DIPLOMADO DE PROFUNDIZACIÓN CISCO CCNP
EVALUACIÓN - PRUEBA DE HABILIDADES PRÁCTICAS CCNP

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UNIVERSIDAD NACIONAL ABIERTA Y A DISTANCIA – UNAD
ESCUELA DE CIENCIAS BÁSICAS, TECNOLOGÍA E INGENIERÍA
INGENIERÍA DE TELECOMUNICACIONES
BOGOTÁ D.C
2020

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Diplomado de opción de grado presentado para optar el titulo
como INGENIERA DE TELECOMUNICACIONES

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Bogotá D.C, 26 de febrero de 2020

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CONTENIDO

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GLOSARIO

CCNP: Es el nivel intermedio de certificación de la compañía. Esta certificación, es la intermedia de las certificaciones generales de Cisco, Para obtener esta certificación, se han de superar varios exámenes, clasificados según la empresa en 3 módulos.

IP: Es el número que determina de una manera única un puerto en red de que use el protocolo IP para transportarse por la red.

Networking: Es una red de comunicaciones de datos conectados entre sí por medio de dispositivos físicos que envían y reciben impulsos eléctricos, ondas electromagnéticas o cualquier otro medio para el transporte de datos, con la finalidad de compartir información, recursos y ofrecer servicios.

VLAN: Es un método para crear redes lógicas segmentadas para propagar diferente información dentro de la misma red.

OSPF: Es un protocolo que se encarga de enrutar el tráfico por el camino más corto entre las redes.

Cambio de estado: Es el comportamiento que se observa cuando la interfaz o configuraciones de OSPF han detectado un cambio en el estado de la red y las adyacencias.

Topología: Es el mapa (diagrama) lógico en dónde se especifican las conexiones de red, puertos usados, VLANS, direcciones IP empleadas en la solución.

RESUMEN

En el siguiente informe se desarrolla de acuerdo a las indicaciones para la presentación del examen de habilidades prácticas para el curso DIPLOMADO DE PROFUNDIZACIÓN CISCO CCNP, en el cual se procede abordar y conocer la importancia del curso como forma de aprendizaje acerca del proceso de enrutamiento y configuración avanzado usando equipos activos en la red como switches y routers segmentando la red usando las VLANS para enviar paquetes por la red de destino a través de equipos conectados transportando el tráfico por capa dos y capa tres respectivamente ocupando protocolos como IP, OSPF, usando rutas estáticas y evidenciando adyacencias convergentes en la red.

Palabras Clave: CCNP, Vlans, OSPF, show ip route, direccionamiento IP.red.

ABSTRACT

The following report is developed according to the indications for presentation of the practical skills test for the course, in which it is necessary to address and know the importance of the course as a way of learning about the process of advanced routing and configuration using active devices on the network such as switches and routers segmenting the network using VLANS to send packets over the destination network through devices connected transporting traffic through layer two and layer three respectively occupying protocols such as IP, OSPF, using static routes and evidencing convergent adjacencies in the network.

Keywords: : CCNP, Vlans, OSPF, show ip route, ip address, networking.

INTRODUCCIÓN

El actual informe comprende el desarrollo del diplomado CCNP, el cual cuenta con temas avanzado sobre instalación, configuración y operación de redes de área local y área amplia. Este diplomado se centra en el desarrollo de las habilidades necesarias la implementación de redes escalables, construcción de redes que abarquen un campus, diseñe e instale intranets globales, así como la detección y solución de problemas.

En el siguiente documento se realiza una prueba práctica de configuración apoyándose en el material el cual se ha desarrollado durante el semestre educativo logrando la implementación de los conocimientos adquiridos.

1. EVALUACIÓN - PRUEBA DE HABILIDADES PRÁCTICAS CCNP

1.1. DESCRIPCIÓN GENERAL DE LA PRUEBA DE HABILIDADES

La evaluación denominada "Prueba de habilidades prácticas", forma parte de las actividades evaluativas del Diplomado de Profundización CCNP, y busca identificar el grado de desarrollo de competencias y habilidades que fueron adquiridas a lo largo del diplomado. Lo esencial es poner a prueba los niveles de comprensión y solución de problemas relacionados con diversos aspectos de Networking.

Para esta actividad, el estudiante dispone de cerca de dos semanas para realizar las tareas asignadas en cada uno de los dos (2) escenarios propuestos, 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 mediante el uso de comandos ping, traceroute, show ip route, entre otros.

Teniendo en cuenta que la Prueba de habilidades está conformada por dos (2) escenarios, el estudiante deberá realizar el proceso de configuración de usando cualquiera de las siguientes herramientas: Packet Tracer, GNS3 o SMARTLAB.

· Es muy importante mencionar que esta actividad es de carácter INDIVIDUAL y OBLIGATORIA.
· Toda evidencia de copy-paste o plagio (de la web o de otros informes) será penalizada con severidad.

Descripción de escenarios propuestos para la prueba de habilidades

1.2. ESCENARIO 1

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

Topología de red

Ilustración 1 Topología de red Escenario 1
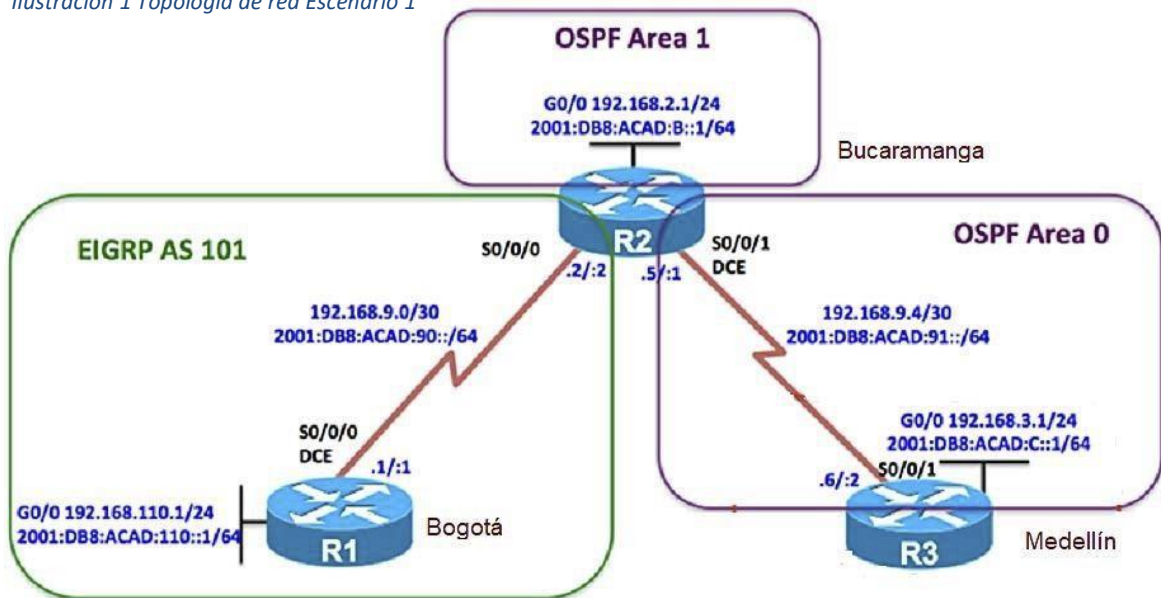
Fuente: Autoría propia.

