Direccionamiento IP, protocolos de enrutamiento y creación de vlans en dos escenarios diferentes

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Prueba de habilidades prácticas

Diplomado Cisco CCNP

Presentado a:

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TABLA DE CONTENIDO

INTRODUCCIÓN

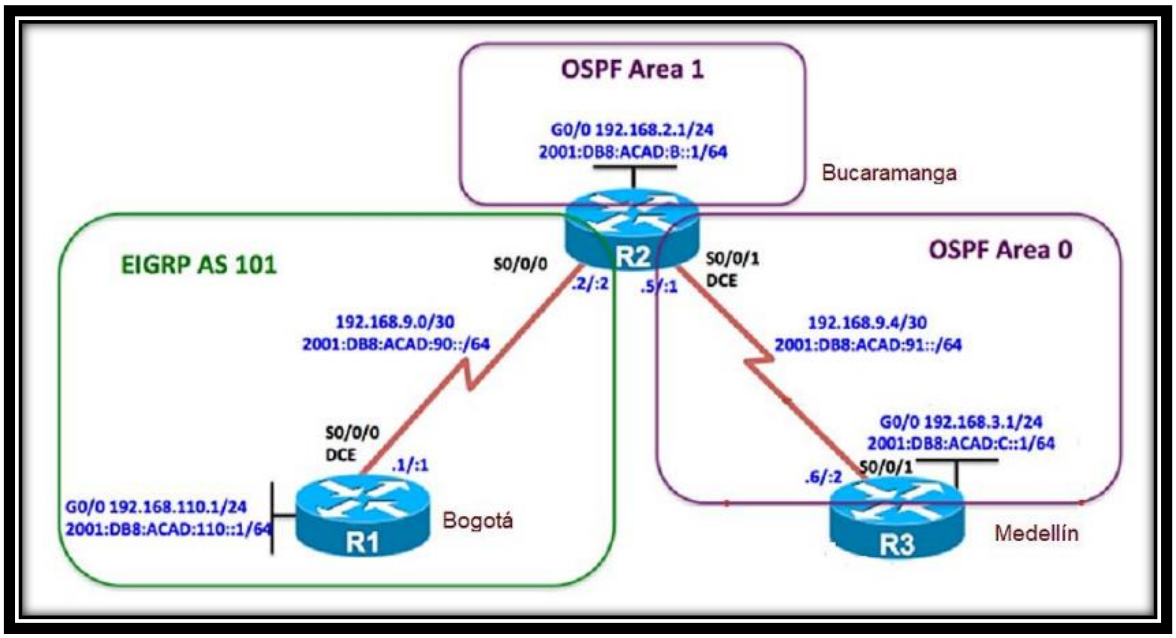
A lo largo del diplomado en CCNP CISCO, se realizaron diferentes ejercicios estudiando los diferentes protocolos de enrutamientos y direccionamiento IP. En el presente trabajo es la unificación e implementación de todos los conceptos a lo largo del diplomado donde se realizara la solución de dos escenarios propuestos para CCNP-ROUTE y CCNP-SWITCH, donde se identifica el grado de competencias y habilidades adquiridas a lo largo del curso, estos laboratorios se realizan en el software Packet Tracer y el laboratorio remoto SmartLab. En el escenario de CCNP ROUTE se abordarán conceptos principales como protocolos de enrutamiento EIGRP, OSPF, BGP. En el escenario CCNP SWITCH se abordarán conceptos principales como operaciones y puertos de switches, VLANs y troncales, Spanning Tree.

Mediante los comandos show y comandos ping se verificara la correcta programación de los diferentes dispositivos como router y switchs con los debidos protocolos establecidos.

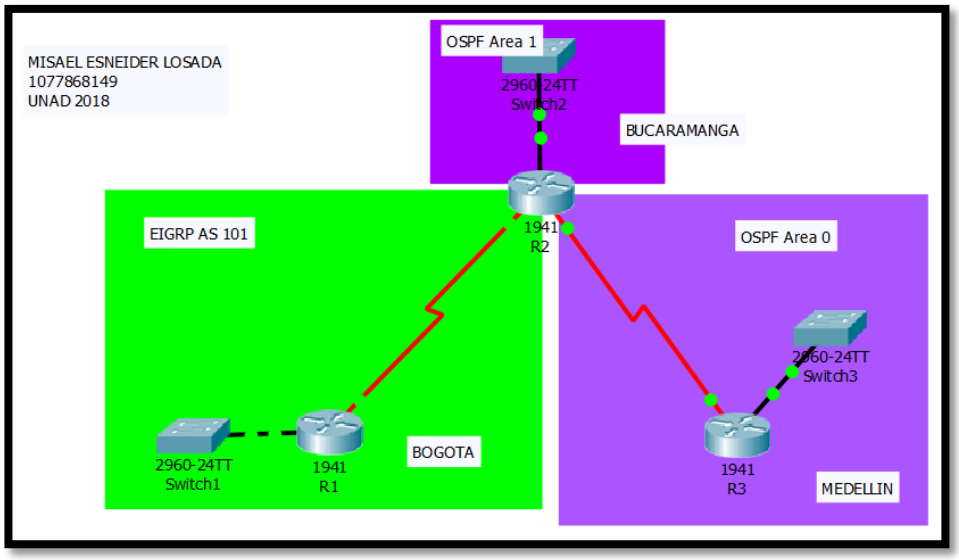
Descripción de escenarios propuestos para la prueba de habilidades practicas

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



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.

---------- R1 ----------

```
Router#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#no ip domain-lookup
Router(config)#hostname R1
R1(config)#ipv6 unicast-routing
R1(config)#line con 0
R1(config-line)#logging synchronous
R1(config-line)#exec-timeout 0 0
R1(config-line)#exit
R1(config)#interface g0/0
R1(config-if)#ip address 192.168.110.1 255.255.255.0
R1(config-if)#ipv6 address 2001:db8:acad:110::1/64
R1(config-if)#no shut

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

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0, chan

R1(config-if)#exit
R1(config)#interface s0/0/0
R1(config-if)#ip address 192.168.9.1 255.255.255.252
R1(config-if)#ipv6 address 2001:db8:acad:90::1/64
R1(config-if)#ipv6 address fe80::1 link-local
R1(config-if)#exit
R1(config)#interface s0/0/0
```

no ip domain-lookup
hostname R1
ipv6 unicast-routing
line con 0
logging synchronous
exec-timeout 0 0
exit
interface g0/0
ip address 192.168.110.1 255.255.255.0
ipv6 address 2001:db8:acad:110::1/64
no shut
exit
interface s0/0/0
ip address 192.168.9.1 255.255.255.252
ipv6 address 2001:db8:acad:90::1/64
ipv6 address fe80::1 link-local

---------- R2 ----------

```
Router>en
Router#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#hostname R2
R2(config)#ipv6 unicast-routing
R2(config)#no ip domain-lookup
R2(config)#line con 0
R2(config-line)#logging synchronous
R2(config-line)#exec-timeout 0 0
R2(config-line)#exit
R2(config)#interface s0/0/0
R2(config-if)#ip address 192.168.9.2 255.255.255.252
R2(config-if)#ipv6 address 2001:db8:acad:90::2/64
R2(config-if)#ipv6 address fe80::2 link-local
R2(config-if)#no shut

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

R2(config-if)#exit
R2(config)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0,

R2(config)#interface s0/0/1
R2(config-if)#ip address 192.168.9.5 255.255.255.252
R2(config-if)#ipv6 address 2001:db8:acad:91::1/64
R2(config-if)#ipv6 address fe80::2 link-local
R2(config-if)#clock rate 128000
R2(config-if)#no shut

%LINK-5-CHANGED: Interface Serial0/0/1, changed state to down
R2(config-if)#exit
R2(config)#interface g0/0
R2(config-if)#ip address 192.168.2.1 255.255.255.0
R2(config-if)#ipv6 address 2001:db8:acad:b::1/64
R2(config-if)#no shut
```

```
enable
conf t
hostname R2
ipv6 unicast-routing
no ip domain-lookup
line con 0
logging synchronous
exec-timeout 0 0

interface s0/0/0
ip address 192.168.9.2 255.255.255.252
ipv6 address 2001:db8:acad:90::2/64
ipv6 address fe80::2 link-local
no shut
exit

interface s0/0/1
ip address 192.168.9.5 255.255.255.252
ipv6 address 2001:db8:acad:91::1/64
ipv6 address fe80::2 link-local
clock rate 128000
no shut
exit

interface g0/0
ip address 192.168.2.1 255.255.255.0
ipv6 address 2001:db8:acad:b::1/64
no shut
exit
```

---------- R3 ----------

```
enable
conf t
hostname R3
ipv6 unicast-routing
no ip domain-lookup
line con 0
logging synchronous
exec-timeout 0 0
exit


interface s0/0/1
ip address 192.168.9.6 255.255.255.252
ipv6 address 2001:db8:acad:91::2/64
ipv6 address fe80::3 link-local
no shutdown
exit

interface g0/0
```

ip address 192.168.3.1 255.255.255.0
ipv6 address 2001:db8:acad:c::1/64
no shutdown
exit

```
Router>en
Router#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#hostname R3
R3(config)#ipv6 unicast-routing
R3(config)#no ip domain-lookup
R3(config)#line con 0
R3(config-line)#logging synchronous
R3(config-line)#exec-timeout 0 0
R3(config-line)#exit
R3(config)#interface s0/0/1
R3(config-if)#ip address 192.168.9.6 255.255.255.252
R3(config-if)#ipv6 address 2001:db8:acad:91::2/64
R3(config-if)#ipv6 address fe80::3 link-local
R3(config-if)#no shut

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)#ipv6 address 2001:db8:acad:c::1/64
R3(config-if)#no shut

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

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0, changed state
```

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.

---------- R1 ----------

interface s0/0/0
bandwidth 128
clock rate 128000
no shut

```
R1(config)#interface s0/0/0
R1(config-if)#bandwidth 128
R1(config-if)#clock rate 128000
R1(config-if)#no shut
```

---------- R2 ----------

interface s0/0/0
bandwidth 128
no shut
exit
interface s0/0/1
bandwidth 128
clock rate 128000
no shut
exit

```
R2(config)#interface s0/0/0
R2(config-if)#bandwidth 128
R2(config-if)#no shut
R2(config-if)#exit
R2(config)#interface s0/0/1
R2(config-if)#bandwidth 128
R2(config-if)#clock rate 128000
R2(config-if)#exit
```

---------- R3 ----------

interface s0/0/1
bandwidth 128
no shut
exit

```
R3(config)#interface s0/0/1
R3(config-if)#bandwidth 128
R3(config-if)#no shut
R3(config-if)#exit
```

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.

