

DIPLOMADO DE PROFUNDIZACION CISCO CCNP
PRUEBA DE HABILIDADES PRACTICAS

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UNIVERSIDAD NACIONAL ABIERTA Y A DISTANCIA
ESCUELA DE CIENCIAS BASICAS, TECNOLOGIA E INGENIERIA
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SAHAGUN – CORDOBA
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presentado para optar el título de
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NOTA DE ACEPTACIÓN

Presidente del Jurado

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Sahagún, 26 de diciembre de 2019

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RESUMEN

En el siguiente informe se desarrolla 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 switches, para segmentar la red a través de VLANs para enviar paquetes a la red de destino a través de equipos conectados y pasando por capa 2 y capa 3 respectivamente mediante los dos escenarios propuestos.

Este curso avanzado capacita a los estudiantes para instalar, configurar y operar LANs, WANs, y para brindar servicios de acceso por marcación a organizaciones que tienen redes desde 100 hasta 500 nodos con protocolos y tecnologías tales como TCP/IP, OSPF, EIGRP, BGP, ISDN, Frame Relay, STP y VTP a lo largo de 2 cursos: Route Avanzado (CCNP ROUTE R&Sv7) y Switch Avanzado (CCNP SWITCH R&S v7.1)

Palabras Clave: Redes, Electrónica, CISCO, CCNP

ABSTRACT

The following report develops the presentation of the practical skills test for the CCNP diploma course in deepening, in which it is necessary to address and know the importance of the course as a way of learning about the routing process and advanced configuration using switches, to segment the network through VLANs to send packets to the destination network through connected equipment and through layer 2 and layer 3 respectively through the two scenarios proposed.

This advanced course enables students to install, configure and operate LANs, WANs, and to provide dial-up access services to organizations that have networks from 100 to 500 nodes with protocols and technologies such as TCP / IP, OSPF, EIGRP, BGP , ISDN, Frame Relay, STP and VTP over 2 courses: Advanced Route (CCNP ROUTE R & Sv7) and Advanced Switch (CCNP SWITCH R & S v7.1)

Keywords: Networking, Electronics, CISCO, CCNP

INTRODUCCIÓN

La prueba de habilidades prácticas es una herramienta de evaluación del Diplomado de profundización de CCNP, con la cual se busca medir las habilidades y competencias que el estudiante logró alcanzar mediante el desarrollo del diplomado y cada una de sus actividades, esta evaluación pondrá a prueba al estudiante mediante la solución de problemas relacionados con redes.

Esta actividad final contará con dos escenarios en la cual se realizará cada una de las configuraciones necesarias para solventar el problema de red propuesto, anexando cada una de las evidencias que muestran la solución al problema.

Los conocimientos adquiridos en el desarrollo de este diplomado son fundamentales en la aplicación del aprendizaje obtenido en la carrera como Ingeniero Electrónico, teniendo en cuenta que los equipos de comunicación CISCO SYSTEMS, tienen un alto nivel de comercialización y uso generalizado a nivel internacional, gracias a que sus redes poseen grandes índices de capacidad y seguridad, situación que permite enfrentarse con este tipo sistemas en el ámbito laboral.

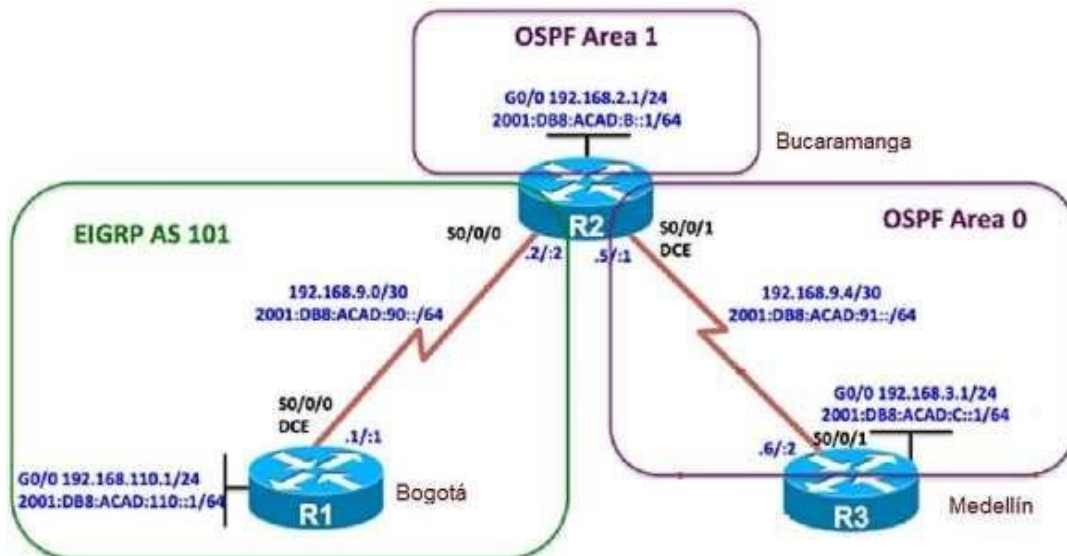
Descripción de escenarios propuestos para la prueba de habilidades