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

Parte 1: Configuración del escenario propuesto

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

En R1.

```
Router>enable
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#no ip domain-lookup
Router(config)#hostname    R1
R1(config)#interface s0/0/0
R1(config-if)#ip  address  192.168.9.1  255.255.255.252
R1(config-if)#no shutdown

%LINK-5-CHANGED: Interface Serial0/0/0, changed state to down
R1(config-if)#exit
R1(config)#interface g0/0
R1(config-if)#ip  address  192.168.110.1  255.255.255.0
R1(config-if)#no shutdown

R1(config-if)#
%LINK-5-CHANGED: Interface GigabitEthernet0/0, changed state to up

R1(config-if)#ipv6 unicast-routing
R1(config)#interface s0/0/0
R1(config-if)#ipv6 address 2001:DB8:ACAD:90::1/64
R1(config-if)#ipv6 address FE80::1 link-local
R1(config-if)#no shutdown
R1(config-if)#exit
R1(config)#interface g0/0
R1(config-if)#ipv6 address 2001:DB8:ACAD:110::1/64
R1(config-if)#ipv6 address FE80::1 link-local
R1(config-if)#no shutdown
R1(config-if)#exit
R1(config)#
```

En R2

```
Router>enable
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#no ip domain-lookup
Router(config)#hostname    R2
R2(config)#interface s0/0/0
R2(config-if)#ip  address  192.168.9.2  255.255.255.252
R2(config-if)#no shutdown
```

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

R2(config-if)#exit
R2(config)#interf
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0, changed state
to up
ace g0/0
R2(config-if)#ip address 192.168.2.1 255.255.255.0
R2(config-if)#no shutdown

R2(config-if)#
%LINK-5-CHANGED: Interface GigabitEthernet0/0, changed state to up

R2(config-if)#exit
R2(config)#interface s0/0/1
R2(config-if)#ip address 192.168.9.5 255.255.255.252
R2(config-if)#no shutdown

%LINK-5-CHANGED: Interface Serial0/0/1, changed state to down
R2(config-if)#exit
R2(config)#ipv6   unicast-routing
R2(config)#interface s0/0/0
R2(config-if)#ipv6 address 2001:DB8:ACAD:90::2/64
R2(config-if)#ipv6 address FE80::2 link-local
R2(config-if)#no shutdown
R2(config-if)#exit
R2(config)#interface g0/0
R2(config-if)#ipv6 address 2001:DB8:ACAD:8::1/64
R2(config-if)#ipv6 address FE80::2 link-local
R2(config-if)#no shutdown
R2(config-if)#exit
R2(config)#interface s0/0/1
R2(config-if)#ipv6 address 2001:DB8:ACAD:91::1/64
R2(config-if)#ipv6 address FE80::2 link-local
R2(config-if)#no shutdown
R2(config-if)#exit
R2(config)#

En R3.

Router>enable
Router#configure terminal

Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#no ip domain-lookup
Router(config)#hostname   R3
R3(config)#interface s0/0/1
R3(config-if)#ip address 192.168.9.6 255.255.255.252
R3(config-if)#no shutdown

R3(config-if)#
%LINK-5-CHANGED: Interface Serial0/0/1, changed state to up

R3(config-if)#exit
R3(config)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/1, changed state
to up

R3(config)#interface g0/0
R3(config-if)#ip address 192.168.3.1 255.255.255.0
R3(config-if)#no shutdown

R3(config-if)#
%LINK-5-CHANGED: Interface GigabitEthernet0/0, changed state to up

R3(config-if)#exit
R3(config)#ipv6   unicast-routing
R3(config)#interface s0/0/1
R3(config-if)#ipv6 address 2001:DB8:ACAD:91::2/64
R3(config-if)#ipv6 address FE80::3 link-local
R3(config-if)#no shutdown
R3(config-if)#exit
R3(config)#interface g0/0
R3(config-if)#ipv6 address 2001:DB8:ACAD:C::1/64
R3(config-if)#ipv6 address FE80::3 link-local
R3(config-if)#no shutdown
R3(config-if)#exit
R3(config)#

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

En R1.

```
R1>enable
R1#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
R1(config)#interface s0/0/0
R1(config-if)#bandwidth 128
R1(config-if)#clock  rate  128000
R1(config-if)#exit
R1(config)#
```

En R2.

```
R2(config)#interface    se0/0/0
R2(config-if)#bandwidth    128
R2(config-if)#exit
R2(config)#interface se0/0/1
R2(config-if)#bandwidth 128
R2(config-if)#clock  rate  128000
R2(config-if)#exit
R2(config)#
```

En R3.

```
R3(config)#interface    se0/0/1
R3(config-if)#bandwidth    128
R3(config-if)#exit
R3(config)#
```

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

En R2.

```
R2(config)#router ospf 1
R2(config-router)#router-id    2.2.2.2
R2(config-router)#exit
R2(config)#ipv6  router  ospf  1
R2(config-rtr)#router-id 2.2.2.2
```

```
R2(config-rtr)#exit
R2(config)#
```

En R3.

```
R3(config)#router ospf 1
R3(config-router)#router-id   3.3.3.3
R3(config-router)#exit
R3(config)#ipv6  router  ospf  1
R3(config-rtr)#router-id   3.3.3.3
R3(config-rtr)#exit
R3(config)#
```

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

En R2.

```
R2#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
R2(config)#router ospf 1
R2(config-router)#network 192.168.2.0 0.0.0.255 area 1
R2(config-router)#network 192.168.9.4 0.0.0.3 area 0
R2(config-router)#exit
R2(config)#
```

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

En R3.

```
R3#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
R3(config)#router ospf 1
R3(config-router)#network 192.168.9.4 0.0.0.3 area 0
R3(config-router)#network 192.168.3.0 0.0.0.255 area 0
R3(config-router)#exit
R3(config)#
```

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

En R2.

R2(config)#router ospf 1
R2(config-router)#area 1 nssa
R2(config-router)#exit
R2(config)#

En R3.

R3(config)#router ospf 1
R3(config-router)#area 1 nssa
R3(config-router)#exit
R3(config)#

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

En R3.

R3(config)#router ospf 1
R3(config-router)#log-adjacency-changes
R3(config-router)#exit
R3(config)#ipv6 router ospf 1
R3(config-rtr)#log-adjacency-changes
R3(config-rtr)#exit
R3(config)#

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

En R1.

R1>enable
R1#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
R1(config)#router eigrp 101
R1(config-router)#passive-interface gi
R1(config-router)#passive-interface gigabitEthernet 0/0
R1(config-router)#network 192.168.110.0
R1(config-router)#network 192.168.9.0 0.0.0.3
R1(config-router)#
%DUAL-5-NBRCHANGE: IP-EIGRP 101: Neighbor 192.168.9.2 (Serial0/0/0) is up: new adjacency

R1(config-router)#no   auto-summary
R1(config-router)#exit
R1(config)#ipv6 router eigrp 101
R1(config-rtr)#eigrp router-id 1.1.1.1
R1(config-rtr)#no shutdown
R1(config-rtr)#passive-interfa
R1(config-rtr)#passive-interface gigabitEthernet 0/0
R1(config-rtr)#passive-interface serial 0/0/0
R1(config-rtr)#

En R2.

R2(config)#router eigrp 101
R2(config-router)#eigrp router-id 2.2.2.2
R2(config-router)#redistribute ospf 1
R2(config-router)#redistribute connected
R2(config-router)#network 192.168.9.0 0.0.0.3
R2(config-router)#no auto-summary
R2(config-router)#exit
R2(config)#ipv6 router eigrp 101
R2(config-rtr)#eigrp   router-id   2.2.2.2
R2(config-rtr)#no shutdown
R2(config-rtr)#passive-interface Gigabi
R2(config-rtr)#passive-interface GigabitEthernet 0/0
R2(config-rtr)#passive-interface Ser
R2(config-rtr)#passive-interface Serial 0/0/1
R2(config-rtr)#redistribute ospf 1
R2(config-rtr)#redistribute connected

9. Configurar las interfaces pasivas para EIGRP según sea apropiado.

En R1.

R1(config)#router eigrp   101
R1(config-router)#passive
R1(config-router)#passive-interface gi
R1(config-router)#passive-interface gigabitEthernet 0/0
R1(config-router)#

En R2.

R2(config)#router eigrp   101
R2(config-router)#pass
R2(config-router)#passive-interface gi
R2(config-router)#passive-interface gigabitEthernet 0/0
R2(config-router)#exit
R2(config-rtr)#passive-interface Gigabi
R2(config-rtr)#passive-interface GigabitEthernet 0/0
R2(config-rtr)#passive-interface Ser
R2(config-rtr)#passive-interface Serial 0/0/1
R2(config-rtr)#redistribute ospf 1
R2(config-rtr)#redistribute connected

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

En R2.