---------- R2 ----------

router ospfv3 1
address-family ipv4 unicast
router-id 2.2.2.2
exit-address-family

address-family ipv6 unicast
router-id 2.2.2.2
exit-address-family

```
R2(config)#router ospf 1
R2(config-router)#address-family ipv4 unicast
                  ^
% Invalid input detected at '^' marker.

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
```

---------- R3 ----------

router ospfv3 1
address-family ipv4 unicast
router-id 3.3.3.3
passive-interface g0/0
default-information originate always
exit-address-family
address-family ipv6 unicast
router-id 3.3.3.3
passive-interface g0/0
default-information originate always
exit-address-family

```
R3(config)#route ospf 1
R3(config-router)#router-id 3.3.3.3
R3(config-router)#passive-interface g0/0
R3(config-router)#default-information originate always
                                                ^
% Invalid input detected at '^' marker.

R3(config-router)#default-information originate ?
  <cr>
R3(config-router)#exit
R3(config)#ipv6 router ospf 1
R3(config-rtr)#router-id 3.3.3.3
R3(config-rtr)#passive-interface g0/0
R3(config-rtr)#exit
```

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.

---------- R2 ----------

interface g0/0
ospfv3 1 ipv4 area 1
ospfv3 1 ipv6 area 1

exit

interface s0/0/1
ospfv3 1 ipv4 area 0
ospfv3 1 ipv6 area 0
exit

```
R2(config-if)#ospf 1 ipv4 area 1
               ^
% Invalid input detected at '^' marker.

R2(config-if)#ospf 1 ipv6 area 1
               ^
% Invalid input detected at '^' marker.
```

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

---------- R3 ----------

interface g0/0
ospfv3 1 ipv4 area 1
ospfv3 1 ipv6 area 1
exit

interface s0/0/1
ospfv3 1 ipv4 area 0
ospfv3 1 ipv6 area 0
exit

```
R3(config)#interface g0/0
R3(config-if)#ospfv3 1 ipv4 area 1
               ^
% Invalid input detected at '^' marker.

R3(config-if)#ospfv3 1 ipv6 area 1
               ^
% Invalid input detected at '^' marker.
```

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

---------- R2 ----------

router ospfv3 1
address-family ipv4 unicast
area 1 stub no-summary
exit-address-family

address-family ipv6 unicast
area 1 stub no-summary
exit-address-family

```
R2(config)#router ospf 1
R2(config-router)#area 1 stub no-summary
R2(config-router)#exit
R2(config)#ipv6 router ospf 1
R2(config-rtr)#area 1 stub no-summary
R2(config-rtr)#exit
```

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.**

---------- R3 ----------

router ospfv3 1
address-family ipv4 unicast
default-information originate always
exit-address-family
address-family ipv6 unicast
default-information originate always
exit-address-family

```
R3(config)#route ospf 1
R3(config-router)#default-information originate
R3(config-router)#exit
R3(config)#ipv6 router ospf 1
R3(config-rtr)#default-information originate
R3(config-rtr)#exit
```

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.

---------- R1 ----------
router eigrp DUAL-STACK
address-family ipv4 unicast autonomous-system 101
af-interface g0/0
passive-interface
exit-af-interface
topology base
exit-af-topology
network 192.168.9.0 0.0.0.3
network 192.168.110.0 0.0.0.255
eigrp router-id 1.1.1.1
exit-address-family

address-family ipv6 unicast autonomous-system 101
af-interface g0/0
passive-interface
exit-af-interface
topology base
exit-af-topology
eigrp router-id 1.1.1.1
exit-address-family

```
R1(config-router)#
R1(config-router)#exit
R1(config)#router eigrp 101
R1(config-router)#network 192.168.9.0 0.0.0.3
R1(config-router)#network 192.168.110.0 0.0.0.255
R1(config-router)#eigrp router-id 1.1.1.1
R1(config-router)#exit
R1(config)#ipv6 router eigrp 101
R1(config-rtr)#eigrp router-id 1.1.1.1
R1(config-rtr)#exit
```

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

```
R1(config)#interface g0/0
R1(config-if)#passive-interface
                ^
% Invalid input detected at '^' marker.
```

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

---------- R2 ----------
router eigrp DUAL-STACK
address-family ipv4 unicast autonomous-system 101
topology base
distribute-list 1 out
distribute-list R3-to-R1 out
redistribute ospfv3 1 metric 1500 100 255 1 1500
exit-af-topology
address-family ipv6 unicast autonomous-system 101
topology base
redistribute ospf 1 metric 1500 100 255 1 1500
exit-af-topology
exit

```
R2(config)#router eigrp 101
R2(config-router)#redistribute ospf 1 metric 1500 100 255 1 1500
R2(config-router)#exit
R2(config)#ipv6 router eigrp 101
R2(config-rtr)#redistribute ospf 1 metric 1500 100 255 1 1500
R2(config-rtr)#exit
```

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

---------- R2 ----------

access-list 1 deny 192.168.3.0 0.0.0.255
access-list 1 permit any

```
R2(config)#access-list 1 deny 192.168.3.0 0.0.0.255
R2(config)#access-list 1 permit any
```

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.

```
R1#show ip route
Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B -
       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 i
       * - 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, 2 subnets, 2 masks
C       192.168.9.0/30 is directly connected, Serial0/0/0
L       192.168.9.1/32 is directly connected, Serial0/0/0
     192.168.110.0/24 is variably subnetted, 2 subnets, 2 masks
C       192.168.110.0/24 is directly connected, GigabitEthernet0/0
L       192.168.110.1/32 is directly connected, GigabitEthernet0/0

R1#show ip protocols

Routing Protocol is "eigrp  101 "
  Outgoing update filter list for all interfaces is not set
  Incoming update filter list for all interfaces is not set
  Default networks flagged in outgoing updates
  Default networks accepted from incoming updates
  Redistributing: eigrp 101
  EIGRP-IPv4 Protocol for AS(101)
    Metric weight K1=1, K2=0, K3=1, K4=0, K5=0
    NSF-aware route hold timer is 240
    Router-ID: 1.1.1.1
    Topology : 0 (base)
      Active Timer: 3 min
      Distance: internal 90 external 170
      Maximum path: 4
      Maximum hopcount 100
      Maximum metric variance 1

  Automatic Summarization: disabled
  Automatic address summarization:
  Maximum path: 4
  Routing for Networks:
     192.168.9.0/30
     192.168.110.0
  Routing Information Sources:
    Gateway         Distance      Last Update
  Distance: internal 90 external 170
```

```
R2#show ip protocols

Routing Protocol is "eigrp  101 "
  Outgoing update filter list for all interfaces is not set
  Incoming update filter list for all interfaces is not set
  Default networks flagged in outgoing updates
  Default networks accepted from incoming updates
  Redistributing: eigrp 101, ospf 1
  EIGRP-IPv4 Protocol for AS(101)
    Metric weight K1=1, K2=0, K3=1, K4=0, K5=0
    NSF-aware route hold timer is 240
    Router-ID: 192.168.2.1
    Topology : 0 (base)
      Active Timer: 3 min
      Distance: internal 90 external 170
      Maximum path: 4
      Maximum hopcount 100
      Maximum metric variance 1

  Automatic Summarization: disabled
  Automatic address summarization:
  Maximum path: 4
  Routing for Networks:
  Routing Information Sources:
    Gateway         Distance      Last Update
  Distance: internal 90 external 170


Routing Protocol is "ospf 1"
  Outgoing update filter list for all interfaces is not set
  Incoming update filter list for all interfaces is not set
  Router ID 2.2.2.2
  Number of areas in this router is 1. 0 normal 1 stub 0 nssa
  Maximum path: 4
  Routing for Networks:
  Routing Information Sources:
    Gateway         Distance      Last Update
  Distance: (default is 110)
```

```
R3#show ip protocols

Routing Protocol is "ospf 1"
  Outgoing update filter list for all interfaces is not set
  Incoming update filter list for all interfaces is not set
  Router ID 3.3.3.3
  Number of areas in this router is 0. 0 normal 0 stub 0 nssa
  Maximum path: 4
  Routing for Networks:
  Passive Interface(s):
    GigabitEthernet0/0
  Routing Information Sources:
    Gateway         Distance      Last Update
  Distance: (default is 110)
```

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

```
R1#ping 192.168.110.1

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 192.168.110.1, timeout is 2 seconds
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 1/2/5 ms

R1#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 = 2/7/19 ms

R1#ping 192.168.9.2

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 192.168.9.2, timeout is 2 seconds:
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 1/2/8 ms

R1#ping 192.168.2.1

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 192.168.2.1, timeout is 2 seconds:
.....
Success rate is 0 percent (0/5)

R1#ping 192.168.9.5

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 192.168.9.5, timeout is 2 seconds:
.....
Success rate is 0 percent (0/5)

R1#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 0 percent (0/5)

R1#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)

R1#ping 172.16.1.1

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 172.16.1.1, timeout is 2 seconds:
.....
Success rate is 0 percent (0/5)
```

```
R1#ping 172.16.1.2

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 172.16.1.2, timeout is 2 seconds:
.....
Success rate is 0 percent (0/5)

R1#ping 2001:db8:acad:110::1

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 2001:db8:acad:110::1, timeout is 2 seconds:
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 0/4/7 ms

R1#ping 2001:db8:acad:90::1

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 2001:db8:acad:90::1, timeout is 2 seconds:
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 2/8/25 ms

R1#ping 2001:db8:acad:90::2

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 2001:db8:acad:90::2, timeout is 2 seconds:
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 1/3/9 ms

R1#ping 2001:db8:acad:b::1

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 2001:db8:acad:b::1, timeout is 2 seconds:
.....
Success rate is 0 percent (0/5)

R1#ping 2001:db8:acad:91::1

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 2001:db8:acad:91::1, timeout is 2 seconds:
.....
Success rate is 0 percent (0/5)

R1#ping 2001:db8:acad:c::1

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 2001:db8:acad:c::1, timeout is 2 seconds:
.....
Success rate is 0 percent (0/5)

R1#ping 2001:db8:feed:1::1

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 2001:db8:feed:1::1, timeout is 2 seconds:
.....
```

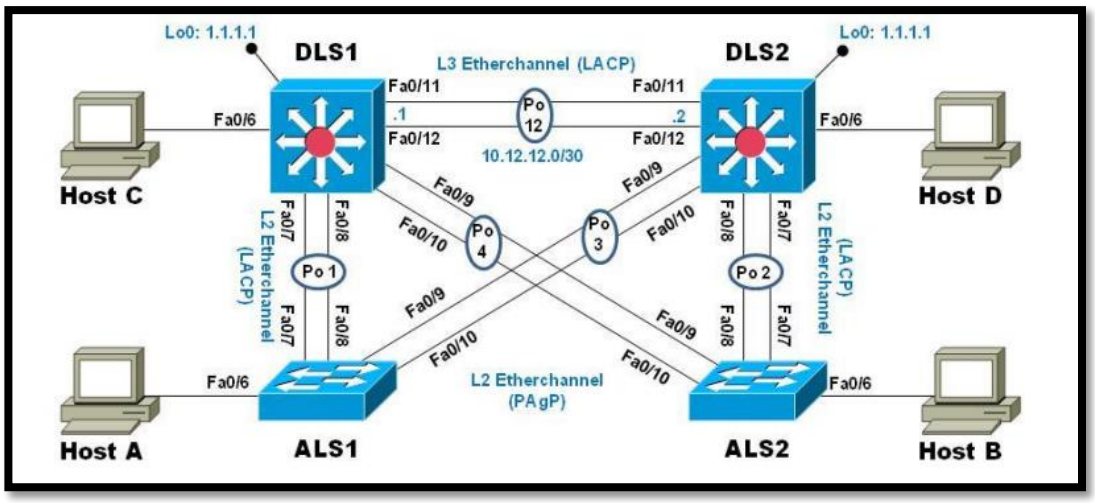
c. Verificar que las rutas filtradas no están presentes en las tablas de enrutamiento de los routers correctas.