ESCENARIO 1

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

Topología de red

Figura 1. Topología de Red Escenario 1



Fuente: Autor

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.

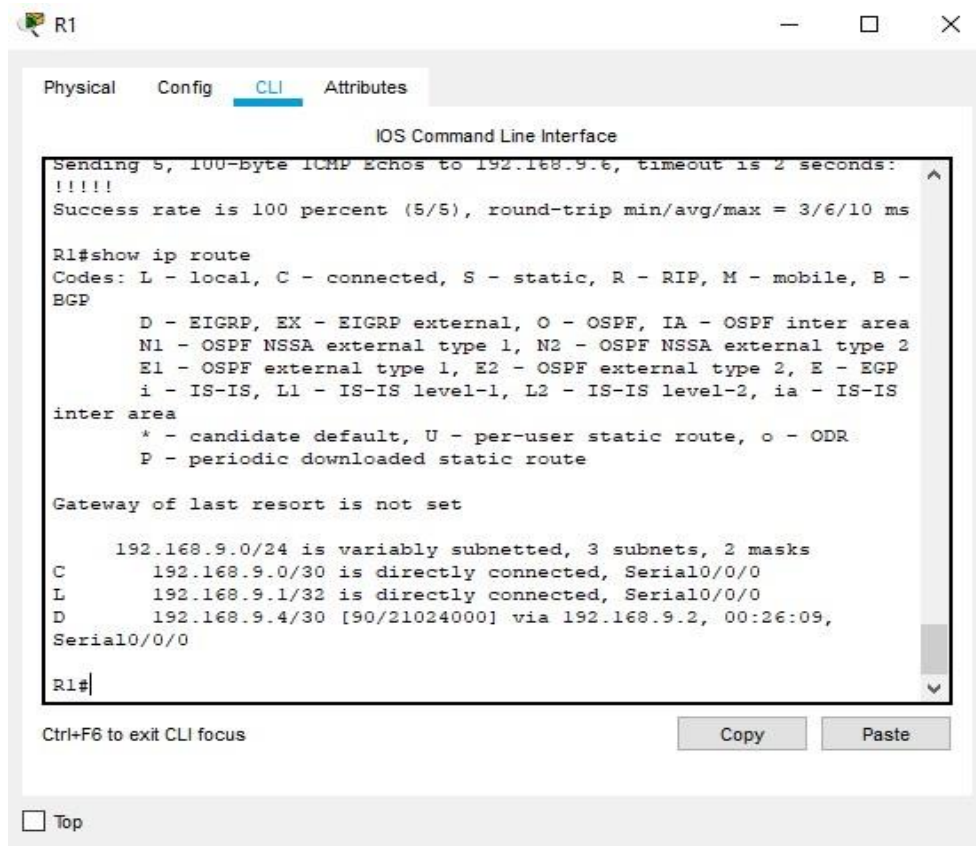
En R2

```
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

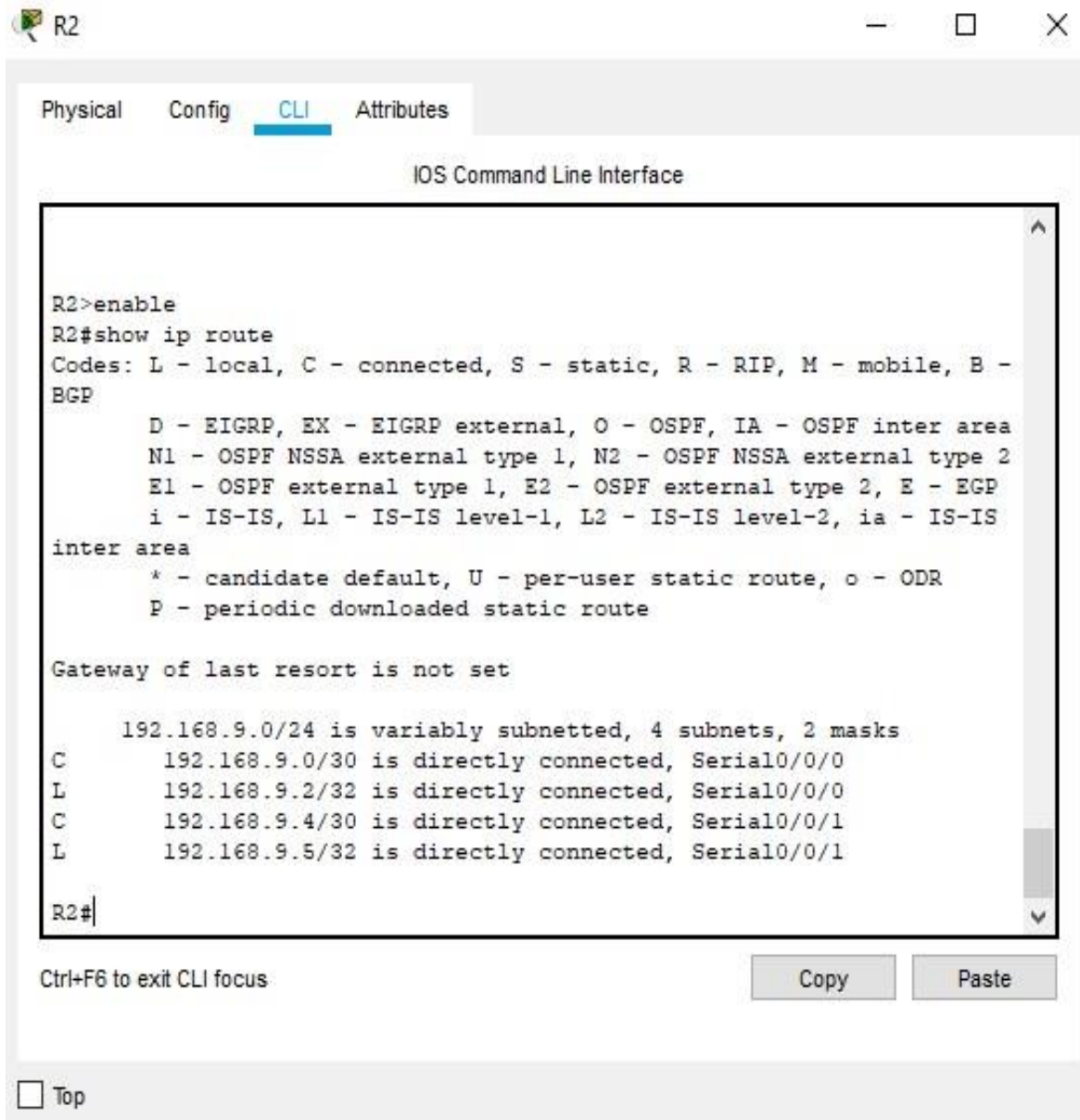
a. Registrar las tablas de enrutamiento en cada uno de los routers, acorde con los parámetros de configuración establecidos en el escenario propuesto.

Figura 2. Registro de las tablas de enrutamiento en R1



Fuente: Autor

Figura 3. Registro de las tablas de enrutamiento en R2



The image shows a screenshot of a network device's Command Line Interface (CLI) window. The window title is "R2" and it has standard window controls (minimize, maximize, close). The interface has tabs for "Physical", "Config", "CLI", and "Attributes", with "CLI" selected. The main area is titled "IOS Command Line Interface" and displays the following text:

```
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

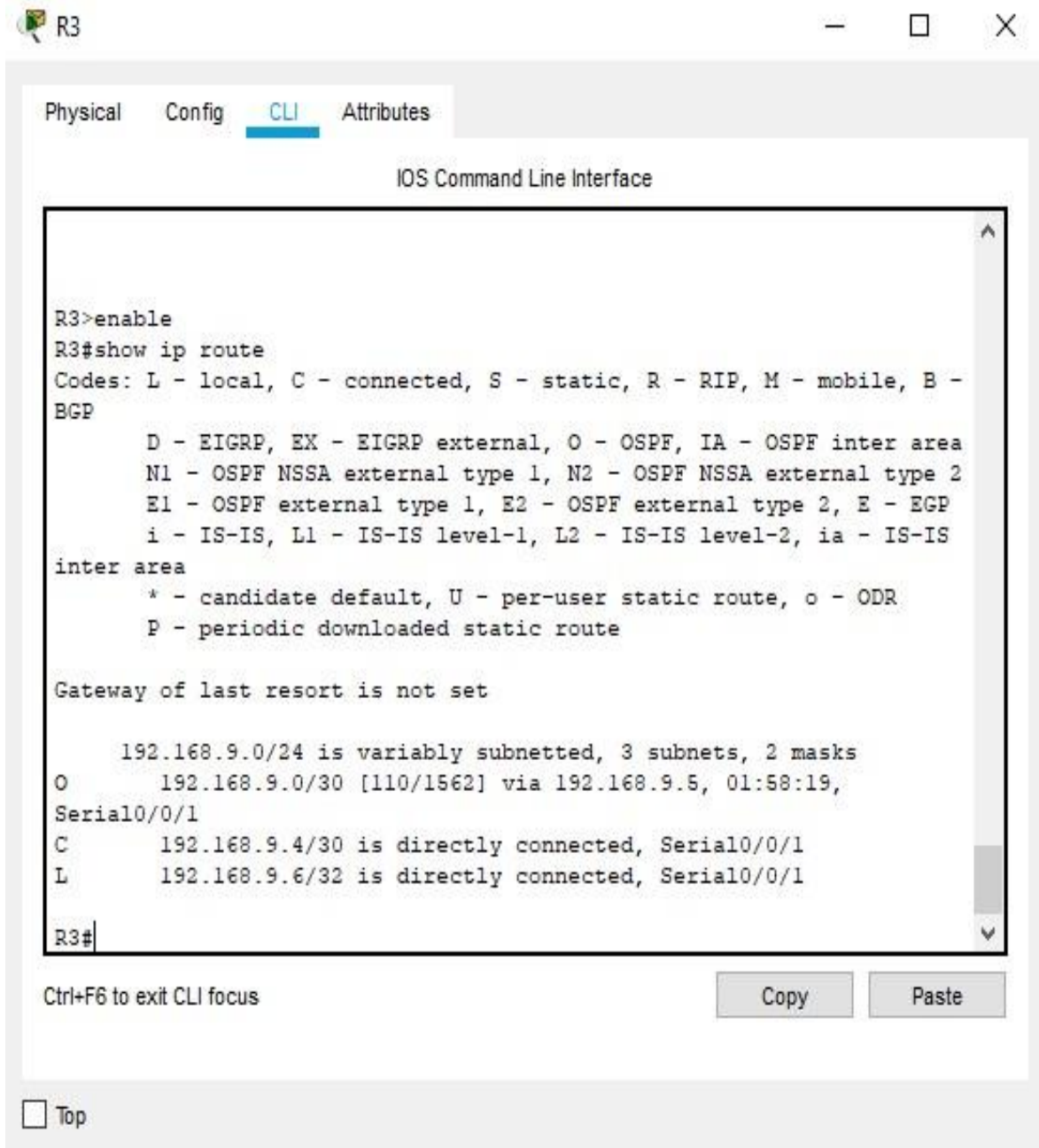
      192.168.9.0/24 is variably subnetted, 4 subnets, 2 masks
C       192.168.9.0/30 is directly connected, Serial0/0/0
L       192.168.9.2/32 is directly connected, Serial0/0/0
C       192.168.9.4/30 is directly connected, Serial0/0/1
L       192.168.9.5/32 is directly connected, Serial0/0/1