R2(config)#router ospf 1
R2(config-router)#router-id 2.2.2.2
R2(config-router)#log-adjacency-changes
R2(config-router)#area 1 stub no-summary
R2(config-router)#OSPF: Area is configured as NSSA already

R2(config-router)#redistribute eigrp 101 subnets
R2(config-router)#exit
R2(config)#ipv6 router ospf 1
R2(config-rtr)#router-id 2.2.2.2
R2(config-rtr)#log-adjacency-changes

R2(config-rtr)#area 1 stub no-summary
R2(config-rtr)#redistribute eigrp 101
R2(config-rtr)#%OSPF-4-ASBR_WITHOUT_VALID_AREA: Router is currently an ASBR while having only one area which is a stub area

R2(config-rtr)#redistribute connected
R2(config-rtr)#%OSPF-4-ASBR_WITHOUT_VALID_AREA: Router is currently an ASBR while having only one area which is a stub area

R2(config-rtr)#
R2(config-rtr)#exit
R2(config)#router eigrp 101
R2(config-router)#eigrp router-id 2.2.2.2
R2(config-router)#redistribute ospf 1
R2(config-router)#redistribute connected
R2(config-router)#passi
R2(config-router)#passive-interface gi
R2(config-router)#passive-interface gigabitEthernet 0/0
R2(config-router)#exit
R2(config)#ipv6 router eigrp 101
R2(config-rtr)#eigrp router-id 2.2.2.2
R2(config-rtr)#no shutdown
R2(config-rtr)#passiv
R2(config-rtr)#passive-interface gi
R2(config-rtr)#passive-interface gigabitEthernet 0/0
R2(config-rtr)#passi
R2(config-rtr)#passive-interface se
R2(config-rtr)#passive-interface serial 0/0/1
R2(config-rtr)#redistribute ospf 1
R2(config-rtr)#redistribute connected
R2(config-rtr)#exit
R2(config)#

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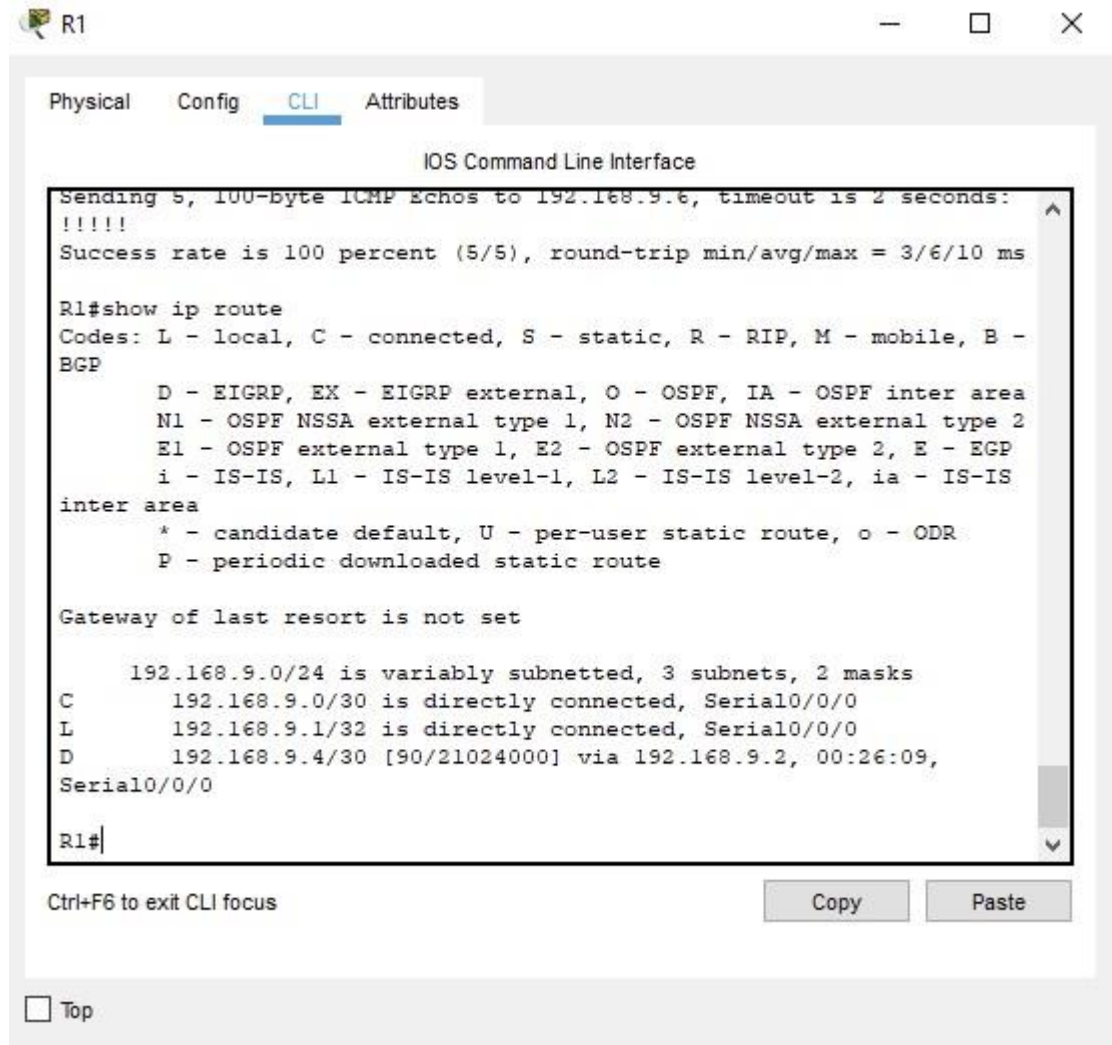
En R2.

R2(config)#
R2(config)#access-list 1 permit 192.168.3.0 255.255.255.0
R2(config)#

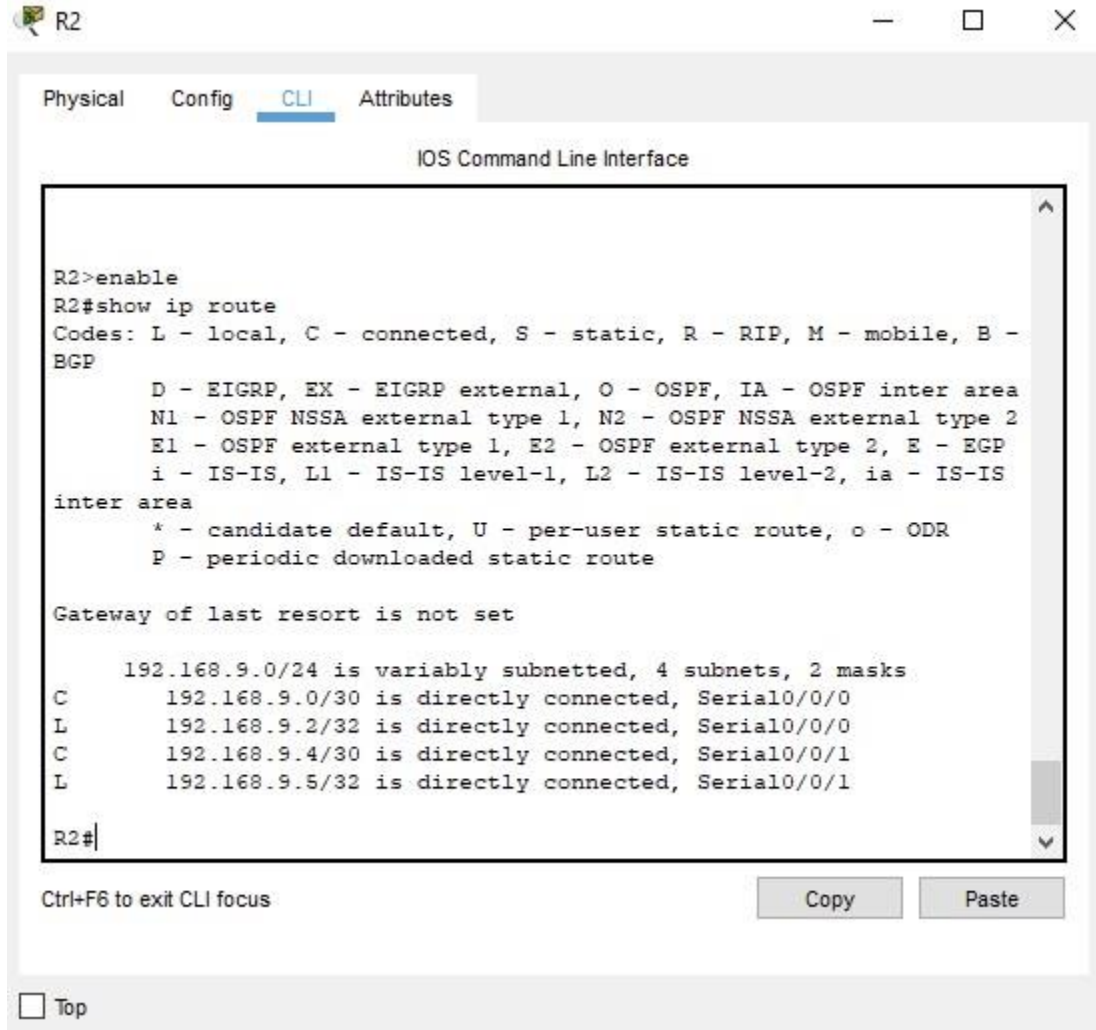Parte 2: Verificar conectividad de red y control de la trayectoria.

