

DIPLOMADO DE PROFUNDIZACIÓN CISCO CCNP  
SOLUCIÓN DE DOS ESCENARIOS PRESENTES EN ENTORNOS  
CORPORATIVOS BAJO EL USO DE TECNOLOGÍA CISCO

LUIS OLMEDO FERNÁNDEZ MENSA

UNIVERSIDAD NACIONAL ABIERTA Y A DISTANCIA - UNAD ESCUELA DE  
CIENCIAS BÁSICAS, TECNOLOGÍA E INGENIERÍA-ECBTI  
INGENIERÍA DE TELECOMUNICACIONES  
BOGOTÁ DC.  
2020

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Diplomado de opción de grado presentado para optar el  
título de INGENIERO EN TELECOMUNICACIONES

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UNIVERSIDAD NACIONAL ABIERTA Y A DISTANCIA - UNAD ESCUELA DE  
CIENCIAS BÁSICAS, TECNOLOGÍA E INGENIERÍA-ECBTI  
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BOGOTÁ DC.  
2020

NOTA DE ACEPTACIÓN

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Firma del Presidente del Jurado

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Firma del Jurado

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Firma del Jurado

BOGOTÁ DC., 30 de Noviembre de 2020

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## GLOSARIO

### CISCO.

Es una empresa de origen Estadounidense fabricante de dispositivos para redes locales y externa, también presta el servicio de soluciones de red, su objetivo es conectar a todos y demostrar las cosas asombrosas que se pueden lograr con una visión clara del futuro.

### CCNP.

El termino es de las siglas de Cisco Certified Networking Professional, es decir, un certificado de Networking y telecomunicaciones, como veíamos antes con la CCNA, solo que esta vez hay un elemento decisivo que lo diferencia y separa ambas categorías. Este elemento es la P de las siglas, la palabra profesional indica que no se trata de Associate o nivel básico y medio, sino de uno más profesional y avanzado.

### ROUTING

Es el proceso que permite que los paquetes IP enviados por el host origen lleguen al host destino de forma adecuada.

### REDES.

Es un conjunto nodos y programas interconectados entre sí por medio de dispositivos físicos o inalámbricos que envían y reciben datos, con la finalidad de compartir información para el servicio de manera efectiva.

### TOPOLOGÍA.

Se trata de un mapa físico o lógico de una red para intercambiar datos, de acuerdo a la tipo en que se haya diseñado según la necesidad.

### ELECTRÓNICA.

Se trata de circuitos eléctricos que involucran componentes asociados a elementos activos y pasivos según la implementación en una interconexión tecnológica.

### ANCHO DE BANDA

Se trata de la cantidad de datos que puede ser enviada o recibida durante un cierto tiempo a través de un determinado circuito de comunicación

### PROTOCOLO.

De uso bidireccional en origen o destino de comunicación para transmitir datos mediante una conexión que transfiere paquetes conmutados a través de distintas redes físicas previamente enlazadas.

## RESUMEN

**Escenario 1:** Se aplica las configuraciones iniciales de los protocolos de enrutamiento y conmutación para los routers R1, R2, R3, R4 y R5 según el diagrama del escenario, donde, no se asignan claves a los routers y configuración de interfaces con las direcciones que se muestran en la topología de red en los medios de la electrónica.

Así mismo se crea cuatro nuevas interfaces de Loopback en R1 utilizando la asignación de direccionamiento 10.1.0.0/22 y configuraciones de interfaces para participar en el área 5 de OSPF. Se crean cuatro nuevas interfaces de Loopback en R5 utilizando la asignación de direcciones 172.5.0.0/22 y configuración de interfaces para participar en el Sistema Autónomo EIGRP 15.

Se analiza la tabla de enrutamiento de R3 y verifica que R3 está aprendiendo las nuevas interfaces de Loopback del mismo modo se configura R3 para redistribuir las rutas EIGRP en OSPF usando el costo de 50000 y luego se redistribuye las rutas OSPF en EIGRP usando un ancho de banda T1 y 20,000 microsegundos de retardo, para posterior verificar en R1 y R5 que las rutas del sistema autónomo opuesto existen en su tabla de enrutamiento.

**Escenario 2:** Una empresa de comunicaciones presenta una estructura Core acorde a la topología de redes, 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, Ether-channels, VLANs y demás aspectos que forman parte del escenario propuesto por el documento final del curso de CCNP en el programa de CISCO.

Palabras Clave: CISCO, CCNP, Conmutación, Enrutamiento, Redes, Electrónica.

## ABSTRACT

Scenario 1: The initial configurations of the routing and switching protocols for the routers R1, R2, R3, R4 and R5 are applied according to the diagram of the scenario, where, keys are not assigned to the routers and interface configuration with the addresses that they are shown in the network topology on the electronics media. Likewise, four new loopback interfaces are created on R1 using the 10.1.0.0/22 addressing assignment and interface configurations to participate in OSPF area 5. Four new loopback interfaces are created on R5 using the 172.5.0.0/22 address assignment and interface configuration to participate in the EIGRP 15 Autonomous System.

R3's routing table is analyzed and verifies that R3 is learning the new loopback interfaces in the same way R3 is configured to redistribute EIGRP routes in OSPF using the cost of 50,000 and then redistribute OSPF routes in EIGRP using a width of T1 band and 20,000 microseconds of delay, to later verify in R1 and R5 that the routes of the opposite autonomous system exist in its routing table.

Scenario 2: A communications company presents a Core structure according to the network topology, where the student will be the network administrator, who must configure and interconnect each of the devices that are part of the scenario, according to the guidelines established for IP addressing, Ether-channels, VLANs and other aspects that are part of the scenario proposed by the final document of the CCNP course in the CISCO program.

Keywords: CISCO, CCNP, Routing, Swicthing, Networking, Electronics.

## INTRODUCCIÓN

En el presente trabajo se busca crear de manera práctica las etapas que se desarrollaron en el diplomado de profundización en redes Cisco Networking con el objetivo de extraer datos vistos de las unidades 1 a la 10 donde se resaltan temas de implementación de protocolos y las dos topologías de redes con diferentes exigencias de conexión y condiciones de implementación, las cuales quedaran plasmadas en este documento por medio de la simulación en el software packet tracer y GSN3.

Para el planteamiento del escenario N° 1, Se aplica las configuraciones iniciales de los protocolos de enrutamiento y conmutación para los routers del diagrama donde, no se le asignan claves a los routers y configuración de interfaces con las direcciones que se muestran en la topología, así mismo se crea cuatro nuevas interfaces de Loopback en R1 utilizando la asignación de direcciones 10.1.0.0/22 y configuraciones de interfaces para participar en el área 5 de OSPF, también se crean cuatro nuevas interfaces de Loopback en R5 utilizando la asignación de direcciones 172.5.0.0/22 y configuración de interfaces para participar en el Sistema Autónomo EIGRP 15, del mismo modo se analiza la tabla de enrutamiento de R3 y se verifica que R3 está aprendiendo las nuevas interfaces de Loopback, así mismo se configura R3 para redistribuir las rutas EIGRP en OSPF usando el costo de 50000 y luego se redistribuye las rutas OSPF en EIGRP usando un ancho de banda T1 y 20,000 microsegundos de retardo, para posterior verificar en R1 y R5 que las rutas del sistema autónomo opuesto existen en su tabla de enrutamiento, siendo este el paso del primer ejercicio.

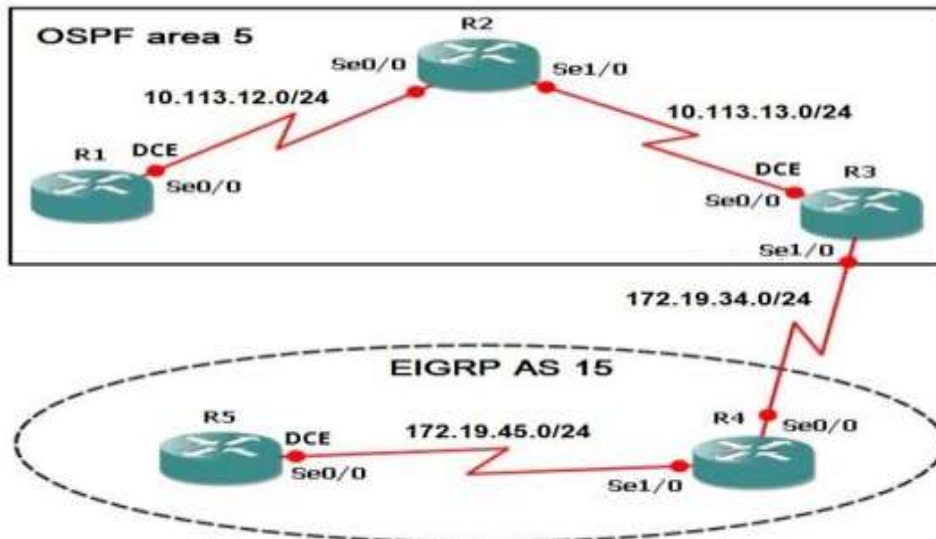
Para el desarrollo del escenario N° 2 se tratara de una empresa de comunicaciones que presenta una estructura Core acorde a la topología de redes, en donde se deberá configurar e interconectar entre sí cada uno de los dispositivos que forman parte del escenario, acorde con los lineamientos establecidos para el direccionamiento IP, Ether-channels, VLANs y demás aspectos que forman parte del escenario propuesto por el documento final del curso de CCNP.

## DESARROLLO

### 1. ESCENARIO 1

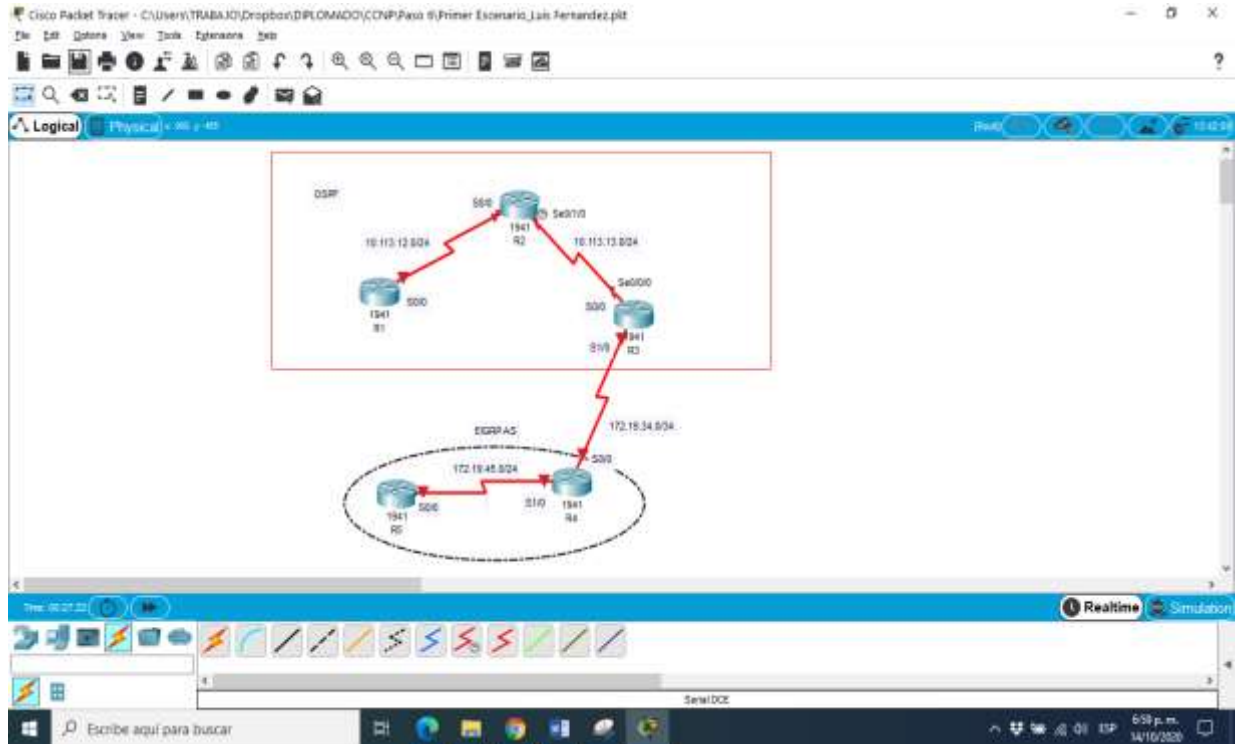
Teniendo en la cuenta la siguiente imagen:

Figura 1. Escenario 1



1. Aplique las configuraciones iniciales y los protocolos de enrutamiento para los routers R1, R2, R3, R4 y R5 según el diagrama. No asigne passwords en los routers. Configure las interfaces con las direcciones que se muestran en la topología de red.
2. Cree cuatro nuevas interfaces de Loopback en R1 utilizando la asignación de direcciones 10.1.0.0/22 y configure esas interfaces para participar en el área 5 de OSPF.
3. Cree cuatro nuevas interfaces de Loopback en R5 utilizando la asignación de direcciones 172.5.0.0/22 y configure esas interfaces para participar en el Sistema Autónomo EIGRP 15.
4. Analice la tabla de enrutamiento de R3 y verifique que R3 está aprendiendo las nuevas interfaces de Loopback mediante el comando **show ip route**.
5. Configure R3 para redistribuir las rutas EIGRP en OSPF usando el costo de 50000 y luego redistribuya las rutas OSPF en EIGRP usando un ancho de banda T1 y 20,000 microsegundos de retardo.
6. Verifique en R1 y R5 que las rutas del sistema autónomo opuesto existen en su tabla de enrutamiento mediante el comando **show ip route**.

Figura 2. Simulación de escenario 1



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

### Solución punto 1

Se procede a configurar cada uno de los enrutadores. 1, 2, 3, 4, y 5  
Se asignan nombre y protocolos de comunicación mediante EIGRP que fueron asignados.

Descripción del código y pantallazo de configuración en “R1”  
Configuración Router R1

```
Router>en //ingreso al modo privilegiado
Router#config t // ingreso al modo configuración
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#hostname R1 //Asigno nombre al router
R1(config)#interface s0/0/0 //configuro interfaz del puerto serial
R1(config-if)#bandwidth 128000 //configuro el ancho de banda
R1(config-if)#ip address 10.113.12.10 255.255.255.0 //asigno la direccion IP
R1(config-if)#no shutdown //Mantener encendido el router
```

```

%LINK-5-CHANGED: Interface Serial0/0/0, changed state to down
R1(config-if)#exit
R1(config)#router ospf 1 //configura el protocolo ospf
R1(config-router)#network 10.113.12.0 0.0.0.255 area 5 //asigno red y numero de área
R1(config-router)#exit //salir del modo configuración
R1(config)#end //finalizar
R1#
%SYS-5-CONFIG_I: Configured from console by console

```

Figura 3. Aplicando código R1

```

R1
Physical Config CLI Attributes
IOS Command Line Interface

Press RETURN to get started!

Router>en
Router#config t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#hostname R1
R1(config)#interface s0/0/0
R1(config-if)#bandwidth 128000
R1(config-if)#ip address 10.113.12.10 255.255.255.0
R1(config-if)#no shutdown

%LINK-5-CHANGED: Interface Serial0/0/0, changed state to down
R1(config-if)#exit
R1(config)#router ospf 1
R1(config-router)#network 10.113.12.0 0.0.0.255 area 5
R1(config-router)#exit
R1(config)#end
R1#
%SYS-5-CONFIG_I: Configured from console by console

```

### Descripción del código y pantallazo de configuración en “R2” Configuración Router R2

```

Router>en
Router#config t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#hostname R2
R2(config)#interface s0/0/0
R2(config-if)#ip address 10.113.12.20 255.255.255.0
R2(config-if)#no shutdown
R2(config-if)#exit
R2(config)#interface s0/1/0
R2(config-if)#ip address 10.113.13.20 255.255.255.0
R2(config-if)#no shutdown
R2(config-if)#
%LINK-5-CHANGED: Interface Serial0/1/0, changed state to up
R2(config-if)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/1/0, changed state to up

```

```

02:37:04: %OSPF-5-ADJCHG: Process 1, Nbr 172.19.34.10 on Serial0/1/0 from
LOADING to FULL, Loading Done
R2(config-if)#
%LINK-5-CHANGED: Interface Serial0/0/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0, changed state to up
R2(config-if)#exit
R2(config)#router ospf 1
R2(config-router)#network 10.113.12.0 0.0.0.255 area 5
R2(config-router)#
00:50:35: %OSPF-5-ADJCHG: Process 1, Nbr 10.113.12.10 on Serial0/0/0 from
LOADING to FULL, Loading Done
R2(config-router)#network 10.113.13.0 0.0.0.255 area 5
R2(config-router)#exit
R2(config)#end
R2#
%SYS-5-CONFIG_I: Configured from console by console

```

Figura 4. Aplicando código R2

The screenshot shows a terminal window titled "R2" with tabs for "Physical", "Config", "CLI", and "Attributes". The "CLI" tab is active, displaying the "IOS Command Line Interface". The terminal output shows the following sequence of commands and messages:

```

R2>en
R2#config t
Enter configuration commands, one per line. End with CNTL/Z.
R2 (config)#interface s0/0/0
R2 (config-if)#ip address 10.113.12.20 255.255.255.0
R2 (config-if)#no shutdown
R2 (config-if)#exit
R2 (config)#interface s0/1/0
R2 (config-if)#ip address 10.113.13.20 255.255.255.0
R2 (config-if)#no shutdown

R2 (config-if)#
%LINK-5-CHANGED: Interface Serial0/1/0, changed state to up

R2 (config-if)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/1/0, changed state to up

02:37:04: %OSPF-5-ADJCHG: Process 1, Nbr 172.19.34.10 from LOADING to FULL, Loading Done

R2 (config-if)#exit
R2 (config)#router ospf 1
R2 (config-router)#network 10.113.12.0 0.0.0.255 area 5
R2 (config-router)#network 10.113.13.0 0.0.0.255 area 5
R2 (config-router)#exit
R2 (config)#end
R2#
%SYS-5-CONFIG_I: Configured from console by console

```

### Descripción del código y pantallazo de configuración en “R3” Configuración Router R3

```

Router>en
Router#config t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#hostname R3
R3(config)#interface s0/0/0

```

```

R3(config-if)#bandwidth 128000
R3(config-if)#ip address 10.113.13.10 255.255.255.0
R3(config-if)#no shutdown
%LINK-5-CHANGED: Interface Serial0/0/0, changed state to down
R3(config-if)#interface s0/1/0
R3(config-if)#ip address 172.19.34.10 255.255.255.0
R3(config-if)#no shutdown
%LINK-5-CHANGED: Interface Serial0/1/0, changed state to down
R3(config-if)#exit
R3(config)#router ospf 1
R3(config-router)#network 10.113.13.0 0.0.0.255 area 5
R3(config-router)#exit
R3(config)#router eigrp 15
R3(config-router)#network 172.19.34.0 0.0.0.255
R3(config-router)#exit
R3(config)#end
R3#
%SYS-5-CONFIG_I: Configured from console by console
%LINK-5-CHANGED: Interface Serial0/0/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0, changed state to up
02:36:53: %OSPF-5-ADJCHG: Process 1, Nbr 10.113.12.20 on Serial0/0/0 from
LOADING to FULL, Loading Done

```

Figura 5. Aplicando código R3

```

R3
Physical Config CLI Attributes
IOS Command Line Interface
Router#config t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#hostname R3
R3(config)#interface s0/0/0
R3(config-if)#bandwidth 128000
R3(config-if)#ip address 10.113.13.10 255.255.255.0
R3(config-if)#no shutdown
%LINK-5-CHANGED: Interface Serial0/0/0, changed state to down
R3(config-if)#interface s0/1/0
R3(config-if)#ip address 172.19.34.10 255.255.255.0
R3(config-if)#no shutdown
%LINK-5-CHANGED: Interface Serial0/1/0, changed state to down
R3(config-if)#exit
R3(config)#router ospf 1
R3(config-router)#network 10.113.13.0 0.0.0.255 area 5
R3(config-router)#exit
R3(config)#router eigrp 15
R3(config-router)#network 172.19.34.0 0.0.0.255
R3(config-router)#exit
R3(config)#end
R3#
%SYS-5-CONFIG_I: Configured from console by console
%LINK-5-CHANGED: Interface Serial0/0/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0, changed state to up
02:36:53: %OSPF-5-ADJCHG: Process 1, Nbr 10.113.12.20 on Serial0/0/0 from
LOADING to FULL, Loading Done

```

Descripción del código y pantallazo de configuración en “R4”  
Configuración Router R4

```

Router>en
Router#config t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#hostname R4
R4(config)#INTERFACE S0/0/0
R4(config-if)#ip address 172.19.34.20 255.255.255.0
R4(config-if)#no shutdown
R4(config-if)#
%LINK-5-CHANGED: Interface Serial0/0/0, changed state to up
R4(config-if)#interface s0/1/0
R4(config-if)#ip address 172.19.45.20 255.255.255.0
R4(config-if)#no shutdown
%LINK-5-CHANGED: Interface Serial0/1/0, changed state to down
R4(config-if)#exit
R4(config)#router eigrp 15
R4(config-router)#network 172.19.34.0 0.0.0.255
R4(config-router)#
%DUAL-5-NBRCHANGE: IP-EIGRP 15: Neighbor 172.19.34.10 (Serial0/0/0) is up: new
adjacency
R4(config-router)#network 172.19.45.0 0.0.0.255
R4(config-router)#exit
R4(config)#end
R4#
%SYS-5-CONFIG_I: Configured from console by console

