

DIPLOMADO DE PROFUNDIZACION CISCO
PRUEBA DE HABILIDADES PRACTICAS CCNP

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UNIVERSIDAD NACIONAL ABIERTA Y A DISTANCIA - UNAD
ESCUELA DE CIENCIAS BÁSICAS, TECNOLOGÍA E INGENIERÍA - ECBTI
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NOTA DE ACEPTACION

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Bucaramanga 18 de abril de 2020

AGRADECIMIENTOS

Dedico esta página a Dios que es mi guía para el desarrollo de todas mis metas y objetivos en la vida, además quiero agradecer a mi familia que son personas incondicionales.

Quiero aprovechar la oportunidad para agradecer también a la universidad quien me ha brindado la oportunidad de crecer no solo profesionalmente sino también personalmente, me ha ofrecido el apoyo necesario para cumplir todas mis metas y poder terminar mi pregrado.

CONTENIDO

CONTENIDO	5
LISTA DE ILUSTRACIONES	6
LISTA DE TABLAS	9
GLOSARIO	10
RESUMEN.....	12
ABSTRACT.....	12
1. DESARROLLO.....	15
1.1. Prueba de habilidades - Escenario 1	15
1.1.1. Topología de red 1	15
Parte 1: Configuración del escenario propuesto.....	16
Parte 2: Verificar conectividad de red y control de la trayectoria.....	24
1.1.2. ESCENARIO COMANDOS 1.....	27
ROUTER 2	29
ROUTER 3	33
1.2. Prueba de Habilidades - Escenario 2	37
1.2.1. Topología de red 2	37
Parte 1: Configurar la red de acuerdo con las especificaciones.....	38
Parte 2: conectividad de red de prueba y las opciones configuradas.....	63
1.2.2. ESCENARIO COMANDOS 2.....	71
DLS1.....	71
DLS2.....	74
ALS1.....	80
ALS2.....	82
CONCLUSIONES	85
BIBLIOGRAFÍA.....	86

LISTA DE ILUSTRACIONES

Ilustración 1. Topología de red E1	15
Ilustración 2. Topología de red E1 Software Packet Tracer	15
Ilustración 3. R1: Configuración	16
Ilustración 4. R2: Configuración	16
Ilustración 5. R3: Configuración	17
Ilustración 6. R1: Ajuste de banda	17
Ilustración 7. R2: Ajuste de banda	18
Ilustración 8. R3: Ajuste de banda	18
Ilustración 9. R2: Configuración de direcciones OSPFv3	19
Ilustración 10. R2: Configuración de direcciones OSPFv3	19
Ilustración 11. R2: Configuración de la interfaz F0/0	20
Ilustración 12. R3: Configuración de la interfaz F0/0	20
Ilustración 13. R2: Configuración en A1	21
Ilustración 14. R3: Configuración de rutas	21
Ilustración 15. R1: configuración del protocolo EIGRP	22
Ilustración 16. R1: Configuración de las interfaces EIGRP	22
Ilustración 17. R2: Configuración entre OSPF y EIGRP	23
Ilustración 18. R2: Publicidad de la ruta	23
Ilustración 19. R1: Enrutamiento	24
Ilustración 20. R2: Enrutamiento	24
Ilustración 21. R2: Enrutamiento	25
Ilustración 22. R1: Comprobando comunicación	25
Ilustración 23. R2: Comprobaciones	26
Ilustración 24. Topología de Red E2	37
Ilustración 25. Topología de red E2 Software Packet Tracer	37
Ilustración 26. Switch DLS1: Apagando interfaces	38
Ilustración 27. Switch DLS2: Apagando interfaces	38
Ilustración 28. Switch ALS1: Apagando interfaces	39
Ilustración 29. Switch ALS2: Apagando interfaces	39
Ilustración 30. Switch DLS1: Establecido un nombre	40
Ilustración 31. Switch DLS2: Establecido un nombre	40
Ilustración 32. Switch ALS1: Establecido un nombre	41
Ilustración 33. Switch ALS2: Establecido un nombre	41
Ilustración 34. Switch DLS1: Realizando Conexión	42
Ilustración 35. Switch DLS2: Realizando Conexión	42

Ilustración 36. Switch DLS1: Configuración de los Port-channels en las interfaces Fa0/7 y Fa0/8 utilizará LACP	43
Ilustración 37. Switch DLS1: Configuración de los Port-channels en las interfaces Fa0/7 y Fa0/8 utilizará LACP	43
Ilustración 38. Switch ALS1: Configuración de los Port-channels en las interfaces Fa0/7 y Fa0/8 utilizará LACP	44
Ilustración 39. Switch ALS1: Configuración de los Port-channels en las interfaces Fa0/7 y Fa0/8 utilizará LACP	44
Ilustración 40. Switch DLS1: Configuración de los Port-channels en las interfaces F0/9 y fa0/10 utilizará PAgP	45
Ilustración 41. Switch DLS1: Configuración de los Port-channels en las interfaces F0/9 y fa0/10 utilizará PAgP	45
Ilustración 42. Switch ALS1: Configuración de los Port-channels en las interfaces F0/9 y fa0/10 utilizará PAgP	46
Ilustración 43. Switch ALS1: Configuración de los Port-channels en las interfaces F0/9 y fa0/10 utilizará PAgP	46
Ilustración 44. Switch DLS1: Asignación.....	47
Ilustración 45. Switch DLS1: Asignación.....	47
Ilustración 46. Switch DLS2: Asignación.....	48
Ilustración 47. Switch DLS2: Asignación.....	48
Ilustración 48. Switch DLS2: Asignación.....	49
Ilustración 49. Switch ALS1: Asignación.....	49
Ilustración 50. Switch ALS1: Asignación.....	50
Ilustración 51. Switch ALS2: Asignación.....	50
Ilustración 52. Switch ALS2: Asignación.....	51
Ilustración 53. Switch ALS2: Asignación.....	51
Ilustración 54. Switch DLS1: Configuración de Nombre y dominio	52
Ilustración 55. Switch DLS1: Configuración del servidor.....	52
Ilustración 56. Switch ALS1: Configuración ALS1 como clientes VTP.....	53
Ilustración 57. Switch ALS2: Configuración ALS1 como clientes VTP.....	53
Ilustración 58. Switch DLS1: Configuración del servidor principal	54
Ilustración 59. Switch DLS1: Suspender la VLAN 434.....	55
Ilustración 60. Switch DLS1: Suspender la VLAN 434.....	55
Ilustración 61. Switch DLS2: Configuración DLS2 en modo VTP	56
Ilustración 62. Switch DLS2: Suspendiendo VLAN.....	56
Ilustración 63. Switch DLS2: Suspendiendo VLAN.....	57
Ilustración 64. Switch DLS2: Se crea el nombre de CONTABILIDAD.....	57
Ilustración 65. Switch DLS1: Configuración como Spanning tree root.....	58
Ilustración 66. Switch DLS2: Configuración como Spanning tree root.....	58

Ilustración 67. Switch DLS1: Configuración los puertos.....	59
Ilustración 68. Switch DLS2: Configuración los puertos.....	59
Ilustración 69. Switch ALS1: Configuración los puertos.....	60
Ilustración 70. Switch ALS1: Configuración los puertos.....	60
Ilustración 71. Switch DLS1: Configuración de interfaces.....	61
Ilustración 72. Switch DLS2: Configuración de interfaces.....	62
Ilustración 73. Switch ALS1: Configuración de interfaces.....	62
Ilustración 74. Switch ALS1: Configuración de interfaces.....	63
Ilustración 75. Switch DLS1: Verificación la existencia de las VLAN	63
Ilustración 76. Switch DLS2: Verificación la existencia de las VLAN	64
Ilustración 77. Switch ALS1: Verificación la existencia de las VLAN	64
Ilustración 78. Switch ALS2: Verificación la existencia de las VLAN	65
Ilustración 79. Switch DLS1: Verificación.....	65
Ilustración 80. Switch DLS1: Verificación.....	66
Ilustración 81. Switch DLS1: Configuración de Spanning tree	66
Ilustración 82. Switch DLS1: Configuración de Spanning tree	67
Ilustración 83. Switch DLS2: Configuración de Spanning tree	67
Ilustración 84. Switch DLS2: Configuración de Spanning tree	68
Ilustración 85. Switch ALS1: Configuración de Spanning tree	68
Ilustración 86. Switch ALS1: Configuración de Spanning tree	69
Ilustración 87. Switch ALS2: Configuración de Spanning tree	69
Ilustración 88. Switch ALS2: Configuración de Spanning tree	70

LISTA DE TABLAS

Tabla 1. Configuración en el servidor principal las siguientes VLAN	54
Tabla 2. Configuraciones de las interfaces como puertos de acceso	61

GLOSARIO

CISCO CCNP: La Certificación Cisco Certified Network Professional (CCNP) te aprueba la habilidad para planificar, implementar, verificar y resolver problemas de redes locales. De igual forma te permite trabajar en colaboración con especialistas en soluciones avanzadas de seguridad, voz, Wireless y video.

Digitization: Migrar del mundo físico al digital. Esto incluye no solamente documentos y procesos de negocio, sino el negocio en sí: mostrar y vender productos en una tienda en línea, tener el historial de sus clientes en tiempo real, ofrecer servicios en Internet.

EIGRP: es una versión mejorada de IGRP. La tecnología de vector de igual distancia que se usa en IGRP también se emplea en EIGRP. Además, la información de la distancia subyacente no presenta cambios

CONECTIVIDAD: Es la capacidad de establecer una conexión: una comunicación, un vínculo. El concepto suele aludir a la disponibilidad que tiene de un dispositivo para ser conectado a otro o a una red.

IGRP utiliza la tecnología de ruteo del vector de distancia. El concepto es que cada Router no necesita conocer todas las relaciones del Router/del link para toda la red. Cada Router anuncia destinos con una distancia correspondiente. Cada Router que escucha la información ajusta la distancia y la propaga a los Routers vecinos.

SWITCH: El switch es uno de los componentes fundamentales en el desarrollo de Internet. Funciona como lo hacían los conmutadores telefónicos: recibe paquetes de datos y los direcciona al destinatario correcto.

VTP: Se emplea para centralizar en un solo switch la administración de VLANS

VLAN: Red de área local virtual, hace referencia a una red de área local enlazada de manera lógica (no física) Enrutamiento

ACCESS POINT: Es un dispositivo que habilita la conexión inalámbrica. El módem que le ofrece su proveedor de Internet, es un Access Point.

PROTOCOLOS DE ENRUTAMIENTO: Conjunto de reglas utilizadas por el Router cuando se comunica con otro Router con el fin de compartir información y tablas de enrutamiento.

SERVER: Un servidor es una computadora con altos niveles de almacenamiento y procesamiento. En él, las organizaciones instalan y ejecutan sistemas y servicios como los de facturación, recursos humanos y aplicaciones de colaboración.

PACKET TRACER: es un software desarrollado por cisco que permite la simulación de redes.

ROUTER: Los switches conectan los dispositivos en una red, y los Routers conectan diferentes redes. Son dispositivos que crean los caminos para que viajen los datos y eligen las mejores rutas para que la información se transmita de forma rápida y segura.

RESUMEN

En el presente proyecto encontraremos el desarrollo de dos escenarios planteados para la prueba de habilidades prácticas de diplomado de profundización CISCO CCNP, con el fin y propósito de poner en práctica cada una de las actividades desarrolladas en el curso, y afianzar nuestro conocimiento.

El escenario 1 es una red para una empresa de confecciones que posee tres sucursales distribuidas en las ciudades de Bogotá, Medellín y Bucaramanga, en donde el estudiante será el administrador de la red, el cual deberá configurar e interconectar entre sí cada uno de los dispositivos que forman parte del escenario, acorde con los lineamientos establecidos para el direccionamiento IP, protocolos de enrutamiento y demás aspectos que forman parte de la topología de red.

Y en el escenario 2 es una red para empresa de comunicaciones, presenta una estructura Core acorde a la topología de red, en donde el estudiante será el administrador de la red, el cual deberá configurar e interconectar entre sí cada uno de los dispositivos que forman parte del escenario, acorde con los lineamientos establecidos para el direccionamiento IP, etherchannels, VLANs y demás aspectos que forman parte del escenario propuesto.

PALABRAS CLAVE: Red, CCNP, Vlans, Cisco, conectividad, Switch, Router, enrutamiento, EBGp, VTP, Escenarios, Packet Tracer

ABSTRACT

In this project we will find the development of two scenarios proposed for the practical skills test of the CISCO CCNP deepening diploma, with the purpose and purpose of putting into practice each of the activities developed in the course, and strengthening our knowledge.

Scenario 1 is a network for a clothing company that has three branches distributed in the cities of Bogotá, Medellín and Bucaramanga, where the student will be the administrator of the network, which must configure and interconnect each of the devices that are part of the scenario, according to the established guidelines for IP addressing, routing protocols and other aspects that are part of the network topology.

And in scenario 2 it is a network for a communications company, it presents a Core structure according to the network topology, where the student will be the administrator of the network, which must configure and interconnect each of the devices that form part of the scenario, according to the established guidelines for

IP addressing, etherchannels, VLANs and other aspects that are part of the proposed scenario.

KEY WORDS: Network, CCNP, Vlans, Cisco, connectivity, Switch, Router, routing, EBGP, VTP, Scenarios, Packet Tracer.

INTRODUCCION

En el siguiente documento se encuentran desarrollados los dos escenarios planteados en la guía de habilidades prácticas del curso de profundización CISCO CCNP.

En el escenario 1 se trabajó en una red para una empresa de confecciones posee tres sucursales, se instalará los debidos equipos y enrutamientos necesarios para que esta funcione de acuerdo a el número de sedes trabajadas, y en el escenario 2 se trabajó en una red una empresa de comunicaciones presenta una estructura Core acorde a la topología de red, se instalará las medidas y dispositivos necesarios para que la red trabaje ejemplarmente.

1. DESARROLLO

1.1. Prueba de habilidades - Escenario 1

Una empresa de confecciones posee tres sucursales distribuidas en las ciudades de Bogotá, Medellín y Bucaramanga, en donde el estudiante será el administrador de la red, el cual deberá configurar e interconectar entre sí cada uno de los dispositivos que forman parte del escenario, acorde con los lineamientos establecidos para el direccionamiento IP, protocolos de enrutamiento y demás aspectos que forman parte de la topología de red.

1.1.1. Topología de red 1

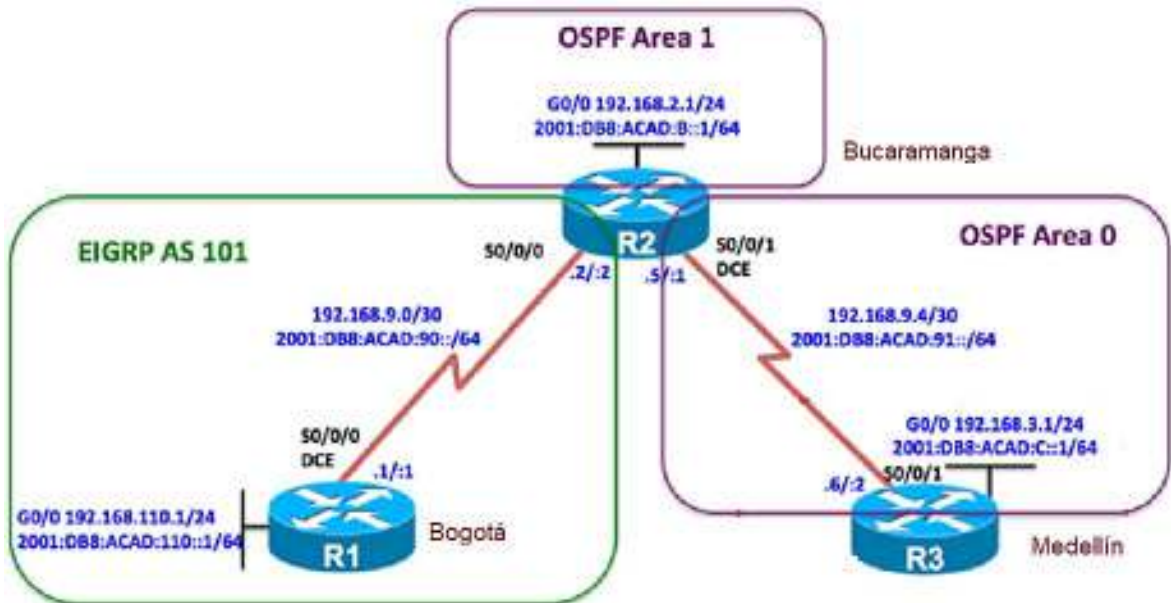


Ilustración 1. Topología de red E1

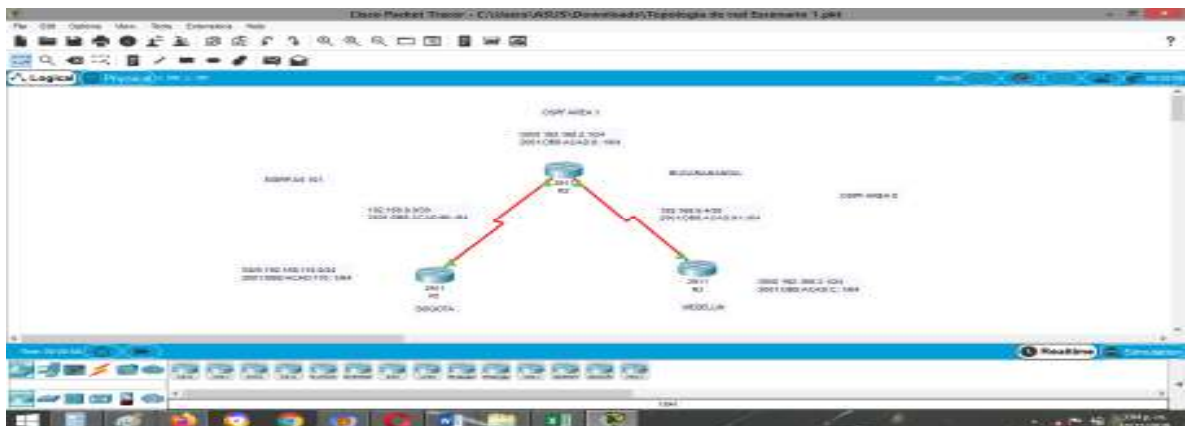


Ilustración 2. Topología de red E1 Software Packet Tracer

Configurar la topología de red, de acuerdo con las siguientes especificaciones.

Parte 1: Configuración del escenario propuesto

1. Configurar las interfaces con las direcciones IPv4 e IPv6 que se muestran en la topología de red.

```
hostname R1
ip address 10.1.1.1 24 GigabitEthernet0/0
ip address 10.1.1.2 24 GigabitEthernet0/1
ip address 10.1.1.3 24 GigabitEthernet0/2
ip address 10.1.1.4 24 GigabitEthernet0/3
ip address 10.1.1.5 24 GigabitEthernet0/4
ip address 10.1.1.6 24 GigabitEthernet0/5
ip address 10.1.1.7 24 GigabitEthernet0/6
ip address 10.1.1.8 24 GigabitEthernet0/7
ip address 10.1.1.9 24 GigabitEthernet0/8
ip address 10.1.1.10 24 GigabitEthernet0/9
ip address 10.1.1.11 24 GigabitEthernet0/10
ip address 10.1.1.12 24 GigabitEthernet0/11
ip address 10.1.1.13 24 GigabitEthernet0/12
ip address 10.1.1.14 24 GigabitEthernet0/13
ip address 10.1.1.15 24 GigabitEthernet0/14
ip address 10.1.1.16 24 GigabitEthernet0/15
ip address 10.1.1.17 24 GigabitEthernet0/16
ip address 10.1.1.18 24 GigabitEthernet0/17
ip address 10.1.1.19 24 GigabitEthernet0/18
ip address 10.1.1.20 24 GigabitEthernet0/19
ip address 10.1.1.21 24 GigabitEthernet0/20
ip address 10.1.1.22 24 GigabitEthernet0/21
ip address 10.1.1.23 24 GigabitEthernet0/22
ip address 10.1.1.24 24 GigabitEthernet0/23
ip address 10.1.1.25 24 GigabitEthernet0/24
ip address 10.1.1.26 24 GigabitEthernet0/25
ip address 10.1.1.27 24 GigabitEthernet0/26
ip address 10.1.1.28 24 GigabitEthernet0/27
ip address 10.1.1.29 24 GigabitEthernet0/28
ip address 10.1.1.30 24 GigabitEthernet0/29
ip address 10.1.1.31 24 GigabitEthernet0/30
```

Ilustración 3. R1: Configuración

```
hostname R2
ip address 10.1.1.1 24 GigabitEthernet0/0
ip address 10.1.1.2 24 GigabitEthernet0/1
ip address 10.1.1.3 24 GigabitEthernet0/2
ip address 10.1.1.4 24 GigabitEthernet0/3
ip address 10.1.1.5 24 GigabitEthernet0/4
ip address 10.1.1.6 24 GigabitEthernet0/5
ip address 10.1.1.7 24 GigabitEthernet0/6
ip address 10.1.1.8 24 GigabitEthernet0/7
ip address 10.1.1.9 24 GigabitEthernet0/8
ip address 10.1.1.10 24 GigabitEthernet0/9
ip address 10.1.1.11 24 GigabitEthernet0/10
ip address 10.1.1.12 24 GigabitEthernet0/11
ip address 10.1.1.13 24 GigabitEthernet0/12
ip address 10.1.1.14 24 GigabitEthernet0/13
ip address 10.1.1.15 24 GigabitEthernet0/14
ip address 10.1.1.16 24 GigabitEthernet0/15
ip address 10.1.1.17 24 GigabitEthernet0/16
ip address 10.1.1.18 24 GigabitEthernet0/17
ip address 10.1.1.19 24 GigabitEthernet0/18
ip address 10.1.1.20 24 GigabitEthernet0/19
ip address 10.1.1.21 24 GigabitEthernet0/20
ip address 10.1.1.22 24 GigabitEthernet0/21
ip address 10.1.1.23 24 GigabitEthernet0/22
ip address 10.1.1.24 24 GigabitEthernet0/23
ip address 10.1.1.25 24 GigabitEthernet0/24
ip address 10.1.1.26 24 GigabitEthernet0/25
ip address 10.1.1.27 24 GigabitEthernet0/26
ip address 10.1.1.28 24 GigabitEthernet0/27
ip address 10.1.1.29 24 GigabitEthernet0/28
ip address 10.1.1.30 24 GigabitEthernet0/29
ip address 10.1.1.31 24 GigabitEthernet0/30
```

Ilustración 4. R2: Configuración

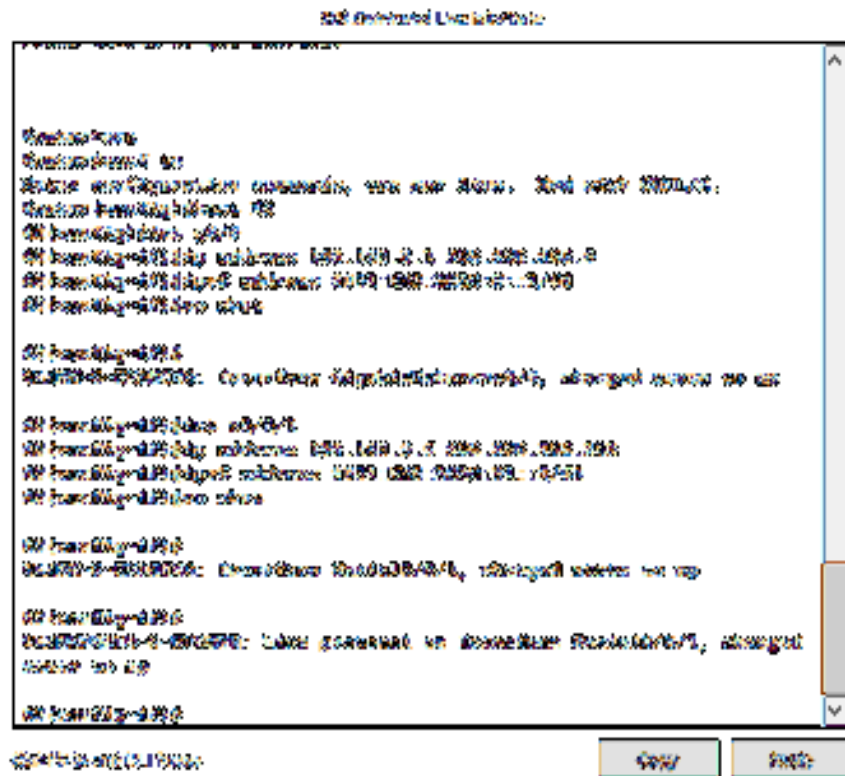


Ilustración 5. R3: Configuración

2. Ajustar el ancho de banda a 128 kbps sobre cada uno de los enlaces seriales ubicados en R1, R2, y R3 y ajustar la velocidad de reloj de las conexiones de DCE según sea apropiado.

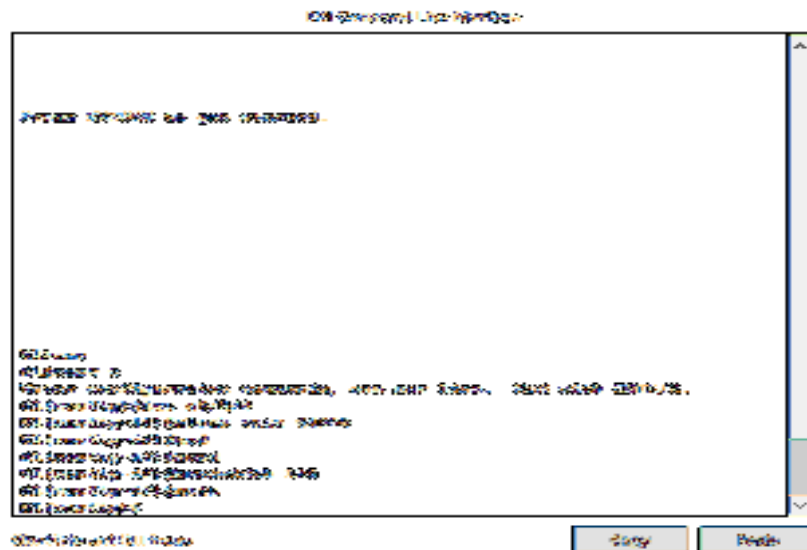
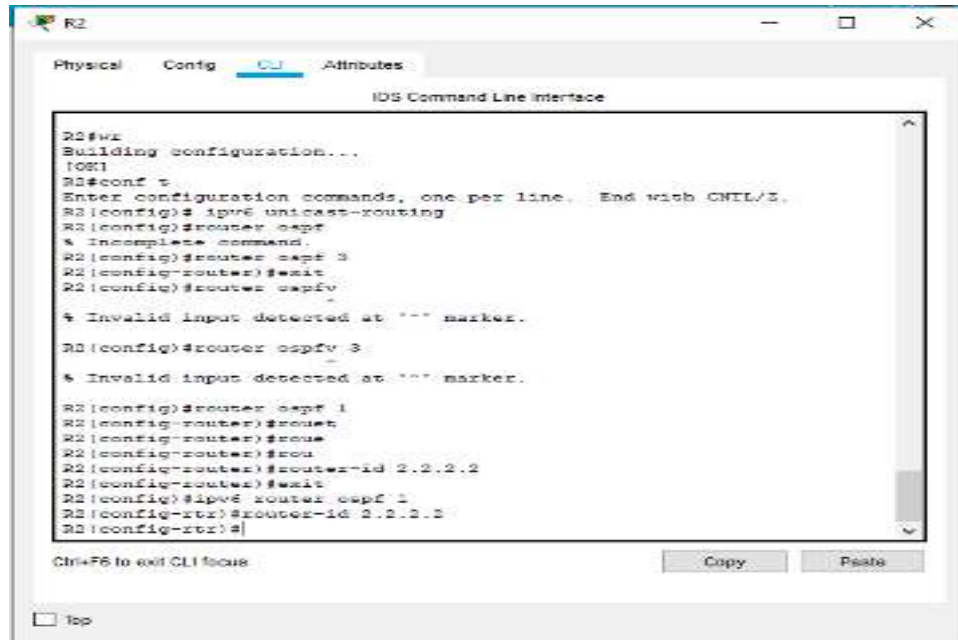


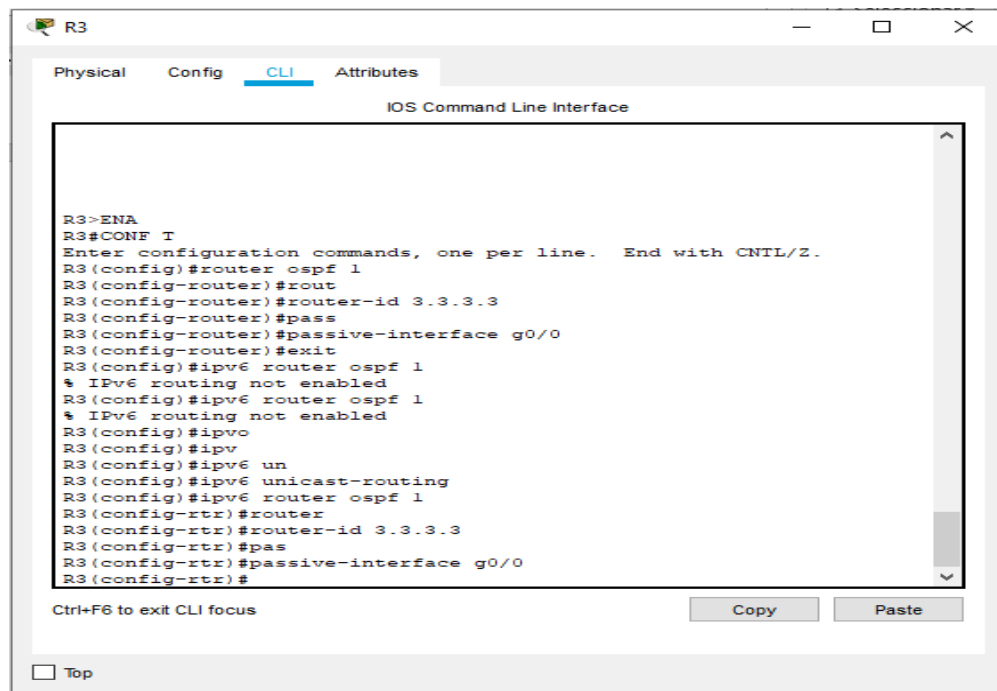
Ilustración 6. R1: Ajuste de banda

3. En R2 y R3 configurar las familias de direcciones OSPFv3 para IPv4 e IPv6. Utilice el identificador de enrutamiento 2.2.2.2 en R2 y 3.3.3.3 en R3 para ambas familias de direcciones.



```
R2#wa
Building configuration...
[OK]
R2#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R2(config)# ipv6 unicast-routing
R2(config)#router ospf
% Incomplete command.
R2(config)#router ospf 3
R2(config-router)#exit
R2(config)#router ospfv3
% Invalid input detected at '^' marker.
R2(config)#router ospfv3 3
% Invalid input detected at '^' marker.
R2(config)#router ospf 1
R2(config-router)#router
R2(config-router)#route
R2(config-router)#rou
R2(config-router)#router-id 2.2.2.2
R2(config-router)#exit
R2(config)#ipv6 router ospf 1
R2(config-rtr)#router-id 2.2.2.2
R2(config-rtr)#
```

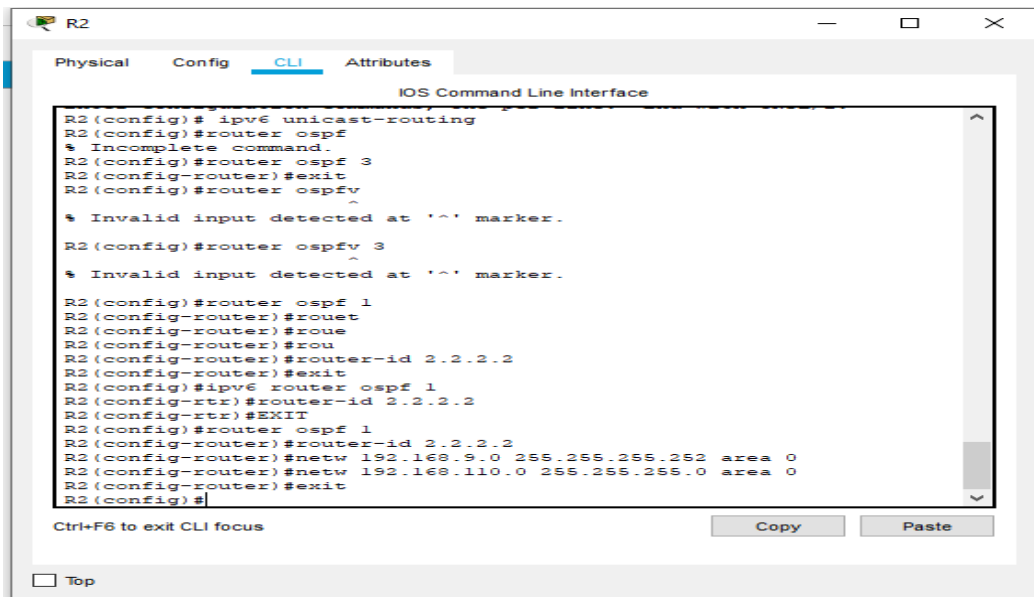
Ilustración 9. R2: Configuración de direcciones OSPFv3



```
R3>ENA
R3#CONF T
Enter configuration commands, one per line. End with CNTL/Z.
R3(config)#router ospf 1
R3(config-router)#rout
R3(config-router)#router-id 3.3.3.3
R3(config-router)#pass
R3(config-router)#passive-interface g0/0
R3(config-router)#exit
R3(config)#ipv6 router ospf 1
% IPv6 routing not enabled
R3(config)#ipv6 router ospf 1
% IPv6 routing not enabled
R3(config)#ipvo
R3(config)#ipv
R3(config)#ipv6 un
R3(config)#ipv6 unicast-routing
R3(config)#ipv6 router ospf 1
R3(config-rtr)#router
R3(config-rtr)#router-id 3.3.3.3
R3(config-rtr)#pas
R3(config-rtr)#passive-interface g0/0
R3(config-rtr)#
```

Ilustración 10. R2: Configuración de direcciones OSPF

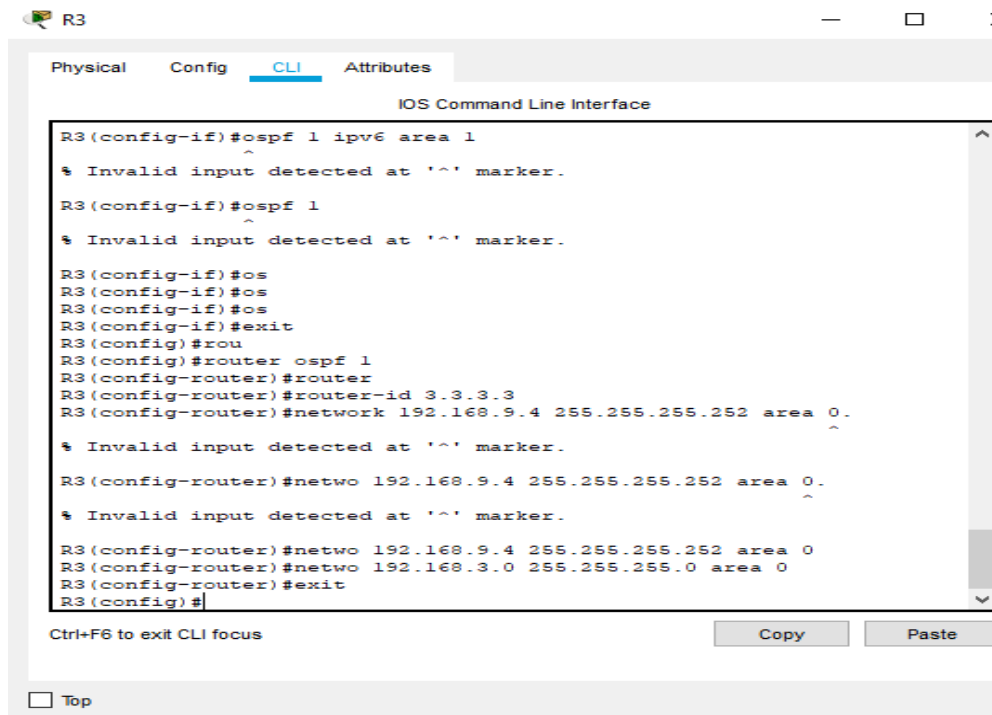
4. En R2, configurar la interfaz F0/0 en el área 1 de OSPF y la conexión serial entre R2 y R3 en OSPF área 0.



