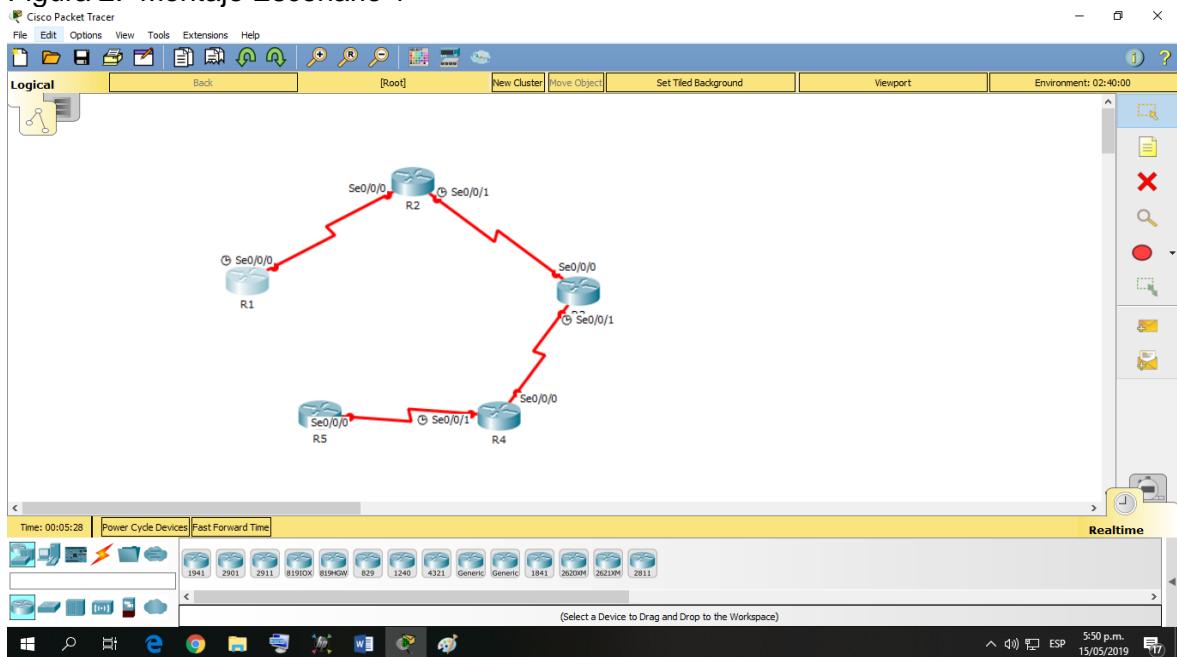


Figura 2. Montaje Escenario 1



- 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.

Tabla 1. Router R1

R1	<pre> Router>enable Router#configure terminal Enter configuration commands, one per line. End with CNTL/Z. Router(config)#no ip domain-lookup Router(config)#line con 0 Router(config-line)#logging synchronous Router(config-line)#exec-timeout 0 0 Router(config-line)#exit Router(config)#interface loopback 1 Router(config-if)# %LINK-5-CHANGED: Interface Loopback1, changed state to up %LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback1, changed state to up Router(config-if)#interface serial 0/0/1 Router(config-if)#ip address 10.103.12.2 255.255.255.0 Router(config-if)#clock rate 128000 Router(config-if)#no shutdown Router(config-if)# %LINK-5-CHANGED: Interface Serial0/0/1, changed state to up Router(config-if)#exit Router(config)#exit Router# %SYS-5-CONFIG_I: Configured from console by console Router# Router(config)#router ospf 1 Router(config-router)#router-id 1.1.1.1 Router(config-router)#network 10.1.0.0 0.0.3.255 area 0 Router(config-router)#network 10.103.12.0 0.0.0.255 area 0 Router# %SYS-5-CONFIG_I: Configured from console by console %LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/1, changed state to up Router#Router#copy ru st Destination filename [startup-config]? Building configuration... [OK] Router# </pre>
----	---

Tabla 2. Router R2

R2	<pre> Router>enable Router#configure terminal Enter configuration commands, one per line. End with CNTL/Z. Router(config)#no ip domain-lookup Router(config)#line con 0 Router(config-line)#logging synchronous Router(config-line)#exec-timeout 0 0 Router(config-line)#exit Router(config)#interface loopback 2 Router(config-if)# %LINK-5-CHANGED: Interface Loopback2, changed state to up %LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback2, changed state to up Router(config-if)#interface serial 0/0/0 Router(config-if)#ip address 10.103.12.1 255.255.255.0 Router(config-if)#no shut Router(config-if)# %LINK-5-CHANGED: Interface Serial0/0/0, changed state to up Router(config-if)#interface serial 0/0/1 %LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0, changed state to up Router(config-if)#interface serial 0/0/1 Router(config-if)#ip address 10.103.23.2 255.255.255.0 Router(config-if)#no shut Router(config-if)# %LINK-5-CHANGED: Interface Serial0/0/1, changed state to up Router(config-if)#exit Router(config)#exit Router# Router(config)#router ospf 1 Router(config-router)#router-id 2.2.2.2 Router(config-router)#network 10.103.12.0 0.0.0.255 area 0 Router(config-router)#network 10.103.23.0 0.0.0.255 area 0 Router# %SYS-5-CONFIG_I: Configured from console by console Router#copy %LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/1, changed state to up Router#copy ru st Destination filename [startup-config]? Building configuration... [OK] Router# </pre>
----	--

Tabla 3. Router R3

R3	<pre> Router>enable Router#configure terminal Enter configuration commands, one per line. End with CNTL/Z. Router(config)#no ip domain-lookup Router(config)#line con 0 Router(config-line)#logging synchronous Router(config-line)#exec-timeout 0 0 Router(config-line)#exit Router(config)#interface loopback 3^ Router(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 Router(config-if)#ip address 10.103.23.1 255.255.255.0 Router(config-if)#clock rate 128000 Router(config-if)#no shutdown Router(config-if)# %LINK-5-CHANGED: Interface Serial0/0/0, changed state to up Router(config-if)#exit Router(config)#int %LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0, changed state to up Router(config)#interface loopback 3 Router(config-if)#interface serial 0/0/1 Router(config-if)#ip address 172.29.34.2 255.255.255.0 Router(config-if)#no shutdown Router(config-if)# %LINK-5-CHANGED: Interface Serial0/0/1, changed state to up Router(config-if)#exit Router(config)#exit Router# Router# Router(config)#router ospf 1 Router(config-router)#router-id 3.3.3.3 Router(config-router)#network 10.103.23.0 0.0.0.255 area 0 Router# %SYS-5-CONFIG_I: Configured from console by console Router#copy ru %LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/1, changed state to up Router#copy ru st Destination filename [startup-config]? Building configuration... [OK] Router# </pre>
----	--

Tabla 4. Router R4

R4	<pre> Router>enable Router#configure terminal Enter configuration commands, one per line. End with CNTL/Z. Router(config)#no ip domain-lookup Router(config)#line con 0 Router(config-line)#logging synchronous Router(config-line)#exec-timeout 0 0 Router(config-line)#exit Router(config)#interface loopback 4 Router(config-if)# %LINK-5-CHANGED: Interface Loopback4, changed state to up %LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback4, changed state to up Router(config-if)#interface serial 0/0/0 Router(config-if)#ip address 172.29.34.1 255.255.255.0 Router(config-if)#no shut Router(config-if)# %LINK-5-CHANGED: Interface Serial0/0/0, changed state to up Router(config-if)#interface serial 0/0/ %LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0, changed state to up1 Router(config-if)#interface serial 0/0/1 Router(config-if)#ip address 172.29.45.2 255.255.255.0 Router(config-if)#no shut Router(config-if)# %LINK-5-CHANGED: Interface Serial0/0/1, changed state to up Router(config-if)#exit Router(config)#exit Router# %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] Router# </pre>
----	--

Tabla 5. Router R5

R5	<pre> Router>enable Router#configure terminal Enter configuration commands, one per line. End with CNTL/Z. Router(config)#no ip domain-lookup Router(config)#line con 0 Router(config-line)#logging synchronous Router(config-line)#exec-timeout 0 0 Router(config-line)#exit Router(config)#interface loopback 5 Router(config-if)# %LINK-5-CHANGED: Interface Loopback5, changed state to up %LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback5, changed state to up Router(config-if)#interface serial 0/0/0 Router(config-if)#ip address 172.29.45.1 255.255.255.0 Router(config-if)#clock rate 128000 Router(config-if)#no shut Router(config-if)# %LINK-5-CHANGED: Interface Serial0/0/0, changed state to up Router(config-if)#exit Router(config)#exit Router# %SYS-5-CONFIG_I: Configured from console by console Router#copy ru st Destination filename [startup-config]? Building configuration... [OK] Router# %LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0, changed state to up Router# </pre>
----	--

- 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.

