

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

CAMILO ANDRES VILLALOBOS CORREDOR

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

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

CAMILO ANDRES VILLALOBOS CORREDOR

Diplomado de opción de grado presentado para
optar el título De
Ingeniero de Telecomunicaciones

DIRECTOR:
MSc. GERARDO GRANADOS ACUÑA

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

NOTA DE ACEPTACIÓN

Firma del Presidente del Jurado

Firma del Jurado

Firma del Jurado

BOGOTÁ DC., 24 de Noviembre de 2020

AGRADECIMIENTOS

Quiero agradecer en el presente trabajo a mi familia por siempre brindarme al apoyo necesario y la comprensión por tantos momentos sacrificados en pro de mi desarrollo como profesional.

CONTENIDO

AGRADECIMIENTOS.....	5
LISTA DE TABLAS	6
LISTA DE FIGURAS.....	7
GLOSARIO	8
RESUMEN	9
ABSTRACT.....	10
INTRODUCCIÓN	11
ESCENARIO 1	12
ESCENARIO 2.....	26
CONCLUSIONES	77
BIBLIOGRAFÍA	78

LISTA DE TABLAS

Tabla 1 Tabla de subredes	19
Tabla 2 Tabla Subredes R5.....	20
Tabla 3 Asignación Vlans	59
Tabla 4 Conf Interfaces como accesos	68

LISTA DE FIGURAS

Ilustración 1 Escenario 1.....	12
Ilustración 2 Simulación.....	13
Ilustración 3 Configuración Router 1.....	14
Ilustración 4 Configuración Router 2.....	15
Ilustración 5 Configuración Router 3.....	16
Ilustración 6 Configuración Router 4.....	18
Ilustración 7 Configuración Router 5.....	18
Ilustración 8 Configuración Loopback R1.....	20
Ilustración 9 Configuración loopback R5.....	21
Ilustración 10 IP route en R3.....	22
Ilustración 11 Redistribución de las rutas EIGRP en OSPF.....	23
Ilustración 12 Ip route un R1.....	25
Ilustración 13 Ip route en R5.....	26
Ilustración 14 Segundo Escenario.....	26
Ilustración 15 Configuración Switches.....	27
Ilustración 16 Configuración DLS1.....	27
Ilustración 17 Apagado de interfaces DLS1.....	29
Ilustración 18 Apagado interfaces DSL2.....	31
Ilustración 19 Apagado interfaces ALS1.....	32
Ilustración 20 Apagado interfaces ALS2.....	33
Ilustración 21 Apagado de interfaces del sistema.....	33
Ilustración 22 Asignación de Nombres a la topología.....	34
Ilustración 23 LACP en DLS1.....	35
Ilustración 24 Canal de Ethernet DLS1 -DLS2.....	36
Ilustración 25 Conf. LACP interfaces.....	37
Ilustración 26 Conf. LACP en Interfaces.....	37
Ilustración 27 Conf.LACP ALS1.....	38
Ilustración 28 Conf. LACP ALS2.....	39
Ilustración 29 Conf. PAGP en DLS1.....	40
Ilustración 30 Conf. PAGP en DLS2.....	40
Ilustración 31 Conf. PAGP en ALS 1.....	41
Ilustración 32 Conf. PAGP en ALS2.....	42
Ilustración 33 Configuración VLAN Nativa.....	46
Ilustración 34 Configuración VLAN Nativa DSL2.....	50
Ilustración 35 Configuración VLAN Nativa ASL1.....	52
Ilustración 36 Configuración VLAN Nativa ASL2.....	54
Ilustración 37 VTP Configuración versión 3.....	55
Ilustración 38 Conf.Contraseña y dominio.....	56
Ilustración 39 VTP Configuración versión 3.....	56
Ilustración 40 Configuración servidor principal.....	57
Ilustración 41 vtp mode en ADSL1.....	58
Ilustración 42 Creación Vlan Nativa.....	59
Ilustración 43 Creación Vlan Admon.....	60

Ilustración 44 Configuración de las Vlans	60
Ilustración 45 Configuración de las Vlans Ventas y Personal.....	61
Ilustración 46 Suspensión Vlan Proveedores.....	61
Ilustración 47 Configurar DLS2 en modo VTP transparente.....	62
Ilustración 48 Configurar DLS2 en modo VTP transparente.....	62
Ilustración 49 Suspende VLAN 434 en DLS2.	63
Ilustración 50 configuración private-vlan isolated	64
Ilustración 51 Conf.DLS1 como Spanning tree root.....	65
Ilustración 52 DLS2 como Spanning tree root.....	65
Ilustración 53 Configurar todos los puertos como troncales	66
Ilustración 54 Configurar todos los puertos como troncales	67
Ilustración 55 Conf.puertos como troncales	67
Ilustración 56 Cof.puertos como troncales	68
Ilustración 57 Conf Interfaces como accesos DLS1	69
Ilustración 58 Conf Interfaces como accesos DLS2	70
Ilustración 59 Conf Interfaces como accesos DLS2	71
Ilustración 60 Conf Interfaces como accesos DLS2	71
Ilustración 61 Conf Interfaces como accesos ALS1.....	72
Ilustración 62 Conf Interfaces como accesos ALS2.....	73
Ilustración 63 comando show vlan	73
Ilustración 64 Verificación de la existencia de las VLAN	74
Ilustración 65 Verificación VTP	74
Ilustración 66 Verificación Canales DLS1	75
Ilustración 67 Verificación Canales ALS1	75
Ilustración 68 spanning-tree DLS1	76
Ilustración 69 spanning-tree DLS2	76

GLOSARIO

LOOPBACK: La interfaz loopback es una interfaz lógica interna del router. Esta no se asigna a un puerto físico y, por lo tanto, nunca se puede conectar a otro dispositivo. Se la considera una interfaz de software que se coloca automáticamente en estado UP (activo), siempre que el router esté en funcionamiento (itesa , 2019).

OSPF:(Open Shortest Path First) es un protocolo de enrutamiento abierto del tipo Estado de Enlace (Link State). OSPF fue desarrollado por el IETF con el objetivo de reemplazar al protocolo RIP (Routing Information Protocol).

OSPF utiliza el algoritmo Dijkstra para encontrar la mejor ruta entre dos puntos. OSPF es un protocolo classless, por lo tanto, soporta VLSM y CIDR (DUARTE, 2019).

EIGRP: Es un protocolo de vector de distancias optimizado, que se basa en el Algoritmo de Actualización Difusa (DUAL) para calcular la trayectoria más corta hacia un destino dentro de una red (CISCO, 2020).

BANDWIDTH : Sirve solamente para indicar la velocidad de la interfaz a los protocolos de nivel superior. Por ejemplo, algunos protocolos de ruteo utilizan el ancho de banda como métrica para elegir la mejor ruta hacia la red de destino. Esta información la toman de los valores configurados para el parámetro bandwidth en cada interfaz. IGRP, EIGRP y OSPF utilizan la información de bandwidth (Gerometta, 2016).

RESUMEN

El presente trabajo tiene como objetivo, la aplicación de los conocimientos recopilados a lo largo del desarrollo de los cursos propuestos en la plataforma CISCO y de esta misma forma desarrollar un aprendizaje centrado en la práctica. De igual manera la revisión y aplicación de conceptos de seguridad de redes, enrutamiento y conmutación.

Para este fin se proponen dos escenarios de aplicación; en el primero encontramos el uso y aplicación en un ambiente simulado de los protocolos de EIGRP y OSPF, en el caso de OSPF este ha sido pensado para el entorno de Internet y su pila de protocolos TCP/IP, como un protocolo de routing interno, es decir, que distribuye información entre routers que pertenecen al mismo Sistema Autónomo mientras que EIGRP el cual es una versión mejorada de IGRP. La tecnología de vector de igual distancia que se usa en IGRP también se emplea en EIGRP. Además, la información de la distancia subyacente no presenta cambios mejorando de manera significativa la eficacia de las redes al ser escaladas.

En el segundo escenario desarrollado en este curso la situación planteada nos lleva a efectuar el desarrollo de redes VLAN con el fin de realizar la división de recursos de red en una organización mostrando las diferentes capacidades de este sistema de subredes, al poder limitar acceso a puertos específicos asignados a dichas VLANS siendo un diseño efectivo y sencillo de implementar sin llegar a afectar la arquitectura física de una red.

Palabras Clave: CISCO, CCNP, Conmutación, Enrutamiento, Redes, Vlan, OSPF y EIGRP.

ABSTRACT

The objective of this work is to apply the knowledge collected throughout the development of the courses proposed in the CISCO platform and in this same way develop a learning focused on practice. Likewise, the review and application of network security, routing and switching concepts.

For this purpose, two application scenarios are proposed; In the first we find the use and application in a simulated environment of the EIGRP and OSPF protocols, in the case of OSPF this has been designed for the Internet environment and its TCP / IP protocol stack, as an internal routing protocol, that is, it distributes information between routers that belong to the same Autonomous System while EIGRP which is an improved version of IGRP. The equal distance vector technology used in IGRP is also used in EIGRP. Furthermore, the underlying distance information does not show changes, significantly improving the efficiency of the networks when scaled.

In the second scenario developed in this course, the situation raised leads us to carry out the development of VLAN networks in order to divide network resources in an organization, showing the different capabilities of this subnet system, by limiting access to ports assigned to said VLANS, being an effective and simple design to implement without affecting the physical architecture of a network.

Keywords: CISCO, CCNP, Switching, Routing, Networks, Vlan, OSPF and EIGRP.

INTRODUCCIÓN

El objetivo principal de la aplicación práctica de los conocimientos recopilados en el desarrollo de las diferentes etapas de este diplomado CCNP es del brindar las herramientas necesarias para la solución de problemas presentados en campo en la vida real pero con la ventaja de poder llevar a cabo su práctica en un ambiente controlado mediante el uso de software de simulación como lo son el GNS3, CISCO PACKET TRACER y SMARTLAB lo cual pedagógicamente nos lleva como estudiantes a una implementación de conocimientos mas dinámica.

Por lo tanto, con este afán pedagógico se nos presentan los dos escenarios a tratar en este trabajo los cuales involucran conocimientos sobre protocolos de enrutamiento, manejo de subredes y implementación de medidas de seguridad de redes abarcando al igual otras tantas habilidades recopiladas a través de los cursos de la arquitectura de CISCO.

Para el desarrollo y presentación de los resultados de la implementación de las soluciones a los escenarios se llevó a cabo desarrollo del código de configuración al igual que de la inclusión de imágenes y transcripciones del mismo con el afán de ayudar a comprender el proceso de solución.