The screenshot shows the CLI of router R2. The user is in configuration mode. The commands entered are: `ipv6 unicast-routing`, `router ospf` (with an error), `router ospf 3` (with an error), `router ospfv 3` (with an error), `router ospf 1`, `router-id 2.2.2.2`, `exit`, `router ospf 1`, `router-id 2.2.2.2`, `EXIT`, `router ospf 1`, `router-id 2.2.2.2`, `netw 192.168.9.0 255.255.255.252 area 0`, `netw 192.168.110.0 255.255.255.0 area 0`, and `exit`. The prompt returns to `R2(config)#`.

Ilustración 11. R2: Configuración de la interfaz F0/0

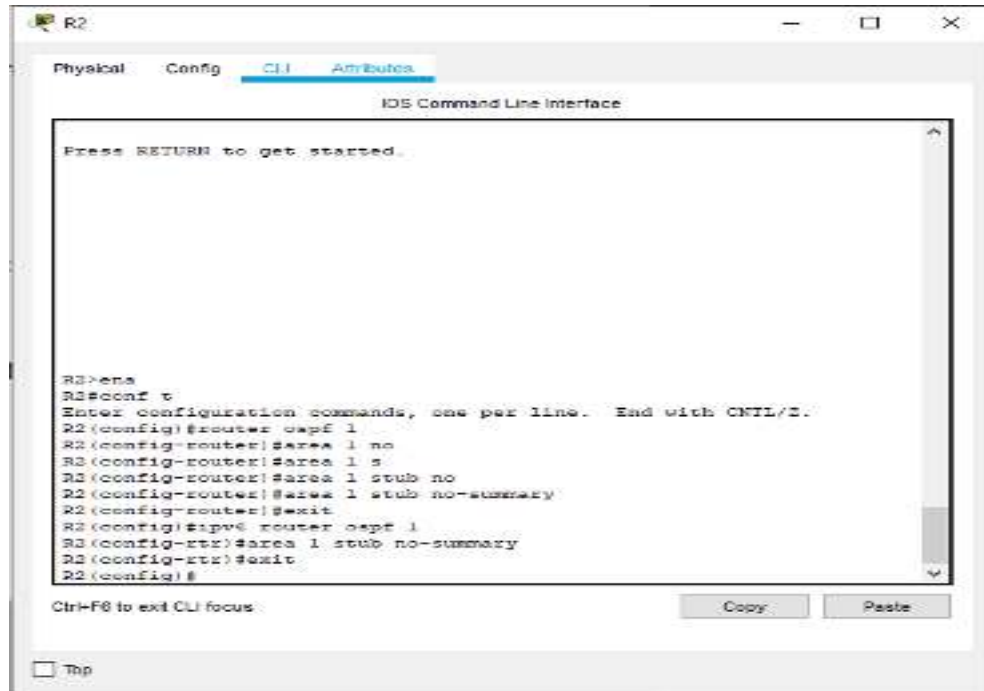
5. En R3, configurar la interfaz F0/0 y la conexión serial entre R2 y R3 en OSPF área 0.



The screenshot shows the CLI of router R3. The user is in configuration mode. The commands entered are: `ospf 1 ipv6 area 1` (with an error), `ospf 1` (with an error), `os`, `os`, `os`, `exit`, `router ospf 1`, `router-id 3.3.3.3`, `network 192.168.9.4 255.255.255.252 area 0` (with an error), `network 192.168.9.4 255.255.255.252 area 0` (with an error), `network 192.168.9.4 255.255.255.252 area 0`, `network 192.168.3.0 255.255.255.0 area 0`, and `exit`. The prompt returns to `R3(config)#`.

Ilustración 12. R3: Configuración de la interfaz F0/0

6. Configurar el área 1 como un área totalmente Stubby.

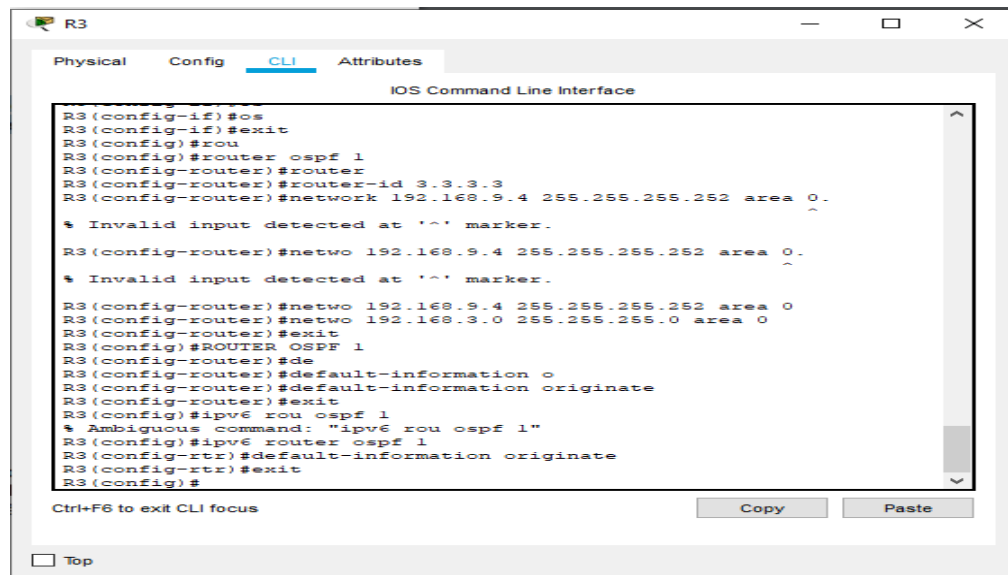


```
R2
Physical Config CLI Attributes
IOS Command Line Interface
Press RETURN to get started.

R2>ena
R2#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R2(config)#router ospf 1
R2(config-router)#area 1 no
R2(config-router)#area 1 s
R2(config-router)#area 1 stub no
R2(config-router)#area 1 stub no-summary
R2(config-router)#exit
R2(config)#ipv6 router ospf 1
R2(config-rtr)#area 1 stub no-summary
R2(config-rtr)#exit
R2(config)#
```

Ilustración 13. R2: Configuración en A

7. Propagar rutas por defecto de IPv4 y IPv6 en R3 al interior del dominio OSPFv3. Nota: Es importante tener en cuenta que una ruta por defecto es diferente a la definición de rutas estáticas.

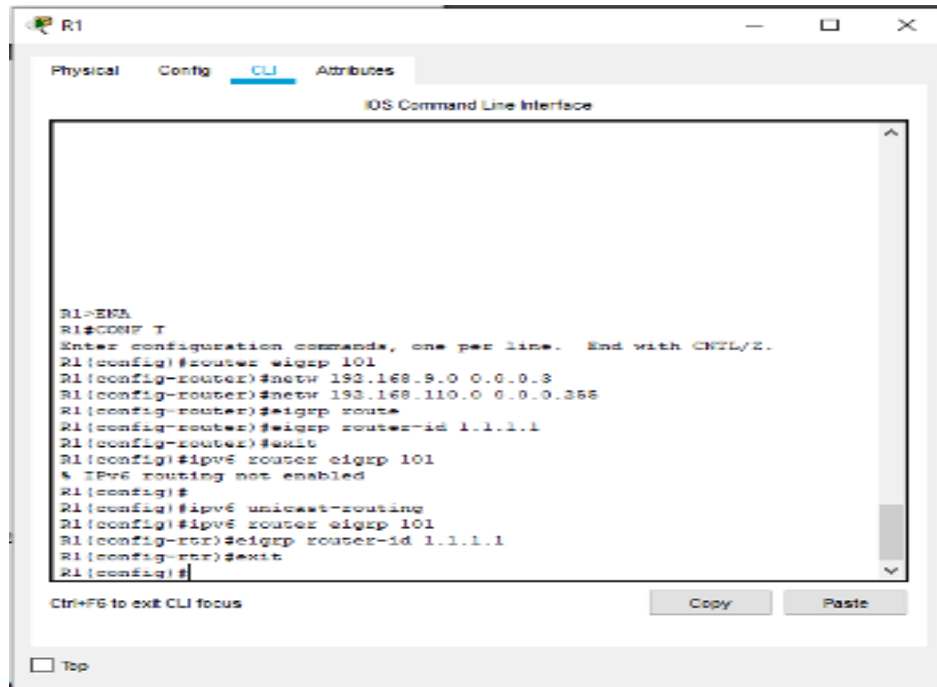


```
R3
Physical Config CLI Attributes
IOS Command Line Interface

R3(config-if)#os
R3(config-if)#exit
R3(config)#rou
R3(config)#router ospf 1
R3(config-router)#router
R3(config-router)#router-id 3.3.3.3
R3(config-router)#network 192.168.9.4 255.255.255.252 area 0.
% Invalid input detected at '^' marker.
R3(config-router)#netwo 192.168.9.4 255.255.255.252 area 0.
% Invalid input detected at '^' marker.
R3(config-router)#netwo 192.168.9.4 255.255.255.252 area 0
R3(config-router)#netwo 192.168.3.0 255.255.255.0 area 0
R3(config-router)#exit
R3(config)#ROUTER OSPF 1
R3(config-router)#de
R3(config-router)#default-information o
R3(config-router)#default-information originate
R3(config-router)#exit
R3(config)#ipv6 rou ospf 1
% Ambiguous command: "ipv6 rou ospf 1"
R3(config)#ipv6 router ospf 1
R3(config-rtr)#default-information originate
R3(config-rtr)#exit
R3(config)#
```

Ilustración 14. R3: Configuración de ru

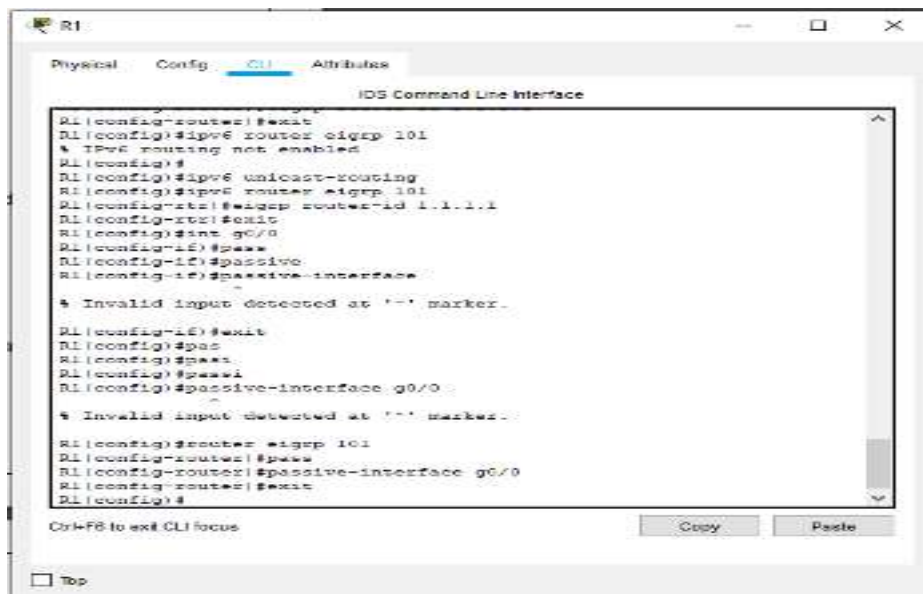
- Realizar la configuración del protocolo EIGRP para IPv4 como IPv6. Configurar la interfaz F0/0 de R1 y la conexión entre R1 y R2 para EIGRP con el sistema autónomo 101. Asegúrese de que el resumen automático está desactivado.



```
R1>ENA
R1#CONF T
Enter configuration commands, one per line. End with CNTL/Z.
R1(config)#router eigrp 101
R1(config-router)#network 192.168.9.0 0.0.0.3
R1(config-router)#network 192.168.110.0 0.0.0.355
R1(config-router)#eigrp route
R1(config-router)#eigrp router-id 1.1.1.1
R1(config-router)#exit
R1(config)#ipv6 router eigrp 101
% IPv6 routing not enabled
R1(config)#
R1(config)#ipv6 unicast-routing
R1(config)#ipv6 router eigrp 101
R1(config-rtr)#eigrp router-id 1.1.1.1
R1(config-rtr)#exit
R1(config)#
```

Ilustración 15. R1: configuración del protocolo EIGRP

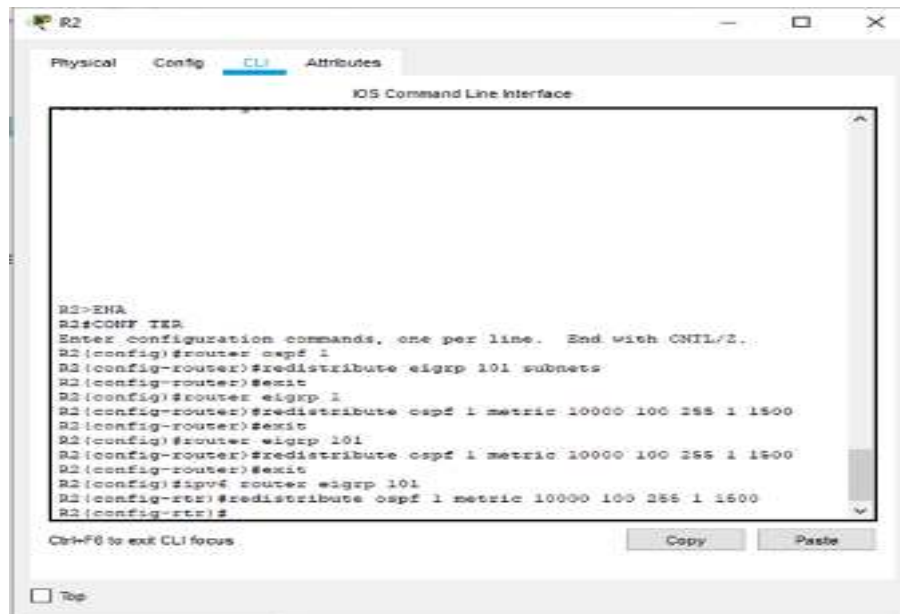
- Configurar las interfaces pasivas para EIGRP según sea apropiado.



```
R1(config-router)#exit
R1(config)#ipv6 router eigrp 101
% IPv6 routing not enabled
R1(config)#
R1(config)#ipv6 unicast-routing
R1(config)#ipv6 router eigrp 101
R1(config-rtr)#eigrp router-id 1.1.1.1
R1(config-rtr)#exit
R1(config)#int g0/0
R1(config-if)#pass
R1(config-if)#passive
R1(config-if)#passive-interface
% Invalid input detected at '^' marker.
R1(config-if)#exit
R1(config)#pas
R1(config)#pass
R1(config)#passi
R1(config)#passive-interface g0/0
% Invalid input detected at '^' marker.
R1(config)#router eigrp 101
R1(config-router)#pass
R1(config-router)#passive-interface g0/0
R1(config-router)#exit
R1(config)#
```

Ilustración 16. R1: Configuración de las interfaces EIGRP

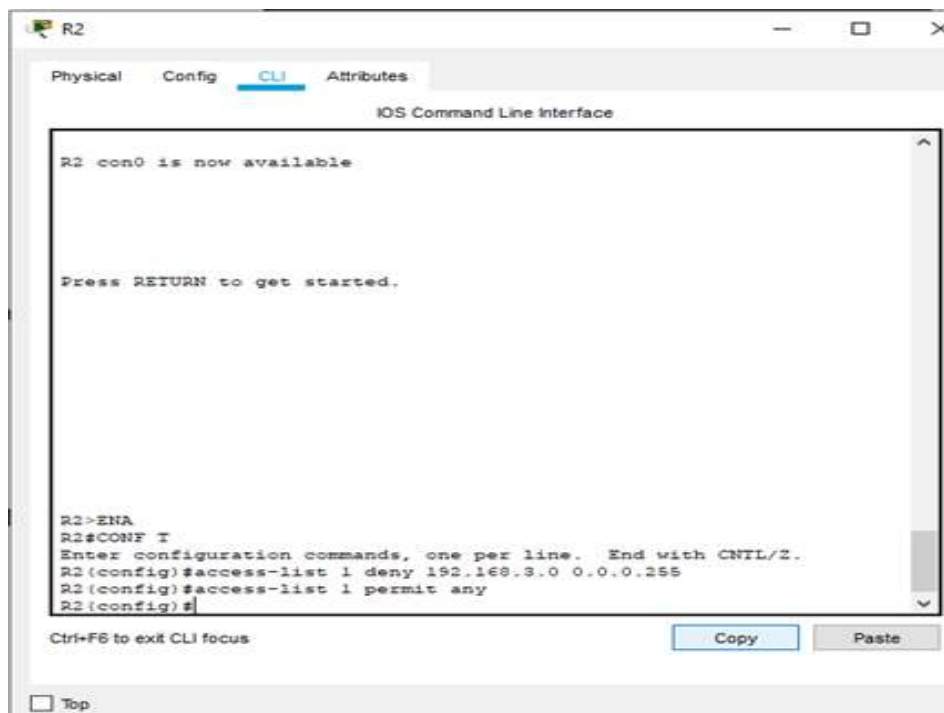
10. En R2, configurar la redistribución mutua entre OSPF y EIGRP para IPv4 e IPv6. Asignar métricas apropiadas cuando sea necesario.



```
R2>ENA
R2#CONF T
Enter configuration commands, one per line. End with CNTL/Z.
R2(config)#router ospf 1
R2(config-router)#redistribute eigrp 101 subnets
R2(config-router)#exit
R2(config)#router eigrp 1
R2(config-router)#redistribute ospf 1 metric 10000 100 255 1 1500
R2(config-router)#exit
R2(config)#router ospf 1
R2(config-router)#redistribute eigrp 1 metric 10000 100 255 1 1500
R2(config-router)#exit
R2(config)#ipv6 router eigrp 101
R2(config-rtt)#redistribute ospf 1 metric 10000 100 255 1 1500
R2(config-rtt)#
```

Ilustración 17. R2: Configuración entre OSPF y EIGRP

11. En R2, de hacer publicidad de la ruta 192.168.3.0/24 a R1 mediante una lista de distribución y ACL.



```
R2 con0 is now available

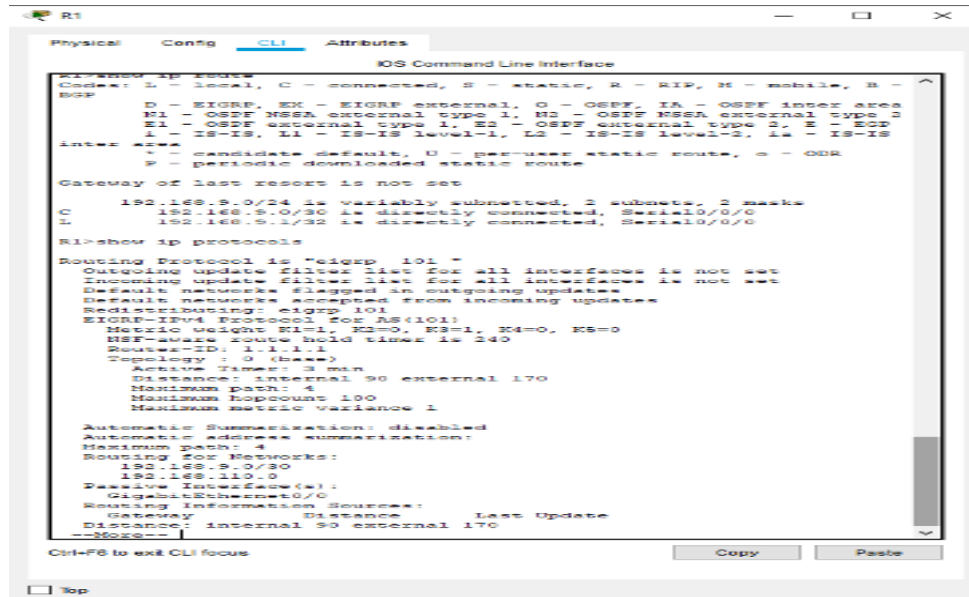
Press RETURN to get started.

R2>ENA
R2#CONF T
Enter configuration commands, one per line. End with CNTL/Z.
R2(config)#access-list 1 deny 192.168.3.0 0.0.0.255
R2(config)#access-list 1 permit any
R2(config)#
```

Ilustración 18. R2: Publicidad de la rut

Parte 2: Verificar conectividad de red y control de la trayectoria.

- Registrar las tablas de enrutamiento en cada uno de los Routers, acorde con los parámetros de configuración establecidos en el escenario propuesto.



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

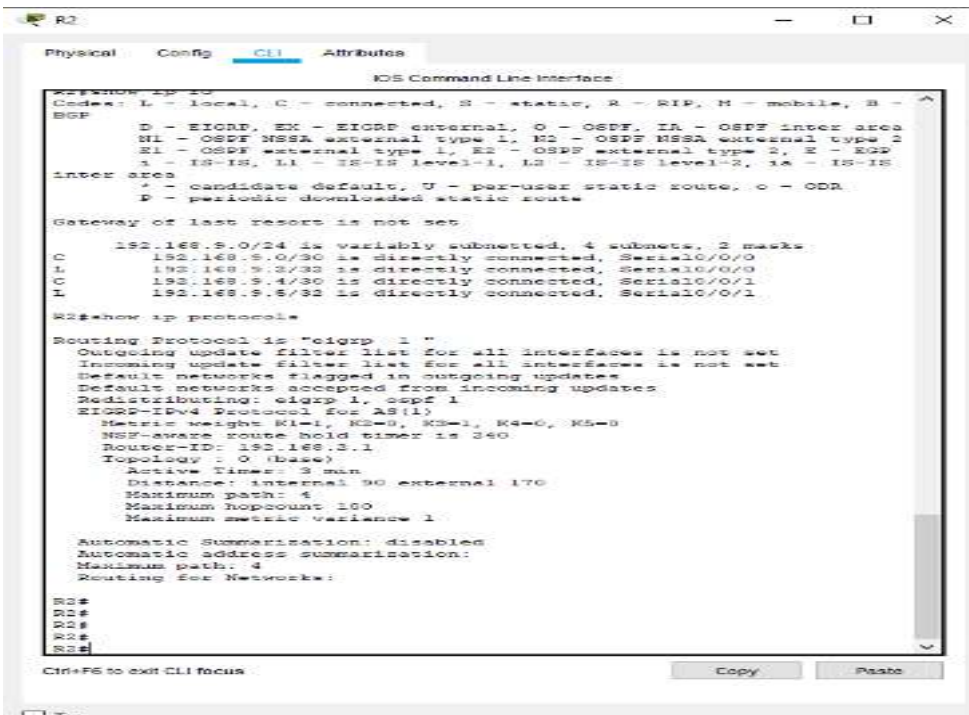
192.168.9.0/24 is variably subnetted, 2 subnets, 2 masks
C
192.168.9.0/30 is directly connected, Serial0/0/0
L
192.168.9.1/32 is directly connected, Serial0/0/0

R1>show ip protocols

Routing Protocol is "eigrp 101"
  Outgoing update filter list for all interfaces is not set
  Incoming update filter list for all interfaces is not set
  Default networks flagged in outgoing updates
  Default networks accepted from incoming updates
  Redistributing: eigrp 101
  EIGRP-IPv4 Protocol for AS(101)
    Metric weight K1=1, K2=0, K3=1, K4=0, K5=0
    NSF-aware route hold timer is 340
    Router-ID: 1.1.1.1
    Topology: 0 (base)
    Active timer: 3 min
    Distance: internal 90 external 170
    Maximum path: 4
    Maximum hopcount 100
    Maximum metric variance 1

  Automatic Summarization: disabled
  Automatic address summarization:
  Maximum path: 4
  Routing for Networks:
    192.168.9.0/30
    192.168.1.0/24
  Passive Interface(s):
  Routing Information Sources:
    Gateway of last resort: not set
    Distance: internal 90 external 170
  --More--
Ctrl-F6 to exit CLI focus
```

Ilustración 19. R1: Enrutamiento



```
R2>show ip route
Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B -
BGP
D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
E1 - EIGP
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

192.168.9.0/24 is variably subnetted, 4 subnets, 2 masks
C
192.168.9.0/30 is directly connected, Serial0/0/0
L
192.168.9.2/32 is directly connected, Serial0/0/0
C
192.168.9.4/30 is directly connected, Serial0/0/1
L
192.168.9.5/32 is directly connected, Serial0/0/1

R2#show ip protocols

Routing Protocol is "eigrp 1"
  Outgoing update filter list for all interfaces is not set
  Incoming update filter list for all interfaces is not set
  Default networks flagged in outgoing updates
  Default networks accepted from incoming updates
  Redistributing: eigrp 1, ospf 1
  EIGRP-IPv4 Protocol for AS(1)
    Metric weight K1=1, K2=0, K3=1, K4=0, K5=0
    NSF-aware route hold timer is 340
    Router-ID: 192.168.3.1
    Topology: 0 (base)
    Active timer: 3 min
    Distance: internal 90 external 170
    Maximum path: 4
    Maximum hopcount 100
    Maximum metric variance 1

  Automatic Summarization: disabled
  Automatic address summarization:
  Maximum path: 4
  Routing for Networks:

R2#
R2#
R2#
R2#
R2#
Ctrl-F6 to exit CLI focus
```

Ilustración 20. R2: Enrutamiento

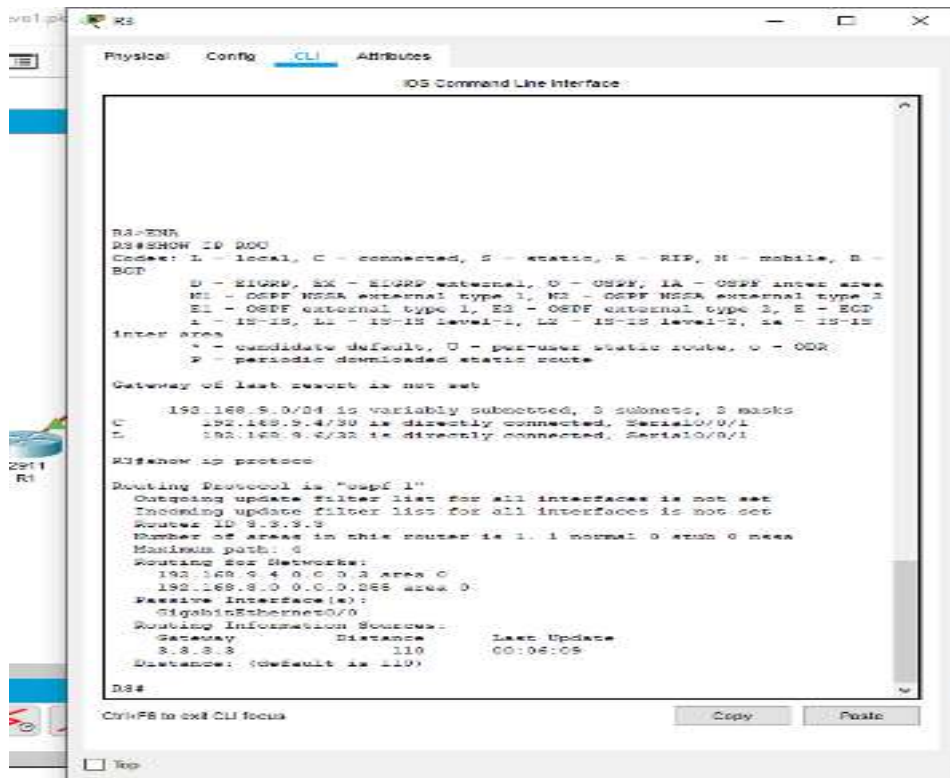


Ilustración 21. R2: Enrutamiento

b) Verificar comunicación entre Routers mediante el comando ping y traceroute

Router 1

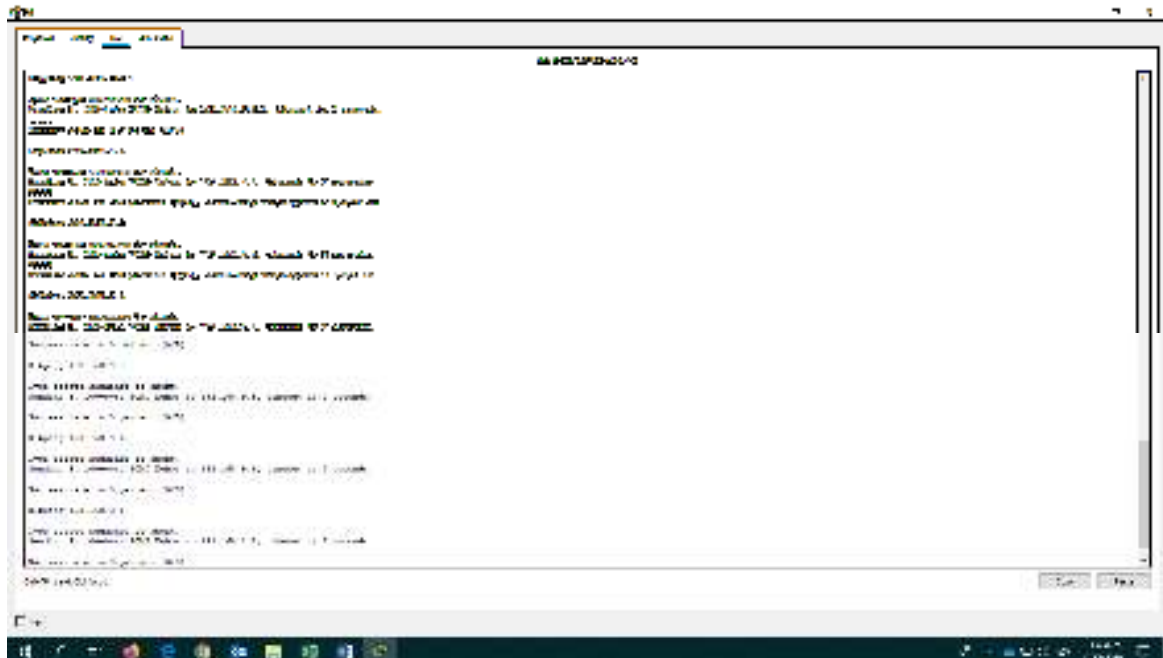
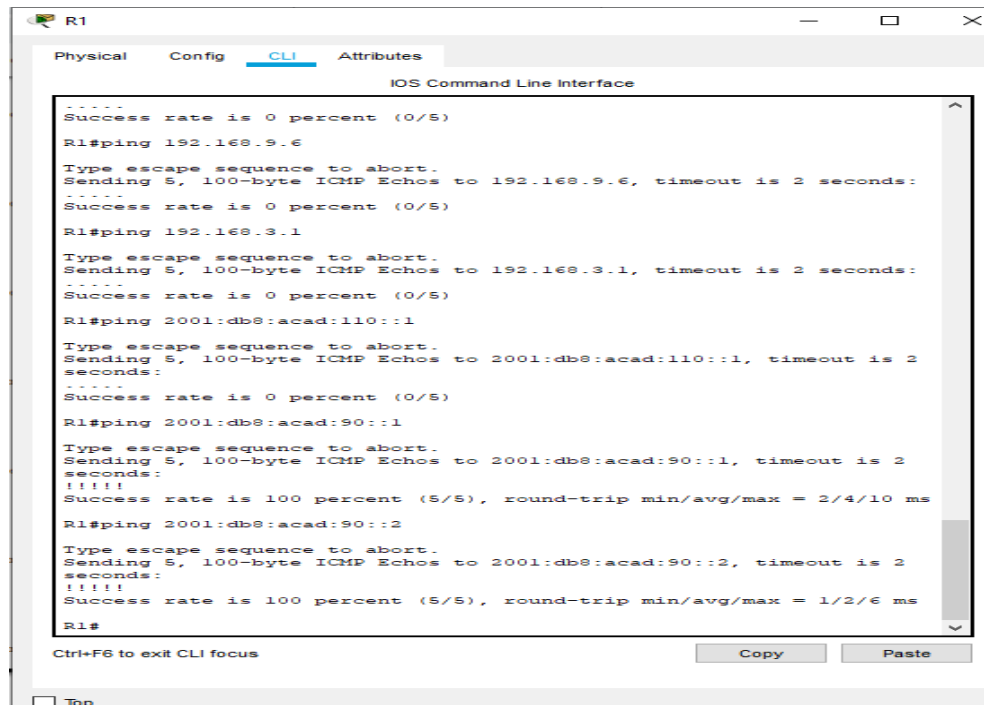


Ilustración 22.R1: Comprobando comunicación

- c) Verificar que las rutas filtradas no están presentes en las tablas de enrutamiento de los Routers correctas.