```

Figura 6. Aplicando código R4

```

R4
Physical Config CLI Attributes
IOS Command Line Interface
Router>en
Router#config t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#hostname R4
R4(config)#INTERFACE S0/0/0
R4(config-if)#ip address 172.19.34.20 255.255.255.0
R4(config-if)#no shutdown
R4(config-if)#
%LINK-5-CHANGED: Interface Serial0/0/0, changed state to up
R4(config-if)#interface s
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0, changed state to up
% Invalid input detected at '^' marker.
R4(config-if)#interface s0/1/0
R4(config-if)#ip address 172.19.45.20 255.255.255.0
R4(config-if)#no shutdown
%LINK-5-CHANGED: Interface Serial0/1/0, changed state to down
R4(config-if)#exit
R4(config)#router eigrp 15
R4(config-router)#network 172.19.34.0 0.0.0.255
R4(config-router)#
%DUAL-5-NBRCHANGE: IP-EIGRP 15: Neighbor 172.19.34.10 (Serial0/0/0) is up: new adjacency
R4(config-router)#network 172.19.45.0 0.0.0.255
R4(config-router)#exit
R4(config)#end
R4#
%SYS-5-CONFIG_I: Configured from console by console

```

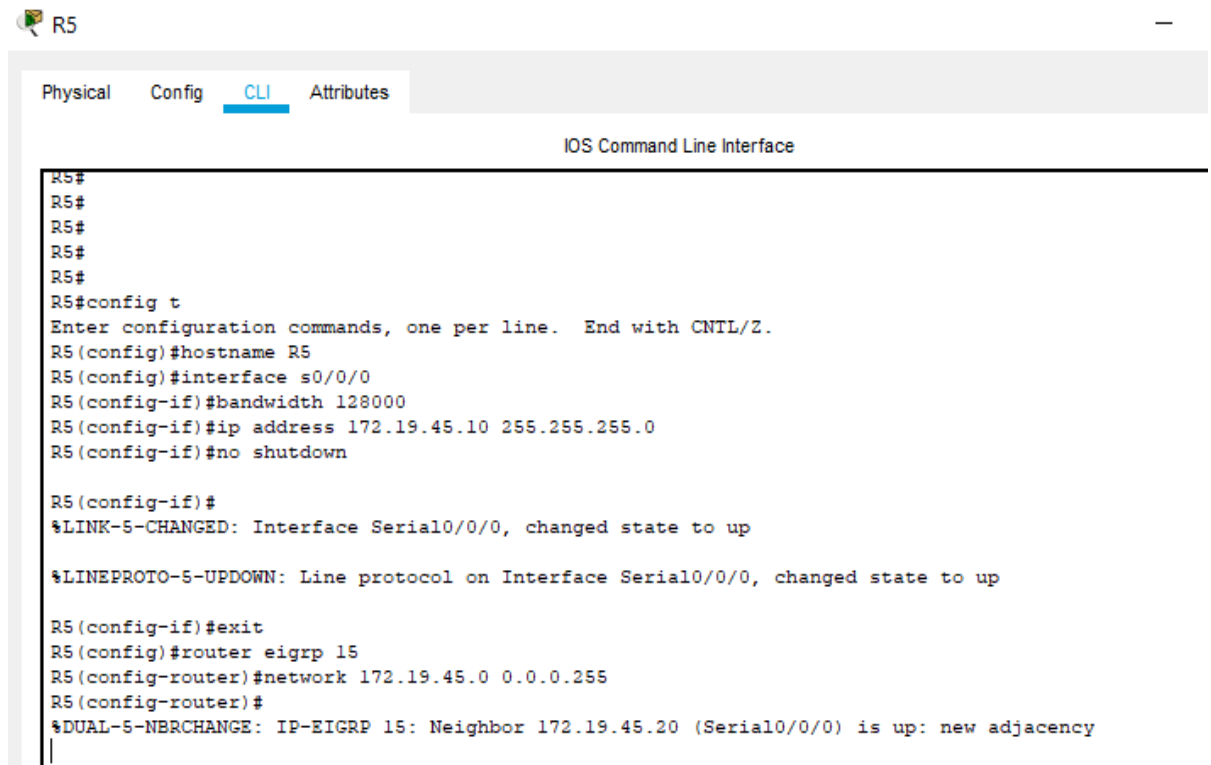
Descripción del código y pantallazo de configuración en “R5”  
Configuración Router R5

```

Router>en
Router#config t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#hostname R5
R5(config)#interface s0/0/0
R5(config-if)#bandwidth 128000
R5(config-if)#ip address 172.19.45.10 255.255.255.0
R5(config-if)#no shutdown
R5(config-if)#
%LINK-5-CHANGED: Interface Serial0/0/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0, changed state to up
R5(config-if)#exit
R5(config)#router eigrp 15
R5(config-router)#network 172.19.45.0 0.0.0.255
R5(config-router)#
%DUAL-5-NBRCHANGE: IP-EIGRP 15: Neighbor 172.19.45.20 (Serial0/0/0) is up: new adjacency

```

Figura 7. Aplicando código R5



```

R5#
R5#
R5#
R5#
R5#
R5#config t
Enter configuration commands, one per line. End with CNTL/Z.
R5(config)#hostname R5
R5(config)#interface s0/0/0
R5(config-if)#bandwidth 128000
R5(config-if)#ip address 172.19.45.10 255.255.255.0
R5(config-if)#no shutdown

R5(config-if)#
%LINK-5-CHANGED: Interface Serial0/0/0, changed state to up

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

R5(config-if)#exit
R5(config)#router eigrp 15
R5(config-router)#network 172.19.45.0 0.0.0.255
R5(config-router)#
%DUAL-5-NBRCHANGE: IP-EIGRP 15: Neighbor 172.19.45.20 (Serial0/0/0) is up: new adjacency
|

```

2. Cree cuatro nuevas interfaces de Loopback en R1 utilizando la asignación de direcciones 10.1.0.0/22 y configure esas interfaces para participar en el área 5 de OSPF.

### Solución punto 2

Tabla 1. Interfaces loopback para crear R1

IP:10.1.0.0		
Network	Rangos Hosts	Broadcast
10.1.0.0/24	10.1.0.1-10.1.0.254	10.1.0.255
10.1.1.0/24	10.1.1.1-10.1.1.254	10.1.1.255
10.1.2.0/24	10.1.2.1-10.1.2.254	10.1.2.255
10.1.3.0/24	10.1.3.1-10.1.3.254	10.1.3.255

Descripción del código y pantallazo de configuración interfaces Loopback en “R1”  
Interfaces de Loopback en R1

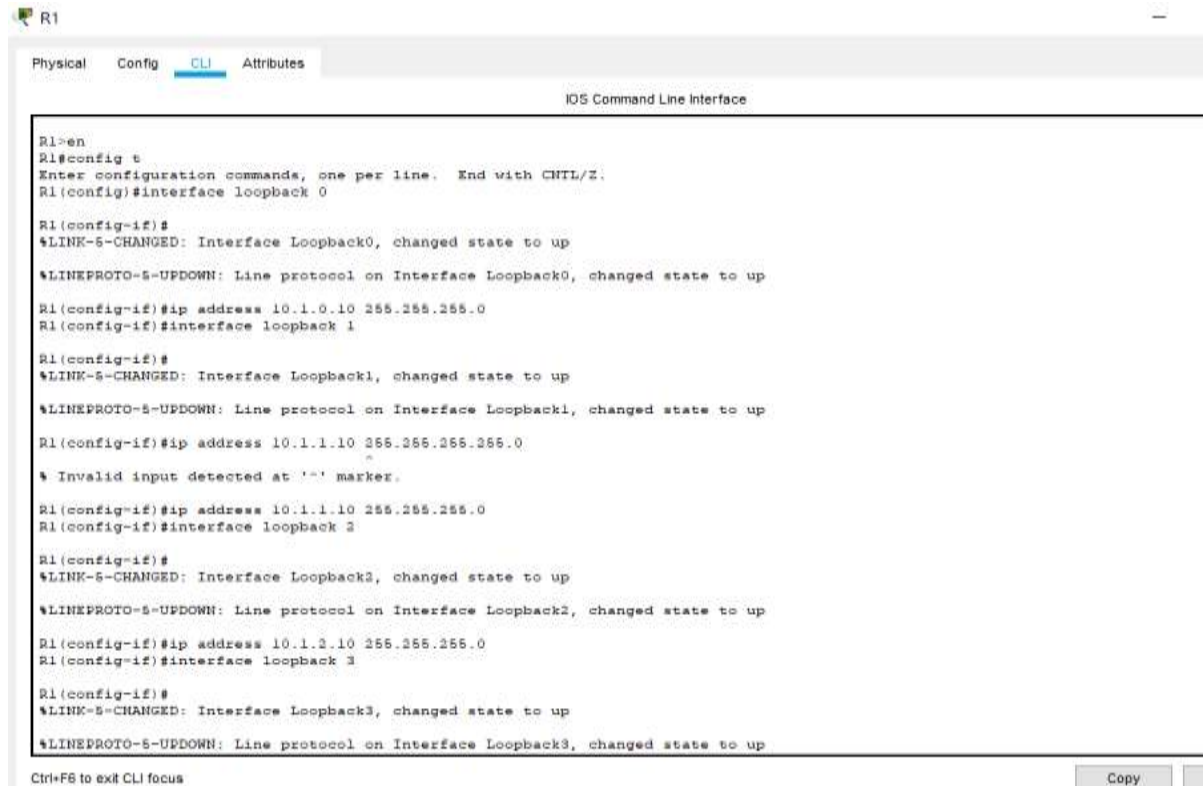
```

R1#config t           //Ingreso al modo configuración
Enter configuration commands, one per line. End with CNTL/Z.
R1(config)#interface loopback 0 //ingreso al interface Loopback 0
R1(config-if)#
%LINK-5-CHANGED: Interface Loopback0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback0, changed state to up
R1(config-if)#ip address 10.1.0.10 255.255.255.0 //asigno la direccion IP
R1(config-if)#interface loopback 1 //ingreso al interface Loopback 1
R1(config-if)#
%LINK-5-CHANGED: Interface Loopback1, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback1, changed state to up
R1(config-if)#ip address 10.1.1.10 255.255.255.0 //asigno la direccion IP
R1(config-if)#interface loopback 2 //ingreso al interface Loopback 2
R1(config-if)#
%LINK-5-CHANGED: Interface Loopback2, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback2, changed state to up
R1(config-if)#ip address 10.1.2.10 255.255.255.0 //asigno la direccion IP
R1(config-if)#interface loopback 3 //ingreso al interface Loopback 3
R1(config-if)#
%LINK-5-CHANGED: Interface Loopback3, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback3, changed state to up
R1(config-if)#ip address 10.1.3.10 255.255.255.0 //asigno la direccion IP
R1(config-if)#exit
R1(config)#router ospf 1 //configuro el protocolo ospf
R1(config-router)#network 10.1.0.0 0.0.0.255 area 5 //asigno # de red y numero de área 5
R1(config-router)#network 10.1.1.0 0.0.0.255 area 5 //asigno # de red y numero de área 5
R1(config-router)#network 10.1.2.0 0.0.0.255 area 5 //asigno # de red y numero de área 5
R1(config-router)#network 10.1.3.0 0.0.0.255 area 5 //asigno # de red y numero de área 5
R1(config-router)#exit //salgo del modo configuración

```

```
R1(config)#end
R1#
%SYS-5-CONFIG_I: Configured from console by console
```

Figura 8. Interfaces de Loopback en R1



3. Cree cuatro nuevas interfaces de Loopback en R5 utilizando la asignación de direcciones 172.5.0.0/22 y configure esas interfaces para participar en el Sistema Autónomo EIGRP 15.

### Solución punto 3

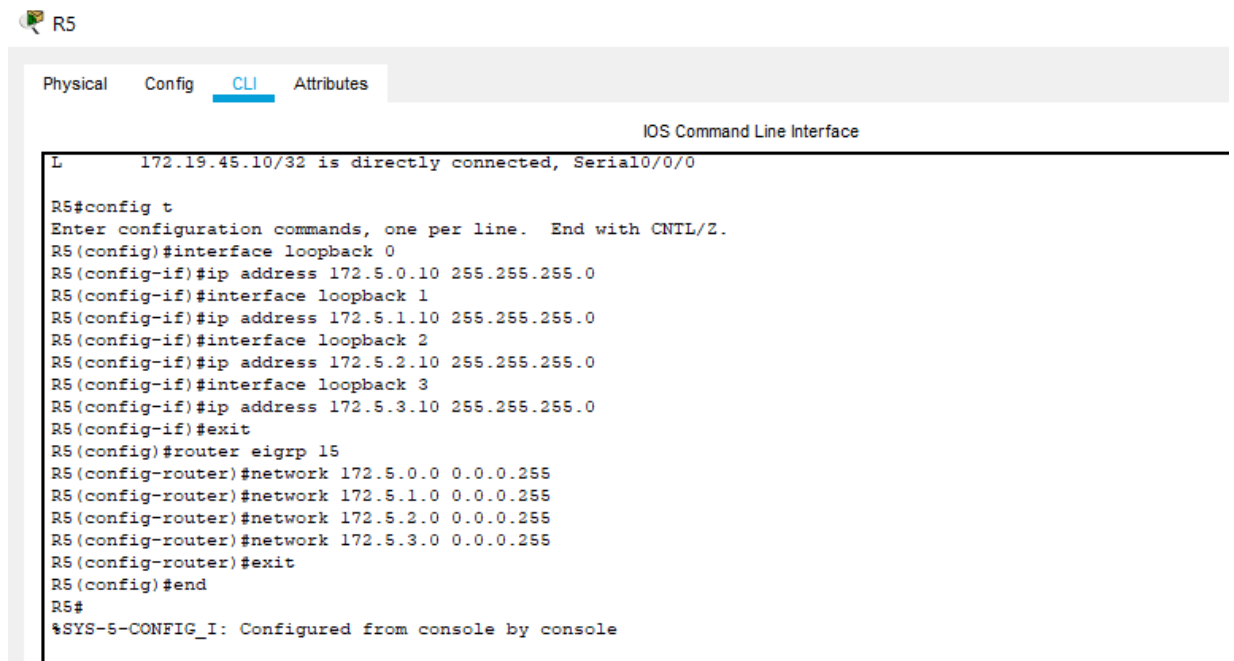
Tabla 2. Interfaces loopback para crear R5

	IP:172.5.0.0	
Network	Rangos Hosts	Broadcast
172.5.0.0/24	172.5.0.1-172.5.0.254	172.5.0.255
172.5.1.0/24	172.5.1.1-172.5.1.254	172.5.1.255
172.5.2.0/24	172.5.2.1-172.5.2.254	172.5.2.255
172.5.3.0/24	172.5.3.1-172.5.3.254	172.5.3.255

## Descripción del código y pantallazo de configuración interfaces Loopback en “R5” Interfaces de Loopback en R5

```
R5>en //ingreso al modo privilegiado
R5#config t //Ingreso al modo de configuración
Enter configuration commands, one per line. End with CNTL/Z.
R5(config)#interface loopback 0 //ingreso al interface Loopback 0
R5(config-if)#ip address 172.5.0.10 255.255.255.0 //asigno la dirección IP de loopback 0
R5(config-if)#interface loopback 1 // ingreso al interface Loopback 1
R5(config-if)#ip address 172.5.1.10 255.255.255.0 //asigno la dirección IP de loopback 1
R5(config-if)#interface loopback 2 //ingreso al interface Loopback 2
R5(config-if)#ip address 172.5.2.10 255.255.255.0 //asigno la dirección IP de loopback 2
R5(config-if)#interface loopback 3 //ingreso al interface Loopback 3
R5(config-if)#ip address 172.5.3.10 255.255.255.0 //asigno la dirección IP de loopback 3
R5(config-if)#exit //salgo del modo configuración del loopback
R5(config)#router eigrp 15 //ingreso al modo configuración EIGRP 15
R5(config-router)#network 172.5.0.0 0.0.0.255 //ingreso el # de la red
R5(config-router)#network 172.5.1.0 0.0.0.255 //ingreso el # de la red
R5(config-router)#network 172.5.2.0 0.0.0.255 //ingreso el # de la red
R5(config-router)#network 172.5.3.0 0.0.0.255 //ingreso el # de la red
R5(config-router)#exit //salgo del modo configuración de red
R5(config)#end //finalizar configuración
R5#
%SYS-5-CONFIG_I: Configured from console by console
```

Figura 9. Interfaces de Loopback en R5



The screenshot shows the R5 CLI interface with the following configuration commands and output:

```
R5#config t
Enter configuration commands, one per line. End with CNTL/Z.
R5(config)#interface loopback 0
R5(config-if)#ip address 172.5.0.10 255.255.255.0
R5(config-if)#interface loopback 1
R5(config-if)#ip address 172.5.1.10 255.255.255.0
R5(config-if)#interface loopback 2
R5(config-if)#ip address 172.5.2.10 255.255.255.0
R5(config-if)#interface loopback 3
R5(config-if)#ip address 172.5.3.10 255.255.255.0
R5(config-if)#exit
R5(config)#router eigrp 15
R5(config-router)#network 172.5.0.0 0.0.0.255
R5(config-router)#network 172.5.1.0 0.0.0.255
R5(config-router)#network 172.5.2.0 0.0.0.255
R5(config-router)#network 172.5.3.0 0.0.0.255
R5(config-router)#exit
R5(config)#end
R5#
%SYS-5-CONFIG_I: Configured from console by console
```

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

#### **Solución punto 4**

Descripción del código y pantallazo de verificación interfaces Loopback en “R3”  
Verificación Interfaces Loopback en R3

R3>en //ingreso al modo privilegiado

R3#show ip route //comando de verificar tabla de enrutamiento

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

Gateway of last resort is not set

10.0.0.0/8 is variably subnetted, 11 subnets, 2 masks

```
O 10.1.0.10/32 [110/66] via 10.113.13.20, 00:16:07, Serial0/0/0
O 10.1.1.10/32 [110/66] via 10.113.13.20, 00:16:07, Serial0/0/0
O 10.1.2.10/32 [110/66] via 10.113.13.20, 00:16:07, Serial0/0/0
O 10.1.3.10/32 [110/66] via 10.113.13.20, 00:16:07, Serial0/0/0
D 10.5.0.0/24 [90/2809856] via 172.19.34.20, 00:16:23, Serial0/1/0
D 10.5.1.0/24 [90/2809856] via 172.19.34.20, 00:16:23, Serial0/1/0
D 10.5.2.0/24 [90/2809856] via 172.19.34.20, 00:16:23, Serial0/1/0
D 10.5.3.0/24 [90/2809856] via 172.19.34.20, 00:16:23, Serial0/1/0
O 10.113.12.0/24 [110/65] via 10.113.13.20, 00:16:17, Serial0/0/0
C 10.113.13.0/24 is directly connected, Serial0/0/0
L 10.113.13.10/32 is directly connected, Serial0/0/0
172.19.0.0/16 is variably subnetted, 3 subnets, 2 masks
C 172.19.34.0/24 is directly connected, Serial0/1/0
L 172.19.34.10/32 is directly connected, Serial0/1/0
D 172.19.45.0/24 [90/2681856] via 172.19.34.20, 00:16:24, Serial0/1/0
```

**Nota:**

**Como se evidencia en el resultado R3 aprendió las interfaces Loopback de R1 y R5.**

Figura 10. Verificación Interfaces de Loopback en R3

```
R3
Physical Config CLI Attributes
IOS Command Line Interface
R3>en
R3#show ip route
Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP
D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
* - candidate default, U - per-user static route, o - ODR
P - periodic downloaded static route

Gateway of last resort is not set

10.0.0.0/8 is variably subnetted, 11 subnets, 2 masks
O 10.1.0.10/32 [110/66] via 10.113.13.20, 00:16:07, Serial0/0/0
O 10.1.1.10/32 [110/66] via 10.113.13.20, 00:16:07, Serial0/0/0
O 10.1.2.10/32 [110/66] via 10.113.13.20, 00:16:07, Serial0/0/0
O 10.1.3.10/32 [110/66] via 10.113.13.20, 00:16:07, Serial0/0/0
D 10.5.0.0/24 [90/2809856] via 172.19.34.20, 00:16:23, Serial0/1/0
D 10.5.1.0/24 [90/2809856] via 172.19.34.20, 00:16:23, Serial0/1/0
D 10.5.2.0/24 [90/2809856] via 172.19.34.20, 00:16:23, Serial0/1/0
D 10.5.3.0/24 [90/2809856] via 172.19.34.20, 00:16:23, Serial0/1/0
O 10.113.12.0/24 [110/65] via 10.113.13.20, 00:16:17, Serial0/0/0
C 10.113.13.0/24 is directly connected, Serial0/0/0
L 10.113.13.10/32 is directly connected, Serial0/0/0
172.19.0.0/16 is variably subnetted, 3 subnets, 2 masks
C 172.19.34.0/24 is directly connected, Serial0/1/0
L 172.19.34.10/32 is directly connected, Serial0/1/0
D 172.19.45.0/24 [90/2681856] via 172.19.34.20, 00:16:24, Serial0/1/0
```

