

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

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UNIVERSIDAD NACIONAL ABIERTA Y A DISTANCIA
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DIPLOMADO DE OPCIÓN DE GRADO PRESENTADO PARA OPTAR EL TITULO
DE INGENIERO EN TELECOMUNICACIONES

Director
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NOTA DE ACEPTACIÓN

Firma del presidente del Jurado

Firma del Jurado

Firma del Jurado

CALI, 30 de Julio de 2021

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Quiero agradecer a Dios, por guiarme en este largo camino y lograr alcanzar este sueño tan anhelado.

Agradezco infinitamente a mi familia, que siempre me brindaron la confianza y apoyo incondicional; A todos mis amigos, vecinos y futuros colegas que me ayudaron de una manera desinteresada, gracias infinitas por toda su ayuda y buena voluntad.

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GLOSARIO

BGP: Es un protocolo mediante el cual se intercambia información de encaminamiento entre sistemas autónomos. Por ejemplo, los proveedores de servicio registrados en Internet suelen componerse de varios sistemas autónomos y para este caso es necesario un protocolo como BGP.

EIGRP: Es un protocolo de encaminamiento de vector distancia, propiedad de Cisco Systems, que ofrece lo mejor de los algoritmos de vector de distancia. Se considera un protocolo avanzado que se basa en las características normalmente asociadas con los protocolos del estado de enlace. Algunas de las mejores funciones de OSPF, como las actualizaciones parciales y la detección de vecinos, se usan de forma similar con EIGRP. Aunque no garantiza el uso de la mejor ruta, es bastante usado porque EIGRP es algo más fácil de configurar que OSPF. EIGRP mejora las propiedades de convergencia y opera con mayor eficiencia que IGRP.

LACP: forma parte de una especificación IEEE (802.3ad) que permite agrupar varios puertos físicos para formar un único canal lógico

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

OSPF: es un protocolo de red para encaminamiento jerárquico de pasarela interior o Interior Gateway Protocol para calcular la ruta más corta entre dos nodos. Su medida de métrica se denomina cost, y tiene en cuenta diversos parámetros tales como el ancho de banda y la congestión de los enlaces. OSPF mantiene actualizada la capacidad de encaminamiento entre los nodos de una red mediante la difusión de la topología de la red y la información de estado-enlace de sus distintos nodos.

Protocolos de red: Conjunto de normas standard que especifican el método para enviar y recibir datos entre varios ordenadores. Es una convención que controla o permite la conexión, comunicación, y transferencia de datos entre dos puntos finales.

Router: Un router es un dispositivo que ofrece una conexión WiFi, que normalmente está conectado a un módem y que envía información de Internet a tus dispositivos personales, como ordenadores, teléfonos o tablets. Los dispositivos que están conectados a Internet en tu casa conforman tu red de área local (LAN).

RESUMEN

En este trabajo se encuentran dos ejercicios donde se analizan y se aplican soluciones con base en los conocimientos adquiridos en el diplomado de cisco CCNP, en los cuales se explica el paso a paso y configuración que se aplicó a cada dispositivo con el objetivo de configurar cada escenario según lo solicitado en cada punto, Con el desarrollo de estos ejercicios también se demuestra a nivel general el manejo de las herramientas trabajadas en el curso como lo son PACKET TRACER y GNS3 que incluye la configuración para resolver los distintos escenarios propuestos gracias a la implementación de protocolos como ODPF, EIGRP y la configuración de LACP que nos permite manejar una alta disponibilidad en los enlaces, Por último, aprendimos nueva terminología correspondiente al área de telecomunicaciones.

PALABRAS CLAVE: CISCO, CCNP, Conmutación, Enrutamiento, Redes, Electronica

ABSTRACT

In this work there are two exercises where solutions are analyzed and applied based on the knowledge acquired in the Cisco CCNP diploma, in which the step-by-step and configuration that was applied to each device is explained to configure each scenario as requested at each point. With the development of these exercises, the management of the tools worked in the course is also demonstrated at a general level, such as PACKET TRACER and GNS3, which includes the configuration to solve the different proposed scenarios thanks to the implementation of protocols such as ODPF, EIGRP and the LACP configuration that allows us to handle high availability in the links. Finally, we learned new terminology corresponding to the telecommunications area.

KEYWORDS: CISCO, CCNP, Routing, Switching, Networking, Electronics.

INTRODUCCIÓN

Este trabajo se realiza con el fin de colocar en prácticas todos los conocimientos adquiridos en la implementación del Diplomado de Profundización CCNP, CISCO la cual busca identificar el grado de desarrollo de competencias y habilidades y destrezas que fueron adquiridas a lo largo del diplomado de profundización y poner a prueba los niveles de comprensión y solución de problemas relacionados con diversos aspectos de redes. Se requiere que los estudiantes para el desarrollo de las actividades planteadas apliquen los contenidos de las temáticas abordadas a lo largo del curso.

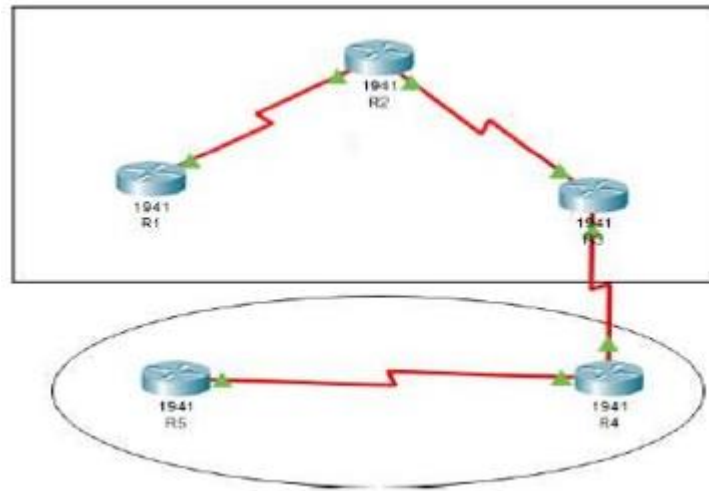
El primer escenario CCNP ROUTE se relaciona los principios básicos de la red y los protocolos de enrutamiento IP versión 4 (IPv4) e IP versión 6 (IPv6), el Protocolo de enrutamiento de gateway interior mejorado (EIGRP), el protocolo Primer camino más corto (OSPF) y el protocolo de puesta de enlace de frontera (BGP). Se realiza un estudio de la conectividad empresarial hacia Internet y se hace un análisis e interpretación de la administración de las diferentes actualizaciones de enrutamiento y las rutas que toma el tráfico en la red.

El segundo escenario CCNP SWITCH, se realiza un análisis profundo de la implementación, monitoreo y administración en la arquitectura de red empresarial, también se hace la implementación de VLANs en redes corporativas, se configuran Switches de 2 y 3 capas y se implementan las características de seguridad en redes LAN y WAN

Para esta actividad, el estudiante realizar las tareas asignadas en cada uno de los dos escenarios asignados, acompañado de los respectivos procesos de documentación de la solución, correspondientes al registro de la configuración de cada uno de los dispositivos, la descripción detallada del paso a paso de cada una de las etapas realizadas durante su desarrollo, el registro de los procesos de verificación de conectividad.

ESCENARIO 1

1 Figura escenario 1



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

R1

```
Router>enable Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z. Router
(config)#hostname R1
R1(config)#interface serial 0/0/0
R1(config-if)#ip address 150.20.15.1 255.255.255.0
R1(config-if)#clock rate 64000 R1(config-if)#no shutdown
R1(config)#router ospf 1
R1(config-router)#network 150.20.15.0 0.0.0.255 area 51
```

R2

```
Router>enable Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z. Router (config)
#hostname R2
R2 (config)#interface serial 0/0/0
R2 (config-if) #ip address 150.20.15.2 255.255.255.0
R2 (config-if)#exit
R2 (config)#interface serial 0/0/1
R2 (config-if)#ip address 150.20.20.1 255.255.255.0
R2 (config-if)#clock rate 64000 R2(config-if)#no shutdown
%LINK-5-CHANGED: Interface Serial0/0/1, changed state to down
R2(config)#router ospf 1
R2(config-router)#network 150.20.15.0 0.0.0.255 area 51
R2(config-router)#network 150.20.20.0 0.0.0.255 area 51
```

R3

```
Router>enable
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#hostname R3
R3(config)#interface serial 0/0/0
R3(config-if)#ip address 150.20.20.2 255.255.255.0
R3(config-if)#no shutdown
R3(config-if)#exit R3(config)#interface serial 0/0/1
R3(config-if)#ip address 80.50.42.1 255.255.255.0
R3(config-if)#clock rate 64000 R3(config-if)#no shutdown
%LINK-5-CHANGED: Interface Serial0/0/1, changed state to down
R3(config)#router ospf 1
R3(config-router)#network 150.20.20.0 0.0.0.255 area 51
R3(config-router)#exit
R3(config)#router eigrp 51
R3(config-router)#network 80.50.42.0 0.0.0.255
```

R4

```
Router>enable R4#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
R4(config)#interface serial 0/0/0
```

```
R4(config-if)#ip address 80.50.42.2 255.255.255.0
R4(config-if)#no shutdown
R4(config-if)#
%LINK-5-CHANGED: Interface Serial0/0/0, changed state to up Router(config-
if)#exit
R4(config)#interface serial 0/0/1
R4(config-if)#ip address 80.50.30.1 255.255.255.0
R4(config-if)#clock rate 64000 R4(config-if)#no shutdown
%LINK-5-CHANGED: Interface Serial0/0/1, changed state to down
R4(config-if)#exit
R4(config)#router eigrp 51
R4(config-router)#network 80.50.42.0 0.0.0.255
R4(config-router)#network 80.50.30.0 0.0.0.255
```

R5

```
Router>enable Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#hostname R5
R5(config)#interface serial 0/0/0
R5(config-if)#ip address 80.50.30.2 255.255.255.0
R5(config-if)#no shutdown
%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 51

R4(config-router)#network 80.50.30.0 0.0.0.255
```

1) Cree cuatro nuevas interfaces de Loopback en R1 utilizando la asignación de direcciones 20.1.0.0/22 y configure esas interfaces para participar en el área 5 de OSPF.

```
R1(config)#interface loopback0
R1(config-if)#ip address 20.1.0.1 255.255.252.0
R1(config-if)#exit
R1(config)#interface loopback1
R1(config-if)#ip address 20.1.30.10 255.255.252.0
```

```
R1(config-if)#exit.  
R1(config)#interface loopback 2  
R1(config-if)#ip address 20.1.40.2 255.255.252.0  
R1(config-if)#exit  
R1(config)#interface loopback 3  
R1(config-if)#ip address 20.1.50.1 255.255.252.0  
R1(config-if)#exit  
R1(config)#router ospf 1  
R1(config-router)#network 20.1.0.0 0.0.0.255 area 51  
R1(config-router)#network 20.1.30.0 0.0.0.255 area 51  
R1(config-router)#network 20.1.40.0 0.0.0.255 area 51  
R1(config-router)#network 20.1.50.0 0.0.0.255 area 51
```

2) Cree cuatro nuevas interfaces de Loopback en R5 utilizando la asignación de direcciones 180.5.0.0/22 y configure esas interfaces para participar en el Sistema Autónomo EIGRP 51.

```
R5(config)#interface loopback0  
R5(config-if)#ip address 180.5.0.1 255.255.252.0  
R5(config-if)#exit  
R5(config)#interface loopback 1  
R5(config-if)#ip address 180.5.10.1 255.255.252.0  
R5(config-if)#exit  
R5(config)#interface loopback 2  
R5(config-if)#ip address 180.5.20.1 255.255.252.0  
R5(config-if)#exit  
R5(config)#interface loopback 3  
R5(config-if)#ip address 180.5.30.2 255.255.252.0  
R5(config-if)#exit  
R5(config)#router eigrp 51  
R5(config-router)#network 180.5.0.0 0.0.0.255  
R5(config-router)#network 180.5.10.0 0.0.0.255  
R5(config-router)#network 180.5.20.0 0.0.0.255  
R5(config-router)#network 180.5.30.0 0.0.0.255  
R3(config)#exit
```

3) Analice la tabla de enrutamiento de R3 y verifique que R3 está aprendiendo las nuevas interfaces de Loopback mediante el comando show ip router

2 Figura show ip router

```

20.0.0.0/32 is subnetted, 4 subnets
O   20.1.0.1/32 [110/129] via 150.20.20.1, 00:26:34, Serial0/0/0
O   20.1.30.10/32 [110/129] via 150.20.20.1, 00:26:34, Serial0/0/0
O   20.1.40.2/32 [110/129] via 150.20.20.1, 00:26:34, Serial0/0/0
O   20.1.50.1/32 [110/129] via 150.20.20.1, 00:26:34, Serial0/0/0
80.0.0.0/8 is variably subnetted, 3 subnets, 2 masks
D   80.50.30.0/24 [90/2681856] via 80.50.42.2, 00:07:54, Serial0/0/1
C   80.50.42.0/24 is directly connected, Serial0/0/1
L   80.50.42.1/32 is directly connected, Serial0/0/1
150.20.0.0/16 is variably subnetted, 3 subnets, 2 masks
O   150.20.15.0/24 [110/129] via 150.20.20.1, 00:26:34, Serial0/0/0
C   150.20.20.0/24 is directly connected, Serial0/0/0
L   150.20.20.2/32 is directly connected, Serial0/0/0
190.5.0.0/22 is subnetted, 1 subnets
D   190.5.0.0/22 [90/2809856] via 80.50.42.2, 00:01:54, Serial0/0/1
R3>

```

Se puede observar que R3 ya reconoce la configuración Loopback configurada.