```
R1
Physical Config CLI Attributes
IOS Command Line Interface
.....
Success rate is 0 percent (0/5)
R1#ping 192.168.9.6
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 192.168.9.6, timeout is 2 seconds:
.....
Success rate is 0 percent (0/5)
R1#ping 192.168.3.1
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 192.168.3.1, timeout is 2 seconds:
.....
Success rate is 0 percent (0/5)
R1#ping 2001:db8:acad:110::1
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 2001:db8:acad:110::1, timeout is 2 seconds:
.....
Success rate is 0 percent (0/5)
R1#ping 2001:db8:acad:90::1
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 2001:db8:acad:90::1, timeout is 2 seconds:
!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 2/4/10 ms
R1#ping 2001:db8:acad:90::2
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 2001:db8:acad:90::2, timeout is 2 seconds:
!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 1/2/6 ms
R1#
```

Ilustración 23. R2: Comprobacione

1.1.2. ESCENARIO COMANDOS 1

```
router#ena
router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
router(config)#host R1
R1(config)#int g0/0
R1(config-if)#ip add 192.168.110.1 255.255.255.0
R1(config-if)#ipv6 add 2001:DB8:ACAD:110::1/64
R1(config-if)#NO SHUT
R1(config-if)#EXIT
R1(config)#INT S0/0/0
R1(config-if)#IP ADD 192.168.9.1 255.255.255.252
R1(config-if)#IPV6 ADD 2001:DB8:ACAD:90::1/64
R1(config-if)#NO SHUT
R1(config-if)#EXIT
R1(config)#INT S0/0/0
R1(config-if)#CLOC RATE 64000
R1(config-if)#BAND 128
R1(config-if)#EXIT
R1(config)#ROUTER EIGRP 101
R1(config-router)#NETW 192.168.9.0 0.0.0.3
R1(config-router)#NETW 192.168.110.0 0.0.0.255
R1(config-router)#EIGRP ROUTE
% Incomplete command.
R1(config-router)#eigrp router-id 1.1.1.1
R1(config-router)#exi
```

```

R1(config)#ipv6 router eigrp 101
R1(config-rtr)#eigrp router-id 1.1.1.1
R1(config-rtr)#exit
R1(config)#int g0/0
R1(config-if)#pass
R1(config-if)#passive
R1(config-if)#passive-interface
^
% Invalid input detected at '^' marker.
R1(config-if)#passive-interfaceexit
^
% Invalid input detected at '^' marker.
R1(config-if)#exit
R1(config)#router eigrp 101
R1(config-router)#pass
R1(config-router)#passive-interface g0/0
R1(config-router)#exit
R1(config)#

```

R1#SHOW IP ROU

Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP
D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
* - candidate default, U - per-user static route, o - ODR

P - periodic downloaded static route

Gateway of last resort is not set

192.168.9.0/24 is variably subnetted, 2 subnets, 2 masks

C 192.168.9.0/30 is directly connected, Serial0/0/0

L 192.168.9.1/32 is directly connected, Serial0/0/0

R1#PING 192.168.110.1

Type escape sequence to abort.

Sending 5, 100-byte ICMP Echos to 192.168.110.1, timeout is 2 seconds:

.....

Success rate is 0 percent (0/5)

R1#PING 192.168.9.1

Type escape sequence to abort.

Sending 5, 100-byte ICMP Echos to 192.168.9.1, timeout is 2 seconds:

!!!!

Success rate is 100 percent (5/5), round-trip min/avg/max = 2/3/5 ms

ROUTER 2

ROUTER#CONF T

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

ROUTER(config)#HOSTNA R2

R2(config)#INT G0/0

```
R2(config-if)#IP ADD 192.168.2.1 255.255.255.0
R2(config-if)#IPV6 ADD 2001:DB8:ACAD:B::1/64
R2(config-if)#NO SHUT
R2(config-if)#EXIT
R2(config)#INT S0/0/0
R2(config-if)#IP ADD 192.168.9.2 255.255.255.252
R2(config-if)#IPV6 ADD 2001:DB8:ACAD:90::2/64
R2(config-if)#NO SHUT
R2(config-if)#EXIT
R2(config)#INT S0/0/1
R2(config-if)#IP ADD 192.168.9.5 255.255.255.252
R2(config-if)#IPV6 ADD 2001:DB8:ACAD:91::1/64
R2(config-if)#NO SHUT
R2(config-if)#EXIT
R2(config)#INT S0/0/0
R2(config-if)#BAND 128
R2(config-if)#EXIT
R2(config)#INT S0/0/1
R2(config-if)#BAND 128
R2(config-if)#CLOCK RAT 64000
R2(config-if)#EXIT
R2(config)#ROUTER OSPF 3
R2(config-router)#EXIT
R2(config)#ROUTER OSPF 1
R2(config-router)#ROUTER-ID 2.2.2.2
^
% Invalid input detected at '^' marker.
R2(config-router)#ROUTER-ID 2.2.2.2
```

```
R2(config-router)#EXIT
R2(config)#IPV6 ROUTER OSPF 1
R2(config-rtr)#ROUTER-ID 2.2.2.2
R2(config-rtr)#EXIT
R2(config)#ROUTER OSPF 1
R2(config-router)#ROUTER-ID 2.2.2.2
R2(config-router)#NET 192.168.9.0 255.255.255.252 AREA 0
R2(config-router)#NET 192.168.110.0 255.255.255.0 AREA 0
R2(config-router)#EXIT
R2(config)#ROUTER OSPF 1
R2(config-router)#AREA 1 STUB NO-SUMMA
R2(config-router)#EXIT
R2(config)#IPV6 ROUTER OSPF 1
R2(config-rtr)#AREA 1 STUB NO-SUMM
R2(config-rtr)#EXIT
R2(config)#ROUTER OSPF 1
R2(config-router)#REDISTRIBUTE EIGRP 101 SUBN
R2(config-router)#EXIT
R2(config)#ROUTER EIGRP 1
R2(config-router)#REDISTRIBUTE OSPF 1 METRIC 10000 100 255 1 1500
R2(config-router)#EXIT
R2(config)#ROUTER EIGRP 101
R2(config-router)#REDISTRIBUTE OSPF 1 METRIC 10000 100 255 1 1500
R2(config-router)#EXI
R2(config)#IPV6 ROUTER EIGRP 101
R2(config-rtr)#REDISTRIBUTE OSPF 1 METRIC 10000 100 255 1 1500
R2(config-rtr)#EXIT
R2(config)#ACCESS-LIST 1 DENY 192.168.3.0 0.0.0.255
```

```
R2(config)#ACCESS-LIST 1 PERMIT ANY
```

```
R2(config)#EXIT
```

```
R2#
```

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

```
R2#SHOW IP ROUT
```

```
Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP
```

```
D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
```

```
N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
```

```
E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
```

```
i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
```

```
* - candidate default, U - per-user static route, o - ODR
```

```
P - periodic downloaded static route
```

```
Gateway of last resort is not set
```

```
192.168.9.0/24 is variably subnetted, 4 subnets, 2 masks
```

```
C 192.168.9.0/30 is directly connected, Serial0/0/0
```

```
L 192.168.9.2/32 is directly connected, Serial0/0/0
```

```
C 192.168.9.4/30 is directly connected, Serial0/0/1
```

```
L 192.168.9.5/32 is directly connected, Serial0/0/1
```

```
R2#SHOW IP PROTOCOL
```

```
Routing Protocol is "eigrp 1 "
```

```
Outgoing update filter list for all interfaces is not set
```

```
Incoming update filter list for all interfaces is not set
```

```
Default networks flagged in outgoing updates
```


Default networks accepted from incoming updates

Redistributing: eigrp 1, ospf 1

EIGRP-IPv4 Protocol for AS(1)

Metric weight K1=1, K2=0, K3=1, K4=0, K5=0

NSF-aware route hold timer is 240

Router-ID: 192.168.2.1

Topology : 0 (base)

Active Timer: 3 min

Distance: internal 90 external 170

Maximum path: 4

Maximum hopcount 100

Maximum metric variance 1

Automatic Summarization: disabled

Automatic address summarization:

Maximum path: 4

Routing for Networks:

Routing Information Sources:

ROUTER 3

router#conf t

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

router(config)#int g0/0

router(config-if)#ip add 192.168.3.1 255.255.255.0

router(config-if)#ipv6 add 2001:DB8:ACAD:C::1/64

router(config-if)#NO SHUT

router(config-if)#EXIT

router(config)#HOST R3

R3(config)#INT S0/0/1

```
R3(config-if)#IP ADD 192.168.9.6 255.255.255.252
R3(config-if)#IPV6 ADD 2001:DB8:ACAD:91::2/64
R3(config-if)#N SHUT
R3(config-if)#EXIT
R3(config)#INT S0/0/1
R3(config-if)#BAND 128
R3(config-if)#EXIT
R3(config)#ROUTER OSPF 1
R3(config-router)#ROUTER-ID 3.3.3.3
R3(config-router)#PASSIVE-IN G0/0
R3(config-router)#EXIT
R3(config)#IPV6 ROUTER OSPF 1
R3(config-rtr)#ROUTER-ID 3.3.3.3
R3(config-rtr)#PASSIVE-IN G0/0
R3(config-rtr)#EXIT
R3(config)#ROUTER OSPF 1
R3(config-router)#ROUTER-ID 3.3.3.3
R3(config-router)#NET 192.168.9.4 255.255.255.252 AREA 0
R3(config-router)#NET 192.168.3.0 255.255.255.0 AREA 0
R3(config-router)#EXIT
R3(config)#ROUTER OSPF 1
R3(config-router)#DEFAULT
R3(config-router)#DEFAULT-information ORIGI
R3(config-router)#EXIT
R3(config)#IPV6 ROUTER OSPF 1
R3(config-rtr)#DEFAULT-information ORIGI
R3(config-rtr)#EXIT
R3(config)#
```

SHOW IP ROUTE

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

Gateway of last resort is not set

192.168.9.0/24 is variably subnetted, 2 subnets, 2 masks

C 192.168.9.4/30 is directly connected, Serial0/0/1

L 192.168.9.6/32 is directly connected, Serial0/0/1

R3#SHOW IP PROTOCO

Routing Protocol is "ospf 1"

Outgoing update filter list for all interfaces is not set

Incoming update filter list for all interfaces is not set

Router ID 3.3.3.3

Number of areas in this router is 1. 1 normal 0 stub 0 nssa

Maximum path: 4

Routing for Networks:

192.168.9.4 0.0.0.3 area 0

192.168.3.0 0.0.0.255 area 0

Passive Interface(s):

GigabitEthernet0/0

Routing Information Sources:

Gateway Distance Last Update

3.3.3.3 110 00:28:52

Distance: (default is 110

1.2. Prueba de Habilidades - Escenario 2

Una empresa de comunicaciones presenta una estructura Core acorde a la topología de red, en donde el estudiante será el administrador de la red, el cual deberá configurar e interconectar entre sí cada uno de los dispositivos que forman parte del escenario, acorde con los lineamientos establecidos para el direccionamiento IP, etherchannels, VLANs y demás aspectos que forman parte del escenario propuesto.

1.2.1. Topología de red 2

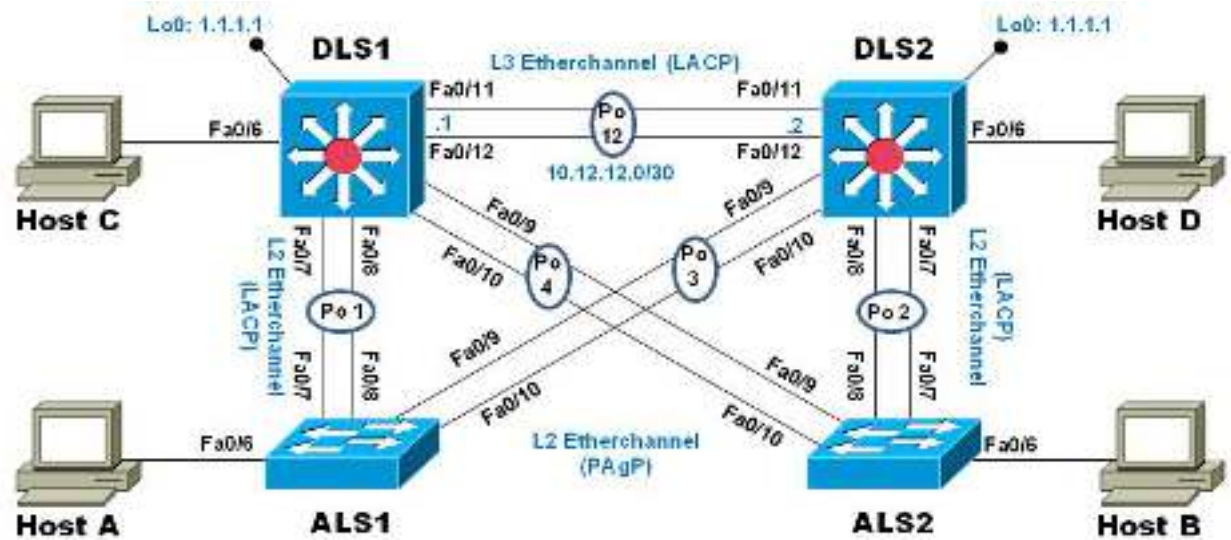


Ilustración 24. Topología de Red E2

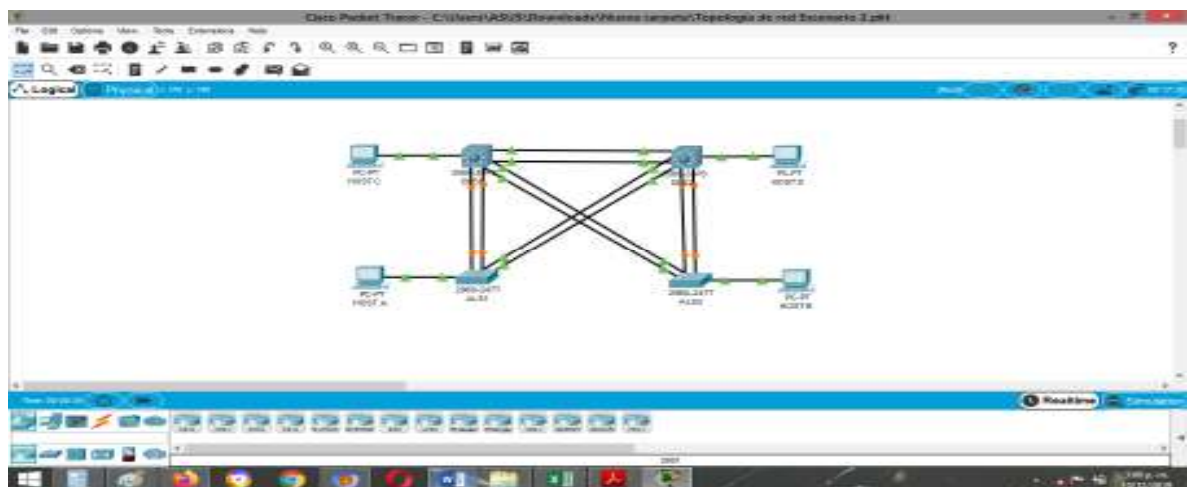
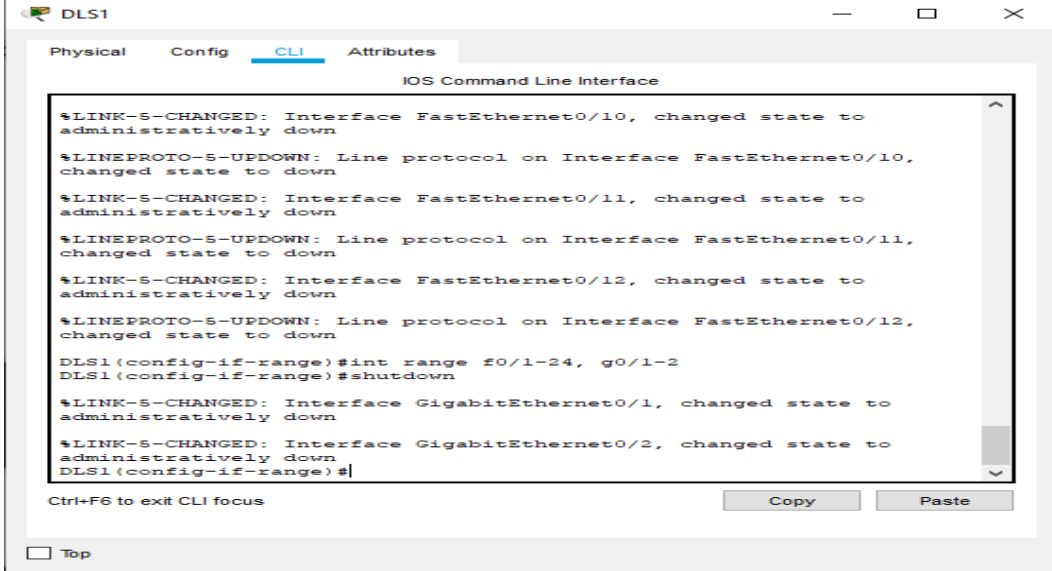


Ilustración 25. Topología de red E2 Software Packet Tracer

Parte 1: Configurar la red de acuerdo con las especificaciones.

a) Apagar todas las interfaces en cada switch.



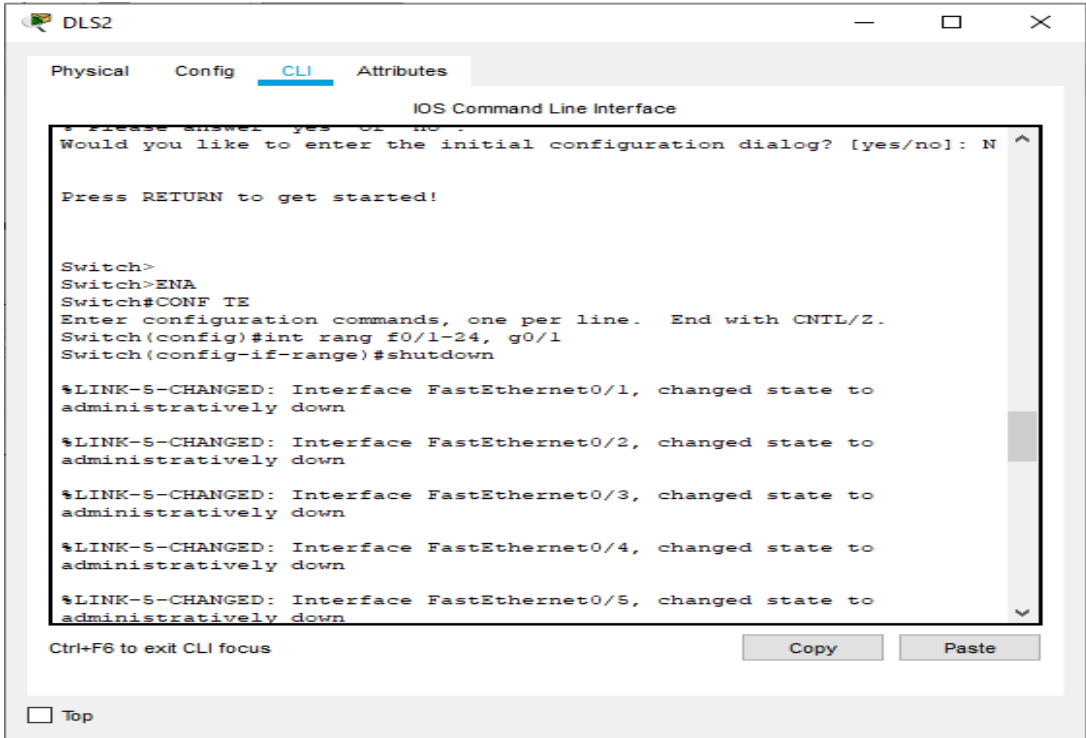
```
IOS Command Line Interface

%LINK-S-CHANGED: Interface FastEthernet0/10, changed state to
administratively down
%LINEPROTO-S-UPDOWN: Line protocol on Interface FastEthernet0/10,
changed state to down
%LINK-S-CHANGED: Interface FastEthernet0/11, changed state to
administratively down
%LINEPROTO-S-UPDOWN: Line protocol on Interface FastEthernet0/11,
changed state to down
%LINK-S-CHANGED: Interface FastEthernet0/12, changed state to
administratively down
%LINEPROTO-S-UPDOWN: Line protocol on Interface FastEthernet0/12,
changed state to down

DLS1(config-if-range)#int range f0/1-24, g0/1-2
DLS1(config-if-range)#shutdown

%LINK-S-CHANGED: Interface GigabitEthernet0/1, changed state to
administratively down
%LINK-S-CHANGED: Interface GigabitEthernet0/2, changed state to
administratively down
DLS1(config-if-range)#
```

Ilustración 26. Switch DLS1: Apagando interfaces



```
IOS Command Line Interface

Would you like to enter the initial configuration dialog? [yes/no]: N

Press RETURN to get started!

Switch>
Switch>ENA
Switch#CONF TE
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#int rang f0/1-24, g0/1
Switch(config-if-range)#shutdown

%LINK-S-CHANGED: Interface FastEthernet0/1, changed state to
administratively down
%LINK-S-CHANGED: Interface FastEthernet0/2, changed state to
administratively down
%LINK-S-CHANGED: Interface FastEthernet0/3, changed state to
administratively down
%LINK-S-CHANGED: Interface FastEthernet0/4, changed state to
administratively down
%LINK-S-CHANGED: Interface FastEthernet0/5, changed state to
administratively down
```

Ilustración 27. Switch DLS2: Apagando interfaces

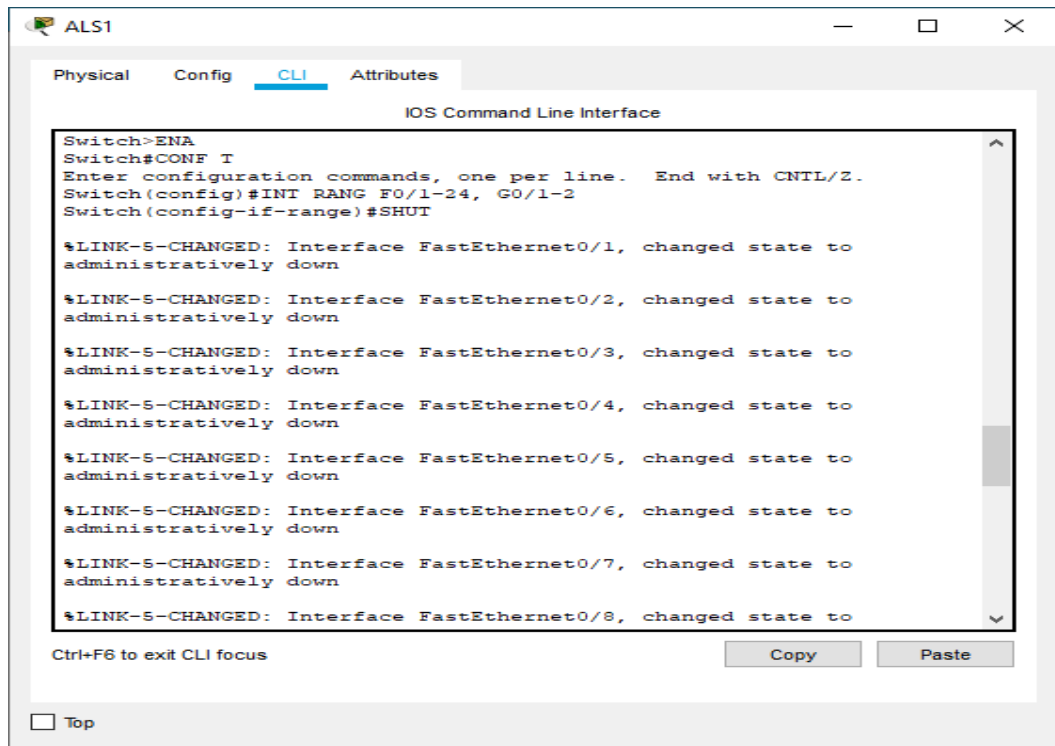


Ilustración 28. Switch ALS1: Apagando interfaces

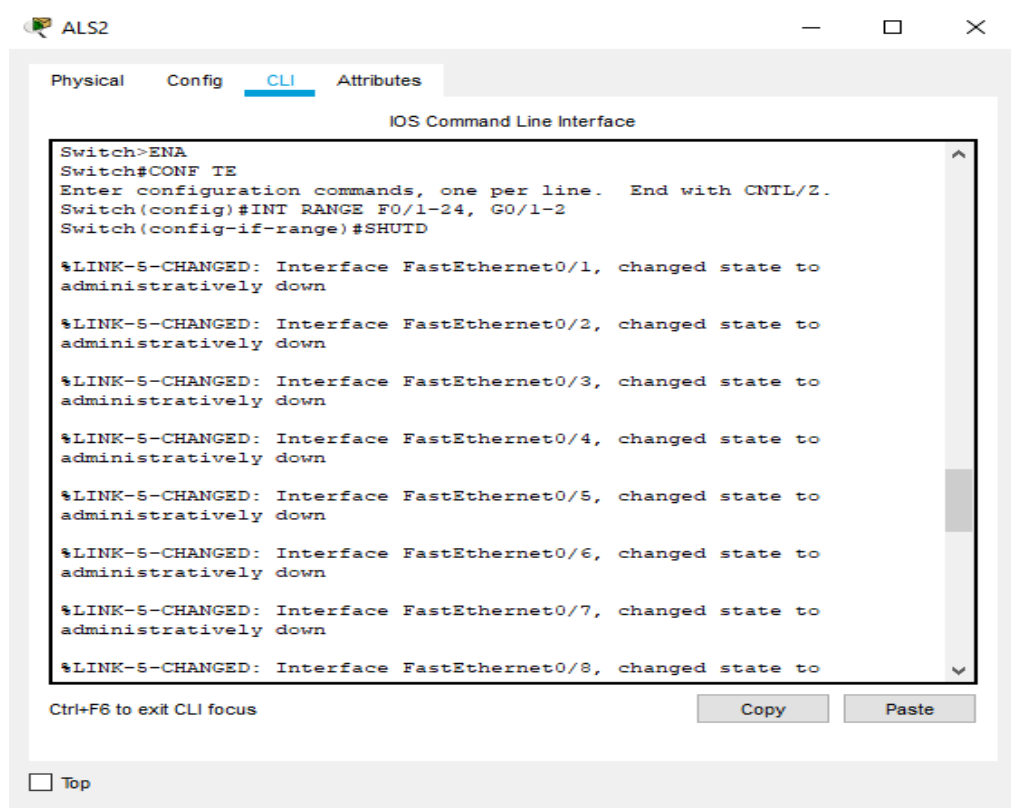


Ilustración 29. Switch ALS2: Apagando interfaces

b) Asignar un nombre a cada switch acorde al escenario establecido.

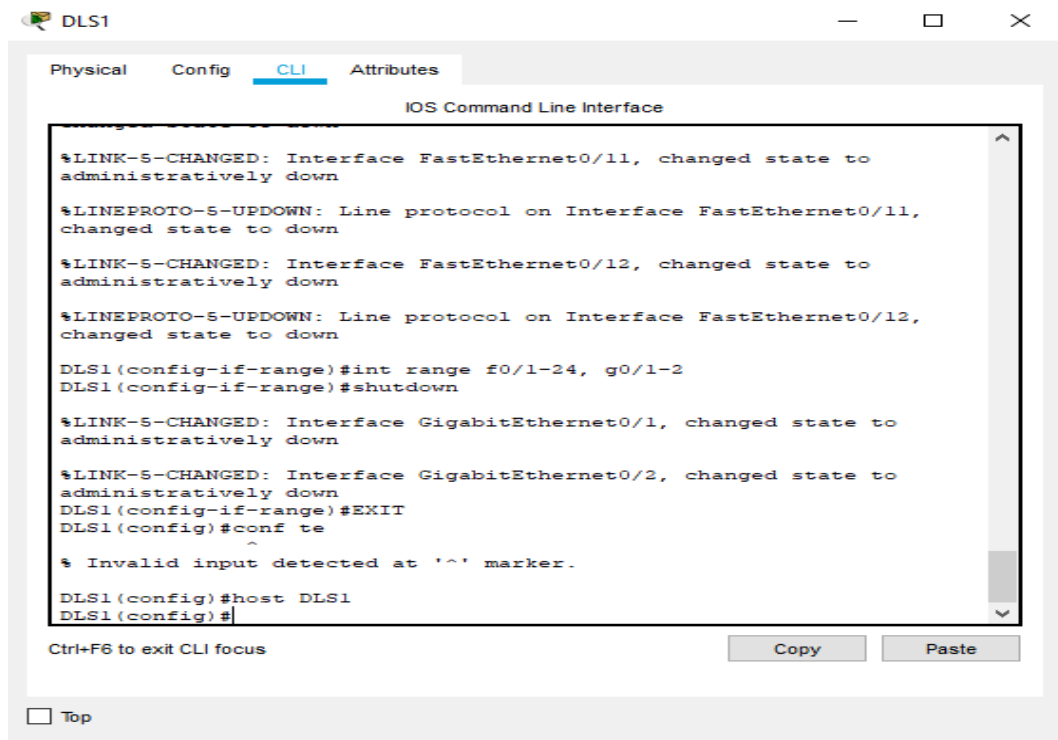


Ilustración 30. Switch DLS1: Establecido un nombre

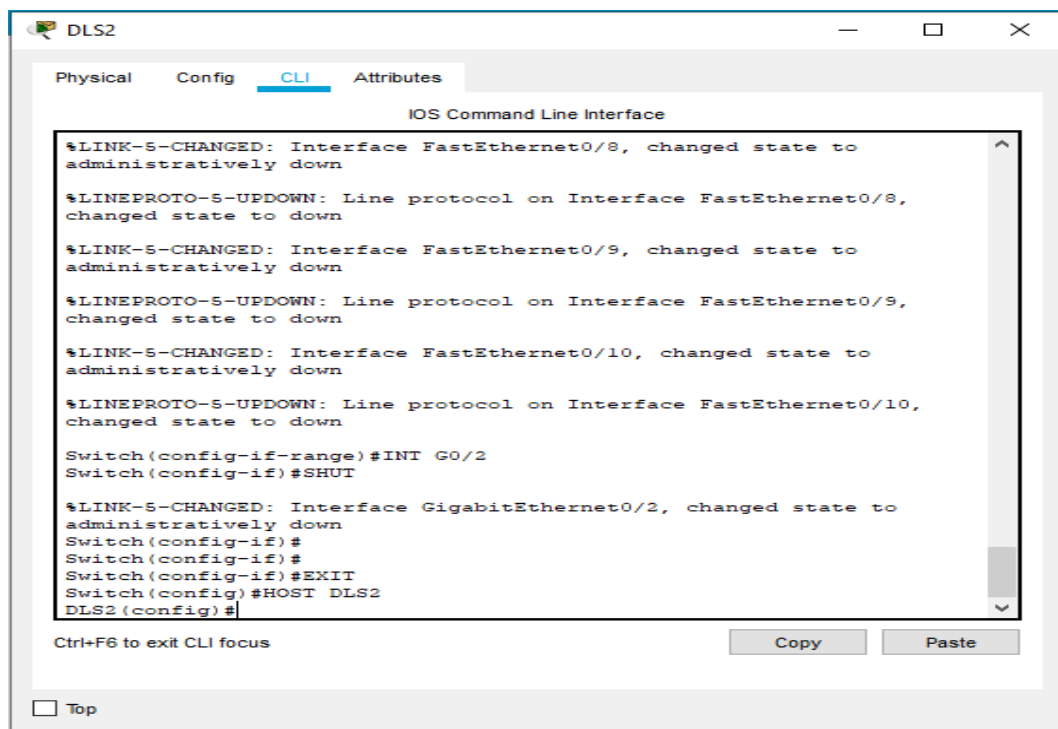


Ilustración 31. Switch DLS2: Establecido un nombre

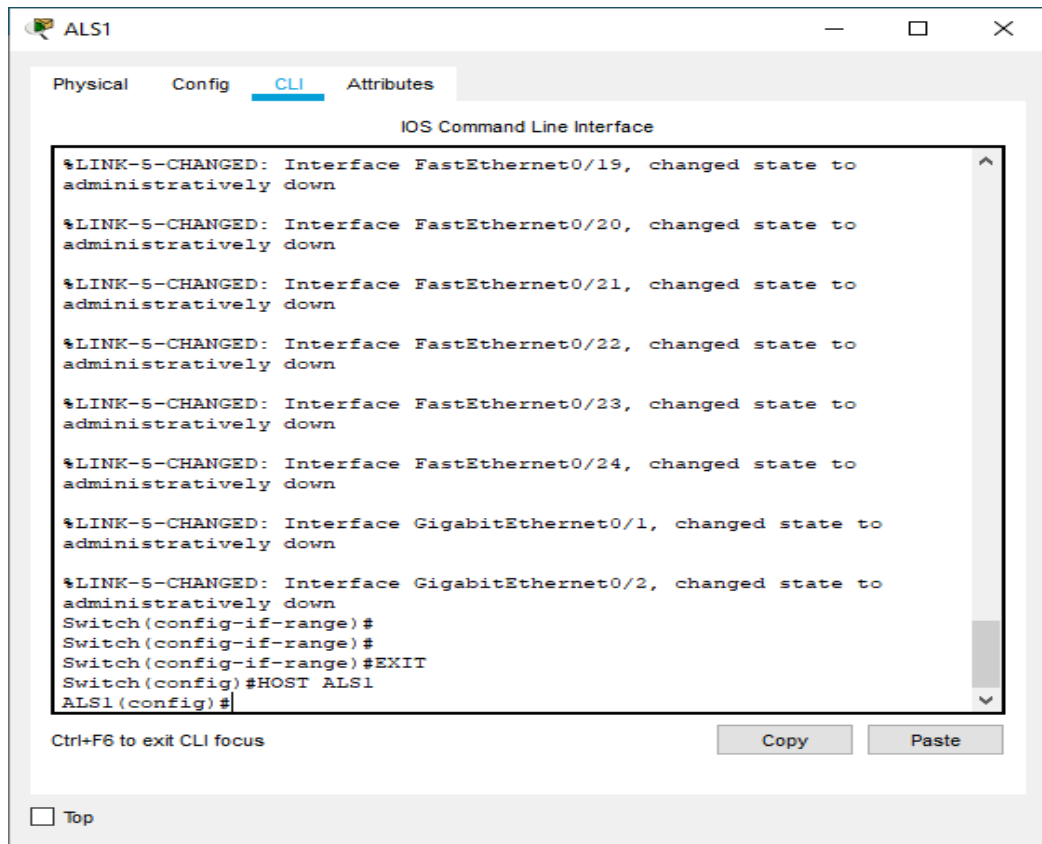


Ilustración 32. Switch ALS1: Establecido un nombre

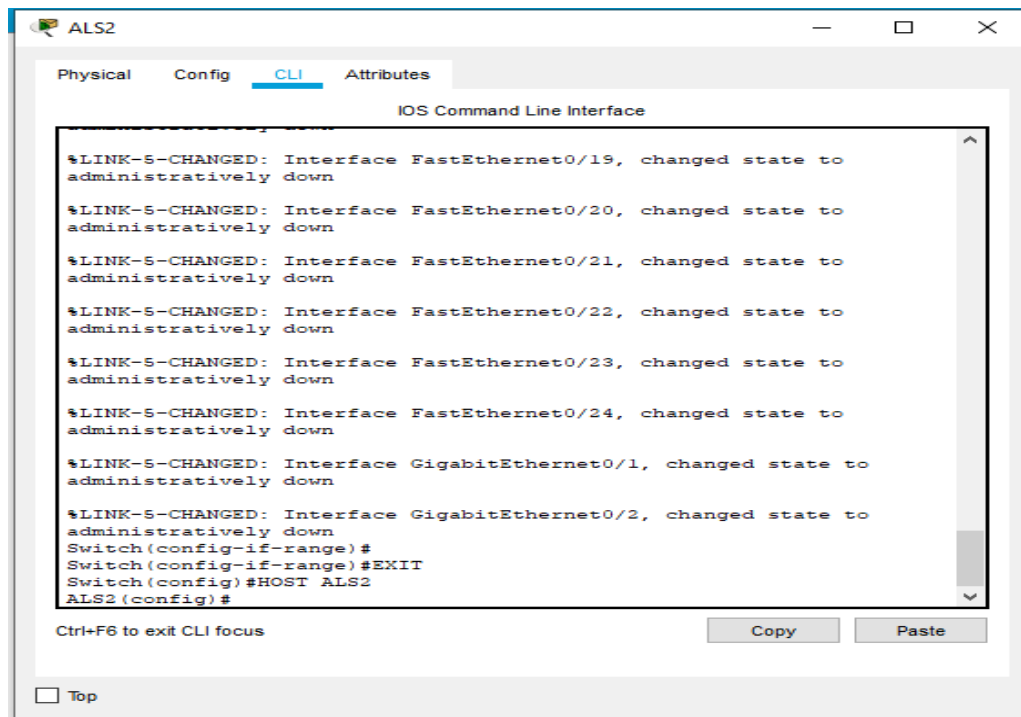


Ilustración 33. Switch ALS2: Establecido un nombre

- c) Configurar los puertos troncales y Port-channels tal como se muestra en el diagrama.
1. La conexión entre DLS1 y DLS2 será un EtherChannel capa-3 utilizando LACP. Para DLS1 se utilizará la dirección IP 10.12.12.1/30 y para DLS2 utilizará 10.12.12.2/30.
 - 2.