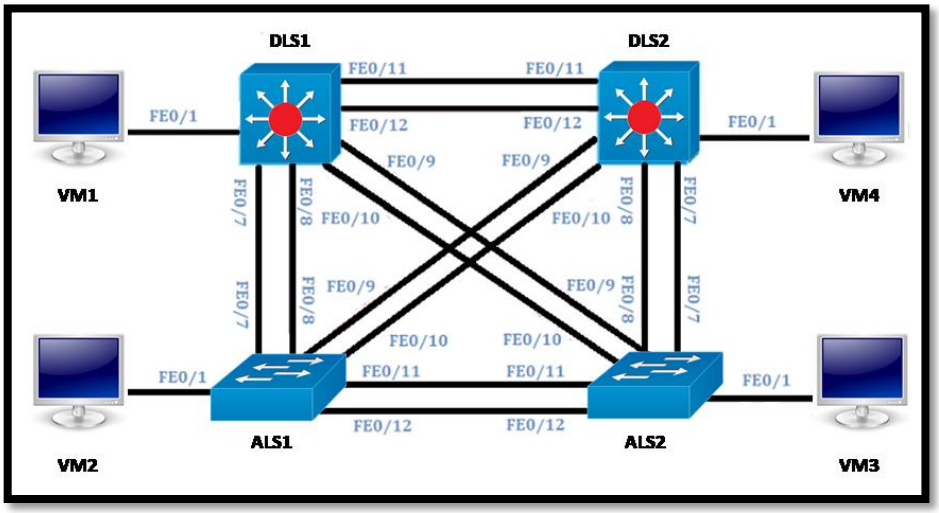
```
R2#show access-lists
Standard IP access list 1
    10 deny 192.168.3.0 0.0.0.255
    20 permit any
```

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





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

a. Apagar todas las interfaces en cada switch.

---------- DLS1 ----------
int ran f0/1-24, g0/1-2
shutdown
exit

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

DLS1(config)#int ran f3/0/1-48

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

---------- DLS2 ----------
int ran f0/1-24, g0/1-2
shutdown
exit

```
DLS2#conf t

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

DLS2(config)#int ran fa1/0/1-48,gi1/0/1-4

DLS2(config-if-range)#shut
```

---------- ALS1 ----------
int ran f0/1-24, g0/1-2
shutdown
exit

```
ALS1(config)#int ran g0/1-24

ALS1(config-if-range)#shut

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

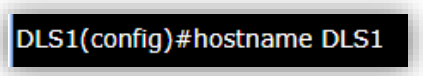
---------- ALS2----------
int ran f0/1-24, g0/1-2
shutdown
exit

```
ASL2(config)#int ran f0/1 - 24, g0/1 - 2

ASL2(config-if-range)#shut

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

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

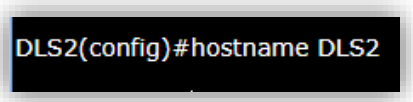
---------- DLS1 ----------

conf t
hostname DLS1



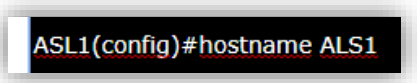
---------- DLS2 ----------

conf t
hostname DLS2



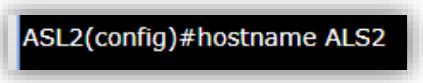
---------- ALS1 ----------

conf t
hostname ALS1



---------- ALS2----------

conf t
hostname ALS2



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.

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

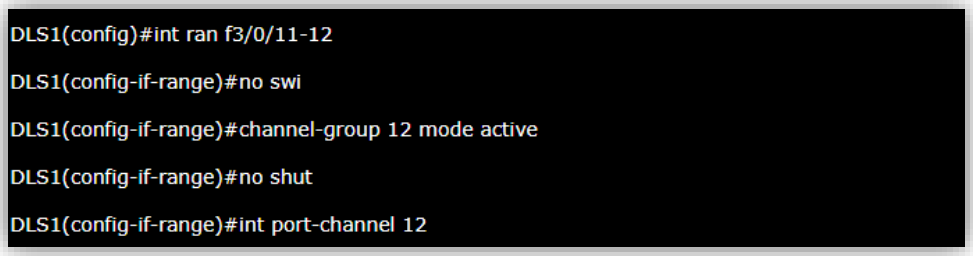
3) Los Port-channels en las interfaces F0/9 y fa0/10 utilizará PAgP.

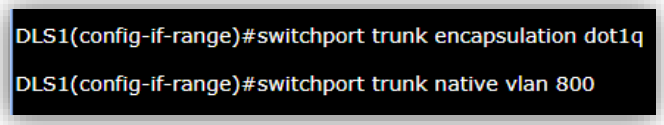
4) Todos los puertos troncales serán asignados a la VLAN 800 como la VLAN nativa.

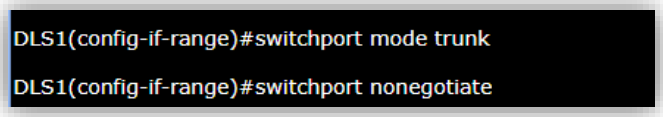
---------- DLS1 ----------

int ran f0/11-12
no switchport
channel-group 12 mode active
no shut

exit
interface port-channel 12
ip address 10.12.12.1 255.255.255.252
exit
int ran f0/7-10
switchport trunk encapsulation dot1q
switchport trunk native vlan 800
switchport mode trunk
switchport nonegotiate
no shut
exit
int ran f0/7-8
desc member of po1 to ALS1
channel-group 1 mode active
exit
int ran f0/9-10
desc member of po4 to ALS2
channel-group 4 mode desirable
exit







---------- DLS2 ----------
int ran f0/11-12
no switchport
channel-group 12 mode active
no shut
exit
interface port-channel 12
ip address 10.12.12.2 255.255.255.252
exit
int ran f0/7-10

switchport trunk encapsulation dot1q
switchport trunk native vlan 800
switchport mode trunk
switchport nonegotiate
no shut
exit
int ran f0/7-8
desc member of po1 to ALS2
channel-group 2 mode active
exit
int ran f0/9-10
desc member of po3 to ALS1
channel-group 3 mode desirable
exit

```
DLS2(config)#int ran f1/0/7-10, f1/0/1

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

DLS2(config-if-range)#switchport trunk native vlan 800

DLS2(config-if-range)#switchport mode trunk

DLS2(config-if-range)#switchport nonegotiate

DLS2(config-if-range)#no shut

DLS2(config-if-range)#

1d23h: %LINK-3-UPDOWN: Interface FastEthernet1/0/7, changed state to down

1d23h: %LINK-3-UPDOWN: Interface FastEthernet1/0/8, changed state to down

1d23h: %LINK-3-UPDOWN: Interface FastEthernet1/0/9, changed state to down
```

```
DLS2(config-if-range)#int ran f1/0/7-8

DLS2(config-if-range)#

1d23h: %LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan1, changed state to up

DLS2(config-if-range)#desc member of po1 to ALS2

DLS2(config-if-range)#channel-group 2 mode active

% Range command terminated because it failed on FastEthernet1/0/7

DLS2(config-if-range)#

1d23h: %EC-5-ERRPROT2: Command rejected: the interface Fa1/0/7 is already part of a char
enabled

DLS2(config-if-range)#exit

DLS2(config)#int ran f1/0/9-10
```

```
DLS2(config)#int ran f1/0/9-10
DLS2(config-if-range)#desc member of po3 to ALS1

DLS2(config-if-range)#channel-group 3 mode desirable

DLS2(config-if-range)#exit
```

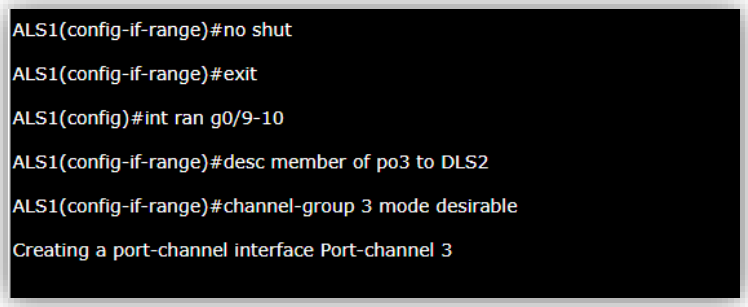
---------- ALS1 ----------

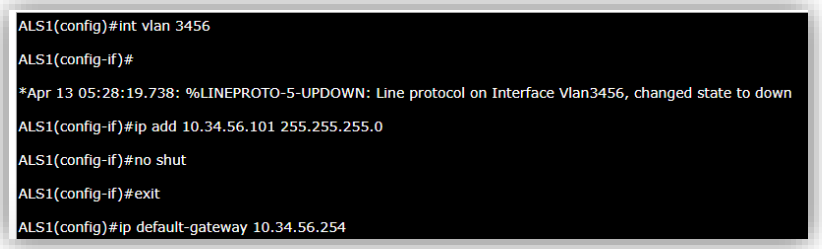
int ran f0/7-10
switchport trunk native vlan 800
switchport mode trunk
switchport nonegotiate
no shut
exit
int ran f0/7-8
desc member of po1 to DLS1
channel-group 1 mode active
switchport trunk allowed vlan 12,123,234,800,1010,1111,3456
no shut
exit
int ran f0/9-10
desc member of po 3 to DLS2
channel-group 3 mode desirable
switchport trunk allowed vlan 12,123,234,800,1010,1111,3456
no shut
exit
int vlan 3456
ip address 10.34.56.101 255.255.255.0
no shut
exit
ip default-gateway 10.34.56.254

```
ALS1(config)#int ran g0/7-10

ALS1(config-if-range)#swi trunk native vlan 800

ALS1(config-if-range)#swi mode trunk
```

```
ALS1(config)#int ran g0/7-8

ALS1(config-if-range)#desc member of po1 to DLS1

ALS1(config-if-range)#channel-group 1 mode active

Creating a port-channel interface Port-channel 1
```

```
ALS1(config-if-range)#swi trunk allowed vlan 12,123,234,800,1010,1111,3456

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





---------- ALS2 ----------

int ran f0/7-10
switchport trunk native vlan 800
switchport mode trunk
switchport nonegotiate
exit
int ran f0/7-8
desc member of po2 to DLS2
channel-group 2 mode active
switchport trunk allowed vlan 12,123,234,800,1010,1111,3456
no shut
exit
int ran f0/9-10
desc member of po 4 to DLS1
channel-group 4 mode desirable
switchport trunk allowed vlan 12,123,234,800,1010,1111,3456
no shut
exit
int vlan 3456
ip add 10.34.56.102 255.255.255.0
no shut
exit
ip default-gateway 10.34.56.254