4) Configure R3 para redistribuir las rutas EIGRP en OSPF usando el costo de 80000 y luego redistribuya las rutas OSPF en EIGRP usando un ancho de banda T1 y 50,000 microsegundos de retardo.

Se realiza la configuración en R3 con los siguientes comandos

R3

```

R3(config)#router ospf 1
R3(config-router)#redistribute eigrp 51 metric 80000 subnets
R3(config)#exit
R3(config)#router eigrp 51
R3(config-router)#redistribute ospf 1 metric 1544 50000 255 1 1500

```

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

Se realiza la validación en R1 y R5 mediante el comando show ip router y se verifica que estos router contienen en su tabla de enrutamiento las interfaces configuradas.

```
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

20.0.0.0/8 is variably subnetted, 8 subnets, 2 masks
C   20.1.0.0/22 is directly connected, Loopback0
L   20.1.0.1/32 is directly connected, Loopback0
C   20.1.28.0/22 is directly connected, Loopback1
L   20.1.30.10/32 is directly connected, Loopback1
C   20.1.40.0/22 is directly connected, Loopback2
L   20.1.40.2/32 is directly connected, Loopback2
C   20.1.48.0/22 is directly connected, Loopback3
L   20.1.50.1/32 is directly connected, Loopback3
O   80.0.0/24 is subnetted, 2 subnets
O   80.50.30.0/24 [110/256] via 150.20.15.2, 00:47:48, Serial0/0/0
O   80.50.42.0/24 [110/192] via 150.20.15.2, 00:47:48, Serial0/0/0
O   150.20.0.0/16 is variably subnetted, 3 subnets, 2 masks
C   150.20.15.0/24 is directly connected, Serial0/0/0
L   150.20.15.1/32 is directly connected, Serial0/0/0
O   150.20.20.0/24 [110/128] via 150.20.15.2, 00:47:48, Serial0/0/0
O   180.5.0.0/22 is subnetted, 1 subnets
O E2 180.5.0.0/22 [110/30000] via 150.20.15.2, 00:04:45, Serial0/0/0

R1>
```

3 Figura Show ip route

4 Figura Show ip route

```
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

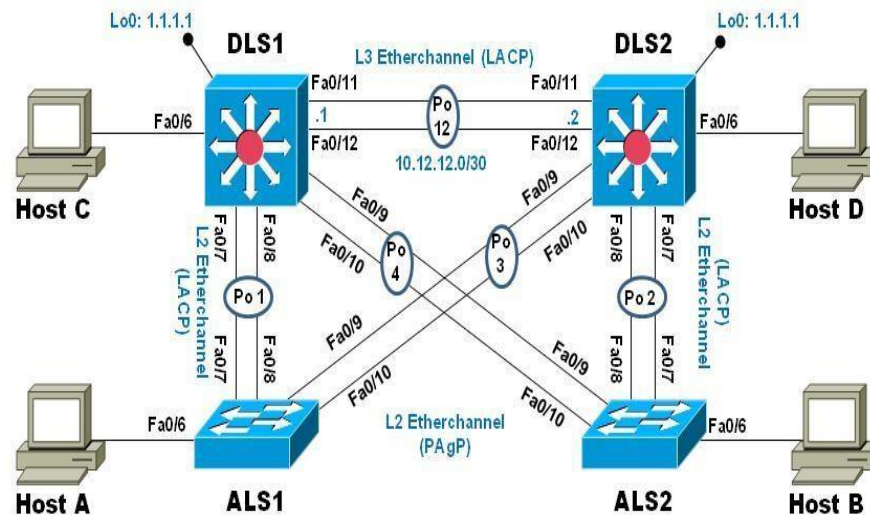
20.0.0.0/8 is subnetted, 4 subnets
O   20.1.0.1/32 [110/257] via 80.50.30.1, 00:48:18, Serial0/0/0
O   20.1.30.10/32 [110/257] via 80.50.30.1, 00:48:18, Serial0/0/0
O   20.1.40.2/32 [110/257] via 80.50.30.1, 00:48:18, Serial0/0/0
O   20.1.50.1/32 [110/257] via 80.50.30.1, 00:48:18, Serial0/0/0
O   80.0.0/8 is variably subnetted, 3 subnets, 2 masks
C   80.50.30.0/24 is directly connected, Serial0/0/0
L   80.50.30.2/32 is directly connected, Serial0/0/0
D   80.50.42.0/24 [90/2691856] via 80.50.30.1, 00:26:47, Serial0/0/0
O   150.20.0.0/24 is subnetted, 2 subnets
O   150.20.15.0/24 [110/256] via 80.50.30.1, 00:48:18, Serial0/0/0
O   150.20.20.0/24 [110/192] via 80.50.30.1, 00:48:18, Serial0/0/0
O   180.5.0.0/16 is variably subnetted, 9 subnets, 2 masks
C   180.5.0.0/22 is directly connected, Loopback0
L   180.5.0.1/32 is directly connected, Loopback0
C   180.5.8.0/22 is directly connected, Loopback1
L   180.5.10.1/32 is directly connected, Loopback1
C   180.5.20.0/22 is directly connected, Loopback2
L   180.5.20.1/32 is directly connected, Loopback2
C   180.5.28.0/22 is directly connected, Loopback3
L   180.5.30.2/32 is directly connected, Loopback3

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, EtherChannel, VLANs y demás aspectos que forman parte del escenario propuesto.

5 Figura Escenario 2



Topología de red

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

- a. Apagar todas las interfaces en cada switch.

```
Switch>enable
```

```
Switch#configure terminal
```

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

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

```
DLS1(config)#interface range e0/0-3
```

```
DLS1(config-if-range)#shutdown
DLS1(config-if-range)#interface range e1/0-3
DLS1(config-if-range)#shutdown
DLS1(config-if-range)#interface range e1/0-3
DLS1(config-if-range)#shutdown
DLS1(config-if-range)#interface range e2/0-3
DLS1(config-if-range)#shutdown
DLS1(config-if-range)#interface range e2/0-3
DLS1(config-if-range)#shutdown
DLS1(config-if-range)#interface range e3/0-3
DLS1(config-if-range)#shutdown
```

```
Switch>enable
```

```
Switch#conf ter
```

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

```
Switch(config)#hostname DSL2
```

```
DSL2(config)#Interface range e0/0-3
```

```
DSL2(config-if-range)#Shutdown
```

```
DSL2(config-if-range)#Interface range e1/0-3
```

```
DSL2(config-if-range)#Shutdown
```

```
DSL2(config-if-range)#Interface range e2/0-3
```

```
DSL2(config-if-range)#Shutdown
```

```
DSL2(config-if-range)#Interface range e3/0-3
```

```
DSL2(config-if-range)#Shutdown
```

```
DSL2(config-if-range)#
```

```
Switch>ena
Switch#conf ter
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#hostname ASL1
ASL1(config)#Interface range e0/0-3
ASL1(config-if-range)#Shutdown
ASL1(config-if-range)#Interface range e1/0-3
ASL1(config-if-range)#Shutdown
ASL1(config-if-range)#Interface range e2/0-3
ASL1(config-if-range)#Shutdown
ASL1(config-if-range)#Interface range e3/0-3
ASL1(config-if-range)#Shutdown
```

```
Switch>ena
Switch#conf ter
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#hostname ASL2
ASL2(config)#Interface range e0/0-3
ASL2(config-if-range)#Shutdown
ASL2(config-if-range)#Interface range e1/0-3
ASL2(config-if-range)#Shutdown
ASL2(config-if-range)#Interface range e2/0-3
ASL2(config-if-range)#Shutdown
ASL2(config-if-range)#Interface range e3/0-3
ASL2(config-if-range)#Shutdown
```

6 Figura Show ip interface brief

```
DLS1#show ip inter bri
Interface          IP-Address      OK? Method Status          Protocol
Ethernet0/0        unassigned      YES unset    administratively down down
Ethernet0/1        unassigned      YES unset    administratively down down
Ethernet0/2        unassigned      YES unset    administratively down down
Ethernet0/3        unassigned      YES unset    administratively down down
Ethernet1/0        unassigned      YES unset    administratively down down
Ethernet1/1        unassigned      YES unset    administratively down down
Ethernet1/2        unassigned      YES unset    administratively down down
Ethernet1/3        unassigned      YES unset    administratively down down
Ethernet2/0        unassigned      YES unset    administratively down down
Ethernet2/1        unassigned      YES unset    administratively down down
Ethernet2/2        unassigned      YES unset    administratively down down
Ethernet2/3        unassigned      YES unset    administratively down down
Ethernet3/0        unassigned      YES unset    administratively down down
Ethernet3/1        unassigned      YES unset    administratively down down
Ethernet3/2        unassigned      YES unset    administratively down down
Ethernet3/3        unassigned      YES unset    administratively down down
DLS1#
```

7 Figura Show ip interface brief

```
DSL2#sho ip inter brief
Interface          IP-Address      OK? Method Status          Protocol
Ethernet0/0        unassigned      YES unset    administratively down down
Ethernet0/1        unassigned      YES unset    administratively down down
Ethernet0/2        unassigned      YES unset    administratively down down
Ethernet0/3        unassigned      YES unset    administratively down down
Ethernet1/0        unassigned      YES unset    administratively down down
Ethernet1/1        unassigned      YES unset    administratively down down
Ethernet1/2        unassigned      YES unset    administratively down down
Ethernet1/3        unassigned      YES unset    administratively down down
Ethernet2/0        unassigned      YES unset    administratively down down
Ethernet2/1        unassigned      YES unset    administratively down down
Ethernet2/2        unassigned      YES unset    administratively down down
Ethernet2/3        unassigned      YES unset    administratively down down
Ethernet3/0        unassigned      YES unset    administratively down down
Ethernet3/1        unassigned      YES unset    administratively down down
Ethernet3/2        unassigned      YES unset    administratively down down
Ethernet3/3        unassigned      YES unset    administratively down down
DSL2#
```

8 Figura Show ip interface brief

```
ASL1#sho ip inter bri
Interface          IP-Address      OK? Method Status          Protocol
Ethernet0/0        unassigned      YES unset  administratively down  down
Ethernet0/1        unassigned      YES unset  administratively down  down
Ethernet0/2        unassigned      YES unset  administratively down  down
Ethernet0/3        unassigned      YES unset  administratively down  down
Ethernet1/0        unassigned      YES unset  administratively down  down
Ethernet1/1        unassigned      YES unset  administratively down  down
Ethernet1/2        unassigned      YES unset  administratively down  down
Ethernet1/3        unassigned      YES unset  administratively down  down
Ethernet2/0        unassigned      YES unset  administratively down  down
Ethernet2/1        unassigned      YES unset  administratively down  down
Ethernet2/2        unassigned      YES unset  administratively down  down
Ethernet2/3        unassigned      YES unset  administratively down  down
Ethernet3/0        unassigned      YES unset  administratively down  down
Ethernet3/1        unassigned      YES unset  administratively down  down
Ethernet3/2        unassigned      YES unset  administratively down  down
Ethernet3/3        unassigned      YES unset  administratively down  down
ASL1#
```

9 Figura Show ip interface brief

```
ASL2#sho ip inter bri
Interface          IP-Address      OK? Method Status          Protocol
Ethernet0/0        unassigned      YES unset  administratively down  down
Ethernet0/1        unassigned      YES unset  administratively down  down
Ethernet0/2        unassigned      YES unset  administratively down  down
Ethernet0/3        unassigned      YES unset  administratively down  down
Ethernet1/0        unassigned      YES unset  administratively down  down
Ethernet1/1        unassigned      YES unset  administratively down  down
Ethernet1/2        unassigned      YES unset  administratively down  down
Ethernet1/3        unassigned      YES unset  administratively down  down
Ethernet2/0        unassigned      YES unset  administratively down  down
Ethernet2/1        unassigned      YES unset  administratively down  down
Ethernet2/2        unassigned      YES unset  administratively down  down
Ethernet2/3        unassigned      YES unset  administratively down  down
Ethernet3/0        unassigned      YES unset  administratively down  down
Ethernet3/1        unassigned      YES unset  administratively down  down
Ethernet3/2        unassigned      YES unset  administratively down  down
Ethernet3/3        unassigned      YES unset  administratively down  down
ASL2#
```

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

```
Switch>ena
```

```
Switch#conf ter
```

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

```
Switch(config)#hostname ASL2
```

```
Switch>ena
```

```
Switch#conf ter
```

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

```
Switch(config)#hostname ASL1
```

```
Switch>enable
```

```
Switch#conf ter
```

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

```
Switch(config)#hostname DSL2
```

```
Switch>enable
```

```
Switch#configure terminal
```

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

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

c. Configurar los puertos troncales y Port-channels tal como se muestra en el diagrama.

2) La conexión entre DLS1 y DLS2 será un EtherChannel capa-3 utilizando LACP. Para DLS1 se utilizará la dirección IP 10.20.20.1/30 y para DLS2 utilizará 10.20.20.2/30.