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

Ilustración 2. Evidencia 1

Fuente: Autoría propia

```
R2>enable
R2#show ip route
Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B -
BGP
        D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
        N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
        E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
        i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS
inter area
        * - candidate default, U - per-user static route, o - ODR
        P - periodic downloaded static route

Gateway of last resort is not set

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

R2#
```

Fuente: Autoría propia

R3

□   ×

Physical   Config   CLI   Attributes

IOS Command Line Interface

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

Gateway of last resort is not set

     192.168.9.0/24 is variably subnetted, 3 subnets, 2 masks
O        192.168.9.0/30 [110/1562] via 192.168.9.5, 01:58:19,
Serial0/0/1
C        192.168.9.4/30 is directly connected, Serial0/0/1
L        192.168.9.6/32 is directly connected, Serial0/0/1

R3#
```
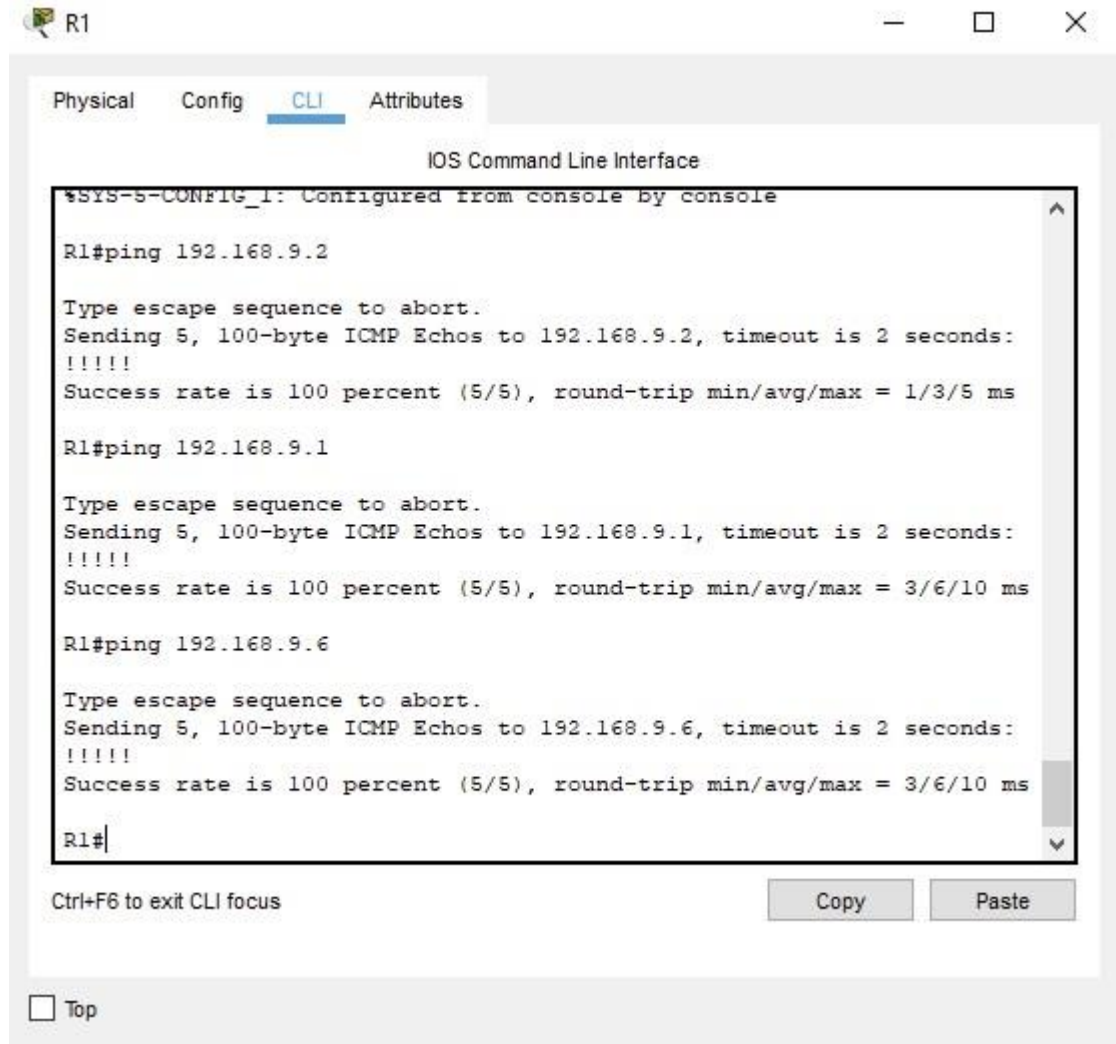
Ctrl+F6 to exit CLI focus   Copy   Paste

□ Top

Fuente: Autoría propia

    b. Verificar comunicación entre routers mediante el comando ping y traceroute
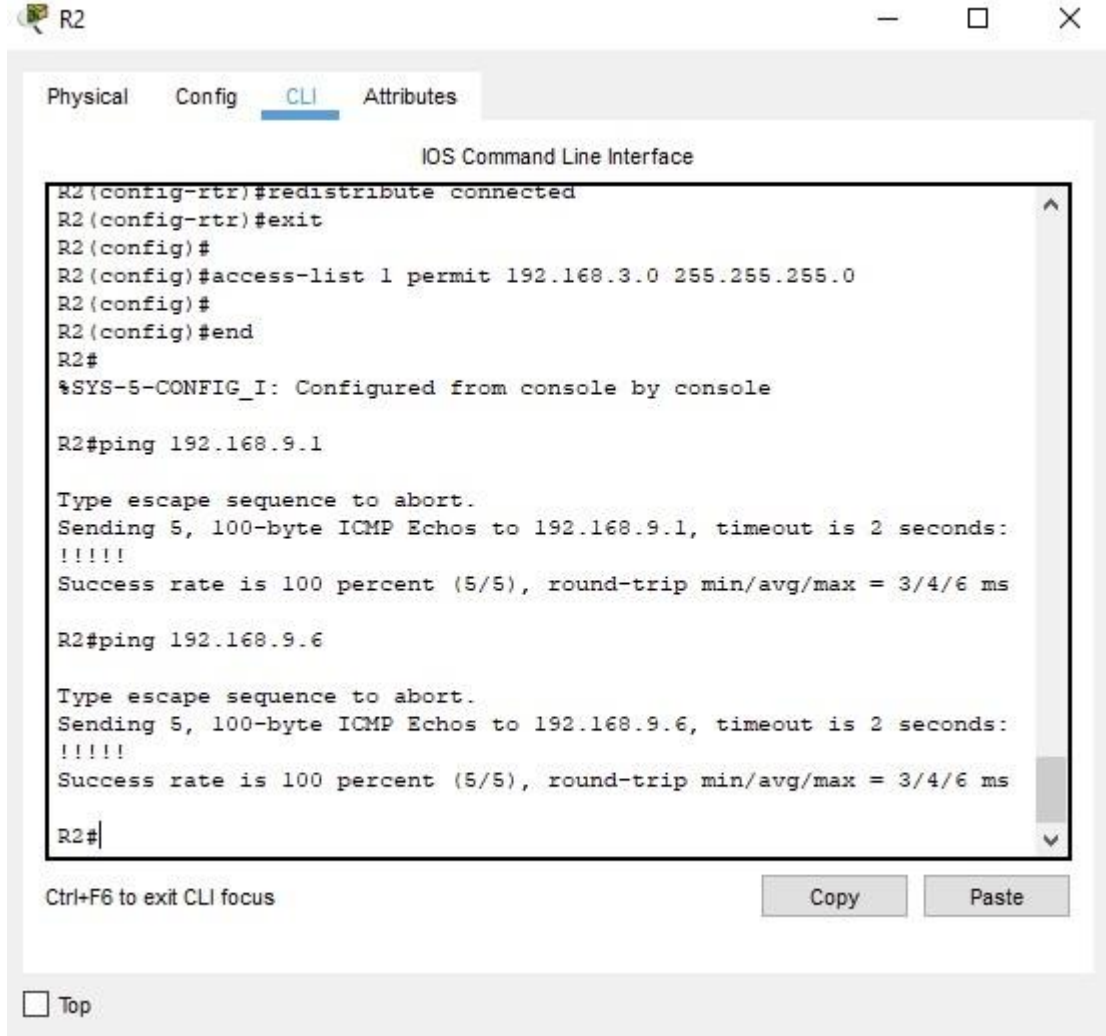
Fuente: Autoría propia

Fuente: Autoría propia
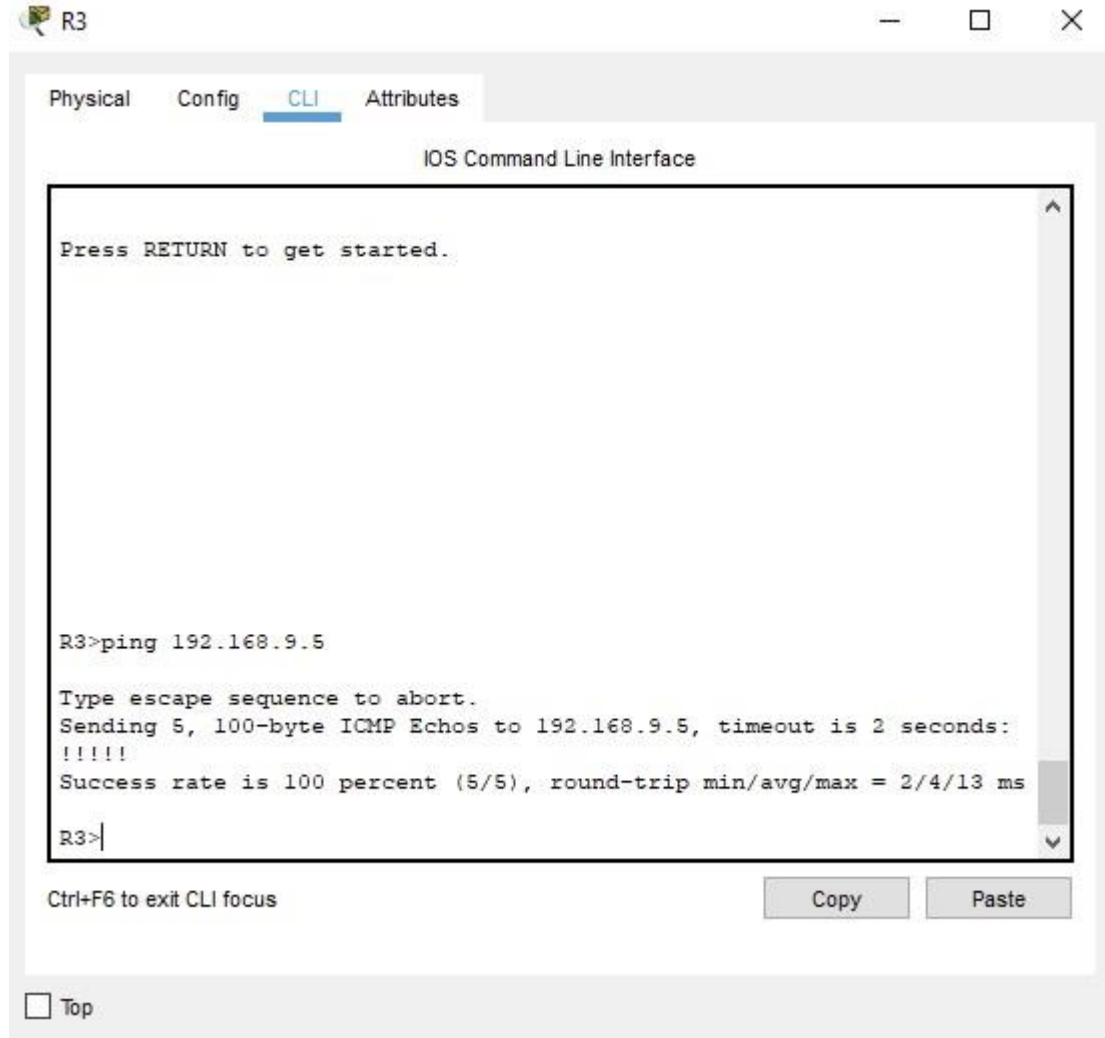
Fuente: Autoría propia

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

Fuente: Autoría propia

Nota: Puede ser que Una o más direcciones no serán accesibles desde todos los routers después de la configuración final debido a la utilización de listas de distribución para filtrar rutas y el uso de IPv4 e IPv6 en la misma red.

1.3. 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 escenar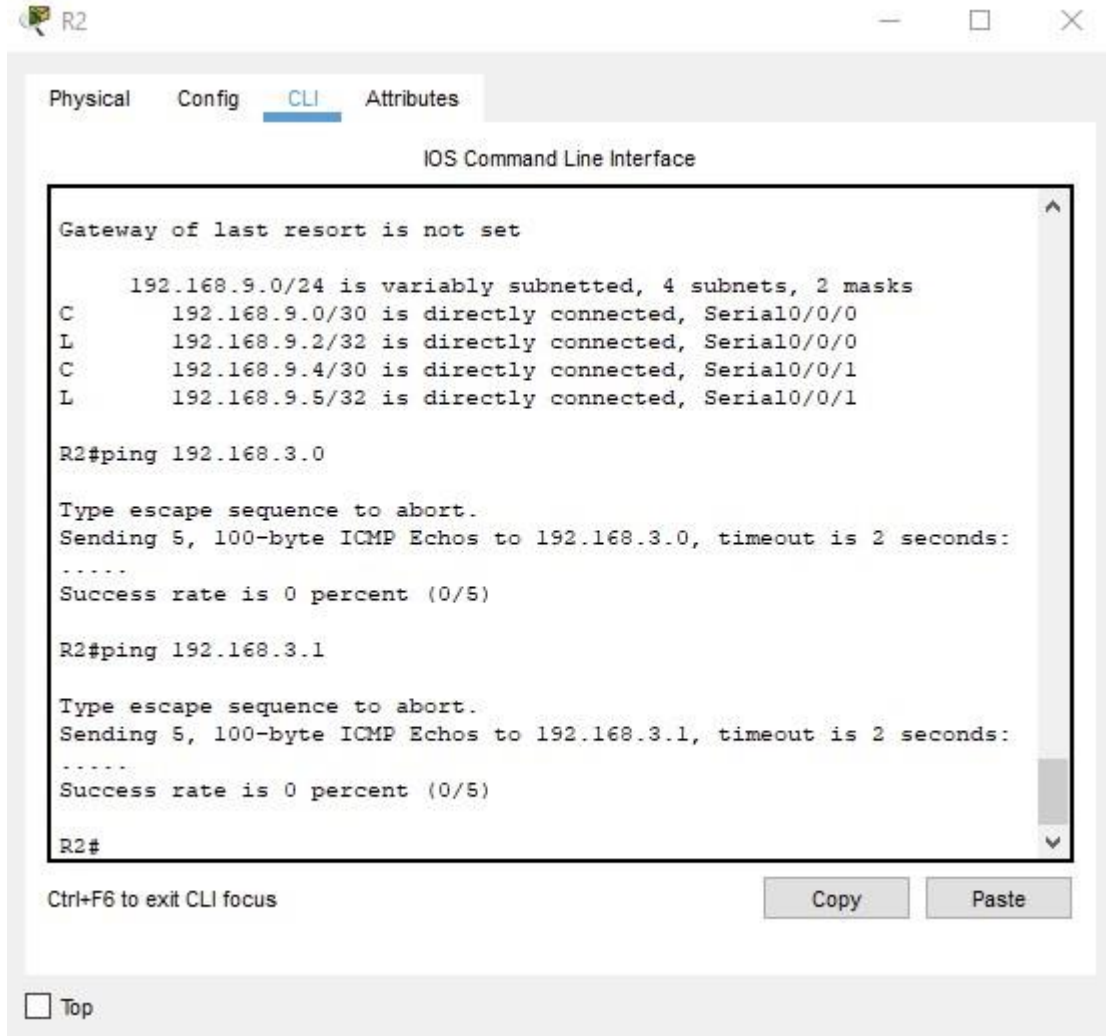io, acorde con los lineamientos establecidos para el direccionamiento IP, etherchannels, VLANs y demás aspectos que forman parte del escenario propuesto.

Ilustración 3. Topología de red
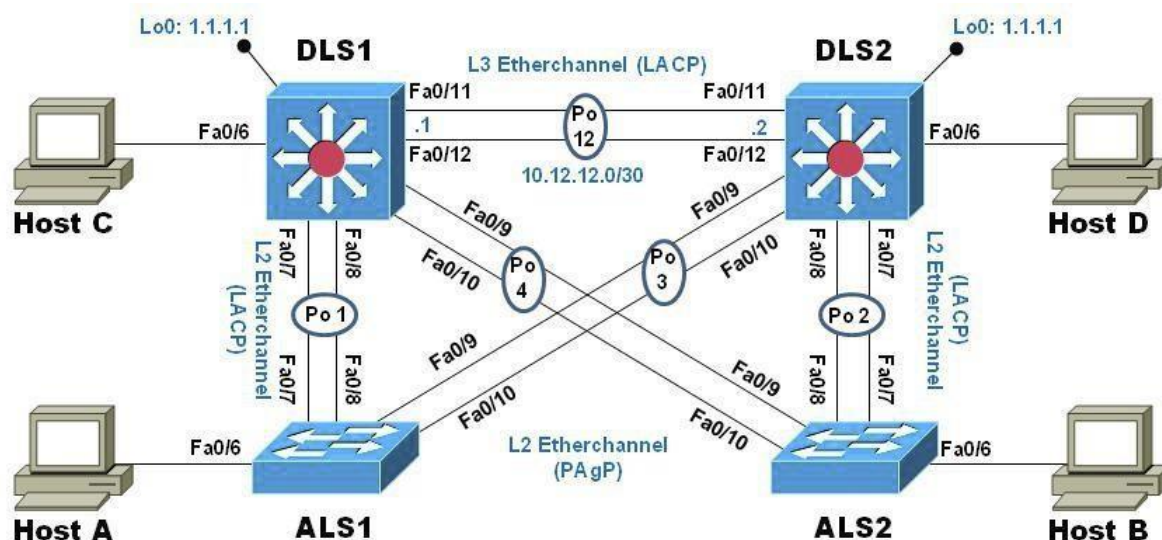
Parte 1: Configurar la red de acuerdo con las especificaciones.

a. Apagar todas las interfaces en cada switch.

En DLS1.

Switch>enable
Switch#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#interface range fa0/1-24
Switch(config-if-range)#shutdown

%LINK-5-CHANGED: Interface FastEthernet0/1, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/2, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/3, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/4, changed state to administratively down

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

%LINK-5-CHANGED: Interface FastEthernet0/13, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/14, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/15, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/16, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/17, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/18, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/19, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/20, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/21, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/22, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/23, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/24, changed state to administratively down
Switch(config-if-range)#
%LINK-5-CHANGED: Interface FastEthernet0/6, changed state to administratively down

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

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

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

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

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

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

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

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

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

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