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

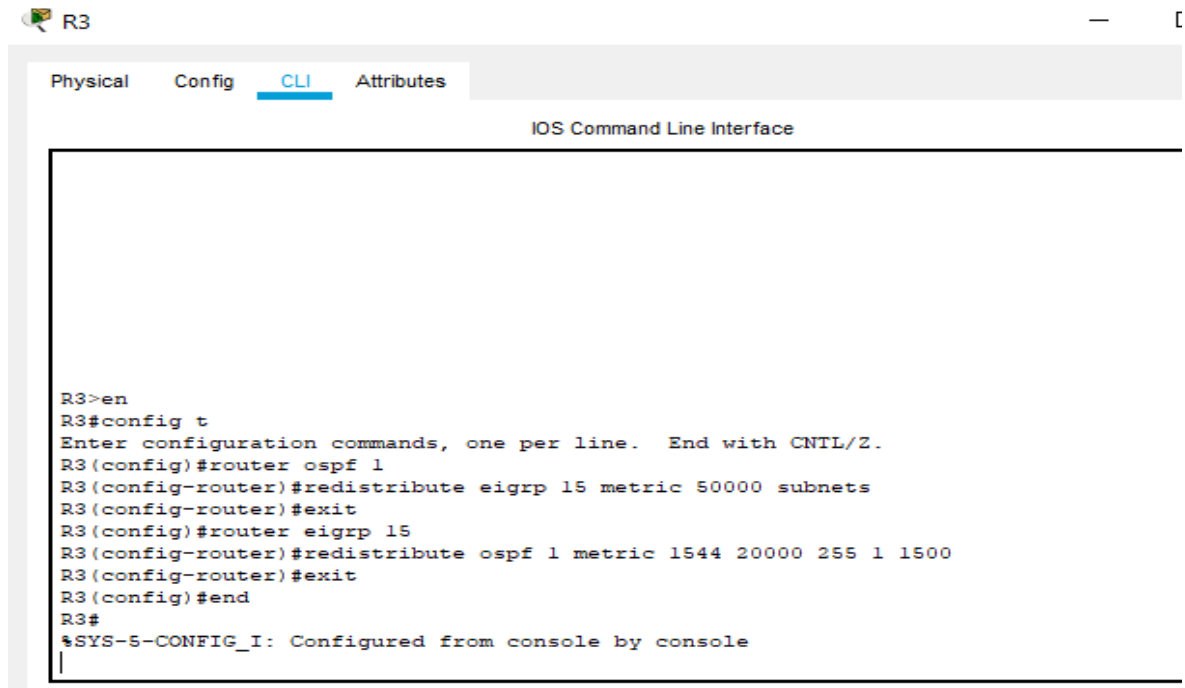
## Solución punto 5

Descripción del código y pantallazo de configuración redistribución rutas EIGRP en OSPF y viceversa en “R3”

Redistribución rutas EIGRP en OSPF y OSPF en EIGRP con su “BW” en R3

```
R3>en //ingreso al modo privilegiado
R3#config t //ingreso al modo configuración del router
Enter configuration commands, one per line. End with CNTL/Z.
R3(config)#router ospf 1 //ingreso a configurar el protocolo ospf
R3(config-router)#redistribute eigrp 15 metric 50000 subnets //redistribuyo la ruta EIGRP
usando el valor de 50000
R3(config-router)#exit //salgo del modo configuración de ruta EIGRP
R3(config)#router eigrp 15 //ingreso al modo de configurar protocolo EIGRP 15
R3(config-router)#redistribute ospf 1 metric 1544 20000 255 1 1500 //Redistribuyo las
rutas OSPF usando un ancho de banda de 20000 microsegundos de retardo
R3(config-router)#exit //Salgo del modo configuración de ruta OSPF
R3(config)#end //finalizo configuración del router
R3#
%SYS-5-CONFIG_I: Configured from console by console
```

Figura 11. Redistribución Rutas EIGRP en OSPF



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

### Solución punto 6

Descripción del código y pantallazo de verificación de las rutas del sistema autónomo opuesto en “R1 y R5”

Verificación de las rutas del sistema autónomo opuesto en “R1”

R1>en //ingreso al modo privilegiado

R1#show ip route //comando de verificar la tabla de enrutamiento de router

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

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

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

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

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

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

P - periodic downloaded static route

Gateway of last resort is not set

10.0.0.0/8 is variably subnetted, 15 subnets, 2 masks

```

C    10.1.0.0/24 is directly connected, Loopback0
L    10.1.0.10/32 is directly connected, Loopback0
C    10.1.1.0/24 is directly connected, Loopback1
L    10.1.1.10/32 is directly connected, Loopback1
C    10.1.2.0/24 is directly connected, Loopback2
L    10.1.2.10/32 is directly connected, Loopback2
C    10.1.3.0/24 is directly connected, Loopback3
L    10.1.3.10/32 is directly connected, Loopback3
O E2  10.5.0.0/24 [110/50000] via 10.113.12.20, 00:05:41, Serial0/0/0
O E2  10.5.1.0/24 [110/50000] via 10.113.12.20, 00:05:41, Serial0/0/0
O E2  10.5.2.0/24 [110/50000] via 10.113.12.20, 00:05:41, Serial0/0/0
O E2  10.5.3.0/24 [110/50000] via 10.113.12.20, 00:05:41, Serial0/0/0
C    10.113.12.0/24 is directly connected, Serial0/0/0
L    10.113.12.10/32 is directly connected, Serial0/0/0
O    10.113.13.0/24 [110/65] via 10.113.12.20, 02:34:35, Serial0/0/0
    172.19.0.0/24 is subnetted, 2 subnets
O E2  172.19.34.0/24 [110/50000] via 10.113.12.20, 00:05:41, Serial0/0/0
O E2  172.19.45.0/24 [110/50000] via 10.113.12.20, 00:05:41, Serial0/0/0

```

Figura 12. Rutas del sistema autónomo Opuesto en R1

```

R1
Physical Config CLI Attributes
IOS Command Line Interface
R1>en
R1#show ip route
Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route

Gateway of last resort is not set

10.0.0.0/8 is variably subnetted, 15 subnets, 2 masks
C    10.1.0.0/24 is directly connected, Loopback0
L    10.1.0.10/32 is directly connected, Loopback0
C    10.1.1.0/24 is directly connected, Loopback1
L    10.1.1.10/32 is directly connected, Loopback1
C    10.1.2.0/24 is directly connected, Loopback2
L    10.1.2.10/32 is directly connected, Loopback2
C    10.1.3.0/24 is directly connected, Loopback3
L    10.1.3.10/32 is directly connected, Loopback3
O E2  10.5.0.0/24 [110/50000] via 10.113.12.20, 00:05:41, Serial0/0/0
O E2  10.5.1.0/24 [110/50000] via 10.113.12.20, 00:05:41, Serial0/0/0
O E2  10.5.2.0/24 [110/50000] via 10.113.12.20, 00:05:41, Serial0/0/0
O E2  10.5.3.0/24 [110/50000] via 10.113.12.20, 00:05:41, Serial0/0/0
C    10.113.12.0/24 is directly connected, Serial0/0/0
L    10.113.12.10/32 is directly connected, Serial0/0/0
O    10.113.13.0/24 [110/65] via 10.113.12.20, 02:34:35, Serial0/0/0
    172.19.0.0/24 is subnetted, 2 subnets
O E2  172.19.34.0/24 [110/50000] via 10.113.12.20, 00:05:41, Serial0/0/0
O E2  172.19.45.0/24 [110/50000] via 10.113.12.20, 00:05:41, Serial0/0/0

```

## Verificación de las rutas del sistema autónomo opuesto en "R5"

R5>en //ingreso al modo privilegiado

R5#show ip route //comando de verificar tabla de enrutamiento del router

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

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

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

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

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

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

P - periodic downloaded static route

Gateway of last resort is not set

10.0.0.0/8 is variably subnetted, 6 subnets, 2 masks

D EX 10.1.0.10/32 [170/7801856] via 172.19.45.20, 00:09:01, Serial0/0/0

D EX 10.1.1.10/32 [170/7801856] via 172.19.45.20, 00:09:01, Serial0/0/0

D EX 10.1.2.10/32 [170/7801856] via 172.19.45.20, 00:09:01, Serial0/0/0

D EX 10.1.3.10/32 [170/7801856] via 172.19.45.20, 00:09:01, Serial0/0/0

D EX 10.113.12.0/24 [170/7801856] via 172.19.45.20, 00:09:11, Serial0/0/0

D EX 10.113.13.0/24 [170/7801856] via 172.19.45.20, 00:09:17, Serial0/0/0

172.5.0.0/16 is variably subnetted, 8 subnets, 2 masks

C 172.5.0.0/24 is directly connected, Loopback0

L 172.5.0.10/32 is directly connected, Loopback0

C 172.5.1.0/24 is directly connected, Loopback1

L 172.5.1.10/32 is directly connected, Loopback1

C 172.5.2.0/24 is directly connected, Loopback2

L 172.5.2.10/32 is directly connected, Loopback2

C 172.5.3.0/24 is directly connected, Loopback3

L 172.5.3.10/32 is directly connected, Loopback3

172.19.0.0/16 is variably subnetted, 3 subnets, 2 masks

D 172.19.34.0/24 [90/2681856] via 172.19.45.20, 00:09:17, Serial0/0/0

C 172.19.45.0/24 is directly connected, Serial0/0/0

L 172.19.45.10/32 is directly connected, Serial0/0/0

Figura 13. Rutas del sistema autónomo Opuesto en R5

```
R5
Physical Config CLI Attributes
IOS Command Line Interface

R5#show ip route
Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route

Gateway of last resort is not set

10.0.0.0/8 is variably subnetted, 6 subnets, 2 masks
D EX  10.1.0.10/32 [170/7801856] via 172.19.45.20, 00:09:01, Serial0/0/0
D EX  10.1.1.10/32 [170/7801856] via 172.19.45.20, 00:09:01, Serial0/0/0
D EX  10.1.2.10/32 [170/7801856] via 172.19.45.20, 00:09:01, Serial0/0/0
D EX  10.1.3.10/32 [170/7801856] via 172.19.45.20, 00:09:01, Serial0/0/0
D EX  10.113.12.0/24 [170/7801856] via 172.19.45.20, 00:09:11, Serial0/0/0
D EX  10.113.13.0/24 [170/7801856] via 172.19.45.20, 00:09:17, Serial0/0/0
172.5.0.0/16 is variably subnetted, 8 subnets, 2 masks
C     172.5.0.0/24 is directly connected, Loopback0
L     172.5.0.10/32 is directly connected, Loopback0
C     172.5.1.0/24 is directly connected, Loopback1
L     172.5.1.10/32 is directly connected, Loopback1
C     172.5.2.0/24 is directly connected, Loopback2
L     172.5.2.10/32 is directly connected, Loopback2
C     172.5.3.0/24 is directly connected, Loopback3
L     172.5.3.10/32 is directly connected, Loopback3
172.19.0.0/16 is variably subnetted, 3 subnets, 2 masks
D     172.19.34.0/24 [90/2681856] via 172.19.45.20, 00:09:17, Serial0/0/0
C     172.19.45.0/24 is directly connected, Serial0/0/0
L     172.19.45.10/32 is directly connected, Serial0/0/0
```

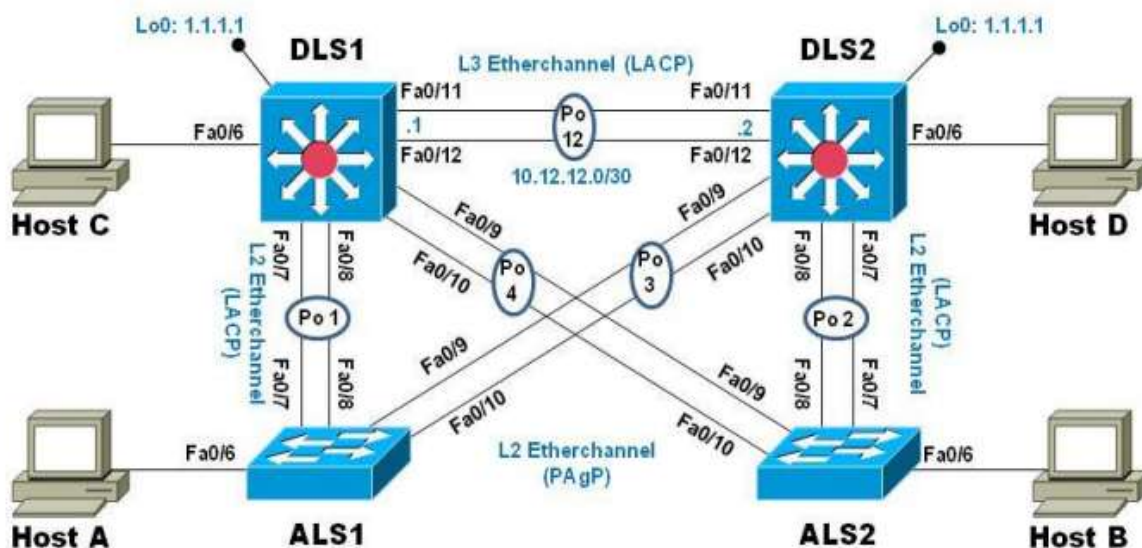
**NOTA:**

**Como se puede evidenciar las rutas del sistema autónomo opuesto existen en su tabla de enrutamiento en R1 y R5.**

## 2. ESCENARIO 2

Mediante la implementación de comandos IOS de configuración avanzada en routers (con direccionamiento IPv4) se analizan los enlaces de protocolos de enrutamiento como: RIPng, OSPFv3, EIGRP y BGP, realizando el diseño de las redes escalables mediante la utilización de enrutamientos como se describe en los ítem solicitados en la actividad consiguiendo la conexión esperada en el planteamiento como se evidencia en cada uno de los pasos realizados.

### Topología de red



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

- Apagar todas las interfaces en cada switch.

#### Apagado Interfaces SWITCH DLS1

```
Switch>en
```

```
Switch#config t
```

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

```
Switch(config)#hostname DLS1
```

```
DLS1(config)#int f0/6
```

```
DLS1(config-if)#shutdown
```

```
DLS1(config-if)#
```

```
%LINK-5-CHANGED: Interface FastEthernet0/6, changed state to administratively down
```

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/6, changed state to down

DLS1(config-if)#exit

DLS1(config)#int f0/7

DLS1(config-if)#shutdown

DLS1(config-if)#

%LINK-5-CHANGED: Interface FastEthernet0/7, changed state to administratively down

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

DLS1(config-if)#exit

DLS1(config)#int f0/8

DLS1(config-if)#shutdown

DLS1(config-if)#

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

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

DLS1(config-if)#exit

DLS1(config)#int f0/9

DLS1(config-if)#shutdown

DLS1(config-if)#

%LINK-5-CHANGED: Interface FastEthernet0/9, changed state to administratively down

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/9, changed state to down

DLS1(config-if)#exit

DLS1(config)#int f0/10

DLS1(config-if)#shutdown

DLS1(config-if)#

%LINK-5-CHANGED: Interface FastEthernet0/10, changed state to administratively down

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/10, changed state to down

DLS1(config-if)#exit

DLS1(config)#int f0/11

DLS1(config-if)#shutdown

%LINK-5-CHANGED: Interface FastEthernet0/11, changed state to administratively down

DLS1(config-if)#exit

DLS1(config)#int f0/12

DLS1(config-if)#shutdown

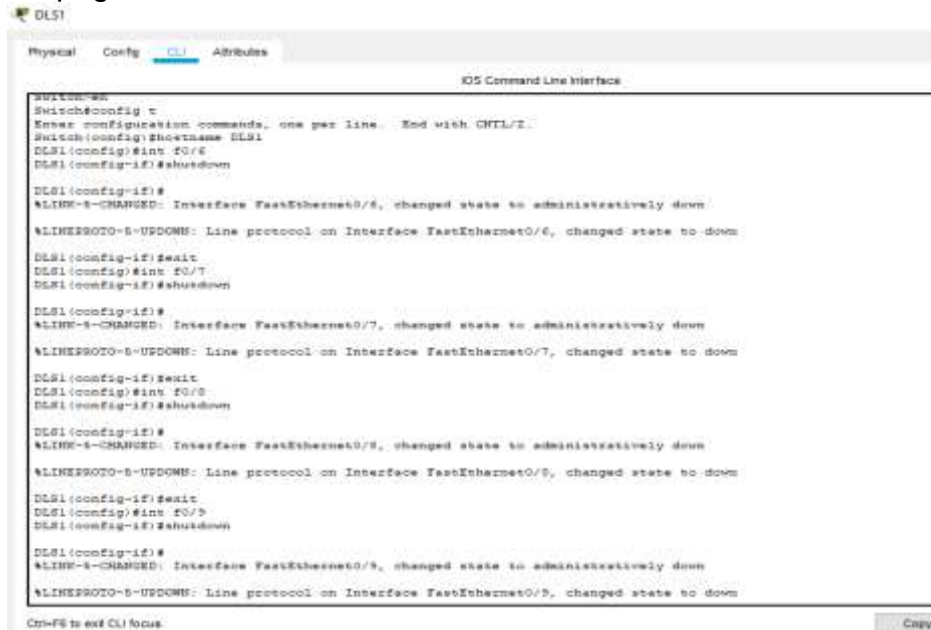
%LINK-5-CHANGED: Interface FastEthernet0/12, changed state to administratively down

```

DLS1(config-if)#exit
DLS1(config)#end
DLS1#
%SYS-5-CONFIG_I: Configured from console by console

```

Figura 14. Apagado interfaces de switch DLS1



## Apagado Interfaces SWITCH DLS2

```

Switch>en
Switch#config t
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#hostname DLS2
DLS2(config)#int f0/6
DLS2(config-if)#shutdown
DLS2(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/6, changed state to administratively
down
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/6, changed
state to down
DLS2(config-if)#exit
DLS2(config)#int f0/7
DLS2(config-if)#shutdown
DLS2(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/7, changed state to administratively down
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/7, changed state to
down
DLS2(config-if)#exit

```

```
DLS2(config)#int f0/8
DLS2(config-if)#shutdown
DLS2(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/8, changed state to administratively down
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/8, changed state to
down
DLS2(config-if)#exit
DLS2(config)#shutdown
DLS2(config)#int f0/9
DLS2(config-if)#shutdown
DLS2(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/9, changed state to administratively down
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/9, changed state to
down
DLS2(config-if)#exit
DLS2(config)#int f0/10
DLS2(config-if)#shutdown
DLS2(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/10, changed state to administratively down
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/10, changed state to
down
DLS2(config-if)#exit
DLS2(config)#int f0/11
DLS2(config-if)#shutdown
%LINK-5-CHANGED: Interface FastEthernet0/11, changed state to administratively down
DLS2(config-if)#exit
DLS2(config)#int f0/12
DLS2(config-if)#shutdown
%LINK-5-CHANGED: Interface FastEthernet0/12, changed state to administratively down
DLS2(config-if)#exit
DLS2(config)#
DLS2#
%SYS-5-CONFIG_I: Configured from console by console
```

Figura 15. Apagado interfaces de switch DLS2

```

Switch>en
Switch#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#hostname ALS1
ALS1(config)#int f0/6
ALS1(config-if)#shutdown
ALS1(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/6, changed state to administratively down.
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/6, changed state to down
ALS1(config-if)#exit
ALS1(config)#int f0/7
ALS1(config-if)#shutdown
ALS1(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/7, changed state to administratively down.
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/7, changed state to down
ALS1(config-if)#exit
ALS1(config)#int f0/8
ALS1(config-if)#shutdown
ALS1(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/8, changed state to administratively down.
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/8, changed state to down
ALS1(config-if)#exit
ALS1(config)#int f0/9
ALS1(config-if)#shutdown
ALS1(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/9, changed state to administratively down.
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/9, changed state to down
ALS1(config-if)#exit
ALS1(config)#int f0/10
ALS1(config-if)#shutdown
ALS1(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/10, changed state to administratively down.
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/10, changed state to down
ALS1(config-if)#exit
ALS1(config)#end
ALS1#

```

### Apagado Interfaces SWITCH ALS1

```

Switch>en
Switch#config t
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#hostname ALS1
ALS1(config)#int f0/6
ALS1(config-if)#shutdown
ALS1(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/6, changed state to administratively down
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/6, changed state to
down
ALS1(config-if)#exit
ALS1(config)#int f0/7
ALS1(config-if)#shutdown
%LINK-5-CHANGED: Interface FastEthernet0/7, changed state to administratively down
ALS1(config-if)#exit
ALS1(config)#int f0/8
ALS1(config-if)#shutdown
%LINK-5-CHANGED: Interface FastEthernet0/8, changed state to administratively down
ALS1(config-if)#exit
ALS1(config)#int f0/9
ALS1(config-if)#shutdown
%LINK-5-CHANGED: Interface FastEthernet0/9, changed state to administratively down
ALS1(config-if)#exit
ALS1(config)#int f0/10
ALS1(config-if)#shutdown
%LINK-5-CHANGED: Interface FastEthernet0/10, changed state to administratively down
ALS1(config-if)#exit
ALS1(config)#end
ALS1#

```

Figura 16. Apagado interfaces de switch ALS1

```

Switch-#
Switch#config t
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#hostname ALS1
ALS1(config)#int F0/6
ALS1(config-if)#shutdown

ALS1(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/6, changed state to administratively down
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/6, changed state to down

ALS1(config-if)#exit
ALS1(config)#int F0/7
ALS1(config-if)#shutdown

%LINK-5-CHANGED: Interface FastEthernet0/7, changed state to administratively down
ALS1(config-if)#exit
ALS1(config)#int F0/8
ALS1(config-if)#shutdown

%LINK-5-CHANGED: Interface FastEthernet0/8, changed state to administratively down
ALS1(config-if)#exit
ALS1(config)#int F0/9
ALS1(config-if)#shutdown

%LINK-5-CHANGED: Interface FastEthernet0/9, changed state to administratively down
ALS1(config-if)#exit
ALS1(config)#int F0/10
ALS1(config-if)#shutdown

%LINK-5-CHANGED: Interface FastEthernet0/10, changed state to administratively down
ALS1(config-if)#exit
ALS1(config)#end
ALS1#

