

PRUEBA DE HABILIDADES CCNP

TUTOR

JUAN CARLOS VESGA

PRESENTADO POR:

ANDRÉS RUIZ CADAVID

CÓDIGO: 16844290

GRUPO:

208014_1

ESCUELA DE CIENCIAS BÁSICAS, TECNOLOGÍA E INGENIERÍA

INGENIERIA ELECTRONICA

CEAD SANTANDER DE QUILICHAO

JULIO 2018

GLOSARIO

IPV4: El Protocolo de Internet versión 4, en inglés: Internet Protocol version 4 (IPv4), es la cuarta versión del Internet Protocol (IP). Es uno de los protocolos centrales de los métodos estándares de interconexión de redes basados en Internet, y fue la primera versión implementada para la producción de ARPANET, en 1983.

IPV6: IPv6 es la versión 6 del Protocolo de Internet (IP por sus siglas en inglés, Internet Protocol), es el encargado de dirigir y encaminar los paquetes en la red, fue diseñado en los años 70 con el objetivo de interconectar redes.

INTERFAZ: es la conexión entre dos ordenadores o máquinas de cualquier tipo dando una comunicación entre distintos niveles.

CCNP: Certificación en Routing y Switching, expedida por la compañía CISCO

EIGRP: Protocolo de enrutamiento de puerta de enlace interior mejorado, el cual usa como parámetro la distancia y calidad del canal.

OSPF: Camino más cortó abierto; protocolo de enrutamiento que proporciona la ruta más corta.

VLAN: Red Virtual de Área Local; arreglo lógico que distingue un conjunto de paquetes de otros independizándolos.

DHCP: Configuración Dinámica de protocolos para host; encargado de proveer de direccionamiento IP a dispositivos de forma automática.

EtherChannel: Arreglo Lógico para la agrupación de varios enlaces físicos de forma que se suman sus velocidades obteniendo un enlace troncal de alta velocidad.

INTRODUCCIÓN

El presente trabajo tiene como finalidad fusionar los cursos de CCNA y CCNP de CISCO, por medio de la solución de dos escenarios de implementación de redes de datos con la ayuda de dispositivos activos Router y Switch simulados en herramientas como Packet Tracer y GNS3. En primera instancia tendremos un primer escenario donde se 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.

Para la segunda parte tendremos un segundo escenario en el cual se 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.

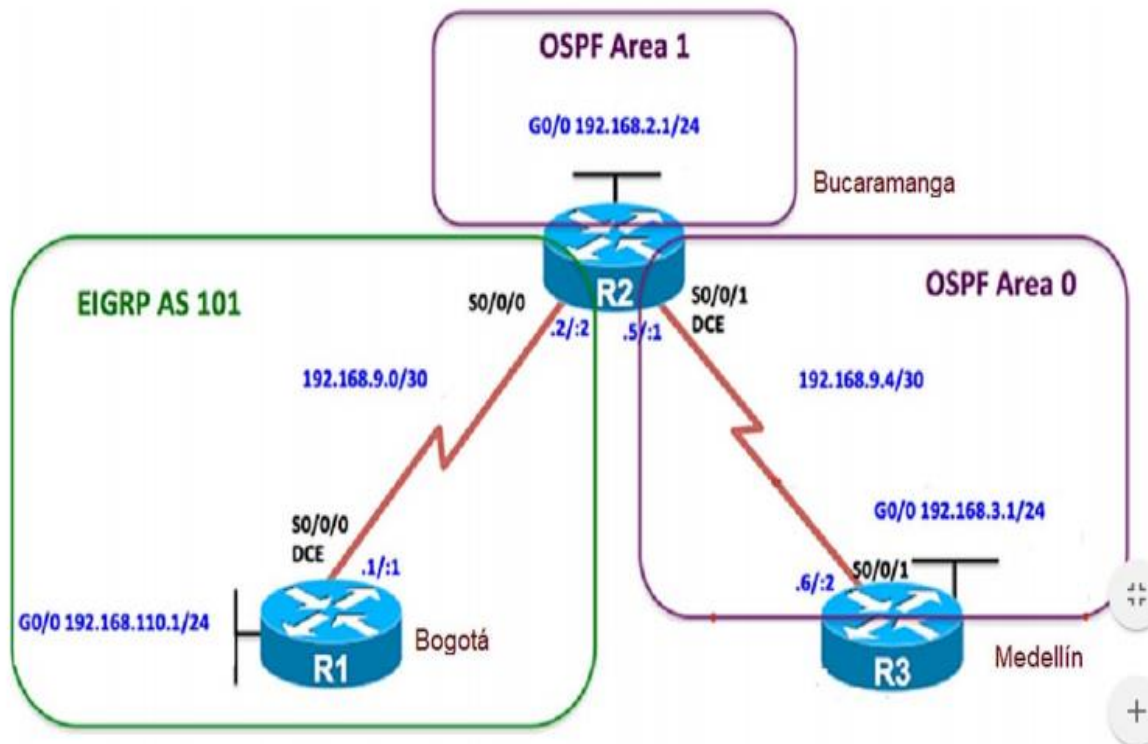
OBJETIVOS

- Configurar las familias de direcciones OSPFv3 para IPv4 e IPv6.
- Propagar rutas por defecto de IPv4 y IPv6, al interior del dominio OSPFv3.
- Realizar la configuración del protocolo EIGRP para IPv4 como IPv6.
- Configurar la redistribución mutua entre OSPF y EIGRP para IPv4 e IPv6.
- Realizar configuración del escenario número 2, propuesto por la prueba de habilidades CCNP.
- Configurar los parámetros iniciales a los dispositivos switch y routers.
- Usar protocolos EIGRP, OSPF, para la configuración y enrutamiento de datos a través de routers y switches con el fin de controlar la red inicial y final.
- Configuración de switches con protocolos Etherchannel para el uso de VLANs, VTP y Port-Channels.
- Configurar puertos troncales y Port-channels (LACP y PAgP).
- Configurar VTP versión 3
- Configurar Spanning tree root para las VLAN
- Configurar HSRP con interfaz tracking para VLAN.

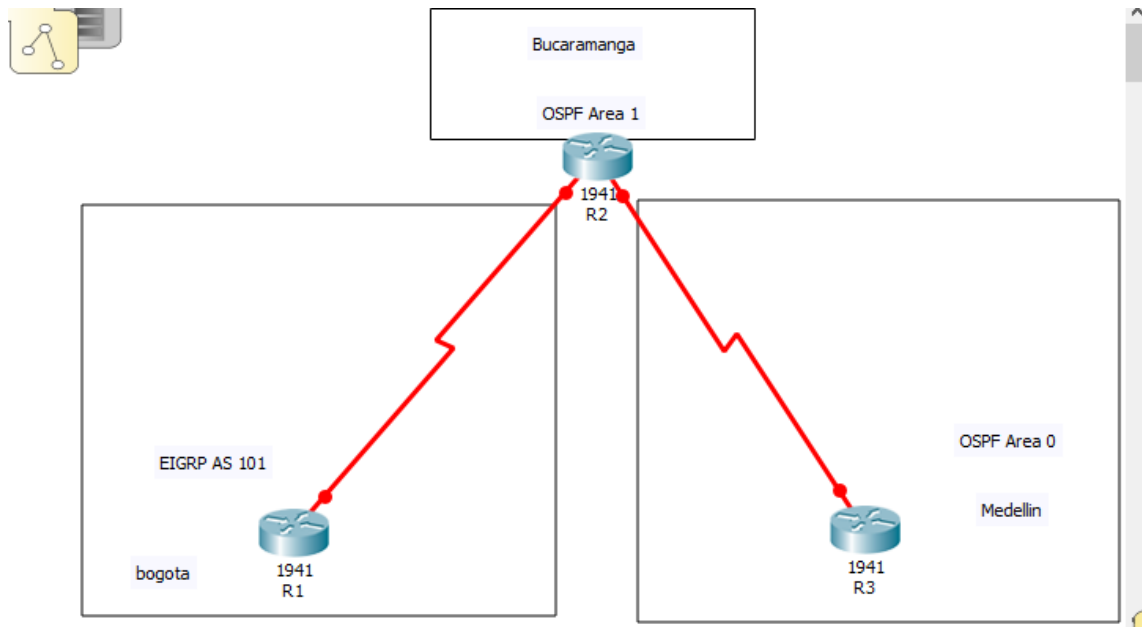
ESCENARIO 1 DE HABILIDADES PRÁCTICAS

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



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



```

R1
Physical Config CLI Attributes
IOS Command Line Interface
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#int
Router(config)#interface s0/0/0
Router(config-if)#ip add
Router(config-if)#ip address 192.168.9.1 255.255.255.252
Router(config-if)#no sh

%LINK-5-CHANGED: Interface Serial10/0/0, changed state to down
Router(config-if)#exit
Router(config)#
Router(config)#int
Router(config)#interface g
Router(config)#interface gigabitEthernet 0/0
Router(config-if)#ip ad
Router(config-if)#ip address 192.168.110.1 255.255.255.0
Router(config-if)#no sh

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

Ctrl+F6 to exit CLI focus

Copy Paste

R2

Physical Config CLI Attributes

IOS Command Line Interface

```

Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#hostname R2
R2(config)#int
R2(config)#interface s0/0/0
R2(config-if)#ip add
R2(config-if)#ip address 192.168.9.2 255.255.255.252
R2(config-if)#no sh

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

R2(config-if)#exit
R2(config)#int g
R2(config)#int gigabitEthernet 0/0
R2(config-if)#ip add
R2(config-if)#ip address 192.168.2.1 255.255.255.0
R2(config-if)#no sh

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

R2(config-if)#exit
R2(config)#int
R2(config)#interface s0/0/1
R2(config-if)#ip add
R2(config-if)#ip address 192.168.9.5 255.255.255.252
R2(config-if)#no sh
|
%LINK-5-CHANGED: Interface Serial0/0/1, changed state to down

```

Ctrl+F6 to exit CLI focus

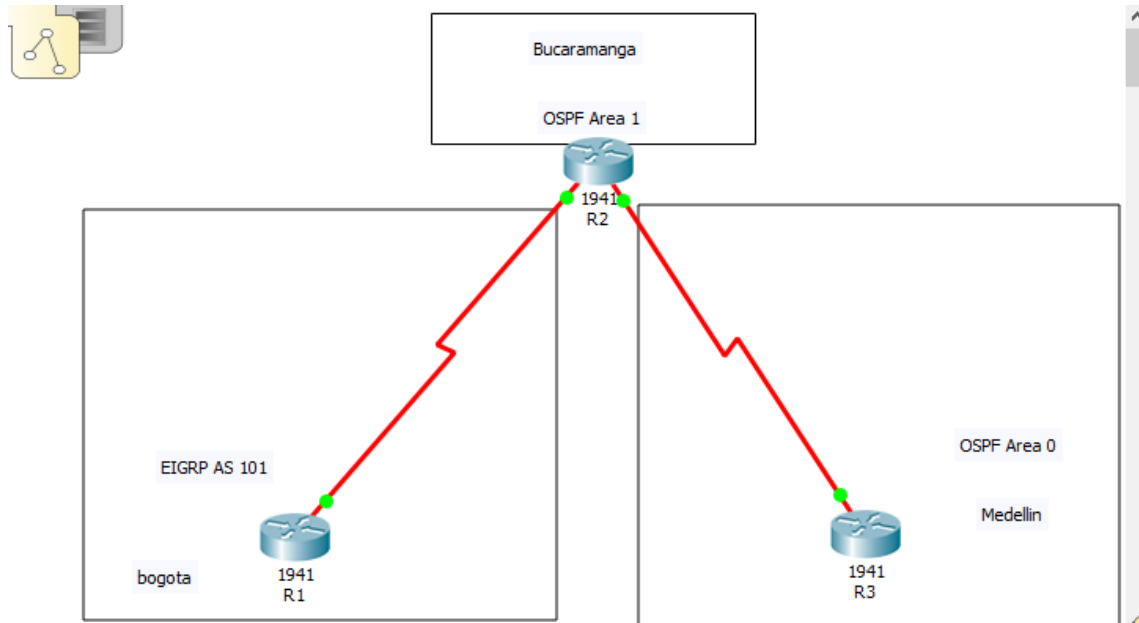
Copy Paste

```
R3
Physical Config CLI Attributes
IOS Command Line Interface
Router#
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#hostname R3
R3(config)#int
R3(config)#interface s0/0/1
R3(config-if)#ip add
R3(config-if)#ip address 192.168.9.6 255.255.255.252
R3(config-if)#no sh

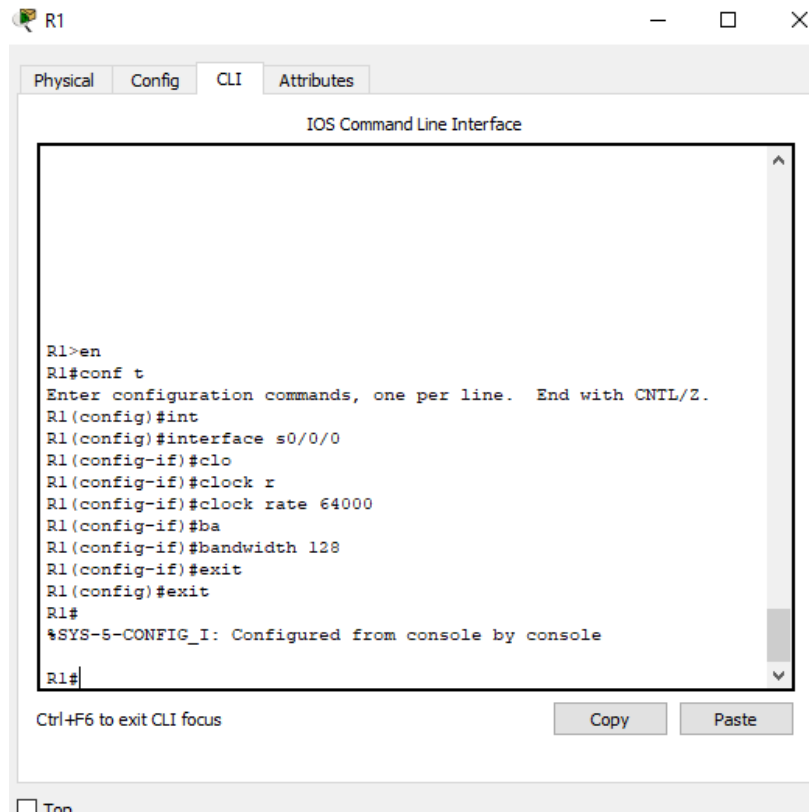
R3(config-if)#
%LINK-5-CHANGED: Interface Serial10/0/1, changed state to up

R3(config-if)#exit
R3(config)#int
R3(config)#interface g
R3(config)#interface gigabitEthernet 0/0
R3(config-if)#ip add
R3(config-if)#ip address 192.168.3.1 255.255.255.0
R3(config-if)#no sh

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



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>en
R1#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R1 (config)#int
R1 (config)#interface s0/0/0
R1 (config-if)#clo
R1 (config-if)#clock r
R1 (config-if)#clock rate 64000
R1 (config-if)#ba
R1 (config-if)#bandwidth 128
R1 (config-if)#exit
R1 (config)#exit
R1#
%SYS-5-CONFIG_I: Configured from console by console
R1#
```

Ctrl+F6 to exit CLI focus

Copy Paste

```

R2
Physical Config CLI Attributes
IOS Command Line Interface
R2 (config)#int
R2 (config)#interface se
R2 (config)#interface serial 0/0/0
R2 (config-if)#cloc
R2 (config-if)#clock ra
R2 (config-if)#clock rate 64000
This command applies only to DCE interfaces
R2 (config-if)#ban
R2 (config-if)#bandwidth 128
R2 (config-if)#exit
R2 (config)#
R2 (config)#int
R2 (config)#interface s0/0/1
R2 (config-if)#cloc
R2 (config-if)#clock ra
R2 (config-if)#clock rate 64000
R2 (config-if)#ban
R2 (config-if)#bandwidth 128
R2 (config-if)#exit
R2 (config)#exit
R2#
%SYS-5-CONFIG_I: Configured from console by console

R2#wr
Building configuration...