Tabla 6. Loopback 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

Tabla 7. Configuración R1

ROUTER NUMBER 1 CONFIGURATION
<pre> Router>enable Router#configure terminal Enter configuration commands, one per line. End with CNTL/Z. Router(config)#interface loopback11 Router(config-if)# %LINK-5-CHANGED: Interface Loopback11, changed state to up %LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback11, changed state to up Router(config-if)#ip address 10.1.0.1 255.255.252.0 Router(config-if)#exit Router(config)#interface loopback12 Router(config-if)# %LINK-5-CHANGED: Interface Loopback12, changed state to up %LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback12, changed state to up Router(config-if)#ip address 10.1.4.1 255.255.252.0 Router(config-if)#exit Router(config)#interface loopback13 Router(config-if)# %LINK-5-CHANGED: Interface Loopback13, changed state to up %LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback13, changed state to up Router(config-if)#ip address 10.1.8.1 255.255.252.0 Router(config-if)#exit Router(config)#interface loopback14 Router(config-if)# %LINK-5-CHANGED: Interface Loopback14, changed state to up %LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback14, changed state to up Router(config-if)#ip address 10.1.12.1 255.255.252.0 Router(config-if)#exit Router(config)#router ospf 1 Router(config-router)#router-id 1.1.1.1 Router(config-router)#network 10.1.0.0 0.0.3.255 area 0 Router(config-router)#network 10.103.12.0 Router# %SYS-5-CONFIG_I: Configured from console by console Router#configure terminal Enter configuration commands, one per line. End with CNTL/Z. Router(config)#router ospf 1 Router(config-router)#network 10.103.12.0 0.0.0.255 area 0 Router(config- router)#exit Router(config)#exit Router# %SYS-5-CONFIG_I: Configured from console by console Router#copy ru st Destination filename [startup-config]? Building configuration... [OK] </pre>

```

Router#
Router#
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface loopback11
Router(config-if)#ip ospf network point-to-point
Router(config-if)#exit Router(config)#interface loopback12
Router(config-if)#ip ospf network point-to-point Router(config-if)#exit
Router(config)#interface loopback13 Router(config-if)#ip ospf network point-to-
point Router(config-if)#exit
Router(config)#interface loopback14 Router(config-if)#ip ospf network point-to-
point Router(config-if)#exit
Router(config)#exit Router#
%SYS-5-CONFIG_I: Configured from console by console
Router#copy ru st
Destination filename [startup-config]? Building configuration...
[OK]
Router#

```

- 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.

Tabla 8. Loopback R5

Loopback51	172.5.0.1
Loopback52	172.5.4.1
Loopback53	172.5.8.1
Loopback54	172.5.12.1

Tabla 9. Configuración R5

ROUTER NUMBER 5 CONFIGURATION
Router>enable Router#configure terminal Enter configuration commands, one per line. End with CNTL/Z. Router(config)#interface loopback51 Router(config-if)# %LINK-5-CHANGED: Interface Loopback51, changed state to up %LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback51, changed state to up Router(config-if)#ip address 172.5.0.1 255.255.252.0 Router(config-if)#exit Router(config)#interface loopback52 Router(config-if)#

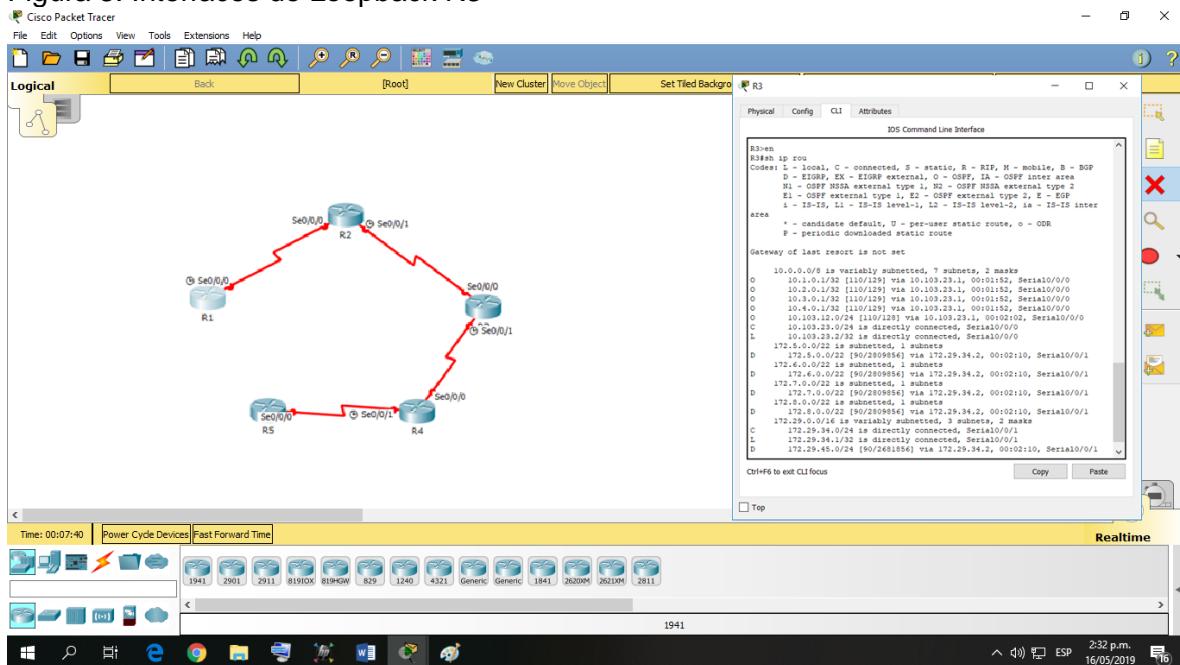
```

%LINK-5-CHANGED: Interface Loopback52, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback52, changed
state to up
Router(config-if)#ip address 172.5.4.1 255.255.252.0 Router(config-if)#exit
Router(config)#interface loopback53
Router(config-if)#
%LINK-5-CHANGED: Interface Loopback53, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback53, changed
state to up
Router(config-if)#ip address 172.5.8.1 255.255.252.0 Router(config-if)#exit
Router(config)#interface loopback54
Router(config-if)#
%LINK-5-CHANGED: Interface Loopback54, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback54, changed
state to up
Router(config-if)#ip address 172.5.12.1 255.255.252.0 Router(config-if)#exit
Router(config)# Router(config)#route eigrp 10
Router(config-router)#auto-summary Router(config-router)#network 172.5.0.0
0.0.3.255
Router(config-router)#network 172.29.45.0 0.0.0.255 Router#

```

- 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*.