```

## Apagado Interfaces SWITCH ALS2

```

Switch>en
Switch#config t
Enter configuration commands, one per line. End with CNTL/Z.
ALS2(config)#hostname ALS2
ALS2(config)#int F0/6
ALS2(config-if)#shutdown
ALS2(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/6, changed state to administratively down
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/6, changed state to
down
ALS2(config-if)#exit
ALS2(config)#int f0/7
ALS2(config-if)#shutdown
%LINK-5-CHANGED: Interface FastEthernet0/7, changed state to administratively down
ALS2(config-if)#exit
ALS2(config)#int f0/8
ALS2(config-if)#shutdown
%LINK-5-CHANGED: Interface FastEthernet0/8, changed state to administratively down
ALS2(config-if)#exit
ALS2(config)#int f0/9
ALS2(config-if)#shutdown
%LINK-5-CHANGED: Interface FastEthernet0/9, changed state to administratively down
ALS2(config-if)#exit
ALS2(config)#int f0/10
ALS2(config-if)#shutdown
%LINK-5-CHANGED: Interface FastEthernet0/10, changed state to administratively down
ALS2(config-if)#exit
ALS2(config)#end
ALS2#
%SYS-5-CONFIG_I: Configured from console by console

```

Figura 17. Apagado interfaces de switch ALS2

```

Switch>en
Switch#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#hostname DLS2
DLS2(config)#hostname ALS2
ALS2(config)#int f0/6
ALS2(config-if)#shutdown

ALS2(config-if)#
%LINK-3-CHANGED: Interface FastEthernet0/6, changed state to administratively down
%LINEPROTO-3-UPDOWN: Line protocol on Interface FastEthernet0/6, changed state to down

ALS2(config-if)#exit
ALS2(config)#int f0/7
ALS2(config-if)#shutdown

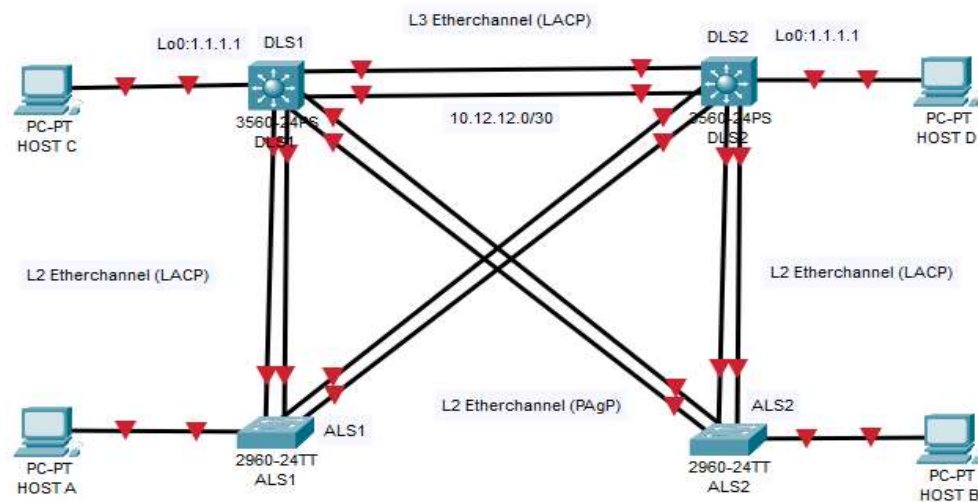
%LINK-3-CHANGED: Interface FastEthernet0/7, changed state to administratively down
ALS2(config-if)#exit
ALS2(config)#int f0/8
ALS2(config-if)#shutdown

%LINK-3-CHANGED: Interface FastEthernet0/8, changed state to administratively down
ALS2(config-if)#exit
ALS2(config)#int f0/9
ALS2(config-if)#shutdown

%LINK-3-CHANGED: Interface FastEthernet0/9, changed state to administratively down
ALS2(config-if)#exit
ALS2(config)#int f0/10
ALS2(config-if)#shutdown

%LINK-3-CHANGED: Interface FastEthernet0/10, changed state to administratively down
ALS2(config-if)#exit
ALS2#
%SYS-3-CONFIG_I: Configured from console by console
  
```

Figura 18. Apagado de todos los switches de la topología



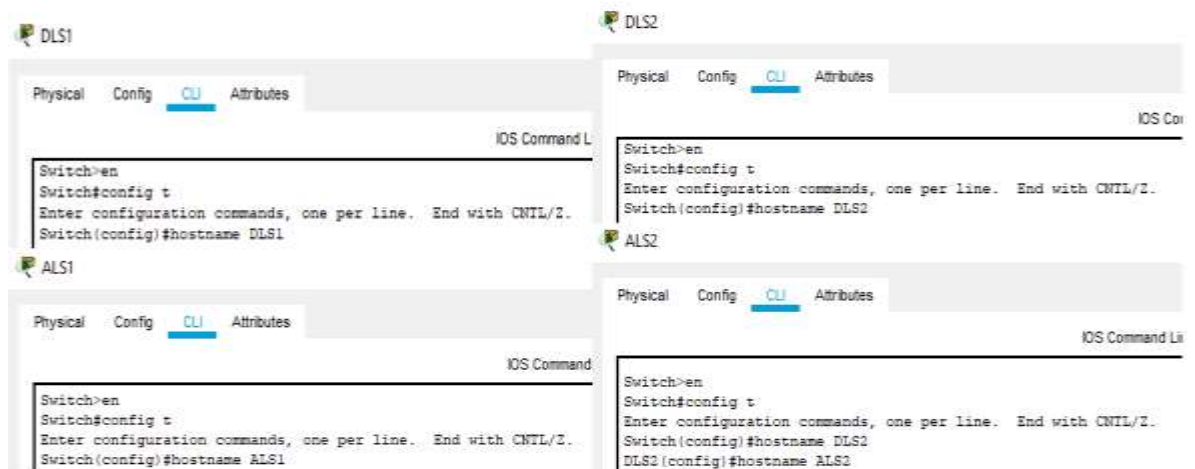
- b. Asignar un nombre a cada switch acorde con el escenario establecido.

Para este punto el nombramiento de los switches se realizó en el paso anterior la configuración es la siguiente:

- **DLS1**  
Switch>en  
Switch#conf t  
Enter configuration commands, one per line. End with CNTL/Z.  
Switch(config)#hostname DLS1
- **DLS2**  
Switch>en

```
Switch#config t
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#hostname DLS2
    • ALS1
Switch>en
Switch#config t
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#hostname ALS1
    • ALS2
Switch>en
Switch#config t
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#hostname ALS2
```

Figura 19. Nombramiento a cada switch de la topología



- c. Configurar los puertos troncales y Port-channels tal como se muestra en el diagrama.
1. La conexión entre DLS1 y DLS2 será un Ether-Channels 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.

Realizamos la configuración de conexión de los switches **DLS1** y **DLS2**

- **DLS1**

```
DLS1#CONFIG T
Enter configuration commands, one per line. End with CNTL/Z.
DLS1(config)#interface vlan 500
DLS1(config-if)#ip address 10.12.12.1 255.255.255.252
DLS1(config-if)#interface range f0/11-12
DLS1(config-if-range)#channel-protocol lacp
```

```

DLS1(config-if-range)#channel-group 2 mode active
DLS1(config-if-range)#
Creating a port-channel interface Port-channel 2

DLS1(config-if-range)#no shutdown

%LINK-5-CHANGED: Interface FastEthernet0/11, changed state to down

%LINK-5-CHANGED: Interface FastEthernet0/12, changed state to down
DLS1(config-if-range)#

```

Figura 20. Configuración conexión switch DLS1

```

DLS1#CONFIG T
Enter configuration commands, one per line. End with CNTL/Z.
DLS1(config)#interface vlan 500
DLS1(config-if)#ip address 10.12.12.1 255.255.255.252
DLS1(config-if)#interface range f0/11-12
DLS1(config-if-range)#channel-protocol lacp
DLS1(config-if-range)#channel-group 2 mode active
DLS1(config-if-range)#
Creating a port-channel interface Port-channel 2

DLS1(config-if-range)#no shutdown

%LINK-5-CHANGED: Interface FastEthernet0/11, changed state to down

%LINK-5-CHANGED: Interface FastEthernet0/12, changed state to down
DLS1(config-if-range)#
DLS1(config-if-range)#

```

Ctrl+F6 to exit CLI focus

## DLS2

```

DLS2#config t
Enter configuration commands, one per line. End with CNTL/Z.
DLS2(config)#interface vlan 500
DLS2(config-if)#ip address 10.12.12.2 255.255.255.252
DLS2(config-if)#interface range f0/11-12
DLS2(config-if-range)#
DLS2(config-if-range)#channel-protocol lacp
DLS2(config-if-range)#channel-group 2 mode active
DLS2(config-if-range)#
Creating a port-channel interface Port-channel 2
DLS2(config-if-range)#no shutdown
DLS2(config-if-range)#
%LINK-5-CHANGED: Interface FastEthernet0/11, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/11, changed state to up

```

```

%LINK-5-CHANGED: Interface FastEthernet0/12, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/12, 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)#

```

Figura 21. Configuración conexión switch DLS2

```

DLS2#config t
Enter configuration commands, one per line. End with CNTL/Z.
DLS2(config)#interface vlan 500
DLS2(config-if)#ip address 10.12.12.2 255.255.255.252
DLS2(config-if)#interface range f0/11-12
DLS2(config-if-range)#
DLS2(config-if-range)#channel-protocol lacp
DLS2(config-if-range)#channel-group 2 mode active
DLS2(config-if-range)#
Creating a port-channel interface Port-channel 2

DLS2(config-if-range)#no shutdown

DLS2(config-if-range)#
%LINK-5-CHANGED: Interface FastEthernet0/11, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/11, changed state to up

%LINK-5-CHANGED: Interface FastEthernet0/12, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/12, 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)#

```

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

Se realiza la configuración de las interfaces Fa0/7 y Fa0/8 en DLS1 y ALS1

### DLS1

```

DLS1>en
DLS1(config)#
DLS1(config)#interface range f0/7-8
DLS1(config-if-range)#channel-protocol lacp
DLS1(config-if-range)#channel-group 2 mode active
DLS1(config-if-range)#no shutdown
%LINK-5-CHANGED: Interface FastEthernet0/7, changed state to down
%LINK-5-CHANGED: Interface FastEthernet0/8, changed state to down

```

```
DLS1(config-if-range)#end
DLS1#
%SYS-5-CONFIG_I: Configured from console by console
```

Figura 22. Configuración de las interfaces Fa0/7 y Fa0/8 en DLS1

```
DLS1(config)#
DLS1(config)#interface range f0/7-8
DLS1(config-if-range)#channel-protocol lacp
DLS1(config-if-range)#channel-group 2 mode active
DLS1(config-if-range)#no shutdown

%LINK-5-CHANGED: Interface FastEthernet0/7, changed state to down

%LINK-5-CHANGED: Interface FastEthernet0/8, changed state to down
DLS1(config-if-range)#end
DLS1#
%SYS-5-CONFIG_I: Configured from console by console
```

## DLS2

```
DLS2(config-if-range)#
DLS2(config-if-range)#exit
DLS2(config)#interface 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 shutdown
%LINK-5-CHANGED: Interface FastEthernet0/7, changed state to down
%LINK-5-CHANGED: Interface FastEthernet0/8, changed state to down
DLS2(config-if-range)#end
DLS2#
%SYS-5-CONFIG_I: Configured from console by console
```

Figura 23. Configuración de las interfaces Fa0/7 y Fa0/8 en DLS2

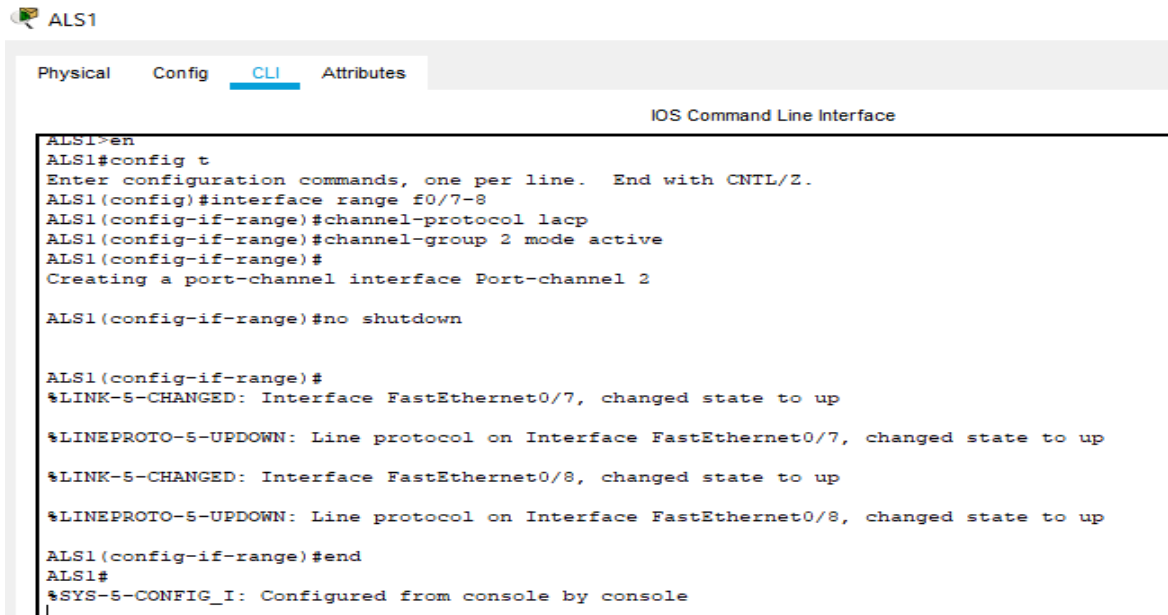
```
DLS2(config-if-range)#
DLS2(config-if-range)#exit
DLS2(config)#interface range f0/7-8
DLS2(config-if-range)#channel-protocol lacp
DLS2(config-if-range)#channel-group 2 mode active
DLS2(config-if-range)#no shutdown

%LINK-5-CHANGED: Interface FastEthernet0/7, changed state to down
|
%LINK-5-CHANGED: Interface FastEthernet0/8, changed state to down
DLS2(config-if-range)#end
DLS2#
%SYS-5-CONFIG_I: Configured from console by console
```

## ALS1

```
ALS1>en
ALS1#config t
Enter configuration commands, one per line. End with CNTL/Z.
ALS1(config)#interface range f0/7-8
ALS1(config-if-range)#channel-protocol lacp
ALS1(config-if-range)#channel-group 2 mode active
ALS1(config-if-range)#
Creating a port-channel interface Port-channel 2
ALS1(config-if-range)#no shutdown
ALS1(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
ALS1(config-if-range)#end
ALS1#
%SYS-5-CONFIG_I: Configured from console by console
```

Figura 24. Configuración de las interfaces Fa0/7 y Fa0/8 en ALS1



The screenshot shows the ALS1 CLI interface with the following text:

```
ALS1>en
ALS1#config t
Enter configuration commands, one per line. End with CNTL/Z.
ALS1(config)#interface range f0/7-8
ALS1(config-if-range)#channel-protocol lacp
ALS1(config-if-range)#channel-group 2 mode active
ALS1(config-if-range)#
Creating a port-channel interface Port-channel 2
ALS1(config-if-range)#no shutdown
ALS1(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
ALS1(config-if-range)#end
ALS1#
%SYS-5-CONFIG_I: Configured from console by console
```

## ALS2

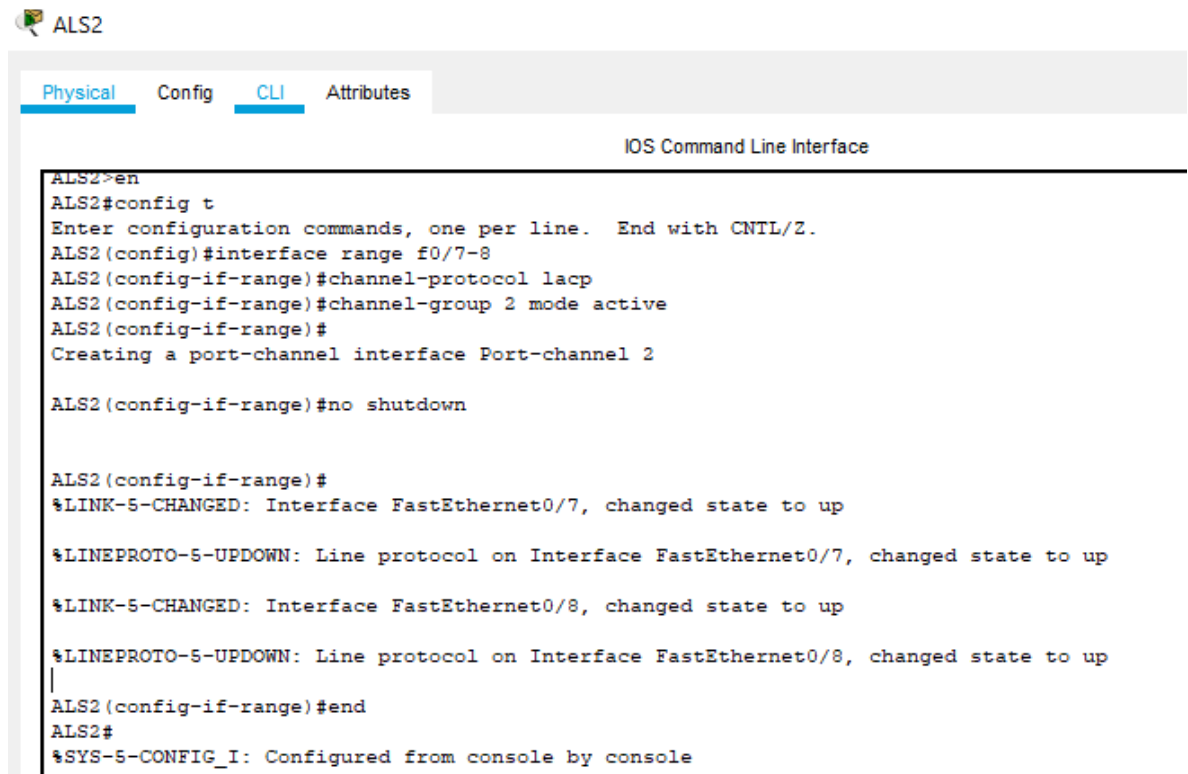
```
ALS2>en
ALS2#config t
```

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

```
ALS2(config)#interface range 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 shutdown
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
ALS2(config-if-range)#end
ALS2#
%SYS-5-CONFIG_I: Configured from console by console
```

Figura 25. Configuración de las interfaces Fa0/7 y Fa0/8 en ALS2



The screenshot shows the ALS2 CLI interface with the following text:

```
ALS2>en
ALS2#config t
Enter configuration commands, one per line. End with CNTL/Z.
ALS2(config)#interface range 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 shutdown

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
|
ALS2(config-if-range)#end
ALS2#
%SYS-5-CONFIG_I: Configured from console by console
```

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

### DLS1

```
DLS1>en
DLS1#config t
Enter configuration commands, one per line. End with CNTL/Z.
DLS1(config)#interface 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 shutdown

%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)#end
DLS1#
%SYS-5-CONFIG_I: Configured from console by console
```

Figura 26. Establecemos el protocolo PAgP en el canal de DLS1

```
DLS1>en
DLS1#config t
Enter configuration commands, one per line. End with CNTL/Z.
DLS1(config)#interface 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 shutdown

%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)#end
DLS1#
%SYS-5-CONFIG_I: Configured from console by console
```

Ctrl-C to exit CLI session

### DLS2

```
DLS2>en
DLS2#config t
Enter configuration commands, one per line. End with CNTL/Z.
DLS2(config)#interface range f0/9-10
DLS2(config-if-range)#channel-protocol pagp
DLS2(config-if-range)#channel-group 2 mode desirable
DLS2(config-if-range)#no shutdown
%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)#end
DLS2#
%SYS-5-CONFIG_I: Configured from console by console
```

Figura 27. Establecemos el protocolo PAgP en el canal de DLS2

```
DLS2>en
DLS2#config t
Enter configuration commands, one per line. End with CNTL/Z.
DLS2(config)#interface range f0/9-10
DLS2(config-if-range)#channel-protocol pagp
DLS2(config-if-range)#channel-group 2 mode desirable
DLS2(config-if-range)#no shutdown

%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)#end
DLS2#
%SYS-5-CONFIG_I: Configured from console by console
```

Ctrl+F6 to exit CLI focus

## ALS1

```
ALS1>en
ALS1#config t
Enter configuration commands, one per line. End with CNTL/Z.
ALS1(config)#interface range f0/9-10
ALS1(config-if-range)#channel-protocol pagp
ALS1(config-if-range)#channel-group 2 mode desirable
ALS1(config-if-range)#no shutdown
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
ALS1(config-if-range)#end
ALS1#
%SYS-5-CONFIG_I: Configured from console by console
```

Figura 28. Establecemos el protocolo PAgP en el canal de ALS1

```
ALS1>en
ALS1#config t
Enter configuration commands, one per line. End with CNTL/Z.
ALS1(config)#interface range f0/9-10
ALS1(config-if-range)#channel-protocol pagp
ALS1(config-if-range)#channel-group 2 mode desirable
ALS1(config-if-range)#no shutdown

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

ALS1(config-if-range)#end
ALS1#
%SYS-5-CONFIG_I: Configured from console by console
```

Ctrl+F6 to exit CLI focus

## ALS2

```
ALS2>en
ALS2#config t
Enter configuration commands, one per line. End with CNTL/Z.
ALS2(config)#interface range f0/9-10
ALS2(config-if-range)#channel-protocol pagp
ALS2(config-if-range)#channel-group 2 mode desirable
ALS2(config-if-range)#no shutdown
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-if-range)#end
ALS2#
%SYS-5-CONFIG_I: Configured from console by console
```

Figura 29. Establecemos el protocolo PAgP en el canal de ALS2

```
ALS2>en
ALS2#config t
Enter configuration commands, one per line. End with CNTL/Z.
ALS2(config)#interface range f0/9-10
ALS2(config-if-range)#channel-protocol pagp
ALS2(config-if-range)#channel-group 2 mode desirable
ALS2(config-if-range)#no shutdown

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-if-range)#end
ALS2#
%SYS-5-CONFIG_I: Configured from console by console
```

Ctrl+F6 to exit CLI focus

4. Todos los puertos troncales serán asignados a la VLAN 500 como la VLAN nativa.

En este punto realizamos ingresamos el comando switchport troncalizado con Trunk, asignando como nativa la VLAN 500.