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

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

R2

Physical Config CLI Attributes

IOS Command Line Interface

```
R2 (config)#exit
R2#
%SYS-5-CONFIG_I: Configured from console by console

R2#wr
Building configuration...
[OK]
R2#
R2#
R2#
R2#
R2#
R2#
R2#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R2 (config)#rou
R2 (config)#router os
R2 (config)#router ospf 10
R2 (config-router)#rou
R2 (config-router)#router-id 2.2.2.2
R2 (config-router)#end
R2#
%SYS-5-CONFIG_I: Configured from console by console

R2#
```

Ctrl+F6 to exit CLI focus

Copy Paste

R3

Physical Config CLI Attributes

IOS Command Line Interface

```
R3>en
R3#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R3 (config)#ro
R3 (config)#router ospf 10
R3 (config-router)#ro
R3 (config-router)#router-id 3.3.3.3
R3 (config-router)#end
R3#
%SYS-5-CONFIG_I: Configured from console by console
```

Ctrl+F6 to exit CLI focus

Copy Paste

Top

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>en
R2#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R2 (config)#
R2 (config)#rou
R2 (config)#router os
R2 (config)#router ospf 10
R2 (config-router)#ro
R2 (config-router)#router-id 2.2.2.2
R2 (config-router)#net
R2 (config-router)#network 192.168.9.0 ar
R2 (config-router)#network 192.168.9.0 area 0
^
% Invalid input detected at '^' marker.

R2 (config-router)#network 192.168.9.0 255.255.255.252 area 0
R2 (config-router)#network 192.168.110.0 255.255.255.0 area 0
R2 (config-router)#end
R2#
%SYS-5-CONFIG_I: Configured from console by console

R2#
    
```

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

R3

Physical Config CLI Attributes

IOS Command Line Interface

```
R3>en
R3#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R3 (config)#rou
R3 (config)#router osp
R3 (config)#router ospf 10
R3 (config-router)#ro
R3 (config-router)#router-id 3.3.3.3
R3 (config-router)#netw
R3 (config-router)#network 192.168.9.4 255.255.255.252 area 0
R3 (config-router)#network 192.168.3.0 255.255.255.0 area 0
R3 (config-router)#exit
R3 (config)#
```

Ctrl+F6 to exit CLI focus

Copy Paste

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

R2

Physical Config CLI Attributes

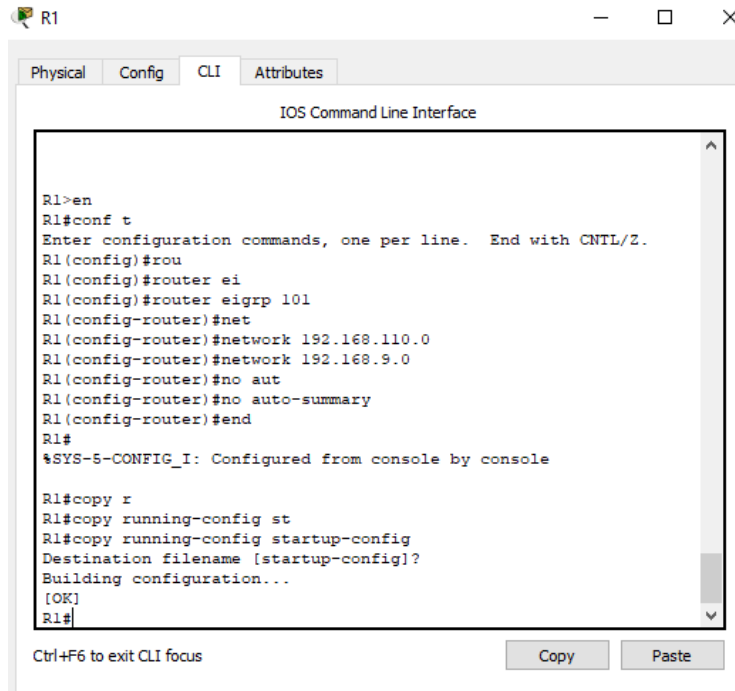
IOS Command Line Interface

```
R2 (config)#ro
R2 (config)#router osp
R2 (config)#router ospf 10
R2 (config-router)#ar
R2 (config-router)#area 1 no-
R2 (config-router)#area 1 no-s
R2 (config-router)#area 1 n
R2 (config-router)#area 1 ?
authentication Enable authentication
default-cost Set the summary default-cost of a NSSA/stub
area
nssa Specify a NSSA area
range Summarize routes matching address/mask (border
routers only)
stub Specify a stub area
virtual-link Define a virtual link and its parameters
R2 (config-router)#area 1 st
R2 (config-router)#area 1 stub no
R2 (config-router)#area 1 stub no-summary
R2 (config-router)#exit
R2 (config)#exit
R2#
%SYS-5-CONFIG_I: Configured from console by console
R2#
```

Ctrl+F6 to exit CLI focus

Copy Paste

8. Realizar la configuración del protocolo EIGRP para IPv4. 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>en
R1#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R1 (config)#rou
R1 (config)#router ei
R1 (config)#router eigrp 101
R1 (config-router)#net
R1 (config-router)#network 192.168.110.0
R1 (config-router)#network 192.168.9.0
R1 (config-router)#no aut
R1 (config-router)#no auto-summary
R1 (config-router)#end
R1#
%SYS-5-CONFIG_I: Configured from console by console

R1#copy r
R1#copy running-config st
R1#copy running-config startup-config
Destination filename [startup-config]?
Building configuration...
[OK]
R1#
```

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

Physical Config CLI Attributes

IOS Command Line Interface

```
R1#sh
R1#show ip
R1#show iprou
R1#show ip ro
R1#show ip route
Codes: L - local, C - connected, S - static, R - RIP, M - mobile,
B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter
area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external
type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E -
EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia -
IS-IS inter area
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route

Gateway of last resort is not set

      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

R1#
```

Ctrl+F6 to exit CLI focus

Copy Paste

R2

Physical Config CLI Attributes

IOS Command Line Interface

```
R2#sh
R2#show ip ro
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#
```

Ctrl+F6 to exit CLI focus

Copy Paste

R3

Physical Config CLI Attributes

IOS Command Line Interface

```

R3>en
R3#sh ip ro
R3#sh 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, 2 subnets, 2 masks
C       192.168.9.4/30 is directly connected, Serial0/0/1
L       192.168.9.6/32 is directly connected, Serial0/0/1
R3#
    
```

Ctrl+F6 to exit CLI focus

Copy Paste

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

```

R1
Physical Config CLI Attributes
IOS Command Line Interface
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, 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

R1#
R1#
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 = 1/1/5
ms

R1#
    
```

Ctrl+F6 to exit CLI focus

Copy Paste

```

R2
Physical Config CLI Attributes
IOS Command Line Interface
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 192.168.9.1

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 = 1/1/3
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 = 1/1/3
ms

R2#
    
```

Ctrl+F6 to exit CLI focus

Copy Paste

```

R3
Physical Config CLI Attributes
IOS Command Line Interface
NI - 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, 2 subnets, 2 masks
C    192.168.9.4/30 is directly connected, Serial0/0/1
L    192.168.9.6/32 is directly connected, Serial0/0/1

R3#ping 192.168.9.5

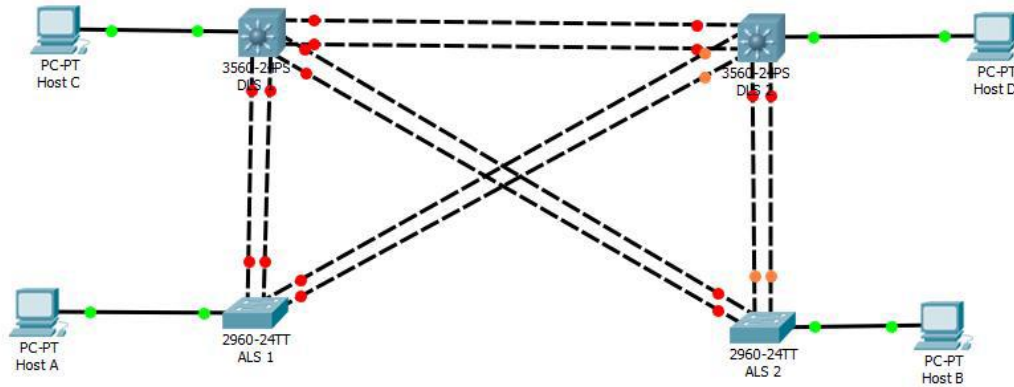
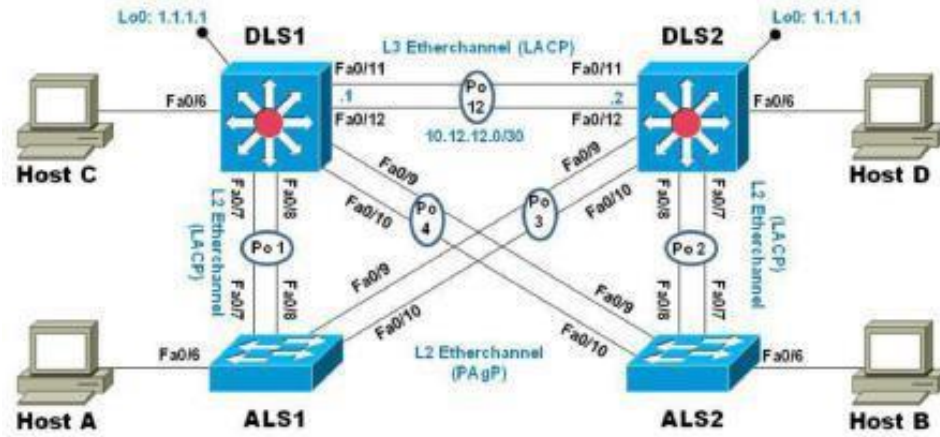
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 192.168.9.5, timeout is 2
seconds:
!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 1/1/4
ms
R3#
Ctrl+F6 to exit CLI focus
Copy Paste

```

ESCENARIO 2 DE HABILIDADES PRÁCTICAS

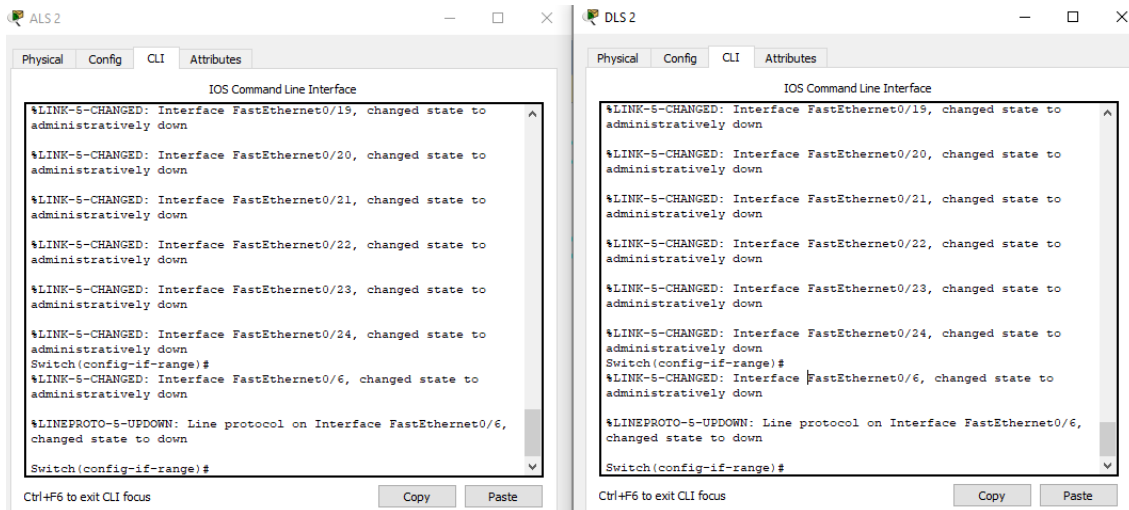
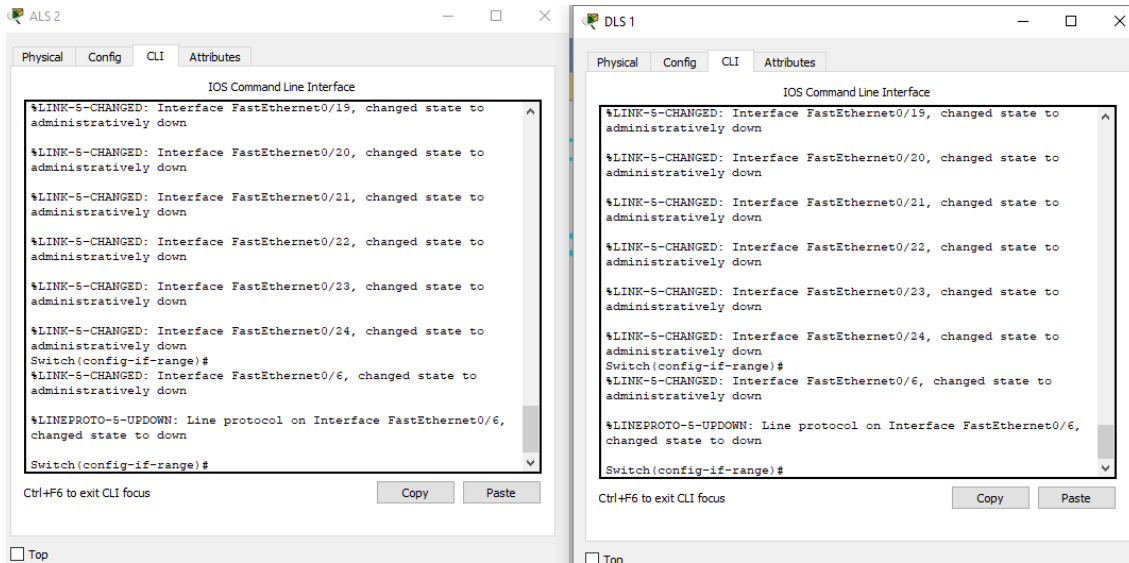
Una empresa de comunicaciones presenta una estructura Core acorde a la topología de red, en donde el estudiante será el administrador de la red, el cual deberá configurar e interconectar entre sí cada uno de los dispositivos que forman parte del escenario, acorde con los lineamientos establecidos para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