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

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

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/12, changed state to down

Switch(config-if-range)#exit
Switch(config)#

En DLS2

Switch>enable
Switch#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#interface range fa0/1-24
Switch(config-if-range)#shutdown

%LINK-5-CHANGED: Interface FastEthernet0/1, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/2, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/3, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/4, changed state to administratively down

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

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

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

%LINK-5-CHANGED: Interface FastEthernet0/13, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/14, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/15, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/16, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/17, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/18, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/19, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/20, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/21, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/22, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/23, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/24, changed state to administratively down
Switch(config-if-range)#
%LINK-5-CHANGED: Interface FastEthernet0/6, changed state to administratively down

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

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

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

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

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

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

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

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

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

Switch(config-if-range)#exit
Switch(config)#

En ALS1

Switch>enable
Switch#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#interface range fa0/1-24
Switch(config-if-range)#shutdown

%LINK-5-CHANGED: Interface FastEthernet0/1, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/2, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/3, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/4, changed state to administratively down

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

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

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

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

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

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

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

%LINK-5-CHANGED: Interface FastEthernet0/13, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/14, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/15, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/16, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/17, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/18, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/19, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/20, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/21, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/22, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/23, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/24, changed state to administratively down
Switch(config-if-range)#
%LINK-5-CHANGED: Interface FastEthernet0/6, changed state to administratively down

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

Switch(config-if-range)#exit
Switch(config)#

En ALS2

Switch>enable
Switch#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#interface range fa0/1-24
Switch(config-if-range)#shutdown