```
ALS2(config)#int ran f0/7 - 10
ALS2(config-if-range)#swi mode trunk
ALS2(config-if-range)#swi trunk native vlan 800
ALS2(config-if-range)#swi none
ALS2(config-if-range)#no shut
ALS2(config-if-range)#
```

```
ALS2(config)#int ran f0/9 - 10
ALS2(config-if-range)#desc member po4 to DLS1
```

```
ALS2(config-if-range)#channel-group 4 mode desirable
ALS2(config-if-range)#swi trunk allowed vlan 12,123,234,800,1010,1111,3456
ALS2(config-if-range)#no shut
ALS2(config-if-range)#exit
```

```
ALS2(config-if-range)#exit
ALS2(config)#int vlan 3456
ALS2(config-if)#ip add 10.34.56.102 255.255.255.0
ALS2(config-if)#no shut
ALS2(config-if)#
5w6d: %LINK-3-UPDOWN: Interface Vlan3456, changed state to down
5w6d: %LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan3456, changed state to down
ALS2(config-if)#exit
ALS2(config)#ip default-gateway 10.34.56.254
```

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

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

2) Configurar DLS1 como servidor principal para las VLAN.

3) Configurar ALS1 y ALS2 como clientes VTP.

---------- DLS1 ----------

vtp domain UNAD
vtp ver 3
vtp password cisco123
vtp primary vlan

```
DLS1(config)#vtp domain UNAD
Changing VTP domain name from NULL to UNAD
DLS1(config)#vtp ver 3
               ^
% Invalid input detected at '^' marker.


DLS1(config)#vtp ver 2
DLS1(config)#vtp password cisco123
Setting device VLAN database password to cisco123
DLS1(config)#vtp primary vlan
```

---------- ALS1 ----------

vtp domain UNAD
vtp ver 3
vtp mode client
vtp password cisco123

```
ALS1(config)#vtp domain UNAD
Domain name already set to UNAD.
ALS1(config)#vtp ver 2
ALS1(config)#vtp mode client
Setting device to VTP CLIENT mode.
ALS1(config)#vtp password cisco123
Setting device VLAN database password to cisco123
```

---------- ALS2----------

vtp domain UNAD
vtp ver 3
vtp mode client
vtp password cisco123

```
Domain name already set to UNAD.
ALS2(config)#vpt ver 2
         ^
% Invalid input detected at '^' marker.


ALS2(config)#vtp ver 2
Cannot modify version in VTP client mode
ALS2(config)#vtp mode client
Device mode already VTP CLIENT.
ALS2(config)#vtp password cisco123
```

e. Configurar en el servidor principal las siguientes VLAN:

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

---------- DLS1 ----------

```
vlan 800
name NATIVA
exit
vlan 434
name ESTACIONAMIENTO
exit
vlan 12
name EJECUTIVOS
exit
vlan 123
name MANTENIMIENTO
exit
vlan 234
name HUESPEDES
exit
vlan 1010
name VOZ
exit
vlan 1111
name VIDEONET
exit
vlan 3456
name ADMINISTRACION
```

```
DLS1(config)#vlan 800
DLS1(config-vlan)#name NATIVA
DLS1(config-vlan)#exit
DLS1(config)#vlan 434
DLS1(config-vlan)#name ESTACIONAMIENTO
DLS1(config-vlan)#exit
DLS1(config)#vlan 12
DLS1(config-vlan)#name EJECUTIVOS
DLS1(config-vlan)#exit
DLS1(config)#vlan 123
```

```
DLS1(config)#vlan 1010
DLS1(config-vlan)#name VOZ
DLS1(config-vlan)#exit
DLS1(config)#vlan 1111
DLS1(config-vlan)#name VIDEONET
DLS1(config-vlan)#exit
DLS1(config)#vlan 3456
DLS1(config-vlan)#name ADMINISTRACION
DLS1(config-vlan)#exit
```

f. En DLS1, suspender la VLAN 434.

---------- DLS1 ----------

vlan 434
state suspend
exit

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

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

---------- DLS2 ----------

vtp ver 2
vtp mode transparent
vlan 800
name NATIVA
exit
vlan 434
name ESTACIONAMIENTO

exit
vlan 12
name EJECUTIVOS
exit
vlan 123
name MANTENIMIENTO
exit
vlan 234
name HUESPEDES
exit
vlan 1010
name VOZ
exit
vlan 1111
name VIDEONET
exit
vlan 3456
name ADMINISTRACION

```
DLS2(config)#vtp ver 2
DLS2(config)#vtp mode transparent
Setting device to VTP TRANSPARENT mode.
DLS2(config)#vlan 800
DLS2(config-vlan)#name NATIVA
DLS2(config-vlan)#exit
DLS2(config)#vlan 434
DLS2(config-vlan)#name ESTACIONAMIENTO
DLS2(config-vlan)#exit
DLS2(config)#vlan 12
```

```
DLS2(config-vlan)#name EJECUTIVOS
DLS2(config-vlan)#exit
DLS2(config)#vlan 123
DLS2(config-vlan)#name MANTENIMIENTOS
DLS2(config-vlan)#exit
DLS2(config)#vlan 234
DLS2(config-vlan)#name HUESPEDES
DLS2(config-vlan)#exit
DLS2(config)#vlan 1010
DLS2(config-vlan)#name VOZ
```

```
DLS2(config-vlan)#exit
DLS2(config)#vlan 1111
DLS2(config-vlan)#name VIDEONET
DLS2(config-vlan)#exit
DLS2(config)#vlan 3456
DLS2(config-vlan)#name ADMINISTRACION
```

h. Suspender VLAN 434 en DLS2.

---------- DLS2 ----------

vlan 434
state suspend
exit

```
DLS2(config)#vlan 434
DLS2(config-vlan)#state suspend
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.

---------- DLS2 ----------

vlan 567
name CONTABILIDAD
exit

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

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.

---------- DLS1 ----------

spanning-tree vlan 1,12,434,800,1010,1111,3456 root primary
spanning-tree vlan 123,234 root secondary

```
DLS1(config)#spanning-tree vlan 1,12,434,800,1111,3456 root primary

DLS1(config)#spanning-tree vlan 123,234 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.

---------- DLS2 ----------

spanning-tree vlan 123,234 root primary
spanning-tree vlan 1,12 ,434,800,1010,3456 root secondary

```
DLS2(config)#spanning-tree vlan 123,234 root primary
DLS2(config)#spanning-tree vlan 1,12,434,800,1010,3456 root secondary
```

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.

---------- DLS1 ----------

interface port-channel 1
switchport trunk allowed vlan 12,123,234,800,1010,1111,3456
exit
interface port-channel 4
switchport trunk allowed vlan 12,123,234,800,1010,1111,3456

```
DLS1(config)#int port-channel 1

DLS1(config-if)#switchport trunk allowed vlan 12,123,234,800,1010,1111,3456
DLS1(config-if)#exit

DLS1(config)#int port-channel 4

DLS1(config-if)#switchport trunk allowed vlan 12,123,234,800,1010,1111,3456

DLS1(config-if)#exit

DLS1(config)#
```

---------- DLS2 ----------
interface port-channel 2
switchport trunk allowed vlan 12,123,234,800,1010,1111,3456
exit
interface port-channel 3
switchport trunk allowed vlan 12,123,234,800,1010,1111,3456
exit

```
DLS2(config)#int port-channel 2
DLS2(config-if)#switchport trunk allowed vlan 12,123,234,800,1010,1111,3456
DLS2(config-if)#
```

```
DLS2(config-if)#exit
DLS2(config)#int port-channel 3
DLS2(config-if)#switchport trunk allowed vlan 12,123,234,800,1010,1111,3456
DLS2(config-if)#
```

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

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

---------- DLS1 ----------
interface f0/6
switchport host
switchport access vlan 3456
no shut
exit
int f0/15
swi host
swi ac v 1111
no sh
exit

```
DLS1(config)#int g1/0/1
DLS1(config-if)#switchport host
switchport mode will be set to access
spanning-tree portfast will be enabled
channel group will be disabled

DLS1(config-if)#switchport access vlan 3456
DLS1(config-if)#no shut
DLS1(config-if)#exit
```

```
DLS1(config)#int g1/0/15
DLS1(config-if)#swi host
switchport mode will be set to access
spanning-tree portfast will be enabled
channel group will be disabled

DLS1(config-if)#swi ac v 1111
DLS1(config-if)#no shut
DLS1(config-if)#exit
```

---------- DLS2 ----------

interface f0/6
switchport host
switchport access vlan 12
switchport voice vlan 1010
no shut
exit
int f0/15
swi host
swi ac v 1111
no sh
exit
int ran f0/16-18
swi host
swi ac v 567
no shut

```
DLS2(config)#int f1/0/1
DLS2(config-if)#swi host
switchport mode will be set to access
spanning-tree portfast will be enabled
channel group will be disabled

DLS2(config-if)#swi ac v 12
```

```
DLS2(config-if)#swi voice v 1010
DLS2(config-if)#no shut
DLS2(config-if)#exit
DLS2(config)#int f1/0/15
DLS2(config-if)#swi host
switchport mode will be set to access
spanning-tree portfast will be enabled
channel group will be disabled