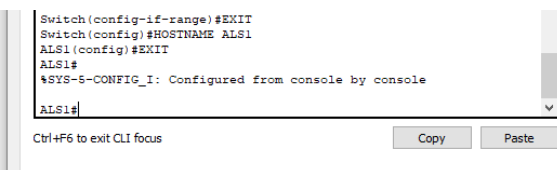
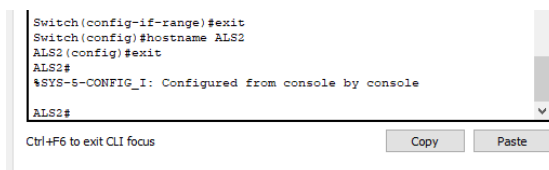


b. Asignar un nombre a cada switch acorde al escenario establecido.

Switch1>enable

Switch1#configure terminal

Switch1(config)#hostname DLS1



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.

DLS1>en

DLS1#conf ter

DLS1(config)#interface port-channel 12

DLS1(config-if)#no switchport

DLS1(config-if)#ip address 10.12.12.1 255.255.255.252

DLS1(config-if)#exit

DLS1(config)#interface range fa0/11-12

DLS1(config-if-range)#no switchport

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

DLS1(config-if-range)#exit

DLS1(config)#exit

DLS2>en

DLS2#conf ter

DLS2(config)#interface port-channel 12

34

DLS2(config-if)#no switchport

DLS2(config-if)#ip address 10.12.12.2 255.255.255.252

DLS2(config-if)#exit

DLS2(config)#interface range fa0/11-12

DLS2(config-if-range)#no switchport

DLS2(config-if-range)#channel-group 12 mode active

DLS2(config-if-range)#exit

DLS 1

Physical Config CLI Attributes

```
DLS1(config-if)#no switchport
DLS1(config-if)#ip address 10.12.12.1 255.255.255.252
DLS1(config-if)#exit
DLS1(config)#interface range fa0/11-12
DLS1(config-if-range)#no switchport
DLS1(config-if-range)#channel-group 12 mode active
DLS1(config-if-range)#exit
DLS1(config)#exit
DLS1#
```

DLS 2

Physical Config CLI Attributes

IOS Command Line Interface

```
DLS2>en
DLS2#config t
Enter configuration commands, one per line. End with CNTL/Z.
DLS2(config)#interface port-channel 12
DLS2(config-if)#no switchport
DLS2(config-if)#ip address 10.12.12.2 255.255.255.252
DLS2(config-if)#exit
DLS2(config)#interface range fa0/11-12
DLS2(config-if-range)#no switchport
DLS2(config-if-range)#channel-group 12 mode active
DLS2(config-if-range)#exit
DLS2(config)#
```

Validando el estado del Etherchannel usamos el comando: show etherchannel Summary en cada uno de los swich.

```

DLS2#show etherchannel summary
Flags: D - down      P - in port-channel
       I - stand-alone s - suspended
       H - Hot-standby (LACP only)
       R - Layer3    S - Layer2
       U - in use    f - failed to allocate aggregator
       u - unsuitable for bundling
       w - waiting to be aggregated
       d - default port

Number of channel-groups in use: 1
Number of aggregators:          1

Group  Port-channel  Protocol    Ports
-----+-----+-----+-----
12     Po12 (RD)        LACP        Fa0/11 (D) Fa0/12 (D)
DLS2#
    
```

```

DLS1#show etherchannel summary
Flags: D - down      P - in port-channel
       I - stand-alone s - suspended
       H - Hot-standby (LACP only)
       R - Layer3    S - Layer2
       U - in use    f - failed to allocate aggregator
       u - unsuitable for bundling
       w - waiting to be aggregated
       d - default port

Number of channel-groups in use: 1
Number of aggregators:          1

Group  Port-channel  Protocol    Ports
-----+-----+-----+-----
12     Po12 (RD)        LACP        Fa0/11 (D) Fa0/12 (D)
DLS1#
    
```

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

Para este utilizamos los siguientes comandos:

DLS1#en

DLS1#conf term

DLS1(config)#int ran fa0/7-8

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

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

DLS1(config-if-range)#channel-group 1 mode active

DLS1(config-if-range)#no shutdown

DLS 1

```

Physical Config CLI Attributes
Enter configuration commands, one per line. End with CNTL/Z.
DLS1(config)#interface range fa0/7-8
DLS1(config-if-range)#switchport trunk encapsulation dot1q
DLS1(config-if-range)#switchport mode trunk
DLS1(config-if-range)#channel-group 1 mode active
DLS1(config-if-range)#
Creating a port-channel interface Port-channel 1

DLS1(config-if-range)#no shutdown

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

%LINK-5-CHANGED: Interface FastEthernet0/8, changed state to down
DLS1(config-if-range)#exit
DLS1(config)#exit
DLS1#
%SYS-5-CONFIG_I: Configured from console by console

DLS1#show etherchannel summary
Flags: D - down          P - in port-channel
       I - stand-alone  s - suspended
       H - Hot-standby (LACP only)
       R - Layer3       S - Layer2
       U - in use       f - failed to allocate aggregator
       u - unsuitable for bundling
       w - waiting to be aggregated
       d - default port

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

Group  Port-channel  Protocol    Ports
-----+-----+-----+-----
1       Pol(SD)          LACP       Fa0/7(D) Fa0/8(D)
12      Pol12(RD)         LACP       Fa0/11(D) Fa0/12(D)
DLS1#
Ctrl+F6 to exit CLI focus

```

ALS1(config)#int ran fa0/7-8

ALS1(config-if-range)#switchport trunk encapsulation dot1q

ALS1(config-if-range)#switchport mode trunk

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

ALS1(config-if-range)#no shutdown

```

ALS1
Physical Config CLI Attributes
ALS1(config-if-range)#switchport trunk encapsulation dot1q
% Invalid input detected at '^' marker.
ALS1(config-if-range)#switchport mode trunk
ALS1(config-if-range)#channel-group 1 mode active
ALS1(config-if-range)#
Creating a port-channel interface Port-channel 1
ALS1(config-if-range)#no shutdown
%LINK-5-CHANGED: Interface FastEthernet0/7, changed state to down
%LINK-5-CHANGED: Interface FastEthernet0/8, changed state to down
ALS1(config-if-range)#exit
ALS1(config)#exit
ALS1#
%SYS-5-CONFIG_I: Configured from console by console
ALS1#show etherchannel summary
Flags: D - down          P - in port-channel
       I - stand-alone  s - suspended
       H - Hot-standby (LACP only)
       R - Layer3        S - Layer2
       U - in use       f - failed to allocate aggregator
       u - unsuitable for bundling
       w - waiting to be aggregated
       d - default port

Number of channel-groups in use: 1
Number of aggregators:          1

Group  Port-channel  Protocol    Ports
-----+-----+-----+-----
1      Pol(SD)          LACP       Fa0/7 (D) Fa0/8 (D)
ALS1#
Ctrl+F6 to exit CLI focus
    
```

DLS2(config)#int ran fa0/7-8

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

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

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

DLS2(config-if-range)#no shutdown

DLS 2

```

Physical Config CLI Attributes
Enter configuration commands, one per line. End with CNTL/Z.
DLS2(config)#int ran fa0/7-8
DLS2(config-if-range)#switchport trunk encapsulation dot1q
DLS2(config-if-range)#switchport mode trunk
DLS2(config-if-range)#channel-group 2 mode active
DLS2(config-if-range)#
Creating a port-channel interface Port-channel 2

DLS2(config-if-range)#no shutdown

%LINK-5-CHANGED: Interface FastEthernet0/7, changed state to down
%LINK-5-CHANGED: Interface FastEthernet0/8, changed state to down
DLS2(config-if-range)#exit
DLS2(config)#exit
DLS2#
%SYS-5-CONFIG_I: Configured from console by console

DLS2#show etherchannel summary
Flags: D - down          P - in port-channel
       I - stand-alone  s - suspended
       H - Hot-standby (LACP only)
       R - Layer3       S - Layer2
       U - in use       f - failed to allocate aggregator
       u - unsuitable for bundling
       w - waiting to be aggregated
       d - default port

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

Group  Port-channel  Protocol    Ports
-----+-----+-----+-----
2      Po2 (SD)        LACP       Fa0/7 (D) Fa0/8 (D)
12     Po12 (RD)       LACP       Fa0/11 (D) Fa0/12 (D)
DLS2#
    
```

```

ALS2(config)#int ran fa0/7-8
ALS2(config-if-range)#switchport trunk encapsulation dot1q
ALS2(config-if-range)#switchport mode trunk
ALS2(config-if-range)#channel-group 2 mode active
ALS2(config-if-range)#no shutdown
    
```

ALS 2

```

Physical Config CLI Attributes
ALS2(config-if-range)#switchport trunk encapsulation dot1q
% Invalid input detected at '^' marker.
ALS2(config-if-range)#switchport mode trunk
ALS2(config-if-range)#channel-group 2 mode active
ALS2(config-if-range)#
Creating a port-channel interface Port-channel 2
ALS2(config-if-range)#no shutdown
%LINK-5-CHANGED: Interface FastEthernet0/7, changed state to down
%LINK-5-CHANGED: Interface FastEthernet0/8, changed state to down
ALS2(config-if-range)#exit
ALS2(config)#exit
ALS2#
%SYS-5-CONFIG_I: Configured from console by console
ALS2#show etherchannel summary
Flags: D - down          P - in port-channel
       I - stand-alone  s - suspended
       H - Hot-standby (LACP only)
       R - Layer3       S - Layer2
       U - in use       f - failed to allocate aggregator
       u - unsuitable for bundling
       w - waiting to be aggregated
       d - default port

Number of channel-groups in use: 1
Number of aggregators:          1

Group  Port-channel  Protocol    Ports
-----+-----+-----+-----
2      Po2(SD)          LACP        Fa0/7(D) Fa0/8(D)
ALS2#

```

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

Para este procedimiento utilizamos los siguientes comandos:

```

DLS1(config)#int ran fa0/9-10
DLS1(config-if-range)# switchport trunk encapsulation dot1q
DLS1(config-if-range)# switchport mode trunk
DLS1(config-if-range)#channel-group 4 mode desirable
Creating a port-channel interface Port-channel 4
DLS1(config-if-range)#no shutdown

```

```

ALS2(config)#int ran fa0/9-10
ALS2(config-if-range)# switchport trunk encapsulation dot1q
ALS2(config-if-range)# switchport mode trunk
ALS2(config-if-range)#channel-group 4 mode desirable
Creating a port-channel interface Port-channel 4
ALS2(config-if-range)#no shutdown
    
```

DLS 1

```

Physical  Config  CLI  Attributes
-----
Enter configuration commands, one per line.  End with CNTL/Z.
DLS1(config)#int ran fa0/9-10
DLS1(config-if-range)#switchport trunk encapsulation dot1q
DLS1(config-if-range)#switchport mode trunk
DLS1(config-if-range)#channel-group 4 mode desirable
DLS1(config-if-range)#
Creating a port-channel interface Port-channel 4

DLS1(config-if-range)#no shutdown

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

%LINK-5-CHANGED: Interface FastEthernet0/10, changed state to down
DLS1(config-if-range)#exit
DLS1(config)#exit
DLS1#
%SYS-5-CONFIG_I: Configured from console by console

DLS1#show etherchannel summary
Flags:  D - down          P - in port-channel
        I - stand-alone  s - suspended
        H - Hot-standby (LACP only)
        R - Layer3       S - Layer2
        U - in use       f - failed to allocate aggregator
        u - unsuitable for bundling
        w - waiting to be aggregated
        d - default port

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

Group  Port-channel  Protocol    Ports
-----+-----+-----+-----
1      Po1(SD)        LACP        Fa0/7(D) Fa0/8(D)
4      Po4(SD)        PAgP        Fa0/9(D) Fa0/10(D)
12     Pol2(RD)       LACP        Fa0/11(D) Fa0/12(D)
DLS1#
    
```

Ctrl+F6 to exit CLI focus

ALS 2

```

Physical Config CLI Attributes
ALS2(config-if-range)#switchport trunk encapsulation dot1q
% Invalid input detected at '^' marker.

ALS2(config-if-range)#switchport mode trunk
ALS2(config-if-range)#channel-group 4 mode desirable
ALS2(config-if-range)#no shutdown

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

%LINK-5-CHANGED: Interface FastEthernet0/10, changed state to down
ALS2(config-if-range)#
Creating a port-channel interface Port-channel 4

ALS2(config-if-range)#exit
ALS2(config)#exit
ALS2#
%SYS-5-CONFIG_I: Configured from console by console

ALS2#show etherchannel summary
Flags: D - down          P - in port-channel
       I - stand-alone  s - suspended
       H - Hot-standby (LACP only)
       R - Layer3       S - Layer2
       U - in use       f - failed to allocate aggregator
       u - unsuitable for bundling
       w - waiting to be aggregated
       d - default port

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

Group  Port-channel  Protocol    Ports
-----+-----+-----+-----
2      Po2 (SD)          LACP       Fa0/7 (D) Fa0/8 (D)
4      Po4 (SD)          PAgP       Fa0/9 (D) Fa0/10 (D)
ALS2#
Ctrl+F6 to exit CLI focus