Figura 3. Interfaces de Loopback R3



- 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.

```

Router>enable Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#router ospf 10
Router(config-router)#redistribute eigrp 10 subnets Router(config-router)#exit
Router(config)#router ospf 1
Router(config-router)#redistribute eigrp 10
% Only classful networks will be redistributed Router(config-router)#redistribute
eigrp 10 subnets Router(config-router)#exit Router(config)#router eigrp 10
Router(config-router)#redistribute ospf 1 metric 1544 100 255 1
1500 Router(config-router)#exit Router(config)#exit
Router#
%SYS-5-CONFIG_I: Configured from console by console
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, 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
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#router ospf 1
Router(config-router)#network 172.29.34.0 0.0.0.255 area 0 Router(config-
router)#exit
Router(config)#exit Router#
%SYS-5-CONFIG_I: Configured from console by console
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, 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

Router#configure terminal

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

Router(config)#router ospf 1

Router(config-router)#redistribute eigrp 10 subnets Router(config-router)#log-adjacency-changes Router(config-router)#redistribute eigrp 7 subnets

Router(config-router)#network 172.29.45.0 area 0

% Invalid input detected at '^' marker.

Router(config-router)#network 172.29.45.0 0.0.0.255 area 0 Router(config-router)#exit

Router(config)#router eigrp 10

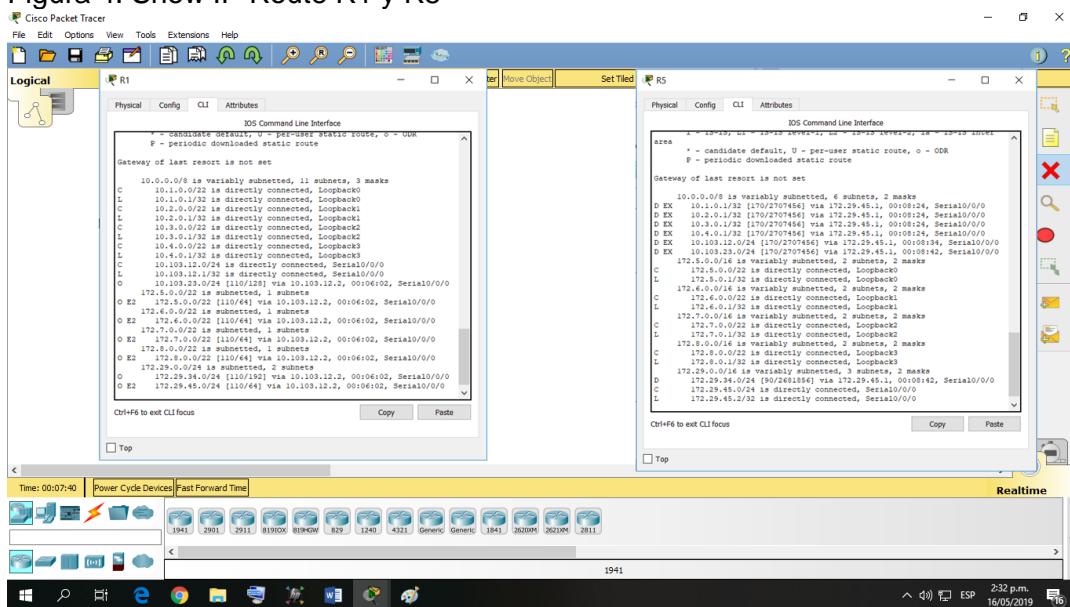
Router(config-router)#redistribute ospf 1 metric 50000 200 255 1 1500

Router(config-router)#auto-summary

Router(config-router)#exit Router(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*.

Figura 4. Show IP Route R1 y R5



ESCENARIO 2

Tabla 10. Configuración de los Routers R1-R5

	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
R3	E 0/0	192.1.23.2	255.255.255.0
	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
R4	S 0/0	192.1.34.3	255.255.255.0
	INTERFAZ	DIRECCIÓN IP	MÁSCARA
	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

Figura 5. Descripción Escenario 2

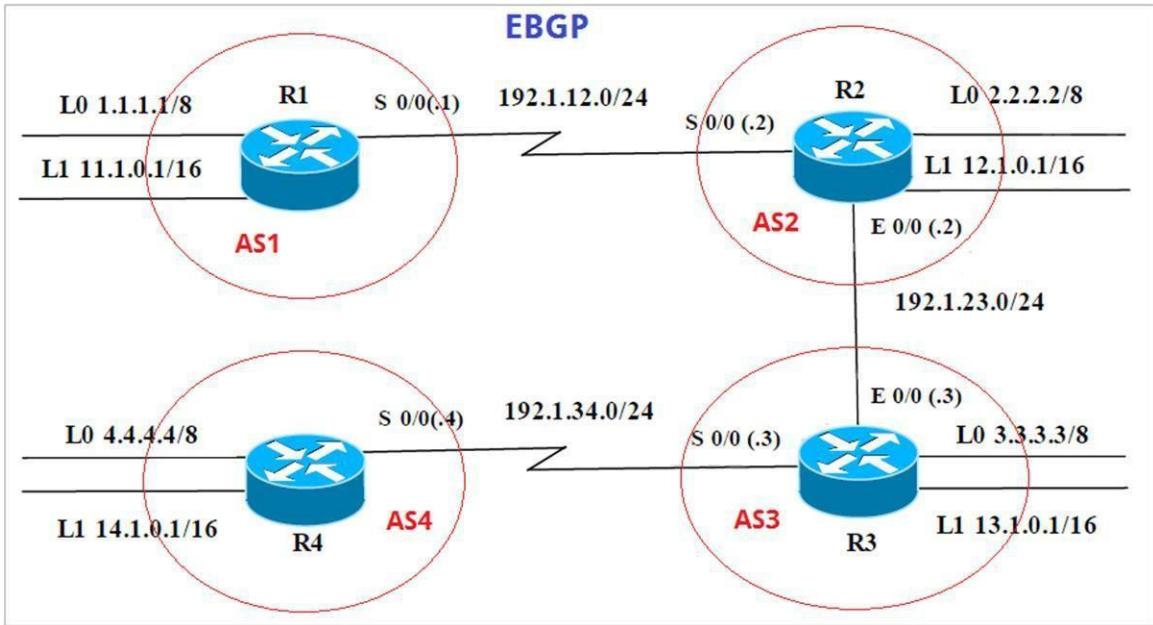
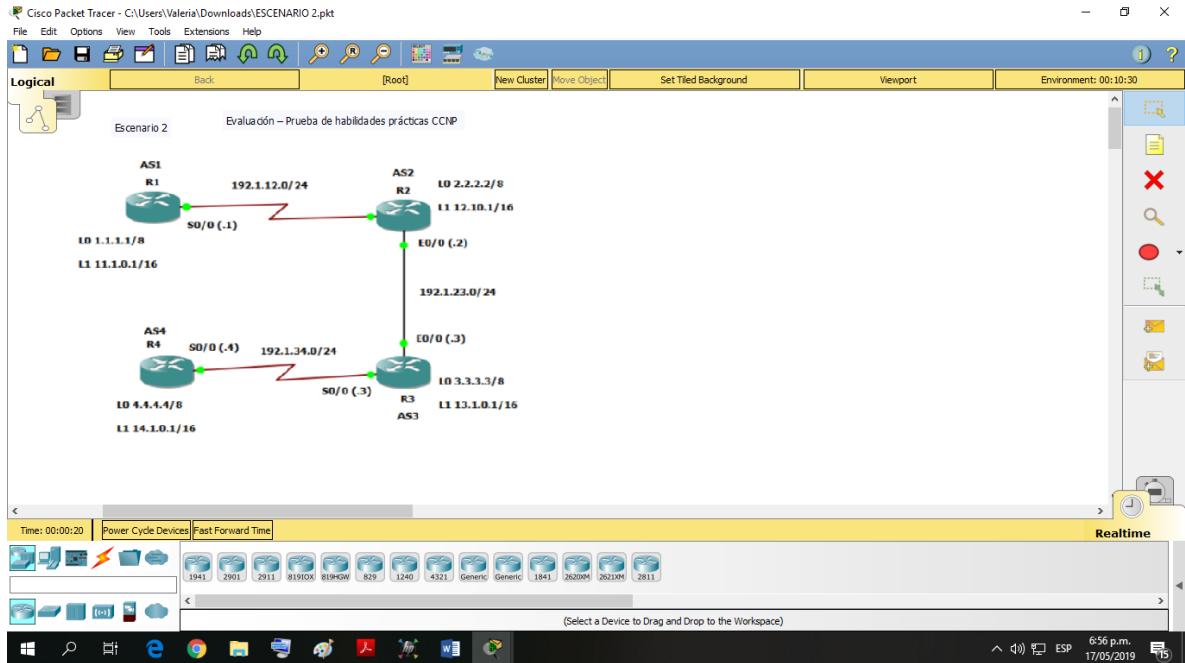


Figura 6. Montaje Escenario 2



- 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**.

Tabla 11. Configuración R1 a R5

R1	Router>en Router#conf t Router(config)#H 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 R1(config-if)#no sh R1(config)#int loopback 0 R1(config-if)#ip add 1.1.1.1 255.0.0.0 R1(config)#int loopback 1 R1(config-if)#ip add 11.1.0.1 255.255.0.0
R2	Router>en Router#conf t Router(config)#h R2 R2(config)#int s 0/0/0 R2(config-if)#ip add 192.1.12.2 255.255.255.0 R2(config-if)#no sh R2(config)#int G0/0 R2(config-if)#ip add 192.1.23.2 255.255.255.0 R2(config-if)#no sh R2(config)#int loopback 0 R2(config-if)# R2(config-if)#ip add 2.2.2.2 255.0.0.0 R2(config-if)#int loopback 1 R2(config-if)#ip add 12.1.0.1 255.255.0.0
R3	Router>EN Router#CONF T Router(config)#H R3 R3(config)#int s 0/0/0 R3(config-if)#ip add 192.1.34.3 255.255.255.0 R3(config-if)#no sh 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)#int loopback 0 R3(config-if)#ip add 3.3.3.3 255.0.0.0 R3(config-if)#int loopback 1 R3(config-if)#ip add 13.1.0.1 255.255.0.0
R4	Router>en Router#conf t Router(config)#H R4 R4(config)#int s0/0/0 R4(config-if)#ip add 192.1.34.4 255.255.255.0 R4(config-if)#clockrate 64000 R4(config-if)#no sh R4(config)#int loopback 0 R4(config-if)#ip add 4.4.4.4 255.0.0.0 R4(config-if)#int loopback 1 R4(config-if)#ip add 14.1.0.1 255.255.0.0
R5	Router>en Router#conf t Router(config)#H R4 R4(config)#int s0/0/0 R4(config-if)#ip add 192.1.34.4 255.255.255.0 R4(config-if)#clockrate 64000 R4(config-if)#no sh R4(config)#int loopback 0 R4(config-if)#ip add 4.4.4.4 255.0.0.0 R4(config-if)#int loopback 1 R4(config-if)#ip add 14.1.0.1 255.255.0.0

Tabla 12. Vecino BGP Entre R1 y R2

VECINO BGP ENTRE R1 Y R2	
R1	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
R2	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)#network 2.0.0.0 mask 255.0.0.0 R2(config-router)#network 12.1.0.0 mask 255.255.0.0

Figura 7. Configuración en R1