ESCENARIO 1

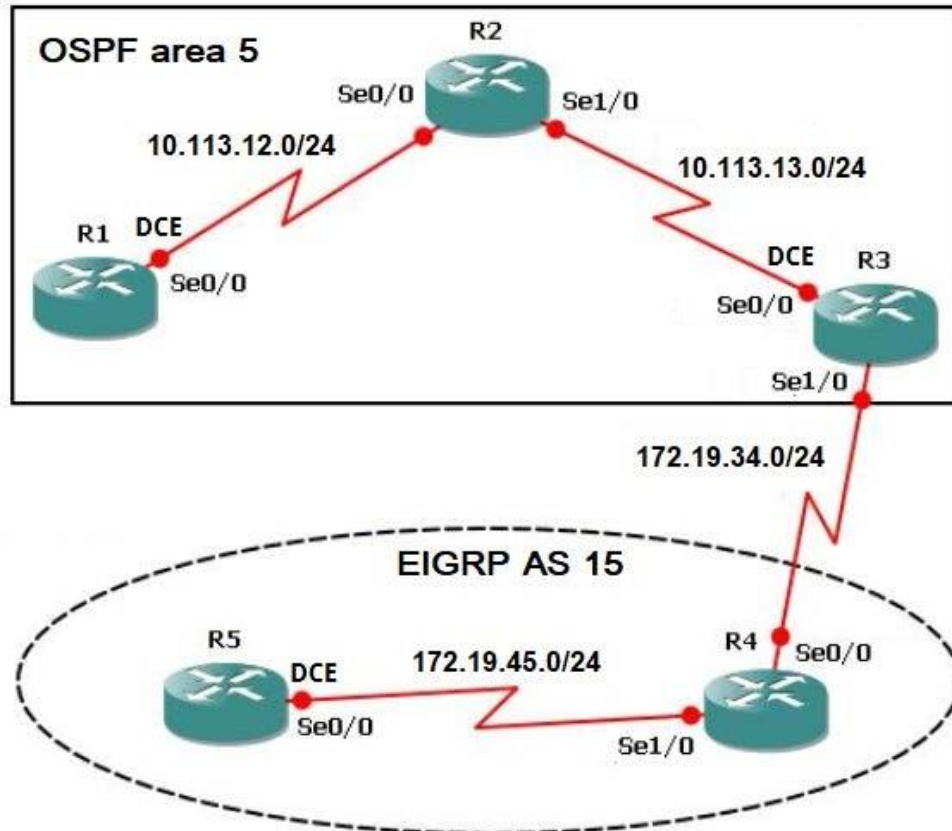


Ilustración 1 Escenario 1

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. Configurar las interfaces con las direcciones

en los routers. Configurar las interfaces con las direcciones que se muestran en la topología de red.

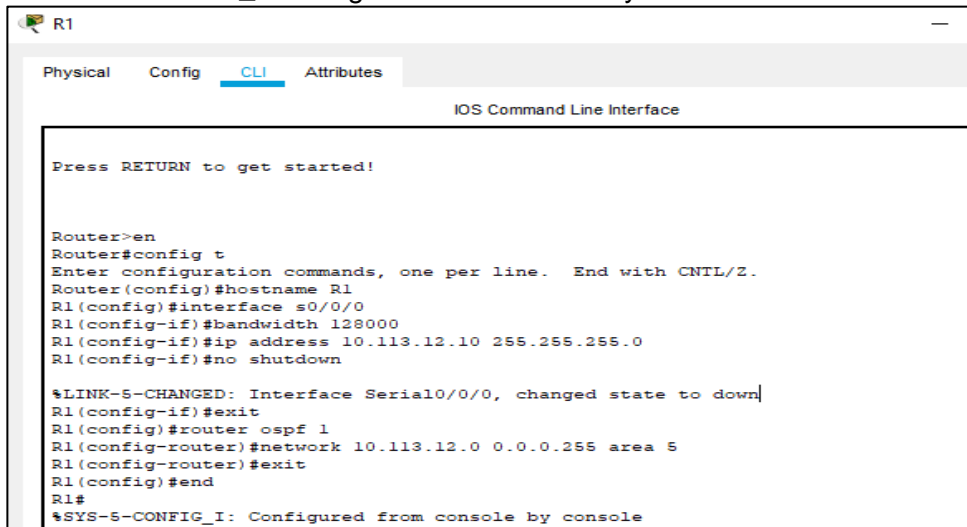
Por lo tanto iniciamos la configuración cada uno de los enrutadores. R1, R2, R3, R4, R5 .DE igual manera se lleva a cabo la asignación de nombres y protocolos de comunicación mediante EIGRP asignados.

Adjuntamos código y pantallazos con veracidad del código.

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 Asignamos nombre al router
R1(config)#interface s0/0/0 configuramos interfaz del puerto serial
R1(config-if)#bandwidth 128000 configuramos el ancho de banda
R1(config-if)#ip address 10.113.12.10 255.255.255.0 asignamos la direccion IP
R1(config-if)#no shutdown Dejamos encendido el router

%LINK-5-CHANGED: Interface Serial0/0/0, changed state to down
R1(config-if)#exit
R1(config)#router ospf 1 configuramos el protocolo ospf
R1(config-router)#network 10.113.12.0 0.0.0.255 area 5 asignamos la red y numero de
area
R1(config-router)#exit salimos del modo configuración
R1(config)#end finalizamos el proceso
R1#
%SYS-5-CONFIG_I: Configured from console by console
```



```
R1
Physical Config CLI Attributes
IOS Command Line Interface

Press RETURN to get started!

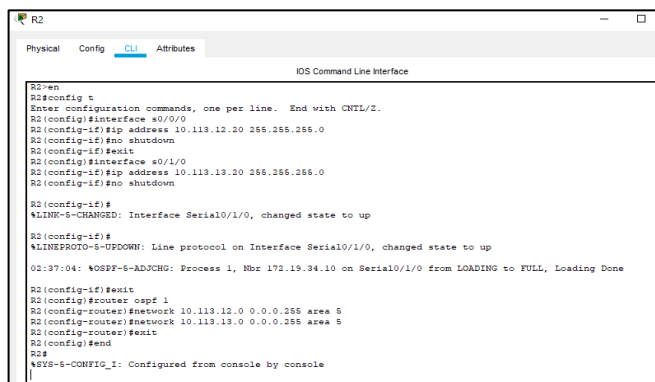
Router>en
Router#config t
Enter configuration commands, one per line. End with CNTL/Z.
Router (config)#hostname R1
R1 (config)#interface s0/0/0
R1 (config-if)#bandwidth 128000
R1 (config-if)#ip address 10.113.12.10 255.255.255.0
R1 (config-if)#no shutdown

%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
```

Ilustración 3 Configuración Router 1

Configuración Router R2

```
Router>en
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
```



```
R2
Physical Config CLI Attributes
IOS Command Line Interface

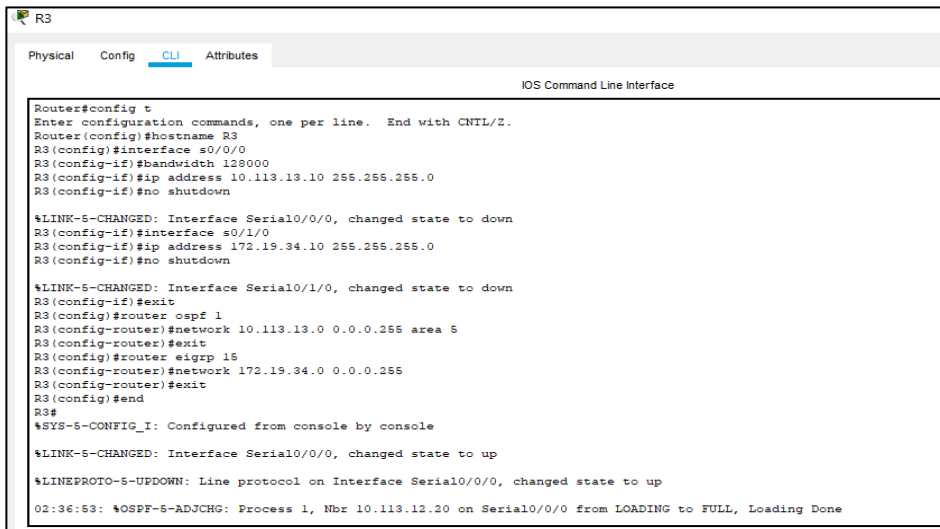
R2>en
R2#config t
Enter configuration commands, one per line. End with CNTL/Z.
R2(config)#interface s0/0/0
R2(config-if)#ip address 10.113.12.20 255.255.255.0
R2(config-if)#no shutdown
R2(config-if)#exit
R2(config)#interface s0/1/0
R2(config-if)#ip address 10.113.13.20 255.255.255.0
R2(config-if)#no 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 on Serial0/1/0 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
```

Ilustración 4 Configuración Router 2

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
```

redistribuir las rutas EIGRP en OSPF



```
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
```

Ilustración 5 Configuración Router 3

Configuracion Router R4

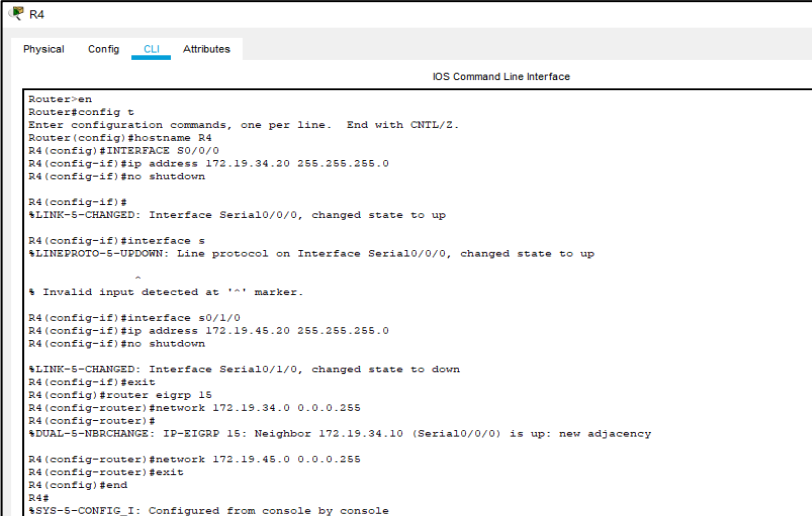
```
Router>en
Router#config t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#hostname R4
R4(config)#INTERFACE S0/0/0
R4(config-if)#ip address 172.19.34.20 255.255.255.0
R4(config-if)#no shutdown

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
```



```
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

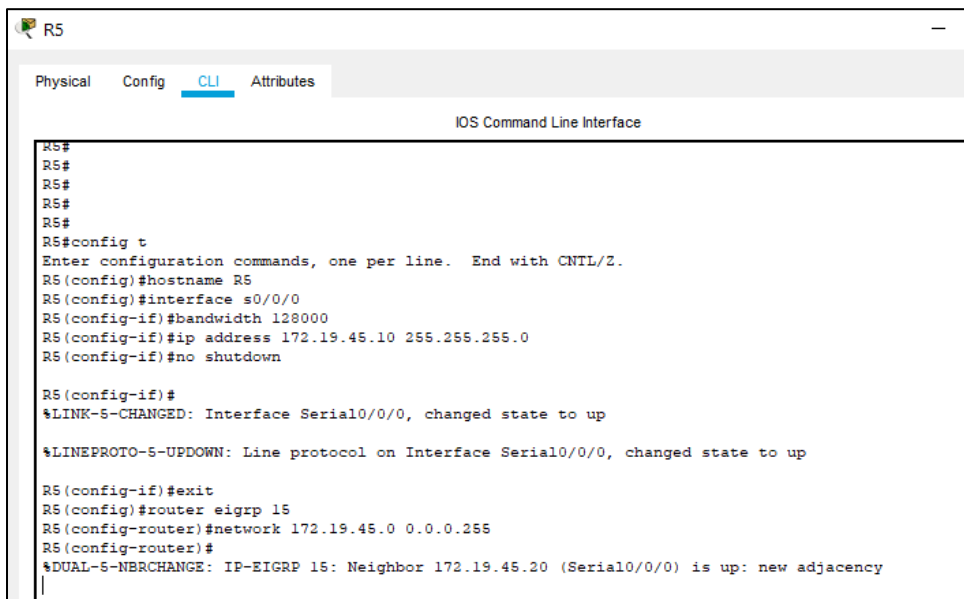
%LINK-5-CHANGED: Interface Serial0/1/0, changed state to down
R4(config-if)#exit
R4(config)#router eigrp 15
R4(config-router)#network 172.19.34.0 0.0.0.255
R4(config-router)#
%DUAL-5-NBRCHANGE: IP-EIGRP 15: Neighbor 172.19.34.10 (Serial0/0/0) is up: new adjacency

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
```