%LINK-5-CHANGED: Interface FastEthernet0/1, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/2, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/3, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/4, changed state to administratively down

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

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

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

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

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

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

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

%LINK-5-CHANGED: Interface FastEthernet0/13, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/14, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/15, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/16, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/17, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/18, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/19, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/20, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/21, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/22, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/23, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/24, changed state to administratively down
Switch(config-if-range)#
%LINK-5-CHANGED: Interface FastEthernet0/6, changed state to administratively down

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

Switch(config-if-range)#exit
Switch(config)#

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

En DLS1.

Switch#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#hostname DLS1
DLS1(config)#

En DLS2

Switch#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#hostname DLS2
DLS2(config)#

En ALS1

Switch#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#hostname ALS1
ALS1(config)#

En ALS2

Switch#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#hostname ALS2
ALS2(config)#

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

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

En DLS1.

DLS1#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
DLS1(config)#interface fastethernet0/11
DLS1(config-if)#channel-group 1 mode active
DLS1(config-if)#no shutdown

%LINK-5-CHANGED: Interface FastEthernet0/11, changed state to down
DLS1(config-if)#description "Conexion Sw DLS2 Port Fa0/11"
DLS1(config-if)#exit

DLS1(config)#interface fastethernet0/12
DLS1(config-if)#channel-group 1 mode active
DLS1(config-if)#no shutdown

%LINK-5-CHANGED: Interface FastEthernet0/12, changed state to down
DLS1(config-if)#description "Conexion Sw DLS2 Port Fa0/12"
DLS1(config-if)#exit
Creating a port-channel interface Port-channel 1
DLS1(config)#interface port-channel 1
DLS1(config-if)#no switchport
DLS1(config-if)#ip address 10.12.12.1 255.255.255.252
DLS1(config-if)#description "Channel Group 1 Ports 11-12"
DLS1(config-if)#no shutdown
DLS1(config-if)#exit

En DLS2.

DLS2#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
DLS2(config)#interface fastethernet0/11
DLS2(config-if)#channel-group 1 mode active
DLS2(config-if)#no shutdown

DLS2(config-if)#description "Conexion Sw DLS1 Port Fa0/11"
DLS2(config-if)#exit
DLS2(config)#interface fastethernet0/12
DLS2(config-if)#channel-group 1 mode active
DLS2(config-if)#no shutdown

DLS2(config-if)#description "Conexion Sw DLS1 Port Fa0/12"
DLS2(config-if)#exit
DLS2(config)#interface port-channel 1
DLS2(config-if)#no switchport
DLS2(config-if)#ip address 10.12.12.2 255.255.255.252
DLS2(config-if)#description "Channel Group 1 Ports 11-12"
DLS2(config-if)#no shutdown
DLS2(config-if)#exit
Creating a port-channel interface Port-channel 1

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

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

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

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

%LINK-5-CHANGED: Interface Port-channel1, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Port-channel1, changed state to up

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

En DLS1.