```
IOS Command Line Interface
* = candidate default, o = per-user static route, u = UDR
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
B        3.0.0.0/8 [20/0] via 192.1.12.2, 00:00:00
B        4.0.0.0/8 [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
      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
S        192.1.23.0/24 is directly connected, Serial0/0/0
          [1/0] via 192.1.12.2
          [1/0] via 192.1.34.1
S        192.1.34.0/24 [1/0] via 192.1.23.1

R1#
```

Figura 8. Configuración en R2

```

R2
Physical Config CLI Attributes
IOS Command Line Interface
15-15 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
    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
B    4.0.0.0/8 [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
    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

Top

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 ip route.

Tabla 13. Vecino BGP Entre R2 y R3

VECINO BGP ENTRE R2 Y R3	
R2	<pre>R2(config)#router bgp 2 R2(config-router)#neighbor 192.1.23.3 remote-as 3</pre>
R3	<pre>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)#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</pre>

Figura 9. Evidencia BGP en R2

The screenshot shows the Cisco IOS CLI interface for router R2. The window title is 'R2'. The tab bar at the top includes 'Physical', 'Config', 'CLI' (which is selected), and 'Attributes'. Below the tabs is the 'IOS Command Line Interface' header. The main area displays the BGP routing table:

```
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 192.1.12.1, 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
B    4.0.0.0/8 [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
    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#
```

At the bottom of the CLI window, there are 'Copy' and 'Paste' buttons, and a 'Top' link.

Figura 10. Evidencia BGP en R3

The screenshot shows the Cisco IOS CLI interface for router R3. The window title is 'R3'. The tab bar at the top includes 'Physical', 'Config', 'CLI' (selected), and 'Attributes'. Below the tabs is the 'IOS Command Line Interface' header. The main area displays the BGP routing table:

```
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
B    4.0.0.0/8 [20/0] via 192.1.34.4, 00:00:00
    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
    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
    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
    192.1.34.0/24 is variably subnetted, 2 subnets, 2 masks
C    192.1.34.0/24 is directly connected, Serial0/0/0
L    192.1.34.3/32 is directly connected, Serial0/0/0
R3#
```

At the bottom of the CLI window, there are 'Copy' and 'Paste' buttons, and a 'Top' link.

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.

Tabla 14. Vecino BGP R3

R3	R3(config)#router bgp 3 R3(config-router)#neighbor 192.1.34.4 remote-as 4
----	--

Tabla 15. Vecino BGP R4

R4	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)#network 4.0.0.0 mask 255.0.0.0 R4(config-router)#network 14.1.0.0 mask 255.255.0.0
----	---

Figura 11. Vecino BGP en R3

```
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 192.1.23.2, 00:00:00
B    2.0.0.0/8 [20/0] via 192.1.23.2, 00:00:00
C    3.0.0.0/8 is variably subnetted, 2 subnets, 2 masks
L      3.3.3.3/32 is directly connected, Loopback0
B    4.0.0.0/8 [20/0] via 192.1.34.4, 00:00:00
    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
    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
    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
    192.1.34.0/24 is variably subnetted, 2 subnets, 2 masks
C      192.1.34.0/24 is directly connected, Serial0/0/0
L      192.1.34.3/32 is directly connected, Serial0/0/0

R3#
```

Ctrl+F6 to exit CLI focus Copy Paste

Top

Figura 12. Vecino BGP en R4

```
IOS Command Line Interface
P - periodic downloaded static route

Gateway of last resort is not set

B    1.0.0.0/8 [20/0] via 192.1.34.3, 00:00:00
B    2.0.0.0/8 [20/0] via 192.1.34.3, 00:00:00
B    3.0.0.0/8 [20/0] via 192.1.34.3, 00:00:00
    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 192.1.34.3, 00:00:00
    14.0.0.0/8 is variably subnetted, 2 subnets, 2 masks
C      14.1.0.0/16 is directly connected, Loopback1
L      14.1.0.1/32 is directly connected, Loopback1
S      192.1.12.0/24 is directly connected, Serial0/0/0
        [1/0] via 192.1.23.1
S      192.1.23.0/24 is directly connected, Serial0/0/0
        [1/0] via 192.1.34.1
        [1/0] via 192.1.12.1
    192.1.34.0/24 is variably subnetted, 2 subnets, 2 masks
C      192.1.34.0/24 is directly connected, Serial0/0/0
L      192.1.34.4/32 is directly connected, Serial0/0/0

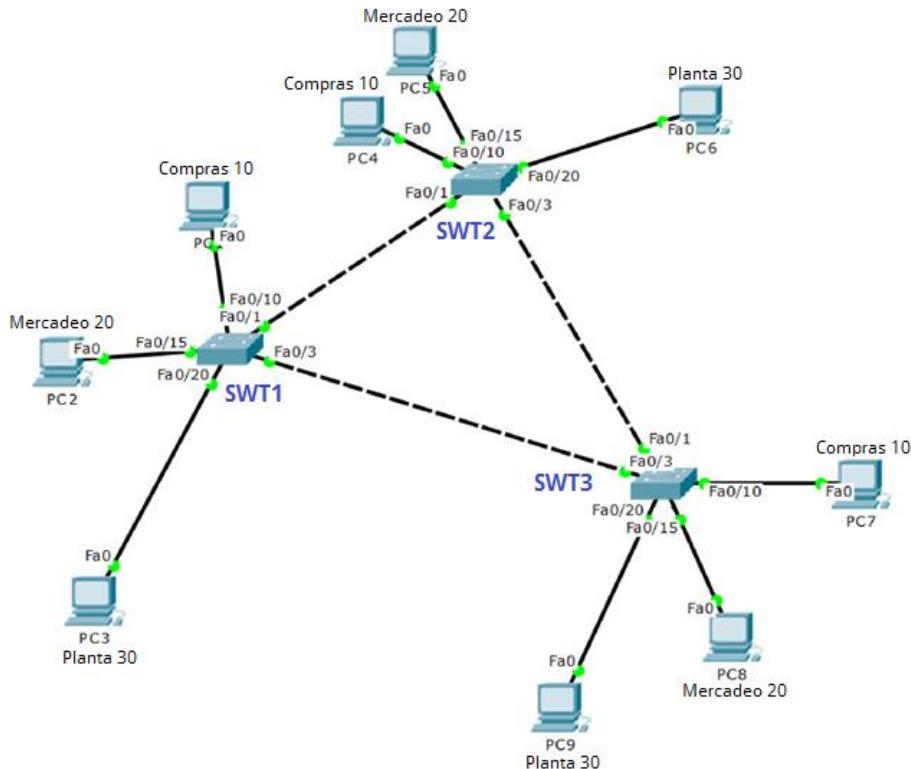
R4#
```

Ctrl+F6 to exit CLI focus Copy Paste

Top

ESCENARIO 3

Figura 13. Descripción Escenario 3



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.