```

```

DLS2(config)#int ran fa0/9-10
DLS2(config-if-range)# switchport trunk encapsulation dot1q
DLS2(config-if-range)# switchport mode trunk
DLS2(config-if-range)#channel-group 3 mode desirable
Creating a port-channel interface Port-channel 3
DLS2(config-if-range)#no shutdown
ALS1(config)#int ran fa0/9-10
ALS1(config-if-range)# switchport trunk encapsulation dot1q
ALS1(config-if-range)# switchport mode trunk
ALS1(config-if-range)#channel-group 3 mode desirable

```

Creating a port-channel interface Port-channel 3
 ALS1(config-if-range)#no shutdown

DLS 2

```

Physical  Config  CLI  Attributes
-----
Enter configuration commands, one per line.  End with CNTL/Z.
DLS2(config)#int ran fa0/9-10
DLS2(config-if-range)#switchport trunk encapsulation dot1q
DLS2(config-if-range)#switchport mode trunk
DLS2(config-if-range)#channel-group 3 mode desirable
DLS2(config-if-range)#
Creating a port-channel interface Port-channel 3

DLS2(config-if-range)#no shutdown

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

%LINK-5-CHANGED: Interface FastEthernet0/10, changed state to down
DLS2(config-if-range)#exit
DLS2(config)#exit
DLS2#
%SYS-5-CONFIG_I: Configured from console by console

DLS2#show etherchannel summary
Flags:  D - down          P - in port-channel
        I - stand-alone  s - suspended
        H - Hot-standby (LACP only)
        R - Layer3       S - Layer2
        U - in use       f - failed to allocate aggregator
        u - unsuitable for bundling
        w - waiting to be aggregated
        d - default port

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

Group  Port-channel  Protocol    Ports
-----+-----+-----+-----
2      Po2(SD)        LACP       Fa0/7(D) Fa0/8(D)
3      Po3(SD)        PAgP       Fa0/9(D) Fa0/10(D)
12     Po12(RD)       LACP       Fa0/11(D) Fa0/12(D)
DLS2#
  
```

ALS 1

```

Physical Config CLI Attributes
ALS1(config-if-range)#switchport trunk encapsulation dot1q
^
% Invalid input detected at '^' marker.
ALS1(config-if-range)#switchport mode trunk
ALS1(config-if-range)#channel-group 3 mode desirable
ALS1(config-if-range)#
Creating a port-channel interface Port-channel 3
ALS1(config-if-range)#no shutdown
%LINK-5-CHANGED: Interface FastEthernet0/9, changed state to down
%LINK-5-CHANGED: Interface FastEthernet0/10, changed state to down
ALS1(config-if-range)#exit
ALS1(config)#exit
ALS1#
%SYS-5-CONFIG_I: Configured from console by console
ALS1#show etherchannel summary
Flags: D - down          P - in port-channel
       I - stand-alone  s - suspended
       H - Hot-standby (LACP only)
       R - Layer3       S - Layer2
       U - in use       f - failed to allocate aggregator
       u - unsuitable for bundling
       w - waiting to be aggregated
       d - default port

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

Group  Port-channel  Protocol    Ports
-----+-----+-----+-----
1      Po1 (SD)        LACP       Fa0/7 (D) Fa0/8 (D)
3      Po3 (SD)        PAgP       Fa0/9 (D) Fa0/10 (D)
ALS1#
    
```

Ctrl+F6 to exit CLI focus

int ran fa0/9-10
 switchport trunk encapsulation dot1q
 switchport mode trunk
 channel-group 3 mode desirable
 no shutdown

4) Todos los puertos troncales serán asignados a la VLAN 800 como la VLAN nativa.
 Para configurar y asignar a las vlan 800 tenemos:

```
DLS1#conf ter
DLS1(config)#interface Po1
DLS1(config-if)#switchport trunk native vlan 800
DLS1(config-if)#exit
DLS1(config)#interface Po4
DLS1(config-if)#switchport trunk native vlan 800
DLS1(config-if)#exit
```

```
DLS1#
DLS1#
DLS1#config t
Enter configuration commands, one per line. End with CNTL/Z.
DLS1(config)#interface Po1
DLS1(config-if)#switchport trunk native vlan 800
DLS1(config-if)#exit
DLS1(config)#interface Po4
DLS1(config-if)#switchport trunk native vlan 800
DLS1(config-if)#exit
DLS1(config)#exit
DLS1#
%SYS-5-CONFIG_I: Configured from console by console
```

```
DLS2(config)#interface Po2
DLS2(config-if)#switchport trunk native vlan 800
DLS2(config-if)#exit
DLS2(config)#interface Po3
DLS2(config-if)#switchport trunk native vlan 800
DLS2(config-if)#exit
```

```
DLS2#config t
Enter configuration commands, one per line. End with CNTL/Z.
DLS2(config)#interface Po2
DLS2(config-if)#switchport trunk native vlan 800
DLS2(config-if)#exit
DLS2(config)#interface Po3
DLS2(config-if)#switchport trunk native vlan 800
DLS2(config-if)#exit
DLS2(config)#
DLS2(config)#exit
DLS2#
%SYS-5-CONFIG_I: Configured from console by console

DLS2#
```

```
ALS1(config-if)#interface Po1
ALS1(config-if)#switchport trunk native vlan 800
ALS1(config-if)#exit
ALS1(config)#interface Po3
ALS1(config-if)#switchport trunk native vlan 800
```

```

ALS1#config t
Enter configuration commands, one per line. End with CNTL/Z.
ALS1(config)#interface Po1
ALS1(config-if)#switchport trunk native vlan 800
ALS1(config-if)#exit
ALS1(config)#interface Po3
ALS1(config-if)#switchport trunk native vlan 800
ALS1(config-if)#
ALS1(config-if)#exit
ALS1(config)#exit
ALS1#
%SYS-5-CONFIG_I: Configured from console by console

ALS1#
    
```

```

ALS2(config)#interface Po2
ALS2(config-if)#switchport trunk native vlan 800
ALS2(config-if)#interface Po4
ALS2 (config-if)#switchport trunk native vlan 800
    
```

```

ALS2#config t
Enter configuration commands, one per line. End with CNTL/Z.
ALS2 (config)#interface Po2
ALS2 (config-if)#switchport trunk native vlan 800
ALS2 (config-if)#exit
ALS2 (config)#interface Po4
ALS2 (config-if)#switchport trunk native vlan 800
ALS2 (config-if)#exit
ALS2 (config)#exit
ALS2#
%SYS-5-CONFIG_I: Configured from console by console

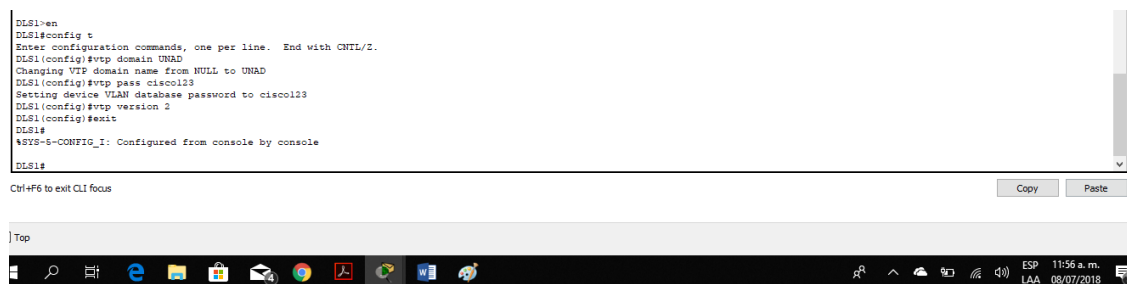
ALS2#
    
```

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

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

```

DLS1(config)#vtp domain UNAD
Domain name already set to UNAD.
DLS1(config)#vtp pass cisco123
Setting device VLAN database password to cisco123
DLS1(config)#vtp version 2
DLS1(config)#exit
DLS1#
    
```



```

ALS1(config)#vtp domain UNAD
Domain name already set to UNAD.
ALS1(config)#vtp pass cisco123
Setting device VLAN database password to cisco123
ALS1(config)#vtp version 2
    
```

```

ALS1>en
ALS1#config t
Enter configuration commands, one per line. End with CNTL/Z.
ALS1(config)#vtp domain UNAD
Changing VTP domain name from NULL to UNAD
ALS1(config)#vtp pass cisco123
Setting device VLAN database password to cisco123
ALS1(config)#vtp version 2
ALS1(config)#exit
ALS1#
%SYS-5-CONFIG_I: Configured from console by console
ALS1#
    
```

```

ALS2(config)#vtp domain UNAD
Changing VTP domain name from NULL to UNAD
ALS2(config)#vtp pass cisco123
Setting device VLAN database password to cisco123
ALS2(config)#vtp version 2
    
```

```

ALS2>en
ALS2#config t
Enter configuration commands, one per line. End with CNTL/Z.
ALS2(config)#vtp domain UNAD
Changing VTP domain name from NULL to UNAD
ALS2(config)#vtp pass cisco123
Setting device VLAN database password to cisco123
ALS2(config)#vtp version 2
ALS2(config)#exit
ALS2#
%SYS-5-CONFIG_I: Configured from console by console
ALS2#
    
```

2) Configurar DLS1 como servidor principal para las VLAN.

```

DLS1#config t
Enter configuration commands, one per line. End with CNTL/Z.
DLS1(config)#vtp mode server
Device mode already VTP SERVER.
DLS1(config)#
    
```

```
DLS1#show vtp status
VTP Version capable      : 1 to 3
VTP version running      : 2
VTP Domain Name          : UNAD
VTP Pruning Mode         : Disabled
VTP Traps Generation     : Disabled
Device ID                 : 0001.97DD.D130
Configuration last modified by 0.0.0.0 at 3-1-93 01:54:19
Local updater ID is 0.0.0.0 (no valid interface found)

Feature VLAN :
-----
VTP Operating Mode       : Server
Maximum VLANs supported locally : 1005
Number of existing VLANs : 5
Configuration Revision   : 1
MD5 digest                : 0x4A 0xB1 0x29 0x39 0x90 0x66 0x68 0x70
                          : 0x68 0x00 0x4B 0x60 0x5E 0xD5 0x27 0x5E
DLS1#
```

3) Configurar ALS1 y ALS2 como clientes VTP.

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

```
ALS1#config t
Enter configuration commands, one per line. End with CNTL/Z.
ALS1(config)#vtp mode client
Setting device to VTP CLIENT mode.
ALS1(config)#exit
ALS1#
%SYS-5-CONFIG_I: Configured from console by console

ALS1#show vtp status
VTP Version      : 2
Configuration Revision : 1
Maximum VLANs supported locally : 255
Number of existing VLANs : 5
VTP Operating Mode : Client
VTP Domain Name   : UNAD
VTP Pruning Mode  : Disabled
VTP V2 Mode       : Enabled
VTP Traps Generation : Disabled
MD5 digest        : 0x14 0xE2 0xEB 0x8F 0xE5 0x1B 0x35 0x52
Configuration last modified by 0.0.0.0 at 3-1-93 01:52:48
ALS1#
```

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#config t
Enter configuration commands, one per line. End with CNTL/Z.
DLS1(config)#vlan 800
DLS1(config-vlan)#name NATIVA
DLS1(config-vlan)#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)#vlan 1112
VLAN_CREATE_FAIL: Failed to create VLANs 1112 : extended VLAN(s) not allowed in current VTP mode
DLS1(config)#vlan 11
DLS1(config-vlan)#name VIDEONET
DLS1(config-vlan)#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)#vlan 10
DLS1(config-vlan)#name VOZ
DLS1(config-vlan)#vlan 3456
VLAN_CREATE_FAIL: Failed to create VLANs 3456 : extended VLAN(s) not allowed in current VTP mode
DLS1(config)#vlan 34
DLS1(config-vlan)#name ADMINISTRACION
DLS1(config-vlan)#

```

```
DLS1#show vlan
```

VLAN Name	Status	Ports
1 default	active	Pol, Po4, Pol2, Fa0/1 Fa0/2, Fa0/3, Fa0/4, Fa0/5 Fa0/6, Fa0/7, Fa0/8, Fa0/9 Fa0/10, Fa0/11, Fa0/12, Fa0/13 Fa0/14, Fa0/15, Fa0/16, Fa0/17 Fa0/18, Fa0/19, Fa0/20, Fa0/21 Fa0/22, Fa0/23, Fa0/24, Gig0/1 Gig0/2
10 VOZ	active	
11 VIDEONET	active	
12 EJECUTIVOS	active	
34 ADMINISTRACION	active	
123 MANTENIMIENTO	active	
234 HUESPEDES	active	
434 ESTACIONAMIENTO	active	
800 NATIVA	active	
1002 fddi-default	act/unsup	
1003 token-ring-default	act/unsup	
1004 fddinet-default	act/unsup	
1005 trnet-default	act/unsup	

VLAN Type	SAID	MTU	Parent	RingNo	BridgeNo	Stp	BrdgMode	Transl	Trans2
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

f. En DLS1, suspender la VLAN 434.

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

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

DLS1(config-vlan)#
```

En esta versión no es posible ejecutar el comando para suspender la VLAN, si es posible eliminarla, pero para efectos la dejare habilitada.