```
DLS1#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
DLS1(config)#interface fastethernet0/7
DLS1(config-if)#channel-group  2  mode  active
DLS1(config-if)#no shutdown

%LINK-5-CHANGED: Interface FastEthernet0/7, changed state to down
DLS1(config-if)#description "Conexion Sw ALS1 Port Fe0/7"
DLS1(config-if)#exit
DLS1(config)#interface fastethernet0/8
DLS1(config-if)#channel-group  2  mode  active
DLS1(config-if)#no shutdown

%LINK-5-CHANGED: Interface FastEthernet0/8, changed state to down
DLS1(config-if)#description "Conexion Sw ALS1 Port Fe0/8"
DLS1(config-if)#exit
Creating a port-channel interface Port-channel 2

DLS1(config)#
```

En DLS2

DLS2#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
DLS2(config)#interface fastethernet0/7
DLS2(config-if)#channel-group 2 mode active
DLS2(config-if)#no shutdown

%LINK-5-CHANGED: Interface FastEthernet0/7, changed state to down
DLS2(config-if)#description "Conexion Sw ALS2 Port Fe0/7"
DLS2(config-if)#exit
DLS2(config)#interface fastethernet0/8
DLS2(config-if)#channel-group 2 mode active
DLS2(config-if)#no shutdown

%LINK-5-CHANGED: Interface FastEthernet0/8, changed state to down
DLS2(config-if)#description "Conexion Sw ALS2 Port Fe0/8"
DLS2(config-if)#exit
Creating a port-channel interface Port-channel 2

DLS2(config)#

En ALS1

ALS1#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
ALS1(config)#interface fastethernet0/7
ALS1(config-if)#channel-group 2 mode active
ALS1(config-if)#no shutdown

ALS1(config-if)#description "Conexion Sw DLS1 Port Fe0/7"
ALS1(config-if)#exit
ALS1(config)#interface fastethernet0/8
ALS1(config-if)#channel-group 2 mode active
ALS1(config-if)#no shutdown

ALS1(config-if)#description "Conexion Sw DLS1 Port Fe0/8"
ALS1(config-if)#exit
Creating a port-channel interface Port-channel 2

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

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

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

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

%LINK-5-CHANGED: Interface Port-channel2, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Port-channel2, changed state to up

ALS1(config)#

En ALS2

ALS2#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
ALS2(config)#interface fastethernet0/7
ALS2(config-if)#channel-group 2 mode active
ALS2(config-if)#no shutdown

ALS2(config-if)#description "Conexion Sw DLS2 Port Fe0/7"
ALS2(config-if)#exit
ALS2(config)#interface fastethernet0/8
ALS2(config-if)#channel-group 2 mode active
ALS2(config-if)#no shutdown

ALS2(config-if)#description "Conexion Sw DLS2 Port Fe0/8"
ALS2(config-if)#exit
Creating a port-channel interface Port-channel 2

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

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

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

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

%LINK-5-CHANGED: Interface Port-channel2, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Port-channel2, changed state to up

ALS2(config)#

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

En DLS1.

DLS1#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
DLS1(config)#interface fastethernet0/9
DLS1(config-if)#channel-group 3 mode desirable
DLS1(config-if)#no shutdown

%LINK-5-CHANGED: Interface FastEthernet0/9, changed state to down
DLS1(config-if)#description "Conexion Sw ALS2 Port Fe0/9"
DLS1(config-if)#exit
DLS1(config)#interface fastethernet0/10
DLS1(config-if)#channel-group 3 mode desirable
DLS1(config-if)#no shutdown

%LINK-5-CHANGED: Interface FastEthernet0/10, changed state to down
DLS1(config-if)#description "Conexion Sw ALS2 Port Fe0/10"
DLS1(config-if)#exit
Creating a port-channel interface Port-channel 3

DLS1(config)#

En DLS2

DLS2#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
DLS2(config)#interface fastethernet0/9
DLS2(config-if)#channel-group 3 mode desirable
DLS2(config-if)#no shutdown

%LINK-5-CHANGED: Interface FastEthernet0/9, changed state to down
DLS2(config-if)#description "Conexion Sw ALS1 Port Fe0/9"
DLS2(config-if)#exit
DLS2(config)#interface fastethernet0/10
DLS2(config-if)#channel-group 3 mode desirable
DLS2(config-if)#no shutdown

%LINK-5-CHANGED: Interface FastEthernet0/10, changed state to down
DLS2(config-if)#description "Conexion Sw ALS1 Port Fe0/10"
DLS2(config-if)#exit
Creating a port-channel interface Port-channel 3

DLS2(config)#

En ALS1

ALS1#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
ALS1(config)#interface fastethernet0/9
ALS1(config-if)#channel-group 3 mode desirable
ALS1(config-if)#no shutdown

ALS1(config-if)#description "Conexion Sw DLS2 Port Fe0/9"
ALS1(config-if)#exit
ALS1(config)#interface fastethernet0/10
ALS1(config-if)#channel-group 3 mode desirable
ALS1(config-if)#no shutdown

ALS1(config-if)#description "Conexion Sw DLS2 Port Fe0/10"
ALS1(config-if)#exit
Creating a port-channel interface Port-channel 3

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

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

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

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

%LINK-5-CHANGED: Interface Port-channel3, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Port-channel3, changed state to up

ALS1(config)#

En ALS2

ALS2#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
ALS2(config)#interface fastethernet0/9
ALS2(config-if)#channel-group 3 mode desirable
ALS2(config-if)#no shutdown

ALS2(config-if)#description "Conexion Sw DLS1 Port Fe0/9"
ALS2(config-if)#exit
ALS2(config)#interface fastethernet0/10
ALS2(config-if)#channel-group 3 mode desirable
ALS2(config-if)#no shutdown

ALS2(config-if)#description "Conexion Sw DLS1 Port Fe0/10"
ALS2(config-if)#exit
Creating a port-channel interface Port-channel 3

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

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

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

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

%LINK-5-CHANGED: Interface Port-channel3, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Port-channel3, changed state to up

ALS2(config)#

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

En DLS1.

DLS1#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
DLS1(config)#vlan 800
DLS1(config-vlan)#name   NATIVA
DLS1(config-vlan)#exit
DLS1(config)#interface range fastethernet0/7-12
DLS1(config-if-range)#switchport trunk native vlan 800
DLS1(config-if-range)#exit
DLS1(config)#

En DLS2.

DLS2(config)#vlan 800
DLS2(config-vlan)#name   NATIVA
DLS2(config-vlan)#exit
DLS2(config)#interface range fastethernet0/7-12
DLS2(config-if-range)#switchport trunk native vlan 800
DLS2(config-if-range)#exit
DLS2(config)#

DLS2#

En ALS1.

ALS1#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
ALS1(config)#vlan 800
ALS1(config-vlan)#name   NATIVA
ALS1(config-vlan)#exit
ALS1(config)#interface range fastethernet0/7-12
ALS1(config-if-range)#switchport trunk native vlan 800
ALS1(config-if-range)#exit
ALS1(config)#

En ALS2.

ALS2#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
ALS2(config)#vlan 800
ALS2(config-vlan)#name   NATIVA
ALS2(config-vlan)#exit
ALS2(config)#interface range fastethernet0/7-12
ALS2(config-if-range)#switchport trunk native vlan 800
ALS2(config-if-range)#exit
ALS2(config)#

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

En DLS1.

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

DLS1(config)#vtp version 2

En ALS1.

ALS1#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
ALS1(config)#vtp version 2

En ALS2.

ALS2#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
ALS2(config)#vtp version 2
ALS2(config)#

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

En DLS1.

DLS1(config)#vtp domain UNAD
Changing VTP domain name from NULL to UNAD
DLS1(config)#vtp password cisco123
Setting device VLAN database password to cisco123
DLS1(config)#

En ALS1.

ALS1(config)#vtp domain UNAD
Changing VTP domain name from NULL to UNAD

ALS1(config)#vtp password cisco123
Setting device VLAN database password to cisco123
ALS1(config)#

En ALS2.

ALS2(config)#vtp domain UNAD
Changing VTP domain name from NULL to UNAD
ALS2(config)#vtp password cisco123
Setting device VLAN database password to cisco123
ALS2(config)#

2)   Configurar DLS1 como servidor principal para las VLAN.

En DLS1.

DLS1(config)#vtp domain server
Changing VTP domain name from UNAD to server
DLS1(config)#00:32:11 %DTP-5-DOMAINMISMATCH: Unable to perform trunk
negotiation on port Po3 because of VTP domain mismatch.

DLS1(config)#

3)   Configurar ALS1 y ALS2 como clientes VTP.

En ALS1.

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

En ALS2.

ALS2(config)#vtp mode client
Setting device to VTP CLIENT mode.
ALS2(config)#

    a. Configurar en el servidor principal las siguientes VLAN:

En DLS1.

Tabla 1. Configuraciones en DLS1

VLAN ID	VLAN NAME	VLAN ID	VLAN NAME
800	NATIVA	434	ESTACIONAMIENTO
12	EJECUTIVOS	123	MANTENIMIENTO
234	HUESPEDES	1010	VOZ
1111	VIDEONET	3456	ADMINISTRACIÓN

DLS1#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
DLS1(config)#vlan 12
DLS1(config-vlan)#name   EJECUTIVOS
DLS1(config-vlan)#vlan 234
DLS1(config-vlan)#name   HUESPEDES
DLS1(config-vlan)#vlan 1111
VLAN_CREATE_FAIL: Failed to create VLANs 1111 : extended VLAN(s) not allowed in current VTP mode
DLS1(config)#name   VIDEONET
^
% Invalid input detected at '^' marker.
DLS1(config)#vlan 434
DLS1(config-vlan)#name   ESTACIONAMIENTO
DLS1(config-vlan)#vlan 123
DLS1(config-vlan)#name   MANTENIMIENTO
DLS1(config-vlan)#vlan 1010

VLAN_CREATE_FAIL: Failed to create VLANs 1010 : extended VLAN(s) not allowed in current VTP mode
DLS1(config)#name   VOZ
^
% Invalid input detected at '^' marker.
DLS1(config)#vlan 3456
VLAN_CREATE_FAIL: Failed to create VLANs 3456 : extended VLAN(s) not allowed in current VTP mode
DLS1(config)#name   ADMINISTRACION
^
% Invalid input detected at '^' marker.

     b. En DLS1, suspender la VLAN 434.

En DLS1.

DLS1#configure   terminal
DLS1(config)#vlan 434
DLS1(config-vlan)#state   suspend
^
% Invalid input detected at '^' marker.
DLS1(config-vlan)#exit
DLS1(config)#

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

En DLS2.

DLS2#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
DLS2(config)#vtp version 2
DLS2(config)#vtp mode transparent
Setting device to VTP TRANSPARENT mode.