Tabla 16. configuración SWT1

SWT1	<pre> Switch>en Switch#conf t Switch(config)#H SWT1 SWT1(config)#vtp domain CCNP SWT1(config)#vtp mode client SWT1(config)#vtp pass cisco SWT1(config)#vtp versión 2 </pre>
-------------	--

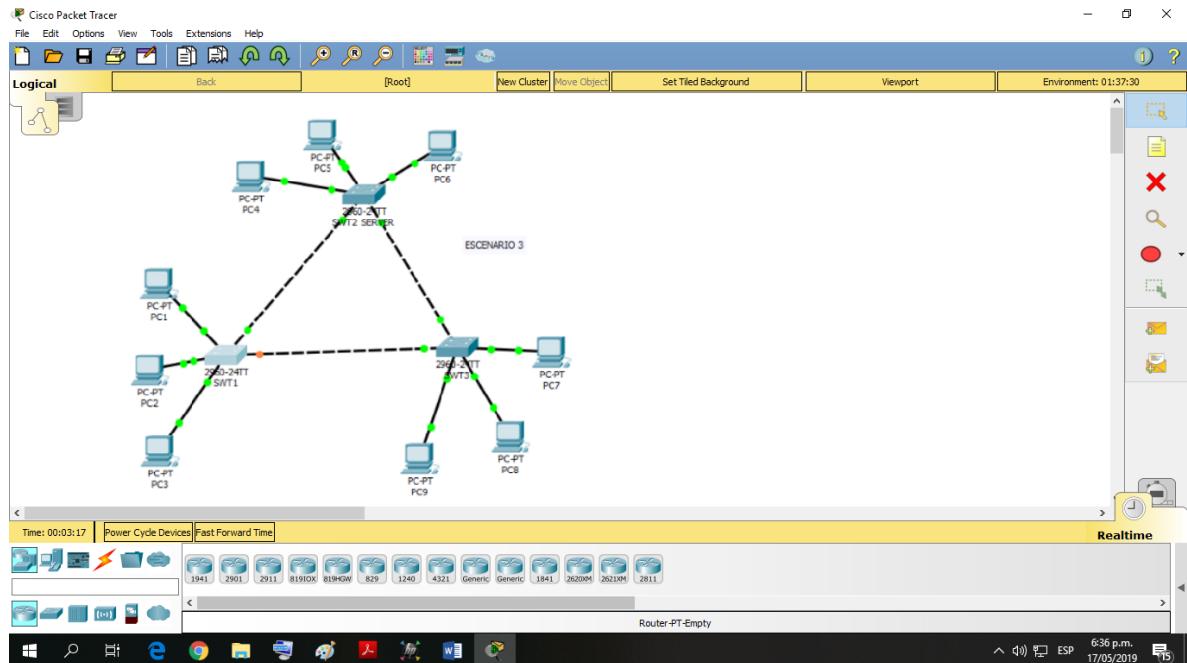
Tabla 17. configuración SWT2

SWT2	Switch>en Switch#conf t Switch(config)#HSWT2 SWT2(config)#vtp domain CCNP SWT2(config)#vtp mode server SWT2(config)#vtp pass cisco SWT2(config)#vtp versión 2
------	---

Tabla 18. configuración SWT3

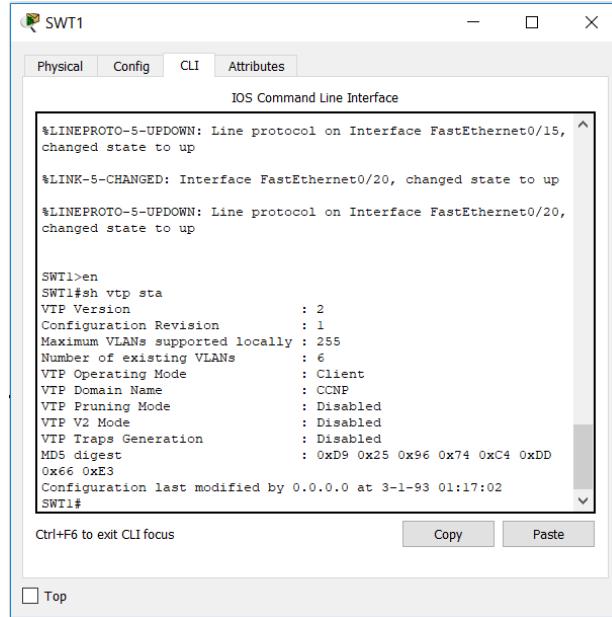
SWT3	Switch>en Switch#conf t Switch(config)#H SWT3 SWT3(config)#vtp domain CCNP SWT3(config)#vtp mode client SWT3(config)#vtp pass cisco SWT3(config)#vtp versión 2
------	--

Figura 14. Montaje Escenario 3



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

Figura 15. SWT1 Show Vtp Status



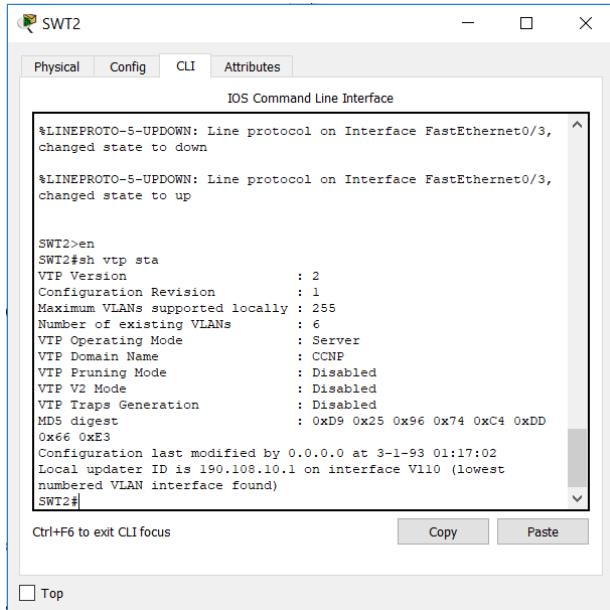
The screenshot shows the CLI interface for switch SWT1. The title bar says "SWT1". The tabs at the top are "Physical", "Config", "CLI" (which is selected), and "Attributes". The main window is titled "IOS Command Line Interface". It displays the output of the command `show vtp status`. The output shows the following information:

```
%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

SWT1>en
SWT1#sh vtp sta
VTP Version : 2
Configuration Revision : 1
Maximum VLANs supported locally : 255
Number of existing VLANs : 6
VTP Operating Mode : Client
VTP Domain Name : CCNP
VTP Pruning Mode : Disabled
VTP V2 Mode : Disabled
VTP Traps Generation : Disabled
MD5 digest : 0xD9 0x25 0x96 0x74 0xC4 0xDD
0x66 0xE3
Configuration last modified by 0.0.0.0 at 3-1-93 01:17:02
SWT1#
```

At the bottom of the window, there are "Copy" and "Paste" buttons, and a "Top" button.

Figura 16. SWT2 Show Vtp Status



The screenshot shows the CLI interface for switch SWT2. The title bar says "SWT2". The tabs at the top are "Physical", "Config", "CLI" (which is selected), and "Attributes". The main window is titled "IOS Command Line Interface". It displays the output of the command `show vtp status`. The output shows the following information:

```
%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>en
SWT2#sh vtp sta
VTP Version : 2
Configuration Revision : 1
Maximum VLANs supported locally : 255
Number of existing VLANs : 6
VTP Operating Mode : Server
VTP Domain Name : CCNP
VTP Pruning Mode : Disabled
VTP V2 Mode : Disabled
VTP Traps Generation : Disabled
MD5 digest : 0xD9 0x25 0x96 0x74 0xC4 0xDD
0x66 0xE3
Configuration last modified by 0.0.0.0 at 3-1-93 01:17:02
Local updater ID is 190.108.10.1 on interface V10 (lowest numbered VLAN interface found)
SWT2#
```

At the bottom of the window, there are "Copy" and "Paste" buttons, and a "Top" button.

Figura 17 SWT3 Show Vtp Status

The screenshot shows the Cisco IOS Command Line Interface (CLI) running on switch SWT3. The window title is "SWT3". The tabs at the top are "Physical", "Config" (which is selected), "CLI", and "Attributes". The main pane displays the output of the "show vtp status" command. The output shows the following information:

```
*LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/20, changed state to up
*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

SWT3>en
SWT3#sh vtp sta
VTP Version : 2
Configuration Revision : 1
Maximum VLANs supported locally : 255
Number of existing VLANs : 6
VTP Operating Mode : Client
VTP Domain Name : CCNP
VTP Pruning Mode : Disabled
VTP V2 Mode : Disabled
VTP Trap Generation : Disabled
MD5 digest : 0xD9 0x25 0x96 0x74 0xC4 0xDD
0x66 0xE3
Configuration last modified by 0.0.0.0 at 3-1-93 01:17:02
SWT3#
```

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

B. Configurar DTP (Dynamic Trunking Protocol)

- 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**.