### DLS1

```
DLS1>en
DLS1#config t
Enter configuration commands, one per line. End with CNTL/Z.
DLS1(config)#int ran f0/7-12
DLS1(config-if-range)#switchport trunk encap dot1q
DLS1(config-if-range)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/7, changed state to
down
%EC-5-CANNOT_BUNDLE2: Fa0/7 is not compatible with Fa0/11 and will be suspended
(trunk encap of Fa0/7 is auto, Fa0/11 is dot1q)
%EC-5-CANNOT_BUNDLE2: Fa0/7 is not compatible with Fa0/12 and will be suspended
(trunk encap of Fa0/7 is auto, Fa0/12 is dot1q)
%EC-5-CANNOT_BUNDLE2: Fa0/7 is not compatible with Fa0/8 and will be suspended
(trunk encap of Fa0/7 is auto, Fa0/8 is dot1q)
%EC-5-CANNOT_BUNDLE2: Fa0/7 is not compatible with Fa0/9 and will be suspended
(trunk encap of Fa0/7 is auto, Fa0/9 is dot1q)
%EC-5-CANNOT_BUNDLE2: Fa0/7 is not compatible with Fa0/10 and will be suspended
(trunk encap of Fa0/7 is auto, Fa0/10 is dot1q)
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/8, changed state to
down
%EC-5-CANNOT_BUNDLE2: Fa0/8 is not compatible with Fa0/11 and will be suspended
(trunk encap of Fa0/8 is auto, Fa0/11 is dot1q)
%EC-5-CANNOT_BUNDLE2: Fa0/8 is not compatible with Fa0/12 and will be suspended
(trunk encap of Fa0/8 is auto, Fa0/12 is dot1q)
```

```

%EC-5-CANNOT_BUNDLE2: Fa0/8 is not compatible with Fa0/9 and will be suspended
(trunk encap of Fa0/8 is auto, Fa0/9 is dot1q)
%EC-5-CANNOT_BUNDLE2: Fa0/8 is not compatible with Fa0/10 and will be suspended
(trunk encap of Fa0/8 is auto, Fa0/10 is dot1q)
%EC-5-CANNOT_BUNDLE2: Fa0/9 is not compatible with Fa0/11 and will be suspended
(trunk encap of Fa0/9 is auto, Fa0/11 is dot1q)
%EC-5-CANNOT_BUNDLE2: Fa0/9 is not compatible with Fa0/12 and will be suspended
(trunk encap of Fa0/9 is auto, Fa0/12 is dot1q)
%EC-5-CANNOT_BUNDLE2: Fa0/9 is not compatible with Fa0/10 and will be suspended
(trunk encap of Fa0/9 is auto, Fa0/10 is dot1q)
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/9, changed state to
down
%EC-5-CANNOT_BUNDLE2: Fa0/10 is not compatible with Fa0/11 and will be suspended
(trunk encap of Fa0/10 is auto, Fa0/11 is dot1q)
%EC-5-CANNOT_BUNDLE2: Fa0/10 is not compatible with Fa0/12 and will be suspended
(trunk encap of Fa0/10 is auto, Fa0/12 is dot1q)
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/10, changed state to
down
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/11, changed state to
down
%EC-5-CANNOT_BUNDLE2: Fa0/11 is not compatible with Fa0/12 and will be suspended
(trunk encap of Fa0/11 is auto, Fa0/12 is dot1q)
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/11, changed state to
up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/7, changed state to
up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/8, changed state to
up
%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
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 FastEthernet0/12, changed state to
down
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/12, changed state to
up
DLS1(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
DLS1(config-if-range)#switchport trunk native vlan 500
DLS1(config-if-range)#switchport mode trunk
DLS1(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 FastEthernet0/7, changed state to down  
%EC-5-CANNOT\_BUNDLE2: Fa0/7 is not compatible with Po2 and will be suspended (native vlan of Fa0/7 is 500, Po2 id 1)  
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/8, changed state to down  
%EC-5-CANNOT\_BUNDLE2: Fa0/7 is not compatible with Po2 and will be suspended (native vlan of Fa0/7 is 500, Po2 id 1)  
%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 up  
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/8, changed state to down  
%EC-5-CANNOT\_BUNDLE2: Fa0/8 is not compatible with Po2 and will be suspended (native vlan of Fa0/8 is 500, Po2 id 1)  
%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  
%EC-5-CANNOT\_BUNDLE2: Fa0/9 is not compatible with Po2 and will be suspended (native vlan of Fa0/9 is 500, Po2 id 1)  
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/9, changed state to down  
%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  
%EC-5-CANNOT\_BUNDLE2: Fa0/10 is not compatible with Po2 and will be suspended (native vlan of Fa0/10 is 500, Po2 id 1)  
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/10, changed state to down  
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/11, changed state to down  
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/11, changed state to up  
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/11, changed state to down  
%EC-5-CANNOT\_BUNDLE2: Fa0/11 is not compatible with Po2 and will be suspended (native vlan of Fa0/11 is 500, Po2 id 1)  
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/12, changed state to down  
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/12, changed state to up  
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/12, 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 500, Po2 id 1)

```

DLS1(config-if-range)#switchport nonegotiate
DLS1(config-if-range)#no shutdown
DLS1(config-if-range)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/7, changed state to
up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/8, changed state to
up
%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
up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/11, changed state to
up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/12, changed state to
up
DLS1(config-if-range)#end
DLS1#
%SYS-5-CONFIG_I: Configured from console by console
%CDP-4-NATIVE_VLAN_MISMATCH: Native VLAN mismatch discovered on
FastEthernet0/11 (500), with DLS2 FastEthernet0/11 (1).
%CDP-4-NATIVE_VLAN_MISMATCH: Native VLAN mismatch discovered on
FastEthernet0/12 (500), with DLS2 FastEthernet0/12 (1).
%CDP-4-NATIVE_VLAN_MISMATCH: Native VLAN mismatch discovered on
FastEthernet0/7 (500), with ALS1 FastEthernet0/7 (1).
%CDP-4-NATIVE_VLAN_MISMATCH: Native VLAN mismatch discovered on
FastEthernet0/8 (500), with ALS1 FastEthernet0/8 (1).
%CDP-4-NATIVE_VLAN_MISMATCH: Native VLAN mismatch discovered on
FastEthernet0/9 (500), with ALS2 FastEthernet0/9 (1).
%CDP-4-NATIVE_VLAN_MISMATCH: Native VLAN mismatch discovered on
FastEthernet0/10 (500), with ALS2 FastEthernet0/10 (1).
%CDP-4-NATIVE_VLAN_MISMATCH: Native VLAN mismatch discovered on
FastEthernet0/7 (500), with ALS1 FastEthernet0/7 (1).
%CDP-4-NATIVE_VLAN_MISMATCH: Native VLAN mismatch discovered on
FastEthernet0/8 (500), with ALS1 FastEthernet0/8 (1).
%CDP-4-NATIVE_VLAN_MISMATCH: Native VLAN mismatch discovered on
FastEthernet0/11 (500), with DLS2 FastEthernet0/11 (1).
%CDP-4-NATIVE_VLAN_MISMATCH: Native VLAN mismatch discovered on
FastEthernet0/12 (500), with DLS2 FastEthernet0/12 (1).

```

Figura 30. Troncalizamos VLAN nativa la VLAN 500 en DLS1

```

Physical  Config  CLI  Attributes
IOS Command Line Interface

DLS1#config t
Enter configuration commands, one per line. End with CNTL/Z.
DLS1(config)#int ran f0/7-12
DLS1(config-if-range)#switchport trunk encap dot1q
DLS1(config-if-range)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/7, changed state to down
%EC-5-CANNOT_BUNDLE2: Fa0/7 is not compatible with Fa0/11 and will be suspended (trunk encap of Fa0/7 is auto, Fa0/11 is dot1q)
%EC-5-CANNOT_BUNDLE2: Fa0/7 is not compatible with Fa0/12 and will be suspended (trunk encap of Fa0/7 is auto, Fa0/12 is dot1q)
%EC-5-CANNOT_BUNDLE2: Fa0/7 is not compatible with Fa0/8 and will be suspended (trunk encap of Fa0/7 is auto, Fa0/8 is dot1q)
%EC-5-CANNOT_BUNDLE2: Fa0/7 is not compatible with Fa0/9 and will be suspended (trunk encap of Fa0/7 is auto, Fa0/9 is dot1q)
%EC-5-CANNOT_BUNDLE2: Fa0/7 is not compatible with Fa0/10 and will be suspended (trunk encap of Fa0/7 is auto, Fa0/10 is dot1q)
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/8, changed state to down
%EC-5-CANNOT_BUNDLE2: Fa0/8 is not compatible with Fa0/11 and will be suspended (trunk encap of Fa0/8 is auto, Fa0/11 is dot1q)
%EC-5-CANNOT_BUNDLE2: Fa0/8 is not compatible with Fa0/12 and will be suspended (trunk encap of Fa0/8 is auto, Fa0/12 is dot1q)
%EC-5-CANNOT_BUNDLE2: Fa0/8 is not compatible with Fa0/9 and will be suspended (trunk encap of Fa0/8 is auto, Fa0/9 is dot1q)
%EC-5-CANNOT_BUNDLE2: Fa0/8 is not compatible with Fa0/10 and will be suspended (trunk encap of Fa0/8 is auto, Fa0/10 is dot1q)
%EC-5-CANNOT_BUNDLE2: Fa0/9 is not compatible with Fa0/11 and will be suspended (trunk encap of Fa0/9 is auto, Fa0/11 is dot1q)
%EC-5-CANNOT_BUNDLE2: Fa0/9 is not compatible with Fa0/12 and will be suspended (trunk encap of Fa0/9 is auto, Fa0/12 is dot1q)
%EC-5-CANNOT_BUNDLE2: Fa0/9 is not compatible with Fa0/10 and will be suspended (trunk encap of Fa0/9 is auto, Fa0/10 is dot1q)
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/9, changed state to down
%EC-5-CANNOT_BUNDLE2: Fa0/10 is not compatible with Fa0/11 and will be suspended (trunk encap of Fa0/10 is auto, Fa0/11 is dot1q)
%EC-5-CANNOT_BUNDLE2: Fa0/10 is not compatible with Fa0/12 and will be suspended (trunk encap of Fa0/10 is auto, Fa0/12 is dot1q)

Ctrl+F6 to exit CLI focus

```

**DLS2**

DLS2&gt;en

DLS2#config t

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

DLS2(config)#int ran f0/7-12

%CDP-4-NATIVE\_VLAN\_MISMATCH: Native VLAN mismatch discovered on FastEthernet0/11 (1), with DLS1 FastEthernet0/11 (500).

%CDP-4-NATIVE\_VLAN\_MISMATCH: Native VLAN mismatch discovered on FastEthernet0/12 (1), with DLS1 FastEthernet0/11 (500).

%CDP-4-NATIVE\_VLAN\_MISMATCH: Native VLAN mismatch discovered on FastEthernet0/11 (1), with DLS1 FastEthernet0/12 (500).

%CDP-4-NATIVE\_VLAN\_MISMATCH: Native VLAN mismatch discovered on FastEthernet0/12 (1), with DLS1 FastEthernet0/12 (500).

DLS2(config-if-range)#switchport trunk encap dot1q

DLS2(config-if-range)#

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

%EC-5-CANNOT\_BUNDLE2: Fa0/7 is not compatible with Fa0/11 and will be suspended (trunk encap of Fa0/7 is auto, Fa0/11 is dot1q)

%EC-5-CANNOT\_BUNDLE2: Fa0/7 is not compatible with Fa0/12 and will be suspended (trunk encap of Fa0/7 is auto, Fa0/12 is dot1q)

%EC-5-CANNOT\_BUNDLE2: Fa0/7 is not compatible with Fa0/8 and will be suspended (trunk encap of Fa0/7 is auto, Fa0/8 is dot1q)

%EC-5-CANNOT\_BUNDLE2: Fa0/7 is not compatible with Fa0/9 and will be suspended (trunk encap of Fa0/7 is auto, Fa0/9 is dot1q)  
%EC-5-CANNOT\_BUNDLE2: Fa0/7 is not compatible with Fa0/10 and will be suspended (trunk encap of Fa0/7 is auto, Fa0/10 is dot1q)  
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/8, changed state to down  
%EC-5-CANNOT\_BUNDLE2: Fa0/8 is not compatible with Fa0/11 and will be suspended (trunk encap of Fa0/8 is auto, Fa0/11 is dot1q)  
%EC-5-CANNOT\_BUNDLE2: Fa0/8 is not compatible with Fa0/12 and will be suspended (trunk encap of Fa0/8 is auto, Fa0/12 is dot1q)  
%EC-5-CANNOT\_BUNDLE2: Fa0/8 is not compatible with Fa0/9 and will be suspended (trunk encap of Fa0/8 is auto, Fa0/9 is dot1q)  
%EC-5-CANNOT\_BUNDLE2: Fa0/8 is not compatible with Fa0/10 and will be suspended (trunk encap of Fa0/8 is auto, Fa0/10 is dot1q)  
%EC-5-CANNOT\_BUNDLE2: Fa0/9 is not compatible with Fa0/11 and will be suspended (trunk encap of Fa0/9 is auto, Fa0/11 is dot1q)  
%EC-5-CANNOT\_BUNDLE2: Fa0/9 is not compatible with Fa0/12 and will be suspended (trunk encap of Fa0/9 is auto, Fa0/12 is dot1q)  
%EC-5-CANNOT\_BUNDLE2: Fa0/9 is not compatible with Fa0/10 and will be suspended (trunk encap of Fa0/9 is auto, Fa0/10 is dot1q)  
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/9, changed state to down  
  
%EC-5-CANNOT\_BUNDLE2: Fa0/10 is not compatible with Fa0/11 and will be suspended (trunk encap of Fa0/10 is auto, Fa0/11 is dot1q)  
%EC-5-CANNOT\_BUNDLE2: Fa0/10 is not compatible with Fa0/12 and will be suspended (trunk encap of Fa0/10 is auto, Fa0/12 is dot1q)  
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/10, changed state to down  
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/11, changed state to down  
%EC-5-CANNOT\_BUNDLE2: Fa0/11 is not compatible with Fa0/12 and will be suspended (trunk encap of Fa0/11 is auto, Fa0/12 is dot1q)  
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/11, changed state to up  
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/7, changed state to up  
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/8, changed state to up  
%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 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 FastEthernet0/12, changed state to down

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/12, changed state to up  
%SPANTREE-2-RECV\_PVID\_ERR: Received 802.1Q BPDU on non trunk FastEthernet0/11 VLAN1.  
%SPANTREE-2-BLOCK\_PVID\_LOCAL: Blocking FastEthernet0/11 on VLAN0001. Inconsistent port type.  
%SPANTREE-2-RECV\_PVID\_ERR: Received 802.1Q BPDU on non trunk FastEthernet0/12 VLAN1.  
%SPANTREE-2-BLOCK\_PVID\_LOCAL: Blocking FastEthernet0/12 on VLAN0001. Inconsistent port type.  
DLS2(config-if-range)#switchport trunk native vlan 500  
DLS2(config-if-range)#switchport mode trunk  
DLS2(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 FastEthernet0/7, changed state to down  
%EC-5-CANNOT\_BUNDLE2: Fa0/7 is not compatible with Po2 and will be suspended (native vlan of Fa0/7 is 500, Po2 id 1)  
%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  
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/8, changed state to down  
%EC-5-CANNOT\_BUNDLE2: Fa0/8 is not compatible with Po2 and will be suspended (native vlan of Fa0/8 is 500, Po2 id 1)  
%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  
%EC-5-CANNOT\_BUNDLE2: Fa0/9 is not compatible with Po2 and will be suspended (native vlan of Fa0/9 is 500, Po2 id 1)  
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/9, changed state to down  
%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  
%EC-5-CANNOT\_BUNDLE2: Fa0/10 is not compatible with Po2 and will be suspended (native vlan of Fa0/10 is 500, Po2 id 1)  
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/10, changed state to down  
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/11, changed state to down  
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/11, changed state to up

```

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/11, changed state to
down
%EC-5-CANNOT_BUNDLE2: Fa0/11 is not compatible with Po2 and will be suspended
(native vlan of Fa0/11 is 500, Po2 id 1)
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/12, changed state to
down
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/12, changed state to
up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/12, 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 500, Po2 id 1)
DLS2(config-if-range)#switchport nonegotiate
DLS2(config-if-range)#no shutdown
DLS2(config-if-range)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/7, changed state to
up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/8, changed state to
up
%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
up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/11, changed state to
up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/12, changed state to
up
DLS2(config-if-range)#end
DLS2#
%SYS-5-CONFIG_I: Configured from console by console
%CDP-4-NATIVE_VLAN_MISMATCH: Native VLAN mismatch discovered on
FastEthernet0/9 (500), with ALS1 FastEthernet0/9 (1).
%CDP-4-NATIVE_VLAN_MISMATCH: Native VLAN mismatch discovered on
FastEthernet0/10 (500), with ALS1 FastEthernet0/10 (1).
%CDP-4-NATIVE_VLAN_MISMATCH: Native VLAN mismatch discovered on
FastEthernet0/9 (500), with ALS1 Port-channel2 (1).
DLS2#

```

Figura 31. Troncalizamos VLAN nativa la VLAN 500 en DLS2

```

Physical  Config  CLI  Attributes
IOS Command Line Interface

DLS2#config t
Enter configuration commands, one per line. End with CNTL/Z.
DLS2(config)#int ran f0/7-12
%CDP-4-NATIVE_VLAN_MISMATCH: Native VLAN mismatch discovered on FastEthernet0/11 (1), with DLS1 FastEthernet0/11 (500).
%CDP-4-NATIVE_VLAN_MISMATCH: Native VLAN mismatch discovered on FastEthernet0/12 (1), with DLS1 FastEthernet0/11 (500).
%CDP-4-NATIVE_VLAN_MISMATCH: Native VLAN mismatch discovered on FastEthernet0/11 (1), with DLS1 FastEthernet0/12 (500).
%CDP-4-NATIVE_VLAN_MISMATCH: Native VLAN mismatch discovered on FastEthernet0/12 (1), with DLS1 FastEthernet0/12 (500).