```
DLS1 (config)#interface ethernet 0/2
```

```
DLS1(config-if)#no switchport
```

```
DLS1(config-if)#no ip address
```

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

```
DLS1 (config-if) #channel-group 12 mode active
```

```
Creating a port-channel interface Port-channel 12
```

DLS1(config-if)#

*Jul 27 21:15:28.694: %LINEPROTO-5-UPDOWN: Line protocol on Interface Ethernet0/2, changed state to down

DLS1(config-if)#interface eth 0/3

DLS1(config-if)#no switchport

DLS1(config-if)#no ip address

DLS1(config-if)#duplex full

DLS1(config-if)#cha

DLS1(config-if)#channel-g

DLS1(config-if)#channel-group 12 mo

DLS1(config-if)#channel-group 12 mode ac

DLS1(config-if)#channel-group 12 mode active

DLS1(config-if)#

*Jul 27 21:16:03.582: %LINEPROTO-5-UPDOWN: Line protocol on Interface Ethernet0/3, changed state to down

DLS1(config-if)#exit

DLS1(config)#

DLS1(config)#inter

DLS1(config)#interface por

DLS1(config)#interface port-ch

DLS1(config)#interface port-channel 12

DLS1(config-if)#no switchport

DLS1(config-if)#ip address 10.20.20.1 255.255.255.252

DLS1(config-if)#exit

DSL2#con f ter

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

DSL2(config)#interface ethernet 0/2

```
DSL2(config-if)#no switchport
DSL2(config-if)#no ip address
DSL2(config-if)#duplex full
DSL2(config-if)#channel-group 12 mode active
Creating a port-channel interface Port-channel 12
```

```
DSL2(config-if)#
*Jul 27 21:24:35.875: %LINEPROTO-5-UPDOWN: Line protocol on Interface
Ethernet0/2, changed state to down
DSL2(config-if)#exit
DSL2(config)#interface ethernet 0/3
DSL2(config-if)#no switchport
DSL2(config-if)#no ip address
DSL2(config-if)#duplex full
DSL2(config-if)#channel-group 12 mode active
DSL2(config-if)#
*Jul 27 21:27:42.164: %LINEPROTO-5-UPDOWN: Line protocol on Interface
Ethernet0/3, changed state to down
DSL2(config-if)#exit
DSL2(config)#interface port-channel 12
DSL2(config-if)#no switchport
DSL2(config-if)#ip address 10.20.20.2 255.255.255.252
DSL2(config-if)#
```

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

```
DLS1(config)#interface range e0/0-1
DLS1(config-if-range)#switchport trunk encapsulation dot1q
```

```
DLS1(config-if-range)#switchport trunk native vlan 600
DLS1(config-if-range)#switchport mode trunk
DLS1(config-if-range)#switchport nonegotiate
DLS1(config-if-range)#no shutdown
DLS1(config-if-range)#
*Jul 27 21:41:41.746: %LINK-3-UPDOWN: Interface Ethernet0/0, changed state to
up
*Jul 27 21:41:41.746: %LINK-3-UPDOWN: Interface Ethernet0/1, changed state to
up
*Jul 27 21:41:42.753: %LINEPROTO-5-UPDOWN: Line protocol on Interface
Ethernet0/0, changed state to up
*Jul 27 21:41:42.753: %LINEPROTO-5-UPDOWN: Line protocol on Interface
Ethernet0/1, changed state to up
DLS1(config-if-range)#switchport trunk allowed vlan except 1,999
DLS1(config-if-range)#channel-group 1 mode active
Creating a port-channel interface Port-channel 1
DLS1(config)#interface port-channel 1
DLS1(config-if)#switchport trunk encapsulation dot1q
DLS1(config-if)#switchport mode trunk
DLS1(config-if)#switchport trunk allowed vlan except 1,999
DLS1(config-if)#exit

ASL1#conf ter
Enter configuration commands, one per line. End with CNTL/Z.
ASL1(config)#interface range e0/0-1
ASL1(config-if-range)#switchport trunk encapsulation dot1q
ASL1(config-if-range)#switchport trunk native vlan 600
ASL1(config-if-range)#switchport mode trunk
```

```
ASL1(config-if-range)#switchport nonegotiate
ASL1(config-if-range)#no shutdown
ASL1(config-if-range)#switchport trunk allowed vlan except 1,999
ASL1(config-if-range)#channel-group 1 mode active
Creating a port-channel interface Port-channel 1
```

```
ASL1(config-if-range)#exit
ASL1(config)#interface port-channel 1
ASL1(config-if)#switchport trunk encapsulation dot1q
    ASL1(config-if)#switchport trunk allowed vlan except 1,999
```

```
DSL2#inter
DSL2#conf ter
Enter configuration commands, one per line. End with CNTL/Z.
DSL2(config)#inter ran
DSL2(config)#inter range e
DSL2(config)#inter range ethernet 0/0-1
DSL2(config-if-range)#swi
DSL2(config-if-range)#switchport tru
DSL2(config-if-range)#switchport trunk en
DSL2(config-if-range)#switchport trunk encapsulation do
DSL2(config-if-range)#switchport trunk encapsulation dot1q
DSL2(config-if-range)#switchport trunk native vlan 600
DSL2(config-if-range)#switchport mode trunk
DSL2(config-if-range)#switchport nonegotiate
DSL2(config-if-range)#no shu
DSL2(config-if-range)#no shutdown
```

DSL2(config-if-range)#

*Jul 27 21:57:06.825: %LINK-3-UPDOWN: Interface Ethernet0/0, changed state to up

*Jul 27 21:57:06.825: %LINK-3-UPDOWN: Interface Ethernet0/1, changed state to up

*Jul 27 21:57:07.831: %LINEPROTO-5-UPDOWN: Line protocol on Interface Ethernet0/0, changed state to up

*Jul 27 21:57:07.831: %LINEPROTO-5-UPDOWN: Line protocol on Interface Ethernet0/1, changed state to up

DSL2(config-if-range)#switchport trunk allowed vlan except 1,999

DSL2(config-if-range)#channel-group 2 mode active

Creating a port-channel interface Port-channel 2

DSL2(config-if-range)#

*Jul 27 21:57:19.944: %LINEPROTO-5-UPDOWN: Line protocol on Interface Ethernet0/0, changed state to down

*Jul 27 21:57:19.944: %LINEPROTO-5-UPDOWN: Line protocol on Interface Ethernet0/1, changed state to down

DSL2(config-if-range)#inter port-ch 2

DSL2(config-if)#

*Jul 27 21:57:26.931: %EC-5-L3DONTBNL2: Et0/1 suspended: LACP currently not enabled on the remote port.

*Jul 27 21:57:27.021: %EC-5-L3DONTBNL2: Et0/0 suspended: LACP currently not enabled on the remote port.

DSL2(config-if)#switchport trunk encapsulation dot1q

DSL2(config-if)#switchport mode trunk

DSL2(config-if)#switchport trunk allowed vlan except 1,999

DSL2(config-if)#end

ASL2#conf ter

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

```
ASL2(config)#
ASL2(config)#
ASL2(config)#interface range e0/0-1
ASL2(config-if-range)#switchport trunk encapsulation dot1q
ASL2(config-if-range)#switchport trunk native vlan 600
ASL2(config-if-range)#switchport mode trunk
ASL2(config-if-range)#switchport nonegotiate
ASL2(config-if-range)#no shutdown
ASL2(config-if-range)#
*Jul 27 21:58:33.030: %LINK-3-UPDOWN: Interface Ethernet0/0, changed state to
up
*Jul 27 21:58:33.031: %LINK-3-UPDOWN: Interface Ethernet0/1, changed state to
up
*Jul 27 21:58:34.036: %LINEPROTO-5-UPDOWN: Line protocol on Interface
Ethernet0/0, changed state to up
*Jul 27 21:58:34.036: %LINEPROTO-5-UPDOWN: Line protocol on Interface
Ethernet0/1, changed state to up
ASL2(config-if-range)#switchport trunk allowed vlan except 1,999
ASL2(config-if-range)#channel-group 2 mode active
Creating a port-channel interface Port-channel 2

ASL2(config-if-range)#inter port-ch 2
*Jul 27 21:58:45.555: %LINEPROTO-5-UPDOWN: Line protocol on Interface Port-
channel2, changed state to up
ASL2(config-if-range)#inter port-ch 2
ASL2(config-if)#switchport trunk encapsulation dot1q
ASL2(config-if)#switchport mode trunk
ASL2(config-if)#switchport trunk allowed vlan except 1,999
```

10 Figura Show etherchannel summary

```
DLS2#sho etherchannel summary
Flags: D - down          P - bundled in port-channel
       I - stand-alone  s - suspended
       H - Hot-standby (LACP only)
       R - Layer3       S - Layer2
       U - in use       N - not in use, no aggregation
       f - failed to allocate aggregator

       M - not in use, minimum links not met
       m - not in use, port not aggregated due to minimum links not met
       u - unsuitable for bundling
       w - waiting to be aggregated
       d - default port

       A - formed by Auto LAG

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

Group  Port-channel  Protocol    Ports
-----+-----+-----+-----+-----
2      Po2(SU)         LACP        Et0/0(P)   Et0/1(P)
12     Po12(RD)        LACP        Et0/2(D)   Et0/3(D)
```

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

DLS1>ena

DLS1#

DLS1#conf ter

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

DLS1(config)#

DLS1(config)#inter

DLS1(config)#interface ra

DLS1(config)#interface range e1/0-1

DLS1(config-if-range)#switchport trunk encapsulation dot1q

DLS1(config-if-range)#switchport trunk native vlan 600

DLS1(config-if-range)#switchport mode trunk

DLS1(config-if-range)#switchport nonegotiate

DLS1(config-if-range)#no shu

```
DLS1(config-if-range)#no shutdown
DLS1(config-if-range)#
*Jul 27 22:16:33.157: %LINK-3-UPDOWN: Interface Ethernet1/0, changed state to
up
*Jul 27 22:16:33.157: %LINK-3-UPDOWN: Interface Ethernet1/1, changed state to
up
DLS1(config-if-range)#
*Jul 27 22:16:34.158: %LINEPROTO-5-UPDOWN: Line protocol on Interface
Ethernet1/0, changed state to up
*Jul 27 22:16:34.158: %LINEPROTO-5-UPDOWN: Line protocol on Interface
Ethernet1/1, changed state to up
DLS1(config-if-range)#switchport trunk allowed vlan except 1,999
DLS1(config-if-range)#channel-group 4 mode desirable
Creating a port-channel interface Port-channel 4

DLS1(config-if-range)#
*Jul 27 22:16:47.500: %LINEPROTO-5-UPDOWN: Line protocol on Interface
Ethernet1/0, changed state to down
*Jul 27 22:16:47.501: %LINEPROTO-5-UPDOWN: Line protocol on Interface
Ethernet1/1, changed state to down
DLS1(config-if-range)#inter port-ch 4
DLS1(config-if)#switchport trunk encapsulation dot1q
DLS1(config-if)#
*Jul 27 22:16:57.042: %LINEPROTO-5-UPDOWN: Line protocol on Interface
Ethernet1/1, changed state to up
*Jul 27 22:16:57.042: %LINEPROTO-5-UPDOWN: Line protocol on Interface
Ethernet1/0, changed state to up
DLS1(config-if)#switchport mode trunk
DLS1(config-if)#switchport trunk allowed vlan except 1,999
```

```
ASL2>ena
ASL2#
ASL2#
ASL2#
ASL2#conf ter
Enter configuration commands, one per line. End with CNTL/Z.
ASL2(config)#
ASL2(config)#interface range e1/0-1
ASL2(config-if-range)#switchport trunk encapsulation dot1q
ASL2(config-if-range)#switchport mode trun
ASL2(config-if-range)#switchport nonegotiate
ASL2(config-if-range)#no shu
ASL2(config-if-range)#no shutdown
ASL2(config-if-range)#
*Jul 27 22:21:56.224: %LINK-3-UPDOWN: Interface Ethernet1/0, changed state to
up
*Jul 27 22:21:56.224: %LINK-3-UPDOWN: Interface Ethernet1/1, changed state to
up
*Jul 27 22:21:57.231: %LINEPROTO-5-UPDOWN: Line protocol on Interface
Ethernet1/0, changed state to up
*Jul 27 22:21:57.231: %LINEPROTO-5-UPDOWN: Line protocol on Interface
Ethernet1/1, changed state to up
ASL2(config-if-range)#switchport trunk allowed vlan except 1,999
ASL2(config-if-range)#channel-group 4 mode desirable
Creating a port-channel interface Port-channel 4