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
```



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

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

Tabla 1 Tabla de subredes

```

R1#config t          Ingreso al modo configuración
Enter configuration commands, one per line. End with CNTL/Z.
R1(config)#interface loopback 0    ingreso a la 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  asignacion de 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 asignacion 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 a la 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 asignacion de la direccion IP
R1(config-if)#exit
R1(config)#router ospf 1 configuracion del protocolo ospf
R1(config-router)#network 10.1.0.0 0.0.0.255 area 5 asignacion# de red y numero de área 5
R1(config-router)#network 10.1.1.0 0.0.0.255 area 5 asignacion # de red y numero de área 5
R1(config-router)#network 10.1.2.0 0.0.0.255 area 5 asignacion # de red y numero de área 5
R1(config-router)#network 10.1.3.0 0.0.0.255 area 5 asignacion # de red y numero de área 5
R1(config-router)#exit salida del modo configuración
R1(config)#end
R1#
%SYS-5-CONFIG_I: Configured from console by console

```

```

R1
Physical Config CLI Attributes
IOS Command Line Interface

R1>en
R1#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R1(config)#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
R1(config-if)#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
% Invalid input detected at '^' marker.
R1(config-if)#ip address 10.1.1.10 255.255.255.0
R1(config-if)#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
R1(config-if)#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

Ctrl+F6 to exit CLI focus
Copy

```

Ilustración 8 Configuración Loopback 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.

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

Tabla 2 Tabla Subredes R5

```

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

```

```

R5
Physical Config CLI Attributes
IOS Command Line Interface
L 172.19.45.10/32 is directly connected, Serial0/0/0
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

```

Ilustración 9 Configuración loopback R5

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

```

R3>en ingreso al modo privilegiado
R3#show ip route comando para 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: Al realizar el comando vemos en el resultado que R3 aprendió las interfaces Loopback correspondientes a los routers R1 y R5.

```

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

```

Ilustración 10 IP route en R3

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

```

R3>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 para configurar el protocolo ospf
R3(config-router)#redistribute eigrp 15 metric 50000 subnets redistribución de la ruta
EIGRP usando el valor de 50000
R3(config-router)#exit salida 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 Redistribucion de las
rutas OSPF usando un ancho de banda de 20000 microsegundos de retardo
R3(config-router)#exit Salida del modo configuración de ruta OSPF
R3(config)#end finalización de la configuración del router
R3#
%SYS-5-CONFIG_I: Configured from console by console

```

```

R3>en
R3#config t
Enter configuration commands, one per line. End with CNTL/Z.
R3 (config)#router ospf 1
R3 (config-router)#redistribute eigrp 15 metric 50000 subnets
R3 (config-router)#exit
R3 (config)#router eigrp 15
R3 (config-router)#redistribute ospf 1 metric 1544 20000 255 1 1500
R3 (config-router)#exit
R3 (config)#end
R3#
%SYS-5-CONFIG_I: Configured from console by console

```

Ilustración 11 Redistribución de las 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.

R1

```

R1>en ingreso al modo privilegiado
R1#show ip route comando para 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

```

```

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

```

R5

R5>en ingreso al modo privilegiado

R5#show ip route comando para 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

```

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

```

Ilustración 13 Ip route en R5

Podemos verificar que las rutas del sistema autónomo opuesto existen en su tabla de enrutamiento en R1 y R5.

ESCENARIO 2

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

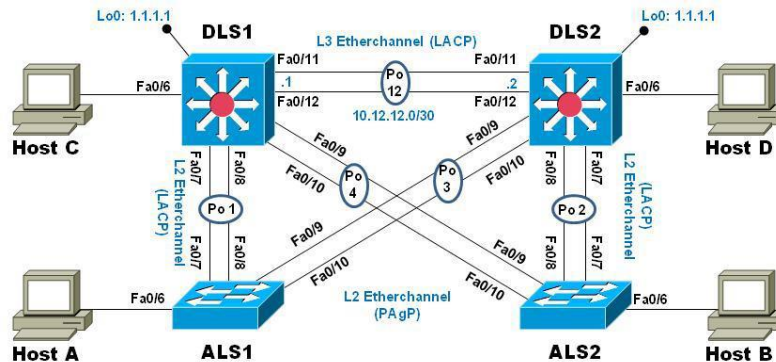


Ilustración 14 Segundo Escenario

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

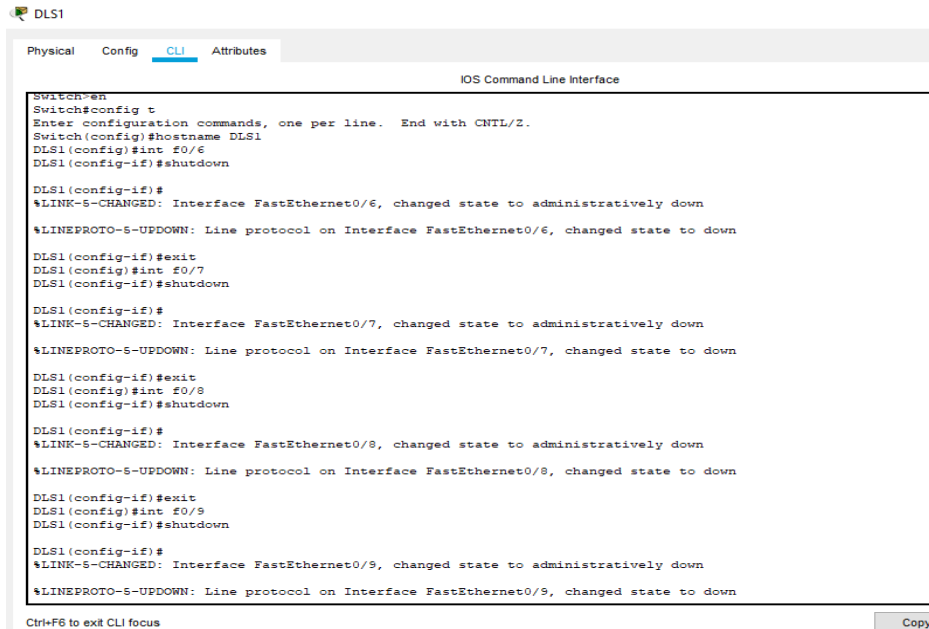
%LINK-5-CHANGED: Interface FastEthernet0/11, changed state to administratively down

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
```



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

Ctrl+F8 to exit CLI focus
```

Ilustración 17 Apagado de interfaces DLS1

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
```

```

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)#int f0/9
DLS2(config-if)#shutdown
DLS2(config-if)#
% Invalid input detected at '^' marker.
DLS2(config)#int f0/9
DLS2(config-if)#shutdown

```

Ctrl+F6 to exit CLI focus

Copy

Ilustración 18 Apagado interfaces DSL2

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#

```



```

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

%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)#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#