DLS2(config-if-range)#switchport trunk encap dot1q
DLS2(config-if-range)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/7, changed state to down

%EC-5-CANNOT_BUNDLE2: Fa0/7 is not compatible with Fa0/11 and will be suspended (trunk encap of Fa0/7 is auto, Fa0/11 is dot1q)
%EC-5-CANNOT_BUNDLE2: Fa0/7 is not compatible with Fa0/12 and will be suspended (trunk encap of Fa0/7 is auto, Fa0/12 is dot1q)
%EC-5-CANNOT_BUNDLE2: Fa0/7 is not compatible with Fa0/8 and will be suspended (trunk encap of Fa0/7 is auto, Fa0/8 is dot1q)
%EC-5-CANNOT_BUNDLE2: Fa0/7 is not compatible with Fa0/9 and will be suspended (trunk encap of Fa0/7 is auto, Fa0/9 is dot1q)
%EC-5-CANNOT_BUNDLE2: Fa0/7 is not compatible with Fa0/10 and will be suspended (trunk encap of Fa0/7 is auto, Fa0/10 is dot1q)

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

%EC-5-CANNOT_BUNDLE2: Fa0/8 is not compatible with Fa0/11 and will be suspended (trunk encap of Fa0/8 is auto, Fa0/11 is dot1q)
%EC-5-CANNOT_BUNDLE2: Fa0/8 is not compatible with Fa0/12 and will be suspended (trunk encap of Fa0/8 is auto, Fa0/12 is dot1q)
%EC-5-CANNOT_BUNDLE2: Fa0/8 is not compatible with Fa0/9 and will be suspended (trunk encap of Fa0/8 is auto, Fa0/9 is dot1q)
%EC-5-CANNOT_BUNDLE2: Fa0/8 is not compatible with Fa0/10 and will be suspended (trunk encap of Fa0/8 is auto, Fa0/10 is dot1q)
%EC-5-CANNOT_BUNDLE2: Fa0/9 is not compatible with Fa0/11 and will be suspended (trunk encap of Fa0/9 is auto, Fa0/11 is dot1q)

Ctrl-F6 to exit CLI focus

```

**ALS1**

ALS1>en

ALS1#config t

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

ALS1(config)#

ALS1(config)#int ran f0/7-10

ALS1(config-if-range)#switchport trunk encap dot1q

ALS1(config-if-range)#switchport trunk encap dot1q

%CDP-4-NATIVE\_VLAN\_MISMATCH: Native VLAN mismatch discovered on FastEthernet0/7 (1), with DLS1 FastEthernet0/7 (500).

%CDP-4-NATIVE\_VLAN\_MISMATCH: Native VLAN mismatch discovered on FastEthernet0/8 (1), with DLS1 FastEthernet0/7 (500).

%CDP-4-NATIVE\_VLAN\_MISMATCH: Native VLAN mismatch discovered on FastEthernet0/7 (1), with DLS1 FastEthernet0/8 (500).

%CDP-4-NATIVE\_VLAN\_MISMATCH: Native VLAN mismatch discovered on FastEthernet0/8 (1), with DLS1 FastEthernet0/8 (500).

%CDP-4-NATIVE\_VLAN\_MISMATCH: Native VLAN mismatch discovered on FastEthernet0/9 (1), with DLS2 FastEthernet0/9 (500).

%CDP-4-NATIVE\_VLAN\_MISMATCH: Native VLAN mismatch discovered on FastEthernet0/10 (1), with DLS2 FastEthernet0/10 (500).

ALS1(config-if-range)#switchport trunk native vlan 500

ALS1(config-if-range)#

%CDP-4-NATIVE\_VLAN\_MISMATCH: Native VLAN mismatch discovered on  
 FastEthernet0/7 (1), with DLS1 FastEthernet0/7 (500).  
 %CDP-4-NATIVE\_VLAN\_MISMATCH: Native VLAN mismatch discovered on  
 FastEthernet0/8 (1), with DLS1 FastEthernet0/7 (500).  
 %CDP-4-NATIVE\_VLAN\_MISMATCH: Native VLAN mismatch discovered on  
 FastEthernet0/7 (1), with DLS1 FastEthernet0/8 (500).  
 %CDP-4-NATIVE\_VLAN\_MISMATCH: Native VLAN mismatch discovered on  
 FastEthernet0/8 (1), with DLS1 FastEthernet0/8 (500).  
 %CDP-4-NATIVE\_VLAN\_MISMATCH: Native VLAN mismatch discovered on  
 FastEthernet0/9 (1), with DLS2 FastEthernet0/9 (500).  
 %CDP-4-NATIVE\_VLAN\_MISMATCH: Native VLAN mismatch discovered on  
 FastEthernet0/10 (1), with DLS2 FastEthernet0/10 (500).  
 ALS1(config-if-range)#switchport mode trunk  
 ALS1(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 FastEthernet0/7, changed state to  
 down  
 %EC-5-CANNOT\_BUNDLE2: Fa0/7 is not compatible with Fa0/8 and will be suspended (dtp  
 mode of Fa0/7 is on, Fa0/8is off )  
 %EC-5-CANNOT\_BUNDLE2: Fa0/7 is not compatible with Fa0/9 and will be suspended (dtp  
 mode of Fa0/7 is on, Fa0/9is off )  
 %EC-5-CANNOT\_BUNDLE2: Fa0/7 is not compatible with Fa0/10 and will be suspended  
 (dtp mode of Fa0/7 is on, Fa0/10is off )  
 %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/8, changed state to  
 down  
 %EC-5-CANNOT\_BUNDLE2: Fa0/7 is not compatible with Fa0/8 and will be suspended (dtp  
 mode of Fa0/7 is on, Fa0/8is off )  
 %EC-5-CANNOT\_BUNDLE2: Fa0/7 is not compatible with Fa0/9 and will be suspended (dtp  
 mode of Fa0/7 is on, Fa0/9is off )  
 %EC-5-CANNOT\_BUNDLE2: Fa0/7 is not compatible with Fa0/10 and will be suspended  
 (dtp mode of Fa0/7 is on, Fa0/10is off )  
 %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/9, changed state to  
 down  
 %EC-5-CANNOT\_BUNDLE2: Fa0/9 is not compatible with Fa0/7 and will be suspended (dtp  
 mode of Fa0/9 is off, Fa0/7is on)  
 %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/10, changed state to  
 down  
 %EC-5-CANNOT\_BUNDLE2: Fa0/10 is not compatible with Fa0/7 and will be suspended  
 (dtp mode of Fa0/10 is off, Fa0/7is on)  
 %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  
 up  
 %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/8, changed state to  
 down

```

%EC-5-CANNOT_BUNDLE2: Fa0/8 is not compatible with Fa0/9 and will be suspended (dtp
mode of Fa0/8 is on, Fa0/9is off )
%EC-5-CANNOT_BUNDLE2: Fa0/8 is not compatible with Fa0/10 and will be suspended
(dtp mode of Fa0/8 is on, Fa0/10is off )
%EC-5-CANNOT_BUNDLE2: Fa0/9 is not compatible with Fa0/10 and will be suspended
(dtp mode of Fa0/9 is on, Fa0/10is off )
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/10, changed state to
up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/7, changed state to
up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/8, changed state to
up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/9, changed state to
up
ALS1(config-if-range)#switchport nonegotiate
ALS1(config-if-range)#no shutdown
ALS1(config-if-range)#end
ALS1#
%SYS-5-CONFIG_I: Configured from console by console

```

Figura 32. Troncalizamos VLAN nativa la VLAN 500 en ALS1

The screenshot shows the CLI interface of a switch named ALS1. The user has entered the configuration mode and is configuring interfaces Fa0/7 through Fa0/10 as trunk ports. The configuration includes the command 'switchport trunk encap dot1q'. After entering the configuration, several CDP mismatch warnings are displayed, indicating that the native VLAN (500) does not match the remote device's native VLAN on the connected interfaces. The warnings are as follows:

```

ALS1#en
ALS1#config t
Enter configuration commands, one per line. End with CNTL/Z.
ALS1(config)#
ALS1(config)#int ran f0/7-10
ALS1(config-if-range)#switchport trunk encap dot1q
^
% Invalid input detected at '^' marker.

ALS1(config-if-range)#switchport trunk encap dot1q
%CDP-4-NATIVE_VLAN_MISMATCH: Native VLAN mismatch discovered on FastEthernet0/7 (1), with DLS1 FastEthernet0/7 (500).
%CDP-4-NATIVE_VLAN_MISMATCH: Native VLAN mismatch discovered on FastEthernet0/8 (1), with DLS1 FastEthernet0/7 (500).
%CDP-4-NATIVE_VLAN_MISMATCH: Native VLAN mismatch discovered on FastEthernet0/7 (1), with DLS1 FastEthernet0/8 (500).
%CDP-4-NATIVE_VLAN_MISMATCH: Native VLAN mismatch discovered on FastEthernet0/8 (1), with DLS1 FastEthernet0/8 (500).
%CDP-4-NATIVE_VLAN_MISMATCH: Native VLAN mismatch discovered on FastEthernet0/9 (1), with DLS2 FastEthernet0/9 (500).
%CDP-4-NATIVE_VLAN_MISMATCH: Native VLAN mismatch discovered on FastEthernet0/10 (1), with DLS2 FastEthernet0/10 (500).
^
% Invalid input detected at '^' marker.

ALS1(config-if-range)#switchport trunk native vlan 500
ALS1(config-if-range)#
%CDP-4-NATIVE_VLAN_MISMATCH: Native VLAN mismatch discovered on FastEthernet0/7 (1), with DLS1 FastEthernet0/7 (500).
%CDP-4-NATIVE_VLAN_MISMATCH: Native VLAN mismatch discovered on FastEthernet0/8 (1), with DLS1 FastEthernet0/7 (500).
%CDP-4-NATIVE_VLAN_MISMATCH: Native VLAN mismatch discovered on FastEthernet0/7 (1), with DLS1 FastEthernet0/8 (500).
%CDP-4-NATIVE_VLAN_MISMATCH: Native VLAN mismatch discovered on FastEthernet0/8 (1), with DLS1 FastEthernet0/8 (500).
%CDP-4-NATIVE_VLAN_MISMATCH: Native VLAN mismatch discovered on FastEthernet0/9 (1), with DLS2 FastEthernet0/9 (500).
%CDP-4-NATIVE_VLAN_MISMATCH: Native VLAN mismatch discovered on FastEthernet0/10 (1), with DLS2 FastEthernet0/10 (500).

```

At the bottom of the screenshot, there is a prompt: 'Ctrl+F6 to exit CLI focus'.

## ALS2

```
ALS2>en
ALS2#config t
Enter configuration commands, one per line. End with CNTL/Z.
ALS2(config)#int ran f0/7-10
ALS2(config-if-range)#switchport trunk encap dot1q
%CDP-4-NATIVE_VLAN_MISMATCH: Native VLAN mismatch discovered on
FastEthernet0/9 (1), with DLS1 FastEthernet0/9 (500).
%CDP-4-NATIVE_VLAN_MISMATCH: Native VLAN mismatch discovered on
FastEthernet0/10 (1), with DLS1 FastEthernet0/10 (500).
%CDP-4-NATIVE_VLAN_MISMATCH: Native VLAN mismatch discovered on
FastEthernet0/7 (1), with DLS2 FastEthernet0/7 (500).
%CDP-4-NATIVE_VLAN_MISMATCH: Native VLAN mismatch discovered on
FastEthernet0/8 (1), with DLS2 FastEthernet0/8 (500).
ALS2(config-if-range)#switchport trunk native vlan 500
ALS2(config-if-range)#switchport 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 FastEthernet0/7, changed state to
down
%EC-5-CANNOT_BUNDLE2: Fa0/7 is not compatible with Fa0/8 and will be suspended (dtp
mode of Fa0/7 is on, Fa0/8is off )
%EC-5-CANNOT_BUNDLE2: Fa0/7 is not compatible with Fa0/9 and will be suspended (dtp
mode of Fa0/7 is on, Fa0/9is off )
%EC-5-CANNOT_BUNDLE2: Fa0/7 is not compatible with Fa0/10 and will be suspended
(dtp mode of Fa0/7 is on, Fa0/10is off )
%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
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/8, changed state to
down
%EC-5-CANNOT_BUNDLE2: Fa0/8 is not compatible with Fa0/9 and will be suspended (dtp
mode of Fa0/8 is on, Fa0/9is off )
%EC-5-CANNOT_BUNDLE2: Fa0/8 is not compatible with Fa0/10 and will be suspended
(dtp mode of Fa0/8 is on, Fa0/10is off )
%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
%EC-5-CANNOT_BUNDLE2: Fa0/9 is not compatible with Fa0/10 and will be suspended
(dtp mode of Fa0/9 is on, Fa0/10is off )
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/9, changed state to
down
```

```

%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
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/7, changed state to
up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/8, changed state to
up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/9, changed state to
up
ALS2(config-if-range)#switchport nonegotiate
ALS2(config-if-range)#no shutdown
ALS2(config-if-range)#end
ALS2#
%SYS-5-CONFIG_I: Configured from console by console

```

Figura 33. Troncalizamos VLAN nativa la VLAN 500 en ALS2

```

ALS2>en
ALS2#config t
Enter configuration commands, one per line. End with CNTL/Z.
ALS2(config)#int ran f0/7-10
ALS2(config-if-range)#switchport trunk encap dot1q
%CDP-4-NATIVE_VLAN_MISMATCH: Native VLAN mismatch discovered on FastEthernet0/9 (1), with DLS1 FastEthernet0/9 (500).

%CDP-4-NATIVE_VLAN_MISMATCH: Native VLAN mismatch discovered on FastEthernet0/10 (1), with DLS1 FastEthernet0/10 (500).

%CDP-4-NATIVE_VLAN_MISMATCH: Native VLAN mismatch discovered on FastEthernet0/7 (1), with DLS2 FastEthernet0/7 (500).

%CDP-4-NATIVE_VLAN_MISMATCH: Native VLAN mismatch discovered on FastEthernet0/8 (1), with DLS2 FastEthernet0/8 (500).

^
% Invalid input detected at '^' marker.

ALS2(config-if-range)#switchport trunk native vlan 500
ALS2(config-if-range)#switchport 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 FastEthernet0/7, changed state to down

%EC-5-CANNOT_BUNDLE2: Fa0/7 is not compatible with Fa0/8 and will be suspended (dtp mode of Fa0/7 is on, Fa0/8is off )

%EC-5-CANNOT_BUNDLE2: Fa0/7 is not compatible with Fa0/9 and will be suspended (dtp mode of Fa0/7 is on, Fa0/9is off )

%EC-5-CANNOT_BUNDLE2: Fa0/7 is not compatible with Fa0/10 and will be suspended (dtp mode of Fa0/7 is on, Fa0/10is off )

%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

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

```

Ctrl+F6 to exit CLI focus

- d. Configurar DLS1, ALS1, y ALS2 para utilizar VTP versión 3
  1. Utilizar el nombre de dominio CISCO con la contraseña ccnp321

#### **DLS1**

```
DLS1>en
DLS1#config t
Enter configuration commands, one per line. End with CNTL/Z.
DLS1(config)#vtp domain CISCO
Changing VTP domain name from NULL to CISCO
DLS1(config)#vtp password ccnp321
Setting device VLAN database password to ccnp321
DLS1(config)#END
DLS1#
%SYS-5-CONFIG_I: Configured from console by console
```

Figura 34. Configuramos DLS1 en la versión 2 ya que versión 3 no la corre Pkt.

```
DLS1>en
DLS1#config t
Enter configuration commands, one per line. End with CNTL/Z.
DLS1(config)#vtp domain CISCO
Changing VTP domain name from NULL to CISCO
DLS1(config)#vtp password ccnp321
Setting device VLAN database password to ccnp321
DLS1(config)#END
DLS1#
%SYS-5-CONFIG_I: Configured from console by console
```

#### **ALS1**

```
ALS1>en
ALS1#config t
Enter configuration commands, one per line. End with CNTL/Z.
ALS1(config)#vtp version 2
ALS1(config)#vtp domain CISCO
Changing VTP domain name from NULL to CISCO
ALS1(config)#vtp password ccnp321
Setting device VLAN database password to ccnp321
ALS1(config)#EXIT
ALS1#
%SYS-5-CONFIG_I: Configured from console by console
```

Figura 35. Configuración del dominio VTP en ALS1

```
ALS1>en
ALS1#config t
Enter configuration commands, one per line. End with CNTL/Z.
ALS1(config)#vtp version 2
ALS1(config)#vtp domain CISCO
Changing VTP domain name from NULL to CISCO
ALS1(config)#vtp password ccnp321
Setting device VLAN database password to ccnp321
ALS1(config)#EXIT
ALS1#
%SYS-5-CONFIG_I: Configured from console by console
```

Ctrl+F6 to exit CLI focus

## ALS2

```
ALS2>EN
ALS2#config t
Enter configuration commands, one per line. End with CNTL/Z.
ALS2(config)#vtp version 2
ALS2(config)#vtp domain CISCO
Changing VTP domain name from NULL to CISCO
ALS2(config)#vtp password ccnp321
Setting device VLAN database password to ccnp321
ALS2(config)#exit
ALS2#
%SYS-5-CONFIG_I: Configured from console by console
```

Figura 36. Configuración del dominio VTP en ALS2

```
ALS2>EN
ALS2#config t
Enter configuration commands, one per line. End with CNTL/Z.
ALS2(config)#vtp version 2
ALS2(config)#vtp domain CISCO
Changing VTP domain name from NULL to CISCO
ALS2(config)#vtp password ccnp321
Setting device VLAN database password to ccnp321
ALS2(config)#exit
ALS2#
%SYS-5-CONFIG_I: Configured from console by console
```

2. Configurar DLS1 como servidor principal para las VLAN.

## DLS1

```
DLS1>en
DLS1#config t
Enter configuration commands, one per line. End with CNTL/Z.
DLS1(config)#vtp mode SERVER
Device mode already VTP SERVER.
DLS1(config)#exit
DLS1#
%SYS-5-CONFIG_I: Configured from console by console
```

Figura 37. Configuración DLS1 como servidor principal para las VLAN

```
DLS1>en
DLS1#config t
Enter configuration commands, one per line. End with CNTL/Z.
DLS1(config)#vtp mode SERVER
Device mode already VTP SERVER.
DLS1(config)#exit
DLS1#
%SYS-5-CONFIG_I: Configured from console by console
```

Ctrl+F6 to exit CLI focus Copy

3. Configurar ALS1 y ALS2 como clientes VTP.

**ALS1**

```
ALS1>en
ALS1#config t
Enter configuration commands, one per line. End with CNTL/Z.
ALS1(config)#vtp mode CLIENT
Setting device to VTP CLIENT mode.
ALS1(config)#exit
ALS1#
%SYS-5-CONFIG_I: Configured from console by console
```

Figura 38. Configuración ALS1 como servidor CLIENT VTP

```
ALS1>en
ALS1#config t
Enter configuration commands, one per line. End with CNTL/Z.
ALS1(config)#vtp mode CLIENT
Setting device to VTP CLIENT mode.
ALS1(config)#exit
ALS1#
%SYS-5-CONFIG_I: Configured from console by console
```

Ctrl+F6 to exit CLI focus

**ALS2**

```
ALS2>EN
ALS2#CONFIG T
Enter configuration commands, one per line. End with CNTL/Z.
ALS2(config)#vtp mode CLIENT
Setting device to VTP CLIENT mode.
ALS2(config)#EXIT
ALS2#
%SYS-5-CONFIG_I: Configured from console by console
```

Figura 39. Configuración ALS2 como servidor CLIENT VTP

```

ALS2>EN
ALS2#CONFIG T
Enter configuration commands, one per line. End with CNTL/Z.
ALS2(config)#vtp mode CLIENT
Setting device to VTP CLIENT mode.
ALS2(config)#EXIT
ALS2#
%SYS-5-CONFIG_I: Configured from console by console
    
```

Ctrl+F6 to exit CLI focus

Copy

- e. Configurar en el servidor principal las siguientes VLAN

Tabla 3. Configuración de la distribución de VLAN principales

N° de VLAN	Nombre de VLAN	N° de VLAN	Nombre de VLAN
500	NATIVA	434	PROVEEDORES
12	ADMON	123	SEGUROS
234	CLIENTES	1010	VENTAS
1111	MULTIMEDIA	3456	PERSONAL

### DLS1

```

DLS1>en
DLS1#config t
Enter configuration commands, one per line. End with CNTL/Z.
DLS1(config)#vlan 500
DLS1(config-vlan)#
%LINK-5-CHANGED: Interface Vlan500, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan500, changed state to up
DLS1(config-vlan)#name NATIVA
DLS1(config-vlan)#exit
DLS1(config)#vlan 12
DLS1(config-vlan)#name ADMON
DLS1(config-vlan)#exit
DLS1(config)#vlan 234
DLS1(config-vlan)#name CLIENTES
DLS1(config-vlan)#EXIT
    
```

```

DLS1(config)#vlan 1111
DLS1(config)#vlan 111
DLS1(config-vlan)#name MULTIMEDIA
DLS1(config-vlan)#exit
DLS1(config)#vlan 434
DLS1(config-vlan)#name PROVEEDORES
DLS1(config-vlan)#exit
DLS1(config)#vlan 123
DLS1(config-vlan)#name SEGUROS
DLS1(config-vlan)#EXIT
DLS1(config)#vlan 1010
DLS1(config)#vlan 101
DLS1(config-vlan)#name VENTAS
DLS1(config-vlan)#exit
DLS1(config)#vlan 3456
DLS1(config)#name PERSONAL
DLS1(config)#vlan 345
DLS1(config-vlan)#name PERSONAL
DLS1(config-vlan)#exit
DLS1(config)#end
DLS1#
%SYS-5-CONFIG_I: Configured from console by console

```

Figura 40. Configuración y distribución de las VLAN

The screenshot shows a network device named DLS1 with tabs for Physical, Config, CLI, and Attributes. The CLI window displays the following configuration commands:

```

DLS1>en
DLS1#config t
Enter configuration commands, one per line. End with CNTL/Z.
DLS1(config)#int VLAN 500
DLS1(config-if)#description NATIVA
DLS1(config-if)#no shutdown
DLS1(config-if)#
DLS1(config-if)#int VLAN 12
DLS1(config-if)#description ADMON
DLS1(config-if)#no shutdown
DLS1(config-if)#int VLAN 234
DLS1(config-if)#description CLIENTES
DLS1(config-if)#no shutdown
DLS1(config-if)#int VLAN 1111
DLS1(config-if)#description MULTIMEDIA
DLS1(config-if)#no shutdown
DLS1(config-if)#int VLAN 434
DLS1(config-if)#description PROVEEDORES
DLS1(config-if)#no shutdown
DLS1(config-if)#int VLAN 123
DLS1(config-if)#description SEGUROS
DLS1(config-if)#no shutdown
DLS1(config-if)#int VLAN 1010
DLS1(config-if)#description VENTAS
DLS1(config-if)#no shutdown
DLS1(config-if)#int VLAN 3456
DLS1(config-if)#description PERSONAL
DLS1(config-if)#no shutdown
DLS1(config-if)#exit
DLS1(config)#end
DLS1#
%SYS-5-CONFIG_I: Configured from console by console

```

Figura 41. Activación de las VLAN