ASL2(config-if-range)#inter port-ch 4
ASL2(config-if)#
```

*Jul 27 22:22:13.760: %LINEPROTO-5-UPDOWN: Line protocol on Interface Port-channel4, changed state to up

ASL2(config-if)#switchport trunk encapsulation dot1q

ASL2(config-if)#switchport mode trunk

ASL2(config-if)#switchport trunk allowed vlan except 1,999

DSL2(config)#interface range e1/0-1

DSL2(config-if-range)#switchport trunk encapsulation dot1q

DSL2(config-if-range)#switchport trunk native vlan 600

DSL2(config-if-range)#switchport mode trunk

DSL2(config-if-range)#switchport nonegotiate

DSL2(config-if-range)#no shutdown

DSL2(config-if-range)#

*Jul 27 22:33:41.350: %LINK-3-UPDOWN: Interface Ethernet1/0, changed state to up

*Jul 27 22:33:41.350: %LINK-3-UPDOWN: Interface Ethernet1/1, changed state to up

*Jul 27 22:33:42.355: %LINEPROTO-5-UPDOWN: Line protocol on Interface Ethernet1/0, changed state to up

*Jul 27 22:33:42.355: %LINEPROTO-5-UPDOWN: Line protocol on Interface Ethernet1/1, changed state to up

DSL2(config-if-range)#switchport trunk allowed vlan except 1,999

DSL2(config-if-range)#channel-group 3 mode desirable

Creating a port-channel interface Port-channel 3

DSL2(config-if-range)#

*Jul 27 22:33:48.451: %LINEPROTO-5-UPDOWN: Line protocol on Interface Ethernet1/0, changed state to down

*Jul 27 22:33:48.452: %LINEPROTO-5-UPDOWN: Line protocol on Interface Ethernet1/1, changed state to down

DSL2(config-if-range)#inter port-ch 3

DSL2(config-if)#switchport trunk encapsulation dot1q

DSL2(config-if)#

*Jul 27 22:33:57.060: %LINEPROTO-5-UPDOWN: Line protocol on Interface Ethernet1/1, changed state to up

*Jul 27 22:33:57.145: %LINEPROTO-5-UPDOWN: Line protocol on Interface Ethernet1/0, changed state to up

DSL2(config-if)#switchport mode trunk

DSL2(config-if)#switchport trunk allowed vlan except 1,999

ASL1#conf ter

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

ASL1(config)#

ASL1(config)#

ASL1(config)#interface range e1/0-1

ASL1(config-if-range)#switchport trunk encapsulation dot1q

ASL1(config-if-range)#switchport trunk native vlan 600

ASL1(config-if-range)#switchport mode trunk

ASL1(config-if-range)#switchport nonegotiate

ASL1(config-if-range)#no shu

ASL1(config-if-range)#no shutdown

ASL1(config-if-range)#switchport trunk allowed vlan except 1,999

*Jul 27 22:35:06.581: %LINK-3-UPDOWN: Interface Ethernet1/0, changed state to up

*Jul 27 22:35:06.581: %LINK-3-UPDOWN: Interface Ethernet1/1, changed state to up

*Jul 27 22:35:07.586: %LINEPROTO-5-UPDOWN: Line protocol on Interface Ethernet1/0, changed state to up

*Jul 27 22:35:07.586: %LINEPROTO-5-UPDOWN: Line protocol on Interface Ethernet1/1, changed state to up

ASL1(config-if-range)#switchport trunk allowed vlan except 1,999

ASL1(config-if-range)#channel-group 3 mode desirable

Creating a port-channel interface Port-channel 3

ASL1(config-if-range)#

*Jul 27 22:35:15.816: %LINEPROTO-5-UPDOWN: Line protocol on Interface Ethernet1/0, changed state to down

*Jul 27 22:35:15.825: %LINEPROTO-5-UPDOWN: Line protocol on Interface Ethernet1/1, changed state to down

ASL1(config-if-range)#inter port-ch 3

*Jul 27 22:35:17.735: %LINEPROTO-5-UPDOWN: Line protocol on Interface Ethernet1/1, changed state to up

*Jul 27 22:35:17.820: %LINEPROTO-5-UPDOWN: Line protocol on Interface Ethernet1/0, changed state to up

ASL1(config-if-range)#inter port-ch 3

ASL1(config-if)#

*Jul 27 22:35:20.620: %LINEPROTO-5-UPDOWN: Line protocol on Interface Port-channel3, changed state to up

ASL1(config-if)#switchport trunk encapsulation dot1q

ASL1(config-if)#switchport mode trunk

ASL1(config-if)#switchport trunk allowed vlan except 1,999

11 Figura Show etherchannel summary

```
ASL1#show etherchannel summary
Flags: D - down          P - bundled in port-channel
       I - stand-alone  s - suspended
       H - Hot-standby (LACP only)
       R - Layer3       S - Layer2
       U - in use       N - not in use, no aggregation
       f - failed to allocate aggregator

       M - not in use, minimum links not met
       m - not in use, port not aggregated due to minimum links not met
       u - unsuitable for bundling
       w - waiting to be aggregated
       d - default port

       A - formed by Auto LAG

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

Group  Port-channel  Protocol    Ports
-----+-----+-----+-----+-----
1      Po1(SU)        LACP        Et0/0(P)  Et0/1(P)
3      Po3(SU)        PAgP        Et1/0(P)  Et1/1(P)

ASL1#
```

- 4) Todos los puertos troncales serán asignados a la VLAN 600 como la VLAN nativa.

DLS1#conf ter

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

DLS1(config)#interface Port-channel1

DLS1(config-if)#\$trunk allowed vlan 15,100,240,420,600,1050,1112,3550

DLS1(config-if)#switchport trunk encapsulation dot1q

DLS1(config-if)#switchport trunk native vlan 600

DLS1(config-if)#switchport mode trunk

DLS1(config-if)#switchport nonegotiate

DLS1(config-if)#interface Port-channel4

DLS1(config-if)#\$trunk allowed vlan 15,100,240,420,600,1050,1112,3550

DLS1(config)#interface Port-channel4

```
DLS1(config-if)#$trunk allowed vlan 15,100,240,420,600,1050,1112,3550
DLS1(config-if)#switchport trunk encapsulation dot1q
DLS1(config-if)#switchport trunk native vlan 600
DLS1(config-if)#switchport mode trunk
DLS1(config-if)#switchport nonegotiate
DLS1(config-if)#interface Ethernet1/1
DLS1(config-if)#$trunk allowed vlan 15,100,240,420,600,1050,1112,3550
DLS1(config-if)#switchport trunk encapsulation dot1q
DLS1(config-if)#switchport trunk native vlan 600
DLS1(config-if)#switchport mode trunk
DLS1(config-if)#switchport nonegotiate
DLS1(config-if)#
DLS1(config-if)#channel-group 4 mode desirable
DLS1(config-if)#
DLS1(config-if)#interface Ethernet0/0
DLS1(config-if)#$trunk allowed vlan 15,100,240,420,600,1050,1112,3550
DLS1(config-if)#switchport trunk encapsulation dot1q
DLS1(config-if)#switchport trunk native vlan 600
DLS1(config-if)#switchport mode trunk
DLS1(config-if)#switchport nonegotiate
DLS1(config-if)#channel-group 1 mode active
DLS1(config-if)#interface Ethernet1/0
DLS1(config-if)#$trunk allowed vlan 15,100,240,420,600,1050,1112,3550
DLS1(config-if)#switchport trunk encapsulation dot1q
DLS1(config-if)#switchport trunk native vlan 600
DLS1(config-if)#switchport mode trunk
DLS1(config-if)#switchport nonegotiate
```

```
DLS1(config-if)#channel-group 4 mode desirable
DLS1(config-if)#interface Ethernet1/1
DLS1(config-if)#
DLS1(config-if)#$trunk allowed vlan 15,100,240,420,600,1050,1112,3550
DLS1(config-if)#switchport trunk encapsulation dot1q
DLS1(config-if)#switchport trunk native vlan 600
DLS1(config-if)#switchport mode trunk
DLS1(config-if)#switchport nonegotiate
DLS1(config-if)#
DLS1(config-if)#channel-group 4 mode desirable
DLS1(config-if)#interface Port-channel2
DLS1(config-if)#$trunk allowed vlan 15,100,240,420,600,1050,1112,3550
DLS1(config-if)#switchport trunk encapsulation dot1q
DLS1(config-if)#switchport trunk native vlan 600
DLS1(config-if)#switchport mode trunk
DLS1(config-if)#switchport nonegotiate
DLS1(config-if)#interface Port-channel3
DLS1(config-if)#$trunk allowed vlan 15,100,240,420,600,1050,1112,3550
DLS1(config-if)#switchport trunk encapsulation dot1q
DLS1(config-if)#switchport trunk native vlan 600
DLS1(config-if)#switchport mode trunk
DLS1(config-if)#switchport nonegotiate

DSL2(config)#interface range e1/0-1
DSL2(config-if-range)#switchport trunk encapsulation dot1q
DSL2(config-if-range)#switchport trunk native vlan 600
DSL2(config-if-range)#switchport mode trunk
```

```
DSL2(config-if-range)#switchport nonegotiate
DSL2(config-if-range)#no shutdown
DSL2(config-if-range)#
*Jul 27 22:33:41.350: %LINK-3-UPDOWN: Interface Ethernet1/0, changed state to
up
*Jul 27 22:33:41.350: %LINK-3-UPDOWN: Interface Ethernet1/1, changed state to
up
*Jul 27 22:33:42.355: %LINEPROTO-5-UPDOWN: Line protocol on Interface
Ethernet1/0, changed state to up
*Jul 27 22:33:42.355: %LINEPROTO-5-UPDOWN: Line protocol on Interface
Ethernet1/1, changed state to up
DSL2(config-if-range)#switchport trunk allowed vlan except 1,999
DSL2(config-if-range)#channel-group 3 mode desirable
Creating a port-channel interface Port-channel 3

DSL2(config-if-range)#
*Jul 27 22:33:48.451: %LINEPROTO-5-UPDOWN: Line protocol on Interface
Ethernet1/0, changed state to down
*Jul 27 22:33:48.452: %LINEPROTO-5-UPDOWN: Line protocol on Interface
Ethernet1/1, changed state to down
DSL2(config-if-range)#inter port-ch 3
DSL2(config-if)#switchport trunk encapsulation dot1q
DSL2(config-if)#
*Jul 27 22:33:57.060: %LINEPROTO-5-UPDOWN: Line protocol on Interface
Ethernet1/1, changed state to up
*Jul 27 22:33:57.145: %LINEPROTO-5-UPDOWN: Line protocol on Interface
Ethernet1/0, changed state to up
DSL2(config-if)#switchport mode trunk
DSL2(config-if)#switchport trunk allowed vlan except 1,999
DSL2(config-if)#
```

DSL2#

*Jul 27 22:34:16.580: %SYS-5-CONFIG_I: Configured from console by console

DSL2#

*Jul 27 22:35:20.630: %LINEPROTO-5-UPDOWN: Line protocol on Interface Port-channel3, changed state to up

DSL2#

DSL2#

DSL2#

DSL2#

DSL2#

DSL2#

DSL2#

DSL2#conf ter

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

DSL2(config)#

DSL2(config)#interface Port-channel2

DSL2(config-if)#\$trunk allowed vlan 15,100,240,420,600,1050,1112,3550

DSL2(config-if)#switchport trunk encapsulation dot1q

DSL2(config-if)#switchport trunk native vlan 600

DSL2(config-if)#switchport mode trunk

DSL2(config-if)#switchport nonegotiate

DSL2(config-if)#interface Port-channel3

DSL2(config-if)#\$trunk allowed vlan 15,100,240,420,600,1050,1112,3550

DSL2(config-if)#switchport trunk encapsulation dot1q

DSL2(config-if)#switchport trunk native vlan 600

DSL2(config-if)#switchport mode trunk

DSL2(config-if)#switchport nonegotiate

```
DSL2(config-if)#interface Ethernet0/0
DSL2(config-if)#$trunk allowed vlan 15,100,240,420,600,1050,1112,3550
DSL2(config-if)#switchport trunk encapsulation dot1q
DSL2(config-if)#switchport trunk native vlan 600
DSL2(config-if)#switchport mode trunk
DSL2(config-if)#switchport nonegotiate
DSL2(config-if)#channel-group 2 mode active
DSL2(config-if)#interface Ethernet0/1
DSL2(config-if)#$trunk allowed vlan 15,100,240,420,600,1050,1112,3550
DSL2(config-if)#switchport trunk encapsulation dot1q
DSL2(config-if)#switchport trunk native vlan 600
DSL2(config-if)#switchport mode trunk
DSL2(config-if)#switchport nonegotiate
DSL2(config-if)#channel-group 2 mode active
DSL2(config-if)#interface Ethernet1/0
DSL2(config-if)#interface Ethernet1/0
DSL2(config-if)#$trunk allowed vlan 15,100,240,420,600,1050,1112,3550
DSL2(config-if)#switchport trunk encapsulation dot1q
DSL2(config-if)#switchport trunk native vlan 600
DSL2(config-if)#switchport mode trunk
DSL2(config-if)#switchport nonegotiate
DSL2(config-if)#channel-group 3 mode desirable
DSL2(config-if)#interface Ethernet1/1
DSL2(config-if)#$trunk allowed vlan 15,100,240,420,600,1050,1112,3550
DSL2(config-if)#switchport trunk encapsulation dot1q
DSL2(config-if)#switchport trunk native vlan 600
DSL2(config-if)#switchport mode trunk
```