```

Ilustración 19 Apagado interfaces ALS1

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

```

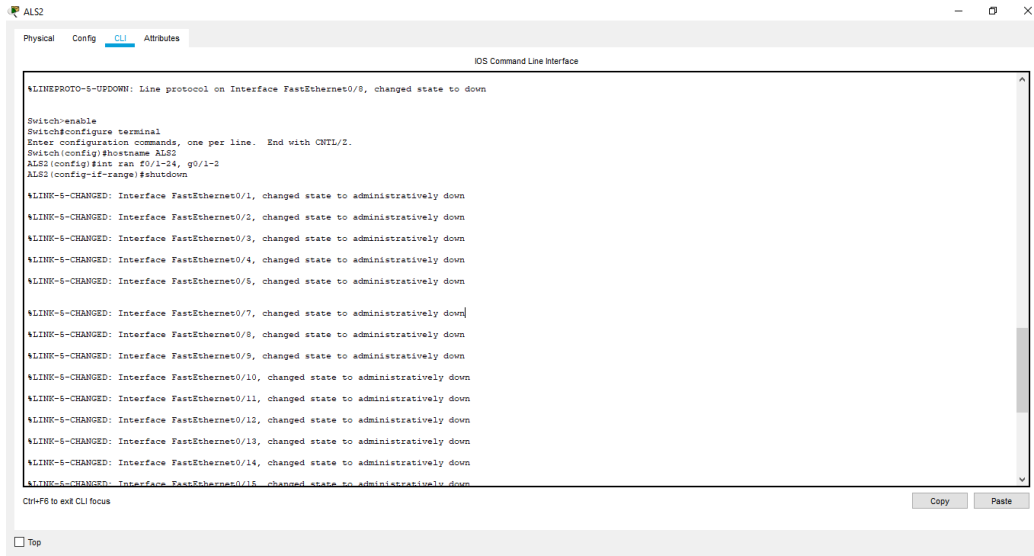


Ilustración 20 Apagado interfaces ALS2

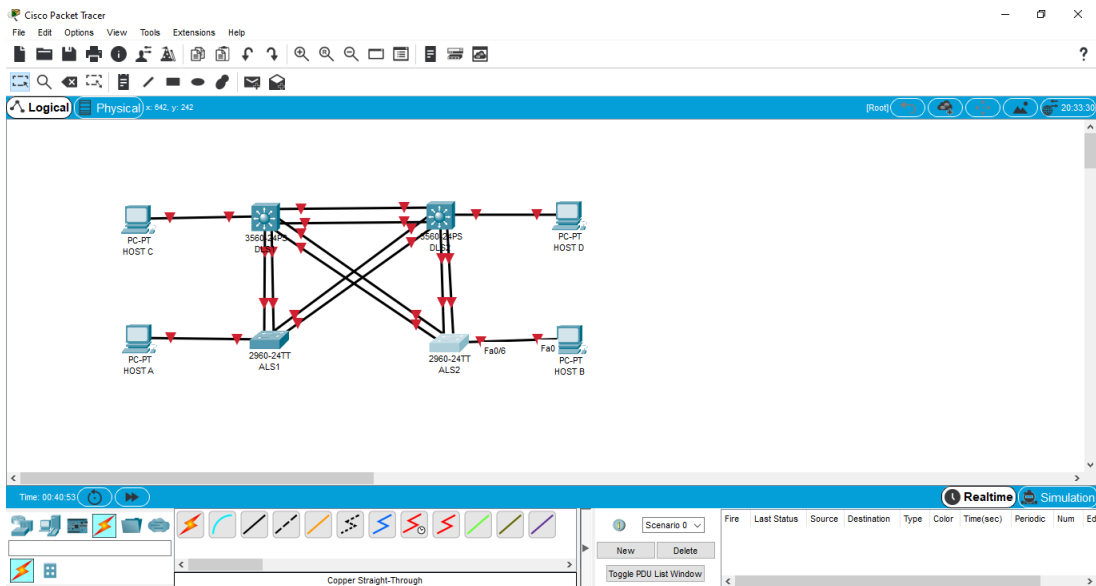


Ilustración 21 Apagado de interfaces del sistema

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

Se lleva a cabo el cambio de nombre de los switches se efectuó en el paso anterior con la siguiente configuración:

- DLS1
Switch>en
Switch#config 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

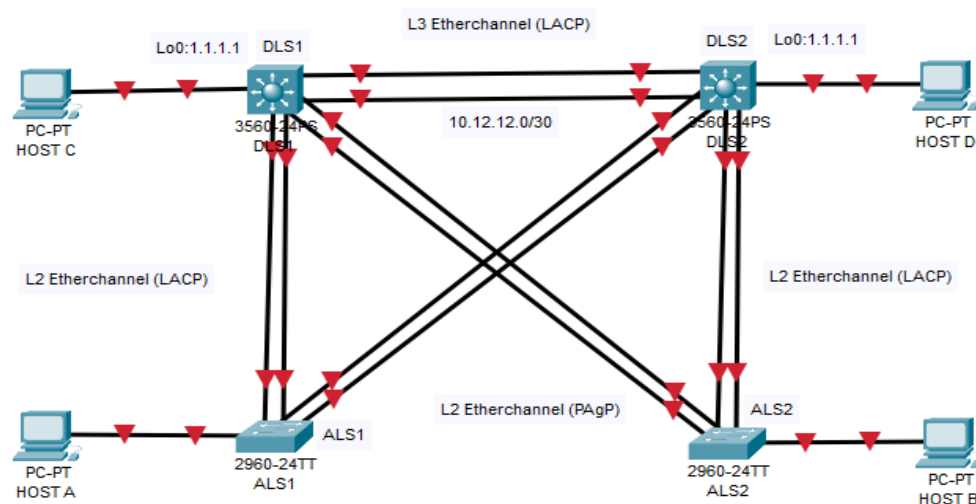


Ilustración22 Asignación de Nombres a la topología.

1) La conexión entre DLS1 y DLS2 será un EtherChannel capa-3 utilizando LACP. Para DLS1 se utilizará la dirección IP 10.12.12.1/30 y para DLS2 utilizará 10.12.12.2/30.

DLS1(config-if-range)#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)#no shutdown
```

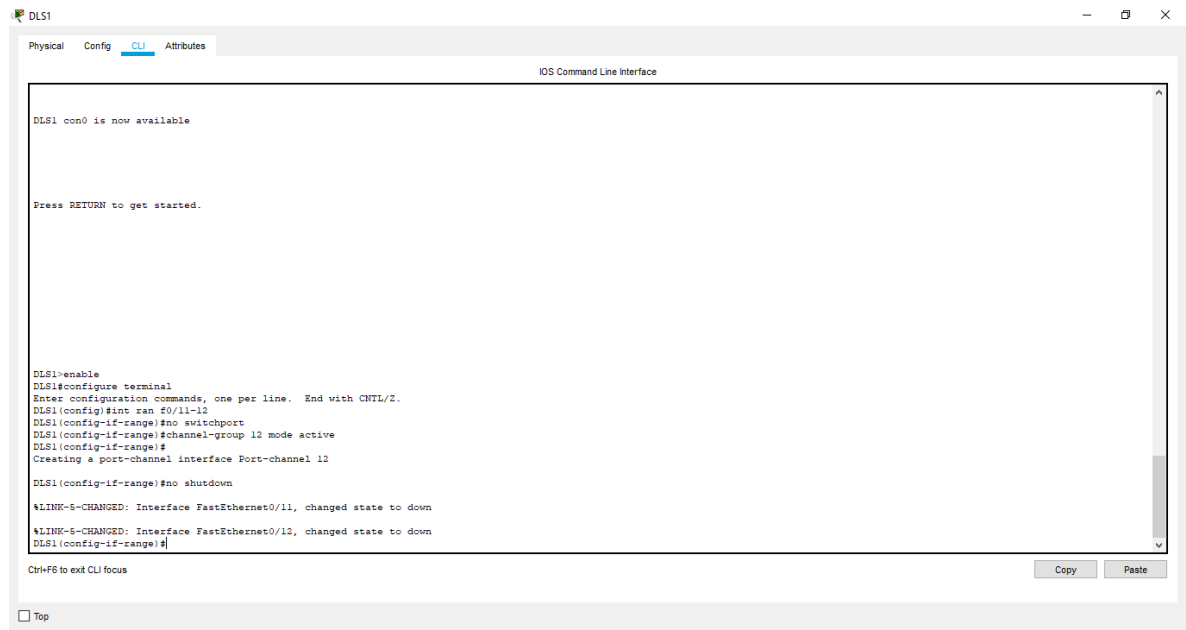


Ilustración 23 LACP en DLS1

DLS2

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)#

```

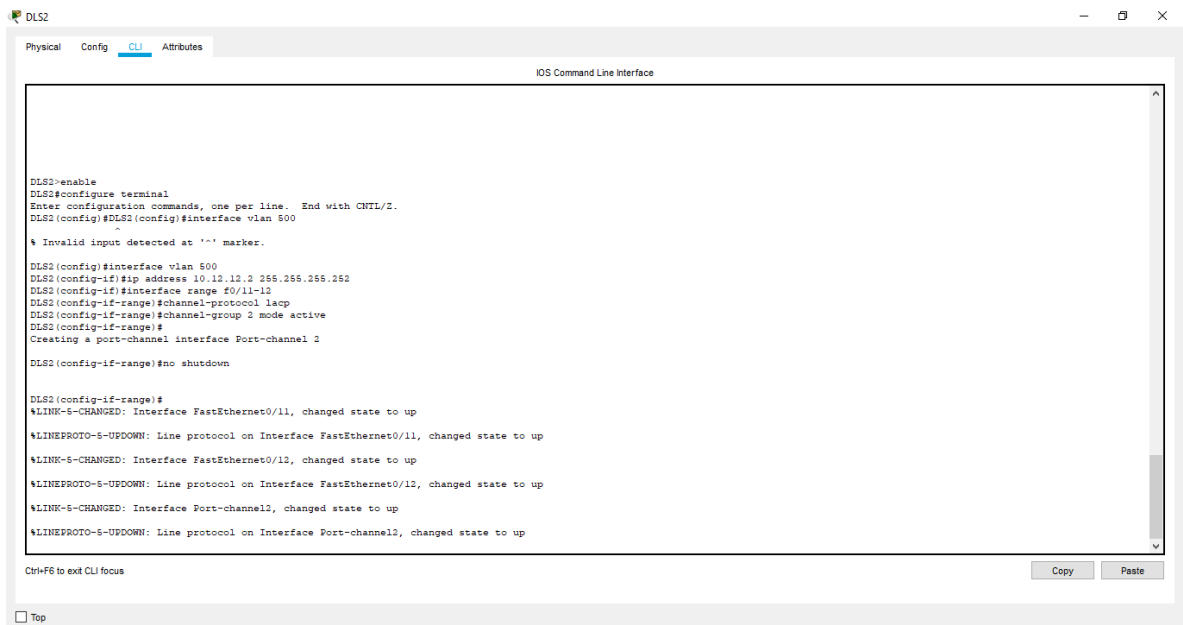


Ilustración 24 Canal de Ethernet DLS1 -DLS2

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

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

```
DLS1>enable
DLS1#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
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
```

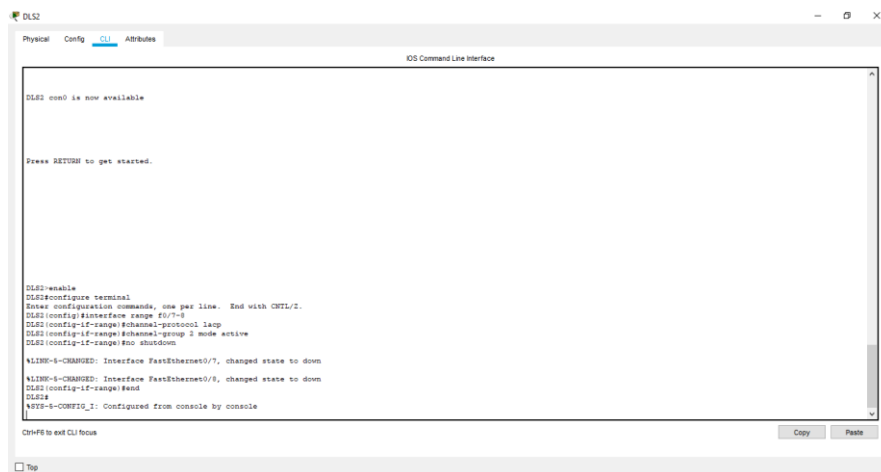
Ctrl+F6 to exit CLI focus

Top

Ilustración 25 Conf. LACP interfaces

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
```



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

DLS2 con0 is now available

Press RETURN to get started.