R2#
```

Below the CLI window, there is a "Ctrl+F6 to exit CLI focus" message and two buttons: "Copy" and "Paste". At the bottom left, there is a "Top" button with a square icon.

Fuente: Autor

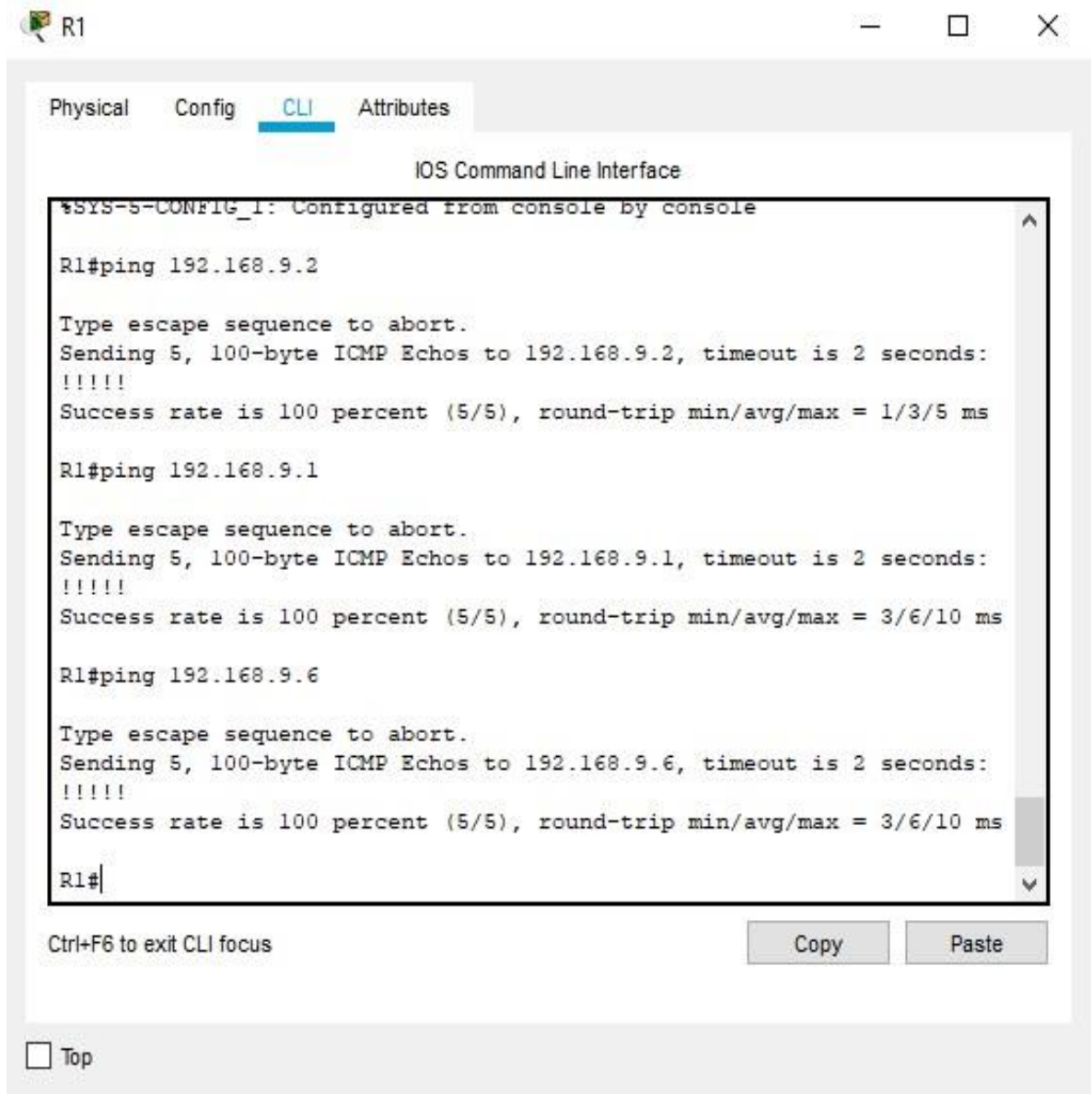
Figura 4. Registro de las tablas de enrutamiento en R3



Fuente: Autor

- b. Verificar comunicación entre routers mediante el comando ping y traceroute

Figura 5. Prueba de ping en R1



Fuente: Autor

Figura 6. Prueba de ping en R2

```
R2
Physical  Config  CLI  Attributes
IOS Command Line Interface
R2(config-rtr)#redistribute connected
R2(config-rtr)#exit
R2(config)#
R2(config)#access-list 1 permit 192.168.3.0 255.255.255.0
R2(config)#
R2(config)#end
R2#
%SYS-5-CONFIG_I: Configured from console by console