Tabla 19. Enlace Troncal SWT1

SWT1	SWT1(config-if)#int fa0/1 SWT1(config-if)#switchport mode trunk SWT1(config-if)# switchport mode dynamic desirable
------	--

Tabla 20. Enlace Troncal SWT2

SWT2	SWT2(config-if)#int fa0/1 SWT2(config-if)#switchport mode trunk
------	--

- Verifique el enlace "trunk" entre SWT1 y SWT2 usando el comando `show interfaces trunk`.

Figura 18. Trunk entre SWT1 y SWT2

```

SWT1>EN
SWT1#SH INT TR
Port      Mode       Encapsulation  Status        Native vlan
Fa0/1    on         802.1q        trunking     1
Fa0/3    on         802.1q        trunking     1

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

Port      Vlans allowed and active in management domain
Fa0/1    1,10
Fa0/3    1,10

Port      Vlans in spanning tree forwarding state and not
pruned
Fa0/1    1,10
Fa0/3    1,10

SWT1#
  
```

Ctrl+F6 to exit CLI focus

Top

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

Tabla 21. SWT1 Switchport Mode Trunk

SWT1	SWT1(config-if)#int fa0/3 SWT1(config-if)#switchport mode trunk
------	--

Tabla 22. SWT3 Switchport Mode Trunk

SWT3	SWT3(config-if)#int fa0/3 SWT3(config-if)#switchport mode trunk
------	--

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

Figura 19. Evidencia Enlace Trunk SWT1

```

SWT1>EN
SWT1#SH INT TR
Port      Mode       Encapsulation  Status      Native vlan
Fa0/1    on        802.1q         trunking    1
Fa0/3    on        802.1q         trunking    1

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

Port      Vlans allowed and active in management domain
Fa0/1    1,10
Fa0/3    1,10

Port      Vlans in spanning tree forwarding state and not
pruned
Fa0/1    1,10
Fa0/3    1,10

SWT1#

```

Ctrl+F6 to exit CLI focus

Top

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

Tabla 23. Trunk Permanente de SWT2

SWT2	SWT2(config-if)#int fa0/3 SWT2(config-if)#switchport mode trunk
------	--

Tabla 24. Trunk Permanente de SWT3

SWT3	SWT3(config-if)#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)

Tabla 25. STW1 VLAN 10

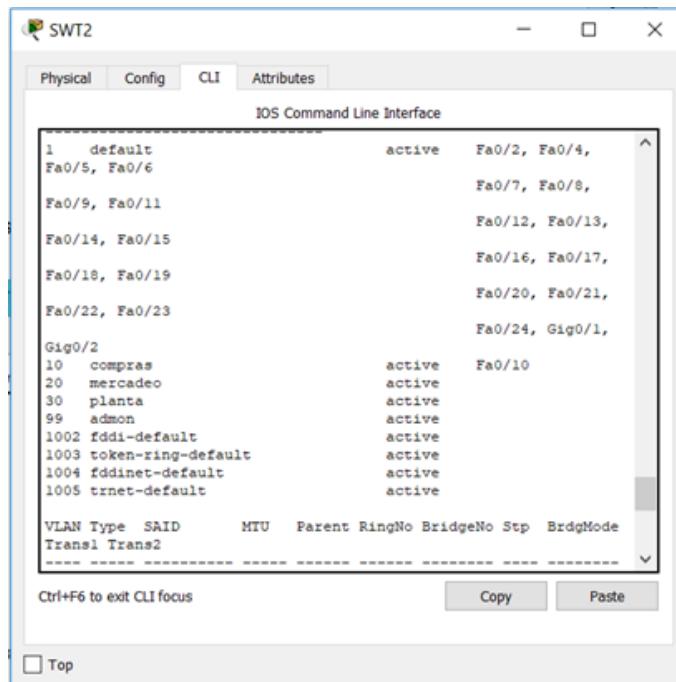
SWT1	SWT1(config)#vlan 10 VTP VLAN configuration not allowed when device is in CLIENT mode.
-------------	---

Tabla 26. STW2 Otras VLANs

SWT2	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
-------------	---

2. Verifique que las VLANs han sido agregadas correctamente.

Figura 20. Evidencias VLANs Agregadas



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

Tabla 27. Configuración Direcciones IP

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

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

Tabla 28. configuración Puerto F0/10 para SWT1

SWT1	<pre> SWT1>enable SWT1#configure terminal Enter configuration commands, one per line. End with CTRL/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 </pre>
-------------	---

Tabla 29. configuración Puerto F0/10 para SWT2

SWT2	<pre> 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# </pre>
-------------	---

Tabla 30. configuración Puerto F0/10 para SWT3

SWT3	<pre> 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# </pre>
------	--

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.

Tabla 31. Configuración Puerto F0/15 y F0/20 para SWT1

SWT1	<pre> 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 </pre>
------	--

Tabla 32. configuración Puerto F0/15 y F0/20 para SWT2

SWT2	<pre> 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 </pre>
-------------	---

Tabla 33. configuración Puerto F0/15 y F0/20 para SWT3

SWT3	<pre> 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 </pre>
-------------	--

D. Configurar las direcciones IP en los Switches.

1. 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.

Tabla 34. Configuración De Los Switches

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 35. Direccionamiento SWT1

SWT1	<pre>SWT1(config)#int vlan 99 SWT1(config-if)#ip add 190.108.99.1 255.255.255.0 SWT1(config-if)#no sh SWT1(config)#int fa0/2 SWT1(config)#shutdown SWT1(config)#exit SWT1(config)#int range fa0/4-9 SWT1(config)#shutdown SWT1(config)#exit SWT1(config)#int range fa0/11-14 SWT1(config)#shutdown SWT1(config)#exit SWT1(config)#int range fa0/16-19 SWT1(config)#shutdown SWT1(config)#exit SWT1(config)#int range fa0/21-24 SWT1(config)#shutdown</pre>
------	--

Tabla 36. Direccionamiento SWT2

SWT2	<pre>SWT2(config)#int vlan 99 SWT2(config-if)#ip add 190.108.99.2 255.255.255.0 SWT2(config-if)#no sh SWT2(config)#int fa0/2 SWT2(config)#shutdown SWT2(config)#exit SWT2(config)#int range fa0/4-9 SWT2(config)#shutdown SWT2(config)#exit SWT2(config)#int range fa0/11-14 SWT2(config)#shutdown SWT2(config)#exit SWT2(config)#int range fa0/16-19 SWT2(config)#shutdown SWT2(config)#exit SWT2(config)#int range fa0/21-24 SWT2(config)#shutdown</pre>
-------------	--