DLS2>enable
DLS2#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
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

Ctrl+F6 to exit CLI focus
```

Top

Ilustración 26 Conf. LACP en Interfaces

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

```

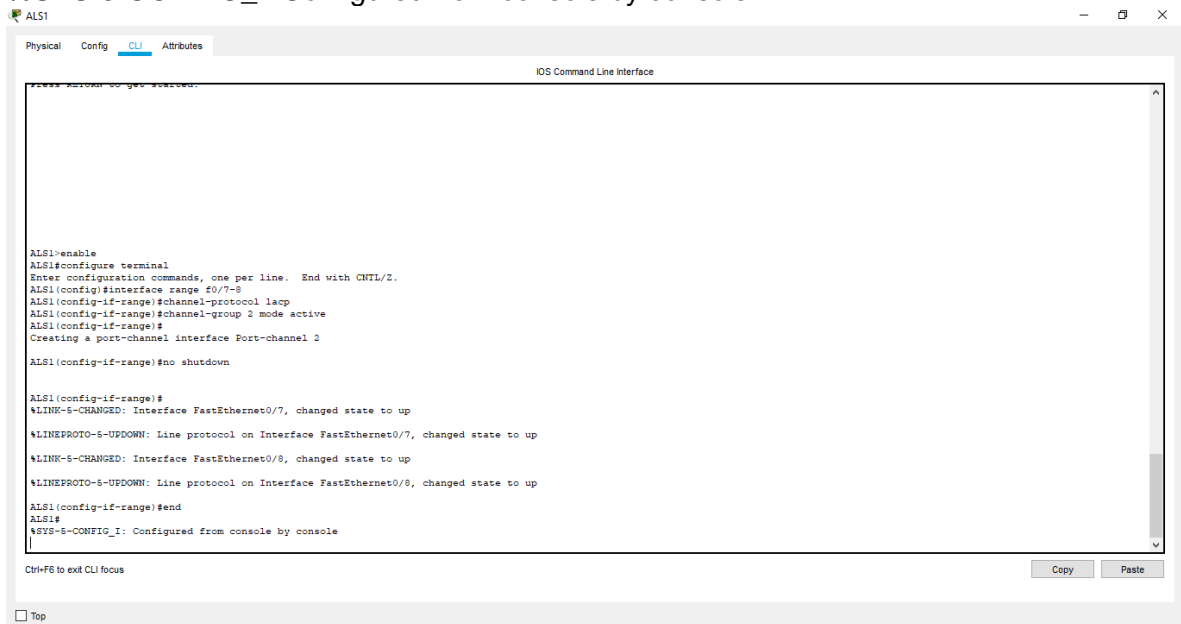


Ilustración 27 Conf.LACP ALS1

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

```

```

ALS2>enable
ALS2#configure terminal
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

```

Ctrl-F6 to exit CLI focus

Copy Paste

Top

Ilustración 28 Conf. LACP ALS2

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

```
DLS1>
DLS1>enable
DLS1#configure terminal
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)#end
DLS1#
%SYS-5-CONFIG_I: Configured from console by console
```

Ctrl+F6 to exit CLI focus

Copy Paste

Top

Ilustración 29 Conf. PAGP en DLS1

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

```
DLS2>enable
DLS2#configure terminal
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)#end
DLS2#
%SYS-5-CONFIG_I: Configured from console by console
```

Ctrl+F6 to exit CLI focus

Copy Paste

Top

Ilustración 30 Conf. PAGP en DLS2

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

```

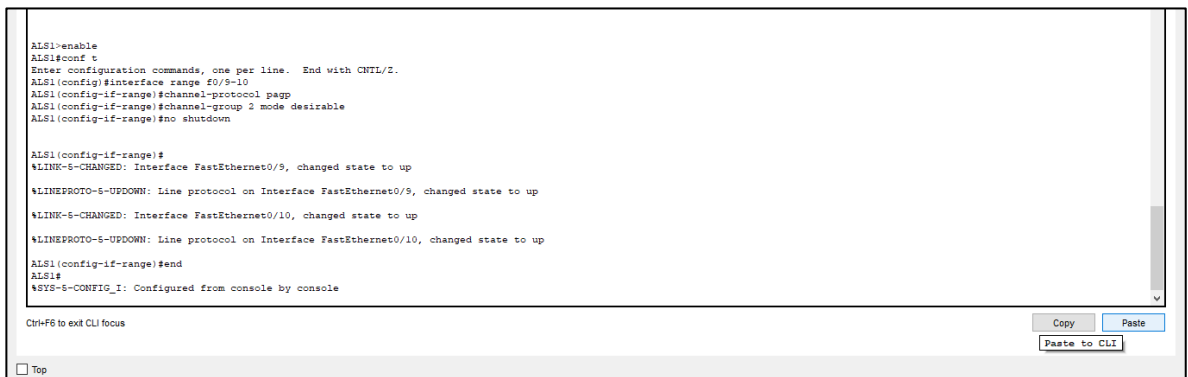


Ilustración 31 Conf. PAGP en ALS 1

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

```

```

ALS2>enable
ALS2#configure terminal
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

```

Ilustración 32 Conf. PAGP en ALS2

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).

```

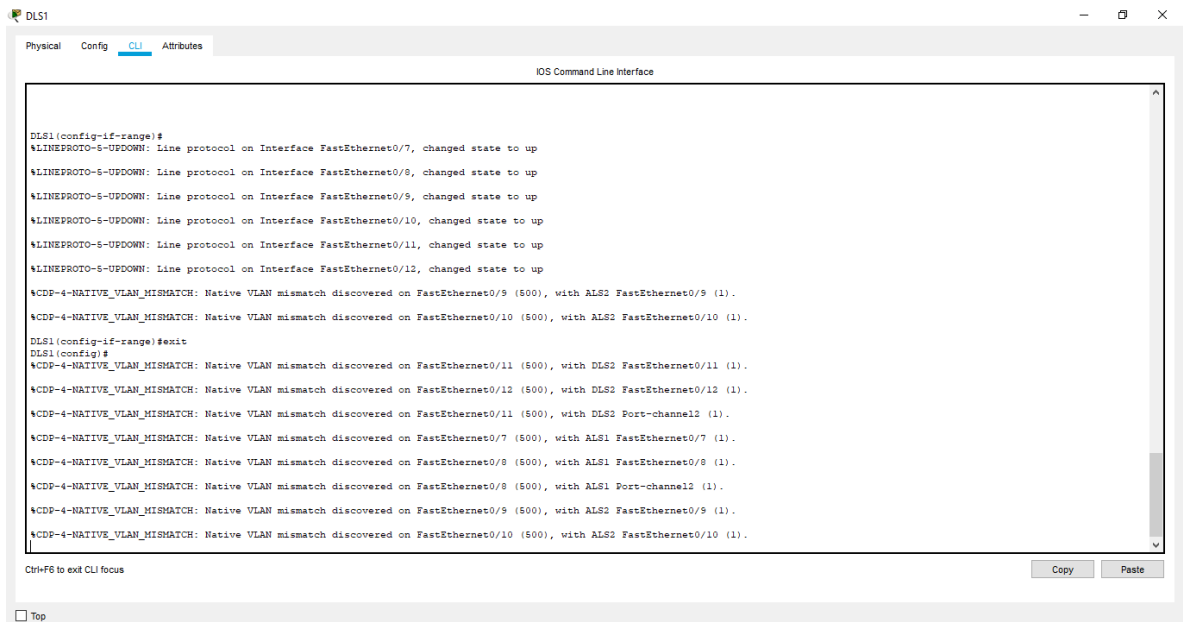


Ilustración 33 Configuración VLAN Nativa

DLS2

DLS2>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#

```

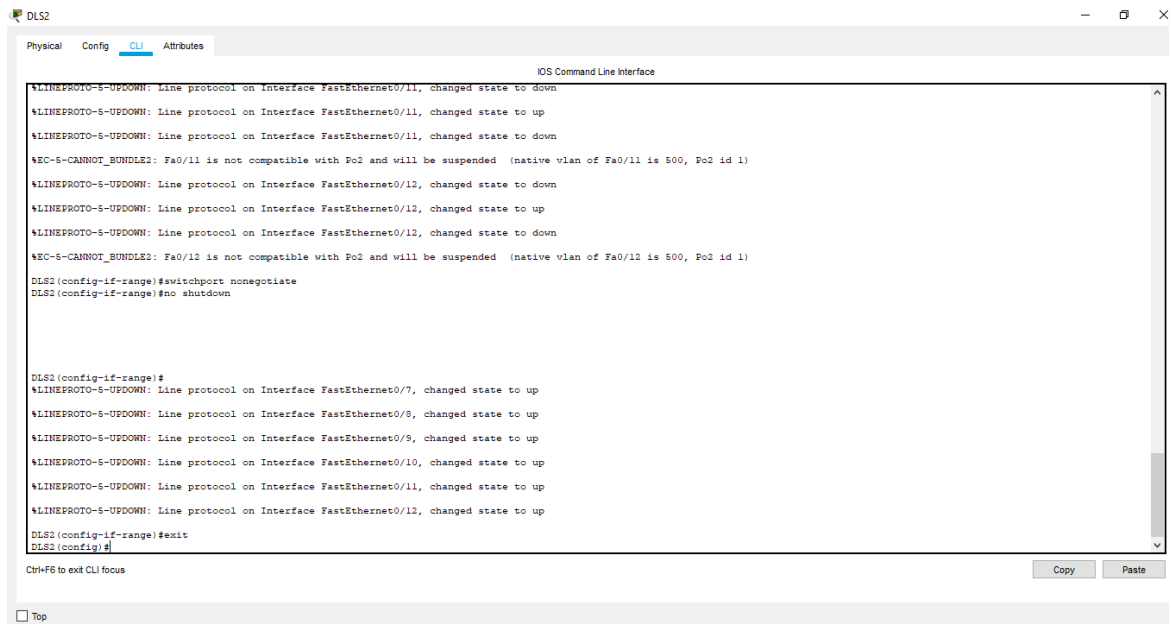


Ilustración 34 Configuración VLAN Nativa DSL2

ASL1

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