R2#ping 192.168.9.1

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 192.168.9.1, timeout is 2 seconds:
!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 3/4/6 ms

R2#ping 192.168.9.6

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 192.168.9.6, timeout is 2 seconds:
!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 3/4/6 ms

R2#
```

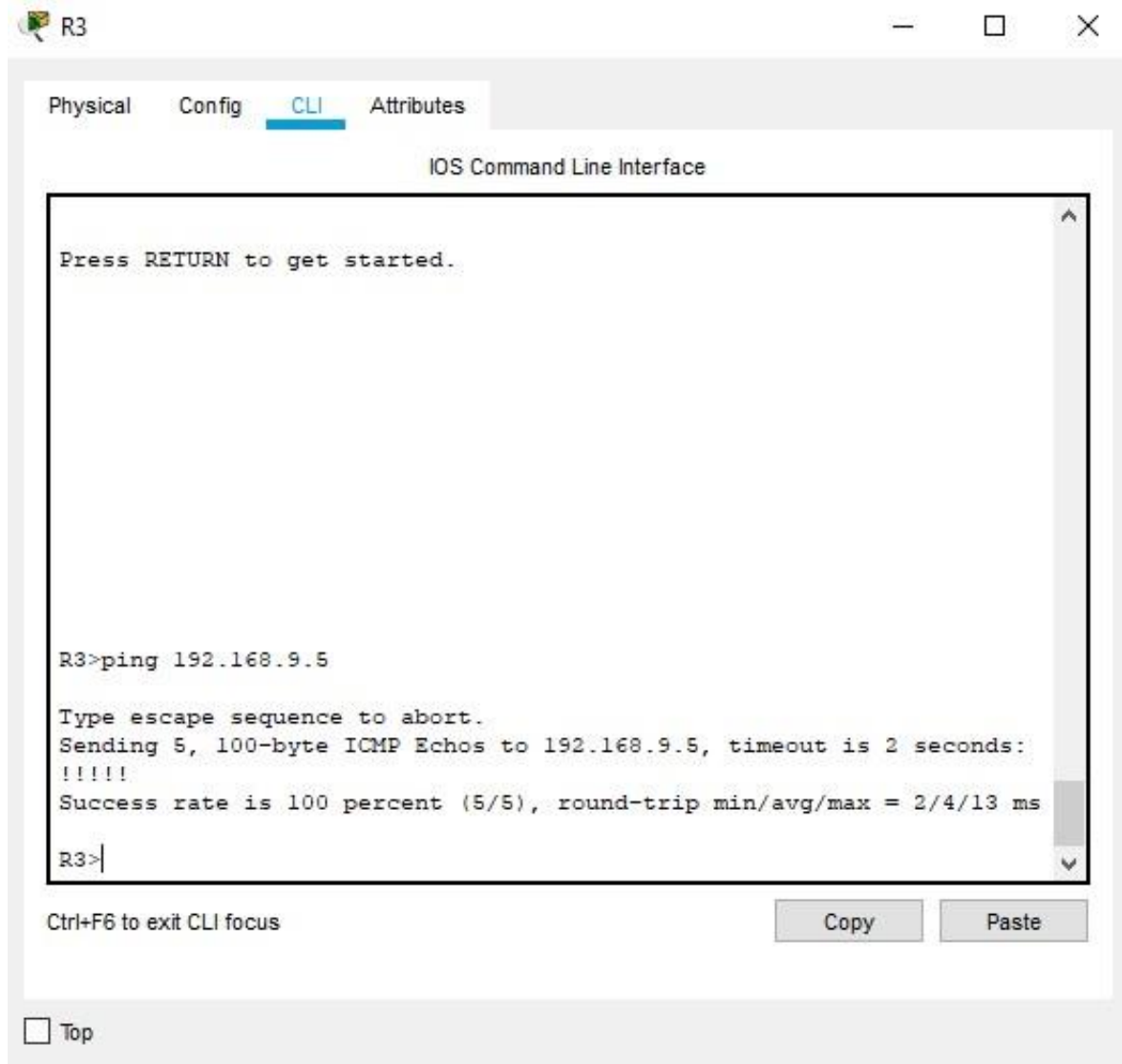
Ctrl+F6 to exit CLI focus

Copy Paste

Top

Fuente: Autor

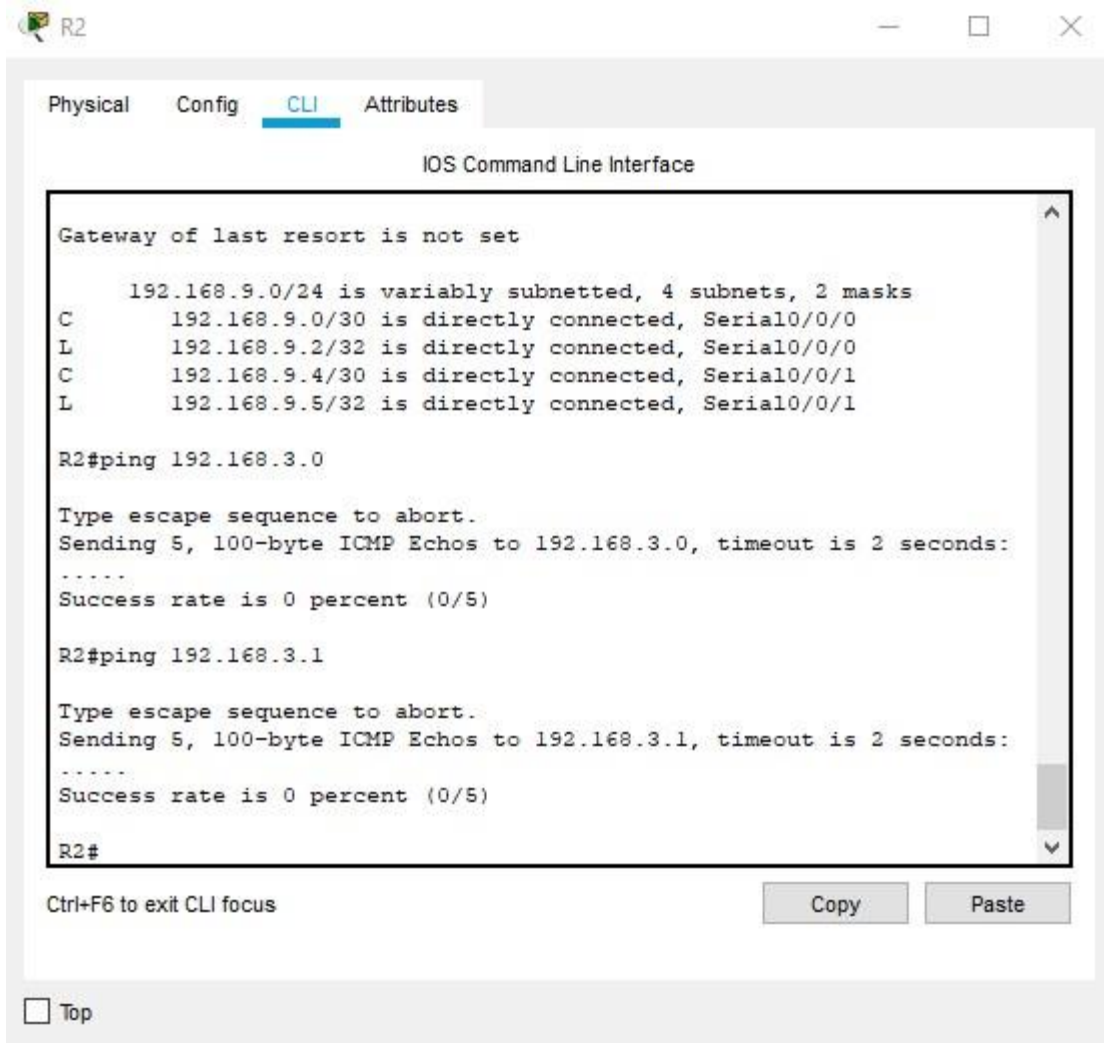
Figura 7. Prueba de ping en R3



Fuente: Autor

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

Figura 8. Verificación de las rutas filtradas en R2



```
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#ping 192.168.3.0

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 192.168.3.0, timeout is 2 seconds:
.....
Success rate is 0 percent (0/5)

R2#ping 192.168.3.1

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 192.168.3.1, timeout is 2 seconds:
.....
Success rate is 0 percent (0/5)