DLS2(config-if)#swi ac v 1111
```

```
DLS2(config)#int ran f1/0/16-18
DLS2(config-if-range)#swi host
switchport mode will be set to access
spanning-tree portfast will be enabled
channel group will be disabled

DLS2(config-if-range)#swi ac v 567
DLS2(config-if-range)#no shut
DLS2(config-if-range)#exit
```

---------- ALS1 ----------

int f0/6
switchport host
switchport access vlan 123
switchport voice vlan 1010
no shut
exit
int f0/15
swi host
swi ac v 1111
no sh
exit

```
ALS1(config)#int g0/1
ALS1(config-if)#swi host
switchport mode will be set to access
spanning-tree portfast will be enabled
channel group will be disabled

ALS1(config-if)#swi ac v 123
ALS1(config-if)#swi voice v 1010
```

```
ALS1(config-if)#swi ac v 1111
ALS1(config-if)#no shut
ALS1(config-if)#exit
```

---------- ALS2 ----------

int f0/6
switchport host
switchport access vlan 234
no shut
exit
int f0/15
swi host
swi ac v 1111
no sh
exit

```
ALS2(config)#int f0/1
ALS2(config-if)#swi host
switchport mode will be set to access
spanning-tree portfast will be enabled
channel group will be disabled

ALS2(config-if)#swi ac v 234
ALS2(config-if)#no shut
ALS2(config-if)#exit
```

```
ALS2(config)#int f0/15
ALS2(config-if)#swi host
switchport mode will be set to access
spanning-tree portfast will be enabled
channel group will be disabled

ALS2(config-if)#swi ac v 1111
ALS2(config-if)#no shut
ALS2(config-if)#exit
```

n. Todas las interfaces que no sean utilizadas o asignadas a alguna VLAN deberán ser apagadas.

---------- **DLS1** ----------

int ran f0/1-5, f0/13-14, f0/16-24, g0/1-2

swi host
swi ac v 434
shut

```
DLS1(config)#int ran g1/0/2-6
DLS1(config-if-range)#swi host
switchport mode will be set to access
spanning-tree portfast will be enabled
channel group will be disabled

DLS1(config-if-range)#swi ac v 434
DLS1(config-if-range)#shut
DLS1(config-if-range)#exit
```

---------- **DLS2** ----------

int ran f0/1-5, f0/13-14, f0/19-24, g0/1-2
swi host
swi ac v 434
shut
exit

```
DLS2(config)#int ran f1/0/2 - 6, f1/0/13 - 14, f1/0/16 - 48, g1/0/1 - 2
DLS2(config-if-range)#swi host
switchport mode will be set to access
spanning-tree portfast will be enabled
channel group will be disabled


DLS2(config-if-range)#swi ac v 434
DLS2(config-if-range)#shut
DLS2(config-if-range)#exit
```

---------- ALS1 ----------

int ran f0/1-5, f0/13-14, f0/16-24, g0/1-2
swi host
swi ac v 434
shut
exit

```
ALS1(config)#int ran f0/2 - 6, f0/13 - 14, f0/16 - 24, g0/1 - 2
 ALS1(config-if-range)#swi host
switchport mode will be set to access
spanning-tree portfast will be enabled
channel group will be disabled


ALS1(config-if-range)#swi ac v 434
ALS1(config-if-range)#shut
ALS1(config-if-range)#exit
```

---------- ALS2 ----------

int ran f0/1-5, f0/13-14, f0/16-24, g0/1-2
swi host
swi ac v 434
shut
exit

```
ALS2(config)#int ran f0/2 - 6, f0/13 - 14, f0/16 - 24, g0/1 - 2
ALS2(config-if-range)#swi host
switchport mode will be set to access
spanning-tree portfast will be enabled
channel group will be disabled

ALS2(config-if-range)#swi ac v 434
ALS2(config-if-range)#shut
ALS2(config-if-range)#exit
```

o. Configurar SVI en DLS1 y DLS2 como soporte de todas las VLAN y de enrutamiento entre las VLAN. Utilice la siguiente tabla para las asignaciones de subred:

VLAN	Nombre de VLAN	subred	VLAN	Nombre de VLAN	subred
12	EJECUTIVOS	10.0.12.0/24	123	MANTENIMIENTO	10.0.123.0/24
234	HUESPEDES	10.0.234.0/24	1010	VOZ	10.10.10.0/24
1111	VIDEONET	10.11.11.0/24	3456	ADMINISTRACIÓN	10.34.56.0/24

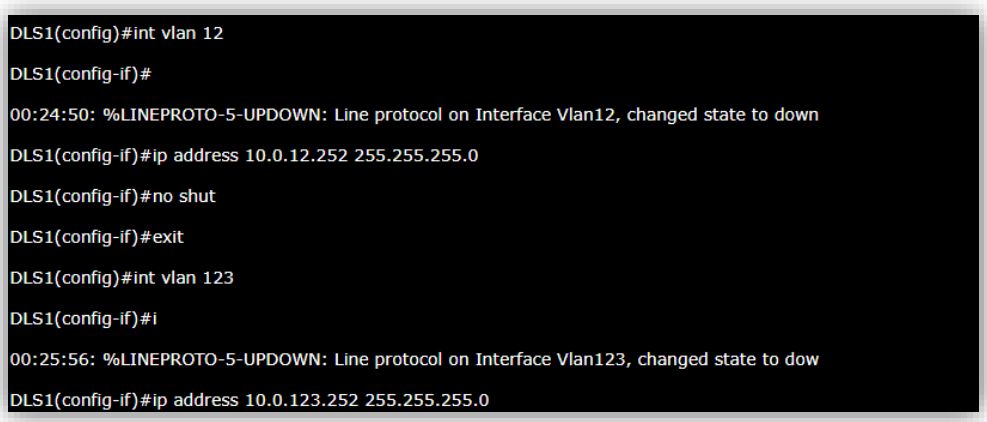
DLS1 siempre utilizará la dirección .252 y DLS2 siempre utilizará la dirección .253 para las direcciones IPv4.

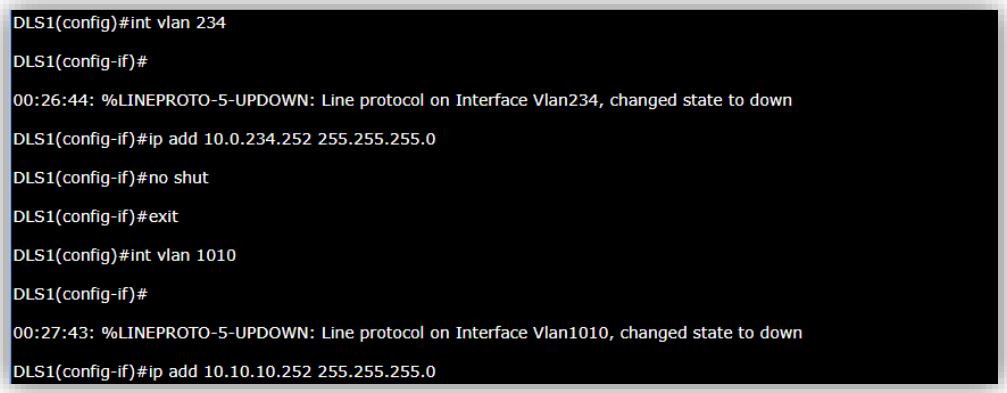
La VLAN 567 en DLS2 no podrá ser soportada para enrutamiento.

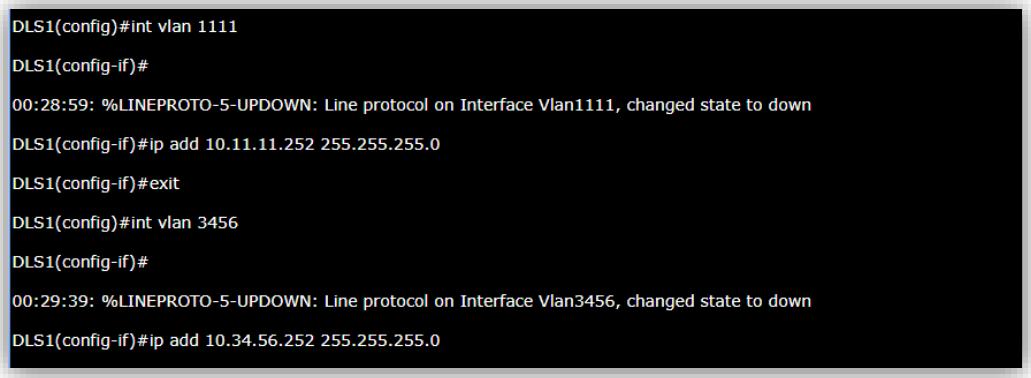
---------- DLS1 ----------

```
ip routing
int vlan 12
ip address 10.0.12.252 255.255.255.0
no sh
exit
int vlan 123
ip address 10.0.123.252 255.255.255.0
no sh
exit
int vlan 234
ip address 10.0.234.252 255.255.255.0
no sh
exit
int vlan 1010
ip add 10.10.10.252 255.255.255.0
no shut
```

exit
int vlan 1111
ip add 10.11.11.252 255.255.255.0
no sh
exit
int vlan 3456
ip address 10.34.56.252 255.255.255.0
no shut
exit







---------- DLS2 ----------

ip routing
int vlan 12
ip address 10.0.12.253 255.255.255.0
no sh
exit
int vlan 123
ip address 10.0.123.253 255.255.255.0
no sh
exit
int vlan 234
ip address 10.0.234.253 255.255.255.0
no sh
exit
int vlan 1010
ip add 10.10.10.253 255.255.255.0
no shut
exit
int vlan 1111
ip add 10.11.11.253 255.255.255.0
no shut
exit
int vlan 3456
ip address 10.34.56.253 255.255.255.0
no shut

```
DLS2(config)#int vlan 12
DLS2(config-if)#
2d01h: %LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan12, changed state to up
DLS2(config-if)#ip add 10.0.12.253 255.255.255.0
DLS2(config-if)#no shut
DLS2(config-if)#exit
DLS2(config)#int vlan 123
```

```
DLS2(config-if)#ip add 10.0.123.253 255.255.255.0
DLS2(config-if)#no shut
DLS2(config-if)#exit
DLS2(config)#int vlan 234
DLS2(config-if)#
2d01h: %LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan234, changed state to down
DLS2(config-if)#ip add 10.0.234.253 255.255.255.0
DLS2(config-if)#no shut
DLS2(config-if)#exit
DLS2(config)#int vlan 1010
```