```
DLS2(config)#vlan 12
DLS2(config-vlan)#name    EJECUTIVOS
DLS2(config-vlan)#vlan 234
DLS2(config-vlan)#name    HUESPEDES
DLS2(config-vlan)#vlan 1111
DLS2(config-vlan)#name    VIDEONET
DLS2(config-vlan)#vlan 123
DLS2(config-vlan)#name    MANTENIMIENTO
DLS2(config-vlan)#vlan 1010
DLS2(config-vlan)#name    VOZ
DLS2(config-vlan)#vlan 3456
DLS2(config-vlan)#name    ADMINISTRACION
DLS2(config-vlan)#vlan 434
DLS2(config-vlan)#name    ESTACIONAMIENTO
DLS2(config-vlan)#exit
DLS2(config)#
```

    d. Suspender VLAN 434 en DLS2.

En DLS2.

```
DLS2(config)#
DLS2(config)#vlan 434
DLS2(config-vlan)#state    suspend
                   ^
% Invalid input detected at '^' marker.
DLS2(config-vlan)#exit
DLS2(config)#
```

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

En DLS2.

DLS2(config)#
DLS2(config)#vlan 567
DLS2(config-vlan)#name   CONTABILIDAD
DLS2(config-vlan)#exit
DLS2(config)#

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

En DLS1.

DLS1#
DLS1#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
DLS1(config)#
DLS1(config)#spanning-tree vlan 1 root primary
DLS1(config)#spanning-tree vlan 12 root primary
DLS1(config)#spanning-tree vlan 434 root primary
DLS1(config)#spanning-tree vlan 800 root primary
DLS1(config)#spanning-tree vlan 1010 root primary
DLS1(config)#spanning-tree vlan 1111 root primary
DLS1(config)#spanning-tree vlan 3456 root primary
DLS1(config)#spanning-tree vlan 123 root secondary
DLS1(config)#spanning-tree vlan 234 root secondary
DLS1(config)#

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

En DLS2.

DLS2(config)#
DLS2(config)#spanning-tree vlan 123 root primary
DLS2(config)#spanning-tree vlan 234 root primary

DLS2(config)#spanning-tree vlan 12 root secondary
DLS2(config)#spanning-tree vlan 434 root secondary
DLS2(config)#spanning-tree vlan 800 root secondary
DLS2(config)#spanning-tree vlan 1010 root secondary
DLS2(config)#spanning-tree vlan 1111 root secondary
DLS2(config)#spanning-tree vlan 3456 root secondary
DLS2(config)#

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

En DLS2.

DLS2(config)#
DLS2(config)#interface range fas
DLS2(config)#interface range fastEthernet 0/1-24
DLS2(config-if-range)#switchport mode trunk
Command rejected: An interface whose trunk encapsulation is "Auto" can not be configured to "trunk" mode.
Command rejected: An interface whose trunk encapsulation is "Auto" can not be configured to "trunk" mode.
Command rejected: An interface whose trunk encapsulation is "Auto" can not be configured to "trunk" mode.
Command rejected: An interface whose trunk encapsulation is "Auto" can not be configured to "trunk" mode.
Command rejected: An interface whose trunk encapsulation is "Auto" can not be configured to "trunk" mode.
Command rejected: An interface whose trunk encapsulation is "Auto" can not be configured to "trunk" mode.
Command rejected: An interface whose trunk encapsulation is "Auto" can not be configured to "trunk" mode.
Command rejected: An interface whose trunk encapsulation is "Auto" can not be configured to "trunk" mode.
Command rejected: An interface whose trunk encapsulation is "Auto" can not be configured to "trunk" mode.
Command rejected: An interface whose trunk encapsulation is "Auto" can not be configured to "trunk" mode.

Command rejected: An interface whose trunk encapsulation is "Auto" can not be configured to "trunk" mode.
Command rejected: An interface whose trunk encapsulation is "Auto" can not be configured to "trunk" mode.
Command rejected: An interface whose trunk encapsulation is "Auto" can not be configured to "trunk" mode.
Command rejected: An interface whose trunk encapsulation is "Auto" can not be configured to "trunk" mode.
Command rejected: An interface whose trunk encapsulation is "Auto" can not be configured to "trunk" mode.
Command rejected: An interface whose trunk encapsulation is "Auto" can not be configured to "trunk" mode.
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Command rejected: An interface whose trunk encapsulation is "Auto" can not be configured to "trunk" mode.
Command rejected: An interface whose trunk encapsulation is "Auto" can not be configured to "trunk" mode.
Command rejected: An interface whose trunk encapsulation is "Auto" can not be configured to "trunk" mode.
Command rejected: An interface whose trunk encapsulation is "Auto" can not be configured to "trunk" mode.
Command rejected: An interface whose trunk encapsulation is "Auto" can not be configured to "trunk" mode.
Command rejected: An interface whose trunk encapsulation is "Auto" can not be configured to "trunk" mode.
DLS2(config-if-range)#exit
DLS2(config)#

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

Tabla 2. Configuraciones para interfaces

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

En DLS1.

```
DLS1(config)#
DLS1(config)#interface fastethernet0/6
DLS1(config-if)#switchport mode access
DLS1(config-if)#switchport access vlan 3456
% Access VLAN does not exist. Creating vlan 3456
DLS1(config-if)#no shutdown

DLS1(config-if)#interface fastethernet0/15
DLS1(config-if)#switchport mode access
DLS1(config-if)#switchport access vlan 1111
% Access VLAN does not exist. Creating vlan 1111
DLS1(config-if)#no shutdown

%LINK-5-CHANGED: Interface FastEthernet0/15, changed state to down
DLS1(config-if)#exit
%LINK-5-CHANGED: Interface FastEthernet0/6, changed state to up
```

En DLS2.

```
DLS2#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
DLS2(config)#
DLS2(config)#interface fastethernet0/6
DLS2(config-if)#switchport mode access
DLS2(config-if)#switchport access vlan 12
DLS2(config-if)#no shutdown

DLS2(config-if)#interface fastethernet0/15
DLS2(config-if)#switchport mode access
DLS2(config-if)#switchport access vlan 1111
DLS2(config-if)#no shutdown
```

%LINK-5-CHANGED: Interface FastEthernet0/15, changed state to down
DLS2(config-if)#interface range fastethernet0/16-18
DLS2(config-if-range)#switchport mode access
DLS2(config-if-range)#switchport access vlan 567
DLS2(config-if-range)#no shutdown

%LINK-5-CHANGED: Interface FastEthernet0/16, changed state to down

%LINK-5-CHANGED: Interface FastEthernet0/17, changed state to down

%LINK-5-CHANGED: Interface FastEthernet0/18, changed state to down
DLS2(config-if-range)#exit
%LINK-5-CHANGED: Interface FastEthernet0/6, changed state to up

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

En ALS1.

ALS1#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
ALS1(config)#interface fastethernet0/6
ALS1(config-if)#switchport mode access
ALS1(config-if)#switchport access vlan 123
ALS1(config-if)#no shutdown

ALS1(config-if)#interface fastethernet0/15
ALS1(config-if)#switchport mode access
ALS1(config-if)#switchport access vlan 1111
ALS1(config-if)#no shutdown

%LINK-5-CHANGED: Interface FastEthernet0/15, changed state to down
ALS1(config-if)#exit
%LINK-5-CHANGED: Interface FastEthernet0/6, changed state to up

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

ALS1(config)#

En ALS2.

ALS2#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
ALS2(config)#interface fastethernet0/6
ALS2(config-if)#switchport mode access
ALS2(config-if)#switchport access vlan 234
ALS2(config-if)#no shutdown

ALS2(config-if)#interface fastethernet0/15
ALS2(config-if)#switchport mode access
ALS2(config-if)#switchport access vlan 1111
ALS2(config-if)#no shutdown

%LINK-5-CHANGED: Interface FastEthernet0/15, changed state to down
ALS2(config-if)#exit
%LINK-5-CHANGED: Interface FastEthernet0/6, changed state to up

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

ALS2(config)#

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

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

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

CONCLUSIONES

De acuerdo con lo indicado en la práctica se pudo observar y aprender cómo se configura una red a través de switching basado en protocolos avanzados de capa 2 pasando por capa 3 otorgando conectividad entre los hosts de la red.

Así mismo con el desarrollo de la actividad se pudieron adquirir las 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 administración de aplicación o de proyectos más simples nos permite que las VLAN agregan dispositivos de red y usuarios para admitir los requerimientos geográficos o comerciales.

Estas configuraciones brindan mejor convergencia y mayor seguridad a las entidades que tienen datos sensibles ofreciendo una segmentación de la información por medio de la red, disminuyendo las posibilidades de que ocurran violaciones de información confidencial.

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