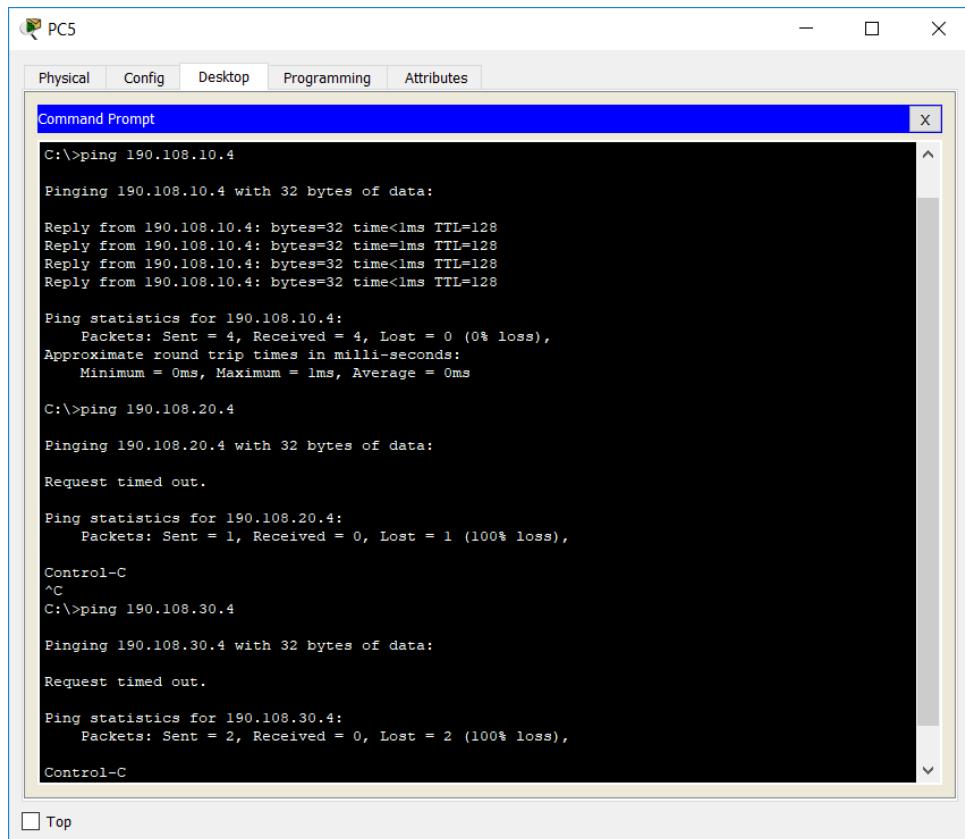
Tabla 37. Direccionamiento SWT3

SWT3	<pre>SWT3(config)#int vlan 99 SWT3(config-if)#ip add 190.108.99.3 255.255.255.0 SWT3(config-if)#no sh SWT3(config)#int fa0/2 SWT3(config)#shutdown SWT3(config)#exit SWT3(config)#int range fa0/4-9 SWT3(config)#shutdown SWT3(config)#exit SWT3(config)#int range fa0/11-14 SWT3(config)#shutdown SWT3(config)#exit SWT3(config)#int range fa0/16-19 SWT3(config)#shutdown SWT3(config)#exit SWT3(config)#int range fa0/21-24 SWT3(config)#shutdown</pre>
-------------	--

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.

Figura 21 Evidencia Ping Desde PC5



The screenshot shows a Windows desktop environment with a window titled "PC5". Inside the window, there is a "Command Prompt" window. The command prompt displays several ping operations:

```
C:\>ping 190.108.10.4
Pinging 190.108.10.4 with 32 bytes of data:
Reply from 190.108.10.4: bytes=32 time<1ms TTL=128

Ping statistics for 190.108.10.4:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 1ms, Average = 0ms

C:\>ping 190.108.20.4

Pinging 190.108.20.4 with 32 bytes of data:
Request timed out.

Ping statistics for 190.108.20.4:
    Packets: Sent = 1, Received = 0, Lost = 1 (100% loss),

Control-C
^C
C:\>ping 190.108.30.4

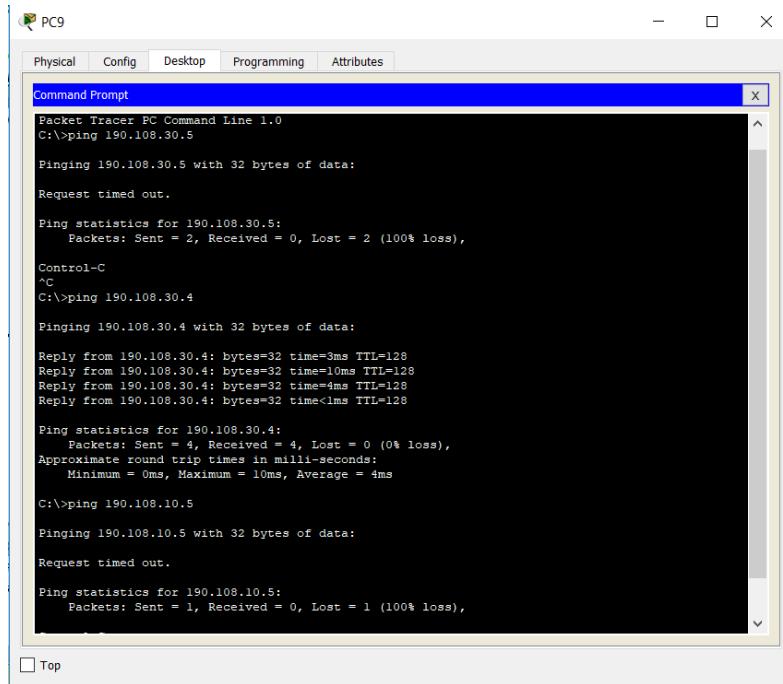
Pinging 190.108.30.4 with 32 bytes of data:
Request timed out.

Ping statistics for 190.108.30.4:
    Packets: Sent = 2, Received = 0, Lost = 2 (100% loss),

Control-C
```

El ping fue acertado con equipos que están en la misma vlan, pero no fue efectivo en las demás vlan porque no existía un enrutamiento que les permitiera mantener un Feedback

Figura 22. Evidencia Ping desde PC9



```
Packet Tracer PC Command Line 1.0
C:\>ping 190.108.30.5

Pinging 190.108.30.5 with 32 bytes of data:
Request timed out.

Ping statistics for 190.108.30.5:
    Packets: Sent = 2, Received = 0, Lost = 2 (100% loss),
Control-C
^C
C:\>ping 190.108.30.4

Pinging 190.108.30.4 with 32 bytes of data:
Reply from 190.108.30.4: bytes=32 time=3ms TTL=128
Reply from 190.108.30.4: bytes=32 time=10ms TTL=128
Reply from 190.108.30.4: bytes=32 time=4ms TTL=128
Reply from 190.108.30.4: bytes=32 time<1ms TTL=128

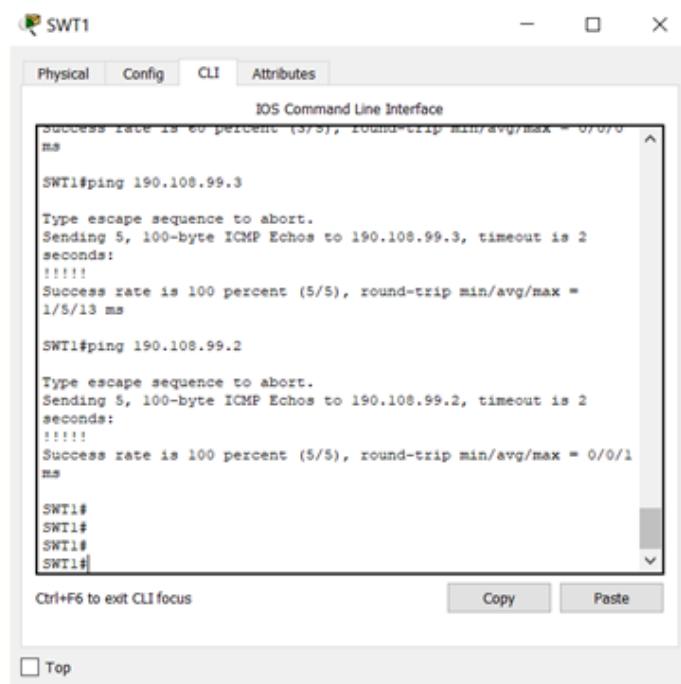
Ping statistics for 190.108.30.4:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 10ms, Average = 4ms
C:\>ping 190.108.10.5

Pinging 190.108.10.5 with 32 bytes of data:
Request timed out.

Ping statistics for 190.108.10.5:
    Packets: Sent = 1, Received = 0, Lost = 1 (100% loss),
```

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

Figura 23. Evidencia Ping SWT1



```
IOS Command Line Interface
Success rate is 100 percent (3/3), round-trip min/avg/max = 0/0/0
ms

SWT1#ping 190.108.99.3

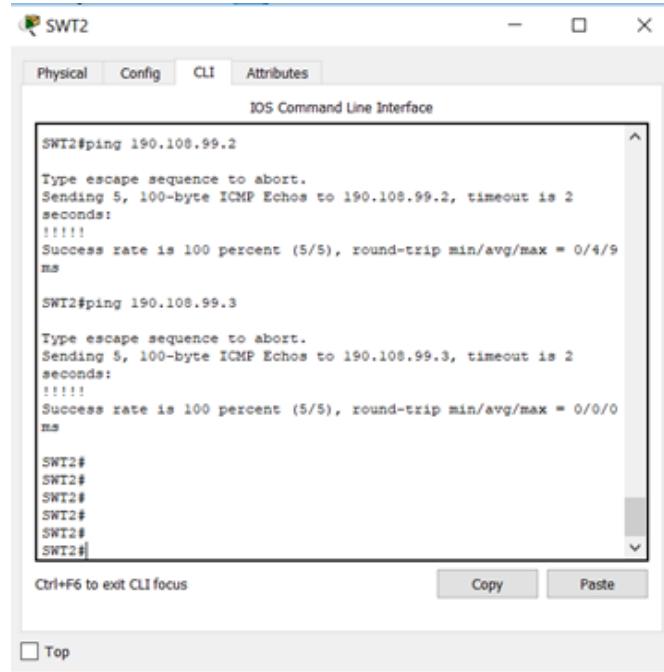
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 190.108.99.3, timeout is 2
seconds:
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max =
1/5/13 ms

SWT1#ping 190.108.99.2

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 190.108.99.2, timeout is 2
seconds:
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 0/0/1
ms

SWT1#
SWT1#
SWT1#
SWT1#
```