R2#
```

Ctrl+F6 to exit CLI focus

Copy Paste

Top

Fuente: Autor

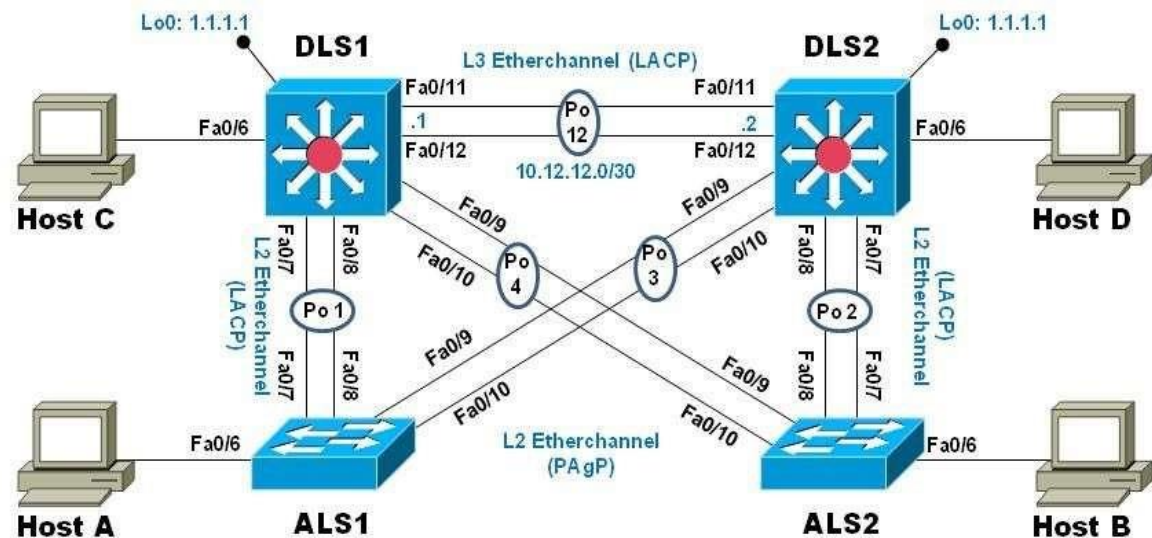
Nota: Puede ser que Una o más direcciones no serán accesibles desde todos los routers después de la configuración final debido a la utilización de listas de distribución para filtrar rutas y el uso de IPv4 e IPv6 en la misma red.

ESCENARIO 2

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

Topología de red

Figura 9. Topología de Red Escenario 2



Fuente: Autor

Parte 1: Configurar la red de acuerdo con las especificaciones

- 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

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)#

- d. 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)#
```

e. Configurar en el servidor principal las siguientes VLAN:

Tabla 1. Datos Configuración VLANs

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

Fuente: Autor

En DLS1

```
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.
```

f. 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)#
```

g. 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)#
```

h. Suspende 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)#
```

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

En DLS2

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

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

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)#
```

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

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)#
```

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

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.
```


Tabla 2. Datos Configuración Interfaces

Interfaz	DLS1	DLS2	ALS1	ALS2
Interfaz Fa0/6	3456	12 , 1010	123, 1010	234
Interfaz Fa0/15	1111	1111	1111	1111
Interfaces F0 /1618			567	

Fuente: Autor

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.

Se adjunta enlace en la nube con los escenarios 1 y 2 desarrollados respectivamente

https://drive.google.com/open?id=1Sez806n5_AaX1Zvuy0dc0MA457mxA8Pr

CONCLUSIONES

Con el desarrollo del trabajo de habilidades prácticas se pudo poner a prueba la capacidad de diseñar y configurar una red en los escenarios propuestos, en tal sentido se establecieron los direccionamientos IP, protocolos de enrutamiento y seguridad.

Los escenarios propuestos afianzaron las capacidades en configuración de dispositivos como router y switches, configuración de Vlan, puertos troncales, configuración de redes primarias y secundarias.

Con el desarrollo del ejercicio de habilidades prácticas permitió evidenciar los diferentes problemas que pueden llegarse a presentar y como solucionarlos, también permitió el uso de diferentes herramientas de simulación que afianzaron las habilidades y competencias adquiridas durante el desarrollo del diplomado de profundización de CCNP.

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