```

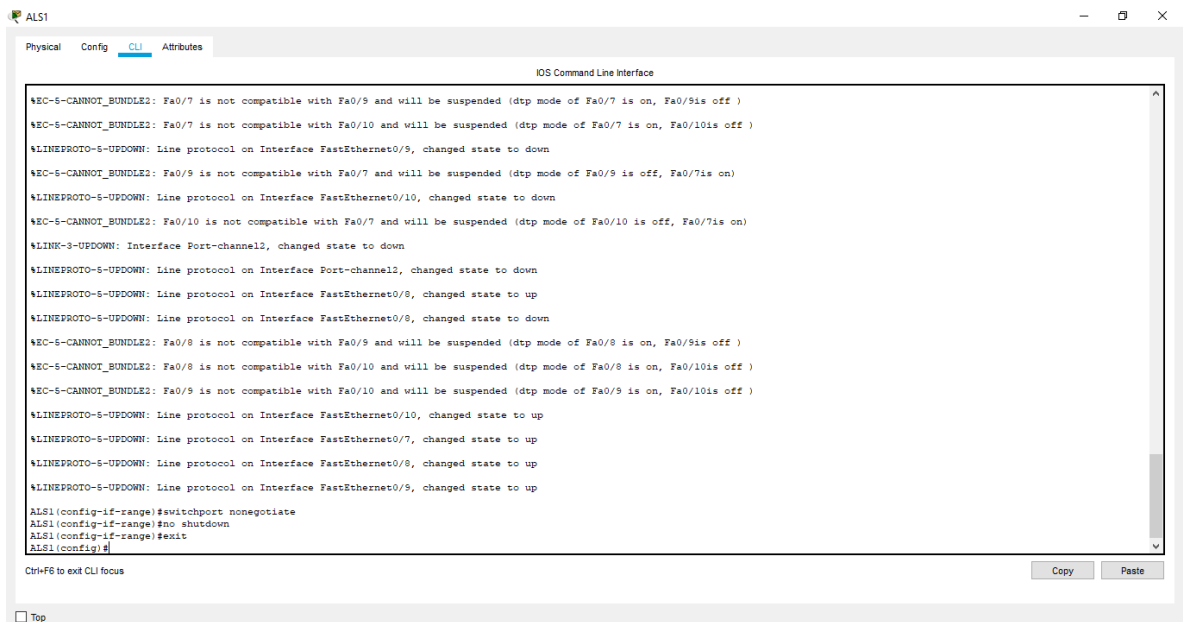


Ilustración 35 Configuración VLAN Nativa ASL1

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

```

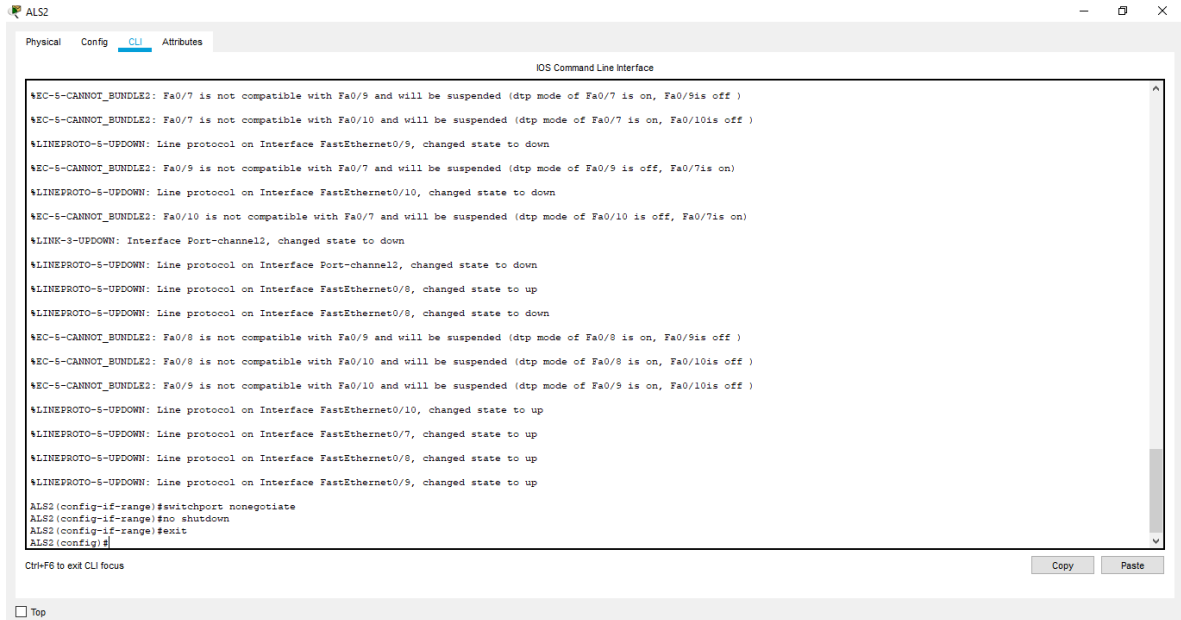


Ilustración 36 Configuración VLAN Nativa ASL2

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

```

DLS1(config)#vtp version 3
^
% Invalid input detected at '^' marker.
DLS1(config)#do show vtp status
VTP Version capable : 1 to 2
VTP version running : 2
VTP Domain Name : UNAD
VTP Pruning Mode : Disabled
VTP Traps Generation : Disabled
Device ID : 0010.11A7.BE30
Configuration last modified by 0.0.0.0 at 0-0-00 00:00:00
Local updater ID is 0.0.0.0 (no valid interface found)

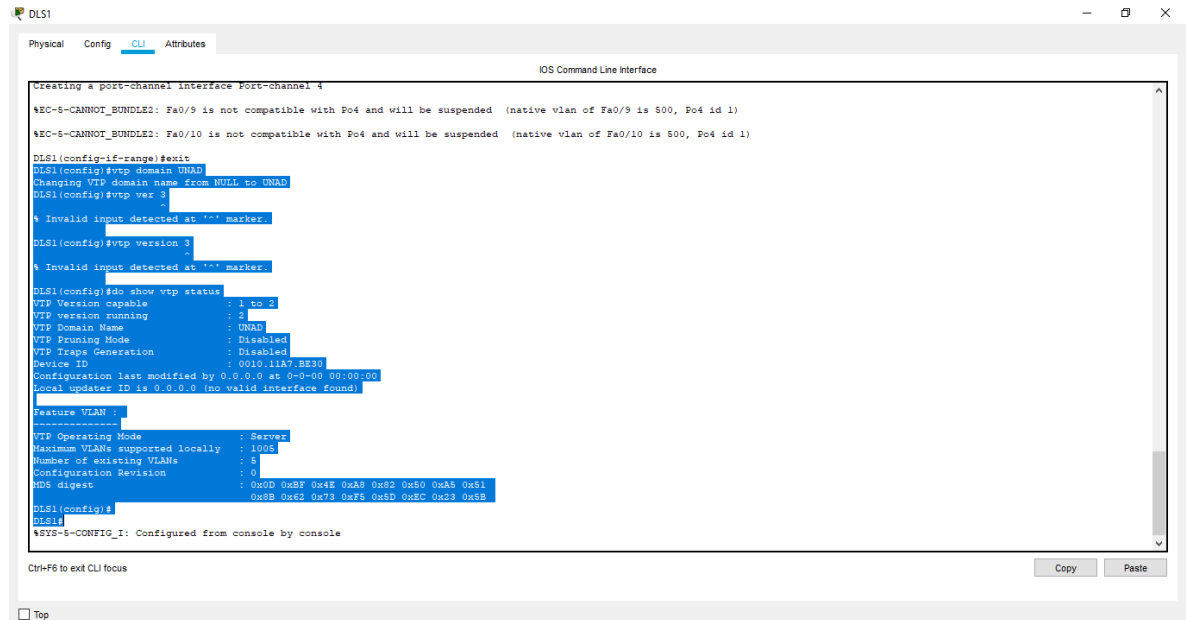
```

```

Feature VLAN :
-----
VTP Operating Mode : Server
Maximum VLANs supported locally : 1005

```

Number of existing VLANs : 5
Configuration Revision : 0
MD5 digest : 0x0D 0xBF 0x4E 0xA8 0x82 0x50 0xA5 0x51
0x8B 0x62 0x73 0xF5 0x5D 0xEC 0x23 0x5B
DLS1(config)#
DLS1#



```
Creating a port-channel interface Port-channel 4
%EC-5-CANNOT_BUNDLE2: Fa0/9 is not compatible with Po4 and will be suspended (native vlan of Fa0/9 is 500, Po4 id 1)
%EC-5-CANNOT_BUNDLE2: Fa0/10 is not compatible with Po4 and will be suspended (native vlan of Fa0/10 is 500, Po4 id 1)
DLS1(config-if-range)#exit
DLS1(config)#vtp domain UNAD
Changing VTP domain name from NULL to UNAD
DLS1(config)#vtp ver 3
% Invalid input detected at '^' marker.
DLS1(config)#vtp version 3
% Invalid input detected at '^' marker.
DLS1(config)#do show vtp status
DLS1#
VTP Version capable      : 1 to 2
VTP version running     : 2
VTP Domain Name         : UNAD
VTP Pruning Mode        : Disabled
VTP Traps Generation    : Disabled
Device ID                : 0010.11A7.8E30
Configuration last modified by 0.0.0.0 at 0-0-00 00:00:00
Local updater ID is 0.0.0.0 (no valid interface found)
-----
Feature VLAN :
-----
VTP Operating Mode      : Server
Maximum VLANs supported locally : 1005
Number of existing VLANs : 5
Configuration Revision  : 0
MD5 digest              : 0x0D 0xBF 0x4E 0xA8 0x82 0x50 0xA5 0x51
                        : 0x8B 0x62 0x73 0xF5 0x5D 0xEC 0x23 0x5B
DLS1(config)#
DLS1#
%SYS-5-CONFIG_I: Configured from console by console
```

Ilustración 37 VTP Configuración versión 3

Nota: No es posible habilitar la VTP versión 3 por que el switch solo tiene habilitada hasta la 2 por lo tanto se implementa en esta versión.

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


```
DLS1>enable
DLS1#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
DLS1(config)#vtp domain UNAD
Changing VTP domain name from NULL to UNAD
DLS1(config)#vtp password cisco321
Setting device VLAN database password to cisco321
DLS1(config)#end
DLS1#
%SYS-5-CONFIG_I: Configured from console by console
```

Ctrl+F6 to exit CLI focus

Top

Ilustración 38 Conf. Contraseña y dominio

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
```

```
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

Ilustración 39 VTP Configuración versión 3

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

```
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 40. Configuración del dominio VTP en ALS2

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
```

```
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

Ilustración 40 Configuración servidor principal

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
```

```
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

Ilustración 41 vtp mode en ADSL1

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
```

```
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

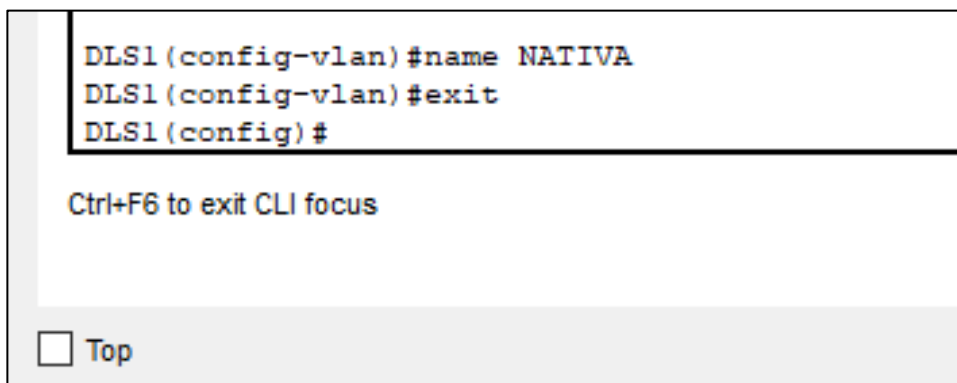
e. Configurar en el servidor principal las siguientes VLAN:

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

Tabla 3 Asignación Vlans

DLS1

```
DLS1#conf t
DLS1(config)#vlan 500
DLS1(config-vlan)#name NATIVA
DLS1(config-vlan)#exit
```



```
DLS1(config-vlan)#name NATIVA
DLS1(config-vlan)#exit
DLS1(config)#
```