Figura 24. Evidencia Ping SWT2



```
SWT2#ping 190.108.99.2
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 190.108.99.2, timeout is 2
seconds:
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 0/4/9
ms

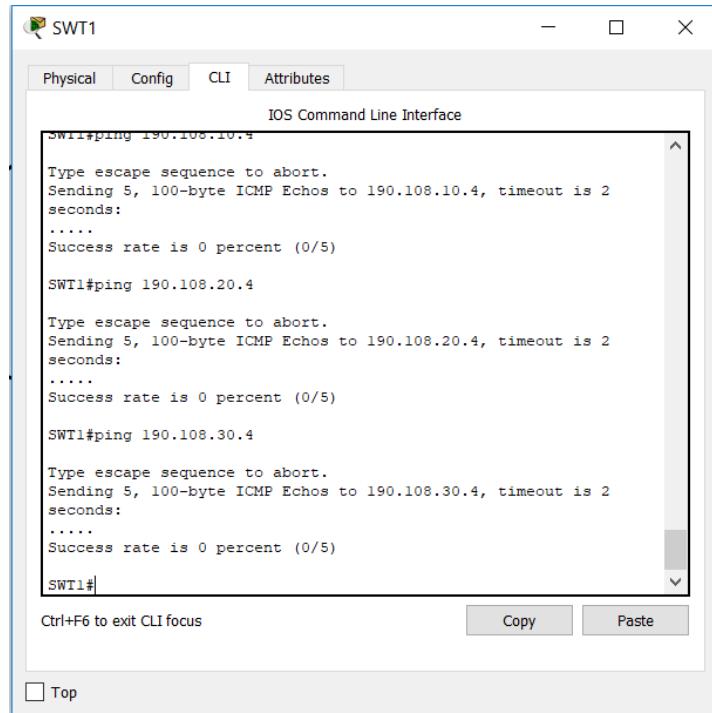
SWT2#ping 190.108.99.3
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 190.108.99.3, timeout is 2
seconds:
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 0/0/0
ms

SWT2#
SWT2#
SWT2#
SWT2#
SWT2#
SWT2#
```

Las evidencias muestran que el ping en los SWT 1, SWT2, y SWT3 es acertado, esto se logró ya que los puertos trunk están enrutados con una misma Vlan al igual que sus direcciones IP

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

Figura 25. Evidencia Ping a cada PC



```
SWT1#ping 190.108.10.4
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 190.108.10.4, timeout is 2
seconds:
.....
Success rate is 0 percent (0/5)

SWT1#ping 190.108.20.4
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 190.108.20.4, timeout is 2
seconds:
.....
Success rate is 0 percent (0/5)

SWT1#ping 190.108.30.4
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 190.108.30.4, timeout is 2
seconds:
.....
Success rate is 0 percent (0/5)

SWT1#
```

El Ping no es exitoso, esto fue producto de configuración ya que no se mantuvo una configuración en las direcciones IP y las Vlan

CONCLUSIONES

Al concluir el desarrollo de los ejercicios propuestos de la prueba de habilidades prácticas, podemos concluir que adquirimos conocimientos suficientes para planificar, implementar, verificar y resolver problemas de redes locales, además tenemos la certeza de que todos los conocimientos aprendidos serán vitales para avanzar en nuestras carreras y trabajar de manera independiente en soluciones de redes complejas.

También fortalecimos nuestros conocimientos sobre Routing and Switching aplicados a la tecnología CISCO, la constante interacción que mantuvimos con pruebas, laboratorios y todas las plataformas simuladoras que nos brindó la Universidad nos aportó una amplia gama de conocimientos

REFERENCIAS BIBLIOGRAFICAS

Teare, D., Vachon B., Graziani, R. (2015). CISCO Press (Ed). Basic Network and Routing Concepts. Implementing Cisco IP Routing (ROUTE) Foundation Learning Guide CCNP ROUTE 300-101. Recuperado de <https://1drv.ms/b/s!AmIJYei-NT1IInMfy2rhPZHwEoWx>

Teare, D., Vachon B., Graziani, R. (2015). CISCO Press (Ed). EIGRP Implementation. Implementing Cisco IP Routing (ROUTE) Foundation Learning Guide CCNP ROUTE 300-101. Recuperado de <https://1drv.ms/b/s!AmIJYei-NT1IInMfy2rhPZHwEoWx>

Teare, D., Vachon B., Graziani, R. (2015). CISCO Press (Ed). OSPF Implementation. Implementing Cisco IP Routing (ROUTE) Foundation Learning Guide CCNP ROUTE 300-101. Recuperado de <https://1drv.ms/b/s!AmIJYei-NT1IInMfy2rhPZHwEoWx>

Teare, D., Vachon B., Graziani, R. (2015). CISCO Press (Ed). Manipulating Routing Updates. Implementing Cisco IP Routing (ROUTE) Foundation Learning Guide CCNP ROUTE 300-101. Recuperado de <https://1drv.ms/b/s!AmIJYei-NT1IInMfy2rhPZHwEoWx>

Teare, D., Vachon B., Graziani, R. (2015). CISCO Press (Ed). Path Control Implementation. Implementing Cisco IP Routing (ROUTE) Foundation Learning Guide CCNP ROUTE 300-101. Recuperado de <https://1drv.ms/b/s!AmIJYei-NT1IInMfy2rhPZHwEoWx>

Teare, D., Vachon B., Graziani, R. (2015). CISCO Press (Ed). Implementing a Border Gateway Protocol (BGP) Solution for ISP Connectivity. Implementing Cisco IP Routing (ROUTE) Foundation Learning Guide CCNP ROUTE 300-101. Recuperado de <https://1drv.ms/b/s!AmIJYei-NT1IInMfy2rhPZHwEoWx>

Teare, D., Vachon B., Graziani, R. (2015). CISCO Press (Ed). Implementing Routing Facilities for Branch Offices and Mobile Workers. Implementing Cisco IP Routing (ROUTE) Foundation Learning Guide CCNP ROUTE 300-101. Recuperado de <https://1drv.ms/b/s!AmIJYei-NT1IInMfy2rhPZHwEoWx>

Teare, D., Vachon B., Graziani, R. (2015). CISCO Press (Ed). Implementing IPv6 in the Enterprise Network. Implementing Cisco IP Routing (ROUTE) Foundation Learning Guide CCNP ROUTE 300-101. Recuperado de <https://1drv.ms/b/s!AmIjYei-NT1InMfy2rhPZHwEoWx>

Froom, R., Frahim, E. (2015). CISCO Press (Ed). Fundamentals Review. Implementing Cisco IP Switched Networks (SWITCH) Foundation Learning Guide CCNP SWITCH 300-115. Recuperado de <https://1drv.ms/b/s!AmIjYei-NT1InWR0hoMxgBNv1CJ>

Froom, R., Frahim, E. (2015). CISCO Press (Ed). Campus Network Design Fundamentals. Implementing Cisco IP Switched Networks (SWITCH) Foundation Learning Guide CCNP SWITCH 300-115. Recuperado de <https://1drv.ms/b/s!AmIjYei-NT1InWR0hoMxgBNv1CJ>

Froom, R., Frahim, E. (2015). CISCO Press (Ed). Campus Network Architecture. Implementing Cisco IP Switched Networks (SWITCH) Foundation Learning Guide CCNP SWITCH 300-115. Recuperado de <https://1drv.ms/b/s!AmIjYei-NT1InWR0hoMxgBNv1CJ>

Froom, R., Frahim, E. (2015). CISCO Press (Ed). Spanning Tree Implementation. Implementing Cisco IP Switched Networks (SWITCH) Foundation Learning Guide CCNP SWITCH 300-115. Recuperado de <https://1drv.ms/b/s!AmIjYei-NT1InWR0hoMxgBNv1CJ>

Froom, R., Frahim, E. (2015). CISCO Press (Ed). InterVLAN Routing. Implementing Cisco IP Switched Networks (SWITCH) Foundation Learning Guide CCNP SWITCH 300-115. Recuperado de <https://1drv.ms/b/s!AmIjYei-NT1InWR0hoMxgBNv1CJ>