```

DLS1
Physical Config CLI Attributes
IOS Command Line Interface
%LINK-5-CHANGED: Interface FastEthernet0/11, changed state to
administratively down
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/11,
changed state to down
%LINK-5-CHANGED: Interface FastEthernet0/12, changed state to
administratively down
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/12,
changed state to down
DLS1(config-if-range)#int range f0/1-24, g0/1-2
DLS1(config-if-range)#shutdown
%LINK-5-CHANGED: Interface GigabitEthernet0/1, changed state to
administratively down
%LINK-5-CHANGED: Interface GigabitEthernet0/2, changed state to
administratively down
DLS1(config-if-range)#EXIT
DLS1(config)#conf te
~
% Invalid input detected at '^' marker.
DLS1(config)#host DLS1
DLS1(config)#
Ctrl+F6 to exit CLI focus
Copy Paste
 Top

```

Ilustración 34. Switch DLS1: Realizando Conexión

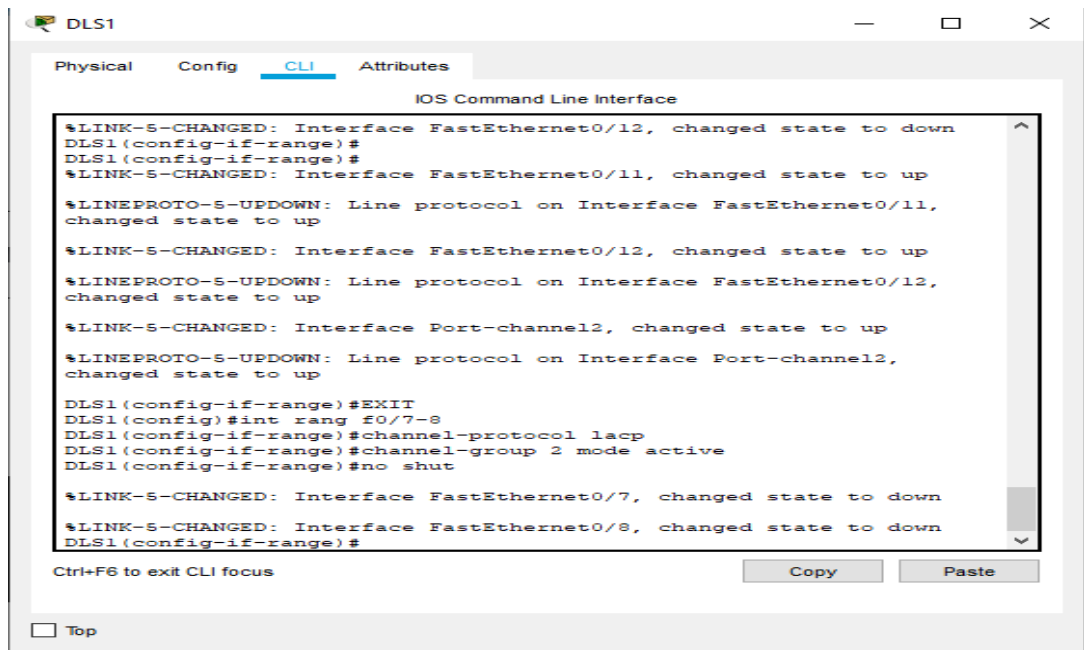
```

DLS2
Physical Config CLI Attributes
IOS Command Line Interface
%LINK-5-CHANGED: Interface FastEthernet0/8, changed state to
administratively down
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/8,
changed state to down
%LINK-5-CHANGED: Interface FastEthernet0/9, changed state to
administratively down
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/9,
changed state to down
%LINK-5-CHANGED: Interface FastEthernet0/10, changed state to
administratively down
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/10,
changed state to down
Switch(config-if-range)#INT G0/2
Switch(config-if)#SHUT
%LINK-5-CHANGED: Interface GigabitEthernet0/2, changed state to
administratively down
Switch(config-if)#
Switch(config-if)#
Switch(config-if)#EXIT
Switch(config)#HOST DLS2
DLS2(config)#
Ctrl+F6 to exit CLI focus
Copy Paste
 Top

```

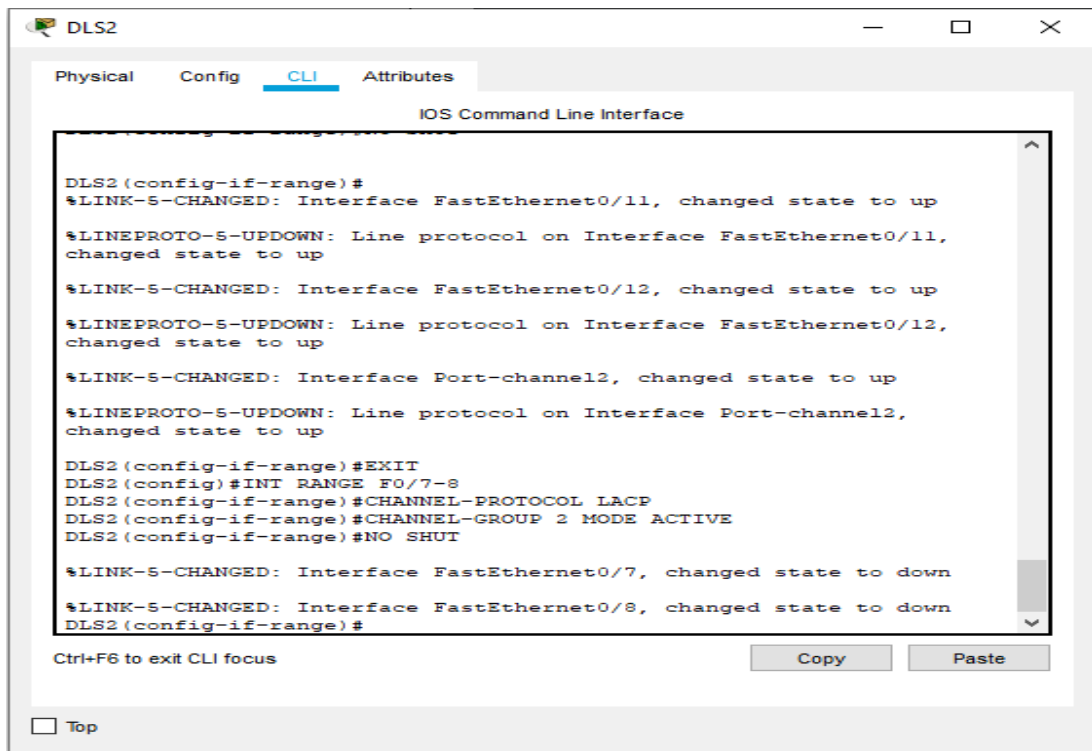
Ilustración 35. Switch DLS2: Realizando Conexión

3. Los Port-channels en las interfaces Fa0/7 y Fa0/8 utilizarán LACP.



```
IOS Command Line Interface
%LINK-S-CHANGED: Interface FastEthernet0/12, changed state to down
DLS1(config-if-range)#
DLS1(config-if-range)#
%LINK-S-CHANGED: Interface FastEthernet0/11, changed state to up
%LINEPROTO-S-UPDOWN: Line protocol on Interface FastEthernet0/11,
changed state to up
%LINK-S-CHANGED: Interface FastEthernet0/12, changed state to up
%LINEPROTO-S-UPDOWN: Line protocol on Interface FastEthernet0/12,
changed state to up
%LINK-S-CHANGED: Interface Port-channel2, changed state to up
%LINEPROTO-S-UPDOWN: Line protocol on Interface Port-channel2,
changed state to up
DLS1(config-if-range)#EXIT
DLS1(config)#int rang f0/7-8
DLS1(config-if-range)#channel-protocol lacp
DLS1(config-if-range)#channel-group 2 mode active
DLS1(config-if-range)#no shut
%LINK-S-CHANGED: Interface FastEthernet0/7, changed state to down
%LINK-S-CHANGED: Interface FastEthernet0/8, changed state to down
DLS1(config-if-range)#
```

Ilustración 36. Switch DLS1: Configuración de los Port-channels en las interfaces Fa0/7 y Fa0/8 utilizará LACP



```
IOS Command Line Interface
DLS2(config-if-range)#
%LINK-S-CHANGED: Interface FastEthernet0/11, changed state to up
%LINEPROTO-S-UPDOWN: Line protocol on Interface FastEthernet0/11,
changed state to up
%LINK-S-CHANGED: Interface FastEthernet0/12, changed state to up
%LINEPROTO-S-UPDOWN: Line protocol on Interface FastEthernet0/12,
changed state to up
%LINK-S-CHANGED: Interface Port-channel2, changed state to up
%LINEPROTO-S-UPDOWN: Line protocol on Interface Port-channel2,
changed state to up
DLS2(config-if-range)#EXIT
DLS2(config)#INT RANGE F0/7-8
DLS2(config-if-range)#CHANNEL-PROTOCOL LACP
DLS2(config-if-range)#CHANNEL-GROUP 2 MODE ACTIVE
DLS2(config-if-range)#NO SHUT
%LINK-S-CHANGED: Interface FastEthernet0/7, changed state to down
%LINK-S-CHANGED: Interface FastEthernet0/8, changed state to down
DLS2(config-if-range)#
```

Ilustración 37. Switch DLS1: Configuración de los Port-channels en las interfaces Fa0/7 y Fa0/8 utilizará LA

```
ALS1
Physical Config CLI Attributes
IOS Command Line Interface

%LINK-S-CHANGED: Interface FastEthernet0/19, changed state to
administratively down
%LINK-S-CHANGED: Interface FastEthernet0/20, changed state to
administratively down
%LINK-S-CHANGED: Interface FastEthernet0/21, changed state to
administratively down
%LINK-S-CHANGED: Interface FastEthernet0/22, changed state to
administratively down
%LINK-S-CHANGED: Interface FastEthernet0/23, changed state to
administratively down
%LINK-S-CHANGED: Interface FastEthernet0/24, changed state to
administratively down
%LINK-S-CHANGED: Interface GigabitEthernet0/1, changed state to
administratively down
%LINK-S-CHANGED: Interface GigabitEthernet0/2, changed state to
administratively down
Switch(config-if-range)#
Switch(config-if-range)#
Switch(config-if-range)#EXIT
Switch(config)#HOST ALS1
ALS1(config)#

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

Ilustración 38. Switch ALS1: Configuración de los Port-channels en las interfaces Fa0/7 y Fa0/8 utilizará LACP

```
ALS2
Physical Config CLI Attributes
IOS Command Line Interface

ALS2>ENA
ALS2#CONF TER
Enter configuration commands, one per line. End with CNTL/Z.
ALS2(config)#INT RANG F0/7-8
ALS2(config-if-range)#CHANNEL-PROTOCOL LACP
ALS2(config-if-range)#CHANNEL-GROUP 2 MODE ACTIVE
ALS2(config-if-range)#
Creating a port-channel interface Port-channel 2

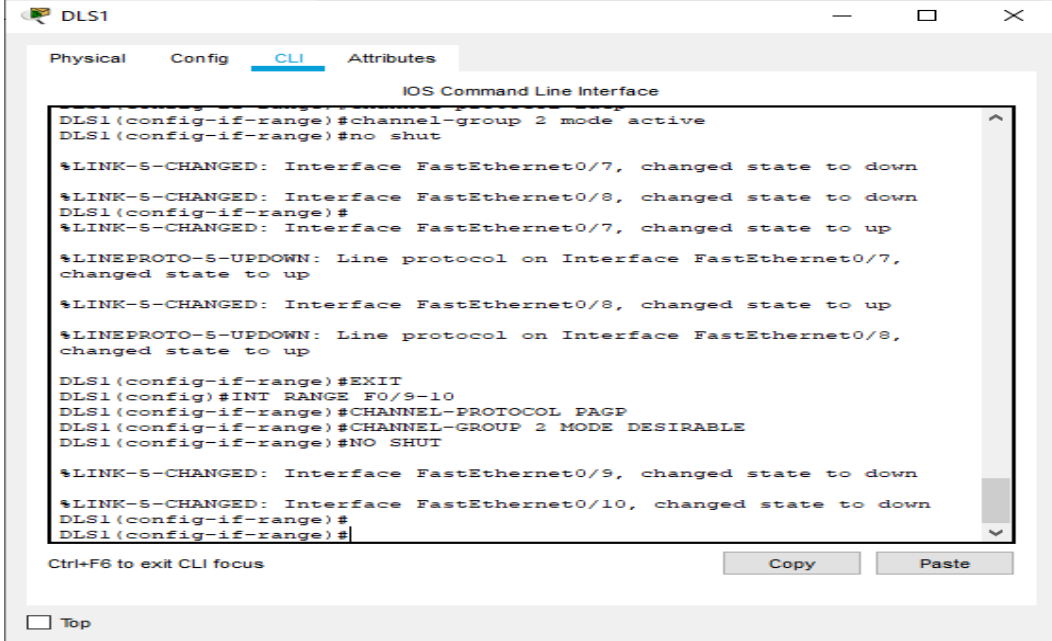
ALS2(config-if-range)#NO SHUT

ALS2(config-if-range)#
%LINK-S-CHANGED: Interface FastEthernet0/7, changed state to up
%LINEPROTO-S-UPDOWN: Line protocol on Interface FastEthernet0/7,
changed state to up
%LINK-S-CHANGED: Interface FastEthernet0/8, changed state to up
%LINEPROTO-S-UPDOWN: Line protocol on Interface FastEthernet0/8,
changed state to up
ALS2(config-if-range)#

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

Ilustración 39. Switch ALS1: Configuración de los Port-channels en las interfaces Fa0/7 y Fa0/8 utilizará

4. Los Port-channels en las interfaces F0/9 y fa0/10 utilizará PAgP.



```
DLS1
Physical Config CLI Attributes
IOS Command Line Interface
DLS1(config-if-range)#channel-group 2 mode active
DLS1(config-if-range)#no shut

%LINK-5-CHANGED: Interface FastEthernet0/7, changed state to down
%LINK-5-CHANGED: Interface FastEthernet0/8, changed state to down
DLS1(config-if-range)#
%LINK-5-CHANGED: Interface FastEthernet0/7, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/7,
changed state to up

%LINK-5-CHANGED: Interface FastEthernet0/8, changed state to up

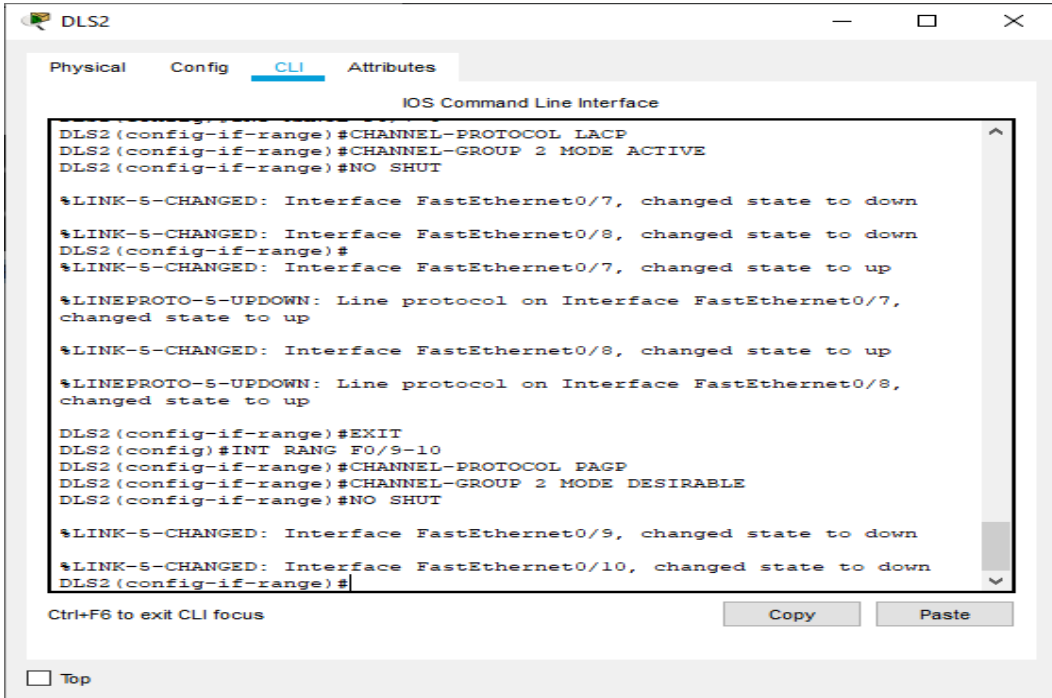
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/8,
changed state to up

DLS1(config-if-range)#EXIT
DLS1(config)#INT RANGE F0/9-10
DLS1(config-if-range)#CHANNEL-PROTOCOL PAgP
DLS1(config-if-range)#CHANNEL-GROUP 2 MODE DESIRABLE
DLS1(config-if-range)#NO SHUT

%LINK-5-CHANGED: Interface FastEthernet0/9, changed state to down
%LINK-5-CHANGED: Interface FastEthernet0/10, changed state to down
DLS1(config-if-range)#
DLS1(config-if-range)#