```
DLS1#SHOW VLAN
```

VLAN Name	Status	Ports
1 default	active	Po2, Po4, Fa0/1, Fa0/2 Fa0/3, Fa0/4, Fa0/5, Fa0/6 Fa0/7, Fa0/8, Fa0/9, Fa0/10 Fa0/11, Fa0/12, Fa0/13, Fa0/14 Fa0/15, Fa0/16, Fa0/17, Fa0/18 Fa0/19, Fa0/20, Fa0/21, Fa0/22 Fa0/23, Fa0/24, Gig0/1, Gig0/2
12 ADMON	active	
101 VENTAS	active	
111 MULTIMEDIA	active	
123 SEGUROS	active	
234 CLIENTES	active	
345 PERSONAL	active	
434 PROVEEDORES	active	
500 NATIVA	active	
1002 fddi-default	active	
1003 token-ring-default	active	
1004 fddinet-default	active	
1005 trnet-default	active	

VLAN	Type	SAID	MTU	Parent	RingNo	BridgeNo	Stp	BrdgMode	Transl	Trans2
1	enet	100001	1500	-	-	-	-	-	0	0

f. En DLS1, suspender la VLAN 434.

**DLS1**

DLS1#

DLS1#config t

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

DLS1(config)#no vlan 434

DLS1(config)#exit

DLS1#

%SYS-5-CONFIG\_I: Configured from console by console

Figura 42. Suspensión de VLAN 434

```

DLS1#
DLS1#
DLS1#config t
Enter configuration commands, one per line. End with CNTL/Z.
DLS1(config)#no vlan 434
DLS1(config)#exit
DLS1#
%SYS-5-CONFIG_I: Configured from console by console

DLS1#show vlan

VLAN Name                Status    Ports
-----
1    default                active    Po2, Po4, Fa0/1, Fa0/2
                                           Fa0/3, Fa0/4, Fa0/5, Fa0/6
                                           Fa0/7, Fa0/8, Fa0/9, Fa0/10
                                           Fa0/11, Fa0/12, Fa0/13, Fa0/14
                                           Fa0/15, Fa0/16, Fa0/17, Fa0/18
                                           Fa0/19, Fa0/20, Fa0/21, Fa0/22
                                           Fa0/23, Fa0/24, Gig0/1, Gig0/2

12   ADMON                  active
101  VENTAS                 active
111  MULTIMEDIA             active
123  SEGUROS                active
234  CLIENTES               active
345  PERSONAL               active
500  NATIVA                 active
1002 fddi-default           active
1003 token-ring-default    active
1004 fddinet-default       active
1005 trnet-default        active

VLAN Type  SAID          MTU    Parent RingNo BridgeNo Stp    BrdgMode Trans1 Trans2

```

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

### DLS2

```

DLS2>en
DLS2#config t
Enter configuration commands, one per line. End with CNTL/Z.
DLS2(config)#vtp version 2
VTP mode already in V2.
DLS2(config)#vtp mode transparent
Setting device to VTP TRANSPARENT mode.
DLS2(config)#vlan 500
DLS2(config-vlan)#name NATIVA
DLS2(config-vlan)#exit
DLS2(config)#vlan 12
DLS2(config-vlan)#name ADMON
DLS2(config-vlan)#exit
DLS2(config)#vlan 234
DLS2(config-vlan)#name CLIENTES
DLS2(config-vlan)#exit
DLS2(config)#vlan 111
DLS2(config-vlan)#name MULTIMEDIA
DLS2(config-vlan)#exit
DLS2(config)#vlan 434
DLS2(config-vlan)#name PROVEEDORES

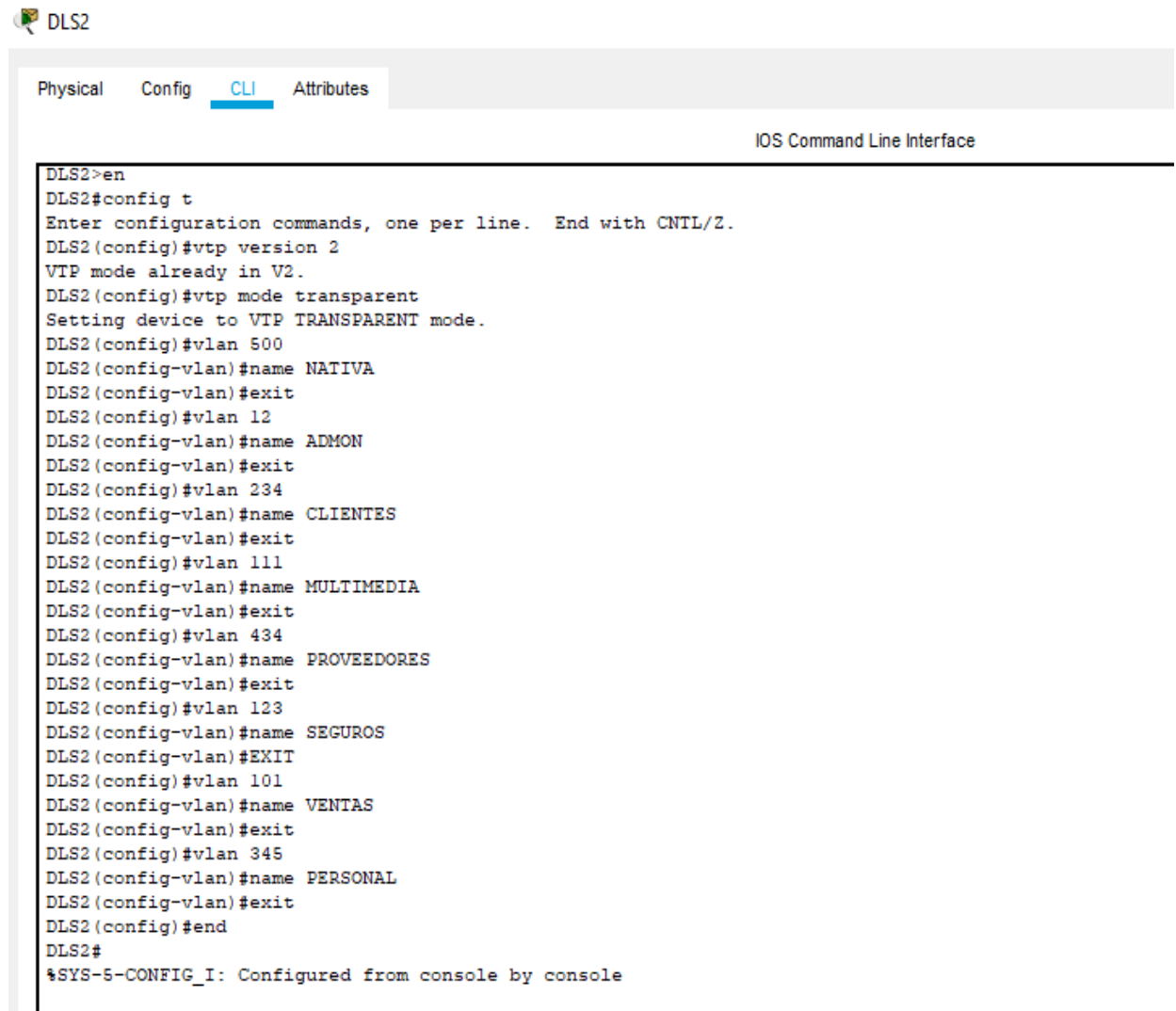
```

```

DLS2(config-vlan)#exit
DLS2(config)#vlan 123
DLS2(config-vlan)#name SEGUROS
DLS2(config-vlan)#EXIT
DLS2(config)#vlan 101
DLS2(config-vlan)#name VENTAS
DLS2(config-vlan)#exit
DLS2(config)#vlan 345
DLS2(config-vlan)#name PERSONAL
DLS2(config-vlan)#exit
DLS2(config)#end
DLS2#
%SYS-5-CONFIG_I: Configured from console by console

```

Figura 43. Activación de las VLAN en DLS2



The screenshot shows the CLI interface of a DLS2 switch. The 'CLI' tab is selected, and the 'IOS Command Line Interface' title is visible. The terminal output shows the following configuration steps:

```

DLS2>en
DLS2#config t
Enter configuration commands, one per line. End with CNTL/Z.
DLS2(config)#vtp version 2
VTP mode already in V2.
DLS2(config)#vtp mode transparent
Setting device to VTP TRANSPARENT mode.
DLS2(config)#vlan 500
DLS2(config-vlan)#name NATIVA
DLS2(config-vlan)#exit
DLS2(config)#vlan 12
DLS2(config-vlan)#name ADMON
DLS2(config-vlan)#exit
DLS2(config)#vlan 234
DLS2(config-vlan)#name CLIENTES
DLS2(config-vlan)#exit
DLS2(config)#vlan 111
DLS2(config-vlan)#name MULTIMEDIA
DLS2(config-vlan)#exit
DLS2(config)#vlan 434
DLS2(config-vlan)#name PROVEEDORES
DLS2(config-vlan)#exit
DLS2(config)#vlan 123
DLS2(config-vlan)#name SEGUROS
DLS2(config-vlan)#EXIT
DLS2(config)#vlan 101
DLS2(config-vlan)#name VENTAS
DLS2(config-vlan)#exit
DLS2(config)#vlan 345
DLS2(config-vlan)#name PERSONAL
DLS2(config-vlan)#exit
DLS2(config)#end
DLS2#
%SYS-5-CONFIG_I: Configured from console by console

```

Figura 44. Activación de las VLAN en DLS2

```
DLS2#show vlan
```

VLAN Name	Status	Ports
1 default	active	Po2, Po3, Fa0/1, Fa0/2 Fa0/3, Fa0/4, Fa0/5, Fa0/6 Fa0/7, Fa0/9, Fa0/10, Fa0/11 Fa0/12, Fa0/13, Fa0/14, Fa0/15 Fa0/16, Fa0/17, Fa0/18, Fa0/19 Fa0/20, Fa0/21, Fa0/22, Fa0/23 Fa0/24, Gig0/1, Gig0/2
12 ADMON	active	
101 VENTAS	active	
111 MULTIMEDIA	active	
123 SEGUROS	active	
234 CLIENTES	active	
345 PERSONAL	active	
434 PROVEEDORES	active	
500 NATIVA	active	
1002 fddi-default	active	
1003 token-ring-default	active	
1004 fddinet-default	active	
1005 trnet-default	active	

VLAN	Type	SAID	MTU	Parent	RingNo	BridgeNo	Stp	BrdgMode	Trans1	Trans2
1	enet	100001	1500	-	-	-	-	-	0	0

h. Suspend VLAN 434 en DLS2.

**DLS2**

DLS2#

DLS2#config t

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

DLS2(config)#no vlan 434

DLS2(config)#exit

DLS2#

%SYS-5-CONFIG\_I: Configured from console by console

Figura 45. Suspensión VLAN 434

```
DLS2#
DLS2#config t
Enter configuration commands, one per line. End with CNTL/Z.
DLS2(config)#no vlan 434
DLS2(config)#exit
DLS2#
%SYS-5-CONFIG_I: Configured from console by console

DLS2#show vlan
```

VLAN Name	Status	Ports
1 default	active	Po2, Po3, Fa0/1, Fa0/2 Fa0/3, Fa0/4, Fa0/5, Fa0/6 Fa0/7, Fa0/9, Fa0/10, Fa0/11 Fa0/12, Fa0/13, Fa0/14, Fa0/15 Fa0/16, Fa0/17, Fa0/18, Fa0/19 Fa0/20, Fa0/21, Fa0/22, Fa0/23 Fa0/24, Gig0/1, Gig0/2
12 ADMON	active	
101 VENTAS	active	
111 MULTIMEDIA	active	
123 SEGUROS	active	
234 CLIENTES	active	
345 PERSONAL	active	
500 NATIVA	active	
1002 fddi-default	active	
1003 token-ring-default	active	
1004 fddinet-default	active	
1005 trnet-default	active	

VLAN	Type	SAID	MTU	Parent	RingNo	BridgeNo	Stp	BrdgMode	Trans1	Trans2
1	enet	100001	1500	-	-	-	-	-	0	0

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

### DLS2

```
DLS2#config t
Enter configuration commands, one per line. End with CNTL/Z.
DLS2(config)#vlan 500
DLS2(config-vlan)#vlan 434
DLS2(config-vlan)#private-vlan isolated
DLS2(config-vlan)#name PRODUCCION
DLS2(config-vlan)#exit
DLS2(config)#end
DLS2#
%SYS-5-CONFIG_I: Configured from console by console
```

Figura 46. Configuración VLAN 567 en DLS2

The screenshot shows the CLI interface of a switch named DLS2. The 'CLI' tab is selected. The user has entered the following commands to configure VLAN 567:

```
DLS2#config t
Enter configuration commands, one per line. End with CNTL/Z.
DLS2(config)#vlan 500
DLS2(config-vlan)#vlan 434
DLS2(config-vlan)#private-vlan isolated
DLS2(config-vlan)#name PRODUCCION
DLS2(config-vlan)#exit
DLS2(config)#end
DLS2#
%SYS-5-CONFIG_I: Configured from console by console
```

After the configuration, the user enters the command 'show vlan', which displays the following output:

VLAN Name	Status	Ports
1 default	active	Po2, Fa0/1, Fa0/2, Fa0/3 Fa0/4, Fa0/5, Fa0/6, Fa0/13 Fa0/14, Fa0/15, Fa0/16, Fa0/17 Fa0/18, Fa0/19, Fa0/20, Fa0/21 Fa0/22, Fa0/23, Fa0/24, Gig0/1 Gig0/2
12 ADMON	active	
101 VENTAS	active	
111 MULTIMEDIA	active	
123 SEGUROS	active	
234 CLIENTES	active	
345 PERSONAL	active	
434 PRODUCCION	active	
500 NATIVA	active	
1002 fddi-default	active	
1003 token-ring-default	active	
1004 fddinet-default	active	
1005 trnet-default	active	

- j. Configurar DLS1 como Spanning tree root para las VLAN 1, 12, 434, 500, 1010, 1111 y 3456 y como raíz secundaria para las VLAN 123 y 234.

### DLS1

```
DLS1>en
DLS1#config t
Enter configuration commands, one per line. End with CNTL/Z.
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 500 root primary
DLS1(config)#spanning-tree vlan 101 root primary
DLS1(config)#spanning-tree vlan 111 root primary
DLS1(config)#spanning-tree vlan 345 root primary
DLS1(config)#spanning-tree vlan 123 root secondary
DLS1(config)#spanning-tree vlan 234 root secondary
DLS1(config)#exit
DLS1#
%SYS-5-CONFIG_I: Configured from console by console
```

Figura 47. Configuración DLS1 las VLAN primaria y secundaria

```
-----
DLS1#config t
Enter configuration commands, one per line. End with CNTL/Z.
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 500 root primary
DLS1(config)#spanning-tree vlan 101 root primary
DLS1(config)#spanning-tree vlan 111 root primary
DLS1(config)#spanning-tree vlan 345 root primary
DLS1(config)#spanning-tree vlan 123 root secondary
DLS1(config)#spanning-tree vlan 234 root secondary
DLS1(config)#exit
DLS1#
%SYS-5-CONFIG_I: Configured from console by console
DLS1#
-----
```

- k. Configurar DLS2 como Spanning tree root para las VLAN 123 y 234 y como una raíz secundaria para las VLAN 12, 434, 500, 1010, 1111 y 3456.

### DLS2

```
DLS2>en
DLS2#config t
Enter configuration commands, one per line. End with CNTL/Z.
DLS2(config)#spanning-tree vlan 123 root primary
DLS2(config)#spanning-tree vlan 234 root primary
```

```

DLS2(config)#spanning-tree vlan 12 root secondary
DLS2(config)#spanning-tree vlan 434 root secondary
DLS2(config)#spanning-tree vlan 500 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)#exit
DLS2#
%SYS-5-CONFIG_I: Configured from console by console

```

Figura 48. Configuración DLS2 de las VLAN primaria y secundaria

```

DLS2>en
DLS2#config t
Enter configuration commands, one per line. End with CNTL/Z.
DLS2 (config)#spanning-tree vlan 123 root primary
DLS2 (config)#spanning-tree vlan 234 root primary
DLS2 (config)#spanning-tree vlan 12 root secondary
DLS2 (config)#spanning-tree vlan 434 root secondary
DLS2 (config)#spanning-tree vlan 500 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)#exit
DLS2#
%SYS-5-CONFIG_I: Configured from console by console

```

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

### DLS1

```

DLS1>en
DLS1#config t
Enter configuration commands, one per line. End with CNTL/Z.
DLS1(config)# int range f0/7-12
DLS1(config-if-range)#switchport trunk encap dot1q
DLS1(config-if-range)#
DLS1(config-if-range)#switchport trunk native vlan 500
DLS1(config-if-range)#switchport mode trunk
DLS1(config-if-range)#exit
DLS1(config)#
%LINK-5-CHANGED: Interface Port-channel1, changed state to up

```

Figura 49. Configuración DLS1 de los puertos troncales en las interfaces

```

DLS1>en
DLS1#conf t
Enter configuration commands, one per line. End with CNTL/Z.
DLS1(config)# int range f0/7-12
DLS1(config-if-range)#switchport trunk encap dot1q
DLS1(config-if-range)#
%LINE-3-UPDOWN: Interface Port-channel1, changed state to down
%LINEPROTO-3-UPDOWN: Line protocol on Interface Port-channel1, changed state to down
%LINEPROTO-3-UPDOWN: Line protocol on Interface FastEthernet0/7, changed state to down
%EC-3-CANNOT_BUNDLE1: Fa0/7 is not compatible with Fa0/8 and will be suspended (trunk encap of Fa0/7 is auto, Fa0/8 is dot1q)
%LINEPROTO-3-UPDOWN: Line protocol on Interface FastEthernet0/8, changed state to down
%EC-3-CANNOT_BUNDLE1: Fa0/8 is not compatible with Fa0 and will be suspended (native vlan of Fa0/8 is 500, Fa0 id 1)
%EC-3-CANNOT_BUNDLE1: Fa0/8 is not compatible with Fa0/10 and will be suspended (trunk encap of Fa0/8 is auto, Fa0/10 is dot1q)
%LINEPROTO-3-UPDOWN: Line protocol on Interface FastEthernet0/9, changed state to down
%LINEPROTO-3-UPDOWN: Line protocol on Interface FastEthernet0/9, changed state to up
%LINE-3-UPDOWN: Interface Port-channel14, changed state to down
%LINEPROTO-3-UPDOWN: Line protocol on Interface Port-channel14, changed state to down
%LINEPROTO-3-UPDOWN: Line protocol on Interface FastEthernet0/11, changed state to down
%EC-3-CANNOT_BUNDLE1: Fa0/11 is not compatible with Fa0/12 and will be suspended (trunk encap of Fa0/11 is auto, Fa0/12 is dot1q)
%LINEPROTO-3-UPDOWN: Line protocol on Interface FastEthernet0/11, changed state to up
%LINE-3-UPDOWN: Interface Port-channel11, changed state to down
%LINEPROTO-3-UPDOWN: Line protocol on Interface Port-channel11, changed state to down
  
```

## DLS2

```

DLS2(config)# int ran f0/7-12
DLS2(config-if-range)# switchport trunk encap dot1q
DLS2(config-if-range)# switchport trunk native vlan 500
DLS2(config-if-range)# switchport mode trunk
DLS2(config-if-range)#exit
  
```

Figura 50. Configuración DLS2 de los puertos troncales en las interfaces


```

DLS2>en
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 encap dot1q
DLS2(config-if-range)#
%EC-3-CANNOT_BUNDLE1: Fa0/7 is not compatible with Fa0 and will be suspended (native vlan of Fa0/7 is 500, Fa0 id 1)
%EC-3-CANNOT_BUNDLE1: Fa0/8 is not compatible with Fa0/10 and will be suspended (trunk encap of Fa0/8 is auto, Fa0/10 is dot1q)
%LINEPROTO-3-UPDOWN: Line protocol on Interface FastEthernet0/9, changed state to down
%LINEPROTO-3-UPDOWN: Line protocol on Interface FastEthernet0/9, changed state to up
%LINE-3-UPDOWN: Interface Port-channel13, changed state to down
%LINEPROTO-3-UPDOWN: Line protocol on Interface Port-channel13, changed state to down
%LINEPROTO-3-UPDOWN: Line protocol on Interface FastEthernet0/11, changed state to down
%EC-3-CANNOT_BUNDLE1: Fa0/11 is not compatible with Fa0/12 and will be suspended (trunk encap of Fa0/11 is auto, Fa0/12 is dot1q)
%LINEPROTO-3-UPDOWN: Line protocol on Interface FastEthernet0/11, changed state to up
%LINE-3-UPDOWN: Interface Port-channel1, changed state to down
%LINEPROTO-3-UPDOWN: Line protocol on Interface Port-channel1, changed state to down
%LINEPROTO-3-UPDOWN: Line protocol on Interface FastEthernet0/12, changed state to down
%LINEPROTO-3-UPDOWN: Line protocol on Interface FastEthernet0/12, changed state to up
DLS2(config-if-range)#switchport trunk native vlan 500
DLS2(config-if-range)#
%LINE-3-CHANGED: Interface Port-channel13, changed state to up
%LINEPROTO-3-UPDOWN: Line protocol on Interface Port-channel13, changed state to up
  
```

## ALS1

```
ALS1(config)# int ran f0/7-12
ALS1(config-if-range)# switchport trunk encap dot1q
ALS1(config-if-range)# switchport trunk native vlan 500
ALS1(config-if-range)# switchport mode trunk
ALS1(config-if-range)#exit
```

Figura 51. Configuración ALS1 de los puertos troncales en las interfaces



The screenshot shows the CLI interface for ALS1. The tabs at the top are Physical, Config, CLI (selected), and Attributes. The title is "IOS Command Line Interface". The terminal output shows the following commands and messages:

```
ALS1#config t
Enter configuration commands, one per line. End with CNTL/Z.
ALS1(config)# int ran f0/7-12
ALS1(config-if-range)#switchport trunk encap dot1q
^
% Invalid input detected at '^' marker.