```
DSL2(config-if)#switchport nonegotiate
DSL2(config-if)#channel-group 3 mode desirable
DSL2(config-if)#end
```

```
ASL1(config)#interface range e1/0-1
ASL1(config-if-range)#switchport trunk encapsulation dot1q
ASL1(config-if-range)#switchport trunk native vlan 600
ASL1(config-if-range)#switchport mode trunk
ASL1(config-if-range)#switchport nonegotiate
ASL1(config-if-range)#no shu
ASL1(config-if-range)#no shutdown
ASL1(config-if-range)#switchport trunk allowed vlan except 1,999
*Jul 27 22:35:06.581: %LINK-3-UPDOWN: Interface Ethernet1/0, changed state to
up
*Jul 27 22:35:06.581: %LINK-3-UPDOWN: Interface Ethernet1/1, changed state to
up
*Jul 27 22:35:07.586: %LINEPROTO-5-UPDOWN: Line protocol on Interface
Ethernet1/0, changed state to up
*Jul 27 22:35:07.586: %LINEPROTO-5-UPDOWN: Line protocol on Interface
Ethernet1/1, changed state to up
ASL1(config-if-range)#switchport trunk allowed vlan except 1,999
ASL1(config-if-range)#channel-group 3 mode desirable
Creating a port-channel interface Port-channel 3
```

```
ASL1(config-if-range)#
*Jul 27 22:35:15.816: %LINEPROTO-5-UPDOWN: Line protocol on Interface
Ethernet1/0, changed state to down
*Jul 27 22:35:15.825: %LINEPROTO-5-UPDOWN: Line protocol on Interface
Ethernet1/1, changed state to down
```

ASL1(config-if-range)#inter port-ch 3

*Jul 27 22:35:17.735: %LINEPROTO-5-UPDOWN: Line protocol on Interface Ethernet1/1, changed state to up

*Jul 27 22:35:17.820: %LINEPROTO-5-UPDOWN: Line protocol on Interface Ethernet1/0, changed state to up

ASL1(config-if-range)#inter port-ch 3

ASL1(config-if)#

*Jul 27 22:35:20.620: %LINEPROTO-5-UPDOWN: Line protocol on Interface Port-channel3, changed state to up

ASL1(config-if)#switchport trunk encapsulation dot1q

ASL1(config-if)#switchport mode trunk

ASL1(config-if)#switchport trunk allowed vlan except 1,999

ASL1(config-if)#end

ASL2#conf ter

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

ASL2(config)#

ASL2(config)#interface range e1/0-1

ASL2(config-if-range)#switchport trunk encapsulation dot1q

ASL2(config-if-range)#switchport mode trun

ASL2(config-if-range)#switchport nonegotiate

ASL2(config-if-range)#no shu

ASL2(config-if-range)#no shutdown

ASL2(config-if-range)#

*Jul 27 22:21:56.224: %LINK-3-UPDOWN: Interface Ethernet1/0, changed state to up

*Jul 27 22:21:56.224: %LINK-3-UPDOWN: Interface Ethernet1/1, changed state to up

*Jul 27 22:21:57.231: %LINEPROTO-5-UPDOWN: Line protocol on Interface Ethernet1/0, changed state to up

*Jul 27 22:21:57.231: %LINEPROTO-5-UPDOWN: Line protocol on Interface Ethernet1/1, changed state to up

```
ASL2(config-if-range)#switchport trunk allowed vlan except 1,999
```

```
ASL2(config-if-range)#channel-group 4 mode desirable
```

Creating a port-channel interface Port-channel 4

```
ASL2(config-if-range)#inter port-ch 4
```

```
ASL2(config-if)#
```

*Jul 27 22:22:13.760: %LINEPROTO-5-UPDOWN: Line protocol on Interface Port-channel4, changed state to up

```
ASL2(config-if)#switchport trunk encapsulation dot1q
```

```
ASL2(config-if)#switchport mode trunk
```

```
ASL2(config-if)#switchport trunk allowed vlan except 1,999
```

- d. Configurar DLS1, ALS1, y ALS2 para utilizar VTP versión 3
- 2) Utilizar el nombre de dominio *CISCO* con la contraseña *ccnp321*
- 3) Configurar DLS1 como servidor principal para las VLAN.

```
DLS1#conf ter
```

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

```
DLS1(config)#vtp domain CISCO
```

Domain name already set to CISCO.

```
DLS1(config)#vtp version 3
```

VTP version is already in V3.

```
DLS1(config)#vtp mode server
```

Device mode already VTP Server for VLANS.

```
DLS1(config)#
```

*Jul 27 22:50:27.671: %CDP-4-NATIVE_VLAN_MISMATCH: Native VLAN mismatch discovered on Ethernet1/1 (600), with ASL2 Ethernet1/1 (1).

DLS1(config)#vtp password ccnp321

*Jul 27 22:50:33.632: %CDP-4-NATIVE_VLAN_MISMATCH: Native VLAN mismatch discovered on Ethernet1/0 (600), with ASL2 Ethernet1/0 (1).

DLS1(config)#vtp password ccnp321

Password already set to ccnp321

DLS1(config)#

4) Configurar ALS1 y ALS2 como clientes VTP.

ASL1#conf ter

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

ASL1(config)#vtp domain CISCO

Domain name already set to CISCO.

ASL1(config)#vtp version 3

VTP version is already in V3.

ASL1(config)#vtp mode client

Device mode already VTP Client for VLANS.

ASL1(config)#vtp password ccnp321

Password already set to ccnp321

ASL2(config)#vtp domain CISCO

Domain name already set to CISCO.

ASL2(config)#vtp version 3

VTP version is already in V3.

ASL2(config)#vtp mode client

Device mode already VTP Client for VLANS.

ASL2(config)#vtp password ccnp321

Password already set to ccnp321

12 Figura Show vtp status

```
ASL1#sho vtp status
VTP Version capable      : 1 to 3
VTP version running     : 3
VTP Domain Name         : CISCO
VTP Pruning Mode        : Disabled
VTP Traps Generation    : Disabled
Device ID               : aabb.cc80.0400

Feature VLAN:
-----
VTP Operating Mode      : Client
Number of existing VLANs : 13
Number of existing extended VLANs : 3
Maximum VLANs supported locally : 4096
Configuration Revision  : 0
Primary ID              : 0000.0000.0000
Primary Description     :
MD5 digest             :
```

13 Figura Show vtp status

```
ASL2#sho vtp status
VTP Version capable      : 1 to 3
VTP version running     : 3
VTP Domain Name         : CISCO
VTP Pruning Mode        : Disabled
VTP Traps Generation    : Disabled
Device ID               : aabb.cc80.0800

Feature VLAN:
-----
VTP Operating Mode      : Client
Number of existing VLANs : 13
Number of existing extended VLANs : 3
Maximum VLANs supported locally : 4096
Configuration Revision  : 0
Primary ID              : 0000.0000.0000
Primary Description     :
MD5 digest             :
```

- e. Configurar en el servidor principal las siguientes VLAN:
DLS1(config)#interface vlan 15
DLS1(config-if)#description ADMON
DLS1(config-if)#no shu

```
DLS1(config-if)#interface vlan 100
DLS1(config-if)#description SEGUROS
DLS1(config-if)#no shu
DLS1(config-if)#interface vlan 240
DLS1(config-if)#description CLIENTES
DLS1(config-if)#no shu
DLS1(config-if)#interface vlan 420
DLS1(config-if)#description PROVEEDORES
DLS1(config-if)#no shu
DLS1(config-if)#interface vlan 600
DLS1(config-if)#description NATIVA
DLS1(config-if)#no shu
DLS1(config-if)#interface vlan 1050
DLS1(config-if)#description VENTAS
DLS1(config-if)#no shu
DLS1(config-if)#interface vlan 1112
DLS1(config-if)#description MULTIMEDIA
DLS1(config-if)#no shu
DLS1(config-if)#interface vlan 3550
DLS1(config-if)#description PERSONAL
DLS1(config-if)#no shu
DLS1(config-if)#
DLS1(config-if)#end
```

14 Figura Show vlan

```
DLS1#sho vlan

VLAN Name                Status    Ports
-----
1    default                active    Et1/2, Et1/3, Et2/0, Et2/1
                                           Et2/2, Et2/3, Et3/0, Et3/1
                                           Et3/2, Et3/3
15   ADMON                  active
39   MANAGEMENT             active
100  SEGUROS                 active
240  CLIENTES                active
420  PROVEEDORES             active
567  PRODUCCION              active
600  NATIVA                  active
999  VLAN0999                active
1002 fddi-default            act/unsup
1003 trcrf-default         act/unsup
1004 fddinet-default        act/unsup
1005 trbrf-default         act/unsup
1050 VENTAS                  active
1112 MULTIMEDIA            active
3550 PERSONAL             active
```

15 Figura Vlan a configurar

Número de VLAN	Nombre de VLAN	Número de VLAN	Nombre de VLAN
600	NATIVA	420	PROVEEDORES
15	ADMON	100	SEGUROS
240	CLIENTES	1050	VENTAS
1112	MULTIMEDIA	3550	PERSONAL

f. En DLS1, suspender la VLAN 420.

```
DLS1(config)#interface vlan 420
```

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

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

```
DSL2#conf ter
```

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

```
DSL2(config)#vtp domain CISCO
DSL2(config)#vtp domain CISCO
Domain name already set to CISCO.
DSL2(config)#vtp ver
DSL2(config)#vtp version 2
VTP version is already in V2.
DSL2(config)#vtp mode trans
Setting device to VTP Transparent mode for VLANS.
DSL2(config)#vtp pass ccnp321
Password already set to ccnp321
DSL2(config)#
DSL2(config)#
DSL2(config)#interface vlan 15
DSL2(config-if)#description ADMON
DSL2(config-if)#no shu
DSL2(config-if)#interface vlan 100
DSL2(config-if)#description SEGUROS
DSL2(config-if)#no shu
DSL2(config-if)#interface vlan 240
DSL2(config-if)#description CLIENTES
DSL2(config-if)#no shu
DSL2(config-if)#interface vlan 420
DSL2(config-if)#description PROVEEDORES
DSL2(config-if)#no shu
DSL2(config-if)#interface vlan 600
DSL2(config-if)#description NATIVA
DSL2(config-if)#no shu
```

```

DSL2(config-if)#interface vlan 1050
DSL2(config-if)#description VENTAS
DSL2(config-if)#no shu
DSL2(config-if)#interface vlan 1112
DSL2(config-if)#description MULTIMEDIA
DSL2(config-if)#no shu
DSL2(config-if)#interface vlan 3550
DSL2(config-if)#description PERSONAL
DSL2(config-if)#no shu

```

16 Figura Show vtp status

```

DSL2#sho vtp status
VTP Version capable      : 1 to 3
VTP version running     : 2
VTP Domain Name         : CISCO
VTP Pruning Mode        : Disabled
VTP Traps Generation    : Disabled
Device ID                : aabb.cc80.0300
Configuration last modified by 10.20.20.2 at 7-27-21 23:28:19

Feature VLAN:
-----
VTP Operating Mode      : Transparent
Maximum VLANs supported locally : 1005
Number of existing VLANs : 13
Configuration Revision  : 0
MD5 digest              : 0xA9 0x24 0xBE 0xD6 0x27 0xF2 0x83 0xE7
                        : 0x74 0xB7 0x57 0xA7 0x10 0x94 0xB8 0x41
DSL2#

```

h. Suspende VLAN 420 en DLS2.

```

DSL2(config)#interface vlan 420
DSL2(config-if)#shu
DSL2(config-if)#shutdown
DSL2(config-if)#

```

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.

```
DSL2(config)#interface vlan 567
```

```
DSL2(config-if)#description PRODUCCION
```

```
DSL2(config-if)#no shu
```

- j. Configurar DLS1 como Spanning tree root para las VLANs 1, 12, 420, 600, 1050, 1112 y 3550 y comoraíz secundaria para las VLAN 100 y 240.

```
DLS1(config)#spanning-tree vlan 1,12,420,600,1050,1112,3550 root primary
```

```
DLS1(config)#spanning-tree vlan 100,240 root secondary
```

- k. Configurar DLS2 como Spanning tree root para las VLAN 100 y 240 y como una raíz secundaria para las VLAN 15, 420, 600, 1050, 1112 y 3550.