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

Ilustración 40. Switch DLS1: Configuración de los Port-channels en las interfaces F0/9 y fa0/10 utilizará PAgP



```
DLS2
Physical Config CLI Attributes
IOS Command Line Interface
DLS2(config-if-range)#CHANNEL-PROTOCOL LACP
DLS2(config-if-range)#CHANNEL-GROUP 2 MODE ACTIVE
DLS2(config-if-range)#NO SHUT

%LINK-5-CHANGED: Interface FastEthernet0/7, changed state to down
%LINK-5-CHANGED: Interface FastEthernet0/8, changed state to down
DLS2(config-if-range)#
%LINK-5-CHANGED: Interface FastEthernet0/7, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/7,
changed state to up

%LINK-5-CHANGED: Interface FastEthernet0/8, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/8,
changed state to up

DLS2(config-if-range)#EXIT
DLS2(config)#INT RANG F0/9-10
DLS2(config-if-range)#CHANNEL-PROTOCOL PAgP
DLS2(config-if-range)#CHANNEL-GROUP 2 MODE DESIRABLE
DLS2(config-if-range)#NO SHUT

%LINK-5-CHANGED: Interface FastEthernet0/9, changed state to down
%LINK-5-CHANGED: Interface FastEthernet0/10, changed state to down
DLS2(config-if-range)#
DLS2(config-if-range)#

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

Ilustración 41. Switch DLS1: Configuración de los Port-channels en las interfaces F0/9 y fa0/10 utilizará PAgP

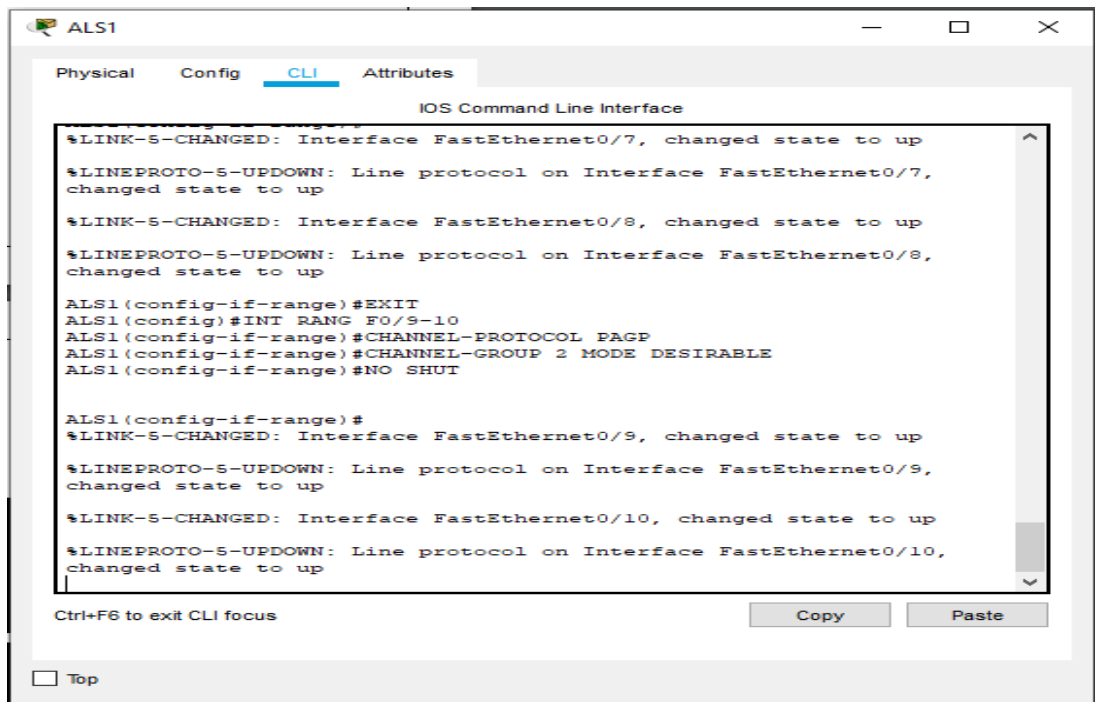


Ilustración 42. Switch ALS1: Configuración de los Port-channels en las interfaces F0/9 y fa0/10 utilizará PAgP

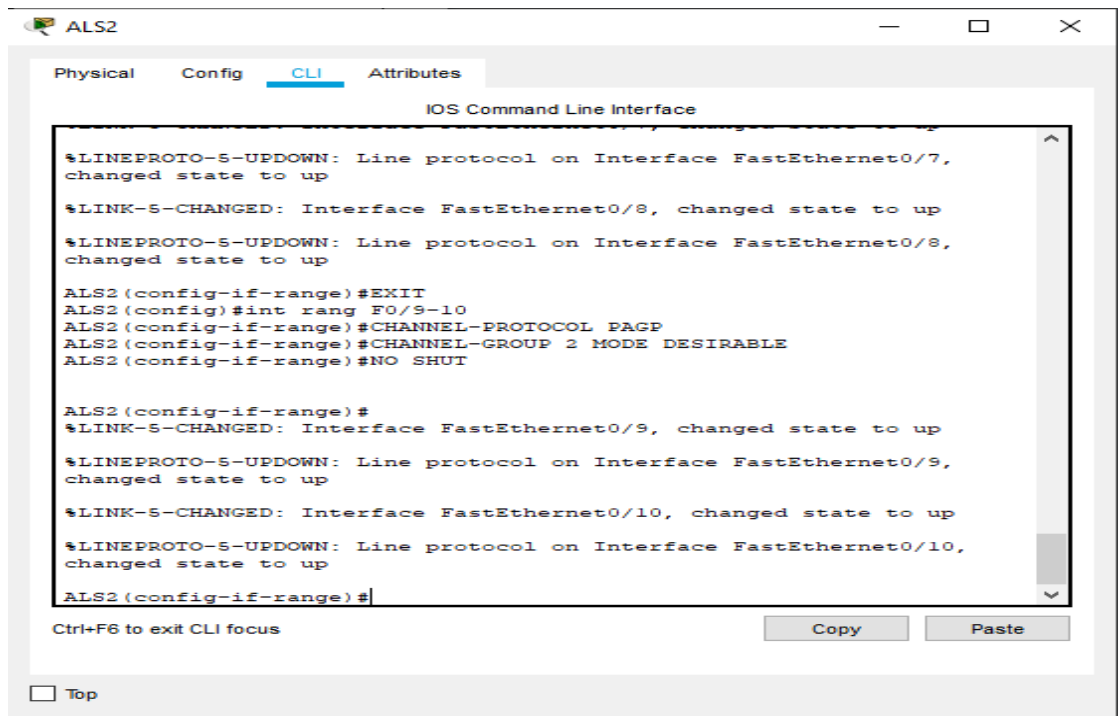


Ilustración 43. Switch ALS1: Configuración de los Port-channels en las interfaces F0/9 y fa0/10 utilizará PAgP

5. Todos los puertos troncales serán asignados a la VLAN 800 como la VLAN nativa.

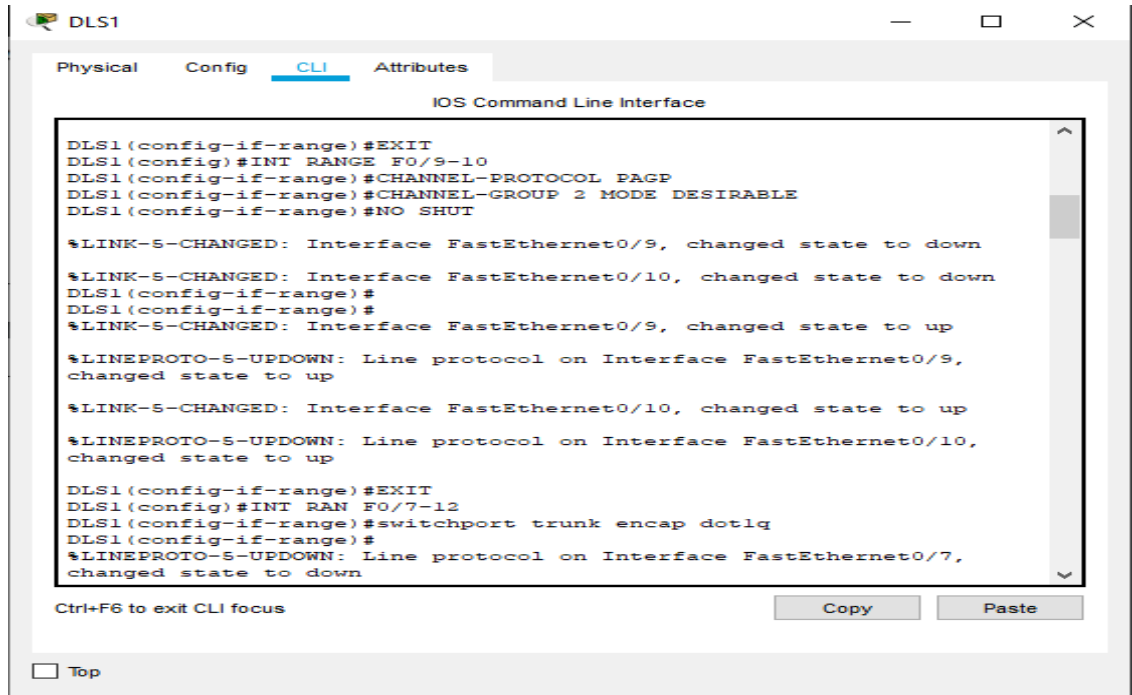


Ilustración 44. Switch DLS1: Asignación

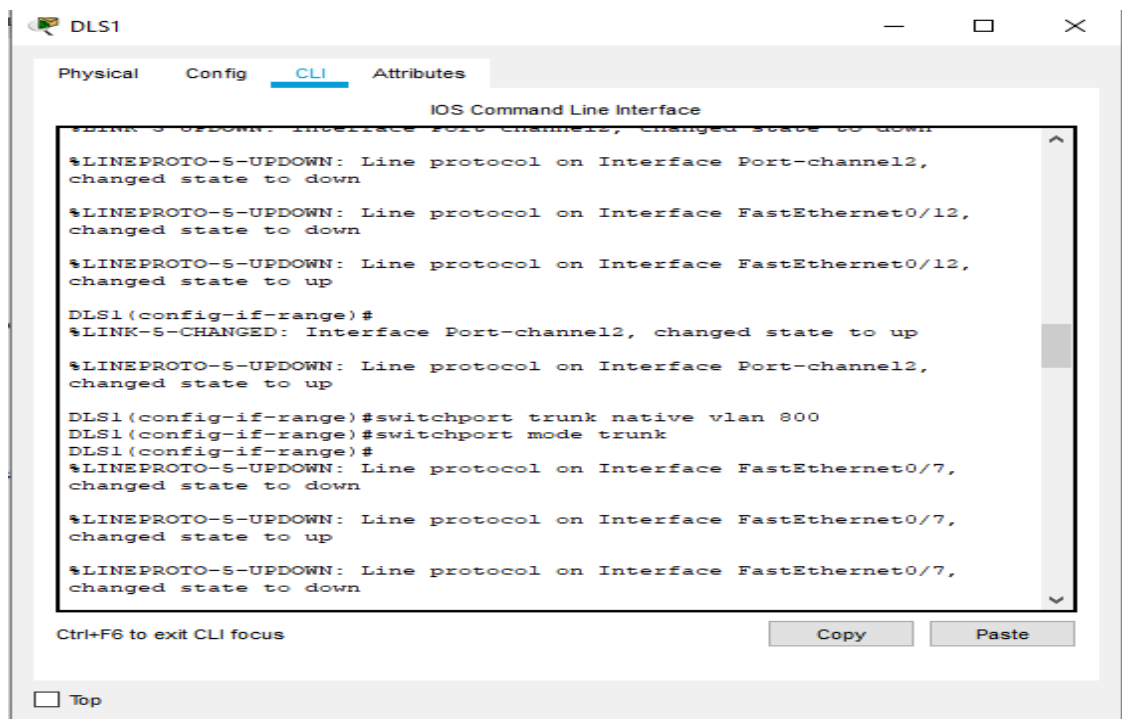


Ilustración 45. Switch DLS1: Asignación

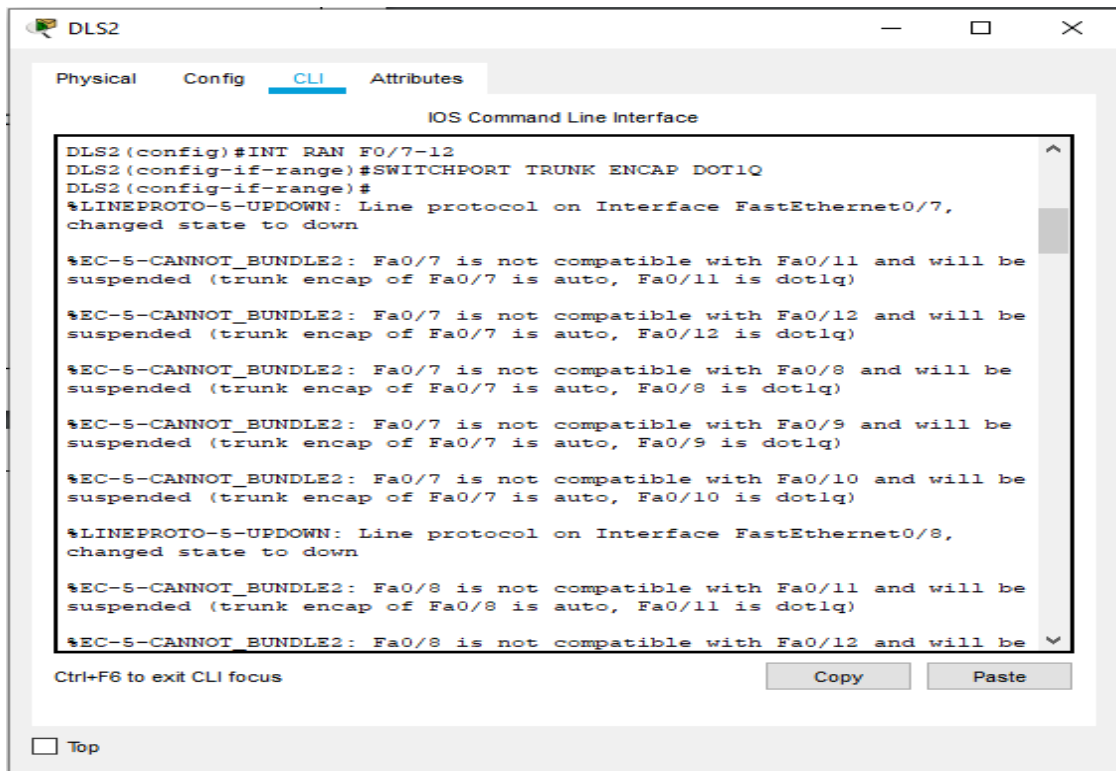


Ilustración 46. Switch DLS2: Asignación

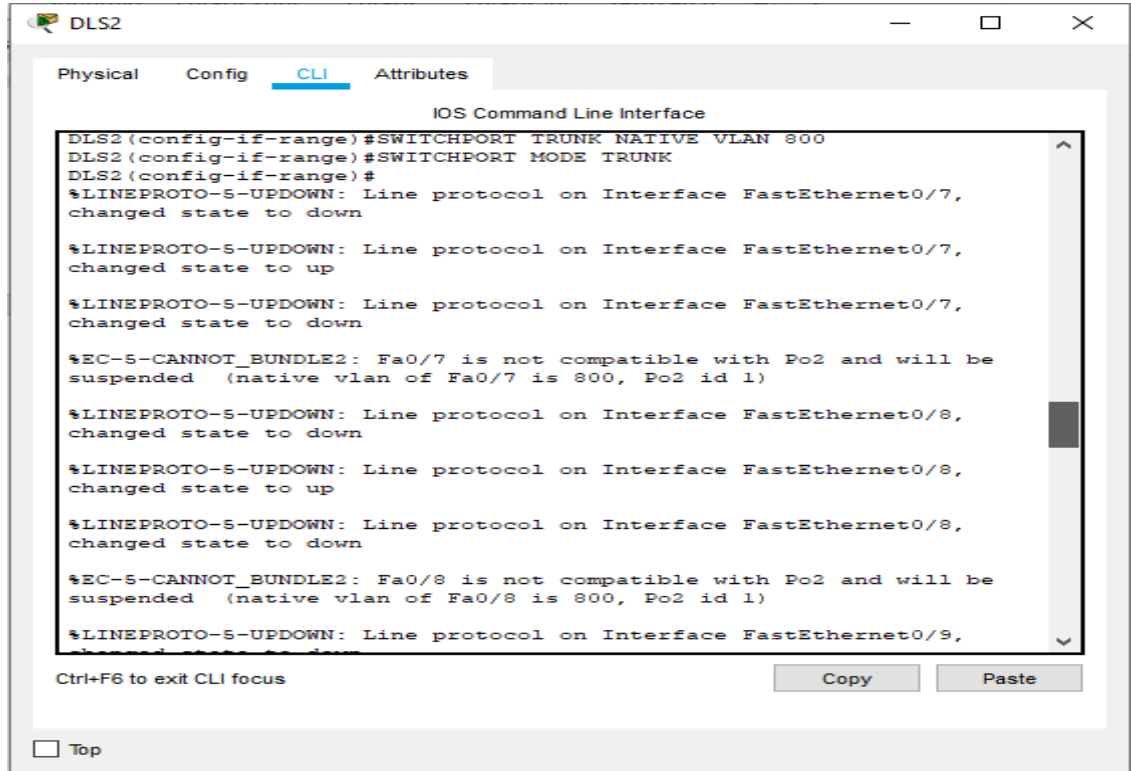


Ilustración 47. Switch DLS2: Asignación

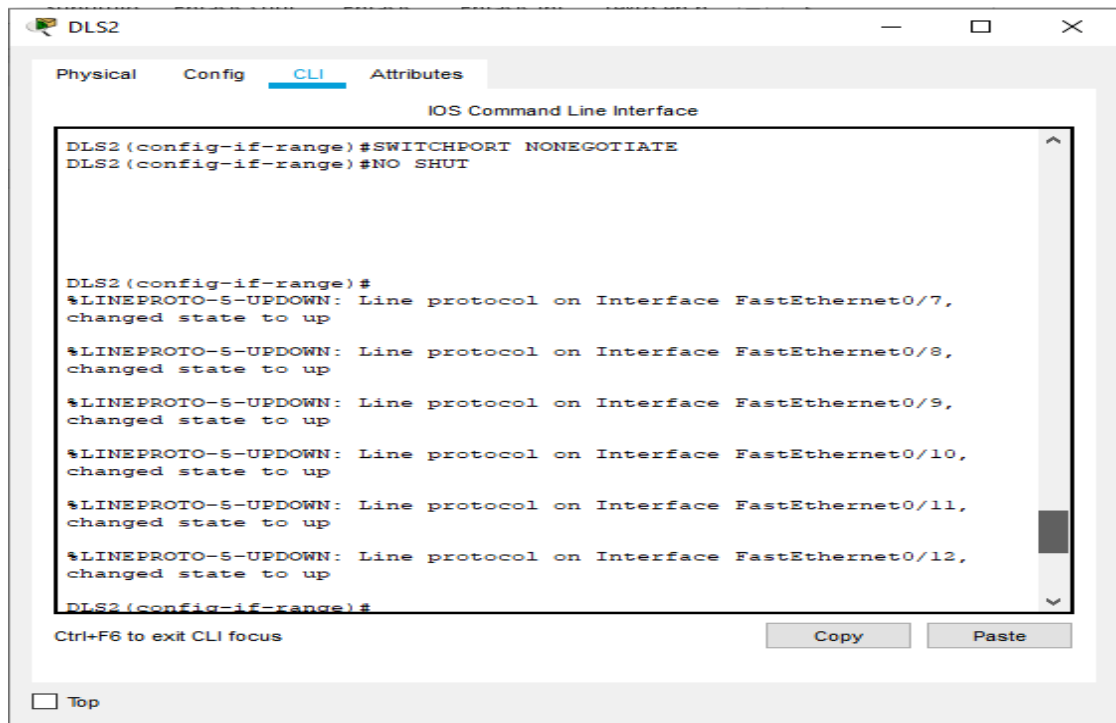


Ilustración 48. Switch DLS2: Asignación

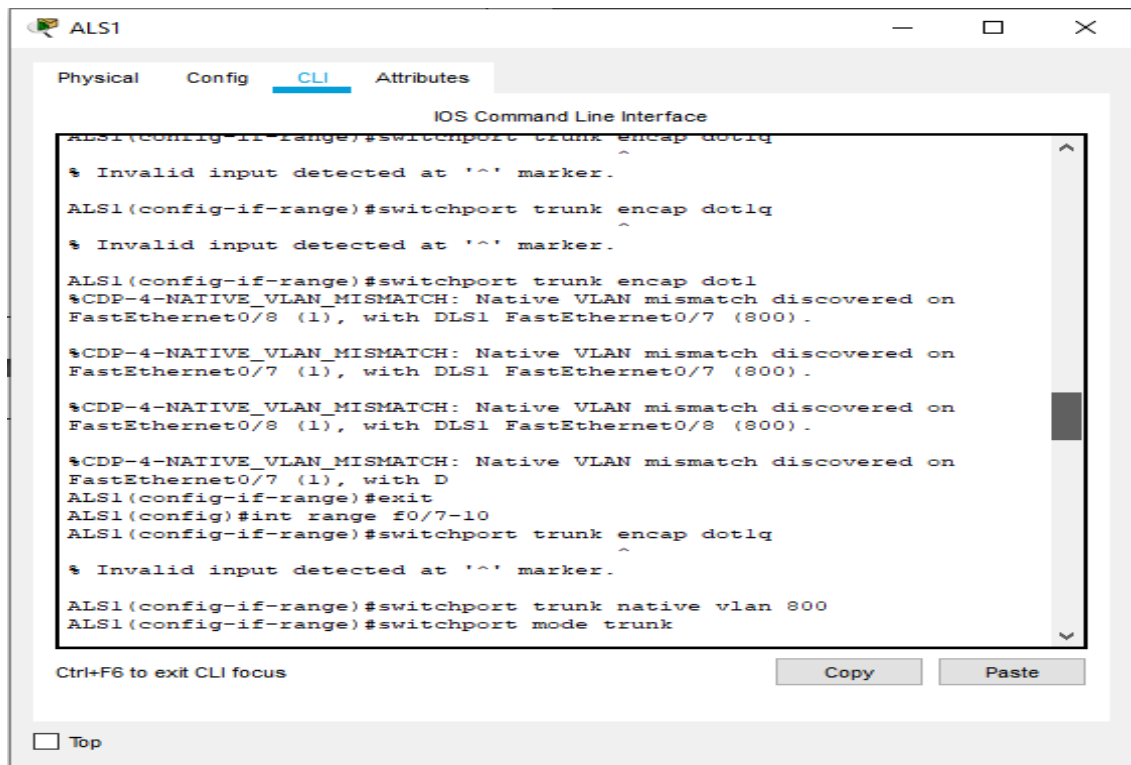


Ilustración 49. Switch ALS1: Asignación

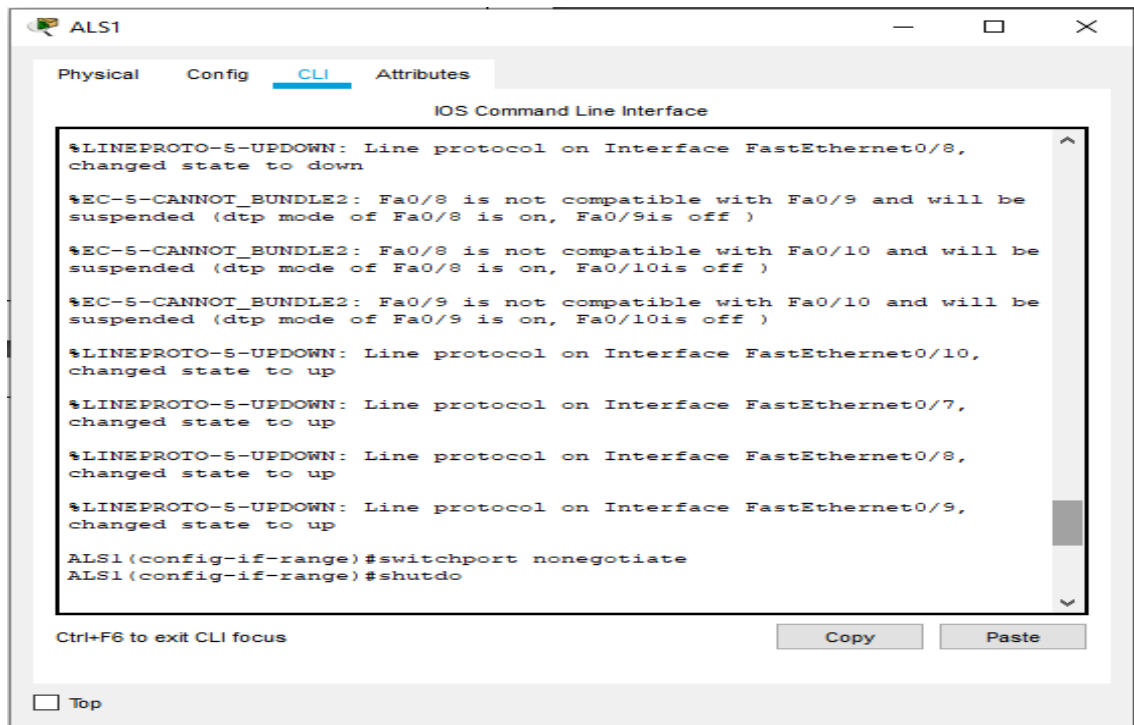


Ilustración 50. Switch ALS1: Asignación

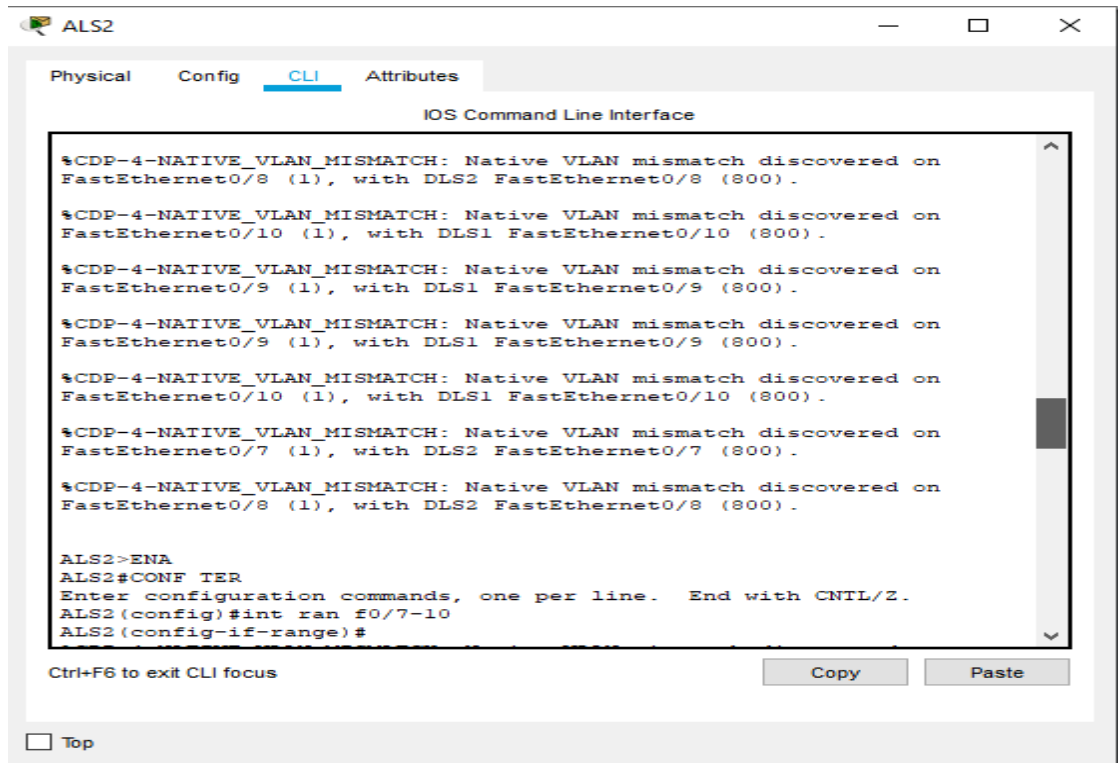


Ilustración 51. Switch ALS2: Asignación

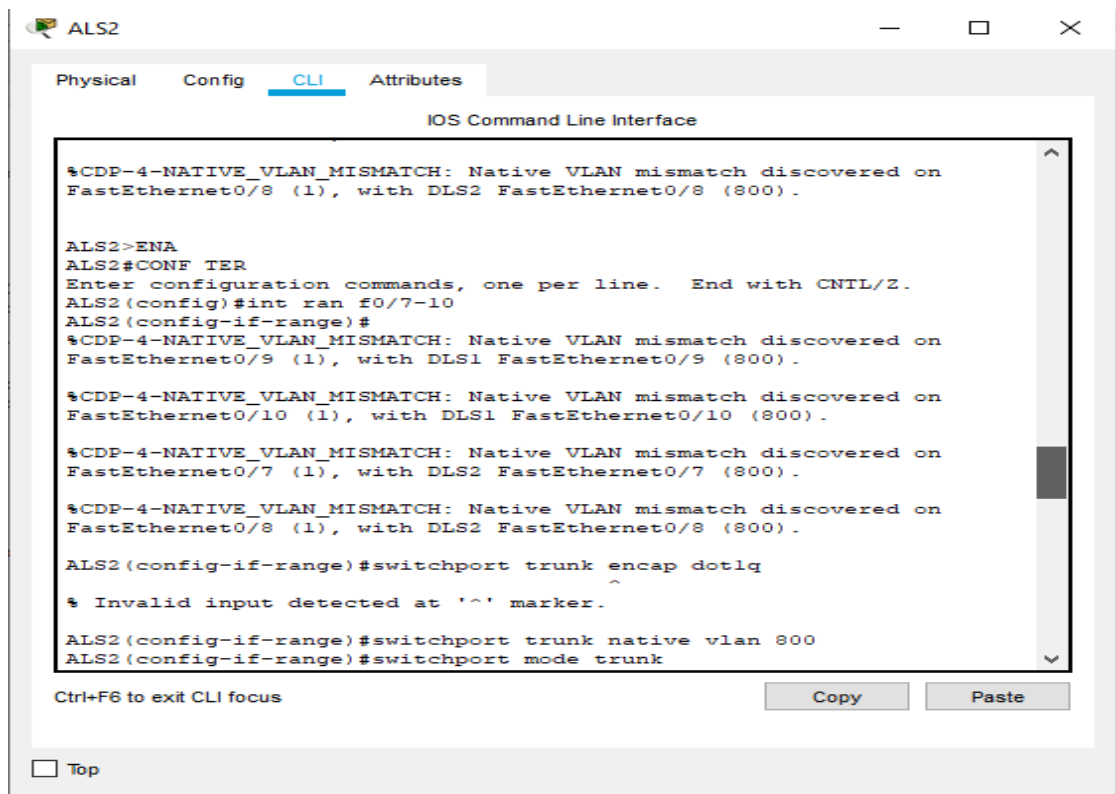


Ilustración 52. Switch ALS2: Asignación

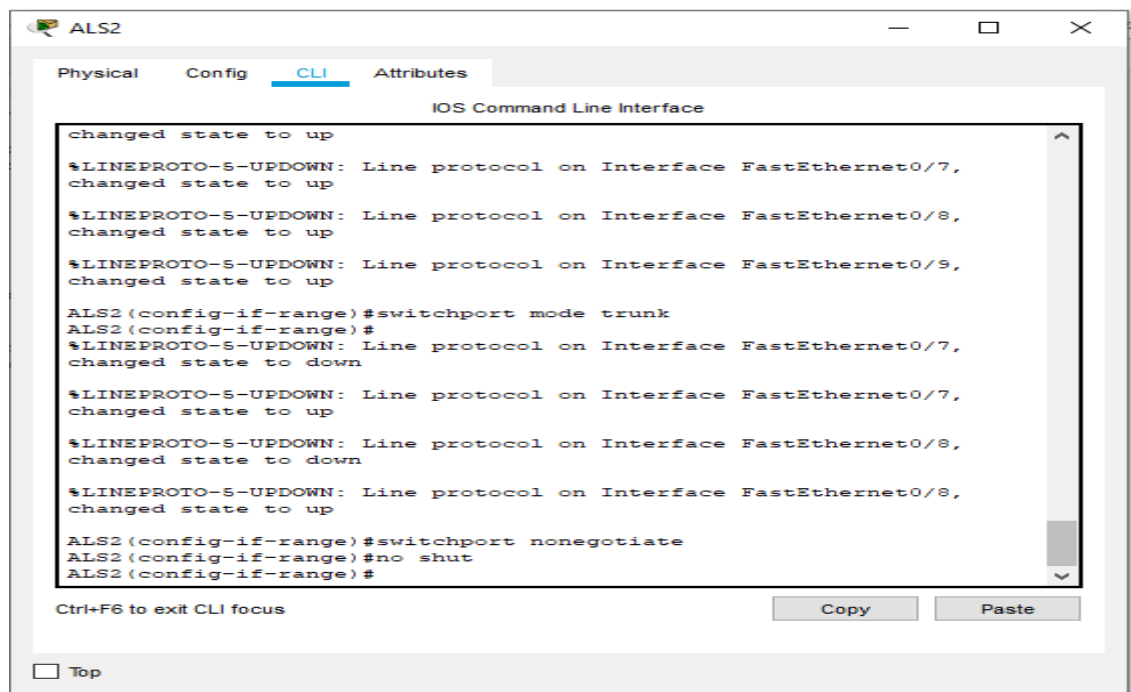
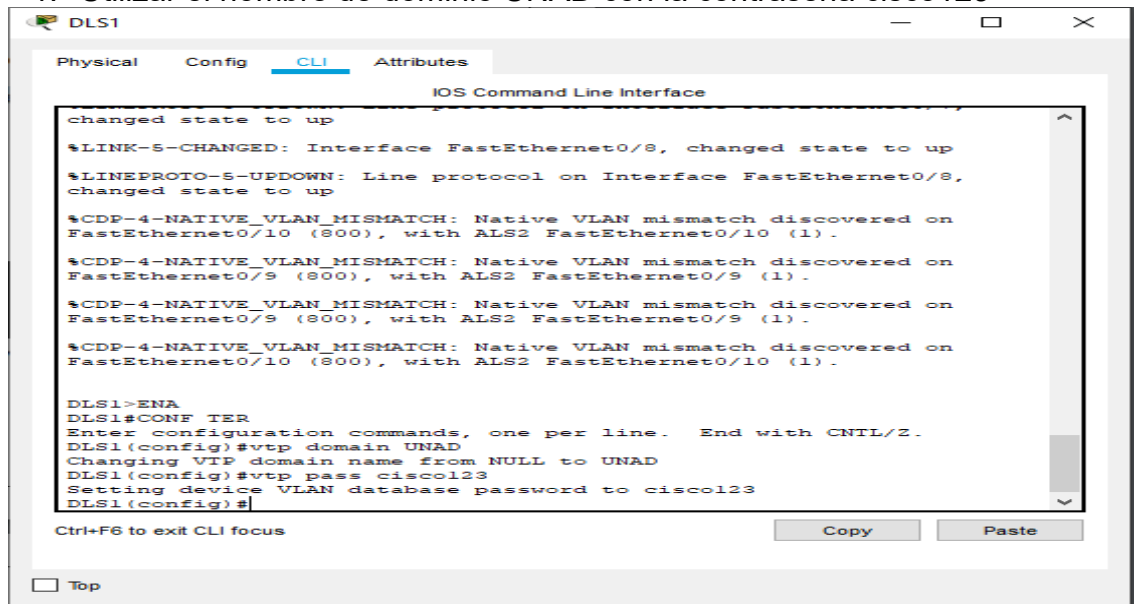


Ilustración 53. Switch ALS2: Asignación

d) Configurar DLS1, ALS1, y ALS2 para utilizar VTP versión 3

1. Utilizar el nombre de dominio UNAD con la contraseña cisco123

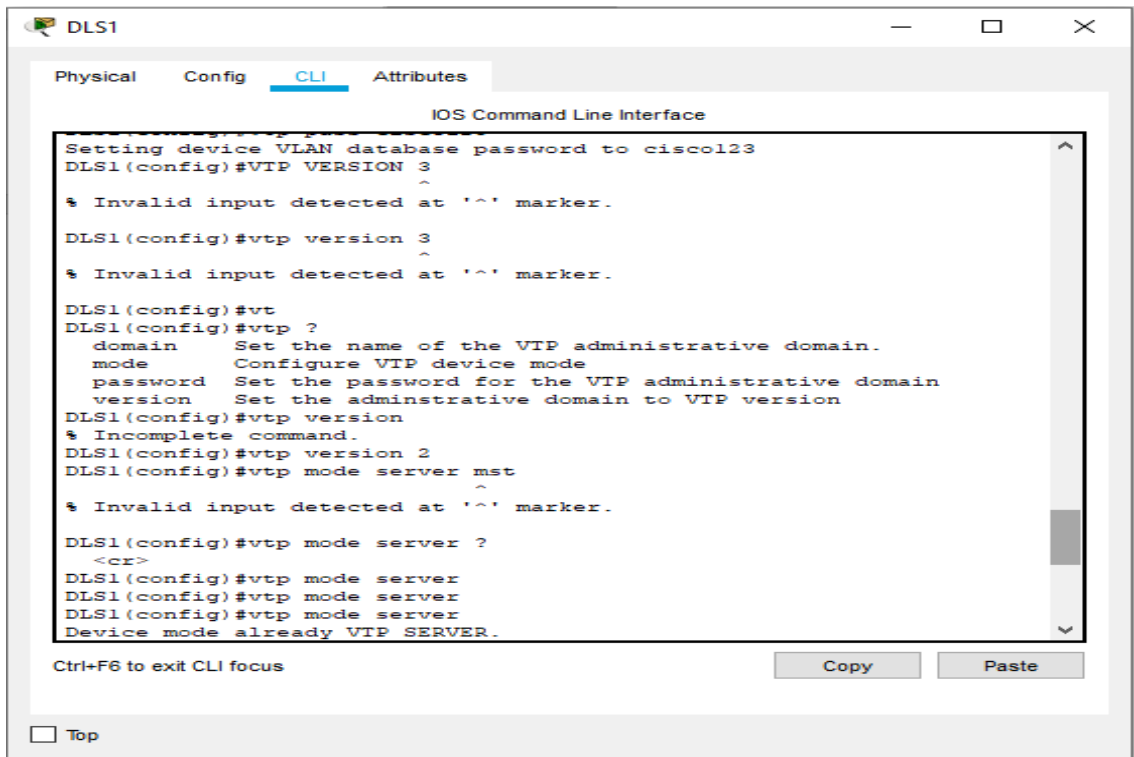


```
changed state to up
%LINK-5-CHANGED: Interface FastEthernet0/8, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/8,
changed state to up
%CDP-4-NATIVE_VLAN_MISMATCH: Native VLAN mismatch discovered on
FastEthernet0/10 (800), with ALS2 FastEthernet0/10 (1).
%CDP-4-NATIVE_VLAN_MISMATCH: Native VLAN mismatch discovered on
FastEthernet0/9 (800), with ALS2 FastEthernet0/9 (1).
%CDP-4-NATIVE_VLAN_MISMATCH: Native VLAN mismatch discovered on
FastEthernet0/9 (800), with ALS2 FastEthernet0/9 (1).
%CDP-4-NATIVE_VLAN_MISMATCH: Native VLAN mismatch discovered on
FastEthernet0/10 (800), with ALS2 FastEthernet0/10 (1).

DLS1>ENA
DLS1#CONF TER
Enter configuration commands, one per line. End with CNTL/Z.
DLS1(config)#vtp domain UNAD
Changing VTP domain name from NULL to UNAD
DLS1(config)#vtp pass cisco123
Setting device VLAN database password to cisco123
DLS1(config)#
```

Ilustración 54. Switch DLS1: Configuración de Nombre y dominio

2. Configurar DLS1 como servidor principal para las VLAN.



```
Setting device VLAN database password to cisco123
DLS1(config)#VTP VERSION 3
^
% Invalid input detected at '^' marker.

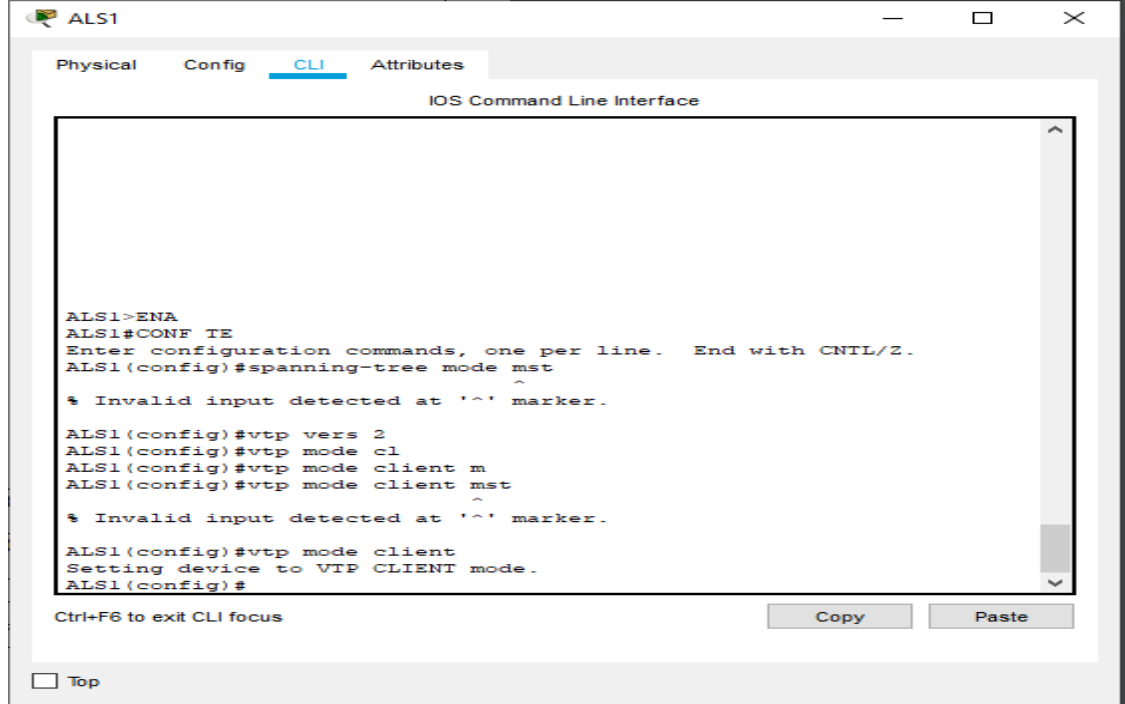
DLS1(config)#vtp version 3
^
% Invalid input detected at '^' marker.

DLS1(config)#vt
DLS1(config)#vtp ?
  domain      Set the name of the VTP administrative domain.
  mode        Configure VTP device mode
  password    Set the password for the VTP administrative domain
  version     Set the administrative domain to VTP version
DLS1(config)#vtp version
% Incomplete command.
DLS1(config)#vtp version 2
DLS1(config)#vtp mode server mst
^
% Invalid input detected at '^' marker.

DLS1(config)#vtp mode server ?
<cr>
DLS1(config)#vtp mode server
DLS1(config)#vtp mode server
DLS1(config)#vtp mode server
Device mode already VTP SERVER.
```

Ilustración 55. Switch DLS1: Configuración del servidor

3. Configurar ALS1 y ALS2 como clientes VTP.



```
ALS1>ENA
ALS1#CONF TE
Enter configuration commands, one per line. End with CNTL/Z.
ALS1(config)#spanning-tree mode mst
^
% Invalid input detected at '^' marker.

ALS1(config)#vtp vers 2
ALS1(config)#vtp mode cl
ALS1(config)#vtp mode client m
ALS1(config)#vtp mode client mst
^
% Invalid input detected at '^' marker.

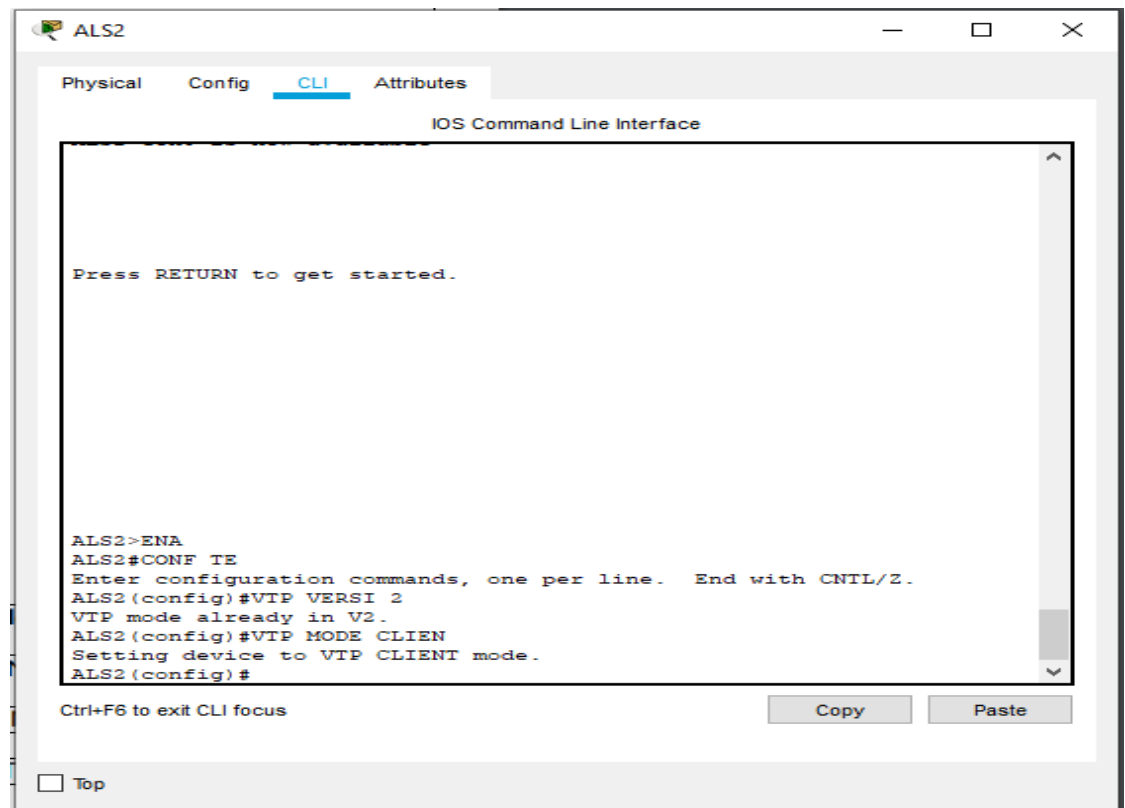
ALS1(config)#vtp mode client
Setting device to VTP CLIENT mode.
ALS1(config)#
```

Ctrl+F6 to exit CLI focus

Copy Paste

Top

Ilustración 56. Switch ALS1: Configuración ALS1 como clientes VTP



```
ALS2>ENA
ALS2#CONF TE
Enter configuration commands, one per line. End with CNTL/Z.
ALS2(config)#VTP VERSI 2
VTP mode already in V2.
ALS2(config)#VTP MODE CLIEN
Setting device to VTP CLIENT mode.
ALS2(config)#
```

Ctrl+F6 to exit CLI focus

Copy Paste

Top

Ilustración 57. Switch ALS2: Configuración ALS1 como clientes VTP.

e) Configurar en el servidor principal las siguientes VLAN:

Tabla 1. Configuración en el servidor principal las siguientes VLAN

Número de VLAN	Nombre de VLAN	Número de VLAN	Nombre de VLAN
800	NATIVA	434	ESTACIONAMIENTO
12	EJECUTIVOS	123	MANTENIMIENTO
234	HUESPEDES	1010	VOZ
1111	VIDEONET	3456	ADMINISTRACIÓN

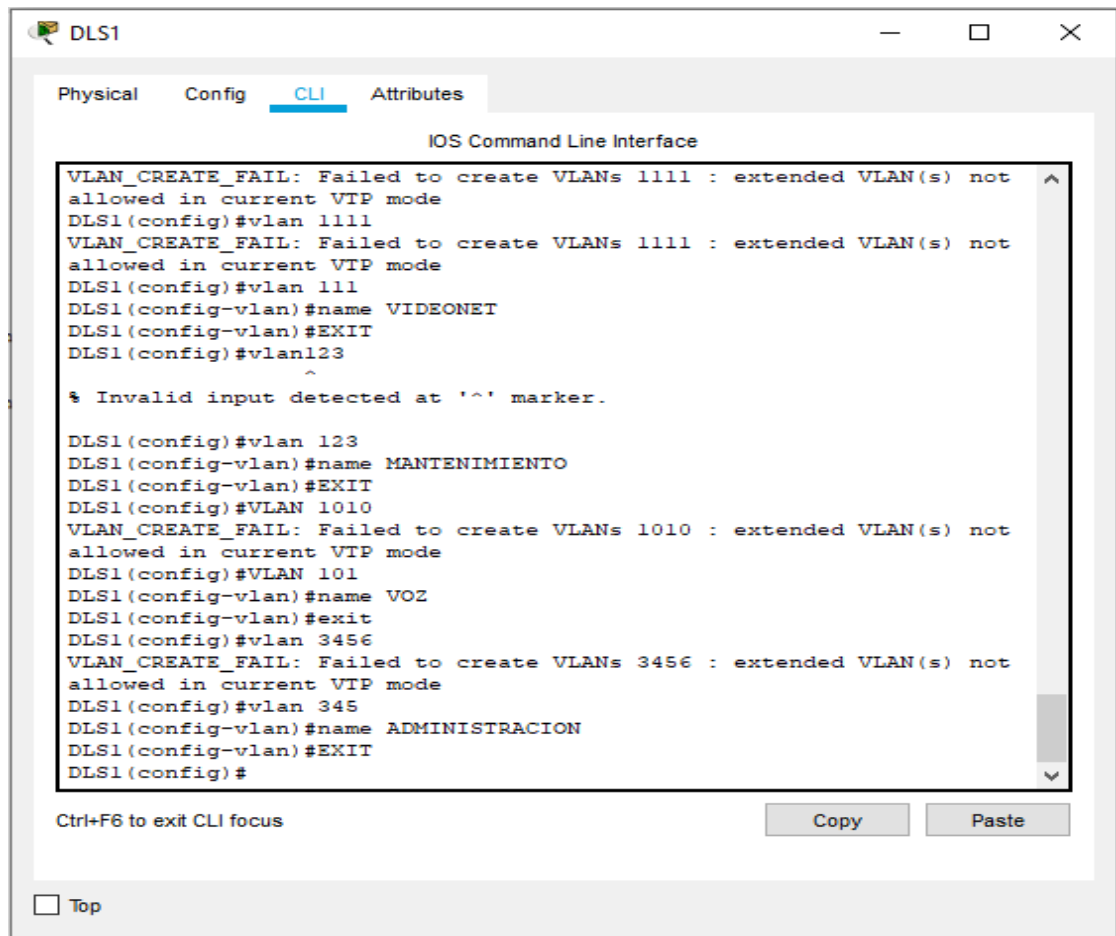
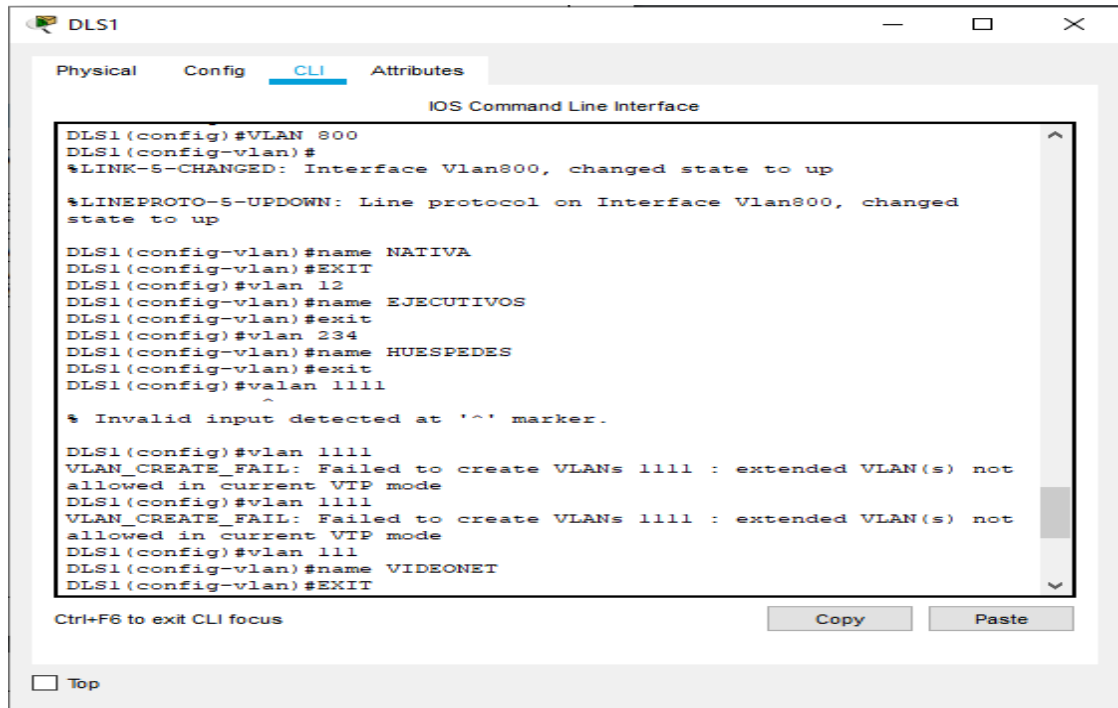


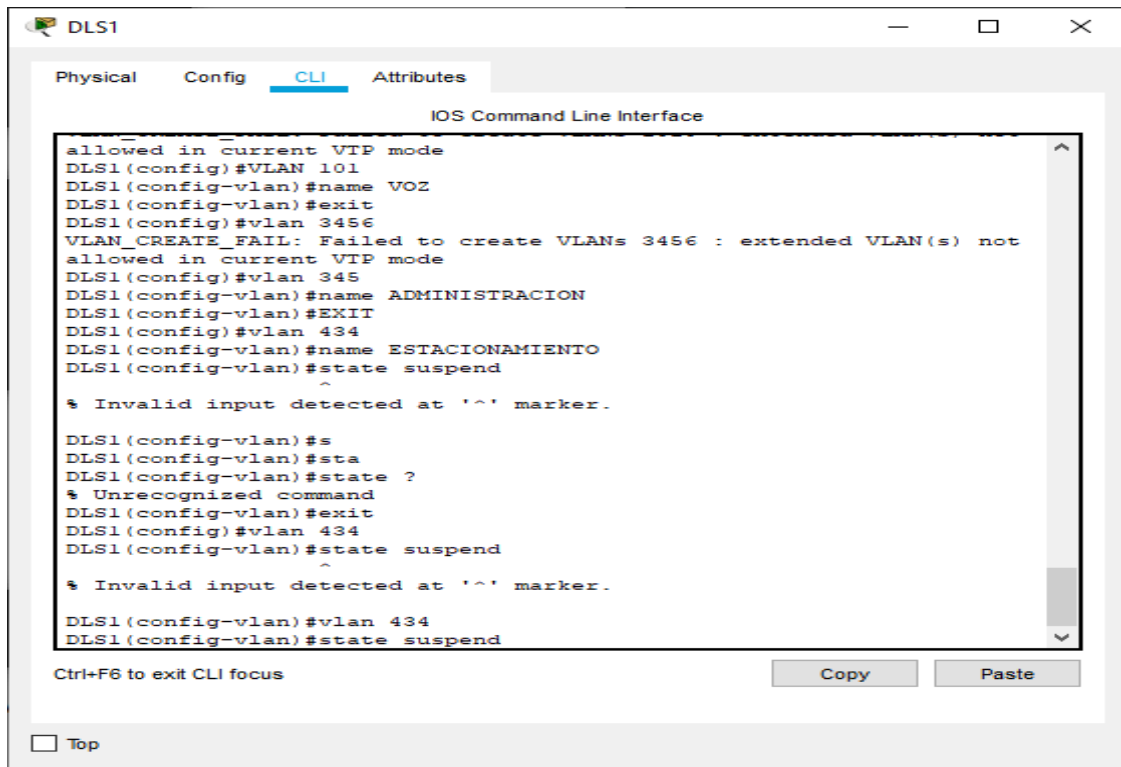
Ilustración 58. Switch DLS1: Configuración del servidor principal

f) En DLS1, suspender la VLAN 434.