```
DLS2(config)#int vlan 1111
DLS2(config-if)#
2d01h: %LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan1111, changed state to down
DLS2(config-if)#ip add 10.11.11.253 255.255.255.0
DLS2(config-if)#no shut
DLS2(config-if)#exit
DLS2(config)#int vlan 3456
DLS2(config-if)#
2d01h: %LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan3456, changed state to down
DLS2(config-if)#ip add 10.34.56.253 255.255.255.0
```

p. Configurar una interfaz Loopback 0 en DLS1 y DLS2. Esta interfaz será configurada con la dirección IP 1.1.1.1/32 en ambos Switch.

---------- DLS1 ----------

int loop 0
ip address 1.1.1.1 255.255.255.255
no shut
exit

```
DLS1(config)#int loop 0
DLS1(config-if)#
00:40:51: %LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback0, changed state to up
DLS1(config-if)#ip add 1.1.1.1 255.255.255.255
DLS1(config-if)#no shut
DLS1(config-if)#exit
```

---------- DLS2 ----------

int loop 0
ip address 1.1.1.1 255.255.255.255
no shut
exit

```
DLS2(config)#int loop 0
DLS2(config-if)#ip add 1.1.1.1 255.255.255.255
DLS2(config-if)#no shut
DLS2(config-if)#exit
DLS2(config)#
```

q. Configurar HSRP con interfaz tracking para las VLAN 12, 123, 234, 1010, y 1111

1) Utilizar HSRP versión 2

2) Crear dos grupos HSRP, alineando VLAN 12, 1010, 1111, y 3456 para el primer grupo y las VLAN 123 y 234 para el segundo grupo.

3) DLS1 será el Switch principal de las VLAN 12, 1010, 1111, y 3456 y DLS2 será el Switch principal para las VLAN 123 y 234.

4) Utilizar la dirección virtual .254 como la dirección de Standby de todas las VLAN

---------- DLS1 ----------

int vlan 12
standby ver 2
standby 1 ip 10.0.12.254
standby 1 preempt
standby 1 priority 110
standby 1 track loop 0 30
exit
int vlan 123
stand ver 2
stand 2 ip 10.0.123.254
standby 2 preempt
exit
int vlan 234

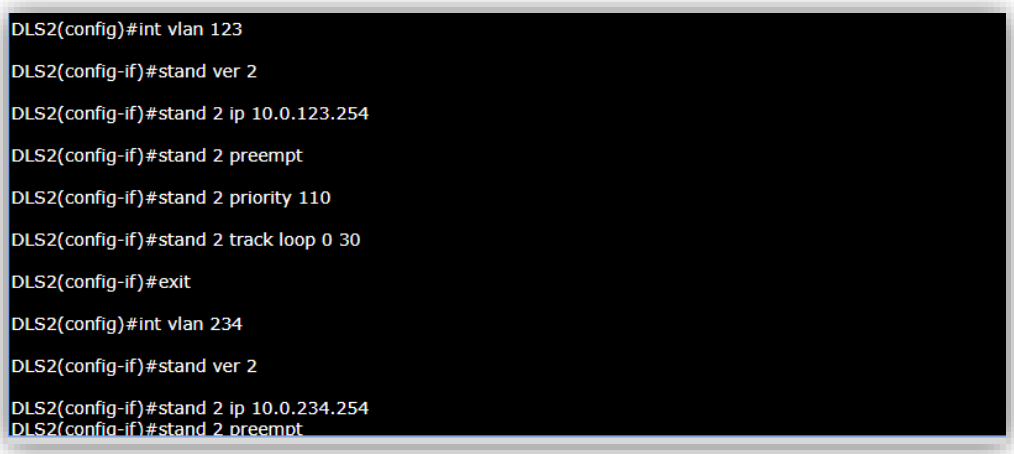
stand ver 2
stand 2 ip 10.0.234.254
stand 2 preempt
exit
int vlan 1010
stand ver 2
stand 1 ip 10.10.10.254
stand 1 preempt
stand 1 pri 110
standby 1 track loop 0 30
exit
int vlan 1111
stand ver 2
stand 1 ip 10.11.11.254
stand 1 preempt
stand 1 pri 110
standby 1 track loop 0 30
exit
int vlan 3456
stand ver 2
stand 1 ip 10.34.56.254
stand 1 preempt
stand 1 pri 110
standby 1 track loop 0 30

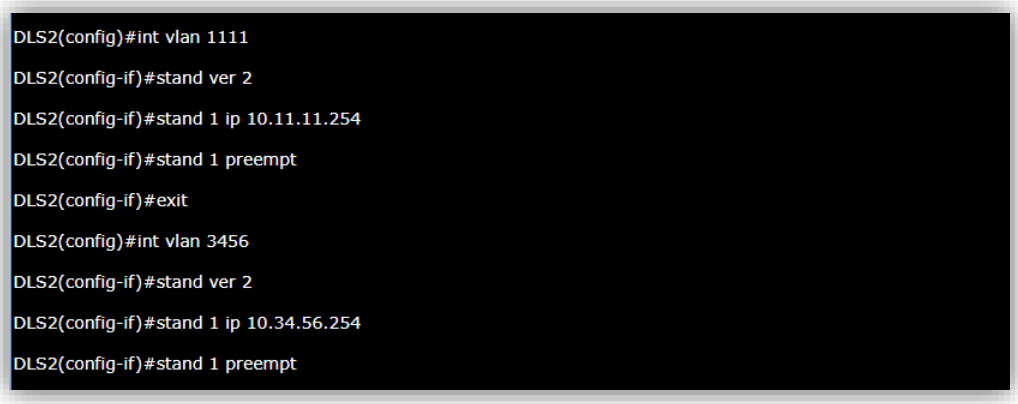
```
DLS1(config)#int vlan 12
DLS1(config-if)#stand ver 2
DLS1(config-if)#stand 1 ip 10.0.12.254
DLS1(config-if)#stand 1 preempt
DLS1(config-if)#stand 1 priority 110
DLS1(config-if)#stand 1 track loop 0 30
DLS1(config-if)#exit
DLS1(config)#int vlan 123
DLS1(config-if)#stand ver 2
DLS1(config-if)#stand 2 ip 10.0.123.254
```

```
DLS1(config-if)#stand 1 pri 110
DLS1(config-if)#stand 1 track loop 0 30
DLS1(config-if)#exit
DLS1(config)#int vlan 3456
DLS1(config-if)#stand ver 2
DLS1(config-if)#stand 1 ip 10.34.56.254
DLS1(config-if)#stand 1 preempt
DLS1(config-if)#stand 1 pri 110
DLS1(config-if)#stand 1 track loop 0 30
```

---------- DLS2 ----------

```
int vlan 12
standby ver 2
standby 1 ip 10.0.12.254
standby 1 preempt
exit
int vlan 123
stand ver 2
stand 2 ip 10.0.123.254
standby 2 preempt
standby 2 priority 110
standby 2 track loop 0 30
exit
int vlan 234
stand ver 2
stand 2 ip 10.0.234.254
stand 2 preempt
standby 2 priority 110
standby 2 track loop 0 30
exit
int vlan 1010
stand ver 2
stand 1 ip 10.10.10.254
stand 1 preempt
exit
int vlan 1111
stand ver 2
stand 1 ip 10.11.11.254
stand 1 preempt
exit
int vlan 3456
stand ver 2
stand 1 ip 10.34.56.254
stand 1 preempt
```





r. Configurar DLS1 como un servidor DHCP para las VLAN 12, 123 y 234

1) Excluir las direcciones desde .251 hasta .254 en cada subred

2) Establecer el servidor DNS a 1.1.1.1 para los tres Pool.

3) Establecer como default-router las direcciones virtuales HSRP para cada VLAN

---------- DLS1 ----------

```
ip dhcp pool EJECUTIVOS-POOL
network 10.0.12.0 255.255.255.0
default-router 10.0.12.254
dns-server 1.1.1.1
exit
ip dhcp pool MANTENIMIENTO-POOL
network 10.0.123.0 255.255.255.0
default-router 10.0.123.254
dns-server 1.1.1.1
exit
```

ip dhcp pool INVITADO-POOL
network 10.0.234.0 255.255.255.0
default-router 10.0.234.254
dns-server 1.1.1.1