Ctrl+F6 to exit CLI focus

Top

Ilustración 42 Creación Vlan Nativa

```
DLS1(config)#vlan 12
DLS1(config-vlan)#name ADMON
DLS1(config-vlan)#exit
```

```

DLS1(config)#vlan 12
DLS1(config-vlan)#name ADMON
DLS1(config-vlan)#exit
DLS1(config)#

```

Ctrl+F6 to exit CLI focus

Top

Ilustración 43 Creación Vlan Admon

```

DLS1(config)#vlan 234
DLS1(config-vlan)#name CLIENTES
DLS1(config-vlan)#exit
DLS1(config)#vlan 111(No se pueden usar vlan extendidas en este modo)
DLS1(config-vlan)#name MULTIMEDIA
DLS1(config-vlan)#exit
DLS1(config)#vlan 123
DLS1(config-vlan)#name SEGUROS
DLS1(config-vlan)#exit

```

```

%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 111
VLAN_CREATE_FAIL: Failed to create VLANs 1111 : extended VLAN(s) not allowed in current VTP mode
DLS1(config)#vlan 111
DLS1(config-vlan)#name MULTIMEDIA
DLS1(config-vlan)#exit
DLS1(config)#vlan 123
DLS1(config-vlan)#name SEGUROS
DLS1(config-vlan)#exit
DLS1(config)#

```

Ctrl+F6 to exit CLI focus

Top

Ilustración 44 Configuración de las Vlan

```

DLS1(config)#vlan 101( no se pueden utilizar vlan exten)
DLS1(config-vlan)#name VENTAS
DLS1(config-vlan)#exit
DLS1(config)#vlan 345( no se pueden utilizar vlan exten)
DLS1(config-vlan)#name PERSONAL
DLS1(config-vlan)#exit

```

```
DLS1(config)#vlan 1010
VLAN_CREATE_FAIL: Failed to create VLANs 1010 : extended VLAN(s) not allowed in current VTP mode
DLS1(config)#vlan 101
DLS1(config-vlan)#name VENTAS
DLS1(config-vlan)#exit
DLS1(config)#vlan 3456
VLAN_CREATE_FAIL: Failed to create VLANs 3456 : extended VLAN(s) not allowed in current VTP mode
DLS1(config)#vlan 345
DLS1(config-vlan)#name PERSONAL
DLS1(config-vlan)#exit
DLS1(config)#
```

Ctrl+F6 to exit CLI focus

Top

Ilustración 45 Configuración de las Vlans Ventas y Personal

f. En DLS1, suspender la VLAN 434.

DLS1

```
DLS1(config-vlan)#vlan 500
DLS1(config)#vlan 434
DLS1(config-vlan)# name PROVEEDORES
DLS1(config-vlan)# state suspend
DLS1(config-vlan)#exit
```

```
DLS1(config)#vlan 500
DLS1(config-vlan)#vlan 434
DLS1(config-vlan)#name PROVEEDORES
DLS1(config-vlan)#state suspend
^
% Invalid input detected at '^' marker.

DLS1(config-vlan)#suspend
^
% Invalid input detected at '^' marker.

DLS1(config-vlan)#exit
DLS1(config)#
```

Ctrl+F6 to exit CLI focus

Top

Ilustración 46 Suspensión Vlan Proveedores

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

DLS2

```
DLS2#conf t
DLS2(config)#vtp version 2
DLS2(config)# vtp mode transparent
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>enable
DLS2#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
DLS2(config)#vtp version 2
DLS2(config)#vtp mode transparent
Setting device to VTP TRANSPARENT mode.
DLS2(config)#vlan 500
DLS2(config-vlan)#
%LINK-5-CHANGED: Interface Vlan500, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan500, changed state to up

DLS2 (config-vlan)#name NATIVA
DLS2 (config-vlan)#exit
DLS2 (config)#vlan 12
DLS2 (config-vlan)#name ADMON
DLS2 (config-vlan)#exit
DLS2 (config)#

Ctrl+F6 to exit CLI focus
```

Top

Ilustración 47 Configurar DLS2 en modo VTP transparente

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

Ilustración 48 Configurar DLS2 en modo VTP transparente

```
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#
DLS2#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
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)#
Ctrl+F6 to exit CLI focus
```

Top

h. Suspend VLAN 434 en DLS2.

DLS2

```
DLS2(config-vlan)#vlan 500
DLS2(config-vlan)#vlan 434
DLS2(config-vlan)# name PROVEEDORES
DLS2(config-vlan)# state suspend
DLS2(config-vlan)#exit
```

```
DLS2(config)#vlan 500
DLS2(config-vlan)#vlan 434
DLS2(config-vlan)#name PROVEEDORES
DLS2(config-vlan)#state suspend
^
% Invalid input detected at '^' marker.
DLS2(config-vlan)#exit
DLS2(config)#
Ctrl+F6 to exit CLI focus
```

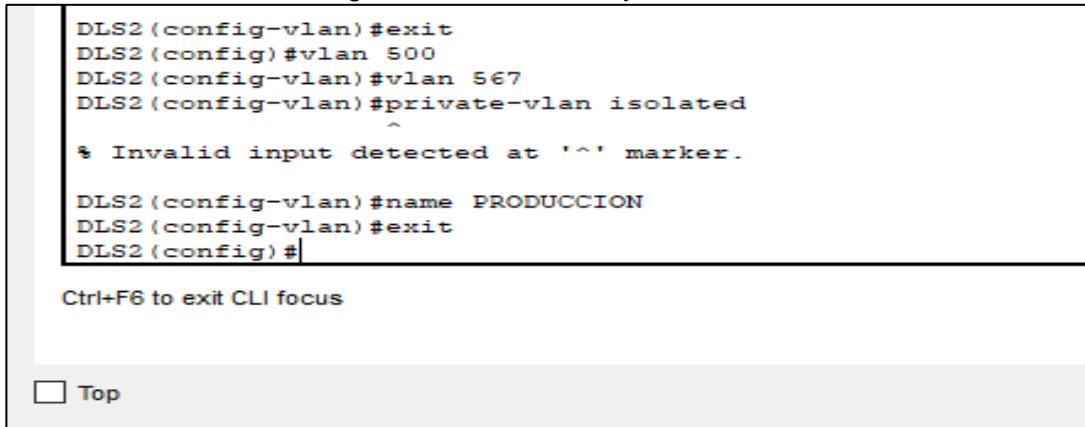
Top

Ilustración 49 Suspend VLAN 434 en DLS2.

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
```



```
DLS2 (config-vlan)#exit
DLS2 (config)#vlan 500
DLS2 (config-vlan)#vlan 567
DLS2 (config-vlan)#private-vlan isolated
^
% Invalid input detected at '^' marker.

DLS2 (config-vlan)#name PRODUCCION
DLS2 (config-vlan)#exit
DLS2 (config)#
```

Ctrl+F6 to exit CLI focus

Top

Ilustración 50 configuración private-vlan isolated

Nota: Esta función es solo ejecutable en versión 3

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

```
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

```
DLS1>enable
DLS1#configure terminal
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 123 root secondary
DLS1(config)#spanning-tree vlan 234 root secondary
DLS1(config)#
Ctrl+F6 to exit CLI focus
```

Top

Ilustración 51 Conf.DLS1 como Spanning tree root

k. Configurar DLS2 como Spanning tree root para las VLAN 123 y 234 y como una raíz secundaria para las VLAN 12, 434, 500, 101, 111 y 345.

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

```
DLS2>enable
DLS2#configure terminal
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)#
Ctrl+F6 to exit CLI focus
```

Top

Ilustración 52 DLS2 como Spanning tree root

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

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
```



```
DLS1
Physical Config CLI Attributes
IOS Command Line Interface
%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)
%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
%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
%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 Vlan500, 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 trunk native vlan 500
DLS1(config-if-range)#switchport mode trunk
DLS1(config-if-range)#
%EC-5-CANNOT_BUNDLE2: Fa0/7 is not compatible with Po2 and will be suspended (native vlan of Fa0/7 is 500, Po2 id 1)
%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)
%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)
%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)
%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)
%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)#exit
DLS1(config)#
Ctrl-F6 to exit CLI focus
Copy Paste
```

Ilustración 53 Configurar todos los puertos como troncales

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
```

```

IOS Command Line Interface
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/8, changed state to down
%EO-S-CANNOT_BUNDLE2: Fa0/8 is not compatible with Po2 and will be suspended (native vlan of Fa0/8 is 500, Po2 id 1)
%EO-S-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
%EO-S-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
%EO-S-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 Vlan500, changed state to down
%EO-S-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 trunk native vlan 500
DLS2 (config-if-range)#switchport mode trunk
DLS2 (config-if-range)#
%EO-S-CANNOT_BUNDLE2: Fa0/7 is not compatible with Po2 and will be suspended (native vlan of Fa0/7 is 500, Po2 id 1)
%EO-S-CANNOT_BUNDLE2: Fa0/8 is not compatible with Po2 and will be suspended (native vlan of Fa0/8 is 500, Po2 id 1)
%EO-S-CANNOT_BUNDLE2: Fa0/9 is not compatible with Po2 and will be suspended (native vlan of Fa0/9 is 500, Po2 id 1)
%EO-S-CANNOT_BUNDLE2: Fa0/10 is not compatible with Po2 and will be suspended (native vlan of Fa0/10 is 500, Po2 id 1)
%EO-S-CANNOT_BUNDLE2: Fa0/11 is not compatible with Po2 and will be suspended (native vlan of Fa0/11 is 500, Po2 id 1)
%EO-S-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)#exit
DLS2 (config)#
Ctrl+F6 to exit CLI focus
Copy Paste

```

Ilustración 54 Configurar todos los puertos como troncales

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

```

```

ALS1>enable
ALS1#conf term
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 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 FastEthernet0/8, changed state to down
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/8, changed state to up
ALS1 (config-if-range)#exit
ALS1 (config)#
Ctrl+F6 to exit CLI focus
Top

```

Ilustración 55 Conf.puertos como troncales

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
```

```
ALS2>enable
ALS2#configure terminal
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)#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
ALS2(config-if-range)#exit
ALS2(config)#
Ctrl+F6 to exit CLI focus
 Top
```

Ilustración 56 Cof.puertos como troncales

Nota: Esta función es solo ejecutable en versión 3

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

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

Tabla 4 Conf Interfaces como accesos

DLS1

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

```

```

DLS1>enable
DLS1#configure terminal
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 sh

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)#exit
DLS1(config)#interface fastethernet 0/15
DLS1(config-if)#switchport access vlan 111
DLS1(config-if)#no sh
DLS1(config-if)#end
DLS1#
%SYS-5-CONFIG_I: Configured from console by console

Ctrl+F6 to exit CLI focus

 Top

```

Ilustración 57 Conf Interfaces como accesos DLS1

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

```

```

DLS2>enable
DLS2#configure terminal
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 sh

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