```
DLS1
Physical Config CLI Attributes
IOS Command Line Interface
DLS1(config)#VLAN 800
DLS1(config-vlan)#
%LINK-5-CHANGED: Interface Vlan800, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan800, changed
state to up
DLS1(config-vlan)#name NATIVA
DLS1(config-vlan)#EXIT
DLS1(config)#vlan 12
DLS1(config-vlan)#name EJECUTIVOS
DLS1(config-vlan)#exit
DLS1(config)#vlan 234
DLS1(config-vlan)#name HUESPEDES
DLS1(config-vlan)#exit
DLS1(config)#vlan 1111
DLS1(config)#
^
% Invalid input detected at '^' marker.
DLS1(config)#vlan 1111
VLAN_CREATE_FAIL: Failed to create VLANs 1111 : extended VLAN(s) not
allowed in current VTP mode
DLS1(config)#vlan 1111
VLAN_CREATE_FAIL: Failed to create VLANs 1111 : extended VLAN(s) not
allowed in current VTP mode
DLS1(config)#vlan 111
DLS1(config-vlan)#name VIDEONET
DLS1(config-vlan)#EXIT
Ctrl+F6 to exit CLI focus
Copy Paste
 Top
```

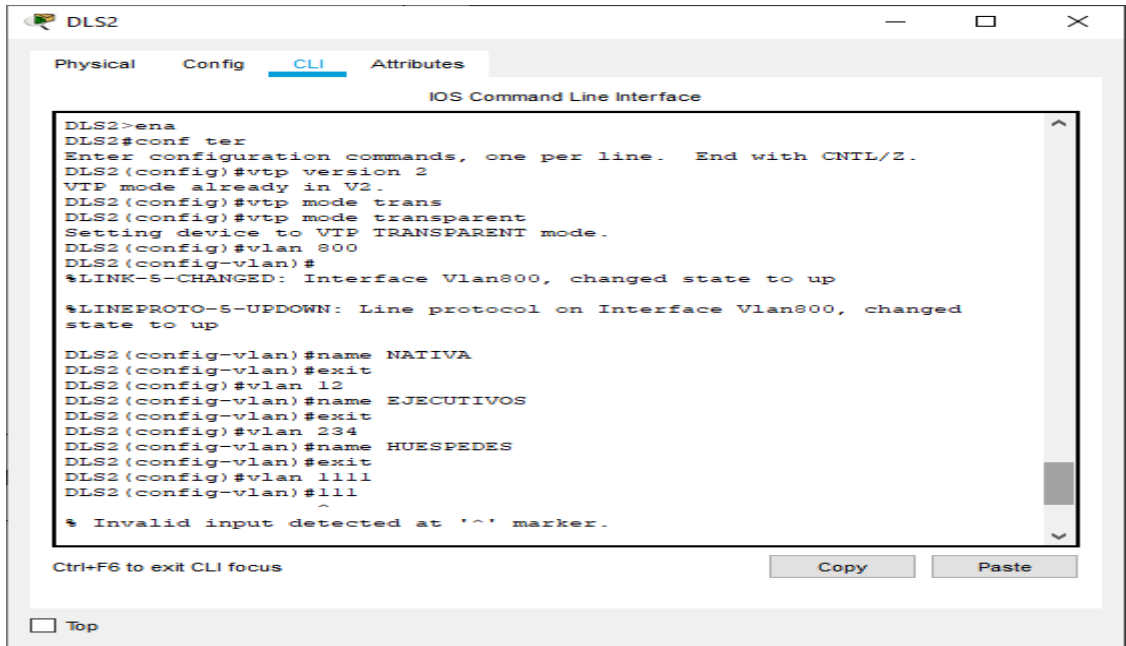
Ilustración 59. Switch DLS1: Suspender la VLAN 434



```
DLS1
Physical Config CLI Attributes
IOS Command Line Interface
allowed in current VTP mode
DLS1(config)#VLAN 101
DLS1(config-vlan)#name VOZ
DLS1(config-vlan)#exit
DLS1(config)#vlan 3456
VLAN_CREATE_FAIL: Failed to create VLANs 3456 : extended VLAN(s) not
allowed in current VTP mode
DLS1(config)#vlan 345
DLS1(config-vlan)#name ADMINISTRACION
DLS1(config-vlan)#EXIT
DLS1(config)#vlan 434
DLS1(config-vlan)#name ESTACIONAMIENTO
DLS1(config-vlan)#state suspend
DLS1(config-vlan)#
^
% Invalid input detected at '^' marker.
DLS1(config-vlan)#s
DLS1(config-vlan)#sta
DLS1(config-vlan)#state ?
% Unrecognized command
DLS1(config-vlan)#exit
DLS1(config)#vlan 434
DLS1(config-vlan)#state suspend
DLS1(config-vlan)#
^
% Invalid input detected at '^' marker.
DLS1(config-vlan)#vlan 434
DLS1(config-vlan)#state suspend
Ctrl+F6 to exit CLI focus
Copy Paste
 Top
```

Ilustración 60. Switch DLS1: Suspender la VLAN 434

- g) Configurar DLS2 en modo VTP transparente VTP utilizando VTP versión 2, y configurar en DLS2 las mismas VLAN que en DLS1.

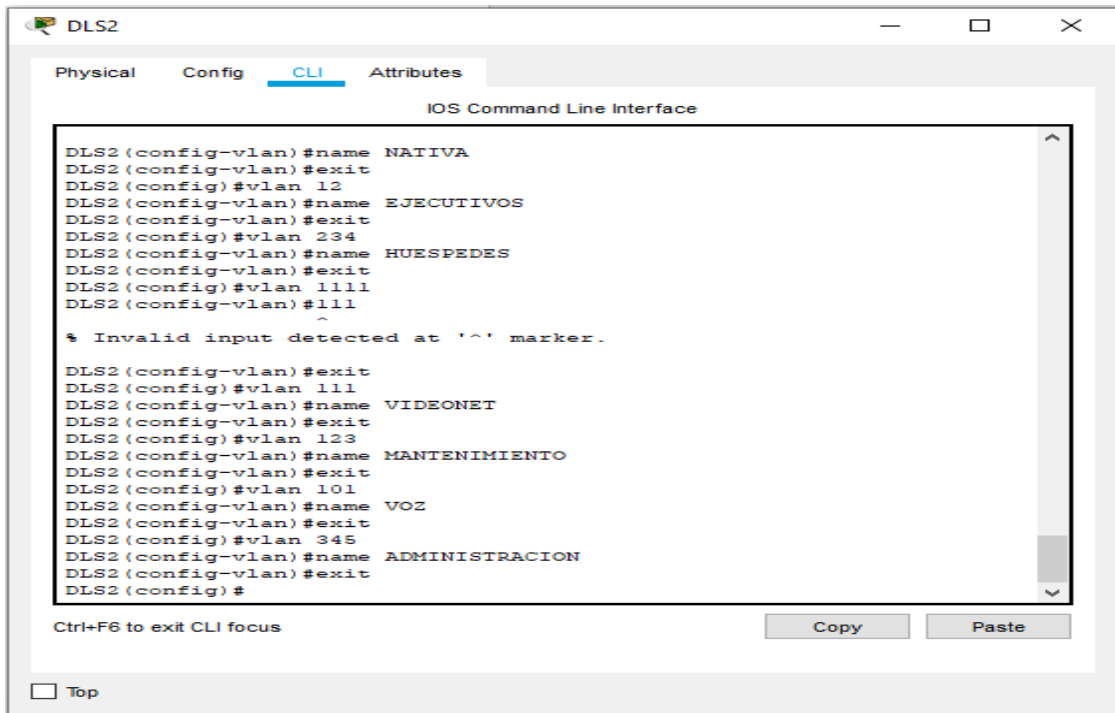


```
DLS2>ena
DLS2#conf ter
Enter configuration commands, one per line. End with CNTL/Z.
DLS2(config)#vtp version 2
VTP mode already in V2.
DLS2(config)#vtp mode trans
DLS2(config)#vtp mode transparent
Setting device to VTP TRANSPARENT mode.
DLS2(config)#vlan 800
DLS2(config-vlan)#
%LINK-S-CHANGED: Interface Vlan800, changed state to up
%LINEPROTO-S-UPDOWN: Line protocol on Interface Vlan800, changed
state to up

DLS2 (config-vlan)#name NATIVA
DLS2 (config-vlan)#exit
DLS2 (config)#vlan 12
DLS2 (config-vlan)#name EJECUTIVOS
DLS2 (config-vlan)#exit
DLS2 (config)#vlan 234
DLS2 (config-vlan)#name HUESPEDES
DLS2 (config-vlan)#exit
DLS2 (config)#vlan 1111
DLS2 (config-vlan)#111
~
% Invalid input detected at '^' marker.
```

Ilustración 61. Switch DLS2: Configuración DLS2 en modo VT

- h) Suspendir VLAN 434 en DLS2.



```
DLS2 (config-vlan)#name NATIVA
DLS2 (config-vlan)#exit
DLS2 (config)#vlan 12
DLS2 (config-vlan)#name EJECUTIVOS
DLS2 (config-vlan)#exit
DLS2 (config)#vlan 234
DLS2 (config-vlan)#name HUESPEDES
DLS2 (config-vlan)#exit
DLS2 (config)#vlan 1111
DLS2 (config-vlan)#111
~
% Invalid input detected at '^' marker.

DLS2 (config-vlan)#exit
DLS2 (config)#vlan 111
DLS2 (config-vlan)#name VIDEONET
DLS2 (config-vlan)#exit
DLS2 (config)#vlan 123
DLS2 (config-vlan)#name MANTENIMIENTO
DLS2 (config-vlan)#exit
DLS2 (config)#vlan 101
DLS2 (config-vlan)#name VOZ
DLS2 (config-vlan)#exit
DLS2 (config)#vlan 345
DLS2 (config-vlan)#name ADMINISTRACION
DLS2 (config-vlan)#exit
DLS2 (config)#
```

Ilustración 62. Switch DLS2: Suspendiendo VLAN

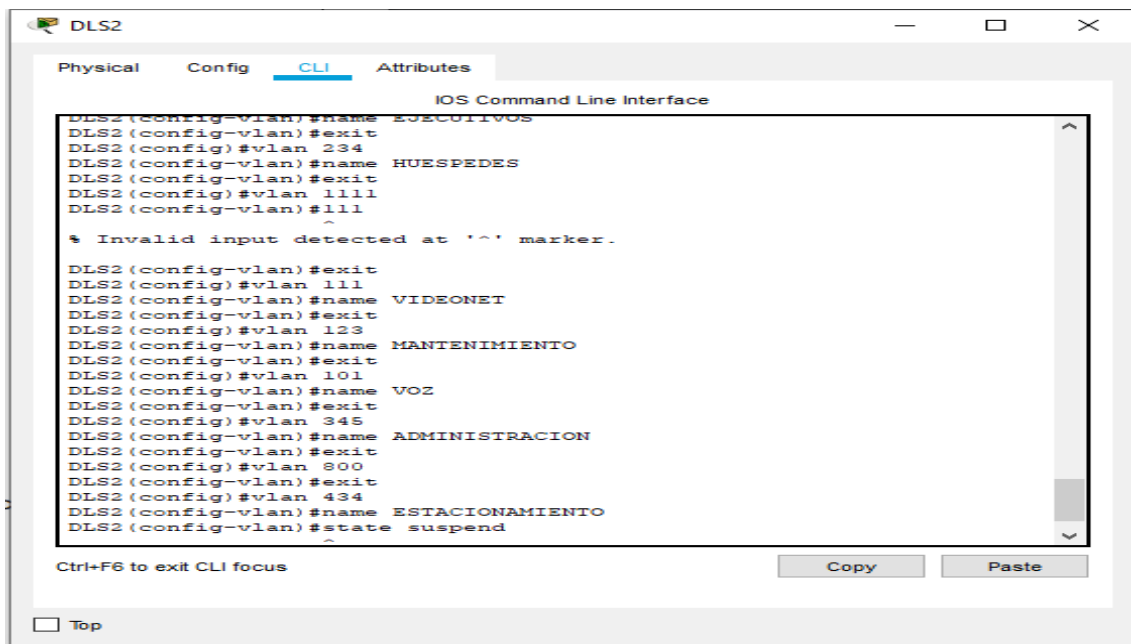


Ilustración 63. Switch DLS2: Suspendiendo VLAN

- i) En DLS2, crear VLAN 567 con el nombre de CONTABILIDAD. La VLAN de CONTABILIDAD no podrá estar disponible en cualquier otro Switch de la red.

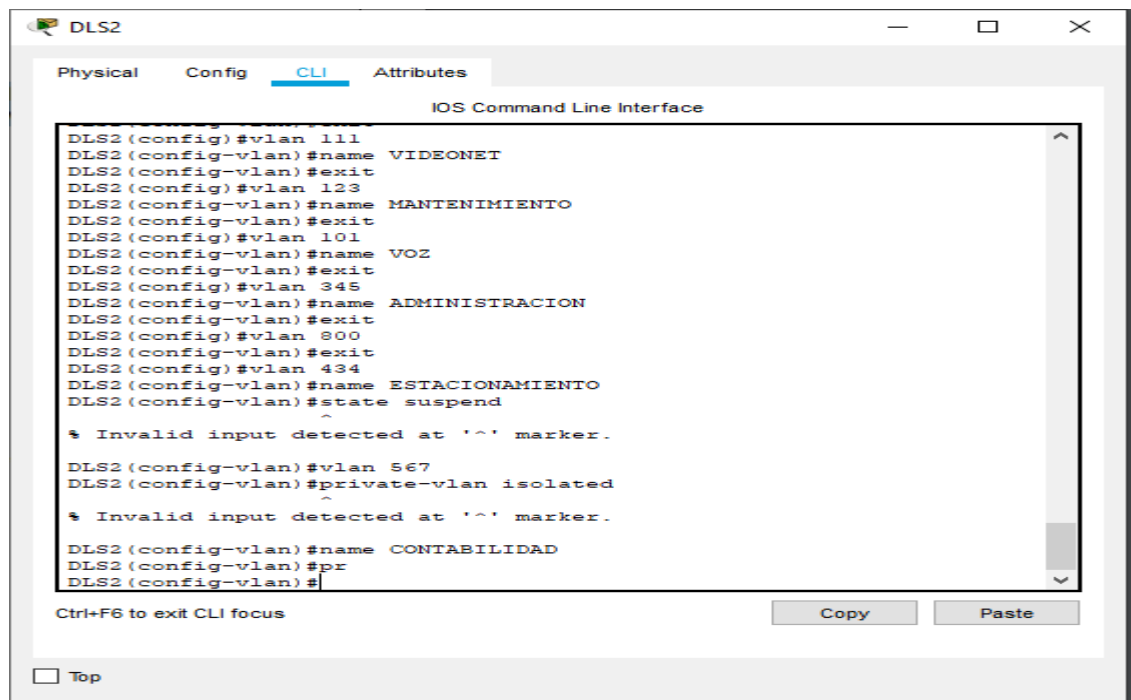
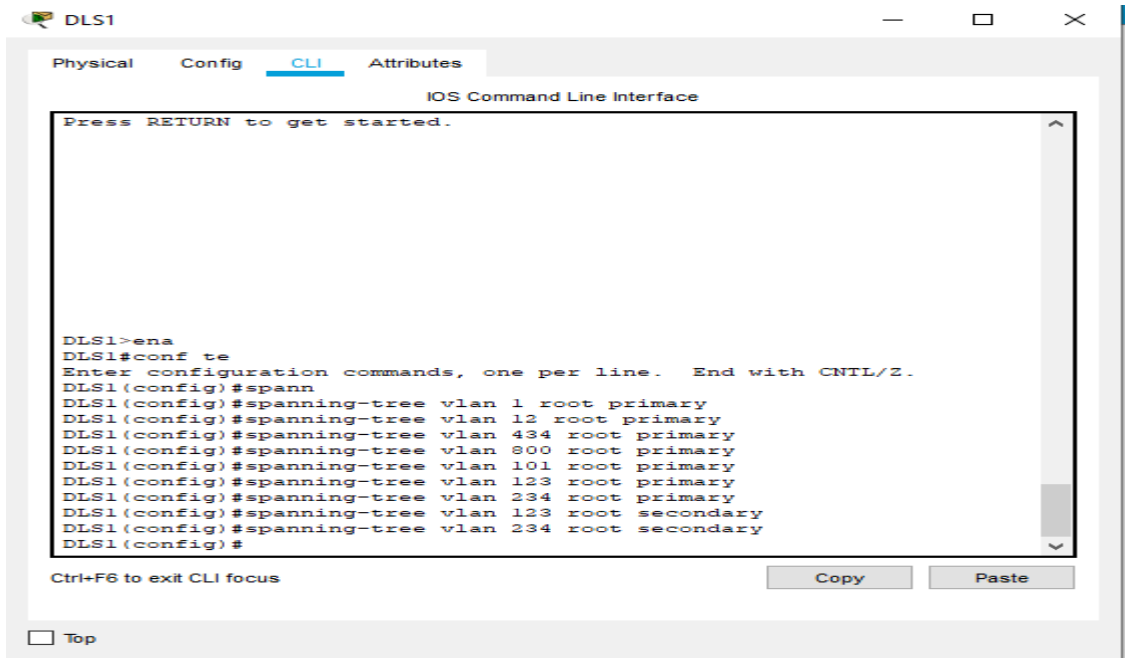


Ilustración 64. Switch DLS2: Se crea el nombre de CONTABILIDAD

- j) Configurar DLS1 como Spanning tree root para las VLAN 1, 12, 434, 800, 1010, 1111 y 3456 y como raíz secundaria para las VLAN 123 y 234.



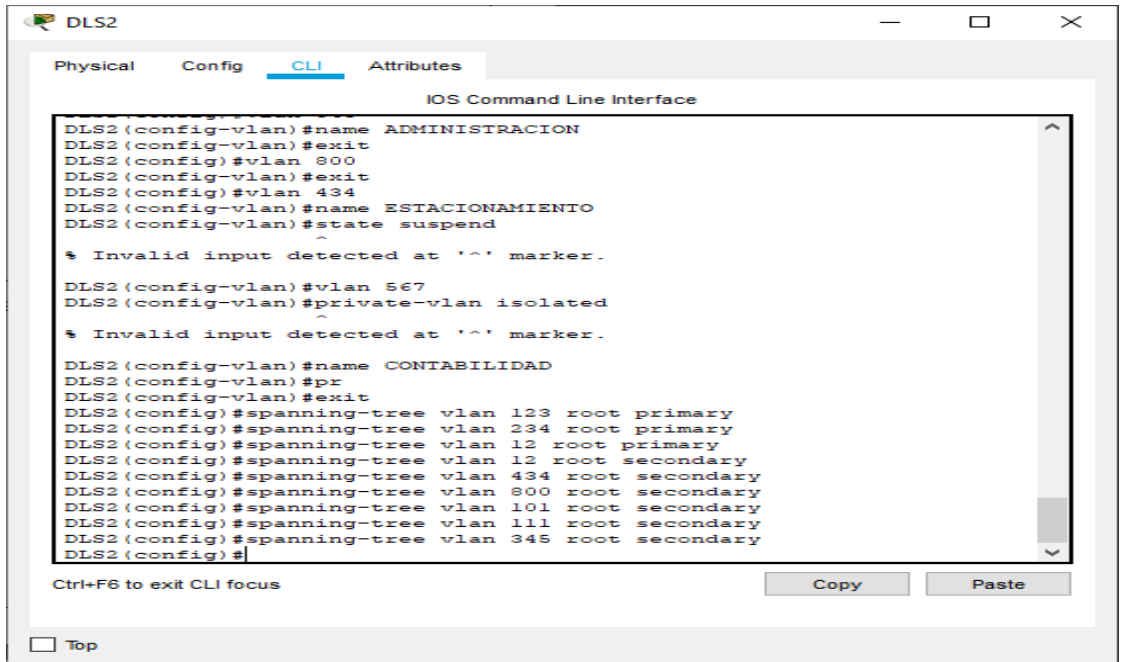
```
DLS1
Physical Config CLI Attributes
IOS Command Line Interface
Press RETURN to get started.

DLS1>ena
DLS1#conf te
Enter configuration commands, one per line. End with CNTL/Z.
DLS1(config)#spann
DLS1(config)#spanning-tree vlan 1 root primary
DLS1(config)#spanning-tree vlan 12 root primary
DLS1(config)#spanning-tree vlan 434 root primary
DLS1(config)#spanning-tree vlan 800 root primary
DLS1(config)#spanning-tree vlan 101 root primary
DLS1(config)#spanning-tree vlan 123 root primary
DLS1(config)#spanning-tree vlan 234 root primary
DLS1(config)#spanning-tree vlan 123 root secondary
DLS1(config)#spanning-tree vlan 234 root secondary
DLS1(config)#

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

Ilustración 65. Switch DLS1: Configuración como Spanning tree root

- k) Configurar DLS2 como Spanning tree root para las VLAN 123 y 234 y como una raíz secundaria para las VLAN 12, 434, 800, 1010, 1111 y 3456.



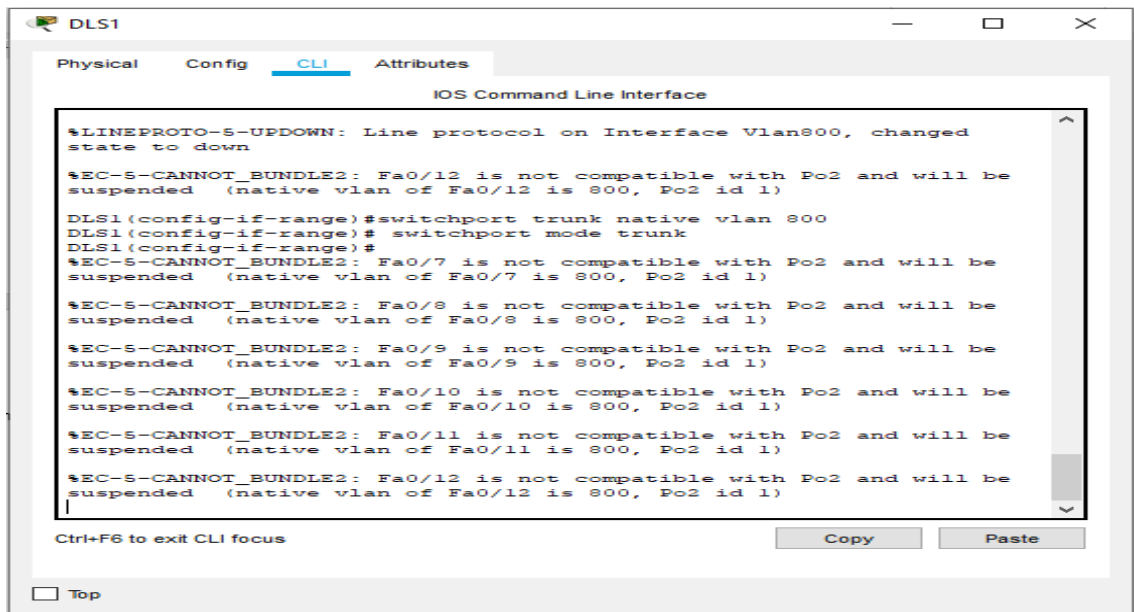
```
DLS2
Physical Config CLI Attributes
IOS Command Line Interface

DLS2(config-vlan)#name ADMINISTRACION
DLS2(config-vlan)#exit
DLS2(config)#vlan 800
DLS2(config-vlan)#exit
DLS2(config)#vlan 434
DLS2(config-vlan)#name ESTACIONAMIENTO
DLS2(config-vlan)#state suspend
^
% Invalid input detected at '^' marker.
DLS2(config-vlan)#vlan 567
DLS2(config-vlan)#private-vlan isolated
^
% Invalid input detected at '^' marker.
DLS2(config-vlan)#name CONTABILIDAD
DLS2(config-vlan)#pr
DLS2(config-vlan)#exit
DLS2(config)#spanning-tree vlan 123 root primary
DLS2(config)#spanning-tree vlan 234 root primary
DLS2(config)#spanning-tree vlan 12 root primary
DLS2(config)#spanning-tree vlan 12 root secondary
DLS2(config)#spanning-tree vlan 434 root secondary
DLS2(config)#spanning-tree vlan 800 root secondary
DLS2(config)#spanning-tree vlan 101 root secondary
DLS2(config)#spanning-tree vlan 111 root secondary
DLS2(config)#spanning-tree vlan 345 root secondary
DLS2(config)#

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

Ilustración 66. Switch DLS2: Configuración como Spanning tree root

- l) Configurar todos los puertos como troncales de tal forma que solamente las VLAN que se han creado se les permitirá circular a través de éstos puertos.

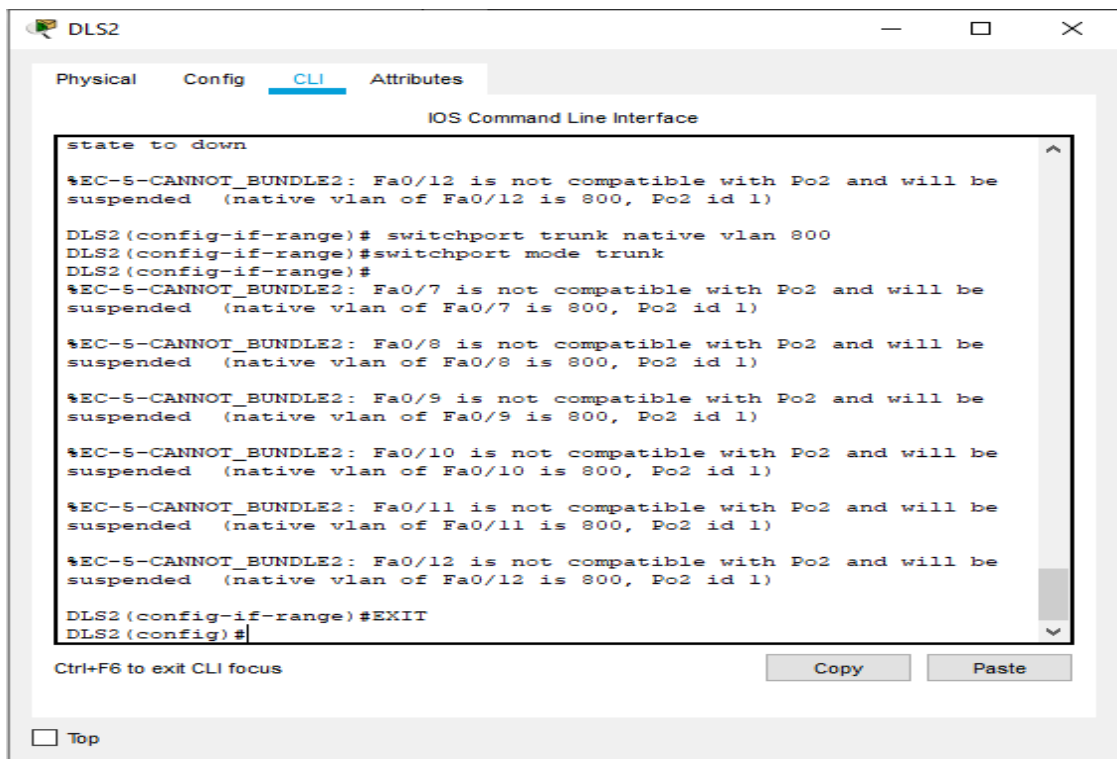


```

%LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan800, changed
state to down
%EC-5-CANNOT_BUNDLE2: Fa0/12 is not compatible with Po2 and will be
suspended (native vlan of Fa0/12 is 800, Po2 id 1)
DLS1(config-if-range)#switchport trunk native vlan 800
DLS1(config-if-range)# switchport mode trunk
DLS1(config-if-range)#
%EC-5-CANNOT_BUNDLE2: Fa0/7 is not compatible with Po2 and will be
suspended (native vlan of Fa0/7 is 800, Po2 id 1)
%EC-5-CANNOT_BUNDLE2: Fa0/8 is not compatible with Po2 and will be
suspended (native vlan of Fa0/8 is 800, Po2 id 1)
%EC-5-CANNOT_BUNDLE2: Fa0/9 is not compatible with Po2 and will be
suspended (native vlan of Fa0/9 is 800, Po2 id 1)
%EC-5-CANNOT_BUNDLE2: Fa0/10 is not compatible with Po2 and will be
suspended (native vlan of Fa0/10 is 800, Po2 id 1)
%EC-5-CANNOT_BUNDLE2: Fa0/11 is not compatible with Po2 and will be
suspended (native vlan of Fa0/11 is 800, Po2 id 1)
%EC-5-CANNOT_BUNDLE2: Fa0/12 is not compatible with Po2 and will be
suspended (native vlan of Fa0/12 is 800, Po2 id 1)
|

```

Ilustración 67. Switch DLS1: Configuración los puertos