ALS1(config-if-range)#switchport trunk encap dot1q
^
% Invalid input detected at '^' marker.

ALS1(config-if-range)#switchport trunk native vlan 500
ALS1(config-if-range)#switchport mode trunk

ALS1(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 FastEthernet0/7, changed state to down
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/7, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/8, 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

ALS1(config-if-range)#
%LINK-5-CHANGED: Interface Port-channel3, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Port-channel3, changed state to up

ALS1(config-if-range)#exit
```

## ALS2

```
ALS1(config)# int ran f0/7-12
ALS1(config-if-range)# switchport trunk encap dot1q
ALS1(config-if-range)# switchport trunk native vlan 500
ALS1(config-if-range)# switchport mode trunk
ALS1(config-if-range)#exit
```

Figura 52. Configuración ALS2 de los puertos troncales en las interfaces

```

ALS2#en
ALS2#config t
Enter configuration commands, one per line. End with CNTL/Z.
ALS2(config)#int ran f0/7-12
ALS2(config-if-range)#switchport trunk encap dot1q
% Invalid input detected at '^' marker.
ALS2(config-if-range)#switchport trunk native vlan 500
ALS2(config-if-range)#SPANTRIE-2-UNBLOCK_CONSIST_PORT: Unblocking FastEthernet0/8 on VLAN0500. Port consistency restored.
%SPANTRIE-2-UNBLOCK_CONSIST_PORT: Unblocking FastEthernet0/8 on VLAN0001. Port consistency restored.
ALS2(config-if-range)#switchport 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 FastEthernet0/8, changed state to down
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/8, 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
%EC-5-CANNOT_BUNDLE2: Fa0/9 is not compatible with Fa0/10 and will be suspended (dtp mode of Fa0/9 is on, Fa0/10is off)
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/9, changed state to down
%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
  
```

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

Tabla 4. Configuración interfaces puertos de acceso asignados a las VLANs

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

**DLS1**

DLS1>en

DLS1#config t

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

DLS1(config)#interface fastethernet 0/6

DLS1(config-if)#switchport access vlan 345

DLS1(config-if)#no shutdown

DLS1(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
DLS1(config-if)#end
DLS1#
%SYS-5-CONFIG_I: Configured from console by console
DLS1#config t
Enter configuration commands, one per line. End with CNTL/Z.
DLS1(config)# interface fastethernet 0/15
DLS1(config-if)#switchport access vlan 111
DLS1(config-if)#no shutdown
DLS1(config-if)#end
DLS1#
%SYS-5-CONFIG_I: Configured from console by console

```

Figura 53. Configuración DLS1 de los puertos de los puertos de acceso a las VLANs

```

DLS1>en
DLS1#config t
Enter configuration commands, one per line. End with CNTL/Z.
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 shutdown

DLS1(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

DLS1(config-if)#end
DLS1#
%SYS-5-CONFIG_I: Configured from console by console

DLS1#config t
Enter configuration commands, one per line. End with CNTL/Z.
DLS1(config)# interface fastethernet 0/15
DLS1(config-if)#switchport access vlan 111
DLS1(config-if)#no shutdown
DLS1(config-if)#end
DLS1#
%SYS-5-CONFIG_I: Configured from console by console

```

## DLS2

```

DLS2>en
DLS2#config t
Enter configuration commands, one per line. End with CNTL/Z.
DLS2(config)#interface fastethernet 0/6
DLS2(config-if)#switchport access vlan 12
DLS2(config-if)#switchport access vlan 101
DLS2(config-if)#no shutdown
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)#end

DLS2#

%SYS-5-CONFIG\_I: Configured from console by console

DLS2#config t

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

DLS2(config)#interface f0/15

DLS2(config-if)#switchport access vlan 111

DLS2(config-if)#no shutdown

DLS2(config-if)#end

DLS2#

%SYS-5-CONFIG\_I: Configured from console by console

DLS2#config t

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

DLS2(config)#int ran f0/16-18

DLS2(config-if-range)#switchport access vlan 567

% Access VLAN does not exist. Creating vlan 567

DLS2(config-if-range)#no shutdown

DLS2(config-if-range)#end

DLS2#

%SYS-5-CONFIG\_I: Configured from console by console

Figura 54. Configuración DLS2 de los puertos de los puertos de acceso a las VLANs

```
DLS2#config t
Enter configuration commands, one per line. End with CNTL/Z.
DLS2(config)#interface fastethernet 0/6
DLS2(config-if)#switchport access vlan 12
DLS2(config-if)#switchport access vlan 101
DLS2(config-if)#no shutdown

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)#end
DLS2#
%SYS-5-CONFIG_I: Configured from console by console

DLS2#config t
Enter configuration commands, one per line. End with CNTL/Z.
DLS2(config)#interface f0/15
DLS2(config-if)#switchport access vlan 111
DLS2(config-if)#no shutdown
DLS2(config-if)#end
DLS2#
%SYS-5-CONFIG_I: Configured from console by console

DLS2#config t
Enter configuration commands, one per line. End with CNTL/Z.
DLS2(config)#int ran f0/16-18
DLS2(config-if-range)#switchport access vlan 567
% Access VLAN does not exist. Creating vlan 567
DLS2(config-if-range)#no shutdown
DLS2(config-if-range)#end
DLS2#
%SYS-5-CONFIG_I: Configured from console by console
```

## ALS1

ALS1>en

ALS1#config t

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

ALS1(config)#interface fastethernet 0/6

ALS1(config-if)#switchport access vlan 123

ALS1(config-if)#switchport access vlan 101

ALS1(config-if)#no shutdown

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)#end

ALS1#

%SYS-5-CONFIG\_I: Configured from console by console

ALS1#config t

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

ALS1(config)#interface fastethernet 0/15

ALS1(config-if)#switchport access vlan 111

ALS1(config-if)#no shutdown

ALS1(config-if)#end

ALS1#

%SYS-5-CONFIG\_I: Configured from console by console

Figura 55. Configuración ALS1 de los puertos de acceso a las VLANs

```
ALS1>en
ALS1#config t
Enter configuration commands, one per line. End with CNTL/Z.
ALS1(config)#interface fastethernet 0/6
ALS1(config-if)#switchport access vlan 123
ALS1(config-if)#switchport access vlan 101
ALS1(config-if)#no shutdown

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)#end
ALS1#
%SYS-5-CONFIG_I: Configured from console by console

ALS1#config t
Enter configuration commands, one per line. End with CNTL/Z.
ALS1(config)#interface fastethernet 0/15
ALS1(config-if)#switchport access vlan 111
ALS1(config-if)#no shutdown
ALS1(config-if)#end
ALS1#
%SYS-5-CONFIG_I: Configured from console by console
```

## ALS2

```
ALS2>EN
ALS2#config t
Enter configuration commands, one per line. End with CNTL/Z.
ALS2(config)#interface fastethernet 0/6
ALS2(config-if)#switchport access vlan 234
ALS2(config-if)#no shutdown
ALS2(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
ALS2(config-if)#end
ALS2#
%SYS-5-CONFIG_I: Configured from console by console
ALS2#config t
Enter configuration commands, one per line. End with CNTL/Z.
ALS2(config)#interface fastethernet 0/15
ALS2(config-if)#switchport access vlan 111
ALS2(config-if)#no shutdown
ALS2(config-if)#end
ALS2#
%SYS-5-CONFIG_I: Configured from console by console
```

Figura 56. Configuración ALS2 de los puertos de los puertos de acceso a las VLANs

```
ALS2>EN
ALS2#config t
Enter configuration commands, one per line. End with CNTL/Z.
ALS2(config)#interface fastethernet 0/6
ALS2(config-if)#switchport access vlan 234
ALS2(config-if)#no shutdown

ALS2(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

ALS2(config-if)#end
ALS2#
%SYS-5-CONFIG_I: Configured from console by console

ALS2#config t
Enter configuration commands, one per line. End with CNTL/Z.
ALS2(config)#interface fastethernet 0/15
ALS2(config-if)#switchport access vlan 111
ALS2(config-if)#no shutdown
ALS2(config-if)#end
ALS2#
%SYS-5-CONFIG_I: Configured from console by console
```

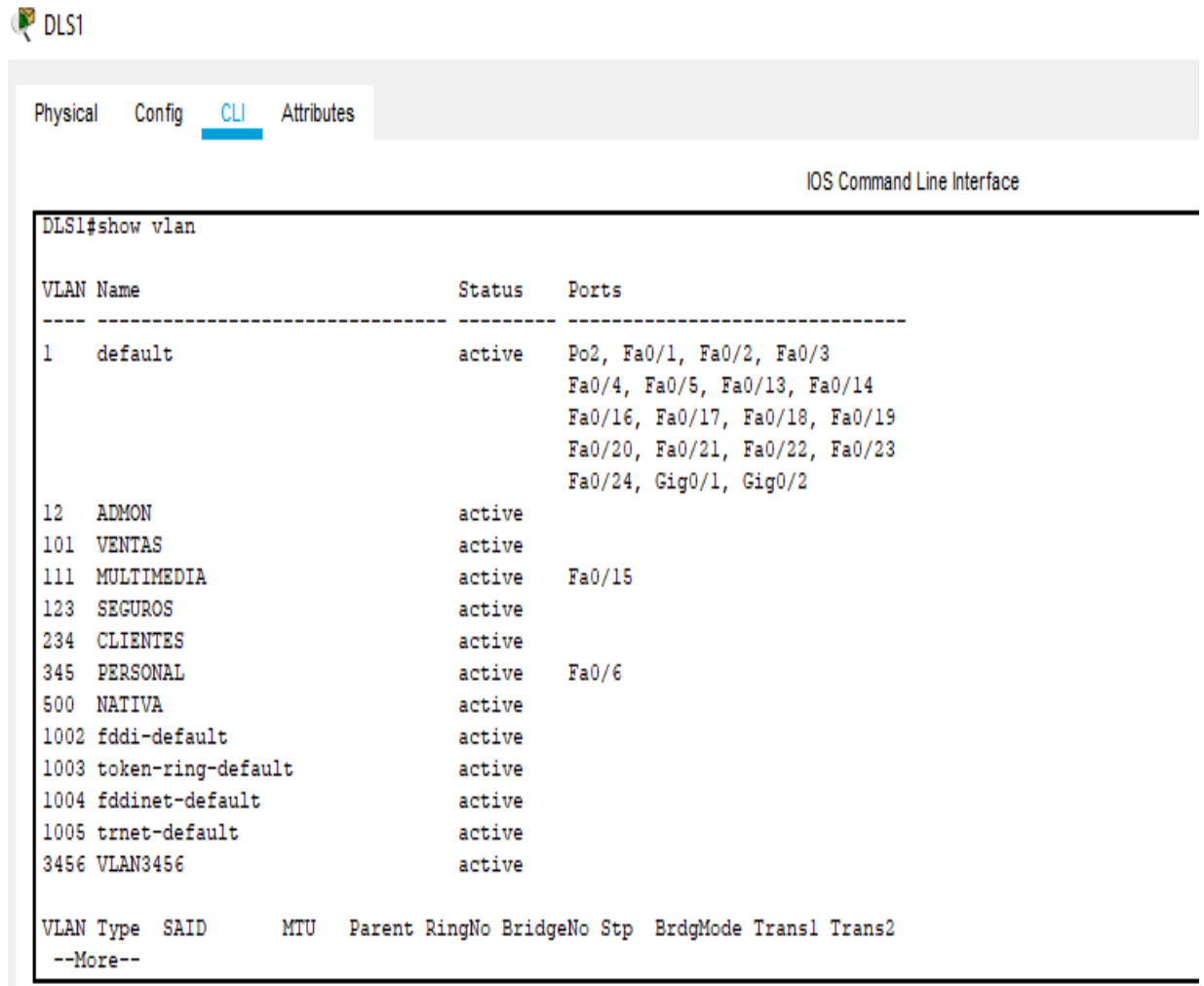
## Parte 2: conectividad de red de prueba y las opciones configuradas.

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

### DLS1

#### DLS1#show VLAN

Figura 57. Verificación conectividad puertos de acceso a las VLANs



```
DLS1
```

```
Physical  Config  CLI  Attributes
```

```
IOS Command Line Interface
```

```
DLS1#show vlan
```

VLAN Name	Status	Ports
1 default	active	Po2, Fa0/1, Fa0/2, Fa0/3 Fa0/4, Fa0/5, Fa0/13, Fa0/14 Fa0/16, Fa0/17, Fa0/18, Fa0/19 Fa0/20, Fa0/21, Fa0/22, Fa0/23 Fa0/24, Gig0/1, Gig0/2
12 ADMON	active	
101 VENTAS	active	
111 MULTIMEDIA	active	Fa0/15
123 SEGUROS	active	
234 CLIENTES	active	
345 PERSONAL	active	Fa0/6
500 NATIVA	active	
1002 fddi-default	active	
1003 token-ring-default	active	
1004 fddinet-default	active	
1005 trnet-default	active	
3456 VLAN3456	active	

```
VLAN Type SAID MTU Parent RingNo BridgeNo Stp BrdgMode Trans1 Trans2  
--More--
```

## DLS1#show ip interface brief

Figura 58. Verificación conectividad interfaces puertos de acceso a las VLANs

```
DLS1
Physical Config CLI Attributes
IOS Command Line Interface

VLAN Type SAID MTU Parent RingNo BridgeNo Stp BrdgMode Transl Trans2
DLS1#show ip interface brief
Interface IP-Address OK? Method Status Protocol
Port-channel2 unassigned YES unset down down
FastEthernet0/1 unassigned YES unset administratively down down
FastEthernet0/2 unassigned YES unset administratively down down
FastEthernet0/3 unassigned YES unset administratively down down
FastEthernet0/4 unassigned YES unset administratively down down
FastEthernet0/5 unassigned YES unset administratively down down
FastEthernet0/6 unassigned YES unset up up
FastEthernet0/7 unassigned YES unset up up
FastEthernet0/8 unassigned YES unset up up
FastEthernet0/9 unassigned YES unset up up
FastEthernet0/10 unassigned YES unset up up
FastEthernet0/11 unassigned YES unset up up
FastEthernet0/12 unassigned YES unset up up
FastEthernet0/13 unassigned YES unset administratively down down
FastEthernet0/14 unassigned YES unset administratively down down
FastEthernet0/15 unassigned YES unset administratively down down
FastEthernet0/16 unassigned YES unset administratively down down
FastEthernet0/17 unassigned YES unset administratively down down
FastEthernet0/18 unassigned YES unset administratively down down
FastEthernet0/19 unassigned YES unset administratively down down
FastEthernet0/20 unassigned YES unset administratively down down
FastEthernet0/21 unassigned YES unset administratively down down
FastEthernet0/22 unassigned YES unset administratively down down
FastEthernet0/23 unassigned YES unset administratively down down
FastEthernet0/24 unassigned YES unset administratively down down
GigabitEthernet0/1 unassigned YES unset administratively down down
GigabitEthernet0/2 unassigned YES unset administratively down down
```

## DLS1# show vtp status

Figura 59. Verificación conectividad y estado de vtp en DLS1

```
DLS1#
DLS1# show vtp status
VTP Version capable : 1 to 2
VTP version running : 2
VTP Domain Name : CISCO
VTP Pruning Mode : Disabled
VTP Traps Generation : Disabled
Device ID : 0001.42EA.B400
Configuration last modified by 0.0.0.0 at 3-1-93 00:00:00
Local updater ID is 10.0.12.252 on interface Vl12 (lowest numbered VLAN interface found)

Feature VLAN :
-----
VTP Operating Mode : Server
Maximum VLANs supported locally : 1005
Number of existing VLANs : 13
Configuration Revision : 36
MD5 digest : 0x0C 0x34 0x2D 0x20 0xED 0x0D 0x44 0x38
             0x06 0x1D 0xA3 0x0D 0x45 0xDA 0x3A 0x79
DLS1#
```

Ctrl+F6 to exit CLI focus

- b. Verificar que el Ether-channels entre DLS1 y ALS1 está configurado correctamente.

DLS1

**DLS1#show etherchannel summary**

Figura 60. Verificación conectividad canales en DLS1

```
DLS1#show etherchannel summary
Flags: D - down          P - in port-channel
       I - stand-alone  s - suspended
       H - Hot-standby (LACP only)
       R - Layer3       S - Layer2
       U - in use       f - failed to allocate aggregator
       u - unsuitable for bundling
       w - waiting to be aggregated
       d - default port

Number of channel-groups in use: 3
Number of aggregators:          3

Group  Port-channel  Protocol    Ports
-----+-----+-----+-----
1      Po1(SU)        LACP       Fa0/7(P) Fa0/8(P)
4      Po4(SU)        PAgP       Fa0/9(P) Fa0/10(P)
12     Po12(RU)       LACP       Fa0/11(P) Fa0/12(P)
DLS1#
```

ALS1

**ALS1#show etherchannel summary**

Figura 61. Verificación conectividad canales en ALS1

```
ALS1>en
ALS1#show etherchannel summary
Flags: D - down          P - in port-channel
       I - stand-alone  s - suspended
       H - Hot-standby (LACP only)
       R - Layer3       S - Layer2
       U - in use       f - failed to allocate aggregator
       u - unsuitable for bundling
       w - waiting to be aggregated
       d - default port

Number of channel-groups in use: 1
Number of aggregators:          1

Group  Port-channel  Protocol    Ports
-----+-----+-----+-----
2      Po2(SD)        LACP       Fa0/7(I) Fa0/8(I) Fa0/9(I) Fa0/10(I)
ALS1#
```

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

**DLS1**

```
DLS1>en
DLS1#show spanning-tree
VLAN0001
```

Figura 62. Verificación de la configuración VLAN en DLS1

The screenshot shows the CLI interface of a switch named DLS1. The interface has tabs for Physical, Config, CLI (selected), and Attributes. The main window displays the output of the 'show spanning-tree' command for two VLANs: VLAN0001 and VLAN0012. For each VLAN, it shows the spanning tree protocol (IEEE), the root bridge ID and address, and the local bridge ID and address. It also lists the interfaces connected to the VLAN along with their roles, status, costs, and priority numbers.

```
DLS1>en
DLS1#show spanning-tree
VLAN0001
  Spanning tree enabled protocol ieee
  Root ID    Priority    24577
             Address    0060.702B.20C1
             This bridge is the root
             Hello Time 2 sec  Max Age 20 sec  Forward Delay 15 sec

  Bridge ID  Priority    24577 (priority 24576 sys-id-ext 1)
             Address    0060.702B.20C1
             Hello Time 2 sec  Max Age 20 sec  Forward Delay 15 sec
             Aging Time 20

Interface    Role Sts Cost    Prio.Nbr Type
-----
Fa0/7        Desg FWD 19      128.7   P2p
Fa0/8        Desg FWD 19      128.8   P2p
Fa0/9        Desg FWD 19      128.9   P2p
Fa0/10       Desg FWD 19      128.10  P2p
Fa0/11       Desg FWD 19      128.11  P2p
Fa0/12       Desg FWD 19      128.12  P2p

VLAN0012
  Spanning tree enabled protocol ieee
  Root ID    Priority    24588
             Address    0060.702B.20C1
             This bridge is the root
             Hello Time 2 sec  Max Age 20 sec  Forward Delay 15 sec

  Bridge ID  Priority    24588 (priority 24576 sys-id-ext 12)
             Address    0060.702B.20C1
             Hello Time 2 sec  Max Age 20 sec  Forward Delay 15 sec
             Aging Time 20

Interface    Role Sts Cost    Prio.Nbr Type
-----
```



## CONCLUSIONES

Las configuraciones e interfaces de direcciones IP nos permiten implementar los protocolos de enrutamiento empleado en herramientas de simulación y laboratorios de acceso remoto con el fin de establecer el escenario planteado para analizar el comportamiento de los protocolos, que se usaron en los routers, mediante el uso de comandos de administración descritos en cada punto, como EIGRP, OSPF, ancho de banda uso de carga y demás características para cada lapso o distancia.

Se resalta las configuraciones iniciales y las comprobaciones de cada uno de los protocolos implementados, con el fin de conocer a groso modo lo fundamental de tener claro el ingreso de cada uno de los comandos para la configuración de cada red, verificando conexión y funcionamiento de la misma como se evidencia en el programa packet tracer en el desarrollo satisfactorio del primero escenario.

Mediante la implementación de los comandos consultados para cada configuración avanzada en los switches (con direccionamiento IPv4) se analizan los enlaces de protocolos de enrutamiento Ether-channels capa-3 utilizando LACP, acorde con el escenario establecido, realizando el diseño y configuración como se describe en los ítem solicitados del diagrama del segundo escenario consiguiendo la conexión esperada en el planteamiento como se evidencia en cada uno de los pasos realizados.

Adicional a esto es de resaltar y de tener en cuenta que a pesar de realizar cada uno de los pasos solicitados en la actividad, se tiene unas limitantes en el software packet tracer, debido a que por ser un servidor virtual se presentan algunas fallas al recibir algunos comandos, como por ejemplo los de OSPFv3 o VTPv3, al igual que la conectividad a internet para el laboratorio virtual, por lo que si no se tiene comunicación no permite el registro de las configuraciones realizadas, es por esto que se trabajó en packet tracer por ser una herramienta de mejor adecuación acorde al planteamiento realizado del escenario 2.

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