```

Ctrl+F6 to exit CLI focus

Top

Ilustración 58 Conf Interfaces como accesos DLS2

```
DLS2#configure terminal
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 shut

%LINK-5-CHANGED: Interface FastEthernet0/15, changed state to down
DLS2(config-if)#end
DLS2#
%SYS-5-CONFIG_I: Configured from console by console

Ctrl+F6 to exit CLI focus

 Top
```

Ilustración 59 Conf Interfaces como accesos DLS2

```
DLS2#configure terminal
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
DLS2(config-if-range)#no shut

%LINK-5-CHANGED: Interface FastEthernet0/16, changed state to down
%LINK-5-CHANGED: Interface FastEthernet0/17, changed state to down
%LINK-5-CHANGED: Interface FastEthernet0/18, changed state to down
DLS2(config-if-range)#end
DLS2#
%SYS-5-CONFIG_I: Configured from console by console

Ctrl+F6 to exit CLI focus

 Top
```

Ilustración 60 Conf Interfaces como accesos DLS2

ALS1

ALS1>enable

ALS1#config terminal

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

```

```

ALS1>enable
ALS1#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
ALS1(config)#interface fastethernet 0/6
ALS1(config-if)#switchport access vlan 123
% Access VLAN does not exist. Creating vlan 123
ALS1(config-if)#switchport access vlan 101
% Access VLAN does not exist. Creating 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#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
ALS1(config)#interface fastethernet 0/15
ALS1(config-if)#switchport access vlan 111
% Access VLAN does not exist. Creating vlan 111
ALS1(config-if)#no shutdown

%LINK-5-CHANGED: Interface FastEthernet0/15, changed state to down
ALS1(config-if)#end
ALS1#
%SYS-5-CONFIG_I: Configured from console by console

Ctrl+F6 to exit CLI focus

 Top

```

Ilustración 61 Conf Interfaces como accesos ALS1

ALS2

```

ALS2>enable
ALS2#config terminal
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

```

```

ALS2>enable
ALS2#configure term
Enter configuration commands, one per line. End with CNTL/Z.
ALS2(config)#interface fastethernet 0/6
ALS2(config-if)#switchport access vlan 234
% Access VLAN does not exist. Creating vlan 234
ALS2(config-if)#no shut

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)#exit
ALS2(config)#interface fastethernet 0/15
ALS2(config-if)#switchport access vlan 111
% Access VLAN does not exist. Creating vlan 111
ALS2(config-if)#no shut

%LINK-5-CHANGED: Interface FastEthernet0/15, changed state to down
ALS2(config-if)#end
ALS2#
%SYS-5-CONFIG_I: Configured from console by console

Ctrl+F6 to exit CLI focus

```

Ilustración 62 Conf Interfaces como accesos ALS2

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# show vlan

```

DLS1>enable
DLS1#show vlan

VLAN Name                Status    Ports
-----
1    default                 active    Po8, Fa0/1, Fa0/2, Fa0/3
                                           Fa0/4, Fa0/5, Fa0/7, Fa0/8
                                           Fa0/9, Fa0/10, Fa0/11, Fa0/12
                                           Fa0/13, Fa0/14, Fa0/16, Fa0/17
                                           Fa0/18, Fa0/19, Fa0/20, Fa0/21
                                           Fa0/22, Fa0/23, Fa0/24, Giga0/1
                                           Giga0/2

12   ALMON                   active
101  VENTAS                  active
111  MULTIMEDIA              active    Fa0/15
123  SEGUROS                  active
234  CLIENTES                 active
345  PERSONAL                 active    Fa0/6
434  PROVEEDORES             active
800  NATIVA                   active
1002 fddi-default             active
1003 token-ring-default    active
1004 fddinet-default        active
1005 trnet-default         active
--More--

Ctrl+F6 to exit CLI focus

```

Ilustración 63 comando show vlan

DLS1# show ip interface brief

```
DLS1#
DLS1#
DLS1#
DLS1#
DLS1#
DLS1#
DLS1#show ip interface brief
Interface      IP-Address      OK? Method Status              Protocol
Port-channel2  unassigned      YES unset  down                down
FastEthernet0/1  unassigned      YES unset  down                down
FastEthernet0/2  unassigned      YES unset  down                down
FastEthernet0/3  unassigned      YES unset  down                down
FastEthernet0/4  unassigned      YES unset  down                down
FastEthernet0/5  unassigned      YES unset  down                down
FastEthernet0/6  unassigned      YES unset  up                  up
FastEthernet0/7  unassigned      YES unset  up                  down
FastEthernet0/8  unassigned      YES unset  up                  down
FastEthernet0/9  unassigned      YES unset  up                  down
FastEthernet0/10 unassigned      YES unset  up                  down
FastEthernet0/11 unassigned      YES unset  up                  down
FastEthernet0/12 unassigned      YES unset  up                  down
FastEthernet0/13 unassigned      YES unset  down                down
FastEthernet0/14 unassigned      YES unset  down                down
FastEthernet0/15 unassigned      YES unset  down                down
FastEthernet0/16 unassigned      YES unset  down                down
FastEthernet0/17 unassigned      YES unset  down                down
FastEthernet0/18 unassigned      YES unset  down                down
FastEthernet0/19 unassigned      YES unset  down                down
FastEthernet0/20 unassigned      YES unset  down                down
FastEthernet0/21 unassigned      YES unset  down                down
FastEthernet0/22 unassigned      YES unset  down                down
FastEthernet0/23 unassigned      YES unset  down                down
FastEthernet0/24 unassigned      YES unset  down                down
GigabitEthernet0/1 unassigned      YES unset  down                down
GigabitEthernet0/2 unassigned      YES unset  down                down
Vlan1          unassigned      YES unset  administratively down down
Vlan500        10.12.12.1     YES manual up                  down
DLS1#
DLS1#
```

Ctrl+F6 to exit CLI focus

Top

Ilustración 64 Verificación de la existencia de las VLAN

DLS1# show vtp status

```
DLS1#
DLS1#show vtp status
VTP Version capable      : 1 to 2
VTP version running     : 2
VTP Domain Name         : UNAD
VTP Pruning Mode        : Disabled
VTP Traps Generation    : Disabled
Device ID                : 0060.7071.4CE0
Configuration last modified by 10.12.12.1 at 3-2-93 03:22:53
Local updater ID is 0.0.0.0 (no valid interface found)

Feature VLAN :
-----
VTP Operating Mode      : Server
Maximum VLANs supported locally : 1005
Number of existing VLANs : 13
Configuration Revision  : 17
MDS digest              : 0x36 0xE0 0x20 0xDC 0x7A 0xBA 0xE7 0x07
                       : 0x74 0xDE 0x9F 0x48 0x3C 0x63 0xD9 0xD9
DLS1#
```

Ctrl+F6 to exit CLI focus

Top

Ilustración 65 Verificación VTP

b. Verificar que el EtherChannel entre DLS1 y ALS1 está configurado correctamente.

DLS1

DLS1#show etherchannel summary

```
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#
```

Ilustración 66 Verificación Canales DLS1

ALS1

ALS1#show etherchannel summary

```
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#
```

Ilustración 67 Verificación Canales ALS1

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

DLS1# show spanning-tree

```
DLS1#
DLS1#show spanning-tree
VLAN0345
  Spanning tree enabled protocol ieee
  Root ID    Priority    33113
            Address    0090.2B48.388C
            This bridge is the root
            Hello Time 2 sec  Max Age 20 sec  Forward Delay 15 sec

  Bridge ID  Priority    33113 (priority 32768 sys-id-ext 345)
            Address    0090.2B48.388C
            Hello Time 2 sec  Max Age 20 sec  Forward Delay 15 sec
            Aging Time 20

Interface          Role Sts Cost      Prio.Nbr Type
-----
Fa0/6              Desg FWD 19        128.6   P2p

DLS1#

Ctrl+F6 to exit CLI focus

 Top
```

Ilustración 68 spanning-tree DLS1

DLS2# show spanning-tree

```
DLS2>enable
DLS2#show spanning-tree
VLAN0101
  Spanning tree enabled protocol ieee
  Root ID    Priority    28773
            Address    0001.C7D7.CC24
            This bridge is the root
            Hello Time 2 sec  Max Age 20 sec  Forward Delay 15 sec

  Bridge ID  Priority    28773 (priority 28672 sys-id-ext 101)
            Address    0001.C7D7.CC24
            Hello Time 2 sec  Max Age 20 sec  Forward Delay 15 sec
            Aging Time 20

Interface          Role Sts Cost      Prio.Nbr Type
-----
Fa0/6              Desg FWD 19        128.6   P2p

DLS2#

Ctrl+F6 to exit CLI focus

 Top
```

Ilustración 69 spanning-tree DLS2

CONCLUSIONES

Pudimos llevar a cabo en el caso del escenario número dos, la configuración del protocolo PAGP, verificando su funcionamiento en los modos disarable-disarable, auto-disarable, sin embargo dado a que generalmente se aplican en Versión 3 y nuestros switches manejan la versión 2 se genera error al configurar ambos switch en modo auto, en cuanto LACP es funcional activo-activo, activo-pasivo, pero al configurarse ambos switch de forma pasiva se genera igualmente error.

Una de las experiencias más gratificantes de este ejercicio fue la posibilidad de implementar VLANs en un entorno similar a la realidad sabiendo que es un recurso de gran utilidad ya que las VLAN (Red de área local virtual) son redes crea independientes, las cuales no son físicas es decir no requieren un cambio mayor de infraestructura y aumento de costos sino por el contrario ,se efectúan mediante configuración del dispositivo, permitiendo disminuir el tamaño del dominio de difusión y mejorando la administración de la red, al permitir enviar información o actualizaciones a un segmento en particular y siendo escalables al futuro.

En el desarrollo de los dos escenarios los cuales involucran conocimientos sobre protocolos de enrutamiento, manejo de subredes y implementación de medidas de seguridad de redes abarcando al igual otras tantas habilidades recopiladas a través de los cursos de la arquitectura de CISCO se logró una mejor comprensión de estos conocimientos y una mejor apropiación de los mismos.

Como ultima conclusión creo que es necesario que se verifique la aplicación de los escenarios y ejercicios del diplomado, ya que al realizar su implementación en simuladores como GNS3 o CISCO Packet Tracer se generan muchos errores con ciertos comandos o presentan problemas por compatibilidad de los componentes causando demora y algunas veces crash de los sistemas, por lo tanto seria recomendable generar escenarios y ejercicios los cuales sean aplicables a cualquier entorno de desarrollo recordando el carácter virtual de este tipo de educación.

BIBLIOGRAFÍA

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

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

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

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

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

Teare, D., Vachon B., Graziani, R. (2015). CISCO Press (Ed). Implementing a Border Gateway Protocol (BGP). Implementing Cisco IP Routing (ROUTE) Foundation Learning Guide CCNP ROUTE 300-101. Recuperado de <https://1drv.ms/b/s!AmIJYei-NT1InMfy2rhPZHwEoWx>