```

state to down
%EC-5-CANNOT_BUNDLE2: Fa0/12 is not compatible with Po2 and will be
suspended (native vlan of Fa0/12 is 800, Po2 id 1)
DLS2(config-if-range)# switchport trunk native vlan 800
DLS2(config-if-range)#switchport mode trunk
DLS2(config-if-range)#
%EC-5-CANNOT_BUNDLE2: Fa0/7 is not compatible with Po2 and will be
suspended (native vlan of Fa0/7 is 800, Po2 id 1)
%EC-5-CANNOT_BUNDLE2: Fa0/8 is not compatible with Po2 and will be
suspended (native vlan of Fa0/8 is 800, Po2 id 1)
%EC-5-CANNOT_BUNDLE2: Fa0/9 is not compatible with Po2 and will be
suspended (native vlan of Fa0/9 is 800, Po2 id 1)
%EC-5-CANNOT_BUNDLE2: Fa0/10 is not compatible with Po2 and will be
suspended (native vlan of Fa0/10 is 800, Po2 id 1)
%EC-5-CANNOT_BUNDLE2: Fa0/11 is not compatible with Po2 and will be
suspended (native vlan of Fa0/11 is 800, Po2 id 1)
%EC-5-CANNOT_BUNDLE2: Fa0/12 is not compatible with Po2 and will be
suspended (native vlan of Fa0/12 is 800, Po2 id 1)
DLS2(config-if-range)#EXIT
DLS2(config)#

```

Ilustración 68. Switch DLS2: Configuración los puertos

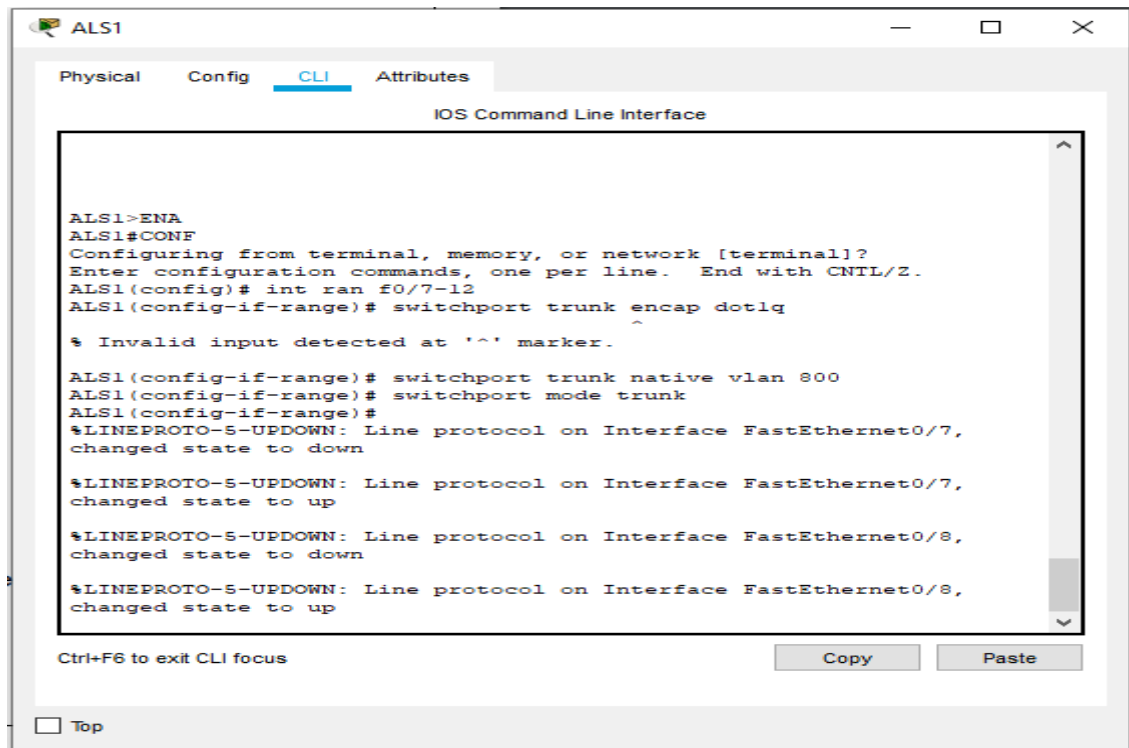


Ilustración 69. Switch ALS1: Configuración los puertos

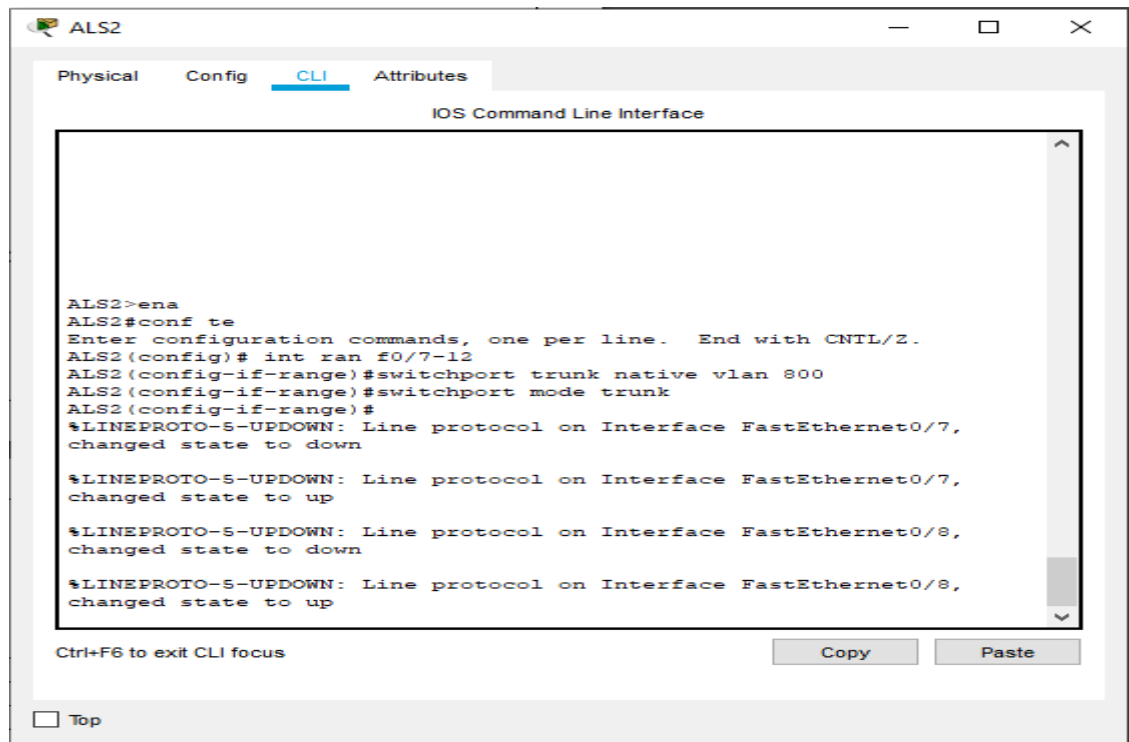


Ilustración 70. Switch ALS1: Configuración los puertos

- m) Configurar las siguientes interfaces como puertos de acceso, asignados a las VLAN de la siguiente manera:

Tabla 2. Configuraciones de las interfaces como puertos de acceso

Interfaz	DLS1	DLS2	ALS1	ALS2
Interfaz Fa0/6	3456	12 , 1010	123, 1010	234
Interfaz Fa0/15	1111	1111	1111	1111
Interfaces F0 /16-18	567			

```

DLS1
Physical Config CLI Attributes
IOS Command Line Interface

%EC-5-CANNOT_BUNDLE2: Fa0/10 is not compatible with Po2 and will be
suspended (native vlan of Fa0/10 is 800, Po2 id 1)

%EC-5-CANNOT_BUNDLE2: Fa0/11 is not compatible with Po2 and will be
suspended (native vlan of Fa0/11 is 800, Po2 id 1)

%EC-5-CANNOT_BUNDLE2: Fa0/12 is not compatible with Po2 and will be
suspended (native vlan of Fa0/12 is 800, Po2 id 1)

DLS1(config-if-range)#EXIT
DLS1(config)# interface fastethernet 0/6
DLS1(config-if)#switchport access vlan 3456
% Access VLAN does not exist. Creating vlan 3456
DLS1(config-if)#switchport access vlan 345
DLS1(config-if)#no shut

%LINK-5-CHANGED: Interface FastEthernet0/6, changed state to down
DLS1(config-if)# interface fastethernet 0/15
DLS1(config-if)#switchport access vlan 111
^
% Invalid input detected at '^' marker.

DLS1(config-if)#switchport access vlan 111
DLS1(config-if)#no shut

%LINK-5-CHANGED: Interface FastEthernet0/15, changed state to down
DLS1(config-if)#
  
```

Ctrl+F6 to exit CLI focus

Copy Paste

Top

Ilustración 71. Switch DLS1: Configuración de interfaces

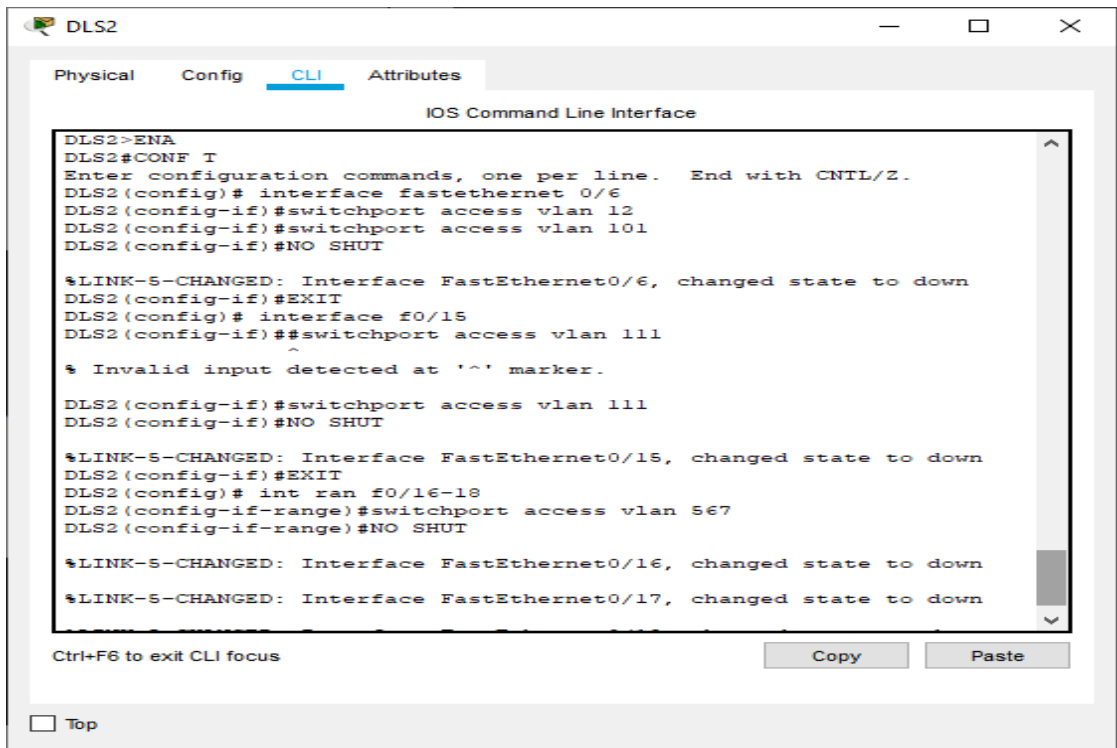


Ilustración 72. Switch DLS2: Configuración de interfaces

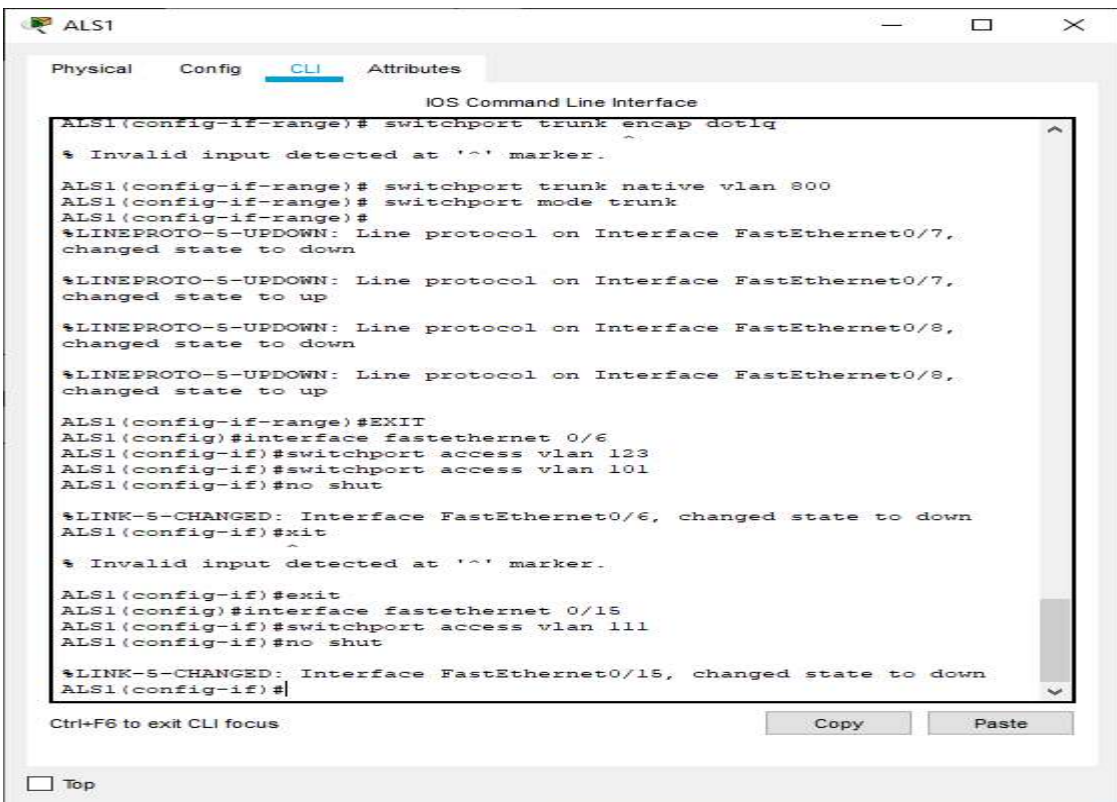


Ilustración 73. Switch ALS1: Configuración de interfaces

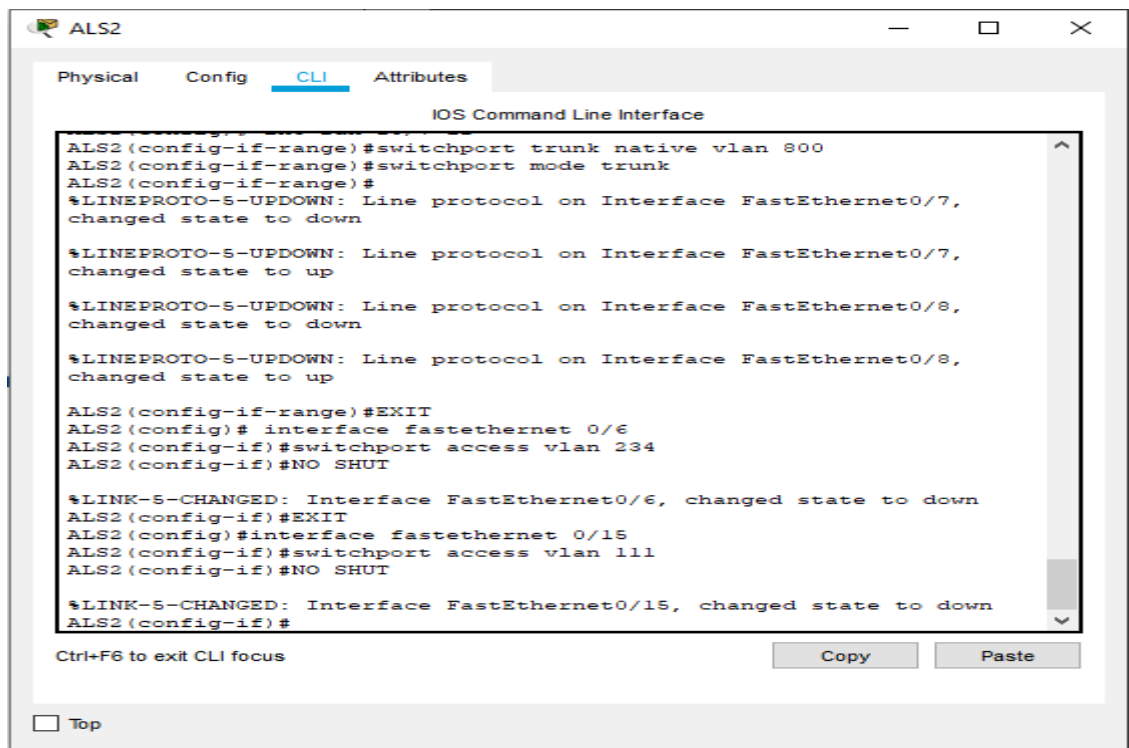


Ilustración 74. Switch ALS1: Configuración de interfaces

Parte 2: conectividad de red de prueba y las opciones configuradas.

- a) Verificar la existencia de las VLAN correctas en todos los switches y la asignación de puertos troncales y de acceso

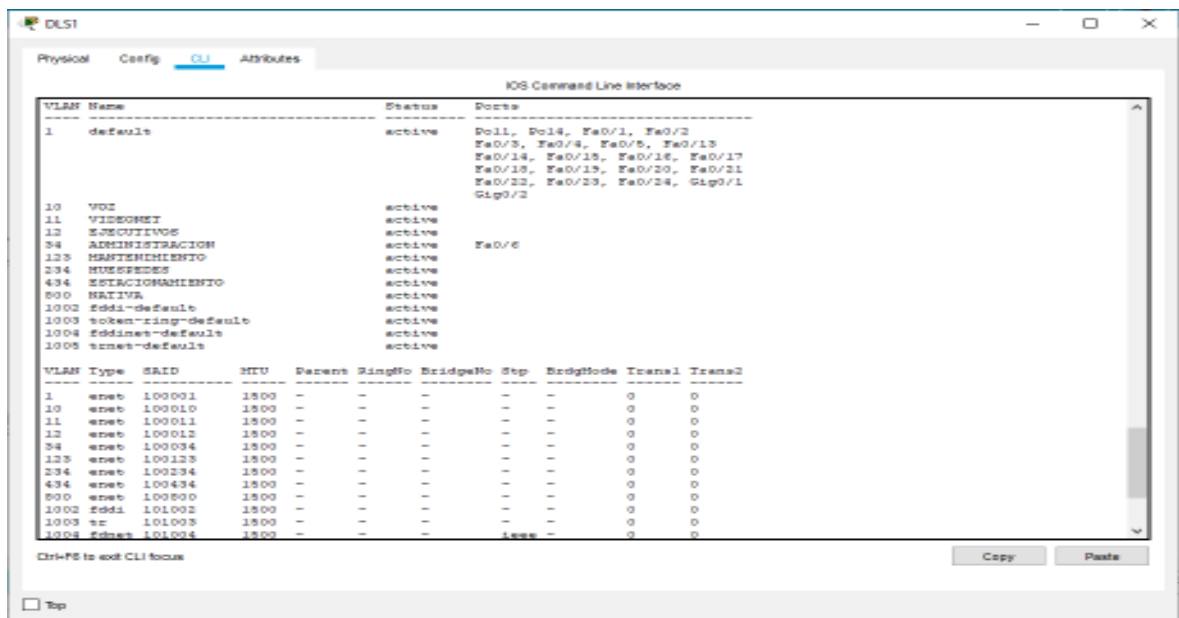


Ilustración 75. Switch DLS1: Verificación la existencia de las VLAN

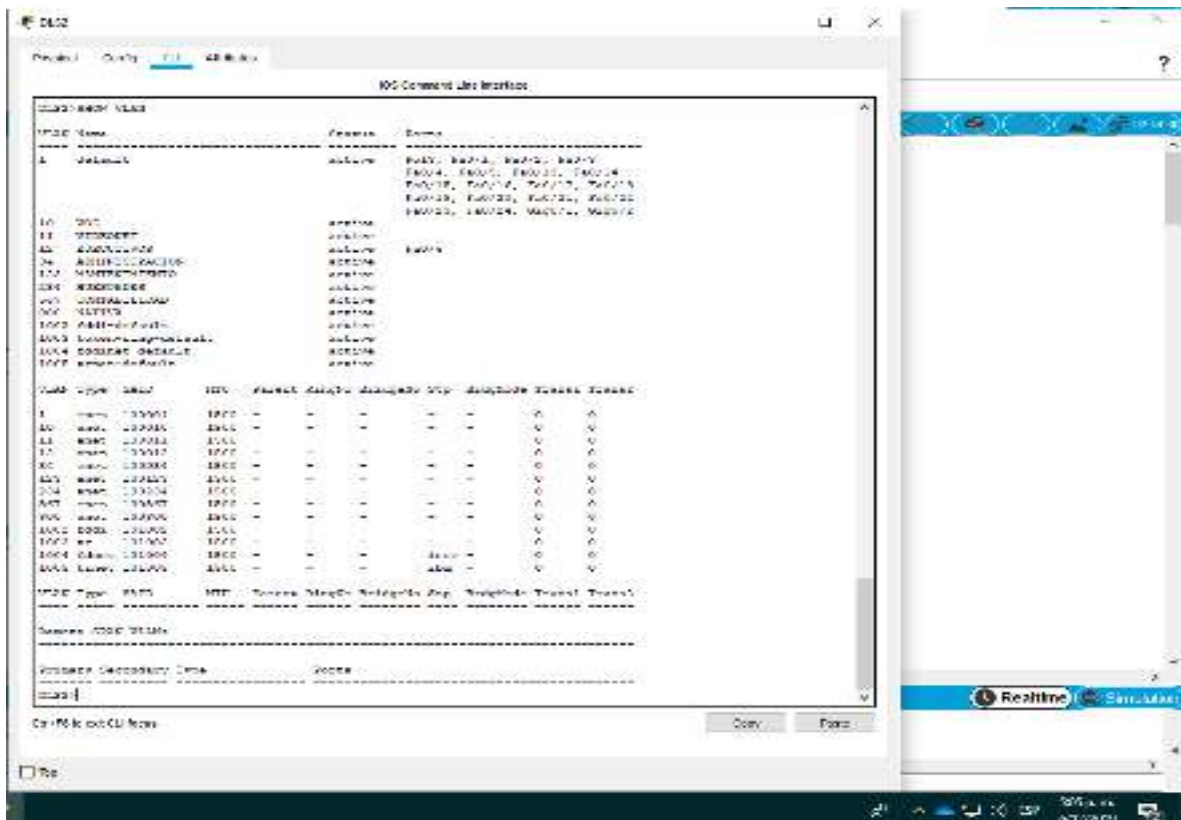


Ilustración 76. Switch DLS2: Verificación la existencia de las VLAN

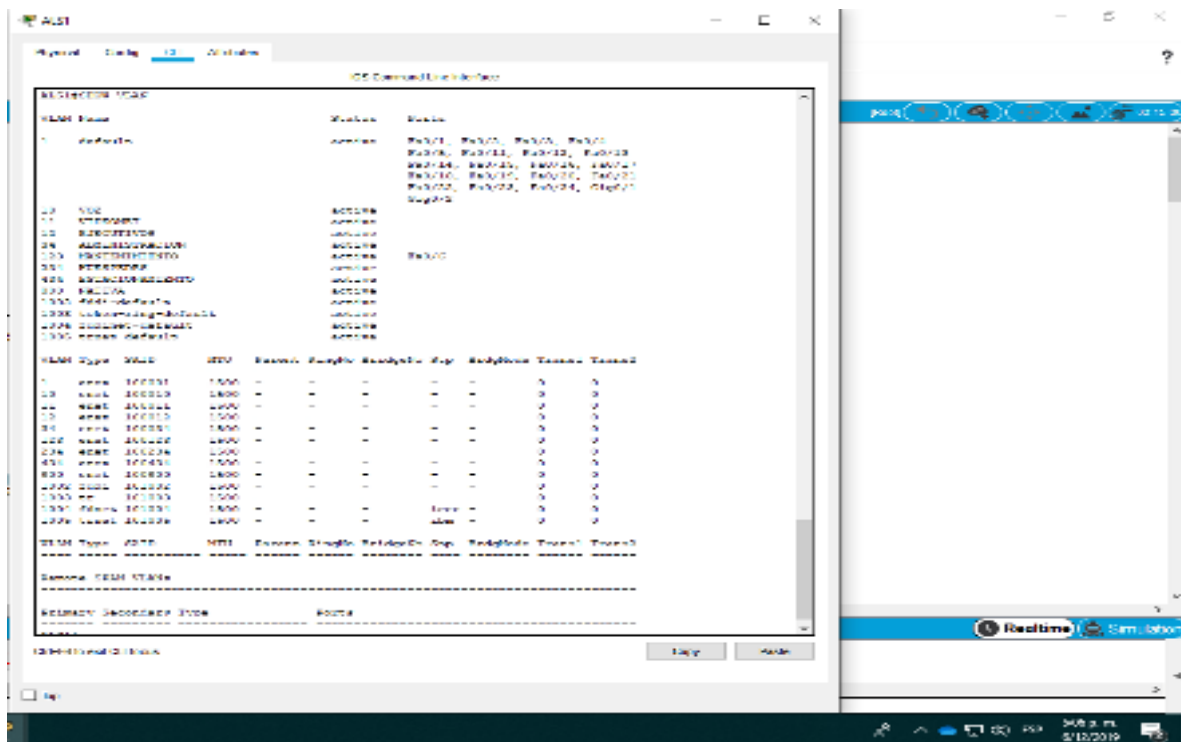


Ilustración 77. Switch ALS1: Verificación la existencia de las VLAN

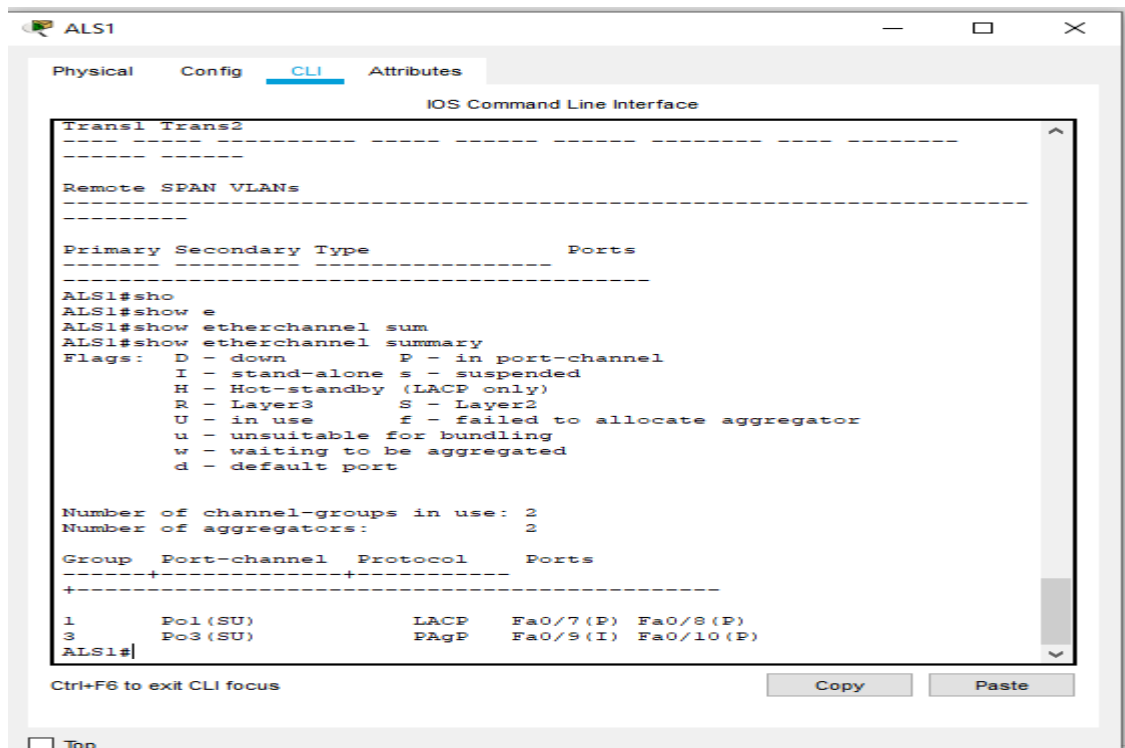


Ilustración 80. Switch DLS1: Verificación

c) Verificar la configuración de Spanning tree entre DLS1 o DLS2 para cada VLAN.

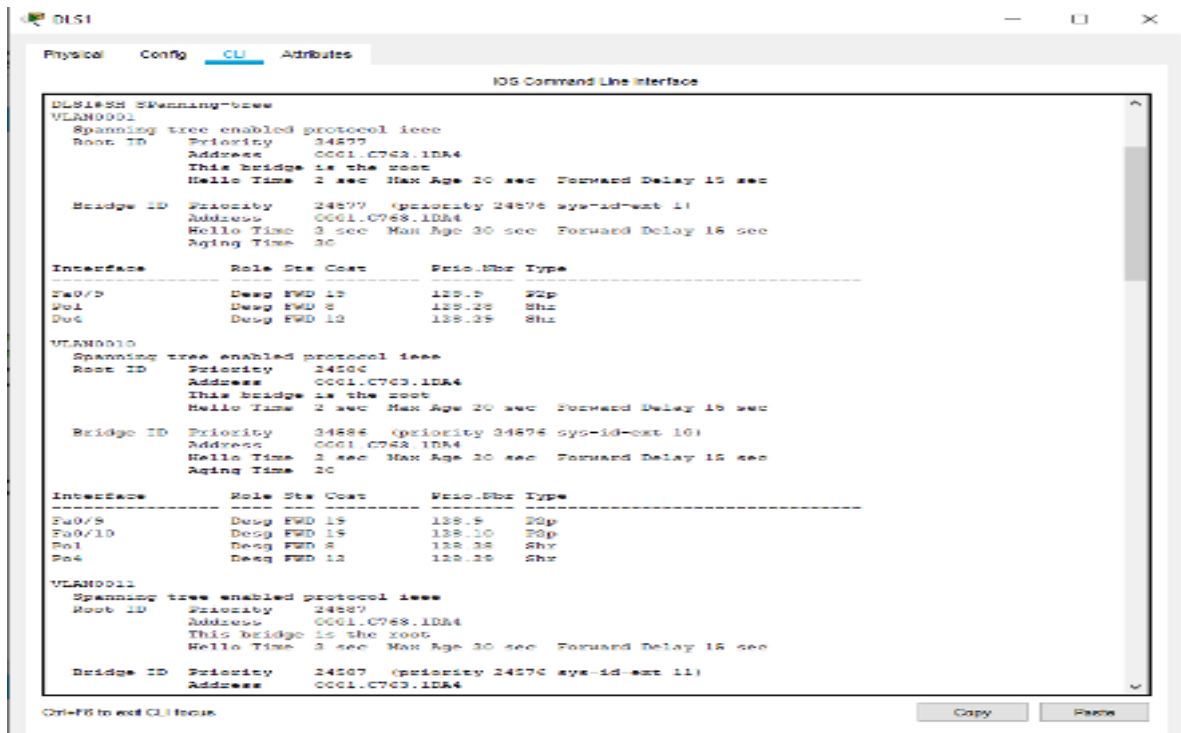


Ilustración 81. Switch DLS1: Configuración de Spanning tree

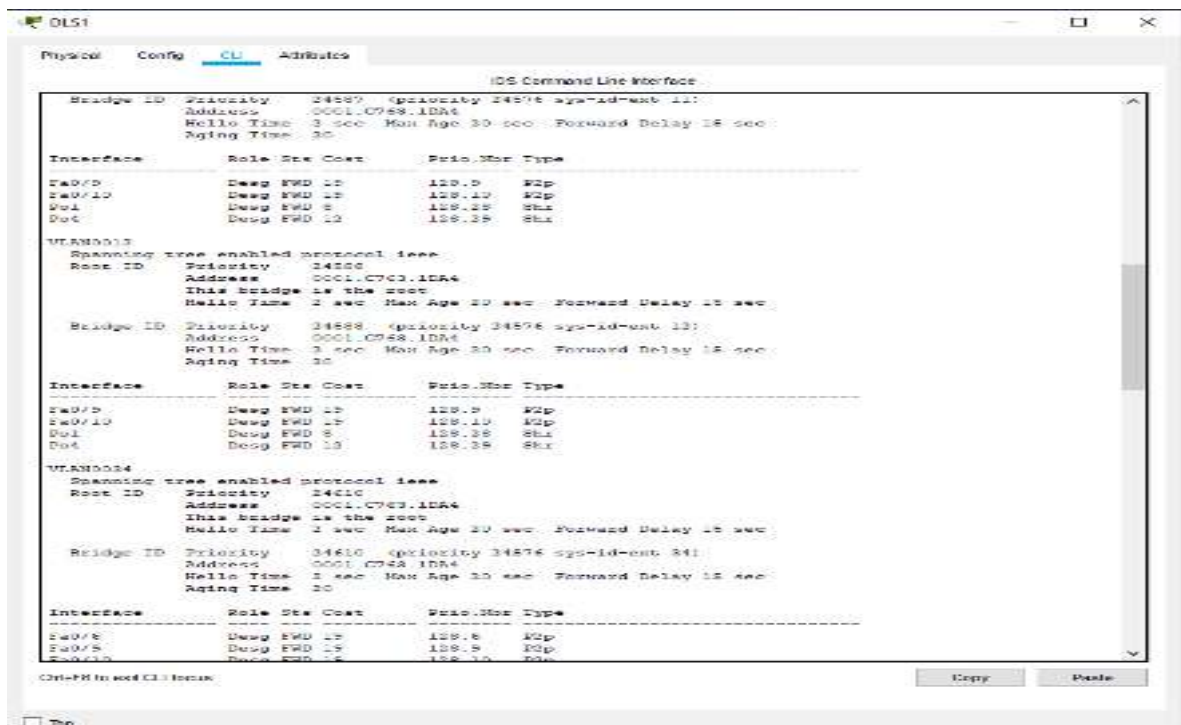


Ilustración 82. Switch DLS1: Configuración de Spanning tree

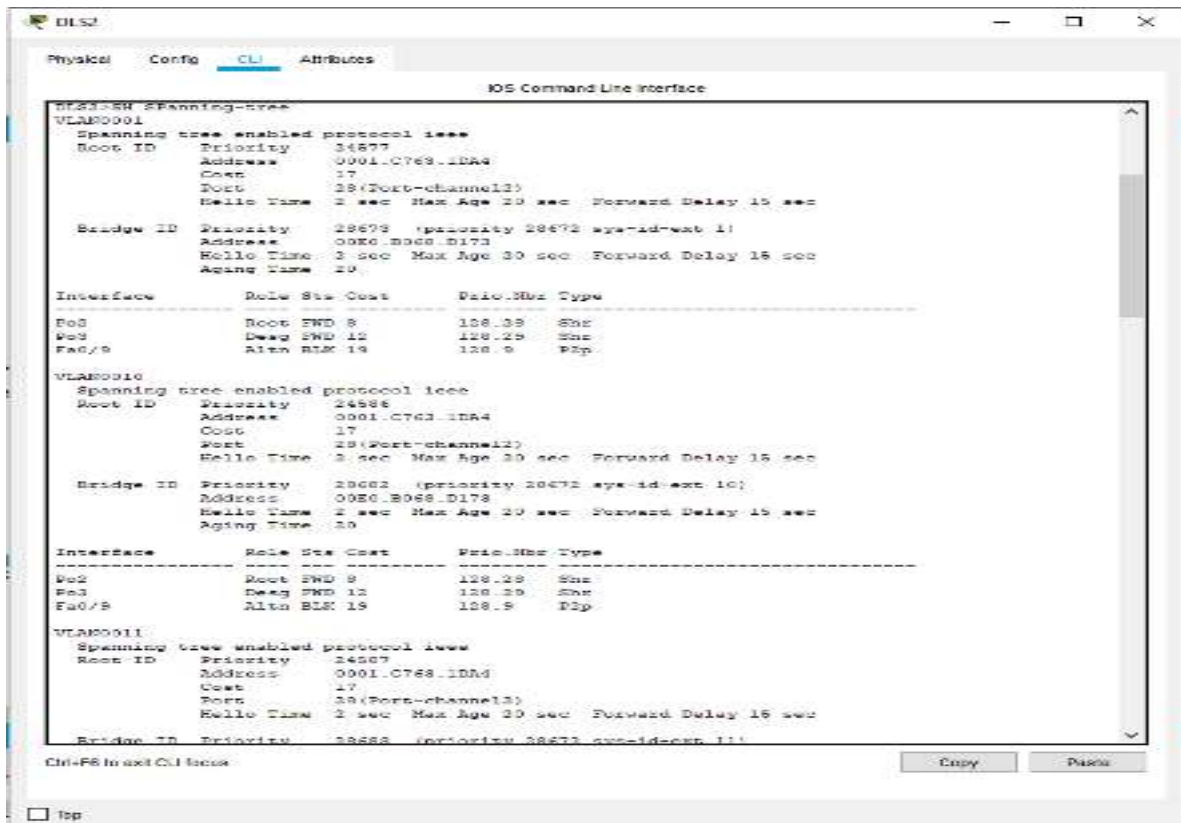


Ilustración 83. Switch DLS2: Configuración de Spanning tree

```

DLS2
Physical Config CLI Attributes
IOS Command Line Interface
Bridge ID Priority 28698 (priority 28672 sys-id-ext 11)
Address 0020.B009.D173
Hello Time 3 sec Max Age 30 sec Forward Delay 15 sec
Aging Time 30

Interface -----
Role Role Sts Cost Prio.Nbr Type
-----
Po2 Root FWD 0 128.28 Sbr
Po3 Desg FWD 12 128.29 Sbr
Fa0/5 Altn BLK 19 128.9 P2p

VLAN0012
Spanning tree enabled protocol ieee
Root ID Priority 24588
Address 0001.C763.1DA4
Cost 17
Port 28 (Port-channel2)
Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