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

```
DLS2(config)#vtp mode transparent
Setting device to VTP TRANSPARENT mode.
DLS2(config)#exit
DLS2#
%SYS-5-CONFIG_I: Configured from console by console
```

DLS 2

```

Physical  Config  CLI  Attributes
-----
IOS Command Line Interface
DLS2#
%SYS-5-CONFIG_I: Configured from console by console

DLS2#config t
Enter configuration commands, one per line. End with Ctrl-D
DLS2 (config)#vlan 800
DLS2 (config-vlan)#name NATIVA
DLS2 (config-vlan)#vlan 12
DLS2 (config-vlan)#name EJECUTIVOS
DLS2 (config-vlan)#vlan 234
DLS2 (config-vlan)#name HUESPEDES
DLS2 (config-vlan)#vlan 123
DLS2 (config-vlan)#name MANTENIMIENTO
DLS2 (config-vlan)#vlan 1111
DLS2 (config-vlan)#VIDEONET
DLS2 (config-vlan)#
^
% Invalid input detected at '^' marker.

DLS2 (config-vlan)#name VIDEONET
DLS2 (config-vlan)#vlan 1010
DLS2 (config-vlan)#name VOZ
DLS2 (config-vlan)#vlan 3456
DLS2 (config-vlan)#name ADMINISTRACION
DLS2 (config-vlan)#exit
DLS2 (config)#
    
```

Ctrl+F6 to exit CLI focus Copy

h. Suspend VLAN 434 en DLS2.

```

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

Para esta versión no es posible ejecutar el comando para suspender la VLAN, si es posible eliminarla, pero para efectos la dejare habilitada.

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#config t
Enter configuration commands, one per line. End with CNTL/Z.
DLS2(config)#interface port-channel 2
DLS2(config-if)#switchport trunk allowed vlan except 567
DLS2(config-if)#exit
DLS2(config)#interface port-channel 3
DLS2(config-if)#switchport trunk allowed vlan except 567
DLS2(config-if)#exit
DLS2(config)#
```

Ctrl+F6 to exit CLI focus

Copy

Paste

```
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(config)#spanning-tree vlan 1,12,434,800,101,111,345 root
primary
DLS1(config)#spanning-tree vlan 123,234 root secondary
DLS1(config)#
DLS1(config)#exit
DLS1#
%SYS-5-CONFIG_I: Configured from console by console
DLS1#
```

Ctrl+F6 to exit CLI focus

Copy

Paste

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(config)#spanning-tree vlan 123,234 root primary
DLS2(config)#spanning-tree vlan 1,12,434,800,101,111,345 root
secondary
DLS2(config)#
```

Ctrl+F6 to exit CLI focus

Copy

Paste

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.

```

DLS2
Physical Config CLI Attributes
IOS Command Line Inte
!
interface Port-channel2
 switchport trunk native vlan 800
 switchport trunk allowed vlan 1-566,568-1005
 switchport trunk encapsulation dot1q
 switchport mode trunk
!
interface Port-channel3
 switchport trunk native vlan 800
 switchport trunk allowed vlan 1-566,568-1005
 switchport trunk encapsulation dot1q
 switchport mode trunk
!
interface Port-channell2
 no switchport
 ip address 10.12.12.2 255.255.255.252
!
interface FastEthernet0/7
 switchport trunk native vlan 800
 switchport trunk allowed vlan 1-566,568-1005
 switchport trunk encapsulation dot1q
 switchport mode trunk
 channel-group 2 mode active
!
interface FastEthernet0/8
 switchport trunk native vlan 800
 switchport trunk allowed vlan 1-566,568-1005
 switchport trunk encapsulation dot1q
 switchport mode trunk
 channel-group 2 mode active
!
interface FastEthernet0/9
 switchport trunk native vlan 800
 switchport trunk allowed vlan 1-566,568-1005
 switchport trunk encapsulation dot1q
 switchport mode trunk
 channel-group 3 mode desirable
!
interface FastEthernet0/10
 switchport trunk native vlan 800
 switchport trunk allowed vlan 1-566,568-1005
 switchport trunk encapsulation dot1q
 switchport mode trunk
 channel-group 3 mode desirable
!

```

```

DLS1
Physical Config CLI Attributes
IOS Comm
interface Port-channell1
 switchport trunk native vlan 800
 switchport trunk encapsulation dot1q
 switchport mode trunk
!
interface Port-channel4
 switchport trunk native vlan 800
 switchport trunk encapsulation dot1q
 switchport mode trunk
!
interface Port-channell2
 no switchport
 ip address 10.12.12.1 255.255.255.252
!
interface FastEthernet0/7
 switchport trunk native vlan 800
 switchport trunk encapsulation dot1q
 switchport mode trunk
 channel-group 1 mode active
!
interface FastEthernet0/8
 switchport trunk native vlan 800
 switchport trunk encapsulation dot1q
 switchport mode trunk
 channel-group 1 mode active
!
interface FastEthernet0/9
 switchport trunk native vlan 800
 switchport trunk encapsulation dot1q
 switchport mode trunk
 channel-group 4 mode desirable
!
interface FastEthernet0/10
 switchport trunk native vlan 800
 switchport trunk encapsulation dot1q
 switchport mode trunk
 channel-group 4 mode desirable
!

```

```

ALS1
-----
IOS Command Line Interface
!
interface Port-channel1
 switchport trunk native vlan 800
 switchport trunk encapsulation dot1q
 switchport mode trunk
!
interface Port-channel3
 switchport trunk native vlan 800
 switchport trunk encapsulation dot1q
 switchport mode trunk
!
interface FastEthernet0/7
 switchport trunk native vlan 800
 switchport trunk encapsulation dot1q
 switchport mode trunk
 channel-group 1 mode active
!
interface FastEthernet0/8
 switchport trunk native vlan 800
 switchport trunk encapsulation dot1q
 switchport mode trunk
 channel-group 1 mode active
!
interface FastEthernet0/9
 switchport trunk native vlan 800
 switchport trunk encapsulation dot1q
 switchport mode trunk
 channel-group 3 mode desirable
!
interface FastEthernet0/10
 switchport trunk native vlan 800
 switchport trunk encapsulation dot1q
 switchport mode trunk
 channel-group 3 mode desirable
!

ALS2
-----
IOS Command Line Interface
!
interface Port-channel2
 switchport trunk native vlan 800
 switchport trunk encapsulation dot1q
 switchport mode trunk
!
interface Port-channel4
 switchport trunk native vlan 800
 switchport trunk encapsulation dot1q
 switchport mode trunk
!
interface FastEthernet0/7
 switchport trunk native vlan 800
 switchport trunk encapsulation dot1q
 switchport mode trunk
 channel-group 2 mode active
!
interface FastEthernet0/8
 switchport trunk native vlan 800
 switchport trunk encapsulation dot1q
 switchport mode trunk
 channel-group 2 mode active
!
interface FastEthernet0/9
 switchport trunk native vlan 800
 switchport trunk encapsulation dot1q
 switchport mode trunk
 channel-group 4 mode desirable
!
interface FastEthernet0/10
 switchport trunk native vlan 800
 switchport trunk encapsulation dot1q
 switchport mode trunk
 channel-group 4 mode desirable
!
    
```

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(config-if)#switchport access vlan 345
DLS1(config-if)#spanning-tree portfast
DLS1(config-if)#no shutdown
    
```

```

DLS2#config t
Enter configuration commands, one per line. End with CNTL/Z.
DLS2(config)#interface fastEthernet 0/6
DLS2(config-if)#switchport mode access
DLS2(config-if)#switchport access vlan 12
DLS2(config-if)#spanning-tree portfast
%Warning: portfast should only be enabled on ports connected to a
single
host. Connecting hubs, concentrators, switches, bridges, etc...
to this
interface when portfast is enabled, can cause temporary bridging
loops.
Use with CAUTION

%Portfast has been configured on FastEthernet0/6 but will only
have effect when the interface is in a non-trunking mode.
DLS2(config-if)#no shutdown

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

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

ALS2#config t
ALS2(config-if)#switchport access vlan 123
% Access VLAN does not exist. Creating vlan 123
ALS2(config-if)#exit
ALS2(config)#vlan 234
ALS2(config-vlan)#name HUESPEDES
ALS2(config-vlan)#EXIT
ALS2(config)#interface fastEthernet 0/6
ALS2(config-if)#switchport mode access
ALS2(config-if)#switchport access vlan 234
ALS2(config-if)#spanning-tree portfast
%Warning: portfast should only be enabled on ports connected to a
single
host. Connecting hubs, concentrators, switches, bridges, etc...
to this
interface when portfast is enabled, can cause temporary bridging
loops.
Use with CAUTION

%Portfast has been configured on FastEthernet0/6 but will only
have effect when the interface is in a non-trunking mode.
ALS2(config-if)#no shutdown

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

DLS1#
% Unknown command or computer name, or unable to find computer
address

DLS1#config t
Enter configuration commands, one per line. End with CNTL/Z.
DLS1(config)#interface fastEthernet 0/6
DLS1(config-if)#switchport mode access
DLS1(config-if)#switchport access vlan 345
% Access VLAN does not exist. Creating vlan 345
DLS1(config-if)#switchport access vlan 3456
% Access VLAN does not exist. Creating vlan 3456
DLS1(config-if)#switchport access vlan 34
DLS1(config-if)#spanning-tree portfast
%Warning: portfast should only be enabled on ports connected to a
single
host. Connecting hubs, concentrators, switches, bridges, etc...
to this
interface when portfast is enabled, can cause temporary bridging
loops.
Use with CAUTION

%Portfast has been configured on FastEthernet0/6 but will only
have effect when the interface is in a non-trunking mode.
DLS1(config-if)#no shutdown

ALS1#en
ALS1#config t
Enter configuration commands, one per line. End with CNTL/Z.
ALS1(config)#interface fastEthernet 0/6
ALS1(config-if)#switchport mode access
ALS1(config-if)#switchport access vlan 123
ALS1(config-if)#spanning-tree portfast
%Warning: portfast should only be enabled on ports connected to a
single
host. Connecting hubs, concentrators, switches, bridges, etc...
to this
interface when portfast is enabled, can cause temporary bridging
loops.
Use with CAUTION

%Portfast has been configured on FastEthernet0/6 but will only
have effect when the interface is in a non-trunking mode.
ALS1(config-if)#no shutdown

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

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

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

```
DLS1>en
DLS1#config t
Enter configuration commands, one per line. End with CNTL/Z.
DLS1(config)#int ran f0/1-5, f0/13-14, f0/19-24, g0/1-2
DLS1(config-if-range)#no shutdown

%LINK-5-CHANGED: Interface FastEthernet0/1, changed state to down
%LINK-5-CHANGED: Interface FastEthernet0/2, changed state to down
%LINK-5-CHANGED: Interface FastEthernet0/3, changed state to down
%LINK-5-CHANGED: Interface FastEthernet0/4, changed state to down
%LINK-5-CHANGED: Interface FastEthernet0/5, changed state to down
%LINK-5-CHANGED: Interface FastEthernet0/13, changed state to down
%LINK-5-CHANGED: Interface FastEthernet0/14, changed state to down
%LINK-5-CHANGED: Interface FastEthernet0/19, changed state to down
%LINK-5-CHANGED: Interface FastEthernet0/20, changed state to down
%LINK-5-CHANGED: Interface FastEthernet0/21, changed state to down
%LINK-5-CHANGED: Interface FastEthernet0/22, changed state to down
%LINK-5-CHANGED: Interface FastEthernet0/23, changed state to down
%LINK-5-CHANGED: Interface FastEthernet0/24, changed state to down
DLS1(config-if-range)#
```

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.

Utilizamos los siguientes comandos tanto para DLS1, DLS2.

```
DLS1(config)#interface vlan 12
```

```
DLS1(config-if)#ip address 10.0.12.252 255.255.255.0
```

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

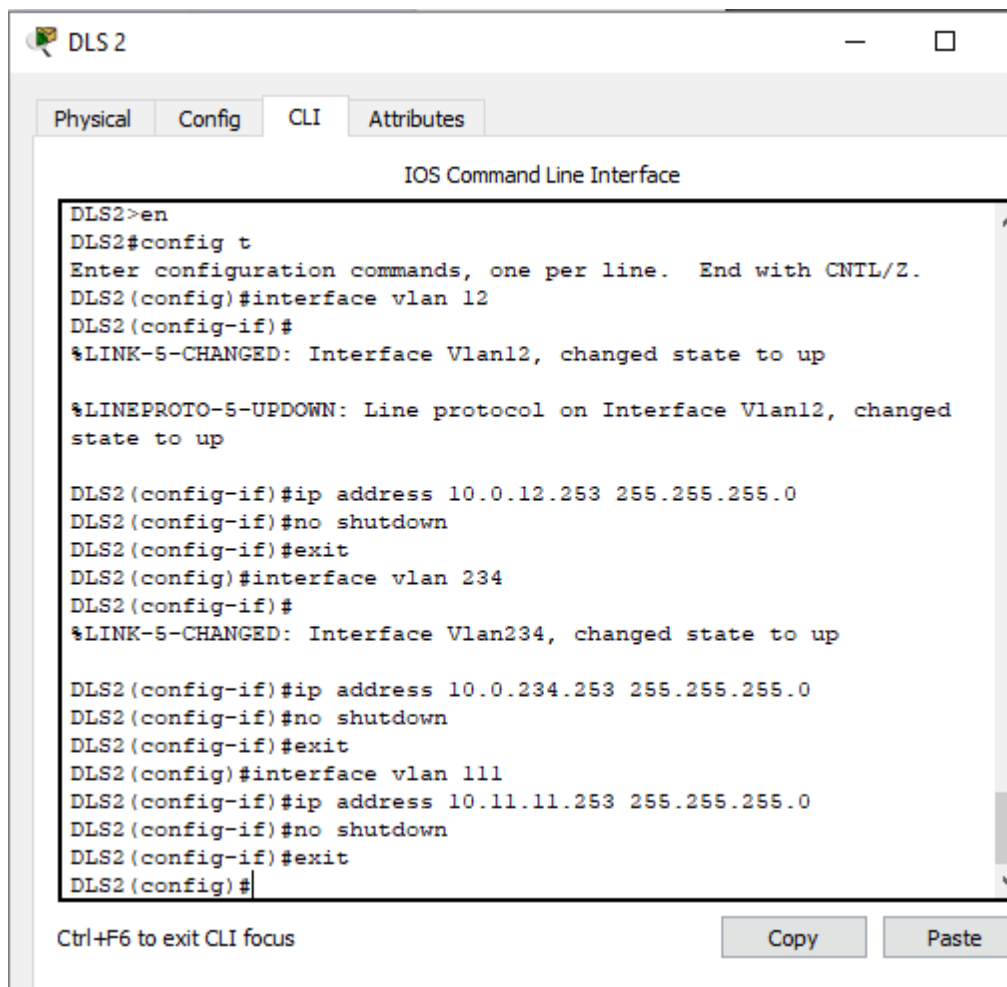
```
DLS1#config t
Enter configuration commands, one per line. End with CNTL/Z.
DLS1(config)#interface vlan 12
DLS1(config-if)#
%LINK-5-CHANGED: Interface Vlan12, changed state to up
ip address 10.0.12.252 255.255.255.0
DLS1(config-if)#ip address 10.0.12.252 255.255.255.0
DLS1(config-if)#no shutdown
DLS1(config-if)#exit
DLS1(config)#interface vlan 234
DLS1(config-if)#
%LINK-5-CHANGED: Interface Vlan234, changed state to up

DLS1(config-if)#ip address 10.0.234
DLS1#
%SYS-5-CONFIG_I: Configured from console by console

DLS1#interface vlan 12
^
% Invalid input detected at '^' marker.