```
DLS1(config)#ip dhcp pool EJECUTIVOS-POOL
DLS1(dhcp-config)#network 10.0.12.0 255.255.255.0
DLS1(dhcp-config)#default-router 10.0.12.254
DLS1(dhcp-config)#dns-server 1.1.1.1
DLS1(dhcp-config)#exit
DLS1(config)#ip dhcp pool MANTENIMIENTO-POOL
DLS1(dhcp-config)#network 10.0.123.0 255.255.255.0
DLS1(dhcp-config)#default-router 10.0.123.254
DLS1(dhcp-config)#dns-server 1.1.1.1
DLS1(dhcp-config)#exit
```

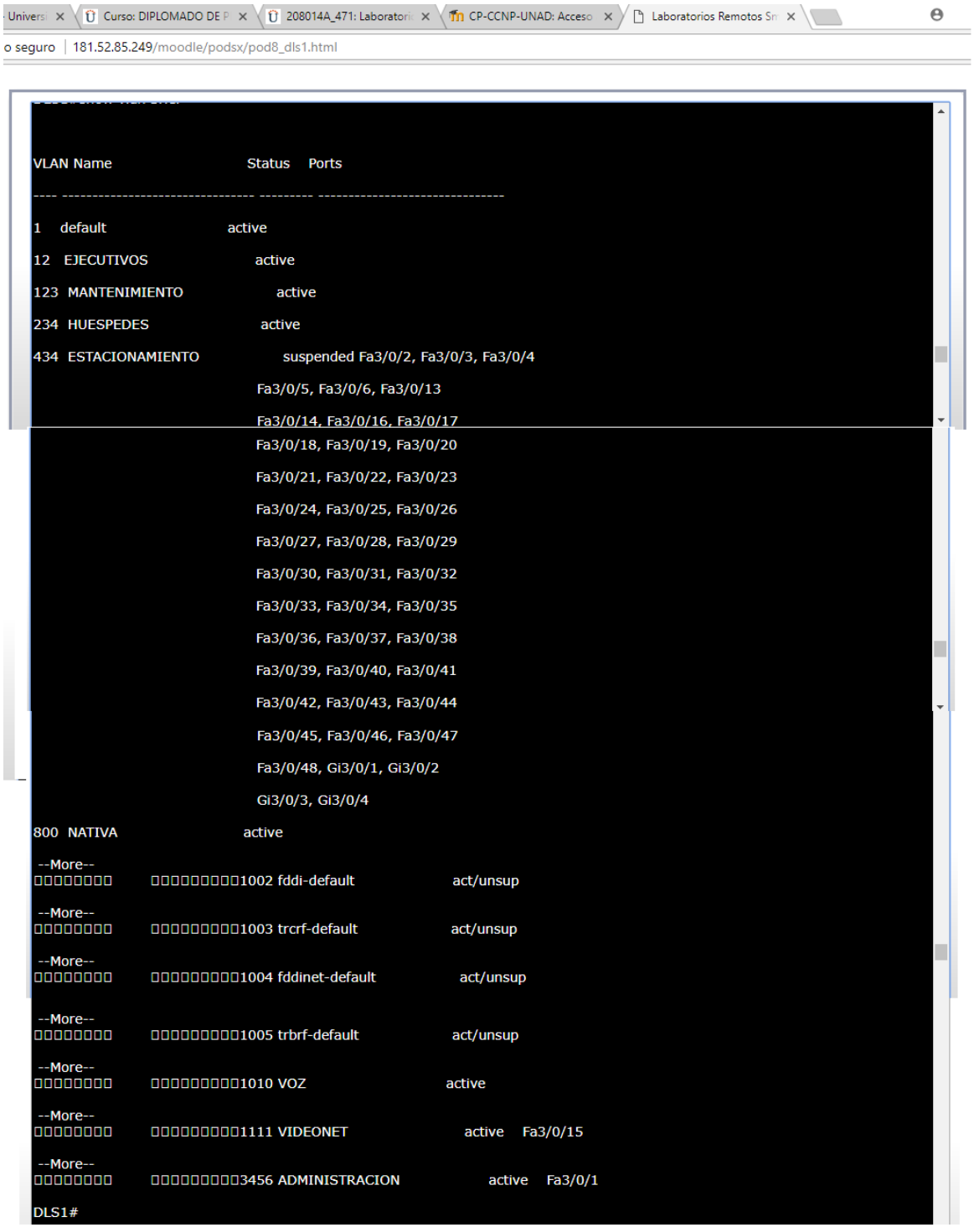
```
DLS1(dhcp-config)#network 10.0.123.0 255.255.255.0
DLS1(dhcp-config)#default-router 10.0.123.254
DLS1(dhcp-config)#dns-server 1.1.1.1
DLS1(dhcp-config)#exit
DLS1(config)#ip dhcp pool INVITADO-POOL
DLS1(dhcp-config)#network 10.0.234.0 255.255.255.0
DLS1(dhcp-config)#default-router 10.0.234.254
DLS1(dhcp-config)#dns-server 1.1.1.1
DLS1(dhcp-config)#exit
```

s. Obtener direcciones IPv4 en los host A, B, y D a través de la configuración por DHCP que fue realizada.

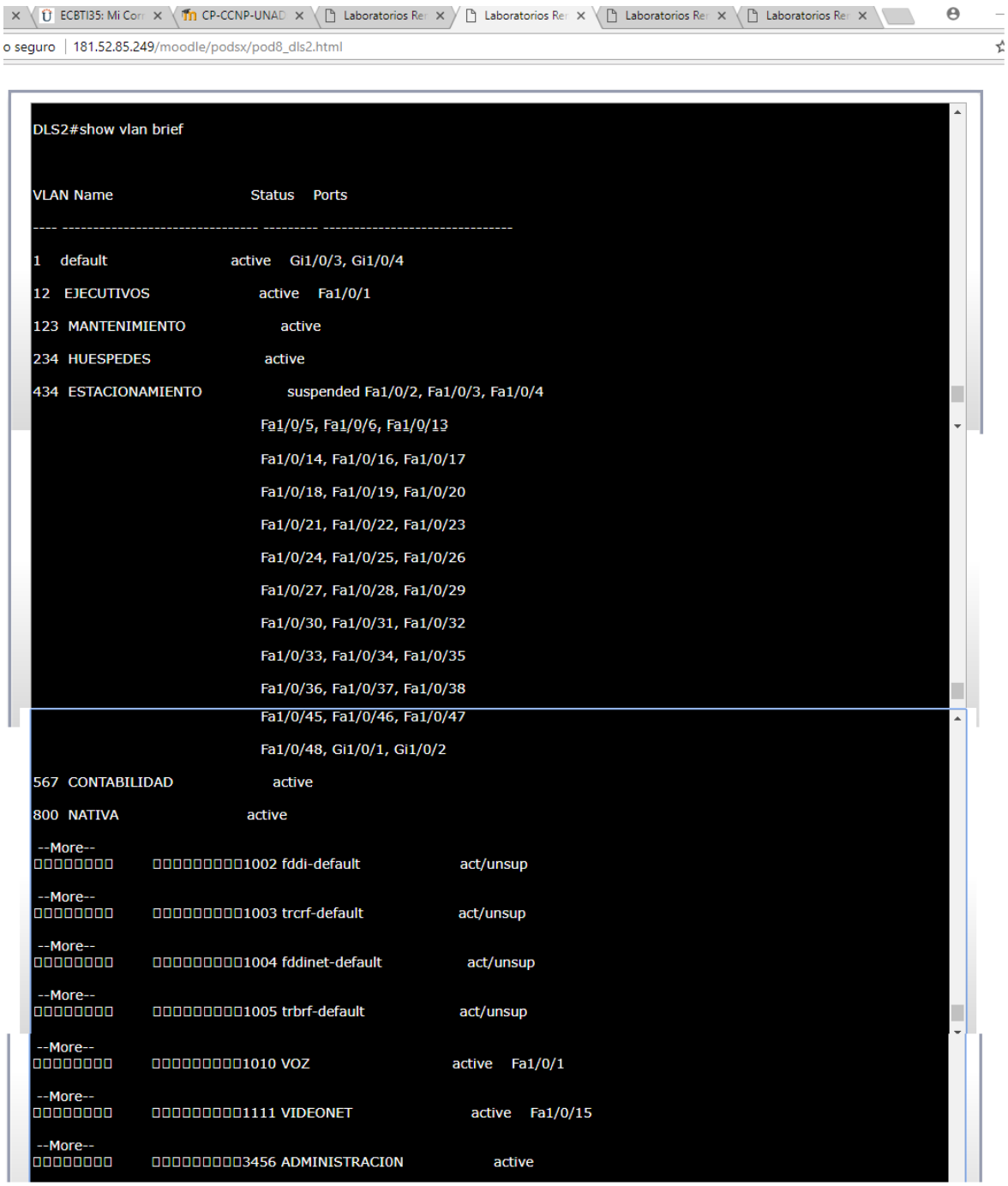
Parte 2: conectividad de red de prueba y las opciones configuradas.

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

---------- DLS1 ----------


Curso: DIPLOMADO DE
208014A_471: Laboratori
CP-CCNP-UNAD: Acceso
Laboratorios Remotos Sn
o seguro | 181.52.85.249/moodle/podsx/pod8_dls1.html
VLAN Name Status Ports
1 default active
12 EJECUTIVOS active
123 MANTENIMIENTO active
234 HUESPEDES active
434 ESTACIONAMIENTO suspended Fa3/0/2, Fa3/0/3, Fa3/0/4
Fa3/0/5, Fa3/0/6, Fa3/0/13
Fa3/0/14, Fa3/0/16, Fa3/0/17
Fa3/0/18, Fa3/0/19, Fa3/0/20
Fa3/0/21, Fa3/0/22, Fa3/0/23
Fa3/0/24, Fa3/0/25, Fa3/0/26
Fa3/0/27, Fa3/0/28, Fa3/0/29
Fa3/0/30, Fa3/0/31, Fa3/0/32
Fa3/0/33, Fa3/0/34, Fa3/0/35
Fa3/0/36, Fa3/0/37, Fa3/0/38
Fa3/0/39, Fa3/0/40, Fa3/0/41
Fa3/0/42, Fa3/0/43, Fa3/0/44
Fa3/0/45, Fa3/0/46, Fa3/0/47
Fa3/0/48, Gi3/0/1, Gi3/0/2
Gi3/0/3, Gi3/0/4
800 NATIVA active
--More--
1002 fddi-default act/unsup
--More--
1003 trcrf-default act/unsup
--More--
1004 fddinet-default act/unsup
--More--
1005 trbrf-default act/unsup
--More--
1010 VOZ active
--More--
1111 VIDEONET active Fa3/0/15
--More--
3456 ADMINISTRACION active Fa3/0/1
DLS1#

---------- DLS2 ----------


ECBTI35: Mi Corr
CP-CCNP-UNAD
Laboratorios Re
Laboratorios Re
Laboratorios Re
Laboratorios Re
o seguro | 181.52.85.249/moodle/podsx/pod8_dls2.html
DLS2#show vlan brief
VLAN Name Status Ports
---- -------------------------------- --------- -------------------------------
1 default active Gi1/0/3, Gi1/0/4
12 EJECUTIVOS active Fa1/0/1
123 MANTENIMIENTO active
234 HUESPEDES active
434 ESTACIONAMIENTO suspended Fa1/0/2, Fa1/0/3, Fa1/0/4
Fa1/0/5, Fa1/0/6, Fa1/0/13
Fa1/0/14, Fa1/0/16, Fa1/0/17
Fa1/0/18, Fa1/0/19, Fa1/0/20
Fa1/0/21, Fa1/0/22, Fa1/0/23
Fa1/0/24, Fa1/0/25, Fa1/0/26
Fa1/0/27, Fa1/0/28, Fa1/0/29
Fa1/0/30, Fa1/0/31, Fa1/0/32
Fa1/0/33, Fa1/0/34, Fa1/0/35
Fa1/0/36, Fa1/0/37, Fa1/0/38
Fa1/0/45, Fa1/0/46, Fa1/0/47
Fa1/0/48, Gi1/0/1, Gi1/0/2
567 CONTABILIDAD active
800 NATIVA active
--More--
1002 fddi-default act/unsup
--More--
1003 trcrf-default act/unsup
--More--
1004 fddinet-default act/unsup
--More--
1005 trbrf-default act/unsup
--More--
1010 VOZ active Fa1/0/1
--More--
1111 VIDEONET active Fa1/0/15
--More--
3456 ADMINISTRACI0N active

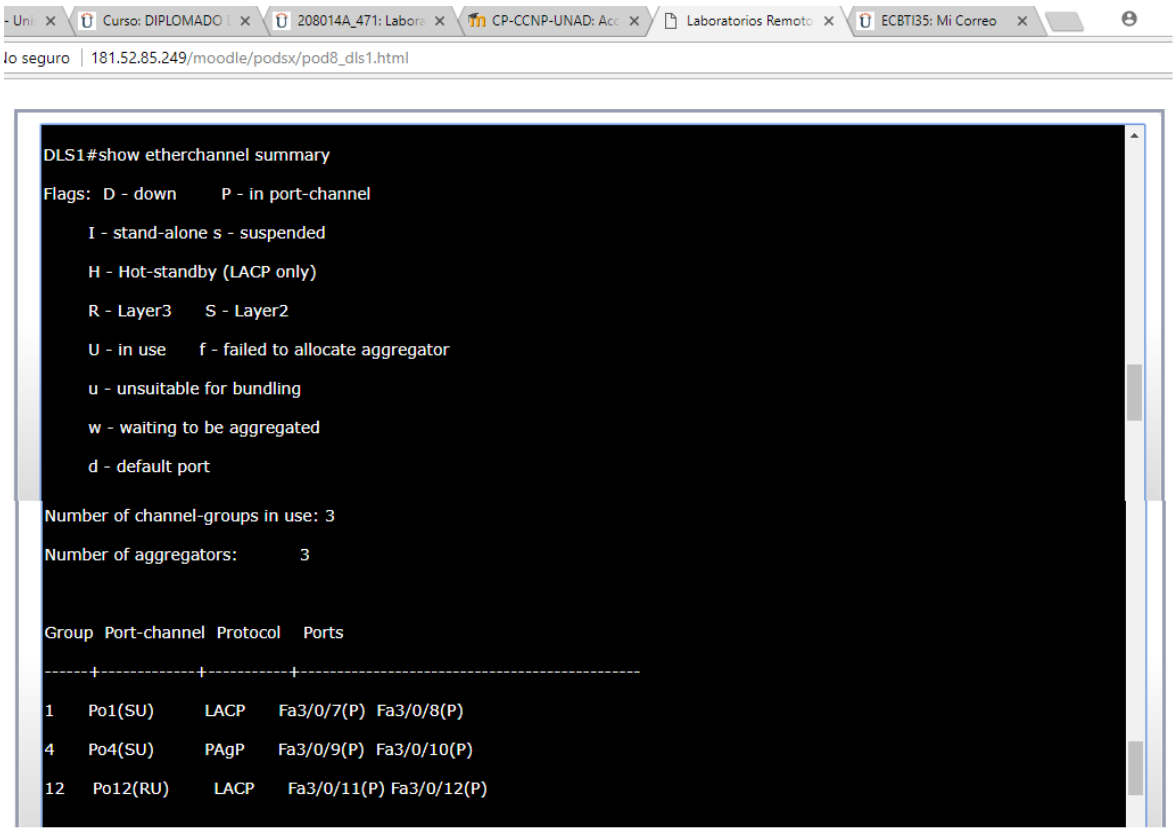
---------- ALS1 ----------

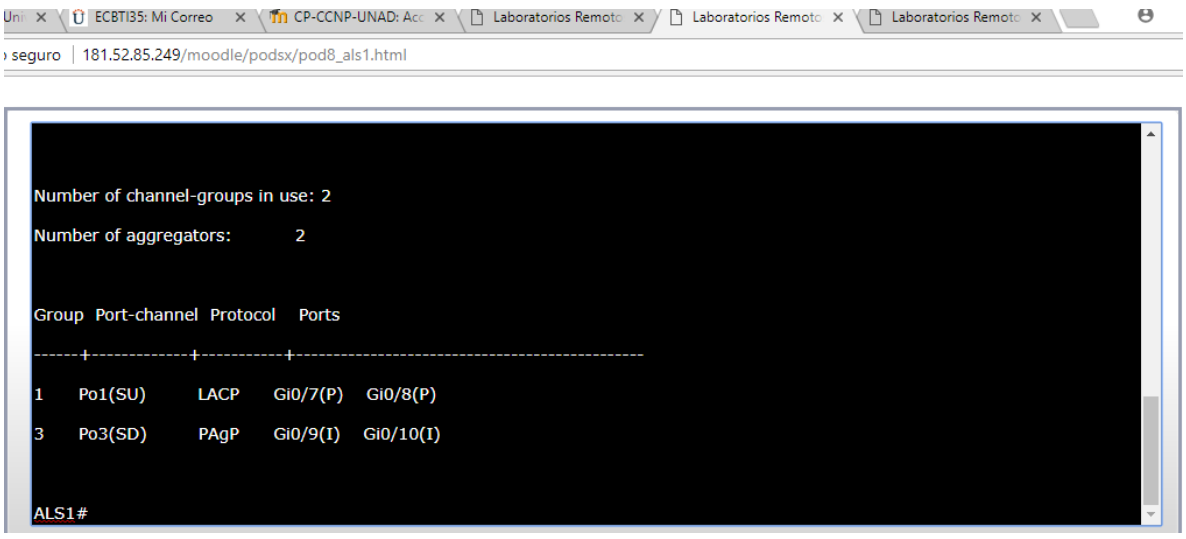
```
ALS1#show vlan brief