Bridge ID Priority 38684 (priority 38672 sys-id-ext 12)
Address 0020.B009.D173
Hello Time 3 sec Max Age 30 sec Forward Delay 15 sec
Aging Time 30

Interface -----
Role Role Sts Cost Prio.Nbr Type
-----
Po2 Root FWD 0 128.28 Sbr
Po3 Desg FWD 12 128.29 Sbr
Fa0/5 Altn BLK 19 128.9 P2p

VLAN0034
Spanning tree enabled protocol ieee
Root ID Priority 24610
Address 0001.C763.1DA4
Cost 17
Port 28 (Port-channel2)
Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

Bridge ID Priority 32802 (priority 32768 sys-id-ext 34)
Address 0020.B009.D173
Hello Time 3 sec Max Age 30 sec Forward Delay 15 sec
Aging Time 30

Interface -----
Role Role Sts Cost Prio.Nbr Type
-----
Po2 Root FWD 0 128.28 Sbr
Po3 Desg FWD 12 128.29 Sbr

Ctrl-F8 to exit CLI focus
Copy Paste

```

Ilustración 84. Switch DLS2: Configuración de Spanning tree

```

ALS1
Physical Config CLI Attributes
IOS Command Line Interface
ALS1#show etherchannel summary
Flags: D - down P - in port-channel
I - stand-alone S - suspended
H - Hot-standby (LACP only)
R - Layer 3 S - Sayer2
U - an use E - failed to allocate aggregator
u - unavailable for bundling
W - waiting to be aggregated
d - default port

Number of channel-groups in use: 2
Number of aggregators: 2

Group Port-channel Protocol Ports
-----
1 Po1(SU) LACP Fa0/7(P) Fa0/8(P)
3 Po3(SU) PAgP Fa0/9(P) Fa0/10(P)

ALS1#SH Spanning-tree
VLAN0001
Spanning tree enabled protocol ieee
Root ID Priority 24577
Address 0001.C763.1DA4
Cost 9
Port 27 (Port-channel1)
Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

Bridge ID Priority 32768 (priority 32768 sys-id-ext 1)
Address 0001.96BD.116D
Hello Time 3 sec Max Age 30 sec Forward Delay 15 sec
Aging Time 30

Interface -----
Role Role Sts Cost Prio.Nbr Type
-----
Fa0/9 Desg FWD 18 128.3 P2p
Po1 Root FWD 0 128.37 Sbr
Po3 Desg FWD 0 128.20 Sbr

VLAN0010
Spanning tree enabled protocol ieee
Root ID Priority 24866
Address 0001.C763.1DA4
Cost 5
Port 27 (Port-channel1)
Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

Ctrl-F8 to exit CLI focus
Copy Paste

```

Ilustración 85. Switch ALS1: Configuración de Spanning tree

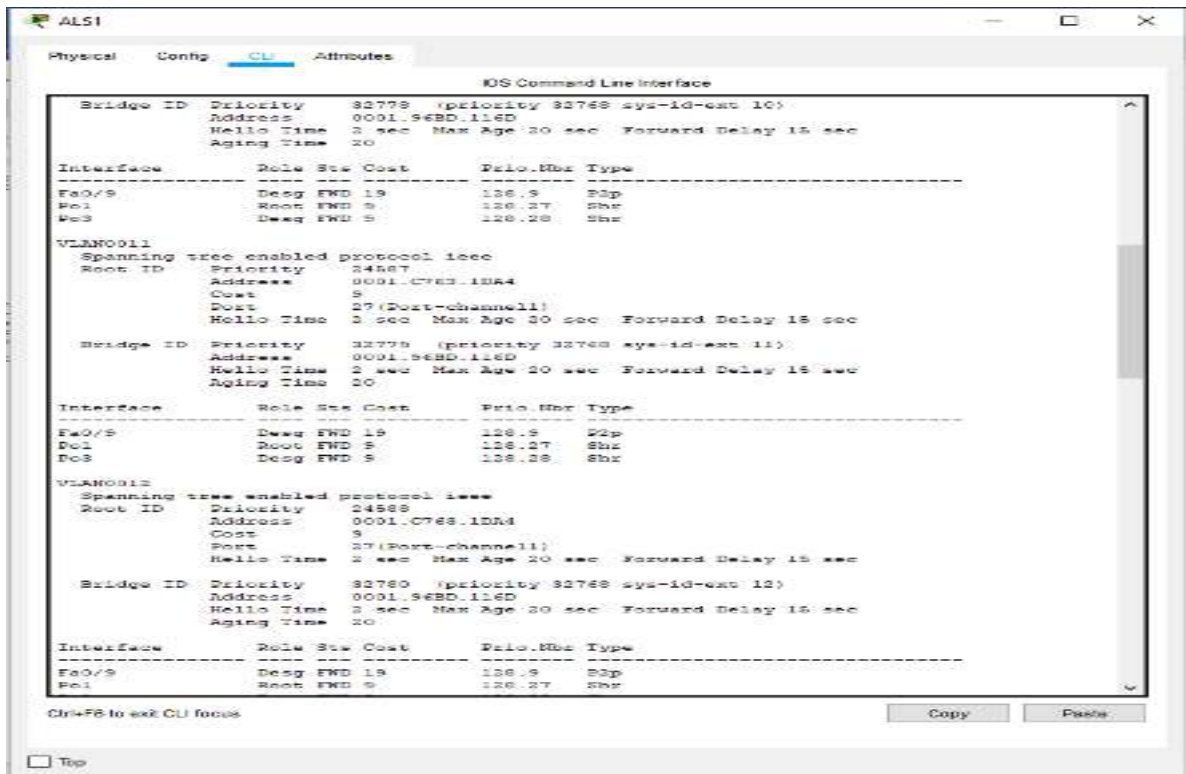


Ilustración 86. Switch ALS1: Configuración de Spanning tree

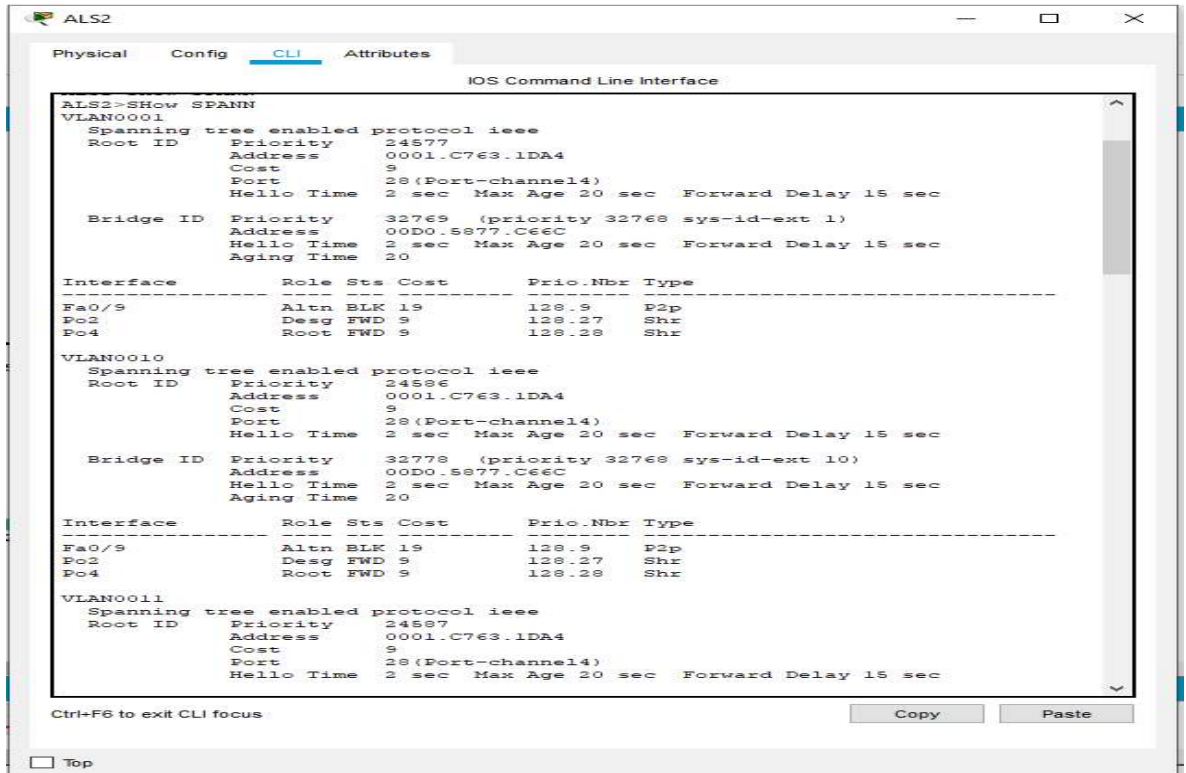


Ilustración 87. Switch ALS2: Configuración de Spanning tree

ALS2

Physical Config **CLI** Attributes

IOS Command Line Interface

```

Bridge ID Priority 32779 (priority 32768 sys-id-ext 11)
Address 00D0.5877.C66C
Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
Aging Time 20

Interface Role Sts Cost Prio.Nbr Type
-----
Fa0/9 Altn BLK 19 128.9 P2p
Po2 Desg FWD 9 128.27 Shr
Po4 Root FWD 9 128.28 Shr

VLAN0012
Spanning tree enabled protocol ieee
Root ID Priority 24588
Address 0001.C763.1DA4
Cost 9
Port 28 (Port-channel4)
Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

Bridge ID Priority 32780 (priority 32768 sys-id-ext 12)
Address 00D0.5877.C66C
Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
Aging Time 20

Interface Role Sts Cost Prio.Nbr Type
-----
Fa0/9 Altn BLK 19 128.9 P2p
Po2 Desg FWD 9 128.27 Shr
Po4 Root FWD 9 128.28 Shr

VLAN0034
Spanning tree enabled protocol ieee
Root ID Priority 24610
Address 0001.C763.1DA4
Cost 9
Port 28 (Port-channel4)
Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

Bridge ID Priority 32802 (priority 32768 sys-id-ext 34)
Address 00D0.5877.C66C
Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
Aging Time 20

Interface Role Sts Cost Prio.Nbr Type
-----
Fa0/9 Altn BLK 19 128.9 P2p
Po2 Desg FWD 9 128.27 Shr
Po4 Root FWD 9 128.28 Shr

```

Ctrl+F6 to exit CLI focus

Copy Paste

Top

Ilustración 88. Switch ALS2: Configuración de Spanning tree

1.2.2. ESCENARIO COMANDOS 2

DLS1

```
swtich>ena
swtich#conf t
Enter configuration commands, one per line. End with CNTL/Z.
swtich(config)#int rang f0/1-24, g0/1-2
swtich(config-if-range)#shutdown

swtich(config-if-range)#
%LINK-5-CHANGED: Interface FastEthernet0/6, changed state to administratively
down
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/6, changed
state to down
%LINK-5-CHANGED: Interface FastEthernet0/7, changed state to administratively
down
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/7, changed
state to down
%LINK-5-CHANGED: Interface FastEthernet0/8, changed state to administratively
down
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/8, changed
state to down
%LINK-3-UPDOWN: Interface Port-channel1, changed state to down
%LINEPROTO-5-UPDOWN: Line protocol on Interface Port-channel1, changed
state to down
%LINK-5-CHANGED: Interface FastEthernet0/9, changed state to administratively
down
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/9, changed
state to down
%LINK-5-CHANGED: Interface FastEthernet0/10, changed state to
administratively down
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/10, changed
state to down
%LINK-5-CHANGED: Interface FastEthernet0/11, changed state to
administratively down
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/11, changed
state to down
%LINK-5-CHANGED: Interface FastEthernet0/12, changed state to
administratively down
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/12, changed
state to down
swtich(config-if-range)#exit
swtich(config)#host DSL1
```



```

DSL1(config)#
DSL1(config)#INT RANG F0/7-8
DSL1(config-if-range)#CHANNEL-PROTOCOL LACP
DSL1(config-if-range)#CHANNEL-GR
DSL1(config-if-range)#CHANNEL-GRoup 2 MODE ACTIV
DSL1(config-if-range)#NO SHUT
DSL1(config-if-range)#
%LINK-5-CHANGED: Interface FastEthernet0/7, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/7, changed
state to up
%LINK-5-CHANGED: Interface FastEthernet0/8, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/8, changed
state to up
%LINK-5-CHANGED: Interface Port-channel2, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Port-channel2, changed
state to up
DSL1(config-if-range)#EXIT
DSL1(config)#INT RANGE F0/9-10
DSL1(config-if-range)#CHANNEL-PROTOCOL PAGP
DSL1(config-if-range)#CHANNEL-GRoup 2 MODE DESIRA
DSL1(config-if-range)#NO SHUT
DSL1(config-if-range)#
%LINK-5-CHANGED: Interface FastEthernet0/9, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/9, changed
state to up
%LINK-5-CHANGED: Interface FastEthernet0/10, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/10, changed
state to up
DSL1(config-if-range)#EXIT
DSL1(config)#INT RANG F0/7-12
DSL1(config-if-range)#SW
DSL1(config-if-range)#SWitchport TRUNK ENCAP D
DSL1(config-if-range)#SWitchport TRUNK ENCAP Dot1q
% Interface range command failed for FastEthernet0/11
% Command failed on interface FastEthernet0/11. Aborting
DSL1(config)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/7, changed
state to down
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/7, changed
state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/9, changed
state to down
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/9, changed
state to up

```



```

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/10, changed
state to down
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/10, changed
state to up%LINK-3-UPDOWN: Interface Port-channel2, changed state to down
%LINEPROTO-5-UPDOWN: Line protocol on Interface Port-channel2, changed
state to down
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/8, changed
state to down
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/8, changed
state to up
DSL1(config)#
%LINK-5-CHANGED: Interface Port-channel2, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Port-channel2, changed
state to up
DSL1(config-if-range)#SWitchport TRUNK NATIVE VLAN 800
DSL1(config-if-range)#SWitchport MODE TRUNK
DSL1#ENA
DSL1#CONF T
Enter configuration commands, one per line. End with CNTL/Z.
DSL1(config)#VTP DOMAIN UNAD
Domain name already set to UNAD.
DSL1(config)#VTP PASS cisco123
Password already set to cisco123
DSL1(config)#VTP MODE SERVER
Device mode already VTP SERVER.
DSL1(config)#
DSL1#ENA
DSL1#CONF T
Enter configuration commands, one per line. End with CNTL/Z.
DSL1(config)#VTP DOMAIN UNAD
Domain name already set to UNAD.
DSL1(config)#VTP PASS cisco123
Password already set to cisco123
DSL1(config)#VTP MODE SERVER
Device mode already VTP SERVER.
DSL1(config)#
DSL1(config)#
DSL1(config)#VLAN 111
DSL1(config-vlan)#NAME VIDEONET
VLAN #11 and #111 have an identical name: VIDEONET
DSL1(config-vlan)#VLAN 123
DSL1(config-vlan)#NAME MANTENIMIENTO
DSL1(config-vlan)#VLAN 101
DSL1(config-vlan)#NAME VOZ
VLAN #10 and #101 have an identical name: VOZ

```

```

DSL1(config-vlan)#VLAN 345
DSL1(config-vlan)#NAME ADMINISTRACION
VLAN #34 and #345 have an identical name: ADMINISTRACION
DSL1(config-vlan)#VLAN 800
DSL1(config-vlan)#NAME NATIVA
DSL1(config-vlan)#VLAN 12
DSL1(config-vlan)#NAME EJECUTIVOS
DSL1(config-vlan)#VLAN 234
DSL1(config-vlan)#NAME HUESPEDES
DSL1(config-vlan)#VLAN 434
DSL1(config-vlan)#NAME ESTACIONAMIENTO
DSL1(config-vlan)#STATE SUSPEND
DSL1(config)#SPAN
DSL1(config)#SPANning-tree VLAN 1 ROOT PRIMARY
DSL1(config)#SPANning-tree VLAN 12 ROOT PRIMARY
DSL1(config)#SPANning-tree VLAN 434 ROOT PRIMARY
DSL1(config)#SPANning-tree VLAN 800 ROOT PRIMARY
DSL1(config)#SPANning-tree VLAN 101 ROOT PRIMARY
DSL1(config)#SPANning-tree VLAN 123 ROOT PRIMARY
DSL1(config)#SPANning-tree VLAN 234 ROOT PRIMARY
DSL1(config)#SPANning-tree VLAN 123 ROOT SECONDARY
DSL1(config)#SPANning-tree VLAN 234 ROOT SECONDARY
DSL1(config)#
DSL1(config)#INT F0/6
DSL1(config-if)#SWITCHPORT ACCES VLAN 345
DSL1(config-if)#NO SHUT
DSL1(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/6, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/6, changed
state to up
DSL1(config-if)#INT F0/15
DSL1(config-if)#SWITCHPORT ACCES VLAN 111
DSL1(config-if)#NO SHUT
%LINK-5-CHANGED: Interface FastEthernet0/15, changed state to down
DSL1(config-if)#SHOW VLAN
DSL1#SHOW ETHERchannel SUMMArY
DSL1#SHO SPanning-tree

```

DLS2

```
switch>ena
```

```
switch#conf t
```

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

```
switch(config)#int rang f0/1-24, g0/1-2
```

```

switch(config-if-range)#shut
%LINK-5-CHANGED: Interface FastEthernet0/11, changed state to
administratively down
%LINK-5-CHANGED: Interface FastEthernet0/12, changed state to
administratively down
switch(config-if-range)#
%LINK-5-CHANGED: Interface FastEthernet0/6, changed state to administratively
down
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/6, changed
state to down
%LINK-5-CHANGED: Interface FastEthernet0/7, changed state to administratively
down
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/7, changed
state to down
%LINK-5-CHANGED: Interface FastEthernet0/8, changed state to administratively
down

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/8, changed
state to down
%LINK-3-UPDOWN: Interface Port-channel2, changed state to down
%LINEPROTO-5-UPDOWN: Line protocol on Interface Port-channel2, changed
state to down
%LINK-5-CHANGED: Interface FastEthernet0/9, changed state to administratively
down
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/9, changed
state to down
%LINK-5-CHANGED: Interface FastEthernet0/10, changed state to
administratively down
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/10, changed
state to down
switch(config-if-range)#EXIT
switch(config)#INT G0/2
switch(config-if)#SHUT
switch(config-if)#EXIT
switch(config)#HOST DLS2
DLS2(config)#
%LINK-3-UPDOWN: Interface Port-channel3, changed state to down
%LINEPROTO-5-UPDOWN: Line protocol on Interface Port-channel3, changed
state to down
DLS2(config)#INT RANG F0/7-8
DLS2(config-if-range)#CHANNEL-PROTOCOL LACP
DLS2(config-if-range)#CHANNEL-GROUP 2 MODE ACTIVE
DLS2(config-if-range)#NO SHUT
DLS2(config-if-range)#
%LINK-5-CHANGED: Interface FastEthernet0/7, changed state to up

```

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/7, changed state to up
%LINK-5-CHANGED: Interface FastEthernet0/8, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/8, changed state to up
%LINK-5-CHANGED: Interface Port-channel2, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Port-channel2, changed state to up
DLS2(config-if-range)#
DLS2(config-if-range)#INT RANG F0/9-10
DLS2(config-if-range)#CHANNEL-PROTOCOL PAGP
DLS2(config-if-range)#CHANNEL-GROUP 2 MODE ACTIVE
Command rejected (the interface Fa0/9 is): is already part of a channel with a different type of protocol enabled
Command rejected (the interface Fa0/10 is): is already part of a channel with a different type of protocol enabled
DLS2(config-if-range)#NO SHUT

DLS2(config-if-range)#
%LINK-5-CHANGED: Interface FastEthernet0/9, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/9, changed state to up
%LINK-5-CHANGED: Interface FastEthernet0/10, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/10, changed state to up
%LINK-5-CHANGED: Interface Port-channel3, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Port-channel3, changed state to up
DLS2(config-if-range)#INT RANG F0/9-10
DLS2(config-if-range)#CHANNEL-PROTOCOL PAGP
DLS2(config-if-range)#CHANNEL-GROUP 2 MODE ACTIVE
Command rejected (the interface Fa0/9 is): is already part of a channel with a different type of protocol enabled
Command rejected (the interface Fa0/10 is): is already part of a channel with a different type of protocol enabled
DLS2(config-if-range)#NO SHUT
DLS2(config-if-range)#
%LINK-5-CHANGED: Interface FastEthernet0/9, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/9, changed state to up
%LINK-5-CHANGED: Interface FastEthernet0/10, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/10, changed state to up
%LINK-5-CHANGED: Interface Port-channel3, changed state to up

```

%LINEPROTO-5-UPDOWN: Line protocol on Interface Port-channel3, changed
state to up
DLS2(config-if-range)#EXIT
DLS2(config)#INT RAN F0/7-12
DLS2(config-if-range)#SWITCHPORT TRUNK ENCAP D
DLS2(config-if-range)#SWITCHPORT TRUNK ENCAP Dot1q
% Interface range command failed for FastEthernet0/11
% Command failed on interface FastEthernet0/11. Aborting
DLS2(config)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/7, changed
state to down
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/7, changed
state to up
%LINK-3-UPDOWN: Interface Port-channel2, changed state to down
%LINEPROTO-5-UPDOWN: Line protocol on Interface Port-channel2, changed
state to down
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/8, changed
state to down
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/8, changed
state to up

%LINK-3-UPDOWN: Interface Port-channel3, changed state to down
%LINEPROTO-5-UPDOWN: Line protocol on Interface Port-channel3, changed
state to down
DLS2(config)#
DLS2#
%SYS-5-CONFIG_I: Configured from console by console
%LINK-5-CHANGED: Interface Port-channel3, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Port-channel3, changed
state to up
%LINK-5-CHANGED: Interface Port-channel2, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Port-channel2, changed
state to up
DLS2#ENA
DLS2#CONF T
Enter configuration commands, one per line. End with CNTL/Z.
DLS2(config)#INT RAN F0/7-12
DLS2(config-if-range)#SWITCHPORT TRUNK NATIVE VLAN 800
% Interface range command failed for FastEthernet0/11
% Command failed on interface FastEthernet0/11. Aborting
DLS2(config)#INT RAN F0/7-12
DLS2(config-if-range)#SWITCHPORT MODE TRUNK
% Interface range command failed for FastEthernet0/11
% Command failed on interface FastEthernet0/11. Aborting
DLS2(config)#

```

```

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/7, changed
state to down
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/7, changed
state to up
%LINK-3-UPDOWN: Interface Port-channel2, changed state to down
%LINEPROTO-5-UPDOWN: Line protocol on Interface Port-channel2, changed
state to down
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/8, changed
state to down
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/8, changed
state to up
%LINK-3-UPDOWN: Interface Port-channel3, changed state to down
%LINEPROTO-5-UPDOWN: Line protocol on Interface Port-channel3, changed
state to down
DLS2(config)#
%LINK-5-CHANGED: Interface Port-channel3, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Port-channel3, changed
state to up
DLS2(config)#INT RAN F0/7-12
DLS2(config-if-range)#SWITCHPORT NO
DLS2(config-if-range)#SWITCHPORT NONegotiate
% Interface range command failed for FastEthernet0/11
% Command failed on interface FastEthernet0/11. Aborting
DLS2(config)#NO SHUT
% Invalid input detected at '^' marker.
DLS2(config)#INT RAN F0/7-12
DLS2(config-if-range)#
%LINK-5-CHANGED: Interface Port-channel2, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Port-channel2, changed
state to up
NO SHUT
%LINK-5-CHANGED: Interface FastEthernet0/11, changed state to down
%LINK-5-CHANGED: Interface FastEthernet0/12, changed state to down
DLS2(config-if-range)#
DLS2(config)#VTP VERSION 2
DLS2(config)#VTP MODE TRANSPA
Device mode already VTP TRANSPARENT.
DLS2(config)#VLAN 800
DLS2(config-vlan)#NAME NATIVA
DLS2(config-vlan)#VLAN 12
DLS2(config-vlan)#NAME EJECUTIVOS
DLS2(config-vlan)#VLAN 234
DLS2(config-vlan)#NAME HUESPEDES
DLS2(config-vlan)#VLAN 111
DLS2(config-vlan)#NAME VIDEONET

```

```

VLAN #11 and #111 have an identical name: VIDEONET
DLS2(config-vlan)#VLAN 123
DLS2(config-vlan)#NAME MANTENIMIENTO
DLS2(config-vlan)#VLAN 101
DLS2(config-vlan)#NAME VOZ
VLAN #10 and #101 have an identical name: VOZ
DLS2(config-vlan)#VLAN 345
DLS2(config-vlan)#NAME ADMINISTRACION
VLAN #34 and #345 have an identical name: ADMINISTRACION
DLS2(config-vlan)#VLAN 434
DLS2(config-vlan)#NAME ESTACIONAMIENTO
DLS2(config-vlan)#STATE SUSPEND
DLS2(config-vlan)#VLAN 567
DLS2(config-vlan)#NAME CONTABILIDAD
DLS2(config-vlan)#
DLS2#CONF TER
Enter configuration commands, one per line. End with CNTL/Z.
DLS2(config)#SPAN
DLS2(config)#SPANning-tree VLAN 123 ROOT PRIMARY
DLS2(config)#SPANning-tree VLAN 234 ROOT PRIMARY
DLS2(config)#SPANning-tree VLAN 12 ROOT PRIMARY
DLS2(config)#SPANning-tree VLAN 12 ROOT SECONDARY
DLS2(config)#SPANning-tree VLAN 434 ROOT SECONDARY
DLS2(config)#SPANning-tree VLAN 800 ROOT SECONDARY
DLS2(config)#SPANning-tree VLAN 101 ROOT SECONDARY
DLS2(config)#SPANning-tree VLAN 111 ROOT SECONDARY
DLS2(config)#SPANning-tree VLAN 345 ROOT SECONDARY
DLS2(config)#INT F0/6
DLS2(config-if)#SWITCHPORT ACCESS VLAN 12
DLS2(config-if)#SWITCHPORT ACCESS VLAN 101
DLS2(config-if)#NO SHUT
DLS2(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/6, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/6, changed
state to up
DLS2(config-if)#INT F0/15
DLS2(config-if)#SWITCHPORT ACCESS VLAN 111
DLS2(config-if)#NO SHUT
%LINK-5-CHANGED: Interface FastEthernet0/15, changed state to down
DLS2(config-if)#EXIT
DLS2(config)#INT RANG F0/16-18
DLS2(config-if-range)#SWITCHPORT ACCESS VLAN 567
DLS2(config-if-range)#NO SHUT
%LINK-5-CHANGED: Interface FastEthernet0/16, changed state to down
%LINK-5-CHANGED: Interface FastEthernet0/17, changed state to down

```

```
%LINK-5-CHANGED: Interface FastEthernet0/18, changed state to down
DLS2#SHOW VLAN
DLS2#SHOW SPAnning-tree
```

```
ALS1
SWITCH>EN
SWITCH#CONF T
Enter configuration commands, one per line. End with CNTL/Z.
SWITCH(config)#INT RAN F0/1-24, G0/1-2
SWITCH(config-if-range)#SHUT
SWITCH(config-if-range)#
%LINK-5-CHANGED: Interface FastEthernet0/6, changed state to administratively
down
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/6, changed
state to down
%LINK-5-CHANGED: Interface FastEthernet0/7, changed state to administratively
down
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/7, changed
state to down
%LINK-5-CHANGED: Interface FastEthernet0/8, changed state to administratively
down
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/8, changed
state to down
%LINK-3-UPDOWN: Interface Port-channel1, changed state to down
%LINEPROTO-5-UPDOWN: Line protocol on Interface Port-channel1, changed
state to down
%LINK-5-CHANGED: Interface FastEthernet0/9, changed state to administratively
down
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/9, changed
state to down
%LINK-5-CHANGED: Interface FastEthernet0/10, changed state to
administratively down
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/10, changed
state to down
SWITCH(config)#HOST ALS1
ALS1(config)#INT RAN F0/9-10
ALS1(config-if-range)#CHANNEL-PROTOCOL PAGP
ALS1(config-if-range)#CHANNEL-GROUP 2 MODE DESIRABL
ALS1(config-if-range)#NO SHUT
ALS1(config-if-range)#
%LINK-5-CHANGED: Interface FastEthernet0/9, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/9, changed
state to up
%LINK-5-CHANGED: Interface FastEthernet0/10, changed state to up
```



```

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/10, changed
state to up
%LINK-5-CHANGED: Interface Port-channel2, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Port-channel2, changed
state to up
ALS1(config)#INT RAN F0/7-10
ALS1(config-if-range)#SWITCHPORT TRUNK native vlan 800
ALS1(config-if-range)#SWITCHPORT MODE TRUNK
ALS1(config-if-range)#
%LINK-3-UPDOWN: Interface Port-channel2, changed state to down

%LINEPROTO-5-UPDOWN: Line protocol on Interface Port-channel2, changed
state to down
ALS1(config-if-range)#EXIT
ALS1(config)#VTP VER 2
Cannot modify version in VTP client mode
ALS1(config)#VTP MODE CLIE
Device mode already VTP CLIENT.
ALS1(config)#INT RAN F0/7-10
ALS1(config-if-range)#SWITCHPORT TRUNK native vlan 800
ALS1(config-if-range)#SWITCHPORT MODE TRUNK
ALS1(config-if-range)#
%LINK-3-UPDOWN: Interface Port-channel2, changed state to down
%LINEPROTO-5-UPDOWN: Line protocol on Interface Port-channel2, changed
state to down
ALS1(config-if-range)#
%LINK-5-CHANGED: Interface Port-channel2, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Port-channel2, changed
state to up
ALS1(config-if-range)#EXIT
ALS1(config)#INT F0/6
ALS1(config-if)#SWI
ALS1(config-if)#SWItchport ACCES VLAN 123
ALS1(config-if)#SWItchport ACCES VLAN 101
ALS1(config-if)#NO SHUT
ALS1(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/6, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/6, changed
state to up
ALS1(config-if)#EXIT
ALS1(config)#INT F0/15
ALS1(config-if)#SWItchport ACCES VLAN 111
ALS1(config-if)#NO SHUT
%LINK-5-CHANGED: Interface FastEthernet0/15, changed state to down
ALS1(config-if)#SHOW VLAN

```

```

ALS1(config-if)#SHOW ETHERCHANNEL SUMMARY
ALS2
swtich>ENA
swtich#CONF TERM
Enter configuration commands, one per line. End with CNTL/Z.
swtich(config)#INT
swtich(config)#INTerface RANG
swtich(config)#INTerface RANGE F0/1-24, G0/1-2
swtich(config-if-range)#SHUT
swtich(config-if-range)#
%LINK-5-CHANGED: Interface FastEthernet0/6, changed state to administratively
down
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/6, changed
state to down
%LINK-5-CHANGED: Interface FastEthernet0/7, changed state to administratively
down
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/7, changed
state to down
%LINK-5-CHANGED: Interface FastEthernet0/8, changed state to administratively
down
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/8, changed
state to down
%LINK-3-UPDOWN: Interface Port-channel2, changed state to down
%LINEPROTO-5-UPDOWN: Line protocol on Interface Port-channel2, changed
state to down
%LINK-5-CHANGED: Interface FastEthernet0/9, changed state to administratively
down
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/9, changed
state to down
%LINK-5-CHANGED: Interface FastEthernet0/10, changed state to
administratively down
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/10, changed
state to down
swtich(config-if-range)#EXIT
swtich(config)#HOST ALS2
ALS2(config)#
ALS2#ENA
ALS2#CONF T
Enter configuration commands, one per line. End with CNTL/Z.
ALS2(config)#INT RANG F0/7-8
ALS2(config-if-range)#CHANNEL-PROTOCOL LACP
ALS2(config-if-range)#CHANNEL-GROUP 2 MODE ACTIV
ALS2(config-if-range)#NO SHUT
ALS2(config-if-range)#

```

%LINK-5-CHANGED: Interface FastEthernet0/7, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/7, changed state to up
%LINK-5-CHANGED: Interface FastEthernet0/8, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/8, changed state to up
%LINK-5-CHANGED: Interface Port-channel2, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Port-channel2, changed state to up
ALS2(config-if-range)#EXIT
ALS2(config)#INT RANG F0/9-10
ALS2(config-if-range)#CHANNEL-PROTOCOL PAGP
ALS2(config-if-range)#CHANNEL-GROUP 2 MODE DESIRABLE
ALS2(config-if-range)#NO SHUT
ALS2(config-if-range)#
%LINK-5-CHANGED: Interface FastEthernet0/9, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/9, changed state to up
%LINK-5-CHANGED: Interface FastEthernet0/10, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/10, changed state to up
ALS2(config)#INT RANG F0/7-10
ALS2(config-if-range)#SWITCH TRUNK NATIVE VLAN 800
ALS2(config-if-range)#SWITCH MODE TRUNK
ALS2(config-if-range)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/7, changed state to down
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/7, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/9, changed state to down
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/9, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/10, changed state to down
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/10, changed state to up
%LINK-3-UPDOWN: Interface Port-channel2, changed state to down
%LINEPROTO-5-UPDOWN: Line protocol on Interface Port-channel2, changed state to down
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/8, changed state to down
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/8, changed state to up
ALS2(config-if-range)#SWITCH NONEGOTIAT

```
ALS2(config-if-range)#NO SHUT
ALS2#ENA
ALS2#CONF T
Enter configuration commands, one per line. End with CNTL/Z.
ALS2(config)#VTP VERSION 2
Cannot modify version in VTP client mode
ALS2(config)#VTP MODE CLIENT
Device mode already VTP CLIENT
ALS2>ena
ALS2#conf te
Enter configuration commands, one per line. End with CNTL/Z.
ALS2(config)#int f0/15
ALS2(config-if)#switc
ALS2(config-if)#switchport access vlan 234
ALS2(config-if)#no shut
%LINK-5-CHANGED: Interface FastEthernet0/15, changed state to down
ALS2(config-if)#exit
ALS2(config)#int f0/15
ALS2(config-if)#switchport access vlan 111
ALS2(config-if)#no shut
ALS2(config-if)#SHOW VLAN
ALS2#SHOW SPanning-tree
```

CONCLUSIONES

Durante el desarrollo de este diplomado CCNP se logró adquirir conocimientos prácticos y teóricos no solo para el desarrollo de esta prueba de habilidades en los dos escenarios propuestos, sino para cualquier otro escenario en el que se puedan administrar equipos tales como routers y enrutadores en diferentes topologías.

Se logró interconectar varias sedes como lo haríamos en un entorno real configurando equipos marca CISCO aprovechando la simulación con el software packet tracer el cual es una muy buena herramienta para entender mejor el funcionamiento de las redes y sus protocolos de enrutamiento como lo son EIGRP Y OSPF, DHCP, comprendiendo mejor los límites y necesidades planteadas en cualquier esquema de configuración o topología. También mediante el Switching y el Routing se logró aumentar la velocidad de acceso a la información administrándola de forma más eficiente.

A partir de las configuraciones básicas en los dispositivos de comunicación cisco se pueden implementar las configuraciones mejorando el envío, transporte y recepción de datos en redes locales y llevarlas a topologías más grandes, mediante este tipo de tecnologías se pueden optimizar y mejorar las pequeñas y grandes empresas, usando por ejemplo las VLANS, las cuales son bastante útiles ofreciendo mayor seguridad a la red implementada.

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