DLS1#onfig t
^
% Invalid input detected at '^' marker.

DLS1#config t
Enter configuration commands, one per line. End with CNTL/Z.
DLS1(config)#interface vlan 234
DLS1(config-if)#ip address 10.0.234.252 255.255.255.0
DLS1(config-if)#no shutdown
DLS1(config-if)#exit
DLS1(config)#interface vlan 111
DLS1(config-if)#ip address 10.11.11.252 255.255.255.0
DLS1(config-if)#no shutdown
DLS1(config-if)#exit
DLS1(config)#exit
DLS1#
%SYS-5-CONFIG I: Configured from console by console
```



```
DLS2>en
DLS2#config t
Enter configuration commands, one per line. End with CNTL/Z.
DLS2(config)#interface vlan 12
DLS2(config-if)#
%LINK-5-CHANGED: Interface Vlan12, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan12, changed
state to up

DLS2(config-if)#ip address 10.0.12.253 255.255.255.0
DLS2(config-if)#no shutdown
DLS2(config-if)#exit
DLS2(config)#interface vlan 234
DLS2(config-if)#
%LINK-5-CHANGED: Interface Vlan234, changed state to up

DLS2(config-if)#ip address 10.0.234.253 255.255.255.0
DLS2(config-if)#no shutdown
DLS2(config-if)#exit
DLS2(config)#interface vlan 111
DLS2(config-if)#ip address 10.11.11.253 255.255.255.0
DLS2(config-if)#no shutdown
DLS2(config-if)#exit
DLS2(config)#
```

Ctrl+F6 to exit CLI focus

Copy Paste

```
DLS2(config)#interface vlan 12
```

```
DLS2(config-if)#ip address 10.0.12.253 255.255.255.0
```

```
DLS2(config-if)#no shutdown
```

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

o. 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.

INGRESAMOS LOS SIGUIENTES COMANDOS:

```
DLS1#conf terminal
```

```
DLS1(config)#interface loopback 0
```

```
DLS1(config-if)#ip address 1.1.1.1 255.255.255.255
```

<pre>DLS2 (config-if)#ip address 1.1.1.1 255.255.255.255 DLS2 (config-if)#exit DLS2 (config)#</pre>	<pre>DLS1 (config-if)#ip address 1.1.1.1 255.255.255.255 DLS1 (config-if)#exit DLS1 (config)#</pre>
<p>Ctrl+F6 to exit CLI focus</p> <p>Copy Paste</p>	<p>Ctrl+F6 to exit CLI focus</p> <p>Copy</p>

p. 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

Utilizamos la siguiente secuencia de comandos para el cumplimiento de lo estipulado.

```
DLS1(config)#interface Vlan 12
DLS1(config-if)#standby 1 ip 10.0.12.254
DLS1(config-if)#standby 1 priority 200
DLS1(config-if)#standby 1 preempt
DLS1(config-if)#standby 1 track FastEthernet0/11
DLS1(config-if)#standby 1 track FastEthernet0/12
DLS1(config-if)#interface Vlan 101
DLS1(config-if)#standby 1 ip 10.10.10.254
DLS1(config-if)#standby 1 priority 200
DLS1(config-if)#standby 1 preempt
DLS1(config-if)#standby 1 track FastEthernet0/11
DLS1(config-if)#standby 1 track FastEthernet0/12
DLS1(config-if)#interface Vlan 111
DLS1(config-if)#standby 1 ip 10.11.11.254
DLS1(config-if)#standby 1 priority 200
DLS1(config-if)#standby 1 preempt
DLS1(config-if)#standby 1 track FastEthernet0/11
DLS1(config-if)#standby 1 track FastEthernet0/12
DLS1(config-if)#interface Vlan 345
DLS1(config-if)#standby 1 ip 10.34.56.254
DLS1(config-if)#standby 1 priority 200
DLS1(config-if)#standby 1 preempt
DLS1(config-if)#standby 1 track FastEthernet0/11
DLS1(config-if)#standby 1 track FastEthernet0/12
DLS1(config-if)#interface Vlan 123
DLS1(config-if)#standby 2 ip 10.0.123.254
DLS1(config-if)#standby 2 priority 100
```

```
DLS1(config-if)#standby 2 preempt
DLS1(config-if)#standby 2 track FastEthernet0/11
DLS1(config-if)#standby 2 track FastEthernet0/12
DLS1(config-if)#interface Vlan 234
DLS1(config-if)#standby 2 ip 10.0.234.254
DLS1(config-if)#standby 2 priority 100
DLS1(config-if)#standby 2 preempt
DLS1(config-if)#standby 2 track FastEthernet0/11
DLS1(config-if)#standby 2 track FastEthernet0/12
```

```
DLS1(config-if)#
DLS1(config-if)#ip address 1.1.1.1 255.255.255.255
DLS1(config-if)#exit
DLS1(config)#
DLS1(config)#interface Vlan 12
DLS1(config-if)#standby 1 ip 10.0.12.254
DLS1(config-if)#standby 1 priority 200
DLS1(config-if)#standby 1 preempt
DLS1(config-if)#standby 1 track FastEthernet0/11
DLS1(config-if)#standby 1 track FastEthernet0/12
DLS1(config-if)#interface Vlan 101
DLS1(config-if)#standby 1 ip 10.10.10.254
% Warning: address is not within a subnet on this interface
DLS1(config-if)#standby 1 priority 200
DLS1(config-if)#standby 1 preempt
DLS1(config-if)#standby 1 track FastEthernet0/11
DLS1(config-if)#standby 1 track FastEthernet0/12
DLS1(config-if)#interface Vlan 111
DLS1(config-if)#standby 1 ip 10.11.11.254
DLS1(config-if)#standby 1 priority 200
DLS1(config-if)#standby 1 preempt
DLS1(config-if)#standby 1 track FastEthernet0/11
DLS1(config-if)#standby 1 track FastEthernet0/12
DLS1(config-if)#interface Vlan 345
DLS1(config-if)#standby 1 ip 10.34.56.254
% Warning: address is not within a subnet on this interface
DLS1(config-if)#standby 1 priority 200
DLS1(config-if)#standby 1 preempt
DLS1(config-if)#standby 1 track FastEthernet0/11
DLS1(config-if)#standby 1 track FastEthernet0/12
DLS1(config-if)#interface Vlan 123
DLS1(config-if)#standby 2 ip 10.0.123.254
% Warning: address is not within a subnet on this interface
DLS1(config-if)#standby 2 priority 100
DLS1(config-if)#standby 2 preempt
DLS1(config-if)#standby 2 track FastEthernet0/11
DLS1(config-if)#standby 2 track FastEthernet0/12
DLS1(config-if)#interface Vlan 234
```

Ctrl+F6 to exit CLI focus

Con el comando Show Standby podemos verificar que las vlan correspondientes hayan quedado Active y las demás Standby.

```
DLS1#Show Standby
Vlan12 - Group 1
```



State is Init (interface down)
Virtual IP address is 10.0.12.254
Active virtual MAC address is unknown
Local virtual MAC address is 0000.0C07.AC01 (v1 default)
Hello time 3 sec, hold time 10 sec
Next hello sent in 1.180 secs
Preemption enabled
Active router is unknown
Standby router is unknown
Priority 180 (configured 200)
Track interface FastEthernet0/11 state Down decrement 10
Track interface FastEthernet0/12 state Down decrement 10
Group name is hsrp-V11-1 (default)

Vlan234 - Group 2
State is Init (interface down)
Virtual IP address is 10.0.234.254
Active virtual MAC address is unknown
Local virtual MAC address is 0000.0C07.AC02 (v1 default)
Hello time 3 sec, hold time 10 sec
Next hello sent in 1.180 secs
Preemption enabled
Active router is unknown
Standby router is unknown
Priority 80 (default 100)
Track interface FastEthernet0/11 state Down decrement 10
Track interface FastEthernet0/12 state Down decrement 10
Group name is hsrp-V12-2 (default)

Vlan111 - Group 1
State is Init (interface down)
Virtual IP address is 10.11.11.254
Active virtual MAC address is unknown
Local virtual MAC address is 0000.0C07.AC01 (v1 default)
Hello time 3 sec, hold time 10 sec
Next hello sent in 1.180 secs
Preemption enabled
Active router is unknown
Standby router is unknown
Priority 180 (configured 200)
Track interface FastEthernet0/11 state Down decrement 10
Track interface FastEthernet0/12 state Down decrement 10
Group name is hsrp-V11-1 (default)

Vlan101 - Group 1
State is Init (interface down)



Virtual IP address is 10.10.10.254
Active virtual MAC address is unknown
Local virtual MAC address is 0000.0C07.AC01 (v1 default)
Hello time 3 sec, hold time 10 sec
Next hello sent in 1.180 secs
Preemption enabled
Active router is unknown
Standby router is unknown
Priority 180 (configured 200)
Track interface FastEthernet0/11 state Down decrement 10
Track interface FastEthernet0/12 state Down decrement 10
Group name is hsrp-V11-1 (default)

Vlan345 - Group 1
State is Init (interface down)
Virtual IP address is 10.34.56.254
Active virtual MAC address is unknown
Local virtual MAC address is 0000.0C07.AC01 (v1 default)
Hello time 3 sec, hold time 10 sec
Next hello sent in 1.180 secs
Preemption enabled
Active router is unknown
Standby router is unknown
Priority 180 (configured 200)
Track interface FastEthernet0/11 state Down decrement 10
Track interface FastEthernet0/12 state Down decrement 10
Group name is hsrp-V13-1 (default)

Vlan123 - Group 2
State is Init (interface down)
Virtual IP address is 10.0.123.254
Active virtual MAC address is unknown
Local virtual MAC address is 0000.0C07.AC02 (v1 default)
Hello time 3 sec, hold time 10 sec
Next hello sent in 1.180 secs
Preemption enabled
Active router is unknown
Standby router is unknown
Priority 80 (default 100)
Track interface FastEthernet0/11 state Down decrement 10
Track interface FastEthernet0/12 state Down decrement 10
Group name is hsrp-V11-2 (default)

Se relaciona a continuación el resultado del comando en el Switch DLS2:

```
DLS2(config)#interface Vlan 12  
DLS2(config-if)#standby 1 ip 10.0.12.254
```

```
DLS2(config-if)#standby 1 priority 100
DLS2(config-if)#standby 1 preempt
DLS2(config-if)#standby 1 track FastEthernet0/11
DLS2(config-if)#standby 1 track FastEthernet0/12
DLS2(config-if)#interface Vlan 101
DLS2(config-if)#standby 1 ip 10.10.10.254
58
DLS2(config-if)#standby 1 priority 100
DLS2(config-if)#standby 1 preempt
DLS2(config-if)#standby 1 track FastEthernet0/11
DLS2(config-if)#standby 1 track FastEthernet0/12
DLS2(config-if)#interface Vlan 111
DLS2(config-if)#standby 1 ip 10.11.11.254
DLS2(config-if)#standby 1 priority 100
DLS2(config-if)#standby 1 preempt
DLS2(config-if)#standby 1 track FastEthernet0/11
DLS2(config-if)#standby 1 track FastEthernet0/12
DLS2(config-if)#interface Vlan 345
DLS2(config-if)#standby 1 ip 10.34.56.254
DLS2(config-if)#standby 1 priority 100
DLS2(config-if)#standby 1 preempt
DLS2(config-if)#standby 1 track FastEthernet0/11
DLS2(config-if)#standby 1 track FastEthernet0/12
DLS2(config-if)#interface Vlan 123
DLS2(config-if)#standby 2 ip 10.0.123.254
DLS2(config-if)#standby 2 priority 200
DLS2(config-if)#standby 2 preempt
DLS2(config-if)#standby 2 track FastEthernet0/11
DLS2(config-if)#standby 2 track FastEthernet0/12
DLS2(config-if)#interface Vlan 234
DLS2(config-if)#standby 2 ip 10.0.234.254
DLS2(config-if)#standby 2 priority 200
DLS2(config-if)#standby 2 preempt
DLS2(config-if)#standby 2 track FastEthernet0/11
DLS2(config-if)#standby 2 track FastEthernet0/12
```

```

DLS2(config)#interface Vlan 12
DLS2(config-if)#standby 1 ip 10.0.12.254
DLS2(config-if)#standby 1 priority 100
DLS2(config-if)#standby 1 preempt
DLS2(config-if)#standby 1 track FastEthernet0/11
DLS2(config-if)#standby 1 track FastEthernet0/12
DLS2(config-if)#interface Vlan 101
DLS2(config-if)#standby 1 ip 10.10.10.254
% Warning: address is not within a subnet on this interface
DLS2(config-if)#standby 1 priority 100
DLS2(config-if)#standby 1 preempt
DLS2(config-if)#standby 1 track FastEthernet0/11
DLS2(config-if)#standby 1 track FastEthernet0/12
DLS2(config-if)#interface Vlan 111
DLS2(config-if)#standby 1 ip 10.11.11.254
DLS2(config-if)#standby 1 priority 100
DLS2(config-if)#standby 1 preempt
DLS2(config-if)#standby 1 track FastEthernet0/11
DLS2(config-if)#standby 1 track FastEthernet0/12
DLS2(config-if)#interface Vlan 345
DLS2(config-if)#standby 1 ip 10.34.56.254
% Warning: address is not within a subnet on this interface
DLS2(config-if)#standby 1 priority 100
DLS2(config-if)#standby 1 preempt
DLS2(config-if)#standby 1 track FastEthernet0/11
DLS2(config-if)#standby 1 track FastEthernet0/12
DLS2(config-if)#interface Vlan 123
DLS2(config-if)#standby 2 ip 10.0.123.254
% Warning: address is not within a subnet on this interface
DLS2(config-if)#standby 2 priority 200
DLS2(config-if)#standby 2 preempt
DLS2(config-if)#standby 2 track FastEthernet0/11
DLS2(config-if)#standby 2 track FastEthernet0/12
DLS2(config-if)#interface Vlan 234
DLS2(config-if)#standby 2 ip 10.0.234.254
DLS2(config-if)#standby 2 priority 200
DLS2(config-if)#standby 2 preempt
DLS2(config-if)#standby 2 track FastEthernet0/11

```

DLS2#Show Standby

Vlan12 - Group 1

State is Active

8 state changes, last state change 04:52:30

Virtual IP address is 10.0.12.254

Active virtual MAC address is 0000.0C07.AC01

Local virtual MAC address is 0000.0C07.AC01 (v1 default)

Hello time 3 sec, hold time 10 sec

Next hello sent in 1.816 secs

Preemption enabled

Active router is local

Standby router is unknown

Priority 80 (default 100)

Track interface FastEthernet0/11 state Down decrement 10

Track interface FastEthernet0/12 state Down decrement 10

Group name is hsrp-V11-1 (default)



Vlan234 - Group 2
State is Init (interface down)
Virtual IP address is 10.0.234.254
Active virtual MAC address is unknown
Local virtual MAC address is 0000.0C07.AC02 (v1 default)
Hello time 3 sec, hold time 10 sec
Next hello sent in 1.180 secs
Preemption enabled
Active router is unknown
Standby router is unknown
Priority 180 (configured 200)
Track interface FastEthernet0/11 state Down decrement 10
Track interface FastEthernet0/12 state Down decrement 10
Group name is hsrp-V12-2 (default)

Vlan111 - Group 1
State is Init (interface down)
Virtual IP address is 10.11.11.254
Active virtual MAC address is unknown
Local virtual MAC address is 0000.0C07.AC01 (v1 default)
Hello time 3 sec, hold time 10 sec
Next hello sent in 1.180 secs
Preemption enabled
Active router is unknown
Standby router is unknown
Priority 80 (default 100)
Track interface FastEthernet0/11 state Down decrement 10
Track interface FastEthernet0/12 state Down decrement 10
Group name is hsrp-V11-1 (default)

Vlan101 - Group 1
State is Init (interface down)
Virtual IP address is 10.10.10.254
Active virtual MAC address is unknown
Local virtual MAC address is 0000.0C07.AC01 (v1 default)
Hello time 3 sec, hold time 10 sec
Next hello sent in 1.180 secs
Preemption enabled
Active router is unknown
Standby router is unknown
Priority 80 (default 100)
Track interface FastEthernet0/11 state Down decrement 10
Track interface FastEthernet0/12 state Down decrement 10
Group name is hsrp-V11-1 (default)