```
DSL2(config)#spanning-tree vlan 100,240 root primary
```

```
DSL2(config)#spanning-tree vlan 15,420,600,1050,1112,3550 root secondary
```

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

```
ASL1(config)#interface Port-channel1
```

```
ASL1(config-if)# no switchport trunk allowed vlan 2-998,1000-4094
```

```
ASL1(config-if)#$trunk allowed vlan 1,12,15,420,600,1050,1112,3550,100,240
```

```
ASL1(config-if)#!
```

```
ASL1(config-if)#interface Port-channel3
```

```
ASL1(config-if)#no switchport trunk allowed vlan 2-998,1000-4094
```

```
ASL1(config-if)#$trunk allowed vlan 1,12,15,420,600,1050,1112,3550,100,240
```

```
ASL1(config-if)#!
```

```
ASL1(config-if)#interface Ethernet0/0
```

```
ASL1(config-if)# no switchport trunk allowed vlan 2-998,1000-4094
```

```
ASL1(config-if)#$trunk allowed vlan 1,12,15,420,600,1050,1112,3550,100,240
```

```
ASL1(config-if)#!
```

```
ASL1(config-if)#interface Ethernet0/1
```

```
ASL1(config-if)# no switchport trunk allowed vlan 2-998,1000-4094
ASL1(config-if)#$trunk allowed vlan 1,12,15,420,600,1050,1112,3550,100,240
ASL1(config-if)#!
ASL1(config-if)#interface Ethernet1/0
ASL1(config-if)# no switchport trunk allowed vlan 2-998,1000-4094
ASL1(config-if)#$trunk allowed vlan 1,12,15,420,600,1050,1112,3550,100,240
DSL2#conf ter
Enter configuration commands, one per line. End with CNTL/Z.
DSL2(config)#
DSL2(config)#interface Port-channel2
DSL2(config-if)#$trunk allowed vlan 15,100,240,420,600,1050,1112,3550
DSL2(config-if)#switchport trunk encapsulation dot1q
DSL2(config-if)#switchport trunk native vlan 600
DSL2(config-if)#switchport mode trunk
DSL2(config-if)#switchport nonegotiate
DSL2(config-if)#interface Port-channel3
DSL2(config-if)#$trunk allowed vlan 15,100,240,420,600,1050,1112,3550
DSL2(config-if)#switchport trunk encapsulation dot1q
DSL2(config-if)#switchport trunk native vlan 600
DSL2(config-if)#switchport mode trunk
DSL2(config-if)#switchport nonegotiate
DSL2(config-if)#interface Ethernet0/0
DSL2(config-if)#$trunk allowed vlan 15,100,240,420,600,1050,1112,3550
DSL2(config-if)#switchport trunk encapsulation dot1q
DSL2(config-if)#switchport trunk native vlan 600
DSL2(config-if)#switchport mode trunk
DSL2(config-if)#switchport nonegotiate
```

```
DSL2(config-if)#channel-group 2 mode active
DSL2(config-if)#interface Ethernet0/1
DSL2(config-if)#$trunk allowed vlan 15,100,240,420,600,1050,1112,3550
DSL2(config-if)#switchport trunk encapsulation dot1q
DSL2(config-if)#switchport trunk native vlan 600
DSL2(config-if)#switchport mode trunk
DSL2(config-if)#switchport nonegotiate
DSL2(config-if)#channel-group 2 mode active
DSL2(config-if)#interface Ethernet1/0
DSL2(config-if)#interface Ethernet1/0
DSL2(config-if)#$trunk allowed vlan 15,100,240,420,600,1050,1112,3550
DSL2(config-if)#switchport trunk encapsulation dot1q
DSL2(config-if)#switchport trunk native vlan 600
DSL2(config-if)#switchport mode trunk
DSL2(config-if)#switchport nonegotiate
DSL2(config-if)#channel-group 3 mode desirable
DSL2(config-if)#interface Ethernet1/1
DSL2(config-if)#$trunk allowed vlan 15,100,240,420,600,1050,1112,3550
DSL2(config-if)#switchport trunk encapsulation dot1q
DSL2(config-if)#switchport trunk native vlan 600
DSL2(config-if)#switchport mode trunk
DSL2(config-if)#switchport nonegotiate
DSL2(config-if)#channel-group 3 mode desirable
DSL2(config-if)#end
```

```
DLS1#conf ter
```

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

```
DLS1(config)#interface Port-channel1
```

```
DLS1(config-if)#$trunk allowed vlan 15,100,240,420,600,1050,1112,3550
```

```
DLS1(config-if)#switchport trunk encapsulation dot1q
```

```
DLS1(config-if)#switchport trunk native vlan 600
```

```
DLS1(config-if)#switchport mode trunk
```

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

```
DLS1(config-if)#interface Port-channel4
```

```
DLS1(config-if)#$trunk allowed vlan 15,100,240,420,600,1050,1112,3550
```

```
DLS1(config)#interface Port-channel4
```

```
DLS1(config-if)#$trunk allowed vlan 15,100,240,420,600,1050,1112,3550
```

```
DLS1(config-if)#switchport trunk encapsulation dot1q
```

```
DLS1(config-if)#switchport trunk native vlan 600
```

```
DLS1(config-if)#switchport mode trunk
```

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

```
DLS1(config-if)#interface Ethernet1/1
```

```
DLS1(config-if)#$trunk allowed vlan 15,100,240,420,600,1050,1112,3550
```

```
DLS1(config-if)#switchport trunk encapsulation dot1q
```

```
DLS1(config-if)#switchport trunk native vlan 600
```

```
DLS1(config-if)#switchport mode trunk
```

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

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

```
DLS1(config-if)#channel-group 4 mode desirable
```

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

```
DLS1(config-if)#interface Ethernet0/0
```

```
DLS1(config-if)#$trunk allowed vlan 15,100,240,420,600,1050,1112,3550
```

```
DLS1(config-if)#switchport trunk encapsulation dot1q
```

```
DLS1(config-if)#switchport trunk native vlan 600
DLS1(config-if)#switchport mode trunk
DLS1(config-if)#switchport nonegotiate
DLS1(config-if)#channel-group 1 mode active
DLS1(config-if)#interface Ethernet1/0
DLS1(config-if)#$trunk allowed vlan 15,100,240,420,600,1050,1112,3550
DLS1(config-if)#switchport trunk encapsulation dot1q
DLS1(config-if)#switchport trunk native vlan 600
DLS1(config-if)#switchport mode trunk
DLS1(config-if)#switchport nonegotiate
DLS1(config-if)#channel-group 4 mode desirable
DLS1(config-if)#interface Ethernet1/1
DLS1(config-if)#
DLS1(config-if)#$trunk allowed vlan 15,100,240,420,600,1050,1112,3550
DLS1(config-if)#switchport trunk encapsulation dot1q
DLS1(config-if)#switchport trunk native vlan 600
DLS1(config-if)#switchport mode trunk
DLS1(config-if)#switchport nonegotiate
DLS1(config-if)#
DLS1(config-if)#channel-group 4 mode desirable
DLS1(config-if)#interface Port-channel2
DLS1(config-if)#$trunk allowed vlan 15,100,240,420,600,1050,1112,3550
DLS1(config-if)#switchport trunk encapsulation dot1q
DLS1(config-if)#switchport trunk native vlan 600
DLS1(config-if)#switchport mode trunk
DLS1(config-if)#switchport nonegotiate
DLS1(config-if)#interface Port-channel3
```

```
DLS1(config-if)#$trunk allowed vlan 15,100,240,420,600,1050,1112,3550
DLS1(config-if)#switchport trunk encapsulation dot1q
DLS1(config-if)#switchport trunk native vlan 600
DLS1(config-if)#switchport mode trunk
DLS1(config-if)#switchport nonegotiate
ASL2(config)#interface Port-channel2
ASL2(config-if)#no switchport trunk allowed vlan 2-998,1000-4094
ASL2(config-if)#$trunk allowed vlan 1,12,420,600,1050,1112,3550,100,240
ASL2(config-if)#!
ASL2(config-if)#interface Port-channel4
ASL2(config-if)#no switchport trunk allowed vlan 2-998,1000-4094
ASL2(config-if)#$trunk allowed vlan 1,12,420,600,1050,1112,3550,100,240
ASL2(config-if)#!
ASL2(config-if)#interface Ethernet0/0
ASL2(config-if)#no switchport trunk allowed vlan 2-998,1000-4094
ASL2(config-if)#$trunk allowed vlan 1,12,420,600,1050,1112,3550,100,240
ASL2(config-if)#!
ASL2(config-if)#interface Ethernet0/1
ASL2(config-if)#no switchport trunk allowed vlan 2-998,1000-4094
ASL2(config-if)#$trunk allowed vlan 1,12,420,600,1050,1112,3550,100,240
ASL2(config-if)#!
ASL2(config-if)#interface Ethernet1/0
ASL2(config-if)#no switchport trunk allowed vlan 2-998,1000-4094
ASL2(config-if)#$trunk allowed vlan 1,12,420,600,1050,1112,3550,100,240
ASL2(config-if)#!
ASL2(config-if)#interface Ethernet1/1
ASL2(config-if)#no switchport trunk allowed vlan 2-998,1000-4094
```

ASL2(config-if)#\$trunk allowed vlan 1,12,420,600,1050,1112,3550,100,240
 ASL2(config-if)#

17 Figura Show interface trunk

```
DLS1#sho interfaces trunk
Port      Mode      Encapsulation  Status      Native vlan
Po1       on        802.1q         trunking    600
Po4       on        802.1q         trunking    600

Port      Vlans allowed on trunk
Po1       15,100,240,420,600,1050,1112,3550
Po4       15,100,240,420,600,1050,1112,3550

Port      Vlans allowed and active in management domain
Po1       15,100,240,420,600,1050,1112,3550
Po4       15,100,240,420,600,1050,1112,3550

Port      Vlans in spanning tree forwarding state and not pruned
Po1       15,100,240,420,600,1050,1112,3550
Po4       15,420,600,1050,1112,3550
DLS1#
```

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

18 Figura vlan a configurar

Interfaz	DL S1	DLS2	ALS1	ALS2
Interfaz e1/2	3550	15, 1050	100, 1050	240
Interfaz e1/3	1112	1112	1112	1112
Interfaces e2/0-2		567		

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

19 Figura Show vlan brief

```
DSL2#sho vlan brief
```

VLAN	Name	Status	Ports
1	default	active	Et2/3, Et3/0, Et3/1, Et3/2 Et3/3
15	ADMN	active	Et1/2
99	MANAGEMENT	active	
100	SEGUROS	active	
240	CLIENTES	active	
420	PROVEEDORES	active	
567	PRODUCCION	active	Et2/0, Et2/1, Et2/2
600	NATIVA	active	
999	VLAN0999	active	
1002	fddi-default	act/unsup	
1003	trcrf-default	act/unsup	
1004	fddinet-default	act/unsup	
1005	trbrf-default	act/unsup	
1050	VENTAS	active	Et1/2
1112	MULTIMEDIA	active	Et1/3
3550	PERSONAL	active	

```
DSL2#
```

20 Figura Show vlan brief

```
ASL1#sho vlan brie
```

VLAN	Name	Status	Ports
1	default	active	Et0/2, Et0/3, Et2/0, Et2/1 Et2/2, Et2/3, Et3/0, Et3/1 Et3/2, Et3/3
15	ADMN	active	
99	MANAGEMENT	active	
100	SEGUROS	active	Et1/2
240	CLIENTES	active	
420	PROVEEDORES	active	
567	PRODUCCION	active	
600	NATIVA	active	
999	VLAN0999	active	
1002	fddi-default	act/unsup	
1003	trcrf-default	act/unsup	
1004	fddinet-default	act/unsup	
1005	trbrf-default	act/unsup	
1050	VENTAS	active	Et1/2
1112	MULTIMEDIA	active	Et1/3
3550	PERSONAL	active	

```
ASL1#
```

21 Figura Show vlan brief

```
ASL2#sho vlan brief
```

VLAN	Name	Status	Ports
1	default	active	Et0/2, Et0/3, Et2/0, Et2/1 Et2/2, Et2/3, Et3/0, Et3/1 Et3/2, Et3/3
15	ADMON	active	
99	MANAGEMENT	active	
100	SEGUROS	active	
240	CLIENTES	active	Et1/2
420	PROVEEDORES	active	
567	PRODUCCION	active	
600	NATIVA	active	
999	VLAN0999	active	
1002	fddi-default	act/unsup	
1003	trcrf-default	act/unsup	
1004	fddinet-default	act/unsup	
1005	trbrf-default	act/unsup	
1050	VENTAS	active	
1112	MULTIMEDIA	active	Et1/3
3550	PERSONAL	active	