VLAN Name                      Status    Ports
---- ------------------------------ --------- -------------------------------
1    default                   active    Fa0/11, Fa0/12
800  VLAN0800                      active    Fa0/7, Fa0/8, Fa0/9, Fa0/10
1002 fddi-default                  act/unsup
1003 trcrf-default                 act/unsup
1004 fddinet-default               act/unsup
1005 trbrf-default                 act/unsup
```

---------- ALS2 ----------

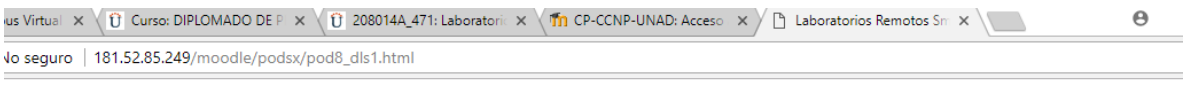
```
ALS2#show vlan brief

VLAN Name                      Status    Ports
---- ------------------------------ --------- -------------------------------
1    default                   active    Fa0/7, Fa0/8, Fa0/9, Fa0/10
                                         Fa0/11, Fa0/12
1002 fddi-default                  act/unsup
1003 token-ring-default                act/unsup
1004 fddinet-default               act/unsup
1005 trnet-default                 act/unsup
```

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





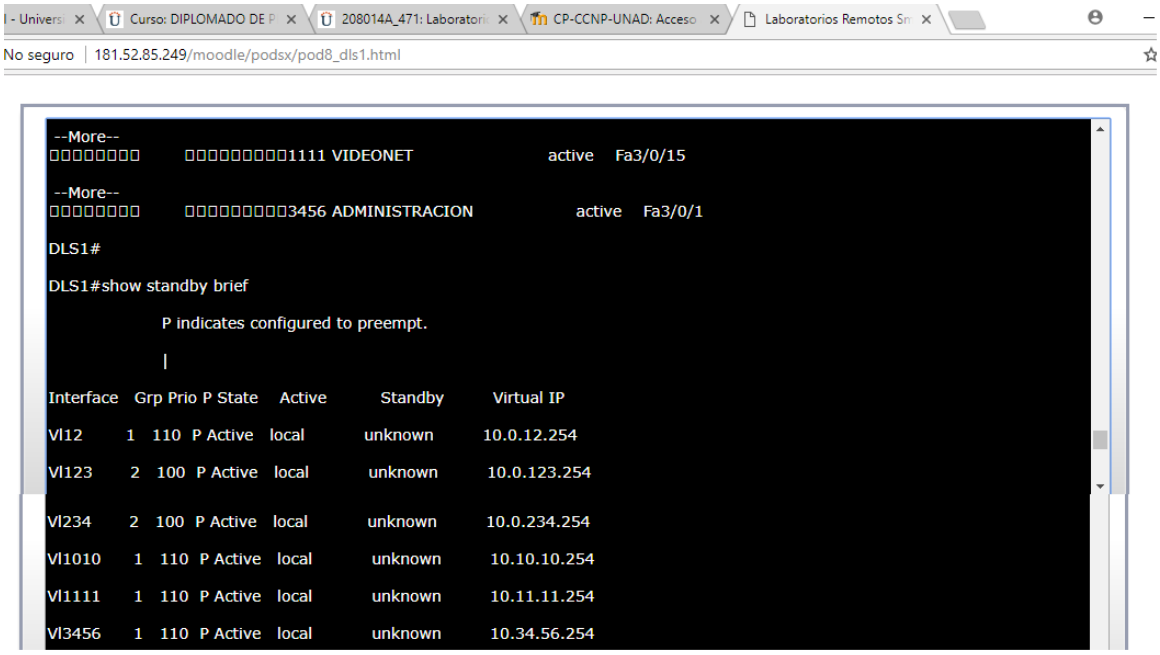
c. Verificar la configuración de Spanning tree entre DLS1 o DLS2 para cada VLAN.




```
DLS1#show spanning-tree root

                        Root    Hello Max Fwd
Vlan             Root ID        Cost   Time  Age Dly  Root Port
---------------- -------------------- --------- ----- --- ---  ------------
VLAN0012         24588 001d.a26a.d100       0    2   20  15
VLAN0123         28795 001d.a26a.d100       0    2   20  15
VLAN0234         33002 001d.a26a.d100       0    2   20  15
VLAN0800         25376 001d.a26a.d100       0    2   20  15
VLAN1010         25586 001d.a26a.d100       0    2   20  15
VLAN1111         25687 001d.a26a.d100       0    2   20  15
VLAN3456         28032 001d.a26a.d100       0    2   20  15
DLS1#
```

```
DLS2#show spanning-tree root

                        Root    Hello Max Fwd
Vlan             Root ID        Cost   Time  Age Dly  Root Port
---------------- -------------------- --------- ----- --- ---  ------------
VLAN0012         28684 0015.2bfb.d300       0    2   20  15
VLAN0123         24699 0015.2bfb.d300       0    2   20  15
VLAN0234         24810 0015.2bfb.d300       0    2   20  15
VLAN0800         29472 0015.2bfb.d300       0    2   20  15
VLAN1010         29682 0015.2bfb.d300       0    2   20  15
VLAN1111         33879 0015.2bfb.d300       0    2   20  15
VLAN3456         32128 0015.2bfb.d300       0    2   20  15
```

d. Verificar configuraciones HSRP mediante comandos Show



CONCLUSIÓN

Se desarrolla a cabalidad los dos escenarios en el cual el primero se realizó en Packet Tracer y el segundo en el laboratorio SmartLab. Se introdujeron diferentes comandos en los routers y switches dependiendo los protocolos y sus direcciones ipv4 e ipv6. Mediante los comandos show se verifico que los protocolos se han realizado correctamente y mediante los comandos ping que tenga conectividad entre los diferentes dispositivos.

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