```
Vlan345 - Group 1
State is Init (interface down)
Virtual IP address is 10.34.56.254
Active virtual MAC address is unknown
Local virtual MAC address is 0000.0C07.AC01 (v1 default)
Hello time 3 sec, hold time 10 sec
Next hello sent in 1.180 secs
Preemption enabled
Active router is unknown
Standby router is unknown
Priority 80 (default 100)
Track interface FastEthernet0/11 state Down decrement 10
Track interface FastEthernet0/12 state Down decrement 10
Group name is hsrp-V13-1 (default)
```

```
Vlan123 - Group 2
State is Init (interface down)
Virtual IP address is 10.0.123.254
Active virtual MAC address is unknown
Local virtual MAC address is 0000.0C07.AC02 (v1 default)
Hello time 3 sec, hold time 10 sec
Next hello sent in 1.180 secs
Preemption enabled
Active router is unknown
Standby router is unknown
Priority 180 (configured 200)
Track interface FastEthernet0/11 state Down decrement 10
Track interface FastEthernet0/12 state Down decrement 10
Group name is hsrp-V11-2 (default)
```

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.

De acuerdo con lo solicitado aplicamos la siguiente secuencia de comandos.

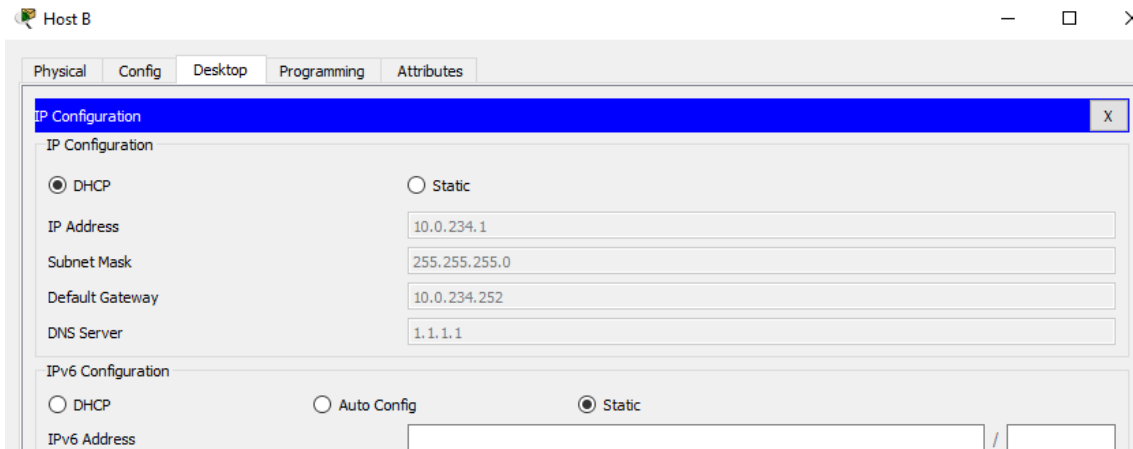
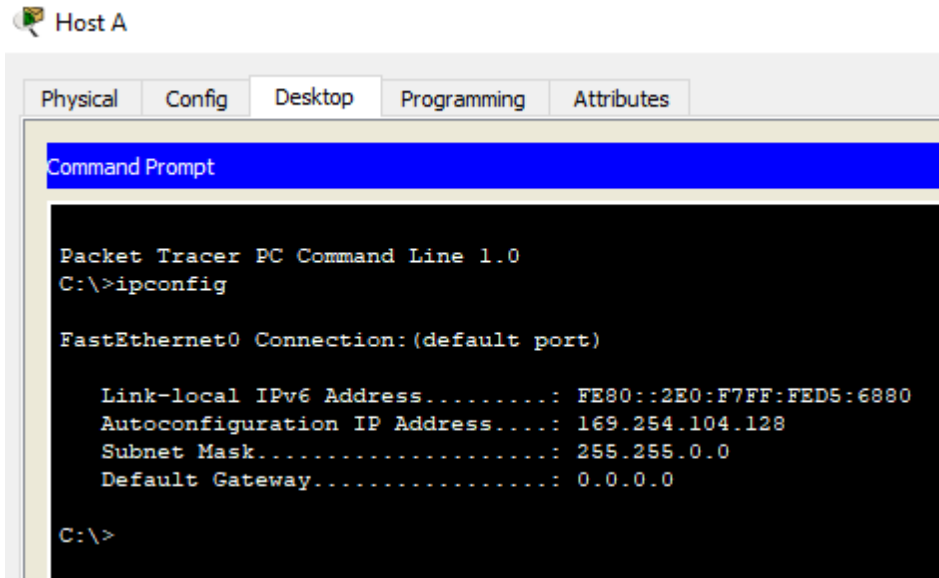
```
DLS1(config)#ip dhcp excluded-address 10.0.12.251 10.0.12.254
DLS1(config)#ip dhcp pool VLAN12_DHCP
DLS1(dhcp-config)#network 10.0.12.0 255.255.255.0
61
DLS1(dhcp-config)#default-router 10.0.12.252
DLS1(dhcp-config)#dns-server 1.1.1.1
DLS1(dhcp-config)#ip dhcp excluded-address 10.0.123.251 10.0.123.254
DLS1(config)#ip dhcp pool VLAN123_DHCP
```

```
DLS1(dhcp-config)#network 10.0.123.0 255.255.255.0
DLS1(dhcp-config)#default-router 10.0.123.252
DLS1(dhcp-config)#dns-server 1.1.1.1
DLS1(dhcp-config)#ip dhcp excluded-address 10.0.234.251 10.0.12.254
DLS1(config)#ip dhcp pool VLAN234_DHCP
DLS1(dhcp-config)#network 10.0.234.0 255.255.255.0
DLS1(dhcp-config)#default-router 10.0.234.252
DLS1(dhcp-config)#dns-server 1.1.1.1
```

The screenshot shows a Cisco IOS CLI window with the following configuration commands:

```
DLS1>en
DLS1#config t
Enter configuration commands, one per line. End with CNTL/Z.
DLS1(config)#ip dhcp excluded-address 10.0.12.251 10.0.12.254
DLS1(config)#ip dhcp pool VLAN12_DHCP
DLS1(dhcp-config)#network 10.0.12.0 255.255.255.0
DLS1(dhcp-config)#default-router 10.0.12.252
DLS1(dhcp-config)#dns-server 1.1.1.1
DLS1(dhcp-config)#ip dhcp excluded-address 10.0.123.251
10.0.12.254
DLS1(config)#ip dhcp pool VLAN123_DHCP
DLS1(dhcp-config)#network 10.0.123.0 255.255.255.0
DLS1(dhcp-config)#default-router 10.0.123.252
DLS1(dhcp-config)#dns-server 1.1.1.1
DLS1(dhcp-config)#ip dhcp excluded-address 10.0.234.251
10.0.12.254
DLS1(config)#ip dhcp pool VLAN234_DHCP
DLS1(dhcp-config)#network 10.0.234.0 255.255.255.0
DLS1(dhcp-config)#default-router 10.0.234.252
DLS1(dhcp-config)#dns-server 1.1.1.1
DLS1(dhcp-config)#
```

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



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

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

DLS1#show vlan

VLAN Name	Status	Ports
1 default	active	Po1, Po4, Po12, Fa0/1 Fa0/2, Fa0/3, Fa0/4, Fa0/5 Fa0/7, Fa0/8, Fa0/9, Fa0/10 Fa0/11, Fa0/12, Fa0/13, Fa0/14 Fa0/15, Fa0/16, Fa0/17, Fa0/18 Fa0/19, Fa0/20, Fa0/21, Fa0/22 Fa0/23, Fa0/24, Gig0/1, Gig0/2
10 VOZ	active	
11 VIDEONET	active	
12 EJECUTIVOS	active	
34 ADMINISTRACION	active	Fa0/6
123 MANTENIMIENTO	active	
234 HUESPEDES	active	
345 VLAN0345	active	
434 ESTACIONAMIENTO	active	
800 NATIVA	active	
1002 fddi-default	act/unsup	
1003 token-ring-default	act/unsup	
1004 fddinet-default	act/unsup	
--More--		

VLAN	Name	Status	Ports
1	default	active	Po2, Po3, Po12, Fa0/1 Fa0/2, Fa0/3, Fa0/4, Fa0/5 Fa0/7, Fa0/8, Fa0/9, Fa0/10 Fa0/11, Fa0/12, Fa0/13, Fa0/14 Fa0/15, Fa0/16, Fa0/17, Fa0/18 Fa0/19, Fa0/20, Fa0/21, Fa0/22 Fa0/23, Fa0/24, Gig0/1, Gig0/2
12	EJECUTIVOS	active	Fa0/6
123	MANTENIMIENTO	active	
234	HUESPEDES	active	
567	CONTABILIDAD	active	
800	NATIVA	active	
1002	fddi-default	act/unsup	
1003	token-ring-default	act/unsup	
1004	fddinet-default	act/unsup	
1005	trnet-default	act/unsup	
1010	VOZ	active	
1111	VIDEONET	active	
3456	ADMINISTRACION	active	

VLAN	Type	SAID	MTU	Parent	RingNo	BridgeNo	Stp	BrdgMode	Trans1	Trans2
1	enet	100001	1500	-	-	-	-	-	0	0
12	enet	100012	1500	-	-	-	-	-	0	0
123	enet	100123	1500	-	-	-	-	-	0	0
234	enet	100234	1500	-	-	-	-	-	0	0
567	enet	100567	1500	-	-	-	-	-	0	0
800	enet	100800	1500	-	-	-	-	-	0	0
1002	fddi	101002	1500	-	-	-	-	-	0	0
1003	tr	101003	1500	-	-	-	-	-	0	0
1004	fdnet	101004	1500	-	-	-	ieee	-	0	0
1005	trnet	101005	1500	-	-	-	ibm	-	0	0

VLAN	Type	SAID	MTU	Parent	RingNo	BridgeNo	Stp	BrdgMode	Trans1	Trans2
1010	enet	101010	1500	-	-	-	-	-	0	0
1111	enet	101111	1500	-	-	-	-	-	0	0

DLS 1

Physical Config CLI Attributes

IOS Command Line Interface

```

FastEthernet0/8 (1), with ALS1 FastEthernet0/7 (800).

%CDP-4-NATIVE_VLAN_MISMATCH: Native VLAN mismatch discovered on
FastEthernet0/7 (1), with ALS1 FastEthernet0/7 (800).

%CDP-4-NATIVE_VLAN_MISMATCH: Native VLAN mismatch discovered on
FastEthernet0/8 (1), with ALS1 FastEthernet0/8 (800).

%CDP-4-NATIVE_VLAN_MISMATCH: Native VLAN mismatch discovered on
FastEthernet0/7 (1), with ALS1 FastEthernet0/8 (800).
ce trunk
Port      Mode      Encapsulation  Status      Native vlan
Po4       on        802.1q         trunking    800

Port      Vlans allowed on trunk
Po4       1-1005

Port      Vlans allowed and active in management domain
Po4       1,10,11,12,34,123,234,345,434,800

Port      Vlans in spanning tree forwarding state and not
pruned
Po4       1,10,11,12,34,123,234,345,434,800

DLS1#
    
```

Ctrl+F6 to exit CLI focus

Copy Paste

```

ALS2#show vlan
-----
VLAN Name                Status    Ports
-----
1    default                active   Po2, Po4, Fa0/1, Fa0/2
                                   Fa0/3, Fa0/4, Fa0/5, Fa0/7
                                   Fa0/8, Fa0/9, Fa0/10, Fa0/11
                                   Fa0/12, Fa0/13, Fa0/14, Fa0/15
                                   Fa0/16, Fa0/17, Fa0/18, Fa0/19
                                   Fa0/20, Fa0/21, Fa0/22, Fa0/23
                                   Fa0/24, Gig0/1, Gig0/2
123  VLAN0123                active
234  HUESPEDES                active   Fa0/6
1002 fddi-default            act/unsup
1003 token-ring-default    act/unsup
1004 fddinet-default       act/unsup
1005 trnet-default         act/unsup

VLAN Type  SAID      MTU   Parent RingNo BridgeNo Stp  BrdgMode Transl Trans2
-----
1    enet     100001   1500  -     -     -     -     -     0     0
123  enet     100123   1500  -     -     -     -     -     0     0
234  enet     100234   1500  -     -     -     -     -     0     0
1002 fddi     101002   1500  -     -     -     -     -     0     0
1003 tr      101003   1500  -     -     -     -     -     0     0
1004 fdnet  101004   1500  -     -     -     -     ieee -     0     0
1005 trnet  101005   1500  -     -     -     -     ibm  -     0     0

VLAN Type  SAID      MTU   Parent RingNo BridgeNo Stp  BrdgMode Transl Trans2
-----

Remote SPAN VLANs
-----

Primary Secondary Type          Ports
-----

ALS2#
ALS2#
-----

```

DLS 2

Physical Config CLI Attributes

IOS Command Line Interface

```
FastEthernet0/8 (1), with ALS2 FastEthernet0/7 (800).