```
ASL2#
```

22 Figura Show vlan brief

```
DLS1#sho vlan brief
```

VLAN	Name	Status	Ports
1	default	active	Et2/0, Et2/1, Et2/2, Et2/3 Et3/0, Et3/1, Et3/2, Et3/3
15	ADMON	active	
99	MANAGEMENT	active	
100	SEGUROS	active	
240	CLIENTES	active	
420	PROVEEDORES	active	
567	PRODUCCION	active	
600	NATIVA	active	
999	VLAN0999	active	
1002	fddi-default	act/unsup	
1003	trcrf-default	act/unsup	
1004	fddinet-default	act/unsup	
1005	trbrf-default	act/unsup	
1050	VENTAS	active	
1112	MULTIMEDIA	active	Et1/3
3550	PERSONAL	active	Et1/2

```
DLS1#
```

23 Figura Show interfaces trunk

```
DLS1#sho interfaces trunk

Port      Mode      Encapsulation  Status      Native vlan
Po1       on        802.1q         trunking    600
Po4       on        802.1q         trunking    600

Port      Vlans allowed on trunk
Po1       15,100,240,420,600,1050,1112,3550
Po4       15,100,240,420,600,1050,1112,3550

Port      Vlans allowed and active in management domain
Po1       15,100,240,420,600,1050,1112,3550
Po4       15,100,240,420,600,1050,1112,3550

Port      Vlans in spanning tree forwarding state and not pruned
Po1       15,100,240,420,600,1050,1112,3550
Po4       15,420,600,1050,1112,3550
DLS1#
```

24 Figura Show interfaces trunk

```
DSL2#sho inter trunk

Port      Mode      Encapsulation  Status      Native vlan
Po2       on        802.1q         trunking    600
Po3       on        802.1q         trunking    600

Port      Vlans allowed on trunk
Po2       15,100,240,420,600,1050,1112,3550
Po3       15,100,240,420,600,1050,1112,3550

Port      Vlans allowed and active in management domain
Po2       15,100,240,420,600,1050,1112,3550
Po3       15,100,240,420,600,1050,1112,3550

Port      Vlans in spanning tree forwarding state and not pruned
Po2       15,100,240
Po3       15,100,240,420,600,1050,1112,3550
DSL2#
```

25 Figura Show interfaces trunk

```
ASL1#sho inter tru

Port      Mode      Encapsulation  Status      Native vlan
Po1       on        802.1q         trunking    600
Po3       on        802.1q         trunking    600

Port      Vlans allowed on trunk
Po1       1,12,15,100,240,420,600,1050,1112,3550
Po3       1,12,15,100,240,420,600,1050,1112,3550

Port      Vlans allowed and active in management domain
Po1       1,15,100,240,420,600,1050,1112,3550
Po3       1,15,100,240,420,600,1050,1112,3550

Port      Vlans in spanning tree forwarding state and not pruned
Po1       1,15,100,240,420,600,1050,1112,3550
Po3       1,15,100,240,420,600,1050,1112,3550
ASL1#
```

26 Figura Show interfaces trunk

```
ASL2#sho inter tru

Port      Mode      Encapsulation  Status      Native vlan
Po2       on        802.1q         trunking    600
Po4       on        802.1q         trunking    1

Port      Vlans allowed on trunk
Po2       1,12,100,240,420,600,1050,1112,3550
Po4       1,12,100,240,420,600,1050,1112,3550

Port      Vlans allowed and active in management domain
Po2       1,100,240,420,600,1050,1112,3550
Po4       1,100,240,420,600,1050,1112,3550

Port      Vlans in spanning tree forwarding state and not pruned
Po2       1,100,240,420,600,1050,1112,3550
Po4       1,100,240,420,600,1050,1112,3550
ASL2#
```

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

correctamente

27 Figura Show etherchannel summary

```
DLS1#sho etherchannel summary
Flags: D - down          P - bundled in port-channel
       I - stand-alone  s - suspended
       H - Hot-standby (LACP only)
       R - Layer3       S - Layer2
       U - in use       N - not in use, no aggregation
       f - failed to allocate aggregator

       M - not in use, minimum links not met
       m - not in use, port not aggregated due to minimum links not met
       u - unsuitable for bundling
       w - waiting to be aggregated
       d - default port

       A - formed by Auto LAG

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

Group  Port-channel  Protocol    Ports
-----+-----+-----+-----+-----
1      Po1(SU)        LACP        Et0/0(P)   Et0/1(P)
4      Po4(SU)        PAgP        Et1/0(P)   Et1/1(P)
12     Po12(RU)       LACP        Et0/2(P)   Et0/3(P)

ASL1#sho etherchannel summary
Flags: D - down          P - bundled in port-channel
       I - stand-alone  s - suspended
       H - Hot-standby (LACP only)
       R - Layer3       S - Layer2
       U - in use       N - not in use, no aggregation
       f - failed to allocate aggregator

       M - not in use, minimum links not met
       m - not in use, port not aggregated due to minimum links not met
       u - unsuitable for bundling
       w - waiting to be aggregated
       d - default port

       A - formed by Auto LAG

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

Group  Port-channel  Protocol    Ports
-----+-----+-----+-----+-----
1      Po1(SU)        LACP        Et0/0(P)   Et0/1(P)
3      Po3(SU)        PAgP        Et1/0(P)   Et1/1(P)
```

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

28 Figura Show spanning-tree vlan

```

DLS1#show spanning-tree vlan 420

VLAN0420
Spanning tree enabled protocol rstp
Root ID    Priority    24996
           Address    aabb.cc00.0200
           This bridge is the root
           Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

Bridge ID  Priority    24996 (priority 24576 sys-id-ext 420)
           Address    aabb.cc00.0200
           Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
           Aging Time 300 sec

Interface                Role Sts Cost      Prio.Nbr Type
-----
Po1                       Desg FWD 56        128.66 Shr
Po4                       Desg FWD 56        128.67 Shr

DLS1#
DLS1#show spanning-tree vlan 600

VLAN0600
Spanning tree enabled protocol rstp
Root ID    Priority    25176
           Address    aabb.cc00.0200
           This bridge is the root
           Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

Bridge ID  Priority    25176 (priority 24576 sys-id-ext 600)
           Address    aabb.cc00.0200
           Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
           Aging Time 300 sec

Interface                Role Sts Cost      Prio.Nbr Type
-----
Po1                       Desg FWD 56        128.66 Shr
Po4                       Desg FWD 56        128.67 Shr

DLS1#
DLS1#show spanning-tree vlan 1050

VLAN1050
Spanning tree enabled protocol rstp
Root ID    Priority    25626
           Address    aabb.cc00.0200
           This bridge is the root
           Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

Bridge ID  Priority    25626 (priority 24576 sys-id-ext 1050)
           Address    aabb.cc00.0200
           Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
           Aging Time 300 sec

Interface                Role Sts Cost      Prio.Nbr Type
-----
Po1                       Desg FWD 56        128.66 Shr
Po4                       Desg FWD 56        128.67 Shr

```

29 Figura Show spanning-tree vlan

```
DLS1#show spanning-tree vlan 1112
VLAN1112
Spanning tree enabled protocol rstp
Root ID    Priority      25688
           Address     aabb.cc00.0200
           This bridge is the root
           Hello Time  2 sec  Max Age 20 sec  Forward Delay 15 sec

Bridge ID  Priority      25688 (priority 24576 sys-id-ext 1112)
           Address     aabb.cc00.0200
           Hello Time  2 sec  Max Age 20 sec  Forward Delay 15 sec
           Aging Time  300 sec

Interface                Role Sts Cost      Prio.Nbr Type
-----
Et1/3                    Desg FWD 100      128.8   Shr
Po1                      Desg FWD 56      128.66  Shr
Po4                      Desg FWD 56      128.67  Shr

DLS1#
DLS1#show spanning-tree vlan 3550
VLAN3550
Spanning tree enabled protocol rstp
Root ID    Priority      28126
           Address     aabb.cc00.0200
           This bridge is the root
           Hello Time  2 sec  Max Age 20 sec  Forward Delay 15 sec

Bridge ID  Priority      28126 (priority 24576 sys-id-ext 3550)
           Address     aabb.cc00.0200
           Hello Time  2 sec  Max Age 20 sec  Forward Delay 15 sec
           Aging Time  300 sec

Interface                Role Sts Cost      Prio.Nbr Type
-----
Et1/2                    Desg FWD 100      128.7   Shr
Po1                      Desg FWD 56      128.66  Shr
Po4                      Desg FWD 56      128.67  Shr
```

30 Figura Show spanning-tree vlan

```
DLS1#show spanning-tree vlan 100
VLAN0100
Spanning tree enabled protocol rstp
Root ID    Priority      24676
           Address     aabb.cc00.0300
           Cost        112
           Port        66 (Port-channell)
           Hello Time  2 sec  Max Age 20 sec  Forward Delay 15 sec

Bridge ID  Priority      28772 (priority 28672 sys-id-ext 100)
           Address     aabb.cc00.0200
           Hello Time  2 sec  Max Age 20 sec  Forward Delay 15 sec
           Aging Time  300 sec

Interface                Role Sts Cost      Prio.Nbr Type
-----
Po1                      Root FWD 56      128.66  Shr
Po4                      Altn BLK 56      128.67  Shr

DLS1#
DLS1#show spanning-tree vlan 240
VLAN0240
Spanning tree enabled protocol rstp
Root ID    Priority      24816
           Address     aabb.cc00.0300
           Cost        112
           Port        66 (Port-channell)
           Hello Time  2 sec  Max Age 20 sec  Forward Delay 15 sec

Bridge ID  Priority      28912 (priority 28672 sys-id-ext 240)
           Address     aabb.cc00.0200
           Hello Time  2 sec  Max Age 20 sec  Forward Delay 15 sec
           Aging Time  300 sec

Interface                Role Sts Cost      Prio.Nbr Type
-----
Po1                      Root FWD 56      128.66  Shr
Po4                      Altn BLK 56      128.67  Shr
```

Configuraciones

DLS1#sho run

Building configuration...

Current configuration : 3240 bytes

!

! Last configuration change at 23:58:01 UTC Tue Jul 27, 2021

!

version 15.2

service timestamps debug datetime msec

service timestamps log datetime msec

no service password-encryption

service compress-config

!

hostname DLS1

!

boot-start-marker

boot-end-marker

!

no aaa new-model

!

ip cef

no ipv6 cef

!

spanning-tree mode rapid-pvst

```
spanning-tree extend system-id
spanning-tree vlan 1,12,420,600,1050,1112,3550 priority 24576
spanning-tree vlan 100,240 priority 28672
!
vlan internal allocation policy ascending
!
interface Port-channel1
  switchport trunk allowed vlan 15,100,240,420,600,1050,1112,3550
  switchport trunk encapsulation dot1q
  switchport trunk native vlan 600
  switchport mode trunk
  switchport nonegotiate
!
interface Port-channel4
  switchport trunk allowed vlan 15,100,240,420,600,1050,1112,3550
  switchport trunk encapsulation dot1q
  switchport trunk native vlan 600
  switchport mode trunk
  switchport nonegotiate
!
interface Port-channel12
  no switchport
  ip address 10.20.20.1 255.255.255.252
!
interface Ethernet0/0
  switchport trunk allowed vlan 15,100,240,420,600,1050,1112,3550
  switchport trunk encapsulation dot1q
```

```
switchport trunk native vlan 600
switchport mode trunk
switchport nonegotiate
channel-group 1 mode active
!
interface Ethernet0/1
switchport trunk allowed vlan 15,100,240,420,600,1050,1112,3550
switchport trunk encapsulation dot1q
switchport trunk native vlan 600
switchport mode trunk
switchport nonegotiate
channel-group 1 mode active
!
interface Ethernet0/2
no switchport
no ip address
channel-group 12 mode active
!
interface Ethernet0/3
no switchport
no ip address
channel-group 12 mode active
!
interface Ethernet1/0
switchport trunk allowed vlan 15,100,240,420,600,1050,1112,3550
switchport trunk encapsulation dot1q
switchport trunk native vlan 600
```

```
switchport mode trunk
switchport nonegotiate
channel-group 4 mode desirable
!
interface Ethernet1/1
switchport trunk allowed vlan 15,100,240,420,600,1050,1112,3550
switchport trunk encapsulation dot1q
switchport trunk native vlan 600
switchport mode trunk
switchport nonegotiate
channel-group 4 mode desirable
!
interface Ethernet1/2
switchport access vlan 3550
switchport mode access
!
interface Ethernet1/3
switchport access vlan 1112
switchport mode access
!
interface Ethernet2/0
shutdown
!
interface Ethernet2/1
shutdown
!
interface Ethernet2/2
```

```
shutdown
!  
interface Ethernet2/3  
shutdown  
!  
interface Ethernet3/0  
shutdown  
!  
interface Ethernet3/1  
shutdown  
!  
interface Ethernet3/2  
shutdown  
!  
interface Ethernet3/3  
shutdown  
!  
interface Vlan15  
description ADMON  
no ip address  
!  
interface Vlan100  
description SEGUROS  
no ip address  
!  
interface Vlan240  
description CLIENTES
```

```
no ip address
!
interface Vlan420
description PROVEEDORES
no ip address
shutdown
!
interface Vlan600
description NATIVA
no ip address
!
interface Vlan1050
description VENTAS
no ip address
!
interface Vlan1112
description MULTIMEDIA
no ip address
!
interface Vlan3550
description PERSONAL
no ip address
!
ip forward-protocol nd
!
no ip http server
no ip http secure-server
```

```
control-plane
!  
line con 0  
  logging synchronous  
line aux 0  
line vty 0 4  
!  
end
```

```
DLS1#
```

```
*Jul 28 00:16:22.860: %CDP-4-NATIVE_VLAN_MISMATCH: Native VLAN  
mismatch discovered on Ethernet1/0 (600), with ASL2 Ethernet1/0 (1).
```

```
DLS1#
```

```
DSL2#sho run
```

```
Building configuration...
```

```
Current configuration : 3771 bytes
```

```
!
```

```
! Last configuration change at 23:55:03 UTC Tue Jul 27 2021
```

```
!
```

```
version 15.2
```

```
service timestamps debug datetime msec
```

```
service timestamps log datetime msec
```

```
no service password-encryption
```

```
service compress-config
```

```
!
```

```
hostname DSL2
!
boot-start-marker
boot-end-marker
!

no aaa new-model
!

ntp domain CISCO
ntp mode transparent
!
ip cef
no ipv6 cef
!
spanning-tree mode rapid-pvst
spanning-tree extend system-id
spanning-tree vlan 15,420,600,1050,1112,3550 priority 28672
spanning-tree vlan 100,240 priority 24576
!
vlan internal allocation policy ascending
!
vlan 15
 name ADMON
!
vlan 99
 name MANAGEMENT
```

```
!  
vlan 100  
  name SEGUROS  
!  
vlan 240  
  name CLIENTES  
!  
vlan 420  
  name PROVEEDORES  
!  
vlan 567  
  name PRODUCCION  
!  
vlan 600  
  name NATIVA  
!  
vlan 999  
!  
vlan 1050  
  name VENTAS  
!  
vlan 1112  
  name MULTIMEDIA  
!  
vlan 3550  
  name PERSONAL  
!
```

```
interface Port-channel2
switchport trunk allowed vlan 15,100,240,420,600,1050,1112,3550
switchport trunk encapsulation dot1q
switchport trunk native vlan 600
switchport mode trunk
switchport nonegotiate
!
interface Port-channel3
switchport trunk allowed vlan 15,100,240,420,600,1050,1112,3550
switchport trunk encapsulation dot1q
switchport trunk native vlan 600
switchport mode trunk
switchport nonegotiate
!
interface Port-channel12
no switchport
ip address 10.20.20.2 255.255.255.252
!
interface Ethernet0/0
switchport trunk allowed vlan 15,100,240,420,600,1050,1112,3550
switchport trunk encapsulation dot1q
switchport trunk native vlan 600
switchport mode trunk
switchport nonegotiate
channel-group 2 mode active
!
interface Ethernet0/1
```

```
switchport trunk allowed vlan 15,100,240,420,600,1050,1112,3550
switchport trunk encapsulation dot1q
switchport trunk native vlan 600
switchport mode trunk
switchport nonegotiate
channel-group 2 mode active
!
interface Ethernet0/2
no switchport
no ip address
channel-group 12 mode active
!
interface Ethernet0/3
no switchport
no ip address
channel-group 12 mode active
!
interface Ethernet1/0
switchport trunk allowed vlan 15,100,240,420,600,1050,1112,3550
switchport trunk encapsulation dot1q
switchport trunk native vlan 600
switchport mode trunk
switchport nonegotiate
channel-group 3 mode desirable
!
interface Ethernet1/1
switchport trunk allowed vlan 15,100,240,420,600,1050,1112,3550
```

```
switchport trunk encapsulation dot1q
switchport trunk native vlan 600
switchport mode trunk
switchport nonegotiate
channel-group 3 mode desirable
!
interface Ethernet1/2
switchport access vlan 15
switchport mode access
switchport voice vlan 1050
shutdown
!
interface Ethernet1/3
switchport access vlan 1112
switchport mode access
!
interface Ethernet2/0
switchport access vlan 567
switchport mode access
!
interface Ethernet2/1
switchport access vlan 567
switchport mode access
!
interface Ethernet2/2
switchport access vlan 567
switchport mode access
```

```
!  
interface Ethernet2/3  
shutdown  
!  
interface Ethernet3/0  
shutdown  
!  
interface Ethernet3/1  
shutdown  
!  
interface Ethernet3/2  
shutdown  
!  
interface Ethernet3/3  
shutdown  
!  
interface Vlan15  
description ADMON  
no ip address  
!  
interface Vlan100  
description SEGUROS  
no ip address  
!  
interface Vlan240  
description CLIENTES  
no ip address
```

```
!  
interface Vlan420  
  description PROVEEDORES  
  no ip address  
  shutdown  
!  
interface Vlan567  
  description PRODUCCION  
  no ip address  
!  
interface Vlan600  
  description NATIVA  
  no ip address  
!  
interface Vlan1050  
  description VENTAS  
  no ip address  
!  
interface Vlan1112  
  description MULTIMEDIA  
  no ip address  
!  
interface Vlan3550  
  description PERSONAL  
  no ip address  
!  
ip forward-protocol nd
```

```
!  
no ip http server  
no ip http secure-server  
!  
control-plane  
!  
line con 0  
  logging synchronous  
line aux 0  
line vty 0 4  
!  
end
```

DSL2#

ASL1#sho run

Building configuration...

Current configuration : 2522 bytes

```
!  
! Last configuration change at 23:58:09 UTC Tue Jul 27 2021  
!  
version 15.2  
service timestamps debug datetime msec  
service timestamps log datetime msec  
no service password-encryption
```

```
service compress-config
!
hostname ASL1
!
boot-start-marker
boot-end-marker
!
no aaa new-model
!
ip cef
no ipv6 cef
!
spanning-tree mode rapid-pvst
spanning-tree extend system-id
!
vlan internal allocation policy ascending
!
interface Port-channel1
  switchport trunk allowed vlan 1,12,15,100,240,420,600,1050,1112,3550
  switchport trunk encapsulation dot1q
  switchport trunk native vlan 600
  switchport mode trunk
  switchport nonegotiate
!
interface Port-channel3
  switchport trunk allowed vlan 1,12,15,100,240,420,600,1050,1112,3550
  switchport trunk encapsulation dot1q
```

```
switchport trunk native vlan 600
switchport mode trunk
switchport nonegotiate
!
interface Ethernet0/0
switchport trunk allowed vlan 1,12,15,100,240,420,600,1050,1112,3550
switchport trunk encapsulation dot1q
switchport trunk native vlan 600
switchport mode trunk
switchport nonegotiate
channel-group 1 mode active
!
interface Ethernet0/1
switchport trunk allowed vlan 1,12,15,100,240,420,600,1050,1112,3550
switchport trunk encapsulation dot1q
switchport trunk native vlan 600
switchport mode trunk
switchport nonegotiate
channel-group 1 mode active
!
interface Ethernet0/2
shutdown
!
interface Ethernet0/3
shutdown
!
interface Ethernet1/0
```

```
switchport trunk allowed vlan 1,12,15,100,240,420,600,1050,1112,3550
switchport trunk encapsulation dot1q
switchport trunk native vlan 600
switchport mode trunk
switchport nonegotiate
channel-group 3 mode desirable
!
interface Ethernet1/1
switchport trunk allowed vlan 1,12,15,100,240,420,600,1050,1112,3550
switchport trunk encapsulation dot1q
switchport trunk native vlan 600
switchport mode trunk
switchport nonegotiate
channel-group 3 mode desirable
!
interface Ethernet1/2
switchport access vlan 100
switchport mode access
switchport voice vlan 1050
!
interface Ethernet1/3
switchport access vlan 1112
!
interface Ethernet2/0
shutdown
!
interface Ethernet2/1
```

```
shutdown
!  
interface Ethernet2/2  
shutdown  
!  
interface Ethernet2/3  
shutdown  
!  
interface Ethernet3/0  
shutdown  
!  
interface Ethernet3/1  
shutdown  
!  
interface Ethernet3/2  
shutdown  
!  
interface Ethernet3/3  
shutdown  
!  
ip forward-protocol nd  
!  
!  
no ip http server  
no ip http secure-server  
!
```

```
control-plane
!  
line con 0  
  logging synchronous  
line aux 0  
line vty 0 4  
!  
end
```

```
ASL1#
```

```
ASL2>ena
```

```
ASL2#
```

```
ASL2#sho run
```

```
Building configuration...
```

```
Current configuration : 2398 bytes
```

```
!
```

```
! Last configuration change at 23:58:58 UTC Tue Jul 27 2021
```

```
!
```

```
version 15.2
```

```
service timestamps debug datetime msec
```

```
service timestamps log datetime msec
```

```
no service password-encryption
```

```
service compress-config
```

```
!
```

```
hostname ASL2
```

```
!  
boot-start-marker  
boot-end-marker  
!  
no aaa new-model  
!  
ip cef  
No ipv6 cef  
!  
spanning-tree mode rapid-pvst  
spanning-tree extend system-id  
!  
vlan internal allocation policy ascending  
!  
interface Port-channel2  
  switchport trunk allowed vlan 1,12,100,240,420,600,1050,1112,3550  
  switchport trunk encapsulation dot1q  
  switchport trunk native vlan 600  
  switchport mode trunk  
  switchport nonegotiate  
!  
interface Port-channel4  
  switchport trunk allowed vlan 1,12,100,240,420,600,1050,1112,3550  
  switchport trunk encapsulation dot1q  
  switchport mode trunk  
  switchport nonegotiate  
!
```

```
interface Ethernet0/0
switchport trunk allowed vlan 1,12,100,240,420,600,1050,1112,3550
switchport trunk encapsulation dot1q
switchport trunk native vlan 600
switchport mode trunk
switchport nonegotiate
channel-group 2 mode active
!
interface Ethernet0/1
switchport trunk allowed vlan 1,12,100,240,420,600,1050,1112,3550
switchport trunk encapsulation dot1q
switchport trunk native vlan 600
switchport mode trunk
switchport nonegotiate
channel-group 2 mode active
!
interface Ethernet0/2
shutdown
!
interface Ethernet0/3
shutdown
!
interface Ethernet1/0
switchport trunk allowed vlan 1,12,100,240,420,600,1050,1112,3550
switchport trunk encapsulation dot1q
switchport mode trunk
switchport nonegotiate
```

```
channel-group 4 mode desirable
!
interface Ethernet1/1
switchport trunk allowed vlan 1,12,100,240,420,600,1050,1112,3550
switchport trunk encapsulation dot1q
switchport mode trunk
switchport nonegotiate
channel-group 4 mode desirable
!
interface Ethernet1/2
switchport access vlan 240
switchport mode access
!
interface Ethernet1/3
switchport access vlan 1112
switchport mode access
!
interface Ethernet2/0
shutdown
!
interface Ethernet2/1
shutdown
!
interface Ethernet2/2
shutdown
!
interface Ethernet2/3
```

```
shutdown
!
interface Ethernet3/0
shutdown
!
interface Ethernet3/1
shutdown
!
interface Ethernet3/2
shutdown
!
interface Ethernet3/3
shutdown
!
ip forward-protocol nd
!
no ip http server
no ip http secure-server
control-plane
line con 0
logging synchronous
line aux 0
line vty 0 4
!
end
```

```
ASL2#
```

CONCLUSIONES

Se llevó a cabo el desarrollo de la Prueba de Habilidades Prácticas implementada como parte de las actividades evaluativas del Diplomado de Profundización CCNP, mediante la cual identificamos el grado de desarrollo de competencias y habilidades que fueron adquiridas a lo largo del curso, poniendo a prueba los niveles de comprensión y solución de problemas relacionados con diversos aspectos de Networking.

En las comunicaciones en redes es de suma importancia la configuración de red que se hace a través de una dirección IP, su máscara de subred y la puerta de enlace predeterminada, la puerta de enlace es la más importante en la comunicación entre redes. Los anteriores elementos son fundamental a la hora de identificar fallas en la red, se recomienda revisar la documentación de la red y realizar pruebas de conexión para descartar dispositivo de bloques de la red.

Se puso en práctica las temáticas abordadas a lo largo del curso, correspondientes a protocolos de Enrutamiento Avanzado, Implementación de soluciones soportadas en enrutamiento avanzado, configuración de sistemas. También se adquirieron habilidades de gestión de redes orientadas hacia el mundo profesional y corporativo, además necesarios para planificar, implementar, asegurar, mantener y solucionar problemas de redes convergentes.

La implementación de la VLAN optimiza el tráfico de red al realizar las configuraciones y separar a los usuarios en grupos para obtener una buena administración. Al configurar una VLAN en un switch se debe tener en cuenta el ancho de banda, se requiere la asignación de un número de VLAN único a los puertos de enlace troncal. Así mismo, deben utilizarse VLAN estáticas y desactivar los puertos de conmutador que no se utilicen

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