%CDP-4-NATIVE_VLAN_MISMATCH: Native VLAN mismatch discovered on
FastEthernet0/7 (1), with ALS2 FastEthernet0/8 (800).

%CDP-4-NATIVE_VLAN_MISMATCH: Native VLAN mismatch discovered on
FastEthernet0/8 (1), with ALS2 FastEthernet0/8 (800).

DLS2>en
DLS2#show interface trunk
Port      Mode          Encapsulation  Status        Native vlan
Po3       on            802.1q         trunking      800

Port      Vlans allowed on trunk
Po3       1-566,568-1005

Port      Vlans allowed and active in management domain
Po3       1,12,123,234,800

Port      Vlans in spanning tree forwarding state and not
pruned
Po3       12,123,234,800

DLS2#
```

Ctrl+F6 to exit CLI focus

Copy Paste



```

ALS1#show interface trunk
Port      Mode      Encapsulation  Status      Native vlan
Po3       on        802.1q         trunking    800

Port      Vlans allowed on trunk
Po3       1-1005

Port      Vlans allowed and active in management domain
Po3       1,10,11,12,34,123,234,345,434,800

Port      Vlans in spanning tree forwarding state and not pruned
Po3       1,10,11,12,34,123,234,345,434,800

ALS1#show vlan

VLAN Name                Status    Ports
-----
1    default              active    Po1, Fa0/1, Fa0/2, Fa0/3
                                           Fa0/4, Fa0/5, Fa0/11, Fa0/12
                                           Fa0/13, Fa0/14, Fa0/15, Fa0/16
                                           Fa0/17, Fa0/18, Fa0/19, Fa0/20
                                           Fa0/21, Fa0/22, Fa0/23, Fa0/24
                                           Gig0/1, Gig0/2
10   VOZ                  active
11   VIDEONET            active
12   EJECUTIVOS          active
34   ADMINISTRACION       active
123  MANTENIMIENTO        active    Fa0/6
234  HUESPEDES            active
345  VLAN0345             active
434  ESTACIONAMIENTO      active
800  NATIVA               active
1002 fddi-default         act/unsup
1003 token-ring-default  act/unsup
1004 fddinet-default     act/unsup
1005 trnet-default       act/unsup
--More--

```

```

ALS2>en
ALS2#show interface trunk
Port      Mode      Encapsulation  Status      Native vlan
Po4       on        802.1q         trunking    800

Port      Vlans allowed on trunk
Po4       1-1005

Port      Vlans allowed and active in management domain
Po4       1, 10, 11, 12, 34, 123, 234, 345, 434, 800

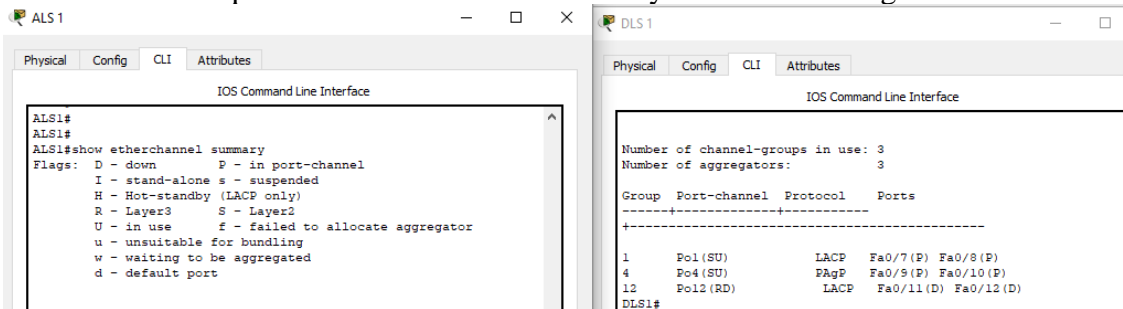
Port      Vlans in spanning tree forwarding state and not pruned
Po4       1, 10, 11, 12, 34, 123, 234, 345, 434, 800

ALS2#show vlan

VLAN Name                Status    Ports
-----
1    default                active    Po2, Fa0/1, Fa0/2, Fa0/3
                                           Fa0/4, Fa0/5, Fa0/11, Fa0/12
                                           Fa0/13, Fa0/14, Fa0/15, Fa0/16
                                           Fa0/17, Fa0/18, Fa0/19, Fa0/20
                                           Fa0/21, Fa0/22, Fa0/23, Fa0/24
                                           Gig0/1, Gig0/2
10   VOZ                    active
11   VIDEONET               active
12   EJECUTIVOS            active
34   ADMINISTRACION        active
123  MANTENIMIENTO         active
234  HUESPEDES             active    Fa0/6
345  VLAN0345              active
434  ESTACIONAMIENTO       active
800  NATIVA                 active
1002 fddi-default          act/unsup
1003 token-ring-default  act/unsup
1004 fddinet-default      act/unsup
1005 trnet-default       act/unsup
--More-- |

```

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#sh spanning-tree
VLAN0001
  Spanning tree enabled protocol ieee
  Root ID    Priority    24577
            Address    0030.F242.A864
            This bridge is the root
            Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

  Bridge ID  Priority    24577 (priority 24576 sys-id-ext 1)
            Address    0030.F242.A864
            Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
            Aging Time 20

Interface      Role Sts Cost      Prio.Nbr Type
-----
Po1            Desg FWD 9         128.28 Shr
Po4            Desg FWD 9         128.29 Shr

VLAN0010
  Spanning tree enabled protocol ieee
  Root ID    Priority    32778
            Address    0001.C783.319C
            Cost        9
            Port        29 (Port-channel4)
            Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

  Bridge ID  Priority    32778 (priority 32768 sys-id-ext 10)
            Address    0030.F242.A864
            Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
            Aging Time 20

Interface      Role Sts Cost      Prio.Nbr Type
-----
Po4            Root FWD 9         128.29 Shr

VLAN0011
  Spanning tree enabled protocol ieee
  Root ID    Priority    32779
            Address    0001.C783.319C
  
```

DLS 2

```

Physical  Config  CLI  Attributes
IOS Command Line Interface
DLS2#sh Spanning-tree
VLAN0001
  Spanning tree enabled protocol ieee
  Root ID    Priority    24577
            Address    0030.F242.A864
            Cost      18
            Port      28(Port-channel2)
            Hello Time 2 sec  Max Age 20 sec  Forward Delay 15 sec

  Bridge ID  Priority    28673 (priority 28672 sys-id-ext 1)
            Address    0005.5E97.8A84
            Hello Time 2 sec  Max Age 20 sec  Forward Delay 15 sec
            Aging Time 20

Interface   Role Sts Cost      Prio.Nbr Type
-----
Po2          Root FWD 9         128.28 Shr
Po3          Altn BLK 9         128.29 Shr

VLAN0012
  Spanning tree enabled protocol ieee
  Root ID    Priority    28684
            Address    0005.5E97.8A84
            This bridge is the root
            Hello Time 2 sec  Max Age 20 sec  Forward Delay 15 sec

  Bridge ID  Priority    28684 (priority 28672 sys-id-ext 12)
            Address    0005.5E97.8A84
            Hello Time 2 sec  Max Age 20 sec  Forward Delay 15 sec
            Aging Time 20

--More--
%CDP-4-NATIVE_VLAN_MISMATCH: Native VLAN mismatch discovered on FastEthernet0/7 (1), with ALS2 FastEthernet0/7 (800).
%CDP-4-NATIVE_VLAN_MISMATCH: Native VLAN mismatch discovered on FastEthernet0/8 (1), with ALS2 FastEthernet0/7 (800).
%CDP-4-NATIVE_VLAN_MISMATCH: Native VLAN mismatch discovered on FastEthernet0/7 (1), with ALS2 FastEthernet0/8 (800).
%CDP-4-NATIVE_VLAN_MISMATCH: Native VLAN mismatch discovered on FastEthernet0/8 (1), with ALS2 FastEthernet0/8 (800).

```

ALS 1

Physical Config CLI Attributes

```

ALS1>en
ALS1#sh Spanning-tree
VLAN0001
  Spanning tree enabled protocol ieee
  Root ID      Priority    24577
              Address    0030.F242.A864
              Cost        9
              Port        27 (Port-channell)
              Hello Time  2 sec  Max Age 20 sec  Forward Delay 15 sec

  Bridge ID    Priority    32769  (priority 32768 sys-id-ext 1)
              Address    0006.2AEA.78E7
              Hello Time  2 sec  Max Age 20 sec  Forward Delay 15 sec
              Aging Time  20

Interface      Role Sts Cost      Prio.Nbr Type
-----
Po1             Root FWD 9         128.27 Shr
Po3             Desg FWD 9         128.28 Shr

VLAN0010
  Spanning tree enabled protocol ieee
  Root ID      Priority    32778
              Address    0006.2AEA.78E7
              This bridge is the root
              Hello Time  2 sec  Max Age 20 sec  Forward Delay 15 sec

  Bridge ID    Priority    32778  (priority 32768 sys-id-ext 10)
              Address    0006.2AEA.78E7
              Hello Time  2 sec  Max Age 20 sec  Forward Delay 15 sec
              Aging Time  20

Interface      Role Sts Cost      Prio.Nbr Type
-----
Po3             Desg FWD 9         128.28 Shr

VLAN0011
--More--

```

Ctrl+F6 to exit CLI focus

ALS 2

Physical Config CLI Attributes

```

VLAN0001
Spanning tree enabled protocol ieee
Root ID    Priority    24577
           Address    0030.F242.A864
           Cost      9
           Port     28 (Port-channel4)
           Hello Time 2 sec  Max Age 20 sec  Forward Delay 15 sec

Bridge ID  Priority    32769 (priority 32768 sys-id-ext 1)
           Address    0001.C783.319C
           Hello Time 2 sec  Max Age 20 sec  Forward Delay 15 sec
           Aging Time 20

Interface      Role Sts Cost      Prio.Nbr Type
-----
Po2             Desg FWD 9         128.27  Shr
Po4             Root FWD 9         128.28  Shr

VLAN0010
Spanning tree enabled protocol ieee
Root ID    Priority    32778
           Address    0001.C783.319C
           This bridge is the root
           Hello Time 2 sec  Max Age 20 sec  Forward Delay 15 sec

Bridge ID  Priority    32778 (priority 32768 sys-id-ext 10)
           Address    0001.C783.319C
           Hello Time 2 sec  Max Age 20 sec  Forward Delay 15 sec
           Aging Time 20

Interface      Role Sts Cost      Prio.Nbr Type
-----
Fa0/8          Desg FWD 19        128.8   P2p
Fa0/7          Desg FWD 19        128.7   P2p
Fa0/9          Desg FWD 19        128.9   P2p
Po4            Desg FWD 9         128.28  Shr

VLAN0011
--More--
    
```

Ctrl+F6 to exit CLI focus

CONCLUSIONES

□

- El área a través de la cual configura el enlace virtual OSPF, se denomina área de tránsito, debe tener información completa de enrutamiento y no fue ser un área stub.
- OSPF es un protocolo complejo y requiere mucho estudio para poder comprender bien cómo funciona, y mucha práctica para poder dominarlo. Uno de los conceptos más importantes dentro de OSPF es el diseño y funcionamiento de las distintas áreas, cosa que confunde bastante cuando se está conociendo este protocolo.
- En NAT existen tipos de funcionamiento, tales como estática, dinámica, sobrecarga y solapamiento. NAT Habilita las redes de IP privado que utilizan los IP Address no registrados para conectar con el Internet.
- Las configuraciones básicas en los dispositivos de comunicación cisco permiten al estudiante bases para la configuración de redes locales y llevarlas a topologías más grandes.
- Es de gran importancia las claves en los dispositivos controladores de redes ya que de esta depende que no pueda ser filtrado y de esta manera roben la información.
- La encriptación de la información es de suma importancia ya que si la red es filtrada la información mostrara caracteres no descifrables. □
- EIGRP es un protocolo de encaminamiento vector distancia avanzado, propiedad de Cisco Systems, que ofrece lo mejor de los algoritmos de vector de distancias y del estado de enlace. Se considera un protocolo avanzado que se basa en las características normalmente asociadas con los protocolos del estado de enlace.
- Algunas de las mejores funciones de OSPF, como las actualizaciones parciales y la detección de vecinos, se usan de forma similar con EIGRP. Aunque no garantiza el uso de la mejor ruta, es bastante usado porque EIGRP es algo más fácil de configurar que OSPF. EIGRP mejora las propiedades de convergencia y opera con mayor eficiencia que IGRP. Esto permite que una red tenga una arquitectura mejorada y pueda mantener las inversiones actuales en IGRP.



BIBLIOGRAFIA

Lammle, T. (2010). CISCO Press (Ed). Cisco Certified Network Associate Study Guide. Recuperado de <http://www.birminghamcharter.com/ourpages/auto/2012/3/22/41980164/CCNA%20Electronic%20Book%206th%20edition.pdf>

Froom, R., Frahim, E. (2015). CISCO Press (Ed). High Availability. Implementing Cisco IP Switched Networks (SWITCH) Foundation Learning Guide CCNP SWITCH 300-115. Recuperado de <https://1drv.ms/b/s!AmIJYei-NT1IlnWR0hoMxgBNv1CJ>

Froom, R., Frahim, E. (2015). CISCO Press (Ed). First Hop Redundancy Protocols. Implementing Cisco IP Switched Networks (SWITCH) Foundation Learning Guide CCNP SWITCH 300-115. Recuperado de <https://1drv.ms/b/s!AmIJYei-NT1IlnWR0hoMxgBNv1CJ>

UNAD (2015). Switch CISCO Security Management [OVA]. Recuperado de <https://1drv.ms/u/s!AmIJYei-NT1IlyVeVJCCezJ2QE5c>

□

Lucas, M. (2009). Cisco Routers for the Desperate : Router and Switch Management, the Easy Way. San Francisco: No Starch Press. Recuperado de <http://bibliotecavirtual.unad.edu.co:2051/login.aspx?direct=true&db=e000xww&AN=440032&lang=es&site=ehost-live>

Tipos de áreas en OSPF – RedesCisco.NET www.redescisco.net/sitio/2011/08/11/tipos-de-areas-en-ospf/.

□

□